

INSTALLATION INSTRUCTION MULTI FUNCTION & CYCLIC TIMERS

S2 ETM1



D1 ETM1



S2 ETM2



D1 ETM1 | S2 ETM1 | S2ETM2

INTRODUCTION

It's the company's pleasure to enlist you as one of our esteemed user customer. Thank you for selecting and purchasing MINILEC make Electronic Multifunction & Multi range Timer / Electronic Unequal cyclic Timer (S2 ETM1 & D1ETM1/S2 ETM2). The Following installation instructions would guide you in installing your unit (S2 ETM1 & D1ETM1/S2 ETM2) and making best use of it. This Timers are auxiliary relays and should be used in control circuit only.

ELECTRICAL CONNECTIONS

See the corresponding Electrical wiring for your unit. Auxiliary supply voltage should be as marked on the side plate of your unit. Connect the load (N/V coil) with the output relay contacts as required.

D1 ETM1 / S2 ETM1 / S2 ETM2 FUNCTIONING :

MODES OF OPERATION (M 1 TO M 7) :

Set the desired Mode, Time Range, Time scale factor by potentiometer provided at the front of the unit. Before Aux. Supply voltage is switched ON, the O/P relay contacts at RELAY 1 and at RELAY - 2 are in De- Energised state (NO). After switching ON the supply, the timer starts counting the timing and when the set time delay elapses the O/P contacts change their state from the original status from NO to NC

MODE 1- ON DELAY

As soon as power is applied, the set time period (T) begins, Relay 1 & 2 are off during set time (T) & at the end of the set time delay, Relay 1 & 2 energizes & remains on till power on.

MODE 2- INTERVAL DELAY

As soon as power is applied, the set time period (T) begins, Relay 1 & 2 are on during set time (T). At the end of set time delay, Relay 1&2 get de-energize and remains off till power on.

MODE 3 : CYCLIC OFF FIRST

As soon as power is applied, t Relay 1 & 2 are off during the set time (T), at the end of the set time Relay 1 & 2 get energize for the same set time (T). This ON/ OFF action continues till power on.

MODE 7 : ENGINE START RELAY

Refer lower scale marking (Attempt A1 to A7) of Range pot on front plate. Set attempts (n) by Range selection switch & Set time by time selection pot. As soon as power is applied, Relay 1 (IGNITION RELAY) remains de-energize for time (2T). At the end of time (2T), Relay 1 gets energize for set time (T) & at the end off the set time, again gets de-energize for time (2T). This process continues till set attempts (n). At the end of these attempts, Relay 2 (ALARM RELAY) gets energize till power on. During set attempt operation if Aux. Supply cuts off, further operation halts. Refer Fig. 4.

MODE 4 : CYCLIC OPERATION ON FIRST

As soon as power is applied, Relay 1 & 2 get energize for the set time (T), at the end of the set time Relay 1 & 2 get releases for the same set time (T). This ON/ OFF action continues till power on.

MODE 5 : STAR - DELTA

As soon as power is applied, Relay 1 (STAR RELAY) energizes for the set time period (T) . At the end of set time period (T) Relay 1 gets off, there will be PAUSE TIME of 100 ms & at the end of the pause time delay Relay 2 (DELTA RELAY) energizes and remains on till power on.

MODE 6 : INSTANT & DELAYED OPERATION

As soon as power is applied, the time period (T) begins & Relay 1 (INSTANT RELAY) energizes. At the end of set time period (T), Relay 2 (DELAYED RELAY) energizes. Relay 1 & 2 remains on till power on.

S2 ETM2 FUNCTIONING

MODES OF OPERATION (M 1 & M 2) :

Terminal no. 5 & 6 are provided to set the desired Mode. If short link at these terminal is absent then unit will be in MODE1 i.e. Unequal Cyclic operation. If short link at these terminal is present then unit will be in MODE2 i.e. Forward / Reverse operation. Set Time Range, Time scale factor by Potentiometer provided at the front of the unit. Before Aux. Supply voltage is switched ON, the O/P relay contacts at 7 - 8 (RELAY 1) and at 10 - 11 (RELAY 2) are in De-Energised State (NO). After switching ON the supply, the timer starts counting the timing and when the set time delay elapses the O/P contacts change their state from The original status (from NO to NC).

MODE1: UNEQUAL CYCLIC OPERATION

As soon as power is applied, the timer starts counting PAUSE TIME (T1). During this PAUSE TIME (T1) both the Relays remains in off condition. After end of the PAUSE TIME timer starts counting ON TIME (T2) & both the relays Change their states. This ON/OFF action continues till Aux. Supply is present.

MODE 2- FORWARD/ REVERSE CYCLIC OPERATION

As soon as power is applied, the timer starts counting PAUSE TIME (T1) begins, during this time period both the relays remains in off condition. When the set PAUSE TIME (T1) elapses, timer starts counting ON TIME for Relay 1, L2. Relay 1 gets on & contacts of Relay 1 change their states (i.e. 7 - 8 closes). When ON TIME elapses Relay 1, L2 gets OFF & timer starts counting PAUSE TIME. After end of the PAUSE TIME Relay 2, L3 gets ON changing its contact states (i.e. 10-11 closes) & timer starts counting ON TIME. After end of the ON TIME timer again counts PAUSE TIME. This action Continues till Aux. Supply is present. SR.

SR. NO.	PARAMETERS	S2 ETM1	D1 ETM1	S2 ETM2
1	Auxiliary supply	24/ 100-110-120* 220-230-240/ 380-415-440 VAC ±20%.12/ 24 VDC, ±20%	24/ 110/ 220/ 230/ 240/ 380/ 415 VAC ±20%, 12/ 24 VDC, ±20% 24 -240VAC/DC(+10,-20%)	24/ 100-110-120* 220-230-240/ 380-415-440 VAC ±20%.12/ 24 VDC, ±20%
2	Frequency of AC voltage	48 Hz to 63 Hz	50/ (60) Hz ± 3%	48 Hz to 63 Hz
3	Output contact	1CO + 1 CO	1 CO + 1 CO	1CO + 1 CO
4	Contact rating (resistive)	5 Amp at 240 VAC	5A at 240 VAC	5 Amp at 240 VAC
5	Operating modes (variable/ adjustable)	1) ON DELAY 2) INTERVAL DELAY 3) CYCLIC OFF FIRST 4) CYCLIC ON FIRST 5) STAR - DELTA 6) INSTANT & DELAYED 7) ENGINE START RELAY	ON DELAY INTERVAL DELAY CYCLIC OFF FIRST CYCLIC ON FIRST STAR - DELTA INSTANT & DELAYED ENGINE START RELAY	1) UNEQUAL CYCLIC OPERATION 2) FORWARD/ REVERSE OPERATION
6	Time range (variable/ adjustable)	1) 0.1 to 01 SEC 2) 01 to 10 SEC 3) 06 to 60 SEC 4) 60 to 600 SEC 5) 0.1 to 01H 6) 01 to 10 H 7) 10 to 100 H	0.1 to 1 SEC, 1 to 10 SEC, 6 to 60 SEC 60 to 600 SEC 0.1 to 1H, 1 to 10 H, 10 to 100 H	1) 0.1 to 01 SEC 2) 01 to 10 SEC 3) 06 to 60 SEC 4) 60 to 600 SEC 5) 0.1 to 01H 6) 01 to 10 H 7) 10 to 100 H
7	Time setting accuracy	± 10% max. w.r.t. Full scale.	± 5% max. w.r.t. Full scale.	± 10% max. w.r.t. Full scale.
8	Repeat accuracy a. Temp. Variation of 25 to 60°C b. Supply variation of ±10% c. Freq. Variation of ±1%	± 1% (at normal Aux. Supply) ± 3% max. of set value ± 3% max. of set value ± 2% max. of set value	± 1% (at normal Aux.) ± 3% max. of set value ± 3% max. of set value ± 2% max. of set value	± 1% (at normal Aux. Supply) ± 3% max. of set value ± 3% max. of set value ± 2% max. Of set value
9	Star to delta transfer delay	100 ms (±20%)	100 ms (±20%)	NA
10	Resetting time	200 ms(Max.)	200 msec (Max.)	200 ms(Max.)
11	Life expectancy	0.5 X 10 ⁶ Operations At 100% Rating	0.5 X 10 ⁶ Operations At 100% Rating	0.5 X 10 ⁶ Operations At 100% Rating
12	Indications: L1 (Green) L2 (Red) L3 (Red)	ON RLY 1 ON RLY 2 ON	L1 POWER ON L2 RELAY 2 ON	ON RLY 1 ON RLY 2 ON
13	Power consumption (max at normal aux. Supply)	15VA for AC models, 3W for 24VDC	15VA for AC models, 3W for 24VDC 4.5 VA for 24 - 240V.	15VA for AC models, 3W for 24VDC
14	Operating conditions	TEMPERATURE = - 5°to +60°C HUMIDITY = Upto 95% RH	Temperature : 5 to +60°C Humidity : Upto 95% RH	TEMPERATURE = - 5°to +60°C HUMIDITY = Upto 95% RH
15	Enclosure	S2 SERIES-ABS,PC-ABS	ABS (D1), 35mm Rail Mounting & Panel mounting	S2 SERIES-ABS,PC-ABS
16	Dimensions (mm)	OVERALL = 90X 35 X 60 MOUNTING = Rail Mounting	76 X 30.5 X 117 68 Centre to Centre	OVERALL = 90X 35 X 60 MOUNTING = Rail Mounting
17	Weight (gms.)	100	200gms	100

* Note : CE approval is not applicable for 100-110-120 VAC Models.

COMPLIANCE TO STANDARDS

TEST		IEC STD.	TEST		IEC STD.
1.	EFT Test of Auxiliary Supply	61000-4-4	6.	Insulation Resistance Test	60255-5
2.	Surge Test of Auxiliary Supply	61000-4-5	7.	Dry Heat Test	60068-2-2
3.	Voltage Interruption, Variation & Dip Test	61000-4-11	8.	Damp Heat test (Steady State)	60068-2-30
4.	ESD Test (Contact Discharge)	61000-4-2	9.	Damp Heat test (cyclic test)	60068-2-78
	ESD Teast (Air Discharge)	61000-4-2			
5.	H.V. Test (Dielectric Test)	60255-5			

D1 ETM1

MODE SELECTION SWITCH

Select required mode by using ROTARY SWITCH provided on front plate of the unit as follows-

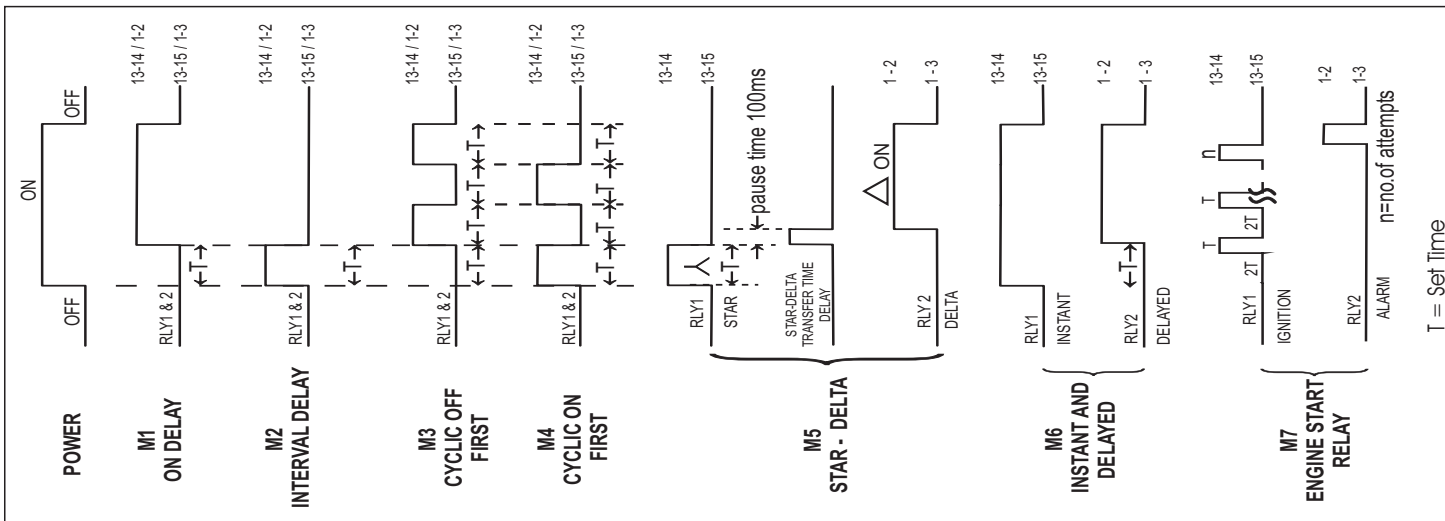
MODE SELECTION SWITCH POSITIONS	MODE OPERATION
1 (M1)	ON DELAY
2 (M2)	INTERVAL DELAY
3 (M3)	CYCLIC OPERATION OFF FIRST
4 (M4)	CYCLIC OPERATION ON FIRST
5 (M5)	STAR - DELTA OPERATION
6 (M6)	INSTANT - DELAYED OPERATION
7 (M7)	ENGINE START RELAY OPERATION

SELECTION OF RANGE / ATTEMPTS SWITCH

Select the time required range. It is suitable for (Mode1 to Mode 6) time delays within the time range of 0.1 sec to 100Hrs in 10 different time ranges. The time setting can be done by rotary switch & POT which is provided at the front of the unit as follows :-

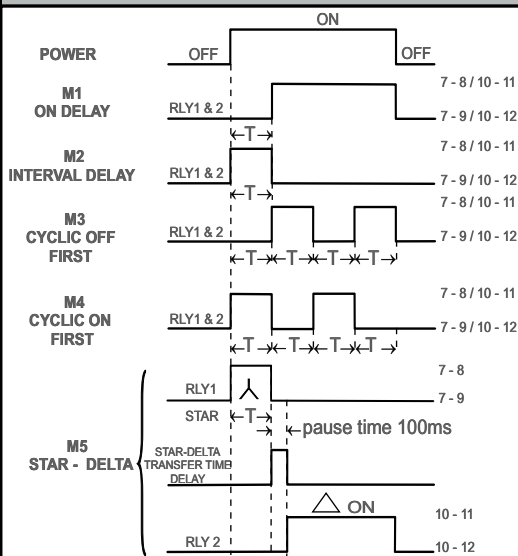
POSITION	MODE 1 - 6	MODE 7 ATTEMPTS
1	0.1 SEC - 1 SEC	1
2	1 SEC - 10 SEC	2
3	6 SEC - 60 SEC	3
4	60 SEC - 600 SEC	4
5	0.1 H - 1 H	5
6	1 H - 10 H	6
7	10 H - 100 H	7

TIMING CYCLE

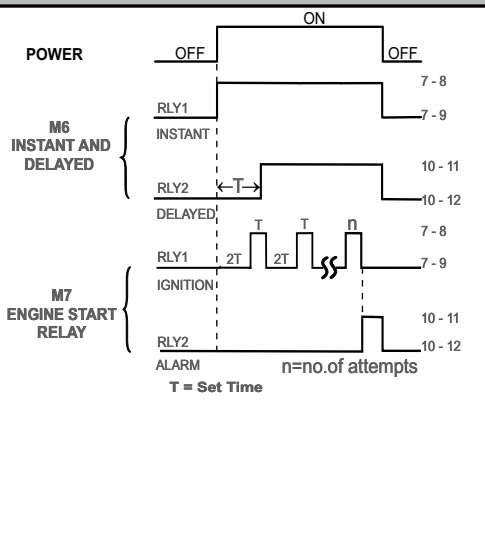


WARRANTY - AGAINST ALL MANUFACTURING DEFECTS FOR 18 MONTHS FROM DATE OF SUPPLY OR 12 MONTHS FROM INSTALLATION WHICHEVER IS EARLIER

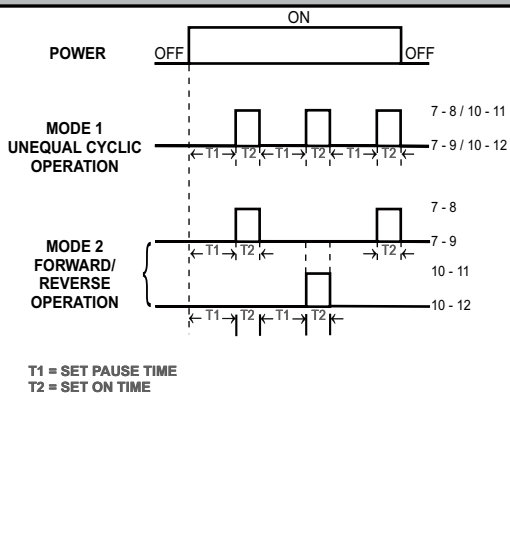
TIMING CYCLE FOR S2 ETM1



TIMING CYCLE FOR S2 ETM2



TIMING CYCLE FOR S2 ETM2



MODE SELECTION SWITCH FOR S2 ETM1

Select required mode by using ROTARY SWITCH provided on front plate of the unit as follows-

MODE SELECTION SWITCH POSITIONS	MODE OPERATION
1 (M1)	ON DELAY
2 (M2)	INTERVAL DELAY
3 (M3)	CYCLIC OPERATION OFF FIRST
4 (M4)	CYCLIC OPERATION ON FIRST
5 (M5)	STAR - DELTA OPERATION
6 (M6)	INSTANT - DELAYED OPERATION
7 (M7)	ENGINE START RELAY OPERATION

SELECTION OF RANGE / ATTEMPTS SWITCH FOR S2 ETM1

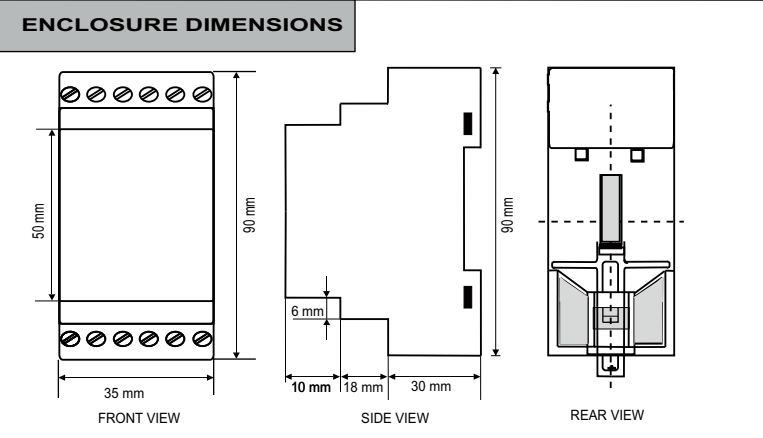
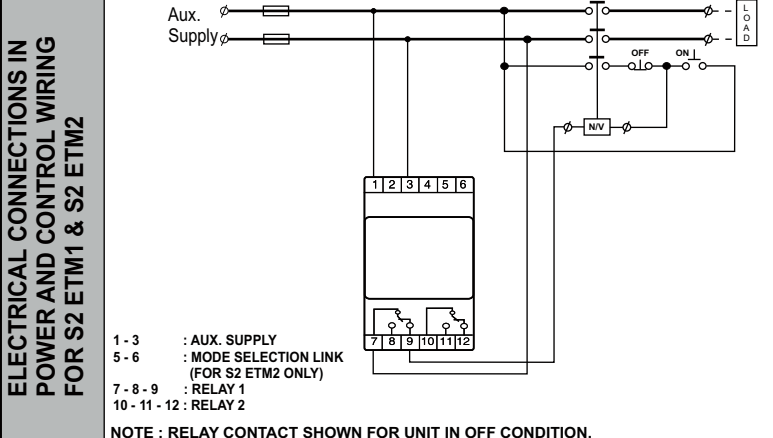
Select the time & required range. The time setting can be done by rotary switch & POT which is provided at the front of the unit as follows -:

RANGE SWITCH POSITION	MODE 1-6	MODE 7 ATTEMPTS
1	0.1 SEC - 1 SEC	1
2	1 SEC - 10 SEC	2
3	6 SEC - 60 SEC	3
4	60 SEC - 600 SEC	4
5	0.1 H - 1 H	5
6	1 H - 10 H	6
7	10 H - 100 H	7

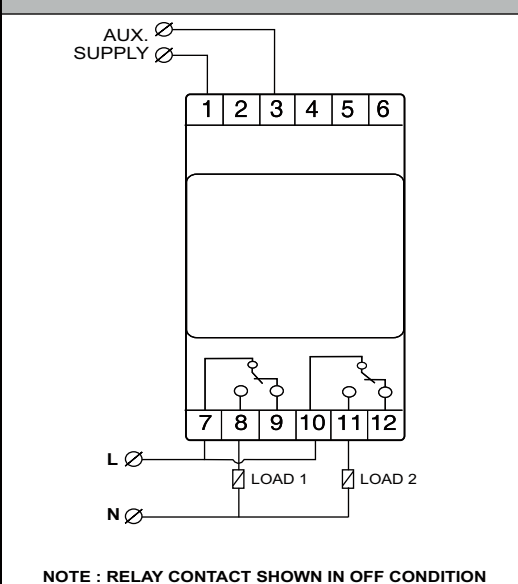
SELECTION OF ON/ PAUSE TIME RANGE SWITCH FOR S2 ETM2

Select the time & required range by ROTARY SWITCH & POT provided on front as follows -:

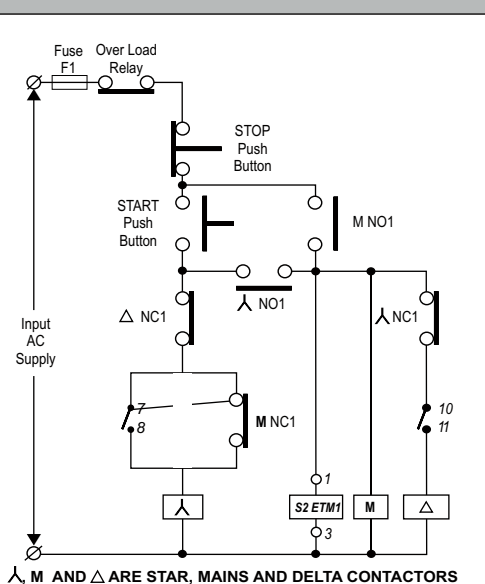
RANGE SWITCH POSITION	MODE 1-2
1	0.1 SEC - 1 SEC
2	1 SEC - 10 SEC
3	6 SEC - 60 SEC
4	60 SEC - 600 SEC
5	0.1 H - 1 H
6	1 H - 10 H
7	10 H - 100 H



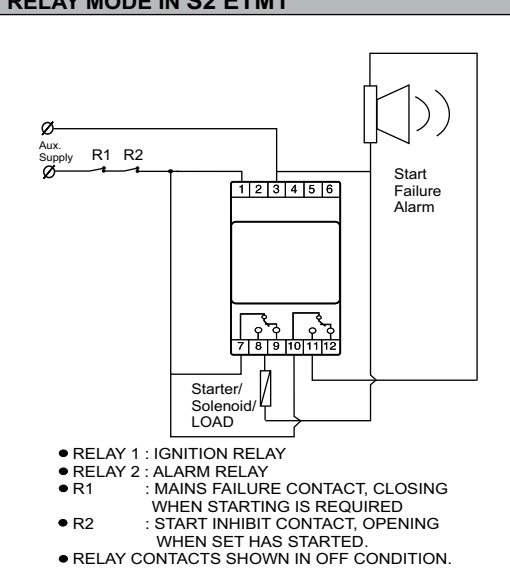
TERMINAL CONNECTIONS IN POWER & CONTROL WIRING FOR S2 ETM1 & S2 ETM2



TYPICAL APPLICATION DIAGRAM FOR STAR-DELTA STARTER MODE IN S2 ETM1



ELECTRICAL CONTROL WIRING AND CONNECTION DIAGRAM FOR ENGINE START RELAY MODE IN S2 ETM1

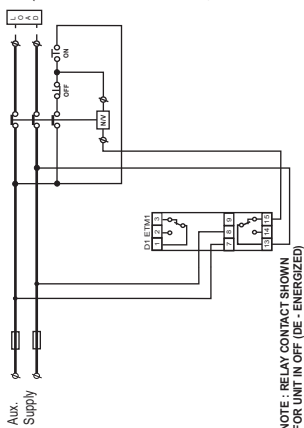


WARRANTY - AGAINST ALL MANUFACTURING DEFECTS FOR 18 MONTHS FROM DATE OF SUPPLY OR 12 MONTHS FROM INSTALLATION WHICHEVER IS EARLIER

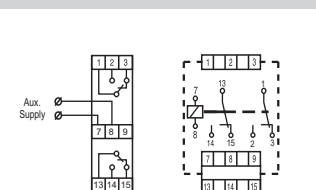
D1 ETM1

ELECTRICAL CONTROL WIRING AND CONNECTION DIAGRAM

(FOR MODE 1 TO 4 ONLY)



ELECTRICAL CONTROL WIRING AND CONNECTION DIAGRAM

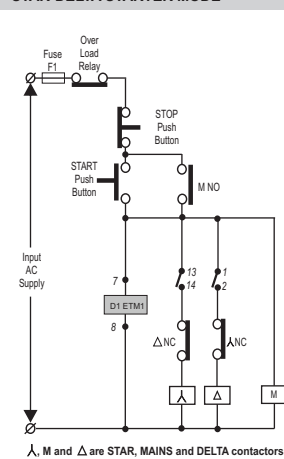


NOTE:
1. Relay Contacts shown for Delay Elapsed condition.
2. Relay Contacts shown for Relay In OFF (De-ENERGIZED) Condition

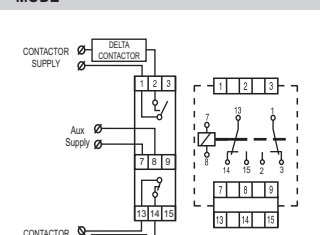
INDICATIONS :
L1 (GREEN) : POWER ON
L2 (RED) : RELAY 1 & 2 ON [FOR MODE 1 TO 4]
RELAY 2 ON [FOR MODE 5 TO 7].

TERMINAL DETAILS :
7-8 : Aux. Supply as marked on Unit
13-14-15 : C1-NO1-NC1 (RELAY1)
1-2-3 : C2-NO2-NC2 (RELAY2)

TYPICAL APPLICATION DIAGRAM FOR STAR-DELTA STARTER MODE



ELECTRICAL CONTROL WIRING AND CONNECTION DIAGRAM FOR STAR DELTA MODE

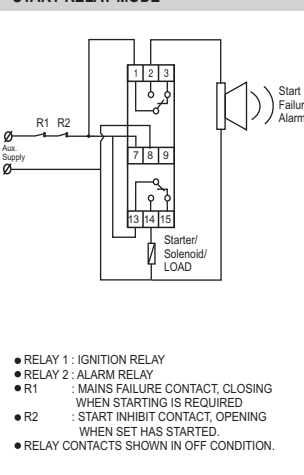


NOTE:
Relay Contacts shown for STAR condition i.e. when STAR relay is in HEALTHY (ENERGIZED) condition.

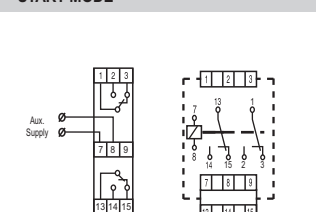
INDICATIONS :
L1 (GREEN) : POWER ON
L2 (RED) : DELTA Relay in Healthy (ENERGIZED) condition

TERMINAL DETAILS :
7-8 : Aux. Supply as marked on Unit
13-14 : STAR relay output contact (NO)
1-2 : DELTA relay output contact (NO)

ELECTRICAL CONTROL WIRING AND CONNECTION DIAGRAM FOR ENGINE START RELAY MODE



ELECTRICAL CONTROL WIRING AND CONNECTION DIAGRAM FOR ENGINE START MODE

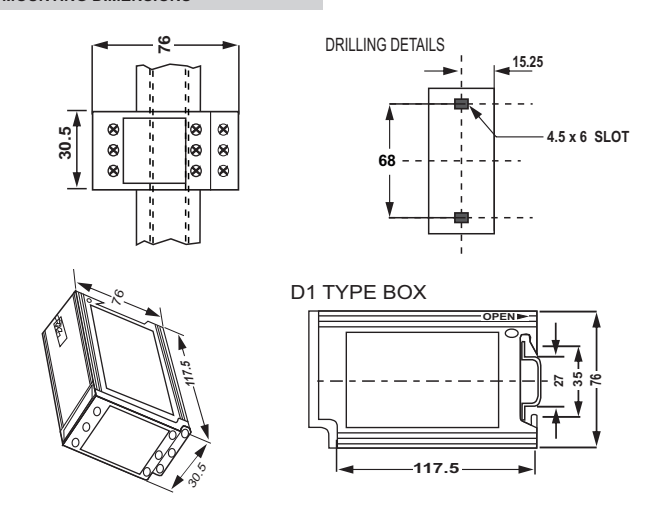


NOTE:
1. Relay Contacts shown for Delay Elapsed condition.
2. Relay Contacts shown for Relay In OFF (De-ENERGIZED) Condition

INDICATIONS :
L1 (GREEN) : POWER ON
L2 (RED) : RELAY 2 ON

TERMINAL DETAILS :
7-8 : Aux. Supply as marked on Unit
13-14-15 : C1-NO1-NC1 (RELAY1)
1-2-3 : C2-NO2-NC2 (RELAY2)

MOUNTING DIMENSIONS



Instructions for Screw Gun torque adjustment
• Torque should be 1 Nm max.
• Max 2.5 sq. mm size wire can be used.

WEEE (Waste Electrical & Electronic Equipment) Regulations: After end of equipment life, recycle or disposal needs to be done as per guidelines or handover it to Waste processing authorized agencies. For more details contact us.

WARRANTY - AGAINST ALL MANUFACTURING DEFECTS FOR 18 MONTHS FROM DATE OF SUPPLY OR 12 MONTHS FROM INSTALLATION WHICHEVER IS EARLIER

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