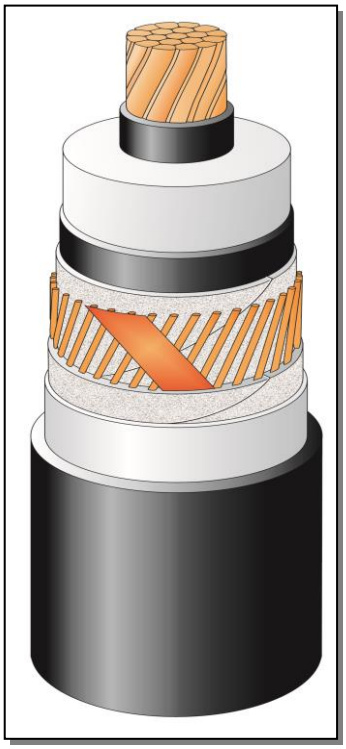
TECHNICAL SPECIFICATION
2XS(FL)2Y 1x240RM/25 40/69 (72.5) kV IEC 60840

CONSTRUCTION (x)

- Round, stranded and compacted copper conductor. Class 2.
- 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 ST7 type

MARKING

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



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 5s)

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

DESCRIPTION	UNIT	DETAILS		
CONSTRUCTION DATA	**$U_o/U/U_m$**	**40/69 (72.5) kV**		
Conductor ❑ material ❑ number of wires	 No	 Copper 37		
Nominal cross sectional area	mm^2	240		
Conductor diameter and tolerance	mm	$18.5^{-0.2\ +0.3}$		
Min./Nom. thickness semi-conducting XLPE on conductor	mm	0.4 / 0.8		
Nominal insulation thickness XLPE	mm	11.0		
Insulation thickness: minimum at a point	mm	9.9		
Diameter over insulation – nominal	mm	$42.1^{\pm0.5}$		
Min./Nom. thickness semi-conducting XLPE on insulation	mm	0.4 / 0.8		
Thickness of semi-conducting swelling tape	No x mm	1 x ~ 0.35		
Metallic screen ❑ Copper wires ❑ Copper equalizing tape	mm^2 No x mm No x mm x mm	25 60 x 1.04 2 x 10 x 0.10		
Mean diameter over metallic screen	mm	46.3		
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	47.2		
Nominal thickness of outer sheath / min.	mm	2.7 / 2.19		
Approximate overall diameter completed cable (D_e)	mm	53.0		
Weight of complete cable (approx.)	kg/km	4120		
DELIVERY DATA				
Diameter of wooden drum ❑ type	m	2.2 220P	3.0 300P	4.3 430P
Maximum length per drum	m	690	1380	4120
Weight of heaviest reel, including cable	kg	3570	7810	22240

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

ELECTRICAL DATA at 50Hz		
Maximum D.C. conductor resistance at 20°C Maximum A.C. conductor resistance at 90°C	Ω/km Ω/km	0.0754 0.0974
Maximum D.C. metallic screen resistance at 20°C	Ω/km	0.664
Maximum D.C. aluminum foil resistance at 20°C	Ω/km	0.856
Operating inductance ❑ trefoil formation ❑ flat formation (*)	 mH/km mH/km	 0.399 0.584
Induction reactance ❑ trefoil formation ❑ flat formation (*)	 Ω/km Ω/km	 0.125 0.183
Capacitance	μF/km	0.180 (+ 8 %)
Capacitance reactance	kΩ/km	17.65
Impedance ❑ trefoil formation ❑ flat formation (*)	 Ω/km Ω/km	 0.159 0.208
Zero sequence reactance	Ω/km	0.073
Max. electric stress at conductor screen / (at insulation)	kV/mm	5.38 / 2.57
Dielectric losses (tg δ = 0.001) – per phase	W/m	0.091
Partial discharge test – at 1.5Uo	pC	≤ 5
Charging current – per phase	A/km	2.27
Charging power	kVA/km	91
Earth fault current – per phase	A/km	6.80
MECHANICAL DATA		
Recommended min. bending radius for laying	m	1.32
Recommended permissible bending radius at final installation	m	1.06
Maximum permissible pulling force:	kN	12.0
SHORT CIRCUIT CURRENTS		
Maximum permissible thermal short-circuit (IEC 60949) *Current for 1.0 sec.* Phase conductor 90 → 250°C Metallic screen 80 → 350°C	 kA kA	 34.7 5.3
AMPACITY (**) – Bonding of the metallic screens		**Single-point / Both-ends**
in earth ❑ flat formation (*) ❑ trefoil formation in air ❑ flat formation ❑ trefoil formation	 A A A A	 575 / 530 540 / 530 727 / 673 634 / 624
TESTS		
Test voltage – (2.5Uo; 30min) Partial discharge test	kV kV	120 60

Marking: TF-KABLE 5 2XS(FL)2Y 1x240RM/25 40/69 (72.5) kV IEC 60840 2021

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

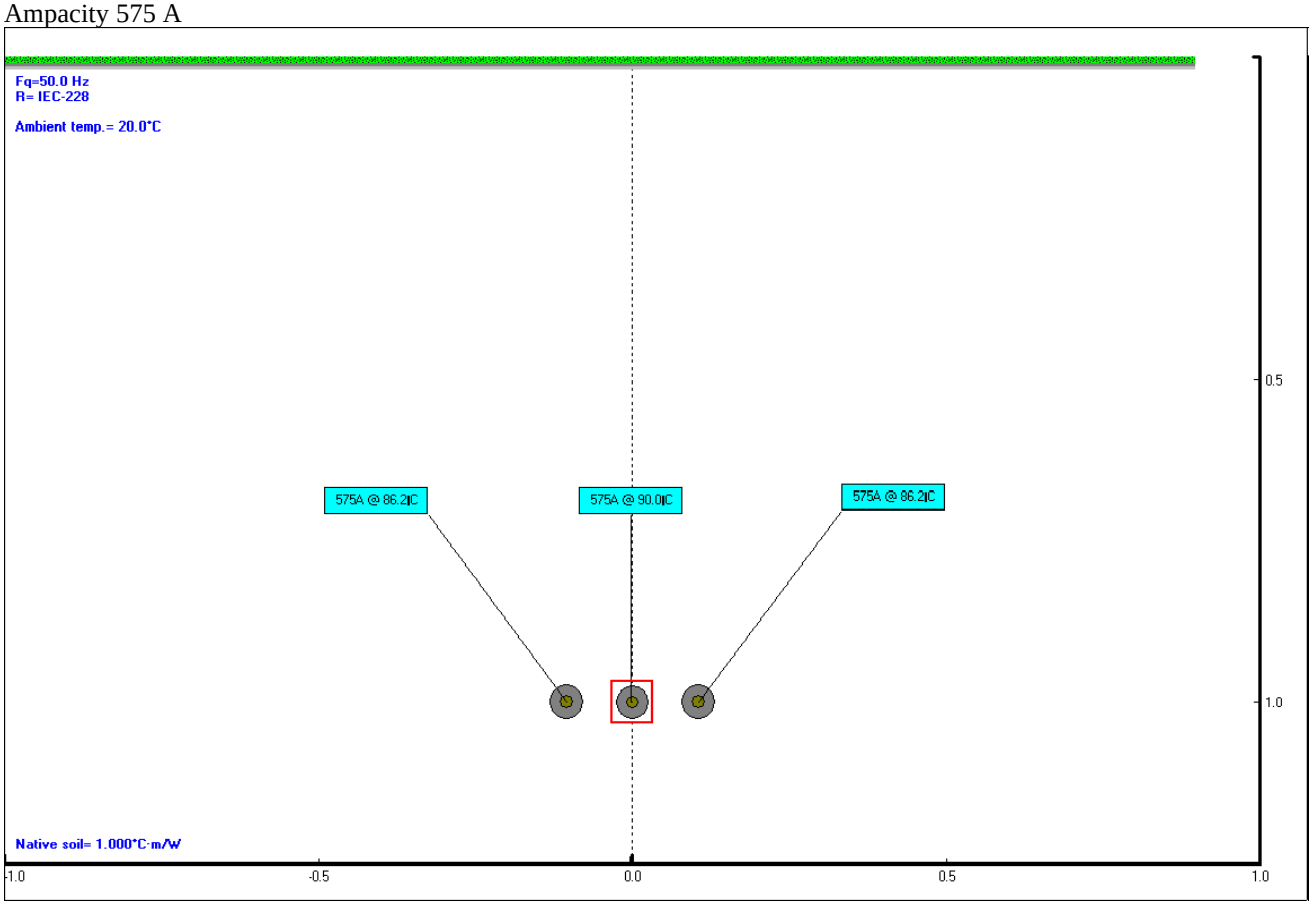
(**) Current rating guideline (Calculated with Cymcap 8.0 based on IEC Pub. 60287 and the following conditions)

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

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

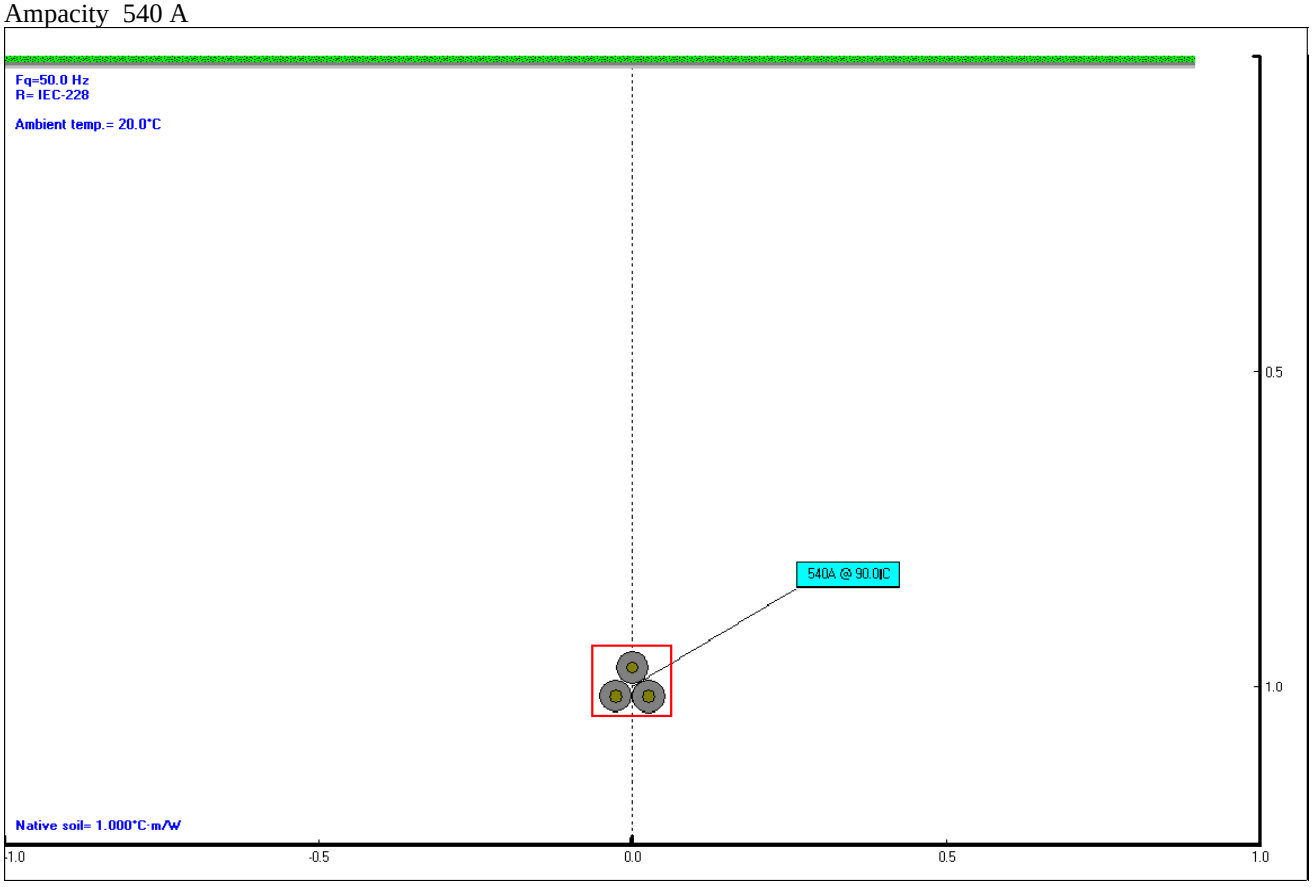
Cables in earth, Single-point, flat

Ampacity 575 A



Cables in earth, Single-point, trefoil

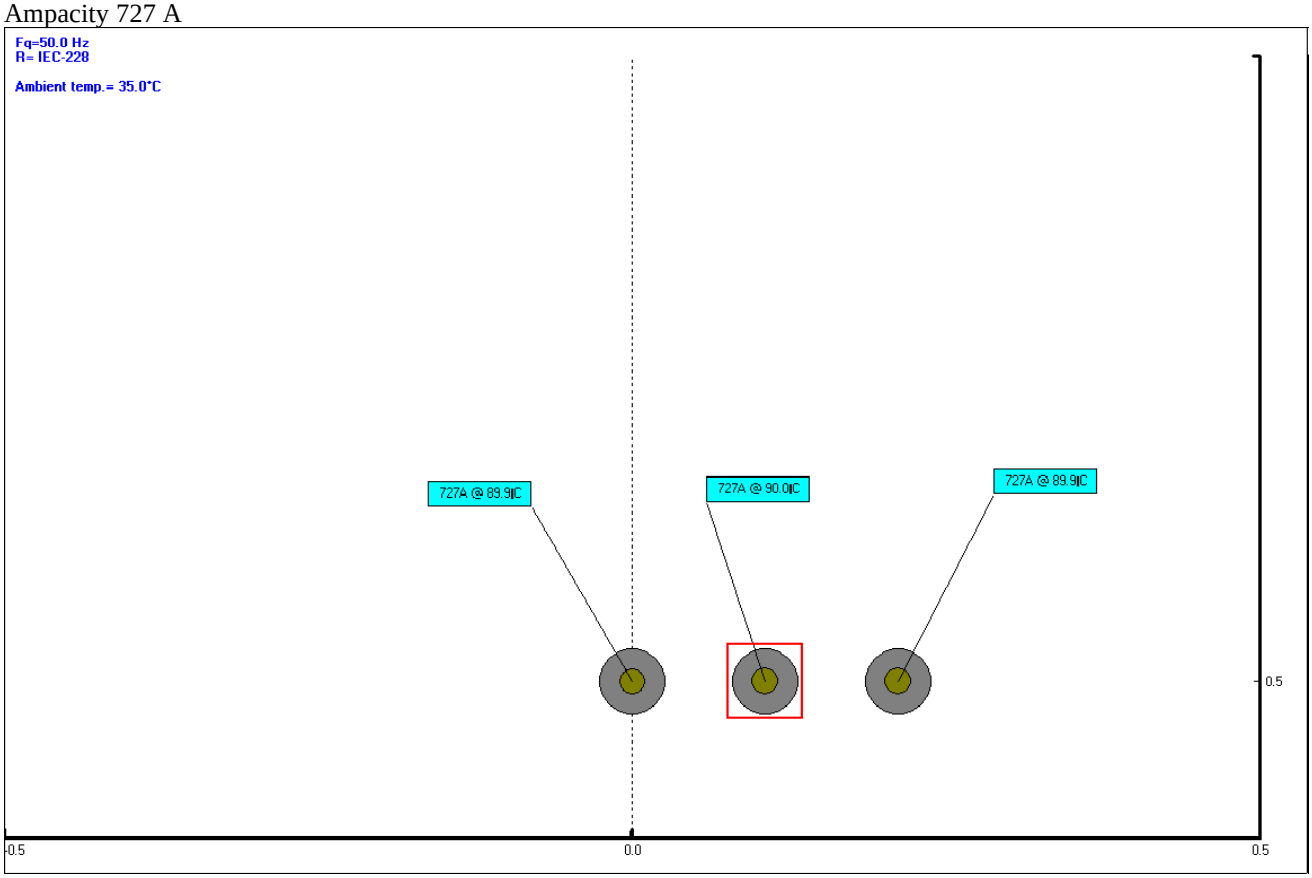
Ampacity 540 A



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

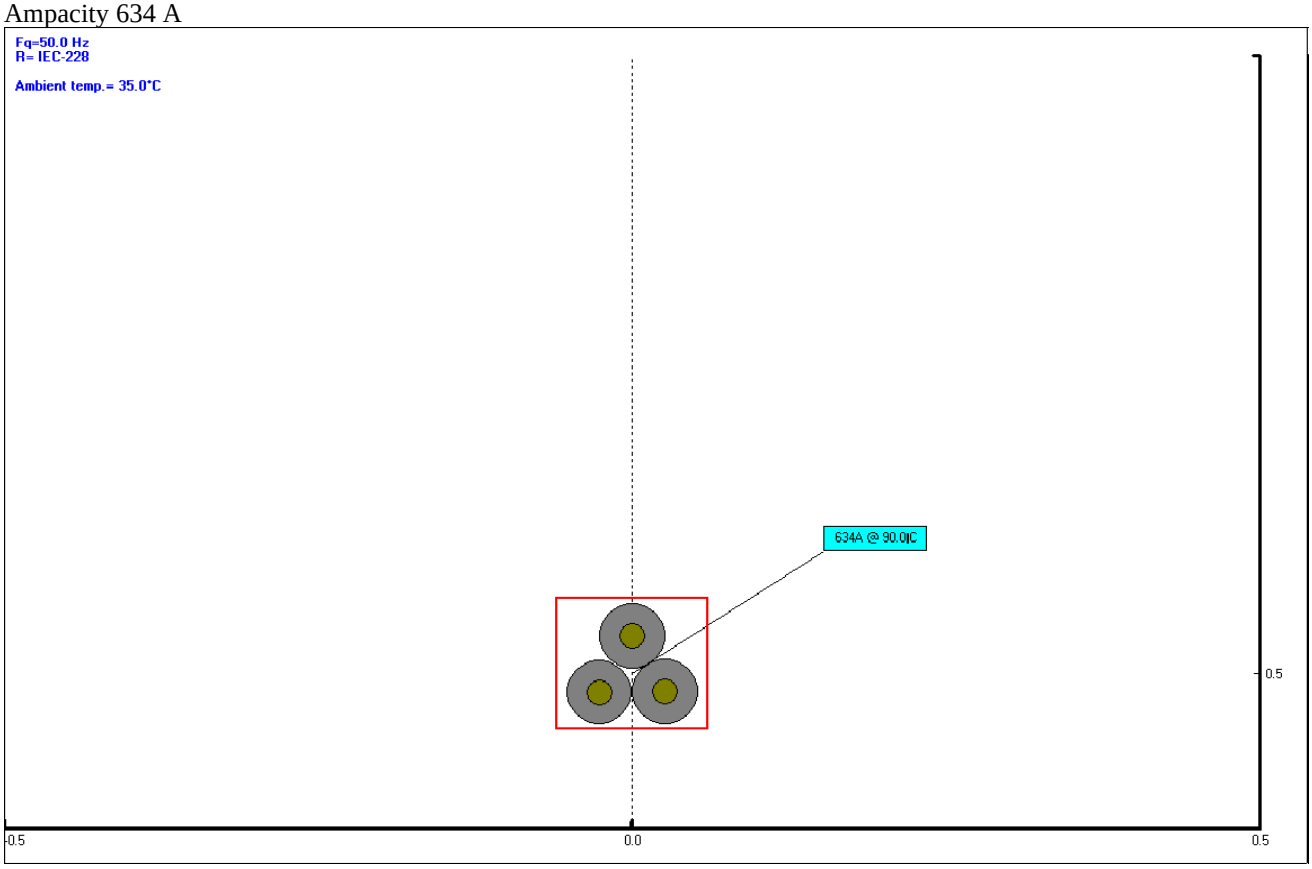
Cables in air, Single-point, flat

Ampacity 727 A



Cables in air, Single-point, trefoil

Ampacity 634 A



Date: 2021-03-18; PK21056

Prepared by: Przemysław Krawczykowski

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