

# KRONTEK KT3000 Master Clock

Operators  
Manual



## **General**

The Krontek KT3000 Master Clock is provided in two models, both products have a temperature compensated crystal oscillator (TCXO) as their time base. The model KT3000GPS includes a GPS module that provides millisecond accuracy and automatic time setting. Note that during initial installation the GPS module may require up to ten minutes to download an almanac that includes a UTC time offset. During this period the time may be out by up to 15 seconds. This is a once only event that will not recur as the almanac is then saved in memory.

The KT3000 will also operate as a clock code format converter. That is - it can receive and synchronise itself to one type of time correction format and transmit in another.

## **Keys and Indicators**

The KT3000 has six front panel keys that enable navigation of the menu system and selection of options. The Escape (ESC) key will exit the menu and return to the time/date display at any time. The Enter key (ENT) will accept the data displayed in the current menu field. The left and right arrow keys enable the display of menu and sub menu fields while the up and down keys allow the modification of data in the currently selected field. If the Passcode is operational you will be prompted to enter a pin number.

Four led indicators are provided, from left to right they are: Output, Ext Sync, GPS and Power. The output indicator provides “real time” feedback of the state of the output terminals (“real time” means the led is physically connected to the output). Green is displayed when the ‘A’ terminal is positive and the ‘B’ terminal is negative. Red is displayed when this is reversed. No indication means there is no output voltage. The ext sync indicator is used to indicate that an external time source is valid. More detail is provided in the “Time source” menu section. The GPS indicator is only applicable to the model KT3000GPS and pulses once a second when a valid time message has being received. The power indicator is active when 24VDC is applied.

## **Menu Settings**

Pressing the left or right arrow keys will step through the main menu from either the bottom or top. The right arrow key starts at the top. If the passcode is active you will be prompted to enter your 4 digit code before proceeding.

Once a menu item is displayed in square brackets [...] pressing the “ENT” key will select that menu item.

The following section describes the operation of each menu item.

### **[Set Time]**

\*This menu is not available if GPS is selected as the time source.

Enables the time setting of the clock. The left and right keys select the hour, minute or seconds field. The up and down keys change the value of the fields.

### **[Set Date]**

\*This menu is not available if GPS is selected as the time source.

Enables the date setting of the clock. The left and right keys select the day, month or year field. The up and down keys change the value of the fields.

### **[Set DLS]**

Set daylight savings off or on or edit daylight saving dates. The top line of the display will indicate if daylight savings is currently active (on) or disabled (off). The lower line displays [OFF ON EDIT], use the left or right keys to select.

[OFF] disables daylight saving.

[ON] activates daylight saving.

[EDIT] allows you to set your own times for the start and end of daylight saving. Use the left and right keys to select the fields and the up and down keys to select the day position, day of week and month, then press ENT.

The daylight saving transition starts at 2.00am (standard time) and ends at 3.00am (daylight savings time).

## **[Time Offset]**

IMPORTANT - This setting is only applicable when the clock derives the time from the GPS system.

GPS time is referenced to UTC (universal time coordinated) or GMT as it was originally called. The time offset for the local time zone must be entered or the clock will display UTC time. For example, the Australian east coast time zone is +10 hours.

Use the up or down keys to change the setting between +23.5 and -23.5 hours.

## **[Clock Type]**

This setting select the type of slave clock the master is going to correct.

[NONE]	The output is disconnected
[SLINE]	Krontek Syncroline
[SR2]	Minute Impulse – 59th minute correction
[MRP]	Minute Impulse – reverse polarity
[MPULSE]	Minute Impulse – single polarity
[SYNC1]	Sync wired – correction every hour
[SYNC12]	Sync wired – correction at 5:57 and 6:57
[BCD50]	Standard BCD serial data – 50hz
[BCD60]	Standard BCD serial data – 60hz
[EBCD]	Extended BCD serial data
[ALPHA]	As used by Adaptive Micro Systems
[ZACH]	Computime format as used by Telechron Clocks

(Note that ALPHA & ZACH require a resistor/zener clamped 5v output)

The minute impulse selections (SR2, MRP and MPULSE) have a further option that allows for changing the “on” pulse settings. Both the length of the pulse and the delay between pulses can be adjusted. This option is provided for slow impulse movements such as tower clocks.

## **[Time Source]**

This setting allows the selection of the time source. For GPS versions of the clock selecting a source other than GPS will disconnect the GPS as a reference. It will however, continue to gather GPS satellite data.

Selecting [TCXO] references the clock to the internal time source, which is accurate to +/- 2 minutes a year.

Selecting [SLINE] requires an external connection to a Krontek Syncroline time source.

### **[Correct Clocks]**

This allows the adjustment of the connected slave clocks and depends on the type of slave clock as follows:

Syncroline clocks: power is disconnected for approximately 5 seconds to allow the slave clocks to reboot.

SR2, minute reverse polarity and minute pulse clocks: select the number of pulses required to advance the clocks in minutes.

Sync wired clocks: select a 1 hour or 12 hour correction. A one hour correction will advance the clocks to the next 58<sup>th</sup> minute. A 12 hour correction will advance the clocks to 5:58.

### **[Clock Load]**

This displays an approximate value of the power used by the slave clocks. It is indicative only but if it exceeds 85% consideration should be given to using a Krontek SL410 power booster.

### **[Set Passcode]**

When enabled, this option requires that a 4 digit passcode be entered before the arrow keys are enabled. A passcode of 0000 (four zeros) will disable this facility. The passcode will have to be reentered if there is no key activity for more than 2 minutes.

### **[Version]**

This displays the software revision number and the date.

### **[GPS Data]** (GPS version only)

This displays satellite information from the GPS module. The number of satellites in view and the number of satellites used for reference. At least 3 satellites are required to get a valid time reference.