

UNITRONIC® BUS and ETHERLINE® – which cable suits which fieldbus system?

Usage criteria		Cable designation																												
	Page	379	381	381	380	326 327	332	332	332	360	342	348	349	346	338 339	332	332	332	360	344	340	363	363	365	335	375	331	364		
		UNITRONIC® BUS IBS A	UNITRONIC® BUS IBS P COMBI A	UNITRONIC® BUS IBS FD P	UNITRONIC® BUS IBS FD P COMBI	UNITRONIC® BUS IBS Yv COMBI	UNITRONIC® BUS LD A + BUS LD FD P A	UNITRONIC® BUS PB A	UNITRONIC® BUS PB PE	UNITRONIC® BUS PB 7-W A	UNITRONIC® BUS PA	UNITRONIC® BUS PB FD P	UNITRONIC® BUS PB TORSION	UNITRONIC® BUS PB FESTOON	UNITRONIC® BUS PB FD P HYBRID	UNITRONIC® BUS PB Yv, PB YY	UNITRONIC® BUS PB PE FC	UNITRONIC® BUS PB H FC	UNITRONIC® BUS PB P FC	UNITRONIC® BUS PA FC	UNITRONIC® BUS PB FD P FC	UNITRONIC® BUS PB BURIAL FC	UNITRONIC® BUS CAN	UNITRONIC® BUS CAN FD P	UNITRONIC® BUS CAN BURIAL	UNITRONIC® BUS PB HEAT 180	UNITRONIC® BUS IS	UNITRONIC® BUS PB TRAY	UNITRONIC® BUS CAN TRAY	
Standards		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓			✓	✓	✓	✓		✓	✓				✓	✓		
Installation		✓	✓				✓	✓	✓	✓	✓				✓	✓	✓	✓	✓			✓	✓		✓	✓		✓	✓	
Fixed installation		✓	✓				✓	✓	✓	✓	✓				✓	✓	✓	✓	✓			✓	✓		✓	✓		✓	✓	
Flexible										✓												✓			✓	✓		✓	✓	
Highly flexible (drag chains etc.)				✓	✓		✓					✓	✓	✓							✓		✓		✓	✓		✓	✓	
Suitable for outdoor use/direct burial, UV-resistant						✓									✓	✓					✓			✓	✓	✓		✓	✓	
Mean characteristic Impedance		✓	✓	✓	✓	✓	✓				✓									✓		✓	✓	✓			✓	✓		
100 – 120 ohms		✓	✓	✓	✓	✓	✓				✓									✓		✓	✓	✓			✓	✓		
150 ohms								✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓		✓	✓	
Dimensions																														
In mm², or diameter in mm, or AWG size		✓		✓																										
3 x 2 x 0.22		✓																												
3 x 2 x 0.25				✓																										
3 x 2 x 0.25 + 3 x 1.0			✓		✓																									
3 x 2 x 0.22 + 3 x 1.0						✓																								
1 x 2 x 0.22/2 x 2 x 0.22/3 x 2 x 0.22							✓																							
1 x 2 x 0.64								✓	✓	✓		✓			✓	✓	✓	✓		✓	✓					✓		✓		
1 x 2 x 1.0											✓																	✓		
1 x 2 x 0.8												✓							✓											
1 x 2 x 0.64 + 4 x 1.5															✓															
1 x 2 x 0.25/2 x 2 x 0.25																							✓	✓						
1 x 2 x 0.34/2 x 2 x 0.34																							✓	✓					✓	
1 x 2 x 0.5/2 x 2 x 0.5																							✓	✓		✓				
1 x 2 x 0.75/2 x 2 x 0.75																							✓	✓						
2 x 6 + 2 x 2.5 + 1 x 4 x 0.5																										✓				
Bus systems		✓	✓	✓	✓																									
INTERBUS® DIN 19258 EN 50251 sensor/actuator bus		✓																												
INTERBUS® (Phoenix Contact)		✓	✓	✓	✓	✓																								
SUCOnet p® (Klöckner-Möller), Modulink® P (Weidmüller) MODBUS VariNet®-P (Pepperl + Fuchs)						✓																								
PROFIBUS-DP, -FMS, FIP								✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓					✓		✓		
PROFIBUS-PA, Foundation™ Fieldbus										✓									✓											
CAN ISO 11898, CAN open																							✓	✓	✓				✓	
AS-INTERFACE																														
EIB																														
CC-Link®																														
Device Net™ (Allen-Bradley/Rockwell Automation)																														
Industrial Ethernet/Fast Ethernet																														
ISOBUS (ISO 11783-2)																										✓				
Legend		Trademarks																												
7-W	= 7-wire braided conductor	LD	= Long distance																									CC-Link®	= is a registered trademark of CLPA, Japan	
AS-I	= AS-INTERFACE	P	= Polyurethane outer sheath																									DeviceNet™	= is a registered trademark of Open Device Vendors Association (ODVA)	
COMBI IBS	= Installation bus cable for INTERBUS	PB	= PROFIBUS																									Foundation™	= is a registered trademark of Foundation Fieldbus	
DN	= Device Net	PE	= Polyethylene outer sheath																									INTERBUS®	= is a registered trademark of Phoenix Contact GmbH & Co.	
EIB	= European Installation Bus	PROFIBUS-DP	= Decentralised Periphery																									Modulink® P	= is a registered trademark of Weidmüller GmbH & Co.	
FD	= Cable suitable for drag chains	PROFIBUS-FMS	= Fieldbus Message Specification																									SIMATIC®	= is a registered trademark of SIEMENS AG	
FRNC	= Flame Retardant Non Corrosive	PROFIBUS-PA	= Process Automation																									SINEC®	= is a registered trademark of SIEMENS AG	
G	= Rubber outer sheath (EPDM)	TPE	= Thermoplastic elastomer																									SUCOnet P®	= is a registered trademark of Klöckner + Moeller GmbH	
H	= Halogen-free material	Yv	= Cable for routing outdoors/underground with reinforced PVC outer sheath																									VariNet®-P	= is a registered trademark of Pepperl + Fuchs GmbH	
IBS	= Remote bus cable for INTERBUS	YY	= Twin PVC outer sheath																											
L2	= Abbr. for SINEC L2-DP																													

[illegible]

Usage criteria		Cable designation														
Page		379	381	380	326	327	332	342 344	338	360	363	363	376	376	364	331
		UNITRONIC® BUS IBS fixed installation	UNITRONIC® BUS IBS FD P highly flexible application	UNITRONIC® BUS IBS Yv suitable for outdoor use/ direct burial	UNITRONIC® BUS LD fixed installation	UNITRONIC® BUS LD FD P highly flexible application	UNITRONIC® BUS PB fixed installation	UNITRONIC® BUS PB FD P + PB FD P FC highly flexible application	UNITRONIC® BUS PB Yv suitable for outdoor use/ direct burial	UNITRONIC® BUS PA (BU + BK) fixed installation	UNITRONIC® BUS CAN fixed installation (0.22 mm ²)	UNITRONIC® BUS FD P CAN FD P highly flexible application (0.25 mm ²)	UNITRONIC® BUS FF 3 ARM fixed installation	UNITRONIC® BUS FF 2 fixed installation	UNITRONIC® BUS CAN TRAY	UNITRONIC® BUS PB TRAY
Parameter																
Characteristic impedance Ω		100	100	100	100–120	100–120	150 +/-15	150 +/-15	150 +/-15	100 +/-20	120	120	100	100	120	150 +/-15
Mutual capacitance (800 Hz) max. nF/km		60	60	60	60	60	30	30	30	52	40	40	56	65	40	30
Peak operating voltage V (not for power applications)		250	250	250	250	250	250	250	250	250	250	250	300	300	250	250
Test voltage, core/core, U_{eff} V		1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	2000	2000
Conductor resistance (loop) Data network cable pair max. Ω /km		186	159.8	186	186	159.8	110	145, 133	115	44	186	159.8	≤ 24	≤ 24	110.8	110
Minimum bending radius, fixed installation		8 x D	–	8 x D	8 x D	–	75 mm	–	75 mm	65 mm	8 x D	–	15 x D	15 x D	8 x D	8 x D
Minimum bending radius, flexing		–	15 x D	–	–	15 x D	–	**	–	–	–	15 x D	–	–	–	–
Temperature range fixed installation	from °C to °C	– 30 + 80	– 40 + 80	– 40 + 70	– 40 + 80	– 40 + 80	– 40 + 80	– 40 + 80	– 40 + 80	– 30 + 80	– 30 + 80	– 40 + 80	– 25 + 80	– 25 + 105	– 40 + 80	– 40 + 80
Temperature range flexing	from °C to °C	–	– 30 + 70	–	– 5 + 70	– 30 + 70	–	– 30 + 70	–	–	– 5 + 70	– 30 + 70	–	–	– 10 + 70	– 10 + 70

Usage criteria		Cable designation													
Page		377	377	417	417	417	418	418	418	419	419	422	430	430	436
		UNITRONIC® BUS CC	UNITRONIC® BUS CC FD P FRNC	ETHERLINE® H Cat.5e	ETHERLINE® P Cat.5e	ETHERLINE® H-H Cat.5e	ETHERLINE® H FLEX Cat.5e	ETHERLINE® P FLEX Cat.5e	ETHERLINE® Y FLEX Cat.5e	ETHERLINE® Y EC FLEX Cat.5e	ETHERLINE® P EC FLEX Cat.5e	ETHERLINE® P EC FD Cat.5e	ETHERLINE® PN Cat.5 Y FLEX FC	ETHERLINE® PN Cat.5 FRNC FLEX FC	ETHERLINE® TORSION Cat.5
Parameter															
Characteristic impedance Ω		110	110	100	100	100	100	100	100	100	100	100	100	100	
Mutual capacitance (800 Hz) max. nF/km		60	60	48	46	46	48	48	–	–	–	–	–	–	
Peak operating voltage V (not for power applications)		300	300	125	125	125	125	125	125	100	100	100	125	125	100
Test voltage, core/core, U_{eff} V		2000	2000	1000	1000	1000	1000	1000	1000	1000	1000	1000	2000	2000	700
Conductor resistance (loop) Data network cable pair max. Ω /km		37.8	37.8	192	186.6	186.6	284	284	–	–	–	–	–	–	
Minimum bending radius, fixed installation		15 x D	4 x D	7.5–8 x D	7.5–8 x D	8 x D	8 x D	8 x D	8 x D	4 x D	4 x D	4 x D	10 x D	4 x D	5 x D
Minimum bending radius, flexing		–	8 x D	–	–	–	15 x D	15 x D	15 x D	8 x D	8 x D	8 x D	15 x D	8 x D	5 x D
Temperature range fixed installation	from °C to °C	– 40 + 70	– 40 + 80	– 30 + 80	– 30 + 80	– 30 + 80	– 30 + 80	– 30 + 80	– 40 + 80	– 30 + 80	– 40 + 80	– 40 + 80	– 40 + 80	– 25 + 80	– 40 + 80
Temperature range flexing	from °C to °C	–	– 40 + 80	– 5 + 60	– 5 + 60	– 5 + 60	– 5 + 60	– 5 + 60	– 10 + 70	– 5 + 50	– 30 + 50	– 30 + 50	– 20 + 60	– 25 + 80	– 40 + 80

**without FC = 65 mm/FC = 120 mm

Usage criteria		Cable designation												
	Page	429	429	429	429	420	435					444	444	449
		ETHERLINE® PN Cat.5e Y	ETHERLINE® TRAY ER PN Y FC	ETHERLINE® Y FC Cat.5	ETHERLINE® Cat.5e YY	ETHERLINE® FD P Cat.5e	ETHERLINE® FD P FC Cat.5 highly flexible application	ETHERLINE® PN Cat.6 FRNC FC + ETHERLINE® PN Cat.7 FRNC	ETHERLINE® PN Cat.6 P FC + ETHERLINE® PN Cat.7 P	ETHERLINE® PN Cat.6 Y FC + ETHERLINE® PN + Cat.7 Y	ETHERLINE® PN Cat.6 Y FLEX FC	ETHERLINE® PN Cat.6 FRNC FLEX FC	ETHERLINE® FD Cat.6 + TORSION Y Cat.6 _A	ETHERLINE® FD P Cat.6 + TORSION P Cat.6 _A
														ETHERLINE® TORSION Cat.7
Parameter														
Characteristic impedance Ω		100	100	100	100	100	100	100	100	100	100	100	100	100
Mutual capacitance (800 Hz) max. nF/km		48	48	48	48	50	52	-	-	-	-	-	-	50
Peak operating voltage V (not for power applications)		125	125	125	125	125	125	125	125	125	125	125	125	125
Test voltage, core/core, U _{eff} V		1000	2000	1000	1000	1000	700	1000	1000	1000	1000	1000	1000	750
Conductor resistance (loop) Data network cable pair max. Ω/km		118	115	115	118	290	120	118	118	118	143	143	175	175
Minimum bending radius, fixed installation		7.5 x D	10 x D	10 x D	4 x D	8 x D	5 x D	4 x D	4 x D	4 x D	8 x D	8 x D	8 x D	8 x D
Minimum bending radius, flexing		15 x D	15 x D	15 x D	8 x D	15 x D	8 x D	8 x D	8 x D	8 x D	15 x D	15 x D	15 x D	15 x D
Temperature range fixed installation	from °C to °C	-40 +70	-40 +80	-40 +80	-25 +80	-30 +80	-30 +70	-25 +80	-40 +80	-30 +80	-10 +70	-25 +80	-40 +80	-40 +80
Temperature range flexing	from °C to °C	-5 +50	-20 +60	-20 +60	-5 +70	-5 +70	-20 +60	-	-	-	-10 +70	-25 +80	-10 +70	-30 +70

Usage criteria		Cable designation												
	Page	328	328	329	329	329	328	361	361	361	361	378	378	378
		UNITRONIC® BUS ASI (G) yellow + black fixed installation/flexible	UNITRONIC® BUS ASI (TPE) yellow + black fixed installation/flexible	UNITRONIC® BUS ASI LD FD P yellow + black highly flexible application	UNITRONIC® BUS ASI FD (TPE) A yellow + black highly flexible application	UNITRONIC® BUS ASI FD P FRNC yellow + black fixed installation	UNITRONIC® BUS ASI (PVC) A yellow + black fixed installation	UNITRONIC® DeviceNet THICK + THIN (halogen-free) fixed installation	UNITRONIC® DeviceNet THICK + THIN (PVC) fixed installation	UNITRONIC® DeviceNet THICK + THIN (PUR) highly flexible	UNITRONIC® DeviceNet THICK + THIN (PVC) highly flexible	UNITRONIC® BUS SAFTEY fixed installation/highly flexible	UNITRONIC® BUS EIB fixed installation	UNITRONIC® BUS EIB COMBI fixed installation
Parameter														
Characteristic impedance Ω		-	-	-	-	-	-	120	120	120	120	100-200	-	-
Mutual capacitance (800 Hz) max. nF/km		-	-	-	-	-	-	39.8	39.8	39.8	39.8	45	max. 100	max. 100
Peak operating voltage V (not for power applications)		300	300	300	300	300	300	300	300	300	300	250	250	250
Test voltage, core/core, U _{eff} V		2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	3000	4000	4000
Conductor resistance (loop) Data network cable pair max. Ω/km		27.4	27.4	16.5	27.4	27.4	27.4	THICK 45 THIN 180	THICK 45 THIN 180	THICK 45 THIN 180	THICK 45 THIN 180	52	max. 130	max. 130
Minimum bending radius, fixed installation		3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	10 x D	10 x D	-	-	8 x D	10 x D	10 x D
Minimum bending radius, flexing		-	-	6 x D	6 x D	-	-	-	-	10 x D	10 x D	-	-	-
Temperature range fixed installation	from °C to °C	-40 +85	-40 +85	-40 +80	-40 +105	-40 +80	-30 +90	-25 +80	-20 +80	-	-	-40 +80	-30 +70	-30 +70
Temperature range flexing	from °C to °C	-	-	-30 +70	-30 +105	-30 +70	-	-	-	-40 +80	-10 +80	-30 +80	-	-