

AudioWind Electronics-Salon

Bistable(Latching) DPDT 8A Power Relay Module

Model:

MD-D151/12V

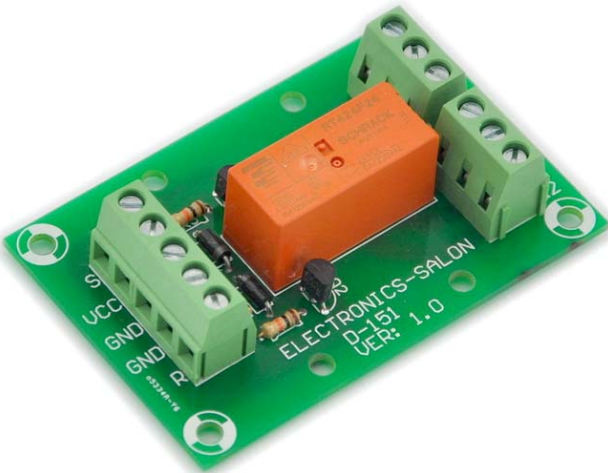
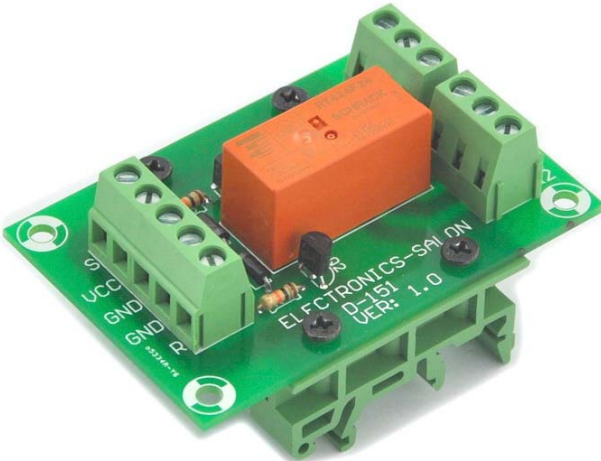
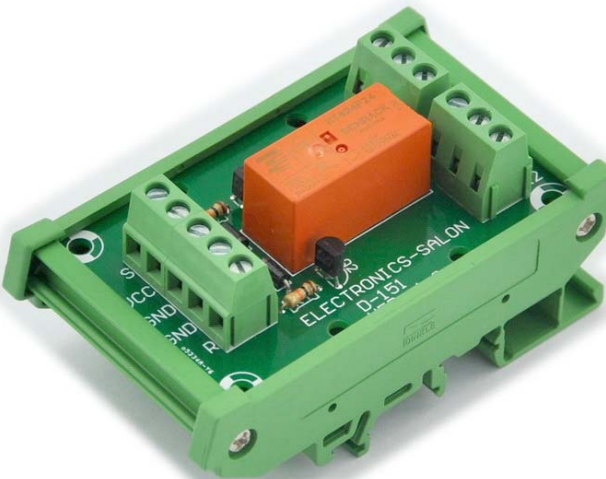
MD-D151/24V

MD-D151/12V-A

MD-D151/24V-A

MD-D151/12V-B

MD-D151/24V-B

Picture	Model	Feature
 The image shows two modules. The top one is MD-D151/12V with a 12V relay. The bottom one is MD-D151/24V with a 24V relay. Both have green PCBs with terminal blocks and an orange relay.	MD-D151/12V	Operating Voltage: DC12V. Relay: TYCO RT424F12
	MD-D151/24V	Operating Voltage: DC24V. Relay: TYCO RT424F24
 The image shows two modules with DIN rail mounting feet. The top one is MD-D151/12V-A with a 12V relay. The bottom one is MD-D151/24V-A with a 24V relay. Both have green PCBs with terminal blocks and an orange relay.	MD-D151/12V-A	Operating Voltage: DC12V. Relay: TYCO RT424F12 With simple adapter feet for DIN rail mounting.
	MD-D151/24V-A	Operating Voltage: DC24V. Relay: TYCO RT424F24 With simple adapter feet for DIN rail mounting.
 The image shows two modules with HQ carrier housing. The top one is MD-D151/12V-B with a 12V relay. The bottom one is MD-D151/24V-B with a 24V relay. Both have green PCBs with terminal blocks and an orange relay.	MD-D151/12V-B	Operating Voltage: DC12V. Relay: TYCO RT424F12 With HQ carrier housing for DIN rail mounting.
	MD-D151/24V-B	Operating Voltage: DC24V. Relay: TYCO RT424F24 With HQ carrier housing for DIN rail mounting.

Bistable(Latching) DPDT 8A Power Relay Module.

Bistable(Latching) relay is a special kind of relay. These are also called "impulse", "keep" or "stay" relays. When the current is switched off, the relay remains in its last state. While a conventional relay uses power continuously when its internal switch is to be closed (relay coil energized), a latching relay require only a brief voltage pulse to change state. The relay will maintain its state when the power supply removed.

Typical applications:

Battery powered equipment or applications with "memory function".

Power supply and control signal:

Operating voltage	12V Version: DC 12V 24V Version: DC24V
Operating current(relay action)	12V Version: 50mA 24V Version: 27mA
Control signal	0 to 0.5V: Low level, relay not action. 0.5 to 2.5V: Unknown state. 2.5 to 24V: High level, relay action.

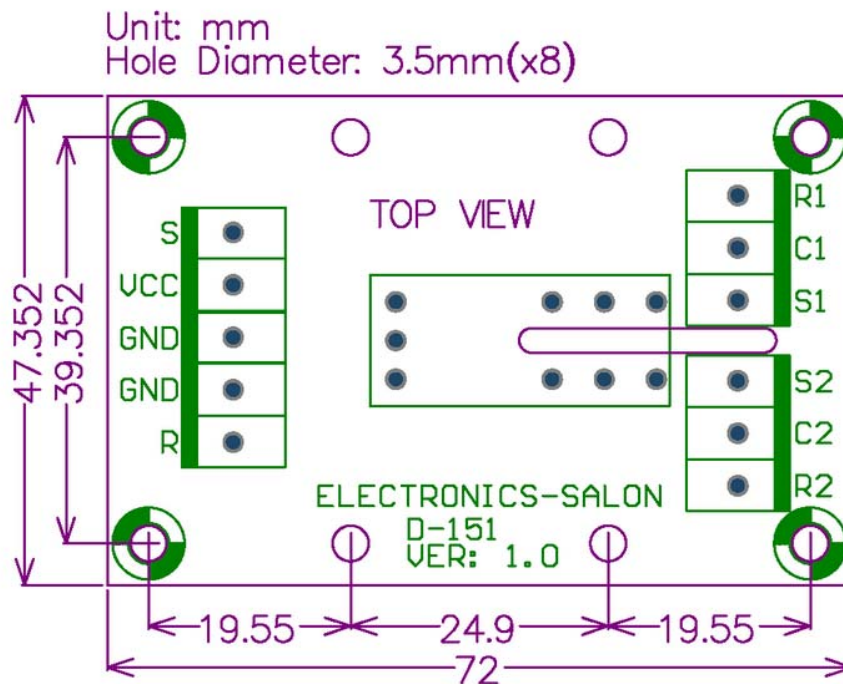
Switch contact data:

Contact arrangement	DPDT (2 form C)
Rated voltage	250VAC
Max. switching voltage	400VAC
Rated current	8A, UL 10A
Limiting continuous current	8A, UL 10A
Limiting making current (max. 4s)	15A
Breaking capacity max.	2000VA

Size

MD-D151/12V MD-D151/24V	L 72 x W 47.35 x H 20mm
MD-D151/12V-A MD-D151/24V-A	L 72 x W 50 x H 37mm
MD-D151/12V-B MD-D151/24V-B	L 87 x W 50 x H 41mm

PCB dimension and terminal block connect:



Left terminal block:

VCC: Power supply input, DC 12V or 24V.

GND: Power supply input 0V(GND).

S: SET signal input.

R: RESET signal input.

GND: Signal GND(0V).

Right terminal blocks:

R1 / C1 / S1: Switch 1.

R2 / C2 / S2: Switch 2.

When the input trigger signal R is High(pulse or constant):

Switch1 R1 – C1 is connected and C1 – S1 is disconnected.

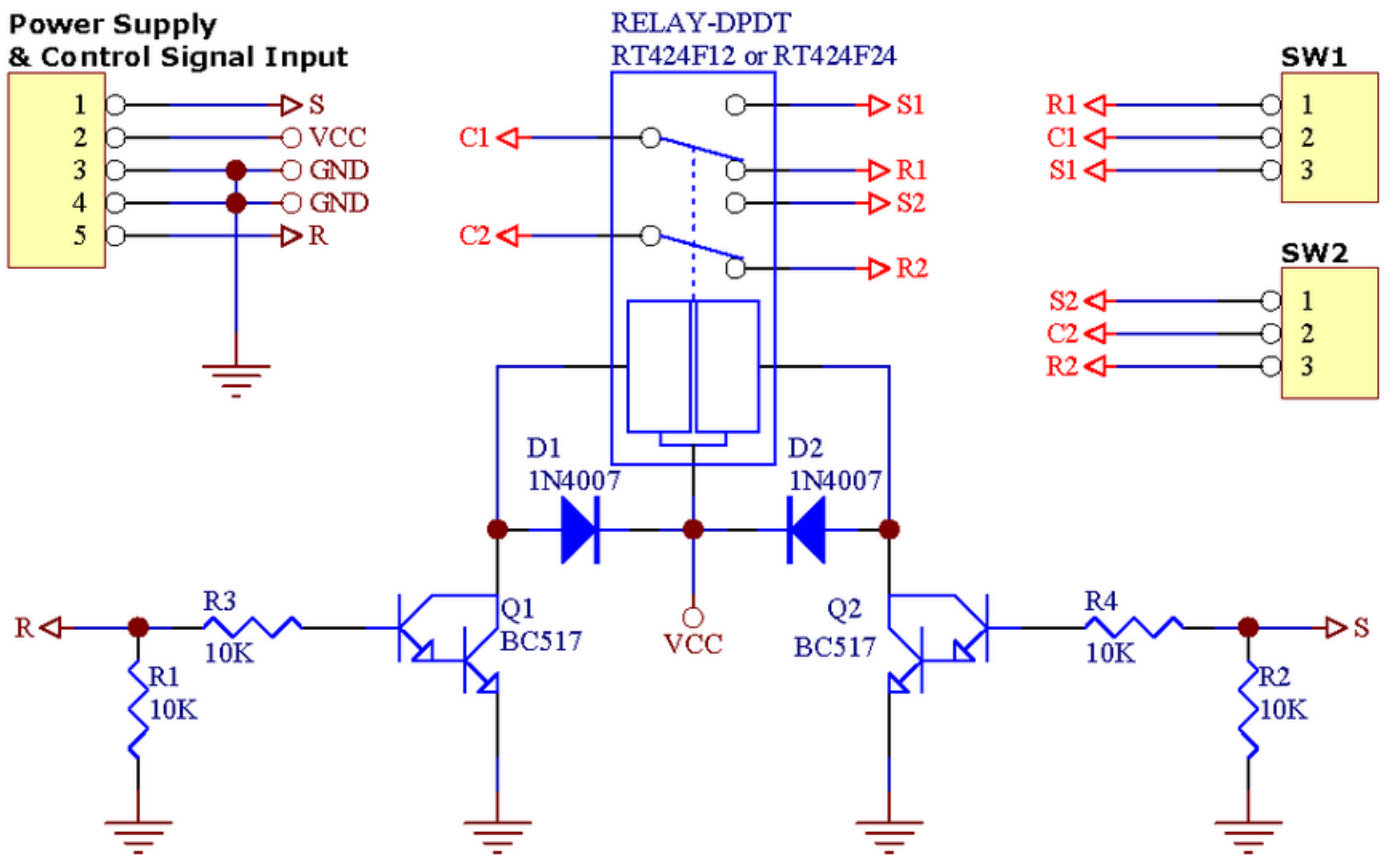
Switch2 R2 – C2 is connected and C2 – S2 is disconnected.

When the input trigger signal S is High(pulse or constant):

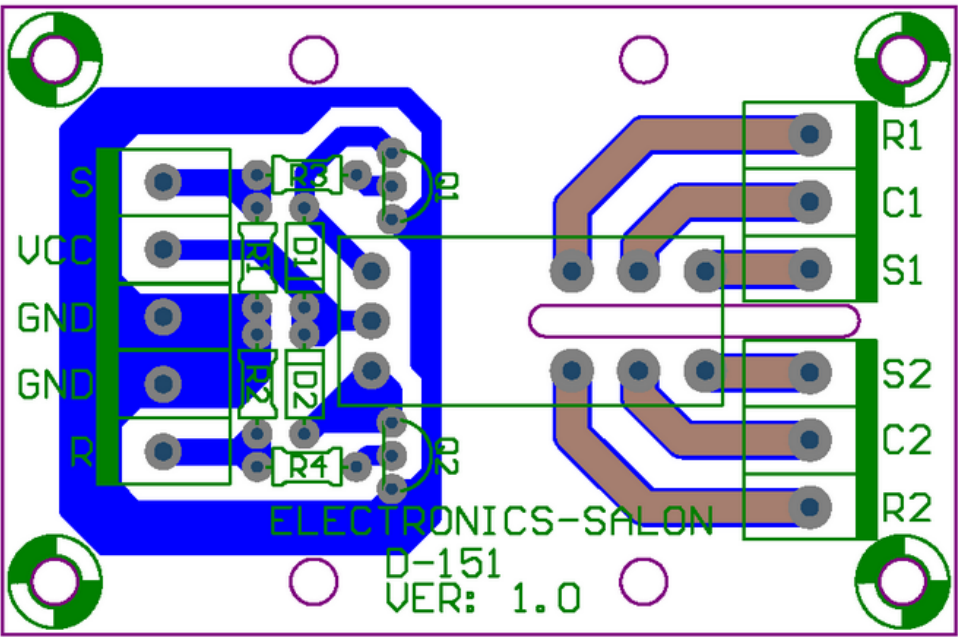
Switch1 R1 – C1 is disconnected and C1 – S1 is connected.

Switch2 R2 – C2 is disconnected and C2 – S2 is connected.

Schematic:



PCB Layout:



Time / State table:

SW state: 0 = disconnected, 1 = connected

Time order	Power Supply	R Signal	S Signal	SW1 R1-C1 / C1-S1	SW2 R2-C2 / C2-S2
0	OFF	L	L	Unknown, but it keeps the state before the power off.	
1	ON	L	L		
2	ON	H	L	1 / 0	1 / 0
3	ON	L	L	1 / 0	1 / 0
4	ON	L	H	0 / 1	0 / 1
5	ON	L	L	0 / 1	0 / 1
6	OFF	L	L	0 / 1	0 / 1
7	OFF	H	L	0 / 1	0 / 1
8	OFF	L	H	0 / 1	0 / 1
9	OFF	L	L	0 / 1	0 / 1

Note:

1, R and S signal, at the same time, cannot both is High state.

2, Due to the mechanical characteristics of the relay, I suggest that the best high state consistently greater than 300 milliseconds.

This is a simple circuit, but my description is very long-winded, I even worried that readers would misunderstand. if you still do not understand, please feel free to tell me:

Jianglily2005@gmail.com

The following two pages is the Tyco relay datasheet:

Power PCB Relay RT2 bistable

- 2 pole 8A, 2 form C (CO) contacts
- Polarized bistable version with 1 or 2 coils
- 5kV/10mm coil-contact
- Reinforced insulation

Typical applications

Battery powered equipment or applications with "memory function".



Approvals

VDE REG.-Nr. 6106, UL E214025, cCSAus 14385

Technical data of approved types on request.

Contact Data

Contact arrangement	2 form C (CO)
Rated voltage	250VAC
Max. switching voltage	400VAC
Rated current	8A, UL: 10A
Limiting continuous current	8A, UL: 10A
Limiting making current, max. 4s, duty factor 10%	15A
Breaking capacity max.	2000VA
Contact material	AgNi 90/10
Frequency of operation, with/without load	900/72000h ⁻¹
Operate/Reset time max.	10/5ms
Bounce time max., form A/form B	4/9ms

Contact ratings

Type	Contact	Load	Cycles
IEC 61810			
RT444	A (NO)	8A, 250VAC resistive, 85°C	100x10 ³
RT424	C (CO)	8A, 250VAC resistive, 85°C	30x10 ³
UL 508			
RT424	A/B (NO/NC)	10A, 250VAC, general purpose, 85°C	20x10 ³
RT424	A/B (NO/NC)	1/2hp, 240VAC, 85°C	1x10 ³
RT424	A/B (NO/NC)	Pilot duty, B300, R300, 85°C	6x10 ³

Mechanical endurance >2x10⁶ operations

Coil Data, bistable coils

	1 coil	2 coils
Magnetic system	polarized, bistable	
Coil voltage range	3 to 24VDC	
Operative range, IEC 61810	2	
Limiting voltage, % of rated coil voltage	120%	150%
Min./Max. energization duration	30ms/1min at <10% duty factor	
Coil insulation system according UL	class F	

Coil versions, bistable coil

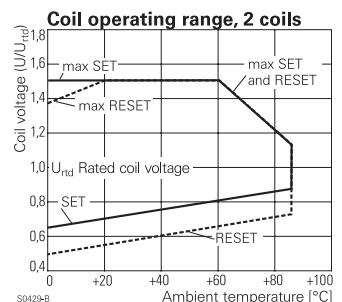
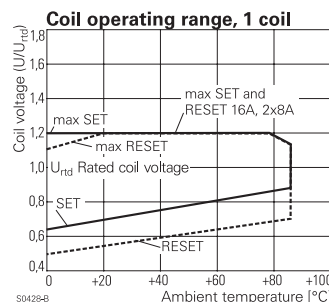
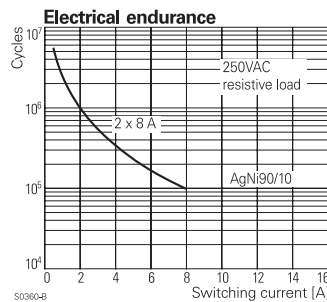
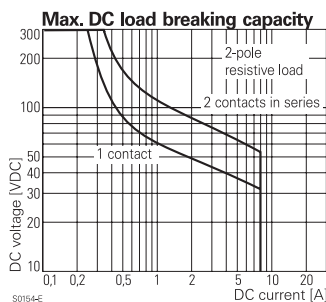
Coil code	Rated voltage VDC	Set voltage VDC	Reset voltage VDC	Coil resistance Ω±10%	Rated coil power mW
bistable 1 coil					
A03	3	2.1	1.7	21	429
A05	5	3.5	2.8	62	403
A06	6	4.2	3.3	90	400
A12	12	8.4	6.6	360	400
A24	24	16.8	13.2	1440	400
bistable 2 coils					
F03	3	2.1	1.7	15	600
F05	5	3.5	2.8	42	595
F06	6	4.2	3.3	55	655
F12	12	8.4	6.6	240	600
F24	24	16.8	13.2	886	650

All figures are given for coil without pre-energization, at ambient temperature +23°C.
Other coil voltages on request.

Bistable coils - operation

Version	1 coil		2 coils		
Coil terminals	A1	A2	A1	A3	A2
Operate	+	-	+	+	-
Reset	-	+	-	+	+

Contact position not defined at delivery



Power PCB Relay RT2 bistable (Continued)

Insulation Data

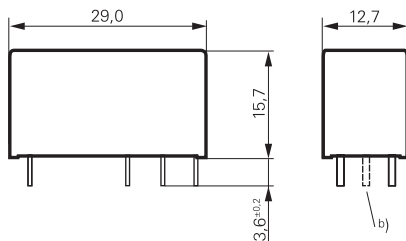
Initial dielectric strength	
between open contacts	1000V _{rms}
between contact and coil	5000V _{rms}
between adjacent contacts	2500V _{rms}
Clearance/creepage	
between contact and coil	≥10/10mm
between adjacent contacts	≥ 3/4mm
Material group of insulation parts	IIIa
Tracking index of relay base	PTI 250V

Other Data

Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customer-support/rohssupportcenter

Ambient temperature	
bistable 1 coil	-10 to 85°C
bistable 2 coils	-40 to 85°C
Category of environmental protection	RTII - flux proof
IEC 61810	
Vibration/shock resistance (functional),	
opening B contact	3/5g
opening closed A contact	6/15g
Shock resistance (destructive)	100g

Dimensions



a) Indicated contact position while or after coil energization with reset voltage.

b) for 2 coil version only

Other Data (continued)

Terminal type	PCB-THT, plug-in ¹⁾
Weight	13g
Resistance to soldering heat	THT
IEC 60068-2-20	270°C/10s
Packaging/unit	tube/20 pcs., box/500 pcs.

1) socket available for 1 coil version only, see Accessories.

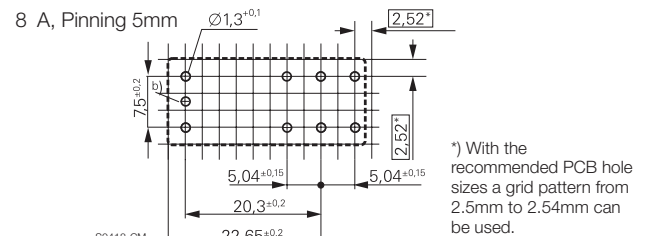
Accessories

For 1 coil version,
details see datasheet [Accessories Industrial Power Relay RT](#)

NOTE: indicated contact ratings and electrical endurance data for direct wiring of relays (according IEC 61810-1); for relays mounted on sockets deratings may apply.

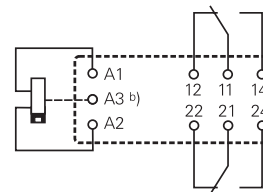
PCB layout / terminal assignment

Bottom view on solder pins



2 form C (CO) contacts

a)



Product code structure

Typical product code **RT 4 2 4 F24**

Type	RT Power PCB Relay RT2 bistable	
Version	4 8A, pinning 5mm, flux proof	E 8A, pinning 5mm, wash tight
Contact configuration	2 2 form C (CO) contacts	
Contact material	4 AgNi 90/10	
Coil	Coil code: please refer to coil versions table	

Product code	Version	Contacts	Contact material	Coil version	Coil	Part number
RT424A05	8A,	2 form C (CO) contacts	AgNi 90/10	Bistable 1 coil	5VDC	4-1393243-4
RT424A12	pinning 5mm,				12VDC	4-1393243-6
RT424F05	flux proof			Bistable 2 coils	5VDC	5-1393243-2
RT424F12					12VDC	5-1393243-4
RT424F24					24VDC	5-1393243-6
RTE24F24	8A pinning 5mm wash tight	2 form C (CO) contacts	AgNi 90/10	Bistable 2 coils	24VDC	8-1415541-7

This list represents the most common types and does not show all variants covered by this datasheet.

Other types on request.