

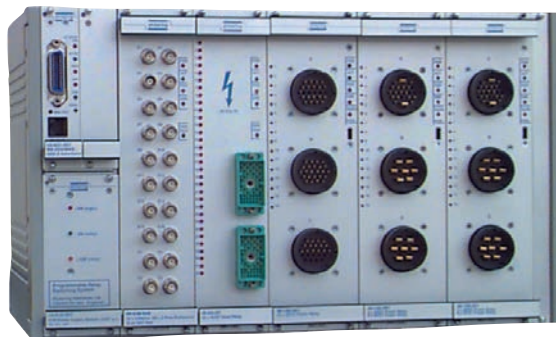
- Up To 16 Power Relays Per Module
- Choice of 13A or 30A Power Relays
- Capable of Switching Up To 250V AC
- 8 Additional Control Lines For Operating External Relays
- Suitable For Slave Switching Large Relays or Contactors
- Front Panel Status Indicators

Power Relay Modules are intended for switching heavy AC or DC loads or for slaving up to large external relays, contactors and solenoids. The 20-150 range is available with a choice of Medium and High Power Relays for switching up to 30A.

The 20-150 range of Power Switching Modules are available with a choice of 13A or heavy duty 30A relays. The standard version (type 20-150-001) has 16 SPDT Power Relays which will switch up to 13A at 30V DC or 250V AC. For applications requiring greater current capability further versions feature 30A SPST relays.

## Range Description:

- 20-150-001 16 x SPDT Medium Power Relays (13A)
- 20-150-101 2 x SPST High Power Relays (30A)  
12 x SPDT Medium Power Relays (13A)
- 20-150-201 4 x SPST High Power Relays (30A)  
8 x SPDT Medium Power Relays (13A)
- 20-150-301 8 x SPST High Power Relays (30A)  
2 x SPDT Medium Power Relays (13A)



Typical Power Switching System

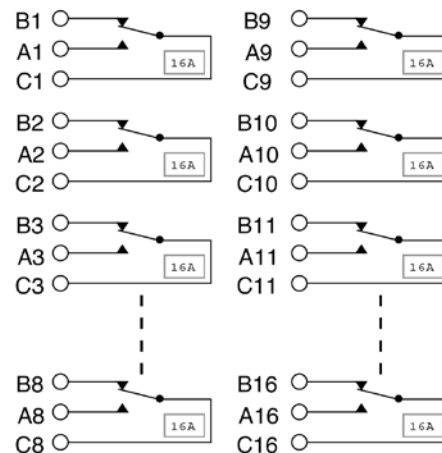
## Connectors

Connections to all modules are made via three front panel mounted power connectors (CPC types). There are four versions available depending upon the configuration (7-pin, 16-pin, 22-pin and 24-pin), as shown below:

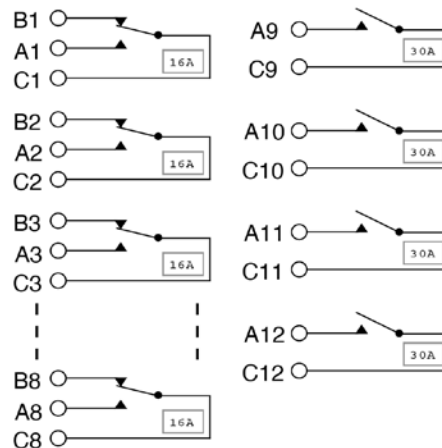
- 20-150-001 3 x 24-pin power connectors
- 20-150-101 3 x 22-pin power connectors
- 20-150-201 3 x 16-pin power connectors
- 20-150-301 2 x 7-pin + 1 x 22-pin power connectors



**\*Please contact Pickering for alternative PXI/LXI/USB solutions**



16 x SPDT Medium Power Relays (20-150-001)



8 x SPDT Medium Power + 4 x SPST High Power Relays (20-150-201)

## Power Relay Types

The 20-150 Power Relay Module is available with a choice of three power switch types: Medium Power Relays are suitable for switching up to 13A, they are socket mounted for ease of maintenance. High Power Relays will switch up to 30A.

### Medium Power Relay Switching Specification

Contact Type:	AgCdO
Contact Rating	
Resistive Load:	13A at 250V AC 13A at 30V DC
Inductive Load:	13A at 250V AC 5A at 30V DC
Max Standoff Voltage:	600V
Max Switching Voltage:	250V rms
Max Switch Current:	13A
Max Carry Current:	13A
Path Resistance - On:	200mΩ
Path Resistance - Off:	>1x10 <sup>8</sup> Ω
Bandwidth (50Ω):	10MHz
Maximum operate time: †	15ms
Max relay close settling time:	10ms
Max relay open settling time:	7ms
Expected Life	
Low power load:	>1x10 <sup>7</sup> operations
Full power load:	>1x10 <sup>5</sup> operations

### Additional Control Lines

To allow straight forward control of externally mounted relays (e.g. High Power, High Voltage, Microwave) the 20-150 is also fitted with 8 open-collector transistor control lines. These are rated at a maximum of 50V, with 0.5A current sink capability.

### Indicator LEDs

All modules have LED indicators for each relay, thus easing system programming and debugging.

### Mechanical Characteristics

The Power Relay Module conforms to the 6U height (262mm) Eurocard standard and is housed in a 160mm deep screened plug-in module. Panel width is 3.0 Inches.

### Operating/Storage Conditions

#### Operating Conditions

Operating Temperature:	0°C to +55°C
Humidity:	Up to 95% non-condensing
Altitude:	5000m

#### Storage and Transport Conditions

Storage Temperature:	-20°C to +75°C
Humidity:	Up to 95% non-condensing
Altitude:	15000m

### High Power Relay Switching Specification

Contact Type:	Silver Alloy
Contact Current Rating	
Resistive Load:	30A at 250V AC 30A at 30V DC
Max Standoff Voltage:	600V DC
Max Switching Voltage:	270V rms
Max Switch Current:	30A
Max Carry Current:	30A
Path Resistance - On:	50mΩ
Path Resistance - Off:	>1x10 <sup>8</sup> Ω
Bandwidth (50Ω):	10MHz
Maximum operate time: †	30ms
Max relay close settling time:	20ms
Max relay open settling time:	5ms
Expected Life	
Low power load:	>5x10 <sup>6</sup> operations
Full power load:	>1x10 <sup>5</sup> operations

† This is the time taken from the start of the IEEE-488 or RS-232 message to the closure of the relay (assuming fast IEEE-488 / RS-232 communication and no pending operations).

### Programming

The 20-150 module is simple to program either by single bit or by byte (8 bits).

<b>ARESET a</b>	Clear all outputs on module <b>a</b>
<b>CLOSE a, b</b>	Set bit number <b>b</b> on module <b>a</b>
<b>DELAY t</b>	Force a minimum delay of <b>t</b> milliseconds between two instructions
<b>OPEN a, b</b>	Clear bit number <b>b</b> on module <b>a</b>
<b>RESET</b>	Clear all bits/switches on all modules
<b>VIEW? a [ , b]</b>	View status of module <b>a</b> , can be viewed at any time either as a word or by bit <b>b</b> as a logical value (1 or 0)
<b>WRITE a, w</b>	Send word <b>w</b> to module <b>a</b> (address <b>a</b> contains both the module address and the position of the byte being changed: 1 to 3 for a 24 relay unit).

20-150 modules must be used in conjunction with the 10-921 interface module (They are not compatible with the older 10-920 interface).

### Safety & CE Compliance

All modules are fully CE compliant and meet applicable EU directives: Low-voltage safety EN61010-1:2010, EMC Immunity EN61326-1:2013, Emissions EN55011:2009+A1:2010.

## Product Order Codes

Power Relay Module		
No. of Medium Power Relays	No. of High Power Relays	Product Order Code
16	0	20-150-001
12	2	20-150-101
8	4	20-150-201
2	8	20-150-301

## Product Customization

Pickering System 20 modules are designed and manufactured on our own flexible manufacturing lines, giving complete product control and enabling simple customization to meet very specific requirements.

Customization can include:

- Alternative relay types
- Mixture of relay types
- Alternative number of relays
- Different performance specifications

All customized products are given a unique part number, fully documented and may be ordered at any time in the future. Please contact your local sales office to discuss.

## Support Products

### Mating Connectors & Cabling

24-Pin CPC Socket with Pins	10-962-001
22-Pin CPC Socket with Pins	10-962-002
16-Pin CPC Socket with Pins	10-962-003
7-Pin CPC Socket with Pins	10-962-004
Pin Extraction Tool	10-962-901
Crimp Tool	10-962-902

Note: Mating connectors are provided free of charge with Power Relay Module purchases.