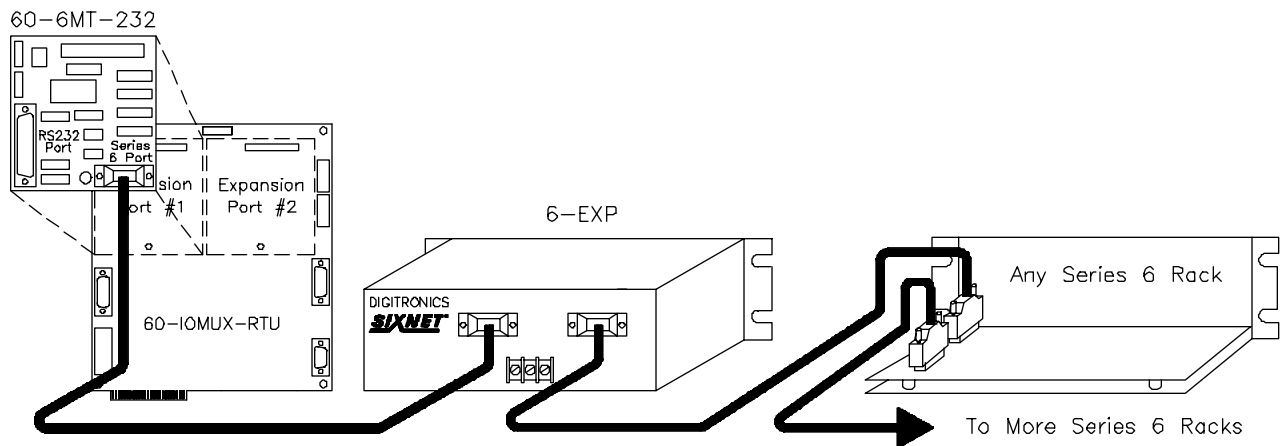


# 60-6MT 60-6MT-232 60-6MT-422 Series 6 Interface Board

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# Section 1

## Using The 6MT I/O Port

The **60-6MT** or **60-6MT-232** interface board is used to add Series 6 I/O racks to an **IOMUX** controller. Up to 256 discrete inputs and 256 discrete outputs can be addressed through the 6MT port on each of these boards.

A **6-EXP** I/O expander must be used in conjunction with either interface board. The expander provides DC power and signal conditioning for the 6MT I/O bases. Connect the **6-EXP** to the **60-6MT** board using a standard 6MT cable. Then, attach the 6MT I/O racks to the expander. Series 6 I/O racks are daisy-chained using 6MT cables. Each rack has two DB15 connectors. The male connector interfaces to the **6-EXP**, or to the previous I/O rack. The female connector is used to interface to the next rack in the 6MT string.

The **60-6MT** is fully automatic. Just plug the board onto either expansion port on an **IOMUX** controller. Now, connect a 6MT cable from the **60-6MT** to the **6-EXP**, and subsequently from the **6-EXP** to the I/O racks. **Design information concerning cable lengths, power supply loading, and 6MT I/O addressing may be found where?**

### 1-1: Addressing Series 6 I/O

For detailed information on discrete and analog I/O addressing, refer to the **60-IOMUX-FEB** or **IOMUX-RTU** Technical Manual. The **IOMUX** controller assigns consecutive addresses to all populated I/O points. First, on-board discrete I/O addresses are assigned. Then addresses are assigned to I/O attached to expansion port 1. Lastly, I/O in expansion port 2 is addressed.

It is possible to add Series 6 analog I/O racks to the 6MT port. This requires support from configuration information loaded into the **IOMUX**. A **SCIL** program can declare the presence of analog I/O on the 6MT port through the `set_id` function

(part of the `IO_init` feature of **SCIL**. Alternatively, the **Muxinit** configuration utility can be used to configure analog I/O on a 6MT port.

Here is an example of a typical system. Consider the situation in which the **IOMUX** on-board discrete I/O is in use. SW1-1/5 on the **IOMUX** are set to a code between 0 and 16. A **60-AMI-DA2** is plugged onto expansion port 1, and is connected to a **60-A/D16-32**. Then, a **60-6MT** is plugged onto expansion port 2. A **6-EXP** is connected to this port along with three **6-IO32** discrete I/O racks. These racks have 64 inputs and 32 outputs populated.

<u>I/O Assignments</u>	<u>On-board Discrete</u>	<u>Port 1 60-AMI-DA2</u>	<u>Port 2 60-6MT</u>
Discrete In	X0-X15		X16-X79
Discrete Out	Y0-Y15		Y16-Y47
Analog In		AX0-AX15	
Analog Out		AY0-AY1	

### 1-2: 6-LOOP Automatic Configuration

The **IOMUX** controller will test the 6MT I/O string at initialization, and automatically determine the number of inputs and outputs on the I/O string. The **6-LOOP** connector, supplied with the **60-6MT** expansion board, must be plugged onto the female connector on the last I/O rack on the 6MT string. This plug enables the **IOMUX** to send out test data and receive it back in a continuous loop. The **6-LOOP** must be installed or the **IOMUX** will refuse to initialize.

The 'XMIT' LED on the edge of the **60-IOMUX** rack is used to indicate error conditions. This lamp will blink five or six times if a 6MT configuration error is detected during system initialization. This error could mean that the **6-LOOP** is not properly installed, or that there is a failure in the 6MT I/O system.

## Section 2

# RS232, RS422 Communications Ports

The **60-6MT-232** board has an RS232 port in addition to the I/O expansion port. This port supports bidirectional RS232 communications. The **60-6MT-422** has an RS422 port in addition to the 6MT port. These two serial ports operate under the control of your **SCIL** applications program.

### 2-1: RS232 Communications Options

The baud rate is selected with a movable jumper provided on the **60-6MT-232** board. There are eight baud rates, ranging from 300 to 38,400 baud, as shown on the chart below. Place the selection bar in the desired position. Be sure to select only one baud rate. Do not place multiple jumpers on the selection pins or turn the jumper 90 degrees from its normal position (placing it across two positions). This will short two signals together.

<u>Baud Rate</u>	<u>Jumper Selection</u>	<u>Baud Rate</u>	<u>Jumper Selection</u>
300	W21	4800	W13
600	W19	9600	W11
1200	W17	19200	W9
2400	W15	38400	W7

Other communications options are set through your applications program or through the **Muxinit** configuration utility.

Default settings are 8 bits, no parity, one stop bit and hardware handshaking.

### 2-2: RS232 Connections

A male DB25 connector is provided on the **60-6MT-232** for making connection to your serial device. A description of the available signals is given below:

#### Transmit Data Out

This is transmitted data leaving the **IOMUX**.

#### Receive Data In

This is data entering the **IOMUX**.

#### Request to Send Output

This signal will be asserted whenever the **IOMUX** is ready to receive data.

#### Clear to Send Input

This signal, when asserted, indicates to the **IOMUX** that the remote device is ready to receive data. The **60-6MT-232** is prohibited from transmitting while CTS is not asserted.

#### Data Terminal Ready (DTR)

This signal will be high when ever power is present in the **IOMUX**. This signal goes to ground upon loss of power.

#### Data Terminal Not Ready (DTR \*)

This signal will be negated whenever power is present in the **IOMUX**. This signal goes to ground upon loss of power.

#### RS232 Connections

P1-2	Transmit Data Out
P1-3	Receive Data In
P1-4	Request to Send Output
P1-5	Clear to Send Input
P1-7	Signal Ground
P1-14	DTR
P1-19	DTR *
P1-20	DTR

### 2-3: RS422 Connections

The RS422 port on the **60-6MT-422** functions identically to the RS232 version, except for the hardware interface (P1) shown below.

#### RS422 Connections:

P1-7	Signal Ground
P1-9	Request to Send Output
P1-10	Request to Send Output *
P1-12	Transmit Data Out
P1-13	Transmit Data Out *
P1-15	Receive Data In
P1-16	Receive Data In *
P1-17	Receive Termination
P1-19	Data Terminal Ready *
P1-20	Data Terminal Ready
P1-21	Transmit Enable (not supported)
P1-22	Transmit Enable * (not supported)
P1-23	Clear to Send Input
P1-24	Clear to Send Input *
P1-25	CTS Termination

**Note:** Connect P1-16 to P1-17, and P1-24 to P1-25, to terminate the RS422 Receive Data and Clear To Send Inputs, respectively.