

### Option-1. Looping (Protect smaller current by looping option)

Some motor size may require one-third or one-fourth of particular EOCR current range. These installations can be accommodated by looping the motor wire 2 or 3 times through the integral current transformers of the EOCR. This reduces the number and type of relays inventoried for spare purposes. Each additional loop will increase the current measured as indicated by the following chart.

Option	Current Setting Range(A)	Time of Passing (#)	No. of Loops (#)
05 Type	0.5 - 6	1	0 --- Fig 1
	0.25 - 3	2	1 --- Fig 2
	0.17 - 2	3	2
Looping Option	0.12 - 1.5	4	3
	0.10 - 1.2	5	4

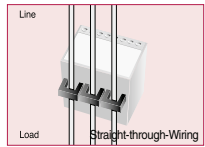


Fig 1

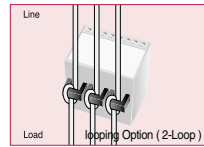
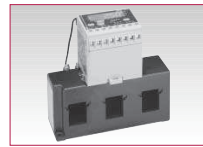


Fig 2

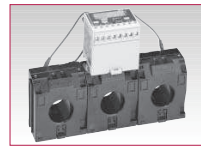
### Option-2. External Current Transformer Option (Ext. CT option protect bigger current)

Ordering option - 05 type of each model fitted to an external current transformer can achieve higher ampere ranges.

Option	Current Setting Range(A)	Current Ratio of Ext. CT
05 Type	0.5 - 6	NIL
	5.0 - 60	NIL
	10 - 120	100 : 5
60 Type	15 - 180	150 : 5
	20 - 240	200 : 5
	30 - 360	300 : 5



External 3CT Option

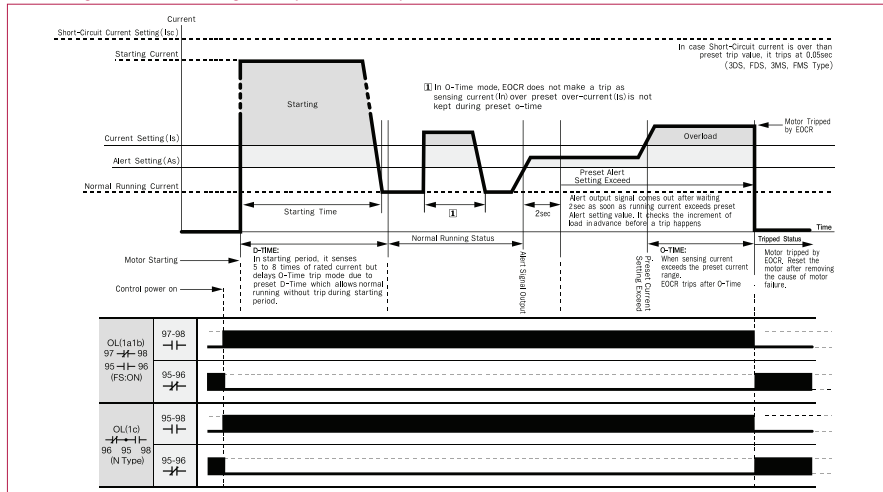


External SR-CT Option

### EOCR Type Table for 3phase Motor

Current Setting Range (Adjustable) (A)	Capacity of 3 Phase Motor (kW/HP)			TYPE	Cable Size		Remark			
	AC220(V)		Current (A)		AC380/440(V)					
0.5 - 6	0.75	1	4.8	1.5	2	4.2 / 3.6	05	3.5	28	Assemble with External CT
5.0 - 60	5.5	7.5	26	22	30	49 / 46	60	5.5-14	67	
10 - 120	22	30	93	37	50	84 / 73	100:05	38	130	
20 - 240	37	50	160	75	100	163 / 141	200:05	100	240	
30 - 360	55	75	230	132	175	263 / 227	300:05	250	430	
40 - 480	95	125	360	190	250	376 / 325	400:05	325	495	
50 - 600	110	150	440	220	300	423 / 390	500:05	400	565	
60 - 720	150	200	570	300	400	602 / 520	600:05	500	625	

### EOCR Setting Pattem / Motor Running Current (3DD & FD Series)



### Overview

#### D-TIME(Delay Time):

When starting the motor, its current is increasing 5 to 8 times of rated current and its starting time is different according to the load of motors. D-Time knob(Mode) has a function to delay the trip during starting period even if starting current exceeds over preset over-current value.

#### O-TIME (Operating Delay Time):

When EOCR senses over-current which exceeds over preset over-current range. O-Time knob(Mode) delays trip until EOCR trips after detecting over-current during running period. In case of Definite type, Over-current protection is provided by the relay tripping when motor operating current(I<sub>n</sub>) exceeds EOCR current setting(I<sub>s</sub>) for a period greater than preset trip time(O-Time), while Inverse type shows that Over-current protection is provided by the relay tripping according to the Time-Current Characteristic Curve.

#### RESET

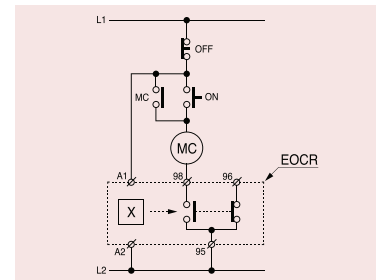
Depressing the RESET button or interrupting power supply resets the relay immediately. Depress the RESET button on the facia for manual reset. Electrical Reset can be achieved by interrupting power supply in remote area. Auto Reset can be achieved automatically according to R-Time setting. Auto reset function is selectable by using mode switch. EOCR with fixed auto reset time or adjustable auto reset time is applicable.

#### TEST

It has function to check and confirm the status of the motor by depressing the TEST button on the facia. To keep depressing the TEST button makes relay trip after the elapse of D-Time and/or O-Time. Once TEST is done, then reset the relay by depressing RESET button. The test function of Digital EOCR with 7 Segment Display CANNOT be performed during motor running, but possible when motor is stopped.

### N Type ( Fail-safe Mode / No Volt Release )

NVR(No Volt Release)/On(N Type)  
Fail-safe

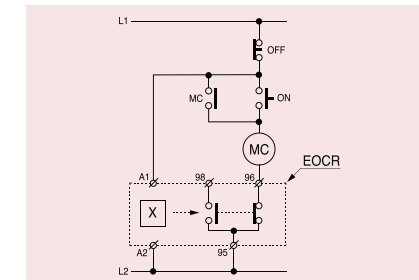


The output of relay is normally energized with control power applied. It is called NVR (No Volt Release) function and recommended to use output mode for safe protection. It is selectable by DIP switch or FS Mode

Caution) NVR function is designed to offer more accurate protection for motor. The motor can not start in case there is no power supply to EOCR or the span of life of motor is gone through. It is able to find the problem in its process in advance.

### R type ( Non-Fail-Safe Mode )

NVR(No Volt Release)/Off (R Type)  
Non-Fail-safe



In all case, the failure of the control voltage may not interrupt the process. It is selectable by DIP switch or FS Mode

Caution) In case of Non-Fail-Safe mode, periodical checking is required in case there is abnormal power supply to EOCR or the span of life of motor is gone through.

Classification		EOCR-3DE Series			EOCR-3M Series			
Model								
Model		3DE	3EZ	3DM	3MS	3MZ	3M4Z	
Wiring	Wire-through	○	○	○	○	○	○	
	Terminal	-	-	-	-	-	-	
Mount	Flush Mounting	-	-	-	-	-	-	
	Panel Mounting	○	○	○	○	○	○	
Protection	Overcurrent	Basic Type	0.5-60A		05: 05-10A, 60: 5-70A	05: 05-10A, 20: 5-20A	05: 05-10A, 60: 5-70A	05: 05-10A, 60: 5-70A
		Use external CT	1-960A(10.5-800.5)		1-960A(10.5-800.5)			
	Undercurrent		0.5-less than preset O.C / OFF		0.5-less than preset O.C / OFF			
		Locked Rotor	Running	0.5, 1-10sec		1-10sec		
		Starting	Within 0.5sec after D-Time		Within 0.5sec after D-Time			
		Phase Loss	Within 3sec		Within 3sec			
		Phase Reversal	0.1-0.3sec		0.1sec			
		Phase Unbalance	Within 8sec		Within 8sec			
		Ground Fault	-	A:0.02-3A, B:0.2-10A	-	-	A:0.03-2.5A, B:0.2-10A	-
		Short Circuit	-	-	-	0.05sec	-	-
Alert Output		A/F/H/U		A/F/H	-	-	-	
Trip Cause Memory		Last 3 Trip Cause			Last 1 Trip Cause			
Trip Cause Display		○	○	○	○	○	○	
Display		4-Digit 7segment			5-Digit 7segment			
Running Time Memory & Setting		-	-	○	○	○	○	
Bar-Graph		-	-	○	○	○	○	
Current Signal Output		-	-	-	-	-	4-20mA	
Setting SW. Type		Button SW.			Rotary SW & Button SW.			
Ground Fault Current Sensing		-	Zero Phase Current	-	-	Zero Phase Current	-	
Contacts	Mode	O.L:2-SPST(1a1b)	O.L:1-SPST(1a)	O.L:2-SPST(1a1b)	O.L:2-SPST(1a1b)	O.L:1-SPST(1a)	O.L:2-SPST(1a1b)	
		AL:1-SPST(1a)	GR:1-SPST(1a)	AL:1-SPST(1a)	S.C:1-SPST(1a)	GR:1-SPST(1a)	-	
Rating		3A/250VAC, Resistive			3A/250VAC, Resistive			
		24VAC/DC, 220VAC ± 15%, 110VAC ± 15%			24VAC/DC, 85-250VAC/DC			

● Panel Mounting / Flush Mounting makes it easier for use.

- Digital Ammeter is installed at the front cover of panel door in Flush Mounting type. It makes possible to check sensing current and finding the cause of trip with tripped current easily, to set current and O-time by simple button selection without removing unit from panel.  
- Panel Mounting type with Digital Ammeter is installed inside the MCC panel and Just Operator is Possible to adjust it.

● Following conditions should be considered in case of installing EOCR.

- Overcurrent & Phase Loss must be included as basic protective function in the point of view for its law and regulation.  
- Earth leakage current protection must be added against moisture and humidity conditions.  
- In case you need to sense the overload increasing, Alert function must be added.  
- If you need to confirm the current of many motors in one place , Current signal output transducer function (4-20mA) must be added.  
- Short Circuit protection must be added if you protect line damage caused by Short Circuit.  
- EOCR with 3CT is recommended to not only 3 φ 3w, but also 3 φ 4w condition.

● Window / Terminal makes it easier for installation.

- Wire is passing through CT without cutting, that is much easier for installation. It has also more convenient application to external CTs.  
- As for Terminal type, display part is Flush Mounting type but Converter is Panel Mounting type with its application less than 60Amp.

● The same diameter of Digital Ammeter to conventional Analogue Ammeter makes it easier for installation.

- Ammeter Selector SW is not necessary as 3 phase current is displayed L1, L2, L3 in order every 5 seconds.  
- It is easy to install Ammeter by using cap cover and it saves install time.

● Alert Output Mode

- "A" (Ampere Relay) : Energized when sensing current  
- "H" (Holding) : ON-OFF output mode

- "F" (Flicker) : Flicker

- "U" (Under Current Mode) : "AL" oupput is transferred to UC (3DD/FD version "E")

		EOCR-FDE Series		EOCR-FM Series				EOCR-P Series	
		FDE	FEZ	FDM	FMS	FMZ	FM420	PMZ	
20		○	○	○	○	○	○	○	
		○	○	○	○	○	○	○	
	○ (Display)	○ (Display)	○ (Display)	○ (Display)	○ (Display)	○ (Display)	○ (Display)	-	
	○ (Converter)	○ (Converter)	○ (Converter)	○ (Converter)	○ (Converter)	○ (Converter)	○ (Converter)	○	
30: 5-70A		0.5-60A		05: 05-10A, 60: 5-70A	05: 05-10A, 20: 5-20A	05: 05-10A, 60: 5-70A	05: 05-10A, 60: 5-70A	05: 05-10A, 60: 5-70A	05-60A
		1-960A(10.5-800.5)		1-960A(10.5-800.5)				1-3600A(10.5-300)	
		0.5-less than preset O.C / OFF		0.5-less than preset O.C / OFF				0.5-less than preset O.	
		0.5, 1-10sec		1-10sec				OFF/0.1-10sec/Adju	
		Within 0.5sec after D-Time		Within 0.5sec after D-Time				Within 0.5sec after D	
		Within 3sec		Within 3sec				Within 3sec	
		0.1-0.3sec		0.1sec				0.1-0.3sec	
		Within 8sec		Within 8sec				Within 8sec	
		-	A:0.02-3A, B:0.2-10A	-	-	A:0.03-2.5A, B:0.5-10A	-	Definite: 0.03-10A, Invers	
		-	-	-	0.05sec	-	-	0.03-0.05sec	
		A/F/H/U	-	A/F/H	-	-	-	-	
		Last 3 Trip Cause			Last 1 Trip Cause			Last 3 Trip Cause	
		○	○	○	○	○	○	○	
		4-Digit 7segment			5-Digit			5-Digit	
		-	-	○	○	○	○	○	
		○	○	○	○	○	○	○	
nA		-	-	-	-	-	4-20mA	4-20mA	
		Button SW.			Rotary SW. & Button SW.			Button SW.	
		-	Zero Phase Current	-	-	Zero Phase Current	-	Zero Phase Current	
1(1a1b)	Mode	O.L:2-SPST(1a1b)	O.L:1-SPST(1a1b)	O.L:2-SPST(1a1b)	O.L:2-SPST(1a)	O.L:1-SPST(1a)	O.L:2-SPST(1a1b)	O.L:SH : 2-SPST(1a	
		AL:1-SPST(1a)	GR:1-SPST(1a)	AL:1-SPST(1a)	SC:1-SPST(1a)	GR:1-SPST(1a)	-	GR : 1-SPST(1a	
		3A/250VAC, Resistive			3A/250VAC, Resistive			3A/250VAC, Resist	
		24VAC/DC, 220VAC ± 15%, 110VAC ± 15%			24VAC/DC, 85-250VAC/DC			24VAC/DC, 85-250V	

EO CR-3DE/FDE

- MC
- Re
- Ov
- Un
- Tir
- -0.5
- UI
- OFF
- DiK
- /Tri
- Tri
- Me
- Th
- Fit
- Re

CU Based

al Time Processing / Higher Precision

ercurrent Protection Range: 0.5-60A, Wide Range Protection (Use with external CT from 11 to 960A, Direct application without CT up to 60A)

ndercurrent Protection Range: 0.5-59A / OFF (Use with external CT less than 960A)

me Characteristic for Overcurrent

i-10A : Definite / Inverse Selectable, Over 11A : Definite(Use with external CT in case using Inverse time)

C' output is used as common to "OC" output. When choosing "U" in AL mode, "AL" mode becomes

gital display / 3 Phase Current Display: Digital Ammeter (Every 5 seconds)

pped Cause Digital Display: Easy Troubleshooting

ip Cause Memory: Last 3 trip check function. Possible to check with tripped trip cause and current

annual / Electrical Reset

ie tripping relay is normally energized with control power supply. (Selectable)

to a variety of environment as Terminal & Window type.

stisity Strengthened against variable frequency device such as inverter : 20-400Hz.



# EOCR-SSD

Series



- PFZ
- 
- 
- (Display)
- (Converter)
- A
- ~3000:5)
- et O.C / OFF
- /Adjustable
- ter D-Time
- sec
- sec
- sec
- verse: 0.03-1A
- 5sec
- 
- Cause
- 
- t
- 
- 
- A
- W.
- Current
- ST(1a1b)
- ST(1a)
- Resistive
- ≥50VAC/DC

## Protection

Protective Item	Trip Time	Description
Over-current	O-Time	$I_s < I_n$
Phase Loss	3sec	$[(MAX - MIN) / MAX] \times 100 > 90$
Locked Rotor	0.5sec after elapse dt	$\geq 3$ times OC setting value

## Specification

Over-current Setting	Current	05	0.5 ~ 6A
		30	3 ~ 30A
		60	10 ~ 60A
	Starting delay time	D-Time	1 ~ 30sec
		Trip time	O-Time
Reset		Manual / Electrical	
Operating t-c characteristic		Over-current	Definite
Tolerance	Current	$I < 1A : \pm 0.05A, I \geq 1A : \pm 5\%$	
	Time	$t \leq 3S : \pm 0.2s, t > 3s : \pm 5\%$	
Environment	Temperature	Operation	-20°C ~ -60°C
	Humidity	Store	-30°C ~ -80°C
Control Power		• 110 : 110VAC ± 15%, 50/60Hz • 220 : 220VAC ± 15%, 50/60Hz • 440 : 440VAC ± 15%, 50/60Hz • 24 : 240VAC/DC	
Contact Rating		2-SPST	3A / 250VAC , Resistive
Insulation	Between casing and circuit	Over 10 MΩ , DC500V	
Dielectric Strength	Between casing and circuit	2000VAC 60Hz, 1min	
	Between open contacts	1000VAC 60Hz, 1min	
	between circuit	2000VAC 60Hz, 1min	
Installation		35mm Din Rail or Panel Mounting	

- MCU(Micro Controller Unit) based / 2-CT Type
- Real Time Processing / Higher Precision
- Current Setting Renge - 05Type : 0.5 ~ 6A / 30Type : 3 ~ 30A / 60Type : 10 ~ 60A
- Digital display : trip cause / easy troubleshooting
- Reset : Manual (instantaneous) / Electrical (remote)
- Load selection by DIP switch : Single phase(1P) / Three phase(3P)
- Fail safe(N) / Non-fail safe(R)

# EOCR-M1 Series

## Features

- MCU(Microprocessor Control Unit) Based
- Convenient installation
  - PMZ : Panel Mounting Type
  - PFZ : Panel Flush Mounting Type
- Easy to set
- 3 Integral Current Transformers
- Multiple Protection Functions
- Wide range protection from 0.1A to 3600A by just 1 model
- Built-in digital ammeter
- Total running time display
- Current display like L1→L2→L3→GF...
- Bar-Graph monitoring on impending overload trip
- Selectable time-current characteristics [Inverse / Inverse based on thermal Memory(Thermal Inverse) / Definite]
- 4-20mA current loop communications
- Test function
- Selectable Fail-safe operation / No volt Release (FS : ON)
- Operates in wide ambient temperature range

## Comparison Table of Model

EOCR	PMZ	FMZ
Protection		
Over - current	●	●
Under - current	●	●
Short - current	●	●
Phase Loss	●	●
Phase Unbalance	●	●
Phase Reverse	●	●
Locked Rotor	●	●
Ground Fault	●	●
Current output 4-20mA	●	●

## External CT Option

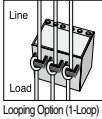
Higher ampere ranges can be achieved by setting CT Ratio in "ct" mode to take an external current transformer, and the actual motor current display can be provided

Current Setting Range (Amps)	Number of Conductors thru CT windows	External CT Ratio	Setting of CT Ratio	Remark
0.5 - 60A	1	-	OFF	Wide Range
0.25 - 3.0A	2	-	2t	
0.1 - 1.2A	5	-	5t	
1 - 12A	1	10 : 5	10	
1.5 - 18A	1	15 : 5	15	
2.0 - 24A	1	20 : 5	20	
2.5 - 30A	1	25 : 5	25	
3.0 - 36A	1	30 : 5	30	
4.0 - 48A	1	40 : 5	40	
5 - 60A	1	50 : 5	50	
6 - 72A	1	60 : 5	60	
7.5 - 90A	1	75 : 5	75	
10 - 120A	1	100 : 5	100	
12 - 144A	1	120 : 5	120	
15 - 180A	1	150 : 5	150	
20 - 240A	1	200 : 5	200	
25 - 300A	1	250 : 5	250	
30 - 360A	1	300 : 5	300	
40 - 480A	1	400 : 5	400	
50 - 600A	1	500 : 5	500	
60 - 720A	1	600 : 5	600	
75 - 900A	1	750 : 5	750	
80 - 960A	1	800 : 5	800	
100 - 1200A	1	1000 : 5	1000	
120 - 1800A	1	1500 : 5	1500	
200 - 3000A	1	2000 : 5	2000	
250 - 3000A	1	2500 : 5	2500	
300 - 3600A	1	3000 : 5	3000	

## Looping Option

Smaller ampere ranges than particular EOCR current range can be covered by looping the motor wire 2 or 3 times as under described.

	No of Loops	Current Ratio of Ext. CT	Current Setting Range (A)
0.5 Type	0	1	0.5 - 10
	1	2	0.25 - 6
	2	3	0.17 - 3.3
	3	4	0.12 - 2.5
Looping Option	4	5	0.1 - 2



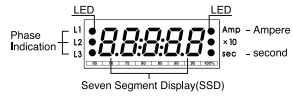
## Protection Feature

Function	Description	Selection
Over-Current	When the motor operating current(In) exceeds preset "oc" setting, the relay will trip after preset O-Time in "of" setting. The amperage of In(operating current) will not effect relay trip time.	Otc:dE Selection Curve-2
	The tripping time of relay depends on the amperage of In (operating current) according to time-current characteristics	Otc:In Selection Curve-1
Under-Current	Thermal Inverse characteristics is adopted inverse time-current characteristics based on thermal memory. If Otc:dE or Otc:In is selected, accumulated thermal memory is cleared (Automatically reset)	Otc:th
	This is for idle/dry running protection. The relay operates when the operating current is less than preset "uc" current after preset "ut" time elapses.	Definite time
Phase Loss	The relay will be operated within 3sec. when the phase failure occurs. This function works during D-Time. If this function is not necessary, it can be deleted by selected PL:OFF	PL:on Selection
Phase Unbalance	The relay operates within 8sec. when the current difference among 3phases is greater than preset % of unbalance. The calculation formula is (Max-Min)/Max current x 100	Ub:6 shows 6% selected
Phase Reversal	In the event of wrong phase sequence, relay will be operated in 0.1sec. Phase reversal protection function can be disabled by setting RP:OFF	RP:on Selection
Ground Fault	Ground fault protection is provided by the relay tripping sensed by Zero Phase Current Trasformer (Core Balanced Current Transformer) The relay shows the leakage current during operation. The characteristic of operating time can be selected for Etc:dE or In.	Definite 0.03-10A inverse 0.03-1.0A
Locked Rotor	The setting range is 2-10 times of oc setting. If the starting current exceeds more than setting value after preset D-Time elapses, the relay will be energized within 0.5sec. This function is available on definite time characteristic. It can be deleted by setting Lc:OFF	Disable on inverse characteristic During D-Time
Stall	The setting range is 1-10sec. If the operating current exceeds more than 180% of preset "oc" setting, the relay will be energized after the preset "st" time elapses. It can be deleted by setting Sc:OFF which makes St:OFF automatically(operating time of stall)	Disable on inverse characteristic After D-Time

# EOCR-M1 Series

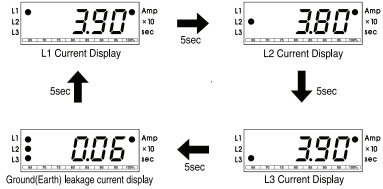
Digital Over Current Relay

## LED Display



## Digital Ammeter

3 phase motor currents (In) and ground(earth) leakage current are displayed in sequence on the LED display.



## Digital Trip Cause Indication / Easy Troubleshooting

When EOCR-M1 series relay trips, the cause of trip is displayed on the LED display. The displayed trip cause assures easy troubleshooting

### Fail-safe & Non-fail-safe

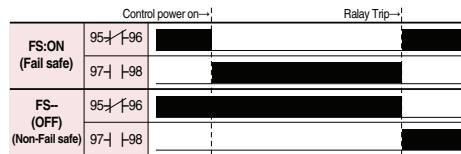
The tripping relay can be operated in a fail-safe or non-fail-safe mode

### Application of the Fail-safe Connection

Fail safe setting in "FS" mode : ON  
The tripping relay is normally energized with control power supply

### Application of the Non-fail-safe Connection

In all cases, the failure of the control voltage may not interrupt the process.



## Test

This is the self-test of this product, checking function of sequence after the installation. If the relay enters into this mode, it begins its count down preset value of O-Time after waiting 3sec and becomes trip state as showing "END" message that means this relay is ready to work "END" message of this test is also stored in "Fault" mode as last trip. While motor is running, output relay contact is not switched to prevent unnecessary trip

## Reset

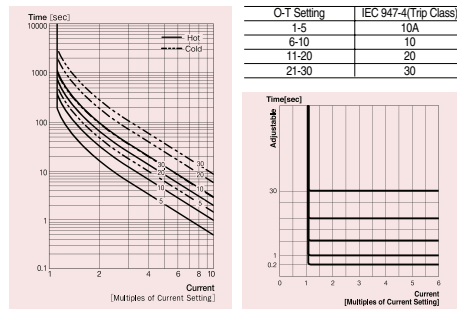
It can be selected by rt:H-r, rt:E-r or rt:A-r in rt mode.  
The rt means reset type and the meaning of H-r, E-r and A-r are hand, electrical and auto reset respectively.  
The relay can be reset by depressing the reset button on relay facia -rt:H-r, interruption of control power on A1, A2-rt:E-r and by setting of automatic reset time from 0.2sec to 20min(indication : 20n) -rt:A-r and A:0.3

## Examples of Trip Cause Indication

<ul style="list-style-type: none"> <li>Over-current Trip Operated by max.current among 3 phases</li> </ul>	
<ul style="list-style-type: none"> <li>Under-current Trip Operated by min.current among 3 phases</li> </ul>	
<ul style="list-style-type: none"> <li>Locked Rotor Trip Operated by Locked Rotor in starting state The highest current is L1 phase</li> </ul>	
<ul style="list-style-type: none"> <li>Stall Trip Operated by Locked Rotor in operating state L1 phase current reaches stall setting value</li> </ul>	
<ul style="list-style-type: none"> <li>Phase Reversal Trip Operated by Reversal Trip</li> </ul>	
<ul style="list-style-type: none"> <li>Phase Unbalance Trip Operated by Phase Unbalance Trip The Lowest current in L2 phase</li> </ul>	
<ul style="list-style-type: none"> <li>Phase Loss Trip Phase Loss Trip The indication Shows L1 phase loss.</li> </ul>	
<ul style="list-style-type: none"> <li>Ground Fault Trip Operated by Ground fault current</li> </ul>	

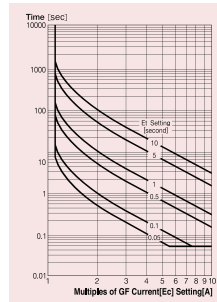
Each phase current is displayed in order whenever depress UP/DN switch every once after entering into "trip" mode

## Time-Current Characteristic Curve



Curve-1 Inverse

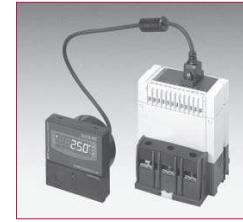
Curve-2 Definite



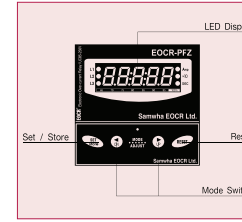
Curve-3  
Inverse time characteristics of EC  
(Ground current range : 0.03-1A)

# EOCR-PFZ

Digital Over Current Relay



EOCR-PFZ



- MCU Based / Panel Mounting Type
- 3 Integral Current Transformers
- Over-current, Under current, Phase Loss, Phase Unbalance, Phase Reversal, Ground Fault, Locked Rotor Protection and current output(4-20mA)
- Digital Ammeter & Easy Troubleshooting
- Bar-graph Type LED Display
- Selectable Trip Time-Current Characteristics
- Independently Adjustable Starting Trip Delay and Trip Time

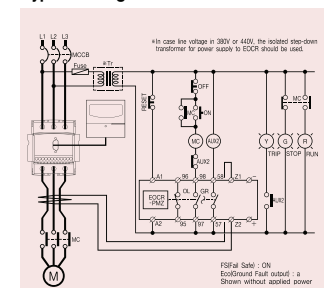
## Protection

EOCR-PFZ			
Protective Item	Trip Time	Protective Item	Trip Time
Over-current	O-TIME	Short Circuit	0.03-0.05sec
Under-Current	Preset Ut time	Ground fault	Preset Et time
Phase reversal	3sec	Locked Rotor	0.5sec after d-time
Phase Unbalance	8sec	Stall	0.05-10sec

## Specification

Model	PFZ	
Current Setting Range	Over-Current(oc) Under-Current(uc) Ground Fault Current(Ec)	Refer to current setting range( page 19 ) Off / 0.5 - less than "oc" setting Off 0.3 - 10A : definite time characteristics 0.3 - 1A definite / inverse time characteristics, selectable
Time Setting	Starting Delay T ime(dt) Over-Current Trip Delay(ot) Under-Current Trip Delay(ut) Ground Fault Trip Delay(Et) Ground Fault Starting Delay(Et)	Off ~ 200sec, Adjustable 0.2 ~ 30sec Inverse Time 1.0 ~ 30class(30curves) 0.5 ~ 30sec, definite time characteristics, if "uc" mode is OFF, then OFF is displayed automatically in "ut" mode Definite / Inverse : 0.05, 0.1 - 1 - 10sec(curve-3) OFF / 1 - 10sec
Tolerance	Current Time	±5% ±5%
Control Power	220	85 ~ 250VAC/DC, 50/60Hz
Contact Rating	OL GR	2-SPST 1-SPST 3A/250VAC Resistive 3A/250VAC Resistive
Environment	Temperature Store Operation Humidity	-30 ~ 80°C -20 ~ 60°C 30 ~ 85% RH Non-Condensing
Display	7-Segment LEDs Bar-Graph	3 Phase current, Trip cause, Operating hour Load factor for current setting(50 ~ 100%)
Insulation		Between casing and circuit : over 10W, DC500V
Dielectric Strength	Between casing and circuit Between open contacts Between circuit	2000VAC, 60Hz, 1min 1000VAC, 60Hz, 1min 2000VAC, 60Hz, 1min
Electrostatic Discharge	IEC61000-4-2	Lever 3 : Air Discharge : ± 8kV, Contact Discharge : ± 6kV
Radiated Electromagnetic Field Disturbance	IEC61000-4-3	Lever 3 : 10V/m, 150MHz & 450MHz Portable transceiver
EFT / Burst	IEC61000-4-4	Lever 3 : ± 2kV, 1min
Surge	IEC61000-4-5	Lever 3 : 1. × 50μs, ± 4kV(0°, 90°, 180°, 270°)
1MHz Burst disturbance	IEC61000-4-12	Lever 3 : 2.5kV, 1MHz
Conducted Emission	EN5011	Class B

## Typical Wiring



EOCR-PFZ (Terminal Type)