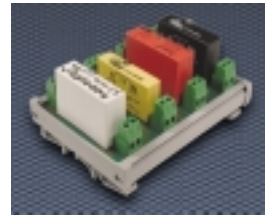


CONNECTOR TO TERMINAL BLOCK MODULES

Compact and reliable connections between high density connectors and high quality screw-cage clamp terminal blocks; DIN Rail mountable

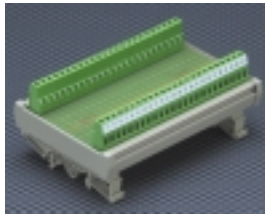
Page6-7



SOLID STATE I/O MODULES

Input/Output Modules (both AC and DC) provided on a DIN mountable module. Bussed and isolated versions available.

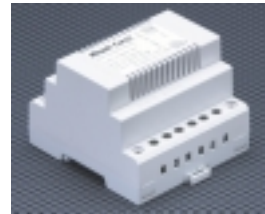
Page30-31



DIODE MODULES & COMPONENT CARRIERS

Add additional components to build circuits and diode modules mounted on 35 or 32mm DIN Rails.

Page8-10



SWITCHING POWER SUPPLIES

Basic and High Performance Series. DIN Rail mountable units are available with 12 or 24VDC output, 15 to 60 Watts and regulated outputs.

Page32



MONITORING PROTECTION MODULES

Special purpose components connected to screw-cage clamp terminal blocks; DIN Rail mountable.

Page11



LINEAR POWER SUPPLIES

Linear power supplies offer 12 or 24VDC output voltages with 115VAC input. Regulated and non-regulated models, all DIN Rail mountable.

Page33



RELAY MODULES

Traditional relay modules from 1-16 channels. Available in several voltages (AC & DC), isolated or bussed systems. DIN Rail mounted.

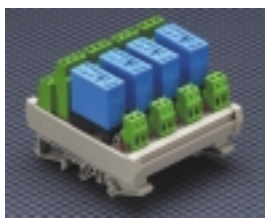
Page12-17



SURGE SUPPRESSORS AND VOLTAGE REGULATORS

DIN Rail and panel mount surge suppressors as well as DC voltage regulators.

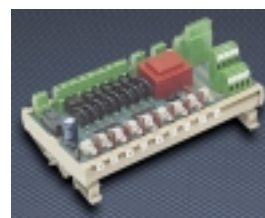
Page34



SAFETY RELAY MODULES

Force-guided contact modules available in 1-16 channels, 12 and 24VDC coils and isolated or bussed systems. All mountable on 32 or 35mm DIN Rails.

Page18-25



CUSTOM MODULES

Altech provides quick turn-key custom designs and competitive solutions.

Page35



GENERAL PURPOSE/ INTERFACE RELAYS

A selection of DIN Rail mountable general purpose relays available for up to 12 A @ 250 Volts.

Page26-27



MOUNTING TRACKS

DIN Rail or panel mount mounting tracks secure standard or custom printed circuit boards in control panels or cabinets.

Page36-37



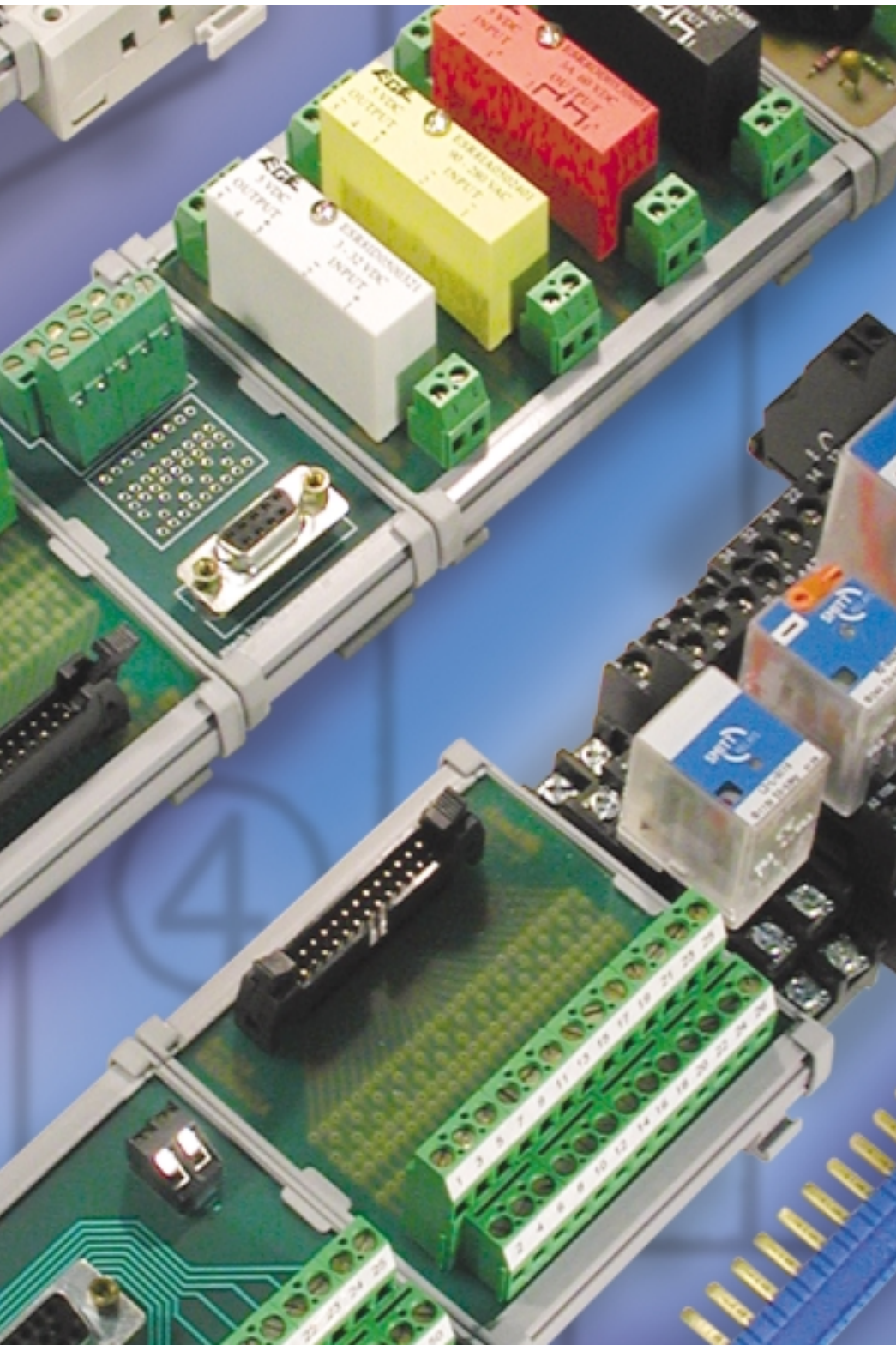
I/O MODULE CARRIERS

Accepts industry standard I/O modules. LED indicator and fuse protection included on carrier.

Page28-29

Intro4-5

Terms and Conditions38



Link incompatible hardware or expand the capabilities of logic systems with Altech interface and electronic modules and carriers. These DIN Rail or panel mounted printed circuit board modules, subsystems and carriers give design flexibility, simplify panel layouts and reduce maintenance and downtime.

Altech's compact interface modules provide a flexible, cost effective transition from Sub-D, Ribbon Cable and other connectors to terminal blocks.

Altech's electronic modules include Diode, Fuse, Varistor, Optocoupler (I/O), Relay, power supplies and custom modules.

If your needs go beyond our comprehensive range of standard interface and electronic modules, Altech can custom design a module to meet even the most sophisticated requirements.

Modules are supplied completely assembled with ready to wire screw-cage terminal blocks in an extruded track. The track can be mounted on 35 or 32mm DIN Rail or can be panel mounted. Select individual components and mount your own electronic boards with Altech mounting tracks.

MODULES

CONNECTOR-TO-TERMINAL BLOCK

Compact and reliable transitions between high density connectors and high quality screw-cage clamp terminal blocks.

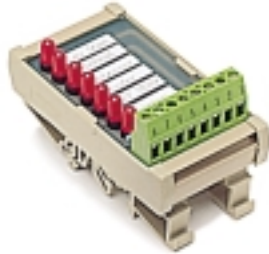
- FBK Ribbon Cable, up to 64 poles
- Subminiature - D, up to 50 poles



MONITORING, PROTECTION

Special purpose components connected to screw-cage clamp terminals.

- M, LED Indicator Module
- FM, 5x20mm Fuse Module
- SSM, Surge Suppressor



DIGITAL I/O MODULES

- DIN Mount Solid State I/O Modules or carriers only
- Accommodates either input or output modules
- DIN Rail or Panel Mount
- Built-in Fuses, LED Indicator
- Bussed or Isolated configurations



MINIATURE RELAYS

Traditional relay and safety relay modules in a high density package.

- Protect equipment
- Provide insulation
- Control motors, solenoid and valves
- Safety relays for emergency stop, safety gate and two-hand stop



SWITCHING & LINEAR POWER SUPPLIES

Switching and linear power supplies, DIN Rail mountable, up to 60 Watts of power. Output voltages of 12 and 24 VDC.



DIODE MODULES & COMPONENT CARRIERS

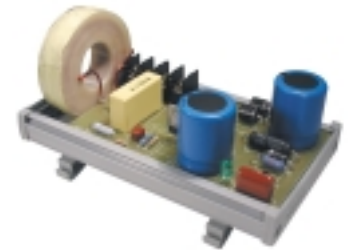
Use our Diode Modules to build lamp test circuits, decouple signals, etc. Mount your own components into our Component Carriers (supplied without electronic components). Or, tell us what you need and we'll install it for you.

- DM Diode Modules have series connection 1A or 3A diodes, and 1A diode gates with common cathodes or anodes, providing commonly used diode arrangements
- BSM Component Carrier has factory installed fork-and eyelet soldering posts in each series trace
- CCA Component Carrier consists of a printed circuit board with four in-line and two bus-connection through-holes to solder pads in each trace, complete with terminal blocks



SURGE SUPPRESSORS

- No Ground circuit contamination
- 4 Models available
- DIN Rail or Panel Mount
- Developed to meet US Government Guidelines



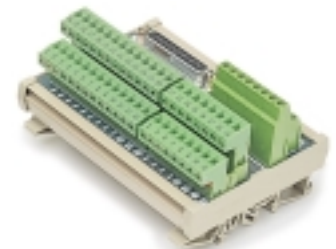
VOLTAGE REGULATORS

- DIN Rail Mountable voltage regulators
- Din Rail and Panel Mount Surge Suppressors; 120V/85-265 Volts



CUSTOM

Altech will design and build DIN Rail or panel mount custom interfaces to meet your exact specifications and application requirements. Give us a call.



MOUNTING TRACKS

DIN Rail or panel mount mounting track extrusions are available for PCB insertions in 32 and 35mm DIN Rail.



INTERFACES
CONNECTOR-TO-WIRE
Subminiature D Module
35 or 32mm DIN Rail

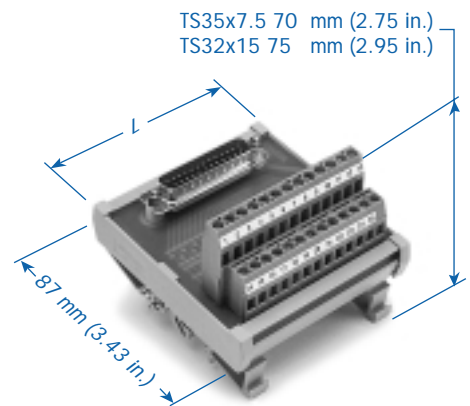
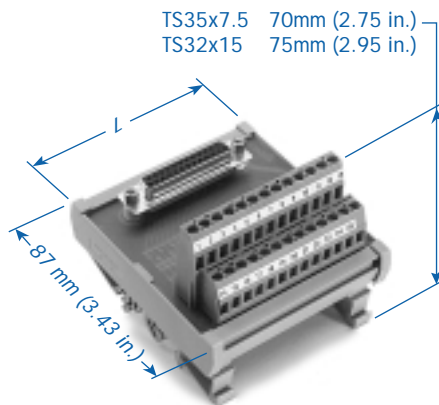
Compact Subminiature D (Sub D) Modules provide quick and reliable interfaces between high density connectors (back shells) with up to 50 poles and discrete wires. Connector-to-Wire Interface modules save time and eliminate wiring mistakes. No special tools are required. Sub D Interface modules are typically used in communications, data processing, process control and other industrial applications.

Keyed by design, Sub D Modules are equipped with male or female connectors, screw-cage clamp terminal blocks, and component solder pads for easy insertion of circuit building components. All terminal blocks are individually marked to correspond to the numbers on the connector pins or sockets.

- Screw-Cage Clamp Connections
- 4 to 5 Component Solder Pads Per Line^a
- .9mm (.035 in.) Component Mtg. Holes
- DIN Rail Mount, Panel Mount Available

SD
Female Sub D

SD
Male Sub D

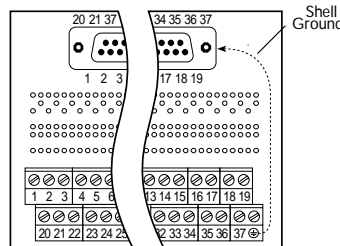


Wire Range	Current	Voltage
0.5-4mm ²		
22-12 AWG	4A	250VAC

Wire Range	Current	Voltage
0.5-4mm ²		
22-12 AWG	4A	250VAC

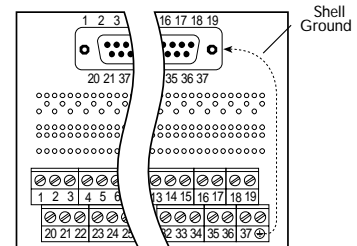
Ordering Information	No. of Poles	Type	Cat. No.	Module Length (L) mm (in.)	Std. Pk.
Sub D, Female Connector	9	SD-F9	5745.2	45 (1.77)	1
	15	SD-F15	5746.2	48 (1.89)	1
	25	SD-F25	5747.2	81 (3.19)	1
	37	SD-F37	5748.2	114 (4.49)	1
	50	SD-F50	5749.2	137 (5.39)	1

Ordering Information	No. of Poles	Type	Cat. No.	Module Length (L) mm (in.)	Std. Pk.
Sub D, Male Connector	9	SD-M9	5740.2	45 (1.77)	1
	15	SD-M15	5741.2	48 (1.89)	1
	25	SD-M25	5742.2	81 (3.19)	1
	37	SD-M37	5743.2	114 (4.49)	1
	50	SD-M50 ^b	5744.2	137 (5.39)	1



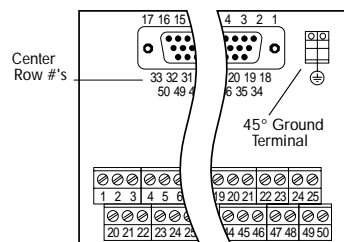
Female Connector SD-F37

37 Pin Socket Female Connector Shown with component counting holes (pads are on solder side)



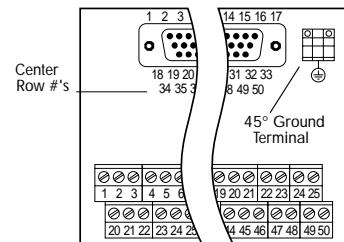
Male Connector SD-M37

37 Pin Male Connector Shown with component mounting holes (pads are on solder side)



Female Connector SD-F50

50 Pin Socket Female Connector Shown with no component solder pads



Male Connector SD-M50

50 Pin Male Connector Shown with no component solder pads

^a SD-F50 and SD-M50 are double-sided boards and do not have component solder pads.

^b SD-M50 is only available with a 1.5A current rating.

INTERFACES CONNECTOR-TO-WIRE Ribbon Cable Module 35 or 32mm DIN Rail

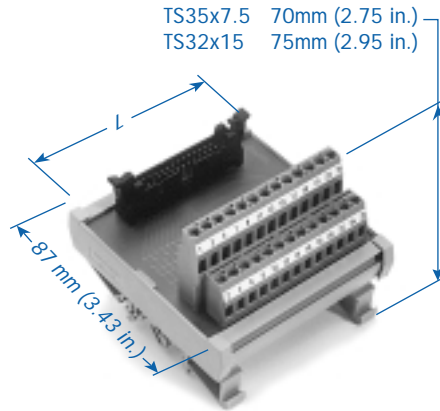
FBK Ribbon Cable

Compact Ribbon Connector Modules provide an interface between multi-wire flat cables outfitted with IDC connectors and discrete wires. Up to 64 conductors can be terminated saving time and eliminating wiring mistakes.

No special wiring or tools are required. Ribbon Cable Interface Modules are typically used in communications, data processing, process control and other industrial applications.

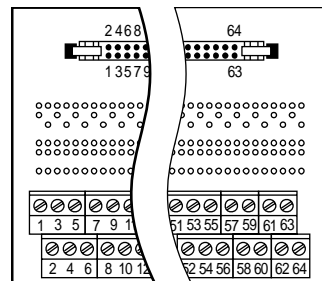
FBK Ribbon Cable Modules are supplied with short strain relief ejector latches (long ejector latches are available), screw-cage clamp terminal blocks and component solder pads for easy insertion of circuit building components. All terminal blocks are individually marked to correspond to the numbers on the header pins.

- Screw-Cage Clamp Connections
- Up to 64 Poles
- 4 to 5 Component Solder Pads Per Line
- .9mm (.035 in.) Component Mtg. Holes
- DIN Rail Mount, Panel Mount Available



Wire Range	Current	Voltage
0.5-4mm ²		
22-12 AWG	3A	250V AC

Ordering Information	No. of Poles	Type	Cat. No.	Module Length (L) mm (in.)	Std. Pk.
Ribbon Cable Module with Short Ejector Latches	10	FBK10	5720.2	47 (1.85)	1
	14	FBK14	5721.2	47 (1.85)	1
<i>To order long ejector latches, specify Cat. No. with /L suffix. Example: Cat. No. 5727.2/L.</i>	16	FBK16	5722.2	69 (2.72)	1
	20	FBK20	5723.2	69 (2.72)	1
	26	FBK26	5724.2	80 (3.15)	1
	34	FBK34	5725.2	103 (4.06)	1
	40	FBK40	5726.2	114 (4.49)	1
	50	FBK50	5727.2	148 (5.83)	1
	60	FBK60	5728.2	170 (6.68)	1
	64	FBK64	5729.2	170 (6.68)	1



Model FBK64

INTERFACES

Diode Module

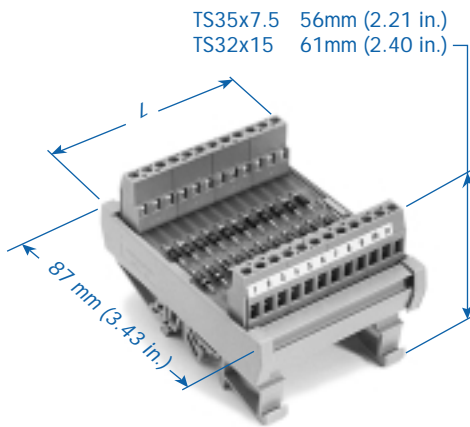
35 or 32mm DIN Rail Mount

**DM
Diode Module**

Wire individually labeled diodes into existing circuits for freewheeling, DC inductive kick suppression (commutating), reverse DC polarity protection, etc. Use bussed diodes for distribution of logic Vcc or ground, or gather and decouple electrical signals for lamp testing or collective fault messages. Use as commutating diodes across inductive loads such as DC relays, solenoid valves, actuator magnets, etc. to suppress voltage surges.

Standard modules include series connection diode circuits in 1 Amp and 3 Amp versions, and diode gates with bussed anodes or cathodes.

- Screw-Cage Clamp Connections
- Special Configurations Available
- DIN Rail Mount, Panel Mount Available



Wire Range	Voltage
0.5-4mm ²	250V
22-12 AWG	

Ordering Information	No. of Diodes	Diode	Type	Cat. No.	Module Length (L) mm (in.)	Std. PK.
Series Connection, 1A diodes	4	1N4007	DM4-S	8971.2	22 (.87)	1
Series Connection, 1A diodes	8	1N4007	DM8-S	5702.2	42 (1.65)	1
Series Connection, 1A diodes	12	1N4007	DM12-S	5703.2	62 (2.44)	1
Series Connection, 1A diodes	16	1N4007	DM16-S	8973.2	90 (3.54)	1
Series Connection, 1A diodes	20	1N4007	DM20-S	8974.2	110 (4.33)	1
Series Connection, 1A diodes	24	1N4007	DM24-S	8975.2	130 (5.12)	1
Series Connection, 3A diodes	4	1N5408	DM4-S3	8971.3	22 (.87)	1
Series Connection, 3A diodes	8	1N5408	DM8-S3	5702.3	42 (1.65)	1
Series Connection, 3A diodes	12	1N5408	DM12-S3	5703.3	62 (2.44)	1
Series Connection, 3A diodes	16	1N5408	DM16-S3	8973.3	90 (3.54)	1
Series Connection, 3A diodes	20	1N5408	DM20-S3	8974.3	110 (4.33)	1
Series Connection, 3A diodes	24	1N5408	DM24-S3	8975.3	130 (5.12)	1
Bussed Anodes, 1A diodes	6	1N4007	DM6-A-S	8842.2	22 (.87)	1
Bussed Anodes, 1A diodes	14	1N4007	DM14-A-S	5704.2	42 (1.65)	1
Bussed Anodes, 1A diodes	22	1N4007	DM22-A-S	5705.2	62 (2.44)	1
Bussed Cathodes, 1A diodes	6	1N4007	DM6-K-S	8850.2	22 (.87)	1
Bussed Cathodes, 1A diodes	14	1N4007	DM14-K-S	5706.2	42 (1.65)	1
Bussed Cathodes, 1A diodes	22	1N4007	DM22-K-S	5707.2	62 (2.44)	1

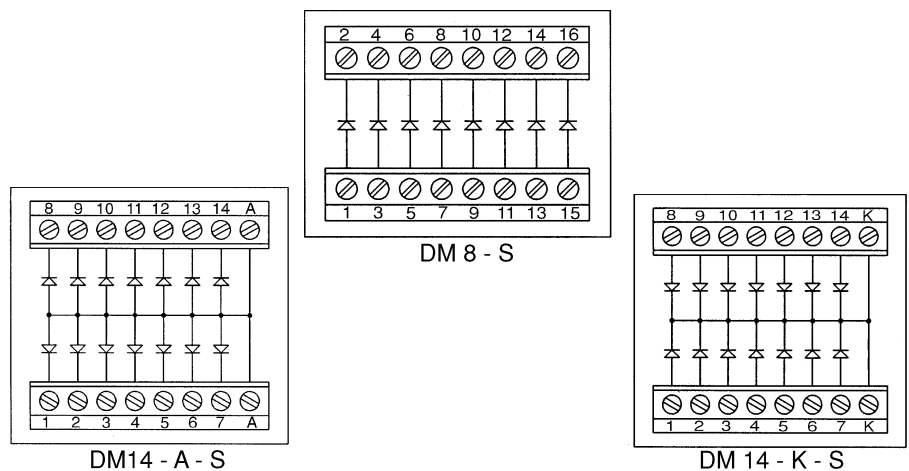
Specifications:

Diode: 1N4007 or equivalent
Rated Current: 1A

Diode: 1N5408 or equivalent
Rated Current: 3A

Maximum Blocking Voltage - 1000V DC

Rated Bus Current: 10A
(12A at 30°C (86°F) Temperature Rise)



INTERFACES
Component Carriers
35 or 32mm DIN Rail

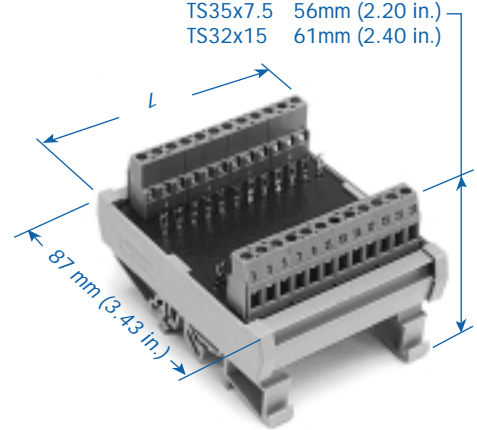
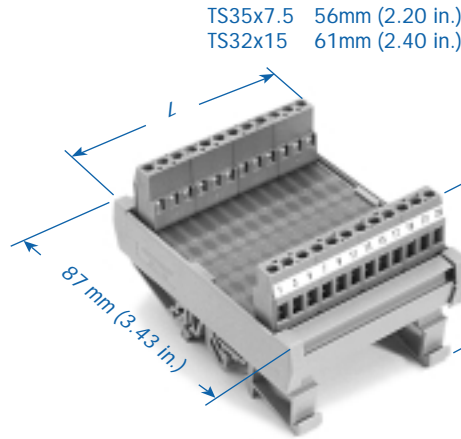
Use Component Carriers to modify and/or build circuits to meet special requirements. Type CCA requires removal of the single solder-side printed circuit board from the mounting track for soldering of components. Posts or through-leads can be installed for future field connections. Contact Altech for custom installation of solder posts.

Type BSM allows field additions of diodes for decoupling, line crossovers for testing or multiplying tie-in terminals for a line. Pre-installed flat, fork-and-eyelet soldering posts allow component-side mechanical and solder connections with minimum disruption to wiring and mounted devices.

- Screw-Cage Clamp Connections
- Terminal Blocks are Numbered for Easy Wire Identification
- DIN Rail Mount, Panel Mount Available

CCA
Component Carrier

BSM
Component Carrier



Wire Range	Current/Line	Voltage
0.5-4mm ²		
22-12 AWG	6A	250V
	(12A Bus ^a)	

Wire Range	Current/Channel	Voltage
0.5-4mm ²		
26-14 AWG	5A	250V

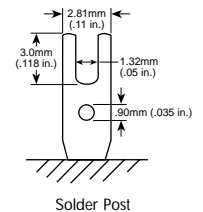
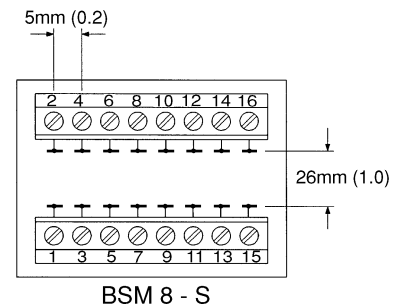
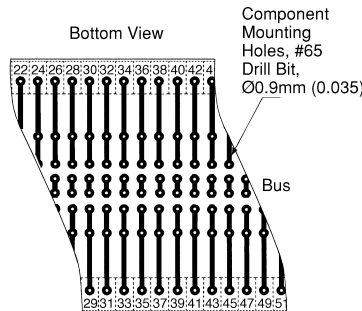
Ordering Information	No. of Poles	Type	Cat. No.	Module Length (L) mm (in.)
Component Carrier <i>without solder posts</i>	4	CCA4	8835.2	22 (.87)
	8	CCA8	8836.2	42 (1.65)
	12	CCA12	8837.2	62 (2.44)
	16	CCA16	8838.2	82 (3.23)
	20	CCA20	8839.2	102 (4.02)
	24	CCA24	8840.2	122 (4.80)

Type	Cat. No.	Module Length (L) mm (in.)
BSM8-S	5700.2	47 (1.85)
BSM12-S	5701.2	69 (2.72)

Component Carrier	No. of Poles
<i>with fork-and-eyelet solder posts</i>	
8 Channel	16
12 Channel	24

Std. Pk.: 1

Std. Pk.: 1



^a Printed Circuit Board Trace Rating.
 Series Trace: 6A
 Bus Trace: 12A
 Terminal Block Rating: 15A

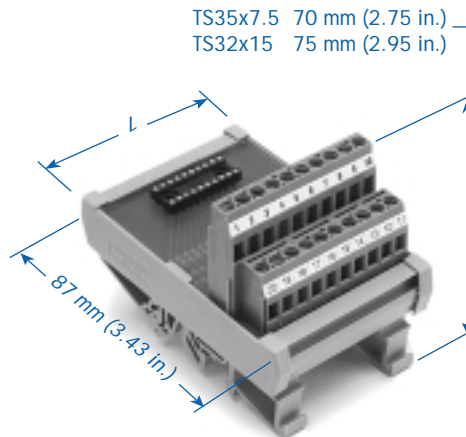
INTERFACES

**Dip Socket Carrier - 3 Amp
35 or 32mm DIN Rail Mount**

**DIPC
Dip Socket Carrier**

Enhance design capabilities with Dual In-Line Package (DIP) Socket Carriers, the most versatile socket available. Use our DIPC's for reed-relays, power relays, photo-isolated Input/Output modules, in-line switches, thin film resistors and more. The Altech DIPC is rated 3 Amp and is available in 14, 16 and 20 pin socket configurations. Each DIPC module has several component solder pads for loading circuit-building components.

- Screw-Cage Clamp Connections
- 4 to 5 Component Solder Pads Per Line
- .9mm (.035 in.) Component Mtg. Holes
- DIN Rail Mount, Panel Mount Available



Typical Applications:

14 Pin

Magnecraft® Classes 107, 171, 172;
S-D® Series MRR-D; Hamlin® 700;
Dale® TDP14 Resistors; etc.

16 Pin

Most P&B® including T85 Hi Sens and
I/O Modules IA, OA, OD16;
Midtex® 190 Power;
Augat® Alcoswitch® GD, AD Series, etc.

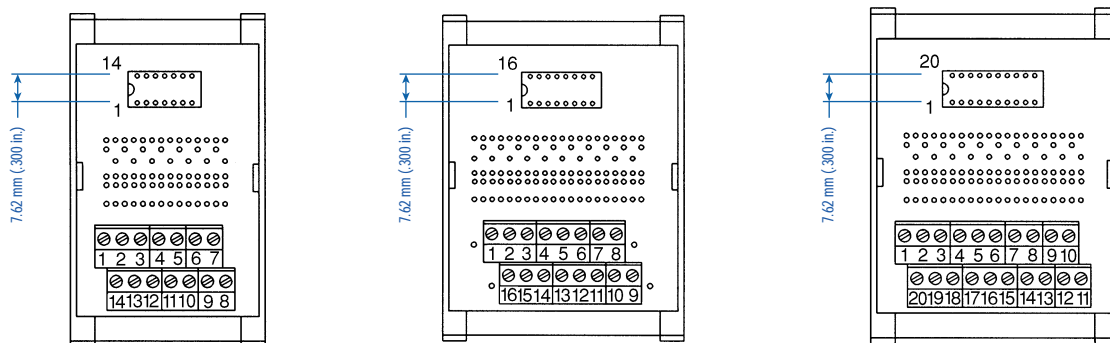
20 Pin

C&K® BD series switches;
Grayhill® 79 coded switches;
AMP® 7600 shunts; etc.

Wire Range	Current	Voltage
0.5-4mm ²		
22-12 AWG	3A ^a	250V

Ordering Information	Type	Cat. No.	Module Length (L) mm (in.)
DIP Socket Carrier, 14 Pin	DIPC14	8937.2	45 (1.77)
DIP Socket Carrier, 16 Pin	DIPC16	8938.2	56 (2.20)
DIP Socket Carrier, 20 Pin	DIPC20	8939.2	56 (2.20)

Std. Pk.: 1



^a Current Ratings
Printed Circuit Traces: 3.5A
Terminal Blocks: 15A
Dip Socket: 3A

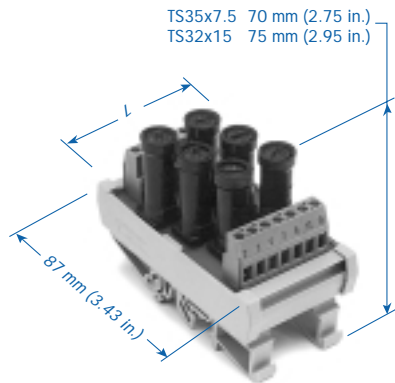
Fuse Module

INTERFACES

35 or 32mm DIN Rail

Protect circuits from overloads and short circuits. 3 or 6 vertical fuse holders have slotted screw caps for convenient fuse replacement (5x20 mm fuses). Modules with common bus are available upon request.

- Screw-Cage Clamp Connections
- Select 3 or 6 Fuse Holder Module
- DIN Rail Mount, Panel Mount Available



Wire Range	Current	Voltage
0.5-4mm ²		
22-12 AWG	6.3A ^b	250 V AC

Type	Cat. No.	Module Length (L) mm (in.)
FM3-E	5712.2	24 (.95)
FM6-E	5714.2	47 (1.85)

Std. Pk.: 1

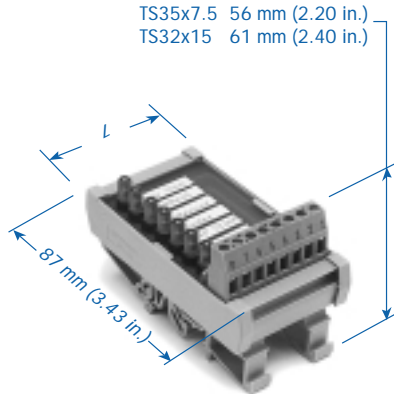
Indicator Module

INTERFACES

35 or 32mm DIN Rail

Monitor control functions and sequences to detect problems quickly and efficiently. The IM Indicator Modules are furnished with 7 red LEDs per module, and are available for various input voltages from 5 to 60V DC^c. Labels can be adhered to the board next to LEDs (Type B-619, manufactured by Brady[®]) Ask about our custom designs.

- Screw-Cage Clamp Connections
- DIN Rail Mount, Panel Mount Available



Wire Range	Current	Voltage
0.5-4mm ²		
22-12 AWG		

Type	Cat. No.	Input VDC	Drop R Ω	LED mA
IM7K/5	5750.2	4-6	220	12.0
IM7K/12	5751.2	9-15	1.0K	9.6
IM7K/24	5752.2	20-30	3.3K	6.5
IM7K/60	5753.2	50-70	10.0K	5.8

Std. Pk.: 1

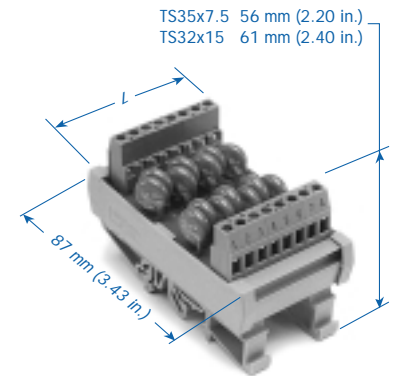
Surge Suppressor Module

INTERFACES

35 or 32mm DIN Rail

Protect personnel and equipment from damaging voltage surges, spikes and overvoltages from lightning, inductive switching or electrostatic discharge. Improve system reliability and reduce downtime with varistor overvoltage protection.

- Screw-Cage Clamp Connections
- Prevent Arcing at Contacts
- Absorb Switching Energy
- DIN Rail Mount, Panel Mount Available



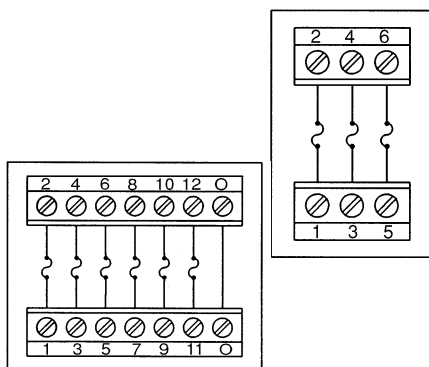
Wire Range	Current	Voltage
0.5-4mm ²		
22-12 AWG		

Type	Cat. No.	Module Length (L) mm (in.)	Operating Volts
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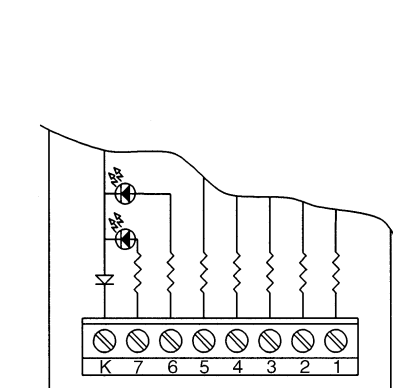
Individually Wired Varistors			
SSM3-E/50	5730.2	24 (.95)	50V AC
SSM8-E/50	5731.2	47 (1.85)	50V AC
SSM3-E/275	5732.2	24 (.95)	275V AC
SSM8-E/275	5733.2	47 (1.85)	275V AC

Common Return			
SSM5-R/50 ^d	5734.2	24 (.95)	50V AC
SSM14-R/50 ^d	5735.2	47 (1.85)	50V AC
SSM5-R/275 ^e	5736.2	24 (.95)	275V AC
SSM14-R/275 ^e	5737.2	47 (1.85)	275V AC

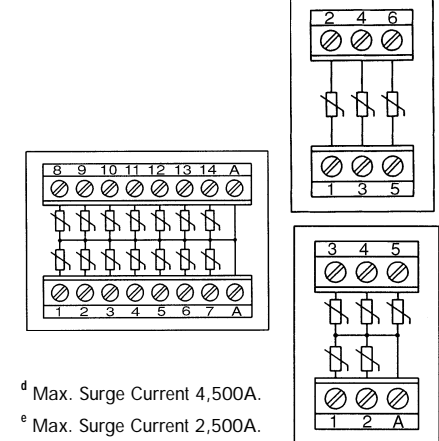
Std. Pk.: 1



^b Maximum per current path.



^c Other DC or AC voltages are available upon request.



^d Max. Surge Current 4,500A.

^e Max. Surge Current 2,500A.

INTERFACES

Relay Modules and Carriers

Isolated Channels

35 or 32mm DIN Rail

Isolated channels (no bus) allow control of each relay by a different logic system, if necessary. Mix sourcing (positive switching, Vcc on/off) and sinking (negative switching, ground on/off) on a single multi-relay module. Provide spare relay channels for future needs without committing to a specific logic power supply, and without committing coil-drive power for more than one relay at a time.

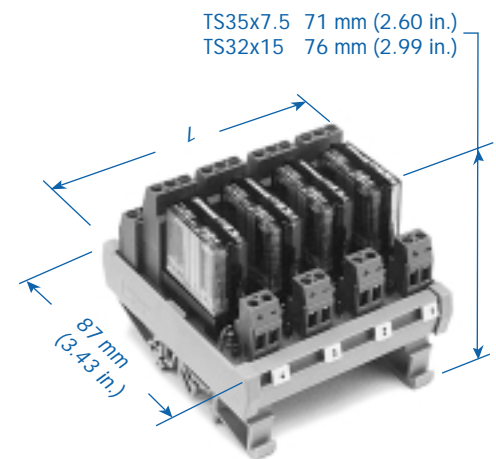
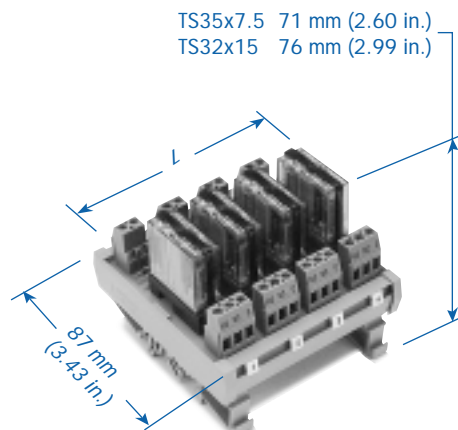
Altech Relay Modules provide high density packaging of miniature general purpose relays with Single Pole Double Throw (Form C) and Double Pole Double Throw (2 Form C) contact configurations and low current AC and DC coils. Load your own relays in our RC Relay Carrier, or order the RM Relay Module complete with relays.

Call us with your custom module requirements!

- Screw-Cage Clamp Connections
- LED Coil Voltage Indicator
- Reverse DC Polarity LED Protection
- Surge Suppression with DC Coil
- DIN Rail Mount, Panel Mount Available

**RC1 / RM1
Single Pole Double Throw**

**RC2 / RM2
Double Pole Double Throw**

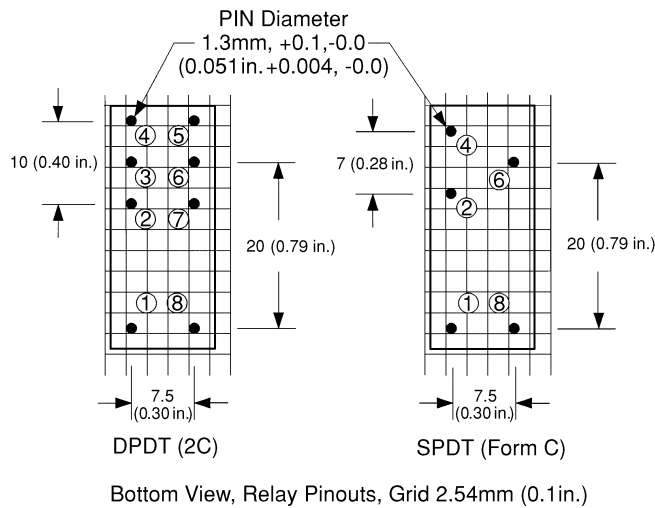


Wire Range	Contact Ratings	
	Current	Voltage
0.5-4mm ²	8A	250VAC/
22-12 AWG		30VDC

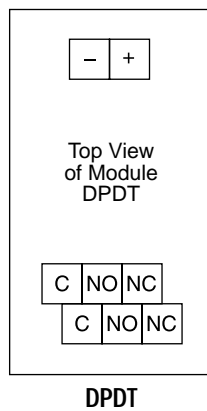
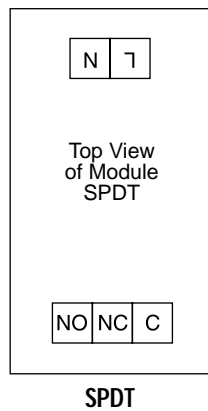
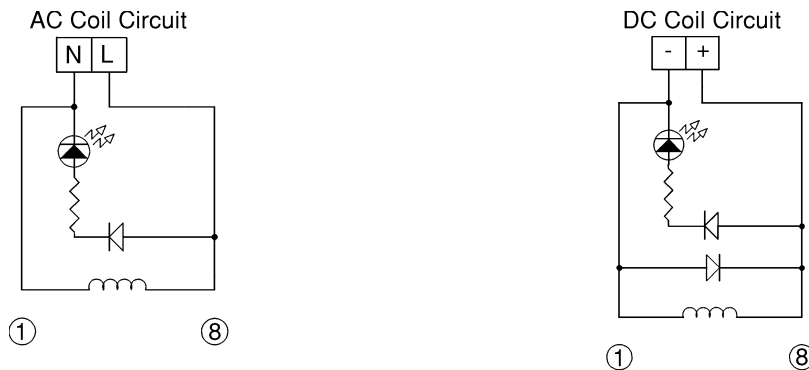
Wire Range	Contact Ratings	
	Current	Voltage
0.5-4mm ²	6A	250VAC/
22-12 AWG		30VDC

Ordering Information	Module Length (L) mm (in.)	Carrier Only		Module with Relays		Carrier Only		Module with Relays	
		Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
1 Channel, Coil Voltage 12V DC 24V DC 110V AC 220V AC	21 (0.83)	RC1E1	8929.5	RM1E1	8929.2	RC2E1	8945.5	RM2E1	8949.2
		RC1G1	8933.5	RM1G1	8933.2	RC2G1	8951.5	RM2G1	8951.2
		RC1U1	8935.5	RM1U1	8935.2	RC2U1	8953.5	RM2U1	8953.2
		RC1X1	8940.5	RM1X1	8940.2	RC2X1	8954.5	RM2X1	8954.2
2 Channel, Coil Voltage 12V DC 24V DC 110V AC 220V AC	40 (1.57)	RC1E2	8929.6	RM1E2	8929.3	RC2E2	8949.6	RM2E2	8949.3
		RC1G2	8933.6	RM1G2	8933.3	RC2G2	8951.6	RM2G2	8951.3
		RC1U2	8935.6	RM1U2	8935.3	RC2U2	8953.6	RM2U2	8953.3
		RC1X2	8940.6	RM1X2	8940.3	RC2X2	8954.6	RM2X2	8954.3
4 Channel, Coil Voltage 12V DC 24V DC 110V AC 220V AC	79 (3.11)	RC1E4	8931.5	RM1E4	8931.2	RC2E4	8955.5	RM2E4	8955.2
		RC1G4	8941.5	RM1G4	8941.2	RC2G4	8956.5	RM2G4	8956.2
		RC1U4	8942.5	RM1U4	8942.2	RC2U4	8957.5	RM2U4	8957.2
		RC1X4	8943.5	RM1X4	8943.2	RC2X4	8959.5	RM2X4	8959.2
8 Channel, Coil Voltage 12V DC 24V DC 110V AC 220V AC	157 (6.18)	RC1E8	8931.6	RM1E8	8931.3	RC2E8	8955.6	RM2E8	8955.3
		RC1G8	8941.6	RM1G8	8941.3	RC2G8	8956.6	RM2G8	8956.3
		RC1U8	8942.6	RM1U8	8942.3	RC2U8	8957.6	RM2U8	8957.3
		RC1X8	8943.6	RM1X8	8943.3	RC2X8	8959.6	RM2X8	8959.3
16 Channel, Coil Voltage 12V DC 24V DC 110V AC 220V AC	311 (12.24)	RC1E16	8932.5	RM1E16	8932.2	RC2E16	8963.5	RM2E16	8963.2
		RC1G16	8944.5	RM1G16	8944.2	RC2G16	8972.5	RM2G16	8972.2
		RC1U16	8946.5	RM1U16	8946.2	RC2U16	8995.5	RM2U16	8995.2
		RC1X16	8948.5	RM1X16	8948.2	RC2X16	8999.5	RM2X16	8999.2
		Std. Pk.: 1		Std. Pk.: 1		Std. Pk.: 1		Std. Pk.: 1	

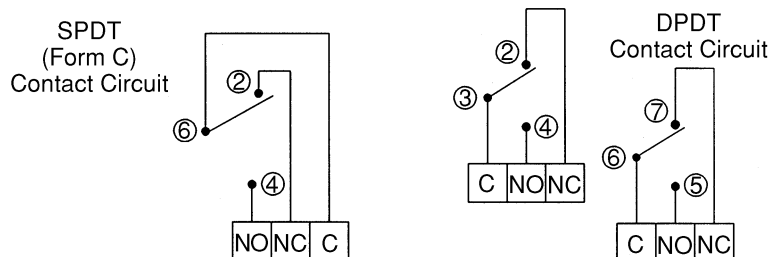
Relay Pinout



Coil Circuits



Contact Circuits



Contact Specifications

SPDT Composite Rating: **8A**

- Relay Socket: 8A
- Terminal Blocks: 15A
- PCB Trace for Contact Circuit
 - At 30°C (86°F) temperature rise NC: 12A
 - Common and NO: 16A
- PCB Trace for Coil Circuit: 6A
 - At 30°C (86°F) temperature rise
- Relay Contacts, AgCdO, Minimum Ratings:
 - Resistive- At 250VAC and 30VDC: 10A
 - Inductive - At 250VAC : 7.5A
 - At 30VDC: 5A
 - (p.f = 0.4)
- Rated Minimum Breaking Capacity:
 - 2,500 VA Resistive, 1,800 VA Inductive

DPDT Composite Rating: **6A**

- Relay Socket: 8A
- Terminal Blocks: 15A
- PCB Trace for Contact Circuit: 6A
 - At 30°C (86°F) temperature rise: 7A
- PCB Trace for Coil Circuit: 1A
 - At 30°C (86°F) temperature rise: 2A
- Relay Contacts, AgCdO, Minimum Ratings:
 - Resistive- At 250VAC and 30VDC: 8A
 - Rated at 250VAC
 - Max. Breaking Voltage: 440VAC
 - "Make" Current: 12A
- Rated Minimum Breaking Capacity:
 - 2,000 VA Resistive

Coil Specifications

-Ambient Temperatures:
40°to +70°C (-40°to +158°F)

Coil Voltage VDC	Operate (pull-in) Max. VDC	Drop Out (Rel.) V Min. VDC	Coil Current mA	Coil Resistance ohms
12	18	8.8	55	220±15%
24	42	17.5	20	1,200±15%
110	132	96.0	8.9	9,000±15%
220	264	192.0	4.1	31,500±15%

Table values are for cold coil at 20°C (68°F) and exclude coil exterior circuit.

INTERFACES

**Relay Modules and Carriers
Bussed Channels
35 or 32mm DIN Rail**

Altech Bussed Relay Modules provide high density packaging of miniature general purpose relays with minimal hook-up wiring. Select from bussed DC Positive (DC Negative switching), bussed DC Negative (DC Positive switching), or bussed AC neutral.

Ideal for traditional mechanical relay input/output array between a single logic system and peripheral devices, or between logic systems in a network as well as their peripheral and field devices.

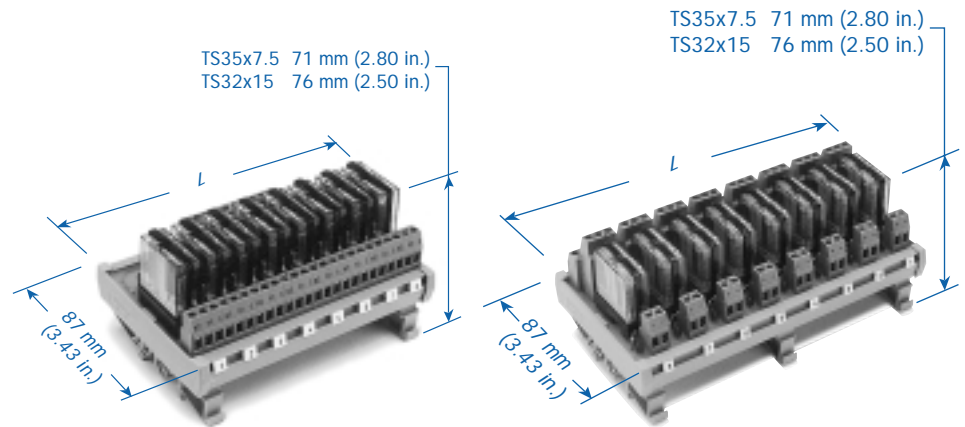
Load your own relays in our RCB Relay Carrier, or order the RMB Relay Module complete with 8 or 16 relays.

Call us with your custom module requirements!

- Screw-Cage Clamp Connections
- LED Coil Voltage Indicator
- Reverse DC Polarity LED Protection
- Surge Suppression With DC Coil
- DIN Rail Mount, Panel Mount Available

**RC1 / RM1
Single Pole Double Throw**

**RC2 / RM2
Double Pole Double Throw**



Wire Range	Current	Contact Ratings Voltage	Wire Range	Current	Contact Ratings Voltage
0.5-4mm ²		250VAC/ 30VDC	0.5-4mm ²		250VAC/ 30VDC
22-12 AWG	8A		22-12 AWG	6A	

Ordering Information	Module Length (L) mm (in.)	Carrier Only		Module with Relays		Carrier Only		Module with Relays	
		Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
8 Channel, Bussed DC+ 12V DC(E) 24V DC(G)	125 (4.92)	RCB1E8V	8912.5	RMB1E8V	8912.2	RCB2E8V	8923.5	RMB2E8V	8923.2
		RCB1G8V	5494.5	RMB1G8V	5494.2	RCB2E8V	8924.5	RMB2G8V	8924.2
8 Channel, Bussed DC- ⊖ 12V DC(E) 24V DC(G)	125 (4.92)	RCB1E8G	8912.6	RMB1E8G	8912.3	RCB2E8G	8923.6	RMB2E8G	8923.3
		RCB1G8G	5492.5	RMB1G8G	5492.2	RCB2G8G	8924.6	RMB2G8G	8924.4
8 Channel, Bussed AC (N) 110V AC(U) 220V AC(X)	125 (4.92)	RCB1U8	5502.5	RMB1U8	5502.2	RCB2U8	8925.5	RMB2U8	8925.2
		RCB1X8	8913.6	RMB1X8	8913.3	RCB2X8	8925.6	RMB2X8	8925.3
16 Channel, Bussed DC+ 12V DC(E) 24VDC(G)	248 (9.76)	RCB1E16V	8914.5	RMB1E16V	8914.2	RCB2E16V	8926.5	RMB2E16V	8926.2
		RCB1G16V	5508.5	RMB1G16V	5508.2	RCB2G16V	8926.6	RMB2G16V	8926.3
16 Channel, Bussed DC- ⊖ 12V DC(E) 24V DC(G)	248 (9.76)	RCB1E16G	8921.5	RMB1E16G	8921.2	RCB2E16G	8927.5	RMB2E16G	8927.2
		RCB1G16G	5506.5	RMB1G16G	5506.2	RCB2G16G	8927.6	RMB2G16G	8927.3
16 Channel, Bussed AC (N) 110V DC(U) 220V AC(X)	248 (9.76)	RCB1U16	5514.5	RMB1U16	5514.2	RCB2U16	8928.5	RMB2U16	8928.2
		RCB1X16	5514.6	RMB1X16	5514.3	RCB2X16	8928.6	RMB2X16	8928.3

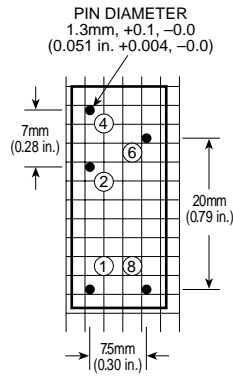
Std. Pk.: 1

Std. Pk.: 1

Std. Pk.: 1

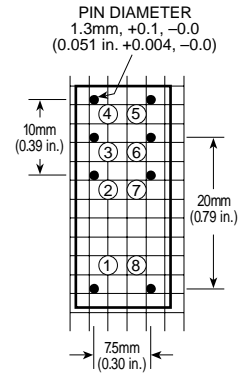
Std. Pk.: 1

Single Pole Double Throw (SPDT)

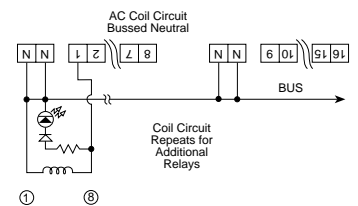
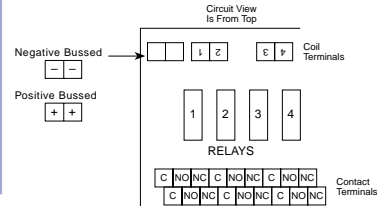
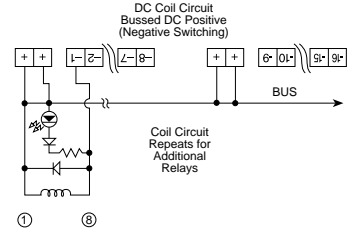
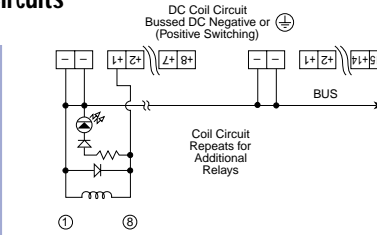
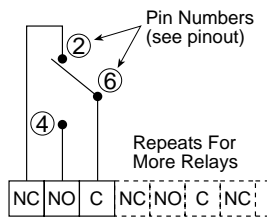
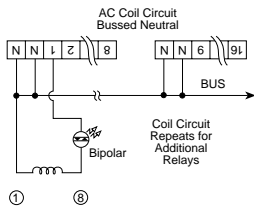
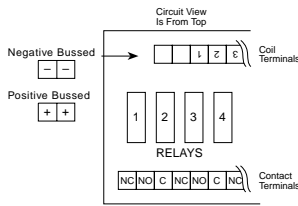
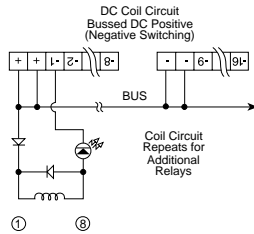
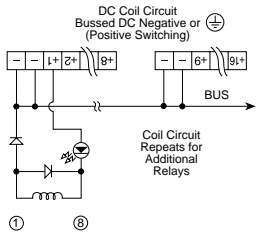


Relay Pinout
Bottom View

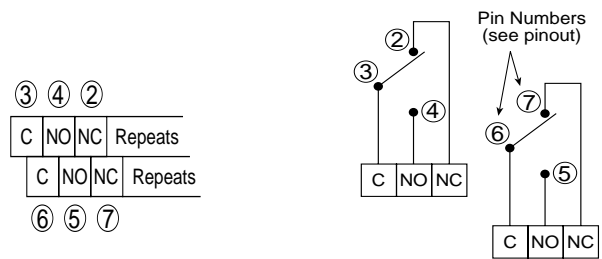
Double Pole Double Throw (DPDT)



Coil Circuits



Contact Circuits



Contact Specifications

SPDT Composite Rating:

-Relay Socket:	8A
-Terminal Blocks:	15A
-PCB Trace for Contact Circuit	
At 30°C (86°F) temperature rise:	12A*
-PCB Trace for Coil Circuit	
At 30°C (86°F) temperature rise:	4A
-PCB Trace for Bus	
At 30°C (86°F) temperature rise:	16A

-Relay Contacts, AgCdO, Minimum Ratings	
Resistive - At 250VAC and 30VDC:	10A
Inductive - At 250VAC:	7.5A
At 30VDC:	5A
(p.f. = 0.4)	
-Minimum Breaking Capacity:	
2,500VA Resistive, 1800 VA Inductive	

Contact Specifications

DPDT Composite Rating:

-Relay Socket:	8A
-Terminal Blocks:	15A
-PCB Trace for Contact Circuit:	
At 30°C (86°F) temperature rise:	6A
At 30°C (86°F) temperature rise:	7A
-PCB Trace for Bus	
At 30°C (86°F) temperature rise:	16A
-PCB Trace for Coil Circuit:	
At 30°C (86°F) temperature rise:	1A
At 30°C (86°F) temperature rise:	2A

-Relay Contacts, AgCdO, Minimum Ratings	
Resistive - At 250VAC and 30VDC:	8A
Rated at 250VAC	
Max. Breaking Voltage:	440VAC
"Make" Current:	12A
-Rated Minimum Breaking Capacity:	
2,000 VA Resistive	

Coil Specifications

Ambient Temperatures:
-40° to +70°C (-40° to +158°F)

Coil Voltage VDC	Operate (pull-in) Max. VDC	Drop Out (Rel.) V Min. VDC	Coil Current mA	Coil Resistance ohms
12	18	8.8	55	220±15%
24	42	17.5	20	1,200±15%
110	132	96.0	8.9	9,000±15%
220	264	192.0	4.1	31,500±15%

Table values are for cold coil at 20°C (68°F) and exclude coil exterior circuit.

* 12A overall rating, with 12A contact relays soldered directly to printed circuit board (no socket) are available. Please consult Altech.

INTERFACES

Relay Modules - High Current Isolated Channels - 15 Amp 35 or 32mm DIN Rail

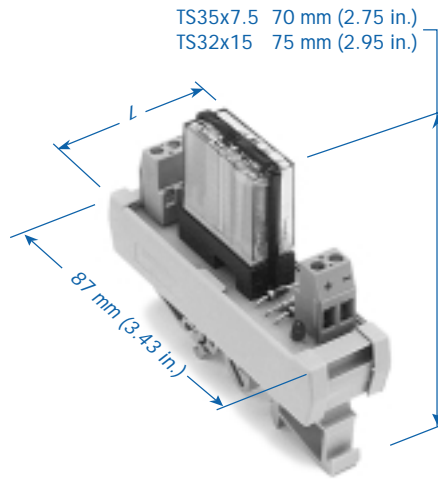
A true high-current rating in a DIN Rail mount miniature relay module. The miniature relays used in the Altech RMH have a SPDT (Form C) 16 Amp continuous current rating, developed from dual 8 Amp contacts that are internally connected in parallel. The relay socket is rated dual 8 Amp. Printed circuit traces are balanced, rated 16 Amp and connect to Altech terminal blocks UL rated 15A/300V.

Typical relay specifications combined with other module component ratings give module ratings suitable for many control applications.

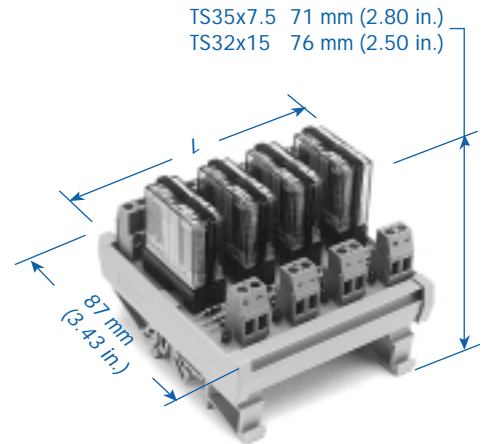
- Resistive: 15A at 250V AC/30V DC
- Inductive: 8A at 250V AC/30V DC
- Tungsten (TV-3): 3A at 120V AC
- Motor: 1/3hp at 120V AC
1/2hp at 250V AC

- Screw-Cage Clamp Connection
- LED Coil Voltage Indicator
- Reverse DC Polarity LED Protection
- Surge Suppression With DC Coils
- Industry Standard Relays^a
- DIN Rail Mount, Panel Mount Available

RMH1- 1 Channel Single Pole Double Throw



RMH4 - 4 Channel Single Pole Double Throw



Wire Range	Contact Ratings	
	Current	Voltage
0.5-4mm ²	15A	250VAC/30VDC
22-12 AWG		

Wire Range	Contact Ratings	
	Current	Voltage
0.5-4mm ²	15A	250VAC/30VDC
22-12 AWG		

Ordering Information

Relay Module, Coil Voltage	Type	Cat. No.	LED ^b (2mA)	Type	Cat. No.	LED ^c (2mA)
5V DC	RMH1B	8905.2	Yellow	RMH4B	8905.3	Yellow
6V DC	RMH1C	8906.2	Green	RMH4C	8906.3	Green
12V DC	RMH1E	8907.2	Red	RMH4E	8907.3	Red
24V DC	RMH1G	5800.2	Yellow	RMH4G	5800.3	Yellow
48V DC	RMH1J	5802.2	Green	RMH4J	5802.3	Green
60V DC	RMH1K	8908.2	Red	RMH4K	8908.3	Red
110V DC	RMH1M	5803.2	Red	RMH4M	5803.3	Red
6V AC	RMH1N	8909.2	Green	RMH4N	8909.3	Green
12V AC	RMH1R	8910.2	Red	RMH4R	8910.3	Red
24V AC	RMH1S	5801.2	Red	RMH4S	5801.3	Red
50V AC	RMH1T	8911.2	Red	RMH4T	8911.3	Red
110V AC	RMH1U	5804.2	Yellow	RMH4U	5804.3	Yellow
220V AC	RMH1X	5805.2	Green	RMH4X	5805.3	Green
240V AC	RMH1Y	5806.2	Red	RMH4Y	5806.3	Red

Std. Pk.: 1

Std. Pk.: 1

General Relay Specifications (Typical)

Mechanical Life:	30 x 10 ⁶ ops
Max. No. of Switching Cycles at Rated Load:	1200 ops/hr
Operate Time (pick-up):	9ms
Release Time (drop-out):	3ms
Bounce Time:	2ms

Module Length (L) 21mm (0.83 in.)

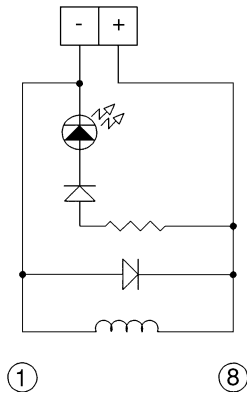
Module Length (L) 79mm (3.11 in.)

^a Catalog specifications from several manufacturers of the 16 Amp (dual 8 Amp) relay are available, please consult Altech.

^b For alternate LED colors, please consult Altech.

^c For alternate LED colors, please consult Altech.

DC Coil Circuit



DC Coil Circuit Specifications (Typical)

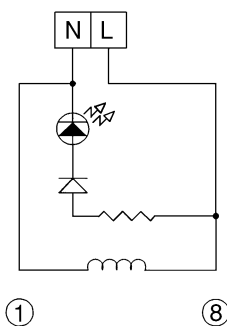
Ambient temperature range: -40° to 70°C (-40° to 158°F)

Table values are for cold coil at 20°C (68°F) and exclude coil exterior circuit.

Coil Voltage V AC	Operate (pull-in) V Max. V AC	Drop-Out (rel.) V Min. V AC	Coil Current mA(50/60Hz)	Coil Resistance Ohms
5	3.5	0.5	92.6	54±15%
6	4.2	0.6	88.2	68±10%
12	8.7	1.2	44.4	270±10%
24	16.8	2.4	21.8	1,100±15%
48	33.6	4.8	11.4	4,200±15%
60	42.0	6.0	9.2	6,540±15%
110	77.0	11.0	4.8	23,100±15%

Diode: 1N4007 or equivalent

AC Coil Circuit



AC Coil Circuit Specifications (Typical)

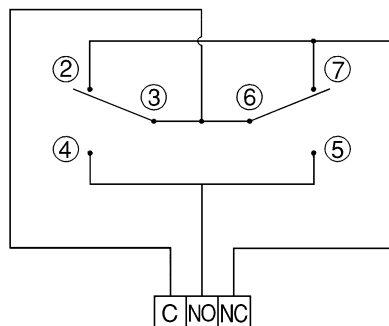
Ambient temperature range: -40° to 60°C (-40° to 140°F)

Table values are for cold coil at 20°C (68°F) and exclude coil exterior circuit.

Coil Voltage V AC	Operate (pull-in) V Max. V AC	Drop-Out (rel.) V Min. V AC	Coil Current mA(50/60Hz)	Coil Resistance Ohms
6	4.8	1.8	190/150	15±10%
12	9.6	3.6	90/75	65±10%
24	19.2	7.2	44/35	280±10%
50	40.0	15.0	22/18	1,130±10%
115	92.0	34.5	11/9	5,600±15%
220	176.0	66.0	5/4	23,400±15%
240	176.0	66.0	4.7/4.1	23,400±15%

Diode: 1N4007 or equivalent

Contact Circuit



Contact Specifications (Typical)

Rated Current (Resistive):	16A
Rated Current (Ind. P.F. = 0.4):	8A
At Rated Voltage:	30V DC, 250V AC
Max. Operating Voltage:	125V DC, 380V AC
Breaking Current (Resistive):	25A
Breaking Capacity (Resistive):	4,000VA
Contact Material:	AgCdO
Contact Electrical Life:	Min. 10 ⁵ ops (AC Resistive Load)

SAFETY RELAY MODULES
8 Amp Contacts,
35 or 32mm DIN Rail

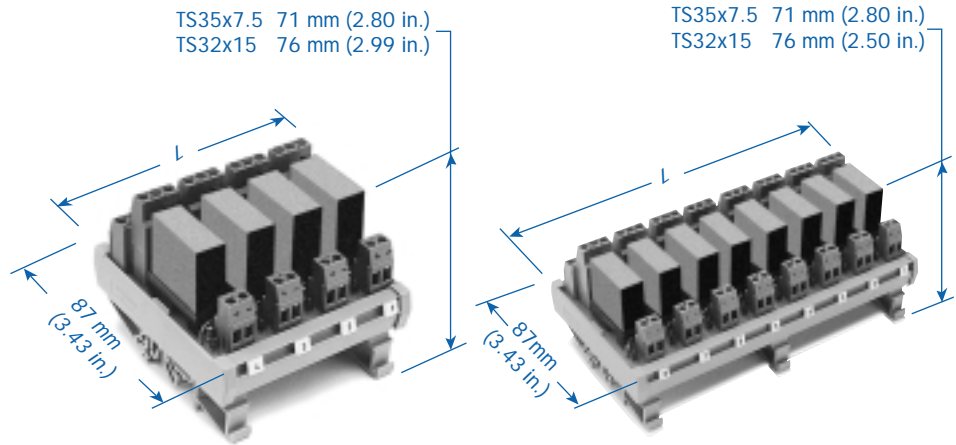
Isolated Channel
Double Pole Double Throw

Bussed Channel
Double Pole Double Throw

Altech Safety Relay Modules utilize Relays with Force-Guided-Contacts that meet or exceed international standards, TÜV, SA, SUVA, and UL. They are designed to protect man and machine as specified in OSHA FR1910 Regulations, a mandatory requirement of the European Machinery Directive EMD 89.392 EEC. The Safety Relays are used in Safety Devices such as Emergency Stop Modules, Safety Gate Monitors, 2-Hand Safety Modules, etc.

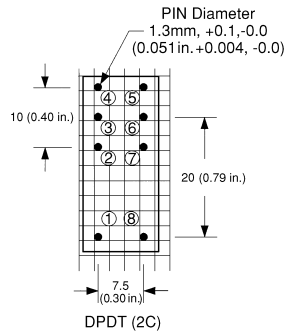
This series of Safety Relay Modules are Double Pole, Double Throw configurations, and are available as 1, 2, 4, 8 and 16 isolated channels with 12 or 24 VDC coils. Isolated channels allow control of each relay by a different logic system, if necessary. There are two inputs for each relay coil per channel. Bussed channels allow high density packaging with a common input for all relays. Safety Relay Modules may be ordered with three different types of relay contact material, depending on the actual load current.

- Screw-Cage Clamp Connection
- LED Coil Voltage Indicator
- Reverse DC Polarity LED Protection
- Surge Suppression With DC Coils
- Industry Standard Relays
- DIN Rail Mount, Panel Mount Available

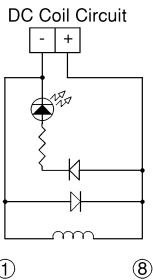


		Contact Material: AgCdO+0.2µmAu	Contact Material: AgNi10+0.2µmAu	Contact Material: AgNi10+5µmAu
		Contact Ratings: 8A(2x5A) 110DC, 250VAC	Contact Ratings: 8A(2x5A) 110DC, 250VAC	Contact Ratings: 8A(2x5A) 110DC, 250VAC
<i>Isolated Channels (No Bus)</i>	Length (L) mm (in.)	Type/Cat. No.	Type/ Cat. No.	Type/Cat. No.
1 Channel, Coil Voltage	21 (0.83)			
12V		8949.2C	8949.2N	8949.2S
24V		8951.2C	8951.2N	8951.2S
2 Channel, Coil Voltage	40 (1.57)			
12V		8949.3C	8949.3N	8949.3S
24V		8951.3C	8951.3N	8951.3S
4 Channel, Coil Voltage	79 (3.11)			
12V		8955.2C	8955.2N	8955.2S
24V		8956.2C	8956.2N	8956.2S
8 Channel, Coil Voltage	157 (6.18)			
12V		8955.3C	8955.3N	8955.3S
24V		8956.3C	8956.3N	8956.3S
16 Channel, Coil Voltage	311 (12.24)			
12V		8963.2C	8963.2N	8963.2S
24V		8972.2C	8972.2N	8972.2S
<i>Bussed Channels</i>	Length (L) mm (in.)	Type/Cat. No.	Type/Cat. No.	Type/Cat. No.
8 Channel, Bussed DC+	125 (4.92)			
12V		8923.2C	8923.2N	8923.2S
24V		8924.2C	8924.2N	8924.2S
8 Channel, Bussed DC-	125 (4.92)			
12V		8923.3C	8923.3N	8923.3S
24V		8924.4C	8924.4N	8924.4S
16 Channel, Bussed DC+	248 (9.76)			
12V		8926.2C	8926.2N	8926.2S
24V		8926.3C	8926.3N	8926.3S
16 Channel, Bussed DC-	248 (9.76)			
12V		8927.2C	8927.2N	8927.2S
24V		8927.3C	8927.3N	8927.3S

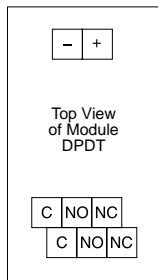
Isolated Channel, DPDT



Bottom View, Relay Pinouts, Grid 2.54mm (0.1 in.)



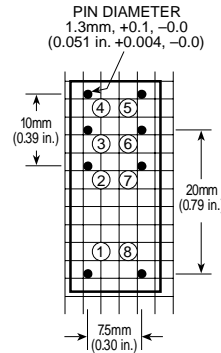
① ⑧



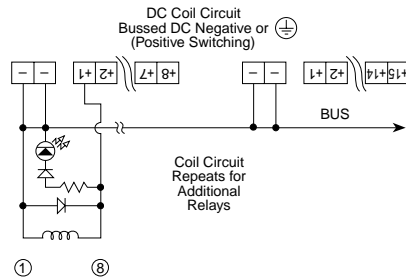
Top View of Module DPDT

Bussed Channel, DPDT

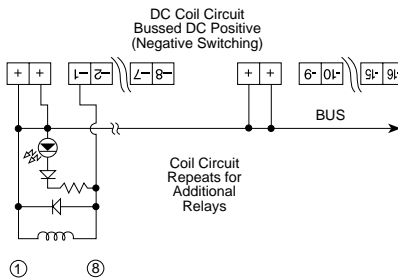
Relay Pinout



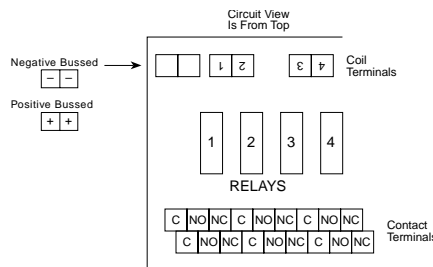
Coil Circuits



① ⑧

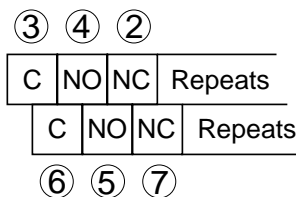
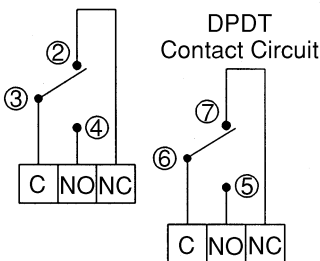


① ⑧



Contact Circuits

For Both Isolated and Bussed Channels



Relay Specifications

-Normal Coil Voltage: 12,24 VDC
 -Coil Power Dissipation: 0.7W
 -Max. Switching Voltage: 110VDC, 250VAC
 -Max. Switching Current: 8A(2x5A simultaneous)

-Max. Switching Power
 DC 200W (2x160W simultaneous)
 AC 2000VA (2x1250VA simultaneous)

-Contact Switching Rate: 10 operations/ sec.
 -Relay Operate Time 15 ms
 -Relay Release Time 12 ms
 -Contact Arrangements DPDT, 2 FORM C

-Contact Material:
 Standard AgNi10+0.2µmAu
 Optional AgCdO+0.2µmAu
 AgNi10+5µmAu

-Mechanical Life: 50x10⁶ operation cycles
 -Ambient Temperature: -40° + 60°C
 -Cover Material: Polyamide 6
 -Weight: 15g

Coil Specifications

Rated Voltage	Voltage Range	Coil Resistance
12VDC	9.6V-19.2V	210Ω ± 15%
24VDC	19.2V-38.4V	820Ω ± 15%

SAFETY RELAY MODULES
4 Pole Relays, 8 or 10 Amps

4 Pole, 8 Amp

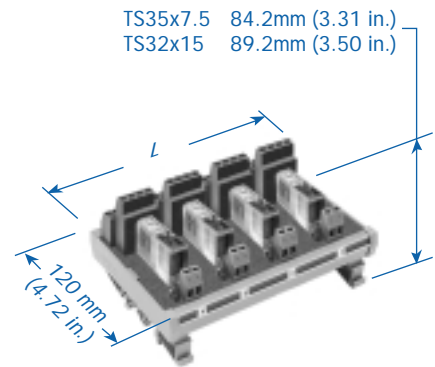
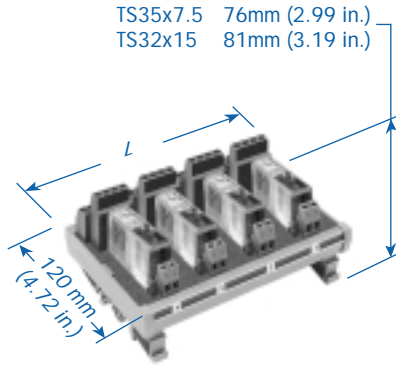
4 Pole, 10 A

Altech Safety Relay Modules utilize Relays with Force-Guided-Contacts that meet or exceed international standards, TÜV, SA, SUVA, and UL. They are designed to protect man and machine as specified in OSHA CFR1910 Regulations, which is a mandatory requirement of the European Machinery Directive EMD 89.392 EEC.

Altech Safety Relays are electro-mechanical relays that are mechanically linked together, causing all contacts to move together when the coil is energized. Force-Guided-contacts are also known as positive-guided-contacts, captive contacts or locked contacts. In addition, our Safety Relays have Crown Contacts which provide two locations per contacts to improve switching conditions. The Safety Relays are used in Safety Devices such as Emergency Stop Modules, Safety Gate Monitors, 2-Hand Safety Modules, Safety Light Curtains, etc.

This series of Safety Relay Modules consist of 4 pole relays with two choices of configurations (2NO/2NC or 3NO/1NC), with 8 or 10 Amp contacts, and are available as 1,2, and 4 isolated channels with 12, or 24 VDC coils. Isolated channels allows control of each relay by a different logic system, if necessary. There are two inputs for each relay coil per channel. Safety Relay Modules may be ordered with three different types of relay contact material, depending on the actual load current. The part numbers shown in this data sheet are for our standard contact material, which is AgCdO + 0.2µmAu.

- Screw-Cage clamp Connections
- LED Coil Voltage Indicator
- Reverse DC Polarity LED Protection
- Surge Suppression With DC Coil
- Din Rail Mount, Panel Mount Available



Ordering Information	Length (L) mm (in.)
1 Channel, Coil Voltage 12V 24V	40.10 (1.58)
2 Channel, Coil Voltage 12V 24V	78.20 (3.08)
4 Channel, Coil Voltage 12V 24V	154.40 (6.08)

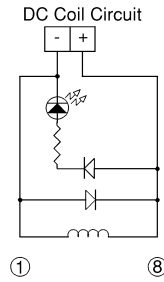
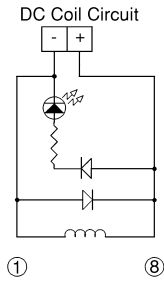
Contact Material*: AgCdO + 0.2µmAu		Contact Material*: AgCdO + 0.2µmAu	
Contact Ratings: 8A(2x5A) 250VDC,400VAC		Contact Ratings: 10A(2x5A) 250VDC, 400VAC	
Contacts: 2N.O + 2N.C		Contacts: 3N.O + 1N.C	
Type/ Cat. No.	Type/ Cat. No.	Type/ Cat. No.	Type/ Cat. No.
156.0A11.1222C 156.0A11.2422C	156.0A11.1231C 156.0A11.2431C	156.0A01.1222C 156.0A01.2422C	156.0A01.1231C 156.0A01.2431C
256.0A11.1222C 256.0A11.2422C	256.0A11.1231C 256.0A11.2431C	256.0A01.1222C 256.0A01.2422C	256.0A01.1231C 256.0A01.2431C
456.0A11.1222C 456.0A11.2422C	456.0A11.1231C 456.0A11.2431C	456.0A01.1222C 456.0A01.2422C	456.0A01.1231C 456.0A01.2431C

* Note: Additional relay contact materials are available upon request. Please contact Altech for additional information.

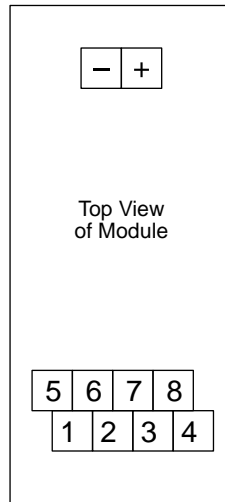
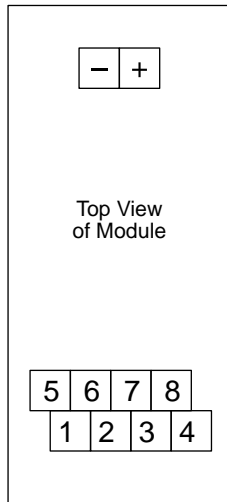
4 Pole, 8 Amps

4 Pole, 10 Amps

DC Coil Circuits



Contact Circuits



Relay Configurations

2 N.O + 2 N.C
 NO Pin (1,2), (5,6)
 NC Pin (3,4), (7,8)

3 N.O + 1 N.C
 NO Pin (1,2), (5,6), (7,8)
 NC Pin (3,4)

Relay Configurations

2 N.O + 2 N.C
 NO Pin (3,4), (7,8)
 NC Pin (1,2), (5,6)

3 N.O + 1 N.C
 NO Pin (3,4), (5,6), (7,8)
 NC Pin (1,2)

Relay Specifications - 8 Amps

-Normal Coil Voltage: 12,24 VDC
 -Coil Power Dissipation: 0.6W
 -Max. Switching Voltage: 250VDC, 400VAC
 -Max. Switching Current: 8A

-Max. Switching Power
 DC 200W
 AC 2000VA

-Contact Switching Rate: 10 operations/ sec.
 -Relay Operate Time 20 ms
 -Relay Release Time 6 ms
 -Contact Arrangements 2NO/2NC, 3NO/1NC

-Contact Material:
 Standard AgCdO+0.2µmAu
 Optional AgNi10+0.2µmAu
 AgNi10+5µmAu

-Mechanical Life: 50x10⁶ operation cycles
 -Ambient Temperature: -25° + 85°C
 -Cover Material: Thermoplast
 -Weight: 35g

Coil Specifications

Rated Voltage	Voltage Range	Coil Resistance
12VDC	8.4V-16.8V	240Ω ± 15%
24VDC	16.8V-33.6V	960Ω ± 15%

Relay Specifications - 10 Amps

-Normal Coil Voltage: 12,24 VDC
 -Coil Power Dissipation: 0.75W
 -Max. Switching Voltage: 250VDC, 400VAC
 -Max. Switching Current: 10A

-Max. Switching Power
 DC 240W
 AC 2500VA

-Contact Switching Rate: 10 operations/ sec.
 -Relay Operate Time 27 ms
 -Relay Release Time 5 ms
 -Contact Arrangements 2NO/2NC, 3NO/1NC

-Contact Material:
 Standard AgCdO+0.2µmAu
 Optional AgNi10+0.2µmAu
 AgNi10+5µmAu

-Mechanical Life: 30x10⁶ operation cycles
 -Ambient Temperature: -25° + 80°C
 -Cover Material: Thermoplast
 -Weight: 75g

Coil Specifications

Rated Voltage	Voltage Range	Coil Resistance
12VDC	8.4V-19.2V	192Ω ± 15%
24VDC	16.8V-38.4V	770Ω ± 15%

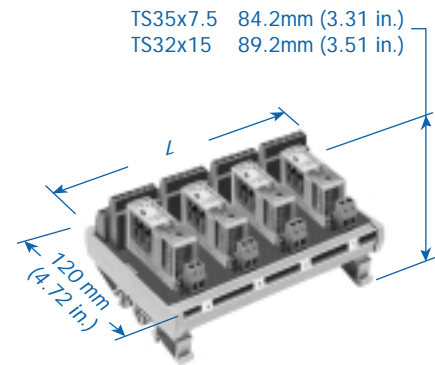
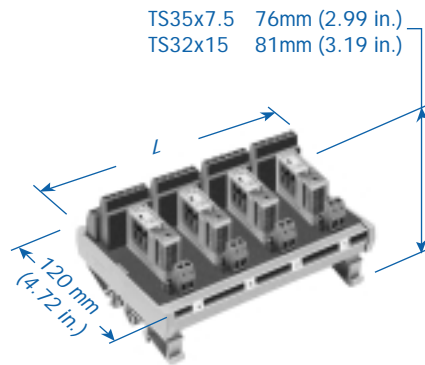
SAFETY RELAY MODULES
6 Pole Relays, 8 or 10 Amps

Altech Safety Relay Modules utilize Relays with Force-Guided-Contacts that meet or exceed international standards, TÜV, SA, SUVA, and UL. They are designed to protect man and machine as specified in OSHA CFR1910 Regulations, which is a mandatory requirement of the European Machinery Directive EMD 89.392 EEC.

Altech Safety Relays are electro-mechanical relays that are mechanically linked together, causing all contacts to move together when the coil is energized. Force-Guided-contacts are also known as positive-guided-contacts, captive contacts or locked contacts. In addition, our Safety Relays have Crown Contacts which provides two locations per contacts to improve switching conditions. The Safety Relays are used in Safety Devices such as Emergency Stop Modules, Safety Gate Monitors, 2-Hand Safety Modules, Safety Light Curtains, etc.

6 Pole, 8 Amps

6 Pole, 10 Amps



Contact Material*: AgCdO+0.2µmAu			Contact Material*: AgCdO+0.2µmAu		
Contact Ratings: 8A(2x5A) 250VDC,400VAC			Contact Ratings: 10A(2x5A) 250VDC,400VAC		
Contacts: 2N.O + 4N.C			Contacts: 3N.O + 3N.C		
Type/ Cat. No.	Type/ Cat. No.	Type/ Cat. No.	Type/ Cat. No.	Type/ Cat. No.	Type/ Cat. No.
156.0A12.1224C	156.0A12.1233C	156.0A12.1242C	156.0A02.1224C	156.0A02.1233C	156.0A02.1242C
156.0A12.2424C	156.0A12.2433C	156.0A12.2442C	156.0A12.2424C	156.0A02.2433C	156.0A02.2442C
256.0A12.1224C	256.0A12.1233C	256.0A12.1242C	256.0A02.1224C	256.0A02.1233C	256.0A02.1242C
256.0A12.2424C	256.0A12.2433C	256.0A12.2442C	256.0A02.2424	256.0A02.2433	256.0A02.2442C
456.0A12.1224C	456.0A12.1233C	456.0A12.1242C	456.0A02.1224C	456.0A02.1233C	456.0A02.1242C
456.0A12.2424C	456.0A12.2433C	456.0A12.2442C	456.0A12.2424C	456.0A02.2433C	456.0A02.2442C

Ordering Information	Length (L) mm (in.)
1 Channel, Coil Voltage 12V 24V	46.45 (1.83)
2 Channel, Coil Voltage 12V 24V	90.90 (3.58)
4 Channel, Coil Voltage 12V 24V	179.80 (7.08)

This series of Safety Relay Modules consist of 6 pole relays with three configuration choices (2NO+4NC, 3NO+3NC, 4NO+2NC), 8 or 10 Amp contacts and either 1, 2 and 4 isolated channels with 12 or 24 VDC coils. Isolated channels allow control of each relay by a different logic system, if necessary. There are two inputs for each relay coil channel. Modules can ordered with three contact materials, dependent upon the actual current load. The standard contact material is AgCdO+0.2µmAu.

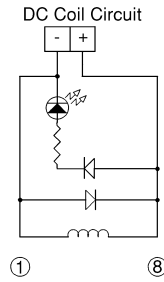
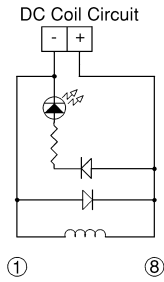
- Screw-Cage clamp Connections
- LED Coil Voltage Indicator
- Reverse DC Polarity LED Protection
- Surge Suppression With DC Coil
- Din Rail Mount, Panel Mount Available

* Note: Additional relay contact materials are available upon request. Please contact Altech for additional information.

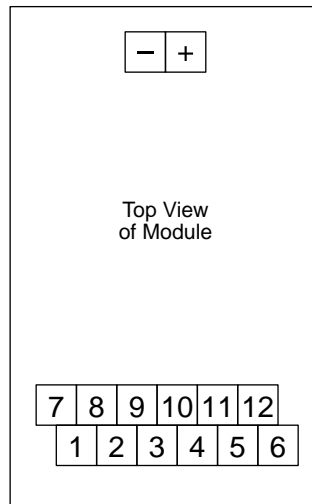
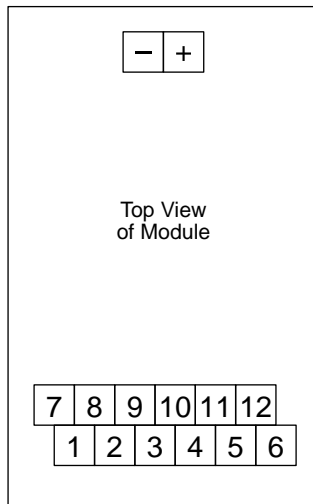
6 Pole, 8 Amps

6 Pole, 10 Amps

DC Coil Circuits



Contact Circuits



Relay Configurations

2N.0 + 4N.C
 NO Pin (1,2), (7,8)
 NC Pin (3,4), (5,6), (9,10), (11,12)

3N.0 + 3N.C
 NO Pin (1,2), (7,8), (9,10)
 NC Pin (3,4), (5,6), (11,12)

4N.0 + 2N.C
 NO Pin (1,2), (3,4), (7,8), (9,10)
 NC Pin (5,6), (11,12)

Relay Configurations

2N.0 + 4N.C
 NO Pin (5,6), (11,12)
 NC Pin (1,2), (3,4), (7,8), (9,10)

3N.0 + 3N.C
 NO Pin (3,4), (5,6), (11,12)
 NC Pin (1,2), (7,8), (9,10)

4N.0 + 2N.C
 NO Pin (3,4), (5,6), (9,10), (11,12)
 NC Pin (1,2), (7,8)

Relay Specifications - 8 Amps

-Normal Coil Voltage: 12,24 VDC
 -Coil Power Dissipation: 0.8-1.0 W
 -Max. Switching Voltage: 250VDC, 400VAC
 -Max. Switching Current: 8A

-Max. Switching Power
 DC 200W (2x160W simultaneous)
 AC 2000VA (2x1250VA simultaneous)

-Contact Switching Rate: 10 operations/ sec.
 -Relay Operate Time 20 ms
 -Relay Release Time 6 ms
 -Contact Arrangements 2NO/4NC, 3NO/3NC, 4NO/2NC

-Contact Material:
 Standard AgCdO+0.2µmAu
 Optional AgNi10+0.2µmAu
 AgNi10+5µmAu

-Mechanical Life: 50x10⁶ operation cycles
 -Ambient Temperature: -25° + 85°C
 -Cover Material: Thermoplast
 -Weight: 38g

Coil Specifications

Rated Voltage	Voltage Range	Coil Resistance
12VDC	8.4V-16.8V	145Ω ± 15%
24VDC	16.8V-33.6V	600Ω ± 15%

Relay Specifications - 10 Amps

-Normal Coil Voltage: 12,24 VDC
 -Coil Power Dissipation: 1.0 W
 -Max. Switching Voltage: 250VDC, 400VAC
 -Max. Switching Current: 10A

-Max. Switching Power
 DC 240W
 AC 2500VA

-Contact Switching Rate: 10 operations/ sec.
 -Relay Operate Time 27 ms
 -Relay Release Time 5 ms
 -Contact Arrangements 2NO/4NC, 3NO/3NC, 4NO/2NC

-Contact Material:
 Standard AgCdO+0.2µmAu
 Optional AgNi10+0.2µmAu
 AgNi10+5µmAu

-Mechanical Life: 30x10⁶ operation cycles
 -Ambient Temperature: -25° + 80°C
 -Cover Material: Thermoplast
 -Weight: 85g

Coil Specifications

Rated Voltage	Voltage Range	Coil Resistance
12VDC	8.4V-19.2V	140Ω ± 15%
24VDC	16.8V-38.4V	570Ω ± 15%

SAFETY RELAY MODULES

10 Pole Relays, 10 Amp Contacts
6 Pole Relays, 4 @ 16 Amps,
2 @ 6 Amps

10 Pole, 10 Amps

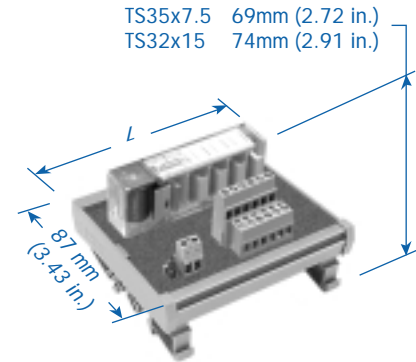
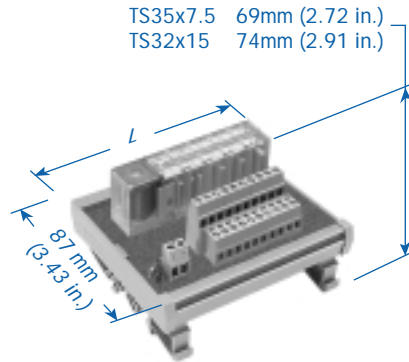
6 Pole, 4- 16 Amps, 2- 6 Amps

These Safety Relay Modules utilize Relays with Force-Guided-Contacts that meet or exceed international standards, TÜV, SA, SUVA, and UL. They meet the standard EN50205 for safety relays, UL/94/VO fire protection, VDE 0106 Protection Class 11, and VDE 0110/group C 250VAC insulation class.

Altech Safety Relays are electro-mechanical relays that are mechanically linked together, causing all contacts to move together when the coil is energized. Force-Guided-contacts are also known as positive-guided-contacts, captive contacts or locked contacts. In addition, our Safety Relays have Crown Contacts which provides two locations per contacts to improve switching conditions. The Safety Relays are used in Safety Devices such as Emergency Stop Modules, Safety Gate Monitors, 2-Hand Safety Modules, Safety Light Curtains, etc.

This series of Safety Relay Modules consists of 10 pole relays with 10 Amps in four configurations choices (3NO/7NC, 7NO/3NC, 8NO/2NC, 9NO/1NC), and 6 pole relays with 6 and 16 Amp contacts (6 Amp is 1NC/1NC, 16 Amp is 4NO). Relays are available as single channel units with 12, or 24 VDC coils. Standard contact material for this series is AgSnO₂ + 0.2µmAu.

- Screw-Cage clamp Connections
- LED Coil Voltage Indicator
- Reverse DC Polarity LED Protection
- Surge Suppression With DC Coil
- Din Rail Mount, Panel Mount Available



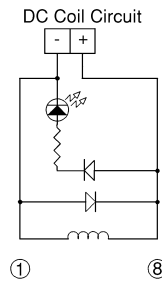
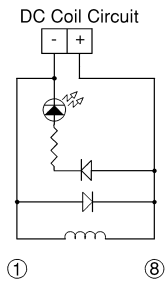
Ordering Information	Length (L) mm (in.)
1 Channel, Coil Voltage 12V 24V	103.6 (4.08)

10 Pole, 10 Amps				6 Pole
Type/ Cat. No.	Type/ Cat. No.	Type/ Cat. No.	Type/ Cat. No.	Type/ Cat. No.
1SIR37212	1SIR73212	1SIR82212	1SIR91212	1SIP51212
1SIR37224	1SIR73224	1SIR82224	1SIR92224	1SIP51224

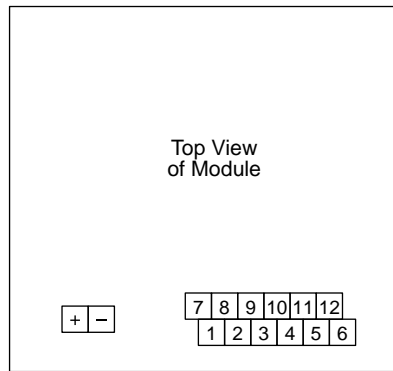
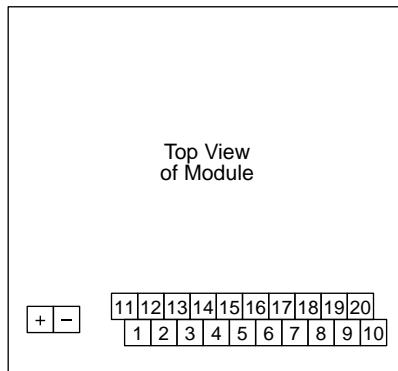
10 Pole, 10 Amps

6 Pole, 4 @ 16Amps, 2 @ 6 Amps

DC Coil Circuits



Contact Circuits



Relay Configurations

3N.O + 7N.C

NO Pin (9,10), (11,12), (19,20)
NC Pin (1,2), (3,4), (5,6), (7,8), (13,14),
(15,16), (17,18)

7N.O + 3N.C

NO Pin (5,6), (7,8), (9,10), (11,12), (15,16),
(17,18), (19,20)
NC Pin (1,2), (3,4), (13,14)

8N.O + 2N.C

NO Pin (3,4), (5,6), (7,8), (9,10), (11,12),
(15,16), (17,18), (19,20)
NC Pin (1,2), (13,14)

9N.O + 2N.C

NO Pin (3,4), (5,6), (7,8), (9,10), (11,12),
(13,14), (15,16), (17,18), (19,20)
NC Pin (1,2)

Relay Configurations

4N.O (16 Amps)

(9,10), (3,4), (11,12), (5,6)

1N.O + 1N.C (6 Amps)

NO Pin (1,2)
NC Pin (7,8)

Relay Specifications - 10 Pole

-Normal Coil Voltage: 12,24 VDC
-Coil Power Dissipation: 1.3W
-Max. Switching Voltage: 250VAC
-Max. Switching Current: 10A

-Max. Switching Power: 2500VAC

-Contact Switching Rate: 15Hz
-Relay Operate Time: 15 ms
-Relay Release Time: 4 ms
-Contact Arrangements:

3NO/7NC
8NO/2NC
9NO/1NC

-Contact Material: AgSnO₂+0.2μmAu

-Mechanical Life: 10x10⁶ operation cycles

-Ambient Temperature: -40° + 70°C

-Weight: 65g

Coil Specifications

Rated Voltage	Min. Pick-up	Coil Resistance
12VDC	8.4V	110Ω ± 15%
24VDC	16.8V	440Ω ± 15%

Relay Specifications - 6 Pole

-Normal Coil Voltage: 12,24 VDC
-Coil Power Dissipation: 1.3W
-Max. Switching Voltage: 250VAC
-Max. Switching Current:

Control Contacts: 6A
Output Contacts: 16A

-Max. Switching Power:
Control Contacts: 1500VA
Output Contacts: 4000VA

-Contact Switching Rate: 15Hz
-Relay Operate Time: 18 ms
-Relay Release Time: 5 ms

-Contact Arrangements:
Control Contacts: 1NO/1NC
Output Contacts: 4NO

-Contact Material: AgSnO₂+0.2μmAu

-Mechanical Life: 10⁶x10⁶ operation cycles

-Ambient Temperature: -40° + 70°C

-Weight: 60g

Coil Specifications

Rated Voltage	Min. Pick-up	Coil Resistance
12VDC	8.4V	110Ω ± 15%
24VDC	16.8V	440Ω ± 15%

GENERAL PURPOSE / INTERFACE RELAYS

- AC or DC coil
- I-Series direct DIN-Rail mountable with screw terminals for PLC applications
- M, G, L plug-in relays for DIN-Panel mountable sockets, with lockable test buttons and mechanical flag (M and G)
- LED version available
- Diode module for M-Series and G-Series available

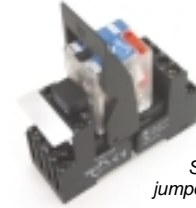
I-Series



Shown with jumper accessory.



M-Series



Shown with jumper accessories.



Contact Specifications

Contact Configurations	SPDT	DPDT; 4PDT
Rated Current	6A	5A
Rated Voltage	250VAC	250VAC
Rated Load	6A @ 250VAC; 6A @ 24VDC	5A @ 250VAC; 5A @ 24VDC
Min Switching Load	192mW	300mW
Contact Material	AgSnO ₂	AgNi

Coil Specifications

Rated Voltage (DC)	12, 24*	12, 24, 48, 110, 125
Rated Voltage (AC)	24, 110, 230	12, 24, 48, 110, 230
Operating Range	(0.8-1.1)Un	(0.8-1.1)Un
Holding Voltage	0.6Un	0.5Un
Must Drop Voltage AC/DC	0.2Un / 0.1Un	0.2Un / 0.1Un
Power Consumption	0.3-0.6W @ 12/24V 1.8VA @ 230VAC 1W/VA @ 230VAC/DC	0.9W (DC) 1.9VA @ 50Hz 1.6VA @ 60Hz

General Data

Mechanical Life Cycles	2 x 10 ⁷	2 x 10 ⁷
Electrical Life Cycles	10 ⁵	10 ⁵
Operate/Release Time (ms)	7(AC) 6(DC) / 15(AC) 8(DC)	10(AC) 13(DC) / 8(AC) 3(DC)
Insulation Between Coil & Contacts	4kV	2kV
Insulation Between Open Contact	1kV	1kV
Ambient Temperature Range	-40 to 55°C	-40 to 70°C

Ordering Codes

I-Series: I 1 L [] [] [] R

Coil Codes

- D012 = 12VDC
- D024 = 24VDC
- A230 = 230VAC
- U024 = 24VAC/DC
- U110 = 110VAC/DC
- U230 = 230VAC/DC

Other coil voltages on request.

Ordering Codes

M-Series: M [] [] [] []

2 = 2 pole
4 = 4 pole

- = Standard
L = +LED

Coil Codes

- D012 = 12 VDC
- D024 = 24 VDC
- D048 = 48 VDC
- D110 = 110 VDC
- D125 = 125 VDC
- A012 = 12VAC
- A024 = 24VAC
- A048 = 48VAC
- A110 = 110VAC
- A230 = 230VAC

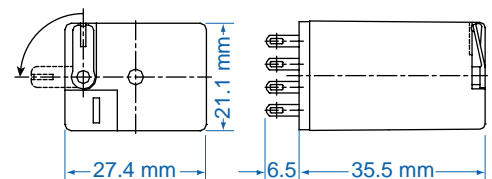
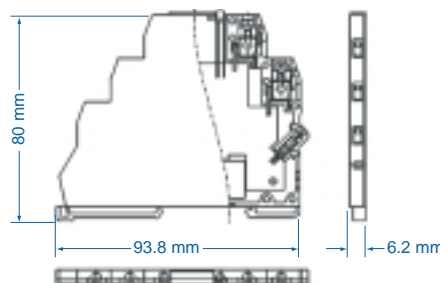
Other coil voltage on request.

Accessories

Socket	-	VM-4T
Retaining Clip	-	CM-1/MS35
Diode Module	-	DM-1
Jumper Links, 20 pole (red, black, blue)	321-820, 321-821, 321-822	-

Dimensions:

All dimensions are in millimeters.
To convert to inches, divide by 25.4.



* 24VAC/DC, 110VAC/DC, 230VAC/DC combination also available

G-Series



Shown with jumper accessories.



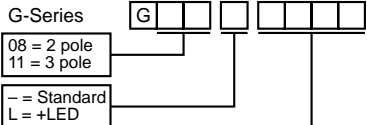
DPDT; 3PDT
10A
250VAC
10A @ 250VAC; 10A @ 24VDC
300mW
AgNi

12, 24, 48, 110, 120
12, 24, 48, 110, 230
(0.8-1.1)Un
0.5Un
0.15Un / 0.1Un
1.5W (DC)
2.5VA @ 50Hz
2.8VA @ 60Hz

2 x 10⁷
2 x 10⁵

12(AC) 18(DC) / 12(AC) 7(DC)
2.5kV
1.5kV
-40 to 70°C

Ordering Codes



Coil Codes	
D012 = 12VDC	A012 = 12VAC
D024 = 24VDC	A024 = 24VAC
D048 = 48VDC	A048 = 48VAC
D110 = 110VDC	A110 = 110VAC
D125 = 125VDC	A230 = 230VAC

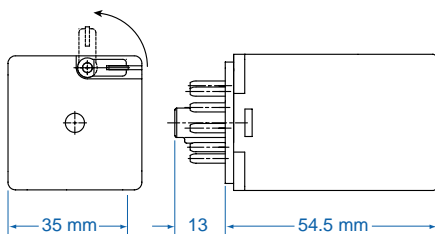
Other coil voltages on request.

8p: VG-8T; 11p: VG-11T

CG-1

-

-



L-Series



Shown with jumper accessories.



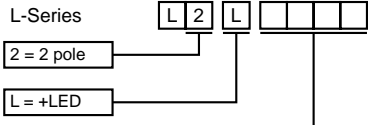
DPDT
12A
250VAC
12A @ 250VAC; 12A @ 24VDC
300mW
AgCd0

12, 24, 48, 110, 125
12, 24, 48, 110, 230
(0.8-1.1)Un
0.5Un
0.2Un / 0.1Un
1.1W (DC)
1.6VA @ 50Hz
1.9VA @ 60Hz

2 x 10⁷
10⁵

15(AC/DC) / 10(AC/DC)
2kV
0.75kV
-40 to 55°C

Ordering Codes



Coil Codes	
D012 = 12VDC	A012 = 12VAC
D024 = 24VDC	A024 = 24VAC
D048 = 48VDC	A048 = 48VAC
D110 = 110VDC	A110 = 110VAC
D125 = 125VDC	A230 = 230VAC

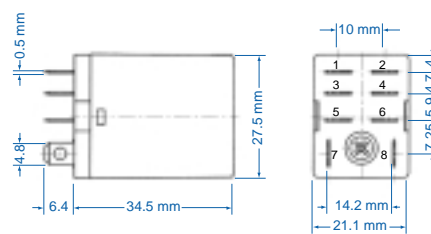
Other coil voltages on request.

VL-2

CL-1

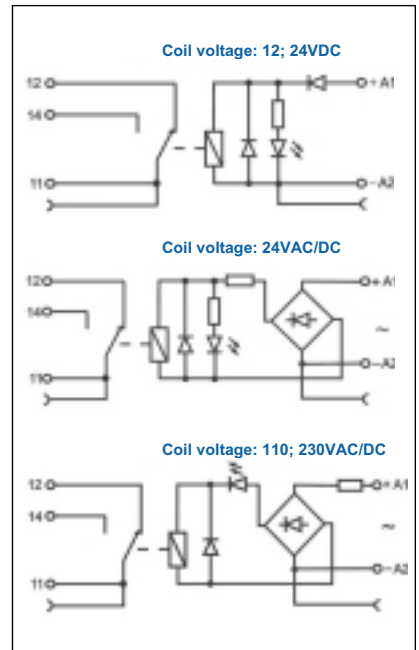
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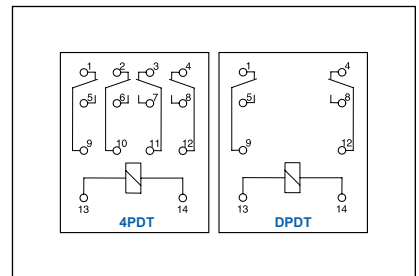


Wiring Diagrams

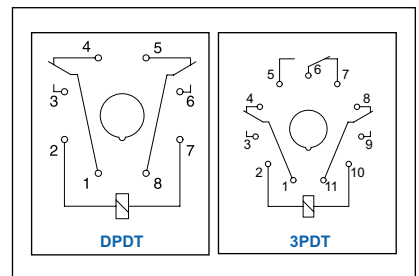
I-Series



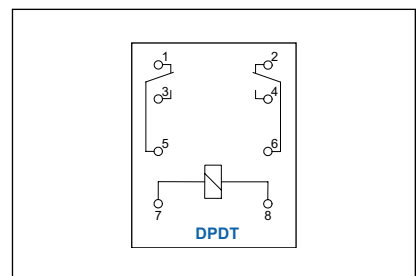
M-Series



G-Series



L-Series



INTERFACES

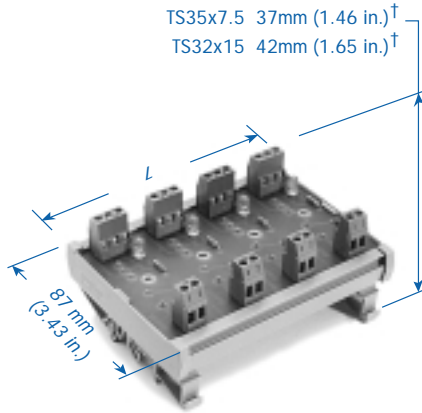
**I/O Opto Carrier
35 or 32mm DIN Rail**

Mount standard opto coupler input/output (I/O) modules in a high density arrangement for logic output to field devices, or for input of field data to the controller. I/O modules optically isolate ICs and PLCs from damaging field voltage spikes and line noise, while controlling up to 3 Amp field current with less than 20mA logic current. Altech I/O Module Carriers can accept up to 16 industry standard 0.6 in. (15.24mm) I/O modules in any combination: Input, Output, AC or DC from most manufacturers.

- Screw-Cage Clamp Connection
- Integral Sockets, Retaining Nut
- Field Voltage Rating: 280V AC/DC^a
- LED Indication, Fuse Protection
- DIN Rail Mount, Panel Mount Available

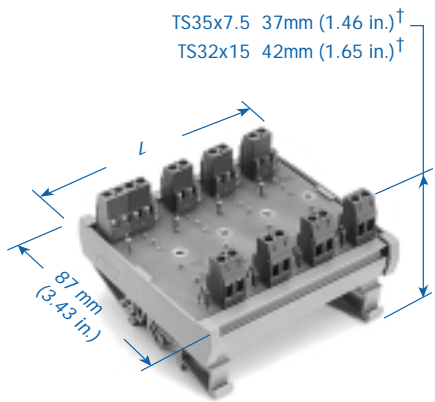
Custom designs can be accommodated!

**I/O I
Isolated**



Low current LED with dropping resistor for high resistance pull-up and low logic sink/source current requirements.

**I/O B
Bussed**



Logic status LED which uses the I/O module impedance as its dropping resistor.

Wire Range	Fuse Rating	Wire Range	Fuse Rating
22-12AWG	0.5-4mm ² 5A/125V AC ^b	22-12AWG	0.5-4mm ² 5A/125V AC ^c

Ordering Information	LED	Type	Cat. No.	Length (L) mm (in.)	Type	Cat. No.	Length (L) mm (in.)
I/O Opto Carrier, Isolated Positions							
1 Position, Logic Voltage							
5V DC	Green	I/O I-1B	8954.0/B	34.5 (1.36)			
15V DC	Yellow	I/O I-1E	8954.0/E	34.5 (1.36)			
24V DC	Red	I/O I-1G	8954.0/G	34.5 (1.36)			
2 Position, Logic Voltage							
5V DC	Green	I/O I-2B	8955.0/B	57.8 (2.28)			
15V DC	Yellow	I/O I-2E	8955.0/E	57.8 (2.28)			
24V DC	Red	I/O I-2G	8955.0/G	57.8 (2.28)			
4 Position, Logic Voltage							
5V DC	Green	I/O I-4B	8956.0/B	114 (4.49)			
15V DC	Yellow	I/O I-4E	8956.0/E	114 (4.49)			
24V DC	Red	I/O I-4G	8956.0/G	114 (4.49)			

I/O Opto Carrier Bussed Positions

4 Position, Logic Voltage 5 to 24V DC	Green				I/O B-4	8956.0	114 (4.49)
8 Position, Logic Voltage 5 to 24V DC	Green				I/O B-8	8959.0	183 (7.20)
16 Position, Logic Voltage 5 to 24V DC	Green				I/O B-16	8861.0	363 (14.30)

Std. Pk.: 1

^aFuse rating limits field side rating.

- PCB Traces, Field Side : 10A/300V
- PCB Traces, Logic Side: 1A with 6A Bus
- Terminal Blocks: 15A/300V

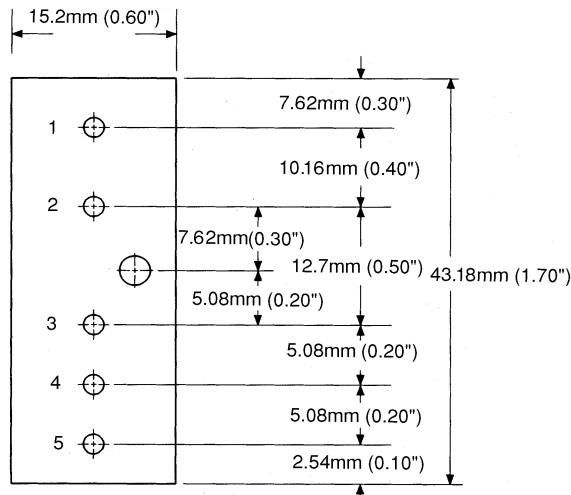
[†]Dimension is to top board, add height of relay to determine clearance.

^b3A/250V fuse available, please consult Altech.

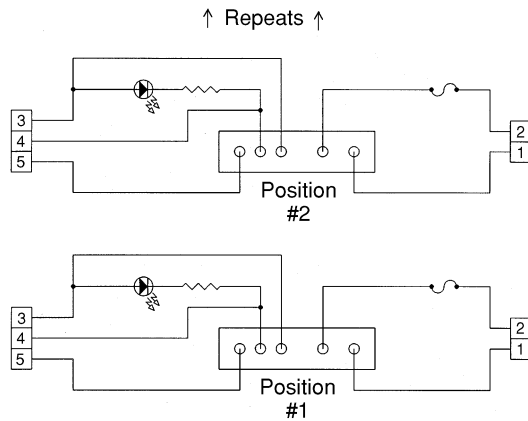
[†]Dimension is to top board, add height of relay to determine clearance.

^c3A/250V fuse available, please consult Altech.

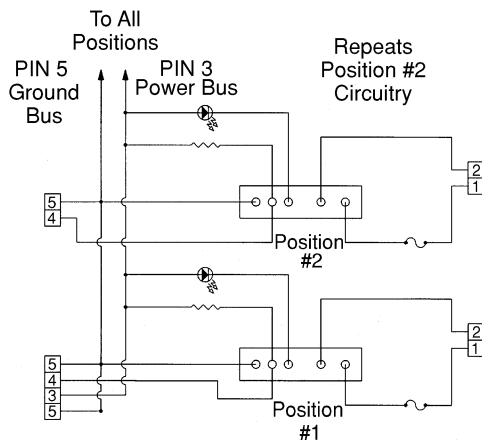
Standard Pinout



I/O I Isolated Positions



I/O B Bussed Positions



Standard Pinout

The I/O Module pin utilization information listed below is intended for use only as a guide. For specific applications, please use only the module manufacturer's published specifications.

Pins 1 & 2: Field Connections

- AC Output to field load, inductive up to 3.5A at nominal 24V AC, 120V AC or 240V AC. AC hot to either pin, field load on other pin.
- DC Output to field load (inductive OK with commutating diode). Some modules polarized with pin #1 positive (+). Standard output voltages 60V DC (5-60), 200V DC (10-200).
- AC Input of field data to the logic, 10mA max at nominal 24V AC (18-36), 120V AC (90-140) and 240V AC (90-280). Field signal to either pin.
- DC Input of field data to the logic, some modules dual rated AC/DC, other nominal 5-28V DC (min. 4, max. 32), and nominal 12-48V DC (min. 10, max. 60). Some modules polarized with pin #1 (+).

Pin 3: VCC Logic Power

- Standard modules are available in three nominal logic voltages: 5V DC (normally min. 3 to max. 6), 15V DC (12 to 18) and 24V DC (20 to 30).

Pin 4: Logic Signal

- Output - Logic ground (sink) on pin #4 closes output circuit (pin #1 to pin #2 normally open, shorts with sink on input pin #4). A few positive-logic modules are available.
- Input - Field signal to pins #1 and #2 gives 20-25mA sink at pin #4 (to pin #5).

Pin 5: Logic Ground

- On input modules only (no pin #5 on output modules).

Solid State Relay I/O Modules 35 or 32mm DIN Rail

Solid State I/O Modules are used to switch both AC and DC loads as well as sensing AC or DC control voltages for controlling the input to a PLC. The input is isolated from the output via an optically coupled circuit in the device itself. Since there are no moving parts, the device will have a virtually unlimited life.

Altech I/O Module assemblies can be supplied in either an isolated or bussed configuration as shown on page 28.

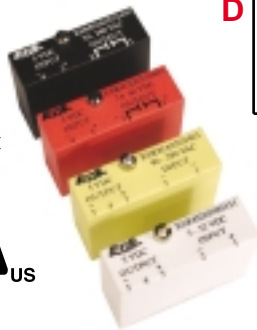
Features:

- Wide range of Solid State I/O Modules to choose from
- LED Indicators, Fuse Protection
- Input or Output Modules can be mixed & Matched on the same board
- Custom installed I/O modules available upon request
- Most plug-in modules are UL Recognized, CE mark.
- Bussed or isolated
- up to 16 channels on single module

Custom designs can be accommodated!

Individual I/O Modules

- UL recognized
- Optically isolated
- Industry standard package and pin-out
- 3.5 kV isolation

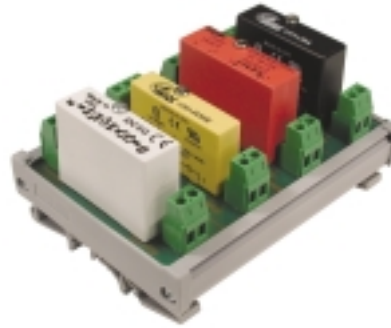


Altech offers a complete line of individual I/O modules. For complete specifications, refer to the listed module part numbers shown above.

* If all plug-in modules are of the same type, then enter the 4 digits of the specific module(s). For example, the part number of a 4 channel, bussed, standard board with the OD05 type module would be: **8950-C-1-A-OD05**.

In the case of mixed modules, please contact Altech for ordering information.

SSR I/O Series



A **AC Output Solid State Relays**

Part No.	Nominal Input Voltage	Control Voltage Range	Input Current Typical	Output Voltage Range	Off-state Leakage Current	Max. Turn On Time	Max Turn Off Time	Output Current
OA05	5 VDC	2.5-6.0 VDC	10 mA	24-240 VAC	5 mA	8.3 ms (60 Hz)	8.3 ms (60 Hz)	3A
OA15	15 VDC	8.5-18.5 VDC	10 mA	24-240 VAC	5 mA	8.3 ms (60 Hz)	8.3 ms (60 Hz)	3A
OA24	24 VDC	16.5-29.0 VDC	10 mA	24-240 VAC	5 mA	8.3 ms (60 Hz)	8.3 ms (60 Hz)	3A

B **DC Output Modules Solid State Relays**

Part No.	Nominal Input Voltage	Control Voltage Range	Input Current Typical	Output Voltage Range	Off-state Leakage Current	Max. Turn On Time	Max Turn Off Time	Output Current
OD05	5 VDC	2.5-6.0 VDC	10 mA	3 - 60 VDC	1.0 mA	50 µSec	100 µSec	3A
OD15	15 VDC	8.5-18.5 VDC	10 mA	3 - 60 VDC	1.0 mA	50 µSec	100 µSec	3A
OD24	24 VDC	16.5-29.0 VDC	10 mA	3 - 60 VDC	1.0 mA	50 µSec	100 µSec	3A

C **AC Input Modules Solid State Relays**

Part No.	Logic Supply Voltage	Min. Turn-Off Voltage	Operating Frequency	Control Voltage Range	Off-Stat Leakage Current	Max. Turn On Time	Max. Turn Off Time
IA05	5 VDC	40 VAC	47 - 63 Hz	90 - 280 VAC	10 µA	20 ms	20 ms
IA15	15 VDC	40 VAC	47 - 63 Hz	90 - 280 VAC	10 µA	20 ms	20 ms
IA24	24 VDC	40 VAC	47 - 63 Hz	90 - 280 VAC	10 µA	20 ms	20 ms

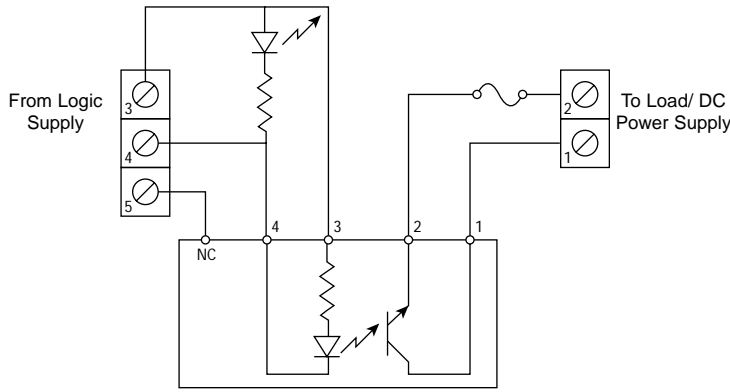
D **DC Input Modules Solid State Relays**

Part No.	Logic Supply Voltage	Min. Turn Off Voltage	Input Resistance	Control Voltage Range	Off-Stat Leakage Current	Max. Turn On Time	Max. Turn Off Time
ID05	5 VDC	2 VDC	2.2 K Ohm	3-32 VDC	10 µA	1.0 ms	1.0 ms
ID15	15 VDC	2 VDC	2.2 K Ohm	3-32 VDC	10 µA	1.0 ms	1.0 ms
ID24	24 VDC	2 VDC	2.2 K Ohm	3-32 VDC	10 µA	1.0 ms	1.0 ms

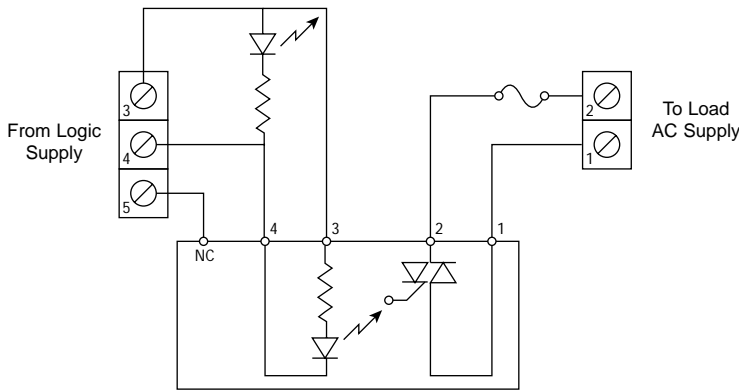
Ordering Codes

8	9	5	0						
No. of Channels A = 1 D = 8 B = 2 E = 16 C = 4				1 = Bussed 2 = Isolated		Specials: A = Standard B = 3A, 250V Fuse		I/O Module Type: A = AC output B = DC output C = AC input D = DC input E = mixed	
Specific plug-in module(s) Part No.*									

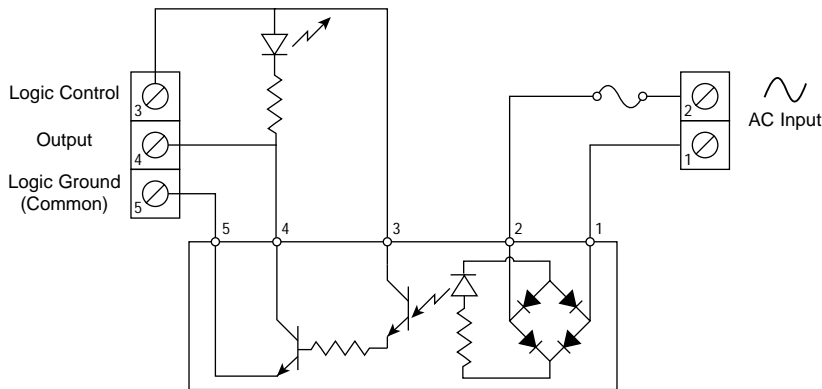
DC Output Module



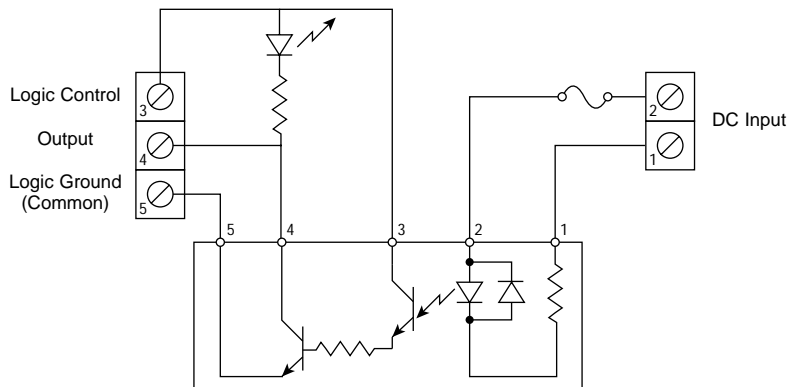
AC Output Module



AC/DC Input Module



DC Input Module



Schematic Explanations

Shown on the left are typical configurations for the I/O Solid State Relay Modules. Each plug-in module may vary somewhat, but the equivalent circuit is shown. Output Modules have only 4 connections, while the input modules have 5, with the addition of an added control voltage on pin 3.

DC Output Module

DC Output Solid State Modules usually only differ in their output rating, although some output modules respond to a different input threshold voltage. Altech offers a 3A@60 VDC output version.

AC Output Module

In choosing the appropriate AC Output Module, there are timing issues to consider as well as output voltage and current capabilities. Moreover, there is a wide variation of input resistance and voltages to consider. AC Output modules are available in either random or zero cross types. In a zero cross AC output module, the output will not switch after the application of an input voltage until the next zero crossing of the AC output waveform. This prevents a large voltage transition at the output that may generate EMI problems in other nearby sensitive circuitry. Depending on the load, the lifetime may also be dramatically increased. In the random output type, the output switches as soon as an input voltage is applied.

AC/DC Input Module

An AC Input Module will supply a logic voltage at its output with the application of an AC voltage at the input. However, it also requires a separate control voltage. The control voltage may be used to inhibit the device, hence both the control voltage and the input voltage must both be present at the same time (similar to a logical "and") in order that the module send a control signal out. Some AC input modules have a bridge rectifier at the input converting the input voltage to a DC voltage. This makes it possible to use it with DC input voltage as well. The output configuration is usually a NPN type.

DC Input Module

DC Input modules are designed to sense the presence or the absence of a DC voltage. Examples include the contact closures from sources such as push buttons, limit switches, proximity switches, etc. Like the AC Input Module, a separate control voltage can be used to inhibit the device.

SWITCHING POWER SUPPLIES
Basic Series

Basic Series

Altech's Basic Series Switching Power Supplies are housed in Industrial grade enclosures. These heavy duty enclosures are hand protected to IP10 rating, ensure positive wire retention with Pressure Plate Terminals and feature DIN Rail or Panel mounting with no additional space required.

- Short Circuit and Overload Protection
- Ripple < 50 mVp-p
- 70% Efficiency Rating
- UL & CSA Approvals Pending



Figure 1

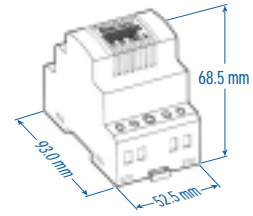


Figure 2

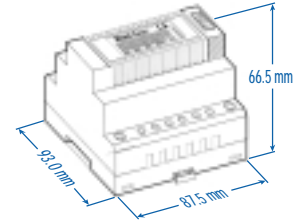
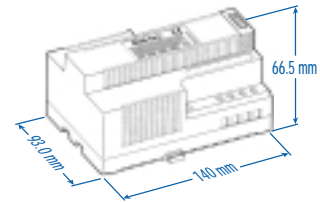


Figure 3



Model Number	15 WATTS		24 WATTS		36 WATTS	48 WATTS		60 Watts	
	12 VDC	24 VDC	12 VDC	24 VDC	12 VDC	12 VDC	24 VDC	12 VDC	24 VDC
Input Voltage	90-260 Vrms	90-260 Vrms	90-260 Vrms	90-260 Vrms	90-260 Vrms	90-260 Vrms	90-260 Vrms	90-260 Vrms	90-260 Vrms
Output Current	0-1.25 A	0-0.63 A	0-2.00 A	0-1.00 A	0.15-3.00 A	0.15-4.00 A	0.1-2.00 A	0.15-5.00 A	0.1-2.5 A
Input Frequency	48-63 Hz	48-63 Hz	48-63 Hz	48-63 Hz	48-63 Hz	48-63 Hz	48-63 Hz	48-63 Hz	48-63 Hz
Preset Accuracy	±3%	±3%	±3%	±3%	±3%	±3%	±3%	±3%	±3%
Output Ripple	< 50 mVp-p	< 50 mVp-p	< 50 mVp-p	< 50 mVp-p	< 50 mVp-p	< 50 mVp-p	< 50 mVp-p	< 50 mVp-p	< 50 mVp-p
Line Regulation	-	-	±0.8%	±0.02%	±0.01%	±0.01%	±0.01%	±0.01%	±0.01%
Load Regulation	-	-	±3.5%	±0.8%	±1.8%	±1.8%	±1.5%	±1.8%	±1.5%
Efficiency (full load)	-	-	70%	80%	70%	70%	80%	70%	80%
DC Output Voltage Adjust	No	No	No	No	No	No	No	No	No
Switching Frequency	100 kHz	100 kHz	100 kHz	100 kHz	70 kHz	70 kHz	70 kHz	70 kHz	70 kHz
Short Circuit Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Over Voltage Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Operating Temperature	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C
Relative Humidity	5-90%	5-90%	5-90%	5-90%	5-90%	5-90%	5-90%	5-90%	5-90%
MTBF	80,000 h	80,000 h	80,000 h	80,000 h	80,000 h	80,000 h	80,000 h	80,000 h	80,000 h
Figure	1	1	2	2	3	3	3	3	3

LINEAR POWER SUPPLY MODULES
35 or 32mm DIN Rail

Unregulated

Regulated

Provide linear DC power required for logic and control interfaces, without harmonics that may exist in some switching power supplies. These transformer power modules are rated at 6 to 24 Watts, and are available in unregulated and regulated models.

- Screw-Cage Clamp Connections
- Fused Primary Line
- LED Output Indicator
- DIN Rail Mount, Panel Mount Available
- UL & CSA Approvals Pending



Figure 1



Figure 2

UNREGULATED

REGULATED

Model Number	BLPSU6-12	BLPSU12-12	BLPSU24-12	BLPSU12-24	BLPSU24-24	BLPSR6-12	BLPSR12-12	BLPSR12-24
Input Voltage	115 Vms	115 Vms	115 Vms	115 Vms	115 Vms	115 Vms	115 Vms	115 Vms
Output Voltage	12V	12V	12V	24V	24V	12V	12V	24V
Power	6 W	12 W	24 W	12 W	24 W	6 W	12 W	12 W
Output Current	0 - 0.50A	0 - 1.00 A	0 - 2.00A	0 - 0.50 A	0 - 1.00 A	0 - 0.50A	0 - 1.00 A	0 - 0.50 A
Input Frequency Variation	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz
Preset Accuracy	±3%	±3%	±3%	±3%	±3%	±3%	±3%	±3%
Output Ripple	1.38 Vp-p	1.25 Vp-p	2.41 Vp-p	1.41 Vp-p	2.53 Vp-p	20m Vp-p	35m Vp-p	30m Vp-p
Load Regulation	-	-	-	-	-	±0.2%	±0.4%	±0.2%
Efficiency (full load)	-	-	-	-	-	50%	50%	55%
Short Circuit Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Operating Temperature	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C	-10 - 40° C
Relative Humidity	5-90%	5-90%	5-90%	5-90%	5-90%	5-90%	5-90%	5-90%
MTBF	100,000 h	100,000 h	100,000 h	100,000 h	100,000 h	90,000 h	90,000 h	90,000 h
Protection	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Figure	1	1	2	1	2	1	1	1

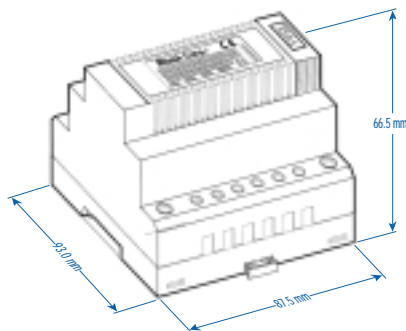


Figure 1

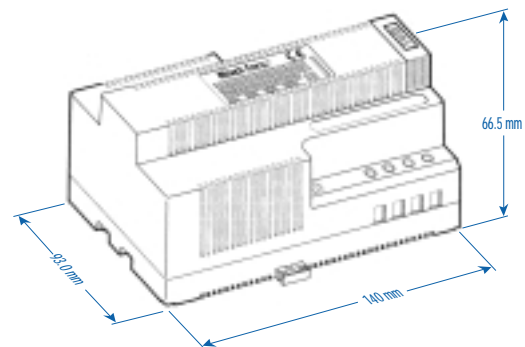


Figure 2

SURGE SUPPRESSORS AND VOLTAGE REGULATORS

SURGE SUPPRESSORS

DIN Rail and Panel Mount

All equipment users/owners can now benefit from Altech's certified, high performance surge protection technology. These cost-effective systems will provide continuous (10 year life) protection.

These surge suppressors eliminate dangerous surge current from being diverted to your ground wire. These surges can degrade audio and video signals as well as slow up and damage networks and interconnected peripherals.

- General Specifications:
4 models available in this series;
load rating 5 amperes.
- 120V DIN Rail mount
 - 85-265V DIN Rail mount
 - 120V Panel mount
 - 85-265V Panel mount

- Developed to Meet US Government Guidelines:
- Grade A endurance: 1,000 surges, 6,000 Volt, 3,000 Amp
 - Class 1 let-through voltage: 280 volts @ 3,000 amps
 - Mode 1 applications: No ground circuit contamination.



DIN-5-120 / DIN-5-240 WVR

PM-5-120 / PM-5-240 WVR

Surge Suppressor	DIN-5-120	DIN-5-240WVR	PM-5-120	PM-5-240WVR
L x W x H	5.9"x3.5"x3"	5.9"x3.5"x3"	5.9"x3.5"x3"	5.9"x3.5"x3"
Current	5A	5A	5A	5A
Voltage	120V	85-265V	120V	85-265V
Mounting Hole Spacing	-	-	6.33 in.	6.33 in.
DIN Rail for ordering information refer to page 58				

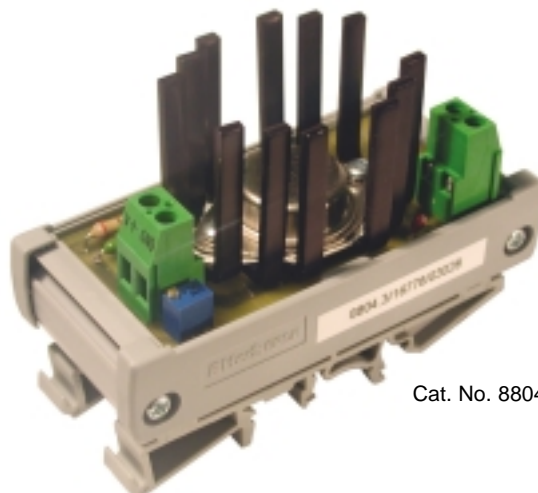
General Specifications

Limiters	Series Mode surge reactor current limiter; cascaded, auto-tracking dual polarity voltage limiter; high performance pulse inverter.
Clamping Voltage Onset	2 volts above peak line voltage (auto-tracking).
Maximum Applied Surge Pulse	Industry standard 6000 Volts (1.2x50µs), with unlimited current (8x20µs).
Maximum Applied Pulse Joule Rating	Unlimited rating (due to 8x20µsec current limiting).
Endurance, ANSI C62.41 Category B3(C1) Pulses	6,000V, 3,000A: >1,000 surges.
EMI/RFI Filter (bidirectional, wave tracking)	(50 ohm source, load): 3 dB @ 3 kHz; >26 dB @ 100 kHz; >40 dB @ 300 kHz for noise within the power wave envelope.
Let-through Slew Rate	5000v/µsec disturbance reduced to 28v/µsec within AC power wave, and less than 10v/µsec out-side power wave envelope.
Leakage Current	10µa @ 120V

VOLTAGE REGULATORS

Altech's voltage regulator modules provide a well-regulated output voltage from an unregulated source. Each module may be operated at an output voltage from 1.2 to 33V. A 2 Amp fuse is included on the module.

- Output voltage from 1.2 to 33 V*
- 2 A output current
- Line regulation is .005% (typical)
- 0.3% Load regulation (typical)
- 86 dB ripple rejection @ 120 Hz (typical)
- Easy access to voltage adjustment
- Other configurations available upon request



Cat. No. 8804.3

*Note: Maximum input/output voltage differential: +35V.

CUSTOM INTERFACE MODULES

If your design or application requires more functionality or features than our standard product, Altech offers complete engineering, prototype and production services for custom modules.

Our staff has the ability to take your design or requirements and manufacture your custom module. Custom module production generally includes engineering, PCB layout and prototypes, packaged in Altech extrusions for mounting on panels or DIN Rail. In many industrial control systems, customized designs are the solution for many problems.

Altech provides a quick turnaround and competitive solution to your problem. Altech provides the following benefits to your company:

Application Assistance

- Modify a standard product
- Help define a new product

Engineering Capability

- Use of latest CAD system
- PCB layouts completed promptly
- Prototypes available two weeks after PCB layout approval

Manufacturing Capability

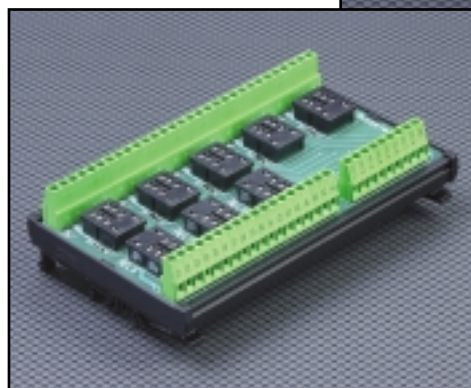
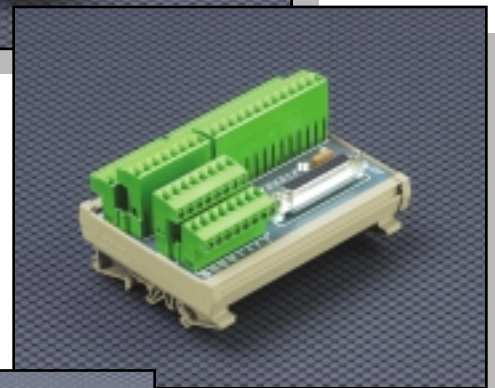
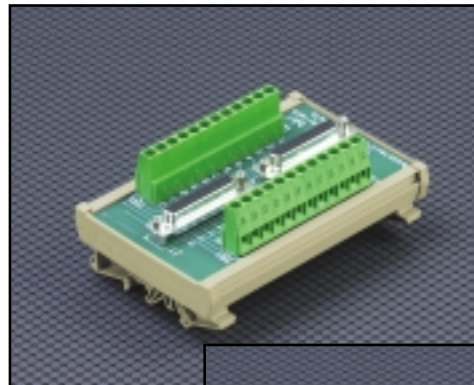
- Complete in-house manufacturing
- ISO 9001 Certified

Minimum Quantities

- 25 piece minimum for custom quotes
- Quotation provided at no cost

Altech Benefits

- Fast turnaround due to in-house capability
- Highly competitive in-house manufacturing
- Use of Altech components (blocks, extrusions, connectors)



**Mounting Tracks
For Printed Circuit Boards
DIN Rail or Panel Mount**

Mount standard or custom printed circuit boards in Mounting Tracks which can be conveniently DIN rail or panel mounted in your control panel or cabinet. These are the same tracks used for Altech interface modules. We now make them available to you to house and protect your custom boards, etc. Tracks are easily cut to size or can be ordered pre-cut to specific lengths. They are easily assembled from standard components and snap onto 35mm DIN rail or can be panel mounted.

Each track has two sets of printed circuit board guides to accept two alternate board widths.

End Sections hold printed circuit boards securely in place and keep out foreign objects.

Mounting

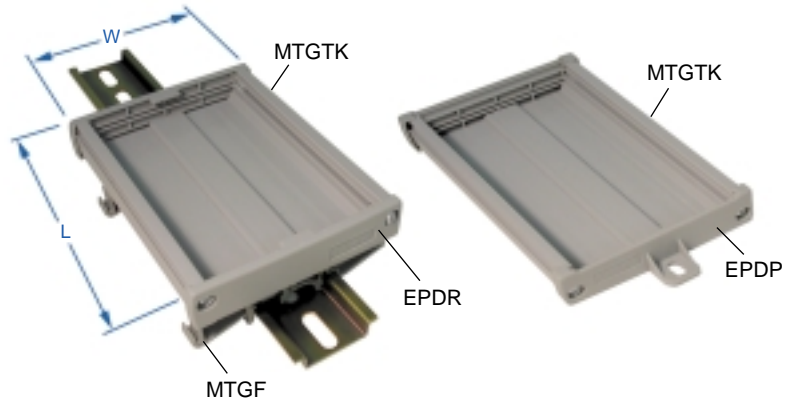
When mounting extrusions on DIN rail, order two or more MTGF DIN Rail mounting feet. These feet slide into grooves on the extrusion. Then attach two EPDR DIN Rail Mount End Sections with help of EPS screws.

To panel mount, order two EPDP Panel Mount End Sections (and EPS screws), each with an integral mounting flange with a 6 x 8mm (.24 x .32 in.) hole slot.

If desired, tracks can be direct mounted using double sided tape. Order two EPDR End Sections (and EPS screws).

- Standard Lengths: 1m (3'-3") or 2m (6'-6")
- Track Material: PVC
- Temperature Limit:
Short Term - 80°C (176°F)
Continuous - 70°C (158°F)
- End Section, Foot Material: Polyamide
- Preassembled, Precut Lengths Available
- Tracks Accept Standard MT2 Marking Tags

MTGTK

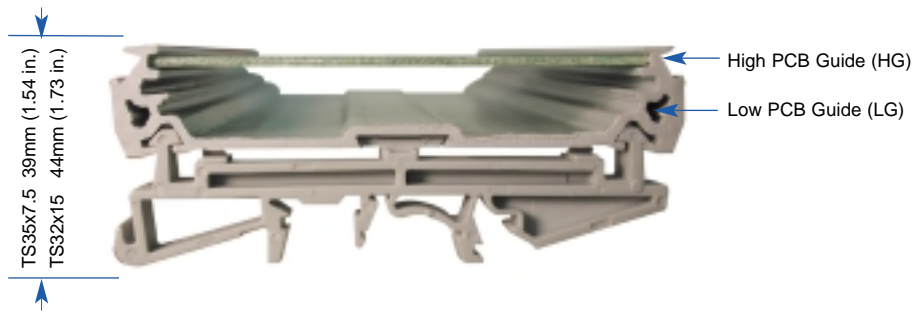


**Narrow Mounting Track
Extrusion and Components**

For PC Board Widths
72.6mm (2.86) or 68.5mm (2.70)

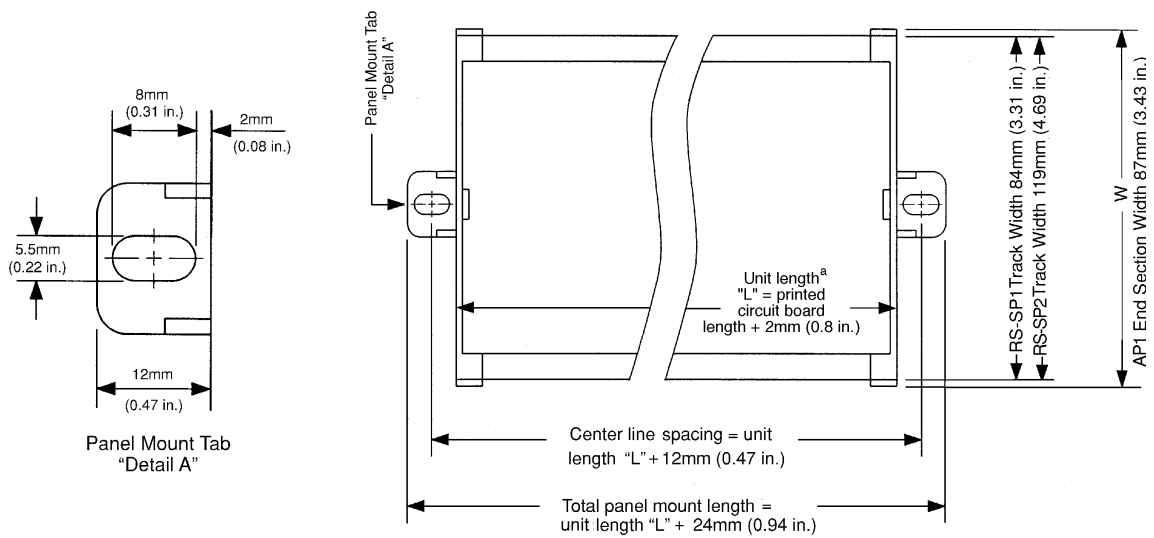
	Cat. No.	Std. Pk.
Mounting Track		
1 meter	MTGTK/1M	5
2 meter	MTGTK	5
Accessories		
DIN Rail Mount End Section	EPDR	100
DIN Rail Mounting Foot	MTGF	100
Panel Mount End Section	EPDP	100
DIN Rail / Panel Mount End Section Screws #4x1/2", Phillips Pan head (2 required per end section)	EPS	200
Marking Tags	MT2	100

DIN Rail Mount



Printed circuit board shown in High Guide

Panel Mount



Printed circuit board shown in High Guide

Sizing Information

Printed Circuit Board Width		
Track Type	High Guide (HG)	Low Guide (LG)
MTGTK	72.6 ± 0.2mm (2.86 ± .008 in.)	68.5 ± 0.5mm (2.70 ± .019 in.)

Mounting Track Extrusion "Cut-to-Size" Formula
Extrusion Length = Printed Circuit Board Length - 4.5mm (.177 in.)

^aAlso applies for DIN Rail Mount Unit