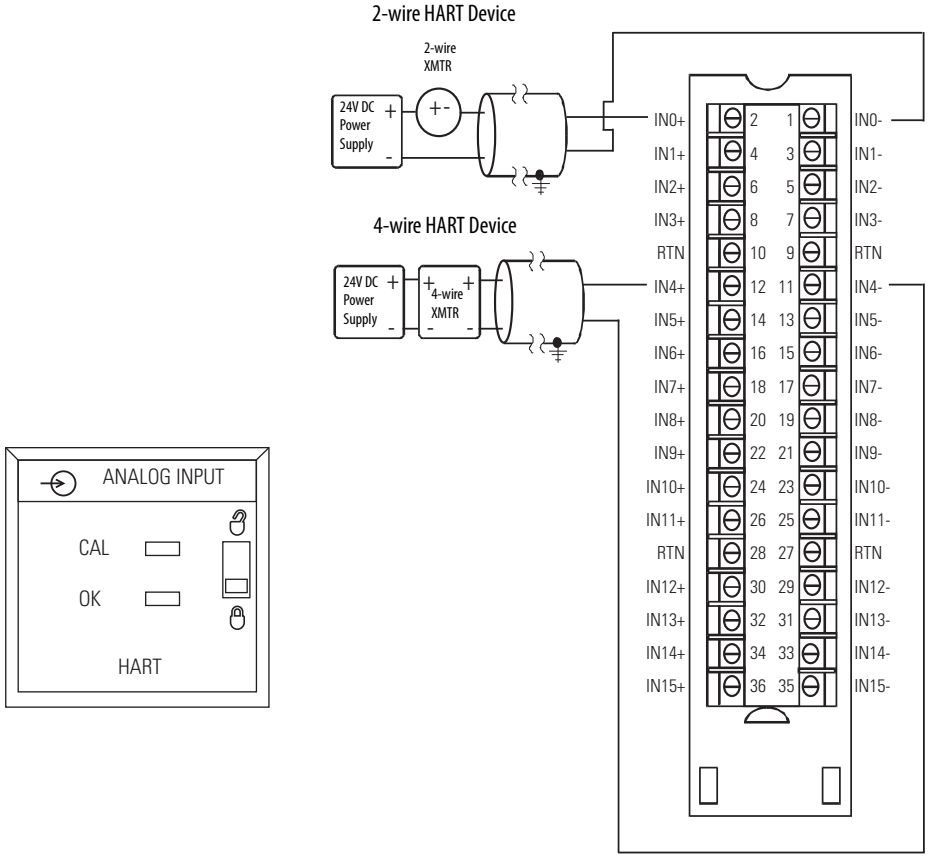
1756-IF16H, 1756-IF16HK

ControlLogix current analog input module with HART protocol.



When a common supply is used, tie the IN- to RTN.

Technical Specifications - 1756-IF16H, 1756-IF16HK

Attribute	1756-IF16H, 1756-IF16HK
Inputs	Sixteen differential, current Dedicated HART modem per channel
Input range	0…20 mA 4…20 mA
Resolution	16…21 bits
Voltage and current ratings	Backplane: 5.1V DC @ 200 mA, 24V DC @ 125 mA Input current range: 0…20 mA, 4…20 mA
Total backplane power	4.02 W
Power dissipation, max	6 W
Isolation voltage	50V (continuous), Basic insulation type, Input Channels to Backplane No isolation between individual Input Channels
Thermal dissipation	12 BTU/hr
Input impedance	249 Ω
Open circuit detection time	Positive full scale reading within 5 s
Overvoltage protection, max	8V DC

Technical Specifications - 1756-IF16H, 1756-IF16HK

Attribute	1756-IF16H, 1756-IF16HK
Normal mode noise rejection	74 dB @ 50/60 Hz (15 Hz filter) 90 dB @ 60 Hz (20 Hz filter)
Common mode noise rejection	> 90 dB @ 50/60 Hz (15 Hz and 20 Hz filters only)
Repeatability	Better than 0.01% of range (15 Hz and 20 Hz filters only)
Calibrated accuracy	Better than 0.13% of range (all filters)
Calibration interval	12 months typical
Offset drift	27 µV/°C
Gain drift with temperature	11ppm/°C
Module error	0.3% of range
Module input scan time, min	11…328 ms (filter dependent)
Module HART scan time	Estimate 1 s if all channels are HART enabled
Data format	Integer mode (left justified, 2 s complement) IEEE 32-bit floating point
Input conversion method	Successive approximation
Output conversion method	R-Ladder DAC, monotonicity with no missing codes
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 mm2(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 1756-TBS6H Single wire connection: 0.33…2.1 mm2(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 spec	1756-TBCH 0.5 N•m (4.4 lb•in)
Wire category(1)	2 - on signal ports
Wire type	Copper
Enclosure type rating	None (open-style)
North American temp code	T5
ATEX temp code	T4
IECEx temp code	T4

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 1756-IF16H, 1756-IF16HK

Attribute	1756-IF16H, 1756-IF16HK
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 °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 N/A, 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
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 1V/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

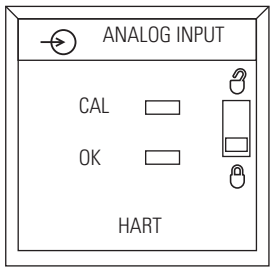
Certifications - 1756-IF16H, 1756-IF16HK

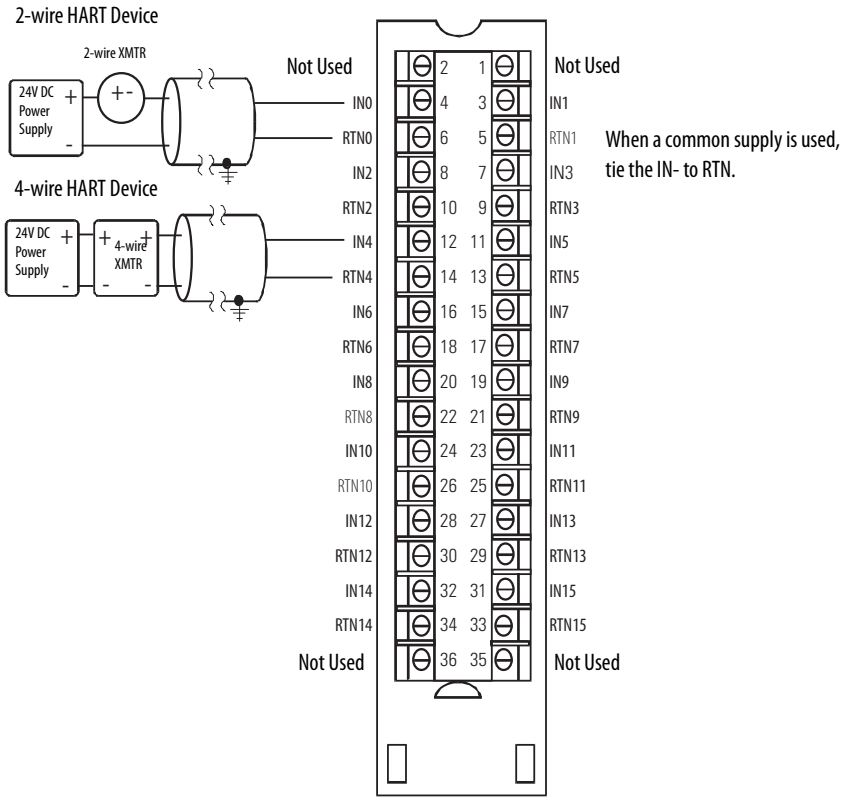
Certification (when product is marked)[1]	1756-IF16H, 1756-IF16HK
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 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)
RCM	Australian Radiocommunications Act, compliant with: • EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO12ATEX1219040X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 16.0109X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

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

1756-IF16IH, 1756-IF16IHK

ControlLogix current analog input module with HART protocol





Technical Specifications - 1756-IF16IH, 1756-IF16IHK

Attribute	1756-IF16IH, 1756-IF16IHK
Voltage and current ratings	Backplane: 225 mA @ 5.1V DC, 200 mA @ 24V DC 16 Inputs Input current range: 0…20 mA, 4…20 mA
Resolution	16…21 bits
Power dissipation	5.30 W
Inrush current	400 mA @ 5.1V DC 450 mA @ 24V DC
Isolation voltage	250V (continuous) Reinforced Insulation Type, inputs to backplane. Basic Insulation Type, input to input, and inputs to ground
Input impedance	250 Ω (±5 Ω)
Open circuit detection time	5 s, 4…20 mA range only
Input overvoltage protection	28.8V DC
Normal mode noise rejection	90 dB @ 50/60 Hz (10 Hz filter) 74 dB @ 50/60 Hz (15 Hz filter) 33 dB @ 60 Hz, 90 dB @60 Hz (20 Hz filter)
Common mode noise rejection	> 90 dB @ 50/60 Hz (10 Hz, 15 Hz, and 20 Hz filters only)
Calibrated accuracy at 25 °C with HART disabled	0.15…1.5% of full scale, dependent on selected filter

Technical Specifications - 1756-IF16IH, 1756-IF16IHK

Attribute	1756-IF16IH, 1756-IF16IHK
Calibrated accuracy at 25 °C with HART enabled	1.5% of full scale with 250 Hz filter 0.5% of full scale with 100 Hz filter 0.2% of full scale with 50 Hz or 60 Hz filter 0.15% of full scale with 15 Hz or 20 Hz filter Monotonicity not guaranteed
Calibrated accuracy over full temperature range with HART enabled	1.8% of full scale with 250 Hz filter 0.8% of full scale with 100 Hz filter 0.5% of full scale with 50 Hz or 60 Hz filter 0.4% of full scale with 15 Hz or 20 Hz filter Monotonicity not guaranteed
Calibration interval	12 months typical
Input offset drift with temperature	300 µA/°C
Gain drift with temperature	20 ppm/°C
Module error over full temperature range with HART disabled	0.3% of range (all filters)
Module scan time for all channels - analog, min	14…428 ms (filter dependent)
Typical module HART dynamic variables update time for all channels	1 s typical with no pass through or device information messaging active
Data format	Integer mode (left justified, 2 s complement) IEEE 32-bit floating point
Input conversion method	Sigma-Delta ADC (24-bit converter)
Output conversion method	Sigma-Delta ADC (24-bit converter)
Module keying	ASIC does not support module keying
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 mm2(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 1756-TBS6H Single wire connection: 0.33…2.1 mm2(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)
Wiring category(1)	2 - on signal ports
Wire type	Copper
Enclosure type rating	None (open-style)
North American temp code	T5
ATEX temp code	T4
IECEx temp code	T4

(1) Use this conductor category information for planning conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 1756-IF16IH, 1756-IF16IHK

Attribute	1756-IF16IH, 1756-IF16IHK
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 °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 N/A, 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
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…6000 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 - 1756-IF16IH, 1756-IF16IHK

Certification (when product is marked)[1]	1756-IF16IH, 1756-IF16IHK
c-UL-us	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.
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 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO14ATEX1238X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 16.0110X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

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