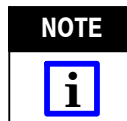


CONNECTOR TYPE	PLUG KIT		RECEPTACLE KIT		PROTECTIVE COVER ASSEMBLY	
	SERIES A	SERIES B	SERIES A TO A*	SERIES B TO A**	PLUG KIT	RECEPTACLE KIT
Plastic Shell	1954637-1	1954640-1	1954643-1	1954646-1	1828740-1	1738611-1
Metal Shell	2058362-1	2058363-1	2058364-1	2058365-1	2058442-1	2008618-1

- Connection End is Series A, Mating Face is Series A
- Connection End is Series A, Mating Face is Series B

Figure 1



All numerical values in this instruction sheet are in metric units [with U.S. customary units in brackets]. Figures are not drawn to scale.

1. INTRODUCTION

The Industrial Circular standard USB panel-mount connector system is designed for interconnection between standard serial bus personal computers and interface devices.

Reasons for reissue of this instruction sheet are provided in Section 7, REVISION SUMMARY.

2. DESCRIPTION

The connector system consists of a 4-position panel-mount receptacle and mating cable mount overmolded plug. Each connector is supplied as a kit containing the components shown in Figure 1.

The kits are available with plastic shell or metal shell and shielded or unshielded. The plug kit is available in Series A and Series B, and the receptacle kit is available in Series A to A and Series B to A. The Series A end of the cable connects to the computer, and the Series B end of the cable connects to the peripheral device.

A protective cover assembly is available for each connector to prevent contamination when the connectors are not engaged. Refer to Figure 1 for part numbers.

The USB components are designed to be terminated to the wires by soldering and terminated to the cable by crimping. The connector system is designed for front- or rear panel-mount applications.

3. CABLE PREPARATION

1. Install the plug assembly (strain relief end first) onto the cable. Then strip the cable to the dimensions given in Figure 2, Detail A.
2. After the braided shield is stripped, roll it back over the jacket and wrap it with copper tape. Then, pre-tin each individual wire with solder. See Figure 2, Detail B.



Reasonable care must be taken not to nick, scrape, or cut any part of the cable during the stripping operation. Care must also be used when handling the cable during stripping to prevent cracking or breaking of the braided shield, wires, or insulation.

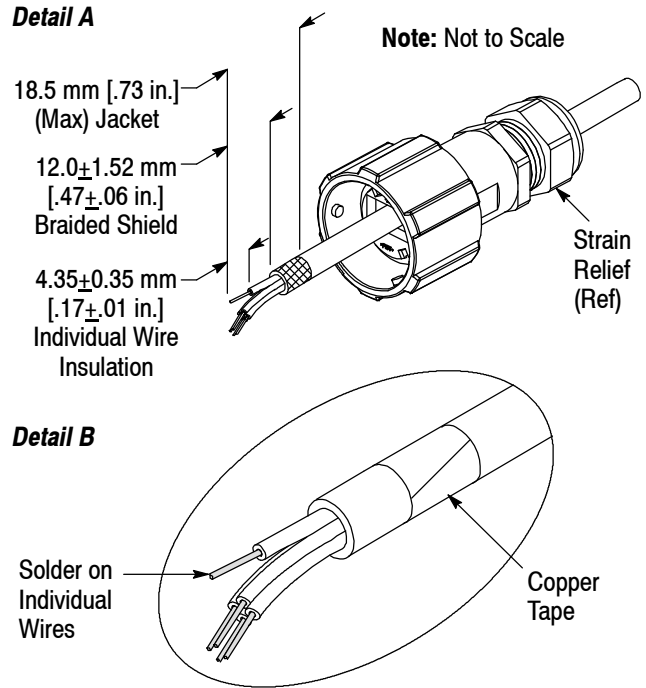
3. Arrange the wires according to the wire color and the circuit positions of the plug contact. Refer to Figure 3.
4. Solder the wire onto the solder pads of plug contacts using industry-acceptable soldering methods.

4. ASSEMBLY

4.1. Plug Kit

1. For Series A plug kit, proceed as follows:
 - a. “Snap” the cover of the plug contact onto the solder pad housing. Make sure that the latches of the cover are secured to the tabs of the solder pad housing and that there is no gap between the cover and the housing.
 - b. Align the bottom of the housing of the plug contact with the seam of the front shell, and insert it into the front shell. Make sure that the copper tape and cable jacket is positioned in the strain relief of the front shell. See Figure 4, Detail A for Series A.
 - c. “Snap” the rear shell onto the front shell so that the latches on the sides of the rear shell

Cable Preparation



WIRE SIZE (AWG)	MAXIMUM CABLE LENGTH
20-28	5.00 m [16.4 ft]
22-28	3.33 m [10.9 ft]
24-28	2.08 m [6.8 ft]
26-28	1.31 m [4.3 ft]
28-28	0.81 m [2.7 ft]

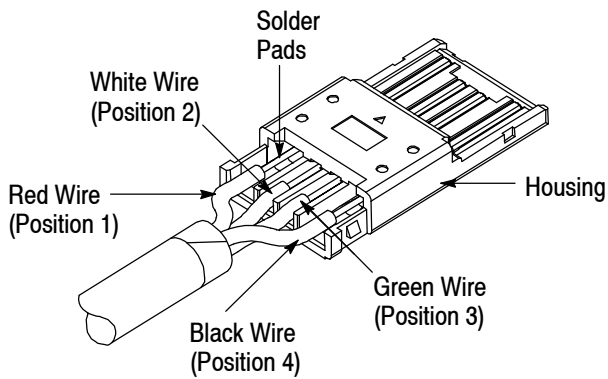
Figure 2

engage the windows on the sides of the front shell. Make sure there is no gap between the front shell and the rear shell. See Figure 4, Detail A for Series A.

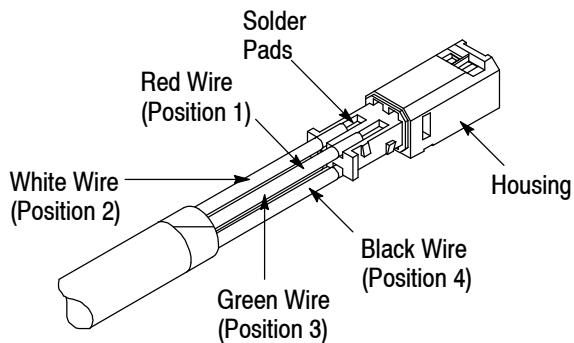
2. For Series B plug kit, proceed as follows:
 - a. “Snap” the cover halves together over the solder pad housing. Make sure there is no gap between the covers and the housing. See Figure 4, Detail A for Series B.
 - b. Align the “D” profile of the front of the housing of the plug contact with the “D” profile of the mating face of the front shell, and insert the plug contact into the front shell. Make sure that the copper tape and cable jacket is positioned in the strain relief of the rear shell. See Figure 4, Detail A for Series B.
 - c. “Snap” the front shell and rear shell together so that the locking latch of the rear shell engages the locking detent of the front shell and the latches on the sides of the rear shell engage the windows of the front shell.

Wire Arrangement

Series A Plug Contact



Series B Plug Contact



Note: For USB Series B plug contact only, wire arrangement and soldering can be performed separately for each wire.

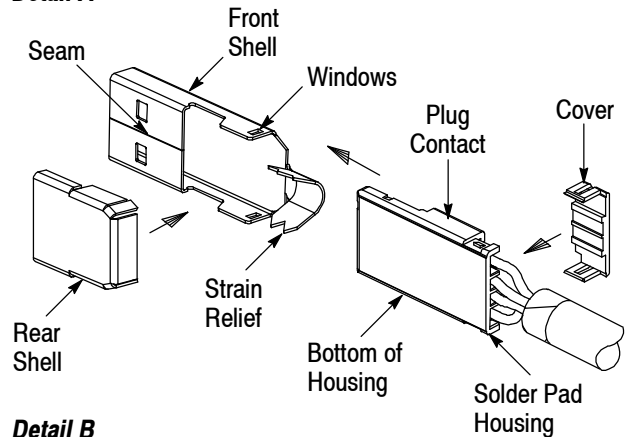
WIRE COLOR (Type)	CIRCUIT POSITION	
	SERIES A	SERIES B
Red (Signal)	1	1
White (Signal)	2	2
Green (Power)	3	3
Black (Power)	4	4

Figure 3

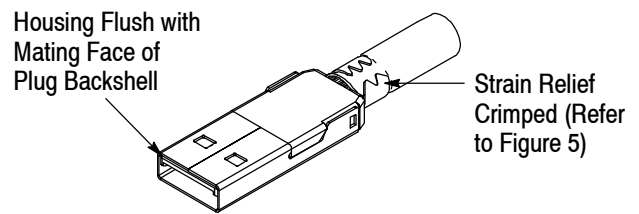
Assembling USB of Plug Kit

Series A

Detail A

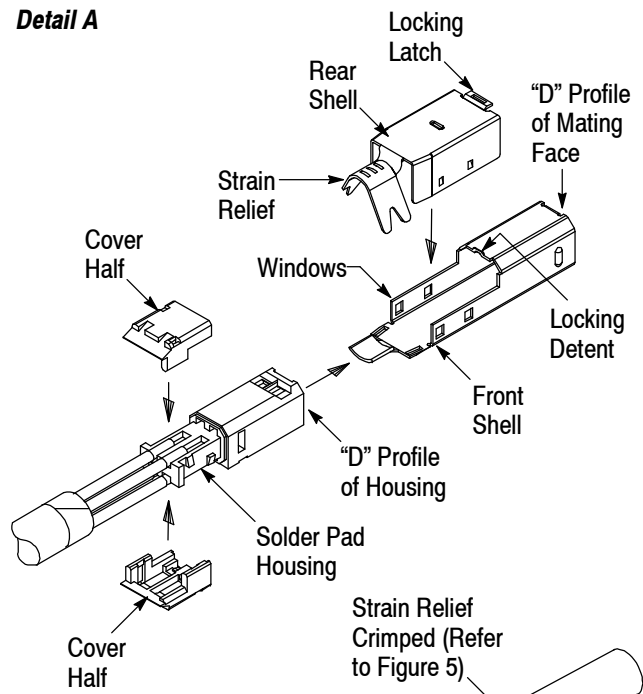


Detail B



Series B

Detail A



Detail B



Figure 4

3. Manually close the strain relief capturing the cable braid, copper tape, and cable jacket. Using a hand crimping tool, crimp the strain relief. Check the crimp width and crimp height using a micrometer, vernier, or caliper, making sure that the measurements meet the required dimensions given in Figure 5.

WIRE SIZE (AWG) (Signal-Power)	CABLE INSULATION DIAMETER (mm [in.])	STRAIN RELIEF CRIMP (mm [in.])		
		SERIES A (Oval Crimp)		SERIES B (Round Crimp) WIDTH AND HEIGHT ± 0.20 [.008]
		WIDTH ± 0.20 [.008]	HEIGHT (Max)	
20-28	5.20 [.204]	6.50 [.256]	5.10 [.200]	5.65 [.222]
22-28				
24-28	4.50 [.177]	5.80 [.228]	5.10 [.200]	5.30 [.209]
26-28	4.20 [.165]	5.50 [.217]		5.00 [.197]
28-28				

Figure 5

4. Check that the housing of the plug contact is bottomed and flush with the mating face of the plug backshell. See Figure 4, Detail B.

5. Gently pull the cable until the USB is fully seated in the USB port. It is recommended that the USB be installed into the plug assembly so that the seam aligns with the TE logo embossed on the front of the plug housing (located over the USB port). Check that the USB protrudes from the housing of the plug assembly to the dimension given in Figure 6, Detail A.

6. While holding the USB in position, rotate the strain relief until it is tightened. Refer to Figure 6, Detail B.

NOTE The torque must be within the range provided in Figure 6 in order for the strain relief to seal the plug assembly at the cable end as defined in International Electrotechnical Commission (IEC) 60529, IP Code 67.

4.2. Receptacle Kit

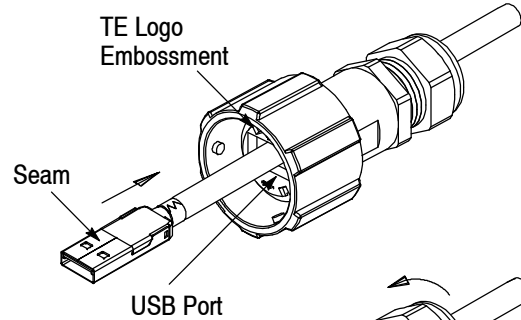
1. Cut the panel using the dimensions provided in Figure 7.

NOTE Make sure that the flat edge is located in the desired rotational orientation.

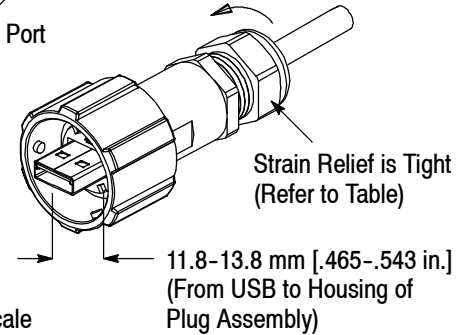
Installing USB of Plug Kit

Plastic Shell Series A
(Same Applies to Metal Shell)

Detail A



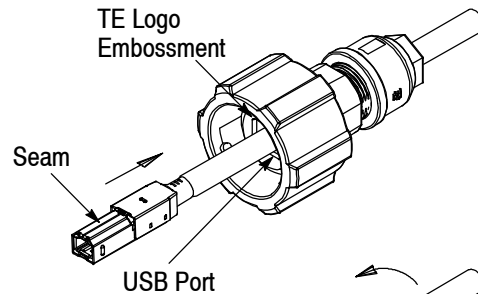
Detail B



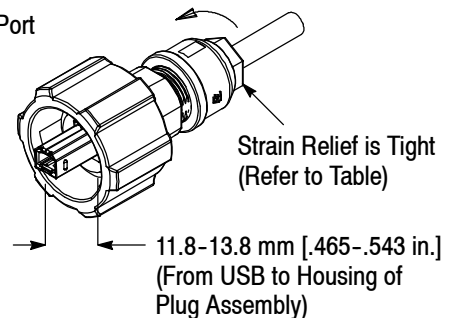
Note: Not to Scale

Metal Shell Series B
(Same Applies to Plastic Shell)

Detail A



Detail B



Note: Not to Scale

TORQUE RANGE	
PLASTIC SHELL	METAL SHELL
1.7-2.8 N-m [15-25 lbf-in.]	0.9-1.4 N-m [8-12 lbf-in.]

Figure 6

Recommended Panel Cutout

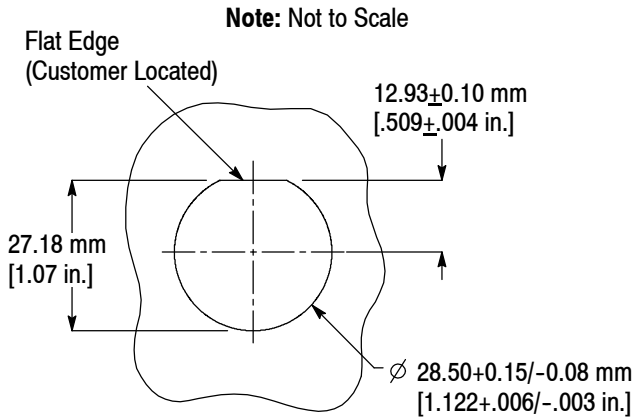


Figure 7

2. Slide the panel gasket over the mating face (end with bayonet lock) of the receptacle assembly for rear panel mount or over the connection end of the receptacle assembly for front panel mount until it is flat against the flange. See Figure 8.

3. Align the flat of the receptacle assembly with the flat edge of the panel cutout, and insert the receptacle assembly into the panel until the panel gasket is flat against the panel.

4. Thread the panel nut onto the mating end of the receptacle assembly for rear panel mount or onto the connection end for front panel mount, and tighten to a torque between 1.7 and 2.8 N-m [15 and 25 lbf-in.]. Make sure that the panel nut is flat against the panel.

NOTE The torque must be within the range provided in order for the panel gasket to seal the receptacle assembly at the panel.

4.3. Protective Cover Assembly (Optional)

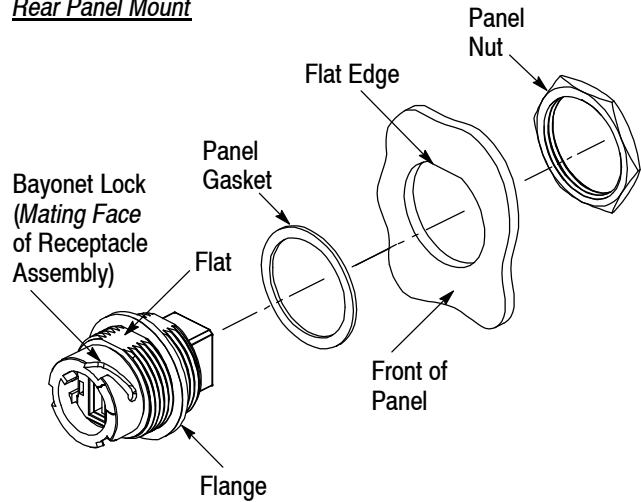
If using the protective cover, refer to Figure 9, and proceed as follows:

1. For the plug assembly, slide the loop of the tether over the back (end with the strain relief) of the plug assembly until it is in the groove at the back of the plug assembly. For the receptacle assembly, slide the loop of the tether over the front (end with bayonet lock) of receptacle assembly until it is in the groove at the front of the receptacle assembly.

2. If not engaging connectors immediately, install the protective cover. For the plug assembly, align the slots of the bayonet lock with the protrusions (located inside) of the plug assembly; for the receptacle assembly, align the protrusions (located

Assembling Receptacle Kit

Rear Panel Mount



Front Panel Mount

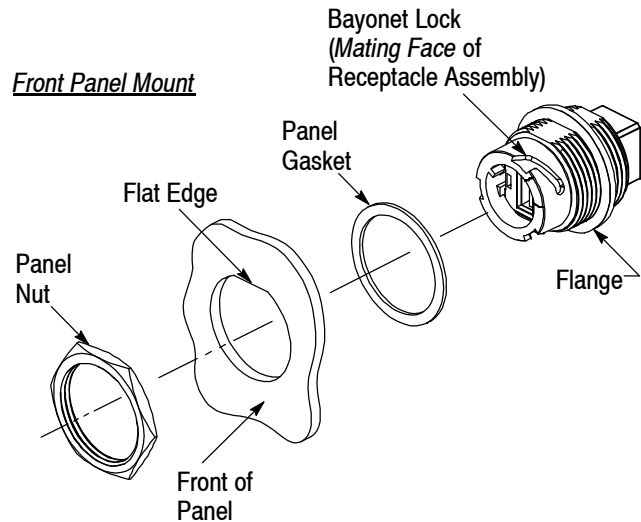


Figure 8

inside) of the cover with the slots of the bayonet lock of the receptacle assembly. Then rotate the cover until the protrusions “click” onto the bayonet lock.

5. MATING (See Figure 10)

1. Align the USB in the plug assembly with the slot of the USB coupler of the receptacle assembly. The mating face of the USB and USB coupler are polarized for proper orientation.

2. Rotate the coupling ring of the plug assembly until the protrusions (located inside the coupling ring) align with the slots of the bayonet lock of the receptacle assembly.

3. Engage the plug to the receptacle, then rotate the coupling ring until the protrusions “click” onto the bayonet lock.

Installing Protective Cover Assembly

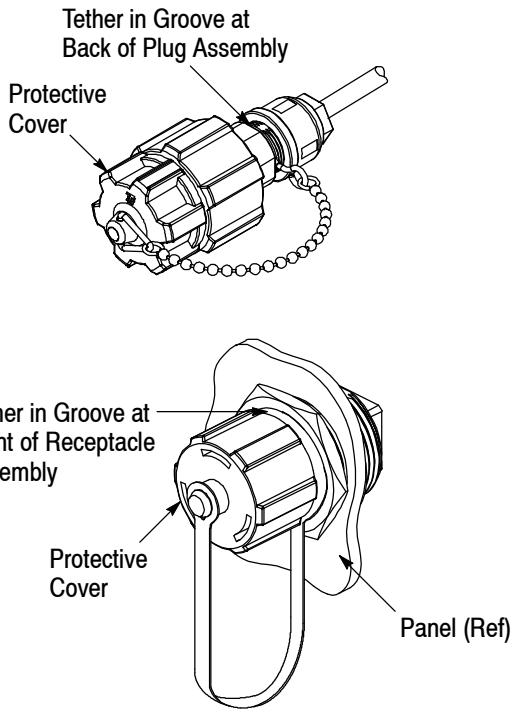


Figure 9

Mating Connectors

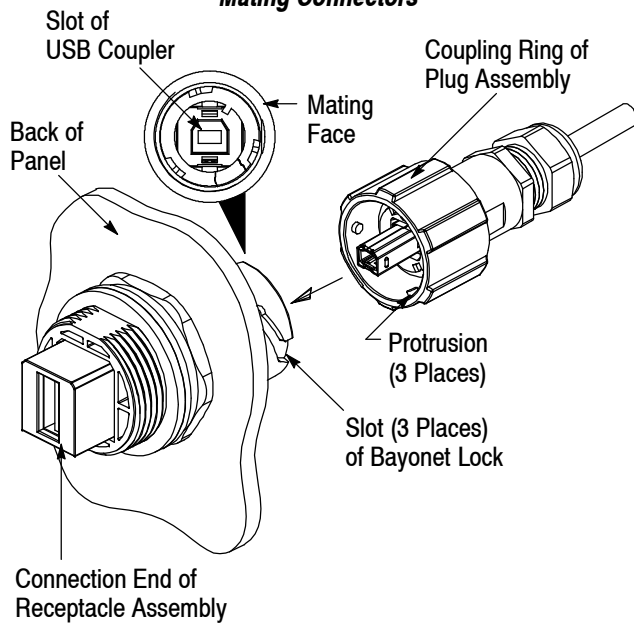


Figure 10

6. REPLACEMENT AND REPAIR

Components of the kits and protective cover assembly are not repairable. DO NOT use defective or damaged components. DO NOT re-use a plug contact by removing the cable. DO NOT remove a plug contact from the backshell and re-used.

7. REVISION SUMMARY

Revisions to this instruction sheet include:

- Updated document to corporate requirements
- New logo