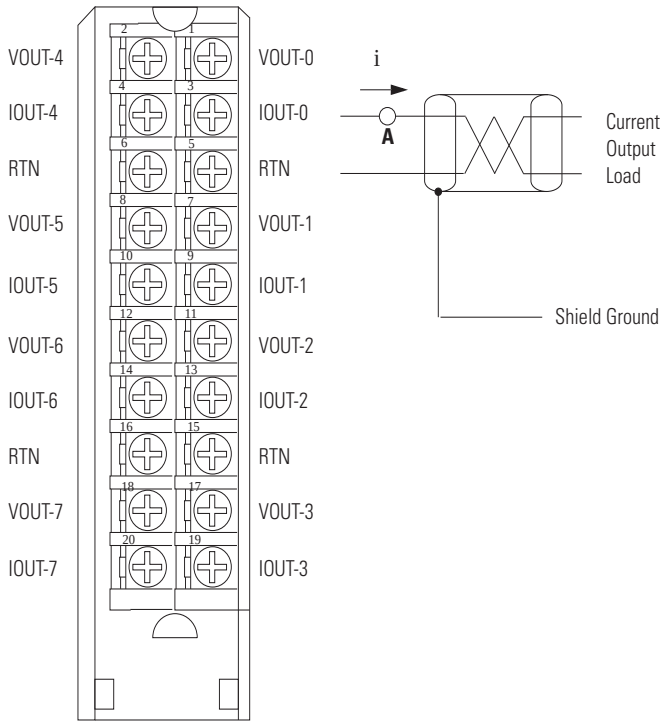
1756-OF8, 1756-OF8K

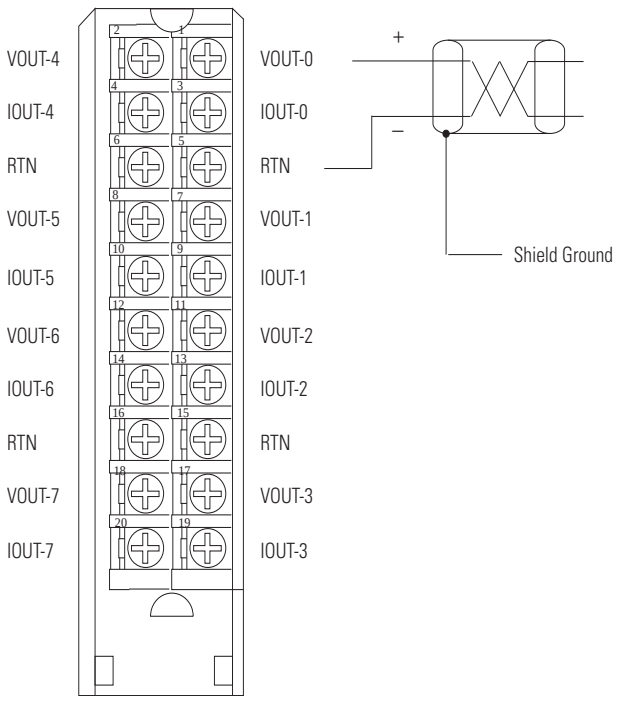
ControlLogix voltage/current output analog module

1756-OF8 Current

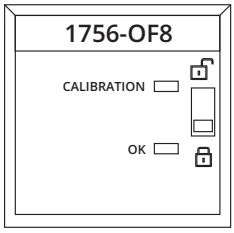


- Place additional loop devices (such as strip chart recorders) at the A location noted in the drawing.
- All terminals marked RTN are connected internally.

1756-OF8 Voltage



All terminals marked RTN are connected internally.



Signal and User Counts

Range	Low Signal and User Counts	High Signal and User Counts
0...20 mA	0 mA -32,768 counts	21.2916 mA 32,767 counts
±10V	-10.4336V -32,768 counts	10.4336V 32,767 counts

Technical Specifications

Attribute	1756-OF8, 1756-OF8K
Outputs	Eight voltages or current
Output range	± 10V 0...20 mA
Resolution	Voltage: 15 bits across 10.5V - 320 µV/bit Current: 16 bits across 21 mA - 325 nA/bit
Current draw @ 5.1V	200 mA
Current draw @ 24V	300 mA

Technical Specifications (Continued)

Attribute	1756-OF8, 1756-OF8K	
Total backplane power	8.22 W	
Voltage and current ratings	Backplane: 5.1V DC, 200 mA max; 24V DC, 300 mA max Output Voltage: -10...+10V Output Current: 0...20mA	
Power dissipation	8.22...2 W; 0...750 ohm loads	
Thermal dissipation	28.03 BTU/hr	
Open circuit detection	Current output only (Output must be set to >0.1 mA)	
Overvoltage protection	± 24V DC	
Short circuit protection	Electronically current limited to 21 mA or less	
Drive capability	Voltage: > 2000 Ω Current: 0...750 Ω	
Settling time	< 2 ms to 95% of final value with resistive loads	
Calibrated accuracy @ 25 °C (77 °F)	Better than 0.05% of range from 0...21 mA, -10.4...10.4V	
Offset drift	20 µV/ °C 80 nA/°C	
Gain drift with temperature, max	Voltage: 6 ppm/°C, 125 µV/°C Current: 30 ppm/°C, 630 µA/°C	
Module error	Voltage: 0.1% of range Current: 0.2% of range	
Module scan time, min	12 ms floating point 8 ms integer	
Data format	Integer mode (left justified, 2 s complement) IEEE 32-bit floating point	
Module conversion method	R-Ladder DAC, monotonicity with no missing codes	
Isolation voltage	250V (continuous), Basic[1] insulation type, Output Channels to Backplane No isolation between individual output channels	250V (continuous), Basic Insulation Type, Output Channels to Backplane No isolation between individual output channels
Module keying	Electronic, software configurable	
Removable terminal block	1756-TBNH 1756-TBSH	
RTB keying	User-defined mechanical	
Slot width	1	
Wire size	1756-TBNH	
	Single wire connection: 0.33...2.1 mm^2 (22...14 AWG) solid or stranded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max. Do not wire more than one conductor on any terminal. Double wire connection: 0.33...1.3 mm^2 (22...16 AWG) solid or stranded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max. Do not wire more than two conductors on any terminal	
	1756-TBSH	
	Single wire connection, 0.33...2.1 mm^2 (22...14 AWG) solid, or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max. Do not wire multiple conductors on any terminal	
Terminal block torque specs	1756-TBNH: 1.36 N•m (12 lb•in)	
Wiring category[2]	1 - on signal ports	
Enclosure type	None (open-style)	
Temperature code	T4	

(1) Series A modules were specified to Reinforced Insulation based on UL508 terminology. Series B and series C modules are type tested to the same Dielectric strength voltage as series A modules but use updated terminology based on IEC 61010-1, Basic Insulation.
(2) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications

Attribute	1756-OF8, 1756-OF8K
Temperature, operating IEC 60068-2-1 (Test Ae, Operating Cold), IEC 60068-2-2 (Test Be, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	Chassis Series C 0 °C ≤ Ta ≤ +60 °C (+32 °F ≤ Ta ≤ +140 °F) Chassis Series B 0 °C ≤ Ta ≤ +55 °C (+32 °F ≤ Ta ≤ +131 °F)
Temperature, nonoperating 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)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Conformal Coated(1)	Yes
Corrosive Atmosphere(1) ASTM B845-97 Method H Accelerated Test (20-Day Exposure)	Severity Level G3(2) per ANSI/ISA 71.04-2013, Airborne Contaminants—Gases Severity Level CX(2)(3) per IEC 60721-3-3:2019, Chemically Active Substances
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 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...6000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz
EFT/B immunity IEC 61000-4-4	±4 kV at 5/100 kHz on signal ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine wave 80% AM from 150 kHz...100 MHz

(1) Only applicable to modules that end with a 'K or 'XT'.
(2) The module and the corresponding RTB must remain installed at all times and the RTB door must remain closed, for the product to maintain its corrosive atmosphere rating.
(3) Up to 9.6 microns per year, corrosion rate of copper.

Certifications

Certification[1]	1756-OF8, 1756-OF8K
cULus	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.
FM	FM Approved Equipment for use in Class I Division 2 Group A, B, C, D Hazardous Locations
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with EN 61131-2; Programmable Controllers (Clause 11)
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN IEC 60079-0; General Requirements • EN IEC 60079-7; Potentially Explosive Atmospheres, Protection "e" • II 3 G Ex ec IIC T4 Gc • UL 22 ATEX 2772X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-7; Potentially Explosive Atmospheres, Protection "e" • II 3 G Ex ec IIC T4 Gc • IECEx UL 22.0039X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with Article 58-2 of Radio Waves Act, Clause 3
UKex	In conformity with the following UKex Statutory Instruments and their amendments: • Schedule 1 of the UKEX Regulation 2016 No. 1107 • Equipment protection by increased safety "e", reference certificate number UL22UKEX2499X • Zone 2 classification according to UKEX Regulation 2016 No. 1107
UKCA	In conformity with the following UK Statutory Instruments and their amendments: • 2016 No. 1091, Electromagnetic Compatibility Regulations • 2016 No. 1101, Electrical Equipment (Safety) Regulations • 2016 No. 1107, Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations • 2012 No. 3032, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
Morocco	In conformity with the following regulations: • Arrêté ministériel n° 6404-15 du 1 er muharram 1437 (15 octobre 2015) Équipements électriques destinés à être utilisés sous certaines limites de tension • Arrêté ministériel n° 6404-15 du 29 ramadan 1436 (16 juillet 2015) Compatibilité électromagnétique des équipements
CCC	CCC 2020122309111998 CNCA-C23-01 强制性产品认证实施规则 防爆电气 CNCA-C23-01 CCC Implementation Rule Explosion-Proof Electrical Products

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