

## Module 8



**Analog Modules**

**1769-IF4XOF2**

**Student Materials**

## Module 8: 1769-IF4XOF2 Analog Modules

	<u>Page</u>
Introduction .....	3
Module I/O Configuration.....	4
Module Configuration Set-Up.....	9
1769-IF4XOF2 Tags .....	15
Review Questions .....	17

**Introduction:**

The 1769-IF4XOF2 analog module is a combination analog module that has 4 analog input channels and 2 analog output channels.

The module can work with both voltage (typically 0 - +10 volts) and / or current (typically 4 -20 mA) signals.

Type of signals used by the module is dependent on the terminal connections.

See pages 3-18 through 3-22 in Compact™ 8-Bit Low Resolution Analog I/O Combination Module User Manual for voltage and current wiring examples.

Input channels can be wired as differential or single-ended inputs. Output channels are single-ended only.

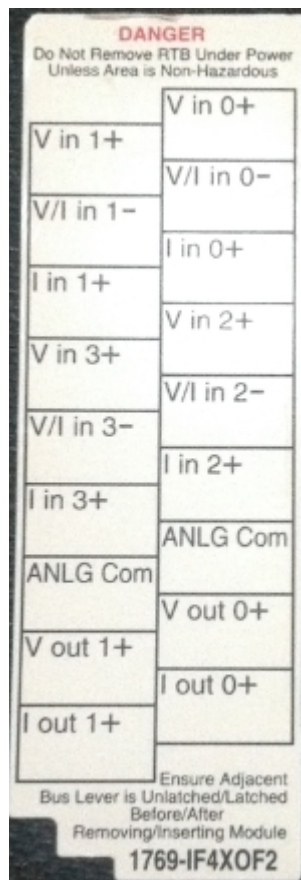


Figure 1-A - Wiring Diagram inside Analog Module Door

An analog input channel converts an analog signal, typically 4-20mA or 0-10 VDC, to digital values (number) that are used by the PLC for control purposes.

An analog output channel converts a digital value (number) generated from the PLC logic to an analog signal, typically 4-20mA or 0-10 VDC for device actuation.

The data format used by the 1769-IF4XOF2 analog module is an INT Data Type.

Note: From the 16 bits in an INT Data Type, the 1769-IF4XOF2 analog module only uses 8 bits (bits 7 -14) to represent the analog signal value.

See page 4-3 in Compact™ 8-Bit Low Resolution Analog I/O Combination Module User Manual for input channel data representation.

See page 4-7 in Compact™ 8-Bit Low Resolution Analog I/O Combination Module User Manual for output channel data representation.

### **I/O Configuration:**

Set-up for analog modules is similar to discrete modules. To add an analog module to the I/O Configuration folder in the Project File, right mouse-click CompactBus Local and choose New Module from the context menu.

Note: The 1769-IF4XOF2 analog module cannot be more than 8 slots from the PLC system power supply.

Part numbers and revision numbers are required. A simple way to determine module revision information is to use RSLinx. Navigate to the RS-Who screen and expand the backplane icon.

From 1769 Bus Right mouse click on 03, 1769 Combo Analog 4pt Input, 2pt Output

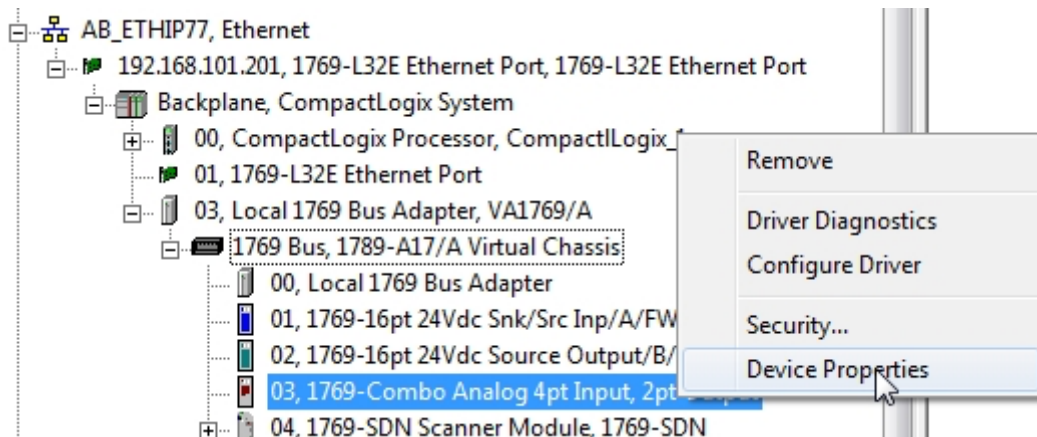


Figure 2-A - RSLinx

Click Device Properties on the context menu.

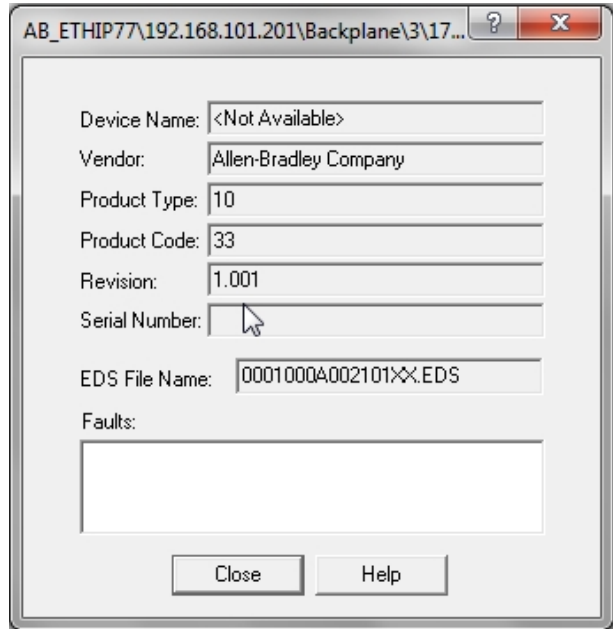


Figure 3-A – Module’s Revision RSLinx

CompactLogix module’s part number can be found on label inside the module’s door.  
See Figure 1-A for 1769-IF4XOF2 analog module’s door label  
Part number on bottom of label

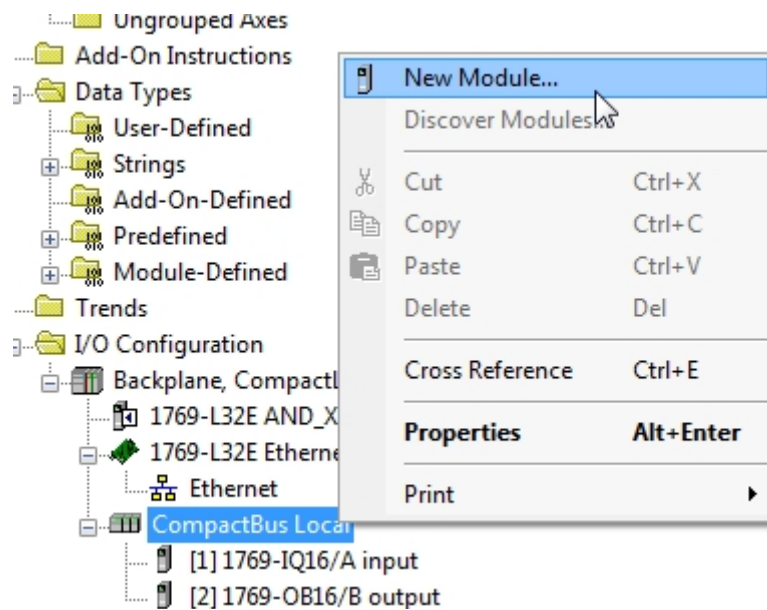


Figure 4-A – Adding Module CompactLogix I/O Configuration

Choose Catalog tab on Select Module Type window.

Note: If Module Type Category Filters is not shown, click the Show Filters button on the right side of the Select Module Type window.

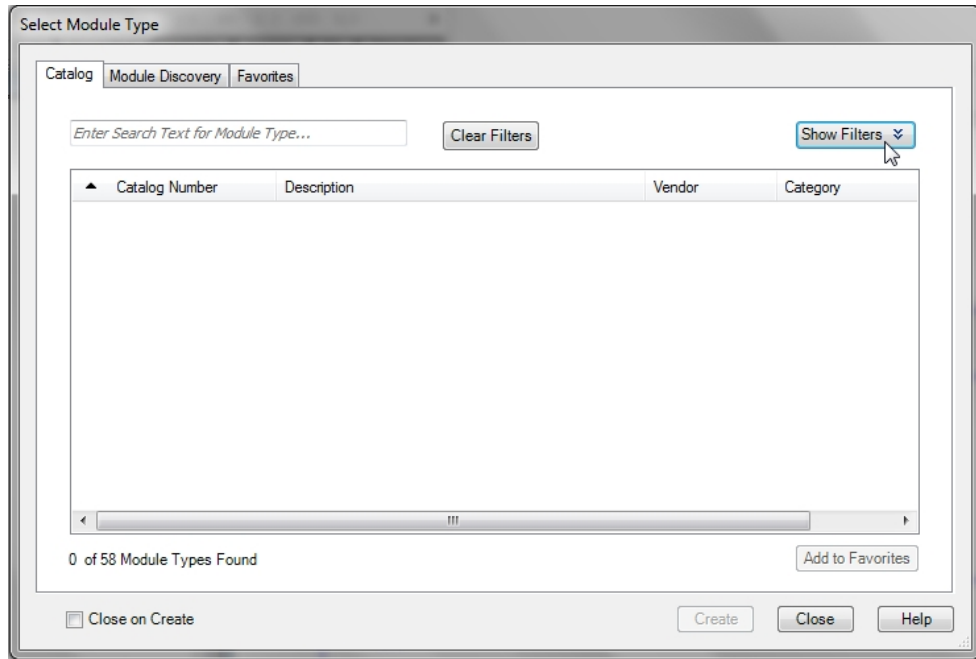


Figure 5-A

To show only analog type of modules –  
Uncheck the Module Type Category Filters check box.  
Check the Analog check box.  
Click the 1769-IF4XOF2 selection listed under Catalog Number to highlight the module.

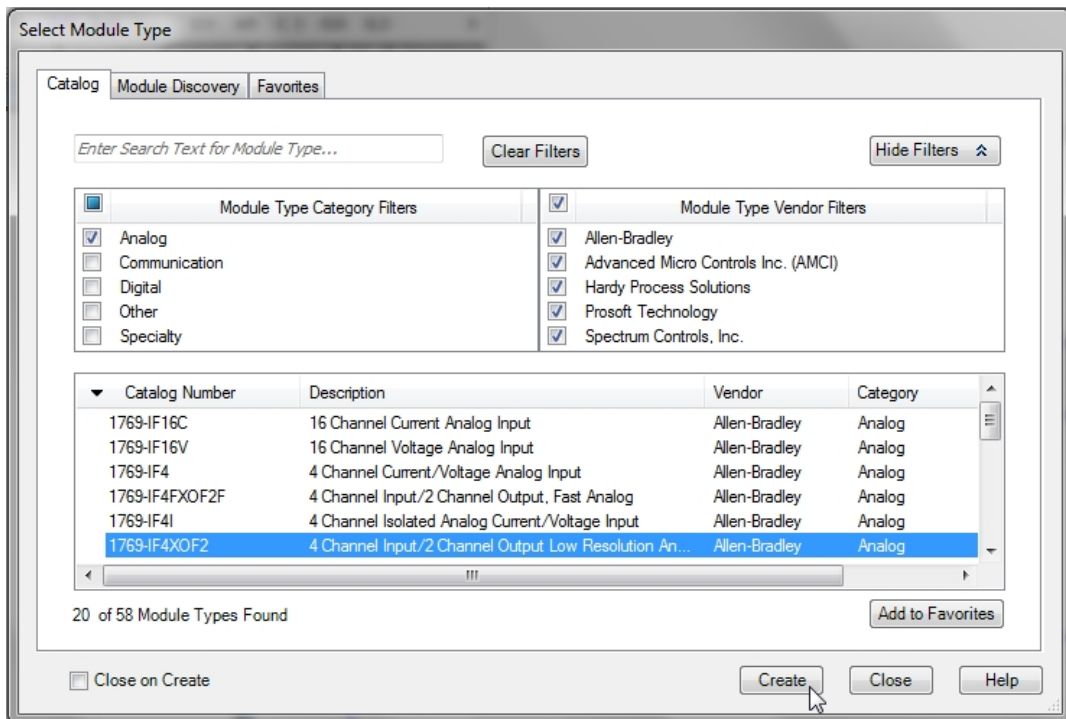


Figure 6-A - Analog Module Category

Click the Create button.

Alternatively type the module part number 1769-IF4XOF2 in the Enter Search Text for Module Type.... text box.

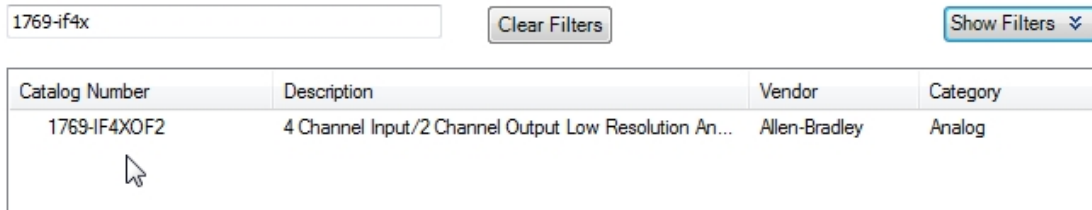


Figure 7-A Search for Module

Click the 1769-IF4XOF2 selection listed under Catalog Number to highlight the module. Click the Create button

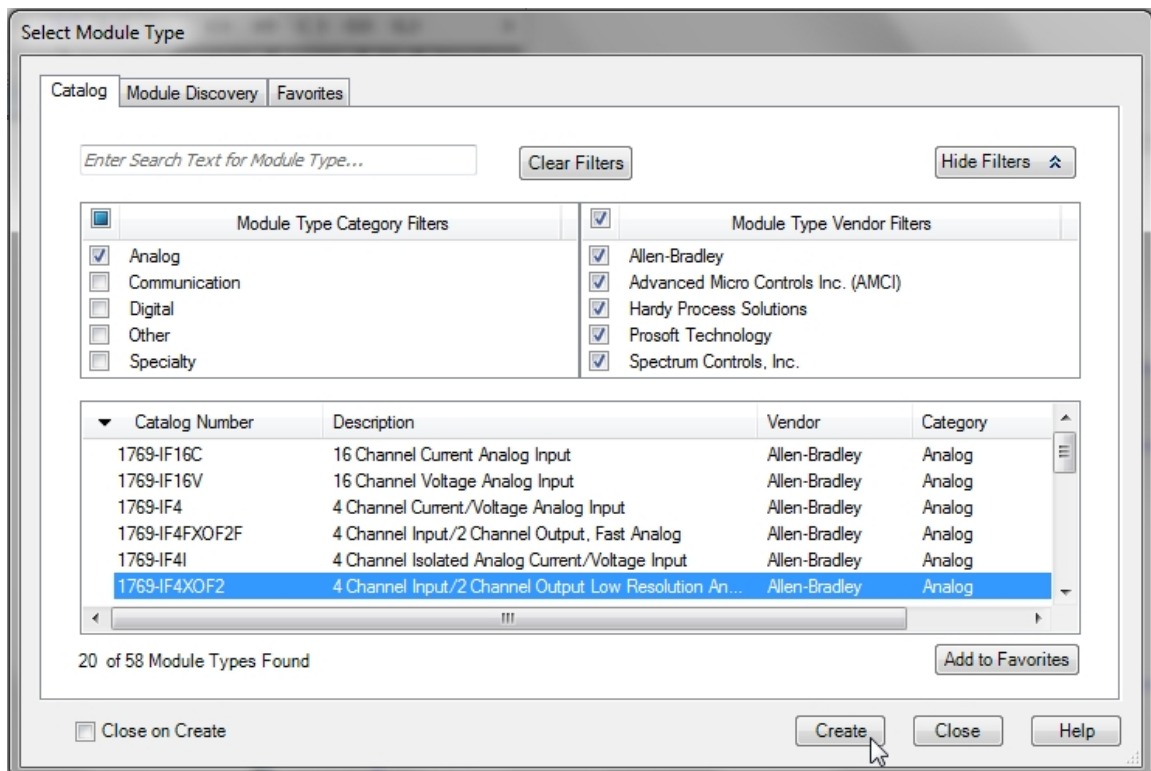


Figure 8-A – Create Module

On the New Module window-  
Add a Name for the module

Select proper Slot number based on module location – Slot 3 for CompactLogix demo boards.

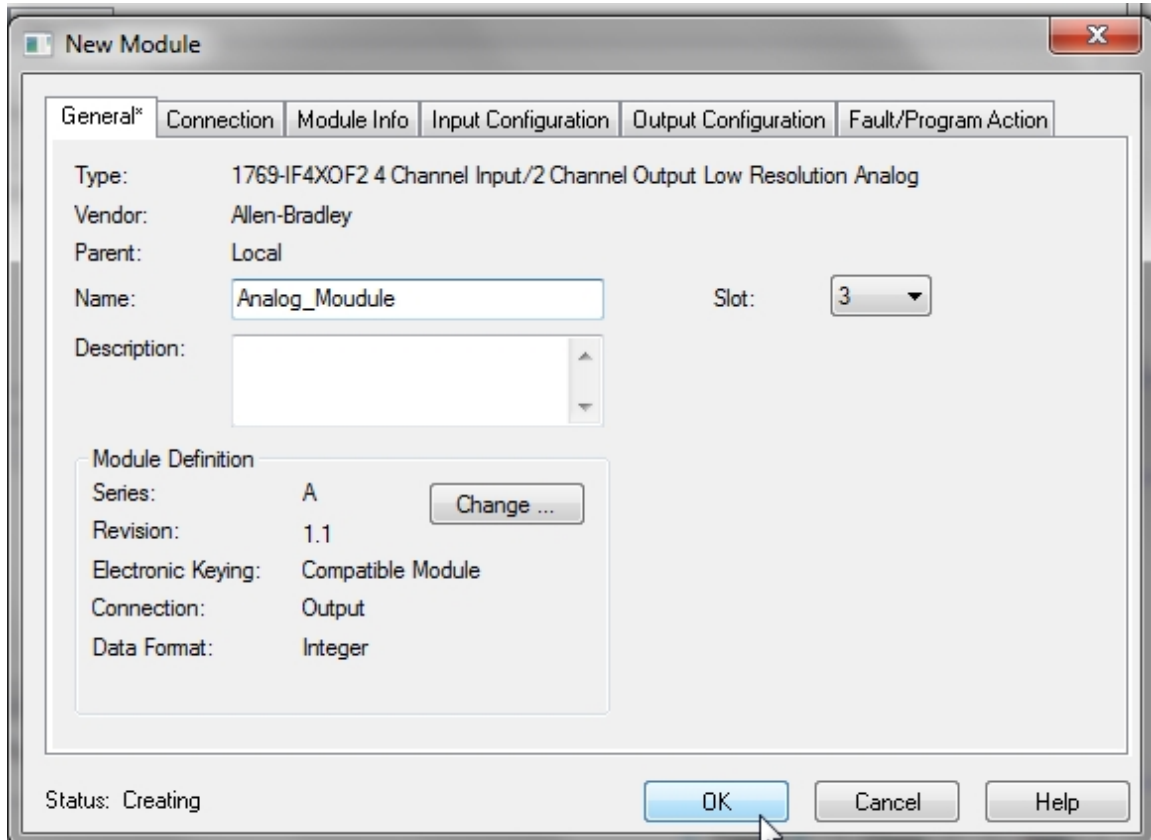


Figure 9-A – Add module Name and Slot location

Leave other information at default setting.  
Click the OK button.

If the Select Module Type window is still opened, click the Close button.

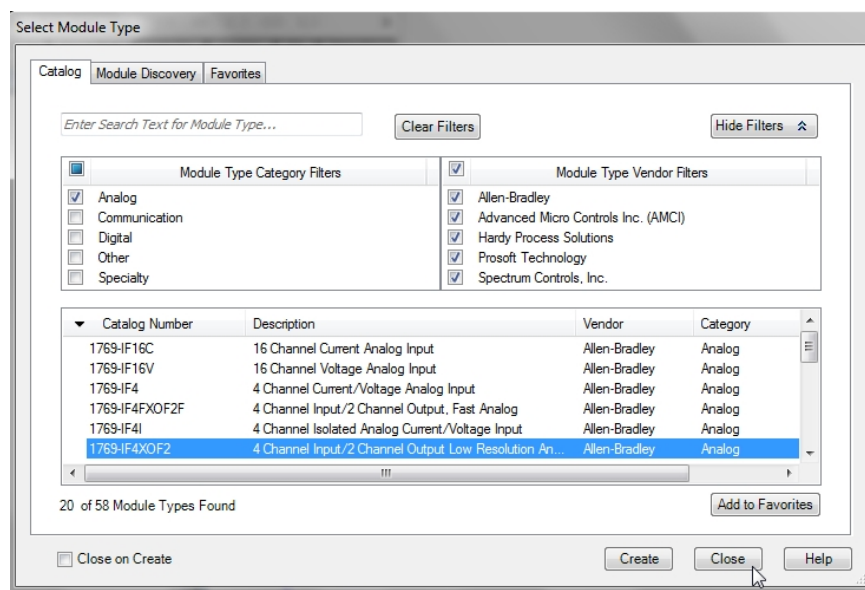


Figure 10-A – Close Select Module Type window



The 1769-IF4XOF2 is now listed under the I/O Configuration folder.

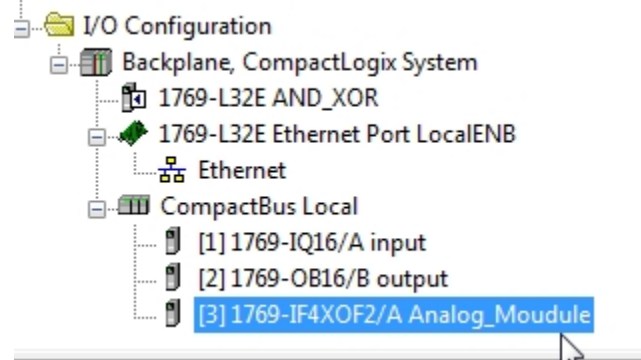


Figure 11-A – Module in I/O Configuration Folder

Click Save or Save As from menu bar to save settings

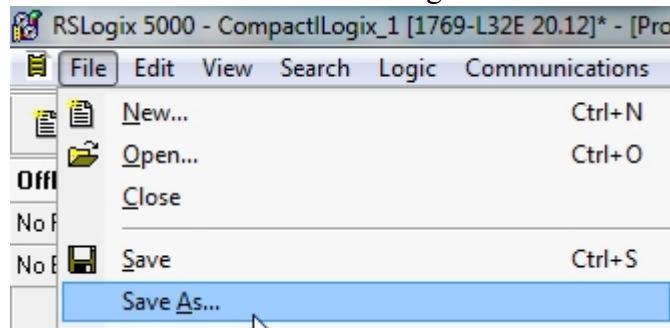


Figure 12-A. Save settings on the module.

### **Module Configuration Set-up:**

Right- click 1769-IF4XOF2/A and choose Properties from the context menu

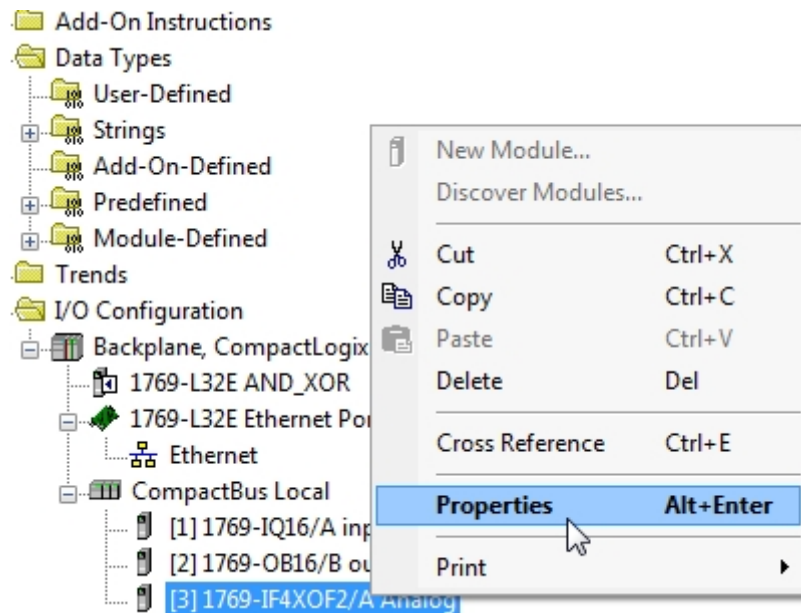


Figure 13-A. Viewing module properties.

The General tab shows Type, Name, Slot, Revision and Keying information for the module.

Note: Revision information – number to left of decimal point is major revision number  
number to right of decimal point is minor revision number

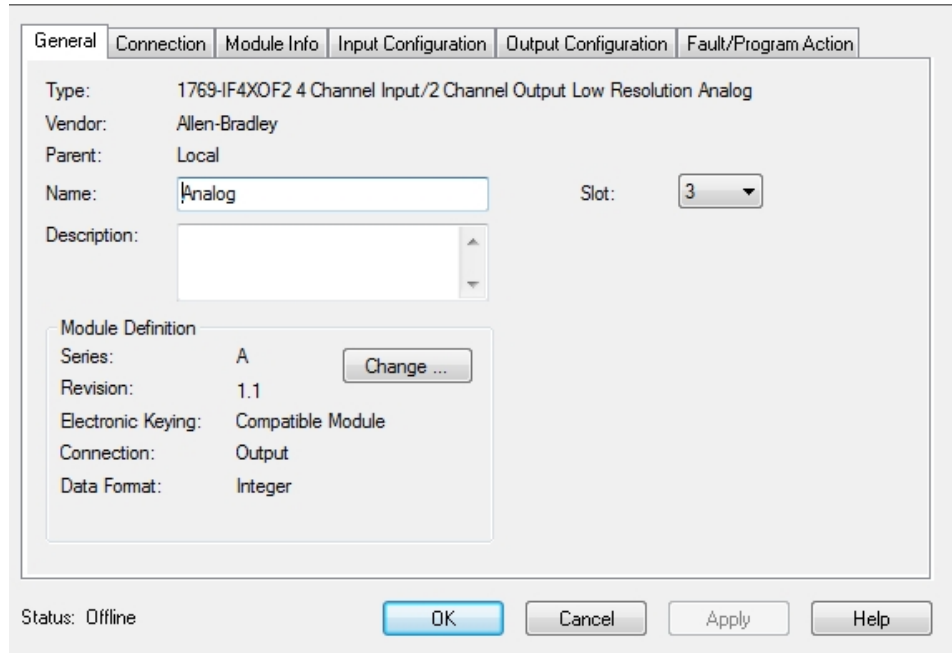


Figure 14-A General Tab

To modify Minor revision setting and / or Electronic Keying setting, select the Change button in Module Definition area of the General tab.

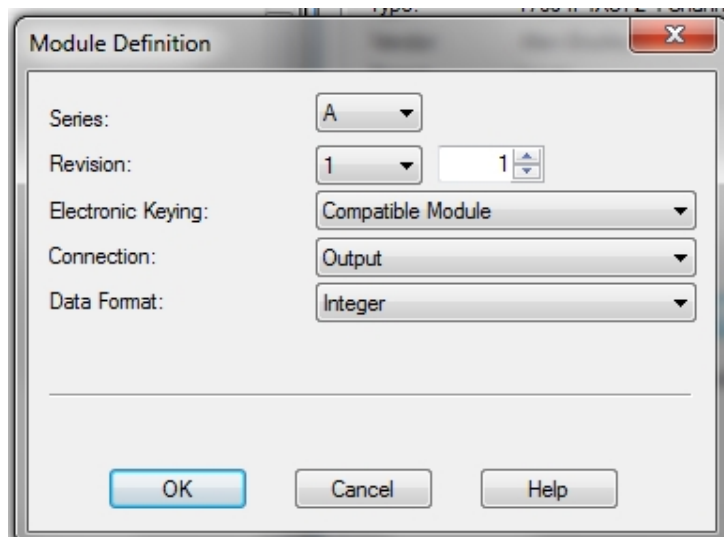


Figure 15-A – Module Definition Window

**Electronic Keying**

ControlLogix / CompactLogix modules have an electronic keying feature. This feature compares the module information in the project I/O configuration, to the module's reads Online. It compares the vendor, product type, catalog number, major and minor revisions. Here are the following levels:

Exact Match	All parameters must match between the I/O configuration and the online read.
Compatible Match	All parameters match between the configuration and the online read, except the minor revision of module firmware.
Disable Keying	This disregards any of the comparison data.

Table 1-A – Electronic Keying

Note: Depending on processor's revision the Electronic Keying setting may react a little different than shown in Table 1-A.  
 i.e. with the Compatible Module setting if the Minor Revision setting is greater than actual module's minor revision setting the module will not communicate to the processor - I/O Not Responding error

Click the OK on the Module Definition window to return the General Tab.  
 To save any changes click the Apply button on the bottom of the General tab window.

Note: OK will also save changes and will close the Properties window  
 Click the Connection tab to open the Connection window

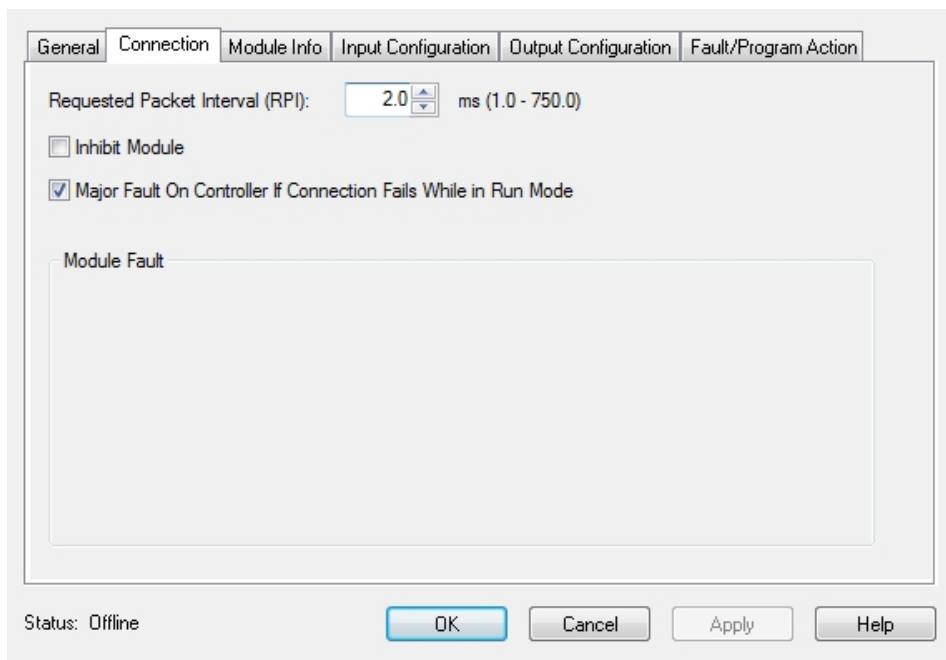


Figure 16-A – Connection Window

The Connection window shows module's –

RPI setting – module's data exchange rate with the processor

Inhibit Module check box – if checked the processor and module will not exchange data.

Major Fault On Controller check box – if checked the processor will fault if the module and the processor cannot establish a connection with each other.

Module Fault Display area – if module is faulted - shows information on why the module is not functioning properly

To save any changes click the Apply button on the bottom of the Connection tab window.

Click the Module Info tab.

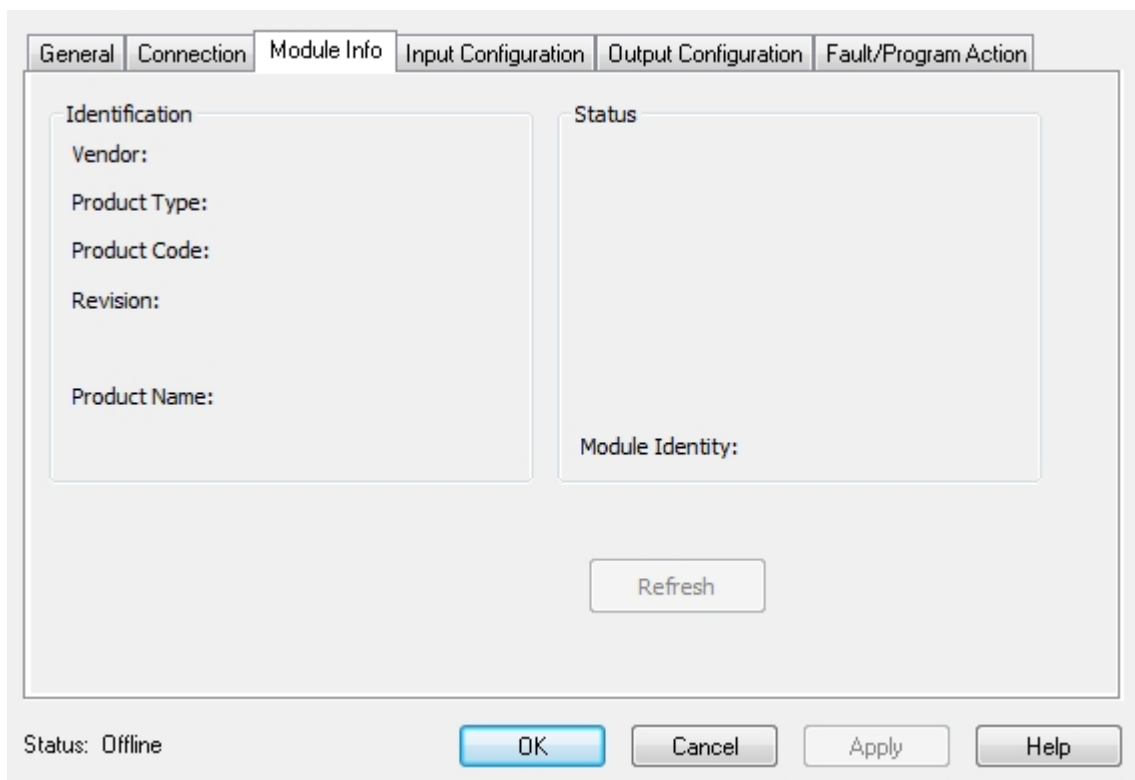


Figure 17-A – Module Info Offline

If Offline - the Module Info window will not show any module information.

If Online – the Module Info window will show module information such as part number and revision information

.See Figure 18-A for Module Info shown online.

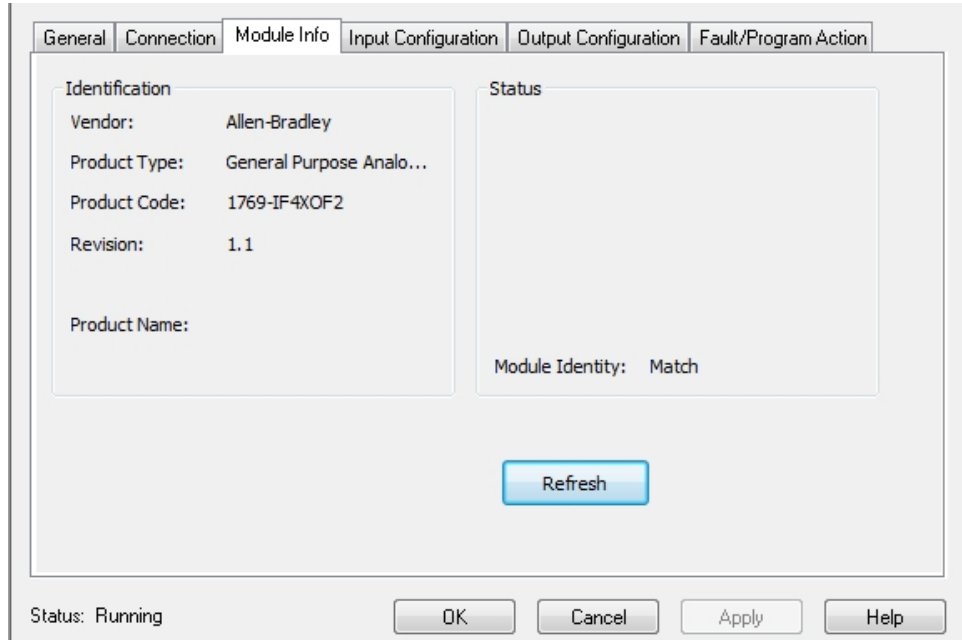


Figure 18-A – Module Info Online

Click the Input Configuration tab.

The Input Configuration window shows which of the module's input channels are operational

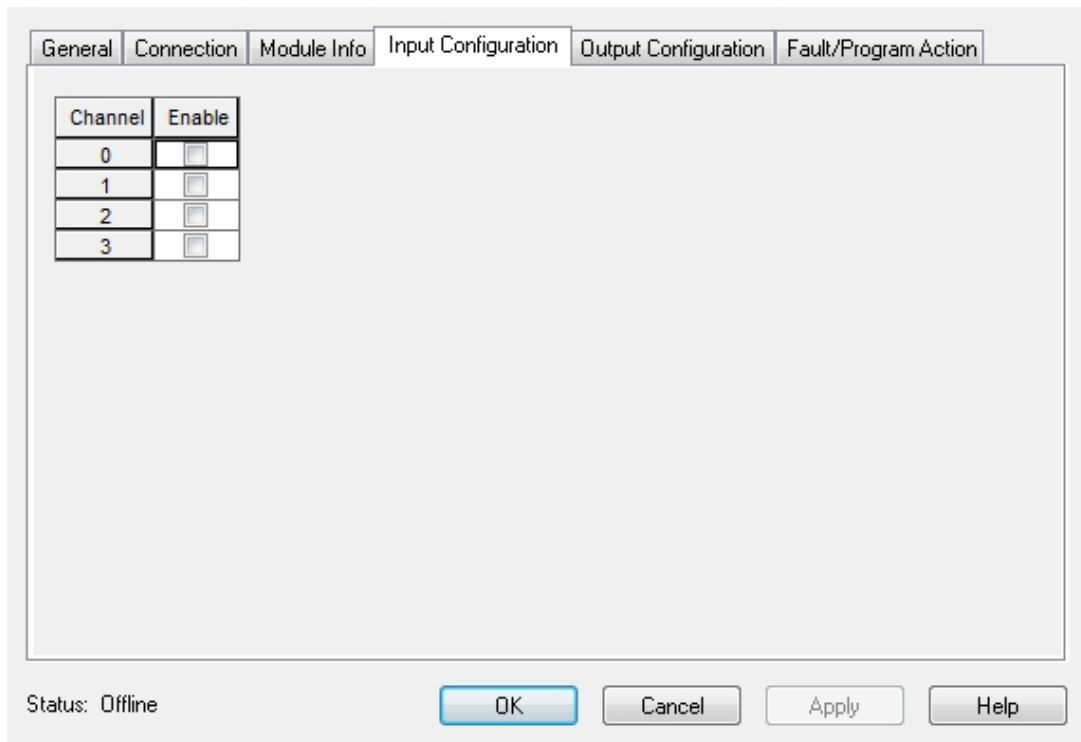


Figure 19-A – Input Configuration Window

Any channels with a check mark in the Enable box will be functioning.  
No check mark - the channel is not functioning

Note: Default setting is none of the input channels are active.

To save any changes click the Apply button on the bottom of the Input Configuration tab window

Click the Output Configuration tab.

The Out Configuration window shows which of the module's output channels are operational

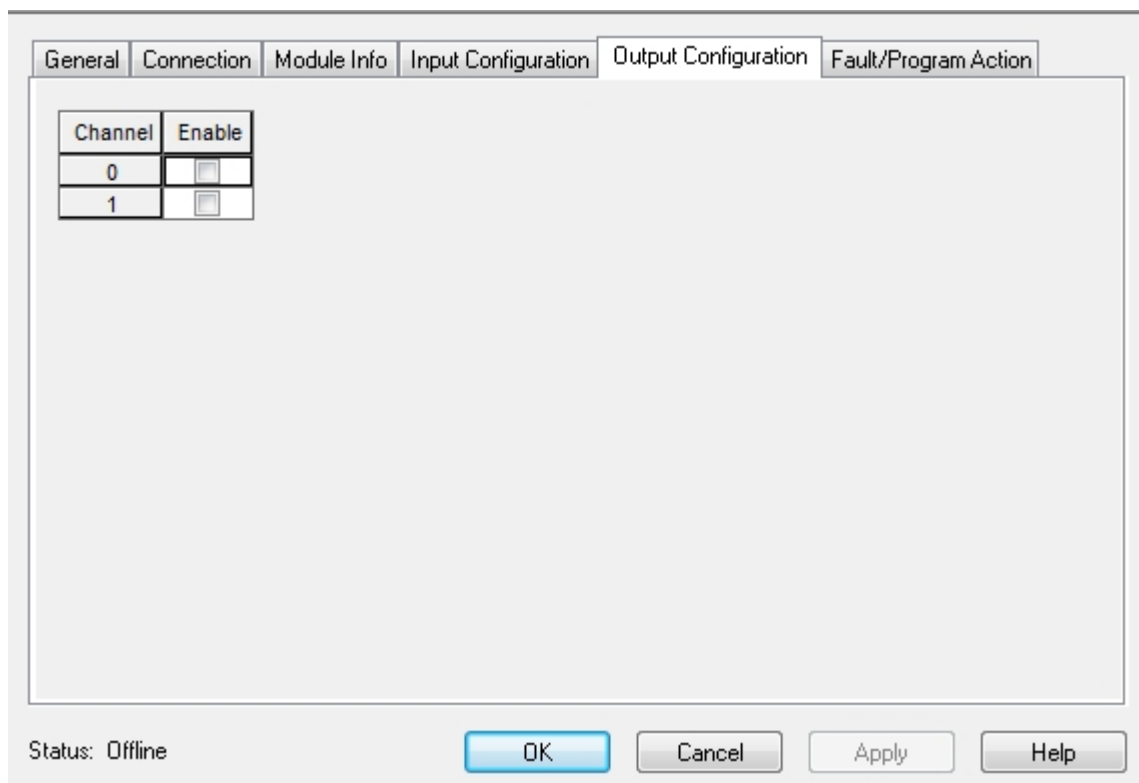


Figure 20-A – Output Configuration Window

Any channels with a check mark in the Enable box will be functioning.  
No check mark - the channel is not functioning

Note: Default setting is none of the output channels are active.

To save any changes click the Apply button on the bottom of the Output Configuration tab window

Click the Fault/Program Action tab.

1769 CompactLogix controllers does not support the functions on this window

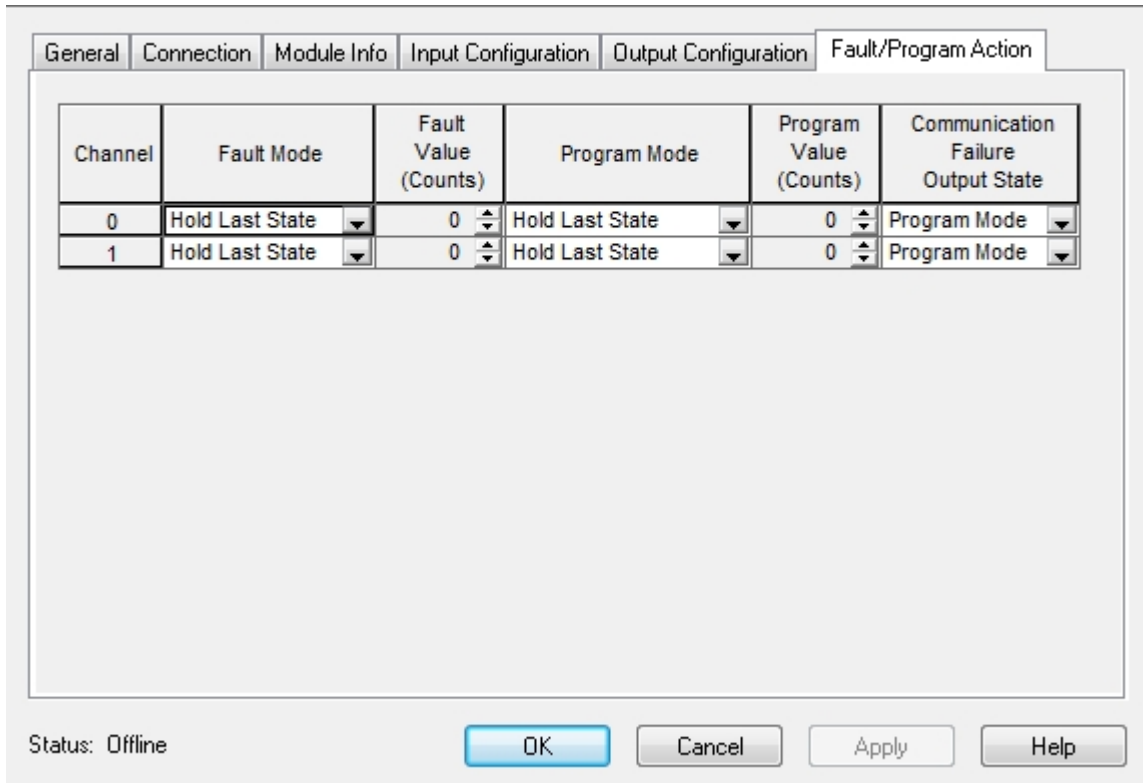


Figure 21-A – Fault / Action Window

## **1769-IF4XOF2 Tags**

There are 3 groups of tags for the 1769-IF4XOF2 analog module

+ Local:3:C	{...}
+ Local:3:I	{...}
+ Local:3:O	{...}

Figure 22-A – 1769-IF4XOF2 tags

Local:3:C – Configuration tags – Slot 3

Local:3:I – Input tags – Slot 3

Local:3:O –Output tags – Slot 3

Tags for the four Input Channels are shown in Figure 23-A

Local:3:I:Ch0Data through Local:3:I:Ch3Data

<input type="checkbox"/>	Local:3:I	{...}
<input type="checkbox"/>	+ Local:3:I.Fault	2#0000_0000_0000_0000_0000_00...
<input type="checkbox"/>	+ Local:3:I.Ch0Data	0
<input type="checkbox"/>	+ Local:3:I.Ch1Data	0
<input type="checkbox"/>	+ Local:3:I.Ch2Data	0
<input type="checkbox"/>	+ Local:3:I.Ch3Data	0

Figure 23-A – Input Channel tags

Tags for the two Output Channels are shown in Figure 22-A  
Local:3:O:Ch0Data through Local:3:O:Ch1Data

<input type="checkbox"/>	Local:3:O	{...}
<input type="checkbox"/>	+ Local:3:O.Ch0Data	0
<input type="checkbox"/>	+ Local:3:O.Ch1Data	0

Figure 24-A – Output Channel tags



## Review Questions

1. T F 1769-IF4XOF2 analog modules uses Real Data.
2. How many output channels does a 1769-IF4XOF2 module have?
  - a) 1
  - b) 4
  - c) 6
  - d) 2
3. How many input channels does a 1769-IF4XOF2 module have?
  - a) 4
  - b) 8
  - c) 2
  - d) It depends on COMM Format setting
4. Analog module integer Data Type uses a \_\_\_\_\_ bit value.
  - a) 32
  - b) 8
  - c) 16
  - d) 24
5. Which instruction is used to send and receive data from a CompactLogix analog module?
  - a) BTR

- b) MOV
  - c) Block Transfer
  - d) JSR.
6. T F All Channels are enabled on the 1769-IF4XOF2 analog modules by default.
7. How many actual bits (resolution) determine the 1769-IF4XOF2 channel's data values:
- a) 16
  - b) 8
  - c) 32
  - d) 24
8. T F A 1769-IF4XOF2 analog modules can use both mA and Voltage signals
9. Analog module tags are:
- a) Controller
  - b) Program

## Review Questions Answers

1. F
2. d
3. a
4. c
5. b
6. F
7. b
8. T
9. A

### DOL DISCLAIMER:

This product was funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration. The product was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The

Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).