

OVERVIEW

D1U54P-12-CONC2K (Murata P/N 4407015) is a dual connection interface card that provides a convenient method to connect, operate and evaluate up to two compatible power supply modules, listed in table below.

This application note is intended to be viewed in conjunction with the product datasheet and [referenced documents](#) where features such as PMBus™, and hardware signals are provided in greater detail.

PMBus™ Communications can be accessed with [PMBob I²C USB adapter](#) available separately.

COMPATABLE MODELS	MAIN OUTPUT (VDC)	STANDBY OUTPUT (VDC)	AIRFLOW DIRECTION
D1U54P-W-2000-12-HA3C-xx	12	5	F-B
D1U54P-W-2000-12-HA4C-xx	12	5	B-F
D1U54P-W-2000-12-HB3C-xx	12	12	F-B
D1U54P-W-2000-12-HB4C-xx	12	12	B-F
D1U54P-W-2000-12-HC3C-xx	12	5	F-B
D1U54P-W-2000-12-HC4C-xx	12	5	B-F
D1U54P-D-2000-12-HA3C-xx	12	5	F-B
D1U54-D-2000-12-HA4C-xx	12	5	B-F
D1U5P-D-2000-12-HB3C-xx	12	12	F-B
D1U54-D-2000-12-HB4C-xx	12	12	B-F
D1U54-D-2000-12-HC3C-xx	12	3.3	F-B
D1U54-D-2000-12-HC4C-xx	12	3.3	B-F

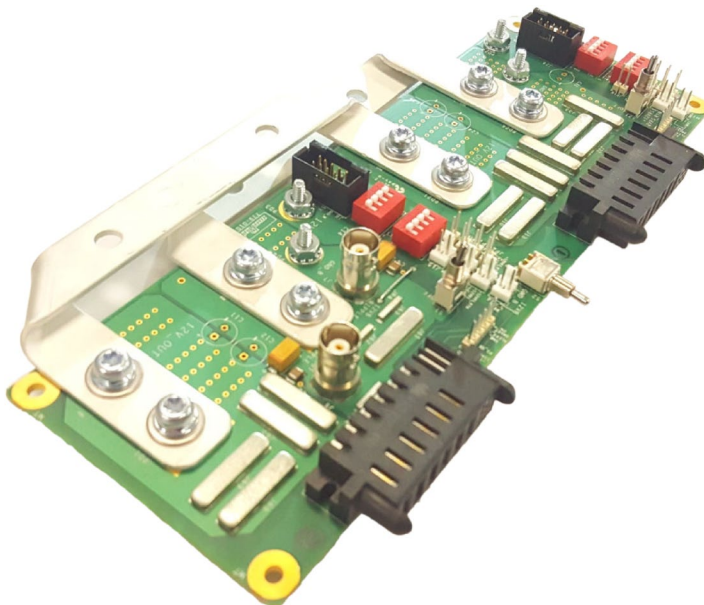
Note: "xx" signifies letters, numbers or may be omitted

SAFETY PRECAUTION

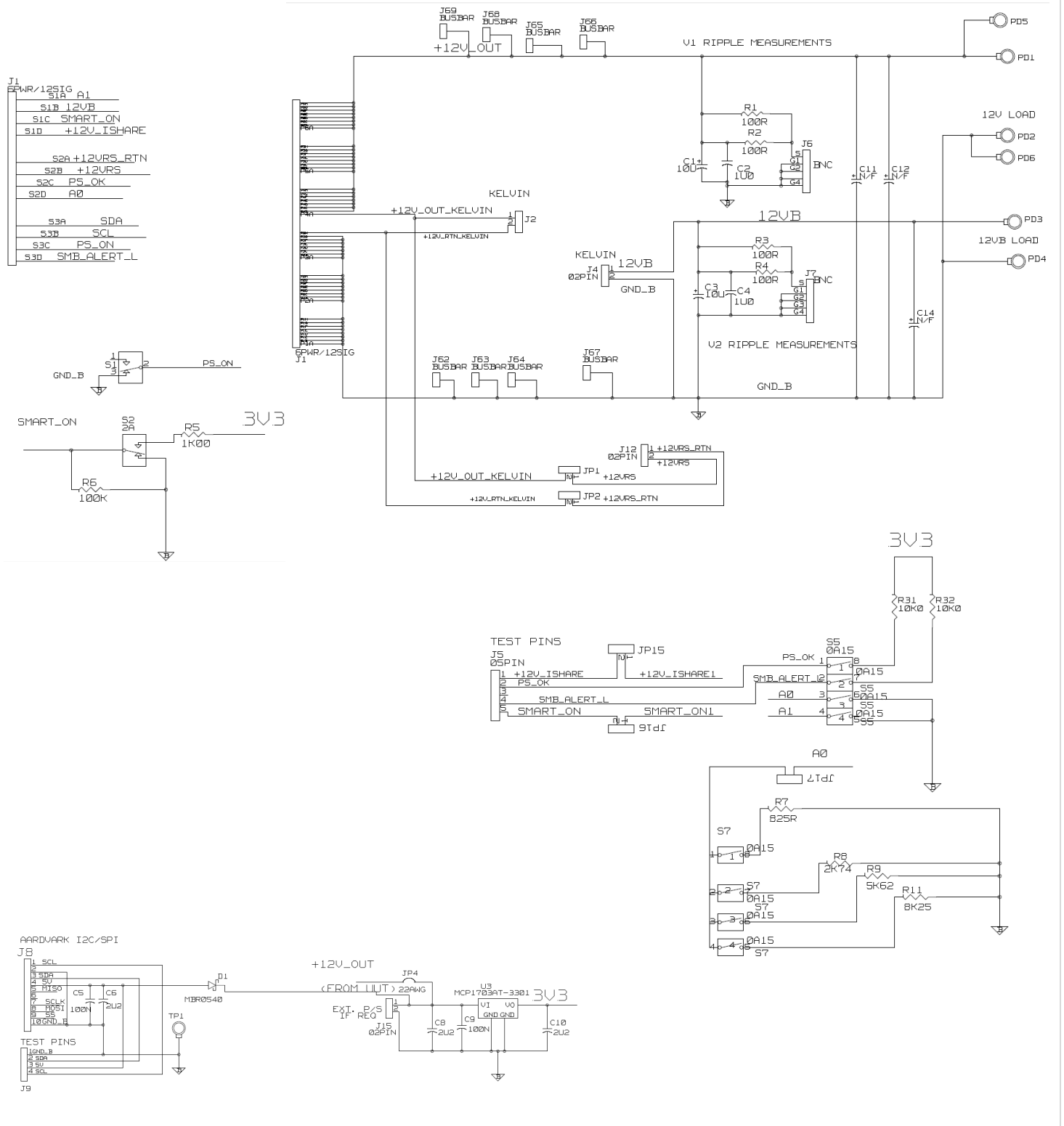


The D1U54P-12-CONC2K interface connector card is intended to facilitate the connection of the output supply rails of the power module for product evaluation. Therefore a 12V high energy source is exposed on the output connector card. Please take all necessary safety precautions when using this interface connector card. The user of this product

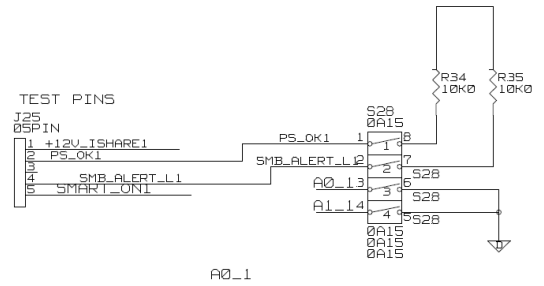
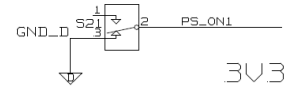
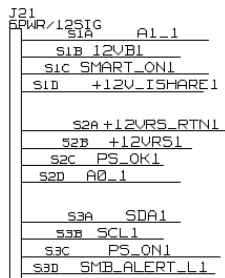
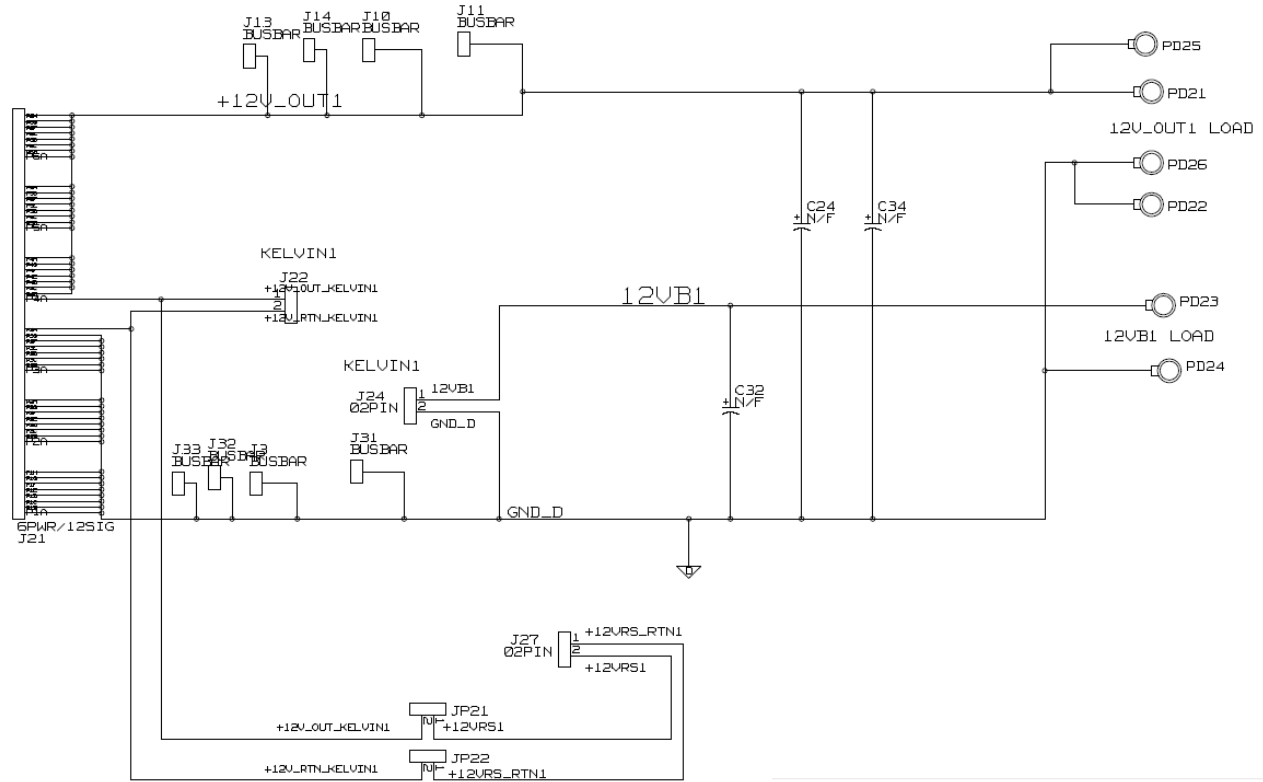
PRODUCT IMAGE



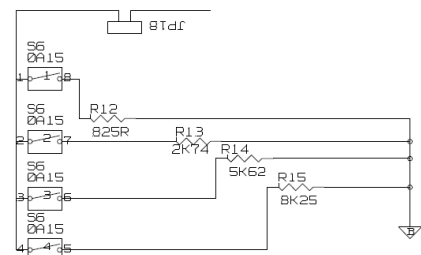
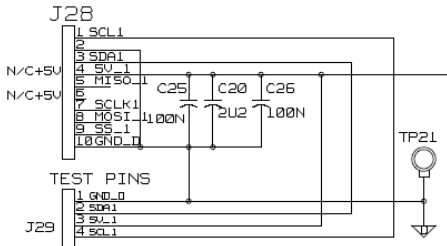
SCHEMATIC



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SCHEMATIC

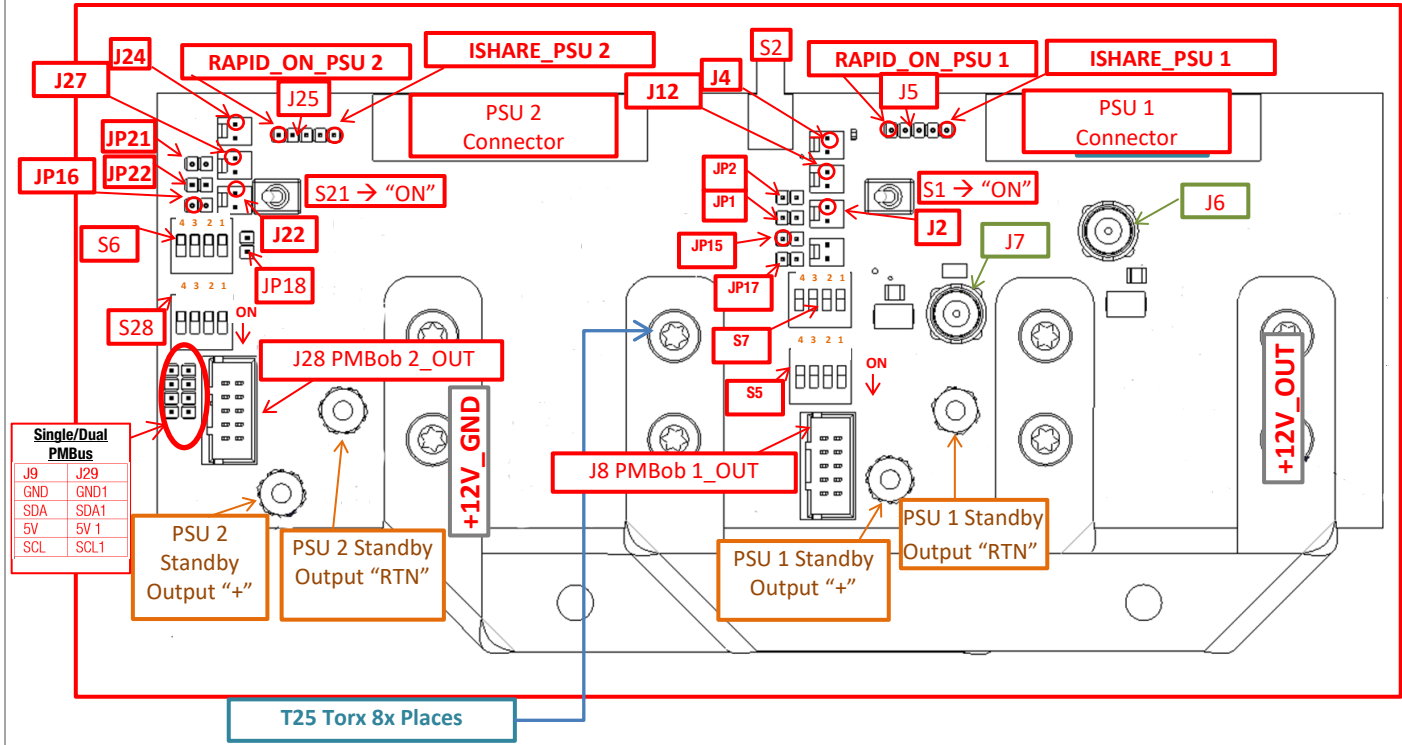


AARDUARK I2C/SPI



MECHANICAL OUTLINE

Switches and Jumpers



CONFIGURATION NOTES:

The Interface Connector card is organized into two identical but independent halves or “Power Supply slots”. There are a few common connections that are detailed on Pg. 5.

Each “half” breaks out the signals and features and necessary configuration links to enable each “half” to operate individually or in parallel (1+1) as required.

All jumpers, headers, switches and other component names are organized by each half. Half 1 (Power Supply slot 1) for example adapt names that are numerically lower than Half 2 (Power Supply slot # 2) making it more easy to differentiate between Power Supply 1 and 2 features.

Various jumper headers are used for configuration, and are compatible with most 1 x 2 position shunt jumper/connectors, 0.100" such as Harwin M7582-05 pictured here:



Refer to the Mechanical Outline Drawing For feature locations referenced in these configurations notes.

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CONFIGURATION NOTES

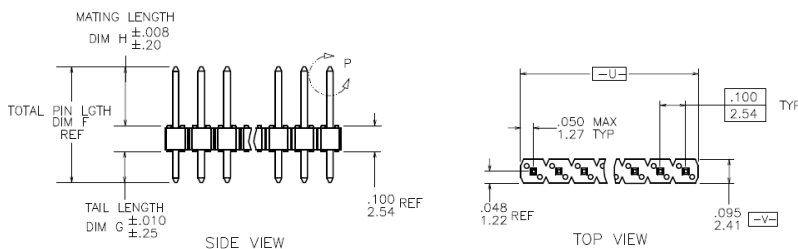
Common 1+1 connections

12VDC Main Outputs of the two power supply slots are shipped with bus bars installed and are labeled “12V_Out” & “12V_GND” placing the main 12V outputs in parallel (1+1 configuration). These bus bars can easily be removed and replaced by individual output cables if single (non-redundant) operation is required.

Note: The bus bars are fastened to the PCB by TORX™ 25 machine screws.

ISHARE current sharing bus link. Jumper [JP15](#) when fitted forms the common ISHARE bus for the two power supplies. This link can be removed if ISHARE feature is not required. The ISHARE bus voltage can be monitored at J5/25 (FCI 68004-405HLF) Pin 1 as shown in board layout diagram.

J5/25 (FCI 68004-405HLF, 5 positions) Header basic mechanical details:



Overall Pinout				
5	4	3	2	1
RAPID_ON	SMBALERT	Not Used	PS_OK	ISHARE

INPUT_OK/RAPID_ON¹ dual function signal – The PSU signal pin “C1” is configurable via PMBus™ write commands to operate in either of the following two modes (can be monitored at J5/25, FCI 68004-405HLF, pin 5 as shown in board layout diagram):

- **INPUT_OK signal (Default setting)** – upon power up, the Power Supply pin “C1” behaves as an AC_OK (or input DC_OK)
- **RAPID_ON (configured via PMBus™)** – forms the cold redundant bus and is required for operation in cold redundant sharing mode. Fit jumper on JP16 when cold redundant operation is required. JP16 Pin 1 (Circled in layout drawing above in red) is Power Supply#1 RAPID_ON signal and the RAPID_ON signal of Power Supply#2.

Standby outputs – Separate connections for Power Supply 1 and Power Supply 2 are provided and share a common return. The VSB outputs can be externally wired for parallel operation when Redundant operation is required however total output loading should not exceed the maximum load current rating of a single unit.

¹ RAPID_ON and SMART_ON signal labels are used interchangeably throughout this document (Schematic refers to RAPID_ON signal as SMART_ON)

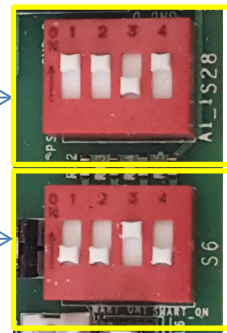
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CONFIGURATION NOTES

Address configuration

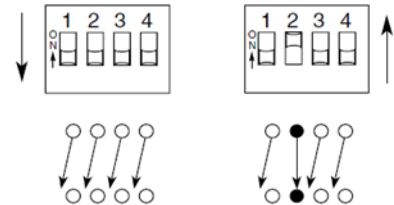
Addressing – PMBus slave device addresses can be assigned to each power supply by setting the DIP switches S5 and S28 as shown below. Ensure JP17 / JP18 jumpers are fitted.

Set S5 and S28 as follows:

S5 (Power Supply 1)	
S28 (Power Supply 2)	
Pos	Setting
1	-
2	-
3	OFF
4	-



Single Pole/Single Throw Switch



S7(PSU1) & S6(PSU2)		Address Setting PSU/EEPROM
Pos	Setting	
1	ON (others set to off)	B0/A0
2	ON (others set to off)	B2/A2
3	ON (others set to off)	B4/A4
4	ON (others set to off)	B6/A6
ALL	Off	BE/AE
ALL	ON	B0/A0

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CONFIGURATION NOTES

Configuration headers (TE Connectivity P/N# 390088-2) and jumpers

JP1 / JP21 (12VRS) & JP2 / JP22 (12VRS_RTN) – These jumpers configure the following remote voltage sense options:

- 1) **Local Sense** - When remote sense is not required, fit the jumpers. Doing so connects 12VRS and 12VRS_RTN signals to the corresponding output points very close to the power supply mating connector.
- 2) **Remote Sense** - Remove the jumpers and make remote voltage sense connections at J12/J27 as follows:

J12/J27 (TE Connectivity 640456-2)



JP17 / JP18 – must be fitted for this series to be able to change PMBus™ slave address otherwise an error when using two PSU's together may occur. If these jumpers are not fitted the PSU / slave addresses default to BE /AE for each slot. For most applications, these two jumpers need to be installed.

JP15 - ISHARE bus connection – fit jumper when current sharing or Cold_Redundant modes are required (circled pin = PSU 1; ties both the ISHARE bus of both PSU's together). Remove the shorting link if the units are to be operated "independently" as separate power modules.

JP16 - RAPID_ON – the jumper must be installed for cold redundancy mode to function.

J2 / J22 - 12V_Out voltage measurement point (TE Connectivity 640456-2) PSU 1 and PSU 2 respectively ("+" = circled pin)

J5 / 25 - Access header pins for monitoring the ISHARE bus, RAPID_ON bus, SMBALERT, PS_OK signals (FCI 68004-405HLF)

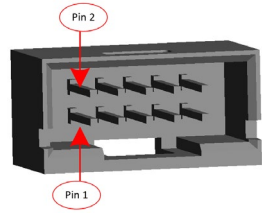
J4 / J24 - standby output voltage measurement point (TE Connectivity 640456-2) PSU 1 and PSU 2 respectively; "+" = circled pin

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CONFIGURATION NOTES:

BNC connectors J6 / J7 – are provided for ripple & noise measurements of the main (J6) and standby (J7) outputs and intended to be directly (or via a 10X probe if required) to an oscilloscope. This measurement node is filtered with a parallel connected 10µF tantalum and 1µF ceramic capacitor (across tip to ground). For accurate measurement, a short 50ohm coaxial cable connection shall be provided between the relevant BNC measurement connector and the input to the measuring ‘scope (the ‘scope bandwidth shall be limited to 20MHz).

J8 / J28 - PMBob 1 and PMBob 2, I²C/SPI interface connectors. Connect the PMBob USB to I²C Interface(s) for digital communications between the corresponding power supply module and MPS GUI software via a USB port of a laptop or PC.

Pin#	Function	board header
1	SCL	 <p>Molex 5-102619-3</p>
2	SCOM2	
3	SDA	
4	5V	
5	-	
6	-	
7	-	
8	-	

J9 / 29 - consist of 4 pairs of jumper headers that provide a convenient method of PMBus™ communication with two installed power supplies using a single PMBob. This feature is enabled by installing all four jumpers as shown in the mechanical outline, circled in red.

Additional notes for two unit, single PMBob™ configuration:

PMBob may be connected to either PMBob 1 or PMBob 2 headers when operating with two power supplies, as long as the above jumpers are installed.

If using a single power supply, J9/29 jumpers shown above, may be left in place.

Unique addresses need to be set for each of the two power supplies (refer to address configuration notes above for details).

S1 / S21 - enables/disables (turns “on”/“off”) the main output.

Closed S1/S21 = turns on the corresponding 12V main output by pulling down PS_ON signal (to ground / VSB and Main 12V output return).

Open S1/S21=turns off the corresponding 12VDC Main Output. A blinking Green LED on the front of PSU indicates the main output is disabled by PS_ON signal.

S2 - is an “on–off–on” toggle switch used to simulate a fault condition by pulling down the cold redundant bus signal “RAPID_ON”. Centre position normal operation (neutral position).

OPTIONAL ACCESSORIES

Description	Model Number
PMBob™ USB to I ² C interface (check with Murata for availability)	MS-PMBob

REFERENCED DOCUMENT LINKS

Document Number	Description	Link to Document
D1U54P-W-2000-12-HxxC	Product Datasheet, AC-DC Power supply	URL Link To Document
D1U54-D-2000-12-HxxC	Product Datasheet, DC-DC Power supply	URL Link To Document
ACAN-80	Application Note: Cold Redundancy	URL Link To Document
ACAN-81	Application Note: PMBus™ Protocol	URL Link To Document

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