

Specifications

General Specifications 1769-OF8C and 1768-OF8V

Attribute	1769-OF8C and 1768-OF8V
Dimensions, HxWxD (approx.)	118 mm x 35 mm x 87 mm Height including mounting tabs is 138 mm 4.65 in. x 1.38 in. x 3.43 in. Height including mounting tabs is 5.43 in.
Approximate Shipping Weight (with carton)	281g (0.62 lb.)
Enclosure type rating	None (open-style)
Wire Size	0.32...2.1 mm ² (22...14 AWG) solid copper wire or 0.32...1.3 mm ² (22...16 AWG) stranded copper wire rated at 90 °C (194 °F) insulation max
Wiring Category ⁽¹⁾	2 - on signal ports

(1) Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

Environmental Specifications 1769-OF8C and 1769-OF8V

Attribute	1769-OF8C and 1769-OF8V
Temperature, storage	-40...85 °C (-40...185 °F)
Temperature, operating <ul style="list-style-type: none"> • 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, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating <ul style="list-style-type: none"> • IEC 60068-2-1 (Test Ab, 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)
North American temp code	T4A
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10...500 Hz

Environmental Specifications 1769-OF8C and 1769-OF8V

Attribute	1769-OF8C and 1769-OF8V
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	20 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Emissions	CISPR 11: Group 1, Class A
ESD immunity IEC 61000-4-2	4 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz
EFT/B immunity IEC 61000-4-4	±2 kV at 5 kHz on signal ports
Surge Transient Immunity IEC 61000-4-5	±1 kV line-earth(CM) on shielded ports
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz
Supply power and current ratings	Backplane (1769-OF8C): <ul style="list-style-type: none"> • 5V DC, 145mA • 24V DC, 185 mA Backplane (1769-OF8V): <ul style="list-style-type: none"> • 5V DC, 145mA • 24V DC, 135 mA Field (1769-OF8C): <ul style="list-style-type: none"> • 0...20 mA • 4...20 mA Field (1769-OF8V): <ul style="list-style-type: none"> • -10V to... +10V, 0...+5V, 0...+10V, 1 to... +5V
Isolation voltage	30V (continuous), Reinforced Insulation Type, channel to system and channel to channel. Type tested at 710V DC for 60 s

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Output Specifications 1769-OF8C and 1769-OF8V

Attribute	1769-OF8C and 1769-OF8V
Analog normal operating ranges ⁽¹⁾	(1769-OF8C): 0...20 mA, 4...20 mA (1769-OF8V): ± 10 V dc, 0...10V DC, 0...5V DC, 1...5V DC
Full Scale analog ranges ⁽¹⁾	(1769-OF8C): 0...21 mA, 3.2 to 21 mA (1769-OF8V): ± 10.5 V dc, -0.5...10.5V DC, -0.5...5.25V DC, 0.5...5.25V DC
Number of outputs	8 single-ended
Bus current draw, max (1769-OF8C)	145 mA at 5V DC 185 mA at 24V DC ⁽²⁾
Bus current draw, max (1769-OF8V)	145 mA at 5V DC 135 mA at 24V DC
Heat dissipation	(1769-OF8C): 2.69 total W (all points - 21 mA into 250 Ω - worst case calculated) (1769-OF8V): 2.16 total W (all points - 10.5V into 1 k Ω - worst case calculated)
Digital resolution across full range	(1769-OF8C): 16 bits (unipolar) 4...20 mA: 15.59 bits, 0.323 μ A/bit 0...20 mA: 15.91 bits, 0.323 μ A/bit (1769-OF8V): 16 bits plus sign (bipolar) ± 10 V dc: 15.89 bits, 330 μ V/bit 0 to +5V dc: 13.89 bits, 330 μ V/bit 0 to +10V dc: 14.89 bits, 330 μ V/bit +1 to +5V dc: 13.57 bits, 330 μ V/bi
Conversion rate (all channels) max.	5 ms
Step response to 63% ⁽³⁾	<2.9 ms
Resistive load on current output (1769-OF8C)	0...500 Ω (includes wire resistance)
Max inductive load (1769-OF8C)	0.1 mH
Load range output (1769-OF8V)	> 1 k Ω at 10V DC
Max capacitive load (1769-OF8V)	1 μ F
Field calibration	None required
Overall accuracy ⁽⁴⁾	(1769-OF8C): $\pm 0.35\%$ full scale at 25 $^{\circ}$ C (77 $^{\circ}$ F) (1769-OF8V): $\pm 0.5\%$ full scale at 25 $^{\circ}$ C
Accuracy drift with temperature	(1769-OF8C): $\pm 0.0058\%$ FS per $^{\circ}$ C (1769-OF8V): $\pm 0.0086\%$ FS per $^{\circ}$ C
Output ripple ⁽⁵⁾ range 0...50 kHz (referred to output range)	$\pm 0.05\%$

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Attribute	1769-OF8C and 1769-OF8V
Non-linearity (in percent full scale)	±0.05%
Repeatability ⁽⁶⁾ (in percent full scale)	±0.05%
Output error over full temperature Range (0...60 °C [+32...+140 °F])	(1769-OF8C) Current: ±0.55% (1769-OF8V) Current: ±0.80%
Output offset error (0...60 °C [+32...+140 °F])	±0.05%
Output impedance	(1769-OF8C): >1 MΩ (1769-OF8V): <1 Ω
Open and short-circuit protection	Yes
Maximum short-circuit current	(1769-OF8C): 21 mA (1769-OF8V): 30 mA
Output overvoltage protection	Yes
Time to detect open wire condition (1769-OF8C)	5 ms
Output response at system power up and power down	±0.5V DC spike for < 5 ms
Rated working voltage ⁽⁷⁾	30V AC/30V DC
Module OK status indicator	On: module has power, has passed internal diagnostics, and is communicating over the bus Flashing: external power failure Off: Any of the above is not true
Output group to bus isolation (1769-OF8V)	500V AC or 710V DC for 1 minute (qualification test) 30V AC/30V DC working voltage (IEC)
Channel diagnostics	Over- or under-range by bit reporting output wire broken or load resistance high by bit reporting
System power supply distance rating	The module may not be more than 8 modules away from the system power supply.
Optional 24V DC Class 2 power supply voltage range ⁽⁸⁾	20.4 V...26.4 V DC
Recommended cable	Belden 8761 (shielded)
Vendor I.D. code	1
Product type code	10
Product code	(1769-OF8C): 40 (1769-OF8V): 39
Input words	11

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Output Specifications 1769-OF8C and 1769-OF8V

Attribute	1769-OF8C and 1769-OF8V
Output words	9
Configuration words	64

- (1) The over- or under-range flag will come on when the normal operating range (over/under) is exceeded. The module will continue to convert the analog input up to the maximum full scale range. The flag automatically resets when within the normal operating range unless configured to latch.
- (2) If the optional 24V DC Class 2 power supply is used, the 24V DC current draw from the bus is 0 mA.
- (3) Step response is the period of time between when the D/A converter was instructed to go from minimum to full range until the device is at 63% of full range.
- (4) Includes offset, gain, drift, non-linearity and repeatability error terms.
- (5) Output ripple is the amount a fixed output varies with time, assuming a constant load and temperature.
- (6) Repeatability is the ability of the output module to reproduce output readings when the same controller value is applied to it consecutively, under the same conditions and in the same direction.
- (7) Rated working voltage is the maximum continuous voltage that can be applied at the input terminal, including the input signal and the value that floats above ground potential (for example, 10V DC input signal and 20V DC potential above ground).
- (8) Failure to use a Class 2 power supply without regulation within these limits could result in improper module operation.