Power Supply Connections for Your CET Signal Conditioner Card

Application Note

Power Requirement for CET Card

The CET signal conditioner card (referenced in this application note as CET card) can be powered from various sources. The recommended sources are discussed in the following sections.

The input supply voltage to the CET card is +12 V @ 0.3 A. The selected source to provide the power needs to be controllable through the test plan execution. Power to the CET card must be uninterrupted for the duration of powered testing. If power to the CET card is disconnected, an “unpowered” command must be issued before turning the power back on.

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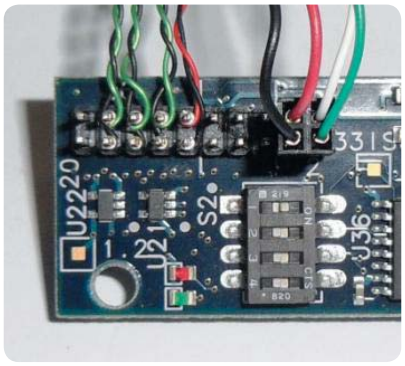
Power Requirement for CET Card

Power is connected via a wire wrap of AWG28 wires to pins 11 and 12 of J6 of the CET card. There is another pair of power connections on J6 at pins 3 and 4. These are the power connections for the USB and do not provide power to the CET card itself.



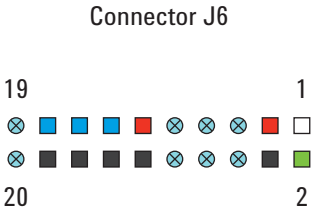


Figure 1. Connections on CET card (J6 connector)

Table 1. Pin layout of J6 connector on CET card

CET card (J6 connector)	Wire color	Wire type	Remarks
Pin 1	White	Boxed header	USB D–
Pin 2	Green		USB D+
Pin 3	Red	Boxed header	USB +
Pin 4	Black		USB –
Pin 5	Not wired		For future use
Pin 6	Not wired		For future use
Pin 7	Not wired		For future use
Pin 8	Not wired		For future use
Pin 9	Not wired		For future use
Pin 10	Not wired		For future use
Pin 11	Red AWG28 Wire	Twisted pair	CET Card Supply (+)
Pin 12	Black AWG28 Wire		CET Card Supply (GND)
Pin 13	Blue AWG28 Wire	Twisted pair	node "~LEM_A~"
Pin 14	Black AWG28 Wire		CET GND
Pin 15	Blue AWG28 Wire	Twisted pair	node "~LEM_R~"
Pin 16	Black AWG28 Wire		CET GND
Pin 17	Blue AWG28 Wire	Twisted pair	node "~LEM_M~"
Pin 18	Black AWG28 Wire		CET GND
Pin 19	Not wired		For future use
Pin 20	Not wired		For future use

Using DUT Power Supplies

Using the device under test (DUT) power supplies is the simplest way to power the CET card. A DUT power supply channel is well designed with proper isolation between the power nodes on the DUT and the system grounds. As such, users do not need to worry about possible shorts between the DUT board ground nodes to the system grounds. DUT power supply output channels are available on the ASRU card MINT pins. Each channel outputs to a group of six MINT pins on the ASRU card.

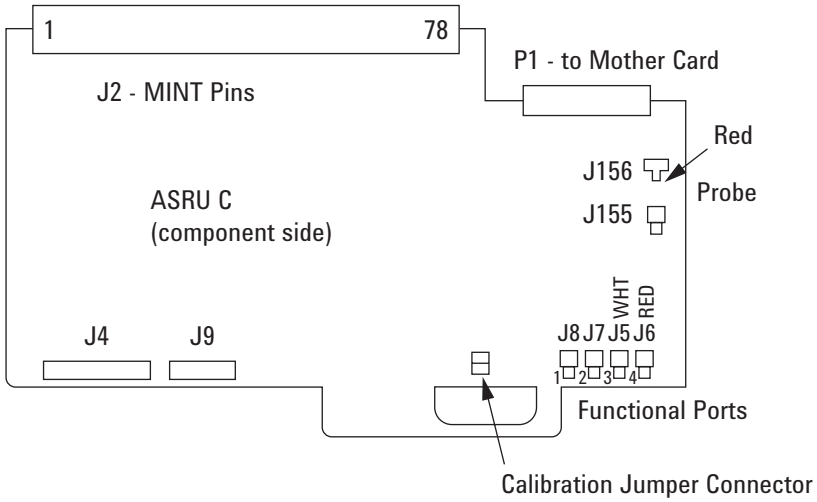


Figure 2. Connector locations on ASRU Card

Using DUT Power Supplies

Each ASRU card can provide up to six channels of DUT power supply output depending on the model of DUT power supply unit. Details of the pin out on the MINT pins are shown in Table 2.

Table 2. ASRU C MINT pins for DUT power supply output

Bank				
1	2	Pin	Name	Function
78	1	1	P1LA	PS #1 Low A
77	2	2	P1LB	PS #1 Low B
76	3	3	P1HA	PS #1 High A
75	4	4	P1HB	PS #1 High B
74	5	5	P1SL	PS #1 Sense Low
73	6	6	P1SH	PS #1 Sense High
72	7	7	P2LA	PS #2 Low A
71	8	8	P2LB	PS #2 Low B
70	9	9	P2HA	PS #2 High A
69	10	10	P2HB	PS #2 High B
68	11	11	P2SL	PS #2 Sense Low
67	12	12	P2SH	PS #2 Sense High
66	13	13	P3LA	PS #3 Low A
65	14	14	P3LB	PS #3 Low B
64	15	15	P3HA	PS #3 High A
63	16	16	P3HB	PS #3 High B
62	17	17	P3SL	PS #3 Sense Low
61	18	18	P3SH	PS #3 Sense High
60	19	19	P4LA	PS #4 Low A
59	20	20	P4LB	PS #4 Low B
58	21	21	P4HA	PS #4 High A
57	22	22	P4HB	PS #4 High B
56	23	23	P4SL	PS #4 Sense Low
55	24	24	P4SH	PS #4 Sense High
36	43	43	P5LA	PS #5 Low A
35	44	44	P5LB	PS #5 Low B
34	45	45	P5HA	PS #5 High A
33	46	46	P5HB	PS #5 High B
32	47	47	P5SL	PS #5 Sense Low
31	48	48	P5SH	PS #5 Sense High
26	53	53	P6LA	PS #6 Low A
25	54	54	P6LB	PS #6 Low B
24	55	55	P6HA	PS #6 High A
23	56	56	P6HB	PS #6 High B
22	57	57	P6SL	PS #6 Sense Low
21	58	58	P6SH	PS #6 Sense High

Using DUT Power Supplies

Usually the sense lines of the various channels need to be separately wired to the DUT in order to achieve accurate sensing of the actual voltage present on the DUT. However, this is not required when powering the CET card.

Both A and B pins of the DUT output may be shorted to their respective sense lines, then a single connection made from each of the High and Low outputs to the CET card. An example is shown in Figure 3.

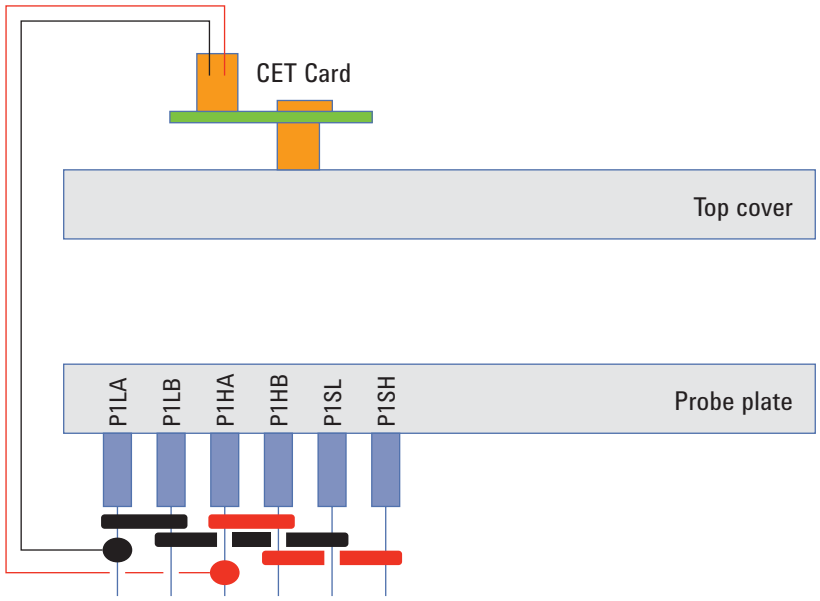


Figure 3. Wiring of DUT power supply output to CET card

Once the connection is established, power to the CET card can be simply controlled from within the test plan using the cps and sps commands.

Using Auxiliary Connect Channels on USB Interface Kit

This option is only available for ASRU C revision cards, which require the USB interface kit to work with the CET card. Although using the DUT power supply for powering the CET card may be the best option, it does take up a DUT power supply channel. So in cases where DUT power supply channels are needed elsewhere, the user has to find alternative means to apply power to the CET card.

With the USB interface kit installed, the user can make use of the 24 V auxiliary port output from the System card for the CET card power. There are a total of five sets of 24 V auxiliary ports on the System card. The first four sets are used by the tester to control the vacuum ports on the test head. This leaves the user with the fifth set to use.

The voltage regulator circuit in the USB interface kit receives the 24 V input from the auxiliary port and regulates it to the 12 V supply that the CET card needs. This 12 V supply channel is isolated from the CET card ground through a relay on the voltage regulator circuit. Figure 4 shows the wiring of the auxiliary port to the voltage regulator circuit.

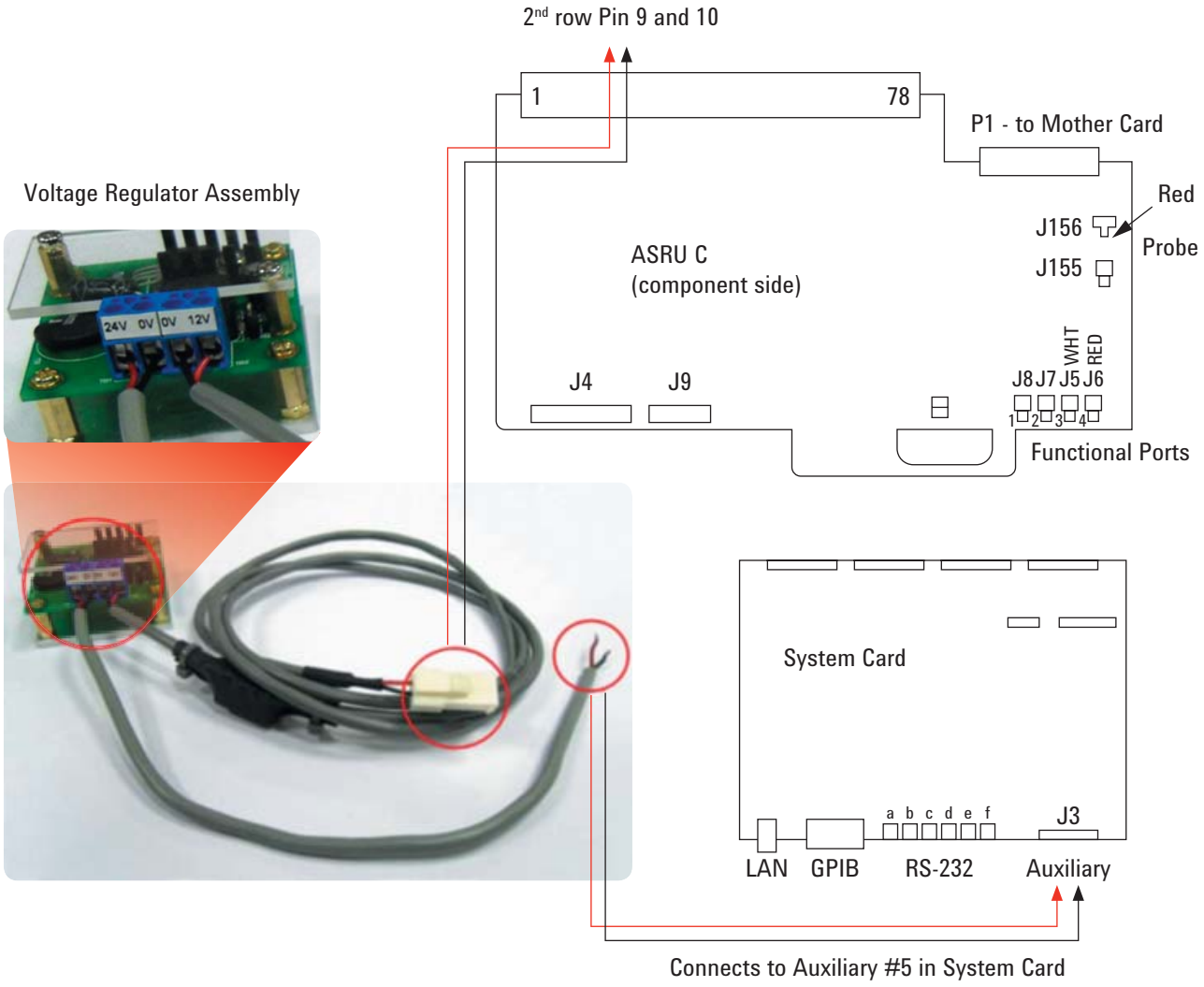


Figure 4. Wiring of Aux #5 to voltage regulator assembly

Using Fixture Power Supplies on ASRU-N Card

The ASRU Revision N card is equipped with two fixed output power supply channels called the Fixture Power Supply channels. The Fixture Power Supply (FPS) capability provided by the ASRU-N card is intended for fixture electronics and other external powering purposes. FPS is capable of generating 12 VDC @ 1 A and 5 VDC @ 2 A outputs from the MPU +20 VDC output, and the outputs are connected to the MINT pins (two identical sets of four FPS pins). The 12 VDC output can be used to power the CET card in the fixture.

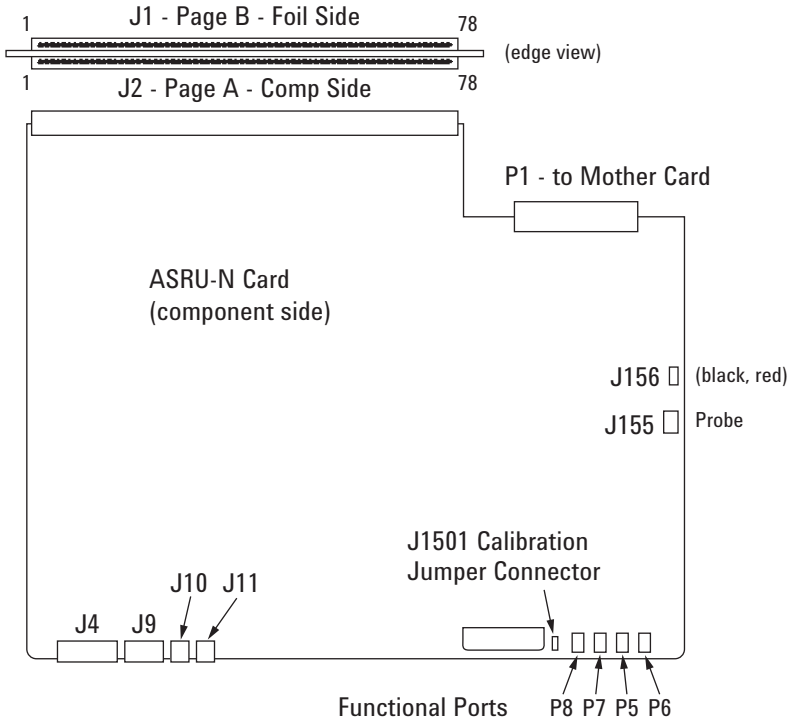


Figure 5. Fixture power supply pin out of ASRU N card

MINT Pins – J1

Pin	Name	Function
9	FPS_12V	Fixture Power Supply 12 V
10	FPS_12VGND	Fixture Power Supply 12 V GND
11	FPS_5V	Fixture Power Supply 5 V
12	FPS_5VGND	Fixture Power Supply 5 V GND

Using Fixture Power Supplies on ASRU-N Card

It is important to note that the outputs from the FPS are not electrically isolated from system ground. This means a 12 V relay has to be installed in the fixture for isolation during unpowered tests, since the CET card requires a connection to the ground plane of the fixture. This relay can be wired in a way that it will close the connection once the power is turned on from the FPS.

Figure 6 shows the connection for a 12 V relay. The output from the FPS is wired to both the COM and the coil pins of the relay. From the relay, the Normal Open (NO) pins are wired to the CET card. When power is turned on, the 12 V will energize the coil, which in turn will close the relay contact to establish the power to the CET card.

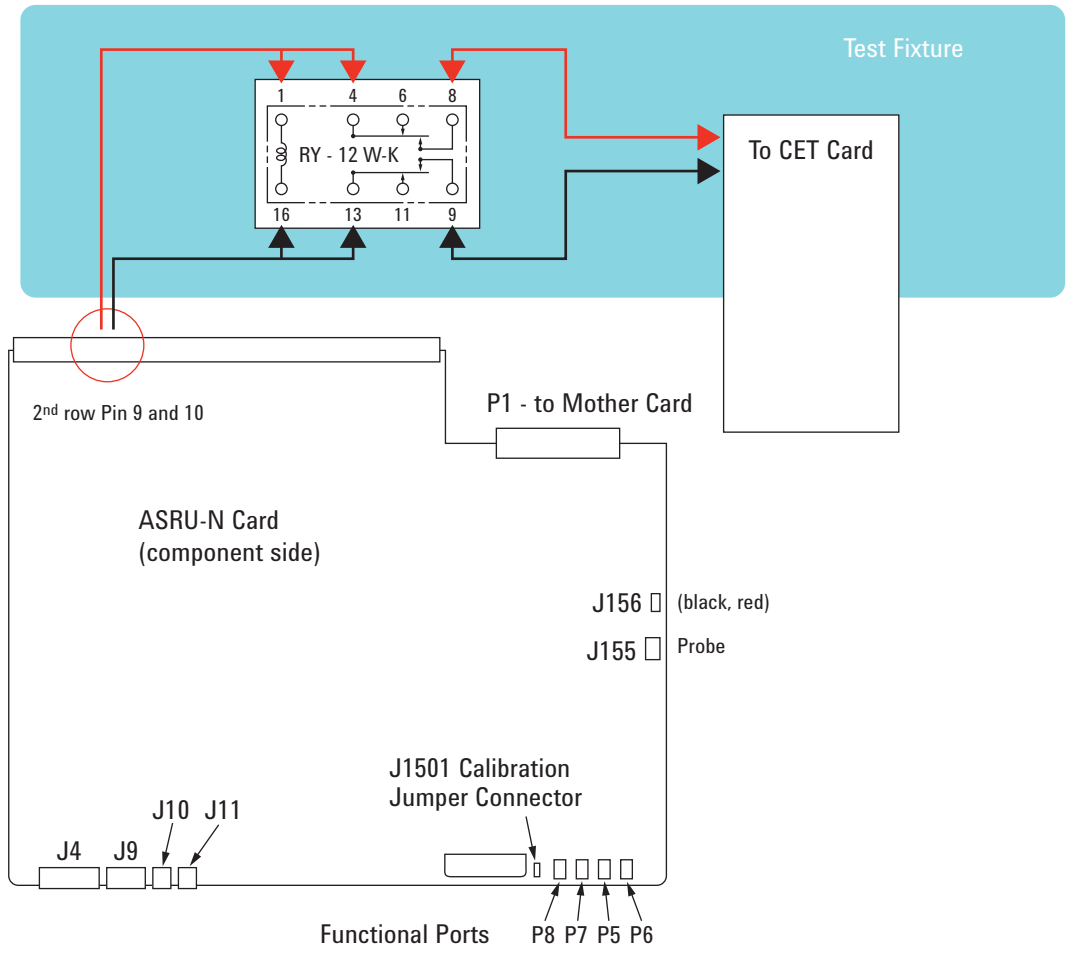


Figure 6. Fixture power supply isolation from system ground

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