



HOW TO OPERATE YOUR 6 TUBE NIXIE CLOCK

There are four buttons that have the following functions:

SET: Exit tube test routine on cold power-up; Show date; Set: time, date; Enter configuration menu;

ADJ: Adjust: time, date, alarm time, configuration parameters;

ALARM: Set alarm time; snooze; cancel snooze/alarm;

DST: Toggle between DST and Standard time (+/- 1 Hour); Enter colour / Led setup menu.

Setting the Time and Date:

From time display mode, press and hold '**SET**' button for 2 seconds until the seconds digits are highlighted. Press the '**ADJ**' button to reset seconds to zero. Briefly Press '**SET**' again and the minutes will be highlighted. Press the '**ADJ**' button to set the minutes. Briefly Press '**SET**' again and the hours will be highlighted. Press the '**ADJ**' button to set the hours. Proceed in this fashion to set the calendar: Year, Month and Day. Finally, briefly Press '**SET**' again to revert to normal clock operation.

Showing Date:

From time display mode, briefly press '**SET**' button. Date will be shown for 5 seconds, then revert to time display.

Manual RFT Call:

In DCF / MSF modes, pressing '**ADJ**' briefly during time display will initiate a manual time seek for maximum 6 minutes, or until a valid time frame is received.

Setting Alarm:

Press the '**ALARM**' Button. The seconds digits show the on / off status of the alarm: 00 or 01 (off or on). Set on / off status, then minutes followed by hours by using the '**ALARM**' and '**ADJ**' buttons. When set, the alarm LED will also light (if fitted on the clock)

Cancelling Alarm:

Press '**ALARM**' briefly to cancel alarm and enter snooze mode, or a longer press until the clock bleeps, to cancel snooze. Alarm remains set for the next day.

Rapid Daylight Savings Time Adjustment:

Press '**DST**' briefly to toggle between DST and standard time. The indicator (where fitted) shows whether DST mode is active or not. If the time has been synchronised from DCF or MSF sources, this light will be set or cleared automatically. It can still be manually overridden, however the system will re-set the DST status again at the next valid time sync.

Note, the GPS time date does not contain any DST information, so the DST status will need to be set manually in GPS Sync mode, as well as manual time-set mode.

Calibration of Timekeeping accuracy:

If you are not using a GPS or WiFi signal to set the time, the clock uses an inbuilt quartz crystal to regulate time. However over time you may observe the clock runs faster or slower than an accurate time standard. You can finely adjust the timekeeping by setting configuration parameters 20 and 21. We recommend to precisely set the clock against a known accurate clock, and then record the time drift in seconds after 5 full days (120 hours). Program this value into parameter 20. Set Parameter 21 to 0 to slow down the clock, or 1 to speed it up.

Entering configuration menu:

The principal settings of the clock are stored in flash memory – your preferred configuration is stored even after powering off the clock for extended periods. To access the configuration mode press and hold the **'SET'** button. After 2 seconds the seconds will become highlighted. Continue holding the button a further 2 seconds until the clock displays in this format: 00-XX-99. The '99' in the seconds digits tells you that you are in the configuration menu. In configuration mode the hours digits display the current parameter being adjusted, and the minutes digits display the current value stored against the parameter. For each parameter, and referring to the table below, scroll through the range of possible values by pressing the **'ADJ'** button. When the desired value has been reached, move on to the next parameter by pressing the **'SET'** button. When the last parameter has been set, pressing **'SET'** one more time will revert the clock back to time display mode. The first parameter (0) cannot be changed as it is the software revision number. It will show for several seconds and then move to parameter 1. In all correspondence on support issues, please quote the board type, revision date and software version.

| Parameter | Description | Values |
|-----------|---|--|
| 0 | Software revision | 30 = version 3.0 31 = version 3.1 etc |
| 1 | 12 / 24 Hr mode | 0 - 12 Hr (default) 1 - 24 Hr |
| 2 | Date format | 0 = MM.DD.YY (default) 1 = DD.MM.YY 2 = YY.MM.DD |
| 3 | Leading zero blanking eg. 01:54:32 | 0 - leading zero blanked (default) 1 - leading zero displayed |
| 4 | Night mode start hour | 0 - 23 |
| 5 | Night mode end hour | 0 - 23 |
| 6 | Night mode | 0 - Tubes off 1 - Dimmed display (default) |
| 7 | Master Blank start hour : Note 1 | 0 - 23 |
| 8 | Master Blank end hour : Note 1 | 0 - 23 |
| 9 | Master Blank days : Note 1 | 0 - Off (Default) 1 - Weekdays 2 - Weekends 3 - All Days |
| 10 | Colon neons mode | 0 - Both off 1 - AM/PM Indication, left / right 2 - AM/PM Indication, left / right flashing 3 - AM/PM Indication, top / bottom 4 - AM/PM Indication, top / bottom flashing 5 - All Slow Flashing 6 - Slow flashing left / right 7 - All flashing 8 - Both illuminated 9 - Railroad fast 10 - Railroad slow |
| 11 | Colon neons during night dimmed mode : Note 2 | As Per Parameter 10 |

| Parameter | Description | Values |
|-----------|---|--|
| 12 | Radio time signal source Note 3 | 0 - 3 reserved 4 - GPS or WiFi module 5 - Transponder |
| 13 | GPS Baud rate | 0 - 4.8 Kbps 1 - 9.6 Kbps (Default) |
| 14 | Radio time offset hours | 0 - 13 (default 0): Note 4 |
| 15 | Radio time offset mins | 0 - 45 (default 0): Note 4 |
| 16 | Radio time offset polarity | 0 - minus time (default) 1 - plus time |
| 17 | Reserved | |
| 18 | Snooze period | 0 - 6 minutes (default) 1 - 9 minutes 2 - 12 minutes 3 - 15 minutes |
| 19 | Reserved - Leave as 0 | 0 |
| 20 | Time calibration factor | 0 - 99 (each unit adjusts by 0.2s per day) |
| 21 | Time calibration polarity 1 - Make clock faster | 0 - Make clock slower |
| 22 | Slots mode: Note 5 | 0 - Slots disabled 1 - Slots every minute 2 - Slots every 10 minutes (default) 3 - Slots every hour 4 - Slots at midnight |
| 23 | Reserved | |
| 24 | Reserved | |
| 25 | Reserved | |
| 26 | Display Mode | 0 - Standard change of digits 1 - Fading digits 2 - Fading digits with scrollbar effect (default) |
| 27 | Auto date display each minute | 0 - Off 1 - Static display of date 2 - Scrolling display of date (default) : Note 7 |
| 28 | Night mode override period (minutes) | 0 - 50 (default 0 gives 15 seconds override) : Note 8 |
| 29 | Thermometer Settings - If Transponder used in Option 12 | 0 - Don't display temperature 1 - Fahrenheit display every minute (default) 2 - Celsius display, every minute 3 - Celsius display, every hour |
| 30 | Reserved | |
| 31 | Restore default settings | 0 - Keep user settings / 1 Restore default : Note 9 |

Notes:

1. Master Blanking Mode has priority over Night Mode. Use to disable the clock on weekends (i.e. clock is in office), or during office hours (i.e. clock is at home). Complete HV shutdown to save power and optimise tube life.
2. Night time neons mode is active when night mode is set to dim. During night time blanking the tubes AND neons are disabled.
3. Clock is fully functional without GPS / Wifi / Transponder synchronisation. Set time manually.
4. Enter your time zone offset from the synchronisation source. Note that GPS transmits UTC so you have to set DST Manually
5. Visual effect / cathode poisoning prevention - all digits on all tubes are cycled for 10 seconds. This setting overrides night blanking or dimming for the duration of the effect (10 seconds).
7. Date will be displayed each minute between 50 and 55 seconds past the minute.

8. Press 'Set' Briefly during night mode to show time for prescribed period.
9. Set this parameter to '1' to restore original default settings. Internal operations will then load all the original settings and restore the value to '0'

Configuring the LED backlights:

The clock features a separate and dedicated setup menu for the LED tube backlights, accessed from the 'DST' Button. All settings are stored to non-volatile memory and are remembered in the event of power loss. The feature allows you to set your favourite colour for any hour of the day, or to cycle through all colours.

Entering the LED menu:

Press and hold the 'DST' button, until the display shows "00:_ 0:00" the 3rd tube will not be lit. To get any colour, we use a Red, Green and Blue LED. The display indicates the hour on the first 2 digits, then a gap and the last 3 digits indicate the amount of **Red / Green / Blue** respectively.

- For each Hour (0-23), you can set a custom colour
- Each custom colour can have your choice of Red, Green and Blue values from 0 (off) to 8 (maximum brightness)
- The other buttons adjust each colour ('SET' = Red / 'ADJ' = Green / 'Alarm' = Blue)
- Use low values (1,2 and 3) for low brightness, eg. For night time
- Set the value to '0' for that colour to be off.
- Once you are happy with the colour for that hour, press 'DST' to move onto the next hour
- While you are adjusting colour, the colour on the clock changes in real time to show.

Setting auto colour cycling:

Setting colour Red ('SET' Button) to a value of 9 has a special meaning: This will enable auto colour cycling for the specified hour. The speed of the cycling will then be governed by the Green ('ADJ') Value: 0 = very slow change, through to 9 = very fast change.

Note: the colours do not cycle live during auto colour cycling setup. The cycling only starts during normal time and date display.

Maintenance:

The Nixie tubes are good for approximately 20 years, some versions of clock will have tubes that can be unplugged and swapped, other clocks will have tubes that will need to be returned to the workshop to be replaced. There is no real maintenance that is required other than periodic dusting or polishing of the case.

Warranty:

All clocks and tubes come with a years warranty from purchase date as standard. Tube failures are rare, even though the tubes are some 40 years old before they are used by us to make into a clock.



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