

# 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	
<b>Lapp Kabel Bus Cables</b> (cross sections in mm <sup>2</sup> or diameter in mm or AWG size)																							
<b>UNITRONIC® BUS IBS + UNITRONIC® BUS IBS</b> 3 x 2 x 0,22 + 3 x 1,0	•										•	•											
<b>UNITRONIC® BUS IBS P COMBI</b> 3 x 2 x 0,22 + 3 x 1,0	•											•											
<b>UNITRONIC® BUS IBS FD P</b> 3 x 2 x 0,25				•								•											
<b>UNITRONIC® BUS IBS FD P COMBI</b> 3 x 2 x 0,25 + 3 x 1,0				•								•											
<b>UNITRONIC® BUS IBS Yv COMBI</b> 3 x 2 x 0,22 + 3 x 2 x 0,22 + 3 x 1,0					•							•											
<b>UNITRONIC® BUS LD A + BUS FD P A</b> 1 x 2 x 0,22, 2 x 2 x 0,22 + 3 x 2 x 0,22		•		•									•										
<b>UNITRONIC® BUS PB A</b> 1 x 2 x 0,64		•													•								
<b>UNITRONIC® BUS PB PE</b> 1 x 2 x 0,64		•													•								
<b>UNITRONIC® BUS PB 7-W A</b> 1 x 2 x 0,64		•	•												•								
<b>UNITRONIC® BUS PA</b> 1 x 2 x 1,0		•								•							•						
<b>UNITRONIC® BUS PB FD P</b> 1 x 2 x 0,64				•											•								
<b>UNITRONIC® BUS PB Torsion</b> 1 x 2 x 0,8				•											•								
<b>UNITRONIC® BUS PB Festoon</b> 1 x 2 x 0,64				•											•								
<b>UNITRONIC® BUS PB FD P HYBRID</b> 1 x 2 x 0,64 + 4 x 1,5				•											•								
<b>UNITRONIC® BUS PB Yv, PB YY</b> 1 x 2 x 0,64		•		•											•								
<b>UNITRONIC® BUS PB PE FC</b> 1 x 2 x 0,64		•		•											•								
<b>UNITRONIC® BUS PB H FC</b> 1 x 2 x 0,64		•		•											•								
<b>UNITRONIC® BUS PB P FC</b> 1 x 2 x 0,64		•		•											•								
<b>UNITRONIC® BUS PA FC</b> 1 x 2 x 1,0		•								•							•						
<b>UNITRONIC® BUS PB FD P FC</b> 1 x 2 x 0,64				•											•								
<b>UNITRONIC® BUS PB BURIAL FC</b> 1 x 2 x 0,64				•											•								
<b>UNITRONIC® BUS CAN</b> 1 x 2 x 0,22, 2 x 2 x 0,22		•	•																			•	
<b>UNITRONIC® BUS CAN</b> 1 x 2 x 0,34, 2 x 2 x 0,34		•	•																			•	
<b>UNITRONIC® BUS CAN</b> 1 x 2 x 0,5, 2 x 2 x 0,5		•	•																			•	
<b>UNITRONIC® BUS CAN</b> 1 x 2 x 0,75, 2 x 2 x 0,75		•	•																			•	
<b>UNITRONIC® BUS CAN FD P</b> 1 x 2 x 0,22, 2 x 2 x 0,22				•																		•	
<b>UNITRONIC® BUS CAN FD P</b> 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  
 SINEC® = is a registered trademark of SIEMENS AG  
 SUCOnet P® = is a registered trademark of der Klöckner + Moeller GmbH  
 VariNet®-P = is a registered trademark of Pepperl + Fuchs GmbH

ÖLFLEX®  
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 ETHERLINE®  
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 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
<b>Lapp Kabel Bus Cables</b> (cross sections in mm² or diameter in mm or AWG size)											
<b>UNITRONIC® BUS CAN FD P</b> 1 x 2 x 0,5, 2 x 2 x 0,5											
<b>UNITRONIC® BUS ASI (G)</b> 2 x 1,5											
<b>UNITRONIC® BUS ASI FD</b> <b>UNITRONIC® BUS ASI FD (TPE) A</b> 2 x 1,5											
<b>UNITRONIC® BUS ASI (PUR)</b> 2 x 1,5											
<b>UNITRONIC® BUS ASI (PVC) A</b> 2 x 1,5											
<b>UNITRONIC® BUS DN THICK FRNC</b> AWG 18 + 15											
<b>UNITRONIC® BUS DN THIN FRNC</b> AWG 24 + 22											
<b>UNITRONIC® BUS DN THICK Y</b> AWG 18 + 15											
<b>UNITRONIC® BUS DN THIN Y</b> AWG 24 + 22											
<b>UNITRONIC® BUS DN THICK FD P</b> AWG 18 + 15											
<b>UNITRONIC® BUS DN THIN FD P</b> AWG 24 + 22											
<b>UNITRONIC® BUS DN THICK FD Y</b> AWG 18 + 15											
<b>UNITRONIC® BUS DN THIN FD Y</b> AWG 24 + 22											
<b>UNITRONIC® BUS EIB, BUS EIB H</b> 2 x 2 x 0,8											
<b>UNITRONIC® BUS EIB COMBI</b> 2 x 2 x 0,8 + 3 x 1,5											
<b>ETHERLINE®-H, P</b> 2 x 2 x AWG 24/1 und 4 x 2 x AWG 24/1											
<b>ETHERLINE®-H-H</b> 4 x 2 x AWG 24/1											
<b>ETHERLINE®-H FLEX, P-FLEX</b> 2 x 2 x AWG 26/7 und 4 x 2 x AWG 26/7											
<b>ETHERLINE®-Y FC CAT.5e, YY CAT.5e, UL/CSA CAT.5e</b> 2 x 2 x AWG 22/1											
<b>ETHERLINE®-FD P CAT.5</b> 2 x 2 x AWG 26/19, 4 x 2 x AWG 26/19											
<b>ETHERLINE®-FD P FC UL/CSA CAT.5e</b> 2 x 2 x AWG 22/7											
<b>UNITRONIC® BUS FF 3, FF ARM</b> 1 x 2 x 1,1 + 1 x 1,1											
<b>UNITRONIC® BUS FF 2</b> 1 x 2 x 1,1											
<b>UNITRONIC® BUS CC</b> 3 x 1 x AWG 20											
<b>UNITRONIC® BUS CC FD P FRNC</b> 3 x 1 x AWG 20											
<b>ETHERLINE® Y FLEX FC UL/CSA (CMG)</b> 2 x 2 x AWG 22/7											
<b>ETHERLINE® Y2Y ARM Type A CAT.5e</b> 2 x 2 x AWG 22/1											
<b>ETHERLINE® FRNC HYBRID FLEX FC UL (AWM)</b> <b>ETHERLINE® Y PiMF CAT.6e, P PiMF, H PiMF</b> 4 x 2 x AWG 22/1											
<b>ETHERLINE® Y PiMF CAT.7, P PiMF, H PiMF</b> 4 x 2 x AWG 22/1											

<b>Legend</b>			
7-W	= 7-wire strand	H	= Halogen free material
AS-I	= AS-INTERFACE	IBS	= Remote bus cable for INTERBUS
COMBI IBS	= Installation remote bus cable for INTERBUS	L2	= Abbreviation for SINEC® L2-DP
DN	= Device Net	LD	= Long distance
EIB	= European Installation Bus	P	= Polyurethane outer sheath
FD	= suitable for power chains	PB	= Profi Bus
FRNC	= Flame Retardant Non Corrosive	PE	= Polyethylene outer sheath
G	= rubber outer sheath (EPDM)	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
<b>Type</b>									
<b>UNITRONIC® BUS IBS</b> static laying	100	60	250	1500	186	8 x D	-	-30 °C up to +80 °C	-
<b>UNITRONIC® BUS IBS FD P</b> highly flexible application	100	60	250	1500	159.8	-	15 x D	-40 °C up to +80 °C	-30 °C up to +70 °C
<b>UNITRONIC® BUS IBS Yv</b> outdoor use/direct burial	100	60	250	1500	186	8 x D	-	-40 °C up to +70 °C	-
<b>UNITRONIC® BUS LD</b> static laying	100 - 120	60	250	1500	186	8 x D	-	-40 °C up to +80 °C	-5 °C up to +70 °C
<b>UNITRONIC® BUS LD FD P</b> 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
<b>UNITRONIC® BUS PB</b> static laying	150+/-15	30	250	1500	110	75 mm	-	-40 °C up to +80 °C	-
<b>UNITRONIC® BUS PB FD P + PB FD P PC</b> 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
<b>UNITRONIC® BUS PB Yv</b> outdoor use/direct burial	150+/-15	30	250	1500	115	75 mm	-	-40 °C up to +80 °C	-
<b>UNITRONIC® BUS PA</b> (blue + black), static laying	100+/-20	52	250	1500	44	65 mm	-	-30 °C up to +80 °C	-
<b>UNITRONIC® BUS CAN</b> static laying (0.22 mm <sup>2</sup> )	100 - 120	40	250	1500	186	8 x D	-	-30 °C up to +80 °C	-5 °C up to +70 °C
<b>UNITRONIC® BUS CAN FD P</b> highly flexible application (0.25 mm <sup>2</sup> )	100 - 120	40	250	1500	159.8	-	15 x D	-40 °C up to +80 °C	-30 °C up to +70 °C
<b>UNITRONIC® BUS FF 3 ARM</b> static laying	100	56	300	1500	≤ 24	15 x D	-	-25 °C up to +80 °C	-
<b>UNITRONIC® BUS FF 3</b> static laying	100	65	300	1500	≤ 24	5 x D	-	-25 °C up to +105 °C	-
<b>UNITRONIC® BUS CC</b> static laying	110	60	300	2000	37.8	15 x D	-	-40 °C up to +70 °C	-
<b>UNITRONIC® BUS CC FD FRNC</b> 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
<b>UNITRONIC® Etherline®-H CAT.5</b> 2 pairs	100	48	125	1000	192	42 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>UNITRONIC® Etherline®-P CAT.5</b> 2 pairs	100	46	125	1000	186.6	42 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>UNITRONIC® Etherline®-H-H</b> 2 pairs	100	46	125	1000	186.6	60 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>UNITRONIC® Etherline-H FLEX</b> 2 pairs	100	48	125	1000	284	30 mm	78 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE® P FLEX</b> 2 pairs	100	48	125	1000	284	30 mm	78 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE®-H CAT.5</b> 4 pairs	100	48	125	1000	192	50 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE®-P CAT.5</b> 4 pairs	100	46	125	1000	186.6	50 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE®-H-H</b> 4 pairs	100	46	125	1000	186.6	55 mm	-	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE®-H FLEX</b> 4 pairs	100	48	125	1000	284	35 mm	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE®-P FLEX</b> 4 pairs	100	48	125	1000	284	35 mm	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE®Y CAT.5e AWG 22/1</b> static laying	100	48	125	1000	192	-	78 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE®Y UL/CSA CAT.5e AWG 22/1</b> static laying	100	48	125	1000	192	-	90 mm	-30 °C up to +70 °C	-5 °C up to +60 °C

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
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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
<b>ETHERLINE® Y CAT.5e AWG 22/1</b> static laying	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE® Y FC CAT.5e AWG 22/1</b> static laying	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE® YY CAT.5e AWG 22/1</b> outdoor use/direct burial	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE® H-FLEX CAT.5e AWG 22/7</b> flexible	100	48	125	1000	192	-	78 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE® FD P CAT.5e AWG 26/19</b> highly flexible	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE® FD P CAT.5e AWG 22/19</b> highly flexible application	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>ETHERLINE® FD P FC UL/CSA CAT.5e</b> highly flexible application	100	48	125	1000	192	-	90 mm	-30 °C up to +80 °C	-5 °C up to +60 °C
<b>UNITRONIC® BUS SAFTEY</b> static laying/flexible	100 – 200	45	250	3000	52	8 x D	-	-40 °C up to +80 °C	-30 °C up to +80 °C
<b>UNITRONIC® BUS ASI (G)</b> yellow + black static laying/flexible	-	-	300	2000	27.4	3 x D	-	-40 °C up to +85 °C	-
<b>UNITRONIC® BUS ASI (TPE)</b> yellow + black static/flexible	-	-	300	2000	27.4	3 x D	-	-40 °C up to +85 °C	-
<b>UNITRONIC® BUS ASI FD</b> 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
<b>UNITRONIC® BUS ASI FD (TPE) A</b> 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
<b>UNITRONIC® BUS ASI (PUR)</b> yellow + black static laying	-	-	300	2000	27.4	3 x D	-	-40 °C up to +85 °C	-
<b>UNITRONIC® BUS ASI (PVC) UL/CSA CMG</b> yellow + black static laying	-	-	300	2000	27.4	3 x D	-	-40 °C up to +90 °C	-
<b>UNITRONIC® DeviceNet THICK + THIN (halogen free)</b> static laying	120	39.8	300	2000	THICK 45 THIN 180	10 x D	-	-25 °C up to +80 °C	-
<b>UNITRONIC® DeviceNet THICK + THIN (PVC)</b> static laying	120	39.8	300	2000	THICK 45 THIN 180	10 x D	-	-20 °C up to +80 °C	-
<b>UNITRONIC® DeviceNet THICK + THIN (PUR)</b> highly flexible	120	39.8	300	2000	THICK 45 THIN 180	-	10 x D	-	-40 °C up to +80 °C
<b>UNITRONIC® DeviceNet THICK + THIN (PVC)</b> highly flexible	120	39.8	300	2000	THICK 45 THIN 180	-	10 x D	-	-10 °C up to +80 °C
<b>UNITRONIC® BUS EIB</b>	-	max. 100	250	4000	max. 130	10 x D	-	-30 °C up to +70 °C	-
<b>UNITRONIC® BUS COMBI EIB</b>	-	max. 100	250	4000	max. 130	10 x D	-	-30 °C up to +70 °C	-