PROTOLON (SB) | MV Flexible Trailing Cable | VDE 0250-813

PROTOLON (SB) NTSCGEWOEU-LED 1,8/3 kV

Self-Powered LED | Copper Core Shield

Split Earth | Three-Core | 1,8/3 kV | MSHA | Shovels | Draglines | Mining

FC-CVD™ SELF-POWERED | MSHA P-189-4 | SHD-GC TYPE

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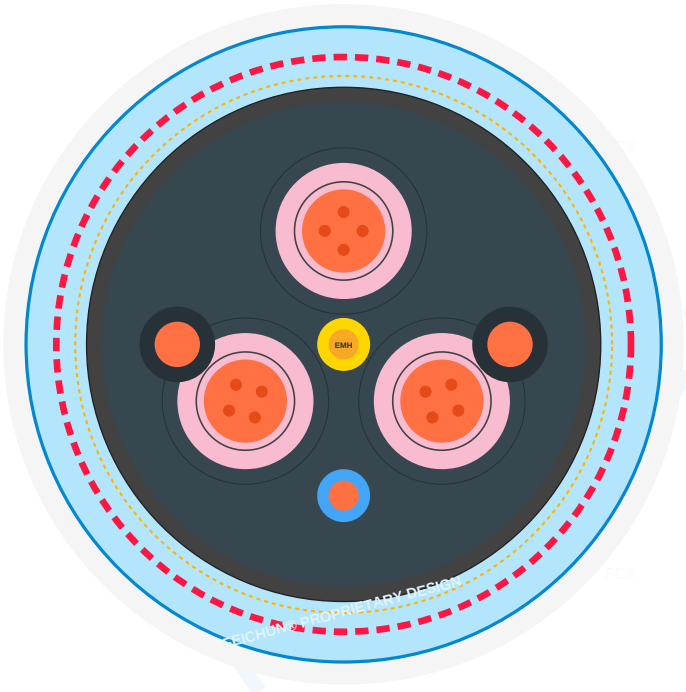
PROTOLON LED

1,8/3 (3,6) kV

LED VISIBILITY UPGRADE

MV power supply cable for large mobile equipment in mines. Trailing cable for use with shovels and draglines in trailing and reeling applications. Extremely robust outer sheath, fully flexible down to Split Earth | Three-Core. Now with FeiChun® integrated self-powered LED illumination.

VDE 0250-813 · GOST-R CERTIFIED · 1,8/3 kV · Split Earth | Three-Core COLD FLEXIBLE · FC-CVD™ SELF-POWERED LED



- Translucent FR-TPU Sheath (FC-TPU™ X-Series)
- Integrated LED Strip (Warning Red 620–630 nm)
- FC-ASB™ Aramid Stress-Relief Braid
- Inner Sheath (EPR compound 5GM3)
- Outer SC Layer (NBR easy-strip)
- EPR Insulation (compound 3GI3)
- Tinned Copper Conductors (Class 5)
- PE Conductors (SC special rubber)
- Pilot Conductor (EPR insulated)
- Aramid Rope Centre + FC-CVD™ Module

Cable Design — LED Upgrade (Inside → Out)

- **Conductors** — Finely stranded copper, tinned, Class 5. PE: Class 5 with SC special rubber.
- **Inner SC Layer** — Semi-conductive EPR. **Insulation** — EPR rubber, compound 3GI3. **Outer SC** — SC NBR easy-strip.
- **Pilot Conductor** — Copper, tinned Cl. 5; EPR insulation.
- **Core Arrangement** — Cores laid around three-core design with split earth conductor in interstices, polyester mesh tape reinforcement. No pilot conductor. No individual core screen..
- **Inner Sheath** — EPR rubber, compound 5GM3.
- **FC-CVD™ Module** — FeiChun® EM induction pickup coil wound around aramid centre support.
- **LED Strip** — Warning red (620–630 nm), silicone encapsulated. **FC-ASB™** aramid stress braid.
- **Outer Sheath** — **Translucent FR-TPU (FC-TPU™ X-Series, FC-2026-TPU-H6). Cold-flex to Split Earth | Three-Core.**

FEICHUN PROPRIETARY FC-TPU™ H-Series (Heavy Trailing) | Formula FC-2026-TPU-H6 | Split Earth | Three-Core | FeiChun Exclusive

PROTOLON (SB) NTSCGEWOEU-LED | FEICHUN® | 1,8/3 kV MV Trailing Cable | VDE 0250-813

1 Standards / Approvals & Operating Parameters

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Based on	DIN VDE 0250-813 | Similar to SHD-GC
Certifications	MSHA P-189-4 | GOST-R/-K/-B Fire Certificate
Conductor	DIN EN 60228 / IEC 60228 / VDE 0295
Flame Retardant	DIN EN 60332-1-2 / IEC 60332-1-2
Tensile / Torsion	15 N/mm² | ±100 °/m
Oil / Ozone / UV	Resistant / Resistant / Resistant
Rated Voltage U_o/U	1,8/3 (3,6) kV | Test: 6 kV
Conductor Temp.	90 °C (250 °C short-circuit, 5 sec)
Ambient (Fixed)	−50 °C to +80 °C
Ambient (Flexible)	−50 °C to +60 °C
Bending Radius	6×D fixed | 10×D flexible | 20×D S-type
Tensile Strength	25 N/mm² | Torsional: ±100 °/m

2 Cable Properties — Physical

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Construction	FeiChun® Part No.	Cond. Dia. mm	Cable Dia. (min) mm	Cable Dia. (max) mm	Weight kg/km	LED Power
3×25+3×25/3	FC-PRTL3-LED-025	6.4	40.0	43.5	2 767	FC-CVD™
3×35+3×25/3	FC-PRTL3-LED-035	7.6	44.0	47.5	3 450	FC-CVD™
3×50+3×25/3	FC-PRTL3-LED-050	9.1	48.0	51.5	4 200	FC-CVD™
3×70+3×35/3	FC-PRTL3-LED-070	10.9	52.0	56.0	5 253	FC-CVD™
3×95+3×50/3	FC-PRTL3-LED-095	12.6	60.0	64.0	6 955	FC-CVD™
3×120+3×70/3	FC-PRTL3-LED-120	14.2	64.0	68.0	8 322	FC-CVD™
3×150+3×70/3	FC-PRTL3-LED-150	15.9	69.5	73.5	9 968	FC-CVD™
3×185+3×95/3	FC-PRTL3-LED-185	17.7	73.5	77.5	11 570	FC-CVD™

Cable diameters/weights include FeiChun® LED system. Weights approx. 10–14 % above standard PROTOLON (SB). All variants FC-CVD™ induction harvesting (≥ 3,6 kV).

FEICHUN SPECIAL CABLES

PROTOLON (SB) NTSCGEWOEU-LED | FEICHUN® | 1,8/3 kV MV Trailing Cable | VDE 0250-813

3 Cable Properties — Electrical / Mechanical

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Construction	Max. Tensile N	Capacit. nF/km	Induct. mH/km	Resist. 20°C Ω/km	Current Cap. A
3×25+3×25/3	1 125	410	0.33	0.795	131
3×35+3×25/3	1 575	470	0.31	0.565	162
3×50+3×25/3	2 250	540	0.29	0.393	202
3×70+3×35/3	3 150	610	0.28	0.277	250
3×95+3×50/3	4 275	660	0.28	0.210	301
3×120+3×70/3	5 400	720	0.27	0.164	352
3×150+3×70/3	6 750	790	0.26	0.132	404
3×185+3×95/3	8 325	860	0.26	0.108	461

Current capacity acc. VDE 0298-4, Tab. 15, surface at 30 °C.

4 FeiChun® FC-CVD™ LED Technology + FC-SPM™ Surge Protection

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 FEICHUN PROPRIETARY FC-CVD™ X-Variant | Cold-Start to Split Earth | Three-Core | Aramid-Centre Wound | FeiChun Exclusive

- **Extreme Cold Start:** FC-CVD™ X-variant with cold-rated capacitors and LDO regulators to Split Earth | Three-Core. LED activates reliably in Siberian/Canadian/Nordic winter mining.
- **Aramid-Centre Coil:** Pickup coil wound around existing aramid rope centre support, utilising cable geometry without modifying the proven core arrangement.
- **Galvanic Isolation:** Zero galvanic connection between LED and 3 kV conductors.
- **Plug-and-Play:** No external DC supply. No switchgear modification. Direct drop-in replacement.

Layer	Component	Function
1	**Magnetic Saturation**	Caps energy at source.
2	**TVS Diodes**	Picosecond clamping of shovel/dragline motor inrush.
3	**Zener / LDO**	12/24 V DC. Cold-rated to Split Earth | Three-Core.
4	**PTC Resettable**	Auto-resets. Zero maintenance.

FEICHUN CABLES

PROTOLON (SB) NTSCGEWOEU-LED | FEICHUN® | 1,8/3 kV MV Trailing Cable | VDE 0250-813

5 Key Advantages & Operational Benefits

FEICHUN®

1 Extreme Cold LED Illumination (Split Earth | Three-Core)

The only illuminated MV trailing cable rated for Split Earth | Three-Core. FC-TPU™ X-Series maintains translucency at extreme sub-zero. FC-CVD™ cold-start electronics activate LED reliably in Siberian, Canadian, and Nordic conditions.

2 Plug-and-Play for Shovels & Draglines

No external DC. No switchgear changes. Direct drop-in replacement. Disconnect → connect → energise → glow.

3 Cable Route Visibility in Harsh Conditions

Continuous red glow across dragline tail-ropes and shovel benches — critical during Arctic darkness, blizzards, and dust storms.

4 VDE 0250-813 + MSHA P-189-4 + GOST-R

Full DIN VDE and GOST-R/-K/-B certification for European, Russian, Kazakh, and CIS markets.

5 FC-TPU™ H-Series Heavy Trailing Durability

Heavy-duty translucent sheath for extreme abrasion. 3–5× abrasion resistance. Oil, ozone, UV resistant.

6 Maintenance-Free FC-SPM™

Four-layer cold-rated surge protection. PTC auto-reset. Zero maintenance.

7 Live Cable Indication

Immediate visual energisation status for isolation and LOTO safety across large open-cut sites.

8 Widest Configuration Range

13 standard constructions from 3×16 to 3×300 mm². FeiChun® part numbers.

FEICHUN SPECIAL CABLES

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