Technical Data

Original Instructions

ControlLogix I/O Modules Specifications

Bulletin 1756

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The ControlLogix® Architecture provides a wide range of input and output modules to span many applications, from high-speed digital to process control. The ControlLogix architecture uses Producer/Consumer technology, which allows input information and output status to be shared among multiple ControlLogix controllers.

Summary of Changes

This publication contains new and updated information as indicated in the following table.

Topic	Page
Corrected 1756-OF8H, 1756-OF8HK Technical Specifications	233
Corrected RTB Specifications	270

Rockwell Automation recognizes that some of the terms that are currently used in our industry and in this publication are not in alignment with the movement toward inclusive language in technology. We are proactively collaborating with industry peers to find alternatives to such terms and making changes to our products and content. Please excuse the use of such terms in our content while we implement these changes.

Available 1756 I/O Modules

Module Type	Input Module Catalog Number	Page	Output Module Catalog Number	Page
AC Digital I/O Modules	1756-IA8D, 1756-IA8DK	7	1756-OA8, 1756-OA8K	26
	1756-IA16, 1756-IA16K	10	1756-OA8D	29
	1756-IA16I, 1756-IA16IK	13	1756-OA8E	32
	1756-IA32, 1756-IA32K	16	1756-OA16, 1756-OA16K	35
	1756-IM16I, 1756-IM16IK	19	1756-OA16I, 1756-OA16IK	38
	1756-IN16, 1756-IN16K	22	1756-ON8, 1756-ON8K	41
DC Digital I/O Modules	1756-IB16, 1756-IB16K, 1756-IB16XT	45	1756-OB8, 1756-OB8K	90
	1756-IB16D, 1756-IB16DK	49	1756-OB8EI, 1756-OB8EIK	94
	1756-IB16I, 1756-IB16IK	53	1756-OB16D, 1756-OB16DK	98
	1756-IB16IF, 1756-IB16IFK	57	1756-OB16E, 1756-OB16EK	102
	1756-IB16ISOE, 1756-IB16ISOEK	61	1756-OB16I, 1756-OB16IK	107
	1756-IB32, 1756-IB32K	65	1756-OB16IEF, 1756-OB16IEFK	111
	1756-IC16	68	1756-OB16IEFS, 1756-OB16IEFSK	115
	1756-IG16, 1756-IG16K	72	1756-OB16IS	119
	1756-IH16I, 1756-IH16IK	76	1756-OB32, 1756-OB32K, 1756-OB32XT	123
	1756-IH16ISOE, 1756-IH16ISOEK	79	1756-OC8, 1756-OC8K	127
	1756-IV16, 1756-IV16K	82	1756-OG16, 1756-OG16K	131
	1756-IV32, 1756-IV32K	86	1756-OH8I	135
			1756-OV16E	138
			1756-OV32E, 1756-OV32EK	142
Safety I/O Modules	1756-IB16S	147	1756-OBV8S	154
Contact I/O Modules			1756-OX8I, 1756-OX8IK	163
			1756-OW16I, 1756-OW16IK	166
Analog I/O Modules	1756-IF4FXOF2F, 1756-IF4FXOF2FK	169	1756-OF4, 1756-OF4K	204
	1756-IF8, 1756-IF8K	174	1756-OF8, 1756-OF8K	208
	1756-IF8I, 1756-IF8IK	179	1756-OF8I, 1756-OF8IK	212
	1756-IF16, 1756-IF16K	184		
	1756-IRT8I, 1756-IRT8IK	189		
	1756-IR12, 1756-IR12K	195		
	1756-IT16, 1756-IT16K	199		
HART I/O Modules	1756-IF8H, 1756-IF8HK	217	1756-OF8H, 1756-OF8HK	233
	1756-IF8IH, 1756-IF8IHK	221	1756-OF8IH, 1756-OF8IHK	237
	1756-IF16H, 1756-IF16HK	225		
	1756-IF16IH, 1756-IF16IHK	229		
Compute Modules	1756-CMEE1Y1	241		
	1756-CMS1B1, 1756-CMS1C1, 1756-CMS1D1, 1756-CMS1H1	243		
Specialty I/O Modules	1756-CFM, 1756-CFMK	245	1756-LSC8XIB8I, 1756-LSC8XIB8IK	258
	1756-HSC, 1756-HSCK	252	1756-PLS	263

ControlLogix I/O Module Accessories

Chassis and Power Supply

1756 ControlLogix I/O modules must be mounted in a ControlLogix chassis and each chassis requires a power supply. For more information about the 1756 Chassis and Power Supply options available for your system, see page 269.

Standard I/O Module Wiring

1756 ControlLogix standard I/O modules require either a Removable Terminal Block (RTB) or a 1492 interface module (IFM) to connect all field-side wiring. RTBs and IFMs are not included with the I/O modules. They must be ordered separately. For more information about the RTBs and IFMs available for your system, see page 269 and page 271.

Safety I/O Module Wiring

1756 ControlLogix safety I/O modules require either a specific Removable Terminal Block (RTB) or 1492 interface module (IFM) to connect all field-side wiring.

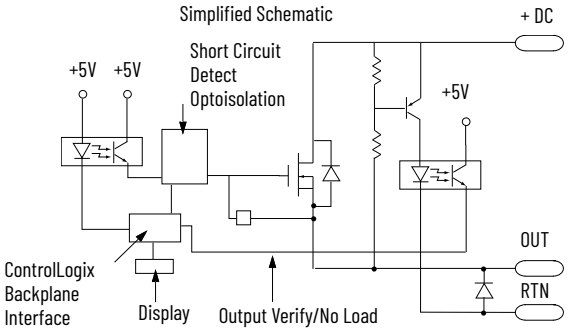
- 1756-IB16S (1756 ControlLogix 16-point Sinking Safety Input Module) has been agency certified using only the ControlLogix RTBs (1756-TBCHS, 1756-TBS6HS).
- 1756-OBV8S (ControlLogix 8-point Safety Bipolar/Sourcing Output Module) has been agency certified using only the ControlLogix RTBs (1756-TBNHS, 1756-TBSHS).
- For information about the IFM module wiring systems that have been tested for use with 1756 Safety I/O modules, see Knowledgebase Technote, *1492 IFM Modules, Cables and Wiring Diagrams for 1756-IB16S, 1756-OBV8S Safety I/O Modules*.

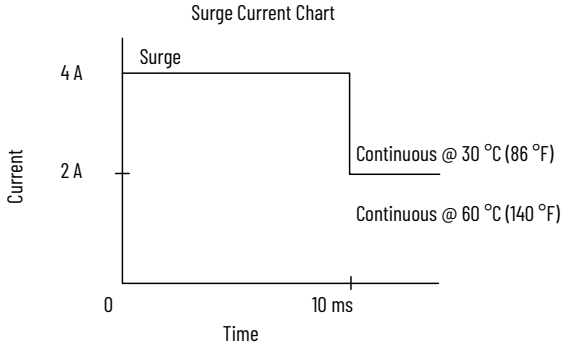
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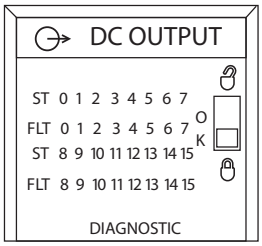
Any application that requires agency certification of the ControlLogix system by using other wiring termination methods may require application-specific approval by the certifying agency.

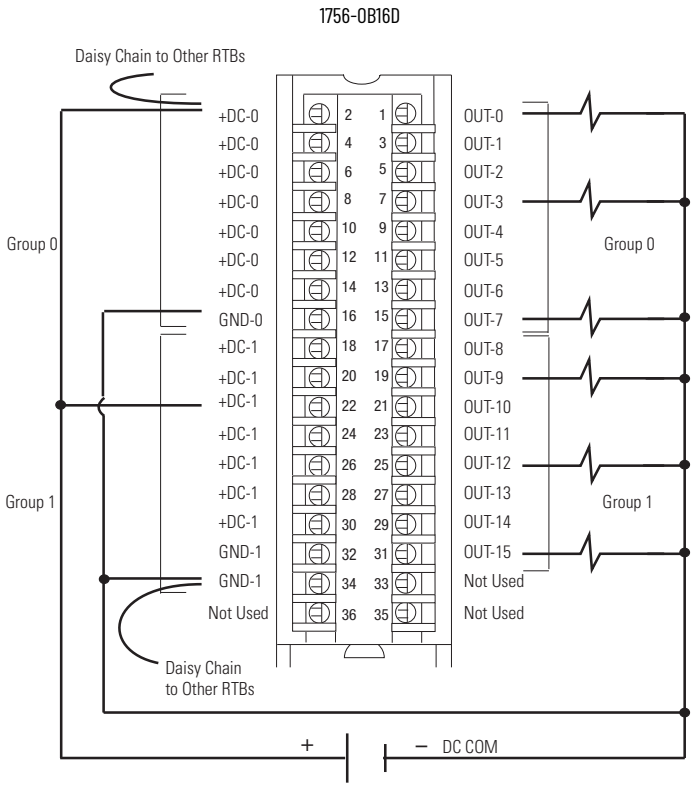
1756-OB16D, 1756-OB16DK

ControlLogix DC (19.2...30V) diagnostic output module









Diagnostic Specifications

Attribute	1756-OB16D, 1756-OB16DK
Short trip	8 A for 180 ms, min 10 A for 120 ms, min
No load	Off-state detection only
Output verification	On-state detection only
Pulse test	Configurable maximum pulse width
Time stamp of diagnostics	±1 ms

Technical Specifications

Attribute	1756-OB16D, 1756-OB16DK
Outputs	16 diagnostic (8 points/group)
Pilot duty (DC-13SQ)	2 A @ 30 °C (86 °F) 1 A @ 60 °C (140 °F)
Voltage category	24V DC source
Operating voltage range	19.2...30V DC
Output delay time Off to On On to Off	 60 µs nom/1 ms max 630 µs nom/5 ms max
Current draw @ 5.1V	250 mA
Current draw @ 24V	140 mA
Total backplane power	4.64 W
Power dissipation, max	3.3 W @ 60 °C (140 °F)
Thermal dissipation	11.25 BTU/hr
Off-state leakage current per point, max	1 mA per point
On-state voltage drop, max	1.2V DC @ 2 A
Current per point, max	2 A @ 30 °C (86 °F) linear derating 1 A @ 60 °C (140 °F) linear derating
Current per module, max	8 A @ 30 °C (86 °F) linear derating 4 A @ 60 °C (140 °F) linear derating
Surge current per point	4 A for 10 ms per point, repeatable every 1 s
Load current, min	3 mA per point
Scheduled outputs	Synchronization within 16.7 s max, reference to the Coordinated System Time
States in Fault mode per point	Hold last state, On or Off (Off is default)
States in Program mode per point	Hold last state, On or Off (Off is default)
Isolation voltage	250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group No isolation between individual group outputs
Module keying	Electronic, software configurable
Fusing	Electronically fused per point
Removable terminal block	1756-TBCH 1756-TBS6H
RTB keying	User-defined mechanical
Slot width	1
Wire category	1(1)
Enclosure type	None (open-style)
Temperature code	T4

(1) 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.

Environmental Specifications

Attribute	1756-OB16D, 1756-OB16DK
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, 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
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 1k Hz sine wave 80% AM from 2000...2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV at 5 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...80 MHz

Certifications

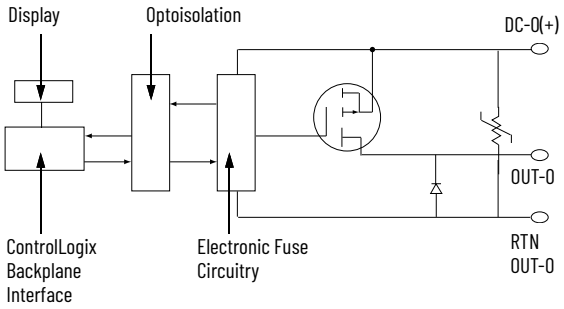
Certification[1]	1756-OB16D, 1756-OB16DK
cULus	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2004/108/EC EMC Directive, 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: Explosive atmospheres - Part 0: Equipment - General requirements • EN IEC 60079-7: Explosive atmospheres – Part 7: Equipment protection by increased safety "e" • II 3 G Ex ec IIC T4 Gc • UL22ATEX2820X
IECEx	IECEx System, compliant with: • IEC 60079-0: Explosive atmospheres - Part 0: Equipment - General requirements • IEC 60079-7: Explosive atmospheres – Part 7: Equipment protection by increased safety "e" • II 3 G Ex ec IIC T4 Gc • IECEx UL 22.0065X
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 UL22UKEX2602X • Zone 2 classification according to UKEX Regulation 2016 No. 1107
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with Article 58-2 of Radio Waves Act, Clause 3
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

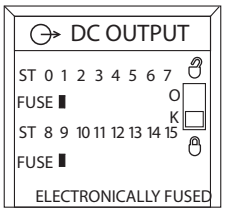
(1) When product is marked. See the Product Certification link at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.

1756-OB16E, 1756-OB16EK

ControlLogix DC (10...31.2V) electronically fused output module

Simplified Schematic





1756-OB16E

