DIGITAL TIME SWITCH

Cat. No. :

Crono™	Pulse
67DDT0	**67DDT9**
6GHDT0	**6GHDT9**
69HDT0	**69HDT9**

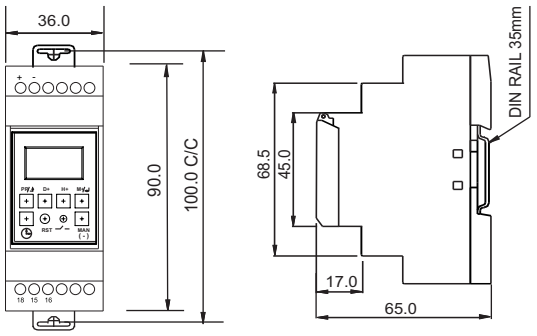
CE RoHS

	Crono			Pulse		
	67DDT0	**6GHDT0**	**69HDT0**	**67DDT9**	**6GHDT9**	**69HDT9**
Supply Characteristics :						
Supply Voltage (⏚)	110 to 240 VAC	24 VDC	12 VDC	110 to 240 VAC	24 VDC	12 VDC
Supply Variation	-20% to +10% (of ⏚)	1 VA				
Power Consumption (Max.)	4 VA	1 VA	1 VA	4 VA	1 VA	1 VA
Operating Frequency	50/60 Hz	N.A	N.A	50/60 Hz	N.A	N.A
Battery Backup	Approx. 6 years running reserve at 20 °C ambient temperature.					
Functional Characteristics :						
Display	3 Line Text LCD					
LED Indications (Red)	Relay ON: LED ON, Relay OFF: LED OFF					
Number of Programs	25 ON/OFF			16 ON		
Hour Setting	00-23 for 24h clock & 00-12 for 12h clock mode					
Clock Resolution (Minimum)	1 minute					
Pulse Duration	N.A			01-59 sec.		
Clock Mode	Either 12h (AM/PM) or 24 h Clock					
Reset	Resets all programs and clock					
Day Setting	Monday to Sunday					
Day Selection	Monday to Sunday, Monday to Saturday, Monday to Friday, Friday to Saturday, Saturday to Sunday, Individual Holiday, Individual day, Alternate week-day					
Clock Accuracy	+/- 2 s/day max. over the operating temp. range					
Number of keys	6 keys with 1 recessed reset button					
Relay Output Characteristics :						
Contact Arrangement	1 C/O (SPDT)					
Contact Rating	16 A (NO) & 5 A (NC) @ 240 VAC/24 VDC (Resistive)					
Utilization Category (AC-15) at +85° C	Ue Rated Voltage (V) : 250 (Inductive @ Cos Ø = 0.6)					
	Ie Rated Current (A) : 6.0					
Utilization Category (DC-13) at +85° C	Ue Rated Voltage (V) : 24 / 250					
	Ie Rated Current (A) : 2.0 / 0.2					
Incandescent Lamps	1000 W					
Contact Material	$AgSnO^2$					
Minimum Switching Load	40 mA at 24 VDC					
Electrical Life	30,000 cycles @ rated load					
Minimum Switching Time	1 min			1 sec.		
Environmental Characteristics :						
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	2					
Degree of Protection	IP-20 for Terminals; IP-40 for Enclosure					
Enclosure	Flame Retardant UL-94V0					
Other Characteristics :						
Mounting	Base / Din Rail					
Weight (Un-packed)	110 g max.					
Operating Position	Any					

EMI/EMC Compliance:		
Harmonic Current Emissions	IEC 61000-3-2	Class A
Voltage Flicker & Fluctuation	IEC 61000-3-3	Class A
ESD	IEC 61000-4-2	Level II
Radiated Susceptibility	IEC 61000-4-3	Level III
Electrical Fast Transients	IEC 61000-4-4	Level IV
Surge	IEC 61000-4-5	Level IV(For 67DDT0/T9) , Level I (For 6GHDT0/T9,69HDT0/T9)
Conducted Susceptibility	IEC 61000-4-6	Level III
Power Frequency Magnetic Field	IEC 61000-4-8	Class 4
Voltage Dips & Interruption (AC)	IEC 61000-4-11	Class B
Voltage Dips & Interruption (DC)	IEC 61000-4-29	Class B
Conducted Emission	CISPR 11	Class B
Radiated Emission	CISPR 11	Class A
Safety Compliance:		
Test Voltage (Input & Output)	IEC 60947-5-1	2.5 kV
Impulse Voltage (Input & Output)	IEC 60947-5-1	Level IV
Single fault	IEC 61010-1	
Insulation Resistance	UL 508	>50 kohm
Leakage Current	UL 508	<3.5 mA
Environmental Compliance :		
Cold Heat	IEC 60068-2-1	
Dry Heat	IEC 60068-2-2)	
Vibration	IEC 60068-2-6	5 g
Repetitive Shock	IEC 60068-2-27	40 g, 6 ms
Non-repetitive Shock	IEC 60068-2-27	30 g, 15 ms

OVERALL DIMENSIONS :

Base / Din Rail Mounting



FEATURES :

- Easy text LCD interface for daily / weekly programming
- 12 / 24 hour clock selection using keypad
- Highly accurate RTC with low drift.
- Flexibility of writing 25 ON/OFF & 16 ON programs for Crono & Pulse respectively.
- Easy to reset & Manual override.
- Available with DST feature.
- 6 years battery back-up.
- Weekend Exclusion Programming (FRI-SAT, SAT-SUN).
- Keypad Lock available.
- *CRONO*: Ideal for lighting applications like street lighting.
- *PULSE*: Ideal for siren or bell applications.

⚠ CAUTION :

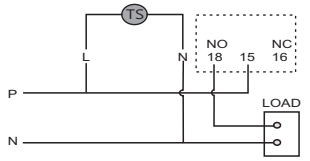
- Installation should be done by skilled electrician only.
- Heavy Inductive loads should be equipped with interference suppressors like varistors, RC snubbers.
- Use of contactors is recommended if load exceeds the contact rating. Please see Inductive load category.
- Non- Rechargable Battery Disposal: As per the applicable regulations in country and state, by authorized, professional disposal firms knowledgeable in Federal, State or Local requirements of hazardous waste treatment & transportation.

NOTE :

- **IMPORTANT:** IF DST applicable, First Set Date, then Set DST & then set the Real Time Clock.
- **IMPORTANT:** When user presses ⏱ key in program edit mode, it comes to Run mode.
- **Battery Mode:** Key sensing may be slower so please make sure that, any key is pressed for at least 1 sec.
- Product innovation being a continuous process, we reserve the right to alter specifications without any prior notice.
- User is recommended to ensure the suitability of the product for the intended application
- GIC will also provide separate time switch for Non-Inrush application if customer wants.

*For optimum battery life , Store product in cool & dry environment.

CONNECTION DIAGRAM:

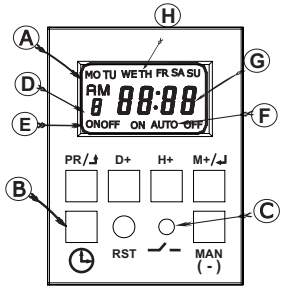


TERMINAL DETAILS :

Ø 3.5mm	0.54 N.m(6lb.in)
	1 x 2.5mm Solid wire / Standard
AWG	1 x 24 to 12

Use Copper Conductors Only, 60/75°C.

FRONT VIEW:



A - LCD
B - Keypad
C - Relay 'ON/OFF' LED Indication.
D - Program Number
E - Relay Status
F - Mode
G - HR : MIN
H - Day

KEY FUNCTIONS :

PR /↵ - Program key to view & edit programs & As ESC Key
D+ - Day selection & Also as an Date/DST Increment key
H+ - Hour Increment & Also as an Date/DST Decrement key
M+/↵ - For Crono: To increment Minute
For Pulse : To set Pulse duration
Also as an ENTER key
(H+) + (M+) - To enter in DATE / DST mode
RST - Reset programs & settings in the device.
MAN (-) - Manual key for overriding.
Also to decrement D/H/M in program mode
⏲ - Clock Key, to set the clock
CLK + MAN - To set 12 / 24h clock mode
CLK + PR - To Lock / Un-lock keypad

CLOCK SETTING: Figure 1

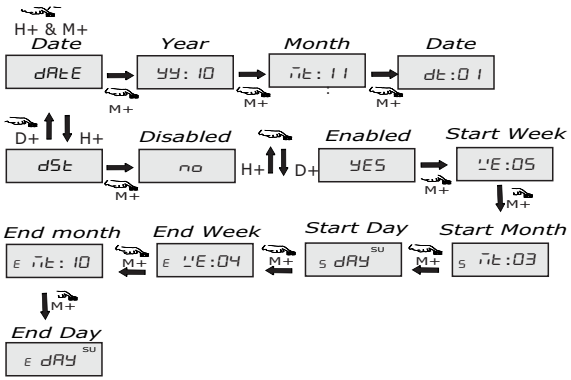
⏲ + MAN Press clock key ⏲ & MAN key simultaneously to toggle between 12/24 hour clock mode.
AM / PM

⏲ + D+ Keep the Clock key ⏲ pressed & then press the D+ key to set day.
MO/TU/WE/TH/FR/SA/SU

⏲ + H+ Keep the Clock key ⏲ pressed, then press the H+ key to set hour.
00- 23 - in 24 Hour Mode
01- 12 - in 12 Hour Mode

⏲ + M+ Keep the clock key ⏲ pressed, then press M+ key to set min.
00- 59

DST & DATE SETTINGS : Figure 2

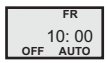


- During Run mode, press H+ with M+ to enter 'dAtE' menu. Press M+/↵ to enter this menu. Edit YY, Mt & dt using D+ or H+.
- 'dAtE' menu is being displayed, press H+ or D+ to select dSt & press M+/↵ to enter its menu.
- User can enter dSt & dAtE as shown in the figure 2 above.
  For this, D+ key is used to increment the parameter value
  H+ key is used to decrement the parameter value
  M+ key is used to save the current parameter value
  PR key is used to escape to previous parameter screen
- During dSt period 'd' will appear at bottom left corner of the screen & day will be updated according to current date. No need to set day manually by pressing CLK & D+ key.

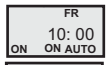
Note:
1. dAtE & dSt must be set in regions where dSt is observed. When dSt is enabled LCD shows 'd' at the left corner.
2. dSt Start / End: Clock is rolled over from '02:00' to '03:00' at start and is rolled over from '03:00' to '02:00' at end.
3. If user edits the clock within DST end ambiguous period (2:00AM to 2:59AM), on DST end day, say at 2:30AM, DST will become OFF immediately.
4. In case, when user goes ahead from Non-DST to DST period by changing Date; clock is moved one hour ahead (DST offset-1 hour). Similarly, clock come back 1 hour when user come back form DST to Non-DST period by changing Date.

MANUAL OVERRIDE & MODE DESCRIPTION:

Press MAN key to toggle between-



1. AUTO: As per set program.



2. ON AUTO: Manual ON up to next ON event. (Not Applicable for Pulse)

3. AUTO OFF : Manual OFF up to next OFF event. (Not Applicable for Pulse)

4. ON: Manual ON (Continuous).

5. OFF: Manual OFF (Continuous).

PROGRAMMING DETAILS :

Program Description (Crono):

25 ON/OFF Programs																								
1	2	3	4	5	6	7	8	9	A	B	C	D	e	f	G	H	J	L	n	P	q	T	u	Y

Program Description (Pulse): With Common Pulse 'P'

Pulse	16 ON Programs															
PL	0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F

Program Description (Pulse): With Individual Pulse

16 ON Programs (As 'Prg/Pulse)' with very 1st common pulse P																			
PL	0	PL	1	PL	2	PL	3	PL	4	PL	5	PL	6	PL	7	PL	8	PL	9

16 ON Programs (As 'Prg/Pulse)' with very 1st common pulse																			
PL	A	PL	b	PL	C	PL	d	PL	E	PL	F	PL							

How to Delete the Program?

1. To delete single program, go to respective program, press H+ until '--' hr comes & press M+ until '--' min comes on LCD. '--:--' displayed on LCD indicates empty program.
2. To delete/reset all the programs & settings, press RST key.

KEYPAD LOCK(🔒):

To lock the keypad, press the '⏲' and the 'PR' key simultaneously for 3 or more secs 'bLoC' will appear on the screen
When the keypad is locked none of the parameters can be edited, only the mode can be changed from 'Auto' to 'ON Auto' and 'Auto OFF' by pressing the 'MAN' key.
To unlock the keypad press '⏲' and PR key simultaneously for 3 or more sec. 'ULoC' will appear on screen.
The keypad can be locked only in Run mode and not in program Edit mode.

FREQUENTLY ASKED QUESTIONS :

Q.1: In event of power failure, do I lose all my programs?
A.1:No, because battery has a reserve of approx 6 yr at operating temperature. In absence of power, we can program the device as per requirement. However, during power fail, relay or LED will not operate but the relay status can be observed on LCD screen.

Q.2: How to use Manual override? When is it applicable?
A.2:Press MAN key to toggle to ON Auto, Auto OFF, ON or OFF mode. (Refer Mode Description). It is used if user requires an immediate ON or OFF of the relay.

Q.3: Can I select any day in the week as my weekly OFF?
A.3: Yes, when in PR mode, toggle by pressing D+ & MAN (-) or D+ key respectively to select individual holiday selection.

Q.4: What should I do to remove all programs & reset RTC?
A.4: Press RST key. All programs will get deleted, RTC will be reset to 00:00 & Default day as Monday.

Q.5: How do I change clock format from 12 h to 24 h?
A.5: Press ⏲ & MAN key simultaneously to switch clock format from 12h to 24 h & vice-versa.

Q.6: How does ON AUTO & AUTO OFF feature help?
A.6:ON AUTO / AUTO OFF feature bypass the current program & continues with the next program. ON AUTO mode returns back to AUTO mode at next programmed ON Time. AUTO OFF mode returns back to AUTO mode at next programmed OFF Time. In this way, one can override the relay to switch ON/OFF without affecting the further programs.

Crono™ PROGRAMMING EXAMPLES :

Ex 1 : Relay ON at 18.00 & OFF at 6.30 from Monday to Sunday (Program For Whole Week).
Steps:

Screen 1

After power ON, screen 1 will be displayed

Screen 2

Set the current time (e.g.10:00), Day (e.g.Friday) & Relay mode (e.g. AUTO) as per CLOCK setting & mode function

PR -> Press PR to enter in ON time program.

Screen 3

Press D+ stepwise for day selection as given below. Mon to Sun is default setting so no need to press any key

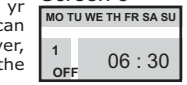
1) MO TU WE TH FR SA SU (All week days)
2) MO TU WE TH FR SA (Exclude Sunday)
3) MO TU WE TH FR (Exclude Week-ends)
4) MO TU WE TH SU (Exclude Friday & Saturday)
5) SA SU (Only Weekends)
6) FR SA
7) TU WE TH FR SA SU (Exclude any single day)
8) MO/TU/WE/TH/FR/SA/SU (Include Single day)
9) MO WE FR (Exclude Alternate day)
10) TU TH SA

Screen 4

Press H+ to edit & increment the hour as & if needed, use MAN (-) key to decrement hours. Set the time to 18:00.

PR -> Press PR to switch in OFF time program.

Screen 5



Press H+continuous to set the hour as 18:00. Use MAN (-) key to decrement hours

Example 2: 3 Different programs for whole week

	RELAY ON	RELAY OFF
Program 1:	20:45 (MO-FR)	06:30 (SA)
Program 2:	19:00 (SA)	06:30 (SU)
Program 3:	18:15 (SU)	06:30 (MO)

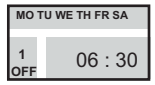
Steps: Set the clock as explained in screen 1 & 2 above

Screen 6

Press D+ 3 times to select MO-FR. Set ON time as 20:45 by using H+ & M+ key.

PR -> Press PR to switch in OFF time.

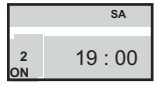
Screen 7



Press D+ once to select MO-SA. Set OFF time as 06:30 by using H+ & M+ key.

PR -> Press PR to enter in 2nd program.

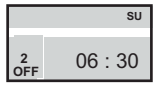
Screen 8



Press D+ continuous to select SA. Set ON time as 19:00 by using H+ & M+ key.

PR -> Press PR to switch in OFF time.

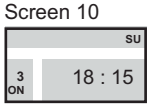
Screen 9



Press D+ continuous to select SU. Set OFF time as 06:30 by using H+ & M+ key.

PR -> Press PR to enter in 3rd program.

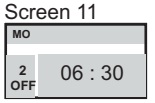
Screen 10



Press D+ continuous to select SU. Set ON time as 18:15 by using H+ & M+ key.

PR -> Press PR to switch in OFF time.

Screen 11



Press D+ continuous to select MO. Set OFF time as 06:30 by using H+ & M+ key.

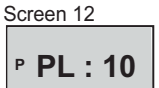
PR -> Press PRG once.

To save & exit the program, press ⏲ key

PULSE: PROGRAMMING EXAMPLES

Ex. 1: Programming For Fixed Pulse Time

Screen 12



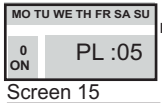
PR -> Press PR once to enter pulse duration. Press M+ continuous to set any pulse duration from 1 to 59 s. E.g. 10s. This fixed pulse duration will be applicable to all 16 programs

Ex. 2: Programming For Individual Pulse Times

Screen 13

In this case, user has to first set the ON time & then pulse duration for the same Press PRG two times to enter in ON time for program '0'. Set the ON time (20:00) & day with the help of H+/M+/D+ keys

Screen 14



PR -> Press PR once to enter pulse duration. Set the pulse 0 (for program 0) for duration of 05 by pressing M+ key.

Screen 15

PR -> Press PR once to enter in program 1 Set the ON time (21:00) & day with the help of H+/M+/D+ keys

Screen 16

PR -> Press PR once to enter pulse duration Set pulse 1 (for program 1) for duration of 07 by pressing M+ key.