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EAPL

Selection Guide 2021-2022

कर्मणैव हि संसिद्धिः
EAPL

ELECTRONIC AUTOMATION (P) LTD.

In association with KRÜGER Switzerland

Contents

Access Uncompromising Quality and Obsessive Accuracy.

In ever-changing times, we have held fast to one constant: That of innovating paradigm-shifting products and standard-setting technologies. The aspects upon which we were founded - stringent adherence to quality and compulsive accuracy - have always characterized us and inspired us to take the clear lead in a demanding industry scenario. From timers and tachometers to annunciators, energy meters and cutting-edge monitoring devices, our products and services fulfil and even exceed customer expectations. Because we believe that our only competition is ourselves.

Mission

Contributors in the field of electronics and thereby participants in India's Growth Story, Electronic Automation Pvt. Ltd. (EAPL) is committed to achieving total customer satisfaction by offering products, technologies and services that meet or exceed expectations related to agreed specifications, timely delivery and competitive prices, in National and International Markets.

Electronic Automation Private Limited

Background

EAPL had its humble beginning in the year 1985. It was the brainchild of Late Shri Madhav Kamat who instituted this venture with espousing support from Mr. Christian Kruger of Switzerland. By launching A1D1 – X, EAPL has established itself as a stronghold for in-house manufacturing of standard electronic instruments. As opposed to heavy material instruments, EAPL designs and develops a multitude of compact versions that ensure efficient and optimum level functioning of process control.

Business Profile

EAPL has always focused on manufacturing quality products at an affordable cost. The company has always sought to invent devices of high viability matched with sales at low prices; ensuing from critically controlled and standardized quality-oriented manufacturing methods and thereby assuring no compromise in the caliber of the product. Additionally, the company has been approved by CSA and UL for complying with regulated safety norms. The products aren't specifically targeted at a particular industry. Instead, they function to the purpose of universal application. EAPL, thereby, has garnered a consumer base in both small and large scale industries in over 50 cities throughout India, as well as in a few GCC countries.

Product Portfolio

1) Electronic timers – caters to various electrical applications through different functional features for varied time ranges and voltages in analog and digital formats.
2) Programmable Annunciators – generally used in industries, utilities to annunciate visual and audio faults and its status at any given time.
3) Energy meters – to monitor different parameters in an electrical system
4) Temperature Controllers – generally used to indicate and control process temperatures of different equipments in the industrial sector.
5) Protection Relays – to protect the equipment / system from specified power un-healthiness in the system
6) Digital Time switches- to switch OFF any equipment, appliances, with reference to real time.

Business Operations

Head quartered in Bangalore, EAPL is spread over a vast expanse of around 22,000 sq. feet with infrastructure capable of manufacturing more than 5,00,000 units annually.

EAPL is one of the earliest establishments in Bangalore to be certified under ISO 9001:2008 by UL (Underwriters Laboratory, USA) and has currently upgraded to ISO 9001:2015. The organization has also adopted the SAP B1 as a part of enterprise resource management and fact-based decision making. At present, the production units are equipped with the latest SMT technology. The Quality Control department compliments these efforts by executing timely quality checks ranging from raw material to different stages of manufacturing and concluding with the final product. (IS5834/IEC guidelines)

The organization also has its very own tool room and plastic injection moulding facility which uses UL graded material and consistently abides by quality and safety protocol. Moreover, the in-house EMI/EMC lab strives to strengthen the validation process in assuring finesse in the quality of products.

The Company's vision for the future is to acquaint itself with emerging technologies and develop new products in accordance with the requirements and expectations of its customers.

Products Range

- Electronic Timers
- Digital Time Switches
- Digital Temperature Controllers
- Programmable Fault Annunciators
- Energy Meters
- Digital Counters
- Monitoring Devices
- Tachometer
- Power Supply Modules
- Light Switch

Winning accolades from the future!

INDIA TODAY MAKE IN INDIA EMERGING ENTREPRENEURS AWARDS

Selected as the winner in the category of Electronic system in the prestigious event, Make in India - the challenges and opportunities held on 01/07/2016 in New Delhi.

"Heartiest congratulations to Electronic Automation Pvt Ltd. for being among the "30next""

Forbes India Listing

"30next – Future of Indian Economy" is an ode to the undying spirit of Indian entrepreneurs who have started out small, and now have notched a sizable market share, immense goodwill and brand awareness for their business.

The name is synonymous with the next 30 companies who define success not only by their bottom line, but also by their contribution to the community, dedication by providing great customer service, and by promoting the culture of excellence.

Awards & Recognitions

ISO Certification 9001:2015

Business Excellence Award from ELCINA, Dun & Bradstreet - 2006-07

NATIONAL AWARD – 2008 From Government of India Ministry of MSME

Listed by SAP India for Global Reference Program -2008

NSIC - CRISIL Rating

Approvals and Clientele

A-Series

Electronic Timers

EAPL offers Electronic timers in both analog and digital types. Based on the application and market requirements, EAPL offers timers with wide voltage & time range, din mounting or flush mounting, single function or multifunction, Output - 1C/O or 2C/O relay outputs.

Different functions of our timer includes on-delay, Interval , Cyclic on-off, Star delta, Auxiliary relay, Signal off delay, Power-off delay. Most of the above functions are available in a single unit as Multifunction timer.

Applications:

AMF Panels, Automation Panels, HT / LT Panels, MCC Panels, C & R Panels, RTCC Panels, Transformer Panels, Textile Machine, Vending machine and many more..

A1D1
On Delay timer - 30min

A1D1-X
On Delay timer - 30min

A1D1-X (60M)
On Delay timer - 60min

A1DE-X
Interval timer

A1DCS-X
Cyclic - Equal Off-On Timer

A1D-S
Star-Delta Timer

Features

- Din sized enclosure for Track (Din Rail) / Screw mounting
- Front terminal protective cover for safety
- LED indication for timing in progress.

Ordering Information

Model	Function	Source Voltage	Time Range	Output
A1D1(CSA)#	On-Delay	240V AC	0.3Secs to 30Mins	2 C/o Relay
A1D1-X(CSA)#		24V AC to 240V AC, 24V DC to 220V DC	0.3Secs to 30Mins	
A1D-Tx			0.3Secs to 30Mins	1 C/o Relay
A1D1-X(60M)(CSA)#			0.6Secs to 60Mins	2 C/o Relay
A1D1		8V to 30V DC	0.3Secs to 30Mins	
A1D1(WB)		266V AC to 456V AC	3Secs to 30Secs	1 C/o Relay

#Also available in UL standard

Specifications

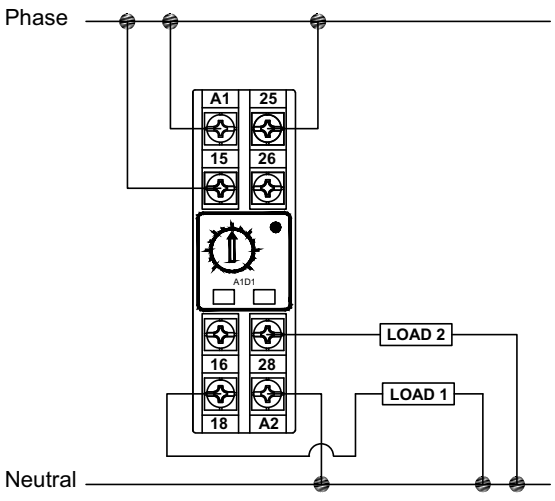
Model	A1D1(CSA)	A1D1-X(CSA)	A1D1-X(60)(CSA)	A1D-Tx
Function	On Delay timer			
Rated Supply Voltage	240V AC	24V to 240V AC & 24V to 220V DC		
Operating voltage range	-20% to +10% of the rated voltage	-10% to +10% of rated voltage		
Rated frequency	50Hz ± 5%	50 / 60Hz ± 5%		
Allowable ripple (for DC supply)	NA	3% maximum		
Power consumption	AC approx. 10VA / 2W	AC approx. 5VA / 1W, DC approx. 3W		
Control output	2 c/o rated for 5A @ 250V AC/28V DC resistive load			1C/O rated for 5A@250V AC/ 28V DC resistive load
Time range	0.3Sec to 30Min		0.6Sec to 60Min	0.3Sec to 30Min
Range selection	3Sec, 30Sec, 3Min, 30Min		6Sec, 60Sec, 6Min, 60Min	3Sec, 30Sec, 3Min, 30Min
Setting accuracy	±10% max. w.r.t full scale ±100mSec			
Repeat accuracy	±1% max. ±100mSec			
Recovery time	100mSec minimum			
Variation due to voltage change	±2% max. ±100mSec			
Variation due to temperature change	±5% max. ±100mSec			
Variation due to frequency change	±2% max. ±100mSec			
Ambient temperature	Operation: -10°C to +55°C , Storage: -25°C to +80°C			
Humidity	Max 85% RH @40°C			
Service life (under no load)	10^6 operations minimum			
Electrical life (under full load)	10^5 operations minimum			
Rated frequency of operation	1800 ±5% operations per hour max			
Insulation resistance	>100M ohms @ 500V DC			
Dielectric strength	01) 1.5KV AC (rms), 50Hz for 1 minute.(Between INPUT terminals & enclosure) 02) 1.5KV AC (rms), 50Hz for 1 minute.(Between relay contact terminals & enclosure) 03) 1.5 KV AC (rms), 50Hz for 1 minute.(Between INPUT terminals & relay contact terminals) 04) 1.0KV AC (rms), 50Hz for 10-30 sec.(Between non-continuous contacts of the relay)			
Electrical connection	Screw type terminals with self lifting clamps			
Dimension(W x H x D) in mm	22.5 x 75 x 102			

Specifications

Model	A1D1 (8-30V DC)	A1D1(WB)
Function	On Delay timer	
Rated Supply Voltage	8V to 30V DC	380V AC
Operating voltage range	Min 8V & Max 30V DC	-30% to +20% of rated voltage
Rated frequency	NA	50Hz ± 5%
Allowable ripple (for DC supply)	3% maximum	NA
Power consumption	DC approx. 2W	AC approx.20VA / 4W
Control output	2 c/o rated for 5A @ 250VAC/28VDC resistive load	1 C/O rated for 5A @ 250V AC / 28V DC, 1A @ 415V AC, resistive load
Time range	0.3Sec to 30Min	3Sec to 30Sec
Range selection	3Sec, 30Sec, 3Min, 30Min	NA
Setting accuracy	±10% max. w.r.t full scale ± 100mSec	
Repeat accuracy	±1% max. ± 100mSec	
Recovery time	100mSec minimum	400mSec minimum
Variation due to voltage change	±2% max. ±100mSec	
Variation due to temperature change	±5% max. ±100mSec	
Variation due to frequency change	NA	±2% max. ±100mSec
Ambient temperature	Operation: -10°C to +55°C , Storage: -25°C to +80°C	
Humidity	Max 85% RH @40°C	
Service life (under no load)	10^6 operations minimum	
Electrical life (under full load)	10^5 operations minimum	
Rated frequency of operation	1800 ±5% operations per hour max	
Insulation resistance	>100M ohms @ 500V DC	
Dielectric strength	01) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non current carrying parts) 02) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 03) 1.0KV AC, 50Hz for 1 minute.(Between non-continuous contacts of the relay)	
Electrical connection	Screw type terminals with self lifting clamps	
Dimension(W x H x D) in mm	22.5 x 75 x 102	

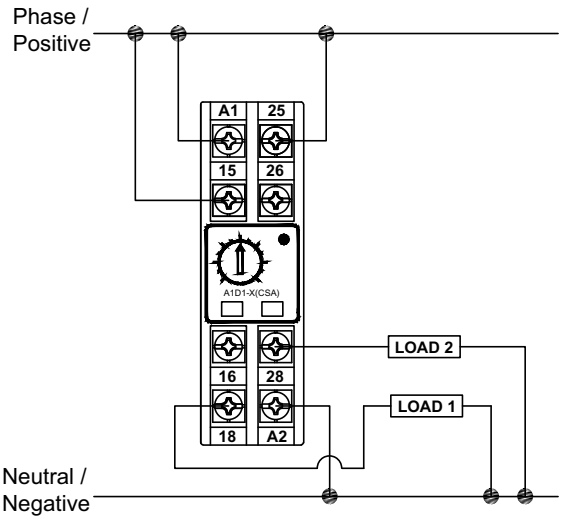
Connection Diagrams

A1D1



A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

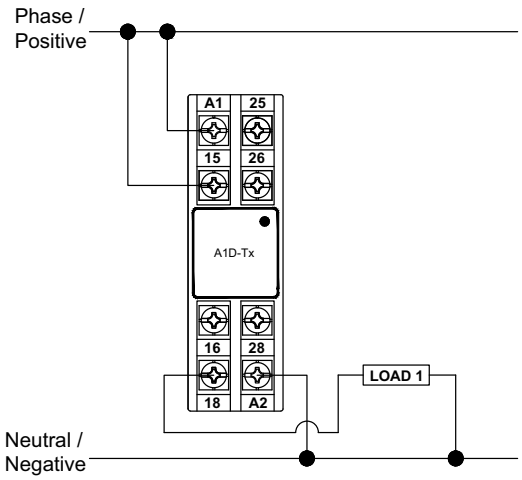
A1D1-X, A1D1-X(60M)



A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

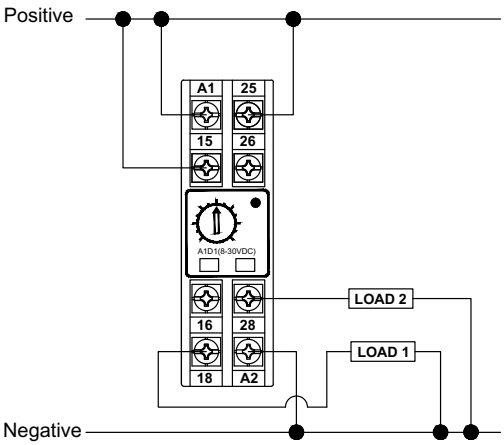
Connection Diagrams

A1D-Tx



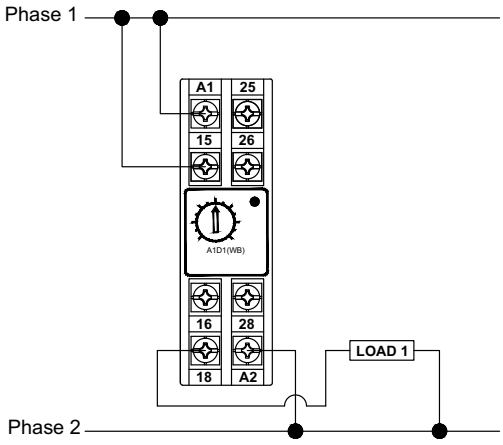
A1, A2 : Source Voltage
15, 16, 18 : C, NC, NO

A1D1 (8V to 30V DC)



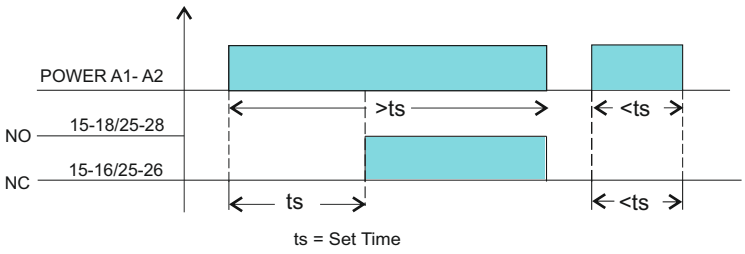
A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

A1D1 (WB)

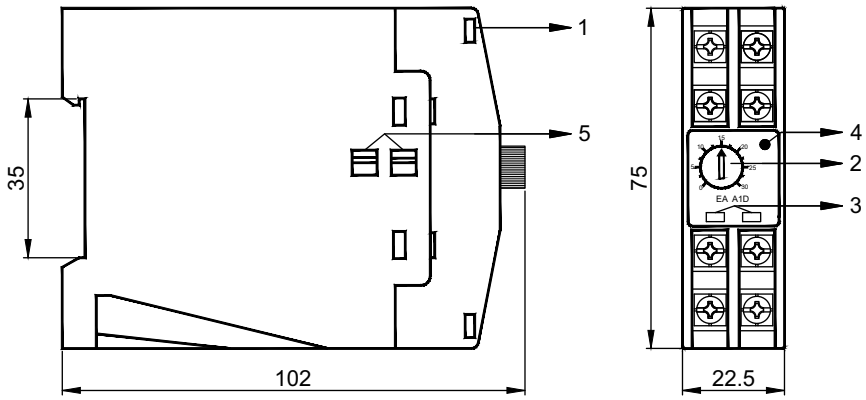


A1, A2 : Source Voltage
15, 16, 18 : C, NC, NO

Timing diagram



Dimension



1- Terminal block
2- Time Tuning Pot
3- Range viewing window
4- LED glowing indicates that the timing is in progress
5- Slide switches for range selection

Note: All Dimensions are in mm.

Features

- Din sized enclosure for Track (Din Rail) / Screw mounting
- Front terminal protective cover for safety
- LED indication for timing in progress.
- A1DA – Signal command (free from external potential) contacts for timing initiation.
- A1DS - Transfer time delay of 40mSec / 100mSec, (user selectable).

Ordering Information

Model	Function	Source Voltage	Time Range	Output
A1DE-X(CSA)#	Interval timer	24V AC to 240V AC,	0.3Secs to 30Mins	2 C/o Relay
A1DCS-X(CSA)#	Cyclic equal Off- On timer	24V DC to 220V DC	0.6Secs to 60Mins	
A1DA	Signal-Off Delay timer	110V AC / 240V AC	0.3Secs to 30Mins	1 C/o Relay
A1DH-1	Power-Off Delay timer	240V AC	18Secs to 180Secs	2 C/o Relay
A1D-S	Star to delta changeover timer with star time & transfer time settable.	110V AC/240V AC/ 415V AC	0.6Secs to 60Secs Transfer delay to change from star to delta - 40ms / 100ms	1 C/o (C-NO)Star 1 C/o (C-NO)Delta

Optional *

Model	Function	Source Voltage	Time Range	Output
A1DE(8 to 30V DC)	Interval timer	8 to 30V DC	0.3Secs to 30Mins	2 C/o Relay
A1DA	Signal-Off Delay timer	24V DC	0.3Secs to 30Mins	1 C/o Relay
A1D-S	Star to delta changeover timer with star time & transfer time settable.	250V - 415V AC 24V AC	0.6Secs to 60Secs Transfer delay to change from star to delta - 40ms / 100ms	1 C/o (C-NO)Star 1 C/o (C-NO)Delta
A1DH-1	Power-Off Delay timer	24V DC/240V AC	0.6Secs to 6Secs	2 C/o Relay

*For bulk quantities only

Specifications

Model	A1DE-X(CSA)	A1DCS-X(CSA)
Function	Interval timer	Cyclic equal Off- On timer
Rated Supply Voltage	24 to 240V AC & 24 to 220V DC	
Operating voltage range	-10% to +10% of the rated voltage	
Rated frequency	50 / 60Hz ± 5%	
Allowable ripple (for DC supply)	3% maximum	
Power consumption	AC approx.5VA / 1W DC approx.3W	
Control output	2 c/o rated for 5A @ 250VAC/28VDC resistive load	
Time range	0.3Sec to 30Min	0.6Sec to 60Min
Range selection	3Sec, 30Sec, 3Min, 30Min	6Sec, 60Sec, 6Min, 60Min
Setting accuracy	± 10% max. w.r.t full scale ± 100mSec	
Repeat accuracy	± 1% max. ± 100mSec	
Recovery time	100mSec minimum	
Variation due to voltage change	± 2% max. ± 100mSec	
Variation due to temperature change	± 5% max. ± 100mSec	
Variation due to frequency change	± 2% max. ±100mSec	
Ambient temperature	Operation : -10° C to + 55° C , Storage : -25° C to +80° C	
Humidity	Max 85% RH @40°C	
Service life (under no load)	10^6 operations minimum	
Electrical life (under full load)	10^5 operations minimum	
Rated frequency of operation	1800 ± 5% operations per hour max	
Insulation resistance	>100M ohms @ 500V DC	
Dielectric strength	01) 1.5KV AC (rms), 50Hz for 1 minute.(Between INPUT terminals & enclosure) 02) 1.5KV AC (rms), 50Hz for 1 minute.(Between relay contact terminals & enclosure) 03) 1.5 KV AC (rms), 50Hz for 1 minute.(Between INPUT terminals & relay contact terminals) 04) 1.0KV AC (rms), 50Hz for 10-30 sec.(Between non-continuous contacts of the relay)	
Electrical connection	Screw type terminals with self lifting clamps	
Dimension(W x H x D) in mm	22.5 x 75 x 102	

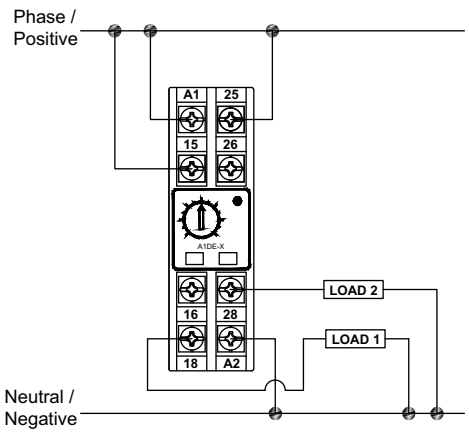
Also available in UL standards

Specifications

Model	A1DA	A1DH-1	A1D-S
Function	Signal OFF delay timer	Power OFF delay timer	Star to delta changeover timer with star time &transfer time settable.
Rated Supply Voltage	240V AC/110V AC	240V AC	110V AC/240V AC/415V AC
Operating voltage range	-20% to +10% of rated voltage		
Rated frequency	50Hz ± 5%		
Power consumption	AC approx.10VA / 2W	15VA	AC approx.10VA / 2W for 110VAC AC approx.15VA / 3W for 240VAC AC approx.20VA / 4W for 415VAC
Control Output	1 c/o rated for 5A @ 250VAC/28VDC resistive load	2C/O rated for 0.5A @ 250VAC/28VDC resistive load	1 C/O rated for 5A @ 250V AC / 28V DC resistive load
Start signal	Potential free closure for a minimum of 150mSec	NA	
Time range	0.3 Sec to 30 Min	18Sec to 180Sec	0.6Sec to 60Sec Transfer time 40mSec, 100mSec
Range selection	3Sec, 30Sec, 3Min, 30Min	NA	0.6Sec to 60Sec Transfer time 40mSec, 100mSec ± 10mSec
Setting accuracy	± 10% max. w.r.t full scale ± 100mSec		
Repeat accuracy	± 1% max. ± 100mSec	± 2% max. ± 100mSec	± 1% max. ± 100mSec
Recovery Time	100mSec minimum	NA	150mSec minimum
Variation due to voltage change	± 2% max. ± 100mSec		
Variation due to temperature change	± 5% max. ± 100mSec		
Variation due to frequency change	± 2% max. ±100mSec		
Temperature Coefficient	NA	± .5% max for every 1°C	NA
Ambient temperature	Operation : -10°C to + 55°C , Storage : -25°C to +80°C		
Humidity	Max 85% RH @40°C		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Rated frequency of operation	1800 ± 5% operations per hour max		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	01) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non current carrying parts) 02) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 03) 1.0KV AC, 50Hz for 1 minute.(Between non-continuous contacts of the relay)		
Electrical connection	Screw type terminals with self lifting clamps		
Dimension (W x H x D) in mm	22.5 x 75 x 102		

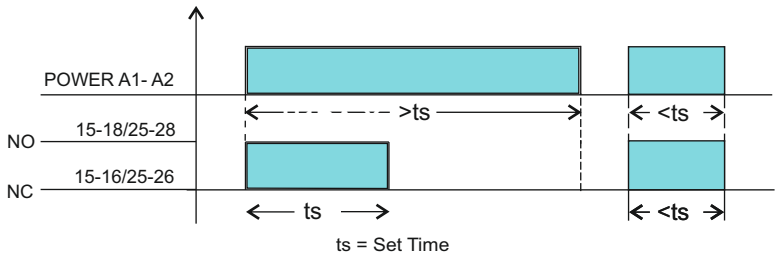
Connection Diagrams

A1DE-X



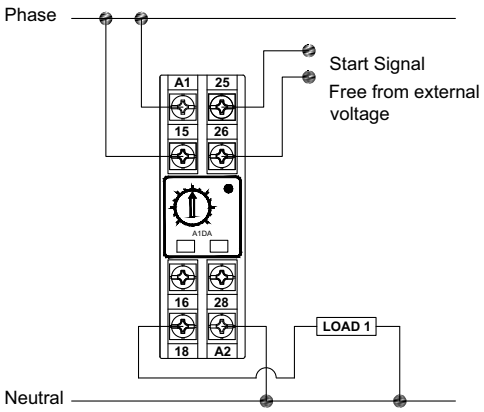
A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

Timing Diagram



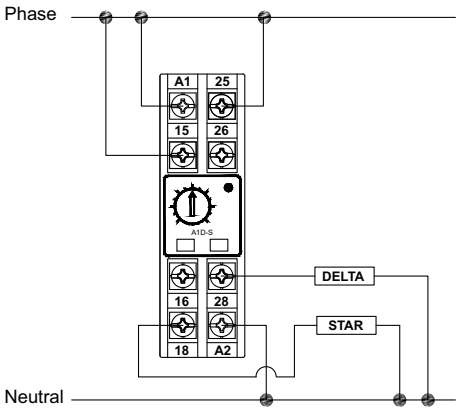
Connection Diagrams

A1DA



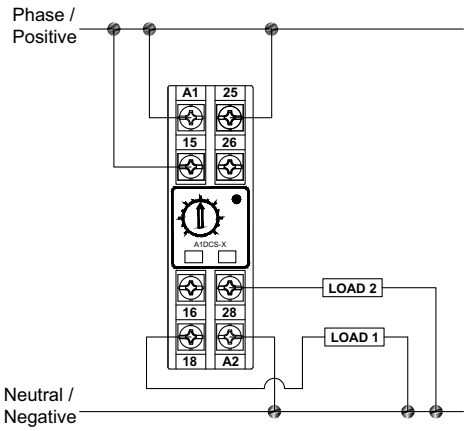
A1, A2 : Auxiliary supply 240VA
15, 16, 18 : C1, NC1, NO1

A1D-S (240V/110V AC)



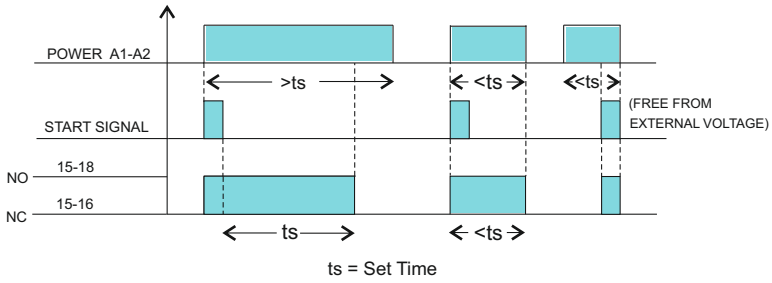
A1, A2 : Source Voltage
15, 25 : Common
1 & 2 18, 28 : Normally open 1 & 2

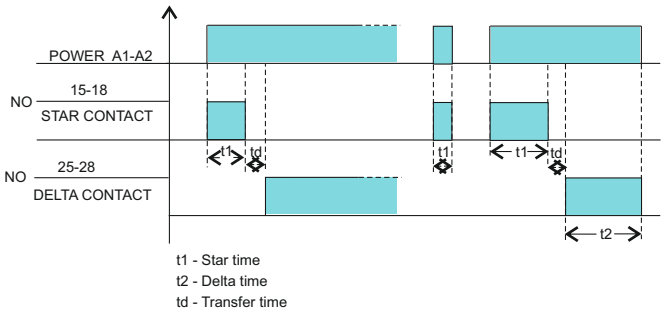
A1DCS-X

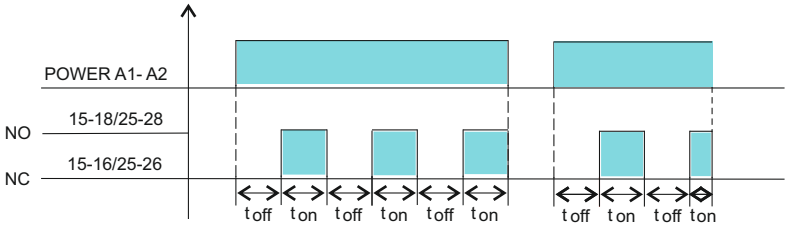


A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

Timing Diagram

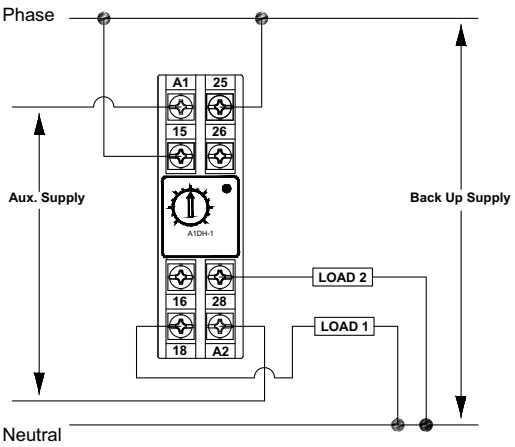






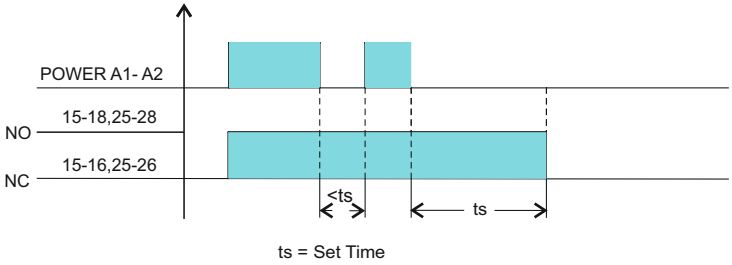
Connection Diagrams

A1DH-1



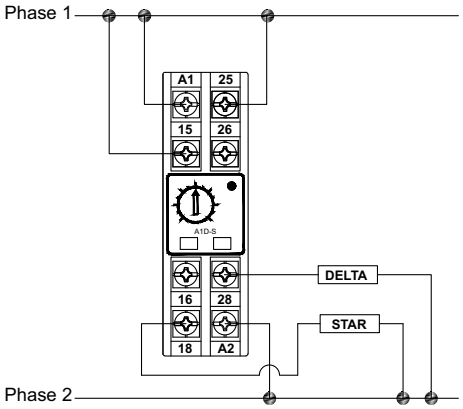
A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

Timing Diagrams

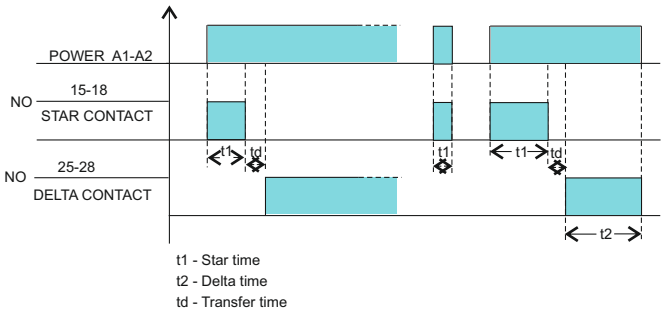


ts = Set Time

A1D-S(415V AC)

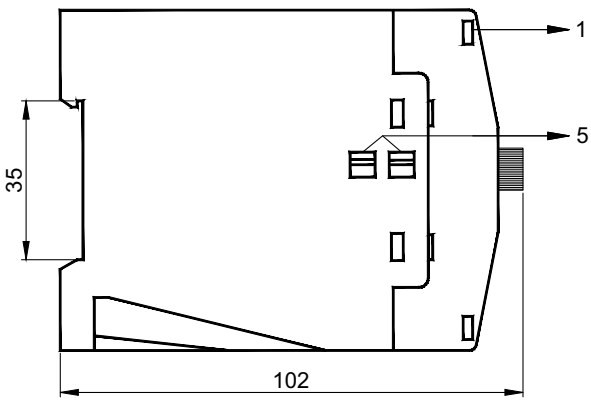


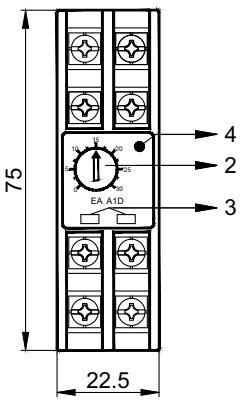
A1, A2 : Source Voltage
15, 25 : Common 1 & 2
18, 28 : Normally open 1 & 2



t1 - Star time
t2 - Delta time
td - Transfer time

Dimension





1- Terminal block
2- Time Tuning Pot
3- Range viewing window
4- LED glowing indicates that the timing is in progress
5- Slide switches for range selection

Note: All Dimensions are in mm.

Features

- Din sized enclosure for Track (Din Rail) / Screw mounting
- Front terminal protective cover for safety

Ordering Information

Model	Function	Source Voltage	Time Range	Output
A1DN-X(CSA)#	Auxiliary Relay	24V AC to 240V AC, 24V DC to 220V DC	20m Sec	2C/o Relay
APD-100	Anti Pumping Device		80m Sec	1 C/o Relay
APD-300	Anti Pumping Device		80m Sec	2 C/o Relay

#Available in UL standard

Optional*

Model	Function	Source Voltage	Time Range	Output
A1DN-X(80mSec)	Auxiliary Relay	24V AC to 240V AC, 24V DC to 220V DC	80m Sec	1 C/o Relay

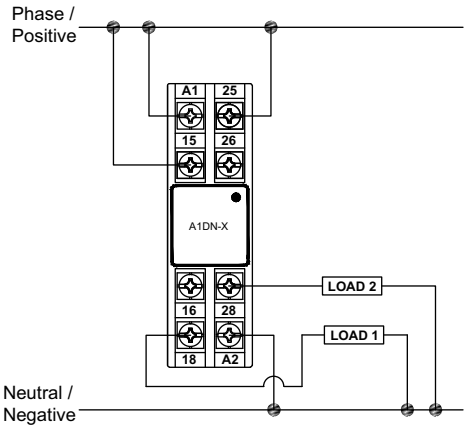
*For bulk quantities only

Specifications

Model	A1DN-X(CSA)	APD-100	APD-300
Function	Auxiliary Relay	Antipumping Relay	Antipumping Relay
Rated Supply Voltage	24 to 240V AC & 24 to 220V DC		
Operating voltage range	-10% to +10% of the rated voltage		
Rated frequency	50 / 60Hz ± 5%		
Allowable ripple (for DC supply)	3% maximum		
Power consumption	AC approx.5VA / 1W & DC approx.3W		
Control Output	2 c/o rated for 5A @ 250VAC/ 28VDC resistive load	1C/O rated for 10A @ 250VAC/ 28VDC resistive load	2 c/o rated for 8A @ 250VAC/ 28VDC resistive load
Time range	20mSec Max	80mSec ± 20mSec	80mSec ± 20mSec
Range selection	NA		
Setting accuracy	NA		
Repeat accuracy	NA		
Recovery Time	100mSec minimum		
Variation due to voltage change	NA		
Variation due to temperature change	NA		
Variation due to frequency change	NA		
Ambient temperature	Operation : -10° C to + 55° C , Storage : -25° C to +80° C		
Humidity	Max 85% RH @40°C		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Rated frequency of operation	1800 ± 5% operations per hour max		
Insulation resistance	>100M ohms @ 500V DC		
Electrical connection	Screw type terminals with self lifting clamps		
Dimension	22.5 x 75 x 102mm (W x H x D)		
Dielectric strength	01) 1.5KV AC (rms), 50Hz for 1 minute. (Between INPUT terminals & enclosure) 02) 1.5KV AC (rms), 50Hz for 1 minute. (Between relay contact terminals & enclosure) 03) 1.5 KV AC (rms), 50Hz for 1 minute. (Between INPUT terminals & relay contact terminals) 04) 1.0KV AC (rms), 50Hz for 10-30 sec. (Between non-continuous contacts of the relay)	01) 2.5KV AC, 50Hz for 1 minute. (Between Current carrying & non-current carrying parts) 02) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 03) 1.0KV AC (rms), 50Hz for 1 minute. (Between non-continuous relay contacts)	

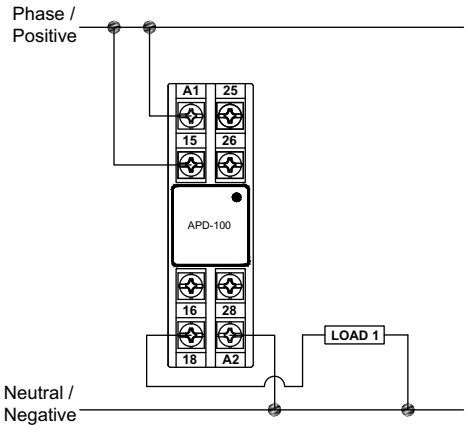
Connection Diagrams

A1DN-X



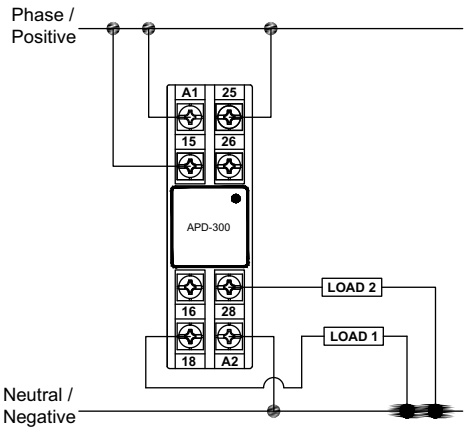
A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

APD-100



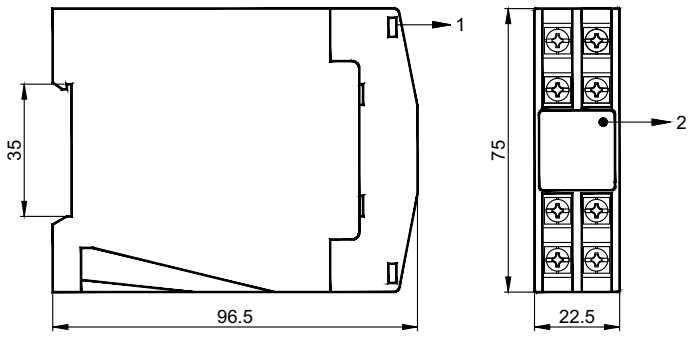
A1, A2 : Source Voltage
15, 16, 18 : C, NC, NO

APD-300



A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

Dimension



1 – Terminal block
2 – LED glowing indicates that the timing is in progress

Note: All Dimensions are in mm.

ETR-Series

Electronic Timers

Features

- Slim and Compact design.
- Suitable for Din Rail Mounting.
- Finger guard protection.
- LED indication for timing in progress.

Ordering Information

Model	Function	Source Voltage	Time Selection	Output
ETR1-X	On Delay	24V AC to 240V AC, 24V DC to 220V DC	0.3Sec to 30Min	1 C/o Relay
ETRCS-X	Cyclic Equal Off - On		0.6Sec to 60 Min	
ETRE-X	Interval		0.3 Sec to 30 Min	
ETRN-X	Auxiliary		20m Sec	
ETR-S	Star Delta	240V AC	6s to 60s, Transfer Time 100ms	1 C/o (CNO)Star 1 C/o (C-NO)Delta
ETR-Sa			12s to 120s, Transfer time,100mSec	

Specifications

Model	ETR1-X	ETRCS-X	ETRE-X
Function	On Delay Timer	Cyclic Equal OFF-ON timer	Interval timer
Rated Supply Voltage	24 to 240V AC & 24 to 220V DC		
Operating voltage range	± 10% of rated voltage		
Rated frequency	50 / 60Hz ± 5%		
Allowable ripple (for DC supply)	3% maximum		
Power consumption	AC approx.5VA DC approx.3W		
Control Output	1C/O rated for 5A @ 250VAC/28VDC resistive load		
Time range	0.3 Sec to 30 Min	0.6Sec to 60 Min	0.3 Sec to 30 Min
Range selection	3S,30S,3M,30M	6S,60S,6M,60M	3S,30S,3M,30M
Setting accuracy	± 10% max. w.r.t full scale ±100mSec		
Repeat accuracy	± 1% max. ± 100mSec		
Recovery Time	100mSec minimum		
Variation due to voltage change	± 2% max. ± 100mSec		
Variation due to temperature change	± 5% max. ± 100mSec		
Variation due to frequency change	± 2% max. ±100mSec		
Ambient temperature	Operation : -10° C to + 55° C Storage : -25° C to +80° C		
Humidity	Max 95% RH @40°C		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Rated frequency of operation	1800 ± 5% operations per hour max		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	01) 1.5KV AC (rms), 50Hz for 1 minute.(Between INPUT terminals & enclosure) 02) 1.5KV AC (rms), 50Hz for 1 minute.(Between relay contact terminals & enclosure) 03) 1.5 KV AC (rms),50Hz for 1 minute.(Between INPUT terminals & relay contact terminals) 04) 1.0KV AC (rms), 50Hz for 10-30 sec. (Between non continuous contacts of the relay)		
Electrical connection	Screw type terminals with self lifting clamps		
Dimension (W x H x D) in mm	17.5 x 89.0x 62.0		

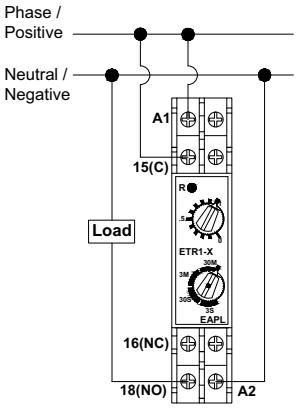
Specifications

Model	ETRN-X	ETR-S/Sa
Function	Auxiliary relay timer	Star to delta change over timer with star time & transfer time.
Rated Supply Voltage	24 to 240V AC & 24 to 220V DC	240V AC
Operating voltage range	± 10% of rated voltage	-20% to +10% of rated voltage
Rated frequency	50 / 60Hz ± 5%	50Hz ± 5%
Allowable ripple (for DC supply)	3% maximum	NA
Power consumption	AC approx.5VA DC approx.3W	AC approx.15VA
Control Output	1C/O rated for 5A @ 250VAC/28VDC resistive load	
Time range	20 ± 10mSec	ETR-S: 6s to 60S/ Transfer time,100ms ETR-Sa:12s to 120s/Transfertime, 100mSec
Range selection	NA	
Setting accuracy	NA	± 10% max. w.r.t full scale ±100mSec
Repeat accuracy	NA	± 1% max. ± 100mSec
Recovery Time	100mSec minimum	150 mSec minimum
Variation due to voltage change	NA	± 2% max. ± 100mSec
Variation due to temperature change	NA	± 5% max. ± 100mSec
Variation due to frequency change	NA	± 2% max. ±100mSec
Ambient temperature	Operation : -10° C to + 55° C Storage : -25° C to +80° C	
Humidity	Max 95% RH @40°C	Up to 85% RH @40°C
Service life (under no load)	10^6 operations minimum	
Electrical life (under full load)	10^5 operations minimum	
Rated frequency of operation	1800 ± 5% operations per hour max	
Insulation resistance	>100M ohms @ 500V DC	
Dielectric strength	01) 1.5KV AC (rms), 50Hz for 1minute Between INPUT terminals & enclosure) 02) 1.5KV AC (rms), 50Hz for 1minute. (Between relay contact terminals & enclosure) 03) 1.5 KV AC (rms), 50Hz for 1minute (Between INPUT terminals & relay contact terminals) 04) 1.0KV AC (rms), 50Hz for 10-30 sec. (Between non continuous contacts of the relay)	01) 2.5KV AC, 50Hz for 1 minute. (Between current carrying& noncurrent carrying parts) 02) 1.5KV AC, 50Hz for 1 minute. (Between contacts & Control Circuit) 03) 750V AC, 50Hz for 1 Minute. (Between non-continuous contacts of the relay)
Electrical connection	Screw type terminals with self lifting clamps	
Dimension (W x H x D) in mm	17.5 x 89.0 x 62.0	

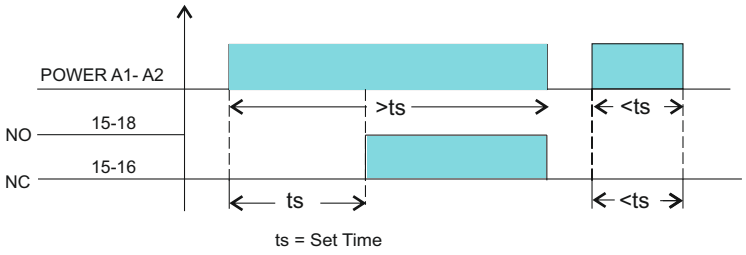
Connection Diagrams

Timing Diagrams

ETR1-X

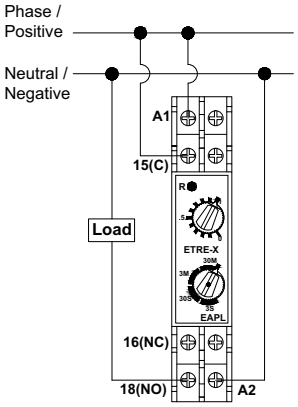


A1, A2 : Source Voltage
15, 16, 18 : C, NC, NO

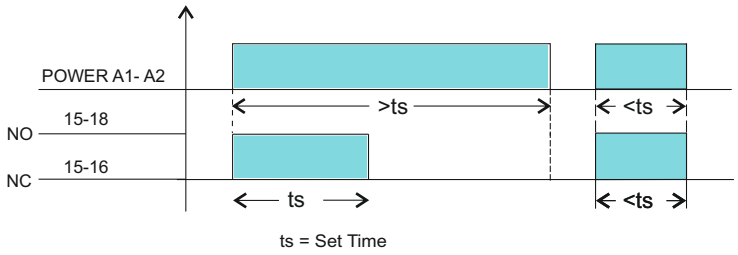


ts = Set Time

ETRE-X

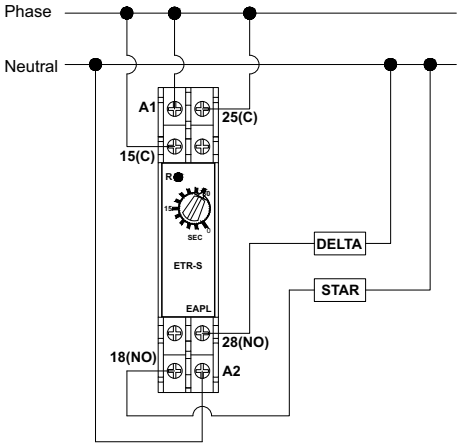


A1, A2 : Source Voltage
15, 16, 18 : C, NO, NC

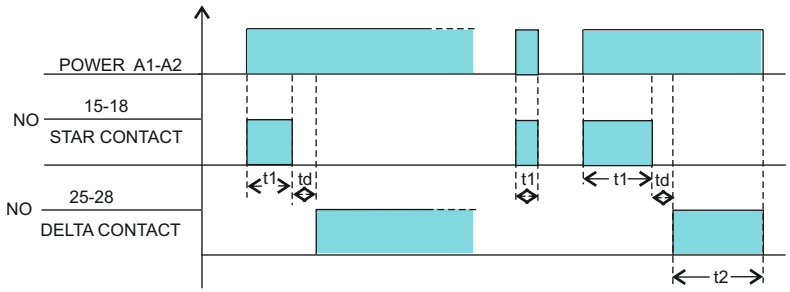


ts = Set Time

ETR-S/Sa



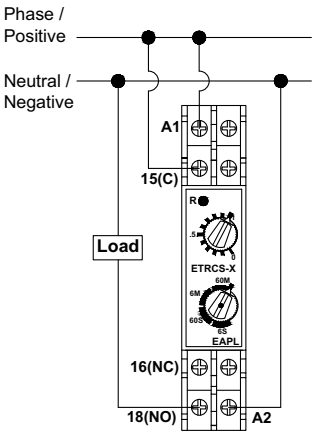
A1, A2 : Source Voltage
15, 25 : C1, C2
18, 28 : NO1, NO2



t1 - Star time
t2 - Delta time
td - Transfer time

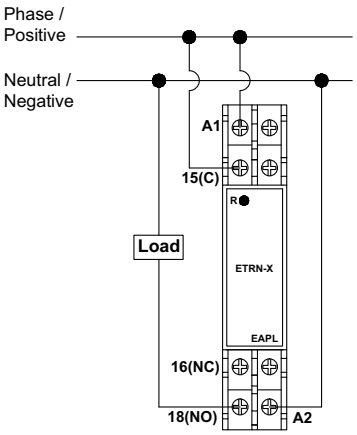
Connection Diagrams

ETRCS-X



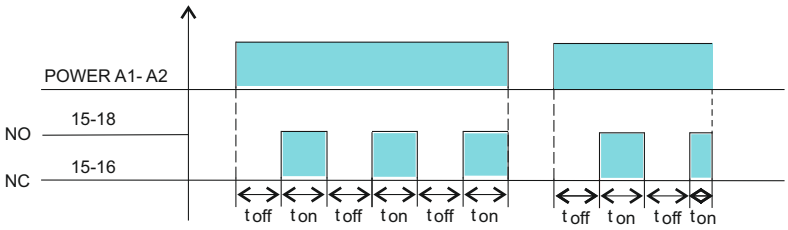
A1, A2 : Source Voltage
15, 16, 18 : C, NO, NC

ETRN-X

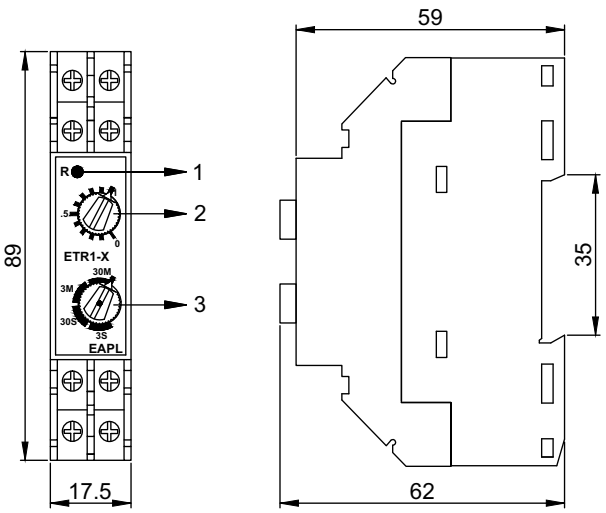


A1, A2 : Source Voltage
15, 16, 18 : C, NO, NC

Timing Diagram



Dimension



1. LED glowing indicates that the timing is in progress
2. Time Tuning Pot
3. Timing Range Pot

Note: All Dimensions are in mm.

Features

- Din sized enclosure
  B1DCA-T
- Hold / Restart facility during power fail conditions.
- Program lock facility is provided for tamper proof operation.
  B1D-S
- Star to Delta Changeover Timer with star time and transfer time settable.

Ordering Information

Model	Function	Source Voltage	Time selection	Output
B1DCA-X	Cyclic Adjustable On-Off	24V AC to 240V AC, 24V DC to 220V DC	0.6Secs to 60Mins	2 C/o Relay
B1DCA-T	Cyclic Adjustable On-Off	110V AC / 240V AC	0.1Secs to 10 Hrs	2 C/o Relay
B1DS	Star Delta	440V AC	0.6secs to 60secs,Transfer delay time to change over from Star to Delta: 40ms / 100ms	1 C/O (C-NO)Star 1 C/O (C-NO)Delta
B1DH-Q	Power-Off Delay	110V AC / 240V AC 110V DC / 220V DC	6Secs to 60Secs	2 C/o Relay

Optional*

Model	Function	Source Voltage	Time selection	Output
B1DCA-T	Cyclic Adjustable On-Off	110V AC / 240V AC/ 12V DC	0.24Secs to 24 Hrs	2 C/O Relay
B1DCA-T	Cyclic Adjustable On-Off	24V DC	0.1Secs to 10 Hrs	2 C/O Relay
B1DH-Q	Power-Off Delay	110V AC to 240V AC, 110V DC to 220VDC	0.6Secs to 6Secs	2 C/O Relay
B1DH-Q	Power-Off Delay	24V DC	6Secs to 60Secs	2 C/O Relay
B1DC-A	Cyclic Adjustable On-Off	12V DC	0.1secs to 10hrs	2 C/O Relay

*For bulk quantities only

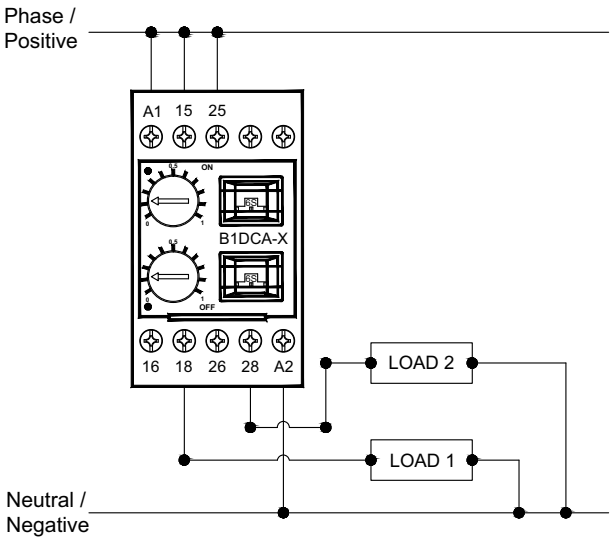
Specifications

Model	B1DCA-X	B1DCA-T	B1D-S	B1DH-Q
Function	Cyclic Adjustable On-Off time independently adjustable		Star to Delta changeover timer with star time & transfer time settable	Power OFF delay timer
Rated Supply Voltage	24V AC to 240V AC, 24V DC to 220V DC	110V AC / 240V AC	440V AC	110V AC / 240V AC 110V DC / 220V DC
Operating voltage range	-10% to +10% of the rated voltage	-15% to +10% of rated voltage	-20% to +10% of rated voltage	
Rated frequency	50Hz ± 5%			50/60Hz ± 5%
Allowable ripple (for DC supply)	3% maximum	NA		
Power consumption	AC approx.5VA / 1W DC approx.2W	AC approx.20VA	AC approx.20VA / 4W	150mA peak current 5mA once stabilized
Control Output	2 c/o rated for 5A @ 250VAC/28VDC resistive load		1c/o rated for 5A @250VAC/ 28VDC resistive load	2c/o rated for 5A @250VAC/ 28VDC resistive load
Time range	0.6 Sec to 60 Min	0.1 Sec to 10 hrs	Star Time : 0.6Sec-60 Sec Transfer Time : 40mSec / 100mSec Settable	6Sec to 60 Sec
Range selection	6S, 18S, 36S, 60S, 3M, 6M, 30M, 60M	1S, 10S, 1M, 10M, 1H, 10H	6Sec,60Sec, transfer time 40msec,100msec	NA
Setting accuracy	± 10% max. w.r.t full scale ± 100mSec			
Repeat accuracy	± 1% max. ± 100mSec			± 2% max. ± 100mSec
Recovery Time	100mSec minimum	500mSec minimum	150mSec minimum	NA

Model	B1DCA-X	B1DCA-T	B1D-S	B1DH-Q
Min energization Time	NA			1 Sec
Variation due to voltage change	± 2% max. ± 100mSec			
Variation due to temperature change	± 5% max. ± 100mSec			
Temperature co-efficient	NA			± 0.5% max. for every 1°C
Variation due to frequency change	± 2% max. ±100mSec			
Ambient temperature	Operation : -10° C to + 55° C , Storage : -25° C to +80° C			
Humidity	Up to 85% RH @40°C			
Service life (under no load)	10^6 operations minimum			
Electrical life (under full load)	10^5 operations minimum			
Rated frequency of operation	1800 ± 5% operations per hour max			120 ± 5% operations per hour max
Insulation resistance	>100M ohms @ 500V DC			
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 1.0KV AC, 50Hz for 1 minute.(Between non-continuous contacts of the relay) for B1DCA-X, B1DCA-T,BIDH-Q. 4) 750V AC , 50Hz for 1minute.(Between non-continuous contacts of the relay) for B1D-S only.			
Electrical connection	Screw type terminals with self lifting clamps			
Dimension	45x 75x 116mm (W x H x D)			

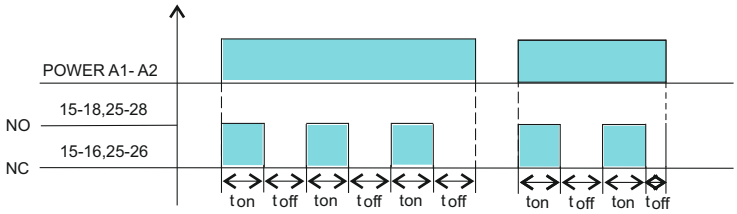
Connection Diagrams

B1DCA-X



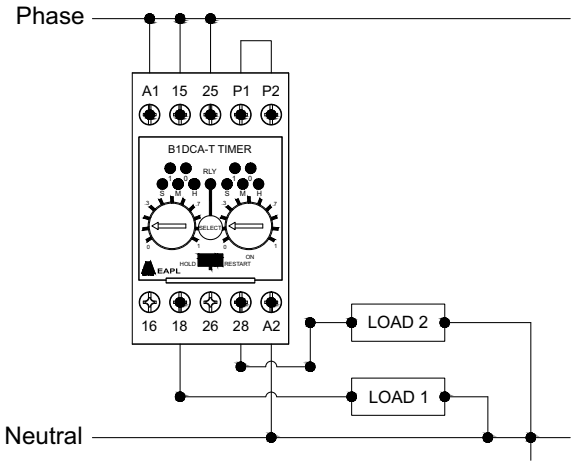
A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

Timing Diagram



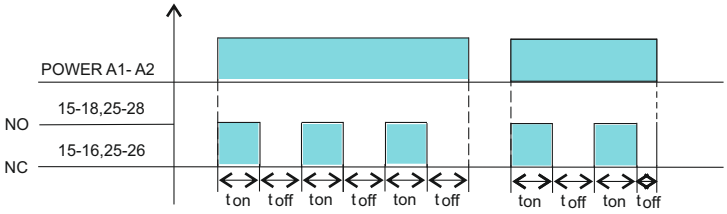
Connection Diagrams

B1DCA-T (AC)

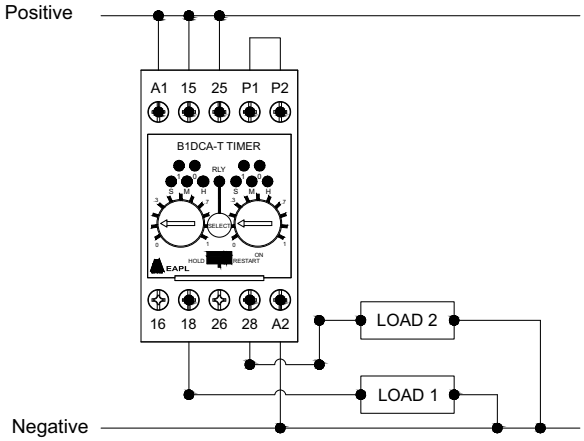


A1, A2 : Source Voltage
15, 25 : Common 1 & 2
16, 26 : Normally closed 1 & 2
18, 28 : Normally open 1 & 2
P1, P2 : SHORT – PROGRAM ENABLE
OPEN - DISABLE

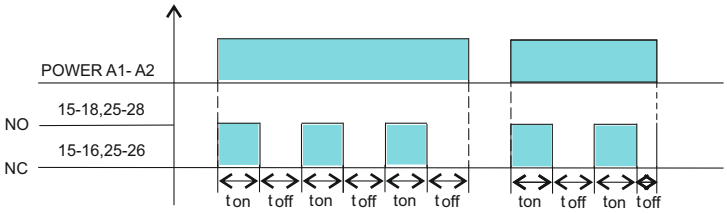
Timing diagram



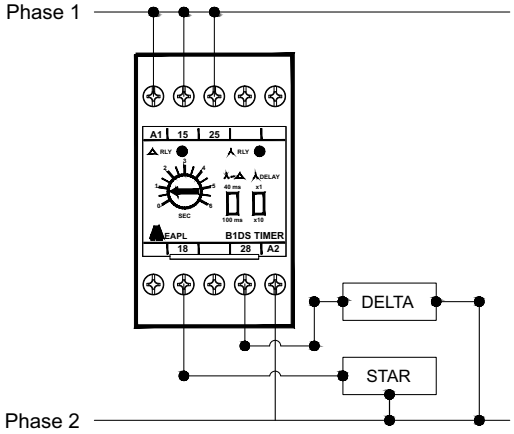
B1DCA-T (DC)



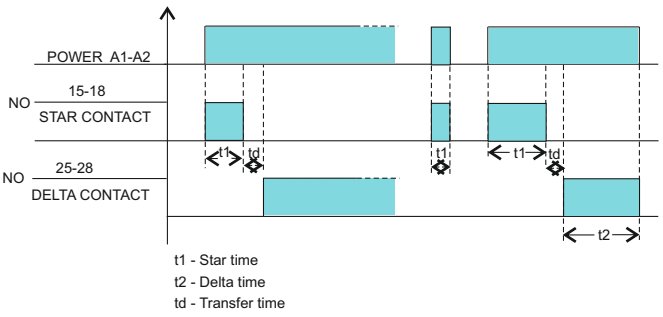
A1, A2 : Source Voltage
15, 25 : Common 1 & 2
16, 26 : Normally closed 1 & 2
18, 28 : Normally open 1 & 2
P1, P2 : SHORT – PROGRAM ENABLE
OPEN - DISABLE



B1DS



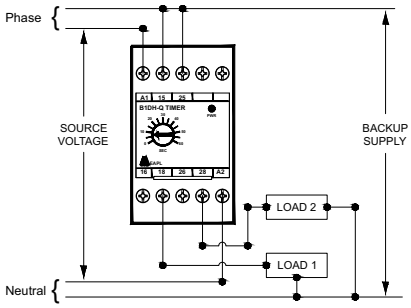
A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2



t1 - Star time
t2 - Delta time
td - Transfer time

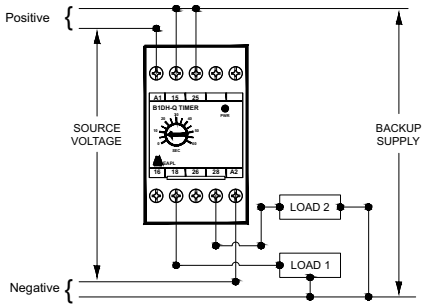
Connection Diagrams

B1DH-Q (AC)



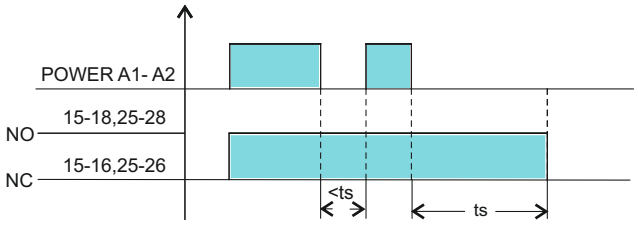
A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO2

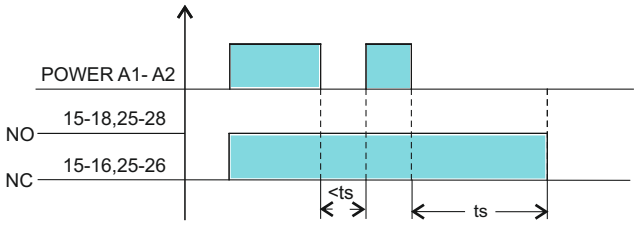
B1DH-Q (DC)



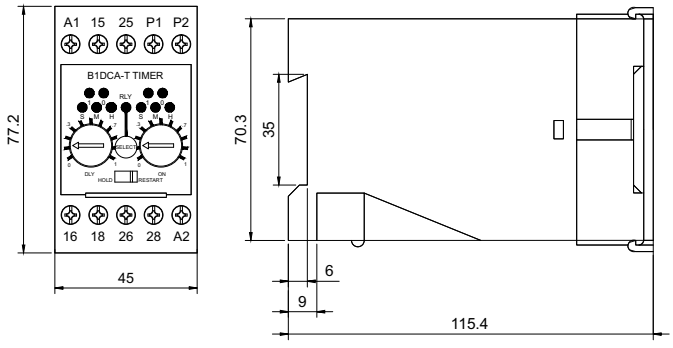
A1, A2 : Source Voltage
15, 16, 18 : C1, NC1, NO1
25, 26, 28 : C2, NC2, NO

Timing diagram





Dimension



Note: All Dimensions are in mm.

Features

- Din sized enclosure
  B1D-FR
- To operate any load for pre-set time in the forward and reverse direction with settable pause time in between the two directions.

Ordering Information

Model	Function	Source Voltage	Time selection	Output
B1DF	On Delay with instant contact	110V AC / 240V AC	0.3Secs to 30Mins	1 C/O On Delay 1 C/O Instant

Optional*

Model	Function	Source Voltage	Time selection	Output
B1DF	On Delay with instant contact	24V DC	0.3Secs to 30Mins	1 C/O On Delay 1 C/O Instant
B1DF-R	Forward/Reverse with Pause Time	240V AC	Forward & Reverse - 0.6Min to 6Min, Delay- 0.1 Min to 1Min	1C/O forward and 1C/O reverse

*For bulk quantities only

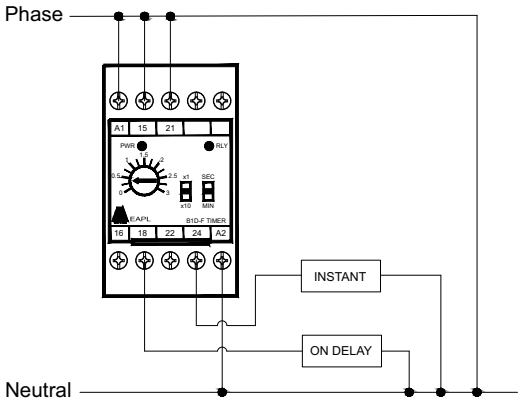
Specifications

Model	B1DF	B1DF-R
Function	ON delay timer with instant contact	Switch two Loads with delay in between in cyclic fashion
Rated Supply Voltage	240V AC/110V AC	240V AC
Operating voltage range	-20% to +10% of the rated voltage	
Rated frequency	50Hz ± 5%	
Power consumption	AC approx. 15VA / 3W	AC approx.30VA
Control Output	1C/O Rated for 5A @250VAC/28VDC resistive load	
Time range	0.3 Sec to 30 Min	Forward & Reverse 0.6Min to 6Min Delay 0.1 Min to 1Min
Range selection	3 Sec, 30 Sec, 3Min, 30Min	NA
Setting accuracy	± 10% max. w.r.t full scale ± 100mSec	
Repeat accuracy	± 1% max. ± 100mSec	
Recovery Time	100mSec minimum	150mSec minimum
Variation due to voltage change	± 2% max. ± 100mSec	
Variation due to temperature change	± 5% max. ± 100mSec	
Variation due to frequency change	± 2% max. ±100mSec	
Ambient temperature	Operation : -10° C to + 55° C , Storage : -25° C to +80° C	
Humidity	Max 85% RH @40°C	
Service life (under no load)	10^6 operations minimum	
Electrical life(under full load)	10^5 operations minimum	
Rated frequency of operation	1800 ± 5% operations per hour max	
Insulation resistance	>100M ohms @ 500V DC	
Dielectric strength	01) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 02) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 03) 1KV AC, 50Hz for 1 minute.(Between non-continuous relay contacts) for B1D-FR 04) 750V AC, 50Hz for 1minute (Between non-continuous contacts of the relay) for B1DF	
Electrical connection	Screw type terminals with self lifting clamps	
Dimension(W x H x D) in mm	45 x 75 x 116mm	

*For bulk quantities only

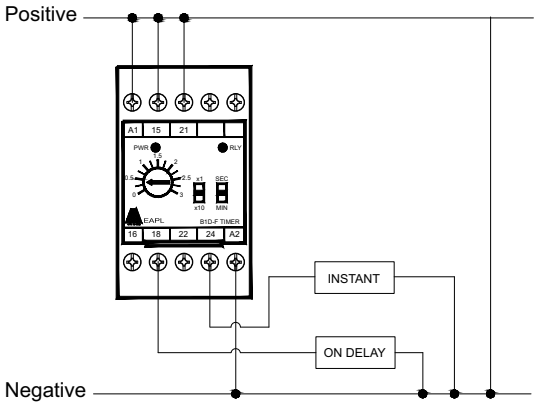
Connection Diagrams

B1D-F (AC)



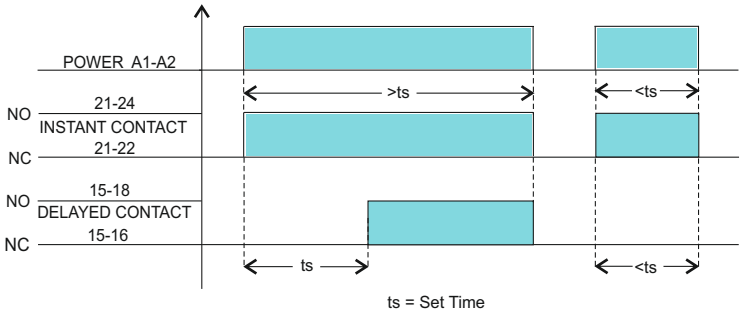
A1, A2 : Source Voltage
15,16,18 : C, NC. NO (ON DELAY Contact)
21,22,24 : C, NC, NO (INSTANT Contact)

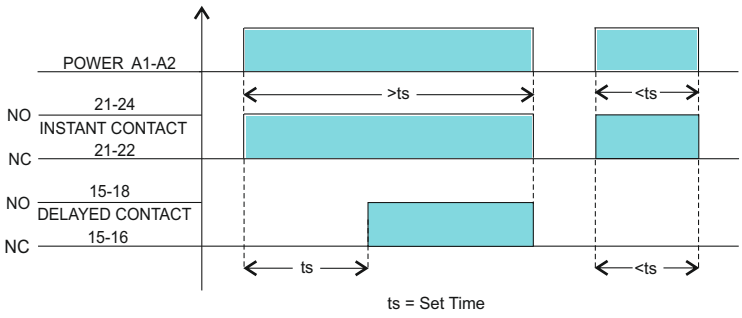
B1D-F (DC)



A1, A2 : Source Voltage
15,16,18 : C, NC.NO (ON DELAY Contact)
21,22,24 : C, NC, NO (INSTANT Contact)

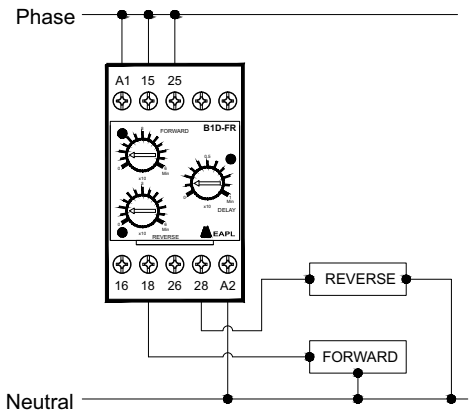
Timing diagram





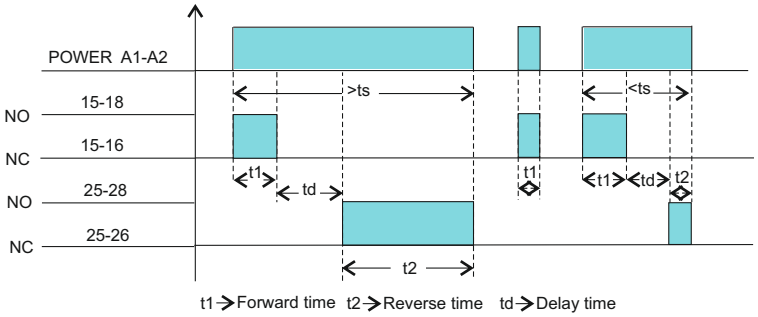
Connection Diagrams

B1DF-R

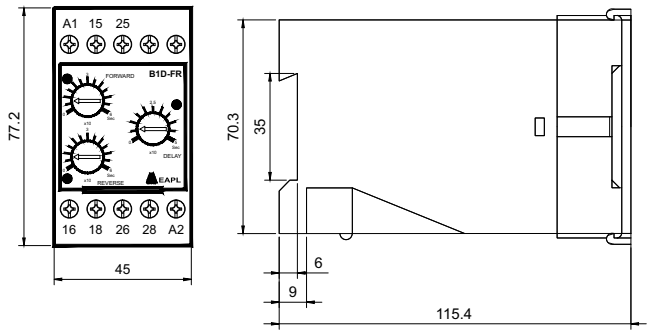


A1, A2 : Source Voltage
15, 16,18 : C, NC, NO (Forward Contact)
25, 26, 28 : C, NC, NO (Reverse Contact)

Timing diagram



Dimension



Note: All Dimensions are in mm.

Features

- Din sized enclosure for Panel / Flush mounting having front protective cover for safety.
- Timer and base available for Track (Din rail) / Screw mounting (except H3D1)
- Large transparent knob for precise time setting.
- Knob lock ring is provided to protect from unintentional change of time setting.
- LED indication for timing in progress.
- 8 Pin/ 11 Pin Timer with corresponding base is available

H1DA-X

- Accepts any voltage from 12V AC / DC to 240V AC / 220V DC as signal for timing initiation.

H1D1-X, H3D1

- Multifunction - On-Delay / Interval / Equal Cyclic- On / Equal Cyclic-Off programmable.
  H3D1- Timer without base.

Ordering Information

Model	Function	Source Voltage	Time selection	Output
H1DT-10(CSA)	On-Delay (11 Pin) plug in type	24V AC to 240V AC, 24V DC to 220V DC	1sec to 10secs	2c/o Relay
H1DT-30(CSA)			3secs to 30secs	
H1DT-60(CSA)			6secs to 60secs	
H4DT-10	On-Delay (8 Pin) plug in type.		1sec to 10secs	
H4DT-30			3secs to 30secs	
H4DT-60			6secs to 60secs	
H1D1-X(CSA)	Multifunction (11 Pin) plug in type		0.3secs to 60mins	
H3D1	Multifunction (8 terminals) screw type		0.3secs to 60mins	
H1DA-X	Signal Off-Delay (11 Pin) plug in type		0.6secs to 60mins	

Specifications

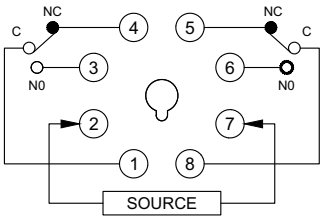
Model	H1DT-10	H1DT-30	H1DT-60	H4DT-10	H4DT-30	H4DT-60
Function	On-Delay (11 Pin) plug in type.			On-Delay (8 Pin) plug in type.		
Rated Supply Voltage	24 to 240V AC & 24 to 220V DC					
Operating voltage range	-10% to +10% of the rated voltage					
Rated frequency	50Hz ± 5%					
Allowable ripple (for DC supply)	3% maximum					
Power consumption	AC Approx. 3VA / 1W & DC Approx.2W					
Control Output	2 c/o rated for 5A @ 250VAC/28VDC resistive load					
Time range	1 Sec to 10 Sec	3 Sec to 30 Sec	6 Sec to 60 Sec	1 Sec to 10 Sec	3 Sec to 30 Sec	6 Sec to 60 Sec
Setting accuracy	± 10% max. w.r.t full scale ±100mSec					
Repeat accuracy	± 1% max. ± 100mSec					
Recovery Time	100mSec minimum					
Variation due to voltage change	± 2% max. ± 100mSec					
Variation due to temperature change	± 5% max. ± 100mSec					
Variation due to frequency change	± 2% max. ±100mSec					
Ambient temperature	Operation : -10°C to + 55°C & Storage : -25°C to +80°C					
Humidity	Max 85% RH @40°C					
Service life (under no load)	10^6 operations minimum					
Electrical life (under full load)	10^5 operations minimum					
Rated frequency of operation	1800 ± 5% operations per hour max					
Insulation resistance	>100M ohms @ 500V DC					
Dielectric strength	01) 1.5KV AC (rms), 50Hz for 1 minute. (Between INPUT terminals & enclosure) 02) 1.5KV AC(rms), 50Hz for 1 minute. (Between relay contact terminals &enclosure) 03) 1.5 KV AC(rms), 50Hz for 1 minute. (Between INPUT terminals & relay contact terminals) 04) 1.0KV AC (rms), 50Hz for 10-30 sec. (Between non-continuous contacts of the relay)			a) 2.5KV AC, 50Hz for 1 minute. (Between current carrying& non-current carrying parts) b) 1.5KV AC, 50Hz for 1 minute. (Between contacts & control circuit) c) 1KV AC, 50Hz for 1 minute. (Between non-continuous relay contacts)		
Electrical connection	11 Pin Plug - in - type			8 pin plug - in - type		
Dimension (W x H x D)	48 x 48 x 94 mm					

Specifications

Model	H3D1	H1D1-X	H1DA-X
Function	On Delay/Interval/Cyclic On/Cyclic Off		Signal OFF delay timer with external potential start signal
Rated Supply Voltage	24 to 240V AC & 24 to 220V DC		
Operating voltage range	-10% to +10% of the rated voltage		
Rated frequency	50Hz ± 5%		
Allowable ripple (for DC supply)	3% maximum		
Power consumption	AC Approx. 3VA / 1W & DC Approx.2W		
Start signal	NA		12V to 240V AC 50Hz / 12 to 220V DC for 150mSec
Control Output	2 c/o rated for 5A @ 250VAC/28VDC resistive load		
Time range	0.3 Sec to 60 Min		0.6 Sec to 60 Min
Range selection	3S, 6S, 30S, 60S, 3M, 6M, 30M, 60M		6S, 60S, 6M, 60M
Setting accuracy	± 10% max. w.r.t full scale ±100mSec		
Repeat accuracy	± 1% max. ± 100mSec		
Recovery Time	100mSec minimum		
Variation due to voltage change	± 2% max. ± 100mSec		
Variation due to temperature change	± 5% max. ± 100mSec		
Variation due to frequency change	± 2% max. ±100mSec		
Ambient temperature	Operation : -10°C to + 55°C , Storage : -25°C to +80°C		
Humidity	Max 85% RH @40°C		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Rated frequency of operation	1800 ± 5% operations per hour max		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	a) 2.5KV AC, 50Hz for 1 minute. (Between current carrying& non-current carrying parts) b) 1.5KV AC, 50Hz for 1 minute. (Between contacts & control circuit) c) 1KV AC, 50Hz for 1 minute. (Between non-continuous relay contacts)	01) 1.5KV AC (rms), 50Hz for 1 minute. (Between INPUT terminals & enclosure) 02) 1.5KV AC(rms), 50Hz for 1 minute. (Between relay contact terminals & enclosure) 03) 1.5 KV AC(rms), 50Hz for 1 minute. (Between INPUT terminals & relay contact terminals) 04) 1.0KV AC (rms), 50Hz for 10-30 sec. (Between non-continuous contacts of the relay)	a) 2.5KV AC, 50Hz for 1 minute. (Between current carrying& non-current carrying parts) b) 1.5KV AC, 50Hz for 1 minute. (Between contacts & control circuit) c) 1KV AC, 50Hz for 1 minute. (Between non-continuous relay contacts)
Electrical connection	Screw type terminals with self lifting clamps.	11Pin Plug - in - type	
Dimension	48 x 48 x 94 mm (W x H x D)		
Cutout Dimension	46 x 46 mm (W x H)		

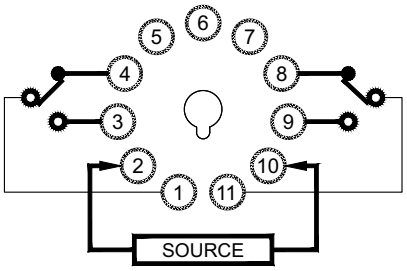
Connection Diagrams

H4DT- 10/30/60



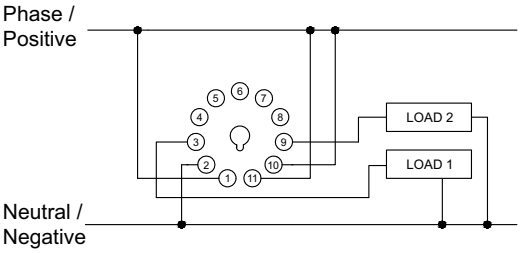
2,10 : Source Voltage
1,4,3 : C, NC. NO
11,8,9 : C, NC, NO

H1DT- 10/30/60



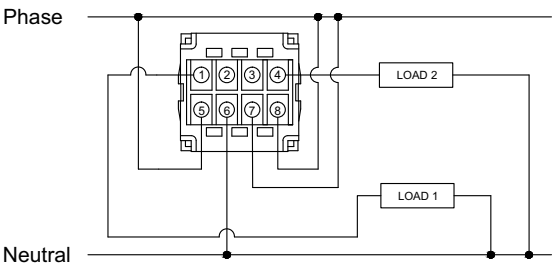
2,7 : Source Voltage
1, 4, 3 : C, NC. NO
8, 5, 6 : C, NC, NO

H1D1-X



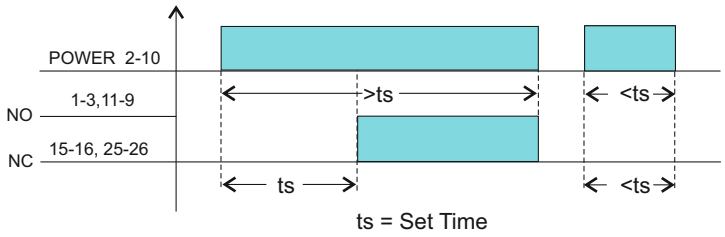
2, 10 : Source Voltage
1, 4, 3 : C, NC. NO
11, 8, 9 : C, NC, NO

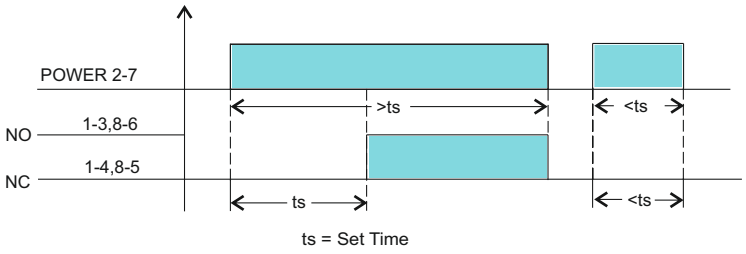
H3D1

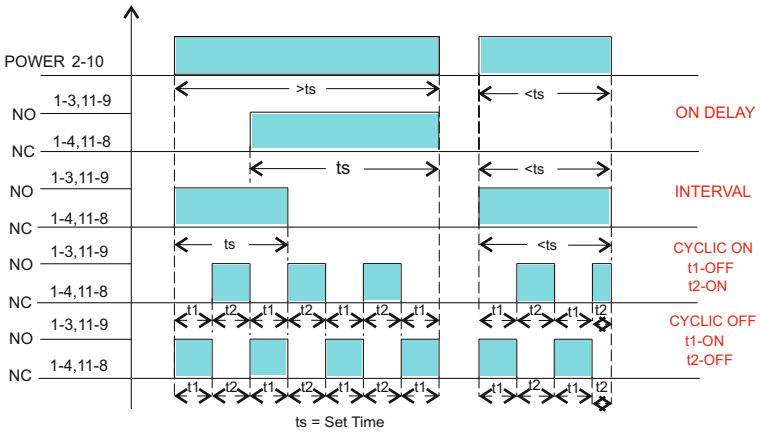


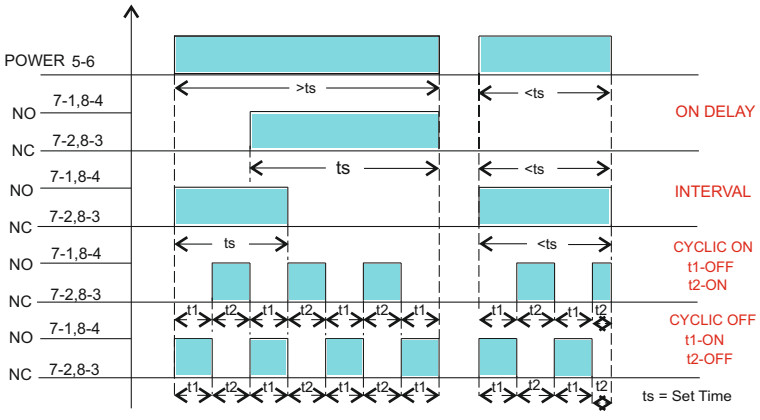
5, 6 : Source voltage
7, 8 : COM1,COM2
1, 2 : NO1, NC1
3, 4 : NC2, NO2

Timing diagram



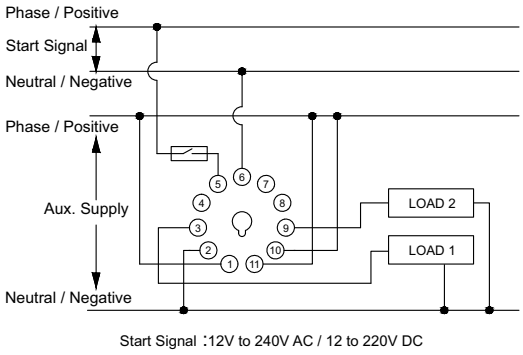




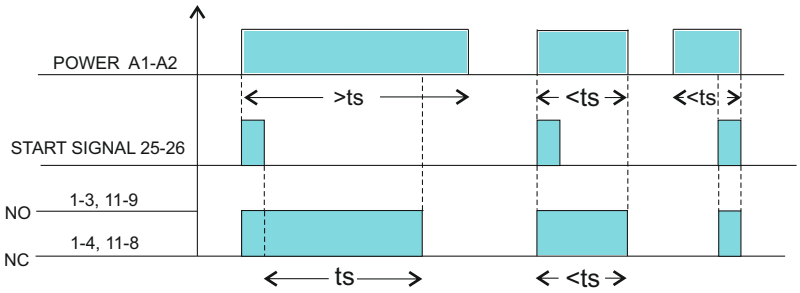


Connection Diagrams

H1DA-X



Start Signal :12V to 240V AC / 12 to 220V DC

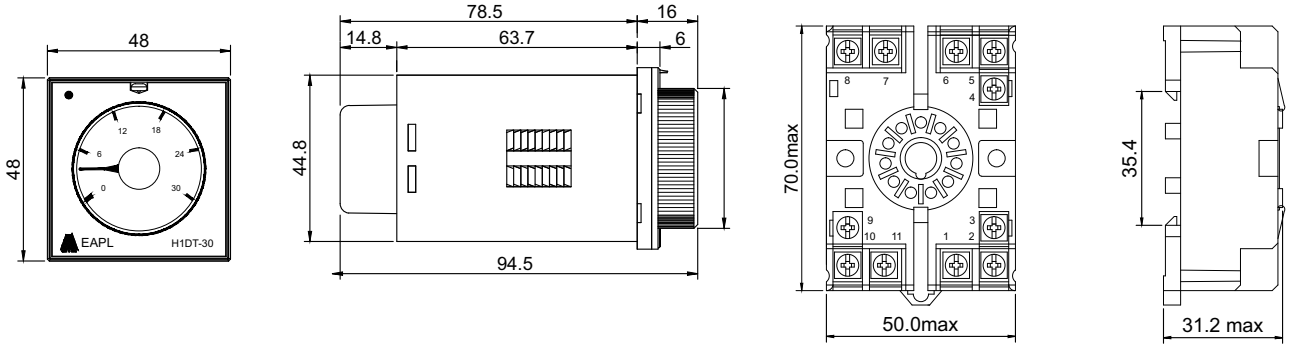


ts = Set Time
START SIGNAL:12V to 240V AC
:12V to 220V DC

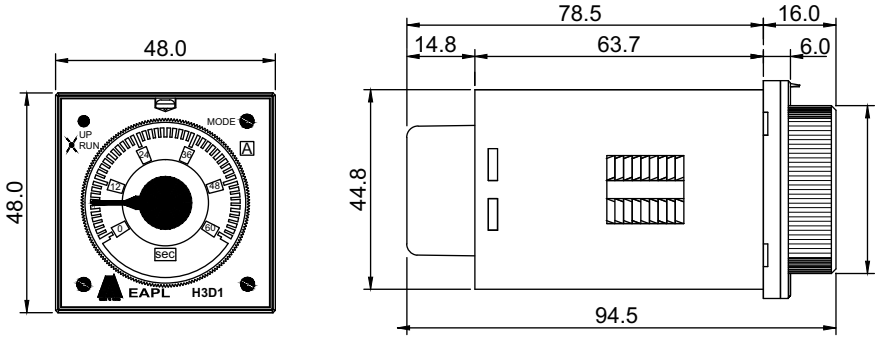
2, 10	:	Source voltage
5, 6	:	Signal
1, 11	:	Common
3, 4	:	NO1, NC1
8, 9	:	NC2, NO2
7	:	Not connected

Dimension

H1DT-30



H3D1



Note: All Dimensions are in mm.

H/C/E-Series

Digital timers

EAPL offers Digital Multifunction timer with user-selectable functions - ON Delay, Interval or cyclic, and user-selectable start signal – no start, pulse or continuous for timing initiations. Relay configuration – 1instant c/o, 1 delayed c/o or 2 delayed c/o can be selected based on requirements. The source voltage will be between 85V- 270V AC/DC and time range selection are from 100msec to 99hrs:59min. All models come with Hold / Restart feature during power fail period and are flush / Panel mounted.

Applications:

Injection moulding machine ,Granite processing machines, Packaging / Printing machines, Hot stamping machines etc.

Features

- Din sized enclosure for Panel Mounting.
- Digital display for set value and process value.
- Function (programmable) : ON DELAY / INTERVAL / CYCLIC.
- Type of start signal (programmable): No START SIGNAL / PULSE /CONTINUOUS.
- 1st c/o of the relay can be configured as INSTANT or DELAYED.
- Terminals are provided to lock the function, relay configuration, type of start signal and range selected.
- RESET cum immediate START facility can be achieved either through front buttons or rear terminals.
- Hold / Restart facility during power failure condition.

Ordering Information

Model	Function	Source Voltage	Time selection	Output
H3PT-MU	Multifunction Up-counting	85V to 270V AC /DC	0.1Secs to 99Hrs 59Mins	1c/o Instant#, 1c/o Delayed or 2c/o delayed
C3PT-MU				
E3PT-MU				1c/o Instant# , 2c/o Delayed or 3c/o delayed

Optional*

Model	Function	Source Voltage	Time selection	Output
H3PT-MU	Multifunction Up-counting	12V DC /24V DC	0.1Secs to 99Hrs 59Mins	1c/o Instant# , 1c/o Delayed or 2c/o Delayed
C3PT-MU		24V DC		

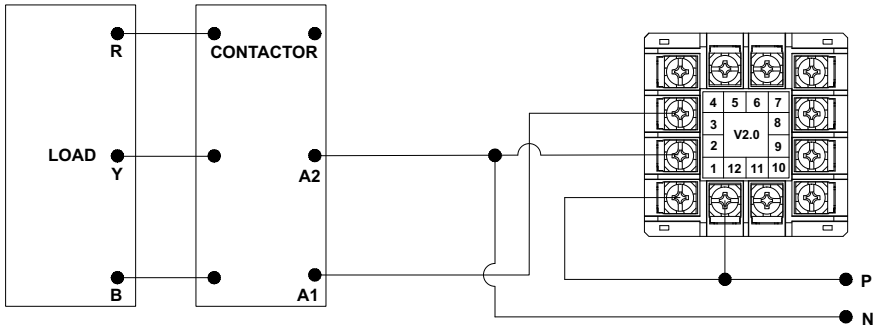
#Instant feature is not available when cyclic function is programmed.
$For bulk quantities only

Specifications

Model	H3PT-MU	C3PT-MU	E3PT-MU
Function	ON Delay / Interval / Cyclic on-off		
Rated Supply Voltage	85V TO 270V AC/DC		
Rated frequency	50/ 60Hz ± 5% for AC only		
Power consumption	AC Approx. 10VA, DC Approx. 5W		AC Approx. 15VA / 3VA
Control Output	RLY 1 & RLY2 - 1 C/ O rated for 5A @ 250 VAC /30VDC(NO) 3A @ 250VAC / 30VDC (NC)	RLY 1 & RLY2 - 1 C/ O rated for 5A @250 VAC /28VDC resistive load	Instant : 1C/O rated for 5A @ 250V AC/28V DC resistive load Delay : 2C/O rated for 5A @ 250VAC/28VDC resistive load
Display	4 digit 7 segment LED 0.28"	4 digit 7 segment LED 0.56"	
Time range	S/S: 0.1Sec to 59.90Sec, M/S: 1Sec to 59.59Min, H/M: 1Min to 99.59Hrs		
Start signal & Reset signal	250mSec minimum(Potential free)		
Setting accuracy	± 1% ± 50mSec		
Repeat accuracy	± 0.05% max. ±50mSec		
Recovery Time	2Sec minimum		
Variation due to voltage change	± 1% max. ± 100mSec		
Variation due to temperature change	± 2% max ± 100mSec		
Variation due to frequency change	± 1% max. ± 100mSec		
Ambient temperature	Operation : -10° C to + 55°C, Storage : -25° C to +80° C		
Humidity	Max 85% RH @40°C		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Rated frequency of operation	1800 ± 5% operations per hour max.		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuousrelay relay contacts)		
Electrical connection	Screw type terminals with self lifting clamps		
Overall Dimension (W x H x D)	48 x 48 x 95.5mm	72 x 72 x 128.5mm	96 x 96 x 117mm
Cut-out Dimension (W X H)	46 x 46mm	69 x 69mm	92 x 92mm

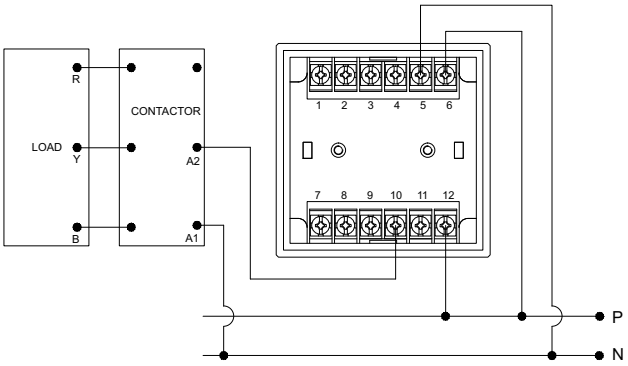
Connection Diagrams

H3PT-MU



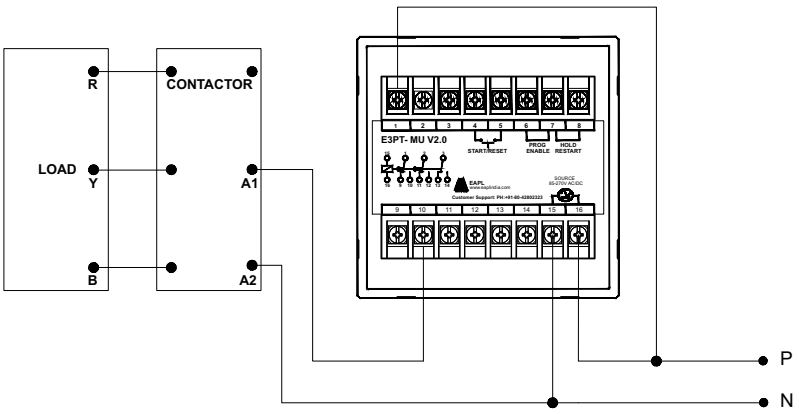
1 & 2 : Source Voltage
7 & 9 : Short – Hold
: Open – Restart
8 & 9 : Short - Program Enable
: Open – Time setting possible.
9 & 10 : Start Signal
12,11,3 : C1, NC1, NO1 (RLY-1)
5, 6, 4 : C2, NC2, NO2 (RLY-2)

C3PT-MU



1 & 2 : Start / Reset
2 & 3 : Short - Program Enable
Open – Digit Programming Possible.
2 & 4 : Short – Hold
: Open – Restart
5 & 6 : Source Voltage
7, 8, 9 : NO, NC, C (RLY-1)
10, 11, 12 : NO, NC, C (RLY-2)

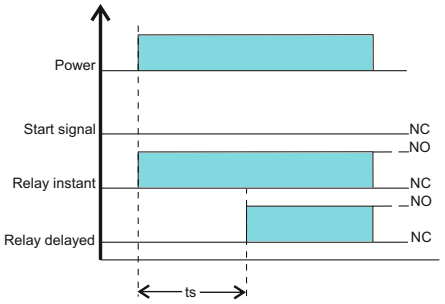
E3PT-MU



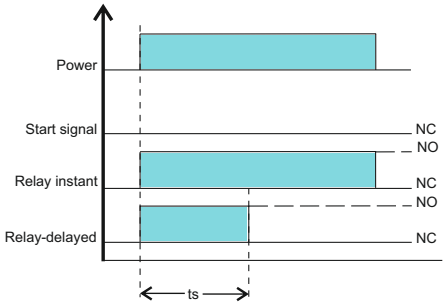
4 & 5 : Start / Reset
6 & 7 : Short - Program Enable
Open – Digit Programming Possible.
7 & 8 : Short – Hold
: Open – Restart
1,9,10 : C,NC,NO(Rly-1)
2,11,12 : C,NC,NO(Rly-1)
3,13,14 : C,NC,NO(Rly-2)
15 & 16 : Source Voltage

Timing Diagrams

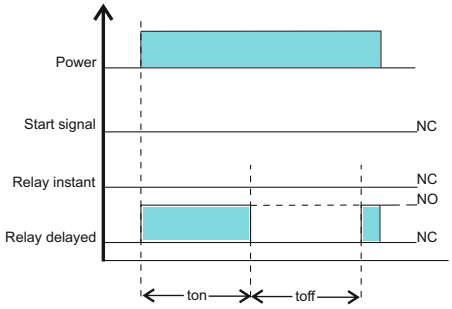
Function: On delay Start signal: No start
2 Relays: 1c/o (1 instant, 1delayed)



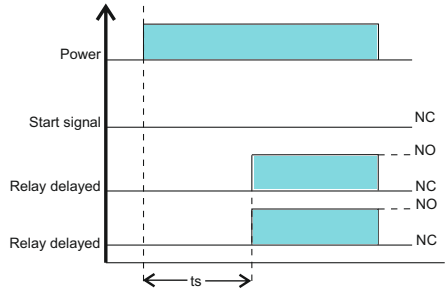
Function: Interval Start signal: No start
2 Relays: 1c/o (1 instant,1 interval)



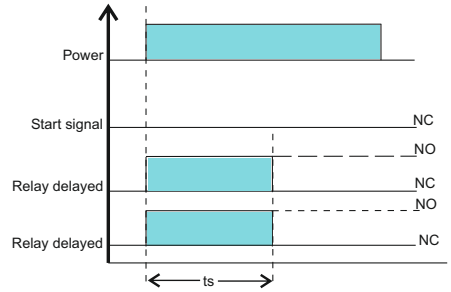
Function: Cyclic Start signal: No start
2 Relays: 1c/o (1 dummy,1 delayed)



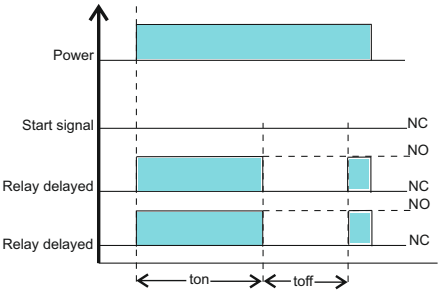
Function: On delay Start signal: No start
2 Relays: 1c/o (2 delayed)



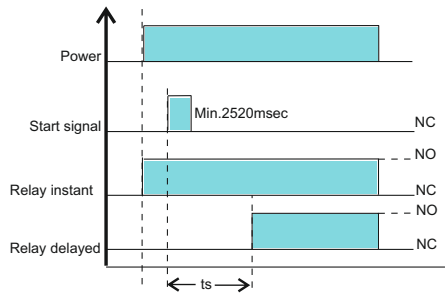
Function: Interval Start signal: No start
2 Relays: 1c/o (2 delayed)



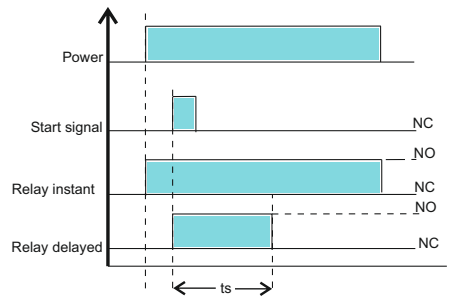
Function:Cyclic Start signal: No start
2 Relays: 1c/o (2 delayed)



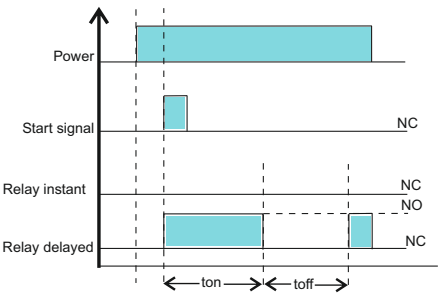
Function: On delay Start signal: Pulse
2 Relays: 1c/o (1 instant, 1 delayed)



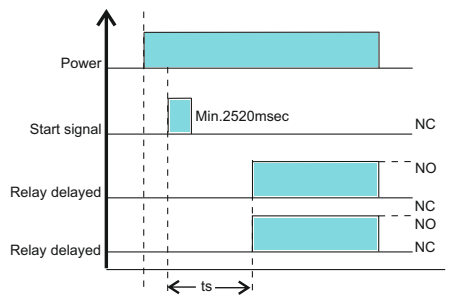
Function: Interval Start signal: Pulse
2 Relays: 1c/o (1 instant, 1 delayed)



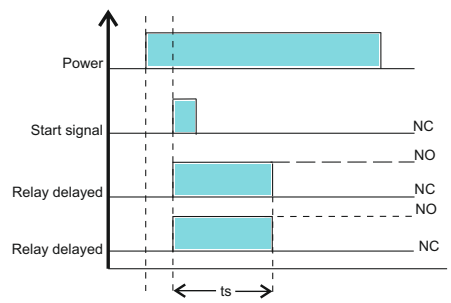
Function: Cyclic Start signal: Pulse
2 Relays: 1c/o (1dummy, 1 delayed)



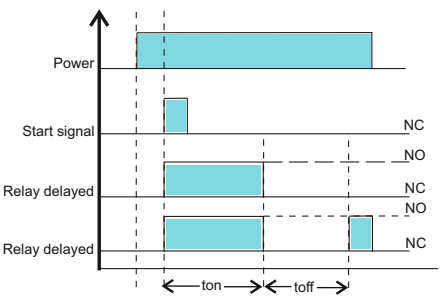
Function: On delay Start signal: Pulse
2 Relays: 2c/o (2 delayed)



Function: Interval Start signal: Pulse
2 Relays: 2c/o (2 delayed)



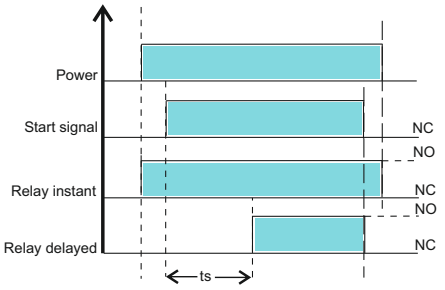
Function: Cyclic Start signal: No start
2 Relays: 2c/o (2 delayed)



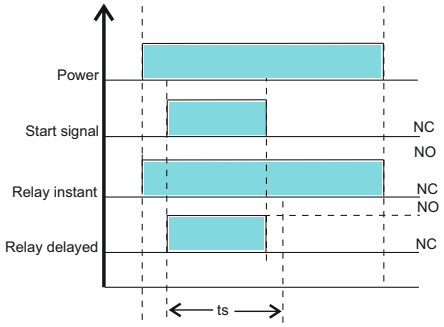
Note: In case of E3PT-MU, It will be 1 instant, 2 delayed or 3 delayed.

Timing Diagrams

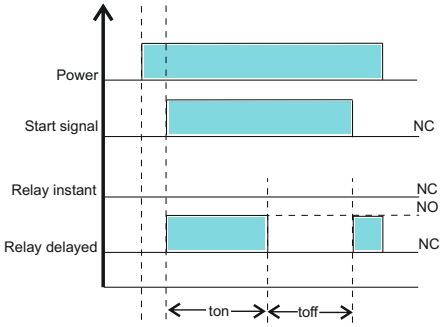
Function: On delay Start signal: Continuous
2 Relays: 1c/o (1 instant, 1delayed)



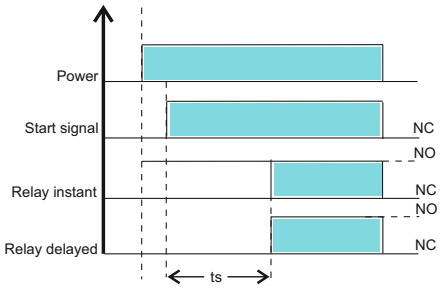
Function: On delay Start signal: Continuous
2 Relays: 1c/o (1 instant, 1delayed)



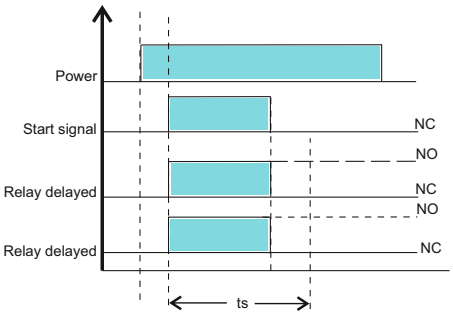
Function: Cyclic Start signal: Continuous
2 Relays: 1c/o (1 instant, 1delayed)



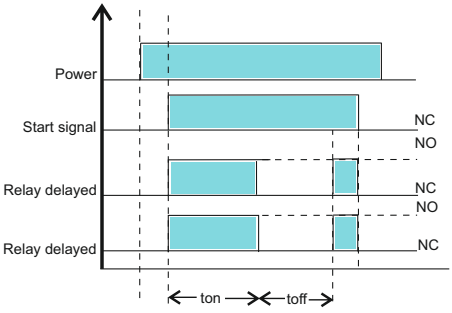
Function: On delay Start signal: Continuous
2 Relays: 1c/o (1 instant, 1delayed)



Function: Interval Start signal: Continuous
2 Relays: 1c/o (2 delayed)



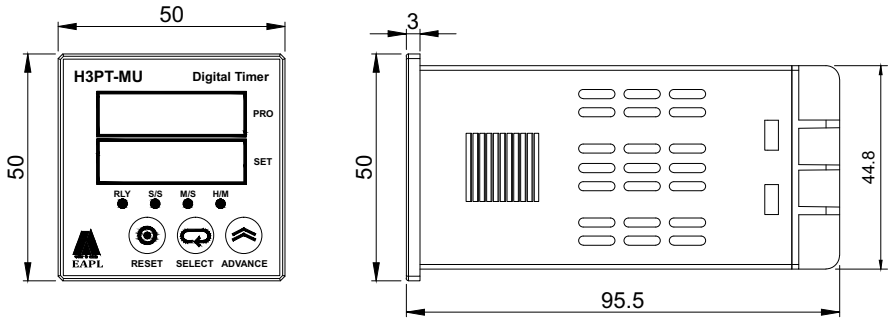
Function: Cyclic Start signal: Continuous
2 Relays: 1c/o (2 delayed)



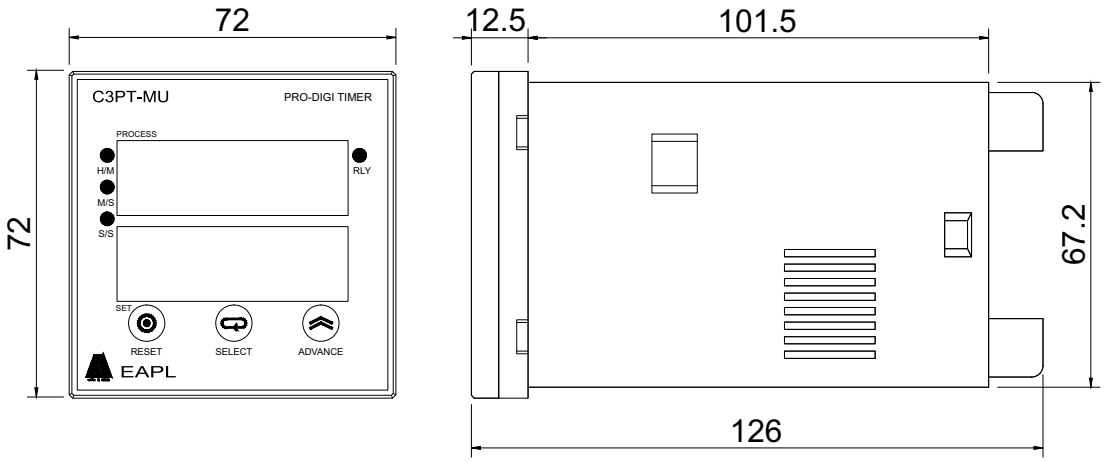
Note: In case of E3PT-MU, It will be 1 instant, 2 delayed or 3 delayed.

Timing diagram

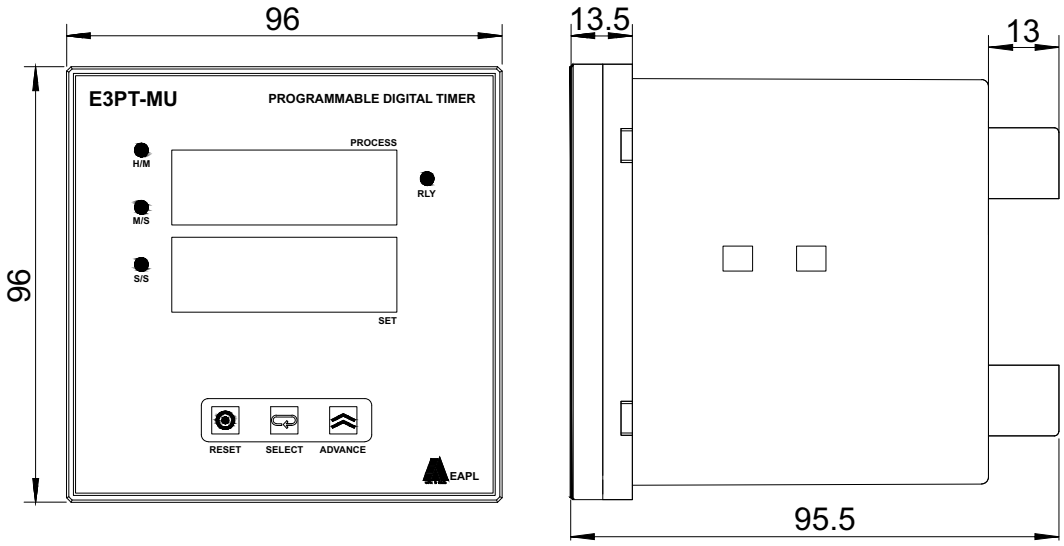
H3PT-MU V2.0



C3PT-MU



E3PT-MU



Note: All Dimensions are in mm.

S-Series

Sequential timers

EAPL offers a unique solution for bag filter applications with its microcontroller-based sequential timers. Model ST10-M1 and ST6-M1 (6 and 10 relays respectively) are relay-based timers and ST10-M2, ST15-M2 (10 triacs, 15triacs respectively) are triac based. Additional features like - cascading for achieving higher outputs, time initiation, single/multi cycles and time inhibition (Not applicable to ST15-M2), and hold /restart option facility during auxiliary power interruptions are provided in these timers. ST15-M2 has features for differential pressure signals and continuous start signals so that the timer functions in healthy condition only. User-friendly programming and copying of 1st relay program to all remaining relays is a striking feature in all these timers. These timers can be operated with an auxiliary supply of 85-270V AC/DC and programmed for a minimum time of 100msec (relay based), 10msec (Triac based) to a maximum of 99hrs 59min for ON and OFF time respectively. All these timers can be enclosed in an IP 66 ABS enclosure for dust and water protection. Size: 200 x 130 x 45mm

Applications:

Bag Filter systems, Dust pollution systems, Air handling systems, MCC panels, Pneumatic Conveyors Process Industries etc...

Features

- State of art micro control design.
- Suitable for screw mounting.
- Hold /Restart feature is available during power failure.
- 7 segment display indication for channel and timing operation.
- User-friendly programming of On / Off time selection for each relay.
- The copy feature is also provided to copy the programmed time of the first channel to all channels.
- Multiple units can be cascaded to obtain more channels.
- Time Inhibit - user can pause time with relay status remaining in current status.
- Unit can be configured to have repeat cycle operation or single cycle operation.
- Terminals for potential free pulse signal are available for timing initiation.

ST4-M1

- Enclosure suitable for din rail.
- Analog sequential timer.
- On time / Off time is common for all channels and only cyclic operation.

Ordering Information

Model	Function	Source voltage	Time range	Output
ST4-M1	Sequential Switching 4 channels	240V AC	0.1sec to 1 S/M/H	1C/O NO Relay for each channel
ST6-M1	Sequential Switching 6 channels	85V to 270V AC /DC	0.1sec to 99hrs 59mins	
ST6-M1(IP)	Sequential Switching 6 channels with IP66 enclosure			
ST10-M1	Sequential Switching 10 channels			
ST10-M1(IP)	Sequential Switching 10 channels with IP66 enclosure			

Optional*

Model	Function	Source voltage	Time range	Output
ST6-M1	Sequential Switching 6 channels	24V AC	0.1sec to 99hrs59mins	1C/O NO Relay for each channel
ST6-M1(IP)	Sequential Switching 6 channels with IP66 enclosure			
ST10-M1	Sequential Switching 10 channels			
ST10-M1(IP)	Sequential Switching 10 channels with IP66 enclosure			
ST6-M2	Sequential Switching 6 channels	85V to 270V AC /DC		1C/O NO Relay for each channel. 1C/O NO Relay each for timer ready, time in progress and timer On
ST6-M2(IP)	Sequential Switching 6 channels with IP66 Enclosure			

Specifications

Model	ST4-M1	ST6-M1	ST10-M1
Function	Sequential timer with 4 Channels	Sequential timer with 6 Channels	Sequential timer with 10 Channels
Rated Supply voltage	240V AC	85V TO 270V AC/DC	
Operating voltage	± 10% of the rated voltage	NA	
Rated frequency	50Hz ± 5%	50 / 60Hz ± 5%	
Power consumption	AC Approx. 20VA / 4W	AC Approx. 15VA,DC Approx. 3W	
Control Output	4 O/P'S (5A @ 250V AC/28 VDC resistive)	6 (RLY0 to RLY5, 'NO' relay contacts rated for 10A @ 250V AC/28VDC resistive	10 (RLY0 to RLY9, 'NO' relay contacts rated for 10A @ 250V AC/28VDC resistive)
Start signal(S1,S2)	Potential free closure(CONTINUOUS).	Potential free closure for a minimum of 150mSec.	Potential free closure for a minimum of 120mSec.
Conduction time	NA	>150 mSec	>120 mSec
On time range	0.1 to 1 S/M/H for each channel	0.1Sec to 99Hrs 59Min for each channel	0.1Sec to 99Hrs 59Min for each channel
Off time range	0.1 to 1 S/M/H for each channel	0.1Sec to 99Hrs 59Min for each channel	0.1Sec to 99Hrs 59Min for each channel
Setting accuracy	± 10 % max. w.r.t full scale ± 100mSec	± 0.1% max. w.r.t Setting ± 50mSec	
Repeat accuracy	± 1 % max. ± 100mSec	± 0.05% max. ± 50mSec	
Recovery Time	1Sec minimum	2Sec minimum	
Variation due to voltage change	± 2% max. ± 100mSec	± 1% max. ± 50mSec.	

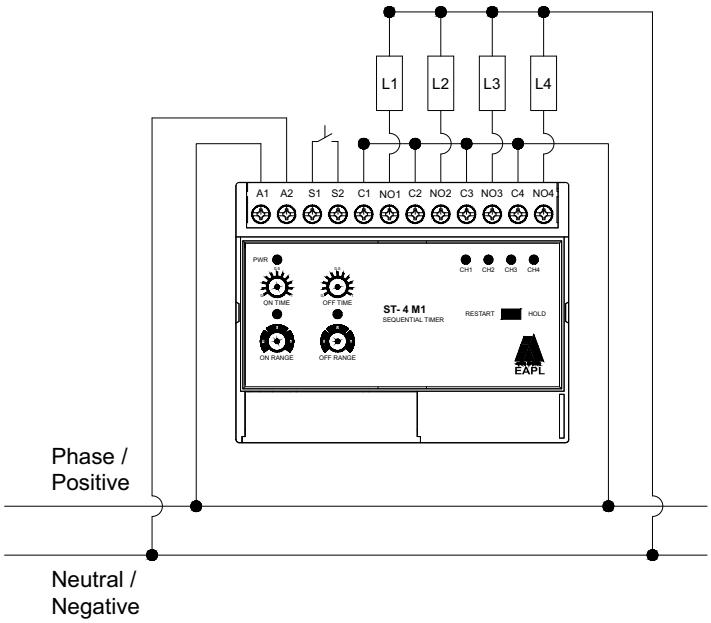
Specifications

Model	ST4-M1	ST6-M1	ST10-M1
Variation due to temperature change	± 5% max. ± 100mSec	± 2% max. ± 50mSec.	
Variation due to frequency change	± 2% max. ± 100mSec	± 1% max. ± 50mSec	
Ambient temperature	Operation : -10°C to + 55°C Storage : -25°C to +80°C		
Humidity	Max 85% RH @40°C		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Rated frequency of operation	1800 ± 5% operations per hour max.		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)		
Electrical connection	Screw type terminals with self lifting clamps		
Overall Dimension (W x H x D)	110 x 86 x 68 mm	200 x 130 x 45 mm	

Note: The same specification of ST6-M1 & ST10-M1 is applicable for ST6-M1(IP) & ST10-M1(IP) only IP66 enclosure is included.

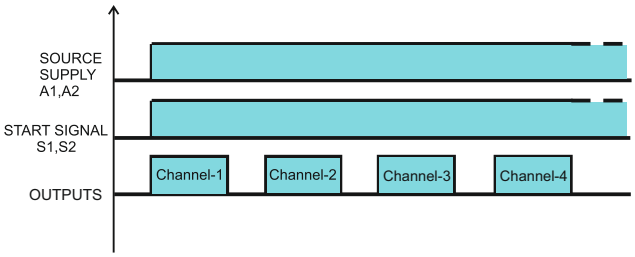
Connection details

ST4-M1



Timing diagram

ST4-M1

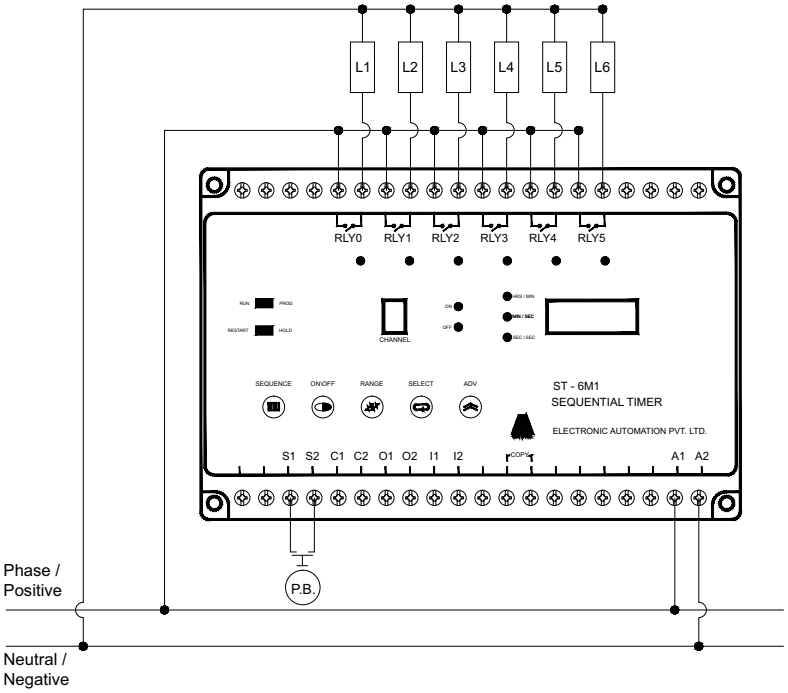


After last channel the cycle will come back to the first channel

A1,A2 : Source
S1-S2 : Open - Stop Signal
Continuous – Timing Initiation.
C1,NO1 : Control output 1
C2,NO2 : Control output 2
C3,NO3 : Control output 3
C4,NO4 : Control output 4
HOLD MODE: Continue the timing after resumption of interrupted power, provided continuous start signal is available
RESTART MODE: After the resumption of interrupted power operation starts from the CH1 or waits for the start signal.

Connection details

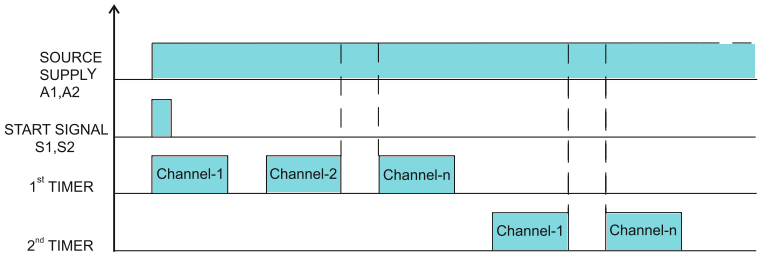
ST-6M1



A1,A2 : Source
S1-S2 : Start signal for a minimum of 150mS.
C1-C2 : SHORT – Single cycle operation(i.e. timer stops at the end of one cycle)
OPEN – Cyclic operation (i.e. timer continues to operate).
O1-O2: Cycle Complete Output. This output is available after completion of 1 cycle in single cycle operation mode (C1-C2 shorted).
I1-I2 : Time Pause Input. By shorting these terminals timing is temporarily stopped and relay status maintained, again by opening timing continues.
COPY : SHORT – First channel program shall be copied to all 10 channels during program mode.
OPEN – Individual channel shall be programmed with different values.
RLY0-RLY5: Control Output for ST6-M1
RLY0-RLY9: Control Output for ST10-M1
HOLD MODE: Continue the timing after resumption of interrupted power.
RESTART MODE: After the resumption of interrupted power operation starts from the sequence 0 or waits for the start signal if C1–C2 is shorted.

Timing diagram

ST6-M1/ST10-M1

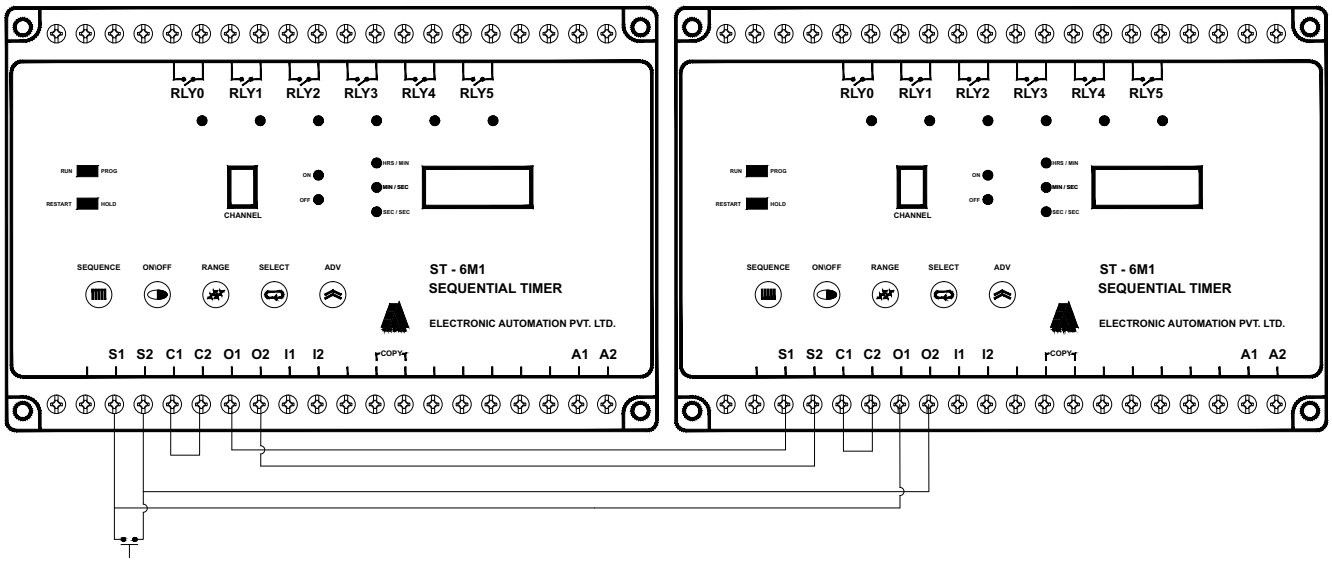


* n → NO. OF OUTPUT CHANNELS

Cascading Connection details

UNIT-1

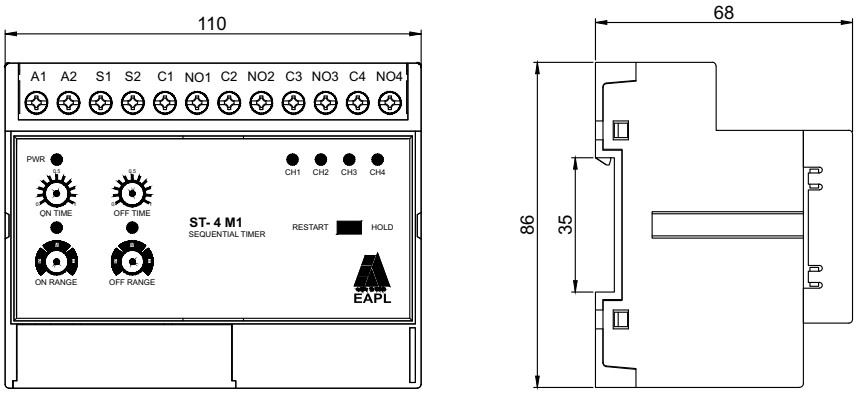
UNIT-2



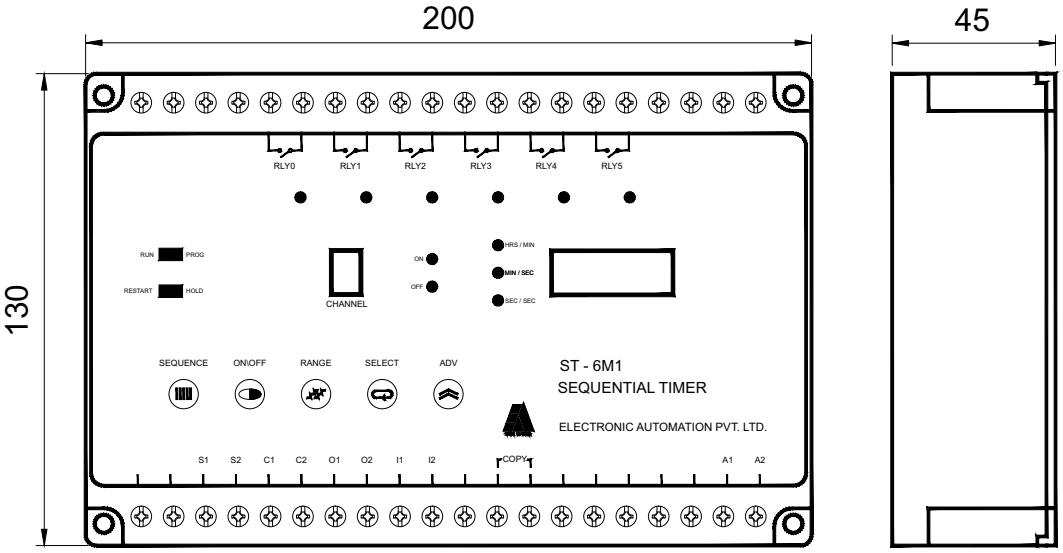
Applicable for ST6-M1,ST10-M1,ST10-M2

Dimensions

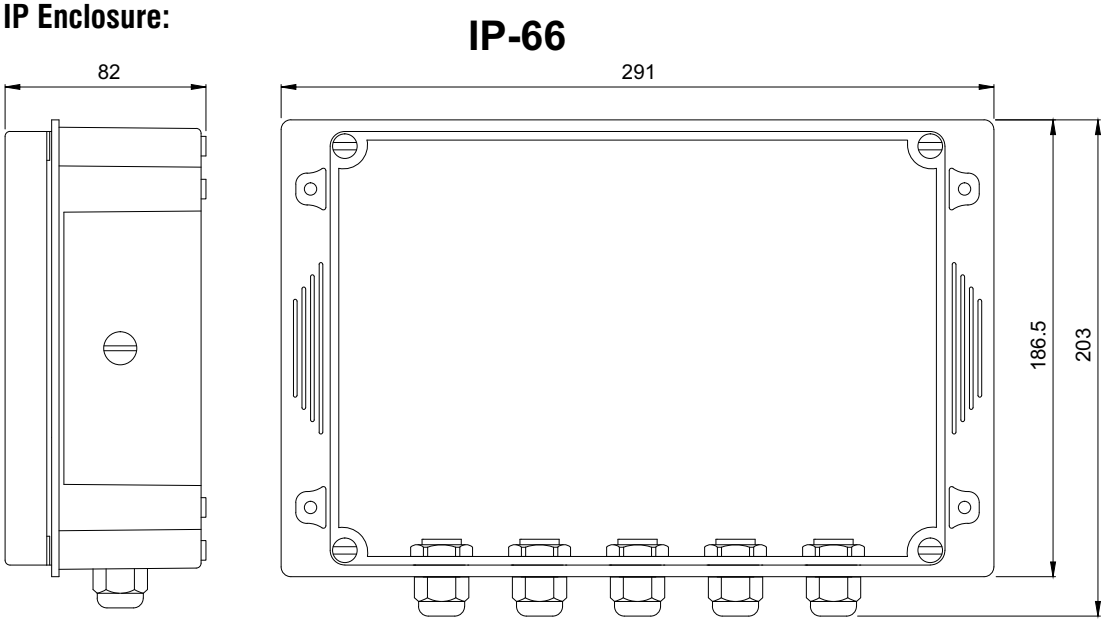
ST4-M1



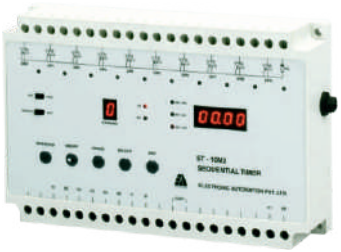
ST6-M1 / ST10 M1



IP Enclosure:



Note: All Dimensions are in mm.



Features

- State of art micro control design.
- Suitable for screw mounting.
- Hold /Restart feature is available during power failure.
- 7 segment display indication for channel and timing operation.
- User-friendly programming of On / Off time selection for each relay.
- The copy feature is also provided to copy the programmed time of the first channel to all channels.
- Applicable for loads operating on 240V Ac/110V AC.

ST10-M2

- Time Inhibit - user can pause time with relay status remaining in current status.
- Unit can be configured to have repeat cycle operation or single cycle operation.
- Terminals for potential free pulse signal are available for timing initiation.
- Multiple units can be cascaded to obtain more channels

ST15-M2

- Facility available to receive potential free (zero volt) continuous signals from PLC & Differential pressure switch to operate timer in healthy conditions.
- Only cyclic operation.

Ordering Information

Model	Function	Source Voltage	Time selection	Output
ST10-M2	Sequential Switching 10 channels	85V to 270V AC /DC	0.01Secs to 99Hrs 59Mins	Triac O/P for each channel. Suitable for 240V AC /110V AC loads only.
ST10-M2(IP)	Sequential Switching 10 channels with IP 66 enclosure			
ST15-M2	Sequential Switching 15 channels	85V to 270V AC		
ST15-M2(IP)	Sequential Switching 15 channels with IP enclosure			

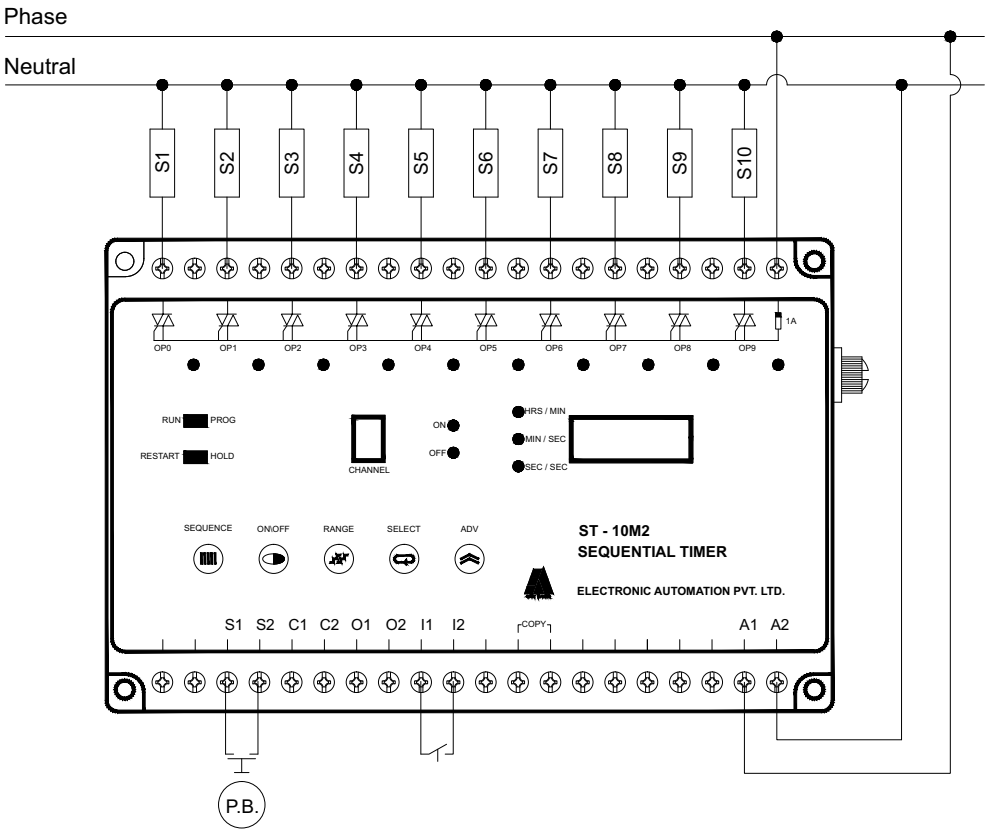
Specifications

Model	ST10-M2	ST15-M2
Function	Sequential timer with 10 Channels	Sequential timer with 15 Channels
Rated Supply Voltage	85V to 270V AC/DC	85V to 270V AC
Rated frequency	50/60Hz ± 5%	
Power consumption	AC Approx. 15VA / 3W	AC Approx. 10VA / 2W.
Control Output	10 (OP0 to OP9) TRIAC OUTPUT, 500mA @ 250V AC resistive	15 (OP1 to OP15)TRIAC OUTPUT, 500mA @ 250V AC resistive
Start signal(S1,S2)	Potential free closure for a minimum of 150mSec	Potential free continuous
Differential Pressure(DP1,DP2)	NA	Potential free continuous
Conduction time	>150 mSec.	NA
On time range	0.01Sec to 99Hrs 59Min for each channel	
Off time range	0.01Sec to 99Hrs 59Min for each channel	
Setting accuracy	± 0.2% max. w.r.t Setting ± 20mSec	
Repeat accuracy	± 0.3% max. ± 20mSec	
Recovery Time	2Sec minimum	
Variation due to voltage change	± 1% max. ± 50mSec	
Variation due to temperature change	± 2% max. ± 50mSec	
Variation due to frequency change	± 1% max. ± 50mSec	
Ambient temperature	Operation : -10°C to +55 °C Storage : -25°C to +80°C	
Humidity	Max 85% RH @40°C	
Service life (under no load)	10^6 operations minimum	
Electrical life (under full load)	10^5 operations minimum	
Rated frequency of operation	1800 ± 5% operations per hour max.	
Insulation resistance	>100M ohms @ 500V DC	
Electrical connection	Screw type terminals with self lifting clamps	
Overall Dimension (W x H x D)	200 x 130 x 45 mm	

Note: The same specification of ST10-M2 & ST15-M2 is applicable for ST10-M2(IP) & ST15-M2(IP) only IP66 enclosure is included.

Connection details

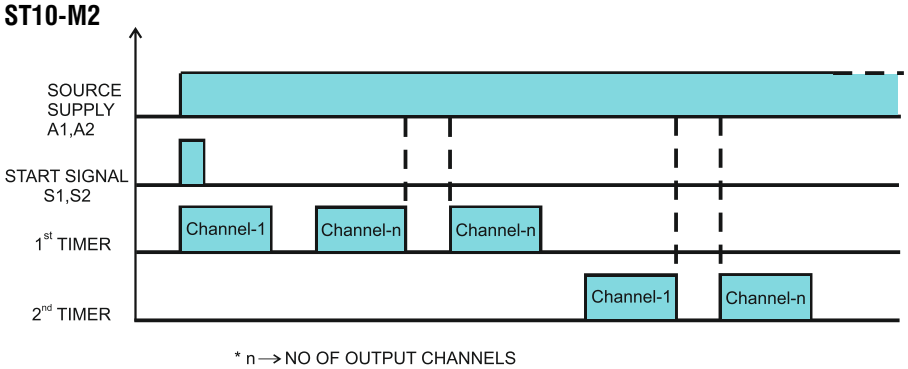
ST10-M2



A1,A2 : Source(Power)
S1-S2 : Start signal for a minimum of 150mS(free from external voltage)
C1-C2 : SHORT – Single cycle operation)
OPEN – Cyclic operation (i.e. timer continues to operate).
O1-O2: Cycle Complete Output (Output for cascade selection)- This output is available after completion of 1 cycle in single cycle operation mode (C1-C2 shorted).
I1-I2 : Time Pause Input. By shorting these terminals timing is temporarily stopped and relay status maintained, again by opening timing continues.
COPY : SHORT – First channel program shall be copied to all 10 channels during program mode.
OPEN – Individual channel shall be programmed with different values.
OP0 – OP9: Traic output
HOLD MODE: Upon resumption of power the timing continuous from the point where it had stopped
RESTART MODE: The timer resets in case of power failure & starts from the beginning upon power resumption.
1A: Common input terminals for all triacs

Timing diagram

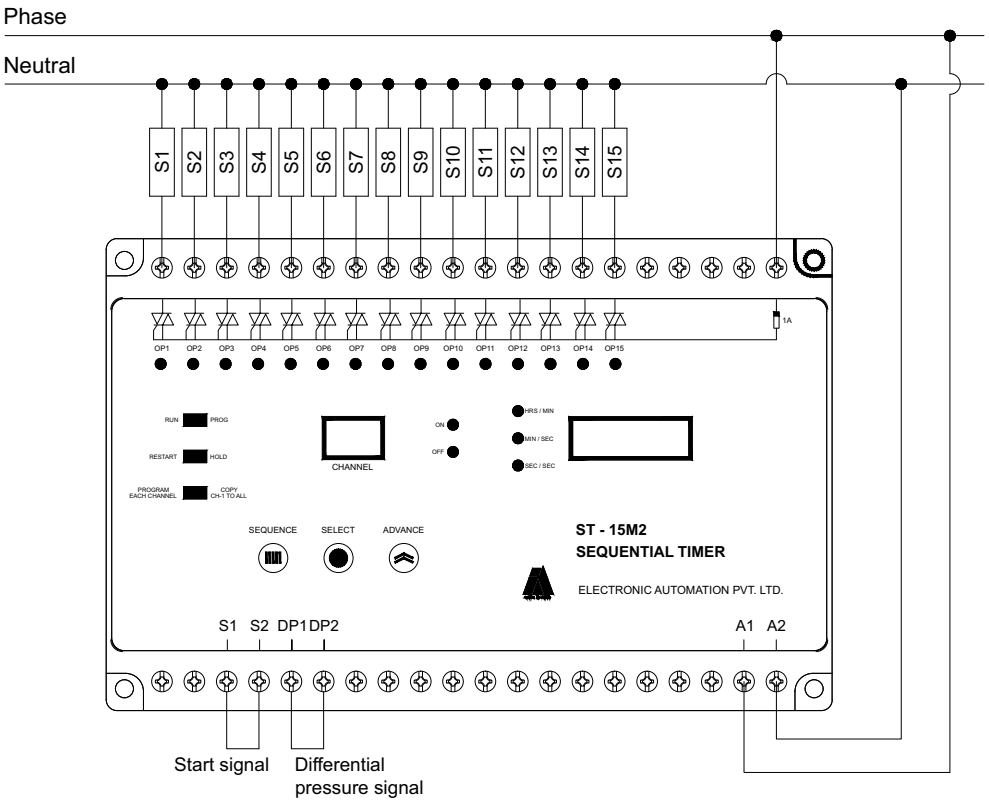
ST10-M2



* n → NO OF OUTPUT CHANNELS

Terminals details

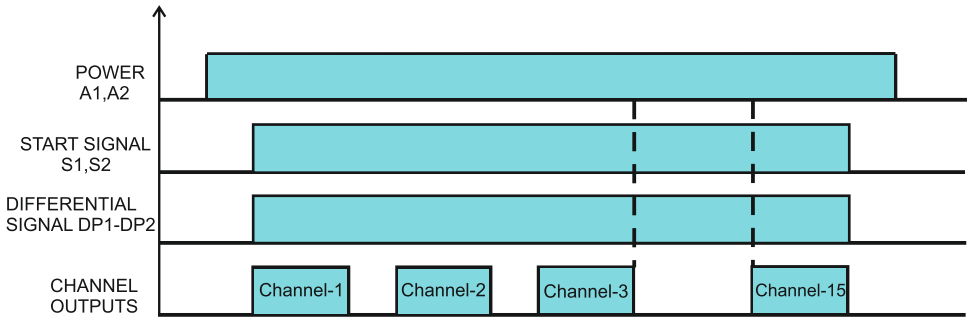
ST15 M2



A1,A2 : Source(Power).
S1-S2 : Start signal - continuous (Potential free).
DP1-DP2 : Differential pressure Signal – continuous (Potential free).
OP1 to OP15: Traic outputs(500mA@250V AC).
HOLD MODE: Upon resumption of power the timing continuous from the point where it had stopped
RESTART MODE: The timer resets in case of power failure & starts from the beginning upon power resumption.
1A: Common input terminals for all triacs

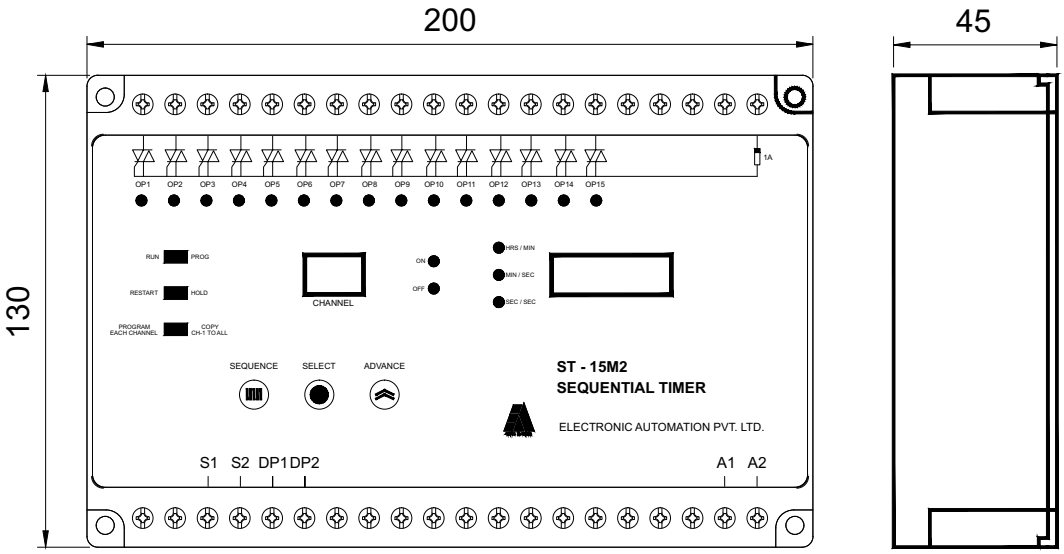
Timing diagram

ST15-M2

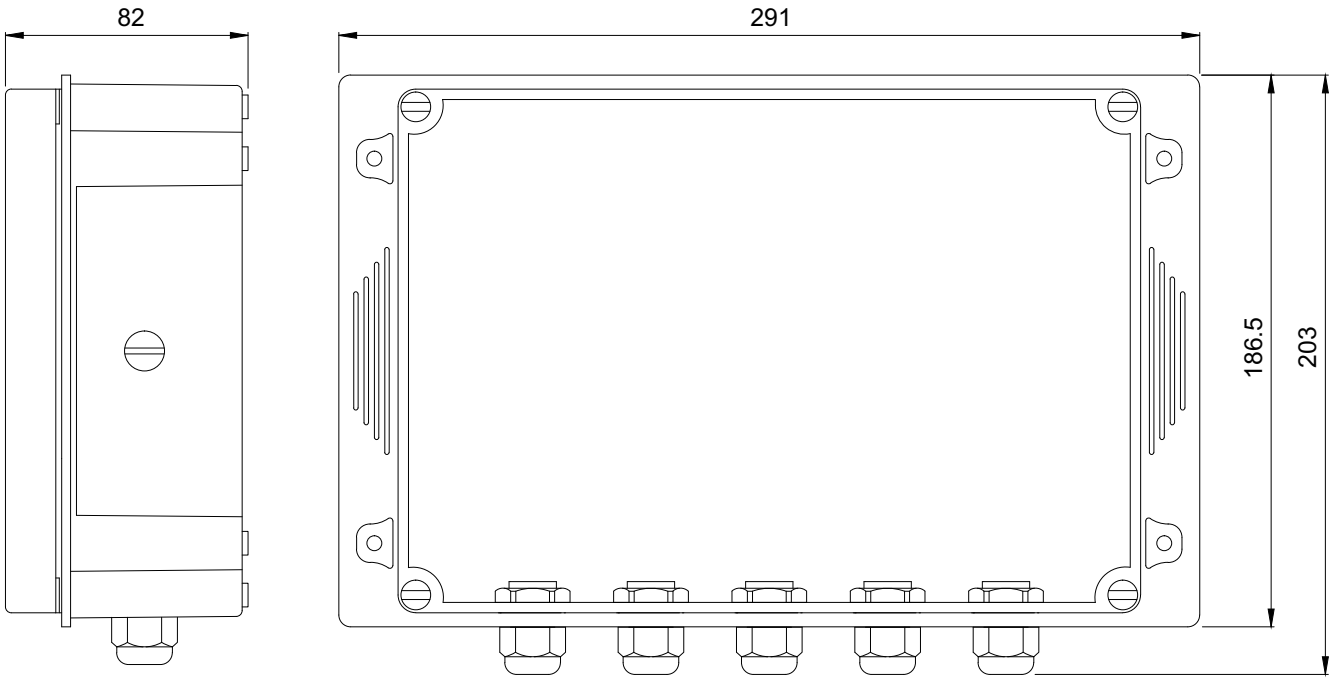


Dimension

ST10-M2 / ST15 M2



IP66 Enclosure:



Note: All Dimensions are in mm.

S-Series

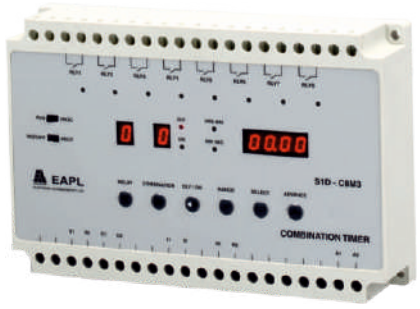
Combination timers

EAPL offers State of art, microcontroller designed digital Combination Timer - Model S1DC8-M3 to operate 8 loads, wherein each load can be switched ON and OFF for a maximum of 8 switching in one cycle either sequentially or un-sequentially or both as user logic demands. The source voltage of this timer is 85V-270VAC/DC. The cycle time of the program (consisting of Delay and ON Time of all combinations required) can be set from 1sec to 99hrs59mins.

Unlike PLC & other high end products programming is done on the instruments itself with the help of key buttons for the channel, combination, DELAY, and ON time selections. The other salient features are - 7 segment display to indicate timing in progress, program & process value retention in case of power failure. It also has terminals for time initiation, time inhibition, and Resetting the entire program to default.

Applications:

Air dryers, Nitrogen and other gas plants,Process industries etc...



Features

- State of art micro control design.
- Hold / Restart feature is available during power failure.
- 7 segment display indication for channel, Combination and time setting.
- Suitable for screw mounting.
- These units come with user-friendly programming for Delay/ On time selection independently.
- Time Inhibit - user can pause time with relay status remaining in current status.
- Unit can be configured to have repeat cycle operation or single cycle operation.
- Terminals for potential free pulse signal are available for timing initiation.
- Erasing of entire programs is possible by shorting reset terminals.

Ordering Information

Model	Function	Source voltage	Time selection	Output
S1DC8-M3	Combination Switching 8 channels, 8 Combination	85V to 270V AC / DC	1sec to 99hrs 59mins 59 Secs	1C/O NO Relay for each Channel

Optional*

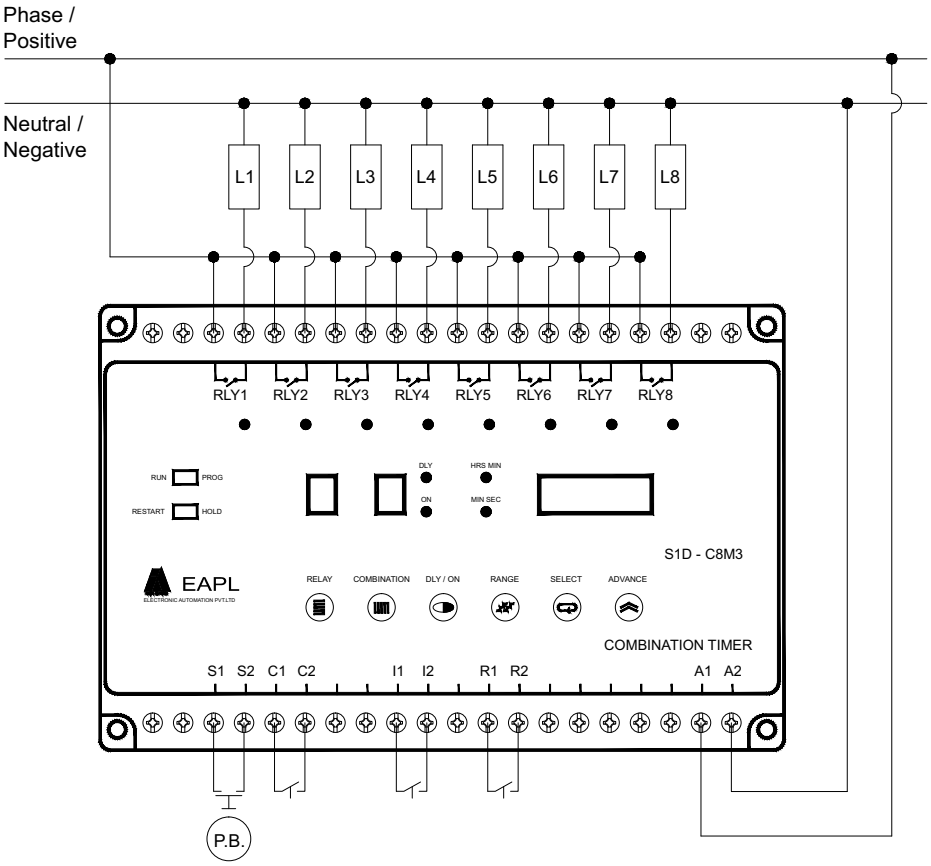
Model	Function	Source voltage	Time selection	Output
S1DC8-M3	Combination Switching 8 channels, 8 Combination	12V DC	1sec to 99hrs 59mins 59 Secs	1C/O NO Relay for each Channel

Specifications

Model	S1DC8-M3
Function	Combination Switching of Outputs
Rated Supply Voltage	85V TO 270V AC/DC
Rated frequency	50 / 60Hz ± 5%
Power consumption	AC Approx. 20VA, DC Approx. 10W
Control Output	8 (8 NO contacts rated for 5A @ 250V AC/28VDC resistive load)
Start signal	Potential free closure for a minimum of 250mSec.
Reset Signal	Potential free closure
Time range	1Sec to 99Hrs 59Min 59Sec For Delay & ON
Setting accuracy	± 0.2% ± 50mSec.
Repeat accuracy	± 0.2% ± 50mSec.
Recovery Time	2Sec minimum
Variation due to voltage change	± 1% max. ± 50mSec.
Variation due to temperature change	± 2% max. ± 50mSec.
Variation due to frequency change	± 1% max. ± 50mSec
Ambient temperature	Operation : -10°C to + 55°C, Storage : -25°C to +80°C
Humidity	Max 85% RH @40°C
Service life (under no load)	10^6 operations minimum
Electrical life (under full load)	10^5 operations minimum
Insulation resistance	>100M ohms @ 500V DC
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 1KV AC, 50Hz for 1 minute.(Between non-continuous relay contacts)
Electrical connection	Screw type terminals with self lifting clamps
Overall Dimension	200 x 130 x 45mm (W X H X D)

Terminals details

S1DC8-M3



A1,A2 : Source
S1-S2 : Start signal for a minimum of 150mS.
C1-C2 : SHORT – Single cycle operation
OPEN – Cyclic operation
I1-I2 : Time Pause Input. By shorting these terminals timing is temporarily stopped and relay status is maintained, again by opening timing continues.
R1– R2 : PROGRAM RESET: After shorting these terminals slide PROG/RUN switch to PROG mode. This will erase all previously programmed On time & delay time settings.
RLY1-RLY8: Control Output
HOLD MODE: Continue the timing after resumption of interrupted power & balance time is executed.
RESTART MODE: After the resumption of interrupted power, timer waits for fresh start signal.

Timing diagram

R1C1	R1C2	R1C3	R1C4	R1C5	R1C6	R1C7	R1C8
R2C1	R2C2	R2C3	R2C4	R2C5	R2C6	R2C7	R2C8
R3C1	R3C2	R3C3	R3C4	R3C5	R3C6	R3C7	R3C8
R4C1	R4C2	R4C3	R4C4	R4C5	R4C6	R4C7	R4C8
R5C1	R5C2	R5C3	R5C4	R5C5	R5C6	R5C7	R5C8
R6C1	R6C2	R6C3	R6C4	R6C5	R6C6	R6C7	R6C8
R7C1	R7C2	R7C3	R7C4	R7C5	R7C6	R7C7	R7C8
R8C1	R8C2	R8C3	R8C4	R8C5	R8C6	R8C7	R8C8

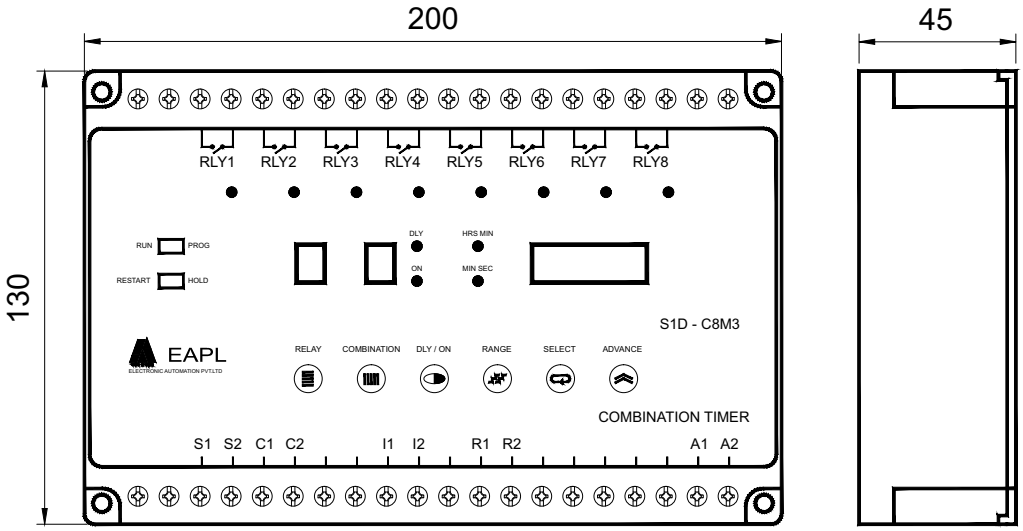
R1C1 to R1C8 - Relay 1 combination 1 to Relay 1 combination 8
R2C1 to R2C8 - Relay 2 combination 1 to Relay 2 combination 8
R3C1 to R3C8 - Relay 3 combination 1 to Relay 3 combination 8
R4C1 to R4C8 - Relay 4 combination 1 to Relay 4 combination 8
R5C1 to R5C8 - Relay 5 combination 1 to Relay 5 combination 8
R6C1 to R6C8 - Relay 6 combination 1 to Relay 6 combination 8
R7C1 to R7C8 - Relay 7 combination 1 to Relay 7 combination 8
R8C1 to R8C8 - Relay 8 combination 1 to Relay 8 combination 8

* In cyclic mode the above sequence will repeat.

Note: The above timing diagram is only a illustration of the equences that can be programmed. In all combinations can be programmed.

Dimension

S1DC8-M3



Note: All Dimensions are in mm.

TS-Series

Digital Time Switches

EAPL offers a highly accurate digital daily time switch with 4 switching per day. Programming is user friendly with a manual override facility. It comes in an elegant ABS enclosure and has an LCD Display for Real-Time Clock. This Quartz real-time clock in 24 hrs. format operates on 2 nos. of AA size (1.5Vx2) batteries in TS-203 and TS-203B, rechargeable batteries in TS-203R which offers high accuracy switching. It has a single change-over relay control output for 16A@250V AC/28VDC. The auxiliary voltage is 240V AC. These are available for both Din rail (Model TS203B) and Panel mounting (Model TS-203) applications.

Applications:

Street lighting, Advertising boards, DG sets, Pumps, Compressors, Exhaust fans, ATM air conditioners and many more.

TS-Series

Digital Time Switches

Features

- Switches On and Off 4 times in a day with respect to real time.
- LED indication for relay status, LCD display for real time clock.
- User friendly programming with manual over ride facility.
- Clock hour and Clock minute buttons can be enabled by shorting terminals to program RTC.
- Program hour and program minute buttons can be enabled by shorting terminals to program the load's START time and DURATION for which theload should be On.
- **TS-203** - Suitable for Panel / Flush mounting.
- **TS-203B**-Suitable for Din rail mounting.
- **TS-203R** - Suitable for Panel / Flush mounting with Inbuilt rechargeable battery

Ordering Information

Model	Function	Source Voltage	Output
TS-203	Digital Daily Time Switch with 4 Program	240V AC	1 C/o, 16A resistive
TS-203R			
TS-203B			

Optional*

Model	Function	Source Voltage	Output
TS-203A	Digital Daily Time Switch with 4 Program	240V AC	1 C/o, 20A resistive
TS-203B		12V DC/24V DC/110V AC	1 C/o, 16A resistive
TS-203		24V DC	

#Instant feature is not available when cyclic function is programmed.

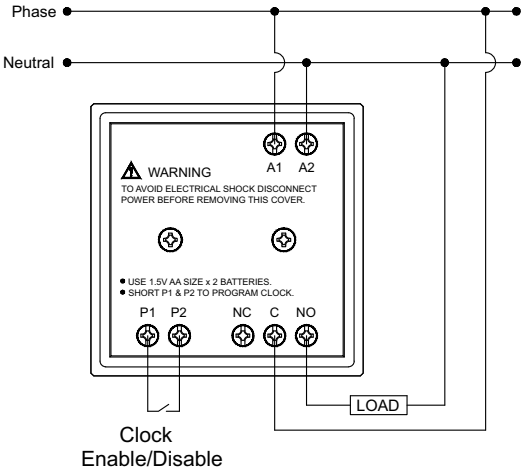
$For bulk quantities only

Specifications

Model	TS-203	TS-203R	TS-203B
Function	Digital Daily Time Switch with 4 Programs		
Number of Programs	4 Programs per day		
Rated Supply Voltage	240V AC		
Operating voltage range	-20% to +10% of the rated voltage		
Rated frequency	50Hz ± 5%		
Battery Backup	1 Year Min	Built in Rechargeable Battery	1 Year Min
Control Output	1 c/o rated for 16A @ 250V AC/28V DC resistive load		
Time Range	ON TIME : 00H 00M to 23H 59M DURATION : 00H 01M to 23H 59M		
Display	0.39" LCD		
Power consumption	From Mains: AC Approx. 12.5VA(2.5W)	From Mains: AC Approx. 25VA/5W	From Mains: AC Approx. 12.5VA(2.5W)
Switching accuracy	± 2 Sec max.		
Recovery Time	100mSec minimum		
Variation due to voltage change	± 2 Sec max		
Variation due to temperature change	± 2 Sec max		
Variation due to frequency change	± 2 Sec max		
Ambient temperature	0°C to 50°C (with no icing)		
Humidity	Max 85% RH @40°C		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	1)2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2)1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3)1KV AC, 50Hz for 1 minute. (between non-continuous relay contacts)		
Electrical connection	Screw type terminals with self lifting clamps		
Overall Dimension	72 X 72 X 84mm(W x H x D)		110 x 86 x 68mm (L x W x D)
Cutout Dimension	69 X 69mm(W x H)		NA

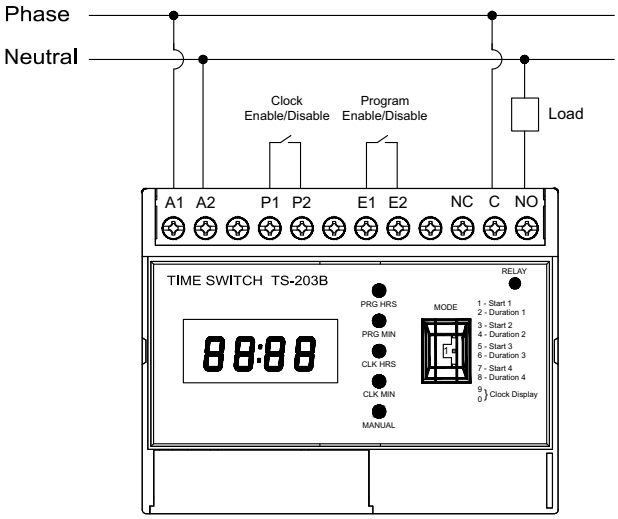
Connection Diagrams

TS-203/TS-203R



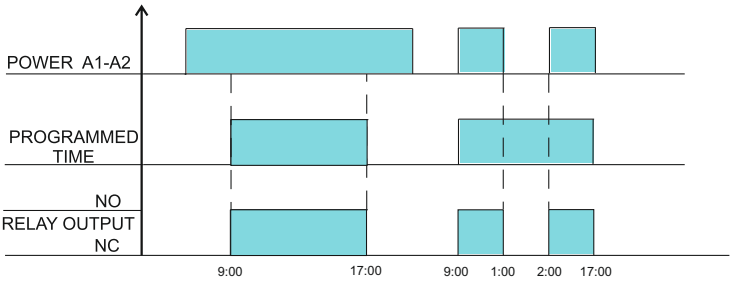
A1, A2 : Source voltage
P1, P2 : Clock Set
Short-Enable
Open- Disable
NC, C, NO: Rly contacts

TS-203B



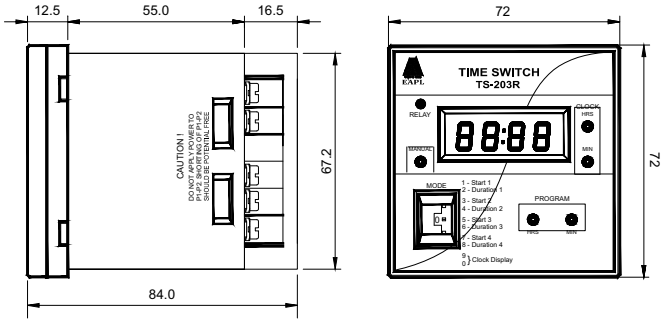
A1, A2 : Source voltage
P1, P2 : Open- Clock Setting Disable
Short - Clock Setting Enable
E1 & E2 : Open- Programming Disable
Short -Programming Enable
NC, C, NO: Rly contacts

Timing diagram

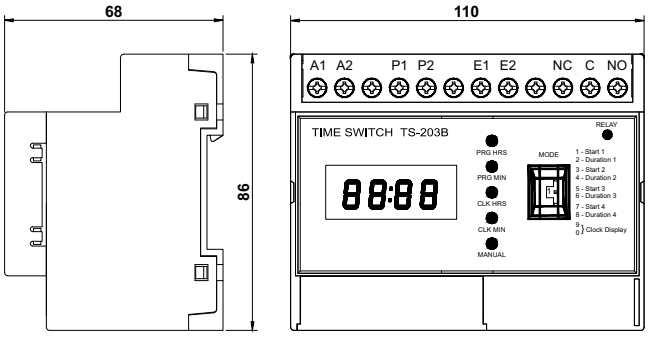


Dimensions

TS-203/203R



TS-203B



Note: All Dimensions are in mm.

Accessories

- Side anchors

C/H-Series Pre-Set Counters

EAPL makes Digital Preset Counters having panel / Flush mounting arrangement, can be pre-set from 1 to 99,999, and counted accordingly by accepting pulse signals from proximity sensor (NPN or PNP), or potential free (without voltage) signals through a limit switch, relays etc. Counts can be set with tact switch (Model H3CT-5U) and thumbwheel (Model CT-5). The output consists of one change-over relay (5 Amps @ 250V AC/28V DC) which energizes on completion of set counts. It also has features like a wide voltage range (85V to 270V AC/DC) for auxiliary power supply, LED indications for the input signal, and relay status. Last counted reading can either be retained or revert to default (0) whenever the auxiliary supply fails. The frequency of input signals can be set from 1-100Hz (Model H3CT-5U) to avoid double-counting due to chattering in contactors, relays, limit switch etc ..

Applications:

Injection molding machine Granite processing machines, Packaging / Printing machines Hot stamping machines and many more.

Features

- Din sized enclosure for panel mounting.
- Wide voltage range.
- Front / Rear reset facility provided.
- Hold / Restart options (selectable) during power failure.
- Input signal from proximity switch (NPN/PNP type) or potential free (zero volt) signal from limit switch, relay o/p etc.

CT-5

- Digital, single window 5 digit 7 segment red LED display with up counting for process value.
- Preset counts can be programmed with the help of thumbwheel switch.

H3CT-5U

- Digital, single window 5 digit 7 segment red LED display with up counting for both process value and set value.
- Input sensitivity – programmable (1-100Hz).

Ordering Information

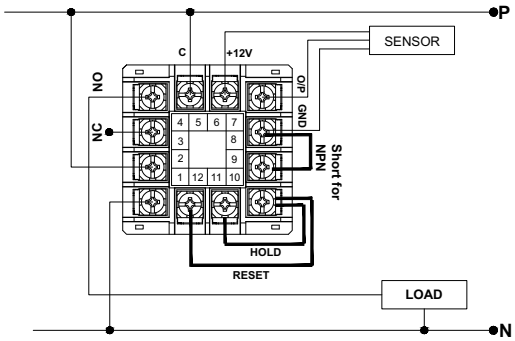
Model	Function	Source voltage	Range	Output
CT-5 H3CT-5U	Preset counter (LED Display), 5 digits	85V AC to 270V AC / DC	0 to 99,999 counts	1 C/o, 5A resistive

Specifications

Model	CT-5	H3CT-5U V.2
Function	Up Counter With Hold mode	
Rated Supply Voltage	85V to 270V AC/DC	
Rated frequency	50 / 60Hz ± 5% for AC only	
Power consumption	4VA/1W Approx.	AC Approx. 8VA. DC Approx. 5W.
Control Output	1 c/o rated for 5A @ 250V AC/28VDC resistive load.	RLY 1 - 1 C/ O rated for 5A @ 250 VAC/ 30VDC(NO) 3A @ 250VAC / 30VDC (NC)
Display	5 digit 7 segment LED, 10mm height	5 digit 7 segment LED,0.30"
Count speed	100Hz max.(min I/P pulse width 200msec)	100Hz max.(min I/P pulse width 5msec)
Range	0 to 99,999 counts	
Resetting time	250mSec minimum	
Recovery Time	2 Sec minimum	
Ambient temperature	Operation: -10°C to 55°C, Storage : -25°C to 80°C	
Humidity	Max 85% RH @40°C	Max 95% RH @ 40°C
Service life (under no load)	10^6 operations minimum	
Electrical life (under full load)	10^5 operations minimum	
Insulation resistance	>100M ohms @ 500V DC	
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)	
Electrical connection	Screw type terminals with self lifting clamps	
Overall dimension	72 x 72 x 128.5mm (W x H x D)	48 x 48 x 95mm (W x H x D)
Cutout dimension	69 x 69mm (W X H)	46 x 46mm (W X H)
Sensor type	Proximity NPN / PNP Without Short Circuit Protection	Proximity sensor (NPN or PNP) and Limit switch

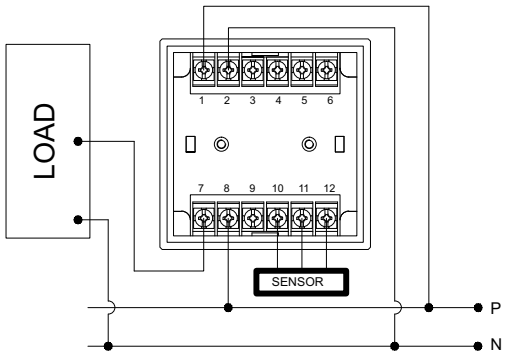
Connection Diagrams

H3CT-5U



1, 2 : Source voltage
6 : +12V
7 : Output
8 : GND
9, 8 : Short – NPN and LIMIT SWITCH
Open – PNP
12, 10 : RESET (short for at least 250ms)
11, 10 : Short – HOLD
Open – RESTART
3,4,5 : NC,NO,C

CT-5

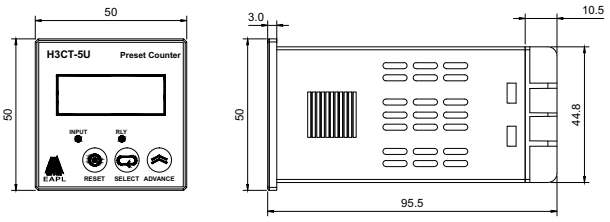


1 & 2 : Source voltage
3 & 4 : Short - Hold
Open - Restart
4 & 5 : External Reset (Short for at least 250mS)
4 & 6 : Short - NPN / Limit Switch
Open - PNP
7, 8, 9 : NO, C, NC (RLY)
10 : Output
11 : Ground
12 : +12V

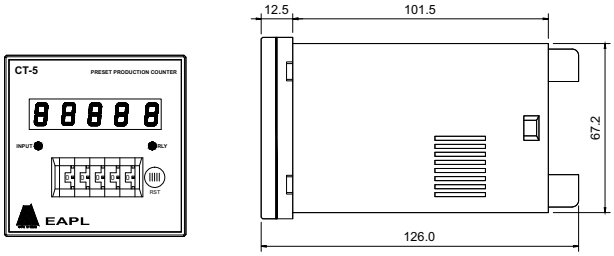
Note: Select NPN/PNP sensors or limit switch before power on.
For potential free inputs signal use only output and ground terminals and permanently short terminals designated as short for NPN.

Dimensions

H3CT-5U



CT-5



Note: All Dimensions are in mm.

Accessories

- Side anchors

Alarm Annunciators

Alarm Annunciators is a microcontroller-based system that displays and alarms the fault in any particular process systems by allowing the users to program the fault conditions in either NO or NC. EAPL offers annunciators starting from 4 windows up to 24 windows with a wide voltage range for auxiliary supply, standby supply. Relays for Field fault annunciation-Trip & Alarm relays, Auxiliary supply failure- Auxiliary fail, and hooter relays are provided. Each window can be programmed to either NO or NC fault conditions and Trip or Alarm conditions by using the front programming keys (Select, NC/NO, and Trip/Non-Trip keys). After programming the same keys will operate as Mute, Ack, Reset & Test.

The Annunciators also have a provision to allow the user to select the sequence of operation wiz.
Manual Reset, Manual +Ring back, Auto reset, FIFO. RS485 terminals are provided for Modbus communication for selected annunciators. EAPL M3 series annunciators also incorporate an inbuilt hooter in addition to alarm relays.

Applications:

C & R panels, Transformer panels, DG set panels, Fire annunciation panels and Instrumentation panels and many more

M2-Series Annunciators-Basic Models

Features

- Available in 2, 4, 6 and 8 windows respectively.
- Sleek, light weight, ABS enclosure.
- Super bright, White color SMD LED for fault indications.
- Test / Mute / Acknowledge / Reset buttons in front and terminals at rear are available.
- Each window can be programmed for fault inputs as NO or NC and output as alarm or trip.
- Program enabling / disabling facility available at rear.
- Over voltage protection.

Ordering Information

Model	No. of Windows	Function	Source voltage	Output
M2-2*	2 windows	Fault Annunciation	85V - 270V AC/DC or 18V - 90V AC/DC	2 Relays 1c/o (C-NO), (Trip / Alarm)
M2-4	4 windows			
M2-6	6 windows			
M2-8	8 windows			

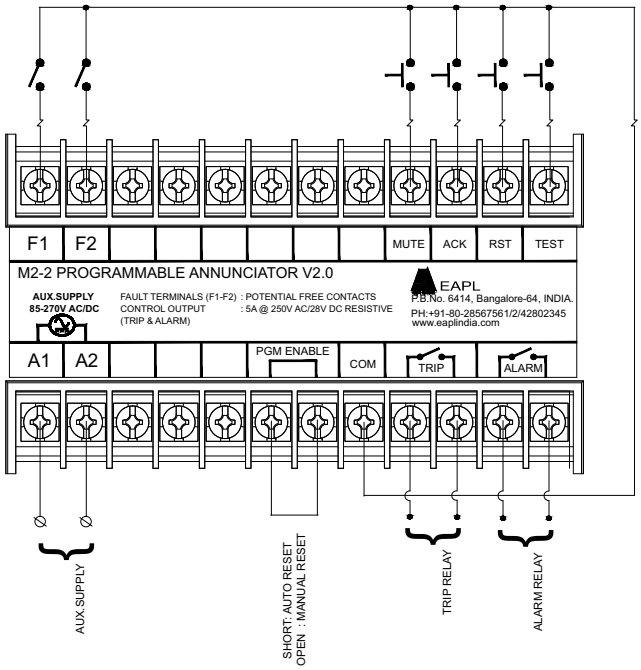
*Availability will be for bulk quantity only

Specifications

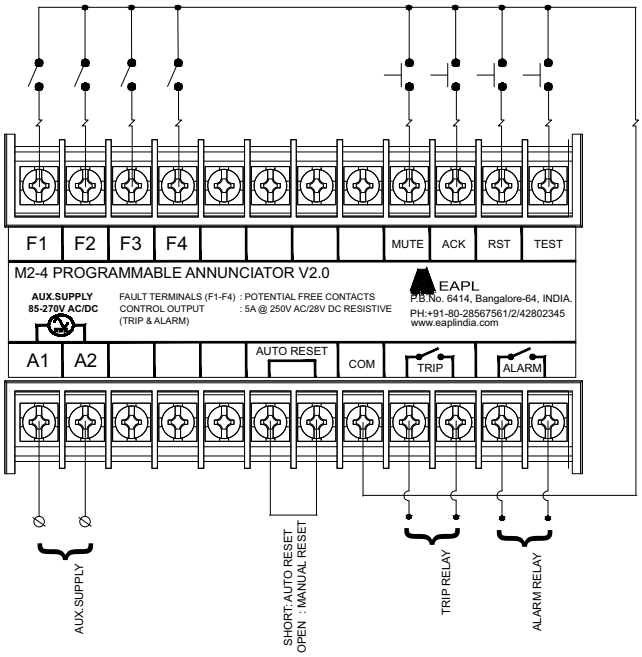
Model	M2-2	M2-4	M2-6	M2-8
Function	Programmable Fault Annunciation			
Rated supply voltage	18 to 90V AC/DC,85V to 270V AC/DC			
Rated frequency	50 / 60Hz ±5%			
Power consumption	15VA / 10W for 85V - 270V AC / DC & 10VA / 5W for 18V - 90V AC / DC			
No. of windows	2 windows	4 windows	6 windows	8 windows
Fault input contacts	Selectable NO / NC type for every channel (potential free contacts)			
Window colour	Red			
Control output (No. of Relays)	2no. Of C-NO relays for Trip and Non Trip (Alarm) respectively			
Contact rating	1 C/O rated for 5A @ 250VAC / 28VDC resistive load			
Test facility	Provided (operational test)			
External Pushbuttons	Terminals provided for External Push buttons			
Standard sequence	Manual Reset & Auto Reset			
Recovery time	2 Sec minimum			
Ambient temperature	Operation : -10°C to + 55° C & Storage : -25° C to + 80° C			
Humidity	MAX 85% RH @ 40° C			
Service life(under no load)	10^6 operations minimum			
Electrical life(under full load)	10^5 operations minimum			
Insulation resistance	>100M ohms @ 500V DC			
Dielectric strength	01) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non current carrying parts) 02) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 03) 750V AC, 50Hz for 1 minute.(Between non-continuous contacts of the relay)			
Electrical connections	Screw type terminals with self lifting clamp terminals			
Window size(W X H)	66 X 58 mm	66 X 27.5 mm	Top 2 Windows: 66 X 27.5mm Bottom 4 windows: 31.5 X 27.5mm	31.5 X 27.5mm
Cut-out Dimension (WXH)	68 x 138 mm			
Overall Dimension(WXHXD)	74 x 143 x 78mm			

Connection Diagrams

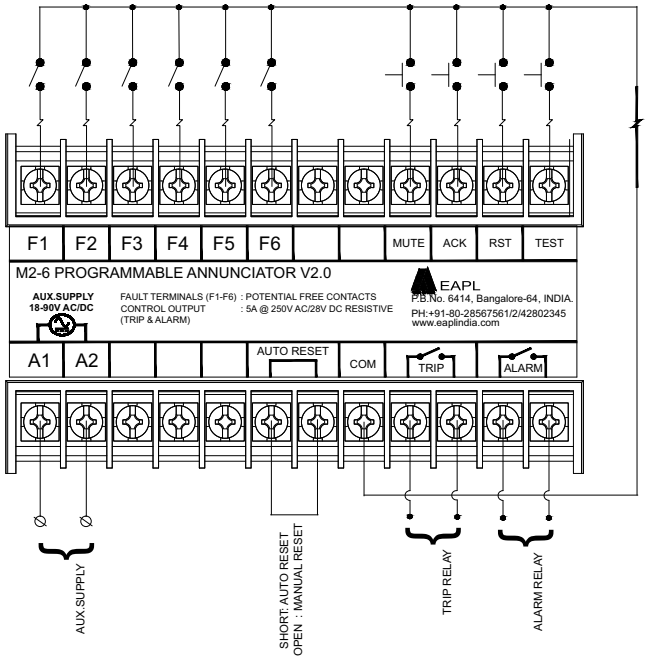
M2-2



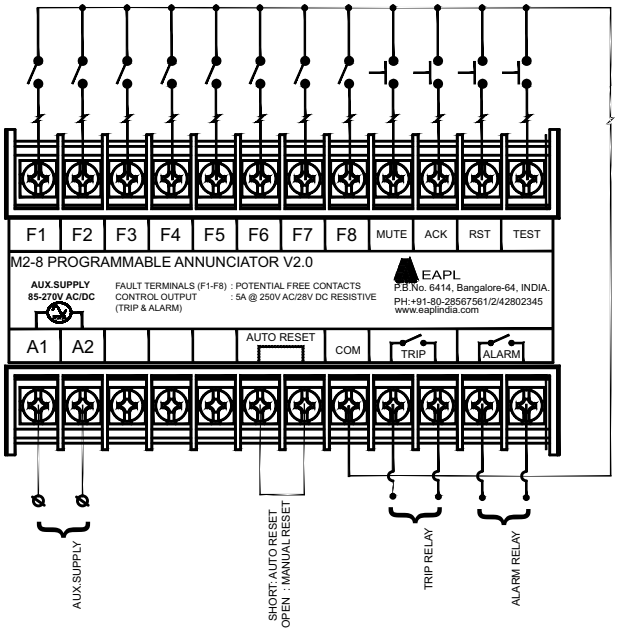
M2-4



M2-6



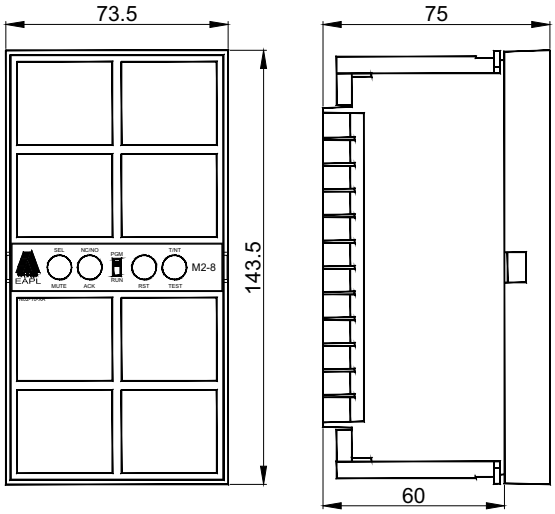
M2-8



A1, A2 : Source voltage
COM : Common terminal to connect fault input and external push button
MUTE ACK, RST, TEST: For External push buttons, Remote
operations and cascading facility.
Individual fault I/P terminals for respective window, connect w.r.t COM (Potential free contact)
F1 to F2: for 2 windows
F1 to F4: for 4 windows
F1 to F6: for 6 windows
F1 to F8: for 8 windows
AUTO RESET TERMINAL (at rear)
Short – Auto reset
Open – Manual reset
AUTO – RESET / MANUAL – RESET selection shall be done before Power ON.

Dimension

M2-2/M2-4/M2-6/M2-8



Note: All Dimensions are in mm.

Accessories

- Panel locking side anchors - 4 Nos

M2-Series

Annunciators-Advance Models

Features

- Available in 12, 16, 20 and 24 windows respectively
- Sleek, light weight, ABS enclosure.
- Super bright, White color SMD, LED for fault indications.
- Test / Mute / Acknowledge / Reset buttons in front and terminals at rear are available.
- Each window can be programmed for fault inputs as NO or NC and output as alarm or trip.
- Program enabling / disabling facility available at rear.
- AC fail relay and Hooter relay is available for relay outputs during auxiliary supply failure.
- User selectable sequence of operation – Manual reset, Auto reset, Manual reset + ring back or First in First Out (FIFO).
- RS-485 modbus communication available in select models M2-12R/16R/24R.
- Dedicated windows for Aux. Fail & Standby supply fail can be provided upon request.
- Windows caps are easily replaceable at site for any change in color.
- Two control relay output: Trip & Alarm(C-NC-NO) and two optional relays: Aux. fail & Standby supply/Hooter relay.

Ordering Information

Model	No. of Windows	Function	Source voltage	Standby Voltage	Output
M2-12	12 windows	Fault Annunciation	85V - 270V AC/DC	12V DC	2 relays 1 C/O (NC-C-NO) for trip/Alarm, 2 relays 1C/O (C-NO) for Hooter, AC Fail
M2-16/16a	16 windows				
M2-20	20 windows				
M2-24	24 windows				

Specifications

Model	M2-12	M2-16/16a	M2-20	M2-24
Function	Programmable Fault Annunciation			
Rated supply voltage	85V to 270V AC/DC			
Rated frequency	50 / 60Hz ±5%			
Power consumption	AC approx.35VA & DC approx.20W			
No. of windows	12 windows	16 windows	20 windows	24 windows
Standby supply	12V DC ± 10%			
Fault input contacts	Selectable NO / NC type for each window			
Window colour	Red/Amber/White/Green			
Flash rate	Fast : 100/Minute, Slow : 50/Minute			
Control output (No. of Rlys)	4 relays-Trip Rly(C,NC,NO),Alarm Rly(C,NC,NO),Aux. fail Rly(C& NO),Hooter Rly(C& NO)			
Contact rating	1 C/O rated for 5A @ 250VAC / 28VDC resistive load			
Test facility	Available (operational test)			
Standard Operation sequence	Manual Reset, Auto Reset, Manual Reset+Repeat Alarm, First in First out			
Recovery time	2 Sec minimum			
Ambient temperature	Operation : -10°C to + 55° C & Storage : -25° C to + 80° C			
Humidity	MAX 85% RH @ 40° C			
Service life (under no load)	10^6 operations minimum			
Electrical life (under full load)	10^5 operations minimum			
Insulation resistance	>100M ohms @ 500V DC			
Dielectric strength	01) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non current carrying parts) 02) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 03) 750V AC, 50Hz for 1 minute.(Between non-continuous contacts of the relay)			
Electrical connections	Screw type terminals with self lifting clamp terminals			
External Pushbuttons	Terminals provided for External Push buttons			
Window size(W x H)	63 x 28 mm	Small window:28 x 28 mm	Big window:63 X 28 mm	28 x 28 mm
Cut-out Dimension(W x H)	285 x 181 mm			
Over-all Dimension(W x H x D)	291 x 187 x 79 mm			

*Availability will be for bulk quantity

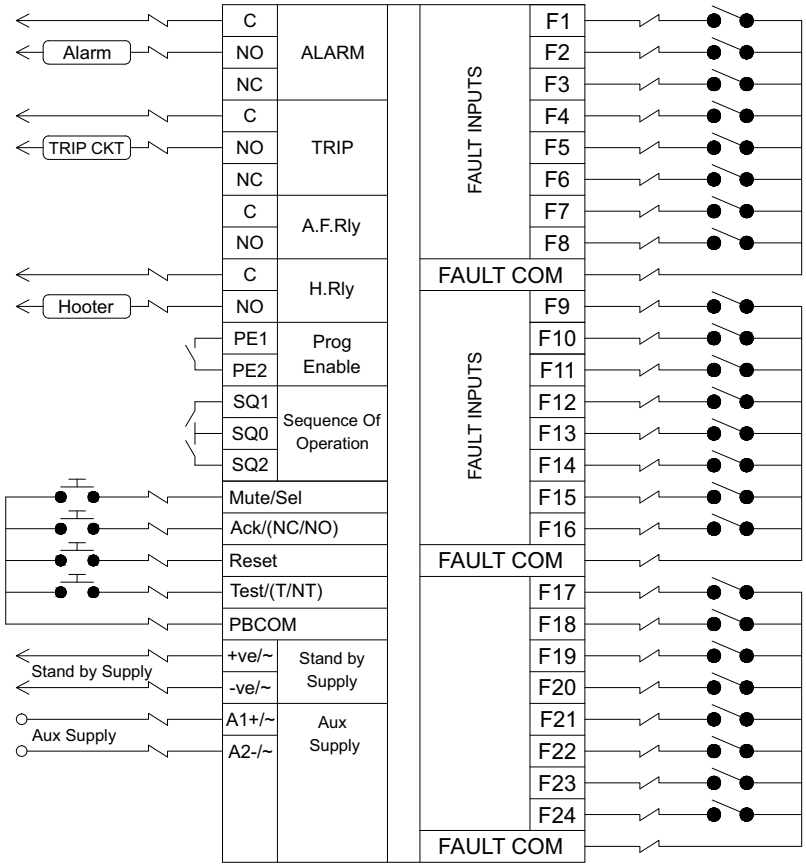
Optional*

Model	No. of Windows	Function	Source voltage	Standby Voltage	Output
M2-12/16a/20/24	12/16/20/24 Windows	Fault Annunciation	24-48V DC	12V DC	2 relays 1 C/O (NC-C-NO) for trip/Alarm, 2 relays 1C/O (C-NO) for Hooter, AC Fail
M2-12/16/24	12/16/24 Windows		24-48V DC	85V - 270V AC/DC	
M2-12/16/24			85V - 270V AC/DC	85V - 270V AC/DC	
M2-12 R/ 16R/ 20R/ 24R	12/16/20/24 Windows		85V - 270V AC/DC	12V DC	2 relays 1 C/O (NC-C-NO) for trip/Alarm, 2 relays 1C/O (C-NO) for Hooter, AC Fail RS 485 Port for modbus communciation

*Availability will be for bulk quantity

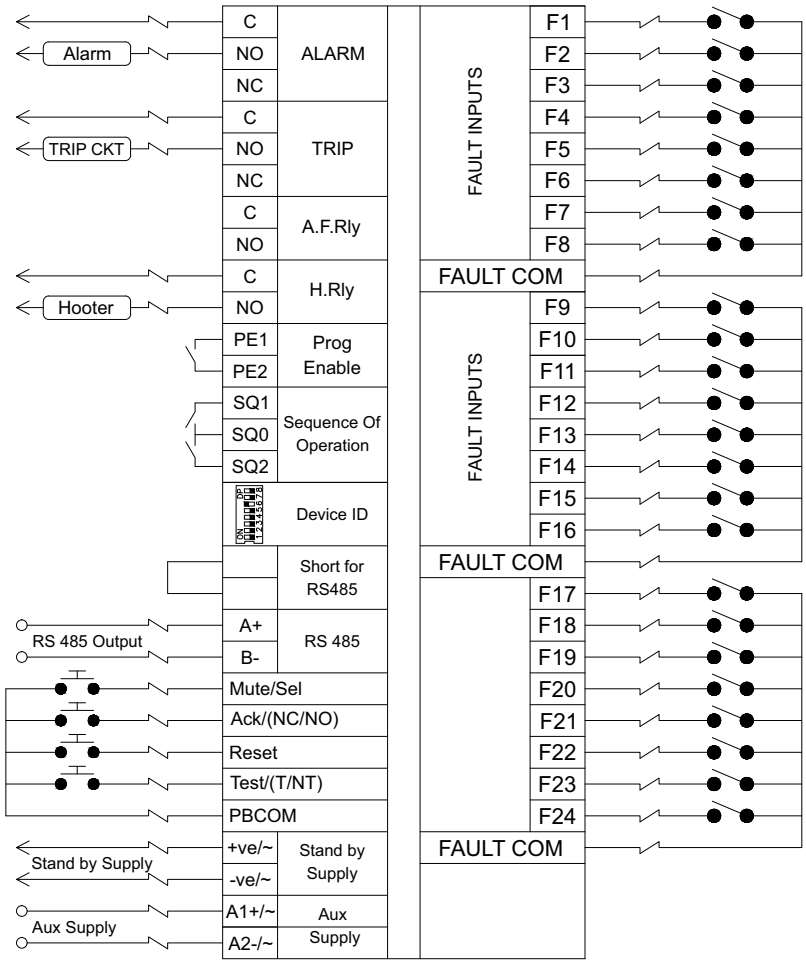
Connection Diagrams

M2-24 (Same Connection Diagram applicable for all windows)



Source Voltage : 85V-270V AC/DC
Stand by Voltage : 12V DC (1Amp) ± 10% -Ve & + Ve
Hooter Rly C & NO : Rly contacts for Hooter during power Fail
Aux. Fail Rly C & NO : Rly contacts for indicating power failure
PE1 & PE2 : Program Enable terminals
Short - Program enable(Program mode)
Open - Program disable(Run mode)
Fault COM : Common fault I/P terminals
Individual fault I/P terminals for respective window (Potential free).
Connect w.r.t Fault COM:
F1-------- F12 for 12 windows
F1-------- F16 for 16 windows
F1-------- F20 for 20 windows
F1-------- F24 for 24 windows
MUTE, ACK, RST, TEST : External push buttons for remote operations, connect w.r.t PBCOM.
SQ1, SQ2 : Selection of required sequence of operations, connect w.r.t SQ0.

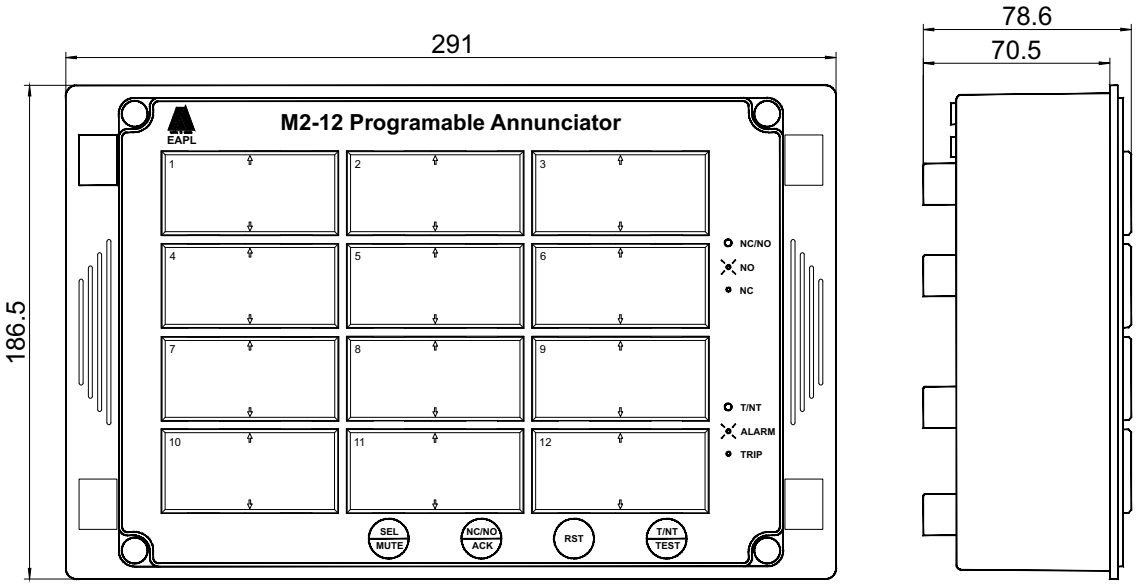
M2-24R (Same Connection Diagram applicable for all windows)



Source Voltage : 85V-270V AC/DC
Stand by Voltage : 12V DC (1Amp) ± 10% -Ve & + Ve
Hooter Rly C & NO : Rly contacts for Hooter during power Fail
Aux. Fail Rly C & NO : Rly contacts for indicating power failure
PE1 & PE2 : Program Enable terminals
Short - Program enable(Program mode)
Open - Program disable(Run mode)
Fault COM : Common fault I/P terminals
Individual fault I/P terminals for respective window (Potential free).Connect w.r.t Fault COM:
F1-------- F12 for 12 windows
F1-------- F16 for 16 windows
F1-------- F20 for 20 windows
F1-------- F24 for 24 windows
MUTE, ACK, RST, TEST : External push buttons for remote operations, connect w.r.t PBCOM.
SQ1, SQ2 : Selection of required sequence of operations, connect w.r.t SQ0.
A (+), B (-) : RS485 Communication terminals

Dimension

M2-12/M2-16/M2-20/M2-24



Note: All Dimensions are in mm.

Accessories

- RC Filter
- Side Anchor

M3-Series

Annunciators-Advance Models

1D

2D

NEW

3D

Features

- Elegant, compact & lightweight.
- ABS enclosures with UL 94 based flame-retardant plastic enclosure.
- Wide voltage range 85-270V AC/DC or 24 -48V AC/DC
- A cluster of Low power, long life super bright white SMD LED's for fault indications.
- Site selectable fault input signals and output relays for each window.
- Site selectable relay output per alarm or trip.
- Two optional relay outputs are also available for aux fail / standby supply fail / hooter relay.
- Incorporates a built-in buzzer in addition to fault alarm relay output.
- User-selectable sequence of operations.
- Dedicated windows for Aux. Fail & Standby supply fail can be provided upon request.
- Available with program lock facility.
- RS485 MODBUS communication output with field selectable device Ids.

Ordering Information

Model	No. of Windows	Product size	Source & standby voltage	Output
M3-4	4	1D	85-270V AC/DC & 12V DC or 85-270V AC/DC & 85-270V AC/DC or 24-48V AC/DC & 12V DC or 24-48V AC/DC & 85-270V AC/DC	Trip Relay - (C-NC-NO), Alarm Relay - (C-NC-NO), AC Fail - (C, NO), DC Fail - (C, NO).
M3-6	6			
M3-8	8			
M3-8	8	2D		
M3-12	12			
M3-16	16			
M3-12	12	3D		
M3-20	20			
M3-24	24			

Optional*

Model	No. of Windows	Product size	Source & standby voltage	Output
M3-4R	4	1D	85-270V AC/DC & 12V DC or 85-270V AC/DC & 85-270V AC/DC or 24-48V AC/DC & 12V DC or 24-48V AC/DC & 85-270V AC/DC	Trip Relay - (C-NC-NO), Alarm Relay - (C-NC-NO), AC Fail - (C, NO), DC Fail - (C, NO).
M3-6R	6			
M3-8R	8			
M3-8R	8	2D		
M3-12R	12			
M3-16R	16			
M3-12R	12	3D		
M3-20R	20			
M3-24R	24			

Specification: Product size-1D

Model	4 windows	6 windows	8 windows
Function	Programmable Fault Annunciator with RS-485 Communication		
Rated supply voltage	85V to 270V AC/DC, 24-48V AC/DC		
Rated frequency	50 / 60Hz ±5%		
Power consumption	AC:15VA Approx. DC:10W Approx. for 85V to 270V AC/DC	AC:12VA Approx. DC:8W Approx. for 24-48V AC/DC	
No. of windows	4	6	8
Standby supply	12V DC ± 10% or 85V - 270V AC / DC		
Fault input contacts	Selectable NO / NC type for each window		
Communication#	RS485 Modbus RTU protocol.		
Window colour	Red (Amber, White and Green are available on request)		
Device ID selection	Field Programmable		
Window size(W x H)	Bigger Window: 68.0 X 31.0mm	Bigger Window : 68.0 X 31.0mm Smaller Window : 34.0 X 31.0mm	Smaller Window : 34.0 X 31.0mm
Flash rate	Fast:100/Minute ±10 & Slow : 60/Minute ±10		
Control output (No. of Rlys)	TRIP Relay(C,NC,NO), Alarm Relay (C,NC,NO), Aux. fail Rly (C & NO), Hooter Rly (C & NO)		
Push Button Control	Integral Push button for Test, Mute, Acknowledge & Reset Function, Provision of output connections for remote access of push Buttons		
Illumination	Low power Super Bright SMD LED'S		
Fault Input Signal	Potential Free (NO/NC field selectable)		
Contact rating	1 C/ O rated for 5A @ 250 VAC / 30VDC(NO) & 3A @ 250VAC / 30VDC (NC)		
Test facility	Yes		
Audible Output	Internal Buzzer		
Fault Sensitivity	100mSec ±10%		
Sequence of operation	a) Manual reset, b) Auto reset, c) Manual Reset + Repeat Alarm, d) FIFO Sequence		
Recovery time	2 Sec minimum		
Ambient temperature	Operation : -10°C to + 55° C & Storage : -25° C to + 80° C		
Humidity	MAX 85% RH @ 40° C		
Service life under no load)	10^6 operations minimum		
Electrical life(under full load)	10^5 operations minimum		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	01) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non current carrying parts) 02) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 03) 750V AC, 50Hz for 1 minute.(Between non-continuous contacts of the relay)		
Electrical connections	Right angle female pluggable connector		
Cut-out Dimension (WXH)	66 x 139 mm		
Over-all Dimension (W x H x D)	72 x 144 x 121mm		

Available for optional models only

Specification: Product size-2D

Model	8 windows	12 windows	16 windows
Function	Programmable Fault Annunciator with RS-485 Communication		
Rated supply voltage	85V to 270V AC/DC , 24-48V AC/DC		
Rated frequency	50 / 60Hz ±5%		
Power consumption	AC: 20VA Approx. ,DC:12W Approx. for 85V to 270V AC/DC		
	AC: 12VA Approx., DC:8W Approx. for 24-48V AC/DC		
No. of windows	8	12	16
Standby supply	12V DC ± 10%		
Fault input contacts	Selectable NO / NC type for each window		
Communication#	RS485 Modbus RTU protocol.		
Window colour	Red (Amber, White and Green are available on request)		
Device ID selection	Field Programmable		
Window size (W x H)	Bigger Window: 68.0 x 31.0mm	Bigger Window : 68.0 x 31.0mm Smaller Window : 34.0 x 31.0mm	Smaller Window : 34.0 x 31.0mm
Flash rate	Fast:100/Minute ±10 & Slow :60/Minute ±10		
Control output (No. of Rlys)	TRIP Relay(C,NC,NO), Alarm Relay (C,NC,NO), Aux. fail Rly (C & NO), Hooter Rly (C & NO)		
Push Button Control	Integral Push button for Test, Mute, Acknowledge & Reset Function, Provision of output connections for remote access of push Buttons		
Illumination	Low power Super Bright SMD LED'S		
Fault Input Signal	Potential Free (NO/NC field selectable)		
Contact rating	1 C/ O rated for 5A @ 250 VAC / 30VDC(NO) & 3A @ 250VAC / 30VDC (NC)		
Test facility	Yes		
Audible Output	Internal Buzzer		
Fault Sensitivity	100msec ±10%		
Sequence of operation	a) Manual reset, b) Auto reset, c) Manual Reset + Repeat Alarm, d) FIFO Sequence		
Recovery time	2 Sec minimum		
Ambient temperature	Operation : -10°C to + 55° C & Storage : -25° C to + 80° C		
Humidity	MAX 85% RH @ 40° C		
Service life under no load)	10^6 operations minimum		
Electrical life(under full load)	10^5 operations minimum		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	01) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non current carrying parts) 02) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 03) 750V AC, 50Hz for 1 minute.(Between non-continuous contacts of the relay)		
Electrical connections	Right angle female pluggable connector		
Cut-out Dimension (W x H)	139 X 139mm		
Over-all Dimension (W x H x D)	144 x 144 x 121mm		

Available for optional models only

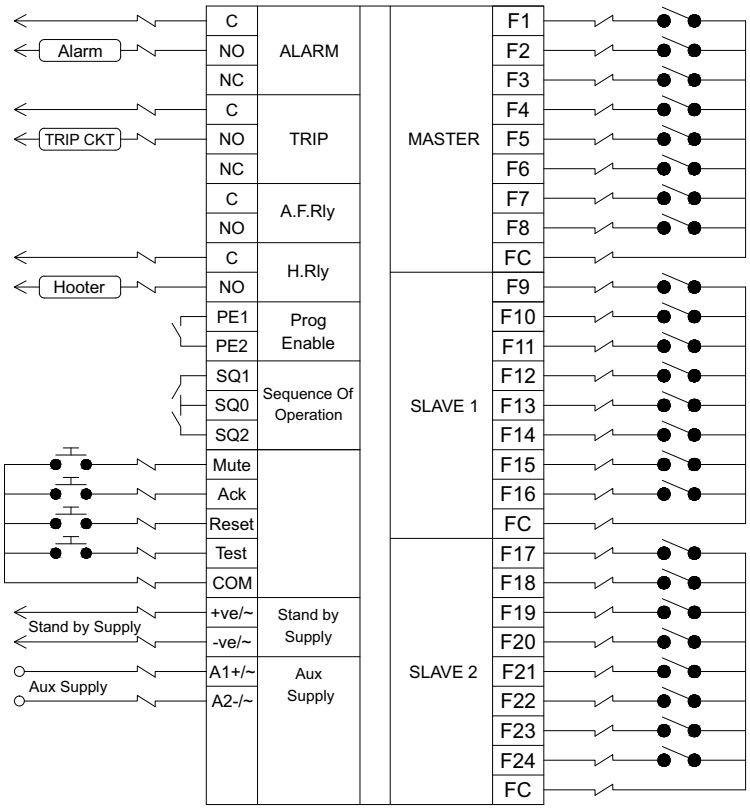
Specification: Product size-3D

Model	12 windows	20 windows	24 windows
Function	Programmable Fault Annunciator with RS-485 Communication		
Rated supply voltage	85V to 270V AC/DC , 24-48V AC/DC		
Rated frequency	50 / 60Hz ±5%		
Power consumption	AC: 35VA Approx., DC:20W Approx. for 85V to 270V AC/DC AC: 20VA Approx., DC:12W Approx. for 24-48V AC/DC		
No. of windows	12	20	24
Standby supply	12V DC ± 10%		
Fault input contacts	Selectable NO / NC type for each window		
Communication#	RS485 Modbus RTU protocol.		
Window colour	Red (Amber, White and Green are available on request)		
Device ID selection	Field Programmable		
Window size (W x H)	Bigger Window : 68.0 X 31.0mm	Bigger Window : 68.0 X 31.0mm Smaller Window : 34.0 X 31.0mm	Smaller Window : 34.0 X 31.0mm
Flash rate	Fast:100/Minute ±10 & Slow :60/Minute ±10		
Control output (No. of Rlys)	TRIP Relay(C,NC,NO), Alarm Relay (C,NC,NO), Aux. fail Rly (C & NO), Hooter Rly (C & NO)		
Push Button Control	Integral Push button for Test, Mute, Acknowledge & Reset Function, Provision of output connections for remote access of push Buttons		
Illumination	Low power Super Bright SMD LED'S		
Fault Input Signal	Potential Free (NO/NC field selectable)		
Contact rating	1 C/ O rated for 5A @ 250 VAC / 30VDC(NO) & 3A @ 250VAC / 30VDC (NC)		
Test facility	Yes		
Audible Output	Internal Buzzer		
Fault Sensitivity	100msec ±10%		
Sequence of operation	a) Manual reset, b) Auto reset, c) Manual Reset + Repeat Alarm, d) FIFO Sequence		
Recovery time	2 Sec minimum		
Ambient temperature	Operation : -10°C to + 55° C & Storage : -25° C to + 80° C		
Humidity	MAX 85% RH @ 40° C		
Service life under no load)	10^6 operations minimum		
Electrical life(under full load)	10^5 operations minimum		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	01) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non current carrying parts) 02) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 03) 750V AC, 50Hz for 1 minute.(Between non-continuous contacts of the relay)		
Electrical connections	Right angle female pluggable connector		
Cut-out Dimension (WXH)	212 x 139mm		
Over-all Dimension (W x H x D)	216 x 144 x 121		

Available for optional models only

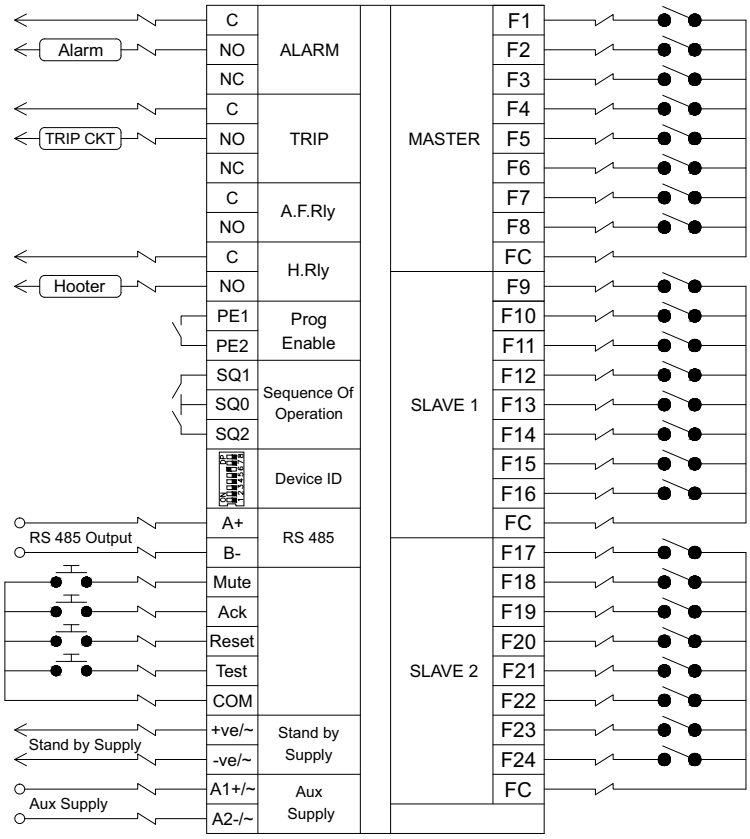
Connection Diagrams

M3-24 3D (Same Connection Diagram applicable for all windows)



Auxiliary voltage: 85-270V AC/DC or 24-48V AC/DC
Stand by -Ve & + Ve: 12V DC (1Amp) ± 10%
Hooter RLY C & NO : Rly contacts for Hooter during power fail
Aux. Fail Rly C & NO : Rly contacts for indicating power failure
Alarm & Trip relay : C,NO&NC for alarm and trip output indication.
PE1 & PE2: Short - Program Enable (PGM) &
Open - Program Disable (RUN)
FC: Common fault(FC) I/P terminals for F1-F4,F1-F6, F1-F8,F1-F12,F1-F16,F1-F20,F1-F24.
Individual fault I/P terminals for respective window (Potential free).Connect WRT Fault COM (FC):
F1-------- F4 for 4 windows
F1-------- F6 for 6 windows
F1-------- F8 for 8 windows
F1-------- F12 for 12 windows
F1-------- F16 for 16 windows
F1-------- F20 for 20 windows
F1-------- F24 for 24 windows
MUTE ACK, RST, and TEST: External push buttons for, remote operations Connect WRT COM.
SQ1, SQ2: Selection of required sequence of operation connect w.r.t SQ0
A (+), B (-): RS485 Communication terminals

M3-24R 3D (Same Connection Diagram applicable for all windows)



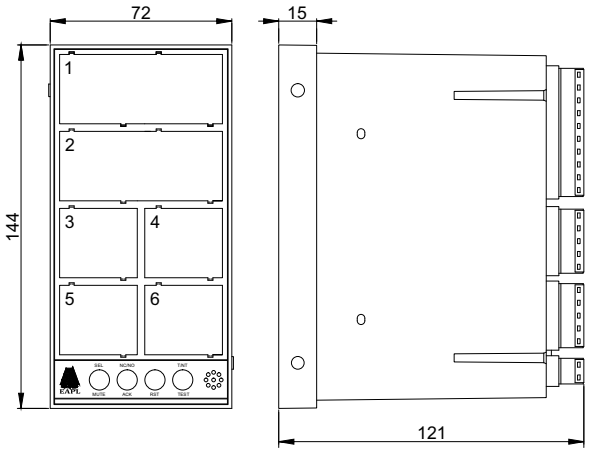
Auxiliary voltage: 85-270V AC/DC or 24-48V AC/DC
Stand by -Ve & + Ve: 12V DC (1Amp) ± 10%
Hooter RLY C & NO : Rly contacts for Hooter during power fail
Aux. Fail Rly C & NO : Rly contacts for indicating power failure
Alarm & Trip relay : C,NO&NC for alarm and trip output indication.
PE1 & PE2: Short - Program Enable (PGM) &
Open - Program Disable (RUN)
FC: Common fault(FC) I/P terminals for F1-F4,F1-F6, F1-F8,F1-F12,F1F16,F1-F20,F1-F24.
Individual fault I/P terminals for respective window (Potential free).Connect WRT Fault COM (FC):
F1--------F4 for 4 windows
F1--------F6 for 6 windows
F1--------F8 for 8 windows
F1--------F12 for 12 windows
F1--------F16 for 16 windows
F1--------F20 for 20 windows
F1--------F24 for 24 windows
MUTE ACK, RST, and TEST: External push buttons for, remote operations Connect WRT COM.
SQ1, SQ2: Selection of required sequence of operation connect w.r.t SQ0
A (+), B (-): RS485 Communication terminals

Dimension table

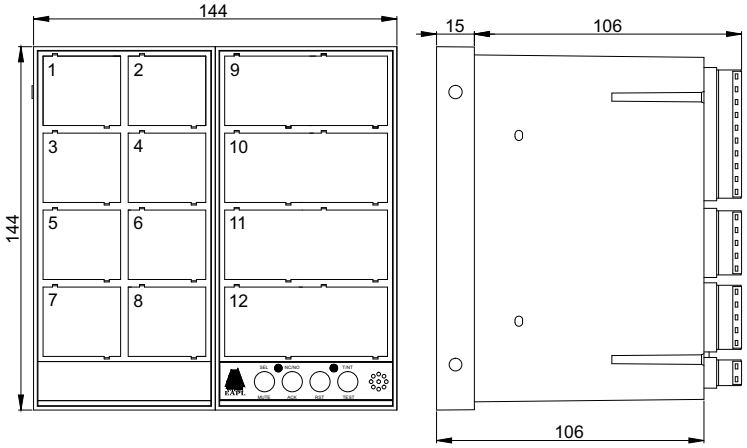
Model	Product size	Window sizes (W x H) in mm	Overall dimension (W x H x D) in mm	Cut out dimension (W x H) in mm
M3-4/M3-4R	1D	4 Bigger windows 68.0 x 31.0	72 x 144 x 121	66 x 139
M3-6/M3-6R		2 Bigger windows 68.0 x 31.0 4 Smaller windows 34.0 x 31.0		
M3-8/M3-8R		8 Smaller windows 34.0 x 31.0		
M3-8/M3-8R	2D	8 Bigger windows 68.0 x 31.0	144 x 144 x 121	139 x 139
M3-12/M3-12R		4 Bigger windows 68.0 x 31.0 8 Smaller windows 34.0 x 31.0		
M3-16/M3-16R		16 Smaller windows 34.0 x 31.0		
M3-12/M3-12R	3D	12 Bigger windows 68.0 x 31.0	216 x 144 x 121	212 x 139
M3-20/M3-20R		4 Bigger windows 68.0 x 31.0 16 Smaller windows 34.0 x 31.0		
M3-24/M3-24R		24 Smaller windows 34.0 x 31.0		

Dimension

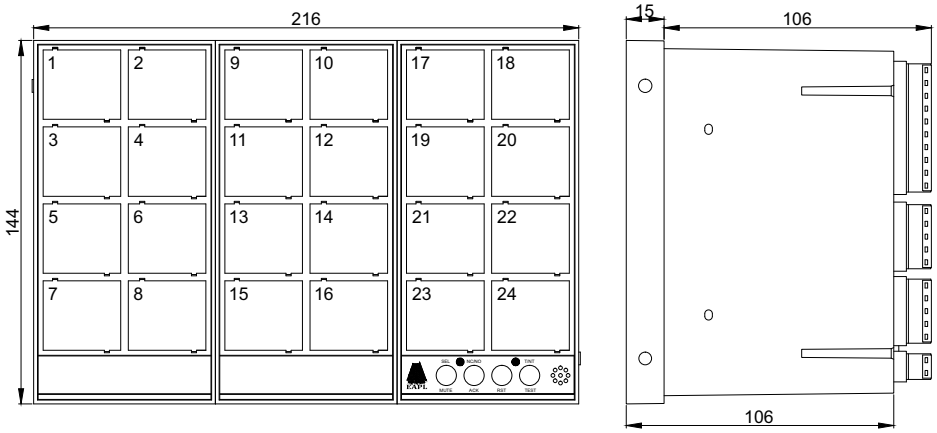
1D



2D



3D



ESB-01 Solid state Buzzer

Features

- Low Power Consumption.
- Suitable for operation on AC.
- Available in 110V AC/240V AC.
- Generates no radio frequency signal.
- Long Life.
- Exquisite appearance.

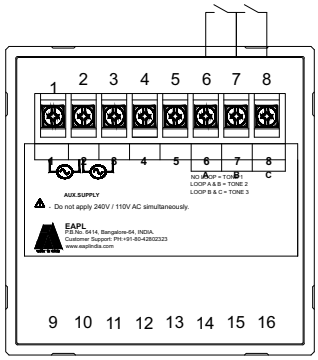
Ordering Information

Model	Function	Source voltage	No. of tones
ESB-01	Audio Alarm	110V AC/240V AC	3

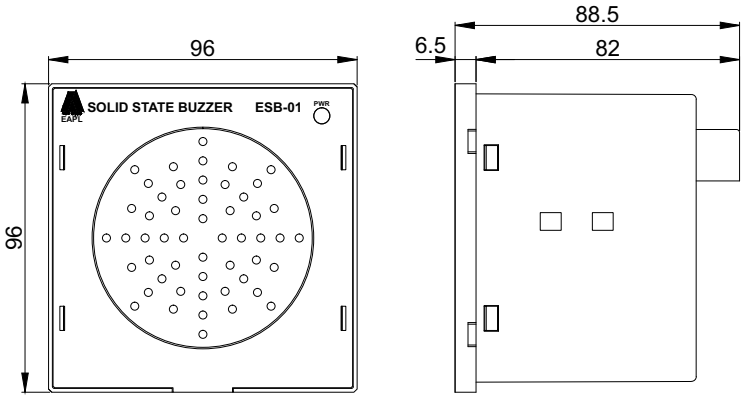
Specifications

Model	ESB-01
Product Function	Audio Alarm
Supply voltage	240VAC/110VAC ±10%
Power Consumption	10VA
Rated frequency	50Hz ± 5% AC ONLY
Audio Output	90db to 110db
No. of tones	3
Ambient Temperature	Operation : -10°C to + 55°C Storage : -25°C to + 80°C
Humidity	Max 95% RH @ 40°C
Dielectric strength	2.5 KV AC, 50Hz for 1 minute (Between current carrying & non-current carrying parts)
Electrical connection	Screw type terminals with self lifting clamps
Overall Dimension	96mm x 96mm x 88.5mm(W X H X D)
Cut-out Dimension	92 x 92mm(WXH)

Connection Diagrams



Dimension:



1, 2 : Auxiliary Supply(240 VAC±10%)
2, 3 : Auxiliary Supply(110 VAC±10%)
Note: (Do not apply 240VAC & 110VAC simultaneously)
Tone 1 = No Loop
Tone 2 = Loop A & B
Tone 3 = Loop B & C

EMS-series

Energy meters

Energy meters are used to measure and display various energy parameters that are consumed by various electric loads. EAPL offers Energy meters ranging from basic meters like Ammeters, voltmeters up to Multifunction meters which measures and displays up to 40 electrical parameters.

In Basic meters, we have Ammeter, Voltmeter, Frequency meters, VAF meters, and KWH meters.

In Multifunction meters range we have KWH meter, Dual-source meters, energy meters with event counters, maximum demand controller, and indicators measuring and displaying up to 40 parameters.

All Multifunction meters are provided with RS 485 port for Modbus communication. EAPL also offers Multifunction meter with Wi-Fi connectivity facility.

Applications:

Sub metering panels, Distribution panels, HT / LT panels and DG panels and many more.

Features

- High brightness red LED display.
- Programmed values of parameters are protected against unintentional/unauthorised changes.
- **EMS-11:**
  Measurement of current parameters (L-N).
  CT primary & secondary programmable..
- **EMS-12:**
  Measurement of voltage parameters (L-N), (L-L).
  PT primary & secondary programmable
- **EMS-13:**
  Measurement of frequency parameter(Average).
- **EMS-18:**
  Measurement of basic parameters. (Current (L-N), Voltage (L-N),(L-L), frequency(avg)

Ordering Information

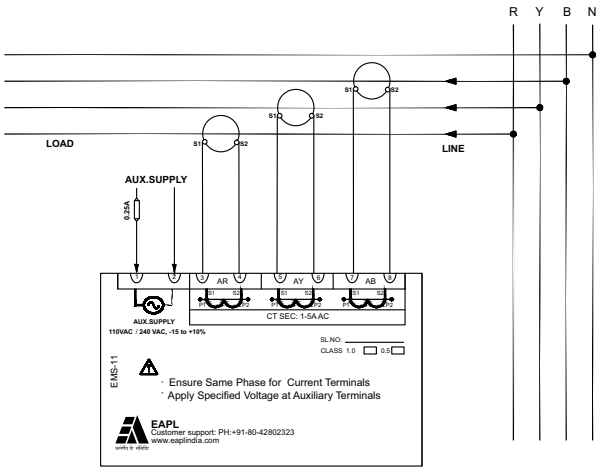
Model	Function	Source voltage	Display Parameters
EMS-11	Ammeter	240V AC/ 110V AC	A(R,Y,B)
EMS-12	Voltmeter	240V AC/ 110V AC	V(R,Y,B), V(RY,YB,BR)
EMS-13	Frequency meter	240V AC/ 110V AC	(L – N)Frequency
EMS-18	VAF meter	85V - 270V AC/DC	V(R, Y, B), V(RY, YB, BR),A(R,Y, B), Hz

Specifications

Model	EMS-11	EMS-12	EMS-13	EMS-18
Function	Ammeter	Voltmeter	Frequency meter	Voltage ,Current , Frequency Meter
Rated voltage	110V AC (-15% to +10%) / 240V AC(-15% to +10%)			85 to 270 V AC / DC
Rated Frequency	50 Hz ± 5%			50 / 60Hz ± 5% for AC only
Power consumption	AC Approx. 5 VA			AC Approx.5 VA & DC Approx. 2W
Burden	< 0.2 VA per Volts/Amps input			
Input voltage	NA	3 Phase 4 wire (R,Y,B,N) Range 50V-300V(L-N)	Range 50V-300V(L-N)	3 Phase 4 wire (R,Y,B,N) Range 50V-300V(L-N)
Input current	Current inputs (AR,AY,AB) 0.1A to 5A (up to 200 % Ib Max)	NA	NA	Current inputs (AR, AY, AB) 1A to 5A (1% to 200%)
Input Frequency	NA	50Hz, ±2%	45Hz to 65Hz	50Hz, ±2%
Sensing	NA	RMS	NA	True RMS
Accuracy	Class 1 / Class 0.5 for IB only	Class 1 / Class 0.5 for Standard voltage	1% of FS ±1 digit	±1% of FS ±1 digit for Voltage and frequency ±1.0 % For 10-100% of CT primary for current
Recovery Time	500msec minimum			2 sec minimum
PT Ratio Selectable	NA	Primary:110V to 999KV max. Secondary:110V to 500V	NA	NA
CT Ratio Selectable	Primary: 1A to 6KA max. Secondary:1A to 5A.	NA	NA	Primary:1A to 6KA max. Secondary:1A to 5A
Ambient Temperature	Operation : -10°C to + 55°C(14°F to 131°F) Storage : -25°C to + 80°C(-13°F to 176°F)			
Humidity	Up to 95% RH @ 40°C			
Insulation resistance	>100M ohms @ 500V DC			
Dielectric strength	2.5 KV AC, 50Hz for 1 minute (Between current carrying & non-current carrying parts)			
Electrical connection	Screw type terminals with self lifting clamps			
Overall Dimension	96 X 96 X 95.5 mm (W x H x D)			
Cut-out Dimension	92 x 92mm (W x H)			

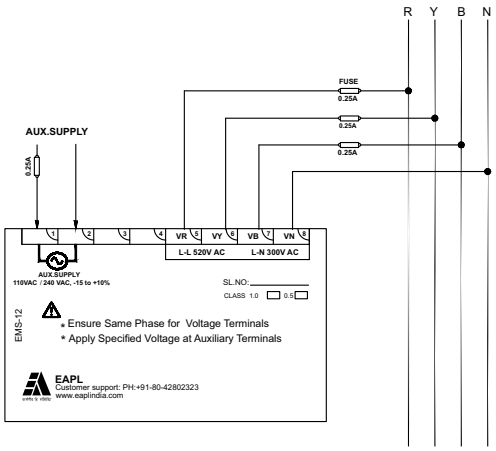
Connection Diagrams

EMS-11



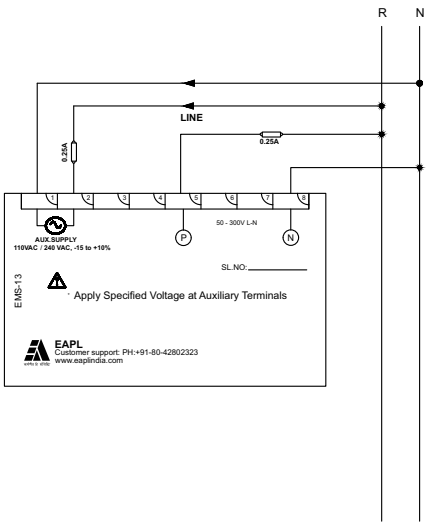
System Type : Star/Wye
1, 2 : Auxiliary Supply(240 VAC,-15% to +10%) &
Auxiliary Supply(110 VAC,-15% to +10%)
3,4 : S1, S2 (R Phase)
5,6 : S1, S2 (B Phase)
7,8 : S1, S2 (Y Phase)
For single phase
1, 2 : Auxiliary Supply(240 VAC,-15% to +10%) &
Auxiliary Supply(110 VAC,-15% to +10%)
3,4 : S1, S2 (R Phase) shall be used

EMS-12



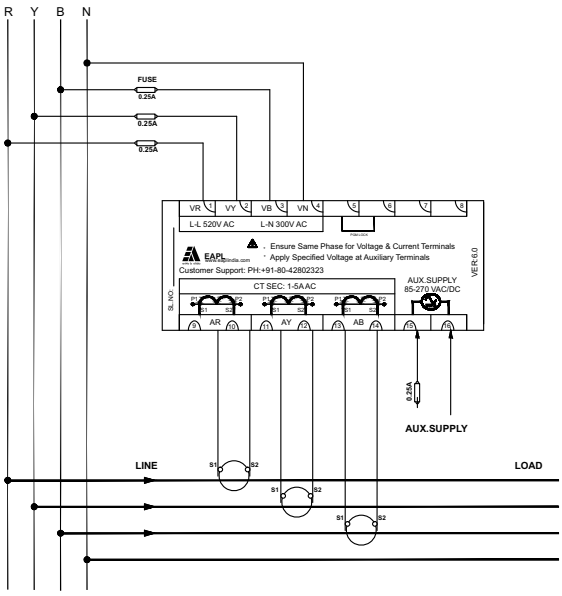
System Type : Star/Wye
1,2 : Auxiliary Supply(240 VAC,-15% to +10%) &
Auxiliary Supply(110 VAC,-15% to +10%)
3,4 : No connection
5 : R Phase
6 : Y Phase
7 : B Phase
8 : Neutral
For single phase
1, 2 : Auxiliary Supply(240 VAC,-15% to +10%) &
Auxiliary Supply(110 VAC,-15% to +10%)
5 : R Phase
8 : Neutral

EMS-13



System Type : Star/Wye
1,2 : Auxiliary Supply(240 VAC,-15% to +10%) &
Auxiliary Supply(110 VAC,-15% to +10%)
3,4 : No connection
5 : R Phase
6,7 : No connection
8 : Neutral

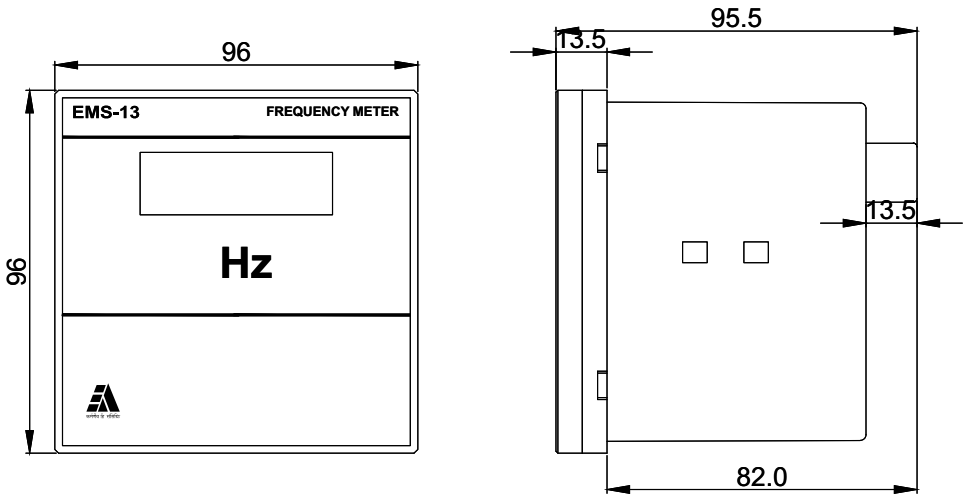
EMS-18



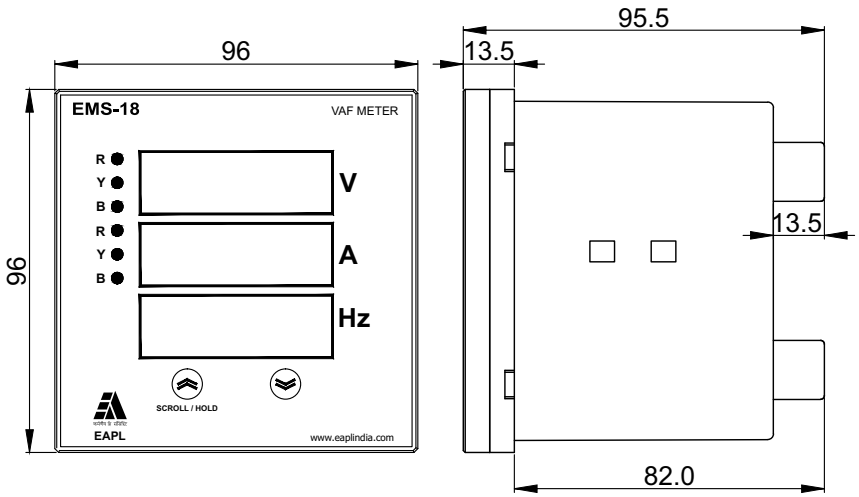
System Type : Star/Wye
1, 2, 3, 4 : R, Y, B, N
5 ,6 : Program lock
7,8 : No Connection
9, 10 : S1, S2 (R Phase)
11,12 : S1, S2 (Y Phase)
13,14 : S1, S2 (B Phase)
15,16 : Auxiliary Supply(85-270 V AC/DC)
For single phase
1, 4 : R, N
5, 6 : Program lock
9, 10 : S1, S2
15,16 : Auxiliary Supply(85-270 V AC/DC)

Dimension

EMS-11/EMS-12/EMS-13



EMS-18



Accessories

- Side Anchor

EMS-series

Basic meters

NEW

Features

- High brightness red LED display.
- Entering program mode is possible by means of short links or buttons.
- **EMS-11a:**
  Measurement of current parameters (L-N).
  CT primary & secondary programmable..
- **EMS-12a:**
  Measurement of voltage parameters (L-N), (L-L).
  PT primary & secondary programmable
- **EMS-13a:**
  Measurement of frequency parameter(Average).

Ordering Information

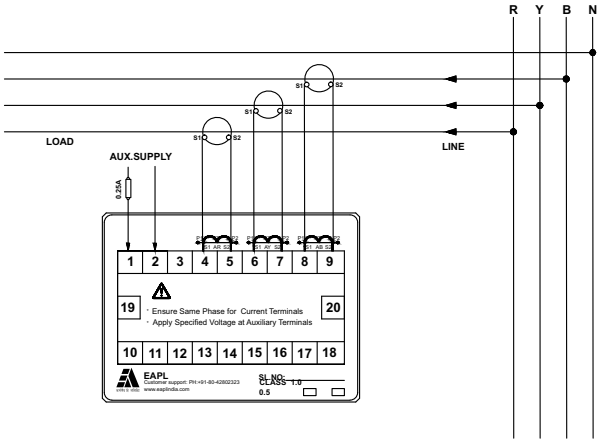
Model	Function	Source voltage	Display Parameters
EMS-11a	Ammeter	240V AC	A(R,Y,B)
EMS-12a	Voltmeter		L(R,Y,B), L-N(RY,YB,BR)
EMS-13a	Frequency meter		(L – N)Frequency

Specifications

Model	EMS-11a	EMS-12a	EMS-13a
Product Function	Ammeter	Voltmeter	Frequency meter
Rated voltage	240V AC(-15% to +10%)		
Rated Frequency	50 Hz ± 5%		
Power consumption	AC Approx. 5 VA		
Burden	< 0.2 VA per Volts/Amps input		
Input voltage	NA	3 Phase 4 wire (R,Y,B,N) Range 50V-300V(L-N)	Range 50V-300V(L-N)
Input current	Current inputs (AR, AY, AB) 0.1A to 5A (up to 200 % Ibmax)	NA	NA
Input Frequency	NA	50Hz, ±2%	45Hz to 65Hz
Accuracy	Class 1 / Class 0.5 for IB only	Class 1 / Class 0.5 for Standard voltage	1% of FS ±1 digit
Recovery Time	500msec minimum		
PT Ratio Selectable	NA	Primary:110V to 999KV. Secondary:110V to 500V	NA
CT Ratio Selectable	Primary: 1A to 6000A max. Secondary:1A to 5A	NA	NA
Ambient Temperature	Operation : -10°C to + 55°C(14°F to 131°F) Storage : -25°C to + 80°C(-13°F to 176°F)		
Humidity	Up to 95% RH @ 40°C		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	2.5 KV AC, 50Hz for 1 minute (Between current carrying & non-current carrying parts)		
Electrical connection	Screw type terminals with self lifting clamps		
Overall Dimension	98 x 50 x 79 mm (W X H X D)		
Cut-out Dimension	92 x 46mm(WXH)		

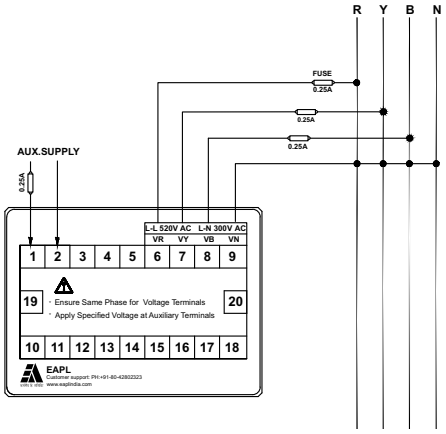
Connection Diagrams

EMS-11a



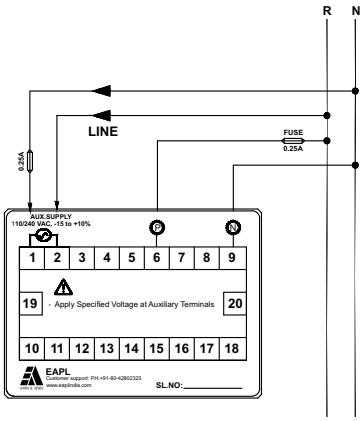
System Type : Star/Wye
1, 2 : Auxiliary Supply(240 VAC,-15% to +10%)
3 : No connection
4,5 : S1, S2 (R Phase)
6,7 : S1, S2 (Y Phase)
8,9 : S1, S2 (B Phase)
For single phase
1, 2 : Auxiliary Supply(240 VAC,-15% to +10%)
4,5 : S1, S2 (R Phase) shall be used

EMS-12a



System Type : Star/Wye
1,2 : Auxiliary Supply(240 VAC,-15% to +10%)
3,4,5 : No connection
6 : R Phase
7 : Y Phase
8 : B Phase
9 : Neutral
For single phase
1, 2 : Auxiliary Supply(240 VAC,-15% to +10%)
6 : R Phase
8 : Neutral

EMS-13 a



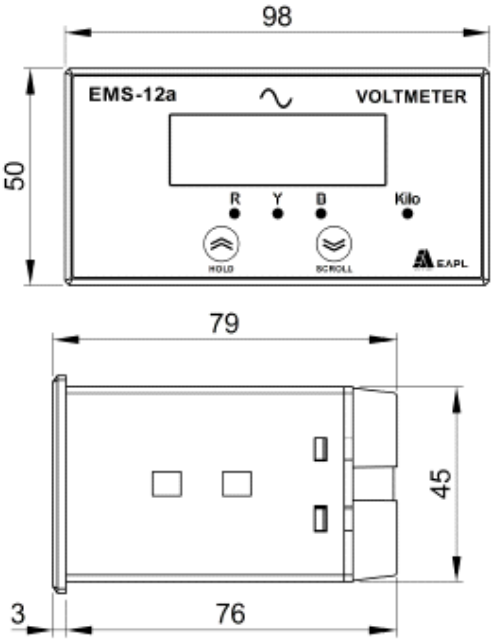
System Type : Star/Wye
1,2 : Auxiliary Supply(240 VAC,-15% to +10%)
3,4,5 : No connection
6 : Phase
7,8 : No connection
9 : Neutral

Accessories

- Side Anchor

Dimension

EMS-11a/EMS-12a/EMS-13a



Note: All Dimensions are in mm.

NEW

Features

- Sleek and compact design.
- High brightness red LED display.
- Dimension: 98 X 50 X 79mm(W X H X D)
- **DPM-01:**
  Measurement of single phase Voltage and Current.

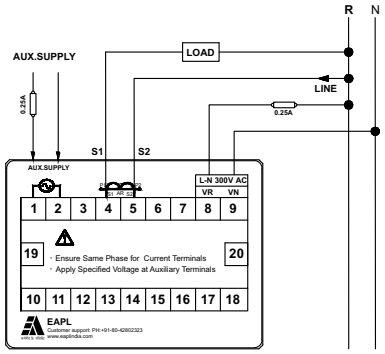
Ordering Information

Model	Function	Source voltage	Display Parameters
DPM-01	Single phase Ammeter & Voltmeter	240V AC	Volt, Amp

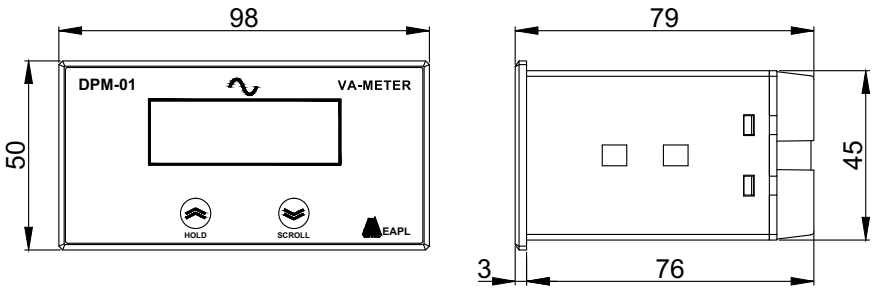
Specifications

Model	DPM-01
Product Function	Single phase Ammeter & Voltmeter
Rated voltage	240V AC ±10%
Rated Frequency	50 Hz ± 5%
Power consumption	AC Approx. 5 VA
Burden	< 0.2 VA per Volts/Amps input
Input voltage	Single phase (R,N) Range 50V-300V(L-N)
Accuracy-voltage	Class 1 for Standard voltage only
Input current	Current inputs (AR) 0.1A to 10A (up to 150 % Ib Max)
Accuracy-current	Class 1 for IB only
Recovery Time	500msec minimum
Ambient Temperature	Operation : -10°C to + 55°C(14°F to 131°F) Storage : -25°C to + 80°C(-13°F to 176°F)
Humidity	Up to 95% RH @ 40°C
Insulation resistance	>100M ohms @ 500V DC
Dielectric strength	2.5 KV AC, 50Hz for 1 minute (Between current carrying & non-current carrying parts)
Electrical connection	Screw type terminals with self lifting clamps
Overall Dimension	96 x 50 x79 mm (W x H x D)
Cut-out Dimension	92 x 46mm (W x H)

Connection Diagrams



Dimension:



1, 2 : Auxiliary Supply(240 VAC±10%)
3,6,7 : No connection
4,5 : S1, S2 (R Phase)
8 : Phase
9 : Neutral

EMS-series

Multifunction meters

Features

- On site programmable PT (Primary & Secondary) / CT (Primary & Secondary) ratio
- High brightness alpha numeric LED display for parameters and numeric values.
- Password protection for program settings.
- Protection from dust and water as per IP 51.
- Accuracy Class:1.0(as per IEC 62053-21) / 0.5(as per IEC 62053-22).
- Available in three variants.
  EMS-01 - Multi Function Meter with RS 485 Modbus communication facility.
  EMS-01x - Multi Function Meter with Wi-Fi communication facility.
  EMS-01T - Multi Function Meter with THD and RS 485 Modbus communication

Ordering Information

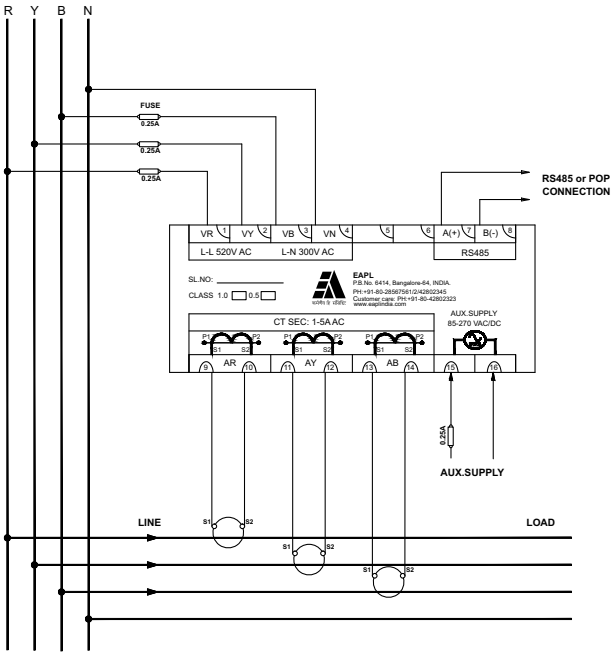
Model	Function	Source voltage	Pages	Display Parameters
EMS-01	3 Phase Multi-function meter with RS 485 communication	85V to 270 V AC/DC	Page 1-Basic	V (R, Y, B), V(RY, YB, BR), A(R,Y, B), Hz,PF(R, Y, B, T), Phase Angle (R, Y, B), RPM,W(R, Y, B, T), VAr(R, Y, B,T), VA(R, Y, B, T),Device ID (Communication Status),Neutral current.
			Page 2-Total	KWhT, KVrhCT, KVrhIT, KVAhT, LT (Load Hours Total)
			Page 3-Import	KWhI, KVrhCI, KVrhII, KVAhI, LI (Load Hours Import)
EMS-01X	3 Phase Multi-function meter with Wi-Fi communication	240 V AC / DC	Page 4-Export	KWhE, KVrhCE, KVrhIE, KVAhE, LE (Load Hours Export)
			Page 5-Old Total	KWhT, KVrhCT, KVrhIT, KVAhT, LT (Load Hours Total)
			Page 6-Old Import	KWhI, KVrhCI, KVrhII, KVAhI, LI(Load Hours Import)
			Page 7-Old Export	KWhE, KVrhCE, KVrhIE, KVAhE, LE(Load Hours Export).
EMS-01T	3 Phase Multifunction meter with THD	85V to 270 V AC/DC	Page 1-Basic	V (R, Y, B), V(RY, YB, BR), A(R,Y, B), Hz,PF(R, Y, B, T), Phase Angle (R, Y, B), RPM,W(R, Y, B, T), VAr(R, Y, B,T), VA(R, Y, B, T),Device ID (Communication Status)
			Page 2-THD	V (R, Y, B), A(R,Y, B) in % only
			Page 3-Total	KWhT, KVrhCT, KVrhIT, KVAhT, LT (Load Hours Total)
			Page 4-Import	KWhI, KVrhCI, KVrhII, KVAhI, LI (Load Hours Import)
			Page 5-Export	KWhE, KVrhCE, KVrhIE, KVAhE, LE (Load Hours Export)
			Page 6-Old Total	KWhT, KVrhCT, KVrhIT, KVAhT, LT (Load Hours Total)
			Page 7-Old Import	KWhI, KVrhCI, KVrhII, KVAhI, LI (Load Hours Import)
			Page 8-Old Export	KWhE, KVrhCE, KVrhIE, KVAhE, LE (Load Hours Export).

Specifications

Model	EMS-01	EMS-01T	EMS-01X
Product Function	Three Phase Multi Function Meter with RS485 Communication	Three Phase Multifunction meter with THD & RS485 communication	Three Phase Multi Function Energy Meter with Wi-Fi communication
Rated voltage	85 to 270 V AC / DC		240 V AC / DC -20%,+10%
Rated Frequency	50 / 60Hz ± 5% for AC only		
Power consumption	AC Approx. 6 VA,DC Approx. 4W		
Input voltage	3 Phase 4 wire (R,Y,B,N),Range - 415 VAC (-40% to +20%), 110 VAC (-40% to +20%)		
Input current	Current inputs (AR, AY, AB) ,Basic upto 5A (Ib), Max. 10A (200% of Ib)		
Input Frequency	50 Hz, 2%		
Burden	< 0.4 VA per Volts/Amps input	< 0.2 VA per Volts/Amps input	< 0.4 VA per Volts/Amps input
Accuracy	Class 1 / Class 0.5		
Recovery Time	2 sec minimum		
Communication	RS-485 MODBUS RTU Protocol		WiFi operating at 2.4GHz Standard: 802.11/b/g/n Network mode: AP / Station Frequency Range: 2.412 - 2.484 GHz Transmit Power: 16dbm Wireless Network Security: WEP: 64-bit/128-bit data encryption, TKIP (WPA-PSK),AES(WPA2-PSK) Antenna Interface:PCB integrated Antenna Transmission Range: 50m
Meter Constant	3200 Pulses / KWh, 3200 pulses / KVArh		
CT Ratio Selectable	Primary 1 to 5000A max. & Secondary 1 to 5A.		
PT Ratio Selectable	Primary 110 to 999KV & Secondary 110 to 500V		
Device ID	1 – 247		
Baud rate	2400, 4800, 9600,19200bps		
Pulse Output	Active Energy / Reactive Energy		
Poles	1-28		
Protection of configuration settings	User settable Password ranging from 0001 to 9999		
Ambient Temperature	Operation : -10°C to + 55°C(14°F to 131°F),Storage : -25°C to + 80°C(-13°F to 176°F)		
Humidity	Up to 95% RH @ 40°C		
Insulation resistance	>100M ohms @ 500V DC		
Dielectric strength	2.5 KV AC, 50Hz for 1 minute (Between current carrying & non-current carrying parts)		
Electrical connection	Screw type terminals with self lifting clamps		
Overall Dimension	96 x 96 x 95.5mm (W x H x D)		
Cutout Dimension	92 x 92mm (W x H)		

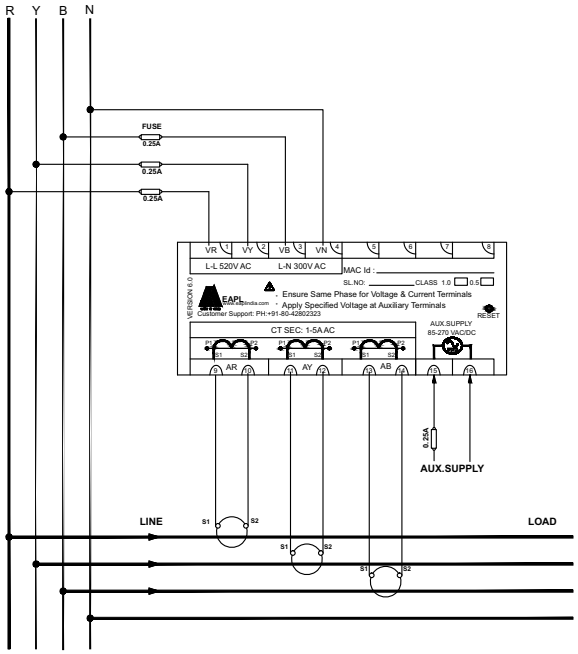
Connection Diagrams

EMS-01/EMS-01T



System Type : Star/Wye
1, 2, 3, 4 : R, Y, B, N
5 ,6 : No connection
7,8 : A,B (RS 485Communication port)
9, 10 : S1, S2 (R Phase)
11,12 : S1, S2 (Y Phase)
13,14 : S1, S2 (B Phase)
15,16 : Auxiliary Supply 85-270 V AC/DC

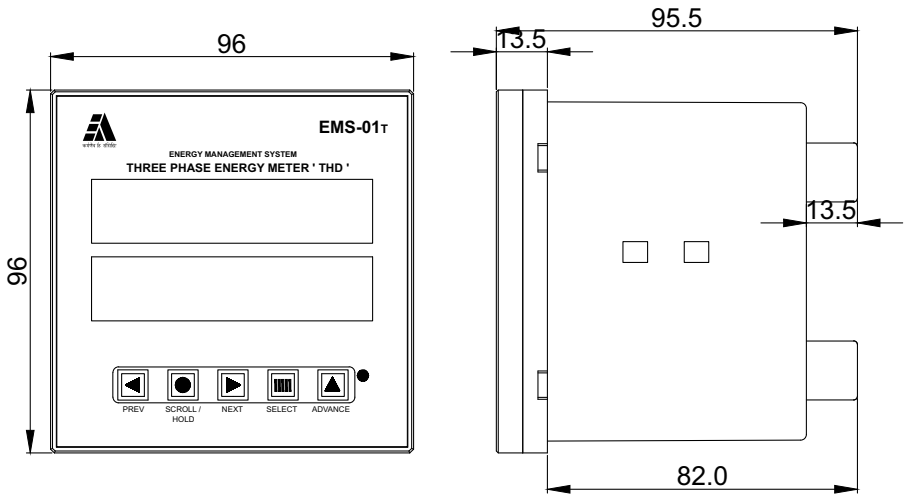
EMS-01X



System Type : Star/Wye
1, 2, 3, 4 : R, Y, B, N
5, 6 : No connection
7, 8 : No connection
9, 10 : S1, S2 (R Phase)
11, 12 : S1, S2 (Y Phase)
13, 14 : S1, S2 (B Phase)
15, 16 : Auxiliary Supply(240 V AC/DC,-20%,+10%)

Dimension:

EMS-01/EMS-01T/EMS-01X



Note: All Dimensions are in mm.

Accessories

- Panel Locking side anchor

EMS-series Multifunction meters

Features

- On site programmable PT (Primary & Secondary) / CT (Primary & Secondary) ratio
- High brightness alpha numeric LED display for parameters and numeric values.
- Password protection for program settings.
- Protection from dust and water as per IP 51.
- Accuracy Class:1.0(as per IEC 62053-21) / 0.5(as per IEC 62053-22).
- **EMS-03** - KWH Meter with RS 485 Modbus communication facility.
- **EMS-09** - Basic /Energy Meter with RS 485 Modbus communication facility.
- **EMS-09m** - Basic /Energy Meter with 2 Event Counter & 485 Modbus
- **EMS-17** -Dual source Energy meter with RS 485 Modbus communication facility.

Ordering Information

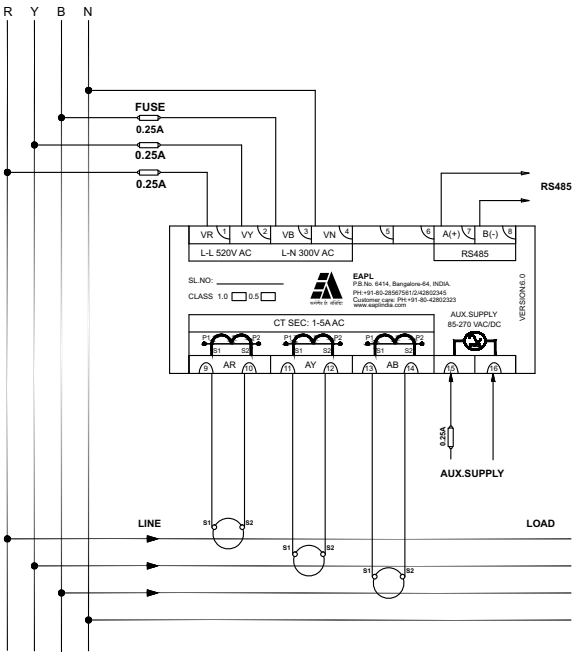
Model	Function	Source voltage	Display Parameters
EMS-03	KWH meter	85V to 270V AC/DC	W(T), PF(T), KWh, MWh, Device ID (Communication Status)
EMS-09	Basic / Energy Meter		V(R,Y,B),V(RY,YB,BR), A(R,Y,B),Hz,PF(R,Y, B,T),W(R,Y, B,T),KWh, MWh, LH, OKWh, OMWh, OL, Device ID (Communication Status)
EMS-09m	Basic /Energy Meter with 2 Event Counter		V(R,Y,B),V(RY,YB,BR), A(R,Y,B),Hz,PF(R,Y, B,T), W(R,Y, B,T), VA, KVAh, KWh,MWh, LH, Device ID (Communication Status),JobCnt 1, JobCnt 2
EMS-17	Dual Source Energy Meter		V(R, Y, B), V(RY, YB, BR), A(R,Y, B), Hz, PF(R, Y, B,T), RPM(for generator mode), Phase angle (R, Y, B),W(R, Y, B,T), KWh(M), MWh(M), LH(M), KWh(G), MWh(G), LH(G) All parameters are available in- Mains(M) and generator mode(G), KVA, KVAh (G&M)

Specifications

Model	EMS-03	EMS-09	EMS-09m	EMS-17
Product Function	KWH meter	Basic / Energy Meter	Basic /Energy Meter with 2 Event Counter	Dual Source Energy Meter
Rated voltage	85 to 270 V AC / DC			
Rated Frequency	50 / 60Hz ± 5% for AC only			
Power consumption	AC Approx. 6 VA, DC Approx. 4W			
Generator sensing	NA			12V -240V AC/12-220V DC
Pulse sensors	NA		24V DC ±10%,On/Off 500mSec(min)	NA
Input voltage	3 Phase 4 wire (R,Y,B,N) , Range : 415 VAC (-40% to +20%), 110 VAC (-40% to +20%)			
Input current	Current inputs (AR, AY, AB), Basic upto 5A (Ib), Max. 10A (200% of Ib)			
Input Frequency	50 Hz, ± 2%			
Burden	< 0.4 VA per Volts/Amps input		< 0.2VA per Volts/Amps input	
Accuracy	Class 1 / Class 0.5			
Recovery Time	2 sec minimum			
Communication	RS-485 MODBUS RTU Protocol			
Meter Constant	3200 Pulses / KWh			
CT Ratio Selectable	Primary 1 to 5000A max. & Secondary 1 to 5A.			
PT Ratio Selectable	Primary 110 to 999KV & Secondary 110 to 500V			
Device ID	1 – 247			
Baud rate	2400, 4800, 9600,19200bps			
Poles	NA			1-28
Protection of configuration settings	User settable Password ranging from 0001 to 9999			
Ambient Temperature	Operation : -10°C to + 55°C(14°F to 131°F), Storage : -25°C to + 80°C(-13°F to 176°F)			
Humidity	Up to 95% RH @ 40°C			
Insulation resistance	>100M ohms @ 500V DC			
Dielectric strength	2.5 KV AC, 50Hz for 1 minute (Between current carrying & non-current carrying parts)			
Electrical connection	Screw type terminals with self lifting clamps			
Overall Dimension(W x H x D)	96 x 96 x 95.5mm		96 x 96 x 117.5mm	96 x 96 x 95.5mm
Cut-out Dimension(W x H)	92 x 92mm			

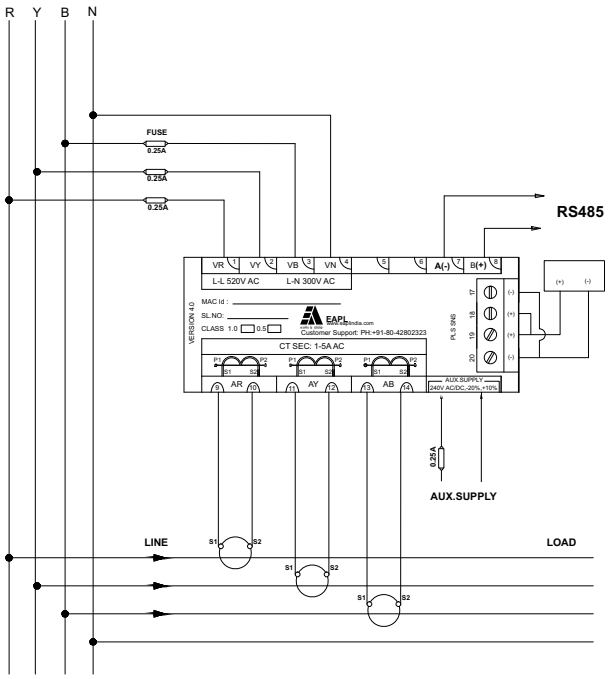
Connection Diagrams

EMS-03/EMS-09



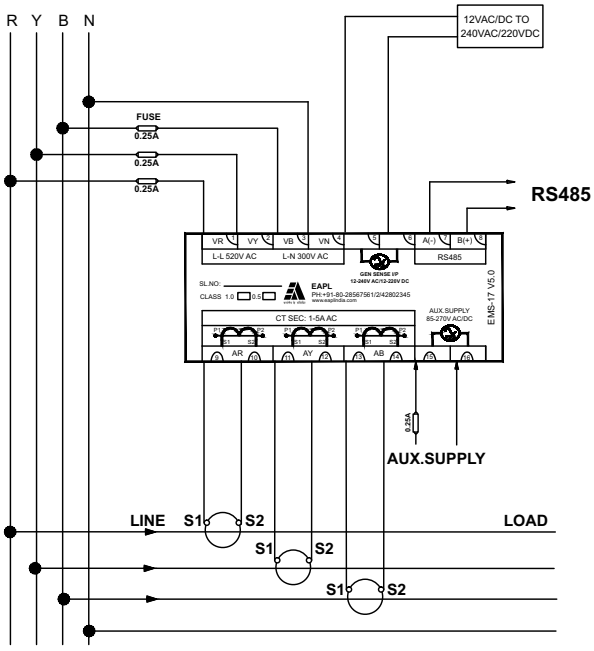
System Type : Star/Wye
1, 2, 3, 4 : R, Y, B, N
5 ,6 : No connection
7,8 : A,B (RS 485 Communication port)
9, 10 : S1, S2 (R Phase)
11,12 : S1, S2 (Y Phase)
13,14 : S1, S2 (B Phase)
15,16 : Auxiliary Supply(85-270 V AC/DC)

EMS-09m



System Type : Star/Wye
1, 2, 3, 4 : R, Y, B, N
7,8 : A,B (RS 485Communication port)
9, 10 : S1, S2 (R Phase)
11,12 : S1, S2 (Y Phase)
13,14 : S1, S2 (B Phase)
15,16 : Auxiliary Supply(85-270 V AC/DC)
17,18 [JobCnt1]: 24V DC ± 10%
19,20 [JobCnt2]: 24V DC ± 10%

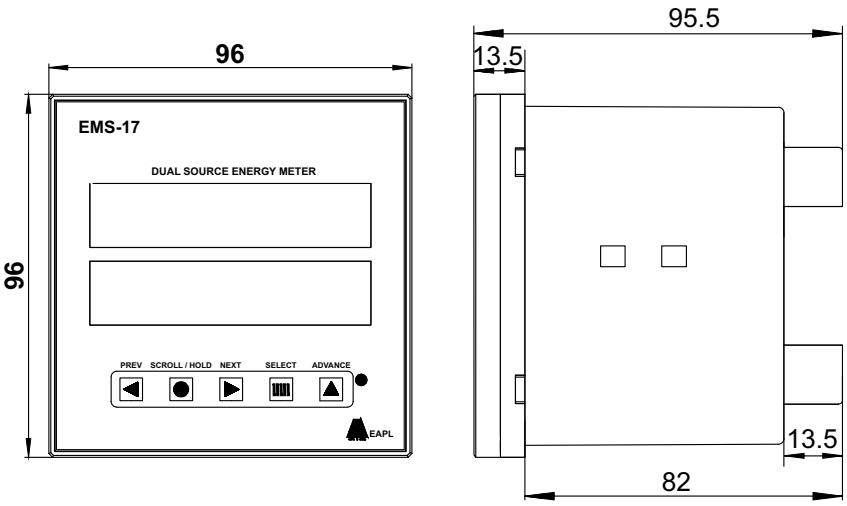
EMS-17



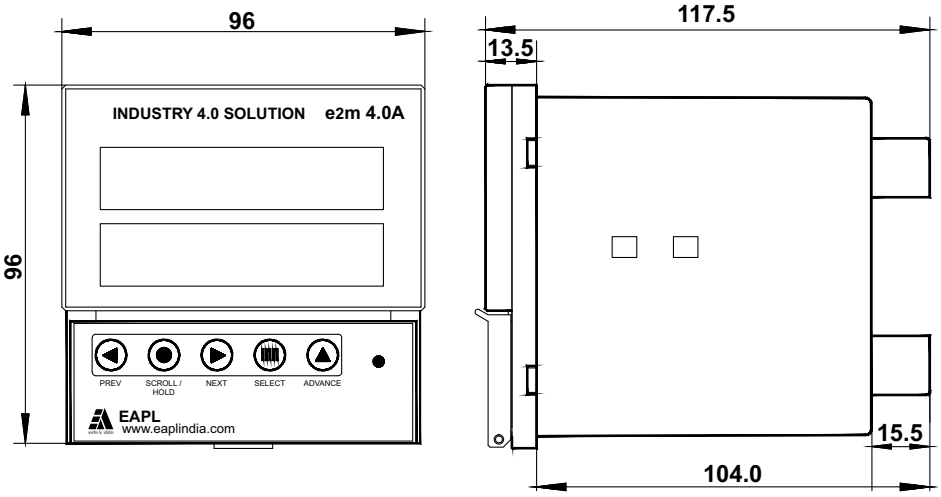
System Type : Star/Wye
1, 2, 3, 4 : R, Y, B, N
5 ,6 : Generator sensing input
(12VAC/DC to 240V AC/220V DC)
7,8 : A,B (RS 485Communication port)
9, 10 : S1, S2 (R Phase)
11,12 : S1, S2 (Y Phase)
13,14 : S1, S2 (B Phase)
15,16 : Auxiliary Supply(85-270 V AC/DC)

Dimension

EMS-03/EMS-09/EMS-17



EMS-09m



Note: All Dimensions are in mm.

Accessories

- Panel Locking side anchor

EMS-series

Maximum Demand Controllers/Indicator

Features

- Measurement of basic, power, energy and demand parameters.
- High brightness alpha numeric LED display for parameters and numeric values.
- Automatic CT reverse correction for energy and demand.
- Programmable demand techniques block / sliding window.
- Programmable demand parameters Apparent / Active power.
- Programmable demand range Kilo / Mega.
- Programmable Alarm / hysteresis settings.
- Programmable RTC setting to match EB meter's clock.
- **EMS-15C**

  Max. Demand Controller = Max. Demand Indicator + Relay module (4 relay) (RR-4).

  4 control outputs (C-NO) for alarm and trip settings.

Ordering Information

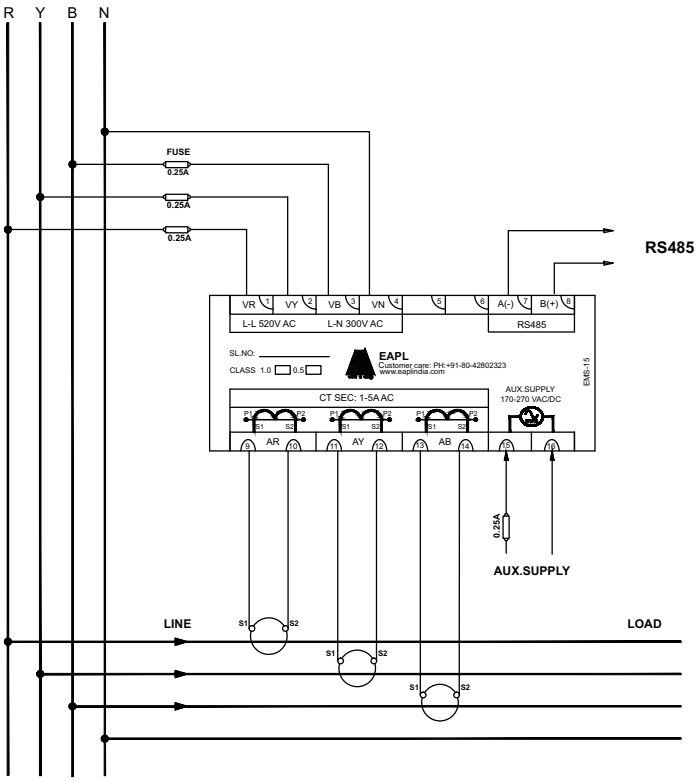
Model	Function	Source voltage	Pages	Display Parameters
EMS-15	Maximum Demand Indicator	170V to 270V AC/DC	Basic	V(R, Y, B), V(RY, YB, BR), A(R,Y, B), Hz, RTC Time
			Power	PF(R, Y, B, T), W(R, Y, B, T), VAr(R, Y, B,T), VA(R, Y, B, T)
EMS-15C	Maximum Demand Controller		Integral	KWh, KVArh-C, KVArh-I, KVAh, LH
			Demand	Md (Fixed/Sliding), Md Time (Fixed/Sliding),Wd (Fixed/Sliding), Rd (Fixed), Elapsed Time (Fixed/Sliding)

Specifications

Model	EMS-15	EMS-15C
Product Function	Maximum Demand Indicator	Maximum Demand Controller
Operating Voltage Range	170V to 270V AC/DC	
Rated Frequency	50 / 60Hz ± 5% for AC only	
Power consumption	AC Approx. 6 VA,DC Approx. 4W	
Input voltage	3 Phase 4 wire (R,Y,B,N) , Range - 415 VAC (-40% to +20%), 110 VAC (-40% to +20%)	
Input current	Current inputs (AR, AY, AB), 1A to 5A (to 200%)	
Input Frequency	50 Hz, ± 2%	
Burden	< 0.2 VA per Volts/Amps input	
Accuracy	Class 1.0 for Active Energy & Class 2.0 for Reactive Energy	
RTC Accuracy	upto 20Sec per month	
Recovery Time	2 sec minimum	
Communication	RS-485 MODBUS RTU Protocol	
Meter Constant	3200 Pulses / KWh , 3200 Pulses / KVArh	
Battery Life	approx. 2 years	
CT Ratio Selectable	Primary 1 to 5000A max. & Secondary 1 to 5A.	
PT Ratio Selectable	Primary 110 to 11KV & Secondary 110 to 500V	
Device ID	1 – 247	
Baud rate	2400, 4800, 9600,19200bps	
Pulse Output	Active Energy / Reactive Energy	
Synchronization technique	Sliding Window / Fixed (bloc) Window	
Protection of configuration settings	User settable Password ranging from 0001 to 9999	
Demand Parameter	Active / Apparent	
Demand Range	Kilo / Mega	
Demand Period	05 / 10 / 15 / 30 Mins	
Ambient Temperature	Operation : -10°C to + 55°C(14°F to 131°F), Storage : -25°C to + 80°C(-13°F to 176°F)	
Humidity	Up to 95% RH @ 40°C	
Insulation resistance	>100M ohms @ 500V DC	
Dielectric strength	2.5 KV AC, 50Hz for 1 minute (Between current carrying & non-current carrying parts)	
Electrical connection	Screw type terminals with self lifting clamps	
Overall Dimension	96 x 96 x 117mm (W x H x D)	
Cutout Dimension	92 x 92mm (W x H)	

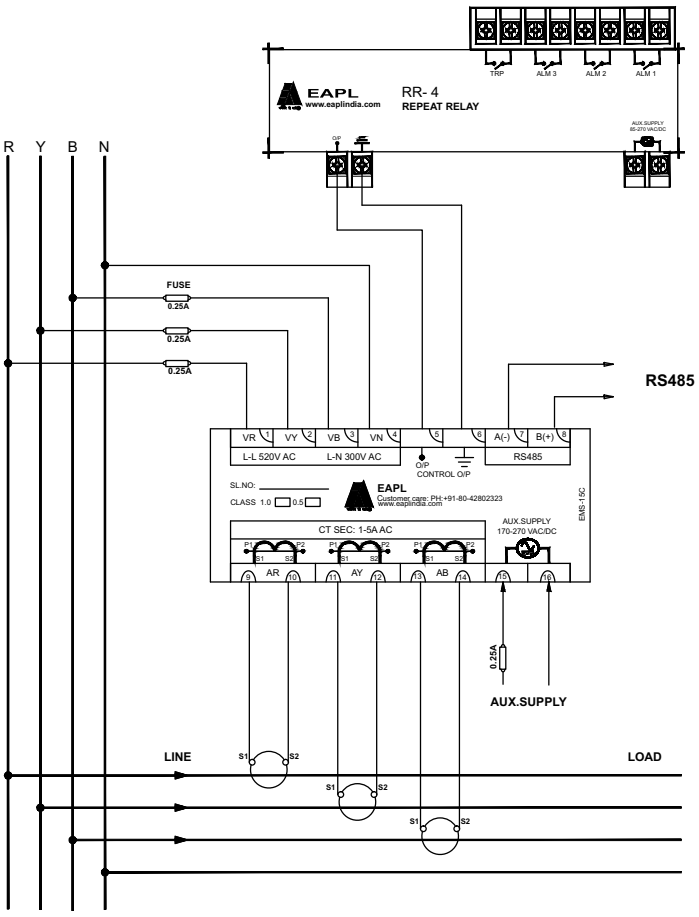
Connection Diagrams

EMS-15



System Type : Star/Wye
1, 2, 3, 4 : R, Y, B, N
5, 6 : No Connection
7, 8 : A,B (RS 485 Communication port)
9, 10 : S1, S2 (R Phase)
11, 12 : S1, S2 (Y Phase)
13, 14 : S1, S2 (B Phase)
15, 16 : Auxiliary Supply (170-270 V AC/DC)

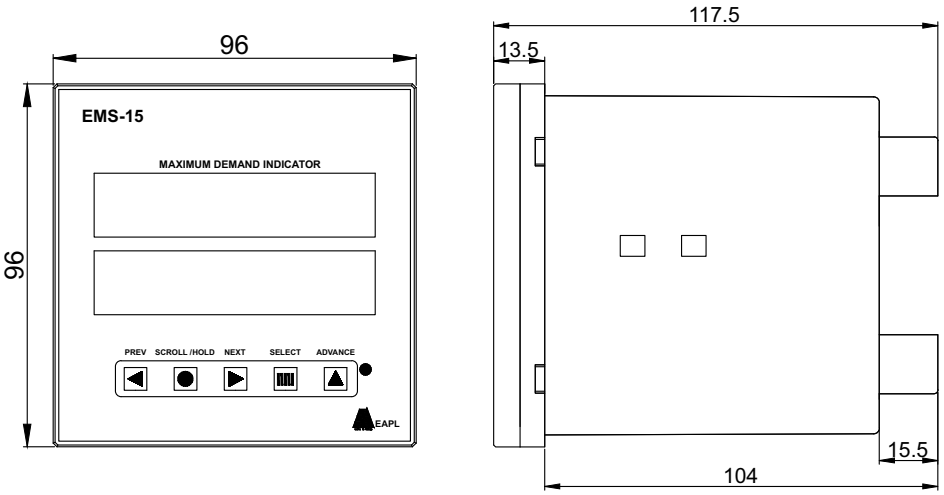
EMS-15C



System Type : Star/Wye
1, 2, 3, 4 : R, Y, B, N
5, 6 : Digital Output to Relay Module
7, 8 : A,B (RS 485Communication port)
9, 10 : S1, S2 (R Phase)
11, 12 : S1, S2 (Y Phase)
13, 14 : S1, S2 (B Phase)
15, 16 : Auxiliary Supply (170-270 V AC/DC)

Dimension

EMS-15/EMS-15C



Note: All Dimensions are in mm.

Accessories

- Panel Locking side anchor

EMS-series

DC Multifunction meters

Features

- Micro Controller based 3 Channel DC Energy Meter. (Except SNM-03 / DCM-01 are single channel).
- High brightness alpha numeric LED display for parameters and numeric values.
- Displays DC parameters V, I, KW, KWh, MWh & Load on hours of all availoable channels.
- Programmable Shunt ratios.
- Alphanumeric display for Parameter & values.
- RS-485 serial port with Modbus RTU output.
- Protection from dust and water as per IP-51.

Ordering Information

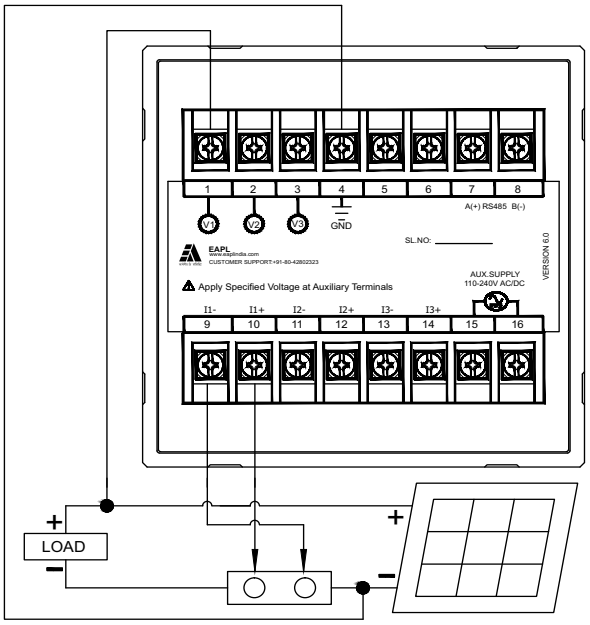
Model	Function	Source voltage	Pages	Display Parameters
SNM-01	DC Multi Function meter	170 to 270V AC/DC	Load 1	V, A, KW, KWh, MWh, LH
			Load 2	V, A, KW, KWh, MWh, LH
			Load 3	V, A, KW, KWh, MWh, LH
			Old	KWh, MWh, LH (load1,Load2, load 3)
SNM-02		24 - 48V DC	Communication	Communication status,Dev Id
SNM-03		110-240V AC/DC	Volt, Ampere, KW, KWh, MWh, LH ,OLd KWh, OLd MWh, OL, dEVId	
DCM-01	Bi-Directional Solar Energy Meter	85-270V AC/DC	Main	V, ±A, ±KW,F-KW, F-KWh,F-MWh, F-Load on Hours, R-KWh, R-MWh, R-Load on Hours, Device ID & Communication Status
			Old Energy	Old F-KWh, Old F-MWh, Old F-Load on hours, Old R-KWh, Old R-MWh,Old R-Load on Hours

Specifications

Model	SNM-01	SNM-02	SNM-03	DCM-01
Product Function	Three channel DC Multifunction Meter		DC Multifunction Meter	Bidirectional Solar Energy Meter
Rated voltage	110 to 240 V AC/DC ± 10%	18V DC to 48V DC	85 to 270V AC/DC	
Input Voltage	80VDC to 220VDC	5V to 80V DC	5V to 1000V DC	
Input Shunt Current	1A to 500A			
Accuracy Voltage	±0.5% of FS	± 0.5% of FS, 21V to 50V DC	± 0.3% of FS, 100V to 500V DC , ± 1.0% of FS, above 500V DC	
Accuracy Current	±0.2% of FS	± 0.2% of FS	± 1.0% of reading up to 10A , ± 0.5% of reading above 10A	
Accuracy Energy	±1%			
Resolution	0.001 KWH			
Communication	RS-485 MODBUS RTU Protocol			
Power consumption	AC Approx <5VA DC Approx 3W	DC Approx.3W	AC Approx <5VA DC Approx 3W	
Recovery Time	2 sec minimum			
Shunt mV	60mV or 75mV Programmable			
Shunt Current	1A to 500A Programmable			
Baud rate	4800, 9600,19200bps			
Device ID	1 to 247			
Protection of configuration settings	User settable Password Ranging from 0001 to 9999			
Ambient Temperature	Operation : -10°C to + 55°C(14°F to 131°F), Storage : -25°C to + 80°C(-13°F to 176°F)			
Humidity	Up to 95% RH @ 40°C			
Insulation resistance	>100M ohms @ 500V DC			
Dielectric strength	2.5 KV AC, 50Hz for 1 minute (Between current carrying & non-current carrying parts)			
Electrical connection	Screw type terminals with self lifting clamps			
Overall Dimension	96 x 96 x 95.5mm (W x H x D)			96 x 96 x 117mm (W x H x D)
Cut-out Dimension	92 x 92mm (W x H)			

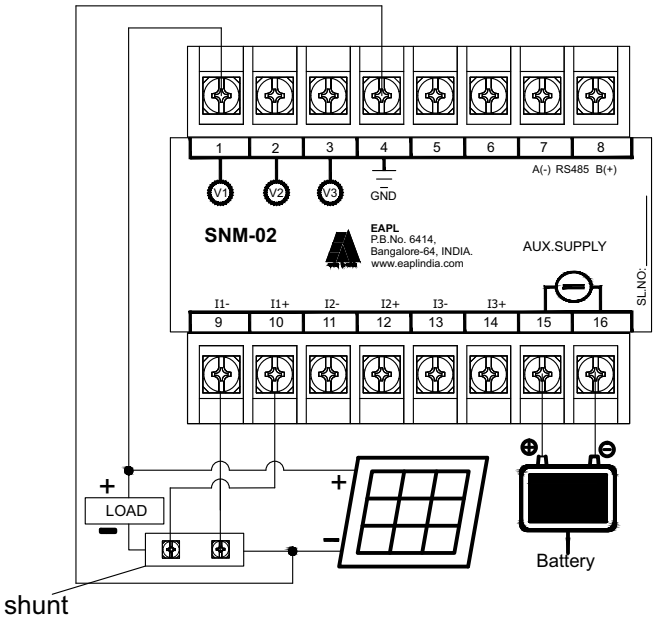
Connection Diagrams

SNM-01



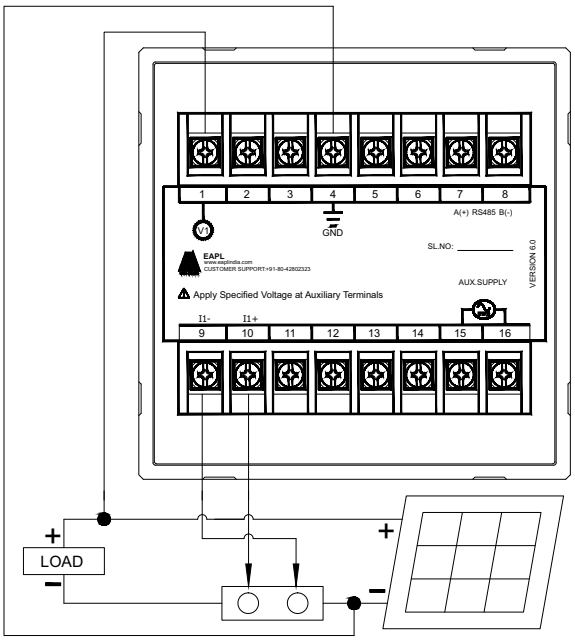
1, 2, 3, 4 : V1, V2, V3, GND
5, 6 : No connection
7, 8 : [A(+),B(-)] (RS 485Communication port)
9, 10 : I1-, I1+
11, 12 : I2-, I2+
13, 14 : I3-, I3+
15, 16 : Auxiliary Supply(110 to 240V AC/DC)

SNM-02



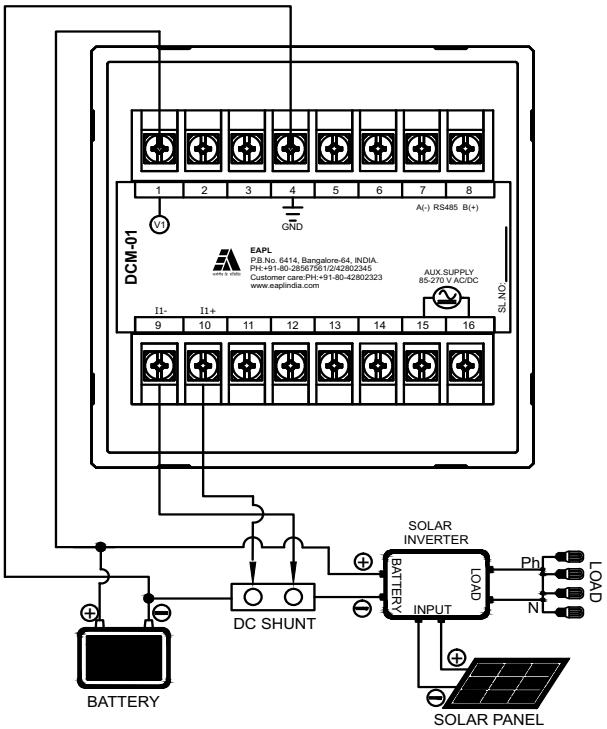
1, 2, 3, 4 : V1,V2,V3,GND
5, 6 : No connection
7, 8 : [A(+),B(-)](RS 485Communication port)
9, 10 : I1-, I1+
11, 12 : I2-, I2+
13, 14 : I3-, I3+
15, 16 : Auxiliary Supply(18V To 48VDC)

SNM-03



1, 4 : V1,GND
2, 3 : No connection
5, 6 : No connection
7, 8 : [A(+),B(-)] (RS 485Communication port)
9, 10 : I1-, I1+
11, 12 : No connection
13, 14 : No connection
15, 16 : Auxiliary Supply(110-270 VAC/DC)

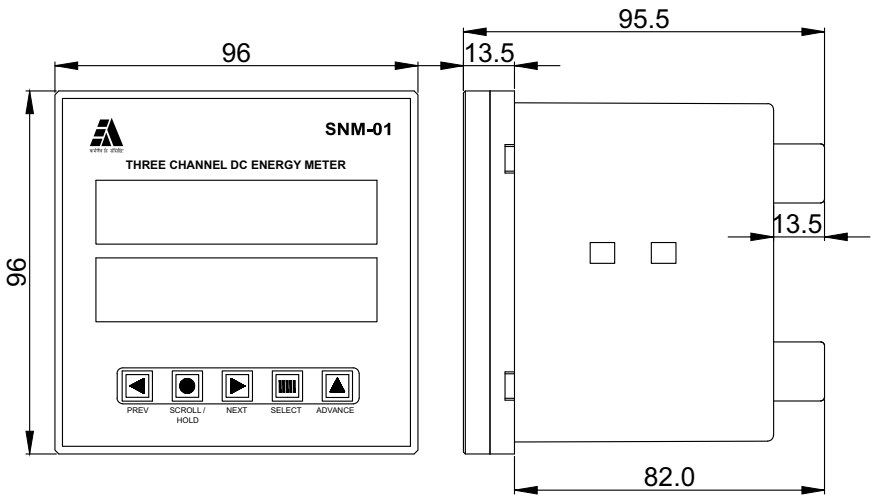
DCM-01



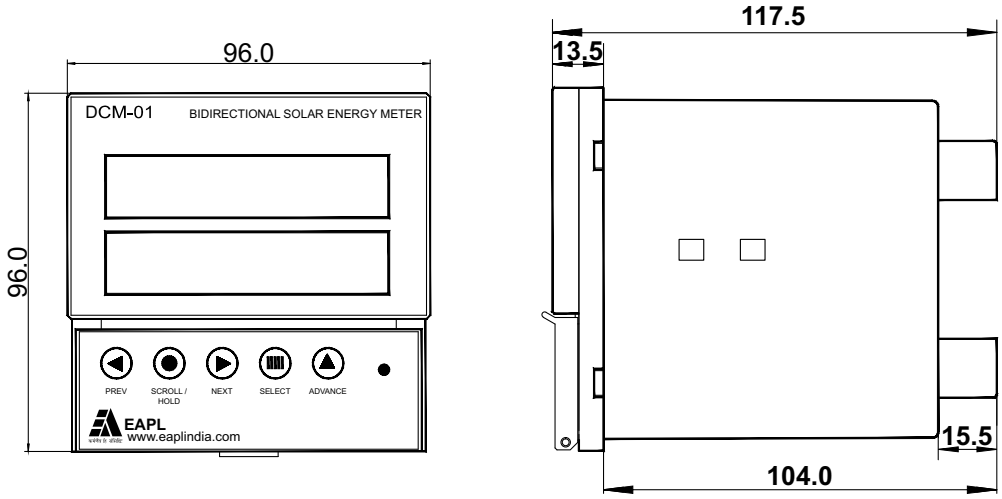
1, 4 : V1,GND(Voltage I/P)
2, 3 : No connection
5, 6 : No connection
7, 8 : [A(-), B(+)] (RS-485 Communication port)
9, 10 : I1-, I1+ (Current I/P from shunt)
11, 12 : No connection
13,14 : No connection
15, 16 : Auxiliary Supply(85-270 VAC/DC)

Dimension

SNM-01/SNM-02/SNM-03



DCM-01



Note: All Dimensions are in mm.

Accessories

- Panel Locking side anchor

Features

- Aux. supply - wide voltage and frequency range.
- Compactable baud rate: 2400, 4800, 9600, 19200.
- Max. no of nodes: 32.
- Max. cable length (RS-232 side) : 15mtrs typical.
- Max. cable length (RS-485 side) : 500mtrs typical.
- Din rail mounting
- LED indication for power, R and T inputs.

Ordering Information

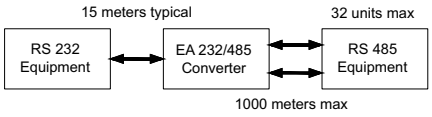
Model	Function	Source voltage
EA232/485	RS232 to RS485 converter	Volt, Amp

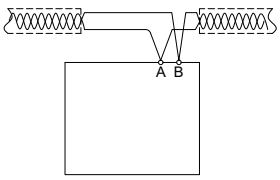
Specifications

Model	EA 232/485
Function	RS232 TO RS485 Converter
Input voltage	85 to 270 V AC/DC
Input Frequency	50 / 60 Hz ± 5%
Power consumption	5VA/1W
Dielectric strength	2.5KV AC, 50Hz for 1 minute.(Between current carrying & non current carrying parts)
Operating Temperature	-10 to +55° C
Storage Temperature	-25 to +80° C
Humidity	85% RH @ 40° C
Maximum cable length(RS232)	15 meters (Typical)
Maximum cable length(RS485)	1000 meters (Typical)
Maximum number of receivers	32
Baud rate	2400, 4800, 9600, 19200bps
Dimensions	117 mm(W) x 86 mm(H) x 61 mm(D)

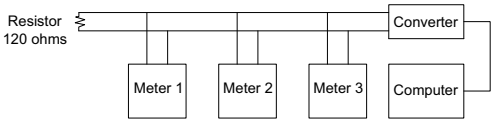
Connection Diagrams

RS232-RS485 Communication



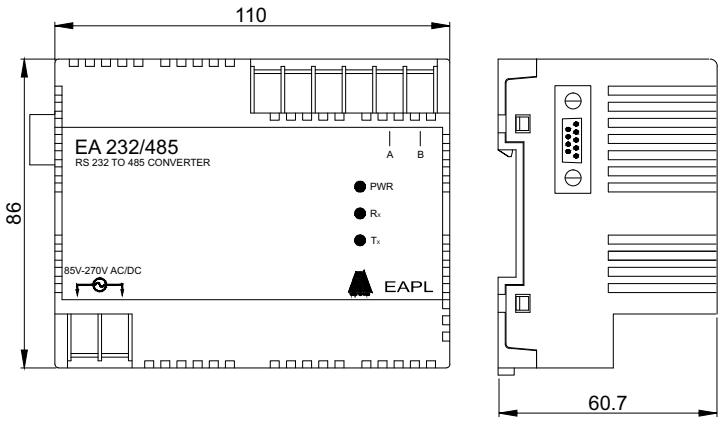


RS232 wiring



Dimension:

EA232/485



Note: All Dimensions are in mm.

G/E-series

Digital Monitoring device

Power supply faults pose a severe threat to the functioning of any equipment. Three phase load is subjected to many different type of faults like Phase Failure, Phase Unbalance, Phase Reversal, Over voltage & Under voltage, Over Current & Under Current. Voltage break, machine damage or fault tripping - all these occur as an obvious outcome which would cost your enterprise heavily.

EAPL offers a series of protection devices ranging from analog to digital devices which are designed with the latest technology using a microcontroller to detect, display, and trip during unhealthy conditions. During the healthy condition, the device displays instantaneous values for defined parameters depending on the models selected; making it yet another one of its kind innovations from the company.

Applications:

Any 3 phase 4wire systems like motors, pumps, generators / distribution / MCC panels, air conditioners, elevators, cranes, escalators, Air Conditioning, Elevator.

G/E-series

Digital Monitoring device

Features

- Din sized enclosure.
- Available in Panel/Din-rail mounting
- Auto / Manual mode available.
- Front button for resetting in manual mode.
- External potential free (zero volt /no voltage) terminal contacts for auto mode.
- LED indication for relay status.
- Window displays the type of fault that has occurred during unhealthy condition.
- Unit will display the fault till accepted in manual mode.
- Trip delay time and limits for each parameter can be set digitally.
- All programs can be locked by removing short link across specified terminals.
- Unwanted parameters can be by-passed as per user's choice.
- Relay can be configured to have NO or NC status during healthy condition.

PVMD, PVMD-G:

- Monitors and trips the circuit after the set trip delay time when ever power unhealthiness (phase failure, phase sequence, phase unbalance under voltage or over voltage) occurs.
- Displays all the 3 phase voltages in a scrolling fashion during healthy condition.
- PVMD – Panel/ Flush mounting, PVMD-G Din Rail mounting.

PVIMD,PVIMD-G:

- Monitors and trips the circuit after the set trip delay time when ever power unhealthiness (phase failure, phase sequence, phase unbalance under voltage, over voltage, under current or over current) occurs.
- Displays all the 3 phase voltages (line to line), (line to neutral), 3 phase current (line to neutral) in a scrolling fashion during healthy condition.
- User can program nominal current. Under current and over current limits can be set in percentage with reference to nominal current.
- User can set the in-rush time delay.
- Terminals to connect all the 3 phase CTs are provided.
- CT primary user settable in steps of 5 where as CT secondary is factory set for 5.
- PVIMD – Panel / Flush mounting. PVIMD-G - Din Rail mounting.

PMR-01:

- Monitors and trips the circuit after the set trip delay time when ever power unhealthiness (phase failure, phase sequence, phase unbalance under voltage, over voltage, under frequency, over frequency or earth leakage current, under current, over current) occurs.
- User can set the in-rush time depending on his system during which over current feature will be in disabled condition.
- Displays all the 3 phase voltages (Line to Line and Line to neutral) 3 phase currents, average frequency in a scrolling fashion during healthy condition.
- User can program earth leakage current limits.
- Terminals to connect all the 3 phase CTs and CBCT are provided.
- CT primary can be programmed up to 2500 in steps of 5.
- CT secondary will be factory set for 5.
- PMR-01– Panel / Flush mounting.
- Unit will retain fault till accepted in manual mode.

Ordering Information

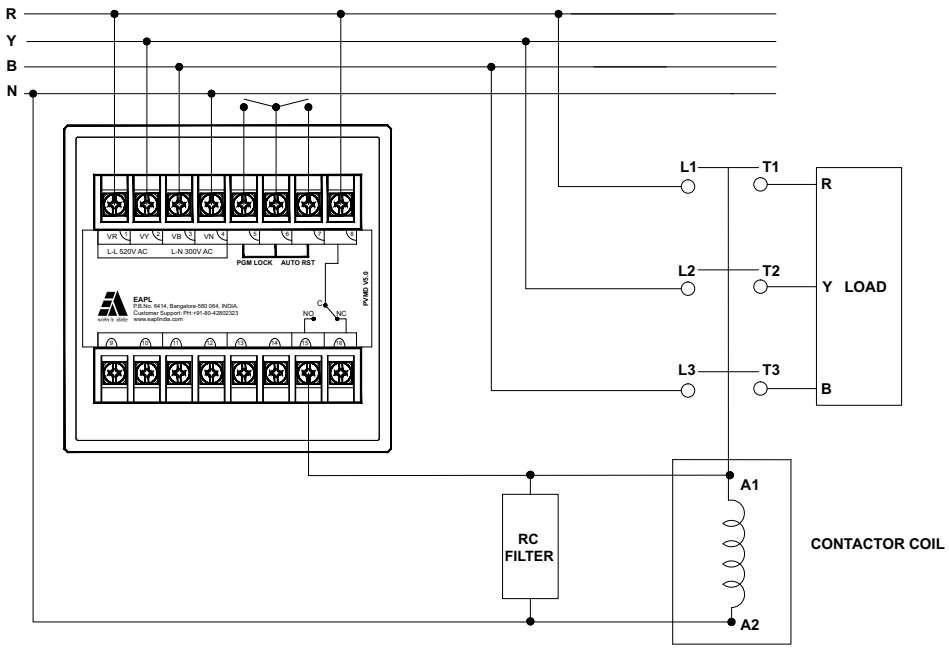
Model	Function	Source voltage	Output
PVMD	Phase Voltage Monitoring Device	415V AC 3 phase, 4 wire, Self powered	1 c/o, 10A resistive
PVMD-G			
PVIMD	Phase Voltage Current Monitoring Device		
PVIMD-G			
PMR-01	Power Monitoring Relay		

Specifications

Model	PVMD	PVMD-G	PVIMD	PVIMD-G	PMR-01
Function	Phase Unbalance, Phase Reversal, Phase failure, Under Voltage and Over Voltage Monitor and Control		Phase Unbalance, Phase Reversal, Phase Failure, Under & Over Voltage, Under and Over Current Monitor and Control		Phase Unbalance, Phase Reversal, Phase Failure, Under and Over Voltage, Under and Over Current, Under and Over Frequency, EarthLeakage Monitor and Control.
Mounting type	Flush	Din rail	Flush	Din rail	Flush
Input Voltage	415V AC(3Ph-4W)				
Input Current	NA		Current inputs (AR, AY, AB), Basic upto 5A (Ib)		
Input Frequency	50 Hz, ±10%				
Control output	1c/o rated for 10A @ 250VAC /28VDC resistive load				
Power Consumption	AC approx. 5VA, DC approx. 1W				
Nominal Current	NA		0.5A to 500A (External CT's shall be used above 5A, CT setting max 2500/5 in steps of 5)		
Accuracy voltage	± 4V of display value				
Accuracy current	NA		± 5% of Ib ± 1 digit (Ib = 5A)		± 5% of Ib ± 1 digit (Ib = 5A)
Accuracy frequency	NA				± 2% of FS ± 1 digit
Accuracy Trip Time	±1% of set delay ± 2 sec		± 1% of set delay ± 2sec		±1% of set delay ± 2 sec
Accuracy Earth leakage current	NA				±500mA of setting accuracy.
Minimum sensing current	NA		0.5A		
Maximum setting current	NA		5A (Above 5A Ext. CT shall be used, CT ratio setting max.250/ 5 Amp in steps of 5A primary current).		
Trip setting Phase unbalance	From 1% to 20% (Adj.)				
Trip setting Under vtg & Over vtg	5V to 100V AC				
Trip setting Under current	NA		From 20%* to 95% (*Applicable for more than 2.5Amps nominal current.)		
Trip setting Over current	NA		From 105% to 800%		From 105% to 800%
Trip setting Under and Over Frequency	NA				From 2Hz to 5Hz
Trip setting Earth leakage current	NA				From 1A to 8A
Trip time delay	1 to 250secs settable for UB, OV, UV		1 to 250secs settable for UB, OV, UV,OC,UC		
Earth leakage Trip time delay	NA				5 sec Earth leakage
Phase Failure trip time delay	< 5 sec				
Phase reverse trip time delay	Instantaneous				
Frequency trip time delay	NA				Instantaneous
Recovery Time	2 sec Min				
Power On Delay	10 sec Max				
Inrush current delay	NA		1 to 60sec settable		
Mode of Operation	Auto/ Manual				
Core Balance Current	NA				Toroidal core
CBCT Size Internal Diameter	NA				100mm
Ambient Temperature	Operation: -10° C to +55° C ,Storage : -25° C to +80° C				
Humidity	MAX 85% RH @ 40° C				
Insulation resistance	>100M ohms @ 500V DC				
Service life (under no load)	10^6 operations minimum				
Electrical life (under full load)	10^5 operations minimum				
Rated frequency of operation	1800 ± 5% operations per hour max				
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)				
Electrical connection	Screw type terminals with self lifting clamps.				
Overall dimension(WxHxD) in mm	96 x 96 x 95.5	76 x 78 x 115	96 x 96 x 95.5	76 x 78 x 115	96 x 96 x 95.5
Cutout dimension(W x H) in mm	92 x 92	NA	92 x 92	NA	92 x 92

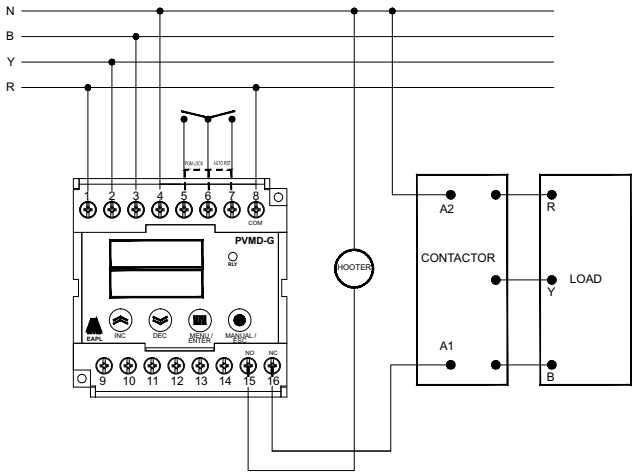
Connection Diagrams

PVMD



1,2,3,4 - R, Y, B, N
5, 6 - Program lock
6, 7 - Auto reset
8 - Com
15,16 - NO, NC

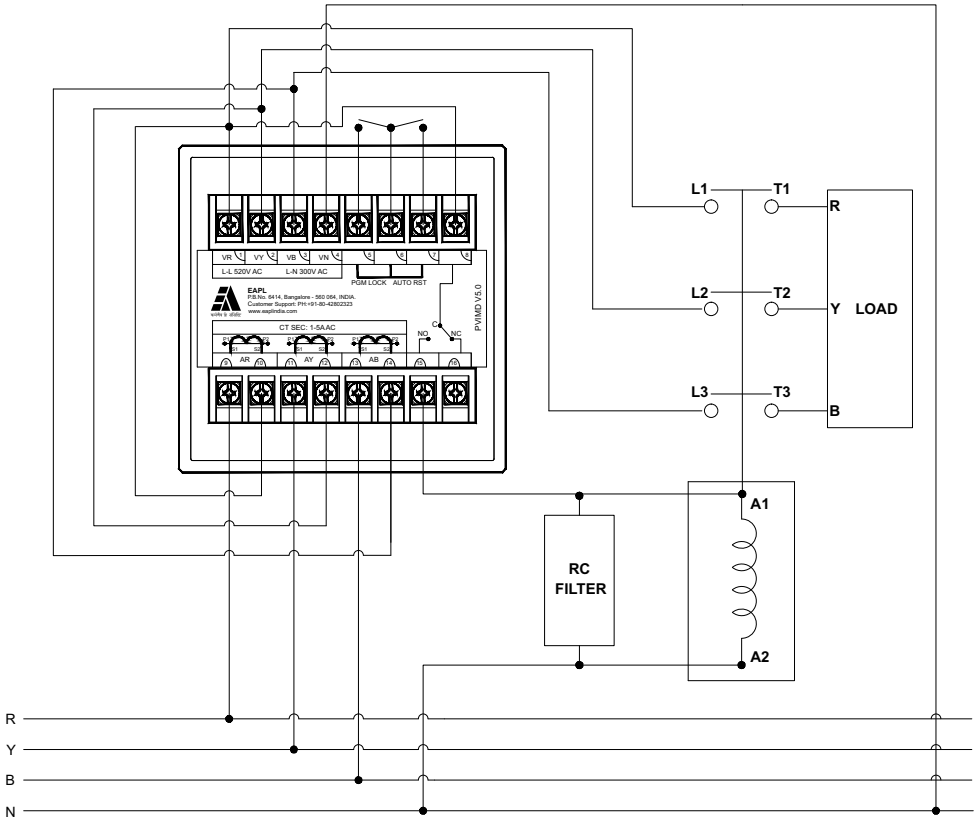
PVMD-G



1,2,3,4 – R, Y, B, N
5 , 6 – Program lock
6,7 – Auto Reset
8 – Com
15,16 – NO,NC

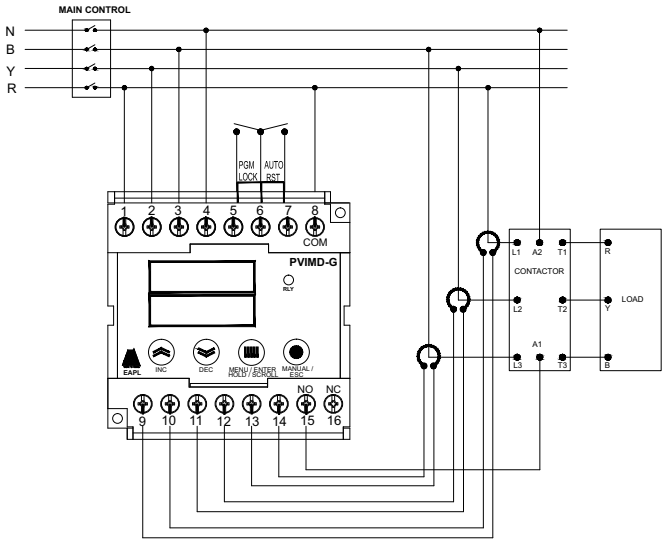
Connection Diagrams

PVIMD



1,2,3,4 - R ,Y,B,N
5 , 6 - Program Lock
6 , 7 - Auto Reset
8 - Com
9,10 - S1,S2 (R phase)
11, 12 - S1, S2 (Y phase)
13, 14 - S1, S2 (B phase)
15, 16 - NO, NC

PVIMD-G

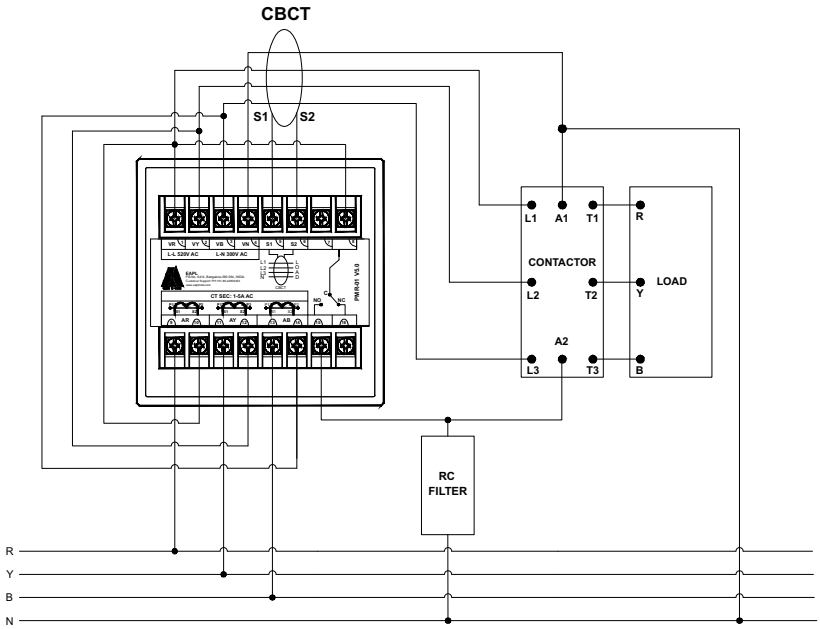


1,2,3,4 - R ,Y, B,N
5,6 -Program Lock
6,7 - Auto Reset
8 – Com
9,10-S1,S2 (R phase)
11, 12- S1, S2 (Y phase)
13, 14 –S1, S2 (B phase)
15, 16- NO, NC (Relay)

Note: above two drawings holds good for both models while using for applications with CT (above 7A) and without CT (Less than 7A)

Connection Diagrams

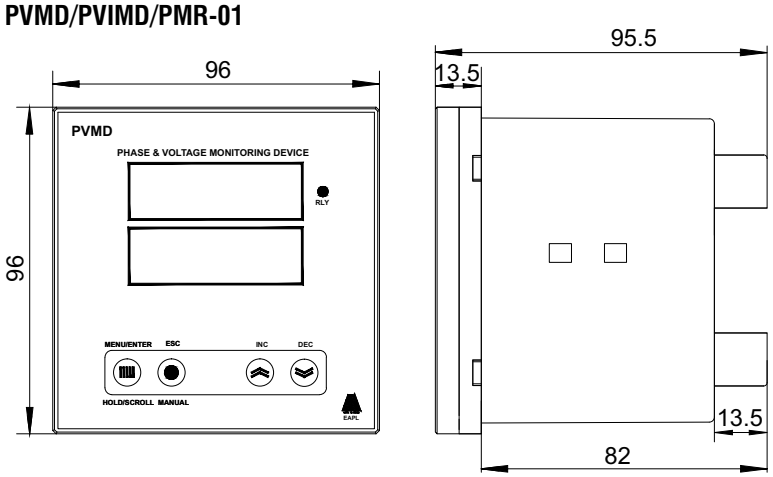
PMR-01



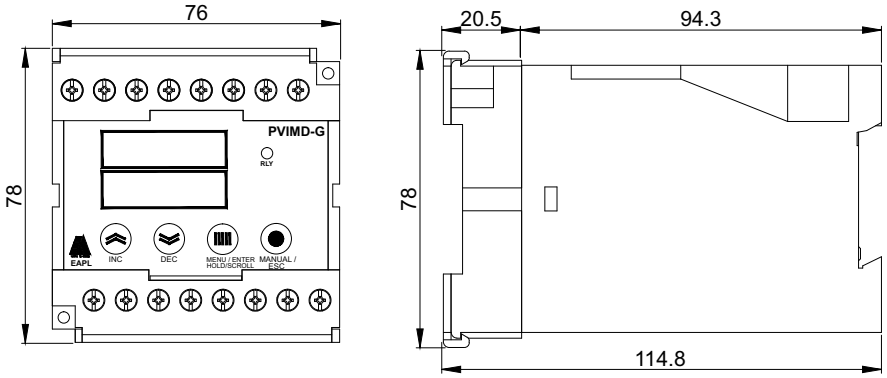
System Type : Star/Wye
1,2,3,4 - R ,Y,B,N
5 , 6 - CBCT
8 - Com
9,10 - S1, S2 (R phase)
11, 12 - S1, S2 (Y phase)
13, 14 - S1, S2 (B phase)
15, 16 - NO, NC

Dimension

PVMD/PVIMD/PMR-01



PVMD-G,PVIMD-G



Note: All Dimensions are in mm.

Accessories

- RC Filter

Features

- Din sized enclosure.
- Auto / Manual mode available.
- Front button for resetting in manual mode.
- External potential free (zero volt /no voltage) terminal contacts for auto mode.
- LED indication for relay status.
- Window displays the type of fault that has occurred during unhealthy condition.
- Trip delay time and limits for each parameter can be set digitally.
- All programs can be locked by removing short link across specified terminals.
- Unwanted parameters can be by-passed as per user's choice.
- Relay can be configured to have NO or NC status during healthy condition.
- Monitors and trips the circuit after the set trip delay time when ever power unhealthiness occurs.
- All the parameters can be monitored using RS485 MODBUS Protocol.
- Displays all the 3 phase voltages (line to line), (line to neutral), 3 phase current (line to neutral), frequency, power factor, Active Power, Apparent Power, Active Energy, Apparent Energy and Load On Hour during healthy condition.
- User can program nominal current. Under current and over current limits can be set in percentage with reference to nominal current.
- User can set the in-rush time delay.
- User settable CT primary and Secondary.

Ordering Information

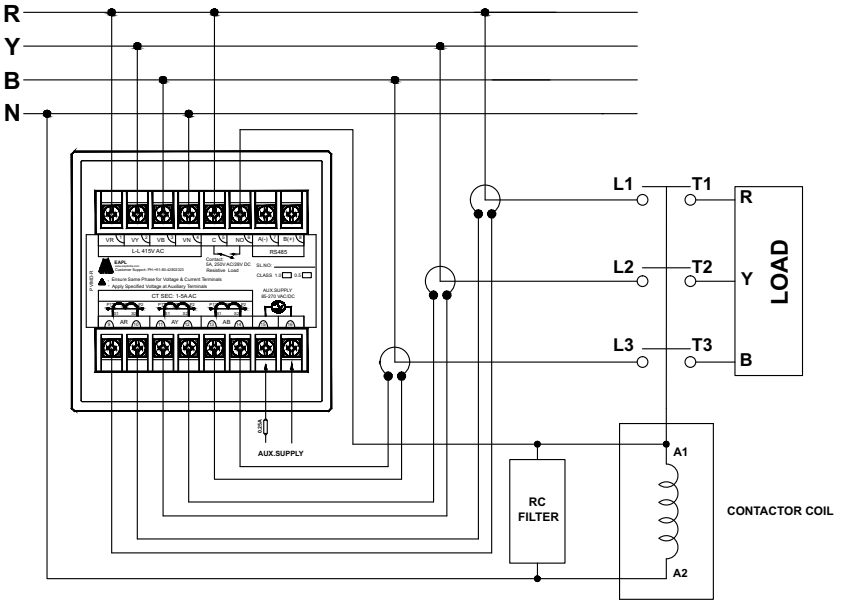
Model	Function	Source voltage	Output voltage
PVIMD-R	Phase Voltage Current & Energy Monitoring Device 415V AC 3 phase, 4 wire with RS485	415V AC 3 phase, 4 wire & auxiliary supply 85-270 V AC/DC	1 c/o, 5A resistive

Specifications

Model	PVIMD-R
Function	Energy Meter with Phase Unbalance, Phase Reversal, Phase Failure, Under &Over Voltage, Under and Over Current Monitor and Control
Mounting type	Flush
Rated voltage	85 to 270 V AC / DC
Rated frequency	50 / 60 Hz + 5% for AC only
Input Voltage	415V AC(3Ph-4W)
Input Current	Current inputs (AR, AY, AB) Ib=5A.
Input Frequency	50 Hz ± 2%
Control output	1c/o rated for 5A @ 230VAC /28VDC resistive load
Power Consumption	AC Approx. 9VA & DC Approx. 6W
Accuracy class	Class 0.5/Class 1
Accuracy Trip Time	±1% of set delay ± 2 sec
Trip setting Phase unbalance	From 1% to 20%
Trip setting Under voltage	315 to 410V AC
Trip setting Over voltage	420 to 515V AC
Trip setting Under current	20% to 95%
Trip setting Over current	105% to 800%
Trip time delay	1 to 250secs settable for UB, OV, UV,OC,UC
Phase Failure trip time delay	< 5 sec
Phase reverse trip time delay	Instantaneous
Recovery Time	2 sec Min
Power On Delay	10 sec Max
Burden	< 0.2 VA per Volts/Amps input
Communication	RS-485 MODBUS RTU Protocol
Mode of Operation	Auto/ Manual

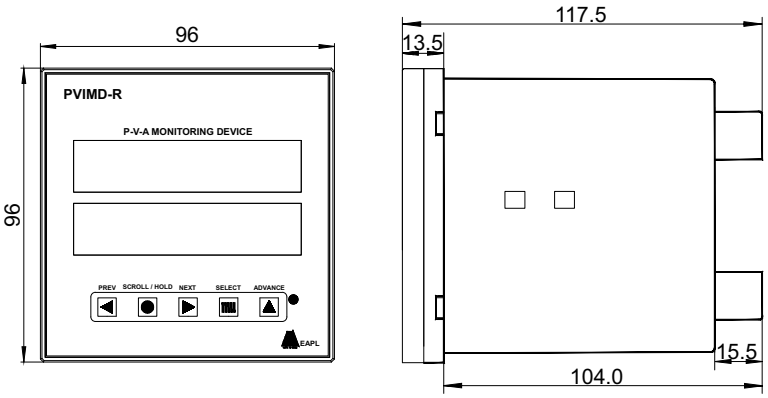
Model	PVIMD-R
CT Ratio Selectable	Primary 1 to 2500A, Secondary 1 to 5A.
PT Ratio Selectable	Primary 110 to 999KV, Secondary 110 to 500V
Device ID	1 – 247
Baud rate	2400, 4800, 9600,19200bps
Protection of configuration settings	User settable Password Ranging from 0001 to 9999
Ambient Temperature	Operation: -10° C to +55° C ,Storage : -25° C to +80° C
Humidity	MAX 85% RH @ 40° C
Insulation resistance	>100M ohms @ 500V DC
Service life (under no load)	10^6 operations minimum
Electrical life (under full load)	10^5 operations minimum
Rated frequency of operation	1800 ± 5% operations per hour max
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuousrelay contacts)
Electrical connection	Screw type terminals with self lifting clamps.
Overall dimension	96 X 96 X 117mm (W x H x D)
Cut-out dimension	92 x 92mm(W x H)

Connection Diagrams



1,2,3,4 - R ,Y,B,N
5 , 6 - Com,NO(Relay)
7, 8 - A , B(RS-485)
9,10 - S1,S2 (R phase)
11, 12 - S1, S2 (Y phase)
13, 14 - S1, S2 (B phase)
15, 16 - Auxiliary supply (85-270V AC/DC)

Dimensions



Note: All Dimensions are in mm.

Accessories

- RC Filter

Features

- Din Rail mounting.
- Auto / Manual mode.
- Front button resetting facility is available in manual mode.
- High brightness numeric LED display for parameters and numeric values.
- LED indication for relay status.
- Window displays the type of fault that has occurred during unhealthy condition.
- Trip delay time and limits for each parameter can be set digitally.
- Unwanted parameters can be by-passed as per User's choice.
- Relay can be configured to have NO or NC status during healthy condition.
- Terminals to connect the 1 phase CT are provided.
- Displays the 1 phase voltage (Line to neutral) 1 phase current during healthy condition.
- Unit will retain fault till accepted in manual mode.
- Factory set hysteresis to recover from Reverse Power.

Function: Monitors the power direction and isolates the DG when the power direction is reversed.
Application: DG synchronizing control panels, AMF panels, Solar Power systems.

Ordering Information

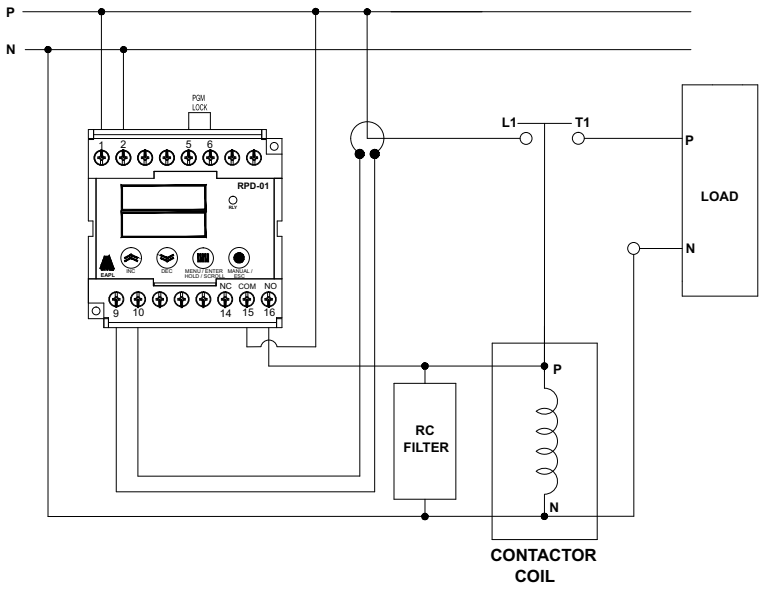
Model	Function	Source voltage	Output voltage
RPD-01	Reverse Power Device	85-270V AC, self powered	1 c/o 5A

Specifications

Model	RPD-01
Function	Reverse power, Under Voltage, Over Voltage Monitor and Control
Input voltage	85 to 270 V AC/DC
Input Frequency	50 / 60 Hz ± 5%
Input current	Current inputs (AR) Ib=5A. (in-Built CT)
Control output	1c/o rated for 5A @ 250VAC /28VDC resistive load
Power consumption	5VA/1W
Accuracy voltage	± 4V of display value
Accuracy current	± 5% of Ib ± 1 digit. (Ib=5A)
Trip time	± 1% of set delay ±2sec.
Trip setting	Under Voltage: 85 to 230V AC Over Voltage: 250 to 270V AC Reverse Current: 2% to 20% of Nominal current
Minimum sensing current	0.1A
Maximum setting current	5A (Above 5A>Ext.CT can be used,CT setting max.500/5 in steps of 5)
Nominal current	5A
Trip time delay	1 to 20secs settable for OV, UV,RC
Recovery Time	2 sec Min
Power On Delay	1 to10 sec settable
Mode of Operation	Auto/Manual
Hysteresis	Voltage ± 3V, Current 2% to 6% of full scale
Ambient Temperature	Operation: -10° C to +55° C Storage: -25° C to +80° C
Humidity	Max 85% RH @ 40° C
Service life (under no load)	10^6 operations minimum
Rated frequency of operation	1800 ± 5% operations per hour max.
Electrical life (under full load)	10^5 operations minimum
Insulation resistance	>100M ohm @ 500V DC
Dielectric strength	a) 2.5KV AC, 50Hz for 1 minute. (Between current carrying& non-current carrying parts) b) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) c) 750V AC, 50Hz for 1 minute. (Between non-continous relay contacts)
Electrical connection	Screw type terminals with self lifting clamps
Dimension	76 x 78 x 115mm (W x H x D)

Connection Diagrams

RPD-100

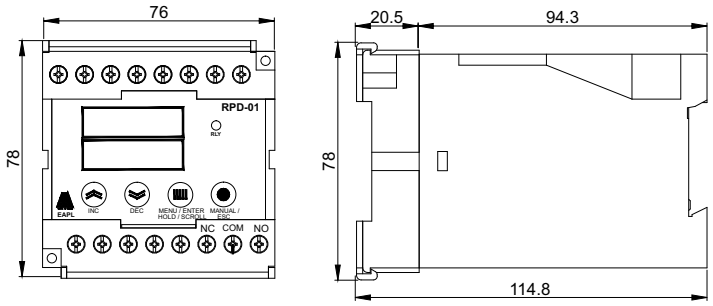


Terminal Details

1,2 - P, N
9, 10 - S1, S2
14, 15, 16 - NC, COM, NO
5, 6 - Short for program lock.

Dimensions

RPD-100



Note: All Dimensions are in mm.

Accessories

- RC Filter

NEW

Features

- Din sized enclosure.
- Auto / Manual mode (only for PMD-01 and SPP-T).
- Front button and external potential free (zero volt / n o voltage)terminal contacts for resetting in manual mode.
- LED indication for power, relay status and fault condition.
- Trip delay time and limits of all parameters are factory set.

Ordering Information

Model	Function	Input voltage	Output voltage
PMD-01a	Phase Failure, Phase Sequence, Phase Unbalance, Under voltage Monitor & Control	440V AC 3phase, 3 wire, Self powered	2 c/o rated for 5A
PMD-01			1 c/o, 5A resistive
PMD-02	Phase Failure, Phase Sequence, Monitor and Control	415V AC 3phase, 3 wire, Self powered	
PMD-03	Phase Failure, Phase Sequence, Under Voltage Monitor and Control		
SPP-T	Phase Failure, Phase Sequence, Phase Unbalance, Monitor and Control		

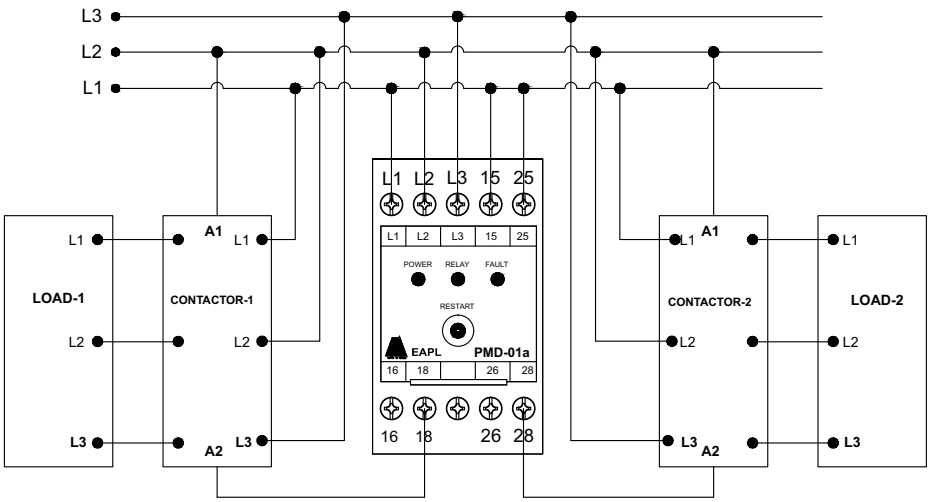
Specifications

Model	PMD-01a	PMD-01	PMD-02	PMD-03	SPP-T
Function	Phase Unbalance, Phase Failure, Negative Phase Sequence, Under voltage Monitor & Control		Phase Failure Trip: Phase missing, Phase Sequence < 70% of nominal Voltage	Phase Failure Trip: Phase missing, Phase Sequence < 70% of nominal Voltage	Phase Unbalance, Phase Failure, Negative Phase Sequence Monitor and Control.
Input voltage	440V AC, 3 Phase		415V AC, 3 Phase		
Operating voltage range	-30% to +20% of rated voltage		280 VAC to 528 VAC		-65% to +20% of rated voltage
Input Frequency	50 Hz ± 5%				
Control output	2 c/o rated for 5A @ 250VAC /28VDC resistive load	1c/o rated for 5A @ 250VAC /28VDC resistive load			
Power consumption	35VA / 7W		50VA / 10W		34VA / 7W
LED Indication	Power ON, Fault and Relay				
Trip Time Delay- Unbalance	2.5 Sec max		NA		2.5 Sec max.
Trip Time Delay- Unbalance response	NA				10 ± 3%
Trip Time Delay-Under voltage	2Sec max		NA		
Trip Time Delay-Phase failure	2Sec max		NA	NA	2 Sec max.
Mode of Operation	Manual	Auto/Manual	Auto reset on Clearing fault condition	Auto reset on Clearing fault condition	Auto / Manual
Power On delay	NA		100 mSec	100 mSec	30 Sec ± 4sec (Auto mode)
Response time	NA		100mSec max		NA
Recovery Time	100mSec Min				
Voltage Unbalance response	10 ± 3%		NA		
Under voltage response	60% to 70% of rated supply @ ambient temperature co-efficient : 0.5V / 0C		NA		
Ambient Temperature	Operation: -10° C to +55° C ,Storage : -25° C to +80° C				
Humidity	MAX 85% RH @ 40° C				
Insulation resistance	>100M ohms @ 500V DC				

Model	PMD-01a	PMD-01	PMD-02	PMD-03	SPP-T
Service life (under no load)	10^6 operations minimum				
Electrical life (under full load)	10^5 operations minimum				
Rated frequency of operation	1800 ± 5% operations per hour max				
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)				
Electrical connection	Screw type terminals with self lifting clamps.				
Dimension(W x H x D)	45 X 75 X 116mm		22.5 x 75 x 96.5mm	17.8 x 90 x 65.0mm	45 X 75 X 116mm

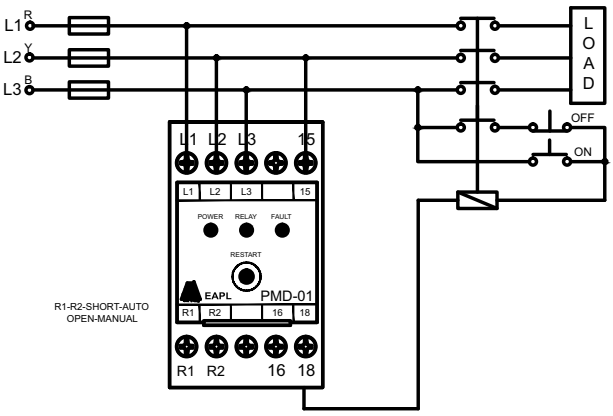
Connection Diagrams

PMD-01a



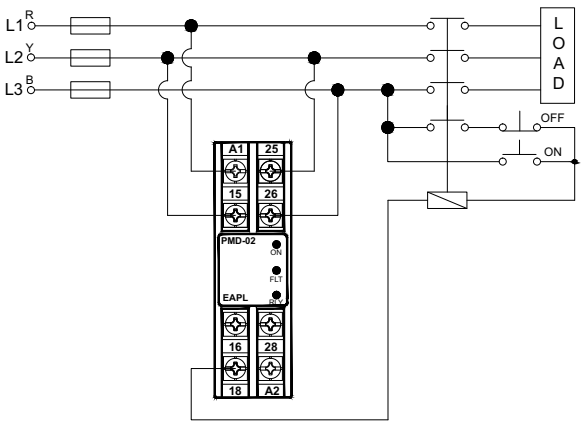
L1,L2,L3 : R,Y,B (440V AC)
15, 16, 18: C1, NC1, NO1
25, 26, 28: C2, NC2, NO2

PMD-01



L1,L2,L3 : R,Y,B (440V AC)
15,16,18 : C,NC,NO
R1,R2 : Short-Auto Operation
Open-Manual Operation

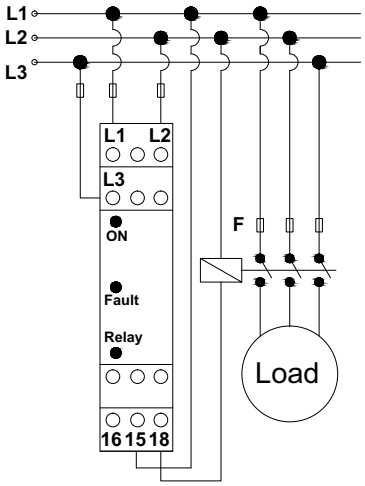
PMD-02



A1,25,26 : R,Y,B 3 phase supply (415V AC)
15,16,18 : C,NC,NO

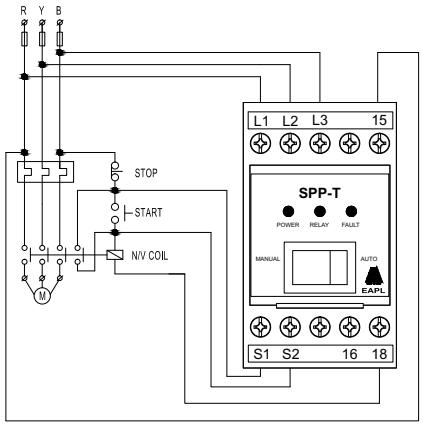
Connection Diagrams

PMD-03



L1, L2, L3 : R,Y,B 3 phase supply (415V AC)
15,16,18 : C,NC,NO

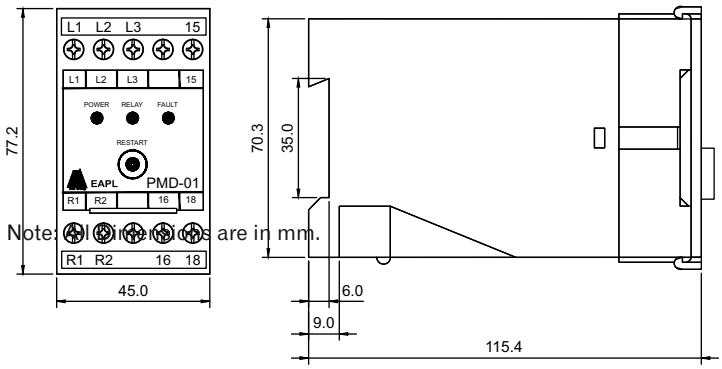
SPP-T



L1,L2,L3 : R,Y,B 3 Phase supply (415V AC)
15,16,18 : C,NC,NO
S1, S2 : Start terminals

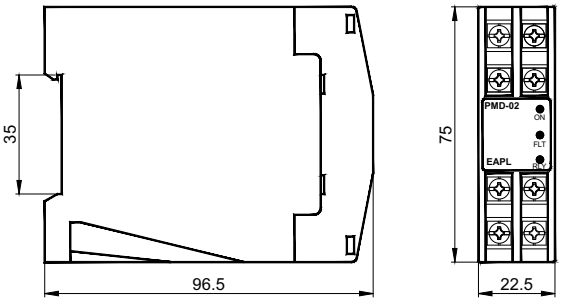
Dimension

PMD-01/PMD-01a

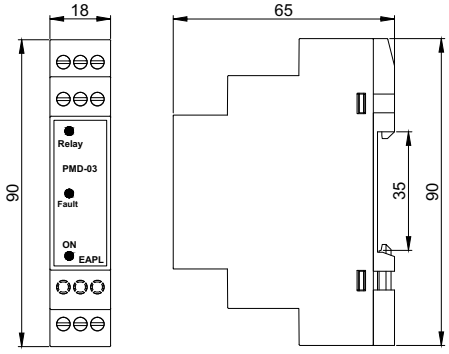


Note: All dimensions are in mm.

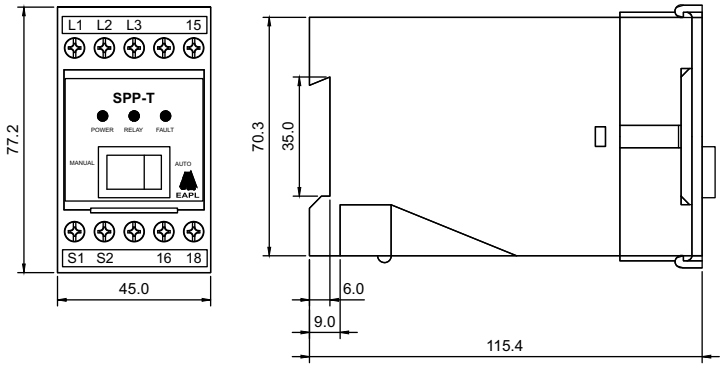
PMD-02



PMD-03



SPP-T



ETR-series Under Voltage Relay

Features

- Slim and Compact design.
- Suitable for Din Rail Mounting.
- Finger guards for Safety.
- Whenever incoming power achieves healthiness the load switches ON after a user-defined pre-set delay time.
- Whenever unhealthiness occurs the relay operates and trips the load instantly.

Ordering Information

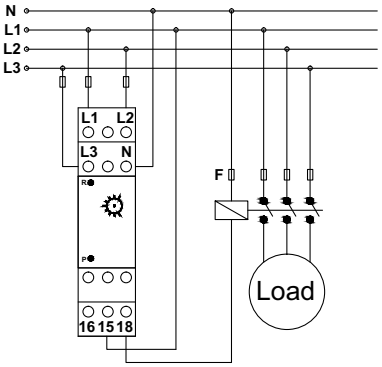
Model	Function	Source voltage	Time Range	Output voltage
ETR-01	Under Voltage Time Relay (ON Delay)	415V AC 3P/4W Self powered	5Min to 15 Min	1C/O Relay
ETR-02		230V AC		

Specifications

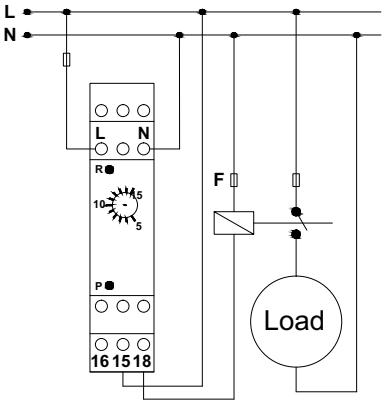
Model	ETR-01	ETR-02
Function	Under voltage time relay (ON delay)	
Rated supply Voltage	415V AC, 3Ø/4W	230V AC,-20% to +10%
Operating voltage range	380V AC to 415V AC	NA
Rated Frequency	50 / 60Hz ± 5% (P-P)	50 / 60Hz ± 5%
Power consumption	35VA	20VA
Control output	1C/O rated for 5A @ 250VAC/28VDC Resistive load	1C/O rated for 5A @ 250VAC/28VDC Resistive load
LED indication	Power ON and Relay ON	Power ON and Relay ON
Recovery time	On interruption of power <200 ms	On interruption of power <200 ms
Power ON delay	5 to 15min	5 to 15min
Trip Level	65% to 85% of 400V	65% to 85% of rated supply
Setting accuracy	± 10% max .w.r.t full scale ± 100mSec	± 10% max .w.r.t full scale ± 100mSec
Repeat accuracy	± 0.5% max. ± 100mSec	± 0.5% max. ± 100mSec
Ambient temperature	Operation: -10° C to +55° C, Storage: -25° C to +80° C	
Humidity	MAX 85% RH @ 40° C	
Service life (under no load)	10^6 operations minimum	
Electrical life (under full load)	10^5 operations minimum	
Rated frequency of operation	1800 ± 5% operations per hour max	
Insulation resistance	>100M ohms @ 500V DC	
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuousrelay contacts)	
Electrical connection	Screw type terminals with self lifting clamps	
Dimension	17.8 x 90 x 65.0mm (W x H x D)	

Connection Diagrams

ETR-01

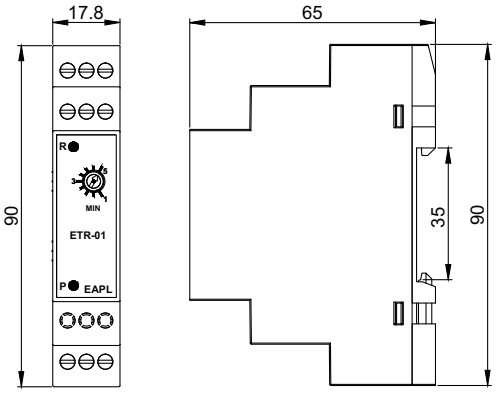


ETR-02



Dimension

ETR-01



Note: All Dimensions are in mm.

Temperature Series

Universal Temperature Controllers

Temperature controllers are used in controlling temperatures of any heating and cooling instruments in the process automation. To achieve that, controller, is programmed at a set temperature, and when process temperature is below the set value the controller will switch on the heating process to maintain the set value and the controller will switch the heaters once the desired temperature is achieved. Once again when the temperature falls below the hysteresis values set the heating process will start again. EAPL offers temperature controllers with a wide voltage range, size, Setpoints, functions(On/Off and Self-tune). Controllers also come with 2 output relays and SSR relays.

Applications:

Furnace, Heat Treatment, Equipment Oven, Boilers, Plastic and Rubber machinery, cooling towers and many more.

Features

- 4 digit, 7 segment LED temperature display.
- Wide voltage range (85-270V AC / DC).
- Universal input (J / K / PT-100).
- LED indication for sensor, relay and function.
- Sensor, function, Hysteresis parameters can be locked (by opening the short link of designated terminals) against unauthorized tampering (only available for TX7 and EX9 series) the same can be locked through designated Key Buttons incase of H3TX models.
- Hysteresis parameter will not be available when self tune function is selected.

  H3TX-Ua / TX7-Ua / EX9-Ua
  Dual function (On-Off or Self-Tune).
  Single set point with relay output.
  Single window display for both set and process values.
  Temperature offset calibration user settable.
- H3TX-2U / TX7-2U / EX9-2U

  Dual function (On-Off or Self-Tune).
  Single set point with relay output.
  Dual window display for set and process values.

Function

ON-OFF:-
Here the controller's relay will change status (NO) when the temperature controller is switched ON at ambient temperature. The process temperature increases (in case of heating systems) / decreases (in case of cooling systems) and on attaining the set value, the relay reverts back to original position (NC)
As the process temperature decreases (heating system) / increases (cooling system) by the hysteresis value set, the relay will once again change over to NO. This process of ON and OFF of the load will continue and thereby maintain the temperature within the set band.

Note:The temperature may overshoot the set value though the relay switches off at set value. This is due to the inherent heat of the heating element. Again the temperature may fall below the specified hysteresis set as the heating element needs to get itself heated before dissipating the heat out.

SELF TUNE :-
In self tune also, the relay status changes to NO when the temperature controller is switched ON at ambient temperature. The temperature rises quickly and relay automatically switches OFF and reverts to NC at 50% of the set value. The internal program takes over and raises the temperature to the set value by switching ON and OFF the relay based on an internal predefined calculation.

As the process temperature proceeds towards the set point, the heating time reduces and finally only heat that is required to maintain the temperature is dissipated. This program helps to curtail the overshoot (that otherwise is seen in ON-OFF system) to a great extent. The hysteresis in this case is by default 1degree centigrade.

Ordering Information

Model	Function	Display	Source voltage	Sensor	Output
H3TX-Ua	On-Off / Self-Tune (Single Set Point)	Single display for Set and process values	85V to 270V AC / DC	J-type,K-type PT-100 (Self-Tune) PT-100 (On-Off	1 relay 1c/o, 5A
TX7-Ua					
EX9-Ua					
H3TX-2U		Dual display for set and process values			
TX7-2U					
EX9-2U					

Specifications

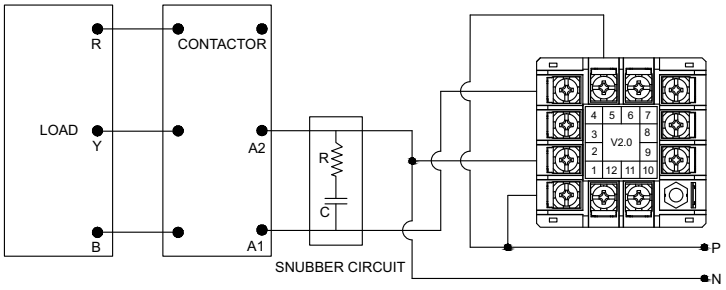
Model	H3TX-Ua	TX7-Ua	EX9-Ua
Function	On-Off and Self Tune temperature controller		
Rated Supply Voltage	85V to 270V AC/DC		
Rated frequency	50/60Hz± 5% for AC only		
Power consumption	AC < 6VA @240V DC approx 3W	AC approx. 6VA / 1.2W	
Control Output	1 c/o contact rated for 5A @ 250VAC/ 28VDC resistive load		
Display Accuracy	± (0.5% of full scale) ±1°C		
Range	0°C to 600°C (J type) 0°C to 1200°C (K type) -100°C to 400°C (PT100 ON/OFF) 0°C to 400°C (PT100 Self tune)	0°C to 600°C (J type) 0°C to 1200°C (K type) -100°C to 300°C (PT100 ON/OFF) 0°C to 300°C (PT100 Self tune)	
Hysteresis (for ON/OFF function)	2°C to 99°C	2°C to 20°C	
Ambient Offset	-20°C to 20°C	NA	
Input	J/K/PT100		
Recovery Time	2 Sec minimum		
Ambient temperature	Operation: 5°C to 50°C , Storage : -10°C to 85°C	Operation: 5°C to 45°C , Storage : -10°C to 85°C	
Variation due to Temperature	0.25°C per degree change in ambient temperature. (Ref.25°C)		0.35°C per degree change in ambient temperature. (Ref.25°C)
Humidity	Up to 95% RH @40°C	Up to 85% RH @40°C	Up to 95% RH @40°C
Insulation Resistance	> 100M Ohms @ 500VDC		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Dielectric Strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)		
Terminal Type	Screw type terminals with self lifting clamps		
Overall Dimension(WxHxD) in mm	48 x 48 x 95.5	72 x 72 x 128.5	96 x 96 x 117
Cut-out Dimension (WxH) in mm	46 x 46	69 x 69	92 x 92

Specifications

Model	H3TX-2U	TX7-2U	EX9-2U
Function	On-Off and Self Tune temperature controller		
Rated Supply Voltage	85V to 270V AC/DC		
Rated frequency	50/60Hz± 5% for AC only		
Power consumption	AC Approx. 6VA,DC Approx. 3W	AC Approx. 6VA / 1.2W	
Control Output	1 c/o contact rated for 5A @ 250VAC/ 28VDC resistive load		
Display Accuracy	± (0.5% of full scale) ±1°C		
Range	0°C to 600°C (J type) 0°C to 1200°C (K type) 0°C to 400°C (PT100)	0°C to 600°C (J type) 0°C to 1200°C (K type) -100°C to 300°C (PT100 ON/OFF) 0°C to 300°C (PT100 Self tune)	
Hysteresis (for ON/OFF function)	1°C to 99°C(J & K Type) 0.1°C to 99.9°C (PT100)	2°C to 20°C	
Ambient Offset	-20°C to 20°C	NA	
Input	J/K/PT100		
Recovery Time	2 Sec minimum		
Ambient temperature	Operation: 5°C to 50°C , Storage : -10°C to 85°C	Operation: +5°C to 45°C , Storage : -10°C to 85°C	
Variation due to Temperature	0.25°C per degree change in ambient temperature (Ref-25°C)		0.35°C per degree change in ambient temperature. (Ref-25°C)
Humidity	Up to 95% RH @40°C	Up to 85% RH @40°C	Up to 95% RH @40°C
Insulation Resistance	> 100M Ohms @ 500VDC		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Dielectric Strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)		
Terminal Type	Screw type terminals with self lifting clamps		
Overall Dimension(WxHxD) in mm	48 x 48 x 95.5	72 x 72 x 128.5	96 x 96 x 117
Cut-out Dimension (WxH) in mm	46 x 46	69 x 69	92 x 92

Connection Diagrams

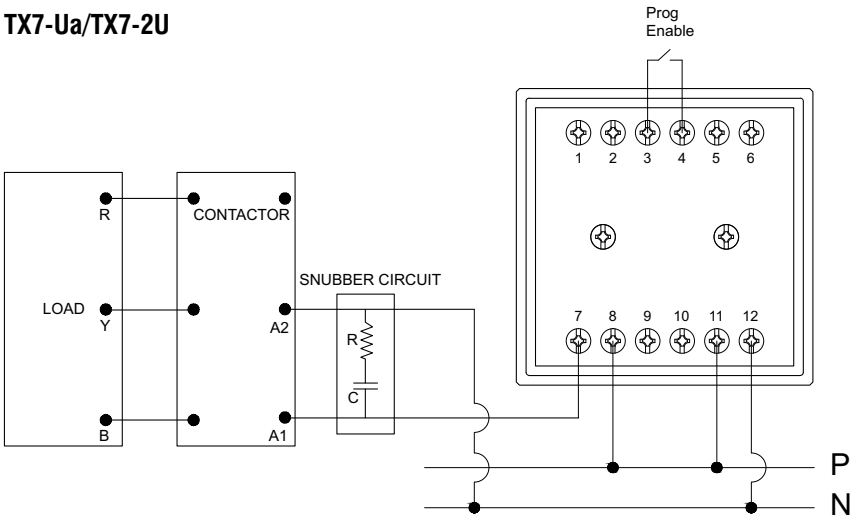
H3TX-Ua/H3TX-2U



1 & 2 : Supply Voltage
3, 4, 5 : NC, NO , C (Relay)
7 : +ve TC / RTD1
8 : -ve TC / RTD2
9 : 3w RTD

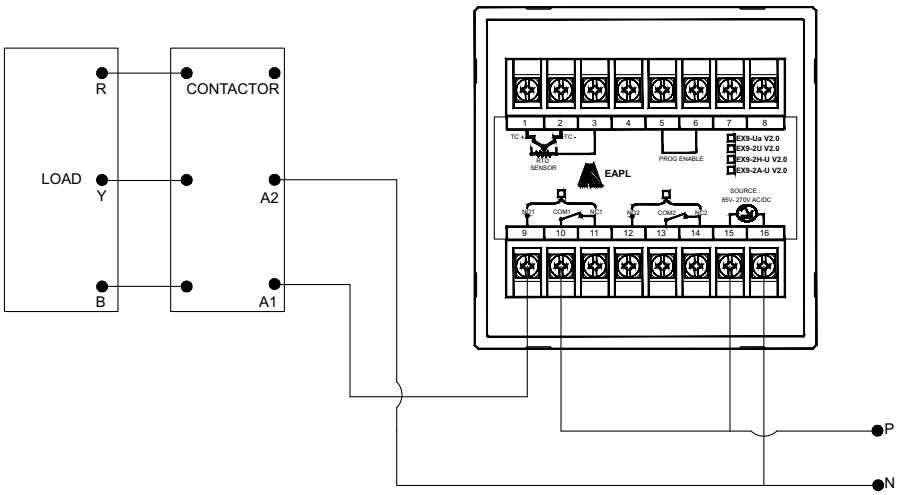
Connection Diagrams

TX7-Ua/TX7-2U



11 & 12 : Supply Voltage
7, 8, 9 : NO,C ,NC (Relay)
1 : +ve TC / RTD1
2 : -ve TC / RTD2
3 : 3w RTD
3,4 : Short - Program enable

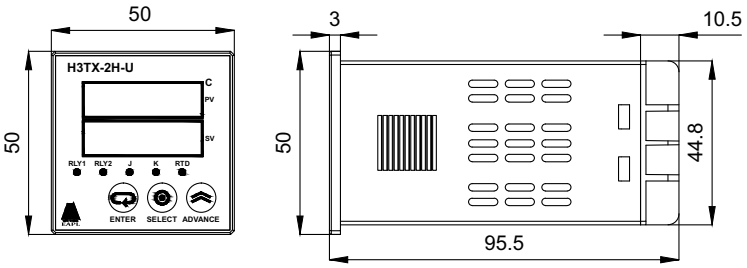
EX9-Ua/Ex9-2U



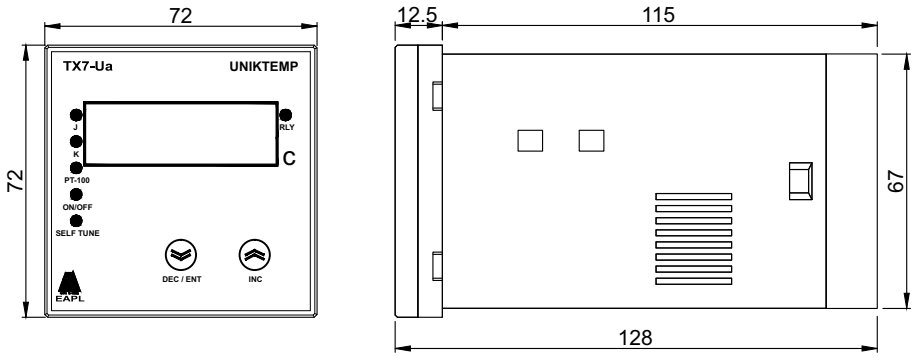
15 & 16 : Universal supply vtg(85-270 V AC/DC)
1 : +ve TC/ RTD1
2 : -ve TC/RTD2
3 : 3w RTD
9, 10, 11: RLY (NO, COM, NC)
5,6: Short-progam enable

Dimension

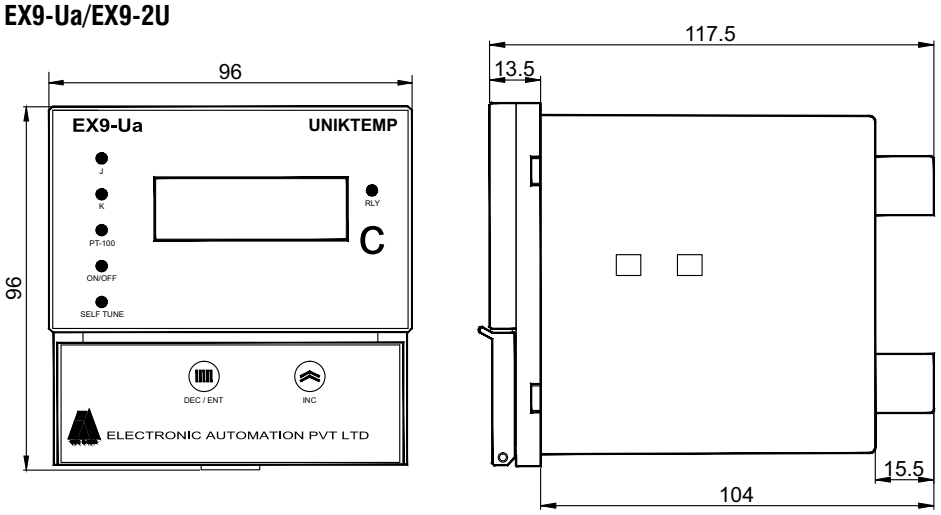
H3TX-Ua/H3TX-2U



TX7-Ua/TX7-2U



EX9-Ua/EX9-2U



Note: All Dimensions are in mm.

Accessories

- Side anchors

Features

- Two set point temperature controller with ON/OFF function.
- 4 digit, 7 segment LED temperature display.
- Wide voltage range (85-270V AC / DC).
- Universal input (J / K / PT-100).
- LED indicator displays sensor selected and relays energized.
- Sensor, function, Hysteresis parameters can be locked (by opening the short link of designated terminals) against unauthorized tampering only available for TX7 and EX9 series

Function

Heater Type:
In Heater type Models, both the relays changes status to NO when unit is switched ON at ambient temperature but reverts back to original status (NC) at respective temperatures set (Set point 1for relay1 and set point 2 for relay2). NO status is attained by the 2 individual relays when process temperature gets dropped to Set value - Hysteresis of the respective relays (Set value1 - Hysteresis1 for relay1 and Set value2 - Hysteresis2 for relay2).

Alarm Type:
In Alarm type Models, the 1st relay changes status to NO when unit is switched ON at ambient temperature and reverts back to original status (NC) when set point 1 is reached. NO status is once again attained by this relay when process temperature gets dropped to Set value1- hysteresis1. The 2nd relay changes status to NO whenever process temperature reaches 2nd set point and remains in this state till the process temperature drops to Set Value2-Hysteresis2.

Ordering Information

Model	Function	Display	Source voltage	Sensor	Output
H3TX-2H-U	On-Off - Heater type Function (Dual Set Point)	Dual display for set and process values	85V to 270V AC / DC	J-type, K-type PT-100 (On-Off)	2 relay 1c/o, 5A
TX7-2H-U					
EX9-2H-U					
H3TX-2A-U	On-Off - Alarm type Function (Dual Set Point)				
TX7-2A-U					
EX9-2A-U					

Specifications

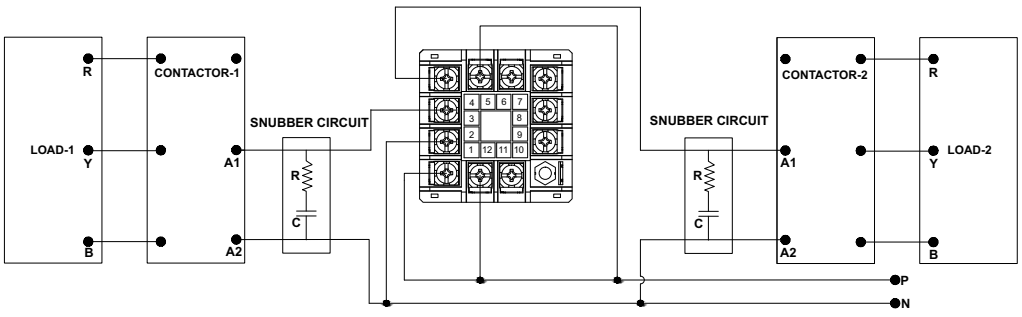
Model	H3TX-2H-U	TX7-2H-U	EX9-2H-U
Function	2 Set Point temperature Controller (Heater type)		
Rated Supply Voltage	85V to 270V AC/DC		
Rated frequency	50/60Hz± 5% for AC only		
Power consumption	AC approx. 6VA DC approx. 3W	AC approx. 6VA / 1.2W	
Control Output	Rly 1 & Rly 2 - 1C/O rated for 5A(NO) & 3A (NC)	1 C/O contact rated for 5A @250V AC/28V DC resistive load for each set point	
Display Accuracy	± (0.5% of full scale) ±1°C		
Range	0°C to 600°C (J type) 0°C to 1200°C (K type) 0.0°C to 400°C (PT100)	0°C to 600°C (J type) 0°C to 1200°C (K type) 0°C to 300°C (PT100)	
Hysteresis	1°C to 99°C(J & K Type) 0.1°C to 99.9°C (PT100)	2°C to 20°C	
Input	J/K/PT100		
Recovery Time	2 Sec minimum		
Ambient temperature	Operation: 5°C to 50°C Storage : -10°C to 85°C	Operation: +5°C to 45°C Storage : -10°C to 85°C	
Variation due to Temperature	0.25°C per degree change in ambient temperature.(ref-25°C)		0.35°C per degree change in ambient temperature.ref-25°C
Humidity	Up to 95% RH @40°C	Up to 85% RH @40°C	Up to 95% RH @40°C
Insulation Resistance	> 100M Ohms @ 500VDC		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Dielectric Strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)		
Terminal Type	Screw type terminals with self lifting clamps		
Overall Dimension (WxHxD) mm	48 x 48 x 95.5	72 x 72 x 128.5	96 x 96 x 117
Cut-out Dimension(WxH) mm	46 x 46	69 x 69	92 x 92

Specifications

Model	H3TX-2A-U	TX7-2A-U	EX9-2A-U
Function	2 Set Point temperature Controller (Alarm type)		
Rated Supply Voltage	85V to 270V AC/DC		
Rated frequency	50/60Hz± 5% for AC only		
Power consumption	AC approx. 6VA DC approx. 3W	AC approx. 6VA / 1.2W	
Control Output	Rly 1 & Rly 2 - 1C/O rated for 5A(NO) & 3A (NC)	1 C/O contact rated for 5A @250V AC/28V DC resistive load for each set point	
Display Accuracy	± (0.5% of full scale) ±1°C		
Range	0°C to 600°C (J type) 0°C to 1200°C (K type) 0.0°C to 400°C (PT100)	0°C to 600°C (J type) 0°C to 1200°C (K type) 0°C to 300°C (PT100)	
Hysteresis	1°C to 99°C(J & K Type) 0.1°C to 99.9°C (PT100)	2°C to 20°C	
Input	J/K/PT100		
Recovery Time	2 Sec minimum		
Ambient temperature	Operation: 5°C to 50°C Storage : -10°C to 85°C	Operation: +5°C to +45°C Storage : -10°C to 85°C	
Variation due to Temperature	0.25°C per degree change in ambient temperature. (ref-25°C)		0.35°C per degree change in ambient temperature. (ref-25°C)
Humidity	Up to 95% RH @40°C	Up to 85% RH @40°C	Up to 95% RH @40°C
Insulation Resistance	> 100M Ohms @ 500VDC		
Service life (under no load)	10^6 operations minimum		
Electrical life (under full load)	10^5 operations minimum		
Dielectric Strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)		
Terminal Type	Screw type terminals with self lifting clamps		
Overall Dimension (W x H x D) mm	48 x 48 x 95.5	72 x 72 x 128.5	96 x 96 x 117
Cutout Dimension(W x H) mm	46 x 46	69 x 69	92 x 92

Connection Diagrams

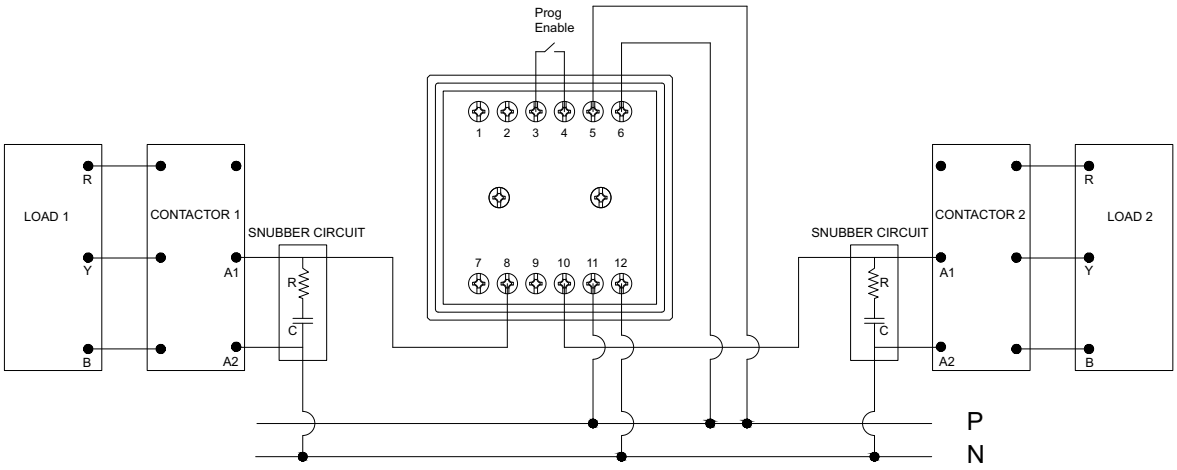
H3TX-2H-U/H3TX-2A-U



1 & 2 : Universal supply vtg (85-270 V AC/DC)
7 : +ve TC/ RTD1
8 : -ve TC/RTD2
9 : RTD3
12, 11, 3: RLY1(COM1, NC1, NO1)
5, 6, 4 : RLY2(COM2, NC2, NO2)

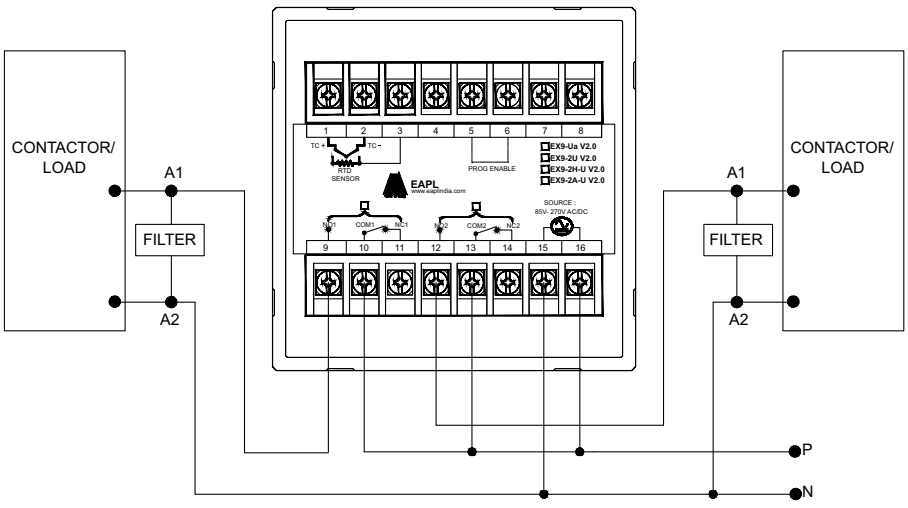
Connection Diagrams

TX7-2H-U/TX7-2A-U



11 & 12 : Universal supply vtg (85-270 V AC/DC)
1 : +ve TC/ RTD1 } Short for 2W RTD
2 : -ve TC/RTD2
3 : RTD3
3, 4 : Short-Program enable
5, 7, 8 : RLY1(COM1, NC1, NO1)
6, 9, 10 : RLY2(COM2, NC2, NO2)

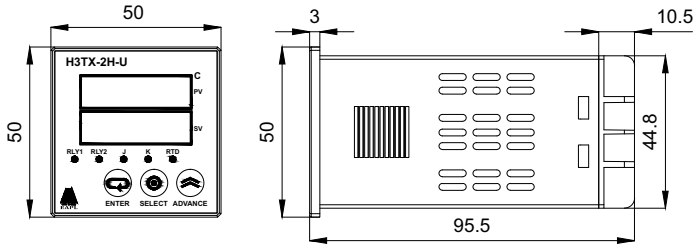
EX9-2H-U/EX9-2A-U



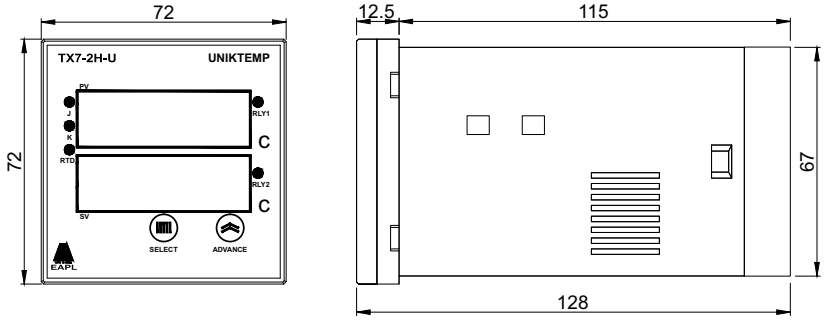
15 & 16 : Universal supply vtg(85-270 V AC/DC)
1 : +ve TC/ RTD1
2 : -ve TC/RTD2
3 : 3w RTD
9, 10, 11 : RLY1(NO1, COM1, NC1)
12, 13,14 : RLY2(NO2, COM2, NC2)
5,6 : Short-progam enable

Dimension

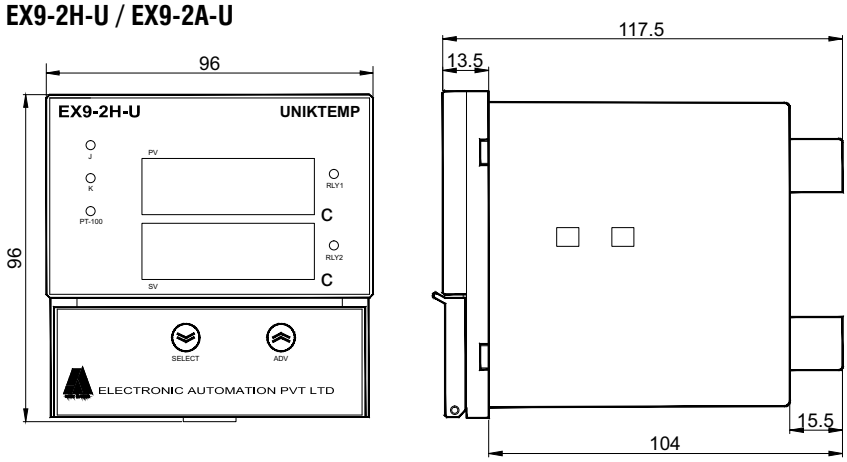
H3TX-2H-U/H3TX-2A-U



TX7-2H-U/TX7-2A-U



EX9-2H-U / EX9-2A-U



Note: All Dimensions are in mm.

Accessories

- Side anchors

NEW

Features

- 4 digit, 7 segment LED temperature display.
- Forward / Reverse logic Set points and hysteresis can be programmed separately for each relay/SSR
- Wide voltage range (85-270V AC / DC).
- Universal input (J / K / PT-100).
- LED indication for sensor, relay and function.
- Minimum and Maximum temperature user settable limits for ease of setting set values.

H3TX-MU/ H3TX-MU-RS

- H3TX-MU & H3TX-MU-RS is a multifunction dual set point temperature controller with universal supply Voltage & universal sensor input.
- Two independent temperature values can be set for given sensor input and Forward / reverse Function can be achieved through relay controlling & SSR controlling.
- User selectable Temperature Span can be programmed according to application.

H3TX-U-RS / H3TX-2U-RS

- Dual function (On-Off) and Self tune with single set point with 1 relay output and SSR output
- Available in Single and Dual display.

Function

Forward Logic:

In Multifunctional Models, the forward direction the corresponding relay will continue to remain in original NC contact even after unit is switched ON till the process value reaches corresponding set point + the respective hysteresis. It will then continue in the NO status till the process temperature value drops to the Set Value.

Reverse Logic:

In the reverse direction, the relay contacts changes to NO immediately and remains in this state till the corresponding set point is reached. On reaching the set value the relay reverts to NC and once again changes contacts to NO after process temperature drops to SET value - hysteresis.

Ordering Information

Model	Function	Source voltage	Sensor	Output
H3TX-MU	Multi function Temperature Controller On-Off Forward and Reverse type(Dual Set Point) with 2 relay outputs	85V to 270V AC / DC	J/K/PT100	Relay1 - 1c/o, 5A(NO) Relay2 - 1c/o, 3A(NC)
H3TX-MU-RS	Multi function Temperature Controller On-Off Forward and Reverse type(Dual Set Point) with 2relay & SSR O/P			Relay1 & Relay2- 1c/o 5A (NO). SSR Drive:12V DC
H3TX-U-RS	On-Off / Self-Tune Function (Single Set Point) with SSR and Relay O/P			Relay 1 - 1c/o, 5A SSR Drive:12V DC
H3TX-2U-RS				

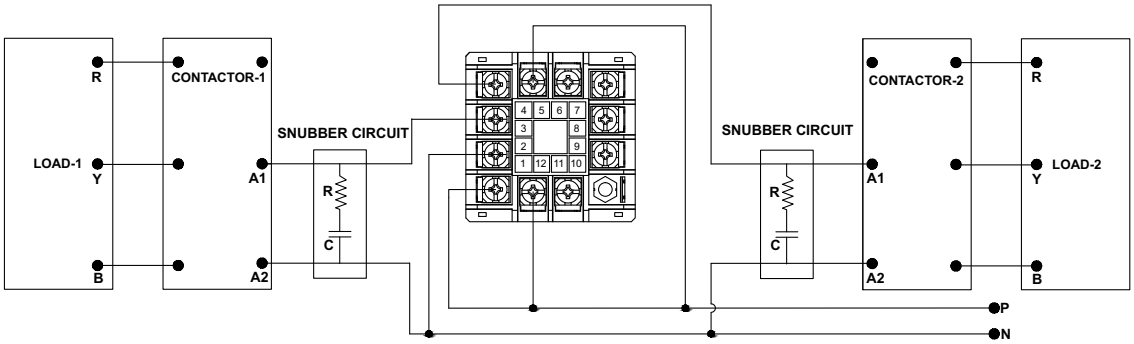
Specifications

Model	H3TX-MU	H3TX-MU-RS	H3TX-U-RS	H3TX-2U-RS
Function	Multifunction 2 Set Point Temperature Controller (with Forward & Reverse option)		On-Off & Self tune temperature controller	
Rated Supply Voltage	85V to 270V AC/DC			
Rated frequency	50/60Hz± 5% for AC only			
Power consumption	AC approx. 6VA DC approx. 3W			
Control Output	Rly 1 & Rly 2 - 1C/O rated for 5A(NO), 3A(NC)	Rly1 & Rly2- 1c/o rated for 5A (NO) SSR Drive:12V DC,20mA.	Rly 1 - 1C/O rated for 5A SSR Drive:12V DC, 20mA.	
Display Accuracy	± (0.5% of full scale) ±1°C			
Range	0°C to 600°C (J type) 0°C to 1200°C (K type) 0°C to 400°C (PT100)		0°C to 600°C (J type) 0°C to 1200°C (K type) -100°C to 400°C(PT100 ON/OFF) 0°C to 400°C (PT100 Self tune)	0°C to 600°C (J type) 0°C to 1200°C (K type) 0°C to 400°C (PT100)
Hysteresis (Applicable for ON/OFF function only)	1°C to 99°C(J & K Type) 0.1°C to 99.9°C (PT100)		2°C to 99°C	1°C to 99°C (J & K Type) 0.1°C to 99.9°C (PT100)
Ambient offset	-20°C to 20°C			
Input	J/K/PT100			
Recovery Time	2 Sec minimum			
Ambient temperature	Operation: 5°C to 50°C ,Storage : -10°C to 85°C			
Variation due to Temperature	0.25°C per degree change in ambient temperature.(Ref.25°C)			

Model	H3TX-MU	H3TX-MU-RS	H3TX-U-RS	H3TX-2U-RS
Humidity	Up to 95% RH @40°C			
Insulation Resistance	> 100M Ohms @ 500VDC			
Service life (under no load)	10^6 operations minimum			
Electrical life (under full load)	10^5 operations minimum			
Dielectric Strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)			
Terminal Type	Screw type terminals with self lifting clamps			
Overall Dimension	48 x 48 x 95.5 (WxHxD) in mm			
Cut-out Dimension	46 x 46 (WxH) in mm			

Connection Diagrams

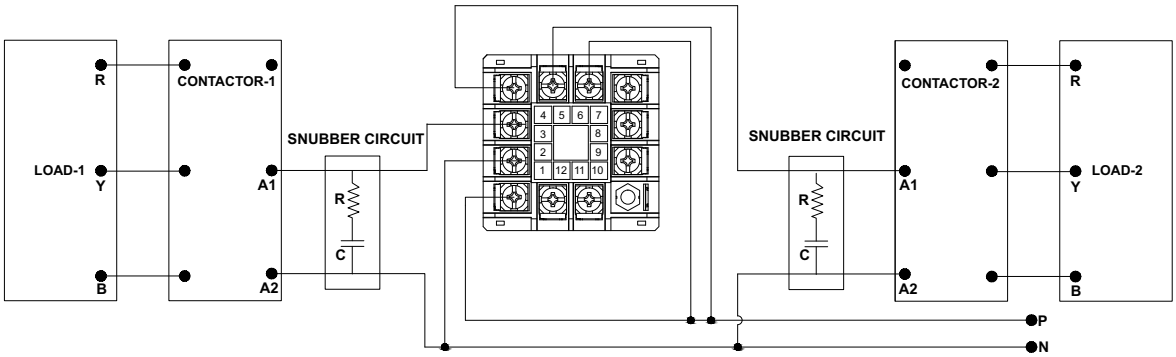
H3TX-MU



1 & 2 : Universal supply vtg (85-270 VAC/DC)
7 : +ve TC/ RTD1
8 : -ve TC/RTD2
9 : RTD3
12, 11, 3: RLY1(COM1, NC1, NO1)
5, 6, 4 : RLY2(COM2, NC2, NO2)

H3TX-MU-RS

Connection diagram for Relay output

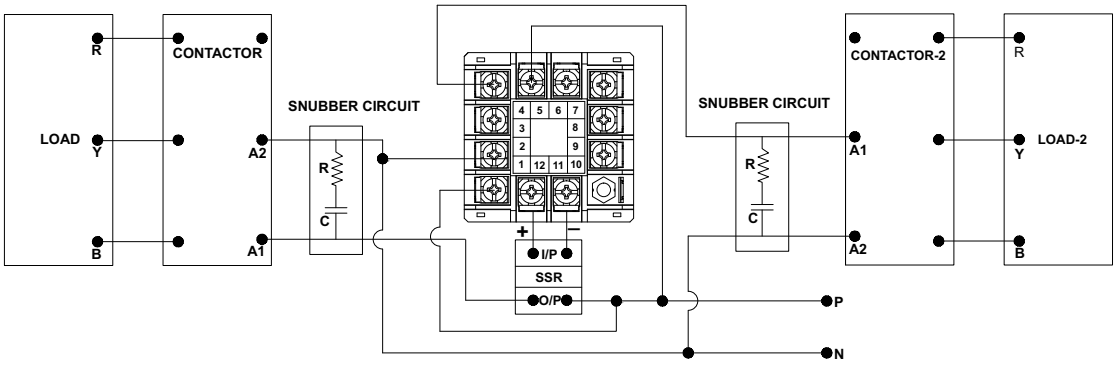


1 & 2 : Supply voltage (85-270 V AC/DC)
7 : +ve TC/ RTD1
8 : -ve TC/RTD2
9 : RTD3
6, 3 : RLY1(COM1,NO1)
5, 4 : RLY2(COM2,NO2)
12,11 : SSR +ve, SSR –ve.

Connection Diagrams

H3TX-MU-RS

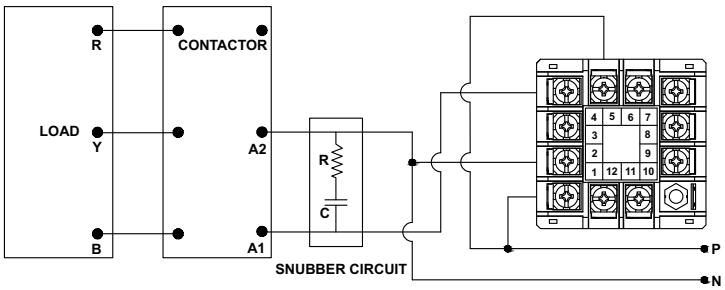
Connection diagram for SSR output



1 & 2 : Supply voltage (85-270 V AC/DC)
7 : +ve TC/ RTD1
8 : -ve TC/RTD2
9 : RTD3
6, 3 : RLY1(COM1,NO1)
5, 4 : RLY2(COM2,NO2)
12,11 : SSR +ve, SSR –ve.

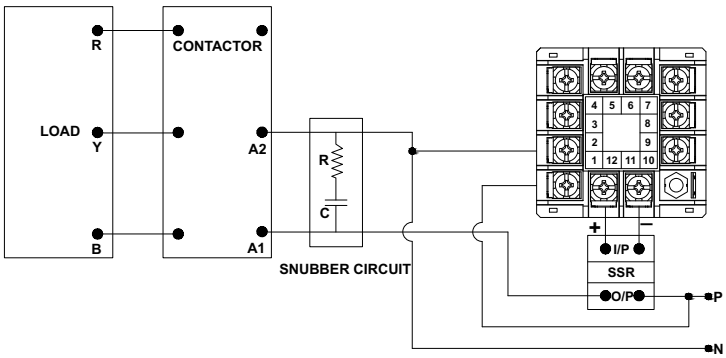
H3TX-U-RS/H3TX-2U-RS

Connection Diagram for relay output



H3TX-U-RS/H3TX-2U-RS

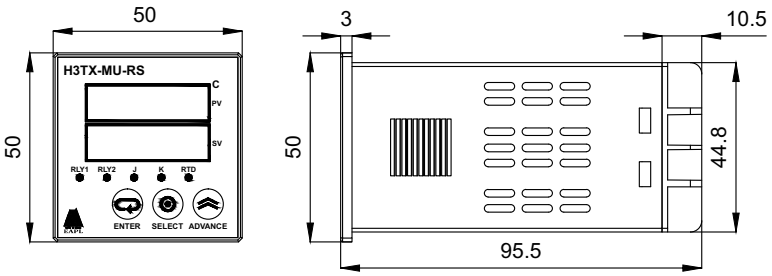
Connection Diagram for SSR output



1 & 2 : Supply Voltage
3, 4, 5 : NC, NO , C (Relay)
7 : +ve TC / RTD1
8 : -ve TC / RTD2
9 : 3w RTD
12 & 11 : SSR +ve, SSR -ve

Dimensions

H3TX-MU/H3TX-MU-RS/H3TX-U-RS/H3TX-2U-RS



Note: All Dimensions are in mm.

Accessories

- Side anchors

CP Series

Submersible Pump controller

NEW

Features

- Elegant, compact & lightweight.
- UL 94 based flame-retardant plastic ABS enclosures..
- Digital meter displaying volts and amps.
- 240V AC, 2pole 20A, contactor
- MCB for short circuit protection.
- Independent Switches and an indicating lamp for ON and OFF functions
- Start & Run capacitors.

Ordering Information

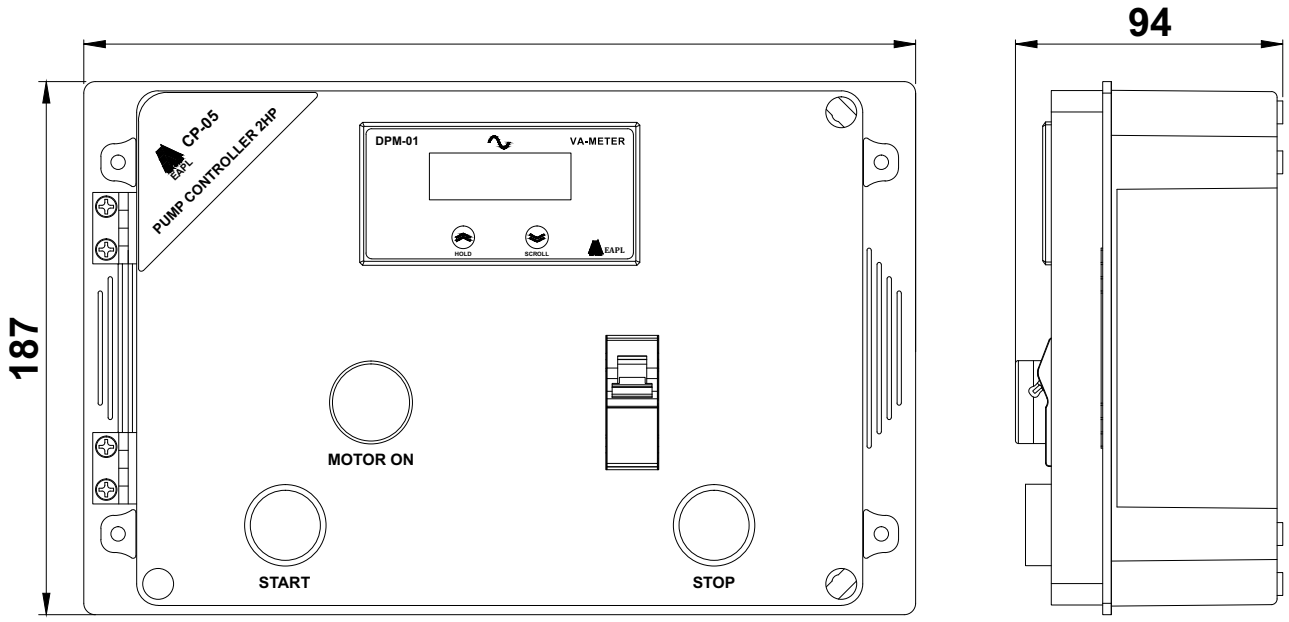
Model	HP	MCB rating @ 240V AC	Start capacitor (μF)	Run capacitor (μF)
CP-05a	1	10A	120	50
CP-05b	1.5	16A	120	60
CP-05	2	16A	150	72

Specifications

Model	CP-05a	CP-05b	CP-05
Function	1HP 1Ø Submersible pump Controller	1.5HP 1Ø Submersible pump Controller	2HP 1Ø Submersible pump Controller
Input Voltage	180-240VAC	180-240VAC	180-240VAC
Input Frequency	50Hz ±5%	50Hz ±5%	50Hz ±5%
Motor Rating	1HP	1.5HP	2HP
Full Load Current	10A	13A	16A
Output Voltage	180-240VAC	180-240VAC	180-240VAC
START Capacitor	120MFD 275VAC ± 5% Operating Frequency 50Hz	120MFD 275VAC ± 5% Operating Frequency 50Hz	150MFD 275VAC ± 5% Operating Frequency 50Hz
RUN Capacitor	50MFD 440VAC ± 5% Operating Frequency 50Hz	60MFD 440VAC ± 5% Operating Frequency 50Hz	72MFD 440VAC ± 5% Operating Frequency 50Hz
Operating temperature	0°C to +45°C		
Protection	Short circuit & overload Protection	Short circuit & overload Protection	Short circuit & overload Protection
Enclosure Dimension (W x H x D) in mm	291 x 187 x 94		

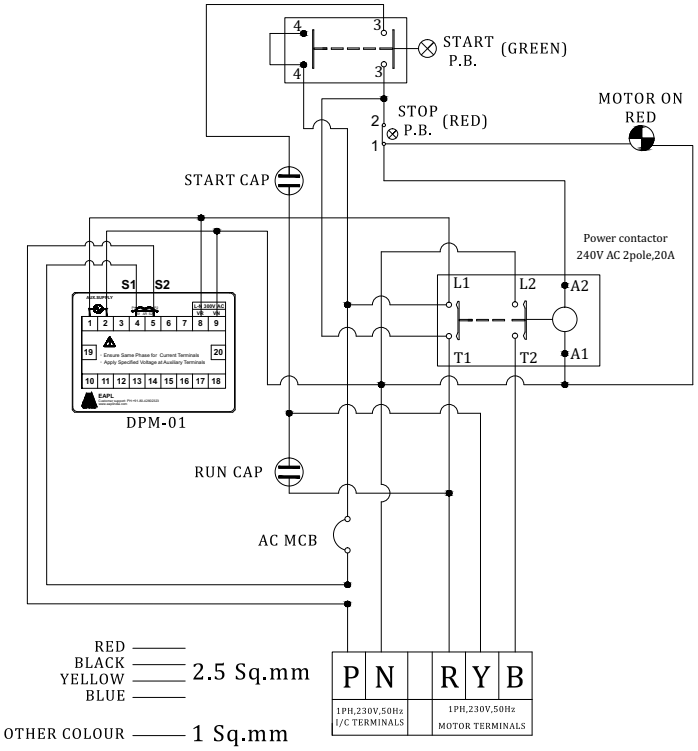
Dimensions

CP-05/05a/05b



Connection Diagrams

CP-05/05a/05b



MS-Series

Power Supply modules

Features

- Compact, light weight design.
- Versatile and easy Snap-On mounting on Din Rail.
- Very low ripple and noise.
- Regulated and adjusted output.
- Protection against over voltage, short circuit and over load.
- Output Voltage fine tuning not applicable for MS-01, MS-05.

Ordering Information

Model	Function	Input voltage	Output		
			Voltage(V DC)	Ampere(A)	Watt(W)
MS-01	Switch Mode Power Supply	192V - 264V AC	24	1	24
			12	1	12
MS-02		170V - 300V AC	24	2.1	50
			24	1.46	35
			24	1.04	25
			24	0.63	15
			12	4.2	50
			12	2.9	35
			12	2.08	25
			12	1.25	15
			5	6	30
			5	5	25
			5	3	15
MS-03			24	5	120
MS-05			5	1	5

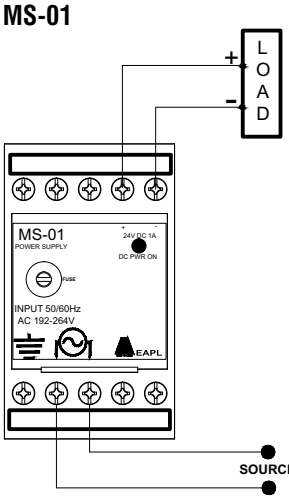
Specifications

Model	MS-01	MS-02	MS-03	MS-05
Function	Switch Mode Power Supply			
Rated supply Voltage	192 to 264 V AC		170 to 300 V AC	
Rated Frequency	50 / 60Hz ± 5%			
Output Voltage	24V DC	12V DC	24V DC	5V DC
Output Current	1.0A		5.0A	1.0A
Output Power	24W	12W	120W	5W
O/P Voltage accuracy	± 2%			
Regulation	I/P variation : ± 0.5% (Line regulation) Load variation : ± 2.5% (Load regulation)			
Ripple & Noise	<50mVp-p ≤150mV (20MHz, Bandwidth)			
Efficiency	85%			
Hold on time	20mSec min with 100% load @rated I/P voltage			
Rise time max. up to 90% of rated O/P voltage with 100% load @ rated input & output	< 100 mSec			
Ambient temperature	Operation: -10°C to 55°C ,Storage : -10°C to 80°C			
Humidity	Max 85% RH @40°C			
Insulation resistance	1000M ohms @ 500V DC			>1000M ohms @ 500V DC
Electrical connection	Screw type terminals with self lifting clamps			
Mounting	Snap-on mounting on 35mm Din- Rail			
Dimension(W x H x D)	45.5 x 77.4 x 116mm		155 x 88 x 79mm	22.5 x 75 x 96.5mm

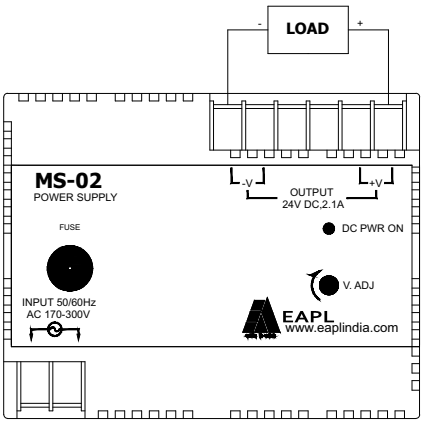
Model	MS-02										
Function	Switch Mode Power Supply										
Rated supply Voltage	170 to 300 V AC										
Rated Frequency	47 to 63Hz										
Output Voltage	5V DC			12V DC				24V DC			
Output Current	3A	5A	6A	1.25A	2.08A	2.9A	4.2A	0.63A	1.04A	1.46A	2.1A
Rated Power	15W	25W	30W	15W	25W	35W	50W	15W	25W	35W	50W
O/P Voltage Tolerance	± 2%										
O/P Adjustable range	±10% of rated power										
Regulation	I/P variation : ± 0.5% (Line regulation) Load variation : ± 2.5% (Load regulation)										
Ripple & Noise	<50mVp-p										
Efficiency	85%										
Hold on time	20mSec min with 100% load @rated I/P voltage										
Rise time max. up to 90% of rated O/P voltage with 100% load @ rated input & output	< 100 mSec										
Ambient temperature	Operation: -10°C to 55°C ,Storage : -10°C to 80°C										
Humidity	Up to 85% RH @40°C										
Insulation resistance	1000M ohms @ 500V DC										
Electrical connection	Screw type terminals with self lifting clamps										
Mounting	Snap-on mounting on 35mm Din- Rail										
Dimension(W x H x D)	110 x 86 x 71 (W x H x D in mm)										

Connection Diagrams

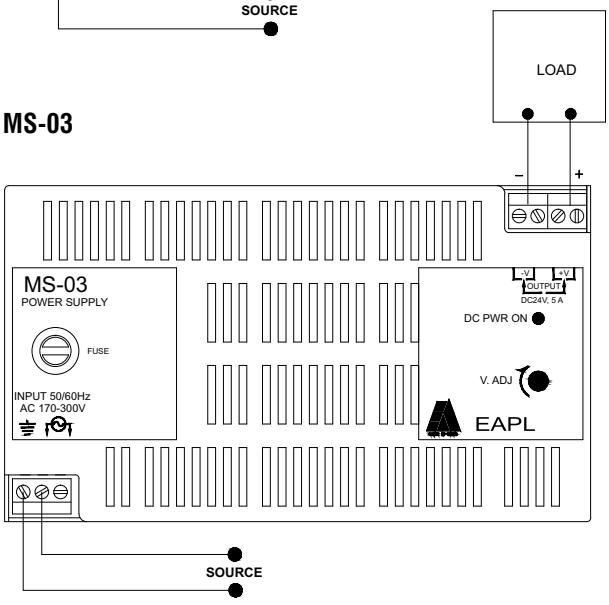
MS-01



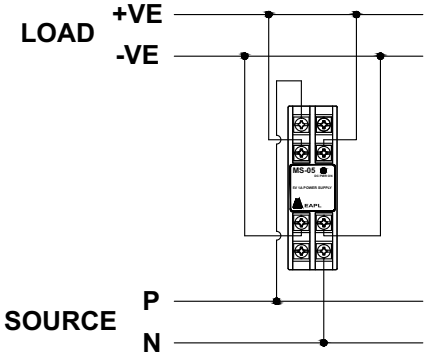
MS-02



MS-03

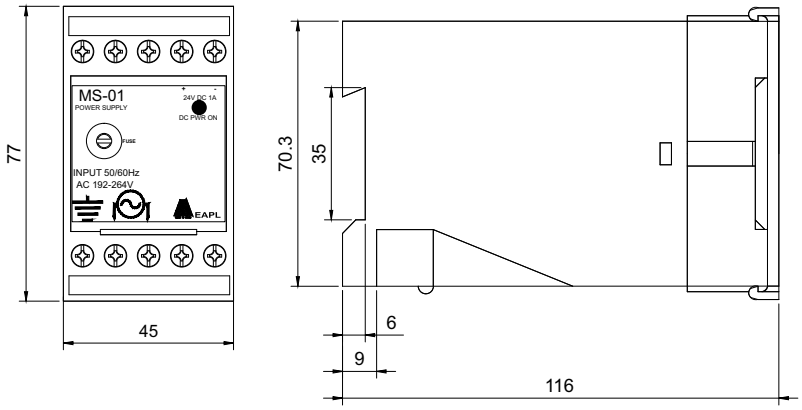


MS-05

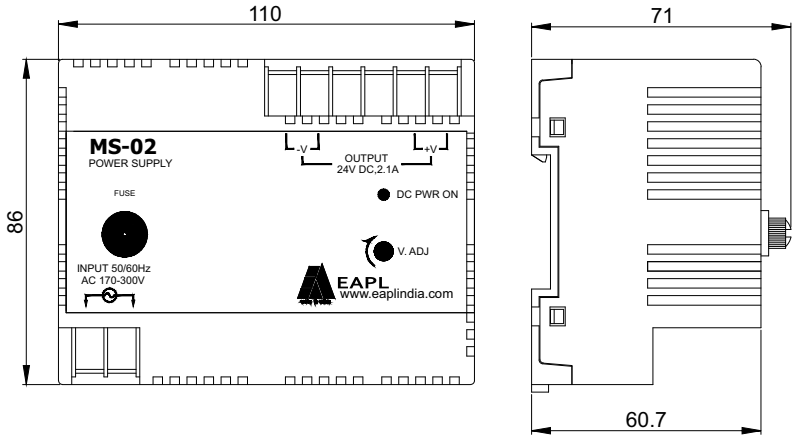


Dimensions

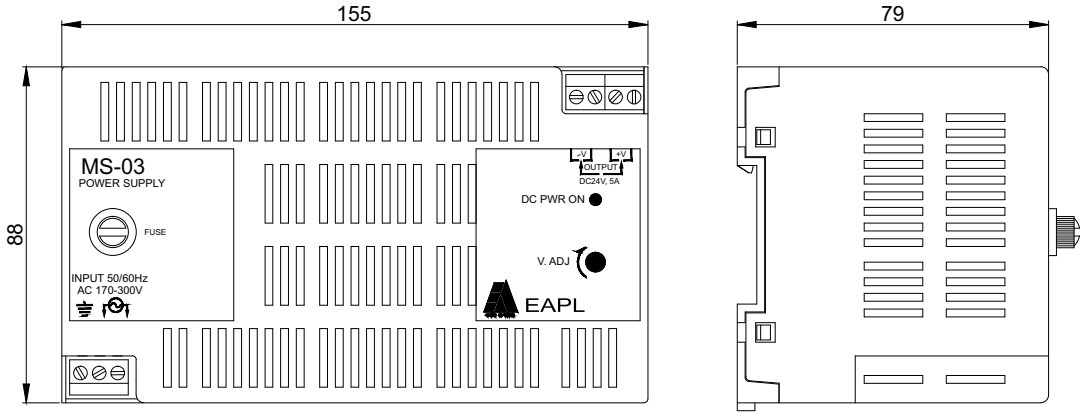
MS-01



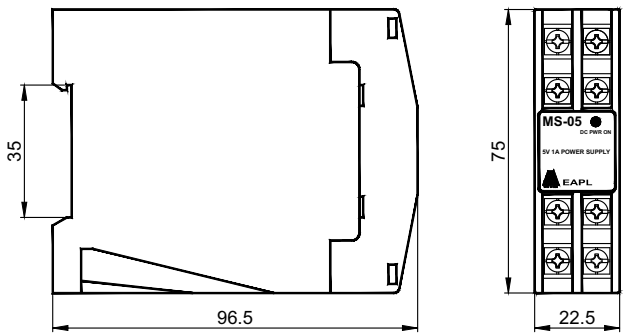
MS-02



MS-03



MS-05



Note: All Dimensions are in mm.

DT-Series

Digital Non-Contact Tachometer

Features

- Microcontroller based design with world class Indian software.
- Non-Contact sensing through reflected light beam on reflective sticker.
- Input sensing indication through LED.
- Memory facility to retain measured value. portable, light weight, strong and elegant ABS enclosure.
- Accuracy: ± 1RPM till 5000RPM and above 5000RPM it will be ± 0.05% of the reading.
- Resolution: 0.1RPM till 5999RPM and 1RPM from 6000RPM onwards.
- Calibration certificate provided along with tachometer.

Ordering Information

Model	Function	Source voltage	Range
DT-2001B	Digital Hand Held Non Contact Tachometer	6V DC (4 x 1.5V, AA size battery)	1 to 99,999 RPM (with one reflecting mark)

Specifications

Model	Function
Function	RPM Counter
Rated supply Voltage	6V DC (Battery 4 x 1.5V, 'AA' size, heavy duty type)
Power consumption	1.5W approx. (when bulb is on)
Display	5 Digit LCD (0.4" height)
Detecting distance	50 to 150mm /2 to 6 inches (up to 300mm / 12 inches depending upon ambient light).
Range	1 to 99,999 RPM(with one reflecting mark)
Range Selection	Automatic
Accuracy	± 1RPM from 1 to 5,000 RPM (from 25°C to 35°C) ± 0.05% RPM over 5,000 RPM (from 25°C to 35°C)
Resolution	0.1RPM upto 5,999 RPM and 1RPM over 6,000 RPM.
Ambient temperature	Operation : 0°C to +50° C
Dimensions	72 x 170 x 38.0mm (W x H x D)
Accessories	Carrying case, Reflecting tape, Operating manual

Dimensions

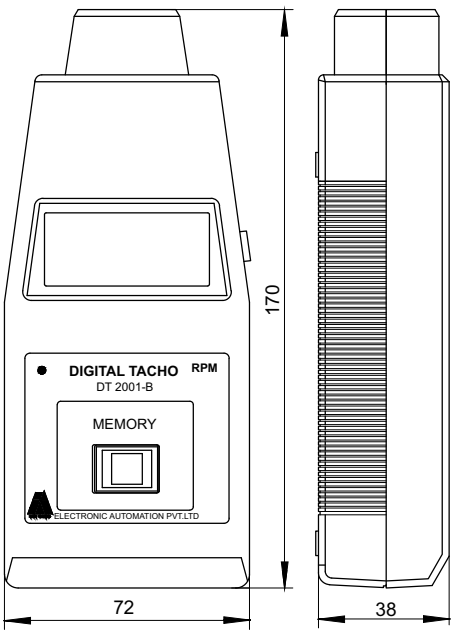


Photo Control - Series

Photo sensing relay

Features

- Design for industrial environment.
- High intensity pulsed infra red emitter.
- Time Delay from 2 to 20 Sec.
- Highly immune to Ambient light.
- Can be used with one set or two sets of receiver and emitter
- Din rail mounting
- When both the set's receiver receives the rays from emitter the control unit's relay is energies to operate feed motor load. Once the bin is filled and the top receiver stops receiving the rays from the top emitter the delay time starts and on completion of set time the relay is de-energise thus switching off the feeder motor. The feeder motor operates once again when both receivers start the receiving the rays emitted by their respective emitters.

Ordering Information

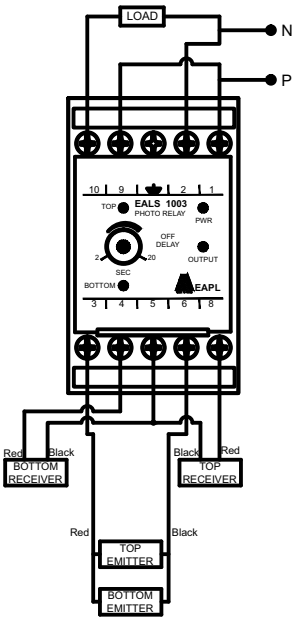
Model	Function	Source voltage	Time selection	Output
EALS-1003	Photo sensing & Control relay	240V AC	2 to 20 Sec (Off Delay)	1 C/O rated for 5A@250V AC/28VDC
EAPRE-01	Photo sensing & Control relay-Emitter Probe	NA	NA	NA
EAPRR-01	Photo sensing & Control relay- Receiver Probe	NA	NA	NA

Specifications

Model	EALS-1003
Function	Photo Sensing & Control
Rated Supply Voltage	240V AC, -20% to +10%
Rated frequency	50Hz ± 5%
Power consumption	5VA / 1W
Control Output	1 c/o rated for 5A @ 250VAC/28VDC (Resistive)
Time range	2 to 20 Sec (Off Delay)
Setting accuracy	± 10% max. w.r.t full scale ±100mSec
Repeat accuracy	± 2% max. ± 100mSec
Recovery Time	1Sec
Ambient temperature	Operation : -10°C to + 55°C Storage : -25°C to +80°C
Humidity	Up to 85% RH @40°C
Service life (under no load)	10^6 operations minimum
Electrical life (under full load)	10^5 operations minimum
Rated frequency of operation	1800 ± 5% operations per hour max
Insulation resistance	>100M ohms @ 500V DC
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 750V AC, 50Hz for 1 minute.(Between non-continuous relay contacts)
Electrical connection	Screw type terminals with self lifting clamps
Dimension	45 x 75 x 116mm (W x H x D)

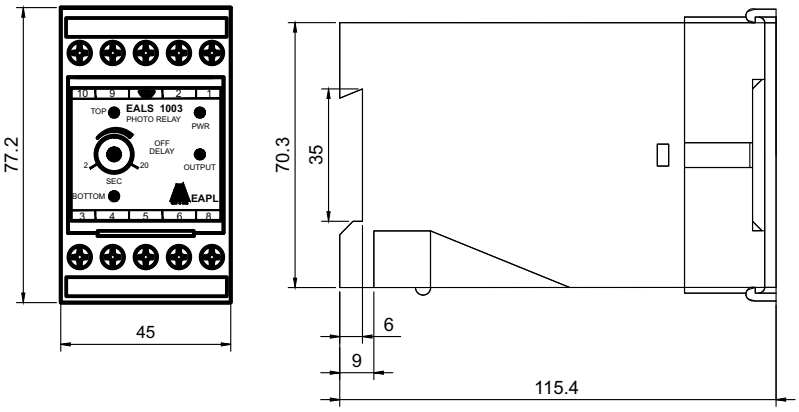
Model	EAPRE-01	EAPRR-01
Function	Emitter probe	Receiver probe
Output	High Intensity Infra Red LED(Pulsed)	High sensitivity tuned Photo sensor
Operating distance range	1-5000mm in Transmission mode 1-120mm in Reflection mode	
Standard cable length	5 Meters	
Cable connection	Red wire(E+), Black wire(E-)	Red wire(R+), Black wire(R-)
Ambient temperature	Operation : -10oC to + 55oC Storage : -25oC to +80oC	
Humidity	Up to 85% RH @40°C	
Insulation resistance	>100M ohms @ 500V DC	
Connection	a) 3-Pin Stereo pocket for Probe b) 3-Pin Stereo plug for cable	
Dimension	19.2 x 35.5 x 127.5mm (W x H x D)	
Enclosure material	Brass probe with 'Nl' plated	

Connection Diagrams



1&2 : 240V AC, -20% to +10%
3 : Emitter(EAPRE-01)+ve(Red)
4 : Receiver(EAPRR-01)Bottom(Red)
5 : Receiver(EAPRR-01)Common(Black)
6 : Emitter(EAPRE-01)-ve(Black)
8 : Receiver(EAPRR-01)TOP(Red)
9 : Relay common
10 : Relay NO

Dimensions



Note: All Dimensions are in mm.

Photo Control - Series

Light Switch

Features

- This is a light switch working on direct or reflective transmission principle.
- It consists of high intensity emitter source and high sensitive receiver.
- The signal received from the receiver will operate a relay with ON delay or OFF delay depending on mode selected.
- The time range can be 0.3 sec / 30 sec.
- When the unit has been programmed for On delay and the light signal is received by the receiver probe emitted by the emitter probe, will start time counting and operate the relay on completion of the set time (ON delay). The relay will reset on power interruption or when signal gets interrupted
- When unit is programmed for OFF delay, the relay immediately changes contact and switches ON the load when the receiver probe receives the light beam emitted by the emitter probe. As and when the beam is interrupted the time starts counting and after set time the relay reverts to original position switching off the load.

Ordering Information

Model	Function	Source voltage	Time selection	Output
EALS-4505	Electronic Stop Motion Light Switch	240V AC	0.3 Sec to 30 Sec	1 C/O rated for 5A@250V AC/28VDC
EALSE-01	Electronic Stop Motion Light Switch-Emitter Probe	NA	NA	NA
EALSR-01	Electronic Stop Motion Light Switch-Receiver Probe	NA	NA	NA

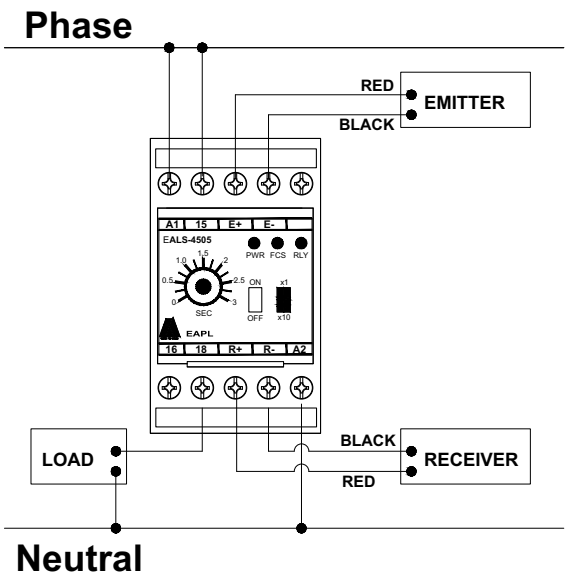
Specifications

Model	EALS-1003
Function	Electronic Stop motion
Rated Supply Voltage	240V AC, -20% to +10%
Rated frequency	50Hz ± 5%
Power consumption	5VA / 1W
Control Output	1 c/o rated for 5A @ 250VAC/28VDC (Resistive)
Time range	0.3 Sec to 30 Sec
Range selection	3 Sec / 30 Sec
Setting accuracy	± 10% max. w.r.t full scale ±100mSec
Repeat accuracy	± 1% max. ± 100mSec
Recovery Time	1Sec
Variation due to voltage change	± 2% max. ± 100mSec
Variation due to temperature change	± 5% max. ± 100mSec
Variation due to frequency change	± 2% max. ± 100mSec
Ambient temperature	Operation : -10°C to + 55°C , Storage : -25°C to +80°C
Humidity	Up to 85% RH @40°C
Service life (under no load)	10^6 operations minimum
Electrical life (under full load)	10^5 operations minimum
Rated frequency of operation	1800 operations / hour at Rated Load
Insulation resistance	>100M ohms @ 500V DC
Dielectric strength	1) 2.5KV AC, 50Hz for 1 minute.(Between current carrying & non-current carrying parts) 2) 1.5KV AC, 50Hz for 1 minute.(Between contacts & control circuit) 3) 1KV AC, 50Hz for 1 minute.(Between non-continuous relay contacts)
Electrical connection	Screw type terminals with self lifting clamps
Dimension	45 x 75 x 116mm (W x H x D)

Specifications

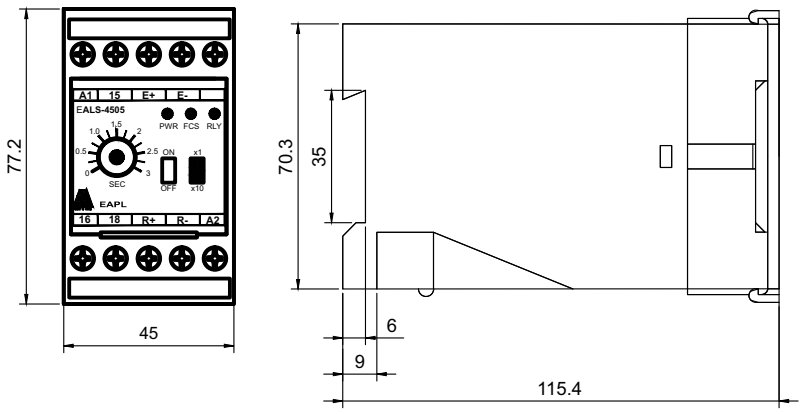
Model	EALSE-01	EALSR-01
Function	Emitter probe	Receiver probe
Output	High Intensity Infra Red LED (Pulsed)	High sensitivity tuned Photo sensor
Operating distance range	1-5000mm in Transmission mode 1-120mm in Reflection mode	
Standard cable length	2 Meters	
Cable connection	Red wire(E+), Black wire (E-)	Red wire(R+), Black wire(R-),Shield wire(E-)
Ambient temperature	Operation : -10°C to + 55°C Storage : -25°C to +80°C	
Humidity	Up to 85% RH @40°C	
Insulation resistance	>100M ohms @ 500V DC	
Connection	a) 3-Pin Stereo pocket for Probe b) 3-Pin Stereo plug for cable	
Dimension	19.2 x 35.5 x 127.5mm (W x H x D)	
Enclosure material	Brass probe with 'NI' plated	

Connection Diagrams



A1,A2 : 240V AC, -20% to +10%
15 : Common(Relay Output)
16 : NC (Relay Output)
18 : NO (Relay Output)
E+ : Emitter +ve (Red)
E- : Emitter -ve (Black)
E- : Receiver Shield
R+ : Receiver +ve(Red)
R- : Receiver -ve(Black)

Dimensions



Note: All Dimensions are in mm.

Note

1. Design & Specification are subject to change without notice
2. User is recommended to confirm the suitability of EAPL product range for intended application
3. Customer should take safety precaution with regards to high voltage/ current etc.. (i.e, should not apply more than the specified limits)
4. EAPL is not responsible for consequential damage out of use of its products.

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