

EZEpics Multipurpose I/O

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Description: The EZEpics multipurpose I/O is an 8 channel combination ADC/DAC/GPIO unit made for quick and easy recording in EPICS. The chip used is the AD5593.

Default Configuration:

- 3x 12-bit ADC input channels
- 3x 12-bit DAC output channels
- 2x GPIO channels (one input, one output)

ADC's:

- 0 to +5V range, optionally 0 to +2.5V
- Default is Ch. 0, 1, 2

DAC's:

- 0 to +5V range, optionally 0 to +2.5V
- 20 mA max source current
- Also configured as ADC to read output voltage
- Default is Ch. 3, 4, 5

GPIO Output:

- $V_{\text{High}} = +5\text{V}$, $V_{\text{Low}} < .4\text{V}$
- Can source or sink 1.6 mA
- Default is Ch. 6

GPIO Input:

- $V_{\text{High}} > 3.7\text{V}$, $V_{\text{Low}} < 1.5\text{V}$
- Default is Ch. 7

Requirements:

- 120 VAC for rPi power supply
- 188 subnet network connection

EPICS Channel Names:

Each channel has 3 PV's associated with it:

- EZEpicsX:ChYSet
- EZEpicsX:ChYRead
- EZEpicsX:ChYActual

X is the unit number and Y is the channel number.

The 'Set' PV allows you to control an output channel. Write to this channel to set the output value. For GPIO, either 0 or 1. For DAC, any voltage from 0 to +5V (or +2.5V).

The 'Read' PV allows you to read the state of the channel. For ADC, this reads the voltage on the input. For DAC, this reads the setpoint register. For GPIO input or output, this reads the current state of the pin.

The 'Actual' PV is for DAC only and uses the ADC function to read the actual DAC output.

Use 'caput' to write to any of the channel set records.

The channels that are irrelevant for a type of I/O will be disabled.

The channels are already in the archiver. If the PV's haven't been used for an extended period, the archiver will automatically deactivate them. If left connected for a maximum of 24 hours, the archiver will reactivate the PV's.

Customization:

Any combination of 8x ADC/DAC/GPIO can be configured and a second set of 8 channels can be added if necessary.