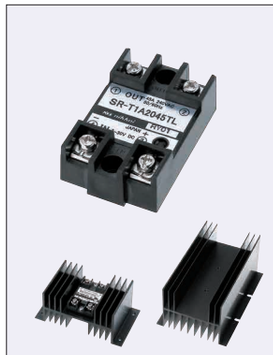
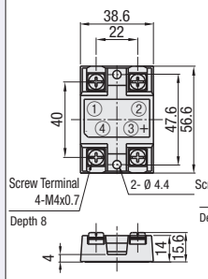
Note that, for some of the types shown here, order might be unable to be received by the MISUMI Indonesia offices.

SSR (Solid State Relays)

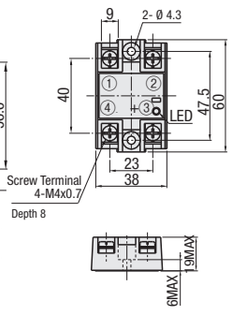


MSSSR (SSR)

No.10, 20

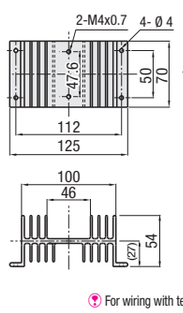


No.45

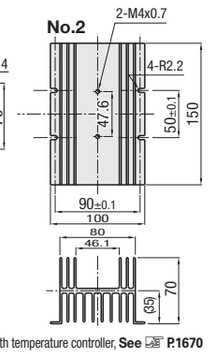


MHS (Heatsinks)

No.1



No.2



For wiring with temperature controller, See P.1670

SSR

Part Number Type	No.	Output Side Rated Load Current	Output Side Rated Voltage	Input Voltage Range (V)	* Max. load when 1 heater is used (reference)	Weight (g)	Applicable Heatsinks	Unit Price Qty. 1 ~ 9	Unit Price 10~20	Volume Discount Rate
MSSSR	10	10A acrms	120/240 V acrms	DC4~32	6A(①10A)	50	MHS1, 2			
	20	20A acrms			7A(①13A②16A)		MHS1, 2			
	45	45A acrms		DC3~30	7A(①24A②36A)	53	MHS1, 2			

*The values of the maximum load current (reference) are those measured when 1 heater is used without a heatsink. In ( ), ① when MHS1 is used; ② when MHS2 is used. No.10 and 20 are for ambient temperature 40°C or less, while No. 45 is for ambient temperature 30°C or less.
*Refer to the following load current characteristics.

For orders larger than indicated quantity, please check with WOS.

Ordering Example: Part Number MSSSR 10

Heatsinks

Part Number Type	No.	Thermal Resistance (°C/W)	Unit Price Qty. 1 ~ 9	Unit Price 10~20	Volume Discount Rate
MHS	1	1.52			
	2	0.85			

For orders larger than indicated quantity, please check with WOS.

Rating

Item		Unit	MSSSR10	MSSSR20	MSSSR45
Output	Rated Load Voltage	V acrms	120/240		
	Rated Load Current (Resistance Load)	A acrms	10	20	45
	Rated Frequency	Hz	50/60		
	Peak Repeatability Off Voltage	V	AC600		
ON	Maximum Input Voltage	V	DC32		DC30
	Input Current	mA	11 or less (Built-in fixed current circuit)		7.0mA or Less*
Common	Withstand Voltage	V acrms	3k 1 minute interval or more (Input - Output - Grounding)		
	Insulation Resistance	MΩ	DC500 V100 or more (Input - Output - Grounding)		
	Operating Temperature Range	°C	-20~+80		
	Storage Temperature Range	°C	-30~+100		

* Built-in fixed current circuit

Properties

Item		Unit	MSSSR10	MSSSR20	MSSSR45
Output	Operating Load Voltage Range	V acrms	50~264		85~264
	Leakage Current at Open Circuit	mA acrms	3 or less**		12 or Less***
	Contact Voltage Drop	V acrms	1.5 or Less (Operating Temperature Range=25°C)		
	Minimum Load Current	mA acrms	50		400
ON	Input Voltage Range	V	DC4~32		DC3.0~30
	Pick Up Voltage	V	DC4.0 or less		DC3.0 or Less
	Drop Out Voltage	V	DC1.0 or less		DC1.0 or More
Common	Response Speed	-	1/2 cycle +1ms or less		
	Capacitance	pF	150 or less (Input - Output)		

V_O=240V *V_O=200V

DC Input Signal of SSR

1) Connect it correctly without altering the polarity (+, - or terminal number).
2) For input voltage, apply the normal starting voltage.
3) The input power supply (signal) should be direct current. When commutating from AC power, put the smoothing circuit without fail, and reduce the ripple so that each voltage of the ripple may be within the operating voltage range.
4) Note that the noise near the input terminal may cause the malfunction.
5) When input line receives the inducement easily, use shielded wire.

Operating Environment

Because the SSR molding is not completely airtight, long term use in high humidity environment incurs the deterioration of SSR interior or malfunctioning. That will cause troubles from leakage between the charge parts, etc.
Examine the damp-proof measures as the system.

Notes on Heat Sink Use

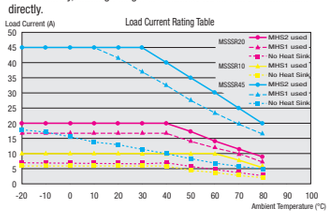
To enhance the heat radiation effect of SSR, deburr and smooth the surface of SSR, then lightly apply silicon compound.
If not applied, the heat will accumulate and SSR may break.
Ex.) Shinetsu Chemicals Ind. Corp. KS609, etc.

Cautions on Installation

When the ambient temperature is high, it is necessary to decrease the load current. Please pay attention to the relation of the mounting place and the load current.
Tighten the mounting screws firmly, so that they should not be loosened from vibration, impact and etc.

Notes on Wiring

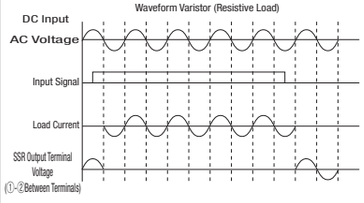
It is recommended to use ring or spade terminals (for M4) to wire more securely, although single or stranded wires can be connected directly.



Cautions on Operation Wave and Use for SSR

• Operation Wave

・In case of resistance load
Although the input voltage is applied near the AC power voltage, the current doesn't flow to the output side load of SSR at once, due to the effect of zero cross circuit.
When the AC power voltage decreases gradually till about zero voltage, the output side enters ON state.
And even when the input signal disappears, SSR is not turned off immediately thereafter. When the output current decreases and comes closer to zero, SSR is turned off through the effect of SSR internal element.
When the load current reaches zero, power supply voltage appears between the terminals ①-② of TRIAC.

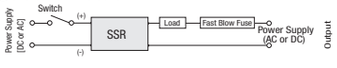


・In case of inductive load
The voltage starts quickly (Magnetic field off voltage increase rate dv/dt is large at the commutation), and it is likely to cause malfunction, when the inductive load of reactance is especially large.

①Overvoltage Protection

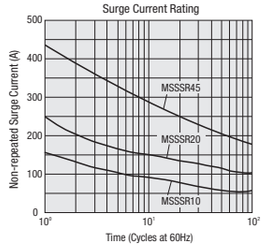
It is likely to malfunction if the noise environment on the power supply side is bad and the big surge voltage is applied to SSR. In such a case, connect varistor as figure shown above.
For varistor voltage, it is recommended to use 200 to 300V for power supply voltage 110V, and 350 to 450V for power supply voltage 220V.

②Overcurrent Protection



For SSR, there is a provided over-current rating. If current over the rated current flows, this may cause permanent breakage of SSR .
Therefore, use of fast fuse is recommended to protect SSR from surge current, when there is a possibility that a load may be short-circuited or abnormal current may flow for some causes.

Surge Current Rating



③Parallel Connection
SSR cannot be used by connected in parallel to increase the current. However, it can be connected in parallel to compensate the trouble of open mode.

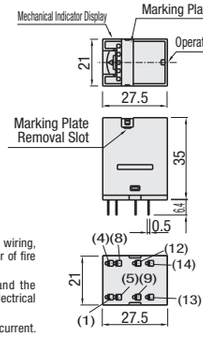
[Important] Malfunction
It is usually in the short mode in many cases when the element of SSR is destroyed by over-voltage or over-current, although two failure modes of the open mode and the short mode may occur.
Do not use it exceeding the maximum rating even just for a moment. Avoid SSR malfunction by taking the measure such as circuit protection.
It is recommended to use in combination of SSR protection and fail safe (safety measures for malfunction).

Universal Relays, Terminal Blocks

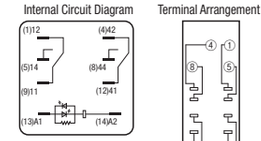
Soldered Terminals

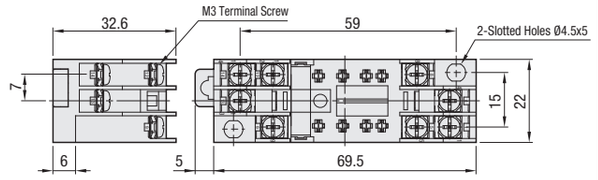
Universal Relays - Soldered Terminals

MURH



Accessory
Socket for Relay 1 pc.
Spring Fitting 2 pcs.





Cautions for Safety

- Shut off the power before attaching, detaching, wiring, maintaining and examining. There may be danger of fire or electrical shock.
- Comply with the rated specification range and the specification. There may be danger of fire or electrical shock.
- Use wires suitable for the applied voltage and current. Tighten the terminal screws using appropriate torque.

Part Number Type	No.	Rated Coil *1 Rated Current (mA)±15% 50Hz	60Hz	Rated Voltage AC (V)	Coil Resistance (Ω) ±10% (at 20°C)	Contact Rating Number of Poles	Allowable Contact Current	Contact Rating Voltage (V)	Allowable Contact Power (Resistance Load)	Load Current with Resistive Load	Unit Price Qty. 1 ~ 9	Volume Discount Rate 10~20
MURH	10	9.2~11.0	7.8~9.0	100~110	3,460	2 Poles	10A	AC250 DC30	AC2500VA DC300W	10A		
	20	4.6~5.5	4.0~4.6	200~220	14,080			AC250 DC30				

* Operating Properties of One Rated Coil (rated values at 20°C): Maximum Applied Voltage: 110%; Minimum Rated Operation: 80% or less; Return Voltage: 30% or more.
Note) The rated current value includes the current of operation indicator LED.

For orders larger than indicated quantity, please check with WOS.

Properties

Contact Material	Ag Alloy	Maximum ON/OFF Frequency	Electrical: 1,800 times/h, Mechanical: 18,000 times/h
Contact Resistance *1	50mΩ or Less	Vibration Resistance	Endurance: Frequency 10 ~ 55Hz, Half Wave 0.5mm Malfunction: Frequency 10~55Hz, Half Wave 0.5mm
Minimum Operation Load *2	DC24V, 5mA (Reference Value)	Impact Resistance	Endurance: 1,000m/s², Malfunction: 150m/s²
Response Time *3	20ms or Less	Mechanical Durability	AC: 50 million times or more, DC: 100 million times or more.
Recovery Time *3	20ms or Less	Electrical Durability *3	AC250V: Resistive Load 10A=100,000, 5A=500,000 times.
Power Consumption	0.9-1.2VA(60Hz) 1.1-1.4VA(50Hz)	Operating Ambient Temp. *4	-55 ~ +60°C (No Freezing)
Insulation Resistance	100MΩ or more DC500V mega	Operating Ambient Humidity	5 ~ 85%RH (No Condensation)
Withstand Voltage	AC2500V, 1 min (between the same pole contact circuit, AC1000V, 1 min.)	Mass (approx.)	35g

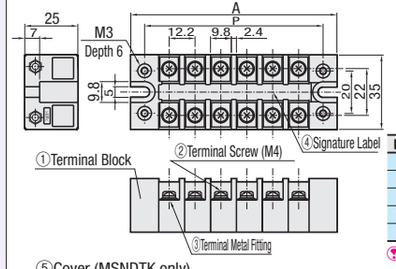
*1. Measurement Condition: DC5V, 1A, depending on the voltage descent method.
*2. M measurement Condition: The value at ON/OFF frequency 120 times/min. Failure modulus P level (Reference)
*3. Measurement Condition: When rated voltage is applied (at 20°C), Bounce is excluded.
*4. When 100% of rated voltage is applied.

Ordering Example: Part Number MURH 10

Terminal Blocks

RoHS10

MSNDTD MSNDTK (Cover Type)



⑤Cover (MSNDTK only)

Features

- The terminal block is made of special resin (unsaturated polyester resin), which can be used at high temperature.
- Use it when several heater lead wires are connected with the temperature controller.
- Although the use in atmosphere with temperature over 80°C causes product label to discolor and the terminal block to be loosened, there is no mechanical problem. Also, use heat resistant wires (more than 200°C) for wiring.
- Tighten the terminal screw regularly (approx. once a year).

No.	Name of Parts	Material	Surface Treatment	Standards
①	Terminal Block	Unsaturated Polyester Resin	-	UL94V-0
②	Terminal Screw	Carbon Steel	Zinc Plating (Trivalent Chromate)	-
③	Terminal Metal Fitting	Brass	Nickel Plating	-
④	Signature Label	Fiber (White)	-	-
⑤	Cover	Phenol Plate (Black)	-	-

MSNDTK (Cover Type) is included with 4 pcs. of M3 screws.

Part Number Type	No.	A	P	Terminal Screws	Mass (g) MSNDTD	Mass (g) MSNDTK	MSNDTD Unit Price Qty. 1 ~ 9	MSNDTD Volume Discount Rate 10~20	MSNDTK Unit Price Qty. 1 ~ 9	MSNDTK Volume Discount Rate 10~20
MSNDTD	2	48.5	35.5	4	72	79				
	3	60.5	47.5	6	91	99				
MSNDTK	4	73	60	8	110	119				
	6	97	84	12	148	159				
	8	121.5	108.5	16	187	201				
	10	146	133	20	225	241				

No. indicates number of poles.
For orders larger than indicated quantity, please check with WOS.

Rating and Performance

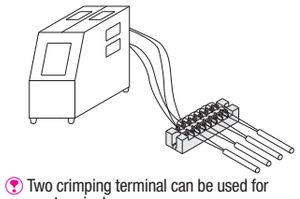
Rated Insulation Voltage	250V	Rated Current	20A	Applicable Wire	5.5mm²
Insulation Resistance	DC500V mega 100MΩ or more			Withstand Voltage	AC2000V, Normal for 1 minute
Operating Temp., Humidity Range	-10~150°C, 45~85%RH (No Freezing or Condensation)				
Conforming Standard	JIS C 2811 Industrial Terminal Block				

Terminal Screw: M4 (Recommended Tightening Torque: 1.4 ~ 1.8N・m)
Use under atmospheric pressure (at an altitude 2,000m or less).

Ordering Example: Part Number MSNDTD8

Example

One temperature controller can be connected to several heaters.



Two crimping terminal can be used for one terminal.