Installation Instructions

A·B QUALITY *Allen-Bradley*

Compact I/O Modules

AC Digital Modules 1769-IA8I, 1769-IA16, 1769-IM12, 1769-OA8, 1769-OA16

DC Digital Modules 1769-IG16, 1769-IQ16, 1769-IQ16F, 1769-IQ32, 1769-IQ32T, 1769-IQ6XOW4, 1769-OB8, 1769-OB16, 1769-OB16P, 1769-OB32, 1769-OB32T, 1769-OG16, 1769-OV16, 1769-OV32T

Contact Modules 1769-OW8, 1769-OW8I, 1769-OW16

Analog Modules 1769-IF4, 1769-IF4I, 1769-IF4XOF2, 1769-IF4FXOF2F, 1769-IF8, 1769-IF16C, 1769-IF16V, 1769-IR6, 1769-IT6, 1769-OF2, 1769-OF4, 1769-OF4CI, 1769-OF4VI, 1769-OF8C, 1769-OF8V

Speciality Modules 1769-ARM, 1769-ASCII, 1769-BOOLEAN, 1769-HSC

A·B QUALITY *Allen-Bradley* • *Rockwell Software*

Rockwell Automation

Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.rockwellautomation.com/literature/) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

⚠	**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
⚠	**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence
⚡	**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
♨	**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

Table of Contents

Chapter 3

I/O Memory Mapping

Appendix A

Module Replacement Parts

Notes:

This manual describes how to install any 1769 Compact I/O module. Use this manual if you are responsible for designing, installing, programming, or troubleshooting control systems that use Compact I/O modules.

Additional Resources

These documents contain additional information concerning related Rockwell Automation products.

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.
Compact I/O Thermocouple/mV Input Module User Manual, publication 1769-UM004	Provides a quick start and describes how to install, configure, and troubleshoot the CompactI/O Thermocouple/mV Input module.
Compact I/O RTD/Resistance Input Module User Manual, publication 1769-UM005	Describes how to install, configure, program, operate, and troubleshoot a control system using the 1769-IR6 module.
Compact High-speed Counter Module User Manual, publication 1769-UM006	Describes how to operate, install, wire, configure, and troubleshoot the 1769-HSC module.
Compact 8-Bit Low Resolution Analog I/O Combination Module User Manual, publication 1769-UM008	Provides a quick start and describes how to install, configure, program, operate, and troubleshoot a control system using the 1769 combination analog I/O module.
Compact I/O ASCII Module User Manual, publication 1769-UM012	Provides a quick start and describes how to install, configure, and troubleshoot the Compact I/O 1769-ASCII module.
Compact I/O Isolated Analog Modules User Manual, publication 1769-UM014	Describes how to install, configure, program, operate, and troubleshoot a control system using 1769 isolated analog I/O modules.
Compact I/O BOOLEAN Module User Manual, publication 1769-UM016	Describes how to install, configure, program, operate, and troubleshoot a control system using the 1769 BOOLEAN module.
Compact High Density Analog Input Modules User Manual, publication 1769-UM018	Describes how to install, configure, and troubleshoot 1769 compact high density analog input modules.
Compact Combination Fast Analog I/O Module User Manual, publication 1769-UM019	Describes how to install, configure, and troubleshoot the 1769 combination analog I/O module.
Compact Analog Output Module User Manual, publication 1769-UM020	Describes how to install, configure, and troubleshoot the 1769 analog I/O module.

You can view or download publications at http://www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

Notes:

Install a 1769 Module

Before You Begin

Compact I/O is suitable for use in an industrial environment when installed in accordance with these instructions.
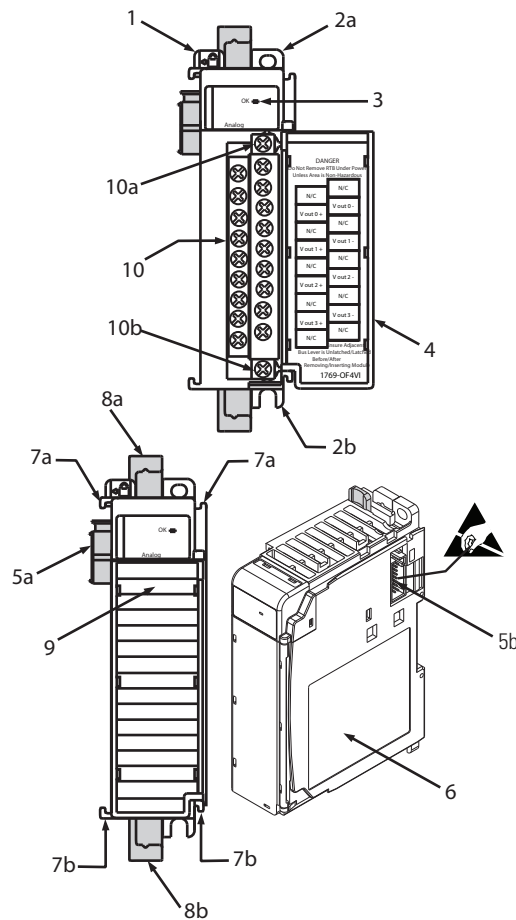
Item	Description	Item	Description
1	Bus lever (with locking function)	7a	Upper tongue-and-groove slots
2a	Upper panel mounting tab	7b	Lower tongue-and-groove slots
2b	Lower panel mounting tab	8a	Upper DIN rail latch
3	Module status LED	8b	Lower DIN rail latch
4	Module door with terminal identification label	9	Write-on label (user ID tag)
5a	Movable bus connector with female pins	10	Removable terminal block (RTB) with finger-safe cover
5b	Stationary bus connector with male pins	10a	RTB upper retaining screw
6	Nameplate label	10b	RTB lower retaining screw

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations.	Informations sur l'utilisation de cet équipement en environnements dangereux.
Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.	Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.
WARNING: **Explosion Hazard** • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous.	**AVERTISSEMENT:** **Risque d'Explosion** • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. • La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

ATTENTION: Prevent Electrostatic Discharge

Electrostatic discharge can damage integrated circuits or semiconductors if you touch bus connector pins or the terminal block. Follow these guidelines when you handle the module:

• Touch a grounded object to discharge static potential.

• Wear an approved wrist-strap grounding device.

• Do not touch the bus connector or connector pins.

• Do not touch circuit components inside the module.

• Use a static-safe work station, if available.

• When not in use, keep the module in its static-shield box.

ATTENTION: Remove power before removing or inserting this module. When you remove or insert a module with power applied, an electrical arc may occur. An electrical arc can cause personal injury or property damage in these ways:

• Sending an erroneous signal to your system's field devices causing unintended machine motion

• Causing an explosion in a hazardous environment

Electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance.

Hazardous Location Considerations

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D or non-hazardous locations only. The following WARNING statement applies to use in hazardous locations.

> ⚠️ **WARNING:** EXPLOSION HAZARD
>
> - Substitution of components may impair suitability for Class I, Division 2.
> - When in hazardous locations, turn off power before wiring or replacing modules.
> - Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
> - This product must be installed in an enclosure.
> - All wiring must comply with N.E.C. article 501-4(b).

Environnements Dangereux

Cet équipement est conçu pour être utilisé dans des environnements de Classe 1, Division 2, Groupes A, B, C, D ou non dangereux. La mise en garde suivante s'applique à une utilisation dans des environnements dangereux.

> ⚠️ **WARNING:** DANGER D'EXPLOSION
>
> La substitution de composants peut rendre cet équipement impropre à une utilisation en environnement de Classe 1, Division 2.
>
> Ne pas remplacer de composants ou déconnecter l'équipement sans s'être assuré que l'alimentation est coupée et que l'environnement est classé non dangereux.
>
> Ne pas connecter ou déconnecter des composants sans s'être assuré que l'alimentation est coupée ou que l'environnement est classé non dangereux.
>
> Ce produit doit être installé dans une armoire.

Install Summary

Follow these steps to install the module.

1. System Assembly.
2. Ground the Module.
3. Wire the Module.

This publication describes these steps in detail.

System Assembly

The module can be attached to the controller or an adjacent I/O module before or after mounting.

- For mounting instructions, see <u>Panel Mounting on page 15</u> or <u>DIN Rail Mounting on page 16</u>.

- To work with a system that is already mounted, see <u>Replace a Module on page 17</u>.

The following procedure shows you how to assemble the Compact I/O system.
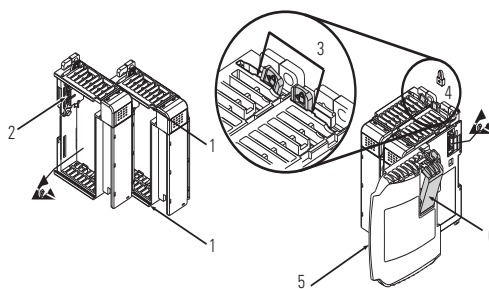
Item	Description	Item	Description
1	Tongue-and-groove slots	4	Bus lever
2	Bus connectors	5	End-cap terminator
3	Positioning tab	6	End-cap bus terminator

1. Disconnect power.

2. Check that the bus lever of the module to be installed is in the unlocked (fully right) position.

3. Use the upper and lower tongue-and-groove slots (1) to secure the modules together (or to a controller).

4. Move the module back along the tongue-and-groove slots until the bus connectors (2) line up with each other.

5. Push the bus lever back slightly to clear the positioning tab (3).

   Use your fingers or a small screwdriver.

6. To allow communication between the controller and module, move the bus lever fully to the left (4) until it clicks.

7. Make sure the lever is locked firmly in place.

> ⚠️ **ATTENTION:** When attaching I/O modules, it is very important that the bus connectors are securely locked together to make a proper electrical connection.

8. Attach an end-cap terminator (5) to the last module in the system by using the tongue-and-groove slots as before.

9. Lock the end-cap bus terminator (6).

IMPORTANT	A 1769-ECR or 1769-ECL right or left end cap must be used to terminate the end of the serial communication bus.

⚠️	**ATTENTION:** During panel or DIN rail mounting of all devices, be sure that all debris, such as metal chips and wire strands, is kept from falling into the module. Debris that falls into the module could cause damage on powerup.

Minimum Spacing

Maintain spacing from enclosure walls, wireways, and adjacent equipment. Allow 50 mm (2 in.) of space on all sides for adequate ventilation.
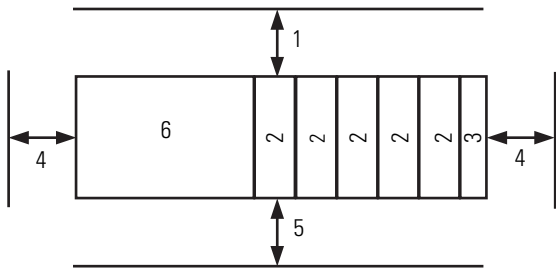
Item	Description	Item	Description
1	Top	4	Side
2	Compact I/O modules	5	Bottom
3	End cap	6	Host controller

Panel Mounting

Mount the module to a panel by using two screws per module. Use M4 or #8 panhead screws. Mounting screws are required on every module.

Panel Mounting Using the Dimensional Template

Spacing for single-wide modules 35mm (1.378 in.)
Spacing for one-and-a half-wide modules 52.5mm (2.067 in.)
Refer to host controller documentation for this dimension.

Host Controller

Note: Overall hole spacing
tolerance: +/- 0.4mm (0.016 in.).

30535-M
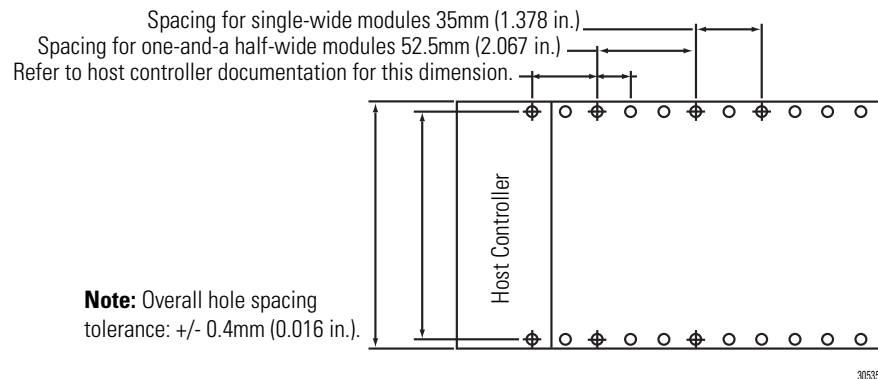
Panel Mounting Procedure Using Modules as a Template

The following procedure lets you use the assembled modules as a template for drilling holes in the panel. If you have sophisticated panel mounting equipment, you can use the dimensional template provided on . Due to module mounting hole tolerance, it is important to follow these procedures.

1. On a clean work surface, assemble no more than three modules.

2. Using the assembled modules as a template, carefully mark the center of all module-mounting holes on the panel.

3. Return the assembled modules to the clean work surface, including any previously mounted modules.

4. Drill and tap the mounting holes for the recommended M4 or #8 screw.

5. Place the modules back on the panel, and check for proper hole alignment.

6. Attach the modules to the panel using the mounting screws.

    TIP   If you are mounting more modules, mount only the last one of this group and put the others aside. This reduces remounting time during drilling and tapping of the next group.

7. Repeat steps 1...6 for any remaining modules.

DIN Rail Mounting

The module can be mounted using the following DIN rails:
- 35 x 7.5 mm (1.38 x 0.30 in.; EN 50 022 - 35 x 7.5)
- 35 x 15 mm (1.38 x 0.59 in.; EN 50 022 - 35 x 15)

Before mounting the module on a DIN rail, close the DIN rail latches. Press the DIN rail mounting area of the module against the DIN rail. The latches will momentarily open and lock into place.

Replace a Module

To replace the module while the system is mounted to a panel or DIN rail, follow these steps.

1. Remove power.

2. On the module to be removed, use a screwdriver to remove the upper and lower mounting screws from the module or open the DIN latches.

3. Move the bus lever to the right to disconnect or unlock the bus.

4. On the right-side adjacent module, move its bus lever to the right to disconnect it from the module to be removed.

5. Gently slide the disconnected module forward.

   If you feel excessive resistance, check that the module has been disconnected from the bus, and that both mounting screws have been removed or DIN latches have been opened.

TIP	It may be necessary to rock the module slightly from front to back to remove it, or, in a panel-mounted system, to loosen the screws of adjacent modules.

6. Before installing the replacement module, be sure that the bus lever on the module to be installed and the bus lever on the right-side adjacent module are in the unlocked (fully right) position.

7. Slide the replacement module into the open slot.

8. Connect the modules together by locking (fully left) the bus levers on the replacement module and the right-side adjacent module.

9. Replace the mounting screws or snap the module onto the DIN rail.

Ground the Module

This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel. Additional grounding connections from the module's mounting tabs or DIN rail are not required unless the mounting surface cannot be grounded. Refer to the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for additional information.

Wire the Module

Consider the following when wiring your system:

- Channels are isolated from each other.

- Use Belden 8761, or equivalent, shielded wire.

- Under normal conditions, the drain wire and shield junction must be connected to earth ground with a panel or DIN rail mounting screw at the analog I/O module end. Keep the shield connection to ground as short as possible.

TIP	In environments where high frequency noise may be present, it may be necessary to ground the shield via a 0.1 µF capacitor at the load end and also ground the module end without a capacitor.

- For optimum accuracy, limit overall cable impedance by keeping your cable as short as possible. Locate the I/O system as close to your sensors or actuators as your application will permit.

- Load resistance for each voltage output channel must be equal to or greater than 2K Ω.

> ⚠ **ATTENTION:** Miswiring of the module to an AC/DC source will damage the module.
>
> Be careful when stripping wires. Wire fragments that fall into a module could cause damage at powerup. Once wiring is complete, make sure the module is free of all metal fragments.

Refer to for wiring diagrams of each module.

Label Terminals

A removable, write-on label is provided with the module. Remove the label from the door, mark the identification of each terminal with permanent ink, and slide the label back into the door. Your markings (ID tag) will be visible when the module door is closed.

Remove the Terminal Block

To remove the terminal block, loosen the upper and lower retaining screws. The terminal block will back away from the module as you remove the screws. When replacing the terminal block, torque the retaining screws to 0.46 N•m (4.1 lb•in).
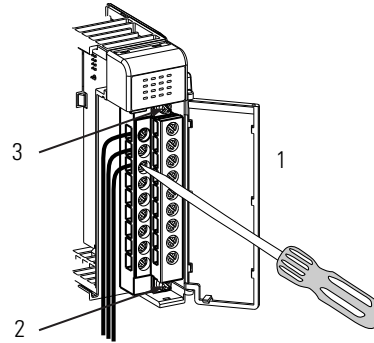
Item	Description
1	Wiring the finger-safe terminal block
2	Lower retaining screws
3	Upper retaining screws

Wire the Terminal Block

When wiring the terminal block, keep the finger-safe cover in place.

1. Loosen the terminal screws to be wired.

2. Route the wire under the terminal pressure plate.

   You can use the bare wire or a spade lug. The terminals will accept a 6.35 mm (0.25 in.) spade lug.

   > **TIP** The terminal screws are non-captive. You can use a ring lug [maximum 6.35 mm (0.25 in.) o.d. with a 3.53 mm (0.139 in.) minimum i.d. (M3.5)] with the module.

3. Tighten the terminal screw making sure the pressure plate secures the wire.

   Recommended torque when tightening terminal screws is 0.68 N•m (6 lb•in).

   > **TIP** If you need to remove the finger-safe cover, insert a screwdriver into one of the square wiring holes and gently pry the cover off. If you wire the terminal block with the finger-safe cover removed, you will not be able to put it back on the terminal block because the wires will be in the way.

Wire Size and Terminal Screw Torque

Each terminal accepts one or two wires with the following restrictions.

Wire Type		Wire Size	Terminal Screw Torque	Retaining Screw Torque
Solid	Cu-90 °C (194 °F)	#14…#22 AWG	0.68 N•m (6 lb•in)	0.46 N•m (4.1 lb•in)
Stranded	Cu-90 °C (194 °F)	#16…#22 AWG	0.68 N•m (6 lb•in)	0.46 N•m (4.1 lb•in)

Module Wiring

1769-IA8I

Compact individually-isolated 120V AC input module
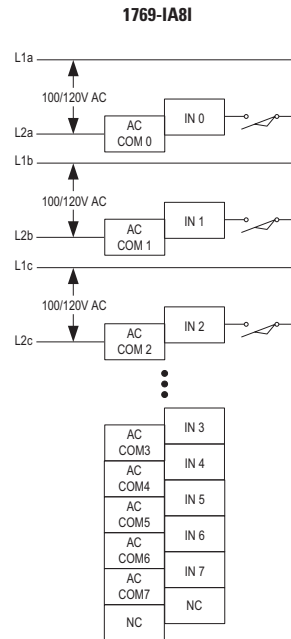
1769-IA16

Compact 120V AC input module
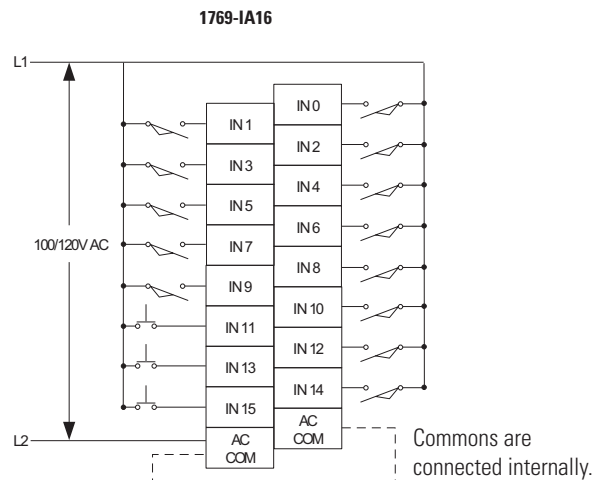
1769-IF4

Compact voltage/current analog input module
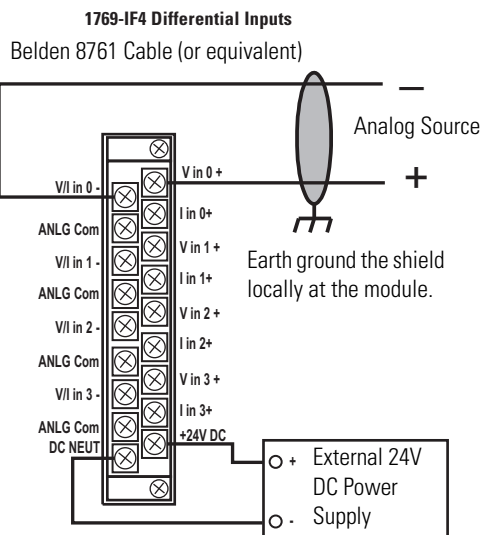
1769-IF4 Differential Inputs

Belden 8761 Cable (or equivalent)

Earth ground the shield locally at the module.

The external power supply must be rated Class 2, with a 24V DC range of 20.4…26.4V DC and 60 mA minimum. Series B and later modules support this option.

1769-IF4 Single-ended Sensor/Transmitter Inputs
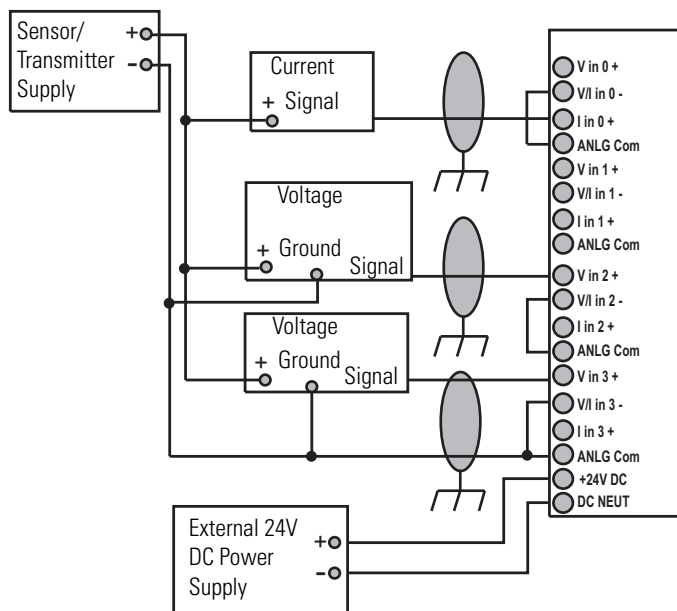
1769-IF4 Mixed Transmitter Inputs
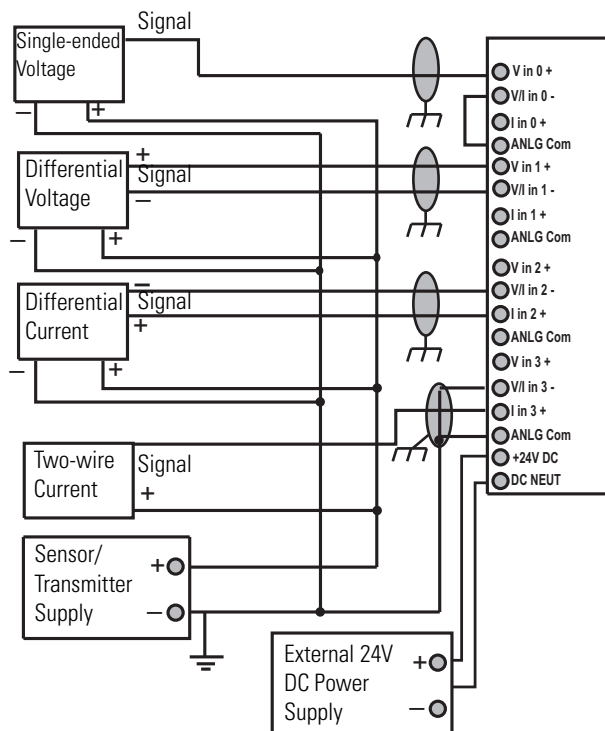
1769-IF4I

Compact voltage/current analog, individually-isolated input module

1769-IF4I Differential Inputs
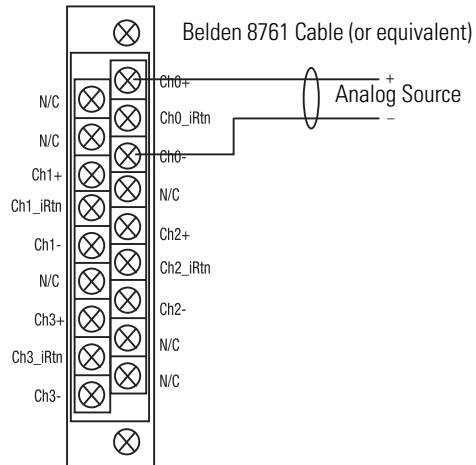
1769-IF4I Single-ended Sensor/Transmitter Inputs
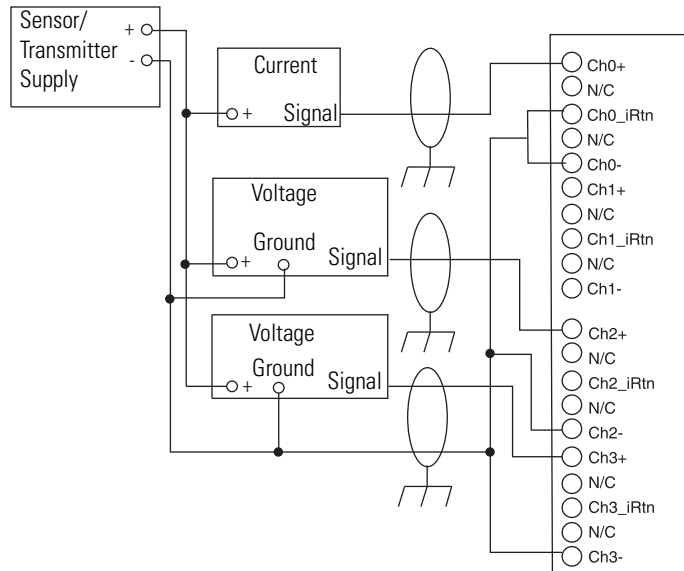
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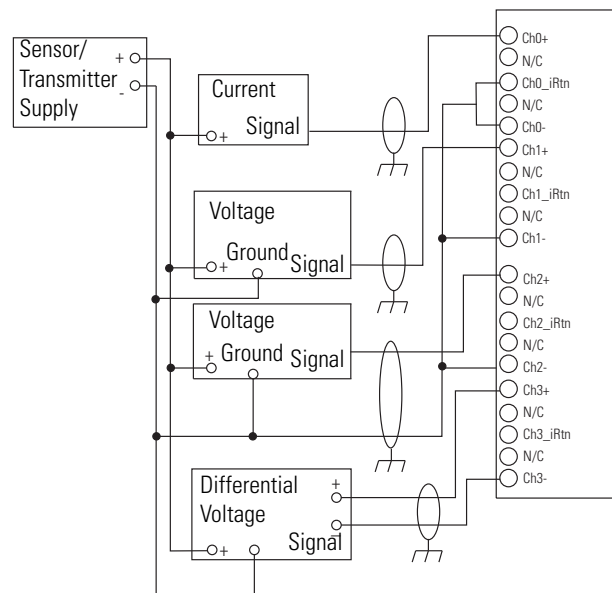
1769-IF4XOF2

Compact combination input/output analog module

1769-IF4XOF2 Outputs

1769-IF4XOF2 Differential Inputs

Belden 8761 Cable (or equivalent)

Earth ground the shield locally at the module.
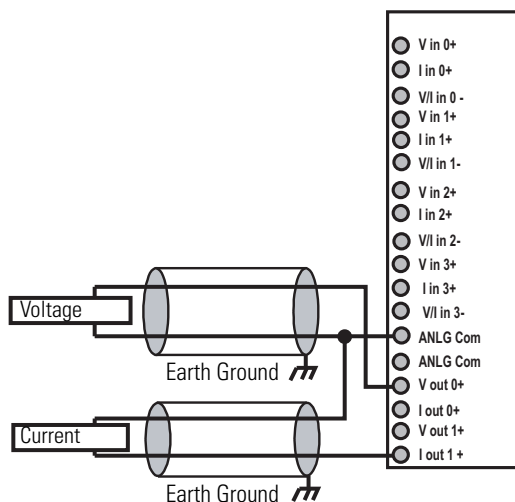
1769-IF4XOF2 Single-ended Sensor/Transmitter Inputs

The sensor power supply must be rated Class 2.
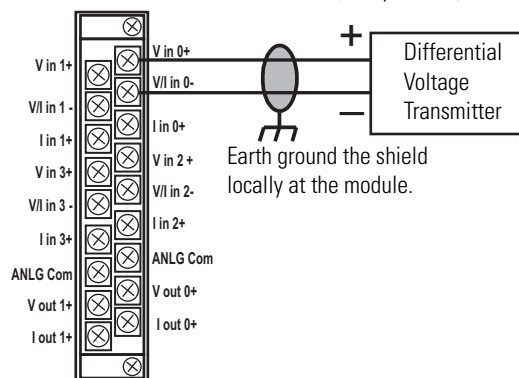
1769-IF4XOF2 Mixed Transmitter Inputs
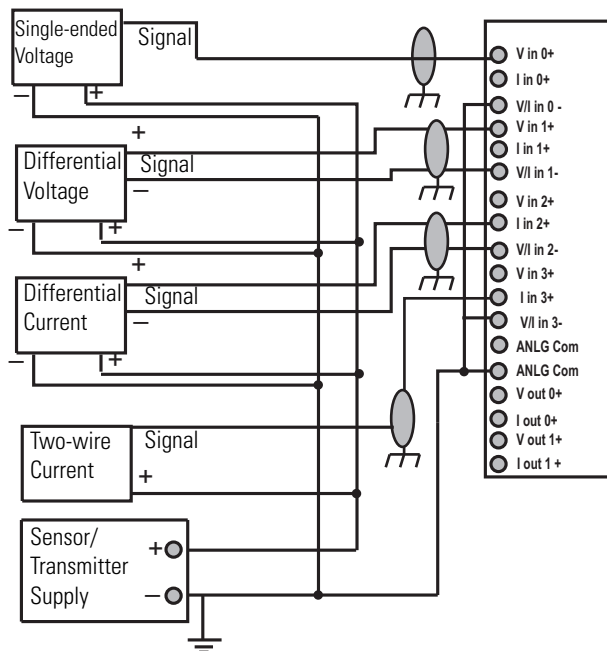
1769-IF4FXOF2F

Compact combination fast input/output analog module
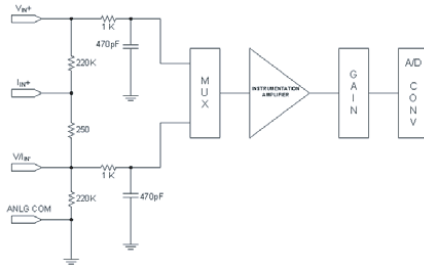
Simplified Input Circuit Diagram
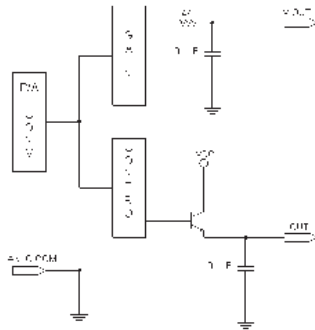
1769-IF4FXOF2F Differential Inputs

Belden 8761 Cable (or equivalent)

Earth ground the shield locally at the module.

Simplified Output Circuit Diagram

Earth ground the shield locally at the module.
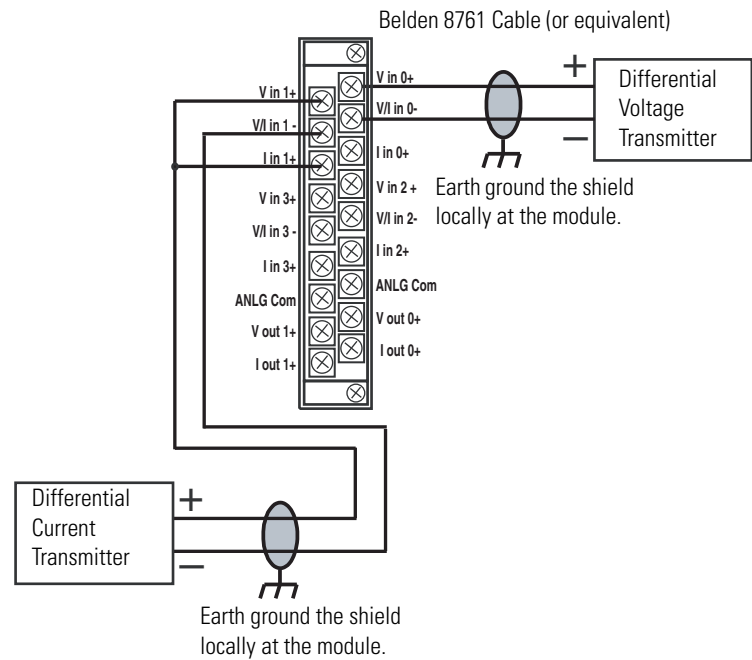
The sensor power supply must be rated Class 2.

1769-IF4FXOF2F Single-ended Sensor/Transmitter Inputs
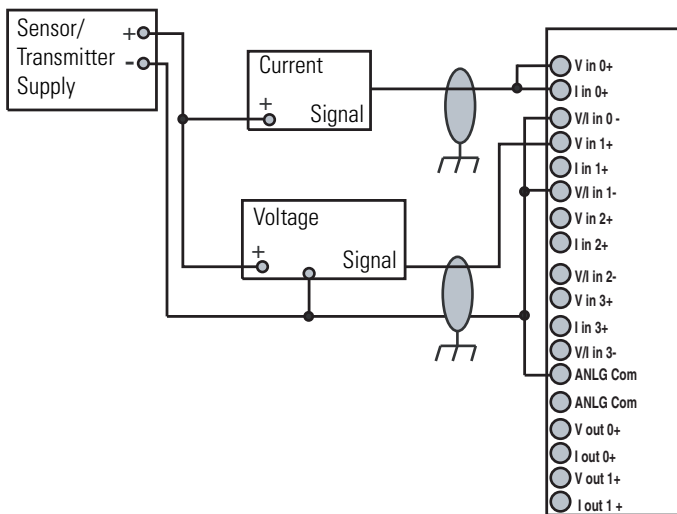
The sensor power supply must be rated Class 2.

1769-IF4FXOF2F Mixed Transmitter Inputs
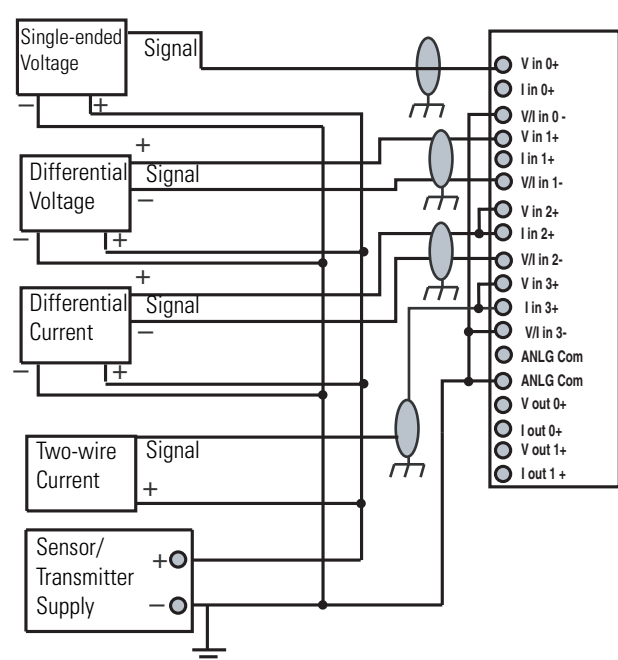
1769-IF4FXOF2F Outputs
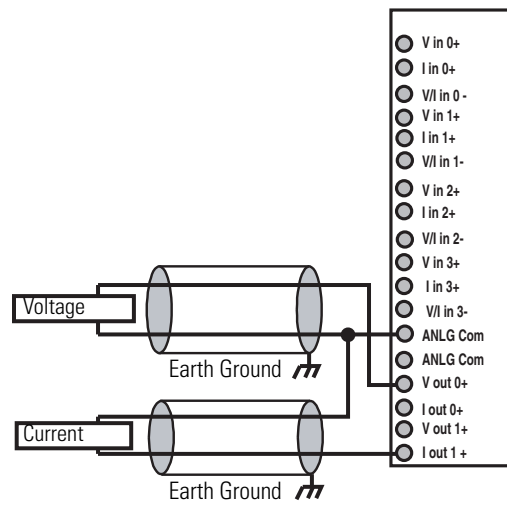
1769-IF8

Compact voltage/current analog input module

Belden 8761 Cable (or equivalent)   **1769-IF8 Differential Inputs**

Analog Source

V/I in 0-   V in 0+

ANLG Com   I in 0+

V/I in 1-   V in 1+

ANLG Com   I in 1+

V/I in 2-   V in 2+

ANLG Com   I in 2+

V/I in 3-   V in 3+

ANLG Com   I in 3+

NC   NC

Earth ground the shield locally at the module.

V/I in 4-   V in 4+

ANLG Com   I in 4+

V/I in 5-   V in 5+

ANLG Com   I in 5+

V/I in 6-   V in 6+

ANLG Com   I in 6+

V/I in 7-   V in 7+

ANLG Com   I in 7+

NC   NC
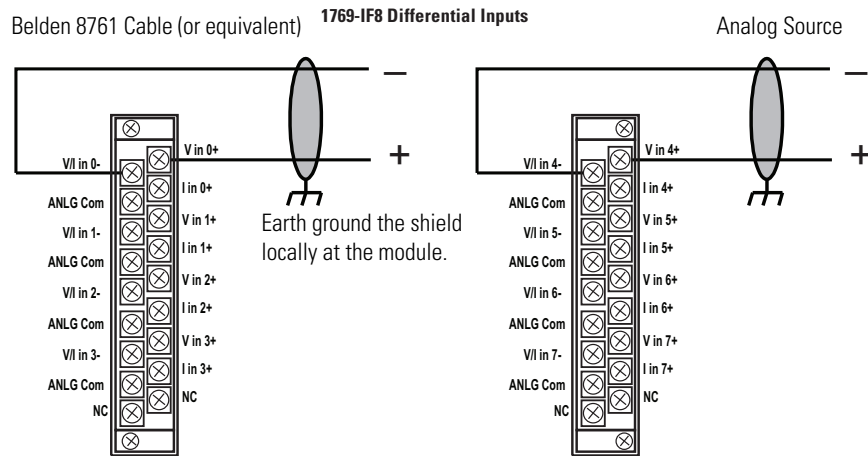
1769-IF8 Single-ended Sensor/Transmitter Inputs

The sensor power supply must be rated Class 2.

Sensor/ Transmitter Supply   +   −

Current   +   Signal

Voltage   +   Ground   Signal

Voltage   +   Ground   Signal

V in 0 +

V/I in 0 -

I in 0 +

ANLG Com

V in 1 +

V/I in 1 -

I in 1 +

ANLG Com

V in 2 +

V/I in 2 -

I in 2 +

ANLG Com

V in 3 +

V/I in 3 -

I in 3 +

ANLG Com

NC

NC
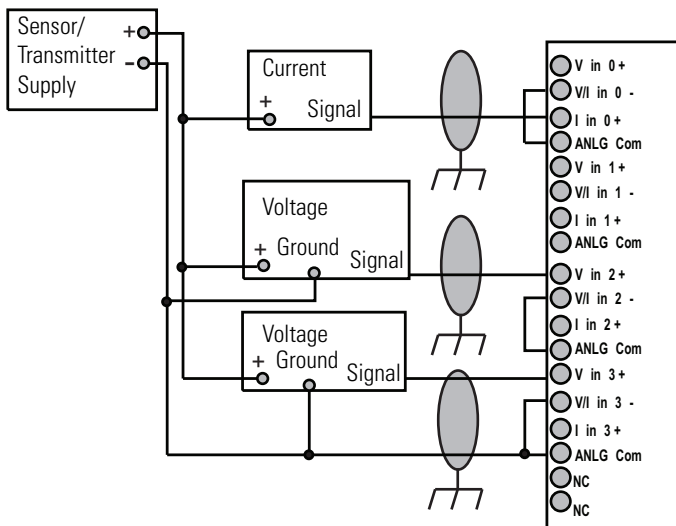
Wiring for channels 4…7 are identical.

1769-IF8 Mixed Transmitter Inputs

The sensor power supply must be rated Class 2.
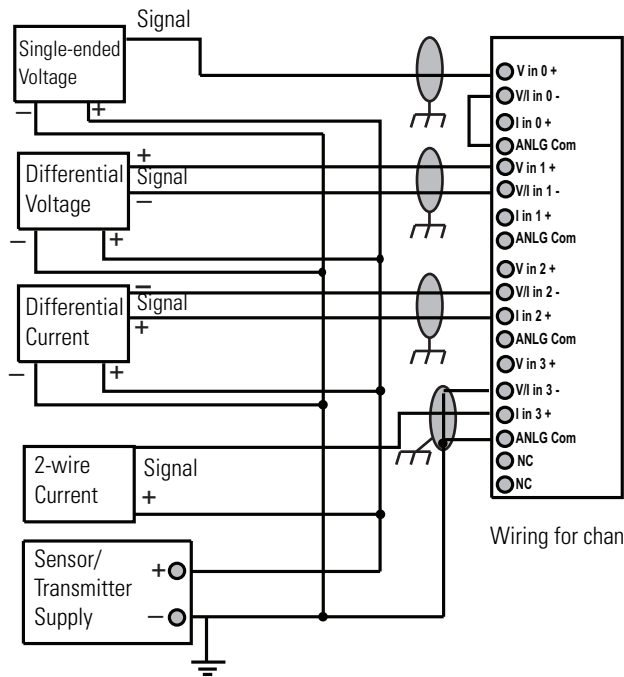
Wiring for channels 4…7 are identical.

1769-IF16C

Compact current analog input module

Simplified Input Circuit Diagram
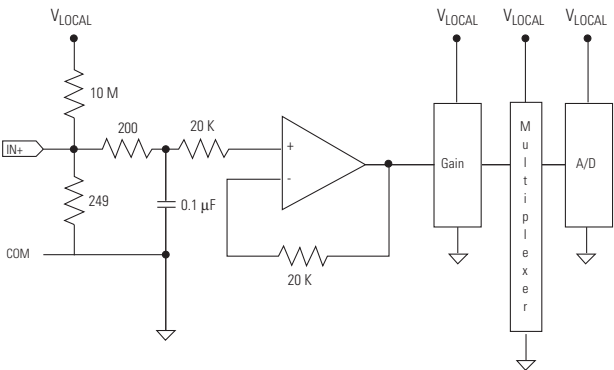
1769-IF16C Sensor/Transmittor Inputs
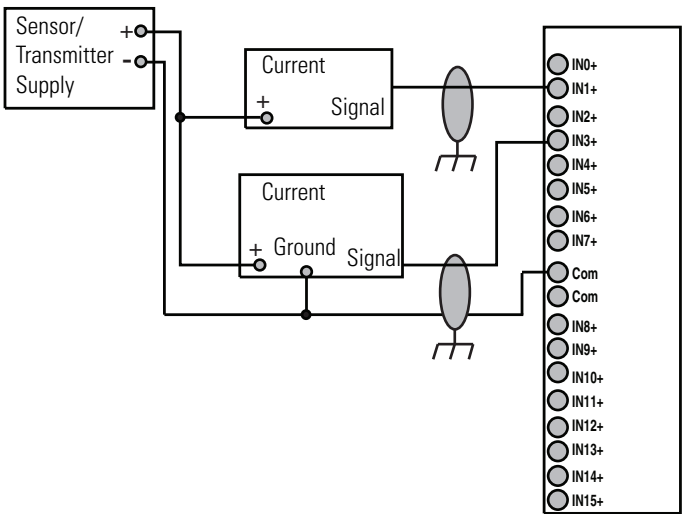
The sensor power supply must be rated Class 2.

1769-IF16V

Compact voltage analog input module

Simplified Input Circuit Diagram
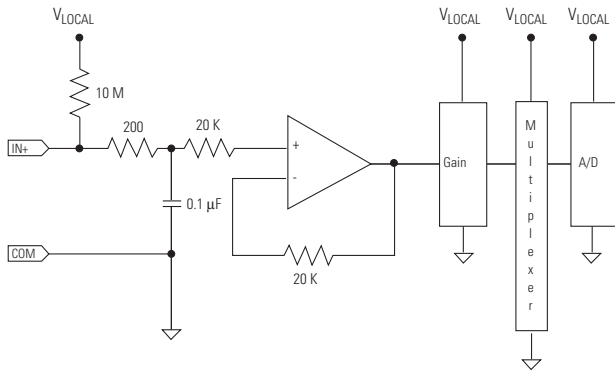
1769-IF16V Sensor/Transmittor Inputs
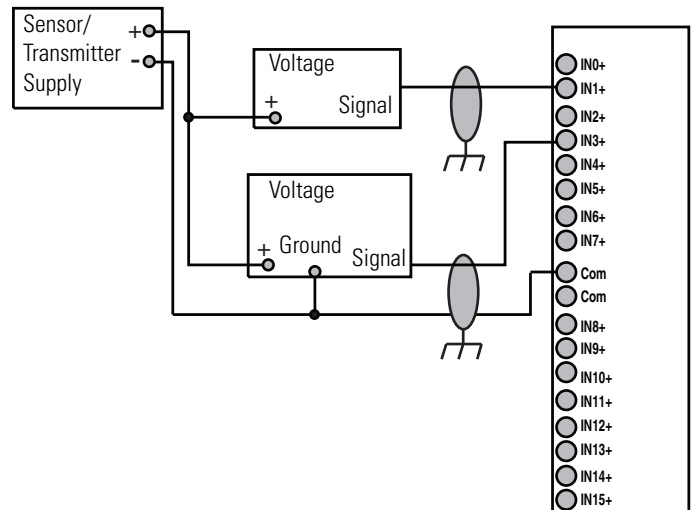
The sensor power supply must be rated Class 2.

1769-IG16

Compact TTL input module

Simplified Input Circuit Diagram

1769-IG16
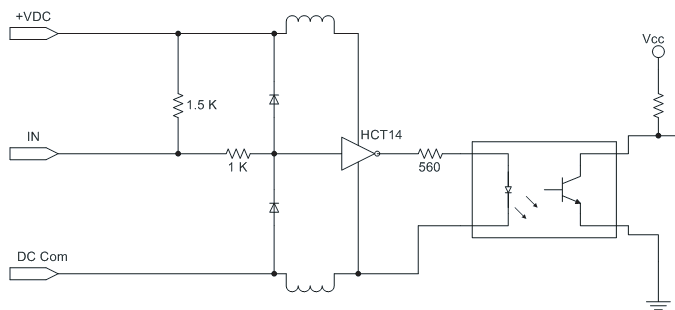
- Use Belden 8761, or equivalent, shielded wire.

- Do not connect more than 2 wires to any single terminal.

- DC power cable and I/O cables should not exceed 10 m (30 ft).

- The capacitors shown above must be 0.01 µF and rated for 2000V min.

- User power supply must be rated Class 2 with a 5V DC range of 4.5…5.5V DC.
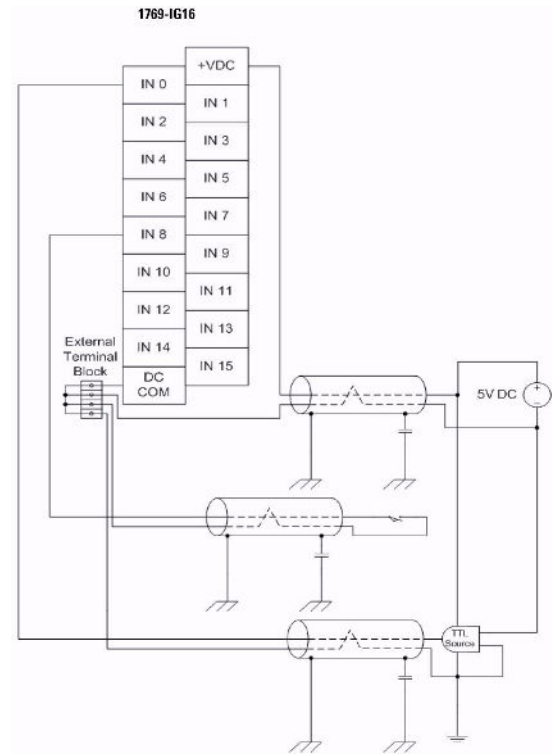
1769-IM12

Compact 240V AC input module

1769-IM12

Commons are connected internally.

Do not use the NC terminals as a connection.
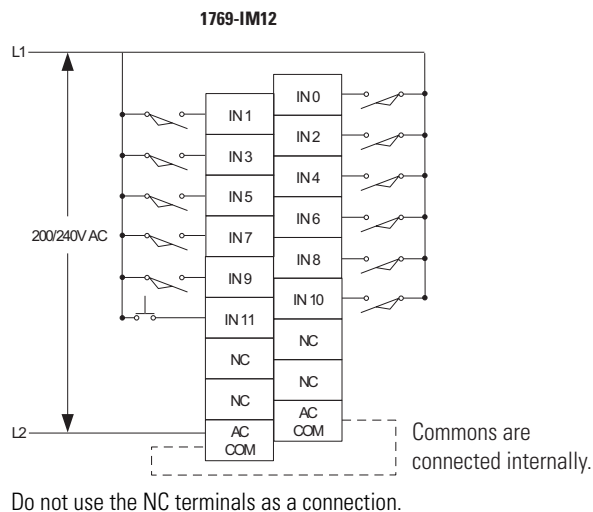
1769-IQ16

Compact 24V DC sink/source input module
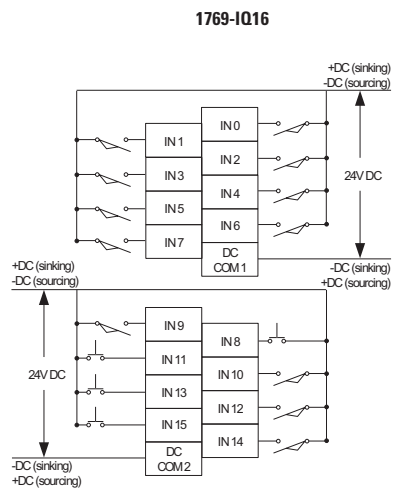
1769-IQ16

1769-IQ16F

Compact 24V DC sink/source, high-speed input module

1769-IQ16F
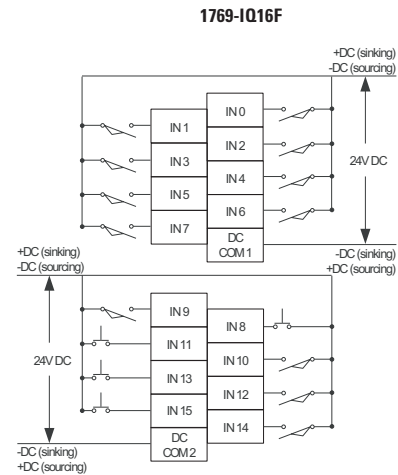
1769-IQ32

Compact 24V DC sink/source input module
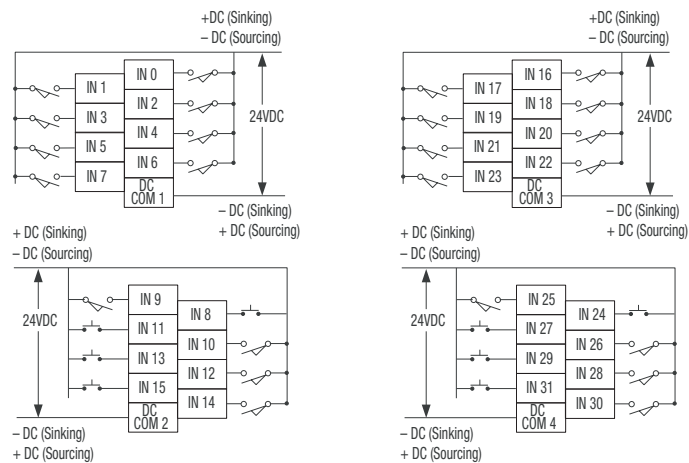
1769-IQ32

1769-IQ32T

Compact 24V DC sink/source, terminated input module

1769-IQ32T
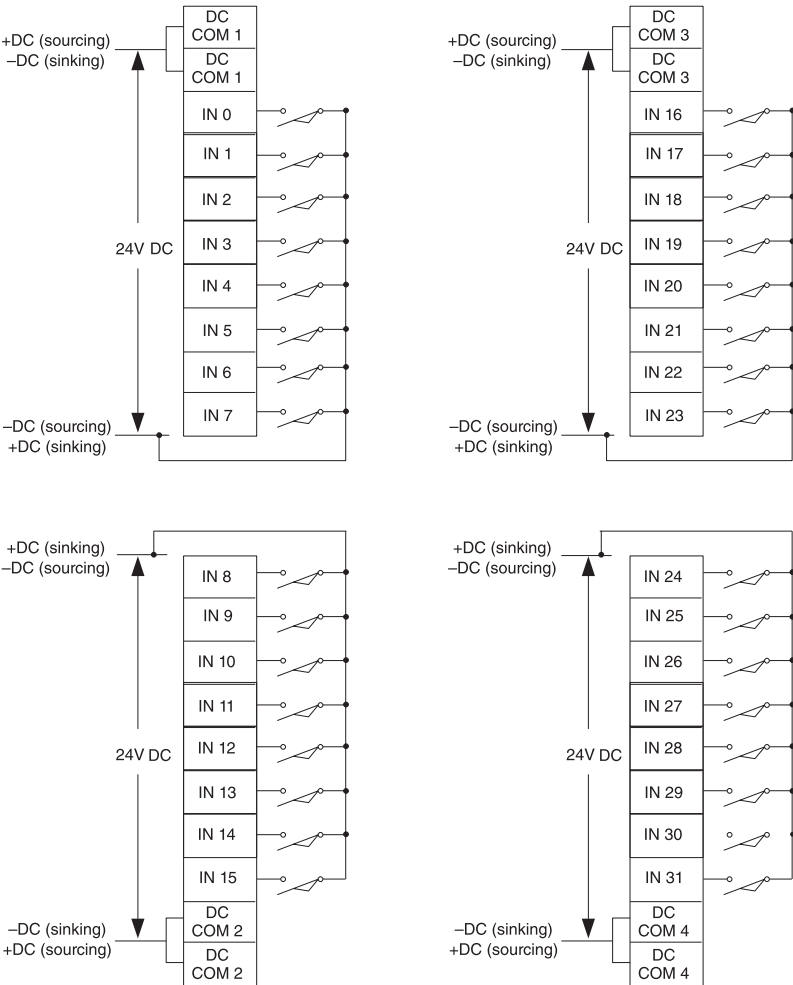
1769-IQ6XOW4

Compact combination 24V DC sink/source input and AC/DC relay output module
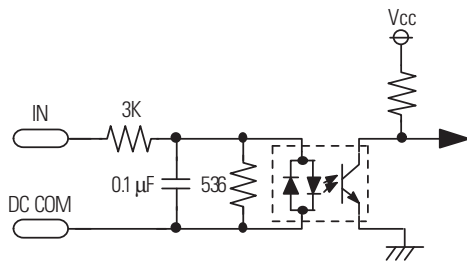
Simplified Input Circuit Diagram

1769-IQ6XOW4

Simplified Output Circuit Diagram
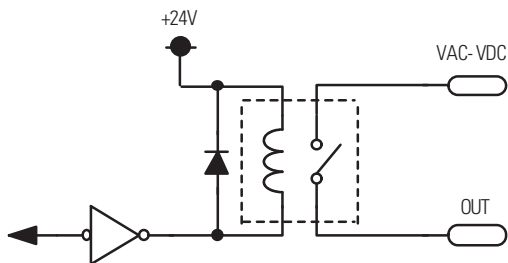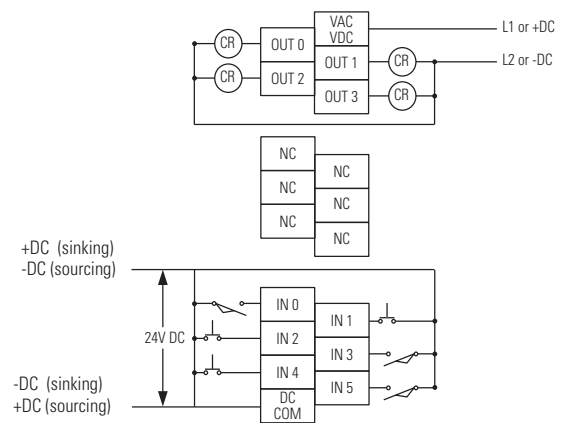
1769-IR6

Compact RTD/resistance input module

Two-wire RTD Configuration
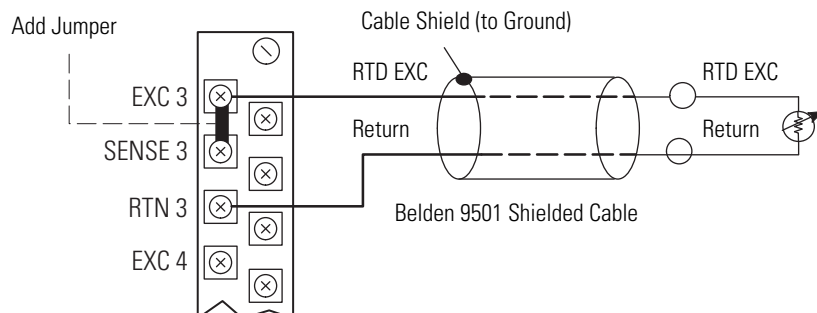
Three-wire RTD Configuration
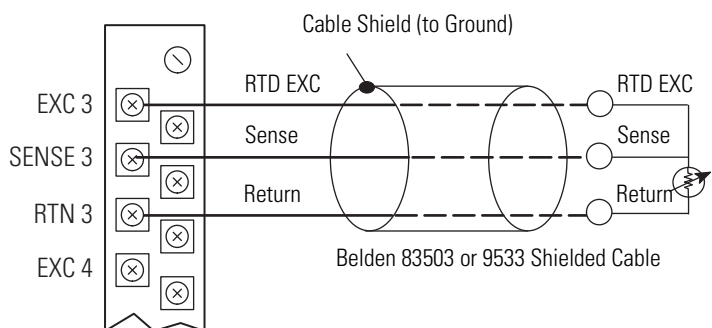
Four-wire RTD Configuration

Two-wire Potentiometer Configuration

Add Jumper

EXC 3

SENSE 3

RTN 3

Cable Shield (to Ground)

RTD EXC

Return

Potentiometer

Belden 9501 Shielded Cable

Add Jumper

EXC 3

SENSE 3

RTN 3

Cable Shield (to Ground)

RTD EXC

Return

Potentiometer

Belden 9501 Shielded Cable

Three-wire Potentiometer Configuration

Cable Shield (to Ground)

EXC 3

SENSE 3

RTN 3

RTD EXC

Sense

Return

Run RTD EXC and sense wires from the module to potentiometer terminal and tie terminal to one point.

Potentiometer

Belden 83503 or 9533 Shielded Cable

Cable Shield (to Ground)

EXC 3

SENSE 3

RTN 3

RTD EXC

Sense

Return

Run RTD EXC and sense wires from the module to potentiometer terminal and tie terminal to one point.

Potentiometer

Belden 83503 or 9533 Shielded Cable

1769-IT6

Compact Thermocouple/mV input module
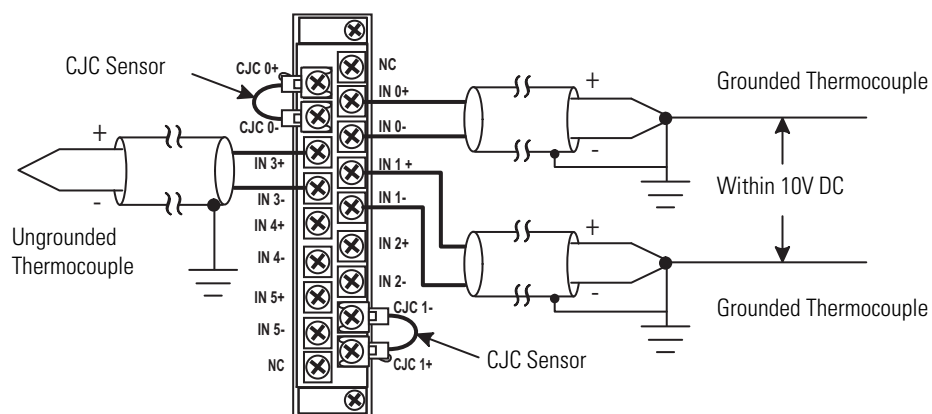
1769-OA8

Compact 100/240V AC solid state output module

Simplified Output Circuit Diagram
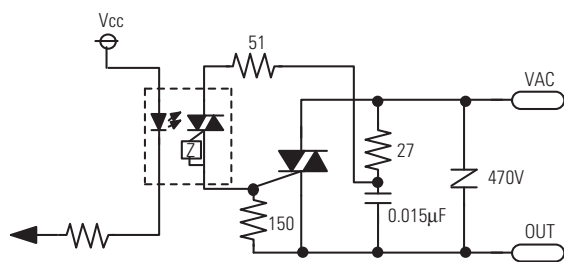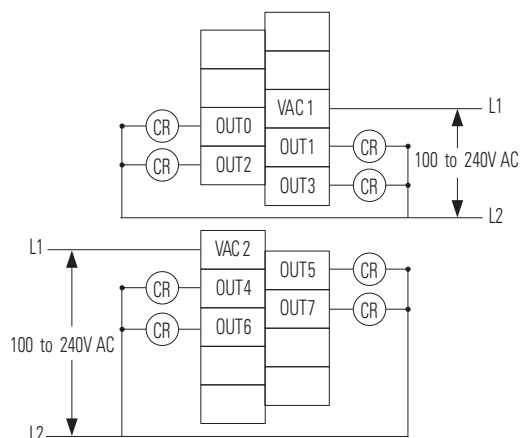
1769-OA16

Compact 120/240V AC solid state output module

Simplified Output Circuit Diagram

1769-OA16
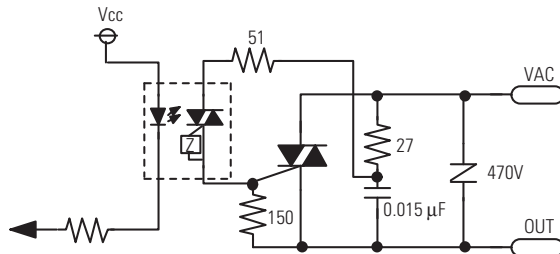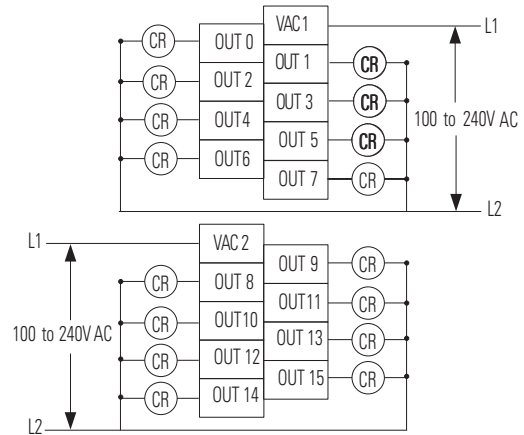
1769-OB8

Compact solid state 24V DC source, high-current output module

Simplified Output Circuit Diagram
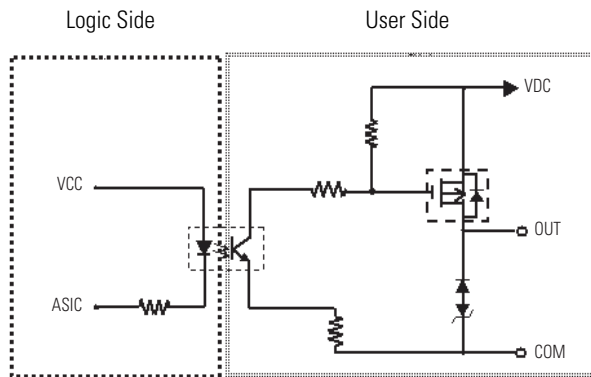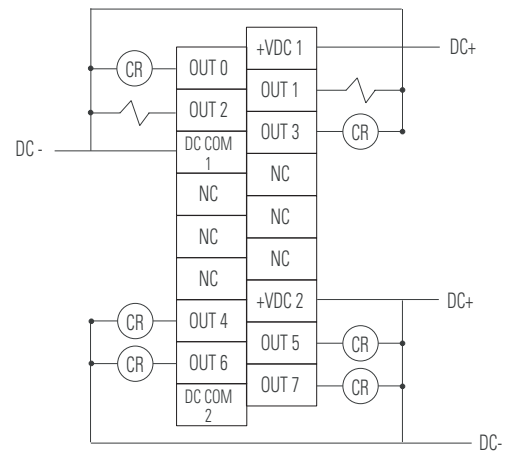
1769-OB8

1769-OB16

Compact solid state 24V DC source output module

Simplified Output Circuit Diagram
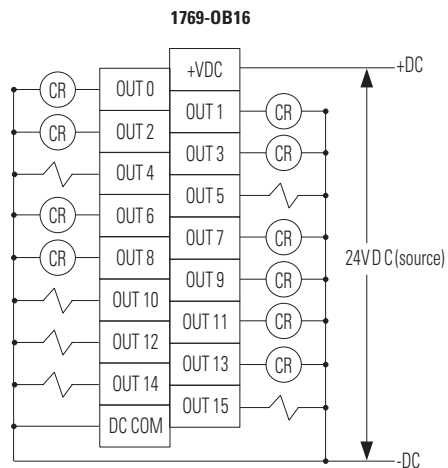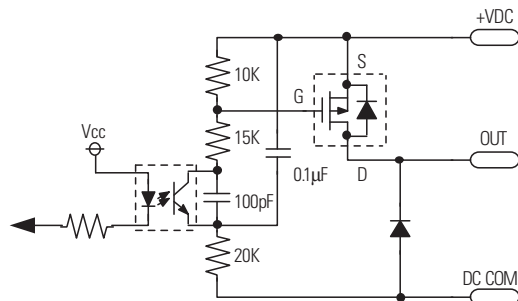
1769-OB16

1769-OB16P

Compact solid state 24V DC source, protected output module

Simplified Output Circuit Diagram
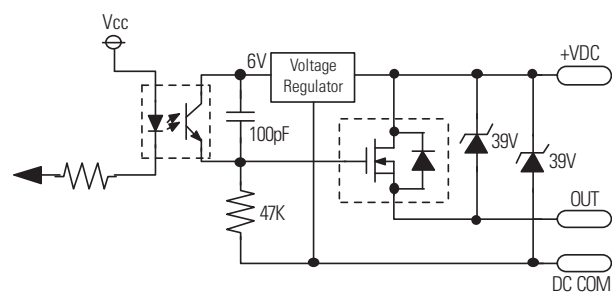
Protection circuit is not shown.

1769-OB16P
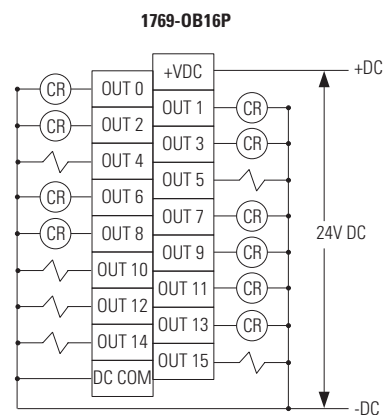
1769-OB32

Compact solid state 24V DC source output module

1769-OB32
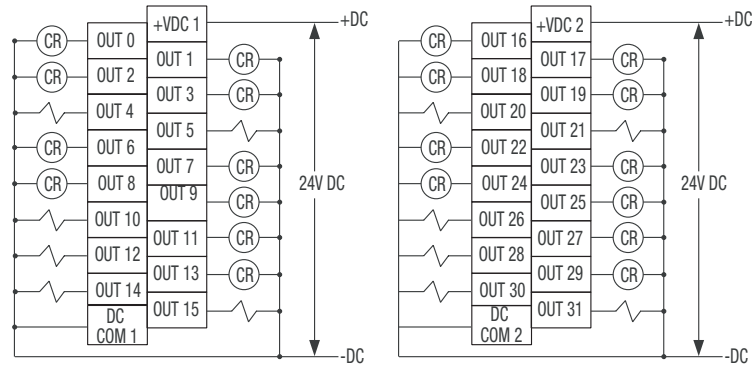
Simplified Output Circuit Diagram

Logic Side   User Side
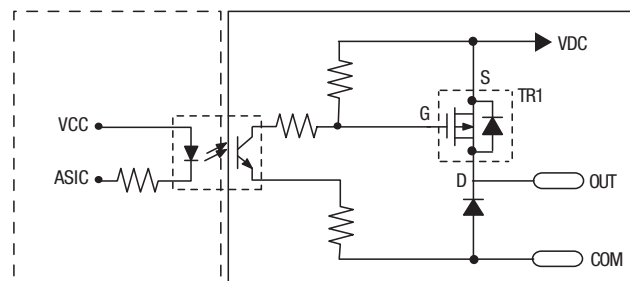
1769-OB32T

Compact solid state 24V DC source, terminated output module

1769-OB32T

Simplified Output Circuit Diagram

Logic Side   User Side
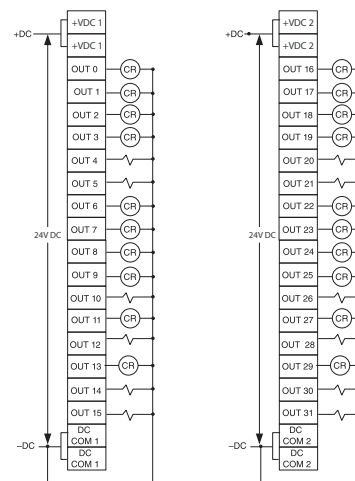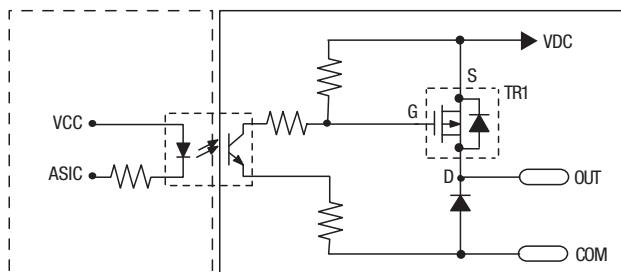
1769-OF2

Compact voltage/current output analog module
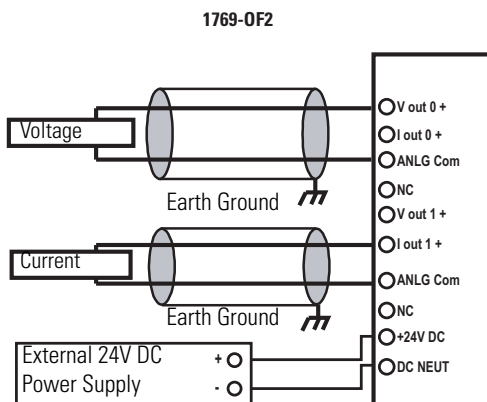
1769-OF2

The external power supply must be rated Class 2, with a 24V DC range of 20.4…26.4V DC and 60 mA minimum. Series B and later modules support this option.

1769-OF4

Compact voltage/current output analog module

Simplified Schematic
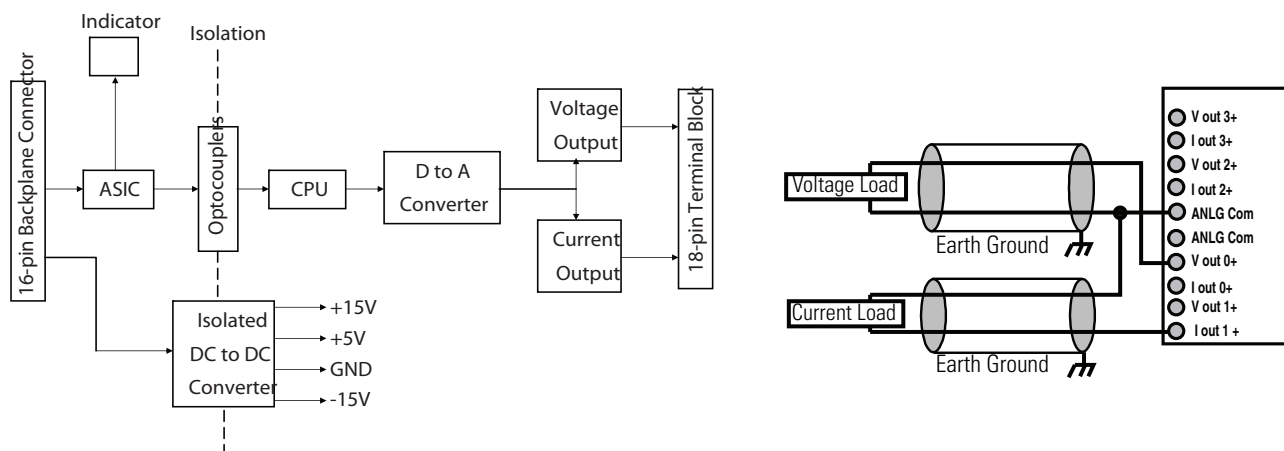
1769-OF4CI

Compact current output, individually isolated analog module

1769-OF4CI
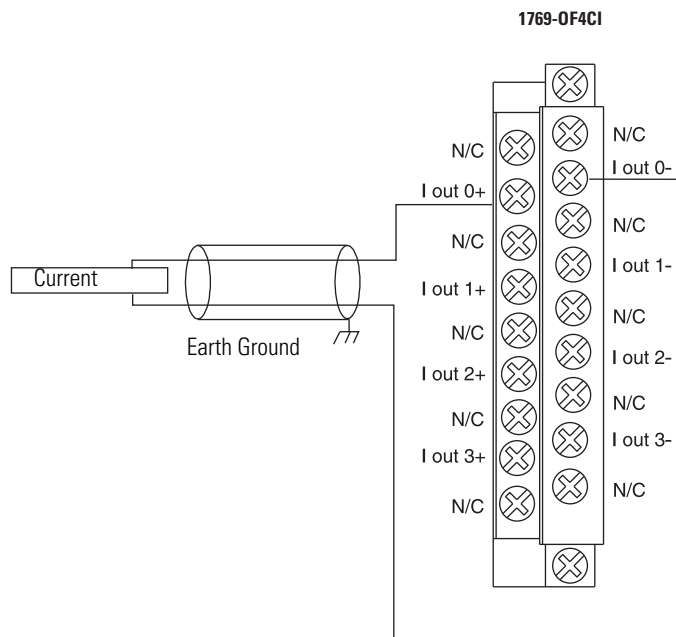
1769-OF4VI

Compact voltage output, individually isolated analog module

1769-OF4VI

1769-OF8C

Compact current output analog module
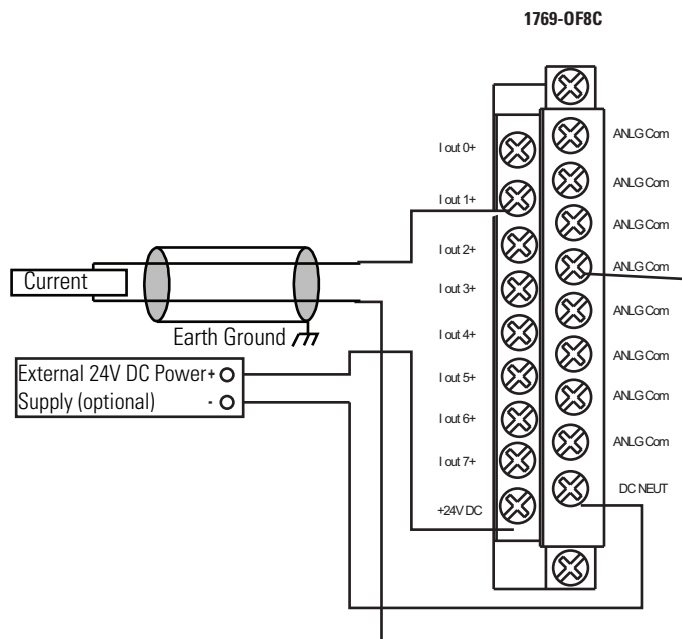
1769-OF8C

I out 0+	ANLG Com
I out 1+	ANLG Com
I out 2+	ANLG Com
I out 3+	ANLG Com
I out 4+	ANLG Com
I out 5+	ANLG Com
I out 6+	ANLG Com
I out 7+	ANLG Com
+24V DC	DC NEUT

Current

Earth Ground

External 24V DC Power +
Supply (optional)   -

The external power supply must be rated Class 2, with a 24V DC range of 20.4…6.4V DC and 60 mA minimum. Series B and later modules support this option.

1769-OF8V

Compact voltage output analog module
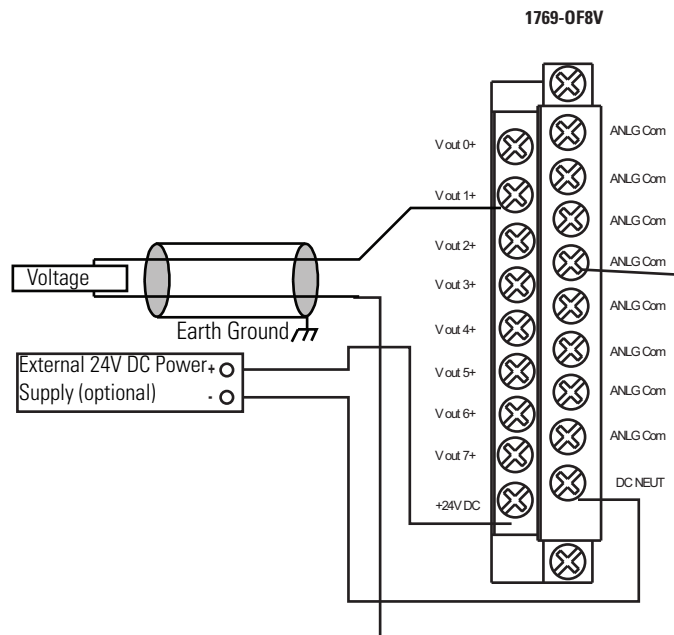
The external power supply must be rated Class 2, with a 24V DC range of 20.4…6.4V DC and 60 mA minimum. Series B and later modules support this option.

1769-OG16

Compact TTL output module

Simplified Output Circuit Diagram
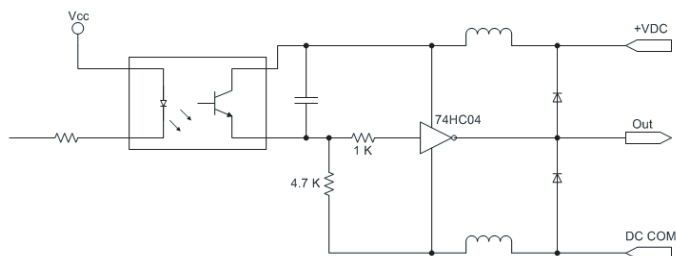
- Use Belden 8761, or equivalent, shielded wire.

- Do not connect more than two wires to any single terminal.

- DC power cable and I/O cables should not exceed 10 m (30 ft).

- The capacitors shown above must be 0.01 μF and rated for 2000V min.

- User power supply must be rated Class 2 with a 5V DC range of 4.5…5.5V DC.
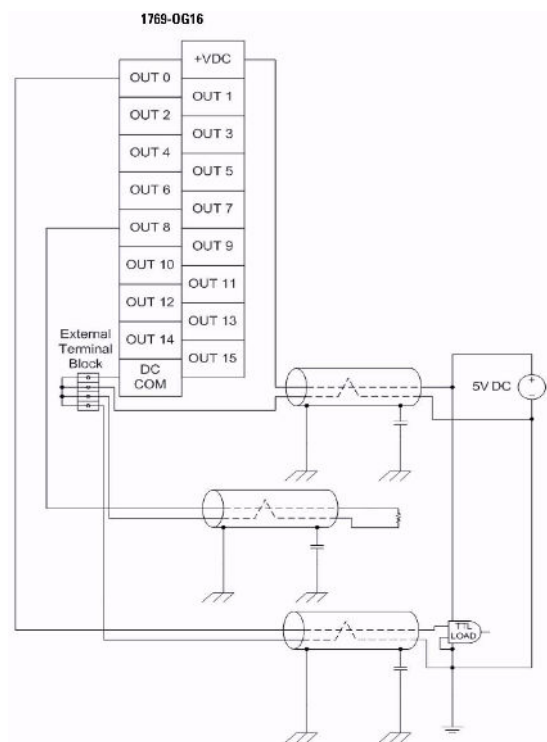
1769-OV16

Compact solid state 24V DC sink output module

Simplified Output Circuit Diagram
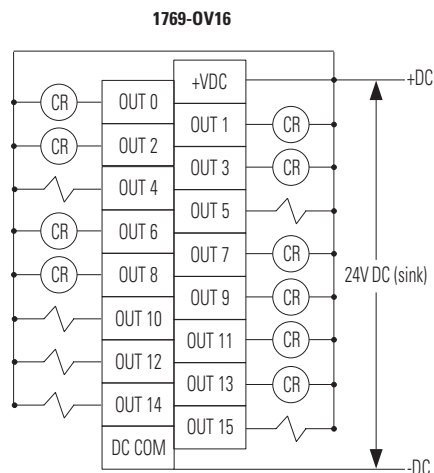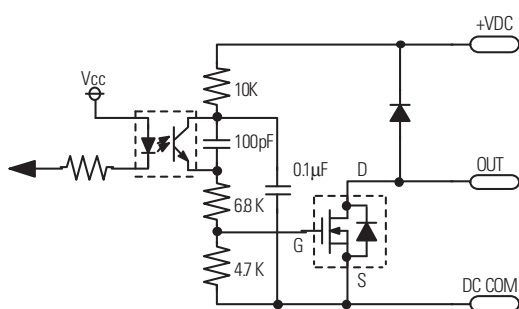
1769-OV32T

Compact solid state 24V DC sink, terminated output module

Simplified Output Circuit Diagram

1769-OV32T
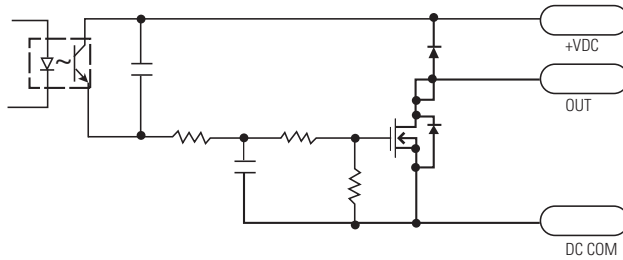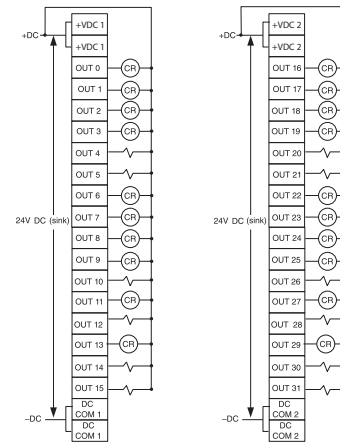
1769-OW8

Compact AC/DC relay contact module

Simplified Output Circuit Diagram

1769-OW8
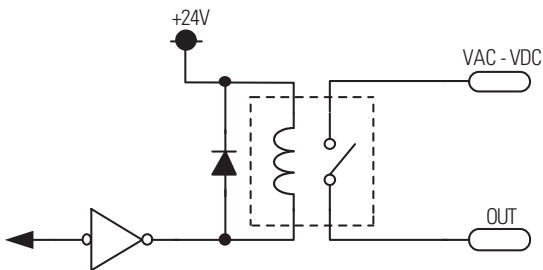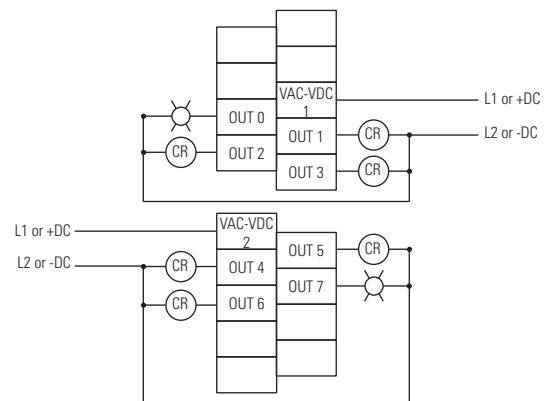
1769-OW8I

Compact AC/DC individually isolated, relay contact module

Simplified Output Circuit Diagram

1769-OW8I
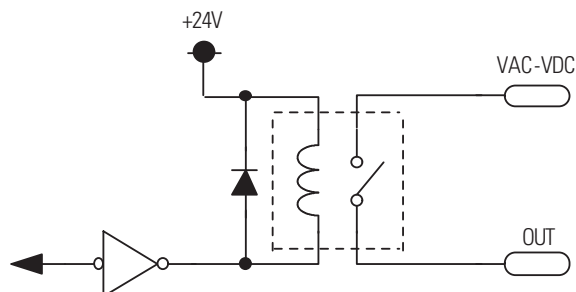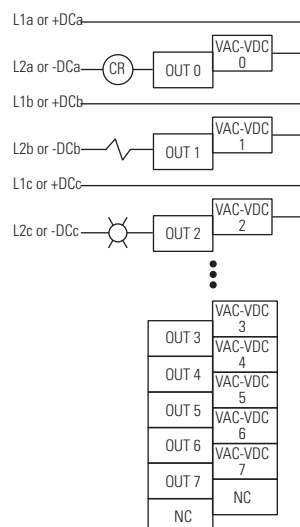
1769-OW16

Compact AC/DC relay contact module

Simplified Output Circuit Diagram
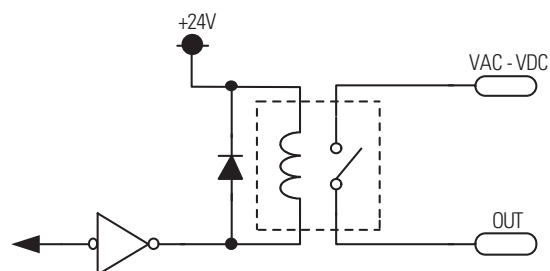
1769-OW16
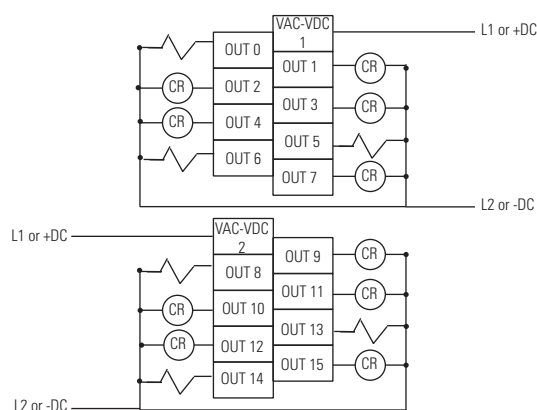
1769-ARM

The 1769-ARM module is an address reserve module for reserving I/O module slots. As a result, no wiring is required.

1769-ASCII

Compact ASCII module

RS-232 Wiring Module to DTE Device (hardware handshaking disabled)

ASCII DTE

			DTE	9-pin	25-pin
1	NC		DCD	1	8
2	RXD	←	TXD	3	2
3	TXD	→	RSD	2	3
4	NC		DSR	6	6
5	COM	↔	COM	5	7
6	NC		DTR	4	20
7	RTS		CTS	8	5
8	CTS		RTS	7	4
9	NC		GND		1
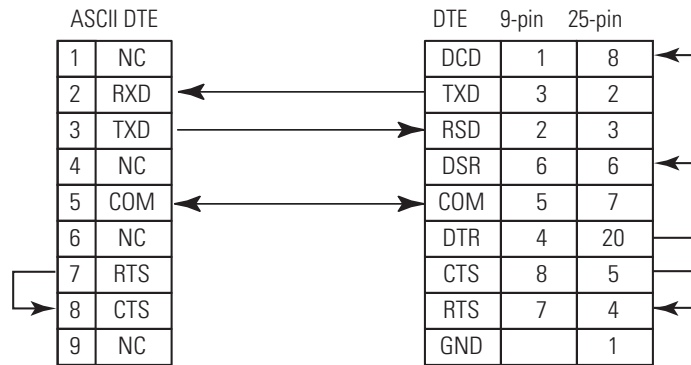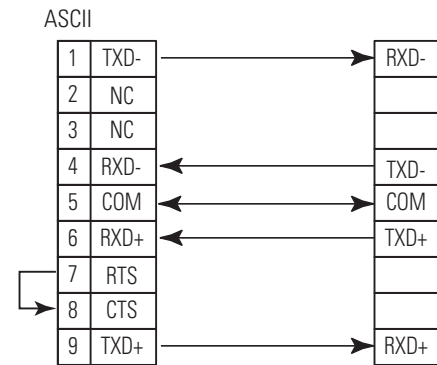
RS-232 Wiring Module to Printer (hardware handshaking enabled, standard printer adapter cable)

ASCII DTE

			DTE	9-pin	25-pin
1	NC		CD	1	8
2	RXD	←	TXD	3	2
3	TXD	→	RXD	2	3
4	NC		DSR	6	6
5	COM	↔	COM	5	7
6	NC		DTR	4	20
7	RTS	→	CTS	8	5
8	CTS	←	RTS	7	4
9	N.C.		RI	9	22
			GND		1

RS-422 Wiring

ASCII

1	TXD-	→	RXD-
2	NC		
3	NC		
4	RXD-	←	TXD-
5	COM	↔	COM
6	RXD+		TXD+
7	RTS		
8	CTS		
9	TXD+	→	RXD+

RS-485 Wiring

ASCII

1	TRXD-	↔	TRXD-
2	NC		
3	NC		
4	NC		
5	COM	↔	COM
6	NC		
7	RTS		
8	CTS		
9	TRXD+	↔	TRXD+
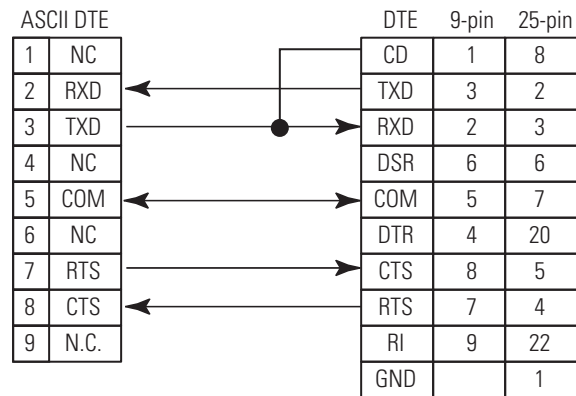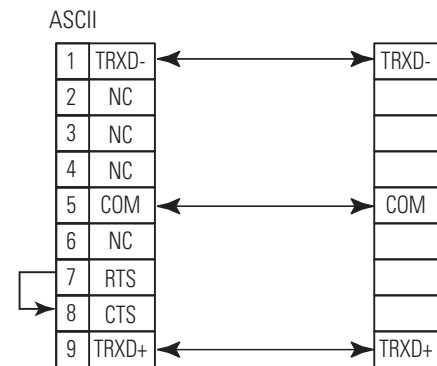
1769-BOOLEAN

Compact combination 24V DC sink input/source output BOOLEAN control module

Simplified Input Schematic

Do not use the NC terminals as connection points.
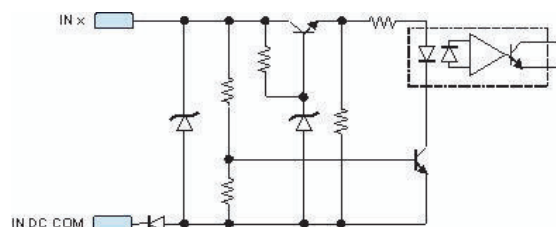
Simplified Output Schematic
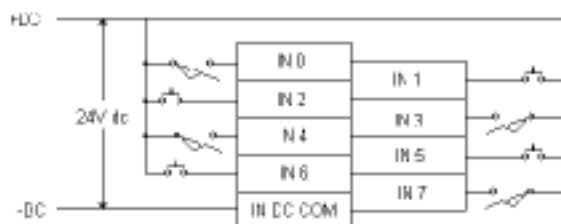
1769-HSC

Compact high-speed counter module

Differential Encoder Wiring

Use twisted-pair, individually-shielded cable with a maximum length of 300 m (1000 ft).

Allen-Bradley 845H Series differential encoder.

Shield/Housing
Connect only if housing is electronically isolated from the motor and ground.
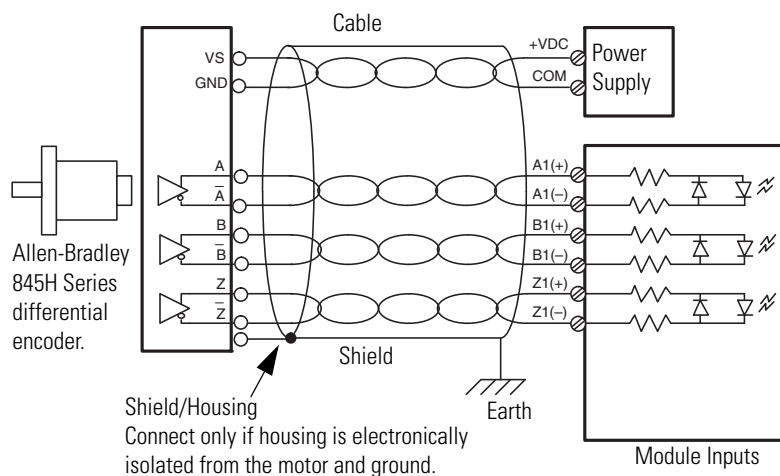
Single-ended Encoder Wiring

Use twisted-pair, individually-shielded cable with a maximum length of 300 m (1000 ft).

Allen-Bradley 845H Series single-ended encoder.

Shield/Housing
Connect only if housing is electronically isolated from the motor and ground.

Module Inputs

External resistors are required if they are not internal to the encoder. The pull-up resistor (R) value depends on the power supply value. To calculate the maximum resistor value, use this formula:

$$R = \frac{(Vdc - Vmin)}{Imin}$$

where:

- R = maximum pull-up resistor value

- Vdc = power supply voltage

- Vmin = 2.6V DC

- min = 6.8 mA

Power Supply Voltage	Pull-up Resistor Value Max (R)[1]
5V DC	352 Ω
12V DC	1382 Ω
24V DC	3147 Ω

(1) Resistance values may change, depending upon your application.

The minimum resistor (R) value depends on the current sinking capability of the encoder.

Discrete Device Wiring

External resistors are required if they are not internal to the encoder. The pull-up resistor (R) value depends on the power supply value. To calculate the maximum resistor value, use this formula:

$$R = \frac{(Vdc - Vmin)}{Imin}$$

where:

- R = maximum pull-up resistor value
- Vdc = power supply voltage
- Vmin = 2.6V DC
- min = 6.8 mA

Power Supply Voltage	Pull-up Resistor Value Max (R)[1]
5V DC	352 Ω
12V DC	1382 Ω
24V DC	3147 Ω

(1)   Resistance values may change, depending upon your application.

The minimum resistor (R) value depends on the current sinking capability of the encoder.

Output Wiring
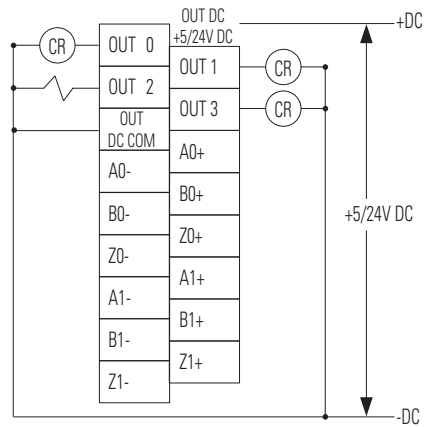
Notes:

I/O Memory Mapping

I/O Type	Cat. No.	Page
AC digital	1769-IA8I	54
	1769-IA16	54
	1769-IM12	94
	1769-OA8	107
	1769-OA16	110
DC digital	1769-IG16	92
	1769-IQ16	94
	1769-IQ16F	95
	1769-IQ32	96
	1769-IQ32T	96
	1769-IQ6XOW4	97
	1769-OB8, Series A	113
	1769-OB16, Series B	116
	1769-OB16P	119
	1769-OB32	122
	1769-OB32T	125
	1769-OG16	162
	1769-OV16	165
	1769-OV32T	167
Contact	1769-OW8	170
	1769-OW8I	173
	1769-OW16	176
Analog	1769-IF4	55
	1769-IF4I	57
	1769-IF4XOF2	61
	1769-IF4FXOF2F	65
	1769-IF8	70
	1769-IF16C	80
	1769-IF16V	86
	1769-IR6	100
	1769-IT6	104
	1769-OF2	128
	1769-OF4	132
	1769-OF4CI	135
	1769-OF4VI	139
	1769-OF8C	142
	1769-OF8V	152
Specialty	1769-ARM	179
	1769-ASCII	180
	1769-BOOLEAN	187
	1769-HSC	195

1769-IA8I

The following I/O memory mapping lets you configure the 1769-IA8I module.

Input Data File

For each input module, slot *x*, word 0 in the input data file contains the current state of the field input points. For the 1769-IA8I, bits 8 to 15 are not used.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	r[1]	r	r	r	r	r	r	r

(1) r = read.

1769-IA16

The following I/O memory mapping lets you configure the 1769-IA16 module.

Input Data File

For each input module, slot *x*, word 0 in the input data file contains the current state of the field input points.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

1769-IF4

The following I/O memory mapping lets you configure the 1769-IF4 module.

Input Data File

For each input module, slot *x*, words 0…3 in the input data file contain the analog values of the inputs.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	SGN	Analog Input Data Channel 0														
1	SGN	Analog Input Data Channel 1														
2	SGN	Analog Input Data Channel 2														
3	SGN	Analog Input Data Channel 3														
4	Not Used												S3	S2	S1	S0
5	U0	O0	U1	O1	U2	O2	U3	O3	Set to 0							

The bits are defined as follows:

- SGN = Sign bit in two's complement format.
- S*x* = General status bit for channels 0 through 3. This bit is set (1) when an error (over- or under-range) exists for that channel.
- U*x* = Under-range flag bits for channels 0 through 3. These bits can be used in the control program for error detection.
- O*x* = Over-range flag bits for channels 0 through 3. These bits can be used in the control program for error detection.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided by the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement. Refer to the Compact I/O Analog Modules User Manual, publication number 1769-UM002 for additional details.

Words 0......3 of the configuration file allow you to change the parameters of each channel independently. For example, word 0 corresponds to channel 0.

Define	To Select	Make these bit settings												
		15	14	13	12	11	10	9	8	4…7	3	2	1	0
Input Filter Selection/-3 dB Frequency	60 Hz/15.7 Hz										0	0	0	0
	50 Hz/13.1 Hz										0	0	0	1
	Not Used										0	0	1	0
	250 Hz/65.5 Hz										0	0	1	1
	500 Hz/131Hz										0	1	0	0
	Spare[1]													
Input Type/ Range	-10 to +10V dc					0	0	0	0	Not Used				
	0 to 5V dc					0	0	0	1					
	0 to 10V dc					0	0	1	0					
	4 to 20 mA					0	0	1	1					
	1 to 5V dc					0	1	0	0					
	0 to 20 mA					0	1	0	1					
	Spare[1]													
Input Data Format	Raw/Proportional Data		0	0	0									
	Engineering Units		0	0	1									
	Scaled-for-PID		0	1	0									
	Percent Range		0	1	1									
	Spare[1]													
Enable Channel	Enabled	1												
	Disabled	0												

(1) An attempt to write any nonvalid (spare) bit configuration into any selection field results in a module configuration error.

1769-IF4I

The following I/O memory mapping lets you configure the 1769-IF4I module.

Input Data File

For each input module, slot *x*, words 0…3 in the input data file contain the analog values of the inputs.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	SGN	Analog Input Data Channel 0														
1	SGN	Analog Input Data Channel 1														
2	SGN	Analog Input Data Channel 2														
3	SGN	Analog Input Data Channel 3														
4	Nu	Time Stamp Value														
5	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	S3	S2	S1	S0
6	L3	H3	U3	O3	L2	H2	U2	O2	L1	H1	U1	O1	L0	H0	U0	O0

The bits are defined as follows:

- SGN = Sign bit in two's complement format.
- Nu = Not used. Bit set to 0.
- S*x* = General status bit for input channels 0…3.
- L*x* = Low alarm flag bits for input channels 0…3.
- H*x* = High alarm flag bits for input channels 0…3.
- U*x* = Under-range flag bits for channels 0…3. When set, the input signal is under normal range or an open circuit condition exists, in the case of the 4-20 mA range.
- O*x* = Over-range flag bits for channels 0…3. When set, the input signal is over normal range or an open circuit condition exists. Open circuit detection applies to voltage input ranges only.

Output Data File

For each input module, slot *x*, word 0 in the output data file contains the analog values of the outputs.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	UL3	UH3	UL2	UH2	UL1	UH1	UL0	UH0

The bits are defined as follows:

- Nu = Not used. Bit set to 0.
- UH*x* = Cancel High Process Alarm Latch *x*. Allows each high process alarm latch to be individually cancelled. Cancel = 1.
- UL*x* = Cancel Low Process Alarm Latch *x*. Allows each low process alarm latch to be individually cancelled. Cancel = 1.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided by the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Real Time Sample Value															
1	ETS	Reserved														
2	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl0			
3	Reserved					Inpt Dta Fm Chl0			Reserved				Inpt Tp/RngeSel Chl0			
4	S	Process Alarm High Data Value Channel 0														
5	S	Process Alarm Low Data Value Channel 0														
6	S	Alarm Dead Band Value Channel 0														
7	Reserved															
8	EC	Reserved				EA	AL	EI	Reserved				Inpt Filter Sel Chl1			
9	Reserved					Inpt Dta Fm Chl1			Reserved				Inpt Tp/RngeSel Chl1			
10	S	Process Alarm High Data Value Channel 1														
11	S	Process Alarm Low Data Value Channel 1														
12	S	Alarm Dead Band Value Channel 1														

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
13	Reserved															
14	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl2			
15	Reserved					Inpt Dta Fm Chl2			Reserved				Inpt Tp/RngeSel Chl2			
16	S	Process Alarm High Data Value Channel 2														
17	S	Process Alarm Low Data Value Channel 2														
18	S	Alarm Dead Band Value Channel 2														
19	Reserved															
20	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl3			
21	Reserved					Inpt Dta Fm Chl3			Reserved				Inpt Tp/RngeSel Chl3			
22	S	Process Alarm High Data Value Channel 3														
23	S	Process Alarm Low Data Value Channel 3														
24	S	Alarm Dead Band Value Channel 3														
25	Reserved															

The bits are defined as follows:

- EC = Enable Channel.
- Inpt Dta Fm Chlx = Input Data Format Select.
- EA = Enable Alarm.
- AL = Alarm Latch.
- EI = Enable Interrupt.[1]
- Inpt Tp/Rnge Sel Chlx = Input Type/Range Select.
- Inpt Filter Sel Chlx = Input Filter Select.
- Reserved = Allows for future expansion.
- ETS = Enable Time Stamp.

---

(1)   MicroLogix 1500 and CompactLogix L3x controllers do not support interrupts.

Define	To Select	Make these bit settings								
		15	14…11	10	9	8	7…4	3	2	1	0
Input Filter Selection	60 Hz							0	0	0	0
	50 Hz							0	0	0	1
	28.5 Hz							0	0	1	0
	300 Hz							0	0	1	1
	360 Hz							0	1	0	0
Enable Interrupt	Enable					1					
	Disable					0					
Enable Process Alarm Latch	Enable				1						
	Disable				0						
Enable Process Alarms	Enable			1							
	Disable			0							
Enable Channel	Enable	1									
	Disable	0									

Define	Indicate this	These bit settings								
		15…11	10	9	8	7…4	3	2	1	0
Input Range Select	-10…+10V dc						0	0	0	0
	0…5V dc						0	0	0	1
	0…10V dc						0	0	1	0
	4…20 mA						0	0	1	1
	1…5V dc						0	1	0	0
	0…20 mA						0	1	0	1
Input Data Select	Raw/Proportional Counts		0	0	0					
	Engineering Units		0	0	1					
	Scaled for PID		0	1	0					
	Percent Range		0	1	1					

1769-IF4XOF2

The following I/O memory mapping lets you configure the 1769-IF4XOF2 module.

Input Data File

The input data file provides access to input data for use in the control program, over-range indication for the input and output channels, and output data feedback as described below.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	SGN	Analog Input Data Channel 0								0	0	0	0	0	0	0
1	SGN	Analog Input Data Channel 1								0	0	0	0	0	0	0
2	SGN	Analog Input Data Channel 2								0	0	0	0	0	0	0
3	SGN	Analog Input Data Channel 3								0	0	0	0	0	0	0
4	Not Used[1]												I3	I2	I1	I0
5	Not Used	H0	Not Used	H1	Not Used[]								E1	E0	O1	O0
6	SGN	Output Data Echo/Loopback for Output Channel 0							0	0	0	0	0	0	0	0
7	SGN	Output Data Echo/Loopback for Output Channel 1							0	0	0	0	0	0	0	0

(1) All unused bits are set to 0 by the module.

IMPORTANT	Input words 6 and 7 contain the output data echo/loopback information for output channels 0 and 1 respectively. Bits 0 through 6 and Bit 15 of words 6 and 7 should always be set to zero in your control program. If they are not set to 0, the invalid data flag (Ex) will be set for that channel by the module. However, the channel will continue to operate with the previously converted value.

The bits are defined as follows:

- SGN = Sign bit in two's complement format. Always positive (equal to zero) for the 1769-IF4XOF2 module.

- Ix = Over-range flag bits for input channels 0 through 3. These bits can be used in the control program for error detection. When set to 1, the bits signal that the input signal is outside the normal operating range. However, the module continues to convert analog data to the maximum full-range value. When the over-range condition is cleared, the bits automatically reset (0).

- Ox = Word 5, bits 0 and 1 provide over-range indication for output channels 0 and 1. These bits can be used in the control program for error detection. When set to 1, the bits signal that the output signal is outside the normal operating range. However, the module continues to convert analog data to the maximum full-range value. When the over-range condition is cleared, the bits automatically reset (0).

    TIP Under-range indication is not provided because zero is a valid number.

- Ex = When set (1), this bit indicates that invalid data has been set in the output data bits 0 through 6 or the sign bit (15). For example, the value sent by the controller is outside the standard output range or increment, such as 128, 256.

- Hx = Hold Last State bits. When set (1), these bits indicate that the channel is in a Hold Last State condition.

- Words 6 and 7 = These words reflect the analog output data echo of the analog value being converted by the digital/analog converter, not necessarily the electrical state of the output terminals. They do not reflect shorted or open outputs.

    IMPORTANT It is only important to use the loopback function of input words 6 and 7 if the controller supports the Program mode or Fault mode functions, and if it is configured to use them.

Output Data File

The output data file applies only to output data from the module as shown in the table below.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	SGN	Analog Output Data Channel 0							0	0	0	0	0	0	0
1	SGN	Analog Output Data Channel 1							0	0	0	0	0	0	0

IMPORTANT Bits 0 through 6 and Bit 15 of output data words 0 and 1 should always be set to zero in your control program. If they are not set to 0, the invalid data flag (Ex) will be set for that channel. However, the channel will continue to operate with the previously converted value. If a MVM (Move with Mask) instruction is used with a mask of 7F80 (hexidecimal) to move data to the output words, writing to bits 0 through 6 and bit 15 can be avoided.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are typically provided by the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement. Refer to the Compact Analog I/O Combination Module User Manual, publication number 1769-UM008 for additional details.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Not Used[1]	Not Used[1]			Not Used[1]				EI3	EI2	EI1	EI0	FM0[2]	PM0[2]	Not Used[1]	PFE0[2]
1	Not Used[1]	Not Used[1]			Not Used[1]				Not Used[1]	Not Used[1]	EO1	EO0	FM1[2]	PM1[2]	Not Used[1]	PFE1[2]
2	SGN	Channel 0 Fault Value[2]							0	0	0	0	0	0	0	0
3	SGN	Channel 0 Program (Idle) Value[2]							0	0	0	0	0	0	0	0
4	SGN	Channel 1 Fault Value[2]							0	0	0	0	0	0	0	0
5	SGN	Channel 1 Program (Idle) Value[2]							0	0	0	0	0	0	0	0

(1) Any attempt to write a nonvalid (1s) bit configurations into any not used selection field results in a module configuration error.

(2) Not all controllers support these functions. Refer to your controller's user manual for details.

The bits are defined as follows:

- SGN = Sign bit in two's complement format. The sign of the data for the 1769-IF4XOF2 must be positive (Bit 15 = 0) or a configuration error occurs.

- EIx = Individually enable or disable input channels 0 through 3 using these bits. When a channel is not enabled, the module provides no current or voltage input to the host controller.

- EOx = Individually enable or disable output channels 0 and 1 using these bits. When a channel is not enabled, the module does not produce current or voltage.

> **TIP** The enable bit remains set even when a channel is configured incorrectly. However, a configuration error for that channel is set. When this occurs, disable the channel, reconfigure the channel correctly, and then enable the channel.

- PM*x* = These bits provide Program (Idle) mode selection for analog output channels 0 and 1.

  Hold Last State (0)—When reset, this bit directs the module to hold the analog output at the last converted value when the module transitions to Program mode. This is the default condition.

  User-Defined Safe State (1)—When this bit is set and the module transitions to Program mode, the module converts the user-specified integer value from the Channel *x* Program Value Word (3 or 5) to the appropriate analog output for the configured range as wired.

- FM*x* = These bits provide Fault mode selection for analog output channels 0 and 1.

  Hold Last State (0)—When reset, this bit directs the module to hold the analog output at the last converted value when the module transitions to Fault mode. This is the default condition.

  User-Defined Safe State (1)—When this bit is set and the module transitions to Fault mode, the module converts the user-specified integer value from the Channel *x* Fault Value Word (2 or 4) to the appropriate analog output for the configured range as wired.

- PFE*x* = The Program to Fault Enable bit determines which data value, Program (PFEx = 0) or Fault (PFEx = 1), is applied to the output if the module undergoes a fault condition while in the Program mode, resulting in a change to Fault mode.

- Channel *x* Program (Idle) Value

  Words 3 and 5 allow you to enter the integer values that output Channel 0 (Word 3) and output Channel 1 (Word 5) should assume when the system transitions to the Program mode. The value must be in increments of 128, such as 0, 128, or 256, for proper operation. If the value entered is outside the acceptable increment or range, the module generates a configuration error for that channel. The module default is zero.

- Channel *x* Fault Value

  Words 2 and 4 allow you to enter the integer values that output Channel 0 (Word 2) and output Channel 1 (Word 4) should assume when the system transitions to the Fault mode. The value must be in increments of 128, such as 0, 128, or 256, for proper operation. If the value entered is outside the acceptable increment or range, the module generates a configuration error for that channel. The module default is zero.

> **IMPORTANT** PM*x*, FM*x*, PFE*x*, Channel *x* Program (Idle) Value and Channel *x* Fault Value functions are not supported by all controllers. Refer to your controller's user manual for details.

1769-IF4FXOF2F

The following I/O memory mapping lets you configure the 1769-IF4FXOF2F module.

Input Data File

For each module, slot *x*, words 0...3 in the input data file contain the converted value of the module's analog input channels. Word 4 in the input data file contains the time stamp value corresponding to the module's last input data sampling period. Words 5 and 6 in the input data file contain status bits for the analog input channels. Word 7 in the input data file contains status bits for the analog output channels. Words 8 to 9 contain the directed values of the analog output channels (output data echo).

Word	Bit Position																
	15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
0	SGN	Analog Read (Input) Data Value Channel 0														0
1	SGN	Analog Read (Input) Data Value Channel 1														0
2	SGN	Analog Read (Input) Data Value Channel 2														0
3	SGN	Analog Read (Input) Data Value Channel 3														0
4	0	Time Stamp Value														
5	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	SI3	SI2	SI1	SI0
6	LI3	HI3	UI3	OI3	LI2	HI2	UI2	OI2	LI1	HI1	UI1	OI1	LI0	HI0	UI0	OI0
7	Nu	Nu	UO1	OO1	Nu	Nu	UO0	OO0	Nu	Nu	Nu	Nu	Nu	Nu	SO1	SO0
8	SGN	Output Data Loopback/Echo Channel 0												0	0
9	SGN	Output Data Loopback/Echo Channel 1												0	0

The bits are defined as follows:

- SGN = Sign bit in 2's complement format.
- Nu = Not Used. Bit set to 0.
- SI*x* = General Status bit for input channels 0...3.
- OI*x* = Over range flag bits for input channels 0...3.
- UI*x* = Under range flag bits for input channels 0...3.
- HI*x* = High Alarm flag bits for input channels 0...3.
- LI*x* = Low Alarm flag bits for input channels 0...3.
- SO*x* = General Status bit for output channels 0...1.
- OO*x* = Over range flag bits for output channels 0...1.
- UO*x* = Under range flag bits for output channels 0...1.

Output Data File

For each module, slot *x*, words 0 and 1 in the output data file contain the control program's directed state of the module's analog output channels. Word 2 contains the cancel input channel alarm control bits. Word 3 contains the cancel output channel clamp control bits.

Word	Bit Position															
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
0	SGN	Analog Output Data Channel 0													0	0
1	SGN	Analog Output Data Channel 1													0	0
2	0	0	0	0	0	0	0	0	CLI3	CHI3	CLI2	CHI2	CLI1	CHI1	CLI0	CHI0
3	0	0	0	0	0	0	0	0	0	0	0	0	CLO1	CHO1	CLO0	CHO0

The bits are defined as follows:

- SGN = Sign bit in 2's complement format.
- CHI*x* = Cancel High Process Alarm Latch for Input *x*. Allows each input high-process-alarm latch to be individually cancelled. Cancel = 1.
- CLI*x* = Cancel Low Process Alarm Latch for Input *x*. Allows each input low-process-alarm latch to be individually cancelled. Cancel = 1.
- CHO*x* = Cancel High Clamp Alarm Latch for Output *x*. Allows each output high-clamp-alarm latch to be individually cancelled. Cancel = 1.
- CLO*x* = Cancel Low Clamp Alarm Latch for Output *x*. Allows each output low-clamp-alarm-latch to be individually cancelled. Cancel = 1.

Configuration Data File

The manipulation of bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens provided by the programming software simplify configuration.

Some systems, like the 1769-ADN DeviceNet adapter system, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	Real Time Sample Value														
1	ETS	Reserved														
2	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl0			
3	Reserved					Input Dta Fm Chl0			Reserved				Inpt Tp/Rnge Sel Chl0			
4	SGN	Process Alarm High Data Value Channel 0														0

Word	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Bit Position															
5	SGN	Process Alarm Low Data Value Channel 0														0
6	SGN	Alarm Dead Band Value Channel 0														0
7	Reserved															
8	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl1			
9	Reserved					Input Dta Fm Chl1			Reserved				Inpt Tp/Rnge Sel Chl1			
10	SGN	Process Alarm High Data Value Channel 1														0
11	SGN	Process Alarm Low Data Value Channel 1														0
12	SGN	Alarm Dead Band Value Channel 1														0
13	Reserved															
14	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl2			
15	Reserved					Input Dta Fm Chl2			Reserved				Inpt Tp/Rnge Sel Chl2			
16	SGN	Process Alarm High Data Value Channel 2														0
17	SGN	Process Alarm Low Data Value Channel 2														0
18	SGN	Alarm Dead Band Value Channel 2														0
19	Reserved															
20	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl3			
21	Reserved					Input Dta Fm Chl3			Reserved				Inpt Tp/Rnge Sel Chl3			
22	SGN	Process Alarm High Data Value Channel 3														0
23	SGN	Process Alarm Low Data Value Channel 3														0
24	SGN	Alarm Dead Band Value Channel 3														0
25	Reserved															
26	EC	Reserved							EHI	ELI	LC	ER	FM	PM	0	PFE
27	Reserved					Outpt Fm Chl0			Reserved				Outpt Tp/Rnge Sel Chl0			
28	SGN	Fault Value Channel 0													0	0
29	SGN	Program (Idle) Value Channel 0													0	0
30	SGN	Clamp High Data Value Channel 0													0	0
31	SGN	Clamp Low Data Value Channel 0													0	0
32	SGN	Ramp Rate Channel 0													0	0
33	Reserved															
34	EC	Reserved							EHI	ELI	LC	ER	FM	PM	0	PFE
35	Reserved					Outpt Fm Chl1			Reserved				Outpt Tp/Rnge Sel Chl1			
36	SGN	Fault Value Channel 1													0	0
37	SGN	Program (Idle) Value Channel 1													0	0
38	SGN	Clamp High Data Value Channel 1													0	0

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
39	SGN	Clamp Low Data Value Channel 1													0	0
40	SGN	Ramp Rate Channel 1													0	0
41	Reserved															

The bits are defined as follows:

- SGN = Sign bit in 2's complement format.
- Real Time Sample Value = Provides the ability to configure the Real Time Sample Rate.
- ETS = Enable Time Stamping.
- EC = Enable Channel.
- EA = Enable Alarm.
- AL = Alarm Latch.
- EI = Enable Input Process Alarm Interrupt.
- Input Filter Sel ChIx = Input Channel Filter Setting.
- Inpt Dta Fm ChIx = Input Data Format Select.
- Inpt Tp/Rnge Sel ChIx = Input Type/Range Select.
- Process Alarm High Data Value Channel x = Provides the ability to configure the Input Process Alarm High Value.
- Process Alarm Low Data Value Channel x = Provides the ability to configure the Input Process Alarm Low Value.
- Alarm Dead Band Value Channel x = Provides the ability to configure the Input Process Dead Band Value.
- Reserved = Bits not used, must be set to 0.
- EHI = Enable Output Channel Interrupt on High Clamp Alarm.
- ELI = Enable Output Channel Interrupt on Low Clamp Alarm.
- LC = Latch Low/High Clamp and Under/Over Range Alarm.
- ER = Enable Ramping.
- FM = Enable Fault Alternate Output State mode.
- PM = Enable Program/Idle Alternate Output State mode.
- PFE = Enable Program/Idle to Fault Alternate Output State mode.
- Outpt Fm ChIx = Output Data Format Select.
- Outpt Tp/Rnge Sel ChIx = Output Type/Range Select.
- Ramp Rate Channel x = Provides the ability to configure the Ramp Rate.

Define	To Select	Make these bit settings															
		15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Input Filter Selection / -3 dB Frequency	60 Hz													0	0	0	0
	50 Hz													0	0	0	1
	5 Hz													0	0	1	0
	10 Hz													0	0	1	1
	100 Hz													0	1	0	0
	250 Hz													0	1	0	1
	500 Hz													0	1	1	0
	1000 Hz													0	1	1	1
	No Filter													1	0	0	0

Define	To Select	Make these bit settings															
		15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Input Type / Range Select	-10 to +10V dc													0	0	0	0
	0 to 5V dc													0	0	0	1
	0 to 10V dc													0	0	1	0
	4 to 20 mA													0	0	1	1
	1 to 5V dc													0	1	0	0
	0 to 20 mA													0	1	0	1
Input Data Format Select	Raw/ Proportional Counts						0	0	0								
	Engineering Units						0	0	1								
	Scaled for PID						0	1	0								
	Percent Range						0	1	1								

Define	To Select	Make these bit settings															
		15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Output Type / Range Select	-10 to +10V dc													0	0	0	0
	0 to 5V dc													0	0	0	1
	0 to 10V dc													0	0	1	0
	4 to 20 mA													0	0	1	1
	1 to 5V dc													0	1	0	0
	0 to 20 mA													0	1	0	1
Output Data Format Select	Raw/ Proportional Counts						0	0	0								
	Engineering Units						0	0	1								
	Scaled for PID						0	1	0								
	Percent Range						0	1	1								

1769-IF8

The following I/O memory mapping lets you configure the 1769-IF8 module.

Input Data File

For each input module, slot *x*, words 0…7 in the input data file contain the analog values of the inputs.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	SGN	Analog Input Data Channel 0														
1	SGN	Analog Input Data Channel 1														
2	SGN	Analog Input Data Channel 2														
3	SGN	Analog Input Data Channel 3														
4	SGN	Analog Input Data Channel 4														
5	SGN	Analog Input Data Channel 5														
6	SGN	Analog Input Data Channel 6														
7	SGN	Analog Input Data Channel 7														
8	Nu	Time Stamp Value														
9	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	S7	S6	S5	S4	S3	S2	S1	S0
10	L3	H3	U3	O3	L2	H2	U2	O2	L1	H1	U1	O1	L0	H0	U0	O0
11	L7	H7	U7	O7	L6	H6	U6	O6	L5	H5	U5	O5	L4	H4	U4	O4

The bits are defined as follows:

- SGN = Sign bit in two's complement format.
- Nu = Not used. Bit set to 0.
- S*x* = General status bit for input channels 0…7.
- L*x* = Low alarm flag bits for input channels 0…7.
- H*x* = High alarm flag bits for input channels 0…7.
- U*x* = Under-range flag bits for channels 0…7. When set, the input signal is under normal range or an open circuit condition exists, in the case of the 4-20mA range.
- O*x* = Over-range flag bits for channels 0…7.

Output Data File

For each input module, slot *x*, word 0 in the output data file contains alarm unlatch control bits.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	CL L7	CL H7	CL L6	CL H6	CL L5	CL H5	CL L4	CL H4	CL L3	CL H3	CL L2	CL H2	CL L1	CL H1	CL L0	CL H0

The bits are defined as follows:

- CLH*x* = Cancel High Process Alarm Latch for Input *x*. Allows each input high-process-alarm latch to be individually cancelled. Cancel = 1.

- CLL*x* = Cancel Low Process Alarm Latch for Input *x*. Allows each input low-process-alarm latch to be individually cancelled. Cancel = 1.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided by the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement. Refer to the Compact Analog I/O User Manual, publication number 1769-UM002 for additional details.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Real Time Sample Value															
1	ERTS	Reserved														
2	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl0			
3	Reserved					Inpt Dta Fm Chl0		Reserved			Inpt Tp/RngeSel Chl0					
4	S	Process Alarm High Data Value Channel 0														
5	S	Process Alarm Low Data Value Channel 0														
6	S	Alarm Dead Band Value Channel 0														
7	Pad															
8	EC	Reserved				EA	AL	EI	Reserved				Inpt Filter Sel Chl1			
9	Reserved					Inpt Dta Fm Chl1		Reserved			Inpt Tp/RngeSel Chl1					
10	S	Process Alarm High Data Value Channel 1														
11	S	Process Alarm Low Data Value Channel 1														

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
12	S	Alarm Dead Band Value Channel 1														
13	Pad															
14	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl2			
15	Reserved					Inpt Dta Fm Chl2			Reserved				Inpt Tp/RngeSel Chl2			
16	S	Process Alarm High Data Value Channel 2														
17	S	Process Alarm Low Data Value Channel 2														
18	S	Alarm Dead Band Value Channel 2														
19	Pad															
20	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl3			
21	Reserved					Inpt Dta Fm Chl3			Reserved				Inpt Tp/RngeSel Chl3			
22	S	Process Alarm High Data Value Channel 3														
23	S	Process Alarm Low Data Value Channel 3														
24	S	Alarm Dead Band Value Channel 3														
25	Pad															
26	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl4			
27	Reserved					Inpt Dta Fm Chl4			Reserved				Inpt Tp/RngeSel Chl4			
28	S	Process Alarm High Data Value Channel 4														
29	S	Process Alarm Low Data Value Channel 4														
30	S	Alarm Dead Band Value Channel 4														
31	Pad															
32	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl5			
33	Reserved					Inpt Dta Fm Chl5			Reserved				Inpt Tp/RngeSel Chl5			
34	S	Process Alarm High Data Value Channel 5														
35	S	Process Alarm Low Data Value Channel 5														
36	S	Alarm Dead Band Value Channel 5														
37	Pad															
38	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl6			
39	Reserved					Inpt Dta Fm Chl6			Reserved				Inpt Tp/RngeSel Chl6			
40	S	Process Alarm High Data Value Channel 6														
41	S	Process Alarm Low Data Value Channel 6														
42	S	Alarm Dead Band Value Channel 6														
43	Pad															
44	EC	Reserved				EA	AL	EI	Reserved				Input Filter Sel Chl7			
45	Reserved					Inpt Dta Fm Chl7			Reserved				Inpt Tp/RngeSel Chl7			
46	S	Process Alarm High Data Value Channel 7														

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
47	S	Process Alarm Low Data Value Channel 7														
48	S	Alarm Dead Band Value Channel 7														
49	Pad															

The bits are defined as follows:

- EC = Enable Channel
- Inpt Dta Fm Chlx = Input Data Format Select.
- EA = Enable Alarm.
- AL = Alarm Latch.
- EI = Enable Interrupt.
- Inpt Tp/Rnge Sel Chlx = Input Type/Range Select.
- Inpt Filter Sel Chlx = Input Filter Select.
- Reserved = Allows for future expansion.
- ERTS = Enable Real Time Sample.

Define	To Select	Make these bit settings												
		15	14	13	12	11	10	9	8	7…4	3	2	1	0
Input Filter Selection/ -3 dB Frequency	60 Hz										0	0	0	0
	50 Hz										0	0	0	1
	10 Hz										0	0	1	0
	250 Hz										0	0	1	1
	500 Hz										0	1	0	0
Enable Interrupt	Enable								1					
	Disable								0					
Process Alarm Latch	Enable						1							
	Disable						0							
Enable Process Alarms	Enable					1								
	Disable					0								
Enable Channel	Enable	1												
	Disable	0												

Define	Indicate this	These bit settings								
		15…11	10	9	8	7…4	3	2	1	0
Input Range Select	-10 to +10V dc						0	0	0	0
	0 to 5V dc						0	0	0	1
	0 to 10V dc						0	0	1	0
	4 to 20 mA						0	0	1	1
	1 to 5V dc						0	1	0	0
	0 to 20 mA						0	1	0	1
Input Data Select	Raw/Proportional Counts		0	0	0					
	Engineering Units		0	0	1					
	Scaled for PID		0	1	0					
	Percent Range		0	1	1					

Controller Tags for RSLogix 5000, Version 15 or Later

Use the following controller tags with RSLogix 5000, version 15 or later.

Channel 0 and 1 Configuration Data

Channel 0 and 1 configuration data is shown below. The same information applies to all channels.

-	**Local:1:C**		**AB:1769_IF8:C:0**	
	+	Local:1:C.RTSInterval	INT	Decimal
		Local:1:C.RTSEn	BOOL	Decimal
	+	Local:1:C.Ch0Filter	SINT	Decimal
		Local:1:C.Ch0AlarmInterruptEn	BOOL	Decimal
		Local:1:C.Ch0AlarmLatchEn	BOOL	Decimal
		Local:1:C.Ch0AlarmEn	BOOL	Decimal
		Local1:C.Ch0En	BOOL	Decimal
	+	Local:1:C.Ch0Range	SINT	Decimal
	+	Local:1:C.Ch0DataFormat	SINT	Decimal
	+	Local:1:C.Ch0HAlarmLimit	INT	Decimal
	+	Local:1:C.Ch0LAlarmLimit	INT	Decimal
	+	Local:1:C.Ch0AlarmDeadband	INT	Decimal
	+	Local:1:C.Ch1Filter	SINT	Decimal
		Local:1:C.Ch1AlarmInterruptEn	BOOL	Decimal
		Local:1:C.Ch1AlarmLatchEn	BOOL	Decimal
		Local:1:C.Ch1AlarmEn	BOOL	Decimal
		Local:1:C.Ch1En	BOOL	Decimal
	+	Local:1:C.Ch1Range	SINT	Decimal
	+	Local:1:C.Ch1DataFormat	SINT	Decimal
	+	Local:1:C.Ch1HAlarmLimit	INT	Decimal
	+	Local:1:C.Ch1LAlarmLimit	INT	Decimal
	+	Local:1:C.Ch1AlarmDeadband	INT	Decimal

Tag Name	To Select	Make These Bit Settings[1]								
		15-8	7	6	5	4	3	2	1	0
Ch#Filter	60 Hz							0	0	0
	50 Hz							0	0	1
	10 Hz							0	1	0
	250 Hz							0	1	1
	500 Hz							1	0	0
Ch#AlarmInterruptEn	Enable									1
	Disable									0
Ch#AlarmLatchEn	Enable									1
	Disable									0
Ch#AlarmEn	Enable									1
	Disable									0
Ch#En	Enable									1
	Disable									0
Ch#Range	-10…+10V DC							0	0	0
	0…5V dc							0	0	1
	0…10V dc							0	1	0
	4…20 mA							0	1	1
	1…5V dc							1	0	0
	0…20 mA							1	0	1
Ch#DataFormat	Raw/proportional counts								0	0
	Engineering units								0	1
	Scaled for PID								1	0
	Percent range								1	1

(1) All bit positions left blank in table must be set to 0.

Input Data

-	**Local:1:I**		**AB:1769_IF8:I:0**	
+	Local:1:I.Fault		DINT	Binary
+	Local:1:I.Ch0Data		INT	Decimal
+	Local:1:I.Ch1Data		INT	Decimal
+	Local:1:I.Ch2Data		INT	Decimal
+	Local:1:I.Ch3Data		INT	Decimal
+	Local:1:I.Ch4Data		INT	Decimal
+	Local:1:I.Ch5Data		INT	Decimal
+	Local:1:I.Ch6Data		INT	Decimal
+	Local:1:I.Ch7Data		INT	Decimal
+	Local:1:I.RealTimeSample		INT	Decimal
+	Local:1:I.CombinedStatus		SINT	Binary
	Local:1:I.Ch0Status		BOOL	Decimal
	Local:1:I.Ch1Status		BOOL	Decimal
	Local:1:I.Ch2Stattus		BOOL	Decimal
	Local:1:I.Ch3Status		BOOL	Decimal
	Local:1:I.Ch4Status		BOOL	Decimal
	Local:1:I.Ch5Status		BOOL	Decimal
	Local:1:I.Ch6Status		BOOL	Decimal
	Local:1:I.Ch7Status		BOOL	Decimal
+	Local:1:I.Ch0_1Status		SINT	Binary
	Local:1:I.Ch0OverRange		BOOL	Decimal
	Local:1:I.Ch0UnderRange		BOOL	Decimal
	Local:1:I.Ch0HAlarm		BOOL	Decimal
	Local:1:I.Ch0LAlarm		BOOL	Decimal
+	Local:1:I.Ch1OverRange		BOOL	Decimal
	Local:1:I.Ch1UnderRange		BOOL	Decimal
	Local:1:I.Ch1HAlarm		BOOL	Decimal
	Local:1:I.Ch1LAlarm		BOOL	Decimal

-	**Local:1:I**		**AB:1769_IF8:I:0**	
+	Local:1:I.Ch2_3Status	SINT	Binary	
	Local:1:I.Ch2OverRange	BOOL	Decimal	
	Local:1:I.Ch2UnderRange	BOOL	Decimal	
	Local:1:I.Ch2HAlarm	BOOL	Decimal	
	Local:1:I.Ch2LAlarm	BOOL	Decimal	
	Local:1:I.Ch3OverRange	BOOL	Decimal	
	Local:1:I.Ch3UnderRange	BOOL	Decimal	
	Local:1:I.Ch3HAlarm	BOOL	Decimal	
	Local:1:I.Ch3LAlarm	BOOL	Decimal	
+	Local:1:I.Ch4_5Status	SINT	Binary	
	Local:1:I.Ch4OverRange	BOOL	Decimal	
	Local:1:I.Ch4UnderRange	BOOL	Decimal	
	Local:1:I.Ch4HAlarm	BOOL	Decimal	
	Local:1:I.Ch4LAlarm	BOOL	Decimal	
	Local:1:I.Ch5OverRange	BOOL	Decimal	
	Local:1:I.Ch5UnderRange	BOOL	Decimal	
	Local:1:I.Ch5HAlarm	BOOL	Decimal	
	Local:1:I.Ch5LAlarm	BOOL	Decimal	
+	Local:1:I.Ch6_7Status	SINT	Binary	
	Local:1:I.Ch6OverRange	BOOL	Decimal	
	Local:1:I.Ch6UnderRange	BOOL	Decimal	
	Local:1:I.Ch6HAlarm	BOOL	Decimal	
	Local:1:I.Ch6LAlarm	BOOL	Decimal	
	Local:1:I.Ch7OverRange	BOOL	Decimal	
	Local:1:I.Ch7UnderRange	BOOL	Decimal	
	Local:1:I.Ch7HAlarm	BOOL	Decimal	
	Local:1:I.Ch7LAlarm	BOOL	Decimal	

Tag Name	Bit Indicates This							
	7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Combined Status	Ch7 Status	Ch6 Status	Ch5 Status	Ch4 Status	Ch3 Status	Ch2 Status	Ch1 Status	Ch0 Status
Ch0_1 Status	Ch1 LAlarm	Ch1 HAlarm	Ch1 Under Range	Ch1 Over Range	Ch0 LAlarm	Ch0 HAlarm	Ch0 Under Range	Ch0 Over Range
Ch2_3 Status	Ch3 LAlarm	Ch3 HAlarm	Ch3 Under Range	Ch3 Over Range	Ch2 LAlarm	Ch2 HAlarm	Ch2 Under Range	Ch2 Over Range
Ch4_5 Status	Ch5 LAlarm	Ch5 HAlarm	Ch5 Under Range	Ch5 Over Range	Ch4 LAlarm	Ch4 HAlarm	Ch4 Under Range	Ch4 Over Range
Ch6_7 Status	Ch7 LAlarm	Ch7 HAlarm	Ch7 Under Range	Ch7 Over Range	Ch6 LAlarm	Ch6 HAlarm	Ch6 Under Range	Ch6 Over Range

Output Data

-	**Local:1:O**		**AB:1769_IF8:O:0**	
+	Local:1:O.AlarmUnlatch		INT	Binary
	Local:1:O.Ch0HAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch0LAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch1HAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch1LAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch2HAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch2LAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch3HAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch3LAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch4HAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch4LAlarmUnlatch		BOOL	Binary
	Local:1:O.Ch5HAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch5LAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch6HAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch6LAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch7HAlarmUnlatch		BOOL	Decimal
	Local:1:O.Ch7LAlarmUnlatch		BOOL	Decimal

1769-IF16C

The following I/O memory mapping lets you configure the 1769-IF16C module.

Input Data File

For each module, slot *x*, words 0…15 in the input data file contain the converted value of the module's analog input channels. Word 16 in the input data file contains the time stamp value, if time stamping is enabled, that corresponds to the module's last input data sampling period. Words 17…21 in the input data file contain status bits for the analog input channels.

Word	Bit Position															
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
0	SGN	Analog Read (Input) Data Value Channel 0														
1	SGN	Analog Read (Input) Data Value Channel 1														
2	SGN	Analog Read (Input) Data Value Channel 2														
3	SGN	Analog Read (Input) Data Value Channel 3														
4	SGN	Analog Read (Input) Data Value Channel 4														
5	SGN	Analog Read (Input) Data Value Channel 5														
6	SGN	Analog Read (Input) Data Value Channel 6														
7	SGN	Analog Read (Input) Data Value Channel 7														
8	SGN	Analog Read (Input) Data Value Channel 8														
9	SGN	Analog Read (Input) Data Value Channel 9														
10	SGN	Analog Read (Input) Data Value Channel 10														
11	SGN	Analog Read (Input) Data Value Channel 11														
12	SGN	Analog Read (Input) Data Value Channel 12														
13	SGN	Analog Read (Input) Data Value Channel 13														
14	SGN	Analog Read (Input) Data Value Channel 14														
15	SGN	Analog Read (Input) Data Value Channel 15														
16	Nu	Time Stamp Value														
17	S15	S14	S13	S12	S11	S10	S9	S8	S7	S6	S5	S4	S3	S2	S1	S0
18	L3	H3	U3	O3	L2	H2	U2	O2	L1	H1	U1	O1	L0	H0	U0	O0
19	L7	H7	U7	O7	L6	H6	U6	O6	L5	H5	U5	O5	L4	H4	U4	O4
20	L11	H11	U11	O11	L10	H10	U10	O10	L9	H9	U9	O9	L8	H8	U8	O8
21	L15	H15	U15	O15	L14	H14	U14	O14	L13	H13	U13	O13	L12	H12	U12	O12

The bits are defined as follows:

- SGN = Sign bit in 2's complement format.
- Nu = Not Used. Bit set to 0.
- Sx = General Status bit for input channels 0…15.
- Ox = Over range flag bits for input channels 0…15.
- Ux = Under range flag bits for input channels 0…15.
- Hx = High Alarm flag bits for input channels 0…15.
- Lx = Low Alarm flag bits for input channels 0…15.

Output Data File

For each module, slot x, words 0 and 1 in the output data file contain the cancel latched channel alarm control bits.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
0	CLL 7	CLH 7	CLL 6	CLH 6	CLL 5	CLH 5	CLL 4	CL H4	CLL 3	CL H3	CLL 2	CL H2	CL L1	CL H1	CL L0	CL H0
1	CLL 15	CLH 15	CLL 14	CLH 14	CLL 13	CLH 13	CLL 12	CL H1 2	CLL 11	CL H1 1	CLL 10	CL H1 0	CL L9	CL H9	CL L8	CL H8

The bits are defined as follows:

- CLHx = Cancel High Process Alarm Latch for Input x. Allows each input high-process-alarm latch to be individually cancelled. Cancel = 1.

- CLLx = Cancel Low Process Alarm Latch for Input x. Allows each input low-process-alarm latch to be individually cancelled. Cancel = 1.

Configuration Data File

The manipulation of bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet software, during initial configuration of the system. In that case, graphical screens provided by the programming software simplify configuration.

Some systems, like the 1769-ADN DeviceNet adapter system, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
0	0	Real Time Sample Value														
1	ETS	Reserved														
2	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch0			
3	Reserved					Input Data Format Ch0		Reserved				Input Type/Range Select Ch0				
4	SGN	Process Alarm High Data Value Channel 0														
5	SGN	Process Alarm Low Data Value Channel 0														
6	SGN	Alarm Dead Band Value Channel 0														
7	Reserved															
8	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch1			
9	Reserved					Input Data Format Ch1		Reserved				Input Type/Range Select Ch1				
10	SGN	Process Alarm High Data Value Channel 1														
11	SGN	Process Alarm Low Data Value Channel 1														
12	SGN	Alarm Dead Band Value Channel 1														
13	Reserved															
14	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch2			
15	Reserved					Input Data Format Ch2		Reserved				Input Type/Range Select Ch2				
16	SGN	Process Alarm High Data Value Channel 2														
17	SGN	Process Alarm Low Data Value Channel 2														
18	SGN	Alarm Dead Band Value Channel 2														
19	Reserved															
20	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch3			
21	Reserved					Input Data Format Ch3		Reserved				Input Type/Range Select Ch3				
22	SGN	Process Alarm High Data Value Channel 3														
23	SGN	Process Alarm Low Data Value Channel 3														
24	SGN	Alarm Dead Band Value Channel 3														
25	Reserved															
26	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch4			
27	Reserved					Input Data Format Ch4		Reserved				Input Type/Range Select Ch4				
28	SGN	Process Alarm High Data Value Channel 4														
29	SGN	Process Alarm Low Data Value Channel 4														
30	SGN	Alarm Dead Band Value Channel 4														
31	Reserved															

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
32	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch5			
33	Reserved					Input Data Format Ch5			Reserved				Input Type/Range Select Ch5			
34	SGN	Process Alarm High Data Value Channel 5														
35	SGN	Process Alarm Low Data Value Channel 5														
36	SGN	Alarm Dead Band Value Channel 5														
37	Reserved															
38	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch6			
39	Reserved					Input Data Format Ch6			Reserved				Input Type/Range Select Ch6			
40	SGN	Process Alarm High Data Value Channel 6														
41	SGN	Process Alarm Low Data Value Channel 6														
42	SGN	Alarm Dead Band Value Channel 16														
43	Reserved															
44	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch7			
45	Reserved					Input Data Format Ch7			Reserved				Input Type/Range Select Ch7			
46	SGN	Process Alarm High Data Value Channel 7														
47	SGN	Process Alarm Low Data Value Channel 7														
48	SGN	Alarm Dead Band Value Channel 7														
49	Reserved															
50	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch8			
51	Reserved					Input Data Format Ch8			Reserved				Input Type/Range Select Ch8			
52	SGN	Process Alarm High Data Value Channel 8														
53	SGN	Process Alarm Low Data Value Channel 8														
54	SGN	Alarm Dead Band Value Channel 8														
55	Reserved															
56	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch9			
57	Reserved					Input Data Format Ch9			Reserved				Input Type/Range Select Ch9			
58	SGN	Process Alarm High Data Value Channel 9														
59	SGN	Process Alarm Low Data Value Channel 9														
60	SGN	Alarm Dead Band Value Channel 9														
61	Reserved															
62	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch10			
63	Reserved					Input Data Format Ch10			Reserved				Input Type/Range Select Ch10			
64	SGN	Process Alarm High Data Value Channel 10														
65	SGN	Process Alarm Low Data Value Channel 10														
66	SGN	Alarm Dead Band Value Channel 10														

Word	Bit Position															
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
67	Reserved															
68	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch11			
69	Reserved					Input Data Format Ch11			Reserved				Input Type/Range Select Ch11			
70	SGN	Process Alarm High Data Value Channel 11														
71	SGN	Process Alarm Low Data Value Channel 11														
72	SGN	Alarm Dead Band Value Channel 11														
73	Reserved															
74	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch12			
75	Reserved					Input Data Format Ch12			Reserved				Input Type/Range Select Ch12			
76	SGN	Process Alarm High Data Value Channel 12														
77	SGN	Process Alarm Low Data Value Channel 12														
78	SGN	Alarm Dead Band Value Channel 12														
79	Reserved															
80	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch13			
81	Reserved					Input Data Format Ch13			Reserved				Input Type/Range Select Ch13			
82	SGN	Process Alarm High Data Value Channel 13														
83	SGN	Process Alarm Low Data Value Channel 13														
84	SGN	Alarm Dead Band Value Channel 13														
85	Reserved															
86	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch14			
87	Reserved					Input Data Format Ch14			Reserved				Input Type/Range Select Ch14			
88	SGN	Process Alarm High Data Value Channel 14														
89	SGN	Process Alarm Low Data Value Channel 14														
90	SGN	Alarm Dead Band Value Channel 14														
91	Reserved															
92	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch15			
93	Reserved					Input Data Format Ch15			Reserved				Input Type/Range Select Ch15			
94	SGN	Process Alarm High Data Value Channel 15														
95	SGN	Process Alarm Low Data Value Channel 15														
96	SGN	Alarm Dead Band Value Channel 15														
97	Reserved															

The bits are defined as follows:

- SGN = Sign bit in 2's complement format
- Real Time Sample Value = Provides the ability to configure the Real Time Sample Rate
- ETS = Enable Time Stamping
- EC = Enable Channel
- EA = Enable Alarm
- AL = Alarm Latch
- EI = Enable Input Process Alarm Interrupt[1]
- Input Filter Sel Ch*x* = Input Channel Filter Setting
- Input Data Format Ch*x* = Input Data Format Select
- Input Type/Range Select Ch*x* = Input Type/Range Select
- Process Alarm High Data Value Channel *x* = Provides the ability to configure the Input Process Alarm High Value
- Process Alarm Low Data Value Channel *x*= Provides the ability to configure the Input Process Alarm Low Value
- Alarm Dead Band Value Channel *x* = Provides the ability to configure the Dead Band Value

Define	To Choose	Make these bit settings															
		15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Input Filter Selection	60 Hz													0	0	0	0
	50 Hz													0	0	0	1
	16 Hz													0	0	1	0
	315 Hz													0	0	1	1
	1365 Hz													0	1	0	0
Enable Interrupt[1]	Enable								1								
	Disable								0								
Process Alarm Latch	Enable							1									
	Disable							0									
Enable Process Alarms	Enable						1										
	Disable						0										
Enable Channel	Enable	1															
	Disable	0															

(1) Alarm interrupts are not supported by all bus masters. Check your controller's user manual to determine if expansion I/O interrupts are supported.

Define	To Choose	Make these bit settings															
		15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Input Range Select	4…20 mA													0	0	0	0
	0…20 mA													0	0	0	1
Input Data Format Select	Proportional Counts						0	0	0								
	Engineering Units						0	0	1								
	Scaled for PID						0	1	0								
	Percent Range						0	1	1								

1769-IF16V

The following I/O memory mapping lets you configure the 1769-IF16V module.

Input Data File

For each module, slot *x*, words 0…15 in the input data file contain the converted value of the module's analog input channels. Word 16 in the input data file contains the time stamp value, if time stamping is enabled, that corresponds to the module's last input data sampling period. Words 17…21 in the input data file contain status bits for the analog input channels.

Word	Bit Position															
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
0	SGN	Analog Read (Input) Data Value Channel 0														
1	SGN	Analog Read (Input) Data Value Channel 1														
2	SGN	Analog Read (Input) Data Value Channel 2														
3	SGN	Analog Read (Input) Data Value Channel 3														
4	SGN	Analog Read (Input) Data Value Channel 4														
5	SGN	Analog Read (Input) Data Value Channel 5														
6	SGN	Analog Read (Input) Data Value Channel 6														
7	SGN	Analog Read (Input) Data Value Channel 7														
8	SGN	Analog Read (Input) Data Value Channel 8														
9	SGN	Analog Read (Input) Data Value Channel 9														
10	SGN	Analog Read (Input) Data Value Channel 10														
11	SGN	Analog Read (Input) Data Value Channel 11														
12	SGN	Analog Read (Input) Data Value Channel 12														
13	SGN	Analog Read (Input) Data Value Channel 13														
14	SGN	Analog Read (Input) Data Value Channel 14														
15	SGN	Analog Read (Input) Data Value Channel 15														
16	Nu	Time Stamp Value														

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
17	S15	S14	S13	S12	S11	S10	S9	S8	S7	S6	S5	S4	S3	S2	S1	S0
18	L3	H3	U3	O3	L2	H2	U2	O2	L1	H1	U1	O1	L0	H0	U0	O0
19	L7	H7	U7	O7	L6	H6	U6	O6	L5	H5	U5	O5	L4	H4	U4	O4
20	L11	H11	U11	O11	L10	H10	U10	O10	L9	H9	U9	O9	L8	H8	U8	O8
21	L15	H15	U15	O15	L14	H14	U14	O14	L13	H13	U13	O13	L12	H12	U12	O12

The bits are defined as follows:

- SGN = Sign bit in 2's complement format.
- Nu = Not Used. Bit set to 0.
- Sx = General Status bit for input channels 0...15.
- Ox = Over range flag bits for input channels 0...15.
- Ux = Under range flag bits for input channels 0...15.
- Hx = High Alarm flag bits for input channels 0...15.
- Lx = Low Alarm flag bits for input channels 0...15.

Output Data File

For each module, slot x, words 0 and 1 in the output data file contain the cancel latched channel alarm control bits.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
0	CLL 7	CLH 7	CLL 6	CLH 6	CLL 5	CLH 5	CLL 4	CLH 4	CLL 3	CLH 3	CLL 2	CLH 2	CLL 1	CLH 1	CLL 0	CLH 0
1	CLL 15	CLH 15	CLL 14	CLH 14	CLL 13	CLH 13	CLL 12	CLH 12	CLL 11	CLH 11	CLL 10	CLH 10	CLL 9	CLH 9	CLL 8	CLH 8

The bits are defined as follows:

- CLHx = Cancel High Process Alarm Latch for Input x. Allows each input high-process-alarm latch to be individually cancelled. Cancel = 1.
- CLLx = Cancel Low Process Alarm Latch for Input x. Allows each input low-process-alarm latch to be individually cancelled. Cancel = 1.

Configuration Data File

The manipulation of bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens provided by the programming software simplify configuration.

Some systems, like the 1769-ADN DeviceNet adapter system, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
0	0	Real Time Sample Value														
1	ETS	Reserved														
2	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch0			
3	Reserved					Input Data Format Ch0		Reserved				Input Type/Range Select Ch0				
4	SGN	Process Alarm High Data Value Channel 0														
5	SGN	Process Alarm Low Data Value Channel 0														
6	SGN	Alarm Dead Band Value Channel 0														
7	Reserved															
8	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch1			
9	Reserved					Input Data Format Ch1		Reserved				Input Type/Range Select Ch1				
10	SGN	Process Alarm High Data Value Channel 1														
11	SGN	Process Alarm Low Data Value Channel 1														
12	SGN	Alarm Dead Band Value Channel 1														
13	Reserved															
14	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch2			
15	Reserved					Input Data Format Ch2		Reserved				Input Type/Range Select Ch2				
16	SGN	Process Alarm High Data Value Channel 2														
17	SGN	Process Alarm Low Data Value Channel 2														
18	SGN	Alarm Dead Band Value Channel 2														
19	Reserved															
20	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch3			
21	Reserved					Input Data Format Ch3		Reserved				Input Type/Range Select Ch3				
22	SGN	Process Alarm High Data Value Channel 3														
23	SGN	Process Alarm Low Data Value Channel 3														
24	SGN	Alarm Dead Band Value Channel 3														
25	Reserved															
26	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch4			

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
27	Reserved					Input Data Format Ch4			Reserved				Input Type/Range Select Ch4			
28	SGN	Process Alarm High Data Value Channel 4														
29	SGN	Process Alarm Low Data Value Channel 4														
30	SGN	Alarm Dead Band Value Channel 4														
31	Reserved															
32	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch5			
33	Reserved					Input Data Format Ch5			Reserved				Input Type/Range Select Ch5			
34	SGN	Process Alarm High Data Value Channel 5														
35	SGN	Process Alarm Low Data Value Channel 5														
36	SGN	Alarm Dead Band Value Channel 5														
37	Reserved															
38	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch6			
39	Reserved					Input Data Format Ch6			Reserved				Input Type/Range Select Ch6			
40	SGN	Process Alarm High Data Value Channel 6														
41	SGN	Process Alarm Low Data Value Channel 6														
42	SGN	Alarm Dead Band Value Channel 16														
43	Reserved															
44	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch7			
45	Reserved					Input Data Format Ch7			Reserved				Input Type/Range Select Ch7			
46	SGN	Process Alarm High Data Value Channel 7														
47	SGN	Process Alarm Low Data Value Channel 7														
48	SGN	Alarm Dead Band Value Channel 7														
49	Reserved															
50	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch8			
51	Reserved					Input Data Format Ch8			Reserved				Input Type/Range Select Ch8			
52	SGN	Process Alarm High Data Value Channel 8														
53	SGN	Process Alarm Low Data Value Channel 8														
54	SGN	Alarm Dead Band Value Channel 8														
55	Reserved															
56	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch9			
57	Reserved					Input Data Format Ch9			Reserved				Input Type/Range Select Ch9			
58	SGN	Process Alarm High Data Value Channel 9														
59	SGN	Process Alarm Low Data Value Channel 9														
60	SGN	Alarm Dead Band Value Channel 9														
61	Reserved															

Word	Bit Position															
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
62	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch10			
63	Reserved					Input Data Format Ch10			Reserved				Input Type/Range Select Ch10			
64	SGN	Process Alarm High Data Value Channel 10														
65	SGN	Process Alarm Low Data Value Channel 10														
66	SGN	Alarm Dead Band Value Channel 10														
67	Reserved															
68	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch11			
69	Reserved					Input Data Format Ch11			Reserved				Input Type/Range Select Ch11			
70	SGN	Process Alarm High Data Value Channel 11														
71	SGN	Process Alarm Low Data Value Channel 11														
72	SGN	Alarm Dead Band Value Channel 11														
73	Reserved															
74	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch12			
75	Reserved					Input Data Format Ch12			Reserved				Input Type/Range Select Ch12			
76	SGN	Process Alarm High Data Value Channel 12														
77	SGN	Process Alarm Low Data Value Channel 12														
78	SGN	Alarm Dead Band Value Channel 12														
79	Reserved															
80	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch13			
81	Reserved					Input Data Format Ch13			Reserved				Input Type/Range Select Ch13			
82	SGN	Process Alarm High Data Value Channel 13														
83	SGN	Process Alarm Low Data Value Channel 13														
84	SGN	Alarm Dead Band Value Channel 13														
85	Reserved															
86	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch14			
87	Reserved					Input Data Format Ch14			Reserved				Input Type/Range Select Ch14			
88	SGN	Process Alarm High Data Value Channel 14														
89	SGN	Process Alarm Low Data Value Channel 14														
90	SGN	Alarm Dead Band Value Channel 14														
91	Reserved															
92	EC	Reserved				EA	AL	EI[1]	Reserved				Input Filter Sel Ch15			
93	Reserved					Input Data Format Ch15			Reserved				Input Type/Range Select Ch15			
94	SGN	Process Alarm High Data Value Channel 15														

Word	Bit Position															
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
95	SGN	Process Alarm Low Data Value Channel 15														
96	SGN	Alarm Dead Band Value Channel 15														
97	Reserved															

The bits are defined as follows:

- SGN = Sign bit in 2's complement format
- Real Time Sample Value = Provides the ability to configure the Real Time Sample Rate
- ETS = Enable Time Stamping
- EC = Enable Channel
- EA = Enable Alarm
- AL = Alarm Latch
- EI = Enable Input Process Alarm Interrupt[1]
- Input Filter Sel Chx = Input Channel Filter Setting
- Input Data Format Chx = Input Data Format Select
- Input Type/Range Select Chx = Input Type/Range Select
- Process Alarm High Data Value Channel x = Provides the ability to configure the Input Process Alarm High Value
- Process Alarm Low Data Value Channel x = Provides the ability to configure the Input Process Alarm Low Value
- Alarm Dead Band Value Channel x = Provides the ability to configure the Dead Band Value

Define	To Choose	Make these bit settings															
		15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Input Filter Selection	60 Hz													0	0	0	0
	50 Hz													0	0	0	1
	16 Hz													0	0	1	0
	315 Hz													0	0	1	1
	1365 Hz													0	1	0	0
Enable Interrupt[1]	Enable								1								
	Disable								0								
Process Alarm Latch	Enable							1									
	Disable							0									
Enable Process Alarms	Enable						1										
	Disable						0										

(1) Alarm interrupts are not supported by all bus masters. Check your controller's user manual to determine if expansion I/O interrupts are supported.

Define	To Choose	Make these bit settings															
		15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Enable Channel	Enable	1															
	Disable	0															
Input Range Select	-10…+10V													0	0	0	0
	0…5V													0	0	0	1
	0…10V													0	0	1	0
	1…5V													0	0	1	1
Input Data Format Select	Proportional Counts						0	0	0								
	Engineering Units						0	0	1								
	Scaled for PID						0	1	0								
	Percent Range						0	1	1								

1769-IG16

The following I/O memory mapping lets you configure the 1769-IG16 module.

Input Data File

For each module, slot *x*, word 0 in the input data file contains the state of the module's input points. The module implements inverted logic on the TTL inputs. A logix low-input voltage results in the corresponding Input Data File bit being set to 1. A logic high-input voltage results in the corresponding bit being cleared to 0.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

Configuration File

The read/writable configuration data file allows the setup of the digital filter settings for each of the two input groups. Group 0 is inputs 0...7 and Group 1 is inputs 8...15.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet software, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Filter Time On to Off Group 1				Filter Time Off to On Group 1				Filter Time On to Off Group 0				Filter Time Off to On Group 0			
1	0000000000000000															
2	0000000000000000															
3	0000000000000000															

Filter Time[1]	Bit Setting
8.0 ms	0000
4.0 ms	0001
2.0 ms	0010
1.0 ms	0011
0.5 ms	0100
0.1 ms	0101
0.0 ms	0110

(1) Filter Time: Word 0, the Filter Time configures the ON to OFF and OFF to ON hardware delay times for each input group.

1769-IM12

The following I/O memory mapping lets you configure the 1769-IM12 module.

Input Data File

For each input module, slot *x*, word 0 in the input data file contains the current state of the field input points. For the 1769-IM12, bits 12 to 15 are not used.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	r[1]	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

1769-IQ16

The following I/O memory mapping lets you configure the 1769-IQ16 module.

Input Data File

For each input module, slot *x*, word 0 in the input data file contains the current state of the field input points.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

1769-IQ16F

The following I/O memory mapping lets you configure the 1769-IQ16F module.

Input Data File

For each input module, slot *x*, word 0 in the input data file contains the current state of the field input points.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

Configuration File

The read/writable configuration data file allows the setup of the digital filter settings for each of the two input groups. Group 0 is inputs 0...7. Group 1 is inputs 8...15.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Filter Time On to Off Group 1				Filter Time Off to On Group 1				Filter Time On to Off Group 0				Filter Time Off to On Group 0			
1	0000000000000000															
2	0000000000000000															
3	0000000000000000															

Filter Time[1]	Bit Setting
2.0 msec	0010
1.0 msec	0011
0.5 msec	0100
0.1 msec	0101
0.0 msec	0110

(1) Filter Time: Word 0, the Filter Time configures the ON to OFF
and OFF to ON hardware delay times for each input group.

1769-IQ32

The following I/O memory mapping lets you configure the 1769-IQ32 module.

Input Data File

For each input module, slot *x*, word 0 in the input data file contains the current state of the field input points.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

1769-IQ32T

The following I/O memory mapping lets you configure the 1769-IQ32T module.

Input Data File

For each input module, slot *x*, words 0 and 1 in the input data file contain the current state of the field input points.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

Configuration File

For each input module, slot *x*, words 0 and 1 in the configuration file control the amount of filtering applied to the signals from the field input points. The amount of filtering applied can be configured individually for both the On-to-Off and Off-to-On edges of each isolated group of input signals.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Filter configuration group 2 On-to-Off				Filter configuration group 2 Off-to-On				Filter configuration group 1 On-to-Off				Filter configuration group 1 Off-to-On			
1	Filter configuration group 4 On-to-Off				Filter configuration group 4 Off-to-On				Filter configuration group 3 On-to-Off				Filter configuration group 3 Off-to-On			

OFF_Filter or ON_Filter (Binary)	Filter Time
0000 (default)	8.0 ms
0001	4.0 ms
0010	2.0 ms
0011	1.0 ms
0100	0.5 ms
0101	0.1 ms
0110	0.0 ms
0111…1111	Not used

1769-IQ6XOW4

The following I/O memory mapping lets you configure the 1769-IQ6XOW4 module.

Input Data File

For the inputs on this module, slot *x*, word 0 in the input data file contains the current state of the field input points. For the 1769-IQ6XOW4, bits 6 to 15 are not used.

For the outputs on this module, slot *x*, input data file word 1 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program Mode configuration, if supported by the controller
- Fault Mode configuration, if supported by the controller

For the 1769-IQ6XOW4, bits 4 to 15 are not used.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	r[1]	r	r	r	r	r
1	0	0	0	0	0	0	0	0	0	0	0	0	r	r	r	r

(1)   r = read.

IMPORTANT	Input data file word 1 reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
	It is important to use this input word if the controller adapter supports the Program mode or Fault mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points. For the 1769-IQ6XOW4, bits 4 to 15 are not used.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	w[1]	w	w	w

(1)   w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	Program State for Output Array Word 0															

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown below.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-IR6

The following I/O memory mapping lets you configure the 1769-IR6 module.

Input Data File

The first six words (0...5) of the input data file contain the analog RTD or resistance values of the inputs. Words 6 and 7 provide sensor/channel status feedback for use in your control program as shown below.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	RTD/resistance Input Data Channel 0															
1	RTD/resistance Input Data Channel 1															
2	RTD/resistance Input Data Channel 2															
3	RTD/resistance Input Data Channel 3															
4	RTD/resistance Input Data Channel 4															
5	RTD/resistance Input Data Channel 5															
6	Not Used		OC 5	OC 4	OC 3	OC 2	OC 1	OC 0	Not Used		S5	S4	S3	S2	S1	S0
7	U0	O0	U1	O1	U2	O2	U3	O3	U4	O4	U5	O5	Not Used			

Word 6 and 7 status bits are defined as follows:

- Sx = General status bit for channels 0 through 5. This bit is set (1) when an error (over- or under-range, open-circuit, or input data not valid) exists for that channel. An input data not valid condition is determined by the user program. This condition occurs when the first analog-to-digital conversion is still in progress at power-up or after a new configuration has been sent to the module. Refer to the RTD/resistance Input Module User Manual, publication number 1769-UM005, for details.

- OCx = Open-circuit detection bit for channels 0 through 5. These bits are set (1) when either an open or shorted input for RTD inputs or an open input for resistance inputs is detected.

  > **TIP**   Short-circuit detection for resistance inputs is not indicated because 0 is a valid number..

- Ux = Under-range flag bits for channels 0 through 5, using RTD inputs only. These bits can be used in the control program for error detection. There is no under-range error for a direct resistance input, because 0 is a valid number.

- Ox = Over-range flag bits for channels 0 through 5, using either RTD or resistance inputs. These bits can be used in the control program for error detection.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided by the programming tool to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement. Refer to the Compact RTD/resistance Input Module User Manual, publication number 1769-UM005 for additional details.

Words 0...5 of the configuration file allow you to change the parameters of each channel independently. For example, word 0 corresponds to channel 0 and word 1 corresponds to channel 1. The functional arrangement of the bits is shown below for a single word/channel.

To Select		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Filter Frequency	10 Hz														1	1	0
	60 Hz														0	0	0
	50 Hz														0	0	1
	250Hz														0	1	1
	500 Hz														1	0	0
	1 kHz														1	0	1
Excitation Current	1.0 mA													0			
	0.5 mA													1			
Cyclic Lead Compensatio	Enable												0				
	Disable												1				
Open-circuit/ Broken Input	Upscale										0	0					
	Downscale										0	1					
	Last State										1	0					
	Zero										1	1					
Temperature Units Mode	°C									0							
	°F									1							
Input/Sensor Type	100Ω Pt 385					0	0	0	0								
	200Ω Pt 385					0	0	0	1								
	500Ω Pt 385					0	0	1	0								
	1000Ω Pt 385					0	0	1	1								
	100Ω Pt 3916					0	1	0	0								
	200Ω Pt 3916					0	1	0	1								
	500Ω Pt 3916					0	1	1	0								
	1000Ω Pt 3916					0	1	1	1								
	10Ω Cu 426					1	0	0	0								
	120Ω Ni 618					1	0	0	1								
	120Ω Ni 672					1	0	1	0								
	604Ω NiFe 518					1	0	1	1								
	150Ω					1	1	0	0								
	500Ω					1	1	0	1								
	1000Ω					1	1	1	0								
	3000Ω					1	1	1	1								

To Select		Make these bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Data Format	Raw/ Proportional		0	0	0												
	Engineering Units		0	0	1												
	Engineering Units X 10		1	0	0												
	Scaled-for-PID		0	1	0												
	Percent Range		0	1	1												
Enable Channe	Enable	1															
	Disable	0															

Module Configuration Word

Word 6 of the configuration data file contains the Enable/Disable Cyclic Calibration bit as shown in the table below.

To Select		Make these bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Enable/ Disable Cyclic Calibration	Enabled[1]																0
	Disabled																1

(1)   When enabled, an autocalibration cycle is performed on all enabled channels every 5 minutes.

1769-IT6

The following I/O memory mapping lets you configure the 1769-IT6 module.

Input Data File

The input data file contains the analog values of the inputs.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Analog Input Data Channel 0															
1	Analog Input Data Channel 1															
2	Analog Input Data Channel 2															
3	Analog Input Data Channel 3															
4	Analog Input Data Channel 4															
5	Analog Input Data Channel 5															
6	OC7	OC6	OC5	OC4	OC3	OC2	OC1	OC0	S7	S6	S5	S4	S3	S2	S1	S0
7	U0	O0	U1	U0	U2	O2	U3	O3	U4	O4	U5	O5	U6	O6	U7	O7

The bits are defined as follows:

- Sx = General status bit for channels 0…5 and CJC sensors (S6 and S7). This bit is set (1) when an error (over-range, under-range, open-circuit, or input data not valid) exists for that channel. An 'input data not valid' condition is determined by the user program. This condition occurs when the first analog-to-digital conversion is still in progress, and after a new configuration has been sent to the module. Refer to the Compact I/O Thermocouple/mV Input Module User Manual, publication 1769-UM004 for additional details.

- OCx = Open-circuit detection bits indicate an open input circuit on channels 0…5 (OC0…OC5) and on CJC sensors CJC0 (OC6) and CJC1 (OC7). The bit is set (1) when an open-circuit condition exists.

- Ux = Under-range flag bits for channels 0…5 and the CJC sensors (U6 and U7). For thermocouple inputs, the under-range bit is set (1) when a temperature measurement is below the normal operating range for a given thermocouple type. For millivolt inputs, the under-range bit indicates a voltage that is below the normal operating range. These bits can be used in the control program for error detection. The bits are reset (0) by the module when within the normal operating range.

- Ox = Over-range flag bits for channels 0…5 and the CJC sensors (O6 and O7). For thermocouple inputs, the over-range bit is set (1) when a temperature measurement is above the normal operating range for a given thermocouple type. For millivolt inputs, the over-range bit indicates a voltage that is above the normal operating range. These bits can be used in the control program for error detection.

Configuration Data File

During initial system configuration, you normally manipulate the bits from the configuration data file with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet. Graphical screens simplify configuration. However, some products, like the 1769-ADN DeviceNet adapter, also let you alter the bits as part of the control program, by using communication rungs. In this case, you need to understand the bit arrangement. Refer to the Compact Thermocouple/mV Input Module User Manual, publication 1769-UM004, for additional details.

Words 0…5 of the configuration data file let you change the parameters of each channel independently. For example, word 0 corresponds to channel 0. See the functional arrangement of the bits for a single word/channel in the Configuration Data File on page 106.

Configuration Data File

To select		Make these bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Filter Frequency	10 Hz														1	1	0
	60 Hz														0	0	0
	50 Hz														0	0	1
	250Hz														0	1	1
	500 Hz														1	0	0
	1 kHz														1	0	1
Open-circuit	Upscale										0	0					
	Downscale										0	1					
	Hold Last State										1	0					
	Zero										1	1					
Temp.	°C									0							
	°F									1							
Input Type	Thermocouple J					0	0	0	0								
	Thermocouple K					0	0	0	1								
	Thermocouple T					0	0	1	0								
	Thermocouple E					0	0	1	1								
	Thermocouple R					0	1	0	0								
	Thermocouple S					0	1	0	1								
	Thermocouple B					0	1	1	0								
	Thermocouple N					0	1	1	1								
	Thermocouple C					1	0	0	0								
	-50…50 mV					1	0	0	1								
	-100…100 mV					1	0	1	0								
Data Format	Raw/Proportional Data		0	0	0												
	Engineering Units		0	0	1												
	Engineering Units *x* 10		1	0	0												
	Scaled-for-PID		0	1	0												
	Percent Range		0	1	1												
Enable	Disabled	0															
	Enabled	1															

Note: Columns 3 and 4 are marked "Not Used[1]".

(1) An attempt to write any nonvalid (spare) bit configuration into any selection field results in a module configuration error.

TIP	Program defaults are indicated by 0 values. For example, type J thermocouple is the default (no user intervention) thermocouple type.

Module Configuration Word

Word 6 of the configuration data file contains the Enable/Disable Cyclic Calibration bit.

To select		**Make these bit settings**															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Enable/ Disable Cyclic Calibration	Enabled[1]																0
	Disabled																1

(1) When enabled, an autocalibration cycle is performed on all enabled channels every 5 minutes.

1769-OA8

The following I/O memory mapping lets you configure the 1769-OA8 module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program mode configuration, if supported by the controller
- Fault mode configuration, if supported by the controller

For the 1769-OA8, bits 8 to 15 are not used.

Word	**Bit Position**															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	r[1]	r	r	r	r	r	r	r

(1) r = read.

IMPORTANT	The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
	It is important to use this input word if the controller adapter supports the Program mode or Fault mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points. For the 1769-OA8, bits 8...15 are not used.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	w[1]	w	w	w	w	w	w	w

(1) w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangment.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		PFE
1	Program State for Output Array Word 0															
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown below.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-OA16

The following I/O memory mapping lets you configure the 1769-OA16 module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon the:

- Program mode configuration, if supported by the controller
- Fault mode configuration, if supported by the controller

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

IMPORTANT	The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
	It is important to use this input word if the controller adapter supports the Program mode or Fault mode function, and if it is configured to use them.

Output Data File

Data output bits are turned on or off using the bit positions in Word 0.

- 1 = output on
- 0 = output off

EXAMPLE   To turn on bit position 12, type 1 in word 0, bit 12.

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	w[1]	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w

(1) w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	Program State for Output Array Word 0															
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting in a change to the Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown below.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-OB8, Series A

The following I/O memory mapping lets you configure the 1769-OB8, Series A module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program mode configuration, if supported by the controller
- Fault mode configuration, if supported by the controller

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	r[1]	r	r	r	r	r	r	r

(1) r = read.

IMPORTANT	The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.

It is important to use this input word if the controller adapter supports the Program mode or Fault mode function, and if it is configured to use them. |

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	w[1]	w	w	w	w	w	w	w

(1) w = write

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	0	0	0	0	0	0	0	0	Program State for Output Array Word 0							
2	0	0	0	0	0	0	0	0	Program Value for Output Array Word 0							
3	0	0	0	0	0	0	0	0	Fault State for Output Array Word 0							
4	0	0	0	0	0	0	0	0	Fault Value for Output Array Word 0							

Program to Fault Enable Bit (PFE), Word 0 Bit 0

Allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Program State, Word 1

Selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value, Word 2

Defines the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State, Word 3

Selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value, Word 4

Defines the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Module Default Condition

The modules default condition is all zeros, which defines these conditions:

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-OB16, Series B

The following I/O memory mapping lets you configure the 1769-OB16, Series B module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program mode configuration, if supported by the controller
- Fault mode configuration, if supported by the controller

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

IMPORTANT	The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
	It is important to use this input word if the controller adapter supports the Program mode or Fault mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	w[1]	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w

(1) w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangment.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	Program State for Output Array Word 0															
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown below.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-OB16P

The following I/O memory mapping lets you configure the 1769-OB16P module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program mode[1] configuration, if supported by the controller
- Fault mode[1] configuration, if supported by the controller

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r= read.

IMPORTANT	The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.

TIP	It is only important to use this input word if the controller/adapter supports the Program mode or Fault mode function, and if it is configured to use them.

(1) Not supported by MicroLogix 1500.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	w[1]	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w

(1) w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions. The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided to simplify programming. However, some systems, like the 1769-ADN DeviceNet adapter, allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement, as described below.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	Not Used (Default = 0)															PFE
1	Program State for Output Array Word 0															
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state condition. Each output is individually configurable for on or off.

Condition	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state condition. Each output is individually configurable for on or off.

Condition	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown below.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-OB32

The following I/O memory mapping lets you configure the 1769-OB32 module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program mode configuration, if supported by the controller
- Fault mode configuration, if supported by the controller

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

> **IMPORTANT**   The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
>
> It is important to use this input word if the controller adapter supports the Program mode or Fault mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	w[1]	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w
1	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w

(1)   w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Program State for Output Array Word 0															
3	Program State for Output Array Word 1															
4	Program Value for Output Array Word 0															
5	Program Value for Output Array Word 1															
6	Fault State for Output Array Word 0															
7	Fault State for Output Array Word 1															
8	Fault Value for Output Array Word 0															
9	Fault Value for Output Array Word 1															
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-OB32T

The following I/O memory mapping lets you configure the 1769-OB32T module.

Input Data File

For each module, slot *x*, input data file words 0 and 1 contain the state of the module's output data (output data echo) file words 0 and 1. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program mode configuration, if supported by the controller
- Fault mode configuration, if supported by the controller

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1)   r = read.

		IMPORTANT	The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.

IMPORTANT | The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
It is important to use this input word if the controller adapter supports the Program mode or Fault mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, words 0 and 1 in the output data file contain the control program's directed state of the digital output points.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	w[1]	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w
1	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w

(1)   w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe-state conditions.

Manipulate these bits with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Program State for Output Array Word 0															
3	Program State for Output Array Word 1															
4	Program Value for Output Array Word 0															
5	Program Value for Output Array Word 1															
6	Fault State for Output Array Word 0															
7	Fault State for Output Array Word 1															

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8	Fault Value for Output Array Word 0															
9	Fault Value for Output Array Word 1															
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined safe state	0
Hold last state	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined safe state	0
Hold last state	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The module's default condition is all zeros, programming the conditions shown.

Word or Bit Affected		Condition Applied
Word 0, Bit 0	Program-to-fault Enable	Program value
Word 1	Program state	User-defined safe state
Word 2	Program value	Off
Word 3	Fault state	User-defined safe state
Word 4	Fault value	Off

1769-OF2

The following I/O memory mapping lets you configure the 1769-OF2 module.

Input Data File

For each module, slot *x*, input data file words 2 and 3 contain the state of the module's output data (output data echo) file words 0 and 1. During normal operation, these input words represent the analog values that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program mode configuration, if supported by the controller
- Fault mode configuration, if supported by the controller

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	D0	H0	D1	H1	Not Used (Bits set to 0)										S1	S0
1	U0	O0	U1	O1	Bits set to 0											
2	SGN	Output Data Loopback/Echo Channel 0														
3	SGN	Output Data Loopback/Echo Channel 1														

The bit definitions are as follows:

- Dx = Diagnostic bits. When set, they indicate a broken output wire or high load resistance (not used on voltage outputs).

- Hx = Hold Last State bits. When set, they indicate that the channel is in a hold last state condition.

- Sx = General Status bits. When set, these bits indicate an error (over-range, under-range, or diagnostic bit) associated with that channel or a module hardware error.

- Ux = Under-range flag bits.

- Ox = Over-range flag bits.

- SGN = Sign bit in two's complement format.

IMPORTANT   The output module's input data file reflects the analog output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.

TIP   It is only important to use these input words if the controller supports the Program mode or Fault mode function, and if it is configured to use them.

Output Data File

For each module, slot x, words 0 and 1 in the output data file contain the channel 0 and channel 1 output data.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	SGN	Analog Output Data Channel 0														
1	SGN	Analog Output Data Channel 1														

SGN = Sign bit in two's complement format.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided by the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement. The channel configuration words, words 0 and 1, are described on page 131. Refer to the Compact Analog I/O User Manual, publication number 1769-UM002 for additional details.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	See "Channel Configuration Words" on page 131.															
1	See "Channel Configuration Words" on page 131.															
2	S	Fault Value - Channel 0[1]														
3	S	Program (Idle) Value - Channel 0														
4	S	Fault Value - Channel 1														
5	S	Program (Idle) Value - Channel 1														

(1) These functions are not supported by all controllers, such as MicroLogix 1500, using any configuration method. Refer to your controller's user manual for details.

Channel Configuration Words

Words 0 and 1 of the configuration file allow you to change the parameters of each channel independently. For example, word 0 corresponds to channel 0.

Define	These bit settings													Indicate this
	15	14	13	12	11	10	9	8	4...7	3	2	1	0	
Program (Idle) to Fault Enable													0	Program (Idle) Mode Data Applied[1]
													1	Fault Mode Data Applied[1]
Not Used														(Reserved)
Program (Idle) Mode											0			Hold Last State[1]
											1			User-Defined Value[1]
Fault Mode										0				Hold Last State[1]
										1				User-Defined Fault Value[1]
Output Range Select					0	0	0	0	Not Used			Not Used		-10V dc to +10V dc
					0	0	0	1						0 to 5V dc
					0	0	1	0						0 to 10V dc
					0	0	1	1						4 to 20 mA
					0	1	0	0						1 to 5V dc
					0	1	0	1						0 to 20 mA
														Spare[2]
Output Data Select		0	0	0										Raw/Proportional Data
		0	0	1										Engineering Units
		0	1	0										Scaled-for-PID
		0	1	1										Percent Range
														Spare[2]
Enable Channel	1													Enabled
	0													Disabled

(1) These functions are not supported by all controllers, such as MicroLogix 1500, using any configuration method. Refer to your controller manual for details.

(2) Any attempt to write a nonvalid (spare) bit configuration into any selection field results in a module configuration error.

1769-OF4

The following I/O memory mapping lets you configure the 1769-OF4 module.

Input Data File

For each module, slot *x*, word 0 in the input data file contains the status bits for the module's analog output channels. Words 1…4 contain the directed values of the analog output channels (output data echo).

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
0	U3	O3	U2	O2	U1	O1	U0	O0	NU	NU	NU	NU	S3	S2	S1	S0
1	SGN	Output Data Loopback/Echo Channel 0														
2	SGN	Output Data Loopback/Echo Channel 1														
3	SGN	Output Data Loopback/Echo Channel 2														
4	SGN	Output Data Loopback/Echo Channel 3														

The bits are defined as follows:

- SGN = Sign bit in 2's complement format.
- NU = Not Used. Bit must be set to 0.
- S*x* = General Status bit for output channels 0…3.
- O*x* = Over range flag bits for output channels 0…3.
- U*x* = Under range flag bits for output channels 0…3.

Output Data File

For each module, slot *x*, words 0…3 in the output data file contain the control program's directed state of the module's analog output channels. Word 4 contains the cancel output-channel-clamp alarm control bits.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
0	SGN	Analog Output Data Channel 0														
1	SGN	Analog Output Data Channel 1														
2	SGN	Analog Output Data Channel 2														
3	SGN	Analog Output Data Channel 3														
4	NU	NU	NU	NU	NU	NU	NU	NU	CLO 3	CHO 3	CLO 2	CHO 2	CLO 1	CHO 1	CLO 0	CHO 0

The bits are defined as follows:

- SGN = Sign bit in 2's complement format.
- NU = Not used. Bit must be set to 0.
- CHO*x* = Cancel High Clamp Alarm Latch for Output *x*: Allows each output high-clamp-alarm latch to be individually cancelled. Cancel = 1.
- CLO*x* = Cancel Low Clamp Alarm Latch for Output *x*: Allows each output low-clamp-alarm-latch to be individually cancelled. Cancel = 1.

Configuration Data File

The manipulation of bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens provided by the programming software simplify configuration.

Some systems, like the 1769-ADN DeviceNet adapter system, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement, shown on the following page.

Word	Bit Position															
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
0	EC	NU							EHI	ELI	LC	ER	FM	PM	NU	PFE
1	NU					Format Ch0			NU				Type/Range Sel Ch0			
2	SGN	Fault Value Channel 0														
3	SGN	Program (Idle) Value Channel 0														
4	SGN	Clamp High Data Value Channel 0														
5	SGN	Clamp Low Data Value Channel 0														
6	SGN	Ramp Rate Channel 0														
7	NU															
8	EC	NU							EHI	ELI	LC	ER	FM	PM	NU	PFE
9	NU					Format Ch1			NU				Type/Range Sel Ch1			
10	SGN	Fault Value Channel 1														
11	SGN	Program (Idle) Value Channel 1														
12	SGN	Clamp High Data Value Channel 1														
13	SGN	Clamp Low Data Value Channel 1														
14	SGN	Ramp Rate Channel 1														
15	NU															
16	EC	NU							EHI	ELI	LC	ER	FM	PM	NU	PFE
17	NU					Format Ch2			NU				Type/Range Sel Ch2			
18	SGN	Fault Value Channel 2														
19	SGN	Program (Idle) Value Channel 2														

Word	Bit Position															
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
20	SGN	Clamp High Data Value Channel 2														
21	SGN	Clamp Low Data Value Channel 2														
22	SGN	Ramp Rate Channel 2														
23	NU															
24	EC	NU							EHI	ELI	LC	ER	FM	PM	NU	PFE
25	NU					Format Ch3			NU				Type/Range Sel Ch3			
26	SGN	Fault Value Channel 3														
27	SGN	Program (Idle) Value Channel 3														
28	SGN	Clamp High Data Value Channel 3														
29	SGN	Clamp Low Data Value Channel 3														
30	SGN	Ramp Rate Channel 3														
31	NU															

The bits are defined as follows:

- SGN = Sign bit in 2's complement format.
- EC = Enable Channel.
- NU = Not used. Bit must be set to 0.
- EHI = Enable Output Channel Interrupt on High Clamp Alarm.[1]
- ELI = Enable Output Channel Interrupt on Low Clamp Alarm.[1]
- LC = Latch Low/High Clamp and Under/Over Range Alarm.
- ER = Enable Ramping.[1]
- FM = Enable Fault Alternate Output State mode.[1]
- PM = Enable Program/Idle Alternate Output State mode.[1]
- PFE = Enable Program/Idle to Fault Alternate Output State mode.[1]
- Format Chx = Output Data Format Select.
- Type/Range Sel Chx = Output Type/Range Select.
- Fault Value Channel x = Provides the ability to configure the Fault mode alternate output value.[1]
- Program (Idle) Value Channel x = Provides the ability to configure the Program (Idle) alternate output value.[1]
- Clamp High Data Value Channel x = Provides the ability to configure the output high clamp value.
- Clamp Low Data Value Channel x = Provides the ability to configure the output low clamp value.
- Ramp Rate Channel x = Provides the ability to configure the Ramp Rate.[1]

(1) Interrupts, ramping, and alternate output states are not supported by all controllers. Refer to your controller's user manual to determine if these functions are available.

Define	To Select	Make these bit settings															
		15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Type / Range Select	-10…+10V DC													0	0	0	0
	0…5V DC													0	0	0	1
	0…10V DC													0	0	1	0
	4…20 mA													0	0	1	1
	1…5V DC													0	1	0	0
	0…20 mA													0	1	0	1
Data Format Select	Raw/ Proportional Counts						0	0	0								
	Engineering Units						0	0	1								
	Scaled for PID						0	1	0								
	Percent Range						0	1	1								

1769-OF4CI

The following I/O memory mapping lets you configure the 1769-OF4CI module.

Input Data File

For each module, slot *x*, input data file words 2…5 contain the state of the module's output data (output data echo) file words 0…3. During normal operation, these input words represent the analog values that the outputs are directed to by the control program.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0													S3	S2	S1	S0
1		H3	U3	O3		H2	U2	O2		H1	U1	O1		H0	U0	O0
2	Channel 0 Data Value															
3	Channel 1 Data Value															
4	Channel 2 Data Value															
5	Channel 3 Data Value															

The bits are defined as follows:

- S = General status (over-range, under-range, or low/high clamp exceeded).
- H = Output held bit.
- U = Under-range (or low-clamp exceeded) alarm.
- O = Over-range (or high-clamp exceeded) alarm.

IMPORTANT	The output module's input data file reflects the analog output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.

Output Data File

For each module, slot *x*, words 0…3 in the output data file contain the channel 0…3 output data. Word 4 is used to unlatch any condition that has been latched. Refer to your module's user manual for additional details.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	SGN	Analog Output Data Channel 0														
1	SGN	Analog Output Data Channel 1														
2	SGN	Analog Output Data Channel 2														
3	SGN	Analog Output Data Channel 3														
4									UU3	UO3	UU2	UO2	UU1	UO1	UU0	UO0

The bits are defined as follows:

- SGN = Sign bit in two's complement format (must be set to 0).
- UU = Unlatch under-range (or low clamp exceeded) alarm.
- UO = Unlatch over-range (or high clamp exceeded) alarm.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided by the programmer to simplify configuration.

However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement. The channel configuration words, the first two words of each eight word group, are described on page 137. Refer to your module's user manual for additional details.

Word	Description	Word	Description
0	Channel 0 Configuration Word 0	16	Channel 2 Configuration Word 0
1	Channel 0 Configuration Word 1	17	Channel 2 Configuration Word 1
2	Channel 0 Fault Value Word	18	Channel 2 Fault Value Word
3	Channel 0 Program Idle Mode Word	19	Channel 2 Program Idle Mode Word
4	Channel 0 Low Clamp	20	Channel 2 Low Clamp
5	Channel 0 High Clamp	21	Channel 2 High Clamp
6	Channel 0 Ramp Rate	22	Channel 2 Ramp Rate
7	Channel 0 Spare	23	Channel 2 Spare
8	Channel 1 Configuration Word 0	24	Channel 3 Configuration Word 0
9	Channel 1 Configuration Word 1	25	Channel 3 Configuration Word 1
10	Channel 1 Fault Value Word	26	Channel 3 Fault Value Word
11	Channel 1 Program Idle Mode Word	27	Channel 3 Program Idle Mode Word
12	Channel 1 Low Clamp	28	Channel 3 Low Clamp
13	Channel 1 High Clamp	29	Channel 3 High Clamp
14	Channel 1 Ramp Rate	30	Channel 3 Ramp Rate
15	Channel 1 Spare	31	Channel 3 Spare

Channel Configuration Words

The first two words of each eight word group in the configuration file allow you to change the parameters of each channel independently. For example, words 8 and 9 correspond to channel 1 while words 16 and 17 correspond to channel 3.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	E	Reserved							SIU	SIO	LA	ER	FM	PM	HI	PFE
1	Reserved					Output Data Format Select			Reserved					Output Type/ Range		

The bits are defined as follows:

- E = Channel Enable: (0 = Disabled, 1 = output Enabled, process changes)

- Reserved = Set to zero

- SIU = System interrupt low clamp, under-range alarms: (0 = Disabled, 1 = Enabled)

- SIO = System interrupt high clamp, over-range alarms: (0 = Disabled, 1 = Enabled)

- LA = Latch low/high clamp, under/over-range alarms: (0 = Disabled, 1 = Enabled)

- ER = Enable ramping: (0 = Disabled, 1 = Enabled. Ramp rate limited by fault states.)

- FM = Fault mode: (0 = Hold Last State, 1 = User Defined Value)

- PM = Program mode: (0 = Hold Last State, 1 = User Defined Value)

- HI = Hold for initialization: (0 = Disabled, 1 = Enabled)
- PFE = Program/idle to fault enable: (0 = Disabled, 1 = Enabled)

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Program (Idle) to Fault Enable	Program (Idle) Mode Data Applied[1]																0
	Fault Mode Data Applied[1]																1
Hold for Initialization	Disabled															0	
	Enabled															1	
Program (Idle) Mode	Hold Last State[1]														0		
	User-Defined Value[1]														1		
Fault Mode	Hold Last State[1]													0			
	User-Defined Fault Value[1]													1			
Enable Ramping	Disabled												0				
	Enabled												1				
System Interrupt High Clamp	Disabled											0					
	Enabled[1]											1					
System Interrupt Low Clamp	Disabled										0						
	Enabled[1]										1						
Enable Channel	Disabled	0															
	Enabled	1															

(1) These functions are not supported by all controllers, such as MicroLogix 1500, using any configuration method. Refer to your controller manual for details.

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Output Range Select	0…20 mA DC														0	0	0
	4…20 mA DC														0	0	1
Output Data Select	Raw/Proportional Counts						0	0	0								
	Engineering Units						0	0	1								
	Scaled for PID						0	1	0								
	Percent Range						0	1	1								

1769-OF4VI

The following I/O memory mapping lets you configure the 1769-OF4VI module.

Input Data File

For each module, slot *x*, input data file words 2...5 contain the state of the module's output data (output data echo) file words 0...3. During normal operation, these input words represent the analog values that the outputs are directed to by the control program.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0													S3	S2	S1	S0
1		H3	U3	O3		H2	U2	O2		H1	U1	O1		H0	U0	O0
2	Channel 0 Data Value															
3	Channel 1 Data Value															
4	Channel 2 Data Value															
5	Channel 3 Data Value															

- S = General status (over-range, under-range, or low/high clamp exceeded).
- H = Output held bit.
- U = Under-range (or low-clamp exceeded) alarm.
- O = Over-range (or high-clamp exceeded) alarm.

> **IMPORTANT** The output module input data file reflects the analog output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.

Output Data File

For each module, slot *x*, words 0...3 in the output data file contain the channel 0...channel 3 output data. Word 4 is used to unlatch any alarm condition that has been latched. Refer to your module user manual for additional details.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	SGN	Analog Output Data Channel 0														
1	SGN	Analog Output Data Channel 1														
2	SGN	Analog Output Data Channel 2														
3	SGN	Analog Output Data Channel 3														
4									UU3	UO3	UU2	UO2	UU1	UO1	UU0	UO0

The bits are defined as follows:

- SGN = Sign bit in two's complement format.
- UU = Unlatch under-range (or low-clamp exceeded) alarm.
- UO = Unlatch over-range (or high-clamp exceeded) alarm.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided by the programmer to simplify configuration.

However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement. The channel configuration words, the first two words of each eight word group, are described on page . Refer to your module user manual for additional details.

Word	Description	Word	Description
0	Channel 0 Configuration Word 0	16	Channel 2 Configuration Word 0
1	Channel 0 Configuration Word 1	17	Channel 2 Configuration Word 1
2	Channel 0 Fault Value Word	18	Channel 2 Fault Value Word
3	Channel 0 Program Idle Mode Word	19	Channel 2 Program Idle Mode Word
4	Channel 0 Low Clamp	20	Channel 2 Low Clamp
5	Channel 0 High Clamp	21	Channel 2 High Clamp
6	Channel 0 Ramp Rate	22	Channel 2 Ramp Rate
7	Channel 0 Spare	23	Channel 2 Spare
8	Channel 1 Configuration Word 0	24	Channel 3 Configuration Word 0
9	Channel 1 Configuration Word 1	25	Channel 3 Configuration Word 1
10	Channel 1 Fault Value Word	26	Channel 3 Fault Value Word
11	Channel 1 Program Idle Mode Word	27	Channel 3 Program Idle Mode Word
12	Channel 1 Low Clamp	28	Channel 3 Low Clamp
13	Channel 1 High Clamp	29	Channel 3 High Clamp
14	Channel 1 Ramp Rate	30	Channel 3 Ramp Rate
15	Channel 1 Spare	31	Channel 3 Spare

Channel Configuration Words

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	E	Reserved							SIU	SIO	LA	ER	FM	PM	HI	PFE
1	Reserved					Output Data Format Select			Reserved					Output Type/ Range		

The bits are defined as follows:

- E = Channel Enable: (0 = Disabled, 1 = output Enabled, process changes)
- Reserved = Set to zero
- SIU = System interrupt low clamp, under-range alarms: (0 = Disabled, 1 = Enabled)
- SIO = System interrupt high clamp, over-range alarms: (0 = Disabled, 1 = Enabled)
- LA = Latch low/high clamp, under/over-range alarms: (0 = Disabled, 1 = Enabled)
- ER = Enable ramping: (0 = Disabled, 1 = Enabled. Ramp rate limited by fault states.)
- FM = Fault mode: (0 = Hold Last State, 1 = User Defined Value)
- PM = Program mode: (0 = Hold Last State, 1 = User Defined Value)
- HI = Hold for initialization: (0 = Disabled, 1 = Enabled)
- PFE = Program/idle to fault enable: (0 = Disabled, 1 Enabled)

The first two words of each eight word group in the configuration file allow you to change the parameters of each channel independently. For example, words 8 and 9 correspond to channel 1 while words 16 and 17 correspond to channel 3.

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Program (Idle) to Fault Enable	Program (Idle) Mode Data Applied[1]																0
	Fault Mode Data Applied[1]																1
Hold for Initialization	Disabled															0	
	Enabled															1	
Program (Idle) Mode	Hold Last State[1]														0		
	User-Defined Value[1]														1		
Fault Mode	Hold Last State[1]													0			
	User-Defined Fault Value[1]													1			

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Enable Ramping	Disabled												0				
	Enabled												1				
System Interrupt High Clamp	Disabled											0					
	Enabled[1]											1					
System Interrupt Low Clamp	Disabled										0						
	Enabled[1]										1						
Enable Channel	Disabled	0															
	Enabled	1															

(1) These functions are not supported by all controllers, such as MicroLogix 1500, using any configuration method. Refer to your controller manual for details.

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Output Range Select	-10 …+10V DC														0	0	0
	0…5V DC														0	0	1
	0…10V DC														0	1	0
	1…5V DC														0	1	1
Output Data Select	Raw/Proportional Counts						0	0	0								
	Engineering Units						0	0	1								
	Scaled for PID						0	1	0								
	Percent Range						0	1	1								

1769-OF8C

The following I/O memory mapping lets you configure the 1769-OF8C module.

Input Data File

For each module, slot *x*, input data file words 3…10 contain the state of the module's output data (output data echo) file words 0…7. During normal operation, these input words represent the analog values that the outputs are directed to by the control program.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0								PF	S7	S6	S5	S4	S3	S2	S1	S0
1	D3	H3	U3	O3	D2	H2	U2	O2	D1	H1	U1	O1	D0	H0	U0	O0
2	D7	H7	U7	O7	D6	H6	U6	O6	D5	H5	U5	O5	D4	H4	U4	O4
3	Channel 0 Data Value															

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
4	Channel 1 Data Value															
5	Channel 2 Data Value															
6	Channel 3 Data Value															
7	Channel 4 Data Value															
8	Channel 5 Data Value															
9	Channel 6 Data Value															
10	Channel 7 Data Value															

The bits are defined as follows:

- PF = Analog power fail.
- S = General status (over-range, under-range, or open-circuit).
- D = Open-circuit diagnostics.
- H = Output held bit.
- U = Under-range (or low-clamp exceeded) alarm.
- O = Over-range (or high-clamp exceeded) alarm.

IMPORTANT	The output module's input data file reflects the analog output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.

Output Data File

For each module, slot *x*, words 0…7 in the output data file contain the channel 0…7 output data. Word 8 is used to unlatch any condition that has been latched. Refer to the Compact Analog I/O User Manual, publication number [1769-UM002](#) for additional details.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	SGN	Analog Output Data Channel 0														
1	SGN	Analog Output Data Channel 1														
2	SGN	Analog Output Data Channel 2														
3	SGN	Analog Output Data Channel 3														
4	SGN	Analog Output Data Channel 4														
5	SGN	Analog Output Data Channel 5														
6	SGN	Analog Output Data Channel 6														
7	SGN	Analog Output Data Channel 7														
8	UU7	UO7	UU6	UO6	UU5	UO5	UU4	UO4	UU3	UO3	UU2	UO2	UU1	UO1	UU0	UO0

The bits are defined as follows:

- SGN = Sign bit in two's complement format.
- UU = Unlatch under-range (or low clamp exceeded) alarm.
- UO = Unlatch over-range (or high clamp exceeded) alarm.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided by the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement. The channel configuration words, the first two words of each eight word group, are described on page 146. Refer to the Compact Analog I/O User Manual, publication number 1769-UM002 for additional details.

Word	Description	Word	Description
0	Channel 0 Configuration Word 0	24	Channel 3 Configuration Word 0
1	Channel 0 Configuration Word 1	25	Channel 3 Configuration Word 1
2	Channel 0 Fault Value Word	26	Channel 3 Fault Value Word
3	Channel 0 Program Idle Mode Word	27	Channel 3 Program Idle Mode Word
4	Channel 0 Low Clamp	28	Channel 3 Low Clamp
5	Channel 0 High Clamp	29	Channel 3 High Clamp
6	Channel 0 Ramp Rate	30	Channel 3 Ramp Rate
7	Channel 0 Spare	31	Channel 3 Spare
8	Channel 1 Configuration Word 0	32	Channel 4 Configuration Word 0
9	Channel 1 Configuration Word 1	33	Channel 4 Configuration Word 1
10	Channel 1 Fault Value Word	34	Channel 4 Fault Value Word
11	Channel 1 Program Idle Mode Word	35	Channel 4 Program Idle Mode Word
12	Channel 1 Low Clamp	36	Channel 4 Low Clamp
13	Channel 1 High Clamp	37	Channel 4 High Clamp
14	Channel 1 Ramp Rate	38	Channel 4 Ramp Rate
15	Channel 1 Spare	39	Channel 4 Spare
16	Channel 2 Configuration Word 0	40	Channel 5 Configuration Word 0
17	Channel 2 Configuration Word 1	41	Channel 5 Configuration Word 1
18	Channel 2 Fault Value Word	42	Channel 5 Fault Value Word
19	Channel 2 Program Idle Mode Word	43	Channel 5 Program Idle Mode Word
20	Channel 2 Low Clamp	44	Channel 5 Low Clamp

Word	Description	Word	Description
21	Channel 2 High Clamp	45	Channel 5 High Clamp
22	Channel 2 Ramp Rate	46	Channel 5 Ramp Rate
23	Channel 2 Spare	47	Channel 5 Spare

Word	Description	Word	Description
48	Channel 6 Configuration Word 0	56	Channel 7 Configuration Word 0
49	Channel 6 Configuration Word 1	57	Channel 7 Configuration Word 1
50	Channel 6 Fault Value Word	58	Channel 7 Fault Value Word
51	Channel 6 Program Idle Mode Word	59	Channel 7 Program Idle Mode Word
52	Channel 6 Low Clamp	60	Channel 7 Low Clamp
53	Channel 6 High Clamp	61	Channel 7 High Clamp
54	Channel 6 Ramp Rate	62	Channel 7 Ramp Rate
55	Channel 6 Spare	63	Channel 7 Spare

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	E	Reserved							SIU	SIO	LA	ER	FM	PM	HI	PFE
1	Reserved					Output Data Format Select			Reserved					Output Type/ Range		

The bits are defined as follows:

- E = Channel Enable: (0 = Disabled, 1 = output 0 and hold Enabled, process changes)
- Reserved = Set to zero
- SIU = System interrupt low clamp, under-range alarms: (0 = Disabled, 1 = Enabled)
- SIO = System interrupt high clamp, over-range alarms: (0 = Disabled, 1 = Enabled)
- LA = Latch low/high clamp, under/over-range alarms: (0 = Disabled, 1 = Enabled)
- ER = Enable ramping: (0 = Disabled, 1 = Enabled. Ramp rate limited by fault states.)
- FM = Fault mode: (0 = Hold Last State, 1 = User Defined Value)
- PM = Program mode: (0 = Hold Last State, 1 = User Defined Value)
- HI = Hold for initialization: (0 = Disabled, 1 = Enabled)
- PFE = Program/idle to fault enable: (0 = Disabled, 1 = Enabled)

Channel Configuration Words

The first two words of each eight word group in the configuration file allow you to change the parameters of each channel independently. For example, words 8 and 9 correspond to channel 1 while words 56 and 57 correspond to channel 7.

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Program (Idle) to Fault Enable	Program (Idle) Mode Data Applied[1]		0	0	0	0	0	0	0	0							0
	Fault Mode Data Applied[1]		0	0	0	0	0	0	0	0							1
Hold for Initialization	Disabled		0	0	0	0	0	0	0	0						0	
	Enabled		0	0	0	0	0	0	0	0						1	
Program (Idle) Mode	Hold Last State[1]		0	0	0	0	0	0	0	0					0		
	User-Defined Value[1]		0	0	0	0	0	0	0	0					1		
Fault Mode	Hold Last State[1]		0	0	0	0	0	0	0	0				0			
	User-Defined Fault Value[1]		0	0	0	0	0	0	0	0				1			
Enable Ramping	Disabled		0	0	0	0	0	0	0	0			0				
	Enabled		0	0	0	0	0	0	0	0			1				
System Interrupt High Clamp	Disabled		0	0	0	0	0	0	0	0		0					
	Enabled		0	0	0	0	0	0	0	0		1					
System Interrupt Low Clamp	Disabled		0	0	0	0	0	0	0	0	0						
	Enabled		0	0	0	0	0	0	0	0	1						
Enable Channel	Disabled	0	0	0	0	0	0	0	0	0							
	Enabled	1	0	0	0	0	0	0	0	0							

(1) These functions are not supported by all controllers, such as MicroLogix 1500, using any configuration method. Refer to your controller manual for details.

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Output Range Select	0 to 20 mA dc	0	0	0	0	0				0	0	0	0	0	0	0	0
	4 to 20 mA dc	0	0	0	0	0				0	0	0	0	0	0	0	1
Output Data Select	Raw/Proportional Counts	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Engineering Units	0	0	0	0	0	0	0	1	0	0	0	0	0			
	Scaled for PID	0	0	0	0	0	0	1	0	0	0	0	0	0			
	Percent Range	0	0	0	0	0	0	1	1	0	0	0	0	0			

Controller Tags for RSLogix 5000, Version 15 or Later

Use the following controller tags with RSLogix 5000, version 15 or later.

Channel 0 and 1 Configuration Data

Channel 0 and 1 configuration data is shown below. The same information applies to all channels.

-	**Local:1:C**	**AB:1769_OF8C:C:0**	
	Local:1:C.Ch0ProgToFaultEn	BOOL	Decimal
	Local:1:C.Ch0HoldForInit	BOOL	Decimal
	Local:1:C.Ch0ProgMode	BOOL	Decimal
	Local:1:C.Ch0FaultMode	BOOL	Decimal
	Local:1:C.Ch0RampEn	BOOL	Decimal
	Local:1:C.Ch0AlarmLatchEn	BOOL	Decimal
	Local:1:C.Ch0OverRangeInterruptEn	BOOL	Decimal
	Local:1:C.Ch0UnderRangeInterruptEn	BOOL	Decimal
	Local:1:C.Ch0En	BOOL	Decimal
+	Local:1:C.Ch0Range	SINT	Decimal
+	Local:1:C.Ch0DataFormat	SINT	Decimal
+	Local:1:C.Ch0FaultValue	INT	Decimal
+	Local:1:C.Ch0ProgValue	INT	Decimal
+	Local:1:C.Ch0LClampValue	INT	Decimal
+	Local:1:C.Ch0HClampValue	INT	Decimal
+	Local:1:C.Ch0RampRate	INT	Decimal
	Local:1:C.Ch1ProgToFaultEn	BOOL	Decimal
	Local:1:C.Ch1HoldForInit	BOOL	Decimal
	Local:1:C.Ch1ProgMode	BOOL	Decimal
	Local:1:C.Ch1FaultMode	BOOL	Decimal
	Local:1:C.Ch1RampEn	BOOL	Decimal
	Local:1:C.Ch1AlarmLatchEn	BOOL	Decimal
	Local:1:C.Ch1OverRangeInterruptEn	BOOL	Decimal
	Local:1:C.Ch1UnderRangeInterruptEn	BOOL	Decimal
	Local:1:C.Ch1En	BOOL	Decimal
+	Local:1:C.Ch1Range	SINT	Decimal
+	Local:1:C.Ch1DataFormat	SINT	Decimal
+	Local:1:C.Ch1FaultValue	INT	Decimal
+	Local:1:C.Ch1ProgValue	INT	Decimal
+	Local:1:C.Ch1LClampValue	INT	Decimal
+	Local:1:C.Ch1HClampValue	INT	Decimal
+	Local:1:C.Ch1RampRate	INT	Decimal

Tag Name	To Select	Make These Bit Settings[1]								
		15…8	7	6	5	4	3	2	1	0
Ch#ProgToFaultEn	Enable									1
	Disable									0
Ch#HoldForInit	Enable									1
	Disable									0
Ch#ProgMode	Enable									1
	Disable									0
Ch#FaultMode	Enable									1
	Disable									0
Ch#RampEn	Enable									1
	Disable									0
Ch#AlarmLatchEn	Enable									1
	Disable									0
Ch#OverRangeInterruptEn	Enable									1
	Disable									0
Ch#UnderRangeInterruptEn	Enable									1
	Disable									0
Ch#En	Enable									1
	Disable									0
Ch#Range	0…20 mA dc									0
	4…20 mA dc									1
Ch#DataFormat	Raw/proportional counts								0	0
	Engineering units								0	1
	Scaled for PID								1	0
	Percent range								1	1

(1) All bit positions left blank in table must be set to 0.

Input Data

-	**Local:1:I**	**AB:1769_OF8C:I:0**	
+	Local:1:I.Fault	DINT	Binary
+	Local:1:I.CombinedStatus	SINT	Binary
	Local:1:I.Ch0Status	BOOL	Decimal
	Local:1:I.Ch1Status	BOOL	Decimal
	Local:1:I.Ch2Status	BOOL	Decimal
	Local:1:I.Ch3Status	BOOL	Decimal
	Local:1:I.Ch4Status	BOOL	Decimal
	Local:1:I.Ch5Status	BOOL	Decimal
	Local:1:I.Ch6Status	BOOL	Decimal
	Local:1:I.Ch7Status	BOOL	Decimal
+	Local:1:I.ModuleStatus	SINT	Binary
	Local:1:I.PowerFail	BOOL	Decimal
+	Local:1:I.Ch0_1Status	SINT	Binary
	Local:1:I.Ch0OverRange	BOOL	Decimal
	Local:1:I.Ch0UnderRange	BOOL	Decimal
	Local:1:I.Ch0InHold	BOOL	Decimal
	Local:1:I.Ch0OpenWire	BOOL	Decimal
	Local:1:I.Ch1OverRange	BOOL	Decimal
	Local:1:I.Ch1UnderRange	BOOL	Decimal
	Local:1:I.Ch1InHold	BOOL	Decimal
	Local:1:I.Ch1OpenWire	BOOL	Decimal
+	Local:1:I.Ch2_3Status	SINT	Binary
	Local:1:I.Ch2OverRange	BOOL	Decimal
	Local:1:I.Ch2UnderRange	BOOL	Decimal
	Local:1:I.Ch2InHold	BOOL	Decimal
	Local:1:I.Ch2OpenWire	BOOL	Decimal
	Local:1:I.Ch3OverRange	BOOL	Decimal
	Local:1:I.Ch3UnderRange	BOOL	Decimal

-	**Local:1:I**		**AB:1769_OF8C:I:0**	
		Local:1:I.Ch3InHold	BOOL	Decimal
		Local:1:I.Ch3OpenWire	BOOL	Decimal
	+	Local:1:I.Ch4_5Status	SINT	Binary
		Local:1:I.Ch4OverRange	BOOL	Decimal
		Local:1:I.Ch4UnderRange	BOOL	Decimal
		Local:1:I.Ch4InHold	BOOL	Decimal
		Local:1:I.Ch4OpenWire	BOOL	Decimal
		Local:1:I.Ch5OverRange	BOOL	Decimal
		Local:1:I.Ch5UnderRange	BOOL	Decimal
		Local:1:I.Ch5InHold	BOOL	Decimal
		Local:1:I.Ch5OpenWire	BOOL	Decimal
	+	Local:1:I.Ch6_7Status	SINT	Binary
		Local:1:I.Ch6OverRange	BOOL	Decimal
		Local:1:I.Ch6UnderRange	BOOL	Decimal
		Local:1:I.Ch6InHold	BOOL	Decimal
		Local:1:I.Ch6OpenWire	BOOL	Decimal
		Local:1:I.Ch7OverRange	BOOL	Decimal
		Local:1:I.Ch7UnderRange	BOOL	Decimal
		Local:1:I.Ch7InHold	BOOL	Decimal
		Local:1:I.Ch7OpenWire	BOOL	Decimal
	+	Local:1:I.Ch0ReadBack	INT	Decimal
	+	Local:1:I.Ch1ReadBack	INT	Decimal
	+	Local:1:I.Ch2ReadBack	INT	Decimal
	+	Local:1:I.Ch3ReadBack	INT	Decimal
	+	Local:1:I.Ch4ReadBack	INT	Decimal
	+	Local:1:I.Ch5ReadBack	INT	Decimal
	+	Local:1:I.Ch6ReadBack	INT	Decimal
	+	Local:1:I.Ch7ReadBack	INT	Decimal

Tag Name	Bit Indicates This[1]							
	7	6	5	4	3	2	1	0
Combined Status	Ch7 Status	Ch6 Status	Ch5 Status	Ch4 Status	Ch3 Status	Ch2 Status	Ch1 Status	Ch0 Status
Module Status								Power Fail
Ch0_1 Status	Ch1 OpenWire	Ch1 InHold	Ch1 Under Range	Ch1 Over Range	Ch0 OpenWire	Ch0 InHold	Ch0 Under Range	Ch0 Over Range

Tag Name	Bit Indicates This[1]							
	7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Ch2_3 Status	Ch3 OpenWire	Ch3 InHold	Ch3 Under Range	Ch3 Over Range	Ch2 OpenWire	Ch2 InHold	Ch2 Under Range	Ch2 Over Range
Ch4_5 Status	Ch5 OpenWire	Ch5 InHold	Ch5 Under Range	Ch5 Over Range	Ch4 OpenWire	Ch4 InHold	Ch4 Under Range	Ch4 Over Range
Ch6_7 Status	Ch7 OpenWire	Ch7 InHold	Ch7 Under Range	Ch7 Over Range	Ch6 OpenWire	Ch6 InHold	Ch6 Under Range	Ch6 Over Range

(1) Bit positions left blank in table are always set to 0.

Output Data

Local:1:O		**AB:1769_OF8C:O:0**	
+	Local:1:O.Ch0Data	INT	Decimal
+	Local:1:O.Ch1Data	INT	Decimal
+	Local:1:O.Ch2Data	INT	Decimal
+	Local:1:O.Ch3Data	INT	Decimal
+	Local:1:O.Ch4Data	INT	Decimal
+	Local:1:O.Ch5Data	INT	Decimal
+	Local:1:O.Ch6Data	INT	Decimal
+	Local:1:O.Ch7Data	INT	Decimal
+	Local:1:O.AlarmUnlatch	INT	Binary
	Local:1:O.Ch0OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch0UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch1OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch1UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch2OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch2UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch3OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch3UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch4OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch4UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch5OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch5UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch6OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch6UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch7OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch7UnderRangeUnlatch	BOOL	Decimal

1769-OF8V

The following I/O memory mapping lets you configure the 1769-OF8V module.

Input Data File

For each module, slot *x*, input data file words 3...10 contain the state of the module's output data (output data echo) file words 0...7. During normal operation, these input words represent the analog values that the outputs are directed to by the control program.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0								PF	S7	S6	S5	S4	S3	S2	S1	S0
1	D3	H3	U3	O3	D2	H2	U2	O2	D1	H1	U1	O1	D0	H0	U0	O0
2	D7	H7	U7	O7	D6	H6	U6	O6	D5	H5	U5	O5	D4	H4	U4	O4
3	Channel 0 Data Value															
4	Channel 1 Data Value															
5	Channel 2 Data Value															
6	Channel 3 Data Value															
7	Channel 4 Data Value															
8	Channel 5 Data Value															
9	Channel 6 Data Value															
10	Channel 7 Data Value															

The bits are defined as follows:
- PF = Analog power fail.
- S = General status (over-range, under-range, or open-circuit).
- D = Open-circuit diagnostics.
- H = Output held bit.
- U = Under-range (or low-clamp exceeded) alarm.
- O = Over-range (or high-clamp exceeded) alarm.

IMPORTANT	The output module's input data file reflects the analog output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.

Output Data File

For each module, slot *x*, words 0...7 in the output data file contain the channel 0 through channel 7 output data. Word 8 is used to unlatch any alarm condition that has been latched. Refer to the Compact Analog I/O User Manual, publication number 1769-UM002 for additional details.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	SGN	Analog Output Data Channel 0														
1	SGN	Analog Output Data Channel 1														
2	SGN	Analog Output Data Channel 2														
3	SGN	Analog Output Data Channel 3														
4	SGN	Analog Output Data Channel 4														
5	SGN	Analog Output Data Channel 5														
6	SGN	Analog Output Data Channel 6														
7	SGN	Analog Output Data Channel 7														
8	UU7	UO7	UU6	UO6	UU5	UO5	UU4	UO4	UU3	UO3	UU2	UO2	UU1	UO1	UU0	UO0

The bits are defined as follows:

- SGN = Sign bit in two's complement format.
- UU = Unlatch under-range (or low-clamp exceeded) alarm.
- UO = Unlatch over-range (or high-clamp exceeded) alarm.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided by the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement. The channel configuration words, the first two words of each eight word group, are described on page 155. Refer to the Compact Analog I/O User Manual, publication number 1769-UM002 for additional details.

Word	Description	Word	Description
0	Channel 0 Configuration Word 0	24	Channel 3 Configuration Word 0
1	Channel 0 Configuration Word 1	25	Channel 3 Configuration Word 1
2	Channel 0 Fault Value Word	26	Channel 3 Fault Value Word
3	Channel 0 Program Idle Mode Word	27	Channel 3 Program Idle Mode Word

Word	Description	Word	Description
4	Channel 0 Low Clamp	28	Channel 3 Low Clamp
5	Channel 0 High Clamp	29	Channel 3 High Clamp
6	Channel 0 Ramp Rate	30	Channel 3 Ramp Rate
7	Channel 0 Spare	31	Channel 3 Spare
8	Channel 1 Configuration Word 0	32	Channel 4 Configuration Word 0
9	Channel 1 Configuration Word 1	33	Channel 4 Configuration Word 1
10	Channel 1 Fault Value Word	34	Channel 4 Fault Value Word
11	Channel 1 Program Idle Mode Word	35	Channel 4 Program Idle Mode Word
12	Channel 1 Low Clamp	36	Channel 4 Low Clamp
13	Channel 1 High Clamp	37	Channel 4 High Clamp
14	Channel 1 Ramp Rate	38	Channel 4 Ramp Rate
15	Channel 1 Spare	39	Channel 4 Spare
16	Channel 2 Configuration Word 0	40	Channel 5 Configuration Word 0
17	Channel 2 Configuration Word 1	41	Channel 5 Configuration Word 1
18	Channel 2 Fault Value Word	42	Channel 5 Fault Value Word
19	Channel 2 Program Idle Mode Word	43	Channel 5 Program Idle Mode Word
20	Channel 2 Low Clamp	44	Channel 5 Low Clamp
21	Channel 2 High Clamp	45	Channel 5 High Clamp
22	Channel 2 Ramp Rate	46	Channel 5 Ramp Rate
23	Channel 2 Spare	47	Channel 5 Spare

Word	Description	Word	Description
48	Channel 6 Configuration Word 0	56	Channel 7 Configuration Word 0
49	Channel 6 Configuration Word 1	57	Channel 7 Configuration Word 1
50	Channel 6 Fault Value Word	58	Channel 7 Fault Value Word
51	Channel 6 Program Idle Mode Word	59	Channel 7 Program Idle Mode Word
52	Channel 6 Low Clamp	60	Channel 7 Low Clamp
53	Channel 6 High Clamp	61	Channel 7 High Clamp
54	Channel 6 Ramp Rate	62	Channel 7 Ramp Rate
55	Channel 6 Spare	63	Channel 7 Spare

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	E	Reserved							SI U	SI O	LA	ER	F M	P M	HI	PF E
1	Reserved					Output Data Format Select			Reserved					Output Type/ Range		

The bits are defined as follows:

- E = Channel Enable: (0 = Disabled, 1 = output 0 and hold Enabled, process changes)
- Reserved = Set to zero
- SIU = System interrupt low clamp, under-range alarms: (0 = Disabled, 1 = Enabled)
- SIO = System interrupt high clamp, over-range alarms: (0 = Disabled, 1 = Enabled)
- LA = Latch low/high clamp, under/over-range alarms: (0 = Disabled, 1 = Enabled)
- ER = Enable ramping: (0 = Disabled, 1 = Enabled. Ramp rate limited by fault states.)
- FM = Fault mode: (0 = Hold Last State, 1 = User Defined Value)
- PM = Program mode: (0 = Hold Last State, 1 = User Defined Value)
- HI = Hold for initialization: (0 = Disabled, 1 = Enabled)
- PFE = Program/idle to fault enable: (0 = Disabled, 1 Enabled)

Channel Configuration Words

The first two words of each eight word group in the configuration file allow you to change the parameters of each channel independently. For example, words 8 and 9 correspond to channel 1 while words 56 and 57 correspond to channel 7.

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Program (Idle) to Fault Enable	Program (Idle) Mode Data Applied[1]		0	0	0	0	0	0	0	0							0
	Fault Mode Data Applied[1]		0	0	0	0	0	0	0	0							1
Hold for Initialization	Disabled		0	0	0	0	0	0	0	0						0	
	Enabled		0	0	0	0	0	0	0	0						1	
Program (Idle) Mode	Hold Last State[1]		0	0	0	0	0	0	0	0					0		
	User-Defined Value[1]		0	0	0	0	0	0	0	0					1		
Fault Mode	Hold Last State[1]		0	0	0	0	0	0	0	0				0			
	User-Defined Fault Value[1]		0	0	0	0	0	0	0	0				1			
Enable Ramping	Disabled		0	0	0	0	0	0	0	0			0				
	Enabled		0	0	0	0	0	0	0	0			1				
System Interrupt High Clamp	Disabled		0	0	0	0	0	0	0	0		0					
	Enabled		0	0	0	0	0	0	0	0		1					

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
System Interrupt Low Clamp	Disabled		0	0	0	0	0	0	0	0	0						
	Enabled		0	0	0	0	0	0	0	0	1						
Enable Channel	Disabled	0	0	0	0	0	0	0	0	0							
	Enabled	1	0	0	0	0	0	0	0	0							

(1) These functions are not supported by all controllers, such as MicroLogix 1500, using any configuration method. Refer to your controller manual for details.

Define	Indicate this	These bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Output Range Select	-10 to +10V dc	0	0	0	0	0				0	0	0	0	0	0	0	0
	0 to 5V dc	0	0	0	0	0				0	0	0	0	0	0	0	1
	0 to 10V dc	0	0	0	0	0				0	0	0	0	0	0	1	0
	1 to 5V dc	0	0	0	0	0				0	0	0	0	0	0	1	1
Output Data Select	Raw/Proportional Counts	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Engineering Units	0	0	0	0	0	0	0	1	0	0	0	0	0			
	Scaled for PID	0	0	0	0	0	0	1	0	0	0	0	0	0			
	Percent Range	0	0	0	0	0	0	1	1	0	0	0	0	0			

Controller Tags for RSLogix 5000, Version 15 or Later

Use the following controller tags with RSLogix 5000, version 15 or later.

Channel 0 and 1 Configuration Data

Channel 0 and 1 configuration data is shown below. The same information applies to all channels.

-	Local:1:C		AB:1769_OF8V:C:0	
	Local:1:C.Ch0ProgToFaultEn	BOOL	Decimal	
	Local:1:C.Ch0HoldForInit	BOOL	Decimal	
	Local:1:C.Ch0ProgMode	BOOL	Decimal	
	Local:1:C.Ch0FaultMode	BOOL	Decimal	
	Local:1:C.Ch0RampEn	BOOL	Decimal	
	Local:1:C.Ch0AlarmLatchEn	BOOL	Decimal	
	Local:1:C.Ch0OverRangeInterruptEn	BOOL	Decimal	
	Local:1:C.Ch0UnderRangeInterruptEn	BOOL	Decimal	
	Local:1:C.Ch0En	BOOL	Decimal	
+	Local:1:C.Ch0Range	SINT	Decimal	
+	Local:1:C.Ch0DataFormat	SINT	Decimal	
+	Local:1:C.Ch0FaultValue	INT	Decimal	
+	Local:1:C.Ch0ProgValue	INT	Decimal	
+	Local:1:C.Ch0LClampValue	INT	Decimal	
+	Local:1:C.Ch0HClampValue	INT	Decimal	
+	Local:1:C.Ch0RampRate	INT	Decimal	
	Local:1:C.Ch1ProgToFaultEn	BOOL	Decimal	
	Local:1:C.Ch1HoldForInit	BOOL	Decimal	
	Local:1:C.Ch1ProgMode	BOOL	Decimal	
	Local:1:C.Ch1FaultMode	BOOL	Decimal	
	Local:1:C.Ch1RampEn	BOOL	Decimal	
	Local:1:C.Ch1AlarmLatchEn	BOOL	Decimal	
	Local:1:C.Ch1OverRangeInterruptEn	BOOL	Decimal	
	Local:1:C.Ch1UnderRangeInterruptEn	BOOL	Decimal	

-	**Local:1:C**		**AB:1769_OF8V:C:0**	
	Local:1:C.Ch1En	BOOL	Decimal	
+	Local:1:C.Ch1Range	SINT	Decimal	
+	Local:1:C.Ch1DataFormat	SINT	Decimal	
+	Local:1:C.Ch1FaultValue	INT	Decimal	
+	Local:1:C.Ch1ProgValue	INT	Decimal	
+	Local:1:C.Ch1LClampValue	INT	Decimal	
+	Local:1:C.Ch1HClampValue	INT	Decimal	
+	Local:1:C.Ch1RampRate	INT	Decimal	

Tag Name	**To Select**	**Make These Bit Settings**[1]								
		15-8	7	6	5	4	3	2	1	0
Ch#ProgToFaultEn	Enable									1
	Disable									0
Ch#HoldForInit	Enable									1
	Disable									0
Ch#ProgMode	Enable									1
	Disable									0
Ch#FaultMode	Enable									1
	Disable									0
Ch#RampEn	Enable									1
	Disable									0
Ch#AlarmLatchEn	Enable									1
	Disable									0
Ch#OverRangeInterruptEn	Enable									1
	Disable									0
Ch#UnderRangeInterruptEn	Enable									1
	Disable									0
Ch#En	Enable									1
	Disable									0
Ch#Range	-10…+10V dc								0	0
	0…5V dc								0	1
	0…10V dc								1	0
	1…5V dc								1	1
Ch#DataFormat	Raw/proportional counts								0	0
	Engineering units								0	1
	Scaled for PID								1	0
	Percent range								1	1

(1) All bit positions left blank in table must be set to 0.

Input Data

-	**Local:1:I**		**AB:1769_OF8V:I:0**	
+	Local:1:I.Fault		DINT	Binary
+	Local:1:I.CombinedStatus		SINT	Binary
	Local:1:I.Ch0Status		BOOL	Decimal
	Local:1:I.Ch1Status		BOOL	Decimal
	Local:1:I.Ch2Status		BOOL	Decimal
	Local:1:I.Ch3Status		BOOL	Decimal
	Local:1:I.Ch4Status		BOOL	Decimal
	Local:1:I.Ch5Status		BOOL	Decimal
	Local:1:I.Ch6Status		BOOL	Decimal
	Local:1:I.Ch7Status		BOOL	Decimal
+	Local:1:I.ModuleStatus		SINT	Binary
	Local:1:I.PowerFail		BOOL	Decimal
+	Local:1:I.Ch0_1Status		SINT	Binary
	Local:1:I.Ch0OverRange		BOOL	Decimal
	Local:1:I.Ch0UnderRange		BOOL	Decimal
	Local:1:I.Ch0InHold		BOOL	Decimal
	Local:1:I.Ch1OverRange		BOOL	Decimal
	Local:1:I.Ch1UnderRange		BOOL	Decimal
	Local:1:I.Ch1InHold		BOOL	Decimal
+	Local:1:I.Ch2_3Status		SINT	Binary
	Local:1:I.Ch2OverRange		BOOL	Decimal
	Local:1:I.Ch2UnderRange		BOOL	Decimal
	Local:1:I.Ch2InHold		BOOL	Decimal
	Local:1:I.Ch3OverRange		BOOL	Decimal
	Local:1:I.Ch3UnderRange		BOOL	Decimal
	Local:1:I.Ch3InHold		BOOL	Decimal

-	**Local:1:I**		**AB:1769_OF8V:I:0**	
	+	Local:1:I.Ch4_5Status	SINT	Binary
		Local:1:I.Ch4OverRange	BOOL	Decimal
		Local:1:I.Ch4UnderRange	BOOL	Decimal
		Local:1:I.Ch4InHold	BOOL	Decimal
		Local:1:I.Ch5OverRange	BOOL	Decimal
		Local:1:I.Ch5UnderRange	BOOL	Decimal
		Local:1:I.Ch5InHold	BOOL	Decimal
	+	Local:1:I.Ch6_7Status	SINT	Binary
		Local:1:I.Ch6OverRange	BOOL	Decimal
		Local:1:I.Ch6UnderRange	BOOL	Decimal
		Local:1:I.Ch6InHold	BOOL	Decimal
		Local:1:I.Ch7OverRange	BOOL	Decimal
		Local:1:I.Ch7UnderRange	BOOL	Decimal
		Local:1:I.Ch7InHold	BOOL	Decimal
	+	Local:1:I.Ch0ReadBack	INT	Decimal
	+	Local:1:I.Ch1ReadBack	INT	Decimal
	+	Local:1:I.Ch2ReadBack	INT	Decimal
	+	Local:1:I.Ch3ReadBack	INT	Decimal
	+	Local:1:I.Ch4ReadBack	INT	Decimal
	+	Local:1:I.Ch5ReadBack	INT	Decimal
	+	Local:1:I.Ch6ReadBack	INT	Decimal
	+	Local:1:I.Ch7ReadBack	INT	Decimal

Tag Name	Bit Indicates This[1]							
	7	6	5	4	3	2	1	0
Combined Status	Ch7 Status	Ch6 Status	Ch5 Status	Ch4 Status	Ch3 Status	Ch2 Status	Ch1 Status	Ch0 Status
Module Status								Power Fail
Ch0_1 Status		Ch1 InHold	Ch1 Under Range	Ch1 Over Range		Ch0 InHold	Ch0 Under Range	Ch0 Over Range
Ch2_3 Status		Ch3 InHold	Ch3 Under Range	Ch3 Over Range		Ch2 InHold	Ch2 Under Range	Ch2 Over Range
Ch4_5 Status		Ch5 InHold	Ch5 Under Range	Ch5 Over Range		Ch4 InHold	Ch4 Under Range	Ch4 Over Range
Ch6_7 Status		Ch7 InHold	Ch7 Under Range	Ch7 Over Range		Ch6 InHold	Ch6 Under Range	Ch6 Over Range

(1) Bit positions left blank in table are always set to 0.

Output Data

Local:1:O		AB:1769_OF8V:O:0	
+	Local:1:O.Ch0Data	INT	Decimal
+	Local:1:O.Ch1Data	INT	Decimal
+	Local:1:O.Ch2Data	INT	Decimal
+	Local:1:O.Ch3Data	INT	Decimal
+	Local:1:O.Ch4Data	INT	Decimal
+	Local:1:O.Ch5Data	INT	Decimal
+	Local:1:O.Ch6Data	INT	Decimal
+	Local:1:O.Ch7Data	INT	Decimal
+	Local:1:O.AlarmUnlatch	INT	Binary
	Local:1:O.Ch0OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch0UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch1OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch1UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch2OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch2UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch3OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch3UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch4OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch4UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch5OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch5UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch6OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch6UnderRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch7OverRangeUnlatch	BOOL	Decimal
	Local:1:O.Ch7UnderRangeUnlatch	BOOL	Decimal

1769-OG16

The following I/O memory mapping lets you configure the 1769-OG16 module.

Output Module's Input Data File

For each module, slot *x*, word 0 in the input data file contains the state of the module's output data file (output data echo). During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program mode configuration, if supported by the controller
- Fault mode configuration, if supported by the controller

The module implements inverted logic on the TTL outputs. An Output Data File bit set to 1 directs a logic low output voltage on the corresponding output point. An Output Data File bit cleared to 0 directs a logic high output voltage on the corresponding output point.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

> **IMPORTANT** The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
>
> It is important to use this input word if the controller adapter supports the Program mode or Fault mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the state of the module's output points. The module implements inverted logic on the TTL outputs. An Output Data File bit set to 1 results in a logic low output voltage on the corresponding output point. An Output Data File bit cleared to 0 results in a logic high output voltage on the corresponding output point.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	w[1]	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w

(1) w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical dialogs are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	Program State for Output Array Word 0															
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word[1]

The program value word, word 2, is used to program the user-defined safe state value (0 = Off, 1 = On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

(1) TTL outputs are inverted (On = 1 = logic low voltage = 0…0.4V dc; Off = 0 = logic high voltage = 4.5…5.5V dc). Use a NOT instruction in the ladder program to convert to traditional True = High logic.

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word[1]

The fault value word, word 4, is used to program the fault state value (0 = Off, 1 = On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting in a change to the Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition[1]

The modules default condition is all zeros.

Word or Bit Affected		Condition Applied
Word 0, Bit 0	Program-to-fault Enable	Program Value
Word 1	Program State	User-defined Safe State
Word 2	Program Value	Off
Word 3	Fault State	User-defined Safe State
Word 4	Fault Value	Off

(1) TTL outputs are inverted (On = 1 = logic low voltage = 0…0.4V dc; Off = 0 = logic high voltage = 4.5…5.5V dc). Use a NOT instruction in the ladder program to convert to traditional True = High logic.

1769-OV16

The following I/O memory mapping lets you configure the 1769-OV16 module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program Mode configuration, if supported by the controller
- Fault Mode configuration, if supported by the controller

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

IMPORTANT	The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
	It is important to use this input word if the controller adapter supports the Program Mode or Fault Mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	w[1]	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w

(1) w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, likek the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangment.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	Program State for Output Array Word 0															
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

1769-OV32T

The following I/O memory mapping lets you configure the 1769-OV32T module.

Output Module's Input Data File

For each module, slot *x*, input data file words 0 and 1 contain the state of the module's output data (output data echo) file words 0 and 1. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program Mode configuration, if supported by the controller
- Fault Mode configuration, if supported by the controller

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

IMPORTANT The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.

It is important to use this input word if the controller adapter supports the Program Mode or Fault Mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, words 0 and 1 in the output data file contain the control program's directed state of the discrete output points.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	w[1]	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w
1	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w

(1) w=write

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Program State for Output Array Word 0															
3	Program State for Output Array Word 1															
4	Program Value for Output Array Word 0															
5	Program Value for Output Array Word 1															
6	Fault State for Output Array Word 0															
7	Fault State for Output Array Word 1															
8	Fault Value for Output Array Word 0															
9	Fault Value for Output Array Word 1															
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-OW8

The following I/O memory mapping lets you configure the 1769-OW8 module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program Mode configuration, if supported by the controller
- Fault Mode configuration, if supported by the controller

For the 1769-OW8, bits 8 to 15 are not used.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	r[1]	r	r	r	r	r	r	r

(1)   r = read

> **IMPORTANT**   The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
>
> It is important to use this input word if the controller adapter supports the Program Mode or Fault Mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points. For the 1769-OW8, bits 8 to 15 are not used.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	w[1]	w	w	w	w	w	w	w

(1) w=write

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangment.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	Program State for Output Array Word 0															
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown below.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-OW8I

The following I/O memory mapping lets you configure the 1769-OW8I module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program Mode configuration, if supported by the controller
- Fault Mode configuration, if supported by the controller

For the 1769-OW8I, bits 8 to 15 are not used.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	r[1]	r	r	r	r	r	r	r

(1) r = read

IMPORTANT	The output module's input data file reflects the output data echo of the module, not the electrical state of the output terminals. It does not reflect shorted or open outputs. It is important to use this input word if the controller adapter supports the Program Mode or Fault Mode function, and if it is configured to use them.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points. For the 1769-OW8I, bits 8 to 15 are not used.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	w[1]	w	w	w	w	w	w	w

(1) w = write

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangment.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	Program State for Output Array Word 0															
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting a change to Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown below.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-OW16

The following I/O memory mapping lets you configure the 1769-OW16 module.

Output Module's Input Data File

For each module, slot *x*, input data file word 0 contains the state of the module's output data (output data echo) file word 0. During normal operation, these input bits represent the logic state that the outputs are directed to by the control program. They are also dependent upon these configurations:

- Program Mode configuration, if supported by the controller
- Fault Mode configuration, if supported by the controller

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	r[1]	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

(1) r = read.

> **IMPORTANT** The output module's input data file reflects the output data echo of the module, not necessarily the electrical state of the output terminals. It does not reflect shorted or open outputs.
>
> It is important to use this input word if the controller adapter supports the Program Mode or Fault Mode function, and if it is configured to use them.

Output Data File

Data output bits are turned on or off using the bit positions in word 0.

- 1 = output on
- 0 = output off

> **EXAMPLE** To turn on bit position 12, type 1 in word 0, bit 12.

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the discrete output points.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	w[1]	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w

(1) w = write.

Configuration File

The read/writable configuration data file allows the setup of the hold last state and user-defined safe state conditions.

The manipulation of the bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens are provided via the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PFE
1	Program State for Output Array Word 0															
2	Program Value for Output Array Word 0															
3	Fault State for Output Array Word 0															
4	Fault Value for Output Array Word 0															

Program State Word

Word 1, the program state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Program.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Program Value Word

The program value word, word 2, is used to program the user-defined safe state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Fault State Word

Word 3, the fault state word, selects the hold last state or user-defined safe state condition for each individual output on a system transition from Run to Fault.

Condition	Bit Setting
User-defined Safe State	0
Hold Last State	1

Fault Value Word

The fault value word, word 4, is used to program the fault state value (0=Off, 1=On). Each output is individually configurable for on or off.

Value	Bit Setting
Off	0
On	1

Program to Fault Enable Bit (PFE)

Word 0, bit 0, allows the selection of which data value, the program or fault value, to apply to the output if a system in Program mode undergoes a system fault, resulting in a change to the Fault mode.

Value Applied	Bit Setting
Program	0
Fault	1

Module Default Condition

The modules default condition is all zeros, programming the conditions shown below.

Word or Bit Affected		Condition Applied
Word 0, Bit 0:	Program-to-Fault Enable	Program Value
Word 1:	Program State	User-defined Safe State
Word 2:	Program Value	Off
Word 3:	Fault State	User-defined Safe State
Word 4:	Fault Value	Off

1769-ARM

The module has an input data file of 1 word, no output data file (0 words), and no configuration data file (0 words).

Input Data File

For each address reserve module, slot *x*, word 0 in the input data file contains all bits set to 0.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

1769-ASCII

The 1769-ASCII module supports an input assembly that is accessible through the Assembly Object (Class 4), Instance 101. The input assembly is up to 108 words. The module supports an output assembly that is accessible through the Assembly Object (Class 4), Instance 100. The output assembly is up to 108 words.

Alternate Mode (One Channel at a Time) Input File

Maximum size is shown below. Refer to the Compact I/O 1769-ASCII Module User Manual, publication 1769-UM012, to use smaller input files.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Tx ID 0 Acknowledged								Rx Transaction ID Ch0							
1	15	14	13	12	11	10	TG 0	TS 0	ND 0	HE 0	NR 0	RF 0	TF 0	PA 0	RO 0	TO 0
2	Tx ID 1 Acknowledged								Rx Transaction ID Ch1							
3	15	14	13	12	11	10	TG 1	TS 1	ND 1	HE 1	NR 1	RF 1	TF 1	PA 1	RO 1	TO 1
4	Reserved															CNI
5	Reserved															CN 0
6	Firmware Revision, Major								Firmware Revision, Minor							
7	Length (Number of Bytes)															
8	Character 1								Character 0							
9	Character 3								Character 2							
…	Character …								Character …							
106	Character 197								Character 196							
107	Character 199								Character 198							

The bits are defined as follows:

- Tx = Transmit.

- Rx = Receive.

- TS = Transmit sent. Indicates the ASCII module has sent the data indicated by the Tx Transaction ID and can accept more transmit data.

- ND = New data. Only used for Handshake mode.

- HE = Handshake error. Only used for Handshake mode.

- NR = Non-delimited record. An input record is received and sent to the Compact bus interface that was not triggered by a delimiter character. This occurs when either the buffer is filled to its maximum receive size or a Message Timeout has occurred.

- RF = Data in the receive FIFO. The FIFO is not empty. The input FIFO has not sent all of its data to the Compact bus interface.

- TF = Data in transmit FIFO. The FIFO is not empty. The output FIFO has not sent all of its data to the ASCII device.

- PA = Parity error. A parity error has occurred with the received data string. This usually indicates a mismatch in the serial port set-up of the ASCII device and the Compact module. It could also indicate that noise has occurred on the line and degraded the signal. This bit is set when the receive FIFO contains a message in which a parity error occurred in one of the incoming bytes. This bit is reset when the receive FIFO is emptied or when a new message is received with no parity error.

- RO = Receive buffer overflow. Some input data has been lost.

- TG = Transmit greater than Max Error. Transmit length in the output file is greater than the maximum transmit character length in the configuration file.

- TO = Transmit buffer overflow. Some output data has been lost.

- CNI = Channel number of the input data. This bit is set by the ASCII module to tell the user program from which port the data was received.

- CNO = Channel number of the output data most recently received. This bit is set by the ASCII module to tell the user program that it has received the data to transmit out the specified port.

Alternate Mode (One Channel at a Time) Output File

Maximum size is shown below. Refer to the Compact I/O 1769-ASCII Module User Manual, publication 1769-UM012, to use smaller output files.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Reserved								Tx Transaction ID Ch0							
1	Reserved								Rx Transaction ID Request Ch0							
2	Reserved								Tx Transaction ID Ch1							
3	Reserved								Rx Transaction ID Request Ch1							
4	Reserved															CNI

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
5	Reserved															CNO
6	Reserved															
7	Length (Number of Bytes)															
8	Character 1								Character 0							
9	Character 3								Character 2							
…	Character …								Character …							
106	Character 197								Character 196							
107	Character 199								Character 198							

The bits are defined as follows:

- Tx = Transmit.

- Rx = Receive.

- CNI = Channel number of requested input data. This bit is set by the PLC controller or other user program to tell the ASCII module which data to produce.

- CNO = Channel number of the output data being sent. This bit is set by the PLC controller or other user program to tell the ASCII module which port's data is being sent to the ASCII module.

- Reserved bits should be set to 0.

Simultaneous Mode (Two Channels) Input File

Maximum size is shown below. Refer to the Compact I/O 1769-ASCII Module User Manual, publication 1769-UM012, to use smaller output files.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Channel 0 Data																
0	Tx ID Acknowledged								Rx Transaction ID							
1	Reserved						TG	TS	ND	HE	NR	RF	TF	PA	RO	TO
2	Firmware Revision, Major								Firmware Revision, Minor							
3	Length (Number of Bytes)															
4	Character 1								Character 0							
5	Character 3								Character 2							
…	Character …								Character …							
x[1]	Last Character								Character …							

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Channel 1 Data																
x+1	Tx ID Acknowledged								Rx Transaction ID							
x+2	Reserved						TG	TS	ND	HE	NR	RF	TF	PA	RO	TO
x+3	Firmware Revision, Major								Firmware Revision, Minor							
x+4	Length (Number of Bytes)															
x+5	Character 1								Character 0							
x+6	Character 3								Character 2							
…	Character …								Character …							
y[(2)]	Last Character								Character …							

(1) X is calculated based on the size of Channel 0 data as specified in the input file. Both channels cannot contain 200 characters as the total configuration file size can be only 108 words.

(2) Y is equal to the connection size minus 1, with a maximum value of 107 for a buffer size of 108.

- Tx = Transmit.

- Rx = Receive.

- TG = Transmit greater than Max Error. Transmit length in the output file is greater than the maximum transmit character length in the configuration file.

- TS = Transmit sent. Indicates the ASCII module has sent the data indicated by the Tx Transaction ID and can accept more transmit data.

- ND = New data. Only used for Handshake mode.

- HE = Handshake error. Only used for Handshake mode.

- NR = Non-delimited record. An input record is received and sent to the Compact bus interface that was not triggered by a delimiter character. This occurs when either the buffer is filled to its maximum receive size or a Message Timeout has occurred.

- RF = Data in the receive FIFO. The FIFO is not empty. The input FIFO has not sent all of its data to the Compact bus interface.

- TF = Data in transmit FIFO. The FIFO is not empty. The output FIFO has not sent all of its data to the ASCII device.

- PA = Parity error. A parity error has occurred with the received data string. This usually indicates a mismatch in the serial port set-up of the ASCII device and the Compact module. It could also indicate that noise has occurred on the line and degraded the signal. This bit is set when the receive FIFO contains a message in which a parity error occurred in one of the incoming bytes. This bit is reset when the receive FIFO is emptied or when a new message is received with no parity error.

- RO = Receive buffer overflow. Some input data has been lost.

- TO = Transmit buffer overflow. Some output data has been lost.

Simultaneous Mode (Two Channels) Output File

Maximum size is shown below. Refer to the Compact I/O 1769-ASCII Module User Manual, publication 1769-UM012, to use smaller output files.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Channel 0 Data																
0	Reserved								Tx Transaction ID							
1	Reserved								Rx Transaction ID Request							
2	Reserved															
3	Length (Number of Bytes)															
4	Character 1								Character 0							
5	Character 3								Character 2							
…	Character …								Character …							
$x^{(1)}$	Last Character								Character …							
Channel 1 Data																
x+1	Reserved								Tx Transaction ID							
x+2	Reserved								Rx Transaction ID Request							
x+3	Reserved															
x+4	Length (Number of Bytes)															
x+5	Character 1								Character 0							
x+6	Character 3								Character 2							
…	Character …								Character …							
$y^{(2)}$	Last Character								Character …							

(1) X is calculated based on the size of Channel 0 data as specified in the configuration file. Both channels cannot contain 200 characters as the total configuration file size can be only 108 words.

(2) Y is equal to the connection size minus 1, with a maximum value of 107 for a buffer size of 108.

The bits are defined as follows:

- Tx = Transmit
- Rx = Receive

Configuration File

The 1769-ASCII module supports a configuration assembly that is accessible through the Assembly Object (Class 4), Instance 102. The configuration assembly is 31 words. The addresses assume a 16-bit data structure where all 16-bit values are INT[1]. The least significant word occupies the smaller byte addresses.

Word	Description	Values	Valid Data Values
0	Data Buffer Mode	0…1	0 = alternate mode 1 = simultaneous mode
Channel 0			
1	Serial Character Framing	0…8	0 = 7N2, 1 = 7E1, 2 = 7O1, 3 = 8N1, 4 = 8N2, 5 = 8E1, 6 = 8O1, 7 = 7E2, 8 = 7O2
2	Serial Port Speed	0…7	0 = 9600, 1 = 1200, 2 = 2400, 3 = 4800, 4 = 19200, 5 = 38400, 6 = 57.6k, 7 = 115.2k (half-duplex only)
Serial Port Receive Data			
3	Max Number of Receive Characters	0…200	In Simultaneous mode, the total number of channel 0 characters plus channel 1 characters cannot exceed 200.
4	Receive Record Start Mode	0…2	0 = ignore, 1 = exclude, 2 = include start delimiter
5	Receive Start Delimiter[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
6	Receive Record End Mode	0…2	0 = ignore, 1 = exclude, 2 = include end delimiter
7	Receive End Delimiter[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
Module Production Data			
8	Pad Character[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
9	Receive Swap Mode	0…2	0 = disabled, 1 = 16-bit, 2 = 32-bit
10	Master Handshake Mode	0…1	0 = master/slave handshake, 1 = produce immediate
11	Message Time Out	0…65535	0 = none, 1 to 65535 ms
Serial Port Transmit Data			
12	Max Number of Transmit Characters	0…200	In Simultaneous mode, the total number of channel 0 characters plus channel 1 characters cannot exceed 200.

(1) INT = Integer range of -32768 to +32767 decimal, 0000 to FFFF hexadecimal.

Word	Description	Values	Valid Data Values
13	Transmit Record End Mode	0…2	0 = ignore, 1 = exclude, 2 = include end delimiter
14	Transmit End Delimiter[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
15	Transmit Swap Mode	0…2	0 = disabled, 1 = 16-bit, 2 = 32-bit
Channel 1			
16	Serial Character Framing	0…8	0 = 7N2, 1 = 7E1, 2 = 7O1, 3 = 8N1, 4 = 8N2, 5 = 8E1, 6 = 8O1, 7 = 7E2, 8 = 7O2
17	Serial Port Speed	0…7	0 = 9600, 1 = 1200, 2 = 2400, 3 = 4800, 4 = 19200, 5 = 38400, 6 = 57.6k, 7 = 115.2k (half-duplex only)
Serial Port Receive Data			
18	Max Number of Receive Characters	0…200	In Simultaneous mode, the total number of channel 0 characters plus channel 1 characters cannot exceed 200.
19	Receive Record Start Mode	0…2	0 = ignore, 1 = exclude, 2 = include start delimiter
20	Receive Start Delimiter[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
21	Receive Record End Mode	0…2	0 = ignore, 1 = exclude, 2 = include end delimiter
22	Receive End Delimiter[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
Module Production Data			
23	Pad Character[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
24	Receive Swap Mode	0…2	0 = disabled, 1 = 16-bit, 2 = 32-bit
25	Master Handshake Mode	0…1	0 = master/slave handshake, 1 = produce immediate
26	Message Time Out	0…65535	0 = none, 1 to 65535 ms
Serial Port Transmit Data			
27	Max Number of Transmit Characters	0…200	In Simultaneous mode, the total number of channel 0 characters plus channel 1 characters cannot exceed 200.
28	Transmit Record End Mode	0…2	0 = ignore, 1 = exclude, 2 = include end delimiter
29	Transmit End Delimiter[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
30	Transmit Swap Mode	0…2	0 = disabled, 1 = 16-bit, 2 = 32-bit

(1) To enter values from +128 to +255, use this conversion formula: Desired Decimal Value - 256 = Entered Decimal Value. For example, for an ASCII character value of 128, 128 - 256 = -128.

1769-BOOLEAN

The following I/O memory mapping lets you configure the 1769-BOOLEAN module.

Input Data File

For each module, slot *x*, word 0 in the input data file contains the state of the module's real input points. Word 1 in the input data file contains the state of the module's output data (output data echo). During normal operation, this word represents the values that the outputs are directed to by the control program (in Direct Control mode) or by the module (in BOOLEAN Control mode).

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0									IN7	IN6	IN5	IN4	IN3	IN2	IN1	IN0
1													O3	O2	O1	O0

The bits are defined as follows:

- Shaded bit positions must be set to 0.
- IN*x* = State of module's real inputs 0…7.
- O*x* = Data echo of directed states of module outputs 0…3; 1 = output on, 0 = output off.

Output Data File

For each module, slot *x*, word 0 in the output data file contains the control program's directed state of the module's output points when operated in Direct Control mode. Direct Control mode is active when an output's disable BOOLEAN (DB_*x*) bit is set in the configuration data file. Word 1 contains the control program's directed states of the virtual inputs, which can be used in controlling the module's output points via BOOLEAN expressions.

Word	Bit Position															
	15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0													OUT3	OUT2	OUT1	OUT0
1									V7	V6	V5	V4	V3	V2	V1	V0

The bits are defined as follows:

- Shaded bit positions must be set to 0.
- OUT*x* = Output state in Direct Control mode; 1 = output on, 0 = output off.
- V*x* = Virtual inputs 0…7.

Configuration Data File

The manipulation of bits from this file is normally done with programming software, such as RSLogix 500, RSLogix 5000, or RSNetWorx for DeviceNet, during initial configuration of the system. In that case, graphical screens provided by the programming software simplify configuration.

Some systems, like the 1769-ADN DeviceNet adapter system, also allow the bits to be altered as part of the control program using communication rungs. In that case, it is necessary to understand the bit arrangement. Words 0 and 1 of the configuration data file set the input control parameters for the module. Words 2…7 set the alternate output state operation of the module. Each output point's operating parameters are controlled by a group of eight words.

Word	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Bit Position															
0														Input Filter		
1	IT_I7	EI_I7	IT_I6	EI_I6	IT_I5	EI_I5	IT_I4	EI_I4	IT_I3	EI_I3	IT_I2	EI_I2	IT_I1	EI_I1	IT_I0	EI_I0
2																PFE
3																
4													PM3	PM2	PM1	PM0
5													PV3	PV2	PV1	PV0
6													FM3	FM2	FM1	FM0
7													FV3	FV2	FV1	FV0
8											IT_O0			EI_O0		DB_0
9											Operand_A_0					
10											Operand_B_0					
11											Operand_C_0					
12											Operator_2_0			Operator_1_0		
13							Output Delay 0									
14							Output Duration 0									
15																
16											IT_O1			EI_O1		DB_1
17											Operand_A_1					
18											Operand_B_1					
19											Operand_C_1					
20											Operator_2_1			Operator_1_1		

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
21							Output Delay 1									
22							Output Duration 1									
23																
24											IT_O2			EI_O2		DB_1
25							Operand_A_2									
26							Operand_B_2									
27							Operand_C_2									
28											Operator_2_2			Operator_1_2		
29							Output Delay 2									
30							Output Duration 2									
31																
32											IT_O3			EI_O3		DB_3
33							Operand_A_3									
34							Operand_B_3									
35							Operand_C_3									
36											Operator_2_3			Operator_1_3		
37							Output Delay 3									
38							Output Duration 3									
39																

The bits are defined as follows:

- Shaded bit positions must be set to 0.

- Input filter: Real input point filter selection. See page .

- EI_Ix: Enable input interrupt; 1 = interrupt enabled, 0 = interrupt disabled.

- IT_Ix: Input interrupt type; 1 = generate interrupt on real input point transition from on to off, 0 = generate interrupt on real input point transition from off to on.

- PFE: Program to fault enable; 1 = fault value applied, 0 = program value applied.

- PMx: Program mode; 1 = hold last state, 0 = user-defined safe state.

- PVx: Program value; 1 = output on, 0 = output off.

- FMx: Fault mode; 1 = hold last state, 0 = user-defined safe state.

- FVx: Fault value; 1 = output on, 0 = output off.

- DB_x: Output Control; 1 = output in Direct Control mode, 0 = output in BOOLEAN Control mode.

- EI_O*x*: Enable output interrupt; 1 = interrupt enabled, 0 = interrupt disabled.
- IT_O*x*: Output interrupt type. See page 191.
- Operand_A_*x*: BOOLEAN operand A. See page 191.
- Operand_B_*x*: BOOLEAN operand B. See page 191.
- Operand_C_*x*: BOOLEAN operand C. See page 191.
- Operator_1_*x*: BOOLEAN operator 1. See page 193.
- Operator_2_*x*: BOOLEAN operator 2. See page 193.
- Output delay x: Delay time from BOOLEAN expression transition from false to true until output directed to transition from off to on. See page 194.
- Output duration x: Pre-determined output pulse duration time. Time from output directed to transition from off to on until output directed to transition from on to off. See page 195.

Word			Bit Position[1]															
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Input Filter	8 ms														0	0	0
		0 s														0	0	1
		100 µs														0	1	0
		200 µs														0	1	1
		500 µs														1	0	0
		1 ms														1	0	1
		2 ms														1	1	0
		4 ms														1	1	1

(1) Darker shaded bit positions must be set to 0.

Word			**Bit Position**[1]															
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8, 16, 24, 32	Output Control (DB_x)	Direct Control																1
		BOOLEAN Control																0
	Enable Output Interrupt	Enable														1		
		Disable														0		
	Output Interrupt Type	BOOLEAN Expression FALSE to TRUE											0	0				
		Output Directed OFF to ON											0	1				
		BOOLEAN Expression TRUE to FALSE											1	0				
		Output Directed ON to OFF											1	1				

(1) Darker shaded bit positions must be set to 0.

Word			**Bit Position**[1]															
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
9, 10, 11	Operand _A_0 Operand _B_0 Operand _C_0	None											0	0	0	0	0	0
		Real Input 0											0	0	0	0	0	1
		Inverted Real Input 0											0	0	0	0	1	0
		Real Input 1											0	0	0	0	1	1
17, 18, 19	Operand _A_1 Operand _B_1 Operand _C_1	Inverted Real Input 1											0	0	0	1	0	0
		Real Input 2											0	0	0	1	0	1
		Inverted Real Input 2											0	0	0	1	1	0
		Real Input 3											0	0	0	1	1	1

Word			Bit Position[1]															
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
25, 26, 27	Operand _A_2 Operand _B_2 Operand _C_2	Inverted Real Input 3											0	0	1	0	0	0
		Real Input 4											0	0	1	0	0	1
		Inverted Real Input 4											0	0	1	0	1	0
		Real Input 5											0	0	1	0	1	1
33, 34, 35	Operand _A_3 Operand _B_3 Operand _C_3	Inverted Real Input 5											0	0	1	1	0	0
		Real Input 6											0	0	1	1	0	1
		Inverted Real Input 6											0	0	1	1	1	0
		Real Input 7											0	0	1	1	1	1
		Inverted Real Input 7											0	1	0	0	0	0
		Virtual Input 0											0	1	0	0	0	1
		Inverted Virtual Input 0											0	1	0	0	1	0
		Virtual Input 1											0	1	0	0	1	1
		Inverted Virtual Input 1											0	1	0	1	0	0
		Virtual Input 2											0	1	0	1	0	1
		Inverted Virtual Input 2											0	1	0	1	1	0
		Virtual Input 3											0	1	0	1	1	1
		Inverted Virtual Input 3											0	1	1	0	0	0
		Virtual Input 4											0	1	1	0	0	1
		Inverted Virtual Input 4											0	1	1	0	1	0
		Virtual Input 5											0	1	1	0	1	1

Word		Bit Position[1]															
		15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
	Inverted Virtual Input 5											0	1	1	1	0	0
	Virtual Input 6											0	1	1	1	0	1
	Inverted Virtual Input 6											0	1	1	1	1	0
	Virtual Input 7											0	1	1	1	1	1
	Inverted Virtual Input 7											1	0	0	0	0	0

(1) Darker shaded bit positions must be set to 0. Entering a binary value greater than 100000 (greater than 32 decimal) results in a configuration error.

Word			Bit Position[1]															
			15	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
12, 20, 28, 36	Operator_1_0 Operator_1_1 Operator_1_2 Operator_1_3	None																0	0
		OR																0	1
		AND																1	0
		XOR																1	1
	Operator_2_0 Operator_2_1 Operator_2_2 Operator_2_3	None											0	0					
		OR											0	1					
		AND											1	0					
		XOR											1	1					

(1) Darker shaded bit positions must be set to 0.

Word			Bit Position[1]														
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
13, 21, 29, 37	Output Delay 0	0 ms							0	0	0	0	0	0	0	0	0	0
		1 ms							0	0	0	0	0	0	0	0	0	1
	Output Delay 1	2 ms							0	0	0	0	0	0	0	0	1	0
		3 ms							0	0	0	0	0	0	0	0	1	1
	Output Delay 2	4 ms							0	0	0	0	0	0	0	1	0	0
		5 ms							0	0	0	0	0	0	0	1	0	1
	Output Delay 3	6 ms							0	0	0	0	0	0	0	1	1	0
		7 ms							0	0	0	0	0	0	0	1	1	1
		…																
		993 ms							1	1	1	1	1	0	0	0	0	1
		994 ms							1	1	1	1	1	0	0	0	1	0
		995 ms							1	1	1	1	1	0	0	0	1	1
		996 ms							1	1	1	1	1	0	0	1	0	0
		997 ms							1	1	1	1	1	0	0	1	0	1
		998 ms							1	1	1	1	1	0	0	1	1	0
		999 ms							1	1	1	1	1	0	0	1	1	1
		1000 ms							1	1	1	1	1	0	1	0	0	0

(1) Shaded bit positions must be set to 0. Entering a binary value greater than 1111101000 (greater than 1000 decimal) results in a configuration error.

Word			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
		Bit Position[2]																
14, 22, 30, 38	Output Duration 0	None[1]							0	0	0	0	0	0	0	0	0	0
		1 ms							0	0	0	0	0	0	0	0	0	1
	Output Duration 1	2 ms							0	0	0	0	0	0	0	0	1	0
		3 ms							0	0	0	0	0	0	0	0	1	1
	Output Duration 2	4 ms							0	0	0	0	0	0	0	1	0	0
		5 ms							0	0	0	0	0	0	0	1	0	1
	Output Duration 3	6 ms							0	0	0	0	0	0	0	1	1	0
		7 ms							0	0	0	0	0	0	0	1	1	1
		…																
		993 ms							1	1	1	1	1	0	0	0	0	1
		994 ms							1	1	1	1	1	0	0	0	1	0
		995 ms							1	1	1	1	1	0	0	0	1	1
		996 ms							1	1	1	1	1	0	0	1	0	0
		997 ms							1	1	1	1	1	0	0	1	0	1
		998 ms							1	1	1	1	1	0	0	1	1	0
		999 ms							1	1	1	1	1	0	0	1	1	1
		1000 ms							1	1	1	1	1	0	1	0	0	0

(1) No pre-determined output pulse duration. Output directed off when BOOLEAN expression goes to FALSE

(2) Shaded bit positions must be set to 0. Entering a binary value greater than 1111101000 (greater than 1000 decimal) results in a configuration error.

1769-HSC

Refer to the Compact High-speed Counter Module User Manual, publication 1769-UM006 for information on configuring the 1769-HSC module.

Notes:

Appendix **A**

Module Replacement Parts

Module Catalog Number	Spare/Replacement Parts
1769-IA8I	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-IA16	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-IF4, Series B or later	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL2 Series B (2 per kit) • Door: 1769-RD (2 per kit)
1769-IF4I	• Terminal block: 1769-RTBN18 (1 per kit)
1769-IF4XOF2	• Terminal block: 1769-RTBN18 (1 per kit) • Door: 1769-RD (2 per kit)
1769-IF4FXOF2F	• Terminal block: 1769-RTBN18 (1 per kit) • Door: 1769-RD (2 per kit)
1769-IF8	• Terminal block: 1769-RTBN18 (1 per kit)
1769-IF16C	• Terminal block: 1769-RTBN18 (1 per kit) • Door: 1769-RD (2 per kit)
1769-IF16V	• Terminal block: 1769-RTBN18 (1 per kit) • Door: 1769-RD (2 per kit)
1769-IG16	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-IM12	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-IQ16	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-IQ16F	• Terminal Block: 1769-RTBN18 (1 per kit) • Door Label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-IQ32	• Terminal block: 1769-RTBN18 (1 per kit)
1769-IQ32T	• Connector kit: 1746-N3 (1 connector, 40 terminals per kit)
1769-IQ6XOW4, Series B	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-IR6	• Terminal block: 1769-RTBN18 (1 per kit) • Door: 1769-RD (2 per kit)
1769-IT6	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL2 series B (2 per kit) • Door: 1769-RD (2 per kit)

Module Catalog Number	Spare/Replacement Parts
1769-OA8, Series B	• Terminal block: 1769-RTBN10 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-OA16	• Terminal block: 1769-RTBN18 (1 per kit)
1769-OB8, Series A	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-OB16, Series B	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-OB16P	• Terminal block: 1769-RTB18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-OB32	• Terminal block: 1769-RTBN18 (1 per kit)
1769-OB32T	• Connector kit: 1746-N3 (1 connector, 40 terminals per kit)
1769-OF2, Series B or later	• Terminal block: 1769-RTBN10 (1 per kit) • Door label: 1769-RL2 Series B (2 per kit) • Door: 1769-RD (2 per kit)
1769-OF4	• Terminal block: 1769-RTBN10 (1 per kit) • Door: 1769-RD (2 per kit)
1769-OF4CI	• Terminal block: 1769-RTBN18 (1 per kit) • Door: 1769-RD (2 per kit)
1769-OF4VI	• Terminal block: 1769-RTBN18 • Door: 1769-RD (2 per kit)
1769-OF8C	• Terminal block: 1769-RTBN10 (1 per kit) A-B part number A22112-319-01 • Door: 1769-RD (2 per kit)
1769-OF8V	• Terminal block: 1769-RTBN10 (1 per kit) A-B part number A22112-319-01 • Door: 1769-RD (2 per kit)
1769-OG16	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-OV16	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-OV32T	• Connector kit: 1746-N3 (1 connector, 40 terminals per kit)
1769-OW8, Series B	• Terminal block: 1769-RTBN10 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-OW8I, Series B	• Terminal block: 1769-RTBN18 (1 per kit) • Door label: 1769-RL1 (2 per kit) • Door: 1769-RD (2 per kit)
1769-OW16	• Terminal block:1769-RTBN18 (1 per kit)
1769-ARM	Not applicable
1769-ASCII	Not applicable
1769-BOOLEAN	• Terminal block: 1769-RTBN18 (1 per kit) • Door: 1769-RD (2 per kit)
1769-HSC	• Terminal block: 1769-RTBN18 (1 per kit) • Door: 1769-RD (2 per kit)

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products.
At http://www.rockwellautomation.com/support/, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/support/.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/support/americas/phone_en.html, or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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Allen-Bradley

Compact I/O Modules

Installation Instructions