






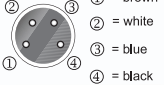
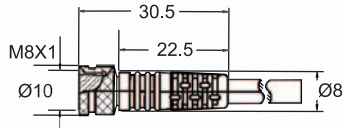
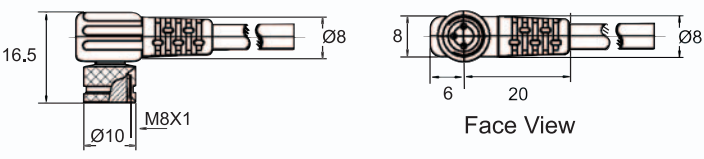
HTM electronics

SENSOR CABLES &
DISTRIBUTION BOXES



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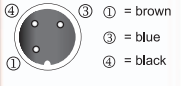
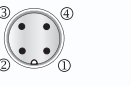
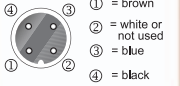


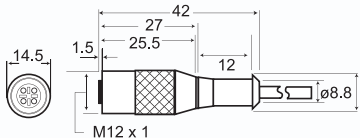
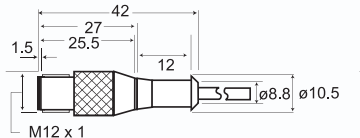
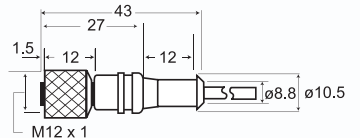
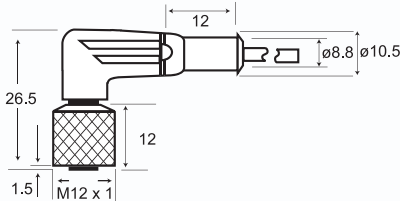
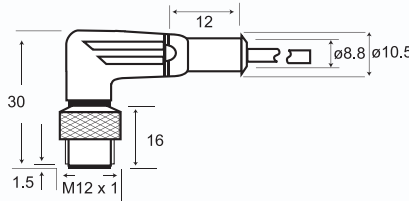
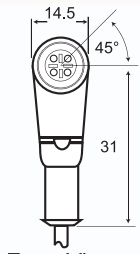
C SERIES - M8 PICO CABLES

				
Connection	M8			
Application Class	HNE acc. to DIN 40040 (-25°C / +90°C/ 75% RH)			
Material	Pin	Moulded Body	O-ring	Threaded Connector
	Gold-plated Brass	PVC, TPU, self-extinguishing	Viton	Nickel-plated Brass
Voltage	Operating Voltage	Nominal Power	Nominal Voltage	Test Voltage
	300 VDC	4A	60VAC/75VDC (10-30 VDC for LED models)	1.5 KV eff./60s
Insulation	Insulation Group: C acc. to VDE 0110, Insulation Resistance: >10 ⁹			
Protection	IP67 (IP65 for snap-in models)			
Pins	3 Pin		4 Pin	
				
	Female	Male	Female	Male
Straight Part Numbers				
	C-FS3TZ-V075	C-MS3TZ-V075	C-FS4TZ-V075	C-MS4TZ-V075
				
Right Angle Part Numbers				
NPN with LED	C-FA3TN-V075			
PNP with LED	C-FA3TP-V075			
Without LED	C-FA3TZ-V075	C-MA3TZ-V075	C-FA4TZ-V075	C-MA4TZ-V075
				



PUR cable type is available. Use -Y075 instead of -V075. Different lengths are available. Replace the last digit, ie. 5 for 5m, with the desired length, ie. R-FS4TZ-V0710 for 10m. Consult the technical service team for special configurations.




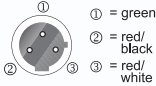

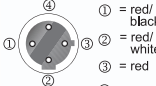


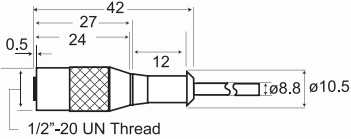
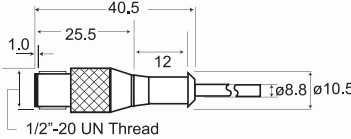

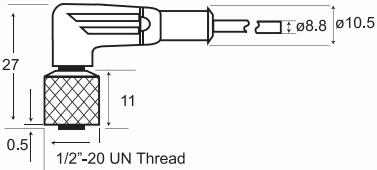
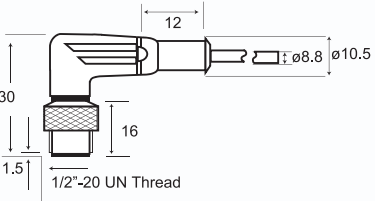
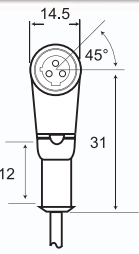
R SERIES - M12 DC MICRO CABLES

						
Connection	M12					
Application Class	HNE acc. to DIN 40040 (-25°C / +90°C/ 75% RH)					
Material	Pin	Moulded Body	O-ring	Threaded Connector		
	Gold-plated Brass	PVC, TPU, self-extinguishing	Viton	Nickel-plated Brass		
Voltage	Operating Voltage	Nominal Power	Nominal Voltage	Test Voltage		
	300 VDC	4A (CSA=3A)	250VAC/300VDC (10-30 VDC for LED models)	2.0 KV eff./60s		
Insulation	Insulation Group: C acc. to VDE 0110, Insulation Resistance: >10 ⁹					
Protection	IP68					
Pins	3 Pin		4 Pin		5 Pin	
		 ① = brown ③ = blue ④ = black		 ① = brown ② = white or not used ③ = blue ④ = black		 ① = brown ② = white ③ = blue ④ = black ⑤ = green/yellow
	Female	Male	Female	Male	Female	Male
Straight Part Numbers						
NPN with LED	R-FS4/3TN-V075					
PNP with LED	R-FS4/3TP-V075					
Without LED	R-FS4/3TZ-V075	R-MS4/3TZ-V075	R-FS4TZ-V075	R-MS4TZ-V075	R-FS5TZ-V025	R-MS5TZ-V025
						
	Female	Male	LED Type			
Right Angle Part Numbers						
NPN with LED	R-FA4/3TN-V075					
PNP with LED	R-FA4/3TP-V075					
Without LED	R-FA4/3TZ-V075	R-MA4/3TZ-V075	R-FA4TZ-V075	R-MA4TZ-V075	R-FA5TZ-V025	R-MA5TZ-V025
						
	Female	Male	Face View			



PUR cable type is available. Use -Y075 instead of -V075. Different lengths are available. Replace the last digit, ie. 5 for 5m, with the desired length, ie. R-FS4TZ-V0710 for 10m. Consult the technical service team for special configurations.



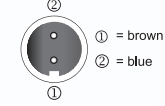

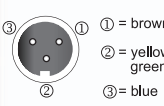
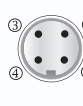
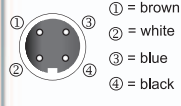

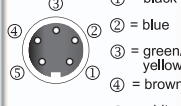

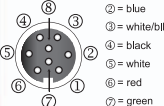

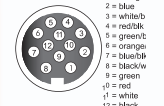
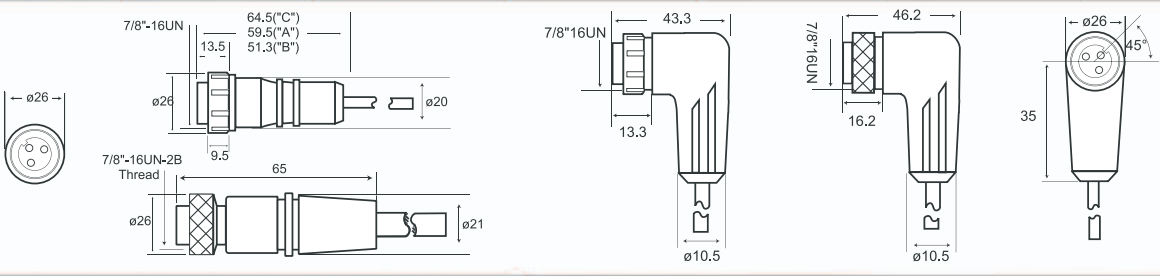
U SERIES - 1/2"-20 AC MICRO CABLES

						
Connection	1/2"-20 UN Thread					
Application Class	HNA acc. to DIN 40040 (-25°C / +90°C / 75% RH)					
Material	Pin	Moulded Body	O-ring	Threaded Connector		
	Gold-plated Brass	TPU, self-extinguishing	Viton	Nickel-plated Brass		
Voltage	Operating Voltage	Nominal Power	Nominal Voltage	Test Voltage		
	300 VAC	4A	300 VAC	2.0 KV eff./60s (5+ poles: 1.25 KV)		
Insulation	Insulation Group: C acc. to VDE 0110, Insulation Resistance: >10 ⁹					
Protection	IP68					
Pins	3 Pin		4 Pin		5 Pin	
		 <ul style="list-style-type: none"> ① = green ② = red/black ③ = red/white 		 <ul style="list-style-type: none"> ① = red/black ② = red/white ③ = red ④ = green 		 <ul style="list-style-type: none"> ① = red/white ② = red ③ = green ④ = red/yellow ⑤ = red/black
	Female	Male	Female	Male	Female	Male
Straight Part Numbers						
	U-FS3TA-V315	U-MS3TA-V315	U-FS4TA-V165	U-MS4TA-V165	U-FS5TA-V105	U-MS5TA-V105
						
	Female		Male		Face View	
Right Angle Part Numbers						
	U-FA3TA-V315	U-MA3TA-V315	U-FA4TA-V165	U-MA4TA-V165	U-FA5TA-V105	U-MA5TA-V105
						
	Female		Male		Face View	



PUR cable type is available. Use -Y075 instead of -V075. Different lengths are available. Replace the last digit, ie. 5 for 5m, with the desired length, ie. R-FS4TZ-V0710 for 10m. Consult the technical service team for special configurations.

Z SERIES - 7/8"-16 MINI CABLES

						
Connection	7/8"-16 UN Thread (2 - 5 Pin), 1"-16 UN Thread (8 Pin), 1 1/8"-16 UN Thread (12 Pin)					
Application Class	GNA acc. to DIN 40040 (-25°C / +90°C/ 75% RH)					
Material	Pin: Gold-plated Brass	Moulded Body: TPU, self-extinguishing	O-ring: Viton	Threaded Connector: Nickel-plated Brass		
	Operating Voltage: 300 VAC	Nominal Power: 2 & 3 poles: 12A, 4+ poles: 9A	Nominal Voltage: 250 VAC	Test Voltage: 2 & 3 poles: 2.5 KV eff./60s, 4+ poles: 1.5 KV		
Insulation	Insulation Group: C acc. to VDE 0110, Insulation Resistance: >10 ⁹					
Protection	IP68					
Pins	2 Pin		3 Pin		4 Pin	
						
	Female	Male	Female	Male	Female	Male
Straight Part Numbers						
Plastic Securing Nut	Z-FS2PA-V015	Z-MS2PA-V015	Z-FS3PA-V035	Z-MS3PA-V035	Z-FS4PA-V425	Z-MS4PA-V425
Metal Securing Nut	Z-FS2KA-V015	Z-MS2KA-V015	Z-FS3KA-V035	Z-MS3KA-V035	Z-FS4KA-V425	Z-MS4KA-V425
Right Angle Part Numbers						
Plastic Securing Nut	Z-FA2PA-V015	Z-MA2PA-V015	Z-FA3PA-V035	Z-MA3PA-V035	Z-FA4PA-V425	Z-MA4PA-V425
Metal Securing Nut	Z-FA2KA-V015	Z-MA2KA-V015	Z-FA3KA-V035	Z-MA3KA-V035	Z-FA4KA-V425	Z-MA4KA-V425
Pins	5 Pin		8 Pin		12 Pin	
						
	Female	Male	Female	Male	Female	Male
Straight Part Numbers						
Plastic Securing Nut	Z-FS5PA-V025	Z-MS5PA-V025	Z-FS8PA-V475	Z-MS8PA-V475	Z-FS12PA-V615	Z-MS12PA-V615
Metal Securing Nut	Z-FS5KA-V025	Z-MS2KA-V025	Z-FS8KA-V475	Z-MS8KA-V475	Z-FS12KA-V615	Z-MS12KA-V615
For Boxes					Z-FS12KA-A615	
Right Angle Part Numbers						
Plastic Securing Nut	Z-FA5PA-V025	Z-MA5PA-V025	Z-FA8PA-V475	Z-MA8PA-V475	Z-FA12PA-V615	Z-MA12PA-V615
Metal Securing Nut	Z-FA5KA-V025	Z-MA5KA-V025	Z-FA8KA-V475	Z-MA8KA-V475	Z-FA12KA-V615	Z-MA12KA-V615
For Boxes					Z-FA12KA-A615	
						

PUR cable type is available. Use -Y075 instead of -V075. Different lengths are available. Replace the last digit, ie. 5 for 5m, with the desired length, ie. R-FS4TZ-V0710 for 10m. Consult the technical service team for special configurations.



DC PREWIRED CABLE BOXES

Technical Data

Application Class: -15°C to +90°C

Materials:
 Housing: PUR/PVC
 Contact: Brass, Gold over Nickel-plating
 Receptacle Shell: Brass, Nickel-plated
 Insert: PUR (black)
 O-Ring: Viton




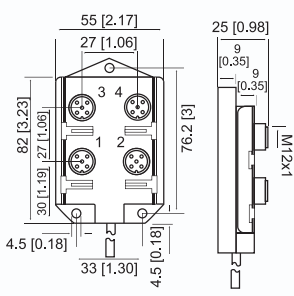
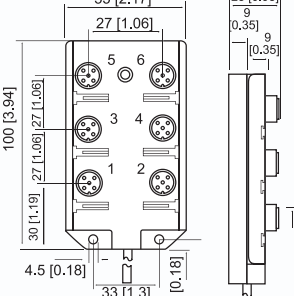
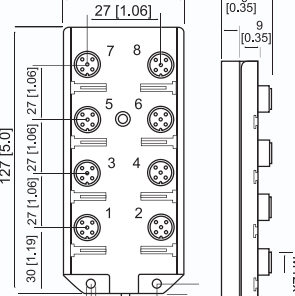
Electrical Data
 Contact Resistance: ≤5mΩ
 Current Rating: 4 amps per outlet, Max. 12 Amps per box
 Working Voltage: 10-30 VDC

Insulation Resistance: >10⁹Ω

Mechanical Data
 Insertion Force:
 Contact: ≤2.0 N (0.45lbs)

Withdrawal Force:
 Contact: ≥0.5 N (0.11lbs)
 Protection: IP68, NEMA 6P (in fully locked position)
 Shock: IEC-68-2-27
 Vibration: IEC-68-2-6

CE Conformity: EN50082-1, EN50082-2, IEC60947-5-2

			
PVC Jacket Material	4 Ports	6 Ports	8 Ports
Part Number			
Without LEDs	ASTR4-5/4UZ-1005	DSTR6-5/4UZ-1105	DSTR8-5/4UZ-1205
NPN with LEDs - N.O.	ASTR4-5/4NA-1005	DSTR6-5/4NA-1105	DSTR8-5/4NA-1205
NPN with LEDs - N.C.	ASTR4-5/4NB-1005	DSTR6-5/4NB-1105	DSTR8-5/4NB-1205
PNP with LEDs - N.O.	ASTR4-5/4PA-1005	DSTR6-5/4PA-1105	DSTR8-5/4PA-1205
PNP with LEDs - N.C.	ASTR4-5/4PB-1005	DSTR6-5/4PB-1105	DSTR8-5/4PB-1205
PNP Dual input (2 LEDs)	ALTR4-5/5DC-1305	DLTR6-5/5DC-3405	DLTR8-5/5DC-3805
NPN Dual input (2 LEDs)	ALTR4-5/5EC-1305	DLTR6-5/5EC-3405	DLTR8-5/5EC-3805
PUR Jacket Material			
Part Number			
Without LEDs	ASTR4-5/4UZ-3005	DSTR6-5/4UZ-3305	DSTR8-5/4UZ-3205
NPN with LEDs - N.O.	ASTR4-5/4NA-3005	DSTR6-5/4NA-3305	DSTR8-5/4NA-3205
NPN with LEDs - N.C.	ASTR4-5/4NB-3005	DSTR6-5/4NB-3305	DSTR8-5/4NB-3205
PNP with LEDs - N.O.	ASTR4-5/4PA-3005	DSTR6-5/4PA-3305	DSTR8-5/4PA-3205
PNP with LEDs - N.C.	ASTR4-5/4PB-3005	DSTR6-5/4PB-3305	DSTR8-5/4PB-3205
PNP Dual input (2 LEDs)	ALTR4-5/5DC-3005	DLTR6-5/5DC-3405	DLTR8-5/5DC-3805
NPN Dual input (2 LEDs)	ALTR4-5/5EC-3005	DLTR6-5/5EC-3405	DLTR8-5/5EC-3805
			



DC 1 1/8"-16 MINI QUICK DISCONNECT CABLE BOXES

Technical Data

Application Class: -15°C to +90°C

Materials:
 Housing: PUR/PVC
 Contact: Brass, Gold over Nickel-plating
 Receptacle Shell: Brass, Nickel-plated
 Insert: PUR (black)
 O-Ring: Viton




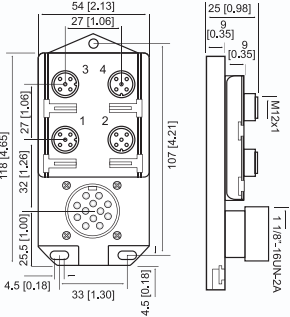
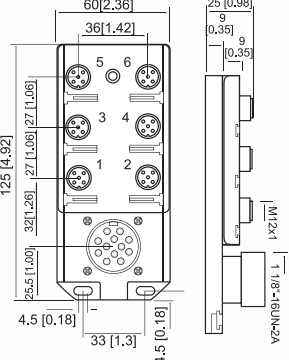
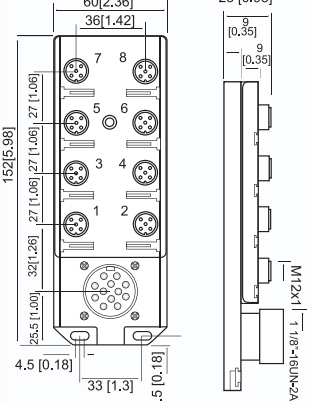
Electrical Data
 Contact Resistance: ≤5mΩ
 Current Rating: 4 amps per outlet, Max. 12 Amps per box
 Working Voltage: 10-30 VDC

Insulation Resistance: >10⁹Ω

Mechanical Data
 Insertion Force:
 Contact: ≤2.0 N (0.45lbs)

Withdrawal Force:
 Contact: ≥0.5 N (0.11lbs)
 Protection: IP68, NEMA 6P (in fully locked position)
 Shock: IEC-68-2-27
 Vibration: IEC-68-2-6

CE Conformity: EN50082-1, EN50082-2, IEC60947-5-2

			
1 1/8"-16 UN Connector	4 Ports	6 Ports	8 Ports
Part Number			
Without LEDs	ALTR4-5/4UZ-TZ12	DLTR6-5/4UZ-TZ12	DLTR8-5/4UZ-TZ12
NPN with LEDs - N.O.	ALTR4-5/4NA-TZ12	DLTR6-5/4NA-TZ12	DLTR8-5/4NA-TZ12
NPN with LEDs - N.C.	ALTR4-5/4NB-TZ12	DLTR6-5/4NB-TZ12	DLTR8-5/4NB-TZ12
PNP with LEDs - N.O.	ALTR4-5/4PA-TZ12	DLTR6-5/4PA-TZ12	DLTR8-5/4PA-TZ12
PNP with LEDs - N.C.	ALTR4-5/4PB-TZ12	DLTR6-5/4PB-TZ12	DLTR8-5/4PB-TZ12
			

Mating Cables: Z-FS12KAA615 (Straight)
 Z-FA12KAA615 (90°)

For more information on these mating cables, see 12 -pin Connector Cables for boxes on page 5.



DC M23 QUICK DISCONNECT CABLE BOXES

Technical Data

Application Class: -15°C to +90°C

Materials:
 Housing: PUR/PVC
 Contact: Brass, Gold over Nickel-plating
 Receptacle Shell: Brass, Nickel-plated
 Insert: PUR (black)
 O-Ring: Viton




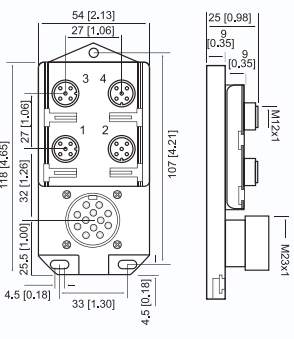
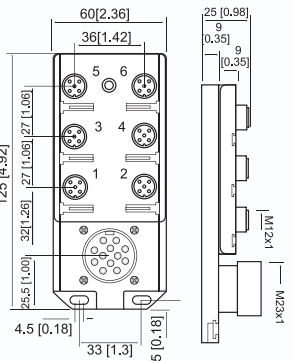
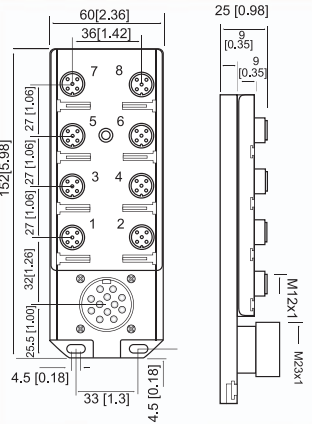
Electrical Data
 Contact Resistance: ≤5mΩ
 Current Rating: 4 amps per outlet, Max. 12 Amps per box
 Working Voltage: 10-30 VDC

Insulation Resistance: >10⁹Ω

Mechanical Data
 Insertion Force:
 Contact: ≤2.0 N (0.45lbs)

Withdrawal Force:
 Contact: ≥0.5 N (0.11lbs)
 Protection: IP68, NEMA 6P (in fully locked position)
 Shock: IEC-68-2-27
 Vibration: IEC-68-2-6

CE Conformity: EN50082-1, EN50082-2, IEC60947-5-2

			
M23x1 Connector	4 Ports	6 Ports	8 Ports
Part Number			
Without LEDs	ALTR4-5/4UZ-T12	DLTR6-5/4UZ-T12	DSTR8-5/4UZ-T12
NPN with LEDs - N.O.	ALTR4-5/4NA-T12	DLTR6-5/4NA-T12	DSTR8-5/4NA-T12
NPN with LEDs - N.C.	ALTR4-5/4NB-T12	DLTR6-5/4NB-T12	DSTR8-5/4NB-T12
PNP with LEDs - N.O.	ALTR4-5/4PA-T12	DLTR6-5/4PA-T12	DSTR8-5/4PA-T12
PNP with LEDs - N.C.	ALTR4-5/4PB-T12	DLTR6-5/4PB-T12	DSTR8-5/4PB-T12
PNP Changeover (2 LEDs)	ALTR4-5/5DC-T19	DLTR6-5/5DC-T19	DLTR8-5/5DC-T19
NPN Changeover (2 LEDs)	ALTR4-5/5EC-T19	DLTR6-5/5DC-T19	DLTR8-5/5EC-T19
			

Mating Cables: HFS-12P-3905 (12-pin straight)
 HFA-12P-3905 (12-pin 90°)
 HFS-19P-3805 (19-pin straight)
 HFA-19P-3805 (19-pin 90°)

For more information on these mating cables, see M23 Connector Cables on page 11



DC SIDE PORT CABLE BOXES

Technical Data

Application Class: -15°C to +90°C

Materials:
 Housing: Nylon 6/6
 Contact: Brass, Gold over Nickel-plating
 Receptacle Shell: Brass, Black Nickel-plated
 Insert: PUR (black)
 O-Ring: Nitrile Rubber

Electrical Data
 Contact Resistance: ≤5mΩ
 Current Rating: 4 amps per outlet, Max. 12 Amps per box
 Working Voltage: 10-30 VDC

Insulation Resistance: >10⁹Ω

Mechanical Data
 Insertion Force:
 Contact: ≤2.0 N (0.45lbs)

Withdrawal Force:
 Contact: ≥0.5 N (0.11lbs)

Protection: IP68, NEMA 6P (in fully locked position)
 Shock: IEC-68-2-27
 Vibration: IEC-68-2-6

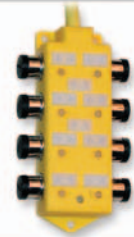
CE Conformity: EN50082-1, EN50082-2, IEC60947-5-2



4 Ports



6 Ports



8 Ports

Part Number			
NPN with LEDs	ASSR4-5/3NA-1005	ASSR6-5/3NA-1105	ASSR8-5/3NA-1205
PNP with LEDs	ASSR4-5/3PA-1005	ASSR6-5/3PA-1105	ASSR8-5/3PA-1205




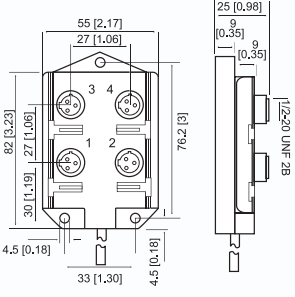
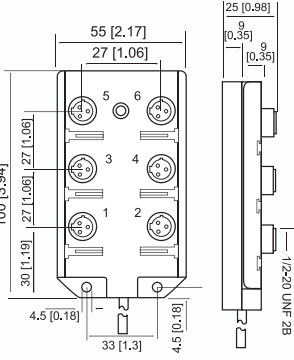
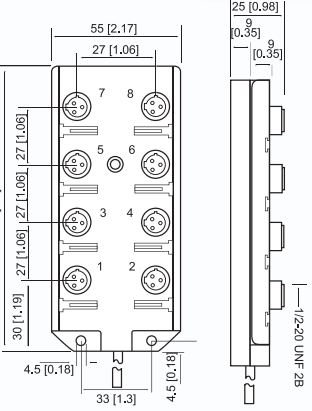


AC PREWIRED CABLE BOXES

Technical Data

Application Class: -15°C to +90°C
Materials:
 Housing: PUR/PVC
 Contact: Brass, Gold over Nickel-plating
 Receptacle Shell: Brass, Nickel-plated
 Insert: PUR (black)
 O-Ring: Viton
Electrical Data
 Contact Resistance: ≤5mΩ
 Current Rating: 4 amps per outlet, Max. 12 Amps per box
 Working Voltage: 250 VAC





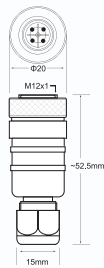
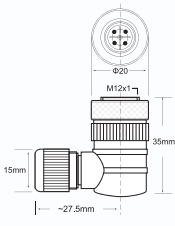
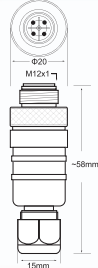
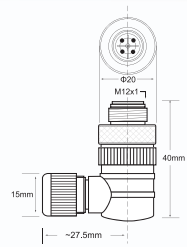
Insulation Resistance: >10⁹Ω
Mechanical Data
 Insertion Force:
 Contact: ≤2.0 N (0.45lbs)
Withdrawal Force:
 Contact: ≥0.5 N (0.11lbs)
 Protection: IP68, NEMA 6P (in fully locked position)
 Shock: IEC-68-2-27
 Vibration: IEC-68-2-6
CE Conformity: EN50082-1, EN50082-2, IEC60947-5-2

			
PUR Jacket Material	4 Ports	6 Ports	8 Ports
Part Number			
AC Without LEDs	ASTU4-3/34AZ-2305	DSTU6-5/3AZ-2405	DSTU8-3/3AZ-2505
			

CONNECTORS





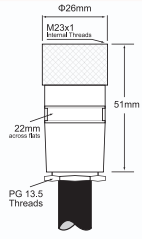
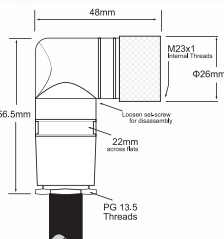
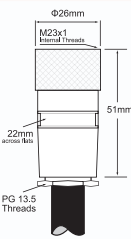
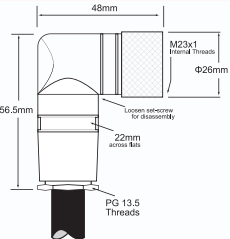
Field Connectors

Application Class:	HNA acc. to DIN 40040 (-40°C to +90°C ≤100%rF)	Lock Nut:	Nickel-plated Brass
Moulded Body:	PA, Self-extinguishing	Protection:	IP67
Nominal Power:	4A	Connection Mode:	Screw Clamps
Nominal Voltage:	125 VAC/150 VDC	Insulation Group:	C acc. to VDE 0110
Contact:	CuZn, 2-4UM/CuSnZn	Test Voltage:	1.25 KV, eff./60s
O-Ring:	NBR	Insulation Resistance:	>10 ⁵ Ω

				
Part Number	R-FS4KZPG7	R-FA4KZPG7	R-MS4KZPG7	R-MA4KZPG7
Poles	4	4	4	4
Max. Wire Section	18 AWG	18 AWG	18 AWG	18 AWG
SW...	15	15	15	15
Screw Joint for Cables	PG7 (Φ4.0-6.0mm)	PG7 (Φ4.0-6.0mm)	PG7 (Φ4.0-6.0mm)	PG7 (Φ4.0-6.0mm)
Diagrams				

M23 Connector Cables

Application Class:	-25°C to +110°C	Current Rating:	7.5Amps
Materials:	Body: CuZn, brass, nickel-plated	Working Voltage:	60 VAC / 75 DC
	Contact: CuZn, pre-nickeled and gold-plated	Dielectric Withstanding:	1.5 kVAC eff./60 seconds
	Coupling Nut: CuZn, brass, nickeled	Insulation Resistance:	>10 ⁹ Ω
	Insert: PBTP, GF	Mechanical Data:	Insertion Force: ≤2.0N (0.45 lbs)
	O-ring: Viton		Withdrawal Force: ≥0.5N (0.11 lbs)
Electrical Data:	Contact Resistance: ≤5mΩ	Protection:	IP65
		Mode of Termination:	Solder types

				
Part Number	HFS-12P-3905	HFA-12P-3905	HFS-19P-3805	HFA-19P-3805
Poles	12	12	19	19
Cable Guage	22 AWG	22 AWG	3 x 17 AWG, 16 x 20 AWG	3 x 17 AWG, 16 x 20 AWG
Cable Diameter	Φ12.8mm	Φ12.8mm	Φ11.6mm	Φ11.6mm
Diagrams				



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SAFETY LIGHT CURTAINS



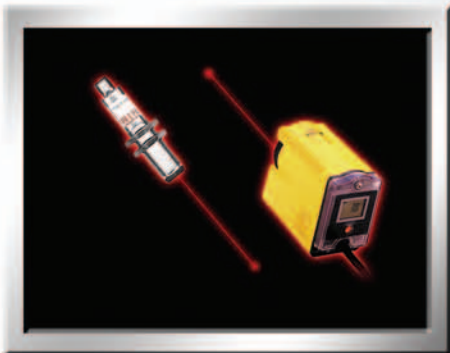
Category 4 Safety
Category 2 Safety
Finger Protection (14mm)
Hand Protection (30mm)
Body Protection (Access)

PHOTOELECTRIC SENSORS



Through Beam
Retro-reflective
Diffuse / Distance / Contrast
Background Suppression
Polarized / Clear Object

LASER SENSORS



Diffuse
Push Button Set-up
Retro-reflective
Through Beam
Temperature Sensors

CABLES & BOXES



M12 Micro & AC 1/2 20
M8 Pico & 7/8" x 16 Mini
Double Ended Cables
Distribution Boxes

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