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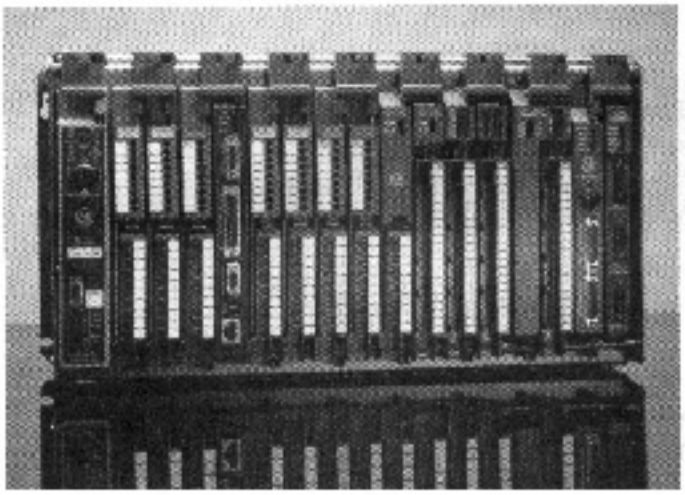
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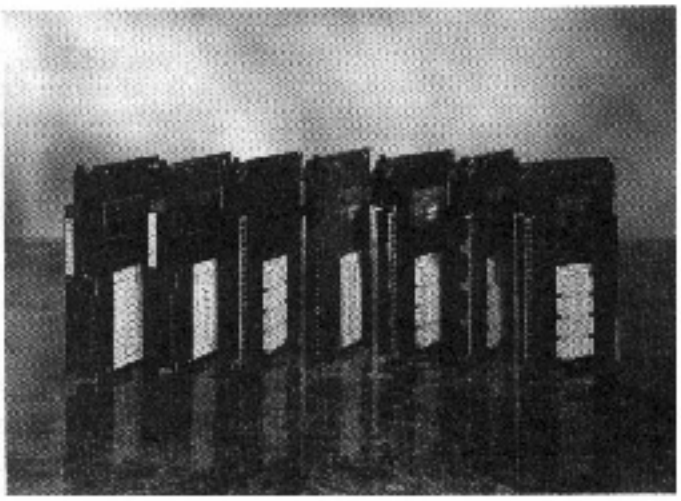
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Find the *Rockwell / Allen-Bradley 1771-IBD* at our website: *Click HERE*

1771 Digital I/O
DC Input and Output Modules

Product Data





Interfaces your ON/OFF devices to Allen-Bradley programmable controllers within the 1771 Universal I/O structure. Allen-Bradley digital dc I/O modules interface to ON/OFF devices such as limit switches, pushbuttons, motor starters, pilot lights, and annunciators. These modules are compatible with all current Allen-Bradley programmable controllers. This saves on spare parts, system engineering, inventory, and training costs.

Supports high-power operations. The dc solid-state family of digital I/O modules meets requirements for applications from 5-125V dc. These modules exhibit long life (20-100+ million operations).

Provides system protection and troubleshooting aids. The dc I/O modules include electrical-optical isolation and filter circuits for signal noise reduction. To help you troubleshoot your system, module indicators are provided to show input or output status and fuse-blown conditions.

Publication 1771-2.180 – July 1996

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Understanding Digital I/O Modules

Allen-Bradley offers a digital I/O product line consisting of three families:

Family	Document
AC Digital Input and Output Modules	1771–2.182
DC Digital Input and Output Modules	1771–2.180
Digital Relay Contact Output Modules	1771–2.181

System Compatibility

Individual dc input and output module specification sheets show compatibility and use of the data table for each.

Status Indicators

The front panel of each digital I/O dc module contains status indicators. Each status indicator shows the ON/OFF condition of an individual input or output. Some modules have an additional indicator, such as Fuse-Blown. Refer to the individual module specification sheets for more information.

Keying

Plastic keying bands shipped with each I/O chassis allow you to key your I/O slots to accept only one type of module. You can key any backplane connector in an I/O chassis to receive your module except for the leftmost connector, which is reserved for adapter or processor modules.

Power Supply Requirements

Digital modules receive power through the 1771 I/O chassis backplane from the associated chassis power supply. Refer to the individual module specifications for the current required from the power supply (in mA) to operate the module. You should total the current requirements for all the modules in the chassis to avoid overloading the power supply or the I/O chassis backplane.

Module Placement Guidelines

Group your modules to minimize adverse effects from radiated electrical noise and/or heat.

- Group analog input and low voltage dc modules away from ac modules or high voltage dc modules to minimize electrical noise interference.
- Place analog input modules and other I/O modules that are sensitive to heat away from slot power supplies to minimize adverse heat effects.

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Addressing Modes

Your Allen-Bradley processor can address its I/O in 2-slot, 1-slot or 1/2-slot I/O groups. You select the addressing method for the chassis in which a processor or I/O adapter resides with the I/O chassis backplane switch assembly. You make the selection for each chassis independently, choosing one method of addressing for each chassis.

Fault Mode Selection

Some digital dc modules let you select last state or reset for input or output failure configuration.

You select one of the two options by positioning a configuration plug (jumper) on the edge of the printed circuit board. This plug is independent of the last state switch on the I/O chassis backplane.

When the input module detects a fault, it's input-image bits are put into the state indicated by the jumper position. When the output module detects a fault it's outputs are put into the state indicated by the jumper position. Refer to the Table below for the state of inputs or outputs after a module detects a fault and jumper settings.

Jumper Settings and the State of Inputs or Outputs

If you want module inputs and outputs to:	Set jumper to:
Stay in their last state when a module detects a fault	last state (LS)
Reset to off when a module detects a fault	reset

For instructions on how to set the configuration jumper on those modules that allow you to select the fault mode, refer to the individual module specification sheets.

DC Input Modules

1771 digital dc input modules convert dc signals from user devices to the appropriate logic level for use within the processor. Typical input devices include:

- proximity switches
- limit switches
- selector switches
- float switches
- pushbutton switches

Allen-Bradley dc input modules are available with a wide range of input terminals per module. The table below lists the Allen-Bradley dc digital input modules. It also shows the image bits per module and addressing modes you can use with the I/O chassis and chassis compatibility for each input module.

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Overview

Data Table Usage and I/O Chassis Compatibility for DC Input Modules

Module Type and Catalog Number	Module Series	Use of Data Table		Addressing			Compatible Chassis
		Input Image Bits	Output Image Bits	1/2–Slot	1–Slot	2–Slot	
DC Input Modules							
1771-IB Module	A	8		Y	Y	Y	A, B
1771–IBD Module	B	16		Y	Y	R	B
1771-IBN Module	C	32		Y	R	N	B
1771-IC Module	A	8		Y	Y	Y	A, B
1771-ICD Module	B	16		Y	Y	R	B
1771-IG Module	A	8		Y	Y	Y	A, B
1771-IGD Module	A	16		Y	Y	R	B
1771-IH Module	A	8		Y	Y	Y	A, B
1771-IQ Module	B	8		Y	Y	Y	A, B
1771–IQ16 Module	B	16		Y	Y	R	B
1771-IT Module	A	8		Y	Y	Y	A, B
1771-IV Module	A	8		Y	Y	Y	A, B
1771-IVN Module	C	32		Y	R	N	B

A = Compatible with superseded chassis (1771-A1, -A2, -A4)
B = Compatible with current chassis (1771-A1B, -A2B, -A3B, -A3B1, -A4B, –AM1, –AM2)
Y = Compatible without restriction
R = Conditional module placement; you must use an input module and an output module in two adjacent slots (even/odd) of the I/O chassis beginning with slot 0.
N = Not compatible

Input Filtering

Input filtering limits the effect of voltage transients caused by contact bounce and/or electrical noise. If not filtered, voltage transients could produce false data.

Backplane circuits, module logic circuits, and the rest of the system are protected from possible damage due to electrical transients by opto-electrical isolation.

Certain modules allow you to set input filter time jumpers. Refer to the individual module specifications for more information.

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DC Output Modules

1771 digital dc output modules control the ON/OFF status of dc user devices. Typical output devices include:

- motor starters
- solenoids
- indicators

The Table below lists the Allen-Bradley dc digital output modules, their image bits per module, the addressing modes you can use with I/O chassis and chassis compatibility for each output module.

Data Table Usage and I/O Chassis Compatibility for DC Output Modules

Module Type and Catalog Number	Module Series	Use of Data Table		Addressing			Compatible Chassis
		Input Image Bits	Output Image Bits	1/2–Slot	1–Slot	2–Slot	
DC Output Modules							
1771-OB Module	C		8	Y	Y	Y	A, B
1771-OBD Module	C		16	Y	Y	R	B
1771-OBN Module	B		32	Y	R	N	B
1771-OC Module	C		8	Y	Y	Y	A, B
1771-OG Module	A		8	Y	Y	Y	A, B
1771-OGD Module	B		16	Y	Y	R	B
1771-OQ Module	B		8	Y	Y	Y	A, B
1771–OQ16 Module	B		16	Y	Y	R	B
1771-OVN Module	B		32	Y	R	N	B

A = Compatible with superseded chassis (1771-A1, -A2, -A4)
B = Compatible with current chassis (1771-A1B, -A2B, -A3B, -A3B1, -A4B, –AM1, –AM2)
Y = Compatible without restriction
R = Conditional module placement; you must use an input module and an output module in two adjacent slots (even/odd) of the I/O chassis beginning with slot 0.
N = Not compatible

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Surge Suppression

Most output modules have internal clamping diodes to protect the output transistors from high voltage transients.

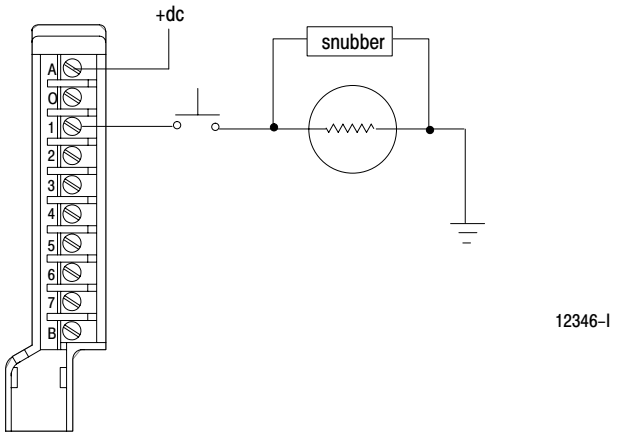
Important: We recommend that you use an additional suppression device if an output module is being used to control an inductive device such as:

- relays
- motor starters
- solenoids
- motors

and is in series with or parallel to a "hard contact" such as:

- pushbuttons
- selector switches

By adding a suppression device directly across the coil of an inductive device, you'll prolong the life of the switch contacts. The diagram below shows an output module with a suppression device.



The most important factor in selecting a suppression device is the impedance characteristic. Thus, no single suppression device can be recommended for every possible load.

Fuses

The outputs on most modules are fused to protect module circuitry from overload. Some module outputs are individually fused and some modules have one fuse for all module circuits.

Fused Wiring Arm Information

The optional Fused Wiring Arm (1771-WHF or -WHFB) provides fuse protection for each output. It also allows simple fuse replacement without removing the wiring arm from the I/O chassis. You can use this wiring arm as an alternative to the 1771-WH Wiring Arm.

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Replacement Fuse Kits

Allen-Bradley provides optional fuse kits for output modules. Refer to the Table below for descriptions and usage.

Use with:	Kit Catalog Number	Kit Contents
8-point output modules	1771-FC	5 each of the following: 125 Volt, 2A 250 Volt, 2A Slow Blow 250 Volt, 2A Normal Blow 25 Volt, .032A
16-point output modules using the nonfused 1771-WH field wiring arm		5 each of the following: 125 Volt, 2A 250 Volt, 2A Slow Blow 250 Volt, 2A Normal Blow 25 Volt, .032A
1771-WHF Field Wiring Arm	1771-FD	8 2AG 3A fuses; 2 fuse holders
1771-WHFB Field Wiring Arm	1771-FD2	8 2AG 1.5A fuses; 2 fuse holders

Compliance to European Union Directives

If this product has the CE mark it is approved for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

This product is tested to meet Council Directive 89/336/EEC Electromagnetic Compatibility (EMC) and the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2EMC – Generic Emission Standard, Part 2 – Industrial Environment
- EN 50082-2EMC – Generic Immunity Standard, Part 2 – Industrial Environment

This product is intended for use in an industrial environment.

Low Voltage Directive

This product is tested to meet Council Directive 73/23/EEC Low Voltage, by applying the safety requirements of EN 61131–2 Programmable Controllers, Part 2 – Equipment Requirements and Tests.

For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines For Noise Immunity, publication 1770-4.1
- Guidelines for Handling Lithium Batteries, publication AG-5.4
- Automation Systems Catalog, publication B111

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Agency Certification

Individual discrete I/O modules can also comply with various other agency requirements when product or packaging is so marked.

Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives

Associated Publications

Each input and output module ships with an installation instruction sheet. Refer to the table below for a list of these publications.

Module Type	Installation Instructions	Module Type	Installation Instructions
DC Input Modules		**DC Output Modules**	
1771-IB Module	1771–2.4	1771-OB Module	1771–2.3
1771–IBD Module	1771–2.75	1771-OBD Module	1771–2.76
1771-IBN Module	1771–5.28	1771-OBN Module	1771–5.34
1771-IC Module	1771–2.174	1771-OC Module	1771–2.175
1771-ICD Module	1771–5.29	1771-OG Module	1771–2.177
1771-IG Module	1771–2.9	1771-OGD Module	1771–2.176
1771-IGD Module	1771–5.22	1771-OQ Module	1771–2.92
1771-IH Module	1771–2.8	1771–OQ16 Module	1771–2.192
1771-IQ Module	1771–2.24	1771-OVN Module	1771–5.36
1771–IQ16 Module	1771–2.191		
1771-IT Module	1771–2.22		
1771-IV Module	1771–2.25		
1771-IVN Module	1771–5.35		

Where to Look

The following table shows you where to go in this publication for the specifications, wiring, and application information specific to each input and output module.

Module Type	Refer to:	Module Type	Refer to:
DC Input Modules		**DC Output Modules**	
1771-IB Module	page 9	1771-OB Module	page 35
1771–IBD Module	page 11	1771-OBD Module	page 37
1771-IBN Module	page 13	1771-OBN Module	page 39
1771-IC Module	page 15	1771-OC Module	page 41
1771-ICD Module	page 17	1771-OG Module	page 43
1771-IG Module	page 19	1771-OGD Module	page 45
1771-IGD Module	page 21	1771-OQ Module	page 47
1771-IH Module	page 23	1771–OQ16 Module	page 49
1771-IQ Module	page 25	1771-OVN Module	page 51
1771–IQ16 Module	page 27		
1771-IT Module	page 29		
1771-IV Module	page 31		
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DC Input Module (Cat. No. 1771-IB) 10

DC Input Module (Cat. No. 1771-IB) 9

DC Input Module (Cat. No. 1771-IBD Series B) 12

DC Input Module (Cat. No. 1771-IBD Series B) 11

DC Input Module (Cat. No. 1771-IBN Series C) 14

DC Input Module (Cat. No. 1771-IBN Series C) 13

DC Input Module (Cat. No. 1771-IC) 16

DC Input Module (Cat. No. 1771-IC) 15

DC Input Module (Cat. No. 1771-ICD Series B) 18

DC Input Module (Cat. No. 1771-ICD Series B) 17

TTL Input Module (Cat. No. 1771-IG) 20

TTL Input Module (Cat. No. 1771-IG) 19

DC Input Module (Cat. No. 1771-IGD) 22

DC Input Module (Cat. No. 1771-IGD) 21

DC Input Module (Cat. No.1771-IH) 24

DC Input Module (Cat. No.1771-IH) 23

DC Input Module (Cat. No. 1771-IQ Series B) 26

DC Input Module (Cat. No. 1771-IQ Series B) 25

DC Input Module (Cat. No. 1771-IQ16 Series B) 28

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DC Input Module (Cat. No. 1771-IQ16 Series B) 27

DC Input Module (Cat. No. 1771-IT) 30

Fast Response DC Input Module (Cat. No. 1771-IT) 29

DC Input Module (Cat. No. 1771-IV) 32

DC Input Module (Cat. No. 1771-IV) 31

DC Input Module (Cat. No. 1771-IVN Series C) 34

DC (10-30V) Input Module (Cat. No. 1771-IVN Series C) . . . 33

DC Output Module (Cat. No. 1771-OB Series C) 36

DC Output Module (Cat. No. 1771-OB Series C) 35

DC Output Module (Cat. No. 1771-OBD Series C) 38

DC Output Module (Cat. No. 1771-OBD Series C) 37

DC Output Module (Cat. No. 1771-OBN Series B) 40

DC Output Module (Cat. No. 1771-OBN Series B) 39

DC Output Module (Cat. No. 1771-OC Series C) 42

DC Output Module (Cat. No. 1771-OC Series C) 41

DC Output Module (Cat. No. 1771-OG) 44

DC Output Module (Cat. No. 1771-OG) 43

DC Output Module (Cat. No. 1771-OGD Series B) 46

DC Output Module (Cat. No. 1771-OGD Series B) 45

DC Output Module (Cat. No. 1771-OQ Series B) 48

DC Output Module (Cat. No. 1771-OQ Series B) 47

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DC Output Module (Cat. No. 1771-OQ16 Series B) 50

DC Input Module (Cat. No. 1771-OQ16 Series B) 49

DC Output Module (Cat. No. 1771-OVN Series B) 52

DC Output Module (Cat. No. 1771-OVN Series B) 51

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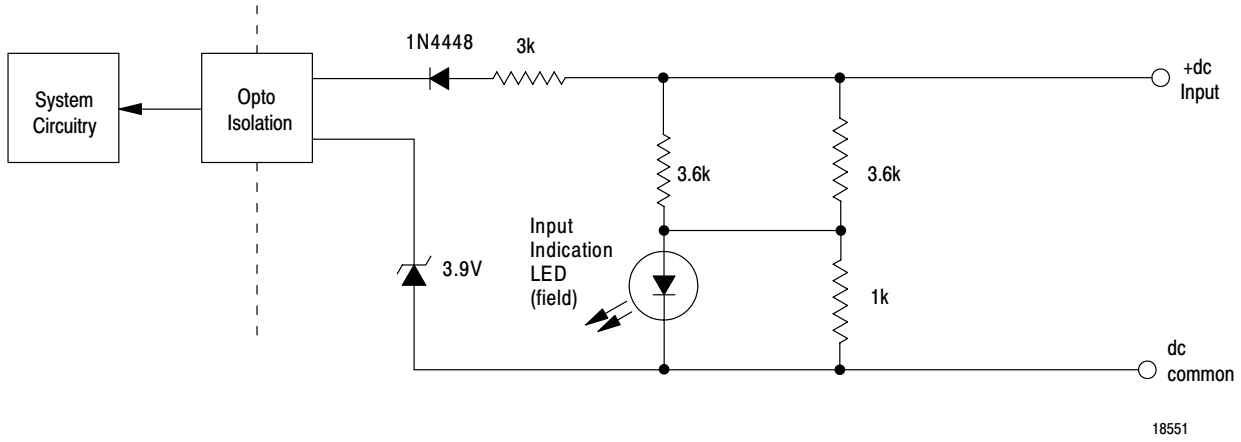
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DC Input Module (Cat. No. 1771-IB)

Simplified Schematic



Application Notes

Device Compatibility. The 1771-IB module is compatible with the following two- and three-wire devices:

- DC proximity switches
- photoelectric sensors
- pushbuttons
- limit switches
- float switches
- selector switches

Connection to Output Module. You can directly drive terminals on a dc (12-24V) Input Module (Cat. No. 1771-IB) from terminals on the following modules:

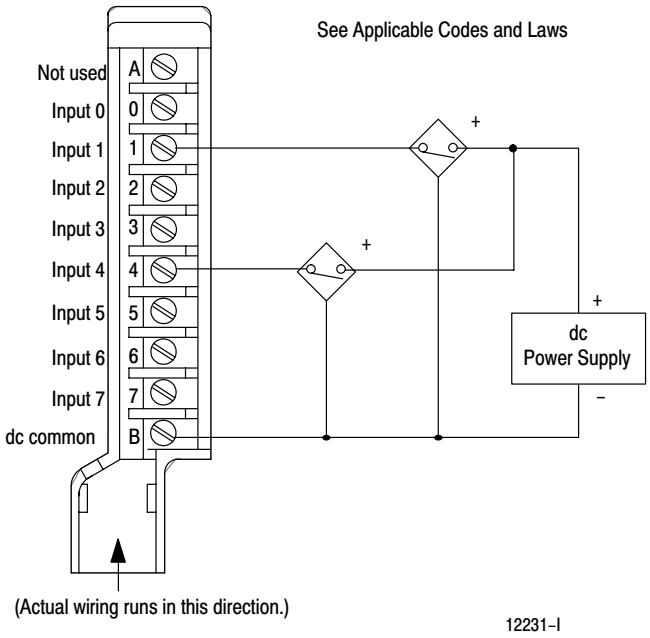
DC (10-60V) Output module (Cat. No. 1771-OBD)

DC (24V) Output module (Cat. No. 1771-OB)

Use the same power source to power both modules to ensure that ground is at the same potential.

Status Indicators. The front panel of your module contains eight red status indicators which provide field side indication of individual inputs. When a red indicator is illuminated, voltage is present on the terminal. The module transfers this information to the backplane for the processor to read.

Connection Diagram (Three–Wire Devices)



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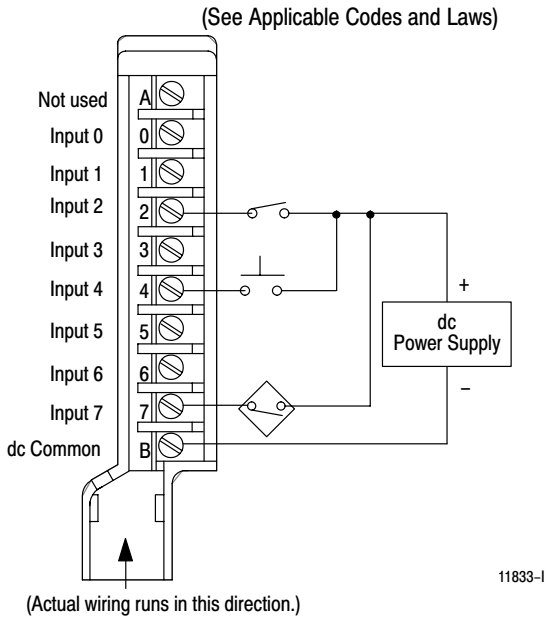
DC Input Module (Cat. No. 1771-IB)

Specifications (Cat. No. 1771-IB)

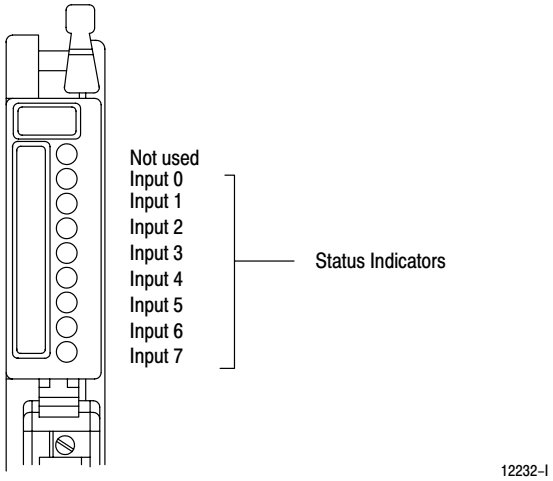
Inputs per Module	8
Module Location	1771 I/O chassis
Input Voltage Range	10 to 27V dc
Nominal Input Current	8mA at 12V dc 24mA at 24V dc
Off–state Current (minimum)	3.0mA @ 7V dc
Off–state Voltage (maximum)	7.0V dc
On–state Voltage (minimum)	10V dc
Input Impedance	1 to 2K ohms maximum (on–state) 2 to 3K ohms maximum (off–state)
Input Signal Delay	Low to high propagation delay 12ms ±7ms High to low propagation delay 20ms ±7ms
Power Dissipation	5.7 Watts (max.), 0.4 Watts (min.)
Thermal Dissipation	19.3 BTU/hr (max.), 1.4 BTU/hr (min.)
Backplane Current	74mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm^2) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Keying	Between 4 and 6 Between 14 and 16
Field Wiring Arm	Catalog Number 1771-WA
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instruction	1771-2.4

[1] You use this conductor-category information for planning conductor routing as described in the system-level installation manual.

Connection Diagram (Two–Wire Devices)



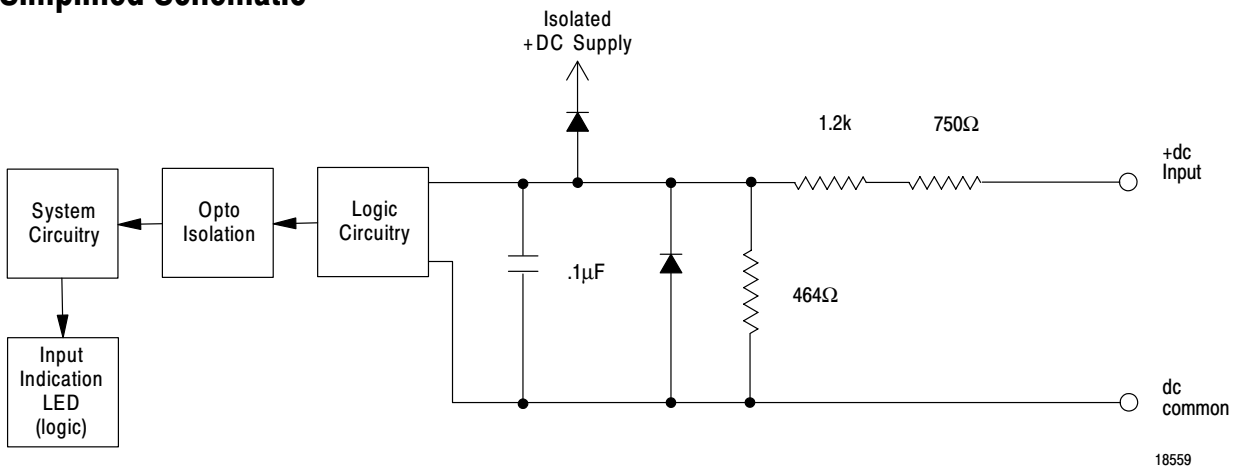
Status Indicators



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DC Input Module (Cat. No. 1771-IBD Series B)

Simplified Schematic

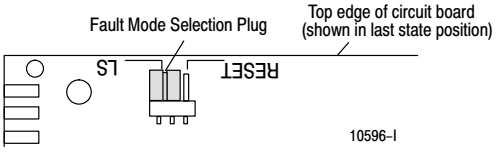


Application Notes

Device Compatibility. The 1771-IBD module must be used in a series B 1771 I/O chassis. Make sure no other input module or single-slot block transfer module is placed in the same module group when using 2-slot addressing. Any discrete output module may be used within the same module group.

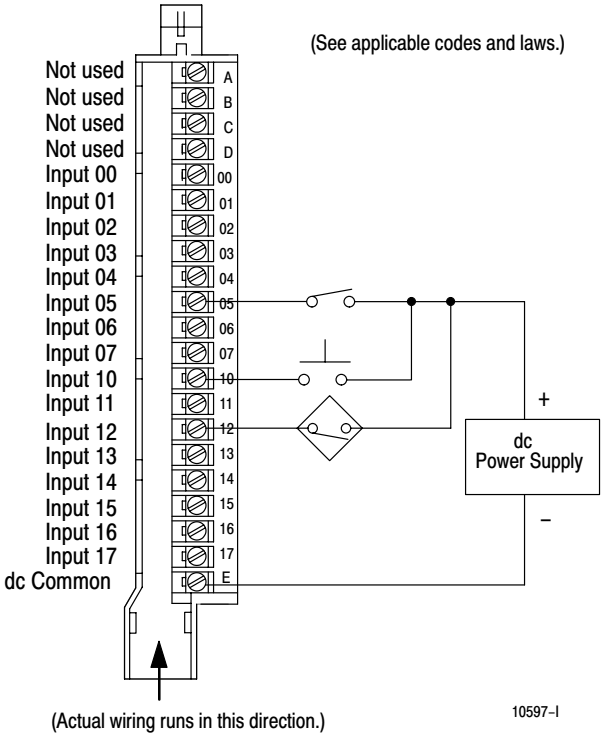
Connection to Output Modules. You can directly drive terminals on a DC (10–30V) Input Module (cat. no. 1771-IBD) from terminals on the following modules:
- DC (10–60V) Output module (cat. no. 1771-OBD)
- DC (24V) Output module (cat. no. 1771-OB)

Setting the Fault Mode. You may select one of two input–failure configurations (last state or reset) by positioning a configuration plug on the top edge of the printed circuit board. This configuration plug is independent of the last state switch on the I/O chassis backplane.



Status Indicators. The front panel contains one green module active indicator, and 16 red status indicators. The 1771-IBD performs diagnostics in a handshaking mode when first powered up. Upon successful completion of the diagnostics, the green module active indicator lights. It turns off if a fault occurs in the data paths or the opto–isolators. If a module fault occurs, the module resets its inputs or sets them to last state, depending on the fault mode selection. The module active indicator must be on to properly interpret the red status indicators. The red status indicators are provided for customer-side indication of individual inputs.

Connection Diagram (Two–Wire Devices)



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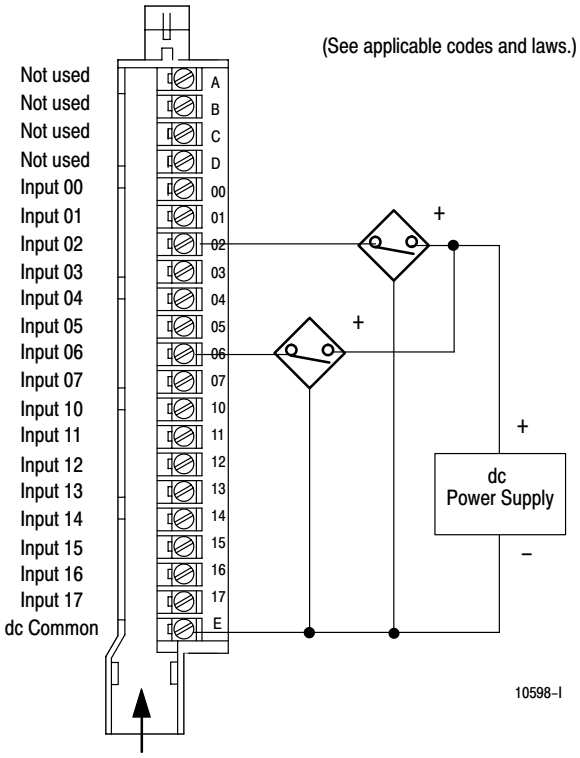
DC Input Module (Cat. No. 1771-IBD Series B)

Specifications (Cat. No. 1771-IBD/B)

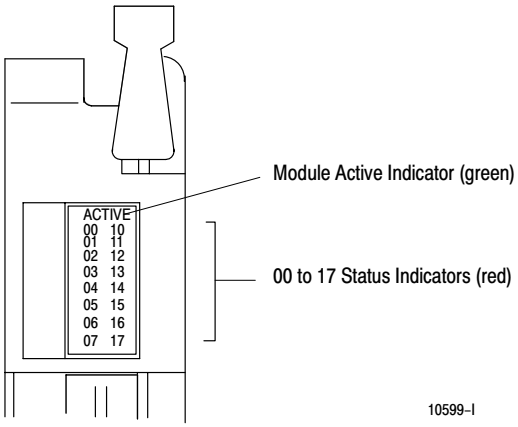
Inputs per Module	16
Module Location	17711–A1 thru -A4 or later I/O chassis and 1771–AM1, –AM2 chassis
Input Voltage Range	10 to 30V dc
Minimum Input Current	4mA at 10V dc 12mA at 30V dc
Minimum Off-state Current	2.0mA @ 5V dc
Maximum Off-state Voltage	6V dc
Minimum On-state Voltage	10V dc
Input Impedance	2.5K ohms maximum
Input Signal Delay	Low to high propagation delay 1.3ms ±0.1ms High to low propagation delay 1.3ms ±0.1ms
Power Dissipation	6.0 Watts (max.), 1.3 Watts (min.)
Thermal Dissipation	20.3 BTU/hr (max.), 4.3 BTU/hr (min.)
Backplane Current	250mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm²) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Keying	Between 10 and 12 Between 16 and 18
Field Wiring Arm Standard Optional	Catalog Number 1771-WH Cat. No. 1771-WHF (fused 3A) Cat. No. 1771-WHFB (fused 1.5A)
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.75

[1] You use this conductor-category information for planning conductor routing as described in the system-level installation manual.

Connection Diagram (Three–Wire Devices)



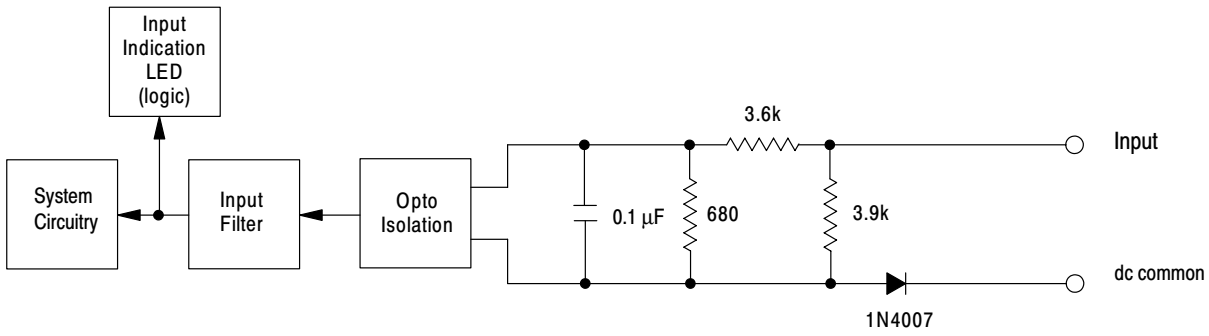
Status Indicators



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DC Input Module (Cat. No. 1771-IBN Series C)

Simplified Schematic



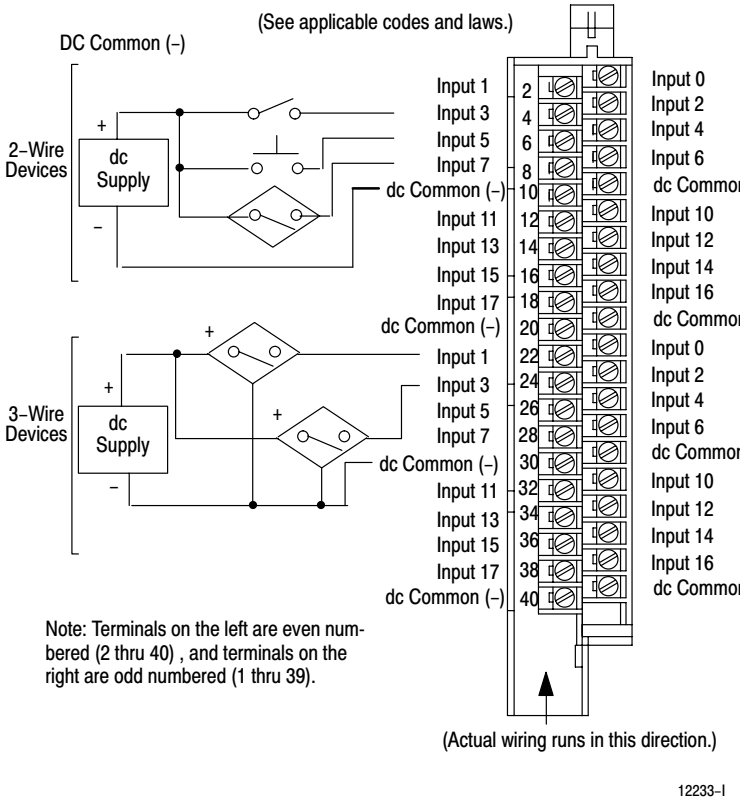
Application Notes

Device Compatibility. The 1771-IBN dc input module has sinking inputs and requires source outputs. A sink input provides a path to ground and a source output provides a positive voltage path. You must use this module in a series B 1771 I/O chassis. Do not place this module in the same I/O chassis as the 1771-IX thermocouple module. You can use this module in the same chassis as the 1771-IXE thermocouple module.

Connection to Output Modules. The sinking inputs on this module can be driven directly by the sourcing outputs of the DC (10-30V) Output Module (cat. no. 1771–OBN).

Status Indicators. The front panel of the module contains 32 status indicators. These indicators are provided for system logic side indication of individual inputs.

Connection Diagram



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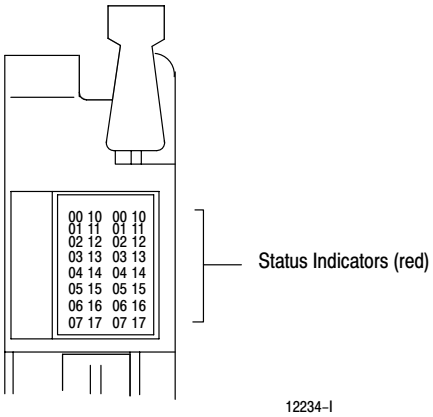
DC Input Module (Cat. No. 1771-IBN Series C)

Specifications (Cat. No. 1771-IBN/C)

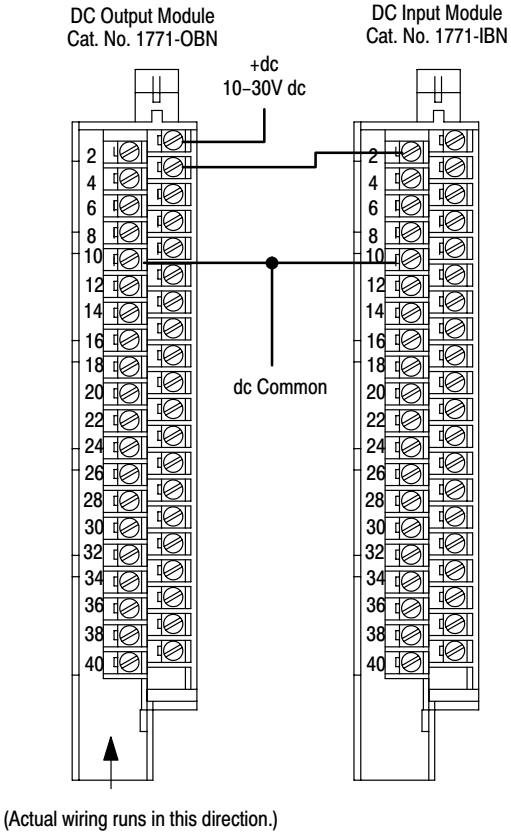
Inputs per module	32
Module Location	1771-A1B thru -A4B or later I/O Chassis
Input Voltage Range	10 to 30V dc
Nominal Input Current	4.5mA @ 10V
Minimum Off–state Current	1.7mA @ 5V dc
Maximum Off–state Voltage	5V dc
Minimum On-state Voltage	10V dc
Input Impedance	2.2K
Input Signal Delay	Low to high propagation: 6ms(±2ms) High to low propagation: 6ms(±2ms)
Power Dissipation	15.6W (max); 1.5W (min)
Thermal Dissipation	53.3 BTU/hr (max); 5.1 BTU/hr (min)
Backplane Current	280mA @ 5V dc maximum
Isolation Voltage	1500V ac rms
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded (max)[2] 3/64 inch (1.2mm) insulation (max) 1[1]
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0^o to 60^oC (32^o to 140^oF) -40^o to 85^oC (-40^o to 185^oF) 5 to 95% (without condensation)
Keying	Between 14 and 16 Between 18 and 20
Field Wiring Arm	1771-WN
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-5.28

[1]You use this conductor-category information for planning conductor routing as described in the system-level installation manual.
[2] 14 gauge wire connected to all terminals may not allow the cover on the field wiring arm to close. A smaller gauge wire may be used.

Status Indicators



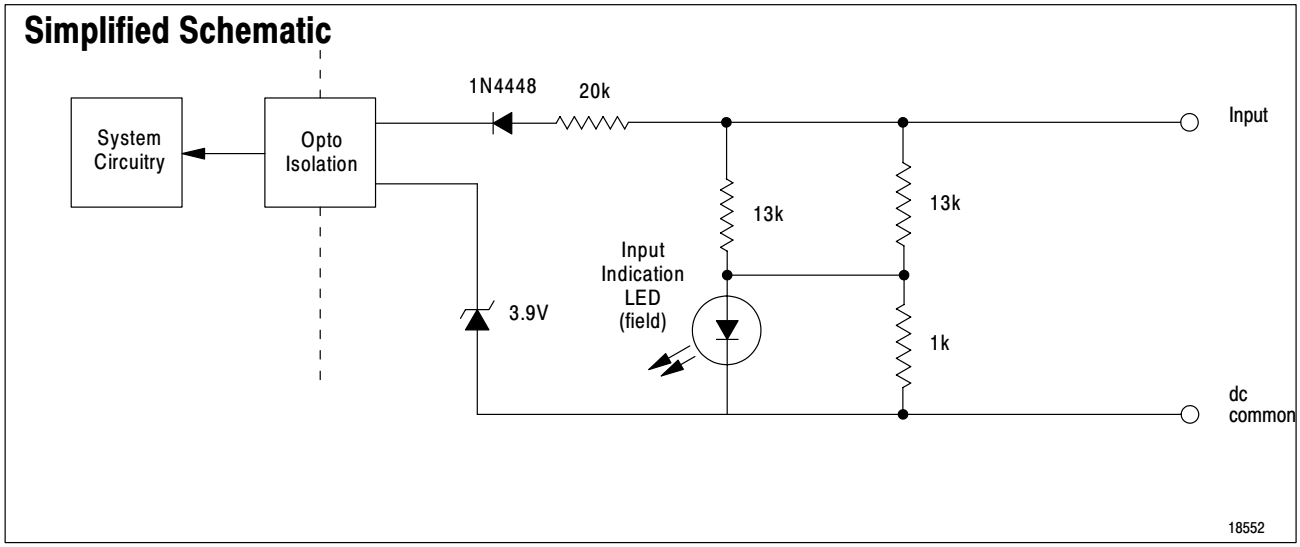
Sample Connection Diagram – Driving a 1771-IBN Module with a 1771-OBN Module



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DC Input Module (Cat. No. 1771-IC)

Simplified Schematic



Application Notes

Device Compatibility. The 1771-IC module is compatible with the following two- and three-wire devices:

- dc proximity switches
- photoelectric sensors
- pushbuttons
- limit switches
- float switches
- selector switches

The off-state leakage current of your three-wire devices should not exceed 4mA.

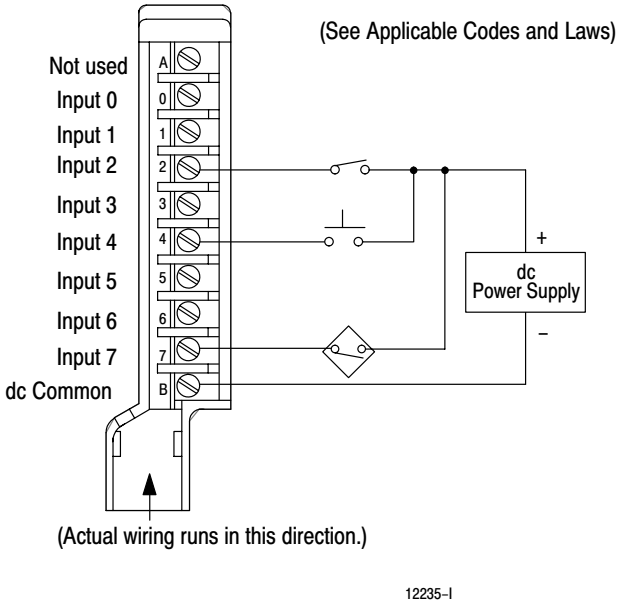
Connection to Output Modules. You can directly drive a terminal on a DC (48V) Input module (Cat. No. 1771-IC) from a terminal on the following modules:

- DC (10-60V) Output Module (Cat. No. 1771-OBD)
- DC (42-53V) Output Module (Cat. No. 1771-OC)

Use the same power source to power both modules to ensure that ground is at the same potential.

Status Indicators. The front panel of your module contains eight status indicators. The status indicators are provided for field side indication of individual inputs. When a red indicator is illuminated, voltage is present on the terminal. The module transfers this information to the backplane for the processor to read.

Connection Diagram (Two-Wire Devices)



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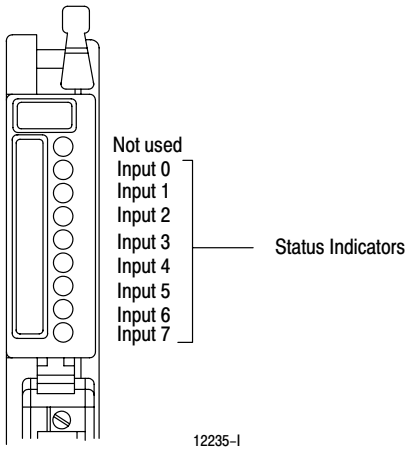
DC Input Module (Cat. No. 1771-IC)

Specifications (Cat. No.1771-IC)

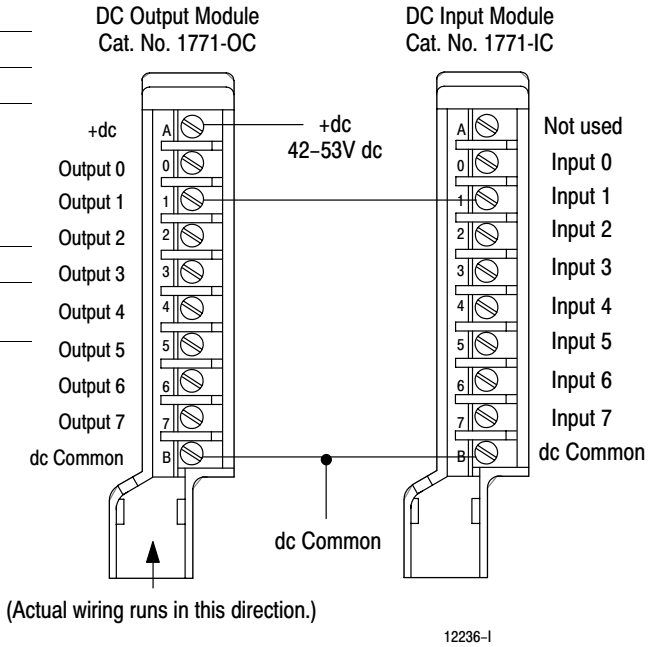
Inputs per Module	8
Module Location	1771 I/O chassis
Input Voltage Range	42 to 56V dc
Nominal Input Current	9mA at 48V dc
Maximum Off–state Current	4.0mA
Maximum Off–state Voltage	22.0V dc
Minimum On–state Voltage	42V dc
Input Impedance	4.5 to 5.5K ohms maximum (on–state) 7 to 8K ohms maximum (off–state)
Input Signal Delay	Low to high propagation delay 15ms ±7ms High to low propagation delay 20ms±7ms
Power Dissipation	3.7 Watts (max.), 0.4 Watts (min.)
Thermal Dissipation	12.7 BTU/hr (max.), 1.4 BTU/hr (min.)
Backplane Current	74mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Keying	Between 4 and 6 Between 16 and 18
Field Wiring Arm	Catalog Number 1771-WA
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.174

[1] You use this conductor-category informatin for planning conductor routing as described in the system-level installation manual.

Status Indicators



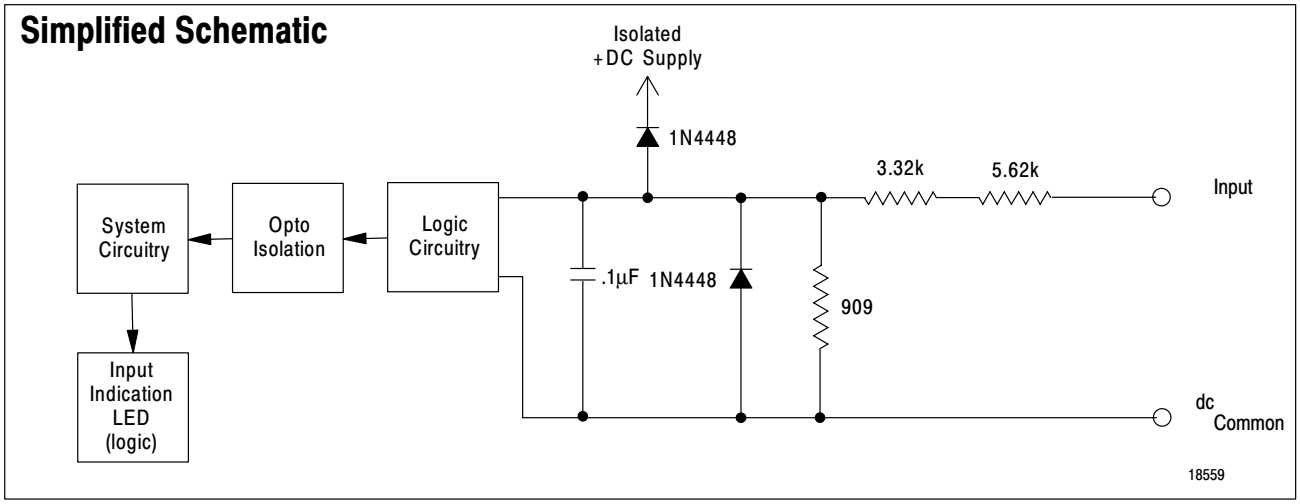
Sample Connection Diagram – Driving a 1771-IC Module with a 1771-OC Module



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DC Input Module (Cat. No. 1771-ICD Series B)

Simplified Schematic

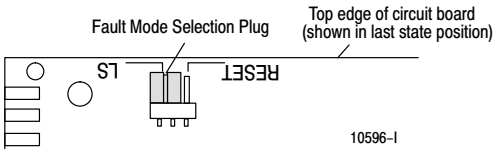


Application Notes

Device Compatibility. This module must be used with a series B or later 1771 I/O chassis. Make sure no other input module or single-slot block transfer module is placed in the same module group when using 2-slot addressing.

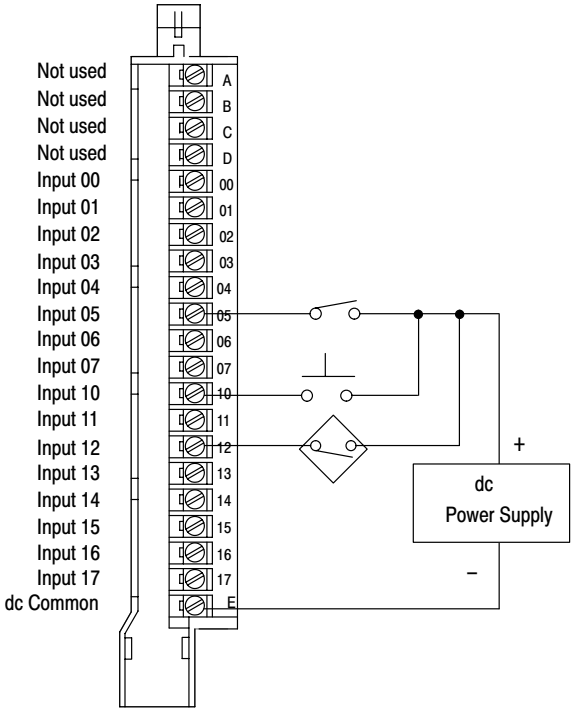
Connection to Output Modules. Terminals on a dc Input Module (Cat. No. 1771-ICD) may be directly driven from terminals on dc Output Modules (Cat. Nos. 1771-OBD, 1771-OC and 1771-OB).

Setting the Fault Mode. You may select one of two input–failure configurations (last state or reset) by positioning a configuration plug on the top edge of the printed circuit board. This configuration plug is independent of the last state switch on the I/O chassis backplane.



Status Indicators. The front panel contains one green module active indicator and 16 status indicators. The 1771-ICD performs diagnostics in a handshaking mode when first powered up. Upon successful completion of the diagnostics, the green module active indicator lights. It turns off if a fault occurs in the data paths or the opto-isolators. If a module fault occurs, the module resets its inputs or sets them to last state, depending on the fault mode selection. The module active indicator must be on to properly interpret the red status indicators. The red status indicators are provided for system logic side indication of individual inputs.

Connection Diagram (Two-Wire Devices)



(Actual wiring runs in this direction.)

(See applicable codes and laws.)

12236–I

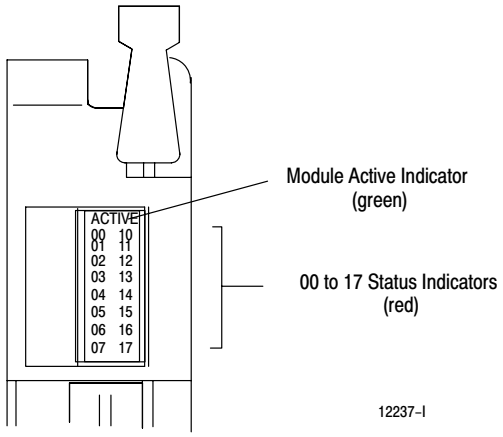
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DC Input Module (Cat. No. 1771-ICD Series B)

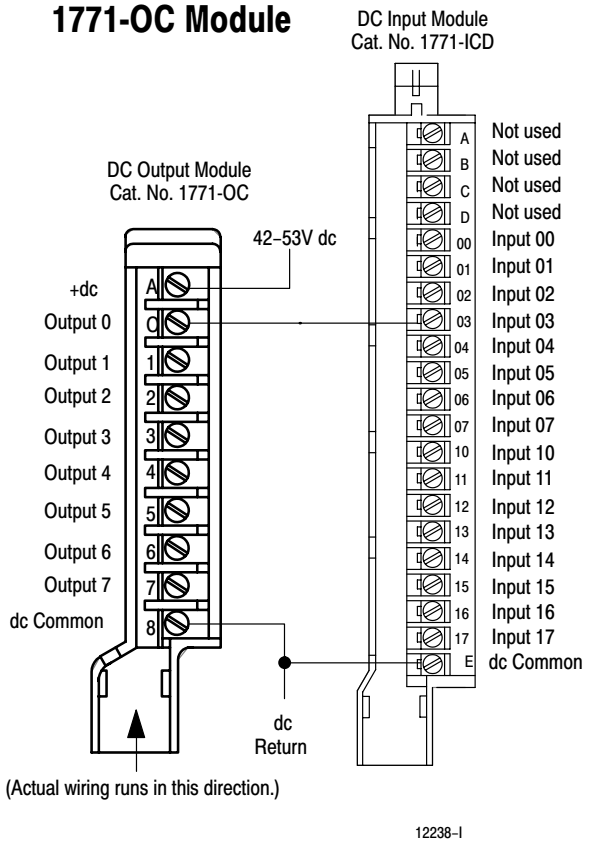
Specifications (Cat. No. 1771-ICD/B)	
Inputs per Module	16
Module Location	1771–A1B thru –A4B or later I/O chassis
Input Voltage Range	20 to 60V dc
Minimum Input Current	2mA at 20V dc; 6mA at 60V dc
Minimum Off–state Current	1.2mA @ 12V dc
Maximum Off–state Voltage	12V dc
Minimum On–state Voltage	20V dc
Input Impedance	10K ohms maximum
Input Signal Delay	Low to high propagation delay 6ms(±2ms) High to low propagation delay 20ms (±1ms)
Power Dissipation	5.9 Watts (max.), 1.3 Watts (min.)
Thermal Dissipation	19.9 BTU/hr (max.), 4.3 BTU/hr (min.)
Backplane Current	250mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm^2) stranded maximum 3/64 inch (1.2mm) insulation maximum 1[1]
Keying	Between 10 and 12 Between 18 and 20
Field Wiring Arm	Catalog Number 1771-WH
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-5.29

[1] You use this conductor-category information for planning conductor routing as described in the system-level installation manual.

Status Indicators



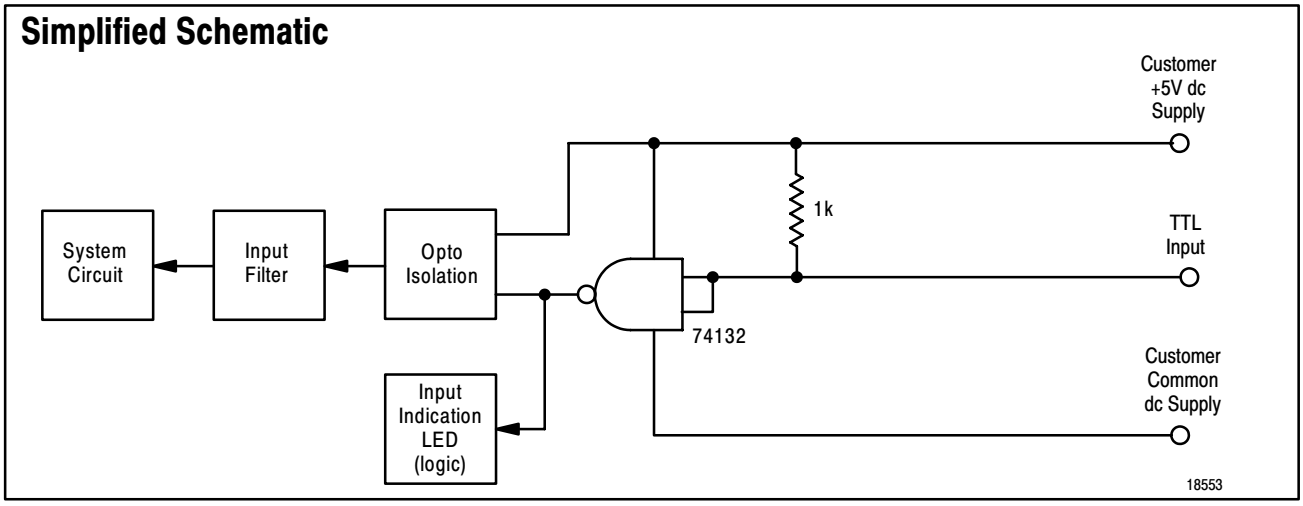
Sample Connection Diagram – Driving a 1771-ICD Module with a 1771-OC Module



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TTL Input Module (Cat. No. 1771-IG)

Simplified Schematic



Application Notes

Device Compatibility. You can use any TTL device that meets the output logic level specification of –0.2V dc to +0.8V dc (low), and 2.0V dc to 5.25V dc (high).

This module contains input filtering to limit the effects of voltage transients caused by contact bounce and/or radiated electrical noise. The delay due to filtering is nominally 1ms.

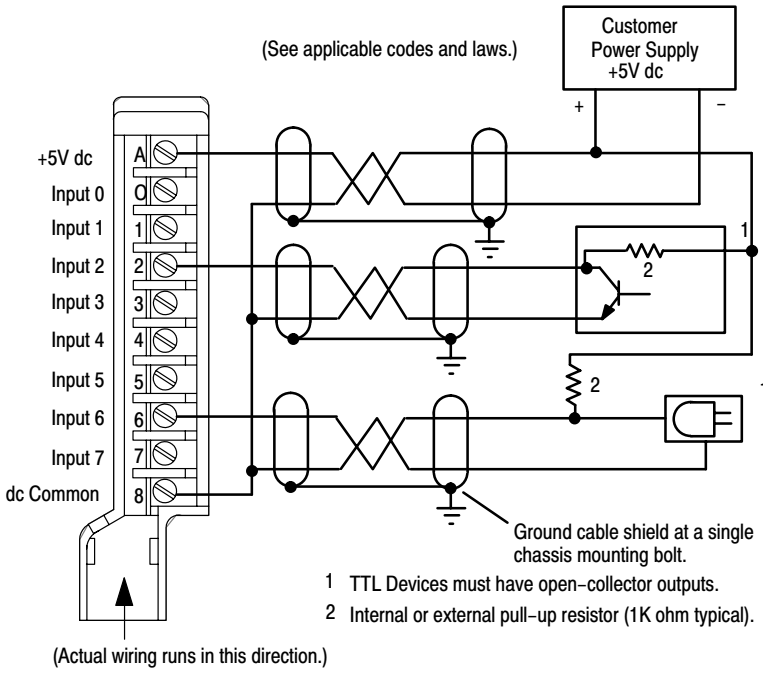
For maximum noise immunity, the output of the TTL device that is driving the input should have a pull-up resistor of 1k ohm (typical). If you add a pull-up resistor, be sure the TTL device maintains the low state requirement of –0.2 V dc to +0.8V dc with the increased load.

Connection to Output Modules. Input terminals of the TTL Input Module may be directly driven by outputs of the TTL Output Module (Cat. No. 1771-OG).

Status Indicators. The front panel contains eight indicator lights. Each indicator lights when its corresponding input terminal senses TTL voltages in the true state. Indicators may appear dim during rapid pulsing of input signals.

Module Application. You can select “High = True” or “Low = True” logic operation using logic switches located on the module.

Connection Diagram



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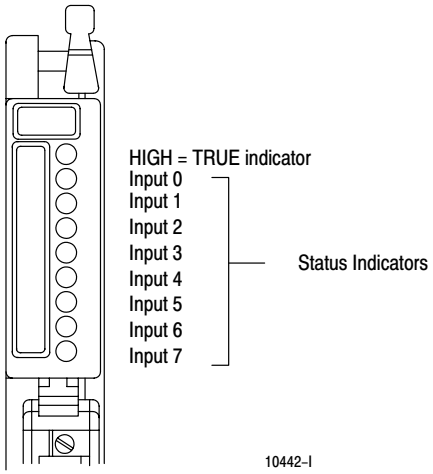
TTL Input Module (Cat. No. 1771-IG)

Specifications (Cat. No. 1771-IG)

Inputs per Module	8
Module Location	Series A or B 1771 I/O chassis
Input Voltage Range HIGH = TRUE LOW = TRUE	 ON; 2.4 to 5.25V dc OFF: –0.2 to +0.8V dc ON: –0.2 to +0.8V dc OFF: 2.4 to 5.25V dc
Customer Current Sink Requirements	7mA (source per input) 0.8mA (sink per input)
Customer Supply Voltage	5V dc (±0.25V) 50mV peak–to–peak ripple max.
Customer Supply Current per Module	500mA max.
Input Signal Delay	Less than 1ms
Power Dissipation	3.3 Watts (max.), 0.6 Watts (min.)
Thermal Dissipation	11.3 BTU/hr (max.), 2.0 BTU/hr (min.)
Backplane Current	122mA max.
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Cable Category	14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum Shielded (Belden 8761) 2[1]
Keying	Between 4 and 6 Between 34 and 36
Field Wiring Arm	Catalog Number 1771-WC
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.9

[1] You use this conductor-category information for planning conductor routing as described in the system-level installation manual.

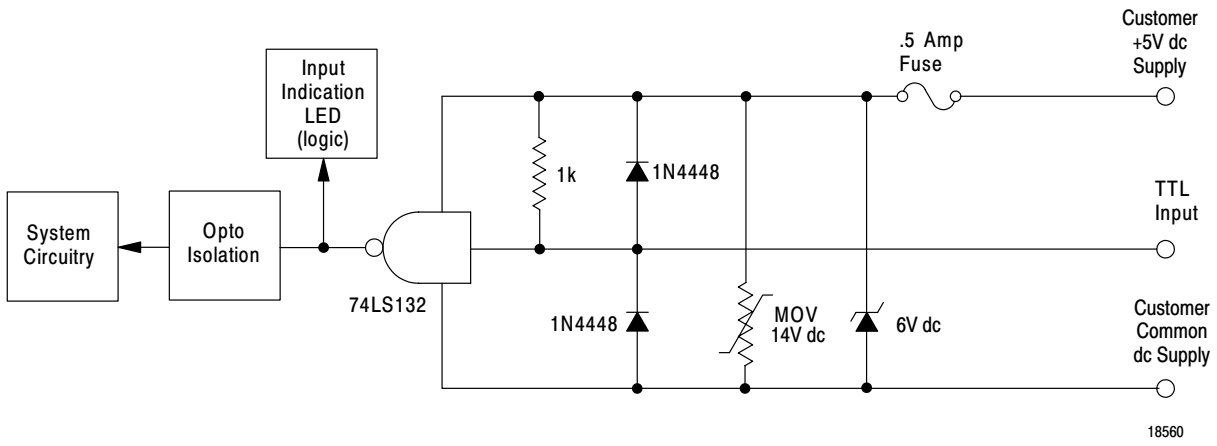
Status Indicators



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DC Input Module (Cat. No. 1771-IGD)

Simplified Schematic



Application Notes

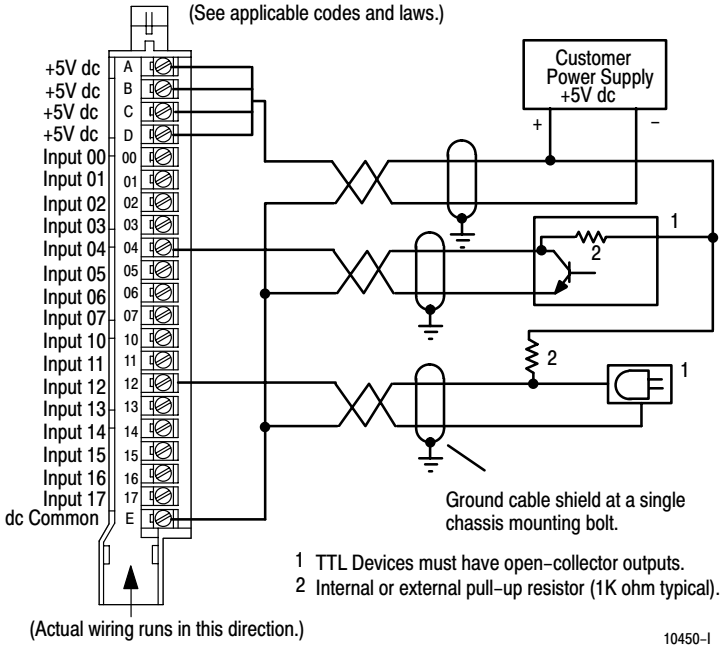
Device Compatibility. This module must be used in a series B 1771 I/O chassis.You can use any TTL device that meets the output logic level specification of –0.2V dc to +0.8V dc (low), and 2.0V dc to 5.25V dc (high).This module contains input filtering to limit the effects of voltage transients caused by contact bounce and/or radiated electrical noise. The delay due to filtering is nominally 50us. For maximum noise immunity, the output of the TTL device that is driving the input should have a pull-up resistor of 1k ohm (typical). If you add a pull-up resistor, be sure the TTL device maintains the low state requirement of –0.2V dc to +0.8V dc with the increased load.

Connection to Output Modules. Input terminals of the TTL input module (cat. no. 1771-IGD) may be directly driven by the outputs of a TTL output module (cat. no. 1771-OGD). Connect the cable shield between modules at one end only.

Status Indicators. The front panel contains 18 status indicators. The green active indicator is on when the fuse is good. The green bottom indicator, when on, indicates you selected high–true logic. When off, it indicates you selected low–true logic. Each of the 16 red status indicators light when their corresponding input terminal senses TTL voltages in the true state.

Module Application. You can select “High = True” or “Low = True” logic operation using logic switches located on the module.

Connection Diagram



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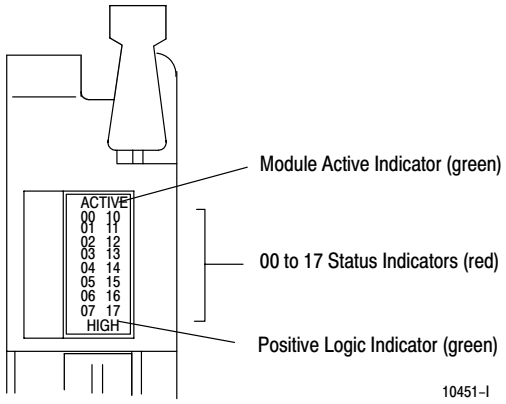
DC Input Module (Cat. No. 1771-IGD)

Specifications (Cat. No. 1771-IGD)

Inputs per Module	16
Module Location	Series B 1771 I/O chassis
Input Voltage Range HIGH = TRUE LOW = TRUE	 ON; 2.0 to 5.25V dc OFF: –0.2 to +0.8V dc ON: –0.2 to +0.8V dc OFF: 2.0 to 5.25V dc
Customer Current Sink Requirements	7mA maximum (source per input) 0.8mA maximum (sink per input)
Customer Supply Voltage	5.0V dc (±0.25V) 50mV peak–to–peak ripple max.
Customer Supply Current per Module	380mA max.
Input Signal Delay	Less than 1ms
Power Dissipation	2.7 Watts (max.); 0.4 Watts (min.)
Thermal Dissipation	9.2 BTU/hr (max.); 1.4 BTU/hr (min.)
Backplane Current	130mA max.
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0^{o} to 60^{o}C (32^{o} to 140^{o}F) -40^{o} to 85^{o}C (-40^{o} to 185^{o}F) 5 to 95% (without condensation)
Fuse	0.5A 250V normal blow
Conductors Wire Size Cable Category	14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum Shielded (Belden 8761) 2[1]
Keying	Between 16 and18 Between 24 and 26
Field Wiring Arm	Catalog Number 1771-WH
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.178

[1] You use this conductor-category information for planning conductor routing as described in the system-level installation manual.

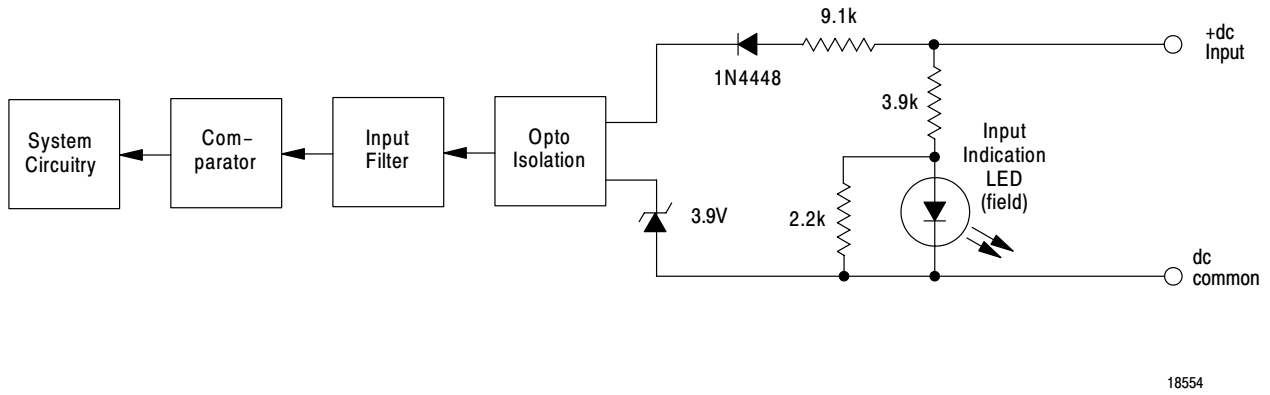
Status Indicators



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DC Input Module (Cat. No.1771-IH)

Simplified Schematic



Application Notes

Device Compatibility. The 1771-IH module is compatible with the following two-wire devices:

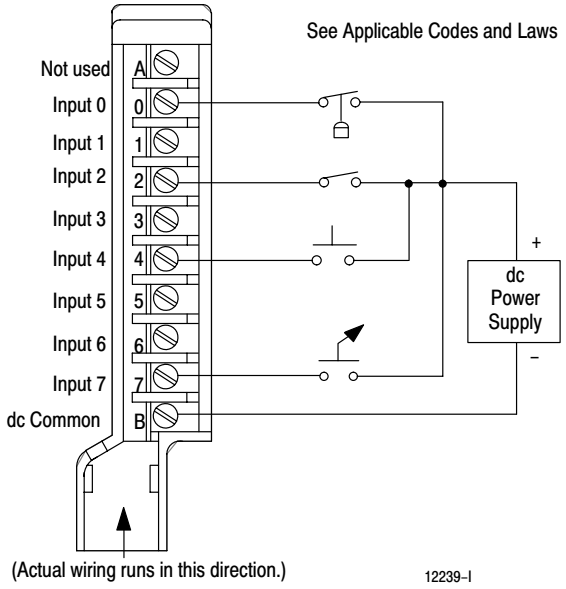
- pushbuttons
- limit switches
- float switches
- selector switches

The off-state leakage current of your two-wire devices should not exceed 1mA.

Connection to Output Modules. Inputs on the DC (24-48V) Input module can be directly driven by outputs on dc output modules (cat. no. 1771-OB, -OBD, and -OC).

Status Indicators. The front panel contains 8 red status indicators. The status indicators are provided for field side indication of individual inputs.

Connection Diagram (Two-Wire Devices)



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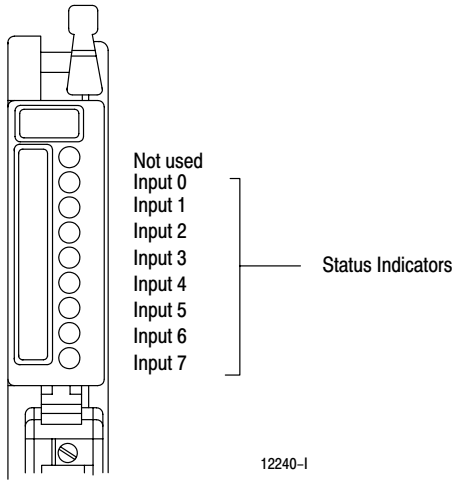
DC Input Module (Cat. No.1771-IH)

Specifications (Cat. No. 1771-IH)

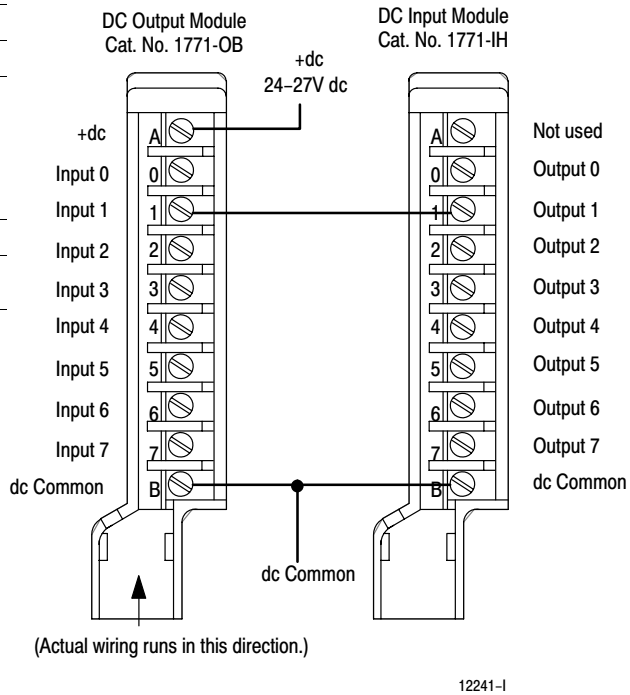
Inputs per Module	8
Module Location	1771 I/O chassis
Input Voltage Range	24 to 48V dc
Nominal Input Current	8.4mA at 24V dc 20mA at 48V dc
Minimum Off–state Current	1.0mA
Maximum Off–state Voltage	4.5V dc
Minimum On–state Voltage	10V dc
Input Impedance	2.5 to 3K ohms maximum (on–state) 5 to 6K ohms maximum (off–state)
Input Signal Delay	Low to high propagation delay 15ms±7ms High to low propagation delay 15ms±7ms
Power Dissipation	8.1 Watts (max.), 0.4 Watts (min.)
Thermal Dissipation	27.7 BTU/hr (max.), 1.3 BTU/hr (min.)
Backplane Current	74mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm^2) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Keying	Between 4 and 6 Between 16 and 18
Field Wiring Arm	Catalog Number 1771-WA
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.8

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

Status Indicators



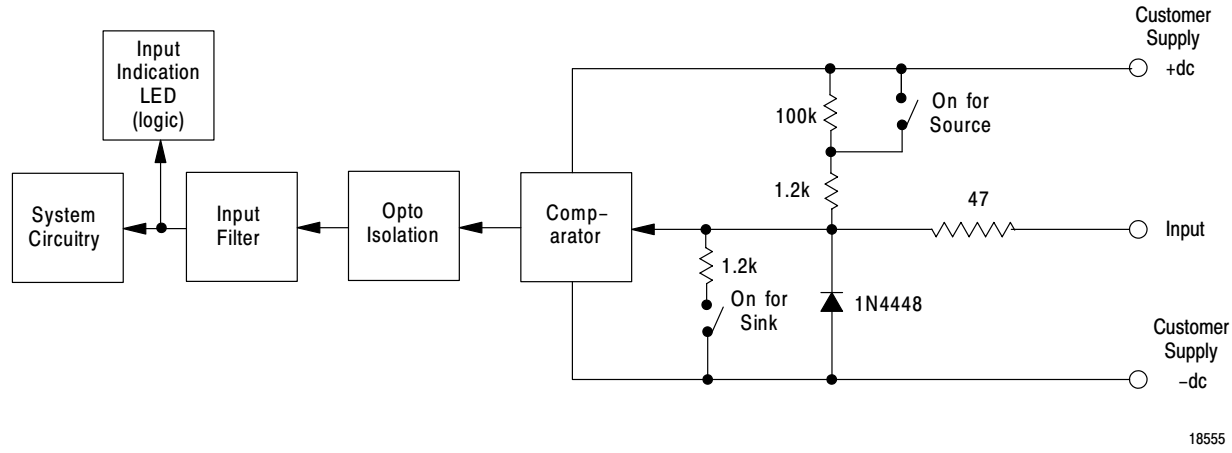
Sample Connection Diagram – Driving a 1771-IH Module with a 1771-OB Module



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DC Input Module (Cat. No. 1771-IQ Series B)

Simplified Schematic



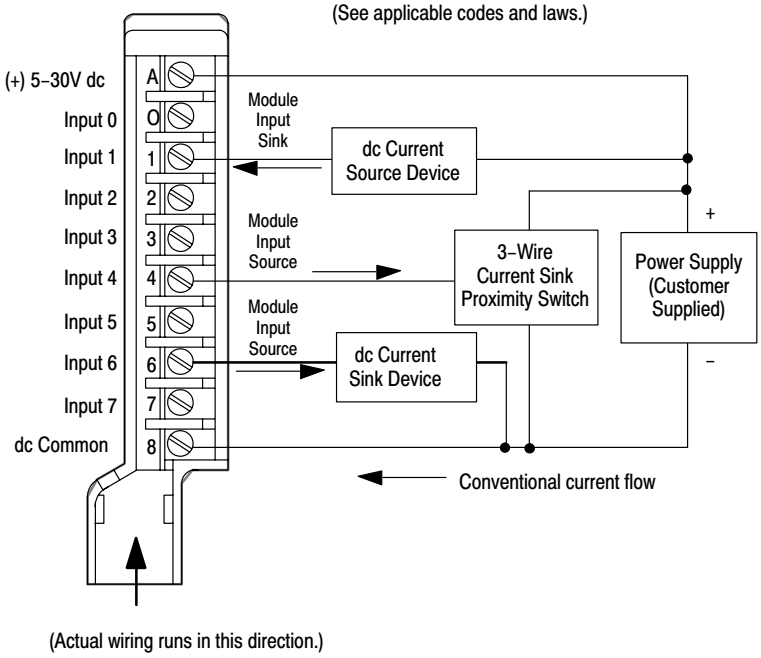
Application Notes

Device Compatibility. Each of the eight inputs to this module are switch selectable for current sourcing or current sinking of your device. The module can be set for either high true or low true logic. The module has selectable delay times of 12ms nominal (5ms minimum; 26ms maximum) in normal or 1ms (maximum) in fast position. The switches must be set before you install the module.

Connection to Output Modules. The sinking inputs on the DC (5–30V) Input module (cat. no. 1771-IQ) can be directly driven by the sourcing outputs of the 24V dc output modules (cat. nos. 1771-OQ, -OQ16, -OB, -OBD and -OBN).

Status Indicators. The front panel contains eight status indicators. The indicators provide system logic side indication of individual inputs.

Connection Diagram



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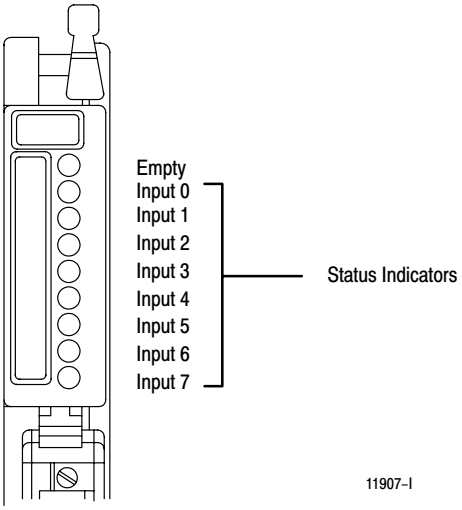
DC Input Module (Cat. No. 1771-IQ Series B)

Specifications (Cat. No. 1771-IQ/B)

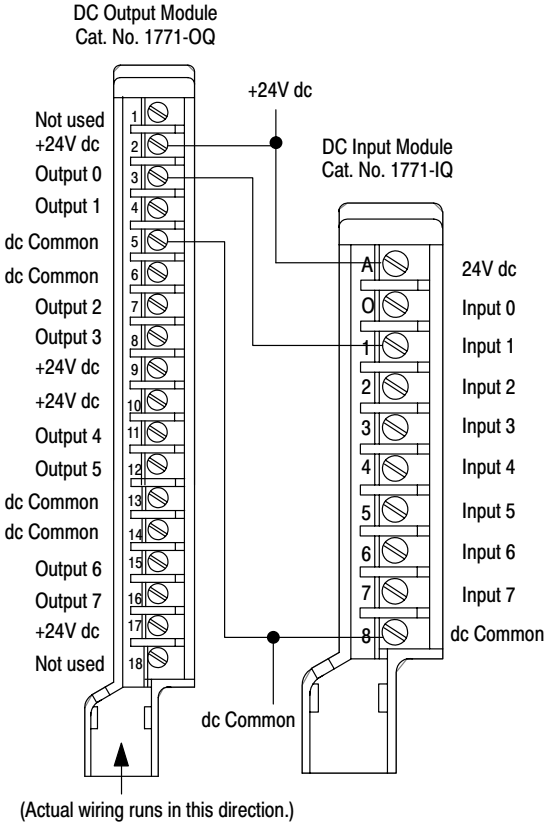
Inputs per Module	8
Module Location	1771 I/O chassis
Nominal Input Current	5mA @ 5V dc; 25mA @ 30V dc
Input Voltage Range HIGH = TRUE LOW = TRUE	 ON: > 40% of customer supply voltage OFF: < 20% of customer supply voltage ON: < 20% of customer supply voltage OFF: > 40% of customer supply voltage
Customer Supply Voltage	5V dc to 30Vdc
Customer Supply Current per Module	All inputs ON and connected for source capability: 100mA per module @ 5V dc 350mA per module @ 30V dc
Input Impedance	1.2K ohms nominal
Input Signal Delay	Fast: Less than 1ms Normal: 12ms typical (–7ms, +14ms)
Power Dissipation	6.8 Watts (max.), 0.8 Watts (min.)
Thermal Dissipation	23.2 BTU/hr (max.), 2.7 BTU/hr (min.)
Backplane Current	150mA max.
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm^2) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Keying	Between 6 and 8 Between 24 and 26
Wiring Arm	Catalog Number 1771-WC
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.24

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

Status Indicators



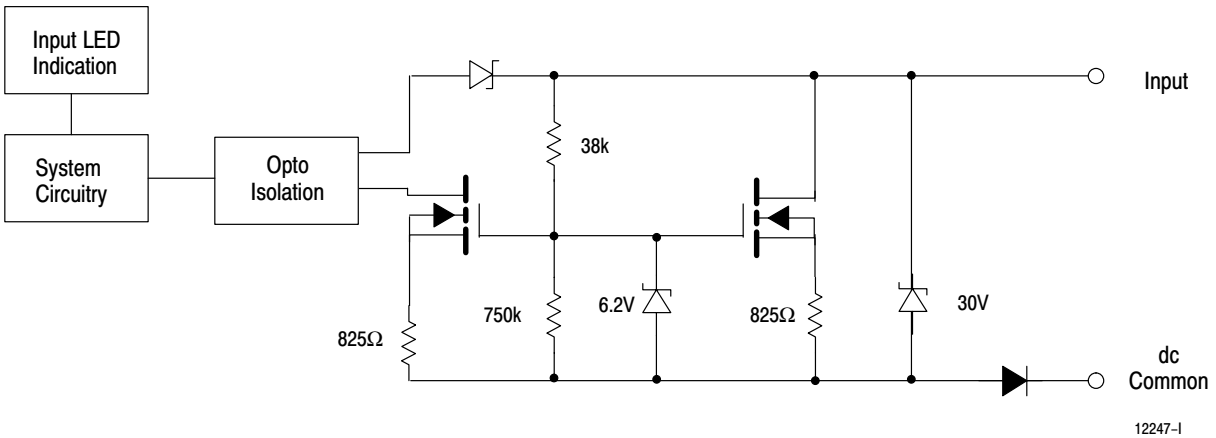
Sample Connection Diagram – Driving a 1771-IQ Module with a 1771-OQ Module



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DC Input Module (Cat. No. 1771-IQ16 Series B)

Simplified Schematic



Application Notes

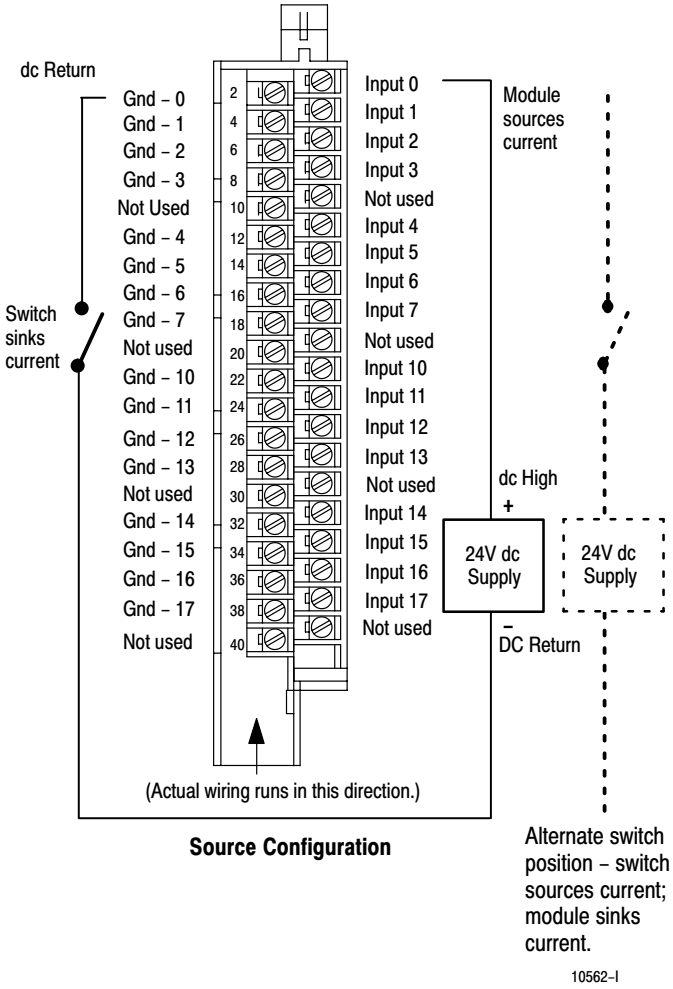
Device Compatibility. This module must be used in a series B I/O chassis. The 1771–IQ16 is not compatible with the 1771–AL local I/O adapter.This module contains customer-selectable input filter times to limit the effects of voltage transients caused by contact bounce and/or radiated electrical noise. The delay due to filtering ranges from 0msec to 18.0ms for turning dc inputs on to off. Delay for turning dc inputs off to on is 1.0ms. The filter time is factory set to 1.0ms.

This module is designed to operate with dc limit switches, float switches, selector switches, proximity switches and pushbutton switches.The module can be used as either a sink or source input based on the wiring configuration of the load.

Connection to Output Modules. You can use an output of the dc (10–32V) output module (1771-OQ16) to drive an input of a dc (10–32V) input module (1771-IQ16) to indicate status of turning on a motor starter, for example. The configuration shown has the output of the 1771-OQ16 wired as a source, and the input on the 1771-IQ16 wired as a sink.

Status Indicators. The module has 17 indicators, consisting of 16 input status indicators and an active indicator. The 16 status indicators are provided for system logic side indication of individual inputs. The active indicator will light when the module has successfully started up and initialized.

Connection Diagram



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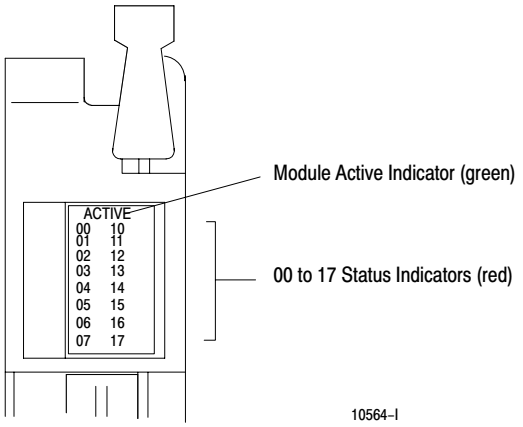
DC Input Module (Cat. No. 1771-IQ16 Series B)

Specifications (Cat. No. 1771-IQ16/B)

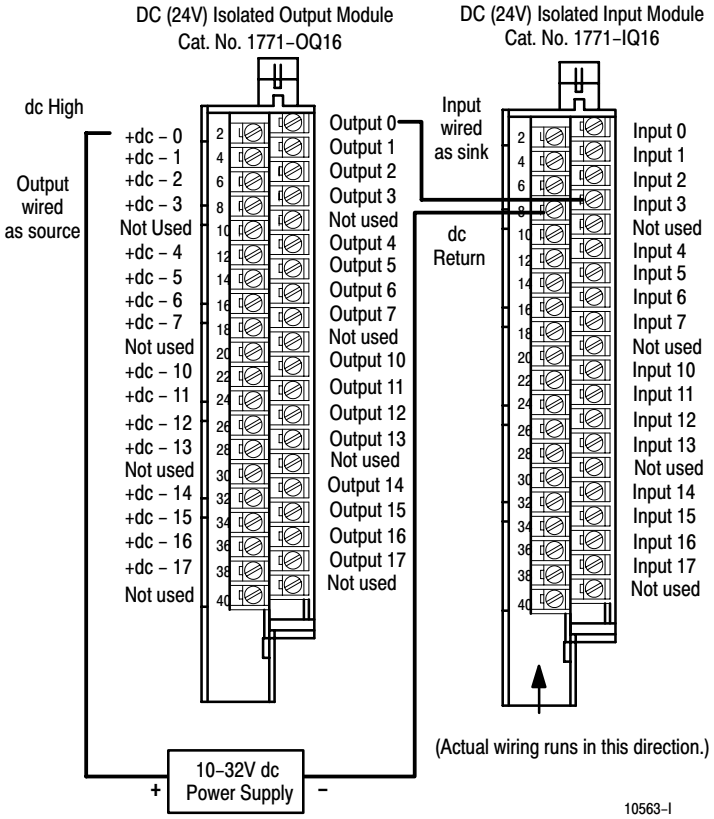
Inputs per Module	16
Module Location	1771 Series B I/O Chassis
Input Voltage Range	10–32V dc
Minimum Off–state Current	2mA @ 5V dc
Maximum Off–state Voltage	5V dc
Minimum On–state Voltage	10V dc
Minimum On–state Current	6.0mA @ 10V dc
Maximum Input Current	30mA @ 32V dc
Input Impedance	1.6K ohms maximum
Input Signal Delay	Customer Selectable: 0, 1, 9, 18ms
Power Dissipation	15.0 Watts (max); 0.5 Watts (min)
Thermal Dissipation	51.0 BTU/hr (max); 1.7 BTU/hr (min)
Backplane Current	100mA maximum
Isolation Voltage	1500V ac channel–to–channel for 1s 1500V ac channel to backplane for 1s
Maximum Cable Length	1000 ft (304.8 m)
Conductors Wire Size Category	14 gauge (2mm^2) stranded maximum[2] 3/64 inch (1.2mm) insulation maximum 1[1]
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0º to 60ºC (32º to 140ºF) –40º to 85ºC (–40º to 185ºF) 5 to 95% (without condensation)
Keying	Between 22 and 24 Between 30 and 32
Field Wiring Arm	Catalog Number 1771-WN
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.191

[1]You use this conductor-category information for planning conductor routing as described in the system-level installation manual.
[2] 14 gauge wire connected to all terminals may not allow the cover on the field wiring arm to close. A smaller gauge wire may be used.

Status Indicators



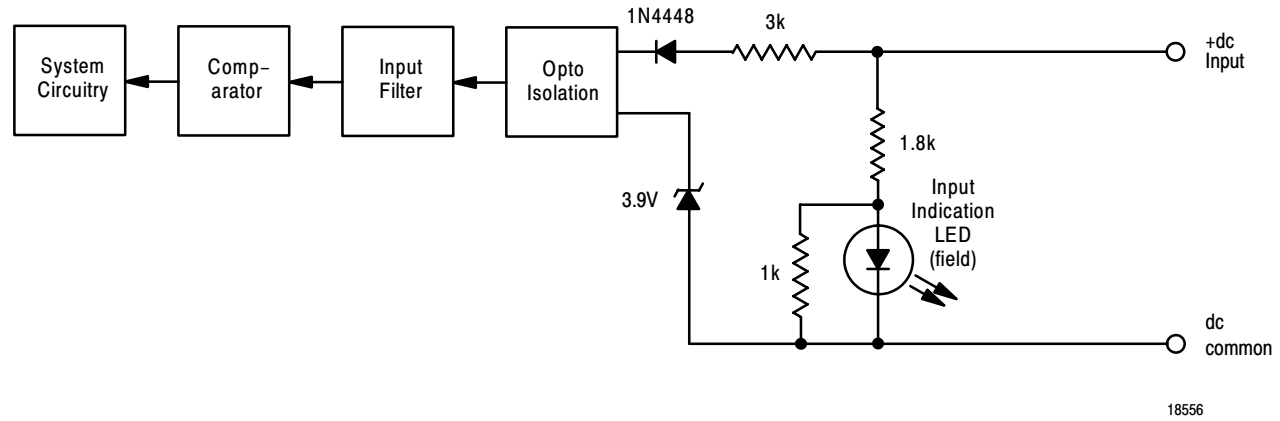
Connection Diagram – Driving a 1771-IQ16 Input Module with a 1771-OQ16 Output Module



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Fast Response DC Input Module (Cat. No. 1771-IT)

Simplified Schematic



Application Notes

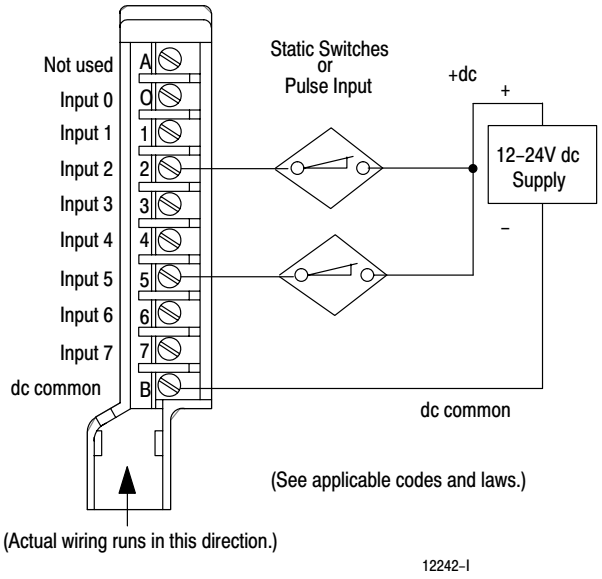
Device Compatibility. The 1771-IT module is compatible with devices that benefit from very short delay times such as the following:

- photoelectric switches
- incremental encoders
- dc proximity switches

Connection to Output Modules. You can use a dc Output Driver Module (Cat. No. 1771-OB) to directly drive terminals on a Fast Response dc Input Module (Cat. No. 1771-IT) Use the same power source to power both modules to ensure that common is at the same potential.

Status Indicators. The front panel contains 8 red status indicators. They provide field side indication of individual inputs. When a red indicator is illuminated, the associated input is energized.

Connection Diagram (Two-Wire Devices)



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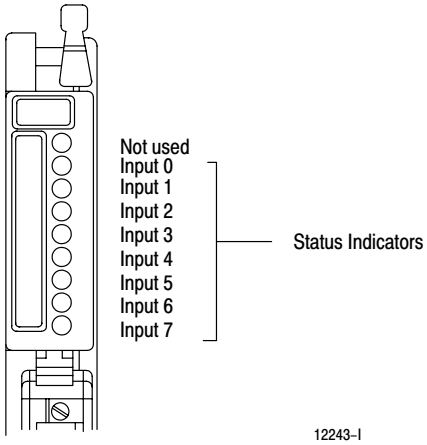
DC Input Module (Cat. No. 1771-IT)

Specifications (Cat. No. 1771-IT)

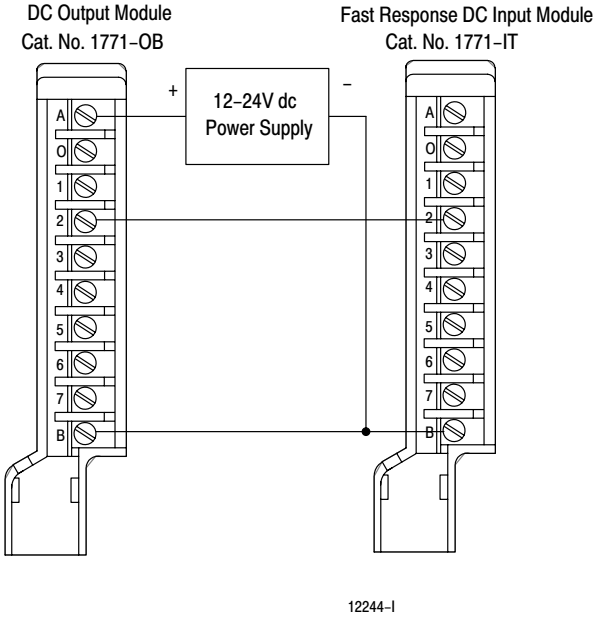
Inputs per Module	8
Module Location	1771 I/O chassis
Input Voltage Range	12–24V dc
Nominal Input Current	8mA @ 12V dc 24mA @ 24V dc
Minimum Off-state Current	1.3A @ 4V dc
Maximum Off-state Voltage	4V dc
Minimum On-state Voltage	10V dc
Input Impedance	On-state: 1–2K ohms Off-state: 2–3K ohms
Input Signal Delay	0.6ms (±0.2ms) on or off
Power Dissipation	5.9 Watts (max.), 0.4 Watts (min.)
Thermal Dissipation	20.0 BTU/hr (max.), 1.3 BTU/hr (min.)
Backplane Current	74mA @ 5V dc
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Keying	Between 6 and 8 Between 32 and 34
Wiring Arm	Catalog Number 1771-WA
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.22

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

Status Indicators



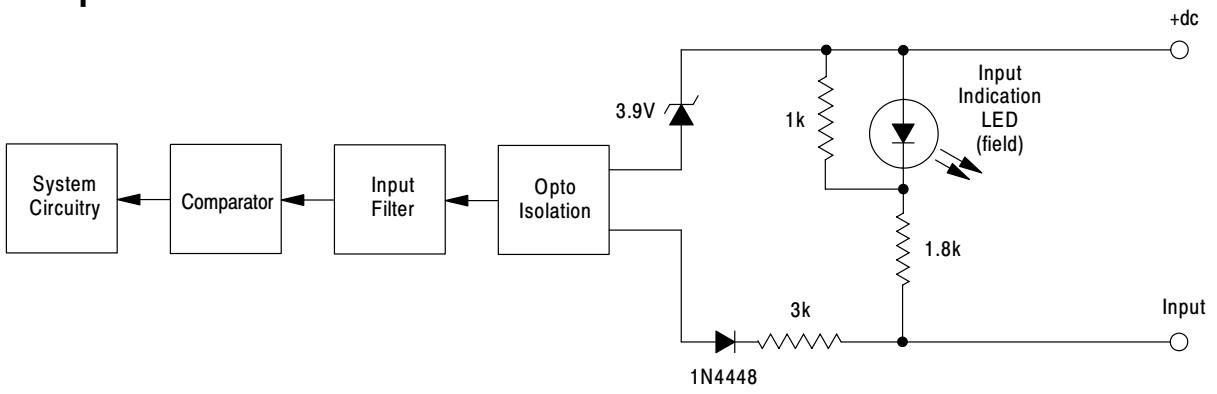
Sample Connection Diagram – Driving a 1771-IT Input Module with a 1771-OB Ouput Module



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DC Input Module (Cat. No. 1771-IV)

Simplified Schematic



Application Notes

Device Compatibility. The 1771-IV module is compatible with the following 2- and 3-wire devices:

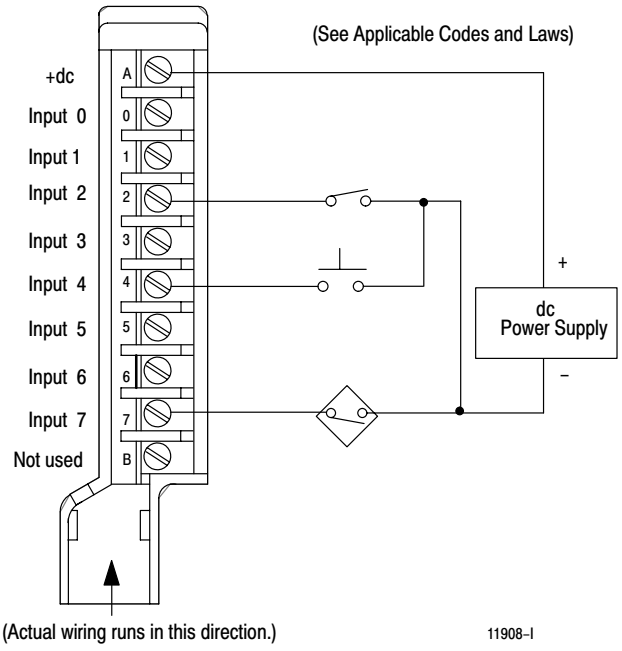
- dc proximity switches
- photoelectric sensors
- pushbuttons
- limit switches
- float switches
- selector switches

When using a 3-wire input device, the input device must be capable of sinking an on-state minimum current of 8mA at 12V dc up to 24mA at 24V dc. The off-state leakage current of your 3-wire devices should not exceed 1mA. This module contains input filtering to limit the effect of voltage transients caused by contact bounce and/or radiated electrical noise. The delay due to input filtering is nominally 15±7ms for turning inputs on, and 15±7ms for turning inputs off.

Connection to Output Modules. The sourcing inputs of the dc (12-24V) Input module (cat. no. 1771-IV) can be directly driven by the sinking outputs of the dc (10-30V) Output module (cat. no. 1771-OVN).

Status Indicators. The front panel contains eight red status indicators. The status indicators provide field side indication of individual inputs. When a red indicator lights, voltage is present on the terminal.

Connection Diagram (Two-Wire Devices)



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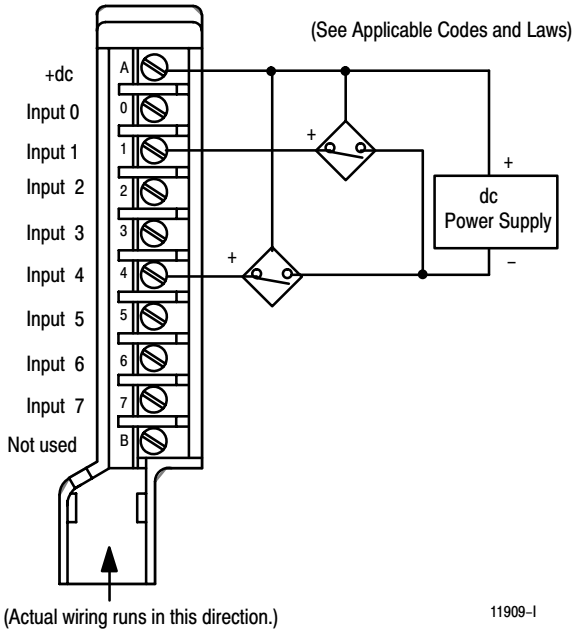
DC Input Module (Cat. No. 1771-IV)

Specifications (Cat. No. 1771-IV)

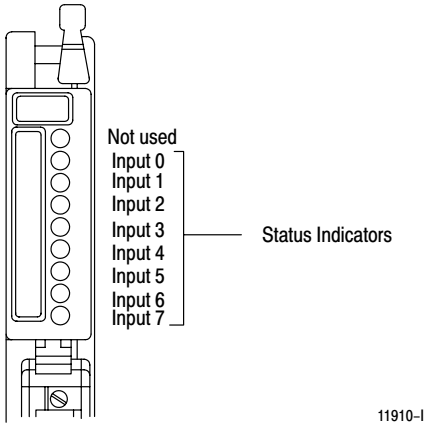
Inputs per Module	8
Module Location	1771 I/O chassis
Input Voltage Range (+dc)	12 to 24V dc
Nominal Input Current (Sourced)	8mA at (+dc – 12V dc) 24mA at (+dc – 24V dc)
Minimum Off–state Current	3.0mA at (+dc – 7V dc)
Maximum Off–state Voltage	(+dc – 7V dc)
Minimum On–state Voltage	(+dc – 10V dc)
Input Impedance	1 to 2K ohms maximum (on–state) 2 to 3K ohms maximum (off–state)
Input Signal Delay	Low to high propagation delay 15ms ±7ms High to low propagation delay 15ms±7ms
Power Dissipation	5.8 Watts (max.), 0.4 Watts (min.)
Thermal Dissipation	19.9 BTU/hr (max.), 1.3 BTU/hr (min.)
Backplane Current	74mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm^2) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Keying	Between 8 and 10 Between 12 and 14
Field Wiring Arm	Catalog Number 1771-WA
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.25

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

Connection Diagram (Three–Wire Devices)



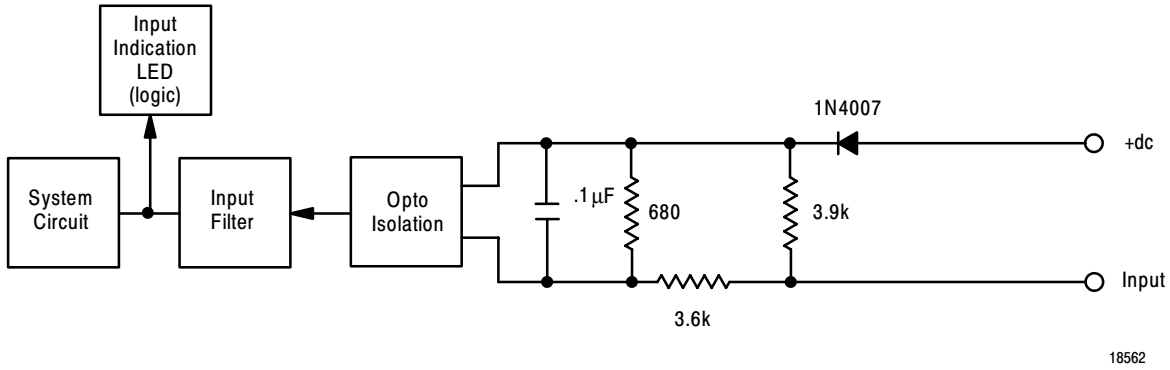
Status Indicators



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DC (10-30V) Input Module (Cat. No. 1771-IVN Series C)

Simplified Schematic



Application Notes

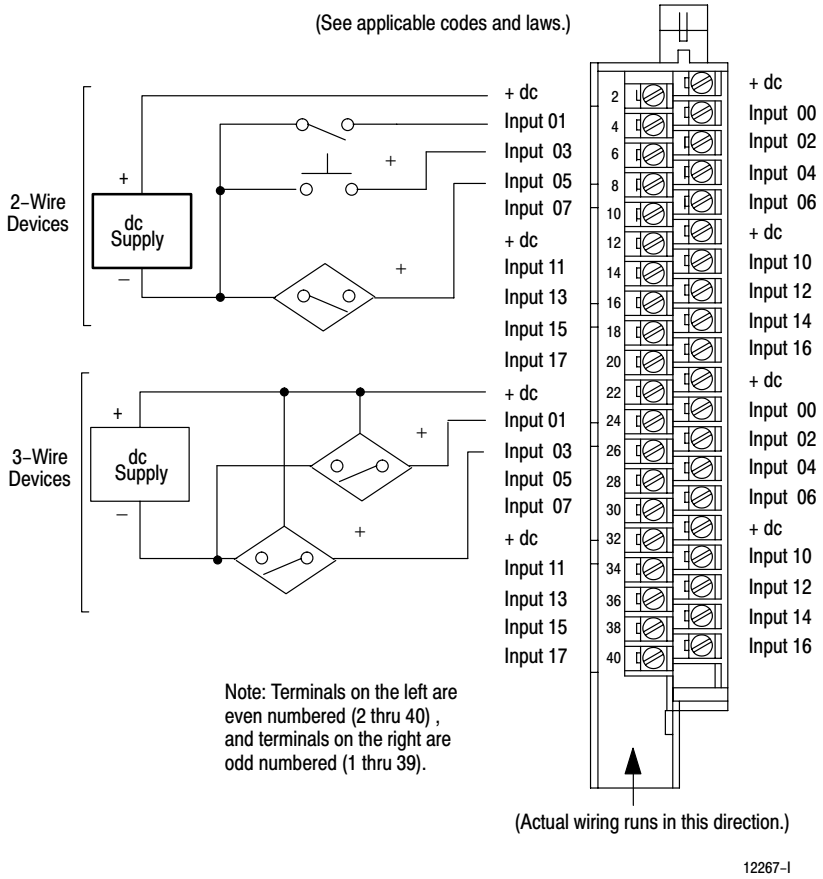
Device Compatibility. The 1771-IVN dc input module has sourcing inputs and requires sinking outputs. You must use this module in a series B 1771 I/O chassis. Do not place this module in the same I/O chassis as the 1771-IX thermocouple module. You can use this module in the same chassis as the 1771-IXE thermocouple module.

This module has input filtering to limit the effects of voltage transients caused by contact bounce and/or electrical noise.

Connection to Output Modules. The sourcing inputs of the 1771-IVN module can be directly driven by the sinking outputs of the dc (10-30V) output module (cat. no. 1771-OVN).

Status Indicators. The module front plate has 32 status indicators. These indicators are provided for system logic side indication of individual inputs.

Connection Diagram



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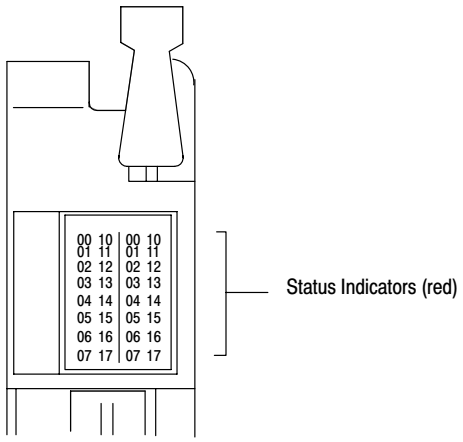
DC Input Module (Cat. No. 1771-IVN Series C)

Specifications (Cat. No. 1771-IVN/C)

Inputs per module	32
Module Location	1771–A1B thru –A4B I/O Chassis
Input Voltage Range (+dc)	10 to 30V dc
Nominal Input Current	4.5mA @ (+dc – 10V dc)
Minimum Off–state Current	1.7mA @ (+dc – 5V dc)
Maximum Off–state Voltage	(+dc – 5V dc)
Minimum On-state Voltage	(+dc – 10V dc)
Input Impedance	2.2K
Input Signal Delay	Low to high propagation: 6ms(±2ms) High to low propagation: 6ms(±2ms)
Power Dissipation	15.6W (max); 1.5W (min)
Thermal Dissipation	53.3 BTU/hr (max); 5.1 BTU/hr (min)
Backplane Current	280mA @ 5V dc maximum
Isolation Voltage	1500V ac RMS
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded (max)[2] 3/64 inch (1.2mm) insulation (max) Category 1[1]
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Keying	Between 14 and 16 Between 30 and 32
Field Wiring Arm	1771-WN
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-5.35

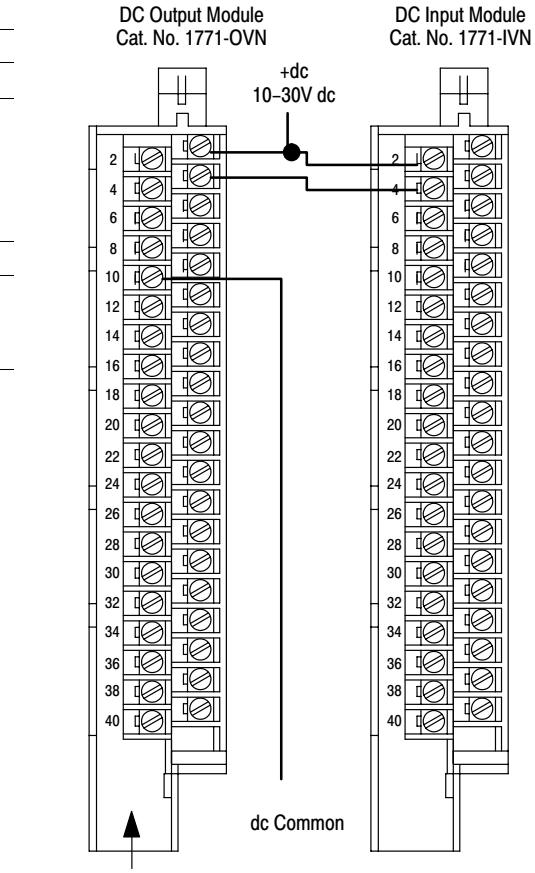
[1]You use this conductor-category information for planning conductor routing as described in the system-level installation manual.
[2] 14 gauge wire connected to all terminals may not allow the cover on the field wiring arm to close. A smaller gauge wire may be used.

Status Indicators



12265–I

Sample Connection Diagram – Driving a 1771-IVN Module with a 1771-OVN Module

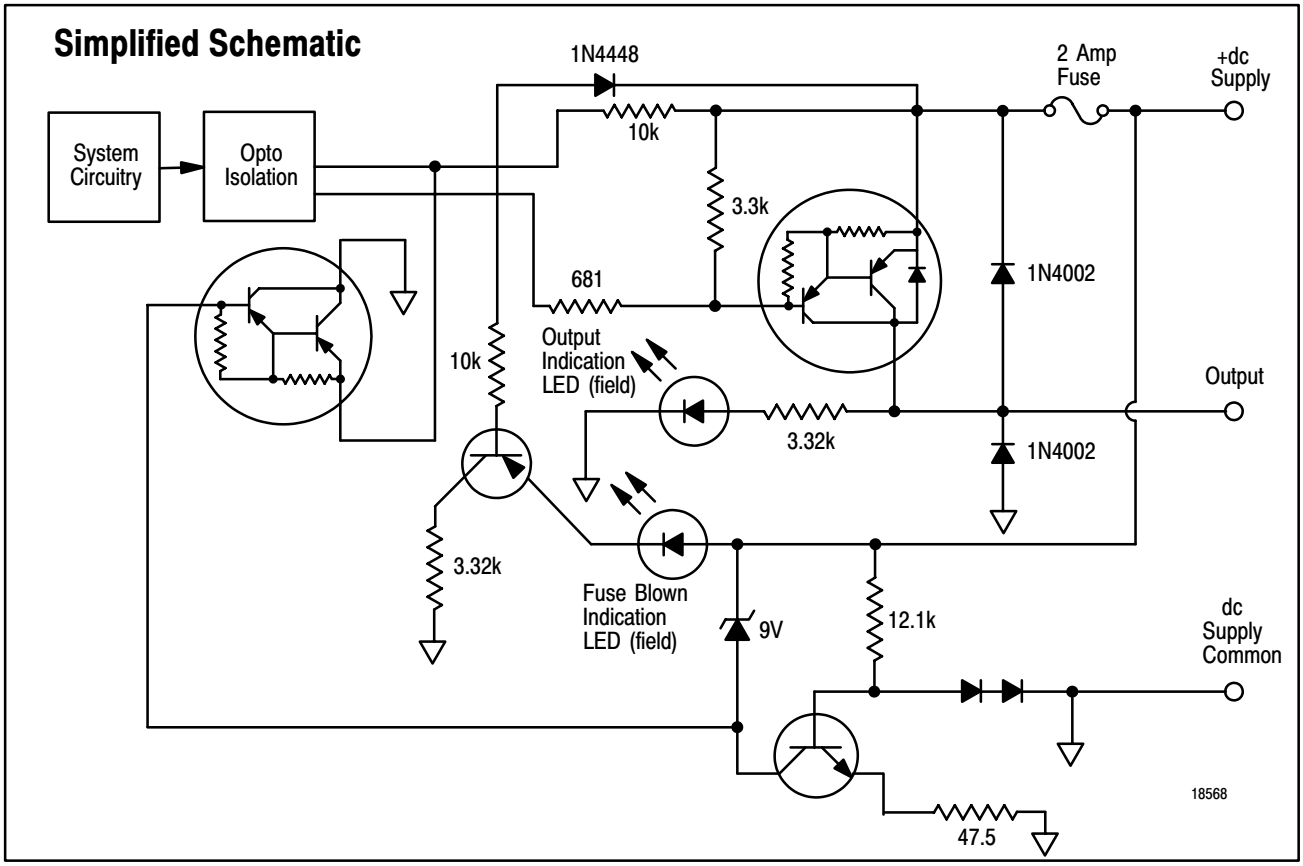


12266–I

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DC Output Module (Cat. No. 1771-OB Series C)

Simplified Schematic



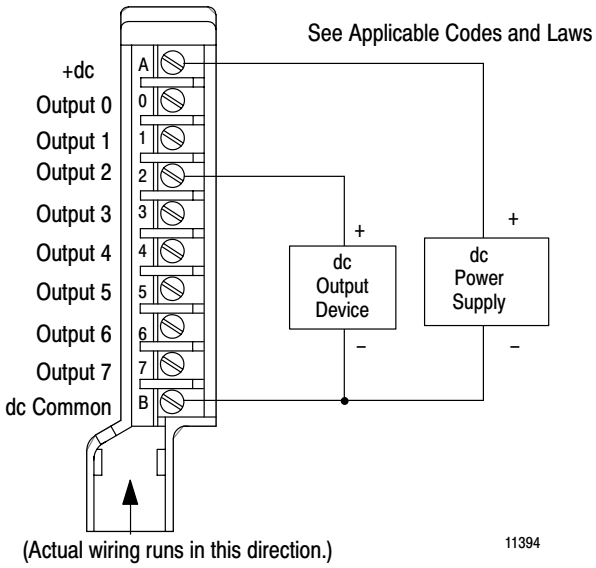
Application Notes

Device Compatibility. The 1771-OB module can control output devices such as dc motor starters, indicators and solenoids.

Connection to Input Modules. You can directly drive terminals on a DC (12–24V) Input Module (cat. no. 1771-IB) from terminals on the DC (12–24V) Output module (cat. no. 1771-OB). **Use the same dc power source to power both modules to ensure that ground is at the same potential.**

Status Indicators. The module has nine red status indicators. The top indicator is the fuse-blown indicator. It illuminates when a fuse has blown in the module. The remaining eight indicators correspond to each of the eight outputs. They are provided for field side indication of individual outputs.

Connection Diagram



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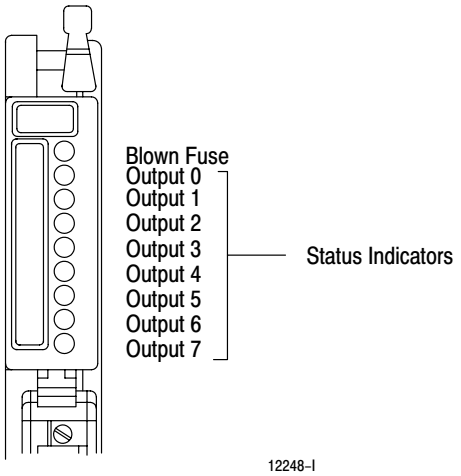
DC Output Module (Cat. No. 1771-OB Series C)

Specifications (Cat. No. 1771-OB/C)

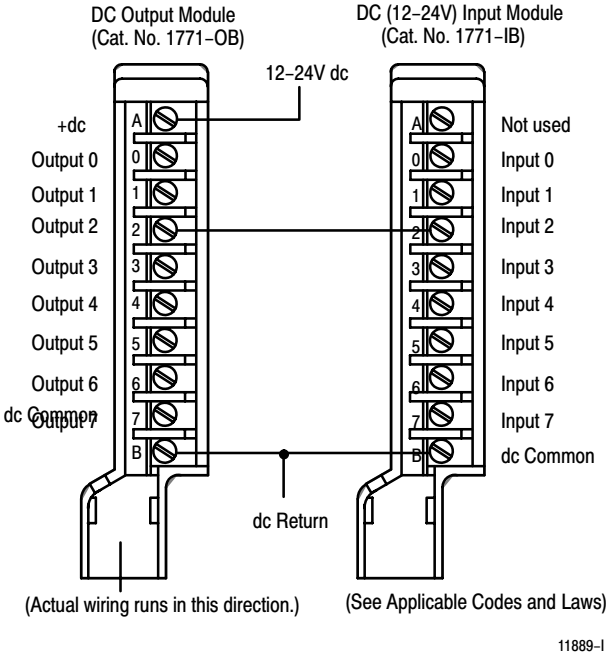
Outputs per Module	8
Module Location	1771 I/O chassis
Output Voltage Range	10 to 27V dc
Output Current (maximum)	1.5A per output 8A per module
Surge Current (maximum per output)	4A for 1ms, repeatable every 1s
Off–state Leakage Current (maximum)	1mA per output @ 27V dc, 25°C
On–state Voltage Drop (maximum)	2V dc
Output Signal Delay	10ms on/off
Maximum Power Rating	3W per output
Power Dissipation	16.9 Watts (max.), 0.9 Watts (min.)
Thermal Dissipation	57.6 BTU/hr (max.), 3.0 BTU/hr (min.)
Backplane Current	165mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Keying	Between 4 and 6 Between 18 and 20
Fuses	2A 8AG (one per output)
Field Wiring Arm	Catalog Number 1771-WA
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.3

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

Status Indicator



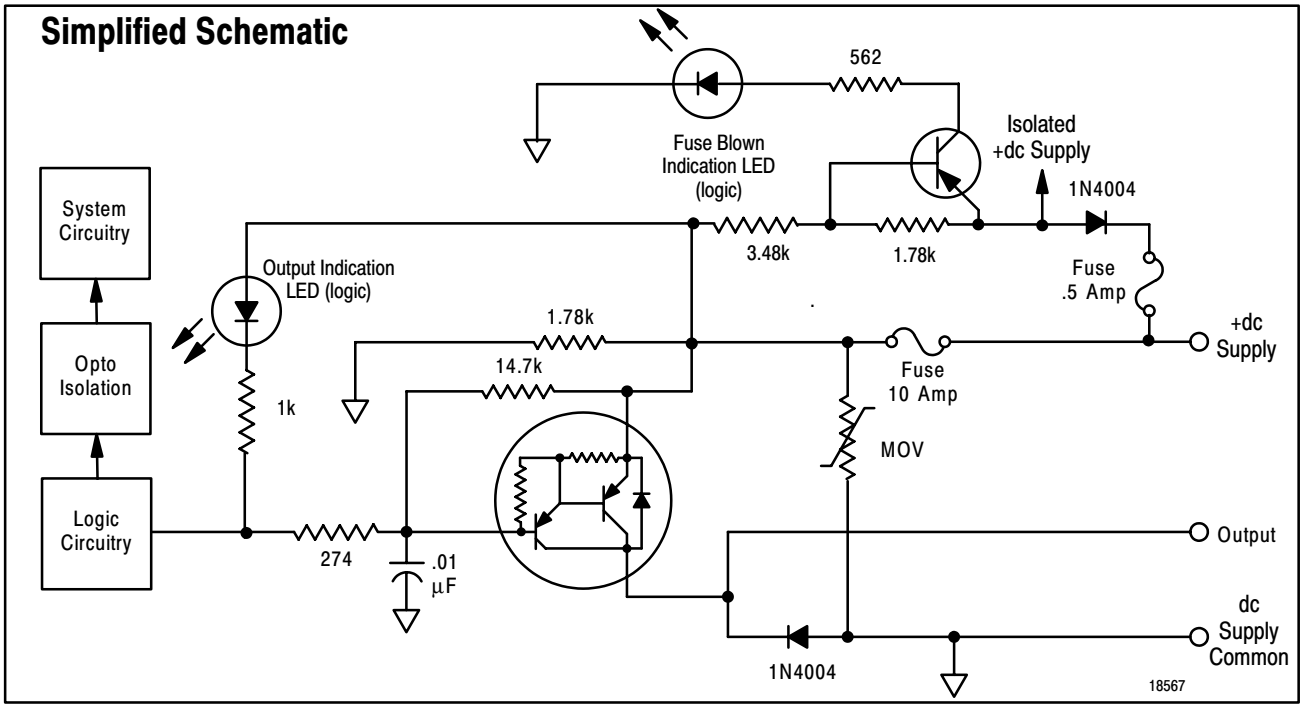
Connection Diagram – Driving a 1771-IB module with a 1771-OB module



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DC Output Module (Cat. No. 1771-OBD Series C)

Simplified Schematic



Application Notes

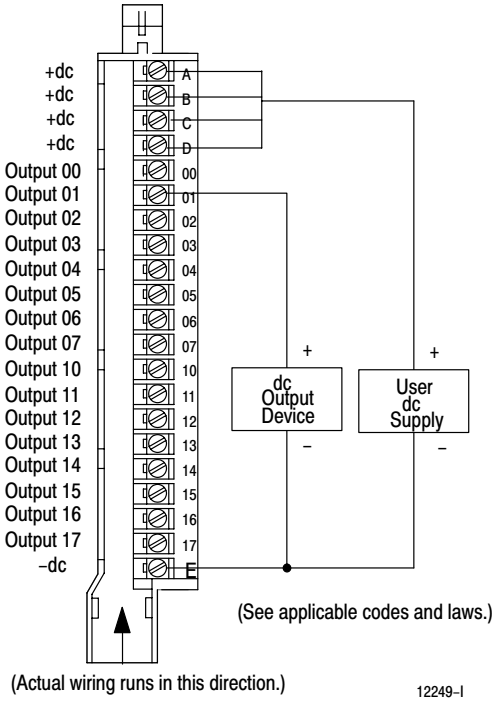
Device Compatibility. This module must be used with a series B 1771 I/O chassis. Make sure no other output module or single card block transfer module is placed in the same module group when using 2-slot addressing.

Connection to Input Modules. You can use a dc (10–60V) output Module (cat. no. 1771-OBD) to directly drive terminals on the following modules: 1771-IB, -IC, -IBD, -ICD. **Use the same dc supply to power both modules to ensure that ground is at the same potential.**

Status Indicators. The module has one green module active indicator, 16 red status indicators and one red fuse-blown indicator. The green module active indicator lights when the module is powered, the processor keyswitch is on "run", and the opto-isolators and data paths are functioning properly. It turns off if a fault occurs in the data paths or the opto–isolators. The module will then reset its outputs or set them to last state. The red status indicators provide for system logic side indication of individual outputs. The fuse-blown indicator turns on when the fuse is blown.

Module Application. An optional 1771-WHFB field wiring arm can be used with this module. Its fuses will protect the module's outputs from short circuit conditions. **Note that the continuous output current must not exceed 1.1A.**

Connection Diagram



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DC Output Module (Cat. No. 1771-OBD Series C)

Specifications (Cat. No. 1771-OBD/C)

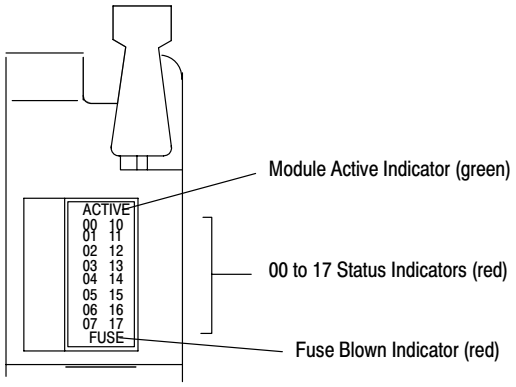
Outputs per Module	16
Module Location	Series B 1771 I/O chassis
Output Voltage Range	10 to 60V dc
Minimum Output Current	2.5mA per output
Maximum Output Current	2A per output 8A per module
Surge Current (maximum)	4A per output for 10ms, repeatable every 2s 25A per module for 10ms, repeatable every 2s
Off-state Leakage Current (maximum)	0.5mA per output @ 24V dc, 25°C
On-state Voltage Drop (max.)	0.3V at 2A
Power Rating (maximum)	3 Watts per output
Output Signal Delay	1.0ms on or off
Power Dissipation	14 Watts (max.), 2 Watts (min.)
Thermal Dissipation	47.8 BTU/hr (max.), 6.9 BTU/hr (min.)
Backplane Current	400mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm^2) stranded maximum 3/64 inch (1.2mm) insulation maximum 1[1]
Fuse	10A, 250V rectifier fuse (1/4 x 1–1/4 inch)
Keying	Between 10 and 12 Between 22 and 24
Field Wiring Arm Standard Optional	Cat. No. 1771-WH Cat. No. 1771-WHF (fused – 3A)[2] Cat. No. 1771-WHFB (fused – 1.5A)[3]
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.76

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

[2] With a customer supply voltage of 30V dc or less, the field wiring arm fuses protect the individual output circuits from damage during a short circuit condition while controlling a resistive load with a continuous current that does not exceed 2A.

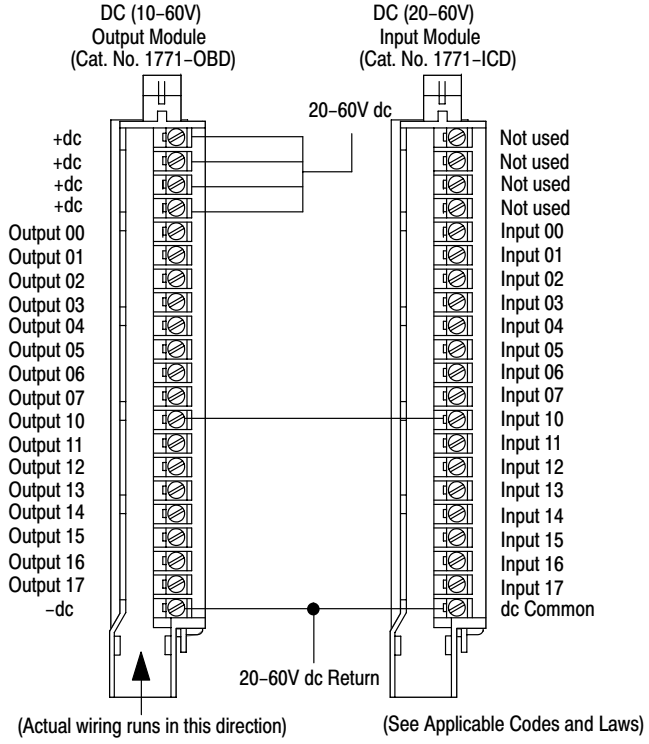
[3] With a customer supply voltage of 30V dc or less, the field wiring arm fuses protect the individual output circuits from damage during a short circuit condition while controlling a resistive load with a continuous current that does not exceed 1A.

Status Indicator



12250–I

Connecting Diagram – Driving a 1771-ICD Module with a 1771-OBD Module

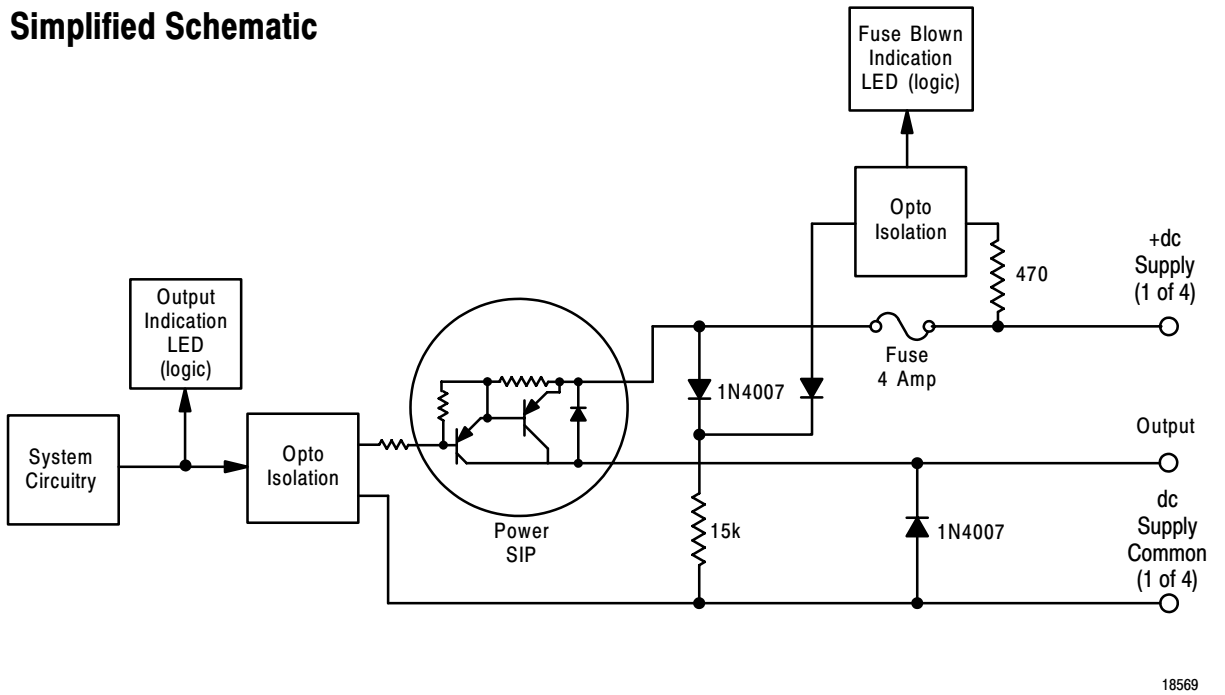


12251–I

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DC Output Module (Cat. No. 1771-OBN Series B)

Simplified Schematic



Application Notes

Device Compatibility. The 1771-OBN dc output module has sourcing outputs and requires sinking inputs. You must use this module in a series B 1771 I/O chassis.

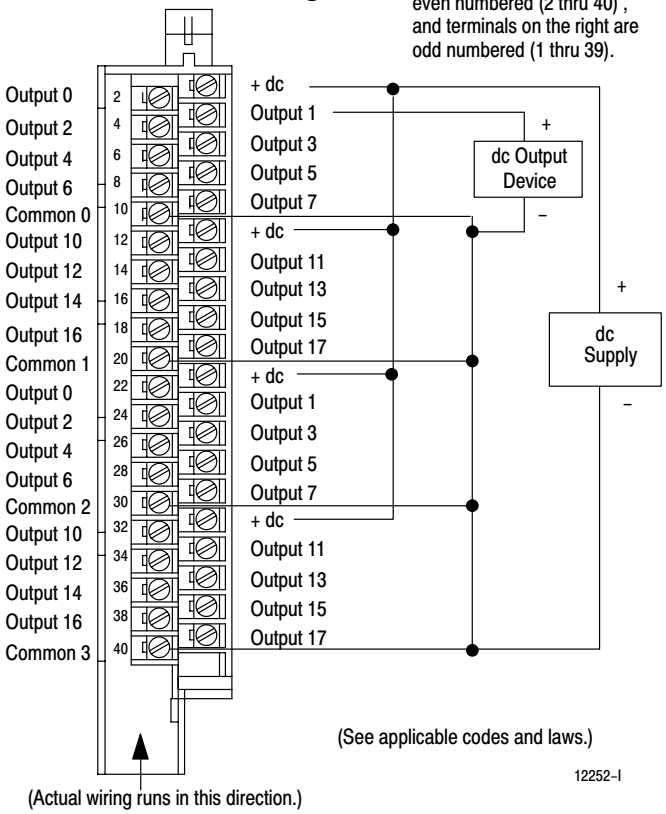
Do not place this module in the same I/O chassis as the 1771-IX thermocouple module. You can use this module in the same chassis as the 1771-IXE thermocouple module.

Connection to Input Modules. A 1771-OBN module can directly drive terminals on a 1771-IBN input module. **Use the same dc supply to power both modules to ensure that ground is at the same potential.**

Status Indicators. The module has 32 status indicators. These are provided for system logic side indication of individual outputs. An additional indicator is provided to indicate a blown-fuse condition.

Connection Diagram

Note: Terminals on the left are even numbered (2 thru 40) , and terminals on the right are odd numbered (1 thru 39).



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DC Output Module (Cat. No. 1771-OBN Series B)

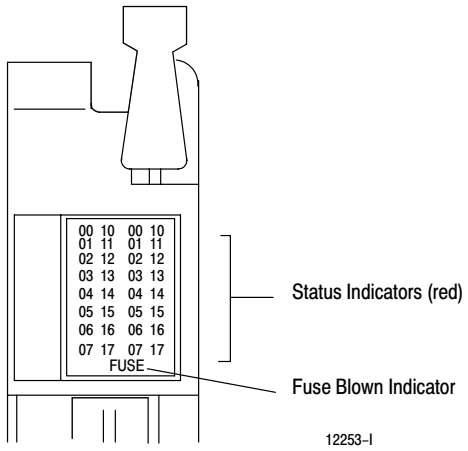
Specifications (Cat. No. 1771-OBN/B)

Outputs per module	32 (4 groups of 8)
Module Location	1771–A1B thru –A4B I/O Chassis
Output Voltage Range	10 to 30V dc
Maximum Output Current	0.5A per output 2A per output group 8A per module
Maximum Surge Current	2A per output for 10ms; repeatable every 2s 5A per group for 10ms.;repeatable every 2s 20A per module for 10ms.; repeatable every 2s
Maximum On–state Voltage Drop	1.5V dc at 0.5A
Maximum Off–state Leakage Current	1.0mA per output @ 30V dc, 55ºC
Maximum Power Rating	0.75W per output
Output Signal Delay	On to off propagation delay 2.0ms Off to on propagation delay 0.1ms
Power Dissipation	13.7W (max); 1.7W (min)
Thermal Dissipation	46.7 BTU/hr (max); 5.7 BTU/hr (min)
Backplane Current	330mA @ 5V dc maximum
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0º to 60ºC (32º to 140ºF) –40º to 85ºC (–40º to 185ºF) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm^2) stranded (max)[1] 3/64 inch (1.2mm) insulation (max) 1[2]
Fuses	Four 4.0A, 250V normal blow fuses (1 per group)
Keying	Between 14 and 16 Between 20 and 22
Field Wiring Arm	1771-WN
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-5.34

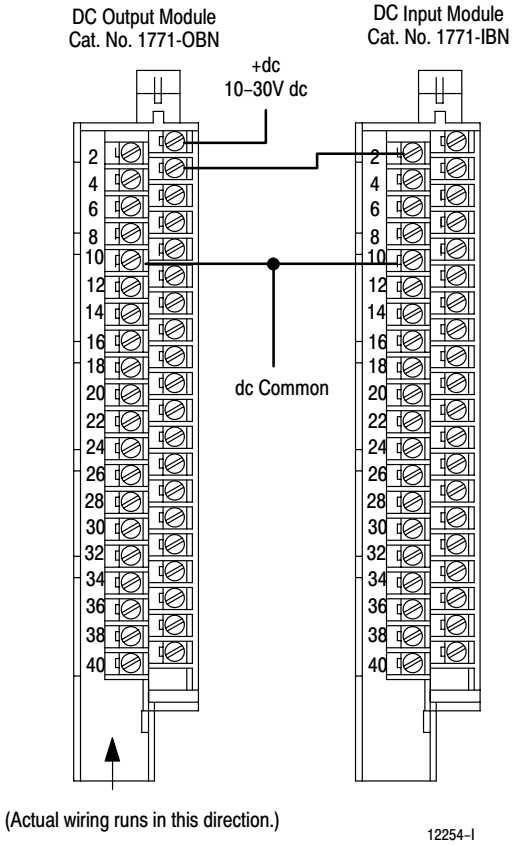
1 14 gauge wire connected to all terminals may not allow the cover on the field wiring arm to close. A smaller gauge wire may be used.

2 You use this conductor-category information for planning conductor routing as described in the system-level installation manual.

Status Indicators



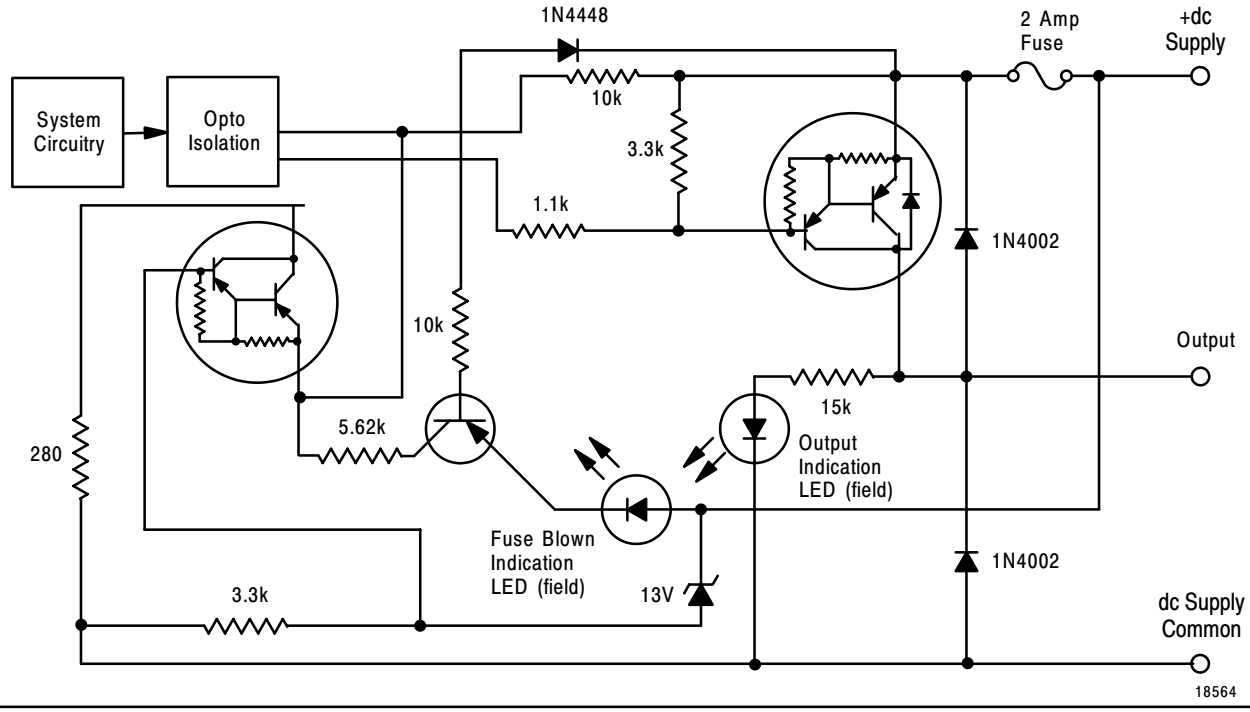
Sample Connection Diagram – Driving a 1771-IBN Module with a 1771-OBN Module



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DC Output Module (Cat. No. 1771-OC Series C)

Simplified Schematic



Application Notes

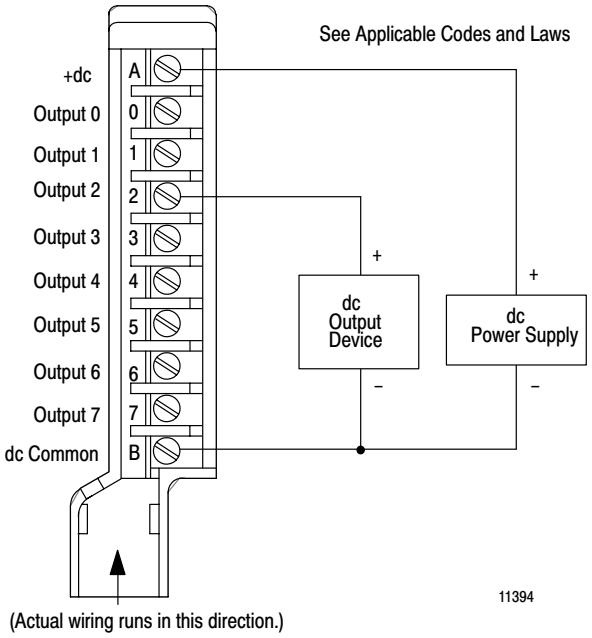
Device Compatibility. The 1771-OC module can control the following output devices:

- dc motor starters
- indicators
- solenoids

Connection to Input Modules. You can directly drive terminals on a dc (48V) input module (cat. no. 1771-IC) from terminals on the dc (48V) output module (cat. no. 1771-OC). **Use the same dc power source to power both modules to ensure that ground is at the same potential.**

Status Indicators. The module has nine red status indicators. The top indicator is the fuse-blown indicator. It illuminates when a fuse has blown in the module. The remaining eight status indicators are provided for field side indication of individual outputs.

Connection Diagram



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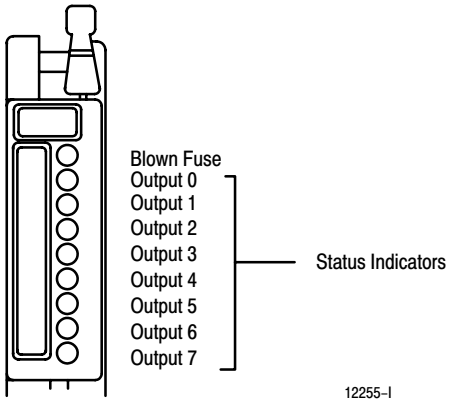
DC Output Module (Cat. No. 1771-OC Series C)

Specifications (Cat. No. 1771-OC/C)

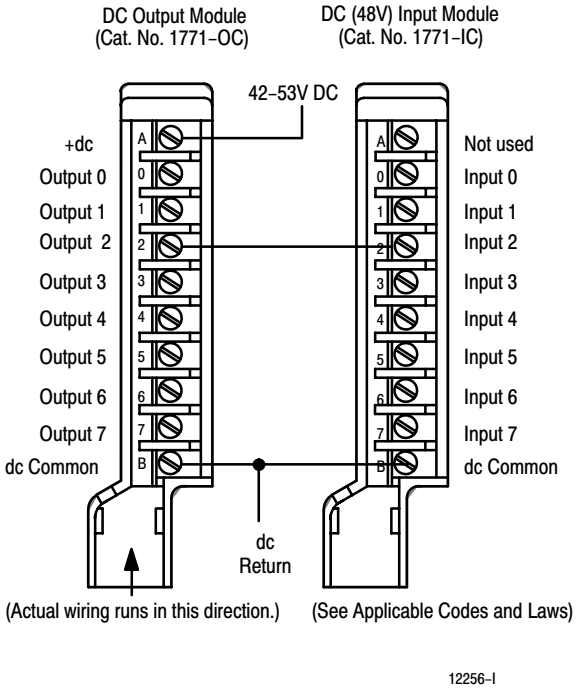
Outputs per Module	8
Module Location	1771 I/O chassis
Output Voltage Range	42 to 53V dc
Maximum Output Current	1.5A per output; 8A per module
Maximum Surge Current	4A for 1ms, repeatable every 1s per output
Maximum Off–state Leakage Current	1mA per output @ 53V dc, 25°C
Maximum On–state Voltage Drop	2V dc @ 1.5A
Maximum Power Rating	3W per output
Output Signal Delay	10msec on or off
Power Dissipation	16.9 Watts (max.), 0.9 Watts (min.)
Thermal Dissipation	57.6 BTU/hr (max.), 3.0 BTU/hr (min.)
Backplane Current	165mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm²) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Fuses	2A 8AG (one per output)
Keying	Between 4 and 6 Between 20 and 22
Field Wiring Arm	Catalog Number 1771-WA
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.175

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

Status Indicator

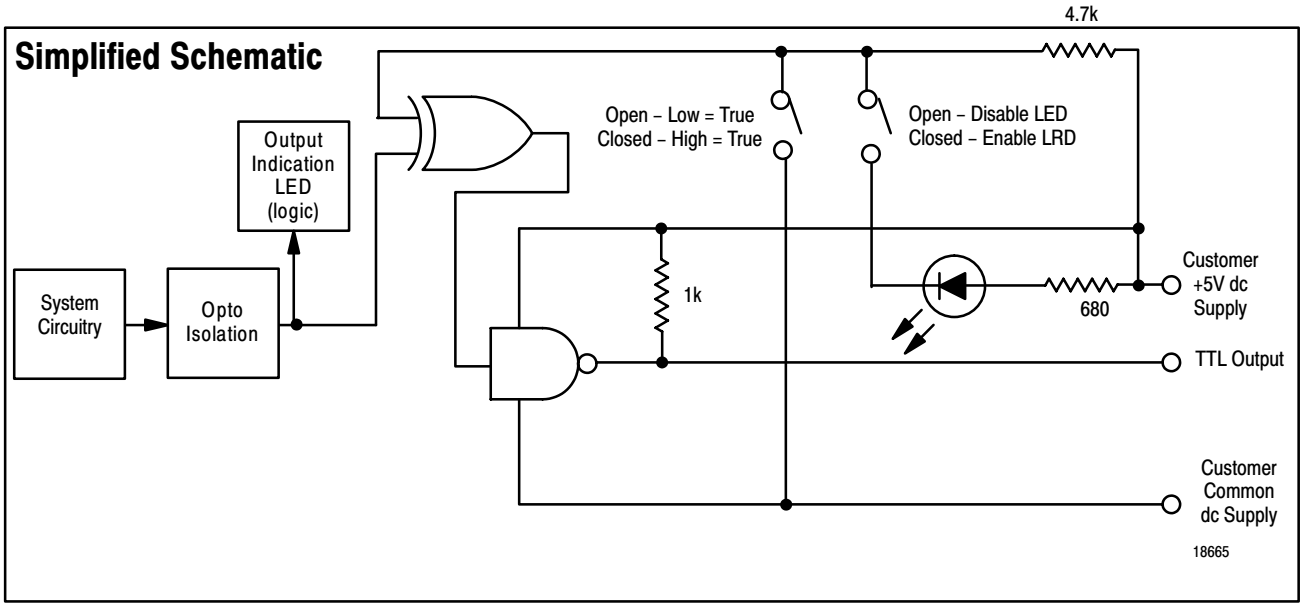


Connection Diagram – Driving a 1771-IC Module with a 1771-OC Module



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DC Output Module (Cat. No. 1771-OG)



Application Notes

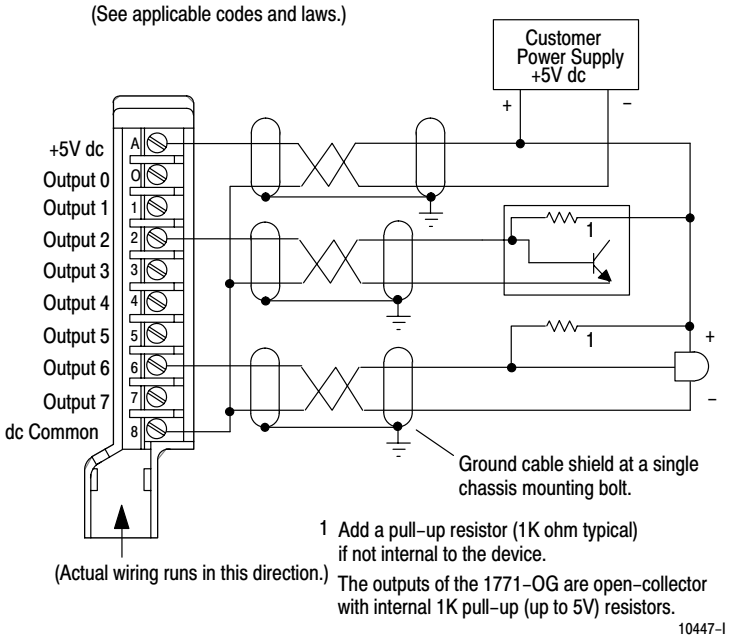
Device Compatibility. You can use any TTL device that meets the input logic level specification of –0.2V dc to +0.8V dc (low), and 2.0V dc to 5.25V dc (high). A switch on the module allows selection of High = True or Low = True logic.

Connection to Input Modules. Output terminals of the TTL output module (cat. no. 1771-OG) may directly drive inputs of a TTL input module (cat. no. 1771-IG). Connect the cable shield between modules at one end only.

Status Indicators. The module has nine status indicators. The red top indicator is labeled "High = True." When on, it indicates you selected high-true logic. When off, it indicates you selected low-true logic. Each of the lower eight indicators light when their corresponding output terminal delivers TTL voltages in the true state. Indicators may appear dim during rapid pulsing of output signals.

Module Application. You can select the operating logic of the module using the logic switches located in the module. Choose between "High = True" or "Low = True" logic.

Connection Diagram



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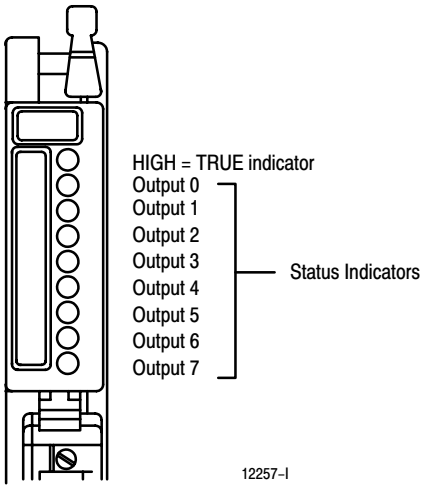
DC Output Module (Cat. No. 1771-OG)

Specifications (Cat. No. 1771-OG)

Outputs per Module	8
Module Location	1771 I/O chassis
Output Voltage Range HIGH = TRUE LOW = TRUE	 ON; 2.0 to 5.25V dc OFF: –0.2 to +0.8V dc ON: –0.2 to +0.8V dc OFF: 2.0 to 5.25V dc
Maximum Output Current	Source: 1mA; Sink: 20mA
Customer Supply Voltage	5V dc (±0.25V) 50mV peak–to–peak ripple max.
Customer Supply Current per Module	250mA max.
Output Signal Delay	Less than 1ms
Power Dissipation	2.2 Watts (max.); 0.8 Watts (min.)
Thermal Dissipation	7.5 BTU/hr (max.); 2.7 BTU/hr (min.)
Backplane Current	168mA max.
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Conductors Wire Size Cable Category	14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum Shielded (Belden 8761) 2[1]
Keying	Between 6 and 8 Between 10 and 12
Field Wiring Arm	Catalog Number 1771-WC
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.177

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

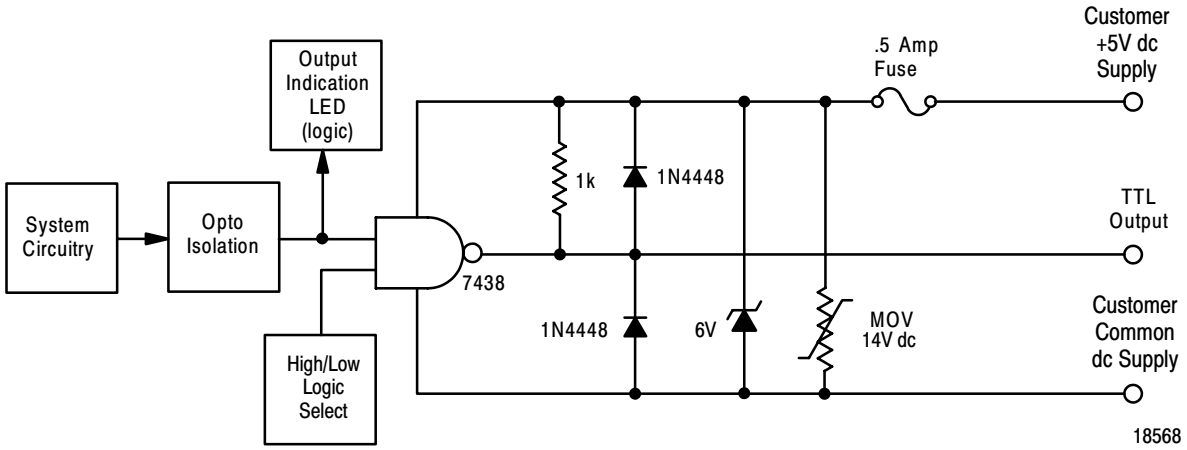
Status Indicator



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DC Output Module (Cat. No. 1771-OGD Series B)

Simplified Schematic



Application Notes

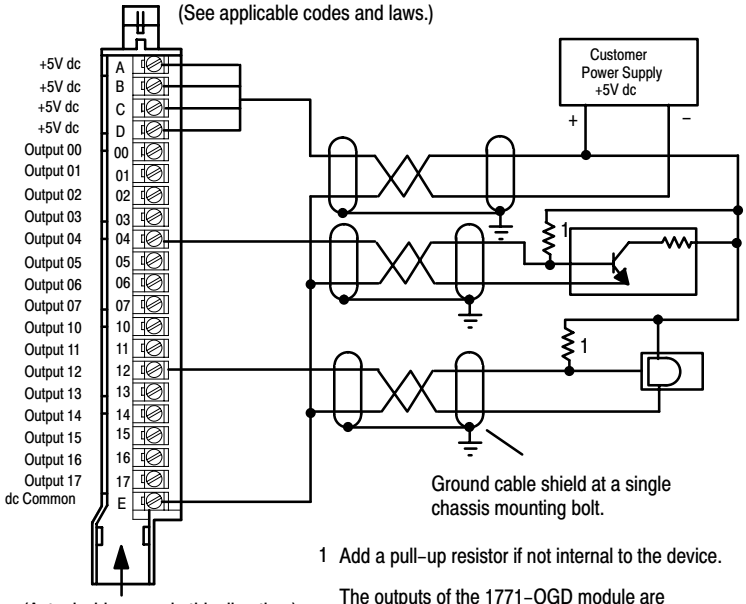
Device Compatibility. The TTL output module must be used in a series B 1771 I/O chassis.You can use any TTL device that meets the input logic level specification of –0.2V dc to +0.8V dc (low), and 2.0V dc to 5.25V dc (high).

Connection to Input Modules. Output terminals of the TTL output module (cat. no. 1771-OGD) may directly drive the inputs of the TTL input module (cat. no. 1771-IGD). Connect the cable shield between modules at one end only.

Status Indicators. The module has 18 status indicators. The green top indicator, labeled "ACTIVE," is on when the fuse is good. The green bottom indicator, when on, indicates you selected high-true logic. When off, it indicates you selected low-true logic. Each of the 16 red status indicators light when their corresponding output terminal delivers TTL voltages in the true state.

Module Application. You can select the operating logic of the module using the logic switches located in the module. Choose between "High = True" or "Low = True" logic.

Connection Diagram



1 Add a pull–up resistor if not internal to the device.

The outputs of the 1771–OGD module are open collector with internal 1K ohm pull–up (to 5V) resistors.

10444–I

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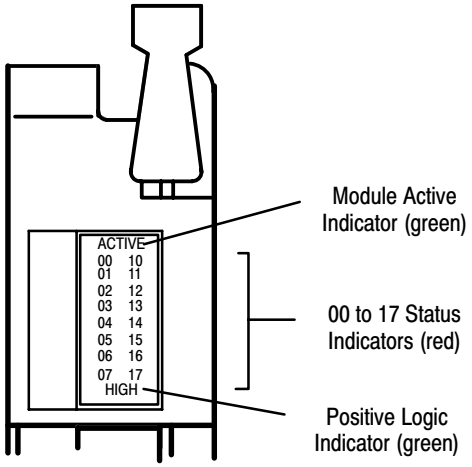
DC Output Module (Cat. No. 1771-OGD Series B)

Specifications (1771–OGD/B)

Outputs per Module	16
Module Location	Series B 1771 I/O chassis
Output Voltage Range HIGH = TRUE LOW = TRUE	 ON; 2.0 to 5.25V dc OFF: –0.2 to +0.8V dc ON: –0.2 to +0.8V dc OFF: 2.0 to 5.25V dc
Maximum Output Current	Source: 1mA; Sink: 20mA
Customer Supply Voltage	5V dc (±0.25V) 50mV peak–to–peak ripple max.
Customer Supply Current per Module	310mA max.
Output Signal Delay	Less than 1ms
Power Dissipation	2.8 Watts (max.); 1.0 Watts (min.)
Thermal Dissipation	9.5 BTU/hr (max.); 3.4 BTU/hr (min.)
Backplane Current	230mA max.
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0º to 60ºC (32º to 140ºF) –40º to 85ºC (–40º to 185ºF) 5 to 95% (without condensation)
Conductors Wire Size Cable Category	14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum Shielded (Belden 8761) 2[1]
Fuse	0.5A 250V Normal Blow
Keying	Between 16 and 18 Between 26 and 28
Field Wiring Arm	Catalog Number 1771-WH
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.176

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

Status Indicators

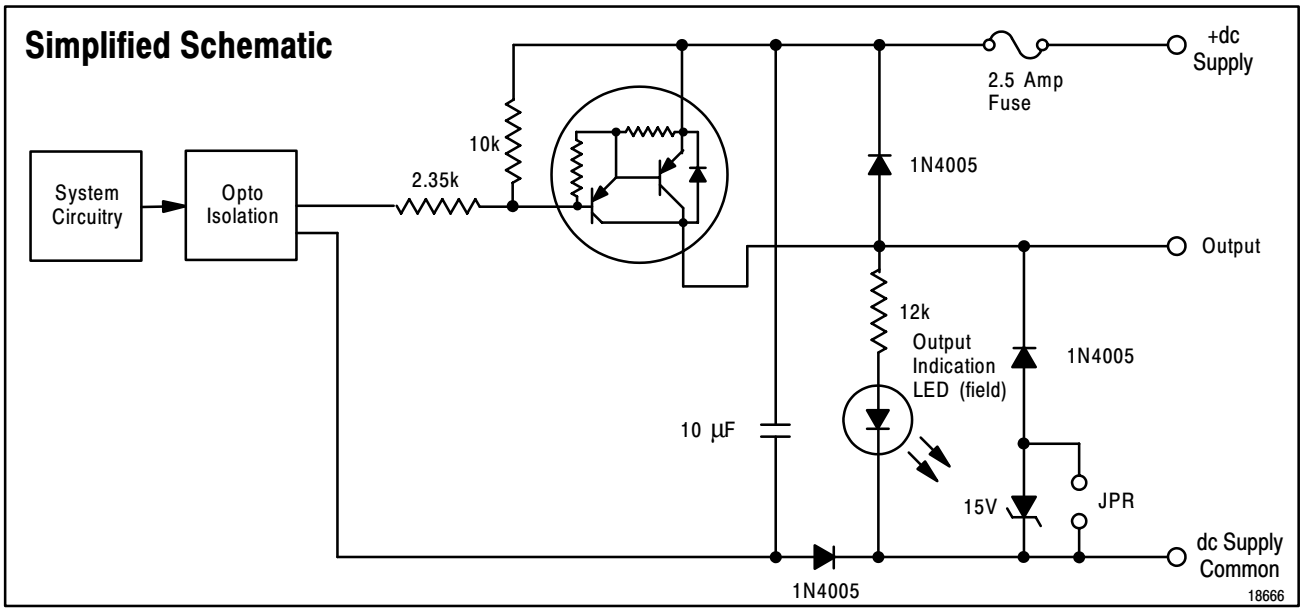


10445–I

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DC Output Module (Cat. No. 1771-OQ Series B)

Simplified Schematic



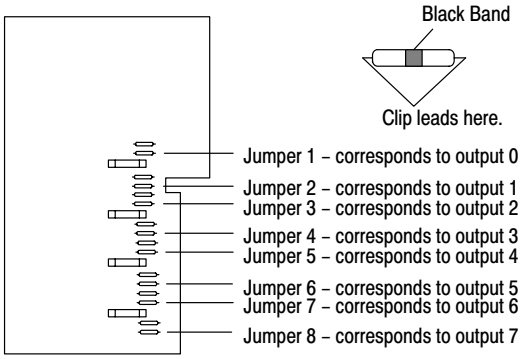
Application Notes

Device Compatibility. An output from this module can drive dc motor starters, indicators, and solenoids.

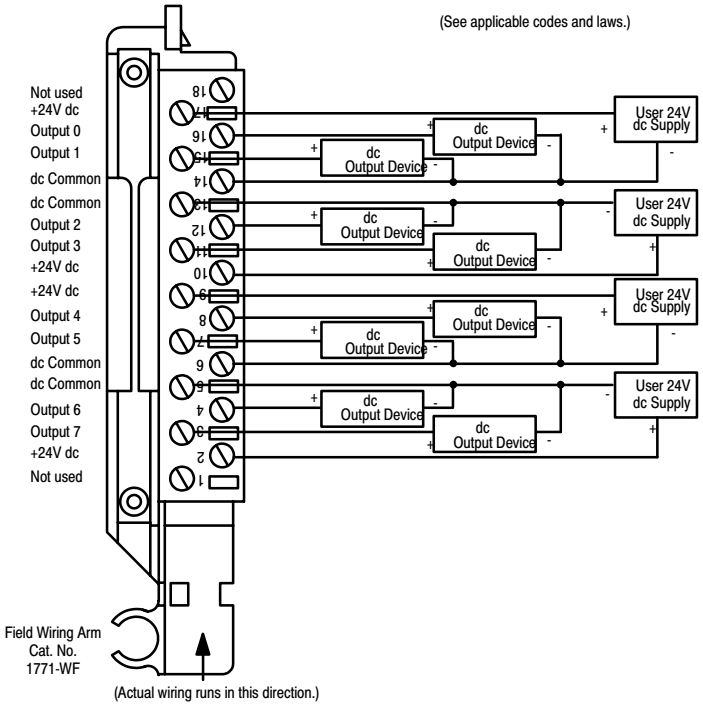
Connection to Input Modules. The 1771-OQ module can drive a 24V dc input module (cat. no. 1771-IB) if you have not removed the jumpers on the 1771-OQ.

Status Indicators. The module has eight red status indicators. Each status indicator provides field side indication of individual outputs. When an indicator is illuminated, the corresponding output circuit is closed.

Setting Jumper Configuration. This module contains soldered jumpers that limit the effects of noise. They must be removed when using certain output devices, such as solenoids. These jumpers are not reusable. Make certain that you will not be using a particular output for other uses before clipping the jumper. Use the figure below to locate the jumper.



Connection Diagram



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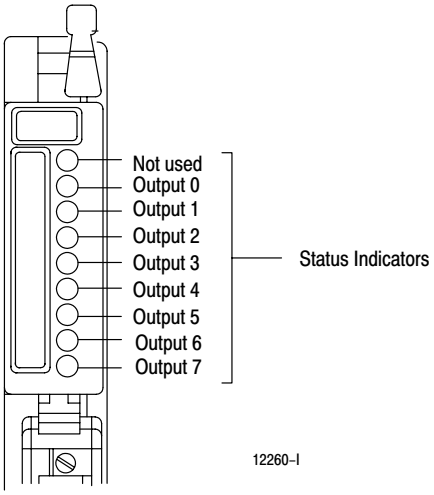
DC Output Module (Cat. No. 1771-OQ Series B)

Specifications (Cat. No. 1771-OQ/B)

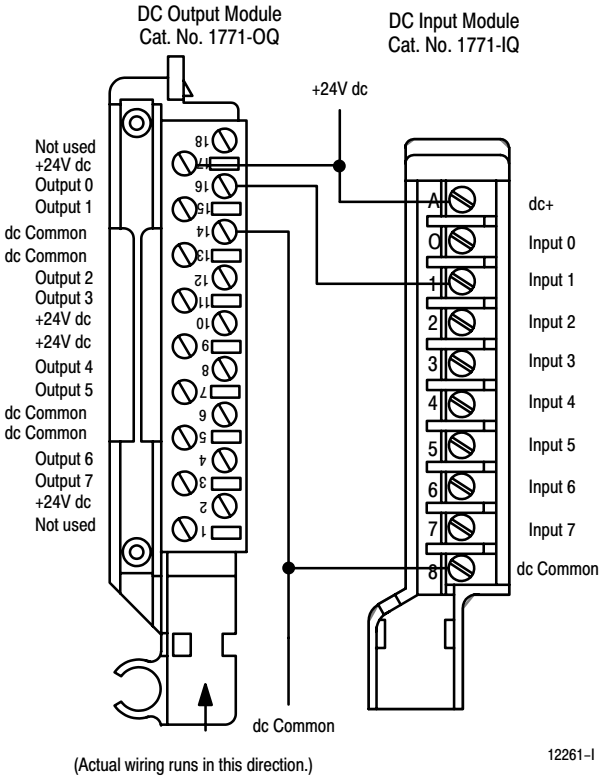
Outputs per Module	8 (4 groups of 2, each group sharing a common dc supply)
Module Location	1771 I/O chassis
Output Voltage Range	24V dc (+10%,–15%) Peaks of modulated ripple must be between 17–34V dc
Maximum Output Current	2.25A per output 2.25A per group 9A per module
Maximum Surge Current	4.0A for 10ms per output
Maximum On–state Voltage Drop	2V dc @ 2.25A
Maximum Off–state Leakage Current	1.0mA per output @ 34V dc, 25ºC
Maximum Power Rating	4.5W per output
Output Signal Delay	10ms on or off
Power Dissipation	19.1 Watts (max.), 1.1 Watts (min.)
Thermal Dissipation	65.1 BTU/hr (max.), 4.1 BTU/hr (min.)
Backplane Current	225mA
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0º to 60ºC (32º to 140ºF) –40º to 85ºC (–40º to 185ºF) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm^2) stranded maximum 3/64 inch (1.2mm) insulation maximum 1[1]
Fuses	2.5A, 3AG (1 per output pair)
Keying	Between 2 and 4 Between 10 and 12
Field Wiring Arm	Catalog Number 1771-WF
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.92

[1] You use this conductor-category for planning conductor routing as described in the system-level installation manual.

Status Indicators



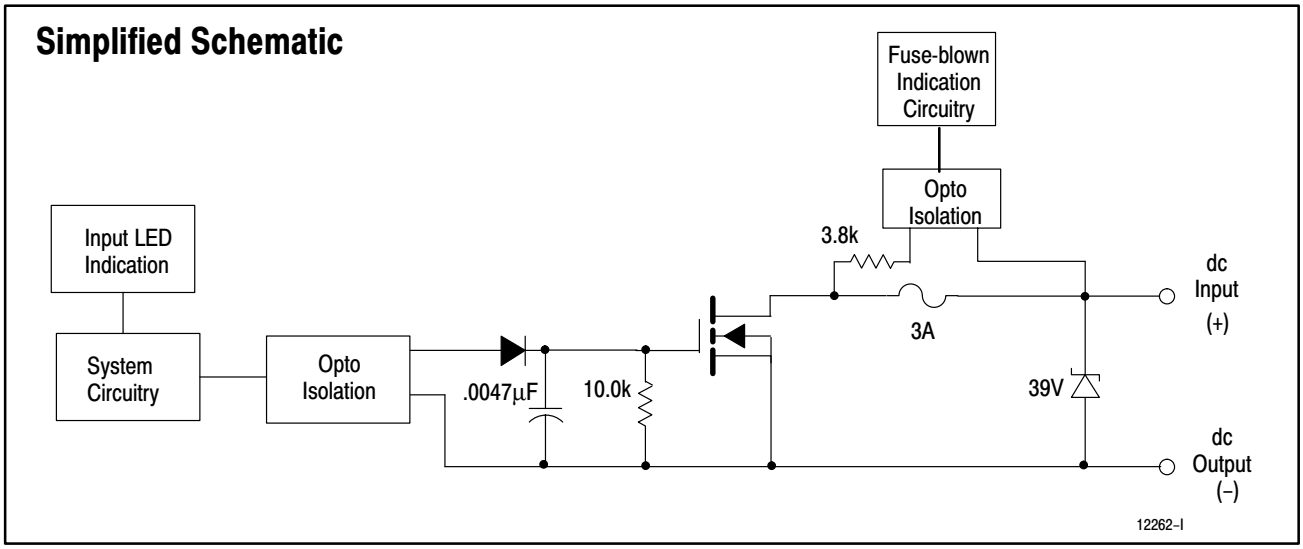
Sample Connection Diagram – Driving a 1771-IQ Module with a 1771-OQ Module



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DC Input Module (Cat. No. 1771-OQ16 Series B)

Simplified Schematic



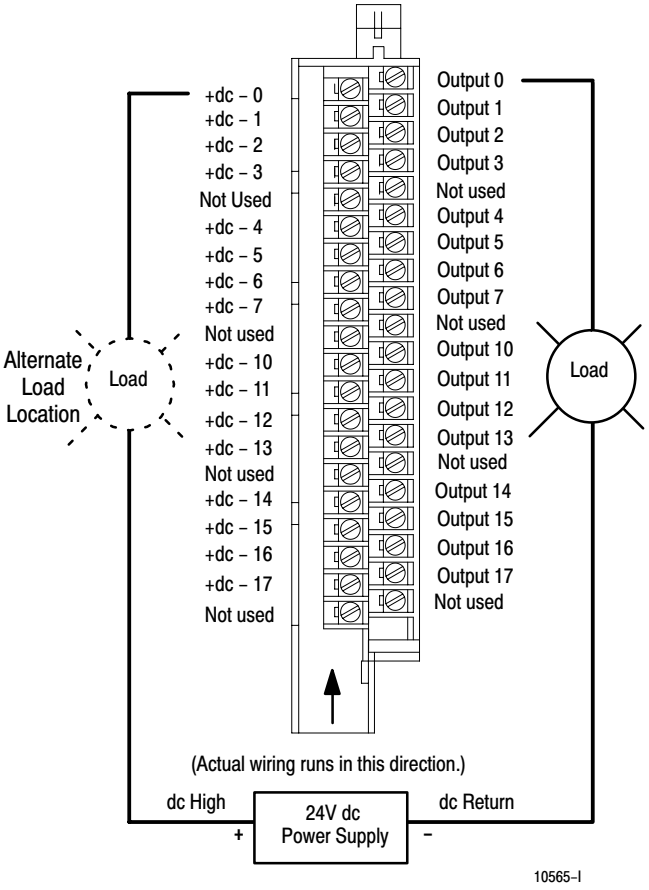
Application Notes

Device Compatibility. This module must be used in a series B I/O chassis. The 1771-OQ16 is not compatible with the 1771-AL local I/O adapter. This module is designed to operate with dc relays and other dc output devices

Connection to Input Modules. You can use an output of the 1771-OQ16 module to drive an input of a dc input module (cat. no. 1771-IQ16) to indicate status of turning on a motor starter, for example.

Status Indicators. The module has 18 indicators, consisting of 16 output status indicators, a fuse-blown indicator and an active indicator. The 16 status indicators are provided for system logic side indication of individual outputs. The active indicator lights when the module has successfully started up and initialized.The fuse-blown indicator lights when a fuse has cleared or been removed, the channel associated with that fuse has been turned “on”, the applied voltage to that channel is above the specified minimum “on” voltage, and the load is less than or equal to the maximum specified for this module. The fuse-blown indicator will reset after the fuse has been replaced and chassis power has been cycled.

Connection Diagram



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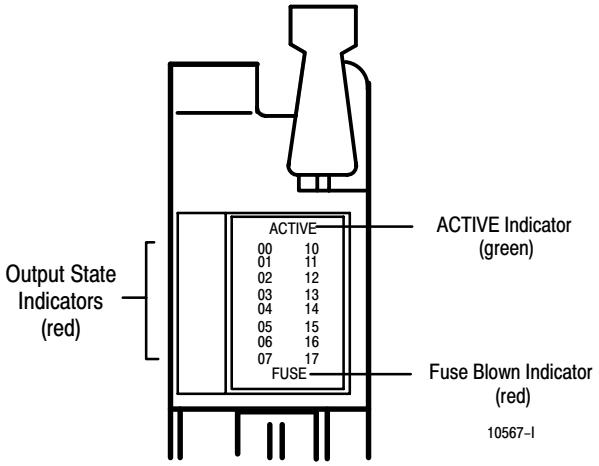
DC Output Module (Cat. No. 1771-OQ16 Series B)

Specifications (Cat. No. 1771-OQ16/B)

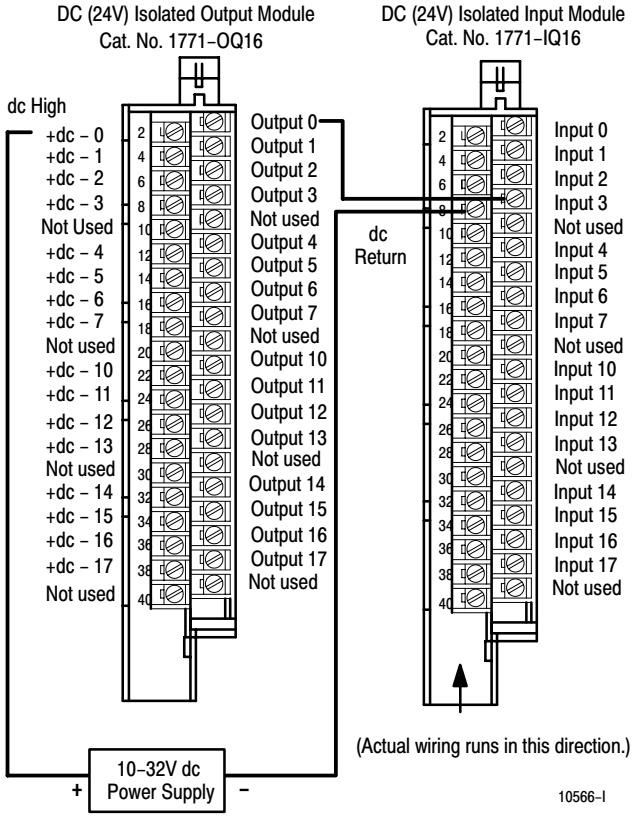
Outputs per Module	16
Module Location	Series B 1771 I/O Chassis
Output Voltage Range	10 to 32V dc
Minimum Output Current	5mA
Maximum Output Current	2.0A per output; 32.0A per module
Maximum On–state Voltage Drop	0.34V dc @ 2A
Maximum Off–state Leakage Current	0.5mA per output @ 32V dc, 25°C
Maximum Surge Current	4A for 10ms per output, repeatable every 2 sec.
Power Rating	0.68 Watts per output (max) @ 2A
Output Signal Delay	Turn On: 100usec (max); Turn Off: 300usec (max)
Power Dissipation	13.0 Watts (max); 2.0 Watts (min)
Thermal Dissipation	44.3 BTU/hr (max); 6.8 BTU/hr (min)
Backplane Current	400mA maximum
Isolation Voltage	1500V channel–to–channel 1500V channel to backplane
Maximum Cable Length	1000 ft (304.8 m)
Conductors Wire Size Category	14 gauge ($2mm^2$) stranded maximum[2] 3/64 inch (1.2mm) insulation maximum 1[1]
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) –40° to 85°C (–40° to 185°F) 5 to 95% (without condensation)
Fuses	3A 2AG Fast Acting fuses (1 per output) Littelfuse P/N 225003
Keying	Between 22 and 24 Between 32 and 34
Field Wiring Arm	Catalog Number 1771-WN
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-2.192

[1]You use this conductor-category information for planning conductor routing as described in the system-level installation manual.
[2] 14 gauge wire connected to all terminals may not allow the cover on the field wiring arm to close. A smaller gauge wire may be used.

Status Indicators



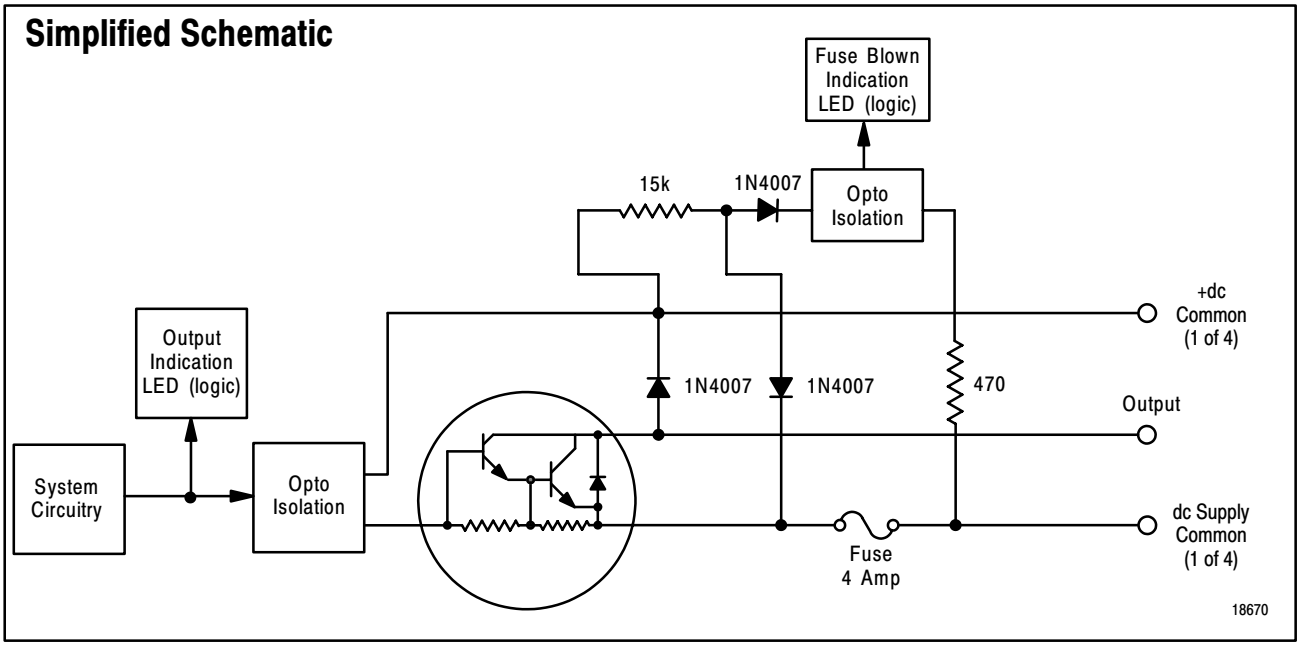
Sample Connection Diagram – Driving a 1771-IQ16 Module with a 1771-OQ16 Module



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DC Output Module (Cat. No. 1771-OVN Series B)

Simplified Schematic



Application Notes

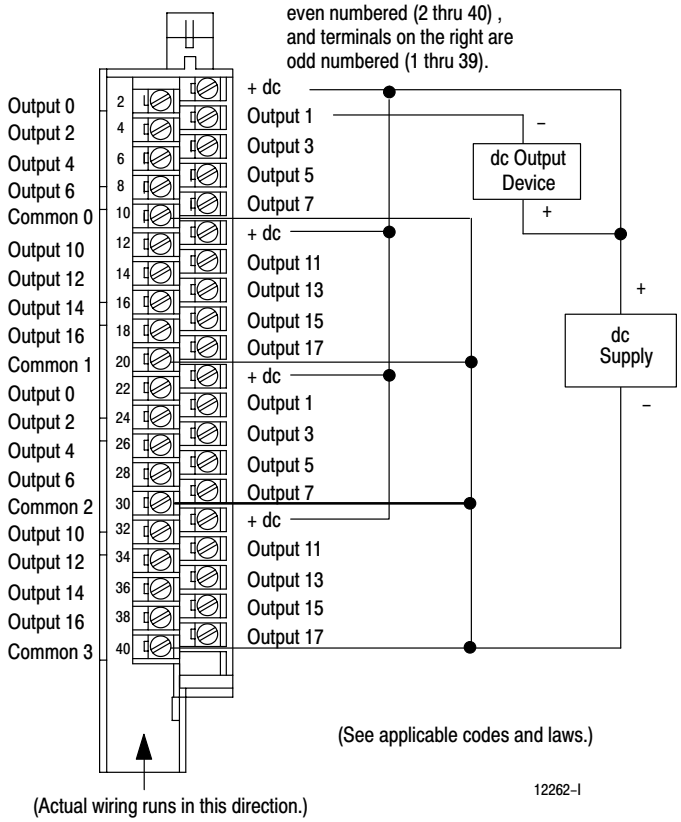
Device Compatibility. The 1771-OVN dc output module has sinking outputs which can interface with sourcing inputs. You must use this module in a series B 1771 I/O chassis. Do not place this module in the same I/O chassis as the 1771-IX thermocouple module. You can use this module in the same chassis as the 1771-IXE thermocouple module as long as you use 1/2-slot addressing.

Connection to Input Modules. A 1771-OVN module can directly drive terminals on a 1771-IVN input module. **Use the same dc supply to power both modules to ensure that ground is at the same potential.**

Status Indicators. The module has 32 status indicators. These represent the control status of the outputs. These are provided for system logic side indication of individual outputs. An additional indicator is provided to indicate a blown fuse condition.

Connection Diagram

Note: Terminals on the left are even numbered (2 thru 40) , and terminals on the right are odd numbered (1 thru 39).



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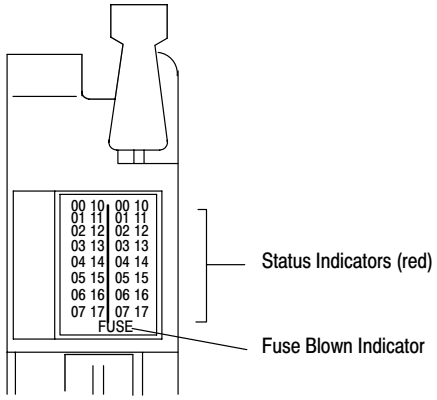
DC Output Module (Cat. No. 1771-OVN Series B)

Specifications (Cat. No. 1771-OVN/B)

Outputs per module	32 (4 groups of 8)
Module Location	Series B 1771 I/O Chassis
Output Voltage Range	10 to 30V dc
Maximum Output Current	0.5A per output 2A per group 8A per module
Maximum Surge Current	2A per output for 10ms; repeatable every 2sec. 5A per output group for 10ms.; repeatable every 2sec. 20A per module for 10ms.; repeatable every 2sec.
Maximum Off–state Leakage Current	1.0mA per output @ 30V dc, 55ºC
Maximum On–state Voltage Drop	1.5V dc at 2A
Maximum Power Rating	3W per output
Output Signal Delay	On to off propagation delay 2.0msec Off to on propagation delay 0.1msec
Power Dissipation	13.7W (max); 1.7W (min)
Thermal Dissipation	46.7 BTU/hr (max); 5.7 BTU/hr (min)
Backplane Current	330mA @ 5V dc maximum
Isolation Voltage	1500V ac rms
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0º to 60ºC (32º to 140ºF) –40º to 85ºC (–40º to 185ºF) 5 to 95% (without condensation)
Conductors Wire Size Category	14 gauge (2mm^2) stranded (max)[2] 3/64 inch (1.2mm) insulation (max) 1[1]
Fuses	Four 4.0A, 250V normal blow fuses (1 per group)
Keying	Between 14 and 16 Between 32 and 34
Field Wiring Arm	1771-WN
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Installation Instructions	1771-5.36

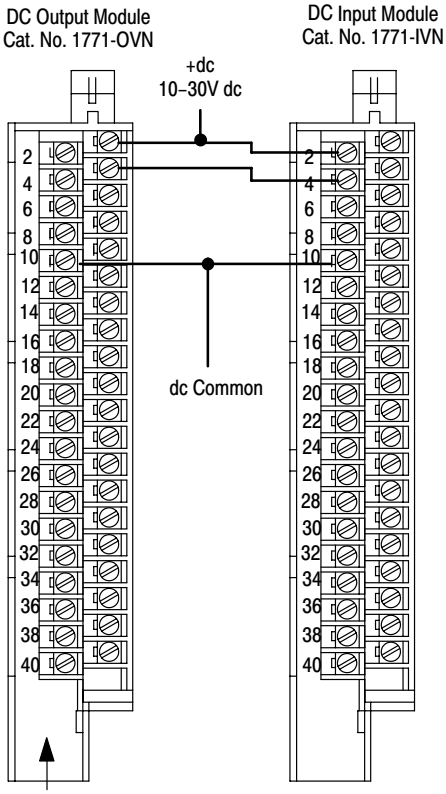
[1]You use this conductor-category information for planning conductor routing as described in the system-level installation manual.
[2] 14 gauge wire connected to all terminals may not allow the cover on the field wiring arm to close. A smaller gauge wire may be used.

Status Indicators



12263–I

Sample Connection Diagram – Driving a 1771-IVN Module with a 1771-OVN Module



(Actual wiring runs in this direction.)

12264–I

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Notes

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