

1769 Compact I/O Modules Specifications

Catalog Numbers

Digital I/O Modules	1769-IA8I, 1769-IA8IK, 1769-IA16, 1769-IA16K, 1769-IM12, 1769-OA8, 1769-OA16, 1769-OA16K, 1769-IG16, 1769-IQ16, 1769-IQ16K, 1769-IQ16F, 1769-IQ32, 1769-IQ32K, 1769-IQ32T, 1769-IQ6XOW4, 1769-OB8, 1769-OB8K, 1769-OB16, 1769-OB16K, 1769-OB16P, 1769-OB32, 1769-OB32K, 1769-OB32T, 1769-OG16, 1769-OV16, 1769-OV32T
Contact I/O Modules	1769-OW8, 1769-OW8I, 1769-OW8IK, 1769-OW16, 1769-OW16K
Analog I/O Modules	1769-IF4, 1769-IF4K, 1769-IF4I, 1769-IF4XOF2, 1769-IF4XOF2K, 1769-IF4FXOF2F, 1769-IF8, 1769-IF8K, 1769-IF16C, 1769-IF16V, 1769-IR6, 1769-IT6, 1769-OF2, 1769-OF2K, 1769-OF4, 1769-OF4K, 1769-OF4CI, 1769-OF4VI, 1769-OF8C, 1769-OF8V
Specialty Modules	1769-ARM, 1769-ASCII, 1769-BOOLEAN, 1769-HSC, 1769-SM2
Accessories	1769-ECL, 1769-ECLK, 1769-ECR, 1769-ECRK, 1769-ECL, 1769-ECLK, 1769-ECR, 1769-ECRK, 1769-CLL1, 1769-CRR1, 1769-CRL1, 1769-CLL3, 1769-CRR3, 1769-CRL3

Topic	Page
Summary of Changes	2
I/O Module Overview	2
Environmental Specifications	2
Certifications	3
Place Compact I/O Modules	4
Digital I/O Modules	5
Contact I/O Modules	25
Analog I/O Modules	29
Specialty I/O Modules	53
Compact I/O Mounting Dimensions	61
Compact I/O Accessories	61
Wiring Systems	64
Additional Resources	65

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

- With a 1769 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 movable bus connector.

Summary of Changes

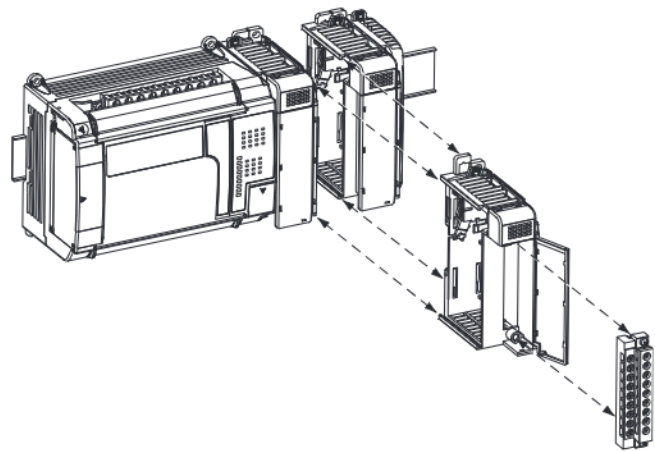
This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Added modules: 1769-IA16K, 1769-IA81K, 1769-IF4K, 1769-IF4XOF2K, 1769-IF8K, 1769-IQ16K, 1769-IQ32K, 1769-OA16K, 1769-OB16K, 1769-OB32K, 1769-OB8K, 1769-OF2K, 1769-OF4K, 1769-OW16K, 1769-OW81K, 1769-SM2	Throughout
Updated certifications	3

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 attach the module to 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.



Environmental Specifications⁽¹⁾

Attribute	1769-IA8I, 1769-IA81K, 1769-IA16, 1769-IA16K, 1769-IF4, 1769-IF4K, 1769-IF4XOF2, 1769-IF4XOF2K, 1769-IM12, 1769-IQ16, 1769-IQ16K, 1769-IQ16F, 1769-IQ32, 1769-IQ32K, 1769-IQ6XOW4, 1769-IR6, 1769-IT6, 1769-OA8, 1769-OA16, 1769-OA16K, 1769-OB8, 1769-OB8K, 1769-OB16, 1769-OB16K, 1769-OB16P, 1769-OB32, 1769-OB32K, 1769-OV16, 1769-OW8, 1769-OW8I, 1769-OW81K, 1769-OW16, 1769-OW16K, 1769-ARM, 1756-HSC	1769-IG16, 1769-IF4FXOF2F, 1769-IF4I, 1769-IF8, 1769-IF8K, 1769-IF16C, 1769-IF16V, 1769-IQ32T, 1769-OB32T, 1769-OG16, 1769-OV32T, 1769-OF2, 1769-OF2K, 1769-OF4, 1769-OF4K, 1769-OF4CI, 1769-OF4VI, 1769-OF8C, 1769-OF8V, 1769-ASCII, 1769-BOOLEAN
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0...60 °C (32...140 °F)	
Temperature, nonoperating IEC 60068-2-1 (Test Allen-Bradley®, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)	
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Nonoperating Damp Heat)	5...95% noncondensing	
Vibration IEC 60068-2-6 (Test Fc, Operating)	Operating: 5 g @ 10...500 Hz Relay operating: 2 g	5 g @ 10...500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	Panel mount 30 g DIN rail mount 20 g	
Shock, relay operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	Panel mount 7.5 g DIN rail mount 5 g	—
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	Panel mount 40 g DIN rail mount 30 g	

(1) Environmental Specifications for the 1769-SM2 module are found on page 60.

Certifications

Certifications - 1769 Compact I/O Digital and Contact Modules

Certification ⁽¹⁾	1769-IA8I, 1769-IA8IK, 1769-IA16, 1769-IA16K, 1769-OA8, 1769-OA16, 1769-OA16K, 1769-OW8, 1769-OW8I, 1769-OW8IK, 1769-OW16, 1769-OW16K	1769-IM12, 1769-IQ6XOW4	1769-IG16, 1769-IQ16, 1769-IQ16K, 1769-IQ16F, 1769-IQ32, 1769-IQ32K, 1769-IQ32T, 1769-OB8, 1769-OB8K, 1769-OB16, 1769-OB16K, 1769-OB16P, 1769-OB32, 1769-OB32K, 1769-OB32T, 1769-OG16, 1769-OV16, 1769-OV32T
c-UL-us	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E334470.		
UKCA and CE	UK Statutory Instrument 2016 No. 1101 and European Union 2014/35/EU LVD Directive, compliant with: EN 61131-2; Programmable Controllers (pertinent LVD sections only) UK Statutory Instrument 2016 No. 1091 and European Union 2014/30/EU EMC Directive, compliant with: EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions UK Statutory Instrument 2012 No. 3032 and European Union 2011/65/EU RoHS Directive, compliant with: EN IEC 63000; Technical Documentation		UK Statutory Instrument 2016 No. 1091 and European Union 2014/30/EU EMC Directive, compliant with: EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions UK Statutory Instrument 2012 No. 3032 and European Union 2011/65/EU RoHS, compliant with: EN IEC 63000; Technical Documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions		
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3		
Morocco	Arrêté ministériel n° 6404-15 du 1er muharram 1437 Arrêté ministériel n° 6404-15 du 29 ramadan 1436		

(1) When marked. See the Product Certification link at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.

Certifications - 1769 Compact I/O Analog Modules

Certification ⁽¹⁾	1769-IF4, 1769-IF4K, 1769-IF4XOF2, 1769-IF4XOF2K, 1769-IF4FXOF2F, 1769-IF8, 1769-IF8K, 1769-OF2, 1769-OF2K	1769-IF4I, 1769-IT6, 1769-OF4CI, 1769-OF4VI, 1769-OF8C, 1769-OF8V	1769-IF16C, 1769-IF16V	1769-IR6	1769-OF4, 1769-OF4K
c-UL-us	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E334470.	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E10314. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E10314.	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E322657. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E334470.
UKCA and CE	UK Statutory Instrument 2016 No. 1091 and European Union 2014/30/EU EMC Directive, compliant with: EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions UK Statutory Instrument 2012 No. 3032 and European Union 2011/65/EU RoHS, compliant with: EN IEC 63000; Technical documentation				
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions				
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3				
Morocco	Arrêté ministériel n° 6404-15 du 1er muharram 1437 Arrêté ministériel n° 6404-15 du 29 ramadan 1436				

(1) When marked. See the Product Certification link at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.

Certifications - Specialty Modules

Certification ⁽¹⁾	1769-ARM, 1769-ASCII, 1769-BOOLEAN	1769-HSC	1769-SM2 ⁽²⁾⁽³⁾
c-UL-us	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E334470.	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E322657. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E334470.	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E59272.
UKCA and CE	UK Statutory Instrument 2016 No. 1091 and European Union 2014/30/EU EMC Directive, compliant with: EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions UK Statutory Instrument 2012 No. 3032 and European Union 2011/65/EU RoHS, compliant with: EN IEC 63000; Technical documentation		
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions		
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3		
Morocco	Arrêté ministériel n° 6404-15 du 1er muharram 1437 Arrêté ministériel n° 6404-15 du 29 ramadan 1436		

(1) When marked. See the Product Certification link at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.

(2) In a domestic environment, this product can cause radio interference in which case supplementary mitigation measures can be required.

(3) To remain CE, a ferrite core (Fair-Rite part number 2643102002) must be added to DSI communication cables longer than 10 m (33 ft.), and the core must be attached within 305 mm (12 in.) of the 1769-SM2 module.

Place Compact I/O Modules

You can DIN rail or panel mount the controller and I/O modules. The number of local I/O modules that are supported depends on the controller.

Controller	Supports	Location	Considerations
1769-L24ER-QB1B 1769-L24ER-QBFC1B 1769-L27ERM-QBFC1B	4 local modules	Right side of the controller	The additional modules are connected directly to the controller. There are no additional banks of local I/O.
1769-L30ER 1769-L30ERM 1769-L30ER-NSE	8 local modules	1 separate bank	Standard 1769 power supplies power the additional banks and connect to the main rack by using standard 1769 expansion cables.
1769-L33ER 1769-L33ERM	16 local modules	2 separate banks	
1769-L36ERM	30 local modules	3 separate banks	
1769-L23E-QB1B 1769-L23E-QBFC1B 1769-L23-QBFC1B	2 local modules, V17 and earlier	Right side of the packaged controller	The additional modules are connected directly to the packaged controller. There are no additional banks of local I/O.
1769-L23E-QB1B	3 local modules, v18 and later		
1769-L35CR 1769-L35E	30 local modules	3 separate banks	Standard 1769 power supplies power the additional banks and connect to the main rack by using standard 1769 expansion cables.
1769-L32C 1769-L32E 1769-L31	16 local modules	3 separate banks	
1768-L43	16 local modules	3 separate banks	
1768-L45	30 local modules	3 separate banks	As many as eight 1769 local modules can be attached to the 1768 backplane. The remaining modules can be in one or two additional I/O banks. Standard 1769 power supplies power the additional banks and connect to the main rack by using standard 1769 expansion cables.

Each 1769 Compact I/O module has a distance rating. In 1769 systems, the distance rating is the number of modules between the specific module and the 1769 power supply. In a 1768 system, the distance rating is the number of modules between the specific I/O module and the 1768 controller.

Digital I/O Modules

Choose digital I/O modules when you need these features.

Type	Description
Input	<p>An input module responds to an input signal in this manner:</p> <ul style="list-style-type: none"> • Input filtering limits the effect of voltage transients that contact bounce and/or electrical noise cause. If not filtered, voltage transients could produce false data. All input modules use input filtering. • Optical isolation shields logic circuits from possible damage due to electrical transients. • Logic circuits process the signal. • An input indicator turns on or off, which indicates the status of the corresponding input device.
Output	<p>An output module controls the output signal in this manner:</p> <ul style="list-style-type: none"> • Logic circuits determine the output status. • An output indicator displays the status of the output signal. • Optical isolation separates module logic and bus circuits from field power. • The output driver turns the corresponding output on or off.

Most output modules have built-in surge suppression to reduce the effects of high-voltage transients. Use an additional suppression device if an output is being used to control inductive devices, such as relays, motor starters, solenoids, or motors.

Additional suppression is especially important if your inductive device is in series with or parallel to hard contacts, such as push buttons or selector switches. Add a suppression device directly across the coil of an inductive device. The suppression device reduces the effects of voltage transients that are caused by interrupting the current to that device and to prolong the life of the switch contacts.

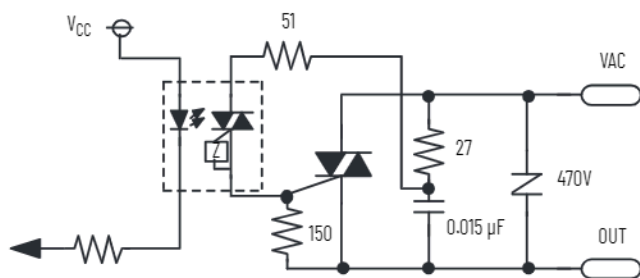
These digital modules are available.

I/O Type	Cat. No.	Description	Page
AC digital input	1769-IA81, 1769-IA81K	Compact individually isolated 120V AC input module	6
	1769-IA16, 1769-IA16K	Compact 120V AC input module	7
	1769-IM12	Compact 240V AC input module	8
AC digital output	1769-OA8	Compact 100/240V AC solid-state output module	9
	1769-OA16, 1769-OA16K	Compact 120/240V AC solid-state output module	10
DC digital input	1769-IG16	Compact TTL input module	11
	1769-IQ16, 1769-IQ16K	Compact 24V DC sink/source input module	12
	1769-IQ16F	Compact 24V DC sink/source, high-speed input module	13
	1769-IQ32, 1769-IQ32K	Compact 24V DC sink/source input module	14
	1769-IQ32T	Compact 24V DC sink/source, terminated input module	15
	1769-IQ6XOW4	Compact combination 24V DC sink/source input and AC/DC relay output module	16
DC digital output	1769-OB8, 1769-OB8K	Compact solid-state 24V DC source, high-current output module	17
	1769-OB16, 1769-OB16K	Compact solid-state 24V DC source output module	18
	1769-OB16P	Compact solid-state 24V DC source, protected output module	19
	1769-OB32, 1769-OB32K	Compact solid-state 24V DC source output module	20
	1769-OB32T	Compact solid-state 24V DC source, terminated output module	21
	1769-OG16	Compact TTL output module	22
	1769-OV16	Compact solid-state 24V DC sink output module	23
	1769-OV32T	Compact solid-state 24V DC sink, terminated output module	24

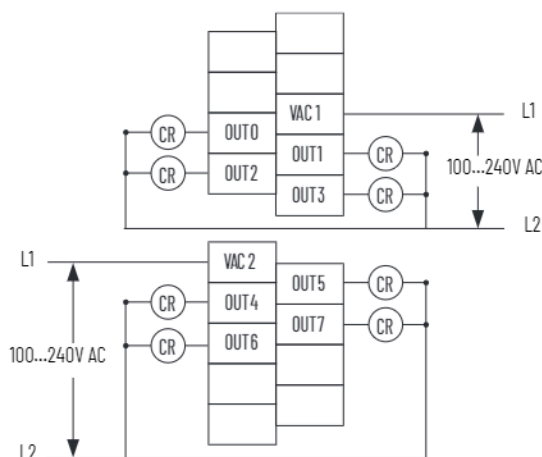
1769-OA8

Compact 100/240V AC solid-state output module

Simplified Output Circuit Diagram



Output Wiring



Technical Specifications - 1769-OA8

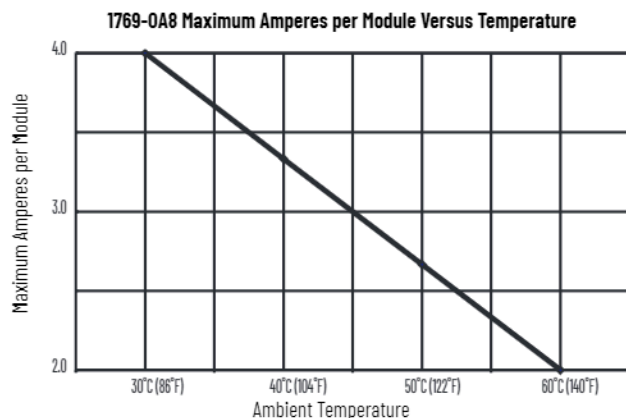
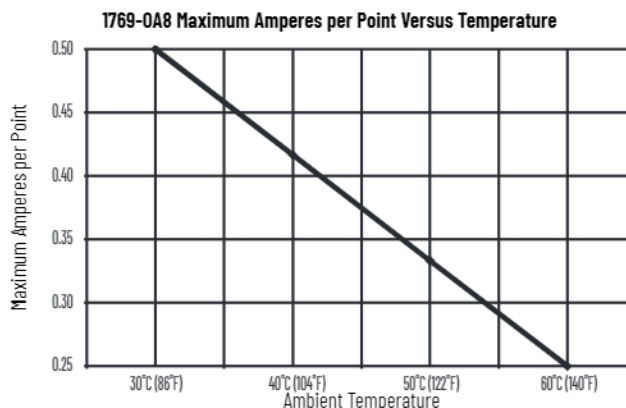
Attribute	1769-OA8
Outputs	8 (4 points/group)
Voltage category	100/240V AC
Operating voltage range	85...265V AC 47...63 Hz
Output delay, on ⁽¹⁾	1/2 cycle
Output delay, off ⁽¹⁾	1/2 cycle
Current draw @ 5.1V	145 mA
Heat dissipation, max	2.12 W
Off-state leakage current, max ⁽²⁾	2.0 mA @ 132V AC 2.5 mA @ 265V AC
On-state current, max	10 mA
On-state voltage drop, max	1.5V peak @ 2 A
Current per point, max	0.25 A @ 60 °C 0.5 A @ 30 °C
Current per module, max	2 A @ 60 °C 4 A @ 30 °C
Surge current ⁽³⁾	10 A for 25 ms, repeatable every 2 s
Isolation voltage	Verified by one of these dielectric tests: 1836V AC for 1 s or 2596V DC for 1 s, group to group 265V AC working voltage (basic insulation) 150V AC working voltage (IEC Class II reinforced insulation)
Weight, approx	280 g (0.61 lb)

Technical Specifications - 1769-OA8

Attribute	1769-OA8
Dimensions (HxWxD), approx	118 x 35 x 87 mm (4.65 x 1.38 x 3.43 in.) 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)
Wire size	(22...14 AWG) solid (22...16 AWG) stranded
Wire type	Cu-90 °C (194 °F)
Replacement terminal block	1769-RTBN10 (1 per kit)
Replacement door label	1769-RL1 (2 per kit)
Replacement door	1769-RD (2 per kit)
Vendor ID code	1
Product type code	7
Product code	84
Enclosure type rating	None (open style)

- (1) Triac outputs turn on and off at AC line zero cross.
- (2) To limit the effects of leakage current through solid-state outputs, a loading resistor can be connected in parallel with your load. For 120V AC operation, use a 15 kW, 2 W resistor. For 240V AC operation, use a 5 kW, 5 W resistor.
- (3) If you connect surge suppressors across your external load, you extend the life of the triac outputs.

Temperature Derating - 1769-OA8

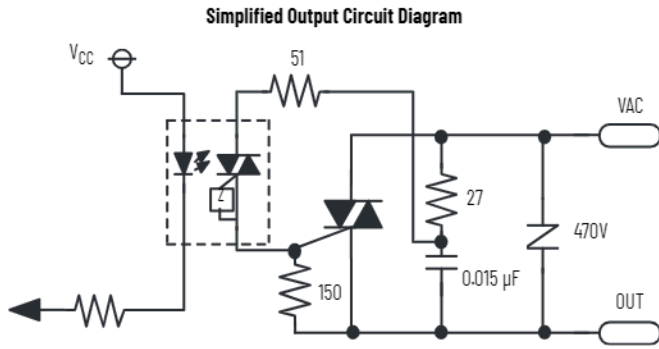


For Environmental Specifications, see [page 2](#).

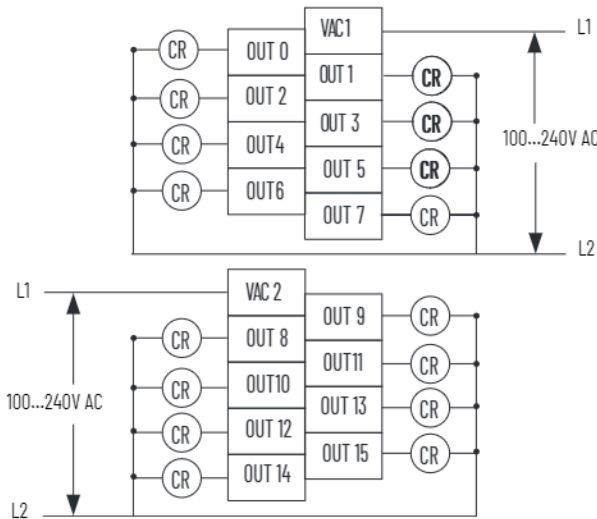
For Certifications, see [page 3](#).

1769-0A16, 1769-0A16K

Compact 120/240V AC solid-state output module



Output Wiring



Technical Specifications - 1769-0A16, 1769-0A16K

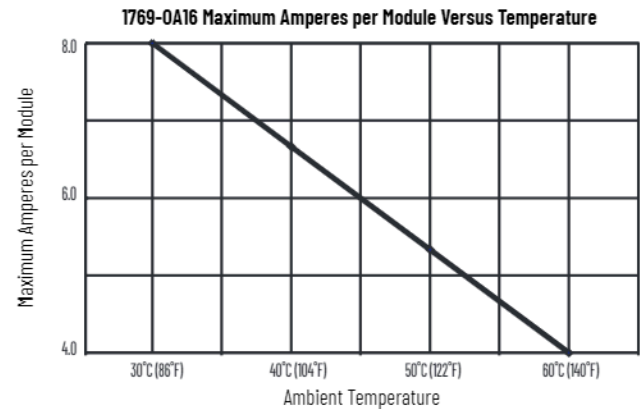
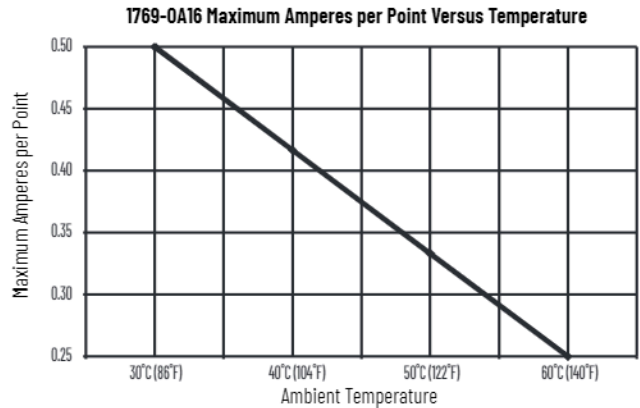
Attribute	1769-0A16
Outputs	16 (8 points/group)
Voltage category	100/240V AC
Operating voltage range	85...265V AC 47...63 Hz
Output delay, on ⁽¹⁾	1/2 cycle
Output delay, off ⁽¹⁾	1/2 cycle
Current draw @ 5.1V	225 mA
Heat dissipation, max	4.9 W
Off-state leakage current, max ⁽²⁾	2.0 mA @ 132V AC 2.5 mA @ 265V AC
On-state current, max	10 mA
On-state voltage drop, max	1.5V peak @ 2 A
Current per point, max	0.25 A @ 60 °C 0.5 A @ 30 °C
Current per module, max	2 A @ 60 °C 4 A @ 30 °C
Surge current ⁽³⁾	5 A for 25 ms, repeatable every 2 s
Isolation voltage	Verified by one of these dielectric tests: 1836V AC for 1 s or 2596V DC for 1 s, output point to bus <ul style="list-style-type: none"> • 265V AC working voltage (IEC Class II reinforced, basic insulation) • 150V AC working voltage (IEC Class II reinforced, basic insulation)

Technical Specifications - 1769-0A16, 1769-0A16K

Attribute	1769-0A16
Weight, approx	280 g (0.61 lb)
Dimensions (HxWxD), approx	118 x 35 x 87 mm (4.65 x 1.38 x 3.43 in.) Height with mounting tabs 138 mm (5.43 in.)
Slot width	1.5
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)
Wire size	(22...14 AWG) solid (22...16 AWG) stranded
Wire type	Cu-90 °C (194 °F)
Replacement terminal block	1769-RTBN18 (1 per kit)
Replacement door	Not available
Vendor ID code	1
Product type code	7
Product code	93
Enclosure type rating	None (open style)

- (1) Triac outputs turn on and off at AC line zero cross.
- (2) To limit the effects of leakage current through solid-state outputs, a loading resistor can be connected in parallel with your load. For 120V AC operation, use a 15 kW, 2 W resistor. For 240V AC operation, use a 5 kW, 5 W resistor.
- (3) If you connect surge suppressors across your external load, you extend the life of the triac outputs.

Temperature Derating - - 1769-0A16, 1769-0A16K



For Environmental Specifications, see [page 2](#).

For Certifications, see [page 3](#).