

# Plug-in dry type terminations up to 300 kV

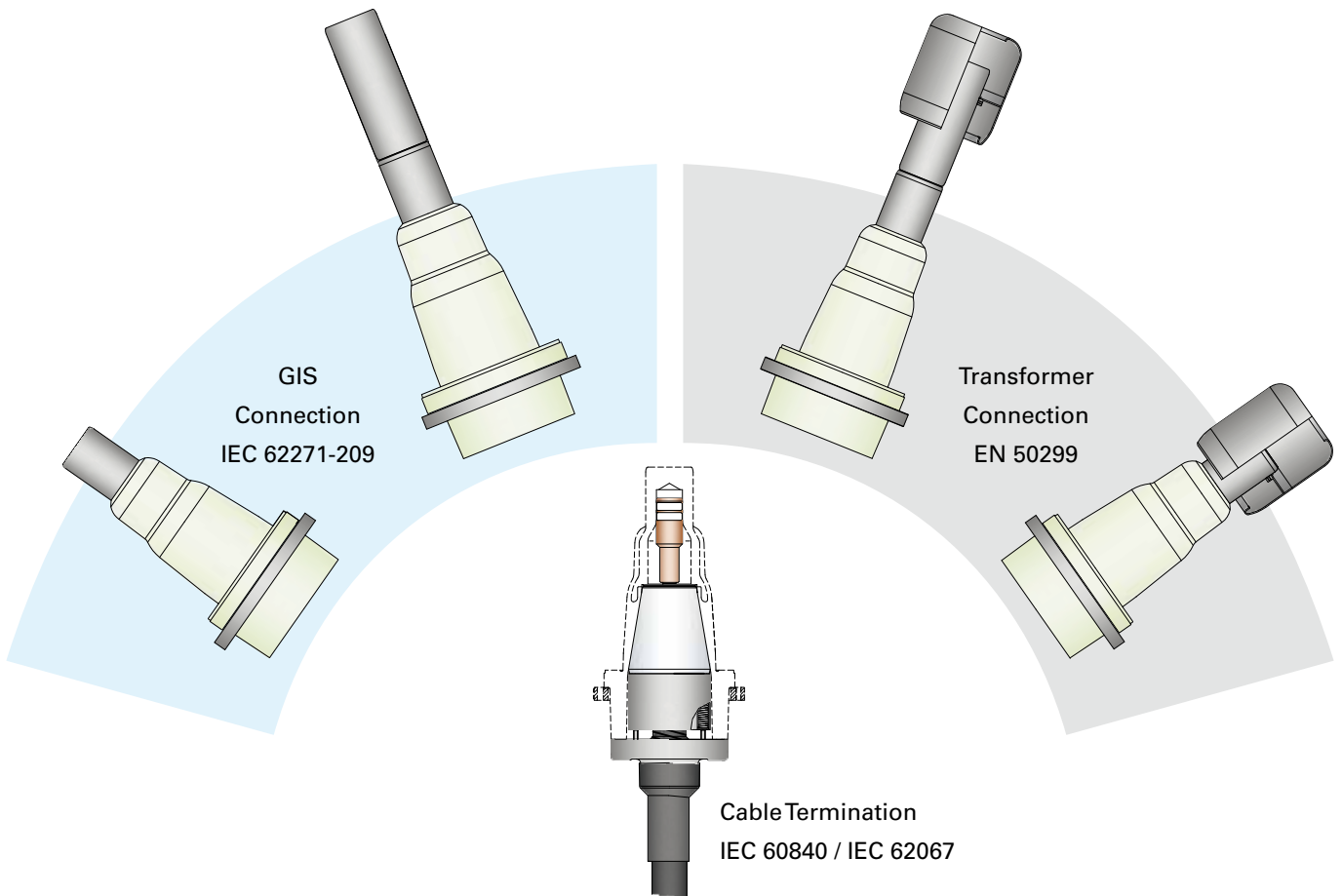
For gas-insulated switchgears  
and oil filled transformers



## Plug-in dry type cable termination for flexible and universal applications

The dry type plug-in cable connection system type TFD for gas-insulated switchgear and power transformers offers highest quality and flexibility in application. Thanks to the modular, versatile configuration, all types of polymer cables can be installed with gas-insulated switchgear (GIS) and transformers for system voltages up to 300 kV reliably and without problem regardless of the manufacturer.

The preconfigured cable connections correspond to the dimensions in accordance with IEC 62271-209 for GIS and EN 50299 for power transformers for dry type as well as conventional fluid-filled versions.



Features	Advantages	Your benefit
Plug-in design	No work is required on the GIS or on the transformer during and after cable laying	Faster, more reliable installation
Dry type design	No oil filling or checking required Installation in any position and at any angle	Lower installation and maintenance costs
Insulator tested according to EN 50089	Insulator can be installed and tested at the GIS or transformer manufacturer facilities	Lower costs for necessary electrical tests on site
Cable connections according to international standards IEC 62271-209	Matches the products to all GIS and transformer manufacturers	Flexible and universal to all requirements
For polymer cables of all types	Independent of the cable manufacturer	Universal application solution Reduction of inventory costs
Silicone stress cones subjected to routine electrical testing at the factory acc. IEC standards	Guaranteed highest material quality	Long service life and maximum reliability of the cable systems

## Simple, reliable pre-installation thanks to modular installation concept

The preconfigured cable connection sets allow a fast installation. Thanks to the modular concept each set can be easily adapted to any GIS or transformers up to 300 kV. Each insulator is pretested in accordance with the requirements of EN 50089.

### Connection sets

<b>TFD 145/170 kV</b>	Dimensions in conformance with IEC 62271-209 dry-type compact Round clamping ring for single-phase arrangement, or V-shaped clamping ring for 3-phase arrangement
<b>TFD 145/170 kV ext.</b>	Dimensions in conformance with IEC 62271-209 fluid-filled Round clamping ring for single-phase arrangement, or V-shaped clamping ring for 3-phase arrangement
<b>TFD 245/300 kV</b>	Dimensions in conformance with IEC 62271-209 dry-type compact Round clamping ring for single-phase arrangement
<b>TFD 245/300 kV ext.</b>	Dimensions in conformance with IEC 62271-209 fluid-filled Round clamping ring for single-phase arrangement
<b>TTD 145/170 kV</b>	Dimensions in conformance with EN 50299-2 dry-type compact Round clamping ring for single-phase arrangement
<b>TTD 145/170 kV ext.</b>	Dimensions in conformance with EN 50299-1 fluid-filled Round clamping ring for single-phase arrangement
<b>TTD 245/300 kV ext.</b>	Dimensions in conformance with EN 50299-1 fluid-filled Round clamping ring for single-phase arrangement



The test accessories enable GIS and transformer manufacturers to carry out routine electrical tests on preinstalled cable connections without intervention inside their equipment. Furthermore, the test plate can also be used to seal the bottom of the cable connection securely so that start-up of the system can be performed on site without a cable termination part. After successful testing or use the test accessories can be reused for the next system.

### Test accessories

Test plate set for TFD/TTD insulators 145 – 300 kV

Contact resistance meter set for TFD/TTD insulators 145 – 300 kV

The cable terminations are quick and easy to install on all types of polymer cables regardless of manufacturer. Thanks to the self-regulating spring pressure force the terminations offer a wide range of application.

All dry-type terminations have successfully undergone type testing in accordance with international standards IEC 60840 ( $\leq 170$  kV) and IEC 62067 ( $> 170$  kV). In order to guarantee the long-term reliability of each unit, every single silicone stress cone is subjected to a series of routine electrical tests at our production plants.



### Cable terminations

	<b>TFD 1.145-11</b>	<b>TFD 1.145-12</b>	<b>TFD 1.170-11</b>	<b>TFD 1.245-11</b>	<b>TFD 1.300-11</b>
Min./max. $\varnothing$ after cable insulation preparation	45-82 mm	70-101 mm	45-101 mm	70-130 mm	70-130 mm
Equivalent cable cross section	240-1200 mm <sup>2</sup>	1200-2500 mm <sup>2</sup>	240-2500 mm <sup>2</sup>	400-2500 mm <sup>2</sup>	400-2500 mm <sup>2</sup>
Max. cable diameter	115 mm	140 mm	140 mm	140 mm	140 mm

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