

Technical Specifications

Attribute	1756-HSC/A, B	1756-HSC/C, D
Number of counters	2	
Inputs per counter	3 (A, B, Z for gate/reset)	
Outputs	4 (2 points/group)	
Operating voltage range, inputs ⁽¹⁾	5V operation: 4.5...5.5V DC 12/24V operation: 10...26.4V DC	
Operating voltage range, outputs ⁽¹⁾	5V operation: 4.5...5.5V DC 12/24V operation: 10...26.4V DC	
Current draw at 5.1V	300 mA	
Current draw at 24V	3 mA	
Total backplane power	1.6 W	
Power dissipation, max	5.6 W @ 60 °C (140 °F)	3.5 W @ 60 °C (140 °F)
Thermal dissipation	19.1 BTU/hr	12 BTU/hr
Isolation voltage	125V (continuous), basic insulation type, input group-to backplane 30V (continuous), basic insulation type, input group-to-input group	250V (continuous), basic insulation type, input group to backplane 125V (continuous), basic insulation type, input group to input group Compliant and tested according to IEC/UL 61010-1
Module keying	Electronic, software configurable	
Removable terminal block	1756-TBCH 1756-TBS6H	
Screw torque	0.5 N•m (4.4 lb•in)	
RTB keying	User-defined mechanical	
Slot width	1	
Wire size	1756-TBCH Single wire connection: 0.33...2.1 mm ² (22...14 AWG) solid or stranded shielded copper wire that is rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max Double wire connection: 0.33...1.3 mm ² (22...16 AWG) solid or stranded copper wire that is 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 ² (22...14 AWG) solid or stranded shielded copper wire that is rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max	
Wire category	2 on signal ports 1 on power ports ⁽²⁾	
Enclosure type	None (open-style)	
Temperature code	T4	

(1) UL rating is 24V DC.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

Input Specifications

Attribute	1756-HSC
Number of counters	2
Inputs per counter	3 (A, B, Z for gate/reset)
Input frequency, max	1 MHz in counter modes (A input) 500 kHz in rate measurement mode (A input) 250 kHz in encoder mode (A/B inputs, X1 or X4) 70 Hz with filter enabled
Count range	0...16, 777, 214
Counting frequency, max	1000 kHz
Input current, min	4 mA
Input current, nom	15 mA

Output Specifications

Attribute	1756-HSC/A, B	1756-HSC/C, D
Outputs	4 (2 per common)	
Output delay time Off to On On to Off	20 μ s nom/50 μ s max 60 μ s nom/300 μ s max	
Off-state leakage current per point, max	300 μ A	
On-state voltage drop, max	0.55V	
Output current rating, per point ⁽¹⁾	20 mA @ 4.5...5.5V DC 1.0 A @ 10...31.2V DC	
Current limit	< 4 A	
Surge current per point	2 A for 10 ms every 1 s @ 60 °C (140 °F)	
Load current per point, min	5V operation: 3 mA 12/24V operation: 40 mA	
Output control	Up to two outputs are assigned to each counter channel. Each output can have two 'turn-on' and 'turn-off' preset values	
Short circuit protection	Electronic (Remove overload and toggle On/Off to restore.)	
Reverse polarity protection	Yes (If wired incorrectly, module outputs can be permanently disabled.)	
Counter, max	1 MHz	
Rate measurement, max	500 kHz	
Encoder, max	250 kHz	
Debounce filter, max	70 Hz	User configurable to the following: <ul style="list-style-type: none"> • 50 Hz • 500 Hz • 5 kHz • 50 kHz

(1) UL rating is 24V DC, 24VA.

Environmental Specifications

Attribute	1756-HSC/A, B	1756-HSC/C, D
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)	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)	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	\pm 4 kV at 5 kHz on power ports \pm 4 kV at 5 kHz on signal ports	\pm 2 kV at 5 kHz and 100 kHz on power ports \pm 3 kV at 5 kHz and 100 kHz on signal ports
Surge transient immunity IEC 61000-4-5	\pm 1 kV line-line (DM) and \pm 2 kV line-earth (CM) on power ports \pm 1 kV line-line (DM) and \pm 2 kV line-earth (CM) on signal ports \pm 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 on shielded signal ports	