UNITRONIC® ETHERLINE®

9

Field Bus and Industrial Ethernet Cable

Field Bus and Industrial Ethernet Cable

ETHERLINE® INDUSTRIAL ETHERNET CABLES

Quick Select Chart

* Refer to product page for specific part numbers

	Application					Performance						
	Stationary	Flexible	Continuous Flexing	Halogen-Free	UL/CSA*	Character Impedance Ohms @ 1Mhz	Mutual Capacitance pF/ft @ 800 Hz	Peak Working Voltage (Volts)	Conductor Resistance Max per km (Data Pair)	Min Bend Radius (Static) x Diameter	Min Bend Radius (Flexing) x Diameter	
UNITRONIC® BUS DeviceNet™ (Static) Thick & Thin	•	•			•	120	12.1	300	45/180	10	-	
UNITRONIC® BUS DeviceNet™ (Flexing) Thick & Thin	•	•	•		•	120	12.1	300	45/180	10	10	
UNITRONIC® BUS BlueFlex™	•	•	•		•	78	17	300	-	5	12	
UNITRONIC® BUS Profibus DP (Static)	•			•	•	150	9.1	250	115	10	-	
UNITRONIC®BUS Profibus DP (Flexing)	•	•	•		•	150	9.1	300	133	8	15	
UNITRONIC® BUS Profibus PA	•	•			•	100	15.2	100	44	5	-	
UNITRONIC® BUS Genius®	•	•	•		•	100	17	300	-	5	10	
UNITRONIC® BUS Foundation Fieldbus	•	•			•	100	19.8	300	24	15	-	
UNITRONIC® BUS CCL	•	•			•	110	18	250	37.8	8	-	
UNITRONIC® BUS CAN	•	•	•		•	120	12.2	250	186	8	10	
UNITRONIC® BUS LD	•	•			•	100	18.3	250	186	10	-	
UNITRONIC® BUS FD	•	•	•		•	100	18.3	250	186	8	15	
UNITRONIC® BUS Interbus (Static)	•	•			•	100	18.3	250	186	10	-	
UNITRONIC® BUS Interbus (Flexing)	•	•	•		•	100	18.3	250	160	10	15	
UNITRONIC® BUS ASI bus (Static)	•				•	140	24.4	300	13.7	3	-	
UNITRONIC® BUS ASI bus (Flexing)	•	•	•	•	•	140	24.4	300	13.7	3	6	
ETHERLINE® CAT5 (Static)	•	•			•	100	14.6	125	186	10	-	
ETHERLINE® CAT5 (Flexing)	•	•	•		•	100	14.6	125	284	10	15	
ETHERLINE® CAT5 (Torsion)	•	•	•	•	•	100	14.6	125	192	-	-	
ETHERLINE® CAT5e (Static)	•	•			•	100	14.6	125	192	10	-	
ETHERLINE® CAT5e (Flexing)	•	•	•		•	100	14.6	125	192	10	15	
ETHERLINE® CAT 6e/7	•	•				100	14.6	125	-	10	-	

Specifications					Construction		
	Low Temperature (Static) °C	High Temperature (Static) °C	Low Temperature (Flexing)C	Low Temperature (Flexing) °C	Jacket Options	Insulation	Page #
	-20	80	-	-	PVC, PUR	FPE, PVC	180
	-	-	-40	80	PVC, PUR	FPE, PVC	182
	-	-	-20	80	PVC	TPE	184
	-40	80	-	-	PVC, PE, TPE	FPE	186
	-	-	-25	75	PVC, PUR	FPE	188
	-30	80	-	-	PVC	FPE	190
	-40	80	-20	80	PUR	TPE	185
	-25	105	-	-	PVC	XLPE	191
	-40	70	-	-	PVC	FPE	192
	-30	80	-5	70	PVC, PUR	FPE	193
	-30	70	-	-	PVC	FPE	194
	-40	80	-30	70	PUR	FPE	194
	-30	80	-	-	PVC	FPE	196
	-40	80	-30	70	PUR	PE	196
	-30	90	-	-	PVC	TPE	198
	-40	85	-30	85	PUR	TPE	198
	-30	80	-	-	PVC, PUR	PE	201
	-30	80	-5	60	PVC, PUR	PE	201
	-30	80	-5	60	PUR	PE	203
	-30	80	-	-	PUR	PE	201
	-30	80	-5	60	PUR	PE	201
	-30	80	-	-	PUR	PE	202

UNITRONIC® BUS DeviceNet™ BUS CABLES

THICK & THIN

120 Ohm Bus Cable for Static Applications

UNITRONIC® BUS- DeviceNet™ Cables are designed to support the robust demands of today's high speed industrial control environments. DeviceNet™ is a versatile, general purpose Fieldbus designed to satisfy 80% of the most common machine and cell-level wiring requirements. Devices can be powered from the network so wiring is minimized.

Recommended Applications:
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:
- Superior shielding for EMC protection
- Flexible construction for ease of installation
- Halogen-free version for LSOH requirements
- UV and oil resistant PVC jacket

UNITRONIC® DeviceNet™ BUS Cables Construction:

Stranded tinned copper conductors; data conductors are insulated with foam polyethylene; power conductors are insulated with PVC; both pairs are tri-laminated foil shield (100% Coverage); plus have an overall foil wrap and braid (65% coverage); both pairs utilize a common drain wire and have a tinned copper braid; oil resistant PVC or halogen-free outer jacket.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-03


Motion Type: FL-02


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

DeviceNet is a registered trademark of the Open DeviceNet Vendor Association.

Lapp is a member of the Open DeviceNet Vendor Association.

Technical Data:

Minimum Bending Radius:	10 x cable diameter	Characteristic Impedance:	120 Ohm
Temperature Range:	-20°C to +75°C	Nominal Capacitance:	12 pf/ft
Nominal Voltage:	300V	Color Code:	Power pair: Red & Black Data pair: Blue & White
Test Voltage:	2000V	Approvals: UL: CSA:	CMG CMG

UNITRONIC® BUS DeviceNet™ BUS CABLES

THICK & THIN

120 Ohm Bus Cable for Static Applications

Rate Table:

Communication Rate	Maximum Length- Main Cable				Maximum Length- Drop Cable			
	THICK		THIN		THICK		THIN	
	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters
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

UNITRONIC® DEVICENET™ BUS CABLES

Part Number	Type	Conductor Description	Nominal Outer Diameter		Copper Weight	Jacket Color	Approx. Weight	
			inches	mm	lbs/mft		lbs/mft	kg/km
PVC Jacketed- UL/CSA (CMG)								
4001	Trunk	18/ 1pr + 15/ 1pr	.437	11.1	59	Gray	140	209
4002	Drop	24/ 1pr + 22/ 1pr	.260	6.6	22	Gray	43	64
2170342*	Trunk	18/ 1pr + 15/ 1pr	.480	12.2	59	Violet	124	184
2170343*	Drop	24/ 1pr + 22/ 1pr	.272	6.9	22	Violet	46	68
Halogen-Free- UL/CSA (CMG)								
2170340	Trunk	18/ 1pr + 15/ 1pr	.492	12.5	59	Violet	124	184
2170341	Drop	24/ 1pr + 22/ 1pr	.283	7.2	22	Violet	46	68

* PLTC Approved

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UNITRONIC® BUS DeviceNet™ BUS FD CABLES

THICK & THIN

120 Ohm Bus Cable for Continuous Flex Applications

UNITRONIC® BUS- DeviceNet™ Cables are designed to support the robust demands of today's high speed industrial control environments. DeviceNet™ is a versatile, general purpose Fieldbus designed to satisfy 80% of the most common machine and cell-level wiring requirements. Devices can be powered from the network so wiring is minimized.

Recommended Applications:
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:
- Tested to over 5 million flex life cycles
- Superior shielding for EMC protection
- Flexible for ease of installation
- Highly abrasion resistant PUR jacket option
- UV and oil resistant PVC or PUR jacket

UNITRONIC® DeviceNet™ BUS Cables Construction:

Stranded tinned copper conductors; data conductors are insulated with foam polyethylene; power conductors are insulated with PVC; both pairs are individually shielded using tri-laminated foil (100% coverage), plus have an overall foil and braid wrap (65% coverage); both pairs utilize a common drain wire and have a tinned copper braid; oil resistant PVC or PUR outer jacket.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-03


Motion Type: CF-01


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

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Technical Data:

Minimum Bending Radius:	10 x cable diameter	Characteristic Impedance:	120 Ohm
Temperature Range:	-20°C to +75°C	Nominal Capacitance:	12 pf/ft
Nominal Voltage:	300V	Color Code:	Power pair: Red & Black Data pair: Blue & White
Test Voltage:	2000V	Approvals:	
		- PVC: UL:	CMG
		CSA:	CMG
		- PUR: UL:	CMX
		CSA:	CMX

UNITRONIC® BUS DeviceNet™ BUS FD CABLES

THICK & THIN

120 Ohm Bus Cable for Continuous Flex Applications

Rate Table:

Communication Rate	Maximum Length- Main Cable				Maximum Length- Drop Cable			
	THICK		THIN		THICK		THIN	
	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters
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

UNITRONIC® DEVICENET™ BUS FD CABLES

Part Number	Type	Conductor Description	Nominal Outer Diameter		Copper Weight	Jacket Color	Approx. Weight	
			inches	mm	lbs/mft		lbs/mft	kg/km
PVC Jacketed- UL/CSA (CMG)								
6001	Trunk	18/ 1pr + 14/ 1pr	.468	11.9	59	Gray	140	209
6002	Drop	24/ 1pr + 22/ 1pr	.283	7.2	22	Gray	43	64
2170346*	Trunk	18/ 1pr + 15/ 1pr	.480	12.2	59	Violet	131	195
2170347*	Drop	24/ 1pr + 22/ 1pr	.272	6.9	22	Violet	47	70
PUR UL/CSA (CMX)								
2170344	Trunk	18/ 1pr + 15/ 1pr	.480	12.2	56	Violet	124	184
2170345	Drop	24/ 1pr + 22/ 1pr	.409	10.4	22	Violet	46	68

* PLTC Approved

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UNITRONIC® BUS BlueFlex™

BlueFlex™ DH, DH+ and Remote I/O Twinaxial Cable
78 Ohm BUS Cable for Continuous Flexing Applications

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

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 resistant
- Oil resistant
- Flexible for ease of routing

BlueFlex™ Construction:
Finely stranded tinned copper conductors; electronic grade flexible TPE insulation; overall tape shield; flexible tinned copper shield (85%); specially formulated flame and oil resistant blue PVC jacket.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: CF-01


Motion Type: CF-01


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

Technical Data:

Minimum Bending Radius:		Characteristic Impedance:	78 Ohm
- static:	5 x cable diameter		
- flexing:	12 x cable diameter	Nominal Capacitance:	17 pF/ft
Temperature Range:	-20°C to +80°C	Color Code:	Blue/Natural
Nominal Voltage:	300V	Approvals: UL:	AWM 2661
Test Voltage:	3000V		

Part Number	Jacket	Conductor Description	Nominal Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
3649FD	PVC	20/ 1pr	.242	6.15	23	Blue	33	50

UNITRONIC® BUS Genius™

Genius™ I/O Twinaxial Cable

100 Ohm BUS Cable for Continuous Flex Applications

UNITRONIC® BUS Genius™ cables are 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

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 resistant
- Oil resistant
- Flexible for ease of routing

UNITRONIC® Genius™ BUS Cables Construction:

Finely stranded tinned copper conductors; TPE insulation; flexible tinned copper serve shield (92%); a specially formulated PUR jacket.

Cable Attributes, See Page 653


Oil Resistance: OR-05


Flame Resistance: FR-02


Motion Type: CF-01


Mechanical Properties: MP-05

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

Technical Data:

Minimum Bending Radius:		Characteristic Impedance:	100 Ohm
- static:	5 x cable diameter	Nominal Capacitance:	14 pF/ft
- flexing:	10 x cable diameter	Color Code:	White/Brown
Temperature Range:		Approvals: UL:	AWM 20233
- static:	-40°C to +80°C		
- flexing:	-20°C to +80°C		
Nominal Voltage:	300V		
Test Voltage:	3000V		

Part Number	Jacket	Conductor Description	Nominal Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
911264	PUR	22/ 1pr	.258	6.5	17	Violet	37	55

Genius is a registered trademark of GE Fanuc Automation.

UNITRONIC® BUS- Profibus DP- Stationary

Profibus® DP (SIMATIC NET), FMS and FIP
150 Ohm BUS Cable for Static Applications

UNITRONIC® BUS - Profibus DP cables are designed for field networks requiring fast, cyclic data exchange between controllers and field devices. Automation devices such as PLCs, PCs, HMI devices, sensors or actuators can communicate via this bus system.

Recommended Applications:
Factory, Process and Building Automation field networks.

Application Advantage:
- High performance EMC shielding
- Designed to profibus user Organization (PNO) standards
- Quick connect option for fast IDC connector termination
- Suitable for RS-422 and RS-485

UNITRONIC® BUS- Profibus® DP- Stationary Construction:

Solid and stranded bare copper conductors; specially designed foil/tinned copper braid shielding; multiple jacketing options for specific applications including PE, Halogen-Free, Quick Connect PVC, TPE and PVC.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-02


Motion Type: FL-01


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

Technical Data:

Minimum Bending Radius:	10 x cable diameter	Characteristic Impedance:	150 Ohm +/- 10 Ohm
Temperature Range:	-40°C to +80°C	Nominal Capacitance:	9 pf/ft
Nominal Voltage:	250V	Color Code:	Red/ Green
Test Voltage:	1500V	Approvals: UL:	- CMG - PLTC - 600V AWM

UNITRONIC® BUS- Profibus® DP- Stationary

Profibus® DP (SIMATIC NET), FMS and FIP
150 Ohm BUS Cable for Static Applications

Rate Table: (Maximum Length- One Bus Segment)

Communication Rate	PROFIBUS-DP Feet	Meters
9.6 Kbps	3936	1200
19.2 Kbps	3936	1200
187.5 Kbps	3280	1000
500 Kbps	1312	400
1.5 Mbps	656	200
12.0 Mbps	328	100

Communication Rate	FIP Feet	Meters
1.0 Kbps	656	200
2.5 Kbps	656	200

Part Number	Jacket	Conductor Description	Nominal Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
Profibus DP, FMS, or FIP (Static Install)								
2170219**	PVC	22/ 1pr	.315	8	20	Violet	38	57
2170233*	PE*	22/ 1pr	.315	8	17	Violet	38	57
2170824	PVC	24/ 1pr (7/32)	.315	8	20	Violet	37	55
Quick Connect- Profibus DP, FMS or FIP (Static Install)								
2170820	PVC	22/ 1pr	.315	8	17	Violet	51	76
2170826	PVC	24/ 1pr (7/32)	.315	8	17	Violet	45	67
2170853	Halogen-Free	22/ 1pr	.315	8	20	Violet	50	75
High Temp (105°C)- Profibus DP, FMS or FIP- (Static Install)								
2170630*	PVC*	24/ 1pr (7/32)	.315	8	20	Violet	47	70

* UL/CSA Pending
** UL (CMX)

UNITRONIC® BUS FD- Profibus DP

Profibus® DP (SIMATIC NET), FMS and FIP
150 Ohm BUS Cable for Continuous Flex Applications

UNITRONIC® BUS - Profibus DP cables are designed for field networks requiring fast, cyclic data exchange between controllers and field devices. Automation devices such as PLCs, PCs, HMI devices, sensors or actuators can communicate via this bus system.

Recommended Applications:
Robotics, Motion Control, Industrial Automation field networks.

Application Advantage:
- High performance EMC shielding
- Stranding for continuous flex operation
- Designed to profibus user organization (PNO) standards
- Quick connect option for fast IDC connector termination
- Suitable for RS-422 and RS-485

UNITRONIC® BUS FD- Profibus DP:
Stranded bare copper conductors; specially designed foil/tinned copper braid shielding; multiple jacketing options for specific applications including Quick Connect PVC, Flexible Abrasion and Oil Resistant PUR.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-02


Motion Type: CF-01


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

Technical Data:

Minimum Bending Radius:		
- static:		8 x cable diameter
- flexing:		15 x cable diameter
Temperature Range:		-25°C to +75°C
Nominal Voltage:		300V
(2170331 & 2170875):		600V
Test Voltage:		2000V
Characteristic Impedance:		150 Ohm +/- 10 Ohms
Nominal Capacitance:		9 pF/ft
Color Code:		Red/ Green Pairs
2170875:		Black number conductors
Approvals:	UL:	- CMG
		- Oil Res I (2170331, 2170875)
	CSA:	- FT4 (2170331, 2170875)

UNITRONIC® BUS FD- Profibus DP

Profibus® DP (SIMATIC NET), FMS and FIP

150 Ohm BUS Cable for Continuous Flex Applications

Rate Table: (Maximum Length- One Bus Segment)

Communication Rate	PROFIBUS-DP Feet	Meters
9.6 Kbps	3936	1200
19.2 Kbps	3936	1200
187.5 Kbps	3280	1000
500 Kbps	1312	400
1.5 Mbps	656	200
12.0 Mbps	328	100

Communication Rate	FIP Feet	Meters
1.0 Kbps	656	200
2.5 Kbps	656	200

Part Number	Jacket	Conductor Description	Maximum Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
Quick Connect- Profibus DP, FMS or FIP								
2170322*	PVC	22/ 1pr	.315	8	20	Violet	43	64
2170854	PUR	24/ 1pr	.315	8	20	Violet	43	64
Torsion Flex- Profibus DP, FMS, or FIP								
2170332*	PUR	22/ 1pr	.315	8	17	Violet	44	66
Festoon Cable- Profibus DP, FMS or FIP								
2170331	PVC	24/ 1pr	.315	8	17	Violet	40	60
Hybrid Cable- Profibus DP, FMS or FIP								
2170875	PVC	24/ 1pr + 16/4c	.433	11	60	Violet	104	155

* UL/CSA (CMX)

UNITRONIC® BUS- Profibus® PA- Stationary

Profibus® PA (Process Automation)
100 Ohm BUS Cable for Static Applications

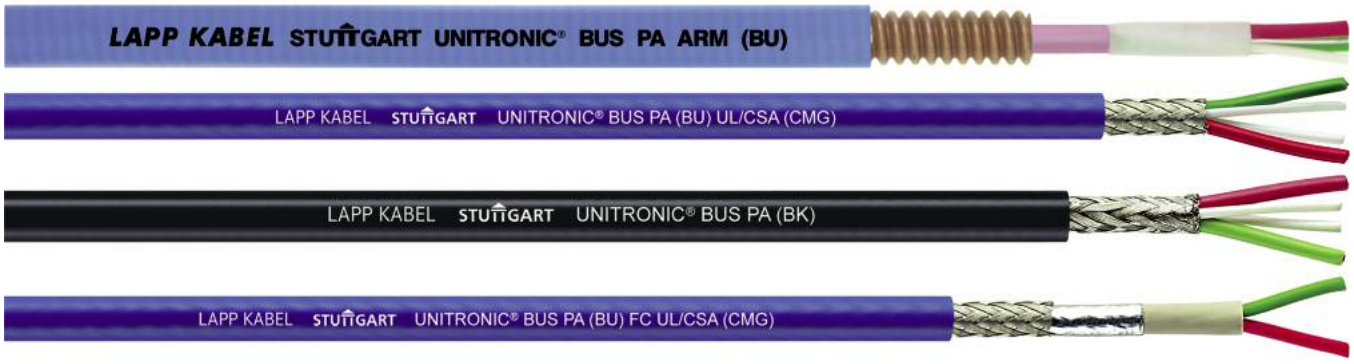
UNITRONIC® BUS - Profibus PA cables are designed for process automation applications where intrinsic safety is required. Designed for bus powered devices requiring reliable data transmission.

Recommended Applications:
Process Control device controllers, Flow, Pressure, Temperature device networking

Application Advantage:
- High performance EMC shielding
- Designed to Profibus® user organization (PNO) standards
- Quick connect option for fast IDC connector termination
- Intrinsically safe (Blue jacket)
- Flame retardant, UV and oil resistant

UNITRONIC® BUS Profibus® PA:

Solid bare copper conductor options; Specially designed foil (100%) / tinned copper braid (90%) shielding for maximum EMC protection; Flame retardant and UV resistant PVC cable jacketing in Blue (intrinsically safe) and Black.



Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-03


Motion Type: FL-01


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

Technical Data:

Minimum Bending Radius:	5 x cable diameter	Characteristic Impedance:	100 Ohm +/- 20 Ohms
Temperature Range:	-30°C to +80°C	Nominal Capacitance:	15 pf/ft
Nominal Voltage:	100V	Color Code:	Red/ Green
Test Voltage:	1500V	Approvals: UL:	- CMG - PLTC - 600V AWM 20201
		CSA:	- CMG

Part Number	Jacket	Conductor Description	Nominal Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
Flexible Profibus PA (Static Install)								
2170834	PVC	18/ 1pr	.291	7.4	30	Blue	50	75
2170835	PVC	18/ 1pr	.291	7.4	30	Black	50	75
Quick Connect- Profibus PA (Static Install)								
2170334	PVC	18/ 1pr	.315	8.0	31	Blue	69	103
2170335	PVC	18/ 1pr	.315	8.0	31	Black	69	103
Armored Profibus PA (Static Install)								
2170248*	PVC (CCA)	18/ 1pr	.437	11.1	104	Blue	95	141

* UL/CSA Pending

UNITRONIC® BUS Foundation™ Fieldbus

Fieldbus Cable for Static Installation
100 Ohm BUS Cable for Static Applications (Process Automation)

UNITRONIC® BUS - FOUNDATION™ Fieldbus cables have been specifically designed to meet the hazardous demands of the industrial and process control environment. 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:
PLC and DCS controllers, Transmitters, Mag meters, Vortex meters, analyzers, Valve positioners, Process instrumentation.

Application Advantage:
- Designed for use in Class I, Div 2 intrinsically safe areas (blue jacket)
- Can withstand temperatures up to 105°C
- Highly flame resistant (CSA - FT4)
- Oil and UV resistant
- Highly flexible for ease of routing

UNITRONIC® BUS Foundation™ Fieldbus:

Stranded bare copper conductors; XLPE insulation; foil shielded pair with an overall flexible tinned copper braid shield (90%); (Welded corrugated copper armoring also available); yellow PVC jacket (or blue for intrinsically safe applications).

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-03


Motion Type: FL-01


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page


EPIC® Connectors: Page


OLFLEX® Tubing: Page


Cable Assemblies Page

Technical Data:

Minimum Bending Radius: - static:	15 x cable diameter	Characteristic Impedance:	100 Ohm +/- 20 Ohms
Temperature Range: - static:	-25°C to +105°C	Nominal Capacitance:	20 pf/ft
Nominal Voltage:	300V	Color Code:	Blue, Brown, Green/Yellow
Test Voltage:	1500V	Approvals: UL:	- CMG - PLTC
		CSA:	- FT4

Part Number	Pairs	Conductor Description	Nominal Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
3 Core Un-Armored								
2170350	1pr/ 1c	18 AWG	.311	7.9	41	Yellow	62	93
3 Core Armored								
2170351	1pr/ 1c	18 AWG	.484	12.3	72	Yellow	122	182
2170353	1pr/ 1c	18 AWG	.484	12.3	72	Blue	122	182
2 Core Un-Armored								
2170352	1 pr	18 AWG	.311	7.9	36	Yellow	55	82

UNITRONIC® BUS CCL- Static BUS

CC-LINK® Fieldbus Cable

110 Ohm BUS Cable for Stationary Applications

UNITRONIC® BUS CCL Fieldbus cables provide high speed, deterministic 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 156kbps) or longer with the use of a repeater.

Recommended Applications:
Digital & Analog I/O, Temperature Controllers, Variable Frequency Drives, Servo Drives, Valve Manifolds, Operator Interfaces, Robots

Application Advantage:
- Signal integrity in high EMC applications
- Flame resistant
- Oil resistant
- Flexible for ease of routing

UNITRONIC® BUS CC-LINK®- Static Bus Cable:

Stranded tinned copper conductors; a foamed PE insulation; flexible tinned copper braid shield (80%) over an aluminum laminated foil (100%) with a stranded tinned copper drain wire; red PVC jacket.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-03


Motion Type: FL-01


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

Technical Data:

Minimum Bending Radius: - static:	15 x cable diameter	Characteristic Impedance:	110 Ohm +/-15 Ohms
Temperature Range: - static:	-40°C to +70°C	Nominal Capacitance:	18 pF/ft
Nominal Voltage:	250V	Color Code:	White, Blue, Yellow
Test Voltage:	1500V	Approvals: UL: CSA:	CM, PLTC FT4

Part Number	Jacket	Conductor Description	Nominal Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
2170360	PVC	20/ 3c	.303	7.7	26	Red	51	77

UNITRONIC® BUS- CAN BUS Cables

CAN BUS Cable

120 Ohm BUS Cable for Static and Continuous Flex Applications

UNITRONIC® BUS - CAN Bus cables are designed to the CAN open and ISO 11898 standard. Cable is well suited for high-speed motion control and feedback loop applications providing high reliability, efficient use of network bandwidth and power available on the network.

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 static and continuous motion applications
- Flame resistant
- Oil resistant
- Flexible for ease of routing

UNITRONIC® BUS CAN Construction:

7-wire stranded twisted pair data cable, polyethylene insulation; conductors are surrounded with a foil wrap and a tinned copper braid shield; violet jacket is PVC.

UNITRONIC® BUS FD P CAN Construction:

Finely stranded twisted pair data cable, polyethylene insulation; conductors are surrounded with a non-wicking textile wrap and a tinned copper braid shield; violet halogen-free PUR jacket.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-02


Motion Type: FL-01


Mechanical Properties: MP-01

Rate Table:
(ISO 11898 Recommendations)

Distance (Meters)	AWG	Max. Rate
0 to 40	22	1 Mbps@ 40m
40 to 300	22, 20	500 kpps @ 100m
300 to 600	20	100 kbps @ 500m
600 to 100	18	50 kbps @ 1 km

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

Technical Data:

Minimum Bending Radius:
- static: 8 x cable diameter
- flexing: 10 x cable diameter

Temperature Range:
- static: -30°C to +70°C
- flexing: -40°C to +75°C

Nominal Voltage: 250V

Test Voltage: 1500V

Characteristic Impedance: 120 Ohm +/- 15 Ohms

Nominal Capacitance: 17 pF/ft

Color Code: DIN 47100, Chart 7, Page 673

Approvals: UL: CMX; CSA: CMX

Part Number	Pairs	Conductor Description	Nominal Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
Static Install								
2170260	1pr	24 AWG	.224	5.7	11	Violet	28	42
2170261	2pr	24 AWG	.299	7.6	23	Violet	46	68
2170263	1pr	22 AWG	.268	6.8	17	Violet	37	55
2170264	2pr	22 AWG	.335	8.5	31	Violet	59	88
2170266	1pr	20 AWG	.295	7.5	28	Violet	60	90
2170267	2pr	20 AWG	.382	9.7	40	Violet	71	106
Continuous Flex								
2170272	1pr	24 AWG	.252	6.4	12	Violet	27	40
2170273	2pr	24 AWG	.331	8.4	22	Violet	47	70
2170275	1pr	22 AWG	.268	6.8	22	Violet	40	60
2170276	2pr	22 AWG	.378	9.6	35	Violet	59	88
2170278	1pr	20 AWG	.315	8.0	28	Violet	50	74
2170279	2pr	20 AWG	.425	10.8	40	Violet	67	100

UNITRONIC® BUS- Static & Flexing Cables

BUS cable for SUCOnet™, ModulLink™ and VariNet™ Applications
100 Ohm BUS Cable for Static and Continuous Flexing Applications

UNITRONIC® BUS Cables are designed using stranded bare copper conductors (finer stranding for continuous flex cables) with high performance PE insulation to optimize flexing endurance. Superior EMC protection is attained using a flexible tinned copper braid shield (85%). Cables are jacketed with a PVC (static) or halogen-free PUR (flexing).

Application Advantage:
- Signal integrity in static and continuous motion applications
- Flame resistant
- Oil resistant
- Flexible for ease of routing

UNITRONIC® BUS Cables Construction: Flexible Versions

Stranded bare copper conductors; electronic grade flexible polyethylene insulation; paired conductors; tinned copper shield; flame retardant violet PVC jacket.

Cable Attributes, See Page 653

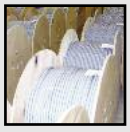

Oil Resistance: OR-01


Flame Resistance: FR-02


Motion Type: FL-02


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

UNITRONIC® BUS Cables Construction: Continuous Flexing Versions

Finely stranded bare copper conductors; electronic grade flexible polyethylene insulation; paired conductors; non-wicking tape wrap; tinned copper shield; flame retardant violet polyurethane jacket.

Cable Attributes, See Page 653


Oil Resistance: OR-05


Flame Resistance: FR-02


Motion Type: CF-01


Mechanical Properties: MP-05

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

Technical Data:

Minimum Bending Radius:		Characteristic Impedance:	100 - 120 Ohm
- static:	8 x cable diameter	Nominal Capacitance:	18 pF/ft
- flexing:	15 x cable diameter	Color Code:	DIN 47100, Chart 7, Page 673
Temperature Range:		Approvals: UL:	CMX
- static:	-30°C to +70°C	CSA:	CMX
Nominal Voltage:	250V		
Test Voltage:	1500V		

UNITRONIC® BUS- Static & Flexing Cables

BUS cable for SUCOnet™, ModulLink™ and VariNet™ Applications

100 Ohm BUS Cable for Static and Continuous Flexing Applications

Rate Table: (Maximum Length- One Bus Segment)

Communications Rate	Feet	Meters
9.6 - 93.75 Kbps	3936	1200
187.5 Kbps	3280	1000
500 Kbps	1312	400

Part Number	Pairs	Conductor Description	Nominal Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
Static Install								
2170203	1pr	24 AWG	.224	5.7	12	Violet	25	37
2170204	2pr	24 AWG	.280	7.1	19	Violet	30	45
2170205	3pr	24 AWG	.282	7.2	25	Violet	48	72
Static Install (UL/CSA)								
2170803	1pr	24 AWG	.232	5.9	12	Violet	26	39
2170804	2pr	24 AWG	.287	7.3	13	Violet	32	48
2170805	3pr	24 AWG	.291	7.4	25	Violet	51	76
Flexing Install								
2170213	1pr	24 AWG	.248	6.3	11	Violet	26	39
2170214	2pr	24 AWG	.331	8.4	22	Violet	44	65
2170215	3pr	24 AWG	.335	8.5	26	Violet	52	77
Flexing Install (UL/CSA)								
2170813	1pr	24 AWG	.256	6.5	11	Violet	26	39
2170814	2pr	24 AWG	.339	8.6	22	Violet	44	65
2170815	3pr	24 AWG	.343	8.7	26	Violet	52	77

SUCOnet is a registered trademark of Moeller-Group.
ModulLink is a registered trademark of Weidmuller GmbH & Co.
VariNet is a registered trademark of Pepperl+Fuchs GmbH.

UNITRONIC® BUS- Interbus™

Interbus™ Cable

100 Ohm BUS Cable for Static & Continuous Flex Applications

UNITRONIC® BUS - Interbus™ cables are widely used for field bus wiring of nodes and I/O due to its inherent high speed and maximum diagnostic capabilities. Due to its unique network topology, Interbus networks are self configuring making startup easy and simplifying troubleshooting.

Recommended Applications:
Assembly, welding and material handling machines. Single-cable wiring of multi-input sensor blocks, pneumatic valves, barcode readers, drives and operator interfaces. Also can be used with Sensor Loop and AS-I sub-networks.

Application Advantage:
- Oil and UV resistant
- Highly flexible for ease of routing (static cables) or for use in continuous flex applications (flexing cables)
- Certified by INTERBUS-CLUB
- Highly flame resistant (UL-VW1)

UNITRONIC® BUS- Interbus™:

Stranded bare copper conductors; PE insulation; overall flexible tinned copper braid shield (90%); welded corrugated copper armoring also available; PVC or halogen-free PUR jackets.

Cable Attributes, See Page 653


Oil Resistance: OR-05


Flame Resistance: FR-02


Motion Type: FL-02


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 627

UNITRONIC® BUS- Interbus™

Interbus™ Cable

100 Ohm BUS Cable for Static & Continuous Flex Applications

Technical Data:

- Minimum Bending Radius: 8 x cable diameter
- Temperature Range:
  - static: -40°C to +80°C
  - flexing: -30°C to +70°C
- Nominal Voltage: 250V
- Test Voltage: 1500V
- Characteristic Impedance: 100 Ohm +/- 20 Ohms
- Nominal Capacitance: 18 pF/ft
- Color Code: DIN 47100, Chart 7, Page 673
  17/3c: Red, Blue, Green/Yellow
- Approvals: UL: CMX
  CSA: CMX

50m max bus segment length (INBC)

Part Number	Conductors	Description	Nominal Outer Diameter inches	mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	kg/km
Static Remote Bus Cable (RBC)								
2170209	24/3pr	Static RBC	.283	7.2	25	Violet	48	72
2170207	24/3pr	Direct Burial RBC	.366	9.3	25	Black	63	94
Static Installation Bus Cable (INBC)								
2170208	24/3pr + 18/3c	Static INBC	.311	7.9	40	Violet	57	85
2170808	24/3pr + 18/3c	Static INBC (UL/CSA)	.311	7.9	40	Violet	57	85
2170817	24/3pr + 18/3c	Direct Burial INBC	.370	9.4	40	Black	86	128
Continuous Flex Remote Bus Cable (RBC)								
2170216	24/3pr	Flex RBC	.311	7.9	26	Violet	43	64
2170816	24/3pr	Flex RBC (UL/CSA)	.311	7.9	26	Violet	43	64
Continuous Flex Installation Bus Cable (INBC)								
2170218	24/3pr + 18/3c	Flex INBC	.311	7.9	42	Violet	62	92
2170818	24/3pr + 18/3c	Flex INBC (UL/CSA)	.311	7.9	42	Violet	62	92

Interbus is a registered trademark of Phoenix Contact GmbH& Co.

UNITRONIC® BUS ASi

AS-Interface (ASi) 2 wire BUS cable
140 Ohm Sensor/ Actuator Cable for Static & Flexing Applications

UNITRONIC® BUS ASi cables have been designed to link lower level binary devices (sensors/actuators) using a simple, cost effective field network. Many devices can be networked using this 2 wire cable including power requirements.

Recommended Applications:
E-Stop, Device Lockout, Sensors, Actuators, Safety modules, AOPD devices.

Application Advantage:
- Flexing withstand of 5 million cycles (TPE parts)
- Cold bend tested
- Oil and flame Resistant
- Quick connect jacket for easy installation

UNITRONIC® BUS ASi Cables Construction: TPE Jacket
Finely stranded bare copper conductors; oil resistant Thermoplastic Elastomer outer jacket.

Cable Attributes


Oil Resistance: OR-03


Flame Resistance: FR-02


Motion Type: FL-01


Mechanical Properties: MP-04

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


SKINTOP® DIX: Page 199

UNITRONIC® BUS ASi Cables Construction: EPDM Rubber Jacket
Finely stranded bare copper conductors; oil resistant, EPDM (rubber) outer jacket.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-02


Motion Type: FL-01

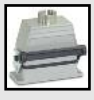

Mechanical Properties: MP-04

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


SKINTOP® DIX: Page 199

Technical Data:

Minimum Bending Radius for stationary use:	3 x cable diameter	Nominal Capacitance: Con/ Con:	19pF/ft
Temperature Range:	-40°C to +105°C	Characteristic Impedance:	70-140 Ohms (@167 KHZ)
Nominal Voltage:	300V	Color Code:	Blue & Brown
Test Voltage:	200V	Approvals:	2170830 & 2170831: UL/CSA

UNITRONIC® BUS ASi

AS-Interface (ASi) 2 wire BUS cable

140 Ohm Sensor/ Actuator Cable for Static & Flexing Applications

Part Number	Jacket	Conductor Description	Jacket Color	Nominal OD inches	Nominal OD mm	Copper Weight lbs/mft	Approx. Weight lbs/mft	Approx. Weight kg/km
Static Installation								
2170842	PVC	2 x 16 AWG (Data/Power)	Yellow	.39 x 0.15	10 x 4	29	38	57
2170843	PVC	2 x 16 AWG (30 VDC Power	Black	.39 x 0.15	10 x 4	29	38	57
Flexible Installation								
2170228	EPDM (Rubber)	2 x 16 AWG (Data/Power)	Yellow	.39 x 0.15	10 x 4	29	38	57
2170229	EPDM (Rubber)	2 x 16 AWG (30 VDC Power)	Black	.39 x 0.15	10 x 4	29	38	57
2170201	PUR	2 x 16 AWG (Data/Power)	Yellow	.39 x 0.15	10 x 4	29	38	57
2170202	PUR	2 x 16 AWG (30 VDC Power)	Black	.39 x 0.15	10 x 4	29	38	57
Continuous Flex Installation								
2170830*	TPE	2 x 16 AWG (Data/Power)	Yellow	.39 x 0.15	10 x 4	29	38	57
2170831*	TPE	2 x 16 AWG (30 VDC Power)	Black	.39 x 0.15	10 x 4	29	38	57

* UL/CSA

ASI is a registered trademark of AS-International.

Lapp Group is a member of the AS-International Association.

SKINTOP® DIX-ASi

Cable Bushings especially for ASi BUS Cables

PG & Metric

SKINTOP® DIX-ASi is a special cable bushing for sealing the UNITRONIC® BUS ASi, which is an AS-Interface cable. This bushing can be used with a standard SKINTOP® cable gland.

Technical Data:

Materials:	NBR
Temperature:	-40°C to + 100°C
Color:	RAL 9005
Seal:	IP 54 IP 68, 5 Bar (when optimally occupied) (Exceeds NEMA 6/ 6P Pressure rating)

SKINTOP® DIX-ASI: PG Bushings

Part Number	Thread Type & Size	Standard Pack Size
53611000	PG-11	50

SKINTOP® DIX-ASI-M: Metric Bushings

Part Number	Thread Type & Size	Standard Pack Size
53611001	M-20	50

ETHERLINE® 2 Pair: CAT5/ CAT5e

2 Pair Industrial Ethernet Cable

CAT5/ CAT5e Bus Cable for Static & Continuous Flexing Applications

ETHERLINE® CAT5/ CAT5e Industrial Ethernet cables are designed to provide reliable network communications in the demanding Industrial and Process Control environment where difficult EMC conditions are pervasive. Conforming to the EIA/TIA-568 standard, ETHERLINE® CAT5/ CAT5e Cables support half-duplex high speed communications.

Recommended Applications:
PLC and DCS automation networks, Device and Field Level Networking, ProfiNet®, Ethernet IP and other Industrial Ethernet Networks

Application Advantage:
- Signal integrity in continuous motion applications
- Flame resistant
- Oil resistant
- Flexible for ease of routing

ETHERLINE® 2 Pair: CAT5/ CAT5e

Solid and stranded conductor options; FPE insulation with foil and braid shielding; jacketing options include PVC, Halogen-Free FRNC, and PUR.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-02


Motion Type: FL-02
CF-01 (2170289)


Mechanical Properties: MP-01

Availability:


Standard put-ups are 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 633

Technical Data:

Minimum Bending Radius:
- static: 5 x cable diameter
- flexing: 10 x cable diameter

Temperature Range:
- static: -40°C to +80°C
- flexing: -20°C to +80°C

Nominal Voltage: 125V Peak (Not for Power)

Test Voltage: cond/cond: 1000V
cond/shield: 500V

Characteristic Impedance: 100 Ohm +/- 15 Ohms

Nominal Capacitance: 17 pF/ft

Color Code: White/Orange & Orange
White/Green & Green

Approvals: UL: CMG (2170893 & 2170494)

Part Number	Jacket	Conductor Description	Category	Nominal Outer Diameter inches	Nominal Outer Diameter mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	Approx. Weight kg/km
Halogen-Free: CAT 5e									
2170280	Zero Halogen	24 (1/24) & 24/ 2pr	CAT 5e	.228	5.8	15	Teal	30	45
2170281	PUR	24 (1/24) & 24/ 2pr	CAT 5e	.228	5.8	15	Teal	36	53
PROFINET® 22 AWG									
2170893	PVC	22 (1/22) & 22/ 2pr	CAT 5	.256	6.5	20	Green	38	56
Outdoor- Direct Burial									
2170494	PVC	22 (1/22) & 22/ 2pr	CAT 5e	.307	7.8	20	Green	42	62
2170496	PVC/PE Armored	22 (1/22) & 22/ 2pr	CAT 5	.366	9.3	20	Black	83	124
Halogen-Free: CAT 5									
2170283	Zero Halogen	26 (7/34) & 26/ 2pr	CAT 5	.213	5.4	13	Teal	29	43
2170284	PUR	26 (19/38) & 26/ 2pr	CAT 5	.228	5.8	13	Teal	30	45
Continuous Flex- Halogen-Free									
2170289	PUR	26 (19/38) & 26/ 2pr	CAT 5	.240	6.1	13	Teal	32	48

PROFINET is a registered trademark of the PNP.

ETHERLINE® 4 Pair: CAT5/ CAT5e

4 Pair Industrial Ethernet Cable

CAT5/ CAT5e Bus Cable for Static and Continuous Flex Applications

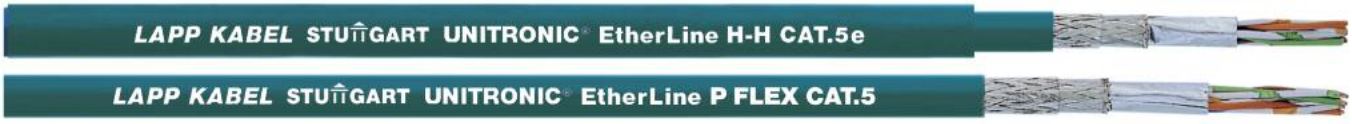
ETHERLINE® CAT5/ CAT 5e Industrial Ethernet cables are designed to provide reliable network communications in the demanding Industrial and Process Control environment where difficult EMC conditions are pervasive. Conforming to the EIA/TIA-568 standard, Etherline CAT5/ CAT 5e Cables support full duplex high speed communications.

Recommended Applications:
PLC and DCS automation networks, Device and Field Level Networking, ProfiNet®, Ethernet IP and other Industrial Ethernet Networks

Application Advantage:
- Signal integrity in continuous motion applications
- Flame resistant
- Oil resistant
- Flexible for ease of routing

ETHERLINE® 4 Pair: CAT5/CAT5e

Solid and stranded conductor options; FPE insulation with foil and braid shielding; jacketing options include PVC, Halogen-Free FRNC, and PUR.



Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-02


Motion Type: FL-02
CF-01 (2170489)


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 633

Technical Data:

Minimum Bending Radius:
- static: 5 x cable diameter
- flexing: 10 x cable diameter

Temperature Range:
- static: -40°C to +80°C
- flexing: -20°C to +80°C

Nominal Voltage: 125V Peak (Not for Power)

Test Voltage: cond/cond: 1000V
cond/shield: 500V

Characteristic Impedance: 100 Ohm +/- 15 Ohms

Nominal Capacitance: 17 pF/ft

Color Code: White/Blue & Blue
White/Orange & Orange
White/Green & Green
White/Brown & Brown

Approvals: UL: CMG (2170886)
EIA/TIA 568

Part Number	Jacket	Conductor Description	Category	Nominal Outer Diameter inches	Nominal Outer Diameter mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	Approx. Weight kg/km
Halogen-Free									
2170296	Zero Halogen (foil)	24 (1/24) & 24/ 4pr	CAT 5e	.248	6.3	22	Teal	36	54
2170297	PUR foil Braid	24 (1/24) & 24/ 4pr	CAT 5e	.248	6.3	22	Teal	42	62
2170298	Zero Hal Double Jacket (Foil/Braid)	24 (1/24) & 22/ 4pr	CAT 5e	.295	7.5	22	Teal	54	80
2170886	Flexible (Foil/Braid)	22 (7/30) & 22/ 2 pr	CAT 5	.256	6.5	22	Teal	36	54
Flexible- Halogen-Free									
2170299	Zero Halogen	26 (7/34) & 26/ 4pr	CAT 5e	.240	6.1	17	Teal	32	48
2170300	PUR (Foil/Braid)	26 (7/34) & 26/ 4pr	CAT 5e	.240	6.1	17	Teal	36	54
Continuous Flex- Halogen-Free									
2170489	PUR (Braid)	26 (19/38) & 26/ 4pr	CAT 5e	.248	6.3	18	Teal	36	54

PROFINET is a registered trademark of the PNP.

ETHERLINE® 4 Pair: CAT6e/ CAT7

4 Pair Industrial Ethernet Cable

CAT6e/ CAT7 Bus Cable for Static Applications

ETHERLINE® CAT6e/7 Industrial Ethernet cables are designed to provide highly reliable network communications in the demanding Industrial and Process Control environment where difficult EMC conditions are pervasive. Conforming to the EIA/TIA-568 standard, ETHERLINE® CAT6e/7 Cables support full duplex high speed communications.

Recommended Applications:
PLC and DCS automation networks, Device and Field Level Networking, ProfiNet®, Ethernet IP and other Industrial Ethernet Networks

Application Advantage:
- Signal integrity in continuous motion applications
- Flame resistant
- Oil resistant
- Flexible for ease of routing

ETHERLINE® 4 Pair: CAT6e/CAT7

Solid BC Conductors; FPE insulation with foil and braid shielding; jacketing options include PVC, Halogen-Free FRNC, and PUR.

Cable Attributes, See Page 653


Oil Resistance: OR-01


Flame Resistance: FR-02


Motion Type: FL-01


Mechanical Properties: MP-01

Availability:


Standard put-ups are 164ft, 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 633

Technical Data:

Minimum Bending Radius:
- static: 5 x cable diameter
- flexing: 10 x cable diameter

Temperature Range:
- static: -40°C to +80°C
- flexing: -20°C to +80°C

Nominal Voltage: 125V Peak (Not for Power)

Test Voltage: cond/cond: 1000V
cond/shield: 500V

Characteristic Impedance: 100 Ohm +/- 15 Ohms

Nominal Capacitance: 17 pF/ft

Color Code: Blue & White, Orange & White, Green & White, Brown & White

Part Number	Jacket	Conductor Description	Category	Nominal Outer Diameter inches	Nominal Outer Diameter mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	Approx. Weight kg/km
CAT 6e									
2170464	PVC	22/ 4pr	CAT 6e	.343	8.7	34	Green	66	98
2170465	PUR	22/ 4pr	CAT 6e	.343	8.7	34	Green	61	91
2170466	Zero Halogen	22/ 4pr	CAT 6e	.343	8.7	34	Green	67	99
CAT 7									
2170474	PVC	22/ 4pr	CAT 7	.343	8.7	34	Green	66	98
2170475	PUR	22/ 4pr	CAT 7	.343	8.7	34	Green	61	91
2170476	Zero Halogen	22/ 4pr	CAT 7	.343	8.7	34	Green	67	99

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ETHERLINE® TORSION

2 Pair Industrial Ethernet Cable
CAT5 BUS Cable for Torsion Flexing Applications

ETHERLINE® Torsion CAT5 Industrial Ethernet cables are designed to provide reliable network communications in Torsion Flexing applications. Tested to over 1 million flex cycles of 180° (Left/Right) over 1 meter, ETHERLINE® Torsion cables meet the most demanding motion requirements. Cable also conforms to the EIA/TIA-568 standard

Recommended Applications:
PLC automation networks, Device and Field Level Networking, ProfiNet, Ethernet IP and other Industrial Ethernet Networks

Application Advantage:
- Signal integrity in continuous motion applications 1 million cycles +/- 180°
- Flame resistant
- Oil resistant
- Flexible for ease of routing

ETHERLINE® TORSION:
Finely Stranded Conductors, FPE insulation with foil and braid shielding (85% coverage), Rugged PUR jacket

Cable Attributes, See Page 653


Oil Resistance: OR-05


Flame Resistance: FR-01


Motion Type: T-01


Mechanical Properties: MP-05

Availability:


Standard put-ups are 328ft, 1640ft, and 3280ft. Bulk reels can be cut to length.

Complete the installation with:


SKINTOP® Strain Relief: Page 486


EPIC® Connectors: Page 251


OLFLEX® Tubing: Page 546


Cable Assemblies Page 633

Technical Data:

- Minimum Bending Radius:
  - static: 5 x cable diameter
  - flexing: 10 x cable diameter
- Temperature Range:
  - static: -40°C to +80°C
  - flexing: -15°C to +70°C
- Nominal Voltage: 100V
- Test Voltage: 700V
- Characteristic Impedance: 100 Ohm +/- 15 Ohms
- Nominal Capacitance: 17 pF/ft
- Color Code: White, Yellow, Blue, Orange
- Approvals: UL: AWM 21161

Part Number	Jacket	Conductor Description	Category	Max. Outer Diameter inches	Max. Outer Diameter mm	Copper Weight lbs/mft	Jacket Color	Approx. Weight lbs/mft	Approx. Weight kg/km
Torsion Flex CAT 5 (1 million cycles +/- 180°)									
2170888	PUR (foil/braid)	22/ 2pr	CAT 5	.256	6.5	21	Green	35	52

ETHERLINE®