



3D torsion robot Ethernet cable

Robot Ethernet Cable

 $\pm 180^\circ/\text{m}$ 3D torsion & drag-chain Cat.5e / Cat.6A / SPE robot Ethernet cable

PROFINET Type R / Cat.6A

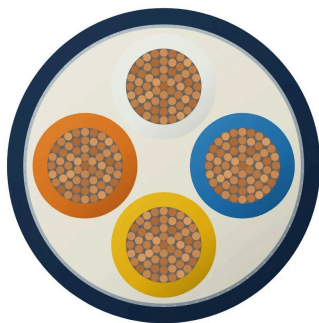
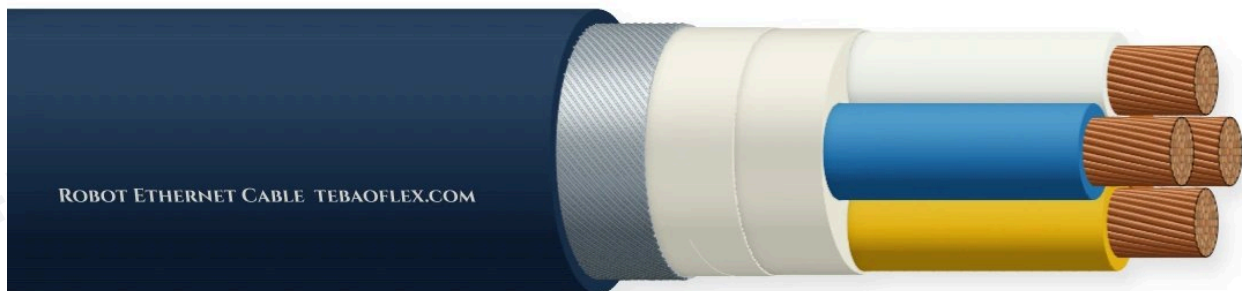
 $100\ \Omega \pm 15\ \Omega$ $\pm 180^\circ/\text{m} + \text{Drag-Chain}$

Application

100 Ω high-speed industrial Ethernet cable built with 19-wire concentric stranded copper (AWG 22/19 to AWG 26/19), cellular Foam-Skin PE insulation, PTFE slip wrap, S/FTP or SF/UTP screening and weld-spatter PUR jacket for $\geq 5\text{M}$ $\pm 180^\circ/\text{m}$ robot cycles.

Typical uses: 3D Bin-Picking & GigE Vision Cameras, PROFINET Type R Robot Cells, EtherCAT & EtherNet/IP Cobots, Laser Seam-Tracking Weld Sensors, Automated Optical Inspection (AOI)

Construction



Cross-section, not to scale

- 1 19-wire concentric stranded conductor
- 2 Foam-Skin PE dielectric
- 3 Pair foil screen (PiMF) or Star-Quad filler
- 4 PTFE anti-friction sliding wrap
- 5 Torsion-optimised copper braid
- 6 Outer robot PUR jacket

Technical data

Typical values

Characteristic impedance	100 Ω ± 15 Ω (1–100 MHz / 1–500 MHz)	Rated voltage U0/U	300 V (UL AWM 21576 up to 1000 V jacket)
AC test voltage	1500 V AC core/core and core/screen	Mutual capacitance	≈ 45–48 pF/m at 1 kHz (77 % NVP)
PoE / PoDL capability	IEEE 802.3af/at/bt (4PPoE up to 90 W)	Temperature, flexing	–40 °C to +80 °C
Temperature, fixed installation	–50 °C to +80 °C	Max. conductor temperature	+80 °C
Torsional stress	±180°/m over 1 m vertical robot loop	Endurance cycles	≥ 5M torsion cycles + ≥ 5M drag-chain cycles
Min. bending radius, moving	7.5 × OD (3D robot & drag chain)	Min. bending radius, fixed	4 × OD
Max. acceleration	Up to 20 m/s ² (3D wrist) · 30 m/s ² (chain)	Oil resistance	DIN EN 50363-10-2 · UL Oil Res I & II
Flame retardance	IEC 60332-1-2 · UL 1581 FT1 / VW-1	Halogen-free / Smoke density	IEC 60754-1/2 halogen-free PUR
Silicone & LABS	LABS-free per VW PV 3.10.7 (paint-shop safe)	Standards	IEC 61156-6 · ISO/IEC 11801 · PROFINET Type R

Sizes

12 standard constructions

Tick the sizes you need and send this page to info@tebaoflex.com or WhatsApp +86 185 9591 3361.

Order designation	Configuration	Protocol & bandwidth	Outer Ø ≈ mm	Total Cu kg/km	Weight ≈ kg/km	Min. bend R moving mm
Cat.5e PROFINET Type R & EtherCAT Robot Cables (100 Mbps – 1 Gbps) 5 sizes						
☐ ROBOT-ETH 2×2×AWG22/19 Cat.5e	1×4×AWG22/19 (Star-Quad)	PROFINET Type R · 100 Mbps	6.5	34	58	49
☐ ROBOT-ETH 2×2×AWG24/19 Cat.5e	2×2×AWG24/19 SF/UTP	EtherCAT / Profinet Patch · 100 Mbps	5.8	26	46	44
☐ ROBOT-ETH 2×2×AWG26/19 Cat.5e	2×2×AWG26/19 SF/UTP	Ultra-Flex Cobot Wrist · 100 Mbps	5.2	21	38	39
☐ ROBOT-ETH 4×2×AWG26/19 Cat.5e	4×2×AWG26/19 SF/UTP	4-Pair Gigabit Robot Bus · 1 Gbps	6.4	33	56	48
☐ ROBOT-ETH 4×2×AWG24/19 Cat.5e	4×2×AWG24/19 SF/UTP	Long-Run Gigabit Robot Bus · 1 Gbps	7.1	42	68	53
Cat.6A / Cat.7 S/FTP GigE Vision & 3D Camera Robot Cables (10 Gbps) 3 sizes						
☐ ROBOT-ETH 4×2×AWG26/19 Cat.6A	4×2×AWG26/19 S/FTP	GigE Vision Camera · 10 Gbps (500 MHz)	6.8	38	62	51
☐ ROBOT-ETH 4×2×AWG24/19 Cat.6A	4×2×AWG24/19 S/FTP	Long-Run GigE Vision · 10 Gbps (500 MHz)	7.6	48	78	57
☐ ROBOT-ETH 4×2×AWG23/19 Cat.7	4×2×AWG23/19 S/FTP	High-Bandwidth 3D Scanner · 10 Gbps (600 MHz)	8.2	56	92	61
Single Pair Ethernet (SPE) & Hybrid Ethernet + 24 V Power Robot Cables 4 sizes						
☐ ROBOT-ETH 1×2×AWG22/19 SPE	1×2×AWG22/19 S/FTP	Single Pair Ethernet 1000BASE-T1	4.6	18	32	34
☐ ROBOT-ETH 1×2×AWG26/19 SPE	1×2×AWG26/19 S/FTP	Miniature Gripper SPE + PoDL	3.9	13	24	29
☐ ROBOT-ETH 2×2×AWG22+4×0.75	1×4×AWG22/19 + 4×0.75	PROFINET Type R + 24 V Power Hybrid	8.8	62	108	66
☐ ROBOT-ETH 4×2×AWG26+2×1.0	4×2×AWG26/19 + 2×1.0	GigE Vision Camera + 24 V Trigger/Light	8.5	58	98	64

– All configurations use 19-wire concentric stranded conductors (/19) rather than 7-wire (/7) to survive ≥ 5 million ±180°/m torsion cycles.

RF transmission & DC parameters

6 sizes

Conductor gauge	Category class	Max. loop R @ 20 °C Ω/km	Attenuation @ 100 MHz dB/100m≤	NEXT @ 100 MHz dB≥	Max. channel length (m)
AWG 22/19 (0.34 mm ²)	Cat.5e PROFINET Type R	115	21.0	35	85
AWG 24/19 (0.22 mm ²)	Cat.5e SF/UTP	175	24.5	35	70
AWG 26/19 (0.14 mm ²)	Cat.5e SF/UTP	280	29.0	35	55
AWG 26/19 (0.14 mm ²)	Cat.6A S/FTP (500 MHz)	280	26.8	65	60
AWG 24/19 (0.22 mm ²)	Cat.6A S/FTP (500 MHz)	175	22.5	68	75
AWG 23/19 (0.28 mm ²)	Cat.7 S/FTP (600 MHz)	145	19.5	72	80

- S/FTP (PiMF) constructions maintain ≥ 65 dB NEXT at 100 MHz and pass Class EA link testing up to 500 MHz even under dynamic torsion.

Standards and approvals

- ✓ PROFINET Type R (Robot) Compliant
- ✓ UL AWM Style 21576 (80 °C 1000 V) & CMX
- ✓ CE, RoHS 2 (2011/65/EU) & LABS-Free

Certifications



Management systems: ISO 9001, ISO 14001, ISO 45001

Request a quotation

Send the size, length and destination. An application engineer replies within 2 business hours.

WhatsApp / phone

+86 185 9591 3361

Email

info@tebaoflex.com

Web

tebaoflex.com/cables/robot-ethernet-cable



Typical values for this cable type, based on IEC 61156-6 / PROFINET Type R. Values for your order are confirmed in the quotation. Subject to change without notice.
Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.