

CURRENT MONITORING SERIES RELAY CMR



Three Phase Products

Inverse Cat. No.	Definite Cat. No.	Current
P1 17A122CB0	P9 17B122AA0	3 A to 9 A
P2 17A222CB0	P10 17B222AA0	8 A to 24 A
P3 17A322CB0	P11 17B322AA0	15 A to 45 A
P4 17A422CB0	P12 17B422AA0	2 A to 5 A
P5 17A122OB0		3 A to 9 A
P6 17A222OB0		8 A to 24 A
P7 17A322OB0		15 A to 45 A
P8 17A422OB0		2 A to 5 A



Single Phase Products

Inverse Cat. No.	Definite Cat. No.	Current
P13 17C112EB0	P17 17D112DA0	3 A to 9 A
P14 17C212EB0	P18 17D212DA0	8 A to 24 A
P15 17C312EB0	P19 17D312DA0	15 A to 45 A
P16 17C412EB0	P20 17D412DA0	2 A to 5 A

2 A to 5 A Product can be used with External CT.

CAUTION:

- Always follow instructions stated in this product leaflet.
- Before installation, check to ensure that specifications agree with the intended application.
- Installation to be done by skilled electrician.
- Suitable dampers should be provided in the event of excessive vibrations during installation.
- Automation & controlled devices must be installed so that they are protected against any risk of involuntary actuation.
- While using the device the star delta starter, configure the full load motor current as per the current in delta mode

MAIN FEATURES:

- Overload protection
- Auto/Manual Reset Selection
- LED indications for all failure conditions
- Fail safe protection
- Phase imbalance protection
- Phase loss protection
- Phase reverse protection
- Wide range of current adjustments (1 A to 45 A)
- Base mounting
- Easy to install
- Compact size
- Test feature

Inverse Time:	Definite Time:
Selectable under load protection Selectable lock rotor protection Selectable trip class	Under Load Protection Selectable Start Time and Trip Time



FUNCTIONAL DESCRIPTION:

Under Load Protection:

Under Load protection is provided by undercurrent trip. It is suitable for small pumps to avoid dry running, cavitations, etc.

Note: Minimum current required for underload detection > 25% Minimum Nominal Current Setting.

Phase unbalance/Phase loss protection:

Negative sequence current due to phase unbalance or phase loss may damage rotor winding. Relay gives excellent protection for Phase unbalance or phase loss.

Phase reverse protection:

Relay detects the phase reversal during starting only. For this feature motor start duration should be more than 0.1 seconds.

RESET:

Auto:

In case of Auto reset mode, relay resets within 3 min to 15 min (as per selected class), after trip in case of 3-phase or Single phase Inverse trip products and within 6 min after trip in case of Definite trip products.

Manual:

In case of manual reset press reset switch For 2 seconds. For all trips relay reset immediately in inverse & definite trip product.

TERMINAL DETAILS:

\varnothing 3.5 mm	0.45 N.m (4 Lb.in) Terminal screw - M2.6
	1 X 0.24 mm ² Rigid Wire (Without wire protection) 1 X 0.22.5 mm ² (With wire protection)
AWG	1 X 22 to 12

NOTE:

Product innovation being a continuous process, we reserve right to alter specifications without prior notice.

TECHNICAL SPECIFICATIONS:

Product	Three Phase	
	P1,P2,P3,P4,P5,P6,P7,P8	P9,P10,P11,P12
Supply Characteristics		
Auxiliary Supply	220 to 415 VAC, -20 % to +15 %, 50 / 60 Hz	
Power Consumption (MAX)	12 VA (approx.)	
LED INDICATIONS		
Power ON (ON) / Lock Out (Blink)	Green LED ON / Green LED Blink	
Over Load (OL)	OL LED ON	
Under Load (UL)	OL LED ON	
*Phase REV.	LED ON:Phase Reverse/Blink: Imbalance Red LED 3)	N.A
*Phase UNB/Loss	BLINK: UNB LED	N.A

Product	Three Phase			
	P1,P2,P3,P4,P5,P6,P7,P8	P9,P10,P11,P12		
Relay Output Characteristics				
Contact Arrangement & Rating	1 C/O (Fail Safe Operation) 5A @ 240 VAC			
Utilisation Category AC-15 UE Rated Voltage V le Rated Current I	120/240 V 3.0/1.5A			
Mechanical Life Expectancy	1 X 10 ⁷ Operations			
Electrical Life Expectancy	1 X 10 ⁵ Operations @ Rated Load			
Contact Material	Ag alloy			
Feature Characteristics				
Number of CTs	2		1	
Trip Characteristics	Inverse Time	Definite Time	Inverse Time	Definite Time
Thermal Memory	Yes	N.A	Yes	N.A
Trip Class (IEC 60255-08)	10A,10,20, &30	N.A	10A,10, 20,&30	N.A
Start Time	N.A	0.2 to 30 s	N.A	0.2 to 30 s
Trip delay	As per trip class	0.2 to 10 s	As per trip class	0.2 to 10 s
Under Load Protection	40% to 90% (Trip Time: 5 s +/- 1 s)	50% (Trip Time 5 s +/- 1 s)	40% to 90% (Trip Time: 5 s +/- 1 s)	50% (Trip Time 5 s +/- 1 s)
Locked Rotor Protection	400% of the Set Nominal Current Trip Time: < 4 s after starting	N.A	400% of the Set Nominal Current Trip Time: < 4 s after starting	N.A
Current Imbalance Protection	> 50% Imbalance and 70% load condition (Trip Time < 5 s)	N.A	N.A	N.A
Phase loss Protection	>70% Imbalance and 70% load condition (Trip Time < 3 s)	N.A	N.A	N.A
*Phase Reverse Protection Delay	100 ms approx.	N.A	N.A	N.A
Reset Mode				
Auto	Class 10A =3 min; Class 10 =6 min; Class 20 =12 min; Class 30 =15 min.	6 min	Class 10A =3 min; Class 10 =6 min; Class 20 =12 min; Class 30 =15 min.	6 min
Manual	2 s +/- 1 s			

Trip Characteristics	Inverse Time	Definite Time	Inverse Time	Definite Time
Lock Out (Restarts allowed /Hour)	For Class 10A, 10=6; Class20, 30=4	6 restarts	For Class 10A, 10=6; Class20, 30=4	6 restarts applicable per hour
Reset Time	120 ms to 400 ms		60 ms to 700 ms	
Terminals Details	L1,L3,15, 16,18		L,N,15, 16,18	

Common Characteristics:

Test Function	Applicable
Repeat Accuracy	+/- 2 %
On Delay	800 ms +/- 50 ms
Pollution degree	Type II
Dimensions in mm (W X H X D)	110.8 X 36.5 X 76.8
Mounting	Base Mounting
Weight Approx. (Packed)	200 gm
Degree of Protection**	IP-20
Operating Position	Any
Maximum Operating Altitude	2000 m
Operating Temperature	-10° C to + 60° C
Storage Temperature	-25° C to + 70° C
Relative Humidity	5 to 95% Rh (without condensation)
Size Of Wire passing Through CT	16 mm ² Max.
Screw Size for Mounting	M4 x 20 mm Cheese Head Screw (Blue Zinc Passivation), 2 No's
Conformity to standards:	
Product Certification:	CE, RoHS
EMC:	
Harmonic Current Emission	IEC 61000-3-2 Class A
ESD	IEC 61000-4-2 Level II
Radiated Susceptibility	IEC 61000-4-3 Level IV
Electrical Fast Transients	IEC 61000-4-4 Level IV
Surge	IEC 61000-4-5 Level IV
Conducted Susceptibility	IEC 61000-4-6 Level III
Voltage dips & Interruptions	IEC 61000-4-11 Class A
Power frequency magnetic Field	IEC 61000-4-8 Level IV
Voltage Flickers & Fluctuations	IEC 61000-3-3 Class A
Conducted Emission	CISPR 14-1 Class A
Radiated Emission	CISPR 14-1 Class A

*Phase Reverse & Phase loss not applicable to 17A1220B0, 2220B0, 3220B0 & 4220B0 products.

**Note: For products 15-45A range, IP protection is not applicable.

Product:	IEC 60255-08	
Environmental Testing Std:		
Vibration	IEC 60068-2-6	5 g
Cold Heat	IEC 60068-2-1	
Dry Heat	IEC 60068-2-2	
Repetitive Shock	IEC 60068-2-27	40 g, 6 ms
Non-Repetitive Shock	IEC 60068-2-27	30 g, 15ms
Safety Std:		
Test Voltage between I/P and O/P	IEC 60947-5-1	2 kV
Impulse Voltage between I/P & O/P	IEC 60947-5-1	2.5 kV
Test Voltage between all Terminal & Enclosure	IEC 60947-5-1	4 kV
Single Fault	IEC 61010-1	
Insulation Resistance	UL 508	>50k Ω
Leakage Current	UL 508	<3.5 mA

FUNCTIONAL DESCRIPTION:

Inverse Time Cat ID:

1) Overload Protection:

Relay implements the thermal image of the motor during heating and cooling periods. If the motor current exceeds 1.11 times the set value of the current, relay trips the motor as soon as the value of thermal capacity exceeds the threshold value.

2) Locked Rotor Protection:

Protects motor from locked rotor conditions if load current exceeds by greater than 400% of set nominal current within 4 sec due to mechanical fault or due to high inertia load

3) Test Function:

This function can be used to check up the trip of the relay. For checking test function press & hold the test switch for 5 sec during this time all LEDs glows on. After relay trip 'UNB' LED starts blinking for three phase products & 'OL' LED ON for 1PH products. Press reset switch for 2 secs & the products comes out of test function.

Functional Description:

1) Overload Protection:

- I. Relay trips if the motor current exceeds 1.11 times set value of the current for duration of set trip time for runtime 'OL' fault.
- II. If 'OL' fault occurs at motor startup, relay time after the current exceeds 1.11 times of set nominal current, by taking start time plus trip time.

2) Test Function:

This function can be used to check up the trip of the relay. For checking test function press & hold the test switch for 5 sec during this time all LEDs glows on. After relay trip 'UNB' LED starts blinking for three phase products & 'OL' LED ON for 1PH products. Press reset switch for 2 secs & the products comes out of test function.

3) Start Time Setting:

In case of definite trip product, Start time should be set according to motor inrush current duration. During this time product will not get tripped.

3) Trip Time Setting:

In case of definite trip product, trip time will be 0.2 sec to 10 secs. Product will trip after the completion of Set Start Time + Set Trip Time.

LOCK OUT:

In auto reset mode of operation lockout feature enables to restrict no. of restarts counts as per class of motor per hour incase of continuous fault.

One the number of restarts in an hour exceeds the given limit device enters into lockout mode in which relay will not turn on.

NOTE:

For '1A' current, use 3A to 9A range product with 3-wire turns through the Ct's and select 3A range of nominal current. OR For '1A' current, use 2A to 5A range product with 2-wire turns through the Ct's and select 2A range of nominal current.

EXTERNAL CT INTERFACE:

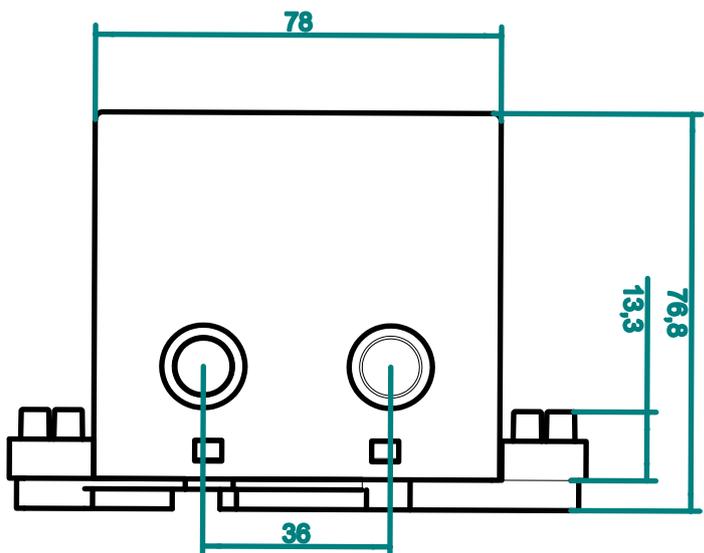
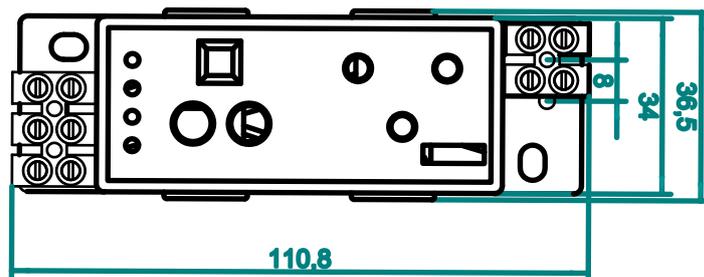
In case of nominal current setting range requirement is higher than 45A, then model with 2 to 5 A current range setting should be used with external CT interface as shown in connection diagram.

Note:- Always use external CT having secondary rating 5A. e.g.: - In case of external CT with ratio 100:5 is to be used then nominal current Multiplier knob can be aligned at 0.4, 0.5, 0.6, 0.7, 0.8, 0.9 & 1 of rated primary current.

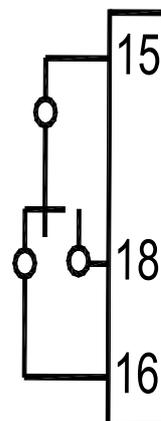
External CT with following ratios can also be used:- 50:5, 200:5.

Nominal Current = 5A X External CT Ratio X Current Multiplier

OVERALL DIMENSIONS FOR PRODUCT WITH TERMINAL:



Relay Connection Diagram:



Connection for Terminal based products: Input connection between L1 & L3

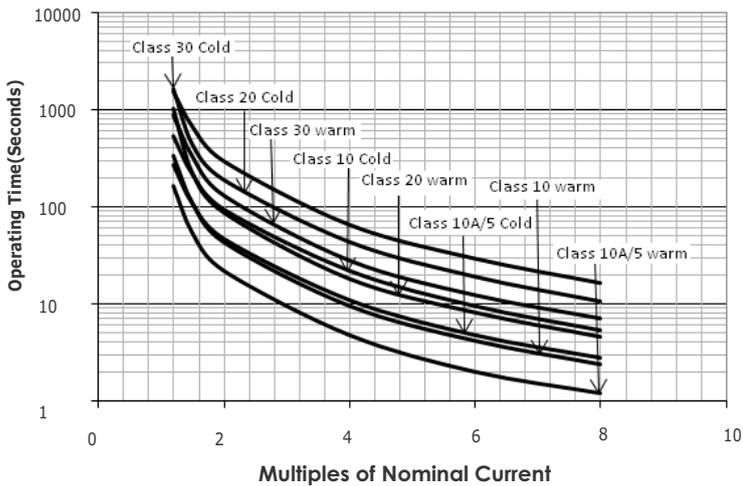
Relay out put : 15, 16, 18

MODE SELECTION:

Inverse Time Product	Definite Time Product
AUTO Reset mode = OFF (Manual ON) Locked Rotor Protection = OFF	AUTO Reset mode = OFF Under Load Protection = OFF
AUTO Reset mode = ON Locked Rotor Protection = OFF	AUTO Reset mode = ON Under Load Protection = ON

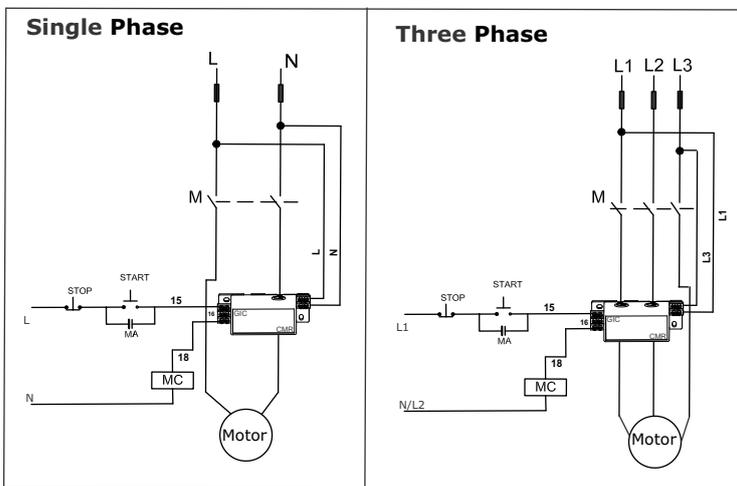
Two position DIP slide switch has been provided on the front facia of the product. By using this switches following protections / modes can be made ON and OFF.

INVERSE TRIP CHARACTERISTIC CURVES:



Warm Curve: Pre loading at 90% of load according to IEC 60255 - 08

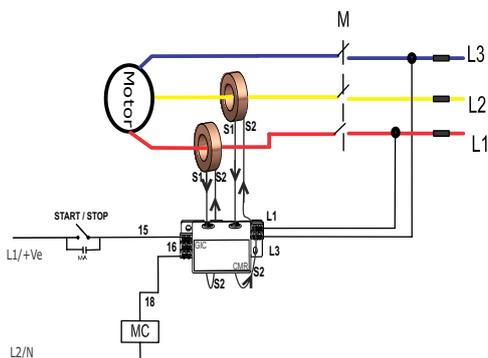
CONNECTION DIAGRAM:



MA = AUXILLIARY SUPPLY

MC = AUXILLIARY CONTACT

CONNECTION DIAGRAM FOR EXTERNAL CT INTERFACE:



E-Waste Regulatory notice: Kindly treat, recycle or dispose of this equipment in an environmentally sound manner after End of Life, as per WEEE (Waste Electrical and Electronic Equipment) regulations; or hand it over to General Industrial Controls Pvt. Ltd, through website <https://www.gicindia.com/get-in-touch/>



Incase of any query, please write us at service@gicindia.com Or visit www.gicindia.com