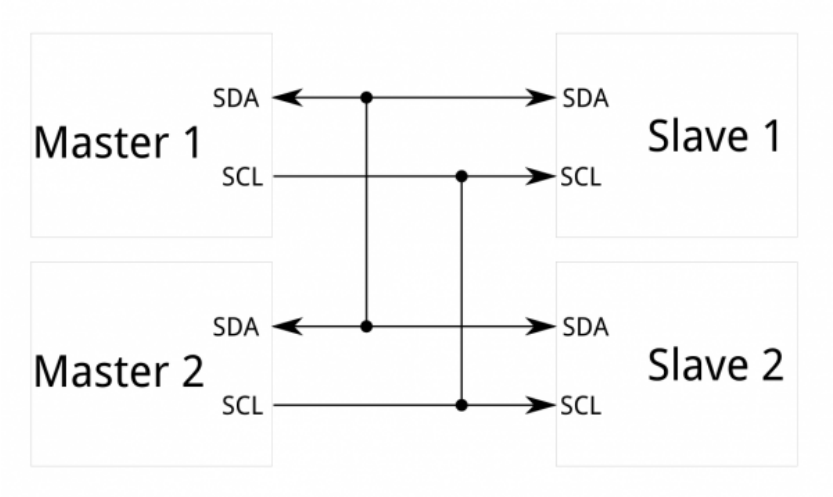
Digital U-Type (HPU)

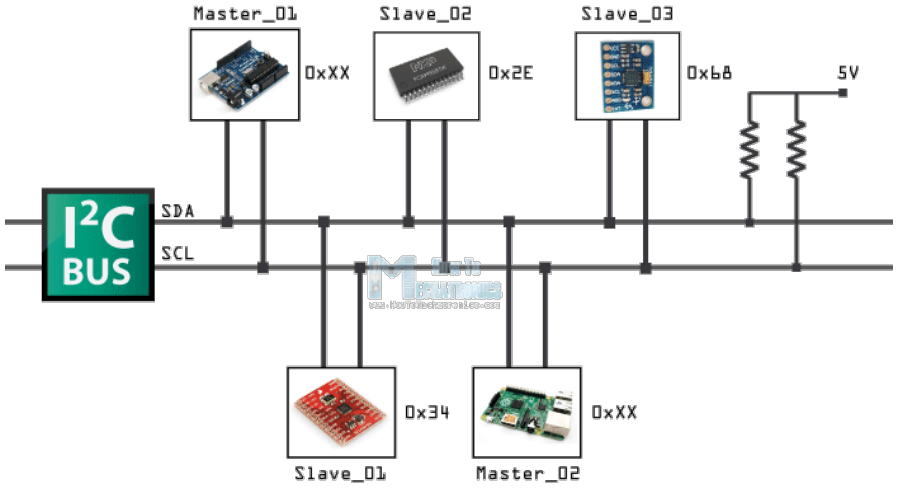
FAQ:

- The Digital U-Type has a 10 pin Molex connector as well as a Mini USB connector.
- The laser cannot be powered via USB, it must use the power pins on the 10 pin connector.
- There are two modes of operation for data communication, USB with I2c or RS-232 (USB disabled).
- The USB connection is disabled when RS-232 is configured
- The customer should specify which I2c address they want before we ship to them if they plan to integrate more than 1 laser in the same system using I2c as the data interface.
- The Digital U-Type has a boot-up time of ~5 seconds before you can communicate with it. It will not respond to the laser enable pin during this time.
- If you have an I2c configured laser and try to use RS-232 on the TX/RX lines, it may damage the logic board.
- Some customers might attempt to connect directly from USB to these TX/RX lines, this may also damage the logic board.

What is I2C?

I2C is a serial communication protocol typically used for short range high speed connections between multiple devices. It stands for the Inter-Integrated Circuit (IIC, or "I-squared-C") bus.
Two wires are required for an I2C bus, SDA and SCL. Each device connects to the same two lines. Because all the devices are connected to the same physical wires, each device on an I2C bus must have an address. The address is used so that each device knows when a message is being sent to that device. There can be multiple master and slave devices (nodes), each of which has a unique address. The addresses can be written as integers (like the decimal number 16, or hexadecimal numbers, like 0x10 where the "0x" prefix shows that it's a hexadecimal or base-16 number). Device addresses range from

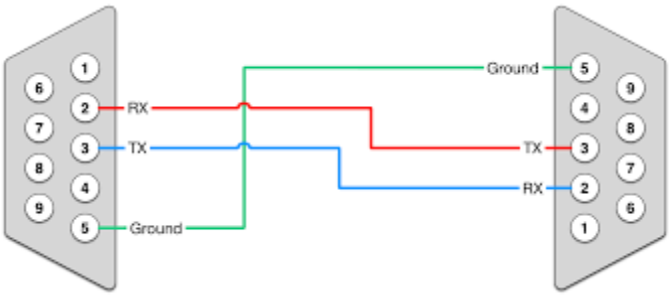


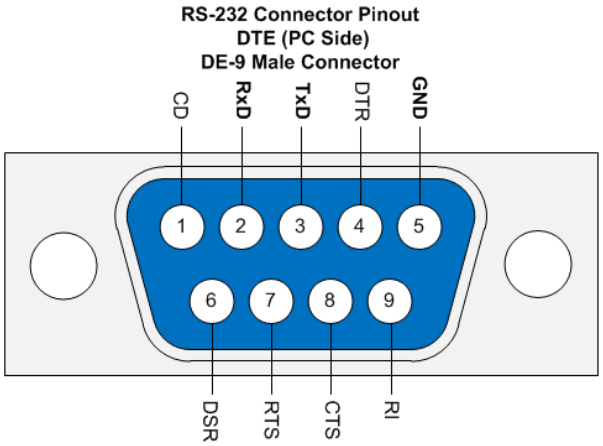


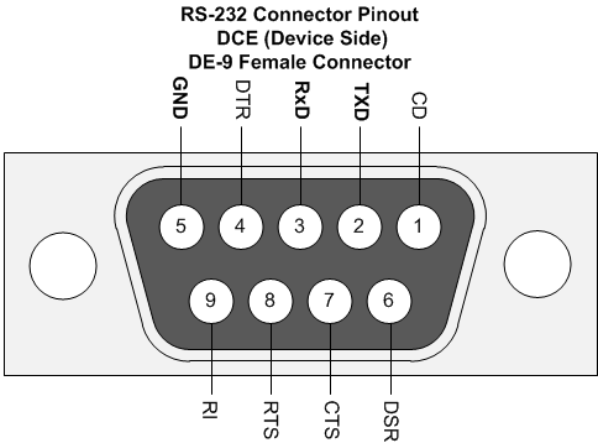
What Is RS-232?

A minimal "3-wire" RS-232 connection consisting only of transmit data, receive data, and ground, is commonly used when the full facilities of RS-232 are not required. The RS-232 standard defines the voltage levels that correspond to logical one and logical zero levels for the data transmission and the control signal lines. Valid signals are either in the range of +3 to +15 volts or the range −3 to −15 volts with respect to the "Common Ground" (GND) pin; consequently, the range between −3 to +3 volts is not a valid RS-232 level.

Typical 3 wire RS-232 connection. A cable can be made with one end as shown below and the other connected to the TX, RX, and GND on the Digital U-Type. Note: TX on one side will connect to RX on the other side and vice versa. An RS-232 to USB adapter can be used as well.







The Female DE-9 connector is the mirror image of the Male DE-9 connector. These diagrams show the connectors face-on.

HPU 10 pin connector

HPU OEM Connector
(Connector Part Number: 51004-1000)

Pin Number	Pin Label	Function
1	VDC	Power supply, 5 - 12 V. Standard operation can use 5V. For units with > 1W output power, at least 9V is required. Pins 1 & 6 connected.
2	SET ENABLE	Enable external laser power control through pin 8 (LD SET): High = Disable Low = Enable
3	TX/SCL	I2C: SCL standard (RS232: TX, by request)
4	RX/SDA	I2C: SDA standard (RS232: RX, by request)
5	GND	Ground. Pins 5 & 10 connected.
6	VDC	Power supply, 5 - 12 V. Standard operation can use 5V. For units with > 1W output power, at least 9V is required. Pins 1 & 6 connected.
7	ENABLE	Laser enable (Modulation): High = Enable Low = Disable
8	LD SET	Laser power setpoint

		Apply a voltage bias in 1:1 ratio to drive current - be aware that this approach may cause laser mode hopping behavior in single-mode lasers. Ground Pin 2 to enable this option.
9	PD	Photo diode voltage output (0.0 - 3.3 V)
10	GND	Ground. Pins 5 & 10 connected.