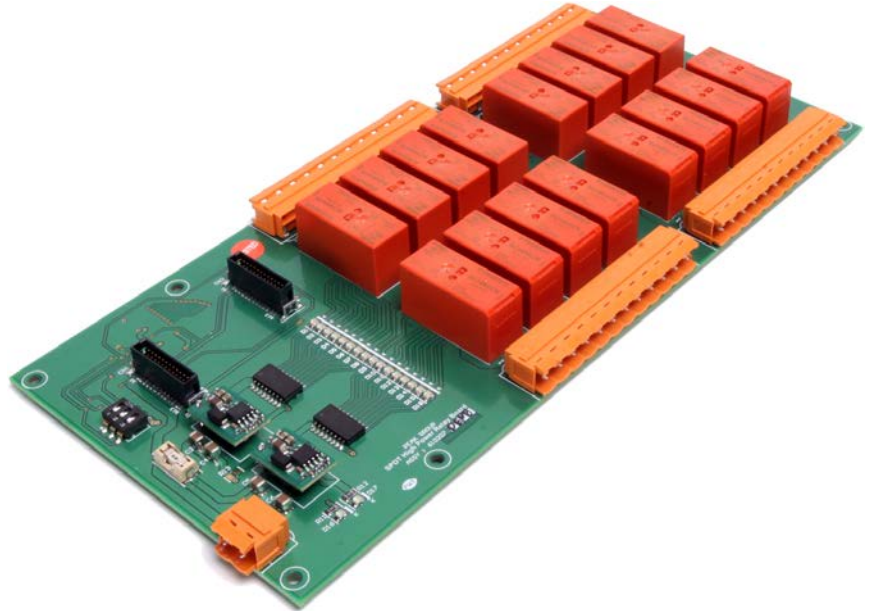


Introduction

The 16-Channel SPDT Relay Slave Module is designed to be used with the Peak Master Interface Module. The Module comprises of 16 single pole double throw 10A, 250VAC relays with LED indication that can be independently controlled by the Peak Master Interface Module. Up to 7 boards can be connected together to 1 Master Interface Module.

Key Features

- Connect Multiple Boards to 1 Master
- 16 High Power Relays
- Wide Voltage Input
- Robust, Flexible Design
- Multiple Connection Methods (Piggyback, Ribbon)
- Low Cost
- Small Size
- High Quality Components
- All Components Fully Traceable

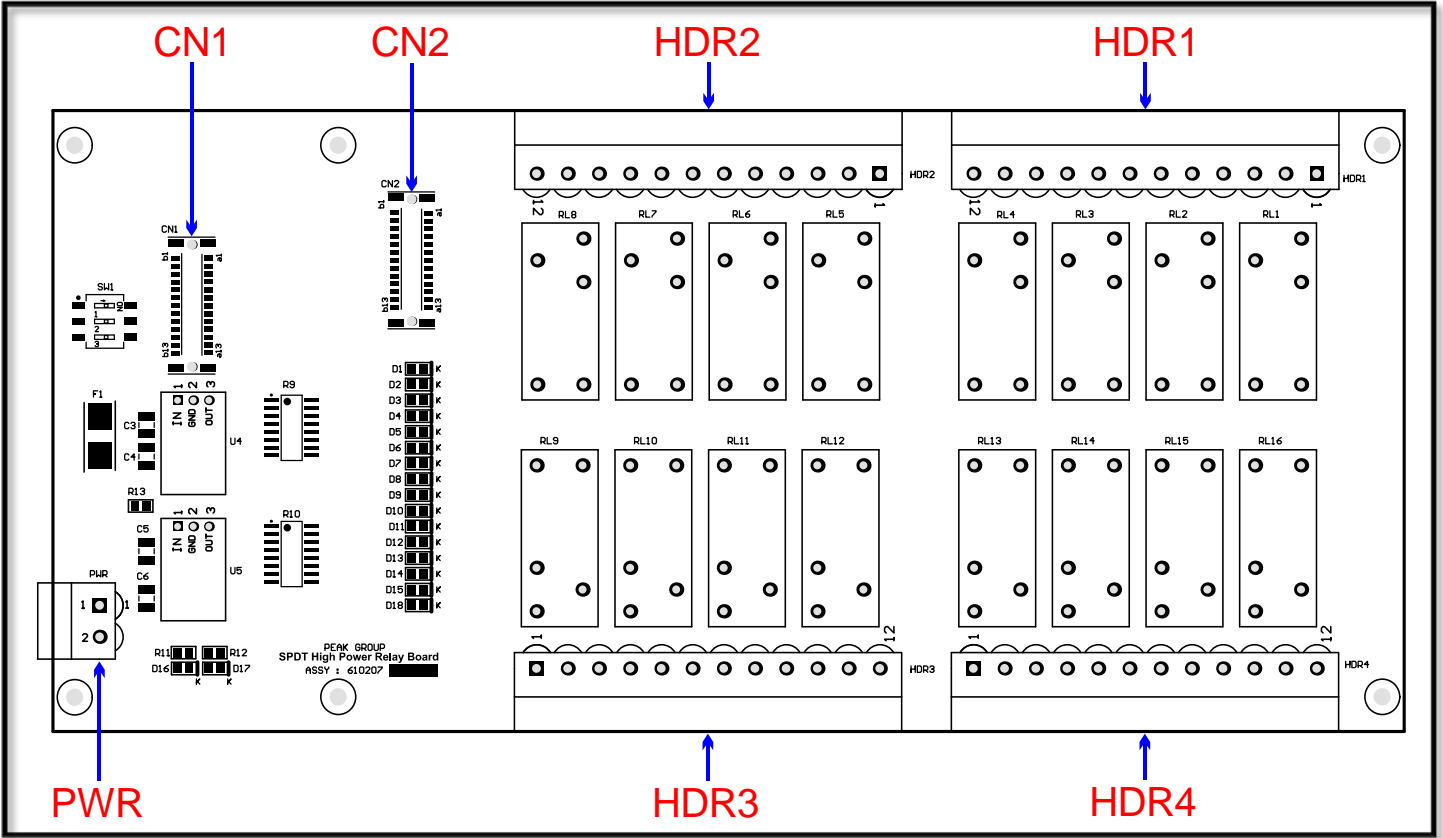


Specifications

Parameter	Min	Typ	Max	Unit
Supply Voltage	7	-	36	VDC
Supply Current (7VDC Supply Voltage)[1]	15	-	950	mA
Supply Current (24VDC Supply Voltage)[1]	7	-	330	mA
Supply Current (36VDC Supply Voltage)[1]	5	-	200	mA
Operating Temperature	-30	-	+75	°C
Relay Contact Voltage	-	-	250	VAC
Relay Breaking Capacity	-	-	3000	VA
Relay Rated Current	-	-	10	A
Operations	-	-	>30x10 ⁶	Operations
	6x10 ³	-	30x10 ³	

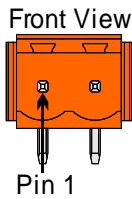
[1] Min = no relays on, max = all relays on.

Connectivity



PWR (POWER)

Pin 1 = +V
Pin 2 = 0V

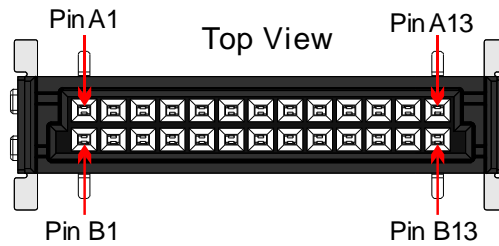


Mating Connector:

Weidmüller – Part No: 1716320000

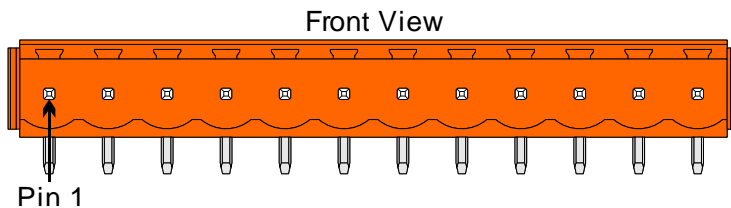
CN1 & CN2 (Slave Link)

- | | |
|-----------------|-----------------|
| Pin a1 = VCC | Pin b1 = VCC |
| Pin a2 = VCC | Pin b2 = VCC |
| Pin a3 = VCC | Pin b3 = 0V |
| Pin a4 = 0V | Pin b4 = 0V |
| Pin a5 = SDA | Pin b5 = 0V |
| Pin a6 = SCL | Pin b6 = 0V |
| Pin a7 = GPIO 1 | Pin b7 = GPIO 2 |
| Pin a8 = GPIO 3 | Pin b8 = GPIO 4 |
| Pin a9 = GPIO 5 | Pin b9 = GPIO 6 |
| Pin a10 = 0V | Pin b10 = 0V |
| Pin a11 = 0V | Pin b11 = 0V |
| Pin a12 = VCC | Pin b12 = VCC |
| Pin a13 = VCC | Pin b13 = VCC |



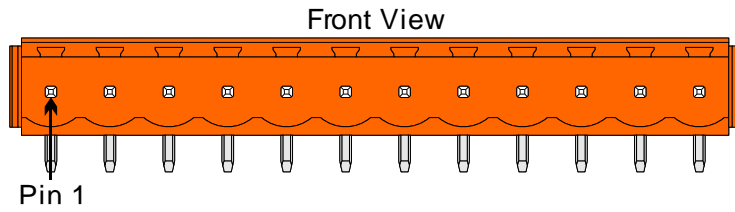
HDR1 (RL 1 – RL4)

- | | |
|-----------------|------------------|
| Pin 1 = RL1 NC | Pin 7 = RL3 NC |
| Pin 2 = RL1 NO | Pin 8 = RL3 NO |
| Pin 3 = RL1 COM | Pin 9 = RL3 COM |
| Pin 4 = RL2 NC | Pin 10 = RL4 NC |
| Pin 5 = RL2 NO | Pin 11 = RL4 NO |
| Pin 6 = RL2 COM | Pin 12 = RL4 COM |



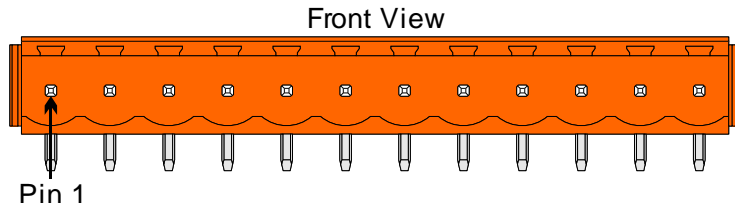
HDR2 (RL5 – RL8)

- Pin 1 = RL5 NC
- Pin 2 = RL5 NO
- Pin 3 = RL5 COM
- Pin 4 = RL6 NC
- Pin 5 = RL6 NO
- Pin 6 = RL6 COM
- Pin 7 = RL7 NC
- Pin 8 = RL7 NO
- Pin 9 = RL7 COM
- Pin 10 = RL8 NC
- Pin 11 = RL8 NO
- Pin 12 = RL8 COM



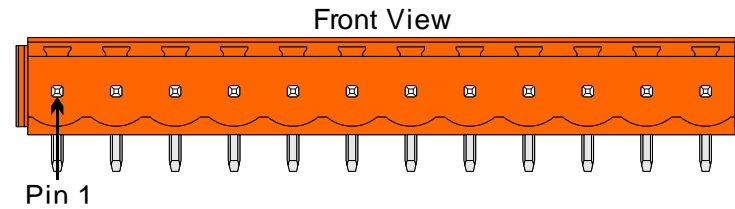
HDR3 (RL9 – RL12)

- Pin 1 = RL9 NC
- Pin 2 = RL9 NO
- Pin 3 = RL9 COM
- Pin 4 = RL10 NC
- Pin 5 = RL10 NO
- Pin 6 = RL10 COM
- Pin 7 = RL11 NC
- Pin 8 = RL11 NO
- Pin 9 = RL11 COM
- Pin 10 = RL12 NC
- Pin 11 = RL12 NO
- Pin 12 = RL12 COM



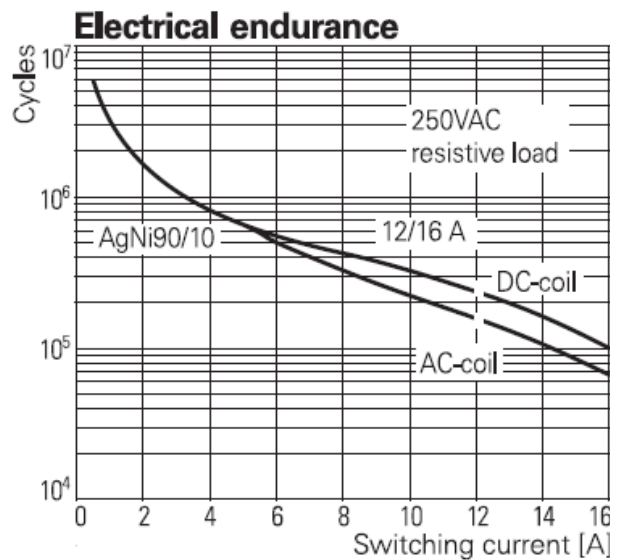
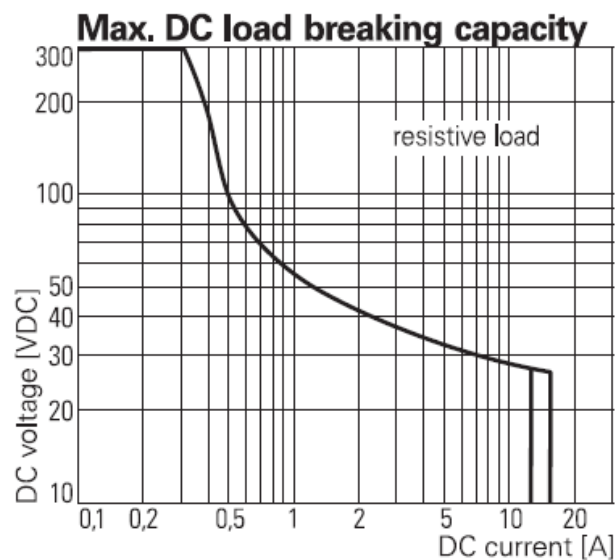
HDR4 (RL13 – RL16)

- Pin 1 = RL13 NC
- Pin 2 = RL13 NO
- Pin 3 = RL13 COM
- Pin 4 = RL14 NC
- Pin 5 = RL14 NO
- Pin 6 = RL14 COM
- Pin 7 = RL15 NC
- Pin 8 = RL15 NO
- Pin 9 = RL15 COM
- Pin 10 = RL16 NC
- Pin 11 = RL16 NO
- Pin 12 = RL16 COM



Relay Switching Specifications

Contact Data	
Contact Arrangement	Form C (CO)
Rated Voltage	250VAC
Rated Current	12A
Limiting continuous current	12A
Limiting making current max. 4s, duty factor 10%	25A
Breaking capacity MAX	3000VA
Contact material	AgNi 90/10
Frequency of operation, with/without load	360/7200h-1
Operate/release time max	8/6ms
Bounce time max	4/6ms



Communications

All communications to the 16-Channel SPDT Relay Slave Module are made by sending string commands via the Peak Master Interface Module.

Commands

1.0.0 – Switching Relays on and off

First configure the relay board:

Binary = 01010011-????????-00000100-00000110-00000000-00000111-00000000-01010000
 Hex = 0x53-0x??-0x04-0x06-0x00-0x07-0x00-0x50
 ASCII = S-?-EOT-ACK-NUL-BEL-NUL-P

The 1 st byte (01010011, 0x53, S)	Start the I ² C bus
The 2 nd byte (?)	Address the Relay Board (See Section 1.2.0)
The 3 rd byte (00000100, 0x04, EOT)	We need to send 4 bytes of data. (4 th to 7 th byte)
The 4 th byte (00000110, 0x06, ACK)	Address RL1 to RL8 register
The 5 th byte (00000000, 0x00, NUL)	Set all pins to be outputs
The 6 th byte (00000111, 0x07, BEL)	Address RL9 to RL16 register
The 7 th byte (00000000, 0x00, NUL)	Set all pins to be outputs
The 8 th byte (01010000, 0x50, P)	Stop the I ² C bus

This has now configured the relay board, we can now write to the RL1-8 & RL9-16 registers to change the state of the relays.

Binary = 01010011-????????-00000010-00000000-????????-01010000
 Hex = 0x53-0x??-0x02-0x00-0x??-0x50
 ASCII = S-?-STX-NUL-?-P

The 1 st byte (01010011, 0x53, S)	Start the I ² C bus
The 2 nd byte (?)	Address the Relay Board (See Section 1.2.0)
The 3 rd byte (00000010, 0x02, STX)	We need to send 2 bytes of data. (4 th & 5 th byte)
The 4 th byte (00000000, 0x00, NUL)	Address RL1-RL8 register
The 5 th byte (?)	Set the state of RL1 to RL8, LSB=RL1, MSB=RL8, 0=OFF, 1=ON
The 6 th byte (01010000, 0x50, P)	Stop the I ² C bus

The same command is required to switch RL9 to RL16 but the 4th byte will need to be 00000001 (0x01(SOH)) to address the RL9-16 register.

1.1.0 - Reading Relay Switch State

Binary = 01010011-????????-00000001-00000000-01010000-01010011-01001111-00000001-01010000

Hex = 0x53-0x??-0x01-0x00-0x50-0x53-0x4F-0x01-0x50

ASCII = S-?-SOH-NUL-P-S-O-SOH-P








- The 1st byte (01010011, 0x53, S) Start the I²C bus
- The 2nd byte (?) Address the Relay Board (**See Section 1.2.0**)
- The 3rd byte (00000001, 0x01, SOH) We need to send 1 byte of data. (4th byte)
- The 4th byte (00000010, 0x00, NUL) Address RL1-8 register
- The 5th byte (01010000, 0x50, P) Stop the I²C bus
- The 6th byte (01010011, 0x53, S) Start the I²C bus
- The 7th byte (01001111, 0x4F, O) Address the RL1-8 register asking to send data
- The 8th byte (00000001, 0x01, SOH) Send 1 byte of data
- The 9th byte (01010000, 0x50, P) Stop the I²C bus

*After this command you must read 1 byte of data from the serial bus. This byte of data will show the state of the port, LSB=RL1, MSB=RL8, 0=OFF, 1=ON.

The same command is required to read the state of RL9-16 but the 4th byte will need to be 00000001 (0x01(SOH)) to address the RL9-16 register.

1.2.0 – Relay Board Addressing

Up to 7 relay boards can be connected to one Master Interface Module, the 3 pole DIP switch must be set as shown below and the associated Writing & Reading Address must be inserted into the data string examples in sections 1.0.0 & 1.1.0.

Relay Board	DIP Switch Setting	Writing Addresss	Reading Address
1		10000000, 0x40, @	10000001, 0x41, A
2		1000010, 0x42, B	1000011, 0x43, C
3		1000100, 0x44, D	1000101, 0x45, E
4		1000110, 0x46, F	1000111, 0x47, G
5		1001000, 0x48, H	1001001, 0x49, I
6		1001010, 0x4A, J	1001011, 0x4B, K
7		1001100, 0x4C, L	1001101, 0x4D, M