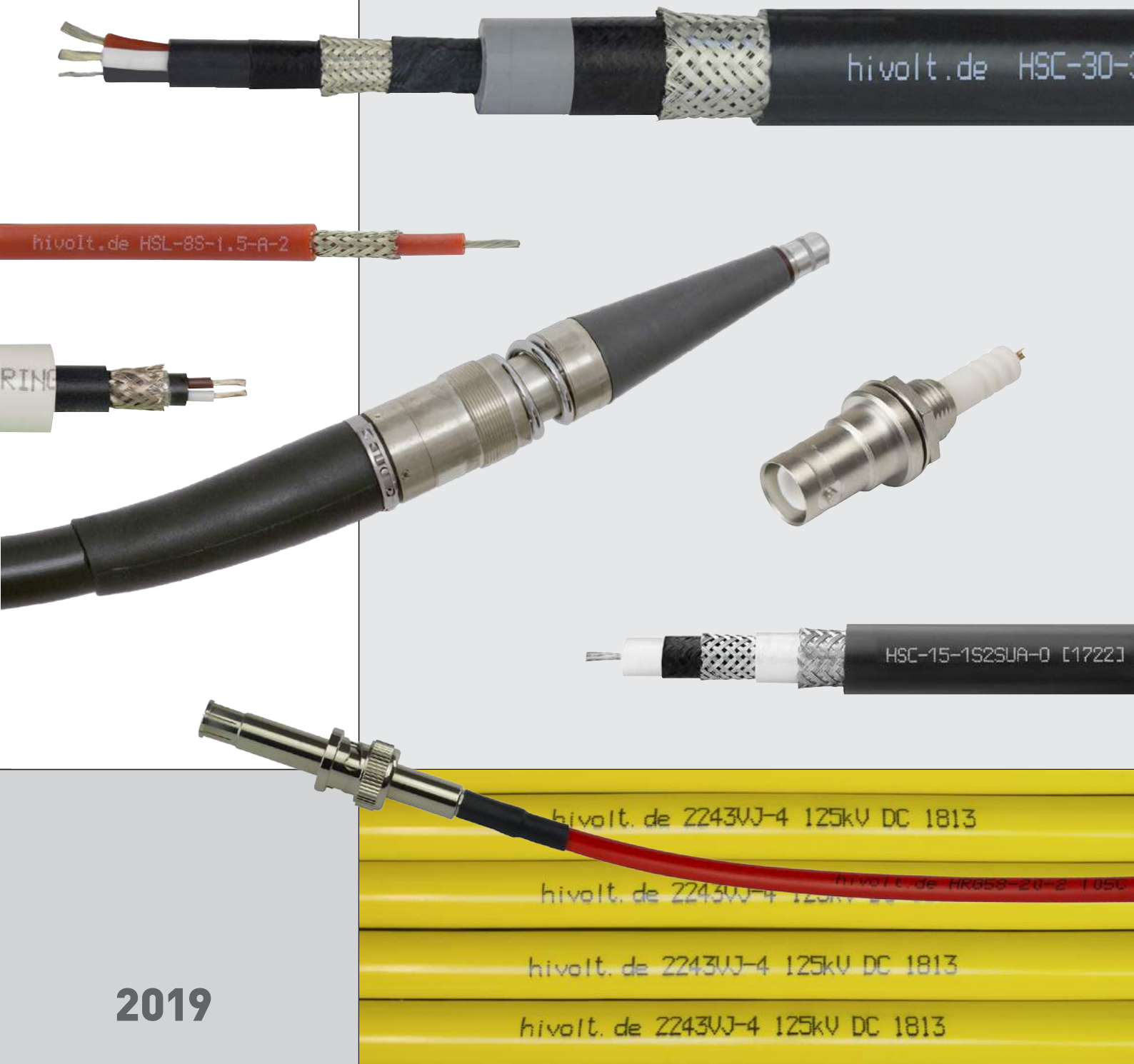


# HIGH VOLTAGE CABLE & CONNECTORS

Edition 7



## ■ ABOUT US

hivolt.de is an internationally operating specialist for professional high voltage components and power supplies. hivolt.de serves customers in D-A-CH, the whole of Europe and worldwide.

Products which are delivered by hivolt.de are being used in a variety of applications, both in industry as well as in research.

In order to find the optimal products for individual applications, we offer precise counsel to our established and potential customers. If desired, we are also able to support the integration into the customer's end product.

Our logistics cares for a smooth flow of goods and delivery on schedule – continuous and reliable.

Due to our inhouse design capabilities and our close cooperation with several leading manufacturers hivolt.de is able to offer custom-made high voltage products that match our customer's specific applications. This includes variations of standard products or special full custom designs.

## ■ ABOUT THIS CATALOG

This catalog comprises a multitude of high voltage cables, connectors and cable assemblies.

**Unshielded and Shielded Cable:** A wide range of unshielded cables for voltages up to 150kV and shielded cables for voltages up to 320kV. Many cables are furnished with semiconductive layers providing low partial discharge levels and AC ratings. Silicone, PE and EPR dielectrics are standard – miscellaneous dielectrics and custom cables are available on request.

**X-Ray / E-Beam Cable:** High quality, 1, 3, 4 and 5 core cables with EPR dielectric for voltages up to 320kV. They are equipped with semiconductive layers, braided shield and robust outer jacket. Many types provide high flexibility making X-Ray cables an excellent choice for safe transmission of high voltage in moving applications. These cables are typically used terminated as complete cable assemblies.

**Special Cable:** Triaxial cables and multiconductor cables in many different configurations. Customer applications often demand for specific solutions, e.g. the transmission of low voltage signals on high voltage potential. hivolt.de is able to provide custom cable for applications where special cables are required.

**HV Connectors:** Standard HV Connectors for voltages up to 100kV. We offer single and multi pin HV connectors in different designs. When required, cables can be supplied terminated with HV connectors.

**HV Cable Assemblies and Receptacles:** HV cable assemblies consist of HV cable fitted with molded rubber or resin cast connectors. HV assemblies and mating receptacles are available for voltages up to 300kV. Typical applications include medical and industrial X-Ray, electron beam welding, analytical instruments, electron microscopes, test stations, high energy, pulsed power and particle physics.

Please refer to **www.hivolt.de** or to our catalog **HIGH VOLTAGE AMPLIFIERS** for a wide range of high voltage power supplies and amplifiers.

## ■ DISCLAIMER

The information given in this catalog is technical data, not assured product characteristics. It has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. All drawings and pictures are not to scale. All values and dimensions without given tolerances are nominal. The content is subject to change without notice. The user has to ensure by adequate tests that the product is suitable for his application regarding safety and technical aspects. hivolt.de GmbH & Co. KG does not assume any liability arising out of the application or use of any product described.

The technical data is based on manufacturer's information.

## ■ SAFETY ADVICE

Design, installation and inspection of machinery and devices carrying high voltage require accordingly trained and qualified personnel. Appropriate safety rules and directives must be complied with. Improper handling of high voltage can mean severe injuries or death and may cause serious collateral damage!

## HIGH VOLTAGE CABLE & CONNECTORS

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## UNSHIELDED HIGH VOLTAGE CABLES

| RATED VOLTAGE |         | TYPE                            | CONDUCTOR SIZE |       | DIELECTRIC MATERIAL | OUTER DIA [mm] | MAX. OPER. TEMP. [°C] | UL                                                                                    | INFO                | STATUS | PAGE               |
|---------------|---------|---------------------------------|----------------|-------|---------------------|----------------|-----------------------|---------------------------------------------------------------------------------------|---------------------|--------|--------------------|
| DC [kV]       | AC [kV] |                                 | [AWG]          | [mm²] |                     |                |                       |                                                                                       |                     |        |                    |
| 5             |         | <a href="#">HSW-0516-0</a>      | 16             | 1.32  | Silicone            | 2.7            | 150                   |    | Series <sup>3</sup> | P      | <a href="#">18</a> |
| 6             |         | <a href="#">HSW-0624-0</a>      | 24             | 0.24  | Silicone            | 2.3            | 150                   |    | Series <sup>3</sup> | P      | <a href="#">18</a> |
| 10            | [6.7]   | <a href="#">8511R</a>           | 15             | 1.53  | Silicone            | 4.8            | 150                   | -                                                                                     |                     | P      | <a href="#">35</a> |
| 10            |         | <a href="#">HSU-1012-65-2</a>   | 12             | 3.31  | Silicone            | 4.6            | 150                   |    | Series <sup>2</sup> | S      | <a href="#">16</a> |
| 10            |         | <a href="#">HSU-1022-7-2</a>    | 22             | 0.36  | Silicone            | 3.1            | 150                   |    | Series <sup>2</sup> | P      | <a href="#">16</a> |
| 15            |         | <a href="#">2075</a>            | 12             | 3.1   | Silicone            | 6              | 200                   | -                                                                                     |                     | S      | <a href="#">24</a> |
| 15            |         | <a href="#">2132</a>            | 6              | 13.6  | Silicone            | 7.6            | 149                   | -                                                                                     |                     | P      | <a href="#">28</a> |
| 15            |         | <a href="#">HSW-1514-2</a>      | 14             | 2.08  | Silicone            | 3.9            | 150                   |    | Series <sup>3</sup> | P      | <a href="#">18</a> |
| 18            |         | <a href="#">HFP-1824-19-0</a>   | 24             | 0.24  | FEP                 | 1.27           | 200                   | -                                                                                     | Series <sup>1</sup> | S      | <a href="#">14</a> |
| 20            |         | <a href="#">2185R</a>           | 20             | 0.51  | Silicone            | 3.2            | 149                   | -                                                                                     |                     | P      | <a href="#">31</a> |
| 20            | [6.6]   | <a href="#">HSL-20-0.38-B-9</a> | 22             | 0.38  | Silicone            | 4.95           | 180                   | -                                                                                     |                     | P      | <a href="#">36</a> |
| 20            |         | <a href="#">HSU-2022-7-2</a>    | 22             | 0.36  | Silicone            | 3.7            | 150                   |    | Series <sup>2</sup> | P      | <a href="#">16</a> |
| 20            |         | <a href="#">HSW-2012-2</a>      | 12             | 3.29  | Silicone            | 4.9            | 150                   |    | Series <sup>3</sup> | P      | <a href="#">18</a> |
| 20            |         | <a href="#">HSW-2018-0</a>      | 18             | 0.81  | Silicone            | 3.8            | 150                   |    | Series <sup>3</sup> | P      | <a href="#">18</a> |
| 20            |         | <a href="#">HTV-20-22-2</a>     | 22             | 0.36  | PE-X                | 4.7            | 105                   |    |                     | S      | <a href="#">37</a> |
| 30            |         | <a href="#">2178</a>            | 20             | 0.51  | Silicone            | 4.7            | 149                   | -                                                                                     |                     | S      | <a href="#">30</a> |
| 30            |         | <a href="#">HFP-3020-19-2</a>   | 20             | 0.61  | FEP                 | 2.54           | 200                   | -                                                                                     | Series <sup>1</sup> | S      | <a href="#">14</a> |
| 30            |         | <a href="#">HSU-3014-41-9</a>   | 14             | 2.08  | Silicone            | 5.6            | 150                   |  | Series <sup>2</sup> | P      | <a href="#">16</a> |
| 30            |         | <a href="#">HSU-3018-19-0</a>   | 18             | 0.96  | Silicone            | 4.8            | 150                   |  | Series <sup>2</sup> | P      | <a href="#">16</a> |
| 30            |         | <a href="#">HSU-3022-7-9</a>    | 22             | 0.36  | Silicone            | 4.3            | 150                   |  | Series <sup>2</sup> | P      | <a href="#">16</a> |
| 30            |         | <a href="#">HTV-30-22-2</a>     | 22             | 0.36  | PE-X                | 5              | 105                   |  |                     | P      | <a href="#">38</a> |
| 40            |         | <a href="#">2012</a>            | 18             | 0.97  | Silicone            | 6              | 200                   | -                                                                                     |                     | S      | <a href="#">20</a> |
| 40            |         | <a href="#">HSW-4010-9</a>      | 10             | 5.32  | Silicone            | 7.8            | 150                   |  | Series <sup>3</sup> | P      | <a href="#">18</a> |
| 40            |         | <a href="#">HSW-4022-2</a>      | 22             | 0.36  | Silicone            | 5.7            | 150                   |  | Series <sup>3</sup> | P      | <a href="#">18</a> |
| 50            |         | <a href="#">2032</a>            | 16             | 1.2   | Silicone            | 7.5            | 200                   | -                                                                                     |                     | S      | <a href="#">22</a> |
| 50            |         | <a href="#">HTV-50-22-2</a>     | 22             | 0.36  | PE-X                | 6.6            | 105                   |  |                     | P      | <a href="#">39</a> |
| 60            |         | <a href="#">2024</a>            | 12             | 3.1   | Silicone            | 9.1            | 200                   | -                                                                                     |                     | S      | <a href="#">21</a> |
| 60            |         | <a href="#">2149</a>            | 18             | 0.97  | LDHMW PE            | 5.8            | 60                    | -                                                                                     |                     | P      | <a href="#">29</a> |
| 80            |         | <a href="#">2229</a>            | 12             | 3.1   | Silicone            | 10.7           | 200                   | -                                                                                     |                     | S      | <a href="#">32</a> |
| 100           |         | <a href="#">2062</a>            | 8              | 8.5   | Silicone            | 16.5           | 200                   | -                                                                                     |                     | S      | <a href="#">23</a> |
| 100           |         | <a href="#">2124A</a>           | 16             | 1.2   | LDHMW PE            | 9.4            | 60                    | -                                                                                     |                     | P      | <a href="#">26</a> |
| 100           |         | <a href="#">2125A</a>           | 12             | 3.1   | LDHMW PE            | 9.4            | 60                    | -                                                                                     |                     | S      | <a href="#">27</a> |
| 125           |         | <a href="#">2243A</a>           | 8              | 8     | EPR                 | 15.7           | 121                   | -                                                                                     |                     | S      | <a href="#">33</a> |
| 125           |         | <a href="#">2243VJ-4</a>        | 8              | 8     | EPR                 | 18.8           | 80                    | -                                                                                     |                     | S      | <a href="#">34</a> |
| 150           |         | <a href="#">2121A</a>           | 12             | 3.1   | LDHMW PE            | 12.4           | 60                    | -                                                                                     |                     | P      | <a href="#">25</a> |

<sup>1</sup> A large variety of HFP Series High Voltage Wires is available. For detailed information, please refer to page 14

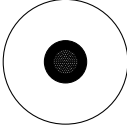
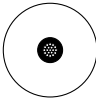
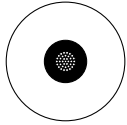
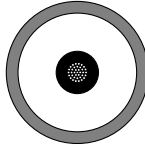
<sup>2</sup> A large variety of HSU Series High Voltage Wires is available. For detailed information, please refer to page 16

<sup>3</sup> A large variety of HSW Series High Voltage Wires is available. For detailed information, please refer to page 18

### Note:

Operation of unshielded cables at AC voltages requires careful tests and long term qualification for the specific application. All AC ratings for unshielded cables are given for orientation only.

## ■ UNSHIELDED HIGH VOLTAGE CABLES – CROSS SECTION VIEWS

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |     |    |
| 2012                                                                                | 2024                                                                                | 2032                                                                                | 2062                                                                                  | 2075                                                                                  |
|    |    |    |    |    |
| 2121A                                                                               | 2124A                                                                               | 2125A                                                                               | 2132                                                                                  | 2149                                                                                  |
|    |    |    |     |    |
| 2178                                                                                | 2185R                                                                               | 2229                                                                                | 2243A                                                                                 | 2243VJ-4                                                                              |
|   |   |   |   |   |
| 8511R                                                                               | HFP-1824-19-0                                                                       | HFP-3020-19-2                                                                       | HSL-20-0.38-B-9                                                                       | HSU-1012-65-2                                                                         |
|  |  |  |  |  |
| HSU-1022-7-2                                                                        | HSU-2022-7-2                                                                        | HSU-3014-41-9                                                                       | HSU-3018-19-0                                                                         | HSU-3022-7-9                                                                          |
|  |  |  |  |  |
| HSW-0516-0                                                                          | HSW-0624-0                                                                          | HSW-1514-2                                                                          | HSW-2012-2                                                                            | HSW-2018-0                                                                            |
|  |  |  |  |  |
| HSW-4010-9                                                                          | HSW-4022-2                                                                          | HTV-20-22-2                                                                         | HTV-30-22-2                                                                           | HTV-50-22-2                                                                           |

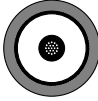
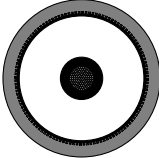
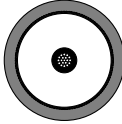
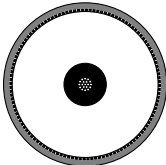
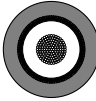
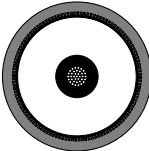
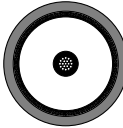


## SHIELDED HIGH VOLTAGE CABLES

| RATED VOLTAGE |         | TYPE                               | CONDUCTOR SIZE |       | DIELECTRIC MATERIAL | JACKET MATERIAL      | OUTER DIA [mm] | MAX OPER. TEMP. [°C] | UL                                                                                   | INFO                | STA-TUS | PAGE               |
|---------------|---------|------------------------------------|----------------|-------|---------------------|----------------------|----------------|----------------------|--------------------------------------------------------------------------------------|---------------------|---------|--------------------|
| DC [kV]       | AC [kV] |                                    | [AWG]          | [mm²] |                     |                      |                |                      |                                                                                      |                     |         |                    |
| 8             | 3       | <a href="#">HSL-8S-0.75-B-2</a>    | 18             | 0.75  | Silicone            | Silicone             | 4.9            | 150                  | -                                                                                    |                     | P       | <a href="#">70</a> |
| 8             | 3       | <a href="#">HSL-8S-1.5-A-2</a>     | 16             | 1.5   | Silicone            | Silicone             | 6.7            | 150                  | -                                                                                    |                     | P       | <a href="#">71</a> |
| 10            |         | <a href="#">2232</a>               | 6              | 13.6  | LDHMW PE            | TPR                  | 12.7           | 60                   | -                                                                                    |                     | S       | <a href="#">58</a> |
| 10            |         | <a href="#">HSUS-1022-19-2</a>     | 22             | 0.38  | Silicone            | Silicone             | 5.6            | 150                  |   | Series <sup>1</sup> | P       | <a href="#">42</a> |
| 15            | 5       | <a href="#">2075S</a>              | 12             | 3.1   | Silicone            |                      | 7.1            | 200                  | -                                                                                    |                     | S       | <a href="#">51</a> |
| 15            | 5       | <a href="#">2075SVJ</a>            | 12             | 3.1   | Silicone            | PVC                  | 9.7            | 60                   | -                                                                                    |                     | S       | <a href="#">52</a> |
| 15            | 6       | <a href="#">HSL-15S-6-A-9</a>      | 10             | 6.0   | Silicone            | Silicone             | 11.6           | 180                  | -                                                                                    |                     | P       | <a href="#">72</a> |
| 20            |         | <a href="#">HRG58-20-2</a>         |                | 0.50  | PE-X                | TPE-U (PUR)          | 4.95           | 105                  | -                                                                                    |                     | P       | <a href="#">62</a> |
| 20            | 6.6     | <a href="#">HSL-20-0.38-SS-C-0</a> | 22             | 0.38  | Silicone            | Silicone             | 7.3            | 140                  | -                                                                                    |                     | O       | <a href="#">73</a> |
| 20            | 6.6     | <a href="#">HSL-20-0.38-SS-D-0</a> | 22             | 0.38  | Silicone            | Silicone             | 7.3            | 140                  | -                                                                                    |                     | P       | <a href="#">74</a> |
| 30            |         | <a href="#">130660</a>             | 22             | 0.36  | HDFRPE              | PVC                  | 5.5            | 80                   | -                                                                                    |                     | P       | <a href="#">44</a> |
| 30            | 9       | <a href="#">HSL-30-0.38-SS-C-0</a> | 22             | 0.38  | Silicone            | Silicone             | 11.1           | 140                  | -                                                                                    |                     | Y       | <a href="#">75</a> |
| 30            |         | <a href="#">HTV-30S-22-0</a>       | 22             | 0.36  | PE-X                | PVC                  | 5.5            | 105                  |   |                     | P       | <a href="#">76</a> |
| 30            |         | <a href="#">HTV-30S-22-2</a>       | 22             | 0.36  | PE-X                | PVC                  | 5.5            | 105                  |  |                     | P       | <a href="#">77</a> |
| 40            | 15      | <a href="#">2012S</a>              | 18             | 0.97  | Silicone            |                      | 7.1            | 200                  | -                                                                                    |                     | S       | <a href="#">45</a> |
| 40            | 15      | <a href="#">2012STJ</a>            | 18             | 0.97  | Silicone            | TPR                  | 10.2           | 80                   | -                                                                                    |                     | S       | <a href="#">46</a> |
| 40            |         | <a href="#">HPW-40S-0.5-A-2</a>    | 20             | 0.5   | PE-X                | PUR                  | 6.6            | 80                   | -                                                                                    |                     | Y       | <a href="#">60</a> |
|               | 15      | <a href="#">HSC-125-1E1SAB-2</a>   |                | 10    | EPR 3GI3            | EVA EM8              | 21.3           | 80                   | -                                                                                    |                     | Y       | <a href="#">67</a> |
| 50            | 15      | <a href="#">2032S</a>              | 16             | 1.2   | Silicone            |                      | 8.3            | 200                  | -                                                                                    |                     | S       | <a href="#">48</a> |
| 50            | 15      | <a href="#">2032STJ</a>            | 16             | 1.2   | Silicone            | TPR                  | 10.7           | 80                   | -                                                                                    |                     | S       | <a href="#">49</a> |
| 50            | 6       | <a href="#">HPW-50S-0.34-A-2</a>   | 22             | 0.34  | PE-X                | PVC                  | 7.28           | 80                   | -                                                                                    |                     | Y       | <a href="#">61</a> |
| 50            | 15      | <a href="#">HSC-50-1S1SUA-0</a>    | 16             | 1.33  | Silicone            | TPE-U                | 11.7           | 90                   | -                                                                                    |                     | Y       | <a href="#">64</a> |
|               | 17      | <a href="#">HSC-17-1SSSOB-2</a>    |                | 6     | Silicone            | Silicone / Polyester | 12.9           | 150                  | -                                                                                    |                     | Y       | <a href="#">63</a> |
| 60            | 20      | <a href="#">2024SVJ</a>            | 12             | 3.1   | Silicone            | PVC                  | 12.7           | 60                   | -                                                                                    |                     | S       | <a href="#">47</a> |
| 60            |         | <a href="#">2149SVJ</a>            | 18             | 0.97  | LDHMW PE            | PVC                  | 8.6            | 60                   | -                                                                                    |                     | P       | <a href="#">57</a> |
| 60            | 20      | <a href="#">HSC-60-1PSUA-2</a>     | 18             | 0.97  | LDHMW PE            | TPE-U                | 7.7            | 60                   | -                                                                                    |                     | P       | <a href="#">65</a> |
| 60            |         | <a href="#">HXC-60-1EA-8</a>       | 14             | 2.0   | EPR (black)         | PVC                  | 11.1           | 70                   | -                                                                                    |                     | P       | <a href="#">78</a> |
| 100           | 30      | <a href="#">2062SVJ</a>            | 8              | 8.5   | Silicone            | PVC                  | 20.8           | 60                   | -                                                                                    |                     | S       | <a href="#">50</a> |
| 100           |         | <a href="#">2124</a>               | 16             | 1.2   | LDHMW PE            | PVC                  | 11.2           | 60                   | -                                                                                    |                     | P       | <a href="#">54</a> |
| 100           |         | <a href="#">2125</a>               | 12             | 3.1   | LDHMW PE            | PVC                  | 11.2           | 60                   | -                                                                                    |                     | S       | <a href="#">55</a> |
| 100           | 30      | <a href="#">HSC-100-1PSUA-2</a>    | 16             | 1.2   | LDHMW PE            | TPE-U                | 13.2           | 60                   | -                                                                                    |                     | E       | <a href="#">66</a> |
| 125           | 40      | <a href="#">2243</a>               | 8              | 8     | EPR                 | PVC                  | 19.7           | 80                   | -                                                                                    |                     | P       | <a href="#">59</a> |
| 150           |         | <a href="#">2121</a>               | 12             | 3.1   | LDHMW PE            | PVC                  | 15.9           | 60                   | -                                                                                    |                     | P       | <a href="#">53</a> |
| 150           | 45      | <a href="#">HSC-150-1PSUA-2</a>    | 12             | 3.1   | LDHMW PE            | TPE-U                | 16.4           | 60                   | -                                                                                    |                     | E       | <a href="#">69</a> |
| 200           |         | <a href="#">2134</a>               | 12             | 3.1   | LDHMW PE            | PVC                  | 21.6           | 60                   | -                                                                                    |                     | S       | <a href="#">56</a> |
| 230           | 75      | <a href="#">2042</a>               |                |       | EPR                 | PVC                  | 31.1           | 60                   | -                                                                                    | X-Ray               | P       | <a href="#">82</a> |
| 320           | 115     | <a href="#">2236</a>               |                |       | EPR                 | PVC                  | 38.2           | 60                   | -                                                                                    | X-Ray               | P       | <a href="#">88</a> |

<sup>1</sup> A large variety of HSUS Series High Voltage Wires is available. For detailed information, please refer to page 42

## ■ SHIELDED HIGH VOLTAGE CABLES – CROSS SECTION VIEWS

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |
| 2012S                                                                               | 2012STJ                                                                             | 2024SVJ                                                                             | 2032S                                                                                 | 2032STJ                                                                               |
|    |    |    |    |    |
| 2062SVJ                                                                             | 2075S                                                                               | 2075SVJ                                                                             | 2121                                                                                  | 2124                                                                                  |
|    |    |    |    |    |
| 2125                                                                                | 2134                                                                                | 2149SVJ                                                                             | 2232                                                                                  | 2243                                                                                  |
|  |  |  |  |  |
| 130660                                                                              | HPW-40S-0.5-A-2                                                                     | HRG58-20-2                                                                          | HSC-17-1SSSOB-2                                                                       | HSC-50-1S1SUA-0                                                                       |
|  |  |  |  |  |
| HSC-60-1PSUA-2                                                                      | HSC-100-1PSUA-2                                                                     | HSC-150-1PSUA-2                                                                     | HSL-8S-0.75-B-2                                                                       | HSL-8S-1.5-A-2                                                                        |
|  |  |  |  |  |
| HSL-15S-6-A-9                                                                       | HSL-20-0.38-SS-A-0                                                                  | HSL-30-0.38-SS-C-0                                                                  | HSUS-1022-19-2                                                                        | HTV-30S-22-0                                                                          |
|  |  |                                                                                     |                                                                                       |                                                                                       |
| HTV-30S-22-2                                                                        | HXC-60-1EA-8                                                                        |                                                                                     |                                                                                       |                                                                                       |



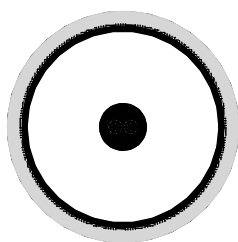
## X-RAY / E-BEAM HIGH VOLTAGE CABLES

| RATED VOLTAGE |         | TYPE                           | NO. OF CONDUCTORS | DIELECTRIC MATERIAL | JACKET MATERIAL | OUTER DIAMETER [mm] | MAX. OPER. TEMP. [°C] | INFO | STATUS | PAGE               |
|---------------|---------|--------------------------------|-------------------|---------------------|-----------------|---------------------|-----------------------|------|--------|--------------------|
| DC [kV]       | AC [kV] |                                |                   |                     |                 |                     |                       |      |        |                    |
| 75            | 25      | <a href="#">2214</a>           | 3                 | EPR                 | PVC             | 16.5                | 60                    |      | P      | <a href="#">86</a> |
| 75            | 25      | <a href="#">2226</a>           | 4                 | EPR                 | PVC             | 16.8                | 60                    |      | S      | <a href="#">87</a> |
| 75            |         | <a href="#">HXC-75-3ED-8</a>   | 3                 | EPR                 | PVC             | 13.2                | 70                    |      | S      | <a href="#">91</a> |
| 100           | 30      | <a href="#">2171</a>           | 5                 | EPR                 | PVC             | 21.5                | 60                    |      | S      | <a href="#">83</a> |
| 100           | 30      | <a href="#">2212</a>           | 3                 | EPR                 | PVC             | 19.9                | 60                    |      | P      | <a href="#">84</a> |
| 100           | 30      | <a href="#">2213</a>           | 4                 | EPR                 | PVC             | 21.5                | 60                    |      | S      | <a href="#">85</a> |
| 160           | 30      | <a href="#">2266</a>           | 4                 | EPR                 | PVC             | 26.4                | 60                    |      | S      | <a href="#">89</a> |
| 160           |         | <a href="#">HXC-160-3EB-8</a>  | 3                 | EPR                 | PVC             | 22.9                | 70                    |      | S      | <a href="#">92</a> |
| 160           |         | <a href="#">HXC-160-3EC-0</a>  | 3                 | EPR                 | PVC             | 29.0                | 70                    |      | S      | <a href="#">93</a> |
| 230           | 75      | <a href="#">2042</a>           | 3                 | EPR                 | PVC             | 31.1                | 60                    |      | P      | <a href="#">82</a> |
| 320           | 115     | <a href="#">2236</a>           | 3                 | EPR                 | PVC             | 38.2                | 60                    |      | P      | <a href="#">88</a> |
| 320           | 115     | <a href="#">2338</a>           | 4                 | EPR                 | PVC             | 38.2                | 60                    |      | S      | <a href="#">90</a> |
| 320           |         | <a href="#">HXC-320-3EUB-0</a> | 3                 | EPR                 | PUR             | 38.2                | 80                    |      | E      | <a href="#">94</a> |

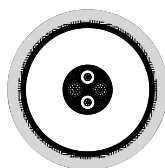




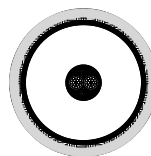
## ■ X-RAY / E-BEAM HIGH VOLTAGE CABLES – CROSS SECTION VIEWS



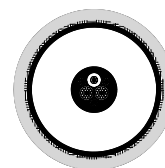
2042



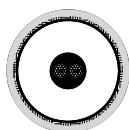
2171



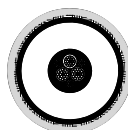
2212



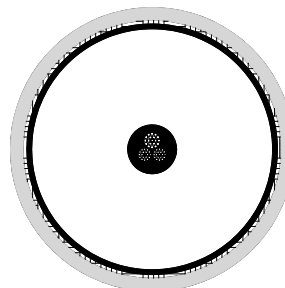
2213



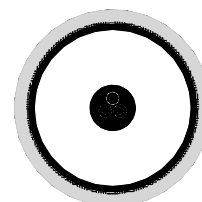
2214



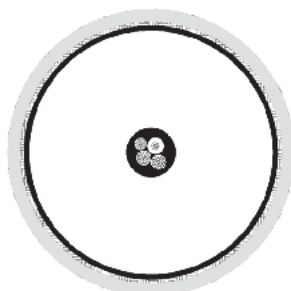
2226



2236



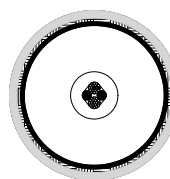
2266



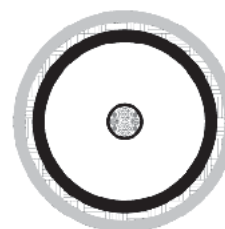
2338



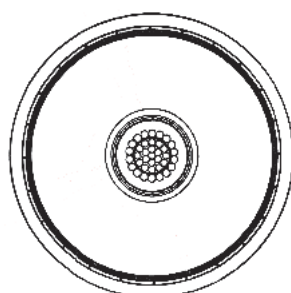
HXC-75-3ED-8



HXC-160-3EB-8



HXC-160-3EC-0



HXC-320-3EUB-0



## SPECIAL HIGH VOLTAGE CABLES

| RATED VOLTAGE |         | TYPE | DESCRIPTION | CONDUCTORS |            | DIELECTRIC MATERIAL | JACKET MATERIAL | OUTER DIAMETER [mm] | MAX. OPER. TEMP. [°C] | STA-TUS | PAGE |
|---------------|---------|------|-------------|------------|------------|---------------------|-----------------|---------------------|-----------------------|---------|------|
| DC [kV]       | AC [kV] |      |             | #          | SIZE [AWG] |                     |                 |                     |                       |         |      |

### ▪ TRIAXIAL

|      |    |                                  |                           |   |    |             |             |      |     |   |                     |
|------|----|----------------------------------|---------------------------|---|----|-------------|-------------|------|-----|---|---------------------|
|      | 4  | <a href="#">HSC-4-1P2SVA-0</a>   | double shield             | 1 | 12 | PE          | PVC         | 13.2 | 70  | Y | <a href="#">108</a> |
| 20   |    | <a href="#">HSC-20-1X2SUA-2</a>  | low noise                 | 1 | 20 | PE-X        | TPE-U (PUR) | 6.1  | 105 | Y | <a href="#">115</a> |
| 22.5 |    | <a href="#">2122</a>             | pulse cable, tubular core | 1 | 4  | EPR         | PVC         | 41.9 | 60  | E | <a href="#">96</a>  |
| 40   |    | <a href="#">2186</a>             |                           | 1 | 16 | SILICONE    | NEOPRENE    | 15.8 | 121 | E |                     |
|      | 15 | <a href="#">HSC-15-1S2SUA-0</a>  |                           | 1 | 16 | SILICONE    | TPE-U       | 14.3 | 90  | P | <a href="#">112</a> |
| 100  | 30 | <a href="#">2212TVJ</a>          | multiconductor            | 3 | 10 | EPR         | PVC         | 24.1 | 60  | E | <a href="#">100</a> |
| 125  | 40 | <a href="#">2243TTJ</a>          |                           | 1 | 8  | EPR         | TPR         | 23.0 | 105 | S | <a href="#">103</a> |
| 230  | 75 | <a href="#">2042TVJ</a>          | multiconductor            | 3 | 11 | EPR         | PVC         | 37.5 | 60  | E |                     |
| 300  |    | <a href="#">2358</a>             | double shield             | 1 | 4  | EPR         | PVC         | 46.7 | 60  | S | <a href="#">104</a> |
| 300  |    | <a href="#">HSC-300-1E2SVA-0</a> | double shield             | 1 | 4  | EPR         | PVC         | 41.7 | 100 | S | <a href="#">118</a> |
| 350  |    | <a href="#">2068-R2</a>          |                           | 1 | 2  | Paper / Oil | HP PE       | 55.9 | 71  | E |                     |

### ▪ MULTICONDUCTOR

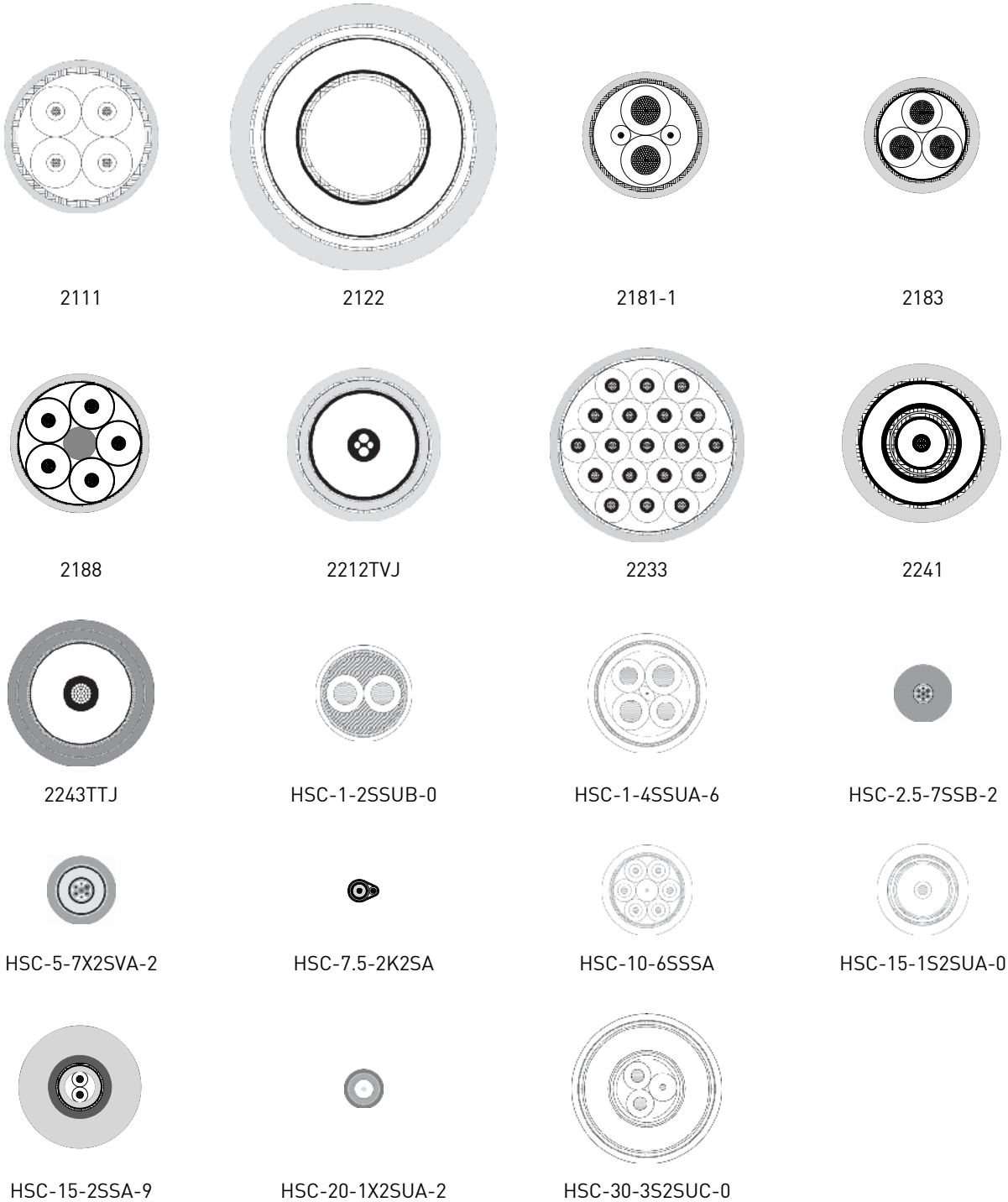
|     |     |                                 |                     |        |          |          |           |      |     |   |                     |
|-----|-----|---------------------------------|---------------------|--------|----------|----------|-----------|------|-----|---|---------------------|
|     | 1   | <a href="#">HSC-1-2SSUB-0</a>   | HF, power           | 2      | 10       | SILICONE | TPE-U     | 15.1 | 90  | S | <a href="#">105</a> |
|     | 1   | <a href="#">HSC-1-4SSUA-6</a>   | HF, power           | 4      | 11       | SILICONE | TPE-U     | 18.7 | 80  | S | <a href="#">106</a> |
| 7.5 | 3   | <a href="#">HSC-7.5-2K2SA</a>   | radiation resistant | 2      | 22       | PEEK     | V2A BRAID | 5.0  | 200 | S | <a href="#">110</a> |
| 8   | 2.5 | <a href="#">HSC-2.5-7SSB-2</a>  | control             | 7      | 26       | FEP      | SILICONE  | 9.0  | 150 | S | <a href="#">107</a> |
| 10  |     | <a href="#">HSC-10-6SSSA</a>    |                     | 6      | 20       | SILICONE | SILICONE  | 14.1 | 90  | X | <a href="#">111</a> |
| 15  |     | <a href="#">2181-1</a>          | outer shield        | 2<br>2 | 6<br>20  | SILICONE | PVC       | 20.3 | 60  | E | <a href="#">97</a>  |
| 15  |     | <a href="#">2183</a>            | outer shield        | 3      | 8        | SILICONE | NEOPRENE  | 18.5 | 60  | E | <a href="#">98</a>  |
| 15  |     | <a href="#">2201</a>            | outer shield        | 2<br>2 | 10<br>20 | SILICONE | PVC       | 13.7 | 60  | E |                     |
| 15  |     | <a href="#">2207</a>            | outer shield        | 2<br>2 | 4<br>20  | SILICONE | PVC       | 22.9 | 60  | E |                     |
| 15  |     | <a href="#">2211-R1</a>         | outer shield        | 2<br>2 | 8<br>20  | SILICONE | PVC       | 15.8 | 60  | E |                     |
| 15  | 5   | <a href="#">HSC-5-7X2SVA-2</a>  | control             | 7      | 26       | PP / PE  | PVC       | 10.6 | 85  | S | <a href="#">109</a> |
| 21  | 15  | <a href="#">HSC-15-2SSA-9</a>   | no outer shield     | 2      | 17       | SILICONE | SILICONE  | 19.5 | 150 | P | <a href="#">114</a> |
| 30  |     | <a href="#">2187</a>            | outer shield        | 3      | 20       | SILICONE | TPR       | 13.5 | 104 | E |                     |
| 30  |     | <a href="#">HSC-30-3S2SUC-0</a> | double shield       | 3      | 14<br>20 | SILICONE | TPE-U     | 23.5 | 90  | E | <a href="#">116</a> |
| 40  |     | <a href="#">2176</a>            | outer shield        | 4      | 18       | SILICONE | PVC       | 19.0 | 60  | E |                     |
| 50  |     | <a href="#">2111</a>            | outer shield        | 4      | 16       | SILICONE | NEOPRENE  | 24.1 | 121 | X | <a href="#">95</a>  |
| 50  |     | <a href="#">2188</a>            | outer shield        | 5      | 16       | SILICONE | PVC       | 22.1 | 121 | E | <a href="#">99</a>  |
| 50  |     | <a href="#">2228</a>            | inner shields       | 3      | 16       | SILICONE | PVC       | 21.1 | 60  | E |                     |
| 60  |     | <a href="#">2233</a>            | outer shield        | 19     | 18       | PE       | PVC       | 30.5 | 60  | E | <a href="#">101</a> |

### ▪ MISCELLANEOUS

|    |    |                      |            |   |    |     |    |      |    |   |                     |
|----|----|----------------------|------------|---|----|-----|----|------|----|---|---------------------|
| 75 | 25 | <a href="#">2241</a> | quadraxial | 1 | 14 | EPR | PU | 25.4 | 60 | S | <a href="#">102</a> |
|----|----|----------------------|------------|---|----|-----|----|------|----|---|---------------------|



## ▪ SPECIAL HIGH VOLTAGE CABLES – CROSS SECTION VIEWS



A wide range of unshielded cable types for voltages up to 150kV<sub>DC</sub>. Many cable types are furnished with semiconductive layers. These layers are smoothing the electrical field, lowering the field strength and provide low partial discharge levels. Silicone, PE and EPR dielectrics are standard – miscellaneous dielectrics on request.

UL recognized appliance wiring material –  
UL AWM style 3239 and other UL styles.

**hivolt.de** is able to provide modified standard types or full custom designed cable for applications where special cable types are required.



# UNSHIELDED HIGH VOLTAGE CABLE



## UNSHIELDED HIGH VOLTAGE / HIGH TEMPERATURE WIRE 18KV<sub>DC</sub> - 30KV<sub>DC</sub> - FEP, ETCHED FEP AND SILICONE COATED FEP

### FEATURES

- Extremely Small Diameter - High Flexibility
- Operating Temperature: -55°C - +200°C
- Bondable Surface: pre-etched or Silicone coated
- High Voltage up to 30kV<sub>DC</sub>
- 28 AWG - 18 AWG Conductors - Silver Plated Copper
- Ozone and Corona Resistant
- Reference: MIL-W-22759
- FEP Resins Meet Flammability Requirements of UL94V-0
- RoHS Compliant



### APPLICATIONS

- Laser Systems
- High Voltage Transformers
- Military & Space
- Industrial & Medical
- High Voltage Power Supplies

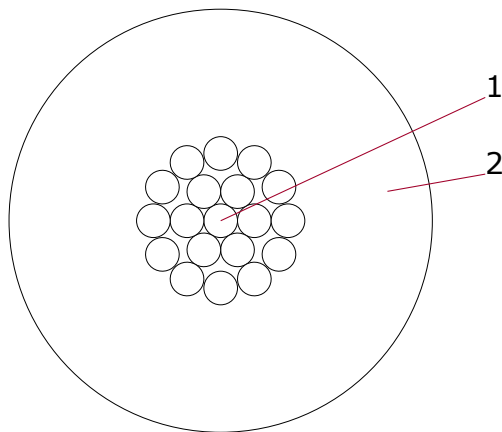
Fluorinated Ethylene Propylene (FEP) offers an excellent combination of properties that include: exceptional dielectric properties, a low dielectric constant over a wide frequency range, chemical inertness including transformer oils and dielectric fluids, heat resistance with retention of properties after service at 204° C, toughness, flexibility, possesses a very high degree of stress crack resistance, low coefficient of friction, low flammability, negligible moisture absorption, has long term weatherability and excellent resistance to ozone sunlight and weather.

FEP offers the lowest refractive index of all thermoplastics with low light reflection (the same as water).

HFPE: pre-etched surface is compatible with epoxy based potting materials.

HFPS: Silicone coated surface is compatible with RTV/Silicone based potting materials and adhesives..

### HFP, HFPE WIRES

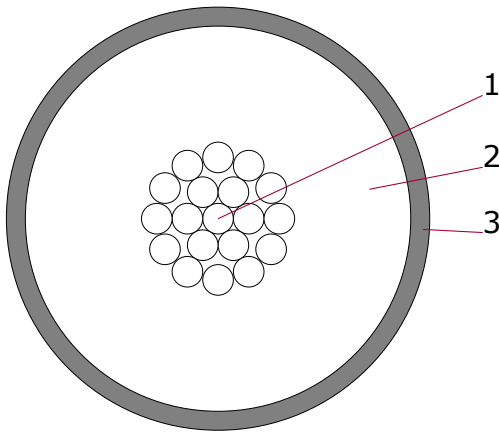


|                      |                                                |
|----------------------|------------------------------------------------|
| <b>1. Conductor</b>  | Silver plated copper wires                     |
| <b>2. Dielectric</b> | HFP Series: FEP<br>HFPE Series: Pre-etched FEP |

Pre-etching provides a bond ready FEP surface compatible with epoxy based potting materials.

| HFP TYPE      | HFPE TYPE      | RATED VOLTAGE<br>[kV <sub>DC</sub> ] | SIZE<br>[AWG] | STRANDS<br>[n/AWG] | OUTER DIA<br>[mm] |
|---------------|----------------|--------------------------------------|---------------|--------------------|-------------------|
| HFP-1828-19-* | HFPE-1828-19-* | 18                                   | 28            | 19/40              | 1.02              |
| HFP-1826-19-* | HFPE-1826-19-* | 18                                   | 26            | 19/38              | 1.14              |
| HFP-2026-19-* | -              | 20                                   | 26            | 19/38              | 1.27              |
| HFP-1824-19-* | HFPE-1824-19-* | 18                                   | 24            | 19/36              | 1.27              |
| HFP-2022-19-* | HFPE-2022-19-* | 20                                   | 22            | 19/34              | 1.52              |
| HFP-2520-19-* | HFPE-2520-19-* | 25                                   | 20            | 19/32              | 2.03              |
| HFP-3020-19-* | HFPE-3020-19-* | 30                                   | 20            | 19/32              | 2.54              |
| HFP-3018-19-* | -              | 30                                   | 18            | 19/30              | 3.30              |

## HFPS WIRES



|               |                            |
|---------------|----------------------------|
| 1. Conductor  | Silver plated copper wires |
| 2. Dielectric | FEP                        |
| 3. Coating    | Silicone                   |

Silicone coating provides a bond ready jacket compatible with RTV based potting materials and adhesives.

| HFPS TYPE      | RATED VOLTAGE<br>[kV <sub>DC</sub> ] | SIZE<br>[AWG] | STRANDS<br>[n/AWG] | DIELECTRIC DIA<br>[mm] | OUTER DIA<br>[mm] |
|----------------|--------------------------------------|---------------|--------------------|------------------------|-------------------|
| HFPS-1828-19-* | 18                                   | 28            | 19/40              | 1.02                   | 1.32              |
| HFPS-1824-19-* | 18                                   | 24            | 19/36              | 1.27                   | 1.52              |
| HFPS-2022-19-* | 20                                   | 22            | 19/34              | 1.52                   | 1.78              |
| HFPS-2520-19-* | 25                                   | 20            | 19/32              | 2.03                   | 2.29              |
| HFPS-3020-19-* | 30                                   | 20            | 19/32              | 2.54                   | 2.79              |

Thicker silicone coating available on request.

## ORDERING INFORMATION

Ordering example for part number: **HFPE-3020-19-2**

|                       |   |                                    |                      |   |                |   |            |
|-----------------------|---|------------------------------------|----------------------|---|----------------|---|------------|
| HFPE                  | - | 30                                 | 20                   | - | 19             | - | 2          |
| Base Part Designation |   | Voltage Rating [kV <sub>DC</sub> ] | Conductor Size [AWG] |   | No. of Strands |   | Color Code |

## COLOR CODE

|                |         |              |          |                |
|----------------|---------|--------------|----------|----------------|
| <b>0 black</b> | 1 brown | <b>2 red</b> | 3 orange | 4 yellow       |
| 5 green        | 6 blue  | 7 violet     | 8 grey   | <b>9 white</b> |

Preferred colors shown in **bold**. Minimum order quantities may apply.

The HFP series wires are not normally stocked.

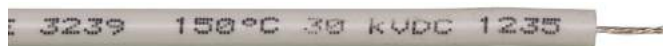
For abrasive applications Nomex braid is available optionally.



## UNSHIELDED SILICONE HIGH VOLTAGE / HIGH TEMPERATURE APPLIANCE WIRE 10kV<sub>DC</sub> - 30kV<sub>DC</sub> - AWM STYLE 3239 - INTERNAL USE

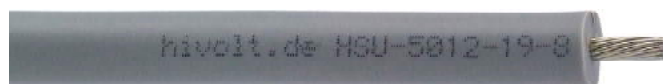
### FEATURES

- 22 AWG - 10 AWG Conductors
- Conductor Construction: Tinned Copper
- Operating Temperature -50°C - +150°C
- High Flexibility
- Ozone and Corona Resistant
- Meets VW-1 Flame Test
- Made in Germany
- RoHS compliant



### TYPICAL APPLICATIONS

- Internal High Voltage Wiring
- Laser Power Supplies
- CRT / Video Displays



### SPECIFICATIONS

Operating Temperature: -50°C - +150°C  
Min. Bend Radius (fixed): 7.5 \* Outer Diameter

### TYPE OVERVIEW

| CONDUCTOR                                     |                    |               |                   | RATED VOLTAGE [kV <sub>DC</sub> ] |                            |                           |                            |                           |                            |
|-----------------------------------------------|--------------------|---------------|-------------------|-----------------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
|                                               |                    |               |                   | 10                                |                            | 20                        |                            | 30                        |                            |
| SIZE<br>[AWG]                                 | STRANDS<br>[n/AWG] | AREA<br>[mm²] | WEIGHT<br>[kg/km] | OUTER<br>DIAMETER<br>[mm]         | TOTAL<br>WEIGHT<br>[kg/km] | OUTER<br>DIAMETER<br>[mm] | TOTAL<br>WEIGHT<br>[kg/km] | OUTER<br>DIAMETER<br>[mm] | TOTAL<br>WEIGHT<br>[kg/km] |
| 22                                            | 7/30               | 0.36          | 3.4               | 2.78-3.19                         | 11.3                       | 3.5-3.8                   | 15.8                       | 4.04-4.56                 | 20.5                       |
| 20                                            | 19/32              | 0.62          | 5.7               | 3.01-3.43                         | 14.8                       | -                         | -                          | 4.27-4.8                  | 24.5                       |
| 18                                            | 19/30              | 0.96          | 9.3               | 3.27-3.71                         | 19.1                       | 3.93-4.34                 | 24.0                       | 4.53-5.07                 | 29.5                       |
| 16                                            | 19/29              | 1.35          | 13.0              | -                                 | -                          | -                         | -                          | 4.76-5.31                 | 34.7                       |
|                                               | 30/30              | 1.52          | 14.4              | 3.57-4.02                         | 25.7                       | -                         | -                          | -                         | -                          |
| 14                                            | 41/30              | 2.08          | 19.9              | 4.01-4.27                         | 34.0                       | -                         | -                          | 5.27-5.85                 | 44.9                       |
| 12                                            | 65/30              | 3.31          | 31.5              | 4.39-4.88                         | 45.8                       | 5.05-5.51                 | 53.0                       | 5.65-6.25                 | 59.0                       |
| 10                                            | 37/25              | 5.88          | 57.6              | -                                 | -                          | -                         | -                          | 6.19-6.81                 | 88.0                       |
|                                               | 84/29              | 5.94          | 57.0              | 5.6-6.09                          | 77.5                       | 5.6-6.41                  | 82.0                       | -                         | -                          |
| Test Voltage (Spark Test) [kV <sub>AC</sub> ] |                    |               |                   | 10                                |                            | 15                        |                            | 20                        |                            |

HSU type wires above 30kV<sub>DC</sub> are no longer available. Please refer to the HSW series.  
Different conductor constructions and plating for use up to 200°C available on request.

### ORDERING INFORMATION

(Ordering example for part number: **HSU-1012-65-2**)

|                       |   |                                    |   |                      |   |                |   |            |
|-----------------------|---|------------------------------------|---|----------------------|---|----------------|---|------------|
| HSU                   | - | 10                                 | - | 12                   | - | 65             | - | 2          |
| Base Part Designation |   | Voltage Rating [kV <sub>DC</sub> ] |   | Conductor Size [AWG] |   | No. of Strands |   | Color Code |



## ■ COLOR CODE

|                |          |              |                |            |         |
|----------------|----------|--------------|----------------|------------|---------|
| <b>0 black</b> | 1 brown  | <b>2 red</b> | 3 orange       | 4 yellow   | 5 green |
| 6 blue         | 7 violet | 8 grey       | <b>9 white</b> | 10 natural |         |

Preferred colors shown in **bold**. Minimum order quantities may apply.

These cables have been spark tested according to UL758 during production. It is recommended to derate the operating voltage for continuous operation. The user has to ensure by adequate tests that the cable is suitable for his application.

## ■ HSU SERIES CROSS SECTION VIEWS

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| HSU-1010-84-X                                                                     | HSU-1012-65-X                                                                     | HSU-1014-41-X                                                                     | HSU-1016-30-X                                                                     | HSU-1018-19-X                                                                       | HSU-1020-19-X                                                                       |
|  |  |  |  |  |  |
| HSU-1022-7-X                                                                      | HSU-2010-84-X                                                                     | HSU-2012-65-X                                                                     | HSU-2018-19-X                                                                     | HSU-2022-7-X                                                                        | HSU-3010-37-X                                                                       |
|  |  |  |  |  |  |
| HSU-3012-65-X                                                                     | HSU-3014-41-X                                                                     | HSU-3016-19-X                                                                     | HSU-3018-19-X                                                                     | HSU-3020-19-X                                                                       | HSU-3022-7-X                                                                        |



## UNSHIELDED SILICONE HIGH VOLTAGE / HIGH TEMPERATURE APPLIANCE WIRE 5KV<sub>DC</sub> - 60KV<sub>DC</sub> - AWM STYLE 3239 AND CANADIAN CERTIFIED - INTERNAL USE

### FEATURES

- 24 AWG - 10 AWG conductors
- High temperature 150°C rating
- High flexibility
- Ozone and corona resistant
- Meets VW-1 flame test
- RoHS compliant

### TYPICAL APPLICATIONS

- Internal high voltage wiring
- Laser power supplies
- CRT / video displays



| CONDUCTOR     |                    |                            | RATED VOLTAGE [kV <sub>DC</sub> ]     |             |             |             |             |             |             |             |             |             |              |              |              |
|---------------|--------------------|----------------------------|---------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|
|               |                    |                            | 5                                     | 6           | 10          | 15          | 20          | 25          | 30          | 35          | 40          | 45          | 50           | 55           | 60           |
| SIZE<br>[AWG] | STRANDS<br>[n/AWG] | AREA<br>[mm <sup>2</sup> ] | NOM. OUTER DIAMETER<br>[mm]<br>[inch] |             |             |             |             |             |             |             |             |             |              |              |              |
| 24            | 19/36              | 0.24                       | 2.0<br>.077                           | 2.3<br>.089 | 2.5<br>.099 | 2.7<br>.107 | 3.2<br>.126 | 3.8<br>.150 | 4.4<br>.174 | 5.0<br>.196 | 5.5<br>.218 | 6.8<br>.266 | 7.8<br>.306  | 8.2<br>.322  | 8.5<br>.336  |
| 22            | 7/30               | 0.36                       | 2.1<br>.083                           | 2.4<br>.095 | 2.7<br>.105 | 2.9<br>.113 | 3.4<br>.132 | 4.0<br>.156 | 4.6<br>.180 | 5.1<br>.202 | 5.7<br>.224 | 6.9<br>.272 | 7.9<br>.312  | 8.3<br>.328  | 8.7<br>.342  |
| 20            | 10/30              | 0.51                       | 2.3<br>.090                           | 2.6<br>.103 | 2.8<br>.110 | 3.0<br>.120 | 3.6<br>.140 | 4.2<br>.164 | 4.8<br>.188 | 5.3<br>.210 | 5.9<br>.232 | 7.1<br>.280 | 8.1<br>.320  | 8.5<br>.336  | 8.9<br>.350  |
| 18            | 16/30              | 0.81                       | 2.5<br>.099                           | 2.9<br>.115 | 3.1<br>.123 | 3.3<br>.131 | 3.8<br>.151 | 4.4<br>.175 | 5.1<br>.199 | 5.6<br>.221 | 6.2<br>.243 | 7.4<br>.291 | 8.4<br>.331  | 8.8<br>.347  | 9.2<br>.361  |
| 16            | 26/30              | 1.32                       | 2.7<br>.108                           | 3.1<br>.121 | 3.3<br>.130 | 3.5<br>.138 | 4.0<br>.158 | 4.6<br>.182 | 5.2<br>.206 | 5.8<br>.228 | 6.4<br>.250 | 7.6<br>.298 | 8.6<br>.338  | 9.0<br>.354  | 9.3<br>.368  |
| 14            | 41/30              | 2.08                       | 3.1<br>.124                           | 3.5<br>.137 | 3.7<br>.146 | 3.9<br>.154 | 4.4<br>.174 | 5.0<br>.197 | 5.6<br>.222 | 6.1<br>.240 | 6.8<br>.266 | 8.0<br>.314 | 9.0<br>.354  | 9.4<br>.370  | 9.8<br>.384  |
| 12            | 65/30              | 3.29                       | 3.6<br>.142                           | 3.9<br>.155 | 4.2<br>.164 | 4.4<br>.172 | 4.9<br>.192 | 5.5<br>.216 | 6.1<br>.240 | 6.7<br>.262 | 7.2<br>.284 | 8.4<br>.332 | 9.4<br>.372  | 9.9<br>.388  | 10.2<br>.402 |
| 10            | 105/30             | 5.32                       | 4.2<br>.167                           | 4.6<br>.180 | 4.8<br>.189 | 5.0<br>.197 | 5.5<br>.217 | 6.1<br>.241 | 6.7<br>.265 | 7.3<br>.287 | 7.8<br>.309 | 9.1<br>.357 | 10.1<br>.397 | 10.5<br>.413 | 10.8<br>.427 |

The above list represents standard constructions for UL 3239.

Canadian certified constructions are listed under the 6, 10, 15, 20, 30, 40, and 50 kV<sub>DC</sub> ratings.

Min. Bend Radius: 8 \* Outer Diameter (fixed)

These cables have been spark tested according to UL758 during production. It is recommended to derate the operating voltage for continuous operation. The user has to ensure by adequate tests that the cable is suitable for his application.

### ORDERING INFORMATION

Ordering example for part number: **HSW-2022-2**

|                       |   |                                    |   |                      |   |            |
|-----------------------|---|------------------------------------|---|----------------------|---|------------|
| HSW                   | - | 20                                 | - | 22                   | - | 2          |
| Base Part Designation |   | Voltage Rating [kV <sub>DC</sub> ] |   | Conductor Size [AWG] |   | Color Code |

### COLOR CODE

|                |          |              |                |            |         |
|----------------|----------|--------------|----------------|------------|---------|
| <b>0 black</b> | 1 brown  | <b>2 red</b> | 3 orange       | 4 yellow   | 5 green |
| 6 blue         | 7 violet | 8 grey       | <b>9 white</b> | 10 natural |         |

Preferred colors shown in **bold**. Minimum order quantities may apply. Different conductor constructions and plating for use up to 200°C available on request.

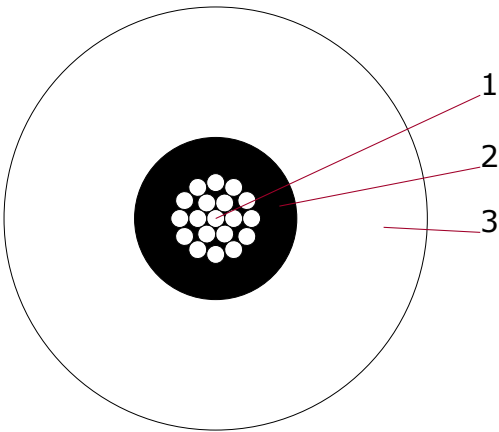
## CROSS SECTION VIEWS

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |    |    |    |
| HSW-0510                                                                            | HSW-0512                                                                            | HSW-0514                                                                            | HSW-0516                                                                            | HSW-0518                                                                            | HSW-0520                                                                              | HSW-0522                                                                              | HSW-0524                                                                              |
|    |    |    |    |    |    |    |    |
| HSW-0610                                                                            | HSW-0612                                                                            | HSW-0614                                                                            | HSW-0616                                                                            | HSW-0618                                                                            | HSW-0620                                                                              | HSW-0622                                                                              | HSW-0624                                                                              |
|    |    |    |    |    |    |    |    |
| HSW-1010                                                                            | HSW-1012                                                                            | HSW-1014                                                                            | HSW-1016                                                                            | HSW-1018                                                                            | HSW-1020                                                                              | HSW-1022                                                                              | HSW-1024                                                                              |
|    |    |    |    |    |    |    |    |
| HSW-1510                                                                            | HSW-1512                                                                            | HSW-1514                                                                            | HSW-1516                                                                            | HSW-1518                                                                            | HSW-1520                                                                              | HSW-1522                                                                              | HSW-1524                                                                              |
|    |    |    |    |    |    |    |    |
| HSW-2010                                                                            | HSW-2012                                                                            | HSW-2014                                                                            | HSW-2016                                                                            | HSW-2018                                                                            | HSW-2020                                                                              | HSW-2022                                                                              | HSW-2024                                                                              |
|    |    |    |    |    |    |    |    |
| HSW-2510                                                                            | HSW-2512                                                                            | HSW-2514                                                                            | HSW-2516                                                                            | HSW-2518                                                                            | HSW-2520                                                                              | HSW-2522                                                                              | HSW-2524                                                                              |
|  |  |  |  |  |  |  |  |
| HSW-3010                                                                            | HSW-3012                                                                            | HSW-3014                                                                            | HSW-3016                                                                            | HSW-3018                                                                            | HSW-3020                                                                              | HSW-3022                                                                              | HSW-3024                                                                              |
|  |  |  |  |  |  |  |  |
| HSW-3510                                                                            | HSW-3512                                                                            | HSW-3514                                                                            | HSW-3516                                                                            | HSW-3518                                                                            | HSW-3520                                                                              | HSW-3522                                                                              | HSW-3524                                                                              |
|  |  |  |  |  |  |  |  |
| HSW-4010                                                                            | HSW-4012                                                                            | HSW-4014                                                                            | HSW-4016                                                                            | HSW-4018                                                                            | HSW-4020                                                                              | HSW-4022                                                                              | HSW-4024                                                                              |
|  |  |  |  |  |  |  |  |
| HSW-4510                                                                            | HSW-4512                                                                            | HSW-4514                                                                            | HSW-4516                                                                            | HSW-4518                                                                            | HSW-4520                                                                              | HSW-4522                                                                              | HSW-4524                                                                              |
|  |  |  |  |  |  |  |  |
| HSW-5010                                                                            | HSW-5012                                                                            | HSW-5014                                                                            | HSW-5016                                                                            | HSW-5018                                                                            | HSW-5020                                                                              | HSW-5022                                                                              | HSW-5024                                                                              |
|  |  |  |  |  |  |  |  |
| HSW-5510                                                                            | HSW-5512                                                                            | HSW-5514                                                                            | HSW-5516                                                                            | HSW-5518                                                                            | HSW-5520                                                                              | HSW-5522                                                                              | HSW-5524                                                                              |
|  |  |  |  |  |  |  |  |
| HSW-6010                                                                            | HSW-6012                                                                            | HSW-6014                                                                            | HSW-6016                                                                            | HSW-6018                                                                            | HSW-6020                                                                              | HSW-6022                                                                              | HSW-6024                                                                              |

2012

40kV<sub>DC</sub> - AWG18 - SILICONE DIELECTRIC

CONSTRUCTION



|               |                                 |                                 |
|---------------|---------------------------------|---------------------------------|
| 1. Conductor  | AWG18 Cu/Ag (19xAWG30 s.p.c.)   | 0.97mm <sup>2</sup><br>Ø 1.24mm |
| 2. Semicon    | Semiconductive Silicone (black) | Ø 2.3mm                         |
| 3. Dielectric | Silicone                        | Ø 6mm                           |

TECHNICAL DATA

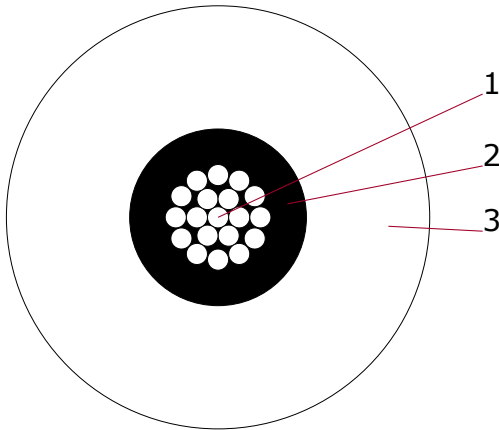
|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 40kV <sub>DC</sub> |
| min. Bend Radius      | 10mm (fixed)       |
| Operating Temperature | -65°C - +200°C     |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.045kg/m      |
| Color                 | white              |
| Status                | S (Special)        |



## 2024

60kV<sub>DC</sub> - AWG12 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                 |                               |
|---------------|---------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Ag (19xAWG25 s.p.c.)   | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive Silicone (black) | Ø 3.8mm                       |
| 3. Dielectric | Silicone                        | Ø 9.1mm                       |

### TECHNICAL DATA

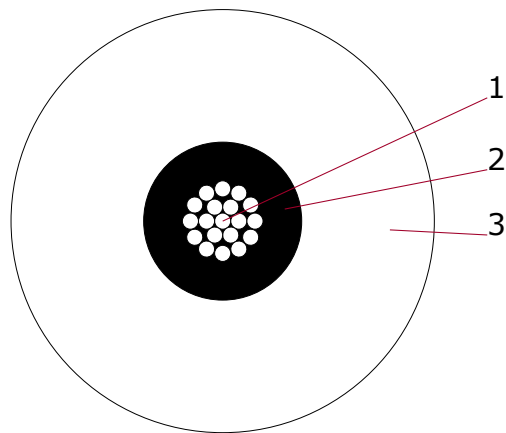
|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 60kV <sub>DC</sub> |
| min. Bend Radius      | 13mm (fixed)       |
| Operating Temperature | -65°C - +200°C     |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.112kg/m      |
| Color                 | white              |
| Status                | S (Special)        |



## 2032

50kV<sub>DC</sub> - AWG16 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                 |                               |
|---------------|---------------------------------|-------------------------------|
| 1. Conductor  | AWG16 Cu/Ag (19xAWG29 s.p.c.)   | 1.2mm <sup>2</sup><br>Ø 1.5mm |
| 2. Semicon    | Semiconductive Silicone (black) | Ø 2.8mm                       |
| 3. Dielectric | Silicone                        | Ø 7.5mm                       |

### TECHNICAL DATA

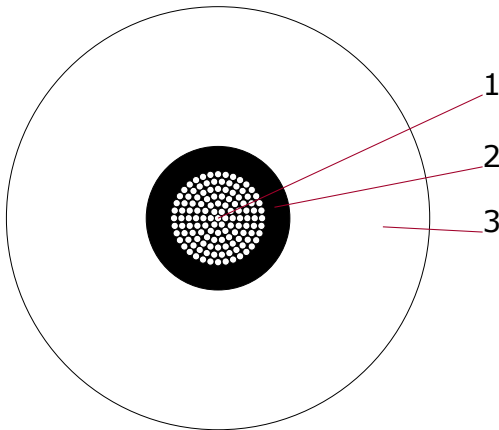
|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 50kV <sub>DC</sub> |
| min. Bend Radius      | 13mm (fixed)       |
| Operating Temperature | -65°C - +200°C     |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.064kg/m      |
| Color                 | white              |
| Status                | S (Special)        |



## 2062

100kV<sub>DC</sub> - AWG8 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                 |                               |
|---------------|---------------------------------|-------------------------------|
| 1. Conductor  | AWG8 Cu/Ag (133xAWG29 s.p.c.)   | 8.5mm <sup>2</sup><br>Ø 4.2mm |
| 2. Semicon    | Semiconductive Silicone (black) | Ø 5.6mm                       |
| 3. Dielectric | Silicone                        | Ø 16.5mm                      |

### TECHNICAL DATA

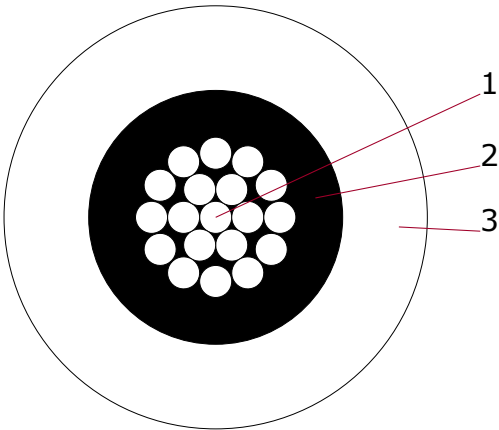
|                       |                     |
|-----------------------|---------------------|
| Rated Voltage         | 100kV <sub>DC</sub> |
| min. Bend Radius      | 64mm (fixed)        |
| Operating Temperature | -51°C - +200°C      |
| RoHS Compliant        | Yes                 |
| Weight                | ca. 0.373kg/m       |
| Color                 | white               |
| Status                | S [Special]         |



## 2075

15kV<sub>DC</sub> / (5)kV<sub>AC</sub> - AWG12 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                 |                               |
|---------------|---------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Ag (19xAWG25 s.p.c.)   | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive Silicone (black) | Ø 3.6mm                       |
| 3. Dielectric | Silicone                        | Ø 6mm                         |

### TECHNICAL DATA

|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 15kV <sub>DC</sub> |
| min. Bend Radius      | 64mm (fixed)       |
| Operating Temperature | -65°C - +200°C     |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.046kg/m      |
| Color                 | white              |
| Status                | S (Special)        |

The cable is suitable for AC operation at up to 5kVRMS (50Hz) provided that proper means regarding partial discharge are chosen for the application.

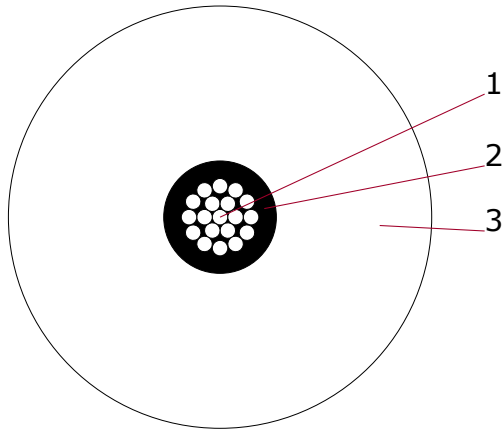




## 2121A

150kV<sub>DC</sub> - AWG12 - LDHMW PE DIELECTRIC

### CONSTRUCTION



|               |                               |                               |
|---------------|-------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Sn (19xAWG25 t.p.c.) | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive PE (black)     | Ø 3.3mm                       |
| 3. Dielectric | LDHMW PE                      | Ø 12.4mm                      |

### TECHNICAL DATA

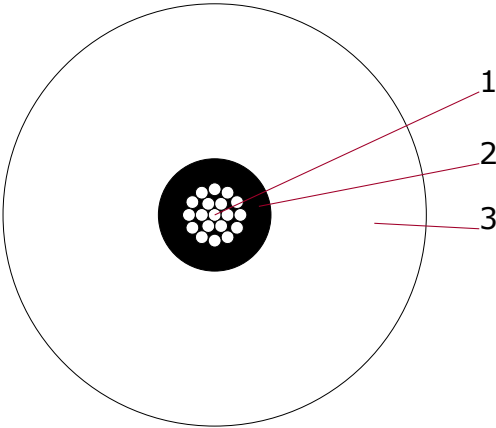
|                       |                     |
|-----------------------|---------------------|
| Rated Voltage         | 150kV <sub>DC</sub> |
| min. Bend Radius      | 178mm (fixed)       |
| Operating Temperature | -51°C - +60°C       |
| RoHS Compliant        | Yes                 |
| Weight                | ca. 0.135kg/m       |
| Color                 | natural             |
| Status                | P (Preferred)       |



2124A

100kV<sub>DC</sub> - AWG16 - LDHMW PE DIELECTRIC

CONSTRUCTION



|               |                               |                               |
|---------------|-------------------------------|-------------------------------|
| 1. Conductor  | AWG16 Cu/Sn (19xAWG29 t.p.c.) | 1.2mm <sup>2</sup><br>Ø 1.5mm |
| 2. Semicon    | Semiconductive PE (black)     | Ø 2.5mm                       |
| 3. Dielectric | LDHMW PE                      | Ø 9.4mm                       |

TECHNICAL DATA

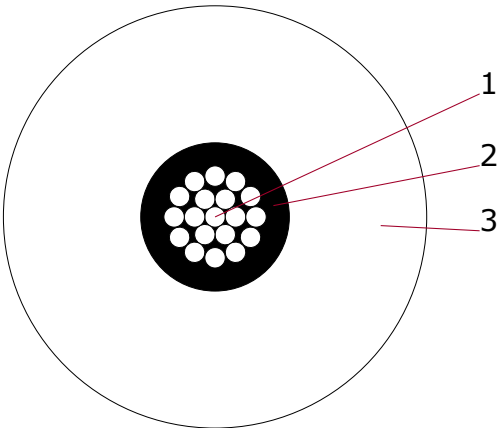
|                       |                     |
|-----------------------|---------------------|
| Rated Voltage         | 100kV <sub>DC</sub> |
| min. Bend Radius      | 127mm (fixed)       |
| Operating Temperature | -51°C - +60°C       |
| RoHS Compliant        | Yes                 |
| Weight                | ca. 0.075kg/m       |
| Color                 | natural             |
| Status                | P (Preferred)       |



## 2125A

100kV<sub>DC</sub> - AWG12 - LDHMW PE DIELECTRIC

### CONSTRUCTION



|               |                               |                               |
|---------------|-------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Sn (19xAWG25 t.p.c.) | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive PE (black)     | Ø 3.3mm                       |
| 3. Dielectric | LDHMW PE                      | Ø 9.4mm                       |

### TECHNICAL DATA

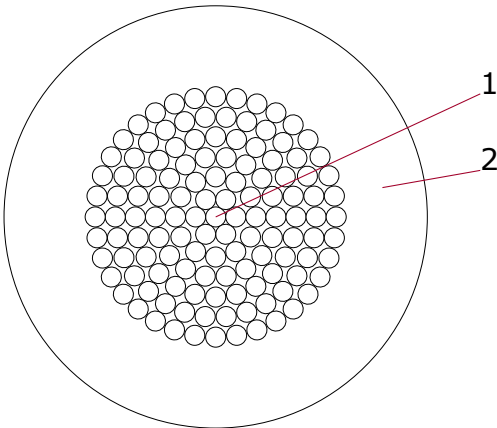
|                       |                     |
|-----------------------|---------------------|
| Rated Voltage         | 100kV <sub>DC</sub> |
| min. Bend Radius      | 127mm (fixed)       |
| Operating Temperature | -51°C - +60°C       |
| RoHS Compliant        | Yes                 |
| Weight                | ca. 0.089kg/m       |
| Color                 | natural             |
| Status                | S (Special)         |



## 2132

15kV<sub>DC</sub> - AWG6 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                               |                                |
|---------------|-------------------------------|--------------------------------|
| 1. Conductor  | AWG6 Cu/Sn (133xAWG27 t.p.c.) | 13.6mm <sup>2</sup><br>Ø 5.3mm |
| 2. Dielectric | Silicone                      | Ø 7.6mm                        |

### TECHNICAL DATA

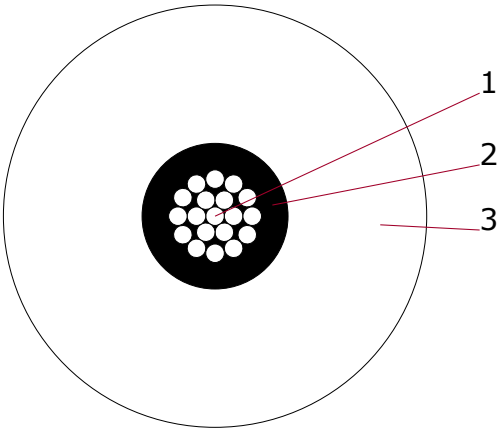
|                       |                                   |
|-----------------------|-----------------------------------|
| Rated Voltage         | 15kV <sub>DC</sub>                |
| Test Voltage          | 12.5kV <sub>AC</sub> (Spark Test) |
| min. Bend Radius      | 114mm (moving), 57mm (fixed)      |
| Operating Temperature | -50°C - +149°C                    |
| RoHS Compliant        | Yes                               |
| Weight                | ca. 0.161kg/m                     |
| Color                 | white                             |
| Status                | P (Preferred)                     |



## 2149

60kV<sub>DC</sub> - AWG18 - LDHMW PE DIELECTRIC

### CONSTRUCTION



|               |                               |                                 |
|---------------|-------------------------------|---------------------------------|
| 1. Conductor  | AWG18 Cu/Sn (19xAWG30 t.p.c.) | 0.97mm <sup>2</sup><br>Ø 1.24mm |
| 2. Semicon    | Semiconductive PE (black)     | Ø 2mm                           |
| 3. Dielectric | LDHMW PE                      | Ø 5.8mm                         |

### TECHNICAL DATA

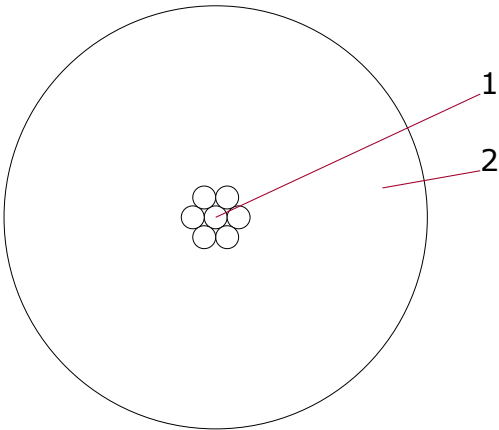
|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 60kV <sub>DC</sub> |
| Test Voltage          | 10kV (Spark Test)  |
| min. Bend Radius      | 64mm (fixed)       |
| Operating Temperature | -51°C - +60°C      |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.03kg/m       |
| Color                 | natural            |
| Status                | P (Preferred)      |



2178

30kV<sub>DC</sub> - AWG20 - SILICONE DIELECTRIC

CONSTRUCTION



|               |                               |                                 |
|---------------|-------------------------------|---------------------------------|
| 1. Conductor  | AWG20 Cu/Sn (10xAWG30 t.p.c.) | 0.51mm <sup>2</sup><br>Ø 0.97mm |
| 2. Dielectric | Silicone                      | Ø 4.7mm                         |

TECHNICAL DATA

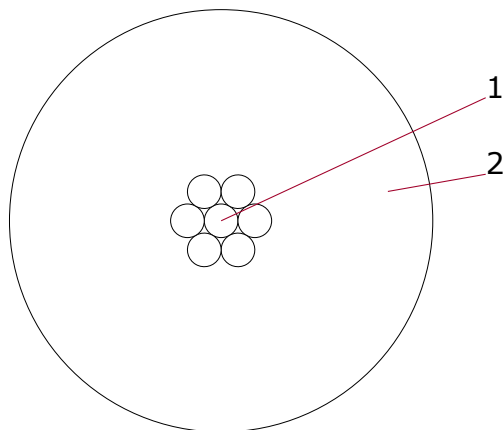
|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 30kV <sub>DC</sub> |
| min. Bend Radius      | 10mm (fixed)       |
| Operating Temperature | -65°C - +149°C     |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.03kg/m       |
| Color                 | white              |
| Status                | S (Special)        |



## 2185R

20kV<sub>DC</sub> - AWG20 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                               |                                 |
|---------------|-------------------------------|---------------------------------|
| 1. Conductor  | AWG20 Cu/Sn (10xAWG30 t.p.c.) | 0.51mm <sup>2</sup><br>Ø 0.97mm |
| 2. Dielectric | Silicone                      | Ø 3.2mm                         |

### TECHNICAL DATA

|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 20kV <sub>DC</sub> |
| min. Bend Radius      | 13mm (fixed)       |
| Operating Temperature | -65°C - +149°C     |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.015kg/m      |
| Color                 | red                |
| Status                | P (Preferred)      |

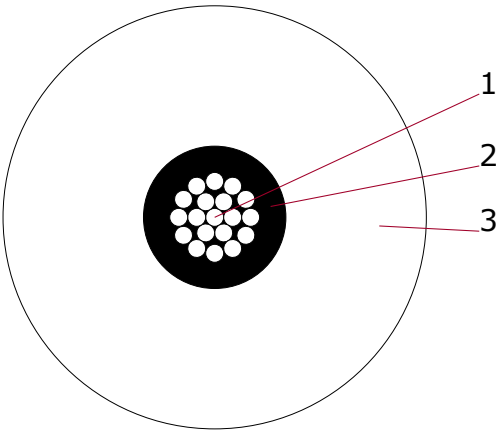
The cable has been spark tested according to UL758 during production. It is recommended to derate the operating voltage for continuous operation. The user has to ensure by adequate tests that the cable is suitable for his application.



2229

80kV<sub>DC</sub> - AWG12 - SILICONE DIELECTRIC

CONSTRUCTION



|               |                                 |                               |
|---------------|---------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Ag (19xAWG25 s.p.c.)   | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive Silicone (black) | Ø 3.6mm                       |
| 3. Dielectric | Silicone                        | Ø 10.7mm                      |

TECHNICAL DATA

|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 80kV <sub>DC</sub> |
| min. Bend Radius      | 13mm (fixed)       |
| Operating Temperature | -65°C - +200°C     |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.149kg/m      |
| Color                 | white              |
| Status                | S (Special)        |

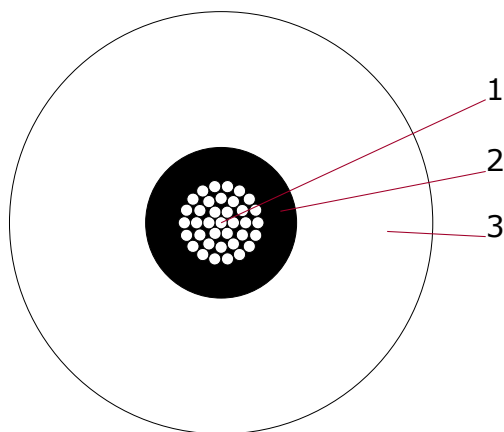




## 2243A

125kV<sub>DC</sub> - AWG8 - EPR DIELECTRIC

### CONSTRUCTION



|               |                              |                             |
|---------------|------------------------------|-----------------------------|
| 1. Conductor  | AWG8 Cu/Sn (49xAWG25 t.p.c.) | 8mm <sup>2</sup><br>Ø 3.6mm |
| 2. Semicon    | Semiconductive EPR           | Ø 5.6mm                     |
| 3. Dielectric | EPR                          | Ø 15.7mm                    |

### TECHNICAL DATA

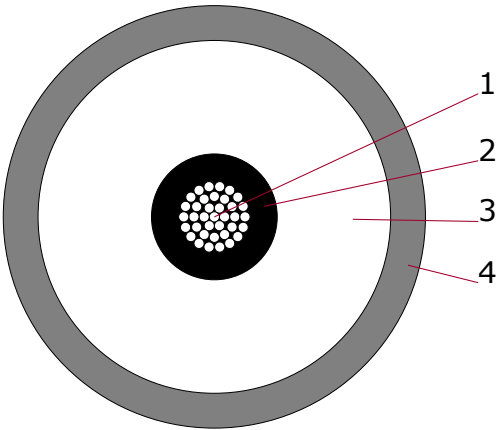
|                       |                     |
|-----------------------|---------------------|
| Rated Voltage         | 125kV <sub>DC</sub> |
| min. Bend Radius      | 127mm (fixed)       |
| Operating Temperature | -51°C - +121°C      |
| RoHS Compliant        | Yes                 |
| Weight                | ca. 0.32kg/m        |
| Color                 | red                 |
| Status                | S [Special]         |



2243VJ-4

125kV<sub>DC</sub> - AWG8 - EPR DIELECTRIC

CONSTRUCTION



|               |                              |                             |
|---------------|------------------------------|-----------------------------|
| 1. Conductor  | AWG8 Cu/Sn (49xAWG25 t.p.c.) | 8mm <sup>2</sup><br>Ø 3.6mm |
| 2. Semicon    | Semiconductive EPR           | Ø 5.6mm                     |
| 3. Dielectric | EPR                          | Ø 15.7mm                    |
| 4. Jacket     | PVC                          | Ø 18.8mm                    |

TECHNICAL DATA

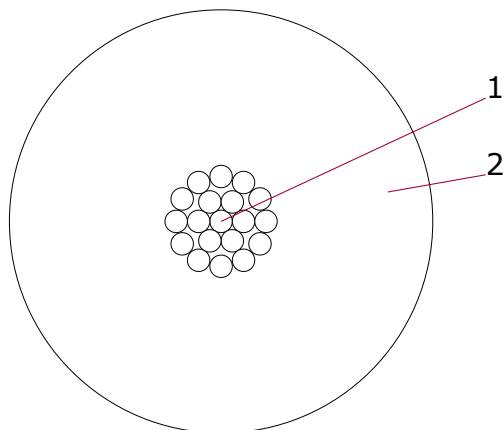
|                       |                     |
|-----------------------|---------------------|
| Rated Voltage         | 125kV <sub>DC</sub> |
| min. Bend Radius      | 150mm (fixed)       |
| Operating Temperature | -51°C - +80°C       |
| RoHS Compliant        | Yes                 |
| Weight                | ca. 0.44kg/m        |
| Color                 | yellow              |
| Status                | S (Special)         |



## 8511R

10kV<sub>DC</sub> / (6.7)kV<sub>AC</sub> - AWG15 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                               |                     |
|---------------|-------------------------------|---------------------|
| 1. Conductor  | AWG15 Cu/Sn (30xAWG30 t.p.c.) | 1.53mm <sup>2</sup> |
| 2. Dielectric | Silicone                      | Ø 4.8mm<br>± 0.2mm  |

### TECHNICAL DATA

|                            |                                            |
|----------------------------|--------------------------------------------|
| Rated Voltage              | 10kV <sub>DC</sub> / (6.7)kV <sub>AC</sub> |
| Test Voltage               | 14kV <sub>AC</sub> (Spark Test)            |
| Conductor Resistance @20°C | ≤ 13.7Ω/km                                 |
| min. Bend Radius           | 72mm (moving), 36mm (fixed)                |
| Operating Temperature      | -50°C - +150°C                             |
| RoHS Compliant             | Yes                                        |
| Weight                     | ca. 0.035kg/m                              |
| Cu-Weight                  | ca. 0.014kg/m                              |
| Color                      | red                                        |
| Status                     | P (Preferred)                              |

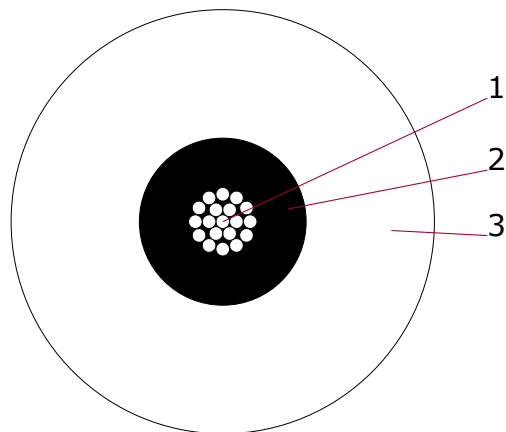
The cable is suitable for AC operation at up to 6.7kVRMS (50Hz) provided that proper means regarding partial discharge are chosen for the application.



## HSL-20-0.38-B-9

20kV<sub>DC</sub> / (6.6)kV<sub>AC</sub> - AWG22 - SILICONE DIELECTRIC

### CONSTRUCTION



|                      |                               |                                 |
|----------------------|-------------------------------|---------------------------------|
| <b>1. Conductor</b>  | AWG22 Cu/Ag (19xAWG34 s.p.c.) | 0.38mm <sup>2</sup><br>Ø 0.78mm |
| <b>2. Semicon</b>    | Semiconductive Silicone       | Ø 1.95mm                        |
| <b>3. Dielectric</b> | Silicone                      | Ø 4.95mm<br>± 0.15mm            |

### TECHNICAL DATA

|                                    |                                            |
|------------------------------------|--------------------------------------------|
| <b>Rated Voltage</b>               | 20kV <sub>DC</sub> / (6.6)kV <sub>AC</sub> |
| <b>Test Voltage</b>                | 18 kV <sub>AC</sub> (Spark Test)           |
| <b>Conductor Resistance @ 20°C</b> | ≤ 48.56Ω/km                                |
| <b>min. Bend Radius</b>            | 50mm (moving), 37.2mm (fixed)              |
| <b>Operating Temperature</b>       | -50°C - +180°C                             |
| <b>RoHS Compliant</b>              | Yes                                        |
| <b>Weight</b>                      | ca. 0.0267kg/m                             |
| <b>Cu-Weight</b>                   | ca. 0.0038kg/m                             |
| <b>Color</b>                       | white                                      |
| <b>Status</b>                      | P (Preferred)                              |

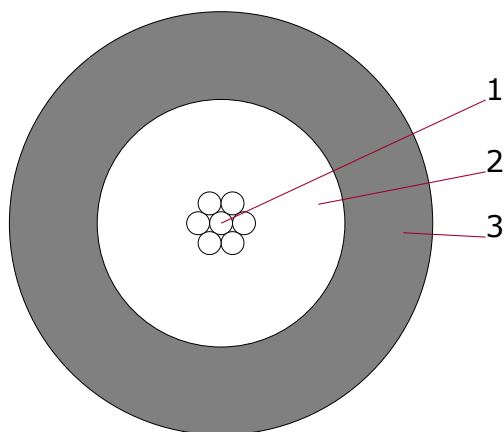
The cable is suitable for AC operation at up to 6.6kVRMS (50Hz) provided that proper means regarding partial discharge are chosen for the application.



## HTV-20-22-2

20kV<sub>DC</sub> - AWG22 - PE-X DIELECTRIC  
 AWM STYLE 3871 - INTERNAL USE

### CONSTRUCTION



|               |                                                                           |                                 |
|---------------|---------------------------------------------------------------------------|---------------------------------|
| 1. Conductor  | AWG22 Cu/Sn (7xAWG30 Cu/Sn (compact tinned MGZ ≈ 15, bunched, re-tinned)) | 0.36mm <sup>2</sup><br>Ø 0.76mm |
| 2. Dielectric | PE-X                                                                      | Ø 2.8mm<br>± 0.1mm              |
| 3. Jacket     | PVC                                                                       | Ø 4.7mm<br>± 0.2mm              |

### TECHNICAL DATA

|                             |                                            |
|-----------------------------|--------------------------------------------|
| Rated Voltage               | 20kV <sub>DC</sub>                         |
| Test Voltage                | 15kV <sub>AC</sub> (Spark Test)            |
| Conductor Resistance @ 20°C | ≤ 58Ω/km                                   |
| min. Bend Radius            | 48mm (moving), 24mm (fixed)                |
| Operating Temperature       | -15°C - +105°C                             |
| Oil Resistance              | according to DIN EN 60811-2-1, 168h ≤ 80°C |
| Flame Retardance            | according to UL2556, Horizontal Flame Test |
| RoHS Compliant              | Yes                                        |
| Weight                      | ca. 0.027kg/m                              |
| Color                       | red (~RAL 3000)                            |
| Status                      | S (Special)                                |

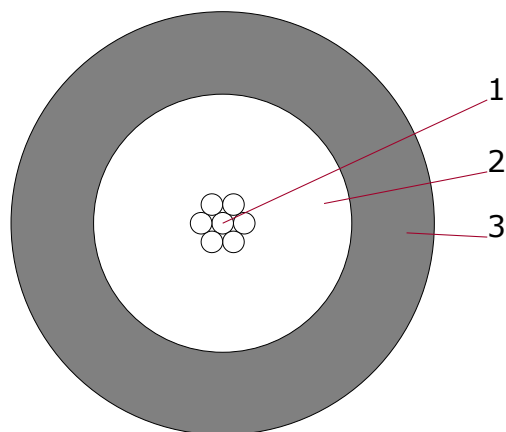
The cable has been tested according to UL758 at 15kV<sub>ac</sub> (spark test) during production. It is recommended to derate the operating voltage for continuous operation. The user has to ensure by adequate tests that the cable is suitable for his application.



## HTV-30-22-2

30kV<sub>DC</sub> - AWG22 - PE-X DIELECTRIC  
 AWM STYLE 3873 - INTERNAL USE

### CONSTRUCTION



|                      |                                                                                   |                                 |
|----------------------|-----------------------------------------------------------------------------------|---------------------------------|
| <b>1. Conductor</b>  | AWG22 Cu/Sn (7xAWG30 Cu/Sn (compact tinned MGZ $\approx$ 15, bunched, re-tinned)) | 0.36mm <sup>2</sup><br>Ø 0.76mm |
| <b>2. Dielectric</b> | PE-X                                                                              | Ø 3.2mm<br>± 0.15mm             |
| <b>3. Jacket</b>     | PVC                                                                               | Ø 5mm<br>± 0.2mm                |

### TECHNICAL DATA

|                                   |                                            |
|-----------------------------------|--------------------------------------------|
| <b>Rated Voltage</b>              | 30kV <sub>DC</sub>                         |
| <b>Test Voltage</b>               | 20kV <sub>AC</sub> (Spark Test)            |
| <b>Conductor Resistance @20°C</b> | ≤ 58Ω/km                                   |
| <b>min. Bend Radius</b>           | 50mm (moving), 25mm (fixed)                |
| <b>Operating Temperature</b>      | -15°C - +105°C                             |
| <b>Oil Resistance</b>             | according to UL1581 Tab.50.182 ≤ 60°C      |
| <b>Flame Retardance</b>           | according to UL2556, Horizontal Flame Test |
| <b>RoHS Compliant</b>             | Yes                                        |
| <b>Weight</b>                     | ca. 0.028kg/m                              |
| <b>Color</b>                      | red (~RAL 3000)                            |
| <b>Status</b>                     | P (Preferred)                              |

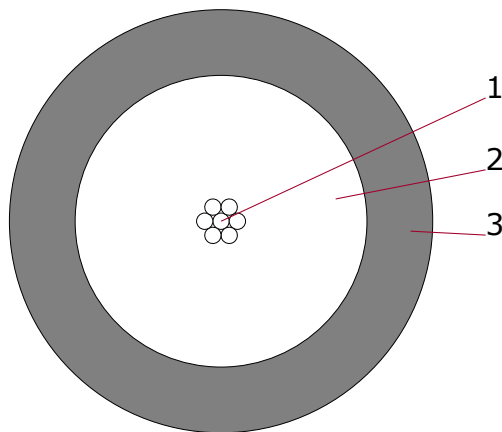
The cable has been tested according to UL758 at 20kV<sub>ac</sub> (spark test) during production. It is recommended to derate the operating voltage for continuous operation. The user has to ensure by adequate tests that the cable is suitable for his application.



## HTV-50-22-2

50kV<sub>DC</sub> - AWG22 - PE-X DIELECTRIC  
 AWM STYLE 3875 - INTERNAL USE

### CONSTRUCTION



|               |                                                                           |                                 |
|---------------|---------------------------------------------------------------------------|---------------------------------|
| 1. Conductor  | AWG22 Cu/Sn (7xAWG30 Cu/Sn (compact tinned MGZ ≈ 15, bunched, re-tinned)) | 0.36mm <sup>2</sup><br>Ø 0.76mm |
| 2. Dielectric | PE-X                                                                      | Ø 4.6mm<br>± 0.2mm              |
| 3. Jacket     | PVC                                                                       | Ø 6.6mm<br>± 0.2mm              |

### TECHNICAL DATA

|                            |                                            |
|----------------------------|--------------------------------------------|
| Rated Voltage              | 50kV <sub>DC</sub>                         |
| Test Voltage               | 30kV <sub>AC</sub> (Spark Test)            |
| Conductor Resistance @20°C | ≤ 58Ω/km                                   |
| min. Bend Radius           | 66mm (moving), 33mm (fixed)                |
| Operating Temperature      | -15°C - +105°C                             |
| Oil Resistance             | according to UL1581 Tab.50.182, ≤ 60°C     |
| Flame Retardance           | according to UL2556, Horizontal Flame Test |
| RoHS Compliant             | Yes                                        |
| Weight                     | ca. 0.043kg/m                              |
| Color                      | red (~RAL 3000)                            |
| Status                     | P (Preferred)                              |

The cable has been tested according to UL758 at 30kV<sub>ac</sub> (spark test) during production. It is recommended to derate the operating voltage for continuous operation. The user has to ensure by adequate tests that the cable is suitable for his application.



A wide range of shielded cable types for voltages up to 150kV<sub>DC</sub>. Many cable types are furnished with semiconductive layers. These layers are smoothing the electrical field, lowering the field strength and provide low partial discharge levels enabling AC operation.

Silicone, PE and EPR dielectrics are standard – miscellaneous dielectrics on request.

UL recognized appliance wiring material –  
UL AWM style 3239 and other UL styles.

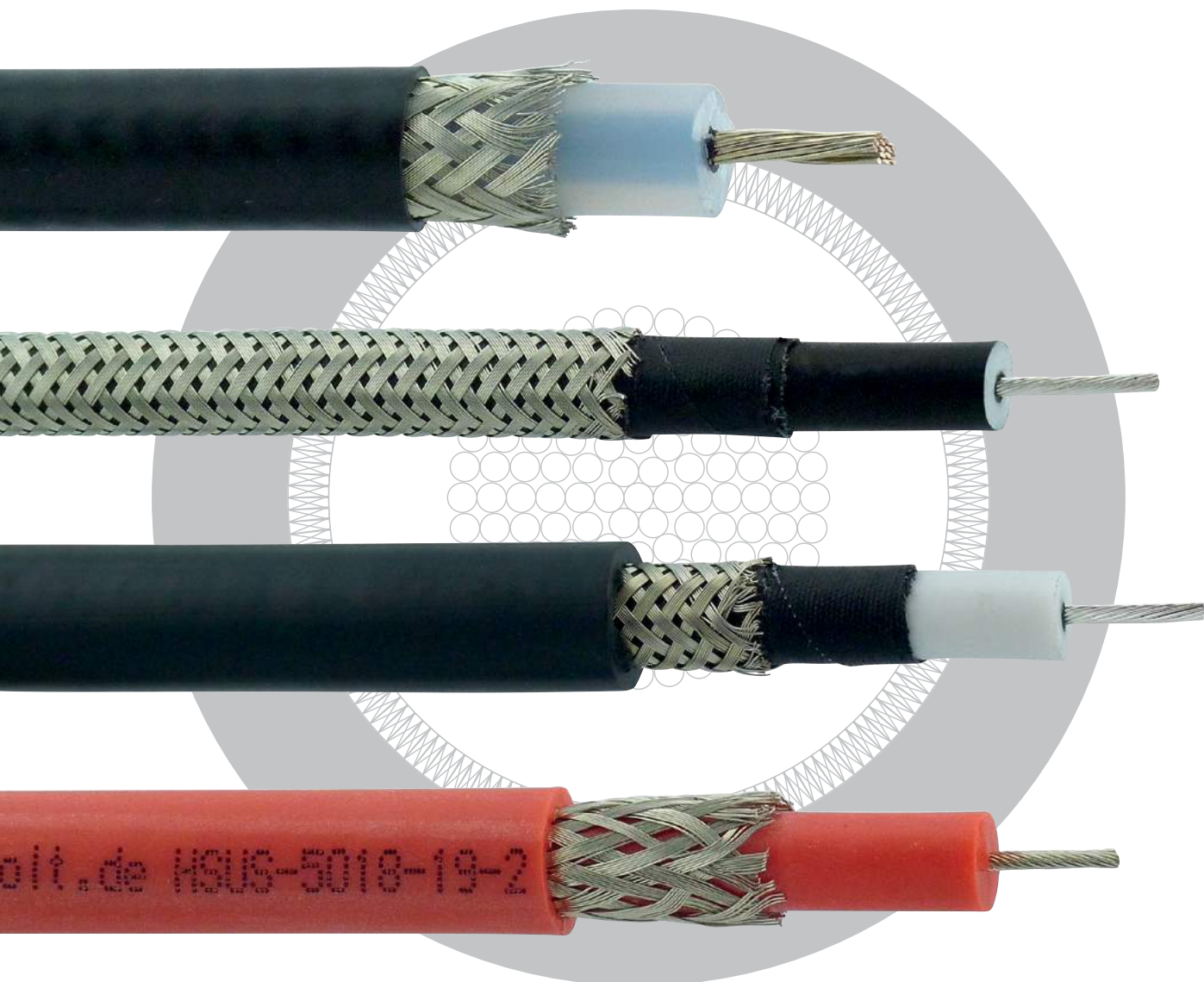
**hivolt.de** is able to provide modified standard types or full custom designed cable for applications where special cable types are required.

Upon customer's request we offer high voltage cables terminated with different types of connectors or as complete cable assemblies with molded terminations.





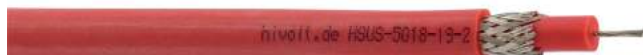
# SHIELDED HIGH VOLTAGE CABLE



## SHIELDED SILICONE HIGH VOLTAGE / HIGH TEMPERATURE APPLIANCE WIRE 10KV<sub>DC</sub> – 30KV<sub>DC</sub> – AWM STYLE 3239 – INTERNAL USE

### FEATURES

- 22 AWG - 10 AWG Conductors
- Conductor Construction: Tinned Copper
- Shield Construction: Tinned Copper Braid
- Operating Temperature: -50°C - +150°C
- High Flexibility
- Ozone and Corona resistant
- Meets VW-1 Flame Test
- Made in Germany
- RoHS compliant



### TYPICAL APPLICATIONS

- Signal Transmission
- HV Measurement
- Laser Power Supplies

### SPECIFICATIONS

Operating Temperature: -50°C - +150°C  
Min. Bend Radius (fixed): 7.5 \* Outer Diameter

### TYPE OVERVIEW

| CONDUCTOR                                                |                    |               | RATED VOLTAGE [kV <sub>DC</sub> ]   |                                   |                            |                                     |                                   |                            |                                     |                                   |                            |
|----------------------------------------------------------|--------------------|---------------|-------------------------------------|-----------------------------------|----------------------------|-------------------------------------|-----------------------------------|----------------------------|-------------------------------------|-----------------------------------|----------------------------|
|                                                          |                    |               | 10                                  |                                   |                            | 20                                  |                                   |                            | 30                                  |                                   |                            |
| SIZE<br>[AWG]                                            | STRANDS<br>[n/AWG] | AREA<br>[mm²] | DIELEC-<br>TRIC<br>DIAMETER<br>[mm] | NOM.<br>OUTER<br>DIAMETER<br>[mm] | TOTAL<br>WEIGHT<br>[kg/km] | DIELEC-<br>TRIC<br>DIAMETER<br>[mm] | NOM.<br>OUTER<br>DIAMETER<br>[mm] | TOTAL<br>WEIGHT<br>[kg/km] | DIELEC-<br>TRIC<br>DIAMETER<br>[mm] | NOM.<br>OUTER<br>DIAMETER<br>[mm] | TOTAL<br>WEIGHT<br>[kg/km] |
| 22                                                       | 19/34              | 0.38          | 3.1                                 | 5.6                               | 43.7                       | -                                   | -                                 | -                          | -                                   | -                                 | -                          |
| 20                                                       | 19/32              | 0.62          | -                                   | -                                 | -                          | 3.9                                 | 6.9                               | 65                         | 4.5                                 | 7.5                               | 77.5                       |
| 18                                                       | 19/30              | 0.96          | 3.5                                 | 6.4                               | 59.3                       | -                                   | -                                 | -                          | 4.8                                 | 7.7                               | 83.7                       |
| 16                                                       | 19/29              | 1.35          | -                                   | -                                 | -                          | 4.4                                 | 7.4                               | 80                         | 5.0                                 | 8.0                               | 91.3                       |
|                                                          | 41/32              | 1.33          | 3.9                                 | 6.8                               | 68                         | -                                   | -                                 | -                          | -                                   | -                                 | -                          |
| 14                                                       | 41/30              | 2.08          | -                                   | -                                 | -                          | -                                   | -                                 | -                          | 5.5                                 | 8.5                               | 106.7                      |
| 12                                                       | 19/24              | 3.88          | -                                   | -                                 | -                          | -                                   | -                                 | -                          | 6.1                                 | 9.1                               | 133.2                      |
|                                                          | 65/30              | 3.29          | 4.6                                 | 7.6                               | 98.9                       | 5.3                                 | 8.3                               | 111                        | 5.9                                 | 8.9                               | 124.7                      |
| 10                                                       | 84/29              | 5.94          | 5.7                                 | 8.7                               | 142.5                      | 6.1                                 | 9.1                               | 150                        | -                                   | -                                 | -                          |
| Test Voltage<br>(Spark Test)<br>[kV <sub>AC</sub> ]      |                    |               | 10                                  |                                   |                            | 15                                  |                                   |                            | 20                                  |                                   |                            |
| Test Voltage<br>(Cond./Braid 60s)<br>[kV <sub>DC</sub> ] |                    |               | 21                                  |                                   |                            | 41                                  |                                   |                            | 61                                  |                                   |                            |

## ORDERING INFORMATION

Ordering example for part number: **HSUS-1012-65-2**

|                       |   |                                    |   |                      |   |                |   |            |
|-----------------------|---|------------------------------------|---|----------------------|---|----------------|---|------------|
| HSUS                  | - | 10                                 | - | 12                   | - | 65             | - | 2          |
|                       |   |                                    |   |                      |   |                |   |            |
| Base Part Designation |   | Voltage Rating [kV <sub>DC</sub> ] |   | Conductor Size [AWG] |   | No. of Strands |   | Color Code |

## COLOR CODE

|                |          |              |          |            |         |
|----------------|----------|--------------|----------|------------|---------|
| <b>0 black</b> | 1 brown  | <b>2 red</b> | 3 orange | 4 yellow   | 5 green |
| 6 blue         | 7 violet | 8 grey       | 9 white  | 10 natural |         |

Preferred voltages, conductor sizes and colors shown in **bold**. Minimum order quantities may apply. Other conductor strandings on request.

These cables have been spark tested according to UL758 during production. It is recommended to derate the operating voltage for continuous operation. The user has to ensure by adequate tests that the cable is suitable for his application.

## HSUS SERIES CROSS SECTION VIEWS



HSUS-1010-84-X



HSUS-1012-65-X



HSUS-1016-41-X



HSUS-1018-19-X



HSUS-1022-19-X



HSUS-2010-84-X



HSUS-2012-65-X



HSUS-2016-19-X



HSUS-2020-19-X



HSUS-3012-19-X



HSUS-3012-65-X



HSUS-3014-41-X



HSUS-3016-19-X



HSUS-3018-19-X



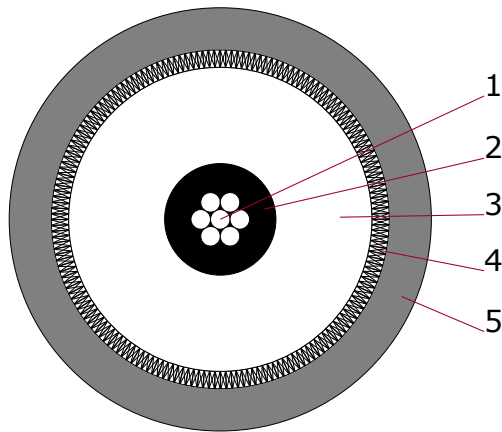
HSUS-3020-19-X



## 130660

30kV<sub>DC</sub> - AWG22 - HDMRPE DIELECTRIC

### CONSTRUCTION



|                 |                                                                         |                                 |
|-----------------|-------------------------------------------------------------------------|---------------------------------|
| 1. Conductor    | AWG22 Cu/Sn (7xAWG30 Cu/Sn (compact tinned MGZ≈15, bunched, re-tinned)) | 0.36mm <sup>2</sup><br>Ø 0.76mm |
| 2. Dielectric 1 | HDPE                                                                    | Ø 1.5mm                         |
| 3. Dielectric 2 | HDMRPE                                                                  | Ø 3.9mm<br>± 0.1mm              |
| 4. Braid        | Cu/Sn (0.10mm t.p.c.) 83% Coverage                                      | Ø 4.4mm                         |
| 5. Jacket       | PVC                                                                     | Ø 5.5mm<br>± 0.1mm              |

### TECHNICAL DATA

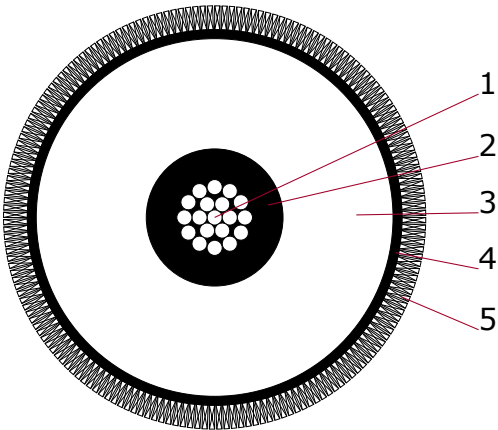
|                            |                                                                    |
|----------------------------|--------------------------------------------------------------------|
| Rated Voltage              | 30kV <sub>DC</sub>                                                 |
| Test Voltage               | 20kV <sub>AC</sub> (Spark Test, core)<br>60kV <sub>DC</sub> / 1min |
| Conductor Resistance @20°C | ≤ 55Ω/km                                                           |
| Impedance                  | typ. 65Ω                                                           |
| Capacitance                | typ. 83pF/m                                                        |
| min. Bend Radius           | 81mm (fixed)                                                       |
| Operating Temperature      | -5°C - +80°C                                                       |
| Flame Retardance           | according to DIN EN 60332-2-2                                      |
| RoHS Compliant             | Yes                                                                |
| Weight                     | ca. 0.041kg/m                                                      |
| Color                      | red                                                                |
| Status                     | P (Preferred)                                                      |



## 2012S

40kV<sub>DC</sub> / 15kV<sub>AC</sub> - AWG18 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                         |                                 |
|---------------|-----------------------------------------|---------------------------------|
| 1. Conductor  | AWG18 Cu/Ag (19xAWG30 s.p.c.)           | 0.97mm <sup>2</sup><br>Ø 1.24mm |
| 2. Semicon    | Semiconductive Silicone (black)         | Ø 2.3mm                         |
| 3. Dielectric | Silicone                                | Ø 6mm                           |
| 4. Semicon    | Semiconductive Ink & Tape               | Ø 6.3mm                         |
| 5. Braid      | Cu/Sn (6x16x AWG34 t.p.c.) 80% Coverage | Ø 7.1mm                         |

### TECHNICAL DATA

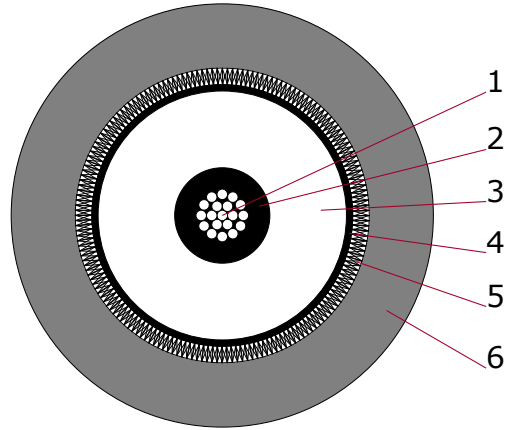
|                       |                                         |
|-----------------------|-----------------------------------------|
| Rated Voltage         | 40kV <sub>DC</sub> / 15kV <sub>AC</sub> |
| Impedance             | typ. 41Ω                                |
| Capacitance           | typ. 184pF/m                            |
| min. Bend Radius      | 25mm (fixed)                            |
| Operating Temperature | -65°C - +200°C                          |
| RoHS Compliant        | Yes                                     |
| Status                | S (Special)                             |



## 2012STJ

40kV<sub>DC</sub> / 15kV<sub>AC</sub> - AWG18 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                         |                                 |
|---------------|-----------------------------------------|---------------------------------|
| 1. Conductor  | AWG18 Cu/Ag (19xAWG30 s.p.c.)           | 0.97mm <sup>2</sup><br>Ø 1.24mm |
| 2. Semicon    | Semiconductive Silicone (black)         | Ø 2.3mm                         |
| 3. Dielectric | Silicone                                | Ø 6mm                           |
| 4. Semicon    | Semiconductive Ink & Tape               | Ø 6.3mm                         |
| 5. Braid      | Cu/Sn (6x16x AWG34 t.p.c.) 80% Coverage | Ø 7.1mm                         |
| 6. Jacket     | TPR                                     | Ø 10.2mm                        |

### TECHNICAL DATA

|                       |                                         |
|-----------------------|-----------------------------------------|
| Rated Voltage         | 40kV <sub>DC</sub> / 15kV <sub>AC</sub> |
| Impedance             | typ. 41Ω                                |
| Capacitance           | typ. 184pF/m                            |
| min. Bend Radius      | 25mm (fixed)                            |
| Operating Temperature | -65°C - +80°C                           |
| RoHS Compliant        | Yes                                     |
| Weight                | ca. 0.124kg/m                           |
| Color                 | black                                   |
| Status                | S (Special)                             |

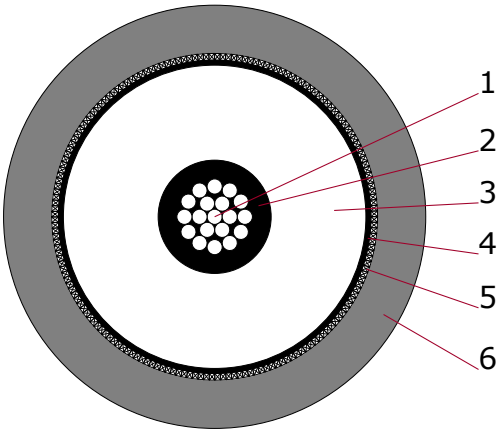
Other jacket materials upon request.



## 2024SVJ

60kV<sub>DC</sub> / 20kV<sub>AC</sub> - AWG12 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                         |                               |
|---------------|-----------------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Ag (19xAWG25 s.p.c.)           | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive Silicone (black)         | Ø 3.4mm                       |
| 3. Dielectric | Silicone                                | Ø 9.1mm                       |
| 4. Semicon    | Semiconductive Ink & Tape               | Ø 9.4mm                       |
| 5. Braid      | Cu/Sn (6x24x AWG34 t.p.c.) 81% Coverage | Ø 9.8mm                       |
| 6. Jacket     | PVC                                     | Ø 12.7mm                      |

### TECHNICAL DATA

|                       |                                         |
|-----------------------|-----------------------------------------|
| Rated Voltage         | 60kV <sub>DC</sub> / 20kV <sub>AC</sub> |
| Impedance             | typ. 39Ω                                |
| Capacitance           | typ. 187pF/m                            |
| min. Bend Radius      | 25mm (fixed)                            |
| Operating Temperature | -51°C - +60°C                           |
| RoHS Compliant        | Yes                                     |
| Weight                | ca. 0.232kg/m                           |
| Color                 | black                                   |
| Status                | S (Special)                             |

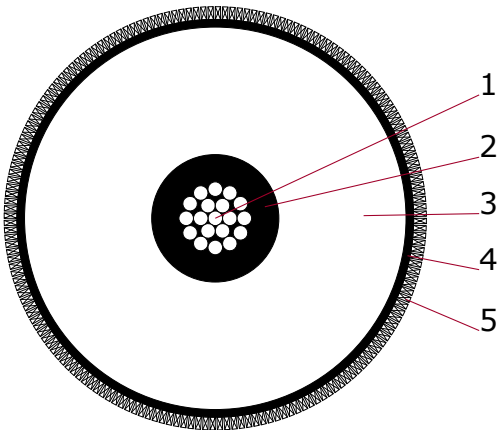
Other jacket materials upon request.



## 2032S

50kV<sub>DC</sub> / 15kV<sub>AC</sub> - AWG16 - SILICONE DIELECTRIC

■ CONSTRUCTION



|               |                                         |                               |
|---------------|-----------------------------------------|-------------------------------|
| 1. Conductor  | AWG16 Cu/Ag (19xAWG29 s.p.c.)           | 1.2mm <sup>2</sup><br>Ø 1.5mm |
| 2. Semicon    | Semiconductive Silicone (black)         | Ø 2.5mm                       |
| 3. Dielectric | Silicone                                | Ø 7.5mm                       |
| 4. Semicon    | Semiconductive Ink & Tape               | Ø 7.8mm                       |
| 5. Braid      | Cu/Sn (6x16x AWG34 t.p.c.) 86% Coverage | Ø 8.3mm                       |

■ TECHNICAL DATA

|                       |                                         |
|-----------------------|-----------------------------------------|
| Rated Voltage         | 50kV <sub>DC</sub> / 15kV <sub>AC</sub> |
| Impedance             | typ. 44Ω                                |
| Capacitance           | typ. 164pF/m                            |
| min. Bend Radius      | 25mm (fixed)                            |
| Operating Temperature | -65°C - +200°C                          |
| RoHS Compliant        | Yes                                     |
| Weight                | ca. 0.1kg/m                             |
| Status                | S (Special)                             |

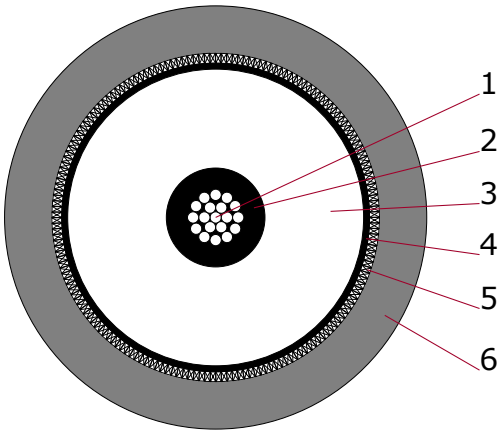




## 2032STJ

50kV<sub>DC</sub> / 15kV<sub>AC</sub> - AWG16 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                         |                               |
|---------------|-----------------------------------------|-------------------------------|
| 1. Conductor  | AWG16 Cu/Ag (19xAWG29 s.p.c.)           | 1.2mm <sup>2</sup><br>Ø 1.5mm |
| 2. Semicon    | Semiconductive Silicone (black)         | Ø 2.5mm                       |
| 3. Dielectric | Silicone                                | Ø 7.5mm                       |
| 4. Semicon    | Semiconductive Ink & Tape               | Ø 7.8mm                       |
| 5. Braid      | Cu/Sn (6x16x AWG34 t.p.c.) 86% Coverage | Ø 8.3mm                       |
| 6. Jacket     | TPR                                     | Ø 10.7mm                      |

### TECHNICAL DATA

|                       |                                         |
|-----------------------|-----------------------------------------|
| Rated Voltage         | 50kV <sub>DC</sub> / 15kV <sub>AC</sub> |
| Impedance             | typ. 44Ω                                |
| Capacitance           | typ. 164pF/m                            |
| min. Bend Radius      | 25mm (fixed)                            |
| Operating Temperature | -65°C - +80°C                           |
| RoHS Compliant        | Yes                                     |
| Weight                | ca. 0.171kg/m                           |
| Color                 | black                                   |
| Status                | S (Special)                             |

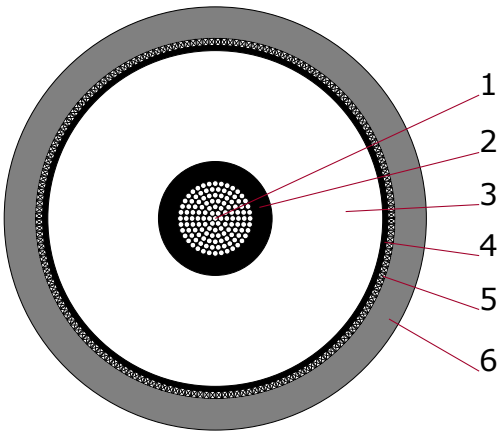
Other jacket materials upon request.



## 2062SVJ

100kV<sub>DC</sub> / 30kV<sub>AC</sub> - AWG8 - SILICONE DIELECTRIC

■ CONSTRUCTION



|               |                                          |                               |
|---------------|------------------------------------------|-------------------------------|
| 1. Conductor  | AWG8 Cu/Ag (133xAWG29 s.p.c.)            | 8.5mm <sup>2</sup><br>Ø 4.2mm |
| 2. Semicon    | Semiconductive Silicone (black)          | Ø 5.6mm                       |
| 3. Dielectric | Silicone                                 | Ø 16.5mm                      |
| 4. Semicon    | Semiconductive Ink & Tape                | Ø 17mm                        |
| 5. Braid      | Cu/Sn (10x24x AWG34 t.p.c.) 85% Coverage | Ø 17.7mm                      |
| 6. Jacket     | PVC                                      | Ø 20.8mm                      |

■ TECHNICAL DATA

|                       |                                          |
|-----------------------|------------------------------------------|
| Rated Voltage         | 100kV <sub>DC</sub> / 30kV <sub>AC</sub> |
| Impedance             | typ. 41Ω                                 |
| Capacitance           | typ. 164pF/m                             |
| min. Bend Radius      | 140mm (fixed)                            |
| Operating Temperature | -51°C - +60°C                            |
| RoHS Compliant        | Yes                                      |
| Weight                | ca. 0.596kg/m                            |
| Color                 | black                                    |
| Status                | S (Special)                              |

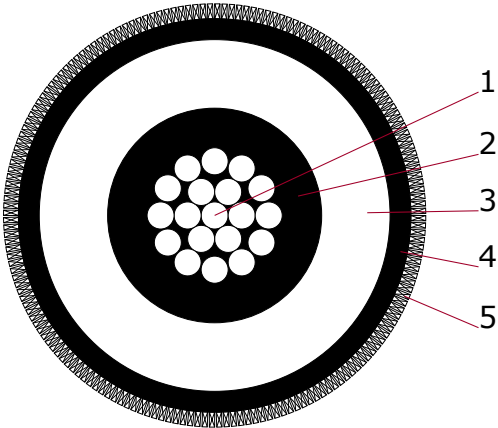
Other jacket materials upon request.



## 2075S

15kV<sub>DC</sub> / 5kV<sub>AC</sub> - AWG12 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                         |                               |
|---------------|-----------------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Ag (19xAWG25 s.p.c.)           | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive Silicone (black)         | Ø 3.6mm                       |
| 3. Dielectric | Silicone                                | Ø 5.9mm                       |
| 4. Semicon    | Semiconductive Ink & Tape               | Ø 6.6mm                       |
| 5. Braid      | Cu/Sn (6x16x AWG34 t.p.c.) 90% Coverage | Ø 7.1mm                       |

### TECHNICAL DATA

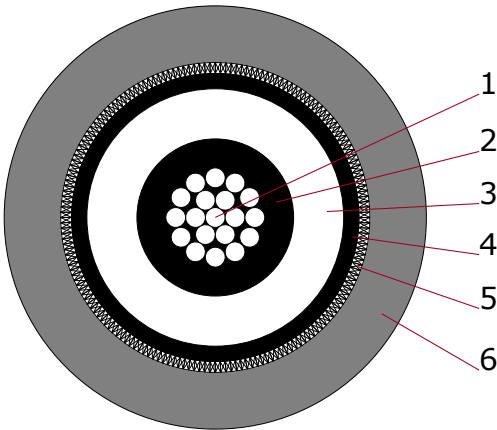
|                       |                                        |
|-----------------------|----------------------------------------|
| Rated Voltage         | 15kV <sub>DC</sub> / 5kV <sub>AC</sub> |
| Impedance             | typ. 25Ω                               |
| Capacitance           | typ. 321pF/m                           |
| min. Bend Radius      | 25mm (fixed)                           |
| Operating Temperature | -65°C - +200°C                         |
| RoHS Compliant        | Yes                                    |
| Status                | S (Special)                            |



## 2075SVJ

15kV<sub>DC</sub> / 5kV<sub>AC</sub> - AWG12 - SILICONE DIELECTRIC

■ CONSTRUCTION



|               |                                         |                               |
|---------------|-----------------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Ag (19xAWG25 s.p.c.)           | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive Silicone (black)         | Ø 3.6mm                       |
| 3. Dielectric | Silicone                                | Ø 5.9mm                       |
| 4. Semicon    | Semiconductive Ink & Tape               | Ø 6.6mm                       |
| 5. Braid      | Cu/Sn (6x16x AWG34 t.p.c.) 90% Coverage | Ø 7.1mm                       |
| 6. Jacket     | PVC                                     | Ø 9.7mm                       |

■ TECHNICAL DATA

|                       |                                        |
|-----------------------|----------------------------------------|
| Rated Voltage         | 15kV <sub>DC</sub> / 5kV <sub>AC</sub> |
| Impedance             | typ. 25Ω                               |
| Capacitance           | typ. 321pF/m                           |
| min. Bend Radius      | 25mm (fixed)                           |
| Operating Temperature | -51°C - +60°C                          |
| RoHS Compliant        | Yes                                    |
| Weight                | ca. 0.127kg/m                          |
| Color                 | black                                  |
| Status                | S (Special)                            |

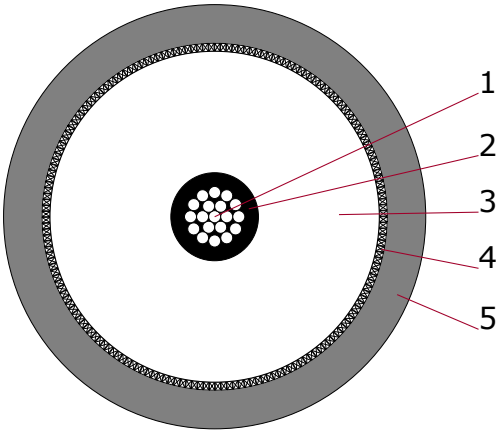
Other jacket materials upon request.



## 2121

150kV<sub>DC</sub> - AWG12 - LDHMW PE DIELECTRIC

### CONSTRUCTION



|               |                                          |                               |
|---------------|------------------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Sn (19xAWG25 t.p.c.)            | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive PE (black)                | Ø 3.3mm                       |
| 3. Dielectric | LDHMW PE                                 | Ø 12.4mm                      |
| 4. Braid      | Cu/Sn (10x24x AWG34 t.p.c.) 90% Coverage | Ø 13mm                        |
| 5. Jacket     | PVC                                      | Ø 15.9mm                      |

### TECHNICAL DATA

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| Rated Voltage         | 150kV <sub>DC</sub>                                  |
| Test Voltage          | 165kV <sub>DC</sub> / 5min<br>Jacket Spark Test: 5kV |
| Impedance             | typ. 59Ω                                             |
| Capacitance           | typ. 95pF/m                                          |
| min. Bend Radius      | 216mm (fixed)                                        |
| Operating Temperature | -51°C - +60°C                                        |
| RoHS Compliant        | Yes                                                  |
| Weight                | ca. 0.28kg/m                                         |
| Color                 | black                                                |
| Status                | P (Preferred)                                        |

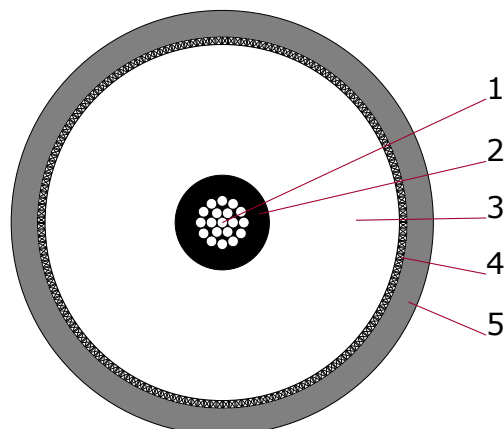
See also HSC-150-1PSUA-2 with outer semicon



## 2124

100kV<sub>DC</sub> - AWG16 - LDHMW PE DIELECTRIC

### CONSTRUCTION



|                      |                                         |                               |
|----------------------|-----------------------------------------|-------------------------------|
| <b>1. Conductor</b>  | AWG16 Cu/Sn (19xAWG29 t.p.c.)           | 1.2mm <sup>2</sup><br>Ø 1.5mm |
| <b>2. Semicon</b>    | Semiconductive PE (black)               | Ø 2.5mm                       |
| <b>3. Dielectric</b> | LDHMW PE                                | Ø 9.15mm                      |
| <b>4. Braid</b>      | Cu/Sn (9x24x AWG34 t.p.c.) 90% Coverage | Ø 9.8mm                       |
| <b>5. Jacket</b>     | PVC                                     | Ø 11.2mm                      |

### TECHNICAL DATA

|                              |                                                      |
|------------------------------|------------------------------------------------------|
| <b>Rated Voltage</b>         | 100kV <sub>DC</sub>                                  |
| <b>Test Voltage</b>          | 110kV <sub>DC</sub> / 5min<br>Jacket Spark Test: 5kV |
| <b>Impedance</b>             | typ. 61Ω                                             |
| <b>Capacitance</b>           | typ. 98pF/m                                          |
| <b>min. Bend Radius</b>      | 152mm (fixed)                                        |
| <b>Operating Temperature</b> | -51°C - +60°C                                        |
| <b>RoHS Compliant</b>        | Yes                                                  |
| <b>Weight</b>                | ca. 0.15kg/m                                         |
| <b>Color</b>                 | black                                                |
| <b>Status</b>                | P (Preferred)                                        |

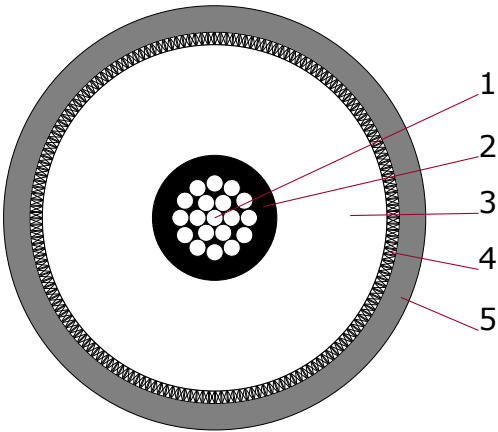
See also HSC-100-1PSUA-2 with outer semicon



## 2125

100kV<sub>DC</sub> - AWG12 - LDHMW PE DIELECTRIC

### CONSTRUCTION



|               |                                         |                               |
|---------------|-----------------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Sn (19xAWG25 t.p.c.)           | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive PE (black)               | Ø 3.3mm                       |
| 3. Dielectric | LDHMW PE                                | Ø 9.1mm                       |
| 4. Braid      | Cu/Sn (9x24x AWG34 t.p.c.) 90% Coverage | Ø 9.8mm                       |
| 5. Jacket     | PVC                                     | Ø 11.2mm                      |

### TECHNICAL DATA

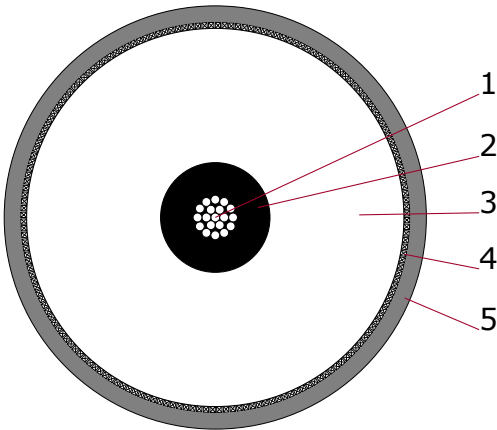
|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| Rated Voltage         | 100kV <sub>DC</sub>                                   |
| Test Voltage          | 110kV <sub>DC</sub> / 10min<br>Jacket Spark Test: 5kV |
| Impedance             | typ. 48Ω                                              |
| Capacitance           | typ. 121pF/m                                          |
| min. Bend Radius      | 152mm (fixed)                                         |
| Operating Temperature | -51°C - +60°C                                         |
| RoHS Compliant        | Yes                                                   |
| Weight                | ca. 0.165kg/m                                         |
| Color                 | black                                                 |
| Status                | S (Special)                                           |



## 2134

200kV<sub>DC</sub> - AWG12 - LDHMW PE DIELECTRIC

■ CONSTRUCTION



|               |                                          |                               |
|---------------|------------------------------------------|-------------------------------|
| 1. Conductor  | AWG12 Cu/Sn (19xAWG25 t.p.c.)            | 3.1mm <sup>2</sup><br>Ø 2.4mm |
| 2. Semicon    | Semiconductive PE                        | Ø 5.6mm                       |
| 3. Dielectric | LDHMW PE                                 | Ø 19.3mm                      |
| 4. Braid      | Cu/Sn (10x24x AWG34 t.p.c.) 90% Coverage | Ø 19.9mm                      |
| 5. Jacket     | PVC                                      | Ø 21.6mm                      |

■ TECHNICAL DATA

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| Rated Voltage         | 200kV <sub>DC</sub>                                   |
| Test Voltage          | 220kV <sub>DC</sub> / 10min<br>Jacket Spark Test: 5kV |
| Impedance             | typ. 64Ω                                              |
| Capacitance           | typ. 102pF/m                                          |
| Operating Temperature | -51°C - +60°C                                         |
| Weight                | ca. 0.551kg/m                                         |
| Color                 | black                                                 |
| Status                | S (Special)                                           |

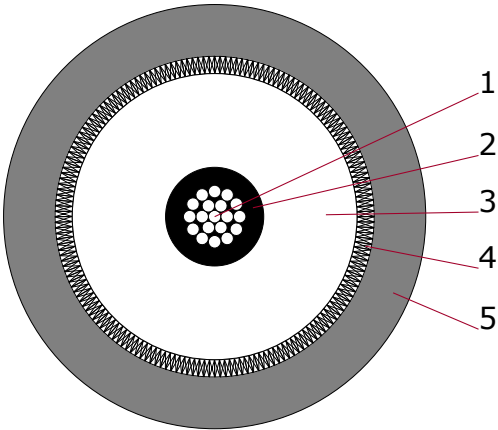




## 2149SVJ

60kV<sub>DC</sub> - AWG18 - LDHMW PE DIELECTRIC

### CONSTRUCTION



|               |                                         |                                 |
|---------------|-----------------------------------------|---------------------------------|
| 1. Conductor  | AWG18 Cu/Sn (19xAWG30 t.p.c.)           | 0.97mm <sup>2</sup><br>Ø 1.24mm |
| 2. Semicon    | Semiconductive PE                       | Ø 2mm                           |
| 3. Dielectric | LDHMW PE                                | Ø 5.8mm                         |
| 4. Braid      | Cu/Sn (6x16x AWG34 t.p.c.) 86% Coverage | Ø 6.5mm                         |
| 5. Jacket     | PVC                                     | Ø 8.6mm                         |

### TECHNICAL DATA

|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 60kV <sub>DC</sub> |
| Impedance             | typ. 50Ω           |
| Capacitance           | typ. 121pF/m       |
| min. Bend Radius      | 64mm (fixed)       |
| Operating Temperature | -51°C - +60°C      |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.075kg/m      |
| Color                 | black              |
| Status                | P (Preferred)      |

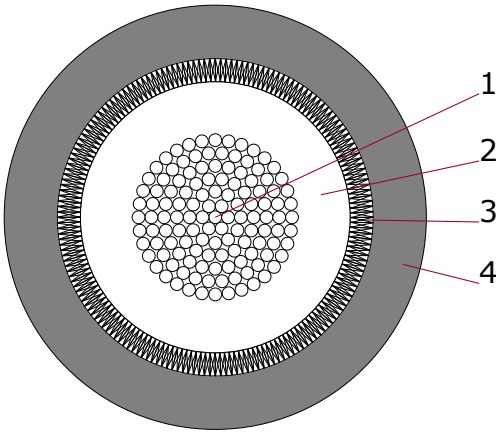
See also HSC-60-1PSUA-2 with outer semicon



## 2232

10kV<sub>DC</sub> - AWG6 - LDHMW PE DIELECTRIC

■ CONSTRUCTION



|               |                                         |                                |
|---------------|-----------------------------------------|--------------------------------|
| 1. Conductor  | AWG6 Cu/Sn (133xAWG27 t.p.c.)           | 13.6mm <sup>2</sup><br>Ø 5.3mm |
| 2. Dielectric | LDHMW PE                                | Ø 7.6mm                        |
| 3. Braid      | Cu/Sn (6x24x AWG30 t.p.c.) 95% Coverage | Ø 8.9mm                        |
| 4. Jacket     | TPR                                     | Ø 12.7mm                       |

■ TECHNICAL DATA

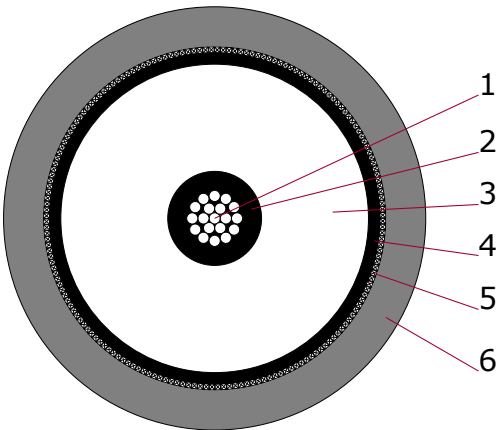
|                       |                    |
|-----------------------|--------------------|
| Rated Voltage         | 10kV <sub>DC</sub> |
| Impedance             | typ. 14Ω           |
| Capacitance           | typ. 358pF/m       |
| min. Bend Radius      | 152mm (fixed)      |
| Operating Temperature | -51°C - +60°C      |
| RoHS Compliant        | Yes                |
| Weight                | ca. 0.298kg/m      |
| Color                 | black              |
| Status                | S (Special)        |



## 2243

125kV<sub>DC</sub> / 40kV<sub>AC</sub> - AWG8 - EPR DIELECTRIC

### CONSTRUCTION



|               |                                         |                             |
|---------------|-----------------------------------------|-----------------------------|
| 1. Conductor  | AWG8 Cu/Sn (49xAWG25 t.p.c.)            | 8mm <sup>2</sup><br>Ø 3.6mm |
| 2. Semicon    | Semiconductive EPR                      | Ø 5.6mm                     |
| 3. Dielectric | EPR                                     | Ø 15.7mm                    |
| 4. Semicon    | Semiconductive Tape                     | Ø 16.1mm                    |
| 5. Braid      | Cu/Sn (7x24x AWG30 t.p.c.) 90% Coverage | Ø 17.1mm                    |
| 6. Jacket     | PVC                                     | Ø 19.7mm                    |

### TECHNICAL DATA

|                                                                  |                                          |
|------------------------------------------------------------------|------------------------------------------|
| Rated Voltage                                                    | 125kV <sub>DC</sub> / 40kV <sub>AC</sub> |
| Impedance                                                        | typ. 46Ω                                 |
| Capacitance                                                      | typ. 155pF/m                             |
| min. Bend Radius                                                 | 127mm (fixed)                            |
| Operating Temperature                                            | -51°C - +80°C                            |
| RoHS Compliant                                                   | Yes                                      |
| Weight                                                           | ca. 0.55kg/m                             |
| Color                                                            | black                                    |
| Status                                                           | P (Preferred)                            |
| The cable is compatible with the high voltage connector S1105-T. |                                          |



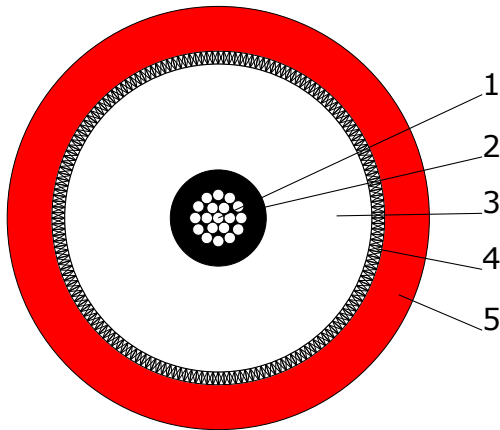
## HPW-40S-0.5-A-2

40kV<sub>DC</sub> - AWG20 - PE-X DIELECTRIC

### PRODUCT DESCRIPTION

40kV<sub>DC</sub> coaxial high voltage cable. It is fully compatible with our HS Series high voltage connectors (HS11, HS21, HS31, HS40). Halogen free, flame retardant, low smoke (LSZH). RoHS / REACH compliant. The jacket is resistant against oil, hydrolysis and microbes.

### CONSTRUCTION



|                      |                                           |                                |
|----------------------|-------------------------------------------|--------------------------------|
| <b>1. Conductor</b>  | AWG20 Cu/Sn (19xAWG33 t.p.c.)             | 0.5mm <sup>2</sup><br>Ø 0.92mm |
| <b>2. Semicon</b>    | Semiconductive PE                         | Ø 1.5mm<br>±0.05mm             |
| <b>3. Dielectric</b> | PE-X                                      | Ø 4.8mm<br>± 0.1mm             |
| <b>4. Braid</b>      | Cu/Sn (16x 8x 0.1mm t.p.c.) ≥85% Coverage | Ø 5.2mm<br>± 0.1mm             |
| <b>5. Jacket</b>     | PUR                                       | Ø 6.6mm<br>± 0.2mm             |

### TECHNICAL DATA

|                                    |                                                                                           |
|------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Rated Voltage</b>               | 40kV <sub>DC</sub>                                                                        |
| <b>Test Voltage</b>                | 64kV <sub>DC</sub> / 24h (conductor / braid)<br>25kV <sub>AC</sub> (Spark Test core)      |
| <b>Conductor Resistance @ 20°C</b> | ≤ 40Ω/km                                                                                  |
| <b>Braid Resistance @ 20°C</b>     | ≤ 30Ω/km                                                                                  |
| <b>Isolation Resistance</b>        | > 10GΩ/km                                                                                 |
| <b>Impedance</b>                   | typ. 60Ω                                                                                  |
| <b>Capacitance</b>                 | typ. 109pF/m                                                                              |
| <b>min. Bend Radius</b>            | 130mm (moving), 66mm (fixed)                                                              |
| <b>Operating Temperature</b>       | -20°C - +80°C                                                                             |
| <b>Oil Resistance</b>              | according to DIN EN 50290-2-22<br>Oil resistance test 60°C according to UL1581 Tab.50.182 |
| <b>Flame Retardance</b>            | according to DIN EN 60332-2-2<br>Horizontal flame test according to UL2556                |
| <b>Halogen-free</b>                | Yes (LSZH)                                                                                |
| <b>RoHS Compliant</b>              | Yes                                                                                       |
| <b>Weight</b>                      | ca. 0.05kg/m                                                                              |
| <b>Cu-Weight</b>                   | ca. 0.02kg/m                                                                              |
| <b>Color</b>                       | red (~RAL3000)                                                                            |
| <b>Status</b>                      | Y (Preliminary)                                                                           |

Intended for fixed installation; suitable for flexible wiring to a limited extent.

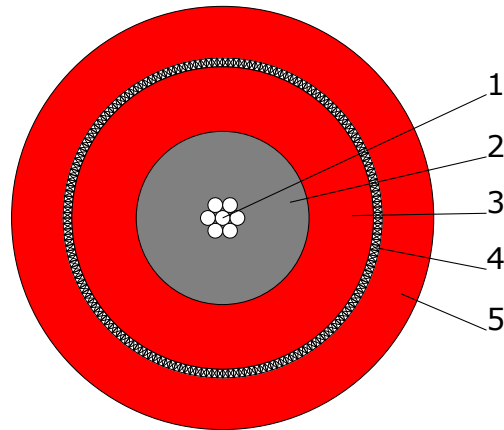
## HPW-50S-0.34-A-2

50kV<sub>DC</sub> / 6kV<sub>AC</sub> - AWG22 - PE-X DIELECTRIC

### PRODUCT DESCRIPTION

50kV<sub>DC</sub> coaxial high voltage cable. It is suitable as a direct replacement for the discontinued shielded TV-50 cable regarding electrical and mechanical properties. RoHS / REACH compliant.

### CONSTRUCTION



|                 |                                           |                                 |
|-----------------|-------------------------------------------|---------------------------------|
| 1. Conductor    | AWG22 Cu/Sn (7xAWG30 t.p.c.)              | 0.34mm <sup>2</sup><br>Ø 0.76mm |
| 2. Dielectric   | PE-X                                      | Ø 2.98mm<br>± 0.10mm            |
| 3. Inner Jacket | PVC red                                   | Ø 5.2mm<br>± 0.1mm              |
| 4. Braid        | Helically wound Cu/Sn (t.p.c.) wires (mm) | Ø 5.5mm                         |
| 5. Jacket       | PVC                                       | Ø 7.28mm<br>± 0.20mm            |

### TECHNICAL DATA

|                             |                                                        |
|-----------------------------|--------------------------------------------------------|
| Rated Voltage               | 50kV <sub>DC</sub> / 6kV <sub>AC</sub>                 |
| Test Voltage                | 60kV <sub>DC</sub> / 1min<br>12kV <sub>AC</sub> / 1min |
| Conductor Resistance @ 20°C | ≤ 55.9Ω/km                                             |
| Braid Resistance            | ≤ 12.5Ω/km                                             |
| min. Bend Radius            | 40mm (fixed)                                           |
| Operating Temperature       | -15°C - +80°C                                          |
| Weight                      | ca. 0.074kg/m                                          |
| Color                       | red                                                    |
| Status                      | Y (Preliminary)                                        |



## HRG58-20-2

20kV<sub>DC</sub> - 0.50mm<sup>2</sup> - PE-X DIELECTRIC

### PRODUCT DESCRIPTION

20kV<sub>DC</sub> coaxial high voltage cable suitable to replace standard 50Ω RG58 coaxial cable in high voltage applications.

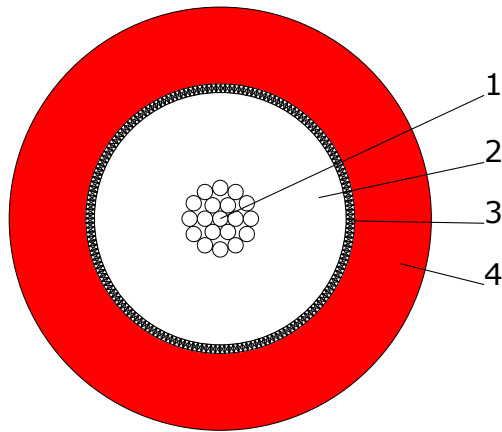
It is fully compatible with SHV, MHV and Kings® type coaxial connectors.

Halogen free, flame retardant, low smoke (LSZH). RoHS / REACH compliant.

The jacket is resistant against oil, hydrolysis and microbes.

The cable is available on cardboard reels (150m) and wooden reels (1000m).

### CONSTRUCTION



|                      |                                    |                                 |
|----------------------|------------------------------------|---------------------------------|
| <b>1. Conductor</b>  | Cu/Sn (19xAWG33 t.p.c.)            | 0.50mm <sup>2</sup><br>Ø 0.95mm |
| <b>2. Dielectric</b> | PE-X                               | Ø 2.95mm<br>± 0.05mm            |
| <b>3. Braid</b>      | Cu/Sn (0.10mm t.p.c.) 85% Coverage | Ø 3.35mm<br>± 0.1mm             |
| <b>4. Jacket</b>     | TPE-U (PUR)                        | Ø 4.95mm<br>± 0.15mm            |

### TECHNICAL DATA

|                                    |                                                                                       |
|------------------------------------|---------------------------------------------------------------------------------------|
| <b>Rated Voltage</b>               | 20kV <sub>DC</sub>                                                                    |
| <b>Test Voltage</b>                | 41kV <sub>DC</sub> / 60s (conductor / braid)<br>15kV <sub>AC</sub> (Spark Test, core) |
| <b>Conductor Resistance @ 20°C</b> | ≤ 40Ω/km                                                                              |
| <b>Impedance</b>                   | typ. 50Ω                                                                              |
| <b>Capacitance</b>                 | typ. 102pF/m                                                                          |
| <b>min. Bend Radius</b>            | 74mm (moving), 37mm (fixed)                                                           |
| <b>Operating Temperature</b>       | -20°C - +105°C                                                                        |
| <b>Flame Retardance</b>            | according to DIN EN 60332-2-1 (60s) and DIN EN 60332-2-2 (20s)                        |
| <b>Halogen-free</b>                | Yes (LSZH)                                                                            |
| <b>RoHS Compliant</b>              | Yes                                                                                   |
| <b>Weight</b>                      | ca. 0.032kg/m                                                                         |
| <b>Cu-Weight</b>                   | ca. 0.014kg/m                                                                         |
| <b>Color</b>                       | red                                                                                   |
| <b>Status</b>                      | P (Preferred)                                                                         |

Intended for fixed installation; suitable for flexible wiring to a limited extent.



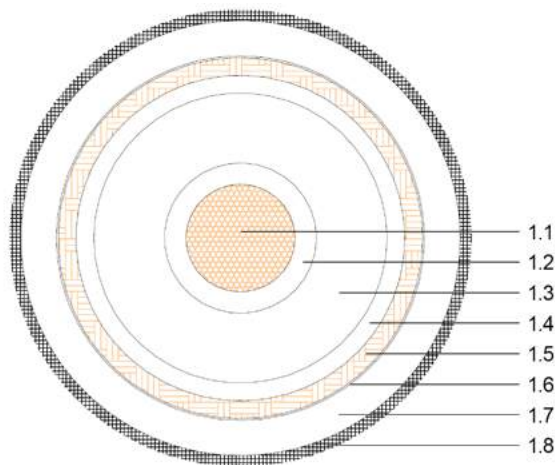
## HSC-17-1SSSOB-2

17kV<sub>AC</sub> – 6mm<sup>2</sup> - SHIELDED SILICONE DIELECTRIC HIGH VOLTAGE CABLE

### PRODUCT DESCRIPTION

17kV<sub>AC</sub> shielded high voltage cable with semiconductive layer around the conductor, silicone dielectric, semiconductive layer around the dielectric, braid, silicone jacket and a protective jacket made of woven, impregnated polyester yarn. The shield is intended for EMC purpose. The area equivalent of the shield is not suitable to carry the full operating current of the inner conductor.

### CONSTRUCTION



|                        |                                         |                             |
|------------------------|-----------------------------------------|-----------------------------|
| 1.1. Conductor         | Cu/Sn (84x0.30mm, t.p.c.)               | 6mm <sup>2</sup><br>Ø 3.2mm |
| 1.2. Semicon           | Semiconductive Silicone                 | Ø 4.3mm                     |
| 1.3. Dielectric        | Silicone                                | Ø 8.2mm                     |
| 1.4. Semicon           | Semiconductive Silicone                 | Ø 9.2mm                     |
| 1.5. Braid             | Cu/Sn (0.25mm t.p.c.)<br>≥ 50% Coverage | Ø 10.2mm                    |
| 1.6. Tape              | PTFE-Tape                               |                             |
| 1.7. Jacket            | Silicone                                | Ø 12.3mm                    |
| 1.8. Protective Jacket | impregnated Polyester                   | Ø 12.9mm<br>± 0.6mm         |

### TECHNICAL DATA

|                             |                              |
|-----------------------------|------------------------------|
| Rated Voltage               | 17kV <sub>AC</sub>           |
| Test Voltage                | t.b.s.                       |
| Conductor Resistance @ 20°C | ≤ 3.39Ω/km                   |
| Capacitance                 | t.b.s.                       |
| min. Bend Radius            | 97mm (fixed), 194mm (moving) |
| Operating Temperature       | -50°C - +150°C               |
| RoHS Compliant              | Yes                          |
| Weight                      | 0.222kg/m                    |
| Cu-Weight                   | 0.095kg/m                    |
| Color                       | red                          |
| Status                      | S (Special)                  |



## HSC-50-1S1SUA-0

50kV<sub>DC</sub> / 15kV<sub>AC</sub> - AWG16 - SILICONE DIELECTRIC

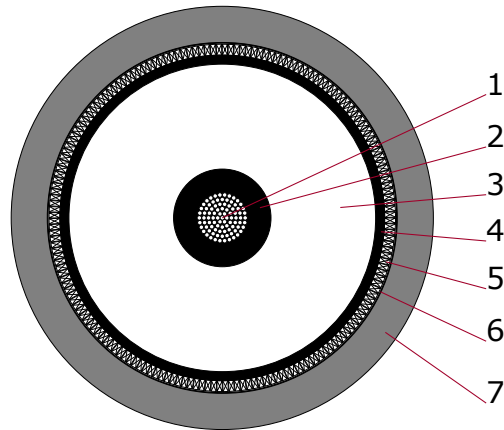
### PRODUCT DESCRIPTION

50kV<sub>DC</sub> / 15kV<sub>AC</sub> shielded high voltage cable optimized for low partial discharge, robustness and high flexibility even at low ambient temperatures.

Semiconductive layers around the conductor and the inner dielectric assure excellent PD behavior.

Silicone dielectric and a robust TPE-U / Polyurethane jacket.

### CONSTRUCTION



|                      |                                           |                                 |
|----------------------|-------------------------------------------|---------------------------------|
| <b>1. Conductor</b>  | AWG16 Cu/Sn (105x0.127mm t.p.c.)          | 1.33mm <sup>2</sup><br>Ø 1.53mm |
| <b>2. Semicon</b>    | Semiconductive Silicone                   | Ø 2.7mm                         |
| <b>3. Dielectric</b> | Silicone                                  | Ø 8.5mm                         |
| <b>4. Semicon</b>    | Semiconductive PTFE Tape                  | Ø 9.0mm                         |
| <b>5. Braid</b>      | Cu/Sn (6x24x 0.15mm t.p.c.) ≥85% Coverage | Ø 9.6mm                         |
| <b>6. Tape</b>       | Nonwoven Separator Tape                   | Ø 9.7mm                         |
| <b>7. Jacket</b>     | TPE-U                                     | Ø 11.7mm<br>± 0.5mm             |

### TECHNICAL DATA

|                                                     |                                                             |
|-----------------------------------------------------|-------------------------------------------------------------|
| <b>Rated Voltage</b>                                | 50kV <sub>DC</sub> / 15kV <sub>AC</sub>                     |
| <b>Test Voltage</b> (Conductor – Braid)<br>(Jacket) | 80kV <sub>DC</sub> / 1min<br>5kV <sub>AC</sub> (Spark Test) |
| <b>Partial Discharge Level</b>                      | ≤ 20pC, U <sub>PD</sub> = 8kV <sub>AC</sub>                 |
| <b>Conductor Resistance @ 20°C</b>                  | ≤ 14.6Ω/km                                                  |
| <b>Braid Resistance</b>                             | ≤ 16Ω/km                                                    |
| <b>Capacitance</b>                                  | typ. 150pF/m                                                |
| <b>min. Bend Radius</b>                             | 120mm (moving), 60mm (fixed)                                |
| <b>Operating Temperature</b>                        | -40°C - +90°C                                               |
| <b>RoHS Compliant</b>                               | Yes                                                         |
| <b>Weight</b>                                       | t.b.s. kg/m                                                 |
| <b>Cu-Weight</b>                                    | t.b.s. kg/m                                                 |
| <b>Color</b>                                        | black                                                       |
| <b>Status</b>                                       | Y (Preliminary)                                             |

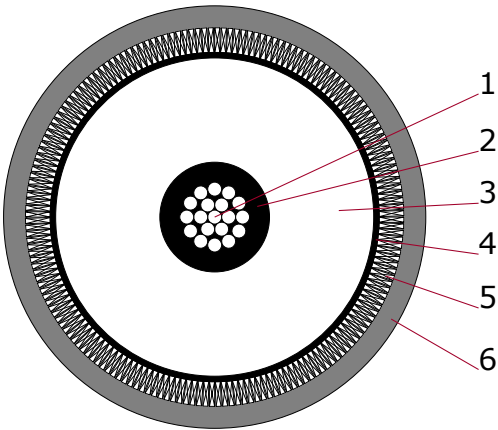




## HSC-60-1PSUA-2

60kV<sub>DC</sub> / 20kV<sub>AC</sub> - AWG18 - LDHMW PE DIELECTRIC

### CONSTRUCTION



|               |                                   |                                 |
|---------------|-----------------------------------|---------------------------------|
| 1. Conductor  | AWG18 Cu/Sn (19xAWG30 t.p.c.)     | 0.97mm <sup>2</sup><br>Ø 1.24mm |
| 2. Semicon    | Semiconductive PE (black)         | Ø 2mm                           |
| 3. Dielectric | LDHMW PE                          | Ø 5.8mm                         |
| 4. Semicon    | Semiconductive Tape               | Ø 6mm                           |
| 5. Braid      | Cu/Sn (AWG34 t.p.c.) 85% Coverage | Ø 6.9mm                         |
| 6. Jacket     | TPE-U                             | Ø 7.7mm<br>± 0.3mm              |

### TECHNICAL DATA

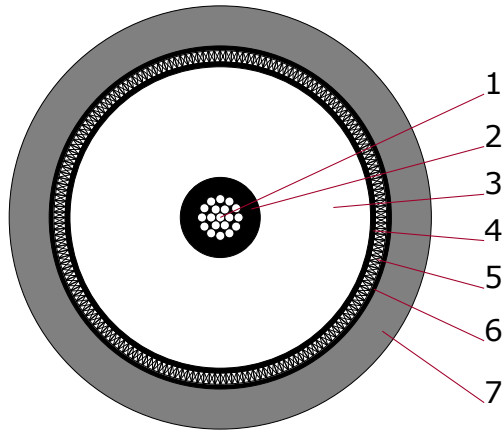
|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| Rated Voltage         | 60kV <sub>DC</sub> / 20kV <sub>AC</sub>                                                    |
| Test Voltage          | 70kV <sub>DC</sub> / 10min (conductor / braid)<br>2.5kV <sub>AC</sub> (Spark Test, jacket) |
| Capacitance           | typ. 121pF/m                                                                               |
| min. Bend Radius      | 90mm (fixed)                                                                               |
| Operating Temperature | -40°C - +60°C                                                                              |
| RoHS Compliant        | Yes                                                                                        |
| Weight                | ca. 0.077kg/m                                                                              |
| Color                 | red                                                                                        |
| Status                | P (Preferred)                                                                              |



## HSC-100-1PSUA-2

100kV<sub>DC</sub> / 30kV<sub>AC</sub> - AWG16 - LDHMD PE DIELECTRIC

### CONSTRUCTION



|               |                                    |                     |
|---------------|------------------------------------|---------------------|
| 1. Conductor  | AWG16 Cu/Sn (19xAWG29 t.p.c.)      | 1.2mm <sup>2</sup>  |
| 2. Semicon    | Semiconductive PE (black)          | Ø 2.5mm             |
| 3. Dielectric | LDHMD PE                           | Ø 9.4mm<br>± 0.3mm  |
| 4. Semicon    | Semiconductive Tape                |                     |
| 5. Braid      | Cu/Sn (0.2mm t.p.c.) ≥85% Coverage | Ø 10.4mm            |
| 6. Tape       | Nonwoven material                  |                     |
| 7. Jacket     | TPE-U                              | Ø 13.2mm<br>± 0.6mm |

### TECHNICAL DATA

|                       |                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------|
| Rated Voltage         | 100kV <sub>DC</sub> / 30kV <sub>AC</sub>                                                    |
| Test Voltage          | 110kV <sub>DC</sub> / 10min (conductor / braid)<br>2.0kV <sub>AC</sub> (Spark Test, jacket) |
| Capacitance           | typ. 100pF/m                                                                                |
| min. Bend Radius      | 200mm (fixed)                                                                               |
| Operating Temperature | -40°C - +60°C                                                                               |
| RoHS Compliant        | Yes                                                                                         |
| Weight                | ca. 0.21kg/m                                                                                |
| Color                 | red                                                                                         |
| Status                | E (Prospective)                                                                             |



## HSC-125-1E1SAB-2

8.7/15kV<sub>AC</sub> – 40kV<sub>AC</sub>/125kV<sub>DC</sub> – EPR DIELECTRIC

### PRODUCT DESCRIPTION

Shielded high voltage cable optimized for low partial discharge, robustness and flexibility. Halogen free design with EPR dielectric and a robust flame retardant EVA jacket. Semiconductive layers around the center conductor and the dielectric assure excellent PD behavior.

This cable is intended and designed for use as flexible wiring in switchgears with protected installation or for short term measurement applications.

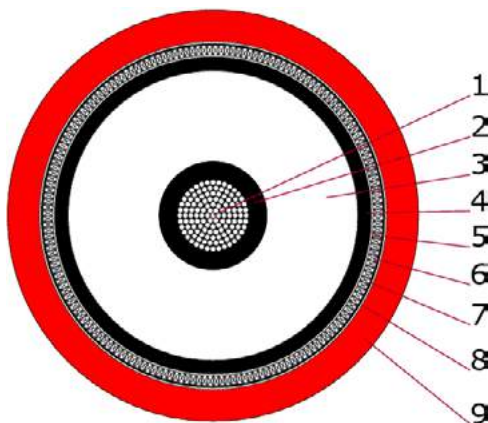
In case of switchgear wiring the permissible operating voltage is 8.7/15kV<sub>AC</sub>. The common rules for installation and use must be followed.

For short term testing/measurement applications the operating voltage is up to 40kV<sub>AC</sub> or up to 125kV<sub>DC</sub> respectively.

The following must be taken into account: insulation wall thickness and test voltage are not in line with common standards requirements. Special care and attention is necessary when using the cable.

Basic specification based on ICEA S-93-639 / UL 1072.

### CONSTRUCTION



|                     |                                               |                                 |
|---------------------|-----------------------------------------------|---------------------------------|
| <b>1 Conductor</b>  | Cu/Sn (t.p.c.)<br>(class 5 acc. DIN EN 60228) | 10mm <sup>2</sup><br>Ø 4.0mm    |
| <b>2 Semicon</b>    | Semiconductive EPR                            | Ø 5.6mm                         |
| <b>3 Dielectric</b> | EPR 3GI3                                      | Ø 15.0mm                        |
| <b>4 Semicon</b>    | Semiconductive NBR Rubber                     | Ø 16.4mm                        |
| <b>5 Tape</b>       | Semiconductive Tape                           |                                 |
| <b>6 Braid</b>      | Cu/Sn (t.p.c.)                                | Ø 17.6mm<br>> 10mm <sup>2</sup> |
| <b>7 Tape</b>       | PET Tape                                      |                                 |
| <b>8 Tape</b>       | Nonwoven Separator Tape                       |                                 |
| <b>9 Jacket</b>     | EVA EM8                                       | Ø 21.3mm<br>± 1.0mm             |

### TECHNICAL DATA

|                                              |                                                          |
|----------------------------------------------|----------------------------------------------------------|
| <b>Rated Voltage (continuous use)</b>        | 8.7/15kV <sub>AC</sub> U <sub>0</sub> /U                 |
| <b>Maximum Voltage (phase - phase)</b>       | 15.75kV <sub>AC</sub>                                    |
| <b>Rated Voltage (short term use)</b>        | 125kV <sub>DC</sub><br>40kV <sub>AC</sub>                |
| <b>Test Voltage (routine test)</b>           | 35kV <sub>AC</sub> / 5min                                |
| <b>Partial Discharge Test (routine test)</b> | ≤ 5pC @ 20kV <sub>AC</sub>                               |
| <b>Test Voltage (type test)</b>              | 160kV <sub>DC</sub> / 15min<br>55kV <sub>AC</sub> / 5min |
| <b>Insulation Resistance</b>                 | > 20MΩ*km                                                |

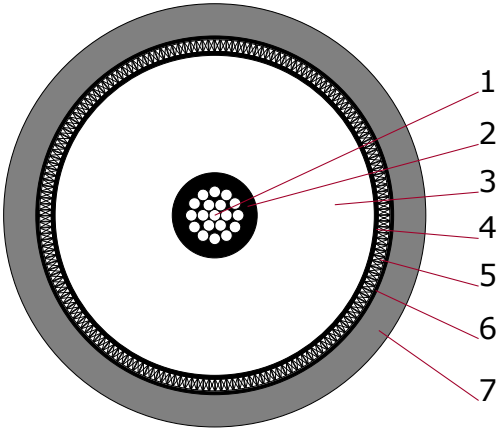
|                                          |                                                                                                                                                                               |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Capacitance (Conductor – Braid I)</b> | t.b.s.                                                                                                                                                                        |
| <b>Conductor Resistance @ 20°C</b>       | t.b.s. Ω/km                                                                                                                                                                   |
| <b>Braid Resistance (Braid I)</b>        | t.b.s. mΩ/m                                                                                                                                                                   |
| <b>Braid Resistance (Braid II)</b>       | t.b.s. mΩ/m                                                                                                                                                                   |
| <b>max. Permissible Pulling Force</b>    | 15N/mm <sup>2</sup>                                                                                                                                                           |
| <b>min. Bend Radius</b>                  | 213mm (during installation or occasional movements in operation)<br>213mm (stationary – measurement use)<br>128mm (stationary – continuous use with max. 15kV <sub>AC</sub> ) |
| <b>Operating Temperature</b>             | -20°C - +60°C (moving)<br>-40°C - +80°C (stationary)                                                                                                                          |
| <b>Oil Resistance</b>                    | according to DIN EN 60811-404                                                                                                                                                 |
| <b>Flame propagation, single cable</b>   | according to DIN EN 60332-1-2                                                                                                                                                 |
| <b>Weight</b>                            | 0.620kg/m                                                                                                                                                                     |
| <b>Cu-Weight</b>                         | 0.212kg/m                                                                                                                                                                     |
| <b>Color</b>                             | red                                                                                                                                                                           |
| <b>RoHS Compliant</b>                    | Yes                                                                                                                                                                           |
| <b>Halogen Free</b>                      | Yes                                                                                                                                                                           |
| <b>Status</b>                            | Y (Preliminary)                                                                                                                                                               |



## HSC-150-1PSUA-2

150kV<sub>DC</sub> / 45kV<sub>AC</sub> - AWG12 - LDHMW PE DIELECTRIC

### CONSTRUCTION



|               |                                     |                     |
|---------------|-------------------------------------|---------------------|
| 1. Conductor  | AWG12 Cu/Sn (19xAWG25 t.p.c.)       | 3.1mm <sup>2</sup>  |
| 2. Semicon    | Semiconductive PE (black)           | Ø 3.3mm             |
| 3. Dielectric | LDHMW PE                            | Ø 12.4mm<br>± 0.3mm |
| 4. Semicon    | Semiconductive Tape                 |                     |
| 5. Braid      | Cu/Sn (0.25mm t.p.c.) ≥85% Coverage | Ø 13.6mm            |
| 6. Tape       | Nonwoven material                   |                     |
| 7. Jacket     | TPE-U                               | Ø 16.4mm<br>± 0.8mm |

### TECHNICAL DATA

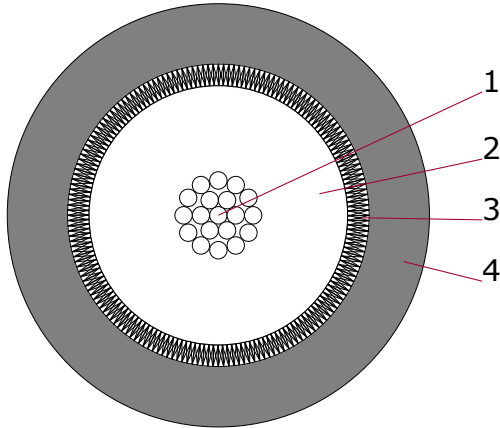
|                       |                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------|
| Rated Voltage         | 150kV <sub>DC</sub> / 45kV <sub>AC</sub>                                                    |
| Test Voltage          | 165kV <sub>DC</sub> / 10min (conductor / braid)<br>2.0kV <sub>AC</sub> (Spark Test, jacket) |
| Capacitance           | typ. 95pF/m                                                                                 |
| min. Bend Radius      | 250mm (fixed)                                                                               |
| Operating Temperature | -40°C - +60°C                                                                               |
| RoHS Compliant        | Yes                                                                                         |
| Weight                | ca. 0.3kg/m                                                                                 |
| Color                 | red                                                                                         |
| Status                | E (Prospective)                                                                             |



## HSL-8S-0.75-B-2

8kV<sub>DC</sub> / 3kV<sub>AC</sub> - AWG18 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                   |                                 |
|---------------|-----------------------------------|---------------------------------|
| 1. Conductor  | AWG18 Cu/Sn (23xAWG32 t.p.c.)     | 0.75mm <sup>2</sup><br>Ø 1.16mm |
| 2. Dielectric | Silicone                          | Ø 3mm                           |
| 3. Braid      | Cu/Sn (AWG36 t.p.c.) 85% Coverage | Ø 3.5mm                         |
| 4. Jacket     | Silicone                          | Ø 4.9mm<br>± 0.2mm              |

### TECHNICAL DATA

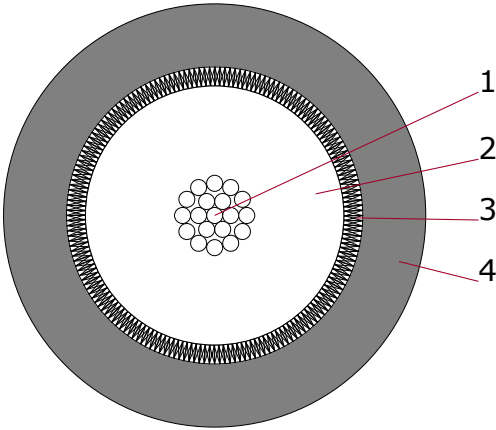
|                            |                                                            |
|----------------------------|------------------------------------------------------------|
| Rated Voltage              | 8kV <sub>DC</sub> / 3kV <sub>AC</sub>                      |
| Test Voltage               | 20kV <sub>DC</sub> or 8kV <sub>AC</sub> (Spark Test, core) |
| Conductor Resistance @20°C | ≤ 26.7Ω/km                                                 |
| Capacitance                | typ. 170pF/m                                               |
| min. Bend Radius           | 74mm (moving), 37mm (fixed)                                |
| Operating Temperature      | -50°C - +150°C                                             |
| RoHS Compliant             | Yes                                                        |
| Weight                     | ca. 0.044kg/m                                              |
| Cu-Weight                  | ca. 0.021kg/m                                              |
| Color                      | red                                                        |
| Status                     | P (Preferred)                                              |



## HSL-8S-1.5-A-2

8kV<sub>DC</sub> / 3kV<sub>AC</sub> - AWG16 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                   |                               |
|---------------|-----------------------------------|-------------------------------|
| 1. Conductor  | AWG16 Cu/Sn (28xAWG30 t.p.c.)     | 1.5mm <sup>2</sup><br>Ø 1.6mm |
| 2. Dielectric | Silicone                          | Ø 4.1mm                       |
| 3. Braid      | Cu/Sn (AWG34 t.p.c.) 80% Coverage | Ø 4.7mm                       |
| 4. Jacket     | Silicone                          | Ø 6.7mm<br>± 0.2mm            |

### TECHNICAL DATA

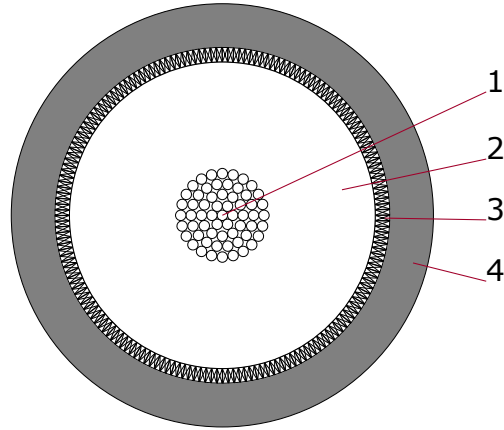
|                            |                                       |
|----------------------------|---------------------------------------|
| Rated Voltage              | 8kV <sub>DC</sub> / 3kV <sub>AC</sub> |
| Test Voltage               | 6kV <sub>AC</sub> (Spark Test, core)  |
| Conductor Resistance @20°C | ≤ 13.7Ω/km                            |
| Capacitance                | typ. 200pF/m                          |
| min. Bend Radius           | 100mm (moving), 50mm (fixed)          |
| Operating Temperature      | -50°C - +150°C                        |
| RoHS Compliant             | Yes                                   |
| Weight                     | ca. 0.071kg/m                         |
| Cu-Weight                  | ca. 0.033kg/m                         |
| Color                      | red                                   |
| Status                     | P (Preferred)                         |



## HSL-15S-6-A-9

15kV<sub>DC</sub> / 6kV<sub>AC</sub> - AWG10 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                    |                                |
|---------------|------------------------------------|--------------------------------|
| 1. Conductor  | AWG10 Cu/Sn (84x0.301mm t.p.c.)    | 6.0mm <sup>2</sup><br>Ø 3.17mm |
| 2. Dielectric | Silicone                           | Ø 8.4mm                        |
| 3. Braid      | Cu/Sn (AWG32 t.p.c.) ≥90% Coverage | Ø 9.2mm                        |
| 4. Jacket     | Silicone                           | Ø 11.6mm<br>± 0.6mm            |

### TECHNICAL DATA

|                            |                                                                                        |
|----------------------------|----------------------------------------------------------------------------------------|
| Rated Voltage              | 15kV <sub>DC</sub> / 6kV <sub>AC</sub>                                                 |
| Test Voltage               | 40kV <sub>DC</sub> / 1min (conductor / braid)<br>12kV <sub>AC</sub> (Spark Test, core) |
| Conductor Resistance @20°C | ≤ 3.39Ω/km                                                                             |
| Capacitance                | typ. 185pF/m                                                                           |
| min. Bend Radius           | 174mm (moving), 87mm (fixed)                                                           |
| Operating Temperature      | -50°C - +180°C                                                                         |
| RoHS Compliant             | Yes                                                                                    |
| Weight                     | ca. 0.23kg/m                                                                           |
| Cu-Weight                  | ca. 0.119kg/m                                                                          |
| Color                      | white                                                                                  |
| Status                     | P (Preferred)                                                                          |

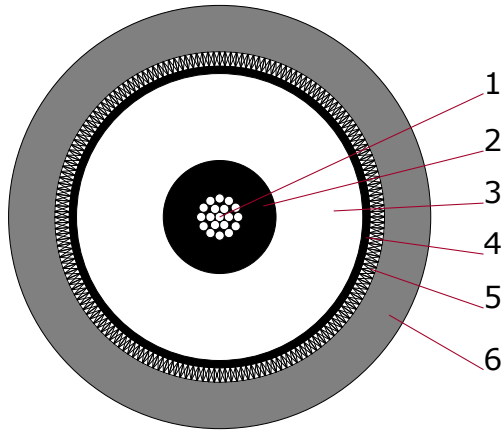




## HSL-20-0.38-SS-C-0

20kV<sub>DC</sub> / 6.6kV<sub>AC</sub> - AWG22 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                     |                                 |
|---------------|-------------------------------------|---------------------------------|
| 1. Conductor  | AWG22 Cu/Sn (19xAWG34 t.p.c.)       | 0.38mm <sup>2</sup><br>Ø 0.78mm |
| 2. Semicon    | Semiconductive Silicone             | Ø 2.0mm<br>± 0.1mm              |
| 3. Dielectric | Silicone                            | Ø 5.0mm<br>± 0.2mm              |
| 4. Semicon    | Semiconductive Tape                 | Ø 5.2mm                         |
| 5. Braid      | Cu/Sn (0.13mm t.p.c.) ≥85% Coverage | Ø 5.7mm<br>± 0.2mm              |
| 6. Jacket     | Silicone                            | Ø 7.3mm<br>± 0.2mm              |

### TECHNICAL DATA

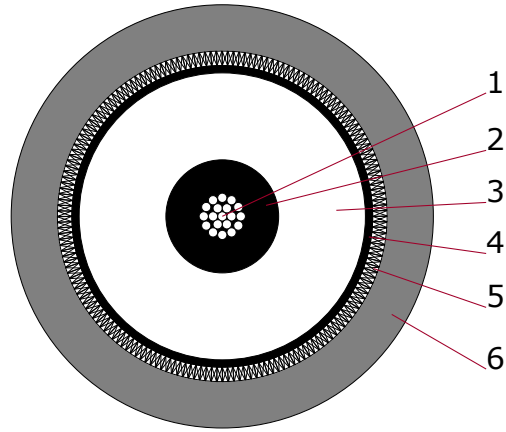
|                             |                                                                                                                                    |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Rated Voltage               | 20kV <sub>DC</sub> / 6.6kV <sub>AC</sub>                                                                                           |
| Test Voltage                | 50kV <sub>DC</sub> / 1min (conductor / braid)<br>18kV <sub>AC</sub> (Spark Test, core)<br>2.5kV <sub>AC</sub> (Spark Test, jacket) |
| Conductor Resistance @ 20°C | ≤ 52.2Ω/km                                                                                                                         |
| Braid Resistance            | ≤ 10.2Ω/km                                                                                                                         |
| Impedance                   | typ. 60Ω                                                                                                                           |
| Capacitance                 | typ. 175pF/m                                                                                                                       |
| min. Bend Radius            | 73mm (moving), 55mm (fixed)                                                                                                        |
| Operating Temperature       | -50°C - +140°C                                                                                                                     |
| RoHS Compliant              | Yes                                                                                                                                |
| Weight                      | ca. 0.071kg/m                                                                                                                      |
| Cu-Weight                   | ca. 0.023kg/m                                                                                                                      |
| Color                       | black                                                                                                                              |
| Status                      | 0 (Obsolete)                                                                                                                       |



## HSL-20-0.38-SS-D-0

20kV<sub>DC</sub> / 6.6kV<sub>AC</sub> - AWG22 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                     |                                 |
|---------------|-------------------------------------|---------------------------------|
| 1. Conductor  | AWG22 Cu/Ag (19xAWG34 s.p.c.)       | 0.38mm <sup>2</sup><br>Ø 0.78mm |
| 2. Semicon    | Semiconductive Silicone             | Ø 2.0mm<br>± 0.1mm              |
| 3. Dielectric | Silicone                            | Ø 5.0mm<br>± 0.2mm              |
| 4. Semicon    | Semiconductive Tape                 | Ø 5.2mm                         |
| 5. Braid      | Cu/Sn (0.13mm t.p.c.) ≥85% Coverage | Ø 5.7mm<br>± 0.2mm              |
| 6. Jacket     | Silicone                            | Ø 7.3mm<br>± 0.2mm              |

### TECHNICAL DATA

|                             |                                                                                                                                    |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Rated Voltage               | 20kV <sub>DC</sub> / 6.6kV <sub>AC</sub>                                                                                           |
| Test Voltage                | 50kV <sub>DC</sub> / 1min (conductor / braid)<br>18kV <sub>AC</sub> (Spark Test, core)<br>2.5kV <sub>AC</sub> (Spark Test, jacket) |
| Conductor Resistance @ 20°C | ≤ 48.6Ω/km                                                                                                                         |
| Braid Resistance            | ≤ 10.2Ω/km                                                                                                                         |
| Impedance                   | typ. 60Ω                                                                                                                           |
| Capacitance                 | typ. 175pF/m                                                                                                                       |
| min. Bend Radius            | 73mm (moving), 55mm (fixed)                                                                                                        |
| Operating Temperature       | -50°C - +140°C                                                                                                                     |
| RoHS Compliant              | Yes                                                                                                                                |
| Weight                      | ca. 0.071kg/m                                                                                                                      |
| Cu-Weight                   | ca. 0.023kg/m                                                                                                                      |
| Color                       | black                                                                                                                              |
| Status                      | P (Preferred)                                                                                                                      |

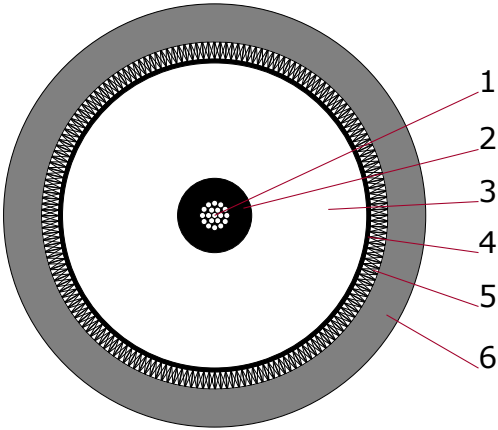
Also available with extruded outer semicon: HSL-20-0.38-SS-U1-0



## HSL-30-0.38-SS-C-0

30kV<sub>DC</sub> / 9kV<sub>AC</sub> - AWG22 - SILICONE DIELECTRIC

### CONSTRUCTION



|               |                                     |                                 |
|---------------|-------------------------------------|---------------------------------|
| 1. Conductor  | AWG22 Cu/Ag (19xAWG34 s.p.c.)       | 0.38mm <sup>2</sup><br>Ø 0.78mm |
| 2. Semicon    | Semiconductive Silicone             | Ø 1.95mm                        |
| 3. Dielectric | Silicone                            | Ø 8.0mm<br>± 0.25mm             |
| 4. Semicon    | Semiconductive Tape                 | Ø 8.2mm                         |
| 5. Braid      | Cu/Sn (0.15mm t.p.c.) ≥85% Coverage | Ø 9.1mm<br>± 0.3mm              |
| 6. Jacket     | Silicone                            | Ø 11.1mm<br>± 0.3mm             |

### TECHNICAL DATA

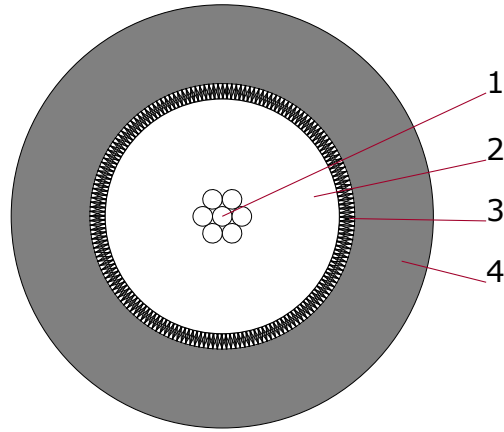
|                             |                                                                                                                                    |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Rated Voltage               | 30kV <sub>DC</sub> / 9kV <sub>AC</sub>                                                                                             |
| Test Voltage                | 80kV <sub>DC</sub> / 1min (conductor / braid)<br>25kV <sub>AC</sub> (Spark Test, core)<br>2.5kV <sub>AC</sub> (Spark Test, jacket) |
| Conductor Resistance @ 20°C | ≤ 52.17Ω/km                                                                                                                        |
| Impedance                   | typ. 45Ω                                                                                                                           |
| Capacitance                 | typ. 140pF/m                                                                                                                       |
| min. Bend Radius            | 111mm (moving), 84mm (fixed)                                                                                                       |
| Operating Temperature       | -50°C - +140°C                                                                                                                     |
| RoHS Compliant              | Yes                                                                                                                                |
| Weight                      | ca. 0.155kg/m                                                                                                                      |
| Cu-Weight                   | ca. 0.047kg/m                                                                                                                      |
| Color                       | black                                                                                                                              |
| Status                      | Y (Preliminary)                                                                                                                    |



## HTV-30S-22-0

30kV<sub>DC</sub> - AWG22 - PE-X DIELECTRIC  
 AWM STYLE 3873 - INTERNAL USE

### CONSTRUCTION



|               |                                                                           |                                 |
|---------------|---------------------------------------------------------------------------|---------------------------------|
| 1. Conductor  | AWG22 Cu/Sn (7xAWG30 Cu/Sn (compact tinned MGZ ≈ 15, bunched, re-tinned)) | 0.36mm <sup>2</sup><br>Ø 0.76mm |
| 2. Dielectric | PE-X                                                                      | Ø 3mm<br>± 0.1mm                |
| 3. Braid      | Cu/Sn (0.1mm t.p.c.) 85% Coverage                                         | Ø 3.5mm<br>± 0.1mm              |
| 4. Jacket     | PVC                                                                       | Ø 5.5mm<br>± 0.2mm              |

### TECHNICAL DATA

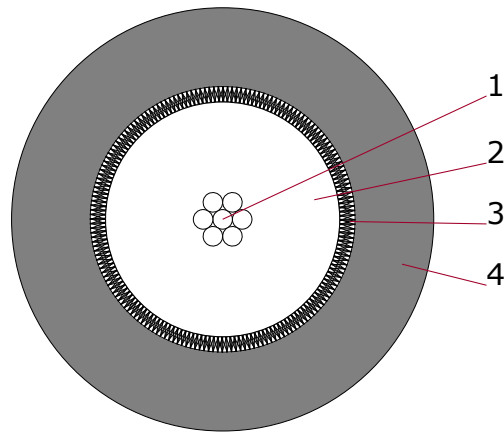
|                             |                                                                                                                                                                       |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated Voltage               | 30kV <sub>DC</sub>                                                                                                                                                    |
| Test Voltage                | 61kV <sub>DC</sub> / 1min (core / braid)<br>20kV <sub>AC</sub> (Spark Test, core)<br>Extended dielectric strength test 48kV <sub>DC</sub> / 24h available on request. |
| Conductor Resistance @ 20°C | ≤ 58Ω/km                                                                                                                                                              |
| Impedance                   | 60Ω                                                                                                                                                                   |
| Capacitance                 | typ. 105pF/m                                                                                                                                                          |
| min. Bend Radius            | 55mm (moving), 27mm (fixed)                                                                                                                                           |
| Operating Temperature       | -15°C - +105°C                                                                                                                                                        |
| Oil Resistance              | according to UL1581 Tab.50.182 ≤ 60°C                                                                                                                                 |
| Flame Retardance            | according to UL2556, Horizontal Flame Test                                                                                                                            |
| RoHS Compliant              | Yes                                                                                                                                                                   |
| Weight                      | ca. 0.039kg/m                                                                                                                                                         |
| Cu-Weight                   | ca. 0.012kg/m                                                                                                                                                         |
| Color                       | black                                                                                                                                                                 |
| Status                      | P (Preferred)                                                                                                                                                         |



## HTV-30S-22-2

30kV<sub>DC</sub> - AWG22 - PE-X DIELECTRIC  
 AWM STYLE3873 - INTERNAL USE

### CONSTRUCTION



|               |                                                                           |                                 |
|---------------|---------------------------------------------------------------------------|---------------------------------|
| 1. Conductor  | AWG22 Cu/Sn (7xAWG30 Cu/Sn (compact tinned MGZ ≈ 15, bunched, re-tinned)) | 0.36mm <sup>2</sup><br>Ø 0.76mm |
| 2. Dielectric | PE-X                                                                      | Ø 3.2mm<br>± 0.15mm             |
| 3. Braid      | Cu/Sn (0.1mm t.p.c.) 85% Coverage                                         | Ø 3.5mm<br>± 0.1mm              |
| 4. Jacket     | PVC                                                                       | Ø 5.5mm<br>± 0.2mm              |

### TECHNICAL DATA

|                            |                                                                                                                                                                       |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated Voltage              | 30kV <sub>DC</sub>                                                                                                                                                    |
| Test Voltage               | 61kV <sub>DC</sub> / 1min (core / braid)<br>20kV <sub>AC</sub> (Spark Test, core)<br>Extended dielectric strength test 48kV <sub>DC</sub> / 24h available on request. |
| Conductor Resistance @20°C | ≤ 58Ω/km                                                                                                                                                              |
| Impedance                  | 60Ω                                                                                                                                                                   |
| Capacitance                | typ. 105pF/m                                                                                                                                                          |
| min. Bend Radius           | 55mm (moving), 27mm (fixed)                                                                                                                                           |
| Operating Temperature      | -15°C - +105°C                                                                                                                                                        |
| Oil Resistance             | according to UL1581 Tab.50.182 ≤ 60°C                                                                                                                                 |
| Flame Retardance           | according to UL2556, Horizontal Flame Test                                                                                                                            |
| RoHS Compliant             | Yes                                                                                                                                                                   |
| Weight                     | ca. 0.039kg/m                                                                                                                                                         |
| Cu-Weight                  | ca. 0.012kg/m                                                                                                                                                         |
| Color                      | red (~RAL 3000)                                                                                                                                                       |
| Status                     | P (Preferred)                                                                                                                                                         |

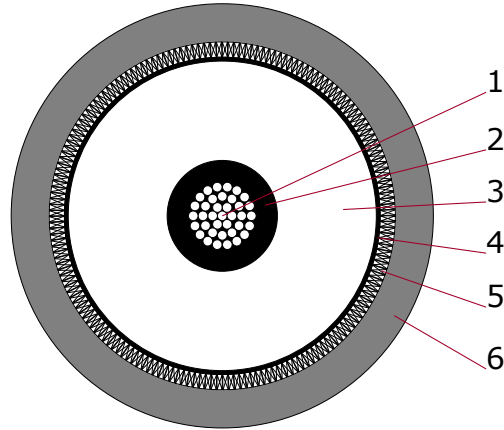
The cable is compatible with HC52 Series high voltage connector HC52P-HTV30S.



## HXC-60-1EA-8

60kV<sub>DC</sub> - AWG14 - EPR (BLACK) DIELECTRIC

### CONSTRUCTION



|               |                                                    |                               |
|---------------|----------------------------------------------------|-------------------------------|
| 1. Conductor  | AWG14 Cu/Sn (37xAWG30 t.p.c.)                      | 2.0mm <sup>2</sup><br>Ø 2.0mm |
| 2. Semicon    | Semiconductive tape and Semiconductive EPR (black) | Ø 2.9mm                       |
| 3. Dielectric | EPR (black)                                        | Ø 8.1mm                       |
| 4. Semicon    | Semiconductive tape (black)                        | Ø 8.3mm                       |
| 5. Braid      | Cu/Sn (mm t.p.c.) 95% Coverage                     | Ø 9.1mm                       |
| 6. Jacket     | PVC                                                | Ø 11.1mm<br>± 0.5mm           |

### TECHNICAL DATA

|                            |                             |
|----------------------------|-----------------------------|
| Rated Voltage              | 60kV <sub>DC</sub>          |
| Test Voltage               | 90kV <sub>DC</sub> / 10min  |
| Conductor Resistance @20°C | ≤ 9Ω/km                     |
| Braid Resistance           | ≤ 7.22Ω/km                  |
| Insulation Resistance      | ≥ 1 · 10 <sup>12</sup> Ωm   |
| Capacitance                | typ. 163pF/m                |
| min. Bend Radius           | 45mm (moving), 22mm (fixed) |
| Operating Temperature      | -10°C - +70°C               |
| RoHS Compliant             | Yes                         |
| Weight                     | ca. 0.17kg/m                |
| Color                      | light grey                  |
| Status                     | P (Preferred)               |





High quality, 1, 3, 4 and 5 core X-Ray / E-Beam cables with EPR dielectric for voltages up to 320kV<sub>DC</sub>. These cables are equipped with semiconductive layers, braided shield and robust outer jacket. Many types provide high flexibility making X-Ray / E-Beam cables an excellent choice for safe transmission of high voltage in moving applications. These cables are typically used terminated as complete cable assemblies.

Special cable includes triaxial and multi-conductor types in many different configurations. Customer applications often demand for specific solutions, e.g. the transmission of low voltage signals on high voltage potential or pulsed power applications.

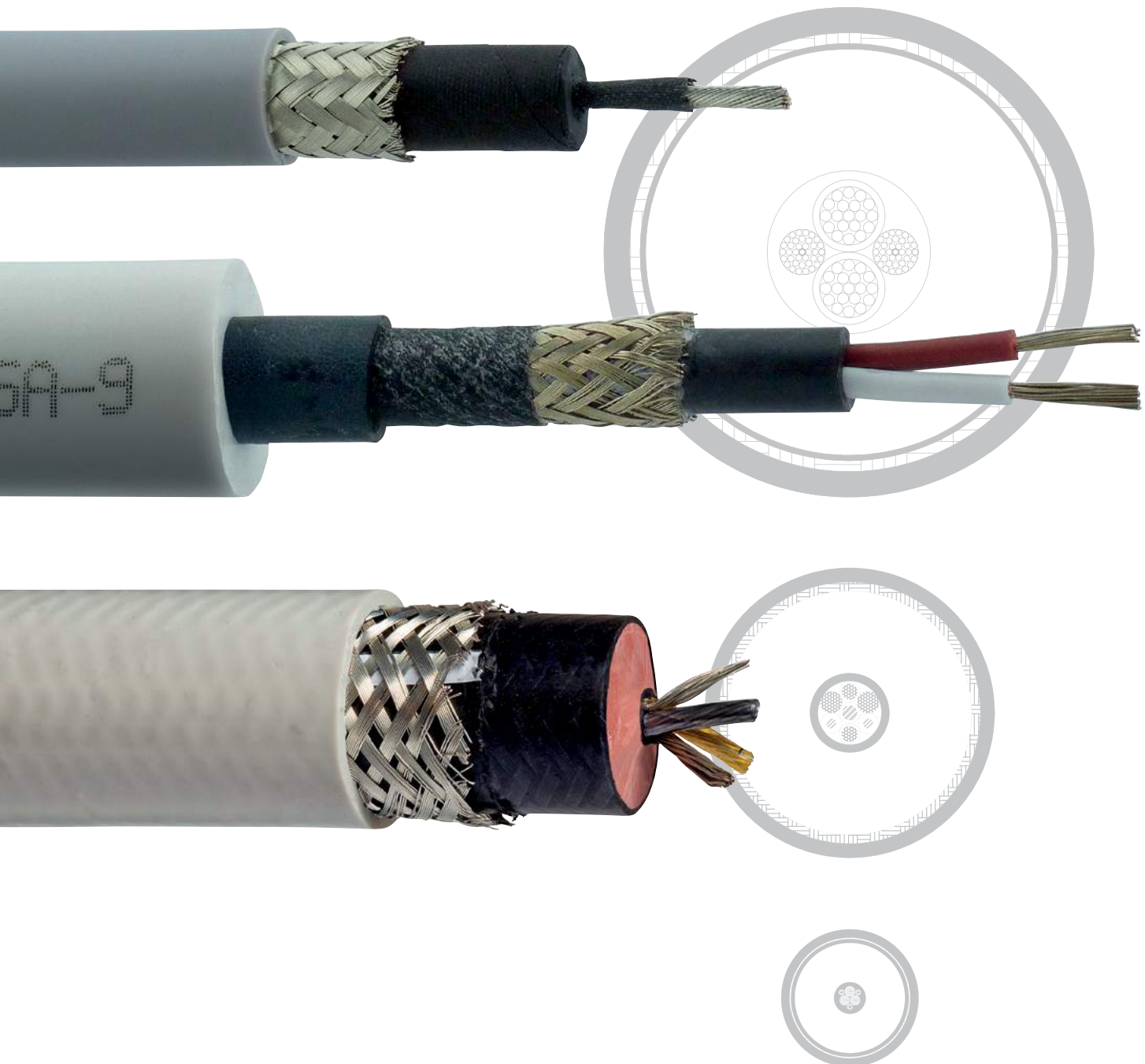
**hivolt.de** is able to provide modified standard types or full custom designs for applications where special cable types are required.

We offer various types of terminations.  
Ask us!





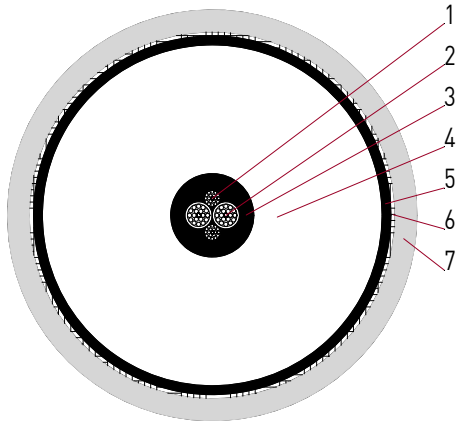
# X-RAY / E-BEAM & SPECIAL HIGH VOLTAGE CABLE



## 2042

230kV<sub>DC</sub> – EPR DIELECTRIC

### ■ CONSTRUCTION



|                      |                                                                                         |                       |
|----------------------|-----------------------------------------------------------------------------------------|-----------------------|
| <b>1. Conductor</b>  | 2x bare Cu/Sn AWG18 (19x0.24mm, t.p.c.), AWG15 in total                                 | 1.9mm <sup>2</sup>    |
| <b>2. Conductor</b>  | 2x Cu/Sn AWG16 (19x0.33mm, t.p.c.), Tefzel Insulation, Rated Voltage: 5kV <sub>DC</sub> | 2x 1.2mm <sup>2</sup> |
| <b>3. Semicon</b>    | Semiconductive EPR (black)                                                              | Ø 6.1mm               |
| <b>4. Dielectric</b> | EPR                                                                                     | Ø 24.9mm              |
| <b>5. Semicon</b>    | Semiconductive EPR (black)                                                              | Ø 26.2mm              |
| <b>6. Braid</b>      | Cu/Sn ≥80% Coverage                                                                     | Ø 26.8mm              |
| <b>7. Jacket</b>     | PVC (black)                                                                             | Ø 31.1mm              |

### ■ TECHNICAL DATA

|                                  |                                          |
|----------------------------------|------------------------------------------|
| <b>Number of Conductors</b>      | 3                                        |
| <b>Rated Voltage</b>             | 230kV <sub>DC</sub> / 75kV <sub>AC</sub> |
| <b>Impedance</b>                 | 59Ω                                      |
| <b>Capacitance</b>               | 115pF/m                                  |
| <b>min. Bend Radius (static)</b> | 152mm                                    |
| <b>Operating Temperature</b>     | -51°C - +60°C                            |
| <b>RoHS Compliant</b>            | Yes                                      |
| <b>Weight</b>                    | 1.07kg/m                                 |
| <b>Status</b>                    | P (Preferred)                            |

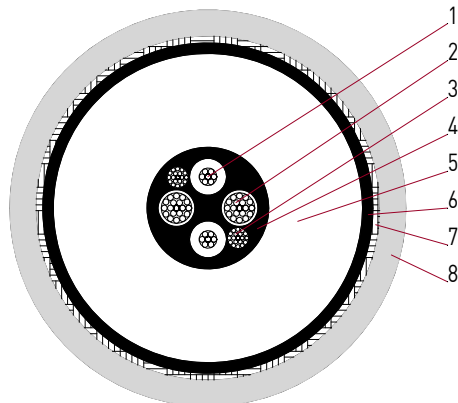
The cable is available also with Low Smoke Zero Halogene jacket. Part-No. 2042LS, status: S



## 2171

100kV<sub>DC</sub> – EPR DIELECTRIC

### CONSTRUCTION



|                      |                                                                                                             |                        |
|----------------------|-------------------------------------------------------------------------------------------------------------|------------------------|
| <b>1. Conductor</b>  | 2x St/Cu AWG20 (7x0.32 copper clad steel), 79mΩ/m, Mylar Tape Insulation, Rated Voltage: 10kV <sub>DC</sub> | 2x 0.57mm <sup>2</sup> |
| <b>2. Conductor</b>  | 2x Cu/Sn AWG15 (19x0.33mm, t.p.c.), Polyester Tape Insulation, Rated Voltage: 1kV <sub>DC</sub>             | 2x 1.7mm <sup>2</sup>  |
| <b>3. Conductor</b>  | 2x bare Cu/Sn AWG18 (19x0.24mm, t.p.c.), AWG15 in total                                                     | 1.9mm <sup>2</sup>     |
| <b>4. Semicon</b>    | Semiconductive EPR (black)                                                                                  | Ø 6.6mm                |
| <b>5. Dielectric</b> | EPR                                                                                                         | Ø 16.8mm               |
| <b>6. Semicon</b>    | Semiconductive EPR (black)                                                                                  | Ø 17.9mm               |
| <b>7. Braid</b>      | Cu/Sn ≥80% Coverage                                                                                         | Ø 18.7mm               |
| <b>8. Jacket</b>     | PVC (grey)                                                                                                  | Ø 21.5mm               |

### TECHNICAL DATA

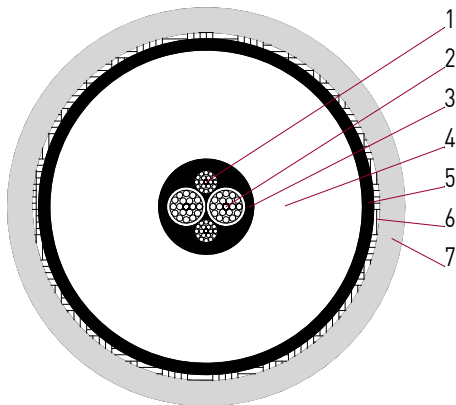
|                                  |                                          |
|----------------------------------|------------------------------------------|
| <b>Number of Conductors</b>      | 5                                        |
| <b>Rated Voltage</b>             | 100kV <sub>DC</sub> / 30kV <sub>AC</sub> |
| <b>Impedance</b>                 | 36Ω                                      |
| <b>Capacitance</b>               | 167pF/m                                  |
| <b>min. Bend Radius (static)</b> | 101mm                                    |
| <b>Operating Temperature</b>     | -51°C - +60°C                            |
| <b>RoHS Compliant</b>            | Yes                                      |
| <b>Weight</b>                    | 0.58kg/m                                 |
| <b>Status</b>                    | S (Special)                              |



## 2212

100kV<sub>DC</sub> – EPR DIELECTRIC

### CONSTRUCTION



|                      |                                                                                                  |                       |
|----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| <b>1. Conductor</b>  | 2x bare Cu/Sn AWG18 (19x0.24mm, t.p.c.), AWG15 in total                                          | 1.9mm <sup>2</sup>    |
| <b>2. Conductor</b>  | 2x Cu/Sn AWG15, (19x0.33mm, t.p.c.), Polyester Tape Insulation, Rated Voltage: 1kV <sub>DC</sub> | 2x 1.7mm <sup>2</sup> |
| <b>3. Semicon</b>    | Semiconductive EPR (black)                                                                       | Ø 4.8mm               |
| <b>4. Dielectric</b> | EPR                                                                                              | Ø 15.8mm              |
| <b>5. Semicon</b>    | Semiconductive EPR (black)                                                                       | Ø 16.9mm              |
| <b>6. Braid</b>      | Cu/Sn ≥80% Coverage                                                                              | Ø 17.5mm              |
| <b>7. Jacket</b>     | PVC                                                                                              | Ø 19.9mm              |

### TECHNICAL DATA

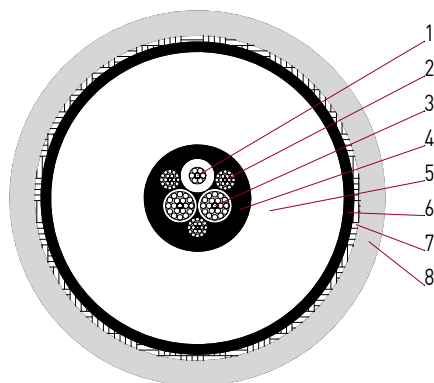
|                                  |                                          |
|----------------------------------|------------------------------------------|
| <b>Number of Conductors</b>      | 3                                        |
| <b>Rated Voltage</b>             | 100kV <sub>DC</sub> / 30kV <sub>AC</sub> |
| <b>Impedance</b>                 | 53Ω                                      |
| <b>Capacitance</b>               | 131pF/m                                  |
| <b>min. Bend Radius (static)</b> | 101mm                                    |
| <b>Operating Temperature</b>     | -51°C - +60°C                            |
| <b>RoHS Compliant</b>            | Yes                                      |
| <b>Weight</b>                    | 0.49kg/m                                 |
| <b>Color</b>                     | grey                                     |
| <b>Status</b>                    | P [Preferred]                            |



## 2213

100kV<sub>DC</sub> – EPR DIELECTRIC

### CONSTRUCTION



|                      |                                                                                                             |                       |
|----------------------|-------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>1. Conductor</b>  | 1x St/Cu AWG20 (7x0.32 copper clad steel), 79mΩ/m, Mylar Tape Insulation, Rated Voltage: 10kV <sub>DC</sub> | 0.57mm <sup>2</sup>   |
| <b>2. Conductor</b>  | 3x bare Cu/Sn AWG18 (19x0.24mm, t.p.c.), AWG13 in total                                                     | 2.9mm <sup>2</sup>    |
| <b>3. Conductor</b>  | 2x Cu/Sn AWG15 (19x0.33mm, t.p.c.), Polyester Tape Insulation, Rated Voltage: 1kV <sub>DC</sub>             | 2x 1.7mm <sup>2</sup> |
| <b>4. Semicon</b>    | Semiconductive EPR (black)                                                                                  | Ø 6.1mm               |
| <b>5. Dielectric</b> | EPR                                                                                                         | Ø 16.8mm              |
| <b>6. Semicon</b>    | Semiconductive EPR (black)                                                                                  | Ø 17.9mm              |
| <b>7. Braid</b>      | Cu/Sn ≥80% Coverage                                                                                         | Ø 18.7mm              |
| <b>8. Jacket</b>     | PVC                                                                                                         | Ø 21.5mm              |

### TECHNICAL DATA

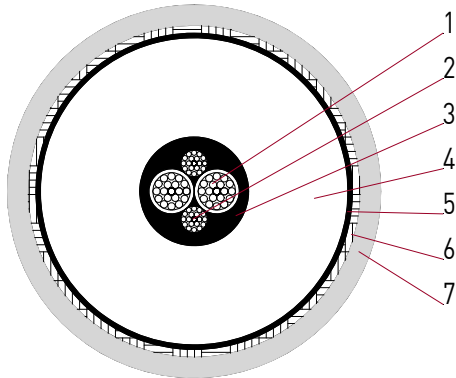
|                                  |                                          |
|----------------------------------|------------------------------------------|
| <b>Number of Conductors</b>      | 4                                        |
| <b>Rated Voltage</b>             | 100kV <sub>DC</sub> / 30kV <sub>AC</sub> |
| <b>Impedance</b>                 | 44Ω                                      |
| <b>Capacitance</b>               | 161pF/m                                  |
| <b>min. Bend Radius (static)</b> | 101mm                                    |
| <b>Operating Temperature</b>     | -51°C - +60°C                            |
| <b>RoHS Compliant</b>            | Yes                                      |
| <b>Weight</b>                    | 0.57kg/m                                 |
| <b>Color</b>                     | grey                                     |
| <b>Status</b>                    | S (Special)                              |



## 2214

75kV<sub>DC</sub> – EPR DIELECTRIC

### CONSTRUCTION



|                      |                                                                                                 |                       |
|----------------------|-------------------------------------------------------------------------------------------------|-----------------------|
| <b>1. Conductor</b>  | 2x Cu/Sn AWG15 (19x0.33mm, t.p.c.), Polyester Tape Insulation, Rated Voltage: 1kV <sub>DC</sub> | 2x 1.7mm <sup>2</sup> |
| <b>2. Conductor</b>  | 2x bare Cu/Sn AWG18 (19x0.24mm, t.p.c.), AWG15 in total                                         | 1.9mm <sup>2</sup>    |
| <b>3. Semicon</b>    | Semiconductive EPR (black)                                                                      | Ø 4.8mm               |
| <b>4. Dielectric</b> | EPR                                                                                             | Ø 13.0mm              |
| <b>5. Semicon</b>    | Semiconductive EPR (black)                                                                      | Ø 14.1mm              |
| <b>6. Braid</b>      | Cu/Sn ≥95% Coverage                                                                             | Ø 14.7mm              |
| <b>7. Jacket</b>     | PVC                                                                                             | Ø 16.5mm              |

### TECHNICAL DATA

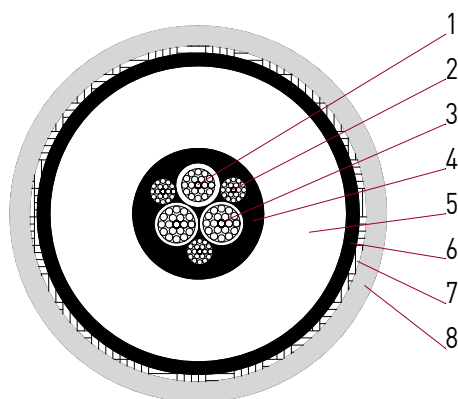
|                                  |                                         |
|----------------------------------|-----------------------------------------|
| <b>Number of Conductors</b>      | 3                                       |
| <b>Rated Voltage</b>             | 75kV <sub>DC</sub> / 25kV <sub>AC</sub> |
| <b>Impedance</b>                 | 46Ω                                     |
| <b>Capacitance</b>               | 154pF/m                                 |
| <b>min. Bend Radius (static)</b> | 76mm                                    |
| <b>Operating Temperature</b>     | -51°C - +60°C                           |
| <b>RoHS Compliant</b>            | Yes                                     |
| <b>Weight</b>                    | 0.37kg/m                                |
| <b>Color</b>                     | grey                                    |
| <b>Status</b>                    | P [Preferred]                           |



## 2226

75kV<sub>DC</sub> – EPR DIELECTRIC

### CONSTRUCTION



|                      |                                                                                                 |                       |
|----------------------|-------------------------------------------------------------------------------------------------|-----------------------|
| <b>1. Conductor</b>  | 1x Cu/Sn AWG16 (19x0.30mm, t.p.c.), Tefzel Insulation, Rated Voltage: 5kV <sub>DC</sub>         | 1.2mm <sup>2</sup>    |
| <b>2. Conductor</b>  | 3x bare Cu/Sn AWG18 (19x0.24mm, t.p.c.), AWG13 in total                                         | 2.9mm <sup>2</sup>    |
| <b>3. Conductor</b>  | 2x Cu/Sn AWG15 (19x0.33mm, t.p.c.), Polyester Tape Insulation, Rated Voltage: 1kV <sub>DC</sub> | 2x 1.7mm <sup>2</sup> |
| <b>4. Semicon</b>    | Semiconductive EPR (black)                                                                      | Ø 5.8mm               |
| <b>5. Dielectric</b> | EPR                                                                                             | Ø 13.2mm              |
| <b>6. Semicon</b>    | Semiconductive EPR (black)                                                                      | Ø 14.4mm              |
| <b>7. Braid</b>      | Cu/Sn ≥95% Coverage                                                                             | Ø 15.0mm              |
| <b>8. Jacket</b>     | PVC                                                                                             | Ø 16.8mm              |

### TECHNICAL DATA

|                                  |                                         |
|----------------------------------|-----------------------------------------|
| <b>Number of Conductors</b>      | 4                                       |
| <b>Rated Voltage</b>             | 75kV <sub>DC</sub> / 25kV <sub>AC</sub> |
| <b>Impedance</b>                 | 37Ω                                     |
| <b>Capacitance</b>               | 197pF/m                                 |
| <b>min. Bend Radius (static)</b> | 76mm                                    |
| <b>Operating Temperature</b>     | -51°C - +60°C                           |
| <b>RoHS Compliant</b>            | Yes                                     |
| <b>Weight</b>                    | 0.39kg/m                                |
| <b>Color</b>                     | grey                                    |
| <b>Status</b>                    | S [Special]                             |

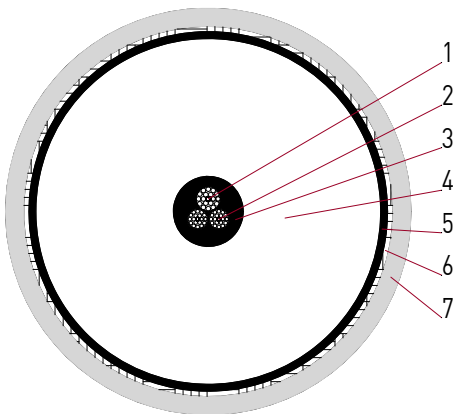


## 2236

320kV<sub>DC</sub> – EPR DIELECTRIC



### CONSTRUCTION



|                      |                                                                                        |                       |
|----------------------|----------------------------------------------------------------------------------------|-----------------------|
| <b>1. Conductor</b>  | 1x bare Cu/Sn AWG12 (19x0.46mm t.p.c.)                                                 | 3.1mm <sup>2</sup>    |
| <b>2. Conductor</b>  | 2x Cu/Sn AWG14 (19x0.37mm, t.p.c.), Tefzel Insulated, Rated Voltage: 5kV <sub>DC</sub> | 2x 1.9mm <sup>2</sup> |
| <b>3. Semicon</b>    | Semiconductive EPR (black)                                                             | Ø 6.6mm               |
| <b>4. Dielectric</b> | EPR                                                                                    | Ø 32.5mm              |
| <b>5. Semicon</b>    | Semiconductive EPR (black)                                                             | Ø 33.8mm              |
| <b>6. Braid</b>      | Cu/Sn (AWG30 t.p.c.) ≥80% Coverage                                                     | Ø 34.8mm              |
| <b>7. Jacket</b>     | PVC                                                                                    | Ø 38.2mm              |

### TECHNICAL DATA

|                                  |                                           |
|----------------------------------|-------------------------------------------|
| <b>Number of Conductors</b>      | 3                                         |
| <b>Rated Voltage</b>             | 320kV <sub>DC</sub> / 115kV <sub>AC</sub> |
| <b>Impedance</b>                 | 61Ω                                       |
| <b>Capacitance</b>               | 102pF/m                                   |
| <b>min. Bend Radius (static)</b> | 190mm                                     |
| <b>Operating Temperature</b>     | -51°C - +60°C                             |
| <b>RoHS Compliant</b>            | Yes                                       |
| <b>Weight</b>                    | 1.64kg/m                                  |
| <b>Color</b>                     | black                                     |
| <b>Status</b>                    | P (Preferred)                             |

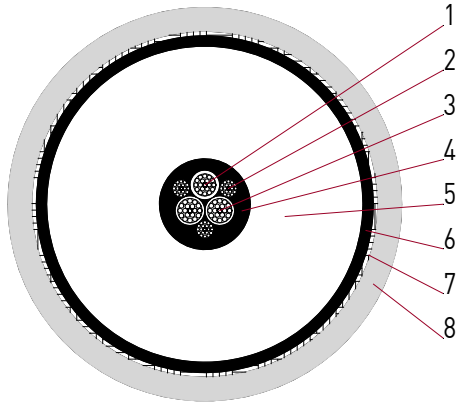




## 2266

160kV<sub>DC</sub> – EPR DIELECTRIC

### CONSTRUCTION



|                      |                                                                                        |                       |
|----------------------|----------------------------------------------------------------------------------------|-----------------------|
| <b>1. Conductor</b>  | 1x Cu/Sn AWG16 (19x0.3mm t.p.c.), Tefzel Insulation, Rated Voltage: 10kV <sub>DC</sub> | 1.2mm <sup>2</sup>    |
| <b>2. Conductor</b>  | 3x bare Cu/Sn AWG18 (19x0.24mm, t.p.c.), AWG13 in total                                | 2.9mm <sup>2</sup>    |
| <b>3. Conductor</b>  | 2x Cu/Sn AWG15 (19x0.33mm, t.p.c.), Polyester Tape, Rated Voltage: 1kV <sub>DC</sub>   | 2x 1.7mm <sup>2</sup> |
| <b>4. Semicon</b>    | Semiconductive EPR (black)                                                             | Ø 6.1mm               |
| <b>5. Dielectric</b> | EPR                                                                                    | Ø 21.2mm              |
| <b>6. Semicon</b>    | Semiconductive EPR (black)                                                             | Ø 22.6mm              |
| <b>7. Braid</b>      | Cu/Sn ≥90% Coverage                                                                    | Ø 23.2mm              |
| <b>8. Jacket</b>     | PVC                                                                                    | Ø 26.4mm              |

### TECHNICAL DATA

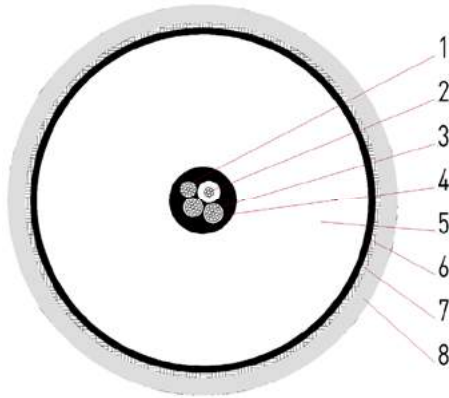
|                                  |                                          |
|----------------------------------|------------------------------------------|
| <b>Number of Conductors</b>      | 4                                        |
| <b>Rated Voltage</b>             | 160kV <sub>DC</sub> / 50kV <sub>AC</sub> |
| <b>Impedance</b>                 | 48Ω                                      |
| <b>Capacitance</b>               | 154pF/m                                  |
| <b>min. Bend Radius (static)</b> | 140mm                                    |
| <b>Operating Temperature</b>     | -51°C - +60°C                            |
| <b>RoHS Compliant</b>            | Yes                                      |
| <b>Weight</b>                    | 0.89kg/m                                 |
| <b>Color</b>                     | grey                                     |
| <b>Status</b>                    | S (Special)                              |



## 2338

320kV<sub>DC</sub> – EPR DIELECTRIC

### CONSTRUCTION



|                      |                                                                                                       |                       |
|----------------------|-------------------------------------------------------------------------------------------------------|-----------------------|
| <b>1. Conductor</b>  | 1x bare Cu/Sn AWG15 (19x0.33mm t.p.c.)                                                                | 1.7mm <sup>2</sup>    |
| <b>2. Conductor</b>  | 1x St/Cu AWG20 (7x0.32mm copper clad steel), Mylar Tape Insulation, Rated Voltage: 10kV <sub>DC</sub> | 0.57mm <sup>2</sup>   |
| <b>3. Conductor</b>  | 2x Cu/Sn AWG15 (19x0.33mm, t.p.c.), Mylar Tape Insulation, Rated Voltage: 1kV <sub>DC</sub>           | 2x 1.7mm <sup>2</sup> |
| <b>4. Semicon</b>    | Semiconductive EPR                                                                                    | Ø 6.6mm               |
| <b>5. Dielectric</b> | EPR                                                                                                   | Ø 32.5mm              |
| <b>6. Semicon</b>    | Semiconductive EPR                                                                                    | Ø 33.8mm              |
| <b>7. Braid</b>      | Cu/Sn (9x24x AWG30 t.p.c.) ≥80% Coverage                                                              | Ø 34.8mm              |
| <b>8. Jacket</b>     | PVC                                                                                                   | Ø 38.2mm              |

### TECHNICAL DATA

|                                  |                                           |
|----------------------------------|-------------------------------------------|
| <b>Number of Conductors</b>      | 4                                         |
| <b>Rated Voltage</b>             | 320kV <sub>DC</sub> / 115kV <sub>AC</sub> |
| <b>Impedance</b>                 | 61Ω                                       |
| <b>Capacitance</b>               | 102pF/m                                   |
| <b>min. Bend Radius (static)</b> | 191mm                                     |
| <b>Operating Temperature</b>     | -51°C - +60°C                             |
| <b>RoHS Compliant</b>            | Yes                                       |
| <b>Weight</b>                    | 1.64kg/m                                  |
| <b>Color</b>                     | black                                     |
| <b>Status</b>                    | S [Special]                               |

Only available as a fitted cable assembly.

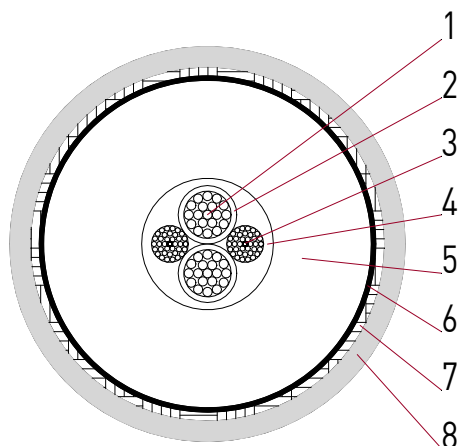


## HXC-75-3ED-8

75kV<sub>DC</sub> – EPR DIELECTRIC – HIGH FLEXIBILITY – SMALL SIZE



### CONSTRUCTION



|               |                                                      |                       |
|---------------|------------------------------------------------------|-----------------------|
| 1. Conductor  | 2x Cu/Sn 1.8mm <sup>2</sup> (19x0.35mm t.p.c.)       | 2x 1.8mm <sup>2</sup> |
| 2. Insulation | ETFE Insulation                                      |                       |
| 3. Conductor  | 2x bare Cu/Sn 1.25mm <sup>2</sup> (50x0.18mm t.p.c.) | 2.5mm <sup>2</sup>    |
| 4. Semicon    | Semiconductive EPR (black)                           | Ø 4.5mm               |
| 5. Dielectric | EPR (black)                                          | Ø 10.9mm<br>±0.5mm    |
| 6. Semicon    | Semiconductive tape (black)                          |                       |
| 7. Braid      | Cu/Sn ≥90% Coverage                                  |                       |
| 8. Jacket     | PVC                                                  | Ø 13.2mm<br>±0.5mm    |

### TECHNICAL DATA

|                                                |                               |
|------------------------------------------------|-------------------------------|
| Number of Conductors                           | 3                             |
| Rated Voltage                                  | 75kV <sub>DC</sub>            |
| Routine Test Voltage (High Voltage Insulation) | 120kV <sub>DC</sub> / 10min   |
| Routine Test Voltage (Conductor Insulation)    | 3.5kV <sub>ACrms</sub> / 5min |
| Thickness of Jacket (PVC)                      | 0.7mm                         |
| Thickness of High Voltage Dielectric           | 3.2mm                         |
| Diameter of Core Assembly                      | 4.4mm                         |
| Capacitance between Cond. and Shield           | 150pF/m ±10%                  |
| RoHS Compliant                                 | Yes                           |
| Weight                                         | 0.235kg/m                     |
| Color                                          | light grey                    |
| Status                                         | S (Special)                   |

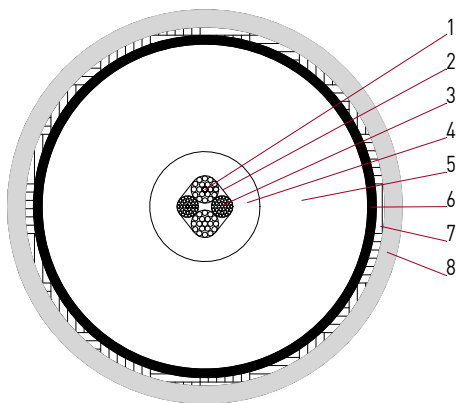


## HXC-160-3EB-8

160kV<sub>DC</sub> – EPR DIELECTRIC



### CONSTRUCTION



|               |                                                                    |                       |
|---------------|--------------------------------------------------------------------|-----------------------|
| 1. Conductor  | 2x Cu/Sn 1.5mm <sup>2</sup> (19x0.32mm, t.p.c.), Tefzel Insulation | 2x 1.5mm <sup>2</sup> |
| 2. Semicon    | Semiconductive tape                                                |                       |
| 3. Conductor  | 2x bare Cu/Sn 0.76mm <sup>2</sup> (30x0.18mm, t.p.c.)              | 1.5mm <sup>2</sup>    |
| 4. Semicon    | Semiconductive EPR (black)                                         |                       |
| 5. Dielectric | EPR (black)                                                        | Ø 19.5mm              |
| 6. Semicon    | Semiconductive tape (black)                                        |                       |
| 7. Braid      | Cu/Sn ≥95% Coverage                                                |                       |
| 8. Jacket     | PVC                                                                | Ø 22.9mm<br>±1.0mm    |

### TECHNICAL DATA

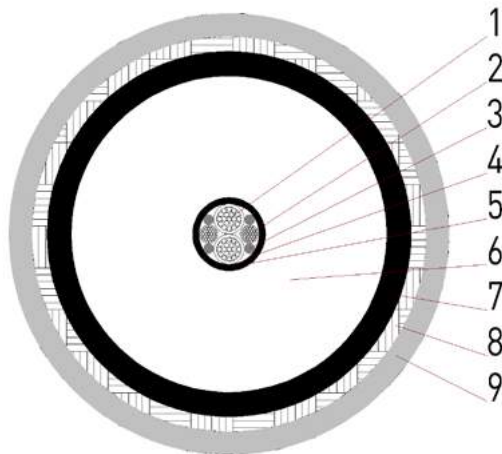
|                                                |                               |
|------------------------------------------------|-------------------------------|
| Number of Conductors                           | 3                             |
| Rated Voltage                                  | 160kV <sub>DC</sub>           |
| Routine Test Voltage (High Voltage Insulation) | 200kV <sub>DC</sub> / 10min   |
| Routine Test Voltage (Conductor Insulation)    | 6.5kV <sub>ACrms</sub> / 1min |
| Maximum Conductor Current                      | 1.5mm <sup>2</sup> : 15A      |
| Thickness of Jacket (PVC)                      | 1.0mm                         |
| Thickness of High Voltage Dielectric           | 5.5mm                         |
| Diameter of Core Assembly                      | 6.4mm                         |
| Insulation Resistance Core to Shield @20°C     | ≥ 1 · 10 <sup>12</sup> Ωm     |
| Conductor Insulation Resistance @20°C          | ≥ 1 · 10 <sup>12</sup> Ωm     |
| Capacitance between Cond. and Shield           | 204pF/m ±10%                  |
| min. Bend Radius (static)                      | 60mm                          |
| min. Bend Radius (dynamic)                     | 120mm                         |
| Operating Temperature                          | -10°C - +70°C                 |
| Storage Temperature                            | -40°C - +70°C                 |
| RoHS Compliant                                 | Yes                           |
| Weight                                         | 0.630kg/m                     |
| Color                                          | light grey                    |
| Status                                         | S (Special)                   |

## HXC-160-3EC-0

160kV<sub>DC</sub> – EPR DIELECTRIC



### CONSTRUCTION



|                    |                                                                |                       |
|--------------------|----------------------------------------------------------------|-----------------------|
| 1. Conductor       | 2x Cu/Sn 1.5mm <sup>2</sup> (19x0.32mm t.p.c.), FEP Insulation | 2x 1.5mm <sup>2</sup> |
| 2. Conductor       | 2x bare Cu/Sn 1.25mm <sup>2</sup> (50x0.18mm t.p.c.)           | 2.5mm <sup>2</sup>    |
| 3. Filling Element | 4x Reinforced Kevlar string                                    |                       |
| 4. Tape            | Semiconductive tape                                            |                       |
| 5. Bedding         | Semiconductive EPR                                             | Ø 4.8mm               |
| 6. Dielectric      | EPR, black                                                     | Ø 20.8mm              |
| 7. Semicon         | Extruded semiconductive EPR                                    |                       |
| 8. Braid           | Cu/Sn ≥95% Coverage                                            | Ø 27mm                |
| 9. Jacket          | PVC                                                            | Ø 29mm ± 1.0mm        |

### TECHNICAL DATA

|                                            |                                                                                                            |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Number of Conductors                       | 3                                                                                                          |
| Rated Voltage                              | 160kV <sub>DC</sub>                                                                                        |
| Test Voltage                               | 220kV <sub>DC</sub> / 10min (high voltage insulation)<br>4.5kV <sub>AC</sub> / 1min (conductor insulation) |
| Maximum Conductor Current                  | 1.5mm <sup>2</sup> : 15A; 1.25mm <sup>2</sup> : 14A                                                        |
| Corona Level @160kV <sub>DC</sub>          | ≤ 10pC                                                                                                     |
| Insulation Resistance Core to Shield @20°C | ≥ 1x10 <sup>12</sup> Ωm                                                                                    |
| Conductor Insulation Resistance @20°C      | ≥ 1x10 <sup>12</sup> Ωm                                                                                    |
| Conductor Resistance @20°C                 | 7.3mΩ/m ±10% (bare conductor)<br>11.9mΩ/m ±10% (insulated conductor)                                       |
| Shield Resistance @20°C                    | 6.27mΩ/m ±10%                                                                                              |
| Capacitance between Conductors and Shield  | 132pF/m ±10%                                                                                               |
| min. Bend Radius                           | 116mm (moving), 58mm (fixed)                                                                               |
| Operating Temperature                      | -10°C - +100°C                                                                                             |
| Storage Temperature                        | -40°C - +70°C                                                                                              |
| RoHS Compliant                             | Yes                                                                                                        |
| Weight                                     | 1.03kg/m                                                                                                   |
| Color                                      | black                                                                                                      |
| Status                                     | S (Special)                                                                                                |

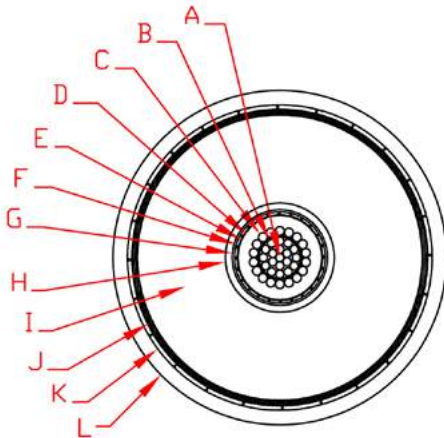
## HXC-320-3EUB-0

320kV<sub>DC</sub> – 3 CONDUCTOR EPR DIELECTRIC

### PRODUCT DESCRIPTION

320kV<sub>DC</sub> 3-conductor shielded high voltage cable for E-beam applications. Triaxial core construction and high dielectric strength between filament and grid conductors for optimized performance. EPR dielectric and Polyurethane jacket.

### CONSTRUCTION



|                      |                                                           |                                |
|----------------------|-----------------------------------------------------------|--------------------------------|
| <b>A. Conductor</b>  | 1x Cu/Sn AWG6 (19x0.94mm t.p.c.) (Filament)               | 13.2mm <sup>2</sup><br>Ø 4.7mm |
| <b>B. Tape</b>       | Fusible Mylar Tape (0.15mm)                               |                                |
| <b>C. Conductor</b>  | 18x Cu/Sn AWG20 (19x0.2mm t.p.c.) (Filament)              | 10.9mm <sup>2</sup>            |
| <b>D. Dielectric</b> | 5x Mylar Tape (0.13mm), ½ lapped<br>1.27mm Wall Thickness | Ø 9.6mm                        |
| <b>E. Tape</b>       | Aluminized Mylar Tape, ¼ lapped                           |                                |
| <b>F. Braid</b>      | 9x24 Cu/Sn AWG34 (0.16mm t.p.c.) (Coverage ≥ 95%) (Grid)  | Ø 10.3mm                       |
| <b>G. Semicon</b>    | Semiconductive Tape, ½ lapped                             | Ø 11.2mm                       |
| <b>H. Semicon</b>    | Semiconductive EPR                                        | Ø 12.8mm                       |
| <b>I. Dielectric</b> | EPR                                                       | Ø 32.5mm<br>± 0.51mm           |
| <b>J. Semicon</b>    | Semiconductive EPR                                        | Ø 33.8mm                       |
| <b>K. Braid</b>      | 9x24 Cu/Sn AWG34 (0.16mm t.p.c.) (Coverage ≥ 80%)         | Ø 34.8mm<br>± 0.51mm           |
| <b>L. Jacket</b>     | Polyurethane                                              | Ø 38.2mm<br>± 0.64mm           |

### TECHNICAL DATA

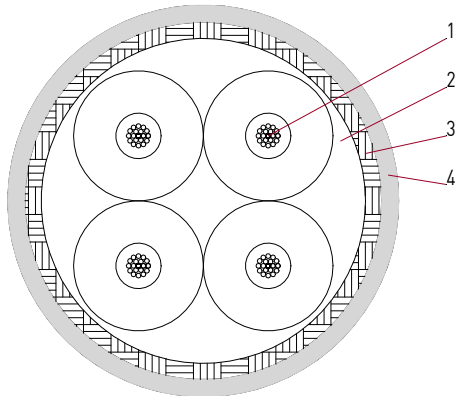
|                                                |                     |
|------------------------------------------------|---------------------|
| <b>Rated Voltage (F. Braid – K. Braid)</b>     | 320kV <sub>DC</sub> |
| <b>Test Voltage (F. Braid – K. Braid)</b>      | t.b.s.              |
| <b>Rated Voltage (C. Conductor – F. Braid)</b> | 5kV <sub>DC</sub>   |
| <b>Test Voltage (C. Conductor – F. Braid)</b>  | 50kV <sub>DC</sub>  |
| <b>Impedance (F. Braid – J. Braid)</b>         | typ. 39Ω            |
| <b>Capacitance (F. Braid – J. Braid)</b>       | typ. 173pF/m        |
| <b>min. Bend Radius</b>                        | 200mm (fixed)       |
| <b>Operating Temperature</b>                   | -51°C - +80°C       |
| <b>Weight</b>                                  | t.b.s. kg/m         |
| <b>Cu-Weight</b>                               | t.b.s. kg/m         |
| <b>Color</b>                                   | black               |
| <b>RoHS Compliant</b>                          | Yes                 |
| <b>Status</b>                                  | E (Prospective)     |



## 2111

50kV<sub>DC</sub> – AWG16 – SILICONE DIELECTRIC – 4 CONDUCTOR SHIELDED

### CONSTRUCTION



|              |                                                                                                 |          |
|--------------|-------------------------------------------------------------------------------------------------|----------|
| 1. Conductor | 4x Cu/Ag AWG16 (19x0.29mm, s.p.c.),<br>Semicon: Semiconducting Silicone<br>Dielectric: Silicone | Ø 7.6mm  |
| 2. Filler    |                                                                                                 |          |
| 3. Braid     | Cu/Sn (AWG34 t.p.c.) 80% Coverage                                                               |          |
| 4. Jacket    | Neoprene (black)                                                                                | Ø 24.1mm |

### TECHNICAL DATA

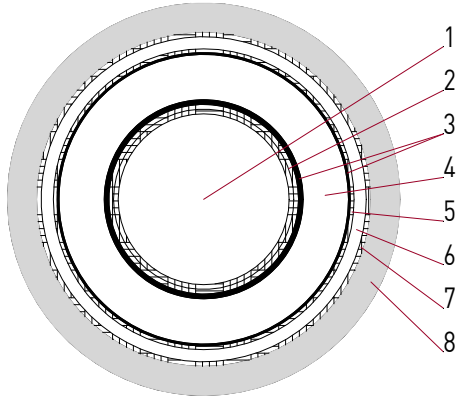
|                                    |                    |
|------------------------------------|--------------------|
| Number of Conductors               | 4                  |
| Rated Voltage (Conductor – Shield) | 50kV <sub>DC</sub> |
| Impedance                          | 44Ω                |
| Capacitance                        | 164pF/m            |
| min. Bend Radius (static)          | 102mm              |
| Operating Temperature              | -51°C - +60°C      |
| Weight                             | 0.21kg/m           |
| Status                             | X (Example)        |



## 2122

22.5kV<sub>DC</sub> – EPR DIELECTRIC – TRIAXIAL HV PULSE CABLE

### ■ CONSTRUCTION



|                      |                                                            |                        |
|----------------------|------------------------------------------------------------|------------------------|
| <b>1. Core</b>       | Neoprene                                                   | Ø 19.1mm               |
| <b>2. Braid</b>      | Conductor: Cu/Sn Double Shield (AWG34 t.p.c.) 80% Coverage |                        |
| <b>3. Semicon</b>    | Semiconductive EPR                                         | Ø 21.3mm (inner layer) |
| <b>4. Dielectric</b> | EPR                                                        | Ø 31.1mm               |
| <b>5. Braid</b>      | Cu/Sn (AWG28 t.p.c.) 80% Coverage                          |                        |
| <b>6. Tape</b>       | Mylar Tape (1.27mm)                                        |                        |
| <b>7. Braid</b>      | Cu/Sn (AWG28 t.p.c.) 80% Coverage                          |                        |
| <b>8. Jacket</b>     | PVC                                                        | Ø 41.9mm               |

### ■ TECHNICAL DATA

|                                                    |                      |
|----------------------------------------------------|----------------------|
| <b>Rated Voltage (Core – Inner Shield)</b>         | 22.5kV <sub>DC</sub> |
| <b>Rated Voltage (Inner Shield – Outer Shield)</b> | 5kV <sub>DC</sub>    |
| <b>Impedance (Core – Inner Shield)</b>             | 15Ω                  |
| <b>Capacitance (Core – Inner Shield)</b>           | 358pF/m              |
| <b>min. Bend Radius (static)</b>                   | 152mm                |
| <b>Operating Temperature</b>                       | -51°C - +60°C        |
| <b>Weight</b>                                      | 2.09kg/m             |
| <b>Color</b>                                       | black                |
| <b>Status</b>                                      | E (Prospective)      |

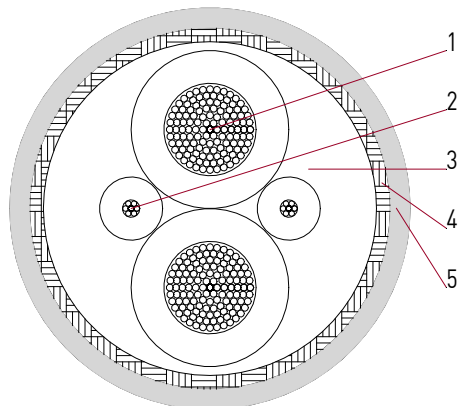




## 2181-1

15kV<sub>DC</sub> – SILICONE DIELECTRIC – 4 CONDUCTOR SHIELDED

### CONSTRUCTION



|              |                                                           |          |
|--------------|-----------------------------------------------------------|----------|
| 1. Conductor | 2x Cu/Sn AWG6 (133x0.36mm, t.p.c.), Dielectric: Silicone, | Ø 7.6mm  |
| 2. Conductor | 2x Cu/Sn AWG20 (10x0.29mm, t.p.c.), Dielectric: Silicone  | Ø 3.2mm  |
| 3. Filler    | Filler Material and Binding Tape                          |          |
| 4. Braid     | Cu/Sn (AWG34 t.p.c.) 85% Coverage                         | Ø 19.3mm |
| 5. Jacket    | PVC                                                       | Ø 20.3mm |

### TECHNICAL DATA

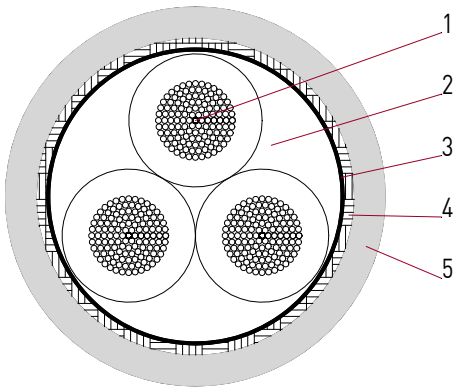
|                                    |                    |
|------------------------------------|--------------------|
| Number of Conductors               | 4                  |
| Rated Voltage (Conductor – Shield) | 15kV <sub>DC</sub> |
| min. Bend Radius (static)          | 152mm              |
| Operating Temperature              | -51°C - +60°C      |
| Weight                             | 0.60kg/m           |
| Color                              | grey               |
| Status                             | E (Prospective)    |



## 2183

15kV<sub>DC</sub> – AWG8 - SILICONE DIELECTRIC - 3 CONDUCTOR SHIELDED

■ CONSTRUCTION



|              |                                                            |          |
|--------------|------------------------------------------------------------|----------|
| 1. Conductor | 3x Cu/Sn AWG8 (133x0.27mm t.p.c.),<br>Dielectric: Silicone | Ø 6.5mm  |
| 2. Filler    |                                                            |          |
| 3. Semicon   | Semiconductive Tape                                        |          |
| 4. Braid     | Cu/Sn (AWG34 t.p.c.) 85% Coverage                          |          |
| 5. Jacket    | Neoprene                                                   | Ø 18.5mm |

■ TECHNICAL DATA

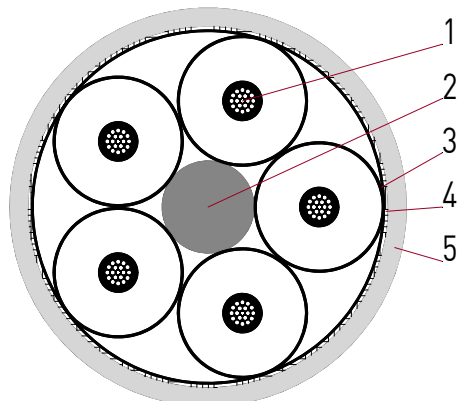
|                                    |                    |
|------------------------------------|--------------------|
| Number of Conductors               | 3                  |
| Rated Voltage (Conductor – Shield) | 15kV <sub>DC</sub> |
| min. Bend Radius (static)          | 101mm              |
| Operating Temperature              | -51°C - +60°C      |
| Weight                             | 0.37kg/m           |
| Color                              | black              |
| Status                             | E [Prospective]    |



## 2188

50kV<sub>DC</sub> – AWG16 – SILICONE DIELECTRIC – 5 CONDUCTOR SHIELDED

### CONSTRUCTION



|              |                                                                                                                                 |         |
|--------------|---------------------------------------------------------------------------------------------------------------------------------|---------|
| 1. Conductor | 5x Cu/Ag AWG16 (19x0.29mm s.p.c.),<br>Semicon: Semiconductive Silicone,<br>Dielectric: Silicone,<br>Semicon: Semiconductive Ink | Ø 7.5mm |
| 2. Cord      | Neoprene                                                                                                                        | Ø 5.3mm |
| 3. Semicon   | Semiconductive Tape                                                                                                             |         |
| 4. Braid     | Cu/Sn (AWG34 t.p.c.) 90% Coverage                                                                                               |         |
| 5. Jacket    | PVC                                                                                                                             | Ø 24mm  |

### TECHNICAL DATA

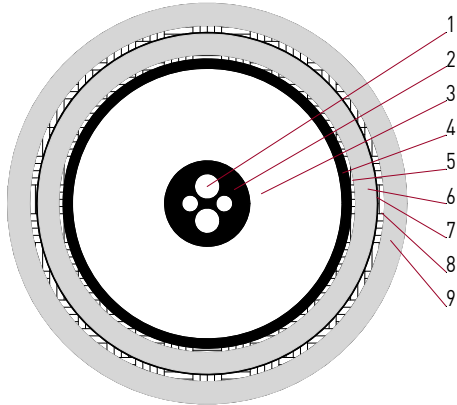
|                                    |                    |
|------------------------------------|--------------------|
| Number of Conductors               | 5                  |
| Rated Voltage (Conductor – Shield) | 50kV <sub>DC</sub> |
| min. Bend Radius (static)          | 127mm              |
| Operating Temperature              | -51°C - +60°C      |
| Weight                             | 0.45kg/m           |
| Color                              | black              |
| Status                             | E (Prospective)    |



## 2212TVJ

100kV<sub>DC</sub> – EPR DIELECTRIC – MULTICONDUCTOR – TRIAXIAL

### CONSTRUCTION



|                        |                                                                                                         |          |
|------------------------|---------------------------------------------------------------------------------------------------------|----------|
| <b>1. Conductor</b>    | 2x Cu/Sn AWG15, (19x0.33mm, t.p.c.), Polyester Tape Insulation, 2x bare Cu/Sn AWG18 (19x0.24mm, t.p.c.) |          |
| <b>2. Semicon</b>      | Semiconductive EPR                                                                                      | Ø 5.1mm  |
| <b>3. Dielectric</b>   | EPR                                                                                                     | Ø 15.8mm |
| <b>4. Semicon</b>      | Semiconductive EPR                                                                                      | Ø 16.9mm |
| <b>5. Braid</b>        | Cu/Sn (AWG34 t.p.c.) 80% Coverage                                                                       |          |
| <b>6. Inner Jacket</b> | PVC                                                                                                     |          |
| <b>7. Tape</b>         | Mylar Tape (2 Layers, ½ lapped)                                                                         |          |
| <b>8. Braid</b>        | Cu/Sn (AWG34 t.p.c.)                                                                                    |          |
| <b>9. Jacket</b>       | PVC                                                                                                     | Ø 23.4mm |

### TECHNICAL DATA

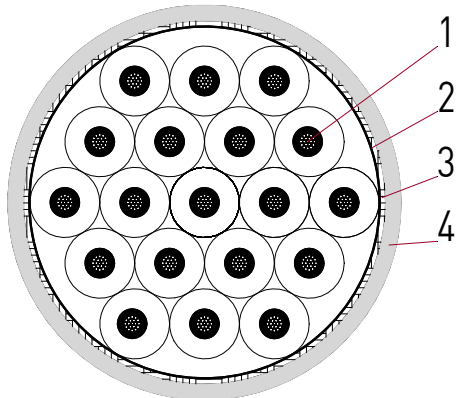
|                                                    |                                          |
|----------------------------------------------------|------------------------------------------|
| <b>Rated Voltage (Core – Inner Shield)</b>         | 100kV <sub>DC</sub> / 30kV <sub>AC</sub> |
| <b>Rated Voltage (Inner Shield – Outer Shield)</b> | 2kV <sub>DC</sub>                        |
| <b>Impedance (Core – Inner Shield)</b>             | 53Ω                                      |
| <b>Capacitance (Core – Inner Shield)</b>           | 131pF/m                                  |
| <b>min. Bend Radius (static)</b>                   | 178mm                                    |
| <b>Operating Temperature</b>                       | -51°C - +60°C                            |
| <b>Weight</b>                                      | 0.91kg/m                                 |
| <b>Color</b>                                       | black                                    |
| <b>Status</b>                                      | E [Prospective]                          |



## 2233

60kV<sub>DC</sub> – AWG18 – PE DIELECTRIC – 19 CONDUCTOR SHIELDED

### CONSTRUCTION



|              |                                                                                            |          |
|--------------|--------------------------------------------------------------------------------------------|----------|
| 1. Conductor | 19x Cu/Sn AWG18 (19x0.26mm t.p.c.),<br>Semicon: Semiconducting PE,<br>Dielectric: LDHMW PE | Ø 5.8mm  |
| 2. Bedding   | Non-Hygroscopic Tape                                                                       |          |
| 3. Braid     | Cu/Sn (AWG34 t.p.c.)                                                                       |          |
| 4. Jacket    | PVC                                                                                        | Ø 30.5mm |

### TECHNICAL DATA

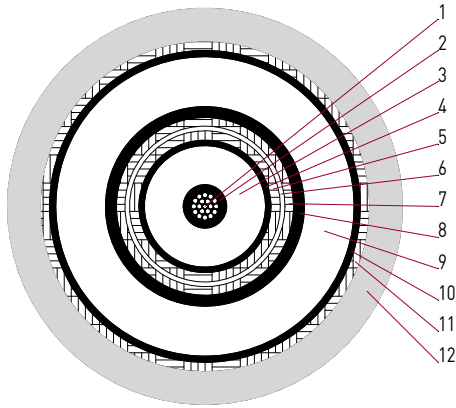
|                                    |                    |
|------------------------------------|--------------------|
| Number of Conductors               | 19                 |
| Rated Voltage (Conductor – Shield) | 60kV <sub>DC</sub> |
| min. Bend Radius (static)          | 482mm              |
| Operating Temperature              | -51°C - +60°C      |
| Weight                             | 0.67kg/m           |
| Status                             | E (Prospective)    |



## 2241

75kV<sub>DC</sub> – EPR DIELECTRIC - QUADRAXIAL

### CONSTRUCTION



|               |                                                |                     |
|---------------|------------------------------------------------|---------------------|
| 1. Conductor  | Cu/Ag AWG14 (19xAWG27 s.p.c.)                  | 1.94mm <sup>2</sup> |
| 2. Semicon    | Semiconductive EPR                             | Ø 2.8mm             |
| 3. Dielectric | EPR                                            | Ø 7.8mm<br>± 0.3mm  |
| 4. Semicon    | Semiconductive EPR                             | Ø 8.5mm             |
| 5. Braid I    | Shield 1: Cu/Sn (AWG30 t.p.c.)<br>95% Coverage | Ø 9.7mm<br>± 0.4mm  |
| 6. Tape       | Mylar Tapes                                    | Ø 10.3mm            |
| 7. Braid II   | Shield 2: Cu/Sn (AWG30 t.p.c.)<br>90% Coverage | Ø 11.4mm<br>± 0.4mm |
| 8. Semicon    | Semiconductive EPR over<br>Semiconductive Tape | Ø 12.8mm            |
| 9. Dielectric | EPR                                            | Ø 19.2mm<br>± 0.3mm |
| 10. Semicon   | Semiconductive EPR                             | Ø 19.9mm            |
| 11. Braid III | Shield 3: Cu/Sn (AWG34 t.p.c.)<br>90% Coverage | Ø 21.2mm<br>± 0.5mm |
| 12. Jacket    | Polyurethane over Mylar Separator              | Ø 25.4mm<br>± 0.6mm |

### TECHNICAL DATA

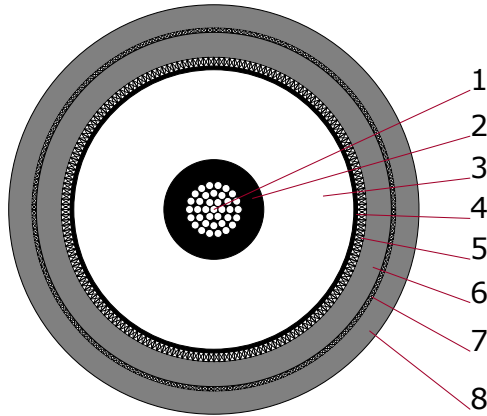
|                                      |                                         |
|--------------------------------------|-----------------------------------------|
| Rated Voltage (Conductor – Braid I)  | 75kV <sub>DC</sub> / 25kV <sub>AC</sub> |
| Rated Voltage (Braid II – Braid III) | 75kV <sub>DC</sub>                      |
| Impedance (Conductor – Braid I)      | typ. 42Ω                                |
| Capacitance (Conductor – Braid I)    | typ. 164pF/m                            |
| min. Bend Radius                     | 203mm (fixed)                           |
| Operating Temperature                | -51°C - +80°C                           |
| Weight                               | 0.75kg/m                                |
| Color                                | black                                   |
| Status                               | S (Special)                             |



## 2243TTJ

125kV<sub>DC</sub> / 40kV<sub>AC</sub> - EPR DIELECTRIC - TRIAXIAL

### CONSTRUCTION



|                 |                                            |                                  |
|-----------------|--------------------------------------------|----------------------------------|
| 1. Conductor    | AWG8 Cu/Sn (49xAWG25 t.p.c.)               | 8mm <sup>2</sup>                 |
| 2. Semicon      | Semiconductive EPR                         | Ø 5.6mm                          |
| 3. Dielectric   | EPR                                        | Ø 15.7mm<br>± 0.25mm             |
| 4. Semicon      | Semiconductive Tape                        | Ø 16.1mm                         |
| 5. Braid I      | Cu/Sn (7x24x AWG30 t.p.c.)<br>90% Coverage | ≈ 4.9mm <sup>2</sup><br>Ø 17.1mm |
| 6. Inner Jacket | TPR                                        | Ø 19.9mm<br>± 0.4mm              |
| 7. Braid II     | Cu/Sn (7x24x AWG34 t.p.c.)<br>90% Coverage | ≈ 2mm <sup>2</sup><br>Ø 20.4mm   |
| 8. Outer Jacket | TPR                                        | Ø 23.0mm<br>± 0.5mm              |

### TECHNICAL DATA

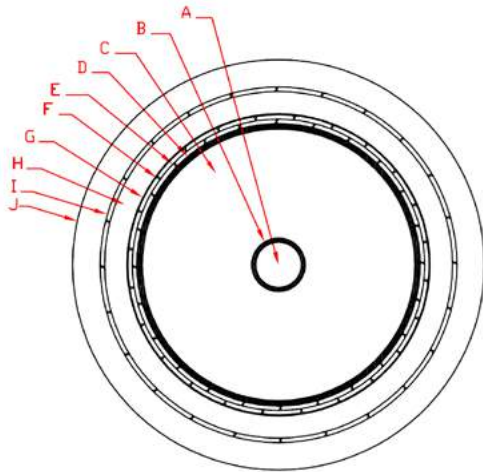
|                                                             |                                                               |
|-------------------------------------------------------------|---------------------------------------------------------------|
| Rated Voltage (Conductor – Braid I)<br>(Braid I – Braid II) | 125kV <sub>DC</sub> / 40kV <sub>AC</sub><br>5kV <sub>DC</sub> |
| Test Voltage (Conductor – Braid I)<br>(Braid I – Braid II)  | 55kV <sub>AC</sub> / 10min<br>10kV <sub>DC</sub> / 10min      |
| Impedance (Conductor – Braid I)                             | typ. 47Ω                                                      |
| Capacitance (Conductor – Braid I)                           | typ. 155pF/m                                                  |
| min. Bend Radius                                            | 150mm (fixed)                                                 |
| Operating Temperature                                       | -51°C - +105°C                                                |
| Weight                                                      | 0.745kg/m                                                     |
| Color                                                       | black                                                         |
| Status                                                      | S (Special)                                                   |



## 2358

300kV<sub>DC</sub> TRIAXIAL EPR DIELECTRIC

### CONSTRUCTION



|                       |                                      |                                |
|-----------------------|--------------------------------------|--------------------------------|
| <b>A Conductor</b>    | AWG4 solid Cu                        | 21.2mm <sup>2</sup><br>Ø 5.2mm |
| <b>B Semicon</b>      | Semiconductive EPR                   | Ø 6.6mm                        |
| <b>C Dielectric</b>   | EPR                                  | Ø 31.8mm<br>± 0.6mm            |
| <b>D Semicon</b>      | Semiconductive EPR                   | Ø 33.0mm                       |
| <b>E Braid I a</b>    | Cu/Sn (9x 24x AWG30 t.p.c.)          |                                |
| <b>F Braid I b</b>    | Cu/Sn (11x 24x AWG30 t.p.c.)         |                                |
| <b>G Tape</b>         | Mylar Tape                           |                                |
| <b>H Dielectric</b>   | Polyolefin                           | Ø 40.6mm<br>± 0.8mm            |
| <b>I Braid II</b>     | CU/Sn (AWG30 t.p.c.)<br>85% Coverage |                                |
| <b>J Outer Jacket</b> | PVC                                  | Ø 46.7mm<br>± 0.8mm            |

### TECHNICAL DATA

|                                                                    |                                             |
|--------------------------------------------------------------------|---------------------------------------------|
| <b>Rated Voltage</b> (Conductor – Braid I)<br>(Braid I – Braid II) | 300kV <sub>DC</sub><br>25kV <sub>DC</sub>   |
| <b>Test Voltage</b> (Conductor – Braid I)<br>(Braid I – Braid II)  | 330kV <sub>DC</sub><br>30kV <sub>DC</sub> / |
| <b>Impedance</b> (Conductor – Braid I)                             | 62Ω                                         |
| <b>Capacitance</b> (Conductor – Braid I)                           | typ. 100pF/m                                |
| <b>Conductor Resistance @ 20°C</b>                                 | typ. 0.86mΩ/m                               |
| <b>Braid Resistance @ 20°C (Braid I)</b>                           | typ. 1.25mΩ/m                               |
| <b>min. Bend Radius</b>                                            | 330mm (fixed)                               |
| <b>max. Conductor Temperature</b>                                  | +60°C                                       |
| <b>Weight</b>                                                      | 2.1kg/m                                     |
| <b>Color</b>                                                       | black                                       |
| <b>Status</b>                                                      | S (Special)                                 |





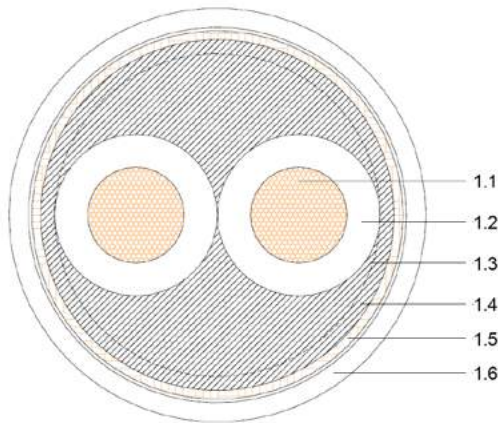
## HSC-1-2SSUB-0

1kV<sub>AC</sub> - 2 CORE HIGH FREQUENCY POWER CABLE

### PRODUCT DESCRIPTION

1kV<sub>AC</sub> 2 conductor shielded cable for medium / high frequency power transmission. The core conductors are made of high frequency litz wire to facilitate low losses at high switching frequencies. Silicone dielectric and robust Polyurethane jacket.

### CONSTRUCTION



|                        |                                                             |                               |
|------------------------|-------------------------------------------------------------|-------------------------------|
| 1.1. Conductor (Core)  | 600x0.10mm enamelled copper wire (high frequency litz wire) | 4.7mm <sup>2</sup><br>Ø 3.6mm |
| 1.2. Dielectric (Core) | Silicone                                                    | Ø 5.9mm                       |
| 1.3. Twist             | 2 Cores                                                     | Ø 11.8mm                      |
| 1.4. Filling           | Silicone                                                    | Ø 12.8mm                      |
| 1.5. Braid             | Cu/Sn (0.161mm t.p.c.)<br>≥85% Coverage                     | Ø 13.4mm                      |
| 1.6. Jacket            | TPE-U                                                       | Ø 15.1mm<br>± 1.0mm           |

### TECHNICAL DATA

|                                       |                                |
|---------------------------------------|--------------------------------|
| Rated Voltage (Conductor – Conductor) | 1kV <sub>AC</sub>              |
| Rated Voltage (Conductor – Braid)     | 1kV <sub>AC</sub>              |
| Test Voltage                          | 10kV <sub>AC</sub> (Sparktest) |
| Conductor Resistance @ 20°C           | ≤ 3.8Ω/km                      |
| Capacitance (Conductor – Conductor)   | typ. t.b.s. pF/m               |
| Capacitance (Conductor – Braid)       | typ. t.b.s. pF/m               |
| Impedance (Conductor – Conductor)     | typ. t.b.s. Ω                  |
| min. Bend Radius                      | 230mm (moving), 115mm (fixed)  |
| Operating Temperature                 | -40°C - +90°C                  |
| Weight                                | 0.406kg/m                      |
| Cu-Weight                             | 0.170kg/m                      |
| Color                                 | black                          |
| RoHS Compliant                        | Yes                            |
| Status                                | S (Special)                    |



## HSC-1-4SSUA-6

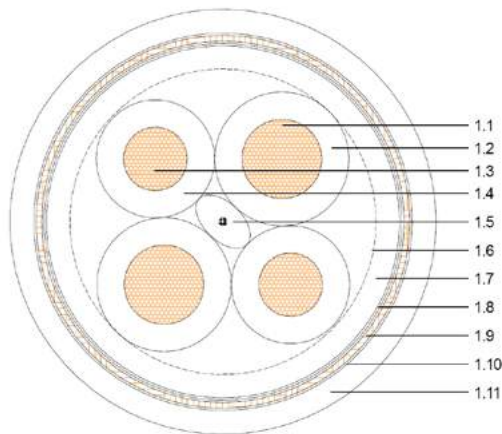
1kV<sub>AC</sub> - 4 CORE SHIELDED HIGH FREQUENCY POWER CABLE

AWM STYLE 20234

### PRODUCT DESCRIPTION

UL recognized AWM 1kV<sub>AC</sub> 4 conductor shielded cable for medium / high frequency power transmission. Two core conductors are made of high frequency litz wire to facilitate low losses at high switching frequencies. Two conventional conductors are additionally provided. Silicone dielectric and robust Polyurethane jacket.

### CONSTRUCTION



|                 |                                                                     |                               |
|-----------------|---------------------------------------------------------------------|-------------------------------|
| 1.1. Conductor  | AWG11 (600x0.10mm enamelled copper wire / high frequency litz wire) | 4.7mm <sup>2</sup><br>Ø 3.6mm |
| 1.2. Dielectric | Silicone<br>Marking: "1", "2"                                       | Ø 5.9mm                       |
| 1.3. Conductor  | AWG12 Cu/Sn (224x0.15mm t.p.c.)                                     | 3.9mm <sup>2</sup><br>Ø 2.9mm |
| 1.4. Dielectric | Silicone                                                            | Ø 5.2mm                       |
| 1.5. Filler     | Silicone on glass fiber                                             |                               |
| 1.6. Twist      | Filler, 4 Cores (2xAWG11 + 1xAWG12)                                 | Ø 14mm                        |
| 1.7. Filling    | Silicone                                                            | Ø 15.5mm                      |
| 1.8. Tape       | PTFE Tape                                                           |                               |
| 1.9. Braid      | Cu/Sn (0.127mm t.p.c.)<br>≥85% Coverage                             | Ø 16.1mm                      |
| 1.10. Tape      | PTFE Tape                                                           |                               |
| 1.11. Jacket    | TPE-U                                                               | Ø 18.7mm<br>± 1.0mm           |

### TECHNICAL DATA

|                                       |                               |
|---------------------------------------|-------------------------------|
| Rated Voltage (Conductor – Conductor) | 1kV <sub>AC</sub>             |
| Rated Voltage (Conductor – Braid)     | 1kV <sub>AC</sub>             |
| Test Voltage (Conductor – Conductor)  | 4kV <sub>AC</sub>             |
| Test Voltage (Conductor – Braid)      | 4kV <sub>AC</sub>             |
| Capacitance (Conductor – Conductor)   | typ. t.b.s. pF/m              |
| Capacitance (Conductor – Braid)       | typ. t.b.s. pF/m              |
| min. Bend Radius                      | 280mm (moving), 140mm (fixed) |
| Operating Temperature                 | -40°C - +80°C                 |
| Weight                                | 0.584kg/m                     |
| Cu-Weight                             | 0.280kg/m                     |
| RoHS Compliant                        | Yes                           |
| Status                                | S (Special)                   |



## HSC-2.5-7SSB-2

2.5kV<sub>AC</sub> – 7 CONDUCTOR SHIELDED CONTROL CABLE WITH UNSHIELDED HIGH VOLTAGE ISOLATION

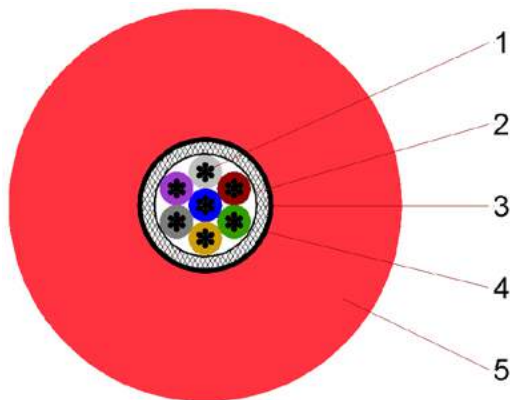
### PRODUCT DESCRIPTION

7-conductor, low voltage shielded control cable with Silicone high voltage isolation.

The inner shielded core is isolated for up to 2.5kV<sub>AC</sub> or 8kV<sub>DC</sub> operating voltage.

Intended for the transmission of signals on high voltage potential. Suitable only for internal wiring in non-accessible space.

### CONSTRUCTION



|                     |                                                                                           |                    |
|---------------------|-------------------------------------------------------------------------------------------|--------------------|
| 1. Conductor (Core) | AWG26 Cu/Sn (7x0.16mm t.p.c.)<br>Isolation: FEP, Ø 0.8mm<br>Colors according to DIN 47100 |                    |
| 2. Twist            | 7 Conductors AWG26,<br>PET Separator Tape                                                 |                    |
| 3. Braid            | Cu/Sn (0.127mm t.p.c.)<br>≥90% Coverage                                                   | Ø 2.9mm            |
| 4. Semicon          | Semiconductive Tape                                                                       |                    |
| 5. Dielectric       | Silicone<br>Color: red                                                                    | Ø 9.0mm<br>± 0.5mm |

### TECHNICAL DATA

|                                 |                                         |                |
|---------------------------------|-----------------------------------------|----------------|
| Rated Voltage                   | 2.5kV <sub>AC</sub> / 8kV <sub>DC</sub> |                |
| Rated Voltage (Core Conductors) | 300V                                    |                |
| Test Voltage (HV Isolation)     | 11.5kV <sub>AC</sub> (Sparktest)        | (routine test) |
|                                 | 16kV <sub>DC</sub> / 1min               | (routine test) |
| Conductor Resistance @ 20°C     | ≤ 133Ω/km                               |                |
| Braid Resistance @ 20°C         | < t.b.s. mΩ/m                           |                |
| min. Bend Radius                | 135mm (moving), 70mm (fixed)            |                |
| Operating Temperature           | -50°C - +150°C                          |                |
| Weight                          | 98kg/km                                 |                |
| Cu-Weight                       | 29kg/km                                 |                |
| RoHS Compliant                  | Yes                                     |                |
| Halogen-free                    | No                                      |                |
| Status                          | S (Special)                             |                |

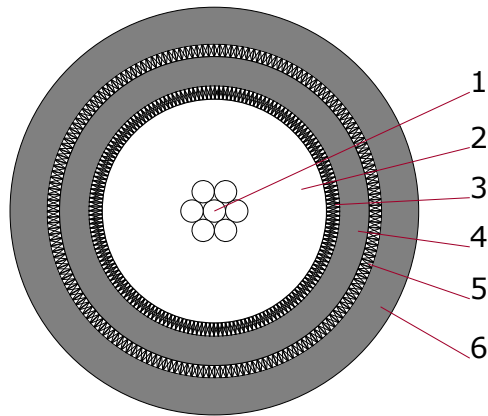


## HSC-4-1P2SVA-0

RG-8 A/U TRIAXIAL PE DIELECTRIC, DOUBLE SHIELD

This is a preliminary specification. Electrical, mechanical and environmental data are subject to change.

### CONSTRUCTION



|                 |                          |                                |
|-----------------|--------------------------|--------------------------------|
| 1. Conductor    | AWG12 Cu (7x AWG21 b.c.) | 3.1mm <sup>2</sup><br>Ø 2.25mm |
| 2. Dielectric   | PE                       | Ø 7.24mm                       |
| 3. Braid I      | Cu<br>94% Coverage       | Ø 8.1mm                        |
| 4. Inner Jacket | PVC                      | Ø 10.0mm<br>± 0.2mm            |
| 5. Braid II     | Cu<br>94% Coverage       | Ø 10.8mm                       |
| 6. Outer Jacket | PVC                      | Ø 13.2mm<br>± 0.2mm            |

### TECHNICAL DATA

|                                                             |                                                                                                                                         |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Rated Voltage (Conductor – Braid I)<br>(Braid I – Braid II) | 4000V <sub>RMS</sub><br>300V <sub>RMS</sub>                                                                                             |
| Test Voltage (Conductor – Braid I)<br>(Braid I – Braid II)  | 30kV <sub>DC</sub> / 1min (routine test)<br>5kV <sub>DC</sub>                                                                           |
| Leakage Current (Conductor – Braid I)                       | ≤ 5µA @ 30kV <sub>DC</sub> / 20m specimen length (routine test)<br>test performed on the full length of each reel                       |
| Isolation Resistance (Conductor – Braid I)                  | ≥ 500MΩ*km                                                                                                                              |
| Impedance (Conductor – Braid I)                             | typ. 50Ω                                                                                                                                |
| Capacitance (Conductor – Braid I)                           | typ. 100pF/m                                                                                                                            |
| Velocity of Propagation                                     | 66%                                                                                                                                     |
| Attenuation                                                 | 0.9dB/100m @ 1MHz<br>3.9dB/100m @ 50MHz<br>6.0dB/100m @ 100MHz<br>10.0dB/100m @ 200MHz<br>13.9dB/100m @ 500MHz<br>23.2dB/100m @ 1000MHz |
| Conductor Resistance @ 20°C                                 | typ. 5.8mΩ/m                                                                                                                            |
| min. Bend Radius                                            | 150mm (fixed)                                                                                                                           |
| max. Conductor Temperature                                  | -20°C - +70°C                                                                                                                           |
| Weight                                                      | ca. 0.28kg/m                                                                                                                            |
| Color                                                       | black                                                                                                                                   |
| Status                                                      | Y (Preliminary)                                                                                                                         |

## HSC-5-7X2SVA-2

5kV<sub>AC</sub> – 7 CONDUCTOR SHIELDED CONTROL CABLE WITH SHIELDED HIGH VOLTAGE ISOLATION

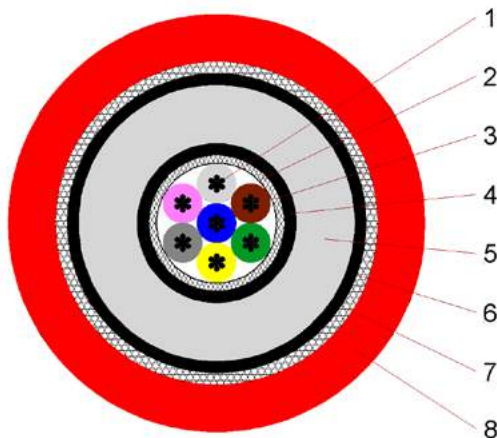
### PRODUCT DESCRIPTION

7-conductor, low voltage shielded control cable with PE-X high voltage isolation, outer shield and PVC jacket.

The inner shielded core is isolated for up to 5kV<sub>AC</sub> or 15kV<sub>DC</sub> operating voltage.

Intended for the transmission of signals on high voltage potential. Suitable only for internal wiring in non-accessible space.

### CONSTRUCTION



|                     |                                                                                                      |                     |
|---------------------|------------------------------------------------------------------------------------------------------|---------------------|
| 1. Conductor (Core) | AWG26 Cu/Sn (7x0.16mm t.p.c.)<br>Isolation: PP<br>Ø 0.99mm ± 0.05mm<br>Colors according to DIN 47100 |                     |
| 2. Twist            | 7 Conductors AWG26,<br>PET Separator Tape                                                            | Ø 3.05mm            |
| 3. Braid I (Core)   | Cu/Sn (0.10mm t.p.c.)<br>ca. 95% Coverage                                                            | Ø 3.45mm            |
| 4. Semicon          | Semiconductive PE<br>Color: black                                                                    | Ø 4.05mm            |
| 5. Dielectric       | PE-X<br>Color: natural                                                                               | Ø 7.0mm<br>± 0.3mm  |
| 6. Semicon          | Semiconductive PE<br>Color: black                                                                    | Ø 7.6mm             |
| 7. Braid II         | Cu/Sn (0.13mm t.p.c.)<br>ca. 85% Coverage                                                            | Ø 8.12mm            |
| 8. Jacket           | PVC<br>Color: red, silk-mat                                                                          | Ø 10.6mm<br>± 0.5mm |

### TECHNICAL DATA

|                             |                                           |                                                                                           |
|-----------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------|
| Rated Voltage               | (Braid I – Braid II)<br>(Core Conductors) | 5kV <sub>AC</sub> / 15kV <sub>DC</sub><br>300V                                            |
| Test Voltage                | (HV Isolation)<br>(Braid I – Braid II)    | 14kV <sub>AC</sub> (Sparktest) (routine test)<br>20kV <sub>DC</sub> / 1min (routine test) |
| Capacitance                 | (Braid I – Braid II)                      | typ. 240pF/m t.b.c.                                                                       |
| Conductor Resistance @ 20°C |                                           | ≤ 139Ω/km                                                                                 |
| Braid Resistance @ 20°C     | (Braid I)<br>(Braid II)                   | < t.b.s. mΩ/m<br>< t.b.s. mΩ/m                                                            |
| min. Bend Radius            |                                           | 160mm (moving), 80mm (fixed)                                                              |
| Operating Temperature       |                                           | -40°C - +85°C                                                                             |
| Weight                      |                                           | 143kg/km                                                                                  |
| Cu-Weight                   |                                           | 53,1kg/km                                                                                 |
| RoHS Compliant              |                                           | Yes                                                                                       |
| Halogen-free                |                                           | No                                                                                        |
| Status                      |                                           | S (Special)                                                                               |



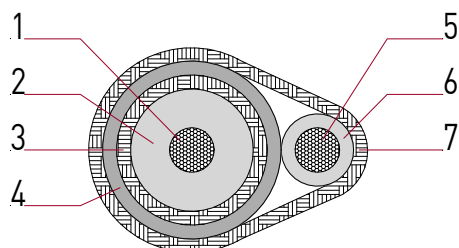
## HSC-7.5-2K2SA

7.5kV<sub>DC</sub> – AWG22 – PEEK DIELECTRIC – 2 CONDUCTOR SHIELDED

### PRODUCT DESCRIPTION

Single conductor, shielded high voltage cable with PEEK dielectric, specified for voltages up to 7.5kV<sub>DC</sub> and 3.0kV<sub>AC</sub> with an additional, unshielded, low voltage conductor. Both conductors are located side by side and coated with a V2A / stainless steel braid. The cable is radiation resistant.

### CONSTRUCTION



|                 |                                |                 |
|-----------------|--------------------------------|-----------------|
| 1. Conductor    | Cu/Ni AWG22 (19x0.16mm n.p.c.) | Ø <0.79mm       |
| 2. Dielectric   | PEEK                           | Ø 2.2mm         |
| 3. Braid        | Cu/Ni (0.13mm n.p.c.)          | Ø 2.7mm         |
| 4. Inner Jacket | PEEK                           | Ø 3.2mm         |
| 5. Conductor    | Cu/Ni AWG22 (19x0.16mm n.p.c.) | Ø <0.79mm       |
| 6. Dielectric   | PEEK                           | Ø 1.3mm         |
| 7. Braid        | V2A / stainless steel (0.12mm) | ca. 3.7 x 5.0mm |

### TECHNICAL DATA

|                                    |                                           |
|------------------------------------|-------------------------------------------|
| Rated Voltage (shielded conductor) | 7.5kV <sub>DC</sub> / 3.0kV <sub>AC</sub> |
| Test Voltage (shielded conductor)  | 20kV <sub>DC</sub> / 8.0kV <sub>AC</sub>  |
| min. Bend Radius                   | 60mm                                      |
| Operating Temperature              | -60°C - +200°C                            |
| Weight                             | 34.5kg/km                                 |
| Cu-Weight                          | 18kg/km                                   |
| RoHS Compliant                     | Yes                                       |
| Status                             | S (Special)                               |



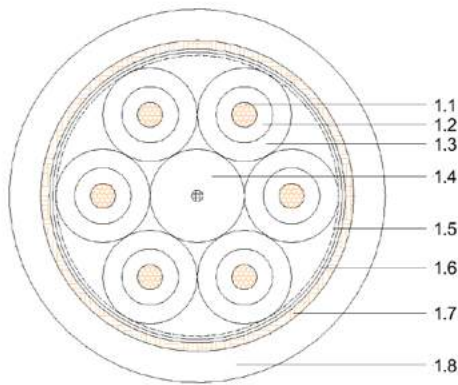
## HSC-10-6SSSA

10kV<sub>DC</sub> – 6 CORE SILICONE DIELECTRIC SHIELDED HIGH VOLTAGE CABLE

### PRODUCT DESCRIPTION

10kV<sub>DC</sub> six core multiconductor (6x AWG20) shielded high voltage cable with silicone dielectric and silicone jacket. The individual cores feature layers of semiconductive silicone around the conductors.

### CONSTRUCTION



|                       |                                        |                                  |
|-----------------------|----------------------------------------|----------------------------------|
| <b>1.1 Conductor</b>  | Cu/Sn (19 x 0.203mm t.p.c.)            | 0.6mm <sup>2</sup><br>Ø < 0.99mm |
| <b>1.2 Semicon</b>    | Semiconductive Silicone                | Ø 2.2mm                          |
| <b>1.3 Dielectric</b> | Silicone                               | Ø 3.6mm                          |
| <b>1.4 Filler</b>     | Silicone around glass fiber            | Ø 3.6mm                          |
| <b>1.5 Twist</b>      | 6 Cores                                | Ø 10.9mm                         |
| <b>1.6 Tape</b>       | Polyester Foil                         |                                  |
| <b>1.7 Braid</b>      | Cu/Sn (0.15mm t.p.c.)<br>≥85% Coverage | Ø 11.7mm                         |
| <b>1.8 Jacket</b>     | Silicone                               | Ø 14.1mm<br>± 0.7mm              |

### TECHNICAL DATA

|                              |                                                                                                                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Rated Voltage</b>         | 10kV <sub>DC</sub> (conductor / braid)                                                                                                                                                           |
| <b>Test Voltage</b>          | 25kV <sub>DC</sub> or 10kV <sub>AC</sub> (Sparktest)<br>20kV <sub>DC</sub> or 8kV <sub>AC</sub> 1min (conductor / conductor)<br>15kV <sub>DC</sub> or 6kV <sub>AC</sub> 1min (conductor / braid) |
| <b>Resistance at 20°C</b>    | < 32.4Ω/km (conductor)                                                                                                                                                                           |
| <b>min. Bend Radius</b>      | 7.5 x Ø (fixed), 15 x Ø (moving)                                                                                                                                                                 |
| <b>Operating Temperature</b> | -50°C - +90°C                                                                                                                                                                                    |
| <b>Weight</b>                | 250kg/km (total)<br>83kg/km (copper)                                                                                                                                                             |
| <b>Color</b>                 | t.b.d.                                                                                                                                                                                           |
| <b>Status</b>                | X (Example)                                                                                                                                                                                      |





## HSC-15-1S2SUA-0

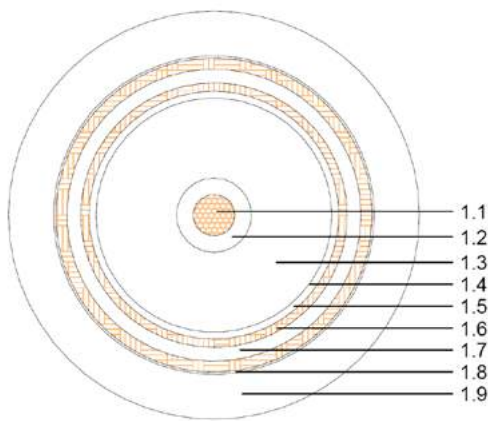
15kV<sub>AC</sub> – AWG16 – SILICONE DIELECTRIC - TRIAXIAL

### PRODUCT DESCRIPTION

15kV<sub>AC</sub> triaxial high voltage cable optimized for low partial discharge, robustness and high flexibility even at low ambient temperatures. Semiconductive layers around the conductor and the inner dielectric assure excellent PD behavior. Silicone dielectric and a robust TPE-U / Polyurethane jacket.



### CONSTRUCTION



|                       |                                               |                                 |
|-----------------------|-----------------------------------------------|---------------------------------|
| <b>1.1 Conductor</b>  | AWG16 Cu/Sn (105x0.127mm t.p.c.)              | 1.33mm <sup>2</sup><br>Ø 1.53mm |
| <b>1.2 Semicon</b>    | Semiconductive Silicone                       | Ø 2.7mm                         |
| <b>1.3 Dielectric</b> | Silicone                                      | Ø 8.5mm                         |
| <b>1.4 Semicon</b>    | Semiconductive PTFE Tape                      | Ø 9.0mm                         |
| <b>1.5 Braid I</b>    | Cu/Sn (6x24x 0.15mm t.p.c.)<br>≥85% Coverage  | Ø 9.6mm                         |
| <b>1.5a Tape</b>      | Polyester Tape                                | Ø 9.7mm                         |
| <b>1.6 Dielectric</b> | Silicone                                      | Ø 10.7mm                        |
| <b>1.6a Tape</b>      | Polyester Tape                                | Ø 10.8mm                        |
| <b>1.7 Braid II</b>   | Cu/Sn (5x24x 0.203mm t.p.c.)<br>≥85% Coverage | Ø 11.6mm                        |
| <b>1.8 Tape</b>       | Nonwoven Separator Tape                       | Ø 11.7mm                        |
| <b>1.9 Jacket</b>     | TPE-U                                         | Ø 14.3mm<br>± 0.5mm             |

### TECHNICAL DATA

|                                                                                             |                                                                 |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>Rated Voltage (Conductor – Braid I)</b><br><b>(Braid I – Braid II)</b>                   | 15kV <sub>AC</sub><br>1kV <sub>AC</sub>                         |
| <b>Test Voltage (Conductor – Braid I)</b><br><b>(Braid I – Braid II)</b><br><b>(Jacket)</b> | 40kVDC / 1min<br>6kVDC / 1min<br>5kV <sub>AC</sub> (Spark Test) |
| <b>Partial Discharge Level (Conductor – Braid I)</b>                                        | ≤ 20pC, U <sub>PD</sub> = 8kV <sub>AC</sub>                     |
| <b>Capacitance (Conductor – Braid I)</b><br><b>(Braid I – Braid II)</b>                     | typ. 150pF/m<br>typ. 870pF/m                                    |
| <b>Conductor Resistance @ 20°C</b>                                                          | ≤ 14.6Ω/km                                                      |
| <b>Isolation Resistance (Braid I – Braid II)</b>                                            | > 10 <sup>9</sup> Ω on 21m cable length                         |



|                                    |                               |
|------------------------------------|-------------------------------|
| <b>Braid Resistance (Braid I)</b>  | <16mΩ/m                       |
| <b>Braid Resistance (Braid II)</b> | <11mΩ/m                       |
| <b>min. Bend Radius</b>            | 210mm (moving), 105mm (fixed) |
| <b>Operating Temperature</b>       | -40°C - +90°C                 |
| <b>Weight</b>                      | 0.330kg/m                     |
| <b>Cu-Weight</b>                   | 0.142kg/m                     |
| <b>Color</b>                       | black                         |
| <b>RoHS Compliant</b>              | Yes                           |
| <b>Status</b>                      | P (Preferred)                 |



## HSC-15-2SSA-9

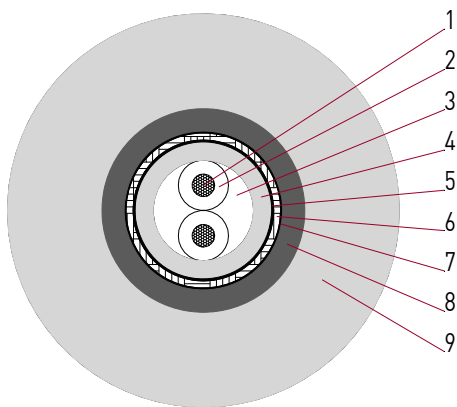
15kV<sub>AC</sub> – SILICONE DIELECTRIC - 2 CONDUCTOR SHIELDED

### PRODUCT DESCRIPTION

2-core, shielded control cable with silicone high voltage isolation. The inner shielded cable is isolated against the environment for up to 15kV<sub>AC</sub> operating voltage. The cable has been developed for the transmission of signals or supply voltages on high voltage potential. Suitable only for internal wiring in non-accessible space.



### CONSTRUCTION



|                        |                              |                     |
|------------------------|------------------------------|---------------------|
| 1. Conductor           | 2x Cu/Sn (IEC 60228, t.p.c.) | 2x 1mm <sup>2</sup> |
| 2. Dielectric          | Silicone                     | Ø 2.5mm             |
| 3. Twist               | 2 Cores                      | Ø 5.0mm             |
| 4. Inner Jacket        | Silicone                     | Ø 7.0               |
| 5. Tape                | Polyester Tape               |                     |
| 6. Braid               | Cu/Sn (0.15mm t.p.c.)        | Ø 7.7mm             |
| 7. Tape                | Semiconductive Tape          |                     |
| 8. Semicon             | Semiconductive Silicone      | Ø 10.1mm            |
| 9. Dielectric / Jacket | Silicone                     | Ø 19.5mm<br>±0.5mm  |

### TECHNICAL DATA

|                                      |                                         |
|--------------------------------------|-----------------------------------------|
| Rated Voltage (Braid – Environment)  | 15kV <sub>AC</sub> / 21kV <sub>DC</sub> |
| Rated Voltage (Conductor – Braid)    | 300 / 500V                              |
| Test Voltage (Braid – Environment)   | 35kV <sub>AC</sub> / 5min               |
| Test Voltage (Conductor – Conductor) | 2.0kV <sub>AC</sub>                     |
| Test Voltage (Conductor – Braid)     | 1.5kV <sub>AC</sub>                     |
| min. Bend Radius                     | 150mm (static) / 200mm (dynamic)        |
| Operating Temperature                | -51°C - +150°C                          |
| Weight                               | 0.43kg/m                                |
| Color                                | white                                   |
| Status                               | P (Preferred)                           |



## HSC-20-1X2SUA-2

20kV<sub>DC</sub> - 0.50mm<sup>2</sup> - PE-X DIELECTRIC - LOW NOISE - TRIAXIAL

### PRODUCT DESCRIPTION

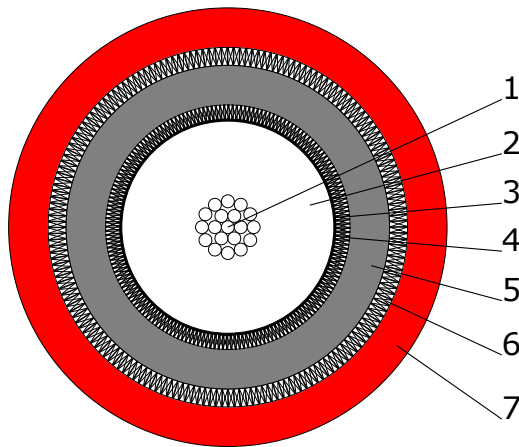
Low noise triaxial high voltage cable suitable to replace standard 50Ω RG58 type triaxial cable.

It is mechanically compatible with triaxial connectors designed for 9222 type cable.

The cable is free of halogens, low smoke (LSZH). RoHS/REACH compliant.

The jacket is resistant against oil, hydrolysis and microbes. The cable is radiation resistant to a limited extent.

### CONSTRUCTION



|                 |                                    |                                 |
|-----------------|------------------------------------|---------------------------------|
| 1. Conductor    | Cu/Sn (19xAWG33 t.p.c.)            | 0.50mm <sup>2</sup><br>Ø 0.95mm |
| 2. Dielectric   | PE-X                               | Ø 2.95mm<br>± 0.05mm            |
| 3. Semicon      | Semiconductive Tape                |                                 |
| 4. Braid I      | Cu/Sn (0.10mm t.p.c.) 95% Coverage | Ø 3.4mm                         |
| 5. Inner Jacket | TPE-U (PUR)                        | Ø 4.5mm<br>± 0.15mm             |
| 6. Braid II     | Cu/Sn (0.10mm t.p.c.) 85% Coverage | Ø 5.0mm                         |
| 7. Jacket       | TPE-U (PUR)                        | Ø 6.1mm<br>± 0.15mm             |

### TECHNICAL DATA

|                                                                                  |                                                                           |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Rated Voltage (Conductor – Braid I)<br>(Braid I – Braid II)                      | 20kV <sub>DC</sub><br>500V <sub>DC</sub>                                  |
| Test Voltage (Conductor – Braid I)<br>(Braid I – Braid II)<br>(Spark Test, core) | 41kV <sub>DC</sub> / 60s<br>2kV <sub>DC</sub> / 60s<br>15kV <sub>AC</sub> |
| Conductor Resistance @ 20°C                                                      | ≤ 40Ω/km                                                                  |
| Impedance (Conductor – Braid I)                                                  | typ. 50Ω                                                                  |
| Capacitance (Conductor – Braid I)                                                | typ. 102pF/m                                                              |
| min. Bend Radius                                                                 | 90mm (moving), 60mm (fixed)                                               |
| Operating Temperature                                                            | -20°C - +105°C                                                            |
| Flame Retardance                                                                 | according to DIN EN 60332-2-2 (20s)                                       |
| Weight                                                                           | ca. t.b.s. kg/m                                                           |
| Cu-Weight                                                                        | ca. t.b.s. kg/m                                                           |
| Color                                                                            | red                                                                       |
| Halogen-free                                                                     | Yes (LSZH)                                                                |
| RoHS Compliant                                                                   | Yes                                                                       |
| Status                                                                           | Y (Preliminary)                                                           |

Intended for fixed installation; suitable for flexible wiring to a limited extent.

## HSC-30-3S2SUC-0

30kV<sub>DC</sub> – 3 CONDUCTOR DOUBLE SHIELDED

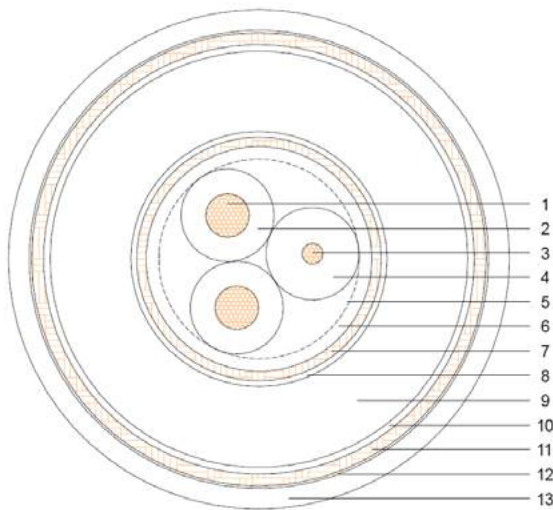
### PRODUCT DESCRIPTION

30kV<sub>DC</sub> shielded high voltage cable with a separately shielded 3 conductor core. Optimized for low partial discharge and high flexibility. Semiconductive layers around the core wires and the dielectric layer assure excellent PD behavior.

Fine wires, the use of Silicone for all inner dielectrics and a Polyurethane jacket provide high flexibility to minimize the transmission of vibrations.



### CONSTRUCTION



|                        |                                         |                                  |
|------------------------|-----------------------------------------|----------------------------------|
| 1. Conductor (F1, F2)  | AWG14 Cu/Sn (105x0.16mm t.p.c.)         | 2.1mm <sup>2</sup>               |
| 2. Dielectric (F1, F2) | Silicone<br>Color: white, red           | Ø 4.0mm                          |
| 3. Conductor (SUP)     | AWG20 Cu/Sn (41x0.127mm t.p.c.)         | 0.52mm <sup>2</sup>              |
| 4. Dielectric (SUP)    | Silicone<br>Color: black                | Ø 4.0mm                          |
| 5. Twist               | 3 Cores (2xAWG14 + 1xAWG20)             | Ø 8.7mm                          |
| 6. Filling             | Semiconductive Silicone                 | Ø 9.7mm                          |
| 7. Braid I (EXT)       | Cu/Sn (0.203mm t.p.c.)<br>≥95% Coverage | Ø 10.5mm<br>≈6.2mm <sup>2</sup>  |
| 8. Semicon             | Semiconductive PTFE Tape                | Ø 11.0mm                         |
| 9. Dielectric          | Silicone<br>Color: t.b.s.               | Ø 20.0mm                         |
| 10. Semicon            | Semiconductive PTFE Tape                | Ø 20.5mm                         |
| 11. Braid II (GND)     | Cu/Sn (0.254mm t.p.c.)<br>≥95% Coverage | Ø 21.5mm<br>≈12.8mm <sup>2</sup> |
| 12. Tape               | Separator Tape                          |                                  |
| 13. Jacket             | TPE-U<br>black                          | Ø 23.5mm<br>± 0.5mm              |



## ■ TECHNICAL DATA

|                                    |                                                                   |                                                                |                                           |
|------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------|
| <b>Rated Voltage</b>               | <b>(EXT - GND)</b><br><b>(EXT - SUP)</b><br><b>(EXT - F1/F2)</b>  | 30kV <sub>DC</sub><br>12kV <sub>DC</sub><br>10kV <sub>DC</sub> |                                           |
| <b>Test Voltage</b>                | <b>(EXT - GND)</b><br><b>(EXT - SUP/F1/F2)</b>                    | 54kV <sub>DC</sub> / 1min<br>22kV <sub>DC</sub> / 1min         | (routine test)<br>(routine test)          |
| <b>Capacitance</b>                 | <b>(EXT - GND)</b><br><b>(EXT - SUP)</b><br><b>(EXT - F1, F2)</b> | typ. 295pF/m<br>typ. 110pF/m<br>typ. 200pF/m                   | (type test)<br>(type test)<br>(type test) |
| <b>Conductor Resistance @ 20°C</b> | <b>(SUP)</b><br><b>(F1, F2)</b>                                   | < 40mΩ/m<br>< 10mΩ/m                                           | (type test)<br>(type test)                |
| <b>Braid Resistance @ 20°C</b>     | <b>(EXT)</b><br><b>(GND)</b>                                      | < 4mΩ/m<br>< 2mΩ/m                                             | (type test)<br>(type test)                |
| <b>min. Bend Radius</b>            |                                                                   | 175mm (static)                                                 |                                           |
| <b>Operating Temperature</b>       |                                                                   | -40°C - +90°C                                                  |                                           |
| <b>Flammability</b>                |                                                                   | UL2556 9.4 VW-1                                                |                                           |
| <b>Weight</b>                      |                                                                   | 0.893kg/m                                                      |                                           |
| <b>Color</b>                       |                                                                   | Black                                                          |                                           |
| <b>RoHS Compliant</b>              |                                                                   | Yes                                                            |                                           |
| <b>Status</b>                      |                                                                   | E (Prospective)                                                |                                           |

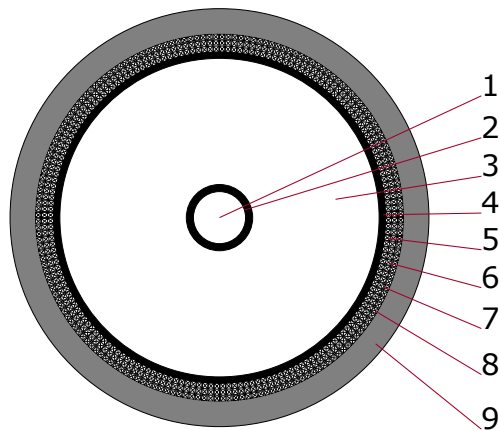


## HSC-300-1E2SVA-0

300kV<sub>DC</sub> TRIAXIAL EPR DIELECTRIC

This is a preliminary specification. Electrical, mechanical and environmental data are subject to change.

### CONSTRUCTION



|                 |                                      |                                |
|-----------------|--------------------------------------|--------------------------------|
| 1. Conductor    | AWG4 solid Cu                        | 21.2mm <sup>2</sup><br>Ø 5.2mm |
| 2. Semicon      | Semiconductive EPR                   | Ø 6.6mm                        |
| 3. Dielectric   | EPR                                  | Ø 31.8mm<br>± 0.6mm            |
| 4. Semicon      | Semiconductive EPR                   | Ø 33.0mm                       |
| 5. Braid I a    | Cu/Sn (9x 24x AWG30 t.p.c.)          |                                |
| 6. Braid I b    | Cu/Sn (11x 24x AWG30 t.p.c.)         |                                |
| 7. Dielectric   | Mylar Tape, 2 Layers, ½ lapped       |                                |
| 8. Braid II     | Cu/Sn (AWG30 t.p.c.)<br>85% Coverage | Ø 36.6mm                       |
| 9. Outer Jacket | PVC                                  | Ø 41.7mm<br>± 0.8mm            |

### TECHNICAL DATA

|                                     |                     |
|-------------------------------------|---------------------|
| Rated Voltage (Conductor – Braid I) | 300kV <sub>DC</sub> |
| Test Voltage (Conductor – Braid I)  | 330kV <sub>DC</sub> |
| (Braid I – Braid II)                | 5kV <sub>DC</sub>   |
| Impedance (Conductor – Braid I)     | typ. 62Ω            |
| Capacitance (Conductor – Braid I)   | typ. 100pF/m        |
| Conductor Resistance @ 20°C         | typ. 0.86mΩ/m       |
| Braid Resistance @ 20°C (Braid I)   | typ. 1.3mΩ/m        |
| min. Bend Radius                    | 320mm (fixed)       |
| max. Conductor Temperature          | -51°C - +100°C      |
| Weight                              | typ. 2kg/m          |
| Color                               | black               |
| Status                              | S (Special)         |

### CUSTOM SPECIAL HIGH VOLTAGE CABLES

The Special HV Cables shown here are just examples for some possible configurations. Customer applications often demand for specific solutions. **hivolt.de** is able to provide customized HV cables that match most specific requirements.



High voltage connectors for voltages up to 100kV<sub>DC</sub>. We offer coaxial as well as single and multi-pin HV connectors in different designs.

Semi-custom or full-custom connector solutions are feasible for specific applications.

When required, cables can be supplied terminated with HV connectors as fully tested high voltage cable assemblies. These can be based on our standard range of connectors or various third-party connector models.

Another range of high voltage cable assemblies consists of high voltage cable fitted with industry standard molded rubber or resin cast terminations like R10, R24, R28, 03/04 (Federal Standard) and many more.

These HV cable assemblies and mating receptacles are available for voltages up to 300kV<sub>DC</sub> and beyond.

The receptacles are oil-tight providing an excellent interface into transformer oil filled high voltage tanks.

Please let us know your specific requirement.

Typical applications include high voltage power supplies, nuclear instrumentation, industrial and scientific X-Ray, electron microscopes, mass spectrometry, electrostatic precipitators, high voltage test equipment, electron beam welding, high energy, pulsed power, particle physics and many more.





# HIGH VOLTAGE

- » CONNECTORS
- » CABLE ASSEMBLIES
- » RECEPTACLES



## SHV - STRAIGHT CABLE PLUG & SEALED BULKHEAD RECEPTACLE 5kV<sub>DC</sub> / 3.5kV<sub>RMS</sub>

### FEATURES

- Rated Voltage 5kV<sub>DC</sub> / 3.5kV<sub>RMS</sub>
- Rated Current 500mA
- Completed cable assemblies available
- RoHS compliant

### APPLICATIONS

- Safe high voltage laboratory wiring
- High voltage power supplies / amplifiers
- Nuclear instrumentation
- Test and measurement equipment

SHV (Safe High Voltage – Nuclear Instrumentation Module Standard) reverse polarity, coaxial high voltage connectors. The straight cable plug 57K101-106N3 is compatible with standard RG58-C/U or our 20kV rated LSZH **HRG58-20-2** coaxial cable for crimp assembly. For high temperature applications it can also be assembled with silicone insulated coaxial cable **HSL-8S-0.75-B-2**. A suitable crimping tool is available on request. The outer ground connection is maintained during unintended mating/unmating. The center contacts are recessed to prevent shock hazard when the connectors are mated. For personal safety the connectors should not be mated or unmated when energized! The connectors are RoHS compliant.

Remark: SHV and BNC connectors are not intermateable.

### SPECIFICATIONS

|                             |                                                                 |
|-----------------------------|-----------------------------------------------------------------|
| Impedance:                  | 50Ω                                                             |
| Frequency:                  | DC to 300MHz                                                    |
| Insulation resistance:      | ≥ 1000GΩ                                                        |
| Center contact resistance:  | ≤ 2mΩ                                                           |
| Outer contact resistance:   | ≤ 1.5mΩ                                                         |
| Operating voltage:          | max. 5000V <sub>DC</sub> / 3500V <sub>RMS</sub>                 |
| Test voltage:               | min. 10000V <sub>DC</sub> / 5000V <sub>RMS</sub> (at sea level) |
| Operating current:          | 500mA (average) / 10A (peak)                                    |
| Mating cycles:              | min. 500                                                        |
| Coupling nut retention:     | ≥ 450N (jack)                                                   |
| Center contact captivation: | ≥ 18N (axial) / ≥ 3Ncm (radial)                                 |

|                        |                            |
|------------------------|----------------------------|
| Operating temperature: | -55 to +155°C              |
| Weight                 | straight cable plug: 20.4g |
|                        | bulkhead receptacle: 11.0g |

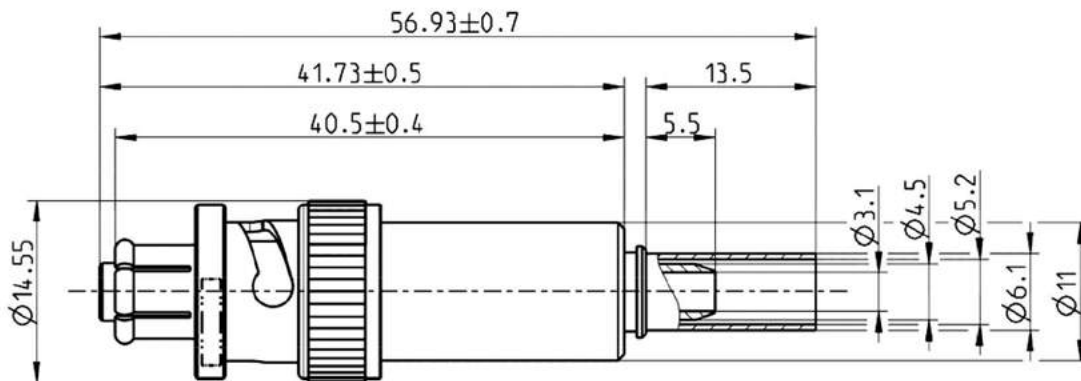
### Material and plating

| Connector part | Straight Cable Plug 57K101-106N3 |                                 | Bulkhead Receptacle 57S501-200N3 |                                 |
|----------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|
|                | Material                         | Plating                         | Material                         | Plating                         |
| Center contact | Beryllium copper                 | Gold, min. 1.27 μm, over nickel | Brass                            | Gold, min. 1.27 μm, over nickel |
| Outer contact  | Beryllium copper                 | Flash white bronze over silver  | Brass                            | White bronze                    |
| Body           | Brass                            | Flash white bronze over silver  | Brass                            | Flash white bronze over silver  |
| Dielectric     | PTFE                             | -                               | PTFE                             | -                               |
| Gasket         | Silicone                         | -                               | NBR                              | -                               |

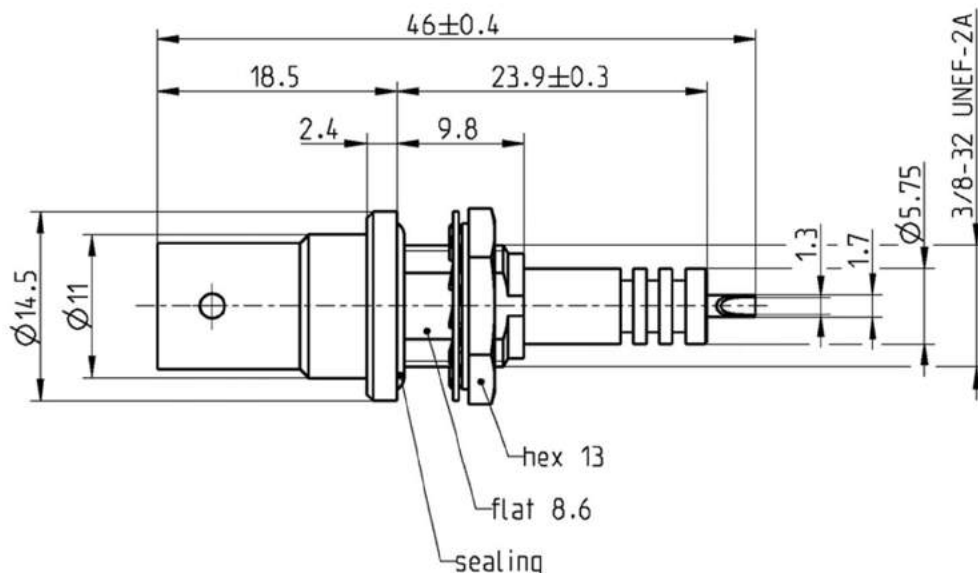


## DIMENSIONS

- STRAIGHT CABLE PLUG 57K101-106N3



- BULKHEAD RECEPTACLE 57S501-200N3



Dimensions are in mm. Drawings not to scale.

## ORDERING INFORMATION

- SHV Straight Cable Plug (female) **57K101-106N3**
- SHV Bulkhead Receptacle (male) **57S501-200N3**

The SHV plug can be assembled by the user (see next chapter for assembly instructions).

Bespoke ready-to-use high voltage cable assemblies based on several high voltage cable types are available. The cable assemblies are fully tested.

Please contact [hivolt.de](http://hivolt.de) for details.

Examples:

Cable: HRG58-20-2; Length: 2m; SHV plug assembled on both sides

**HCA-005-S01-002-S01-A**

Cable: HSL-8S-0.75-B-2; Length: 80m; SHV plug assembled on one side

**HCA-005-S01-080-B**

## ACCESSORIES

- Bend Relief for Cable Plug **71Z526-006SW**



## 10kV - STRAIGHT COAXIAL CONNECTOR SERIES

### FEATURES

- Rated voltage 10kV<sub>DC</sub>
- Recessed contacts
- Coaxial design
- Bayonet coupling
- Intermateable with industry standard 10kV coaxial connectors
- Completed cable assemblies available
- RoHS compliant

### APPLICATIONS

- Instrument high voltage connections
- High voltage power supplies / amplifiers
- Medical electronics
- Nuclear instrumentation
- Test and measurement equipment
- High voltage laboratory wiring
- General high voltage testing

10kV reverse polarity coaxial high voltage connectors designed to minimize the risk of electrical shock to personnel through the use of recessed contacts. Both the cable connectors and the bulkhead receptacles have recessed contacts and will withstand the rated voltage in unmated condition.

The front mount receptacles are hermetically sealed.

The straight crimp cable plug HC51P-58 and the rear mount crimp receptacle HC51RB-58 are compatible with our 20kV rated LSZH **HRG58-20-2** coaxial cable for crimp assembly.

For high temperature applications up to 8kV<sub>DC</sub> the connectors can also be assembled with silicone insulated coaxial cable **HSL-8S-0.5-A-2**.

A suitable crimping tool is available on request.  
The connectors are RoHS compliant.

The connectors should never be mated or unmated when energized.

Please see the HC52 series for 20kV<sub>DC</sub> models.

HC51 series connectors are not intermateable with SHV or HC52 series connectors.

### SPECIFICATIONS

|                            |                                                                                                                  |
|----------------------------|------------------------------------------------------------------------------------------------------------------|
| Operating voltage:         | max. 10kV <sub>DC</sub> (at sea level)                                                                           |
| Test voltage:              | 15kV <sub>DC</sub>                                                                                               |
| Impedance:                 | non constant                                                                                                     |
| Insulation resistance:     | 1000GΩ                                                                                                           |
| Center contact resistance: | ≤ 3mΩ                                                                                                            |
| Outer contact resistance:  | ≤ 2mΩ                                                                                                            |
| Operating temperature:     | -55 to +85°C                                                                                                     |
| Leak rate                  | < 1x10 <sup>-6</sup> mbar*l/s @ 1bar differential pressure<br>(applies to front mount bulkhead receptacles only) |

Ratings listed above apply to clean mated connector pairs in standard atmospheric conditions. When connectors are used in an adverse environment (such as high temperature, humidity, pollution content, extreme mechanical exposure, etc.), the connector should be derated. The fitness for use must be proved by extended operational tests.



## ■ MODEL OVERVIEW - PLUGS

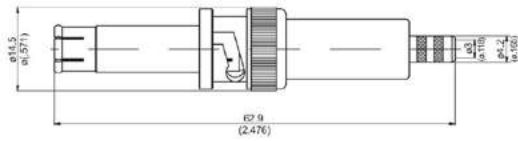
| Part Number<br>Description                                                                                                               | Termination<br>Center<br>Contact | Contact Pin<br>Material/<br>Plating           | Insulator<br>Material | Body<br>Material/<br>Plating | Gasket<br>Material | Weight |
|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------|-----------------------|------------------------------|--------------------|--------|
| <b>HC51P-58</b><br><b>Straight Crimp Cable Plug</b><br> | Crimp                            | Beryllium<br>Copper/<br>Au over Ni<br>over Cu | High Density<br>PE    | Brass/<br>Ni over Cu         | Silicone           | 20.3g  |

## ■ MODEL OVERVIEW - RECEPTACLES

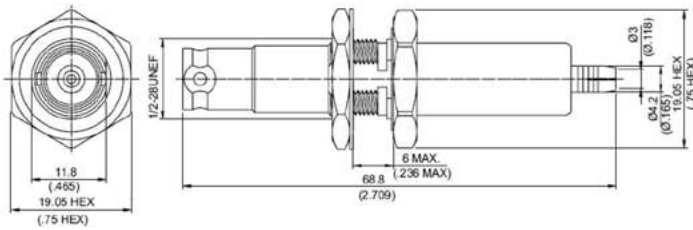
| Part Number<br>Description                                                                                                                                            | Termination<br>Center<br>Contact | Contact Pin<br>Material/<br>Plating           | Insulator<br>Material | Body<br>Material/<br>Plating           | Gasket<br>Material | Weight |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------|-----------------------|----------------------------------------|--------------------|--------|
| <b>HC51RB-58</b><br><b>Rear Mount Bulkhead<br/>Crimp Receptacle</b><br>            | Crimp                            | Brass/<br>Au over Ni<br>over Cu               | High Density<br>PE    | Brass/<br>Sn-Zn-Cu<br>Alloy over<br>Cu | Silicone           |        |
| <b>HC51RB-A</b><br><b>Front Mount Bulkhead<br/>Receptacle (long insulator)</b><br> | Solder                           | Beryllium<br>Copper/<br>Au over Ni<br>over Cu | High Density<br>PE    | Brass/<br>Sn-Zn-Cu<br>Alloy over<br>Cu | Silicone           | 29g    |
| <b>HC51RB-B</b><br><b>Front Mount Bulkhead<br/>Receptacle (short insul.)</b><br>   | Solder                           | Beryllium<br>Copper/<br>Au over Ni<br>over Cu | High Density<br>PE    | Brass/<br>Sn-Zn-Cu<br>Alloy over<br>Cu | Silicone           | 29g    |

## ■ DIMENSIONS

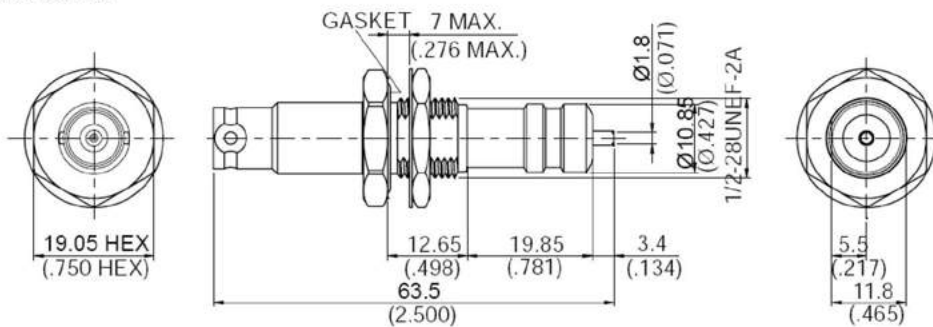
### HC51P-58



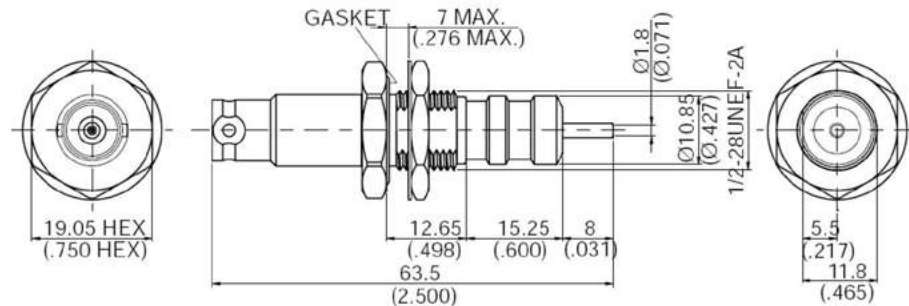
### HC51RB-58



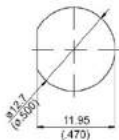
### HC51RB-A



### HC51RB-B



### PANEL CUT-OUT FOR RECEPTACLES



- All dimensions are in mm (inch); drawings not to scale.
- All values and dimensions without given tolerances are nominal.





## ■ ORDERING INFORMATION

|                                                              |                  |
|--------------------------------------------------------------|------------------|
| 10kV Straight Crimp Cable Plug (female)                      | <b>HC51P-58</b>  |
| 10kV Rear Mount Bulkhead Crimp Receptacle (male)             | <b>HC51RB-58</b> |
| 10kV Front Mount Bulkhead Receptacle (male, long insulator)  | <b>HC51RB-A</b>  |
| 10kV Front Mount Bulkhead Receptacle (male, short insulator) | <b>HC51RB-B</b>  |

Bespoke ready-to-use high voltage cable assemblies based on different high voltage cable types are available. The cable assemblies are fully tested. Please contact hivolt.de for details.



### Examples:

|                                                                                                                         |                                |
|-------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Cable: HRG58-20-2; Length: 2m; <b>HC51P-58</b> plug assembled on both ends                                              | <b>HCA-010-H51A-002-H51A-A</b> |
| Cable: HSL-8S-0.5-A-2; Length: 80m; <b>HC51P-58</b> plug assembled on one end                                           | <b>HCA-010-H51A-080-S</b>      |
| Cable: HRG58-20-2; Length: 33m; <b>HC51P-58</b> plug assembled on one end, <b>HC51RB-58</b> receptacle on the other end | <b>HCA-010-H51A-033-H51R-A</b> |



## 20KV - STRAIGHT COAXIAL CONNECTOR SERIES

### ■ FEATURES

- Rated Voltage 20kV<sub>DC</sub>
- Recessed contacts
- Coaxial design
- Bayonet Coupling
- Intermateable with industry standard 20kV coaxial connectors
- Completed cable assemblies available
- RoHS compliant

### ■ APPLICATIONS

- Instrument High Voltage Connections
- High voltage power supplies / amplifiers
- Medical electronics
- Nuclear instrumentation
- Test and measurement equipment
- High voltage laboratory wiring
- General high voltage testing

20kV reverse polarity coaxial high voltage connectors designed to minimize the risk of electrical shock to personnel through the use of recessed contacts. Both the cable connectors and the bulkhead receptacles have recessed contacts and will withstand the rated voltage in unmated condition.

The front mount receptacles are hermetically sealed.

The straight crimp cable plug HC52P and the rear mount crimp receptacles HC52RB are compatible with RG 213 or RG 214 coaxial cable. The straight cable plug HC52P-HTV30S is compatible with our 30kV rated **HTV-30S-22-2** coaxial cable.

A suitable crimping tool is available on request.  
The connectors are RoHS compliant.

The connectors should never be mated or unmated when energized.

Please see the HC51 series for 10kV<sub>DC</sub> models.  
HC52 series connectors are not intermateable with SHV or HC51 series connectors.

### ■ SPECIFICATIONS

|                            |                                                                                                                  |
|----------------------------|------------------------------------------------------------------------------------------------------------------|
| Operating voltage:         | max. 20kV <sub>DC</sub> (at sea level)                                                                           |
| Test voltage:              | 30kV <sub>DC</sub>                                                                                               |
| Impedance:                 | non constant                                                                                                     |
| Insulation resistance:     | 1000GΩ                                                                                                           |
| Center contact resistance: | ≤ 3mΩ                                                                                                            |
| Outer contact resistance:  | ≤ 2mΩ                                                                                                            |
| Operating temperature:     | -55 to +85°C                                                                                                     |
| Leak rate                  | < 1x10 <sup>-6</sup> mbar*l/s @ 1bar differential pressure<br>(applies to front mount bulkhead receptacles only) |

Ratings listed above apply to clean mated connector pairs in standard atmospheric conditions. When connectors are used in an adverse environment (such as high temperature, humidity, pollution content, extreme mechanical exposure, etc.) the connector should be derated. The fitness for use must be proved by extended operational tests.





## ■ MODEL OVERVIEW - PLUGS

| Part Number<br>Description                                                                                                                      | Termination<br>Center<br>Contact | Contact Pin<br>Material/<br>Plating           | Insulator<br>Material | Body<br>Material/<br>Plating | Gasket<br>Material | Weight |
|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------|-----------------------|------------------------------|--------------------|--------|
| <b>HC52P-213 /-214</b><br><b>Straight Crimp Cable Plug</b><br> | Crimp                            | Beryllium<br>Copper/<br>Au over Ni<br>over Cu | High Density<br>PE    | Brass/<br>Ni over Cu         | Silicone           | 51.2g  |
| <b>HC52P-HTV30S</b><br><b>Straight Crimp Cable Plug</b><br>    | Crimp                            | Beryllium<br>Copper/<br>Au over Ni<br>over Cu | High Density<br>PE    | Brass/<br>Ni over Cu         | Silicone           | 51.2g  |

## ■ MODEL OVERVIEW - RECEPTACLES

| Part Number<br>Description                                                                                                                                            | Termination<br>Center<br>Contact | Contact Pin<br>Material/<br>Plating | Insulator<br>Material | Body<br>Material/<br>Plating           | Gasket<br>Material | Weight |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------------|-----------------------|----------------------------------------|--------------------|--------|
| <b>HC52RB-213</b><br><b>Rear Mount Bulkhead<br/>Crimp Receptacle</b><br>           | Crimp                            | Brass/<br>Au over Ni<br>over Cu     | High Density<br>PE    | Brass/<br>Sn-Zn-Cu<br>Alloy over<br>Cu | Silicone           |        |
| <b>HC52RB-A</b><br><b>Front Mount Bulkhead<br/>Receptacle (long insulator)</b><br> | Solder                           | Brass/<br>Au over Ni<br>over Cu     | High Density<br>PE    | Brass/<br>Sn-Zn-Cu<br>Alloy over<br>Cu | Silicone           | 58g    |
| <b>HC52RB-B</b><br><b>Front Mount Bulkhead<br/>Receptacle (short insul.)</b><br>   | Solder                           | Brass/<br>Au over Ni<br>over Cu     | High Density<br>PE    | Brass/<br>Ni over Cu                   | Silicone           | 61g    |

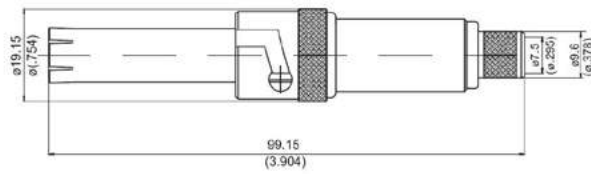
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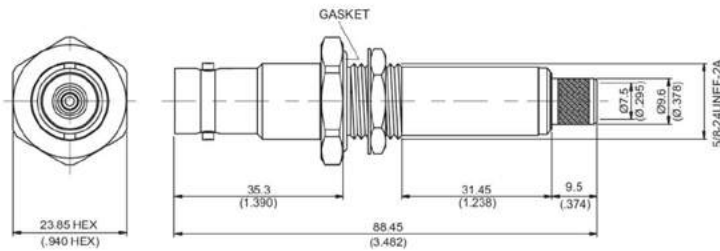
Oehleckerring 40 • D-22419 Hamburg • Germany • ☎ +49 40 537122-0 • 📠 +49 40 537122-99 • info@hivolt.de • www.hivolt.de

## ■ DIMENSIONS

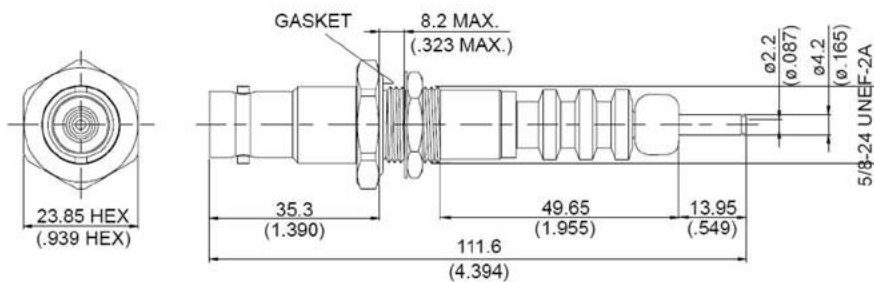
### HC52P-213 /-214



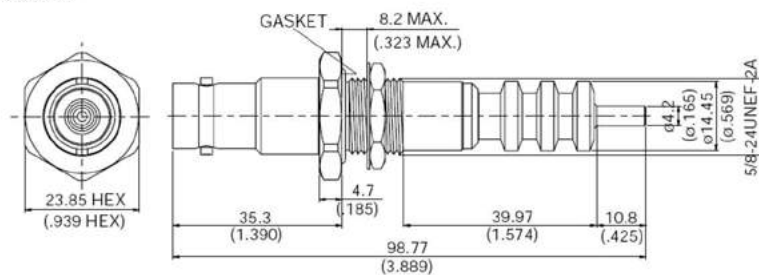
### HC52RB-213



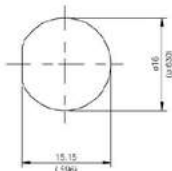
### HC52RB-A



### HC52RB-B



### PANEL CUT-OUT FOR RECEPTACLES



- All dimensions are in mm [inch]; drawings not to scale.
- All values and dimensions without given tolerances are nominal.



## ■ ORDERING INFORMATION

20kV Straight Crimp Cable Plug (female) for RG 213  
 20kV Straight Crimp Cable Plug (female) for RG 214  
 20kV Straight Crimp Cable Plug (female) for HTV-30S-22-2  
 20kV Rear Mount Bulkhead Crimp Receptacle (male) for RG 213  
 20kV Front Mount Bulkhead Receptacle (male, long insulator)  
 20kV Front Mount Bulkhead Receptacle (male, short insulator)

**HC52P-213**  
**HC52P-214**  
**HC52P-HTV30S**  
**HC52RB-213**  
**HC52RB-A**  
**HC52RB-B**

Bespoke ready-to-use high voltage cable assemblies based on different high voltage cable types are available. The cable assemblies are fully tested. Please contact [hivolt.de](http://hivolt.de) for details.



### Examples:

Cable: HTV-30S-22-2; Length: 2m; **HC52P-HTV30S** plug assembled on both ends

Cable: RG 213; Length: 10m; **HC52P-213** plug assembled on one end,  
**HC52RB-213** receptacle on the other end

**HCA-020-H52C-002-H52C-T**

**HCA-020-H52A-010-H52R-X**



## SINGLE POLE HIGH VOLTAGE CONNECTORS 10kV – 100kV

### FEATURES

- Up to 100kV<sub>DC</sub>
- Oil-Tight Receptacles Available
- PTFE Insulation
- Low Contact Resistance
- Extended Temperature Range
- Made in Germany
- Completed Cable Assemblies Available
- RoHS Compliant

### APPLICATIONS

- Instrument High Voltage Connections
- Test Stations



### DESCRIPTION

The single pole high voltage connector pairs HC7M-xx (cable mounting plug) and HC7F-xx (instrument mounting receptacle) are available for operating voltages of up to 100kV<sub>DC</sub> in 30A or 80A versions. The connectors are suitable for use with shielded / screened high voltage cable.

The silver-plated central contact, the strong nickel-plated housing and the screw interlock warrant a safe and reliable connection. The cable is fixed to the connector housing by means of an integrated cable gland. The cylindrical wedging results in a strong mechanical connection and an excellent shield connection. Five different sizes of cable glands are available providing usability of a wide range of cable diameters. An external cable gland may be utilized using an M20x1.5 or M25x1.5 adaptor (xx-20 or xx-25 models, respectively).

The connectors are available with PTFE insulation and extended operating temperature range. Optionally the receptacles are available as oil-tight versions. Recessed male contacts may be ordered for the 20kV/80A connectors.

The HC7 plugs and receptacles are intermateable with their counterparts of the SB100 series.

### SPECIFICATIONS

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locking system:            | threaded coupling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Termination inner contact: | solder (male contact), solder / screw (female contact)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Shield connection:         | screw joint / cable gland                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Contact surface:           | Ag                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Case material:             | CuZn (brass), nickel plated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Insulation material:       | PTFE (Teflon®), white                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Flammability class:        | UL94 V-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Temperature range:         | -50°C to +200°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Contact resistance:        | 30A type (HC7xAx): max. 300μΩ<br>80A type (HC7xBx): max. 150μΩ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Wire gauge (plugs):        | 30A type (HC7xAx): max. 2.5mm <sup>2</sup> / bore hole: ø2.6mm<br>80A type (HC7xBx): max. 10mm <sup>2</sup> / bore hole: ø4.8mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Mating / unmating force:   | 30A type (HC7xAx): 5.5N / 4N<br>80A type (HC7xBx): 15N / 10N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Mating cycles:             | > 100 000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Inner cable diameter       | max. 10mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Suitable cable type:       | shielded high voltage cable; numerous types available on request, e.g.:<br><b>2124</b> up to 100kV <sub>DC</sub> , AWG16, PE / PVC, 11.2mm, universal<br><b>HXC-60-1EA-8</b> up to 60kV <sub>DC</sub> , AWG14, EPR / PVC, 11.1mm, <b>highly flexible</b><br><b>HSL-15S-6-A-9</b> up to 15kV <sub>DC</sub> , AWG10, Silicone, 11.6mm, flexible, high temperature<br><b>2024SVJ</b> up to 60kV <sub>DC</sub> , AWG12, Silicone / PVC, 12.7mm, flexible<br><b>HSUS-3012-65-2</b> up to 20kV <sub>DC</sub> , AWG12, Silicone, 8.9mm, UL (internal wiring), highly flexible, <b>high temperature</b> |

Ratings listed above apply to clean connector pairs in standard atmospheric conditions. When connectors are used in an adverse environment (such as high temperature, humidity, pollution content, extreme mechanical exposure etc.) the connector should be derated. The fitness for use must be proved by extended operational tests.

## ■ MODEL OVERVIEW

| Model        |            | Operating Voltage   | Type Test Voltage   | Rated Current |
|--------------|------------|---------------------|---------------------|---------------|
| Plug         | Receptacle |                     |                     |               |
| HC7M-10A-x   | HC7F-10A   | 10kV <sub>DC</sub>  | 15kV <sub>DC</sub>  | 30A           |
| HC7M-10B-x   | HC7F-10B   | 10kV <sub>DC</sub>  | 15kV <sub>DC</sub>  | 80A           |
| HC7M-20A-x   | HC7F-20A   | 20kV <sub>DC</sub>  | 30kV <sub>DC</sub>  | 30A           |
| HC7M-20B-x   | HC7F-20B   | 20kV <sub>DC</sub>  | 30kV <sub>DC</sub>  | 80A           |
| HC7M-20B-x-P | HC7F-20B-P | 20kV <sub>DC</sub>  | 30kV <sub>DC</sub>  | 80A           |
| HC7M-30A-x   | HC7F-30A   | 30kV <sub>DC</sub>  | 45kV <sub>DC</sub>  | 30A           |
| HC7M-30B-x   | HC7F-30B   | 30kV <sub>DC</sub>  | 45kV <sub>DC</sub>  | 80A           |
| HC7M-50A-x   | HC7F-50A   | 50kV <sub>DC</sub>  | 75kV <sub>DC</sub>  | 30A           |
| HC7M-50B-x   | HC7F-50B   | 50kV <sub>DC</sub>  | 75kV <sub>DC</sub>  | 80A           |
| HC7M-60A-x   | HC7F-60A   | 60kV <sub>DC</sub>  | 90kV <sub>DC</sub>  | 30A           |
| HC7M-60B-x   | HC7F-60B   | 60kV <sub>DC</sub>  | 90kV <sub>DC</sub>  | 80A           |
| HC7M-100A-x  | HC7F-100A  | 100kV <sub>DC</sub> | 150kV <sub>DC</sub> | 30A           |
| HC7M-100B-x  | HC7F-100B  | 100kV <sub>DC</sub> | 150kV <sub>DC</sub> | 80A           |

x: outer cable diameter code – see table below

## ■ OUTER CABLE DIAMETER CODE

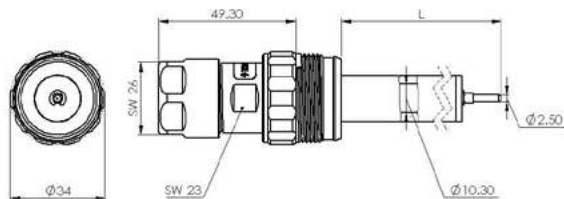
| Diameter Code | Outer Cable Diameter |
|---------------|----------------------|
| 1             | 6.5 – 8mm            |
| 2             | 8 – 9.5mm            |
| 3             | 9.5 – 11mm           |
| 4             | 11 – 12.5mm          |
| 5             | 12.5 – 14mm          |
| 20            | adaptor M20x1.5      |
| 25            | adaptor M25x1.5      |

Bespoke ready-to-use high voltage cable assemblies based on several high voltage cable types are available. The cable assemblies are fully tested. Please contact [hivolt.de](http://hivolt.de) for details.

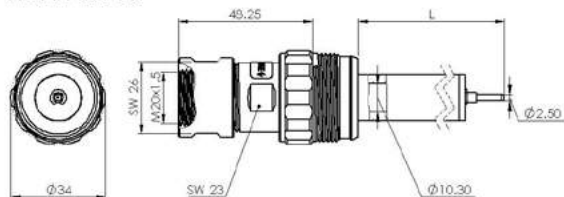


## ■ DIMENSIONS 30A TYPE CONNECTORS

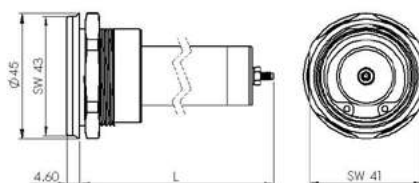
HC7M-xA-1 ... HC7M-xA-5



HC7M-xA-20



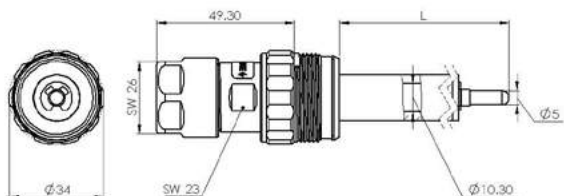
HC7F-xA, HC7F-xA-O



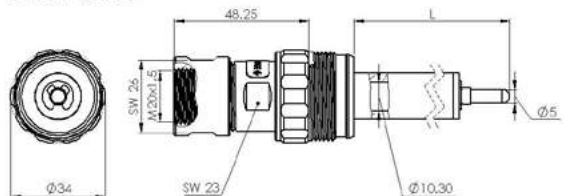
| Model     | L      | Model     | L      |
|-----------|--------|-----------|--------|
| HC7M-10A  | 32.43  | HC7F-10A  | 64.28  |
| HC7M-20A  | 52.43  | HC7F-20A  | 84.28  |
| HC7M-30A  | 72.43  | HC7F-30A  | 104.28 |
| HC7M-50A  | 122.43 | HC7F-50A  | 154.28 |
| HC7M-60A  | 204.93 | HC7F-60A  | 235.28 |
| HC7M-100A | 357.93 | HC7F-100A | 388.28 |

## ■ DIMENSIONS 80A TYPE CONNECTORS

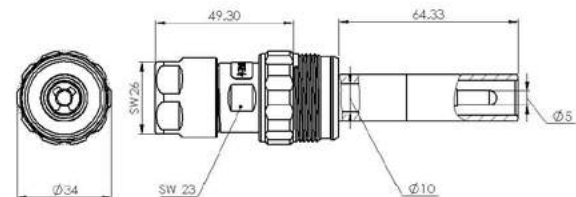
HC7M-xB-1 ... HC7M-xB-5



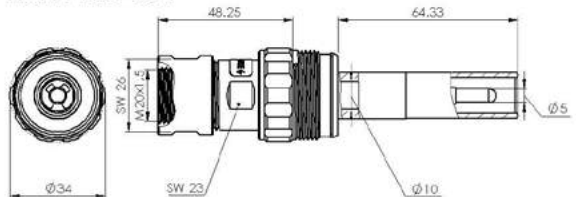
HC7M-xB-20



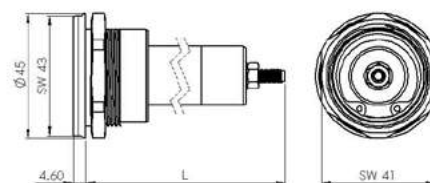
HC7M-20B-1-P ... HC7M-20B-5-P



HC7M-20B-20-P



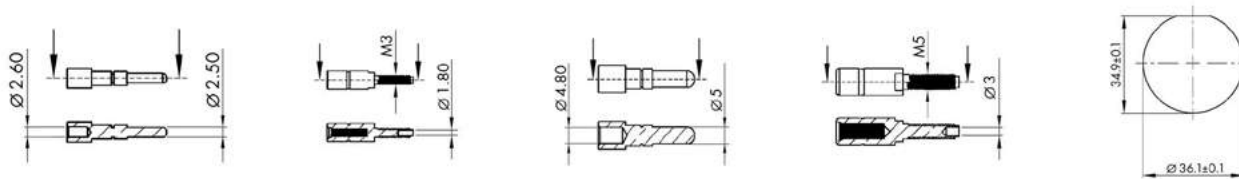
HC7F-xB, HC7F-xB-O, HC7F-20B-P, HC7F-20B-P0



| Model         | L      | Model      | L      |
|---------------|--------|------------|--------|
| HC7M-10B      | 36.43  | HC7F-10B   | 77.78  |
| HC7M-20B      | 53.93  | HC7F-20B   | 97.78  |
| HC7M-20B-xx-P | 64.33  | HC7F-20B-P | 97.78  |
| HC7M-30B      | 76.43  | HC7F-30B   | 117.78 |
| HC7M-50B      | 126.43 | HC7F-50B   | 167.78 |
| HC7M-60B      | 208.93 | HC7F-60B   | 249.78 |
| HC7M-100B     | 361.93 | HC7F-100B  | 402.78 |

Notes: "SW" = wrench size  
Dimensions are in mm. Drawings not to scale

## ■ DIMENSIONS CONTACT 2.5MM (MALE / FEMALE) / 5MM (MALE / FEMALE) / PANEL CUT-OUT



Note: Dimensions are in mm. Drawings not to scale

## ■ ORDERING INFORMATION

| HC7                   | M                          | - | 10                                    | A                                                | - | 1                                                                                                                                                    | - | 0       |
|-----------------------|----------------------------|---|---------------------------------------|--------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------|
| Base Part Designation | M - Plug<br>F - Receptacle |   | Operating Voltage [kV <sub>DC</sub> ] | Contact size<br>A - 2.5mm (30A)<br>B - 5mm (80A) |   | Outer Cable Diameter (plugs)<br>1 - 6.5-8mm<br>2 - 8-9.5mm<br>3 - 9.5-11mm<br>4 - 11-12.5mm<br>5 - 12.5-14mm<br>20 - adaptor M20<br>25 - adaptor M25 |   | Options |

Examples: HC7M-10A-1 (HC7 series plug, 10kV, 30A, cable outer diameter 6.5-8mm)  
 HC7M-20B-5-P (HC7 series plug, 20kV, 80A, cable outer diameter 12.5-14mm, recessed male contact)  
 HC7F-100A (HC7 series receptacle, 100kV, 30A)  
 HC7F-30B-0 (HC7 series receptacle, 30kV, 80A, oil-tight)

## ■ OPTIONS

- 0 oil-tight receptacle
- P recessed male contact – only available for HC7x-20B connectors

Preferred items / minimum order quantities may apply.

Connectors for cable diameter larger than 14mm are available on request.





## SINGLE POLE HIGH VOLTAGE CONNECTORS 10 / 20 / 30 / 40KV

### FEATURES

- Up to 40kV<sub>DC</sub> / 30A
- 100,000 Mating Cycles
- UL94 V-0 Flammability Rating
- Extended Temperature Range
- Central Attachment
- Low Cost
- Made in Germany
- Completed cable assemblies available
- RoHS compliant



### APPLICATIONS

- Instrument High Voltage Connections
- Test Stations

### DESCRIPTION

The single pole high voltage connector pairs HSxx (cable mounting connector) and HBxx (instrument mounting socket) are available for operating voltages of 10kV<sub>DC</sub>, 20kV<sub>DC</sub>, 30kV<sub>DC</sub> and 40kV<sub>DC</sub>. The connectors are suitable for use with shielded / screened high voltage cable.

The silver-plated central contact, the strong nickel-plated housing and the screw interlock warrant a safe and reliable connection. Extended operating temperature range due to PTFE insulation. The 20kV models also with POM insulation.

| Model  |            | Operating Voltage  | Test Voltage       | Rated Current | Insulation material | Mounting type (panel mount connector HBxx) |
|--------|------------|--------------------|--------------------|---------------|---------------------|--------------------------------------------|
| Plug   | Receptacle |                    |                    |               |                     |                                            |
| HS11-T | HB11-T     | 10kV <sub>DC</sub> | 15kV <sub>DC</sub> | 30A           | PTFE                | round flange                               |
| HS21   | HB21       | 20kV <sub>DC</sub> | 30kV <sub>DC</sub> | 30A           | POM                 | round flange                               |
| HS21-T | HB21-T     | 20kV <sub>DC</sub> | 30kV <sub>DC</sub> | 30A           | PTFE                | round flange                               |
| HS31-T | HB31-T     | 30kV <sub>DC</sub> | 45kV <sub>DC</sub> | 30A           | PTFE                | round flange                               |
| HS40-T | HB40-T     | 40kV <sub>DC</sub> | 60kV <sub>DC</sub> | 30A           | PTFE                | 4-hole flange                              |

### SPECIFICATIONS

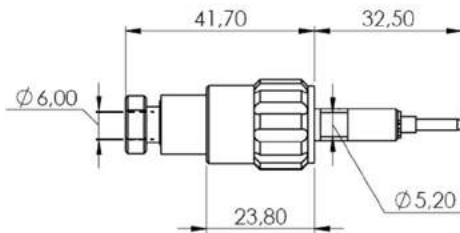
|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Termination inner contact:      | soldering                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Shield connection:              | screw joint / cable gland                                                                                                                                                                                                                                                                                                                                                                                                       |
| Contact surface:                | Ag                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Insulation material:            | PTFE (Teflon®) white (POM (Delrin®) white on request for 20kV models)                                                                                                                                                                                                                                                                                                                                                           |
| Temperature range:              | -50°C to +200°C (PTFE) (-30°C to +120°C (POM))                                                                                                                                                                                                                                                                                                                                                                                  |
| Insulation resistance:          | 10 <sup>14</sup> Ω (contact / housing)                                                                                                                                                                                                                                                                                                                                                                                          |
| Contact resistance:             | max. 300 μΩ                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Wire gauge:                     | max. 2.5mm <sup>2</sup> / bore hole: ø2.4mm                                                                                                                                                                                                                                                                                                                                                                                     |
| Mating / unmating force:        | 5.5N / 4.0N                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Mating cycles:                  | 100 000                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Max. outer diameter - shielded: | 6.5mm                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Max. inner insulation diameter: | 5.0mm                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Suitable cable type:            | shielded high voltage cable; e.g:<br><b>HPW-40S-0.5-A-2</b> up to 40kV <sub>DC</sub> , PE / PUR, <b>LSZH</b> , universal<br><b>130660</b> up to 30kV <sub>DC</sub> , PE / PVC, universal<br><b>HTV-30S-22-2</b> up to 30kV <sub>DC</sub> , PE / PVC, UL (internal wiring)<br><b>HRG58-20-2</b> up to 20kV <sub>DC</sub> , PE / PUR, <b>LSZH</b><br><b>HSL-8S-0.75-B-2</b> up to 8kV <sub>DC</sub> , Silicone (high temperature) |

Bespoke ready-to-use high voltage cable assemblies based on several high voltage cable types are available. The cable assemblies are fully tested. Please contact hivolt.de for details

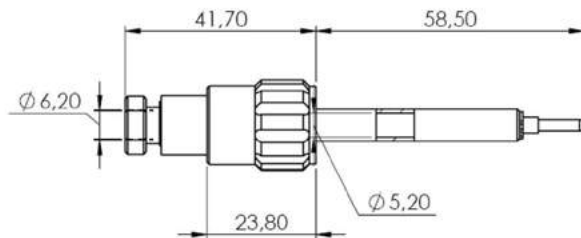
Ratings listed above apply to clean connector pairs in standard atmospheric conditions. When connectors are used in an adverse environment (such as high temperature, humidity, pollution content, extreme mechanical exposure etc.) the connector should be derated. The fitness for use must be proved by extended operational tests.



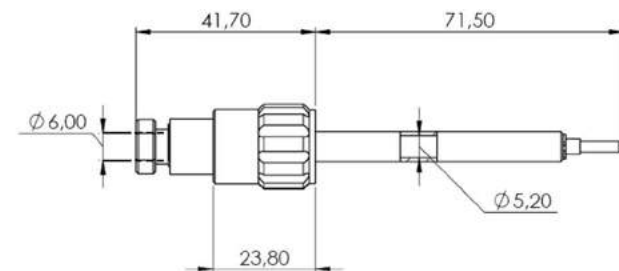
## ■ DIMENSIONS HS11 / HB11



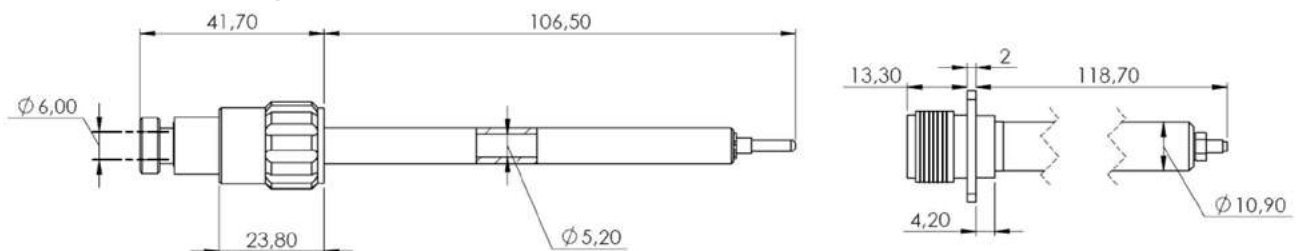
## ■ DIMENSIONS HS21 / HB21



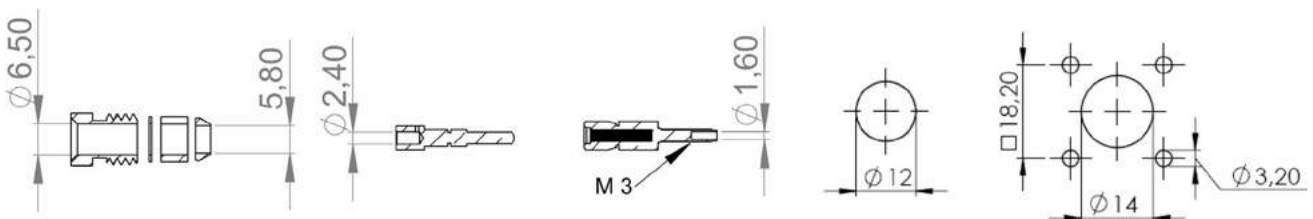
## ■ DIMENSIONS HS31 / HB31



## ■ DIMENSIONS HS40 / HB40



## ■ DIMENSIONS CABLE GLAND / CONTACT HS / HB / PANEL CUT-OUT FOR ROUND / 4-HOLE FLANGE



Note: Dimensions are in mm. Drawings not to scale

## SINGLE POLE HIGH VOLTAGE CONNECTORS 100KV / 80A

### FEATURES

- 100kV<sub>DC</sub> / 80A
- Oil-tight Receptacle
- UL94 V-0 Flammability Rating
- 100,000 Mating Cycles
- Extended Temperature Range
- Central Attachment
- Made in Germany
- Completed cable assemblies available
- RoHS compliant

### APPLICATIONS

- Instrument High Voltage Connections
- Test Stations

### DESCRIPTION

The single pole high voltage connector pair S1105-T (cable mounting plug) and B1105-OT (instrument mounting receptacle) is available for operating voltage of up to 100kV<sub>DC</sub> and a nominal current of 80A.

The connector is suitable for use with shielded / screened high voltage cable.

The silver-plated central contact, the strong nickel-plated housing and the screw interlock warrant a safe and reliable connection. The cable is fixed to the connector housing by means of a metric cable gland. The cylindrical wedging results in a strong mechanical connection and an excellent shield connection.

The connectors are available with PTFE insulation, which has an extended operating temperature range. The receptacle is oil-tight.



| Model   |            | Operating Voltage   | Test Voltage        | Rated Current | Cable Diameter |       |
|---------|------------|---------------------|---------------------|---------------|----------------|-------|
| Plug    | Receptacle |                     |                     |               | max. inner     | outer |
| S1105-T | B1105-OT   | 100kV <sub>DC</sub> | 150kV <sub>DC</sub> | 80A           | 25mm           | 25mm  |

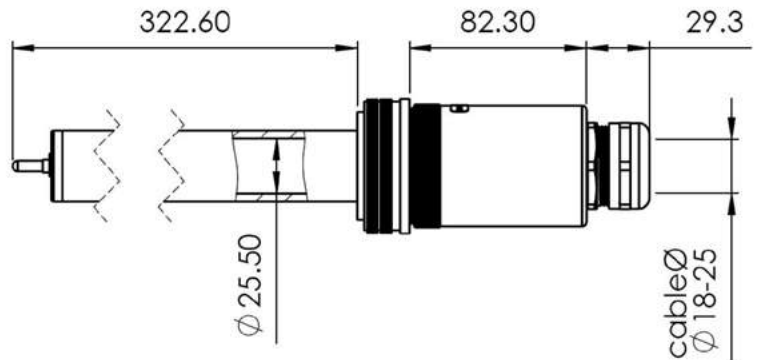
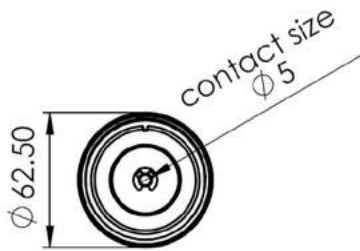
### SPECIFICATIONS

|                             |                                                                          |
|-----------------------------|--------------------------------------------------------------------------|
| Termination center contact: | soldering                                                                |
| Shield connection:          | screw joint / cable gland                                                |
| Contact surface:            | Ag                                                                       |
| Insulation material:        | PTFE (Teflon®), white                                                    |
| Temperature range:          | -30°C to +80°C                                                           |
| Contact resistance:         | max. 150μΩ                                                               |
| Contact diameter:           | 5mm                                                                      |
| Wire gauge (plugs):         | max. 10mm <sup>2</sup> / bore hole: ø4mm                                 |
| Mating / unmating force:    | 15N / 10N                                                                |
| Mating cycles:              | > 100 000                                                                |
| Suitable cable type:        | shielded high voltage cable; different types available on request, e.g.: |
|                             | <b>2062SVJ</b> (100kV <sub>DC</sub> ), AWG8, Silicone / PVC, 20.8mm      |
|                             | <b>2134</b> (200kV <sub>DC</sub> ), AWG12, LDHMW PE / PVC, 21.6mm        |
|                             | <b>2243</b> (125kV <sub>DC</sub> ), AWG8, EPR / PVC, 19.7mm              |

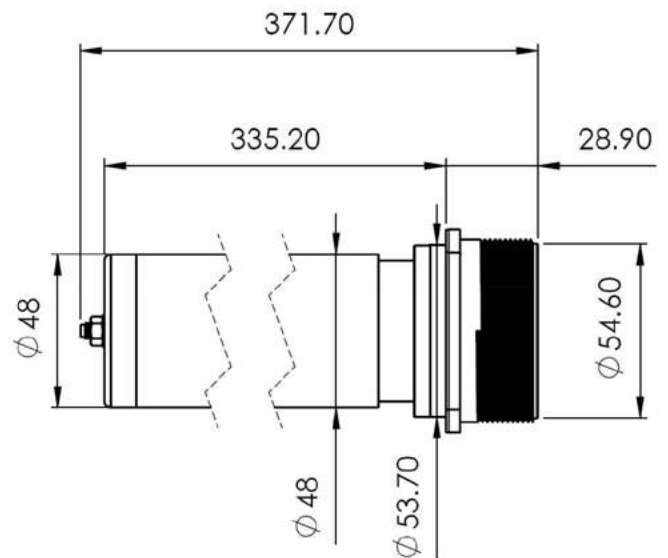
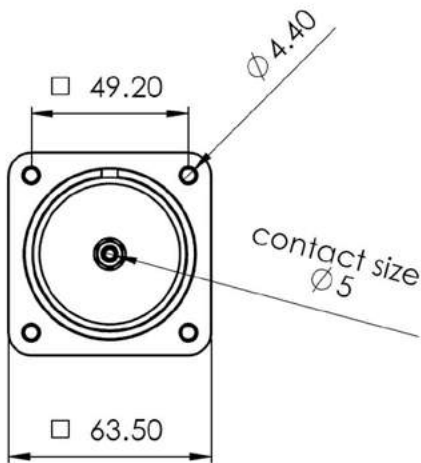
Bespoke ready-to-use high voltage cable assemblies are available on request. The cable assemblies are fully tested. Please contact hivolt.de for details.

Ratings listed above apply to clean connector pairs in standard atmospheric conditions. When connectors are used in an adverse environment (such as high temperature, humidity, pollution content, extreme mechanical exposure, etc.) the connector should be derated. The fitness for use must be proved by extended operational tests.

## ■ DIMENSIONS S1105-T



## ■ DIMENSIONS B1105-OT



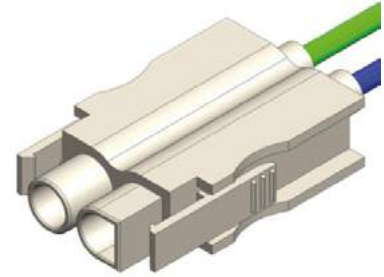
- All dimensions are in mm; drawings not to scale.
- All values and dimensions without given tolerances are nominal.



## 1 / 2 / 3 POLE HIGH VOLTAGE CONNECTORS 13KV, 13A

### FEATURES

- Rated Voltage 13kV<sub>DC</sub>
- Rated Current 13A
- Perfect for Internal Wiring
- Fast Assembly
- High Flexibility due to Several Mounting Options
- Clip Lock
- Made in Germany
- RoHS compliant



### PRODUCT DESCRIPTION

The VP-CL series of high voltage connectors is available in 1, 2 or 3 pole versions. A Clip Lock mechanism permits easy mating and unmating and ensures that the plug will be locked to the receptacle when mated. Intended for internal wiring these high voltage connectors feature versatile mounting options. The connectors can be used unmounted with flying leads, mounted as a feedthrough or mounted on the surface of a structural part.

Crimp contacts used for easy assembly are available for wire sizes of AWG26 to AWG14.

### CONNECTOR HOUSINGS

| No. of Poles | Plug     | Receptacle |
|--------------|----------|------------|
| 1            | VP-CL-1M | VP-CL-1F   |
| 2            | VP-CL-2M | VP-CL-2F   |
| 3            | VP-CL-3M | VP-CL-3F   |

### CRIMP CONTACTS

| Conductor  |             | Plug          |             | Receptacle    |             |
|------------|-------------|---------------|-------------|---------------|-------------|
| Size [AWG] | Area [mm²]  | Silver-plated | Gold-plated | Silver-plated | Gold-plated |
| 26 – 22    | 0.14 - 0.37 | VP-CM-24-AG   | VP-CM-24-AU | VP-CF-24-AG   | VP-CF-24-AU |
| 20         | 0.5         | VP-CM-20-AG   | VP-CM-20-AU | VP-CF-20-AG   | VP-CF-20-AU |
| 20 – 16    | 0.75 - 1.0  | VP-CM-18-AG   | VP-CM-18-AU | VP-CF-18-AG   | VP-CF-18-AU |
| 16 – 15    | 1.5         | VP-CM-16-AG   | VP-CM-16-AU | VP-CF-16-AG   | VP-CF-16-AU |
| 14         | 2.5         | VP-CM-14-AG   | VP-CM-14-AU | VP-CF-14-AG   | VP-CF-14-AU |

### SPECIFICATIONS

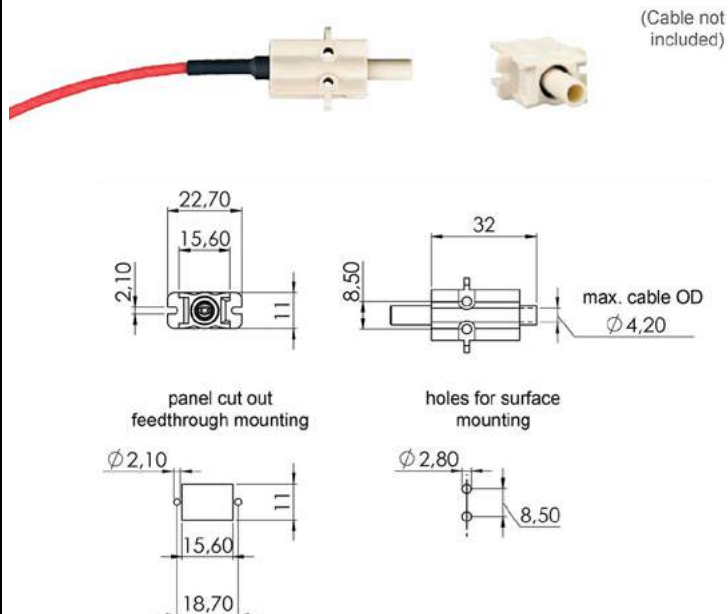
|                            |                          |
|----------------------------|--------------------------|
| Rated Voltage:             | 13kV <sub>DC</sub>       |
| Test Voltage:              | 20kV <sub>DC</sub>       |
| Rated Current:             | 13A (AWG14 / 2.5mm²)     |
| Contact Resistance:        | ≤ 5mΩ                    |
| Crimp Contact Material:    | Brass (CuZn)             |
| Crimp Contact Plating:     | Silver (Ag) or Gold (Au) |
| Crimp Contact Diameter:    | 1.6mm                    |
| Contact Rated Temperature: | 120°C                    |
| Mating Cycles:             | ≥ 1000                   |
| Housing Material:          | PBT (UL94 V-0)           |
| Operating Temperature:     | -40°C - +150°C           |
| Insulation Group:          | I (DIN IEC 60664)        |

Crimp Tool: on request

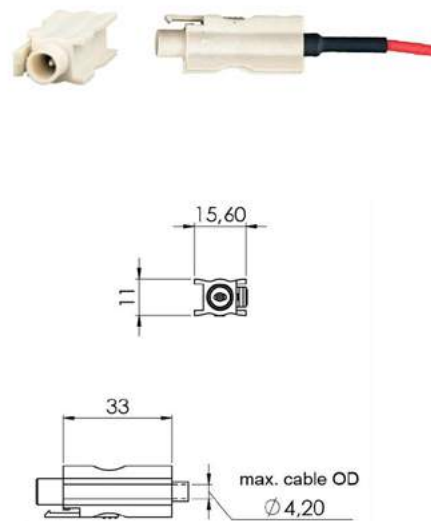


## DIMENSIONS

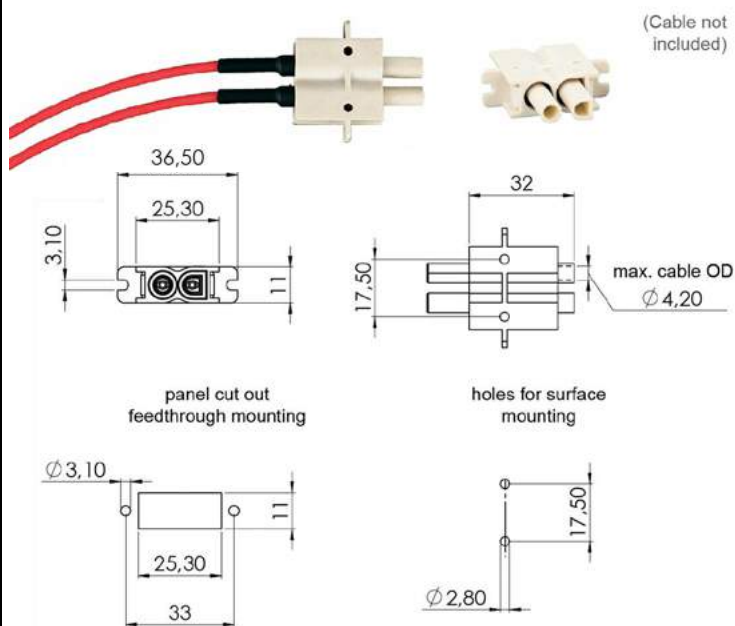
### VP-CL-1F



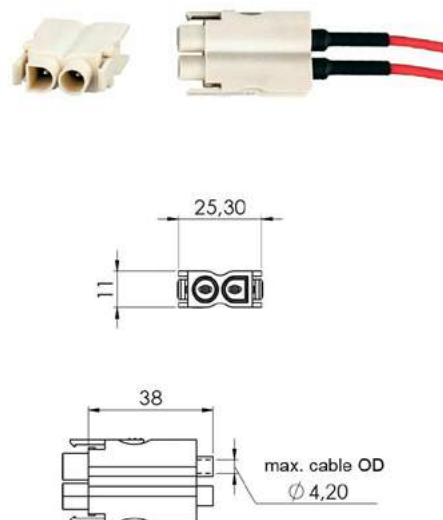
### VP-CL-1M



### VP-CL-2F

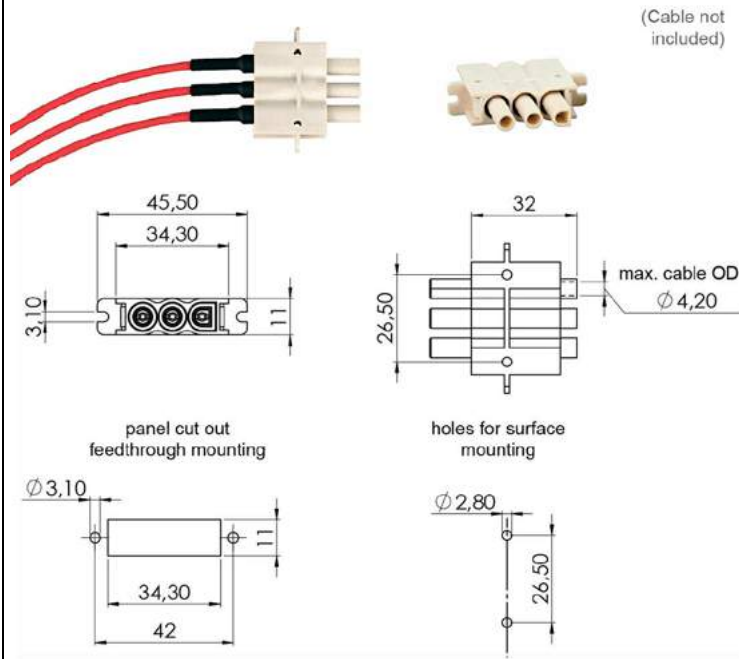


### VP-CL-2M

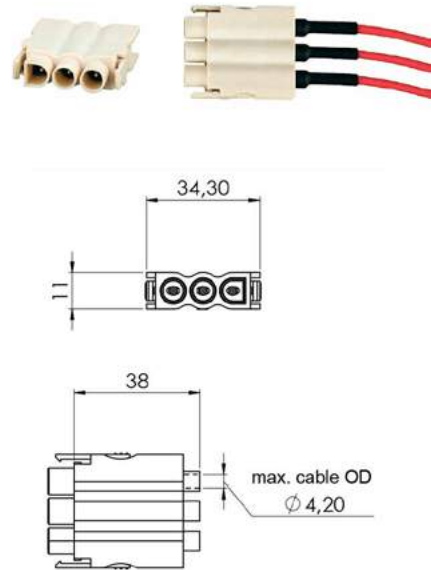


## DIMENSIONS

VP-CL-3F



VP-CL-3M



## HIGH VOLTAGE CABLE ASSEMBLIES UP TO 100kV

### FEATURES

- Different connector families
- Various standard configurations
- Operating voltage up to 100kV<sub>DC</sub>
- Oil-tight and hermetically sealed receptacles available
- Extended temperature range available
- Made in Germany

### APPLICATIONS

- Analytical Instruments
- Medical electronics
- Particle physics
- Instrument high voltage connections
- High voltage power supplies / amplifiers
- Nuclear instrumentation
- Test and measurement equipment
- High voltage laboratory wiring
- General high voltage wiring



### DESCRIPTION

Custom configurations of high voltage cable assemblies for connecting HV power supplies to different kind of equipment. Various connector models can be terminated to a great number of cable types. The terminations can be made single-sided or two-sided. Two-sided terminations are possible with identical or different connector models. Mating instrument mount receptacles are available in oil-tight or even hermetically sealed versions.

The cable assemblies are fully tested to provide reliable long-lasting connections.

Typical applications include high voltage power supplies, nuclear instrumentation, industrial and scientific X-Ray, electron microscopes, mass spectrometry, high voltage test equipment, electron beam welding, particle physics and many more.

### 57 SHV

Safe **H**igh **V**oltage coaxial connectors up to 5kV<sub>DC</sub>. Cable group mechanically matching RG 58 style. High temperature versions available.

SHV terminated cable assemblies are used in nuclear instrumentation and many other applications. Both the cable connectors and the bulkhead receptacles have recessed contacts and will withstand the rated voltage in unmated condition.



### HC51

Coaxial connectors up to 10kV<sub>DC</sub>. Cable group mechanically matching RG 58 style. High temperature versions available for the cable. Typical applications include industrial, nuclear instrumentation and medical. Both the cable connectors and the bulkhead receptacles have recessed contacts and will withstand the rated voltage in unmated condition. The front mount receptacles are hermetically sealed.





## ■ HC52

Coaxial connectors up to 20kV<sub>DC</sub>. Cable group mechanically matching RG 213 / RG 214 style. Typical applications include industrial, nuclear instrumentation and medical. Both the cable connectors and the bulkhead receptacles have recessed contacts and will withstand the rated voltage in unmated condition. The front mount receptacles are hermetically sealed.



## ■ HC7

Industrial high voltage connector series for 10, 20, 30, 50, 60 and 100kV<sub>DC</sub>. Fits to cables from 6.5 to 14mm outer diameter. Various cable types for different requirements available. Medium to high power industrial and scientific applications.



## ■ HS

Industrial high voltage connector series for 10, 20, 30 and 40kV<sub>DC</sub>. Fits to cables from 5 to 6.5mm outer diameter. Cable types for different requirements available. Low to medium power industrial, scientific and T&M applications.



## ■ VP-CL

1, 2 or 3 pole connector series for internal wiring up to 13kV<sub>DC</sub>.

## ■ Others

We are able to provide high voltage cable assemblies using many other HV connector types like LEMO, Fischer or MIL.



## HIGH VOLTAGE MOLDED RUBBER AND RESIN CAST CABLE TERMINATIONS AND RESIN CAST RECEPTACLES 50KV – 300KV

### FEATURES

- Up to 300kV<sub>DC</sub>
- Oil-tight Receptacles
- Extended Temperature Range
- Various Standard Types
- Custom Designs

### APPLICATIONS

- Industrial X-Ray
- Analytical Instruments
- Particle Physics
- Electron Beam Welding
- Pulsed Power
- Test Stations

### DESCRIPTION

A comprehensive range of high voltage cable assemblies and mating chassis mounted receptacles used for connecting HV power supplies to X-Ray tubes and other equipment. Available in the following styles and voltages: 65kV (R3), 75kV Federal Standard (O3, O4), 100kV (R10), 160kV (R24), 210kV (R30), 225kV (R28), 300kV, Pantak connectors, bottle shaped connectors and custom types. The cable terminations are implemented as resin cast or molded rubber connectors and fit most makes of industrial and scientific equipment. Molded rubber connectors are available spring loaded or with spring loaded flanges.

A wide range of termination clamping flanges, insulation paste, receptacle blanking plugs and test probes are available.

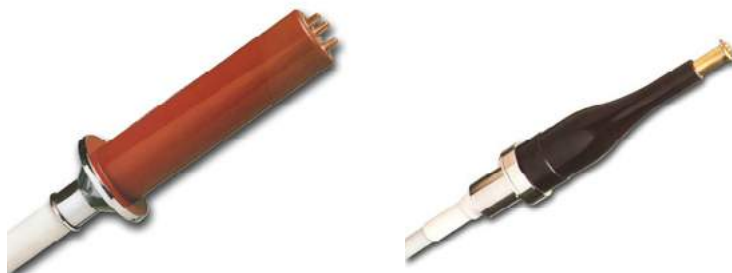
Typical applications include medical and industrial X-Ray, electron microscopes, X-Ray fluorescence, inspection equipment, electron beam welding, high energy, pulsed power and particle physics.



160kV R24 Type Spring Loaded Molded Rubber Connector and Receptacle



75kV O3 Type Resin Cast Connector and Receptacle

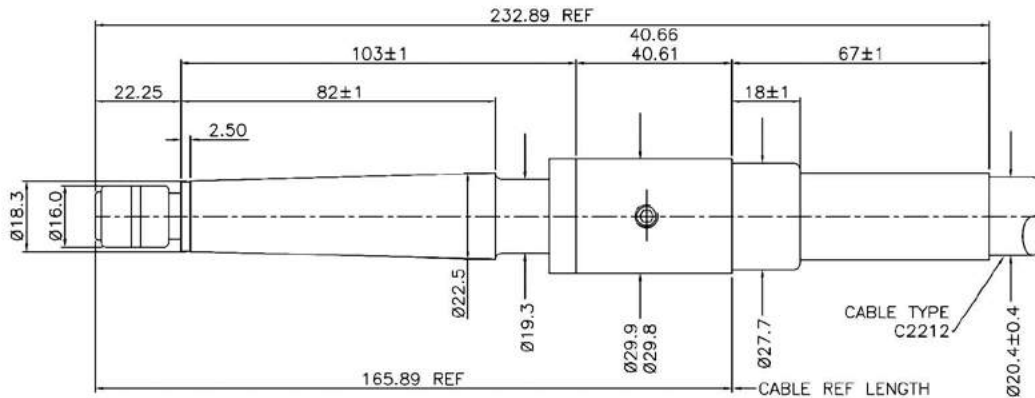


## EXAMPLES OF HIGH VOLTAGE CABLE ASSEMBLIES AND RECEPTACLES (FOR REFERENCE ONLY)

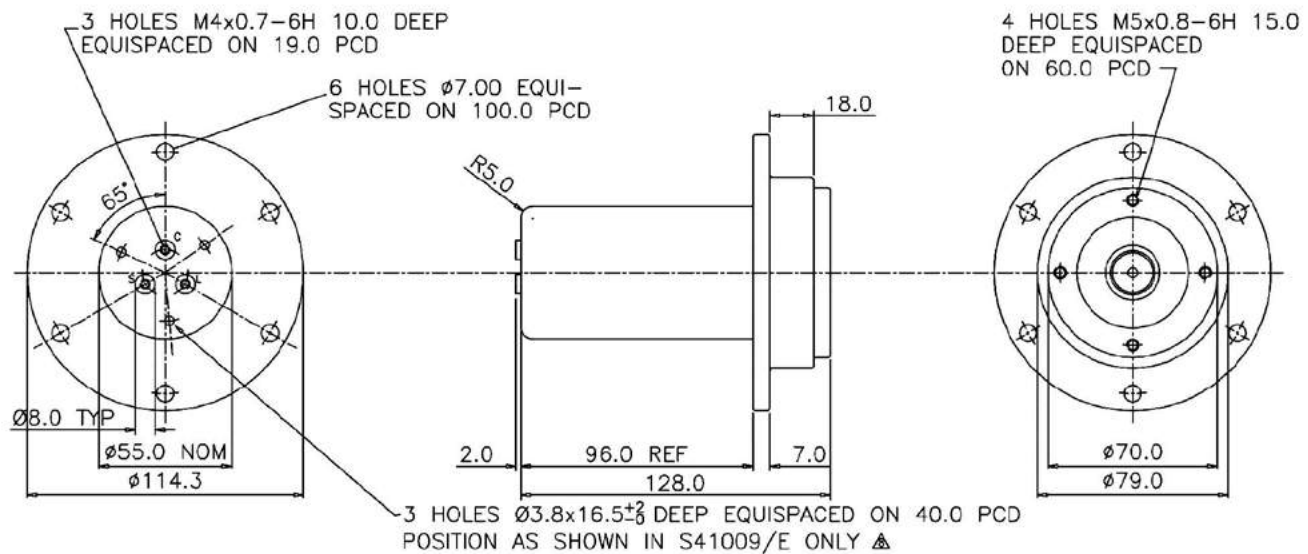
High Voltage Cable Assemblies are manufactured in various different combinations of cable and connector types. Some possible configurations and some variants of receptacles are shown for reference. All drawings are for identification purposes only. All drawings not to scale.

Final configurations are defined according to the requirements of the customer's application.

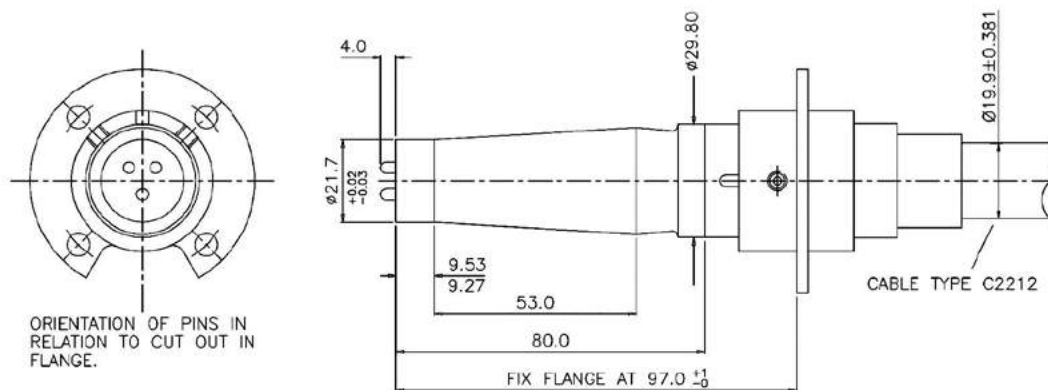
### ■ 100KV R10 STRAIGHT MOLDED RUBBER CONNECTOR – CABLE TYPE 2212



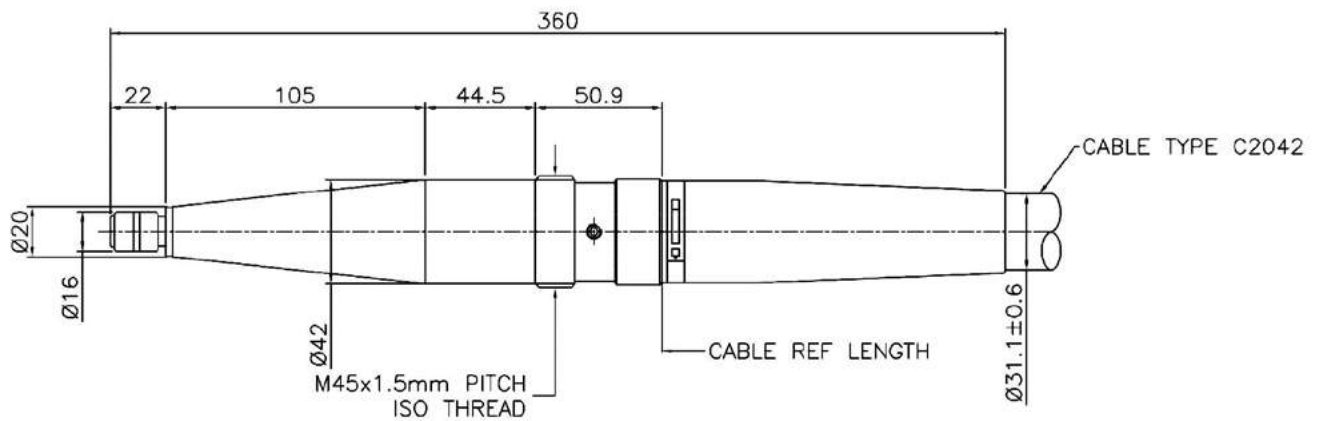
### ■ 100KV R10 RECEPTACLE



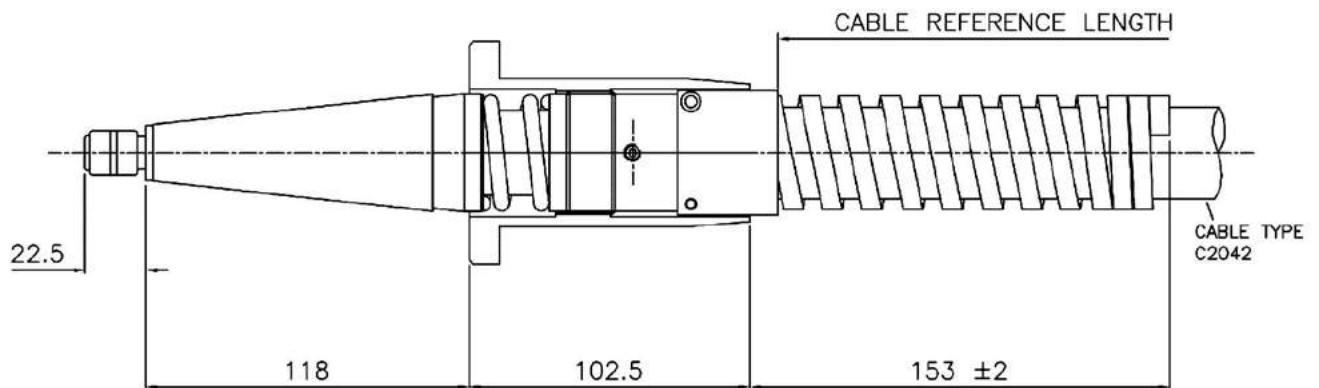
### ■ 100KV R27 STRAIGHT MOLDED RUBBER CONNECTOR – CABLE TYPE 2212



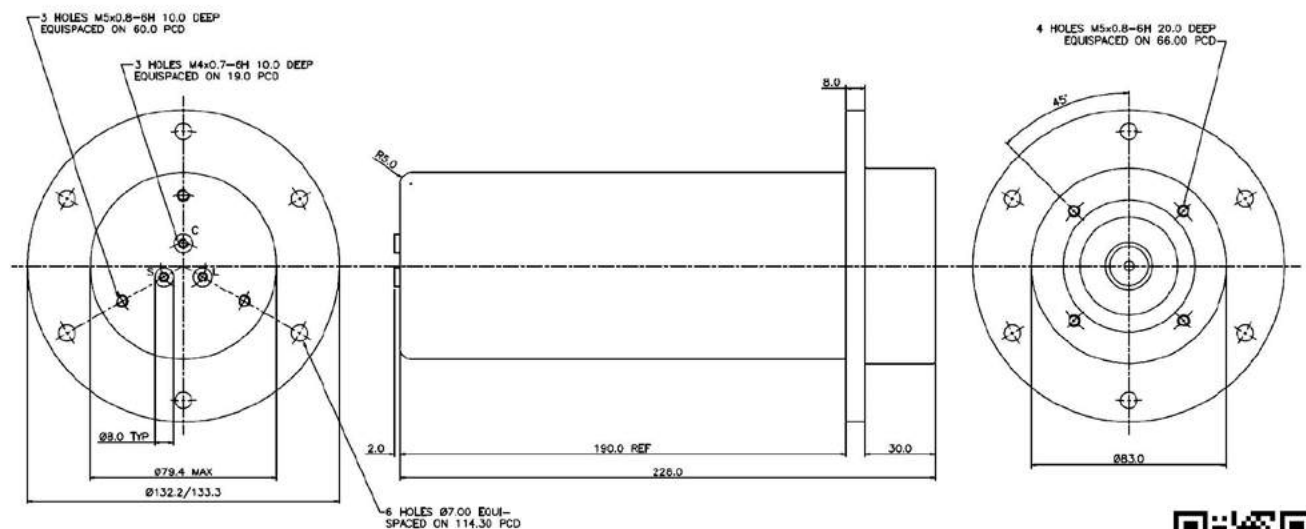
## 160KV R24 STRAIGHT MOLDED RUBBER CONNECTOR – CABLE TYPE 2042



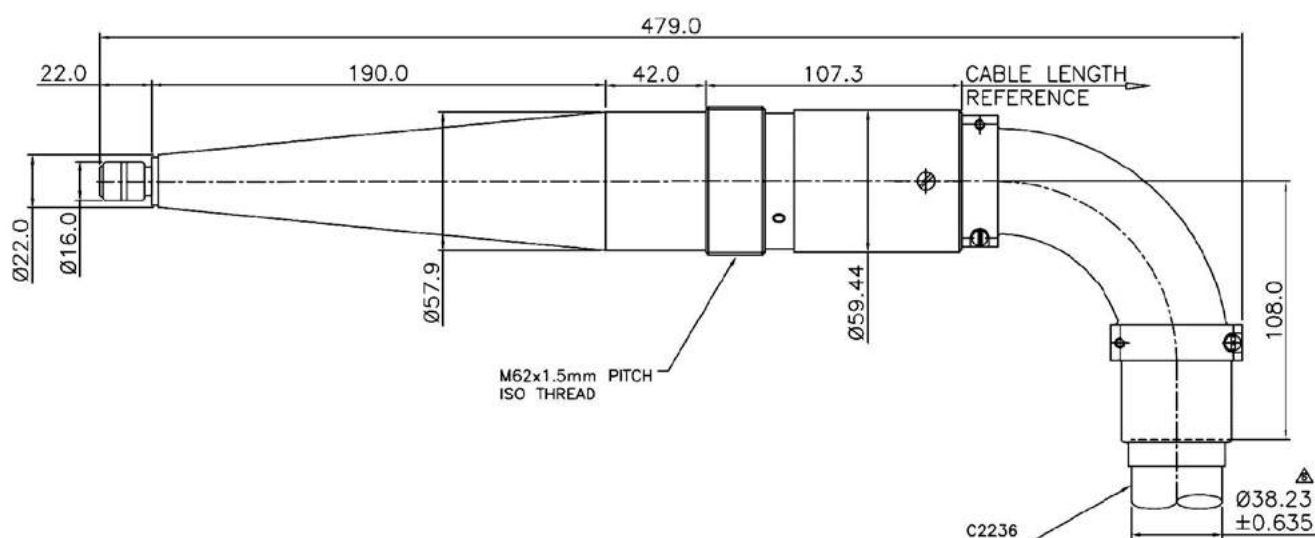
## 160KV R24 SPRING LOADED STRAIGHT MOLDED RUBBER CONNECTOR – CABLE TYPE 2042



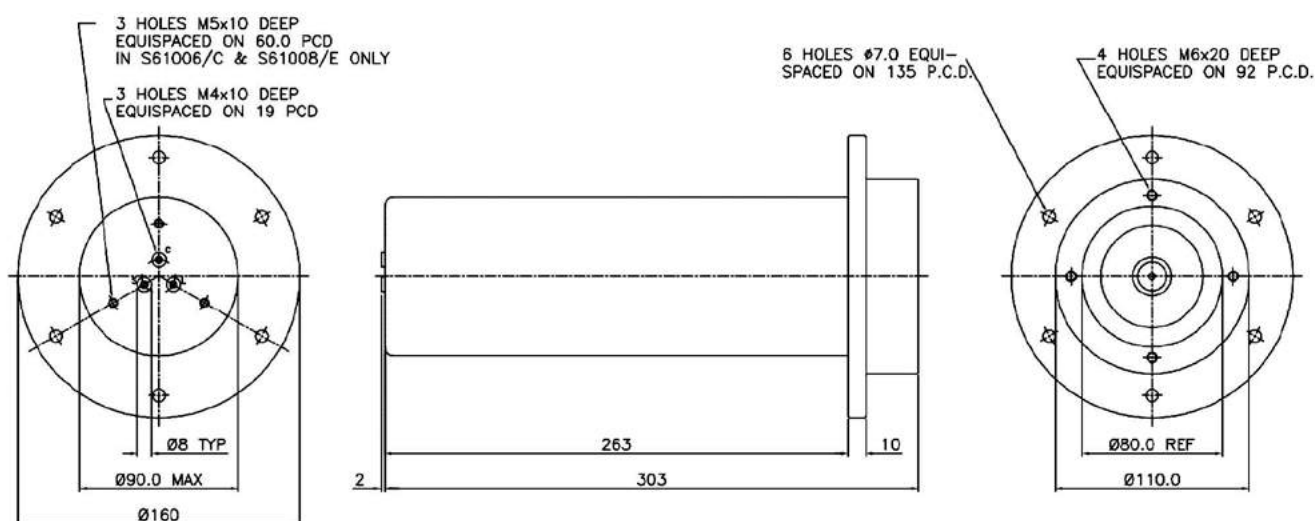
## 160KV R24 RECEPTACLE



## ■ 210KV R30 RIGHT ANGLE MOLDED RUBBER CONNECTOR – CABLE TYPE 2236



## ■ 210KV R30 RECEPTACLE



## OVERVIEW



## SHIELDED



## SPECIAL



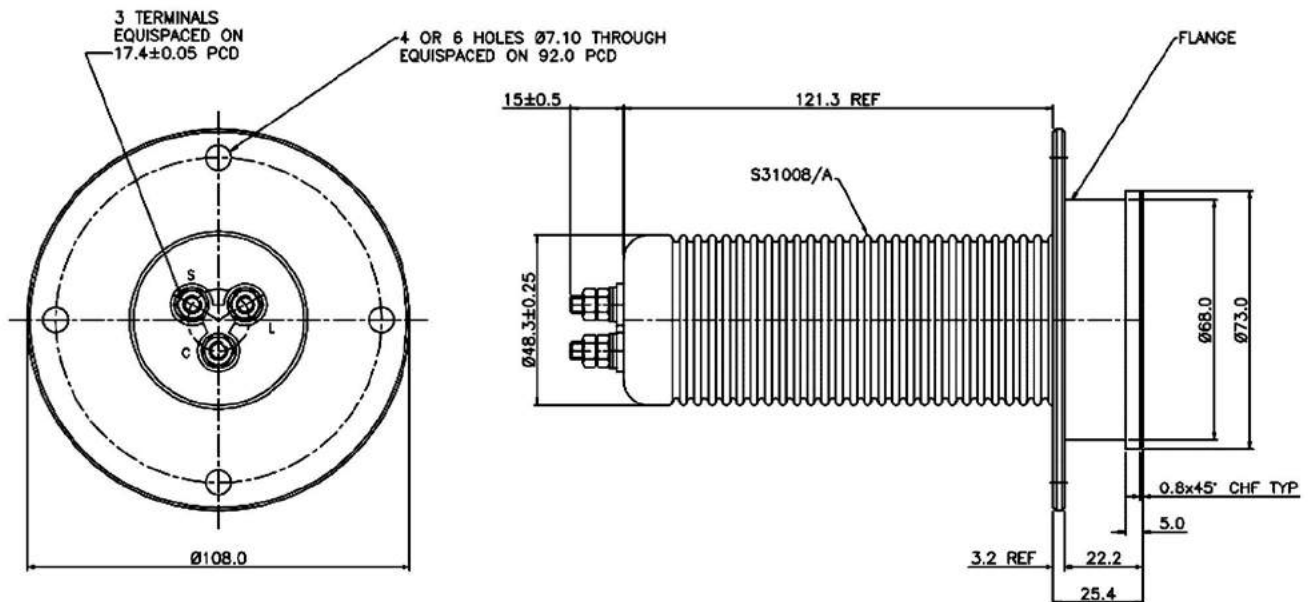
# ASSEMBLIES

ANNEX

INDEX



- **75KV RECEPTACLE WITH FLANGE**



## ■ TERMINOLOGY / TECHNICAL INFORMATION

### Rated Voltage (Operating Voltage)

The maximum voltage (DC or AC – according to the specified values) that may be applied between the centre conductor(s) and

- the environment for unshielded cable or
- the shield for shielded or X-Ray cable or
- the inner shield for triaxial cable or
- the chassis part for single pole connectors (only when plug and receptacle are mated).

For X-Ray, triaxial and multiconductor cable additional relations may apply for the additional conductors.

In case of applied AC voltage the term AC refers to sinusoidal RMS voltage at 50 / 60Hz. AC voltages of higher frequency or pulsed voltages must be examined individually. Cables without AC voltage specification must not be operated with AC voltage applied.

Operation of unshielded cables at AC voltages requires careful tests and long term qualification for the specific application. Suitable means regarding partial discharge have to be considered. All AC ratings for unshielded cables are given for orientation only.

In case of UL recognized AWM please notice the following advice: Normally the cable has been spark tested according to UL758 during production. It is recommended to derate the operating voltage for continuous operation. The user has to ensure by adequate tests that the cable is suitable for his application.

### (Routine) Test Voltage

The voltage applied to the cable during production to test the dielectric strength on the insulation. The duration of the test and further information are given as appropriate.

The cable must not be operated at test voltage levels.

### Type (Model)

Identifier for a specific product. May be extended by optional parameters to form a complete part number.

### Conductor

- Size:** Conductor cross-sectional area, given in AWG or mm<sup>2</sup>.
- Area:** Conductor cross-sectional area, given in mm<sup>2</sup>.
- Diameter:** Approximate diameter of the bare conductor.
- Strands:** Conductor construction, given in number of strands and area of single strand wire.
- Resistance:** Maximal conductor resistance per given length.
- Weight:** Weight of the bare conductor per given length.
- Material:** Normally copper (Cu).
- Plating:** Surface treatment (bare / none, tin plated, silver plated) shown with the conductor material (e.g. Cu/Sn: tin plated copper conductor),

### No. of Conductors

Effective number of individual, insulated conductors in a multiconductor or X-Ray / E-Beam cable. Multiple bare conductors in X-Ray / E-Beam cables are counted as one conductor.

### Dielectric

A non-conducting, insulating material with a specific dielectric constant. Used to insulate the high voltage carrying conductor from the environment or the shield.

### Dielectric (Material)

Specifies the type of compound used for the dielectric. Typical dielectric materials are:

- EPR: Ethylene Propylene Copolymer Rubber
- EPDM: Ethylene Propylene Diene Monomer Rubber
- FEP: Fluorinated Ethylene Propylene
- LDHMMW PE: Low Density High Molecular Weight Polyethylene
- PE: Polyethylene
- PEEK: Polyether Ether Ketone
- PTFE: Polytetrafluoroethylene (Teflon®)
- SILICONE: Silicone Rubber
- XLPE / PE-X: Cross-Linked Polyethylene

**Semicon**

A semi-conducting material that has a specific resistance characteristic. When bonded to the dielectric of a cable, the electrical field will be flattened reducing the field strength and the voltage stress to the dielectric. Furthermore, voids between metallic conductors and the dielectric will be avoided, thus reducing partial discharge or internal corona. Semicon is used for both the inner conductor shielding and between the dielectric insulation and metallic shield.

**Capacitance**

Electrical capacitance of a shielded cable measured between conductor and shield per given length.

**Impedance**

Characteristic impedance of a shielded cable. Not to be confused with conductor resistance.

**Shield (Braid)**

A conducting layer or sheath of material applied around an insulated conductor or conductors. Typical shields in high voltage cables are constructed of copper braid. The purpose of the shield is:

- Protection in case of breakdown of the high voltage insulation,
- electrostatic shielding of the enclosed conductors,
- return path for the operating current.

**Construction:** Plating and AWG or metric size of the individual strand in the braid.  
**Area equivalent:** The conductor size equivalent of the complete braid.  
**Coverage [%]:** The physical area of the shield layer covered by the shielding material.

**Jacket (Material)**

An outer sheath or protective covering over a conductor or insulation, mainly used for protection against the environment, but may also be used to provide additional insulation. Typical jacket materials are:

- NEOPRENE: Polychloroprene Rubber
- PU: Polyurethane
- PUR: Polyurethane Rubber
- PVC: Polyvinyl Chloride
- SILICONE: Silicone Rubber
- TPE-U: Thermoplastic Elastomeres, Urethane Based
- TPR: Thermoplastic Rubber

**Outer Diameter (DIA)**

Nominal diameter of the finished cable.

**Weight / Total Weight**

Weight of the finished cable per given length.

**Cu-Weight / Copper Weight**

Weight of the copper content of the cable per given length.

**Color**

Color of the finished cable.

**Min. Bend Radius**

Minimum admissible radius when bending the cable. Normally shown for static / fixed bending. Additional information for dynamic / moving bending given for some cables.

**Temperatures**

**Operating Temper.:** The maximum continuous operating temperature of the finished cable. Depends on the ambient temperature and the actual operating current.

**max. Conductor:** The maximum continuous temperature of the conductor during operation. Depending on the dielectric material used this limit temperature can be higher than maximum operating temperature of the cable.

**Storage Temperature:** The maximum continuous temperature when the cable is not under operation.



**RoHS Compliant**

- Yes:** The cable complies to the EU Directive 2002/95/EC (Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment).
- :** The cable may contain amounts of substances that exceed the limits of the EU Directive 2002/95/EC.

**Halogen-free**

- Yes:** No halogenes (Fluorine, Chlorine, Bromine, Iodine, Astatine) are intentionally present in the cable.
- No:** Halogenes (Fluorine, Chlorine, Bromine, Iodine, Astatine) may intentionally be present in the cable.

**Oil Resistance**

If applicable, the finished cable is oil resistant according to the listed standards.

**■ STATUS**

- P:** Preferred – Normally in stock and fast delivery.
- Y:** Preliminary – In development. Electrical, mechanical and environmental data are subject to change during the final design of the cable. A final specification will be determined at time of ordering.
- S:** Special – Available on request. Longer delivery time and large Minimum Order Quantities may apply.
- E:** Prospective – Not yet in development. Subject to change.
- X:** Example – Rough draft. No specific realization yet.
- O:** Obsolete – No longer available.

**■ COLOR CODE**

|         |          |        |          |            |         |
|---------|----------|--------|----------|------------|---------|
| 0 black | 1 brown  | 2 red  | 3 orange | 4 yellow   | 5 green |
| 6 blue  | 7 violet | 8 grey | 9 white  | 10 natural |         |

Notice: This color code is not identical to the color code used to identify individual wires in a control cable.

**■ DISCLAIMER**

The information given in this catalog is technical data, not assured product characteristics. It has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. All drawings and pictures are not to scale. All values and dimensions without given tolerances are nominal. The content is subject to change without notice.

The user has to ensure by adequate tests that the product is suitable for his application regarding safety and technical aspects. hivolt.de GmbH & Co. KG does not assume any liability arising out of the application or use of any product described.

The technical data is based on manufacturer's information.

**■ SAFETY ADVICE**

Design, installation and inspection of machinery and devices carrying high voltage require accordingly trained and qualified personnel. Appropriate safety rules and directives must be complied with. Improper handling of high voltage can mean severe injuries or death and may cause serious collateral damage!

## ■ AWG TABLE

| Size<br>[AWG] |       |    | Area<br>[mm²] | Dia<br>[mm] | Res.<br>[Ω/m] | Weight<br>[kg/km] |
|---------------|-------|----|---------------|-------------|---------------|-------------------|
| 44            | solid |    | 0.00198       | 0.050       | 8.6844        | 0.018             |
| 43            | solid |    | 0.00250       | 0.056       | 6.8871        | 0.022             |
| 42            | solid |    | 0.00315       | 0.063       | 5.4617        | 0.028             |
| 41            | solid |    | 0.00397       | 0.071       | 4.3313        | 0.035             |
| 40            | solid |    | 0.00501       | 0.080       | 3.4349        | 0.045             |
| 39            | solid |    | 0.00632       | 0.090       | 2.7240        | 0.056             |
| 38            | solid |    | 0.00797       | 0.101       | 2.1602        | 0.071             |
| 37            | solid |    | 0.0100        | 0.113       | 1.7131        | 0.090             |
| 36            | solid |    | 0.0127        | 0.127       | 1.3586        | 0.113             |
|               | 7     | 44 | 0.0139        | 0.151       | 1.2406        | 0.124             |
| 35            | solid |    | 0.0160        | 0.143       | 1.0774        | 0.143             |
| 34            | solid |    | 0.0201        | 0.160       | 0.8544        | 0.180             |
|               | 7     | 42 | 0.0221        | 0.190       | 0.7802        | 0.197             |
| 33            | solid |    | 0.0254        | 0.180       | 0.6776        | 0.227             |
| 32            | solid |    | 0.0320        | 0.202       | 0.5374        | 0.286             |
|               | 7     | 40 | 0.0351        | 0.240       | 0.4907        | 0.313             |
|               | 19    | 44 | 0.0377        | 0.244       | 0.4571        | 0.336             |
| 31            | solid |    | 0.0404        | 0.227       | 0.4261        | 0.360             |
| 30            | solid |    | 0.0509        | 0.255       | 0.3379        | 0.454             |
|               | 7     | 38 | 0.0558        | 0.302       | 0.3086        | 0.497             |
|               | 19    | 42 | 0.0599        | 0.308       | 0.2875        | 0.534             |
| 29            | solid |    | 0.0642        | 0.286       | 0.2680        | 0.573             |
| 28            | solid |    | 0.0810        | 0.321       | 0.2125        | 0.722             |
|               | 7     | 36 | 0.0887        | 0.381       | 0.1941        | 0.791             |
|               | 19    | 40 | 0.0952        | 0.388       | 0.1808        | 0.849             |
| 27            | solid |    | 0.102         | 0.361       | 0.1686        | 0.911             |
| 26            | solid |    | 0.129         | 0.405       | 0.1337        | 1.149             |
|               | 7     | 34 | 0.141         | 0.480       | 0.1221        | 1.258             |
|               | 10    | 36 | 0.127         | 0.484       | 0.1359        | 1.300             |
|               | 19    | 38 | 0.151         | 0.490       | 0.1137        | 1.350             |
| 25            | solid |    | 0.162         | 0.455       | 0.1060        | 1.448             |
| 24            | solid |    | 0.205         | 0.511       | 0.0841        | 1.826             |
|               | 7     | 32 | 0.224         | 0.606       | 0.0768        | 2.000             |
|               | 10    | 34 | 0.201         | 0.611       | 0.0854        | 1.797             |
|               | 19    | 36 | 0.241         | 0.618       | 0.0715        | 2.147             |
|               | 41    | 40 | 0.205         | 0.580       | 0.0838        | 1.832             |
| 23            | solid |    | 0.258         | 0.573       | 0.0667        | 2.303             |
| 22            | solid |    | 0.326         | 0.644       | 0.0529        | 2.904             |
|               | 7     | 30 | 0.356         | 0.764       | 0.0483        | 3.180             |
|               | 19    | 34 | 0.383         | 0.779       | 0.0450        | 3.414             |
|               | 26    | 36 | 0.329         | 0.740       | 0.0523        | 2.938             |
|               | 41    | 36 | 0.519         | 0.922       | 0.0331        | 4.633             |
| 21            | solid |    | 0.410         | 0.723       | 0.0419        | 3.662             |
| 20            | solid |    | 0.518         | 0.812       | 0.0333        | 4.617             |
|               | 7     | 28 | 0.567         | 0.963       | 0.0304        | 5.056             |
|               | 10    | 30 | 0.509         | 0.971       | 0.0338        | 4.543             |
|               | 19    | 32 | 0.609         | 0.982       | 0.0283        | 5.428             |
|               | 26    | 34 | 0.524         | 0.933       | 0.0329        | 4.671             |
|               | 41    | 36 | 0.519         | 0.922       | 0.0331        | 4.633             |
| 19            | solid |    | 0.653         | 0.912       | 0.0264        | 5.822             |

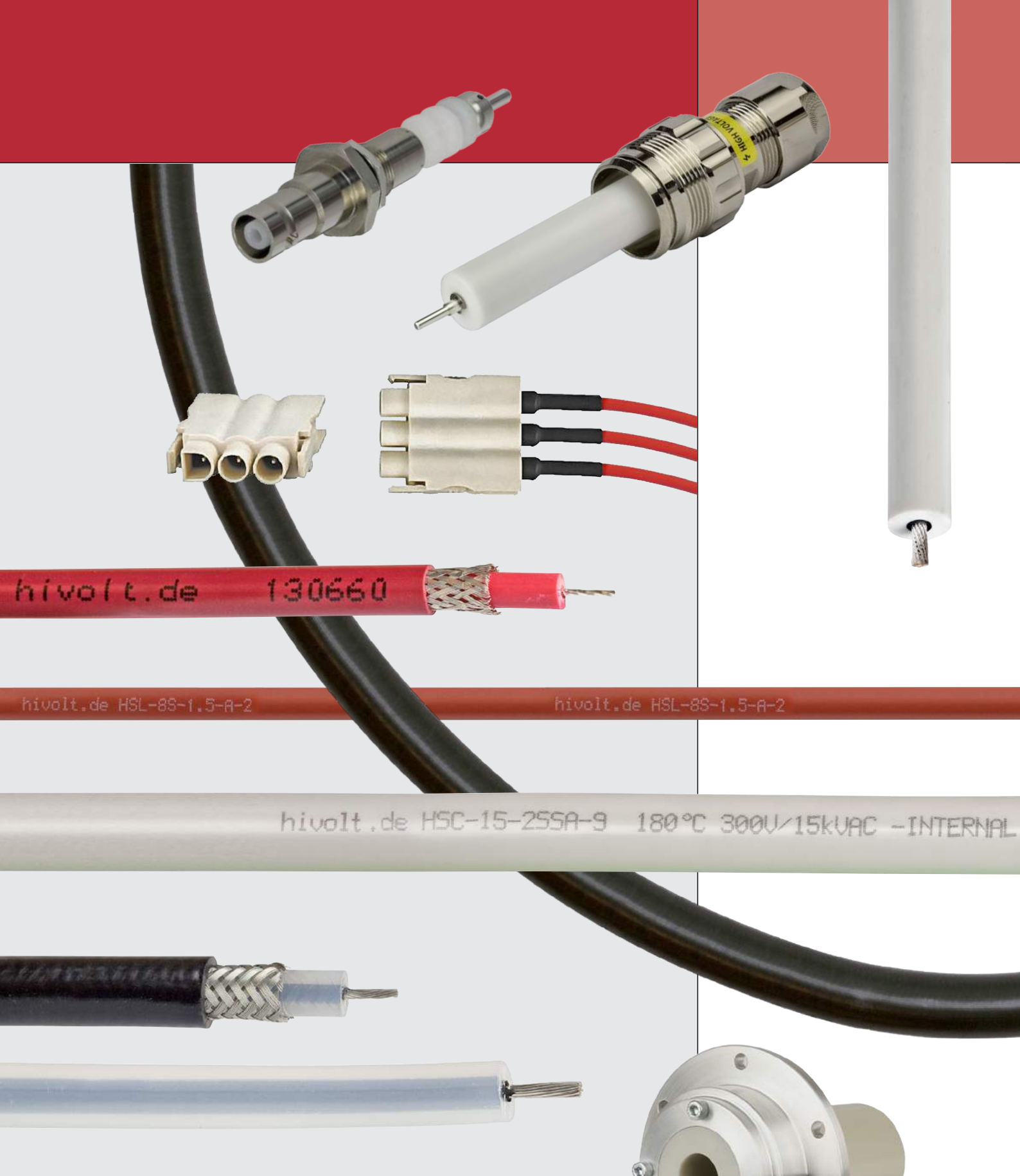
| Size<br>[AWG] | [#]   | [AWG] | Area<br>[mm²] | Dia<br>[mm] | Res.<br>[Ω/m] | Weight<br>[kg/km] |
|---------------|-------|-------|---------------|-------------|---------------|-------------------|
| 18            | solid |       | 0.823         | 1.02        | 0.0209        | 7.342             |
|               | 7     | 26    | 0.901         | 1.21        | 0.0191        | 8.040             |
|               | 16    | 30    | 0.815         | 1.18        | 0.0211        | 7.268             |
|               | 19    | 30    | 0.968         | 1.24        | 0.0178        | 8.631             |
|               | 41    | 34    | 0.826         | 1.16        | 0.0208        | 7.366             |
|               | 65    | 36    | 0.823         | 1.15        | 0.0209        | 7.345             |
| 17            | solid |       | 1.04          | 1.15        | 0.0166        | 9.258             |
| 16            | solid |       | 1.31          | 1.29        | 0.0132        | 11.67             |
|               | 7     | 24    | 1.43          | 1.47        | 0.0120        | 12.78             |
|               | 19    | 29    | 1.22          | 1.45        | 0.0141        | 10.88             |
|               | 26    | 30    | 1.32          | 1.52        | 0.0130        | 11.81             |
|               | 65    | 34    | 1.31          | 1.52        | 0.0131        | 11.68             |
|               | 105   | 36    | 1.33          | 1.44        | 0.0129        | 11.86             |
| 15            | solid |       | 1.65          | 1.45        | 0.0104        | 14.72             |
| 14            | solid |       | 2.08          | 1.63        | 0.0083        | 18.56             |
|               | 7     | 22    | 2.28          | 1.93        | 0.0076        | 20.33             |
|               | 19    | 27    | 1.94          | 1.80        | 0.0089        | 17.31             |
|               | 41    | 30    | 2.09          | 1.96        | 0.0082        | 18.62             |
|               | 105   | 34    | 2.11          | 1.82        | 0.0081        | 18.87             |
| 13            | solid |       | 2.62          | 1.83        | 0.0066        | 23.41             |
| 12            | solid |       | 3.31          | 2.05        | 0.0052        | 29.51             |
|               | 7     | 20    | 3.62          | 2.44        | 0.0048        | 32.32             |
|               | 19    | 25    | 3.08          | 2.29        | 0.0056        | 27.52             |
|               | 37    | 28    | 3.00          | 2.17        | 0.0057        | 26.73             |
|               | 61    | 29    | 3.92          | 2.48        | 0.0044        | 34.95             |
|               | 65    | 30    | 3.31          | 2.31        | 0.0052        | 29.53             |
|               | 165   | 34    | 3.32          | 2.27        | 0.0052        | 29.65             |
| 11            | solid |       | 4.17          | 2.30        | 0.0041        | 37.22             |
| 10            | solid |       | 5.26          | 2.59        | 0.0033        | 46.93             |
|               | 37    | 26    | 4.76          | 2.74        | 0.0036        | 42.49             |
|               | 49    | 27    | 5.00          | 2.84        | 0.0034        | 44.63             |
|               | 105   | 30    | 5.35          | 3.30        | 0.0032        | 47.70             |
| 9             | solid |       | 6.63          | 2.91        | 0.0026        | 59.18             |
| 8             | solid |       | 8.37          | 3.26        | 0.0021        | 74.62             |
|               | 19    | 21    | 7.80          | 3.51        | 0.0022        | 69.57             |
|               | 49    | 25    | 7.96          | 3.59        | 0.0022        | 70.96             |
|               | 133   | 29    | 8.54          | 4.22        | 0.0020        | 76.18             |
|               | 168   | 30    | 8.56          | 4.42        | 0.0020        | 76.32             |
|               | 665   | 36    | 8.42          | 3.53        | 0.0020        | 75.14             |
| 7             | solid |       | 10.5          | 3.66        | 0.0016        | 94.10             |
| 6             | solid |       | 13.3          | 4.12        | 0.0013        | 118.7             |
|               | 133   | 27    | 13.6          | 5.33        | 0.0013        | 121.1             |
|               | 266   | 30    | 13.5          | 5.18        | 0.0013        | 120.8             |
| 5             | solid |       | 16.8          | 4.62        | 0.0010        | 149.6             |
| 4             | solid |       | 21.2          | 5.19        | 0.0008        | 188.7             |
|               | 420   | 30    | 21.4          | 6.53        | 0.0008        | 190.8             |
| 3             | solid |       | 26.7          | 5.83        | 0.0006        | 237.9             |
| 2             | solid |       | 33.6          | 6.54        | 0.0005        | 300.0             |
|               | 665   | 30    | 33.9          | 8.59        | 0.0005        | 302.1             |
| 1             | solid |       | 42.4          | 7.35        | 0.0004        | 378.3             |
| 0             | solid |       | 53.5          | 8.25        | 0.0003        | 477.0             |

Approximate values @20°C

The diameters of stranded wires given in this table are approximate values. The actual diameter may vary depending on the build-up of the particular cable.

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| <a href="#">2012STJ</a> | Shielded       | <a href="#">46</a>  |
| <a href="#">2024</a>    | Unshielded     | <a href="#">21</a>  |
| <a href="#">2024SVJ</a> | Shielded       | <a href="#">47</a>  |
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| <a href="#">2032S</a>   | Shielded       | <a href="#">48</a>  |
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| <a href="#">2062SVJ</a> | Shielded       | <a href="#">50</a>  |
| <a href="#">2068-R2</a> | Triaxial       | <a href="#">10</a>  |
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| <a href="#">2075S</a>   | Shielded       | <a href="#">51</a>  |
| <a href="#">2075SVJ</a> | Shielded       | <a href="#">52</a>  |
| <a href="#">2111</a>    | Multiconductor | <a href="#">95</a>  |
| <a href="#">2121</a>    | Shielded       | <a href="#">53</a>  |
| <a href="#">2121A</a>   | Unshielded     | <a href="#">25</a>  |
| <a href="#">2122</a>    | Triaxial       | <a href="#">96</a>  |
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| <a href="#">2125</a>    | Shielded       | <a href="#">55</a>  |
| <a href="#">2125A</a>   | Unshielded     | <a href="#">27</a>  |
| <a href="#">2132</a>    | Unshielded     | <a href="#">28</a>  |
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| <a href="#">2149</a>    | Unshielded     | <a href="#">29</a>  |
| <a href="#">2149SVJ</a> | Shielded       | <a href="#">57</a>  |
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| <a href="#">2176</a>    | Multiconductor | <a href="#">10</a>  |
| <a href="#">2178</a>    | Unshielded     | <a href="#">30</a>  |
| <a href="#">2181-1</a>  | Multiconductor | <a href="#">97</a>  |
| <a href="#">2183</a>    | Multiconductor | <a href="#">98</a>  |
| <a href="#">2185R</a>   | Unshielded     | <a href="#">31</a>  |
| <a href="#">2186</a>    | Triaxial       | <a href="#">10</a>  |
| <a href="#">2187</a>    | Multiconductor | <a href="#">10</a>  |
| <a href="#">2188</a>    | Multiconductor | <a href="#">99</a>  |
| <a href="#">2201</a>    | Multiconductor | <a href="#">10</a>  |
| <a href="#">2207</a>    | Multiconductor | <a href="#">10</a>  |
| <a href="#">2211-R1</a> | Multiconductor | <a href="#">10</a>  |
| <a href="#">2212</a>    | X-Ray / E-Beam | <a href="#">84</a>  |
| <a href="#">2212TVJ</a> | Triaxial       | <a href="#">100</a> |
| <a href="#">2213</a>    | X-Ray / E-Beam | <a href="#">85</a>  |
| <a href="#">2214</a>    | X-Ray / E-Beam | <a href="#">86</a>  |
| <a href="#">2226</a>    | X-Ray / E-Beam | <a href="#">87</a>  |
| <a href="#">2228</a>    | Multiconductor | <a href="#">10</a>  |
| <a href="#">2229</a>    | Unshielded     | <a href="#">32</a>  |
| <a href="#">2232</a>    | Shielded       | <a href="#">58</a>  |
| <a href="#">2233</a>    | Multiconductor | <a href="#">101</a> |
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| <a href="#">2243VJ-4</a>           | Unshielded     | <a href="#">34</a>  |
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| <a href="#">2358</a>               | Triaxial       | <a href="#">104</a> |
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| <a href="#">HSC-2.5-7SSB-2</a>     | Multiconductor | <a href="#">107</a> |
| <a href="#">HSC-4-1P2SVA-0</a>     | Triaxial       | <a href="#">108</a> |
| <a href="#">HSC-5-7X2SVA-2</a>     | Multiconductor | <a href="#">109</a> |
| <a href="#">HSC-7.5-2K2SA</a>      | Multiconductor | <a href="#">110</a> |
| <a href="#">HSC-10-6SSSA</a>       | Multiconductor | <a href="#">111</a> |
| <a href="#">HSC-15-1S2SUA-0</a>    | Triaxial       | <a href="#">112</a> |
| <a href="#">HSC-15-2SSA-9</a>      | Multiconductor | <a href="#">114</a> |
| <a href="#">HSC-17-1SSSOB-2</a>    | Shielded       | <a href="#">63</a>  |
| <a href="#">HSC-20-1X2SUA-2</a>    | Triaxial       | <a href="#">115</a> |
| <a href="#">HSC-30-3S2SUC-0</a>    | Multiconductor | <a href="#">116</a> |
| <a href="#">HSC-50-1S1SUA-0</a>    | Shielded       | <a href="#">64</a>  |
| <a href="#">HSC-60-1PSUA-2</a>     | Shielded       | <a href="#">65</a>  |
| <a href="#">HSC-100-1PSUA-2</a>    | Shielded       | <a href="#">66</a>  |
| <a href="#">HSC-125-1E1SAB-2</a>   | Shielded       | <a href="#">67</a>  |
| <a href="#">HSC-150-1PSUA-2</a>    | Shielded       | <a href="#">69</a>  |
| <a href="#">HSC-300-1E2SVA-0</a>   | Triaxial       | <a href="#">118</a> |
| <a href="#">HSL-8S-0.75-B-2</a>    | Shielded       | <a href="#">70</a>  |
| <a href="#">HSL-8S-1.5-A-2</a>     | Shielded       | <a href="#">71</a>  |
| <a href="#">HSL-15S-6-A-9</a>      | Shielded       | <a href="#">72</a>  |
| <a href="#">HSL-20-0.38-SS-C-0</a> | Shielded       | <a href="#">73</a>  |
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