

Neutral Supported Cable NS75/NS90 600 V

Triplex Unjacketed NS75/NS90 - Full Neutral

Secondary Distribution Cable

Description

Nexans triplex neutral supported cables consist of an assembly of two insulated phase conductors factory cabled around a neutral conductor. The neutral conductor is the supporting member. The conductors are insulated with polyethylene (PE) rated 75°C or crosslinked polyethylene (XLPE) rated 90°C.



Standards

National CSA C22.2 N° 129

Application

Neutral supported cables are intended for use either as a service drop cable between a power pole and the service entrance, or as a secondary distribution cable between poles. Their use is limited to circuits not exceeding 600 volts phase-to-phase.

Triplex service drop cables are intended to deliver single-phase power from the secondary power line or pole-mounted transformer to the service entrance conductors at the user's building or other structures.

Optional construction includes an insulated control/supply conductor.

Characteristics

Construction characteristics	
With smaller neutral conductor	No
Number of conductors	3

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Triplex Unjacketed NS75/NS90 Full Neutral Physical Data

Code Word	Phase Conductor			Full Size Neutral Support			Cable Assembly	
	Size (Stranding) AWG/kcmil	Diameter (mm)	Insulation Diameter (mm)	Size (Stranding) (AWG)	Area (mm ²)	Rated Strength (kN)	Overall Diameter (mm)	Total Weight (kg/km)
Jade	6 (7)	4.29	6.6	6 (6/1)	15.48	5.20	13.3	166
Ruby	4 (7)	5.41	7.8	4 (6/1)	24.71	8.14	15.6	249
Topaz	2 (7)	6.81	9.2	2 (6/1)	39.23	12.41	18.6	379
Garnet	1 (7)	7.59	10.7	1 (6/1)	49.48	15.48	21.7	493
Jasper	1/0 (7)	8.53	11.7	1/0 (6/1)	62.39	19.06	23.7	608
Diamond	2/0 (7)	9.55	12.7	2/0 (6/1)	78.65	23.80	25.9	751
Emerald	3/0 (7)	10.74	13.9	3/0 (6/1)	99.23	29.67	28.5	930
Sapphire	4/0 (7)	12.07	15.2	4/0 (6/1)	125.1	37.45	31.4	1160
-	266.8 (18)	13.64	17.8	266.8 (26/7)	157.2	50.10	37.3	1490
-	336.4 (18)	15.32	19.5	336.4 (26/7)	198.2	62.31	41.2	1850
-	397.5 (18)	16.74	20.9	397.5 (26/7)	234.2	72.65	44.3	2170
-	477 (18)	18.34	22.5	477 (26/7)	281.1	87.17	48.0	2570
-	500 (18)	18.69	22.9	500 (30/7)	312.5	109.40	49.3	2830

Code words are from the Aluminum Association Publication 50, 7th Edition, Table C19 (add " / XLP " suffix for NS90)
 NS75 with black LLDPE (optionally MDPE) insulation, 1/c printed, 1/c no marking
 NS90 with black XLPE insulation, 1/c printed, 1/c no marking
 Neutral support conductors 266.8 kcmil and larger are round wire ACSR, minimum Type 16, otherwise Type 100 compact
 ACSR conductors are used
 Overall diameter is the multiplex assembly circumscribing diameter

Triplex Unjacketed NS75/NS90 Full Neutral Electrical Data

Code Word	Phase and Neutral Size (Stranding) AWG/kcmil	Phase Conductor Resistance				Inductive Reactance (ohm/km)	Cable Ampacity (amps)	
		Rdc @ 20°C (ohm/km)	Rac @ 50°C (ohm/km)	Rac @ 75°C (ohm/km)	Rac @ 90°C (ohm/km)		NS75	NS90
Jade	6 (7)	2.19	2.48	2.70	2.84	0.1048	80	95
Ruby	4 (7)	1.38	1.56	1.70	1.78	0.0991	105	125
Topaz	2 (7)	0.865	0.979	1.07	1.12	0.0943	140	165
Garnet	1 (7)	0.687	0.778	0.848	0.890	0.0979	160	190
Jasper	1/0 (7)	0.544	0.616	0.672	0.705	0.0955	185	220
Diamond	2/0 (7)	0.432	0.489	0.533	0.559	0.0933	210	255
Emerald	3/0 (7)	0.343	0.388	0.423	0.444	0.0912	245	290
Sapphire	4/0 (7)	0.271	0.307	0.335	0.352	0.0893	280	335
-	266.8 (18)	0.215	0.244	0.268	0.282	0.0914	325	390
-	336.4 (18)	0.171	0.193	0.215	0.225	0.0894	375	450
-	397.5 (18)	0.144	0.164	0.184	0.193	0.0881	415	500
-	477 (18)	0.121	0.136	0.155	0.163	0.0867	460	560
-	500 (18)	0.115	0.130	0.149	0.156	0.0865	500	605

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Rdc at 20°C is taken from CSA C49.5
Rac at 90°C is only applicable to NS90 cable
Ampacities are from the CE Code C22.1-06, Table 36A, based on 30°C ambient air,
0.6 m/s wind, and solar radiation of 1025 W/m²

NS75/NS90 600 V Cable Construction

Phase Conductor Construction

The phase conductors are aluminum alloy 1350-H19, hard-drawn, compact, concentric lay stranded, 6 AWG to 500 kcmil in size.

Neutral Conductor Construction

The standard neutral conductor is aluminum conductor steel reinforced (ACSR) for use with aluminum phase conductors.

Insulation Material

The former Type designation NS-1 and NSF-2 are no longer applicable. New type designations, "NS75" and "NS90", now reflect the temperature ratings.

For Type NS75 cables, the standard insulation on the phase conductor(s) is black linear low-density polyethylene (LLDPE) with a 75°C temperature rating.

For Type NS90 cables, the standard insulation on the phase conductor(s) is black crosslinked polyethylene (XLPE) with a 90°C temperature rating.

Assembly

The phase conductors of a Type NS75 or NS90 cable (including, if applicable, the additional insulated control/supply conductor) are cabled around the neutral conductor without fillers with a length of lay from 25 to 60 times the finished diameter of one of the phase conductors.

Phase Identification

For unjacketed triplex cables only, one conductor shall be printed and one shall be unprinted.

For jacketed triplex and quadruplex cables, solid colour coded identification shall be used.

For unjacketed quadruplex cables, coloured stripes shall be used.

The standard colour code is black, red, blue for phase conductors with a bare neutral support conductor.

For any construction, an optionally insulated neutral support conductor will have white stripes on the insulation, or a solid white jacket.

NS75/NS90 600 V Cable Markings

The covering will bear the following surface markings:

- Nexans
- Year and plant of manufacture
- Type designation: "NS75" or "NS90"
- Conductor size in AWG or kcmil
- Type of insulation: "LDPE", "MDPE", or "XLPE" (if applicable, the jacket type shall also be specified, e.g., "XLPE/PVC")
- Flame test rating "FT1", if applicable
- Conductor material: "ALUMINUM" (or "AL") or "COPPER" (or "CU")
- Conductor corrosion inhibitor "INH", if applicable
- Voltage rating: "600V"
- Low-temperature rating "- 40 °C" or "MINUS 40 °C"

NS75/NS90 600 V Optional Features

- Reduced size insulated conductor for use as a water heater control conductor.
- Conductor corrosion resistant inhibitor treatment

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- Flame retardant PVC jacket extruded over the insulation layer. Flame test compliance is indicated by an "FT1" marking, not by the cable type designation
- Annealed uncoated copper phase conductors, 8 to 4/0 AWG in size with copper neutral
- Aluminum alloy, having the Aluminum Association designation 6101, designated A2 in CAN/CSA-C60104 (AA6101-T81) neutral conductor for use with aluminum phase conductors
- Aluminum alloy, steel reinforced A2/S3A (AACSR) neutral conductor for use with aluminum phase conductors