

Connectors

The components in the «Connector» range are designed to carry control and/or power signals between the different parts of an automated system.

The range includes, among others, the M8, M12, M23 and field bus standards (Ethernet, Profinet, Interbus, etc.).

Connectors

The connector range includes several different types:

- **field attachable connectors**, recommended for small series or bespoke machines with the possibility of connecting the cable oneself.



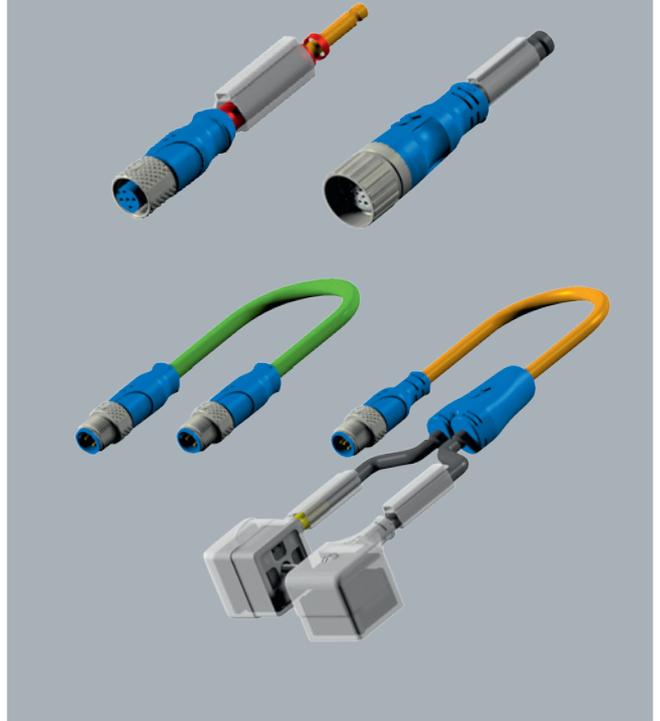
- **receptacles & panel feed-throughs**, recommended for flush through mounting (*enclosures or cabinets for example*).



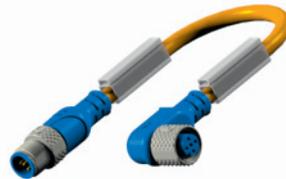
- **CORDS**, recommended for applications requiring a connector only at one end. Length and construction will vary according to need.



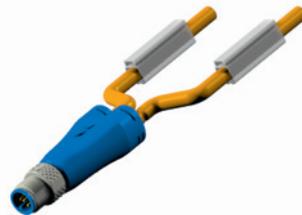
Some examples:



- **extensions** (*a connector at each end*). When the distances and type of connection are known, it is preferable to use standard length extensions (*1, 2, 5 or 10 m*). Specific lengths are available on request.



- **Y cable connection**, when it is necessary to be able to connect two sensors or pre-actuators to a single connector, with a predefined cable length. The Y-cable range includes several connection modes and several wiring schemes.



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- **T cable connections**, a compact solution allowing two sensors or pre-actuators to be connected to the connector.



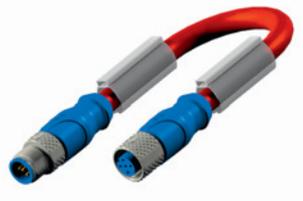
- **LED connectors** used to indicate states.



- **shielded connectors**: the answer to the need to protect sensitive signals (*field bus, analogue signals*) in environments where there is interference (*EMC*) can be found in our shielding technologies: continuity of the shielding with a contact or peripheral shielding (*continuity with the locking ring, 360° shielding*).



- **connectors with protective sleeving for the cables.**



- **connectors with a sleeve to protect against solder splashes.**



- **adapters.**



- **cables.**



Special products

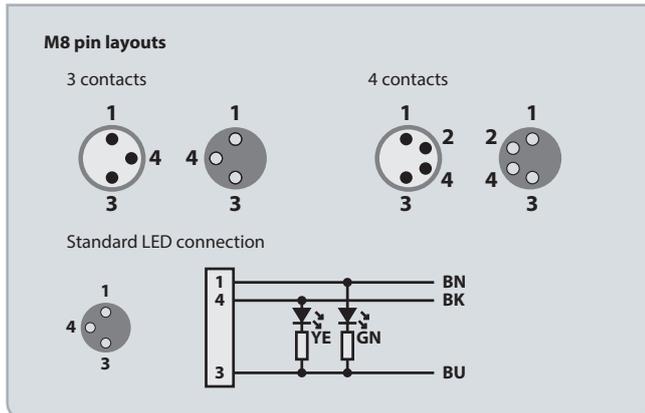
Specific solutions can be designed to meet your specifications: cable protection (*braided shielding, etc.*), made-to-measure junction boxes, specific assemblies (*bundles, etc.*), etc.



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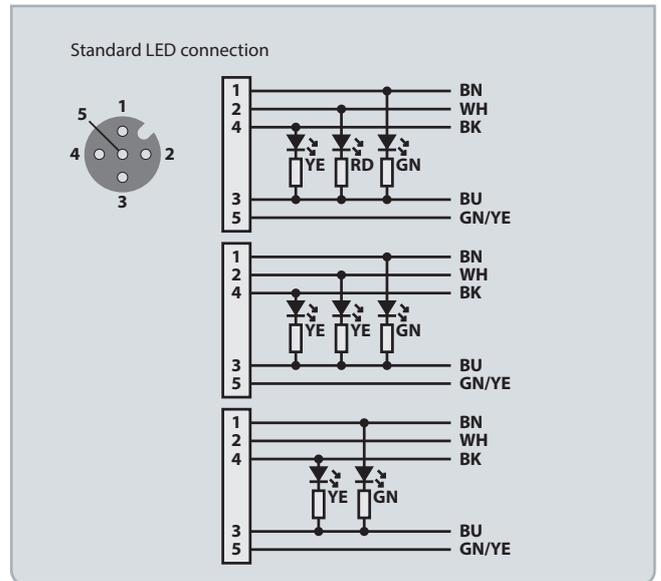
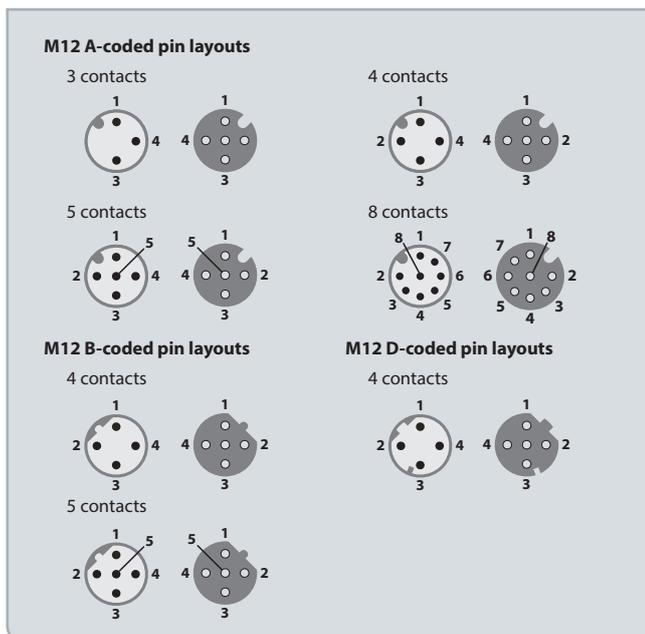
M8 connector series

The M8 connector range includes field attachable connectors, cords, extensions, T and Y cable connections and receptacles. The connectors are available in 3 and 4-contact versions (*with or without LEDs*). The locking rings can be nickel-plated brass, teflon-coated brass or stainless steel. A special sleeve is also provided to protect the locking rings against solder splashes.



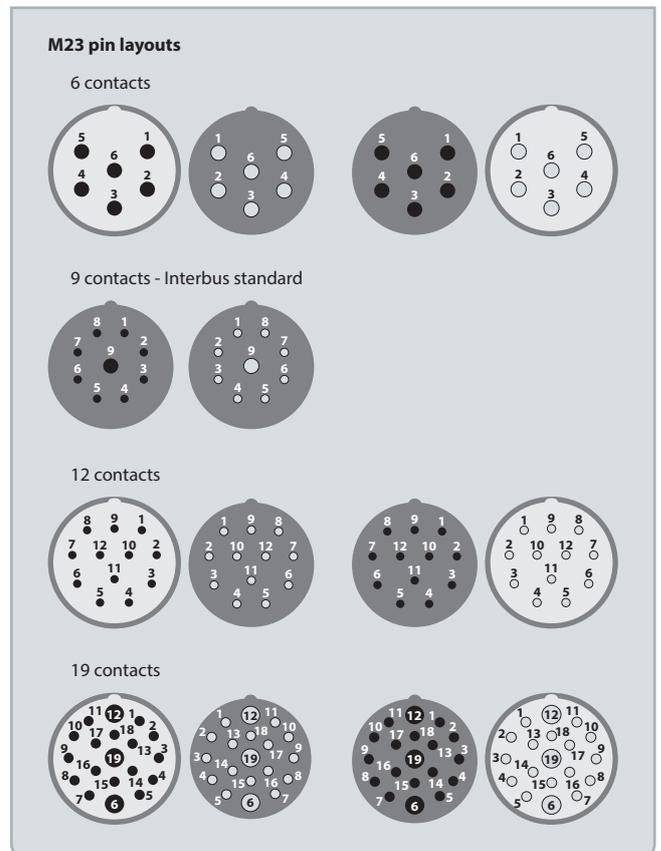
M12 connector series

The M12 connector range includes field attachable connectors, cords, extensions, T and Y cable connections and receptacles. The connectors are available in 3, 4, 5 and 8-contact versions (*with or without LEDs*), shielded or non-shielded. The locking rings can be nickel-plated brass, nickel-plated zamak, teflon-coated brass or stainless steel. A special sleeve is also provided to protect the locking rings against solder splashes.



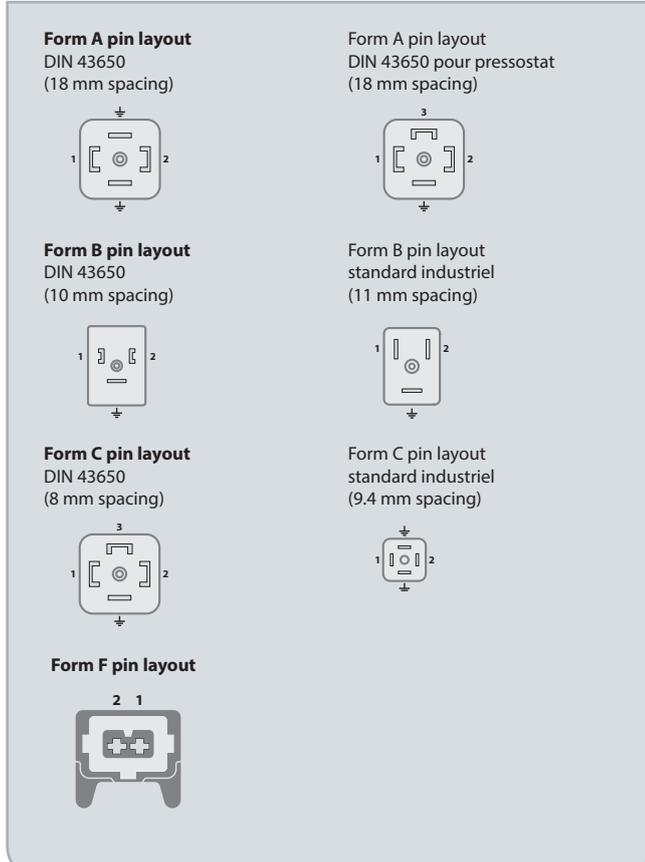
M23 connector series

The M23 connector range includes field attachable connectors, cords, extensions and receptacles. The connectors are available in 6, 9, 12 and 19-contact versions. Versions with T and Y cable connections can be made on request.



Solenoid valve or pressure switch connector series

The solenoid valve connector range includes cords, extensions and Y cable connections.



NB: All our connectors are systematically supplied with a marker carrier.

Cables

The nominal cross-section of a conductor may be given in the European metric standard (mm^2) or the American standard (*American Wire Gauge* – AWG). The table below gives the approximate correspondence between the most common values.

AWG	mm^2
AWG 26	0.14 mm^2
AWG 24	0.25 mm^2
AWG 22	0.34 mm^2
AWG 20	0.50 mm^2
AWG 19	0.75 mm^2
AWG 18	1.00 mm^2
AWG 16	1.50 mm^2

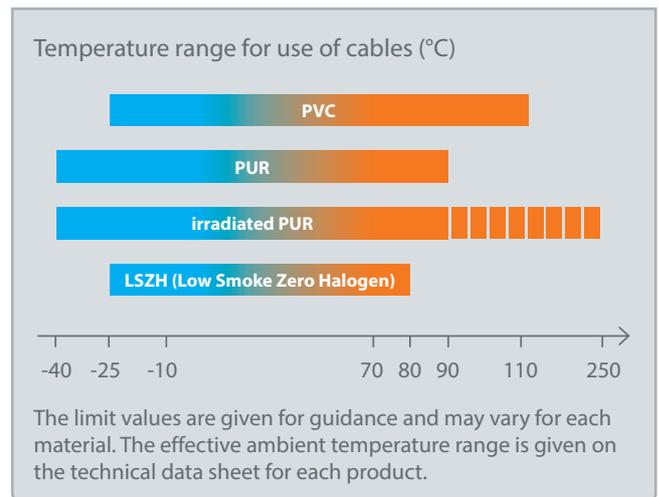
Our products include class 5 (*flexible conductor*) and 6 (*very flexible conductor*) cables.

The table below contains for the most common conductor cross-sections (*given in mm^2*), first of all the **number and diameter of the strands** for both class 5 and class 6, then the **allowable current and resistance** for the conductor according to the IEC 60228 standards.

mm^2	Class 5	Class 6	Current & resistance	
0.14	18 x 0.10 mm	18 x 0.10 mm	2 A max	134 Ω/km
0.25	14 x 0.15 mm	32 x 0.10 mm	4 A max	79 Ω/km
0.34	19 x 0.15 mm	42 x 0.10 mm	6 A max	53 Ω/km
0.50	16 x 0.20 mm	28 x 0.15 mm	9 A max	39 Ω/km
0.75	24 x 0.20 mm	42 x 0.15 mm	12 A max	26 Ω/km
1.00	32 x 0.20 mm	56 x 0.15 mm	15 A max	19.5 Ω/km
1.50	30 x 0.25 mm	84 x 0.15 mm	18 A max	13.3 Ω/km

The cable range includes:

- **PVC** cables - for average mechanical stresses
- **PUR and halogen-free PUR** cables - for high mechanical stresses
- **LSZH** cables - for demanding fire behaviour requirements
- **Network** cables - for field buses
- **Special** cables



Below you will find the technical data you need to select the quality of cable best suited to your needs.

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PVC cables - for average mechanical stresses

These PVC (polyvinyl chloride) cables are perfectly suited to assembly or packaging machinery or conveyors. They feature:

- good resistance to chemicals
- very good oil resistance, for the "CNOMO" sleeved versions,
- good friction and abrasion resistance,
- very good fire behaviour (self-extinguishing),
- operating temperature ranges from -25 to 70°C,

- operating temperatures extended to 110°C for certain specific grades of PVC.

Le tableau ci-après présente une partie des câbles PVC proposés par SENSTRONIC.

	Sleeve			Cable composition	Conductors	
	Material	Colour	Diameter		Class	Colours
PVC		BK	4.6 mm	3 x 0.34 mm ²	5	BN, BU, BK
		WH	5 mm	3 x 0.34 mm ²	6	BN, BU, BK
		OG	5 mm	3 x 0.34 mm ²	6	BN, BU, BK
		BK	4.8 mm	3 x 0.50 mm ²	5	BN, BU, BK
		BK	5.7 mm	3 G 0.50 mm ²	5	BN, BU, GN/YE
		GY	6.7 mm	3 G 1.50 mm ²	5	N° + GN/YE
	PVC 110°C	BK	5 mm	3 x 0.34 mm ²	6	BN, BU, BK
		BK	5 mm	4 x 0.34 mm ²	5	BN, WH, BU, BK
		OG	5 mm	4 x 0.34 mm ²	6	BN, WH, BU, BK
		BK	5 mm	4 x 0.50 mm ²	5	BN, WH, BU, BK
	Shielded cable	GY	5.5 mm	4 x 0.34 mm ²	5	BN, WH, BU, BK
	Shielded cable	OG	5.5 mm	4 x 0.34 mm ²	5	BN, WH, BU, BK
	PVC 110°C	BK	5 mm	4 x 0.34 mm ²	6	BN, WH, BU, BK
		BK	5.7 mm	5 G 0.34 mm ²	5	BN, WH, BU, BK, GN/YE
		OG	5.8 mm	5 G 0.34 mm ²	6	BN, WH, BU, BK, GN/YE
		GY	5.8 mm	5 G 0.50 mm ²	5	BN, WH, BU, BK, GN/YE
		GY	10 mm	5 G 1.50 mm ²	5	N° + GN/YE
	Shielded cable	GY	6.3 mm	5 G 0.34 mm ²	6	BN, WH, BU, BK, GN/YE
	Shielded cable	GY	5.6 mm	5 x 0.34 mm ²	5	BN, WH, BU, BK, GY
		GY	8.9 mm	6 G 1.50 mm ²	5	N° + GN/YE
		OG	6.1 mm	8 x 0.25 mm ²	6	WH, BN, GN, YE, GY, PK, BU, RD
		GY	8 mm	8 x 0.50 mm ²	5	WH, BN, GN, YE, GY, PK, BU, RD
		GY	7 mm	12 x 0.25 mm ²	5	WH, BN, GN, YE, GY, PK, BU, RD, BK, VT, GY/PK, RD/BU
		GY	9 mm	12 x 0.50 mm ²	5	WH, BN, GN, YE, GY, PK, BU, RD, BK, VT, GY/PK, RD/BU
		GY	8.9 mm	12 G 0.50 mm ²	5	N° + GN/YE
		BK	10.8 mm	3 G 1 mm ² + 16 x 0.34 mm ²	5	1 mm ² : BN, BU, GN/YE 0.34 mm ² : WH, GN, YE, GY, PK, RD, BK, VT, GY/PK, RD/BU, WH/GN, BN/GN, WH/YE, YE/BN, WH/GY, GY/BN

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**PUR and halogen-free PUR cables
- for high mechanical stresses**

These cables feature:

- good microbial and hydrolysis resistance,
- very good resistance to chemicals,
- very good oil, hydrocarbon and lubricant resistance,
- very good friction and abrasion resistance,

- very good fire behaviour thanks to additives improving their ability to self-extinguish,
- operating temperature ranges from -40 to 90°C.

The sleeving on PUR cables is halogen-free.

The table below gives details of some of the PUR cables offered by SENSTRONIC.

	Sleeve			Cable composition	Conductors		
	Material	Colour	Diameter		Class	Colours	
PUR		BK	4.6 mm	3 x 0.34 mm ²	5	BN, BU, BK	
		OG	5 mm	3 x 0.34 mm ²	6	BN, BU, BK	
		BK	5 mm	3 G 0.50 mm ²	6	BN, BU, GN/YE	
		BK	8 mm	3 G 1.50 mm ²	6	N° + GN/YE	
		BK	5 mm	4 x 0.34 mm ²	5	BN, WH, BU, BK	
		OG	5 mm	4 x 0.34 mm ²	6	BN, WH, BU, BK	
		BK	5 mm	4 x 0.34 mm ²	6	BN, WH, BU, BK	
		Shielded cable	GY	5.5 mm	4 x 0.34 mm ²	5	BN, WH, BU, BK
			OG	5.5 mm	5 G 0.34 mm ²	6	BN, WH, BU, BK, GN/YE
			BK	5.5 mm	5 G 0.34 mm ²	6	BN, WH, BU, BK, GN/YE
		Shielded cable	GY	6 mm	5 x 0.34 mm ²	5	BN, WH, BU, BK, GY
			BK	9.8 mm	6 G 1.50 mm ²	6	N° + GN/YE
			OG	6.1 mm	8 x 0.25 mm ²	6	WH, BN, GN, YE, GY, PK, BU, RD
			BK	8.7 mm	3 G 1 mm ² + 8 x 0.34 mm ²	6	1 mm ² : BN, BU & Two tone: GN/YE 0.34 mm ² : WH, GN, YE, GY, GY/PK, RD/BU, WH/GN, BN/GN
			BK	10.9 mm	3 G 1 mm ² + 16 x 0.34 mm ²	6	1 mm ² : BN, BU, GN/YE 0.34 mm ² : WH, GN, YE, GY, PK, RD, BK, VT, GY/PK, RD/BU, WH/GN, BN/GN, WH/YE, YE/BN, WH/GY, GY/BN
			BK	11 mm	3 G 1 mm ² + 4 x 4 x 0.34 mm ²	6	1 mm ² : BN, BU & Two tone: GN/YE 0.34 mm ² : WH, GN, YE, GY, PK, RD, BK, VT, GY/PK, RD/BU, WH/GN, BN/GN, WH/YE, YE/BN, WH/GY, GY/BN

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Irradiated PUR and halogen-free irradiated PUR cables - for severe mechanical stresses

Cross-linked by irradiation, these cables feature:

- very good resistance to chemicals,
- very good oil, hydrocarbon and lubricant resistance,
- excellent friction and abrasion resistance,
- very good fire behaviour thanks to additives improving their ability to self-extinguish,

- very good resistance to solder splashes,
- very good UV resistance,
- operating temperature ranges of -4 to 90°C (up to 105°C for short periods and peaks of 205°C).

The table below gives details of some of the irradiated PUR cables offered by SENSTRONIC.

Sleeve			Cable composition	Conductors		
Material	Colour	Diameter		Class	Colours	
PUR irradié		OG	5.1 mm	3 x 0.34 mm ²	5	BN, BU, BK
		OG	5 mm	3 x 0.34 mm ²	6	BN, BU, BK
		OG	5.7 mm	3 G 0.50 mm ²	6	BN, BU, GN/YE
		OG	5.1 mm	4 x 0.34 mm ²	5	BN, WH, BU, BK
		OG	5 mm	4 x 0.34 mm ²	6	BN, WH, BU, BK
		OG	5.2 mm	1 G 0.50 mm ² + 4 x 0.34 mm ²	5	BN, WH, BU, BK, GN/YE

LSZH cables - for demanding fire behaviour requirements

“Low Smoke Zero Halogen” cables feature:

- excellent fire behaviour,
- operating temperature ranges from -30 to 80°C.

- IEC 60754-2: Gases evolved during combustion, determination of acidity of gases evolved (by pH measurement and conductivity),
- IEC 61034-1: Smoke density.

They are suitable for applications subject to average mechanical stresses.

The table below gives details of some of the LSZH cables offered by SENSTRONIC.

These cables comply with the following standards:

- IEC 60332-1 / IEC 60332-2,
- IEC 60754-1: Gases evolved during combustion, halogen acid gas content,

Sleeve			Cable composition	Conductors		
Material	Colour	Diameter		Class	Colours	
LSZH		GY	5 mm	4 x 0.34 mm ²	5	BN, WH, GN, YE
		GY	6 mm	4 x 0.75 mm ²	5	BN, WH, GN, YE
		GY	6.8 mm	5 x 0.75 mm ²	5	BN, WH, GN, YE, GY
	Shielded cable	GY	7.1 mm	5 x 0.75 mm ²	5	BN, WH, GN, YE, GY

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Network cables - for field buses

SENSTRONIC offers a range of certified cables for various applications:

- Ethernet/Profinet cable, Category 5
- Ethernet cable, Category 5e
- Profibus cable

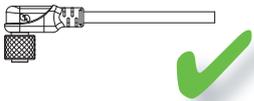
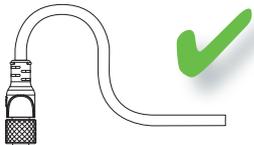
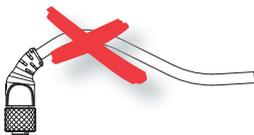
- Interbus cable
- CAN/DeviceNet cable
- SucoNet / VariNet cable

The table below gives details of some of the network cables offered by SENSTRONIC.

	Sleeve			Cable composition	Conductors	
	Material	Colour	Diameter		Class	Colours
Network cables	ProfiNet - Ethernet Category 5 PVC	GN	6.5 mm	2 x 2 x AWG22	AWG22/7	WH, YE, BU, OG
	ProfiNet - Ethernet Category 5 PUR	GN	6.5 mm	2 x 2 x AWG22	AWG22/7	WH, YE, BU, OG
	EtherNet Category 5e PUR	BU	5.6 mm	2 x 2 x AWG26	AWG26/7	GN, OR, WH/OR, WH/GN
	DeviceNet PVC	VT	6.9 mm	2 x AWG24 + 2 x AWG22	AWG24/19 & AWG22/19	WH, BU, RD, BK
	CAN Bus PUR	VT	6.5 mm	4 x 1 x 0.25 mm ²	AWG24/19	WH, BN & GN, YE
	InterBus PUR	VT	7.9 mm	3 x 1 mm ² + 3 x 2 x 0.25 mm ²		1 mm ² : RD, BU, GN/YE 0.25mm ² : WH, BN, GN, YE, GY, PK
	SucoNet - VariNet PVC	VT	7.1 mm	2 x 2 x 0.22 mm ²		BN, WH, GN, YE

Préconisations de montage

- Installing cables **without tension** significantly prolongs the lifespan of the product.



- Similarly, **avoid twisting the cables**.



Special cables

The range of special cables offered by SENSTRONIC covers very numerous applications. We are also able to develop cables to meet particular requirements:

- Cables for railway applications
- ADR/ISO 6722 cables
- Spiral cables
- Hybrid cables

Additional protection can also be proposed for the different types of cables and applications, such as for example:

- Corrugated protective sleeving
- Aramid fibre (Kevlar) protective sleeving
- Fibre glass protective sleeving with silicone rubber coating

Special products

SENSTRONIC is at your disposal to discuss special applications or development requests. Do not hesitate to contact our sales department.