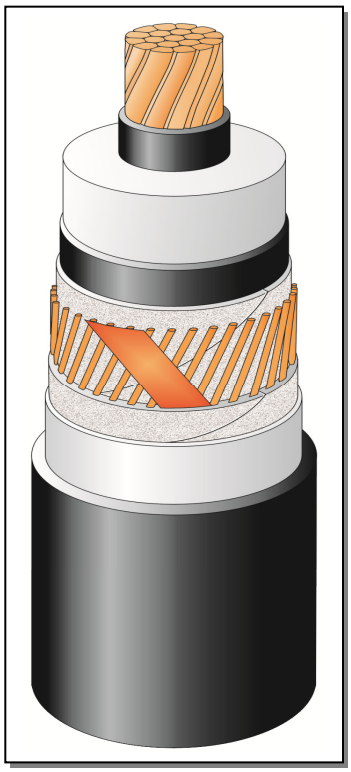
TECHNICAL SPECIFICATION
N2XS(FL)2Y 1x240RM/50 36/69(72,5)kV acc. to IEC 60840

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 tape
- Metallic screen:
  copper wire screen and
  copper equalizing tapes
- Semi-conducting swelling tape
- Longitudinal aluminum foil
- Sheath – Black HDPE ST7 type

MARKING

TF KABLE, product name, year 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 -5°C, with Tele-Fonika supervising

DESCRIPTION	UNIT	DETAILS
CONSTRUCTION DATA	**$U_o/U/U_m$**	**36/69 (72,5)kV**
Conductor ❑ material ❑ number of wires	 No	 Copper 60
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	10.0
Insulation thickness: minimum at a point	mm	9.0
Diameter over insulation – nominal	mm	$40.1^{-0,5+0,4}$
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 tapes	mm^2 No x mm No x mm x mm	50 58 x 1.44 2 x 10 x 0.18
Mean diameter over metallic screen	mm	44.0
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	45.2
Nominal outer sheath thickness / min	mm	2.6 / 2.11
Approximate overall diameter completed cable (D_e)	mm	50.6
Weight of complete cable (approx.)	kg/km	4180
DELIVERY DATA		
Diameter of wooden drum ❑ type	m	2.5 25AS
Length per drum	m	1000
Weight of heaviest reel, including cable	kg	5200

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

ELECTRICAL DATA at 50Hz			
Maximum D.C. conductor resistance at 20°C	Ω/km	0.0221	
Maximum A.C. conductor resistance at 90°C	Ω/km	0.0317	
Maximum D.C. metallic screen resistance at 20°C	Ω/km	0.072	0.063
Maximum D.C. aluminum foil resistance at 20°C	Ω/km	0.480	
Operating inductance			
❑ trefoil formation	mH/km	0.392	
❑ flat formation (*)	mH/km	0.576	
Induction reactance			
❑ trefoil formation	Ω/km	0.123	
❑ flat formation (*)	Ω/km	0.181	
Capacitance	µF/km	0.195 (+ 8 %)	
Capacitance reactance	kΩ/km	16.49	
Impedance			
❑ trefoil formation	Ω/km	0.157	
❑ flat formation (*)	Ω/km	0.205	
Zero sequence reactance	Ω/km	0.071	
Max. electric stress at conductor screen / (at insulation)	kV/mm	5.2 / 2.6	
Dielectric losses (tg δ = 0.001) – per phase	W/m	0.079	
Partial discharge test – at 1.5Uo	pC	≤ 5	
Charging current – per phase	A/km	2.18	
Charging power	kVA/km	79	
Earth fault current – per phase	A/km	6.55	
MECHANICAL DATA			
Recommended min. bending radius for laying	m	1.26	
Recommended permissible bending radius at final installation	m	0.76	
Maximum permissible pulling force:	kN	12	
SHORT CIRCUIT CURRENTS			
Maximum permissible thermal short-circuit (IEC 60949)	*Current 1,0sec*		
Phase conductor 90 → 250°C	kA	34.8	
Metallic screen 80 → 250°C	kA	8.9	
AMPACITY (**) – Bonding of the metallic screens		**Single-point / both-ends**	
in earth – directly		***LF=1,0***	***LF=0,7***
❑ flat formation (*)	A	506 / 449	605 / 546
❑ trefoil formation	A	475 / 460	576 / 559
in ducts **Ø100**			
❑ flat formation (*)	A	476 / 421	554 / 494
❑ trefoil formation	A	470 / 413	549 / 507
in air			
❑ flat formation (*)	A	758 / 685	
❑ trefoil formation	A	666 / 652	
TESTS			
AC – test voltage – (2,5Uo; 30min)	kV	90	
Impulse voltage	kV	325	
Partial discharge test	kV	54	

Marking: TF-KABLE 5 N2XS(FL)2Y 1x240RM/50 36/69(72,5)kV IEC 60840 2018

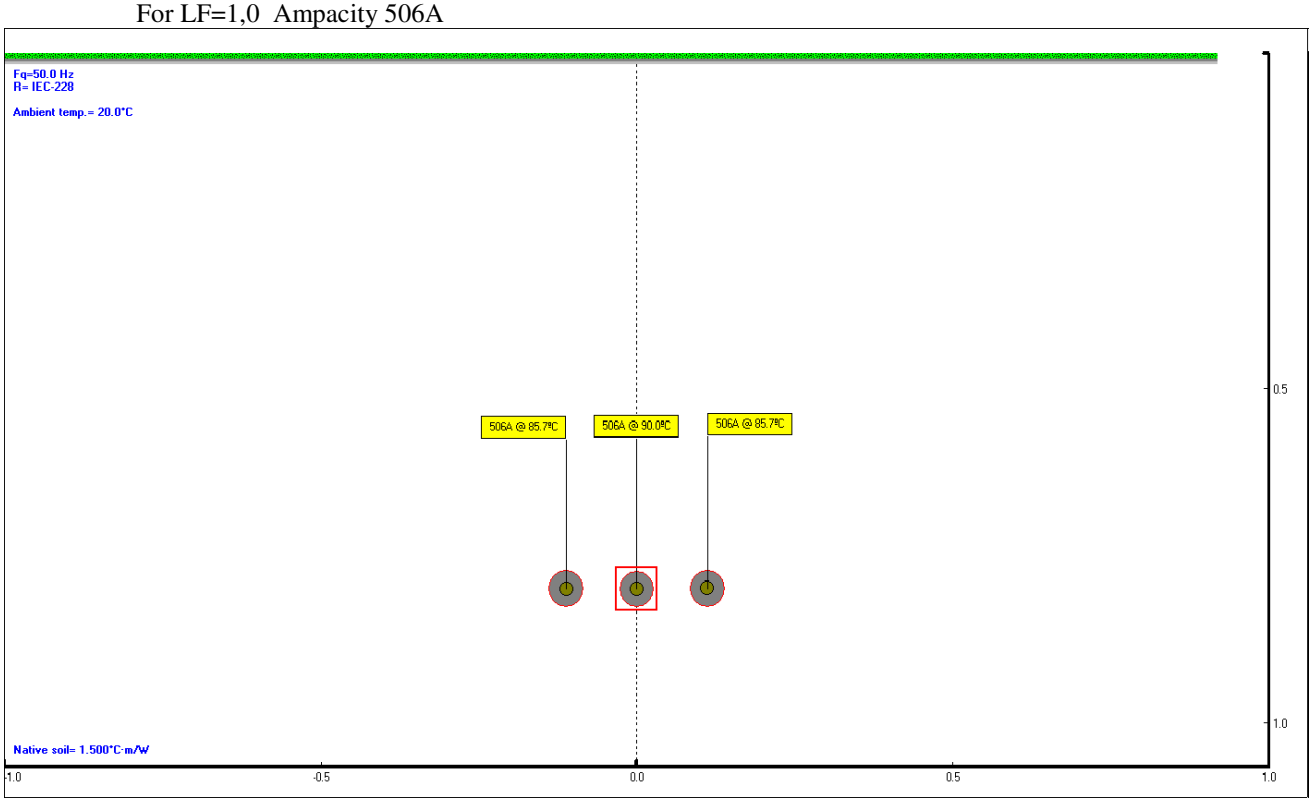
(*) Distance between cable axes laid in flat formation De+De mm

(**) Current rating guideline (Calculated with CymCap 7.2 based on IEC Pub. 60287 and the following conditions)

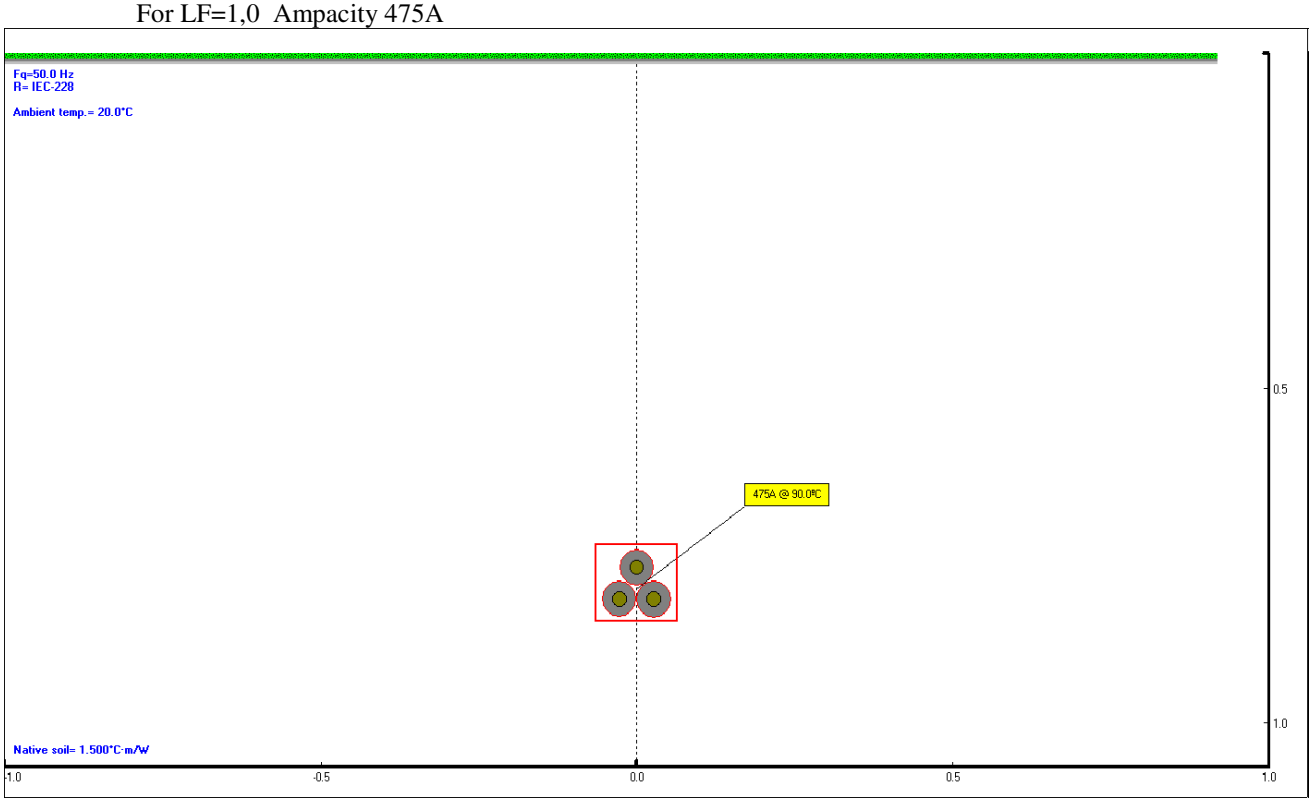
- ❑ Ground temperature +20°C
- ❑ Laying depth 0,8 m
- ❑ Ground thermal resistivity 1,5 K_m/W
- ❑ Load factor LF=1,0 or 0,7
- ❑ Air temperature 30°C

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

Cables in earth – single-point or cross-bonded
Laying depth 0,8m
For LF=1,0 Ampacity 506A

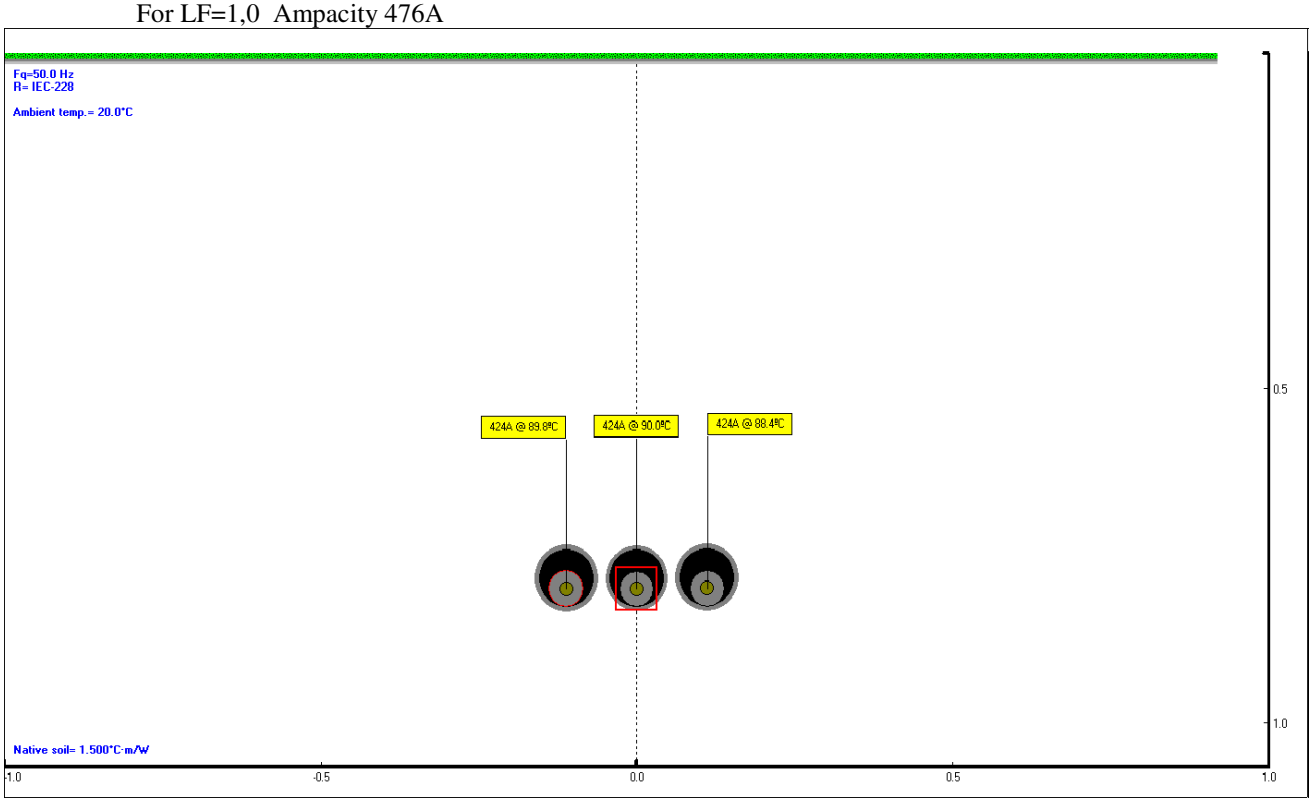


Laying depth 0,8m
For LF=1,0 Ampacity 475A

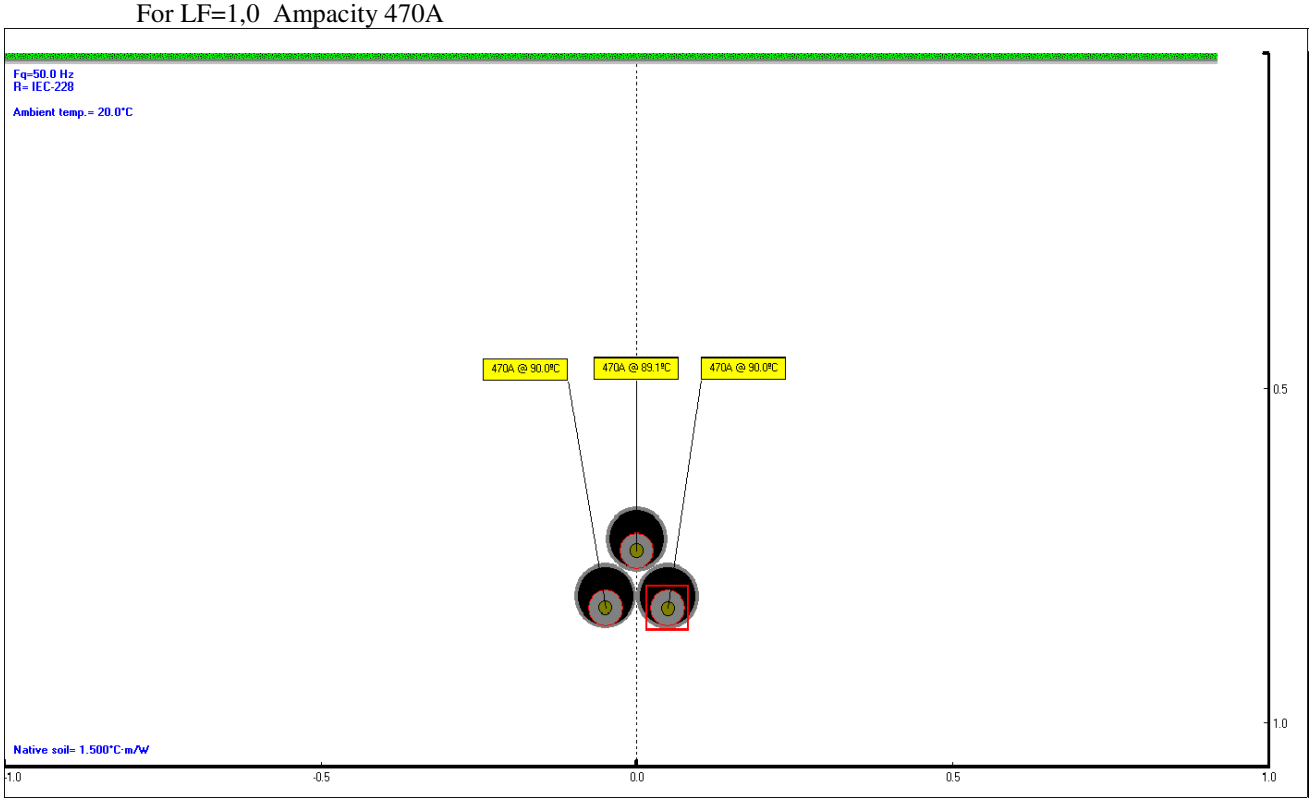


(x) Diameters are calculated values and subject to manufacturing tolerances

Cables in duct **Ø100** – single-point or cross-bonded
Laying depth 0,8m
For LF=1,0 Ampacity 476A



Laying depth 0,8m
For LF=1,0 Ampacity 470A



Date: 2018-04-10; Mp18085
Prepared by: Michał Pstrągowski

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