USB Multi-interface Adapter Card for SOSA Systems 06-1020853

Dawn VME Products®

Another Performance Design from the Team at Dawn

USB Multi-interface Adapter Board for SOSA Systems

The Problem:

VPX cards typically have 1x RS-232 port for Management / configuration setup.

VPX cards hosting FPGAs or other programmable devices also have at least 1x JTAG port.

SOSA standard defines specific pin out definitions for a limited number of D38999 class connectors, and all SOSA connectors defined in the Technical standard have no more than 1x USB port, 1x RS-232 port, no JTAG ports.

1. How does one configure VPX systems for SOSA with multiple VPX cards having more than 2+ RS-232 ports and/or 2+ JTAG ports?

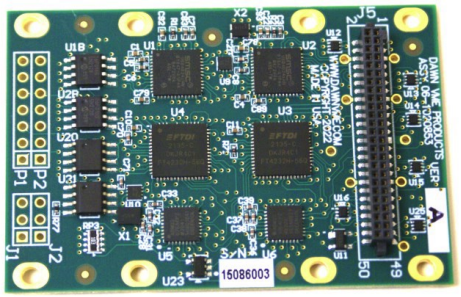
2. How Does one interface with I2C or SPI devices or sensors that do not support the VITA46.11 (IPMI)?

The Solution:

Connect all these RS-232 / JTAG / I2C / SPI ports to a Dawn 06-1020853 USB 2.0 multi-interface adapter card, and combine all these ports (RS-232 / JTAG / I2C / SPI) into a single USB access interface which is compatible with SOSA D38999 connector pinout standards.

No more need for a Non-SOSA standard connector with 2+ RS-232 / JTAG / other ports for front panel access to internal VPX card system configuration.

Have more than 8x RS-232 / JTAG / other interface ports, no problem, connect multiple 853 via built in USB expansion port to additional port groups (8 interface per 853 card).



Technical spec:

Voltage: +3.3V

Current: 300mA typical

80mA Idle

Size: L/W/H: 2.5" x 1.7" x 0.5"

-40°C to 85°C industrial operating temperature range.

Additional stacking options

Additional info:

*RS232/RS422/RS485 UART Transfer Data Rate up to 12Mbaud. (RS232 Data Rate limited by external level shifter).

*RTS/CTS available with external Level translator.

* Up to 2 ports configurable for RS-485 contact factory (Auto-transmit enable control for RS485 serial applications using TXDEN)

* UART Interface supports 7/8 bit data, 1/2 stop bits, and Odd/Even/Mark/Space/No Parity

* UHCI/OHCI/EHCI host controller compatible.

* USB Bulk data transfer mode (512 byte packets in High Speed mode).

47915 Westinghouse Drive Fremont, CA 94539 phone 510-657-4444 fax 510-657-3274 www.dawnvme.com

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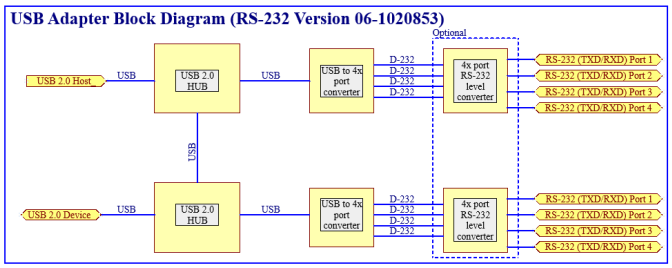
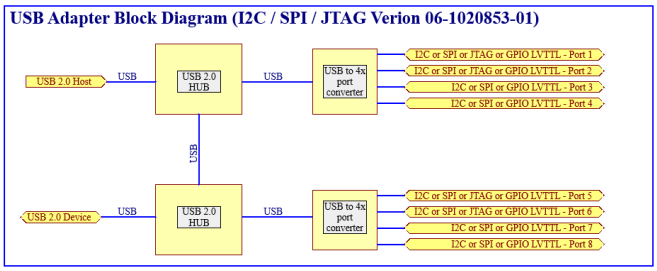
The Dawn 06-1020853 USB multi-interface adapter card is a compact unit measuring 2.5" x 1.7" with a 50 pin Samtec SFM connector and 2-56 mounting hardware for rugged host PCB connection.





Order Options:

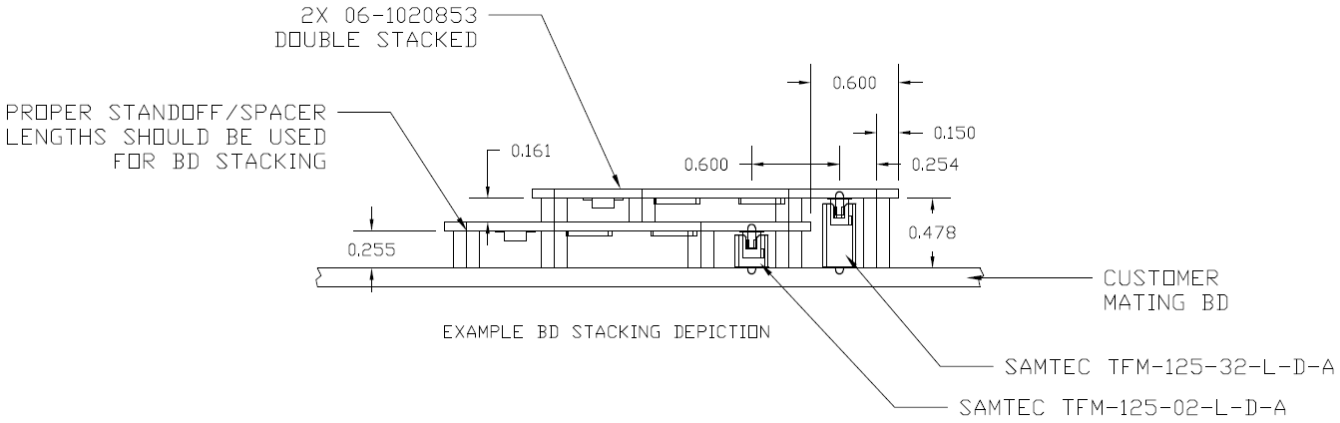
06-1020853 = RS-232 only version (With conformal coat)

O61020853-01 = RS-232 only version (No conformal coat)

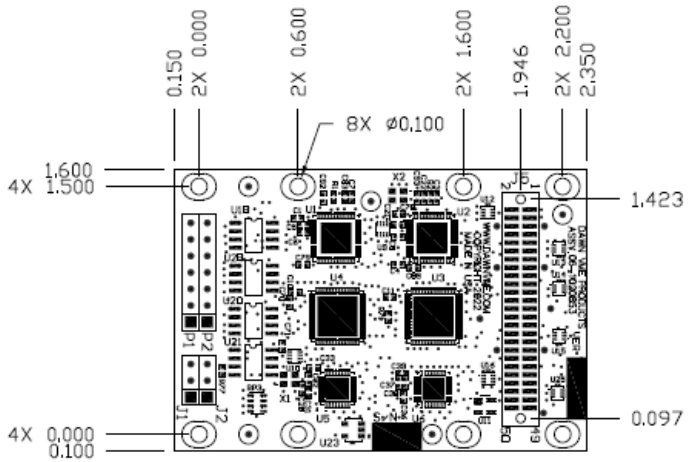
06-1020853-02 = i2C/SPI/ JTAG/GPIO version (With conformal coat)

06-1020853-03 = i2C/SPI/ JTAG/GPIO version ((No conformal coat)

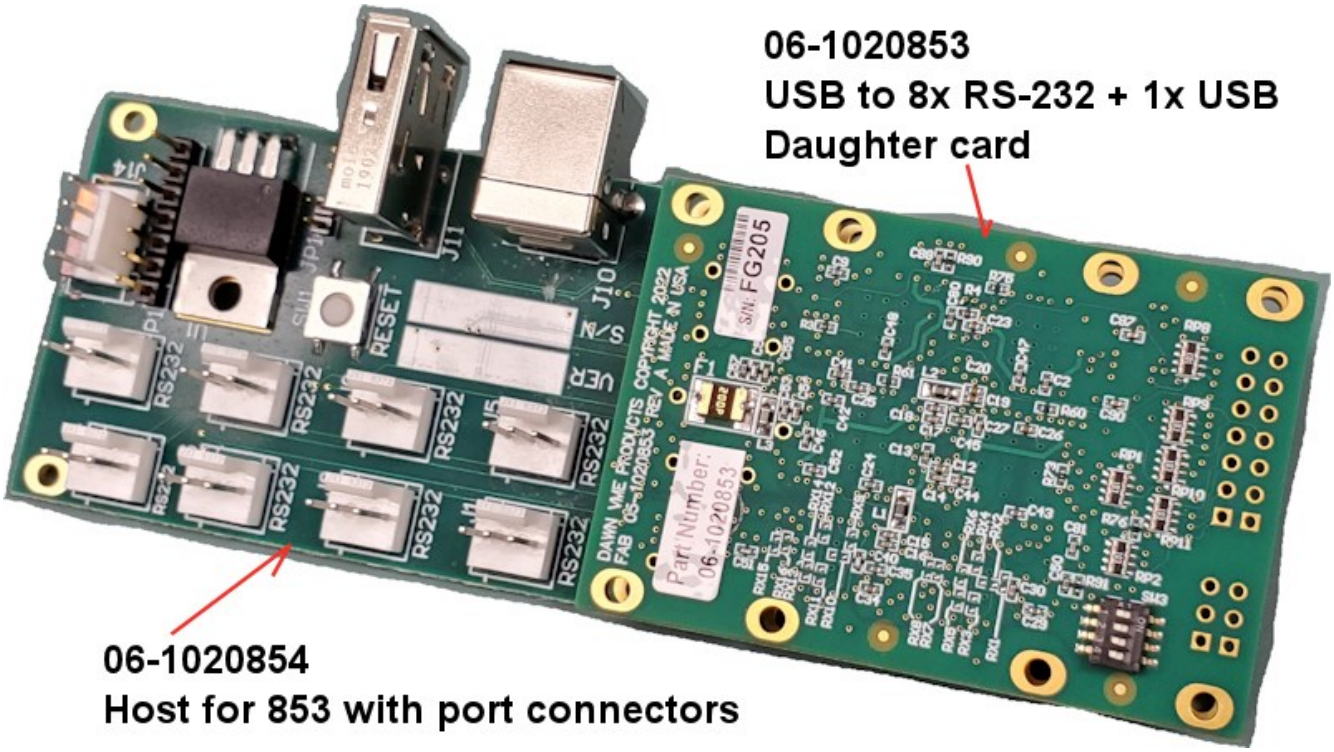
O6-1020854 = Host Test PCB for docking 853 card.

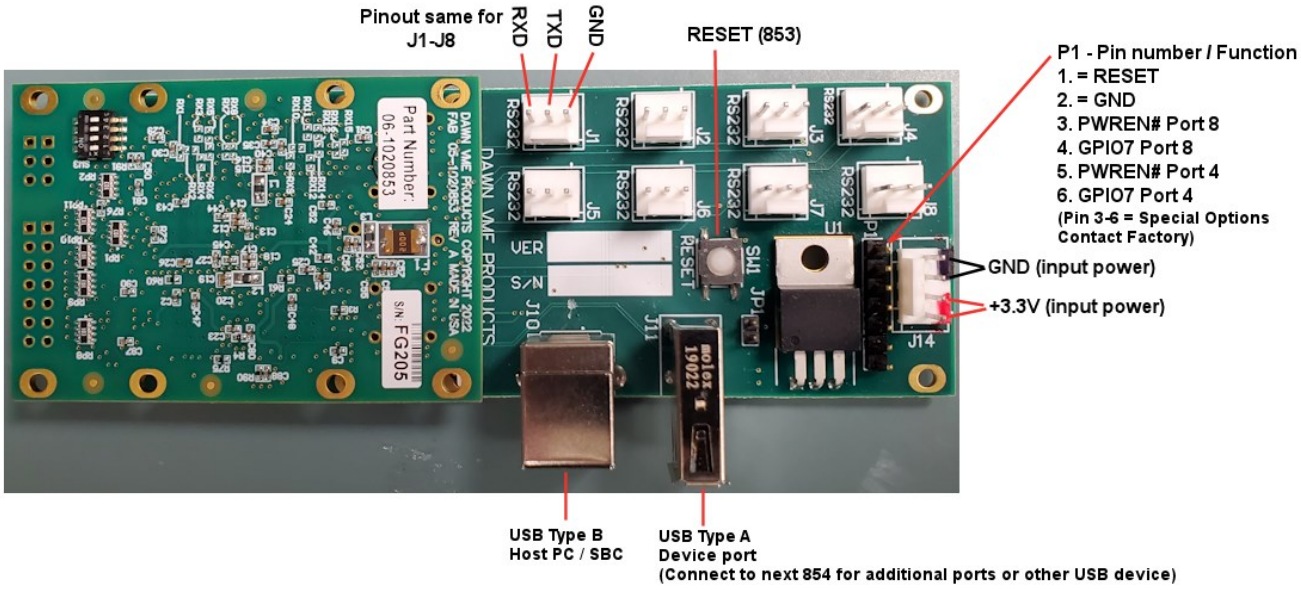


Board size and mounting hole location



Optional 06-1020854 Host card for testing 06-1020853 functions in lab applications.





8 Ports can be one the following types:

RS-232 CMOS

RS-232 standard

I2C

JTAG (2x per board)

SPI

RS-485 (limited number)

GPIO.

The 06-1020853 is expandable as it has USB2 input and USB2 output ports.

The 853 can be stacked to support 8,16, or more ports of the types listed above.

Now one can access all the JTAG / SERIAL ports of a SOSA system via the SOSA standard D38999 connectors.

Three standard SOSA D38999 connectors with USB are shown in the figures below:

SOSA J2 Class 1 (D38999 Shell 25-7)

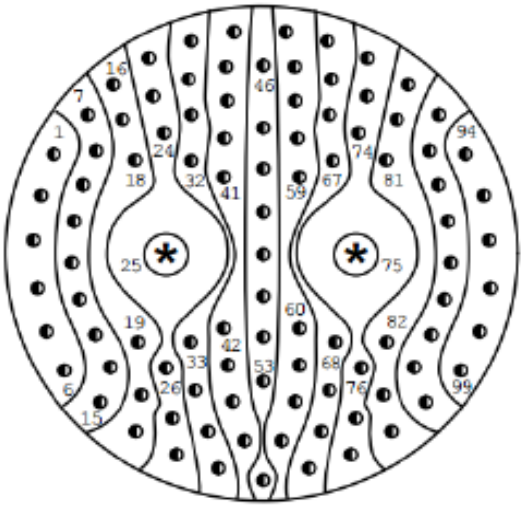


Figure 13.5.2.3-1: J2-Signal Connector Pin Arrangement

Table 13.5.2.3-1: J2-Signal Connector Pin Allocation

SOSA Electrical Interface J2-Signal (25-7 insert, N-Keying) For Part Numbers insert receptacle choice (20 or 24) and relevant plating finish Sensor MIL-DTL-38999/***J7SN (receptacle with socket inserts) Platform Umbilical MIL-DTL-38999/26*J7PN (plug with pin inserts)						EO-IR Sensor	Radar/SAR Sensor	EW Sensor	SIGINT Sensor	Comms
Conn/ Desc.	**Pin**	**Wire Type**	**Signal Name**	**Signal Source**	**Signal Type**	**Used**	**Used**	**Used**	**Used**	**Used**
USB β.0 Data	6	STP 2419	USB_DATA+	Platform/ Sensor	USB Data	✓	✓	✓	✓	✓
	13	STP 2419	USB_DATA-	Platform/ Sensor	USB Data					
	14	Shield	GND	Platform/ Sensor	USB Data Shield					
USB 2.0 Power	33	STP 2419	USB_PWR_+5 V	Sensor	USB Power	✓	✓	✓	✓	✓
	34	STP 2419	USB_PWR_RT N	Sensor	USB Power					
	43	Shield	GND	Sensor	USB Power Shield					

OR
SOSA J7 Class 1 (D38999 Hercules shell 17)

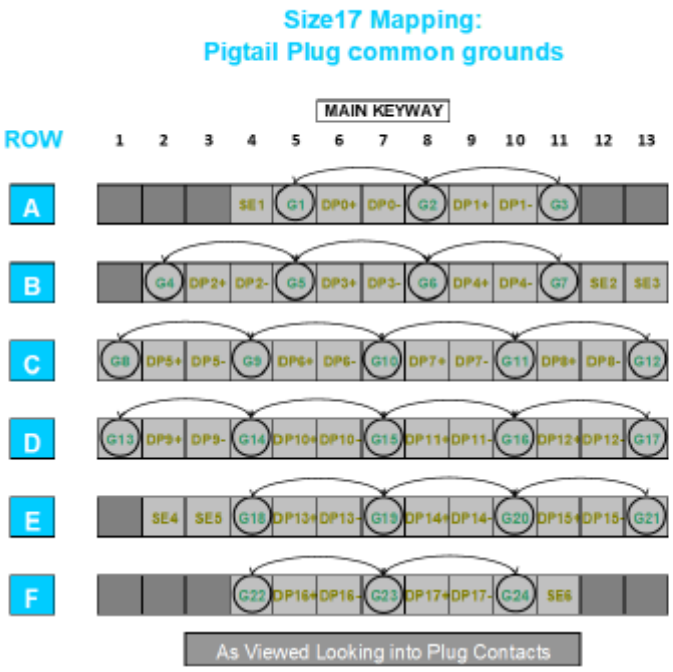


Figure 13.5.2.8-1: J7-High Speed Electrical Connector Pin Arrangement

Table 13.5.2.8-1: J7-High Speed Electrical Pin Allocations

SOSA Electrical Interface J7-High Speed Electrical (ANSI/VITA 76.0 #17 shell, N-keying) Sensor: 985217*N**** Receptacle, Size 17, N keying Choose Jam Nut/Flange, Press Fit /Solder, Low/High Profile, Plating Finish, Tail Length Platform Umbilical: 985017*N**** Plug, Size 17, N keying Choose Straight/Angle end 1&2, Plating Finish, Cable Gauge, Length or contact for specific options Fields noted (*) are implementer's discretion The Shell Plating on the Receptacle and the Plug shall be the same plating The requirements of v76.0 are met by a Meritec part number or equivalent						EO-IR Sensor	Radar/SAR Sensor	EW Sensor	SIGINT Sensor	Comms
Conn/ Desc.	**Pin**	**Wire Type**	**Signal Name**	**Signal Source**	**Signal Type**	**Used**	**Used**	**Used**	**Used**	**Used**
USB 3.0/2.0	E8	100 Ohm STP 2419	USB_SS TX+	Sensor	USB 3.X Tx DATA	✓	✓	✓	✓	✓
	E9		USB_SS TX-							
	E7	SC-AWG24	USB GND DRAIN							
	E5	100 Ohm STP 2419	USBSS_RX+	Platform	USB 3.X Rx DATA					
	E6		USB_SS_RX-							
	F9	100 Ohm STP 2419	USB_D-	Sensor/ Platform	USB 2.X Data	✓	✓	✓	✓	✓
	F8		USB_D+							
	F11	AWG24	USB_PWR	Sensor	USB Power	✓	✓	✓	✓	✓

OR
SOSA J2 Class 3 (D38999 Hercules shell 19-35)

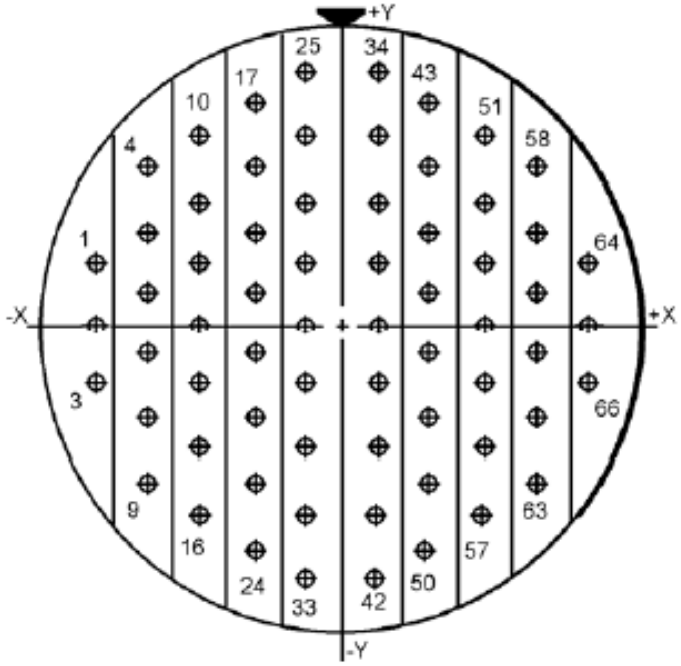


Figure 13.5.3.3-1: J2-Signal Connector Pin Arrangement

Table 13.5.3.3-1: J2-Signal Connector Pin Allocation

SOSA Electrical Interface J2-Signal (19-35 insert, A-Keying) For Part Numbers insert receptacle choice (20 or24) and relevant plating finish Sensor MIL-DTL-38999/***D35SA (receptacle with socket inserts) Platform Umbilical MIL-DTL-38999/26*F35PA (plug with pin inserts)						EO-IR Sensor	Radar/SAR Sensor	EW Sensor	SIGINT Sensor	Comms
Conn/ Desc.	**Pin**	**Wire Type**	**Signal Name**	**Signal Source**	**Signal Type**	**Used**	**Used**	**Used**	**Used**	**Used**
USB Data	1	90 – 100 Ohm STP 2419	USB_DATA+	Platform/ Sensor	USB Data	✓	✓	✓	✓	✓
	3	90 – 100 Ohm STP 2419	USB_DATA-	Platform/ Sensor	USB Data					
	6	Shield	GND	Platform/ Sensor	USB Data Shield					
USB Power	7	STP 2419	USB_PWR_+5 V	Sensor	USB Power	✓	✓	✓	✓	✓
	64	STP 2419	USB_PWR_RT N	Sensor	USB Power					
	66	Shield	GND	Sensor	USB Power Shield					