MANUAL
PT Series
365 Day Annual Timer
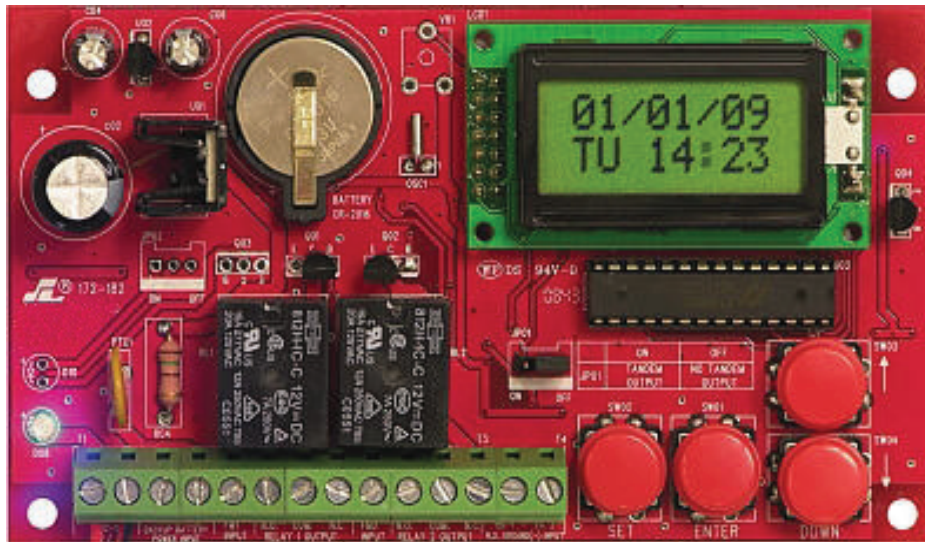
Table of Contents:

Introduction:

The PT Series   - Annual Timer can be programmed to operate two relays 365 days, 24 hours per day. These relays can be used to control devices in many applications such as Security, Access Control, Lighting, and Environmental Control. The 2 form "C" relays can be programmed to operate in shunt or momentary mode for up to 50 unique events. Each event can be programmed on a weekly or daily schedule. Block Coding can be programmed to repeat the operation of the relays on consecutive days. 10 programmable holidays disable the timer for a single day, or the same day every year.

Features:

- Two N.O. or N.C. form "C" relays 10A@120VAC / 28VDC
- Each relay can be programmed for 50 events, total of 100 individual programmable events
- 100 programmable events can be set weekly, daily or hourly 365 days a year
- Password protection can be turned ON or OFF
- One egress input per relay (2 total)
- Block programming allows events to be repeated on consecutive days
- First person in function interrupts the normal operation of the annual timer.
- Event output can be shunt or momentary, momentary output programmable for 1~99 seconds
- 10 programmable holidays
- Can be programmed for password protection
- Tandem mode allows both relays to operate simultaneously
- EEPROM memory for data safe storage protection when power failed
- Build-in clock back-up battery
- Built-in backup battery charger for external back-up battery use
- Compensates for leap years
- Can be set for standard or Daylight Savings Time
- Alpha-numeric and back lit LCD display for easy programming

Specifications:

Input Voltage	12~24 VDC/VAC
Number of relays	2
Relay rating	10A@120VAC/28VDC
Current draw	70mA
Number of prog. events	50
Blue LED ON	Power is ON
Blue LED OFF	Power is OFF
Number of prog. holidays	10
Battery charging current	90mA
Security code	4-digits, numeric, On/Off

Overview:

PT Series Annual Timer
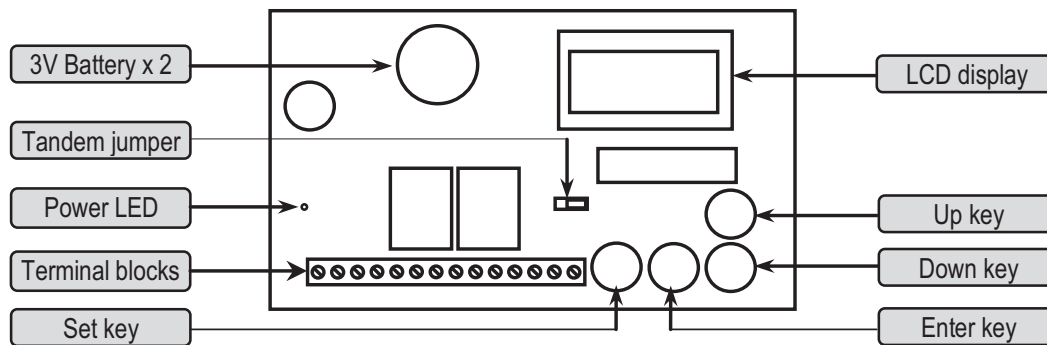
Installation:

1. Mount the timer where the alpha-numeric display can be easily seen, and the keys can be pressed.
2. Connect 12/24 VDC/VAC to the power input terminals marked (+) and (-).
3. Connect the battery backup to the backup battery input terminals marked (+) and (-).
   Note: For the best backup battery charging results, the power input should not be lower than 17VDC or 12VAC.
4. If using the onboard clock backup battery, insert the battery in the battery socket (CR-2016x2).
5. Connect the devices that are being controlled to the outputs of one or two relays.
   NOTE: Connect a 1N4004 diode as close as possible to and in parallel if using a DC powered electromagnetic or electric lock. This absorbs possible electromagnetic interference to prevent operation of the lock from damaging the timer. A 1N4004 is not required for AC-powered locks.

Function Keys

The Timer has 4 function keys that control the programming features.

Table 1: Function Keys

SET	Enter system into the main menu and back spaces in submenu
ENTER	Enter submenu or accept current value above under cursor
UP	Change menu selection or value underline cursor
DOWN	Change menu selection or value underline cursor

Relay Operation:

Each relay can be programmed to operate in 4 different modes: On, Off, Pulse, and Disable.

Table 2: Operation Modes

Disable	Disables the event (factory default)
On	Turns the relay On
Off	Turns the relay Off
Pulse	Activates the relay for 1~99 secs.

Programming Key:

BK	Block Coding	HOL	Holiday
ON	Relay will switch on	MO	Monday
OFF	Relay will switch off	TU	Tuesday
DIS	Relay will be disabled	WE	Wednesday
PL	Relay will pulse for a # of secs.	TH	Thursday
DS	Daylight Savings Time	FR	Friday
ST	Standard Time	SA	Saturday
R1	Relay 1	SU	Sunday
R2	Relay 2		

Programming Notes:

A convenient feature of the PT Series Annual Timer is the ability to program it before installation. The EEPROM memory stores and protects programming instructions.

Programming the timer is easier and faster if you know exactly how you want to use the Annual Timer, as well as functions it will perform.

1. Following the programming instructions in the order will make installation easier.
2. Determine which relays will operate the devices that are being controlled.
3. Determine if Tandem Output (both relays operating at the same time) will be used.
4. Using the separate piece of paper, write down the following things:
    A. The days to be block coded, for example: Monday to Friday or Sunday to Thursday.
    B. All the events you want to program, as well as their duration (up to 50)
    C. Any holidays you wish to program to override the programmed events. (up to 10)
5. Determine whether a password will be used or not, and what the password will be. For password operation see page 9.

Setting the Time and Date:

1. To set the Time and Date press the SET key on the PT timer until "ENTER TO SET TIME" appears on-screen. Press the ENTER key to confirm the programming selection.

| ENTER TO SET TIME | → | 01/01/01 SU 01:01 | → | 05/01/01 SU 01:01 | → | 05/22/01 SU 01:01 |

| 05/22/09 SU 01:01 | → | 05/22/09 FR 01:01 | → | 05/22/09 FR 16:01 | → | 05/22/09 FR 16:20 |
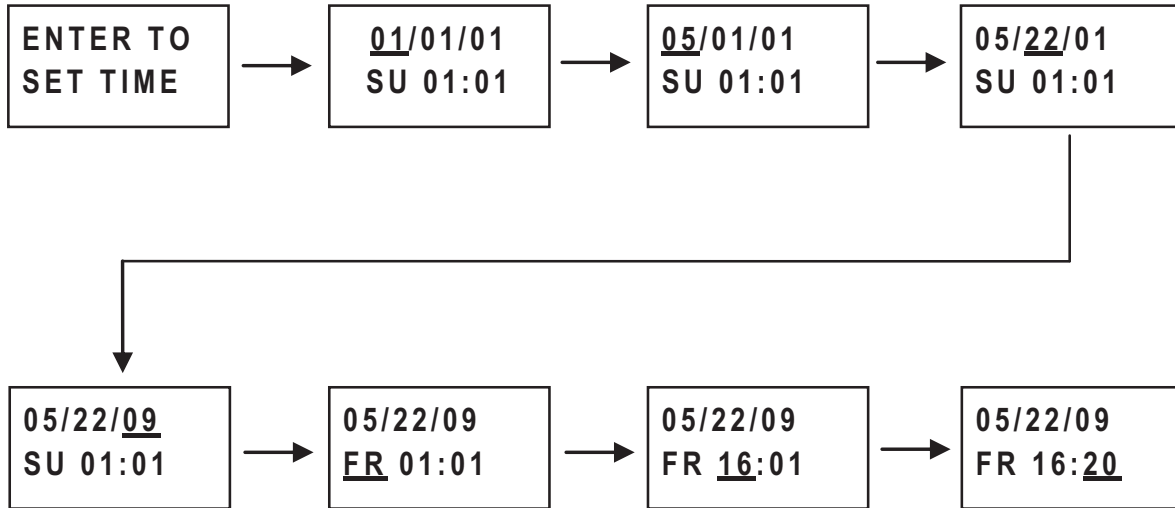
2. Using the function keys, press UP or DOWN to enter in the correct month, date and year.
3. Using the function keys, press UP or DOWN to enter in the correct day of the week, hour and minute.
4. Press the ENTER key to confirm a selection, press the SET key to go back to the previous selection.

Programming Events:

1. To set the Events, press the SET key on the PT timer until "ENTER TO SET EVNT" appears on-screen. Press the ENTER key to confirm the programming selection.

| ENTER TO SET EVNT | → | 01 R1DIS SU 00:00 | → | 01 R1PL3 MO 07:30 |
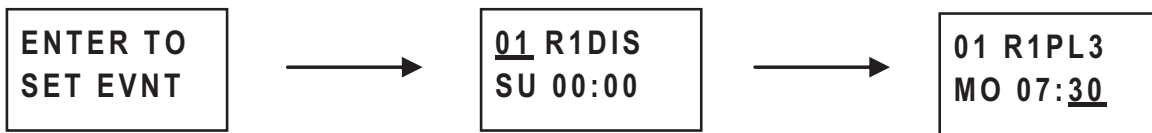
2. Using the function keys, press UP or DOWN to enter the event number, the relay number and how the relay will operate, and the day and time the event is scheduled. Refer to the Programming Key on page 4.
3. Below are some examples of how each event can be programmed:

| 01R1PL45 WE 12:45 | 29 R2ON BK 07:55 | 30 R2OFF BK 17:05 | 50 R1DIS SU 08:00 |

| Event #1, Relay #1 Pulse 45 secs Wednesday only Occurs at 12:45 | Event #29, Relay #2 Relay ON Block programming Occurs at 07:55 | Event #30, Relay #2 Relay OFF Block programming Occurs at 17:05 | Event #50, Relay #1 No Relay Output Sunday only Occurs at 0800 |

Programming Holidays:

1. To set the Holidays when the normal operation of the timer is suspended, press the SET key on the PT timer until "ENTER TO SET HOL" appears on-screen. Press the ENTER key to confirm the programming selection.

| ENTER TO
SET HOL | → | #**01** HOL
01/01/01 | → | #05 HOL
07/04/**XX** |
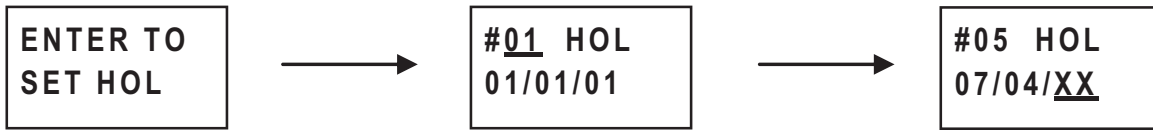
2. Using the function keys, press UP or DOWN to enter the Holiday number and the date the timer will suspend normal operation. Press the ENTER key to confirm the programming selection.
3. To set a Holiday to suspend normal operation every year, set the year to XX.

Clearing Memory:

1. To clear the memory, press the SET key on the PT timer until "ENTER TO CLR MEMO" appears on-screen. Press the ENTER key to confirm the programming selection.

| ENTER TO
CLR MEMO | → | CLEAR
MEMORY ? | → | PRESS UP
TO CLEAR |
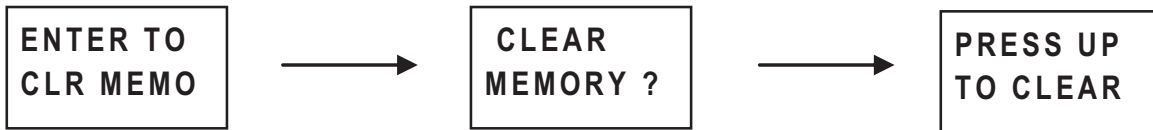
2. Using the function keys, press the ENTER key to confirm you want to clear the memory.
3. Using the function keys, press the UP key to clear the memory.

Setting Block Programming and Time Settings:

1. To set the Block Events, press the SET key on the PT timer until "ENTER TO SET BK" appears on-screen.

| ENTER TO
SET BK | → | BK=**MO**/SU
TIME=DS | → | BK=MO/**FR**
TIME=DS |
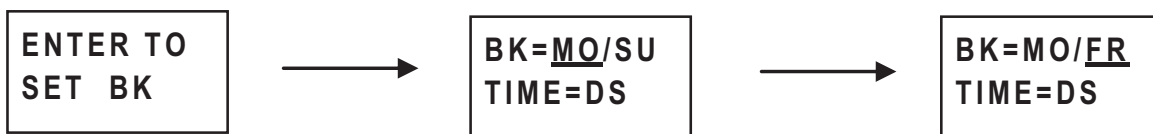
2. Pressing the ENTER key will confirm the programming selection.
3. Using the function keys, press UP or DOWN to enter in the first day of consecutive days you want an event to repeat, press the ENTER key to confirm the programming selection.
4. Using the function keys, press UP or DOWN to enter in the last day of consecutive days you want an event to repeat. Press the ENTER key to confirm the programming selection.
5. Using the function keys, press UP or DOWN to switch between Daylight Savings Time (DS) or Standard Time (ST) format.

| BK=MO/FR
TIME=**DS** | → | BK=MO/FR
TIME=**ST** |
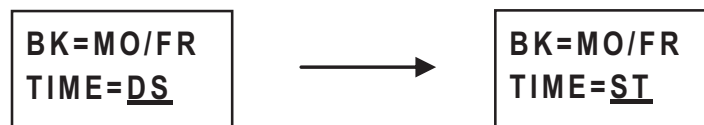
Programming Password:

1. To set the password, press the SET key on the PT Timer until "ENTER TO SET CODE" appears on-screen. Press the ENTER key to confirm the programming selection.

| ENTER TO SET CODE | → | PASSWORD YES/NO | → | PASSWORD CHNG Y/N |

| ENTER PASSWORD | → | OLD CODE 0000 |
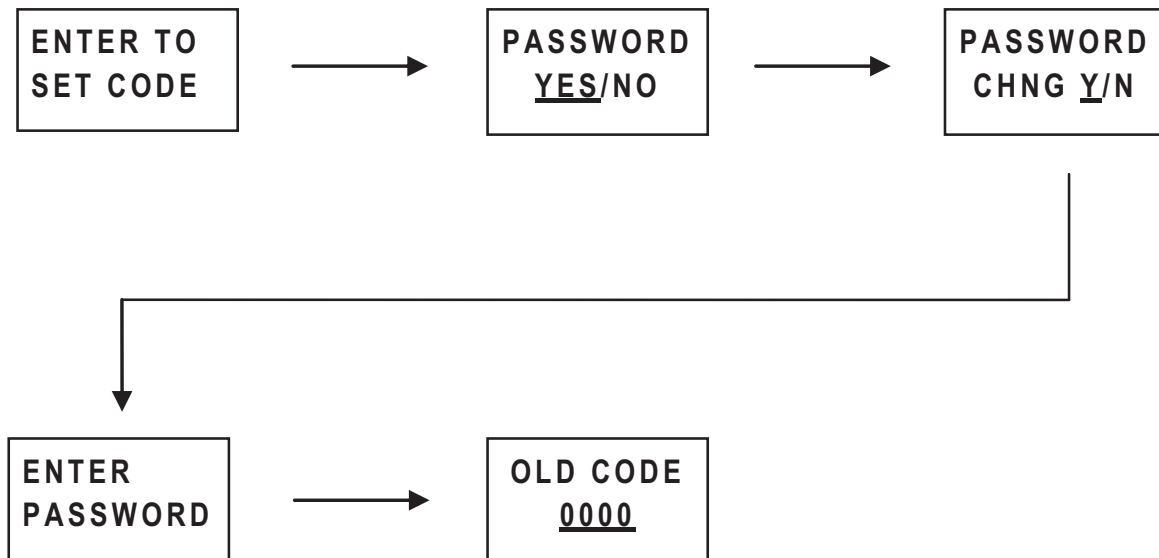
2. Using the function keys, press UP or DOWN to select "YES" or "NO". Press enter to confirm the selection. A confirmation screen will appear select "Y" to set the password or "N" to go back.
3. Using the UP and DOWN keys enter in the password you are changing.
   THE FACTORY DEFAULT PASSWORD IS 0000.

| ENTER PASSWORD | → | NEW CODE 7291 | → | NEW CODE ACCEPT? |

4. If the password is correct, use the UP and DOWN keys to set a new password.
5. After entering the new password, press the ENTER key to accept the new password.

Using Password Protection:

1. If the password protection is set, the password must be entered every time programming mode is entered.

PASSWORD CORRECT	→	PASSWORD 0000	→	PASSWORD CORRECT
			OR	
			→	PASSWORD ERROR

Programming Menu Flowchart:

```
                    ┌─────────────┐
                    │  01/01/01   │◄──────────────┐
                    │  SU 01:01   │               │
                    └─────────────┘               │
                           │                      │
                           ▼                      │
┌──────────────────┐  ┌─────────────┐             │
│ Only if the      │  │   ENTER     │             │
│ password is      │--│  PASSWORD   │             │
│ Enabled, see     │  └─────────────┘             │
│ "Password        │         │                    │
│ Operation" on    │         ▼                    │
│ page 9.          │  ┌─────────────┐             │
└──────────────────┘  │  ENTER TO   │             │
                      │  SET TIME   │             │
                      └─────────────┘             │
                             │                    │
                             ▼                    │
                      ┌─────────────┐             │
                      │  ENTER TO   │             │
                      │  SET EVNT   │             │
                      └─────────────┘             │
                             │                    │
                             ▼                    │
                      ┌─────────────┐             │
                      │  ENTER TO   │             │
                      │  SET HOL    │             │
                      └─────────────┘             │
                             │                    │
                             ▼                    │
                      ┌─────────────┐             │
                      │  ENTER TO   │             │
                      │  CLR MEMO   │             │
                      └─────────────┘             │
                             │                    │
                             ▼                    │
                      ┌─────────────┐             │
                      │  ENTER TO   │             │
                      │  SET  BK    │             │
                      └─────────────┘             │
                             │                    │
                             ▼                    │
                      ┌─────────────┐             │
                      │  ENTER TO   │             │
                      │  SET CODE   │────────────►┘
                      └─────────────┘
```

Wiring Diagram:

12-24 VDC/VAC + ⊘ | ⊘	Connect to input power
Backup Battery Power Input | ⊘ + ⊘	Connect to 12VDC backup battery
First Person Input #1 ⊘	Connect to N.O. ground switch*
Relay Output #1 — N.O. ⊘ / COM ⊘ / N.C. ⊘	Connect to device #1
First Person Input #2 ⊘	Connect to N.O. ground switch*
Relay Output #2 — N.O. ⊘ / COM ⊘ / N.C. ⊘	Connect to device #2
Egress Input #1 ⊘	Connect to N.O. ground switch
Egress Input #2 ⊘	

* The First Person Input function suspends the operation of the PT Series annual timer. If a relay is turned on before the first man feature is activated, the relay will remain on until the first man feature is deactivated.

Once deactivated, the timer will turn on the last programmed function prior to the first man activation.

Using 2 Relays in Tandem:

The PT timer can be configured so that both relays operate at the same time.

By setting the jumper to the "ON" position, the timer will output on both relays whenever an event is programmed for either Relay #1 or Relay #2 (factory default is set to OFF).

Tandem Jumper marked JP01:
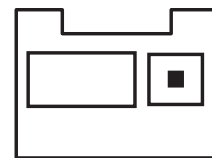
ON   OFF

	ON	OFF
JP01	Tandem output	No tandem output

Annual Timer Programming Worksheet

| Default Factory Password: 0000 |
| New Password: _____ |

Relay #1

Event No.	Time	Date	Relay Status	No. of secs.
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				

Relay #2

Event No.	Time	Date	Relay Status	No. of secs.
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				

Holiday Programming

Holiday No.	Holiday date	Years to operate
01		
02		
03		
04		
05		

Holiday No.	Holiday date	Years to operate
01		
02		
03		
04		
05		

www.belltimers.com 1-888-327-8463 email:info@belltimers.com