TYPE · VFD RUBBER CABLE · −45 °C | 0.6/1 kV | 10 Variants

PROTOMONT EMV-FC −45 °C Equivalent

FC-EMV-ARC (N)SSHCÖU 0,6/1 kV

Cold-flexible VFD rubber cable for use down to −45 °C — symmetrical three-part earth, overall tinned copper braid screen and black CR sheath.

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01 Application & Product Overview

FC-EMV-ARC (N)SSHCÖU is the cold-flexible version of the EMC-screened VFD rubber cable, for converter-to-motor connections at sites with ambient temperatures down to −45 °C.

Cold-resistant EPR insulation and sheath compounds keep the cable flexible at −45 °C. The symmetrical three-part earth and overall tinned copper braid screen provide EMC-compliant converter connections.

Typical applications

- VFD-to-motor connections in arctic and sub-arctic mines
- Conveyor, pump and fan drives exposed to severe cold
- EMC-compliant installations with long motor cables
- Mobile and semi-fixed installation outdoors and underground
- Wet conditions and immersion

10 variants
Conductor range 16 – 240 mm²

0.6/1 kV
Rated voltage, AC test 5 kV

−45 °C
Flexible operation

> 90 %
Copper braid screen coverage

Cross-reference

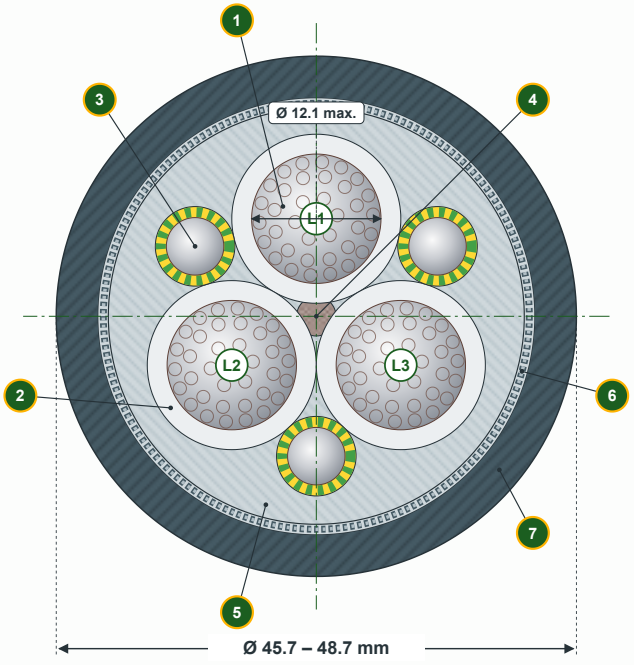
REFERENCE TYPE
PROTOMONT EMV-FC (N)SSHCÖU −45 °C 0,6/1 kV

⇄

FEICHUN EQUIVALENT
FC-EMV-ARC (N)SSHCÖU 0,6/1 kV

Equivalent in construction and dimensions to PROTOMONT EMV-FC (N)SSHCÖU −45 °C 0,6/1 kV.

02 Construction



FEICHUN · SECTION A–A · 0.6/1 kV
FC-EMV-ARC (N)SSHCÖU
Doc. No. FC-TDS-EMVA-2026-55F6
Ref. 3×95 mm²
Rev. 0 · 2026-10-12 · 1st-angle · NTS

Drawing representative of the reference size; other sizes scale proportionally.

Pos.	Element	Material
1	Conductor	Annealed copper, finely stranded, class 5 (IEC 60228)
2	Insulation	Cold-flexible EPR compound
3	Earth conductor	Split into three green-yellow cores in the interstices (symmetrical)
4	Centre filler	Rubber filler
5	Inner sheath	EPR rubber compound GM1b
6	EMC screen	Tinned copper braid, coverage > 90 %
7	Outer sheath	Cold-resistant CR compound 5GM5, black

Drawing: 3×95 mm² reference size.

Construction details

Element	Description
Conductor	Finely stranded tinned annealed copper, class 5 (FS) to DIN EN 60228 / IEC 60228 / VDE 0295
Core insulation	EPR rubber (PROTOLON-type), special compound 3GI3 to DIN VDE 0207-20

Element	Description
Core identification	Phase cores light-coloured with black numerals 1, 2, 3; earth cores green-yellow
Protective earth	Split earth conductor: three insulated green-yellow earth cores of equal size laid in the outer interstices (symmetrical arrangement for EMC and balanced induced voltages)
Lay-up	Three phase cores and three earth cores stranded together; central filler where required
Inner sheath	Waterproof cold-resistant EPR rubber, special compound GM1b type
Screen	Overall braid of tinned copper wires, coverage > 90 %, for EMC
Outer sheath	Cold-resistant polychloroprene (PCP) rubber, special compound 5GM5 to DIN VDE 0207-21, black; flexible down to −45 °C, abrasion- and tear-resistant, flame-retardant, oil-, ozone- and UV-resistant

03 Electrical, Thermal & Mechanical Data

Electrical parameters

Parameter	Value
Rated voltage U_0/U (Um)	0.6/1 (1.2) kV AC; also permitted for 640/1140 V
Max. operating voltage DC	0.9/1.8 kV
Max. peak voltage (converter operation)	2.4 kV
Test voltage	5 kV AC
Current ratings	Per DIN VDE 0298-4, 30 °C ambient, three loaded conductors in air

Thermal & mechanical parameters

Parameter	Value
Max. conductor temperature	+90 °C
Max. short-circuit temperature	+250 °C
Ambient temperature, fixed installation	−60 °C to +80 °C
Ambient temperature, flexing operation	−45 °C to +60 °C

Parameter	Value
Min. bending radius	4 × D fixed; 5 × D flexing (D = max. outer diameter), per DIN VDE 0298-3
Max. tensile load	15 N/mm², related to the total cross-section of the phase conductors
Max. torsional stress	±25 °/m
Screen	Tinned copper braid, optical coverage > 90 %; EMC-compliant
Operating capacitance / inductance	Approx. 420–730 nF/km; approx. 0.23–0.26 mH/km (see table)
Flame retardance	DIN EN 60332-1-2 / IEC 60332-1-2
Oil resistance	DIN EN 60811-404 / IEC 60811-404
UV, ozone and moisture resistance	Resistant
Water resistance	Suitable for water immersion up to 500 m depth, water temperature max. 40 °C; seawater resistance excellent
Halogen-free	No

04 Dimensions, Weights & Ratings — 0.6/1 kV (10 variants)

Type designation cores × mm²	FeiChun part no.	Conductor Ø max. mm	Outer diameter min. mm	Outer diameter max. mm	Min. bending radius mm	Weight approx. kg/km	Max. tensile force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
3×16+3×2.5	FC-EMVA-001	5.4	24.4	27.4	137	1,190	720	1.240	99	2.29
3×25+3×4	FC-EMVA-002	6.3	28.2	31.2	156	1,680	1,125	0.795	131	3.57
3×35+3×16/3	FC-EMVA-003	7.5	30.5	33.5	168	2,000	1,575	0.565	162	5.00

Type designation cores × mm²	FeiChun part no.	Conductor Ø max. mm	Outer diameter min. mm	Outer diameter max. mm	Min. bending radius mm	Weight approx. kg/km	Max. tensile force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
3×50+3×25/3	FC-EMVA-004	8.9	36.0	39.0	195	2,820	2,250	0.393	202	7.15
3×70+3×35/3	FC-EMVA-005	10.6	41.2	44.2	221	3,800	3,150	0.277	250	10.01
3×95+3×50/3	FC-EMVA-006	12.1	45.7	48.7	244	4,760	4,275	0.210	301	13.58
3×120+3×70/3	FC-EMVA-007	14.1	48.7	52.7	264	5,890	5,400	0.164	352	17.16
3×150+3×70/3	FC-EMVA-008	16.0	55.7	59.7	299	7,230	6,750	0.132	404	21.45
3×185+3×95/3	FC-EMVA-009	17.8	60.4	64.4	322	8,640	8,325	0.108	461	26.45
3×240+3×120/3	FC-EMVA-010	20.2	68.2	72.2	361	11,100	10,800	0.0817	540	34.32

Current rating: DIN VDE 0298-4 values for flexible rubber cables at 30 °C ambient — apply the factors below for other ambient temperatures, grouping and multi-layer laying. Bending radius: 5 × D when moved, 4 × D fixed. Tensile force: 15 N/mm² × total phase cross-section. Further sizes and special designs are manufactured to order.

Ambient temperature factors (90 °C conductor)

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

Short-circuit rating

Permissible short-circuit current for 1 s: $I_k = 0.143$ kA/mm² × phase cross-section (EPR, 90 °C → 250 °C, tinned copper). For other durations t: $I_{k,t} = I_{k,1s} / \sqrt{t}$ (0.1 s ≤ t ≤ 5 s).

05 Standards & Tests

Standard	Scope
DIN VDE 0250-812	Basis of design — flexible mining cables, low voltage
DIN EN 60228 / IEC 60228 / VDE 0295	Conductors, class 5 — class 5, tinned
DIN VDE 0207-20	Insulating compound 3GI3
DIN VDE 0207-21	Sheathing compounds
DIN VDE 0298-3	Use of cables — bending radii, tensile load
DIN VDE 0298-4	Current-carrying capacity
DIN EN 60332-1-2 / IEC 60332-1-2	Flame propagation, single cable

Routine & type tests

- AC voltage test 5 kV on every drum
- Conductor resistance and dimensional checks
- Continuity of earth, screen and control conductors
- Cold bend and impact tests (type test)
- Flame retardance (IEC 60332-1-2) and oil resistance (IEC 60811-404) of the outer sheath

Test documentation: each delivery is accompanied by a FeiChun in-house laboratory inspection certificate. Third-party witnessed testing can be arranged at the buyer's cost.

Standard	Scope
DIN EN 60811-404 / IEC 60811-404	Oil resistance of sheath

06 Installation, Marking & Delivery

Installation notes

- Use symmetrical three-phase cable runs between converter and motor; terminate the overall copper braid 360° in EMC glands at both ends.
- Connect all three earth cores together at both ends to keep the earth system symmetrical.
- Observe the minimum bending radius: 4 × D fixed, 5 × D when moved.
- Keep tensile force within 15 N/mm² of the total conductor cross-section.
- Unwind tangentially from the delivery drum — never pull off over the flange; avoid loops and kinks.

Sheath marking

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FEICHUN FC-EMV-ARC (N)SSHCÖU [size] 0,6/1 kV [year] [serial no.] [metre mark]
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Packing & delivery

Item	Standard
Drum	Steel or fumigated wooden drums, ends sealed with heat-shrink caps
Lengths	To order, single continuous length (no joints)
Production lead time	2–3 weeks after technical confirmation
Warranty	Min. 3 years against manufacturing defects
Drum label	Type, size, length, gross/net weight, batch no., drum no.

07 Certifications & Quality

CE — LVD 2014/35/EU
Attestation No. M.2025.206.C116598 · EN 50525-1:2011+A1:2022 · UDEM International Certification · valid to 01.04.2030

EAC — TR CU 004/2011
Certificate No. ЕАЭС KG417/052.CN.02.15390 · GOST 31996-2012, GOST 31565-2012 · valid 24.10.2025–23.10.2030

UKCA — Verification
No. ICR/VC/HS2508110 · BS EN 50525-1:2011+A1:2022 · ICR Polska · valid to 17.08.2030

FeiChun also holds ATEX (Directive 2014/34/EU) documentation verification and IECEx / VDE related approvals for designated product families. Mine-specific approvals are arranged with the end user or local distributor where required. Certificate copies are available on request.

08 Trademark Notice & Intellectual Property

PROTOMONT® and the type designation PROTOMONT EMV-FC (N)SSHCÖU −45 °C 0,6/1 kV are cited to identify the reference product of Prysmian Group, the trademark owner. They are used solely for technical cross-referencing; FeiChun Cables has no affiliation with, and is not endorsed by, the trademark owner. FC-EMV-ARC is a FeiChun product designed to equivalent functional performance.

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Technical & Sales Contact

Anhui FeiChun Special Cable Co., Ltd.
International Business Department
No. 1 Park, Private Science & Technology Park, Hefei National ETDZ, Hefei, Anhui, China
Technical: Tech@feichuncables.com
Mining & heavy industry: mining@feichuncables.com
Zihao Yang, Global Sales Manager:
zihao.yang@feichuncables.com
WhatsApp: +86 138 5512 3218
Web: www.feichuncables.com

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