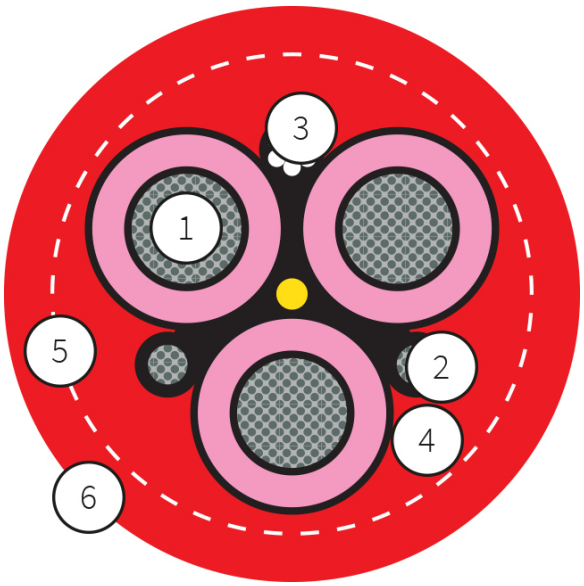
VDE 0250 Part 813 Type Protolon (SMK)-LWL Reeling Cable
8.7/15 kV (N)TSKCGEWOEU 3x25 + 2x25/2 + 12G 62, 5/125



Technical Specifications

1. Application

This Type Protolon (SMK)-LWL (N)TSKCGEWOEU 8.7/15 kV cable is a flexible medium voltage reeling cable integrated with fibre-optics, designed for the combined transmission of energy and data. It is particularly suitable for use in high-stress environments that require extreme mechanical resilience.

Applications include:

Fast-moving container cranes

Large-scale mobile equipment

Scenarios with high travel speeds, dynamic tensile loads, multiple directional changes, and torsional stress.

Design Features

Conductor:

Made fromelectrolytic copper, tinned, finely stranded in accordance with Class FS (VDE 0295), ensuring high flexibility and low electrical resistance.

Insulation: High-quality special compound based on EPR (Ethylene Propylene Rubber), designated PROTOLON HS, offers excellent mechanical and electrical performance. The insulation material meets the 3GI3 standard (DIN VDE 0207, Part 20).

Electrical Field Control:

Inner semiconductive layer made of EPR.
Outer semiconductive layer made ofmodified NBR, designed for easy stripping (cold-strippable) to simplify preparation during installation.

Core Identification: Natural-colored insulation with a black semiconductive layer for easy identification of each core.

Optical Fibre Element:

Core diameter: 62.5 μm

Cladding diameter: 125 μm

Coating diameter: 250 μm

Type: Graded-index fibre

Attenuation:

850 nm: < 3.3 dB/km

1310 nm: < 0.9 dB/km

Bandwidth at 850 nm: > 400 MHz

Bandwidth at 1300 nm: > 600 MHz

Optical fibres are arranged insix tubeswith 12 fibres around a central support element.

Sheath System:

Inner Sheath (PROTOLON Sandwich): Double layer based on EPR (quality at least 5GM3), serving as a water barrier and providing flexibility.

Anti-Torsion Braid: Reinforcedpolyester braidbetween sheaths, offering high mechanical strength to protect against twisting forces.

Outer Sheath (PROTOFIRM Sandwich): Durable rubber compounds based on PCP (Polychloroprene), designed forabrasion resistance,tear-proofing, andweather resistance. The outer layer isbright redfor visibility.

Electrical Parameters

Rated Voltage: 8.7/15 kV

Maximum Operating Voltage (AC): 10.4/18 kV

Maximum Operating Voltage (DC): 13.5/27 kV

AC Test Voltage: 18 kV

Electromagnetic Compatibility (EMC): Designed with low interference levels, thanks to the symmetrical three-core design.

Data Transmission Parameters

Fibre-Optics Design:

Integrated fibre-optics for reliable, high-speed data transmission, essential in systems requiring simultaneous energy and data transfer.

Fibre Type: Graded-index fibre G62,5/125µm

Attenuation:

850 nm: < 3.3 dB/km

1310 nm: < 0.9 dB/km

Bandwidth:

850 nm: > 400 MHz

1300 nm: > 600 MHz

Chemical and Thermal Parameters

Oil Resistance: Compliant with DIN EN 60811-404 and DIN VDE 0473-811

Weather Resistance: Suitable for both outdoor and indoor use.

Resistant to ozone, UV, and moisture.

Water Resistance: Meets the requirements of HD 2216.

Maximum Conductor Temperature: 90°C.

Short Circuit Temperature: 250°C.

Ambient Temperature (fixed installation): -50°C to +80°C.

Ambient Temperature (flexible operation): -35°C to +80°C.

Mechanical Parameters

Maximum Tensile Load:

On the conductor:20 N/mm².

During acceleration: Up to30 N/mm².

Torsional Stress: ± 25 °/m

Minimum Bending Radius: In compliance with DIN VDE 0298, Part 3.

Minimum Distance (S-type Directional Changes): 20 x D (cable diameter).

Travel Speed: For gantry reeling operation, speeds up to 240 m/min (higher speeds require consultation with the manufacturer).