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MESSRS.

LINE FAULT DETECTOR & EM'CY TRIPPING CONTROL FOR MARINE & INDUSTRIAL

(LFD - □PB□ Series)

LFD - □ P B □

- □ (3rd): 3 : 3 Point / 6 : 6 Point / 10 : 10 Point
- □ (4th): R1 : Open Alarm / S1 : Open & Short Alarm (Patent No. : 10-1582250)

FOR WORKING

9 SHEETS WITH COVER

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LINE FAULT DETECTOR (LFD-□PB□)

CONTENTS

Sheet No.

1. General information ---------- 2
   1) General
   2) Ordering information

2. Specifications of construction & environment ---------- 3
   2.1 Case
   2.2 External connection T.B
   2.3 Front name plate
   2.4 Outside figure & Mounting
   2.5 Ambient conditions
   2.6 Vibration test

3. Specifications of electrical rating ---------- 4
   3.1 Aux. power voltage rating
   3.2 Aux. power voltage variation
   3.3 Input signal
   3.4 Output signal
   3.5 Line fault alarm delay time
   3.6 2ndary alarm recovery time
   3.7 Insulation resistance
   3.8 Surge transient

4. Descriptions ---------- 4

5. Connection & T.B Layout ---------- 5

6. Application circuit ---------- 6 ~ 8
   1) Em'cy stop for tripping
   2) In case of em'cy stop line is fault
   3) Recovery
   4) Alarm timing flowchart
   5) System diagram

LINE FAULT DETECTOR (LFD-□PB□)

1. GENERAL INFORMATION

1) GENERAL

LINE FAULT DETECTOR continuously monitors whether the line of emergency stop system, that applies to marine system, power plant, steel, chemical plant and other industrial system, is faulted or not. It's a essential equipment to prevent accident spreading due to the breakage of emergency stop line when abnormal condition of a system requires emergency state.

2) ORDERING INFORMATION

The following models are applied according to the specification of a control system.

LFD - □ P B □

- □ : 3 Point, 6 Point, 10 Point
- B □ : ⓇⓁ: Open Alarm; ⓈⓁ: Open & Short Alarm (Patent No. : 10-1582250)

LINE FAULT DETECTOR (LFD-□PB□)

2. SPECIFICATIONS OF CONSTRUCTION & ENVIRONMENT

2.1. CASE

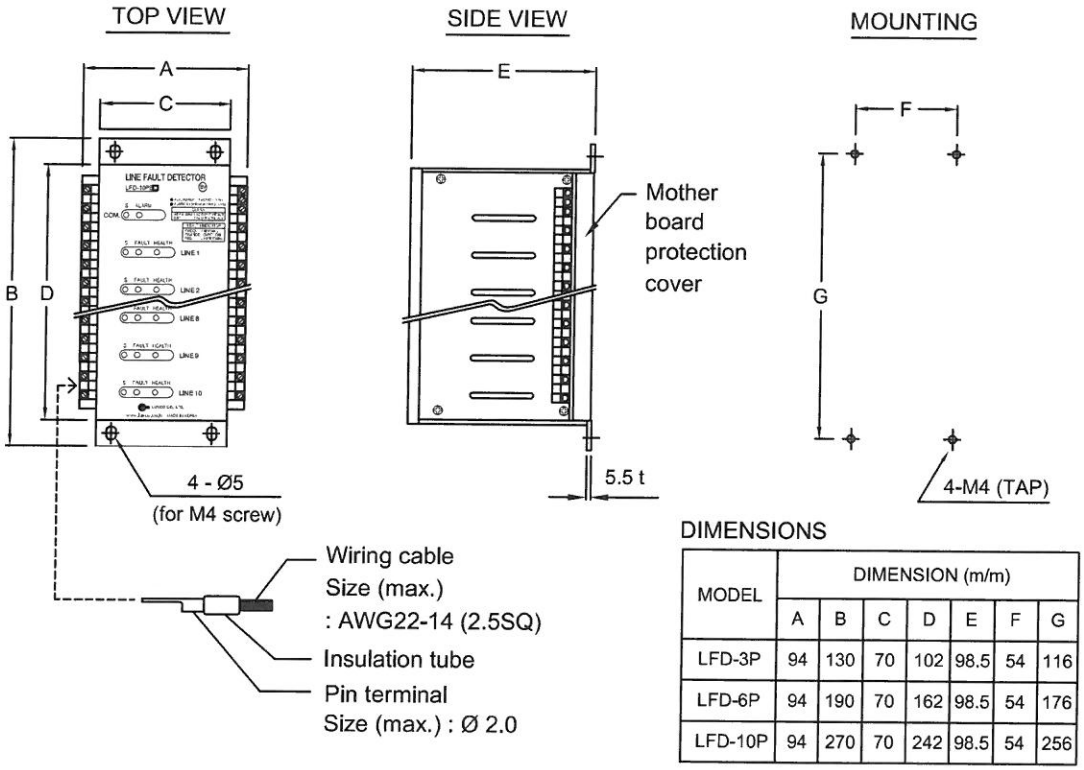
1) Material : PC(polycarbonate) - Flame retardant (UL94 V-O)
   - TRIREX3025G10 / Glass fiber reinforced
   - Dielectric strength : 31KV/mm (ASTM D149 / IEC 243)
2) Color : Terminal block part - Blue
   Front - Ivory , Body - Black (maker standard)

2.2. EXTERNAL CONNECTION T.B

1) Material
   - Insulation Material : PA / UL94 V-O
   - Terminal : CnZn
2) Screw size : M3
3) Spacing : 5mm
4) Rated Voltage : 250V (UL 1059, EN60998)
5) Wire Size (max.) : AWG 22-14 (2.5 SQ)
6) Test Voltage : 2.0kV
7) Rated Torque : 0.5Nm

2.3. FRONT NAME PLATE : Screen Print

2.4. OUTSIDE FIGURE & MOUNTING (unit in mm)



DIMENSIONS

MODEL	DIMENSION (m/m)						
	A	B	C	D	E	F	G
LFD-3P	94	130	70	102	98.5	54	116
LFD-6P	94	190	70	162	98.5	54	176
LFD-10P	94	270	70	242	98.5	54	256

2.5. AMBIENT CONDITIONS

1) Ambient temperature range : -10°C ~ +60°c
2) Storage temperature range : -20°C ~ +70°C
3) Humidity : 20% ~ 90% R.H

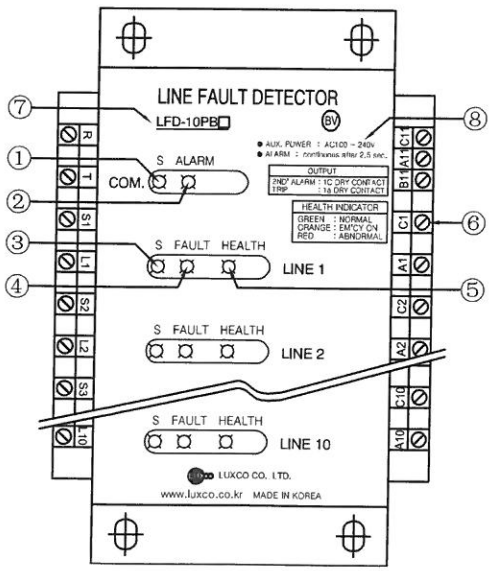
2.6. VIBRATION TEST : 30 Hz for 2 hours (acceleration : ±0.7G)

LINE FAULT DETECTOR (LFD-□PB□)

3. SPECIFICATIONS OF ELECTRICAL RATING

3.1	Aux. POWER VOLTAGE RATING	:	AC100 ~ 240V 0.25Amax, 50 / 60Hz (Option : DC 24V)
3.2	Aux. POWER VOLTAGE VARIATION	:	85%~110%
3.3	INPUT SIGNAL		
	1) Type		
	① LFD-□PB(R1)	:	"a" contact with resistor 1/2W 1kΩ for 1 circuit
	② LFD-□PB(S1)	:	"a" contact with two resistors 1/2W 10kΩ connected in series and parallel for 1 circuit
	2) Leakage Current	:	Below 10mA per each point (R1 : 10mA) (S1 : 1mA)
	3) Cable Length	:	Within 500m (Above 1.25 SQ)
3.4	OUTPUT SIGNAL		
	1) Common Alarm Output (2ndary)	:	"1c" dry contact (30VDC 5A / 250VAC 5A, p.f=1)
	2) Tripping Contact Output	:	"1a" dry contact (30VDC 5A / 250VAC 5A, p.f=1)
3.5	LINE FAULT ALARM DELAY TIME	:	2.5 Sec (±0.1 Sec)
3.6	2NDARY ALARM RECOVERY TIME	:	2.5 Sec (±0.1 Sec)
3.7	INSULATION RESISTANCE	:	Above 200MΩ between live part and enclosure
3.8	SURGE TRANSIENT	:	1kV 50uVs line/line, 0.5kV 50kV 50uVs line/line (IEC 1000-4-5 / 1995)

4. DESCRIPTIONS



① Common Source indicator : 3 Ø LED (lignt up in green)
② Common alarm (2ndary) : 3 Ø LED (lignt up in yellow)
③ Alarm Source indicator : 3 Ø LED (lignt up in white)
④ Line fault indicator : 3 Ø LED (lignt up in red)
⑤ Health indicator : 3 Ø LED

GREEN : NORMAL
ORANGE : EM'CY ON
RED : ABNORMAL (Detect card fail)

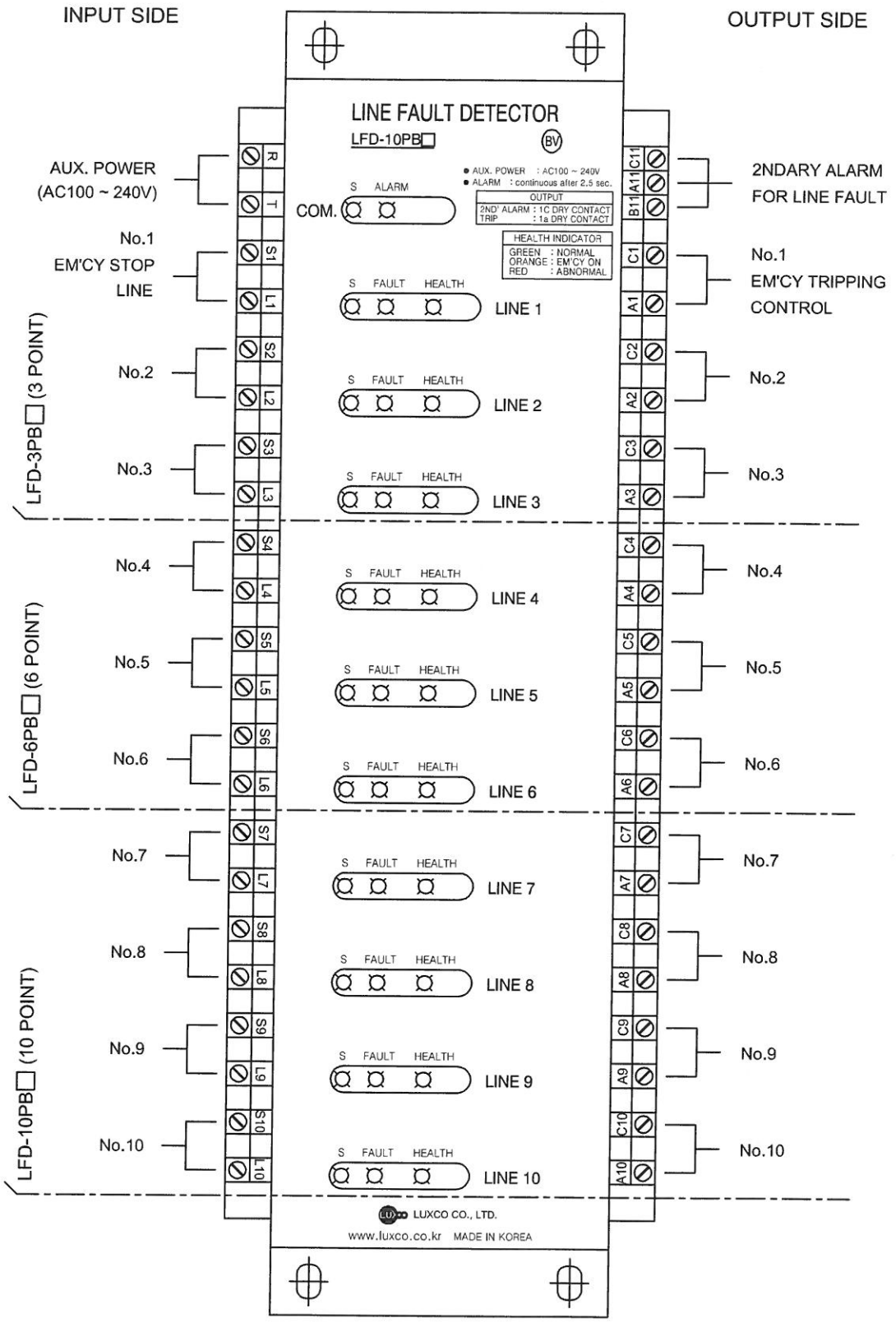
⑥ External connection T.B : (UL-1059, EN60998)
⑦ Model Name
⑧ Rating

- Aux. POWER : AC100 ~ 240V
- ALARM : Continuous after 2.5 sec.

OUTPUT
2ND' ALARM : 1C DRY CONTACT
TRIP : 1a DRY CONTACT

LINE FAULT DETECTOR (LFD-□PB□)

5. CONNECTION & T.B LAYOUT



6. APPLICATION CIRCUIT

1) EM'CY STOP FOR TRIPPING

MCCB (MCCB 1~MCCB n) is tripped by each control card when an em'cy switch line is in normal condition and em'cy stop button is pressed.

2) IN CASE OF EM'CY STOP LINE IS FAULT

① LFD-□PB(R1) (Disconnection)

② LFD-□PB(S1) (Short & Disconnection)

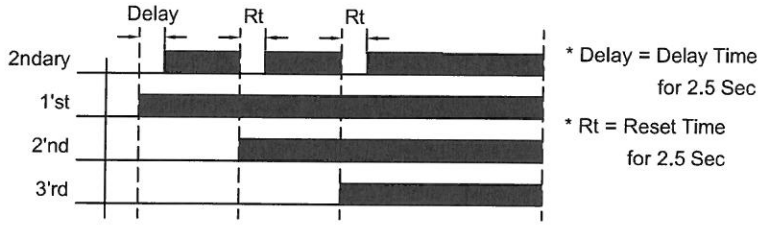
In case that em'cy stop line is fault, the alarm goes out to the system via the T.B #(c11, a11, b11) after 2.5 sec and individual alarm lamp of control card is lit up on steady.

On keeping 1'st abnormal alarm, if another line is falted, the 2ndary alarm come out again continuously from common card after 2.5 sec of delay.

3) RECOVERY

After the line recovers from fault situations, detector circuit is automatically recovered and turn to normal condition.

4) ALARM TIMING FLOWCHART

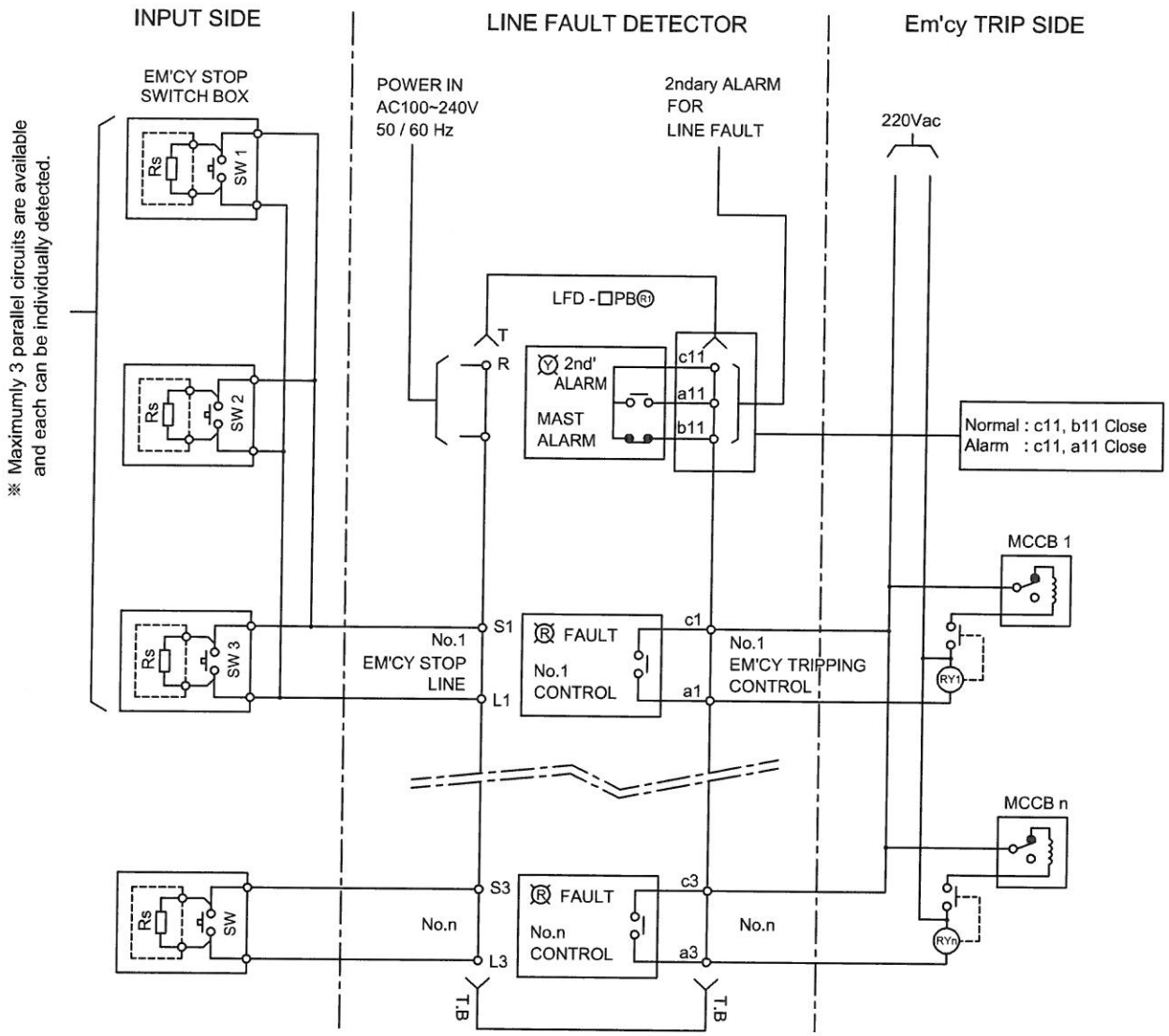


LINE FAULT DETECTOR (LFD-□PB□)

6. APPLICATION CIRCUIT

5) SYSTEM DIAGRAM

① LFD-□PB(R1)

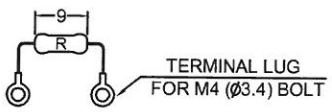


※ INDIVIDUAL CIRCUIT(1)
Rs : 1KΩ 1/2W

※ PARALLEL 2 CIRCUITS
Rs : 6.8KΩ 1/2W
FOR EACH

※ PARALLEL 3 CIRCUITS
Rs : 12KΩ 1/2W
FOR EACH

* ACCESSORY

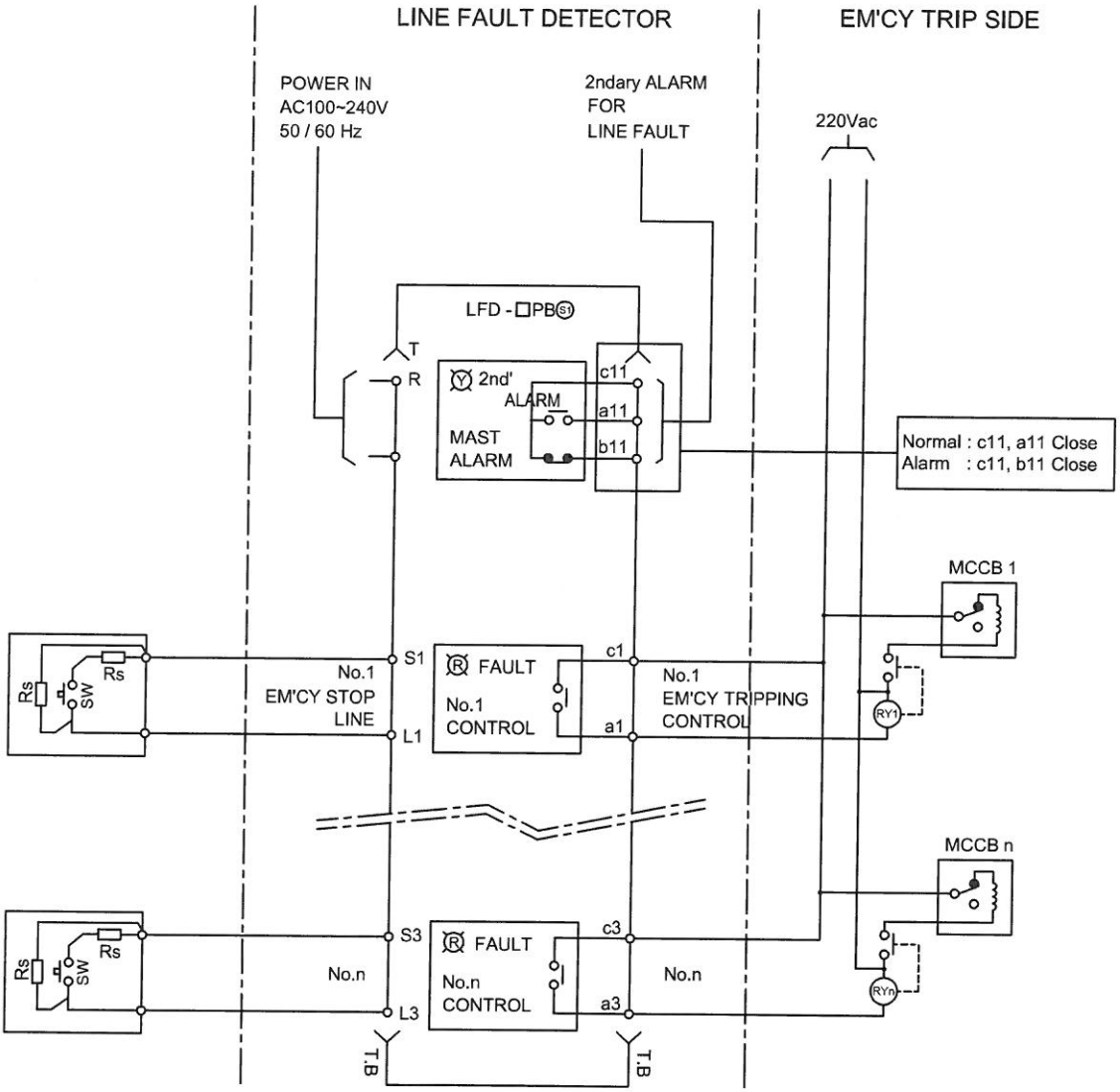


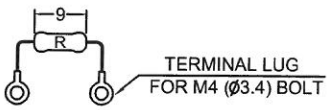
LINE FAULT DETECTOR (LFD-□PB□)

6. APPLICATION CIRCUIT

5) SYSTEM DIAGRAM

② LFD-□PB(S1)



※ INDIVIDUAL CIRCUIT(1)
Rs : 10KΩ 1/2W

* ACCESSORY