PM2R for RZ6

Connect the PM2R control port directly to the RZ6 DB25 port via the 25-pin serial cable.

The input and output pins are assigned to Bits 0-7 of the Bit-Addressable Digital I/O of the RZ6 and the digital ground.

Use the RPvdsEx BitOut components to control the PM2R.

PM2R Bitcode Pattern

The bitcode pattern from the RZ6 consists of an 8-bit word that contains the following information; the device ID, the channel ID, and a set-bit. A final bit shuts off all channels. To control the PM2R, generate the bitcode pattern associated with the device and channel then send out the set-bit to change the channels. Be aware that the relays on the PM2R have a transition time of around one millisecond.

Bits 0 - 3 identify the channel number. Integer 0, or bitpattern (xxxx 0000), is channel 0 and integer 15, or bitpattern (xxxx 1111), is channel 15.

Bits 4 and 5 identify the device number. Integer value 0, or bit pattern (xx00xxxx), is device number 0 and integer value 48, or bit pattern (xx11xxxx), is device number 3. The device number is set internally for each PM2R and allows for an RZ6 to control up to four PM2R modules. If only one PM2R is being used, it should have device number 0.

Bit 6 is the set-bit. When this bit is set high, the channel and device from the previous six bits is activated.

Bit 7 deactivates all channels across only the specified device.

The chart below shows the bit ID, its integer value, and its function.

Bit Number	Integer Value	Function
0	1	Least significant bit of channel number
1	2	Bit 2 of channel number
2	4	Bit 3 of channel number
3	8	Most significant bit of channel number
4	16	Least significant bit of device number
5	32	Most significant bit of device number
6	64	Turns on the channel of the specified device
7	128	Turns off all channels on specified device only

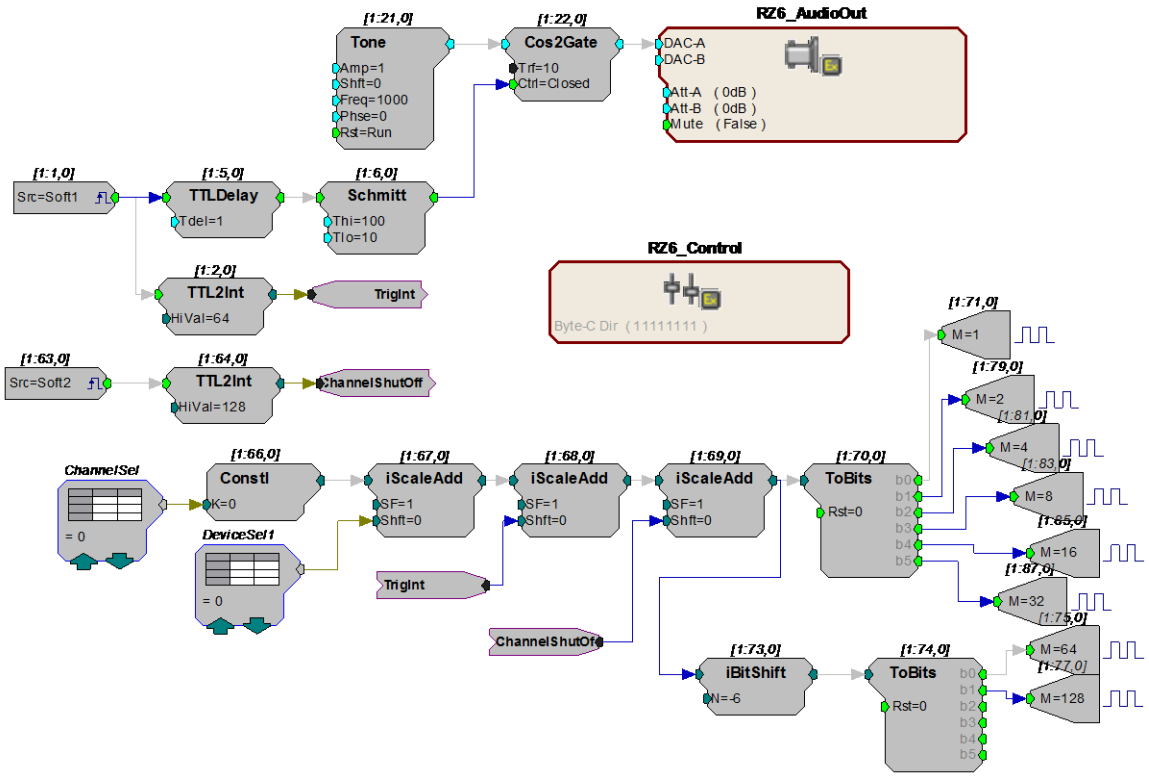
PM2R - Controlling Signal Presentation

The circuit described here uses typical techniques for controlling the signal presentation when using a PM2R. This circuit has been designed as tutorials and will need to be modified to meet the needs of the individual researcher.

Controlling the PM2R with BitOuts:

In this example the BitOuts are used to control the PM2R (via an RZ6) from within RPvdsEx. The word pattern is generated by two DataTable components. DataTables are commonly used to send values from the PC to the RP devices. While working in RPvdsEx, the selection can be changed by clicking the green up and down arrows near the bottom edge of the components. The first DataTable (Channel Select) stores the values for the channel number. Channel numbers start at zero and go to fifteen. The second DataTable (DeviceSelect) stores the values for the device ID. The values in the table are 0 (device 0), 16 (device 1), 32 (device 2), and 48 (device 3). The iScaleAdd is used to add the integer values from both tables and the ToBits followed by BitOut components sends the control code to the PM2R.

A software trigger (1) is used to change devices and initiate a tone burst of 100 milliseconds duration. The software trigger causes the Schmitt trigger to open a gate for 100 milliseconds. The Schmitt trigger is delayed by one millisecond relative to the channel select. This removes the transient associated with the relays. A second software trigger (2) is used to shut off all channels.



RZ6 – Setting up Digital I/O

The Digital I/O lines can be either inputs or outputs. The default is that all are inputs. Modifying the RZ6_Control macro will enable Bits0-7 to be outputs for driving the PM2R.

In RPvdsEx, under the Components Menu, choose Circuit Macros. Navigate to Device\RZ6_Processor and choose RZ6_Control. Click Insert and click in the circuit to place the macro. Double-click on the newly placed macro to open its options. Choose the Digital I/O tab. Select Output for all 8 bits to set them all as outputs, as shown below.