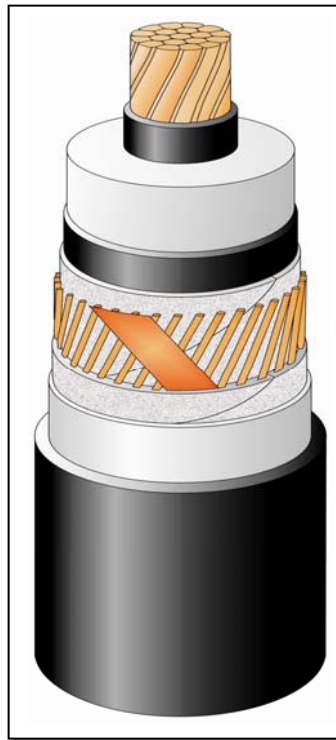


TECHNICAL SPECIFICATION

2XS(FL)2Y 1x400RM/105 40/69kV IEC 60840

CONSTRUCTION ^(x)

- Round, stranded and compacted copper conductor. Class B.
- Extruded semi-conducting conductor screen
- Insulation XLPE – dry cured
- Extruded semi-conducting insulation screen
- Semi-conducting swelling tapes
- Metallic screen:
 - copper wires screen and
 - copper equalizing tapes
- Semi-conducting swelling tapes
- Longitudinal aluminum foil
- Sheath – Black HDPE



The picture is informative only
– not in scale

APPLICATION

- Laying in ground (wet or dry locations)
- Laying in air
- Laying in ducts

Highest permissible conductor temperature

- Continuous operation 90°C
- Overload 105°C
- Short circuit 250°C
(duration max 5 s)

Laying is possible without any special measures at natural cable temperatures and ambient temperature not lower than -5°C, with Tele-Fonika supervising

MARKING

TF KABLE, product name, date of manufacture, standard, meter marking

DESCRIPTION	UNIT	DETAILS	
CONSTRUCTION DATA	U₀/U/U_m	40/69 (72,5) kV	
Conductor		Copper	
<input type="checkbox"/> material		60	
<input type="checkbox"/> number of wires	No		
Nominal cross sectional area	mm ²	400	
Conductor diameter and tolerance	mm	23.5 ^{+0.3}	
Min./Nom. thickness semi-conducting XLPE on conductor	mm / Ø	0.4 / 0.8 / 24.7	
Nominal insulation thickness XLPE	mm	11.0	
Insulation thickness: minimum at a point	mm	9.9	
Diameter over insulation – nominal	mm	47.2	
Min./Nom. thickness semi-conducting XLPE on insulation	mm / Ø	0.4 / 0.8 / 48.3	
Thickness of semi-conducting swelling tape	No x mm	1 x ~ 0.35	
Metallic screen	mm ²	105	
<input type="checkbox"/> Copper wires	No x mm	66 x 1.44	
<input type="checkbox"/> Copper equalizing tape	No x mm x mm	2 x 10 x 0.10	
Mean diameter over metallic screen	mm	52.2	
Thickness of semi-conducting swelling tape	No x mm	1 x ~ 0.35	
Thickness of aluminum foil	mm	0.2	
Diameter over aluminum foil	mm	54.0	
Nominal thickness of outer sheath / min.	mm	2.9 / 2.37	
Approximate overall diameter completed cable (D _c)	mm	60.2	
Weight of complete cable (approx.)	kg/km	6550	
DELIVERY DATA			
Diameter of wooden drum	m	3.4	2.8
<input type="checkbox"/> type		34	28
Maximum length per drum	m	2000	1000
Weight of heaviest reel, including cable	kg	15700	8000

^(x) Diameters are calculated values and subject to manufacturing tolerances

ELECTRICAL DATA at 50Hz		
Maximum D.C. conductor resistance at 20°C	Ω/km	0.0470
Maximum A.C. conductor resistance at 90°C	Ω/km	0.0620
Maximum D.C. metallic screen resistance at 20°C	Ω/km	0.175
Maximum D.C. aluminum foil resistance at 20°C	Ω/km	0.750
Operating inductance		
<input type="checkbox"/> trefoil formation	mH/km	0.379
<input type="checkbox"/> flat formation (*)	mH/km	0.563
Induction reactance		
<input type="checkbox"/> trefoil formation	Ω/km	0.119
<input type="checkbox"/> flat formation (*)	Ω/km	0.177
Capacitance	μF/km	0.200 (+ 8 %)
Capacitance reactance	kΩ/km	15.73
Impedance		
<input type="checkbox"/> trefoil formation	Ω/km	0.134
<input type="checkbox"/> flat formation (*)	Ω/km	0.187
Zero sequence reactance	Ω/km	0.066
Max. electric stress at conductor screen / (at insulation)	kV/mm	5.05 / 2.70
Dielectric losses (tg δ = 0.001) – per phase	W/m	0.102
Partial discharge test – at 1.5U ₀	pC	≤ 5
Charging current – per phase	A/km	2.54
Charging power	kVA/km	102
Earth fault current – per phase	A/km	7.63
MECHANICAL DATA		
Recommended min. bending radius for laying	m	1.51
Recommended permissible bending radius at final installation	m	0.90
Maximum permissible pulling force:	kN	20
SHORT CIRCUIT CURRENTS		
Maximum permissible thermal short-circuit (IEC 60949) <i>Current for 1.0 sec.</i>		
Phase conductor 90 → 250°C	kA	57.8
Metallic screen 80 → 350°C	kA	21.1
AMPACITY (***) – Bonding of the metallic screens		Single-point / Both-ends
in earth		
<input type="checkbox"/> flat formation (*)	A	746 / 567
<input type="checkbox"/> trefoil formation	A	703 / 651
in air		
<input type="checkbox"/> flat formation (*)	A	979 / 791
<input type="checkbox"/> trefoil formation	A	849 / 799
TESTS		
Test voltage – (2.5U ₀ ; 30min)	kV	120
Partial discharge test	kV	60

Marking: TF-KABLE 5 2XS(FL)2Y 1x400RM/105 40/69kV IEC 60840 2012

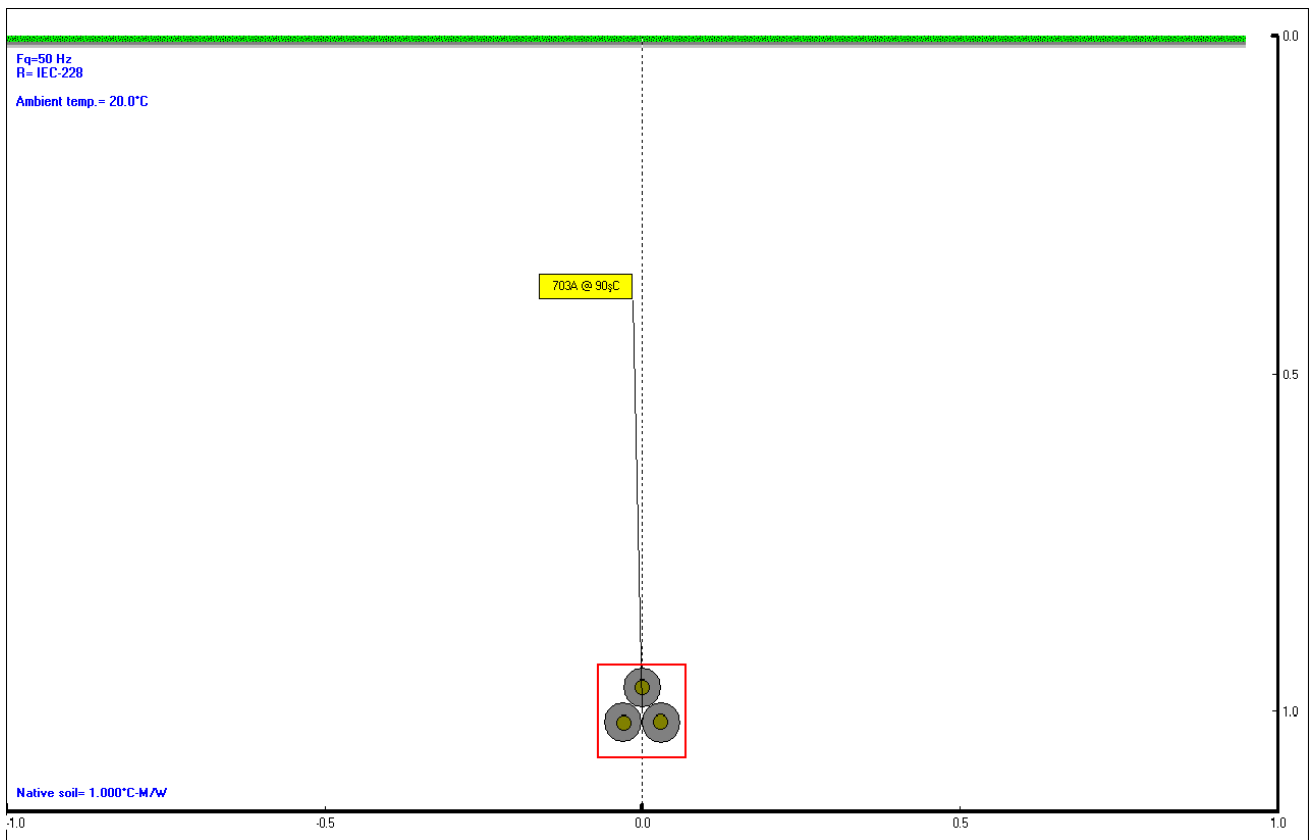
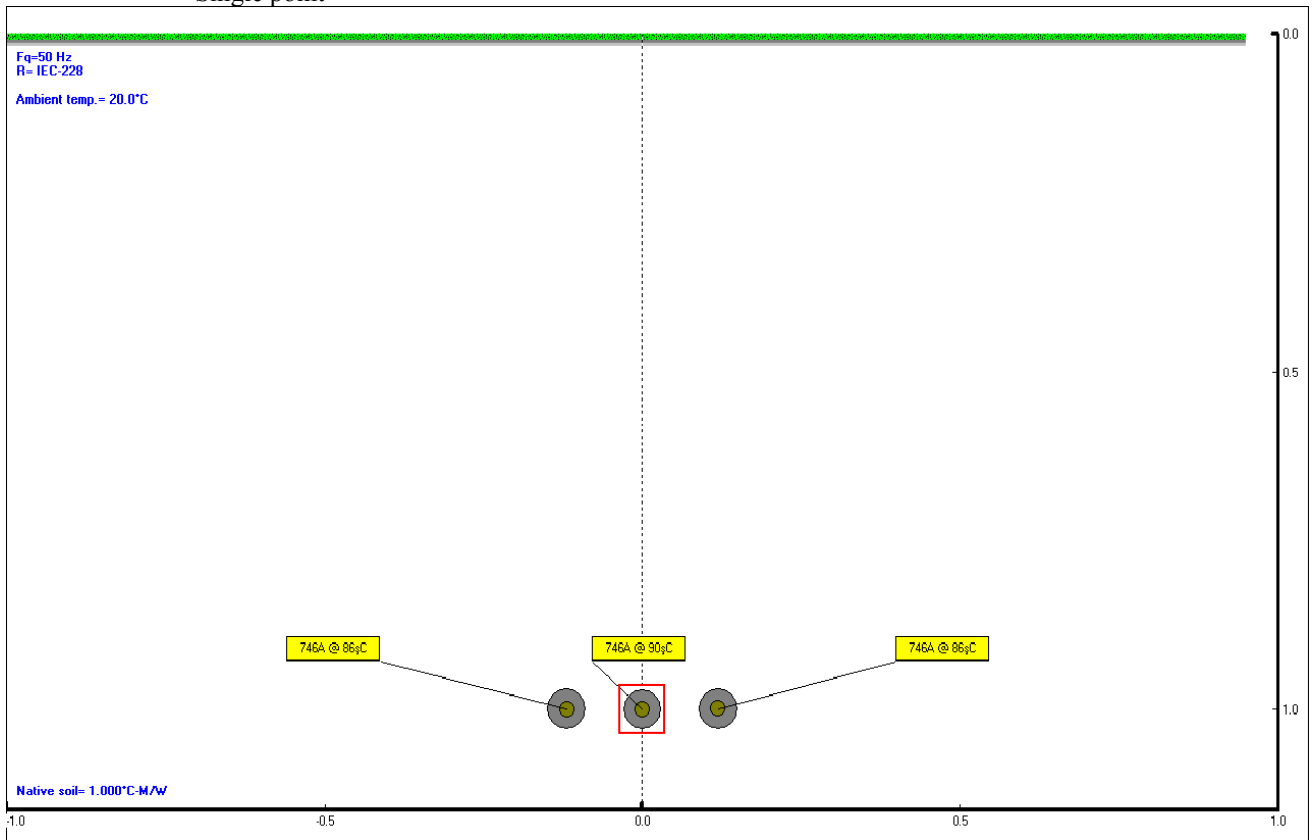
(*) Distance between cable axes laid in flat formation D_e+D_e mm

(**) Current rating guideline (Calculated with Cymcap 5.3 based on IEC Pub. 60287 and the following conditions)

- Ground temperature 20°C
- Laying depth 1.0 m
- Ground thermal resistivity 1.0 K · m/W
- Air temperature 35°C

(³) Diameters are calculated values and subject to manufacturing tolerances

Single point



Date: 2012-10-05; Mp12287
 Prepared by: Michał Pstragowski

⁽⁶⁾ Diameters are calculated values and subject to manufacturing tolerances