TOSHIBA

6F9E0086

INSTRUCTION MANUAL

TEMPERATURE CONTROL RELAY

MODEL RTM20

Read and understand this instruction manual before attempting any installation, wiring or operation of this relay.

TOSHIBA CORPORATION

CODE: RY

CONTENTS

1. OUTLINE

The motor temperature monitoring unit can be used in various industrial fields as a protection relay for motor windings, bearings and internal atmosphere by monitoring and measuring their temperature through temperature measuring resistors.

The unit uses a microcomputer and can automatically stop temperature drift as it varies from preset reference points. It can maintain accuracy over a wide temperature range. Moreover, it is designed for flexibility and is reliable in a variety of environments.

Read this manual carefully and you wi 11 be able to use the relay correctly and effectively.

2. SPECIFICATIONS

Items	Specifications.	Remarks
1. Display temperature	-20 to +200°C	
2. Sensor inputs	8 RTDs	3-wire
3. Sensor type (RTD)	Selection -Resistance Platinum (Pt) 100Ω Nickel (Ni) 100Ω Nickel (Ni) 120Ω Copper (Cu) 10Ω	Resistance Tables are from ANSI.
4. Temperature accuracy	Pt 100Ω, Ni 100Ω, Ni 120Ω } ±0.5° C cu 10Ω ±1° c	
5. Trip/Alarm set point	From 40° C to 195° C in graduations of 5° c.	

Items	Specifications	Remarks
. Trip/alarm set point mode selector	Sensor inputs are divided into two or three sections, as follows.	

Channel No. / Mode	1 2	3	4	5	6	7	8
1	A					B	
2	A		B			C	

* The letters A, B, and C are symbols used on the front nameplate of the relay, and represent RTD mounting areas. For example, A channels might be used on stator windings, B channels might be used on bearings and so on.

7. outputs

a. Alarm output

	output		
	Conditions	Relay output	Indicator
1	1. Temperature on A channels rises above..9 x trip set value 2. (A) An A channel RTD contact breaks	Alarm (A) (l circuit is closed)	a -
2	1. Temperature on B channels rises above . 9 x trip set value 2. (B) A B channel RTD contact breaks	Alarm (B) (la)	-

Items	specifications	Remarks

7.

output

Conditions	Relay output	Indicator
1. Temperature on C channels rises above .9 x trip set value 2. (C) A C channel RTD contact breaks	Alarm (C) (1a)	-

b. Trip output

output

	Conditions	Relay output	Trip indicator
1	(A) Area A temperature rises above A channels' trip set value	Trip (A) (1a)	Red on
2	(b) Area B temperature rises above B channels' trip set value	Trip (B) (1a)	Red on
3	(C) Area C temperature rises above C channels' trip set value	Trip (C) (1a)	Red on

	Items	Specifications	Remarks
		c. Contact capacity ($\cos\phi$ = 0.4, L/R = 7 ms	

Resistive load	Inductive load
250 Vac 5 A	250 Vac 2 A
30 Vdc 5 A	30 Vdc 2 A

* Inductive Load

	Continuous	Interruptive
ac	5 A	500 VA*1
dc	5 A	50 W*2

8.	Display	· Channel . . . . . 1 digit Measured value . . . . . 3 digits	
9.	Sampling and response tïa	1 Sampling time . . . . . 4 S'/8 CH 2 Output response time . a S (max.	
10.	Reset	Selectable from auto or manual 1 Auto (A) . . . . . Automatic reset 2 Manu. (M) . . . . Resets during MANUAL-RESET switch is being depressed.	Hysteresis 5° c
11.	Power supply	100 to 120 Vac (+10%, -15%) 50/60Hz or 100 to 125 Vdc (+10%, -15%)	
12.	Insulation resistance	100 MO or more	With a 500 V megger

* Note: *1 Maximum application voltage is 380 Vac and power factor ($\cos\phi$) is 0.4.

*2. Contact capacity at 30 Vdc and time constant (L/R) is 7 ms. Capacity must be derated at higher voltage.

	Items	Specifications	Remarks
L3	Dielectric strength	2000 v ac, one minute	Between output and power supply terminals in common and earth Between output terminals and power supply terminals
14	Vibration-proofing	Endurance 2a(total amplitude) = 3 mm 16.7 Hz, 3 directions, 2 hours each	
15.	Power consumption	6 VA	
16.	Ambient temperature	-10 to +60° C	
	Humidity	10 to 95% RH (no condensation) (-20 to +60° C: In storage and transportation)	
17.	Mounting	Flash mounting	
18.	Outline dimensions (in millimeters)	120 W x 235 H x 190 D Case..... Black semi-luster coating	Refer to Outline drawing.
19.	Weiaht	2.6 kg	

3. DESCRIPTION of FRONT PANEL

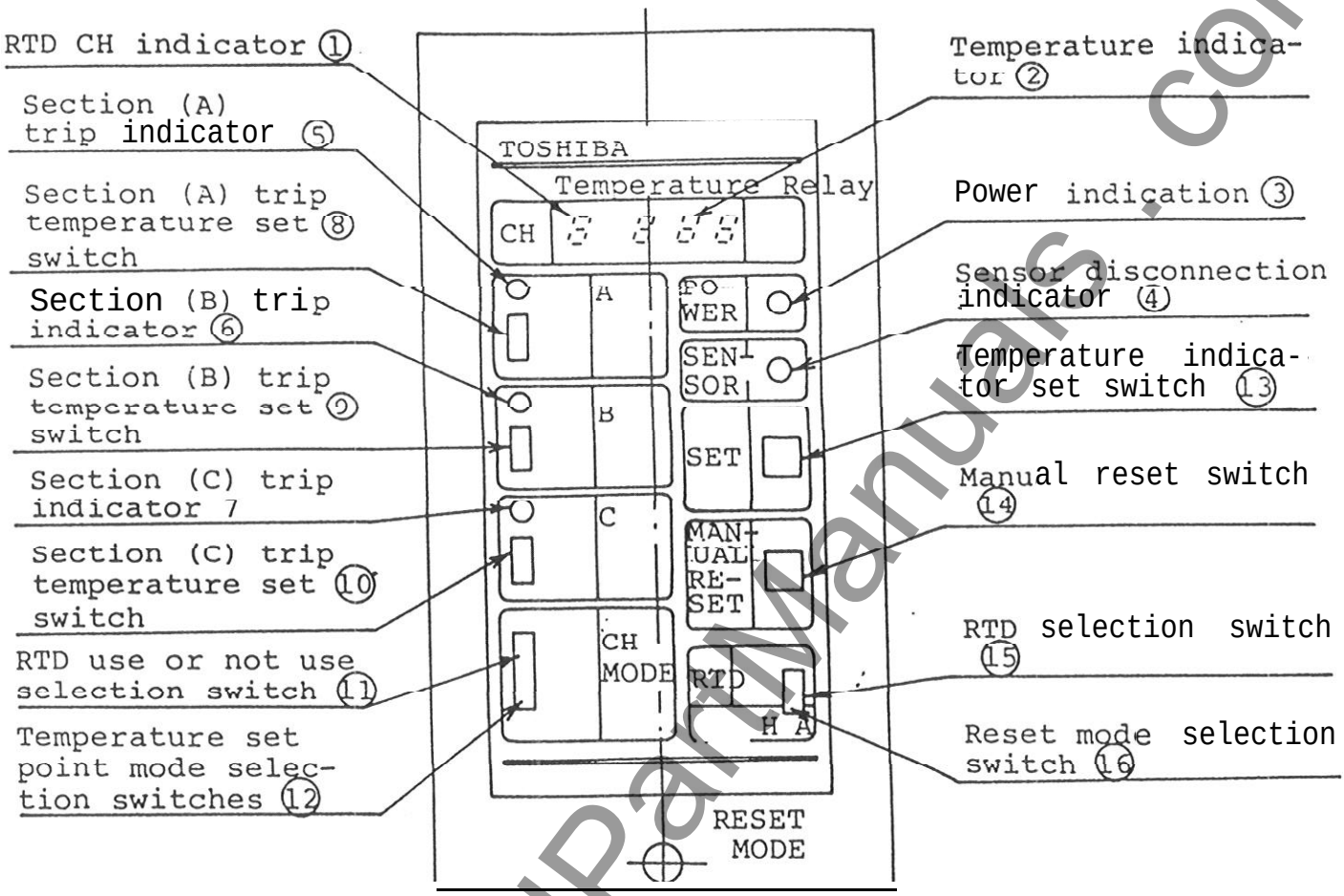


Figure.1 Front Panel Rayout

① RTD channel indicator

Indicates CR. No.'s 1 to 8 incrementally, on operation of temperature indicator set switch.

② Temperature indicator

Indicates the temperature of the channel selected by RTD channel indicator (①)

. Measuring range: -20° C to +200° C (1° C step)

. Display: Depends on how RTD is used, for example:

	Indicator	Meaning
Channel →	- - -	RTD not used

When the following indicators flashes at 0.8 second intervals, some abnormality has happened:

Indicator	Meaning
	Temperature rises to or above trip set point. Temperature reading flashes at 0.8 second intervals. (Indicated temperature is between -20° C and 200° C)
F F F	RTD disconnection
2 0 0	200° C or higher
- 2 0	-20° C or lower

③ Power indicator (yellow)

Turns on when power supply is kept on.

④ Sensor indicator (Red)

Turns on when there is a break in an RTD wire.

⑤, ⑥ and ⑦ Trip indicator (Red)

Turns on when indicating that the temperature monitored by the RTD's in either the A, B, or C channels has risen above the acceptable limit set on the relay.

⑧ Section.(A) trip temperature set switch

FCF50011

⑨ Section (B) trio temperature set switch

⑩ Section (C) trip temperature set switches 8 to 10 can be set from 40° C to 195° C in 5° increments. Set using either the +5, +10, +20, or +40 switches and add the temperature indicated on the right-hand switch. Then the required value is set.

⑪ RTD use or not use selection switch

On . . . . . to use

Off . . . . . not to use

⑫ Temperature set point mode selection switch:

On	Ch. 1 to 6	Section (A) setting
	Ch. 7 to 8	Section (B) setting
Off	Ch. 1 to 3	Section (A) setting
	Ch. 4 and 5	Section (B) setting
	Ch. 6 to 7	Section (C) setting

Write the monitored part or area name on each channel.

⑬ Temperature indicator set switch. This switch is used to select the RTD channel. Depressing the switch incrementally changes the channel.

⑭ Manual reset switch. This feature is available when the reset mode switch is set at "Manual". Depress the switch and reset the temperature indicator, alarm, trip output and temperature peak hold values.

⑮ RTD selection switch

Select only one of either Pt (100Ω), Ni (120Ω), Ni (100Ω) or Cu (10Ω). Then set. If you try to choose more than one metal, the trip indicator will light.

⑯ Reset mode selection switch

M . . . . . Manual reset

The trip/alarm indicator, output, and alarm/trip values are kept until the manual reset switch is on.

A . . . . . Auto reset

The trip/alarm indicator and the output are automatically reset when abnormal conditions are removed.

4. WIRING

4.1 RTD Input Wiring

Attach cables as follows:

. Three shielded conductor cables for sensor inputs
. Twisted cable for alarm and trip contacts

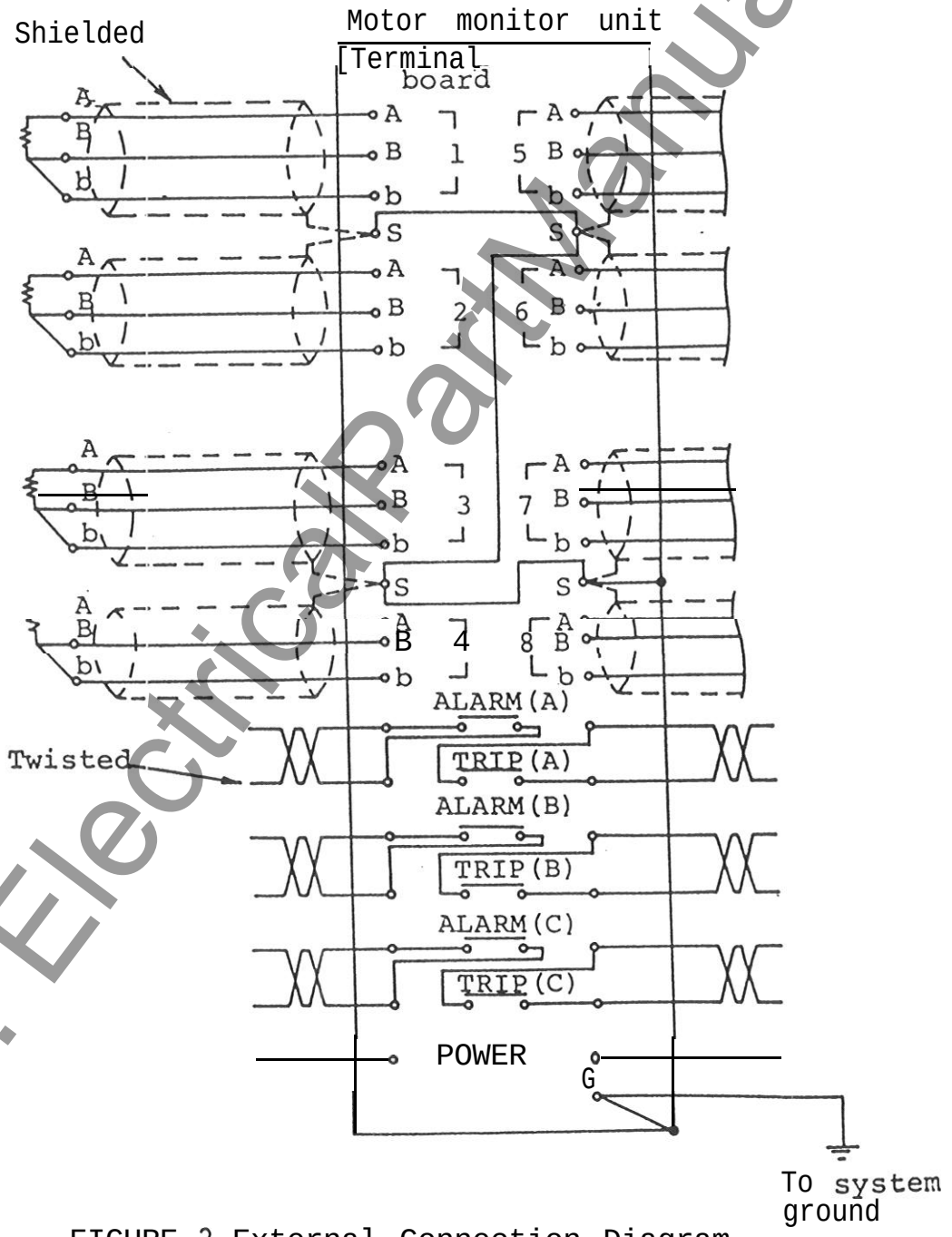


FIGURE 2 External Connection Diagram

4.2 Alarm Output Wiring

Connect the alarm signal leads (alarm, trip) to the terminals on the monitor unit's rear surface terminal board, according to the nameplate.

When an inductive load such as a relay is connected on the load side, apply spark suppression circuits on both ends of the inductive load to ensure the long life of the unit contact to suppress noise.

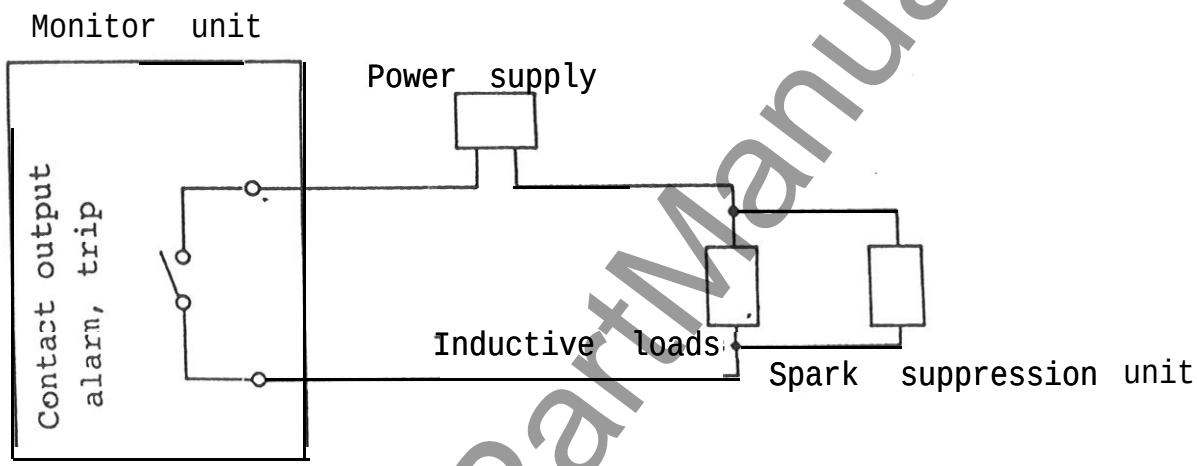
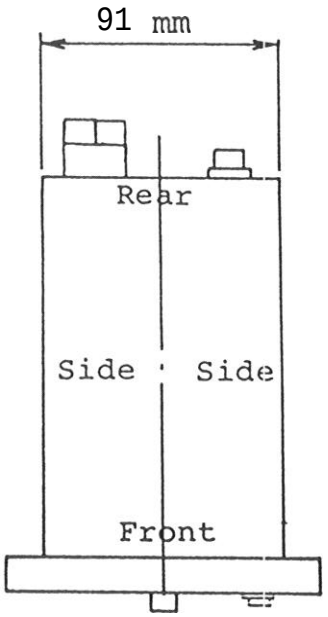


FIGURE 3 Output Circuit Configuration

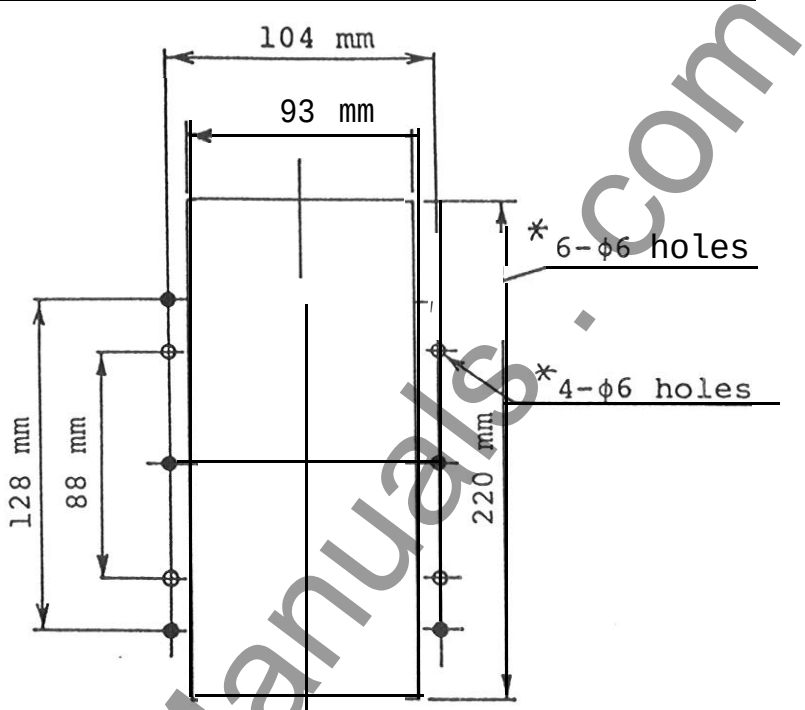
4.3 Wiring for Power Supply

The monitor unit can use either 100 Vac to 120 Vac or 100 Vdc to 125 Vdc. Connect the leads to the POWER terminals on the rear surface of the unit.

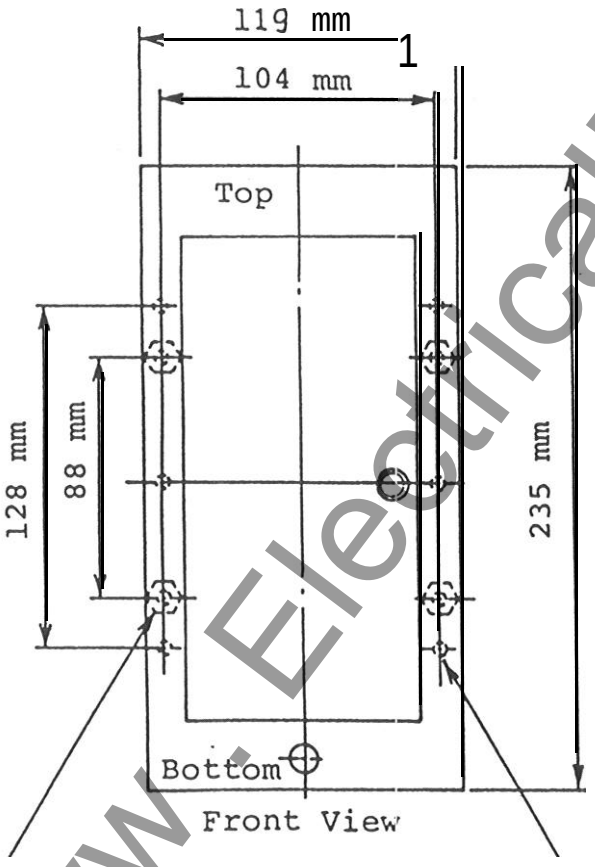
5. OUTLINE DIMENSIONS



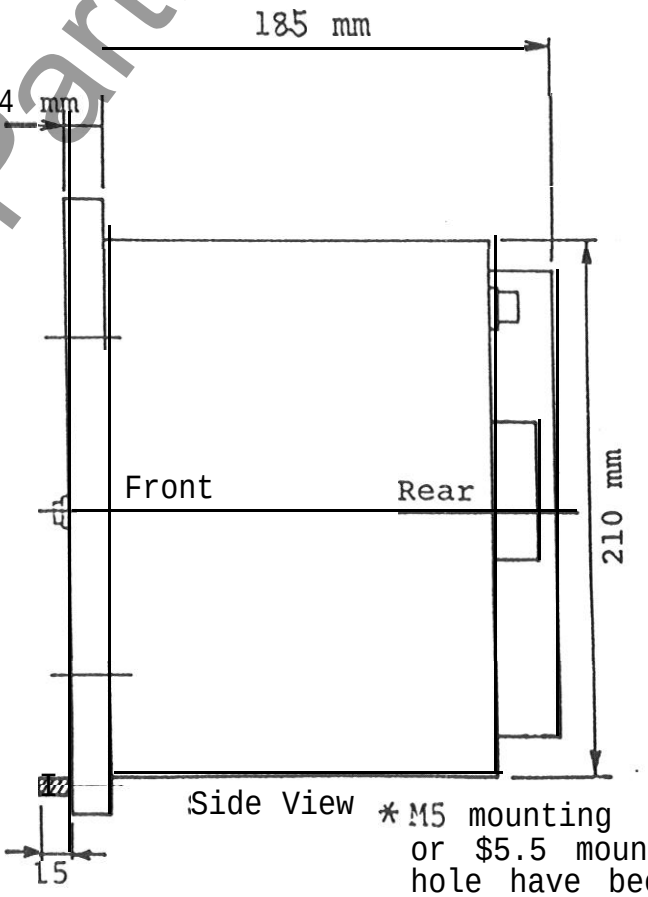
Top view



Drilling Plan for o or .
Mounting Relay



4-M5 mounting screw threads

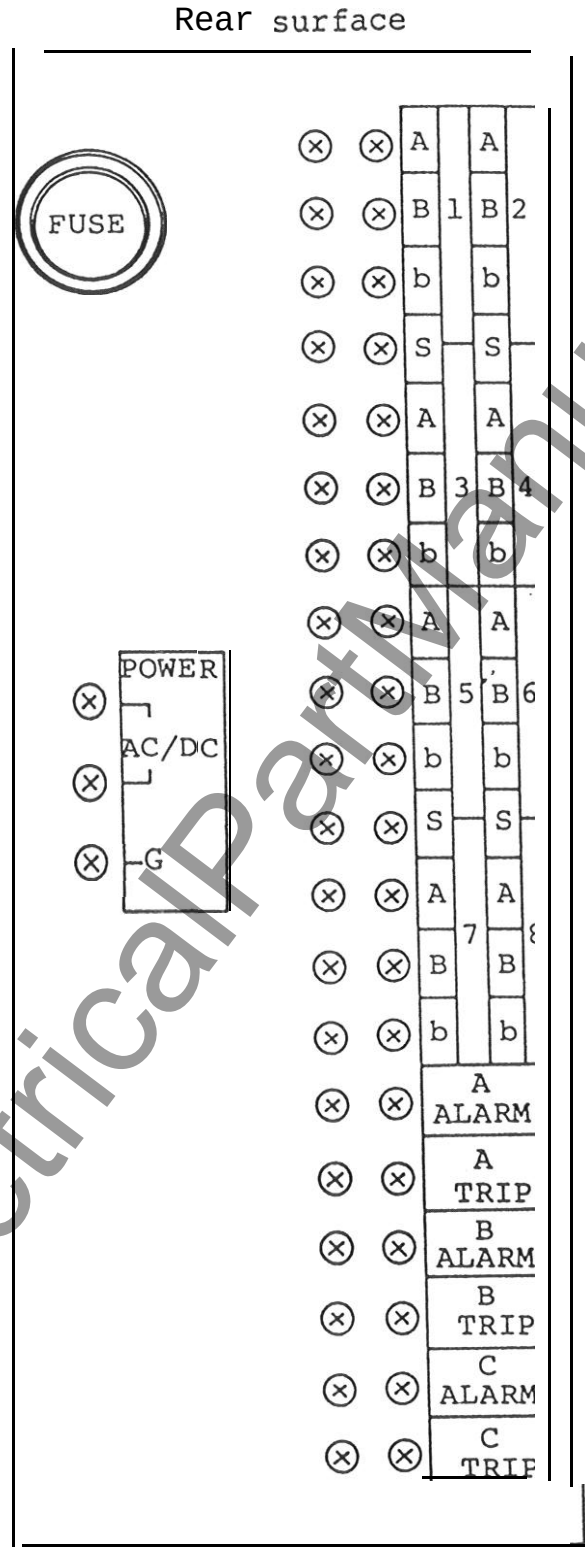


6-φ5.5 mounting hole

*M5 mounting threads or $5.5 mounting hole have been selected.

FIGURE 4 Outline Drawings

6. TERMINAL LAYOUT



* Applicable fuse
... AC250V, 2A

FIGURE 5 Terminal Layout