

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Termination and Joint for Cable**

with type designation(s)

**Cold-shrink Termination for Polymeric Insulated Cable 6.35/11kV or 8.7/15kV,
see page 2 and 3 for detailed type designations.**

Issued to

**Tyco Electronics (Kunshan) Ltd.
Kunshan, Jiangsu, China**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.**Issued at **Hamburg** on **2019-04-23**This Certificate is valid until **2024-04-22**.for **DNV GL**DNV GL local station: **Shanghai**Approval Engineer: **Carsten Hunsalz**

**Arne Schaarmann
Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

Medium voltage cold shrink indoor & outdoor termination for cables - 1 or 3 cores with mechanical lugs:

6,35/11(12) kV three core termination

Kit description indoor	Kit description Outdoor	Application range [mm ²]
CSTI-3322	CSTO-3322	25 - 95
CSTI-3332	CSTO-3332	95 - 240
CSTI-3342	CSTO-3342	300 - 400

6.35/11(12) kV single core termination

Kit description Indoor	Kit description Outdoor	Application range [mm ²]
CSTI-3122	CSTO-3122	25 - 95
CSTI-3132	CSTO-3132	95 - 240
CSTI-3142	CSTO-3142	300 - 400
CSTI-3152	CSTO-3152	500 - 630

8,7/15(17.5) kV three core termination

Kit description Indoor	Kit description Outdoor	Application range [mm ²]
CSTI-4322	CSTO-4322	25 - 95
CSTI-4332	CSTO-4332	95 - 240
CSTI-4342	CSTO-4342	300 - 400

8,7/15(17.5) kV single core termination

Kit description Indoor	Kit description Outdoor	Application range [mm ²]
CSTI-4122	CSTO-4122	25 - 95
CSTI-4132	CSTO-4132	95 - 240
CSTI-4142	CSTO-4142	300 - 400
CSTI-4152	CSTO-4152	500 - 630

Medium voltage cold shrink indoor & outdoor termination for cables - 1 or 3 cores with crimp compression lugs:

6,35/11(12) kV three core termination

Kit description indoor	Kit description Outdoor	Application range [mm ²]
CSTI-12-5012	CSTO-12-5012	50 - 120
CSTI-12-1518	CSTO-12-1518	150 - 185
CSTI-12-2440	CSTO-12-2440	240 - 400

6.35/11(12) kV single core termination

Kit description Indoor	Kit description Outdoor	Application range [mm ²]
CSTI-12-5015-SC	CSTO-12-5015-SC	50 - 150
CSTI-12-1840-SC	CSTO-12-1840-SC	185 - 400

8,7/15(17.5) kV three core termination

Kit description Indoor	Kit description Outdoor	Application range [mm ²]
CSTI-17.5-5012	CSTO-17.5-5012	50 - 120
CSTI-17.5-1524	CSTO-17.5-1524	150 - 240
CSTI-17.5-3040	CSTO-17.5-3040	300 - 400

8,7/15(17.5) kV single core termination

Kit description Indoor	Kit description Outdoor	Application range [mm ²]
CSTI-17.5-3512-SC	CSTO-17.5-3512-SC	35 - 120
CSTI-17.5-1530-SC	CSTO-17.5-1530-SC	150 - 300

Application/Limitation

Cold-shrink Termination for Polymeric Insulated Cable 6.35/11kV or 8.7/15kV with Copper tape shield, three-core or single-core (without armour). Separate variants for indoor (CSTI) and outdoor use (CSTO).

Installation to be done in accordance with manufacturers installation instructions.

Type Approval documentation

Tests carried out

Tested according to IEC 60502-4 (2010-12): Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1,2$ kV) up to 30 kV ($U_m = 36$ kV) –

Part 4: Test requirements on accessories for cables with rated voltages from 6 kV ($U_m = 7,2$ kV) up to 30 kV ($U_m = 36$ kV)

Product is also tested according to equivalent standard GB-12706.4 with minor deviations shown in table.

	Test Sequence	GB-12706.4	8.7/15 (10kV)	IEC-60502-4 2005	8.7/15 (17.5) kV
1	AC Withstand or DC withstand	4.5U ₀ , 5min. or 4U ₀ , 15min.	39	4.5U ₀ , 5min. or 4U ₀ , 15min.	39
2	AC withstand	4U ₀ , 1min, Rain	35	4U ₀ , 1min, Rain	35
3	Partial Discharge	1.73U ₀ ≤ 10pC	15	1.73U ₀ ≤ 10pC	15
4	Impulse (cond. temp 95degC)	+/- 10 times	95	+/- 10 times	95
5	Load cycling in air (cond. temp 95degC)	3 cycles at 2.5U ₀	23	---	---
6	Partial Discharge (cond. temp 95degC)	1.73U ₀ ≤ 10pC	15	---	---
7	Load cycling in air (cond. temp 95degC)	60 cycles at 2.5U ₀	23	60 cycles at 2.5U ₀	23
8	Partial Discharge (cond. temp 95degC)	1.73U ₀ ≤ 10pC	15	1.73U ₀ ≤ 10pC	15
9	Short circuit (screen)	2 times	---	2 times	---
10	Short circuit (conductor)	2 times	---	2 times	---
11	Dynamic short circuit	1 time	---	1 time	---
12	Impulse	+/- 10 times	95	+/- 10 times	95

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13	AC withstand	2.5Uo, 15min.	23	2.5Uo, 15min.	23
14	Moisture test for indoor termination	1.25Uo, 300hrs	11	1.25Uo, 300hrs	11
15	Salt fog test for outdoor termination	1.25Uo, 1000hrs	11	1.25Uo, 1000hrs	11

Marking of product

Tyco Electronics – Type designation – Voltage - Batch no.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE