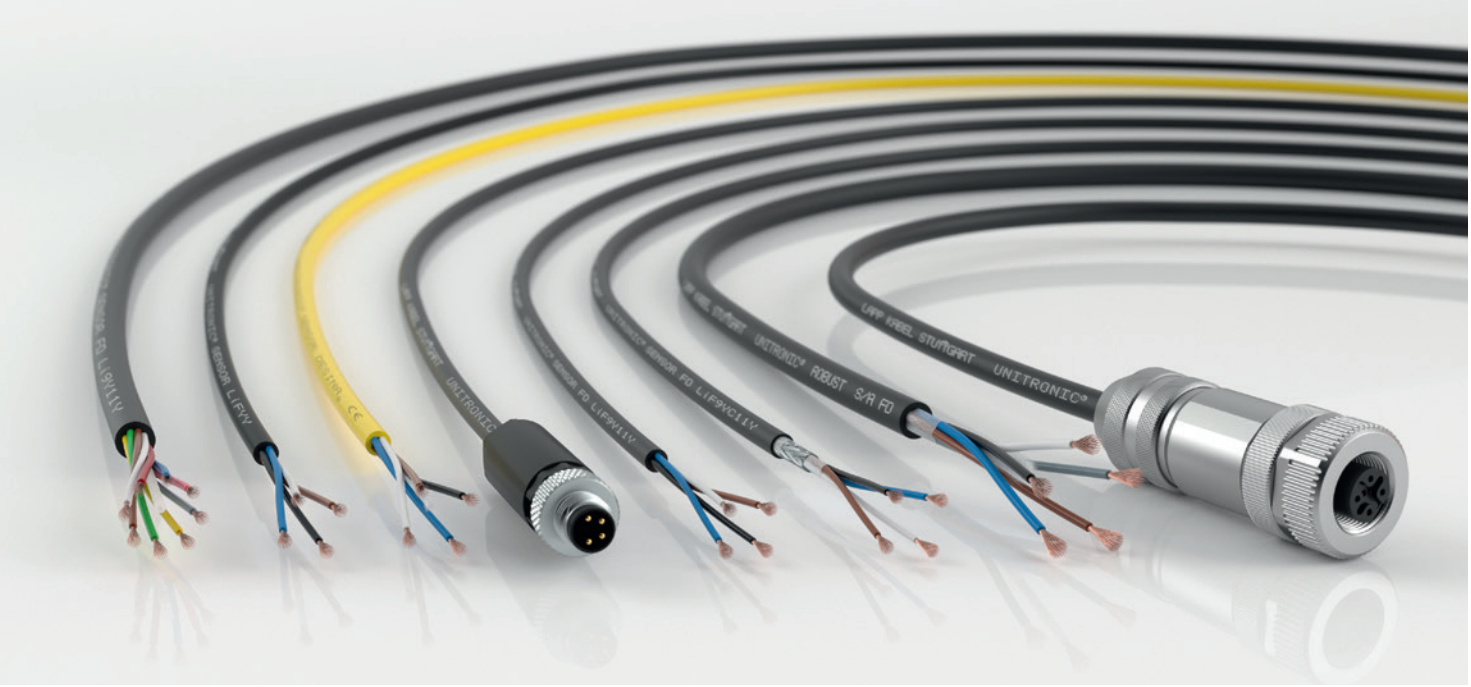
UNITRONIC® SENSOR

Application guide

LAPP GROUP



Lapp sensor cables

The right solution for every challenge

Sensor cables need to meet specific requirements. The range of potential uses extends from simple applications in dry conditions to challenging applications involving lubricants and cleaning agents, even applications with extremely intense mechanical stress, for example, in combination with drag chains or robot applications. To guarantee safe and reliable transmission of signals and data, the sensor cable and the area of use must suit one another.

Lapp offers the perfect sensor cable for every application. The right outer sheath material makes the world of difference and is absolutely essential for a long service life, smooth processes and maximum functionality. The most commonly used materials are **PVC** (polyvinyl chloride), **PUR** (polyurethane) and our **TPE**-based ROBUST material, developed by Lapp.

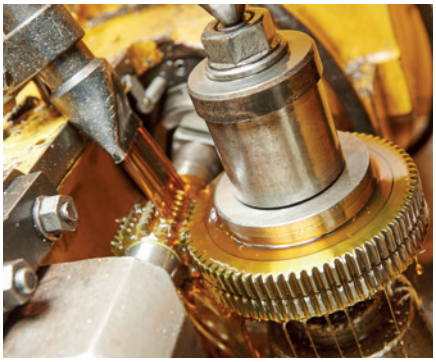
You've got the task – we've got the solution to suit your needs. Talk to us. We will be more than happy to support you and help you choose the perfect sensor cable for your individual application.

PVC

[POLYVINYL CHLORIDE]

Basic applications

- Fixed installation
- Occasional flexible application
- Good processability



PUR

[POLYURETHANE]

Increased mechanical stress

- High abrasion resistance
- Halogen-free
- Suitable for drag chains

ROBUST

[TPE, THERMOPLASTIC ELASTOMER]

Harsh application fields

- Very good stripping properties
- Resistant in contact with aggressive media
- Extended temperature range from -50 °C to +90 °C
- Use in drag chains and torsion applications

PVC [polyvinyl chloride]

Basic applications

Application fields

- Packaging machines, assembly and production lines
- Ideal for fixed installation and not constantly recurring movement without tensile stress
- Medium mechanical stress in dry conditions

Properties

- Good processability
- High level of moisture resistance (wash-down applications)
- LiFYY A: Use for the North American market (UL)

UNITRONIC® SENSOR LiFYY

Article number	Dimensions [mm²]	Outer diameter [mm]	Core/sheath material	Sheath colour
7038898	3 x 0.25	3.8	PVC/PVC	Black
7038899	4 x 0.25	4.2	PVC/PVC	Black
7038900	3 x 0.34	4.1	PVC/PVC	Black
7038901	4 x 0.34	4.4	PVC/PVC	Black
7038902	5 x 0.34	4.8	PVC/PVC	Black

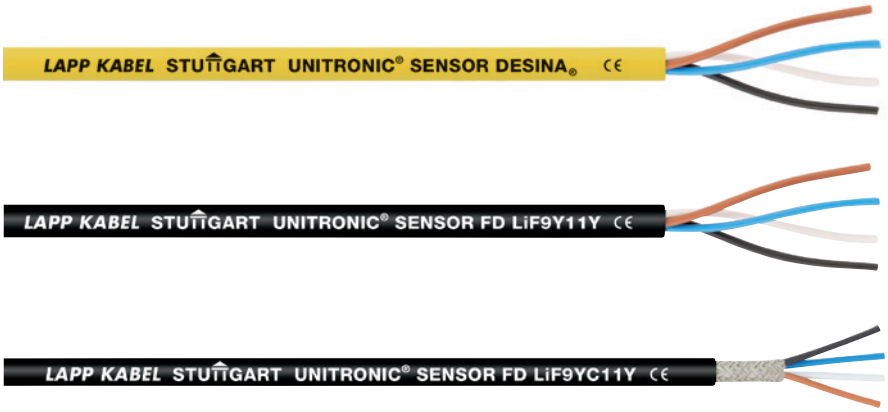
UNITRONIC® SENSOR LiFYY A – UL-approved

Article number	Dimensions [mm²]	Outer diameter [mm]	Core/sheath material	Sheath colour
7038903	3 x 0.25	4.3	PVC/PVC	Black
7038904	4 x 0.25	4.6	PVC/PVC	Black
7038905	3 x 0.34	4.4	PVC/PVC	Black
7038906	4 x 0.34	4.8	PVC/PVC	Black
7038907	5 x 0.34	5.2	PVC/PVC	Black

Photographs are not to scale and do not represent detailed images of the respective products.

PUR [polyurethane]

Increased mechanical stress



Application fields

- Tooling machines, automated production lines
- Good performance in constantly moving use in the drag chain (FD series)

Properties

- High abrasion resistance
- Resistant to microbes and hydrolysis
- Good chemical resistance (mineral oils)
- Oil- and UV-resistant
- Temperature range from -40 °C to +80 °C
- FD series: Flame-retardant according to IEC 60332-2-2 and UL 1581 FT2

Different compositions result in different PUR qualities. Special mixtures are halogen-free and/or flame-retardant and therefore are also suitable for use in North America (UL). Shielded cables provide perfect protection for heavy-duty use in an EMC-critical environment (LiF9YC11Y).

UNITRONIC® SENSOR LiFY11Y

Article number	Dimensions [mm²]	Outer diameter [mm]	Core/sheath material	Sheath colour
7038861	4 x 0.34	4.8	PVC/PUR	Black
7038862	5 x 0.25	4.9	PVC/PUR	Black
0040434	4 x 0.34	5.2	PVC/PUR	Yellow (DESINA®)

UNITRONIC® SENSOR FD LiF9Y11Y – UL-approved, for use in drag chains

Article number	Dimensions [mm²]	Outer diameter [mm]	Core/sheath material	Sheath colour
7038889	3 x 0.25	3.6	PP/PUR	Black
7038890	4 x 0.25	3.9	PP/PUR	Black
7038867	5 x 0.25	4.7	PP/PUR	Black
7038868	8 x 0.25	5.9	PP/PUR	Black
7038864	3 x 0.34	4.6	PP/PUR	Black
7038865	4 x 0.34	4.7	PP/PUR	Black
7038893	5 x 0.34	4.5	PP/PUR	Black

UNITRONIC® SENSOR FD LiF9YC11Y – UL-approved, shielded, for use in drag chains

Article number	Dimensions [mm²]	Outer diameter [mm]	Core/sheath material	Sheath colour
7038885	3 x 0.34	4.3	PP/PUR	Black
7038886	4 x 0.34	4.6	PP/PUR	Black
7038887	5 x 0.34	5.0	PP/PUR	Black

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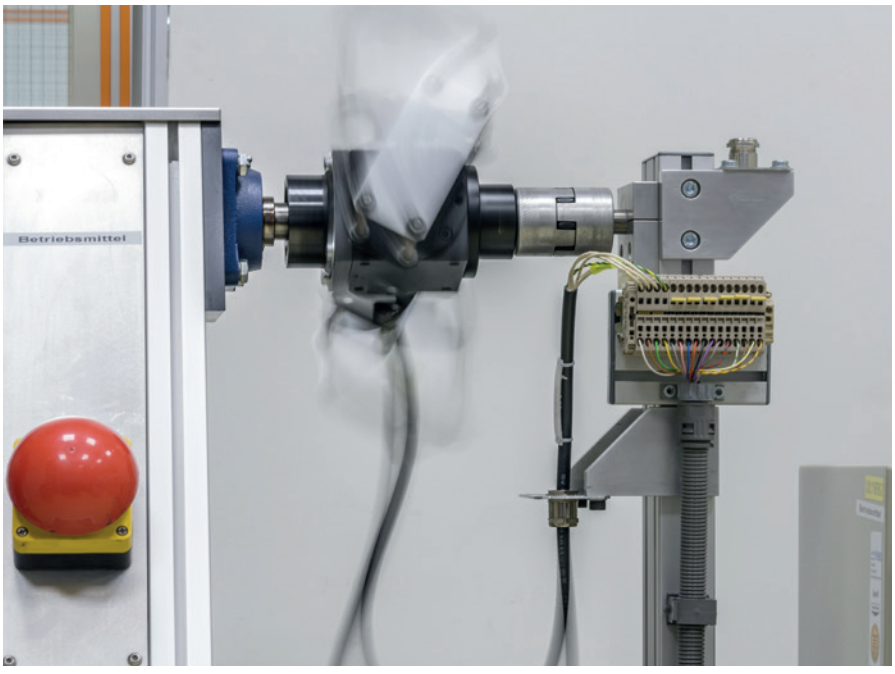
ROBUST [TPE-based, thermophastic elastomer]

Harsh application fields

ECOLAB

UNITRONIC® ROBUST S/A FD – for use in drag chains

Article number	Dimensions [mm²]	Outer diameter [mm]	Core/sheath material	Sheath colour
7038897	4 x 0.25	4.9	PP/TPE	Black
7038895	3 x 0.34	5.0	PP/TPE	Black
7038894	4 x 0.34	5.4	PP/TPE	Black
7038896	5 x 0.34	5.9	PP/TPE	Black



Application fields

- Outdoor applications, extreme application fields
- Increased stress in constantly moving use in the drag chain (FD series)
- Torsion resistant 360°/m
- Food industry (ECOLAB®-certified)
- Can be stripped easily

Properties

- Excellent weather-, UV resistance and ozone resistance
- Highly resistant in harsh environmental conditions and ideal for outdoor applications
- Outstandling in contact with bio-oils, emulsions, fats and waxes with a plant, animal or synthetic basis
- Good resistance to hot and cold water, as well as water-soluble cleaning agents
- Halogen-free
- Extended temperature range from -50 °C to +90 °C

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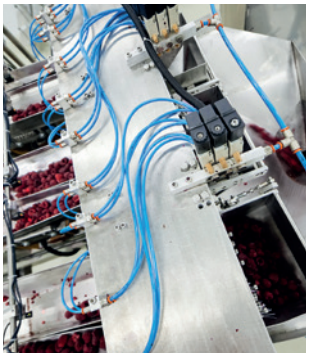
Characteristics of the cable materials

Overview



Properties		Core/outer sheath PVC/PVC		Core/outer sheath PVC/PUR	Core/outer sheath PP/PUR	Core/outer sheath PP/TPE basis
		LiFYY	LiFYY A	LiFY11Y	LiF9Y11Y LiF9YC11Y	ROBUST
UV	UV-resistant	✖*	✖*	✖	✖✖	✖✖
	Power chain	⊠	⊠	⊠	✖	✖✖
	Halogen-free	⊠	⊠	⊠	✖	✖
	Flame-retardant	IEC 60332-1-2	IEC 60332-1-2 UL FT1 and VW-1	⊠	IEC 60332-2-2 UL 1581 FT-2	⊠
-40 °C +80 °C	Temperatureresistant Fixed Flexing	-40 °C to +80 °C -5 °C to +70 °C	-40 °C to +80 °C -5 °C to +70 °C	-30 °C to +80 °C -10 °C to +80 °C	-40 °C to +80 °C -25 °C to +80 °C	-50 °C to +90 °C -40 °C to +90 °C
	Mechanical resistance	⊠	⊠	✖	✖✖	✖
	Cold-resistant	⊠	⊠	✖	✖	✖✖
	Food & Beverage	✖	✖	⊠	⊠	✖
	Good chemical resistance	There is a wide range of resistances and mixtures of liquids in different concentrations. Please contact us for further information.				
	Torsion-resistant	⊠	⊠	⊠	⊠	360°/m
Approvals						
c UL us	UL	⊠	UL 2464	⊠	UL 20549	⊠
ECOLAB	ECOLAB®	⊠	⊠	⊠	⊠	✖

Please note:
The information provided in the table refers only to the material compositions used in the Lapp sensor cables.
✖✖ highly resistant, ✖ resistant, ✖ limited resistant, ⊠ not resistant. *Black PVC is UV-resistant, but may fade over time.

Further portfolio

Suitable connectors, distribution boxes and plug and play products

M8 AND M12 CONNECTORS

- 100% tested
- High temperature range
- High protection classes up to IP69
- Shielded/unshielded
- Straight/angled

MORE PRODUCTS

- UNITRONIC® SENSOR HD M 12 – hygienic design for the food and beverage industry
- EPIC® SENSOR M12 V4A – outdoor connectors
- EPIC® POWER M12
- M8/M12 distributors
- EPIC® SENSOR M8/M12 plug-in connectors
- UNITRONIC® SENSOR valves

Visit us at:
www.lappgroup.com/sensoractuator-cabling

Here, you will find more information about our range of PVC, PUR and ROBUST sensor cables, as well as the associated data sheets.

You will find a wide selection of suitable cables and connectors in our product range.

Further information can be found here:

www.lappgroup.com/sensoractuator-cabling

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