Technical specification

Cable ladder 67 in U23X

Description

Use

- For support and distribution of large-calibre power and communication cables.
- Cable ladder system for indoor and outdoor applications. Suitable for humid, saline and chemical environments. Good behaviour against the UVs and outdoor exposure. Made in U23X and U48X, materials boasting wide experience in outdoor use. (1, 2)

Advantages

- Insulating Cable ladder system with no earthing required.
- Unex Cable ladder is entirely manufactured in insulating material (U23X and U48X). The whole mass is resistant to corrosion. Suitable for humid, saline and chemical environments. (2)
- Provides better cable ventilation and less dirt holding due to its open base.
- Allows 2 and 3 m distance between supports, at full load, due to its robustness.
- Good performance with exposure to the UVs and to the elements.
- The cable ladder is insulating and does not require earthing.

Easy-to-install

- The Cable ladder profiles are supplied completely factory assembled and ready-to-install. They are 3m long and have rungs every 300 mm.
- Perforated rungs and side rails.
- Fast junction system with thermal expansion absorption.
- Rungs compatible with standard 21x41 rail nut for fixing cable clamps or other elements.
- Full set of series production fittings making a ready-to-mount KIT. Available in standard bend radii of 300 mm and 600 mm.
- Provided with a wide range of cable cleats in U48X compatible with rungs for a durability equivalent to that of the cable ladder.
- Easy-to-cut. No burrs or sparks when cutting.

Design

- Sturdy profiles made of high quality extrusion with the definitive form of use and solid walls. No adhesive, rivets or screws to fix rungs to the side rails, increasing the durability of the ensemble.
- Junctions with thickness equal or higher than the side rails.
- Profiles compatible with the standard cover and divider of Unex insulating cable tray 66.
- Colour: Grey RAL 7035.

Mounting instructions

- To fulfil the characteristics defined herein, the installation must be carried out in accordance with the manufacturer` s assembly instructions provided in the main product packaging and also available on the website www.unex.net.

Product composition

- Silicone contents: Without silicone (<0,01%).
- RoHS Directive compliance: Compliant .

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Quality Marks (3)

EN 61537:2007 European Cable tray and Cable Ladder standard
Licence nº: 030/002558

EN 61914: 2016 European Standard for cable cleats Cable cleats in U48X. Licence nº: 40048000

ANSI / UL 568: 2009 - CAN/CSA C22.2 No. 126.2-02
Licence nº: E335136

GOST R 52868:2007 POCC.RU.C-ES-AK01.H.02882/19

Approvals (3)

FZ-123-FZ
POCC RU C-ES.AK01.H.02882/19

Characteristics

BS EN 61537:2007 (IEC 61537:2006) International Cable tray and Cable Ladder standard

Min./max. transport, storage, installation and application temperature	-20 ºC up to +60 ºC.
Impact resistance (5)	20 J at -20 ºC
Electrical characteristics	• Cable ladder system: • Non-metallic. • Without electrical continuity. • Non-conductive.
Resistance to flame propagation acc./ EN 60695-11-2:2003 (6)	Non flame propagating system.
Coating	• Without coating. • Except refs. 67812-48 and 67822-48 (Steel with organic coating)
% Perforation of the base area of cable ladder	Class Y (more than 80% up to 90%)
Available dimensions H:85 mm	• external: 85x200, 85x300, 85x400, 85x500 and 85x600 • useful : 48x147, 48x247, 48x347, 48x443 and 48x543
Available dimensions H:135 mm	• external: 135x200, 135x300, 135x400, 135x500 and 135x600 • useful : 82x120, 82x220, 82x320, 82x420 and 82x520
Safe Working Load (SWL) acc. Test Type I	• See load and span diagrams by reference in Annex. • H: 85 mm: 2 m at 40 ºC and 1,5 m at 60 ºC • H: 135 mm: 3 m at 40 ºC and 2 m at 60 ºC

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BS EN 61537:2007 (IEC 61537:2006) International Cable tray and Cable Ladder standard

Safe Working Load (SWL) Test conditions	• T = +40 °C, T = +60 °C. • Longitudinal deflection lower than 1%. • Transverse deflection lower than 5%. • Test Type I : the junction between two lengths of cable ladder is placed in the midpoint of the span (the worst situation for testing) so that in a real situation the junction can be placed at any point between two supports. • The cable ladder system must be able to support 1,7 times the safe working load (SWL) without collapse.
Glow-wire test acc./ IEC 60695-2-11:2001 (6)	Severity degree 960°C.
Performance against corrosion (humid and saline)	Inherently resistant to corrosion and therefore do not require testing.

DIN 8061 and ISO/TR 10358

Performance against chemical ambiances	Chemical resistance against different substances defined by the standard depending on the concentration and temperature.

EN 61914:2016 (IEC 61914:2015) International Cable Cleat standard

Material (4)	Non metallic
Minimum and Maximum temperature for permanent application	-25 °C up to +60 °C
Impact resistance	• Medium (2 J) 67741-48, 67751-48, 67761-48, 67771-48, 67791-48 • Light (1 J) 67701-48, 67711-48, 67721-48, 67731-48
Resistance to electromechanical forces	Not declared
Maximum lateral and axial load	• 67701-48 - Dmin= 8 mm Q=0,24 kg / Dmax=12 mm Q=0,36 kg • 67711-48 - Dmin=12 mm Q=0,36 kg / Dmax=16 mm Q=0,48 kg • 67721-48 - Dmin=16 mm Q=0,48 kg / Dmax=22 mm Q=0,66 kg • 67731-48 - Dmin=22 mm Q=0,66 kg / Dmax=28 mm Q=0,84 kg • 67741-48 - Dmin=28 mm Q=0,84 kg / Dmax=34 mm Q=1,36 kg • 67751-48 - Dmin=34 mm Q=1,36 kg / Dmax=40 mm Q=1,60 kg • 67761-48 - Dmin=40 mm Q=1,60 kg / Dmax=46 mm Q=1,84 kg • 67771-48 - Dmin=46 mm Q=1,84 kg / Dmax=52 mm Q=2,08 kg • 67791-48 - Dmin=58 mm Q=2,08 kg / Dmax=64 mm Q=2,56 kg
Resistance to the UV light	Resistant
Resistance to corrosion (humid and saline)	Inherently resistant. No testing required.

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Constructive and Functional characteristics

- Junctions: The junction's thickness is equal or higher than the one of the joined lengths of ladder and has longitudinal holes to absorb expansion.
- Supports: Supports manufactured in insulating material available.
- Product packaging: Product perfectly packaged and clearly identified.

Compulsory regulations

Conformity with the demands of European Directive 2014/35/EU

CE Marking [6]	• Insulating cable ladder 67. • Conformity with standard EN 61537:2007.
CE Marking [4]	• Cable cleats 67. • Conformity with the standard EN 61914:2016.

Characteristics of U23X raw material

- Base raw material: PVC.
- Silicone contents: <0,01%.
- Phthalate contents according to ASTM D2124-99:2004: <0,01%.
- Dielectric strength according to EN 60243-1:2013: 18±5 kV/mm.
  Test sample thickness 2,5 mm.
- Reaction to fire according to UNE 201010:2015: Classification: M1.
- UL flammability tests on plastic materials according to ANSI/UL 94: 1990: Degree UL94: V0.
- L.O.I. Oxygen index according to EN ISO 4589:1999 + A1:2006: (Concentration %) = 52±5.
- Coefficient of linear expansion: 0,07 mm/°C m. [7]
- Behaviour to chemicals exposure: The ISO/TR 10358 and DIN 8061 standards indicate the behaviour of rigid PVC when exposed to a series of chemical products, depending on the temperature and concentration.
  It is resistant to the majority of:
  - Oils (mineral, vegetable and paraffins)
  - Organic and inorganic acids (diluted or concentrated)
  - Fatty acids
  - Alcohols
  - Carbonates, Phosphates, Nitrates, Sulphates and other saline solutions
  - Aliphatic hydrocarbons
  - Hydroxides (diluted or concentrated)

  However, it is not resistant to the majority of:
  - Amines
  - Ketones
  - Phenols
  - Aromatic hydrocarbons [7]
- Resistance to ozone according to ASTM D-1149: No cracks magnified to 2.
- UL Approval: UL File E317944 (only extrusion formula, grey and blue colour).

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Characteristics of U48X raw material

- Base raw material: 100% recycled halogen free thermoplastic
- Halogen contents according to EN 50642: 2018: Halogen free
- Silicone contents: <0,01% (8)
- Phthalate contents according to ASTM D2124-99:2004: <0,01% (8)
- Dielectric strength according to IEC 60243-1:2013: 18±5 kV/mm
  Test sample thickness 2,0 mm.
- Reaction to fire according to NF F 16-101:1998: Class F2
- UL flammability tests on plastic materials according to ANSI/UL 94: 1990: Degree UL94: V0
  Test sample thickness 3,2 mm
- L.O.I. Oxygen index according to EN ISO 4589:1999: (Concentration %) =32±3
  Test sample thickness 3,2 mm
- Coefficient of linear expansion: 0,07 mm/°C m. (7)
- Behaviour to chemicals exposure: It is resistant to the majority of:
  - Oils (mineral, vegetable and paraffins)
  - Diluted acids
  - Fatty acids
  - Alcohols
  - Carbonates, Phosphates, Nitrates, Sulphates and other saline solutions
  - Aliphatic hydrocarbons
  - Diluted hydroxides

  However, it is not resistant to the majority of:
  - Amines
  - Ketones
  - Phenols
  - Aromatic hydrocarbons (9, 7)

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Notes

1. In outdoor installations or in aggressive chemical environments it is necessary to periodically check the installation.

2. Some parts are made in U48X. For more details, see the Part number's chart.

3. Except for new part numbers, which are under process of obtaining quality marks and approvals. See updated information of each part number on www.unex.net

4. Tested according to standard prescriptions of EN 61914:2016 . Equivalent to IEC 61914:2015 Cable cleat standard.

5. -50ºC/-70ºC (20 J H:135 mm, 10 J H: 85 mm)

6. Tested according to standard prescriptions of EN 61537:2007 . Equivalent to IEC 61537:2006 Cable tray and cable ladder standard.

7. All features marked are based on random tests of the material in the manufacture of our products. However, they only reflect the values accepted by the raw material manufacturers, which are provided only as information and guidance.

8. Detection limit for the analytical technique applied.

9. For aggressive chemical environments (concentrated acids ans hydroxides) we strongly recommend, if possible, the use of the product in U23X.

* All information contained herein is completely objective and is the result of a wide experience in satisfying our costumers' requirements . For more details, please visit our website.

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