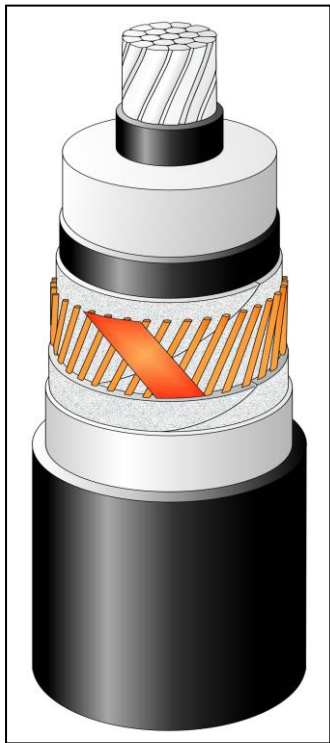


## TECHNICAL SPECIFICATION

### A2XS(FL)2Y 1x500RM/105 40/69 (72.5) kV acc. to IEC 60840

#### CONSTRUCTION <sup>(x)</sup>

- ☐ Round, stranded and compacted aluminum conductor. Class 2,
- ☐ Extruded semi-conducting conductor screen
- ☐ Insulation XLPE – dry cured
- ☐ Extruded semi-conducting insulation screen
- ☐ Semi-conducting swelling tape
- ☐ Metallic screen:
  - copper wires screen and
  - copper equalizing tapes
- ☐ Semi-conducting swelling tape
- ☐ 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 -20° C, with Tele-Fonika supervising

#### MARKING

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

DESCRIPTION	UNIT	DETAILS		
CONSTRUCTION DATA	U <sub>0</sub> /U/U <sub>m</sub>	40/69 (72.5) kV		
Conductor		Aluminum		
❑ Material	No	56		
❑ Number of wires				
Nominal cross sectional area	mm <sup>2</sup>	500		
Conductor diameter and tolerance	mm	25.7 <sup>-0.2 +0.4</sup>		
Min./Nom. thickness semi-conducting XLPE on conductor	mm	0.4 / 0.8		
Nominal insulation thickness XLPE	mm	10.0		
Insulation thickness: minimum at a point	mm	9.0		
Diameter over insulation – nominal	mm	47.3 <sup>+0.5</sup>		
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	mm <sup>2</sup>	105		
❑ Copper wires	No x mm	52 x 1.63		
❑ Copper equalizing tape	No x mm x mm	2 x 10 x 0.10		
Mean diameter over metallic screen	mm	52.6		
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	53.6		
Nominal inside outer sheath thickness / min.	mm	2.9 / 2.37		
Approximate overall diameter completed cable (D <sub>e</sub> )	mm	59.8		
Weight of complete cable (approx.)	kg/km	4370		
DELIVERY DATA				
Diameter of wooden drum	m	2.0	2.4	3.2
❑ type		200P	240P	320P
Maximum length per drum	m	290	500	1500
Weight of heaviest reel, including cable	kg	1790	3060	8730

<sup>(x)</sup> Diameters are calculated values and subject to manufacturing tolerances

ELECTRICAL DATA at 50Hz		
Maximum D.C. conductor resistance at 20°C	Ω/km	0.0605
Maximum A.C. conductor resistance at 90°C	Ω/km	0.0792
Maximum D.C. metallic screen resistance at 20°C	Ω/km	0.167
Maximum D.C. aluminum foil resistance at 20°C	Ω/km	0.764
Operating inductance		
<input type="checkbox"/> trefoil formation	mH/km	0.358
<input type="checkbox"/> flat formation (*)	mH/km	0.542
Induction reactance		
<input type="checkbox"/> trefoil formation	Ω/km	0.112
<input type="checkbox"/> flat formation (*)	Ω/km	0.170
Capacitance	μF/km	0.243 (+ 8 %)
Capacitance reactance	kΩ/km	13.12
Impedance		
<input type="checkbox"/> trefoil formation	Ω/km	0.137
<input type="checkbox"/> flat formation (*)	Ω/km	0.188
Zero sequence reactance	Ω/km	0.061
Max. electric stress at conductor screen / (at insulation)	kV/mm	5.33 / 3.08
Dielectric losses (tg δ = 0.001) – per phase	W/m	0.122
Partial discharge test – at 1.5U <sub>0</sub>	pC	≤ 5
Charging current – per phase	A/km	3.05
Charging power	kVA/km	122
Earth fault current – per phase	A/km	9.15
MECHANICAL DATA		
Recommended min. bending radius for laying	m	1.49
Recommended permissible bending radius at final installation	m	1.19
Maximum permissible pulling force:	kN	15.0
SHORT CIRCUIT CURRENTS		
Maximum permissible thermal short-circuit ( IEC 60949 )		
<i>Current for 1.0 sec.</i>		
Phase conductor 90 → 250°C	kA	47.8
Metallic screen 80 → 350°C	kA	21.4
AMPACITY (**) – Bonding of the metallic screens		Single-point / Both-ends
in earth		
<input type="checkbox"/> flat formation (*)	A	667 / 548
<input type="checkbox"/> trefoil formation	A	622 / 582
in air		
<input type="checkbox"/> flat formation (*)	A	887 / 733
<input type="checkbox"/> trefoil formation	A	766 / 726
TESTS		
AC – Test voltage – ( 2.5U <sub>0</sub> ; 30min)	kV	100
Impulse test 1.2/50 μs	kV	325
Partial discharge test 1.5U <sub>0</sub>	kV	60

**Marking: TF-KABLE 5 A2XS(FL)2Y 1x500RM/105 40/69 (72.5) kV IEC 60840 2021**

(\*) Distance between cable axes laid in flat formation D<sub>e</sub>+D<sub>e</sub> mm (for information)

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

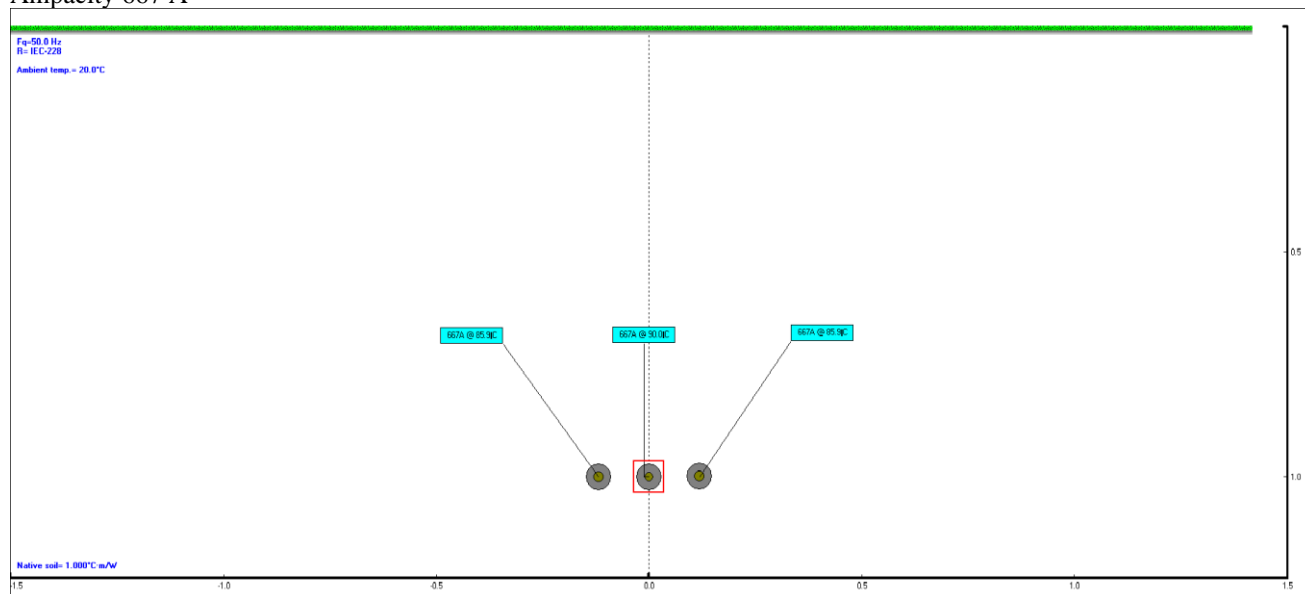
(\*\*\*) According to IEC 60840, for electrical tests U<sub>0</sub> is 36 kV

- ☐ 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

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

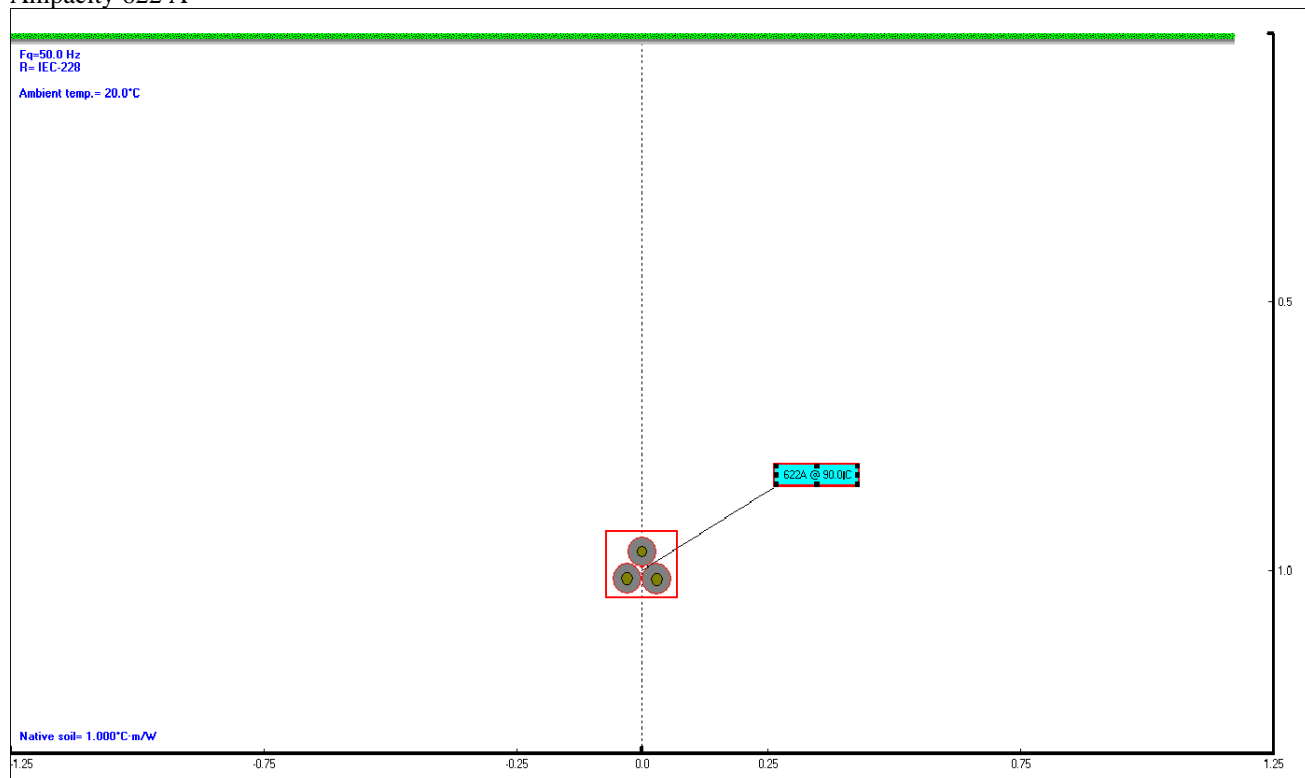
### Cables in earth, Single-point, flat

Ampacity 667 A



### Cables in earth, Single-point, trefoil

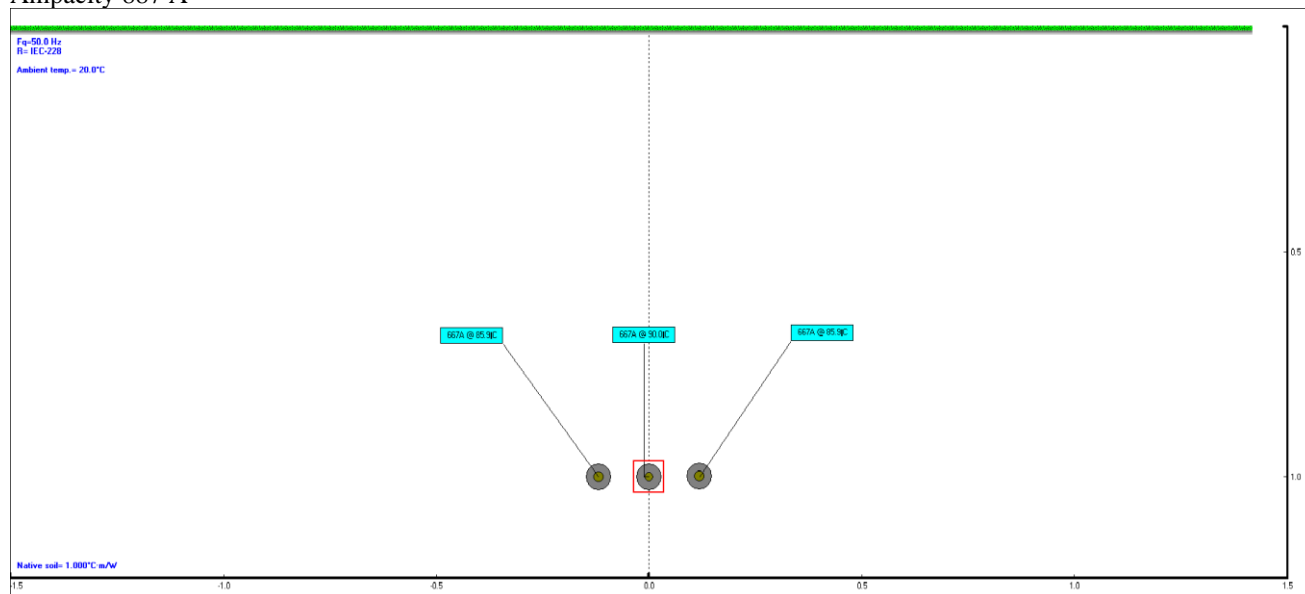
Ampacity 622 A



<sup>(s)</sup> Diameters are calculated values and subject to manufacturing tolerances

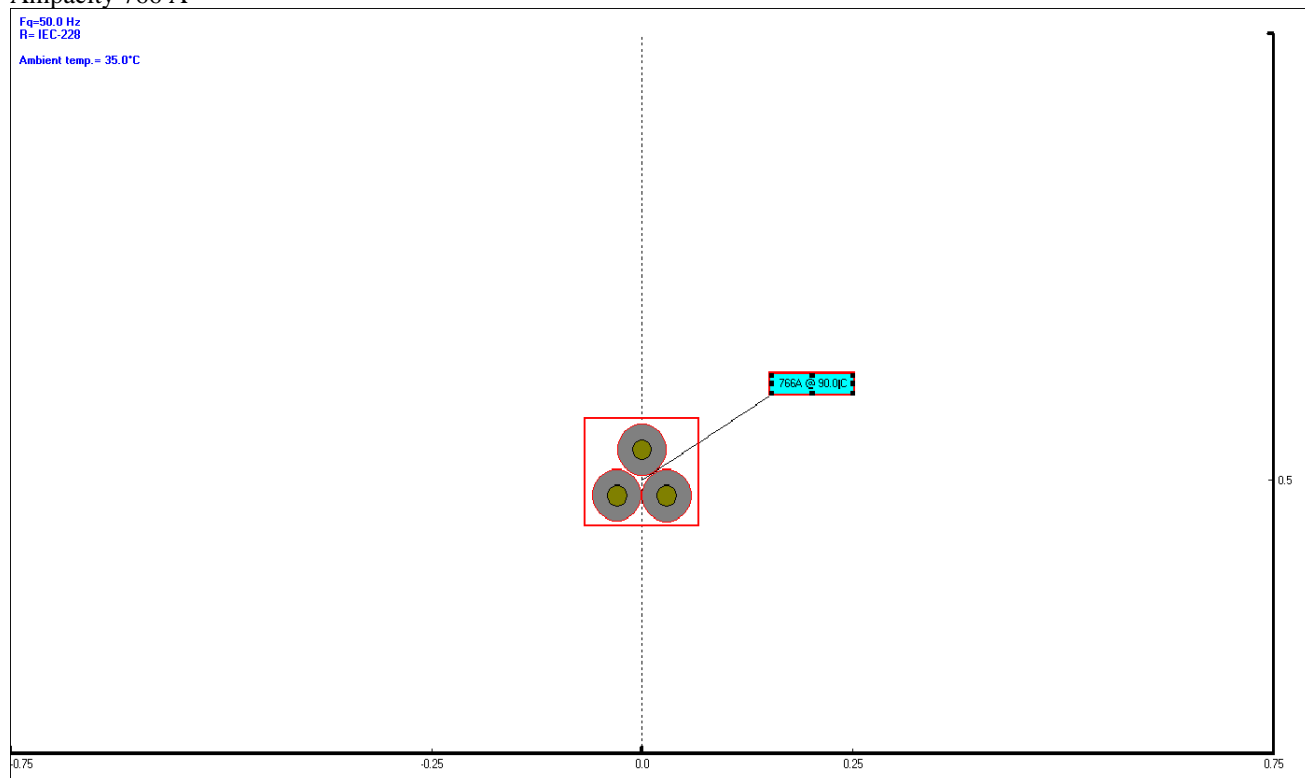
### Cables in air, Single-point, flat

Ampacity 887 A



### Cables in air, Single-point, trefoil

Ampacity 766 A



Date: 2021-01-19; PK21003

Prepared by: Przemysław Krawczykowski

<sup>(s)</sup> Diameters are calculated values and subject to manufacturing tolerances