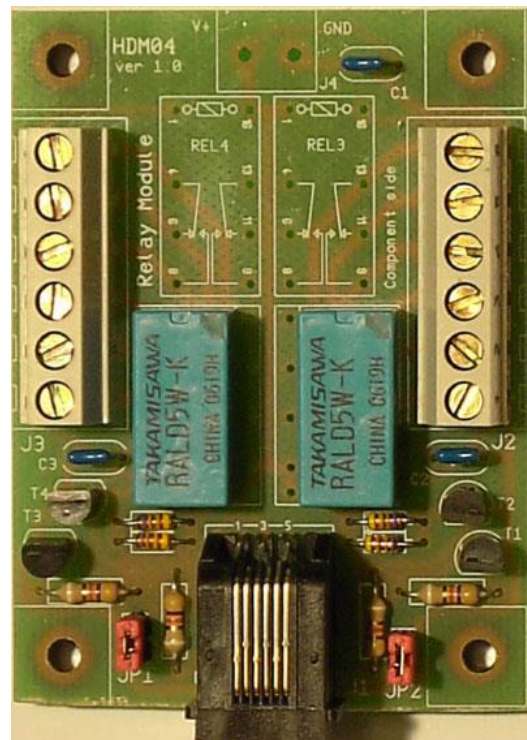
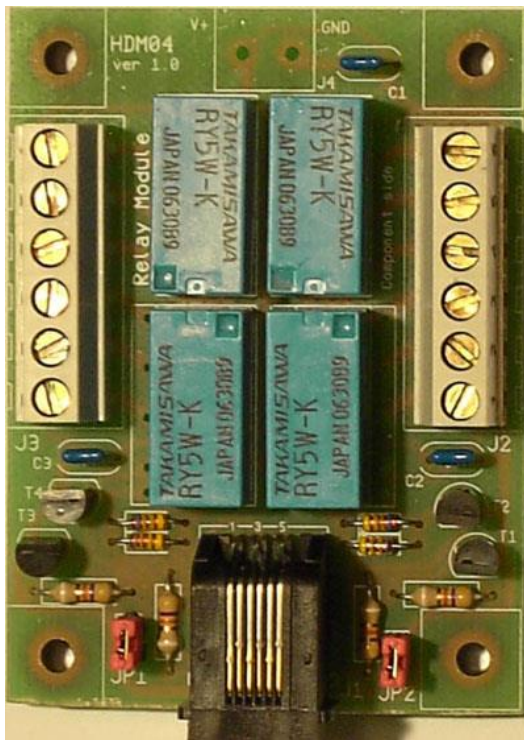


# LocoRelays Module



**HDM04**

**Liability disclaimer:**

Use all items that can be bought and installation instructions that can be found on this site at your own risk. They have been developed for personal use, and I find them very useful. That is why I wish to share them with other model railroad hobbyists. All items and procedures have been tested and used on my own model railroad systems without causing any damage, but this does not necessarily imply that all modifications and procedures will work in any and all environments or systems. I cannot take any responsibility when items or procedures are used under different circumstances. Always use your own judgement and common sense!

# Relay Module for LocoIO

This is a Relay module for LocoIO. Then it is possible with the LocoIO outputs (5V, max 20mA) to drive different items with higher voltages and bigger currents.

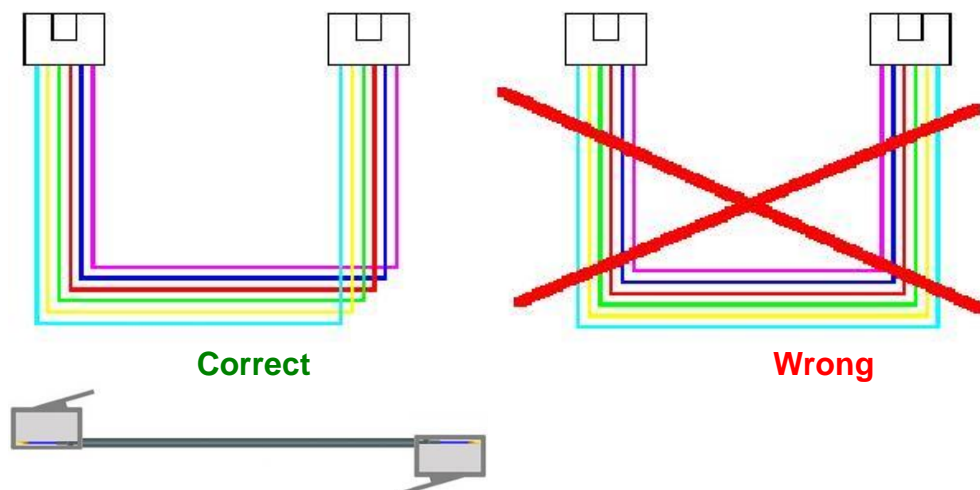
Each Relay has a change-over switch. The module can be provided with 2 bi-stable, 4 mono stable relays or 1 bi-stable and 2 mono stable relays.

## Some Applications:

- Current interruption on signals for analog layouts
- Polarization of the hart piece of the points
- Terminus loop circuit
- Turntable operation

## Relay module connection:

The Connection between LocoIO and Relay Module is with a 6-wire cable with RJ12 connectors. Important is that on the connector on both ends of the cable the pin1 to pin1 is connected. The length of the cable can be maximum 200 cm.

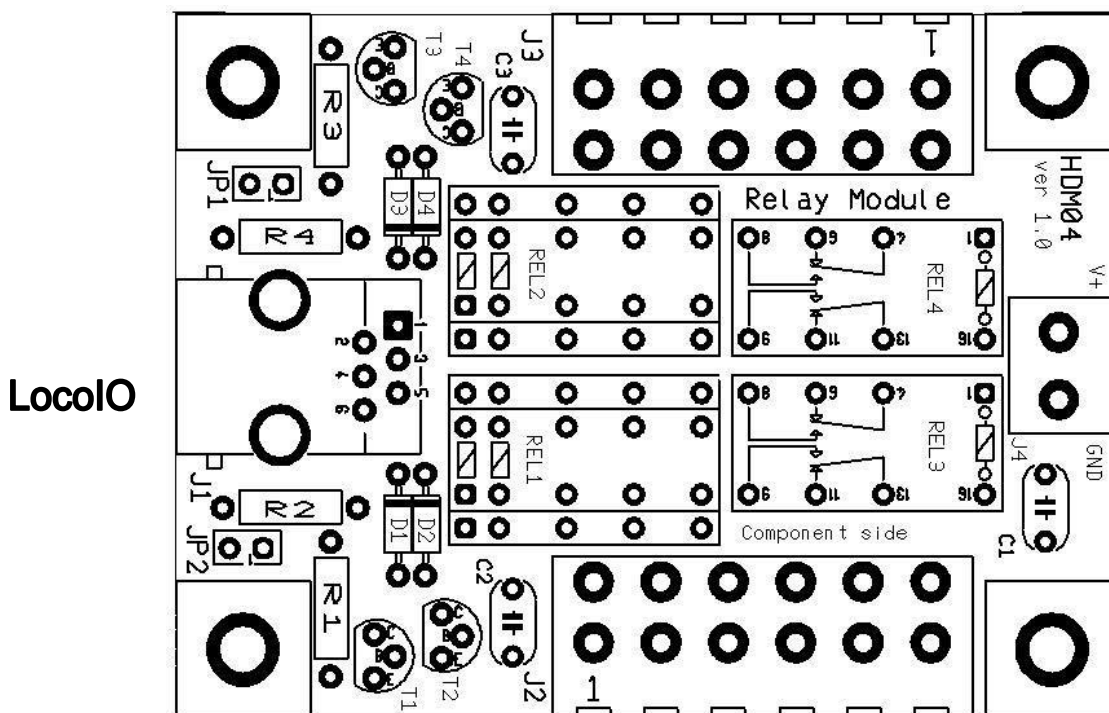


## Jumper settings:

JP1	Open	External DC-coil voltage for relays. Then can be used relays with other coil voltages.
	Closed	LocoIO 5V power voltage for relays. You have to use relays with a minimum coil resistant of 125Ω (Default)
JP2	Closed	Always be kept closed (Default)

## Remarks:

- AC-voltage cannot be used as feeding for the relays.
- At use of several modules with 5V mono stable relays, powered by the 5V of the LocoIO, it is better to foresee a cool plate on the voltage regulator (U4) of the LocoIO.



### Bill of materials for the basic Relay module:

UT_DEVICE	UT_VALUE	Refdes
PCB	HDM04	
Resistor	10kΩ	R1, R2, R3, R4
Capacitor	100nF	C1, C2, C3
Diode	1N4148	D1, D2, D3, D4
Transistor	BC548B	T1, T2, T3, T4
Connector	RJ12	J1
HDR_6	6 pins print connector	J2, J3
HDR_2	2 pins print connector	J4 (option, not used)
Relays	*	REL1, REL2, REL3, REL4

### \*Relay materials depends of model:

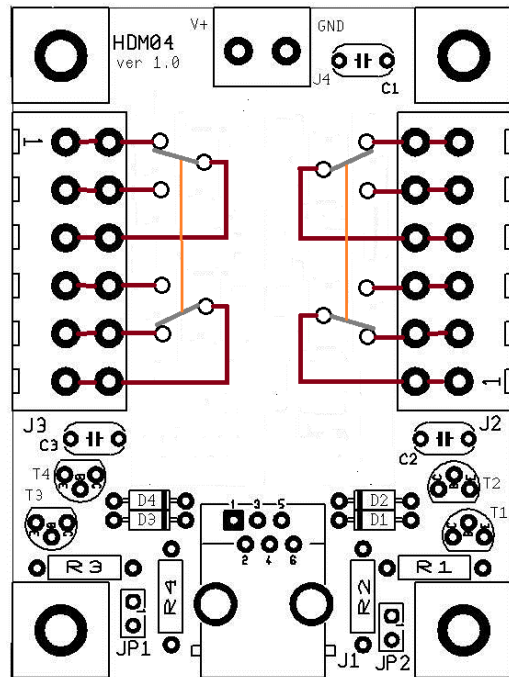
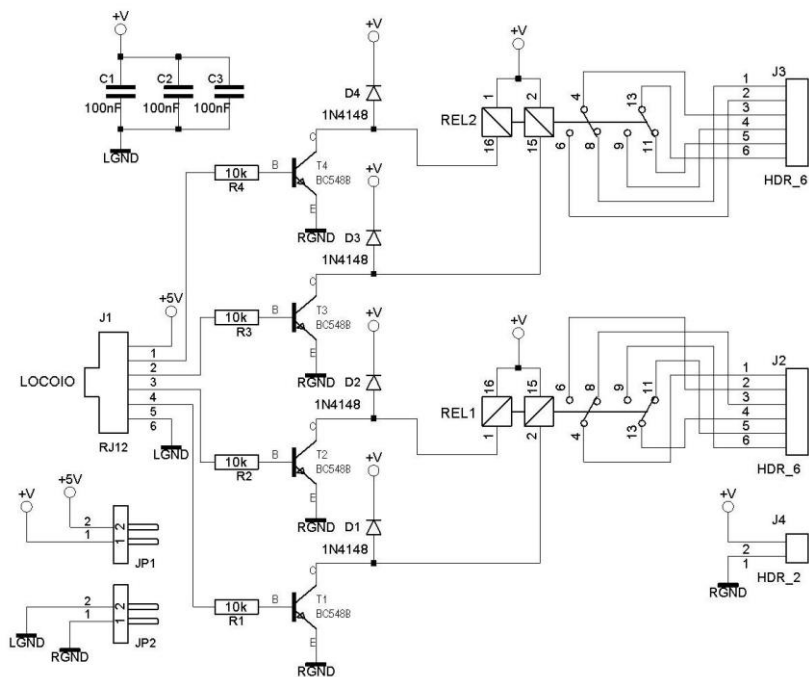
Relay (HDM04MD1) Bi stable 5V REL1, REL2  
 Hongfa HFD2/005-S-L2-D Example: Conrad 629512



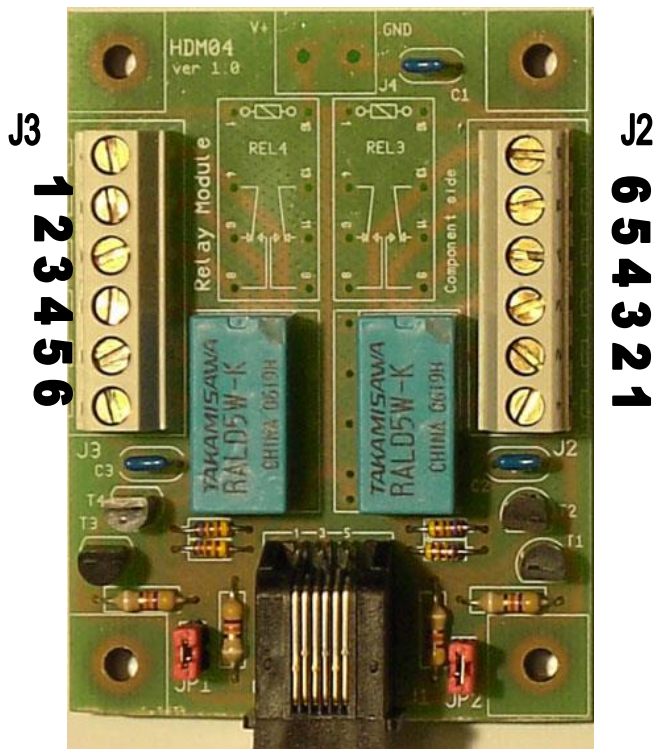
Relay (HDM04MD2) Mono stable 5V REL1, REL2, REL3, REL4  
 Takamisawa RY-05W-K Example: Conrad 502852  
 Hongfa HFD2/005-S-D Example: Conrad 629507



### HDM04MD1 with 2 bi stable relays



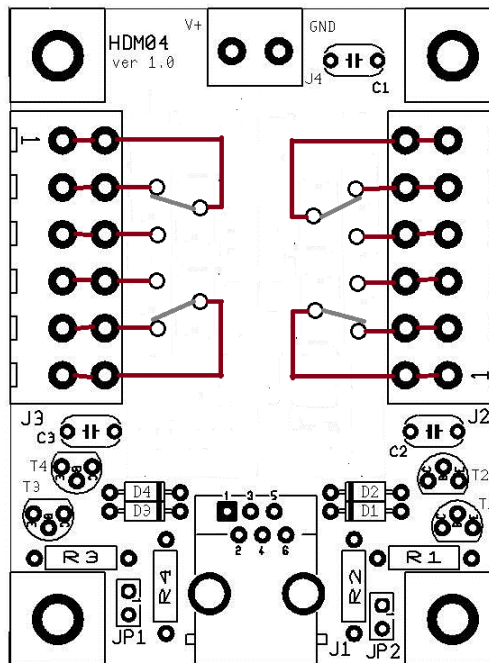
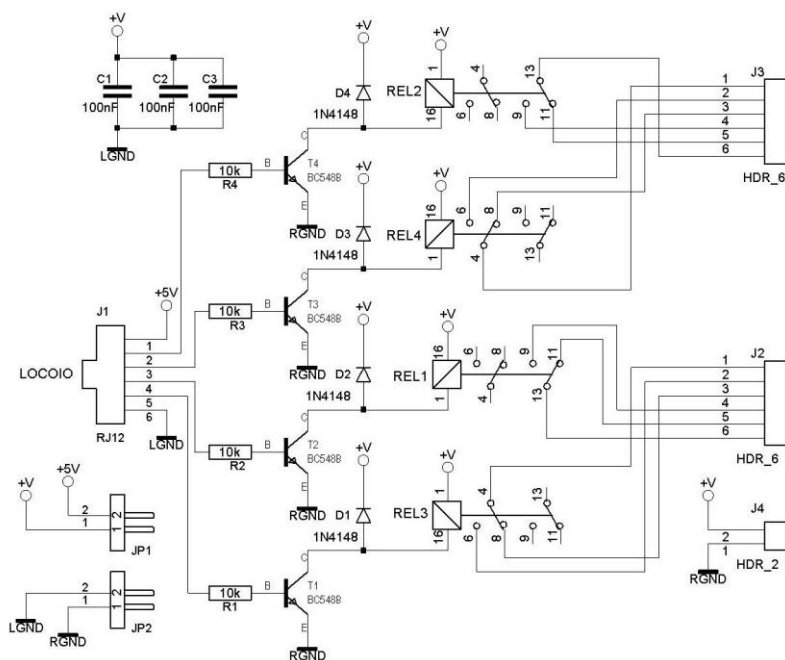
Output			
Block Occupancy			
Block Display LocoView			
Blinking		<input type="text" value="0"/>	Rate
1 - On	1 - Off	2 - On	Fixed Contact
2 - On	2 - Off	4 Way Port	
1 Soft Reset	1 Hard Reset	2 Soft Reset	Pulse Contact
2 Soft Reset	2 Hard Reset		
Address			
104	104	105	105



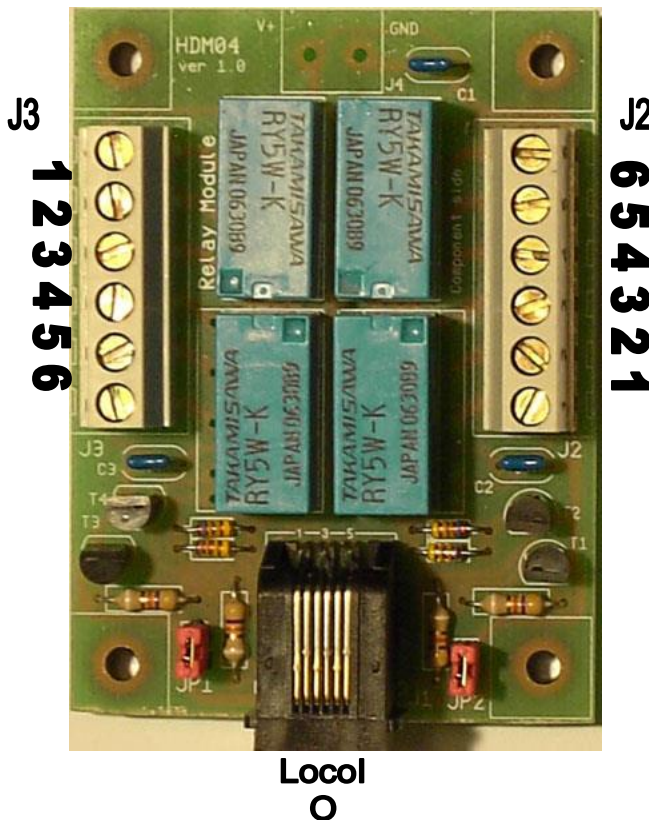
Loco  
O



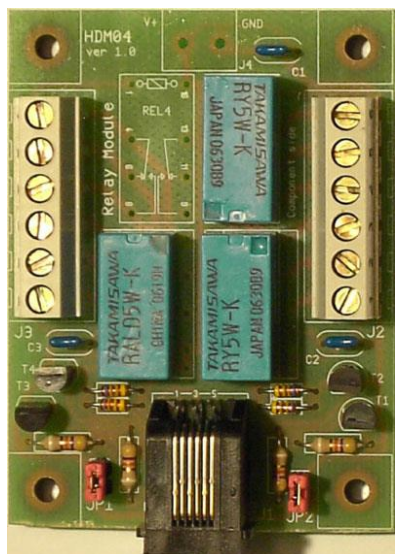
### HDM04MD1 with 4 mono stable relays



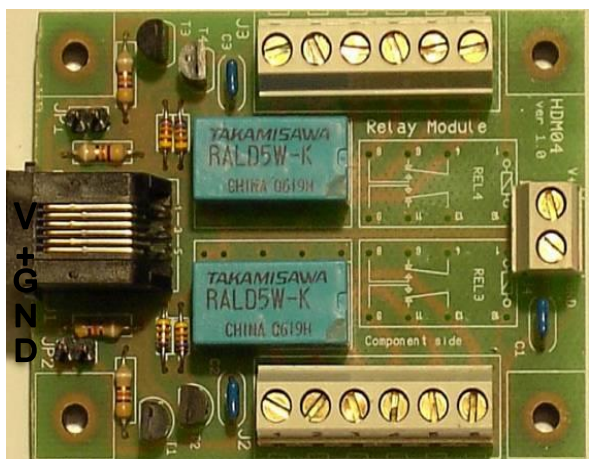
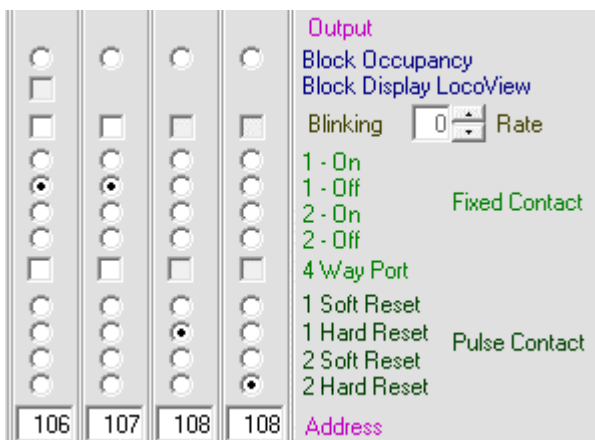
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Output</b>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Block Occupancy
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Block Display LocoView
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Blinking <input type="text" value="0"/> Rate
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1 - On
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1 - Off
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 - On <span style="float: right;">Fixed Contact</span>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 - Off
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4 Way Port
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1 Soft Reset
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1 Hard Reset <span style="float: right;">Pulse Contact</span>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 Soft Reset
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 Hard Reset
100	101	102	103	<b>Address</b>



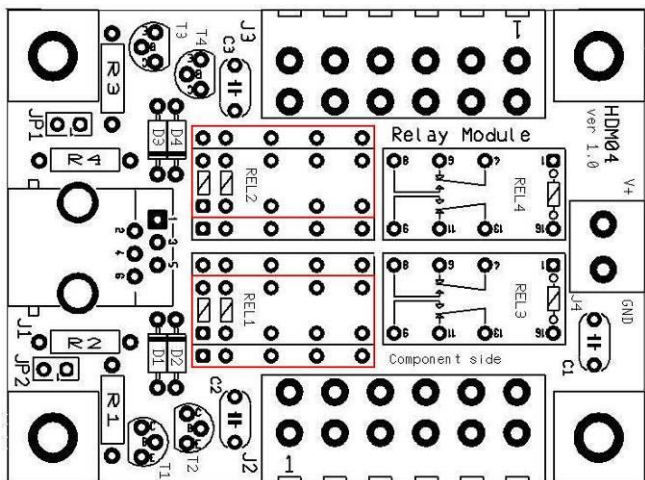
**Variations:**



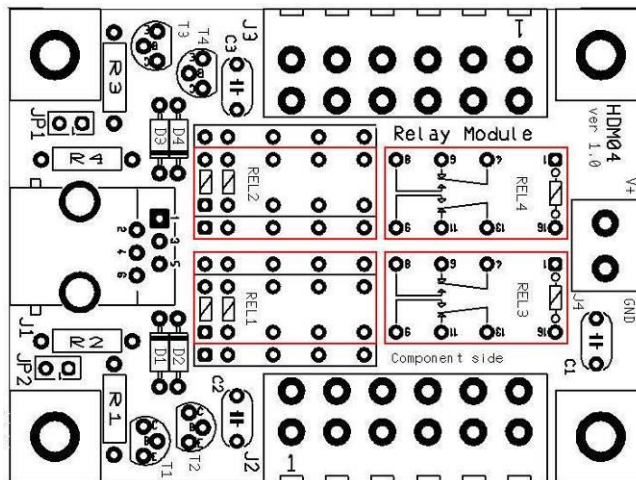
1 Bistabil relay and 2 mono stabile relays.



Connector J4 is for external power supply of the relays. J1 and J2 must then be Open.



Location of bistabil relays



Location mono stabile relays