

# 1769 Compact I/O Modules Specifications

Catalog Numbers 1769 Series

| Topic                           | Page |
|---------------------------------|------|
| Summary of Changes              | 2    |
| I/O Module Overview             | 2    |
| Place Compact I/O Modules       | 4    |
| Digital I/O Modules             | 4    |
| Analog I/O Modules              | 5    |
| Specialty I/O Modules           | 5    |
| Compact I/O Accessories         | 116  |
| Compact I/O Mounting Dimensions | 120  |
| Wiring Systems                  | 121  |
| Additional Resources            | 121  |



The 1769 Compact I/O™ modules can be used in the following applications:

- With a CompactLogix™ controller
- For expansion I/O in a MicroLogix™ 1500 controller assembly
- In an assembly with a 1769-ADN DeviceNet adapter
- In an assembly with a 1769-AENTR Ethernet adapter.

Unless connected to a MicroLogix 1500 base, each bank of I/O modules must include its own power supply.

Install the I/O modules on a panel with two mounting screws or on a DIN rail. The modules mechanically lock together with a tongue-and-groove design and have an integrated communication bus that is connected from module to module by a moveable bus connector.



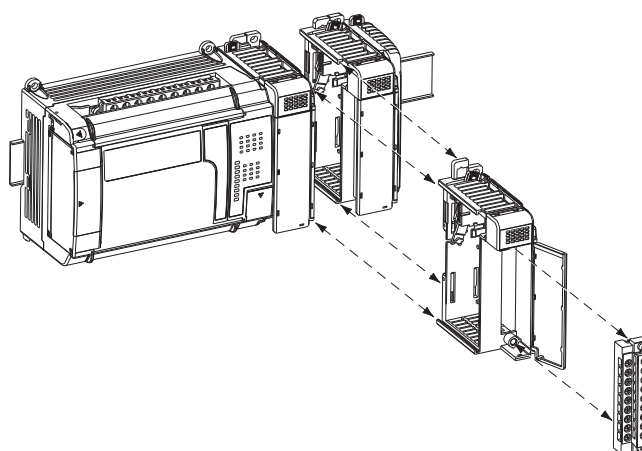
## Summary of Changes

This manual contains new and updated information. Changes throughout this revision are marked by change bars, as shown to the right of this paragraph.

| Topic                                                    | Page |
|----------------------------------------------------------|------|
| Updated information for Compact I/O modules applications | 1    |
| Updated specifications in Table 51                       | 51   |
| Updated description of 1769-ARM module                   | 102  |

## I/O Module Overview

Each I/O module includes a built-in removable terminal block with fingersafe cover for connections to I/O sensors and actuators. The terminal block is behind a door at the front of the module. I/O wiring can be routed from beneath the module to the I/O terminals.



- Once the modules are locked together, the system becomes a rugged assembly.
- Upper and lower tongue-and-groove slots guide the module during installation and secure the module within the system.
- Removable terminal blocks help ease the wiring task.
- Self-lifting, field-wire pressure plates cut installation time.
- The patented bus connector with the lock function enables consistent and system communication.
- A color bar is provided on the front of the module.
- Digital and field circuits are optically isolated.

## Available 1769 I/O Modules

| I/O Type   | Cat. No.                       | Page                | Cat. No.                     | Page                |
|------------|--------------------------------|---------------------|------------------------------|---------------------|
| AC digital | <a href="#">1769-IA8I</a>      | <a href="#">6</a>   | <a href="#">1769-OA8</a>     | <a href="#">57</a>  |
|            | <a href="#">1769-IA16</a>      | <a href="#">8</a>   | <a href="#">1769-OA16</a>    | <a href="#">60</a>  |
|            | <a href="#">1769-IM12</a>      | <a href="#">35</a>  |                              |                     |
| DC digital | <a href="#">1769-IG16</a>      | <a href="#">33</a>  | <a href="#">1769-OB8</a>     | <a href="#">63</a>  |
|            | <a href="#">1769-IQ16</a>      | <a href="#">37</a>  | <a href="#">1769-OB16</a>    | <a href="#">64</a>  |
|            | <a href="#">1769-IQ16F</a>     | <a href="#">39</a>  | <a href="#">1769-OB16P</a>   | <a href="#">67</a>  |
|            | <a href="#">1769-IQ32</a>      | <a href="#">41</a>  | <a href="#">1769-OB32</a>    | <a href="#">69</a>  |
|            | <a href="#">1769-IQ32T</a>     | <a href="#">43</a>  | <a href="#">1769-OB32T</a>   | <a href="#">72</a>  |
|            | <a href="#">1769-IQ6XOW4</a>   | <a href="#">45</a>  | <a href="#">1769-OG16</a>    | <a href="#">90</a>  |
|            |                                |                     | <a href="#">1769-OV16</a>    | <a href="#">92</a>  |
|            |                                |                     | <a href="#">1769-OV32T</a>   | <a href="#">94</a>  |
| Contact    | <a href="#">1769-OW8</a>       | <a href="#">96</a>  | <a href="#">1769-OW16</a>    | <a href="#">100</a> |
|            | <a href="#">1769-OW8I</a>      | <a href="#">98</a>  |                              |                     |
| Analog     | <a href="#">1769-IF4</a>       | <a href="#">10</a>  | <a href="#">1769-OF2</a>     | <a href="#">74</a>  |
|            | <a href="#">1769-IF4I</a>      | <a href="#">13</a>  | <a href="#">1769-OF4</a>     | <a href="#">76</a>  |
|            | <a href="#">1769-IF4XOF2</a>   | <a href="#">16</a>  | <a href="#">1769-OF4CI</a>   | <a href="#">79</a>  |
|            | <a href="#">1769-IF4FXOF2F</a> | <a href="#">19</a>  | <a href="#">1769-OF4VI</a>   | <a href="#">82</a>  |
|            | <a href="#">1769-IF8</a>       | <a href="#">24</a>  | <a href="#">1769-OF8C</a>    | <a href="#">85</a>  |
|            | <a href="#">1769-IF16C</a>     | <a href="#">28</a>  | <a href="#">1769-OF8V</a>    | <a href="#">87</a>  |
|            | <a href="#">1769-IF16V</a>     | <a href="#">30</a>  |                              |                     |
|            | <a href="#">1769-IR6</a>       | <a href="#">48</a>  |                              |                     |
|            | <a href="#">1769-IT6</a>       | <a href="#">53</a>  |                              |                     |
| Specialty  | <a href="#">1769-ARM</a>       | <a href="#">102</a> | <a href="#">1769-BOOLEAN</a> | <a href="#">105</a> |
|            | <a href="#">1769-ASCI</a>      | <a href="#">103</a> | <a href="#">1769-HSC</a>     | <a href="#">109</a> |

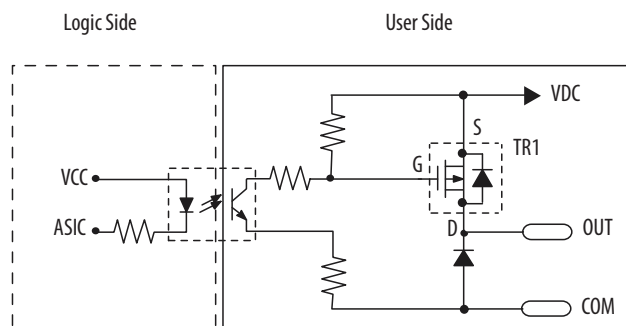
**Table 1 - Environmental Specifications - 1769 I/O Modules**

| Attribute                                                                                                                                                                                                       | 1769-IA8I, 1769-IA16, 1769-IM12, 1769-OA8, 1769-OA16, 1769-IQ16, 1769-IQ16F, 1769-IQ32, 1769-IQ6XOW4, 1769-OB8, 1769-OB16, 1769-OB16P, 1769-OB32, 1769-OV16, 1769-OW8, 1769-OW8I, 1769-OW16 1769-IF4, 1769-IF4XOF2, 1769-IR6, 1769-IT6 1769-ARM, 1756-HSC | 1769-IG16, 1769-IQ32T, 1769-OB32T, 1769-OG16, 1769-OV32T 1769-IF4I, 1769-IF8, 1769-IF16C, 1769-IF16V, 1769-OF2, 1769-OF4CI, 1769-OF4VI, 1769-OF8C, 1769-OF8V, 1769-IF4FXOF2F 1769-ASCI, 1769-BOOLEAN |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)                                         | 0...60 °C (32...140 °F)                                                                                                                                                                                                                                   | 0...60 °C (32...140 °F)                                                                                                                                                                              |
| Temperature, storage<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...85 °C (-40...185 °F)                                                                                                                                                                                                                                | -40...85 °C (-40...185 °F)                                                                                                                                                                           |
| Relative humidity<br>IEC 60068-2-30 (Test Db, Unpackaged Nonoperating Damp Heat)                                                                                                                                | 5...95% noncondensing                                                                                                                                                                                                                                     | 5...95% noncondensing                                                                                                                                                                                |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)                                                                                                                                                                 | Operating: 5 g @ 10...500 Hz<br>Relay operating: 2 g                                                                                                                                                                                                      | 5 g @ 10...500 Hz                                                                                                                                                                                    |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)                                                                                                                                                  | Panel mount 30 g<br>DIN rail mount 20 g                                                                                                                                                                                                                   | Panel mount 30 g<br>DIN rail mount 20 g                                                                                                                                                              |
| Shock, relay operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)                                                                                                                                            | Panel mount 7.5 g<br>DIN rail mount 5 g                                                                                                                                                                                                                   | —                                                                                                                                                                                                    |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)                                                                                                                                               | Panel mount 40 g<br>DIN rail mount 30 g                                                                                                                                                                                                                   | Panel mount 40 g<br>DIN rail mount 30 g                                                                                                                                                              |

# 1769-OB32T

Compact solid-state 24V DC source, terminated output module

Simplified Output Circuit Diagram



1769-OB32T

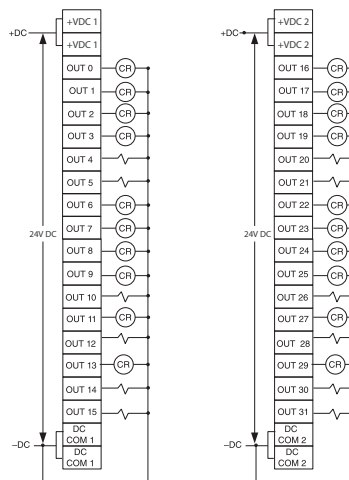


Table 71 - Technical Specifications - 1769-OB32T

| Attribute                                     | 1769-OB32T                                                                                                                                                              |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Outputs                                       | 32 terminated (16 points/group)                                                                                                                                         |
| Voltage category                              | 24V DC source                                                                                                                                                           |
| Operating voltage range                       | 10.2...26.4V DC                                                                                                                                                         |
| Output delay, on                              | 0.5 ms                                                                                                                                                                  |
| Output delay, off                             | 4.0 ms                                                                                                                                                                  |
| Current draw @ 5.1V                           | 220 mA                                                                                                                                                                  |
| Heat dissipation, max                         | 4.76 W                                                                                                                                                                  |
| Off-state leakage current, max <sup>(1)</sup> | 0.1 mA @ 26.4V DC                                                                                                                                                       |
| On-state current, min                         | 1.0 mA                                                                                                                                                                  |
| On-state voltage drop, max                    | 0.3V DC @ 0.5 A                                                                                                                                                         |
| Current per point, max                        | 0.5 A                                                                                                                                                                   |
| Current per module, max                       | 4.0 A                                                                                                                                                                   |
| Surge current <sup>(2)</sup>                  | 2.0 A for 10 ms, repeatable every 2 s                                                                                                                                   |
| Isolation voltage                             | Verified by one of the following dielectric tests: 1200V AC for 2 s or 1697V DC for 2 s, output point to bus 75V DC working voltage (IEC Class 2 reinforced insulation) |
| Weight, approx                                | 230 g (0.51 lb)                                                                                                                                                         |
| Dimensions (HxWxD), approx                    | 118 x 35 x 87 mm (4.65 x 1.38 x 3.43 in.)<br>Height with mounting tabs 138 mm (5.43 in.)                                                                                |
| Slot width                                    | 1                                                                                                                                                                       |
| Module location                               | DIN rail or panel mount                                                                                                                                                 |
| Power supply                                  | 1769-PA2, 1769-PB2, 1769-PA4, 1769-PB4                                                                                                                                  |
| Power supply distance rating                  | 8 modules                                                                                                                                                               |
| Terminal screw torque                         | 0.68 N•m (6 lb•in)                                                                                                                                                      |
| Retaining screw torque                        | 0.46 N•m (4.1 lb•in)                                                                                                                                                    |

**Table 71 - Technical Specifications - 1769-OB32T**

| Attribute             | 1769-OB32T                                    |
|-----------------------|-----------------------------------------------|
| Wire size             | (22...14 AWG) solid<br>(22...16 AWG) stranded |
| Wire type             | Cu-90 °C (194 °F)                             |
| Replacement connector | 1746-N3 (1 connector, 40 terminals)           |
| Vendor ID code        | 1                                             |
| Product type code     | 7                                             |
| Product code          | 79                                            |
| Enclosure type rating | None (open style)                             |

- (1) To limit the effects of leakage current through solid-state outputs, a loading resistor can be connected in parallel with your load. Use a 5.6 k $\Omega$ , 1/2 W resistor for transistor outputs, 24V DC operation.  
 (2) Use a 1N4004 diode reverse-wired across the load for transistor outputs switching 24V DC inductive loads.

**Table 72 - Certifications - 1769-OB32T**

| Certification <sup>(1)</sup> | 1769-OB32T                                                                                                                                                 |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| c-UL                         | C-UL certified (under CSA C22.2 No. 142)<br>UL 508 listed<br>Class I, Division 2 Group A,B,C,D Hazardous Locations (UL 1604, C-UL under CSA C22.2 No. 213) |
| CE                           | CE compliant for all applicable directives                                                                                                                 |
| C-Tick                       | C-Tick compliant for all applicable directives<br>Australian Radiocommunications Act, compliant with:<br>• AS/NZS CISPR 11; Industrial Enclosure           |

- (1) When marked. See the Product Certification link at <http://www.rockwellautomation.com/global/certification/overview.page> for Declarations of Conformity, Certificates, and other certification details.