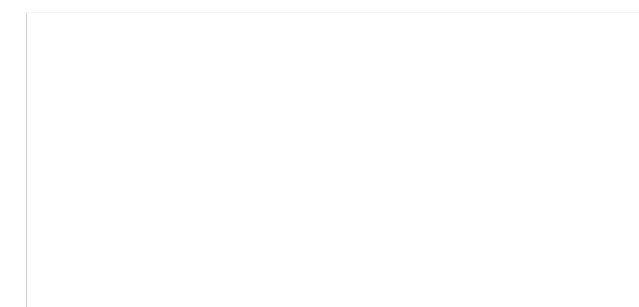


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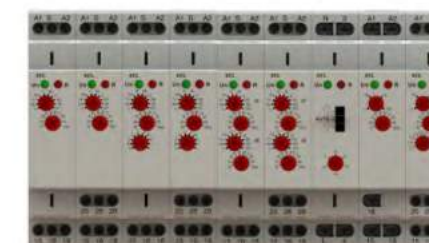
- Power Semiconductors
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Relay

Product catalog

2020

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Company Profile:

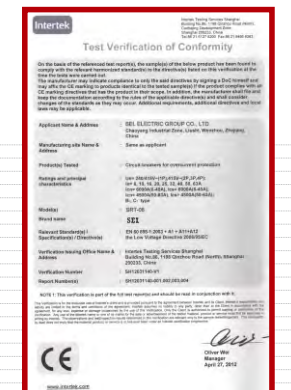
Fastron Electronics is a privately owned company based in Melbourne, Australia specialising in the Manufacturing and supply of Components, Products and Solutions to the Energy Monitoring, Power Electronics, Process Control and Electrical Instrumentation markets.

We Are:

- Manufacturers, importers, design/development and consulting engineers in electrical, electronic and systems solution disciplines.

Our Mission:

- To select the most suitable components, products or engineered solutions to meet and potentially exceed our customers requirements in an unbiased and professional manner.
- To be actively involved in improving the reliability and energy efficiency of power conversion equipment, temperature and electric heating controls.
- To promote Energy Monitoring and Management solutions as the means to benchmark, measure and reduce energy waste, reduce costs and CO2 emissions.



Introduction

Single-function time relay



General

■ Applications

- Suitable for applications where function and time requirements are known.
- Time switch, possible to be used for pump decay time after switching heating off, switching of fans.

■ Function Features

- Single-function relay with possibility of time setting by a potentiometer.
- Choice of 2 functions:
A: Delay ON
B: Delay OFF
- Time scale 0.1 s - 10 days divided into 10 ranges..
- Relay status is indicated by LED.
- 1-MODULE, DIN rail mounting.

■ Model and connotation

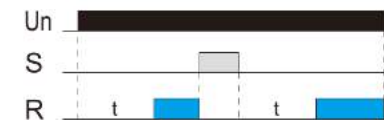
- FRT8 - □ □ □ □
- Rated control supply voltage:
A230: AC230V
W240: AC/DC12V-240V
 - Number of contacts:
1: 1×SPDT
2: 2×SPDT
 - Function mode:
A - Delay ON
B - Delay OFF
 - SRT8 Series

Technical parameters

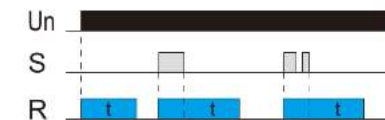
Technical parameters	FRT8-A1/B1	FRT8-A2/B2
Function	delay ON	delay OFF
Supply terminals	A1-A2	
Voltage range	AC/DC 12-240V(50-60Hz)	
Burden	AC 0.7-3VA/DC 0.5-1.7W	
Voltage range	AC 230V(50-60Hz)	
Power input	AC max. 12VA/1.3W	AC max. 12VA/1.9W
Supply voltage tolerance	-15%;+10%	
Supply indication	green LED	
Time ranges	0.1s-10days, ON, OFF	
Time setting	potentionmeter	
Time deviation	5%-mechanical setting	
Repeat accuracy	0.2%-set value stability	
Temperature coecient	0.05%/°C, at=20°C(0.05%°F, at=68°F)	
Output	1×SPDT	2×SPDT
Current rating	16A/ AC1	
Switching voltage	250VAC/24VDC	
Min.breaking capacity DC	500mW	
Output indication	red LED	
Mechanical life	1×10 ⁷	
Electrical life(AC1)	1×10 ⁶	
Reset time	max.200ms	
Operating temperature	-20°C to +55°C (-4°F to 131°F)	
Storage temperature	-35°C to +75°C (-22°F to 158°F)	
Mounting/DIN rail	Din rail EN/IEC 60715	
Protection degree	IP40 for front panel/IP20 terminals	
Operating position	any	
Overvoltage cathegory	III.	
Pollution degree	2	
Max.cable size(mm ²)	solid wire max.1×2. 5or 2×1. 5/ with sleeve max.1×2. 5(AWG 12)	
Dimensions	90×18×64mm	
Weight	1×SPDT: W240-60g, A230-59g	2×SPDT: W240-81g, A230-79g
Standards	IEC/EN 61812-1, IEC/EN 61010-1	

Functions Diagram

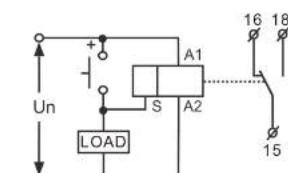
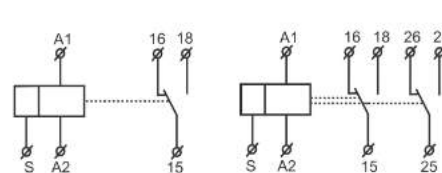
A - Delay ON



B - Delay OFF

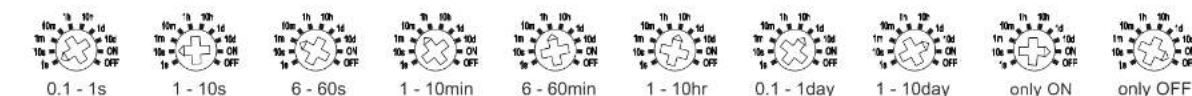


Wiring Diagram

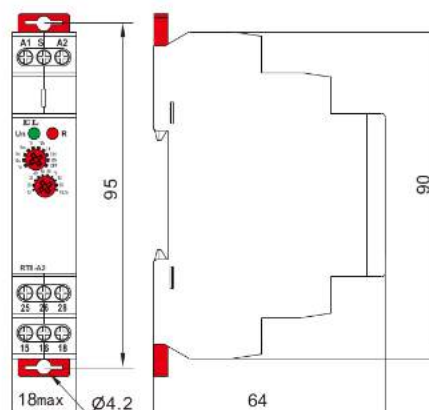


It is possible to connect load between S-A2(e.g contactor, control of light or any other device, without disturbing a correct function of relay(load is energized while the switch is ON.)

Time Range



Dimensions(mm)



Multifunction time relay



General

■ Applications

-Multifunction time relay can be used for electrical appliances, control of lights, heating, motors, pumps and fans (10 functions, 10 time ranges, multi-voltage).

■ Function Features

- 10 functions: - 5 time functions controlled by supply voltage
- 4 time functions controlled by control input
- 1 function of latching relay

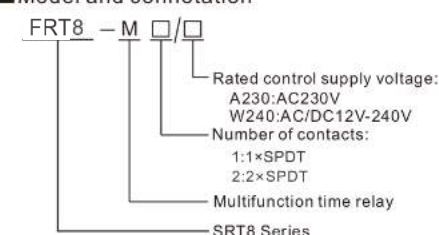
-Comfortable and well-arranged function and time-range setting by rotary switches.

-Time scale 0.1 s - 10 days divided into 10 ranges.

- Relay status is indicated by LED.

- 1-MODULE, DIN rail mounting.

■ Model and connotation



Technical parameters

Technical parameters	FRT8-M1	FRT8-M2
Function	A,B,C,D,E,F,G,H,I,J	
Supply terminals	A1-A2	
Voltage range	AC/DC 12-240V(50-60Hz)	
Burden	AC 0.7-3VA/DC 0.5-1.7W	
Voltage range	AC 230V(50-60Hz)	
Power input	AC max. 12VA/1.3W	AC max. 12VA/1.9W
Supply voltage tolerance	-15%; +10%	
Supply indication	green LED	
Time ranges	0.1s-10days, ON, OFF	
Time setting	potentionmeter	
Time deviation	5%-mechanical setting	
Repeat accuracy	0.2%-set value stability	
Temperature coecient	0.05%/°C, at=20°C(0.05%°F, at=68°F)	
Output	1×SPDT	2×SPDT
Current rating	16A/AC1	
Switching voltage	250VAC/24VDC	
Min. breaking capacity DC	500mW	
Output indication	red LED	
Mechanical life	1×10 ⁷	
Electrical life(AC1)	1×10 ⁶	
Reset time	max. 200ms	
Operating temperature	-20°C to +55°C (-4°F to 131°F)	
Storage temperature	-35°C to +75°C (-22°F to 158°F)	
Mounting/DIN rail	Din rail EN/IEC 60715	
Protection degree	IP40 for front panel/IP20 terminals	
Operating position	any	
Overvoltage cathegory	III.	
Pollution degree	2	
Max. cable size(mm ²)	solid wire max. 1×2.5 or 2×1.5/with sleeve max. 1×2.5(AWG 12)	
Dimensions	90×18×64mm	
Weight	1×SPDT: W240-62g, A230-60g	2×SPDT: W240-82g, A230-81g
Standards	IEC/EN 61812-1, IEC/EN 61010-1	

Functions Diagram

A: On Delay (Power On)

When the input voltage U is applied, timing delay t begins. Relay contacts R change state after time delay is complete. Contacts R return to their shelf state when input voltage U is removed. Trigger switch is not used in this function.



B: Interval (Power On)

When input voltage U is applied, relay contacts R change state immediately and timing cycle begins. When time delay is complete, contacts return to shelf state. When input voltage U is removed, contacts will also return to their shelfstate. Trigger switch is not used in this function.



C: Repeat Cycle (Starting Off)

When input voltage U is applied, time delay t begins. When time delay t is complete, relay contacts R change state for time delay t. This cycle will repeat until input voltage U is removed. Trigger switch is not used in this function.



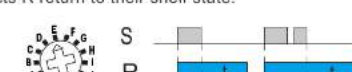
D: Repeat Cycle (Starting On)

When input voltage U is applied, relay contacts R change state immediately and time delay t begins. When time delay t is complete, contacts return to their shelf state for time delay t. This cycle will repeat until input voltage U is removed. Trigger switch is not used in this function.



E: Off Delay (S Break)

Input voltage U must be applied continuously. When trigger switch S is closed, relay contacts R change state. When trigger switch S is opened, delay t begins. When delay t is complete, contacts R return to their shelf state. If trigger switch S is closed before time delay t is complete, then time is reset. When trigger switch S is opened, the delay begins again, and relay contacts R remain in their energized state. If input voltage U is removed, relay contacts R return to their shelf state.



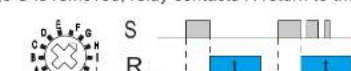
F: Single Shot

Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of the trigger signal S, the relay contacts R transfer and the preset time t begins. During time-out, the trigger signal S is ignored. The relay resets by applying the trigger switch S when the relay is not energized.



G: Single Shot Trailing Edge (Non-Retriggerable)

Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of the trigger signal S, the relay contacts R transfer and the preset time t begins. At the end of the preset time t, the relay contacts R return to their normal condition unless the trigger switch S is opened and closed prior to time out t (before preset time elapses). Continuous cycling of the trigger switch S at a rate faster than the preset time will cause the relay contacts R to remain closed. If input voltage U is removed, relay contacts R return to their shelf state



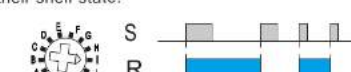
H: On/Off Delay

Input voltage U must be applied continuously. When trigger switch S is closed, time delay t begins. When time delay t is complete, relay contacts R change state and remain transferred until trigger switch S is opened. If input voltage U is removed, relay contacts R return to their shelfstate



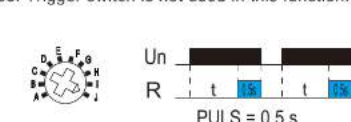
I: Latching relay

Input voltage U must be applied continuously. Output changes state with every trigger switch S closure. If input voltage U is removed, relay contacts R return to their shelf state.

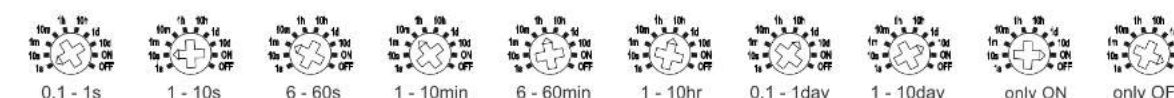


J: Pulse generator

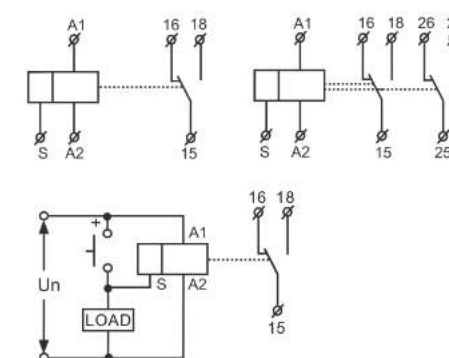
Upon application of input voltage U, a single output pulse of 0.5 seconds is delivered to relay after time delay t. Power must be removed and re-applied to repeat pulse. Trigger switch is not used in this function.



Time Range

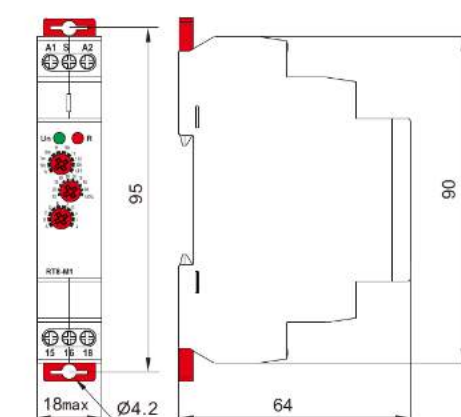


Wiring Diagram



It is possible to connect load between S-A2 (e.g. contactor, control of light or any other device, without disturbing a correctgunction of relay(load is energized while the switch is ON.)

Dimensions(mm)



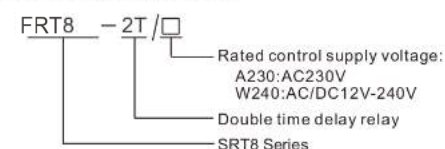
Double delay time relay



General

- Applications
 - For gradual switching of heavy powers (e.g. el.heating), prevents current strokes in the main.
- Function Features
 - 2x Delay ON (2 time relays in one)
 - Time scale 0.1s - 10 days divided into 10 time ranges: 0.1s - 1s / 1s - 10s / 0.1min - 1min / 1min - 10min / 0.1h - 1h / 1h - 10hrs / 0.1 day - 1 day / 1 day - 10 days / ON / OFF.
 - Times t1 and t2 are independantly adjustable.
 - t1 and t2 are switched on after supply voltage connection
 - Relay status is indicated by LED.
 - 1-MODULE, DIN rail mounting.

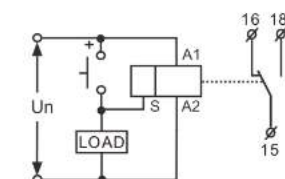
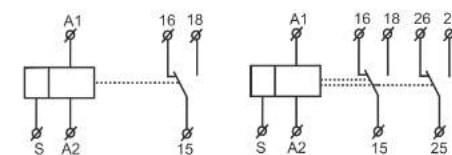
Model and connotation



Technical parameters

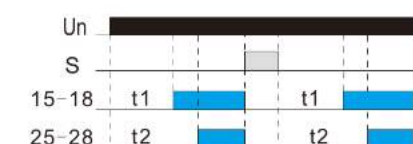
Technical parameters	FRT8-2T
Function	2x Delay ON
Supply terminals	A1-A2
Voltage range	AC/DC 12-240V(50-60Hz)
Burden	AC 0.7-3VA/DC 0.5-1.7W
Voltage range	AC 230V(50-60Hz)
Power input	AC max.12VA/1.9W
Supply voltage tolerance	-15%;+10%
Supply indication	green LED
Time ranges	0.1s-10days,ON,OFF
Time setting	potentionmeter
Time deviation	5%-mechanical setting
Repeat accuracy	0.2%-set value stability
Temperature coecient	0.05%/°C,at=20°C(0.05%°F , at=68°F)
Output	2×SPDT
Current rating	16A/AC1
Switching voltage	250VAC/24VDC
Min.breaking capacity DC	500mW
Output indication	red LED
Mechanical life	1×10 ⁷
Electrical life(AC1)	1×10 ⁶
Reset time	max.200ms
Operating temperature	-20°C to +55°C (-4°F to 131°F)
Storage temperature	-35°C to +75°C (-22°F to 158°F)
Mounting/DIN rail	Din rail EN/IEC 60715
Protection degree	IP40 for front panel/IP20 terminals
Operating position	any
Overvoltage cathegory	III.
Pollution degree	2
Max.cable size(mm ²)	solid wire max.1×2. 5or 2×1. 5/with sleeve max.1×2. 5(AWG 12)
Dimensions	90×18×64mm
Weight	W240-82g,A230-82g
Standards	IEC/EN 61812-1,IEC/EN61010-1

Wiring Diagram

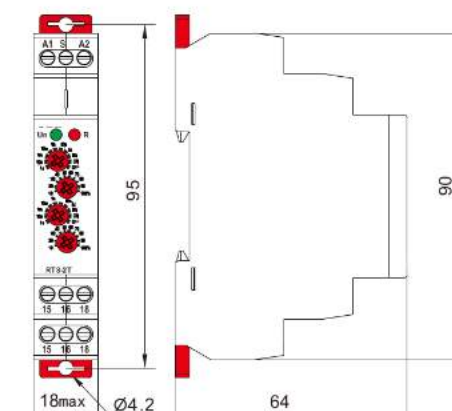


It is possible to connect load between S-A2(e.g contactor , control of light or any other device, without disturbing a correctgunction of relay(load is energized while the switch is ON.)

Functions Diagram



Dimensions(mm)



Asymmetric cycler

General

■ Applications

-It is used for regular room ventilation, cyclic dehumidification, light control, circulating pumps, noon signs, etc.

■ Function Features

-2 time functions:

- Cycler beginning with pulse
- Cycler beginning with pause

-Function choice is done by an external jumper of terminals S-A1.

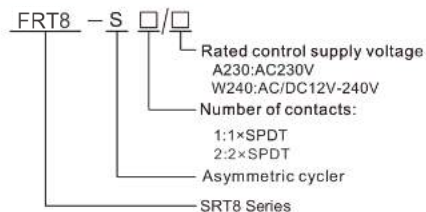
-Time scale 0.1 s - 100 days divided into 10 time ranges:

(0.1 s - 1 s / 1 s - 10 s / 0.1 min - 1 min / 1 min - 10 min / 0.1 hrs - 1 h / 1 hrs - 10 hrs / 0.1 day - 1 day / 1 day - 10 days / 3 days - 30 days / 10 days - 100 days).

-Relay status is indicated by LED.

-1-MODULE, DIN rail mounting.

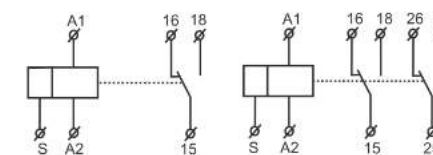
■ Model and connotation



Technical parameters

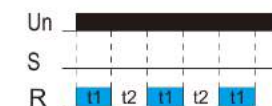
Technical parameters	FRT8-S1	FRT8-S2
Function	Asymmetric cycler time relay	
Supply terminals	A1-A2	
Voltage range	AC/DC 12-240V(50-60Hz)	
Burden	AC 0.7-3VA/DC 0.5-1.7W	
Voltage range	AC 230V(50-60Hz)	
Power input	AC max.12VA/1.3W	AC max.12VA/1.9W
Supply voltage tolerance	-15%;+10%	
Supply indication	green LED	
Time ranges	0.1s-10days	
Time setting	potentionmeter	
Time deviation	5%-mechanical setting	
Repeat accuracy	0.2%-set value stability	
Temperature coeicient	0.05%/°C, at=20°C (0.05%/°F, at=68°F)	
Output	1×SPDT	2×SPDT
Current rating	16A/ AC1	
Switching voltage	250VAC/24VDC	
Min. breaking capacity DC	500mW	
Output indication	red LED	
Mechanical life	1×10 ⁷	
Electrical life(AC1)	1×10 ⁶	
Reset time	max.200ms	
Operating temperature	-20°C to +55°C (-4°F to 131°F)	
Storage temperature	-35°C to +75°C (-22°F to 158°F)	
Mounting/DIN rail	Din rail EN/IEC 60715	
Protection degree	IP40 for front panel/IP20 terminals	
Operating position	any	
Overvoltage cathegory	III.	
Pollution degree	2	
Max. cable size(mm ²)	solid wire max.1×2.5 or 2×1.5 / with sleeve max.1×2.5 (AWG 12)	
Dimensions	90×18×64mm	
Weight	1×SPDT: W240-62g, A230-61g	2×SPDT: W240-82g, A230-82g
Standards	EN 61812-1, EN61010-1	

Wiring Diagram

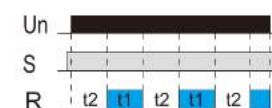


Functions Diagram

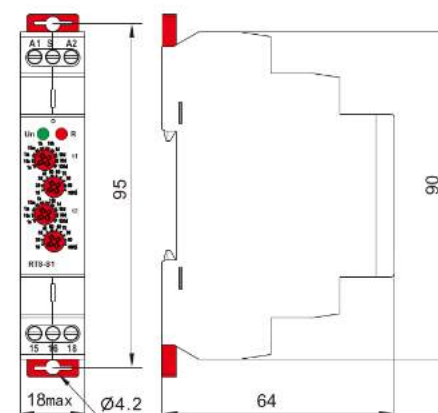
Cycler beginning with pulse



Cycler beginning with pause(jumper A1-S)



Dimensions(mm)



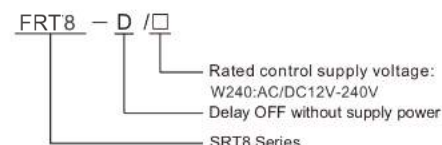


Delay OFF without supply voltage

General

- Applications
 - Back-up source for Delay OFF in case of voltage failure (emergency lighting, emergency respirator, or protection of el. controlled doors - in case of fire).
- Function Features
 - Time range (adjustable by rotary switch and fine setting by potentiometer): 0.1 s - 10 min.
 - Voltage range: AC/DC 12-240V, clamp terminals.
 - Relay status is indicated by LED.
 - 1-MODULE, DIN rail mounting.

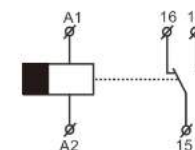
■ Model and connotation



Technical parameters

Technical parameters	FRT8-D
Function	Delay OFF without supply power
Supply terminals	A1-A2
Voltage range	AC/DC 12-240V(50-60Hz)
Burden	AC 0.7-3VA/DC 0.5-1.7W
Supply voltage tolerance	-15%;+10%
Supply indication	green LED
Time ranges	0.1s-10min
Time setting	potentiometer
Time deviation	5%-mechanical setting
Repeat accuracy	0.2%-set value stability
Minimum power time	200ms
Temperature coeicient	0.05%/°C, at=20°C(0.05%/°F, at=68°F)
Output	1×SPDT
Current rating	16A/AC1
Switching voltage	250VAC/24VDC
Min.breaking capacity DC	500mW
Output indication	red LED
Mechanical life	1×10 ⁷
Electrical life(AC1)	1×10 ⁶
Reset time	max.200ms
Operating temperature	-20°C to +55°C (-4°F to 131°F)
Storage temperature	-35°C to +75°C (-22°F to 158°F)
Mounting/DIN rail	Din rail EN/IEC 60715
Protection degree	IP40 for front panel/IP20 terminals
Operating position	any
Overvoltage cathegory	III.
Pollution degree	2
Max.cable size(mm ²)	solid wire max.1×2.5 or 2×1.5 /with sleeve max.1×2.5 (AWG 12)
Dimensions	90×18×64mm
Weight	66g
Standards	IEC/EN 61812-1, IEC/EN61010-1

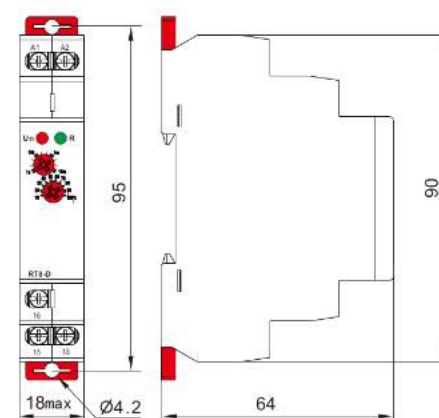
Wiring Diagram



Functions Diagram



Dimensions(mm)



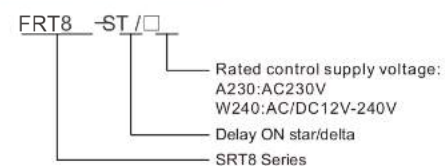


Delay ON star/delta

General

- Applications
 - Designated for delay ON of motors star/delta.
- Function Features
 - Time t1 (star) :
 - time scale 0.1 s - 10min divided into 4 time ranges
 - rough time setting by rotary switch.
 - Time t2 (delay) :
 - time scale 0.1 s - 1 s
 - time setting by potentiometer
 - Relay status is indicated by LED.
 - 1-MODULE,DIN rail mounting.

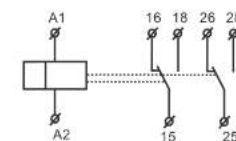
■ Model and connotation



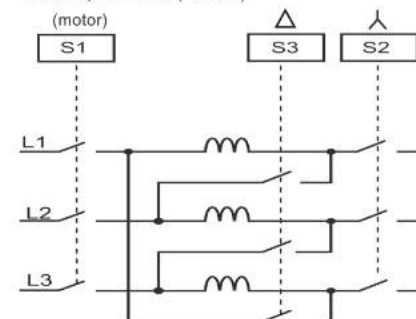
Technical parameters

Technical parameters	FRT8-ST
Function	Delay ON star/delta
Supply terminals	A1-A2
Voltage range	AC/DC 12-240V(50-60Hz)
Burden	AC 0.7-3VA/DC 0.5-1.7W
Voltage range	AC 230V(50-60Hz)
Power input	AC max.12VA/1.3W AC max.12VA/1.9W
Supply voltage tolerance	-15%;+10%
Supply indication	green LED
Time ranges	Range of time delay t1: 0.1 s - 10 min,Switch time t2: 0.1 s-1 s
Time setting	potentionmeter
Time deviation	5%-mechanical setting
Repeat accuracy	0.2%-set value stability
Temperature coecient	0.05%/°C,at=20°C(0.05%°F, at=68°F)
Output	2×SPDT
Current rating	16A/AC1
Switching voltage	250VAC/24VDC
Min.breaking capacity DC	500mW
Output indication	red LED
Mechanical life	1×10 ⁷
Electrical life(AC1)	1×10 ⁶
Reset time	max.200ms
Operating temperature	-20°C to +55°C (-4°F to 131°F)
Storage temperature	-35°C to +75°C (-22°F to 158°F)
Mounting/DIN rail	Din rail EN/IEC 60715
Protection degree	IP40 for front panel/IP20 terminals
Operating position	any
Overvoltage cathegory	III.
Pollution degree	2
Max.cable size(mm ²)	solid wire max.1×2.5or 2×1.5/with sleeve max.1×2.5(AWG 12)
Dimensions	90×18×64mm
Weight	W240-82g,A230-80g
Standards	EN 61812-1,EN61010-1

Wiring Diagram

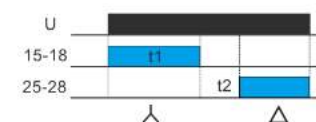


Start up of motor(λ - Δ)

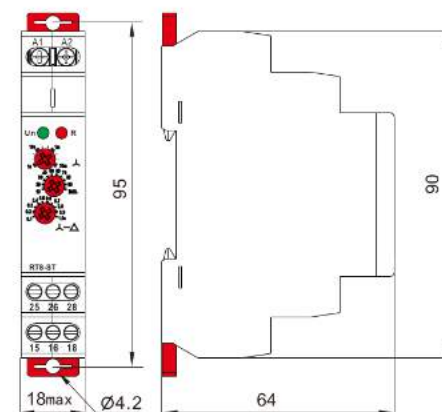


Functions Diagram

Delay ON star / delta



Dimensions(mm)



Staircase switch

General

■ Applications

- It is used for delayed switching of lights in the corridors, entrances, stairways, halls or for delayed finish of fans (WC, bathroom, etc.).

■ Function Features

- Operating system switch:
ON - output is constantly ON .
AUTO - timing according to adjusting by potentiometer in range 0.5 - 20 min
OFF - output is constantly OFF.
- Voltage range: AC 230 V, clamp terminals.
- Relay status is indicated by LED.
- 1-MODULE, DIN rail mounting.

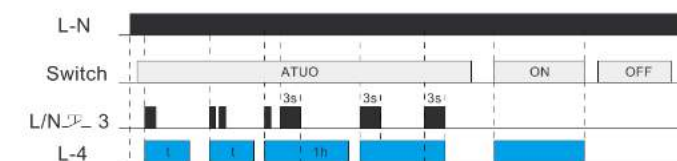
■ Model and connotation



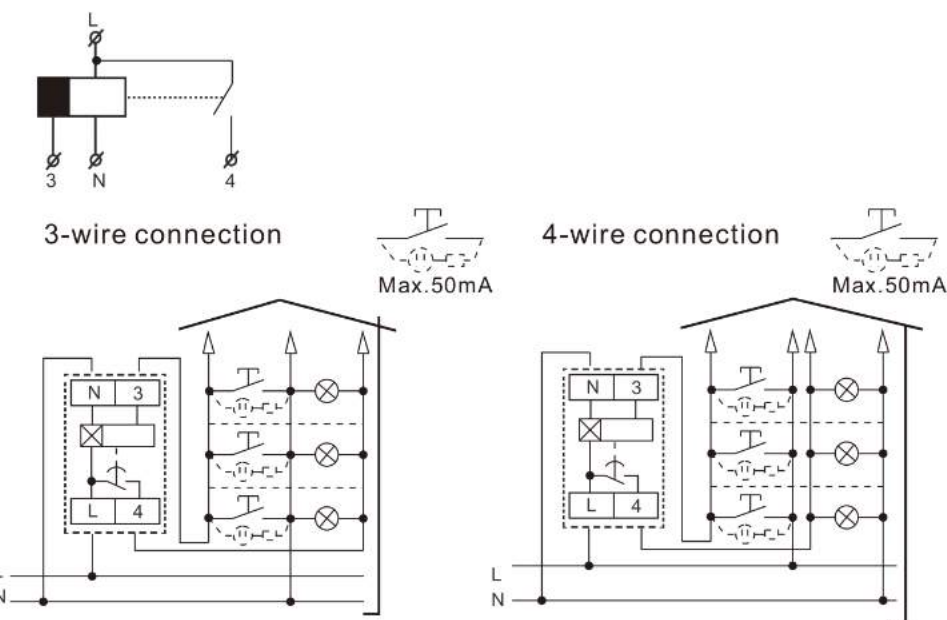
Technical parameters

Technical parameters	FRT8-LS
Function	delay off reacting to contact switching
Supply terminals	L-N
Voltage range	AC 230V(50-60Hz)
Power input	AC max.12VA/1.9W
Supply voltage tolerance	-15%;+10%
Supply indication	green LED
Time ranges	AUTO:0.5-20min ON OFF
Time setting	potentionmeter
Time deviation	5%-mechanical setting
Repeat accuracy	0.2%-set value stability
Mininum power time	200ms
Glow tubes connetions	Yes(N-3 or L-3)
Max. amount of glow lamps	230V,max.75pcs(Measured with glow lamp 0.68mA/230V AC)
Temperature coecient	0.05%/°C,at=20°C(0.05%°F , at=68°F)
Output	1×SPST
Current rating	16A/ AC1
Switching voltage	250VAC/24VDC
Min.breaking capacity DC	500mW
Output indication	red LED
Mechanical life	1×10 ⁷
Electrical life(AC1)	1×10 ⁶
Reset time	max.200ms
Operating temperature	-20°C to +55°C (-4°F to 131°F)
Storage temperature	-35°C to +75°C (-22°F to 158°F)
Mounting/DIN rail	Din rail EN/IEC 60715
Protection degree	IP40 for front panel/IP20 terminals
Operating position	any
Overvoltage cathegory	III.
Pollution degree	2
Max.cable size(mm ²)	solid wire max.1×2. 5or 2×1. 5/with sleeve max.1×2. 5(AWG 12)
Dimensions	90×18×64mm
Weight	61g
Standards	IEC/EN 60669-2-3,IEC/EN61010-1

Functions Diagram



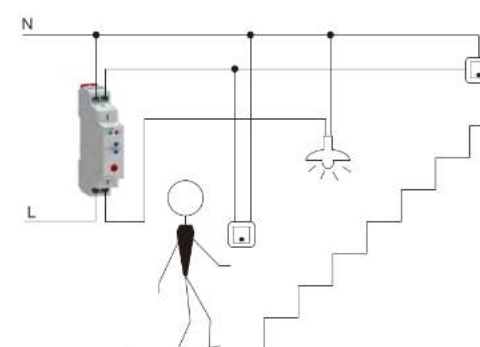
Wiring Diagram



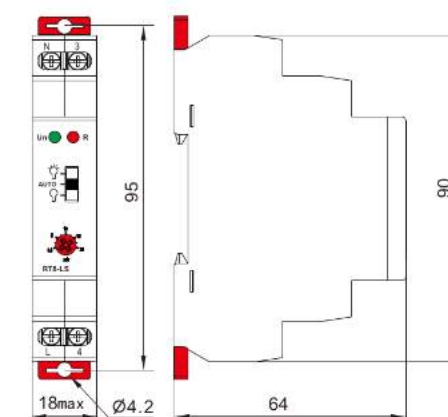
Types of lamps

2000W	2000W	1000W	900W(125uF)	400W

Example



Dimensions(mm)



Monitoring voltage relay



General

- Applications
 - Protect electrical equipment and motors from over-voltage and under-voltage.
 - Normal/emergency power supply switching.
- Function Features
 - Controls its own supply voltage (True RMS measurement)
 - User may select operation mode through knob.
 - Voltage measurement accuracy < 1%.
 - Relay status is indicated by LED.
 - 1-MODULE, DIN rail mounting.
- Model and connotation

FRV8 - □/□

Rated control supply voltage:

Rated supply voltage code	Rated supply voltage	Supply voltage limits	Range of adjustment
D12	DC 12V	DC 7...20V	DC 9...15V
AD48	AC/DC 24...48V	AC/DC 15...100V	AC/DC 20...80V
AD240	AC/DC 110...240V	AC/DC 50...270V	AC/DC 65...260V
A220	AC 220V	AC 160...270V	AC 180...260V

Function mode:

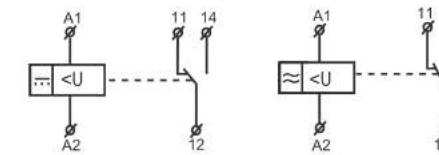
- 01 - Over/under voltage in windows mode
- 02 - Overvoltage Undervoltage

SRV8 Series

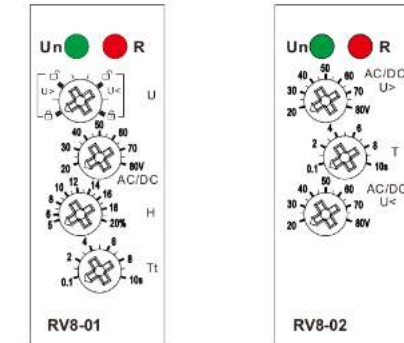
Technical parameters

Technical parameters	FRV8-01	FRV8-02
Function	Monitoring voltage	
Supply terminals	A1-A2	
Rated supply voltage	DC12V, AC/DC24V-48V, AC/DC110V-240V, AC220V	
Rated supply frequency	45Hz-65Hz, 0	
Hysteresis	5%-20%	3% fixed
Supply indication	green LED	
Time delay	Adjustable 0.1s-10s, 10%	
Measurement error	≤ 1%	
Run up delay at power up	0.5s time delay	
Knob setting accuracy	1% of scale value	
Reset time	1000ms	
Temperature coefficient	0.05%/°C, at=20°C (0.05%/°F, at=68°F)	
Output	1×SPDT	
Current rating	10A/AC1	
Switching voltage	250VAC/24VDC	
Min. breaking capacity DC	500mW	
Output indication	red LED	
Mechanical life	1×10 ⁷	
Electrical life (AC1)	1×10 ⁶	
Operating temperature	-20°C to +55°C (-4°F to 131°F)	
Storage temperature	-35°C to +75°C (-22°F to 158°F)	
Mounting/DIN rail	Din rail EN/IEC 60715	
Protection degree	IP40 for front panel/IP20 terminals	
Operating position	any	
Overvoltage category	III.	
Pollution degree	2	
Max. cable size (mm ²)	solid wire max. 1×2.5 or 2×1.5 / with sleeve max. 1×2.5 (AWG 12)	
Dimensions	90×18×64mm	
Weight	59g	
Standards	IEC/EN 60255-1, IEC/EN 61010-1	

Wiring Diagram

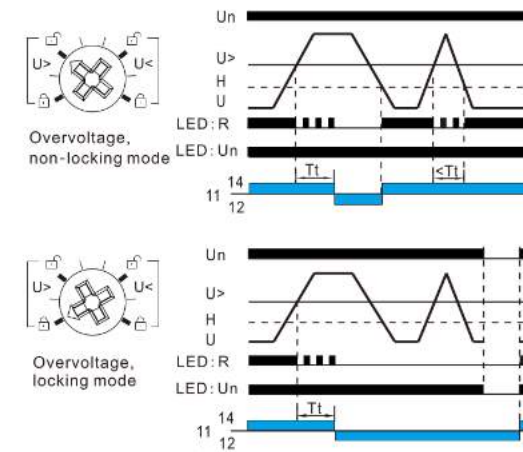


Panel Diagram

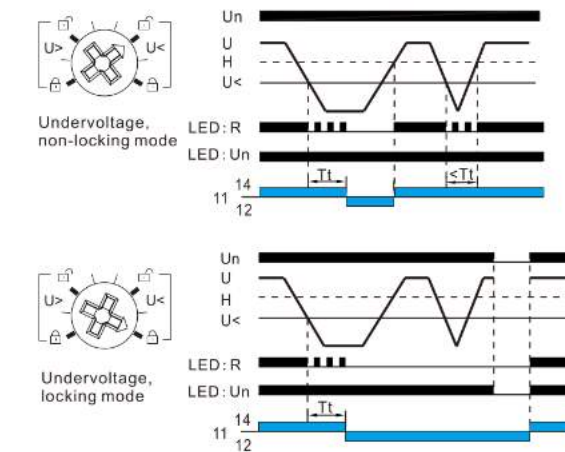
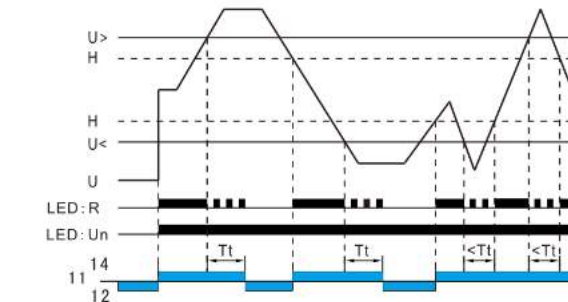


Functions Diagram

FRV8-01

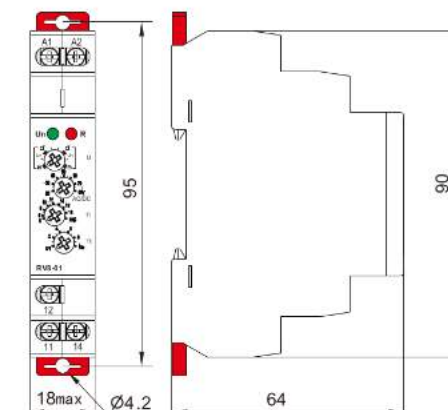


FRV8-02



U> : Overvoltage threshold
U< : Undervoltage threshold
H : Hysteresis
U : Controlled signal
Tt : Delay on threshold crossing

Dimensions (mm)



3-Phase voltage relay

General

■ Applications

- Control for connection of moving equipment(site equipment,agricultural equipent,refrigerated trucks).
- Control for protection of persons and equipment against the consequences of reverse running.
- Normal/emergency power supply switching.
- Protection against the risk of a driving load(phase failure).

■ Function Features

- Controls its own supply voltage(True RMS measurement).
- Set 8-level rated operating voltage through knob.
- Measuring frequency range:45Hz-65Hz.
- Voltage measurement accuracy<1%.
- Relay status is indicated by LED.
- 1-MODULE,DIN rail mounting.

■ Model and connotation



Table 1

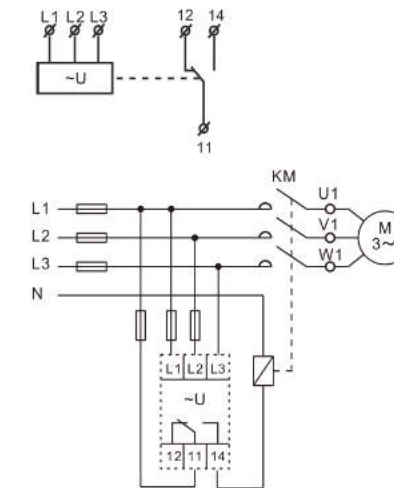
Function code	Over-voltage	Under-voltage	Asymmetry	Delay time	Phase sequence	Phase failure
03					●	●
04	2%...20%	-20%...2%		0.1s...10s	●	●
05	2%...20%	-20%...2%	8%	0.1s...10s	●	●
06	2%...20%	-20%...2%	5%...15%	2s	●	●
07			8%	2s	●	●
08	15%	-15%	8%	2s	●	●

Note:●the function is available

Technical parameters

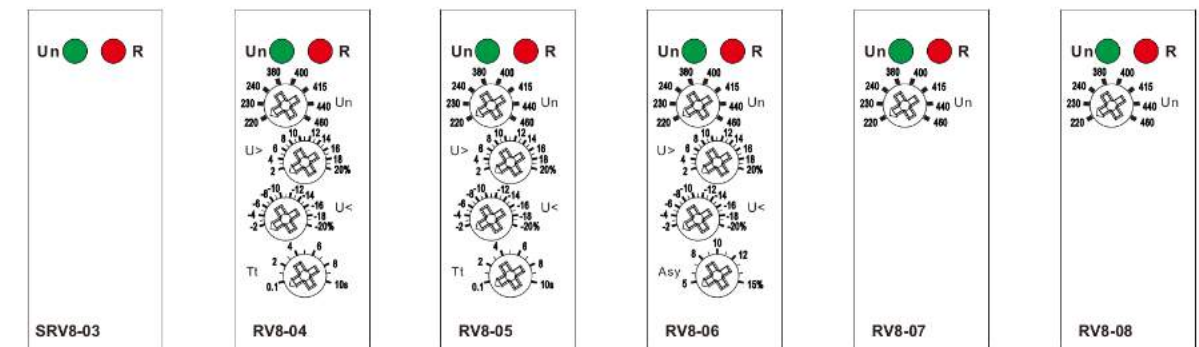
Technical parameters	M460	M265
Function	Monitoring 3-phase voltage	
Monitoring terminals	L1-L2-L3	L1-L2-L3-N
Supply terminals	L1-L2	L1-N
Voltage range	220-230-240-380-400-415-440-460(P-P)	127-132-138-220-230-240-254-265(P-N)
Rated supply frequency	45Hz-65Hz	
Measuring range	176V-552V	101V-318V
Threshold adjustment voltage	2%-20% of Un selected	
Adjustment of asymmetry threshold	5%-15%	
Hysteresis	2%	
Supply indication	green LED	
Time delay	Adjustable 0.1s-10s,10%	
Measurement error	≤1%	
Run up delay at power up	0.5s time delay	
Konb setting accuracy	1% of scale value	
Reset time	1000ms	
Temperature coecient	0.05%/°C,at=20°C(0.05%°F , at=68°F)	
Output	1×SPDT	
Current rating	10A/AC1	
Switching voltage	250VAC/24VDC	
Min.breaking capacity DC	500mW	
Output indication	red LED	
Mechanical life	1×10 ⁷	
Electrical life(AC1)	1×10 ⁶	

Wiring Diagram



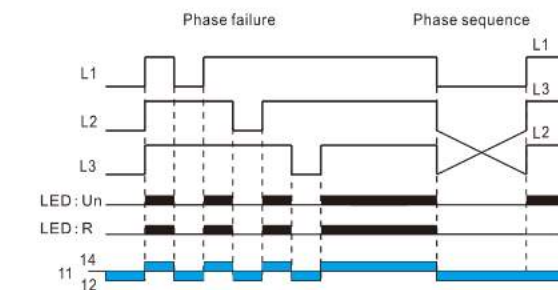
Operating temperature	-20°C to +55°C (-4°F to 131°F)
Storage temperature	-35°C to +75°C (-22°F to 158°F)
Mounting/DIN rail	Din rail EN/IEC 60715
Protection degree	IP40 for front panel/IP20 terminals
Operating position	any
Overvoltage category	III.
Pollution degree	2
Max.cable size(mm ²)	solid wire max.1×2. 5or 2×1. 5/with sleeve max.1×2. 5(AWG 12)
Dimensions	90×18×64mm
Weight	64g
Standards	IEC/EN 60255-1, IEC/EN61010-1

Panel Diagram

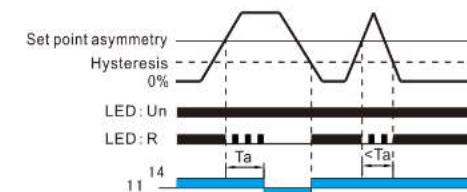


Functions Diagram

● Phase failure and phase sequence function diagram

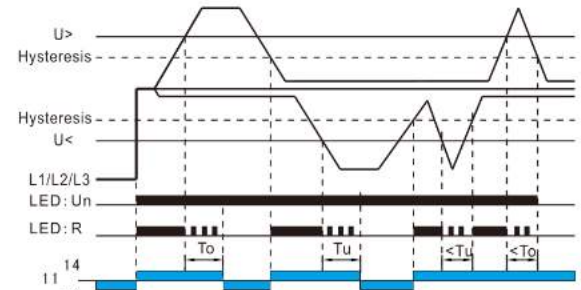


● Asymmetry function diagram

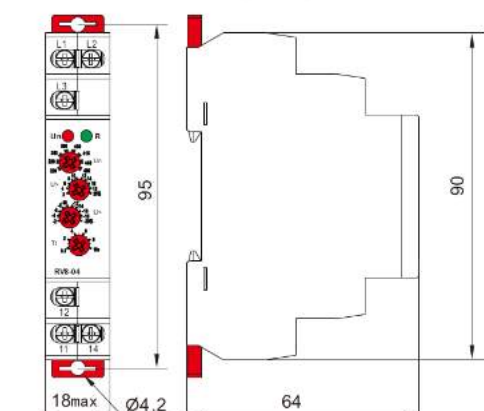


To: Overvoltage threshold tripping delay.
Tu: Undervoltage threshold tripping delay.
Ta: Asymmetry threshold tripping delay.

● Overvoltage and undervoltage function diagram



Dimensions(mm)





Current monitoring relay

General

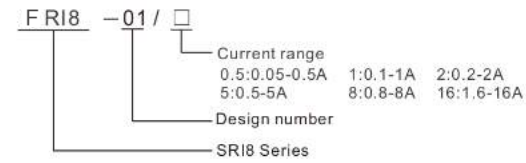
■ Applications

- Serves for monitoring of heating in rail-switches, heating cables, consumption of one-phase motors, indicates current flow.

■ Function Features

- Adjustable delay 0.5 - 10 s to eliminate short current peaks.
- Flexible adjustment by potentiometer, choice of 6 ranges:
AC 0.05-0.5A; AC 0.1-1A; AC 0.2-2A; AC 0.5-5A; AC 0.8-8A; AC 1.6-16A
- Possible to use for current scanning from current transformer.
- Universal supply AC 24 - 240 V and DC 24 V.
- Relay status is indicated by LED.
- 1-MODULE,DIN rail mounting. -Tr Selection is for Inductive loads

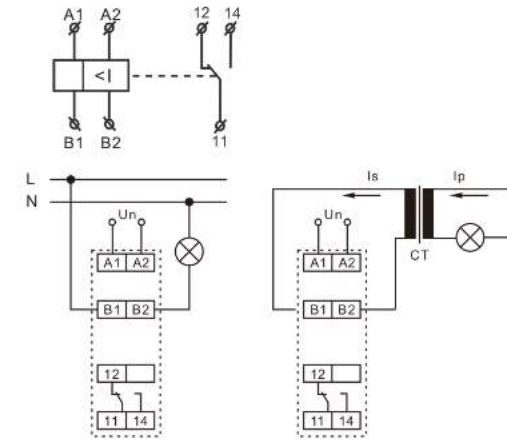
■ Model and connotation



Technical parameters

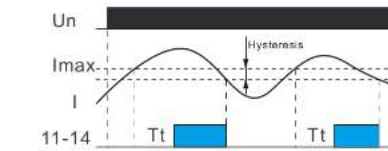
Technical parameters	FRI8-01
Function	Monitoring current
Supply terminals	A1-A2
Rated supply voltage	AC 24V-240V or DC 24V
Rated supply frequency	50/60Hz,0
Burden	max.1.5VA
Supply voltage tolerance	-15%;+10%
Current range	0.5A,1A,2A,5A,8A,16A
Current adjustment	potentiometer
Time delay	adjustable 0.5-10 s
Supply indication	green LED
Setting accuracy	5 %
Repeat accuracy	<1 %
Temperature dependancy	< 0.1 % /°C
Limit values tolerance	5 % (10% for 0.05-0.5A range)
Hysteresis	5 %
Temperature coecient	0.05%/°C,at=20°C(0.05°F , at=68°F)
Output	1×SPDT
Current rating	10A/ AC1
Switching voltage	250VAC/24VDC
Min.breaking capacity DC	500mW
Output indication	red LED
Mechanical life	1×10 ⁷
Electrical life(AC1)	1×10 ⁶
Operating temperature	-20°C to +55°C (-4°F to 131°F)
Storage temperature	-35°C to +75°C (-22°F to 158°F)
Mounting/DIN rail	Din rail EN/IEC 60715
Protection degree	IP40 for front panel/IP20 terminals
Operating position	any
Overvoltage cathegory	III.
Pollution degree	2
Max.cable size(mm ²)	solid wire max.1×2. 5or 2×1. 5/ with sleeve max.1×2. 5(AWG 12)
Dimensions	90×18×64mm
Weight	62g
Standards	IEC/EN 62055-1,IEC/EN61010-1

Wiring Diagram

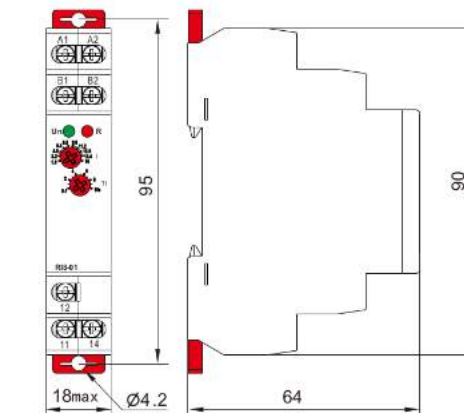


Note: 3rd POT (not shown) Tr Selection is for Inductive loads. The feature gives a filter window or delayed response to avoid tripping due to inrush current

Functions Diagram



Dimensions(mm)



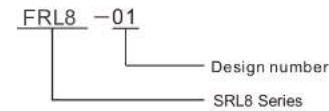
Level control relay



General

- Applications
 - Designed for monitoring level in wells, basins, reservoirs, tanks.....
- Function Features
 - In one device you can choose the following configurations:
 - 2 level control mode
 - 1 level control mode
 - Choice of function PUMP UP, PUMP DOWN.
 - Adjustable time delay on the output (0.5 - 10s).
 - Sensitivity adjustable by a potentiometer (5-100kΩ).
 - Galvanically separated supply voltage AC/DC 24-240V.
 - Relay status is indicated by LED.
 - 1-MODULE, DIN rail mounting.

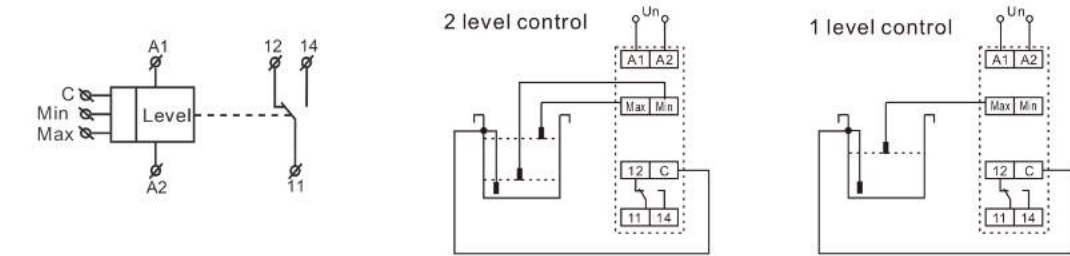
Model and connotation



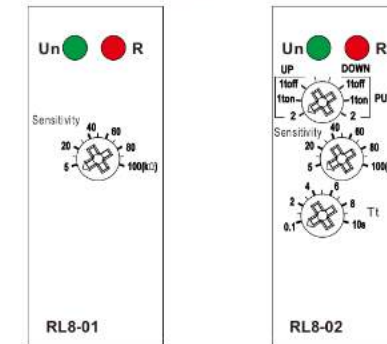
Technical parameters

Technical parameters	FRL8-01	FRL8-02
Function	2 level control mode	2 or 1 level control mode
Supply terminals	A1-A2	
Voltage range	AC/DC 24-240V(50-60Hz)	
Input	max.2VA	
Supply voltage tolerance	-15%;+10%	
Sensitivity (input resistance)	adjustable in range 5 kΩ -100 kΩ	
Voltage in electrodes	max. AC 3.5 V	
Current in probe	AC <0.1 mA	
Time response	max. 400 ms	
Max. capacity of probe cable	800 nF (sensitivity 5kΩ), 100 nF (sensitivity 100 kΩ)	
Time delay (t)	adjustable, 0.5 -10 s	
Time delay after power on	1.5 s	
Accuracy in setting (mechanical)	± 5 %	
Temperature coeicient	0.05%/°C, at=20°C(0.05%°F, at=68°F)	
Output	1×SPDT	
Current rating	10A/ AC1	
Switching voltage	250VAC/24VDC	
Min.breaking capacity DC	500mW	
Output indication	red LED	
Mechanical life	1×10 ⁷	
Electrical life(AC1)	1×10 ⁶	
Reset time	max.200ms	
Operating temperature	-20°C to +55°C (-4°F to 131°F)	
Storage temperature	-35°C to +75°C (-22°F to 158°F)	
Mounting/DIN rail	Din rail EN/IEC 60715	
Protection degree	IP40 for front panel/IP20 terminals	
Operating position	any	
Overvoltage cathegory	III.	
Pollution degree	2	
Max.cable size(mm ²)	solid wire max.1×2.5 or 2×1.5/with sleeve max.1×2.5(AWG 12)	
Dimensions	90×18×64mm	
Weight	61g	81g
Standards	IEC/EN 62055-1, IEC/EN 61010-1	

Wiring Diagram



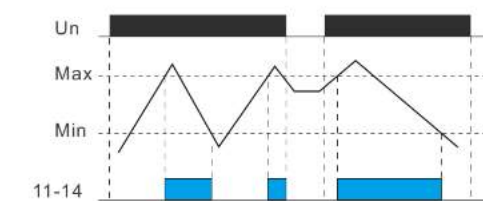
Panel Diagram



Functions Diagram

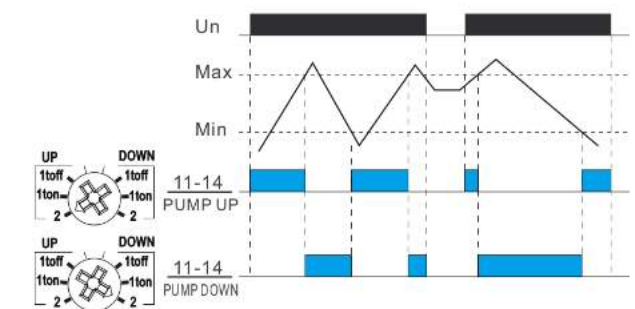
RL8-01

2 level control

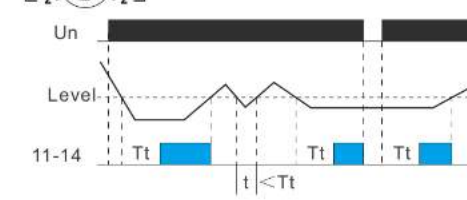


RL8-02

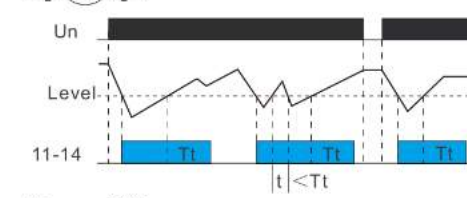
2 level control(pump up/down)



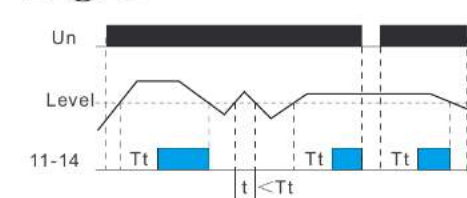
1 level control(pump up t on)



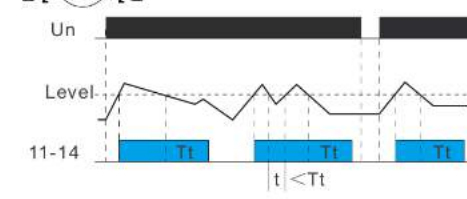
1 level control(pump up t off)



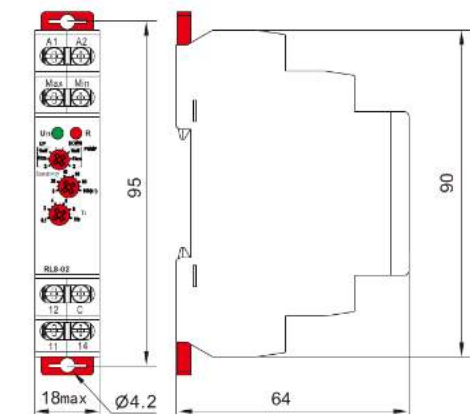
1 level control(pump down t on)



1 level control(pump down t off)



Dimensions(mm)



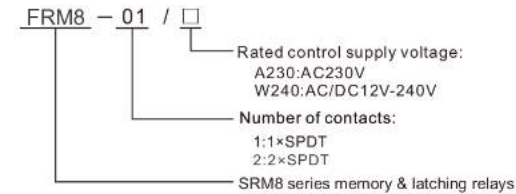
Memory&Latching relay



General

- Applications
 - latching relay, controlled by buttons from several locations can replace three way switches or cross bar switches thanks to control by buttons(un-limited number,connected inparallel by 2 wires), installation gets more transparent and faster for mounting.
- Function Features
 - Voltage range: AC 230 V,AC/DC12V-240V clamp terminals.
 - Relay status is indicated by LED.
 - 1-MODULE,DIN rail mounting.

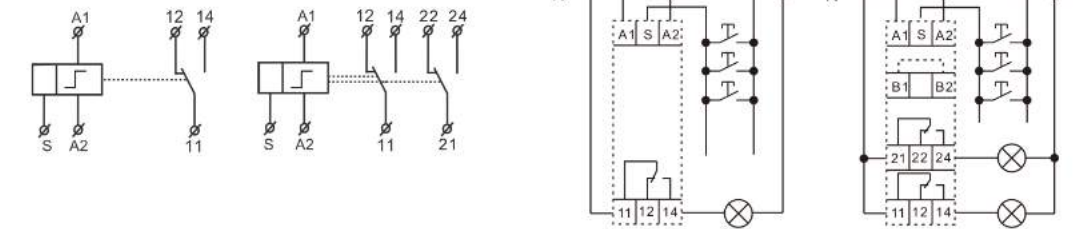
Model and connotation



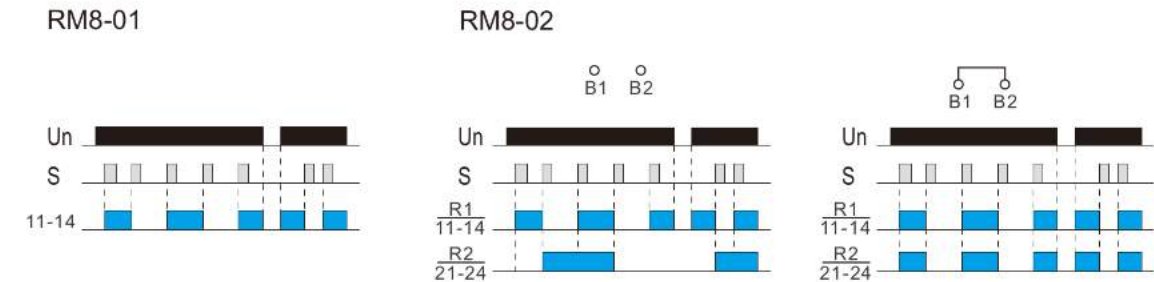
Technical parameters

Technical parameters	FRM8-01	FRM8-02
Number of function	1	2
Supply terminals	A1-A2	
Voltage range	AC/DC 12-240V(50-60Hz)	
Burden	AC 0.7-3VA/DC 0.5-1.7W	
Voltage range	AC 230V(50-60Hz)	
Power input	AC max.12VA/1.3W	AC max.12VA/1.9W
Supply voltage tolerance	-15%;+10%	
Supply indication	green LED	
Control terminals	A1-S	
Glow tubes connetions	Voltage range: AC 230V Yes(A1-S)	
Max. amount of glow lamps	230V,max.75 pcs(Measured with glow lamp 0.68mA/230V AC)	
Impulse length	min.25ms	
Temperature coeicient	0.05%/°C,at=20°C(0.05%°F , at=68°F)	
Output	1×SPDT	2×SPDT
Current rating	16A/ AC1	
Switching voltage	250VAC/24VDC	
Min.breaking capacity DC	500mW	
Output indication	red LED	
Mechanical life	1×10 ⁷	
Electrical life(AC1)	1×10 ⁶	
Reset time	max.200ms	
Operating temperature	-20°C to +55°C (-4°F to 131°F)	
Storage temperature	-35°C to +75°C (-22°F to 158°F)	
Mounting/DIN rail	Din rail EN/IEC 60715	
Protection degree	IP40 for front panel/IP20 terminals	
Operating position	any	
Overvoltage cathegory	III.	
Pollution degree	2	
Max.cable size(mm ²)	solid wire max.1×2. 5or 2×1. 5/ with sleeve max.1×2. 5(AWG 12)	
Dimensions	90×18×64mm	
Weight	1×SPDT: W240-58g,A230-57g	2×SPDT: W240-79g,A230-77g
Standards	IEC/EN 61810-1,IEC/EN61010-1	

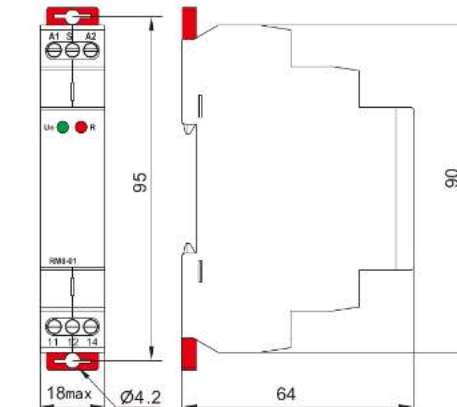
Wiring Diagram



Functions Diagram



Dimensions(mm)



Example

Example of lighting system which allows control of light intensity by actuating one of the sections R1 and R2 from any location in the room.

