

A7 Selection Table

A7: UNITRONIC® BUS and ETHERLINE® - Which UNITRONIC® BUS cable for which field bus system?

Cable and Lead Designation	Application Criteria																						
	Laying	stationary	flexible	highly flexible (power chains etc.)	outdoor use/direct burial/UV-resist.	Standards	UL/CSA approved	Characteristic impedance	100 - 120 Ohm	Bus systems	INTERBUS® DIN 19258 EN 50251 Sensor-/Actor Bus	INTERBUS® (Phoenix Contact)	SUCOnet P® (Klöckner-Müller) Modulink® P (Weidmüller) MODBUS VariNet®-P (Pepperl + Fuchs)	PROFIBUS DIN 19245 EN 50170	PROFIBUS-DP, -FMS/FIP	PROFIBUS-PA, Foundation™ Fieldbus	CAN ISO 11898	AS-INTERFACE	EIB	CC-Link	DeviceNet™ (Allen-Bradley/Rockwell Automation)	Industrial Ethernet/Fast Ethernet	
Lapp Kabel Bus Cables (cross sections in mm² or diameter in mm or AWG size)																							
UNITRONIC® BUS IBS + UNITRONIC® BUS IBS 3 x 2 x 0,22 + 3 x 1,0	•										•	•											
UNITRONIC® BUS IBS P COMBI 3 x 2 x 0,22 + 3 x 1,0	•											•											
UNITRONIC® BUS IBS FD P 3 x 2 x 0,25			•									•											
UNITRONIC® BUS IBS FD P COMBI 3 x 2 x 0,25 + 3 x 1,0			•									•											
UNITRONIC® BUS IBS Yv COMBI 3 x 2 x 0,22 + 3 x 2 x 0,22 + 3 x 1,0				•								•											
UNITRONIC® BUS LD A + BUS FD P A 1 x 2 x 0,22, 2 x 2 x 0,22 + 3 x 2 x 0,22	•		•										•										
UNITRONIC® BUS PB A 1 x 2 x 0,64	•														•								
UNITRONIC® BUS PB PE 1 x 2 x 0,64	•														•								
UNITRONIC® BUS PB 7-W A 1 x 2 x 0,64	•	•													•								
UNITRONIC® BUS PA 1 x 2 x 1,0	•									•							•						
UNITRONIC® BUS PB FD P 1 x 2 x 0,64				•											•								
UNITRONIC® BUS PB Torsion 1 x 2 x 0,8				•											•								
UNITRONIC® BUS PB Festoon 1 x 2 x 0,64				•											•								
UNITRONIC® BUS PB FD P HYBRID 1 x 2 x 0,64 + 4 x 1,5				•											•								
UNITRONIC® BUS PB Yv, PB YY 1 x 2 x 0,64	•			•											•								
UNITRONIC® BUS PB PE FC 1 x 2 x 0,64	•			•											•								
UNITRONIC® BUS PB H FC 1 x 2 x 0,64	•			•											•								
UNITRONIC® BUS PB P FC 1 x 2 x 0,64	•			•											•								
UNITRONIC® BUS PA FC 1 x 2 x 1,0	•									•							•						
UNITRONIC® BUS PB FD P FC 1 x 2 x 0,64				•											•								
UNITRONIC® BUS PB BURIAL FC 1 x 2 x 0,64				•											•								
UNITRONIC® BUS CAN 1 x 2 x 0,22, 2 x 2 x 0,22	•	•																			•		
UNITRONIC® BUS CAN 1 x 2 x 0,34, 2 x 2 x 0,34	•	•																			•		
UNITRONIC® BUS CAN 1 x 2 x 0,5, 2 x 2 x 0,5	•	•																			•		
UNITRONIC® BUS CAN 1 x 2 x 0,75, 2 x 2 x 0,75	•	•																			•		
UNITRONIC® BUS CAN FD P 1 x 2 x 0,22, 2 x 2 x 0,22				•																	•		
UNITRONIC® BUS CAN FD P 1 x 2 x 0,34, 2 x 2 x 0,34				•																	•		

Legend

- | | | | | | | | | | | | | | | | | | | | | |
|---------------------|---------------------|--|-----------------|---------------------------------|--------------------------------|--------------------------------------|--------------------------------|---------------------------|-------------------------------------|------------------------------------|--------------------|-------------------------------|----------------|--------------------------------|---------------------------------------|---|----------------------------------|-------------------------------|--|------------------------------|
| 7-W = 7-wire strand | AS-I = AS-INTERFACE | COMBI IBS = Installation remote bus cable for INTERBUS | DN = Device Net | EIB = European Installation Bus | FD = suitable for power chains | FRNC = Flame Retardant Non Corrosive | G = rubber outer sheath (EPDM) | H = Halogen free material | IBS = Remote bus cable for INTERBUS | L2 = Abbreviation for SINEC® L2-DP | LD = Long distance | P = Polyurethane outer sheath | PB = Profi Bus | PE = Polyethylene outer sheath | PROFIBUS-DP = Decentralized Periphery | PROFIBUS-FMS = Fieldbus Message Specification | PROFIBUS-PA = Process Automation | TPE = thermoplastic Elastomer | Yv = Wire for outdoor use/direct burial with reinforced PVC outer sheath | YY = double PVC outer sheath |
|---------------------|---------------------|--|-----------------|---------------------------------|--------------------------------|--------------------------------------|--------------------------------|---------------------------|-------------------------------------|------------------------------------|--------------------|-------------------------------|----------------|--------------------------------|---------------------------------------|---|----------------------------------|-------------------------------|--|------------------------------|

CC-Link® = is a registered trademark of CLPA, Japan
 DeviceNet™ = is a registered trademark of Open Device Vendors Association (ODVA)
 Foundation™ = is a registered trademark of Foundation Fieldbus
 INTERBUS® = is a registered trademark of Phoenix Contact GmbH & Co.
 Modulink® P = is a registered trademark of Weidmüller GmbH & Co.

SIMATIC® = is a registered trademark of SIEMENS AG
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 SUCOnet P® = is a registered trademark of der Klöckner + Moeller GmbH
 VariNet®-P = is a registered trademark of Pepperl + Fuchs GmbH

ÖLFLEX®
 UNITRONIC®
 ETHERLINE®
 HITRONIC®
 EPIC®
 SKINTOP®
 SILVYN®
 FLEXIMARK®
 ACCESSORIES
 APPENDIX

A7: UNITRONIC® BUS and ETHERLINE® – Which UNITRONIC® BUS cable for which field bus system?

Cable and Lead Designation	Application Criteria										
	Laying	stationary static	flexible	highly flexible (power chains etc.)	outdoor use/direct burial/UV-resist.	Standards	UL/CSA approved	Characteristic impedance	100 - 120 Ohm	Bus systems	Application
Lapp Kabel Bus Cables (cross sections in mm² or diameter in mm or AWG size)											
UNITRONIC® BUS CAN FD P 1 x 2 x 0,5, 2 x 2 x 0,5											
UNITRONIC® BUS ASI (G) 2 x 1,5											
UNITRONIC® BUS ASI FD UNITRONIC® BUS ASI FD (TPE) A 2 x 1,5											
UNITRONIC® BUS ASI (PUR) 2 x 1,5											
UNITRONIC® BUS ASI (PVC) A 2 x 1,5											
UNITRONIC® BUS DN THICK FRNC AWG 18 + 15											
UNITRONIC® BUS DN THIN FRNC AWG 24 + 22											
UNITRONIC® BUS DN THICK Y AWG 18 + 15											
UNITRONIC® BUS DN THIN Y AWG 24 + 22											
UNITRONIC® BUS DN THICK FD P AWG 18 + 15											
UNITRONIC® BUS DN THIN FD P AWG 24 + 22											
UNITRONIC® BUS DN THICK FD Y AWG 18 + 15											
UNITRONIC® BUS DN THIN FD Y AWG 24 + 22											
UNITRONIC® BUS EIB, BUS EIB H 2 x 2 x 0,8											
UNITRONIC® BUS EIB COMBI 2 x 2 x 0,8 + 3 x 1,5											
ETHERLINE®-H, P 2 x 2 x AWG 24/1 und 4 x 2 x AWG 24/1											
ETHERLINE®-H-H 4 x 2 x AWG 24/1											
ETHERLINE®-H FLEX, P-FLEX 2 x 2 x AWG 26/7 und 4 x 2 x AWG 26/7											
ETHERLINE®-Y FC CAT.5e, YY CAT.5e, UL/CSA CAT.5e 2 x 2 x AWG 22/1											
ETHERLINE®-FD P CAT.5 2 x 2 x AWG 26/19, 4 x 2 x AWG 26/19											
ETHERLINE®-FD P FC UL/CSA CAT.5e 2 x 2 x AWG 22/7											
UNITRONIC® BUS FF 3, FF ARM 1 x 2 x 1,1 + 1 x 1,1											
UNITRONIC® BUS FF 2 1 x 2 x 1,1											
UNITRONIC® BUS CC 3 x 1 x AWG 20											
UNITRONIC® BUS CC FD P FRNC 3 x 1 x AWG 20											
ETHERLINE® Y FLEX FC UL/CSA (CMG) 2 x 2 x AWG 22/7											
ETHERLINE® Y2Y ARM Type A CAT.5e 2 x 2 x AWG 22/1											
ETHERLINE® FRNC HYBRID FLEX FC UL (AWM) ETHERLINE® Y PiMF CAT.6e, P PiMF, H PiMF 4 x 2 x AWG 22/1											
ETHERLINE® Y PiMF CAT.7, P PiMF, H PiMF 4 x 2 x AWG 22/1											

- Legend**
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 - DN = Device Net
 - EIB = European Installation Bus
 - FD = suitable for power chains
 - FRNC = Flame Retardant Non Corrosive
 - G = rubber outer sheath (EPDM)
 - H = Halogen free material
 - IBS = Remote bus cable for INTERBUS
 - L2 = Abbreviation for SINEC® L2-DP
 - LD = Long distance
 - P = Polyurethane outer sheath
 - PB = Profi Bus
 - PE = Polyethylene outer sheath
 - PROFIBUS-DP = Decentralized Periphery
 - PROFIBUS-FMS = Fieldbus Message Specification
 - PROFIBUS-PA = Process Automation
 - TPE = thermoplastic Elastomer
 - Yv = Wire for outdoor use/direct burial with reinforced PVC outer sheath
 - YY = double PVC outer sheath

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A7 Appendix
Selection Table

A7: UNITRONIC® BUS and ETHERLINE® – Technical Data

Cable Designation	Parameters								
	Characteristic impedance Ω	Mutual capacitance (800 Hz) max. nF/km	Peak working voltage in V (not for power purpose)	Test voltage conductor / conductor Urms. V	Conductor resistance max. Ω/km (Data Pair)	Minimum bending radius static in mm	Minimum bending radius flexible in mm	Temperature range °C static	Temperature range °C flexible
Type									
UNITRONIC® BUS IBS static laying	100	60	250	1500	186	8 x D	-	-30 °C up to +80 °C	-
UNITRONIC® BUS IBS FD P highly flexible application	100	60	250	1500	159.8	-	15 x D	-40 °C up to +80 °C	-30 °C up to +70 °C
UNITRONIC® BUS IBS Yv outdoor use/direct burial	100	60	250	1500	186	8 x D	-	-40 °C up to +70 °C	-
UNITRONIC® BUS LD static laying	100 - 120	60	250	1500	186	8 x D	-	-40 °C up to +80 °C	-5 °C up to +70 °C
UNITRONIC® BUS LD FD P highly flexible application	100 - 120	60	250	1500	159.8	-	15 x D	-40 °C up to +80 °C	-30 °C up to +70 °C
UNITRONIC® BUS PB static laying	150+/-15	30	250	1500	110	75 mm	-	-40 °C up to +80 °C	-
UNITRONIC® BUS PB FD P + PB FD P PC highly flexible application	150+/-15	30	250	1500	145, 133	-	w/o FC = 65 mm FC = 120 mm	-40 °C up to +80 °C	-30 °C up to +70 °C
UNITRONIC® BUS PB Yv outdoor use/direct burial	150+/-15	30	250	1500	115	75 mm	-	-40 °C up to +80 °C	-
UNITRONIC® BUS PA (blue + black), static laying	100+/-20	52	250	1500	44	65 mm	-	-30 °C up to +80 °C	-
UNITRONIC® BUS CAN static laying (0.22 mm ²)	100 - 120	40	250	1500	186	8 x D	-	-30 °C up to +80 °C	-5 °C up to +70 °C
UNITRONIC® BUS CAN FD P highly flexible application (0.25 mm ²)	100 - 120	40	250	1500	159.8	-	15 x D	-40 °C up to +80 °C	-30 °C up to +70 °C
UNITRONIC® BUS FF 3 ARM static laying	100	56	300	1500	≤ 24	15 x D	-	-25 °C up to +80 °C	-
UNITRONIC® BUS FF 3 static laying	100	65	300	1500	≤ 24	5 x D	-	-25 °C up to +105 °C	-
UNITRONIC® BUS CC static laying	110	60	300	2000	37.8	15 x D	-	-40 °C up to +70 °C	-
UNITRONIC® BUS CC FD FRNC static laying	110	60	300	2000	37.8	4 x D	8 x D	-40 °C up to +80 °C	-40 °C up to +80 °C
UNITRONIC® Etherline®-H CAT.5 2 pairs	100	48	125	1000	192	42 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
UNITRONIC® Etherline®-P CAT.5 2 pairs	100	46	125	1000	186.6	42 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
UNITRONIC® Etherline®-H-H 2 pairs	100	46	125	1000	186.6	60 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
UNITRONIC® Etherline-H FLEX 2 pairs	100	48	125	1000	284	30 mm	78 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE® P FLEX 2 pairs	100	48	125	1000	284	30 mm	78 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE®-H CAT.5 4 pairs	100	48	125	1000	192	50 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE®-P CAT.5 4 pairs	100	46	125	1000	186.6	50 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE®-H-H 4 pairs	100	46	125	1000	186.6	55 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE®-H FLEX 4 pairs	100	48	125	1000	284	35 mm	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE®-P FLEX 4 pairs	100	48	125	1000	284	35 mm	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE®Y CAT.5e AWG 22/1 static laying	100	48	125	1000	192	-	78 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE®Y UL/CSA CAT.5e AWG 22/1 static laying	100	48	125	1000	192	-	90 mm	-30 °C up to +70 °C	-5 °C up to +60 °C

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Cable Designation	Parameters								
	Characteristic impedance Ω	Mutual capacitance (800 Hz) max. nF/km	Peak working voltage in V (not for power purpose)	Test voltage conductor/conductor Urms. V	Conductor resistance max. Ω/km (Data Pair)	Minimum bending radius static in mm	Minimum bending radius flexible in mm	Temperature range °C static	Temperature range °C flexible
ETHERLINE® Y CAT.5e AWG 22/1 static laying	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE® Y FC CAT.5e AWG 22/1 static laying	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE® YY CAT.5e AWG 22/1 outdoor use/direct burial	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE® H-FLEX CAT.5e AWG 22/7 flexible	100	48	125	1000	192	-	78 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE® FD P CAT.5e AWG 26/19 highly flexible	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE® FD P CAT.5e AWG 22/19 highly flexible application	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
ETHERLINE® FD P FC UL/CSA CAT.5e highly flexible application	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
UNITRONIC® BUS SAFTEY static laying/flexible	100 – 200	45	250	3000	52	8 x D	-	-40 °C up to +80 °C	-30 °C up to +80 °C
UNITRONIC® BUS ASI (G) yellow + black static laying/flexible	-	-	300	2000	27.4	3 x D	-	-40 °C up to +85 °C	-
UNITRONIC® BUS ASI (TPE) yellow + black static/flexible	-	-	300	2000	27.4	3 x D	-	-40 °C up to +85 °C	-
UNITRONIC® BUS ASI FD yellow + black highly flexible application	-	-	300	2000	27.4	3 x D	6 x D	-40 °C up to +80 °C	-30 °C up to +70 °C
UNITRONIC® BUS ASI FD (TPE) A yellow + black highly flexible application	-	-	300	2000	27.4	3 x D	6 x D	-40 °C up to +105 °C	-30 °C up to +105 °C
UNITRONIC® BUS ASI (PUR) yellow + black static laying	-	-	300	2000	27.4	3 x D	-	-40 °C up to +85 °C	-
UNITRONIC® BUS ASI (PVC) UL/CSA CMG yellow + black static laying	-	-	300	2000	27.4	3 x D	-	-40 °C up to +90 °C	-
UNITRONIC® DeviceNet THICK + THIN (halogen free) static laying	120	39.8	300	2000	THICK 45 THIN 180	10 x D	-	-25 °C up to +80 °C	-
UNITRONIC® DeviceNet THICK + THIN (PVC) static laying	120	39.8	300	2000	THICK 45 THIN 180	10 x D	-	-20 °C up to +80 °C	-
UNITRONIC® DeviceNet THICK + THIN (PUR) highly flexible	120	39.8	300	2000	THICK 45 THIN 180	-	10 x D	-	-40 °C up to +80 °C
UNITRONIC® DeviceNet THICK + THIN (PVC) highly flexible	120	39.8	300	2000	THICK 45 THIN 180	-	10 x D	-	-10 °C up to +80 °C
UNITRONIC® BUS EIB	-	max. 100	250	4000	max. 130	10 x D	-	-30 °C up to +70 °C	-
UNITRONIC® BUS COMBI EIB	-	max. 100	250	4000	max. 130	10 x D	-	-30 °C up to +70 °C	-