2 UNITRONIC®

Data communication systems

Our high-quality UNITRONIC® data network cables & field bus components provide forward-looking solution for all applications in industrial machinery and plant engineering. From transmission of simple control signals to field bus signals in complex network structures, we offer a dependable cabling and connection solution for almost every situation.

Application range

- Industrial machinery & plant engineering
- Sensors & actuating elements
- Appliances
- Measurement & control technology
- Automated production processes & industrial robots
- Bus systems
- Computing & communication systems

Product range

UNITRONIC®
Bus cable & connectors

Quick select chart

Bus system	Applications	Approvals	Jacket material	Part number	Page
DeviceNet™ 120 Ω	stationary	CL2	PVC	4001, 4002	167
		CMG	PVC	2170343	169
			halogen-free	2170341	
		CMG, PLTC	PVC	2170342	
			halogen-free	2170340	
	continuous flex	CL2	PVC	6001	168
		CL2, CMG	PVC	6002	
		CMG	PVC	2170347	170
		CMG, PLTC	PVC	2170346	
		CMX	PUR	2170344, 2170345	
PROFIBUS® 150 Ω	stationary	–	PVC	2170220, 2170223, 2170236	173
		CMX	PVC	2170219	
		CMG, fast connect	PVC	2170820	
			halogen-free	2170326, 2170853	
		CMX, fast connect	PUR	2170330, 2170330	
		CMG, PLTC, AWM	PVC	2170856	175
	flexible	CMG	PVC	2170824	173
		CMG, fast connect	PVC	2170826	
	festoon	CMG	PVC	2170331	178
	torsion	CMX	PUR	2170332	177
	continuous flex	–	PUR	2170222,	174
				2170227, 2170495	176
		CMG	PVC	2170875	176
		CMX	PUR	2170822	174
		CMG, fast connect	halogen-free	2170854	
		CMX, fast connect	PUR	2170322	
CAN bus 120 Ω	stationary	CMX	PVC	2170260, 2170261, 2170263, 2170264, 2170266, 2170267, 2170269, 2170270, 2170500	183
	flexible	CMG, PLTC, AWM	PVC	2170857	185
	continuous flex	CMX	PUR	2170272, 2170273, 2170275, 2170276, 2170278, 2170279	184

Bus system	Applications	Approvals	Jacket material	Part number	Page
RS485, RS422 100–120 Ω	stationary	–	PVC	2170203, 2170204, 2170205	189
		CMX	PVC	2170803	
	continuous flex	–	PUR	2170213, 2170214, 2170215	189
		CMX	PUR	2170813, 2170814, 2170815	
AS-Interface (AS-i) 70–140 Ω	flexible	–	rubber	2170228, 2170229 2170371, 2170372	190
			TPE	2170230, 2170231, 2170232	
		CMG	PVC	2170842, 2170843	
	continuous flex	AWM	PUR	2170357, 2170358, 2170317, 2170318	191
			TPE	2170830, 2170831	
Data Highway	continuous flex	AWM	PVC	3649FD	192
INTERBUS 100 Ω	stationary	–	PVC	2170206, 2170207, 2170217	193
			PUR	2170208	
		CMX	PVC	2170208	
	continuous flex	–	PUR	2170216, 2170218	194
		CMX	PUR	2170818	
Genius™	continuous flex	AWM	PUR	911264	195
CC-Link 110 Ω	flexible	CMG, PLTC	PVC	2170360	196
	continuous flex	AWM	PUR	2170370	197
FOUNDATION Fieldbus 100 Ω	stationary	CMG, PLTC	PVC	2170351, 2170353	198
	flexible	CMG, PLTC	PVC	2170350, 2170352	198
SAFETY bus 120 Ω	stationary	–	halogen-free	2170295	199
	continuous flex	–	PUR	2170885	199

UNITRONIC® bus cable attributes

Bus system	Product name	Part number	Cable attributes, page 648				Page
			oil resistance	flame resistance	motion type	mechanical properties	
DeviceNet™	UNITRONIC® BUS DeviceNet Gray	4001, 4002	OR-01	FR-02	FL-02	MP-01	167
	UNITRONIC® BUS DeviceNet FD Gray	6001, 6002	OR-01	FR-03	CF-02	MP-01	168
	UNITRONIC® BUS DeviceNet Violet	2170340, 2170341	OR-00	FR-03	FL-02	MP-01	169
		2170342, 2170343	OR-02	FR-03	FL-02	MP-01	
	UNITRONIC® BUS DeviceNet FD Violet	2170344, 2170345	OR-04	FR-02	CF-02	MP-05	170
		2170346, 2170347	OR-02	FR-03	CF-02	MP-01	
PROFIBUS®	UNITRONIC® BUS PB	2170220, 2170219, 2170330	OR-00	FR-02	FL-01	MP-01	173
		2170824	OR-00	FR-02	FL-02	MP-01	
		2170326, 2170820, 2170826	OR-00	FR-03	FL-01	MP-01	
		2170853	OR-04	FR-03	FL-01	MP-05	
		2170223, 2170236	OR-01	FR-00	FL-01	MP-01	
	UNITRONIC® BUS PB FD	2170222, 2170822, 2170322	OR-04	FR-02	CF-02	MP-05	174
		2170854	OR-00	FR-03	CF-02	MP-01	
	UNITRONIC® BUS PB TRAY	2170856	OR-02	FR-03	FL-01	MP-03	175
	UNITRONIC® BUS PB FD Y HYBRID	2170875	OR-02	FR-03	CF-02	MP-01	176
	UNITRONIC® BUS PB FD P HYBRID UNITRONIC® BUS PB FD P COMBI	2170227, 2170495	OR-02	FR-02	CF-02	MP-01	
	UNITRONIC® BUS PB TORSION	2170332	OR-04	FR-02	FL-02*	MP-05	177
	UNITRONIC® BUS PB FESTOON	2170331	OR-02	FR-03	FL-02**	MP-01	178
CAN bus	UNITRONIC® BUS CAN	2170260 to 2170270	OR-00	FR-02	FL-02	MP-01	183
		2170500	OR-01	FR-02	FL-00	MP-01	
	UNITRONIC® BUS CAN FD P	2170272 to 2170279	OR-04	FR-02	CF-02	MP-05	184
	UNITRONIC® BUS CAN TRAY	2170857	OR-02	FR-04	FL-02	MP-03	185
RS485/RS422	UNITRONIC® BUS LD	2170203, 2170803 2170204, 2170205	OR-00	FR-02	FL-02	MP-01	189
	UNITRONIC® BUS LD FD P	2170213, 2170813, 2170214, 2170814, 2170215, 2170815	OR-04	FR-02	CF-02	MP-05	189
AS-Interface	UNITRONIC® BUS ASi	2170842, 2170843	OR-02	FR-03	CF-02	MP-01	190
		2170228, 2170229	OR-00	FR-02	FL-02	MP-01	
		2170371, 2170372	OR-00	FR-00	FL-02	MP-01	
		2170230, 2170231, 2170232	OR-04	FR-00	FL-02	MP-02	
	UNITRONIC® BUS ASi FD	2170357, 2170358, 2170317, 2170318	OR-04	FR-02	CF-02	MP-05	191
		2170830, 2170831	OR-02	FR-02	CF-02	MP-02	
Data Highway	UNITRONIC® BUS BlueFlex	3649FD	OR-01	FR-02	CF-01	MP-01	192
INTERBUS	UNITRONIC® BUS INTERBUS	2170206	OR-00	FR-02	FL-02	MP-01	193
		2170208	OR-04	FR-02	FL-02	MP-05	
		2170209	OR-00	FR-02	FL-02	MP-01	
		2170207, 2170217	OR-00	FR-02	FL-00	MP-01	
	UNITRONIC® BUS INTERBUS FD	2170216, 2170218	OR-04	FR-02	CF-02	MP-05	194
		2170818	OR-04	FR-02	CF-02	MP-05	
Genius™	UNITRONIC® BUS Genius	911264	OR-04	FR-02	CF-01	MP-05	195
CC-Link	UNITRONIC® BUS CC-Link	2170360	OR-00	FR-03	FL-02	MP-01	196
	UNITRONIC® BUS CC-Link FD	2170370	OR-04	FR-02	CF-02	MP-05	197
FOUNDATION Fieldbus	UNITRONIC® BUS FOUNDATION Fieldbus	2170350	OR-02	FR-03	FL-02	MP-01	198
		2170351, 2170353	OR-02	FR-03	FL-00	MP-01	
		2170352	OR-02	FR-03	FL-02	MP-01	
SAFETY bus	UNITRONIC® BUS SAFETY	2170295	OR-00	FR-02	FL-01	MP-01	199
		2170885	OR-00	FR-02	FL-02	MP-01	
Sensor/ actuator wiring	UNITRONIC® SENSOR FD	7038864 to 7038887	OR-04	FR-02	CF-02	MP-05	200

* Torsion ±180°/m
** Festoon bending: 70 mm min. bending radius

UNITRONIC® BUS DeviceNet™ Gray

For DeviceNet bus systems; stationary applications; 120 Ω

UNITRONIC® BUS DeviceNet cables provide reliable data and power transfer between industrial automation devices like sensors, actuators & PLCs. The cables are designed to perform in harsh chemical & mechanical environments and are in full compliance with ODVA specifications.

Recommended applications

DeviceNet bus systems; automation devices like sensors, actuators, PLCs, and PCs

Rate table

Communication rate	Maximum length: trunk cable				Maximum length: drop cable			
	THICK		THIN		THICK		THIN	
	ft	m	ft	m	ft	m	ft	m
125 Kbps	1640	500	328	100	512	156	20	6
250 Kbps	820	250	328	100	256	78	20	6
500 Kbps	328	100	328	100	128	39	20	6

Construction

Conductors: stranded tinned copper

Insulation: power conductors: PVC • data conductors: polyethylene

Shielding: pairs: tri-laminated foil shield (100% coverage) • tinned copper drain wire; overall foil wrap and braid (65% coverage)

Jacket: PVC; gray

Application advantage

- Cable can supply device with power and data, wiring is minimized
- Full compliance with ODVA specifications
- Communication rate up to 500 Kbps

Approvals

DeviceNet RoHS

Cable attributes page 648

OIL	OR-01	FLAME	FR-02
MOTION	FL-02	MECH.	MP-01

Complete the installation

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ÖLFLEX® CONNECT solution

DeviceNet™ cordsets page 631

Technical data

Minimum bend radius:		**Nominal capacitance:**	12 pF/ft
- for installation:	10 x cable diameter	**Color code:**	
Temperature range:	-20°C to +75°C	- power pair:	red & black
Nominal voltage:	300V	- data pair:	blue & white
Characteristic impedance:	120 Ω	**Approvals:**	UL: CL2 Canada: CSA AWM

Part number	Type	Conductor description	Nominal outer diameter		Copper weight	Approx. weight	SKINTOP® MS-SC
			in	mm	lbs/mft	lbs/mft	PG thread
4001	Thick	18 AWG/1pr + 15 AWG/1pr	0.437	11.1	57	140	53112240
4002	Thin	24 AWG/1pr + 22 AWG/1pr	0.260	6.6	20	43	53112210

DeviceNet is a trademark of Open DeviceNet Vendor Association, Inc.
Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS DeviceNet™ FD Gray

For DeviceNet bus systems; continuous flex applications; 120 Ω

UNITRONIC® BUS DeviceNet FD cables provide reliable data and power transfer between industrial automation devices like sensors, actuators & PLCs. The cables are designed to perform in harsh chemical & mechanical environments and are in full compliance with ODVA specifications.

Construction

Conductors: stranded tinned copper

Insulation: power conductors: PVC • data conductors: polyethylene

Shielding: pairs: tri-laminated foil shield (100% coverage) • tinned copper drain wire; overall foil wrap and braid (65% coverage)

Jacket: PVC; gray

Recommended applications

DeviceNet bus systems; cable tracks and moving machine parts, automation devices like sensors, actuators, PLCs, and PCs

Application advantage

- Cable can supply device with power and data, wiring is minimized
- Full compliance with ODVA specifications
- Communication rate up to 500 Kbps
- Oil-resistant PVC jacket

Rate table

Communication rate	Maximum length: trunk cable THICK ft	THICK m	THIN ft	THIN m	Maximum length: drop cable THICK ft	THICK m	THIN ft	THIN m
125 Kbps	1640	500	328	100	512	156	20	6
250 Kbps	820	250	328	100	256	78	20	6
500 Kbps	328	100	328	100	128	39	20	6

Approvals

Continuous Flex Test Method Verified UL VERIFIED verifyUL.com A522492

Cable attributes

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OIL	OR-01	FLAME	FR-03
MOTION	CF-02*	MECH.	MP-01

Complete the installation

SKINTOP® MS-SC
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ÖLFLEX® CONNECT solution

DeviceNet™ cordsets
page 631

Technical data

Minimum bend radius:
- for continuous flexing: 10 x cable diameter

Temperature range: -20°C to +75°C

Nominal voltage: 300V

Characteristic impedance: 120 Ω

Nominal capacitance: 12 pF/ft

Color code:
- power pair: red & black
- data pair: blue & white

Approvals:
UL: CL2
CM (6002)
Canada: CSA AWM (6001)
CSA CMG (6002)
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Type	Conductor description	Nominal outer diameter in	mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
6001	Thick	18 AWG/1pr + 14 AWG/1pr	0.468	11.9	60	145	53112240
6002	Thin	24 AWG/1pr + 22 AWG/1pr	0.283	7.2	23	43	53112210

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UNITRONIC® BUS DeviceNet™ Violet

For DeviceNet bus systems; stationary applications; 120 Ω

UNITRONIC® BUS DeviceNet cables provide reliable data and power transfer between industrial automation devices like sensors, actuators & PLCs. The cables are designed to perform in harsh chemical & mechanical environments and are in full compliance with ODVA specifications.

Construction

Conductors: stranded tinned copper

Insulation: power conductors: PVC (PVC jacket); polyethylene (halogen-free jacket) • data conductors: polyethylene

Shielding: pairs: tri-laminated foil shield • tinned copper drain wire; overall foil wrap and braid

Jacket: PVC or halogen-free; violet

Recommended applications

DeviceNet bus systems; automation devices like sensors, actuators, PLCs, and PCs

Application advantage

- Cable can supply device with power and data, minimizing wiring
- Communication rate up to 500Kbps
- Oil-resistant PVC or halogen-free jacket options
- Full compliance with ODVA specifications

Approvals

c UL us · DeviceNet · DNV·GL · RoHS

Cable attributes	page 648
See attribute list by part number on page 166	

Complete the installation	
	SKINTOP® MS-SC page 522

ÖLFLEX® CONNECT solution	
	ÖLFLEX® CONNECT CABLES page 605

Technical data

Minimum bend radius:
- for installation: 7.5 x cable diameter

Temperature range:
- PVC: -20°C to +75°C
- halogen-free: -25°C to +75°C

Nominal voltage: 300V

Characteristic impedance: 120 Ω

Nominal capacitance: 12 pF/ft

Color code:
- power pair: red & black
- data pair: blue & white

Approvals:
UL: CMG
PLTC (2170342, 2170340)
CL2 (2170343)
DNV GL Certification (2170340, 2170341)
CL2 (2170343)
Canada: c(UL) CMG

Part number	Type	Jacket material	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170342	Thick	PVC	18 AWG/1pr + 15 AWG/1pr	0.480	12.2	59	129	53112240
2170343	Thin	PVC	24 AWG/1pr + 22 AWG/1pr	0.272	6.9	22	45	53112210
2170340	Thick	halogen-free & flame retardant (FRNC)	18 AWG/1pr + 15 AWG/1pr	0.480	12.2	59	131	53112240
2170341	Thin	halogen-free & flame retardant (FRNC)	24 AWG/1pr + 22 AWG/1pr	0.272	6.9	22	47	53112210

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Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
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UNITRONIC® BUS DeviceNet™ FD Violet

For DeviceNet bus systems; continuous flex applications; 120 Ω

UNITRONIC® BUS DeviceNet FD cables provide reliable data and power transfer between industrial automation devices like sensors, actuators & PLCs. The cables are designed to perform in harsh chemical & mechanical environments and are in full compliance with ODVA specifications.

Construction

Conductors: stranded tinned copper

Insulation: power conductors: PVC (PVC jacket); polyethylene (PUR jacket) • data conductors: polyethylene

Shielding: pairs: tri-laminated foil shield • tinned copper drain wire; overall foil wrap and braid

Jacket: PVC or polyurethane; violet

Recommended applications

DeviceNet bus systems; cable tracks and moving machine parts; automation devices like sensors, actuators, PLCs, and PCs

Application advantage

- Cable can supply device with power and data, minimizing wiring
- Communication rate up to 500Kbps
- Oil-resistant PVC or abrasion-resistant PUR
- Full compliance with ODVA specifications

Approvals

c UL us · DeviceNet · RoHS

Cable attributes page 648

See attribute list by part number on page 166

Complete the installation

SKINTOP® MS-SC
page 522

ÖLFLEX® CONNECT solution

ÖLFLEX® CONNECT CABLES
page 605

Technical data

Minimum bend radius:
- for continuous flexing: 15 x cable diameter

Temperature range:
- PUR: -40°C to +75°C
- PVC: -10°C to +75°C

Nominal voltage: 300V

Characteristic impedance: 120 Ω

Nominal capacitance: 12 pF/ft

Color code:
- power pair: red & black
- data pair: blue & white

Approvals:
UL: CMG (2170346, 2170347)
CMX (2170344, 2170345)
PLTC (2170346)
CLX2 (2170344, 2170345)
CL2 (2170347)
Canada: c(UL) CMG (2170346, 2170347)
c(UL) CMX (2170344, 2170345)

Part number	Type	Jacket material	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170344	Thick	PUR	18 AWG/1pr + 15 AWG/1pr	0.480	12.2	63	124	53112240
2170345	Thin	PUR	24 AWG/1pr + 22 AWG/1pr	0.272	6.9	22	45	53112210
2170346	Thick	PVC	18 AWG/1pr + 15 AWG/1pr	0.480	12.2	63	131	53112240
2170347	Thin	PVC	24 AWG/1pr + 22 AWG/1pr	0.272	6.9	22	47	53112210

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

DeviceNet™ field wireable connectors

DN4110150
DN4110151

DN4110152
DN4110153

DN4110157

DN4110156

DN4110155

DN4110154

Application advantage

- Quick & easy on-site assembly

Technical data

Temperature range: max +85 °C

Nominal voltage:
- ⅞": 250V
- M12: 125V

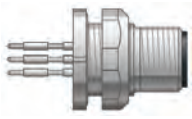
Nominal current:
- ⅞": 9A
- M12: 4A

Part number male	Part number female	Number of positions	Size	Termination	Cable diameter in	Cable diameter mm	Nominal voltage	Nominal current
⅞" straight connectors								
DN4110150	DN4110152	5	PG 9	screw	0.234 - 0.312	6 - 8	250V	9A
DN4110151	DN4110153	5	PG 13	screw	0.390 - 0.468	10 - 12	250V	9A
M12 straight connectors								
DN4110157	DN4110156	5	PG 9	screw	0.156 - 0.312	4 - 8	125V	4A
M12 90° connectors								
DN4110155	DN4110154	5	PG 9	screw	0.156 - 0.312	4 - 8	125V	4A

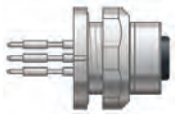
DeviceNet™ PCB connectors

DN4110007

DN4110045



DN4110044



Technical data

Temperature range: -40 °C to 105 °C

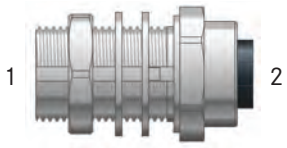
Part number	Connector	Number of positions	Nominal voltage	Nominal current
DN4110007	female ⅞"	5	300V	9A
DN4110044	female M12	5	250V	4A
DN4110045	male M12	5	250V	4A

If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

DeviceNet™ feed-through receptacles

DN4110043

DN4110051



Technical data

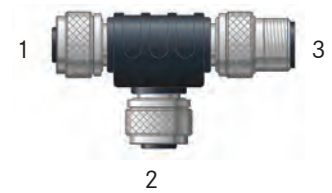
Temperature range:	-40°C to 75°C
IP Protection rating:	IP67

Part number	Connectors 1	Connectors 2	Number of positions	Nominal voltage	Nominal current
DN4110051	male 7/8"	female 7/8"	5	300V	9A
DN4110043	male M12	female M12	5	250V	4A

DeviceNet™ T-connectors

DN4110014

DN4110013



DN4110012

Technical data

Temperature range:	-40°C to 75°C

Part number	Connectors 1	Connectors 2	Connectors 3	Number of positions	Nominal voltage	Nominal current
DN4110012	female 7/8"	female 7/8"	male 7/8"	5	300V	9A
DN4110013	female M12	female M12	male M12	5	250V	4A
DN4110014	male 7/8"	female M12	female 7/8"	5	250V	4A

UNITRONIC® BUS PB

For PROFIBUS-DP/FMS/FIP bus systems; stationary applications; 150 Ω

UNITRONIC® BUS PB cables are designed for automation networks requiring fast and reliable data exchange between controllers and field devices. Additional styles are available upon request (e.g., armored, high temperature, direct burial for outdoor, PROFIBUS PA for intrinsic safety).

Recommended applications

Automation devices like sensors, actuators, PLCs, and PCs in dry or damp environments; PROFIBUS-DP/FMS/FIP bus systems

Max. cable length by bit rate for one bus segment

Communication rate	Length of cable segment ft	m
93.75 Kbps	3936	1200
187.5 Kbps	3280	1000
500 Kbps	1312	400
1.5 Mbps	656	200
12.0 Mbps	328	100

Construction

Conductors: solid and stranded bare copper

Insulation: polyethylene

Shielding: specially designed foil/tinned copper braid

Jacket: PVC, PUR, or halogen-free; violet • reinforced jacket: PVC; black

Application advantage

- Maximum EMI protection
- Fast connect style for quick installation
- Communication rate up to 12.0 Mbit/s
- LAPP is a member of the PROFIBUS User Organization (PNO)
- Call your sales representative for additional styles

Approvals

c UL us · PROFIBUS · RoHS

Cable attributes page 648

See attribute list by part number on page 166

Complete the installation

SKINTOP® MS-SC page 522

EPIC® DATA connectors page 179

ÖLFLEX® CONNECT solution

PROFIBUS cordsets page 626

Technical data

Minimum bend radius:
- for installation: 10 x cable diameter

Temperature range:
- PVC & PUR: -40°C to +80°C
- halogen-free: -30°C to +80°C

Characteristic impedance: 150 Ω ± 15 Ω

Nominal capacitance: 9 pF/ft

Color code: red & green pair

Approvals:
UL: CMG (see table below)
CMX (see table below)
CL3 (2170824, 2170820)
Canada: c(UL) CMG (see table below)
c(UL) CMX (see table below)

Part number	Jacket material	Conductor description	Approvals	Nominal outer diameter in	mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170220	PVC	22 AWG/1pr	–	0.315	8	20	50	53112220
2170219	PVC	22 AWG/1pr	UL/CSA CMX	0.315	8	20	38	53112220
2170824*	PVC	24 AWG/1pr, 7 wire	UL/CSA CMG	0.315	8	20	37	53112220
Fast connect								
2170820	PVC	22 AWG/1pr	UL/CSA CMG	0.315	8	17	56	53112220
2170853	halogen-free	22 AWG/1pr	UL/CSA CMG	0.315	8	20	50	53112220
2170326	halogen-free	22 AWG/1pr	–	0.315	8	20	50	53112220
2170330	PUR	22 AWG/1pr	UL/CSA CMX	0.315	8	20	50	53112220
2170826	PVC	24 AWG/1pr, 7 wire	UL/CSA CMG	0.315	8	20	45	53112220
Reinforced black jacket								
2170223	PVC	22 AWG/1pr	–	0.370	9.4	20	74	53112220
2170236	PVC/PVC	22 AWG/1pr	–	0.374	9.5	20	59	53112220

*For applications where vibrations occur

PROFIBUS is a registered trademark of PROFIBUS & PROFINET International (PI).
Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS PB FD

For PROFIBUS-DP/FMS/FIP bus systems; continuous flex applications; 150 Ω

UNITRONIC® BUS PB FD cables are designed for automation networks requiring fast and reliable data exchange between controllers and field devices.

Construction

Conductors: stranded bare copper

Insulation: polyethylene

Shielding: specially designed foil/tinned copper braid

Jacket: polyurethane or halogen-free; violet

Recommended applications

Highly flexible applications like cable tracks & moving machine parts; PROFIBUS-DP/FMS/FIP bus systems

Application advantage

- Oil-resistant and flame retardant outer jacket
- Fast connect style for quick installation
- Communication rate up to 12 Mbit/s
- LAPP is a member of the PROFIBUS User Organization (PNO)

Approvals

c UL us · PROFIBUS · Continuous Flex Test Method Verified (UL VERIFIED verify.UL.com A522492) · RoHS

Cable attributes page 648

See attribute list by part number on page 166 *

Complete the installation

SKINTOP® MS-SC page 522

EPIC® DATA connectors page 179

ÖLFLEX® CONNECT solution

PROFIBUS cordsets page 626

Technical data

Minimum bend radius:
- for continuous flexing:
  - 2170222 & 2170822: 9 x cable diameter
  - 2170322 & 2170854: 15 x cable diameter

Temperature range:
- for stationary use: -40°C to +80°C
- for flexible use: -30°C to +70°C

Characteristic impedance: 150 Ω ± 15 Ω

Nominal capacitance: 9 pF/ft

Color code: red & green pair

Approvals:
UL: CMX (2170822, 2170322)
CM (2170997)
Canada: c(UL) CMX (2170822, 2170322)
c(UL) CM (2170854)
Additional: Torsion rated for wind market (± 150°/m) (2170222, 2170822)
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Jacket material	Conductor description	Approvals	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170222	PUR	24 AWG/1pr	–	0.315	8	20	43	53112220
2170822	PUR	24 AWG/1pr	UL/CSA CMX	0.315	8	20	39	53112220
Fast connect								
2170322	PUR	24 AWG/1pr	UL/CSA CMX	0.315	8	17	53	53112220
2170997	halogen-free	24 AWG/1pr	UL CMG	0.315	8	20	50	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS PB TRAY

For PROFIBUS-DP/FMS bus systems; stationary tray applications; 150 Ω

UNITRONIC® BUS PB TRAY is designed for automation networks requiring fast and reliable data exchange between controllers and field devices.

Construction

Conductors: solid bare copper
Shielding: specially designed foil/tinned copper braid
Inner jacket: PVC; violet
Jacket: PVC; violet

Recommended applications

Automation devices like sensors, actuators, PLCs, and PCs in dry or damp environments; stationary tray applications for PROFIBUS-DP/FMS bus systems

Application advantage

- Designed for tray applications (PLTC-ER)
- Highly flame retardant
- Oil-resistant jacket
- Fast connect style for quick installation

Approvals

c UL us c UL us PROFIBUS RoHS

Cable attributes			page 648
OIL	OR-02	FLAME	FR-03
MOTION	FL-01	MECH.	MP-03

Complete the installation


SKINTOP® MS-SC
page 522


EPIC® DATA connectors
page 179

Technical data

Minimum bend radius: 8 x cable diameter

Temperature range:
- for stationary use: -40°C to +80°C
- for flexible use: -10°C to +70°C

Nominal voltage: 250V (not for power applications)

Characteristic impedance: 150 Ω ± 15 Ω

Color code: red & green pair

Approvals:
UL: CMG per UL 444
PLTC-ER per UL 13
AWM 20201
Attributes: UL Oil Res I
Sunlight resistant
Canada: c(UL) CMG FT4

Part number	Jacket material	Conductor description	Approvals	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170856	PVC	22 AWG/1pr	UL/CSA CMG	0.331	8.4	17	55	53112220

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Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS PB FD HYBRID/COMBI

For PROFIBUS-DP/FMS/FIP bus systems; continuous flex applications; 150 Ω

UNITRONIC® BUS PB FD HYBRID/COMBI is designed for automation networks requiring fast and reliable data exchange between controllers and field devices.

Construction

Conductors: data pairs: stranded bare copper • power conductors: stranded bare copper

Insulation: data pairs: polyethylene • power conductors: PVC

Shielding: shielded pair and 4 control conductors twisted together with yarn • data pairs: specially designed foil/tinned copper braid

Jacket: PVC or PUR; violet

Recommended applications

Highly flexible hybrid (data and power) applications like power chains & moving machine parts; PROFIBUS-DP/FMS/FIP bus systems

Application advantage

- Hybrid cable for data transmission and power supply
- Oil-resistant and flame retardant outer jacket
- Sunlight resistant
- LAPP is a member of the PROFIBUS User Organization (PNO)

Approvals

c UL us · PROFIBUS · RoHS · Continuous Flex Test Method Verified UL VERIFIED A522492

Cable attributes page 648

See attribute list by part number on page 166 *

Complete the installation

SKINTOP® MS-SC page 522

Technical data

Minimum bend radius:
- for stationary use: 10 x cable diameter
- for continuous flexing: 15 x cable diameter

Temperature range:
- 2170875: -5°C to +80°C
- 2170227: -5°C to +50°C
- 2170495: -30°C to +60°C

Nominal voltage: (not for power applications)
- 2170875: 600V
- 2170227 & 2170495: 100V

Characteristic impedance: 150 Ω ± 15 Ω

Nominal capacitance: 9 pF/ft

Color code:
- data pairs: red & green
- power conductors: black conductors with white numbers: 1, 2, 3, 4

Approvals:
UL: CMG*
CL3*
Canada: c(UL) CMG*
*UNITRONIC® BUS PB FD Y HYBRID
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Jacket material	Conductor description	Approvals	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
UNITRONIC® BUS PB FD Y HYBRID								
2170875	PVC	24 AWG/1pr + 16 AWG/4c	UL/CSA CMG	0.445	11.3	60	104	S2116
UNITRONIC® BUS PB FD P COMBI								
2170227	PUR	24 AWG/1pr + 18 AWG/3c	–	0.398	10.1	40	84	S2116
UNITRONIC® BUS PB FD P HYBRID								
2170495	PUR	24 AWG/1pr + 16 AWG/4c	–	0.445	11.3	60	100	S2116

UNITRONIC® BUS PB TORSION

For PROFIBUS-DP/FMS/FIP bus systems; torsion applications; 150 Ω

UNITRONIC® BUS PB TORSION is designed for automation networks requiring fast and reliable data exchange between controllers and field devices.

Construction

Conductors: stranded bare copper

Insulation: polyethylene

Shielding: specially designed foil/tinned copper braid

Jacket: halogen-free polyurethane; violet

Recommended applications

Torsion applications like robots; PROFIBUS-DP/FMS/FIP bus systems

Application advantage

- For torsional stress ± 180°/meter
- Halogen-free and flame retardant outer jacket
- Communication rate up to 12 Mbit/s
- LAPP is a member of the PROFIBUS User Organization (PNO)

Approvals

cULus PROFIBUS RoHS

Cable attributes			page 648
OIL	OR-04	FLAME	FR-02
MOTION	FL-02	MECH.	MP-05

Complete the installation

SKINTOP® MS-SC
page 522

EPIC® DATA connectors
page 179

Technical data

Minimum bend radius:
- for stationary use: 4 x cable diameter
- for flexible use: 15 x cable diameter

Temperature range: -25°C to +75°C

Nominal voltage: 300V (not for power applications)

Characteristic impedance: 150 Ω ± 15 Ω

Nominal capacitance: 9 pF/ft

Color code: red & green

Approvals: UL: CMX; Canada: c(UL) CMX

Part number	Jacket material	Conductor description	Approvals	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170332	PUR	22 AWG/1pr	UL/CSA CMX	0.315	8	21	44	53112220

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Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
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UNITRONIC® BUS PB FESTOON

For PROFIBUS-DP/FMS/FIP bus systems; festoon applications; 150 Ω

UNITRONIC® BUS PB FESTOON is designed for automation networks requiring fast and reliable data exchange between controllers and field devices.

Construction

Conductors: stranded bare copper

Insulation: polyethylene

Shielding: specially designed foil/tinned copper braid

Jacket: PVC; violet

Recommended applications

Festoon applications like cable trolleys; PROFIBUS-DP/FMS/FIP bus systems

Application advantage

- CL3 rating for installation in trays
- Oil-resistant and flame retardant outer jacket
- Communication rate up to 12 Mbit/s
- Sunlight resistant
- LAPP is a member of the PROFIBUS User Organization (PNO)

Approvals

cULus PROFIBUS RoHS

Cable attributes			page 648
OIL	OR-02	FLAME	FR-03
MOTION	FL-02	MECH.	MP-01

Complete the installation

SKINTOP® MS-SC
page 522

ÖLFLEX® CONNECT solution

ÖLFLEX® CONNECT CABLES
page 605

Technical data

Minimum bend radius:
- for stationary use: 4 x cable diameter
- for flexible use: 9 x cable diameter

Temperature range:
- for stationary use: -40°C to +75°C
- for flexible use: -5°C to +70°C

Nominal voltage: 600V (not for power applications)

Characteristic impedance: 150 Ω ± 15 Ω

Nominal capacitance: 9 pF/ft

Color code: red & green

Approvals: UL: CMG, CL3
Canada: c(UL) CMG

Part number	Jacket material	Conductor description	Approvals	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170331	PVC	24 AWG/1pr	UL/CSA CMG	0.315	8	17	43	53112220

PROFIBUS® is a registered trademark of PROFIBUS & PROFINET International (PI).
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Photographs are not to scale and are not true representations of the products in question.

EPIC® DATA PROFIBUS® connectors

35°, 90° & 180° with screw terminal


EPIC® DATA PROFIBUS connectors are screw terminal, 9 pin D-sub connectors with an integrated adjustable termination resistor. Connectors are available with additional programming/diagnostic interface. The following designs are available: 35° angled, 90° angled, 180° angled, 90° angled with LED for easy troubleshooting and visual connection control.

Usage notes

- When used as a through connector the switch must be in the “OFF” position. If used as a terminating connector the switch must be in the “ON” position.
- If the switch is in the “ON” position, the outgoing bus cable is disconnected.
- Switch is clearly visible when connector is plugged in and operational.
- LED version: 3 status LEDs indicate: bus operation (green), station transmission (blue), terminating resistor “on” (orange)
- D-sub pin assignment in accordance with PROFIBUS

Approvals

Design

Connection type: screw terminal

For cable diameter: 0.197 - 0.315 in (5 - 8 mm)

Terminating resistor: integrated resistor combination that is connected by a sliding switch

Interface: 9 pin D-sub socket

Weight: 40g

Insertion/withdrawal cycles: > 200

Application advantage

- Standardized interfaces
- Cost-saving due to quick installation
- Easy to connect
- Small design
- Fully compatible with market standard

Technical data

Temperature range:
- operating: 0°C to +60°C
- transport & storage: -25°C to +80°C
- relative humidity: max. 75% at +25°C

Protection rating: IP20

Supply voltage: 4.75 - 5.25V DC

Transmission rate: max. 12 Mbit/s

Current consumption: max. 12.5 mA

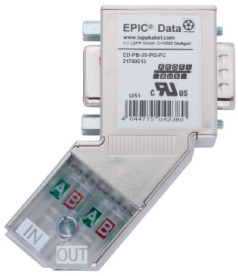
Interface:
- PROFIBUS station: 9 pin D-sub socket
- PROFIBUS cable: 4 terminal blocks for wires up to 1 mm²

Approvals:
- UL: Programmable Controllers: Components
- Canada: Programmable Controllers Certified: Component
- Additional: CE & RoHS

Part number	Cable outlet	Programming/ diagnostics	Diagnostics LED	Dimensions (L × W × H) mm	Current consumption
21700506	35°	yes	no	54 × 40 × 17	12.5 mA
21700507	35°	no	no	54 × 40 × 17	12.5 mA
21700503	90°	yes	no	64 × 40 × 17	12.5 mA
21700504	90°	no	no	64 × 40 × 17	12.5 mA
21700529	90°	yes	yes	64 × 40 × 17	35 mA
21700530	90°	no	yes	64 × 40 × 17	35 mA
21700505	180°	no	no	68 × 39.5 × 17	12.5 mA

EPIC® DATA PROFIBUS® connectors

35°, 90° & 180° fast connect



Installation tools

Fast connect stripping tool
page 262

EPIC® DATA PROFIBUS connectors are screw terminal, 9 pin D-sub connectors with an integrated adjustable termination resistor. Connectors are available with additional programming/diagnostic interface. The following designs are available: 35° angled, 90° angled, 180° angled, 90° angled with LED for easy troubleshooting and visual connection control.

Usage notes

- When used as a through connector the switch must be in the “OFF” position. If used as a terminating connector the switch must be in the “ON” position.
- If the switch is in the “ON” position, the outgoing bus cable is disconnected.
- Switch is clearly visible when connector is plugged in and operational.
- LED version: 3 status LEDs indicate: bus operation (green), station transmission (blue), terminating resistor “on” (orange)
- D-sub pin assignment in accordance with PROFIBUS

Approvals

Design

Connection type: fast connect

For cable diameter: 0.197 - 0.315 in (5 - 8 mm)

Termination resistor: integrated resistor combination that is connected by a sliding switch

Interface: 9 pin D-sub socket

Weight: 40g

Insertion/withdrawal cycles: 50g

Application advantage

- Suitable for FC cables
- Standardized interfaces
- Cost-saving due to quick installation
- Easy to connect
- Fully compatible with market standard

Technical data

Temperature range:
- operating: -25°C to +60°C
- transport & storage: -25°C to +80°C
- relative humidity: max. 75% at +25°C

Protection rating: IP20

Supply voltage: 4.75 - 5.25V DC (supplied from terminal)

Transmission rate: max. 12 Mbit/s

Interface:
- PROFIBUS station: 9 pin D-sub socket
- PROFIBUS cable: FC standard cable ø 0.64 mm

Approvals:
Components
UL: Programmable Controllers:
Canada: Programmable Controllers Certified: Component
Additional: CE & RoHS

Part number	Cable outlet	Programming/ diagnostics	Diagnostics LED	Cable type	Dimensions (L × W × H) mm	Current consumption
21700511	35°	no	no	solid	95 × 70 × 17	12.5 mA
21700515	35°	yes	no	stranded	95 × 70 × 17	12.5 mA
21700514	35°	no	no	stranded	95 × 70 × 17	12.5 mA
21700501	90°	yes	no	solid or stranded	72 × 40 × 17	12.5 mA
21700502	90°	no	no	solid or stranded	72 × 40 × 17	12.5 mA
21700546	90°	yes	yes	solid or stranded	72 × 40 × 17	35 mA
21700547	90°	no	yes	solid or stranded	72 × 40 × 17	35 mA
21700544	180°	no	no	solid or stranded	70 × 35 × 17	12.5 mA

PROFIBUS® field wireable M12 connectors

Application advantage

- Quick and easy on-site assembly
- Robust shielded design
- Space-saving compact design

Approvals

Technical data

Temperature range:	-40°C to +85°C	**Coding:**	B-inverse
Nominal voltage:	60V	**Protection rating:**	IP67
Nominal current:	4A	**Approvals:**	RoHS
Contact resistance:	3mΩ		

Part number		Number of positions	Size	Termination	Conductor cross section		Cable diameter	
male	female				AWG	mm²	in	mm
22260653	22260646	5	PG 9	screw	24 - 18	0.25 - 0.75	0.234 - 0.332	6 - 8.5
22262078	22260889	5	PG 11	screw	24 - 18	0.25 - 0.75	0.315 - 0.394	8 - 10

PROFIBUS® termination resistors

Application advantage

- Robust design
- Standardized interfaces
- Space-saving compact design
- Female connector with shielded design

Approvals

Technical data

Temperature range:
- male: -25°C to +90°C
- female: -40°C to +85°C

Nominal voltage:
- male: 60V
- female: 32V

Nominal current: 4A

Contact resistance: 5mΩ

Coding: B-inverse

Protection rating:
- male: IP65/IP67
- female: IP67

Approvals: RoHS

Part number	Connector	Number of positions	Nominal voltage	Nominal current	Pack size
22260722	male M12	4	60V	4A	5
22261001	female M12	4	32V	4A	5

UNITRONIC® BUS CAN

For CAN bus systems; stationary applications; 120 Ω

UNITRONIC® BUS CAN is designed to the CAN open and ISO11898 standard. It is well suited for high-speed motion control and feedback loop applications, providing high reliability and efficient use of network bandwidth.

Construction

Conductors: 7-wire strands of bare copper

Insulation: polyethylene

Shielding: foil wrap; tinned copper braid shield

Jacket: PVC; violet • reinforced jacket: PE; black

Recommended applications

Motion control systems; assembly, welding, and material handling machines; single cable wiring of multi-input sensor blocks; smart sensors; pneumatic valves; barcode readers; drives and operator interfaces

Application advantage

- Signal integrity in stationary motion applications
- Flame retardant
- Oil-resistant jacket
- Flexible for ease of routing
- Supports SAE J1939 physical layer in accordance with ISO 11898

Rate table

Distance (m)	AWG	Max. rate
0 - 40	22	1 Mbps @ 40 m
40 - 300	22, 20	50 kbps @ 100 m
300 - 600	20	100 kbps @ 500 m
600 - 1000	19	50 kbps @1 km

Approvals

c UL us

RoHS

Cable attributes page 648

OIL OR-00 | FLAME FR-02
MOTION FL-02 | MECH. MP-01

Complete the installation


SKINTOP® MS-SC page 522


EPIC® DATA connectors page 186

Technical data

Minimum bend radius:	10 x cable diameter	**Nominal capacitance:**	12 pF/ft
Temperature range:	-30°C to +80°C	**Color code:** - pair 1: - pair 2:	DIN 47100: chart 8, page 682 white & brown green & yellow
Nominal voltage:	250V (not for power applications)		
Characteristic impedance:	120 Ω ± 15Ω	**Approvals:**	UL: CMX Canada: c(UL) CMX *not for 2170500

Part Number	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170260	24 AWG/1pr	0.224	5.7	11	28	53112220
2170261	24 AWG/2pr	0.299	7.6	23	46	53112220
2170263	22 AWG/1pr	0.268	6.8	17	37	53112220
2170264	22 AWG/2pr	0.335	8.5	31	59	53112220
2170266	20 AWG/1pr	0.296	7.5	28	60	53112220

Part Number	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170267	20 AWG/2pr	0.382	9.7	40	71	53112230
2170269	19 AWG/1pr	0.343	8.7	35	73	53112220
2170270	19 AWG/2pr	0.453	11.5	54	95	53112230
Reinforced black jacket (outdoor/ direct burial)						
2170500	20 AWG/4c	0.354	9.0	28	61	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS CAN FD P

For CAN bus systems; continuous flex applications; 120 Ω

UNITRONIC® BUS CAN FD P is designed to the CAN open and ISO 11898 standard. It is well suited for high-speed motion control and feedback loop applications, providing high reliability and efficient use of network bandwidth.

Construction

Conductors: finely stranded bare copper

Insulation: polyethylene

Shielding: tinned copper braid shield

Jacket: halogen-free polyurethane; violet

Recommended applications

Motion control systems; assembly, welding, and material handling machines; single cable wiring of multi-input sensor blocks; smart sensors; pneumatic valves; barcode readers; drives and operator interfaces

Application advantage

- Designed for continuous flex applications
- Signal integrity in stationary motion applications
- Flame retardant
- Oil-resistant jacket
- Flexible for ease of routing
- Supports SAE J1939 physical layer in accordance with ISO 11898

Rate table

Distance (m)	AWG	Max. rate
0 - 40	22	1 Mbps @ 40 m
40 - 300	22, 20	50 kbps @ 100 m
300 - 600	20	100 kbps @ 500 m
600 - 1000	19	50 kbps @1 km

Approvals

Continuous Flex Test Method Verified UL VERIFIED verify.UL.com A522492

c UL us

RoHS

Cable attributes			page 648
OIL	OR-04	FLAME	FR-02
MOTION	CF-02*	MECH.	MP-05

Complete the installation

EPIC® DATA connectors
page 186

Technical data

Minimum bend radius: 15 x cable diameter

Temperature range:
- for installation: -40°C to +80°C
- for continuous flexing: -30°C to +70°C

Nominal voltage: 250V (not for power applications)

Characteristic impedance: 120 Ω ± 15Ω

Nominal capacitance: 18 pF/ft

Color code: DIN 47100: chart 8, page 682
- pair 1: white & brown
- pair 2: green & yellow

Approvals:
UL: CMX
Canada: c(UL) CMX
Additional:
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part Nnmber	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170272	24 AWG/1pr	0.252	6.4	16	27	53112210
2170273	24 AWG/2pr	0.331	8.4	22	44	53112220
2170275	22 AWG/1pr	0.268	6.8	22	40	53112210

Part Nnmber	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170276	22 AWG/2pr	0.378	9.6	35	59	53112230
2170278	20 AWG/1pr	0.315	8.0	28	50	53112220
2170279	20 AWG/2pr	0.426	10.8	40	67	53112230

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS CAN TRAY

For CAN bus systems; stationary tray applications; 120 Ω

UNITRONIC® BUS CAN TRAY is designed to the CAN open and ISO 11898 standard. It is well-suited for high-speed motion control and feedback loop applications, providing both high reliability and efficient use of network bandwidth.

Construction

Conductors: 7-wire strands of bare copper

Inner jacket: PVC; violet

Shielding: tinned copper braid

Jacket: PVC; violet

Recommended applications

Stationary cable tray applications; motion control systems; assembly, welding, and material handling machines; single-cable wiring for multi-input sensor blocks; smart sensors; pneumatic valves; barcode readers; operator interfaces

Application advantage

- Designed for tray applications (PLTC-ER)
- Highly flame retardant
- Oil-resistant jacket
- Maximum bit rate: 1 Mbit/s @ 40 m
- Sunlight resistant
- Supports SAE J1939 physical layer in accordance with ISO 11898

Approvals

c UL us c UL us RoHS

Cable attributes			page 648
OIL	OR-02	FLAME	FR-04
MOTION	FL-02	MECH.	MP-03

Complete the installation

SKINTOP® MS-SC
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EPIC® DATA connectors
page 186

Technical data

Minimum bend radius: 8 x cable diameter

Temperature range:
- for stationary use: -40°C to +80°C
- for flexible use: -10°C to +70°C

Nominal voltage: 250V (not for power applications)

Characteristic impedance: 120 Ω ± 15Ω

Color code: DIN 47100: chart 8, page 682
- pair 1: white & brown
- pair 2: green & yellow

Approvals:
UL: CMG per UL 444
PLTC-ER per UL 13
AWM 21695
Attributes: UL Oil Res I
sunlight resistant
Canada: CSA CMG FT 4

Part number	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170857	22 AWG/2pr	0.296	7.5	24	54	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
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EPIC® DATA CAN bus connectors

90° & 180° with screw terminal

EPIC® DATA CAN bus connectors are screw terminal, 9 pin D-sub connectors with an integrated adjustable termination resistor. Connectors are available with additional programming/diagnostic interface. The following designs are available: 90° angled or 180° angled

Usage notes

- When used as a through connector the switch must be in the “OFF” position. If used as a terminating connector, the switch must be in the “ON” position
- No loose parts
- D-sub pin assignment in accordance with CAN bus

Approvals

Design

Connection type: screw terminal

For cable diameter: 0.197 - 0.315 in (5 - 8 mm)

Termination resistor: 120 Ω integrated and connectable with slide switch

Interface: 9 pin D-sub socket

Weight: 40 g

Insertion/withdrawal cycles: > 200

Application advantage

- With additional 24V DC output to supply external devices (GND = pin, CAN V+ = pin 9)
- Cost-saving due to quick installation
- Easy to connect
- Standardized interfaces

Technical data

Temperature:
- operating: 0°C to +60°C
- transport & storage: -25°C to +75°C
- relative humidity: max. 75% at +25°C

Protection rating: IP20

Transmission rate: max. 1 Mbit/s

Interface:
- CAN bus station: 9 pin D-sub socket
- CAN bus cable: 6 terminal blocks for wires up to 1 mm²
- D-sub assignments: pin 2: CAN Low, pin 7: CAN High, pin 3: CAN Gnd, pin 9*: CAN V+, pin 6*: Gnd
  * 90° version only

Approvals:
UL: Programmable Controllers: Components
Canada: Programmable Controllers Certified: Component
Additional: CE & RoHS

Part number	Cable outlet	Programming/ diagnostics	Diagnostics LED	Dimensions (L × W × H) mm
21700536	90°	yes	no	65 × 48 × 16
21700537	90°	no	no	65 × 48 × 16
21700538	180°	no	no	67.5 × 35 × 17

CAN bus field wireable M12 connectors

Application advantage

- Quick and easy on-site assembly
- Robust shielded design
- Space-saving compact design

Approvals

RoHS

Technical data

Temperature range:	-40°C to +85°C	Coding:	A-standard
Nominal voltage:	60V	Protection rating:	IP67
Nominal current:	4A	Approvals:	RoHS
Contact resistance:	3mΩ		

Part number		Number of positions	Size	Termination	Conductor cross section		Cable diameter	
male	female				AWG	mm²	in	mm
22260135	22260136	5	PG 9	screw	24 - 18	0.25 - 0.75	0.234 - 0.332	6 - 8

CAN bus T-connectors

Application advantage

- Robust shielded design
- Space-saving compact design
- Standardized interfaces

Approvals

RoHS

Technical data

Temperature range:	-20°C to +90°C	Coding:	A-standard
Nominal voltage:	60V	Protection rating:	IP65/IP67
Nominal current:	4A	Approvals:	RoHS
Contact resistance:	5mΩ		

Part number	Connector			Number of positions
	1	2	3	
22260765	female M12	male M12	female M12	5

If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

CAN bus termination resistor

Application advantage

- Robust design
- Standardized interfaces
- Space-saving compact design

Approvals

RoHS

Technical data

Temperature range:	-25 °C to +90 °C	**Coding:**	A-standard
Nominal voltage:	60V	**Protection rating:**	IP65/IP67
Nominal current:	4A	**Approvals:**	RoHS

Part number	Connector	Number of positions	Nominal voltage	Nominal current	Pack size
22260766	male M12	5	60V	4A	5

UNITRONIC® BUS LD/LD FD P

For RS485/RS422 bus systems; stationary & continuous flex applications; 100 - 120 Ω

UNITRONIC® BUS Long Distance (LD) cables are built after the RS-422 and RS-485 standards and are robust solutions for transmitting data over long distances and noisy environments. Stranded copper conductors and high-performance insulation optimize flexing endurance. Tinned copper braid provides superior EMI protection.

Recommended applications

Bus systems such as Modbus, SUCOnet P, Modulink P, VariNet-P; dry or damp rooms; FD version suitable for continuous flex applications like cable tracks and moving machine parts

Approvals

c UL us

RoHS

Continuous Flex Test Method Verified — UL VERIFIED verify.ul.com A522492

Stationary construction

Conductors: stranded bare copper

Insulation: polyethylene

Shielding: copper braid

Jacket: PVC; violet

Continuous flex construction

Conductors: stranded bare copper

Insulation: polyethylene

Shielding: copper braid

Jacket: polyurethane; violet

Application advantage

- Maximum EMI protection
- PUR jacket resistant to tear, abrasion & mineral oils
- Flexible for ease of routing

Cable attributes page 648

See attribute list by part number on page 166

Complete the installation

SKINTOP® MS-SC
page 522

ÖLFLEX® CONNECT solution

ÖLFLEX® CONNECT CABLES
page 605

Technical data

Minimum bend radius:
- stationary: 8 x cable diameter
- continuous flex:
  - for installation: 6 x cable diameter
  - for continuous flexing: 15 x cable diameter

Temperature range:
- stationary: -40°C to +80°C
- continuous flex:
  - for installation: -40°C to +80°C
  - for flexible use: -30°C to +70°C

Nominal voltage: 250V

Characteristic impedance: 100 - 120 Ω

Nominal capacitance: 18 pF/ft (800 Hz)

Color code: DIN 47100: chart 8, page 682
- pair 1: white & brown
- pair 2: green & yellow
- pair 3: gray & pink

Approvals: UL: CMX (see below)
Canada: CSA CMX (see below)

Continuous Flex Version (CF-01, CF-02, CF-03)
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Jacket material	Conductor description	Approvals	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
Stationary								
2170203	PVC	24 AWG/1pr	–	0.225	5.7	12	25	53112210
2170803	PVC	24 AWG/1pr	UL/CSA CMX	0.225	5.7	12	26	53112210
2170204	PVC	24 AWG/2pr	–	0.280	7.1	19	30	53112210
2170205	PVC	24 AWG/3pr	–	0.284	7.2	25	48	53112210
Continuous flex*								
2170213	PUR	24 AWG/1pr	–	0.236	6.0	12	26	53112210
2170813	PUR	24 AWG/1pr	UL/CSA CMX	0.244	6.2	12	26	53112210
2170214	PUR	24 AWG/2pr	–	0.311	7.9	22	44	53112220
2170814	PUR	24 AWG/2pr	UL/CSA CMX	0.327	8.3	22	44	53112220
2170215	PUR	24 AWG/3pr	–	0.315	8.0	26	52	53112220
2170815	PUR	24 AWG/3pr	UL/CSA CMX	0.331	8.4	26	52	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS ASi

For Actuator Sensor Interface (AS-i) bus systems; stationary & flexible applications; 140 Ω

UNITRONIC® BUS ASi is a geometrically-coded, 2-conductor flat cable designed for data and power transfer between simple I/O devices on the sensor/actuator level. The cable is available with 3 different jackets: PVC, rubber, or TPE. The voltage drop on the long distance version is smaller due to larger conductor cross-sections.

Recommended applications

Data and power transmission between sensors, actuators, slaves, repeaters and master; TPE version suitable for wet areas and cooling lubricants

Cable attributes page 648

See attribute list by part number on page 166 *

Construction

Conductors: stranded tinned copper
Insulation: PVC, rubber, or TPE
Jacket: PVC, EPDM (rubber), or TPE

Application advantage

- Data and power transmission in one cable
- Quick connections to ASi-module due to piercing technology
- Protection against polarity reversal
- UNITRONIC® BUS ASi LD (Long Distance) allows even longer cable runs; more devices or devices with higher power demand can be connected to the network.

Approvals

Complete the installation


SKINTOP® strain relief page 492


SKINTOP® DIX-ASi page 547

Technical data

Minimum bend radius:
- for stationary use: 12 mm
- for flexible use:
  - PVC & rubber: 24 mm
  - TPE: 16 mm

Temperature range:
- PVC:
  - during use: -30°C to +90°C
  - during installation: -20°C to +90°C
- rubber & TPE:
  - during use: -40°C to +85°C
  - during installation: -30°C to +85°C
- 2170845, 2170846, 2170847, 2170848
  - during use: -40°C to +105°C
  - during installation: -30°C to +105°C

Peak voltage:
- yellow, blue & black: 300V (not for power applications)
- red: 300V

Test voltage: 2000V

Characteristic impedance: 70 - 140 Ω (@ 167 KHz)

Nominal capacitance: 24 pF/ft

Color code: blue & brown

Approvals:
UL: CMG (PVC jacket)
CL2 (PVC jacket)
AWM 2095 (PVC jacket)
AWM 21439 (2170845, 2170846, 2170847, 2170848)
Canada: c(UL) CMG (PVC jacket)
cRU AWM FT2 (2170845, 2170846, 2170847, 2170848, PVC jacket)
Additional: ASi
CE & RoHS

Part number	Jacket construction material	Jacket construction color	Conductor description	Approvals	Application	Copper weight lbs/mft	Approx. weight lbs/mft
2170842	PVC	yellow	2 x 16 AWG	UL/CSA CMG	data & power transmission	19	47
2170843	PVC	black	2 x 16 AWG	UL/CSA CMG	transmission of 30V DC auxiliary power	19	47
2170845	TPE	yellow	2 x 16 AWG	UL/CSA AWM	data & power transmission	19	43
2170846	TPE	black	2 x 16 AWG	UL/CSA AWM	transmission of 30V DC auxiliary power	19	43
2170847	TPE	blue	2 x 16 AWG	UL/CSA AWM	data and power transmission	19	43
2170848	TPE	black	2 x 14 AWG	UL/CSA AWM	transmission of 30V DC auxiliary power	32	57
2170228	EPDM rubber	yellow	2 x 16 AWG	–	data & power transmission	19	57
2170229	EPDM rubber	black	2 x 16 AWG	–	transmission of 30V DC auxiliary power	19	57
2170371	EPDM rubber	yellow	2 x 14 AWG	–	long distance data & power transmission	32	57
2170372	EPDM rubber	black	2 x 14 AWG	–	long distance transmission of 30V DC auxiliary power	32	57
2170230	TPE	yellow	2 x 16 AWG	–	data & power transmission	19	43
2170231	TPE	black	2 x 16 AWG	–	transmission of 30V DC auxiliary power	19	43
2170232	TPE	red	2 x 16 AWG	–	transmission of 230V AC auxiliary power	19	43

If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS ASi FD

For Actuator Sensor Interface (AS-i) bus systems; continuous flex applications; 140 Ω

LAPP KABEL STUTTGART UNITRONIC® BUS ASi FD

LAPP KABEL STUTTGART UNITRONIC® BUS ASi FD

UNITRONIC® BUS ASi FD is a geometrically-coded, 2-conductor flat cable designed for data and power transfer between simple I/O devices on the sensor/actuator level. This cable is suitable for continuous flex applications and has a halogen-free PUR or oil-resistant TPE jacket.

Recommended applications

Continuous flex applications e.g. cable tracks and moving machine parts; data and power transmission between sensors, actuators, slaves, repeaters and master

Approvals

Continuous Flex Test Method Verified

Cable attributes page 648

See attribute list by part number on page 166 *

Complete the installation

SKINTOP® strain relief page 492

SKINTOP® DIX-ASi page 547

Construction

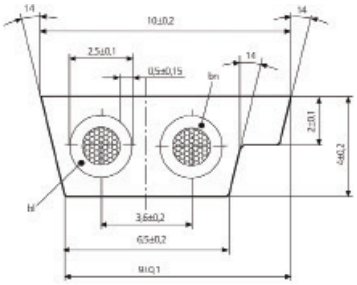
Conductors: stranded tinned copper

Insulation: polyurethane or TPE

Jacket: polyurethane or TPE

Application advantage

- Data and power transmission in one cable
- Quick connections to ASi-module due to piercing technology
- PUR-jacketed version is halogen-free and highly oil-resistant
- UNITRONIC® BUS ASi FD LD (Long Distance) allows even longer cable runs between modules



Technical data

Minimum bend radius:
- for stationary use: 12 mm
- for continuous flexing: 24 mm

Temperature range:
- PUR:
  - fixed installation: -40°C to +80°C
  - flexible without fixing: -30°C to +70°C
- TPE:
  - fixed installation: -40°C to +105°C
  - flexible without fixing: -30°C to +105°C

Peak voltage: 300V

Test voltage: 2000V

Characteristic impedance: 70 - 140 Ω (@ 167 KHz)

Nominal capacitance: 24 pF/ft

Color code: blue & brown

Approvals:
UL: AWM
Canada: cRU AWM
Additional: ASi
CE & RoHS
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Jacket construction material	Jacket construction color	Conductor description	Approvals	Application	Copper weight lbs/mft	Approx. weight lbs/mft
2170357	PUR	yellow	2 x 16 AWG	UL/CSA AWM	data & power transmission	19	43
2170358	PUR	black	2 x 16 AWG	UL/CSA AWM	transmission of 30V DC auxiliary power	19	43
2170317	PUR	yellow	2 x 14 AWG	UL/CSA AWM	long distance data & power transmission	32	50
2170318	PUR	black	2 x 14 AWG	UL/CSA AWM	long distance transmission of 30V DC auxiliary power	32	50
2170830	TPE	yellow	2 x 16 AWG	UL/CSA AWM	data & power transmission	19	43
2170831	TPE	black	2 x 16 AWG	UL/CSA AWM	transmission of 30V DC auxiliary power	19	43

If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS BlueFlex™

For Data Highway and Data Highway+ bus systems; continuous flex applications; 78 Ω

UNITRONIC® BUS BlueFlex™ is designed for use in Rockwell Automation® Allen Bradley DH, DH+, and Remote I/O networks. BlueFlex™ is constructed to withstand continuous flex applications where EMC conditions are pervasive.

Construction

Conductors: finely stranded tinned copper

Insulation: electronic-grade flexible TPE

Shielding: overall tape shield; flexible tinned copper braid (85% coverage)

Jacket: PVC; blue

Recommended applications

Industrial automation and process control field networks; sensors; valves; gauges; barcode readers; drives and operator interfaces.

Application advantage

- Signal integrity in continuous motion applications
- Flame- and oil-resistant jacket
- Flexible for ease of routing
- UL AWM USE: external interconnection of electronic equipment

Approvals

Continuous Flex Test Method Verified VERIFIED verify.ul.com A522492

Cable attributes			page 648
OIL	OR-01	FLAME	FR-02
MOTION	CF-01*	MECH.	MP-01

Complete the installation

SKINTOP® MS-SC
page 522

Technical data

Minimum bend radius:
- for stationary use: 5 x cable diameter
- for continuous flexing: 12 x cable diameter

Temperature range: -20°C to +80°C

Nominal voltage: 300V

Test voltage: 3000V

Characteristic impedance: 78 Ω

Nominal capacitance: 17 pF/ft

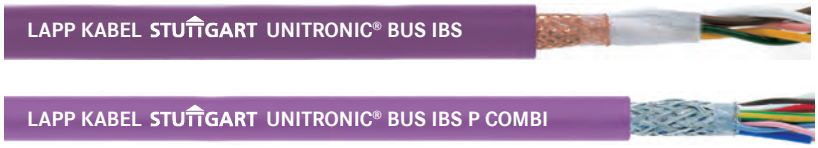
Color code: blue/natural

Approvals:
UL: AWM 2661
Attributes: NFPA 79
Additional: RoHS
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part Number	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
3649FD	20 AWG/1pr	0.242	6.15	14	33	53112210

UNITRONIC® BUS INTERBUS

For INTERBUS bus systems (IBS); stationary applications; 100 Ω



UNITRONIC® BUS INTERBUS guarantees high operation security during data transmission. This shielded and flexible cable is available with a PVC or PUR jacket (INBC).

Construction

Conductors: stranded bare copper

Insulation: polyethylene

Shielding: copper braid

Jacket: PVC or halogen-free polyurethane; violet • reinforced jacket: PVC; black

Recommended applications

Assembly, welding, and material handling machines; wiring of sensors, actuators, and other network devices

Approvals

c UL us · RoHS · INTERBUS · PHOENIX CONTACT

Application advantage

- High operation security during data transmission
- Oil-resistant jacket
- Halogen-free & flame retardant PUR jacket
- Certified by INTERBUS Club
- Cable allows data transmission rate of 500 kbit/s at a max. length of 400 m

Cable attributes page 648

See attribute list by part number on page 166

Complete the installation


SKINTOP® MS-SC page 522


EPIC® connectors page 284

Technical data

Minimum bend radius:	8 x cable diameter
Temperature range:	-30°C to +80°C
- reinforced jacket:	-40°C to +70°C
Nominal voltage:	250V (not for power applications)
Test voltage:	1500V
Characteristic impedance:	100 Ω ± 15%
Nominal capacitance:	18 pF/ft
Color code:	DIN 47100: chart 8, page 682
- data conductors:	white/brown, green/yellow, gray/pink
- power supply:	red, blue, green/yellow
Approvals: UL:	CMX (2170209)
Canada:	c(UL) CMX (2170209)
Additional:	INTERBUS Phoenix Contact RoHS

Part number	Jacket material	Conductor description	Cable type	Approvals	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170206	PVC	24 AWG/3pr	remote bus cable (RBC)	–	0.284	7.2	25	48	53112220
2170208	halogen-free PUR	24 AWG/3pr + 18 AWG/3c	installation remote bus cable (INBC)	–	0.311	7.9	40	57	53112220
2170209	PVC	24 AWG/3pr	remote bus cable (RBC)	UL/CSA CMX	0.284	7.2	25	48	53112220
Reinforced black jacket									
2170207	PVC	24 AWG/3pr	remote bus cable (RBC)	–	0.366	9.3	25	63	53112220
2170217	PVC	24 AWG/3pr + 18 AWG/3c	installation remote bus cable (INBC)	–	0.370	9.4	40	86	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS INTERBUS FD

For INTERBUS bus systems (IBS); continuous flex applications; 100 Ω

UNITRONIC® BUS INTERBUS FD is designed for continuous flex applications in harsh industrial environments. The high-performance PUR jacket provides protection against tearing, abrasion, and mineral oils when used in cable tracks.

Construction

Conductors: stranded bare copper

Insulation: polyethylene

Shielding: copper braid

Jacket: polyurethane; violet

Recommended applications

Cable tracks, moving machinery, and linear tracks in dry and damp rooms; harsh industrial environments; RBC

Approvals

Application advantage

- High operation security for data transmission in chain
- Excellent abrasion and oil resistance
- Halogen-free
- Certified by INTERBUS Club
- Cable allows data transmission rate of 500 kbit/s at a max. length of 400 m; IRBC max. cable run is 50 m

Cable attributes page 648

See attribute list by part number on page 166 *

Complete the installation

SKINTOP® MS-SC page 522

EPIC® connectors page 284

ÖLFLEX® CONNECT solution

ÖLFLEX® CONNECT CABLES page 605

Technical data

Minimum bend radius:
- for continuous flexing: 15 x cable diameter

Temperature range:
- for stationary use: -40°C to +80°C
- for continuous flexing: -30°C to +70°C

Nominal voltage: 250V

Test voltage: 1500V

Characteristic impedance: 100 Ω ± 15%

Nominal capacitance: 18 pF/ft

Color code:
- 2170216: DIN 47100: chart 8, page 682
- 2170218 & 2170818:
  - data pairs: white & brown, green & yellow, gray & pink
  - power conductors: red, blue, green/yellow

Approvals:
UL: CMX (2170818)
Canada: c(UL) CMX (2170818)
Additional: INTERBUS, Phoenix Contact, RoHS
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Conductor description	Cable type	Approvals	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170216	24 AWG/3pr	remote bus cable (RBC)	–	0.311	7.9	26	43	53112220
2170218	24 AWG/3pr + 18 AWG/3c	installation remote bus cable (INBC)	–	0.311	7.9	42	62	53112220
2170818	24 AWG/3pr + 18 AWG/3c	installation remote bus cable (INBC)	UL/CSA CMX	0.311	7.9	42	62	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS Genius™

Genius I/O twinaxial bus cable; continuous flex applications; 100 Ω

UNITRONIC® BUS Genius is designed for use in GE Fanuc's Genius I/O, Field Control™, and VersaMax® networks. Genius network flexibility allows users to deploy the most efficient combination of high-density and low-density distributed I/O for their application.

Construction

Conductors: finely stranded tinned copper

Insulation: TPE

Shielding: foil and flexible tinned copper spiral shield (92% coverage)

Jacket: polyurethane; violet

Recommended applications

Industrial automation and process control field networks; sensors; valves; gauges; barcode readers; drives and operator interfaces.

Application advantage

- Signal integrity in continuous motion applications
- Flame- and oil-resistant jacket
- Flexible for ease of routing

Approvals

Continuous Flex Test Method Verified
VERIFIED
verifyUL.com
A522492

Cable attributes			page 648
OIL	OR-04	FLAME	FR-02
MOTION	CF-01*	MECH.	MP-05

Complete the installation

SKINTOP® MS-SC
page 522

EPIC® connectors
page 284

Technical data

Minimum bend radius:
- for stationary use: 5 x cable diameter
- for continuous flexing: 10 x cable diameter

Temperature range:
- for stationary use: -40°C to +80°C
- for flexible use: -20°C to +80°C

Nominal voltage: 300V

Test voltage: 3000V

Characteristic impedance: 100 Ω

Nominal capacitance: 18 pF/ft

Color code: white & brown pair

Approvals:
UL: AWM 20233
Attributes: NFPA 79
Additional: RoHS
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part Number	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
911264	22 AWG/1pr	0.258	6.5	12	40	53112210

Genius, Field Control, and VersaMax are trademarks of GE Fanuc Automation North American, Inc.
Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values. Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS CC-Link

For CC-Link bus systems; stationary applications; 110 Ω

UNITRONIC® BUS CC-Link provides high-speed communication, linking a wide range of automation devices over a single cable. CC-Link cables can be used in long distance network configurations up to 1.2km (at 156 kbps).

Construction

Conductors: stranded bare copper

Insulation: polyethylene

Shielding: foil and tinned copper braid

Jacket: PVC; red

Recommended applications

Digital & analog I/O; temperature controllers; variable frequency drives; servo drives; robots

Application advantage

- Signal integrity in high-EMC applications
- Passes the CC-Link conformance test in Japan
- Flame- and oil-resistant jacket
- Flexible for ease of routing
- Sunlight resistant

Approvals

c UL us RoHS CLPA

Cable attributes			page 648
OIL	OR-00	FLAME	FR-03
MOTION	FL-02	MECH.	MP-01

Complete the installation


SKINTOP® MS-SC page 522


EPIC® connectors page 284

Technical data

Minimum bend radius:	5 x cable diameter	Nominal capacitance:	18 pF/ft
Temperature range:	-40°C to +70°C	Color code:	white, blue, yellow
Nominal voltage:	300V	Approvals: UL:	PLTC CM
Test voltage:	2000V	Canada:	c(UL) CM
Characteristic impedance:	110 Ω ± 15 Ω	Additional:	CC-Link RoHS

Part Number	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170360	20 AWG/3c	0.303	7.7	26	51	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS CC-Link FD

For CC-Link bus systems; continuous flex applications; 110 Ω

UNITRONIC® BUS CC-Link FD is a continuous flex cable for field bus networks for both control and information data to provide efficient integrated factory and process automation.

Construction

Conductors: stranded bare copper

Insulation: polyethylene

Shielding: tinned copper braid

Inner jacket: FRNC

Outer Jacket: polyurethane; red

Recommended applications

Continuous flex applications like cable tracks and moving machine parts

Application advantage

- Signal integrity in high-EMC applications
- Passes the CC-Link conformance test in Japan
- Flame- and oil-resistant halogen-free jacket
- Flexible for ease of routing

Approvals

Cable attributes			page 648
OIL	OR-04	FLAME	FR-02
MOTION	CF-02*	MECH.	MP-05

Complete the installation


SKINTOP® MS-SC
page 522


EPIC® connectors
page 284

ÖLFLEX® CONNECT solution


ÖLFLEX® CONNECT CABLES
page 605

Technical data

Minimum bend radius:
- for stationary use: 4 x cable diameter
- for continuous flexing: 8 x cable diameter

Temperature range: -40°C to +80°C

Nominal voltage: 300V

Test voltage: 2000V

Characteristic impedance: 110 Ω ± 15 Ω

Nominal capacitance: 18 pF/ft

Color code: white, blue, yellow

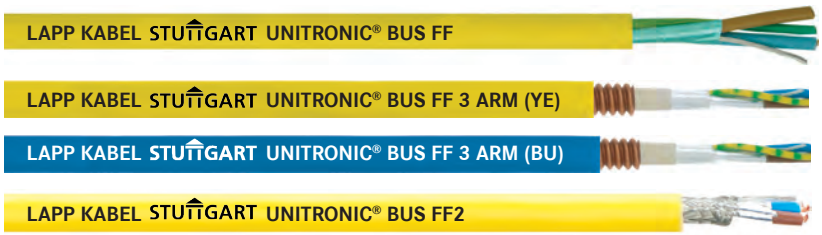
Approvals:
UL: AWM 20233
Attributes: NFPA 79
Additional: CC-Link
RoHS
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part Number	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
2170370	20 AWG/3c	0.335	8.5	27	56	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® BUS Foundation Fieldbus

For Foundation Fieldbus bus systems; stationary applications; 100 Ω



UNITRONIC® BUS Foundation Fieldbus has been specifically designed to meet the demands of the hazardous industrial and process automation. Using a distributed architecture where the control is in the devices themselves, Foundation Fieldbus integrates low-speed sensors and actuators with high-speed controllers and servers in a single system.

Recommended applications

Sensors, actuators and PLCs in intrinsically safe areas like magnetic flow meters, temperature sensors, and pressure sensors.

Construction

Conductors: stranded bare copper

Insulation: pair: XLPE • conductor: PVC

Shielding: foil and tinned copper braid • armored cable: longitudinally welded spiral corrugated copper tape

Jacket: PVC; yellow or blue

Application advantage

- Can withstand temperatures up to +105°C
- Sunlight resistant
- Cables meet the requirements of ISA ISP50 and the Fieldbus Foundation for cable type A

Approvals

c UL us · RoHS · Fieldbus Foundation

Cable attributes page 648

See attribute list by part number on page 166

Complete the installation

SKINTOP® MS-SC page 522

SKINTOP® K-M ATEX plus page 506

Technical data

Minimum bend radius: 5 x cable diameter

Temperature range:
- three-conductor cable: -25°C to +105°C
- two-conductor cable: -40°C to +105°C

Nominal voltage: 300V

Test voltage: 1500V

Characteristic impedance: 100 Ω ± 20 Ω

Nominal capacitance: 20 pF/ft

Color code:
- three-conductor cable: blue & brown twisted pair, plus green/yellow ground
- two-conductor cable: blue & brown twisted pair

Approvals:
UL: PLTC, CMG
Canada: c(UL) CMG
Additional: RoHS

Part number	Jacket color	Number of conductors	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® K-M ATEX metric thread
2170352	yellow	2	18 AWG/1pr	0.311	7.9	36	55	54115210
2170350	yellow	3	18 AWG/1pr + 18 AWG/1c	0.311	7.9	41	62	54115210
Armored cable								
2170351	yellow	3	18 AWG/1pr + 18 AWG/1c	0.484	12.3	84	122	54115245
2170353	blue	3	18 AWG/1pr + 18 AWG/1c	0.484	12.3	84	122	54115445

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UNITRONIC® BUS SAFETY

For SAFETY bus systems

UNITRONIC® BUS SAFETY is designed for data communication in terms of machinery safety

Construction

Conductors: finely stranded bare copper

Insulation: polyethylene

Shielding: tinned copper braid

Jacket: halogen-free or PUR; yellow

Recommended applications

For safety-related devices in systems such as SafetyBUS, based on the tried and tested CAN bus system, such as Factory Automation and Transport Technology

Application advantage

- For fixed installation (2170295) and highly flexible (2170885) applications
- For serial transmission of safety-oriented data
- Communication rate up to 500 kbits/sec

Approvals

CE RoHS

Cable attributes			page 648
OIL	OR-00	FLAME	FR-02
MOTION	FL-02	MECH.	MP-01

Complete the installation

SKINTOP® MS-SC
page 522

ÖLFLEX® CONNECT solution

ÖLFLEX® CONNECT CABLES
page 605

Technical data

Minimum bend radius: 10 x cable diameter

Temperature range:
- for stationary use:
  - 2170295: -30°C to +80°C
  - 2170885: -40°C to +80°C
- for flexible use:
  - 2170885: -30°C to +80°C

Nominal voltage: 250V (not for power applications)

Test voltage:
- 2170295: 3000V
- 2170885: 1500V

Characteristic impedance: 120 Ω

Nominal capacitance: 14 pF/ft

Color code: white, brown, green

Approvals: CE & RoHS

Part number	Jacket material	Conductor description	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC metric thread
Stationary							
2170295	halogen-free	19 AWG/3c	0.299	7.6	33	46	53112220
Continuous flex							
2170885	PUR	19 AWG/3c	0.307	7.8	33	46	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® SENSOR FD

Multi-conductor continuous flex communication cable with PUR jacket; 300V

UNITRONIC® SENSOR FD is designed for sensor and actuator wiring. Constructed with extra-fine stranding, this cable is suitable for continuous flex applications. The abrasion- and tear-resistant PUR jacket provides superior service life in harsh environments and is also resistant to most oils, solvents, and coolants.

Recommended applications

Wiring of sensors and actuators; data transmission cables to connect to M8 or M12 connectors; automation technology; plant engineering

Approvals

Unshielded construction

Conductors: super fine stranded bare copper

Insulation: polypropylene

Jacket: halogen-free polyurethane; black

Shielded construction

Conductors: super fine stranded bare copper

Insulation: polypropylene

Shielding: tinned copper braid

Jacket: halogen-free polyurethane; black

Application advantage

- Designed for continuous flexing
- Highly flexible construction for ease of routing in tight spaces
- Excellent abrasion and cut resistance
- Outstanding oil, solvent, and coolant resistance
- Round geometry facilitates liquid-tight installation

Cable attributes			page 648
OIL	OR-04	FLAME	FR-01
MOTION	CF-02*	MECH.	MP-05

Complete the installation

SKINTOP® strain relief
page 492

SKINTOP® MS-SC
page 522

ÖLFLEX® CONNECT solution

ÖLFLEX® CONNECT CABLES
page 605

Technical data

Minimum bend radius:
- for stationary use: 5 x cable diameter
- for continuous flexing: 10 x cable diameter

Temperature range:
- for stationary use: -40°C to +80°C
- for flexible use: -15°C to +80°C

Nominal voltage: 300V

Color code:
- 3 conductors: 1: brown, 2: blue, 3: black
- 4 conductors: 1: brown, 2: white, 3: blue, 4: black
- 5 conductors: 1: brown, 2: white, 3: blue, 4: black 5: gray
- 8 conductors: 1: white, 2: brown, 3: green, 4: yellow, 5: gray, 6: pink, 7: blue, 8: red

Approvals:
UL: AWM 20549
Additional: RoHS
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Number of conductors	Shielding	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread	SKINTOP® MS-SC PG thread
24 AWG (0.25 mm²)								
7038868	8	unshielded	0.232	5.9	13	34	S2107	–
22 AWG (0.34 mm²)								
7038864	3	unshielded	0.181	4.6	7	20	S2107	–
7038865	4	unshielded	0.185	4.7	8	27	S2107	–
7038893	5	unshielded	0.177	4.5	11	30	S2107	–
7038885	3	shielded	0.181	4.6	13	79	–	53112210
7038886	4	shielded	0.185	4.7	16	88	–	53112210
7038887	5	shielded	0.201	5.1	18	97	–	53112210

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

M8 field wireable sensor/actuator connectors

Application advantage

- Quick and easy on-site assembly
- Screw and fast connect design with insulation displacement (IDC) available
- Standardized interfaces

Approvals

RoHS

Technical data

Temperature range:
- screw: -40°C to +85°C
- IDC: -25°C to +80°C

Nominal voltage: 30 or 60V

Nominal current: 4A

Coding: A-standard

Protection rating:
- screw: IP67
- IDC: IP65/67

Approvals: RoHS

Part number male	Part number female	Number of positions	Conductor cross-section AWG	Conductor cross-section mm²	Cable diameter in	Cable diameter mm	Nominal voltage
Screw connection							
22260120	22260125	3	26 - 20	0.14 - 0.50	0.137 - 0.195	3.5 - 5	60V
22260121	22260126	4	26 - 20	0.14 - 0.50	0.137 - 0.195	3.5 - 5	30V
Insulation displacement							
22260985	22260986	3	24 - 20	0.25 - 0.50	0.098 - 0.195	2.5 - 5	60V
22260044	22260046	4	24 - 20	0.25 - 0.50	0.098 - 0.195	2.5 - 5	30V

If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

M 12 field wireable sensor/actuator connectors

screw connection

screw connection, shielded

insulation displacement

Application advantage

- Quick and easy on-site assembly
- Screw and fast connect design with insulation displacement (IDC) available
- No special tools required with fast connect design
- Shielded styles are available

Approvals

RoHS

Technical data

Temperature range:
- screw: -40°C to +85°C
- IDC: -25°C to +80°C

Protection rating:
- screw: IP67
- IDC: IP65/67

Nominal current: 2 or 4A

Approvals: RoHS

Coding: A-standard

Part number male	Part number female	Number of positions	Size	Conductor cross-section AWG	Conductor cross-section mm²	Cable diameter in	Cable diameter mm	Nominal voltage	Nominal current
Screw connection									
22260649	22260640	4	PG 7	24 - 19	0.25 - 0.75	0.156 - 0.234	4 - 6	250V	4A
22260129	22260127	5	PG 7	24 - 19	0.25 - 0.75	0.156 - 0.234	4 - 6	60V	4A
Screw connection, shielded									
22260135	22260136	5	PG 9	24 - 19	0.25 - 0.75	0.234 - 0.312	6 - 8	60V	4A
22260825	22260826	8	PG 9	24 - 19	0.25 - 0.75	0.234 - 0.312	6 - 8	30V	2A
Insulation displacement									
22260132	22260131	4	–	26 - 22	0.14 - 0.34	0.137 - 0.234	3.5 - 6	125V	4A
22260134	22260133	4	–	22 - 19	0.34 - 0.75	0.234 - 0.312	6 - 8	250V	4A

M12 T-coded connectors

screw connection

screw connection, 90° angled

Application advantage

- Quick and easy on-site assembly
- Compact standardized M12 design saves space and costs
- Fault-proof connection through M12 T-coded connector
- DC high-power connector: 60 V DC / 12 A

Approvals

Technical data

Temperature range:
- screw: -40°C to +85°C

Nominal current: 12A

Coding: T-power

Protection rating: IP67

Approvals: RoHS
UL cable fitting

Part number male	Part number female	Connection	Number of positions	Conductor cross-section AWG	Conductor cross-section mm²	Cable diameter in	Cable diameter mm	Nominal voltage	Nominal current
Straight									
22262010	22262011	screw	4	19 - 16	0.75 - 1.5	0.312 - 0.394	8 - 10	60V	12A
Angled									
22262012	22262013	screw	4	19 - 16	0.75 - 1.5	0.312 - 0.394	8 - 10	60V	12A

If not otherwise specified, all values relating to the product are nominal values.
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LAPP KABEL STUTTGART
UNITRONIC® BUS
LAPP KABEL STUTTGART

UNITRONIC®

Flexible data, signal & control cable

Quick select chart

Product name	RS-232	Industrial sensors/ actuators	Stepper motor, encoder, resolver	420 mA signaling	Electronic instrumentation	Halogen-free	UL/CSA	Shielding	Jacket/insulation material	
Flexible UL/CSA electronic cable										
UNITRONIC® 300		✔			✔		✔	no	PVC	
UNITRONIC® 300 S		✔	✔		✔		✔	yes	PVC	
UNITRONIC® 300 STP	✔	✔	✔	✔	✔		✔	yes	PVC	
UNITRONIC® 190		✔			✔		✔	no	PVC	
UNITRONIC® 190 CY		✔	✔		✔		✔	yes	PVC	
UNITRONIC® 190 CY (TP)	✔	✔	✔	✔	✔		✔	yes	PVC	
Flexible European electronic cable										
UNITRONIC® LiYY			✔		✔			no	PVC	
UNITRONIC® LiYCY								yes	PVC	
UNITRONIC® LiYCY (TP)	✔		✔	✔	✔			yes	PVC	
UNITRONIC® LiHH			✔		✔	✔		no	halogen-free	
UNITRONIC® LiHCH								yes	halogen-free	
UNITRONIC® LiHCH (TP)	✔		✔	✔	✔	✔		yes	halogen-free	
UNITRONIC® CY PiDY (TP)	✔		✔	✔	✔			yes	PVC	

	AWG range	Peak working voltage	Min. bend radius (stationary)	Temperature range (stationary)	Cable attributes, see page 648		Page
					oil resistance	flame resistance	
	24 - 16 AWG	300V	4 x OD	-40°C to +105°C	OR-02	FR-03	210
	24 - 16 AWG	300V	6 x OD	-40°C to +105°C			
	24 - 18 AWG	300V	6 x OD	-40°C to +105°C	OR-02	FR-03	212
	28 - 22 AWG	300V	4 x OD	-40°C to +105°C	OR-02	FR-03	213
	28 - 22 AWG	300V	6 x OD	-40°C to +105°C			
	28 - 22 AWG	300V	6 x OD	-40°C to +105°C	OR-02	FR-03	213
	26 - 16 AWG	250V	4 x OD	-40°C to +80°C	OR-01	FR-02	215
	26 - 16 AWG	250V	6 x OD	-40°C to +80°C			
	26 - 18 AWG	250V	6 x OD	-40°C to +80°C	OR-01	FR-02	215
	24 - 18 AWG	250V	6 x OD	-30°C to +80°C	OR-01	FR-02	218
	26 - 16 AWG	250V	6 x OD	-30°C to +80°C			
	26 - 18 AWG	250V	6 x OD	-30°C to +80°C	OR-01	FR-02	218
	24 AWG	250V	6 x OD	-40°C to +80°C	OR-01	FR-02	220

UNITRONIC® 300/300 S

Flexible 300V multi-conductor industrial signal & control cable; unshielded & shielded

control cable (20 AWG - 16 AWG)

signal cable (24 AWG - 22 AWG)

UNITRONIC® 300/300 S is a rugged, multi-conductor, low voltage control and signal cable for internal and external wiring of OEM equipment for industrial applications. The jacket is very oil resistant and is pressure-extruded for improved flexibility and easier installation. UNITRONIC® 300 S has a foil tape and tinned copper braid shield for maximum RFI & EMI protection.

Unshielded construction

Conductors: finely stranded tinned copper

Insulation: blended PVC

Jacket: specially formulated PVC; gray

Shielded construction

Conductors: finely stranded tinned copper

Insulation: blended PVC

Shielding: tri-laminate foil shield and tinned copper braid (75% coverage); drain wire

Jacket: specially formulated PVC; gray

Recommended applications

Process control; electrical equipment; industrial machinery; low-voltage control interconnect

Application advantage

- Extended temperature rating of -40°C to +105°C
- Flexible design for ease of routing
- Suitable for use in cable tray
- Oil- and UV-resistant jacket (Oil Res I)
- Sequential foot marking for ease of installation

Approvals

c UL us · FIRE PROTECTION · CE · RoHS

Cable attributes			page 648
OIL	OR-02	FLAME	FR-03
MOTION	WT-02	MECH.	MP-02

Complete the installation


SKINTOP® strain relief page 492


EPIC® connectors page 284

Technical data

Minimum bend radius:
- for installation: 4 x cable diameter
- shielded: 6 x cable diameter

Temperature range:
- for stationary use: -40°C to +105°C
- for flexible use: -25°C to +105°C

Nominal voltage: 300V

Test voltage: 1500V

Conductor stranding: fine wire

Color code:
- 24 - 22 AWG: chart 4, page 681
- 20 - 16 AWG: chart 5, page 681

Approvals:

UL:	CMG per UL 444 PLTC-ER per UL 13 (18 & 16 AWG) PLTC per UL 13 (22 & 20 AWG) ITC-ER per UL 2250 (18 & 16 AWG) AWM 2464
Attributes:	UL Oil Res I -40°C cold bend; -25°C cold impact sunlight resistant direct burial NFPA 79
NEC:	meets NEC Art. 725 & 800 Class 1 Division 2 (PLTC only)
Canada:	cUL CMG FT4 CSA AWM I/II A/B FT1
Additional:	CE & RoHS

If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® 300

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
24 AWG (0.24 mm²)						
302402	2	0.165	4.2	3	13	S1107
302403	3	0.172	4.4	5	15	S1107
302404	4	0.183	4.6	6	18	S1107
302406	6	0.209	5.3	9	22	S1107
302408	8	0.223	5.7	12	29	S1107
302410	10	0.253	6.4	15	35	S1109
302415	15	0.284	7.2	23	46	S1111
302420	20	0.321	8.2	30	57	S1111
302425	25	0.355	9.0	38	71	S1111
22 AWG (0.38 mm²)						
302202	2	0.179	4.5	5	15	S1107
302203	3	0.187	4.7	7	20	S1107
302204	4	0.200	5.1	10	22	S1107
302206	6	0.229	5.8	15	31	S1107
302208	8	0.245	6.2	19	37	S1107
302210	10	0.289	7.3	24	44	S1111
302215	15	0.324	8.2	36	62	S1111
302220	20	0.355	9.0	47	99	S1111
302225	25	0.414	10.5	59	126	S1113
20 AWG (0.62 mm²)						
302002	2	0.225	5.7	8	37	S1107
302003	3	0.237	6.0	12	40	S1107
302004	4	0.256	6.5	15	51	S1109
302006	6	0.308	7.8	23	66	S1111
302008	8	0.331	8.4	30	90	S1111
302010	10	0.381	9.7	38	97	S1113
302015	15	0.452	11.5	57	121	S1113
302020	20	0.497	12.6	76	174	S1116
302025	25	0.554	14.1	94	238	S1121

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
18 AWG (1 mm²)						
301802	2	0.241	6.1	12	42	S1107
301803	3	0.254	6.5	18	44	S1109
301804	4	0.285	7.2	24	53	S1111
301806	6	0.333	8.5	36	68	S1111
301808	8	0.358	9.1	47	95	S1111
301810	10	0.437	11.1	61	130	S1113
301815	15	0.494	12.5	91	165	S1116
301820	20	0.544	13.8	121	220	S1121
301825	25	0.629	16.0	151	276	S1121
16 AWG (1.32 mm²)						
301602	2	0.263	6.7	17	55	S1109
301603	3	0.288	7.3	25	60	S1111
301604	4	0.312	7.9	33	75	S1111
301606	6	0.366	9.3	49	110	S1111
301608	8	0.417	10.6	65	163	S1113
301610	10	0.481	12.2	82	181	S1116
301615	15	0.546	13.9	122	242	S1121
301620	20	0.603	15.3	163	331	S1121
301625	25	0.696	17.7	204	410	S1129

UNITRONIC® 300 S

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
24 AWG (0.24 mm²)						
302402S	2	0.193	4.9	10	19	53112210
302403S	3	0.201	5.1	12	22	53112210
302404S	4	0.209	5.3	14	26	53112210
302406S	6	0.236	6.0	18	31	53112210
302408S	8	0.248	6.3	22	37	53112210
302410S	10	0.288	7.3	26	44	53112210
302415S	15	0.319	8.1	35	60	53112220
302420S	20	0.346	8.8	44	71	53112220
302425S	25	0.382	9.7	53	86	53112230
22 AWG (0.38 mm²)						
302202S	2	0.202	5.1	13	22	53112210
302203S	3	0.210	5.3	16	26	53112210
302204S	4	0.223	5.7	19	31	53112210
302206S	6	0.252	6.4	25	42	53112210
302208S	8	0.278	7.1	30	48	53112210
302210S	10	0.312	7.9	37	57	53112220
302215S	15	0.347	8.8	52	77	53112220
302220S	20	0.378	9.6	64	95	53112230
302225S	25	0.445	11.3	81	117	53112240
20 AWG (0.62 mm²)						
302002S	2	0.248	6.3	19	48	53112210
302003S	3	0.260	6.6	23	51	53112210
302004S	4	0.289	7.3	27	62	53112220
302006S	6	0.331	8.4	35	79	53112220
302008S	8	0.354	9.0	46	106	53112220
302010S	10	0.426	10.8	56	115	53112230
302015S	15	0.483	12.3	77	143	53112240
302020S	20	0.528	13.4	88	203	53112240
302025S	25	0.585	14.9	104	271	53112250

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
18 AWG (1 mm²)						
301802S	2	0.266	6.8	25	53	53112210
301803S	3	0.289	7.3	33	57	53112220
301804S	4	0.310	7.9	41	68	53112220
301806S	6	0.358	9.1	55	88	53112220
301808S	8	0.383	9.7	69	115	53112230
301810S	10	0.469	11.9	88	154	53112240
301815S	15	0.525	13.3	121	196	53112240
301820S	20	0.575	14.6	157	256	53112250
301825S	25	0.660	16.8	189	311	53112250
16 AWG (1.32 mm²)						
301602S	2	0.298	7.6	34	66	53112220
301603S	3	0.313	8.0	43	79	53112220
301604S	4	0.337	8.6	52	95	53112220
301606S	6	0.413	10.5	71	141	53112230
301608S	8	0.448	11.4	91	181	53112240
301610S	10	0.512	13.0	114	209	53112240
301615S	15	0.577	14.7	157	342	53112250
301620S	20	0.654	16.6	201	401	53112250
301625S	25	0.727	18.5	247	496	53112260

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.

UNITRONIC® 300 STP

Flexible 300V multi-pair industrial communication & signal cable; shielded

UNITRONIC® 300 STP is a multi-pair, low voltage communication, signal, and control cable with an overall shield for internal and external wiring of OEM equipment for industrial applications. The jacket is very oil resistant and is pressure-extruded for improved flexibility and easier installation. UNITRONIC® 300 STP has an overall foil tape and tinned copper braid shield for maximum RFI & EMI protection.

Recommended applications

Process control; electrical equipment; industrial machinery; low-voltage control interconnect

Approvals

c UL us · VW · FIRE PROTECTION · CSA · CE · RoHS

Cable attributes			page 648
OIL	OR-02	FLAME	FR-03
MOTION	FL-01	MECH.	MP-02

Construction

Conductors: finely stranded tinned copper

Insulation: blended PVC

Shielding: foil tape and tinned copper braid (75% coverage); drain wire

Jacket: specially formulated PVC; gray

Application advantage

- Extended temperature rating of -40°C to +105°C
- Flexible design for ease of routing
- Suitable for use in cable tray
- Oil- and UV-resistant jacket (Oil Res I)
- Sequential foot marking for ease of installation

Complete the installation	
 SKINTOP® MS-SC page 522	 EPIC® connectors page 284

Technical data

Minimum bend radius:	6 x cable diameter
Temperature range:	
- for stationary use:	-40°C to +105°C
- for flexible use:	-25°C to +105°C
Nominal voltage:	300V
Test voltage:	1500V
Conductor stranding:	fine wire
Color code:	chart 3, page 680
- 24 - 22 AWG single pair:	black & white

Approvals: UL:	CMG per UL 444 PLTC-ER per UL 13 (18 & 16 AWG) PLTC per UL 13 (22 & 20 AWG) ITC-ER per UL 2250 (18 & 16 AWG) ITC per UL 2250 (24 - 20 AWG) AWM 2464
Attributes:	UL Oil Res I -40°C cold bend; -25°C cold impact sunlight resistant direct burial NFPA 79
NEC:	meets NEC Art. 725 & 800 Class 1 Division 2 (PLTC only)
Canada:	cUL CMG FT4 CSA AWM I/II A/B FT1
Additional:	CE & RoHS

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
24 AWG (0.24 mm²)						
302401STP*	1	0.190	4.8	10	24	53112210
302402STP	2	0.256	6.5	18	40	53112210
302403STP	3	0.268	6.8	21	44	53112210
302406STP	6	0.343	8.7	34	71	53112220
302409STP	9	0.415	10.5	46	104	53112230
302415STP	15	0.504	12.8	68	130	53112240
22 AWG (0.38 mm²)						
302201STP*	1	0.202	5.1	13	26	53112210
302202STP	2	0.278	7.1	23	35	53112210
302203STP	3	0.305	7.7	26	48	53112220
302206STP	6	0.379	9.6	47	84	53112230
302209STP	9	0.459	11.7	64	130	53112240
302215STP	15	0.553	14.0	96	165	53112250

* Pair is black & white

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
20 AWG (0.62 mm²)						
302001STP	1	0.248	6.3	18	68	53112210
302002STP	2	0.372	9.4	32	86	53112230
302003STP	3	0.412	10.5	46	108	53112230
302006STP	6	0.524	13.3	72	216	53112240
302009STP	9	0.604	15.3	97	293	53112250
302015STP	15	0.762	19.4	165	452	53112260
18 AWG (1 mm²)						
301801STP	1	0.266	6.8	26	71	53112210
301802STP	2	0.422	10.7	45	82	53112230
301803STP	3	0.452	11.5	58	101	53112240
301806STP	6	0.574	14.6	103	218	53112250
301809STP	9	0.681	17.3	147	328	53112260
301815STP	15	0.836	21.2	248	544	53112260
16 AWG (1.32 mm²)						
301601STP	1	0.298	7.6	34	68	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values. Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® 190/190 CY/190 CY (TP)

Flexible 300V multi-conductor & multi-pair industrial signal & control cable; unshielded & shielded

UNITRONIC® 190/190 CY is a multi-conductor cable for communication, signal, and control applications. It is designed for general purpose installations of electrical machinery. UNITRONIC® 190 CY has an overall foil tape & tinned copper braid for RFI & EMI protection. UNITRONIC® 190 CY (TP) is an overall shielded multi-paired version for data, communication, and signal applications.

Unshielded construction

Conductors: finely stranded tinned copper

Insulation: SR-PVC

Jacket: specially formulated PVC; gray

Shielded construction

Conductors: finely stranded tinned copper

Pairs: SR-PVC

Insulation: SR-PVC

Shielding: foil tape and tinned copper braid (85% coverage); drain wire

Jacket: specially formulated PVC; gray

Recommended applications

RS-232; data buses; process control instrumentation; low-voltage signaling and interconnect

Application advantage

- Extended temperature range of -40°C to 105°C
- UV-resistant jacket
- Sequential foot marking for ease of installation

Approvals

Cable attributes			page 648
OIL	OR-02	FLAME	FR-03
MOTION	FL-01	MECH.	MP-01

Complete the installation

SKINTOP® strain relief
page 492

EPIC® connectors
page 284

Technical data

Minimum bend radius:
- for installation: 4 x cable diameter
- shielded: 6 x cable diameter

Temperature range:
- for stationary use: -40°C to +105°C
- for flexible use: -25°C to +105°C

Nominal voltage: 300V

Test voltage: 1500V

Conductor stranding: fine wire

Color code:
- UNITRONIC® 190/190 CY: chart 2, page 680
- UNITRONIC® 190 CY (TP): chart 3, page 680

Approvals:

UL:	CMG per UL 444 AWM 2661
Attributes:	UL Oil Res I -40°C cold bend; -25°C cold impact sunlight resistant NFPA 79
NEC:	meets NEC Art. 725 & 800
Canada:	cUL CMG FT4 CSA AWM I/II A/B FT1
Additional:	RoHS

If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® 190

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
28 AWG (0.08 mm²)						
602802	2	0.143	3.6	2	10	S1107
602803	3	0.149	3.8	3	12	S1107
602804	4	0.158	4.0	3	14	S1107
602805	5	0.168	4.3	4	16	S1107
602807	7	0.178	4.5	5	18	S1107
602808	8	0.189	4.8	5	20	S1107
602810	10	0.213	5.4	6	23	S1107
602815	15	0.248	6.3	9	29	S1109
602820	20	0.269	6.8	11	36	S1109
602825	25	0.297	7.5	15	43	S1111
602850	50	0.375	9.5	28	73	S1111
26 AWG (0.14mm²)						
602603	3	0.157	4.0	4	13	S1107
602605	5	0.178	4.5	6	17	S1107
602607	7	0.190	4.8	7	21	S1107
602610	10	0.229	5.8	9	28	S1107
602620	20	0.290	7.4	18	45	S1111
602625	25	0.321	8.2	23	54	S1111
602636	36	0.366	9.3	32	72	S1111

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
24 AWG (0.25 mm²)						
602402	2	0.161	4.1	3	19	S1107
602403	3	0.168	4.3	4	22	S1107
602404	4	0.179	4.5	7	27	S1107
602405	5	0.192	4.9	8	31	S1107
602407	7	0.205	5.2	11	37	S1107
602408	8	0.219	5.6	12	42	S1107
602410	10	0.249	6.3	15	51	S1109
602415	15	0.290	7.4	22	69	S1111
22 AWG (0.34 mm²)						
602202	2	0.179	4.5	5	15	S1107
602203	3	0.187	4.7	9	19	S1107
602204	4	0.200	5.1	11	22	S1107
602205	5	0.214	5.4	14	26	S1107
602207	7	0.229	5.8	18	33	S1107
602208	8	0.245	6.2	20	37	S1107
602210	10	0.279	7.1	23	45	S1111
602212	12	0.297	7.5	29	62	S1111
602220	20	0.355	9.0	46	78	S1111
602225	25	0.409	10.4	57	95	S1113
602236	36	0.459	11.7	81	138	S1113

UNITRONIC® 190 CY

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
26 AWG (0.14mm²)						
602603S	3	0.192	4.9	10	24	53112210
602604S	4	0.202	5.1	11	29	53112210
602607S	7	0.225	5.7	15	35	53112210
602608S	8	0.237	6.0	16	37	53112210
602610S	10	0.264	6.7	20	44	53112210
602615S	15	0.301	7.6	26	53	53112220
602620S	20	0.325	8.3	30	64	53112220
24 AWG (0.25 mm²)						
602403S	3	0.203	5.2	12	31	53112210
602404S	4	0.214	5.4	14	34	53112210
602405S	5	0.227	5.8	16	38	53112210
602407S	7	0.240	6.1	20	44	53112210
602408S	8	0.254	6.5	22	49	53112210
602410S	10	0.284	7.2	27	53	53112220
602415S	15	0.325	8.3	35	66	53112220
602420S	20	0.352	8.9	44	79	53112220
602425S	25	0.366	9.3	52	95	53112230

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
22 AWG (0.34 mm²)						
602202S	2	0.204	5.2	13	31	53112210
602203S	3	0.212	5.4	15	34	53112210
602204S	4	0.225	5.7	18	37	53112210
602205S	5	0.239	6.1	22	42	53112210
602207S	7	0.254	6.5	28	51	53112210
602208S	8	0.270	6.9	30	55	53112210
602210S	10	0.314	8.0	36	66	53112220
602215S	15	0.349	8.9	49	84	53112220
602216S	16	0.354	9.0	52	88	53112220
602220S	20	0.380	9.7	62	104	53112230
602225S	25	0.440	11.2	79	132	53112240
602236S	36	0.490	12.4	108	174	53112240
602240S	40	0.505	12.8	119	187	53112240

UNITRONIC® 190 CY (TP)

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
24 AWG (0.25 mm²)						
602402TP	2	0.254	6.5	17	35	53112210
602404TP	4	0.285	7.2	24	48	53112220
602405TP	5	0.305	7.7	28	55	53112220
602408TP	8	0.360	9.1	40	77	53112220

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
22 AWG (0.34 mm²)						
602202TP	2	0.270	6.9	22	42	53112210
602203TP	3	0.294	7.5	27	51	53112220
602204TP	4	0.315	8.0	33	57	53112220
602205TP	5	0.338	8.6	38	68	53112220
602206TP	6	0.363	9.2	45	79	53112220

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.

UNITRONIC® LiYY/LiYCY/LiYCY (TP)

Low-voltage multi-conductor & multi-pair communication & control cable; unshielded & shielded

UNITRONIC® LiYY/LiYCY is a multi-conductor cable for communication, signal, and control applications. It is designed for general purpose installations of electrical machinery. UNITRONIC® LiYCY has a tinned copper braid for RFI & EMI protection. UNITRONIC® LiYCY (TP) is an overall-shielded multi-paired version for data, communication, and signal applications.

Unshielded construction

Conductors: stranded bare copper
Insulation: PVC
Jacket: PVC; pebble gray

Shielded construction

Conductors: stranded bare copper
Insulation: PVC
Pairs: PVC
Shielding: tinned copper braid
Jacket: PVC; pebble gray

Recommended applications

RS-232; data buses; process control instrumentation; low-voltage signaling and interconnect; broadcast; applications with European DIN 47100 color code

Application advantage

- Extended temperature range of -40°C to +80°C
- European color code DIN 47100
- Flexible for easy installation

Approvals

CE RoHS

Cable attributes				page 648
OIL	OR-01	FLAME	FR-02	
MOTION	FL-01	MECH.	MP-01	

Complete the installation


SKINTOP® strain relief
page 492


EPIC® connectors
page 284

Technical data

Minimum bend radius:
- for installation: 4 x cable diameter
- shielded: 6 x cable diameter

Temperature range:
- for stationary use: -40°C to +80°C
- for flexible use: -5°C to +70°C

Nominal voltage: 250V

Test voltage:
- 26 AWG: 1200V
- larger than 26 AWG: 1500V

Conductor stranding: fine wire

Inductance:
- UNITRONIC® LiYY/LiYCY: nominal 0.65 mH/km
- UNITRONIC® LiYCY (TP): nominal 0.50 mH/km

Mutual capacitance:
- conductor/conductor: 37 pF/ft
- conductor/shield: 48 pF/ft

Color code:
- UNITRONIC® LiYY/LiYCY: DIN 47100: chart 8, page 682
- UNITRONIC® LiYCY (TP): DIN 47100: chart 7, page 682

Approvals: based on VDE 0812
CE & RoHS

If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® LiYY

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
26 AWG (0.14 mm²)						
0028202	2	0.126	3.2	2	9	S1107
0028203	3	0.134	3.4	4	11	S1107
0028204	4	0.142	3.6	5	13	S1107
0028205	5	0.154	3.9	6	15	S1107
0028207	7	0.165	4.2	8	19	S1107
0028208	8	0.193	4.9	7	24	S1107
0028210	10	0.205	5.2	10	28	S1107
0028212	12	0.220	5.6	12	32	S1107
0028214	14	0.228	5.8	14	36	S1107
0028216	16	0.240	6.1	16	40	S1107
0028220	20	0.276	7.0	19	48	S1111
0028225	25	0.307	7.8	23	58	S1111
0028236	36	0.339	8.6	33	85	S1111
0028237	37	0.350	8.9	34	79	S1111
0028240	40	0.366	9.3	37	93	S1111
0028250	50	0.409	10.4	46	115	S1113
0028256	56	0.421	10.7	53	126	S1113
24 AWG (0.25 mm²)						
0028302	2	0.150	3.8	4	12	S1107
0028303	3	0.157	4.0	5	15	S1107
0028304	4	0.169	4.3	7	17	S1107
0028305	5	0.185	4.7	9	21	S1107
0028307	7	0.201	5.1	12	28	S1107
0028308	8	0.244	6.2	13	33	S1107
0028310	10	0.268	6.8	17	39	S1109
0028312	12	0.276	7.0	20	45	S1111
0028314	14	0.287	7.3	23	50	S1111
0028316	16	0.303	7.7	26	56	S1111
0028318	18	0.319	8.1	30	62	S1111
0028320	20	0.339	8.6	33	69	S1111
0028325	25	0.378	9.6	41	90	S1113
0028330	30	0.406	10.3	49	104	S1113
0028332	32	0.421	10.7	52	110	S1113
0028336	36	0.437	11.1	59	122	S1113
0028337	37	0.449	11.4	60	124	S1113
0028340	40	0.472	12.0	65	134	S1116
0028350	50	0.508	12.9	81	173	S1116

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
22 AWG (0.34 mm²)						
0028402	2	0.165	4.2	5	17	S1107
0028403	3	0.173	4.4	7	21	S1107
0028404	4	0.189	4.8	9	29	S1107
0028405	5	0.217	5.5	12	36	S1107
0028407	7	0.232	5.9	16	42	S1107
0028408	8	0.280	7.1	18	49	S1111
0028410	10	0.299	7.6	22	55	S1111
0028412	12	0.307	7.8	27	69	S1111
0028414	14	0.323	8.2	31	73	S1111
0028416	16	0.343	8.7	35	85	S1111
0028420	20	0.378	9.6	44	107	S1113
0028421	21	0.409	10.4	47	112	S1113
0028425	25	0.441	11.2	55	128	S1113
0028430	30	0.457	11.6	66	152	S1113
0028436	36	0.492	12.5	80	191	S1116
0028440	40	0.531	13.5	89	213	S1121
0028450	50	0.591	15.0	110	274	S1121
20 AWG (0.5 mm²)						
0028502	2	0.185	4.7	7	27	S1107
0028503	3	0.197	5.0	10	32	S1107
0028504	4	0.220	5.6	13	38	S1107
0028505	5	0.240	6.1	17	44	S1107
0028507	7	0.272	6.9	23	55	S1109
0028508	8	0.315	8.0	26	60	S1111
0028510	10	0.339	8.6	33	79	S1111
0028512	12	0.350	8.9	39	89	S1111
0028516	16	0.402	10.2	52	114	S1113
0028520	20	0.449	11.4	65	144	S1113
0028525	25	0.484	12.3	81	178	S1116
0028530	30	0.520	13.2	98	204	S1116
0028540	40	0.622	15.8	130	263	S1121
18 AWG (1 mm²)						
0028702	2	0.220	5.6	13	37	S1107
0028703	3	0.232	5.9	20	47	S1107
0028705	5	0.287	7.3	33	66	S1111
16 AWG (1.5 mm²)						
0028802	2	0.268	6.8	20	50	S1109
0028803	3	0.283	7.2	30	60	S1111
0028804	4	0.307	7.8	40	71	S1111

UNITRONIC® LiYCY

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
26 AWG (0.14 mm²)						
0034302	2	0.154	3.9	9	13	53112210
0034303	3	0.161	4.1	9	19	53112210
0034304	4	0.169	4.3	10	22	53112210
0034305	5	0.181	4.6	11	26	53112210
0034306	6	0.193	4.9	13	26	53112210
0034307	7	0.193	4.9	13	33	53112210
0034308	8	0.228	5.8	15	38	53112210
0034310	10	0.240	6.1	20	44	53112210
0034312	12	0.248	6.3	21	52	53112210
0034314	14	0.264	6.7	22	54	53112210
0034315	15	0.272	6.9	26	58	53112210
0034316	16	0.276	7.0	29	60	53112210
0034318	18	0.287	7.3	33	70	53112220
0034320	20	0.303	7.7	37	78	53112220
0034321	21	0.311	7.9	38	81	53112220
0034325	25	0.331	8.4	43	100	53112220
0034328	28	0.335	8.5	45	103	53112220
0034330	30	0.343	8.7	47	106	53112220
0034332	32	0.354	9.0	50	110	53112220
0034336	36	0.366	9.3	56	123	53112230
0034340	40	0.409	10.4	59	141	53112230
0034344	44	0.421	10.7	75	151	53112230
0034350	50	0.437	11.1	83	170	53112230

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
24 AWG (0.25 mm²)						
0034402	2	0.177	4.5	11	22	53112210
0034403	3	0.185	4.7	15	25	53112210
0034404	4	0.197	5.0	17	28	53112210
0034405	5	0.220	5.6	20	34	53112210
0034406	6	0.236	6.0	21	39	53112210
0034407	7	0.236	6.0	25	44	53112210
0034408	8	0.280	7.1	29	49	53112210
0034410	10	0.295	7.5	31	55	53112220
0034412	12	0.303	7.7	36	66	53112220
0034414	14	0.315	8.0	40	67	53112220
0034415	15	0.327	8.3	41	75	53112220
0034416	16	0.331	8.4	44	83	53112220
0034418	18	0.346	8.8	56	96	53112220
0034420	20	0.366	9.3	60	102	53112230
0034421	21	0.378	9.6	63	108	53112230
0034425	25	0.421	10.7	77	116	53112230
0034428	28	0.425	10.8	85	122	53112230
0034430	30	0.433	11.0	89	127	53112230
0034432	32	0.449	11.4	93	136	53112240
0034436	36	0.465	11.8	100	148	53112240
0034440	40	0.500	12.7	106	167	53112240
0034450	50	0.543	13.8	120	214	53112250
0034461	61	0.591	15.0	138	245	53112250

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.

UNITRONIC® LiYCY

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
22 AWG (0.34 mm²)						
0034502	2	0.193	4.9	15	25	53112210
0034503	3	0.201	5.1	19	33	53112210
0034504	4	0.224	5.7	19	40	53112210
0034505	5	0.244	6.2	21	44	53112210
0034506	6	0.268	6.8	31	53	53112210
0034507	7	0.268	6.8	33	56	53112210
0034508	8	0.307	7.8	35	63	53112220
0034510	10	0.327	8.3	50	87	53112220
0034512	12	0.335	8.5	54	95	53112220
0034514	14	0.350	8.9	58	103	53112220
0034515	15	0.362	9.2	61	104	53112220
0034516	16	0.370	9.4	64	108	53112230
0034518	18	0.402	10.2	70	116	53112230
0034520	20	0.421	10.7	76	129	53112230
0034521	21	0.437	11.1	78	134	53112230
0034525	25	0.469	11.9	91	174	53112240
0034528	28	0.472	12.0	103	188	53112240
0034530	30	0.484	12.3	107	196	53112240
0034532	32	0.512	13.0	111	205	53112240
0034536	36	0.528	13.4	121	222	53112240
0034540	40	0.583	14.8	135	245	53112250
0034550	50	0.626	15.9	158	290	53112250
20 AWG (0.5 mm²)						
0034602	2	0.220	5.6	20	36	53112210
0034603	3	0.232	5.9	26	45	53112210
0034604	4	0.248	6.3	29	52	53112210
0034605	5	0.276	7.0	35	60	53112210

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
0034606	6	0.299	7.6	40	70	53112220
0034607	7	0.299	7.6	44	75	53112220
0034608	8	0.343	8.7	48	91	53112220
0034610	10	0.366	9.3	60	108	53112230
0034612	12	0.378	9.6	67	119	53112230
0034618	18	0.465	11.8	91	161	53112240
0034620	20	0.476	12.1	101	185	53112240
0034625	25	0.539	13.7	142	237	53112250
0034630	30	0.571	14.5	155	267	53112250
18 AWG (1 mm²)						
0034802	2	0.248	6.3	29	48	53112210
0034803	3	0.268	6.8	38	60	53112210
0034804	4	0.287	7.3	46	73	53112220
0034805	5	0.315	8.0	54	85	53112220
0034807	7	0.339	8.6	80	115	53112220
0034810	10	0.437	11.1	95	153	53112230
0034812	12	0.449	11.4	113	174	53112240
0034818	18	0.528	13.4	170	261	53112240
0034825	25	0.638	16.2	226	347	53112250
16 AWG (1.5 mm²)						
0034902	2	0.295	7.5	39	60	53112220
0034903	3	0.311	7.9	50	77	53112220
0034904	4	0.335	8.5	73	103	53112220
0034905	5	0.366	9.3	87	118	53112230
0034907	7	0.413	10.5	111	148	53112230
0034912	12	0.539	13.7	171	253	53112250
0034918	18	0.642	16.3	236	349	53112250
0034925	25	0.783	19.9	370	605	53112260

UNITRONIC® LiYCY (TP)

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
26 AWG (0.14 mm²)						
0035131	2	0.224	5.7	13	26	53112210
0035141	3	0.228	5.8	16	32	53112210
0035132	4	0.244	6.2	18	36	53112210
0035133	6	0.280	7.1	33	57	53112210
0035150	8	0.323	8.2	37	65	53112220
0035134	10	0.343	8.7	40	74	53112220
0035135	12	0.350	8.9	45	95	53112220
0035136	16	0.402	10.2	54	103	53112230
0035142	20	0.445	11.3	66	124	53112240
0035137	25	0.492	12.5	76	160	53112240
24 AWG (0.25 mm²)						
0035800	2	0.248	6.3	19	36	53112210
0035801	3	0.280	7.1	27	46	53112210
0035802	4	0.299	7.6	31	54	53112220
0035803	6	0.335	8.5	47	77	53112220
0035804	8	0.406	10.3	52	87	53112230
0035805	10	0.433	11.0	69	106	53112230
0035806	12	0.445	11.3	81	128	53112240
0035807	16	0.492	12.5	99	160	53112240
0035808	25	0.634	16.1	138	231	53112250

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
20 AWG (0.5 mm²)						
0035810	2	0.339	8.6	33	62	53112220
0035811	3	0.343	8.7	50	87	53112220
0035812	4	0.370	9.4	56	98	53112230
0035813	6	0.437	11.1	74	133	53112230
0035814	8	0.516	13.1	94	174	53112240
0035816	12	0.587	14.9	134	238	53112250
0035817	16	0.650	16.5	162	308	53112250
18 AWG (1 mm²)						
0035830	2	0.354	9.0	57	95	53112220
0035831	3	0.409	10.4	65	116	53112230
0035832	4	0.445	11.3	82	142	53112240
0035836	5	0.465	11.8	109	179	53112240

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.

UNITRONIC® LiHH/LiHCH/LiHCH (TP)

Low-voltage halogen-free multi-conductor & multi-pair communication & control cable

UNITRONIC® LiHH/LiHCH is a halogen-free multi-conductor cable for communication, signal, and control applications. It is designed for general purpose installations of electrical machinery where human safety is a concern in case of a fire. UNITRONIC® LiHCH has a tinned copper braid for RFI & EMC protection. UNITRONIC® LiHCH (TP) is an overall-shielded multi-paired version for data, communication, and signal applications.

Unshielded construction

Conductors: stranded bare copper

Insulation: special halogen-free compound

Jacket: special halogen-free compound; pebble gray

Shielded construction

Conductors: stranded bare copper

Pairs: special halogen-free compound

Insulation: special halogen-free compound

Shielding: tinned copper braid

Jacket: special halogen-free compound; pebble gray

Recommended applications

RS-232; data buses; process control instrumentation; low-voltage signaling and interconnect; broadcast; applications with European DIN 47100 color code where human safety is a concern

Application advantage

- Low Smoke, Zero Halogen
- European color code DIN 47100
- Extended temperature range of -30°C to +80°C
- Low smoke density and low amount of corrosive gases if on fire

Approvals

CE RoHS

Cable attributes			page 648
OIL	OR-01	FLAME	FR-02
MOTION	FL-01	MECH.	MP-02

Complete the installation

SKINTOP® strain relief
page 492

EPIC® connectors
page 284

Technical data

Minimum bend radius:
- for installation: 6 x cable diameter
- shielded: 6 x cable diameter

Temperature range:
- for stationary use: -30°C to +80°C
- for flexible use: -5°C to +70°C

Nominal voltage: 250V

Test voltage: 1200V

Conductor stranding: fine wire

Inductance: nominal 0.65 mH/km

Mutual capacitance:
- conductor/conductor: 24 pF/ft
- conductor/shield: 37 pF/ft

Color code:
- UNITRONIC® LiHH/LiHCH: DIN 47100: chart 8, page 682
- UNITRONIC® LiHCH (TP): DIN 47100: chart 7, page 682

Approvals: based on VDE 0812
CE & RoHS

UNITRONIC® LiHH

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
24 AWG (0.25 mm²)						
0037120	2	0.157	4.0	4	15	S1107
0037121	3	0.165	4.2	5	17	S1107
0037122	4	0.177	4.5	7	19	S1107
0037124	6	0.209	5.3	10	26	S1107
0037125	7	0.209	5.3	12	28	S1107
0037126	8	0.252	6.4	13	34	S1109
0037128	12	0.283	7.2	20	45	S1111
22 AWG (0.34 mm²)						
0037140	2	0.173	4.4	5	19	S1107
0037141	3	0.181	4.6	7	20	S1107
0037142	4	0.197	5.0	9	27	S1107
0037143	5	0.224	5.7	11	30	S1107
0037147	12	0.315	8.0	27	65	S1111

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
20 AWG (0.5 mm²)						
0037150	2	0.193	4.9	7	21	S1107
0037151	3	0.205	5.2	10	25	S1107
0037152	4	0.228	5.8	13	30	S1107
0037153	5	0.248	6.3	17	39	S1109
0037154	7	0.276	7.0	23	48	S1111
18 AWG (1 mm²)						
0037171	3	0.240	6.1	20	38	S1107
0037172	4	0.260	6.6	26	45	S1109

UNITRONIC® LiHCH

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
26 AWG (0.14 mm²)						
0037302	2	0.161	4.1	9	15	53112210
0037304	4	0.177	4.5	11	19	53112210
0037308	8	0.236	6.0	18	28	53112210
0037312	12	0.256	6.5	21	52	53112210
0037325	25	0.343	8.7	43	100	53112220
24 AWG (0.25 mm²)						
0037402	2	0.185	4.7	11	17	53112210
0037403	3	0.193	4.9	13	20	53112210
0037404	4	0.205	5.2	15	24	53112210
0037406	6	0.244	6.2	21	33	53112210
0037407	7	0.244	6.2	22	35	53112210
0037408	8	0.287	7.3	24	39	53112220
0037410	10	0.303	7.7	29	54	53112220
0037425	25	0.429	10.9	77	116	53112230
22 AWG (0.34 mm²)						
0037502	2	0.201	5.1	12	20	53112210
0037503	3	0.209	5.3	15	24	53112210
0037504	4	0.232	5.9	17	28	53112210
0037507	7	0.276	7.0	29	49	53112210
0037508	8	0.315	8.0	31	56	53112220
0037510	10	0.335	8.5	43	68	53112220
0037516	16	0.378	9.6	64	108	53112230
0037525	25	0.476	12.1	97	174	53112240

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
20 AWG (0.5 mm²)						
0037602	2	0.228	5.8	20	26	53112210
0037603	3	0.240	6.1	24	32	53112210
0037604	4	0.256	6.5	31	45	53112210
0037605	5	0.283	7.2	34	51	53112220
0037606	6	0.307	7.8	40	56	53112220
0037607	7	0.307	7.8	46	61	53112220
0037608	8	0.350	8.9	51	70	53112220
0037610	10	0.374	9.5	63	88	53112230
0037612	12	0.386	9.8	67	119	53112230
0037618	18	0.461	11.7	91	161	53112240
18 AWG (1 mm²)						
0037802	2	0.256	6.5	29	48	53112210
0037803	3	0.276	7.0	38	60	53112210
0037804	4	0.295	7.5	46	73	53112220
0037807	7	0.346	8.8	80	115	53112220
16 AWG (1.5 mm²)						
0037902	2	0.303	7.7	39	60	53112220
0037903	3	0.319	8.1	50	77	53112220

UNITRONIC® LiHCH (TP)

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
26 AWG (0.14 mm²)						
0038302	2	0.232	5.9	13	26	53112210
0038303	3	0.236	6.0	16	32	53112210
0038304	4	0.252	6.4	18	36	53112210
0038308	8	0.331	8.4	37	65	53112220
0038312	12	0.358	9.1	45	95	53112220
0038316	16	0.409	10.4	54	103	53112230
0038325	25	0.500	12.7	76	160	53112240
24 AWG (0.25 mm²)						
0038402	2	0.283	7.2	19	36	53112220
0038403	3	0.287	7.3	27	44	53112220
0038404	4	0.307	7.8	31	54	53112220
0038406	6	0.343	8.7	47	77	53112220
0038408	8	0.413	10.5	52	87	53112230
0038412	12	0.453	11.5	81	128	53112240
0038416	16	0.500	12.7	99	160	53112240

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
20 AWG (0.5 mm²)						
0038602	2	0.346	8.8	33	62	53112220
0038603	3	0.350	8.9	50	87	53112220
0038604	4	0.378	9.6	56	98	53112230
0038606	6	0.445	11.3	74	133	53112240
0038608	8	0.524	13.3	94	174	53112240
0038612	12	0.594	15.1	134	238	53112250
0038616	16	0.657	16.7	162	308	53112250
18 AWG (1 mm²)						
0038802	2	0.413	10.5	57	95	53112230
0038803	3	0.417	10.6	65	116	53112230
0038804	4	0.453	11.5	82	142	53112240

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.

UNITRONIC® CY PiDY (TP)

Low-voltage multi-pair communication & control cable; individually shielded pairs & overall shield

UNITRONIC® CY PiDY (TP) is a multi-pair cable with individually shielded pairs for communication, signal, and control applications. It is designed for general purpose installations of electrical machinery. UNITRONIC® CY PiDY (TP) has a tinned copper braid for additional RFI & EMI protection.

Construction

Conductors: stranded bare copper

Pairs: PVC; tinned copper braid; PVC jacket over braid

Shielding: overall tinned copper braid

Jacket: PVC; pebble gray

Recommended applications

RS-232; data buses; process control instrumentation; low-voltage signaling and interconnect; broadcast; applications with the European DIN 47100 color code

Application advantage

- Outstanding EMC protection against signal coupling
- European color code DIN 47100
- Extended temperature range of -30°C to +70°C

Approvals

CE RoHS

Cable attributes			page 648
OIL	OR-01	FLAME	FR-02
MOTION	FL-01	MECH.	MP-01

Complete the installation


SKINTOP® MS-SC
page 522


EPIC® connectors
page 284

Technical data

Minimum bend radius:
- for installation: 6 x cable diameter

Temperature range:
- for stationary use: -40°C to +80°C
- for flexible use: -5°C to +50°C

Nominal voltage: 250V

Test voltage: 1200V

Conductor stranding: fine wire

Insulation resistance: 20 GΩ x cm

Inductance: nominal 0.65 mH/km

Loop resistance: < 160 Ω x km

Characteristic impedance: approx. 65 Ω

Mutual capacitance:
- conductor/conductor: 37 pF/ft
- conductor/shield: 48 pF/ft

Color code: DIN 47100: chart 7, page 682

Approvals: based on VDE 0812
RoHS

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
24 AWG (0.25 mm²)						
0034250	2	0.367	9.3	41	75	53112230
0034251	3	0.386	9.8	49	91	53112230
0034252	4	0.438	11.1	60	113	53112230
0034253	5	0.465	11.8	70	135	53112240
0034254	6	0.504	12.8	85	164	53112240

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
0034256	8	0.607	15.4	109	218	53112250
0034257	10	0.674	17.1	126	230	53112260
0034258	12	0.721	18.3	161	280	53112260
0034259	16	0.800	20.3	213	364	53112260

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC®

Continuous flex data, signal & control cable

Quick select chart

Product	Construction			AWG range	Conductor count	
	shielding	insulation	jacket			
UNITRONIC® FD 890	no	PVC	PVC	24 - 22 AWG	3, 5, 7 10, 14, 18, 25	
UNITRONIC® FD	no	PVC	PVC	26 - 22 AWG	2, 3, 4, 5, 7, 10, 14, 18, 25	
UNITRONIC® FD CY	yes	PVC	PVC	26 - 22 AWG	2, 3, 4, 5, 7, 10, 14, 18, 25	
UNITRONIC® FD P plus	no	polyolefin	PUR	26 - 22 AWG	2, 3, 4, 5, 7, 10, 14, 18, 25	
UNITRONIC® FD CP plus	yes	polyolefin	PUR	26 - 22 AWG	2, 3, 4, 5, 7, 10, 14, 18, 25	
UNITRONIC® FD CP (TP) plus	yes	polyolefin	PUR	26 - 18 AWG	1, 2, 3, 4, 5, 6, 8, 10, 14 (pairs)	

	Nominal voltage	Temperature range		Approvals	Cable attributes, see page 648			Page
		low	high		oil resistance	flame resistance	mechanical properties	
	300V	-5°C	90°C		OR-03	FR-02	MP-01	222
	350V	-5°C	70°C		OR-01	FR-02	MP-01	223
	350V	-5°C	70°C		OR-01	FR-02	MP-01	224
	250V	-40°C	80°C		OR-05	FR-02	MP-05	225
	250V	-40°C	80°C		OR-05	FR-02	MP-05	226
	250V	-40°C	80°C		OR-05	FR-02	MP-05	227

UNITRONIC® FD 890

Continuous flex 300V multi-conductor PVC industrial communication cable; unshielded

UNITRONIC® FD 890 is designed for continuous flexing signal and low voltage control applications. The specially blended PVC jacket is resistant to most oils, solvents, and water-based coolants.

Construction

Conductors: finely stranded bare copper

Insulation: specially blended PVC; non-woven wrapping

Jacket: specially formulated PVC; gray

Recommended applications

High-speed automated equipment; robotics; CNC and multi-axis cutting equipment; other cable track applications

Application advantage

- Designed for high flexing applications
- Flexible for ease of routing in tight spaces
- Resistant to oils, solvents, and coolants

Approvals

Continuous Flex Test Method Verified

Cable attributes			page 648
OIL	OR-03	FLAME	FR-02
MOTION	CF-02*	MECH.	MP-01

Complete the installation

SKINTOP® MS-SC page 522

EPIC® connectors page 279

ÖLFLEX® CONNECT solution

ÖLFLEX® CONNECT CABLES page 605

Technical data

Minimum bend radius:
- for continuous flexing: 7.5 x cable diameter

Temperature range:
- for continuous flexing: -5°C to +90°C
- for stationary use: -40°C to +90°C

Nominal voltage: 300V (not for power)

Test voltage: 2000V

Conductor stranding: Class 6 super fine wire

Color code: DIN 47100: chart 8, page 682

Approvals:
UL: AWM 20132
Attributes: -25°C cold bend, NFPA 79
Canada: CSA AWM I/II A/B FT1
Additional: RoHS
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
24 AWG (0.24 mm²)						
892405	5	0.242	6.1	8	40	S1107
892407	7	0.281	7.1	11	50	S1111
892410	10	0.349	8.9	15	65	S1111
892414	14	0.350	18.9	21	83	S1111
892425	25	0.485	12.3	38	138	S1116

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
22 AWG (0.34 mm²)						
892203	3	0.210	5.3	8	33	S1107
892205	5	0.254	6.5	12	50	S1109
892207	7	0.293	7.4	14	66	S1111
892210	10	0.377	9.6	24	91	S1113
892214	14	0.376	9.6	34	140	S1113
892218	18	0.416	10.6	43	161	S1113
892225	25	0.519	13.2	60	194	S1116

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® FD

Continuous flex 350V multi-conductor PVC industrial communication cable; unshielded

UNITRONIC® FD is a DIN-style communication cable designed for continuous flexing industrial signal and low voltage control applications. The specially blended PVC jacket is resistant to most oils, solvents, and water-based coolants.

Construction

Conductors: finely stranded bare copper

Insulation: specially blended PVC; non-woven wrapping

Jacket: specially formulated PVC; gray

Recommended applications

High-speed automated equipment; robotics; CNC and multi-axis cutting equipment; other cable track applications

Application advantage

- Designed for high flexing applications
- Flexible for ease of routing in tight spaces
- Resistant to oils, solvents, and coolants

Approvals

CE RoHS

Continuous Flex Test Method Verified UL VERIFIED verify.ul.com A522492

Cable attributes				page 648
OIL	OR-01	FLAME	FR-02	
MOTION	CF-02*	MECH.	MP-01	

Complete the installation

SKINTOP® MS-SC
page 522

EPIC® connectors
page 279

ÖLFLEX® CONNECT solution

ÖLFLEX® CONNECT CABLES
page 605

Technical data

Minimum bend radius:	
- for continuous flexing:	5 x cable diameter
Temperature range:	
- for continuous flexing:	-5°C to +70°C
- for stationary use:	-40°C to +80°C
Nominal voltage:	350V (not for power)
Test voltage:	1500V
Mutual capacitance:	
- conductor/conductor:	approx. 30 pF/ft
Inductance:	approx. 0.65 mH/km
Conductor stranding:	extra fine wire per VDE 0295
Color code:	DIN 47100: chart 8, page 682
Approvals:	based on VDE 0812 CE & RoHS
*UL Verified ID A522492:	Continuous Flex Test Method Verified

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
26 AWG (0.14 mm²)						
0027841	3	0.161	4.1	3	17	S1107
0027842	4	0.173	4.4	4	21	S1107
0027843	5	0.185	4.7	5	24	S1107
0027844	7	0.213	5.4	7	34	S1107
0027845	10	0.252	6.4	9	42	S1109
0027846	14	0.256	6.5	13	52	S1109
0027847	18	0.280	7.1	17	61	S1111
0027848	25	0.339	8.6	24	84	S1111
24 AWG (0.25 mm²)						
0027855	2	0.181	4.6	3	18	S1107
0027856	3	0.185	4.7	5	22	S1107
0027857	4	0.201	5.1	7	27	S1107
0027858	5	0.220	5.6	8	30	S1107
0027859	7	0.252	6.4	12	40	S1109

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
0027860	10	0.303	7.7	17	56	S1111
0027861	14	0.307	7.8	24	73	S1111
0027863	18	0.346	8.8	30	87	S1111
0027865	25	0.425	10.8	42	120	S1113
22 AWG (0.34 mm²)						
0027870	2	0.193	4.9	5	20	S1107
0027871	3	0.205	5.2	7	29	S1107
0027872	4	0.224	5.7	9	38	S1107
0027873	5	0.244	6.2	11	44	S1107
0027874	7	0.280	7.1	16	57	S1111
0027875	10	0.346	8.8	23	79	S1111
0027876	14	0.350	8.9	32	101	S1111
0027877	18	0.394	10.0	41	122	S1113
0027878	25	0.484	12.3	57	168	S1116

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® FD CY

Continuous flex 350V multi-conductor PVC industrial communication cable; shielded

UNITRONIC® FD CY is a DIN-style communication cable designed for continuous flexing industrial signal and communication applications. It has a tinned copper braid shield for EMI resistance.

Construction

Conductors: finely stranded bare copper

Insulation: specially blended PVC; non-woven wrapping

Shielding: tinned copper braid (85% coverage)

Jacket: specially formulated PVC; gray

Recommended applications

High-speed automated equipment; robotics; CNC and multi-axis cutting equipment; other cable track applications

Application advantage

- Designed for high flexing applications
- Flexible for ease of routing in tight spaces
- Resistant to oils, solvents, and coolants

Approvals

CE RoHS

Continuous Flex Test Method Verified UL VERIFIED verify.ul.com A522492

Cable attributes			page 648
OIL	OR-01	FLAME	FR-02
MOTION	CF-02*	MECH.	MP-01

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Technical data

Minimum bend radius:
- for continuous flexing: 7.5 x cable diameter

Temperature range:
- for continuous flexing: -5°C to +70°C
- for stationary use: -40°C to +80°C

Nominal voltage: 350V (not for power)

Test voltage: 1500V

Mutual capacitance:
- conductor/conductor & conductor/shield: approx. 33 pF/ft

Inductance: approx. 0.65 mH/km

Conductor stranding: extra fine wire per VDE 0295

Color code: DIN 47100: chart 8, page 682

Approvals: based on VDE 0812
CE & RoHS
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
26 AWG (0.14 mm²)						
0027411	3	0.185	4.7	9	25	53112210
0027412	4	0.197	5.0	10	28	53112210
0027413	5	0.213	5.4	12	32	53112210
0027414	7	0.236	6.0	19	47	53112210
0027416	10	0.276	7.0	26	60	53112210
0027418	14	0.280	7.1	30	71	53112210
0027420	18	0.303	7.7	36	83	53112220
0027422	25	0.362	9.2	46	110	53112220
24 AWG (0.25 mm²)						
0027425	2	0.201	5.1	10	26	53112210
0027426	3	0.213	5.4	13	31	53112210
0027427	4	0.228	5.8	14	36	53112210
0027428	5	0.244	6.2	20	48	53112210
0027429	7	0.276	7.0	27	50	53112210

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
0027431	10	0.335	8.5	36	77	53112220
0027434	14	0.339	8.6	43	95	53112220
0027436	18	0.370	9.4	53	112	53112230
0027438	25	0.449	11.4	68	149	53112240
22 AWG (0.34 mm²)						
0027440	2	0.220	5.6	11	32	53112210
0027441	3	0.232	5.9	19	42	53112210
0027442	4	0.248	6.3	24	54	53112210
0027443	5	0.268	6.8	26	60	53112210
0027444	7	0.303	7.7	35	79	53112220
0027446	10	0.370	9.4	45	104	53112230
0027448	14	0.374	9.5	57	130	53112230
0027450	18	0.421	10.7	67	151	53112230
0027452	25	0.508	12.9	104	220	53112240

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
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UNITRONIC® FD P plus

Continuous flex 250V multi-conductor PUR industrial communication cable; unshielded

UNITRONIC® FD P plus is a communication cable designed for continuous flexing industrial signal and low voltage control applications. The tear-resistant polyurethane jacket provides excellent service life in harsh environments against most oils, solvents, and coolants.

Construction

Conductors: finely stranded bare copper

Insulation: polyolefin; non-woven wrapping

Jacket: specially formulated polyurethane; gray

Recommended applications

High-speed automated equipment; robotics; CNC and multi-axis cutting equipment; other cable track applications

Application advantage

- Designed for high flexing applications
- Flexible at -40°C
- Resistant to oils, solvents, and coolants
- Abrasion-resistant & halogen-free jacket
- Resistant to microbes and hydrolysis

Approvals

c UL us · CE · RoHS · Continuous Flex Test Method Verified (UL VERIFIED verifyUL.com A522492)

Cable attributes				page 648
OIL	OR-05	FLAME	FR-02	
MOTION	CF-02*	MECH.	MP-05	

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Technical data

Minimum bend radius:	
- for continuous flexing:	5 x cable diameter
Temperature range:	
- for continuous flexing:	-40°C to +80°C
Nominal voltage:	250V (not for power)
- UL AWM:	1000V
Test voltage:	1500V
Mutual capacitance:	
- conductor/conductor:	approx. 18 pF/ft
Inductance:	approx. 0.65 mH/km
Conductor stranding:	extra fine wire per VDE 0295
Color code:	DIN 47100: chart 8, page 682
Approvals: UL:	AWM 21576
Canada:	cRU AWM I/II A/B FT2
Additional:	CE & RoHS
*UL Verified ID A522492:	Continuous Flex Test Method Verified

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
26 AWG (0.14 mm²)						
0028647	2	0.146	3.7	2	13	S1107
0028650	3	0.154	3.9	3	17	S1107
0028651	4	0.165	4.2	4	20	S1107
0028652	5	0.177	4.5	5	23	S1107
0028677	6	0.189	4.8	6	28	S1107
0028653	7	0.201	5.1	7	32	S1107
0028654	10	0.240	6.1	9	40	S1109
0028678	12	0.248	6.3	11	45	S1109
0028656	18	0.268	6.8	17	56	S1111
0028657	25	0.327	8.3	24	81	S1111
24 AWG (0.25 mm²)						
0028658	2	0.169	4.3	3	18	S1107
0028659	3	0.177	4.5	5	22	S1107
0028660	4	0.193	4.9	7	24	S1107
0028661	5	0.209	5.3	8	33	S1107
0028679	6	0.240	6.1	10	37	S1109

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® SL PG thread
0028662	7	0.240	6.1	12	29	S1109
0028663	10	0.291	7.4	17	48	S1111
0028680	12	0.295	7.5	20	58	S1111
0028664	14	0.295	7.5	24	49	S1111
0028665	18	0.335	8.5	30	70	S1111
0028666	25	0.409	10.4	42	89	S1113
22 AWG (0.34 mm²)						
0028667	2	0.185	4.7	5	22	S1107
0028668	3	0.197	5.0	7	26	S1107
0028669	4	0.213	5.4	9	28	S1107
0028670	5	0.232	5.9	11	30	S1107
0028671	7	0.268	6.8	16	37	S1111
0028672	10	0.335	8.5	23	57	S1111
0028673	14	0.339	8.6	32	63	S1111
0028674	18	0.382	9.7	41	88	S1113
0028675	25	0.469	11.9	57	134	S1116

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® FD CP plus

Continuous flex 250V multi-conductor PUR industrial communication cable; shielded

UNITRONIC® FD CP plus is a Type CMX approved communication cable designed for continuous flexing industrial signal and low voltage applications. The tear-resistant polyurethane jacket provides excellent service life in harsh environments against most oils, solvents, and coolants. It has a tinned copper braid shield for EMI resistance.

Recommended applications

High-speed automated equipment; robotics; CNC and multi-axis cutting equipment; other cable track applications

Approvals

c UL us c UL us RoHS Continuous Flex Test Method Verified UL VERIFIED verify/UL.com A522492 CE

Construction

Conductors: finely stranded bare copper

Insulation: polyolefin; non-woven wrapping

Shielding: tinned copper braid (85% coverage)

Jacket: specially formulated polyurethane; gray

Application advantage

- UL/c(UL) CMX approved
- Flexible at -40°C
- Resistant to oils, solvents, and coolants
- Abrasion-resistant & halogen-free jacket
- Resistant to microbes and hydrolysis
- Designed for high flexing applications

Cable attributes page 648

OIL	OR-05	FLAME	FR-02
MOTION	CF-02*	MECH.	MP-05

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Technical data

Minimum bend radius:
- for continuous flexing: 7.5 x cable diameter

Temperature range:
- for continuous flexing: -40°C to +80°C
  - AWM: up to +80°C
  - CMX: up to +75°C

Nominal voltage: 250V (not for power)
- UL AWM: 1000V

Test voltage:
- conductor/conductor: 1500V
- conductor/shield: 500V

Mutual capacitance:
- conductor/conductor: approx. 18 pF/ft

Inductance: approx. 0.65 mH/km

Conductor stranding: extra fine wire per VDE 0295

Color code: DIN 47100: chart 8, page 682

Approvals:
UL: AWM 21576
CMX
Canada: c(UL) CMX
cRU AWM I/II A/B FT2
Additional: CE & RoHS
*UL Verified ID A522492: Continuous Flex Test Method Verified

Part number	Number of conductors	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
26 AWG (0.14 mm²)						
0028880	2	0.169	4.3	8	22	53112210
0028881	3	0.177	4.5	9	24	53112210
0028882	4	0.189	4.8	10	27	53112210
0028883	5	0.201	5.1	12	30	53112210
0028884	7	0.224	5.7	19	45	53112210
0028885	10	0.264	6.7	26	58	53112210
0028886	14	0.268	6.8	30	69	53112210
0028887	18	0.291	7.4	36	79	53112220
0028888	25	0.350	8.9	46	106	53112220
24 AWG (0.25 mm²)						
0028889	2	0.185	4.7	10	26	53112210
0028890	3	0.193	4.9	13	30	53112210
0028891	4	0.209	5.3	14	35	53112210
0028892	5	0.220	5.6	21	46	53112210
0028893	7	0.252	6.4	27	56	53112210
0028894	10	0.299	7.6	36	73	53112220
0028895	14	0.311	7.9	43	91	53112220
0028896	18	0.339	8.6	53	108	53112230
0028897	25	0.409	10.4	68	143	53112240
22 AWG (0.34 mm²)						
0028898	2	0.201	5.1	12	30	53112210
0028899	3	0.213	5.4	19	41	53112210
0028900	4	0.228	5.8	24	52	53112210
0028901	5	0.244	6.2	26	56	53112210
0028902	7	0.280	7.1	35	73	53112220
0028903	10	0.339	8.6	45	99	53112230
0028904	14	0.346	8.8	58	125	53112230
0028905	18	0.386	9.8	67	145	53112230
0028906	25	0.465	11.8	104	211	53112240

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® FD CP (TP) plus

Continuous flex 250V multi-pair PUR industrial communication cable; shielded

UNITRONIC® FD CP (TP) plus is a Type CMX approved multi-pair communication cable designed for continuous flexing industrial signal and data applications. The tear-resistant polyurethane jacket provides excellent service life in harsh environments against most oils, solvents, and coolants. It has a tinned copper braid shield for EMI resistance.

Recommended applications

High-speed automated equipment; robotics; CNC and multi-axis cutting equipment; other cable track applications

Approvals

Construction

Conductors: finely stranded bare copper

Insulation: polyolefin

Pairs: conductors are paired and twisted together; non-woven wrapping

Shielding: tinned copper braid

Jacket: specially formulated polyurethane; gray

Application advantage

- UL/c(UL) CMX approved
- Flexible at -40°C
- Resistant to oils, solvents, and coolants
- Abrasion-resistant & halogen-free jacket
- Resistant to microbes and hydrolysis

Cable attributes				page 648
OIL	OR-05	FLAME	FR-02	
MOTION	CF-02*	MECH.	MP-05	

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Technical data

Minimum bend radius:
- for continuous flexing: 7.5 x cable diameter

Temperature range:
- for continuous flexing: -40°C to +80°C
  - AWM: up to +80°C
  - CMX: up to +75°C

Nominal voltage: 250V (not for power)

Test voltage:
- conductor/conductor: 1500V
- conductor/shield: 500V

Mutual capacitance:
- up to 0.5 mm²: 18 pF/ft
- up to 1.0 mm²: 21 pF/ft

Inductance: approx. 0.65 mH/km

Conductor stranding: extra fine wire per VDE 0295

Color code: DIN 47100: chart 7, page 682

Approvals:

UL:	AWM 21576 CMX
Canada:	c(UL) CMX cRU AWM I/II A/B FT2
Additional:	CE & RoHS
*UL Verified ID A522492:	Continuous Flex Test Method Verified

If not otherwise specified, all values relating to the product are nominal values.
Photographs are not to scale and are not true representations of the products in question.

UNITRONIC® FD CP (TP) plus

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
26 AWG (0.14 mm²)						
0030910	2	0.232	5.9	13	28	53112210
0030911	3	0.244	6.2	16	36	53112210
0030912	4	0.264	6.7	18	40	53112210
0030913	5	0.287	7.3	25	50	53112220
0030914	6	0.295	7.5	33	61	53112220
0030915	8	0.346	8.8	37	73	53112220
0030916	10	0.398	10.1	40	81	53112230
24 AWG (0.25 mm²)						
0030962	1	0.185	4.7	9	18	53112210
0030919	2	0.260	6.6	22	40	53112220
0030920	3	0.276	7.0	26	48	53112220
0030921	4	0.299	7.6	29	57	53112220
0030922	5	0.335	8.5	35	69	53112230
0030923	6	0.346	8.8	48	88	53112230
0030924	8	0.406	10.3	50	104	53112240
0030925	10	0.465	11.8	60	125	53112240
0030926	14	0.472	12.0	75	147	53112240
22 AWG (0.34 mm²)						
0030963	1	0.201	5.1	13	24	53112210
0030928	2	0.287	7.3	28	54	53112220

Part number	Number of pairs	Nominal outer diameter in	Nominal outer diameter mm	Copper weight lbs/mft	Approx. weight lbs/mft	SKINTOP® MS-SC PG thread
0030929	3	0.315	8.0	35	68	53112220
0030930	4	0.343	8.7	40	80	53112230
0030932	6	0.394	10.0	58	111	53112230
0030934	10	0.539	13.7	88	184	53112250
20 AWG (0.5 mm²)						
0030964	1	0.232	5.9	15	32	53112210
0030937	2	0.327	8.3	34	67	53112230
0030938	3	0.346	8.8	48	87	53112230
0030939	4	0.386	9.8	50	99	53112230
0030940	5	0.421	10.7	57	113	53112240
0030941	6	0.445	11.3	67	130	53112240
0030942	8	0.520	13.2	97	191	53112250
0030943	10	0.598	15.2	118	230	53112260
0030944	14	0.610	15.5	145	269	53112260
18 AWG (1 mm²)						
0030955	1	0.248	6.3	28	48	53112210
0030956	2	0.390	9.9	49	87	53112230
0030957	3	0.413	10.5	63	114	53112240
0030958	4	0.465	11.8	79	137	53112240
0030959	5	0.516	13.1	93	159	53112250

Recommended SKINTOP® assumes minimal OD variance. Additional configurations are available; please see our SKINTOP® section.
If not otherwise specified, all values relating to the product are nominal values.