HARMONISED FLEXIBLE CABLE 300/500 V · DIN VDE 0282 / EN 50525 | 300/500 V | 4 sizes | PUR | BARE COPPER

H05BQ-F 5× 300/500 V

PUR-Sheathed Flexible Cable 300/500 V 300/500 V – 5 cores of equal cross-section in concentric layers with a short lay length. Polyurethane sheath. Complete technical data sheet: construction, dimensions, weights, current ratings, voltage drop and installation guidance for 4 sizes.

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01 Application and Product Overview

H05BQ-F is the harmonised PUR-sheathed flexible cable for 300/500 V. EPR-insulated fine-wire cores are enclosed in a halogen-free polyurethane sheath that is resistant to cuts, abrasion and oil. The cable connects hand-held tools and appliances under moderate mechanical load.

Design

The conductors are class 5 fine-wire copper, bare or tinned. The insulation is EPR (type 3GI3) rated for 90 °C at the conductor. The outer sheath is polyurethane of type TMPU (EN 50363-10-2), extruded tightly over the stranded cores. The bright orange sheath makes the cable easy to see on a site.

Typical applications

- Hand-held tools, drills and saws on building sites
- Machine connections in workshops, with oil and coolant exposure
- Cleaning, spray and wash-down equipment
- Garden, agricultural and forestry machinery
- Mobile compressors and generators
- Extension cables and cable reels for site distribution
- Production lines with abrasive floors
- General connections for medium mechanical stress in dry, damp and wet areas

4 sizes	300/500 V	+90 °C	Halogen-free
Cross-section 0.75 – 2.5 mm²	Rated voltage U_0/U	Maximum conductor temperature	Sheath: PUR

Key features

- PUR sheath: high resistance to cuts, abrasion, tear and oil
- Halogen-free; hydrolysis- and microbe-resistant
- EPR insulation rated 90 °C at the conductor
- Rated voltage 300/500 V, test voltage 2 kV
- Flexible use from −25 °C to +80 °C, fixed use from −40 °C to +90 °C
- Bending radius 5 × D flexing, 3 × D fixed
- 4 sizes from 0.75 to 2.5 mm²; weight from 137 to 306 kg/km; copper from 36 to 120 kg/km

Core layout and conductor

5 cores of equal cross-section in concentric layers with a short lay length. Core colours: blue, brown, black, grey, black (DIN VDE 0293-308); no protective core is included. Five cores carry three phases, neutral and PE (5G) or three phases, neutral and a spare core. The conductors are bare annealed copper. Bare copper has the lowest conductor resistance of the class 5 range and is the usual choice for dry and damp indoor use. Where the cable is exposed to salt, sulphur or permanent moisture, the tinned version of the same cable is preferable.

Standard background

H05BQ-F and H07BQ-F are harmonised types covered by DIN VDE 0282-10 (HD 22.10) and now by DIN EN 50525-2-21. The cable replaced the former VDE type NGMH11YÖ. H07 identifies the 450/750 V rating, B the EPR insulation, Q the polyurethane sheath and F the flexible conductor.

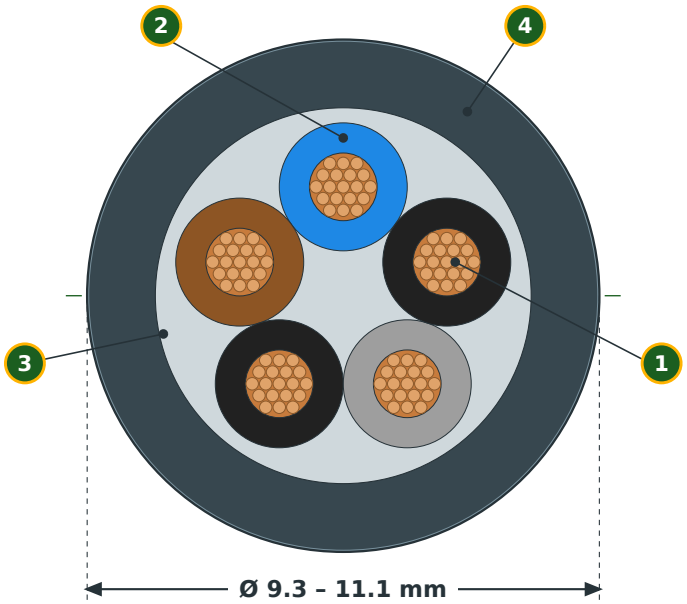
300/500 V suits domestic, office and light-industrial circuits up to 400 V three-phase. The test voltage is 2 kV.

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02 Construction

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

H05BQ-F
Sample size 5×1 · Rev 0 · Illustrative, not to scale



No.	Component	Material
1	Conductor	Bare annealed fine-wire copper, class 5 to IEC 60228 / DIN VDE 0295
2	Insulation	EPR rubber, type 3GI3 (90 °C)
3	Filler and binder tape	Halogen-free filler with polyester binder tape
4	Outer sheath	Polyurethane (PUR), type TMPU

The drawing shows size 5×1. 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 annealed fine-wire copper, class 5 to DIN VDE 0295 / IEC 60228
Insulation	EPR rubber, type 3GI3 (90 °C), maximum conductor temperature 90 °C
Core identification	Blue, brown, black, grey, black to DIN VDE 0293-308
Stranding	Cores in concentric layers with a short lay length
Outer sheath	Polyurethane (PUR), type TMPU; thickness about 1.4 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
Conductor resistance	Maximum at 20 °C, class 5, bare

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Thermal and mechanical data

Maximum conductor temperature	+90 °C
Maximum temperature at short circuit	+250 °C (5 s maximum)
Ambient temperature, fixed installation	−40 °C to +90 °C
Ambient temperature, in motion	−30 °C to +90 °C
Minimum bending radius	Fixed: 3 × D (D ≤ 12 mm), 4 × D (D > 12 mm); moving: 3 × D (D ≤ 8 mm), 4 × D (D ≤ 12 mm), 5 × D (D > 12 mm) (DIN VDE 0298-3)
Maximum tensile load	15 N/mm² continuous on the total copper cross-section
Flame propagation	IEC 60332-1-2 / DIN EN 60332-1-2
Halogen-free	Yes (insulation and sheath), IEC 60754-1/-2
Mineral oil resistance	Resistant, DIN EN 60811-404
UV and ozone resistance	Resistant
Water	Damp and wet areas, spray water

04 Dimensions, Weights and Rated Data – 300/500 V (4 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
5×0.75	FC-H05B-0991-01	1.2	8.8	10.6	32	42	137	36	56	26.0	11	0.107
5×1	FC-H05B-0991-02	1.4	9.3	11.1	33	44	159	48	75	19.5	13	0.143
5×1.5	FC-H05B-0991-03	1.7	10.6	12.8	51	64	216	72	112	13.3	17	0.214
5×2.5	FC-H05B-0991-04	2.2	12.7	15.2	61	76	306	120	188	7.98	23	0.357

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 and the multi-core reduction factor already included in the table. Copper weight = 9.6 kg/(km·mm²) of copper cross-section (VDE copper index). Pull force = 15 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 90 °C)

°C	20	25	30	35	40	45	50	55	60
Factor	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71

Short-circuit current rating

I_k = 0.143 kA/mm² × cross-section of the power core (conductor 90 °C → 250 °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 90 °C, cos φ = 0.8 and reactance 0.08 Ω/km (three-phase). 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 90 °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
5×0.75	11	33.2	50.62	12.66	1.20	0.339	0.152	0.107	0.062
5×1	13	24.9	44.90	11.22	1.26	0.452	0.202	0.143	0.083
5×1.5	17	17.0	40.09	10.02	1.47	0.678	0.303	0.214	0.124
5×2.5	23	10.2	32.62	8.15	1.61	1.13	0.506	0.357	0.206

06 Selection Guide and Sizing Aid

H05BQ-F 5× covers 4 sizes. The smallest, 5×0.75, has an outer diameter of up to 10.6 mm and weighs about 137 kg/km; the largest, 5×2.5, has an outer diameter of up to 15.2 mm and weighs about 306 kg/km, 2.2 times as much. Across the range the rated current rises from 11 A to 23 A at 30 °C and the fixed bending radius from 32 mm to 61 mm.

Example 1. A circuit draws 9 A continuously at 40 °C ambient temperature, in a group of two cables. Temperature factor 0.91, grouping factor 0.80: required table current = 9 / (0.91 × 0.80) = 13 A. The smallest suitable size is 5×1 with 13 A.

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Example 2. A circuit draws 15 A continuously at 35 °C ambient temperature, on its own. Temperature factor 0.96: required table current = 15 / (0.96) = 16 A. The smallest suitable size is 5×1.5 with 17 A.

07 Engineering Profile by Size

Every size of H05BQ-F 5× with the dimensions that decide how it behaves in a circuit: layers, weight, copper share, heat, voltage drop, bending, termination and pull.

5×0.75. This size has with a conductor of Ø 1.2 mm under 0.60 mm of insulation (core Ø 2.4 mm) and an outer sheath of 1.3 mm; outer diameter 8.8–10.6 mm, weight about 137 kg/km of which copper 36 kg/km (26 %). Rated current 11 A at 30 °C; at that load the voltage drop is 50.62 V per 100 m (12.66 % of 400 V) and the loss 1.20 kW per 100 m. Bending radius 32 mm fixed, 42 mm moving; gland M20, lug bolt M5. Short-circuit rating 0.107 kA for 1 s; permitted pull 56 N, free-hanging length 41 m.

5×1. This size has with a conductor of Ø 1.3 mm under 0.60 mm of insulation (core Ø 2.5 mm) and an outer sheath of 1.4 mm; outer diameter 9.3–11.1 mm, weight about 159 kg/km of which copper 48 kg/km (30 %). Rated current 13 A at 30 °C; at that load the voltage drop is 44.90 V per 100 m (11.22 % of 400 V) and the loss 1.26 kW per 100 m. Bending radius 33 mm fixed, 44 mm moving; gland M20, lug bolt M5. Short-circuit rating 0.143 kA for 1 s; permitted pull 75 N, free-hanging length 48 m.

5×1.5. This size has with a conductor of Ø 1.7 mm under 0.70 mm of insulation (core Ø 3.1 mm) and an outer sheath of 1.4 mm; outer diameter 10.6–12.8 mm, weight about 216 kg/km of which copper 72 kg/km (33 %). Rated current 17 A at 30 °C; at that load the voltage drop is 40.09 V per 100 m (10.02 % of 400 V) and the loss 1.47 kW per 100 m. Bending radius 51 mm fixed, 64 mm moving; gland M25, lug bolt M5. Short-circuit rating 0.214 kA for 1 s; permitted pull 112 N, free-hanging length 52 m.

5×2.5. This size has with a conductor of Ø 2.1 mm under 0.80 mm of insulation (core Ø 3.7 mm) and an outer sheath of 1.6 mm; outer diameter 12.7–15.2 mm, weight about 306 kg/km of which copper 120 kg/km (39 %). Rated current 23 A at 30 °C; at that load the voltage drop is 32.62 V per 100 m (8.15 % of 400 V) and the loss 1.61 kW per 100 m. Bending radius 61 mm fixed, 76 mm moving; gland M25, lug bolt M5. Short-circuit rating 0.357 kA for 1 s; permitted pull 188 N, free-hanging length 62 m.

Averaged over all sizes copper makes up 34 % of the cable weight; the share rises from 26 % at 5×0.75 to 39 % at 5×2.5, which is why the larger sizes are costed mostly on the copper market price.

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, %
5×0.75	1.17	2.37	0.60	7.0	–	1.33	–	28
5×1	1.35	2.55	0.60	7.5	–	1.36	–	27
5×1.5	1.65	3.05	0.70	8.8	–	1.43	–	24
5×2.5	2.13	3.73	0.80	10.7	–	1.62	–	23

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
5×0.75	10.6	M20	M5	10	15
5×1	11.1	M20	M5	10	15
5×1.5	12.8	M25	M5	10	25
5×2.5	15.2	M25	M5	10	30

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

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10 Comparison with Related Variants at Size 5×1

Variant	Differs in	Outer Ø / H mm	Weight kg/km	Pull N	Current A
This datasheet H05BQ-F 5× 300/500 V	–	11.1	159	75	13
H05BQ-F 5G 300/500 V 5G1	core configuration	11.1 (+0%)	159 (+0%)	75 (+0%)	15 (+15%)
H05BQ-F 4× 300/500 V 4×1	core configuration	10.3 (-7%)	139 (-13%)	60 (-20%)	15 (+15%)
H05BQ-F 5× 300/500 V 5×1	tinned vs bare copper	11.1 (+0%)	159 (+0%)	75 (+0%)	13 (+0%)
H05BQ-F 5× 300/500 V 5×1	low-temperature sheath	11.1 (+0%)	159 (+0%)	75 (+0%)	13 (+0%)
H05BQ-F 4G 300/500 V 4G1	core configuration	10.3 (-7%)	139 (-13%)	60 (-20%)	17 (+31%)
H05BQ-F 3× 300/500 V 3×1	core configuration	9.3 (-16%)	109 (-31%)	45 (-40%)	17 (+31%)
H05BQ-F 3G 300/500 V 3G1	core configuration	9.3 (-16%)	109 (-31%)	45 (-40%)	17 (+31%)
H05BQ-F 2× 300/500 V 2×1	core configuration	8.8 (-21%)	81 (-49%)	30 (-60%)	17 (+31%)

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

11 Standards and Testing

Standard	Scope
DIN VDE 0282-10 (HD 22.10) / DIN EN 50525-2-21	Flexible EPR/PUR cables
DIN EN 50363-10-2	Sheathing compound TMPU
DIN VDE 0293-308	Core identification
DIN VDE 0295 / IEC 60228	Conductors, class 5
DIN EN 60754-1 / -2	Halogen content of the compounds
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
- Flame propagation test (IEC 60332-1-2) on type-test samples
- Verification of the halogen-free compounds (IEC 60754-1/-2)

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 0282-10. 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.

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12 Installation, Marking and Delivery

Installation guidance

- Keep to the bending radii of section 04: flexing 5 × D, fixed 3 × D.
- Do not exceed the tensile load of 15 N/mm² of the copper cross-section.
- Avoid prolonged contact with hot surfaces above the rated conductor temperature.
- Cut and strip the PUR sheath with a sharp, round-blade tool.
- Use cable glands with a clamping range that matches the outer diameter.
- Store the cable dry and away from direct sunlight for long periods.

Sheath marking

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FEICHUN H05BQ-F [cross-section] 300/500 V [year] [serial no.] [metre mark]
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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: H05BQ-F 5×1 300/500 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.

- H05BQ-F 5G 300/500 V – core configuration, PUR
- H05BQ-F 4× 300/500 V – core configuration, PUR
- H05BQ-F 5× 300/500 V – tinned vs bare copper, PUR, tinned
- H05BQ-F 5× 300/500 V – low-temperature sheath, PUR, low-temp
- H05BQ-F 4G 300/500 V – core configuration, PUR
- H05BQ-F 3× 300/500 V – core configuration, PUR
- H05BQ-F 3G 300/500 V – core configuration, PUR
- H05BQ-F 2× 300/500 V – core configuration, PUR

Overview of all H05BQ-F datasheets: H05 Series Flexible Cables 300/500 V

Frequently asked questions

What is the difference between H07BQ-F and H07RN-F?
H07BQ-F has a PUR sheath (cut- and abrasion-resistant, halogen-free); H07RN-F has a polychloroprene sheath.

Is H07BQ-F halogen-free?
Yes. Insulation and sheath are halogen-free compounds.

What sizes are available for H05BQ-F 5×?
4 sizes from 0.75 to 2.5 mm². The outer dimension of the largest size, 5×2.5, is 15.2 mm and the weight is about 306 kg/km.

What current can 5×1.5 carry?
17 A in free air at 30 °C ambient, with the conductor at 90 °C. Other temperatures and grouping change the value; use the factors in section 04.

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15 Trademark Notice and Intellectual Property

Cable type designations such as H05BQ-F 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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