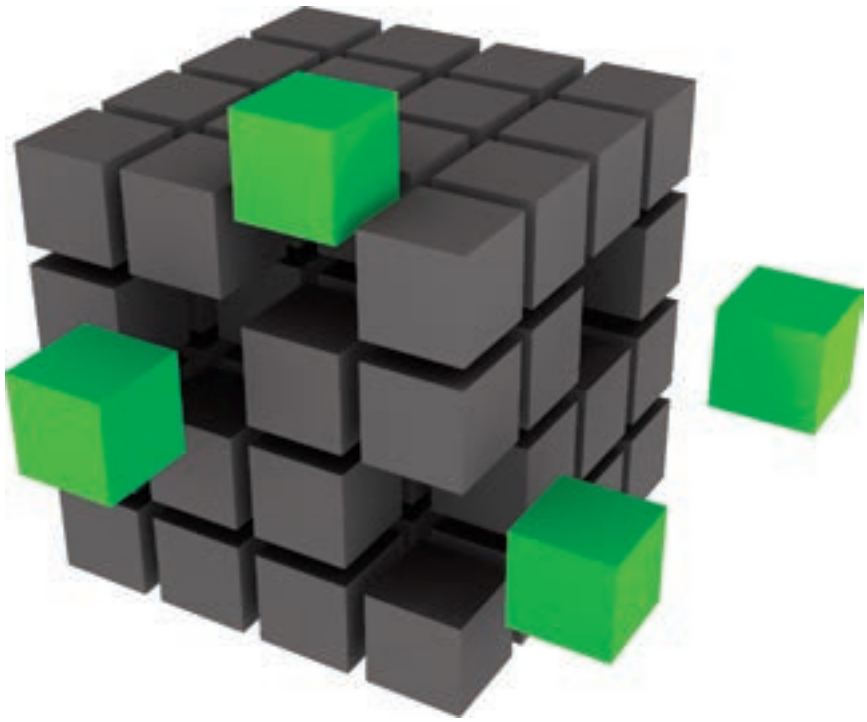
GIC

PRODUCT CATALOGUE



Timers | Time Switches | Hour Meters & Counters | Logic Controllers | Power Supplies
Converters and Transducers | Isolated Relay Modules | Monitoring Devices | Temperature Controllers

General Industrial Controls Private Limited

General Industrial Controls Private Limited (GIC), is offering services as a well established manufacturer and exporter of Process Control and Automation products with unparalleled sophistication and expertise. We are an ISO 9001:2008, TS 16949 certified company with International approvals like cULus. Our products are Eco-friendly, RoHS compliant and CE certified. Brand **"GIC"** has been built on this strong foundation over the past four decades signifying reliability, quality and value for money.

Our product categories include **1)** Lighting Automation: Time Switches and Lighting Management Console **2)** Process Control: Timers, Smart Relays, Mini PLCs, GSM Controller, Protocol Converters, Interface Converters, Signal Transducer, Isolated Relay Modules, Power Supplies, Temperature Controllers **3)** Low Voltage Protection and Switchgear: Voltage, frequency and Current Monitoring Devices, Earth Leakage Relays, Temperature Monitoring devices & Liquid Level Controllers **4)** Instrumentation: Hour Meters, Impulse Counters **5)** Injection Moulded Plastic Components for various applications.

I N D E X

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I N D E X

TIMERS

Digital Timer *Eliro*®

- Compact 17.5 mm Wide
- Multi Function: (8 or 18) Non Signal & Signal based functions
- Multi-Voltage: 24 - 240 VAC/DC
- Wide Timing Range: 0.1s to 999 Hr
- 3 Digit LCD for Preset time and Run time
- Option to select Up/Down counting
- Tamper proof with key lock feature

Ordering Information

Cat. No.	Description
V0DDTS	24 - 240 VAC/DC, Multi Function Digital Timer - Eliro (8 Functions), 1 C/O
V0DDTD	24 - 240 VAC/DC, Multi Function Digital Timer - Eliro (8 Functions), 2 NO
V0DDTS1	24 - 240 VAC/DC, Multi Function Digital Timer - Eliro (18 Functions), 1 C/O
V0DDTD1	24 - 240 VAC/DC, Multi Function Digital Timer - Eliro (18 Functions), 2 NO

Digital Timer *Eliro*®

Cat. No.	V0DDTS	V0DDTD	V0DDTS1	V0DDTD1
Parameters				
Timer Description	Multi Function Digital Timer			
Functions	1) ON Delay 2) Cyclic OFF/ON 3) Cyclic ON/OFF 4) Signal ON/OFF 5) Signal OFF Delay 6) Interval 7) Signal OFF/ON 8) One Shot Output		1) ON Delay 2) Cyclic OFF/ON 3) Cyclic ON/OFF 4) Impulse on Energizing 5) Accumulative Delay on Signal 6) Accumulative Delay on Inverted Signal 7) Accumulative Impulse on Signal 8) Signal ON Delay 9) Inverted Signal ON Delay 10) Signal OFF Delay 11) Impulse ON/OFF 12) Signal OFF/ON 13) Leading Edge Impulse 1 14) Leading Edge Impulse 2 15) Trailing Edge Impulse 1 16) Trailing Edge Impulse 2 17) Delayed Impulse 18) Inverted Signal ON Delay	
Supply Voltage (⏚)	24 - 240 VAC/DC			
Supply Variation	-15% to +10% (of ⏚)			
Frequency	50/60 Hz			
Power Consumption (Max.)	0.5 VA (@ 24/48 VAC), 4 VA (@ 110 to 265 VAC/DC)			
Timing Range	0.1s to 999h			
Reset Time	200 ms (Max.)			
Repeat Accuracy	± 0.5%			
Output – Relay Output	1 C/O	2 NO	1 C/O	2 NO
Output – Contact Rating	8A @ 240 VAC / 24 VDC (Resistive)			
Output – Electrical Life	$1x10^5$			
Output – Mechanical Life	$2x10^7$			
Utilization Category – AC - 15	Rated Voltage (Ue): 125/240 V, Rated Current (Ie): 3/1.5 A			
Utilization Category – DC - 13	Rated Voltage (Ue): 125/250 V, Rated Current (Ie): 2/0.22/0.1 A			
Operating Temperature Storage Temperature	-10° C to +55° C -20° C to +65° C			
Humidity (Non Condensing)	95% (Rh)			
LED Indication	Red LED →Relay ON			
Enclosure	Flame Retardant UL94-V0			
Dimension (W x H x D) (in mm)	18 X 85 X 76			
Weight (unpacked) Approx.	85 g			
Mounting	DIN Rail			
Certification	CE, cULus LISTED, RoHS Compliant			
Degree of Protection	IP 20 for Terminals, IP 30 for Enclosure			

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Digital Timer *Eliro*®

FUNCTIONAL DIAGRAMS FOR V0DDTS & V0DDTD

: Supply Voltage, S: Input Signal, R: Relay Output
T: Preset Time, TON: Preset ON Time, TOFF: Preset OFF Time

ON DELAY (A)

On application of supply voltage, the preset time duration (T) starts. On completion of the preset time, the output is switched ON and remains ON till the supply voltage is present

CYCLIC OFF/ON {OFF Start, (Sym, Asym)} (b)

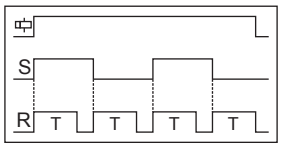
On application of supply voltage, the output is initially switched OFF for the preset 'OFF' time duration (TOFF) after which it is switched ON for the preset 'ON' time duration (TON). This cycle repeats and continues till the supply is present.

CYCLIC ON/OFF {ON Start, (Sym, Asym)} (C)

On application of supply voltage, the output is initially switched ON for the preset 'ON' time duration (TON) after which it is switched OFF for the preset 'OFF' time duration (TOFF). This cycle repeats and continues till the supply is present.

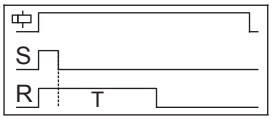
SIGNAL ON/OFF (d)

The output relay is turned ON for Preset Time (T) whenever the Signal(S) is applied or removed.



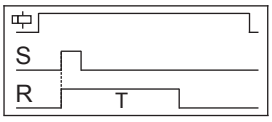
SIGNAL OFF DELAY (E)

On application of supply voltage and input signal, the output is switched ON. When the signal is removed the preset time duration commences & the output is switched OFF at the end of the time duration.



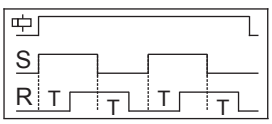
INTERVAL (F)

When supply power is applied to the timer and on application of input signal the output is immediately switched ON. The output remains ON for the preset time duration (T) after which it is switched OFF.



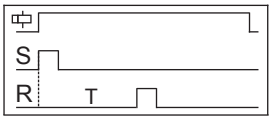
SIGNAL OFF / ON (G)

When Signal (S) is applied or removed, the relay changes its state after Timer Duration (T)



ONE SHOT OUTPUT (H)

When Signal (S) is applied, the Timer Duration (T) starts. At the end of Timer duration (T), the relay gets energized for approximately 1 sec.(Refer Note : 2)



Note: 1. For Power-On operation, connect the terminal B1 to A1 permanently.
2. If the Signal (S) changes during the Timer Duration (T), it does not change the output relay but re-triggering takes places and the Timer Duration is extended.

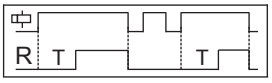
Digital Timer *Eliro*®

FUNCTIONAL DIAGRAMS FOR V0DDTS1 & V0DDTD1

: Supply Voltage, S: Input Signal, R: Relay Output
T: Preset Time, TON: Preset ON Time, TOFF: Preset OFF Time

ON DELAY [0]

On application of supply voltage, the preset time duration (T) starts. On completion of the preset time, the output is switched ON and remains ON till the supply voltage is present.



CYCLIC OFF/ON {OFF Start, (Sym, Asym)} [1]

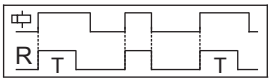
On application of supply voltage, the output is initially switched OFF for the preset 'OFF' time duration (TOFF) after which it is switched ON for the preset 'ON' time duration (TON). This cycle repeats and continues till the supply is present.

CYCLIC ON/OFF {ON start, (Sym, Asym)} [2]

On application of supply voltage, the output is initially switched ON for the preset 'ON' time duration (TON) after which it is switched OFF for the preset 'OFF' time duration (TOFF). This cycle repeats and continues till the supply is present.

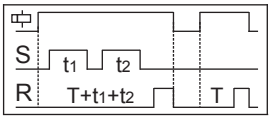
IMPULSE ON ENERGIZING [3]

On application of supply voltage, the output is instantly switched ON for the preset time duration (T) after which it is switched OFF.



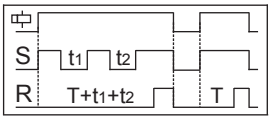
ACCUMULATIVE DELAY ON SIGNAL [4]

On application of supply voltage, the preset timing duration commences. When input signal is applied, the timing pauses and resumes only when the input signal is removed. The output is switched ON at the end of the preset time duration (T).



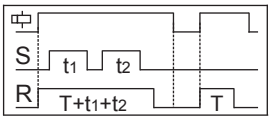
ACCUMULATIVE DELAY ON INVERTED SIGNAL [5]

On application of supply voltage and input signal, the preset timing duration commences. When the signal is removed the timing pauses and resumes when the signal is applied. The output is switched ON at the end of the preset time duration (T).



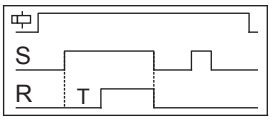
ACCUMULATIVE IMPULSE ON SIGNAL [6]

On application of supply voltage the output is switched ON & the preset timing duration commences. When the signal is applied the timing pauses and resumes when the signal is removed. The output is switched OFF at the end of the preset time duration (T).



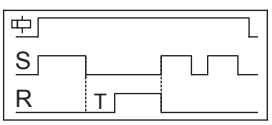
SIGNAL ON DELAY [7]

On application of input signal, the preset time duration (T) starts. On completion of the preset time, the output is switched ON and remains ON till the input signal is present



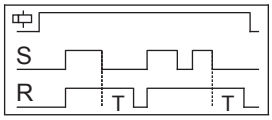
INVERTED SIGNAL ON DELAY [8]

On application of supply voltage, the preset time duration (T) starts. When input signal is applied, the timing pauses & resumes only when the signal is removed. On completion of the preset time, the output is switched ON.



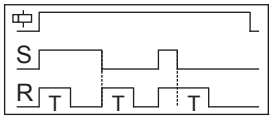
SIGNAL OFF DELAY [9]

On application of supply voltage and input signal, the output is switched ON. When the signal is removed the preset time duration commences & the output is switched OFF at the end of the time duration.



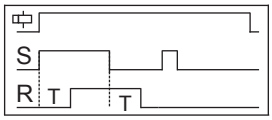
IMPULSE ON/OFF [A]

On application or removal of input signal, the output is switched ON & the preset time duration (T) starts. On completion of the time duration the output is switched OFF. When timing commences, changing the state of the input signal resets the time.



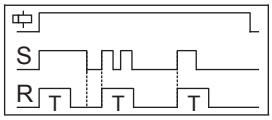
SIGNAL OFF/ON [b]

On application of input signal, the preset delay time period (T) starts. On completion of the preset time, the output is switched ON. On removal of input signal, the preset time period starts again and the output is switched ON when the preset time duration is complete.



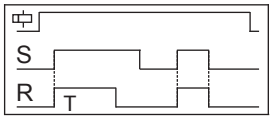
LEADING EDGE IMPULSE1 [C]

On application of input signal the output is immediately switched ON. The output remains ON for the preset time duration (T) after which it is switched OFF. If the input signal is removed during the preset time, the output remains unaffected.



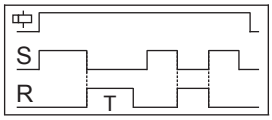
LEADING EDGE IMPULSE2 [d]

On application of input signal the output is immediately switched ON. The output remains ON for the preset time duration (T) after which it is switched OFF. If the input signal is removed during the preset time, the output is immediately switched OFF.



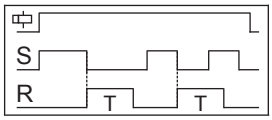
TRAILING EDGE IMPULSE1 [E]

When the input signal to the timer is removed, the output is immediately switched ON for the preset time duration (T) after which it is switched OFF. If the input signal is applied during the preset time, the output is immediately switched OFF.



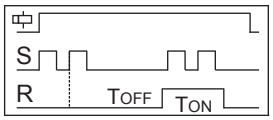
TRAILING EDGE IMPULSE2 [F]

When the input signal to the timer is removed, the output is immediately switched ON for the preset time duration (T) after which it is switched OFF. If the input signal is applied during the preset time, the output remains unaffected.



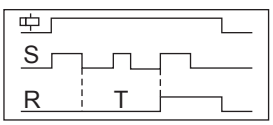
DELAYED IMPULSE [G]

On application of input signal, the preset 'OFF' time duration (TOFF) starts. the output is switched ON at the end of the preset 'OFF' time duration & the preset 'ON' time duration commences irrespective of signal level and remains ON till the completion of 'TON'.



INVERTED SIGNAL ON DELAY-TYPE 2 [H]

Timing starts only upon signal 'S' transition high to low. During timing or after completion of Time (i.e. relay on), any signal transition is ignored. To reset the timer supply has to be interrupted.



Programmable Digital Timer *Eliro*®

- Digital 7-Segment display Supply Voltage range of 110-240 VAC
- Input Signal Sensing range of 85-265 VAC/100-265 VDC & 20-60 VAC/DC
- Inbuilt library of 33 functions covering majority applications
- Easy steps to program customized functions
- Suitable for Panel and Base/DIN mounting
- Two separate Channel outputs with selectable Timer modes
- Wide timing range - 0.1 Sec. to 999 Days
- Tamper proof with key lock feature
- Provision to edit Preset time during Run time
- Provision to save two independent functional Profiles (P1 & P2)

Ordering Information

Cat. No.	Description
V7DFTS3	110 - 240 VAC, Multi Function Digital Timer - Eliro (33 Functions), 2 C/O
V7DDSS3	110 - 240 VAC, Multi Function Digital Timer - Eliro (33 Functions), 2 C/O, 11 Pin Universal socket

Programmable Digital Timer *Eliro*®

Cat. No.	V7DFTS3	V7DDSS3
Parameters		
Timer Description	Programmable Multi Function Digital Timer	
Default Functions	1) On delay 2) On delay constant supply type 2 3) On delay constant supply type 3 4) On delay (control switch resettable) 5) Signal on delay 6) Inverted signal on delay 7) Inverted signal on delay type 2 8) Signal off delay 9) Off delay const. supply type 2 10) Cyclic on/off 11) Cyclic off/on 12) Asymmetric cycle pulse start 13) Asymmetric recycler pulse start type 2 14) Signal on off delay 15) Signal on off delay type 2 16) Signal off/on (new)	17) Impulse on energizing 18) Impulse on/off 19) Accumulative delay on signal 20) Accumulative delay on inverted signal 21) Accumulative impulse on signal 22) Leading edge impulse 23) Leading edge impulse 2 24) Trailing edge impulse 25) Trailing edge impulse 2 26) Delayed impulse 27) Delayed impulse type 2 28) Delayed pulse (constant supply) 29) Delayed pulse (remote trig.) 30) Delayed pulse (const. supply type 1) 31) On pulse (control switch resettable) 32) On pulse (supply reset)mode 33) Leading edge bi-stable or step relay
Supply Voltage (⏚)	110 - 240 VAC	
Supply Variation	-20% to +10% (of ⏚)	
Frequency	47-63 Hz	
Power Consumption (Max.)	9 VA	
Timing Range	0.1s to 999 days	
Reset Time/Initiate Time	200 ms (Max.) / 100 ms (Max.)	
Input Signals/Signal Isolation	High Range: 85-265V AC/ 100-265V DC, Low Range: 24-60V AC/DC / 2 KV	
Signal Sensing Time/ Wait Period	50ms. (max.) / 100ms @ Power On & for signal based modes only.	
Timing Accuracy	± 0.01%	
Output – Relay Output	2 C/O	
Output – Contact Rating	5A for NO & 3A for NC @ 250VAC/30VDC (Resistive.)	
Output – Electrical Life	$1x10^5$	
Output – Mechanical Life	$5x10^6$	
Utilization Category – AC - 15	250V AC/2A, Cos Ø = 0.6, 85ºc, 100000 Operations.	
Utilization Category – DC - 13	Ue rated voltage V – 24; Ie rated current A – 2.0.	
Operating Temperature	-5° C to +55° C	
Storage Temperature	-10° C to +60° C	
Humidity (Non Condensing)	95% (Rh)	
LED Indication	SV (Red) - Set Value; P1/P2 (Red) -P1 Running; Up/Down (Red)-Up Counting; SG (Green)- Signal Present;OP1 (Red)-Relay OP1 ON;OP2 (Red)-Relay OP2 ON;	
Enclosure	IP 30 for Housing & front Facial and IP 20 for Terminals	
Dimension (W x H x D) (in mm)	48 X 48 X 92.5	
Weight (unpacked)	160 g	
Mounting	Panel / Flush Mountable	Base / DIN Rail with 11 Pin Universal socket
Certification	CE, cULus LISTED, RoHS Compliant	
Degree of Protection	IP 20 for Terminals, IP 30 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Programmable Digital Timer *Eliro*®

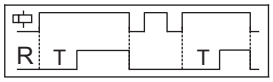
FUNCTIONAL DIAGRAMS

: Supply Voltage, S: Input Signal, R: Relay Output

T: Preset Time, TON: Preset ON Time, TOFF: Preset OFF Time, T-a: Timing Break Before completion

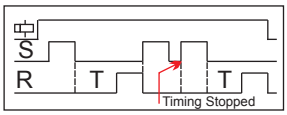
ON DELAY [00]

On application of supply voltage, the preset time duration (T) starts. On completion of the preset time, the output is switched ON and remains ON till the supply voltage is present.



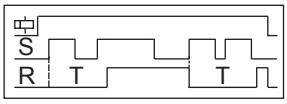
ON DELAY CONSTANT SUPPLY TYPE 2 [01]

Timing will commence when the supply is present and input signal is not applied. After the time period has elapsed, output is switched ON. If signal is applied then the timing period stops. Timing will restart only when signal is removed. Therefore there are two methods this timer can be controlled, either by application or removal of signal input and with the interruption of the supply voltage to the timer with signal removal.



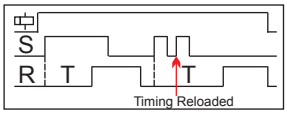
ON DELAY CONSTANT SUPPLY TYPE 3 [02]

A permanent supply is required. The timing period starts when the signal is applied and will continue irrespective of any further changes to signal input. After the time period has elapsed output is switched ON. Signal change has no effect during timing period. To reset the timer, signal must be removed and then applied.



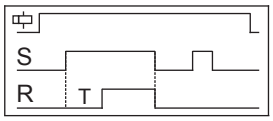
ON DELAY (CONTROL SWITCH RESETTABLE) [03]

When the supply is connected and signal is applied, the timing function starts. If signal is removed and applied during the preset timing then timing is restarted and output stays OFF. After preset time has elapsed the output is ON.



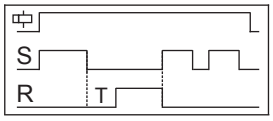
SIGNAL ON DELAY [04]

On application of input signal, the preset time duration (T) starts. On completion of the preset time, the output is switched ON and remains ON till the input signal is present.



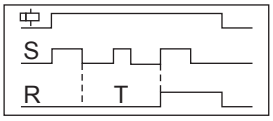
INVERTED SIGNAL ON DELAY [05]

On application of supply voltage, the preset time duration (T) starts. When input signal is applied, the timing pauses & resumes only when the signal is removed. On completion of the preset time, the output is switched ON.



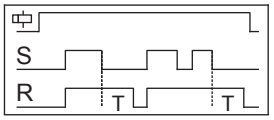
INVERTED SIGNAL ON DELAY-TYPE 2 [06]

Timing starts only upon signal 'S' transition high to low. During timing or after completion of Time (i.e. relay on), any signal transition is ignored. To reset the timer supply has to be interrupted.



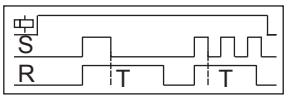
SIGNAL OFF DELAY [07]

On application of supply voltage and input signal, the output is switched ON. When the signal is removed the preset time duration commences & the output is switched OFF at the end of the time duration.



OFF DELAY CONST. SUPPLY TYPE 2 [08]

A permanent supply is required. When the input signal is applied the output is switched ON immediately. When input signal is removed the timing period starts. After the time period has elapsed output is switched OFF. Once the timing period has started further actions of input signal will have no effect. However once the timing cycle has been completed the process may be started again applying input signal. While the timer is executing the only way to reset the timer is to interrupt the supply.



CYCLIC ON/OFF {ON start, (Sym, Asym)} [09]

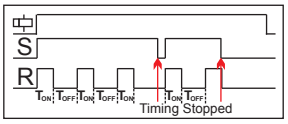
On application of supply voltage, the output is initially switched ON for the preset 'ON' time duration (TON) after which it is switched OFF for the preset 'OFF' time duration (TOFF). This cycle repeats and continues till the supply is present.

CYCLIC OFF/ON {OFF Start, (Sym, Asym)} [10]

On application of supply voltage, the output is initially switched OFF for the preset 'OFF' time duration (TOFF) after which it is switched ON for the preset 'ON' time duration (TON). This cycle repeats and continues till the supply is present.

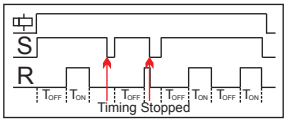
ASYMMETRIC CYCLE PULSE START [11]

A permanent supply is required. The timer function is triggered by the input signal. When input signal applied the output is switched ON while the first preset time period (TON) elapses. Once this time period (TON) has elapsed output is switched OFF for the second preset time (TOFF) period. Once this second time period (TOFF) had elapsed then output switched ON and the cycle will start from the beginning again. If input signal is removed during timing (TON or TOFF) the cycle will stop and output is switched OFF, cycle will start with output ON state when the input signal applied again



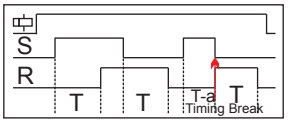
ASYMMETERIC RECYCLER PULSE START TYPE 2 [12]

A permanent supply is required. The timer function is triggered by input signal. When input signal is applied the output is switched OFF while the first preset time period (TOFF) elapses. Once this time period has elapsed output is switched ON for the second preset time period (TON). Once this second time period (TON) had elapsed then output is switched OFF and the cycle will start from the beginning again. If input signal is removed during timing (TON or TOFF) the cycle will stop and output is switched OFF, cycle will start with output OFF state when the input signal applied again.



SIGNAL ON OFF DELAY [13]

On application of signal the preset time (T) starts. After this preset time has elapsed, output is switched ON. During this timing, if signal is removed then output is switched ON immediately and OFF delay is started. Once this time period has elapsed the output is switched OFF. During this OFF delay if signal is reapplied the output switched OFF immediately and ON Delay restarted.



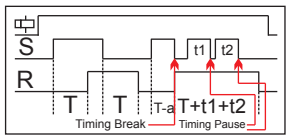
Programmable Digital Timer *Eliro*®

FUNCTIONAL DIAGRAMS

⊏⊐: Supply Voltage, S: Input Signal, R: Relay Output

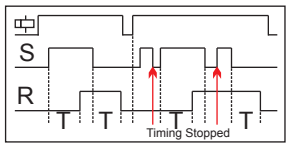
T: Preset Time, TON: Preset ON Time, TOFF: Preset OFF Time

SIGNAL ON OFF DELAY TYPE 2 [14]



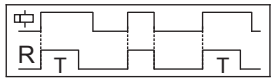
On application of signal the preset time (T) starts. After this preset time has elapsed, output is switched ON. During this timing, if signal is removed then output is switched ON immediately and preset timing is restarted. Removing the signal during this timing suspends timing but does not reset the time sequence. Timing will resume immediately when signal is applied. Therefore, total time taken before the delayed contact changes state is the preset time plus any time that the signal is removed. Once this time period has elapsed the output is switched OFF.

SIGNAL OFF/ON [15]



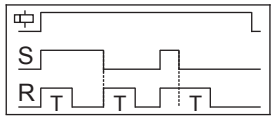
On application of input signal, the preset delay time period (T) starts. During this timing if signal is removed then timing is stopped and timing will be restarted when signal applied again. After this time period has elapsed output is switched ON. On removal of input signal, the preset time period starts again & the output is switched OFF when the preset time duration is complete. Output stays OFF until supply voltage has been interrupted.

IMPULSE ON ENERGIZING [16]



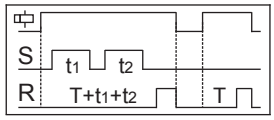
On application of supply voltage, the output is instantly switched ON for the preset time duration (T) after which it is switched OFF.

IMPULSE ON/OFF [17]



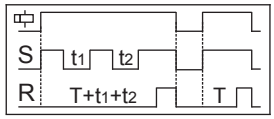
On application or removal of input signal, the output is switched ON & the preset time duration (T) starts. On completion of the time duration the output is switched OFF. When timing commences, changing the state of the input signal resets the time.

ACCUMULATIVE DELAY ON SIGNAL [18]



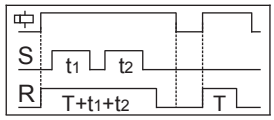
On application of supply voltage, the preset timing duration commences. When input signal is applied, the timing pauses and resumes only when the input signal is removed. The output is switched ON at the end of the preset time duration (T).

ACCUMULATIVE DELAY ON INVERTED SIGNAL [19]



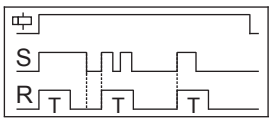
On application of supply voltage and input signal, the preset timing duration commences. When the signal is removed the timing pauses and resumes when the signal is applied. The output is switched ON at the end of the preset time duration (T).

ACCUMULATIVE IMPULSE ON SIGNAL [20]



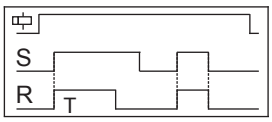
On application of supply voltage the output is switched ON & the preset timing duration commences. When the signal is applied the timing pauses and resumes when the signal is removed. The output is switched OFF at the end of the preset time duration (T).

LEADING EDGE IMPULSE1 [21]



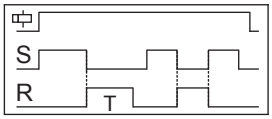
On application of input signal the output is immediately switched ON. The output remains ON for the preset time duration (T) after which it is switched OFF. If the input signal is removed during the preset time, the output remains unaffected.

LEADING EDGE IMPULSE2 [22]



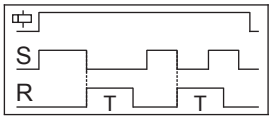
On application of input signal the output is immediately switched ON. The output remains ON for the preset time duration (T) after which it is switched OFF. If the input signal is removed during the preset time, the output is immediately switched OFF.

TRAILING EDGE IMPULSE1 [23]



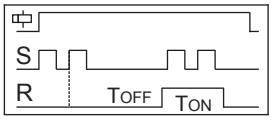
When the input signal to the timer is removed, the output is immediately switched ON for the preset time duration (T) after which it is switched OFF. If the input signal is applied during the preset time, the output is immediately switched OFF

TRAILING EDGE IMPULSE2 [24]



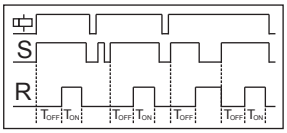
When the input signal to the timer is removed, the output is immediately switched ON for the preset time duration (T) after which it is switched OFF. If the input signal is applied during the preset time, the output remains unaffected

DELAYED IMPULSE [25]



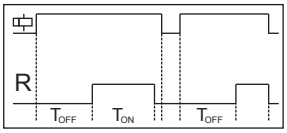
On application of input signal, the preset 'OFF' time duration (TOFF) starts. the output is switched ON at the end of the preset 'OFF' time duration & the preset 'ON' time duration commences irrespective of signal level and remains ON till the completion of 'ToN'.

DELAYED IMPULSE TYPE 2[26]



A permanent supply is required. When signal is applied the output will remain OFF while the first preset time period (TOFF) elapses. Once this time period has elapsed the output is switched ON for the second preset time period (TON). Once this second time period (TON) had elapsed then output is switched OFF and cycle stops. Output stays OFF until supply voltage has been interrupted. During timing period (TON or TOFF) if signal is removed then output is switched OFF and the cycle stops, cycle will start with output OFF state when the input signal applied again.

DELAYED PULSE (CONSTANT SUPPLY) POWER BASED [27]



The timing period (TOFF) starts when the supply is applied to the timer. After the preset has elapsed output is switched ON for the preset pulse (TON) duration. To reset the timer the supply has to be interrupted. If this interruption occurs during the pulsed output (TON) then the output is switched OFF and the timer will reset.

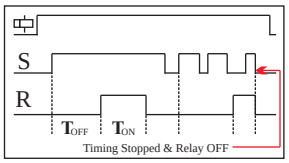
Programmable Digital Timer *Eliro*®

FUNCTIONAL DIAGRAMS

⊕: Supply Voltage, S: Input Signal, R: Relay Output

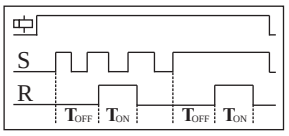
T: Preset Time, TON: Preset ON Time, TOFF: Preset OFF Time

DELAYED PULSE (REMOTE TRIG.) [28]



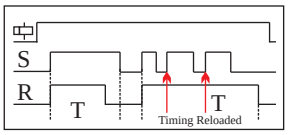
The timing period (TOFF) will start when input signal is applied with the supply connected. After preset time (TOFF) has elapsed the output is switched ON for the per-selected pulse (TON) duration. To reset the timer either input signal needs to be removed or supply has to interrupt. If this action occurs during the pulsed output cycle (TON) then output is switched OFF and the timer will reset.

DELAYED PULSE (CONST. SUPPLY TYPE 1) [29]



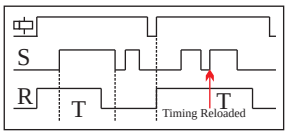
Supply to the unit must be continuous. On application of input signal the time period 'TOFF' starts to run. On completion of 'TOFF', the relay output is switched ON immediately and the time period 'TON' starts to run. On completion of 'TON' the output is switched OFF. The input signal has no effect until' TOFF' + ' TON' have completely expired.

ON PULSE (CONTROL SWITCH RESETTABLE) / WATCH DOG TYPE [30]



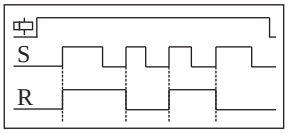
When the supply is connected and signal is applied, output is switched ON and the timing function starts. If signal is removed and applied during the preset timing then timing is restarted and output stays ON. After preset time(TON) has elapsed the output is switched OFF

ON PULSE (SUPPLY RESET)[31]



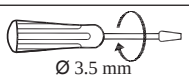
On application of supply voltage the output is switched ON. The first pulse of input signal starts the preset time period. Receiving pulses during the time period extends it and output stays ON. Receiving no signal pulses during the time period completes it and output is switched OFF. Output stays OFF until supply voltage has been interrupted.

LEADING EDGE BI-STABLE OR STEP RELAY [32]

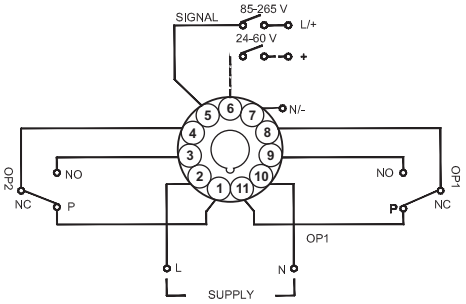


After every signal, the output contact changes their states, alternately switching from open to close and vice versa.

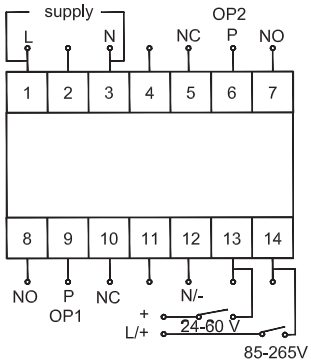
TERMINAL TORQUE & CAPACITY

 Ø 3.5 mm	0.50 N.m (4.5 Lb.in)
	1 x 1.5 mm² Solid/Stranded Wire
AWG	1 x 26 to 14

CONNECTION DIAGRAM

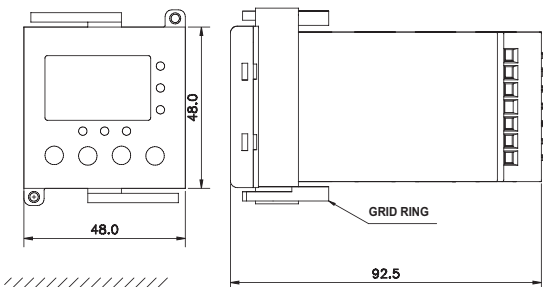


DIN / SOCKET / BASE MOUNT

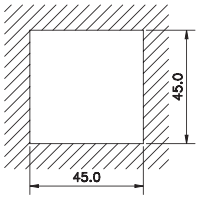


PANEL / FLUSH MOUNT

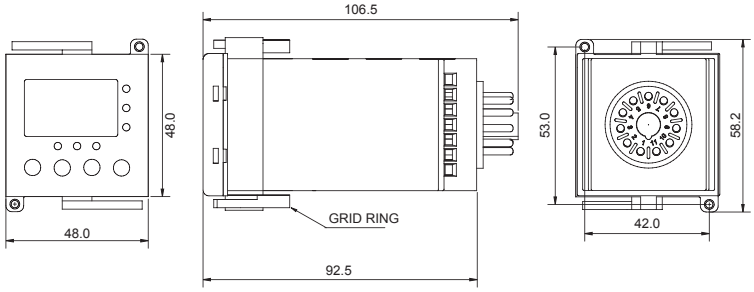
MOUNTING DIMENSIONS (mm)



V7DFTS3



PANEL CUTOUT



V7DDSS3

Electronic Timer - Series Staircase

- Multi Function/Mono Function Staircase Timer in compact 17.5mm
- Time Range: 0.5min - 20min
- Long Run mode with Time range from 0.5h - 20h
- Functions with Pre-Warning, Cut-Off & Release Delay
- Maintenance Mode available
- Switch indications (Glow-lamps / Pilot lamps) upto 50 mA
- 3 Wire & 4 Wire Configurations

Ordering Information

27☐ ☐ ☐ 3 B ☐

Casing Colour
- B Casing: White & Knob: Red
- C Casing: Dark Grey & Knob: Green

Mode
- 1 C Multi Mode
- 2 B Mono Mode

Output Relay Contact
- 1 1 'NO', 16A, 120A/20ms (Peak Inrush Current)
- 2 1 'NO', 16A, 80A/20ms (Peak Inrush Current)

*** For Mono Mode the available mode is 'Timing Step with Release Delay & Cut-Off'**

Electronic Timer - Series Staircase

Cat. No.		27B1C3B1
Parameters		
Timer Description		**Staircase Timer**
Modes		1) Staircase Relay 2) Staircase Relay with Pre-Warning 3) Staircase Relay with Cut-Off 4) Staircase Relay with Cut-Off & Pre-Warning 5) Timing Step with Release Delay & Cut-Off 6) Timing Step with Release Delay, Cut-Off & Pre-Warning 7) Long Run 8) Long Run with Pre-Warning 9) Step Relay 10) Permanent ON 11) Maintenance Mode
Supply Voltage (⏚)		230 VAC
Supply Variation		- 25% to +15% (of ⏚)
Frequency		50 Hz
Power Consumption (Max.)		3 VA
Timing Ranges		0.5m, 2m, 4m, 6m, 9m, 15m, 20m (The unit will change from minutes to hours for 'Long Run' modes)
Reset Time		500 ms (Max.)
Signal Sensing Time		40 ms < Ts < 5 s (For modes 1, 2, 3, 4, 5, 6, 9) & Ts ≥ 5s (For modes 7, 8, 11)
Maintenance Mode		If the Relay is 'OFF' and the signal is present for 5 sec or more (Ts ≥5 s), the timer will enter 'Maintenance mode'
Setting Accuracy Repeat Accuracy		± 5% of Marking ± 1%
Output	Relay Output	1 NO (Pole is internally shorted with 'Live')
	Contact Rating	16A @ 230 VAC (Resistive)
	Electrical Life	$1X10^5$
	Mechanical Life	$5X10^6$
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A
Operating Temperature Storage Temperature		-10°C to +60°C -15°C to +70°C
LED Indication		Green LED → Power ON, Yellow LED → Relay ON
Enclosure		Flame Retardant UL94-V0
Dimension (W x H x D) (in mm)		18 X 85 X 65
Weight (unpacked)		70 g
Mounting		DIN Rail
Certification		CE RoHS Compliant
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

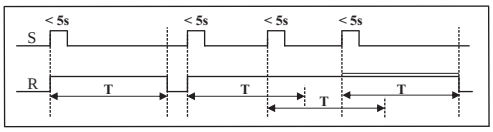
Electronic Timer - Series Staircase

FUNCTIONAL DIAGRAM

S: Supply, R: Relay Output, T: Preset Time, t: 10 seconds

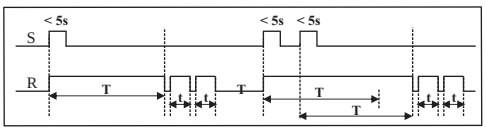
1. STAIRCASE RELAY

On initial signal, the output closes & timing starts for the preset duration. Subsequent signals during the run time will extend the time duration by the full preset value.



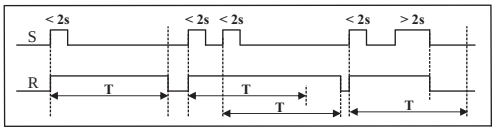
2. STAIRCASE RELAY WITH PRE-WARNING

On Initial Signal, the output is switched ON & timing starts for the preset duration. On completion of the set time duration the output blinks once & after a delay of 10 seconds, it blinks twice. After a further delay of 10 seconds, the output is switched OFF. Any signal during the run time or the pre-warning period will extend the time duration by the value indicated on the timer during run time.



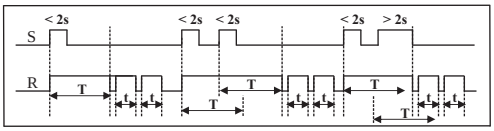
3. STAIRCASE RELAY WITH CUT-OFF

On initial signal, the output closes & timing starts for the preset duration. Subsequent signals during the run time will extend the time duration by the full preset value. If a signal of duration more than 2 seconds is applied, the output contacts open instantly.



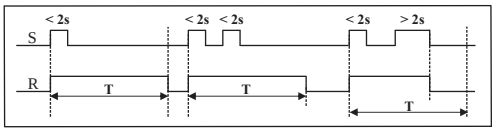
4. STAIRCASE RELAY WITH CUT-OFF & PRE-WARNING

On Initial Signal, the output is switched ON & timing starts for the set duration. On completion of the set time duration the output blinks once & after a delay of 10 seconds, it blinks twice. After a further delay of 10 seconds, the output is switched OFF. Any signal during the run time or the pre-warning period will extend the time duration by the value indicated on the timer during run time. If a signal of duration 2 seconds or more is applied, then the output is switched OFF after completion of the pre-warning period.



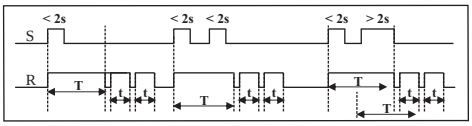
5. TIMING STEP WITH RELEASE DELAY & CUT-OFF

On initial signal, the output closes & timing starts for the preset duration. During run time, if a signal of duration less than 2 seconds is applied, it is ignored. If the duration is more than 2 seconds, the output contacts open instantly



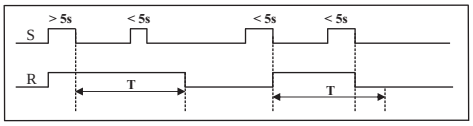
6. TIMING STEP WITH RELEASE DELAY & CUT-OFF & PRE-WARNING

On Initial Signal, the output is switched ON & timing starts for the set duration. On completion of the set time duration the output blinks once & after a delay of 10 seconds, it blinks twice. After a further delay of 10 seconds, the output is switched OFF. Any signal during the run time or the pre-warning period will extend the time duration by the value indicated on the timer during run time. If a signal of duration 2 seconds or more is applied, then the output is switched OFF after completion of the pre-warning period.



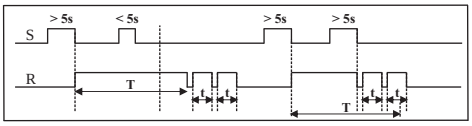
7. LONG RUN

On initial signal, the output closes & timing starts for the preset duration. On completion of the time duration the output contacts open. Any signal during the run time is ignored.



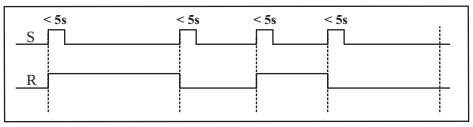
8. LONG RUN WITH PRE-WARNING

On Initial Signal, the output is switched 'ON' & timing starts for he preset duration. On completion of the set time duration theoutput blinks once & after a delay of 10 seconds, it blinks twice. After a further delay of 10 seconds, the output is switched OFF. During run time, if a signal of duration less than 5 seconds is applied, it is ignored. If the duration of the signal is 5 seconds or more, then output is switched OFF after completion of the pre warning period.



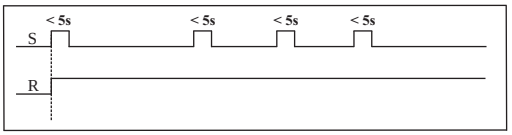
9. STEP RELAY

After every signal, the output changes state, alternately switching from open to closed & vice versa.



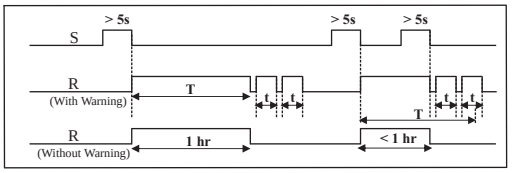
10. PERMANENT ON

In this mode the output contacts are permanently closed until the mode is changed and the device is reset.



11. MAINTENANCE MODE

If the relay is OFF and a signal of duration more than 5 seconds is applied, the maintenance mode is activated. In this mode the output contacts close for a duration of 60 minutes after which it opens. During this period if a signal of duration more than 5 seconds is applied, the maintenance mode is interrupted and the output contacts open. The mode can be activated from any one of the modes (Mode 1, 2, 3, 4, 5, 6, 9) provided that the output contacts are open initially.



Pre-Warning: On completion of the set time duration the output blinks once & again blinks twice after a delay of 10 seconds and the contacts open after a further delay of 10 seconds.

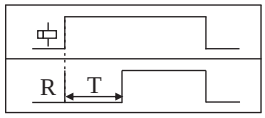
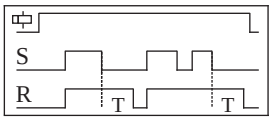
Electronic Timer - Series Micon® 175

- Compact 17.5mm Wide
- Integrated Dual Voltage
- Functions: ON Delay, Star Delta, One Shot
- Wide Time Range: 0.3s - 30h
- LED Indications for Power and Relay status
- Low Power Consumption

Ordering Information

Cat. No.	Description
11ODT4	110 VAC / 24 VAC/DC, ON Delay Timer, 1 C/O
12ODT4	240 VAC / 24 VAC/DC, ON Delay Timer, 1 C/O
15ODT4	12 VDC, ON Delay Timer, 1 C/O
11RDT4	110 VAC / 24 VAC/DC, Signal OFF Delay Timer, 1 C/O
12RDT4	240 VAC / 24 VAC/DC, Signal OFF Delay Timer, 1 C/O
15DDT4	12 VDC, Signal OFF Delay Timer, 1 C/O
11BDT4	110 VAC / 24 VAC/DC, One Shot Timer, 1 C/O
12BDT4	240 VAC / 24 VAC/DC, One Shot Timer, 1 C/O
15BDT4	12 VDC, One Shot Timer, 1 C/O

Electronic Timer - Series Micon® 175

Cat. No.			12ODT4	12RDT4
Parameters				
Timer Description			**ON Delay Timer**	**Signal OFF Delay Timer**
Mode			ON Delay	Signal OFF Delay
Functional Diagram				
Supply Voltage (⏚)			240 VAC / 24 VAC/DC	240 VAC / 24 VAC/DC
Supply Variation			- 20% to +10% (of⏚)	- 15% to +10% (of⏚)
Frequency			50/60 Hz	50/60 Hz
Power Consumption (Max.)			8 VA	8 VA
Timing Ranges			0.3s to 30h	0.3s to 30h
Reset Time			100 ms (Max.)	150 ms (Max.)
Setting Accuracy Repeat Accuracy			± 5% of Full scale ± 1%	
Output	Relay Output		1 C/O	
	Contact Rating		5A @ 240 VAC / 28 VDC (Resistive)	5A @ 240 VAC / 3A @ 30 VDC (Resistive)
	Electrical Life		$1X10^5$	
	Mechanical Life		$5X10^6$	
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
Operating Temperature Storage Temperature			-10°C to +55°C -20°C to +70°C	
Humidity (Non Condensing)			95% (Rh)	
LED Indication			Green LED →Power ON, Red LED → Relay ON	
Enclosure			Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)			17.5 X 90 X 58.5	
Weight (unpacked) Approx.			65 g	
Mounting			Base / DIN Rail	
Certification			CE RoHS Compliant	
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

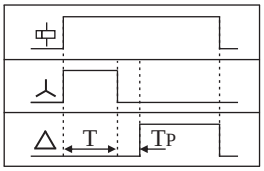
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Electronic Timer - Series Micon® 175

Ordering Information

Cat. No.	Description
11SDT0	110 VAC, Star Delta Timer, 1 NO (Star) + 1 NO (Delta)
12SDT0	240 VAC, Star Delta Timer, 1 NO (Star) + 1 NO (Delta)
14SDT1S	240-415V AC, Star Delta Timer, 1C/O (Star) + 1C/O (Delta), 3-30 Sec.

Electronic Timer - Series Micon® 175

Cat. No.		12SDT0
Parameters		
Timer Description		**Star Delta Timer**
Mode		Star Delta
Functional Diagram		
Supply Voltage (⏚)		240 VAC
Supply Variation		- 20% to +10% (of ⏚)
Frequency		50 Hz
Power Consumption (Max.)		8 VA
Timing Ranges		3s to 120s
Pause Time		60 ms
Reset Time		150 ms (Max.)
Setting Accuracy Repeat Accuracy		± 5% of Full scale ± 1%
Output	Relay Output	Star - 1 'NO', Delta - 1 'NO'
	Contact Rating	5A @ 240 VAC / 3A @ 30 VDC (Resistive)
	Electrical Life	$1X10^5$
	Mechanical Life	$5X10^6$
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A
Operating Temperature Storage Temperature		-10°C to +55°C -20°C to +70°C
Humidity (Non Condensing)		95% (Rh)
LED Indication		Red LED 1 → '人' ON, Red LED 2 → '△' ON
Enclosure		Flame Retardant UL94-V0
Dimension (W x H x D) (in mm)		17.5 X 90 X 58.5
Weight (unpacked)		60 g
Mounting		Base / DIN Rail
Certification		CE RoHS Compliant
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Electronic Timer - Series Micon® 175

- Multi Function: 10 Different (Non Signal & Signal based) Modes
- Wide Voltage range for both AC & DC
- Wide Time range: 0.1s - 100h
- LED Indications for Power and Relay status
- Independent settings for both ON Time & OFF Time
- Low Power Consumption

Ordering Information

Cat. No.	Description
1CMDT0	12 - 240 VAC/DC, Multi Function Timer (10 Modes), 1 C/O (RAL 7016 Casing)
1CJDT0	12 - 240 VAC/DC, Asymmetric Timer, 1 C/O (RAL 7016 Casing)

*Note: For RAL 7035 Casing, replace 0 by B in Cat. No.

Electronic Timer - Series Micon® 175

Cat. No.			1CJDT0	1CMDT0
Parameters				
Timer Description			**Asymmetric Timer**	**Multi Function Timer**
Modes			1) Asymmetric ON-OFF, 2) Asymmetric OFF-ON	1) Signal ON Delay 2) Cyclic ON/OFF 3) Cyclic OFF/ON 4) Signal OFF Delay 5) Signal OFF/ON 6) Accumulative Delay on Signal 7) Impulse ON/OFF 8) Leading Edge Impulse 9) Trailing Edge Impulse 10) Leading Edge Bi-stable
Derived Modes			N A	ON Delay, Interval
Supply Voltage (⏚)			12 - 240 VAC/DC	
Supply Variation			-15% to +10% (of ⏚)	
Frequency			50/60 Hz	
Power Consumption (Max.)			2 VA	
Timing Range			0.1s to 100h	
Reset Time			200 ms (Max)	
Setting Accuracy Repeat Accuracy			± 5% of Full scale ± 1%	
Output	Relay Output		1 C/O	1 C/O
	Contact Rating		8A @ 240 VAC / 5A @ 24 VDC (Resistive)	8A @ 240 VAC / 5A @ 24 VDC (Resistive)
	Electrical Life		$1X10^5$	
	Mechanical Life		$5X10^6$	
Utilization Category		AC - 15 DC - 13	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
Operating Temperature Storage Temperature			-10°C to +60°C -15°C to +70°C	
LED Indication			Green LED → Power ON, Amber LED → Relay ON	Green LED → Power ON, Yellow LED → Relay ON
Enclosure			Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)			18 X 85 X 65	
Weight (unpacked)			70 g	
Mounting			DIN Rail	
Certification			CE cULus LISTED RoHS Compliant	
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

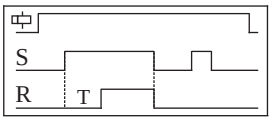
Electronic Timer - Series Micon® 175

FUNCTIONAL DIAGRAMS FOR 1CMDT0

⏚: Supply Voltage, S: Input Signal, R: Relay Output
T: Preset Time, TON: Preset ON Time, TOFF: Preset OFF Time

SIGNAL ON DELAY [stn]

On application of input signal, the preset delay time period starts. On completion of the preset time, the output is switched ON and remains ON till the input signal is present.



CYCLIC ON/OFF [cnf]

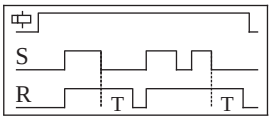
On application of supply voltage, the output is initially switched ON for the preset time duration (T) after which it is switched OFF for the same time duration (T). This cycle continues till the power supply is present.

CYCLIC OFF/ON [cfn]

On application of supply voltage, the output is initially switched OFF for the preset time duration (T) after which it is switched ON for the same time duration (T). This cycle continues till the power supply is present.

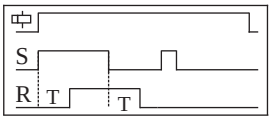
SIGNAL OFF DELAY [sf]

On application of input signal to the timer, the output is immediately switched ON. When the input signal is switched OFF, the preset time delay period starts. On completion of the time period the output is switched OFF.



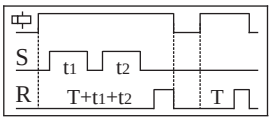
SIGNAL OFF/ON [sfn]

On application of input signal to the timer, the preset delay time period (T) starts. On completion of the time preset time, the output is switched ON When the input signal is switched OFF, again the preset time delay period (T) starts. On completion of the time period the output is switched OFF.



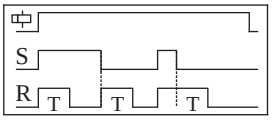
ACCUMULATIVE DELAY On SIGNAL [san]

On application of supply voltage, the preset delay time period starts. If input signal is applied during this period, the preset time stops and resumes only when the input signal is removed. On completion of the preset time, the output is switched ON.



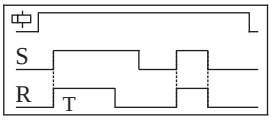
IMPULSE ON/OFF [inf]

On application or removal of input signal to the timer, the output is immediately switched ON for the preset time duration (T). If the state of the input signal is changed during the preset time, the output does not change state only the time is reset.



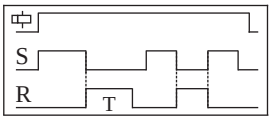
LEADING EDGE IMPULSE [iL]

When input signal is applied to the timer the output is immediately switched ON. The output remains ON for the preset time duration (T) after which it is switched OFF. If the input signal is removed during the preset time, the output is immediately switched OFF.



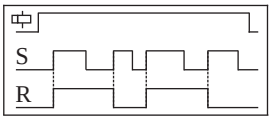
TRAILING EDGE IMPULSE [it]

When the input signal to the timer is removed, the output is immediately switched ON for the preset time duration (T) after which it is switched OFF. If the input signal is applied during the preset time, the output is immediately switched OFF.



LEADING EDGE BISTABLE [sbi]

On application of input signal to the timer, the output is switched ON and remains ON even after the input signal is removed. On subsequent application of input signal, the output keeps on changing its state.

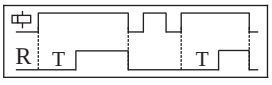


DERIVED MODES

Select mode, 'Signal ON Delay' and short the connection between A1 - B1 before power ON Select mode, 'Accumulative Delay ON Signal' and keep the connection between A1 - B1 open.

ON DELAY

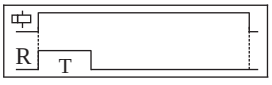
When supply power is applied to the timer, the preset delay time period starts. On completion of the preset time, the output is switched ON and remains ON till the input supply is present.



Select mode, "Leading Edge Impulse" and short the connection between A1 & B1.

INTERVAL

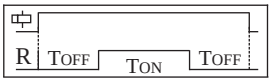
When supply power is applied to the timer, the output is instantly switched ON. On completion of the preset time, the output is switched OFF.



FUNCTIONAL DIAGRAMS FOR 1CJDT0

MODE A
ASYMMETRIC OFF-ON

On application of supply voltage, the output is initially switched OFF for the preset 'OFF' time duration (T) after which it is switched ON for the preset 'ON' time duration (T). This cycle repeats and continues till the supply is present. The ON time & OFF time are set independently.



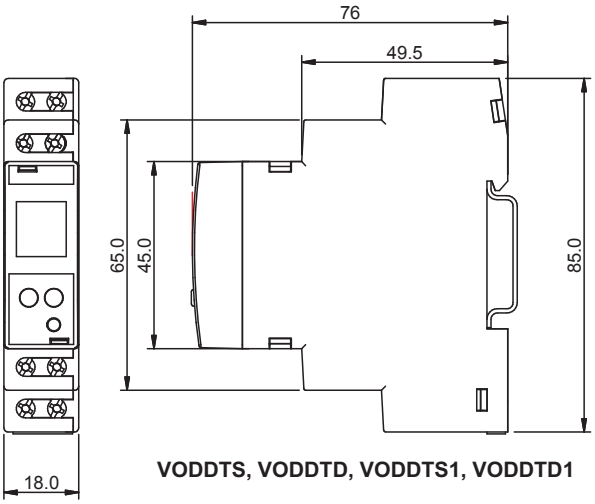
MODE B
ASYMMETRIC ON-OFF

On application of supply voltage, the output is initially switched ON for the preset 'ON' time duration (T) after which it is switched OFF for the preset 'OFF' time duration (T). This cycle repeats and continues till the supply is present. The ON time & OFF time are set independently.

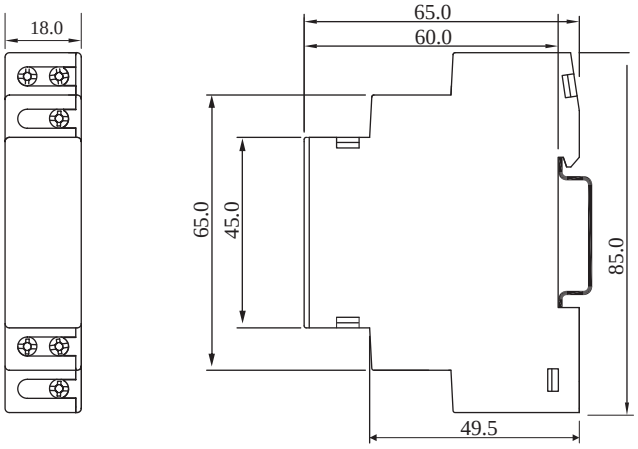
Note: Refer page number 25 for Connection Diagram

Electronic Timer - Series Micon® 175

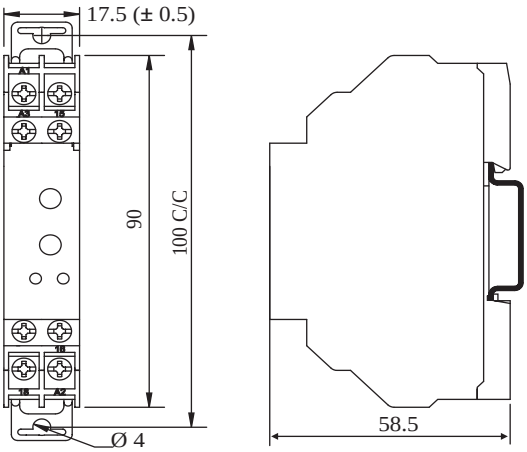
MOUNTING DIMENSIONS (mm)



VODDTS, VODDTD, VODDTS1, VODDTD1



1CMDT0, 1CJDT0, STAIRCASE TIMER



110DT4, 120DT4, 150DT4, 11SDT0, 12SDT0
11ODT8, 12ODT8, 11BDT4, 12BDT4, 15BDT4

TERMINAL TORQUE & CAPACITY

Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm² Solid/Stranded Wire
AWG	1 x 20 to 10

VODDTS, VODDTD, VODDTS1, VODDTD1

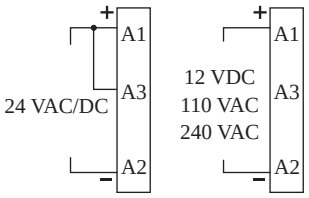
Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm² Solid/Stranded Wire
AWG	1 x 20 to 10

1CMDT0, 1 CJDT0, STAIRCASE TIMER

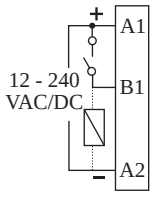
Ø 3.5 mm....5.0mm	0.80 N.m (7.1 Lb.in)
	2 x 2.5 mm² Solid/Stranded Wire
AWG	2 x 20 to 14

110DT4, 120DT4, 150DT4, 11SDT0, 12SDT0
11ODT8, 12ODT8, 11BDT4, 12BDT4, 15BDT4

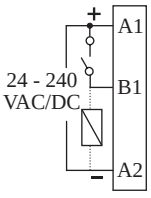
CONNECTION DIAGRAM



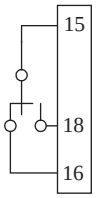
110DT4, 120DT4, 150DT4,
11SDT0, 12SDT0, 11ODT8,
12ODT8, 11BDT4, 12BDT4, 15BDT4



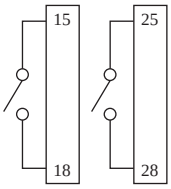
1CMDT0,
1CMDTB,
1CJDTB



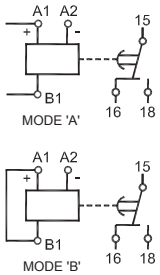
VODDTS, VODDTD,
VODDTS1, VODDTD1



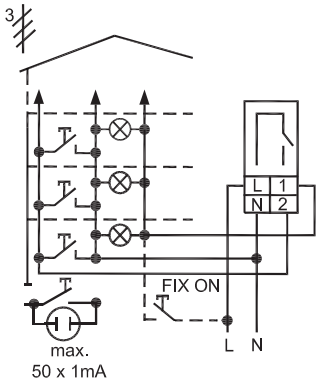
110DT4, 120DT4, 150DT4,
11SDT0, 12SDT0, 11ODT8,
12ODT8, 11BDT4, 12BDT4,
15BDT4,1CMDT0. 1CJDT0,
VODDTS, VODDTS1



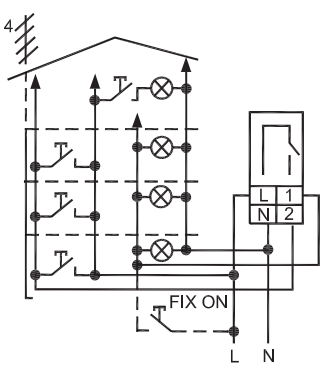
VODDTD, VODDTD1,
STAIRCASE TIMER



1CJDT0



3 Wire rising main without Loft illumination



4 Wire rising main without connection
for Loft illumination

STAIRCASE TIMER

Electronic Timer - Series Micon® 225
Signal Based Multi - Function

- Multi-function with Signal Start and Supply Start.
- 16 Timing Functions selected by DIP switch.
- Two independent relay outputs with either both relays timed or one timed and one instantaneous.
- Wide Input Signal & Supply range - 24-240V AC/DC.
- Wide Timing Range - 0.1 s to 120 days.
- High timing Accuracy.
- LED indicators for Power Supply & Relay Status.
- 22.5mm DIN Mount Housing.

Ordering Information

Cat. No.	Description
2A8DT6	24-240 VAC / DC, Signal Based Multi - Function, 1 C/O (Delayed) & 1 C/O (Configurable as either Delayed or Instant)

Electronic Timer - Series Micon® 225
Signal Based Multi - Function

Cat. No.	2A8DT6
Parameters	
Timer Description	**Multi-function with Signal Start and Supply Start**
Supply Voltage (⏚)	24-240 VAC / DC
Supply Variation	- 20% to +10% (of ⏚)
Frequency	50/60 Hz
Power Consumption (Max.)	3 VA
Initiate Time	100 ms (Max.)
Reset Time	200 ms (Max.)
Signal Voltage — Low Range (B1L-A2)	24-60V AC/DC
Signal Voltage — High Range (B1H-A2)	85-265V AC, 100-265V DC
Signal Sensing Time	For AC Signals: 50 ms Max. For DC Signals: 20 ms Max.
Signal stabilization Delay	100 ms (Applicable at Power ON Only)
Setting Accuracy	± 5% of Full scale
Repeat Accuracy	± 1%
Output — Relay Output	1 C/O (Delayed) & 1 C/O (Configurable as either Delayed or Instant)
Output — Contact Rating	5A @ 240 VAC / 28 VDC (Resistive)
Output — Contact Material	AgNi
Output — Electrical Life	$1x10^5$
Output — Mechanical Life	$1x10^7$
Set Time (Ts)	0.1 seconds to 120 Days
Functions	Refer page no. 28 & 29
LED Indication on front panel	Green LED ON: Power ON, Amber LED ON :Relay ON for Delayed contact
Mounting	Base / DIN Rail
Max. Operating Altitude	2000 m
Housing	Flame retardant (UL 94-V0)
Operating Temperature	-10°C to +60°C
Storage Temperature	-20°C to +70°C
Humidity (Non Condensing)	95% (Rh)
LED Indication	Green LED → Power ON, Red LED → Relay ON
Enclosure	Flame Retardant UL94-V0
Dimension (W x H x D) (in mm)	22.5 X 83 X 100.5
Weight (unpacked)	130 g
Pollution Degree	II
Certification	CE, cULus LISTED, RoHS Compliant
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Safety:

Test Voltage between I/P and O/P	IEC 60947-5-1
Test Voltage between all terminals & enclosure	IEC 60947-5-1
Impulse Voltage between I/P and O/P	IEC 60947-5-1
Single Fault	IEC 61010-1
Insulation Resistance	UL 508
Leakage Current	UL 508
Product Reference Standard	IEC 61812-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

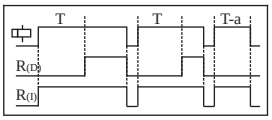
Electronic Timer - Series Micon® 225
Signal Based Multi - Function

FUNCTIONAL DIAGRAMS

: Supply Voltage, S: Input Signal, R: Relay Output, R(I): Instant Relay, R(D): Delayed Relay
T: Preset Time, TON: Preset ON Time, TOFF: Preset OFF Time, T-a: Timing Break Before completion

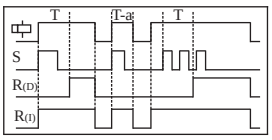
ON DELAY (Non Signal Based)

When supply is applied, timing starts and after the preset time duration 'T', output switches ON and remains ON till the supply is present.



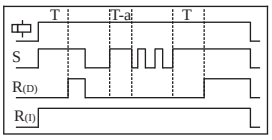
SIGNAL ON DELAY TYPE 1

When the input supply & signal are applied, timing starts and after preset time duration 'T' output switches ON & remains ON till the supply is present. Changing the state of signal during 'T' does not affect the output.



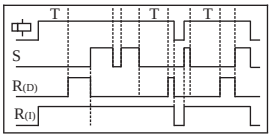
SIGNAL ON DELAY

Time commences as supply and signal is present. When input signal is opened, the timing resets. The output is switched ON at the end of the preset time duration 'T'. When output is ON if signal is opened then the output switches OFF.



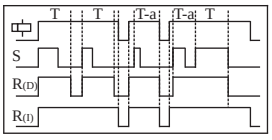
INVERTED SIGNAL ON DELAY

When supply is applied and signal is opened, preset time duration 'T' starts. On completion of the 'T', output switches ON. If the signal is closed during timing 'T', timing resets.



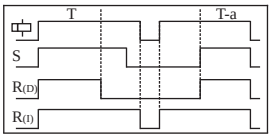
INTERVAL

When supply voltage is applied & signal is closed, output switches ON & timing function starts. If signal is opened and closed during the preset time, the timing restarts. After preset time 'T' has elapsed, the output switches OFF.



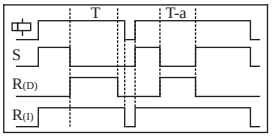
LEADING EDGE IMPULSE

When the supply applied and signal is closed, the output switches ON for preset time 'T'. After the completion of preset time 'T', the output switches OFF. If signal closed or opened during preset time duration 'T', the output remains unaffected.



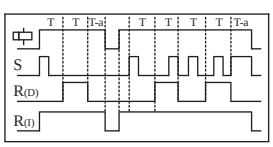
TRAILING EDGE IMPULSE

When supply voltage is applied and signal is opened, output switches ON for the preset time duration 'T'. After completion of preset time 'T', output switches OFF. If the signal is closed during preset timing 'T', output switches OFF & timing stops.



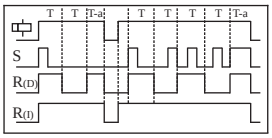
CYCLIC OFF/ON

When the supply applied and signal is closed, output switches OFF for the preset time duration 'T' and then switches ON for preset time duration 'T'. This cycle repeats while the supply is present. Changing the state of signal during 'T' does not affect the output.



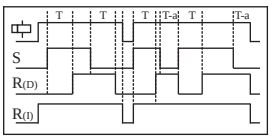
CYCLIC ON/OFF

When the supply applied and signal is closed, output switches ON for the preset time duration 'T' and then switches OFF for preset time duration 'T'. This cycle repeats while the supply is present. Changing the state of signal during 'T' does not affect the output.



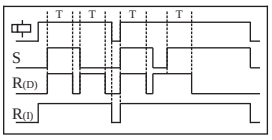
SIGNAL ON/ OFF Delay

Signal ON/OFF Delay: When the supply is applied and signal is closed, outputs switches ON after preset time 'T'. During the timing 'T' if signal is opened, the output switches ON immediately and OFF delay starts. Once this time period has elapsed the output switches OFF. During this OFF delay if signal is closed, the output switches OFF immediately and ON Delay restarts.



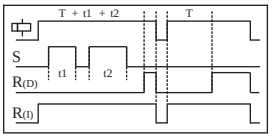
IMPULSE ON/OFF

When supply is applied and if signal closed or opened, output switches ON for Preset time duration 'T'. During time period 'T',changing state of input signal does not affect the output but resets the timing.



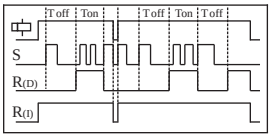
ACCUMULATIVE DELAY ON SIGNAL

Accumulative Delay ON Signal: On application of the supply voltage, the preset timing commences. Whenever signal is closed, timing pauses & resumes back only when the input signal is opened. The output switches ON at the end of the preset time duration 'T'.



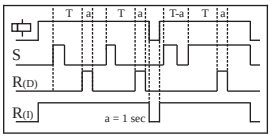
DELAYED IMPULSE

Delayed Impulse: When supply voltage is applied and signal is closed, output switches ON at the end of the preset time 'TOFF'. Then the preset ON time 'TON' starts irrespective of the signal state and remains ON till the completion of preset time duration 'TON'. If signal closed during the timing 'TOFF', the timing restarts but the output state remains unaffected. The signal change does not have any effect during the timing period 'TON'.



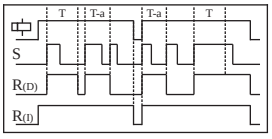
ONE SHOT

One Shot: When the supply voltage is applied and signal is closed,timing starts and after the preset time duration'T', output switches ON for One sec. only.



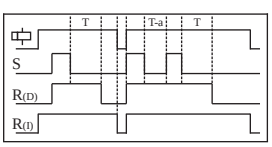
STEP MODE

Step Mode: When the supply voltage is applied and signal closed, output switches ON for preset time duration 'T', removal of the input signal during this time duration 'T' does not affect the output state. But if the signal is closed during time duration 'T', output switches OFF.



SIGNAL OFF DELAY

Signal OFF Delay: When the supply is applied and signal is closed, output is switches ON. When signal is opened, the preset timing commences and output is switches OFF at the end of time duration 'T'. If signal is closed during timing period, then timing stops and restarts when signal.



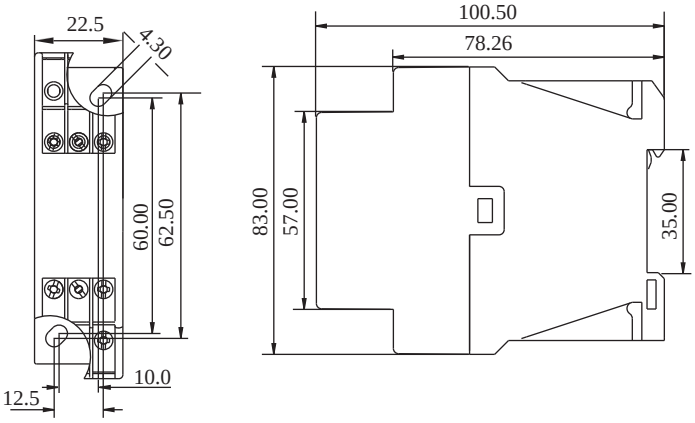
Electronic Timer - Series Micon® 225
Signal Based Multi - Function

Selection of Function: Operating Mode & timing can be selected by using DIP switches

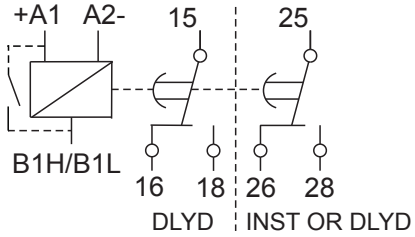
Function (1 2 3 4)		Function (1 2 3 4)	
■■■■	On Delay (Non Signal)	■■■■	Signal OFF Delay
■■■ ■	Signal On Delay Type 1	■■■ ■	Step Mode
■■ ■■	Signal On Delay	■■ ■■	One Shot
■■ ■■	Inverted Signal On Delay	■■ ■■	Delayed Impulse
■ ■■ ■	Interval	■ ■■ ■	Accumulative Delay On Signal
■ ■■ ■	Leading Edge Impulse	■ ■■ ■	Impulse ON / OFF
■■ ■■	Trailing Edge Impulse	■■ ■■	Signal ON / OFF Delay
■■■■	Cyclic OFF / ON	■■■■	Cyclic ON / OFF

1I + 1D or 2D Selection (5)		Timing Multiplier Selection (6)	
■	1I + 1D Operation	■	Timing = 'T' X 't' X 1
■	2 Delayed Operation	■	Timing = 'T' X 't' X 12

MOUNTING DIMENSION (mm)



CONNECTION DIAGRAM



TERMINAL TORQUE & TERMINAL CAPACITY

Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm² Solid/Stranded Wire
AWG	1 x 20 to 10

Electronic Timer - Series Micon® 225

- Compact 22.5mm Wide
- Wide Time Range: 0.1s to 10h
- Wide Voltage range for both AC & DC

Multi Function Timer

- With 5 different Functions
- 2 C/O Configuration
- Flush knobs for better security
- LED Indications for Power and Relay status
- Excellent Noise Immunity to the latest IEC standards

Multi Function Timer with 1 Instant & 1 Delayed C/O

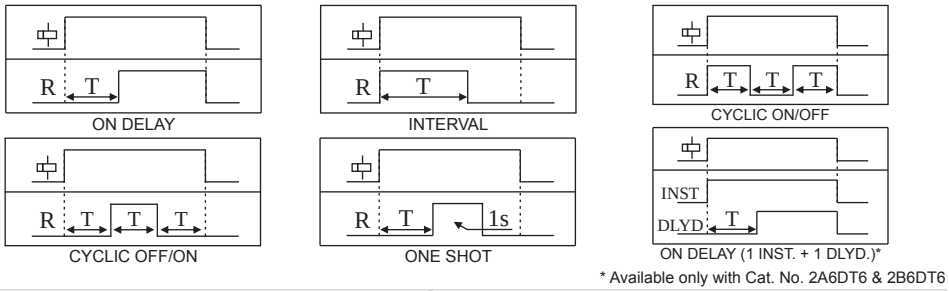
- With 6 different Functions
- Instant + Delayed output Configuration

Ordering Information

Cat. No.	Description
2A5DT5	24 - 240 VAC/DC, Multi Function Timer (5 Modes), 2 C/O
2B5DT5	240 - 415 VAC, Multi Function Timer (5 Modes), 2 C/O
2A6DT6	24 - 240 VAC/DC, Multi Function Timer (6 Modes), 2 C/O (1 Instant + 1 Delayed for 6th Mode)
2B6DT6	240 - 415 VAC, Multi Function Timer (6 Modes), 2 C/O (1 Instant + 1 Delayed for 6th Mode)
2AODT5	24 - 240 VAC/DC, ON Delay, 2 C/O

UL Approval not applicable for Cat No. 2A6DT6 & 2B6DT6

Electronic Timer - Series Micon® 225

Cat. No.		2A5DT5	2B6DT6
Parameters			
Timer Description		**Multi Function Timer**	**Multi Function Timer**
Modes		ON Delay, Interval, Cyclic ON-OFF, Cyclic OFF-ON, One Shot	ON Delay, Interval, Cyclic ON-OFF, Cyclic OFF-ON, One Shot, ON Delay with 1 Instant & 1 Delayed
Functional Diagram		 * Available only with Cat. No. 2A6DT6 & 2B6DT6	
Supply Voltage (⏚)		24 - 240 VAC/DC	240 - 415 VAC
Supply Variation		- 20% to +10% (of ⏚)	
Frequency		50/60 Hz	
Power Consumption (Max.)		4 VA	7 VA
Timing Range		0.1s to 10h	
Reset Time		200 ms (Max.)	
Setting Accuracy Repeat Accuracy		± 5% of Full scale ± 1%	
Output	Relay Output	2 C/O	2 C/O, 1 Instant + 1 Delayed (for 6th mode)
	Contact Rating	5A @ 240 VAC / 28 VDC (Resistive)	
	Electrical Life	$1x10^5$	
	Mechanical Life	$1x10^7$	
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
Operating Temperature Storage Temperature		-15°C to +60°C -20°C to +80°C	
Humidity (Non Condensing)		95% (Rh)	
LED Indication		Green LED → Power ON, Red LED → Relay ON	
Enclosure		Flame Retardant UL94V0	
Dimension (W x H x D) (in mm)		22.5 X 75 X 100.5	
Weight (unpacked)		130 g	
Mounting		Base / DIN Rail	
Certification		CE cULus LISTED RoHS Compliant	
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

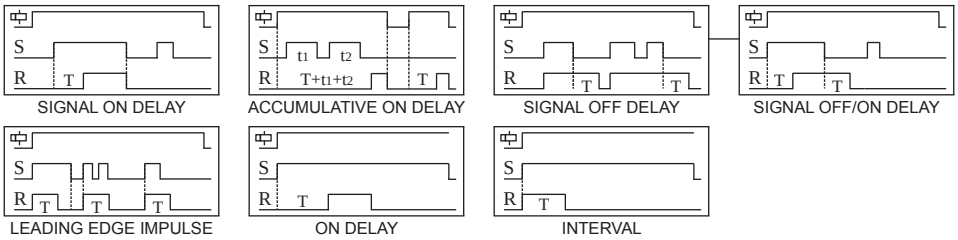
Electronic Timer - Series Micon® 225

- Signal based Multi-function with Relay / Solid State Output
- Potential Free Signal Input
- Asymmetric Timer with Solid State Output

Ordering Information

Cat. No.	Description
2ANDT0	24 - 240 VAC/DC, Signal Based Multi Function Timer, 1 C/O
20NDTT	110 - 240 VAC, Signal Based Multi Function Timer with Solid State Output
20JDTT	110 - 240 VAC, Asymmetric Timer with Solid State Output

Electronic Timer - Series Micon® 225

Cat. No.		2ANDT0	20NDTT
Parameters			
Description		**Signal Based Multi Function**	
Modes		Signal ON Delay, Accumulative ON Delay, Signal OFF Delay, Signal OFF/ON Delay, Leading Edge Impulse	
Derived Modes		ON Delay, Interval	
Functional Diagram			
Supply Voltage (⏚)		24 - 240 VAC/DC	110 - 240 VAC
Supply Variation		- 20% to +10% (of ⏚)	
Frequency		50/60 Hz	
Power Consumption (Max.)		4 VA	
Timing Ranges		0.1s to 10h	
Reset Time		200 ms (Max.)	
Setting Accuracy Repeat Accuracy		± 5% of Full scale ± 1%	
Output	Relay Output	1 C/O (SPDT)	N A
	Contact Rating	5A @ 240 VAC / 28 VDC (Resistive)	N A
	Electrical Life	$1x10^5$	N A
	Mechanical Life	$1x10^7$	N A
Solid State Output	Type & Form	N A	Optical Isolation, SPST
	Rated Current	N A	1A (AC)
	Max. Admissible Current	N A	20A (10 ms)
	Vol. Breaking Capacity	N A	110 to 240 VAC
	Max. Drop @ Terminals	N A	<= 8V
	Minimum Load Current	N A	20 mA
	Electrical Life	N A	$1x10^6$
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
Operating Temperature Storage Temperature		-15° C to +60° C -20° C to +80° C	
Humidity (Non Condensing)		95% (Rh)	
LED Indication		Green LED → Power ON Red LED → Relay ON	
Enclosure		Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)		22.5 X 75 X 100.5	
Weight (unpacked)		130 g	
Mounting		Base / DIN Rail	
Certification		CE cULus LISTED RoHS Compliant	
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Electronic Timer - Series Micon® 225

Asymmetric ON-OFF Timer

- Compact 22.5mm Wide
- Independent settings for ON & OFF time
- Wide Time Range
- LED Indications for Power and Relay status

Star Delta Timer

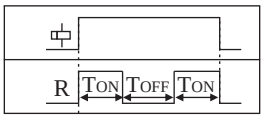
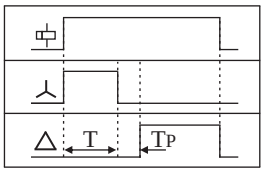
- Settable Start Time
- Settable Pause Time
- Indications for Star & Delta
- Excellent Noise Immunity to the latest IEC standards

Ordering Information

Cat. No.	Description
2AADT5	24 - 240 VAC/DC, Asymmetric ON/OFF Timer, 2 C/O
2ASDT0*	24 - 240 VAC/DC, Star Delta Timer, 1 NO (Star) + 1 NO (Delta)
2ASDT1	24 - 240 VAC/DC, Star Delta Timer, 1 NO (Star) + 1 NO (Delta)
2BSDT0*	240 - 415 VAC, Star Delta Timer, 1 NO (Star) + 1 NO (Delta)
2BSDT1	240 - 415 VAC, Star Delta Timer, 1 NO (Star) + 1 NO (Delta)

*Note: Product with test voltage between input and output at 1.5 kV

Electronic Timer - Series Micon® 225

Cat. No.			2AADT5	2ASDT0
Parameters				
Timer Description			**Asymmetric Timer**	**Star Delta Timer**
Mode			Asymmetric ON-OFF (A)	Star Delta
Functional Diagram				
Supply Voltage (⏚)			24 - 240 VAC/DC	
Supply Variation			- 20% to +10% (of ⏚)	
Frequency			50/60 Hz	
Power Consumption (Max.)			4 VA	
Timing Ranges			0.1s to 10h	3s to 120s
Pause Time (P)			N A	60ms, 90ms, 120ms, 150ms
Reset Time			200 ms (Max.)	
Setting Accuracy Repeat Accuracy			± 5% of Full scale ± 1%	
Output	Relay Output		2 C/O	Star - 1 'NO', Delta - 1 'NO'
	Contact Rating		5A @ 240 VAC / 28 VDC (Resistive)	
	Electrical Life		$1x10^5$	
	Mechanical Life		$1x10^7$	
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
Operating Temperature Storage Temperature			-15°C to +60°C -20°C to +80°C	
Humidity (Non Condensing)			95% (Rh)	
LED Indication			Green LED → Power ON, Red LED → Relay ON	Red LED 1 → '⅄' ON, Red LED 2 → 'Δ' ON
Enclosure			Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)			22.5 X 75 X 100.5	
Weight (unpacked)			130 g	
Mounting			Base / DIN Rail	
Certification			CE cULus LISTED RoHS Compliant	
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

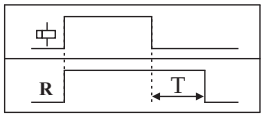
Electronic Timer - Series Micon® 225

- True OFF Delay (Power OFF Delay) upto 600 seconds with 2 C/O.

Ordering Information

Cat. No.	Description
23GDT0	24-240 VAC/DC, True OFF Delay (Power OFF Delay) Timer, 2 C/O

Electronic Timer - Series Micon® 225

Cat. No.			23GDT0
Parameters			
Timer Description			**True OFF Delay (Power OFF Delay) Timer**
Mode			True OFF Delay (Power OFF Delay)
Functional Diagram			
Supply Voltage (⏚)			24 - 240 VAC/DC
Supply Variation			-10 to +20% (of ⏚)
Frequency			50/60 Hz
Power Consumption (Max.)			2.5 VA
Energizing Time			1s (Minimum)
Timing Range			0.6s to 600s
Setting Accuracy Repeat Accuracy			± 5% of Full scale ± 1%
Output	Relay Output		2 C/O
	Contact Rating		5A @ 240 VAC / 28 VDC (Resistive)
	Electrical Life		$1x10^5$
	Mechanical Life		$1x10^7$
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A
Operating Temperature Storage Temperature			-15°C to +60°C -20°C to +70°C
Humidity (Non Condensing)			95% (Rh)
LED Indication			Green LED → Power ON, Red LED → Relay ON
Enclosure			Flame Retardant UL94-V0
Dimension (W x H x D) (in mm)			22.5 X 75 X 100.5
Weight (unpacked)			130 g
Mounting			Base / DIN Rail
Certification			CE cULus LISTED RoHS Compliant
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure

EMI / EMC

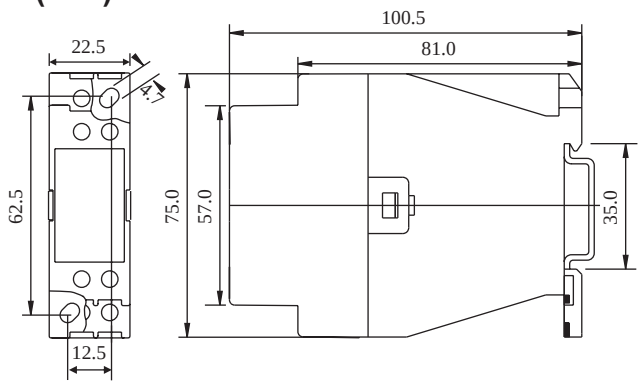
Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

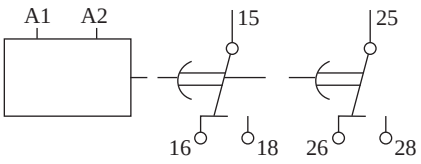
Electronic Timer - Series Micon® 225

MOUNTING DIMENSION (mm)

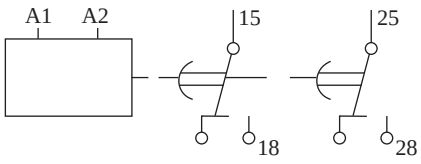


2A5DT5, 2B5DT5, 2AODT5, 2ASDT0, 2ASDT1,
2BSDT0, 2BSDT1, 2AADT5,
20JDTT, 20NDTT, 2ANDT0, 23GDT0, 2A6DT6, 2B6DT6

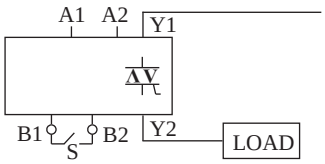
CONNECTION DIAGRAM



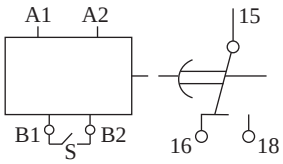
2A5DT5, 2B5DT5, 2AADT5, 23GDT0, 2AODT5



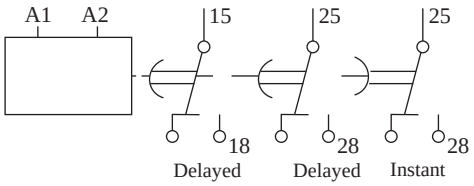
2ASDT0, 2BSDT0, 2ASDT1, 2BSDT1



20JDTT, 20NDTT

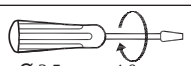


2ANDT0



2A6DT6, 2B6DT6

TERMINAL TORQUE & TERMINAL CAPACITY

 Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

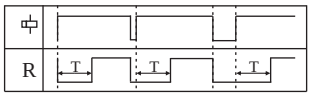
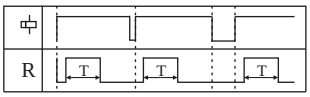
Motor Control Timers

- Compact 17.5mm wide
- Brown Out Timer with many functional options
- Detects Voltage Dips and Momentary Loss of Supply & Resets the control panel
- Low Power Consumption
- Fast Response Time
- Excellent Noise Immunity to the latest IEC standards

Ordering Information

Cat. No.	Description
17UDT0	230 VAC, Brown Out Timer (ON Delay), 1 C/O
17UDT1	230 VAC, Brown Out Timer (Interval), 1 C/O
13UDT0	110 VAC, Brown Out Timer (ON Delay), 1 C/O
13UDT1	110 VAC, Brown Out Timer (Interval), 1 C/O
1FUDT0F	110 VAC, Brown Out Timer (Normally Energized / ON Delay Mode), Fast Response (5 msec max), 1C/O
1FUDT1F	110 VAC, Brown Out Timer (Momentary / Pulse Mode), Fast Response (5 msec max), 1C/O
1FUDT2F	110 VAC, Brown Out Timer (Normally De-energized / Pulse Mode), Fast Response (5 msec max), 1C/O

Motor Control Timers

Cat. No.		17UDT0	13UDT1
Parameters			
Timer Description		**Brown Out Timer**	
Modes		ON Delay	Interval
Functional Diagram			
Supply Voltage (⏚)		230 VAC	110 VAC
Supply Variation		-30% to +10%	
Frequency		50 Hz	60 Hz
Power Consumption (Max.)		10 VA	
Timing Range		0.3s to 30s	
Initiate Time		Max. 100 ms	
Trip Voltage		168 V (± 5 V)	82 V (± 5 V)
Recovery Voltage		Trip Voltage + 14 V (± 5 V)	Trip Voltage + 14 V (± 5 V)
Response Time		25 ms (Max.) (Voltage Dips & Interruptions)	
Setting Accuracy Repeat Accuracy		± 10% @ 30s & ± 20% @ 0.3s ± 1%	
Output	Relay Output	1 C/O	
	Contact Rating	5A @ 240 VAC / 28 VDC (Resistive)	
	Electrical Life	$1x10^5$	
	Mechanical Life	$1x10^7$	
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
Operating Temperature Storage Temperature		-10°C to +55°C -15°C to +60°C	
Humidity (Non Condensing)		80% (Rh)	
LED Indication	Green	Healthy	
	Red	Relay ON	
Enclosure		Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)		17.5 X 58.5 X 90	
Weight (unpacked)		70 g	
Mounting		Base / DIN rail	
Certification		CE RoHS Compliant	
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

BROWN OUT

A dip in voltage causes electro-mechanical devices such as relays and contactors to drop out and electronic devices such as Timers, Programmable Relays, PLC's remain energized. As a result of this the switch sequence of the panel is lost. This can lock out all or a part of the control system causing the entire system to malfunction.

BROWN OUT TIMER

The 'Brown-Out' Timer also known as 'Mains restoration auto restart timer' is used for detection of voltage dips or momentary loss of supply known as 'Brown out' and initiation of a control panel reset following the Brown out.

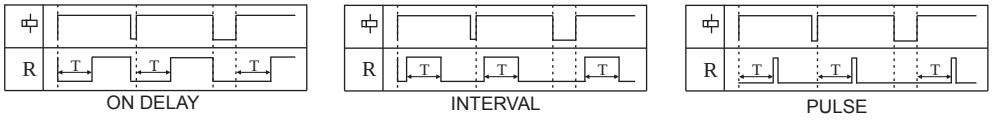
Motor Control Timers

- Brown Out Timer with 3 Functions: ON Delay, Interval, Pulse
- Detects Voltage Dips and Momentary Lossof Supply & Resets the control panel
- Low Power Consumption
- Fast Response Time
- LED indications for Healthy & Unhealthy conditions
- Excellent Noise Immunity to the latest IEC standards

Ordering Information

Cat. No.	Description
23UDT0	110 VAC, Brown Out Timer with 3 Functions, 1 C/O
27UDT0	240 VAC, Brown Out Timer with 3 Functions, 1 C/O

Motor Control Timers

Cat. No.			23UDT0	27UDT0
Parameters				
Timer Description			**Brown Out Timer**	
Modes			ON Delay, Interval, Pulse	
Functional Diagram			 ON DELAY INTERVAL PULSE	
Supply Voltage (⏚)			110 VAC	240 VAC
Supply Variation			- 40% to +10% (of ⏚)	- 40% to +10% (of ⏚)
Frequency			50/60 Hz	50 Hz
Power Consumption (Max.)			6 VA	10 VA
Timing Range			0.3s to 30s	0.3s to 30s
Initiate Time			Max. 200 ms	Max. 200 ms
Trip Voltage			81 V (± 6 V)	168 V (± 6 V)
Recovery Voltage			96 V (± 4 V)	184 V (± 4 V)
Response Time	Voltage Interruptions		15 ms (Max.)	
	Voltage Dips		30 ms (Max.)	
Setting Accuracy			± 5% of Full scale	
Repeat Accuracy			± 1%	
Output	Relay Output		1 C/O	
	Contact Rating		5A @ 240 VAC / 28 VDC (Resistive)	
	Electrical Life		$1x10^5$	
	Mechanical Life		$1x10^7$	
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
Operating Temperature			-10°C to +55°C	
Storage Temperature			-10°C to +60°C	
Humidity (Non Condensing)			95% (Rh)	
LED Indication			Healthy Condition: Flashing, Unhealthy Condition: Blinking	
	Colour		Amber	Red
Enclosure			Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)			22.5 X 75 X 100.5	
Weight (unpacked)			130 g	
Mounting			Base / DIN rail	
Certification			CE RoHS Compliant	
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Motor Control Timers

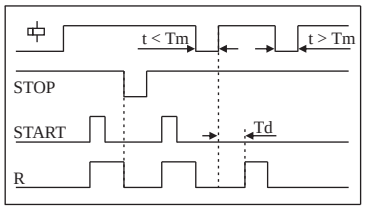
- Single phase Motor Restart Control Timer with Memory Time
- Under Voltage Trip and ON Delay

Ordering Information

Cat. No.	Description
22LDT0	240 VAC, Motor Restart Control Timer, 1 C/O
23LDT0	110 VAC, Motor Restart Control Timer, 1 C/O

UL Approval not applicable for Cat No. 23LDT0

Motor Control Timers

Cat. No.		22LDT0	23LDT0
Parameters			
Timer Description		Motor Restart Control Timer	
Functional Diagram		 t: Power Fail Time; Td: Delay Time; Tm: Memory Time	
Supply Voltage (⏚)		240 VAC	110 VAC
Supply Variation		- 20% to +10% (of ⏚)	
Frequency		50/60 Hz	
Power Consumption (Max.)		4 VA	
Timing Ranges		Memory Time (Tm): 0.2 to 6s, Delay Time (Td): 0.2 to 60s	
Trip Voltage		176 VAC, (± 6VAC)	80 VAC, (± 6VAC)
Hysterisis		4 VAC to 10 VAC	
Reset Time		200 ms (Max.)	
Setting Accuracy Repeat Accuracy		± 5% of Full scale ± 1%	
Output	Relay Output	1 C/O	
	Contact Rating	5A @ 240 VAC / 28 VDC (Resistive)	
	Electrical Life	$1x10^5$	
	Mechanical Life	$1x10^7$	
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
Operating Temperature Storage Temperature		-15°C to +60°C -20°C to +70°C	
Humidity (Non Condensing)		95% (Rh)	
LED Indication		Green LED → Power ON, Red LED → Relay ON	
Enclosure		Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)		22.5 X 75 X 100.5	
Weight (unpacked)		130 g	
Mounting		Base / DIN Rail	
Certification		CE cULus LISTED RoHS Compliant	
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

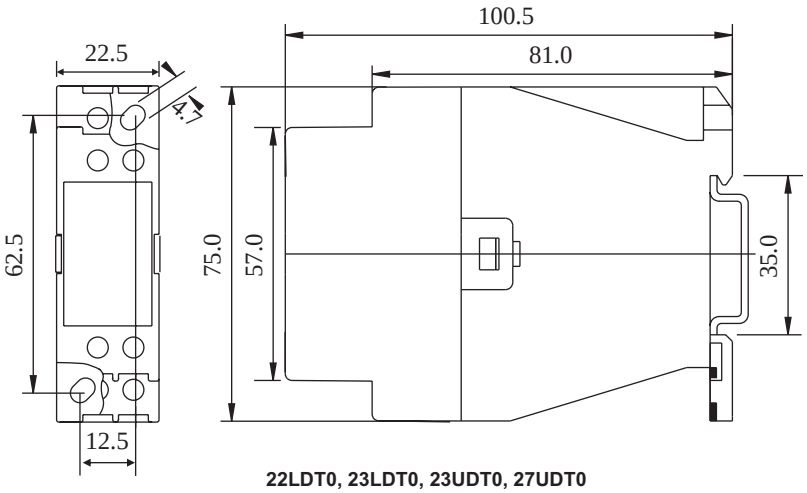
Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

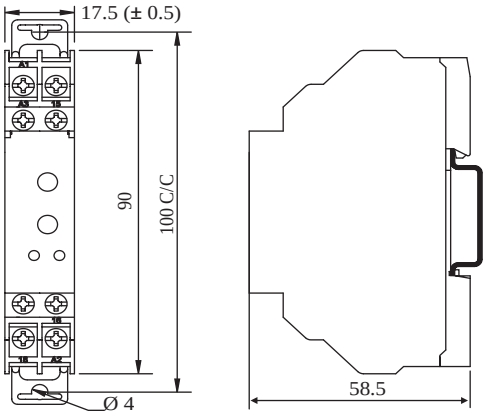
WORKING

The timer is used for instantaneous or delayed motor startup after a short-time power failure (max. 6 sec). The start occurs immediately if power supply is disrupted for less than 0.2 sec. If the power failure lasts longer, the relay activates its memory for a time that can be set to 0.2 to 6 sec, after which no automatic restart is possible. If power supply is restored while the memory period is elapsing, the relay commands a motor restart with a delay time from power supply restoration that can be set to 0.2 to 60 sec. A system stop cancels the memory function after 50 ms, and therefore the stop signal should be on for at least this time. The relay is non-sensitive to any control voltage fluctuation or disruption during or after the motor stop.

MOUNTING DIMENSION (mm)

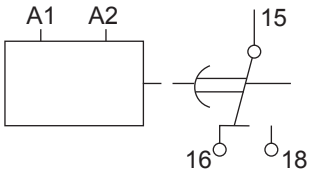


22LDT0, 23LDT0, 23UDT0, 27UDT0

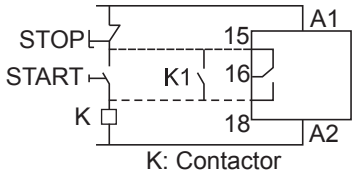


17UDT0, 17UDT1, 13UDT0, 13UDT1
1FUDT0F, 1FUDT1F, 1FUDT2F

CONNECTION DIAGRAM



13UDT0, 17UDT0, 13UDT1, 17UDT1
23UDT0, 27UDT0



22LDT0, 23LDT0

TERMINAL TORQUE & TERMINAL CAPACITY

Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

22LDT0, 23LDT0, 23UDT0, 27UDT0

Ø 3.5 mm....5.0mm	0.80 N.m (7.1 Lb.in)
	2 x 2.5 mm^2 Solid/Stranded Wire
AWG	2 x 20 to 14

13UDT0, 17UDT0, 13UDT1, 17UDT1

Synchronous Timer - Series EM 1000

- Time delay is independent of normal voltage and temperature fluctuations
- Black pointer gives clear indication of the time set on the calibrated dial while the red one indicates the time left to complete the cycle
- Automatic reset on de-energisation of the clutch coil
- Base mounting or flush mounting versions
- No-volt feature available

Ordering Information

B□□□□□

Timing Ranges(SR)

B	0.15 - 3.0	SEC
C	1.5 - 30	SEC
D	0.15 - 3.0	MIN
E	1.5 - 30	MIN
F	0.15 - 3.0	HRS
G	1.5 - 30	HRS
H	0.3 - 6.0	SEC
J	3.0 - 60	SEC
K	0.3 - 6.0	MIN
L	3.0 - 60	MIN
M	0.3 - 6.0	HRS
N	3.0 - 60	HRS
P	0.6 - 12	SEC
Q	6.0 - 120	SEC
R	0.6 - 12	MIN
S	6.0 - 120	MIN
T	0.6 - 12	HRS
V	6 - 120	HRS

Timing Ranges(MR)

X	0.15 SEC.-3.0 HRS.
Y	0.3 SEC.- 6.0 HRS.
Z	0.6 SEC.-12.0 HRS.

Voltage

3	110V AC 50 Hz
4	240V AC 50 Hz
C	110V AC 60 Hz
D	240V AC 60 Hz

Contact

1	1 Inst + 1 Del C/O
2	1 Inst + 2 Del C/O

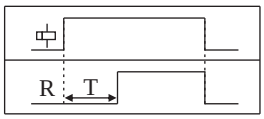
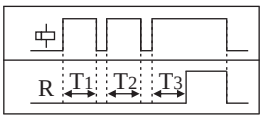
Mounting

B	Base Mounting
F	Flush (door) Mtg.

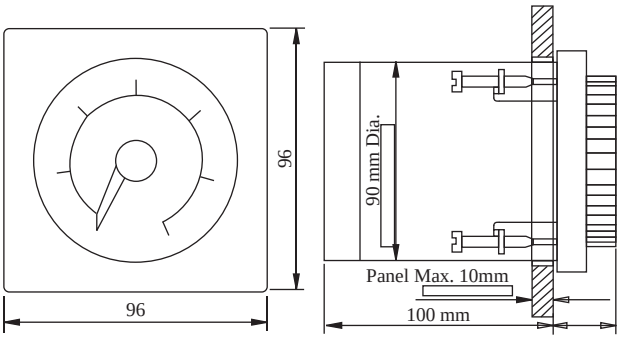
Delay

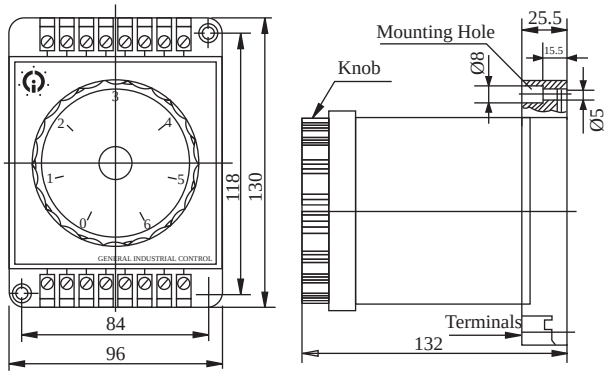
1	Standard ON delay
2	With 'NO VOLT'

Synchronous Timer - Series EM 1000

Mode		ON Delay	ON Delay Retentive (No Volt)
Functional Diagram			
Supply Variation		- 20% to +10%	
Frequency Variation		95% to 105%	
Power Consumption (Max.)		10 VAC	
Timing Range		0.15s to 120h	
Repeat Accuracy		± 0.5% of Full Scale Range @ Constant Frequency	
Output	Output Contact	1 Instant + 1 Delayed / 1 Instant + 2 Delayed (Optional)	
	Contact Rating	6A (resistive) @ 250 VAC	
	Switching Frequency	3000 operations/hr. (Max.)	
Operating Temperature		-5°C to 45°C	
Enclosure		Conforms to IP30 - IS 13947.	
Dimension (W x H x D) (in mm)		96 X 96 X 100	
Weight (unpacked)		530 g	
Mounting		Flush / Base	
Terminal Connection		1– 2.5 mm² solid/stranded.	
Degree of Protection		IP20	

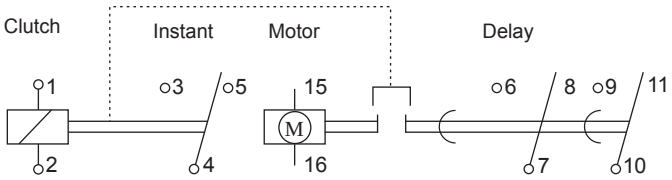
MOUNTING DIMENSION (mm)



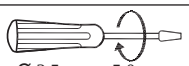


BASE/DIN MOUNTING

CONNECTION DIAGRAM

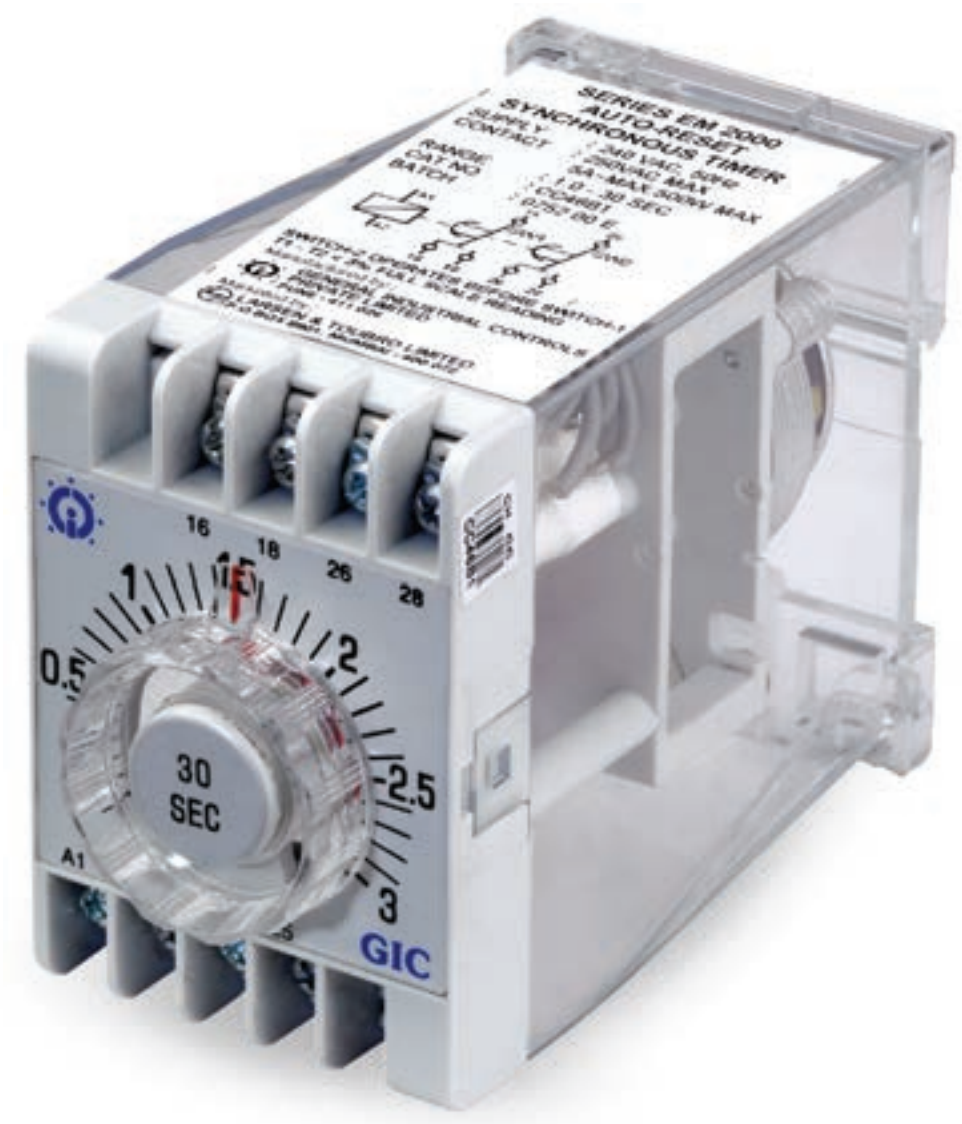


TERMINAL TORQUE & CAPACITY

 Ø 3.5 mm....5.0mm	0.80 N.m (7.1 Lb.in)
	2 x 2.5 mm² Solid/Stranded Wire
AWG	2 x 20 to 14

Synchronous Timer - Series EM 2000

- Time delay is independent of normal voltage & temperature fluctuations
- Large knob operating on a linear scale makes time setting easy
- Set time is indicated by a fixed pointer of the setting knob.
- Time left for completion of cycle is indicated by red pointer
- Wiring is quicker and easier as terminals are in the front of the unit
- All part subjected to wear & tear are made of 'Delrin' which has high resistance to wear & tear and thus ensures longer life.



Ordering Information

C □ □ □ B 1

Timing Ranges

C	1.0 - 30 Sec
J	2.0 - 60 Sec
Q	4.0 - 120 Sec

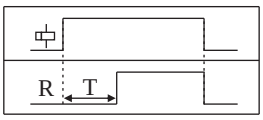
Voltage

3	110V AC 50 Hz
4	240V AC 50 Hz
5	415V AC 50 Hz

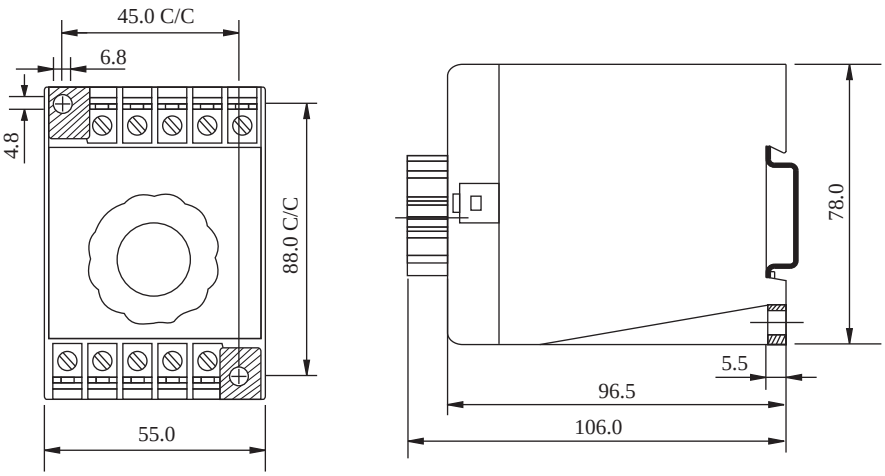
Contact

5	1 Del C/O
6	2 Del C/O

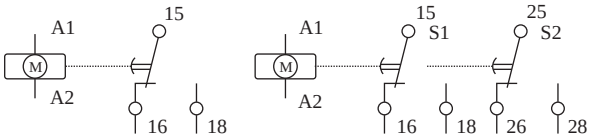
Synchronous Timer - Series EM 2000

Mode		ON Delay
Functional Diagram		
Supply Variation		- 20% to +10%
Frequency Variation		95% to 105%
Timing Range		1s to 120s
Repeat Accuracy		± 2% of Full Scale Range at Constant Frequency
Output	Output Contact	1 Delayed C/O or 2 Delayed C/O (Resistive)
	Contact Rating	5A @ 250 VAC (Resistive)
	Switching Frequency	1000 operations / hr. (Max.)
Operating Temperature		-5°C to 45°C
Enclosure		Conforms to IP30 - IS 13947.
Dimension (W x H x D) (in mm)		55 X 88 X 106
Weight (unpacked)		260 g
Mounting		Base/DIN Mounting & can be mounted on vertical plane with maximum inclination of 15° from vertical.
Terminal Connection		1– 2.5 mm² solid/stranded.
Degree of Protection		IP20

MOUNTING DIMENSION (mm)

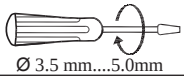


CONNECTION DIAGRAM



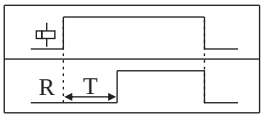
Note : Switch 2 operates before switch 1

TERMINAL TORQUE & CAPACITY

	0.80 N.m (7.1 Lb.in)
	2 x 2.5 mm² Solid/Stranded Wire
AWG	2 x 20 to 14

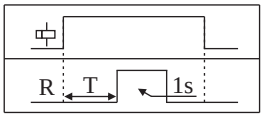
Basic Operating Modes / Functions

⏚ : SUPPLY, S: SIGNAL, R: RELAY OUTPUT,
T: SET TIME, TP: PAUSE TIME, T_{ON}: ON TIME, T_{OFF}: OFF TIME, T_1,T_2,T_3: POWER DOWN REGION



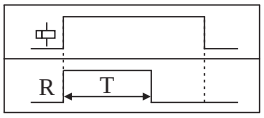
• ON DELAY (DELAY ON ENERGIZATION):

On application of supply voltage to the timer, the preset delay time period starts. On completion of the preset time, the output is switched ON and remains ON till the supply voltage is present



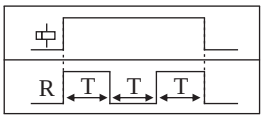
• ONE SHOT (PULSE):

On application of supply voltage to the timer, the preset delay time period starts. On completion of the preset time, the output is switched ON for a period of one second after which it is switched OFF.



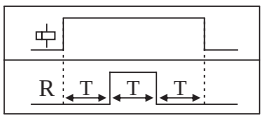
• INTERVAL (IMPULSE ON):

On application of supply voltage to the timer, the output is instantly switched ON for the preset time period. On completion of the preset time, the output is switched OFF.



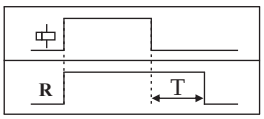
• CYCLIC ON/OFF (SYMMETRIC):

On application of supply voltage, the output is initially switched ON for the preset time duration (T) after which it is switched OFF for the same time duration (T). This cycle repeats and continues till the supply is present.



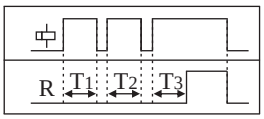
• CYCLIC OFF/ON (SYMMETRIC):

On application of supply voltage, the output is initially switched OFF for the preset time duration (T) after which it is switched ON for the same time duration (T). This cycle repeats and continues till the supply is present.



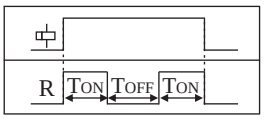
• TRUE OFF DELAY (POWER OFF DELAY):

On application of supply voltage, the output relay energizes instantly. On removal of supply voltage to the timer, the preset delay time period starts. On completion of the preset time, the output is switched OFF.



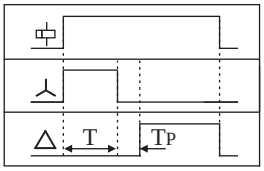
• ON DELAY RETENTIVE (NO VOLT):

On application of supply voltage to the timer, the preset delay time period starts. On completion of the preset time, the output is switched ON and remains. If power fails during preset time duration, the elapsed time is retained by timer. Upon resumption of power, the remaining cycle continues.



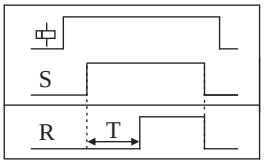
• ASYMMETRIC ON-OFF / CYCLIC ON-OFF (ASYMMETRIC):

On application of supply voltage, the output is initially switched ON for the preset 'ON' time duration (T) after which it is switched OFF for the preset 'OFF' time duration (T). This cycle repeats and continues till the supply is present. The ON time & OFF time are set independently.



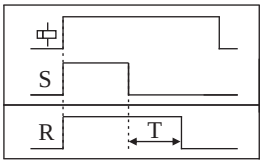
• STAR DELTA:

On application of supply voltage, the output Star relay energizes instantly. On completion of the preset delay time, the output Delta relay energizes after a fixed pause time. This pause time (60, 90, 120, 150 ms) provides the shortest possible 'current off' pause and simultaneously ensures smooth change over.



• SIGNAL ON DELAY :

On application of input signal to the timer, the preset delay time period starts. On completion of the preset time, the output is switched ON and remains ON till the input signal is present.



• SIGNAL OFF DELAY:

On application of input signal, the output relay energizes instantly. On removal of input signal to the timer, the preset delay time period starts. On completion of the preset time, the output is switched OFF.

Product Selection Chart : Timers

Cat. No.	Supply Voltage						Timing Range								Signal		Relay Output			Function				
	12 to 240 VAC / DC	24 to 240 VAC / DC	240 to 415 VAC	240 VAC or 24 VAC / DC	240 VAC	110 to 240 VAC	3 sec to 120 sec	0.6 Sec to 600 sec	0.1 sec to 10 hrs	0.3 sec to 30 hrs	0.1 sec to 100 hrs	0.1 sec to 999 hrs	0.1 sec to 120 days	0.1 sec to 999 days	Potential Signal	Potential Free Signal	1 C/O	2 C/O	2 NO	ON Delay	Asymmetrical ON/OFF Delay	True OFF Delay	Star Delta	Multi-Function
12ODT4				●						●							●			●				
1CMDT0	●										●				●		●							●
1CJDT0	●										●						●				●			
12SDT0					●		●												●				●	
2AODT5		●							●									●		●				
2ASDT0		●					●												●				●	
2BSDT0			●				●												●				●	
2A8DT6		●											●					●						●
2A5DT5		●							●									●						●
2B5DT5			●						●									●						●
2ANDT0		●							●							●	●							●
2AADT5		●							●									●			●			
23GDT0		●						●										●				●		
V0DDTS		●										●			●		●							●
V0DDTD		●										●			●				●					●
V0DDTS1		●										●			●		●							●
V0DDTD1		●										●			●				●					●
V7DFTS3						●								●	●			●						●
V7DDSS3						●								●	●			●						●

TIME SWITCHES

Time Switch FM Series

- Modular construction
- Inbuilt over-ride facility
- High switching capacity
- Tamper proof sealing
- Analog & Digital version
- Daily/Weekly programming
- Graphical Program LCD

Ordering Information

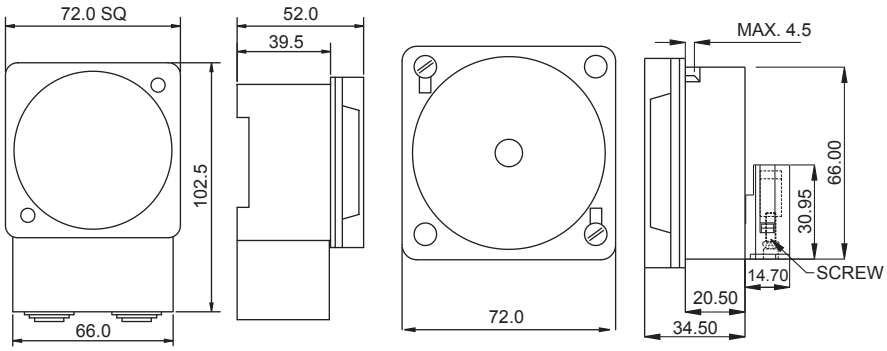
Cat. No.	Description	
J648B1	FM/1 QT	240 VAC, Daily Dial, Base / DIN Mounting*
J848B1	FM/1 QW	240 VAC, Weekly Dial, Base / DIN Mounting*
J638B1	FM/1 QT	110 VAC, Daily Dial, Base / DIN Mounting*
J838B1	FM/1 QW	110 VAC, Weekly Dial, Base / DIN Mounting*
D847B2	FM/1 Digi20 Plus	240 VAC, Daily / Weekly, Base / DIN Mounting*

Note: For Flush Mounting model, replace B by F in Cat. No.

Time Switch FM Series

Cat. No.			J648B1	D847B2
Parameters				
Supply Voltage ⏚			240 VAC	
Frequency			50/60 Hz	
Power Consumption (Max.)			2 VA	4.4 VA
Accuracy			± 1.5 s/day at 20°C	± 1 s/day at 20°C
Relay Output			1 C/O	1 C/O
Contact Rating	Resistive		16A @ 250 VAC, 0.25A @ 220VDC	16A @ 250 VAC
	Inductive (cosø = 0.6)		8A @ 250 VAC, 0.1A @ 220 VDC	4A @ 250 VAC
	Incandescent Lamp		1350 W	1350 W
Shortest Switching Time		Daily	15min	1min
		Weekly	2h	1min
Power reserve			150h	10 years from Factory at 20°C
Memory locations			N. A.	20
Storage Temperature			- 20°C to + 55°C	
Manual Over-ride			Provided	
Mounting			Flush, Base / DIN rail	
Weight (unpacked)			185 g	

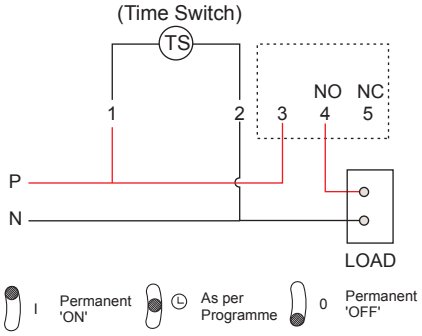
MOUNTING DIMENSION (mm)

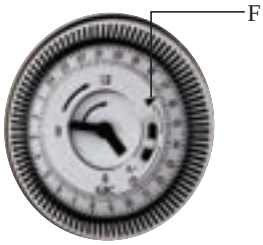


Base Mounting

Flush Mounting

CONNECTION DIAGRAM





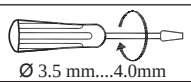
TIME SETTING:

Rotate the switching Dial in clockwise direction until the current time (day / time incase of weekly model) is almost opposite to the marking arrow F. For fine adjustment rotate the minute hand in the clockwise direction until the clock shows the current time.

PROGRAMMING:

Required Switch ON time is set on the Switching Dial by radially pulling outwards the corresponding black segments. Each segment on daily dial corresponds to 15 mins. & on weekly Dial corresponds to 2 hours.

TERMINAL TORQUE & CAPACITY

 Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

*Products available for sale only in selected Countries

Digital Time Switches *Crono*® & *Pulse*

- Precise time programming for Daily/Weekly/Pulse switching
- 25 ON/OFF programs
- Weekend Exclusion (FRI SAT or SAT SUN) and Weekly OFF programming
- LED Indication of Relay status
- 12/24 h display formats
- 6 Years Battery reserve
- Simple Reset & Manual override
- Settable DST & Keypad Lock Feature

Ordering Information

Cat. No.	Description
67DDT0	110 - 240 VAC, Digital Time Switch - Crono, 1 C/O
6GHDT0	24 VDC, Digital Time Switch - Crono, 1 C/O
69HDT0	12 VDC, Digital Time Switch - Crono, 1 C/O
67DDT9	110 - 240 VAC, Digital Time Switch - Pulse, 1 C/O
6GHDT9	24 VDC, Digital Time Switch - Pulse, 1 C/O
69HDT9	12 VDC, Digital Time Switch - Pulse, 1 C/O

Digital Time Switches *Crono*® & *Pulse*

Cat. No.			67DDT0 (*Crono*®)	67DDT9 (*Pulse*)
Parameters				
Supply Voltage			110 - 240 VAC	
Supply Variation			-20 % to +10%	
Frequency			50/60 Hz	
Power Consumption (Max.)			6 VA	
Number of Programs			25 ON/OFF Programs	16 Pulse Programs
Minimum Switching Time			1 min	1 s
Pulse Duration			N A	1 to 59 s (Programmable)
Number of Operating Modes			5	3
Description of Modes			• AUTO - Program Run • ON AUTO - Instant ON up to next Auto Event • AUTO OFF - Instant OFF up to next Auto Event • ON - Continuous ON • OFF - Continuous OFF	• AUTO - Program Run • ON - Continuous ON • OFF - Continuous OFF
Display			3 Lines Text LCD	
DST			Programmable	
Clock Accuracy			± 2 s/day max. over the Operating Temperature range	
Power Reserve from Factory			6 Years	
Output	Relay Output		1 C/O	
	Contact Rating		16A (For 'NO') & 5A (For 'NC') @ 240 VAC / 24 VDC (Resistive), Inductive (cos ø = 0.6):- 6 A @ 250 VAC	
	Electrical Life		$3x10^4$	
	Mechanical Life		$5x10^4$	
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3/1.5 A	
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.11 A	
Operating Temperature Storage Temperature			-10°C to + 55°C -10°C to + 60°C	
Humidity (Non Condensing)			95% (Rh)	
LED Indication			Red LED → Relay ON	
Enclosure			Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)			36 X 90 X 65	
Weight (unpacked) Approx.			110 g	
Mounting			Base / DIN rail	
Certification			CE cULus LISTED RoHS Compliant	
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Applications	Ideal for Lighting applications like street lighting, Advertising Displays, Glowsigns. Also can be used for Air conditioners / Coolers, Geysers, conveyors, pumps etc.	Ideal for Siren, Bell applications

Astronomical Time Switch *Astro® Mini*

- Astronomical Time Switch in 35mm
- Latitude/Longitude precise to the minute with time zone
- Sunrise/Sunset or Twilight rise/set trigger modes
- Ease of Programming & Navigation
- DST, Offset, OFF Hours, Weekly OFF features
- 12/24 Hour display format
- 6 years Battery reserve
- Easy Manual Override & Keypad Lock feature
- Ideal for Outdoor & Street lighting applications

Ordering Information

Cat. No.	Description
T2DDT7	110 - 240 VAC, Astro Mini, 1 C/O
T2DDT8	110 - 240 VAC, Astro Mini, 1 C/O (With Pre-defined City codes)

Astronomical Time Switch *Astro® Mini*

Cat. No.	T2DDT7
Parameters	
Supply Voltage (⏚)	110 - 240 VAC
Supply Variation	-20 % to +10% (of ⏚)
Frequency	50/60 Hz
Power Consumption	6 VA
Programming	Based on Latitude/Longitude precise to the minute with time-zone
Trigger Modes	Sunrise/Sunset or Twilight Rise/Set
Offset	1 min to 10 hr 59 min (Programmable)
OFF Hours	Programmable
Weekly Off	User Defined
DST	User Defined
Number of Operating Modes	3
Description of Modes	• AUTO - As per user defined program settings • ON AUTO - Instant ON up to next Auto Event • AUTO OFF - Instant OFF up to next Auto Event
Minimum Switching Time	1 min
Display	3 Lines Text LCD
Clock Accuracy	± 2 s/day max. over the Operating Temperature range
Power Reserve from Factory	6 Years
Output – Relay Output	1 C/O
Output – Contact Rating	16A (For 'NO') & 5A (For 'NC') @ 240 VAC / 24 VDC (Resistive), Inductive (cos ø = 0.6) :- 6 A @ 250 VAC
Output – Electrical Life	$3x10^4$
Output – Mechanical Life	$5x10^4$
Utilization Category – AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3/1.5 A
Utilization Category – DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.11 A
Operating Temperature Storage Temperature	-10°C to + 55°C -10°C to + 60°C
Humidity (Non Condensing)	95% (Rh)
LED Indication	Red LED → Relay ON
Enclosure	Flame Retardant UL94-V0
Dimension (W x H x D) (in mm)	36 X 90 X 65
Weight (unpacked)	110 g
Mounting	Base / DIN rail
Certification	CE RoHS Compliant
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Applications

Street lighting applications in cities, industrial townships, university campuses
Lighting automation in sports complex, hotels, parks & other outdoor applications.

Astronomical Time Switch *Astro*®

- Dynamic and Accurate control based on Astronomical Mathematics
- Sunrise / Sunset or Twilight rise / set trigger
- Yearly programming with Season mode, DST, Offset, OFF hours, Weekly Off features
- Protection against Under Voltage and Over Voltage
- Alternate Mode with Auto Load Changeover feature
- Active Phase selection
- Manual override facility
- Single phase and Three phase versions
- Modbus Communication
- User friendly software for device configuration

Ordering Information

Cat. No.	Description
T2DDT0	110 - 240 VAC, Astro with Two Independent Channel Output, 2 NO
T3DDT0	110 - 240 VAC, Astro with Three Independent Channel Output, 3 NO
TGDDT6	Windows based Application software for Astro
GFDNN1	USB Interface Cable
GFDNN2S	RS 232 Serial Interface Cable
GFDNN3M	Memory Card

Astronomical Time Switch *Astro*®

Cat. No.			T2DDT0	T3DDT0
Parameters				
Supply Voltage (⏚)			110 - 240 VAC	110 - 240 VAC (3 Phase, 4 Wire)
Supply Variation			-20 % to +10% (of ⏚)	
Frequency			50/60 Hz	
Programming			Based on Latitude/Longitude precise to the minute with time-zone	
Trigger Modes			Sunrise/Sunset or Twilight Rise/Set	
Offset			1 min to 10 hr 59 min (Programmable)	
OFF Hours			Programmable	
Weekly Off			User Defined	
Alternate Mode			Yes	
Seasonal Mode			User Defined	
DST			User Defined	
Number of Operating Modes			3	
Mode Description			• AUTO - As per user defined program settings • ON AUTO - Instant ON up to next Auto Event • AUTO OFF - Instant OFF up to next Auto Event	
Minimum Switching Time			1 min (1s for Pulse)	
Display			Backlit LCD	
Under Voltage Trip Level			N A	0 - 220 V (Settable)
Over Voltage Trip Level			N A	130 - 330 V (Settable)
Trip Time			N A	5 - 16 sec
Recovery Time			N A	1 - 4 sec
Clock Accuracy			± 1 s/day max. over the Operating Temperature range	
Power Reserve from Factory			6 years	
Output	Relay Output		2 NO	3 NO
	Contact Rating		8A @ 240 VAC & 5A @ 30 VDC (Resistive)	
	Electrical Life		$1x10^5$	
	Mechanical Life		$1x10^7$	
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3/1.5 A	
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.11 A	
Operating Temperature Storage Temperature			-10°C to + 50°C -10°C to + 60°C	
Humidity (Non Condensing)			95% (Rh)	
Enclosure			Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)			72 X 90 X 65	
Weight (unpacked)			190 g	208 g
Mounting			Base / DIN rail	
Certification			CE, cULus LISTED, RoHS Compliant	
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

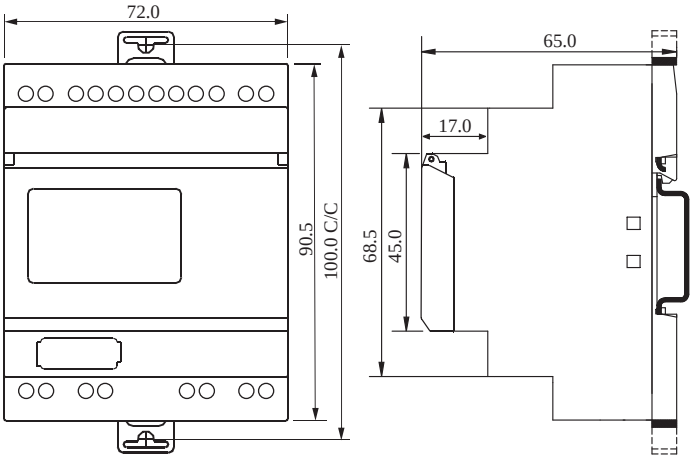
Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Astronomical Time Switch *Astro*®

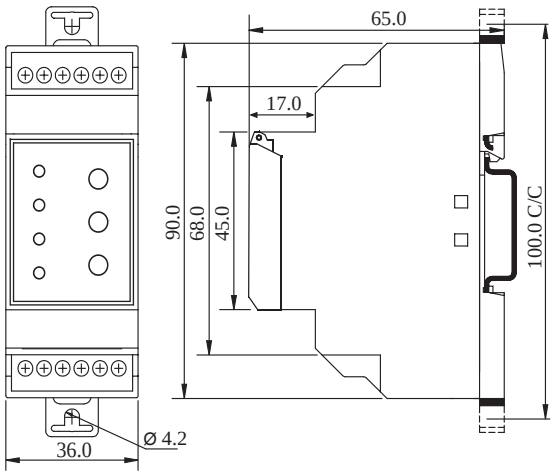
MOUNTING DIMENSION (mm)

Astro®



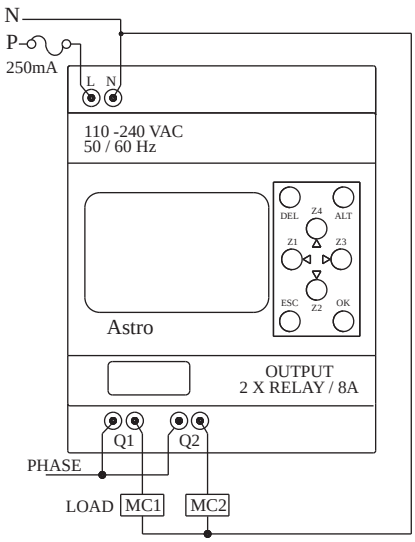
T2DDT0, T3DDT0

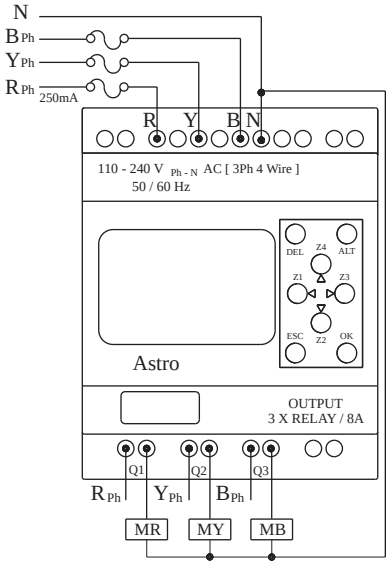
Crono®*, Pulse & Astro*® *Mini*



67DDT0, 6GHDT0, 69HDT0, 67DDT9, 6GHDT9, 69HDT9, T2DDT7, T2DDT8

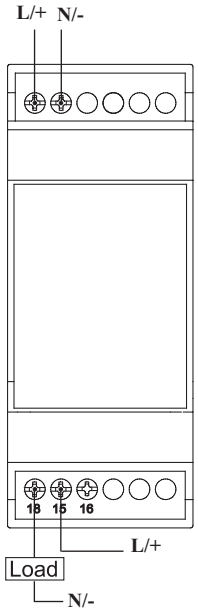
CONNECTION DIAGRAM





T2DDT0, T3DDT0

MC1, MC2, MR, MY, MB: CONTACTOR COILS



67DDT0, 6GHDT0, 6GHDT9, 67DDT9, 69HDT0, 69HDT9, T2DDT7, T2DDT8

TERMINAL TORQUE & CAPACITY

Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 24 to 12

T2DDT0, T3DDT0, T2DDT7, T2DDT8, 67DDT0, 67DDT9

Lighting Automation with *Astro*® using GSM Technology

- Most of the "ASTRO" parameters can be set remotely using SMS queries. I.e. Output mode, Offset Hrs etc, UV, OV settings.
- Relay Output can be override remotely using SMS query.
- Energy Meter Functionality. Parameter like Load current, Supply voltage, Power, Energy can be known remotely.
- With the help of "Auto Error Code Update" following onsite error can be know remotely during output event.
  - Under Voltage
  - Over Voltage
  - Over Current
  - Output actuator short.
  - Load Open

Ordering Information

Cat. No.	Description
19D2000C	Surge Suppressor
19D20B00	Astro GSM Module (GSM-ERT5), Remote Side
19A1000B	Communication Cable (TTL-TTL) between Astro & GSM Module
TGDDT6	Windows based application software for Astro

Lighting Automation with *Astro*® using GSM Technology

Cat. No.	19D20B00 (ERT 5)
Parameters	
Supply Voltage (⏚)	240 VAC (3 Phase, 4 Wire)
Supply Variation	-30% to +25% (of ⏚)
Frequency	50/60 Hz
Active Phase selection	Yes
Operating Temperature	-15°C to + 60°C
GSM Type	Dual band 900 / 1800 GSM
GPRS Packet data	Class 10 coding scheme
AT cCommand set Suitabiltiy	N. A.
SMS Type Functionality	Data Call through GSM, SMS
SIM Holder	Text, Cell Broadcast
Antenna	Connected with the product
Antenna Impedance	50 Ω
Energy Measurement	Yes
Energy Measurement Accuracy	Class 0.5
Current Sensing Range	5A
CT Ratio	Settable up to 40
LED Indications	Tx, Rx, Network, Power, Pulse Out
Pulse Out rate	3200 pulses / kWh
Auxiliary Output	12 V DC, 200 mA
Mounting	Base / DIN Rail
Enclosure	Flame Retardant UL94-V0
Dimension (W x H x D) (in mm)	72 X 90 X 67
Weight (unpacked)	190 g
Certification	CE RoHS Compliant

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

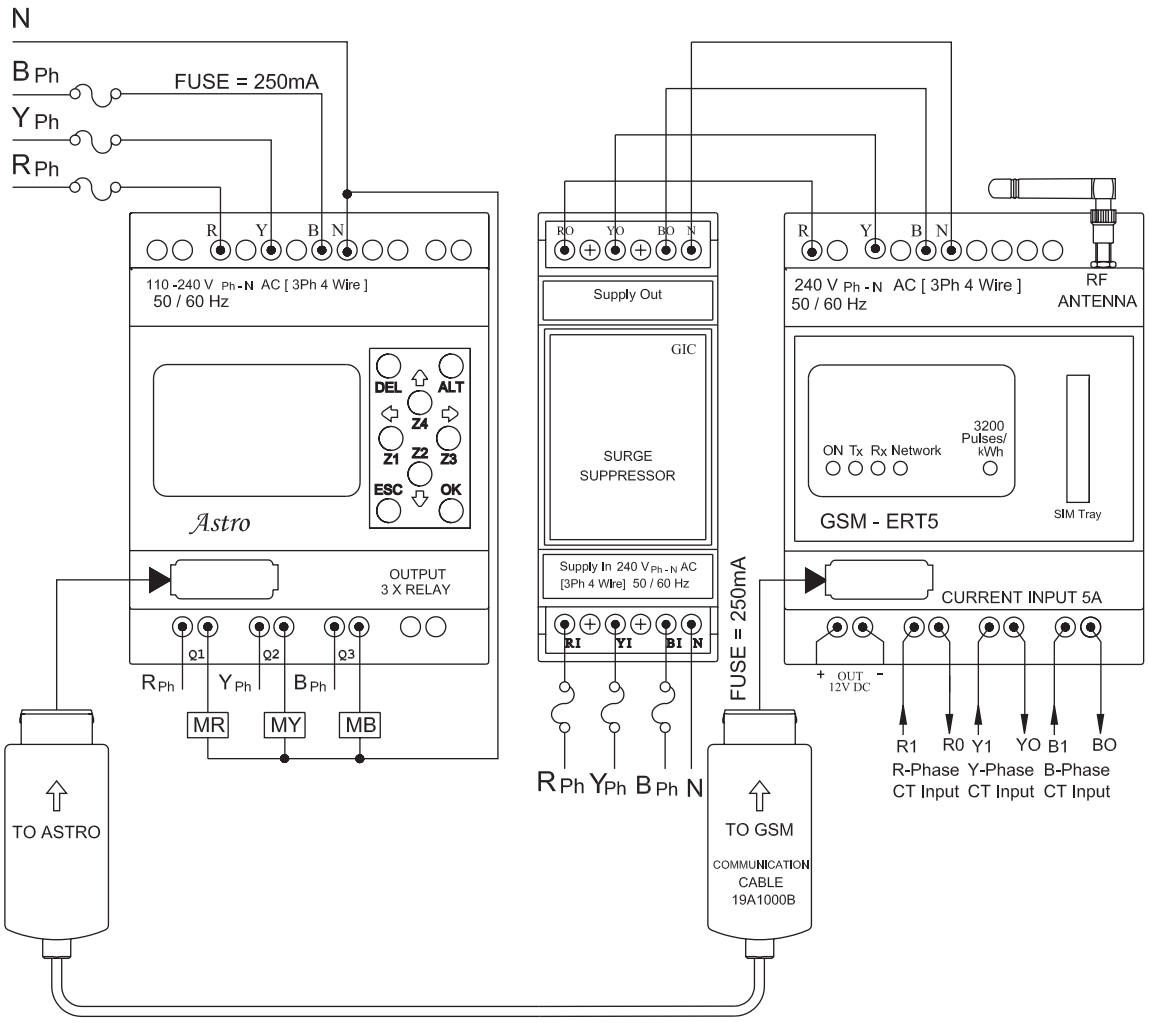
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Note:
1. ERT5 can measure maximum 5A & 1A current respectively.
2. Maximum current measurement limit for ERT-5 is 200A.
Ex: 1. For CT selection if current required to be measured is upto 200A then CT of 200:5 A (CT ratio 40) needs to be used.

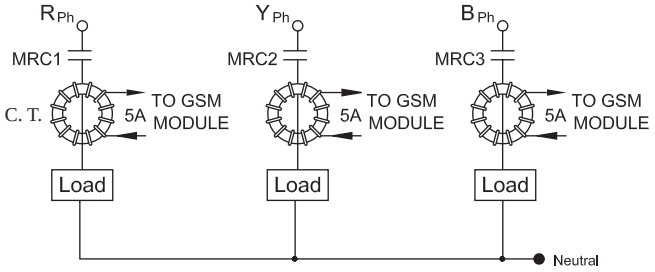
Lighting Automation with *Astro*® using GSM Technology

- Maximum 5 valid users can access the system remotely, using GSM functionality.
- To avoid Remote module's SIM theft, "SIM PIN" facility can be enabled remotely using SMS query.
- To avoid changes in system configuration by unauthorized user amongst valid users, important SMS queries are provided with "MODULE PIN" lock.
- Device supports for 12 to 14 digit mobile number. i.e. (10 Digit Mobile number + 2/3/4 digit country code).

CONNECTION DIAGRAM



1. MR: - Coil of Contactor 1
2. MY: - Coil of Contactor 2
3. MB: - Coil of Contactor 3
4. MRC1: - NO of Contactor 1
5. MRC2: - NO of Contactor 2
6. MRC3: - NO of Contactor 3



TERMINAL TORQUE & CAPACITY

Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 24 to 12

HOUR METERS & COUNTERS

Hour Meter Series HM36

- Robust design with high degree of Accuracy and Compact size
- Frequency independent for AC applications
- Indicates operating time in hours and tenths with running indicators
- Totally sealed from Dust and Moisture
- Panel mountable with 7 Bezel options
- 6 Digit Non-Resettable with automatic recycle to zero
- Wide supply voltage range: 4 - 30V AC/DC, 10 - 80V DC & 90 - 264V AC
- Shock & Vibration Proof

Ordering Information

Cat. No.	Description
LA21F1	90 - 264 VAC, Rectangular Bezel
LA22F1	90 - 264 VAC, Rectangular 2 holes Bezel
LA23F1	90 - 264 VAC, Round Bezel
LA24F1	90 - 264 VAC, Round 3 holes Bezel
LA25F1	90 - 264 VAC, Square Mount Bezel
LA26F1	90 - 264 VAC, Cup Mount Bezel
LA27F1	90 - 264 VAC, Stirrup Mount Bezel
LD11F1	10 - 80 VDC, Rectangular Bezel
LD12F1	10 - 80 VDC, Rectangular 2 holes Bezel
LD13F1	10 - 80 VDC, Round Bezel
LD14F1	10 - 80 VDC, Round 3 holes Bezel
LD15F1	10 - 80 VDC, Cup Mount Bezel
LD16F1	10 - 80 VDC, Stirrup Mount Bezel
LD17F1	10 - 80 VDC, Square Mount Bezel
LC31F1	4 - 30 VAC/DC, Rectangular Bezel
LC32F1	4 - 30 VAC/DC, Rectangular 2 holes Bezel
LC33F1	4 - 30 VAC/DC, Round Bezel
LC34F1	4 - 30 VAC/DC, Round 3 holes Bezel
LC35F1	4 - 30 VAC/DC, Cup Mount Bezel
LC36F1	4 - 30 VAC/DC, Stirrup Mount Bezel
LC37F1	4 - 30 VAC/DC, Square Mount Bezel

Hour Meter Series HM36

Cat. No.	LA25F1	LD15F1	LC36F1
Parameters			
Supply Voltage (⏚)	90 - 264 VAC	10 - 80 VDC	4 - 30 VAC/DC
Frequency	50/60 Hz	N A	50/60 Hz
Over Voltage & Reverse Polarity Protection	N A	Protected for 2 times Battery voltage and / or Reverse polarity	Not applicable to AC and 48V for DC Application
Power Consumption (Max.)	0.5 VA	0.25 VA	1 VA
Bezel	Square Mount	Cup Mount	Stirrup Mount
Register	6 Digit (3.6mm)		
Read Out	99999.9		
Least Count	1/10 h		
Accuracy	± 0.02% over entire range		
Vibration	10-80Hz with 20g max (SAE J1378)		
Shock	55g @ 9-13ms (SAE J1378)		
Weight (unpacked)	47g		
Temperature	-40° C to +85° C		
Humidity (Non Condensing)	95% (Rh)		
Mounting	Panel		
Termination	¼" [6.3] Spade Terminal		
Degree of Protection	IP 66		
Approvals	SAE & NEMA 4X		SAE & NEMA 4X
	c UL us CE RoHS Compliant		CE RoHS Compliant

VIEWS OF DIFFERENT BEZELS

Rectangular Bezel

Rectangular 2 holes Bezel

Round Bezel

Round 3 holes Bezel

Cup Mount Bezel

Stirrup Mount Bezel

Hour Meter Series HM36

- Robust design with high degree of Accuracy and Compact size
- Frequency independent for AC applications
- Indicates operating time in hours and tenths with running indicators
- Totally sealed from Dust and Moisture
- 6 Digit Non-Resettable with automatic recycle to zero
- Wide supply voltage range: 90 - 460V AC, 10 - 80V DC & 110 V DC
- Suitable for Control Panel applications

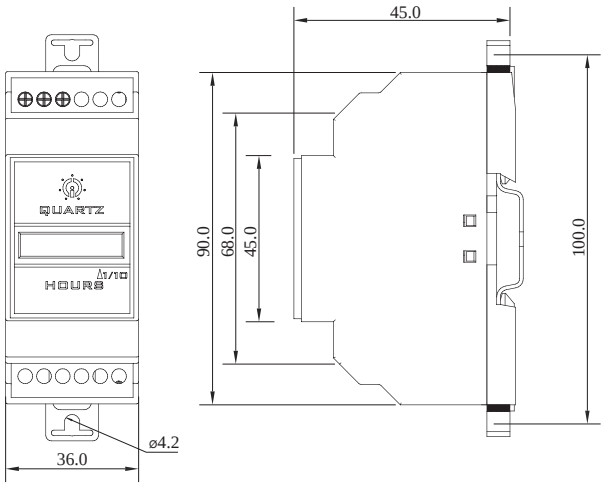
Ordering Information

Cat. No.	Description
30A6B1	90 - 264 / 270 - 460 V AC, Hour Meter, Base/DIN
30A7B1	48 V AC, Hour Meter, Base/DIN
30D1B1	10 - 80 V DC, Hour Meter, Base/DIN
30D4B1	110 VDC, Hour Meter, Base/DIN

Hour Meter Series HM36

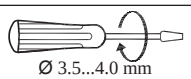
Cat. No.	30A6B1	30D1B1	30D4B1
Parameters			
Supply Voltage (⏚)	90 - 264 / 270 - 460 VAC	10 - 80 VDC	110 VAC
Frequency	50/60 Hz	N A	N A
Over Voltage	N A	96 VDC, 1 min	96 VDC, 1 min
Reverse Polarity Protection	N A	Yes	Yes
Power Consumption (Max.)	1 VA Max	0.25 VA	0.5 VA
Register	6 Digit (3.6mm)		
Read Out	99999.9		
Least Count	1/10 h		
Accuracy	± 0.02% over entire range		
Vibration	10-80Hz with 20g max (SAE J1378)		
Shock	55g @ 9-13ms (SAE J1378)		
Weight (unpacked)	70g		
Operating Temperature	-5° C to +55° C		
Storage Temperature	-20° C to +70° C		
Humidity (Non Condensing)	95% (Rh)		
Mounting	Base/DIN Rail		
Termination	¼" [6.3] Spade Terminal		
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure		
Approvals	CE RoHS Compliant		

MOUNTING DIMENSIONS (mm)

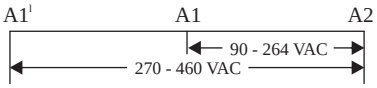


30A6B1, 30A7B1, 30D1B1, 30D4B1

TERMINAL TORQUE & CAPACITY

 Ø 3.5...4.0 mm	Torque - 0.54 N.m (5 Lb.in) Terminal screw - M2.6
	Solid Wire - 1 X 0.2...3.3 mm^2
AWG	1 X 24 to 12

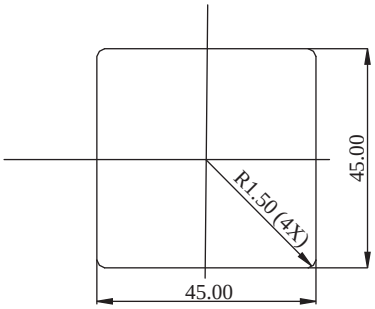
CONNECTION DIAGRAM



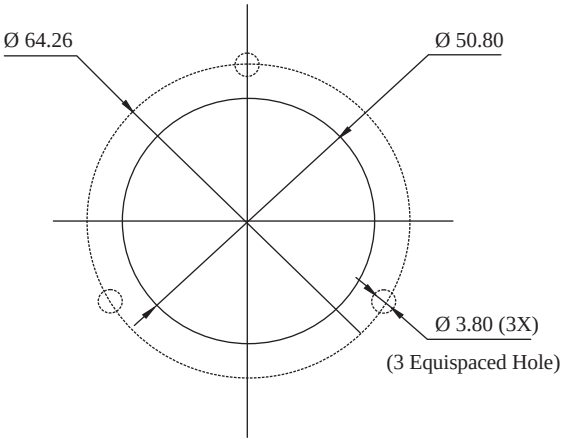
Hour Meter Series HM36

MOUNTING DIMENSION (mm)

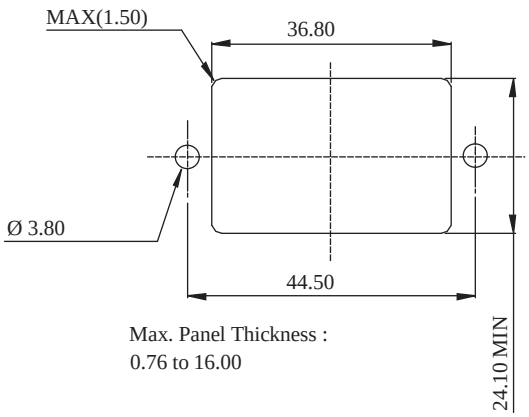
SQUARE MOUNT BEZEL (45 X 45 PANEL CUTOUT)



ROUND BEZEL, ROUND 3 HOLES BEZEL, CUP MOUNT BEZEL & STIRRUP MOUNT BEZEL



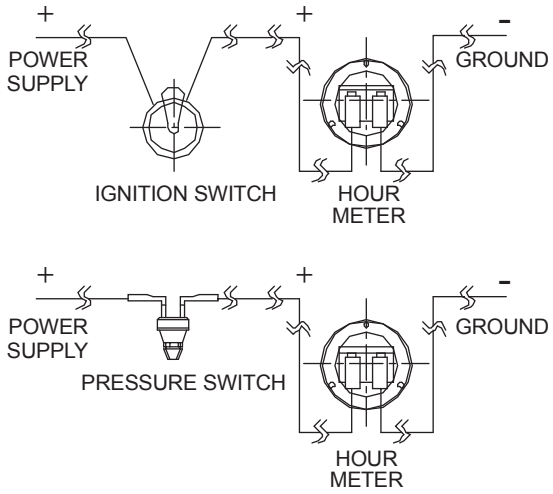
RECTANGULAR BEZEL



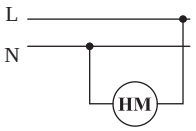
Max. Panel Thickness :
0.76 to 16.00

CONNECTION DIAGRAM

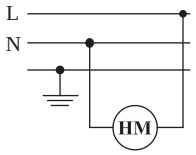
FOR: DC SERIES



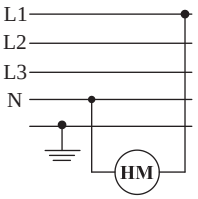
FOR: AC SERIES



Single phase, 2 wire, 120/240 V system: Connect power wire to one terminal and neutral wire to opposite terminal.



Single phase, 3 wire, 120/240 V system: Connect any one power wire to one terminal and neutral wire to opposite terminal.

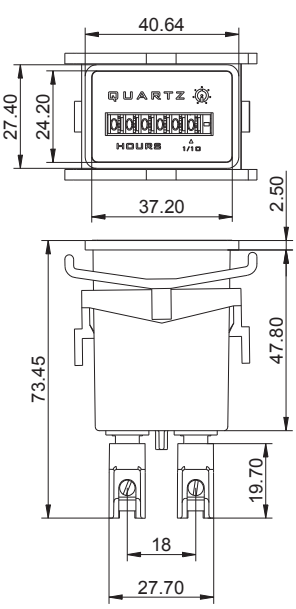


Three phase, 4 wire, 120/240 V system: Connect any one power wire to one terminal and neutral wire to opposite terminal.

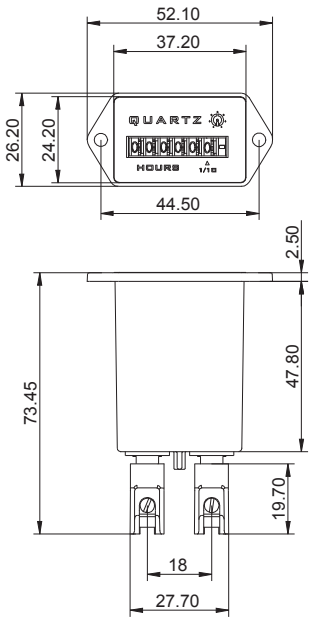
CAUTION
Tighten terminals with flat head screwdriver with tip size 4.3 x 0.6 mm.

Hour Meter Series HM36

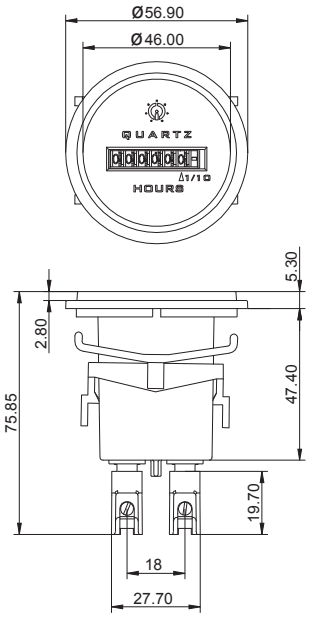
VIEWS OF DIFFERENT BEZELS



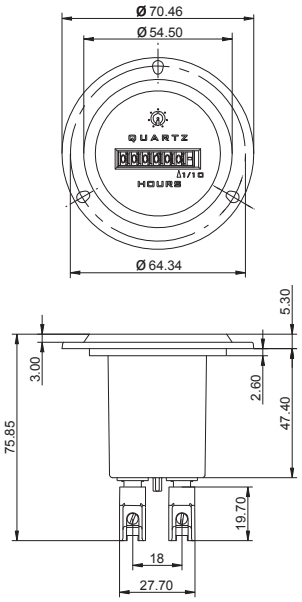
Rectangular Bezel



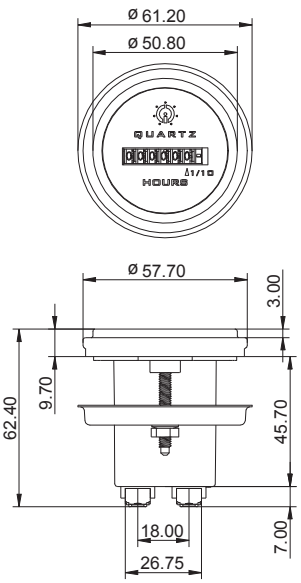
Rectangular 2 holes Bezel



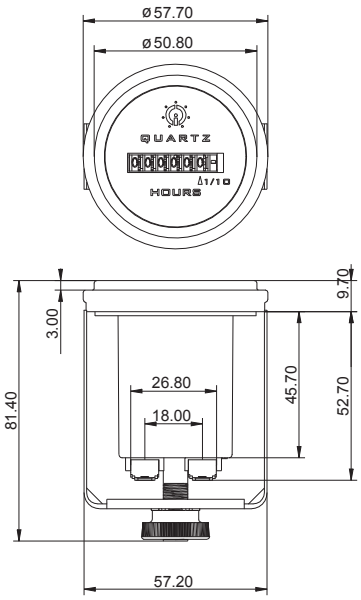
Round Bezel



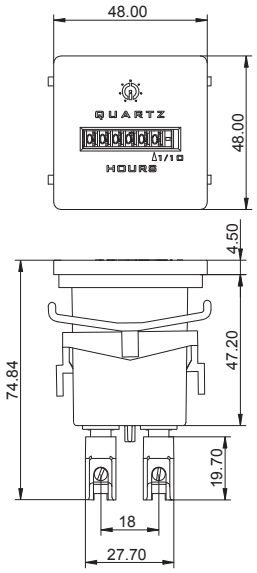
Round 3 holes Bezel



Cup Mount Bezel



Stirrup Mount Bezel



Square Bezel

Dimensions in mm

Digital Hour Meter

- 6-digit LCD
- In-built nonvolatile memory (EEPROM) offering exceptional reliability
- Wide range of supply voltage
- Remote reset
- Available in 3 different Bezels
- Low Power Consumption

Ordering Information

Cat. No.	Description
Z71FBX	85-265 VAC model
ZJ1FBX	12-48 VAC/DC model
ZH1FBX	10-80 VDC model
X	A = Round Bezel, B = 24x48 Bezel, C = Screw Mount Bezel

Digital Hour Meter

Cat. No.	Z71FBX	ZJ1FBX	ZH1FBX
Parameters			
Supply Voltage (⏚)	85 - 265 VAC	12 - 48 VAC/DC	10 - 80 VDC
Frequency	50/60 Hz	50/60 Hz	N A
Power Consumption (Max.)	0.8 VA	0.4 W	0.6 W
Range	99999.9 h		
Display	6-digit LCD 5mm Height		
Resolution	1/10 h		
Accuracy	± 0.02%		
Memory Retention	100 Years		
Operating Temperature Storage Temperature	-10° C to +50° C -20° C to +65° C		
Humidity	95% (Rh)		
Degree of Protection	IP54 (for front side only)		
Enclosure	UL94-V0		
Terminals	1, 2: Input Supply, 3: Enable 4: Reset		
Panel cut outs	Round Bezel, 24 x 48 Bezel, Screw Mount Bezel		
Mounting	Flush / Panel Mounting		
Certification	CE RoHS Compliant		
Weight (unpacked)	With Round Bezel- 35g, with 24 x 48 Bezel- 29 g, with Screw Mount Bezel- 31 g		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

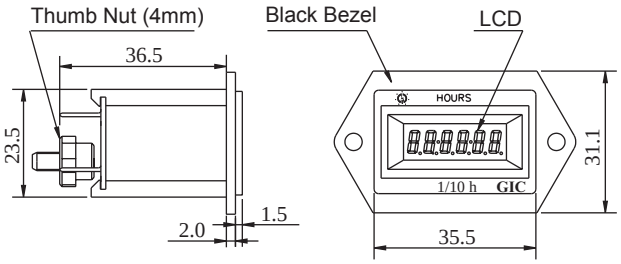
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Digital Hour Meter

MOUNTING DIMENSION (mm)

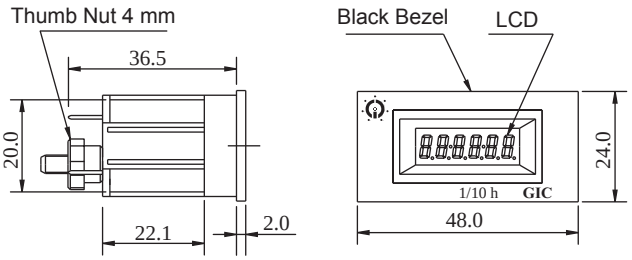
DIGITAL HOUR METER

SCREW MOUNT BEZEL



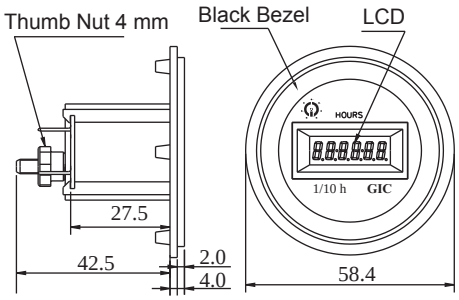
Recommended Panel Cutout :
37.0 (+0.5)mm x 24.6 (+0.5)mm

24X48 BEZEL



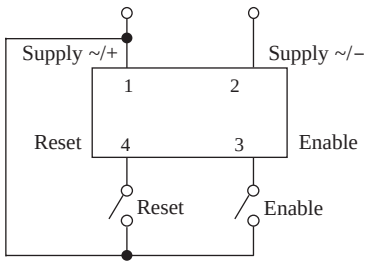
Recommended Panel Cutout :
45.5 (+0.5)mm x 23.0 (+0.5)mm

ROUND BEZEL



Recommended Panel Cutout :
37.0 (+0.5)mm x 24.6 (+0.5)mm

CONNECTION DIAGRAM



TERMINAL DESCRIPTION

Pin 1: Supply (~ / +)
Pin 2: Supply (~ / -)
Pin 3: Enable
Pin 4: Reset

DIGITAL HOUR METER

Impulse Counter Series CR 18

- 7-digit Compact Size
- High Accuracy and Reliability
- Requires no lubrication or maintenance
- Ideal where space is limitation
- Mounting options: Panel, PCB

Ordering Information

Cat. No.	Description
ED11A	12 V DC, Behind the panel (Screw mount)
ED11B	12 V DC, Behind the Panel With out Seal Hole (Screw mount)
ED22D	24 V DC, PCB mount (Straight)
ED23D	24 V DC, PCB mount (Right angle)
ED24C	24 V DC, Panel (Snap-in type)

Impulse Counter Series CR 18

Cat. No.	ED11A	ED11B	ED22D	ED23D	ED24C
Parameters					
Supply Voltage (⏚)	12 V DC		24 V DC		
Supply Variation	-15% to +10%		±10%		-15% to +10%
Power Consumption (Max.)	1.2 W				
Figure	7 Digit, Black, 4.0 mm Height				
Maximum Range	99,99,999				
Operating Life	10,000,000 counts minimum				
Speed (Counts / Minute)	600 (50ms-ON / 50ms-OFF)		1200 (25ms-ON / 25ms-OFF)		600 (50ms-ON / 50ms-OFF)
Pulse Width (minimum)	50 ms		25 ms		50 ms
Connection	Lead wire with connector		Terminal PIN (Pitch : 10 mm)	Terminal PIN (Pitch : 3.80 mm)	Lead Wire
	#39-01-4031 #39-00-0039	# 03-09-2022 #02-09-2116			
Panel Cutout	N.A				1.20'(30.48) x 0.96'(24.38) Panel thickness - 0.04'(1.0) to 0.08'(2.0)
Protection for Housing	Tamper Proof housing		N.A		
Weight (unpacked)	142 g				
Operating Temperature	-5° C to +40° C (Non-Freezing)				
Humidity (Non Condensing)	45 to 85% (Rh)				
Display	0.12'(3.0) x 0.06' (1.6) - White & black background				
Continuous Energizing	Permissible				
Counting Method	One pulse - One count (energizing - ½ count, unenergized - ½ count)				
Reset	None				
Shock test	Endurance: 300 m/s² (30g) XYZ 5 times each direction, Total : 3, Mismovement :50 m/s² (5g) XYZ 4 times each direction, Total : 24.				
Vibrations test	Endurance: 16.7 Hz, Width : 4mm ; XYZ each direction for 1 hour Mismovement :10~55 Hz, Width : 0.5mm ; XYZ each direction for 10 mins				
Type of Mounting	Behind the panel (Screw mount)		PCB mount (Straight)	PCB mou(Right angle)	Panel (Snap-in type)
Degree of Protection	IP 30				
Construction	Cover : Plastic (Noryl UL94V-1), Black				
Approvals	CE RoHS Compliant				

VIEWS OF DIFFERENT BEZELS

Behind the panel (Screw mount)

Housing Behind Panel with Out Seal Hole (Screw mount)

PCB mount (Straight)

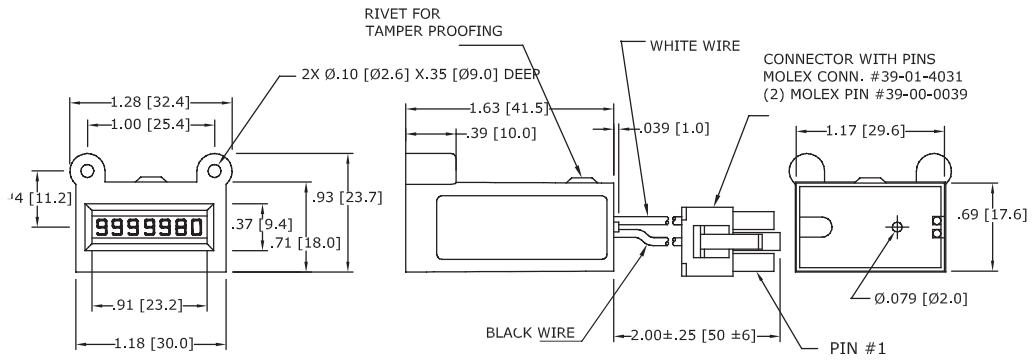
PCB mount (Right angle)

Panel (Snap-in type)

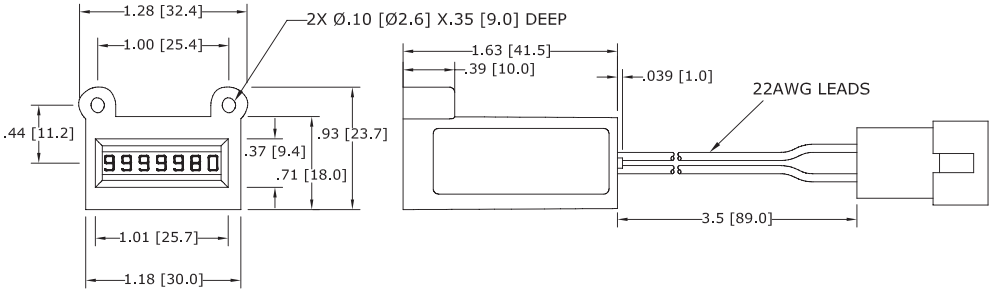
Impulse Counter Series CR 18

MOUNTING DIMENSION (mm)

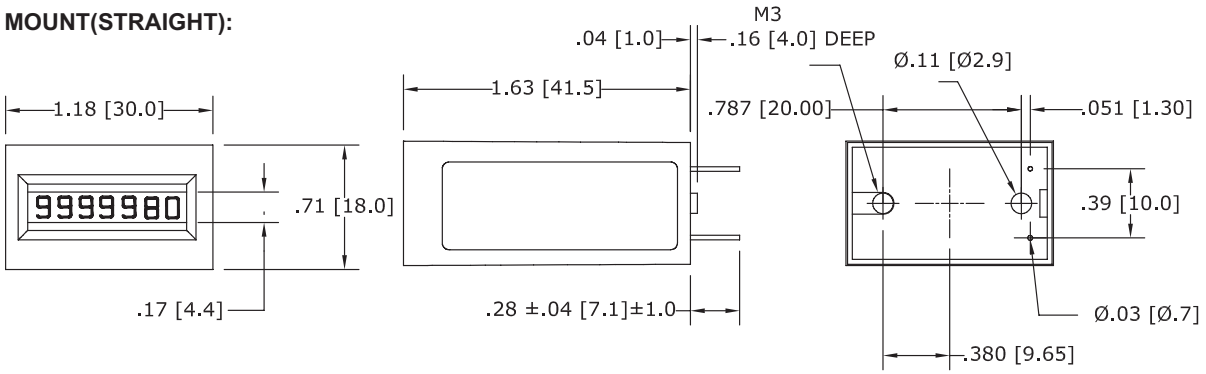
BEHIND THE PANEL (SCREW MOUNT):



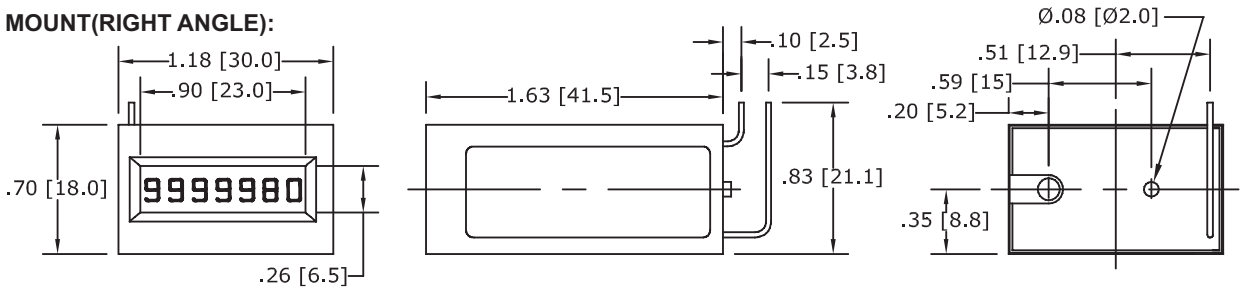
BEHIND THE PANEL (SCREW MOUNT):



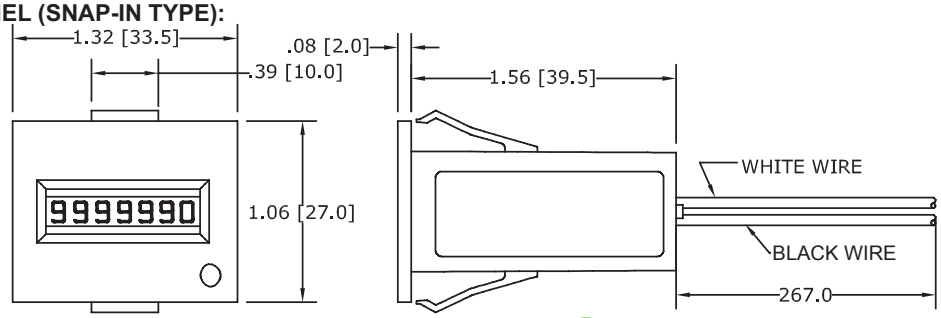
PCB MOUNT(STRAIGHT):



PCB MOUNT(RIGHT ANGLE):



PANEL (SNAP-IN TYPE):



Impulse Counter Series CR 26

- 6-digit Compact and Robust Design
- Push-button quick reset
- High Accuracy and Reliability
- Requires no lubrication or maintenance
- Optional locking for reset button
- Ideal where space is limitation
- Three mounting options: Bail, Panel, Base

X X X X X - X X X

Product

S	Resettable Series CR-26
N	Non-Resettable Series CR-26

Model

A	For AC
D	For DC

Voltage

AC		DC	
1		1	9 V
2		2	12 V
3	24 V 50/60 Hz	3	24 V
4	115 V 50/60 Hz	4	110 V
5	230 V 50/60 Hz	5	220 V
		6	2.5 V
		7	4 V
		8	6 V
		9	250 V
		A	125 V

Mounting

1	Rectangular - 2 Hole
2	Bail Mounting
3	Base Mounting

Termination

A	With 2 - way terminal strip
B	With 22 AWG 254 mm long wire

Note: Terminal strip is not applicable for base mounting

Only for Rectangular - 2 Hole

356	Center Distance 35.6
385	Center Distance 38.5

Note: Other voltages will be made available upon request.

Impulse Counter Series CR 26

Cat. No.	SD21A-385	SD31A-385	SA41A-356	SA51A-356
Parameters				
Supply Voltage (⏚)	12 VDC	24 VDC	115 VAC	230 VAC
Supply Variation	+10% to -15% (of ⏚)			
Power Consumption (Max.)	2 W		3 W	
Figure	6 Digit, White on Black, (4.0 mm) Height			
Maximum Range	9,99,999			
Operating Life	Beyond 100 million counts			
Speed	10 Hz Maximum (600 Counts / Minute)			
Pulse Width	50 ms minimum			
Counting Method	One Pulse - One count (energizing - 1/2 count, de-energized - 1/2 count)			
Continuous Energizing	Permissible			
Reset	Manual push button Reset (Reset button can be locked or sealed to avoid accidental reset)			
Weight (unpacked)	142 g			
Operating Temperature	-5° C to +50° C (Non-Freezing)			
Humidity (Non Condensing)	45 to 85% (Rh)			
Termination	22 AWG, 105° C wire leads, 254 mm long / 2 way Terminal Strip			
Type of Mounting	Panel, Bail & Base			
Degree of Protection	IP 30			
Certification	CE RoHS Compliant			
Applications	Ideal for use in - Machine tools, Business Machines, Test Instruments, Amusement Instruments and Measuring devices			

Note: Do not push reset button during change over.

Impulse Counter Series CR 26 (4-Digit)

- 4-digit Compact and Robust Design
- Push-button quick reset
- High Accuracy and Reliability
- Requires no lubrication or maintenance
- Optional locking for reset button
- Ideal where space is limitation
- Three mounting options: Bail, Panel, Base

4 X X X X X - X X X

Product

S	Resettable Series CR-26
N	Non-Resettable Series CR-26

Model

A	For AC
D	For DC

Voltage

AC		DC	
1		1	9 V
2		2	12 V
3	24 V 50/60 Hz	3	24 V
4	115 V 50/60 Hz	4	110 V
5	230 V 50/60 Hz	5	220 V
		6	2.5 V
		7	4 V
		8	6 V
		9	250 V
		A	125 V

Termination

A	With 2 - way terminal strip
B	With 22 AWG 254 mm long wire

Note: Terminal strip is not applicable for base mounting

Mounting

1	Rectangular - 2 Hole
2	Bail Mounting
3	Base Mounting

Only for Rectangular - 2 Hole

356	Center Distance 35.6

Note: Other voltages will be made available upon request.

Impulse Counter Series CR 26 (4-Digit)

Cat. No.	4SD21A-356	4SD31A-356	4SA41A-356	4SA51A-356
Parameters				
Supply Voltage (⏚)	12 VDC	24 VDC	115 VAC	230 VAC
Supply Variation	+10% to -15% (of ⏚)			
Power Consumption (Max.)	2 W		3 W	
Figure	4 Digit, White on Black, (4.0 mm) Height			
Maximum Range	9999			
Operating Life	Beyond 100 million counts			
Speed	10 Hz Maximum (600 Counts / Minute)			
Pulse Width	50 ms minimum			
Counting Method	One Pulse - One count (energizing - 1/2 count, de-energized - 1/2 count)			
Continuous Energizing	Permissible			
Reset	Manual push button Reset (Reset button can be locked or sealed to avoid accidental reset)			
Weight (unpacked)	113 g			
Operating Temperature	-5° C to +50° C (Non-Freezing)			
Humidity (Non Condensing)	45 to 85% (Rh)			
Termination	22 AWG, 105° C wire leads, 254 mm long / 2 way Terminal Strip			
Type of Mounting	Panel, Bail & Base			
Degree of Protection	IP 30			
Certification	CE RoHS Compliant			
Applications	Ideal for use in - Machine tools, Business Machines, Test Instruments, Amusement Instruments and Measuring devices			

Note: Do not push reset button during change over.

Impulse Counter Series CR 36

- Compact Size & Robust Design
- 7 Digit, Non-Resettable
- High Degree of Accuracy & Reliability
- Wide Temperature range
- Shock & Vibration Proof

Ordering Information

Cat. No.	Description
QD11A	12 VDC, Rectangular Bezel
QD21A	24 VDC, Rectangular Bezel
QD12A	12 VDC, Rectangular 2 Hole Bezel
QD22A	24 VDC, Rectangular 2 Hole Bezel
QD23A	24 VDC, Round Bezel

Impulse Counter Series CR 36

Cat. No.	QD11A	QD22A
Parameters		
Supply Voltage (⏚)	12 VDC	24 VDC
Supply Variation	-15% to +10%	
Power Consumption (Max.)	0.25 VA	
Figure	7 Digit, White on Black, (3.6mm) High	
Maximum Range	9999999	
Speed	10 Hz Maximum (600 counts/minute)	
Pulse Width	50 ms. minimum	
Counting Method	One Pulse - One Count (energizing - ½ count, de-energizing - ½ count)	
Weight	45 gm	
Operating Temperature	-5°C to +50°C	
Humidity (Non Condensing)	45% to 85% (Rh)	
Mounting	Panel	
Degree of Protection	NEMA 4X (IP 65)	
Certification	CE RoHS Compliant	

Digital Counters

- 6-digit LCD
- In-built nonvolatile memory (EEPROM) offering exceptional reliability
- Wide range of supply voltage
- Remote reset
- Available in 3 different shaped Bezels
- Low Power Consumption

Ordering Information

Cat. No.	Description
Z72FBX	85-265 VAC model
ZJ2FBX	12-48V AC/DC model
ZH2FBX	10-80V DC model
X	A=Round Bezel, B=24x48 Bezel, C=Screw Mount Bezel

Digital Counters

Cat. No.	Z72FBX	ZJ2FBX	ZH2FBX
Parameters			
Supply Voltage (⏚)	85 - 265 VAC	12 - 48 VAC/DC	10 - 80 VDC
Frequency	50/60 Hz	50/60 Hz	N A
Power Consumption (Max.)	0.8 VA	0.4 W	0.6 W
Counting frequency	10Hz	10Hz	30Hz
Maximum Range	999999		
Display	Large 6-Digit display, easy to read		
Resolution	1 Count		
Reset	Electrical		
Memory Retention	100 Years		
Operating Temperature Storage Temperature	- 10° C to +50° C - 20° C to +65° C		
Accuracy	± 1 Count		
Humidity (Non Condensing)	95% (Rh)		
Degree of Protection	IP54		
Enclosure	UL94-V0		
Terminals	1 & 2: Input Supply, 3: Count 4: Reset		
Panel cut outs	Round Bezel, 24 x 48 Bezel, Screw Mount Bezel		
Mounting	Flush/ Panel Mounting		
Certification	CE RoHS Compliant		
Weight (unpacked)	With Round Bezel - 35g, with 24 x 48 Bezel - 29 g, with Screw Mount Bezel - 31 g		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

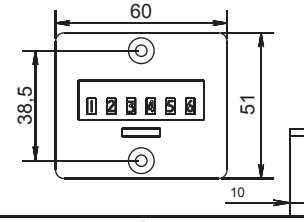
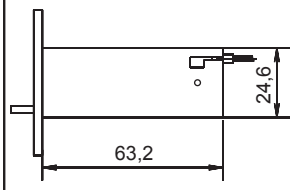
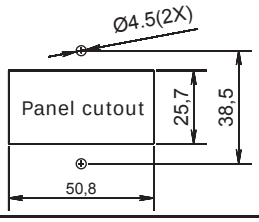
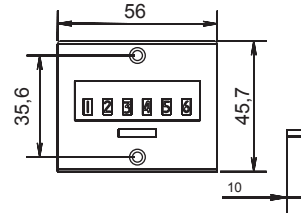
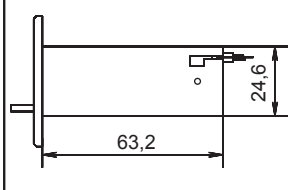
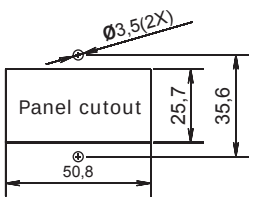
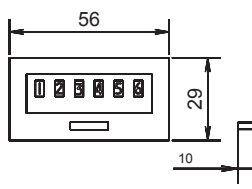
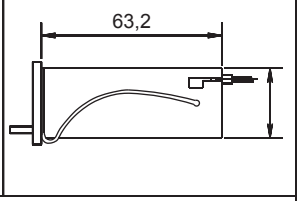
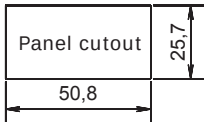
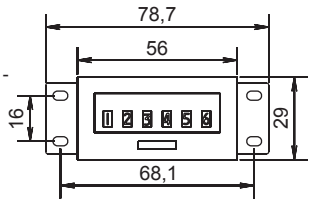
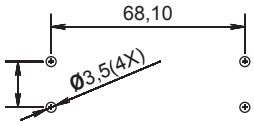
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Impulse Counter Series CR 26

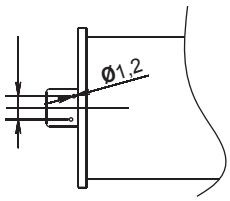
MOUNTING DIMENSION (mm)

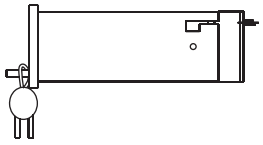
IMPULSE COUNTER CR 26

Resettable Counter
SXXXA

	A=With terminal strip	B=With 22 AWG 254 mm long wire	Panel cutout dimension
1. Panel Mount - 6 Figure SXXXX-385			
2. Panel Mount - 6 Figure SXXXX-356			
3. Bail Mount - 6 Figure			
4. Base Mount - 6 Figure			

5. Optional locking for reset button

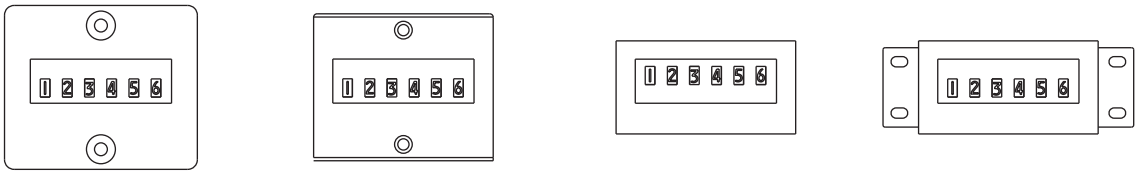




To avoid the tampering with the reset button you can seal the counter as shown in the above figure

NON RESETTABLE COUNTER- NXXXA

A = Counter with Terminal Strip(not applicable for Base Mounting)
B = Counter with Wire (22 AWG 254 mm Long)



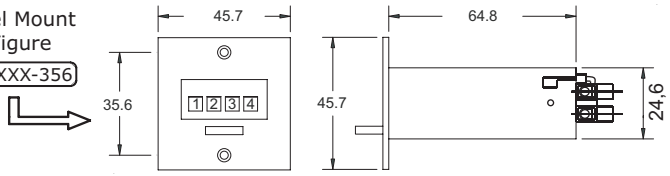
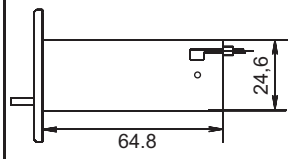
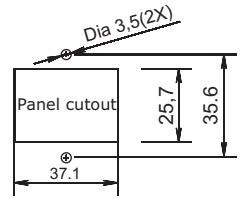
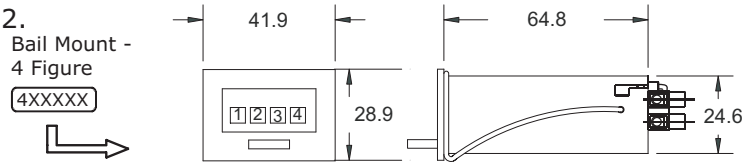
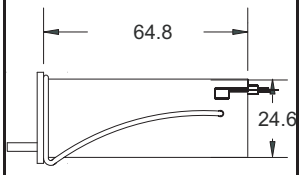
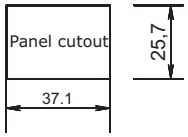
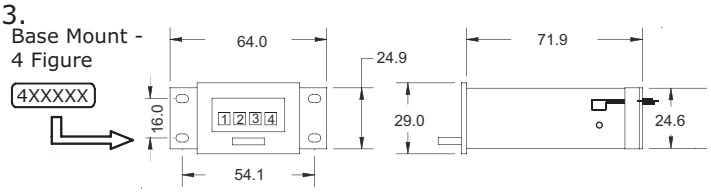
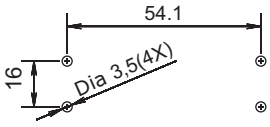
Note: For Non Resettable Counters, reset arm lever will not be present and all other details will be common with resettable counter.

Impulse Counter Series CR 26 (4-Digit)

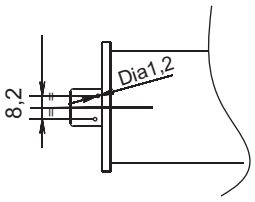
MOUNTING DIMENSION (mm)

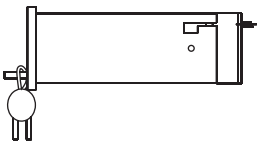
IMPULSE COUNTER CR 26 (4 FIG)

Resettable Counter
4XXXA

	A=With terminal strip	B=With 22 AWG 254 mm long wire	Panel cutout dimension
1. Panel Mount - 4 Figure 4XXXXX-356			
2. Bail Mount - 4 Figure 4XXXXX			
3. Base Mount - 4 Figure 4XXXXX			

4. Optional locking for reset button

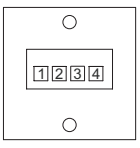


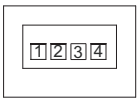


To avoid the tampering with the reset button you can seal the counter as shown in the above figure

NON RESETTABLE COUNTER- NXXXA

A = Counter with Terminal Strip(not applicable for Base Mounting)
B = Counter with Wire (22 AWG 254 mm Long)





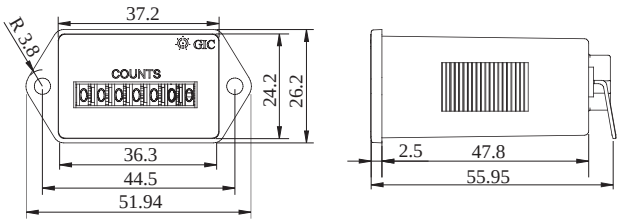
Note: For Non Resettable Counters, reset arm lever will not be present and all other details will be common with resettable counter.

Impulse Counter Series CR 36 & Digital Counter

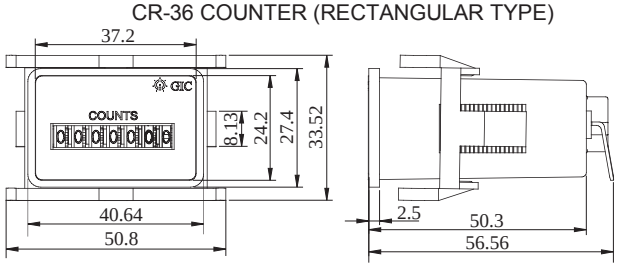
MOUNTING DIMENSIONS (mm)

IMPULSE COUNTER CR 36

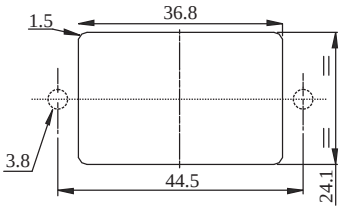
CR-36 COUNTER (RECTANGULAR 2 HOLE TYPE)



CR-36 COUNTER (RECTANGULAR TYPE)



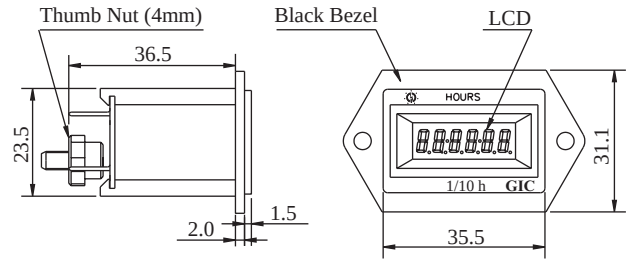
PANEL CUT-OUT



Max. Panel Thickness: 0.76mm to 10.20mm
Panel Cut-out Dimensions: Tolerance - 0.30mm
Panel Cut-out common for all models

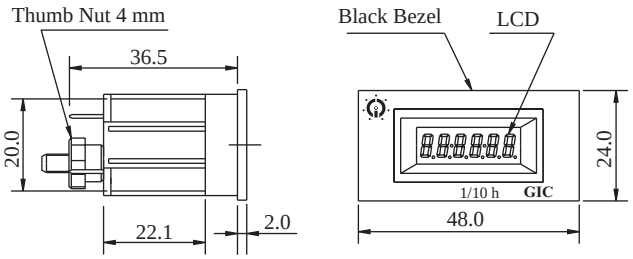
DIGITAL COUNTER

SCREW MOUNT BEZEL



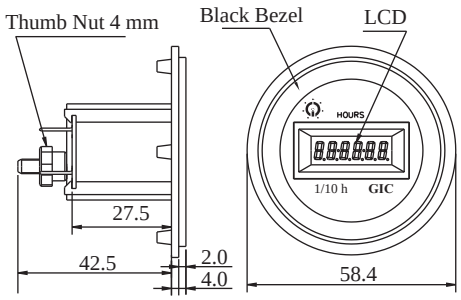
Recommended Panel Cutout :
37.0 (+0.5)mm x 24.6 (+0.5)mm

24X48 BEZEL



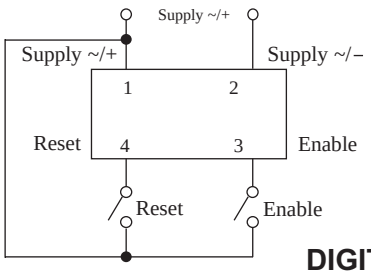
Recommended Panel Cutout :
45.5 (+0.5)mm x 23.0 (+0.5)mm

ROUND BEZEL



Recommended Panel Cutout :
37.0 (+0.5)mm x 24.6 (+0.5)mm

CONNECTION DIAGRAM



TERMINAL DESCRIPTION

Pin 1: Supply (~ / +)
Pin 2: Supply (~ / -)
Pin 3: Enable
Pin 4: Reset

DIGITAL COUNTER

Digital Hour Meter & Counter

- Suitable for Hour meter & Counter (Up / Down) application
- Wide Hour meter range from 1 sec to 9999999 hrs
- Wide counter range from 1 to 9999999 counts
- Prescaling facility for Counter
- Alarm facility for both Hour meter & Counter
- Relay & MOSFET Output with Over Load detection
- Retentive & Non-Retentive modes
- 7 Digit LCD with luxurious green backlight
- Compact size
- Suitable for panel mounting

Ordering Information

Cat. No.	Description
Z2301N0G1FT00	9-30 V DC (with dual MOSFET output)
Z2221N0G2FT00	85-265 V AC/DC (with Relay output)

Digital Hour Meter & Counter

Cat. No.			Z2301N0G1FT00		Z2221N0G2FT00
Parameters					
Supply Voltage (⏚)			9 - 30 VDC		85 - 265 VAC/DC
Power Consumption (W)			2 W max.		2 VA / 1W
Supply Frequency			50 / 60 Hz		
I/P Signal Characteristics					
Signal Voltage Range			9 - 30 VDC		85 - 265 VAC & 100 - 265 VDC
Signal Isolation			2kV		
Output Characteristics					
Output type			2 MOSFET: 30 VDC/60 mA (Max.) Note: Use isolated input supply		Relay: 1 NO, Contact Rating: 5 A(Res.) @ 250 VAC/30 VDC Contact Material: Ag Alloy
Functional Characteristics					
Display			7 digit LCD , 6.5 mm Height, 12 O' Clock, Transmissive		
Number of keys			2 (SET key & RST key)		
Reset function	Reset type		Terminal	Front	Auto Reset
	Time (min.)		80 ms	3 Sec	-
Hour Meter Functions	Accuracy		± 2sec per Day		
	Ranges		Hrs : Min : Sec (999:59:59), Hrs : Min (99999:59), Hrs (9999999), Min (9999999), Sec (9999999)		
	Input Signal		For Hour counting detection, Signal has to be present for min. 3msec & signal has to be absent for min 20msec.		
Counter Functions	Accuracy		100%		
	Range		1 to 9999999.999		
	Decimal Point Position(max.)		3		
	Pre-scaler		4 Digit		
	Input	Switching Freq.(max.)	10 Hz for AC and 40 Hz for DC		
	Signal	Pulse Width min.	50ms ON/50ms OFF for AC, 12.5ms ON/12.5ms OFF for DC		
Environmental Characteristics					
Operating Temperature			-5° C to +55° C		
Storage Temperature			-10° C to +60° C		
Humidity			5 to 95% Rh (Without condensation)		
Maximum Operating Altitude			2000 m		
Pollution Degree			II		
Degree of Protection			Front side: IP40; Terminals: IP20, Housing : IP30		
Enclosure material			UL 94 V0 Plastic		
Casing color			Black		
Other Characteristics					
Mounting			Flush mounting on panel cut-out		
Panel Cut-out			22mm X 44.8mm		
Weight (Un-packed)			52 gm		
Operating position			Horizontal		
Termination wire Sizes			Wire size : 22-14 AWG, 0.3-2.5 mm		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
Voltage Flicker & Fluctuation	IEC 61000-3-3
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients (Supply)	IEC 61000-4-4
Electrical Fast Transients (Signal)	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Power Frequency Magnetic Field	IEC 61000-4-8
Voltage Dips	IEC 61000-4-29
Conducted Emission	CISPR 11
Radiated Emission	CISPR 11

Safety Compliance:

Test Voltage (All terminal to housing)	IEC 60947-5-1
Single fault	IEC 61010-1
Leakage Current	UL 508

Environmental

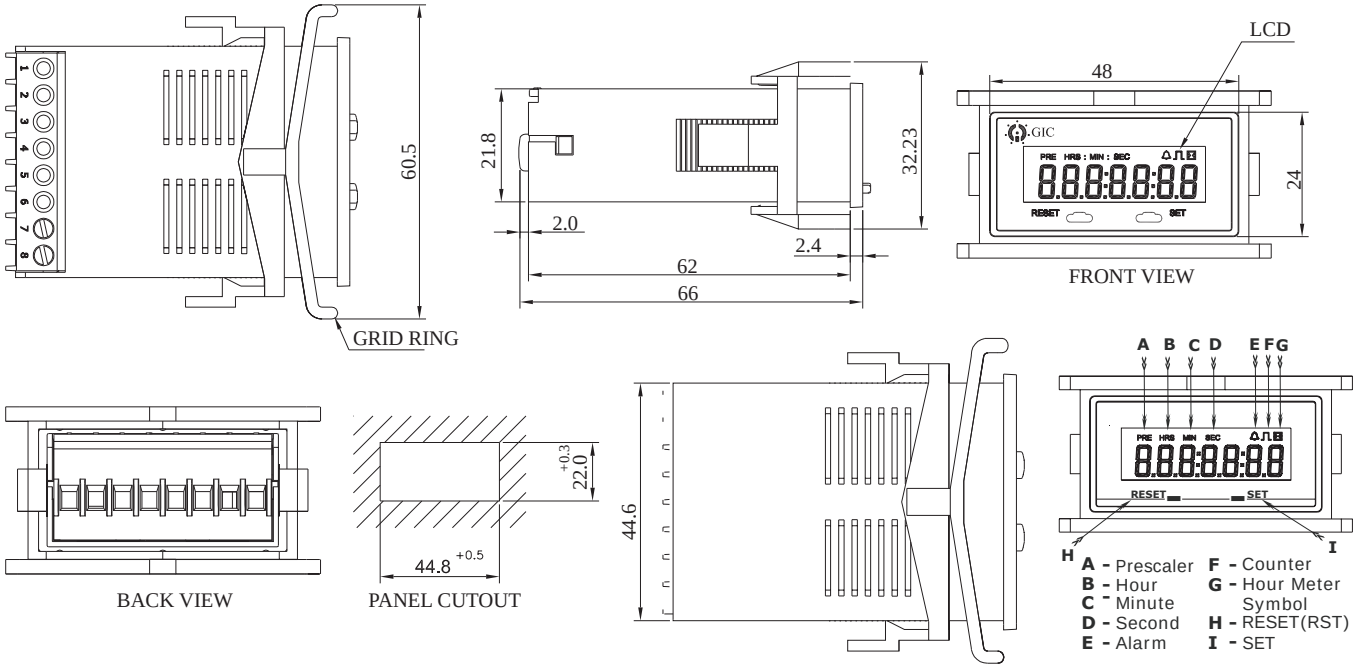
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Digital Hour Meter & Counter

TERMINAL TORQUE & CAPACITY

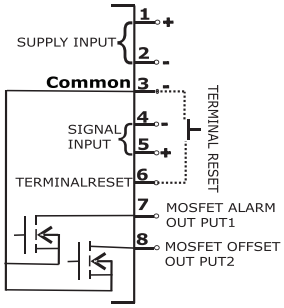
Ø 3.5 mm	0.40 N.m (3.5 Lb.in)
	1 x 2.5 mm^2 Solid/Stranded Wire
AWG	22 to 14

MOUNTING DIMENSIONS (mm)

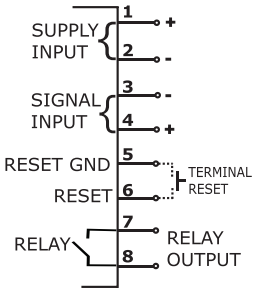


CONNECTION DIAGRAM

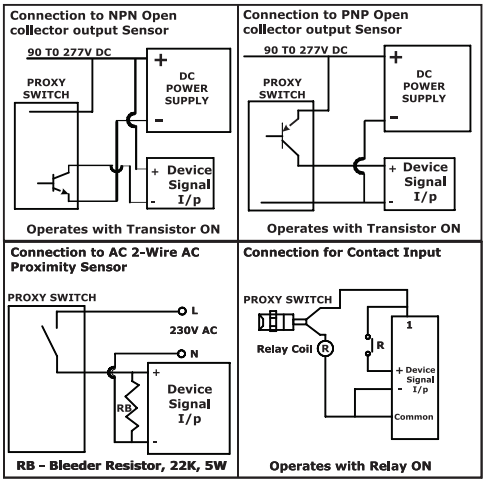
For Z2301N0G1FT00



For Z2221N0G2FT00



Proximity Switch Connection Diagram:



Rate Indicator & Totaliser

- Wide input signal sensing range 0.01Hz to 20KHz.
- Wide Totalizer range from 1 to 9999999.
- Wide Rate range from 1 to 999999.
- Prescaling facility for Rate Indicator.
- Alarm facility for both Rate Indicator & Totalizer.
- Password enabled.
- Signal Over-range displayed.

Ordering Information

Cat. No.	Description
Z3301N0G2FT00	9 VDC - 30 VDC (with Relay output)

Rate Indicator & Totaliser

Cat. No.		Z3301N0G2FT00		
Parameters				
Supply Voltage (⏚)		9 VDC to 30 VDC		
Max. Power Consumption (W)		0.73 W		
Input Signal		Range 1 : 0.1 Hz to 40 Hz		
Frequency Range		Range 2 : 0.1 Hz to 20 KHz		
Output Type		Relay: 1 NO, Contact Rating:5 A(Res.) @250 VAC / 30VDC Contact Material: Ag Alloy		
Display		7 digit LCD, 6.5mm Height, 12 O' Clock, Transmissive		
Rate Display		6 digit Display		
Number of keys		2 (SET & RST)		
Reset	Reset type	Terminal	Front	Auto Reset
Function	Time (min.)	80 ms	3 Sec	-
Rate Accuracy		± 0.01%		
Totalizer Accuracy		100 %		
Decimal Point Position (max.)		4		
Pre-scaler		4 digits before decimal point & 3 digits after decimal point.		
Operating Temperature		- 10° C to +55° C		
Storage Temperature		- 10° C to +60° C		
Humidity		5 to 95% Rh (Without condensation)		
Maximum Operating Altitude		2000 m		
Pollution Degree		II		
Degree of Protection		Front side : IP40; Terminals: IP20, Housing: IP30		
Enclosure material		UL 94 V0 Plastic		
Casing color		Black		
Weight (Unpacked)		52g		
Operating Position		Horizontal		
Termination wire Sizes		Wire size : 22-14 AWG, 0.3-2.5 mm		
Panel Cut-out		22mm X 44.8mm		
Mounting		Flush / Panel Mounting		
Certification		CE RoHS Compliant		

EMI / EMC

ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients (Supply)	IEC 61000-4-4
Electrical Fast Transients (Signal)	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Power Frequency Magnetic Field	IEC 61000-4-8
Voltage Dips	IEC 61000-4-29
Conducted Emission	CISPR 11
Radiated Emission	CISPR 11

Safety Compliance:

Test Voltage (All Terminal & Housing)	IEC 60947-5-1
Signal Fault	IEC 61010-1
Leakage Current	UL 508

Environmental

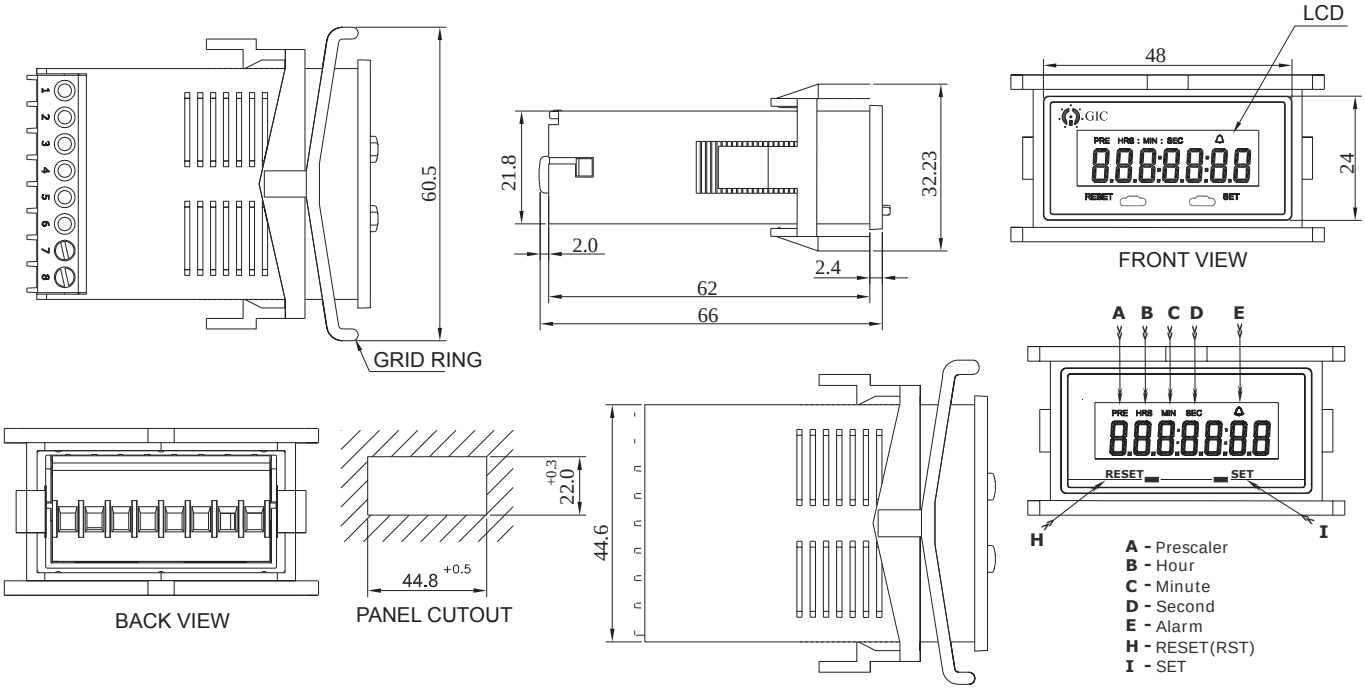
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Rate Indicator & Totaliser

TERMINAL TORQUE & CAPACITY

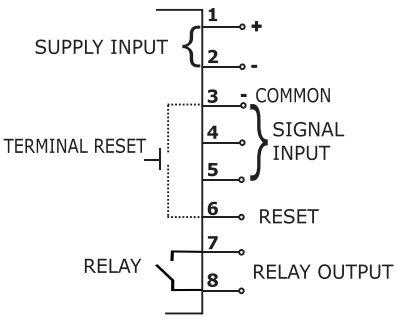
Ø 3.5 mm	0.40 N.m (3.5 Lb.in)
	1 x 2.5 mm^2 Solid/Stranded Wire
AWG	22 to 14

MOUNTING DIMENSIONS (mm)

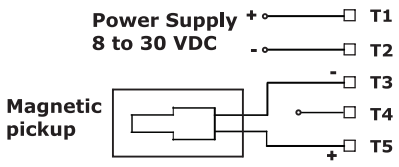


CONNECTION DIAGRAM

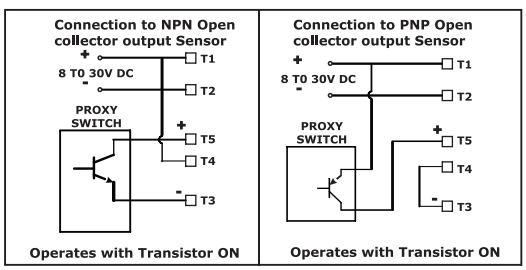
Z3301N0G2FT00



Magnetic pickup:



Proximity Switch Connection Diagram:



CONTROLLERS

Programmable Logic Controllers

Smart Relay *Genie*™- *NX*

Mini PLC PL - 100

GSM Controller

Smart Relay *Genie*™- *Nx*

- Supports upto 48 I/Os (32 Digital Inputs & 16 Digital Outputs)
- 250 lines of ladder programming
- 16 soft text messages, Time Switches, Compare Counters, Timers, Counters & 12 Analog functions, 4 Hour Meters
- DST Feature Available
- Backlit LCD Screen for display & modification of pre-selected parameters of functional blocks, viewing I/O status and programming on the device
- PC software for programming, online & offline simulation, documentation & printing
- Designed for use in automation for commercial & Industrial sectors

Ordering Information

Cat. No.	Description
G7DDT10	110 - 240 VAC, Genie Nx Base Module
G7DDT10B	110 - 240 VAC, Genie Nx Base Module, Without LCD Display
G8DDT10	12 - 24 VDC, Genie Nx Base Module
G8DDT10B	12 - 24 VDC, Genie Nx Base Module, Without LCD Display
G9DDT10	24V AC/DC, Genie Nx Base Module
G9ADT10	24V AC/DC, Genie Nx Base Module With 2 Analog I/P (for 24V DC only)
G9DDT10B	24V AC/DC, Genie Nx Base Module, Without display
G9ADT10B	24V AC/DC, Genie Nx Base Module With 2 Analog I/P (for 24V DC only), Without display

Cat. No.	Description
G7DDT10E	110 - 240 VAC, Genie Nx Extension Module
G8DDT10E	12 - 24 VDC, Genie Nx Extension Module
G9DDT10E	24V AC/DC, Genie Nx Extension Module
G9ADT10E	24V AC/DC, Genie Nx Base Module With 2 Analog I/P (for 24V DC only), Extension Module
GFDNN3M	Memory Card
GFDNN2S	RS 232 Serial Communication Cable
GFDNN1	USB Cable
GNXNN2	Genie Nx Software supplied on CD-ROM compatible with Windows 98, 2000, XP, VISTA, Windows 7, Windows 8, Windows 8.1 & Windows 10

UL Approval not applicable for Cat No. G9DDT10, G9ADT10, G9DDT10B, G9ADT10B, G9DDT10E & G9ADT10E

Smart Relay *Genie*™- *NX*

Cat. No.			G7DDT10	G8DDT10
Parameters				
Supply Voltage (⏚)			110 - 240 VAC	12 - 24 VDC
Supply Variation			-20% to +10%(of ⏚)	
Frequency			50/60 Hz	
Power Consumption			5W	
Digital Input			8	6
Analog Input			N A	2 (Can be used as Digital Inputs)
Digital Input Range			(0 - 40 VAC) OFF, (80 - 265 VAC) ON	(0 - 4 VDC) OFF, (8 - 26.4 VDC) ON
Analog Input Range			N A	0 to 10 VDC
Digital Output	Relay Output		4 'NO'	
	Contact Rating		8A @ 240 VAC / 5A @ 30 VDC (Resistive)	
	Electrical Life		10^5	
	Mechanical Life		10^7	
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
I/O Extensions (Max.)			3	
Power Reserve (For Clock Only)			7 yrs. (at -10°C to 55°C)	
Modbus Communication			Yes (RTU) (Slave)	
DST			Settable	
Lines for Ladder Programming			250	
Function Blocks	Timers		16 (ON Delay, Interval, Cyclic ON-OFF, OFF Delay)	
	Counters		16 (Up / Down, Retentive selectable)	
	Time Switches		16 (Weekly / Daily)	
	Compare Counters		16	
	Analog Functions		N A	12
	Soft Text Messages		16 (Priority Driven)	
	Auxiliary Relays		64	
	Hour Meter		4	
Operating Temperature Storage Temperature			-10° C To + 55° C -25° C To + 70° C	
Humidity (Non Condensing)			95% (Rh)	
Enclosure			Flame Retardant UL 94-V0	
Dimension (W x H x D) (in mm)			72 X 90 X 65	
Weight (unpacked) Approx.			230 g	
Mounting			Base / DIN Rail	
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure	
Certification			CE cULus LISTED RoHS Compliant	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Smart Relay *Genie*™- *NX*

- Nx-Comm RS 485 Module

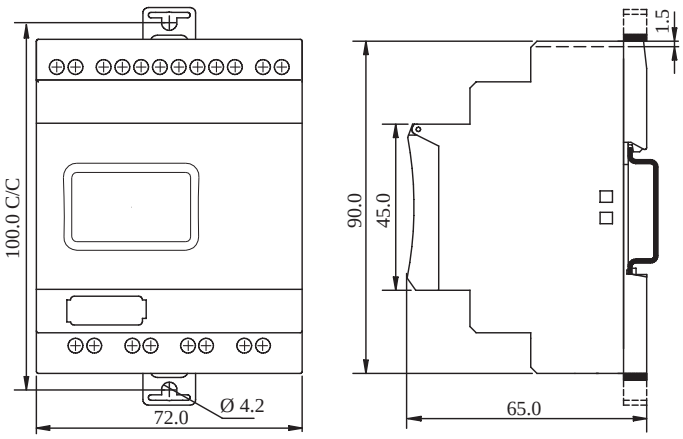
Ordering Information

Cat. No.	Description
G7XDTR4	110 - 240 VAC, RS 485 Communication Module
G8XDTR4	12 - 24 VDC, RS 485 Communication Module

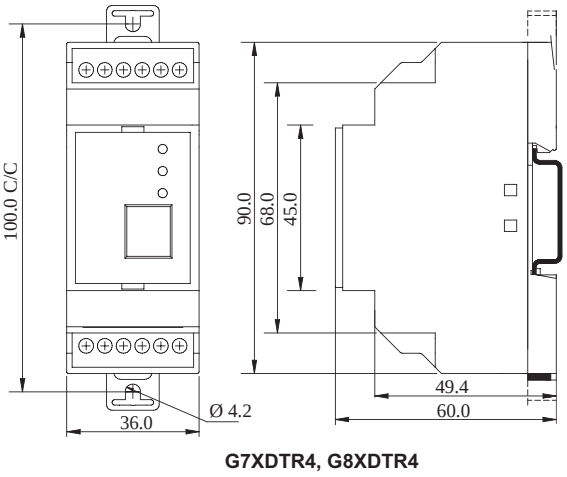
Smart Relay *Genie*™- *NX*

Cat. No.	G7XDTR4	G8XDTR4
Parameters		
Supply Voltage (⏚)	110 - 240 VAC	12 - 24 VDC
Input	TTL Level	
Output	RS 485 Protocol (Two wires, D +, D -)	
Number of Nodes	32 Standard unit loads	
Isolation voltage	2000 Vrms	
Baud Rate	300, 600, 1200, 2400, 4800, 9600	
Operating Temperature	-10°C to + 55°C	
Storage Temperature	-20°C to + 70°C	
Modbus Communication	Yes (RTU) (Slave)	
LED Indications	Red LED's for Tx & Rx. Green LED for Power indication.	
Certification	CE, cULus LISTED, RoHS Compliant	
Weight (unpacked)	80 g	84 g

MOUNTING DIMENSION (mm)

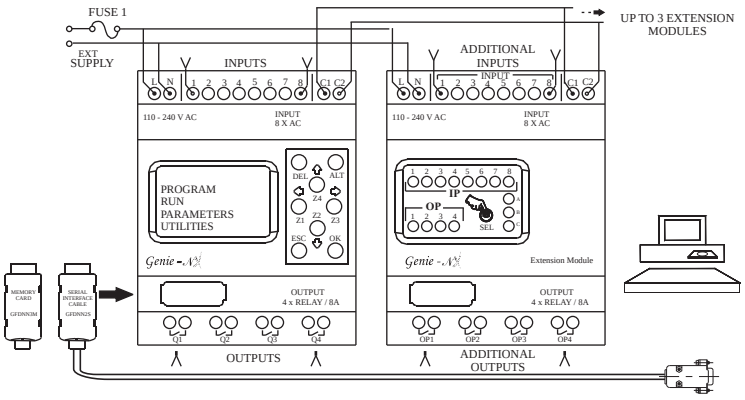


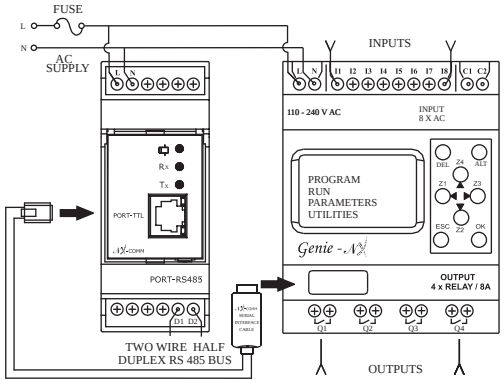
G7DDT10, G7DDT10B, G8DDT10, G8DDT10B, G7DDT10E, G8DDT10E



G7XDTR4, G8XDTR4

CONNECTION DIAGRAM





TERMINAL TORQUE & CAPACITY

Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm² Solid Wire/Stranded
AWG	1 x 24 to 12

Smart Relay *Genie*™- *NX*

FEATURES

Programming:
Programming can be carried out independently using the keys on the Genie-NX base module with the help of ladder diagram or on a PC, using "G-Soft NX." software.

LCD Backlighting:
Backlight of the LCD display is present for a minimum 15 seconds whenever the device is powered ON or a key is pressed on the base module. The backlight can also be configured to be permanently ON or permanently OFF by configuring the "Device Utilities" option in the device menu or by using the G-Soft NX application software.

Memory Card:
Genie-NX has a Program Transfer feature, which allows programs to be transferred or copied into another Genie-NX with the help of memory card. This feature enables quick copy of the programs without the use of a laptop or a PC.

I/O Extensions:
User can connect a maximum of 3 Extension Modules to the Genie-NX base module & each Extension Module has 8 inputs and 4 outputs, so we can expand up to 48 I/O extensions if necessary via the Genie-NX. Expansions are made in daisy chain fashion.

Communication Module:
A module for communication on the Modbus network is available, which is called "NX-Comm "to facilitate communication of the logic relay over a 2 wire half duplex RS 485 link. Modules are powered by 110- 240 VAC or 12- 24 VDC power supplies. The base module can be connected to this communication interface by means of the cable and the communication takes place via the NX-Comm. on the RS 485 link.

APPLICATIONS

- HVAC Controls
- Machine Controls involving Motor, Pump and Valve
- Operational Monitoring systems like Access control, Vehicle Control Monitoring, Baggage handling etc.
- Materials handling Equipments, Conveyor systems and Elevators
- Exhaust and Filtering Systems
- Water-treatment plants
- Printing and Packaging Machines
- Ancillary equipments in Textile and Plastic Industry
- Interior and Exterior Lighting Control
- Door, Gate, Shutter, Sun blinds and Awning control
- Irrigation Control Systems
- Automation of Compressors and Pumps for Air Conditioning requirements

Mini PLC PL - 100

- Supports up to 112 IOs
- Relay Base & MOSFET Low Side Base modules
- Stacking using FRC cable up to maximum 6 Expansion Modules
- Isolated Digital Inputs with sourcing & sinking capability
- Isolated Digital Transistorized Outputs (Low Side and High side driver)
- High Speed Inputs - Single / Quadrature (1x/2x/4x)
- High Speed Outputs (PTO / PWM / S-Profile)
- Analog Voltage/Current Inputs and Outputs of 0-10 V / 4-20 mA
- PC Software for programming, online & offline simulation
- Standard RS232/RS485 port with RJ11 for HMI/SCADA Interface
- Modbus RTU support
- 128 Weekly, Monthly & Yearly Time Switches each
- Multiple Timers, Counters including retentive counters, Hour meters & many more function blocks

Ordering Information

Cat. No.	Description
Base Models:	
PC10BD16001D1	DC Base with 8 Digital I/Ps, 8 Relay Outputs
PC10BD14002D1	DC Base with 8 Digital I/Ps (6 normal I/Ps + 2 high speed I/Ps), 6 Transistor Low Side Outputs (4 Normal O/Ps + 2 high speed O/Ps)
Extension Models:	
PC10ED08001N	Extension with 8 Digital Inputs
PC10ED08002N	Extension with 8 Relay Outputs
PC10ED16003N	Extension with 8 Digital Inputs and 8 Relay Outputs
PC10ED08004N	Extension with 8 Transistor Low Side Outputs
PC10ED08005N	Extension with 8 Transistor High Side Outputs
PC10EA04001N	Extension with 4 Analog Inputs (Max. 24, 0-10V / 4-20mA)
PC10EA02002N	Extension with 2 Analog Outputs (Max. 12, 0-10V / 4-20mA)
Application Software:	
PC10SN000N	PL-Soft
Accessories:	
28D33B0	Accessory, USB 2.0 Cable, Type A Male to B Male
PC10AC2	RS232 Communication Cable, PL-100 to HMI / SCADA
PC10AC3	RS485 Communication Cable, PL-100 to HMI / SCADA

Mini PLC PL - 100

Cat. No.	PC10BD16001D1	PC10BD14002D1
Parameters		
Power Supply		
Supply Voltage (⏚)	24 VDC	
Supply Tolerance	- 20% to +10%	
Internal Current Consumption	65mA @ 24 VDC	60mA @ 24 VDC
Inrush Current	2.5A @ 24VDC	
Battery Backup (In Event of Power failure)	30 Days	
Separate Power Supply For Output	Not required	19.2 To 26.4 VDC (External fuse of 10A is recommended)
Digital Inputs		
No. of Inputs	8	6+2 High Speed
Grouping	(4+1 Common)*2	
Type of Inputs	Sinking / Sourcing	
Input Voltage Range	0 - 26.4 VDC	
Level (Logic 0)	Max. 7VDC	
Level (Logic 1)	Min. 16VDC	
Max. Input Current	1.2 mA per input	
Hardware Delay	5 msec	
Digital Filter Time (Sampling Time)	28 msec	
Min. Pulse Width	(Hardware Delay + Digital Filter Time) OR (System Loop Time) whichever is higher.	
Max. I/P frequency	10 Hz (for worst case condition)	
High Speed Level (Logic 0)	-	Max 1 VDC
High Speed Level (Logic 1)	-	Min 3 VDC
Max Input Current	-	1.2 mA per Input
Max High Speed Input Current	-	3 mA per Input
Min. Pulse width for High Speed Inputs (for 'low to high' or 'high to low' transition)	-	50 µSec (Min.)
Max. I/P frequency for high speed inputs.	-	Single Phase Mode - 10 kHz. Quadrature Mode 1X - 10 KHz, 2X - 5 KHz, 4X - 2.5 KHz
Digital Outputs		
No. of Outputs	8	4+2 High Speed
Grouping	(4+1 Common)*2	NA
Output Hardware	Relay (NO)	MOSFET Low Side Driver
Rated Load	5 A (Res.) @ 230 VAC / 30 VDC	24 VDC, 500 mA
Max load per common	10 A	
Max operations	$1x10^5$	
Protection	External Fuse	Internally Protected (Max 3 A Per output)
Min. load for High Speed Output	-	10% of Rated Load (24 VDC, 500 mA)
HSO frequency	-	25 kHz max. for High Speed Outputs
Isolation		
Between Output & Supply	2KV	
Between Input & Supply	2KV	
Communication		
PC Port (USB)	USB Port (Type B) for PC Communication	
Isolation for USB Port	2KV between communication lines and internal circuit	
HMI Port (RS-232 / RS-485)	RJ11 Port for HMI (or any MODBUS Device)	
Communication parameters	Software selectable for HMI Port	
HMI port comm. Protocol	MODBUS Slave / MODBUS Master	
Functional		
Programming language	Ladder	
Scan Time	50 mS max.	
User Program memory	32 k	
User Data memory	1 k	
Maximum no. of I/O s	100	
Maximum no. of Extension modules	6	

Details continued on next page

Mini PLC PL - 100

Cat. No.	PC10BD16001D1	PC10BD14002D1
Indication		
Input	Yes (Green LED)	
Output	Yes (Red LED)	
RUN	Yes (Green LED)	
STOP	Yes (Red LED)	
ERROR	Yes (Red LED Blinking)	
Operating Temperature	0ºC to 55ºC	
Storage Temperature	-20ºC to 70ºC	
Relative Humidity	20-90% RH (Without condensation)	
Environmental Air	No excessive dust or corrosive gas allowed	
Dimension (W x H x D) (in mm)	72 x 90 x 58	
Weight (unpacked) Approx.	220g	
Mounting	DIN Rail (35 mm)	
Enclosure Material	UL 94 V0	
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure	
Certification	CE RoHS Compliant	

EMI / EMC

ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Power Frequency Magnetic Field Test	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

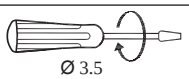
Safety Compliance

Test Voltage between I/P and O/P	IEC 60947-5-1
Impulse Voltage between I/P and O/P	IEC 60947-5-1
Single Fault	IEC 61010-1
Insulation Resistance	UL 508
Leakage Current	UL 508

Environmental Compliance

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-repetitive Shock	IEC 60068-2-27

TERMINAL TORQUE & CAPACITY

 Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 24 to 12

Mini PLC PL - 100

FUNCTION BLOCKS:

Sr. No.	Contact Blocks	Max. Available*
1	Positive Edge Contact	128
2	Negative Edge Contact	128
3	Not Contact	128
4	First Scan Contact	1
5	Auxiliary Relay State change	512
6	Auxiliary Relay Level change	512
7	Auxiliary Relay Bistable Set Reset	512

Sr. No.	Special I/O	Max. Available*
1	Timed I/O	1
2	Interrupt I/O	1

Sr. No.	Timer & Time Switch Blocks	Max. Available*
1	ON Delay Timer	128
2	OFF Delay Timer	128
3	Cyclic ON/Off	128
4	Cyclic OFF/ON	128
5	Accumulative Delay ON Signal Timer	128
6	Accumulative Impulse ON Signal Timer	128
7	Impulse ON/OFF Timer	128
8	Signal OFF/ON Timer	128
9	Leading Edge Impulse 1 Timer	128
10	Leading Edge Impulse 2 Timer	128
11	Trailing Edge Impulse 1 Timer	128
12	Trailing Edge Impulse 2 Timer	128
13	Delayed Impulse Timer	128
14	Retentive ON Delay Timer	128
15	Retentive OFF Delay Timer	128
16	Time switch Weekly	128
17	Time switch Monthly	128
18	Time switch Yearly	128

Sr. No.	Arithmetic Functions	Max. Available*
1	Arithmetic ADD	128
2	Arithmetic SUB	128
3	Arithmetic MUL	128
4	Arithmetic DIV	128
5	Arithmetic INC	128
6	Arithmetic DEC	128
7	Arithmetic MOD	128

Sr. No.	Logical Functions	Max. Available*
1	NOT	128
2	AND	128
3	OR	128
4	EXOR	128

Sr. No.	High Speed Output	Max. Available*
1	High Speed Output (PTO01)	1
2	High Speed Output (PTO02)	1
3	High Speed Output (PWM01)	1
4	High Speed Output (PWM02)	1
5	High Speed Output (SPO01)	1

Sr. No.	Hour & Counter blocks	Max. Available*
1	Up counter	128
2	Down counter	128
3	Up-Down counter	128
4	Retentive Up counter	128
5	Retentive Down counter	128
6	Retentive Up-Down counter	128
7	Hour meter	128
8	High Speed Counter 1	1
9	High Speed Counter 2	1

Sr. No.	Move & Convert Functions	Max. Available*
1	Move	128
2	Block Move	8
3	Block Set	8
4	Compare	128
5	Convert	128
6	Scale Converter	16
7	Shift Left (SHL)	128
8	Shift Right (SHR)	128

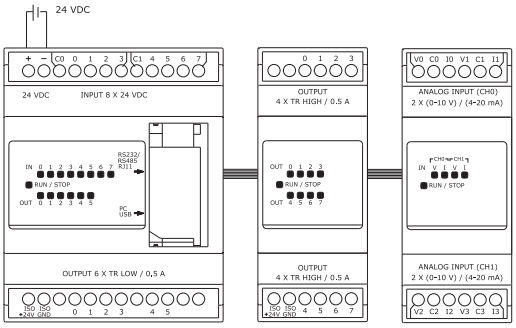
Sr. No.	MODBUS Functions	Max. Available*
1	MODBUS UNIT (Slave / Master)	1
2	MODBUS MASTER	16
3	Variable	1024**

*Maximum number of blocks that can be used in ladder depends on the user program memory.
**No of variables can be varied according to defined variable types.
i. Byte / SByte Type Variables - 1024. ii. Word / Sword Type Variables - 512. iii. Dword / SDword Type Variables - 256.
iv. Maximum size of Byte / Sbyte Type Array - 999

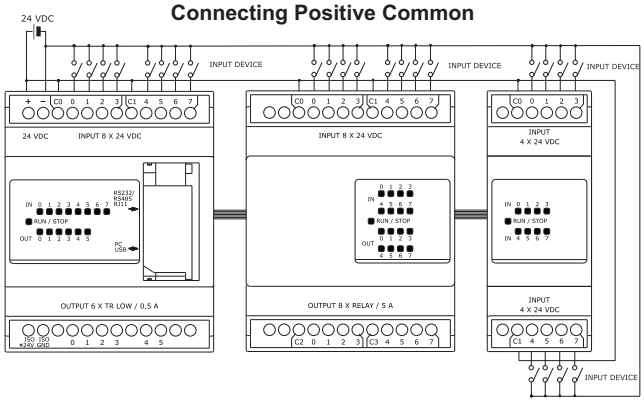
Mini PLC PL - 100

CONNECTION DIAGRAM

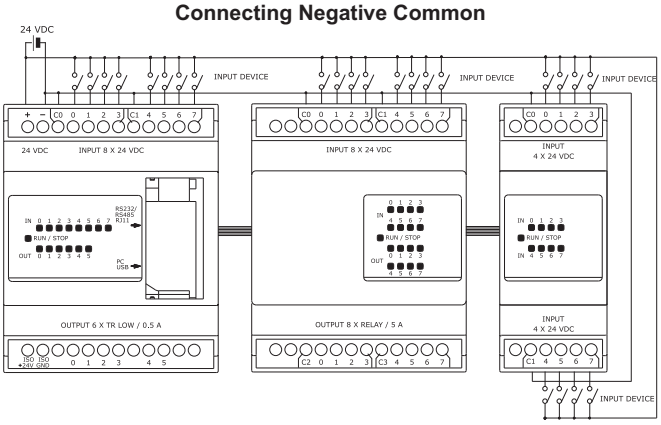
Connecting Power Supply to PL-100 Units



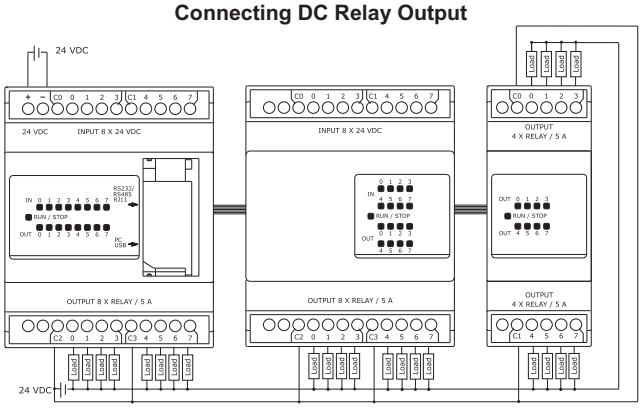
Connecting Positive Common



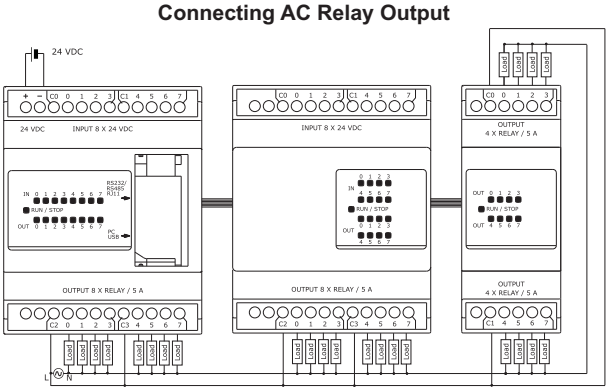
Connecting Negative Common



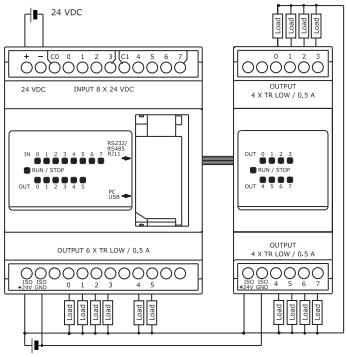
Connecting DC Relay Output



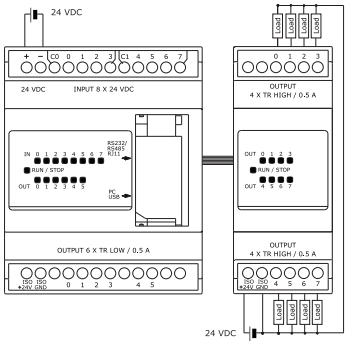
Connecting AC Relay Output



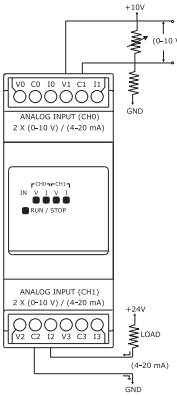
Connecting Low Side Output



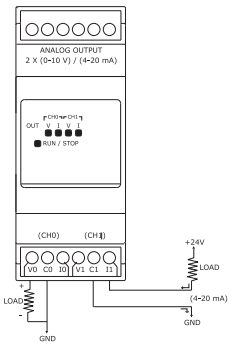
Connecting High Side Output



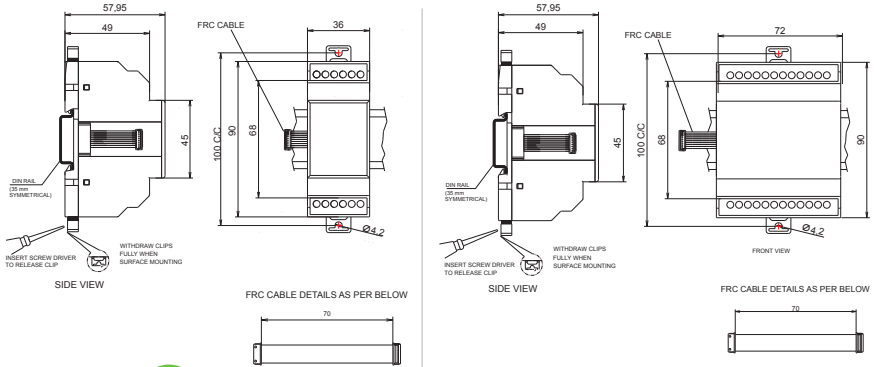
Connecting Analog Input Model



Connecting Analog Output Model



MOUNTING DIMENSIONS (mm)



GSM Controller

- Ideal for ON /OFF Switching of load remotely using Mobile Handsets
- Suitable for both 1 Phase and 3 Phase installations
- Flexible antenna positioning to get proper signal strength
- SMS alerts for ON/OFF status, Power fail, Power on, Phase error, Error recovery, Phase fail, Contactor pick-up fault and SIM balance
- Anti-theft protection
- Switching enabled by number of missed rings or sending SMS to the device
- Load can be operated in GSM Auto Mode for automatic operation, Timer Mode or Multiple Daily Timer Mode for specific duration of operation
- One Master & two Monitor numbers can be configured

Ordering Information

Cat. No.	Description
26A11AV	180 - 500 VAC, Module For Mobile Starter with wire type antenna
26A21AV	85 - 265 VAC, Module For Mobile Starter with wire type antenna
26100V0 (Accessory)	Wire type antenna

GSM Controller

Cat. No.	26A11AV		
Parameters			
Supply Voltage (⏚)	180V AC to 500V AC (For Single Phase : Connect Live to R or Y & Neutral to B & COM terminal of Controller)		
Frequency	50-60 Hz		
Power Consumption (Max.)	10 VA		
Initialisation Time	45 Sec		
Contact Ratings	Terminal 15 & 16 – NC ,Terminal 25 & 28 – NO, 5A @ 250V AC / 30V DC (Res)		
FUNCTIONAL CHARACTERISTICS :			
LED Indications	LED	INDICATION	DEVICE STATUS
	ON (Green)	ON	Master number configured.
		Blinking @ 500 m Sec	GSM modem in factory default mode
	CFG (Red)	Blinking @ 500 m Sec	GSM modem in configuration mode
	N/W (Green)	Flash every 800 m sec	Not registered with N/W
		Flash every 3 sec	Registered with N/W
	I1 & I2 (Yellow)	Both ON	Starter ON
		Both OFF	Starter OFF
		I1 Blinking @ 500 m Sec	Phase fail
		Both blinking	Power fail indication till super capacitor back up
	Tx/Rx (Green)	Randomly Blinking	Communication between CPU and Modem
		Flash every 400 m Sec	SIM card not detected
GSM Modem	Quad band 850MHz,900MHz / 1800MHz,1900MHz		
Operating Temperature	0° C to +60° C		
Storage Temperature	-20° C to +70° C		
Humidity (Non Condensing)	95% (Rh)		
Enclosure	Flame Retardant UL94-V0		
Dimension (W x H x D) (in mm)	72 X 90.5 X 65		
Weight (unpacked)	220 g approx.		
Mounting	DIN rail / Base		
Certification	CE RoHS Compliant		
Degree of Protection	IP 20 for Terminals, IP 30 for Enclosure		

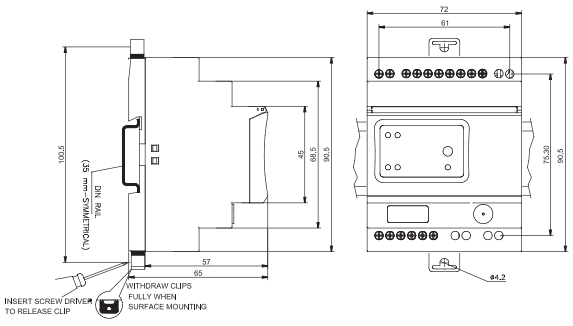
EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

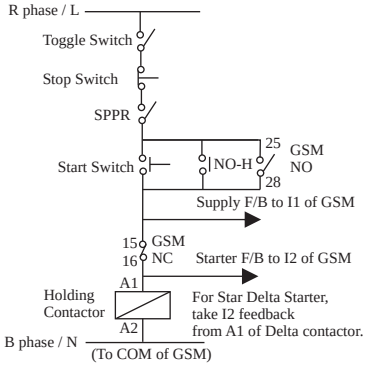
Environmental Compliance

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TERMINAL TORQUE & CAPACITY

Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm² Solid Wire/Stranded
AWG	1 x 24 to 12

Note: It is strongly recommended to use Single Phasing Protection Device (SPPR) for Motor Protection with GSM Controller

Note: This Product is only available for Sale Outside India

GSM Controller

Configuration Steps

Step 1 : Insert SIM card in the slot provided and connect Antenna.

Step 2 : Power on device & wait for 45 sec. ON (Green) LED will start blinking, indicating that device is in factory default mode. After every power on ,device will take 45 sec for initialization during which user should wait.

Step 3 : Ensure that NW (Network) LED is flashing after every 3 sec. It means device is registered with inserted SIM N/W. If NW LED is blinking faster, it means that the device is not registered with SIM NW & hence not ready for operation.

Step 4 : Press the CFG (Configuration) key on the device till CFG (RED) LED starts blinking. The device goes in the configuration mode to configure the master number in the device.

Step 5 : CFG LED will blink for 3 min, user should configure the master number within this time.

Step 6 : Call the device number, call will be disconnected after 1 to 2 rings.

Step 7 : After call gets disconnected, ON LED stops blinking & becomes permanently ON. CFG LED turns OFF. This will indicate that, master number has been configured in the device. User will receive SMS of "Mobile number updated".

Step 8 : To configure the monitor numbers if required, send query 55<Space>Mobile no.1<Space>Mobile no.2 from the master number.

Step 9 : After installing device for the first time, set the device clock by sending query "16". User will receive SMS," 16, "TIME ALREADY SET" or "16, "TIME SET TO, DT: 15/12/13, TM:10:10:50 AM".

Step 10 : If device is connected to single phase supply, then configure device for single phase supply by sending query 18<space>1. User will receive SMS - 18, SYSTEM CONFIGURED FOR 1-PHASE SUPPLY.

Step 11 : If device is connected in Semi Automatic Star Delta starter then configure the device in SASD system by sending query 77<space>0. User will receive SMS - 77, "SYSTEM CONFIGURED FOR SASD"

Step 12 : User should refer the "General SMS Queries" for functional details of the device.

General SMS Queries : (To be sent only from Master number to Device number)

QUERY	DETAILS
Functionality Queries	
Call to device number or send SMS 11<space>0	After 3-4 rings device cuts the call & turns ON the starter or after receiving SMS 11 0 device turns ON the starter.
Call to device number or send SMS 00	After 5-6 rings device cuts the call & turns OFF the starter or after receiving SMS 00 device turns OFF the starter.
11<space>1 to 47	Starter ON with timer. Here 1=30 min, 2=1hr, 3=1.5hrs….. 47=23.50hrs. e.g. 11 4 query will turn on starter for 2 hrs from the time device receives the query.
22<space>ON time1 <space>OFF time1, ON time2<space>OFF time2, ON time3<space> OFF time3, ON time4 <space>OFF time4	1) This query is used to enable daily timer. Daily timer ON & OFF time is in hours and 24 hours format only. 2) User can set minimum one daily timer and maximum four daily timer to operate the starter on daily basis. e.g. 22 18 20 query will enable daily timer from 6PM to 8PM. 3) If user wish to turn ON & OFF the starter at different times on daily basis then he can send the query e.g. 22 8 9,11 12,13 15,16 18 Here Starter will turn ON at 8AM and turn OFF at 9AM,again Starter will turn ON at 11AM and turn OFF at 12AM, then starter will turn ON at 1PM and turn OFF at 3PM and finally starter will turn ON at 4PM and turn OFF at 6PM. 4)If time is overlapped in query then User will receive SMS of "Invalid Parameter". 5) If user wishes to change the time then he has to reconfigure the new time by 22 query. 6) To disable daily timer settings, send query 22<space>0<space>0.
33<space> 0 or 1	0 - Auto Time Update Disable / 1 - Auto Time Update Enable. (Factory default)
66<space> 0 or 1	0 - GSM Auto Mode Disable (Factory default) / 1 - GSM Auto Mode Enable.
88	To know the available balance in prepaid account. (Note: Before sending this query first set the balance code by sending query 14).
99	To know current status of device.
INFO	To know all frequently used queries.
Configuration Queries	
44<space>xxxx (xxxx denotes last four digit of previous master number)	To replace the previous master number with new one, send query 44<space>xxxx from a new number which is to be configured as Master. (Note: 1. Before sending this query first press configuration key on device till CFG LED starts blinking 2. After this query, previously stored Monitoring numbers will be deleted & new monitoring numbers need to be configured)
55<space>First number <space>Second number	For pairing Monitoring numbers. By sending this query Master number can pair 2 monitoring numbers with device. (Note: While entering Monitor numbers, ensure that correct number is entered. Numbers can be verified in response SMS).
55	To remove monitor numbers, send only 55 query to device.
77<space>0	Starter Configuration - SASD. Send this query if GSM is installed in Semi Automatic Star Delta Starter.
77<space>1	Starter configuration - DOL/FASD (Factory default).
14<space>balance code	Set balance code.Balance code depends on Service provider. e.g. 14 *121# (*121# is balance code).
15<space> 0 or 1	0 - "AUTO BALANCE INFO SMS OFF" / 1-"AUTO BALANCE INFO SMS ON" (Factory default).
16	To set device clock if there is difference in local time and Device time. Device clock will be set as per time stamp received in SMS.
17	To know configured master & monitor numbers.
18<space>1	To configure the device for single phase supply.
18<space>3	To configure the device for three phase supply (Factory default).
Troubleshooting / Security Queries	
79	To set device in factory default mode. Before sending this query first press configuration key on device till CFG LED starts blinking
12	To check signal quality.
13	To know IMEI number of the device.

NOTE : For monitor numbers only INFO, 12 , 44 & 99 queries are applicable.

CONVERTERS AND TRANSDUCERS

Protocol Converters

Lynx Gateway

Interface Converters

USB to RS232 / RS485 / RS422 Converter

RS232 to RS485 / RS422 Converter

Signal Transducers

Lynx Gateway

- Serial protocol support for Modbus (RTU and ASCII) Master/Slave
- Network protocol support for Modbus TCP (Server/Client)
- Supports Raw Serial to Ethernet conversion with Telnet RFC2217
- Serial Interface support for RS232, RS422 and RS485 network
- Serial Baud rate: 300 bps to 115.2 Kbps
- Ethernet interface support: 10/100Mbps with Auto Negotiation
- Configurable using Embedded Web server and Application software
- Network Protocols: ARP, TCP/IP, HTTP, BOOTP, TFTP, ICMP, TELNET, DHCP, AutoIP
- Isolation between Communication Ports & Input Power supply

Ordering Information

Cat. No.	Description
25A11A0	12 - 24 VDC, Protocol Converter, Modbus TCP - Modbus RTU/ASCII
25B11A0	12 - 24 VDC, Serial to Ethernet Converter

Lynx Gateway

Cat. No.		25A11A0	25B11A0
Parameters			
Supply Voltage (⏚)		12 - 24 VDC	
Supply Variation		-10% to +25%	
Power Consumption (Max.)		2 W	
Protocol Conversion		Modbus RTU / ASCII to Modbus TCP	N.A
Operation Mode		Modbus RTU / ASCII (Master / Slave), Modbus TCP (Server / Client)	Raw, Telnet
Configuration Management		HTTP Web Server and Application software	
Serial Interface	Number of Serial Ports	1	2
	Serial Interface	Port1: Screw terminals for RS232, RS422 and RS485 interface	Port1: Screw terminals for RS232, RS422 and RS485 interface, Port2: RJ11 for RS232 Interface
	Signals	RS232 : RXD, TXD, GND RS422 :TX+, TX-, RX+, RX-, GND RS485 : TX+ (D+), TX- (D-), GND	
	Serial Interface Selection	For Port1: Mode selection using RST switch with Mode LED indication	
	Serial Communication Parameters	Baud Rate : 300bps to 115.2Kbps	
		Data Bits : 7,8 ; Flow Control : None	
		Parity : Odd, Even, None	
		Stop Bits : 1,2	
	Fail safe resistor	4K7 Resistor Pull up (TX+) & Pull Down (TX-) on BUS	
	Terminating Resistor	Connect externally if required	
	Isolation	Isolation 2 KVrms	
LAN Interface	Port	RJ45, Ethernet 10/100 Mbps	
	LAN Isolation	1.5KVrms magnetic Isolation	
	Network Protocol's Supported	Protocols for Communication : TCP/IP, Modbus	Protocols for Communication : Raw, Telnet-RFC2217
		Standard Protocols used : HTTP, DHCP, AutoIP, UPnP, TCP, UDP, IP, ARP, ICMP, Protocols used for firmware updating : BOOTP, TFTP	Standard Protocols used : HTTP, DHCP, AUTOIP, UPnP, TCP, UDP, IP, ARP, ICMP, Protocols used for firmware updating : BOOTP, TFTP
	Isolation	1.5KVrms magnetic Isolation	
Feature		Mapping and Background Processing Data Block (BPD)	N.A
Configuration Software		Windows Based Software to Configure Ports as well as Selection of Protocol Driver	
Reset		Front Panel recessed , Loads Default Factory Settings & Serial Mode selection	
LED Indications		Serial TX and RX, LAN: LINK and Activity, Power ON, Error, Mode Selection Indication LED	
Operating Temperature		0°C to + 55°C	
Enclosure		Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)		72 X 90 X 58	
Weight (unpacked)		185 g	
Mounting		Base / DIN Rail	
Certification		CE RoHS Compliant	

EMI / EMC

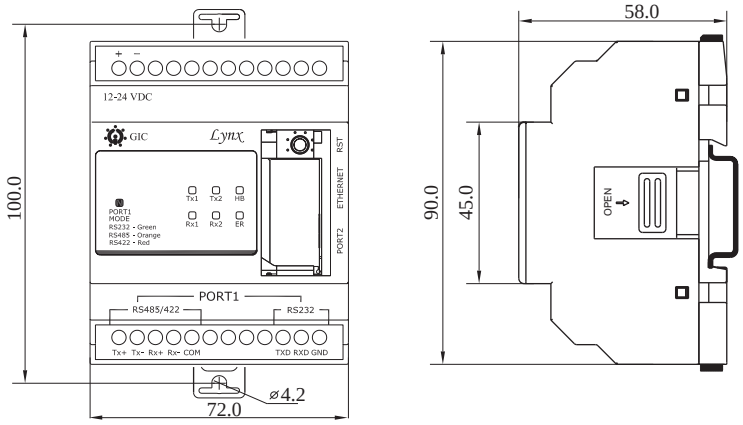
ESD	IEC 61000-4-2
EFT (On Supply Lines)	IEC 61000-4-4
EFT (On Communication Line)	Port-1 : IEC 61000-4-4
Radiated Susceptibility	IEC 61000-4-3
Surges (DC Power Ports)	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1
Power Frequency Magnetic Field Immunity	IEC 61000-4-8

Environmental Compliance

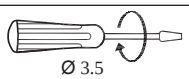
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Lynx Gateway

MOUNTING DIMENSIONS (mm)



TERMINAL TORQUE & CAPACITY

 Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 24 to 12

USB to RS232 / RS485 / RS422 Converter

- Compatible with USB 2.0
- Input : USB 2.0 Protocol
- Output : RS232 on DB9 Male connector compatible to PC RS485/RS422 on terminal block.
- Communication Speed : 300bps to 230Kbps.
- Auto direction control for RS485-2W data transmission.
- Cable: USB 2.0 type A to type B cable.
- Galvanic Isolation of 1.5kV
- RS232/RS485 line protection: +/- 15kV ESD.
- LED Indication for Transmit Receive signals.
- Input power from USB port, no external power required.
- 2M enclosure with DIN Rail mounting.
- Virtual COM port USB Drivers provided for Win XP, Vista, Win7, Win8

Ordering Information

Cat. No.	Description
28A11A0	USB to RS232 / RS485 / RS422 Converter
28D33B0	Accessory for Converter 28A11A0, USB 2.0 Cable, Type A Male to B Male
28NNN10	Accessory for Converter 28A11A0, Software CD for Win XP, Vista, Win7, Win8

USB to RS232 / RS485 / RS422 Converter

Cat. No.	28A11A0
Parameters	
USB	
Version	USB Specification 2.0 compliant
Speed	12 Mbps
Isolated Serial Interface	
RS232	TX, RX,GND
RS485	D+, D-, GND
RS422	TX+, TX-, RX+, RX-, GND
Auto direction control for RS485-2W	
Serial line Protection	Internal 15kV ESD protection
Isolation	1500 V Galvanic Isolation
Connector	RS232 - D Type 9 Pin Male Compatible with PC, RS485, RS422- Screw Terminals
LED Indication	TX, RX, Communication Mode Indication.
Power Requirements	USB BUS Powered
Operating Temperature	0^{O} C To + 60^{O} C
Storage Temperature	-20^{O} C To + 70^{O} C
Humidity	5% (Rh) to 95% (Rh)
Enclosure	Flame Retardant UL 94-V0
Dimension (W x H x D) (in mm)	36 X 90 X 52.3
Weight (unpacked) Approx.	100 g
Mounting	Base / DIN rail
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure
Certification	CE RoHS Compliant
Function and Application	This converter allows serial devices on RS232/RS485/RS422 to systems using USB interface. It has galvanic isolation of 1500V between USB and Serial ports. It drives power from USB connector and does not need any power adapter.

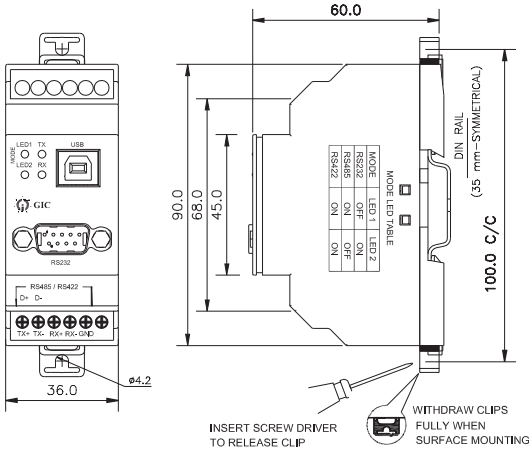
EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

MOUNTING DIMENSIONS (mm)



TERMINAL TORQUE & CAPACITY

Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 24 to 12

RS232 to RS485 / RS 422 Converter

- Isolated RS485/RS422 on terminal block.
- RS232 with DB9 Female connector
- Auto direction control for RS485-2W transmission.
- Galvanic Isolation of 1500V for RS485/RS422.
- Supports Baud rate up to 230Kbps.
- Internal 15 kV ESD protection both RS232 and RS485/RS422.
- LED Indication for Transmit, Receive signal communication traffic.
- Input power supply range 9-6V DC to 26.4 VDC
- 2M enclosure with DIN Rail mounting.

Ordering Information

Cat. No.	Description
28B21A0	RS 232 to RS485/RS422 CONVERTER
28E34B0	Accessory for Converter 28B21A0, Cable, DB9 Female to DB9 Male

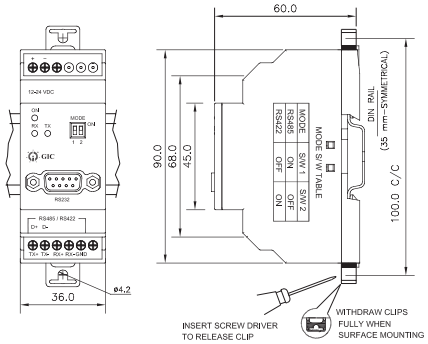
RS232 to RS485 / RS 422 Converter

Cat. No.	28B21A0
Parameters	
RS232 Port	
Connector	D type 9 pin Female
Serial line protection	Internal 15 kV ESD
Isolated RS485/RS422 Port	
No. of Ports	1
RS422	TX+, TX-, RX+, RX
RS485	D+, D-
Serial line Protection	15kV ESD
Serial Communication Parameter	
Isolation	1500 V Galvanic
Parity	None, Even, Odd, Space, Mark
Data Bits	5,6,7,8
Stop Bits	1,1,5,2
Flow Control	None, XON/XOFF,
Speed	300 bps to 230 Kbps
LED Indication	TX, RX LED indication
Input Supply Voltage	9.4 - 26.4 VDC
Power Consumption	1W
Operating Temperature	0^{o} C to + 60^{o} C
Storage Temperature	-25^{o} C to + 70^{o} C
Humidity	95% (Rh)
Enclosure	Flame Retardant UL 94-V0
Dimension (W x H x D) (in mm)	36 X 90 X 52.3
Weight (unpacked) Approx.	100 g
Mounting	Base / DIN rail
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure
Certification	CE RoHS Compliant
Function and Application	This converter allows to interface any device using RS232 serial link to RS485/RS422 link. The RS485 specification allows to network up to 32 Notes on the same lines, at speeds up to 10 Mbps to distances of 4,000 feet (1200 meters). RS485/RS422 links are much used in industrial process control where reliability is important.

EMI / EMC	
Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental	
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

MOUNTING DIMENSIONS (mm)



TERMINAL TORQUE & CAPACITY

Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 24 to 12

Signal Transducer

- Input / Output configuration selected via DIP switch combinations
- Choice of 16 analog input-output configurations
- Provides 3-way galvanic isolation of 3.75kV
- Fast output Response Time (<100ms)
- Sleek 22.5mm wide

Ordering Information

Cat. No.	Description
2SC3D11CC3	Signal Transducer, 24VDC, 1 Input & 1 Output, Voltage & Current, 3 Port Isolation, Base / DIN

Signal Transducer

Cat. No.	2SC3D11CC3
Parameters	
Supply Voltage (⎓)	24 V DC
Supply Variation	-15% to + 15% (of ⎓)
Power Consumption (Max.)	4 VA
Device Characteristics	
Input Signal	0-10VDC, 2-10VDC, 0-20mA DC, 4-20mA DC
Input Impedance	V-Approx. 100 K Ohm, I-100 Ohm approx.
Output Signal	0-10VDC,2-10VDC (min. 1 kOhm load) 0-20mA DC,4-20mA DC (max. 500 Ohm load)
Accuracy	1% of full Scale
Offset	± 5% of full scale Adjustable
Gain	± 10% of full scale Adjustable
Linearity	<0.02% of full scale
Protections	
Input supply reverse polarity	Yes
Input signal reverse polarity	Yes
Output short circuit current	<25mA (Output Voltage mode)
Output open circuit voltage	(12-14)VDC (Output Current mode)
LED Indication	GREEN LED: Power ON
Operating Temperature Storage Temperature	-10°C to +55°C -15°C to +60°C
Humidity (Non Condensing)	95% (Rh)
Enclosure	Flame Retardant UL94-V0
Dimension (W x H x D) (in mm)	22.5 X 83 X 100.5
Weight (unpacked)	130 g
Mounting	Base / DIN rail
Certification	CE RoHS Compliant
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure

EMI / EMC

ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients on Supply	IEC 61000-4-4
Electrical Fast Transients on I/O Signal	IEC 61000-4-4
Surge on Supply	IEC 61000-4-5
Surge on I/O Signal	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

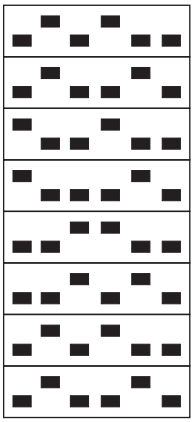
Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Signal Transducer

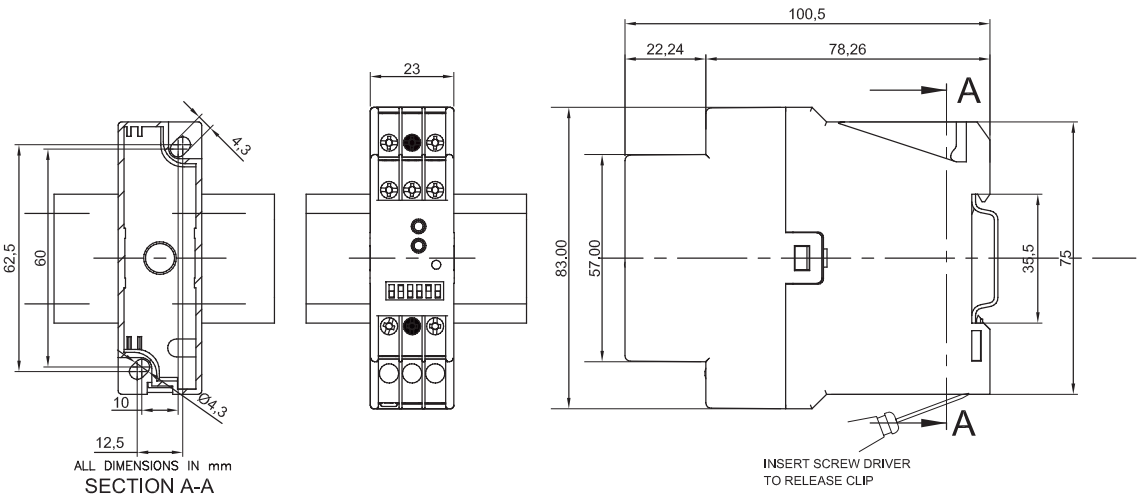
DIP SWITCH MODE SELECTION

SIGNAL TRANSDUCER-SERIES 225
SELECTION OF INPUT & OUTPUT SIGNAL MODE

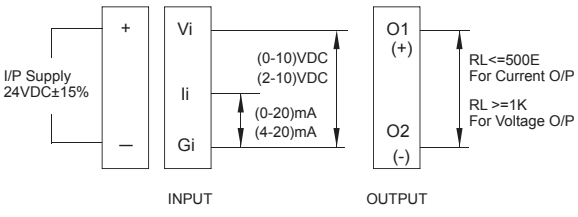
Mode		Input Voltage / Current (DC)	Output Signal
	– (0-10)V	(0-20)mA	(0-10)V
	– (0-10)V	(0-20)mA	(0-20)mA
	– (0-10)V	(0-20)mA	(2-10)V
	– (0-10)V	(0-20)mA	(4-20)mA
	– (2-10)V	(4-20)mA	(0-10)V
	– (2-10)V	(4-20)mA	(0-20)mA
	– (2-10)V	(4-20)mA	(2-10)V
	– (2-10)V	(4-20)mA	(4-20)mA

1 2 3 4 5 6

MOUNTING DIMENSIONS (mm)

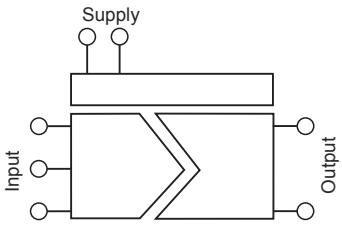


CONNECTION DIAGRAM

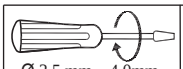


3 PORT ISOLATION DIAGRAM

3,75kV AC (input, supply and output)



TERMINAL TORQUE & CAPACITY

 Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

ISOLATED RELAY MODULES

Isolated Relay Output Module

Isolated Relay Output Module

- Provides effective 3 way Isolation between supply, input switch & relay output
- Provides isolation of dissimilar circuits
- Enables control of multiple loads when only one relay output is available
- Isolated Relays are mainly used in fire safety applications that interface with HVAC system, elevator controls and access control doors. It can also be integrated with PLC systems.

Ordering Information

Cat. No.	Description
IRLA01S	85-265 VAC, 47-63 Hz, 8A, Isolated Relay Output Module with One Channel, 1 C/O
IRLA02S	85-265 VAC, 47-63 Hz, 8A, Isolated Relay Output Module with Two Channel, 2 C/O
IRLA04S	85-265 VAC, 47-63 Hz, 8A, Isolated Relay Output Module with Four Channel, 4 C/O
IRLA08S	85-265 VAC, 47-63 Hz, 8A, Isolated Relay Output Module with Eight Channel, 8 C/O

Isolated Relay Output Module

Cat. No.			IRLA01S	IRLA02S	IRLA04S	IRLA08S
Parameters						
Function			Protection Relay			
Supply Voltage (⏚)			85 - 265 VAC			
Frequency			47 - 63 Hz			
Power Consumption (Maximum)			2.5 VA	3 VA	3.8 VA	5.6 VA
LED Indication	GREEN	ON	Power ON			
		OFF	Power OFF			
	RED	ON	Relay ON			
		OFF	Relay OFF			
Output	Relay		1 C/O, 8A (Res.) @ 240 VAC / 30 VDC			
	Contact Material		AgNi / $AgSnO_2$			
Mechanical Life Expectancy			$3x10^7$ Operations			
Electrical Life Expectancy			$3x10^7$ Operations			
Operating Temperature			-20° C to +55 °C			
Storage Temperature			-25° C to +70 °C			
Relative Humidity (Non-Condesing)			15 to 85% (RH)			
Max. Operating Altitude			2000 m			
Degree of Protection			IP-20 for Terminals; IP-40 for Housing			IP-30 Housing
Pollution Degree			2			
Housing			Flame Retardant UL 94-V0			
Mounting			Base / Din-Rail (35 mm Symmetrical)			
Dimension (W x H x D) (in mm)			See the related Diagram			
Weight (packed) approx.			90 g	129 g	209 g	303 g
Certification			CE RoHS Compliant			
Safety						
Test Voltage Between IEC 60947-5-1 ED.3.0 (2003-11)	Supply I/P to I/P Switch		4 kVAC			
	Supply I/P to O/P Switch		4 kVAC			
	I/P Switch to Relay O/P		4 kVAC			2.5 kVAC
Impulse Voltage Between I/P & O/P			IEC 60947-5-1			
Single Fault			IEC 61010-1			
Insulation Resistance			UL 508			
Leakage Current			UL 508			

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	CISPR 14-1
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

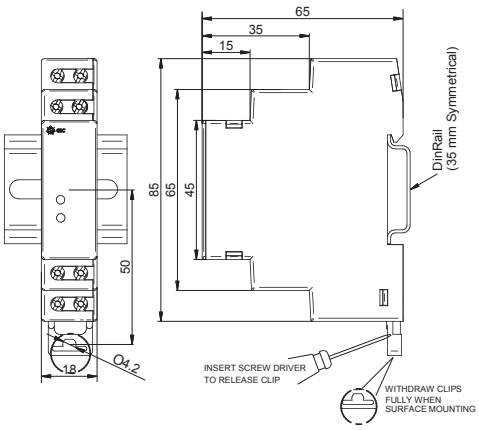
Environmental Compliance

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

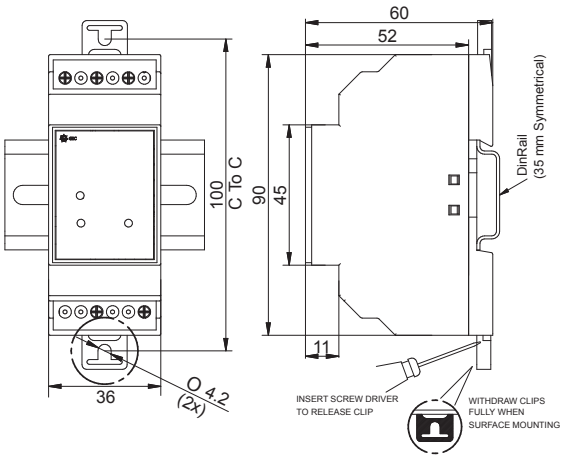
Isolated Relay Output Module

MOUNTING DIMENSIONS (mm)

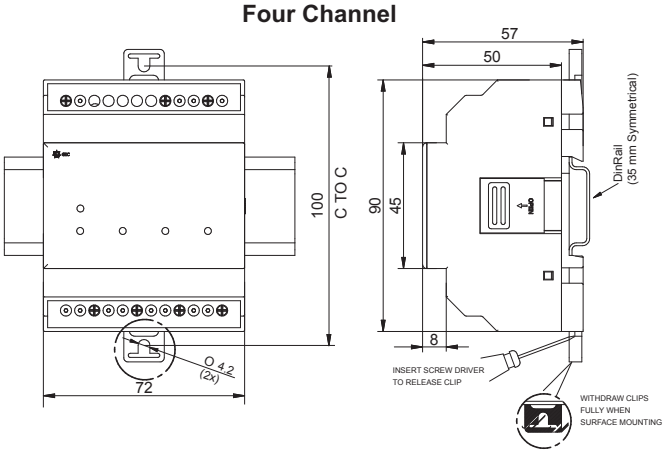
Single Channel



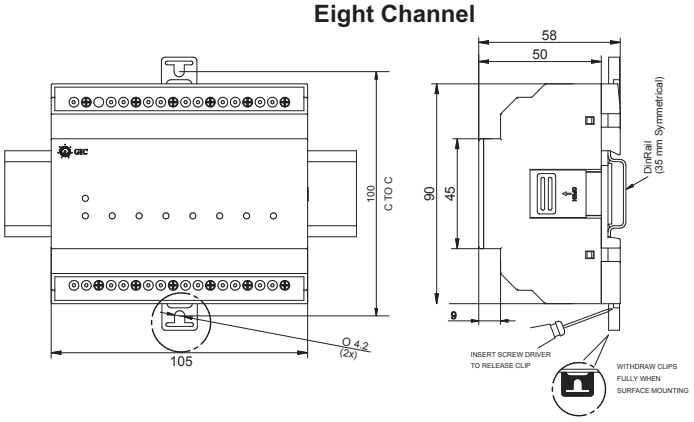
Two Channel



Four Channel

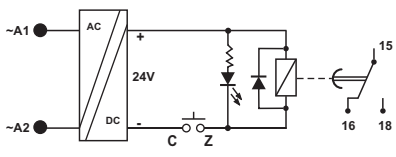


Eight Channel

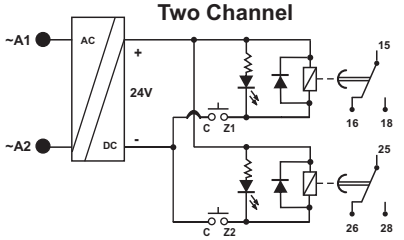


CONNECTION DIAGRAM

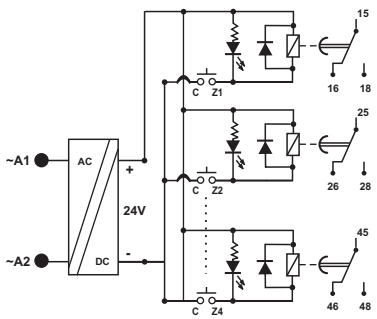
Single Channel



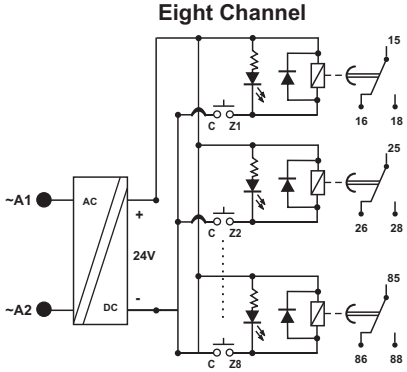
Two Channel



Four Channel



Eight Channel



TERMINAL TORQUE & CAPACITY

Single Channel

Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

Two, Four & Eight Channel

Ø 3.5 mm	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid/Stranded Wire
AWG	1 x 24 to 12

POWER SUPPLIES

Switched Mode Power Supply

Switched Mode Power Supply

- Excellent Load & Line Regulation
- High Noise Immunity & Low Ripple
- No Load Power Consumption of less than 0.5W
- Overload & Short Circuit Protection
- High Efficiency of Operation
- Suitable for Temperatures upto 55°C
- Small Form Factor
- Peak Power Capacity
- Compact Design with DIN Mounting

Ordering Information

Cat. No.	Description
24AS244D6D	96W, 230V AC, 24 VDC / 4A, Switched Mode Power Supply
24AS126D6D	72W, 230V AC, 12 VDC / 6A, Switched Mode Power Supply
24BS24AD4E	60W, 110 - 240 VAC, 24 VDC / 2.5A, Switched Mode Power Supply
24BS241D2F	24W, 110 - 240 VAC, 24 VDC / 1A, Switched Mode Power Supply
24BS24BD1F	12W, 110 - 240 VAC, 24 VDC / 0.5A, Switched Mode Power Supply
24BS051D1F	5W, 110 - 240 VAC, 5 VDC / 1.0A, Switched Mode Power Supply

Switched Mode Power Supply

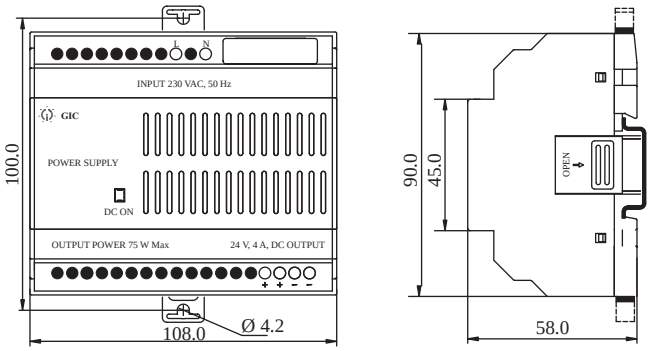
Cat. No.		24AS244D6D	24BS24AD4E
Parameters			
Supply Voltage (⏚)		230 VAC	110-240V AC
Supply Variation		-30% to +15%	
Frequency		50 Hz	
Power Consumption @ No Load		0.5W Max. @ 230 VAC	
AC Current		0.8A / 230 VAC	1.3A/115VAC & 0.7A/230VAC
Efficiency		> 85%	
Inrush Current		Cold Start 50A / 230 VAC	
Leakage Current		< 0.2µA / 230 VAC	
Output	Voltage	24 VDC	
	Rated Current	4A	2.5A
	Current Range	0 - 4A	0 - 2.5A
	Rated Power	96W	60W
	Output Voltage Accuracy	± 1%	
	Line Regulation	1%	
	Load Regulation	1%	
	Ripple & Noise	150 mV (P-P)	
	Over Voltage Protection	26V ~ 33 V	26V ~ 38V
	Over Load Capacity	168% of rated output (Max.10s)	160% of rated output (Max. 10s)
Continuous Open Circuit		Normal Operation	
Over Current Protection		Voltage Drop	
Continuous Short Circuit Protection		Auto Recovery after fault condition is removed	
Start Up Time		3s Max. (At minimum input voltage and rated load)	
Hold Up Time		30ms Min. (At minimum input voltage and rated load)	
Withstand Voltage		Input to Output 3 KV AC for 1 Minute, 5 mA	
LED Indications		Green LED: Output ON	
Operating Temperature		-10°C to + 55°C	
Storage Temperature		-25°C to + 85°C	
Enclosure		Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)		108 X 90 X 58	90 X 58 X 72
Weight (unpacked) Approx.		350 g	260 g
Mounting		Base / DIN Rail	
Certification		CE RoHS Compliant	

EMI / EMC

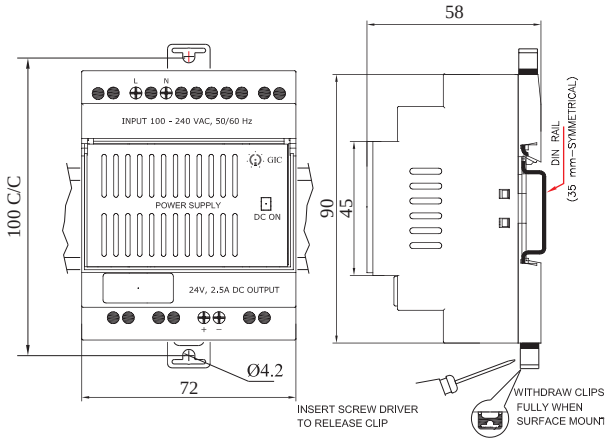
Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Switched Mode Power Supply

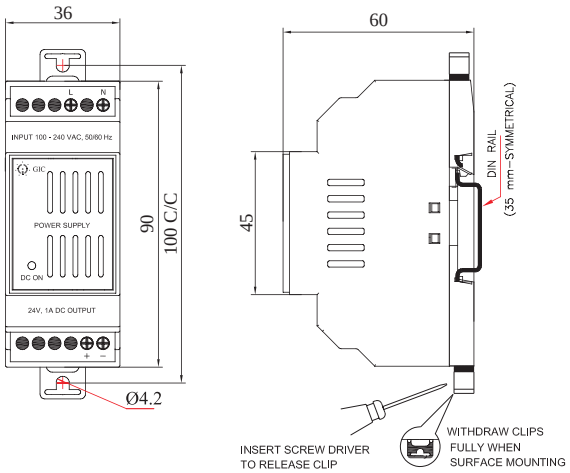
MOUNTING DIMENSIONS (mm)



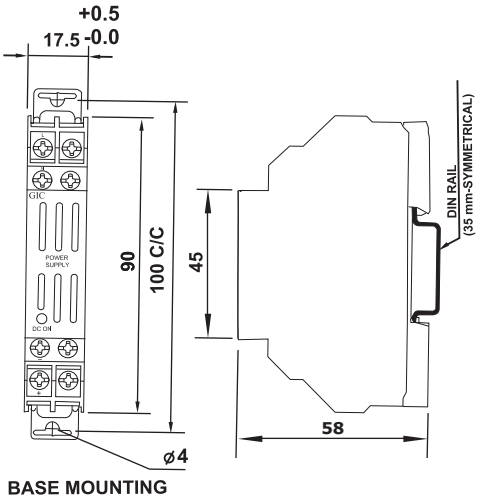
24AS244D6D, 24AS126D6D



24BS24AD4E



24BS241D2F



24BS24BD1F, 24BS051D1F

TERMINAL TORQUE & CAPACITY

Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 24 to 12

24AS244D6D, 24AS126D6D, 24BS24AD4E, 24BS241D2F

Ø 3.5 mm....5.0mm	0.80 N.m (7.1 Lb.in)
	2 x 2.5 mm^2 Solid/Stranded Wire
AWG	2 x 20 to 14

24BS24BD1F, 24BS051D1F

MONITORING DEVICES

Voltage Monitoring Series

SM 175

SM 301

SM 500

SM 501

Product Selection Chart: Voltage Monitoring

Three Phase Indicator

Frequency Monitoring Series PD 225

Current Monitoring Series

Earth Leakage Relay Series CMR

CMR - Current Control

Temperature Monitoring Series

PTC Thermistor Relay Series PD 225

PTC Thermistor & Single Phasing Preventer Series PD225

Equipment Room Temperature Control Relay

Level Monitoring Series

Liquid Level Controller

Voltage Monitoring Series SM 175

- Compact 17.5 mm Wide
- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- Multi-Voltage: Three Phase wire @ 208 - 480 VAC
- Selectable Under Voltage / Over Voltage & Asymmetry
- LED Indication for all Faults & for change in settings during run time for better security
- Adjustable Time Delay
- 1 C/O Configuration

Ordering Information

Cat. No.	Description
MN21D5	208 - 480 VAC, Phase Loss Monitoring, 1 C/O
MK21D5	208 - 480 VAC, Phase Loss, Phase Sequence Monitoring , 1 C/O
MC21D5	208 - 480 VAC, Phase Loss, Phase Sequence, Phase Asymmetry Monitoring (30% Fixed), 1 C/O
MA21DN	208 - 480 VAC, Phase Loss, Phase Sequence, Phase Asymmetry Monitoring (5% to 15% Variable), 1 C/O
MOF1D51	208 - 480 VAC, Phase Loss, Phase Asymmetry Monitoring (10% Fixed), with trip time < 65 ms, 1 C/O

Voltage Monitoring Series SM 175

Cat. No.			MN21D5	MK21D5	MC21D5	MA21DN
Parameters						
Supply Voltage (⏚)			208 - 480 VAC, (3 Phase 3 Wire)			
Supply Variation			-12% to + 10% (of ⏚)			
Frequency			50/60 Hz			
Power Consumption (Max.)			3.5 VA			
Trip Levels	Phase Loss		Yes	Yes	Yes	Yes
	Phase Sequence		N A	Yes	Yes	Yes
	Phase Asymmetry		N A	N A	30% Fixed	5% to 15%
Time Delay	ON Delay		< 750 ms	< 750 ms	< 750 ms	5s
	Trip Time (OFF Delay)		< 65 ms	100 ms	100 ms	0.5 to 15 s (Selectable)
Output	Relay Output		1 C/O			
	Contact Rating		5A @ 250 VAC / 30 VDC (Resistive)			
	Electrical Life		$1X10^5$			
	Mechanical Life		$3X10^6$			
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A			
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A			
LED Indication		Healthy	Relay LED Continuous ON			
		Phase Reverse	N A	Relay LED Flashing		
		Asymmetry	Relay LED Off (Red Colour)	N A	Relay LED Off (Red Colour)	
Operating Temperature Storage Temperature			- 15° C to +60° C - 20° C to +80° C			
Humidity (Non Condensing)			95% (Rh)			
Enclosure			Flame Retardant UL 94-V0			
Dimension (W x H x D) (in mm)			17.5 X 90 X 58.5			
Weight (unpacked)			70 g			
Mounting			Base / DIN rail			
Degree of Protection			IP 20 for Terminal, IP 30 for Enclosure			
Certification			CE cULus LISTED RoHS Compliant			

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Voltage Monitoring Series SM 175

Ordering Information

Cat. No.	Description
MD21DF	208 - 480 VAC, UV / OV, Phase Loss & Sequence with Selectable OFF Delay, 1 C/O
MG21DH	208 - 480 VAC, UV / OV & SPP with Selectable ON Delay, 1 C/O
MG21DF	208 - 480 VAC, UV / OV & SPP with Selectable OFF Delay, 1 C/O
MGD1DR	208 - 480 VAC, UV / OV & SPP with Selectable ON Delay & OFF Delay, 1 C/O
MAE03D0200	115 VAC/DC or 240 VAC/DC, UV / OV with Selectable ON & OFF Delay, 1 C/O
MF31B0	220 VAC, Single Phase Under Voltage Relay
MF51B0	400 VAC, Three Phase Under Voltage Relay

UL Approval not applicable to Cat Nos. MN21D5, MOF1D51, MGD1DR, MAE03D0200, MF31B0, MF51B0

Voltage Monitoring Series SM 175

Cat. No.			MD21DF	MG21DH	MG21DF	MGD1DR
Parameters						
Supply Voltage (⏚)			208 - 480 VAC, (3 Phase 3 Wire)			400 VAC, (3 Phase 3 Wire)
Supply Variation			-12% to + 10% (of ⏚)			
Frequency			50/60 Hz			
Power Consumption (Max.)			3.5 VA			
Settable Nominal Voltage			208 - 220 - 380 - 400 - 415 - 440 - 480 VAC			N A
Trip Levels	Phase Loss		Yes			
	Phase Sequence		Yes			
	Phase Asymmetry		N A	10% Fixed		
	Under Voltage		-2% to -20% (of ⏚)	-5% to -25% (of ⏚)		
	Over Voltage		+2% to +20% (of ⏚)	+5% to +25% (of ⏚)		
Time Delay	ON Delay		5 s	0.5 to 100 s (Selectable)	5 s	0.5 to 100 s (Selectable)
	Trip Time (OFF Delay)		0.5 to 15 s (Selectable)	5 s	0.5 to 100 s (Selectable)	0.5 to 15 s (Selectable)
Output	Relay Output		1 C/O			
	Contact Rating		5A @ 250 VAC / 30 VDC (Resistive)			
	Electrical Life		$1X10^5$			
	Mechanical Life		$3X10^6$			
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A			
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A			
LED Indication		Healthy	Red LED: Supply Healthy → Continuous ON, Phase Reverse → Flashing			
		UV	Red LED: Under Voltage → Continuous ON			
		OV	Red LED: Over Voltage → Continuous ON			
		Asymmetry	Red LED: Asymmetry → Continuous ON			
		All LED's	Phase Fail or Higher Cut OFF(> 560 VAC) or lower cut off (<175 VAC), Blinking → Pot changed during running conditions			
Operating Temperature Storage Temperature			- 15° C to +60° C - 20° C to +80° C			
Humidity (Non Condensing)			95% (Rh)			
Enclosure			Flame Retardant UL 94-V0			
Dimension (W x H x D) (in mm)			18 X 59 X 90			
Weight (unpacked) Approx.			70 g			
Mounting			Base / DIN rail			
Degree of Protection			IP 20 for Terminal, IP 30 for Enclosure			
Certification			CE, cULus LISTED, RoHS Compliant			

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Voltage Monitoring Series SM 301

- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- No Auxiliary Supply needed
- Voltage Sensing principle
- 1 C/O & 2 C/O Configurations
- Designed to meet Industrial and Agricultural segment applications

Ordering Information

Cat. No.	Description
MA51BC	415 VAC, Single Phasing Preventor with 65 VAC Asymmetry, 1 C/O
MA51BK	415 VAC, Single Phasing Preventor with 40 VAC Asymmetry, 1 C/O
MC21B5	415 VAC, Single Phasing Preventor with 65 VAC Asymmetry, 2 C/O

Voltage Monitoring Series SM 301

Cat. No.			MA51BC	MA51BK	MC21B5
Parameters					
Supply Voltage (⏚)			415 VAC		
Frequency			50/60 Hz		
Power Consumption (Max.)			15 VA		
Trip Settings	Phase Loss		Yes	Yes	Yes
	Phase Sequence		Yes	Yes	Yes
	Phase Asymmetry		65 V (± 10V)	40 V (± 10 V)	65 V (± 10V)
	Hysteresis		10 to 18 V	10 to 18 V	10 to 18 V
Time Delay	ON Delay		2 s (± 2 s)	2 s (± 2 s)	< 550 ms
	Trip Time (OFF Delay)		7 s (± 2 s)	7 s (± 2 s)	< 550 ms
Output	Relay Output		1 C/O	1 C/O	2 C/O
	Contact Rating		5A (For 'NO') & 3A (For 'NC') @ 250 VAC / 28 VDC (Resistive)		5A @ 250 VAC / 28 VDC (Resistive)
	Electrical Life		$1X10^5$		
	Mechanical Life		$3X10^6$		
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A		
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A		
LED Indication			Red → Relay ON (Healthy), See Note 1		
Operating Temperature Storage Temperature			- 15° C to + 50° C - 20° C to + 65° C		
Humidity (Non Condensing)			95% (Rh)		
Enclosure			Flame Retardant UL 94-V0		
Dimension (W x H x D) (in mm)			36 X 90 X 60		
Weight (unpacked)			120 g		
Mounting			Base / DIN rail		
Degree of Protection			IP20 for Terminals, IP 40 for Enclosure		
Certification			CE RoHS Compliant		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Note 1:- ON: Relay ON, OFF: Phase Loss, Blinking: Asymmetry (200 ms, On/Off), Flashing: Phase Sequence (1 s, On/Off)

Voltage Monitoring Series SM 500

- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- Can be configured for 3 Phase 4 Wire or 1 Phase system
- Selectable Over Voltage / Under Voltage Trip level
- Selectable Time Delay
- LED Indications for Power and Fault conditions
- Voltage Sensing principle
- 1 C/O or 2 C/O Configuration

Ordering Information

Cat. No.	Description
MD71BH	240 VAC, UV / OV with Selectable ON Delay (0.5 to 15 sec), 1 C/O
MD71BF	240 VAC, UV / OV with Selectable OFF Delay (0.5 to 15 sec), 1 C/O
MD71B9	240 VAC, UV / OV with Selectable ON Delay (0.5 s to 15 min), 1 C/O

Voltage Monitoring Series SM 500

Cat. No.		MD71BH	MD71BF	MD71B9
Parameters				
Supply Voltage (⏚)		240 VAC (1 Phase & 3 Phase, 4 Wire)		
Frequency		50/60 Hz		
Power Consumption (Max.)		4 VA		
Trip Settings	Phase Loss	Yes	Yes	Yes
	Phase Sequence	N.A	N.A	N.A
	Phase Asymmetry	N.A	N.A	N.A
	Under Voltage	55% to 95% (of ⏚)		
	Over Voltage	105% to 125% (of ⏚)		
Time Delay	ON Delay	0.5 to 15 s (Selectable)	5 s	0.5 s to 15 min (Selectable)
	Trip Time (OFF Delay)	5 s	0.5 to 15 s (Selectable)	5 s
Output	Relay Output	1 C/O		
	Contact Rating	5A @ 250 VAC / 28 VDC (Resistive)		
	Electrical Life	$1X10^5$		
	Mechanical Life	$3X10^6$		
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A		
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A		
LED Indication		Separate indications for Power ON, UV and OV		
Operating Temperature Storage Temperature		-15^{o} C To + 55^{o} C -25^{o} C To + 70^{o} C		
Humidity (Non Condensing)		95% (Rh)		
Enclosure		Flame Retardant UL 94-V0		
Dimension (W x H x D) (in mm)		36 X 90 X 60		
Weight (unpacked) Approx.		120 g		
Mounting		Base / DIN rail		
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure		
Certification		CE RoHS Compliant		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Note: 1) Voltage setting is with respect to Neutral. Voltage Setting Accuracy: ± 5 % of Full Scale; Time Setting Accuracy: ± 10 % of Full Scale

Voltage Monitoring Series SM 500

Ordering Information

Cat. No.	Description
MG73B9	240 VAC, UV / OV & Single Phasing Preventor (SPP) with Selectable ON Delay (0.5 s to 15 min), 2 C/O
MG73BH	240 VAC, UV / OV & SPP with Selectable ON Delay (0.5 to 15 sec), 2 C/O
MG73BF	240 VAC, UV / OV & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O
MG73BQ	120 - 240 VAC Selectable, UV / Selectable OV & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O
MG73BR	240 VAC, Fixed UV / OV & SPP, 20% Asymmetry with Fixed ON (10 sec) & OFF (5 sec) Delay, 2 C/O
MGH3BH	220 VAC, UV / OV & SPP with Selectable ON Delay (0.5 to 15 sec), 2 C/O
MGH3BF	220 VAC, UV / OV & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O
MGI3BF	230 VAC, UV / OV & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O

Voltage Monitoring Series SM 500

Cat. No.			MG73BH	MG73BF	MG73B9
Parameters					
Supply Voltage (⏚)			240 VAC (1 Phase & 3 Phase, 4 Wire)		
Frequency			50/60 Hz		
Power Consumption (Max.)			5 VA		
Trip Settings	Phase Loss		Yes		
	Phase Sequence		Yes		
	Phase Asymmetry		10% (of ⏚)		
	Under Voltage		55% to 95% (of⏚)		
	Over Voltage		105% to 125% (of⏚)		
	Hysterisis		7 V (± 2 V)		
Time Delay	ON Delay		0.5 to 15 s (Selectable)	5 s	0.5 s to 15 min (Selectable)
	Trip Time (OFF Delay)		5 s	0.5 to 15 s (Selectable)	5 s
Output	Relay Output		2 C/O		
	Contact Rating		5A @ 250 VAC / 28 VDC (Resistive)		
	Electrical Life		$1X10^5$		
	Mechanical Life		$3X10^6$		
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A		
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A		
LED Indication			Separate indications for Power ON, UV and OV; ON: Phase Reverse; BLINK: Phase Asymmetry		
Operating Temperature Storage Temperature			-15^{o} C To + 55^{o} C -25^{o} C To + 70^{o} C		
Humidity (Non Condensing)			95% (Rh)		
Enclosure			Flame Retardant UL 94-V0		
Dimension (W x H x D) (in mm)			36 X 90 X 60		
Weight (unpacked)			120 g		
Mounting			Base / DIN rail		
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure		
Certification			CE RoHS Compliant		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Note: 1) Voltage setting is with respect to Neutral. Voltage Setting Accuracy: ± 5 % of Full Scale; Time Setting Accuracy: ± 10 % of Full Scale

Voltage Monitoring Series SM500 - Neutral Loss Protection

- Phase loss (failure) detection
- Neutral loss detection
- Phase reverse detection
- Phase asymmetry
- Adjustable Over & Under voltage trip level
- LED indication for all failure conditions
- Automatic recovery on fault removal

Ordering Information

Cat. No.	Description
MAC04D0100	415 VAC, Neutral Loss Protection with Phase and Voltage Control, 2 C/O
MAC04D0119	380 VAC, Neutral Loss Protection with Phase and Voltage Control, 2 C/O

Voltage Monitoring Series SM500 - Neutral Loss Protection

Cat. No.		MAC04D0100	
Parameters			
Supply Voltage (⏚)		415 VAC (Ph-Ph); 3 Phase, 4 Wire	
Frequency		47 to 53 Hz	
Power Consumption (Max.)		10 VA (max)	
Trip Settings	Phase Loss	Yes	
	Phase Sequence	Yes	
	Phase Asymmetry	94V ± 4V (Ph-Ph)	
	Under Voltage	55% to 95% (of ⏚)	
	Over Voltage	105% to 125% (of ⏚)	
	Hysterisis	7 V (± 2 V)	
Time Delay	ON Delay	5 s ±1 s (Fixed)	
	Trip Time (OFF Delay)	For Phase failure phase Imbalance Under voltage / Over Voltage	5 s ±1 s (Fixed)
		For Neutral Fail	500 ms -1s
Output	Relay Output	2 C/O	
	Contact Rating	5A @ 250 VAC / 28 VDC (Resistive)	
	Electrical Life	$1X10^5$	
	Mechanical Life	$1X10^7$	
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	

LED Indications on front plate

Respective fault condition will be indicated by LED immediately & Relay will be tripped after specified trip time only.

	GREEN	UV	OV	Blink: ASY, ON: REV
Power ON	ON	OFF	OFF	OFF
Phase reverse	ON	OFF	OFF	ON
Asymmetry	ON	OFF	OFF	BLINK
UV	ON	ON	OFF	OFF
OV	ON	OFF	ON	OFF
Phase Fail	BLINK	OFF	OFF	OFF
Phase Fail *	BLINK	ON	OFF	BLINK
Neutral Fail	ON	BLINK	BLINK	BLINK

* Phase fail indications when I/P voltages are below UV set point and below asymmetry

Operating Temperature	-10° C To + 60° C
Storage Temperature	-10° C To + 70° C
Humidity (Non Condensing)	95% (Rh)
Enclosure	Flame Retardant UL 94-V0
Dimension (W x H x D) (in mm)	36 X 90 X 60
Weight (unpacked)	120 g
Mounting	Base / DIN rail
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure
Certification	CE RoHS Compliant

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Voltage Monitoring Series SM 501

- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- Suitable for 3 Phase 3 Wire system
- Selectable Under Voltage / Over Voltage Trip level
- Selectable Time Delay
- Models for Selectable Phase Asymmetry
- LED Indications for Power and Fault conditions
- Voltage Sensing Principle
- 2 C/O Configuration

Ordering Information

Cat. No.	Description
MG53BH	415 VAC, UV / OV & Single Phasing Preventor (SPP) with Selectable ON Delay (0.5 to 15 sec), 2 C/O
MG53BF	415 VAC, UV / OV & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O
MG63BH	220 VAC, UV / OV & SPP with Selectable ON Delay (0.5 to 15 sec), 2 C/O
MG63BF	220 VAC, UV / OV & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O

Voltage Monitoring Series SM 501

Cat. No.		MG53BH	MG53BF	MG63BH	MG63BF
Parameters					
Supply Voltage (⏚)		415 VAC (3 Phase, 3 Wire)		220 VAC (3 Phase, 3 Wire)	
Frequency		50/60 Hz			
Power Consumption (Max.)		10 VA		5 VA	
Trip Settings	Phase Loss	Yes			
	Phase Sequence	Yes			
	Phase Asymmetry	10% (of ⏚)			
	Under Voltage	55% to 95% (of ⏚)			
	Over Voltage	105% to 125% (of⏚)			
	Hysterisis	7 V (± 2 V) of Trip Voltage			
Time Delay	ON Delay	0.5 to 15 s (Selectable)	5 s	0.5 to 15 s (Selectable)	5 s
	Trip Time (OFF Delay)	5 s	0.5 to 15 s (Selectable)	5 s	0.5 to 15 s (Selectable)
Output	Relay Output	2 C/O			
	Contact Rating	5A @ 250 VAC / 28 VDC (Resistive)			
	Electrical Life	$1X10^5$			
	Mechanical Life	$3X10^6$			
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A			
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A			
LED Indication		Separate indications for Power ON, UV and OV; ON: Phase Reverse; BLINK: Phase Asymmetry			
Operating Temperature Storage Temperature		-15^{o} C To + 55^{o} C -25^{o} C To + 70^{o} C			
Humidity (Non Condensing)		95% (Rh)			
Enclosure		Flame Retardant UL 94-V0			
Dimension (W x H x D) (in mm)		36 X 90 X 60			
Weight (unpacked)		120 g			
Mounting		Base / DIN rail			
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure			
Certification		CE RoHS Compliant			

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Note: 1) Voltage Setting Accuracy: ± 5 % of Full Scale; Time Setting Accuracy: ± 10 % of Full Scale

2) In the event of Phase Sequence or Phase Loss, OFF Delay is 100 ms

Voltage Monitoring Series SM 501

Ordering Information

Cat. No.	Description
MG53BI	415 VAC, UV / OV & Single Phasing Preventor (SPP) with 65 V Asymmetry, 2 C/O
MG53BO	415 VAC, UV / OV & SPP with 3 min ON Delay & 5s OFF Delay, 2 C/O
MB53BM	415 VAC, UV / OV (110% Fixed) & SPP with Selectable Asymmetry (5% to 17%), 2 C/O
MG53BQ	415 VAC, UV / OV & SPP with 30 V Asymmetry, 3 Sec ON Delay, 2 C/O

Voltage Monitoring Series SM 501

Cat. No.		MG53BI	MG53BO	MB53BM
Parameters				
Supply Voltage (⏚)		415 VAC (3 Phase, 3 Wire)		
Frequency		50/60 Hz		
Power Consumption (Max.)		10 VA		
Trip Settings	Phase Loss	Yes	Yes	Yes
	Phase Sequence	Yes	Yes	Yes
	Phase Asymmetry	65 V	10%	5% to 17%
	Under Voltage	55% to 95% (of ⏚)	85% (of ⏚) Fixed	80% (of ⏚) Symmetrical
	Over Voltage	105% to 125% (of ⏚)	110% (of ⏚) Fixed	110% Fixed
	Hysterisis	7 V (± 2 V) of Trip Voltage	7 V (± 2 V) of Trip Voltage	7 V (± 2 V) of Input Voltage
Time Delay	ON Delay	5 s	3 min	0.5 to 15 s (Selectable)
	Trip Time (OFF Delay)	5 s	5 s	0.5 to 15 s (Selectable)
Output	Relay Output	2 C/O		
	Contact Rating	5A @ 250 VAC / 28 VDC (Resistive)		
	Electrical Life	$1X10^5$		
	Mechanical Life	$3X10^6$		
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A		
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A		
LED Indication		Separate indications for Power ON, UV and OV; ON: Phase Reverse; BLINK: Phase Asymmetry		
Operating Temperature Storage Temperature		-15° C To + 55° C -25° C To + 70° C		
Humidity (Non Condensing)		95% (Rh)		
Enclosure		Flame Retardant UL 94-V0		
Dimension (W x H x D) (in mm)		36 X 90 X 60		
Weight (unpacked)		120 g		
Mounting		Base / DIN rail		
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure		
Certification		CE RoHS Compliant		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

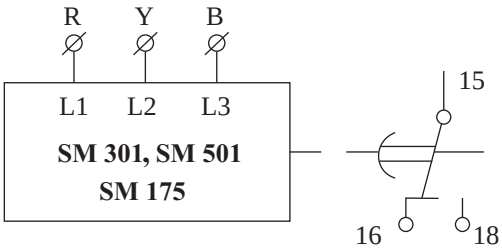
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Note: 1) Voltage Setting Accuracy: ± 5 % of Full Scale; Time Setting Accuracy: ± 10 % of Full Scale

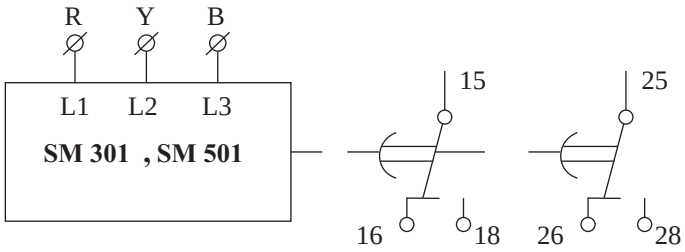
2) In the event of Phase Sequence or Phase Loss, OFF Delay is 100 ms
3) MG53BQ does not detect Phase Sequence Fault

Voltage Monitoring Series

CONNECTION DIAGRAM

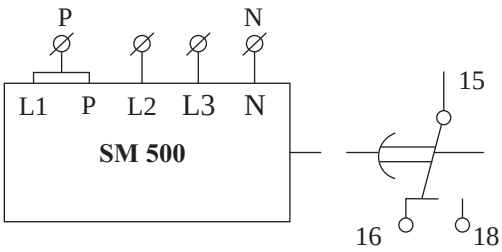


MA51BC, MA51BK, MN21D5, MK21D5, MC21D5
MA21DN, MD21DF, MG21DH, MG21DF, MGD1DR

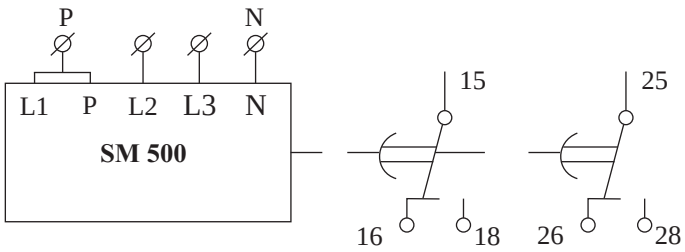


MG53BH, MG53BF, MG63BH, MG63BF
MG53BI, MG53BO, MB53BM, MC21B5

SINGLE PHASE

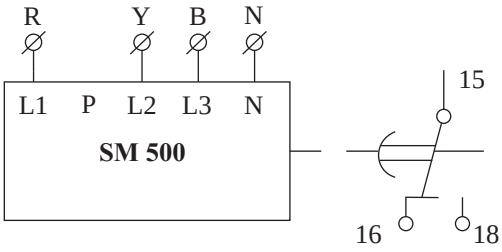


MD71BH, MD71BF, MD71B9

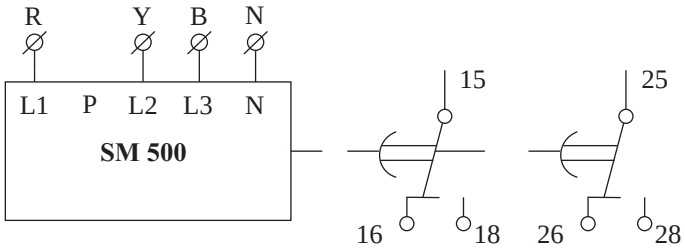


MG73BH, MG73BF, MG73B9

THREE PHASE

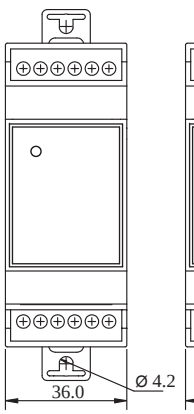


MD71BH, MD71BF, MD71B9

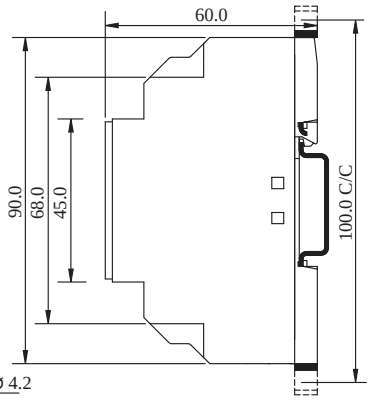


MG73BH, MG73BF, MG73B9, MAC04D0100 (P is not applicable in neutral loss)

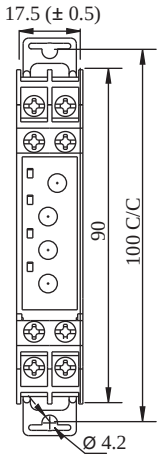
MOUNTING DIMENSION (mm)

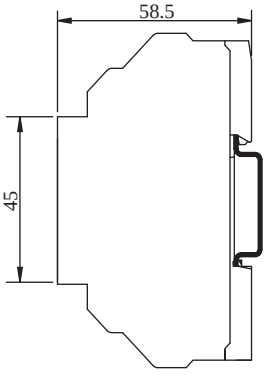


SM 301



SM 500, SM 501





SM 175

TERMINAL TORQUE & CAPACITY

Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm² Solid Wire/Stranded
AWG	1 x 24 to 12

SM 301, SM 500, SM 501

Ø 3.5 mm....5.0mm	0.80 N.m (7.1 Lb.in)
	2 x 2.5 mm² Solid/Stranded Wire
AWG	2 x 20 to 14

SM 175

Product Selection Chart: Voltage Monitoring

Cat. No.	3-Phase 3-Wire	3-Phase 4-Wire	1 - Phase	Under Voltage Protection	Over Voltage Protection	Phase Loss Protection	Phase Sequence Protection	Phase Asymmetry Monitoring	Settable ON Delay	Settable OFF Delay	1 C/O Relay Output	2 C/O Relay Output	Neutral Loss Protection	115 VAC	208 to 480 VAC	240 VAC	415 VAC
MN21D5	●					●					●				●		
MK21D5	●					●	●				●				●		
MC21D5	●					●	●	●			●				●		
MA21DN	●					●	●	●		●	●				●		
MD21DF	●			●	●	●	●			●	●				●		
MG21DH	●			●	●	●	●	●			●				●		
MG21DF	●			●	●	●	●	●		●	●				●		
MOF1D51	●					●		●			●				●		
MAE03D0200				●	●				●	●	●			●		●	
MA51BC	●					●	●	●			●						●
MA51BK	●					●	●	●			●						●
MC21B5	●					●	●	●				●					●
MD71BH		●	●	●	●	●			●		●					●	●
MD71BF		●	●	●	●	●				●	●					●	●
MD71B9		●	●	●	●	●		●	●		●					●	●
MG73BH		●	●	●	●	●	●	●	●			●				●	●
MG73BF		●	●	●	●	●	●	●		●		●				●	●
MG73BR		●	●	●	●	●	●	●		●		●				●	●
MG73B9		●	●	●	●	●	●	●	●			●				●	●
MAC04D0100		●		●	●	●	●	●				●	●				●
MG53BH	●			●	●	●	●	●	●			●					●
MG53BF	●			●	●	●	●	●		●		●					●
MG53BT	●			●	●	●	●	●		●		●					●
MG53BQ	●			●	●	●		●		●		●					●
MG53BI	●			●	●	●	●	●				●					●
MG53BO	●			●	●	●	●	●				●					●
MB53BM	●			●	●	●	●	●	●	●		●					●

Note: The product can be made available in 120 VAC, 220 VAC, 230 VAC and 400 VAC.

Three Phase Indicator

- Compact 17.5 mm Wide
- Available for Single, Two and Three Phase indications
- Choice of four colours
- LED technology for long life
- Integrated front product labeling

Ordering Information

Cat. No.	Description
MM1NDV	240V AC, Single Phase Indicator, Red
MM1NDW	240V AC, Single Phase Indicator, Yellow
MM1NDX	240V AC, Single Phase Indicator, Blue
MM1NDY	240V AC, Single Phase Indicator, Green
MMENDVW	240V AC, Two Phase Indicator, Red & Yellow
MM3ND	240V AC, Three Phase Indicator, Red, Yellow & Blue
MM3NDVH	240V AC, Three Phase Indicator, Red, Yellow & Green
MM3NDVD	240V AC, Three Phase Indicator, Red
MM3NDZ	240V AC, Three Phase Indicator, Green

Three Phase Indicator

Cat. No.		MM1NDV	MMENDVW	MM3ND
Parameters				
Supply Voltage (⏚)		240 VAC		
Supply Variation		-25 to +10%(of⏚)		
Frequency		50/60Hz		
Power Consumption (Max.)		1.8 W		
Number of Indications		1	2	3
LED Colour	Red	R Phase	R Phase	R Phase
	Yellow	N A	Y Phase	Y Phase
	Blue	N A	N A	B Phase
LED Type		Through Hole (Water Clear)		
LED Size		3mm		
Operating Temperature Storage Temperature		- 15° C to +60° C - 25° C to +80° C		
Humidity (Non Condensing)		95% (Rh)		
Enclosure		Flame Retardant UL94-V0		
Dimension (W x H x D) (in mm)		17.5 X 90 X 65		
Weight (unpacked)		75 g		
Mounting		DIN rail		
Certification		CE RoHS Compliant		
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure		

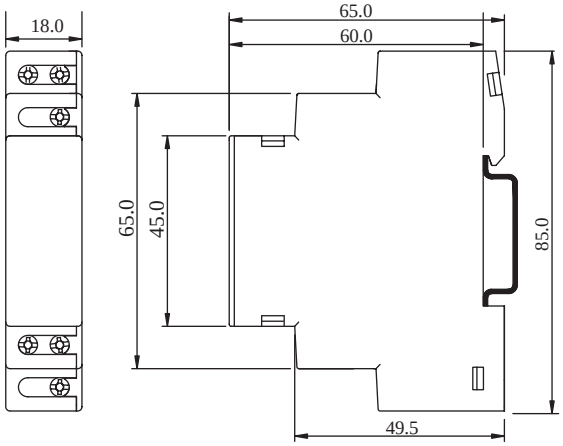
EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

MOUNTING DIMENSIONS (mm)



TERMINAL TORQUE & CAPACITY

Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

Frequency Monitoring Series PD 225

- Wide Auxiliary Supply voltage Range: 110 - 240 VAC, 220 - 440 VAC
- Models for Over Frequency and Under/Over Frequency Monitoring
- Monitors Frequency of Three signals - Sine, Square & Triangular
- Model for Frequency Limit Control: 5 Hz to 135 Hz
- Wide Signal Input Voltage: 15 to 500 VAC
- Adjustable Relay status in Healthy or Unhealthy condition using DIP switch "ET" (Energize to Trip) or "DT" (De-energize to trip.)
- Ease of Frequency setting with simple Addition & Subtraction
- LED Indications for Healthy, Unhealthy & No signal conditions

Ordering Information

Cat. No.	Description
MI81BJ	110 - 240 VAC, Over Frequency Relay, 1 C/O
MI91BJ	220 - 440 VAC, Over Frequency Relay, 1 C/O
MI81BL	110 - 240 VAC, Over Frequency & Under Frequency Relay, 1 C/O
MI91BL	220 - 440 VAC, Over Frequency & Under Frequency Relay, 1 C/O

UL Approval for Cat Nos. MI81BL & MI91BL only.

Frequency Monitoring Series PD 225

Cat. No.			MI81BJ	MI91BL
Parameters				
Supply Voltage (⏚)			110 - 240 VAC	220 - 440 VAC
Supply Variation			-15% to +15% (of ⏚)	
Frequency			50/60 Hz	
Power Consumption (Max.)			3 VA	
Signal Type			Sinusoidal, Square, Triangular	
Signal Input Voltage Range			(15 to 500) V	
Overall Frequency Range			(5 to 135) Hz	(40 to 70) Hz
Trip Settings	Over Frequency		0.33 to 1 of Full Scale	(+1 to +10) Hz above Selected Value
	Under Frequency		N A	(-1 to -10) Hz below Selected Value
	Reset Hysteresis		1.5 % of Full Scale selected	
Setting Accuracy			± 5%	
Repeat Accuracy			± 0.02%	
Time Delay	ON Delay		500 ms	
	OFF Delay		100 ms	500 ms to 5 s
	Reset Time		150 ms	
Output	Relay Output		1 C/O	
	Contact Rating		6A (Resistive) @ 250 VAC / 28 VDC	
	Electrical Life		1 x 10^5	
	Mechanical Life		3 x 10^6	
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
LED Indications	Relay		Red LED Flashing if No Signal	N A
	UF / OF		N A	Separate for UF & OF
Operating Temperature Storage Temperature			- 15° C to +60° C - 25° C to +80° C	
Enclosure			Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)			22.5 X 83 X 100.5	
Weight (unpacked)			120 g	
Mounting			Base / DIN rail	
Certification			CE cULus LISTED RoHS Compliant	
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Earth Leakage Relay Series CMR

- Monitors, Detects and Protects Power systems from Earth Leakage Faults
- Wide range of selectable Earth Leakage Current: 30 mA - 30 A
- Configurable Earth Leakage Trip time: 0 - 10 s
- Wide Auxiliary Supply Range:
  110 - 240 V AC / 110 V DC,
  220 - 415 V AC / 220 V DC
- Instantaneous Trip for 5 times of set value of Leakage current
- Test feature to check complete product functionality
- LED Indication for Relay status, CT open, Earth Leakage fault & Test/Reset switch feature
- Manual / Remote Reset feature
- 1 C/O + 1 NO Relay Output

Ordering Information

Cat. No.	Description
17G715GF2	110-240V AC / 110 V DC, Current Range 30 mA - 30 A, 1 C/O + 1 NO, Manual Reset
17G715KF2	110-240V AC / 110 V DC, Current Range 30 mA - 30 A, 1 C/O + 1 NO, Auto Reset
17G745GF2	220-415V AC / 220 V DC, Current Range 30 mA - 30 A, 1 C/O + 1 NO, Manual Reset
17G745KF2	220-415V AC / 220 V DC, Current Range 30 mA - 30 A, 1 C/O + 1 NO, Auto Reset
17G755GF2	15V DC, Current Range 30 mA - 30 A, 1 C/O + 1 NO, Manual Reset
17G755KF2	15V DC, Current Range 30 mA - 30 A, 1 C/O + 1 NO, Auto Reset
17G815GF2	110-240V AC / 110 V DC, Current Range 30 mA - 10 A, 1 C/O + 1 NO, Manual Reset
17G815KF2	110-240V AC / 110 V DC, Current Range 30 mA - 10 A, 1 C/O + 1 NO, Auto Reset
17G845GF2	220-415V AC / 220 V DC, Current Range 30 mA - 10 A, 1 C/O + 1 NO, Manual Reset
17G845KF2	220-415V AC / 220 V DC, Current Range 30 mA - 10 A, 1 C/O + 1 NO, Auto Reset
17H7NNHN3	CBCT 38mm, 30 mA - 30A
17H7NNIN3	CBCT 57mm, 30 mA - 30A
17H7NNJN3	CBCT 92mm, 30 mA - 30A
17H7NNLN3	CBCT 120mm, 30 mA - 30A
17H7NNKN3	CBCT 210mm, 30 mA - 30A

Earth Leakage Relay Series CMR

Cat. No.		17G715GF2	17G715KF2	17G745GF2	17G745KF2
Parameters					
Supply Voltage (⏚)		110 - 240 V AC / 110 V DC		220 - 415 V AC / 220 V DC	
Supply Variation		-20 to +20%			
Frequency		50/60Hz			
Power Consumption (Max.)		5 VA		10 VA	
Leakage Current Range (I∆n)		30 mA to 30 A			
Threshold I∆n (A)	For '17G7' Devices	0.03 - 0.1 - 0.3 - 0.5 - 1 - 3 - 5 - 10 - 20 - 30			
	For '17G8' Devices	0.03 - 0.05 - 0.1 - 0.3 - 0.5 - 0.75 - 1- 3 - 5 - 10			
Type Class		'A' True RMS measurement (As per IEC 60947-2 appendix M)			
Max. Crest Factor		5 (for 30 mA to 30 A)			
Reset Mode		Manual Reset	Auto Reset	Manual Reset	Auto Reset
No. of Resets		N A	4	N A	4
Clear Auto Reset		After 1 hour of healthy condition or supply interruption			
Reset Enable & Reset Time		Below 50% on current threshold set by potentiometer & in presence of CBCT (< 1s)			
Trip Time (∆t in sec)		0 - 0.06 - 0.15 - 0.25 - 0.5 - 0.8 - 1 - 2.5 - 5 - 10			
Test / Reset		Local & Remote (Non Potential free contacts, upto 10 m)			
Setting Accuracy		-20% (Including CBCT Accuracy)			
Repeat Accuracy		± 2%			
Output	Relay Output	1 C/O + 1 NO			
	Contact Rating	5A (Resistive) @ 240 VAC / 30 VDC			
	Electrical Life	1 x 10^5			
	Mechanical Life	1 x 10^7			
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A			
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A			
LED Indication	Power	Green LED (ON)			
	EL / CT	Red LED (ON) → Relay Trip / Red LED (Blinking) → CT Open			
	Leakage Current / TST	By Bar Graph: 30% (Green), 45% (Green), 60% (Yellow), 75% (Red), Blink Test / Reset Switch is pressed			
Operating Temperature Storage Temperature		- 15° C to +60° C - 25° C to +80° C			
Humidity (Non Condensing)		95% (Rh)			
Enclosure		Flame Retardant UL94-V0			
Dimension (W x H x D) (in mm)		36 X 90 X 65			
Weight (unpacked) Approx.		150 g			
Mounting		Base / DIN rail			
Certification		CE RoHS Compliant			
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure			

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

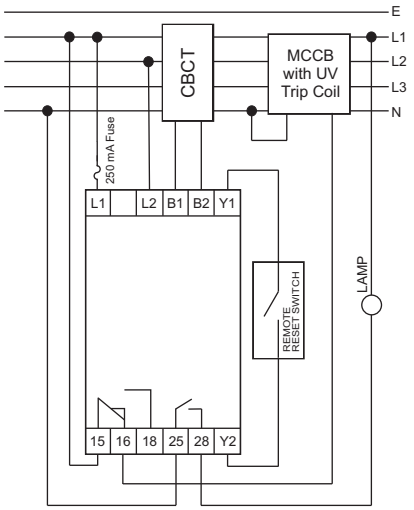
Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

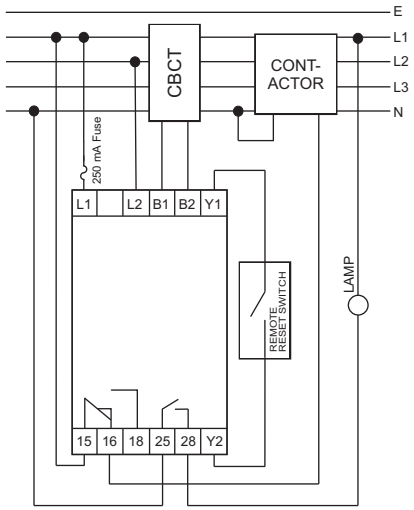
Earth Leakage Relay Series CMR

CONNECTION DIAGRAM

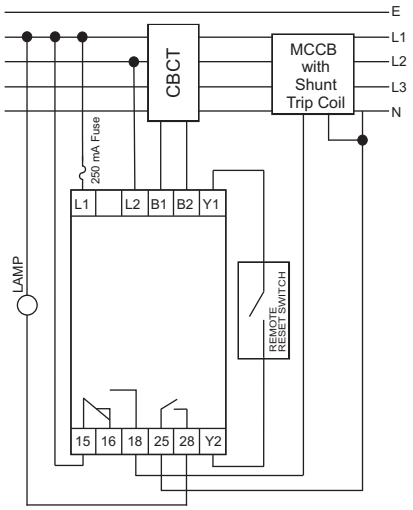
NON-FAIL SAFE MODE WITH UV TRIP COIL



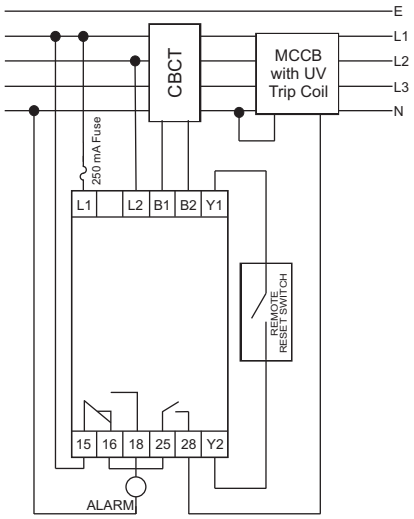
NON-FAIL SAFE MODE WITH CONTACTOR



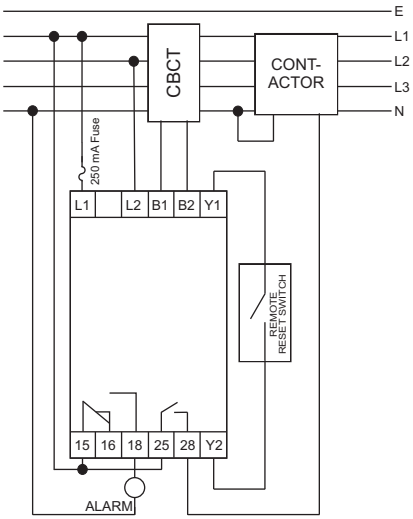
NON-FAIL SAFE MODE WITH SHUNT TRIP COIL



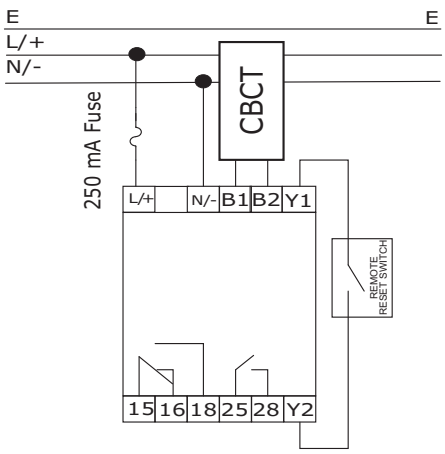
FAIL SAFE MODE WITH UV TRIP COIL



FAIL SAFE MODE WITH CONTACTOR

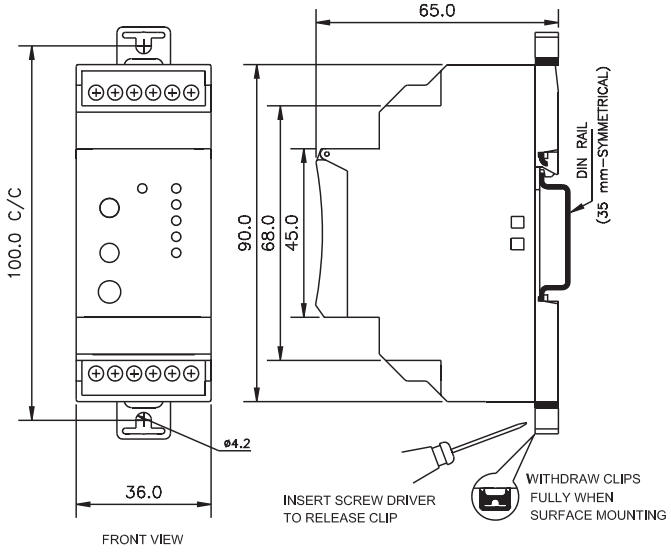


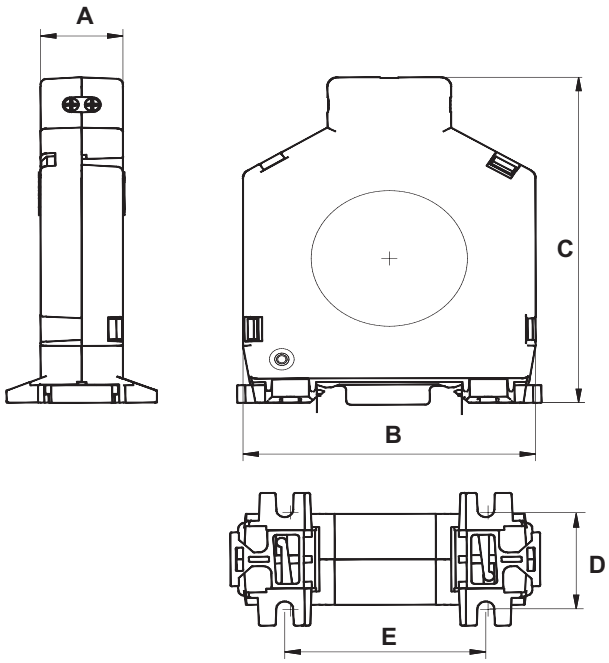
SINGLE PHASE APPLICATION



Earth Leakage Relay Series CMR

MOUNTING DIMENSIONS

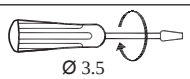




CBCT	SIZE	WEIGHT (in gms)	A	B	C	D	E
17H7NNHN3	38	110	20	71	91	27	48
17H7NNIN3	57	185	20	97	117	27	55
17H7NNJN3	92	250	20	132	155	27	73
17H7NNLN3	120	255	20	153	176	27	73
17H7NNKN3	210	280	20.5	250	282	28	128

Dimensions in mm

TERMINAL TORQUE & CAPACITY

 Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 24 to 12

Earth Leakage Relay Series CMR

- Monitors, Detects and Protects Power systems from Leakage faults
- Wide Auxiliary Supply range: 110 - 240 VAC, 220 - 415 VAC
- Wide Range of selectable Earth Leakage Current: 60 mA - 300 mA, 0.2A - 1.2A
- Configurable Earth Leakage Trip time: 100 ms - 5 s
- Easily configurable operating modes
- Test feature to check complete product functionality
- Manual / Remote reset feature
- LED indication for Relay status, CT open, Earth leakage fault & Test/Reset switch feature

Ordering Information

Cat. No.	Description
17G514FF1	110 - 240V AC, Earth Leakage Relay, Current Range 60 mA - 300 mA, 1 C/O
17G614FF1	110 - 240V AC, Earth Leakage Relay, Current Range 0.2 A-1.2 A, 1 C/O
17G544FF1	220 - 415V AC, Earth Leakage Relay, Current Range 60 mA - 300 mA, 1 C/O
17G644FF1	220 - 415V AC, Earth Leakage Relay, Current Range 0.2 A-1.2 A, 1 C/O
17H5NNHL3	CBCT (tape wound), 35mm, 60 mA - 300 mA
17H5NNIL3	CBCT (tape wound), 65mm, 60 mA - 300 mA
17H5NNJL3	CBCT (tape wound), 100mm, 60 mA - 300 mA
17H6NNHL3	CBCT (tape wound), 35mm, 0.2 A - 1.2 A
17H6NNIL3	CBCT (tape wound), 65mm, 0.2 A - 1.2 A
17H6NNJL3	CBCT (tape wound), 100mm, 0.2 A - 1.2 A

Earth Leakage Relay Series CMR

Cat. No.	17G514FF1	17G614FF1	17G544FF1	17G644FF1
Parameters				
Supply Voltage (⏚)	110 - 240 VAC		220 - 415 VAC	
Supply Variation	-20 to +10%			
Frequency	50/60Hz			
Power Consumption (Max.)	5 VA		10 VA	
Leakage Current Range	60 mA to 300 mA	0.2 A to 1.2 A	60 mA to 300 mA	0.2 A to 1.2 A
Mode	Fail Safe Latch (FSL), Fail Safe Non Latch (FSNL), Non Fail Safe Non Latch (NFSNL)			
Trip Time (Δt in sec)	0.1 - 0.2 - 0.4 - 2 - 5			
Trip Time (For 5 In)	100 ms (Irrespective of the Set Trip Time)			
Test / Reset	Local & Remote (For Fail Safe Latch mode only)			
Reset Enabled	Below 85% of Current sensitivity level and in presence of CBCT			
Reset Time	< 100 ms			
ON Delay	50 ms (± 20 ms)			
Setting Accuracy	-10% (85ms to 100 ms trip time for 100 ms setting in NFSL)			
Repeat Accuracy	± 2%			
Output – Relay Output	1 C/O			
Output – Contact Rating	5A (Resistive) @ 240 VAC / 30 VDC			
Output – Electrical Life	1 x 10^5			
Output – Mechanical Life	1 x 10^7			
Utilization Category – AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A			
Utilization Category – DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A			
LED Indication – Power ON	Green LED (ON)			
LED Indication – CT Open / SW Short	Red LED: ON → CT Open, Blink → TST / RST Switch short			
LED Indication – Earth Leakage	Red LED: ON			
Operating Temperature Storage Temperature	- 15° C to +60° C - 20° C to +80° C			
Humidity (Non Condensing)	95% (Rh)			
Enclosure	Flame Retardant UL94V0			
Dimension (W x H x D) (in mm)	22.5 X 83 X 100.5			
Weight (unpacked)	110 g			
Mounting	Base / DIN rail			
Certification	CE, RoHS Compliant, c UL us LISTED			
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure			

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

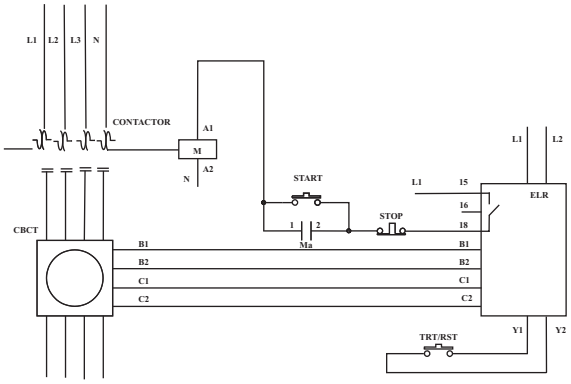
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

UL Approval for Cat. Nos. 17G514FF1 & 17G614FF1 only.

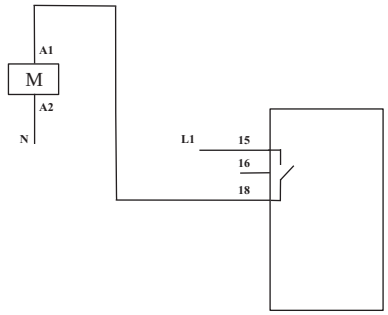
Earth Leakage Relay Series CMR

CONNECTION DIAGRAM

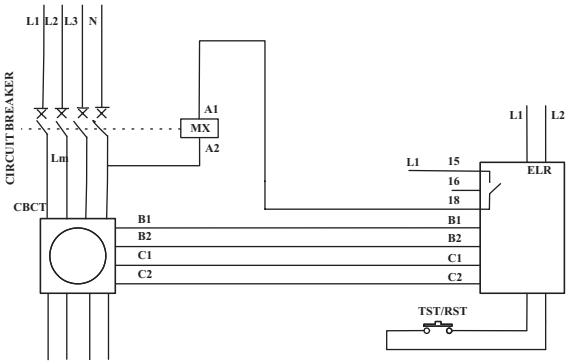
1) EARTH LEAKAGE RELAY WITH CONTACTOR FAILSAFE NON LATCH MODE



2) EARTH LEAKAGE RELAY WITH CONTACTOR FAIL SAFE LATCH MODE

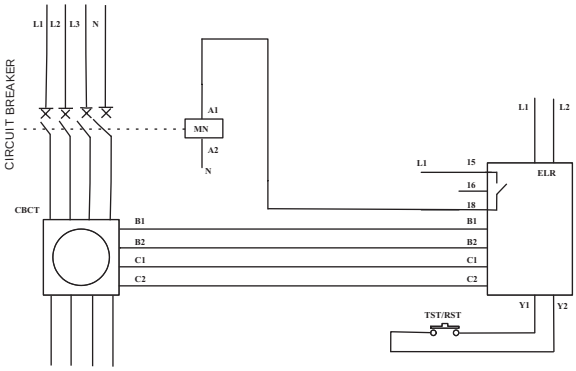


3) EARTH LEAKAGE RELAY WITH MCCB AND SHUNT TRIP COIL NON FAIL SAFE NON LATCH MODE

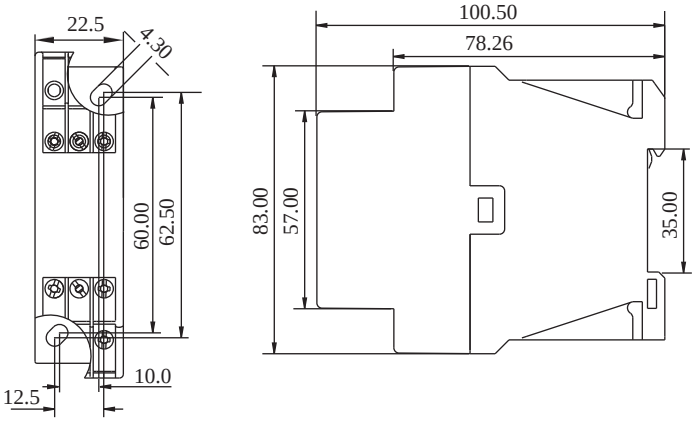


4) EARTH LEAKAGE RELAY WITH MCCB & UNDER VOLTAGE TRIP COIL FAIL SAFE LATCH MODE

5) EARTH LEAKAGE RELAY WITH MCCB & UNDER VOLTAGE TRIP COIL FAIL SAFE NON-LATCH MODE



MOUNTING DIMENSION (mm)



TERMINAL TORQUE & CAPACITY

Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

Current Monitoring Series CMR - Current Control

- Protects against Overload, Phase Reverse, Phase Loss and Phase Unbalance faults
- Wide Range of Sensing Current : 1A-45A
- Models for 1 Phase and 3 Phase systems
- Auto/Manual Reset selection
- Fail-Safe Protection
- Inverse Time model with Underload, Locked Rotor Protection and Selectable Trip Class
- Definite Time model with Underload and selectable Start and Trip time

Ordering Information

Cat. No.	Trip Type	Current	Auto Reset Time
17C112EB0	Inverse	3 A - 9 A	As per trip class
17C212EB0	Inverse	8 A - 24 A	As per trip class
17C312EB0	Inverse	15 A - 45 A	As per trip class
17C412EB0	Inverse	2 A - 5 A	As per trip class
17D112DA0	Definite	3 A - 9 A	6 min
17D212DA0	Definite	8 A - 24 A	6 min
17D312DA0	Definite	15 A - 45 A	6 min
17D412DA0	Definite	2 A - 5 A	6 min

Current Monitoring Series CMR - Current Control

Cat. No.		17C112EB0	17C212EB0	17D312DA0
Parameters				
Supply Voltage (⏚)		110 - 240 VAC		
Supply Variation		-20% to +10% of (⏚)		
Frequency		50 / 60 Hz		
Power Consumption (Max.)		5 VA		
Trip Settings	Trip Type	Inverse Time	Inverse Time	Definite Time
	Tripping Class	5, 10, 20, 30	5, 10, 20, 30	N A
	Current Ranges	3 - 9 A	8 - 24 A	15 - 45 A
	Thermal Memory	Yes	Yes	N A
	Underload	40% to 90%	40% to 90%	50%
	Locked Rotor Protection	400% of the set value	400% of the set value	N A
Number of In-Built CT's		1		
Reset Mode		Auto, Manual		
Test Function		Yes		
Time Delay	Start Time	N A	N A	0.2 to 30s
	Delay Time	As per trip class	As per trip class	0.2 to 10s
	Auto Reset Time	3-15 min (As per trip class)	3-15 min (As per trip class)	6 min
	ON Delay	60 ms to 700 ms		
Setting Accuracy		± 5%		
Repeat Accuracy		± 2%		
Output	Relay Output	1 C/O		
	Contact Rating	5A @ 240 VAC (Resistive)		
	Electrical Life	1 x 10^5		
	Mechanical Life	1 x 10^7		
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A		
LED Indications		ON: Power ON, UL: Underload, OL: Overload		
Operating Temperature Storage Temperature		- 10° C to +60° C - 25° C to +70° C		
Humidity (Non Condensing)		95% (Rh)		
Enclosure		Flame Retardant UL94-V0		
Dimension (W x H x D) (in mm)		110 X 36.5 X 76.8		
Weight (unpacked) Approx.		210 g		
Mounting		Base Mounting		
Certification		CE RoHS Compliant		
Degree of Protection		IP 20 for Enclosure		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Current Monitoring Series CMR - Current Control

Ordering Information

Cat. No.	Trip Type	Current	Auto Reset Time
17A122CB0	Inverse	3 A - 9 A	As per trip class
17A222CB0	Inverse	8 A - 24 A	As per trip class
17A322CB0	Inverse	15 A - 45 A	As per trip class
17A422CB0	Inverse	2 A - 5 A	As per trip class
17B122AA0	Definite	3 A - 9 A	6 min
17B222AA0	Definite	8 A - 24 A	6 min
17B322AA0	Definite	15 A - 45 A	6 min
17B422AA0	Definite	2 A - 5 A	6 min
17B122PA0	Definite	3 A - 9 A	Instant (< 500 msec)
17B222PA0	Definite	8 A - 24 A	Instant (< 500 msec)
17B322PA0	Definite	15 A - 45 A	Instant (< 500 msec)
17B422PA0	Definite	2 A - 5 A	Instant (< 500 msec)

Current Monitoring Series CMR - Current Control

Cat. No.		17A122CB0	17B222AA0	17A322CB0
Parameters				
Supply Voltage (⏚)		220 - 415 VAC (3 Phase, 3 Wire)		
Supply Variation		-20% to +15% of (⏚)		
Frequency		50/60 Hz		
Power Consumption (Max.)		12 VA		
Trip Settings	Trip Type	Inverse Time	Definite Time	Inverse Time
	Tripping Class	10A, 10, 20, 30	N A	10A, 10, 20, 30
	Current Ranges	3 - 9 A	8 - 24 A	15 - 45 A
	Thermal Memory	Yes	N A	Yes
	Phase Reverse Protection	Yes / (100 ms Approx.)		
	Phase Loss	70% of Unbalance		
	Current unbalance Protection	50% of Unbalance		
	Underload	40% to 90%	50%	40% to 90%
	Locked Rotor Protection	400% of the set value	N A	400% of the set value
Number of In-Built CT's		2		
Reset Mode		Auto, Manual		
Test Function		Yes		
Time Delay	Start Time	N A	0.2 to 30s	N A
	Delay Time	N A	0.2 to 10s	N A
	Auto Reset Time	3-15 min (As per trip class)	6 min	3-15 min (As per trip class)
	ON Delay	450 ms (±50ms)		
Setting Accuracy		± 5%		
Repeat Accuracy		± 2%		
Output	Relay Output	1 C/O		
	Contact Rating	5A @ 240 VAC (Resistive)		
	Electrical Life	1 x 10^5		
	Mechanical Life	1 x 10^7		
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A		
LED Indications		Separate indications for Phase Asymmetry, Phase Loss & Phase Sequence / Reverse, Power ON, Underload & Overload		
Operating Temperature Storage Temperature		- 10° C to +60° C - 25° C to +70° C		
Humidity (Non Condensing)		95% (Rh)		
Enclosure		Flame Retardant UL94-V0		
Dimension (W x H x D) (in mm)		110 X 36.5 X 76.8		
Weight (unpacked) Approx.		210 g		
Mounting		Base Mounting		
Certification		CE RoHS Compliant		
Degree of Protection		IP 20 for Enclosure		

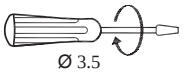
EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

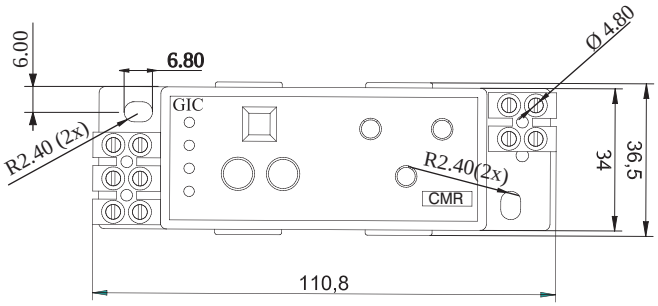
TERMINAL TORQUE & CAPACITY

 Ø 3.5	0.45 N.m (4 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 22 to 12

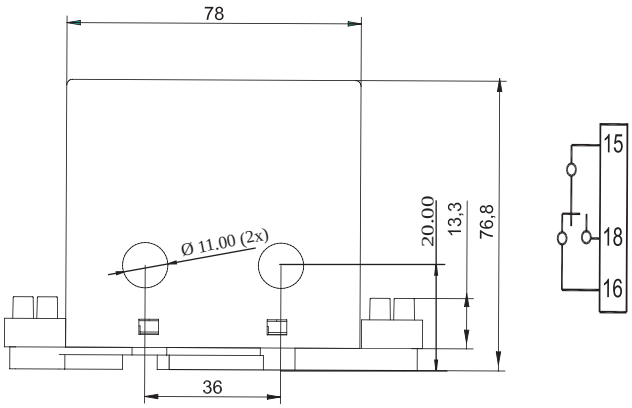
Note: 2 A - 5A products can be used with external CT. Load wires to be passed through the external CT and Secondary's wire terminals are to be looped through the Product CT.

Current Monitoring Series CMR - Current Control

MOUNTING DIMENSION (mm)

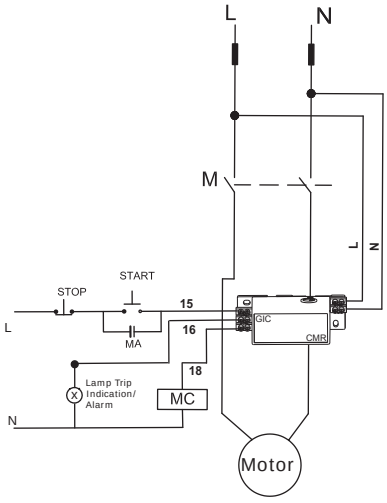


RELAY CONNECTION DIAGRAM

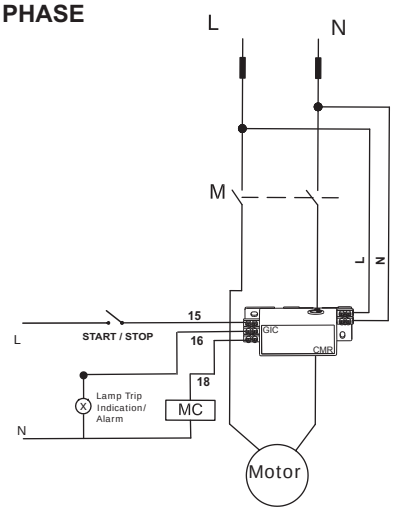


CONNECTION DIAGRAM

SINGLE PHASE

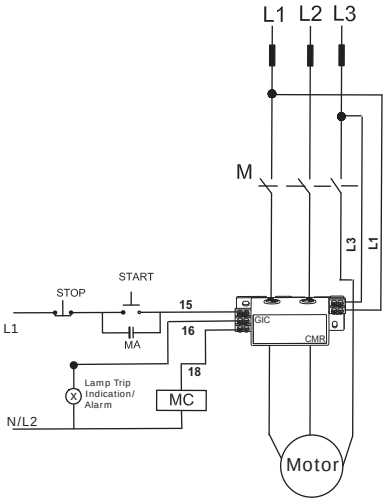


MANUAL RESET

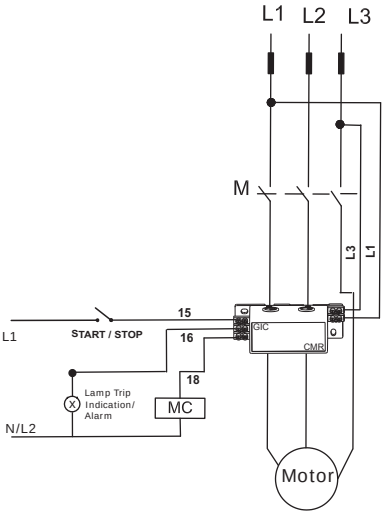


AUTO RESET

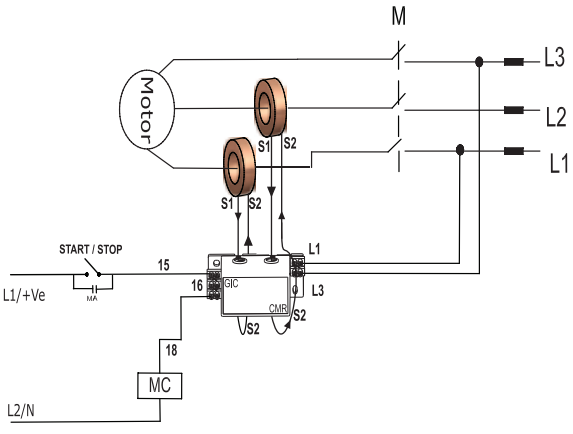
THREE PHASE



MANUAL RESET



AUTO RESET



EXTERNAL CT INTERFACE

PTC Thermistor Relay Series PD 225

- Monitors and Protects Motors with Integrated PTC Resistor sensors
- Protection against Over heating for Heavy Duty Load, High Switching Frequency, High operating temperature & Insufficient cooling conditions
- Wide Auxiliary Supply Voltage: 24 VAC/DC, 110 - 240 VAC & 220 - 415 VAC
- LED Indications for Healthy, Unhealthy, Sensor Open/Short conditions
- 1 C/O & 2 C/O Configuration
- Reset Options: Auto, Manual and Remote

Ordering Information

Cat. No.	Description
MJ83BK	110 - 240 VAC, PTC Thermistor Relay, 2 C/O
MJ93BK	220 - 440 VAC, PTC Thermistor Relay, 2 C/O
MJA3BK	24 VAC/DC, PTC Thermistor Relay, 2 C/O
MJ81BK	110 - 240 VAC, PTC Thermistor Relay, 1 C/O
MJ91BK	220 - 440 VAC, PTC Thermistor Relay, 1 C/O

UL Approval not applicable for Cat Nos. MJ83BK & MJ93BK.

PTC Thermistor Relay Series PD 225

Cat. No.			MJ83BK	MJ93BK	MJA3BK
Parameters					
Supply Voltage (⏚)			110 - 240 VAC	220 - 440 VAC	24 VAC/DC
Supply Variation			-20% to + 10% (of ⏚)		
Frequency			50/60 Hz		
Power Consumption (Max.)			4 VA		2 VA
Trip Settings	Trip Level		2.7 kΩ, (± 5%)		
	Reset Level		1.71 kΩ, (± 5%)		
	Sensor Short		<20Ω, (±4Ω)		
	Hysterisis		40Ω, (± 4Ω)		
	Sensor Open		> 20 kΩ, (± 5%)		
Max Cold Res(Ω) of Sensor Chain			< 1.5 kΩ		
Reset Mode			Auto, Manual, Remote		
Repeat Accuracy			1%		
Time Delay	ON Delay		500 ms		
	OFF Delay		100 ms		
	Reset Time		150 ms		
Output	Relay Output		2 C/O	2 C/O	2 C/O
	Contact Rating		5A (Resistive) @ 250 VAC / 28 VDC		
	Electrical Life		1 x 10^5		
	Mechanical Life		3 x 10^6		
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A		
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A		
LED Indications	Green LED		Continuous ON → Healthy Flashing → Sensor Open		
	Red LED		Continuous ON → Relay ON Flashing → Sensor Short		
	All LEDs OFF		Power Supply Fail		
Operating Temperature Storage Temperature			- 15° C to +60° C - 25° C to +80° C		
Humidity (Non Condensing)			95% (Rh)		
Enclosure			Flame Retardant UL94-V0		
Dimension (W x H x D) (in mm)			22.5 X 83 X 100.5		
Weight (unpacked)			120 g		
Mounting			Base / DIN rail		
Certification			CE, cULus LISTED, RoHS Compliant		
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

PTC Thermistor &
Single Phasing Preventer Series PD225

- Thermistor Relay combined with Protection against Phase Sequence, Phase Loss & Phase Asymmetry Faults
- Monitors and Protects Motors with Integrated PTC Resistor sensors
- Protection against Over heating for Heavy Duty Load, High Switching Frequency, High operating temperature & Insufficient cooling conditions
- LED indications for Healthy, Unhealthy, Sensor Open/Short and Phase Sequence fault conditions

Ordering Information

Cat. No.	Description
ML64BS	230 VAC, Three Phase Three Wire PTC Thermistor & SPP, 1 NO + 1 NO
ML67BS	230 VAC, Three Phase Three Wire PTC Thermistor & SPP, 1 NO + 1 NC
MLD4BS	400 VAC, Three Phase Three Wire PTC Thermistor & SPP, 1 NO + 1 NO
MLD7BS	400 VAC, Three Phase Three Wire PTC Thermistor & SPP, 1 NO + 1 NC

UL Approval not applicable for Cat Nos. MJ83BK & MJ93BK.

PTC Thermistor &
Single Phasing Preventer Series PD225

Cat. No.			ML64BS	MLD7BS
Parameters				
Supply Voltage (⏚)			230 VAC (3 Phase 3 Wire)	400 VAC (3 Phase 3 Wire)
Supply Variation			-15% to + 15% (of ⏚)	-15% to + 15% (of ⏚)
Frequency			50/60 Hz	50/60 Hz
Power Consumption (Max.)			15 VA	24 VA
Trip Settings	Trip Level		2.7 kΩ, (± 5%)	
	Reset Level		1.71 kΩ, (± 5%)	
	Sensor Short		<20Ω, (±4Ω)	
	Hysterisis		40Ω, (± 4Ω)	
	Sensor Open		> 20 kΩ, (± 5%)	
Max Cold Res(Ω) of Sensor Chain			< 1.5 kΩ	
Cable Resistance			20Ω	
Phase Asymmetry			70 VAC (± 10 VAC)	104 VAC (± 10 VAC)
Asymmetrical Phase Loss			110 VAC (± 10 VAC)	220 VAC (± 10 VAC)
Symmetrical Phase Loss			130 VAC (± 10 VAC)	240 VAC (± 10 VAC)
Restart Voltage			145 VAC (± 10 VAC)	265 VAC (± 10 VAC)
Reset Mode			Auto	
Repeat Accuracy			1%	
Time Delay	Operate Time		< 350 ms	
	Release Time		360 - 550ms for Asymmetrical or Symmetrical Phase Fault & 100ms (max.) for Phase Sequence, Thermistor Trip	
	Reset Time		100 - 750 ms	
Output	Relay Output		1 NO (SPP) + 1 NO (PTC Thermistor)	1 NO (SPP) + 1 NC (PTC Thermistor)
	Contact Rating		5A 'NO' & 3A 'NC' @ 240 VAC / 28 VDC (Resistive)	
	Electrical Life		1 x 10^5	
	Mechanical Life		3 x 10^7	
Utilization Category		AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
LED Indi-cations	⏚ (Green)	Continuous ON	Power Supply Healthy	
		Continuous OFF	Power Fail	
		Flashing	Sensor Open	
	+t° (Amber)	Continuous ON	Over Temperature Trip	
		Continuous OFF	Thermistor Relay ON	
		Flashing	Sensor Short or Cable Short	
	(Red)	Continuous ON	SPP Relay Trip (For Supply Above Restart Voltage)	
		Continuous OFF	SPP Relay ON (After ensuring the input Voltage of 5V above the Restart Voltage)	
		Flashing	Supply & SPP Fault below restart voltage	
Operating Temperature			- 10° C to +60° C	
Storage Temperature			- 15° C to +70° C	
Humidity (Non Condensing)			95% (Rh)	
Enclosure			Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)			22.5 X 83 X 100.5	
Weight (unpacked)			150 g	
Mounting			Base / DIN rail	
Certification			CE RoHS Compliant	
Degree of Protection			IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

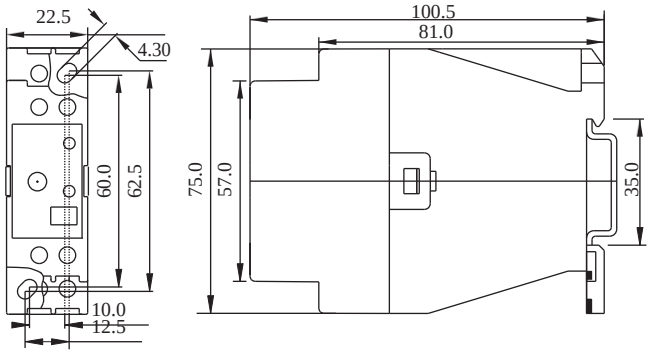
Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

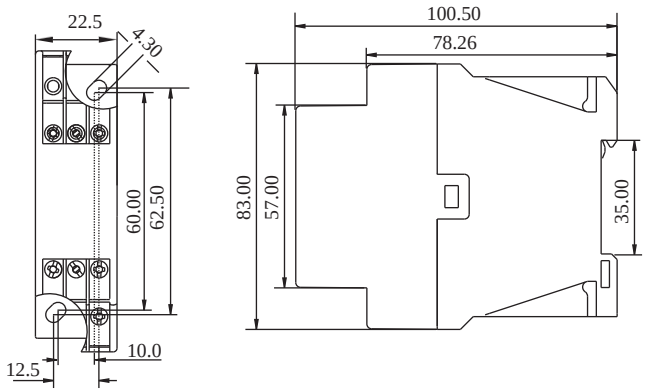
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Frequency Monitoring &
PTC Thermistor Relay Series PD225

MOUNTING DIMENSION (mm)

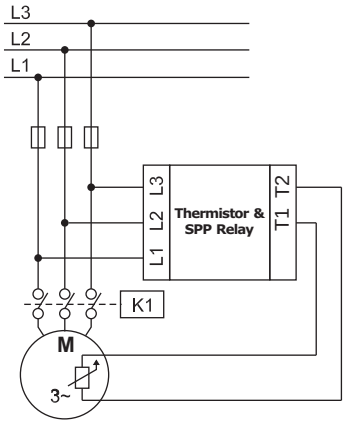


FREQUENCY MONITORING SERIES PD 225



PTC THERMISTOR RELAY SERIES PD 225 &
PTC THERMISTOR & SINGLE PHASING PREVENTER SERIES PD 225

CONNECTION DIAGRAM

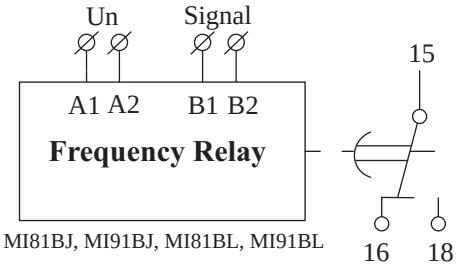


PTC THERMISTOR & SINGLE PHASING PREVENTER SERIES PD 225

CONTACT ARRANGEMENT :

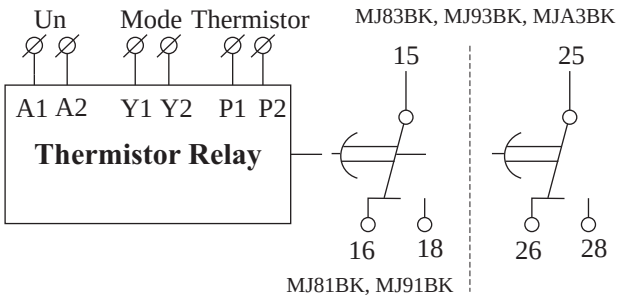
For 1 NO + 1 NO PRODUCT:
ML64BS, MLD4BS

For 1 NO + 1 NC PRODUCT:
ML67BS, MLD7BS



MI81BJ, MI91BJ, MI81BL, MI91BL

FREQUENCY MONITORING SERIES PD 225



MJ83BK, MJ93BK, MJA3BK

MJ81BK, MJ91BK

PTC THERMISTOR RELAY SERIES PD 225

TERMINAL TORQUE & CAPACITY

Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

FREQUENCY MONITORING SERIES PD 225
PTC THERMISTOR RELAY SERIES PD 225
PTC THERMISTOR & SINGLE PHASING PREVENTER SERIES PD 225

Equipment Room
Temperature Control Relay

- Provides protection against variations of the ambient temperature (min/max) in equipment or lift rooms
- Suitable for use in Traction and Hydraulic Lift Types
- Supports an External sensor module
- LED Indication for Relay Trip & Power ON

Ordering Information

Cat. No.	Description
45A131AR	5°C to 40°C (Traction lift type), 230V AC, 1NO, External NTC two wire sensor. Base/DIN
45A231AR	5°C to 40°C (Traction lift type), 110V AC, 1NO, External NTC two wire sensor. Base/DIN
45A231ARN	5°C to 40°C (Traction lift type), 110V AC, 1NO, Without Sensor, Base/DIN
45D331AR	5°C to 40°C (Traction Lift Type), 24V DC, 1NO, External NTC two wire sensor. Base/DIN
45A131BR	15°C to 35°C (Hydraulic Lift Type), 230V AC, 1NO, External NTC two wire sensor. Base/DIN
45A231BR	15°C to 35°C (Hydraulic Lift Type), 110V AC, 1NO, External NTC two wire sensor. Base/DIN
45D331BR	15°C to 35°C (Hydraulic Lift Type), 24V DC, 1NO, External NTC two wire sensor. Base/DIN
45SP01	Accessory, NTC 2 wire sensor assembly with 2 sensors

Equipment Room Temperature Control Relay

Cat. No.	45A131AR	45A231AR	45D331AR
Parameters			
Supply Voltage (⏚)	230 VAC	110 VAC	24 VDC
Supply Variation	± 15%		
Frequency	47Hz - 63Hz		NA
Power Consumption (Max.)	10 VA	5 VA	1.2 W
Device Characteristics			
Accuracy	± 1°C		
Output Control Mode	Relay ON/OFF		
Relay ON Delay	10 sec (Fixed), ± 1sec		
Relay OFF Delay	10 sec (Fixed), ± 1sec		
Hysteresis	2°C		
Trip Level			
High Trip Level	+ 40°C		
Low Trip Level	+ 5°C		
LED Indication			
Power ON	Green LED ON		
Relay ON	Red LED ON		
Relay OFF	Red LED OFF		
Sensor Open / Short	Red LED Blinking		
Contact Ratings	Terminal 15 – Pole, Terminal 18 – NO, 8 Amp at 250VAC, 1Amp at 30VDC 3 KV Isolation between coil and contact		
Max Power Output Rating of Relay	1840 VA for AC / 30W for DC approx		
Operating Temperature Storage Temperature	- 15° C to +60° C - 20° C to +70° C		
Humidity (Non Condensing)	95% (Rh)		
Enclosure	Flame Retardant UL94-V0		
Dimension (W x H x D) (in mm)	22.5 X 75 X 100.5		
Weight (unpacked)	100 g		
Mounting	Base / DIN rail		
Certification	CE RoHS Compliant		
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure		

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

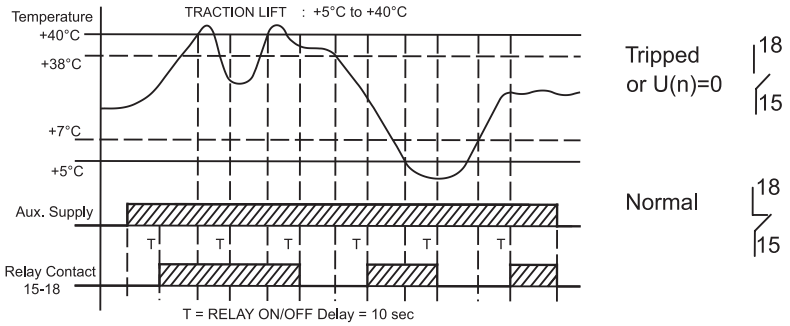
Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

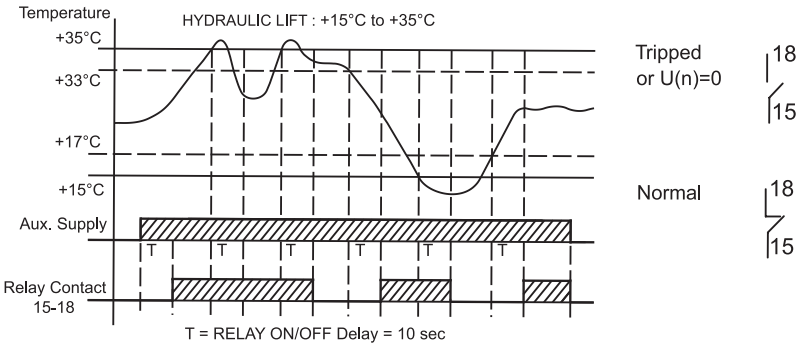
Equipment Room
Temperature Control Relay

FUNCTION DIAGRAM

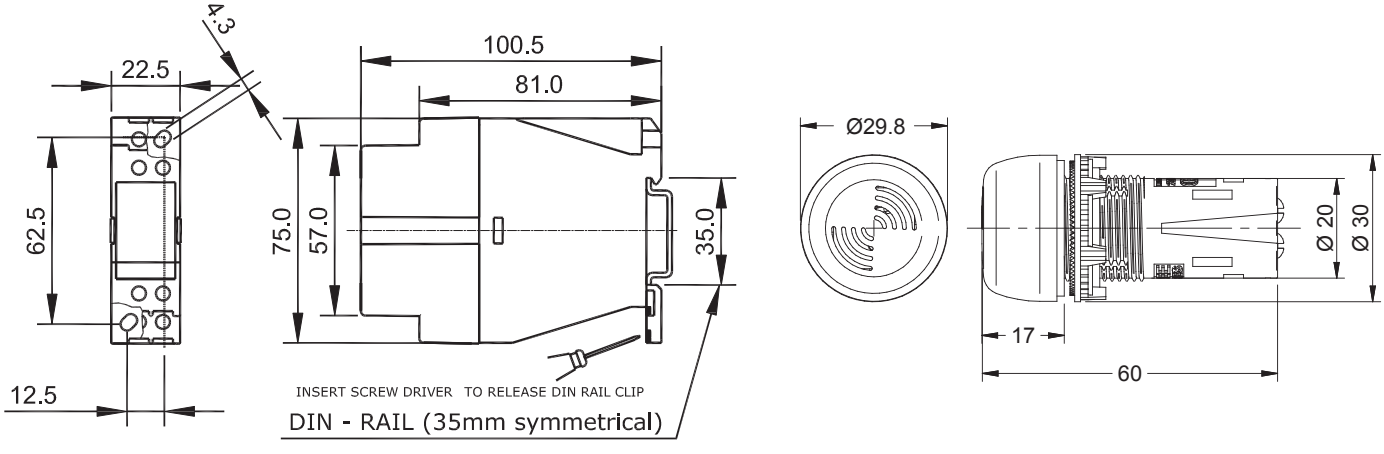
For Traction Type



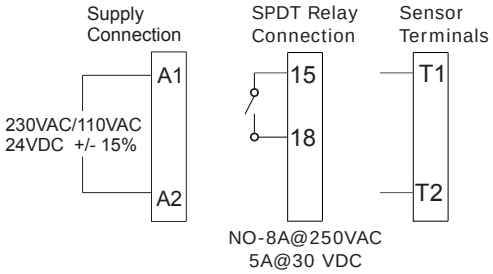
For Hydraulic Type



MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TERMINAL TORQUE & CAPACITY

For 8 and 12 terminal 225

Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

Liquid Level Controller

- Fully Automatic operation enabling both draining and filling simultaneously with a single device
- Adjustable sensitivity level from 1k to 200k Ohm
- Includes provision for Manual start
- Protects submersible pumps against dry running and prevents overfilling
- Enables maximum utilization of incoming liquid (eg. water) supply
- Specially designed corrosion and shock resistant sensors to ensure trouble free operation.

Ordering Information

Cat. No.	Description
4411AD1	110VAC, 1 C/O,1K to 200K Sensitivity, Draining & Filling
4421AD1	240VAC, 1 C/O,1K to 200K Sensitivity, Draining & Filling
4431AD1	400VAC, 1 C/O,1K to 200K Sensitivity, Draining & Filling
44S0003	Accessories, Set Of 3 Stainless Steel Sensors
44S0006	Accessories, Set Of 6 Stainless Steel Sensors

Liquid Level Controller

Cat. No.	4411AD1	4421AD1	4431AD1
Parameters			
Supply Voltage (⏚)	110VAC, +/-20%	240VAC, +/-20%	400VAC, +/-20%
Frequency	47Hz - 63Hz		
Power Consumption (Max.)	3VA		
Device Characteristics			
Conductive Sensor Probes	Stainless Steel SS304, 3 or 6Nos		
Sensor Length	10 cm		
Control Action Modes	Only Draining, Only Filling, Draining & Filling Simultaneous (One Tank or Two tanks)		
Sensitivity	1K to 200 K Ohm (Potentiometer adjustable)		
Sensor Voltage & Current	12 Vp-p, 100 Hz,< 1 mA		
Sensor cable	Cable gauge (Min):0.5 sq mm Tin coated, Cable dia(Min):1.5mm Max Cable Length-1000m (For set value < 50%) Max Cable Length-300m (For set value 100%) Max capacitances of wire- 80 nF / km		
Manual Start Switch	If Lower tank water level is greater than Low level & upper tank water level is below High level then by pressing a switch Relay can be switched ON manually.		
Output Control Mode	Relay ON/OFF		
Contact Ratings	1 C/O,8A@250VAC,Resistive,Terminal 15-Pole, Terminal 16-NC,Terminal 18-NO		
Utilization Category	AC-15: Rated Voltage (Ue):120/240V, Rated Current(Ie): 3.0/1.5A DC-13: Rated Voltage (Ue):24/125/250V, Rated Current(Ie): 2.0/0.22/0.1A		
Electrical Life	1 x 10^5Operations		
Mechanical Life	1 x 10^7Operations		
LED Indication	GREEN LED: Power ON, RED LED : Relay Output ON		
Operating Temperature	-10°C to +60°C		
Storage Temperature	-10°C to +70°C		
Relative Humidity	5 to 95 % RH (non condensing)		
Mounting	Base/DIN Rail		
Dimension (W x H x D) (in mm)	36 X 90 X 65		
Weight (unpacked)	235 g (Controller), 45 g (Sensor)		
Certification	CE RoHS Compliant		

EMI/EMC

Harmonic Current Emission	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transient	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

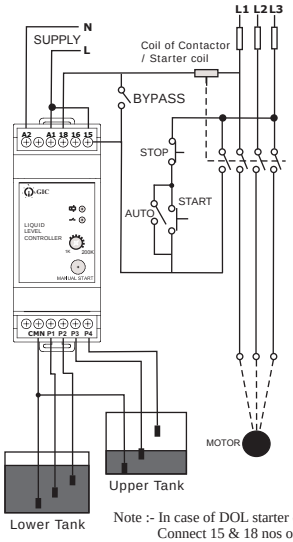
Environmental

Cold Heat	EC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

Liquid Level Controller

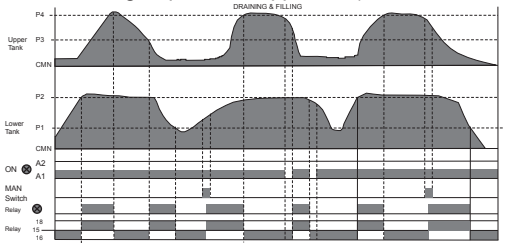
OPERATING FUNCTION DIAGRAM

Simultaneous filling and draining with 6 Sensors



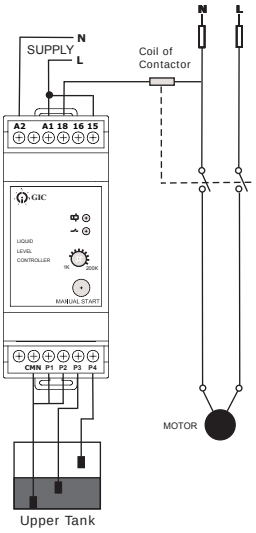
Note :- In case of DOL starter connection with LLC, Connect 15 & 18 nos of Liquid level controller to 93 & 95 nos. of DOL Starter respectively

The system starts up whenever the upper tank requires liquid and the lower tank has sufficient level to supply it, and it stops when the liquid reaches its maximum level in the upper tank or if the Lower tank reaches its minimum level. If all Sensors are non conducting then Relay is "OFF". If Liquid level reaches "P1" Sensor then relay will be OFF (maintains previous state). When the level reaches "P2" Sensor then relay will be switched ON (As the liquid level has reached maximum level of Lower tank). Now Filling of Upper tank will start. When liquid level reaches "P3" Sensor, relay will be ON (maintains previous state). Now when liquid level reaches "P4" Sensor relay will be switched "OFF" (As Liquid level has reached maximum level in the Upper tank). Now if Liquid level of upper tank is decreasing and it goes below "P4" Sensor, then the relay will be "OFF" (Maintains previous state), But when it falls below "P3" level, then relay will be switched "ON" until the liquid level is more than "P1" Sensor (i.e. until there is enough liquid in the upper tank).

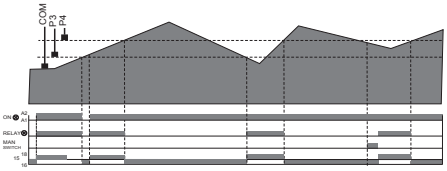


P1	P2	P3	P4	Relay & RED LED Indication
OUT	OUT	OUT	OUT	OFF
IN	OUT	OUT	OUT	OFF
IN	IN	OUT	OUT	ON
IN	IN	IN	OUT	ON
IN	IN	IN	IN	OFF
IN	IN	IN	OUT	OFF
IN	IN	OUT	OUT	ON
IN	OUT	OUT	OUT	ON
OUT	OUT	OUT	OUT	OFF

Filling Control (Single Tank Monitoring with 3 Sensors)

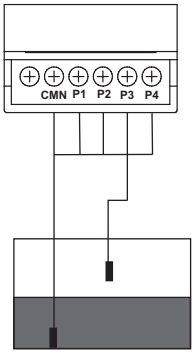


When the level in the tank drops below the low level Sensor, the relay energises. The relay then remains energized until the level reaches the high level Sensor. As soon as the high level Sensor becomes submerged, the relay de-energizes and remains OFF until the level has dropped sufficiently below the low level Sensor. When "P3" & "P4" are non-conducting i.e. tank is empty, Relay is "ON". Whenever water level reaches "P3" Sensor, then again the relay will be ON (Maintains previous state of relay). But when water level touches the "P4" Sensor, then relay will be switched "OFF" (As Liquid reaches the maximum level). Again when water level decreases below "P4" level, then the relay will be switched "OFF"(Maintains previous state of relay). When water level reaches below "P3", then the relay will be switched "ON" (As the Liquid reaches minimum level)

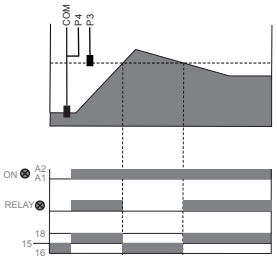


P3	P4	Relay & RED LED Indication
OUT	OUT	ON
IN	OUT	ON
IN	IN	OFF
IN	OUT	OFF
OUT	OUT	ON

Filling Control (Single level Monitoring with two Sensors)



The output relay switches "ON" which starts up the relay when the Minimum level Sensor "P3" is no longer in contact with the liquid and switches "OFF" when the liquid reaches "P3". **This operation is not recommended for pump controlling.**

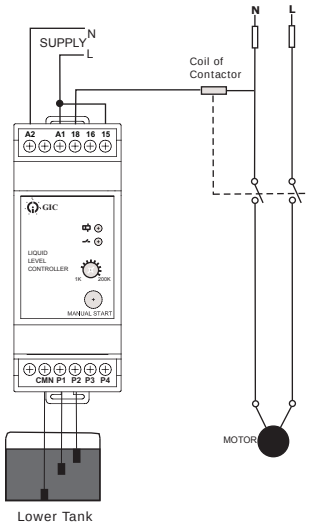


P3	Relay & RED LED Indication
OUT	ON
IN	OFF

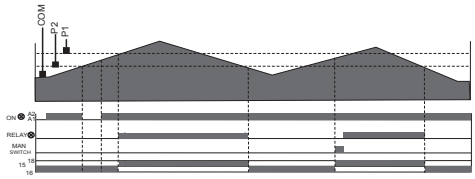
Liquid Level Controller

OPERATING FUNCTION DIAGRAM

Draining Control (Single Tank Monitoring with 3 Sensors)

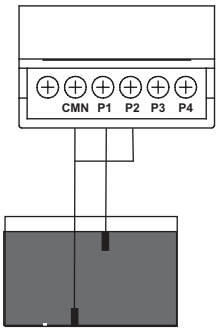


When the level in the tank rises sufficiently to submerge the high level Sensor, the relay energizes. The relay then remains energized until the level has dropped below the low level Sensor. As the liquid drops below the low level Sensor, the relay de-energizes and remains off until the level has risen sufficiently to submerge the high level Sensor. When "P1" & "P2" are non-conducting i.e. when the tank is empty, relay is "OFF". Whenever water level reaches "P1" Sensor, then again the relay will be "OFF" (maintains previous state of relay). But when water level touches the "P2" Sensor, then relay will be switched "ON" (as the Liquid reaches maximum level). Again, when water level decreases below "P2" level, then the relay will remain switched "ON" (maintains previous state of relay). When water level reaches below "P1", then relay will be switched "OFF" (as the liquid reaches minimum level).

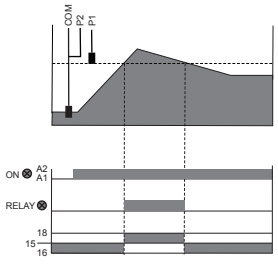


P1	P2	Relay & RED LED Indication
OUT	OUT	OFF
IN	OUT	OFF
IN	IN	ON
IN	OUT	ON
OUT	OUT	OFF

Draining Control (Single level Monitoring with two Sensors)



The output relay switches ON, when liquid level goes above a maximum level, fixed by the Sensor "P1", when the level drops below a "P1" Sensor, relay switches "OFF". **This operation is not recommended for pump controlling.**

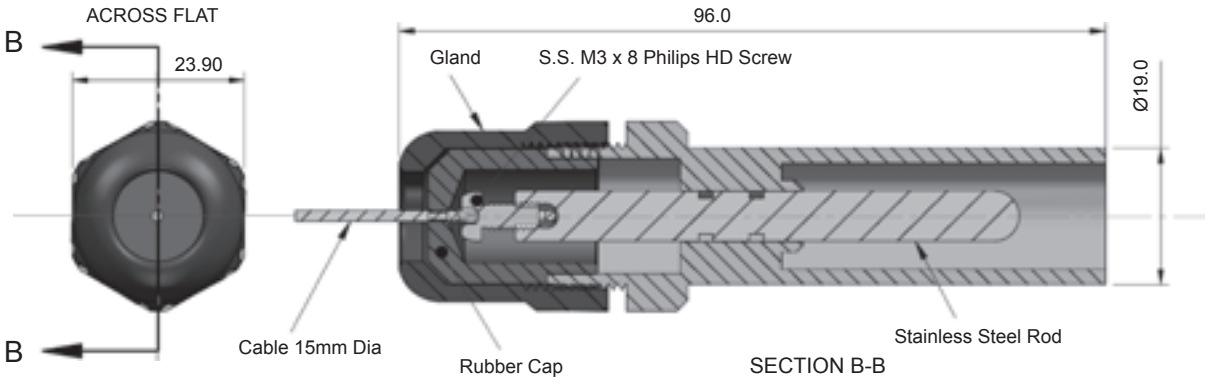


P1	Relay & RED LED Indication
OUT	OFF
IN	ON

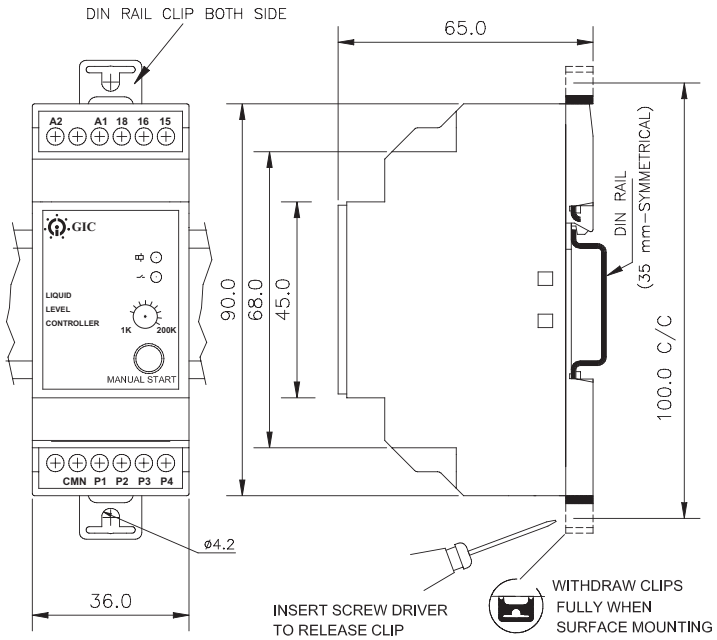
Liquid Level Controller

SENSOR DIAGRAM

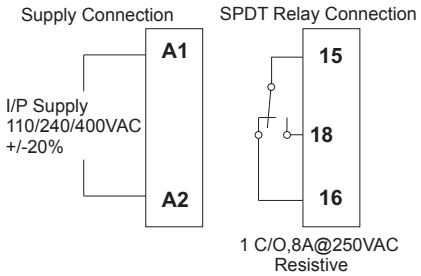
A single pole electrode used for level control in wells or storage tanks. It comprises of stainless steel Sensor with plastic holder and cable gland. A sealed ring and cable gland prevents liquid from entering the cable terminal connector and causing its oxidation.
Maximum operating temperature : -10°C to + 65°C
Cable connection: Screw
The external cable diameter must be 1.5 mm to warrant perfect sealing.



MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TERMINAL TORQUE & CAPACITY

Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm^2 Solid Wire/Stranded
AWG	1 x 24 to 12

TEMPERATURE CONTROLLERS

PID Temperature Controller
Series PR 69

- Universal Input
- Configurable Output combination
- Configurable: Band, Deviation, Sensor break & Loop break alarms
- Single/Dual acting PID controllers with 5 Control modes
- Auto-tuning PID with provision for Soft-Start
- 6 Segment Ramp & Soak profile with Power Failure resumption modes
- Rapid Set Point change feature
- RS 485 Communication
- Bumpless Auto-Manual transfer
- IP 20 (for Terminal & Enclosure)
  IP 40 (for for Front Panel only)

Ordering Information

Dual Acting PID Controller

Cat. No.	Description
151A13B	2 Relays (SPST 8A & 5A), SSR driving output (12 VDC, 24mA)
151B13B	1 Relay (SPST 5A), Analog output (0-10V, 4-20mA), SSR driving output (12 VDC, 24mA)
151C13B	2 Relays (SPST 5A each), Analog output (0-10V, 4-20mA)
151D13B	3 Relays (SPST One 8A & Two 5A)
151A13B1	2 Relays (SPST 8A & 5A), SSR driving output (12 VDC, 24mA) with RS485
151B13B1	1 Relay (SPST 5A), Analog output (0-10V, 4-20mA), SSR driving output (12 VDC, 24mA) with RS485
151C13B1	2 Relays (SPST 5A each), Analog output (0-10V, 4-20mA) with RS485
151D13B1	3 Relays (SPST One 8A & Two 5A) with RS485

PID Temperature Controller
Series PR 69

Cat. No.	151A13B1	151B13B1	151C13B1	151D13B1
Parameters				
Supply Voltage (⏚)	110 - 240 VAC			
Supply Variation	-20% to +10%(of ⏚)			
Frequency	50/60 Hz			
Control Action	ON/OFF (Symmetric / Asymmetric), PID (Single / Dual Acting)			
Tuning Method	Auto Tuning / Manual Tuning			
Temperature sensors / Inputs	Thermocouple: J, K, E, S, B, R; RTD: PT100 - 3 wire compensation; Analog Signal DC: (0-50 mV, 0-60 mV,12-60 mV)			
Measurement Range	Sensor J: 0 to 700°C/32 to 1292°F, Sensor K: 0 to 1300°C/32 to 2372°F, Sensor E: 0 to 600°C/32 to 1112°F, Sensor R: 0 to 1750°C/32 to 3182°F, Sensor S: 0 to 1750°C/32 to 3182°F, Sensor B: 250 to 1820°C/482 to 3308°F, Sensor PT100 3 wire: - 200 to 700°C/-328 to 1292°F			
Measurement Accuracy	+/-0.5% of full scale of PT100, +/-1% of full scale for TC & mV signals			
Resolution	0.1°C for RTD, J,E & 1° for S,B,K & 0.001°C for mV signals			
Configurable Set Points	4			
Display	Dual row 7 segment display with LED indications, 4-digit process value, 4 digit set value			
Keypad	4-Keys: ■ - Exit / Configurable Key, ▼ - Down, ▲ - Up, ↵ - Enter / Select			
Output 1	Relay: SPST 8A @ 240 VAC / 28 VDC	Analog: 0 - 10V DC / 4 - 20 mA Configurable Retransmission Output		Relay: SPST 8A @ 240 VAC / 28 VDC
Output 2	Relay: SPST 5A @ 240 VAC / 28 VDC			
Output 3	SSR: 12 VDC, 24 mA Short Circuit Protection		Relay: SPST 5A @ 240 VAC / 28 VDC	
Analog Output Update Rate	N A	150ms to 5s		N A
Alarm Types	Absolute (High/Low/Band), Deviation (High/Low/Band), Sensor Break, Loop Break,			
Soft Start Feature	Yes			
Ramp Soak Feature	6 Segment Ramp Soak Profile			
RS 485 Communication	RS 485 Communication			
Transmission Speed & Type	300 to 19200 BPS (Half Duplex)			
Transmission Protocol	Modbus RTU			
Operating Temperature Storage Temperature	0°C to +50°C -20°C to +60°C			
Humidity (Non Condensing)	80% (Rh)			
Enclosure	Flame Retardant UL94V0			
Dimensions (W x H x D) (in mm)	48 x 48 x 91.5			
Weight (unpacked)	130 g			
Mounting	Flush			
Certification	CE RoHS Compliant			
Degree of Protection	IP 20 Terminal & Enclosure, IP 40 (For Front Panel only)			

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

PID Temperature Controller
Series PR 69

Ordering Information

Single Acting PID Controller
Advanced PID Series PR 69

Cat. No.	Description
151A12B	2 Relays (SPST 8A & 5A, 240 VAC / 28 VDC), SSR driving output (12 VDC, 24mA)
151B12B	1 Relay (SPST 5A, 240 VAC / 28 VDC), Analog output (0-10V, 4-20mA), SSR driving output (12 VDC, 24mA)
151C12B	2 Relays (SPST 5A each,240V AC/28V DC), Analog output (0-10V, 4-20mA)
151D12B	3 Relays (SPST One 8A & Two 5A, 240V AC / 28V DC)

PID Temperature Controller
Series PR 69

Cat. No.	151A12B	151B12B	151C12B	151D12B
Parameters				
Supply Voltage (⏚)	110 - 240 VAC			
Supply Variation	-20% to +10% (of ⏚)			
Frequency	50/60 Hz			
Control Action	ON/OFF (Symmetric / Asymmetric), PID (Single Acting)			
Tuning Method	Auto Tuning / Manual Tuning			
Temperature sensors / Inputs	Thermocouple: J, K, E, S, B, R; RTD: PT100 - 3 wire compensation; Analog Signal DC: (0-50 mV, 0-60 mV,12-60 mV)			
Measurement Range	Sensor J: 0 to 700°C/32 to 1292°F, Sensor K: 0 to 1300°C/32 to 2372°F, Sensor E: 0 to 600°C/32 to 1112°F, Sensor R: 0 to 1750°C/32 to 3182°F, Sensor S: 0 to 1750°C/32 to 3182°F, Sensor B: 250 to 1820°C/482 to 3308°F, Sensor PT100 3 wire: - 200 to 700°C/-328 to 1292°F			
Measurement Accuracy	± 0.5% of full scale of PT100, ± 1% of full scale for TC & mV signals			
Resolution	0.1°C for RTD, J,E & 1° for S,B,K & 0.001°C for mV signals			
Configurable Set Points	2			
Display	Dual row 7 segment display with LED indications, 4-digit process value, 4 digit set value			
Keypad	4-Keys: ▣ - Exit / Configurable Key, ▼ - Down, ▲ - Up, ↵ - Enter / Select			
Output 1	Relay: SPST 8A @ 240 VAC / 28 VDC	Analog: 0 - 10V DC / 4 - 20 mA Configurable Retransmission Output		Relay: SPST 8A @ 240 VAC / 28 VDC
Output 2	Relay: SPST 5A @ 240 VAC / 28 VDC			
Output 3	SSR: 12 VDC, 24 mA Short Circuit Protection		Relay: SPST 5A @ 240 VAC / 28 VDC	
Analog Output Update Rate	N A	150ms to 5s		N A
Alarm Types	Absolute (High/Low/Band), Deviation (High/Low/Band), Sensor Break, Loop Break,			
Soft Start Feature	Yes			
Ramp Soak Feature	No			
Operating Temperature Storage Temperature	0°C to +50°C -20°C to +60°C			
Humidity (Non Condensing)	80% (Rh)			
Enclosure	Flame Retardant UL94V0			
Dimensions (W x H x D) (in mm)	48 x 48 x 91.5			
Weight (unpacked)	130 g			
Mounting	Flush			
Certification	CE RoHS Compliant			
Degree of Protection	IP 20 Terminal & Enclosure, IP 40 (For Front Panel only)			

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

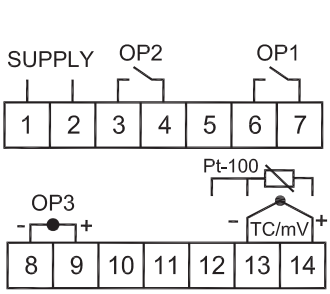
Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

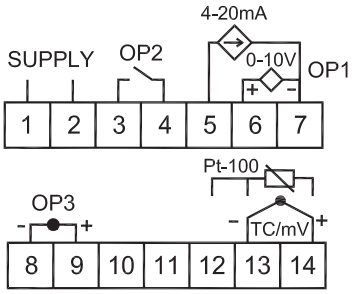
PID Temperature Controller
Series PR 69

CONNECTION DIAGRAM

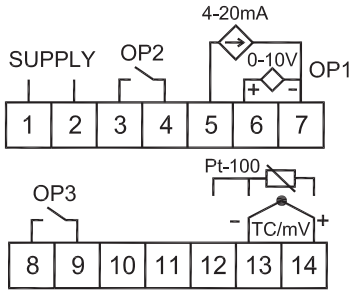
151A12B



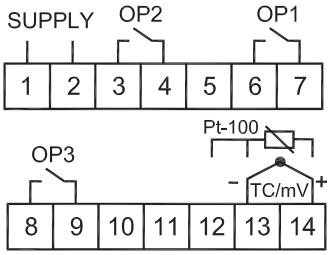
151B12B



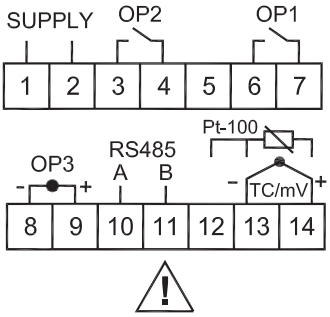
151C12B



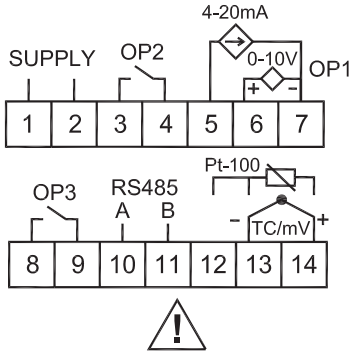
151D12B



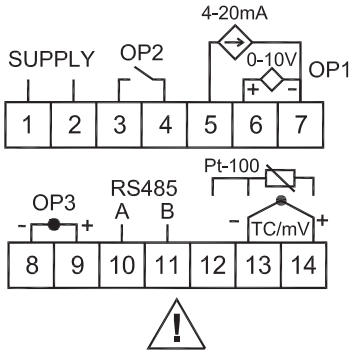
151A13B1



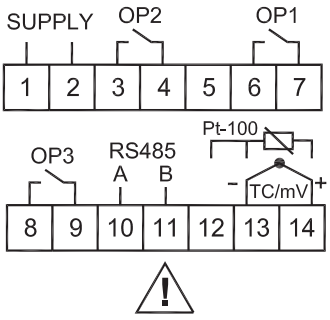
151C13B1



151B13B1



151D13B1

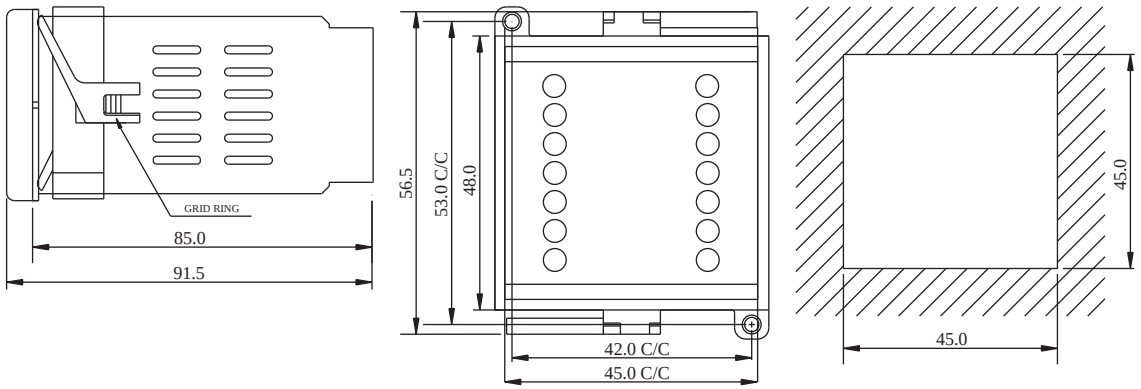


Note: Connection Diagram for 151G12B and 151H12B on page 187

TERMINAL TORQUE & CAPACITY

Ø 3.5 mm	0.50 N.m (4.5 Lb.in)
	1 x 1.5 mm² Solid/Stranded Wire
AWG	1 x 26 to 14

MOUNTING DIMENSION (mm)



Temperature Controller
Series PR 43

- Highly Accurate Performance.
- Luxurious Single 3-digit LED Display.
- Wide supply range:110-240VAC (Un),-20 to +10% of Un.
- Front keypad with 4 keys.
- Thermocouple (J & K)/RTD 3-wire (Pt-100) sensor inputs.
- Control Modes: Proportional,
  ON-OFF Asymmetric, ON-OFF Symmetric.
- °C & °F temperature unit selectable
- Control Output: Relay & SSR Drive (Individual products)

Ordering Information

ON - OFF Temperature Controller

Cat. No.	Description
151G11B	Series PR 43, Relay Output (SPST 5A, 240 VAC / 30 VDC)
151H11B	Series PR 43, SSR driving output (12 VDC, 30 mA)

PID Temperature Controller

Cat. No.	Description
151G12B	Series PR 43, 1 NO Relay (SPST 5A, 240 VAC / 28VDC)
151H12B	Series PR 43, SSR driving output (12 VDC, 24mA)

ON-OFF Temperature Controller Series PR 43

Cat. No.	151G11B	151H11B
Parameters		
Supply Voltage (⏚)	110 - 240 VAC	
Supply Variation	-20% to +10% (of ⏚)	
Frequency	50/60 Hz	
Control Action	ON/OFF (Symmetric / Asymmetric) & Proportional	
Power Consumption	6 VA @ 265 VAC	
Temperature sensors / Inputs	Thermocouple: J, K ; RTD: PT100 - 3 wire compensation;	
Measurement Range	Sensor J: -5°C to 750°C / 23°F to 999°F, Sensor K: -20°C to 850°C / -4°F to 999°F, Sensor PT100 3 wire: - 100°C to 650°C / -148°F to 999°F	
Measurement Accuracy	± 0.5% of full scale	
Resolution	1°C Fixed	
Configurable Set Points	1	
Display	7 segment, 3 digit LED display	
Keypad	4-Keys: ■ - ESC, ▼ - Down, ▲ - Up, ↵ - Enter / Select	
Output 1	Relay: (1 NO) SPST 5A @ 240 VAC / 30 VDC	SSR: 12 VDC, 30 mA
LED Indications:		
	OP1 (Red LED)	Continuous ON — Relay output ON
	'°F' (Red LED)	Continuous ON — Display '°F' value
	'°F' (Red LED)	Continuous OFF — Display '°c' value
Error Indications		
SBR	SENSOR OPEN/BREAK ERROR	
OVR	OVER RANGE ERROR	
UNR	UNDER RANGE ERROR	
Operating Temperature	0°C to +50°C	
Storage Temperature	-10°C to +60°C	
Humidity (Non Condensing)	80% (Rh)	
Enclosure	Flame Retardant UL 94 - V0	
Dimensions (W x H x D) (in mm)	48 x 48 x 91.5	
Weight (unpacked)	120 g	
Mounting	Flush	
Certification	CE RoHS Compliant	
Degree of Protection	IP 20 Terminal & Enclosure, IP 40 (For Front Panel only)	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

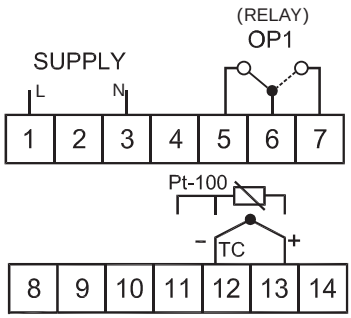
Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

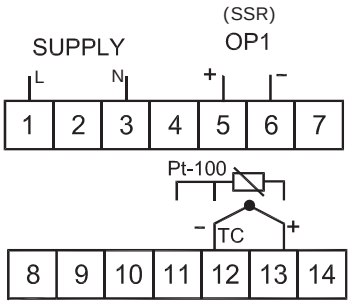
ON-OFF Temperature Controller Series PR 43

CONNECTION DIAGRAM

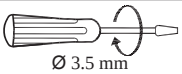
151G11B / 151G12B



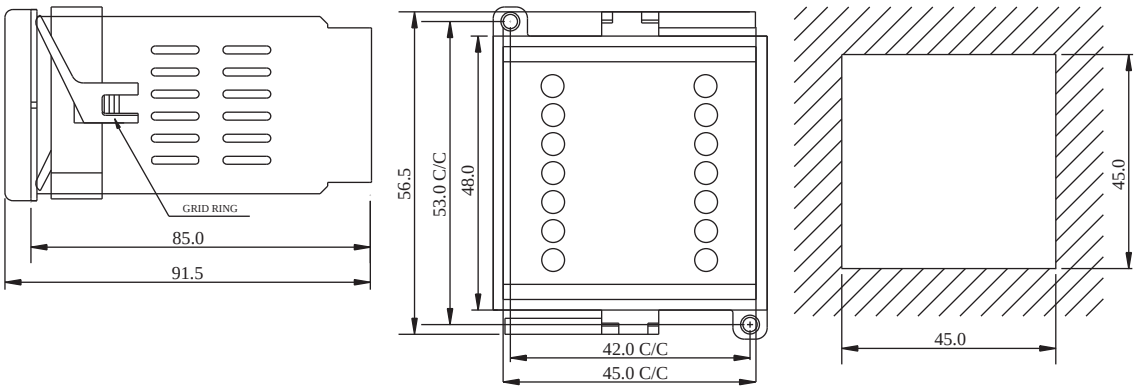
151H11B / 151H12B



TERMINAL TORQUE & CAPACITY

 Ø 3.5 mm	0.50 N.m (4.5 Lb.in)
	1 x 1.5 mm^2 Solid/Stranded Wire
AWG	1 x 26 to 14

MOUNTING DIMENSION (mm)



Temperature Control Relay

- Wide ambient Temperature monitoring & controlling range with inbuilt temperature sensor.
- Protection Relay against variations of the ambient temperature set point (StH & StL)
- 3 digit LCD display for Real time Temperature Indication.
- User adjustable offset (-10°C to +10°C)
- LED indication for Relay Trip.

Ordering Information

Cat. No.	Description
41A111AR	110 - 240 VAC, Temperature Control Relay (TCR - 111) Double SP
41A111BR	110 - 240 VAC, Temperature Control Relay (TCR - 112) Single SP

Temperature Control Relay

Cat. No.		41A111AR	41A111BR
Parameters			
Series nos.		TCR - 111	TCR - 112
Number of set points		Double SP	Single SP
Supply Voltage (⏚)		110 - 240 VAC, -20% to +10%	
Frequency		47Hz - 63Hz	
Power Consumption (Max.)		3 VA	
Device Characteristics			
Sensor		Inbuilt Temperature Sensor	
Temperature Unit		°C	
Display Resolution		0.1°C	
Accuracy		± 3°C Max	
Output Control Mode		Relay ON/OFF	
Hysteresis		2°C (Fixed)	
Temperature measurement and Controlling Range		-10°C to 55°C	-5°C to 55°C
Set Point Range	Low Level (StL)	-10°C to (StH-4°C)	Internally Fixed to 5°C
	High Level (StH)	(StL + 4°C) to +55°C	0°C to +55°C
Offset		-10°C to 10°C	
Minimum difference between StH & StL (for double SP only)		4°C	
LED Indication		ON - Relay ON condition (Red Color)	
Display Type		Positive Image, Reflective, TN	
Contact Ratings		NO - 5A & NC - 3A @ 250 VAC / 30 VDC Resistive	
Operating Temperature Storage Temperature		- 10° C to +55° C - 20° C to +65° C	
Dimension (W x H x D) (in mm)		18 X 85 X 82	
Weight (unpacked)		70 g	
Mounting		DIN rail	
Certification		CE RoHS Compliant	
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure	

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

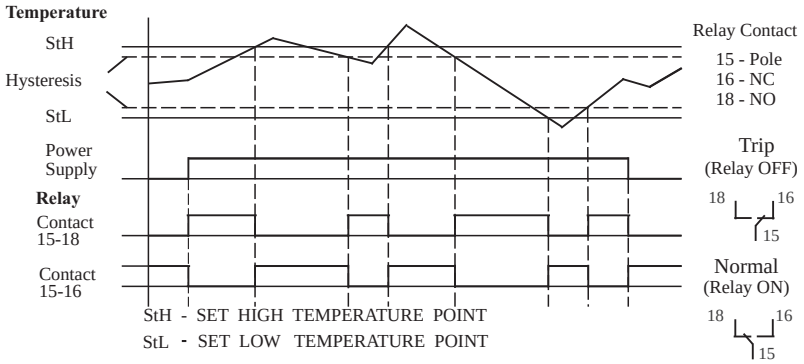
Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

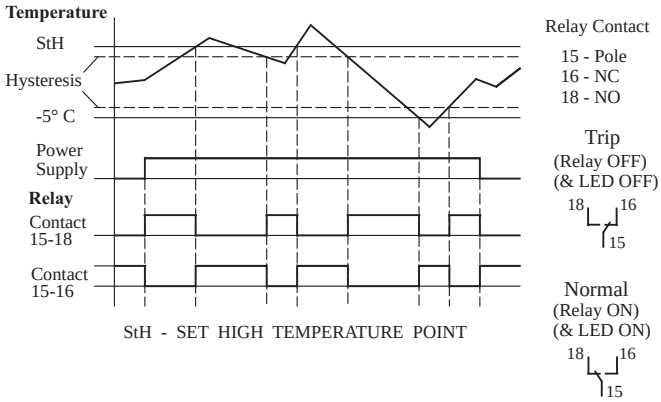
Temperature Control Relay

FUNCTION DIAGRAM

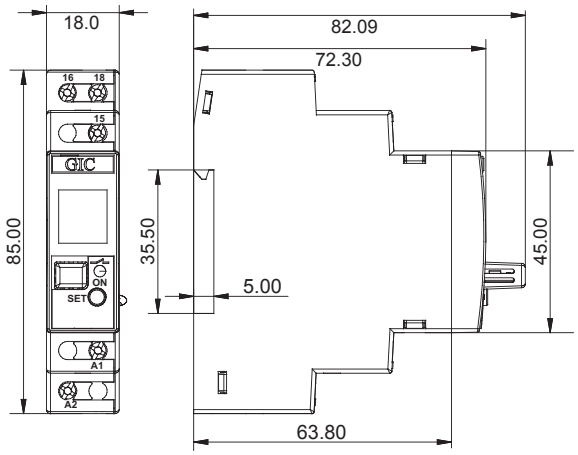
Double SP - 41A111AR:



Single SP - 41A111BR:

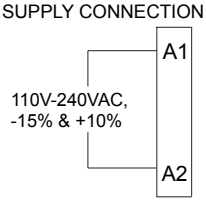


MOUNTING DIMENSIONS (mm)

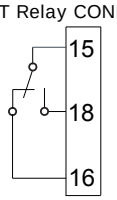


CONNECTION DIAGRAM

SUPPLY CONNECTION



SPDT Relay CONNECTION



NO-5A & NC-3A@
250VAC/30VDC RESISTIVE

TERMINAL TORQUE & CAPACITY

Ø 3.5 mm....4.0mm	0.60 N.m (6 Lb.in)
	1 x 4.0 mm^2 Solid/Stranded Wire
AWG	1 x 20 to 10

Notes

Note:

- Innovation being a continuous process, design and specifications are subject to change without prior notice.
- User is recommended to ensure the suitability of the products for intended application.
- GIC is not responsible for consequential damage out of use of its products.

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