DIN VDE 0250-204 · PVC INSTALLATION CABLE | 300/500 V | 6 sizes | PVC

NYM-J 1G 300/500 V

PVC-Sheathed Installation Cable 300/500 V – A single round core with a class 1 or 2 copper conductor, insulation and sheath. PVC sheath. Complete technical data sheet: construction, dimensions, weights, current ratings, voltage drop and installation guidance for 6 sizes.

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01 Application and Product Overview

NYM-J is the PVC-sheathed installation cable of DIN VDE 0250-204 for fixed installation in dry, damp and wet rooms, in walls, under plaster and in concrete. PVC-insulated copper cores are laid up with a filler compound and enclosed in a grey PVC sheath. It is the standard cable of building services and light industrial installations.

Design

The conductors are solid (class 1) up to 10 mm² and stranded (class 2) from 16 mm². Each core is insulated with PVC compound of type TI1 for 70 °C at the conductor; the cores are stranded with a filler compound that gives the cable its round cross-section, and the sheath is PVC of type TM1. The J versions contain a green-yellow protective core, the O versions do not.

Typical applications

- Fixed installation in dry, damp and wet rooms, inside walls and under plaster
- Installation in cavities, on and in masonry and concrete, except for direct burial
- Circuits for lighting, sockets and fixed appliances in houses and workshops
- Sub-distribution cabling in light industrial buildings
- Agricultural buildings and utility rooms where damp conditions occur
- Outdoor installation in protective conduit, shielded from direct sunlight
- Replacement or extension of existing NYM wiring
- Machine and control-cabinet feeds in fixed, non-moving applications

6 sizes	300/500 V	+70 °C	PVC
Cross-section 1.5 – 16 mm²	Rated voltage U_0/U	Maximum conductor temperature	Sheath: PVC

Key features

- PVC insulation and sheath, rated 70 °C at the conductor, short-circuit temperature 160 °C
- Solid conductors up to 10 mm², stranded conductors from 16 mm²
- Cores identified to DIN VDE 0293-308
- Flame-retardant to IEC 60332-1-2
- Fixed installation only; bending radius 4 × D
- Rated voltage 300/500 V, test voltage 2 kV
- 6 sizes from 1.5 to 16 mm²; weight from 33 to 253 kg/km; copper from 14 to 154 kg/km

Core layout and conductor

A single round core with a class 1 or 2 copper conductor, insulation and sheath. In a three-phase circuit the three single-core cables are laid together.

Standard background

DIN VDE 0250-204 is the national standard of the NYM installation cable. NYM is for fixed installation only; it is not a flexible cable and must not be used for moving parts or for permanent direct burial. Reaction-to-fire classification under the Construction Products Regulation is project-specific and is not stated in this datasheet.

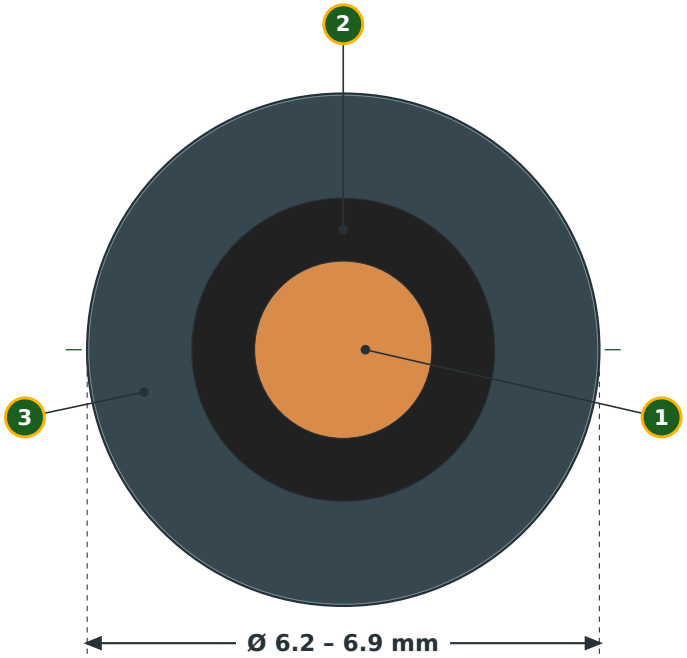
300/500 V suits domestic, office and light-industrial circuits up to 400 V three-phase. The test voltage is 2 kV.

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02 Construction

FEICHUN · CROSS-SECTION A-A · 300/500 V

NYM-J
Sample size 1G4 · Rev 0 · Illustrative, not to scale



No.	Component	Material
1	Conductor	Solid copper, class 1 to IEC 60228 (up to 10 mm²); stranded class 2 from 16 mm²
2	Insulation	PVC compound, type TI1 (70 °C)
3	Outer sheath	PVC compound, type TM1

The drawing shows size 1G4. Other sizes have the same construction with scaled dimensions; the layout of every size is checked for non-overlap of all elements.

Construction details

Conductor	Bare solid copper, class 1 (up to 10 mm²) and stranded class 2 (from 16 mm²) to DIN VDE 0295 / IEC 60228
Insulation	PVC compound, type TI1 (70 °C), maximum conductor temperature 70 °C
Core identification	Green-yellow to DIN VDE 0293-308
Stranding	Single core
Outer sheath	PVC compound, type TM1; thickness about 1.3 mm at this size

03 Electrical, Thermal and Mechanical Characteristics

Electrical data

Rated voltage U_0/U	300/500 V AC
Test voltage	2 kV AC, 5 min
Maximum operating voltage, three-phase	550 V
Maximum operating voltage, DC (core-earth / core-core)	0.3/0.5 kV (DC 0.45/0.9 kV)
Current-carrying capacity	Design values by the method of DIN VDE 0298-4, free air, 30 °C ambient; installation method C for NYM-type cables
Conductor resistance	Maximum at 20 °C, class 1 / class 2 solid and stranded

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Thermal and mechanical data

Maximum conductor temperature	+70 °C
Maximum temperature at short circuit	+160 °C (5 s maximum)
Ambient temperature, fixed installation	−30 °C to +70 °C
Ambient temperature, handling	+5 °C to +70 °C; not for moving applications
Minimum bending radius	Fixed installation: 4 × D
Maximum tensile load	50 N/mm² during installation on the total copper cross-section
Flame propagation	IEC 60332-1-2 / DIN EN 60332-1-2
Halogen-free	No (PVC)
Mineral oil resistance	Not specified
UV and ozone resistance	Limited; protect from direct sunlight
Water	Damp and wet rooms, fixed installation

04 Dimensions, Weights and Rated Data – 300/500 V (6 sizes)

Type designation cores × mm²	FeiChun article no.	Cond. Ø max mm	Outer Ø min mm	Outer Ø max mm	Bend radius fixed mm	Bend radius moving mm	Weight approx. kg/km	Copper kg/km	Max. pull N	R_{20} max Ω/km	Rated current A	I_k (1 s) kA
1G1.5	FC-NYM-0706-01	1.4	4.6	5.1	20	–	33	14	75	12.1	20	0.172
1G2.5	FC-NYM-0706-02	1.8	5.3	5.9	24	–	51	24	125	7.41	27	0.287
1G4	FC-NYM-0706-03	2.3	6.2	6.9	28	–	83	38	200	4.61	36	0.460
1G6	FC-NYM-0706-04	2.8	6.8	7.5	30	–	106	58	300	3.08	46	0.690
1G10	FC-NYM-0706-05	3.6	8.3	9.2	37	–	166	96	500	1.83	63	1.15
1G16	FC-NYM-0706-06	4.7	9.9	11.0	44	–	253	154	800	1.15	85	1.84

Current-carrying capacity: design values by the method of DIN VDE 0298-4, free air, 30 °C ambient; for other ambient temperatures use the factors below. Copper weight = 9.6 kg/(km·mm²) of copper cross-section (VDE copper index). Pull force = 50 N/mm² × total copper cross-section of the power cores. Diameters, dimensions and weights are nominal design values calibrated to published type tables; they vary within manufacturing tolerances. Confirm critical dimensions before dimensioning reels, glands or festoon systems. Other sizes and configurations are produced to order.

Ambient temperature factors (conductor 70 °C)

°C	20	25	30	35	40	45	50	55	60
Factor	1.12	1.06	1.00	0.94	0.87	0.79	0.71	0.61	0.50

Short-circuit current rating

I_k = 0.115 kA/mm² × cross-section of the power core (conductor 70 °C → 160 °C). For another duration t: $I_{k,t} = I_{k,1s} / \sqrt{t}$ (0.1 s ≤ t ≤ 5 s).

05 Voltage Drop, Losses and Short-Circuit Data

Voltage drop per 100 m of cable at rated current with the conductor at 70 °C, cos φ = 0.8 and reactance 0.08 Ω/km (single-phase AC, round trip). The percentage refers to a system voltage of 400 V. Loss is the total I²R loss of the loaded cores per 100 m. The short-circuit columns give the permitted current for four durations.

Type designation cores × mm²	Rated current A	R at 70 °C Ω/km	Voltage drop V / 100 m	Voltage drop % of 400 V	Loss kW / 100 m	I_k 0.1 s kA	I_k 0.5 s kA	I_k 1 s kA	I_k 3 s kA
1G1.5	20	14.5	46.52	11.63	1.16	0.545	0.244	0.172	0.100
1G2.5	27	8.87	38.56	9.64	1.29	0.909	0.407	0.287	0.166
1G4	36	5.52	32.12	8.03	1.43	1.45	0.651	0.460	0.266
1G6	46	3.69	27.56	6.89	1.56	2.18	0.976	0.690	0.398
1G10	63	2.19	22.68	5.67	1.74	3.64	1.63	1.15	0.664
1G16	85	1.38	19.53	4.88	1.99	5.82	2.60	1.84	1.06

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06 Selection Guide and Sizing Aid

NYM-J 1G covers 6 sizes. The smallest, 1G1.5, has an outer diameter of up to 5.1 mm and weighs about 33 kg/km; the largest, 1G16, has an outer diameter of up to 11.0 mm and weighs about 253 kg/km, 7.7 times as much. Across the range the rated current rises from 20 A to 85 A at 30 °C and the fixed bending radius from 20 mm to 44 mm.

Example 1. A circuit draws 23 A continuously at 40 °C ambient temperature, in a group of two cables. Temperature factor 0.87, grouping factor 0.80: required table current = 23 / (0.87 × 0.80) = 34 A. The smallest suitable size is 1G4 with 36 A.

Example 2. A circuit draws 54 A continuously at 35 °C ambient temperature, on its own. Temperature factor 0.94: required table current = 54 / (0.94) = 58 A. The smallest suitable size is 1G10 with 63 A.

07 Engineering Profile by Size

Every size of NYM-J 1G with the dimensions that decide how it behaves in a circuit: layers, weight, copper share, heat, voltage drop, bending, termination and pull.

1G1.5. This size has with a conductor of Ø 1.4 mm under 0.70 mm of insulation (core Ø 2.8 mm) and an outer sheath of 1.0 mm; outer diameter 4.6–5.1 mm, weight about 33 kg/km of which copper 14 kg/km (42 %). Rated current 20 A at 30 °C; at that load the voltage drop is 46.52 V per 100 m (11.63 % of 400 V) and the loss 1.16 kW per 100 m. Bending radius 20 mm fixed, no moving use; gland M16, lug bolt M5. Short-circuit rating 0.172 kA for 1 s; permitted pull 75 N, free-hanging length 231 m.

1G2.5. This size has with a conductor of Ø 1.8 mm under 0.80 mm of insulation (core Ø 3.4 mm) and an outer sheath of 1.1 mm; outer diameter 5.3–5.9 mm, weight about 51 kg/km of which copper 24 kg/km (47 %). Rated current 27 A at 30 °C; at that load the voltage drop is 38.56 V per 100 m (9.64 % of 400 V) and the loss 1.29 kW per 100 m. Bending radius 24 mm fixed, no moving use; gland M16, lug bolt M5. Short-circuit rating 0.287 kA for 1 s; permitted pull 125 N, free-hanging length 249 m.

1G4. This size has with a conductor of Ø 2.3 mm under 0.80 mm of insulation (core Ø 3.9 mm) and an outer sheath of 1.3 mm; outer diameter 6.2–6.9 mm, weight about 83 kg/km of which copper 38 kg/km (46 %). Rated current 36 A at 30 °C; at that load the voltage drop is 32.12 V per 100 m (8.03 % of 400 V) and the loss 1.43 kW per 100 m. Bending radius 28 mm fixed, no moving use; gland M16, lug bolt M5. Short-circuit rating 0.460 kA for 1 s; permitted pull 200 N, free-hanging length 245 m.

1G6. This size has with a conductor of Ø 2.8 mm under 0.80 mm of insulation (core Ø 4.4 mm) and an outer sheath of 1.4 mm; outer diameter 6.8–7.5 mm, weight about 106 kg/km of which copper 58 kg/km (55 %). Rated current 46 A at 30 °C; at that load the voltage drop is 27.56 V per 100 m (6.89 % of 400 V) and the loss 1.56 kW per 100 m. Bending radius 30 mm fixed, no moving use; gland M16, lug bolt M5. Short-circuit rating 0.690 kA for 1 s; permitted pull 300 N, free-hanging length 288 m.

1G10. This size has with a conductor of Ø 3.6 mm under 1.00 mm of insulation (core Ø 5.6 mm) and an outer sheath of 1.6 mm; outer diameter 8.3–9.2 mm, weight about 166 kg/km of which copper 96 kg/km (58 %). Rated current 63 A at 30 °C; at that load the voltage drop is 22.68 V per 100 m (5.67 % of 400 V) and the loss 1.74 kW per 100 m. Bending radius 37 mm fixed, no moving use; gland M16, lug bolt M6. Short-circuit rating 1.15 kA for 1 s; permitted pull 500 N, free-hanging length 307 m.

1G16. This size has with a conductor of Ø 4.7 mm under 1.00 mm of insulation (core Ø 6.7 mm) and an outer sheath of 1.9 mm; outer diameter 9.9–11.0 mm, weight about 253 kg/km of which copper 154 kg/km (61 %). Rated current 85 A at 30 °C; at that load the voltage drop is 19.53 V per 100 m (4.88 % of 400 V) and the loss 1.99 kW per 100 m. Bending radius 44 mm fixed, no moving use; gland M20, lug bolt M6. Short-circuit rating 1.84 kA for 1 s; permitted pull 800 N, free-hanging length 322 m.

Averaged over all sizes copper makes up 55 % of the cable weight; the share rises from 42 % at 1G1.5 to 61 % at 1G16, which is why the larger sizes are costed mostly on the copper market price.

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08 Construction Dimensions by Size

Wall thicknesses and diameters of the layers at each size, taken from the validated cross-section layout; the overall diameter in section 04 is the sum of these layers within tolerance. The insulation wall follows the voltage class 300/500 V.

Type designation cores × mm²	Conductor Ø mm	Core Ø over insulation, mm	Insulation wall mm	Laid-up core Ø mm	Inner sheath mm	Outer sheath mm	Screen + braid mm	Sheath share of Ø, %
1G1.5	1.38	2.78	0.70	2.8	–	1.02	–	42
1G2.5	1.78	3.38	0.80	3.4	–	1.10	–	39
1G4	2.26	3.86	0.80	3.9	–	1.33	–	41
1G6	2.76	4.36	0.80	4.4	–	1.38	–	39
1G10	3.57	5.57	1.00	5.6	–	1.59	–	36
1G16	4.68	6.68	1.00	6.7	–	1.91	–	36

09 Termination Planning (indicative)

Type designation cores × mm²	Outer Ø or W × H mm	Cable gland thread	Lug / ferrule bolt	Strip length mm	Straight length behind gland, mm
1G1.5	5.1	M16	M5	10	10
1G2.5	5.9	M16	M5	10	10
1G4	6.9	M16	M5	10	15
1G6	7.5	M16	M5	11	15
1G10	9.2	M16	M6	11	20
1G16	11.0	M20	M6	12	20

Gland threads, lug bolts and strip lengths are planning guides computed from the dimensions above; confirm them with the accessory manufacturer.

10 Comparison with Related Variants at Size 1G4

Variant	Differs in	Outer Ø / H mm	Weight kg/km	Pull N	Current A
This datasheet NYM-J 1G 300/500 V	–	6.9	83	200	36
NYM-O 300/500 V 1×4	core configuration	6.9 (+0%)	83 (+0%)	200 (+0%)	36 (+0%)
NYM-O 2× 300/500 V 2×4	core configuration	12.7 (+84%)	226 (+172%)	400 (+100%)	36 (+0%)
NYM-J 3G 300/500 V 3G4	core configuration	12.5 (+81%)	268 (+223%)	600 (+200%)	36 (+0%)
NYM-O 3× 300/500 V 3×4	core configuration	12.5 (+81%)	268 (+223%)	600 (+200%)	36 (+0%)
NYM-J 4G 300/500 V 4G4	core configuration	13.7 (+99%)	348 (+319%)	800 (+300%)	36 (+0%)
NYM-O 4× 300/500 V 4×4	core configuration	13.7 (+99%)	348 (+319%)	800 (+300%)	31 (-14%)
NYM-J 5G 300/500 V 5G4	core configuration	14.5 (+110%)	399 (+381%)	1,000 (+400%)	31 (-14%)
NYM-O 5× 300/500 V 5×4	core configuration	14.5 (+110%)	399 (+381%)	1,000 (+400%)	27 (-25%)

Percentages show the change against this datasheet; where a variant does not offer the exact size, the nearest listed size is used.

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11 Standards and Testing

Standard	Scope
DIN VDE 0250-204	PVC-sheathed installation cable NYM-J / NYM-O, 300/500 V
DIN VDE 0295 / IEC 60228	Conductors, class 1 and class 2
DIN VDE 0293-308	Core identification
DIN VDE 0298-4	Current-carrying capacity
DIN EN 60332-1-2 / IEC 60332-1-2	Flame propagation

Routine and type tests

- AC voltage test on every drum length (routine test): 2 kV, 5 min
- Conductor resistance and checks of dimensions, insulation thickness and sheath thickness
- Continuity of conductors and protective earth
- Flame propagation test (IEC 60332-1-2) on type-test samples

Test documentation: every delivery is accompanied by a test certificate from FeiChun's own laboratory. Third-party witnessed tests can be arranged at the buyer's cost.

The design follows DIN VDE 0250-204. This datasheet does not claim the VDE approval mark; mark or approval certificates, where required for a project, are arranged on request and apply only to the type tested.

12 Installation, Marking and Delivery

Installation guidance

- Install at ambient temperatures of −5 °C or higher; PVC stiffens in the cold.
- Keep the bending radius at 4 × D or more; do not kink the cable.
- Fix the cable with clips that do not squeeze the sheath, at the usual distances for the installation method.
- Do not use NYM for moving applications; use a flexible rubber or PUR cable instead.
- In wet rooms use cable glands or sealing entries rated for the enclosure.
- Observe the current-carrying capacity for the installation method and the grouping with other cables.

Sheath marking

FEICHUN NYM-J [cross-section] 300/500 V [year] [serial no.] [metre mark]

Packing and delivery

Drum	Steel or fumigated wooden drums; cable ends sealed with heat-shrink caps
Delivery length	As ordered, in one continuous length without joints
Lead time	2–3 weeks after technical approval
Warranty	At least 3 years against manufacturing defects
Drum label	Type, cross-section, length, gross/net weight, batch no., drum no.

Ordering information

Order example: NYM-J 1G4 300/500 V – 500 m on one drum. When requesting a quotation, state the cable type, configuration, cross-section, voltage, conductor (bare copper), length per piece, required standards and installation conditions.

13 Certification and Quality

All cable is subject to FeiChun's quality control, with routine testing over 100 % of the delivered length. Declarations of conformity, type-test reports and third-party tests (for example for a mine, a tunnel or a rail project) are provided per project requirement; copies of the records are available on request. FeiChun holds CE, EAC and UKCA documentation for certain product groups. Whether a certificate covers this specific construction must be confirmed with FeiChun before it is quoted in a tender.

VDE, mine-specific (for example coal-mine safety marks, MSHA) and ATEX / IECEx approvals are not implied by this datasheet. They depend on the project, the machine and the country and are arranged with the end user.

14 Related Datasheets and Frequently Asked Questions

Variants of this cable with a different configuration, conductor, temperature grade, screen or voltage. All datasheets are PDF files.

- NYM-O 300/500 V – core configuration, PVC
- NYM-O 2× 300/500 V – core configuration, PVC
- NYM-J 3G 300/500 V – core configuration, PVC
- NYM-O 3× 300/500 V – core configuration, PVC

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- NYM-J 4G 300/500 V – core configuration, PVC
- NYM-O 4× 300/500 V – core configuration, PVC
- NYM-J 5G 300/500 V – core configuration, PVC
- NYM-O 5× 300/500 V – core configuration, PVC

Overview of all NYM datasheets: NYM PVC Installation Cables

Frequently asked questions

Is NYM suitable for outdoor use?
Only in protective conduit and shielded from direct sunlight; direct burial requires a cable such as NYY.

What do -J and -O mean?
J: with green-yellow protective core; O: without. NYM-J is the J (with PE core) version.

What sizes are available for NYM-J 1G?
6 sizes from 1.5 to 16 mm². The outer dimension of the largest size, 1G16, is 11.0 mm and the weight is about 253 kg/km.

What current can 1G6 carry?
46 A in free air at 30 °C ambient, with the conductor at 70 °C. Other temperatures and grouping change the value; use the factors in section 04.

15 Trademark Notice and Intellectual Property

Cable type designations such as NYM-J are standardised, descriptive designations defined in DIN VDE and EN standards; they are used to state which standard this product is designed to. References to other manufacturers' trade names, where made, serve only for technical comparison; FeiChun Cables is not affiliated with them.

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