

Module Configuration Word

Word 6 of the configuration data file contains the Enable/Disable Cyclic Calibration bit.

To select		Make these bit settings															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Enable/Disable Cyclic Calibration	Enabled ⁽¹⁾																0
	Disabled																1

⁽¹⁾ When enabled, an autocalibration cycle is performed on all enabled channels every 5 min.

Specifications

Technical Specifications - 1769-IT6

Attribute	1769-IT6
Number of inputs	6 input channels plus 2 CJC sensors
Bus current draw, max	100 mA at 5V DC 40 mA at 24V DC
Heat dissipation	1.5 Total Watts (The Watts per point, plus the min Watts, with all points energized.)
Converter type	Delta Sigma
Input filtering	Programmable notch filter with multiple frequencies
Response speed per channel	Input filter and configuration dependent (refer to the Compact I/O Thermocouple/mV Input Module User Manual, publication 1769-UM004)
Rated working voltage ⁽¹⁾	30V AC/30V DC
Common mode voltage range ⁽²⁾	±10V DC max per channel
Common mode rejection	115 dB (min) at 50 Hz (with 10 Hz or 50 Hz filter) 115 dB (min) at 60 Hz (with 10 Hz or 60 Hz filter)
Normal mode rejection ratio	85 dB (min) at 50 Hz (with 10 Hz or 50 Hz filter) 85 dB (min) at 60 Hz (with 10 Hz or 60 Hz filter)
Cable impedance, max	25 Ω
Input impedance	>10M Ω
Open-circuit detection time	7 ms to 2.1 s ⁽⁴⁾
Calibration	The module performs autocalibration upon powerup and whenever a channel is enabled; you can also program the module to calibrate every 5 min. by using the Enable/Disable Cyclic Calibration bit
Non-linearity (in percent full scale)	±0.03%
Repeatability ⁽³⁾	±0.03%
Overload at input terminals, max	±35V DC continuous ⁽⁵⁾

Technical Specifications - 1769-IT6

Attribute	1769-IT6
Module error over full temperature range (0...60 °C (32...140 °F))	See Calibrated Accuracy - 1769-IT6 on page 22.
CJC sensor accuracy	±0.3 °C (±0.54 °F)
CJC accuracy	±1.0 °C (±1.8 °F)
Power supply distance rating	8 (The module cannot be more than 8 modules away from the Compact I/O power supply. See page 7 for suggested placement when using AC power supplies.)
Input group to bus isolation	720V DC for 1 min (qualification) 30V AC/30V DC working voltage (IEC Class 2 reinforced insulation)
Channel-to-channel Common mode separation, max	±10V DC
Input channel configuration	Via configuration software screen or the user program (by writing a unique bit pattern into the module's configuration file); refer to your controller's user manual to determine if user program configuration is supported
Module OK status indicator	On: module has power, has passed internal diagnostics, and is communicating over the bus Off: Any of the above is not true
Channel diagnostics	Over- or under-range and open-circuit by bit reporting
Vendor I.D. code	1
Product type code	10
Product code	36

- (1) 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, 30V DC input signal and 20V DC potential above ground).
- (2) For proper operation, both the plus and minus input terminals must be within ±10V DC of analog common.
- (3) Repeatability is the ability of the input module to register the same reading in successive measurements for the same input signal.
- (4) Open-circuit detection time is equal to channel update time, which is based on filter frequency.
- (5) Maximum current input is limited due to input impedance.

Environmental Specifications - 1769-IT6

Attribute	1769-IT6
Dimensions (HxWxD), approx.	118 x 87 x 35 mm (4.65 x 3.43 x 1.38 in.) Height including mounting tabs 138 mm (5.43 in.)
Weight, approx. (with carton)	276 g (0.61 lb)
Temperature, storage	-40...85 °C (-40...185 °F)
Temperature, operating	0...60 °C (32...140 °F)
Humidity, operating	5...95% noncondensing
Altitude, operating	2000 m (6561 ft)

Environmental Specifications - 1769-IT6

Attribute	1769-IT6
Vibration, operating	10...500 Hz, 5 g, 0.030 in. peak-to-peak Relay operation 2 g ⁽¹⁾
Shock, operating	30 g, 11 ms panel-mounted (20 g, 11 ms DIN rail-mounted) Relay operation 7.5 g panel-mounted (5 g DIN rail-mounted) ⁽¹⁾
Shock, nonoperating	40 g panel-mounted (30 g DIN rail-mounted)
Radiated and conducted emissions	EN50081-2 Class A
Electrical/EMC	The module has passed testing at these levels:
• ESD immunity (IEC61000-4-2)	• 4 kV contact, 8 kV air, 4 kV indirect
• Radiated immunity (IEC61000-4-3)	• 10V/m, 80...1000 MHz, 80% amplitude modulation, 900 MHz keyed carrier
• Fast transient burst (IEC61000-4-4)	• 2 kV, 5 kHz
• Surge immunity (IEC61000-4-5)	• 1 kV galvanic gun
• Conducted immunity (IEC1000-4-6)	• 10V, 0.15...80 MHz ⁽²⁾ (3)

⁽¹⁾ When used with the 1769-OW8 or 1769-OW8I relay output modules.

⁽²⁾ Conducted immunity frequency range may be 150 kHz...30 MHz if the radiated immunity frequency range is 30...1000 MHz.

⁽³⁾ For grounded thermocouples, the 10V level is reduced to 3V.

Certifications - 1769-IT6

Certification ⁽¹⁾	1769-IT6
Hazardous environment class	Class I, Division 2, Hazardous Location, Groups A, B, C, D (UL 1604, C-UL under CSA C22.2 No. 213)
c-UL	Certified (under CSA C22.2 No. 142) UL 508 listed
CE	Compliant for all application directives

⁽¹⁾ When marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

Calibrated Accuracy - 1769-IT6

Input Type ⁽¹⁾	Accuracy for 10 Hz, 50 Hz, and 60 Hz Filters ⁽²⁾ (max)	
	@ 25 °C (77 °F)	@ 0...60 °C (32...140 °F)
Thermocouple J (-210...1200 °C (-346...2192 °F))	±0.6 °C (±1.1 °F)	±0.9 °C (±1.6 °F)
Thermocouple N (-200...1300 °C (-328...2372 °F))	±1 °C (±1.8 °F)	±1.5 °C (±2.7 °F)
Thermocouple N (-210...-200 °C (-346...-328 °F))	±1.2 °C (±2.2 °F)	±1.8 °C (±3.2 °F)
Thermocouple T (-230...400 °C (-382...752 °F))	±1 °C (±1.8 °F)	±1.5 °C (±2.7 °F)
Thermocouple T (-270...-230 °C (-454...-382 °F))	±5.4 °C (±9.7 °F)	±7.0 °C (±12.6 °F)

Calibrated Accuracy - 1769-IT6

Input Type ⁽¹⁾	Accuracy for 10 Hz, 50 Hz, and 60 Hz Filters ⁽²⁾ (max)	
	@ 25 °C (77 °F)	@ 0...60 °C (32...140 °F)
Thermocouple K (-230...1370 °C (-382...2498 °F))	±1 °C (±1.8 °F)	±1.5 °C (±2.7 °F)
Thermocouple K (-270...-230 °C (-454...-382 °F))	±7.5 °C (±13.5 °F)	±10 °C (±18 °F)
Thermocouple E (-210...1000 °C (-346...1832 °F))	±0.5 °C (±0.9 °F)	±0.8 °C (±1.4 °F)
Thermocouple E (-270...-210 °C (-454...-346 °F))	±4.2 °C (±7.6 °F)	±6.3 °C (±11.3 °F)
Thermocouples S and R	±1.7 °C (±3.1 °F)	±2.6 °C (±4.7 °F)
Thermocouple C	±1.8 °C (±3.2 °F)	±3.5 °C (±6.3 °F)
Thermocouple B	±3.0 °C (±5.4 °F)	±4.5 °C (±8.1 °F)
±50 mV	±15 µV	±25 µV
±100 mV	±20 µV	±30 µV

⁽¹⁾ The module uses the National Institute of Standards and Technology (NIST) ITS-90 standard for thermocouple linearization.

⁽²⁾ Accuracy is dependent on the analog/digital converter output rate selection, data format, and input noise. Refer to the Compact I/O Thermocouple/mV Input Module User Manual, publication [1769-UM004](#), for additional information.

Repeatability - 1769-IT6

Input Type	Repeatability for 10 Hz Filter
Thermocouple J	±0.1 °C (±0.18 °F)
Thermocouple N (-110...1300 °C (-166...2372 °F))	±0.1 °C (±0.18 °F)
Thermocouple N (-210...-110 °C (-346...-166 °F))	±0.25 °C (±0.45 °F)
Thermocouple T (-170...400 °C (-274...752 °F))	±0.1 °C (±0.18 °F)
Thermocouple T (-270...-170 °C (-454...-274 °F))	±1.5 °C (±2.7 °F)
Thermocouple K (-270...1370 °C (-454...2498 °F))	±0.1 °C (±0.18 °F)
Thermocouple K (-270...-170 °C (-454...-274 °F))	±2.0 °C (±3.6 °F)
Thermocouple E (-220...1000 °C (-364...1832 °F))	±0.1 °C (±0.18 °F)
Thermocouple E (-270...-220 °C (-454...-364 °F))	±1.0 °C (±1.8 °F)
Thermocouples S and R	±0.4 °C (±0.72 °F)
Thermocouple C	±0.7 °C (±1.26 °F)
Thermocouple B	±0.2 °C (±0.36 °F)
±50 mV	±6 µV
±100 mV	±6 µV