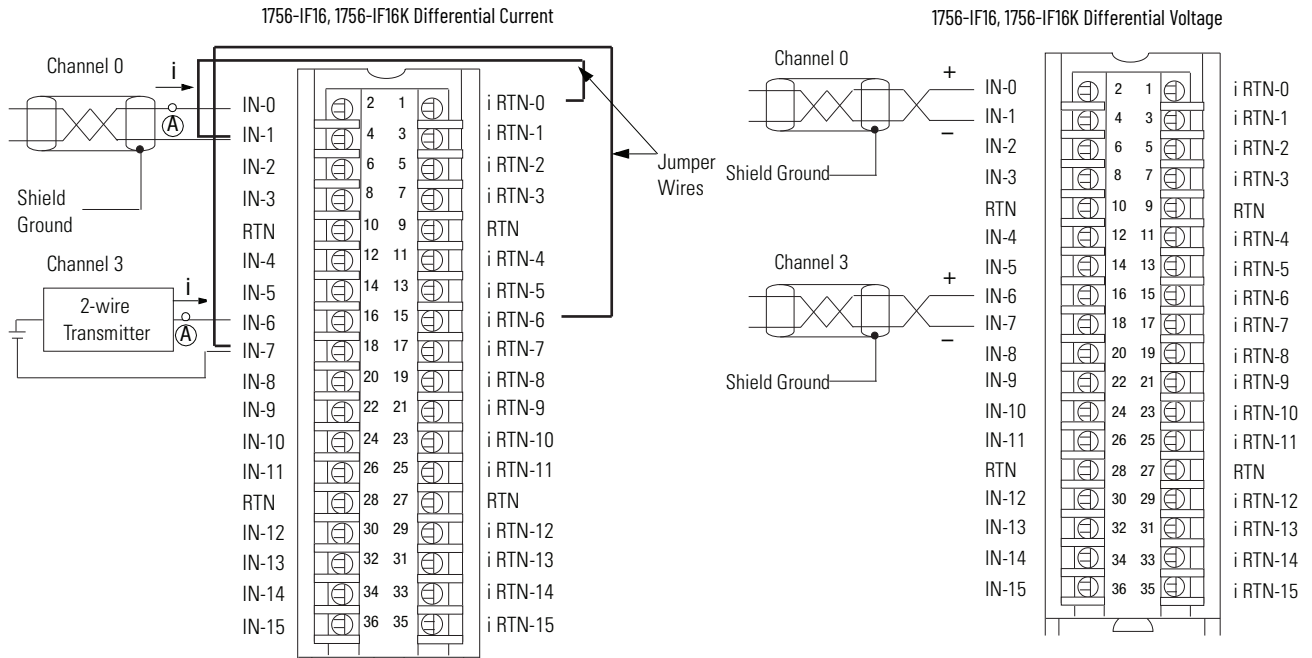


# 1756-IF16, 1756-IF16K

ControlLogix current/voltage analog input module



Use this table when wiring your module in Differential Current mode.

This Channel	Uses these terminals
Channel 0	IN-0 (+), IN-1 (-), i RTN-0
Channel 1	IN-2 (+), IN-3 (-), i RTN-2
Channel 2	IN-4 (+), IN-5 (-), i RTN-4
Channel 3	IN-6 (+), IN-7 (-), i RTN-6
Channel 4	IN-8 (+), IN-9 (-), i RTN-8
Channel 5	IN-10 (+), IN-11 (-), i RTN-10
Channel 6	IN-12 (+), IN-13 (-), i RTN-12
Channel 7	IN-14 (+), IN-15 (-), i RTN-14

- All terminals marked RTN are connected internally.
- A 249 Ω current loop resistor is located between IN-x and i RTN-x terminals.
- If multiple (+) or multiple (-) terminals are tied together, connect that tie point to an RTN terminal to maintain the accuracy of the module.
- Place additional loop devices (such as strip chart recorders) at the A location in the current loop.

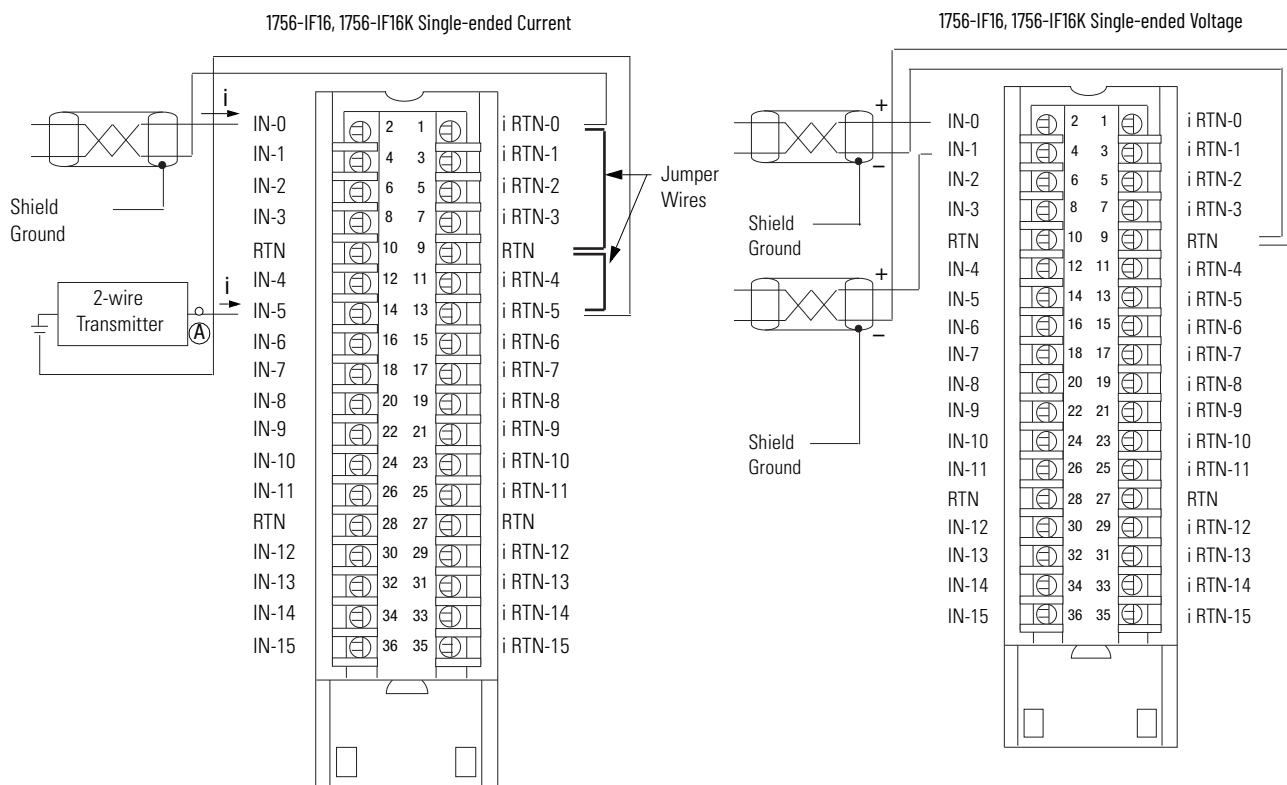
**IMPORTANT:** When operating in 4-channel, High-Speed mode, only use channels 0, 2, 4, and 6.

Use this table when wiring your module in Differential Voltage mode.

This Channel	Uses these terminals
Channel 0	IN-0 (+), IN-1 (-)
Channel 1	IN-2 (+), IN-3 (-)
Channel 2	IN-4 (+), IN-5 (-)
Channel 3	IN-6 (+), IN-7 (-)
Channel 4	IN-8 (+), IN-9 (-)
Channel 5	IN-10 (+), IN-11 (-)
Channel 6	IN-12 (+), IN-13 (-)
Channel 7	IN-14 (+), IN-15 (-)

- All terminals marked RTN are connected internally.
- If multiple (+) or multiple (-) terminals are tied together, connect that tie point to an RTN terminal to maintain the accuracy of the module.
- Terminals marked RTN or i RTN are not used for differential voltage wiring.

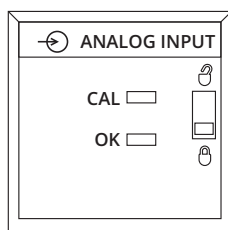
**IMPORTANT:** When operating in 4-channel, High-Speed mode, only use channels 0, 2, 4, and 6.



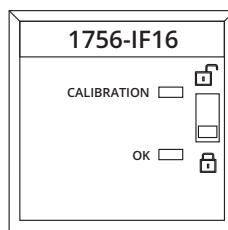
- All terminals marked RTN are connected internally.
- For current applications, all terminals marked i RTN must be wired to terminals marked RTN.
- A 249 Ω current loop resistor is located between IN-x and i RTN-x terminals.
- Place additional loop devices (such as strip chart recorders) at the A location in the current loop.

- All terminals marked RTN are connected internally.
- Terminals marked i RTN are not used for single-ended voltage wiring.

**Series A**



**Series B**



**Technical Specifications**

Attribute	1756-IF16/A, 1756-IF16K/A	1756-IF16/B, 1756-IF16K/B
Inputs	16 single ended, 8 differential or 4 differential (high speed)	
Input range	±10V 0...10V 0...5V 0...20 mA	
Resolution	320 μV/count (15 bits + sign bipolar) @ ±10.25V 160 μV/count (16 bits) @ 0...10.25V 80 μV/count (16 bits) @ 0...5.125V 0.32 μA/count (16 bits) @ 0...20.5 mA	
Current draw @ 5.1V	150 mA	200 mA
Current draw @ 24V	65 mA	35 mA
Total backplane power	2.33 W	1.86 W

## Technical Specifications (Continued)

Attribute	1756-IF16/A, 1756-IF16K/A	1756-IF16/B, 1756-IF16K/B
Voltage and current ratings	Backplane: 5.1V DC, 150 mA max 24V DC, 65 mA max Input Voltage Range: -10...+10V Input Current Range: 4...20mA Limited to 100VA	Backplane: 5.1V DC, 200 mA max 24V DC, 35 mA max Input Voltage Range: -10...+10V Input Current Range: 0...20mA Limited to 100VA
Power consumption	2.33 W	
Power dissipation	Voltage: 2.33 W Current: 4.00 W	Voltage: 1.86 W Current: 3.53 W
Thermal dissipation	Voltage: 7.93 BTU/hr Current: 13.65 BTU/hr	Voltage: 6.35 BTU/hr Current: 12.06 BTU/hr
Input impedance	Voltage: $\geq 10 \text{ M}\Omega$ Current: 249 $\Omega$	
Open circuit detection time	Differential voltage - Positive full-scale reading within 5 s Single-ended/differential current - Negative full-scale reading within 5 s Single-ended voltage - Even-numbered channels go to positive full-scale reading within 5s, odd-numbered channels go to negative full-scale reading within 5 s	
Overvoltage protection, max	Voltage: 30V DC Current: 8V DC	
Normal mode noise rejection	$>80 \text{ dB @ } 50/60 \text{ Hz}^{(1)}$	
Common mode noise rejection	$>100 \text{ dB @ } 50/60 \text{ Hz}$	
Channel bandwidth	15 Hz ( $-3 \text{ dB}^{(1)}$ )	
Calibrated accuracy 25 °C (77 °F)	Voltage: Better than 0.05% of range Current: Better than 0.15% of range	
Offset drift	45 $\mu\text{V}/^\circ\text{C}$	
Gain drift with temperature	Voltage: 15 ppm/ $^\circ\text{C}$ Current: 20 ppm/ $^\circ\text{C}$	
Module error	Voltage: 0.1% of range Current: 0.3% of range	
Module input scan time, min <sup>(1)</sup>	16 pt single-ended: 16...488 ms 8 pt differential: 8...244 ms 4 pt differential: 5...122 ms	
Onboard data alarming	Yes	
Scaling to engineering units	Yes	
Real-time channel sampling	Yes	
Data format	Integer mode (left justified, 2 s complement) IEEE 32-bit floating point	
Module conversion method	Sigma-Delta	
Isolation voltage	250V (continuous), Reinforced insulation type, Inputs-to-Backplane. No isolation between individual Inputs.	250V (continuous), Basic <sup>(2)</sup> insulation type, Inputs-to-Backplane. No isolation between individual Inputs.
Module keying	Electronic, software configurable	
Removable terminal block	1756-TBCH 1756-TBS6H	
RTB keying	User-defined mechanical	
Slot width	1	
Wire size	1756-TBCH Single wire connection: 0.33...2.1 mm <sup>2</sup> (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. Double wire connection: 0.33...1.3 mm <sup>2</sup> (22...16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max. 1756-TBS6H Single wire connection: 0.33...2.1 mm <sup>2</sup> (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.	
Terminal block torque specs	1756-TBCH: 0.5 N•m (4.4 lb•in)	
Wire category <sup>(3)</sup>	2 - on signal ports	
Enclosure type	None (open-style)	
Temperature code	T4	

(1) Notch filter dependent.

(2) Series A modules were specified to Reinforced Insulation based on UL508 terminology. Series B 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.

(3) 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-IF16/A, 1756-IF16K/A	1756-IF16/B, 1756-IF16K/B
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 Variation of Temperature)	0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)	
Temperature, surrounding air, max	60 °C (140 °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	
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)	50 g	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...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 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	±2 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	

## Certifications

Certification (when product is marked) <sup>(1)</sup>	1756-IF16/A, 1756-IF16K/A	1756-IF16/B, 1756-IF16K/B
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: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>EN 61131-2; Programmable Controllers (Clause 11)</li> </ul>	
RCM	Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>EN 61000-6-4; Industrial Emissions</li> </ul>	
Ex	European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-0; General Requirements</li> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>DEMKO15ATEX1482X</li> </ul>	European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN IEC 60079-0; General Requirements</li> <li>EN IEC 60079-7; Potentially Explosive Atmospheres, Protection "e"</li> <li>II 3 G Ex ec IIC T4 Gc</li> <li>UL 22 ATEX 2772X</li> </ul>
IECEX	IECEX System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>IECEX UL 15.0053X</li> </ul>	IECEX System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-7; Potentially Explosive Atmospheres, Protection "e"</li> <li>II 3 G Ex ec IIC T4 Gc</li> <li>IECEX UL 22.0039X</li> </ul>
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: <ul style="list-style-type: none"> <li>Article 58-2 of Radio Waves Act, Clause 3</li> </ul>	
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation	
UKex	N/A	In conformity with the following UKex Statutory Instruments and their amendments: <ul style="list-style-type: none"> <li>Schedule 1 of the UKEX Regulation 2016 No. 1107</li> <li>Equipment protection by increased safety "e", reference certificate number UL22UKEX2499X</li> <li>Zone 2 classification according to UKEX Regulation 2016 No. 1107</li> </ul>
UKCA	N/A	In conformity with the following UK Statutory Instruments and their amendments: <ul style="list-style-type: none"> <li>2016 No. 1091, Electromagnetic Compatibility Regulations</li> <li>2016 No. 1101, Electrical Equipment (Safety) Regulations</li> <li>2016 No. 1107, Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations</li> <li>2012 No. 3032, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment</li> </ul>
Morocco	N/A	In conformity with the following regulations: <ul style="list-style-type: none"> <li>Arrêté ministériel n° 6404-15 du 1<sup>er</sup> muharram 1437 (15 octobre 2015) Équipements électriques destinés à être utilisés sous certaines limites de tension</li> <li>Arrêté ministériel n° 6404-15 du 29 ramadan 1436 (16 juillet 2015) Compatibilité électromagnétique des équipements</li> </ul>
CCC	N/A	CCC 202012230911830, 202012230911998, 2020122309113868 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) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.