ICE Platform Enclosure

Document Revision: 1.0

Document Last Updated on 2021/08/26 14:26

Please read Limited Warranty and General Warnings and Cautions prior to operating.

Description

The ICE Platform Enclosure contains the necessary Master Control Board, communications ports, I/O, mounting hardware, and thermal management for supporting up to 8 daughter modules.

Absolute Maximum Ratings

Note: All modules designed to be operated in laboratory environment

Parameter	Rating
Environmental Temperature	>15°C and <30°C
Environmental Humidity	<60%
Environmental Dew Points	<15°C

Specifications

	Min	Typ	Max	Units
Input Power Requirements[1]				
5V Supply Current	5	-	-	A
15V Supply Current	1.5	-	-	A
-15V Supply Current	1.5	-	-	A
5V Line Input Range	4.5	-	5.5	V

	Min	Typ	Max	Units
Input Power Requirements[1]				
15V Line Input Range	14.5	-	16	V
-15V Line Input Range	-14.5	-	-16	V
Maximum Power Consumption[2]				
5V Current Draw	-	-	10	A
15V Current Draw	-	-	3	A
-15V Current Draw	-	-	3	A
D-Sub 9pin Signals				
Safety Interlock Input Voltage Range	0	-	3.3	V
TXO Serial Input Voltage Range	0	-	3.3	V
RXI Serial Output Voltage Range	0	-	3.3	V
GPIO Input Voltage Range	0	-	5	V
GPIO Input Voltage Range	0	-	5	V
5V Input Voltage Range	4	5	9	V
5V Input Current Draw	-	25	40	mA
Slave Boards				
Max Number of Slave Boards	-	-	8	
Communication Methods				
USB 2.0				
TTL Serial (3.3V)				

I/O

Power Entry Connector
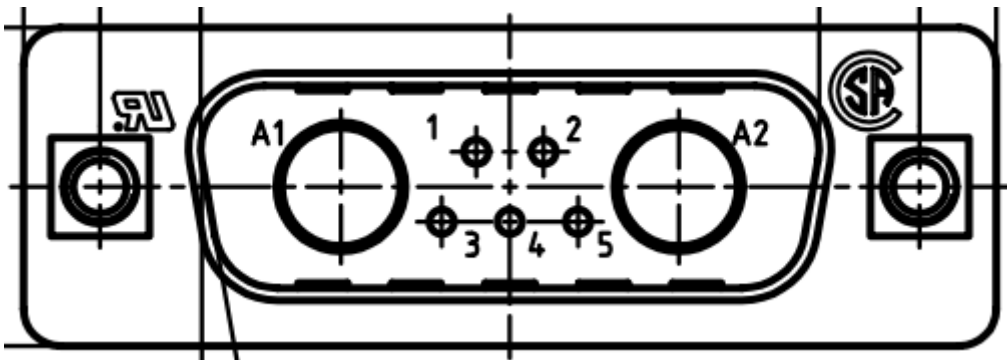
Fig. 1: ICE enclosure power connector

Pin	Signal
1	No Connect
2	No Connect
3	+15V
4	GND
5	-15V
A1	5V_A

Pin	Signal
A2	GND_A

Tab. 1: Power entry connector pin definition

Power is provided with a mixed-signal D-Sub connector (Conec P/N: 3007W2PCM99A30X). Pin definition shown in figure 1 and table 1 above. The return current path for +5V_A is GND_A. This wiring connected to this return path should be capable of carrying the maximum current of the +5V_A line. The signals GND and GND_A are shorted together on the circuit board through a jumper, but this can be removed.

USB

USB communication to the ICE Platform is done via a type-B USB connector on the back panel. The ICE Platform emulates a serial port over USB and all communications with the device should be done with Serial communication settings of '8N1' (8 bit, no parity, 1 stop bit) at 115,200 baud. The comm (or serial) port to use will be chosen by the USB host computer. See commands overview page for usage of the serial port. The ICE Platform uses an FTDI 232R chip to emulate a serial port over USB. Drivers can be found at http://www.ftdichip.com/Drivers/VCP.htm. The USB port is electrically isolated from the ICE Platorm, thereby preventing any ground loops between the ICE enclosure and a computer.
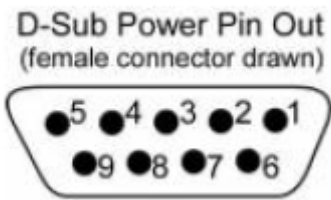
D-Sub 9 Pin Connector

Fig. 2: D-Sub 9 pin connector.

Pin	Signal
1	EVENT_ADDR0
2	TX_Serial
3	RX_Serial
4	5V In[3]
5	Ground
6	EVENT_ADDR1
7	No Connect
8	EVENT_ADDR2
9	EVENT_Trigger

Tab. 2: D-Sub 9 pin connector pin definitions.

TTL Serial

This provides a LVTTL (low-voltage, 3.3V signalling) asynchronous serial interface (USART) to

communicate with the ICE Platform. Note that this serial interface is **not** compatible with RS-232 signalling levels, as found on the COM ports of older PC's. The serial interface operates at 3.3V signalling levels, 115200 Baud, 8N1 format (8 bit, no parity, 1 stop bit), and no flow control. Bus idle state is high (3.3V). The TX (transmit out) and RX (receive in) nomenclature is from the perspective of the ICE Box. Either the TTL serial interface or USB can be used to receive commands, but **not** simultaneously (e.g. interleaved bytes).

> Either the TTL serial interface or USB can be used to receive commands, but **not** simultaneously (e.g. interleaved bytes). Taking turns sending complete commands and responses is okay.

> The ground pin of the D-Sub 9 connector is connected to the ground pin of the USB connector. The shell of the D-Sub 9 connector is connected to the chassis of the ICE Enclosure. Even though the D-Sub 9 interface is opto-isolated, there are potential ground connections between the D-Sub and USB port.

5V In

This pin is used to supply the isolated interface on the ICE Platform with power. It is only necessary to supply 5V on this pin if the USB port is left unconnected. If the USB port is connected to a computer, the isolated interface will be powered from the USB cable. Even if both the USB port is connected and 5V is supplied on this pin, no damage will occur. The maximum current draw on this pin is 10mA.

> Power must be supplied on this pin if the USB port is left unconnected.

EVENT

The EVENT pins are used for event system signalling. EVENT_ADDR0 is the least significant bit of the 3-bit event address. EVENT_TRIGGER is used to trigger the event. The state of the EVENT_ADDR pins will be read when on the rising edge of the EVENT_TRIGGER line. Voltage signalling is at 3.3V TTL, active high. Pin definitions and usage is detailed in the Event System section.

Safety Interlock BNC

The safety interlock signal prevents the Master Controller from releasing the safety interlocks on all attached daughter boards. The safety interlock is only applicable to daughter boards that have laser controllers. Without the safety interlocks released, daughter boards are prevented from powering on lasers. The safety interlock signal floats high to 3.3V and must be pulled down to ground to release the interlocks. It must be pulled to ground with less than 1kΩ of impedance. This pin can be permanently shorted directly to ground if safety interlock functionality is not required.

> ⚠️ The safety interlock signal floats high to 3.3V and must be pulled down to ground to release the interlocks. This pin can safely be shorted to ground if safety interlock functionality is not required.

[1)]
Minimum recommended supply current depends on configuration and number of daughter boards.
[2)]
External power provided must also be able to handle the current requirements to utilize maximum power consumption specification
[3)]
leave unconnected if USB is also connected

From:
https://www.vescent.com/manuals/ - **Product Manuals**

Permanent link:
https://www.vescent.com/manuals/doku.php?id=ice:enclosure

Last update: **2021/08/26 15:26**