TYPE · LV SHEARER CABLE · CHAIN · FIBRE OPTIC | 0.6/1 kV | 1 Variant

PROTOMONT (V) LWL Equivalent

FC-PMT-V-LWL NSSHCGEÖU 0,6/1 kV

Low voltage coal-cutter cable for chain operation with concentric earth and a central fibre-optic element — power, control and data for automated longwall shearers.

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Language **English (AU)**

01 Application & Product Overview

FC-PMT-V-LWL NSSHCGEÖU 0.6/1 kV combines the chain-operation PROTOMONT (V) power design with a central fibre-optic element for high-rate machine control, automation and condition monitoring.

The fibre-optic element sits in the protected centre of the core assembly, surrounded by the three screened main cores and three double-concentric control/PE elements. The steel/copper spinning between the sheaths gives reinforcement and anti-torsion protection for continuous chain operation.

Typical applications

- Automated longwall shearers — control and condition-monitoring data
- Video and high-rate data links from the shearer
- Cable handlers on 1,000 V shearer supplies
- Underground coal mines with firedamp / coal-dust explosion risk (with approved couplers)
- EMI-immune data alongside power in one cable

1 variant
3×95 mm² + 12 fibres

0.6/1 kV
Rated voltage, 3 kV test

12 fibres
G50/125 standard, G.652.D option

15 N/mm²
Max. tensile load on conductors

Cross-reference

REFERENCE TYPE

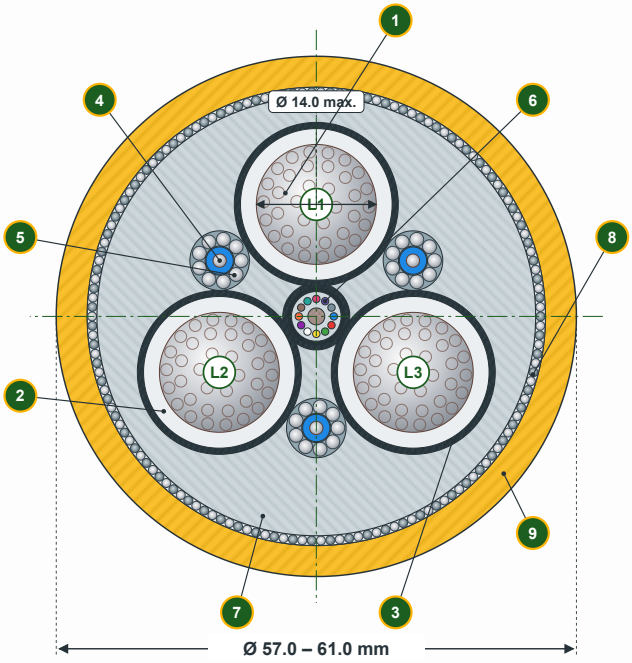
PROTOMONT (V) NSSHCGEÖU LWL 0,6/1 kV

FEICHUN EQUIVALENT

FC-PMT-V-LWL NSSHCGEÖU 0,6/1 kV

Equivalent to PROTOMONT (V) NSSHCGEÖU LWL 0,6/1 kV. Further sizes and fibre counts can be designed to order.

02 Construction



FEICHUN · SECTION A–A · 0.6/1 kV

FC-PMT-V-LWL NSSHCGEÖU

Doc. No. FC-TDS-PMVLF-2026-5F7D
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	Tinned annealed copper, very finely stranded, class FS (DIN VDE 0295) / class 5 (IEC 60228)
2	Insulation	EPR rubber compound type 3GI3 (DIN VDE 0207-20); main cores black, grey and brown
3	Core screen	Cold-strippable semi-conductive elastomer layer over each main core
4	Control core (ST)	Tinned copper 1.5 mm², EPR 3GI3 insulation, blue
5	Concentric PE conductor (KON)	Tinned copper wires concentric over the control core; protective earth split into three
6	Fibre-optic element (centre)	12 fibres in a gel-filled loose tube, aramid strength members, elastomer element sheath
7	Inner sheath	Vulcanised EPR-based rubber compound GM1b (DIN VDE 0207-21)

Pos.	Element	Material
8	Reinforcement / anti-torsion	Closed-lay spinning of galvanised steel and tinned copper wires, vulcanised between inner and outer sheath
9	Outer sheath	Heavy-duty polychloroprene (PCP) compound 5GM5 (DIN VDE 0207-21), abrasion-, notch- and tear-resistant, flame-retardant, oil-resistant, yellow

Drawing: 3×95 mm² reference size.

Construction details

Element	Description
Conductor	Very finely stranded tinned annealed copper, class 5 (class FS) to DIN VDE 0295 / IEC 60228
Power core insulation	EPR rubber compound type 3GI3 to DIN VDE 0207-20
Core screen	Cold-strippable semi-conductive elastomer layer over each power core
Fibre-optic element (centre)	Central LWL element in the inner interstice: 12 fibres in a gel-filled loose tube, aramid-yarn strength members, PUR/elastomer element sheath (black), protected by the surrounding power cores
Power cores	Three main cores, colours black, grey and brown
Control / earth elements	Three double-concentric elements in the outer interstices: 1.5 mm² tinned copper control core (3GI3, blue) with protective earth split into three concentric tinned copper wire layers (50/3 KON)
Lay-up	Lay length approx. 6 × core assembly diameter
Inner sheath	Vulcanised EPR-based rubber compound GM1b to DIN VDE 0207-21
Reinforcement / anti-torsion braid	Closed-lay spinning of combined galvanised steel and tinned copper wires, vulcanised between inner and outer sheath
Outer sheath	Polychloroprene (PCP) compound 5GM5 to DIN VDE 0207-21, yellow, flame-retardant and oil-resistant

03 Electrical, Thermal & Mechanical Data

Electrical parameters

Parameter	Value
Rated voltage U_0/U (Um)	0.6/1 (1.2) kV AC; 0.9/1.8 kV DC
Test voltage	3 kV AC (power cores); 2 kV AC (control cores)
Current ratings	Per DIN VDE 0298-4, 30 °C ambient, cable fully unreeled / in chain

Thermal & mechanical parameters

Parameter	Value
Max. conductor temperature	+90 °C
Max. short-circuit temperature	+250 °C (≤ 5 s)
Ambient temperature, fixed installation	−40 °C to +80 °C
Ambient temperature, fully flexing operation	−20 °C to +60 °C
Max. tensile load on conductors	15 N/mm² (permanent, related to total phase cross-section)
Min. bending radius in cable chain	2.3 × D at tensile load ≤ 5 N/mm² (DIN VDE 0298-3); 5 × D at higher tensile load
Min. distance between S-type direction changes	20 × D
Max. torsional stress	±25 °/m
Flame retardance	EN 60332-1-2 / IEC 60332-1-2
Oil resistance	EN 60811-404 / IEC 60811-404
UV, ozone and weather resistance	Resistant (5GM5 PCP outer sheath)

04 Optical Fibre Data

Characteristic	Value
Fibre type	G50/125 multimode (OM2) standard; G.652.D single-mode on request
Max. number of fibres	12
Element	Central gel-filled loose tube with aramid strength members and elastomer/PUR element sheath, placed in the inner interstice of the three power cores
Attenuation (dB/km) — 850 nm (G50/125)	≤ 3.0
Attenuation (dB/km) — 1300 nm (G50/125)	≤ 1.0
Attenuation (dB/km) — 1310 nm (G.652.D)	≤ 0.40
Attenuation (dB/km) — 1550 nm (G.652.D)	≤ 0.30
Bandwidth	G50/125: ≥ 500 MHz·km at 850 nm and 1300 nm

Fibre type and count per variant as stated in the type designation; other fibre types and counts on request.

05 Dimensions, Weights & Ratings — 0.6/1 kV (1 variant)

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)
3×95+3×(1.5STKON+50/3KON)+12 OFE	FC-PMVLF-001	14.0	57.0	61.0	140	7,150	4,275	0.210	301	13.58

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: 2.3 × D in the cable protection chain at ≤ 5 N/mm² tensile load. 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).

06 Standards & Tests

Standard	Scope
DIN VDE 0250-812	Basis of design — flexible mining cables, low voltage
DIN VDE 0295 / IEC 60228	Conductors, class FS / 5 — class 5, tinned
DIN VDE 0207-20	Insulating compound 3GI3 — 3GI3
DIN VDE 0207-21	Sheathing compounds — GM1b, 5GM5
DIN VDE 0298-3	Use of cables — bending radii, tensile load
DIN VDE 0298-4	Current-carrying capacity
EN 60332-1-2 / IEC 60332-1-2	Flame propagation, single cable
EN 60811-404 / IEC 60811-404	Oil resistance of sheath
DIN VDE 0118	Electrical installations in underground mining
IEC 60793-2-10 / IEC 60793-2-50	Optical fibres — fibres
IEC 60794-1-2	Optical cables — test methods — FO element test methods

Routine & type tests

- AC voltage test 3 kV on every drum (main cores); 2 kV on control cores
- Conductor resistance, dimensional and continuity checks of PE, control and monitoring conductors
- OTDR attenuation measurement of every fibre, report supplied with the drum
- Insulation resistance and screen / semi-conductive layer resistance
- Bending, torsion and tensile tests in a cable protection chain (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.

07 Installation, Marking & Delivery

Installation notes

- Guide the cable in the cable protection chain (cable handler) — the chain takes the tensile forces; minimum bending radius 2.3 × D at ≤ 5 N/mm² tensile load.
- Keep at least 20 × D between S-type direction changes and keep torsion within the stated limit.
- Do not exceed the permanent tensile load of 15 N/mm² on the main conductors, including start-up and braking peaks.
- Unwind tangentially from the delivery drum — never pull off over the flange; lay out and relax the cable before fitting it into the chain.
- Connect all three PE parts at both ends; connect control and monitoring conductors to the earth-fault / insulation monitoring relay of the shearer supply.
- Use flameproof (Ex d) or increased-safety plugs and couplers suited to the cable diameter and approved for the mine.
- Fibre-optic versions: factory pre-assembly of FO connectors or splice enclosures is recommended — please supply connection details with the order.

Sheath marking

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FEICHUN FC-PMT-V-LWL NSSHCGEÖU
3×95+3×(1.5STKON+50/3KON)+12 OFE 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.

08 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.

09 Trademark Notice & Intellectual Property

PROTOMONT® and the type designation PROTOMONT (V) NSSHCGEÖU LWL 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-PMT-V-LWL is a FeiChun product designed to equivalent functional performance.

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