INNOBIZ 기술혁신형중소기업 CE ISO KAB 특허

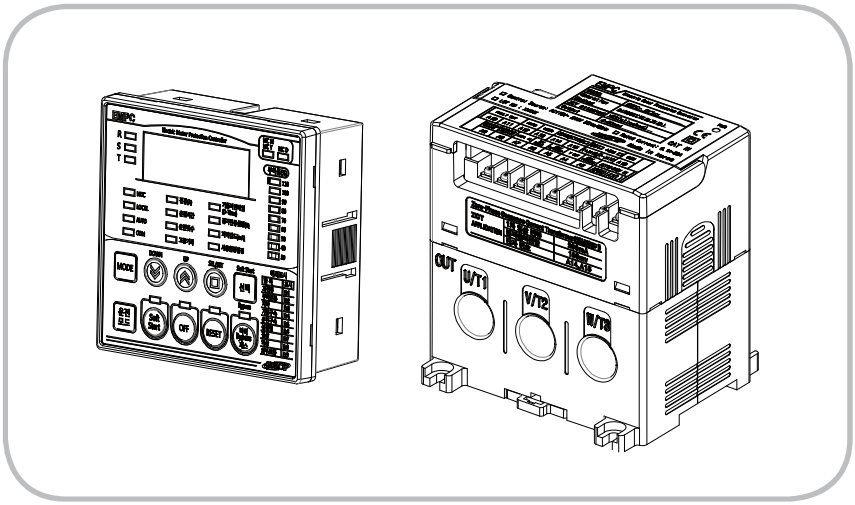
EMPC Series

Electric Motor Protection Controller

CE KC

www.ginice.co.kr / www.ginice.com

Product Overview



It, EMPC SERIES, is Electric Motor Protection Controller to save motor from overload with efficient starting, user-friendly functions.

It is digitalized motor protection relay with MCU(Microprocessor Controller Unit) installed. Real-time data processing and achievement of high-precision lead to reliability. It can protect motor from over-current, reverse phase, electric phase cut-off, unbalance, ground fault.

Product Features

◈ **Integration of components in motor control panel**

- Downsize the room for installation by integration of analogue components, such as timer, motor protection relay, protection relay, auxiliary contact, ZCT(Zero phase sequence current transformer).
- Reduce wiring of circuit board to 50% and consequently, improve to save manufacturing cost.

◈ **Simplifications of installation**

- Easy fixing DISPLAY with panel (BRACKET)
- Diversify user installations with bolt, DIN RAIL in control center.

◈ **Analogue components unity at door of MCC**

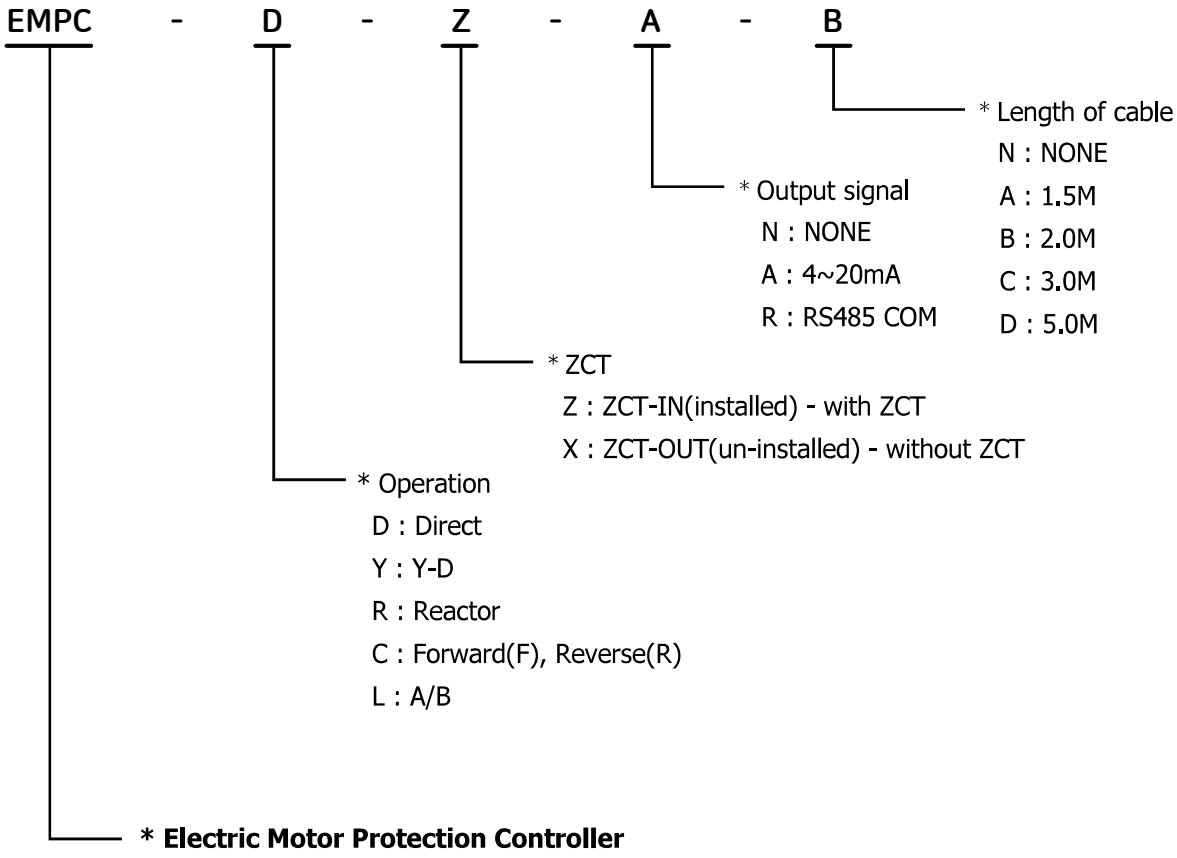
- DISPLAY unit to embody switches(ON, OFF, RESET), lamp(ON, OFF, RESET), operation converting switch, status display, etc. A cable of wiring to devices improves to save the cost.

◈ **DISPLAY unit to check the operation of motor.**

- Operation status of motor to be found in DISPLAY unit.

◈ **Easy maintenance by integrated components**

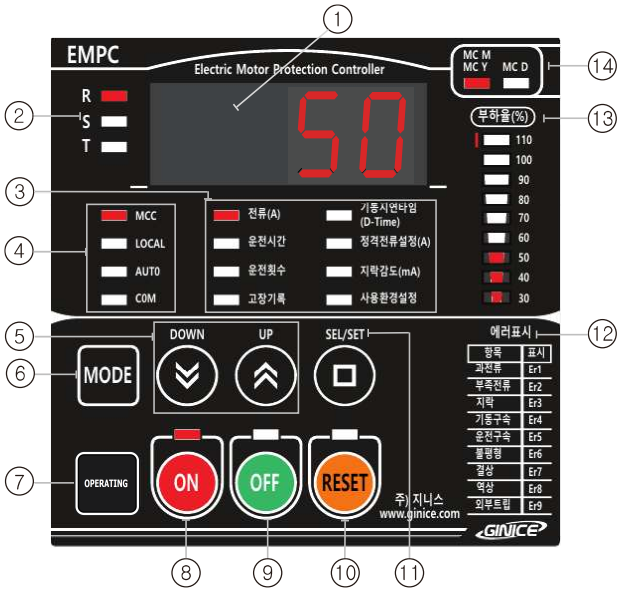
Order Configuration



Technical Specification

	Specifications
Usage	combination of single phase and 3 phase
Operation	direct, Y-D, Reactor, Forward(F)/Reverse(R), inverter/bypass, A/B, soft/bypass
Voltage	AC110~240V(Free voltage)
Frequency	50~60Hz(Free frequency)
Consumption pwer	5VA
Ambient Temp.	-10°C ~ 50°C(not frozen)
Ambient humidity	below 90%RH(Less than dew point)
Material	body :ABS(flame-retard) PC(flame-retard) BRACKET:ACETAL
Withstand voltage	2,000VAC/1min(between enclosure and terminal)
Certificates	CE KC
Weight	Appr. 650g

EMPC Display



① set-value and display
② R.S.T phase definition
③ 3-phase/operating time/operating cycles / break-down record/delay time of starting / rated current / ground fault sensing / Configuration
④ operation type ⑤ alter set-value ⑥ MODE
⑦ operating mode
⑧ motor operation ⑨Motor stop/emergency stop/exit after saving set-value.
⑩ Blink at Fault/ Blink at emergency OFF in AUTO operation
⑪ save set-value ⑫ error ⑬ load factor(%) ⑭ starting type

◈ OFF

- RESET LAMP flickers if "OFF" button is pressed while "LOCAL/AUTO" operating (Unlock with "RESET" button)

◈ Display of errors and causes

- EMPC (▭ error) LED flickering to check 1 ~ 5 errors

SEL/SET button to review errors in sequence

◈ Delay time of starting

- Initial value of EMPC, 8sec
- 8~10sec for air-supply(exhaust) fan

◈ Display and setting of rated current(A)

- EMPC initial configuration setting rated current range(_28) : 80A / rated current display and setting 5A
  (refer to the following when setting below 5A unavailable)

- With motor capacity at 1Ph 220V(0.4~0.8w), 3Ph 380/440V(0.4~2.2KW),
  set (_28) to 5A(0.1~5A) at configuration and
  set rated current of motor at rated current display and setting(A)

- Use external CT when motor capacity 3Ph 380/440V(above 37KW)

- At configuration,
  set (_28) to 5A(0.1~5A) and (_08) to 60 for external CT ratio initial value OFF(5~1000),
  200A of motor rated current at rated current display and setting(A)
  (For example : CT300/5A = 300÷5=60, 110,000÷380÷1.732x1.2=200A at 110KW)

- Convert _28 setting value to 5A automatically when setting value _08(external CT ratio) activated

- Convert to _08(external CT ratio) OFF when setting value _28(range of rated current) 80A activated

◈ Setting ground fault sensing

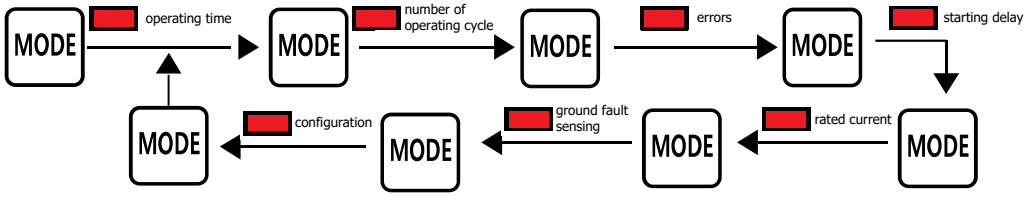
- Initial value 250mA

- Display ground fault from 250mA when LED flickers on ▭ ground fault sensing with MODE button pressed.

- Set 3sec for prompt ground fault sensing time(_22)

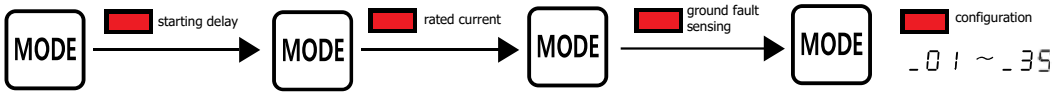
◈ MODE & Operating cycles

- EMPC MODE cycle

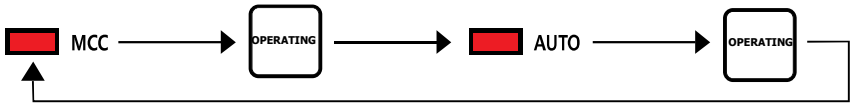


- Configurations : To be checked in "errors" and "configuration" at "EMPC ON" mode

- Convertible settings in "EMPC OFF" : "MODE" cycle



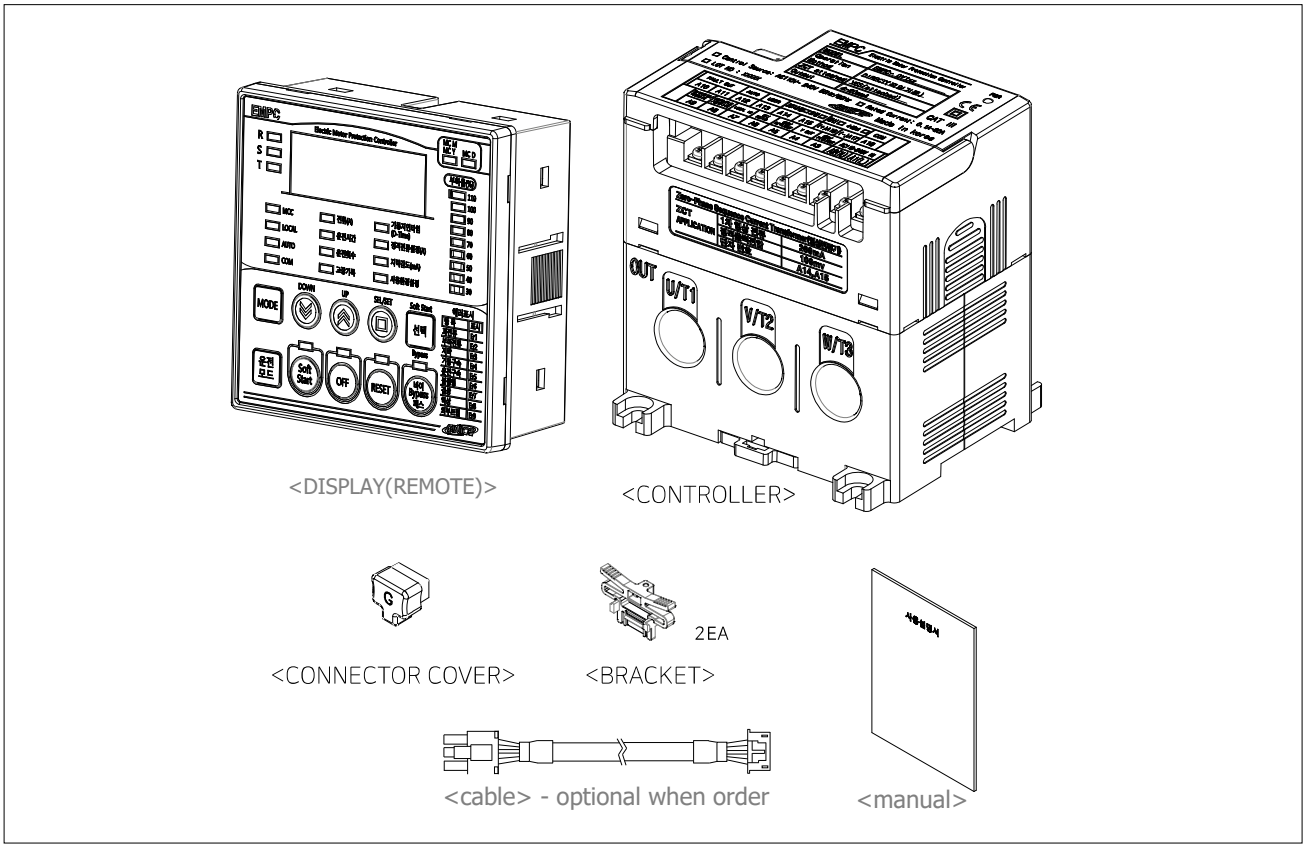
- Cycle of operating mode



◈ "LOCAL" input or removal

- Input "LOCAL" : LOCAL "LOCAL LED" flickering
- Remove "LOCAL" : Enter into "MCC" mode or "AUTO"mode by EMPC configurations(_19)

Parts



<DISPLAY(REMOTE)>

<CONTROLLER>

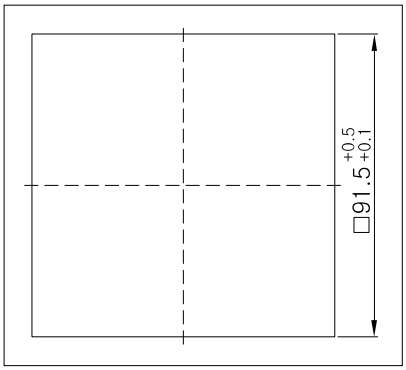
<CONNECTOR COVER>

<BRACKET>

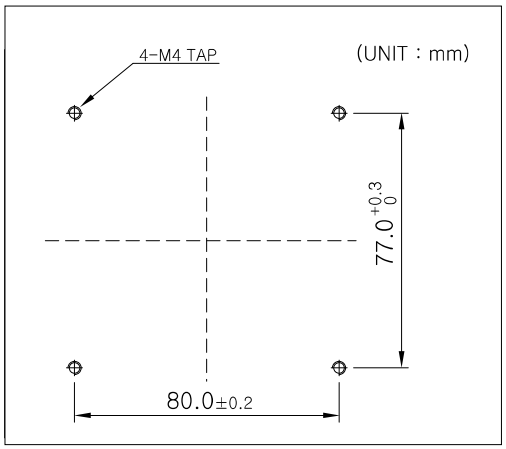
<cable> - optional when order

<manual>

Size of Panel to cut – out



<REMOTE>

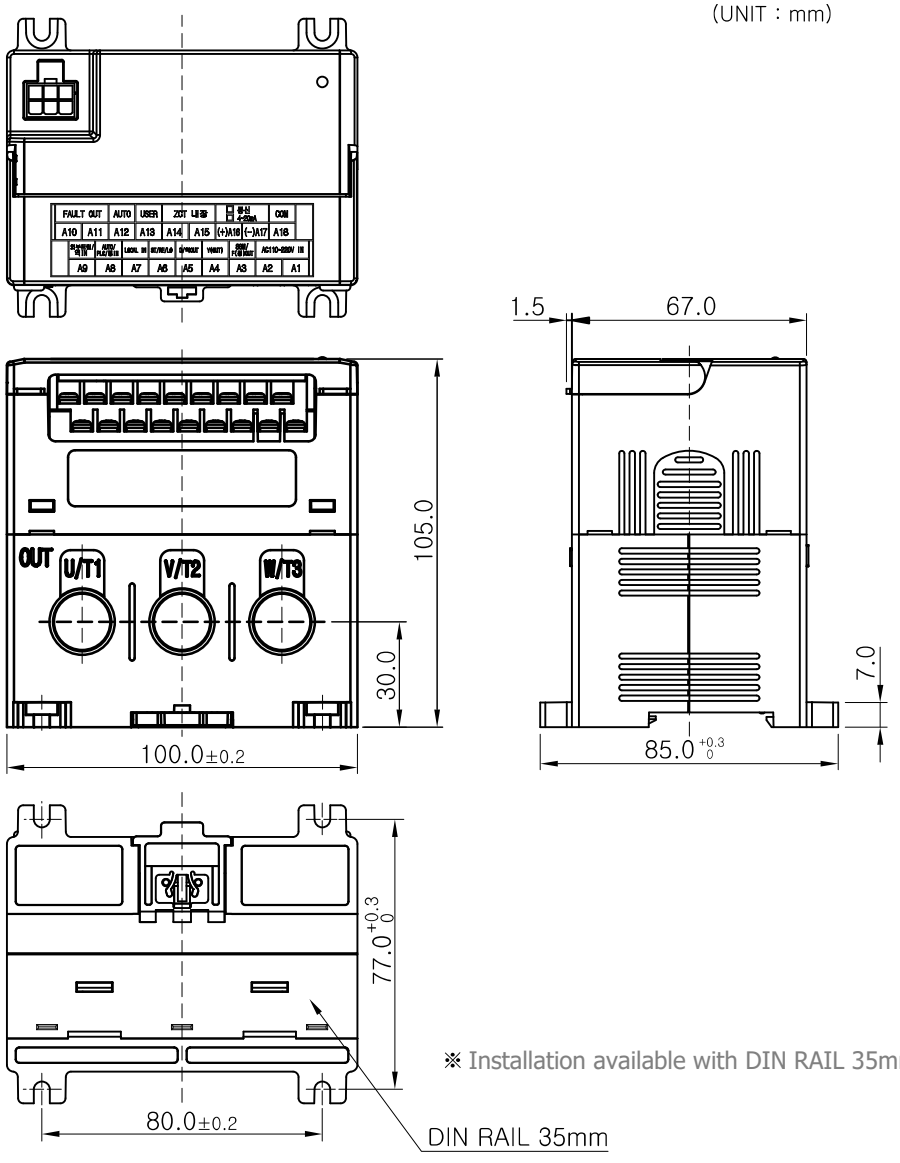


<CONTROLLER> - TAP machining

Dimensions

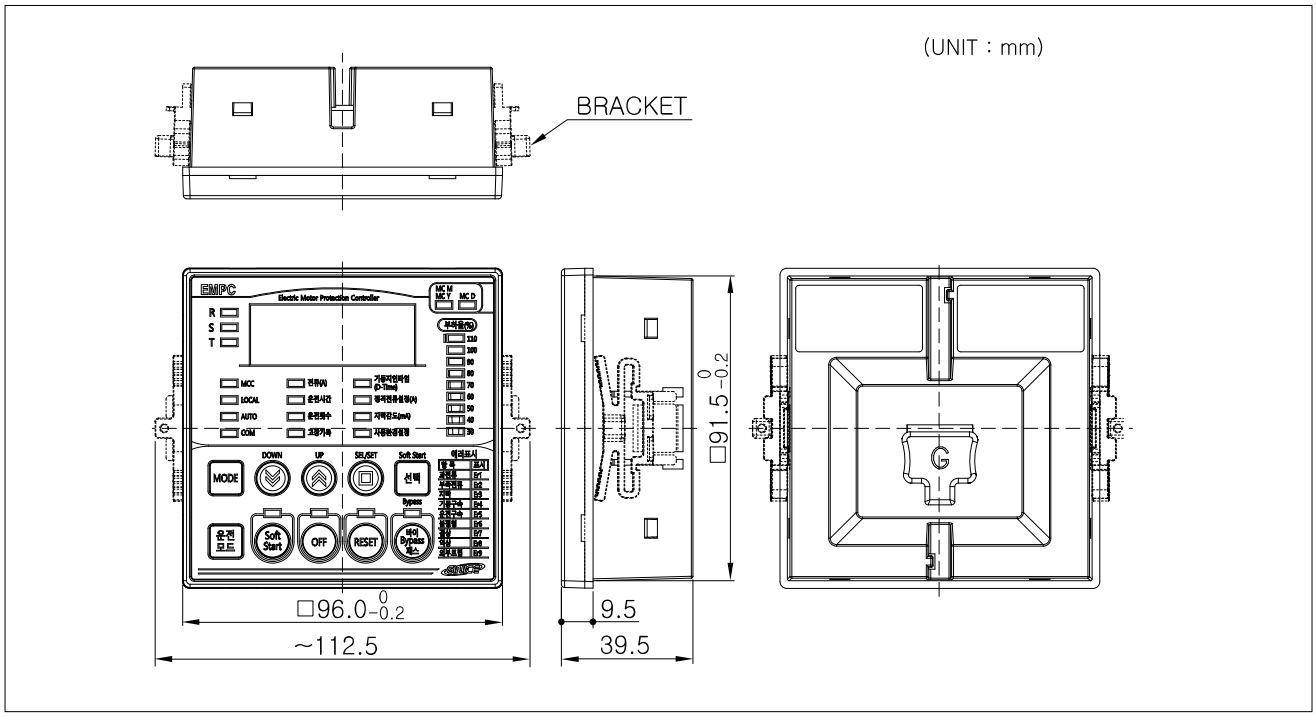
◈ Shape of Controller

(UNIT : mm)



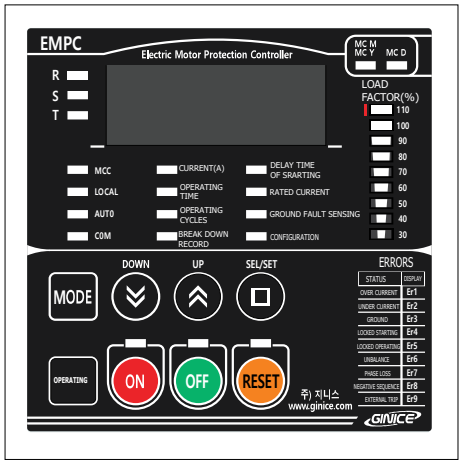
※ Installation available with DIN RAIL 35mm CONTROLLER

◈ Shape of remote controller

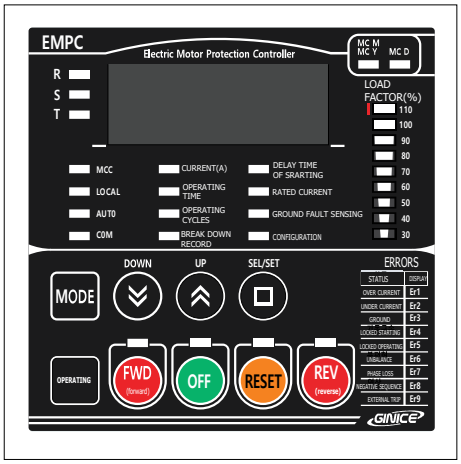


Type Of Remote controller

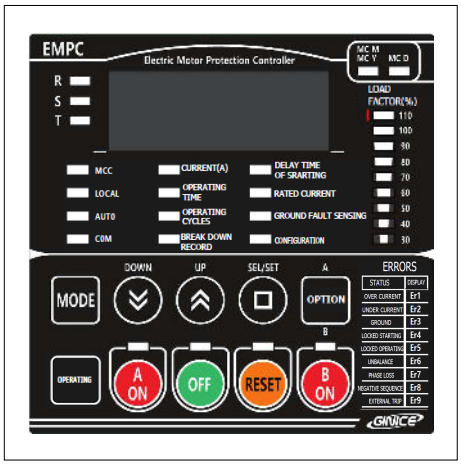
◈ Direct, Y-D, Reactor starting



◈ Forward(F), Reverse(R)starting

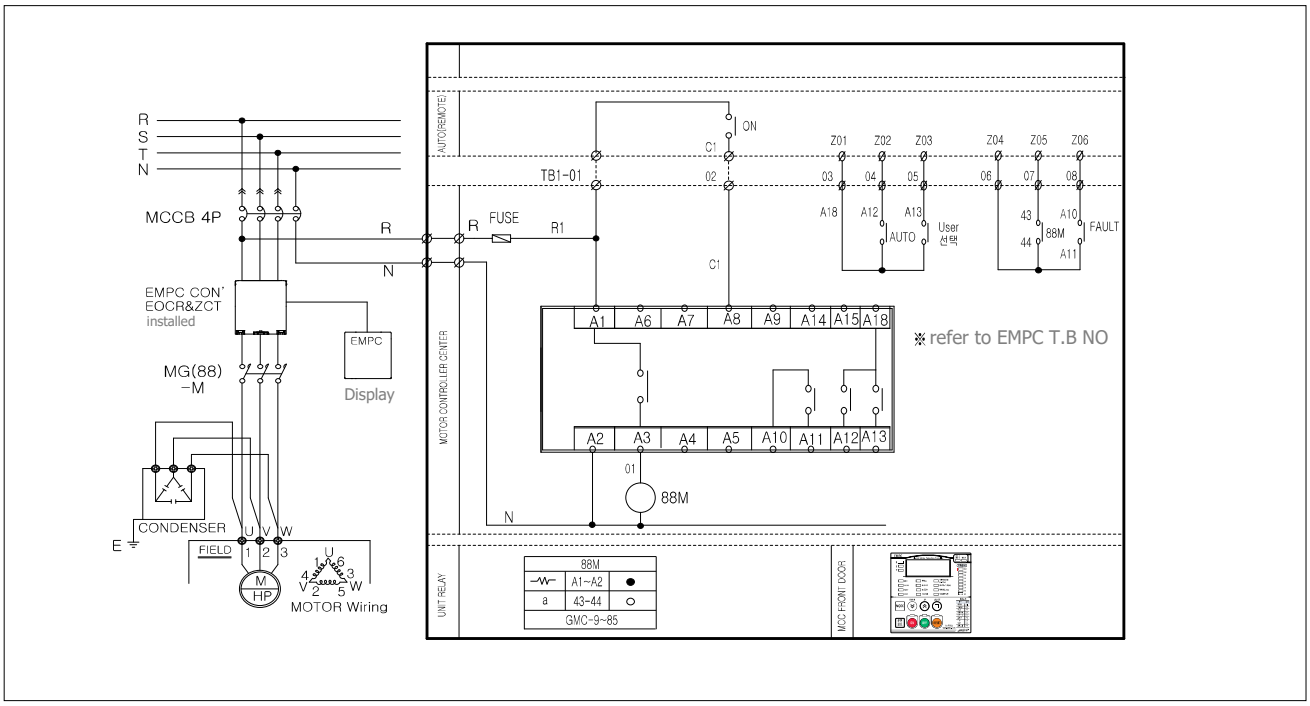


A / B

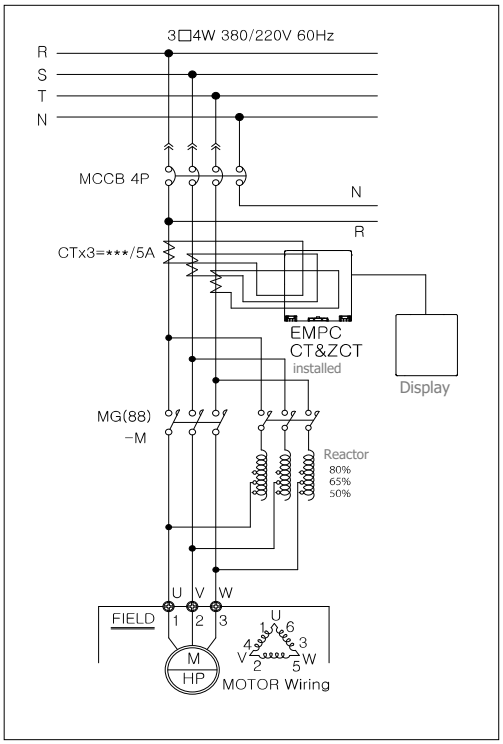

EMPC
Electric Motor Protection Controller
MC M
MC Y
MC D
R
S
T
LOAD
FACTOR(%)
110
100
90
80
70
60
50
40
30
MCC
LOCAL
AUTO
COM
CURRENT(A)
OPERATING TIME
OPERATING CYCLES
BREAK DOWN RECORD
DELAY TIME OF SRARTING
RATED CURRENT
GROUND FAULT SENSING
CONFIGURATION
DOWN
UP
SEL/SET
A
B
MODE
OPTION
ERRORS
STATUS
DISPLAY
OVER CURRENT
Er1
UNDER CURRENT
Er2
GROUND
Er3
LOCKED STARTING
Er4
LOCKED OPERATING
Er5
UNBALANCE
Er6
PHASE LOSS
Er7
NEGATIVE SEQUENCE
Er8
EXTERNAL TRIP
Er9
OPERATING
A ON
OFF
RESET
B ON
GMNICE

EMPC Sequence

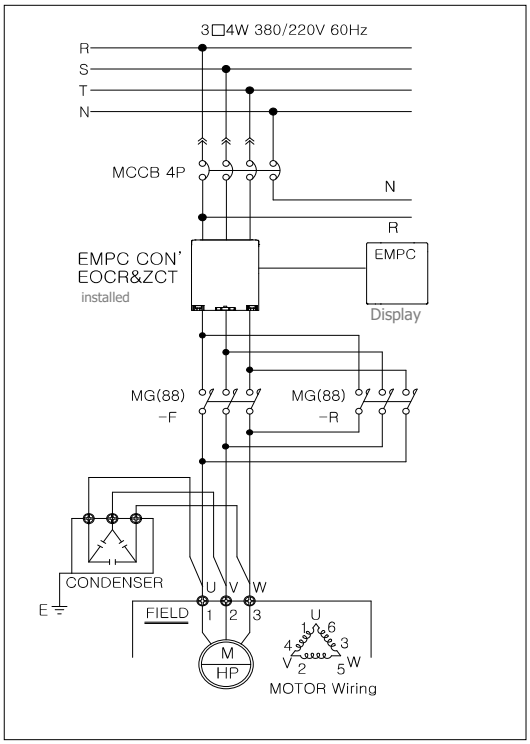
◈ Direct starting



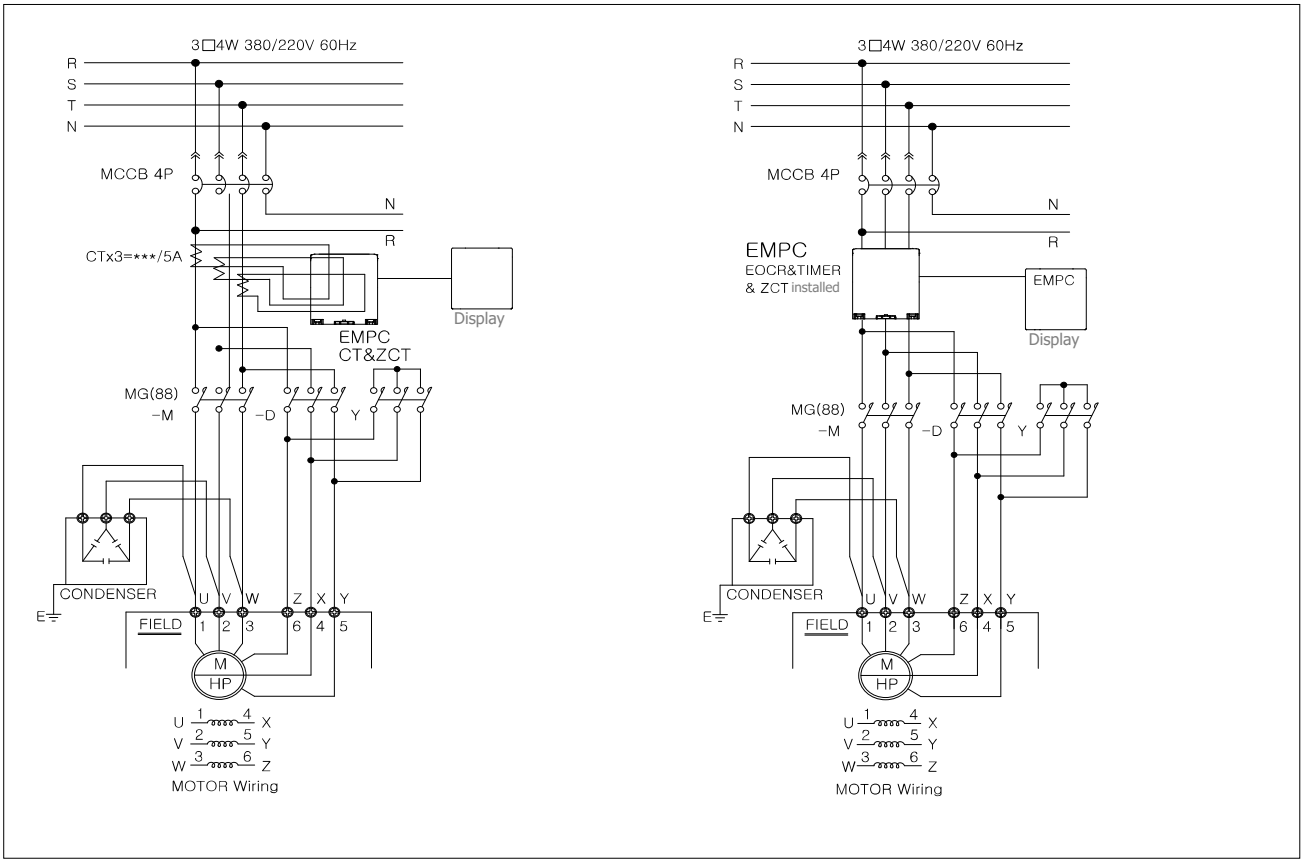
◈ Reactor starting



◈ Forward, Reverse starting



◈ Y-D starting



Functions of each terminal No.

FAULT OUT		AUTO	USER	ZCT installed		□ comm. □ 4~20mA		COM		
A10	A11	A12	A13	A14	A15	(+)A16	(-)A17	A18		
ext trip R IN	AUTO/ PLC F N	LOCAL IN	ST/RE/LO	D/R OUT	Y(OUT)	88M/ F OUT	AC110~240V IN			
A9	A8	A7	A6	A5	A4	A3	A2(N)	A1(L)		

EMPC T.B NO		
A1	(L) AC110~ 240V-IN	
A2	(N) 50/60Hz	
A3	88M/F (forward) OUT	
A4	88Y-OUT	
A5	88D/R (reverse) OUT	
A6	RESET/(inter) LOCK /OFF-IN	
A7	LOCAL(LOP)-IN	
A8	AUTO/F(forward) -IN	
A9	External trip / R(reverse) IN	
A10	FAULT OUT	
A11		
A12	AUTO OUT	
A13	ON/FAULT/(Grounding alert)OUT	
A14	ZCT(enclosed)/ZCT(attached) - alternative	
A15		
A16	(+) RS485 comm. (alternative)	
A17	(-) 4~20mA	
A18	COM	

contact point

※EMPC T.B NO