REPLACES TRATOS TRATOSLIGHT-VRDB-FO | 0.6/1 kV | vertical reeling cable | 24E9 | elastomer, yellow

FC-VRDB-FO 30G2.5+24E9 0.6/1 kV

Replacement for Tratos TRATOSLIGHT-VRDB-FO 30G2.5+24E9. Vertical Reeling Control Cable with Integrated Optical Fibres with 24 single-mode fibres E9/125 (G.652.D) – construction, dimensions, weight, current rating, fibre data, standards and installation guidance.

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01 Application and Product Overview

FC-VRDB-FO 30G2.5+24E9 is a vertical Reeling Control Cable with Integrated Optical Fibres rated 0.6/1 kV and the FeiChun replacement for Tratos TRATOSLIGHT-VRDB-FO 30G2.5+24E9. It has an outer diameter of 37.5 – 40.0 mm, weighs about 1,770 kg/km and carries 12 A in free air at 30 °C. The series covers 2.5 – 2.5 mm².

Design

30 numbered cores of 2.5 mm² stranded around a central element that combines a Kevlar®-type self-supporting member with an optical element of 24 single-mode fibres E9/125 (G.652.D). An aramid braid gives torsion protection for high-speed vertical reeling.

Typical applications

- Vertical reeling on spreader reels of STS cranes
- Single-mode fibres for long data links to the terminal or mine control system
- Tender (basket) systems and high-speed vertical reels
- Spreader control and camera or PLC data over fibres in one cable
- Long vertical drops with high tensile load on the central Kevlar®-type element

30G2.5+24E9	0.6/1 kV	12 A	Ø 40.0 mm
Cross-section	Rated voltage U_0/U	Current at 30 °C	Outer dimension, max

Key features

- Plain fine-wire class 5 copper conductors to IEC 60228
- Optical element: 24 single-mode fibres E9/125 (G.652.D) in gel-filled loose tubes
- Travel speed up to 300 m/min
- Anti-torsion braid between inner and outer sheath
- Flame-retardant to IEC 60332-1-2; oil-resistant to EN 60811-404; UV and ozone resistant

Replacement reference

REFERENCE PRODUCT
Tratos TRATOSLIGHT-VRDB-FO 30G2.5+24E9
vertical reeling cable

⇄

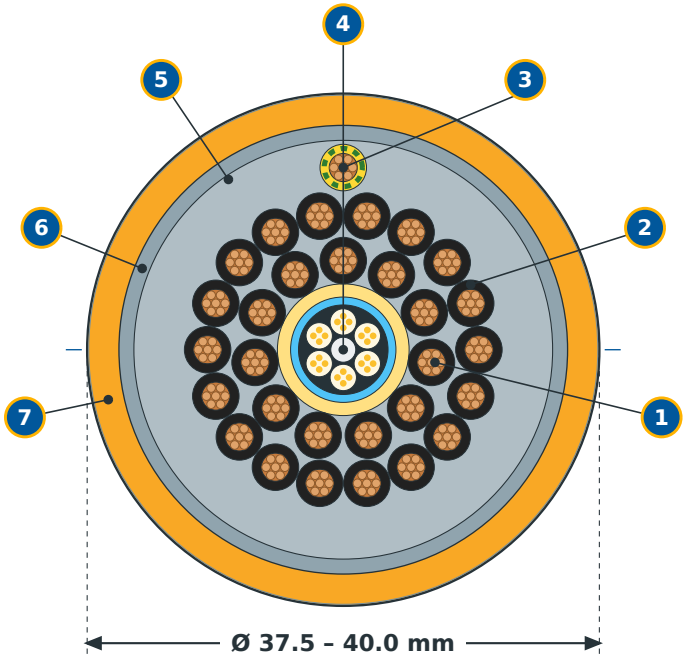
FEICHUN REPLACEMENT
FC-VRDB-FO 30G2.5+24E9 0.6/1 kV
Vertical Reeling Control Cable with Integrated Optical Fibres

The FeiChun cable has the same core configuration, voltage rating and field of application as the reference product. Dimensions and weights are FeiChun design values; compare them with reels, guides and glands before direct replacement.

02 Construction

FEICHUN · CROSS-SECTION A-A · 0.6/1 kV

FC-VRDB-FO
Sample size 30G2.5+24E9 · Rev 0 · Illustrative, not to scale



No.	Component	Material
1	Conductor	Plain fine-wire copper, class 6 to IEC 60228
2	Insulation	Cross-linked elastomer
3	Protective earth conductor	Green-yellow insulated copper
4	Optical element	24 single-mode fibres E9/125 (G.652.D); ETFE tubes around GRP support
5	Filler and anti-torsion braid	Rubber filler; aramid braid
6	Inner sheath	Rubber compound 5GM3
7	Outer sheath	Cross-linked elastomer, yellow, UV-resistant

The drawing shows 30G2.5+24E9. Other sizes have the same construction with scaled dimensions.

Construction details

Construction basis	FeiChun standard construction for vertical reeling cable reeling cables with integrated optical fibres, designed to DIN VDE 0250-813. The core configuration, voltage rating and optical element match the reference type.
Conductor	Plain copper, very finely stranded, class 6 to IEC 60228 / DIN VDE 0295
Insulation	Cross-linked elastomer
Core identification	Black cores with white numbers; green-yellow protective core
Optical element	24 single-mode fibres E9/125 (G.652.D); located at the centre of the cable
Central element	Kevlar®-type self-supporting element
Inner sheath	Elastomer compound
Anti-torsion braid	Aramid braid
Outer sheath	Cross-linked elastomer, yellow, UV-resistant
Marking	FEICHUN FC-VRDB-FO 30G2.5+24E9 0.6/1 kV, metre marking

Optical fibre data

Fibre type	Single-mode E9/125 µm, ITU-T G.652.D
Attenuation, cabled	≤ 0.40 dB/km at 1310 nm; ≤ 0.30 dB/km at 1550 nm
Typical link reach	1 and 10 Gbit/s Ethernet up to 10 km
Optical element	Six gel-filled ETFE buffer tubes (1–4 fibres each) stranded around a central GRP support element, with a rubber element sheath; 250 µm coated fibres
Fibre identification	Colour code to IEC 60304 / DIN VDE 0888; tubes colour-coded
Fibre strain	Fibres lie with excess length in the tubes so that reeling strain is not transferred to the fibres
Optical test	Attenuation of every fibre measured by OTDR after cabling; values in the test certificate

Sheath material

The yellow cross-linked elastomer sheath is UV-resistant and keeps its elasticity in high-speed vertical reeling; the colour improves visibility on the spreader.

03 Electrical, Thermal and Mechanical Data

Electrical data

Rated voltage U_0/U	0.6/1 kV AC
Test voltage	3.5 kV AC, 5 min
Current-carrying capacity	DIN VDE 0298-4, 30 °C ambient; see table
Conductor resistance	Maximum at 20 °C, class 5 to IEC 60228

Thermal and mechanical data

Maximum conductor temperature	+90 °C
Short-circuit temperature	+250 °C
Ambient temperature, fixed	-40 … +80 °C
Ambient temperature, moving	-30 … +80 °C
Minimum bending radius, moving	See table (7 × D)
Maximum tensile load	15 N/mm² of copper cross-section of the power cores
Maximum travel speed	300 m/min
Flame propagation	IEC 60332-1-2
Halogen-free sheath	No
Oil, ozone and UV resistance	Resistant

04 Dimensions, Weights and Ratings

The highlighted row is 30G2.5+24E9; the adjacent sizes of the series are shown for comparison.

Type designation	Article no.	Conductor Ø max mm	Outer Ø min mm	Outer Ø max mm	Min. bend radius mm	Weight approx. kg/km	Max. pull N	R_{20} max Ω/km	Current per core A	I_k (1 s) kA
30G2.5+24E9	**FC-FO2103-30G2524E9**	**2.2**	**37.5**	**40.0**	**280**	**1,770**	**1,120**	**7.98**	**12**	**0.357**

Current-carrying capacity: design values to DIN VDE 0298-4, free air, 30 °C ambient; values per core include the derating for the number of cores. Pull force = 15 N/mm² × copper cross-section of the power cores. Dimensions and weights are nominal design values within manufacturing tolerances.

Ambient temperature factors

°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

I_k = 0.143 kA/mm² × conductor cross-section for 1 s; for duration t: $I_{k,t} = I_{k,1s} / \sqrt{t}$.

05 Reel Design Data

Rated current for the number of layers on the reel (DIN VDE 0298-4 factors 0.80 / 0.61 / 0.49 / 0.41) and the minimum reel core diameter (2 × bending radius).

Type designation	Outer Ø max, mm	Min. reel core Ø, mm	Copper, kg/km	1 layer, A	2 layers, A	3 layers, A	4 layers, A
30G2.5+24E9	**40.0**	**560**	**670**	**10**	**7**	**6**	**5**

06 Selection Guide

Typical use: 30G2.5+24E9 carries 29 control circuits at up to 12 A per core; one cable of this type replaces 14 two-wire connections on the reel or festoon.

Example. A circuit carries 9 A at 40 °C ambient. Required table current = 9 / 0.91 = 10 A, so 30G2.5+24E9 (12 A) is suitable.

On a reel with 2,500 mm flange diameter, 1,000 mm traverse and 560 mm core, about 2,580 m of 30G2.5+24E9 can be wound (indicative).

07 Standards and Testing

Standard	Scope
DIN VDE 0250-814	Design reference for the construction
IEC 60228 / DIN VDE 0295	Conductors, class 5 and 6
DIN VDE 0207-20 / -21	Insulation and sheath compounds
DIN VDE 0298-3 / -4	Bending radii, tensile loads and current ratings
IEC 60332-1-2	Flame propagation, single cable
EN 60811-404	Mineral oil resistance
ITU-T G.652.D	Single-mode optical fibres
IEC 60794-1-21	Optical cables – mechanical test methods

Routine and type tests

- AC voltage test on every delivery length: 3.5 kV, 5 min
- Conductor resistance, dimensions and insulation thickness
- Continuity of all conductors and fibres
- Flame propagation, IEC 60332-1-2 (type test)

Test documentation: every delivery comes with a test certificate from FeiChun's own laboratory; third-party witnessed tests can be arranged at the buyer's cost.

08 Installation, Marking and Delivery

Installation guidance

- Unwind the cable tangentially from the drum; avoid loops, kinks and pulling over the drum flange.
- Keep the bending radius and tensile load within the values in this datasheet.
- Protect trailing cables from being run over; use cable bridges or hangers where vehicles cross.
- Connect the protective conductor at both ends before the other cores.

Sheath marking

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FEICHUN FC-VRDB-FO 30G2.5+24E9 0.6/1 kV [year] [metre mark]
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Packing and delivery

Packing	Steel or fumigated wooden drums; cable ends sealed
Delivery length	As ordered, in one continuous length
Lead time	2–3 weeks after technical approval
Warranty	1 year, covering failures not caused by human factors
Terms	FCA buyer's nominated forwarder's warehouse in China (Incoterms 2020); prices subject to LME copper

Order example: FC-VRDB-FO 30G2.5+24E9 0.6/1 kV – replacement for Tratos TRATOSLIGHT-VRDB-FO 30G2.5+24E9, 500 m on one drum. State type, cross-section, voltage, length per piece and installation conditions when requesting a quotation.

09 Certification and Quality

FeiChun holds CE (Low Voltage Directive), EAC and UKCA certificates and an ATEX documentation verification for defined product groups. Whether a certificate scope covers this construction is confirmed per project. All cable is routine-tested over 100 % of the delivered length.

10 Related Datasheets

- FC-VRDB-FO 30G2.5+12G62.5 0.6/1 kV – replaces Tratos TRATOSLIGHT-VRDB-FO
- FC-VRDB-FO 30G2.5+24G62.5 0.6/1 kV – replaces Tratos TRATOSLIGHT-VRDB-FO
- FC-VRDB-FO 30G2.5+24G50 0.6/1 kV – replaces Tratos TRATOSLIGHT-VRDB-FO
- FC-VRDB-FO 24G2.5+12G62.5 0.6/1 kV – replaces Tratos TRATOSLIGHT-VRDB-FO
- FC-VRDB-FO 36G2.5+12G62.5 0.6/1 kV – replaces Tratos TRATOSLIGHT-VRDB-FO
- FC-VRDB-FO 42G2.5+12G62.5 0.6/1 kV – replaces Tratos TRATOSLIGHT-VRDB-FO

Library overview: FeiChun replacements for Tratos fibre-optic reeling cables

Frequently asked questions

Can FC-VRDB-FO 30G2.5+24E9 replace Tratos TRATOSLIGHT-VRDB-FO 30G2.5+24E9?
Yes. It has the same core configuration, voltage rating, optical-fibre type and count, and field of application. Compare outer dimension, bending radius, weight and the fibre-optic rotary joint (FORJ) channels with your reel before ordering; FeiChun confirms suitability on request.

What are the outer diameter and minimum bending radius of 30G2.5+24E9?
Outer diameter 37.5 – 40.0 mm; minimum bending radius in moving operation 280 mm (7 × D).

Which optical fibres are included?
24 single-mode fibres E9/125 (G.652.D). Other fibre counts and types (E9/125, G50/125, G62.5/125 or combinations) are available on request.

How are the fibres connected on the reel?
Through a fibre-optic rotary joint (FORJ) on the reel axis, normally combined with the slip-ring assembly. Match the FORJ channels and fibre type (single-mode or multimode) to the fibres in use and keep spare fibres for later expansion.

What current can 30G2.5+24E9 carry?
12 A in free air at 30 °C. Apply the temperature factors and, on reels, the layer factors in this datasheet.

11 Trademark Notice and Intellectual Property

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