
SAS ENGINEERING NOTE

SUBJECT: METER POD CONNECTOR REPLACEMENT

DATE: 5/2/2012

REPLACING CLOCK POWER/DATA CONNECTOR

This Engineering Note describes how to open a Meter Pod and change an insulation displacement type connector which is suspected of poor contact. You can perform this procedure with low voltage power applied, but power off is preferred. Disconnect the two 24 VDC cylindrical connectors and verify the meter assembly is dark.

To remove the elliptical rear cover of the Meter Pod, first remove both side plates, each held on by 3 Philips head #6-32 machine screws. This will allow the cover to flex for removal and re-installation. Next remove the #4-40 button head screws across the front top of the cover, using a 1/16" allen driver (same tool as module removal). Gently tip the cover rearward. The cover will rest on the pivot brackets, exposing the internal wiring. Remove the cover by flexing the bottom lip downward toward the desk surface using your thumbs and then rearward to release the cover from the bottom catch. Carefully put the cover aside while proceeding to repair the wiring.

Locate the clock, the rightmost module from the rear of the meter pod. The connector on the left rear corner is a 5 pin PanCon IDC connector. The pinout is, from right to left as viewed from the rear:

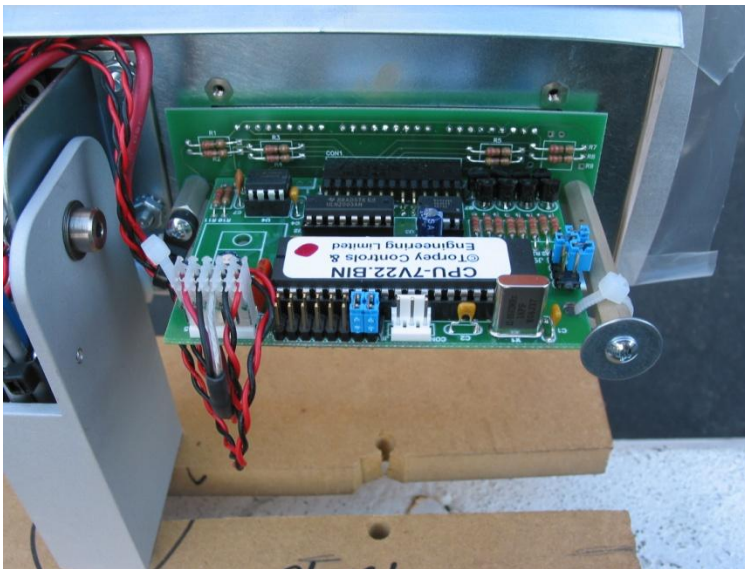
Pin 1 – RED, +5 VDC (thru wire)

Pin 2 – BLK, GND (thru wire)

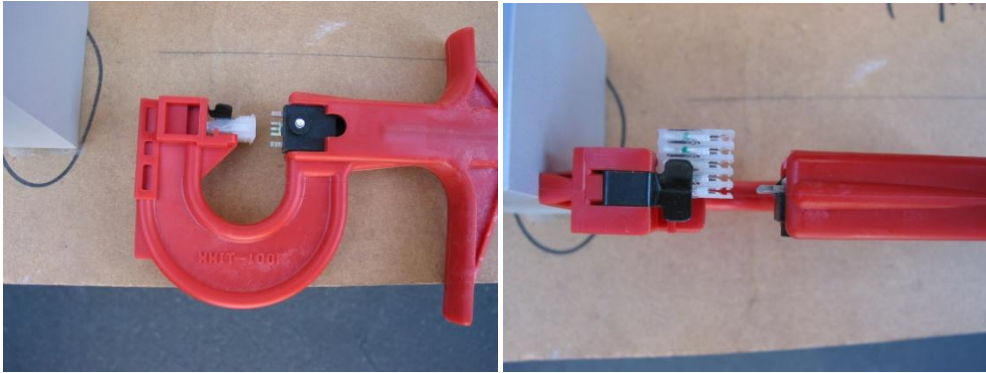
Pin 3 – Shield

Pin 4 – BLK, Clock Data –

Pin 5 – RED, Clock Data +



Carefully unplug the connector from the header on the electronics assembly, holding the board steady with your other hand. Grasp the connector firmly with your fingers and remove the wires by pulling up and out of the wire slot. Take care not to break any wires. You will install the wires into a new connector in the same order. The connector has a wire retention feature (plastic 'barbs') to hold the wire. There are two levels of retention 'barbs': one to hold the wire above the contact before the tool presses the wire into the contact and one to provide extra retention once the wire has been fully seated. These retention barbs provide only a modest amount of resistance to you removing the wires. Discard the old connector. The wires do not need to be trimmed.



To re-insert the wires into a new connector, insert the new connector into the provided tool. The connector slides into the tool with the black and green colors up and the locking ramp down. The connector slides left to right with detent stops at each wire position. Insert the wires for pins 1 and 2, snapping them down below the wire retention barbs. When re-inserting the wires try to have fresh uncut insulation in the contact area. Align the connector to press the Pin 1 Red wire down. Be careful that the connector is aligned properly with the tool and actuate the tool with a firm press of the plunger. The wire will be driven down into the metal contact. The contact has two blades which will cut through the insulation of the wire and make contact. Advance the connector by sliding it left to Pin 2. Again press the Black wire firmly into the contact. Now locate the clock data wires, snapping them into the connector retention area and then pressing them home one at a time. If any contacts get splayed or if the connector twists in the tool, discard the connector and start again to ensure good contact with the wire. Carefully align the completed connector to the pins and plug it to the clock board. Check operation.



To replace the meter pod rear cover, carefully hook the underside to the lower catch using your thumbs to flex the cover. Rotate the cover forward, lifting so that the cover slides up the ramp of the subchassis and aligns with the mounting screw locations. Install the screws and then the side plates. You're done!

REPLACING METER POWER CONNECTOR

This Meter Assembly uses a two pin insulation displacement connector for power. The 24 VDC power is converted to 5 VDC by the on board convertor. The 5 VDC is then output through a Molex pin and socket connector. The output of the Molex connector has 18 ga. wires going to Meter 1 and 24 ga. wires going to the clock assembly. Failure at the Molex junction would typically affect all meters and clock/timer. The 18 ga. wires connect through each meter in a daisy chain arrangement from Meter 1 to 2 to 3 etc. using a 3 pin IDC connector with 0.156 pin spacing, as opposed to the 0.100 space connector used on the clock/timer. A failure on any one will typically not affect the others. Since the contacts are blade style which cut through the plastic wire insulation and bite the wire for contact, if the blades are spread out too wide by overstress or improper application the contact will be intermittent. If this is happening you will likely see the meter will not flicker at low VU display (less LEDs, less current) and will flicker at high VU display.

To replace a suspect connector, carefully remove the old connector by pulling the wire free. Discard the old connector. Carefully use the 156 tool. Be careful that the connector is aligned properly with the tool and actuate the tool with a firm press of the plunger. The wire will be driven down into the metal contact. The contact has two blades which will cut through the insulation of the wire and make contact. The Red wire (+ 5 VDC) goes to Pin 1, while the Black wire (Ground) goes to pin 3. Pin 2 is not used. Advance the connector by sliding it left to Pin 2, then to Pin 3. If any contacts get splayed or if the connector twists in the tool, discard the connector and start again to ensure good contact with the wire. Carefully align the completed connector to the pins and plug it to the meter and test.