

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 (<i>Crono</i> [®])	67DDT9 (<i>Pulse</i>)
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	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 ϕ = 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	-10°C to + 55°C	
Storage Temperature	-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	  	
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

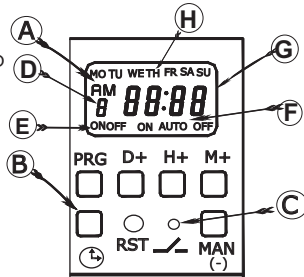
DAILY/WEEKLY TIME SWITCH (Crono™/Pulse)

Features :

- Easy interface with text LCD for daily / weekly programming.
- 12 / 24 hour clock mode display selection.
- High accuracy of timing with low drift.
- Flexibility of writing 25 programs for Crono.
- Simple Reset & easy Manual Override.
- DST Feature.
- 6 years battery reserve.
- Weekend Exclusion Programming (FRI-SAT, SAT- SUN).

FRONT VIEW & FUNCTION OF KEYS :

- A** - LCD
- B** - Keypad
- C** - Relay 'ON/OFF' LED Indication.
- D** - Program Number
- E** - Relay Status
- F** - Mode
- G** - HR : MIN
- H** - Day
- PRG** - Programming
- D+** - Day Increment
- H+** - Hour Increment
- M+** - Minute Increment or used to set pulse duration in Pulse Time Switch.
- ⌚** - Clock Key, to set the clock & change the time format.
- RST** - Reset programs or settings in the device.



- MAN** - It has four usages:
 1. Manual key for overriding.
 2. Decrement key to decrement D/H/M in PRG mode.
 3. Used with ⌚ key to select clock format.
 4. Used to toggle DST in DST mode.

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

MODE DESCRIPTION :

- 1. AUTO:** As per set program.
- 2. ON AUTO:** Manual ON up to next program.
- 3. AUTO OFF:** Manual OFF up to next program.
- 4. ON:** Manual ON (Continuous).
- 5. OFF:** Manual OFF (Continuous).

Note: 1. Circle drawn in screens indicates Relay Status.
 2. Square drawn in screens indicates 5 Modes Auto, ON Auto, Auto OFF, ON and OFF.
 (Pulse has only 3 modes: Auto, ON and OFF)

CLOCK SETTING :

- Keep the clock key ⌚ pressed & then press the MAN key for 12/24 hour clock mode display.
- Keep the Clock key ⌚ pressed & then press the Day Increment Key D+ to set day.

Keep the Clock key ⌚ pressed, then press the Hour Increment Key H+ to set hour.

- in 24 Hour Mode
- in 12 Hour Mode

Keep the clock key ⌚ pressed, then press the Minute Increment Key M+ to set min.

- 00 - 59

Crono™ PROGRAMMING :

Ex.1: Program for switching Relay ON at 18:00 and OFF at 6:30 from Monday to Sunday (i.e. For the whole week).

Steps:

Screen 1
 After powering the device for the first time, the clock is set to 00:00 & the relay mode is AUTO & the default day is Monday (Screen 1).
 Now, set the clock as explained in CLOCK SETTING (Screen 2).

Screen 2
 Once Time & Day settings are done, press PRG key to enter the Program Menu (Screen 3).

Press D+ key stepwise to change any combination of days or single day settings. To select Monday to Sunday, there is no need to press any key as it is a default setting or to select following combinations, keep pressing D+ key.

- MO TU WE TH FR SA SU**
- MO TU WE TH FR SA**
- MO TU WE TH FR** (Exclude Weekends)
- MO TU WE TH SU**
- SA SU** (Only Weekends)
- FR SA**
- TU WE TH FR SA SU** (Exclude any single day)
- MO/TU/WE/TH/FR/SA/SU** (Include Single day and exclude rest of the days)
- MO WE FR**
- TU TH SA** (Exclude Alternate day)

Screen 4
 Now to set ON time as 18:00, press H+ key once to enter in hour mode, then keep on pressing MAN(-)/H+ key until 18 is displayed on the screen (Screen 4).

Screen 5
 Press PRG key to switch to the OFF time setting screen. To set OFF time as 06:30, keep on pressing H+ key until 06 is displayed on the screen then keep on pressing M+ key until 30 is displayed on the screen (Screen 5).

Press key ⌚ to save and exit the program.

Ex.2: Program for switching relay ON at 20:45 & OFF at 6:30 from Monday to Friday.

Steps:

First set the clock as explained in CLOCK SETTING. Once clock is set to the desired Time & Day, press PRG key to enter the Program Menu.

Screen 6
To set ON Time: Set day combination as Monday to Friday by pressing D+ key twice. Now, set ON time as 20:45 (Screen 6).

Screen 7
To set OFF Time: After setting ON time, press PRG key to set OFF time. First select day as Monday to Saturday by pressing D+ key once and then set OFF time as 06:30 with the help of H+ & M+ keys (Screen 7).

Screen 8
 Alternate way to select OFF time is first select day as Monday to Saturday by pressing D+ key once and then set OFF time as 06:30 with the help of H+ & M+ keys (Screen 8).
 To save and exit the program, press clock ⌚ key.

Pulse PROGRAMMING :



Screen 12

PL : 10

Ex.1: Programming for fixed pulse:

When the device is displaying the main screen (Refer screen 1 in Ex.1), press PRG once to enter the programming menu. Screen 12 for fixed pulse will be displayed. Press M+ key continuously to set any fixed pulse duration from 1 to 59 seconds. For e.g. As shown in Screen 12, Pulse duration is 0 s. This fixed pulse duration will be applicable to all 0 to F i.e. for all 16 programs.

Ex.2: Programming for individual pulse times:

In this case, user has to first set the ON time and then a pulse duration for the same.

Screen 13

0 ON 20:00

I. SETTING THE ON TIME :

When the device is displaying the main screen (i.e. screen 1 in Ex. 1), press PRG key twice to set the ON time for program number '0'. Set the Time & Day with the help of H+, M+ & D+ keys (Screen 13).

Screen 14

0 ON PL:05

II. SETTING THE PULSE TIME:

Now, press PRG key again to set the pulse duration for the above ON time i.e. 20:00. Set the pulse duration with the help of M+ key. For e.g. User can set a pulse of 5 seconds for program number '0' (Screen 14).

Screen 15

1 ON 21:00

Use the above procedure to set the ON time at 21:00 and the pulse time of 7 seconds. Now, the display for ON time and pulse time would be as shown in Screen 15 & Screen 16 respectively. To save and exit the program, press clock key ⌚. Similarly, user can set different pulse duration for different programs.

Screen 16

1 ON PL:07

If MAN(-) key is pressed, relay will become ON instantaneously for a pulse duration of 1 minute when in RUN mode.

PROGRAM DELETION :

When in PRG mode, to delete a single program, go to that respective program and press H+ & M+ until -- : -- comes. "-- : --" indicates empty program. To delete all programs, press RST key.

BATTERY DISPOSAL :

1. Dispose in accordance with the applicable regulations in country and state, as battery used is Non-rechargeable.
2. Disposal should be performed by authorized, professional disposal firms knowledgeable in Federal, State or Local requirements of hazardous waste treatment and hazardous waste transportation.

APPLICATIONS :

Crono:

Ideal for Lighting applications like street lighting, advertising displays & glow signs. Also can be used to control Air Conditioners / coolers, Geysers, Conveyors, Pumps, Exhaust fans etc.

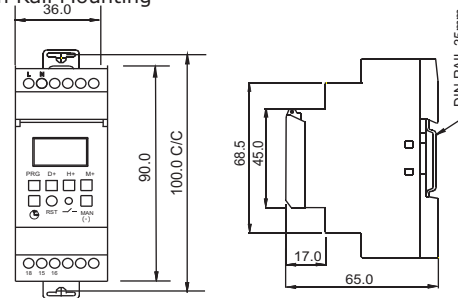
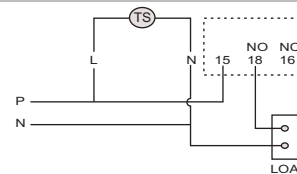
Pulse:

Ideal for Siren, School Bell applications.

Cat. No.	67DDT0	67DDT9
Supply Characteristics :		
Supply Voltage (V)	110 to 240 VAC	
Supply Variation	-20% to +10% (of V)	
Power Consumption (Max.)	6 VA	
Operating Frequency	50/60 Hz	
Battery Backup	Approx. 6 years running reserve	
LED Indication	Red LED for Relay Status	
Settings :		
Day	Monday to Sunday	
Hour	00-23	
Minute	00-59	
Clock Format	Either AM/PM (12 h) or 24 h Clock	
Reset	Resets all programs and clock	
Number of Memory Locations	25 ON/OFF programs	16 ON programs
Number of Operating Modes	Five Modes	Three Modes
Number of combinations available for day selection	Monday to Sunday, Monday to Saturday, Monday to Friday, Saturday to Sunday, Individual Holiday can be set, Individual day selection. Refer details overleaf.	
Relay Output Characteristics :		
Contact Arrangement	1 C/O (SPDT)	
Contact Rating	16 A (NO) and 5 A (NC) @ 240 VAC / 24 VDC	
Incandescent Lamps	1000 W	
Inductive Load (Cos φ = 0.6)	6 A @ 250 VAC	
Contact Material	AgSnO ₂	
Minimum Switching Load	40 mA at 24 VDC	
Mechanical Life	50 X 10 ³	
Electrical Life	30,000 cycles @ rated load	
Minimum Switching Time	1 min	1 s
Utilization Category AC-15	Ue Rated Voltage (V)	120 / 240
	Ie Rated Current (A)	3.0 / 1.5
Utilization Category DC-13	Ue Rated Voltage (V)	24 / 125 / 250
	Ie Rated Current (A)	2.0 / 0.22 / 0.1
Others :		
Clock Accuracy	+/- 2 s/day max. over the operating temp.range	
LCD Display	3 Lines Text LCD	
Number of keys	6 keys with 1 recessed reset button	
Operating Temperature Range	-10° C to +55° C	
Storage Temperature Range	-10° C to +60° C	
Humidity (Non-Condensing)	95% Rh	
Maximum Operating Altitude	2000 m	
Pollution Degree	2	
Degree of Protection	IP-20 for Terminals; IP-40 for Enclosure	
Mounting	Base / Din Rail	
Enclosure	Flame Retardant UL-94V0	
Weight (Unpacked)	110 g max.	
EMI/EMC :		
Harmonic Current Emissions	IEC 61000-3-2 Ed. 3.0 (2005-11) Class A	
Voltage Flicker & Fluctuation	IEC 61000-3-3 Ed. 2.0 (2008-06) Class A	
ESD	IEC 61000-4-2 Ed. 1.2 (2001-04) Level II	
Radiated Susceptibility	IEC 61000-4-3 Ed. 3.0 (2006-02) Level III	
Electrical Fast Transients	IEC 61000-4-4 Ed. 2.0 (2004-07) Level IV	
Surge	IEC 61000-4-5 Ed. 2.0 (2005-11) Level IV	
Conducted Susceptibility	IEC 61000-4-6 Ed. 2.2 (2006-05) Level III	
Power Frequency Magnetic Field	IEC 61000-4-8 Ed. 2.0 (2009-09) Class 4	
Voltage Dips and Interruption (AC)	IEC 61000-4-11 Ed. 2.0 (2004-03) Class B	
Conducted Emission	CISPR 14-1 Ed. 5.0 (2005-11) Class B	
Radiated Emission	CISPR 14-1 Ed. 5.0 (2005-11) Class B	
Safety :		
Test Voltage between Input and Output	IEC 60947-5-1 Ed. 3.0 (2003-11) 2.5 kV	
Impulse Voltage between Input and Output	IEC 60947-5-1 Ed. 3.0 (2003-11) Level IV	
Single fault	IEC 61010-1 Ed. 2.0 (2001-02)	
Insulation Resistance	UL 508 Ed. 17 (1999-01) >2000 Mohm	
Leakage Current	UL 508 Ed. 17 (1999-01) < 3.5 mA	
Environmental Testing :		
Cold Heat	IEC 60068-2-1 Ed. 6.0 (2007-03)	
Dry Heat	IEC 60068-2-2 Ed. 5.0 (2007-07)	
Vibration	IEC 60068-2-6 Ed. 7.0 (2007-12) 5 g	
Repetitive Shock	IEC 60068-2-27 Ed. 4.0 (2008-02) 40 g, 6 ms	
Non-repetitive Shock	IEC 60068-2-27 Ed. 4.0 (2008-02) 30 g, 15 ms	

OVERALL DIMENSIONS :

Base / Din Rail Mounting

**CONNECTION DIAGRAM :****FAQ'S (FREQUENTLY ASKED QUESTIONS) :**

Q.1: How many programs can I store in Crono/Pulse Time Switch?
A.1: The maximum 25 sets of (ON/OFF) programs can be stored per day/week for Crono and 16 per day/week for Pulse.

Q.2: In the event of power failure, do I lose all my programs?

A.2: No, because battery has a reserve of approx 6 years at operating temperature range. In the absence of power, we can program the device as per our requirement. However, during power failure relay or LED will not operate but the relay status can be observed on the screen.

Q.3: How to use Manual switching (override)? When is it applicable?
A.3: Press MAN key to toggle between ON Auto, Auto OFF, ON or OFF mode. (Refer Mode Description overleaf). It is used if user requires immediate relay ON or OFF.

Q.4: Can I select any day in the week as my weekend/weekly OFF?

A.4: Yes, when in PRG mode, toggle by pressing D key and then pressing D+ or MAN (-) key to go to individual holiday selections.

Q.5: What should I do to remove all programs and reset the RTC?

A.5: Press the Reset key. All programs will get deleted and the clock will be reset to 00:00. Refer the Screen 1 in Ex. 1.

Q.6: How do I change clock format from 12 h to 24 h?

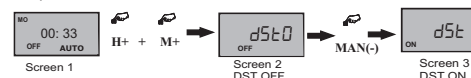
A.6: Press C and MAN key simultaneously to switch from 12 h to 24 h clock format & vice versa.

Q.7: How does ON AUTO and AUTO OFF feature help?

A.7: ON AUTO / AUTO OFF feature bypasses the current program and continues with the next program. ON AUTO mode returns back to AUTO mode at the next programmed ON Time. AUTO OFF mode returns back to AUTO mode at the next programmed OFF Time. In this way, one can override the relay to switch ON/OFF without affecting the further programs.

Q.8: How do I increment or decrement my clock by one hour using DST feature?

A.8: When On Main screen (Screen 1), press H+ & M+ key simultaneously to enter the DST mode. Screen 2 will be displayed which shows the current status of DST. To enable DST, press MAN(-) key once. Screen 3 will be displayed. Similarly, you can disable DST by pressing MAN(-) key again. In DST feature, MAN(-) key is used to enable/disable DST. *dSt0* indicates DST OFF, *dSt1* indicates DST ON.

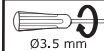

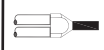
**DIGITAL TIME SWITCH**

Cat. No. :

67DDT0 Crono™**67DDT9** Pulse**Caution :**

1. Always follow instructions stated in this instruction Manual.
2. Before installation, ensure that the specifications agree with the intended application.
3. Installation to be done by skilled electrician.
4. Inductive loads should be equipped with interference suppressors like Varistors, RC Snubbers. Use of contactors is recommended if load exceeds the contact rating.

TERMINAL DETAILS :

	0.54 N.m (5 Lb.in) Terminal screw - M2.5
	1 x 0.2...3.3 mm ² Solid Wire / Single Wire Ferrule
	2 x 0.2...1 mm ² Insulated Twin Wire Ferrule
AWG	1 x 24 to 12

Use Copper Conductors Only, 60/75°C.

NOTE :

1. If DST is applicable in your region, set DST first and then set the clock.
2. In Programming Mode, user can press clock key to save current program/modification & also to exit the program.
3. In battery back-up period, LCD is switched OFF to save power. On any key press, LCD will be switched ON for 25-30 s.
4. Time out to return to the Main screen if no key is pressed: In Programming mode: 25-26 s.
On DST screen: 6 s.
On DST screen, if user presses any key other than CLK or MAN (-): 4 s.
On DST screen if clock key is pressed, immediately main screen will be displayed or if MAN key is pressed, DST status will Change and immediately main screen will be displayed.
5. Product innovation being a continuous process, we reserve the right to alter specifications without prior notice.