L&T SWITCHGEAR
SAFE & SURE

Timers
Supply Monitors
Hour Meters
Counters
Time Switches

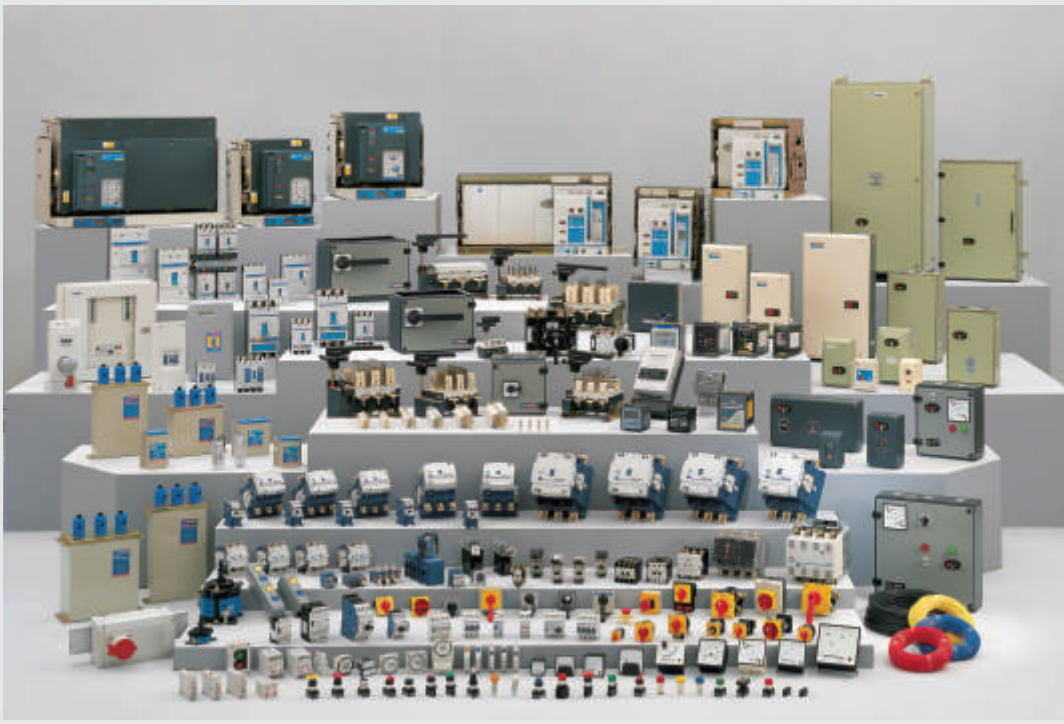
LARSEN & TOUBRO
It's all about Imagineering

L&T SWITCHGEAR
SAFE & SURE

Larsen & Toubro Limited is India's leading engineering company. It offers the country's widest range of low tension switchgear. In addition to high quality products from it's own factories, L & T seeks out the best in Power Control Technology and offers these products to the Indian market. Timers, Time Switches, Hour Meters, Counters & Supply Monitors from GIC are a part of the world class products offered by Larsen & Toubro Limited.

The Electrical Business Group of Larsen & Toubro Limited manufactures and markets the country's widest range of low tension Switchgear and Accessories all over the country. L & T's marketing efforts are complimented by a strong service capability that extends nationwide.

A network of more than 450 stockists in addition to L &T's own offices ensures that wherever you are in the country, GIC products are not far from you.



GIC

General Industrial Controls Pvt. Ltd. (GIC), have the unique distinction of being the pioneers in Timers, Time Switches & Hour Meters. They have built up the right infrastructure & wholly integrated facility from design to manufacture of finished products. Besides being an **ISO 9001:2000** certified organisation GIC products also have International approvals of CE (European Standard), RoHS Compliant (RoHs Compliant) & c UL us (USA/Canadian Standard)

Index

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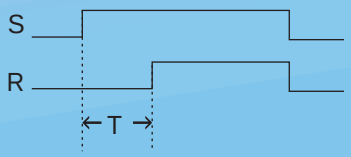
Micon 175
Electronic Timers

- Compact 17.5 mm wide
- Multiple timing ranges
- Low power consumption
- LED indication for power and relay status
- Din Rail and Base mountable
- Integrated Dual Voltage selection
- CE, IEC Approved
- Environment Friendly RoHS Compliant

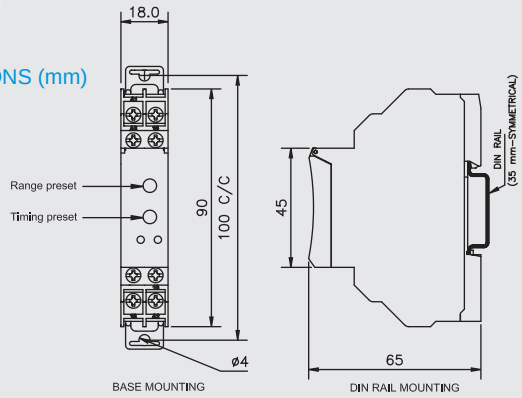
ON DELAY



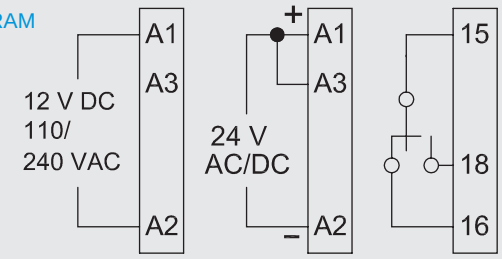
S = Supply
R = Relay

Micon 175

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

Supply Voltage	110 VAC /24VAC /DC (Selectable)
Supply Variation	- 20% to +10%
Frequency	50/60 Hz
Timing Ranges	3s, 30s, 3min., 30min., 3h, 30h
Reset Time	100 ms. (Max.)
Accuracy:	
Setting Accuracy	± 5% of Full scale
Repeat Accuracy	± 1%
Relay Output	1 C/O (SPDT)
Contact Rating	5A (resistive) @ 240 VAC / 28 VDC
Contact Material	Ag Alloy
Electrical Life	$1X10^5$
Switching Frequency @ rated max load	1000 operations/hr. (Max.)
Operating Temperature	-10 to +55° C
Storage Temperature	-20 to +70° C
LED Indication	Green LED → Power ON, Red LED → Relay ON
Housing	Flame Retardant UL94V0
Dimension (W x H x D)	18 X 65 X 90 (in mm)
Weight (unpacked)	75 g
Mounting	Base / Din rail
Certification	CE

EMI/ EMC:

Radio Interference Suppression	CISPR 14-1 Class B
ESD	IEC 61000-4-2 Level III
Electrical Fast Transients	IEC 61000-4-4 Level IV
Surges	IEC 61000-4-5 Level IV
Voltage Dips & Interruptions	IEC 61000-4-11 All 7 Levels

ORDERING INFORMATION

Cat. No. & Description:

1) 11ODT4 -
110 VAC & 24 VAC/DC (selectable), ON Delay

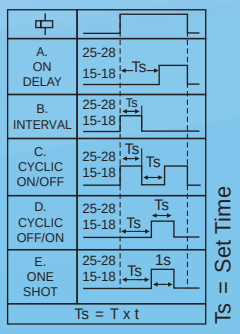
2) 12ODT4 -
240 VAC & 24 VAC/DC (selectable), ON Delay

3) 15ODT4 -
12 VDC, ON Delay

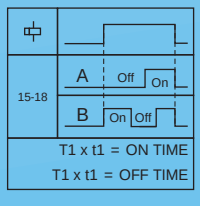
Micon 225
Electronic Timers

- Compact 22.5 mm wide Base/Din Rail Timer
- Multi-voltage, Multi-function & Multi-range timers
- Time Range - 0.1 sec. to 10 hours
- Flush Knobs for Better Security
- Finger Protection on Terminals (IP20)
- cULus Certified, CE, IEC Approved
- Environment Friendly RoHS Compliant

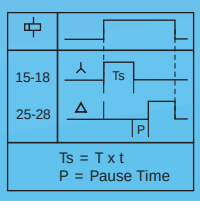
MULTIFUNCTION



ASYMMETRICAL ON-OFF / OFF-ON

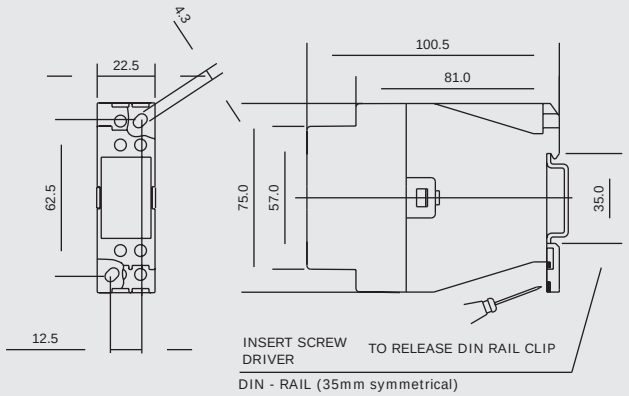


STAR - DELTA

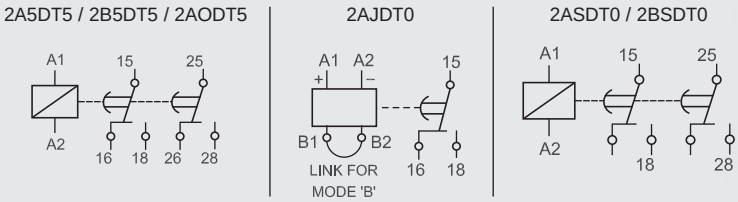


Micon 225

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

Supply Voltage	24-240 VAC/DC
Supply Variation	- 20% to +10%
Frequency	50/60 Hz
Power Consumption (Max.)	15 VA
Timing Ranges	1s, 10s, 1min., 10min., 1h, 10h
Pause Time (P)	Not Applicable
Reset Time	Max. 200 ms
Accuracy:	
Setting Accuracy	± 5% of Full scale
Repeat Accuracy	± 1%
Relay Output	2 C/O (SPDT)
Contact Rating	5A @ 240 VAC / 28 VD C (Resistive)
Contact Material	Ag Alloy
Electrical Life	$1x10^5$
Mechanical Life	$1x10^6$
Switching Frequency @ rated max load	Electrical : 1800 Operations / h
Operating Temperature	-15° C to +60° C
Storage Temperature	-20° C to +80° C
Humidity	95% (Rh)
LED Indication	Green LED → Power ON Red LED → Relay ON
Housing	Flame Retardant UL94-V0
Dimension (W x H x D)	22.5 X 75 X 100.5 (in mm)
Weight (unpacked)	130 g
Mounting	Base / Din Rail
Degree of Protection	IP 20 for Terminal, IP 40 for Housing
Terminal Torque	0.6 Nm
Terminal Capacity	1-4 mm²
Certification	CE, cULus

Relay Output	1 C/O (SPDT)

Timing Ranges	3 - 120s
Pause Time (P)	60ms, 90ms, 120ms, 150ms
Relay Output	Star - 1 'NO', Delta - 1 'NO'
LED Indication	Red 1-人 ON, Red 2- Δ ON

EMI/ EMC:

Radio Interference Suppression	CISPR 14-1 Ed. 5.0 (2005-11) Class A
ESD	IEC 61000-4-2 Ed. 1.2 (2001-04) Level III
Electrical Fast Transients	IEC 61000-4-4 Ed. 2.0 (2004-07) Level IV
Surges	IEC 61000-4-5 Ed. 2.0 (2005-11) Level IV
Voltage Dips & Interruptions	IEC 61000-4-11 (AC) Ed. 2.0 (2004-03), IEC 61000-4-29 (DC) Ed. 1.0 (2000-08)

ORDERING INFORMATION

Cat. No. & Description:
2A5DT5 -
24-240 VAC/DC,
Multi Function with 2 C/O

Cat. No. & Description:
2AJDT0 -
24-240 VAC/DC,
Asymmetrical ON-OFF / OFF-ON
with 1 C/O

Cat. No. & Description:
2ASDT0 -
24-240 VAC/DC,
Star - Delta, 1 NO (Star)
+ 1 NO (Delta)

Cat. No. & Description:
2B5DT5 -
240-415 VAC,
Multi Function with 2 C/O

Cat. No. & Description:
273DT5 -
240 VAC, Multi Function with
2 C/O (On Delay, Interval,
Cyclic ON/OFF)

Cat. No. & Description:
2AODT5 -
24-240 VAC/DC, ON Delay
with 2 C/O

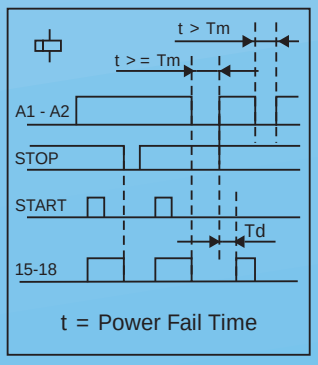
Cat. No. & Description:
29ODT5 -
9-32VDC, ON Delay with 2 C/O

Cat. No. & Description:
20ADT5 -
24-240 VAC Asymmetrical
ON/OFF with 2C/O

Micon 225
Single Phase Motor Restart Control Timer

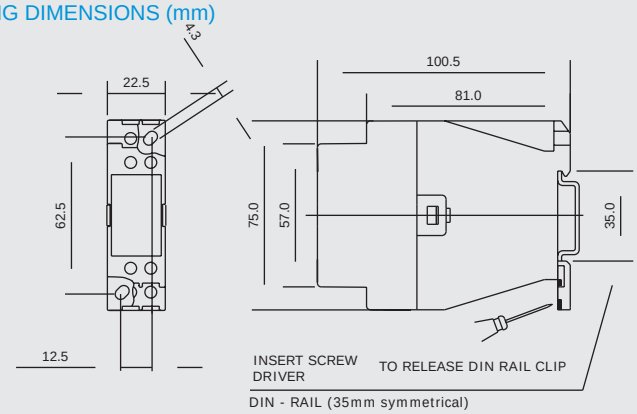
- Compact 22.5 mm wide Base/Din Rail Timer
- Motor Restart Control
- Flush Knobs for Better Security
- Finger Protection on Terminals (IP20)
- cULus Certified, CE Marked
- Environment Friendly RoHS Compliant

MOTOR RESTART RELAY

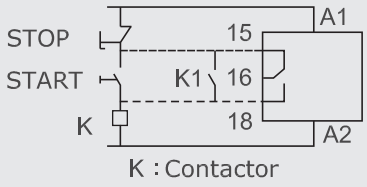


Micon 225

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

Supply Voltage	240 VAC
Supply Variation	- 20% to +10%
Frequency	50/60 Hz
Power Consumption (Max.)	15 VA
Timing Ranges	Memory Time (Tm): 0.2 to 6s, Delay Time (Td): 0.2 to 60s Trip Volt: 176 VAC, +/- 6VAC, Hysterisis: 10 VAC max.
Reset Time	Max. 200 ms
Accuracy:	
Setting Accuracy	± 5% of Full scale
Repeat Accuracy	± 1%
Relay Output	1 C/O (SPDT)
Contact Rating	5A @ 240 VAC / 28 VD C (Resistive)
Contact Material	Ag Alloy
Electrical Life	$1x10^5$
Mechanical Life	$1x10^6$
Switching Frequency @ rated max load	Electrical : 1800 Operations / h
Operating Temperature	-15°C to +60°C
Storage Temperature	-20°C to +80°C
Humidity	95% (Rh)
LED Indication	Green LED → Power On, Red LED → Relay On
Housing	Flame Retardant UL94-V0
Dimension (W x H x D)	22.5 X 75 X 100.5 (in mm)
Weight (unpacked)	130 g
Mounting	Base / Din Rail
Certification	CE RoHS cULus
Degree of Protection	IP 20 for Terminal, IP 40 for Housing
Terminal Torque, Capacity	0.6 Nm, 1-4 mm²

EMI/ EMC:

Radio Interference Suppression	CISPR 14-1	Ed. 5.0 (2005-11) Class A
ESD	IEC 61000-4-2	Ed. 1.2 (2001-04) Level III
Electrical Fast Transients	IEC 61000-4-4	Ed. 2.0 (2004-07) Level IV
Surges	IEC 61000-4-5	Ed. 2.0 (2005-11) Level IV
Voltage Dips & Interruptions	IEC 61000-4-11 (AC)	Ed. 2.0 (2004-03)

ORDERING INFORMATION

Cat. No. & Description:
22LDT0 -
240V AC,
Motor Restart Relay
with 1 C/O

Digital Multi-functional Timers

Digicon

- Multimode multi-functional timer
- Timing ranges from 0.1sec to 999 hrs.
- Wide supply flexibility
- Selectable Up/Down counting modes to show elapsed/remaining time
- 3 Digit LC display for preset time and run time
- Clear LED indication of relay status
- Tamper Proof with Key lock Function
- Finger Protection provided for Terminals
- Very compact size (17.5mm single width module)
- CE, IEC marked
- Environment Friendly RoHS Compliant

OPERATING MODES

CAT. NOS.
V0DDTS1, V0DDTD1

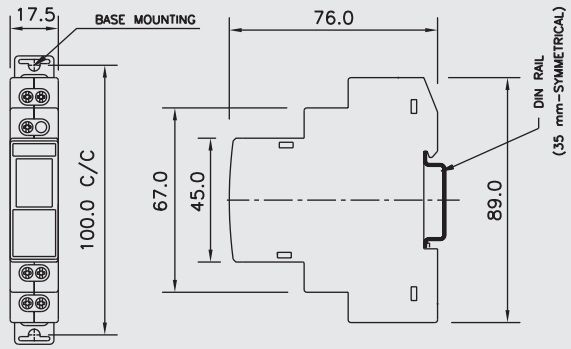
1) ON DELAY [0]
2) CYCLIC OFF/ON {OFF Start, (Sym, Asym)} [1]
3) CYCLIC ON/OFF {ON start, (Sym, Asym)} [2]
4) IMPULSE ON ENERGIZING [3]
5) ACCUMULATIVE DELAY ON SIGNAL [4]
6) ACCUMULATIVE DELAY ON INVERTED SIGNAL [5]
7) ACCUMULATIVE IMPULSE ON SIGNAL [6]
8) SIGNAL ON DELAY [7]
9) INVERTED SIGNAL ON DELAY [8]
10) SIGNAL OFF DELAY [9]
11) IMPULSE ON/OFF [A]
12) SIGNAL OFF/ON [b]
13) LEADING EDGE IMPULSE1 [C]
14) LEADING EDGE IMPULSE2 [d]
15) TRAILING EDGE IMPULSE1 [E]
16) TRAILING EDGE IMPULSE2 [F]
17) DELAYED IMPULSE [G]

CAT. NOS.
V0DDTS, V0DDTD

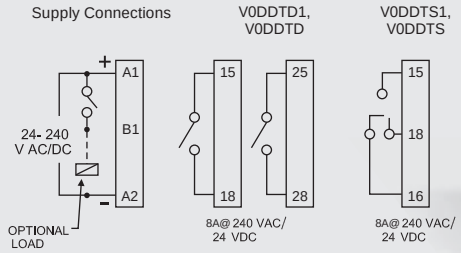
1) ON DELAY (A)
2) CYCLIC OFF/ON {OFF Start, (Sym, Asym)} (b)
3) CYCLIC ON/OFF {ON Start, (Sym, Asym)} (C)
4) SIGNAL ON/OFF (d)
5) SIGNAL OFF DELAY (E)
6) INTERVAL (F)
7) SIGNAL OFF / ON (G)
8) ONE SHOT OUTPUT (H)

Digicon DigitalTimer

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

Supply Voltage (Un)	24 - 240 VAC/DC
Operating Range	-15% to +10% of Un
Frequency	50 - 60 Hz, + / - 2 Hz
Power Consumption (Max.)	10 VA
Timing Ranges	h: m / m: s / hr / min / sec 9:59 / 9:59 / 999 / 999 / 999 99.9 / 99.9 / 99.9
Repeat Accuracy	+/- 0.5% of selected range
Max. Reset Time	<200 ms
Variation in timing due to	
1) voltage change	+/-2%
2) Temperature Change	+/-5%
Relay Output	1 C/O (SPDT)
Contact Rating	8A (resistive) @ 240 VAC / 24 VDC
Contact Material	Ag alloy
Electrical Life	$1x10^5$
Mechanical Life	$2x10^7$
Switching Frequency @ rated max load	1800 Operations / h
Utilization Category	
AC - 15	Rated Voltage (Ue): - 125/240 V, Rated Current (Ie) :- 3/1.5 A
DC - 13	Rated Voltage (Ue): - 125/250 V, Rated Current (Ie) :- 0.22/0.1 A
Operating Temperature	-10° C to +55° C; Storage Temperature: -20° C to +65° C
LED Indication	Red LED → Relay ON
Housing	Flame Retardant UL94V0
Dimension (W x H x D)	17.5 X 89 X 76 (in mm)
Weight (Unpacked)	85 g
Mounting	Base / Din rail
Terminal Capacity	1.5 mm² max (Pin type lugs)
Degree of Protection	IP 30 (Enclosure), IP 20 (Terminals)
Humidity (Non-Condensing)	93% Rh
Certification	CE

Relay Output	2 NO (DPST)

EMI/ EMC

Radio Interference Suppression	CISPR 14-1 Class B
ESD	IEC 61000-4-2 Level III (Air 4kV/Contact 6kV)
Electrical Fast Transients	IEC-61000-4-4 Level IV
Surges	IEC-61000-4-5 Level IV
Voltage Dips, Interruptions	IEC-61000-4-11 (AC), IEC-61000-4-29 (DC)
Vibration	IEC-60068-2-6

ORDERING INFORMATION

Cat. No. & Description:
V0DDTS1 -
Digital Timer In 17.5mm with 17 modes, 24 - 240 VAC/DC, Range 0.1 sec To 999hrs, 1 C/O

Cat. No. & Description:
V0DDTD1 -
Digital Timer In 17.5mm with 17 modes, 24 - 240 VAC/DC, Range 0.1 sec To 999hrs, 2 NO

Cat. No. & Description:
V0DDTS -
Digital Timer In 17.5mm with 8 modes, 24 - 240 VAC/DC, Range 0.1 sec To 999hrs, 1 C/O

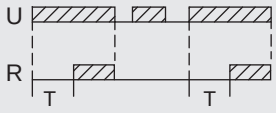
Cat. No. & Description:
V0DDTD -
Digital Timer In 17.5mm with 8 modes, 24 - 240 VAC/DC, Range 0.1 sec To 999hrs, 2 NO

Digital Multi-functional Timers

Digicon

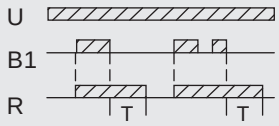
FUNCTIONAL DIAGRAMS FOR V0DDTS1, V0DDTD1

ON DELAY [0]



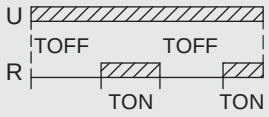
Timing commences when supply is present.R energizes at the end of the timing period.

SIGNAL OFF DELAY [9]



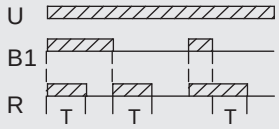
Permanent supply is required. R energizes when switch B1 is closed. Timing commences after S is opened and then the relay de-energizes.

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



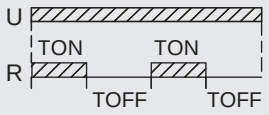
T-ON and T-OFF can be same or different. The relay(R) keeps on changing its status till power is removed.

IMPULSE ON/OFF [A]



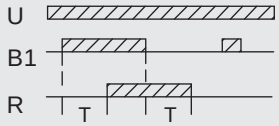
Permanent supply is required. R energizes for the timing period when B1 is opened or closed. When timing commences, changing state of B1 does not affect R but resets timer.

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



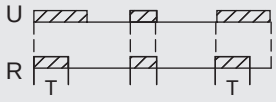
This function is quite similar to the function '1' but initially the relay(R) is ON for period T-ON after the power is applied.

SIGNAL OFF/ON [b]



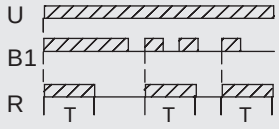
When switch B1 is closed or opened for preset time ,T, the relay changes its state after time duration T.

IMPULSE ON ENERGIZING [3]



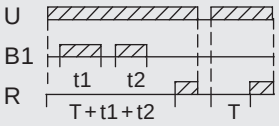
After power ON, R energizes and timing starts. R de-energizes after timing is over.

LEADING EDGE IMPULSE1 [C]



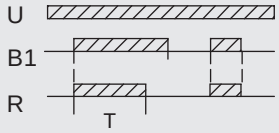
A permanent supply is needed. When B1 is closed, output relay energizes until timing irrespective of any further action of B1.

ACCUMULATIVE DELAY ON SIGNAL [4]



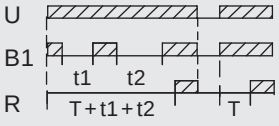
Time commences as supply is present and switch B1 is open. Closing switch B1 pauses timing. Timing resumes when switch B1 is opened again. R energizes at the end of timing.

LEADING EDGE IMPULSE2 [d]



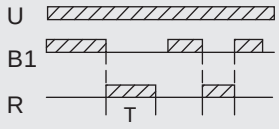
Permanent supply is required. when switch B1 is closed, and remains closed output relay energizes until timing is over. If B1 is opened during timing, R resets.

ACCUMULATIVE DELAY ON INVERTED SIGNAL [5]



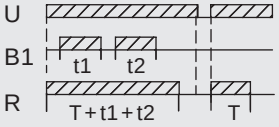
Time commences as supply is present and switch B1 is closed. Opening switch B1 pauses timing. Timing resumes when switch B1 is closed again. R energizes at end of timing.

TRAILING EDGE IMPULSE1 [E]



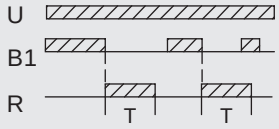
Permanent supply required. when B1 is opened, R energizes and de-energizes when timing is over. If B1 is closed during timing R resets.

ACCUMULATIVE IMPULSE ON SIGNAL [6]



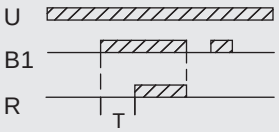
When supply is ON, R energizes. When switch B1 is closed timing is suspended and remains suspended till switch B1 is opened again. Interrupting supply resets timer.

TRAILING EDGE IMPULSE2 [F]



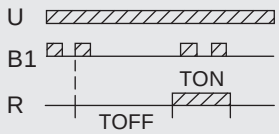
Permanent supply is required. When switch B1 is opened, R energizes and will de-energize when timing is over. If B1 is pulsed during timing period it will have no effect on R.

SIGNAL ON DELAY [7]



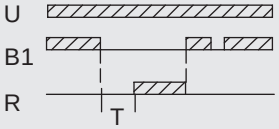
Permanent supply required. Timing starts when switch B1 is closed. R energizes at end of timing period and de-energizes when B1 is opened.

DELAYED IMPULSE [G]



when switch B1 is closed, TOFF starts. Relay energizes at the end of TOFF period. Then, TON starts irrespective of signal level and relay de-energizes at the end of TON period.

INVERTED SIGNAL ON DELAY [8]

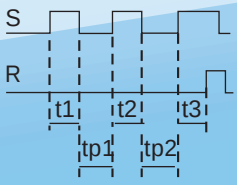


Timing will commence when supply is present and switch B1 is open. R energizes after timing .If B1 is closed during timing period, timing resets to the beginning of cycle.

Micon Electronic Timers
350, 480 & 780

- Multi-function & Multi-range timers
- Selectable Retentive ON Delay
- Low power consumption
- LED indication for power and relay status
- Din Rail and Base mountable
- Wide Operating voltage range
- Highly Accurate
- CE Marked

MICON 350

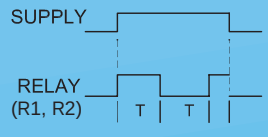


T= SET TIME
T=t1 + t2 + t3
tp1, tp2 = Power down region

MICON 480 & 780
MULTI FUNCTION

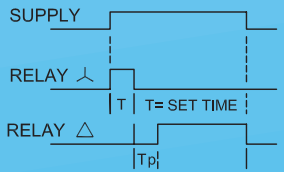
MODE	FUNCTION
	Un
ON DELAY	T-SET TIME, R, T
INTERVAL	R, T
CYCLIC	R, T, T
SIGNAL OFF DELAY	CONTROL SIGNAL, R

ASYMMETRICAL ON/OFF



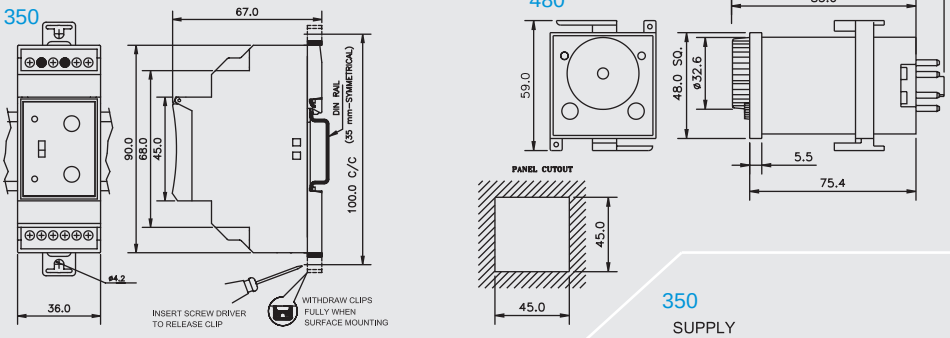
T = SET TIME

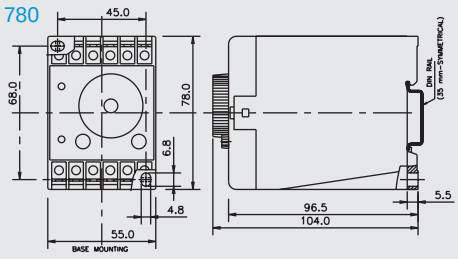
MICON 480
STAR-DELTA

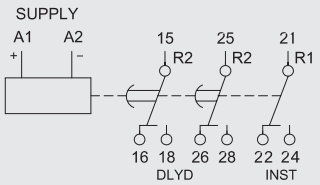


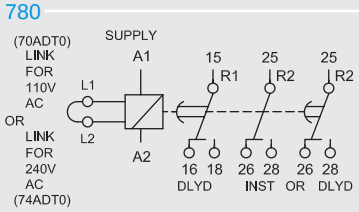
Tp = PAUSE TIME

MOUNTING DIMENSIONS (mm)

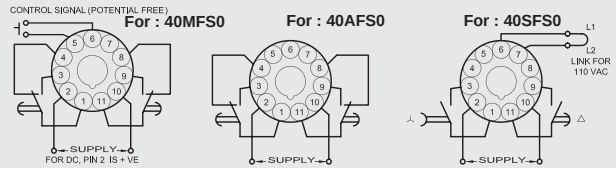








CONNECTION DIAGRAM 480



TECHNICAL SPECIFICATIONS

Cat. No.	**36EDT7**
Supply Voltage	24 VAC/DC
Timing Ranges	3s, 30s, 3min, 30min, 3h, 30h
Relay Output	1 Instant C/O + 2 Delayed C/O
Dimension (W x H x D)	35 X 67 X 90 (in mm)
Weight (unpacked)	135 g
Mounting	Base / Din Rail

Cat. No.	**40MFS0**
Supply Voltage	24-240 VAC/DC
Timing Ranges	1s, 10s, 1min., 10min., 1h, 10h
Relay Output	2 C/O
Dimension (W x H x D)	48 X 48 X 95 (in mm)
Weight (unpacked)	114g
Mounting	Base / Din Rail, Flush with 11 or 8 pin Universal or Solderable socket

Cat. No.	**70MDT0**
Supply Voltage	110V AC / 240V AC
Timing Ranges	1s, 10s, 1min, 10min, 1h, 10h
Relay Output	1 Instant + 1 Delayed or 2 Delayed C/O (Selectable)
Dimension (W x H x D)	55 X 78 X 104 (in mm)
Weight (unpacked)	210g
Mounting	Base / Din Rail

Note: *Common specification for Micon 350, 480 & 780 are as follows*

Supply Variation	- 20% to +10%
Frequency	50/60 Hz
Reset Time	100 msec. (Max.)
Accuracy:	
Setting Accuracy	± 5% of Full scale
Repeat Accuracy	± 1%
Contact Rating	5A (resistive) @ 240 VAC / 28 VDC
Contact Material	AgCdO
Electrical Life	$1x10^5$
Switching Frequency @ rated max load	1000 operations/h (Max.)
Operating Temperature	-10 to +55° C
Storage Temperature	-20 to +70° C
LED Indication	Green LED→ Power ON, Red LED→ Relay ON
Housing	Flame Retardant UL94V0
Terminal Connection	1- 2.5 mm² solid/stranded
Certification	CE

EMI/ EMC:

Radio Interference Suppression	CISPR 14-1 Class B
ESD	IEC 61000-4-2 Level III
Electrical Fast Transients	IEC 61000-4-4 Level IV
Surges	IEC 61000-4-5 Level IV
Voltage Dips & Interruptions	IEC 61000-4-11 All 7 Levels

ORDERING INFORMATION

Micon 350
Cat. No. & Description:
1) 36EDT7 -
24 VAC/DC with selectable ON Delay, 1 Inst. C/O + 2 delayed C/O

2) 33EDT7 -
110 VAC with selectable ON Delay, 1 Inst. C/O + 2 delayed C/O

3) 37EDT7 -
240 VAC with selectable ON Delay, 1 Inst. C/O + 2 delayed C/O

Micon 480
Cat. No. & Description:
1) 40MFS0 -
24-240 VAC/DC, Multifunction with Signal Off Delay & 2 C/O 11 pin

2) 40AFS0 -
24-240 VAC/DC, Asymmetrical On-Off with 2 C/O 11 pin

3) 40SFS0 -
110/240 VAC, Star- Delta (Selectable), 1 'NO' (Star) + 1 'NO' (Delta) 11 pin

Micon 780
Cat. No. & Description:
1) 70MDT0 -
110/240 VAC Multifunction
2) 70ADT0 -
110/240 VAC Asymmetrical ON/OFF
3) 74MDT0 -
240/415 VAC Multifunction
4) 74ADT0 -
240/415 VAC Asymmetrical ON/OFF
5) 76MDT0 -
24 VAC/DC Multifunction
6) 76ADT0 -
24 VAC/DC Asymmetrical ON/OFF

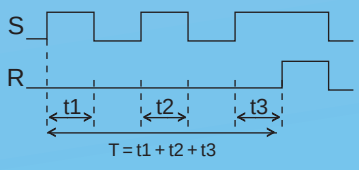
EM1000
Auto-Reset Synchronous Timers

- Time delay is independent of normal voltage and temperature fluctuations
- Black pointer gives clear indication of time set on a 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 is available.

ON - DELAY

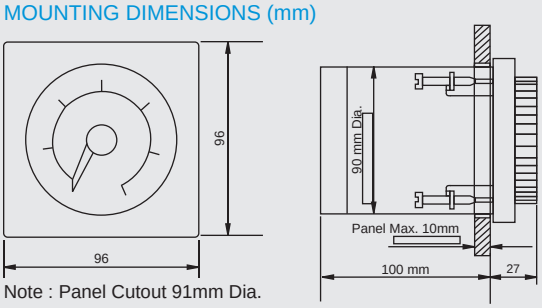
S = Supply, R = Relay, T = SET TIME

ON - DELAY (Retentive / No Volt)



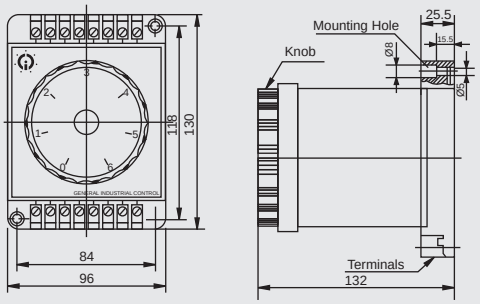
EM1000

MOUNTING DIMENSIONS (mm)



Note : Panel Cutout 91mm Dia.

BASE MOUNTING



TECHNICAL SPECIFICATIONS

Supply Variation	- 20% to 10%
Frequency	95% - 105%
Nominal Consumption	10 V AC Max.
Timing Range	0.15 sec. to 120 hrs.
Repeat Accuracy	± 0.5% of FSR at constant Frequency
Contact Rating	1 Inst + 1 delayed - AgCdO 1 Inst + 2 delayed - AgCdO (Optional) 6A (resistive) @ 250 VAC
Switching Frequency	3000 operations/hr. (Max.)
Operating Temp.	-5°C to 45°C
Housing	Conforms to IP30 - IS 13947.
Dimension (W x H x D)	96 X 96 X 100 (in mm)
Mounting	Flush & Base
Terminal Connection	1– 2.5 mm² solid/ stranded
Protection	IP20

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

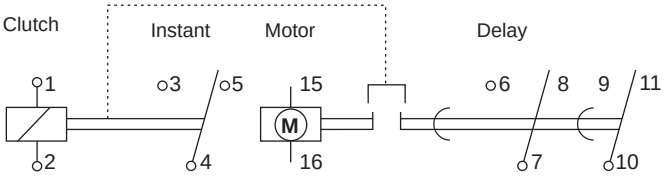
Mounting

B	Base Mounting
F	Flush (door) Mtg.

Delay

1	Standard ON delay
2	With 'NO VOLT'

WIRING DIAGRAMS



EM2000
Auto-Reset Synchronous Timers

- Time delay is independent of normal voltage & temp 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 'Derlin' which has high resistance to wear & tear and thus ensures longer life.

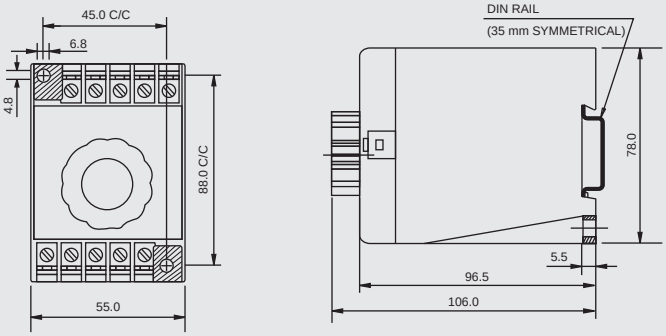
ON - DELAY

S = Supply, R = Relay, T = SET TIME

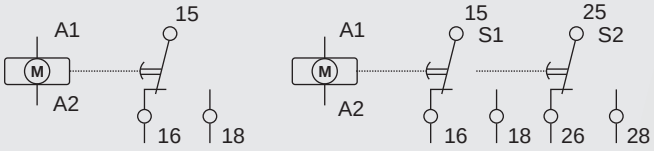
EM2000

MOUNTING DIMENSIONS (mm)

BASE/DIN MOUNTING



WIRING DIAGRAMS



Note : Switch 2 operates before switch 1

TECHNICAL SPECIFICATIONS

Supply Variation	- 20% to 10%
Frequency	95% - 105%
Timing Range	1 sec. to 120 sec.
Accuracy :	
Repeat Accuracy	± 2% of Full Scale Range at constant Frequency
Contact Rating	1 delayed - AgCdO 2 delayed - AgCdO (Optional) 5A (resistive) @ 250 VAC
Switching Frequency	1000 operations / hr. (Max)
Operating Temp.	-5°C to 45°C
Housing	Conforms to IP30 - IS 13947.
Dimension (W x H x D)	55 X 88 X 106 (in mm)
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.
Protection	IP20

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

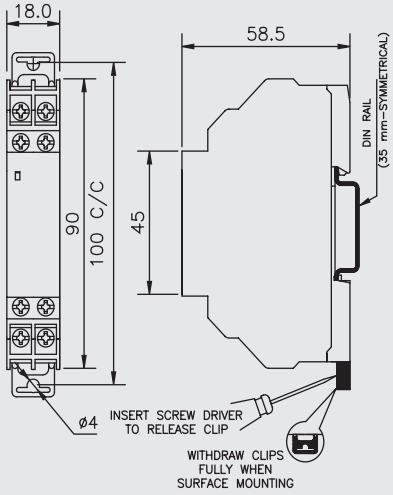
SM 175
Three Phase Three Wire Phase Sequence Monitoring

- Compact 17.5 mm wide
- Controls correct sequence of three phases & own supply voltage
- Multi-voltage from 3 x 208 to 3 x 480 V
- LED status indication
- SPDT Relay output (5 Amp resistive)
- DIN Rail & Base Mounting
- Environment Friendly RoHS Compliant

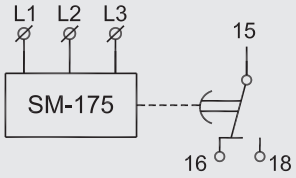
SM 175

Series SM175

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

Supply Voltage Un		3 Phase 3 Wire, 208-480VAC, 45-65 Hz
Supply Variation		-12% to + 10%
Power Consumption		3 VA
Setting Accuracy		± 5% of full scale
Time Delay **Setting Accuracy:** ± 10% of Full Scale	ON Delay	~ 500 msec.
	OFF Delay	~ 100 msec. In the event of phase sequence or phase loss fault, OFF delay is ~100ms
Relay Output		1 C/O (SPDT)
Contact Rating		5A (Resistive) @ 250 VAC / 30VDC
Mechanical Life		3 x 10^6 Operations
Electrical Life		1 x 10^5 Operations
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) :- 2/0.22/0.1 A
Operating Temperature		- 15°C to +60°C
Storage Temperature		- 20°C to +70°C
Humidity (Non Condensing Limits)		Max. 95%
LED Indications	Relay (R) Healthy	Relay LED Continuous ON (Red Colour)
	Relay (R) Phase Reverse	Relay LED Flashing (Red Colour)
	All LEDs OFF	Phase Fail
Degree of Protection		Terminals - IP 20, Housing - IP 30, Pollution Degree - 2
Dimension (W x H x D)		18 X 59 X 90 (in mm)
Weight		70 g
Mounting		Base / Din rail
Terminal Connection		1mm² (min.) to 2.5 mm² (Max.)
Screw Type / Torque		Philips Head Screw M 3.5 mm / 0.40 - 0.50 N. m
Certification		CE, IEC 60255, cULus

EMI/ EMC:

Radio Interference Suppression	CISPR 14-1 Class B
ESD	IEC 61000-4-2 Level III
Electrical Fast Transients	IEC-61000-4-4 Level IV
Surges	IEC-61000-4-5 Level IV
Voltage Dips, Interruptions	IEC-61000-4-11 All 7 Levels
Isolation	Test Vtg. between input & output - IEC 60947- 5, 2kV

ORDERING INFORMATION

Cat. No. & Description:
MK21D5 -
3 Phase 3 Wire,
Phase Sequence Relay,
1 C/O

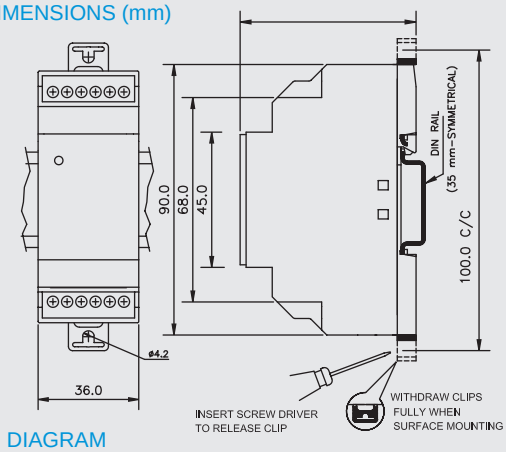
SM 301
Supply Monitoring

- Protects against Phase Loss, Phase Reversal and Phase - Phase Unbalance
- Compact 36 mm wide
- No Auxiliary supply needed
- Din Rail and Base mountable
- Voltage sensing principle
- Designed to meet industrial and agricultural segment needs.
- Environment Friendly RoHS Compliant

SM 301

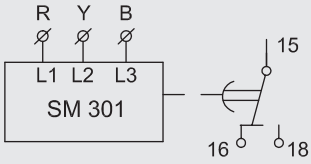
SM301

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM

THREE PHASE APPLICATION



TECHNICAL SPECIFICATIONS

Supply Voltage Un	3 phase 415V AC
Frequency	50-60 Hz
Power Consumption	15 VA max (415 V)
Mode of Operation	Auto
Trip Settings:	
Phase - Phase Unbalance	65 VAC ± 10 (fixed)
Unbalance Hysterisis	10 - 18 VAC
Time Delays:	
On Delay	2 Sec (fixed)
Trip Time (Off Delay)	7 Sec (fixed)
Setting Accuracy	± 10 % of full scale
Relay Output	1 C/O (SPDT)
Contact Rating	5A (resistive) @ 250 VAC / 28 VDC
Electrical Life	$1X10^5$
Mechanical Life	$3X10^6$
Utilization Category:	
AC - 15	Rated Voltage (Ue): - 125/240 V, Rated Current (Ie) :- 3/1.5 A
DC - 13	Rated Voltage (Ue): - 125/250 V, Rated Current (Ie) :- 0.22/0.1 A
LED Indication	Red → Relay ON (Healthy)
Operating Temperature	- 10 to +50°C
Storage Temperature	- 20 to +65°C
Enclosure	Flame Retardant UL 94V0
Dimension (W x H x D)	36 X 60 X 90 (in mm)
Weight	120 g
Mounting	Base / Din rail
Degree of Protection	IP20 for Terminal, IP 40 for Enclosure
Terminal Connection	1.5 - 2mm² flat lugs
Certification	CE , IEC 60255

EMI/ EMC:

Radio Interference Suppression	CISPR 14-1 Class B
ESD	IEC 61000-4-2 Level III
Electrical Fast Transients	IEC-61000-4-4 Level IV
Surges	IEC-61000-4-5 Level IV
Voltage Dips, Interruptions	IEC-61000-4-11 All 7 Levels
Isolation	Test Vtg. between input & output - IEC 60947- 5, 2kV

ORDERING INFORMATION

Cat. No. & Description:

1) MA51BC - SM301 415VAC, 50-60HZ with 65 VAC Asymmetry, 1 C/O

2) MA51BK - SM301 415VAC, 50-60HZ with 40 VAC Asymmetry, 1 C/O

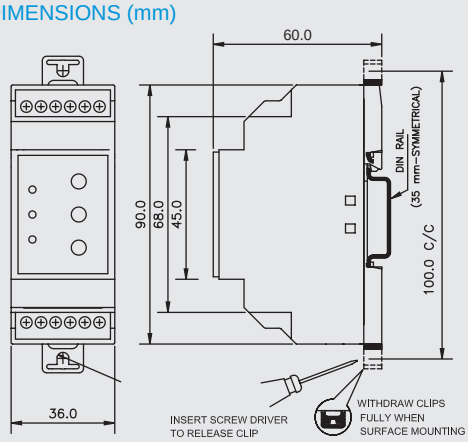
SM 500
Three Phase Four Wire Voltage Monitoring

- Protects against Phase Loss, Neutral Loss & Under / Over voltage
- Adjustable Over and Under voltage trip level
- LED indication for power and UV, OV
- Din Rail and Base mountable
- Voltage sensing principle
- Common model for 1 Phase / 3 Phase application
- Environment Friendly RoHS Compliant

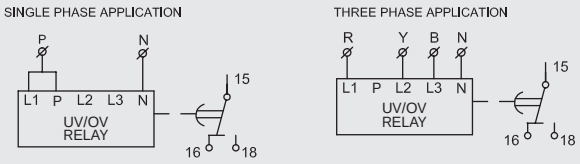
SM 500
MD71B9

SM500

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

Supply Voltage (Un):		3 - Phase 4 - Wire, 240VAC
Frequency		1 Phase - 240 VAC 48 - 63 Hz
Power Consumption		5 VA
Trip Levels: Under Voltage		55% - 95% of Un
Over Voltage		105% - 125% of Un
		Setting Accuracy: ± 5 % of full scale Note: Voltage setting is with respect to neutral
Time Delays:		
ON Delay		0 to 15 Min (Adjustable)
OFF Delay		5 Sec. (Fixed)
Setting Accuracy		± 10 % of full scale
Relay Output		1 C/O (SPDT)
Contact Rating		5A (Resistive) @ 250 VAC / 28 VDC
Electrical Life		1 x 10^5 Ops.
Mechanical Life		3 x 10^6 Ops.
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) :- 2/0.22/0.1 A
LED Indication		Separate indications for Power ON, UV and OV
Operating Temperature		-10° C To + 55° C
Storage Temperature		-25° C To + 70° C
Enclosure		Flame Retardant UL 94V0
Dimension (W x H x D)		36 X 60 X 90 (in mm)
Weight		~120 g
Mounting		Base / Din rail (35 mm symmetrical)
Degree of Protection		IP20 for Terminal, IP 40 for Enclosure
Terminal Connection		1.5 - 2mm² flat lugs
Certification		CE, IEC 60255

ORDERING INFORMATION

Cat. No. & Description:

1) MD71B9 -
SM 500, UV / OV with adjustable 0 to 15 min on delay time, 1C/O

2) MD71BH -
SM 500, UV / OV with adjustable 0 to 15 sec on delay time, 1C/O

MD71BH
MG73BH

Time Delays:		
ON Delay		0 to 15 Sec. (Adjustable)
OFF Delay		5 Sec. (Fixed)

MG73BF

Time Delays:		
ON Delay		5 Sec. (Fixed)
OFF Delay		0 to 15 Sec. (Adjustable)

EMI/ EMC:		
Radio Interference Suppression		CISPR 14-1 Class B
ESD		IEC 61000-4-2 Level III
Electrical Fast Transients		IEC-61000-4-4 Level IV
Surges		IEC-61000-4-5 Level IV
Voltage Dips, Interruptions		IEC-61000-4-11 All 7 Levels
Isolation		Test Vtg. between input & output - IEC 60947- 5-1, 2kV

Cat. No. & Description:

1) MG73BH -
SM 500, 3 Ph-4 Wire, UV/OV & single phasing Protection with adjustable ON time delay (0 to 15 sec.), 2 C/O.

2) MG73BF -
SM 500, 3 Ph-4 Wire, UV/OV & single phasing Protection with adjustable OFF time delay (0 to 15 sec.), 2 C/O.

SM 501
Three Phase Three Wire UV/OV & Single Phasing Protection

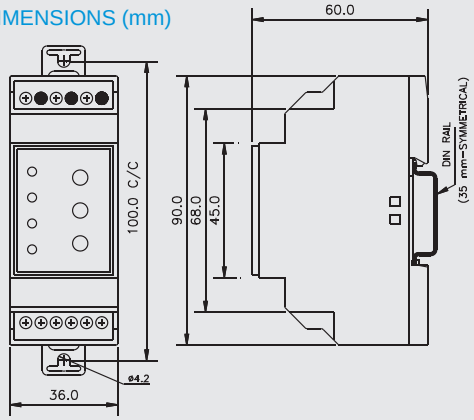
- Protects against Phase Loss, Phase Reversal and Phase-Phase Unbalance &Under/Over Voltage faults.
- 3 phase 3-wire models.
- Adjustable On Delay & Trip Time Delay.
- LED indications for power on, UV, OV and phase faults.
- Environment Friendly RoHS Compliant
- Din Rail and Base mountable.
- Compact 36 mm wide.
- Voltage sensing principle.

SM 501
MG53BH

SM 501
MG53BF

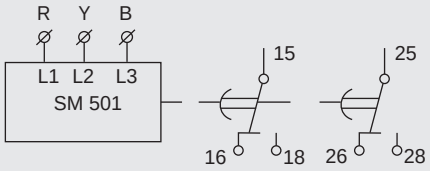
SM501

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM

THREE PHASE APPLICATIONS



TECHNICAL SPECIFICATIONS

Supply Voltage Un	3 Phase 3 Wire, 415 VAC
Frequency	48 - 63 Hz
Power Consumption	10 VA
Trip Settings :	
Under Voltage	55% - 95% of Un
Over Voltage	105% - 125% of Un
Phase Reverse Detect	Yes
Hysterisis	7 V ± 2V of trip voltage
Phase - Phase Unbalance	10%
Time Delays	
ON Delay	0.5 -15 Sec (adjustable)
OFF Delay	5 Sec (fixed)
Setting Accuracy	± 10 % of full scale
Relay Output	2 C/O (DPDT)
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) :- 3/1.5 A
DC - 13	Rated Voltage (Ue): - 24/125/250 V, Rated Current (Ie) :- 2/0.22/0.1 A
Operating Temperature	- 10°C to +55°C Storage Temperature - 25°C to +70°C
LED Indications	Separate indications for Power ON: UV, OV, On Phase Reverse / BLINK: Phase Unbalance
Enclosure	UL 94V0
Dimension (W x H x D)	36 X 60 X 90 (in mm)
Weight	120 g
Mounting	Base / Din rail
Degree of Protection	IP20 for Terminal, IP 40 for Enclosure
Terminal Connection	1.5 - 2mm² flat lugs
Certification	CE, IEC 60255

Time Delays	
ON Delay	5 Sec (fixed)
OFF Delay	0.5 - 15 Sec (adjustable)
Setting Accuracy	± 10 % of full scale

EMI/ EMC:

Radio Interference	CISPR 14-1 Class B
Suppression	IEC 61000-4-2 Level III
ESD	IEC-61000-4-4 Level IV
Electrical Fast Transients	IEC-61000-4-5 Level IV
Surges	IEC-61000-4-11 All 7 Levels
Voltage Dips, Interruptions	Test Vtg. between input & output -
Isolation	IEC 60947- 5-1, 2kV

ORDERING INFORMATION

Cat. No. & Description:

1) MG53BH -
3 Phase 3 Wire, 415 VAC with adjustable ON (0.5 - 15 sec) & fixed OFF (5 sec) Delay time, 2 C/O

2) MG53BF -
3 Phase 3 Wire, 415 VAC with adjustable OFF (0.5 - 15 sec) & fixed ON (5 sec) Delay time, 2 C/O

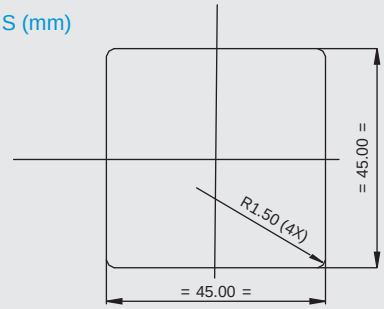
6 Digit Hour Meter
HM36

- High degree of accuracy and compact size
- Indicates operating time in Hours and Tenths plus has running indicator
- Low power consumption
- Totally sealed
- Panel mountable
- Non-Resetable
- 10,000 hour version standard with automatic recycle to zero
- Wide supply voltage working models 4-30V AC/DC, 10-30 VDC & 90 - 264 VAC
- Environment Friendly RoHS Compliant

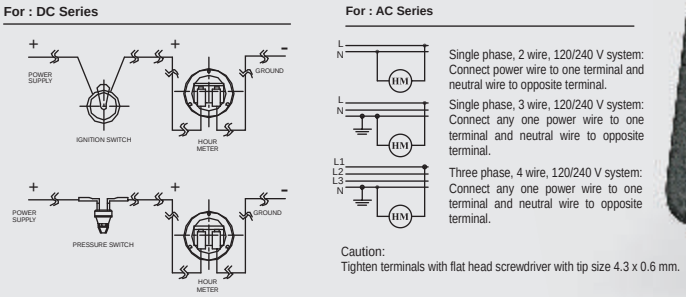
HM36

MOUNTING DIMENSIONS (mm)

Square Mount Bezel
(45 x 45 Panel Cutout)



CONNECTION DIAGRAM



AC MODEL HM36

TECHNICAL SPECIFICATIONS

Supply Voltage & Frequency	90-264VAC, 50/60 Hz
Power Consumption	0.5 VA (Max)
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 1378)
Shock	55g @ 9-13m sec(SAE 1378)
Weight	47g (approx.)
Temperature	-40°C to +85°C
Humidity (Not condensive)	95%Rh (SAE J1378)
Mounting	Panel
Termination	¼" [6.3] spade terminal
Approvals	UL/c UL recognized CE & ROHS compliant SAE & NEMA 4X (Equivalent to IP65)

ORDERING INFORMATION

Cat. No. & Description:
LA25F1 -
HM36 90-264VAC
Square Mount Bezel

DC MODEL HM36

Supply Voltage	10-80VDC
Over Voltage & reverse polarity protection	Protected for 2 times battery voltage and / or reverse polarity
Power Consumption	0.25VA (Max)
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 1378)
Shock	55g @ 9-13m sec(SAE 1378)
Weight	47g (approx.)
Temperature	-40° C to +85° C
Humidity (Not condensive)	95%Rh (SAE J1378)
Mounting	Panel
Termination	¼" [6.3] spade terminal
Approvals	UL/c UL recognized CE & ROHS compliant SAE & NEMA 4X (Equivalent to IP65)

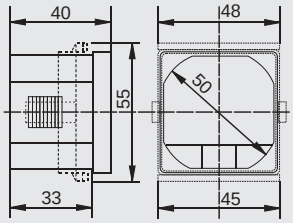
Cat. No. & Description:
LD17F1 -
HM36 10-80VDC
Square Mount Bezel

7 Digit Synchron Hour Meter
HM48 / 700

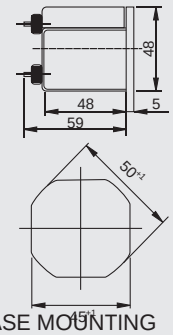
- High degree of accuracy
- Compact
- Maintenance free
- Versatility in mounting
- Ac synchronous hour meter driven by synchronous motor

MOUNTING DIMENSIONS (mm)

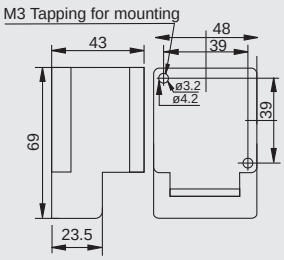
HM48
FLUSH MOUNTING



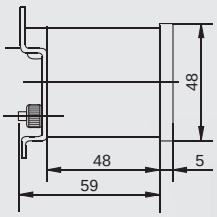
HM700
FLUSH MOUNTING



BASE MOUNTING



BASE MOUNTING



TECHNICAL SPECIFICATIONS

HM 48
K54SF1

Supply Voltage	240V AC, 50Hz
Supply Variation	-20% to +10%
Drive	Synchronous Motor
Consumption	~ 1VA
Register	7 Digital (2 Decimal)
Read out	99999.99
Least count	1/100 h
Accuracy	Directly proportional to supply frequency
Vibration	10 to 2000 Hz with 0.5 g
Protection	IP20
Net weight (unpacked)	70 g
Ambient Temperature	20°C to +55°C
Mounting	Flush / Base

HM 700 AC
E54SF1

Consumption	~ 5 VA
Accuracy	Directly proportional to supply frequency ± 1.0 Sec. / 24 Hrs. At 25°C
Vibration	10 - 50 Hz, amplitude, 0.35mm
Shocks	50 blows at acceleration 7g for Vibration Proof Buffer Mounting
Protection	85 g
Ambient Temperature	-5°C to +45°C
Mounting	Standard Hour Meter is furnished with flush mounting metal bracket. On request base mounting bracket can be furnished in place of flush mounting bracket.

Mounting Accessories for HM700

Mounting frame	Cat. No.
55 x 55 mm	EF 1900
72 x 72 mm	EF 1901
Base mounting bracket	EF 2002
Vibration proof buffer	EF 9000

ORDERING INFORMATION

HM700 SYNCHRON

E 5 □ S □ 1

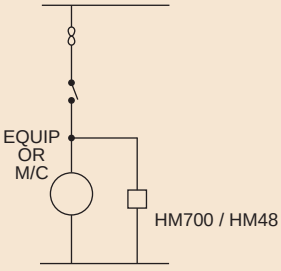
Voltage		Mounting	
1	24VAC 50Hz	B	Base Mounting
3	110VAC 50Hz	F	Flush Mounting
4	240VAC 50Hz		
5	415VAC 50Hz		

HM48 SYNCHRON

K 5 □ S □ 1

Voltage		Mounting	
1	24VAC 50Hz	B	Base Mounting
3	110VAC 50Hz	F	Flush Mounting
4	240VAC 50Hz		

WIRING DIAGRAMS

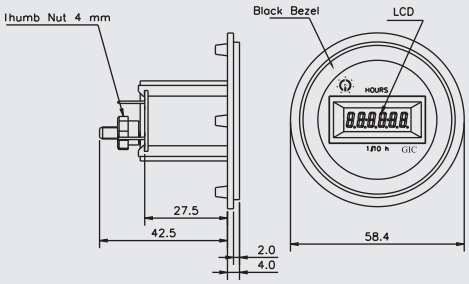


Digital Hour Meters

- 6-digit LC display
- Exceptional reliability in-built nonvolatile memory (EEPROM)
- Wide range of supply voltage
- Remote reset
- Available in 3 different shaped Bezels
- Environment Friendly RoHS Compliant

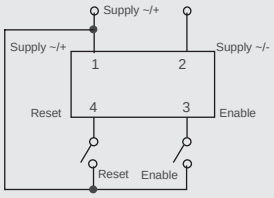
MOUNTING DIMENSIONS (mm)

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

TECHNICAL SPECIFICATIONS

Z71FBX

Supply Voltage (Un)	85-265 VAC 50/60 Hz
Power Consumption	0.8 VA
Range	99999.9 Hours
Display	6-digit LC display 5mm height
Resolution	1/10 h
Accuracy	± 0.02%
Memory Retention	100 Years
Operating Temperature	-10 to +50°C
Storage Temperature	-20 to +65°C
Humidity	95% Rh
Protection Class	IP54 (for front side only)
Housing	UL94V0
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

ZJ1FBX

Supply Voltage (Un)	12-48 V AC/DC 50/60 Hz
Power Consumption	0.4 W

ZH1FBX

Supply Voltage (Un)	10-80V DC
Power Consumption	0.6 W

ORDERING INFORMATION

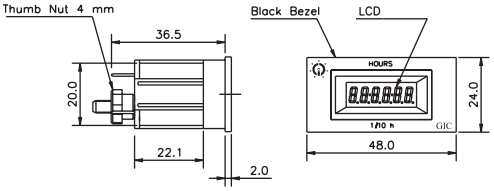
Cat. No. & Description:
Z71FBX -
85-265 VAC AC model

Cat. No. & Description:
ZJ1FBX -
12-48V AC/DC model

Cat. No. & Description:
ZH1FBX -
10-80V DC model

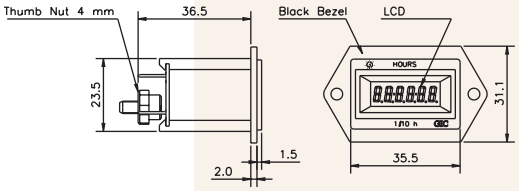
MOUNTING DIMENSIONS (mm)

24x48 bezel



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

Screw mount bezel



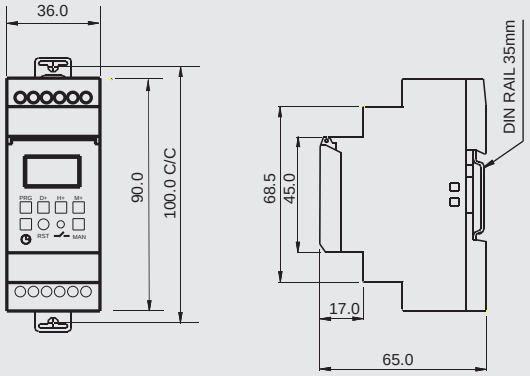
Recommended Panel Cutout :
37.0 (+0.5)mm x 24.6 (+0.5)mm

Digital Time Switches

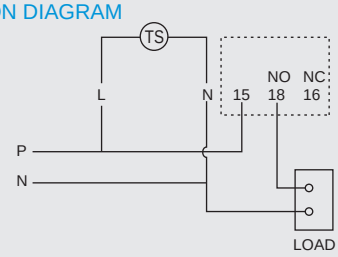
Crono & Pulse

- Precise time programming for
  - Daily / Weekly, Pulse switching.
- Simple Reset feature.
- Weekend programming.
- Red LED for relay ON Indication.
- 24 Hr display (Military) or AM / PM
- Manual Override.
- CE, CSA Marked
- Environment Friendly
  RoHS Compliant

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

ORDERING INFORMATION

Crono 67DDT0

Supply Voltage & Frequency	110 - 240 VAC, +10% / -20 %, 50 / 60 Hz
No. of modes & it's Description	ON AUTO - Relay ON as per Program OFF AUTO - Relay OFF as per Program ON AUTO ON - Instant ON up to next ON program OFF AUTO OFF - Instant OFF up to next OFF program ON ON - Continuous ON OFF OFF - Continuous OFF
Memory Locations	8 On / Off operations, 16 memory locations
Minimum Switching Time	1 min
Power Consumption	6 VA (Approx)
Operating Temperature	0°C to + 55°C
Storage Temperature	-20°C to +70°C
Clock Accuracy	± 2 Sec / Day at 20°C
Power Reserve	500 Hrs.
Switching Contact	1 C/O
Shortest Switching Time	1 Min (For Crono) & 1Sec (For Pulse)
Contact Rating	Resistive:- 16A @ 250 VAC, 28 VDC Inductive (cos ø = 0.6) :- 6 A @ 250 VAC Incandescent Lamp: - 1000 W
Electrical Life	$1x10^5$
LED Indication	Red → Relay ON
Housing	Flame Retardant UL94V0
Dimension (W x H x D)	36 X 65 X 90 (in mm)
Weight	120 gms (unpacked)
Mounting	Base / Din rail
Terminal Connection	1.5 - 2.5 mm² flat lungs.
Protection	IP20
Certification	CE, cULus

Cat. No. & Description:
67DDT0 -
Crono Time switch,
110 - 240 VAC (50/60 Hz),
1 C/O (SPDT)

Pulse 67DDT9

Supply Voltage & Frequency	240 VAC, +10% / -20 %, 50 / 60 Hz
No. of modes	ON AUTO - Relay ON as per Program OFF AUTO - Relay OFF as per Program OFF OFF - Continuous OFF ON ON - Continuous ON
Memory Locations	16 Pulse operations (Ex - 0,1,2,3,4,5,6,7,8,9, a, b, c, d, e, f)
Minimum Switching Time	1 to 59 seconds Pulse Time

Cat. No. & Description:
67DDT9 -
Pulse Time switch,
240 VAC (50/60 Hz),
1 C/O (SPDT)

EMI/ EMC:

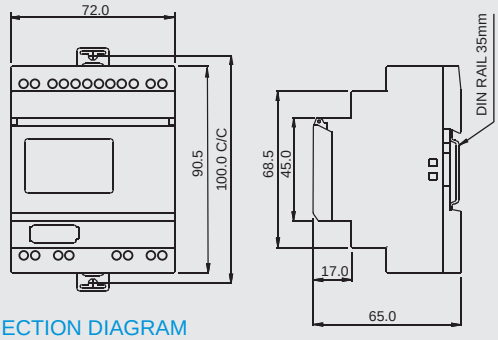
Radio Interference Suppression	CISPR 14-1 Class B
ESD	IEC 61000-4-2 Level III
Electrical Fast Transients	IEC 61000-4-4 Level IV
Surges	IEC 61000-4-5 Level IV
Voltage Dips & Interruptions	IEC 61000-4-11 All 7 Levels

Astronomical Time Switches

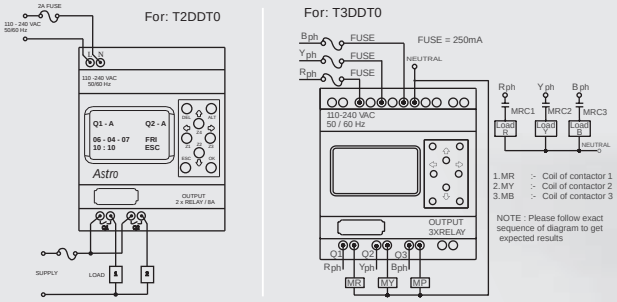
Astro

- Sunrise/sunset or twilight trigger mode
- ON/OFF/Pluse
- Midnight OFF hours selectable
- Off-hours feature to alternate channel on alternate days
- Turn OFF outputs on office's weekly off-days
- Automatic offset change for specified period
- Easy, fast and single key press manual override
- In 3 phase Astro, inbuilt feature of Under / Over voltage protection

MOUNTING DIMENSIONS (mm)



CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

Supply Voltage	110-240 VAC 50-60Hz
Supply Variation	- 20% to +10% of normal voltage
Power Consumption	3W
Storage Temperature	-20°C to +70°C; Operating Temperature: 0°C to + 55°C
Max. Supply current	15mA
Switching contacts	2 SPST Relays, 8A (for resistive load)
Shortest switching time (daily)	1 min
Power reserve (for clock only)	1000 h
Clock deviation	±1 Sec @ 20°C per day
Mounting	Base / DIN rail
Dimensions (W x H x D)	72 X 90 X 65 (in mm)
Weight	220 g
Certification	CE, RoHS, cULus

ORDERING INFORMATION

Astro
T2DDT0

Cat. No. & Description:
T2DDT0 -
Astro time switch,
110-240VAC 50-60Hz,
2 NO (SPST)

Astro
T3DDT0

Supply Voltage	3 Phase 4 wire 110-240VAC (P-N) 50-60Hz
Supply Variation	- 20% to +10% of normal voltage
Power Consumption	4W
Storage Temperature	-20°C to +70°C; Operating Temperature: 0°C to + 55°C
Max. Supply current	25mA
Switching contacts	3 SPST Relays, 8A (for resistive load)
Shortest switching time (daily)	1 min
Power reserve (for clock only)	1000 h
Clock deviation	± 0.5 Sec at any temperature per day
Mounting	Base / DIN rail
Dimensions (W x H x D)	72 X 90 X 65 (in mm)
Weight	240 g
Certification	CE, RoHS

Cat. No. & Description:
T3DDT0 -
Astro time switch,
110-240VAC 50-60Hz,
3 Phase 4 wire (P-N),
3 NO (SPST)

EMI/ EMC:

Radio Interference Suppression	CISPR 14-1 Class B
ESD	IEC 61000-4-2 Level III
Electrical Fast Transients	IEC 61000-4-4 Level IV
Surges	IEC 61000-4-5 Level IV
Voltage Dips & Interruptions	IEC 61000-4-11 All 7 Levels

Accessories for Astro

TGDDT1	Software on PC
GFDNN2S	Serial Interface cable
GFDNN1	USB interface cable
TGDDT3	Memory Card

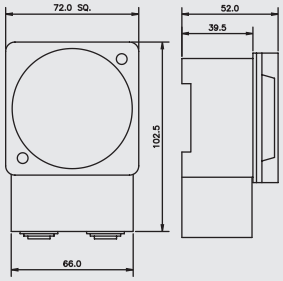
Time Switch
FM Series

- Modular construction.
- Inbuilt over-ride facility.
- High switching capacity.
- Tamper proof sealing.
- Analog & Digital version.
- Graphical Program LC Display

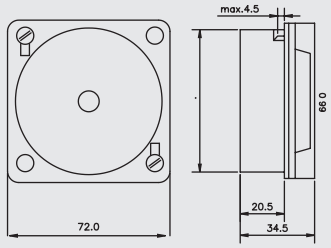
FMseries

MOUNTING DIMENSIONS (mm)

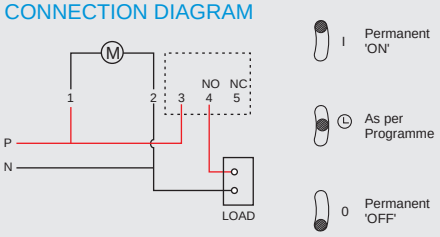
BASE/DIN MOUNTING



FLUSH MOUNTING



CONNECTION DIAGRAM



J648B1

TECHNICAL SPECIFICATIONS

Supply Voltage & Frequency	240VAC, 50/60 Hz
Power Consumption	2 VA
Accuracy	± 1.5 Sec./day at 20°C
Switching contact	1 C/O contact - AgCdO
Contact Rating:	
- Resistive	16A @ 250 VAC
- Inductive (cosø = 0.6)	8A @ 250 VAC
- Incandescent Lamp	1350 W
Shortest Switching Time:	
- Daily	15 Min.
- Weekly	2 Hrs.
Power reserve	150 Hrs.
Memory locations	NA
Ambient Temperature	-20°C to 55°C
Manual Over-ride	Provided
Mounting	Flush, Base / Din

ORDERING INFORMATION

Cat. No. & Description:
1) J648B1 -
FM/1 QT Daily dial, 240V AC
Base / DIN Mounting

2) J848B1 -
FM/1 QW Weekly dial, 240V AC
Base / DIN Mounting

3) J638B1 -
FM/1 QT Daily dial, 110V AC
Base / DIN Mounting

4) J838B1 -
FM/1 QW Weekly dial,
110V AC Base / DIN Mounting

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

D847B2

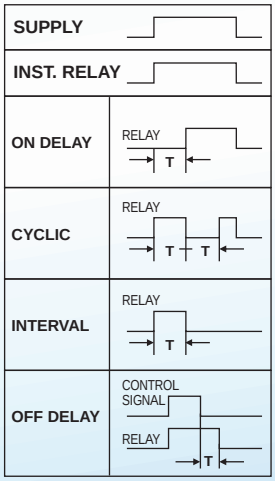
Power Consumption	4.4 VA
Accuracy	± 1.5 Sec./day at 20°C
Switching contact	
Contact Rating:	
- Resistive	16A @ 250 VAC
- Inductive (cosø = 0.6)	4A @ 250 VAC
- Incandescent Lamp	
Shortest Switching Time:	
- Daily	1 Min.
- Weekly	1 Min.
Power reserve	10 years from Factory at 20°C
Memory locations	NA

Cat. No. & Description:
D847B2 -
FM/1 Digi20 Plus Weekly/ Daily,
240V AC Base / DIN Mounting

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

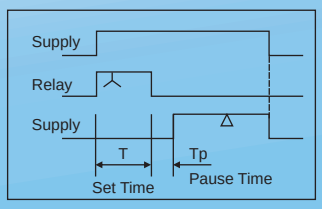
Operating Modes / Functions

MULTIFUNCTIONAL



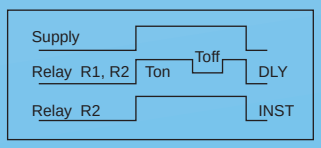
- **Delay on Energisation (ON Delay):** The set time (Delay) start when timer receives supply. The output relay energises at the end of the pre-set time
- **Cyclic Instant (Equal ON/OFF):** On energisation, relay output is on and off repeatedly for the set time. Cycle starts with relay in energised condition. By removing supply, the relay gets reset.
- **Interval Timer:** On energisation of Timer, Output relay changes the state for the time set. After completion of set time, output relay de-energises. By switching off supply, the Timer gets de-energised & is ready for the next cycle of the operation.
- **(Signal)-Off delay:** Timer is energised and relay is in Off condition. When control input is given through control contacts, relay is energised. Delay period commences when control input is removed. At the end of set time, relay is de-energised and load is desconnected

STAR - DELTA



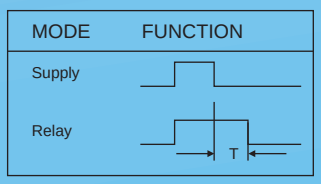
- **Star - Delta:** The timer has a fixed transition time from Star to Delta connections. On energisation, the output star relay energises instantly. After completion of preset delay time, output Delta relay energises after fixed pause time. This pause time (60, 90, 120, 150 ±20 ms) provides the shortest possible 'current off' pause and simultaneously ensures smooth change over.

ASYMMETRICAL ON/OFF



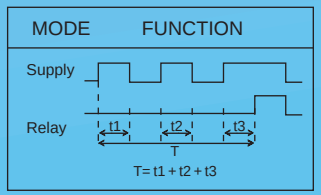
- **Asymmetrical ON/OFF (Cyclic Instant):** ON/OFF, can be independently selected from 0.1 Sec. to 10 Hrs. On energisation, relay output is on and off repeatedly for the respective set times. Cycle starts with relay is energised condition. By removing supply, the relay gets reset.

TRUE OFF DELAY



- **True Off Delay:** On energisation the Relay O/P is in ON Position. Timing delay period commences when supply to the true off delay Timer goes OFF. The O/P Relay de-energises at the end of pre-set time

ON DELAY (RETENTIVE/NO VOLT)



- **On Delay (Retentive):** The set time (Delay) starts when timer receives supply. The output relay energises at the end of the pre-set time. If power fails during set time, the elapsed time will retained by timer. Upon resumption of power, remaining cycle will continue.

Micon Series Electronic Timers General Technical Specification

Feature	General Specifications	
Operating Voltage	80% - 110% of Rated Voltage	
Power Consumption	*10-15 VA (approximate)	
Frequency	50 / 60 Hz	
Setting Accuracy	± 5 % of full scale maximum	
Repeat Accuracy	± 1% maximum	
Reset Time	100 ms maximum	
Variation in timing due to Voltage change	± 2% maximum (for minimum to maximum operating voltage)	
Variation in timing due to Temperature change	± 5% maximum (for minimum to maximum operating temperature)	
Indications	LEDs for Power ON and Relay Status	
Insulation Resistance	> 100 M ohms @ 500 V DC	
Mechanical Life Expectancy (at no load and maximum switching frequency)	5 X 10^6 operations	
Electrical Life Expectancy	175, 225, 350, 480 Series	780 Series
1) 240 V AC, PF =1.0, rated maximum load current	1 x 10^5 operations	0.5 x 10^5 Operation
2) 30 V DC, L/R = 7 ms	6 x 10^4 operations	6 x 10^4 Operation
3) 240 V AC, PF = 0.4, rated maximum load current	4 x 10^4 operations	
Maximum Switching Frequency	1000 Operations / Hour	
Contact Material	As mentioned in respective page of products	
Protection Class	IP 30	
Terminal Size	Suitable for maximum 2.5 mm^2 wires	
Operating Temperature	-10° C to +55° C	
Storage Temperature	-20° C to +70° C	
Certification	CE, RoHS Compliant, cULus	

* 20 VA for True Off Delay Timer

GLOSSARY

Operating Voltage	Input Supply required for the Operation.
Supply Variation	Allowable Variation in input power supply connected to Timer for satisfactory functioning.
Delayed Contacts	A contact in Timer that changes state at the end of time you have set.
Instantaneous contact	A contact which changes state as soon as power is switched on to the Timer
Mechanical Life	The Number of operations of contact without electrical supply.
Electrical Life	The Number of operation that the contact can be expected to make and break at rated electrical load.
Reset Time	Time taken by Timer to start a new cycle.
Repeat Accuracy	It Indicates how consistently the Timer will repeat the time. It is more Important especially where uniform processing time cycles are required.
Rated Current	A current that can flow continuously through the closed contact.
Contact Rating	Voltage & current which can switch under specified conditions.
Ambient Temperature	Temperature of atmosphere sorrounding the product.
Power Consumption	Power absorbed by Timer for its own satisfactory functioning.
Mounting	The type of placement of Timer (Base / DIN / Flush).
No-volt protection feature	Timers are available with a no-volt protection feature which ensures that elapsed time is not canceled as they do not reset when the supply is interrupted during any timing cycle. This feature is particularly useful for applications like battery charging, mixing or any application where aggregate timing has to be kept constant even under power interruption.

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