Analog I/O

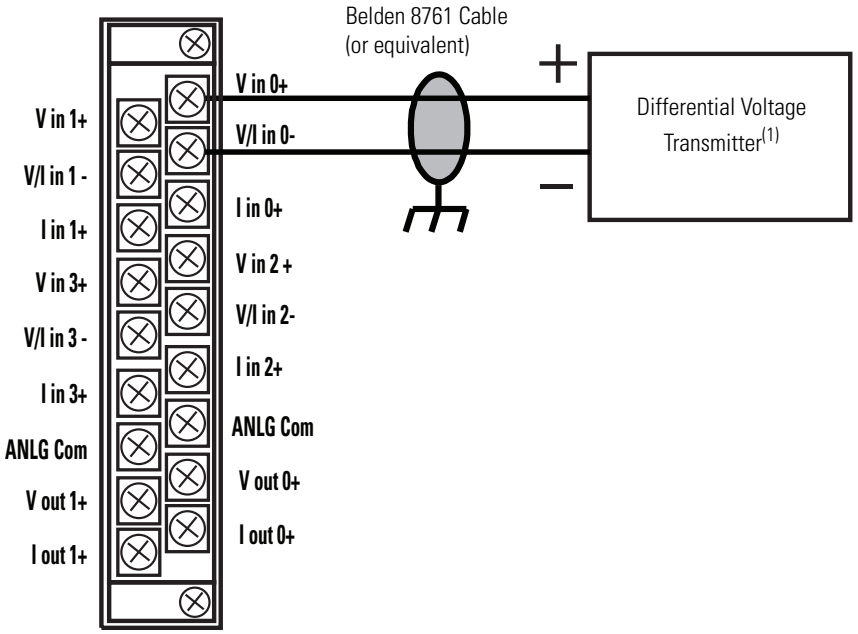
The 1769-L23-QBFC1B and 1769-L23E-QBFC1B packaged controllers provide four differential or single-ended analog inputs and two single-ended analog outputs.

This section contains wiring options and diagrams, configuration procedures, and tag information for the embedded IF4XOF2 analog I/O channels.

Analog I/O Wiring Diagrams

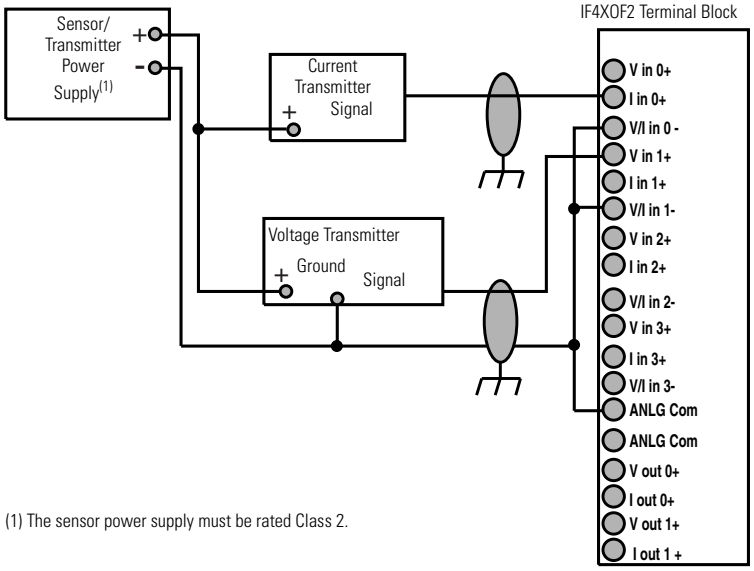
Use these wiring diagrams as a reference when wiring your analog I/O.

Wiring Differential Inputs



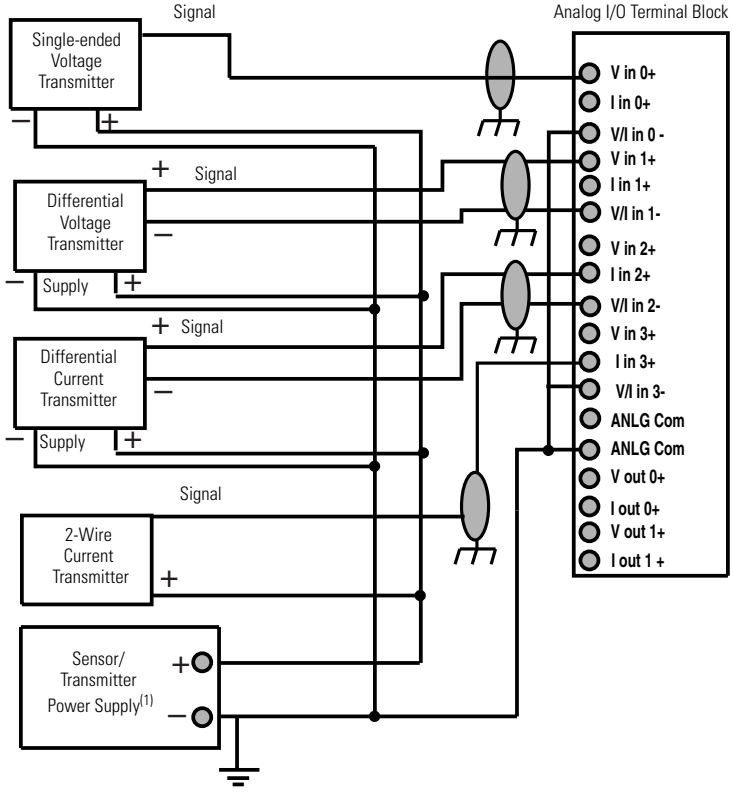
(1) The sensor power supply must be rated Class 2.

Wiring Single-ended Sensor/Transmitter Types



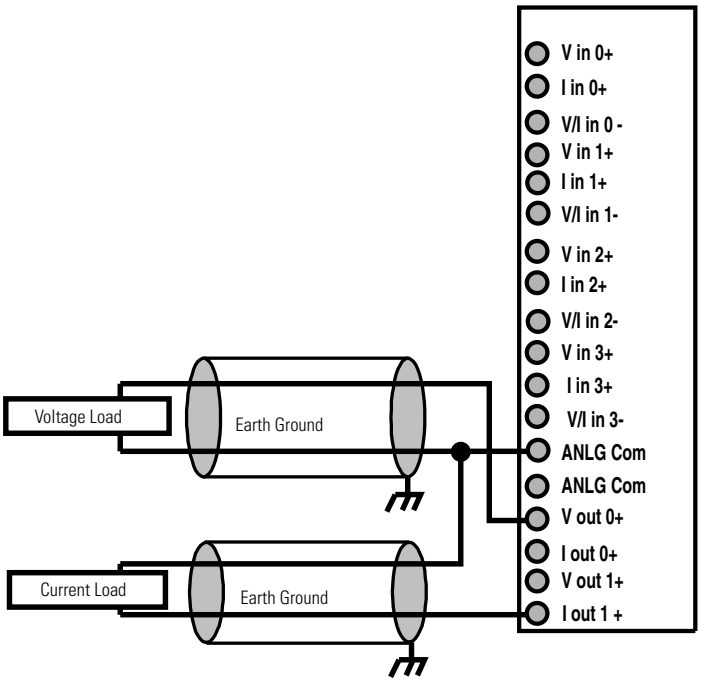
(1) The sensor power supply must be rated Class 2.

Wiring Mixed Transmitter Types



(1) The sensor power supply must be rated Class 2.

Wiring Analog Outputs



ATTENTION

Analog outputs may fluctuate for less than a second when power is applied or removed. This characteristic is common to most analog outputs. While the majority of loads will not recognize this short signal, take preventive measures to make sure that connected equipment is not affected.

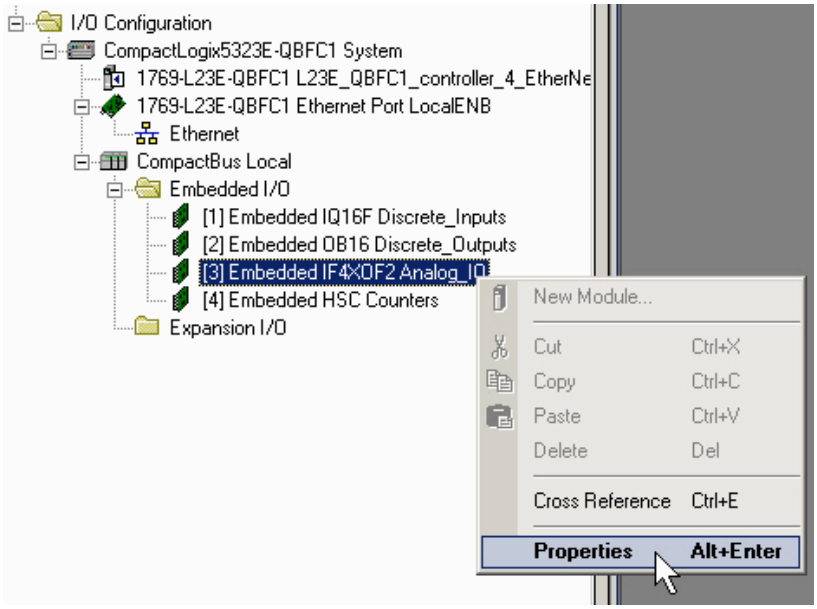
Configure the Analog I/O

The analog I/O Module Properties dialog box lets you specify the analog inputs and outputs you want to enable in your application.

Configuration of the analog I/O is typically completed by using RSLogix 5000 software during the initial system configuration.

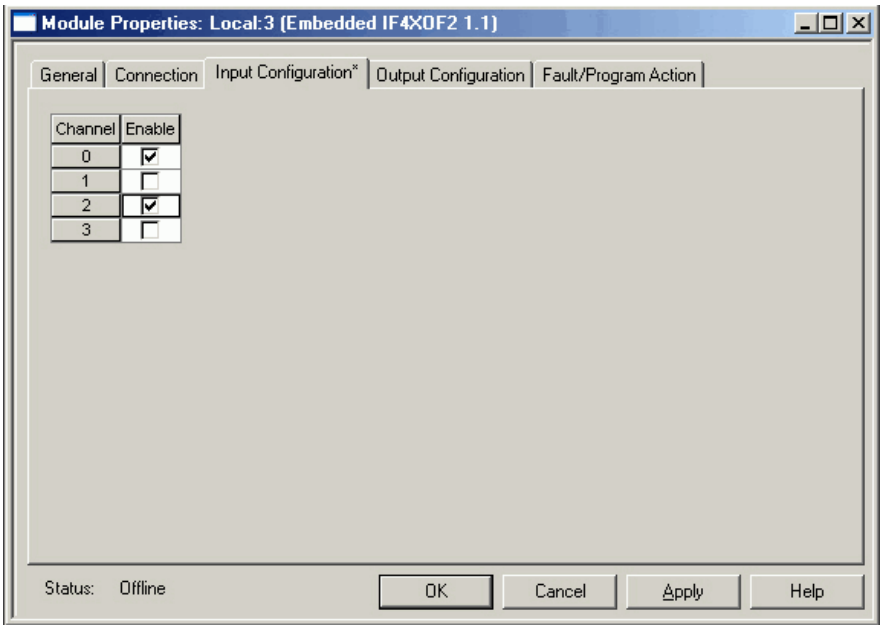
To configure your analog I/O in RSLogix 5000 programming software, complete these steps.

1. In the I/O Configuration tree, right-click slot 3, Embedded IF4XOF2 Analog I/O and choose Properties.



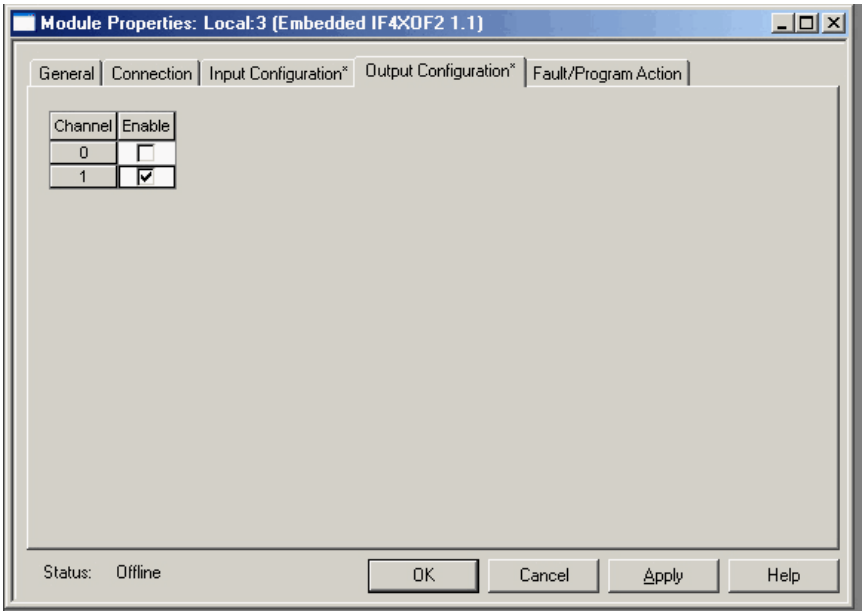
2. Click the Input Configuration tab.

3. Check the checkboxes that correspond to the input channels you need to enable.



4. Click the Output Configuration tab.

5. Check the boxes that correspond to the output channels you need to enable.



6. Click OK.

Analog I/O Tags

As indicated in the Embedded I/O Tags section on page 192, the tags for the embedded I/O are located in the Controller Tags folder at the creation of the packaged controller project.

Tags specific to the use of the analog I/O are described here.

Analog I/O Tags[1]

Configuration Tags
(Analog I/O configuration is completed via the Module Properties dialog box.)

Input Data and Status Tags

Output Data

Name	Data Type	Style
Local:3:C	AB:Embedded_IF4XOF2:C:0	
Local:3:I	AB:Embedded_IF4XOF2:I:0	
Local:3:I.Fault	DINT	Binary
Local:3:I.Ch0Data	INT	Decimal
Local:3:I.Ch1Data	INT	Decimal
Local:3:I.Ch2Data	INT	Decimal
Local:3:I.Ch3Data	INT	Decimal
Local:3:I.InputRangeFlag	INT	Binary
Local:3:I.Ch0InputOverRange	BOOL	Decimal
Local:3:I.Ch1InputOverRange	BOOL	Decimal
Local:3:I.Ch2InputOverRange	BOOL	Decimal
Local:3:I.Ch3InputOverRange	BOOL	Decimal
Local:3:I.OutputRangeFlag	INT	Binary
Local:3:I.Ch0OutputOverRange	BOOL	Decimal
Local:3:I.Ch1OutputOverRange	BOOL	Decimal
Local:3:I.Ch0DataInvalid	BOOL	Decimal
Local:3:I.Ch1DataInvalid	BOOL	Decimal
Local:3:I.Ch0Readback	INT	Decimal
Local:3:I.Ch1Readback	INT	Decimal
Local:3:O	AB:Embedded_IF4XOF2:O:0	
Local:3:O.Ch0Data	INT	Decimal
Local:3:O.Ch1Data	INT	Decimal

[1] See the Analog I/O Tag descriptions on following page for further explanation of these tags.

Analog I/O Tag Descriptions

Tag Name	Description
Local:3:I	Tags that contain analog input data.
Local:3:I.Fault	The bits of this word are set to 1 (ON) if a fault occurs with the analog I/O[1].
Local:3:I.Ch0Data	Channel input data for channel 0.
Local:3:I.Ch1Data	Channel input data for channel 1.
Local:3:I.Ch2Data	Channel input data for channel 2.
Local:3:I.Ch3Data	Channel input data for channel 3.
Local:3:I.InputRangeFlag	Indicate the range status of the input signal by channel.
Local:3:I.Ch0InputOverRange	Indicates if the input channel is over range.[2]
Local:3:I.Ch1InputOverRange	Indicates if the input channel is over range.[2]
Local:3:I.Ch2InputOverRange	Indicates if the input channel is over range.[2]
Local:3:I.Ch3InputOverRange	Indicates if the input channel is over range.[2]
Local:3:I.OutputRangeFlag	Indicate the range status of the output signal by channel.
Local:3:I.Ch0OutputOverRange	Indicates if the output channel is over range.[3]
Local:3:I.Ch1OutputOverRange	Indicates if the output channel is over range.[3]
Local:3:I.Ch0DataInvalid	Indicates if 1 (ON) data is being written to bits 0…6 or bit 15 of this channel.[4]
Local:3:I.Ch1DataInvalid	Indicates if 1 (ON) data is being written to bits 0…6 or bit 15 of this channel.[4]
Local:3:I.Ch0Readback	Data echo values of the analog output channels.
Local:3:I.Ch1Readback	Data echo values of the analog output channels.
Local:3:O	Analog output channel data.
Local:3:O.Ch0Data	Analog output data value for channel 0.
Local:3:O.Ch1Data	Analog output data value for channel 1.

(1) For example, this data is at 1 (ON) if the analog I/O terminal block is removed from the packaged controller while the controller is in Run mode.

(2) The operating range of the analog inputs is voltage 0…10V DC or current 0…20 mA. The input range is dependent upon the wiring option you use.

(3) The operating range of the analog outputs is voltage 0…10V DC or current 0…20 mA. The output range is dependent upon the wiring option you use.

(4) Bits 0…6 and bit 15 of both output data channels (Ch0Data and Ch1Data) should always be set to 0 in your control program. If they are not set to 0, the corresponding DataInvalid tag is set for that channel. While the DataInvalid tag indicates the 1 (ON) data for the specified bits, the channel will continue to operate with the previously converted channel value. For more information about the data specific to these bits, see the Compact 8-Bit Low Resolution Analog I/O Combination Module User Manual, publication 1769-UM008.

High-speed Counters

Both the 1769-L23-QBFC1B and 1769-L23E-QBFC1B packaged controllers provide high-speed counter functionality similar to that of the 1769-HSC module.

While many features of the 1769-HSC module are available with the embedded high-speed counters, some of the features of the 1769-HSC module are not available with the embedded high-speed counters of the CompactLogix packaged controllers. Features not available on the embedded high-speed counters include rate/timer functions and limited output range control (4 ranges instead of the 16 available with the 1769-HSC module).

This section provides wiring diagrams, configuration procedures, and tag descriptions for the embedded high-speed counters.

High-speed Counters Wiring Diagrams

This section describes wiring options for the high-speed counter terminals of the 1769-L23-QBFC1B and 1769-L23E-QBFC1B packaged controllers.

Input Wiring

The embedded high-speed counter uses differential inputs. Therefore, two input terminals are required for each input point. For example, the A0+ and A0- terminals are required for input point A0. Each input point is isolated from other input points, the packaged controller, and the entire output terminal group.

The inputs are compatible with standard differential-line driver output devices as well as single-ended devices such as limit switches, photo-eyes, and proximity sensors. Examples of differential and single-ended circuits are shown in these wiring diagrams.