HELUPOWER® ROBOFLEX® HYBRID-D PUR UL/CSA

Hybrid cable, EMC-preferred type

TECHNICAL DATA

PUR robot cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

Temperature range	flexible -30°C to +90°C fixed -40°C to +90°C
Nominal voltage	VDE AC U_0/U 600/1000 V UL (AWM) AC 1000 V
Test voltage core/core	3000 V
Minimum bending radius	fixed 5x Outer-Ø flexible: see properties

CABLE STRUCTURE

- Copper wire bare, 0.5 - 6 mm²: extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Wire structure: 0.25 mm²: approx. 32 x 0.1 mm
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits;
  Identification of control pairs:
  0.25 mm²: acc. to DIN 47100 (paired stranding)
  0.5 – 1.5 mm²: 1 pair – numbers 5+6; 2 pairs – numbers 5+6, 7+8
- G = with protective conductor GN-YE,
  x = without protective conductor
- Control cores stranded in pairs with optimal lay lengths
- Fleece wrapping of the pairs
- Screening element: control pairs, helically wound tinned copper wires, approx. coverage 90%, Fleece wrapping
- Control pairs and power cores stranded with optimally matched lay lengths
- Fleece wrapping
- Screen: helically wound tinned copper wires, approx. coverage 90%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- smooth, high-quality core insulation for eased sliding and optimized core stranding ensure long service-life within applications that request combined bending and torsion movements
- for outdoor use
- torsion rated
- suitable for use in drag chains
- Torsion parameters
  Acceleration (max.): 60 °/s²
  Velocity (max.): 180 °/s
  Minimum bending radius: 10x Outer-Ø
  Torsional stress up to 180 °/m: 5 Mio. Cycles (max.)
- Drag chain parameters
  Acceleration (max.): 10 m/s²
  Velocity (max.), unsupported: 3 m/s
  Velocity (max.), gliding: 2 m/s
  Traverse path (max.): 10 m
  Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø
  Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø
  Bending cycles (max.): 5 Mio.
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

APPLICATION

Hybrid cable designed for combined torsion and bending movements consisting of components for power supply and the transmission of control signals; for use in robot control devices, assembly and welding robots, in material handlings and automation centres, in transport and conveyor systems, on rotary and swivel tables and wherever a defined cable routing with only alternating bending movements is not applicable, but 3D-movements and torsional load have an impact on the cable; for applications with the highest requirements on mechanical, chemical and thermal resilience. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the D-screen.

NOTES

- Part no. 11022491: Power cores stranded in pairs; identification: number 1+2, number 3+GN-GE
- for use in energy supply systems:
  1) the assembly instructions must be observed
  2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

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Part no.	No. cores x cross-sec. mm²	Outer Ø mm, approx.	Cu-weight kg/km	Weight kg/km, approx.
11022484	(4 G 1.5 + (2 x 0.5)D)D	10.3	111.0	185.0
11022485	(4 G 2.5 + (2 x 0.5)D)D	12.4	156.0	256.0
11022486	(4 G 2.5 + (2 x 1)D)D	12.8	171.0	279.0
11022487	(4 G 4 + (2 x 0.5)D)D	13.5	216.0	329.0
11022488	(4 G 4 + (2 x 0.75)D)D	14.0	225.0	346.0
11022489	(4 G 4 + (2 x 1)D)D	14.0	233.0	348.0
11022490	(4 G 6 + (2 x 1)D)D	15.9	330.0	455.0
11022491	(4 G 1.5 +2 x (2 x 1.5)D)D	14.4	203.0	314.0
11022492	(4 G 2.5 +2 x (2 x 0.75)D)D	14.0	200.0	322.0
11022493	(4 G 2.5 +2 x (2 x 1.5)D)D	15.4	241.0	385.0
11022494	(4 G 4 +4 x (2 x 0.25)D)D	16.3	216.0	329.0