

Peltier Relay

TRT-2416



BRIEF OVERVIEW

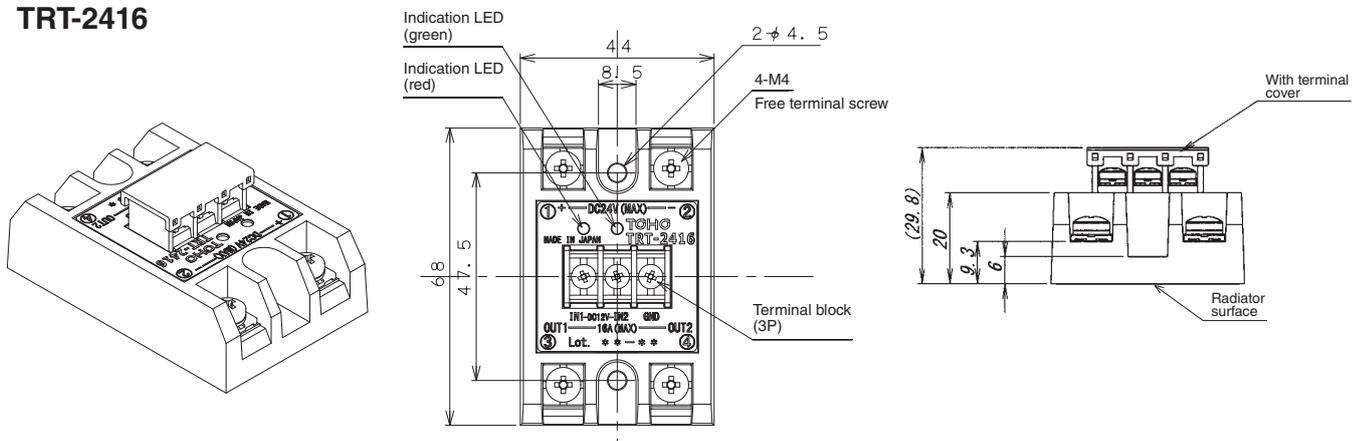
This unit is a relay module with built-in CPU which changes the direction of the drive current flow to the Peltier module in response to the signal of heating/cooling control (SSR drive voltage output) from the temperature control by simply connecting the unit to the external DC power source.
The external DC power source (for this relay and Peltier module drive) is separately needed.

EXAMPLE OF USE APPLICATION

- ◆ **PHOTO VOLTAIC (PV) INDUSTRY:** Solar panel (cell) inspection equipment
- ◆ **LABORATORY EQUIPMENT INDUSTRY:** Gene analysis equipment / Isothermal water circulation equipment
- ◆ **ANALYTICAL EQUIPMENT INDUSTRY:** Temperature cycle testing equipment
- ◆ **SEMI-CONDUCTOR MANUFACTURING EQUIPMENT INDUSTRY:** Chiller / Silicon wafer temperature control
- ◆ **ELECTRONIC EQUIPMENT MANUFACTURING INDUSTRY:** Laser marker / Laser soldering robot
- ◆ **MEDICAL EQUIPMENT INDUSTRY:** Microbiological culturing equipment / Facial laser therapeutic instrument
- ◆ **MACHINE TOOL:** Laser machine tools
- ◆ **AIR-CONDITIONING EQUIPMENT:** Pipe fitting equipment
- ◆ **FREEZING MACHINE INDUSTRY:** Chiller
- ◆ **DEVICE INDUSTRY:** Device & Memory Board temperature characteristic test system

EXTERNAL VIEW AND DIMENSION

TRT-2416

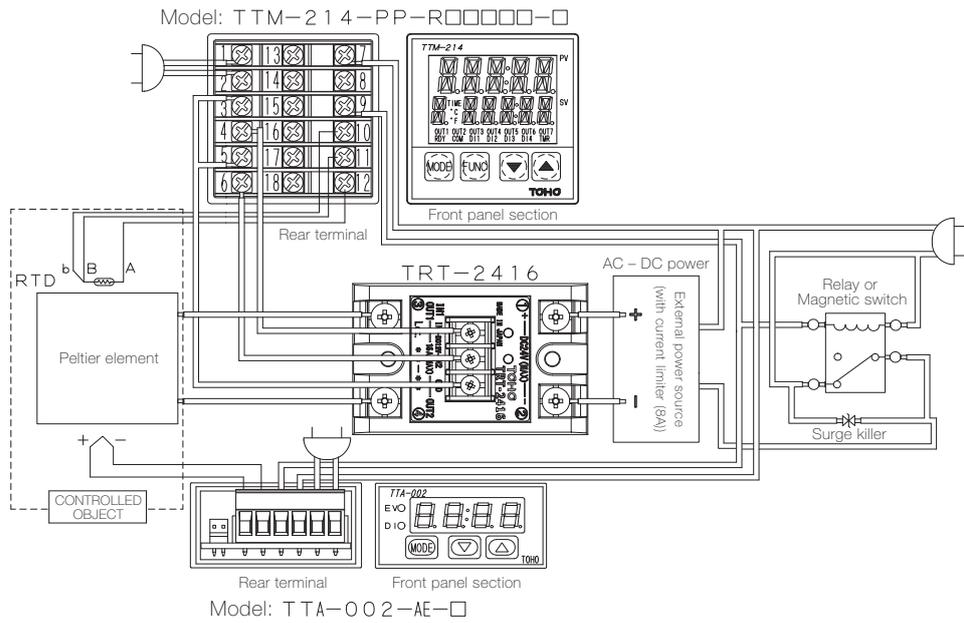


RATING

INPUT	Input Point	2-points (IN 1, IN 2 <GND common>)
	Input Type	Voltage DC12V ±1V • <ON>, DC0V to +1V • <OFF>
	Min. Input Time	More than 2ms (Level Input)
	Input Resistance	2.8kΩ
OUTPUT	Connection Method	Terminal Block (M3 screw)
	Output Point	1-point
	Output Kind	Connected to Peltier Drive Output (OUT 1, OUT 2)
	Output Type	ON/OFF
	Output Voltage	DC 8 to 24V (The voltage is dependent on the external power voltage, polarity is dependent on the inverting function of input)
	Max. Output Current	Max. 16A. (ref. to load current characteristic) Ambient Temperature: Max. 50°C
	Connection Method	Terminal Block (M4 screw)
Usable Ambient Temp./Humidity Range		0 to 50°C, 20 to 90%RH (no dew condensation allowed)
Ambient Storage Temp./Humidity Range		-20 to +70°C (no freeze or dew condensation allowed), 5 to 95 %RH (no dew condensation allowed)
Mounting Angle		0 or 90 degrees (In vertical attachment, make sure the output side is positioned upward, while the input side downward)
Weight		Below 100gms.
Isolation		Non-isolated between input & power circuit, and input & Peltier drive circuit.
Acquisition of external standard accreditation		None

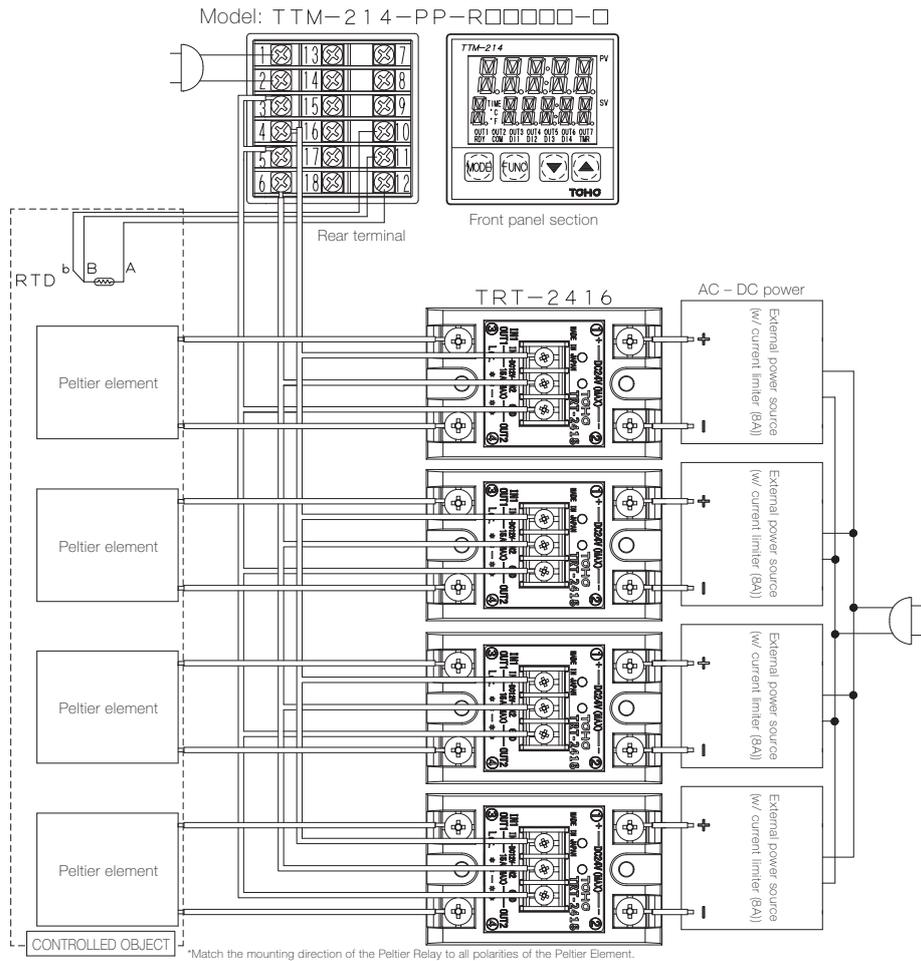
WIRING DIAGRAM

① 1 unit + current limiter



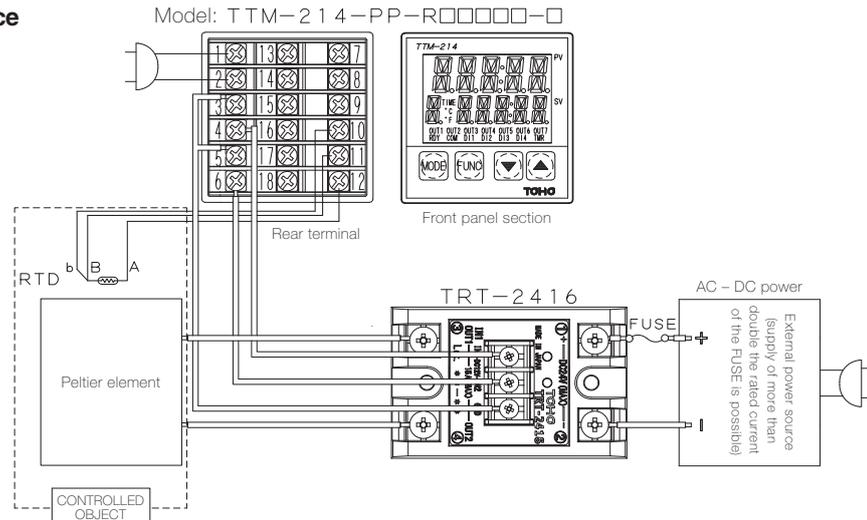
- * Please use power source suited to Peltier element. (Voltage: below DC24V, Current: within 16A)
- * Please use external power source with current limiter (max. 16A).

② 4 units + current limiter



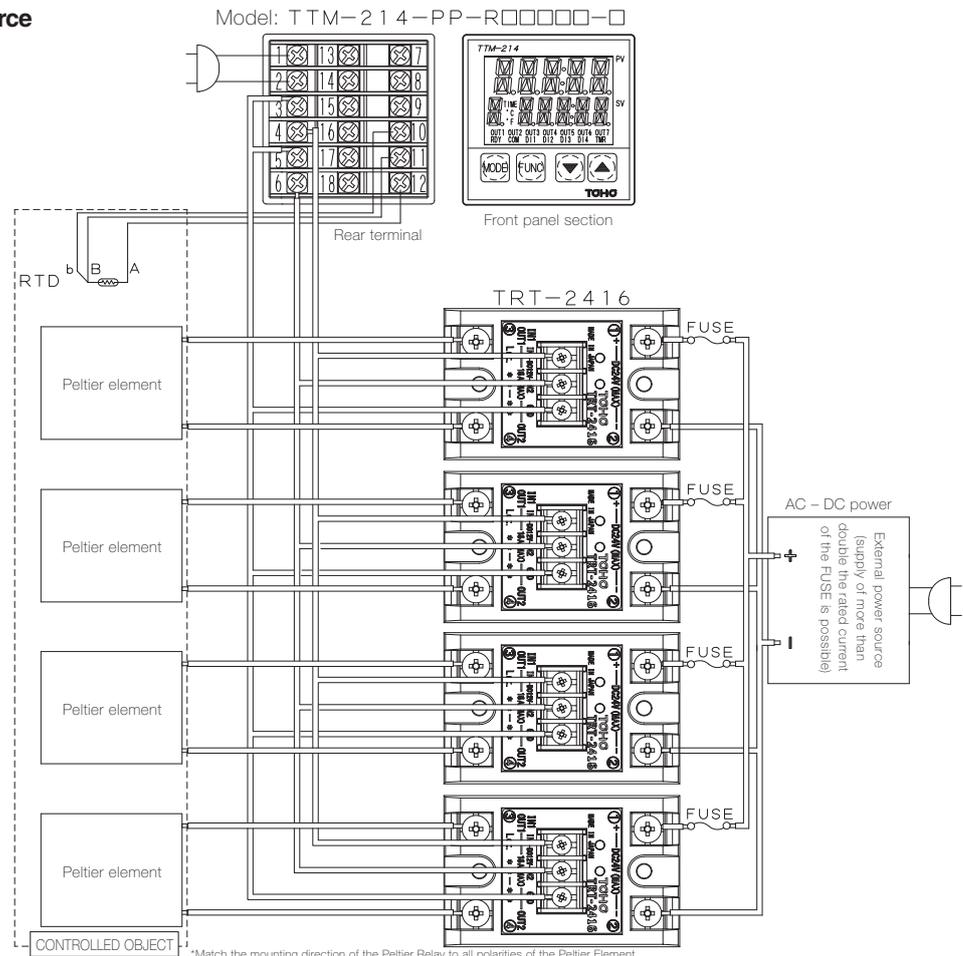
- * A max. of 4 units of this product can be connected to one temperature controller in parallel connection. Do not connect more than 5 units.
- * This product cannot do parallel drive (parallel connection of OUT terminal 1, 2) with one Peltier element only.

③ 1 unit + external power source
(with external fuse)



- * There may be a case of fuse degradation due to inrush current of the load, so use Peltier element with more than enough current value.
- * To activate the fuse, the current about double the amperage rating of the fuse is necessary. Please use power source which can secure enough current.
- * Over current protection part is needed for the Peltier relay. If the power source does not have one, please provide FUSE.

④ 4 units + external power source
(with external fuse)



- * Connect up to max. of 4 units to one temperature controller in parallel connection. Do not connect more than 5 units.
- * This product cannot do parallel drive (parallel connection of OUT terminal 1, 2) with one Peltier element only.
- * To activate the fuse, the current about double the amperage rating of the fuse is necessary. Please use power source which can supply enough current.
- * Over current protection part is needed for the Peltier relay. If the power source does not have one, please Provide FUSE.

GENERAL PRECAUTIONS:

- * Please do not cover the base of the unit with insulating material as this product is design to radiate the heat from its base.
- * We shall not be held responsible for any damage/s caused due to use of this unit beyond the range and condition as stipulated in this catalogue.
- * Please use the unit with utmost care and safety in mind by giving some allowance to its rating and performance, and to limit the damage to minimum in case of trouble.
- * Regardless of the place of use, the unit may bring about serious effect due to aging or trouble of the unit. It is therefore advised to install proper protective circuits and perform regular maintenance.
- * As a precaution related to line surge, avoid making common connection of inductive load such as relays to the Peltier element drive source.

CHARACTERISTICS

INPUT	Max. input voltage	13V
	Max. input current	5mA
	Max. OFF voltage	1V
OUTPUT	Output specification	MOS FET Output (for Peltier drive, with polarity reverse function)
INDICATION	Monitor display	Input 1 LED Red 1 pc. When the input from the SSR drive output of Input 1 becomes ON (12V), the red LED will light up.
		Input 2 LED Green 1 pc. When the input from the SSR drive output of Input 2 becomes ON (12V), the green LED will light up.
POWER SOURCE VOLTAGE		DC8 to 24V±10% (voltage range supplied from the external source)

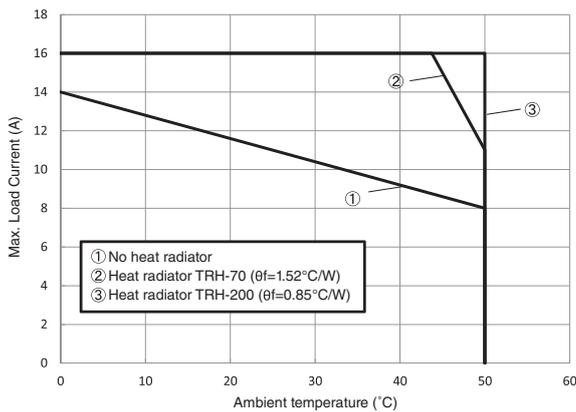
MOVEMENT OF INPUT (1,2) AND OUTPUT (1,2)

Condition	IN1	IN2	OUT1	OUT2
Heating	12V	0V	+	-
	When IN 1 is ON, the output condition <OUT 1 = +, OUT 2 = -> will be retained even if the voltage of IN 2 changes.			
Cooling	0V	12V	-	+
	When IN 2 is ON, the output condition <OUT 1 = -, OUT 2 = +> will be retained even if the voltage of IN 1 changes.			
OFF	0V	0V	No output	No output

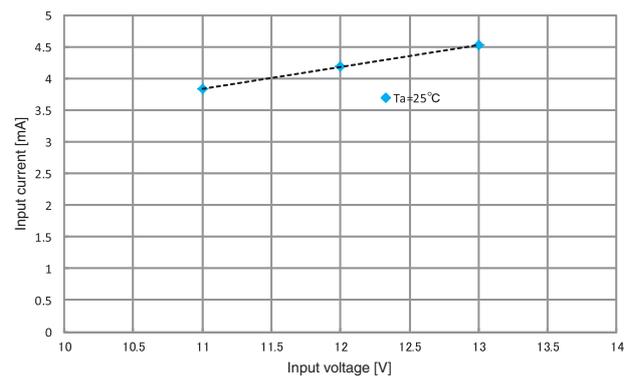
* Heating and cooling will change depending on the direction in which the Peltier element is attached.

CHARACTERISTIC CURVE

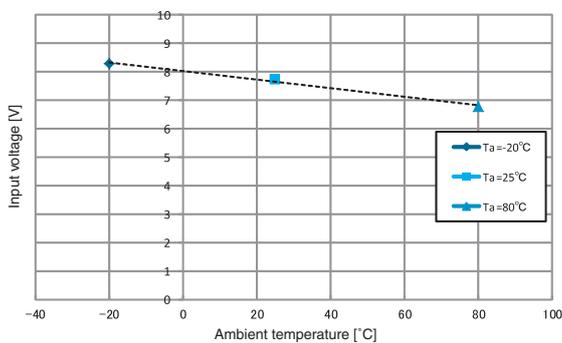
● Load Current Characteristics



● Voltage-Current Characteristics



● Temperature Characteristics (Temperature-Voltage Threshold)



● Temperature Characteristics (Temperature-Current Threshold)

