# 1200T Series
# Analog Clock Displays

# Instruction Manual



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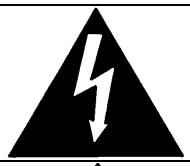
## IMPORTANT SAFETY INSTRUCTIONS

| | |
|---|---|
|  | The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “Dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. |
|  | The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (Servicing) instructions in the literature accompanying the product. |

- Read these instructions
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

| |
|---|
| **WARNING**<br>TO REDUCE THE RISK OF FIRE OR ELECTRIC – SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE. |
| **WARNING**<br>DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS ARE PLACED ON THE EQUIPMENT. |
| **WARNING**<br>TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE. |
| **WARNING**<br>THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE. |

# INFORMATION TO USERS IN EUROPE

## NOTE

This equipment with the CE marking complies with bother the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60065 Product Safety
- EN55103-1 Electromagnetic Interference Class A (Emission)
- EN55103-2 Electromagnetic Susceptibility (Immunity)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

# INFORMATION TO USERS IN THE U.S.A.

## NOTE

### FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## WARNING

Changes or Modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

# REVISION HISTORY

| REVISION | DESCRIPTION | DATE |
|---|---|---|
| 1.0 | Preliminary Release | Aug 2012 |
| 1.1 | Updated specifications | Feb 2013 |
| 1.2 | Updated as 1200T manual – NTP is now an option | Mar 2013 |

# TABLE OF CONTENTS

## Figures



## Tables

# 1. OVERVIEW

The 1200T Series Analog Clock Displays take master and slave clock technology to new levels of convenience and excellence. The clocks are microprocessor controlled and employ separate direct drive motors for each hand. This means that, as well as being able to set the time almost instantaneously, the new displays are also silent in operation. The hands of the clocks can be programmed to move in sweep mode or in steps.

Each clock can be programmed for automatic Daylight Saving Time adjustment, as well as for any time zone offset using a laptop computer. It is then only necessary to supply the clock system with Universal Coordinated Time (UTC) from the master clock. Daylight Saving Time changes will be automatic, as will adjustments for different time zones.

Each clock can be used as a master or slave clock. When used as a slave clock, it reads SMPTE linear timecode (LTC) from a master clock. When used as a master, it generates LTC for distribution to other slave clocks. In fact, any clock in the chain can generate timecode as soon as it loses timecode input from the master. The system is therefore extremely robust and reliable.

When the +T option is added, the 1200T series clocks can lock to time disctributed as Network Time Prototcol (NTP) over Ethernet.

The problems of power distribution have also been considerably simplified. With other clock products, it is necessary to install power outlets wherever clocks are to be located. The 1200T system slave clocks may be powered from the Ethernet cable that distributes both power and NTP time. The clocks may also be powered locally using the AC to 12VDC adapter provided.

Internal crystal oscillators ensure that the clocks will continue to operate in the absence of input timecode. Internal battery backup ensures that each clock will continue to keep time in the absence of timecode and power. When power resumes, the hands will immediately reset to the correct time.

The 1200T series clock displays are offered in two sizes. Backlighting is available for all models.

| Model | Description |
|---|---|
| 1212T | 12” diameter clock display |
| 1212TL | 12” diameter clock display with back lighting |
| 1216T | 16” diameter clock display |
| 1216TL | 16” diameter clock display with back lighting |

Throughout this manual the model 1200T will be used to describe the clocks when describing common features. When necessary, the specific model numbers will be used to distinguish features only available on some models.

**Features:**

- Automatic detection of 30 Fps or 25 Fps SMPTE LTC timecode input
- May act as an NTP client when +T option is ordered.
- Three motors for quiet operation and rapid hand setting - sets to time in 10 seconds
- Automatic Daylight Saving Time adjustment
- Addressable slave clocks with programmable time offsets of 0 to 23.5 hours in 0.5 hour increments - set via DIP switches, RS-232 control or VistaLINK®
- Accepts date information from LTC User Bits using SMPTE ST 309 or Leitch™ protocol

- Master or Slave operation with battery backed up clock
- Single cable distribution for both power and NTP using IEEE 802.3at Power over Ethernet
- Optional back lighting of clock face
- Two sizes 12” or 16”
- Time may be set manually via pushbutton switches, or through the RS-232 serial port, or via Vista Link
- Completely self-setting with NTP (Optional), SMPTE timecode input or battery back-up
- Built-in quartz time base oscillator with battery back-up
- May be configured as a timecode generator to drive other clocks
- Lighting brightness is adjustable
- Powered by 12VDC (with 50/60 Hz, 100⇔240 VAC adapter), or IEEE 802.3at Power over Ethernet
- 10/100Mbit Ethernet port for NTP and SNMP control/monitoring with VistaLINK® Pro

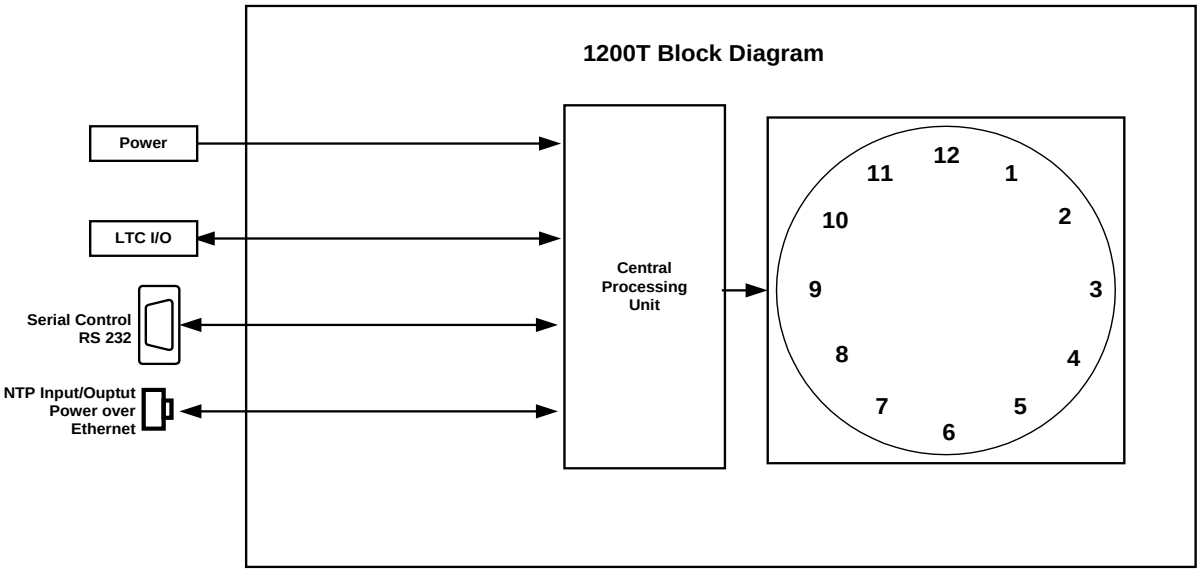



**Figure 1-1: Clock Block Diagram**

## 1.1. Compatibility with Original 1200 Series Analog Clocks

This manual is applicable only to the 1200T Series hardware. This 1200T Series hardware can be distinquished from the original 1200 Series hardware by inspecting the rear panel of the unit. 1200T series units are fitted with an RJ45 connector which is used to provide Power over Ethernet, SNMP and NTP. The original 1200 series units do not have this RJ45 connector. This is the easiest way to tell the difference between the two types of hardware. Please contact the Evertz service department to get manual for the 1200 Series clocks.

Although this cursory examination reveals some obvious differences in the units, there are other differences, which may not be as obvious. Series 2 hardware supports most but not all of the features of the Series 1 hardware.


**Features supported in the 1200 series hardware, that are not supported in the 1200T Series hardware are highlighted in special notes such as this throughout this manual.**

## 2. INSTALLATION

The 1200 series clocks have keyhole slots for mounting. They have a 4 pin connector for timecode input and output. They have a power jack for 12 VDC input and there is a 12 VDC adapter supplied which is installed in a slot in the rear panel. This allows the clock to run on 12 VDC, 100⇔240 VAC or to receive power from a Power over Ethernet power sourcing device. There is a DB-9 connector for RS-232 communications from a PC.

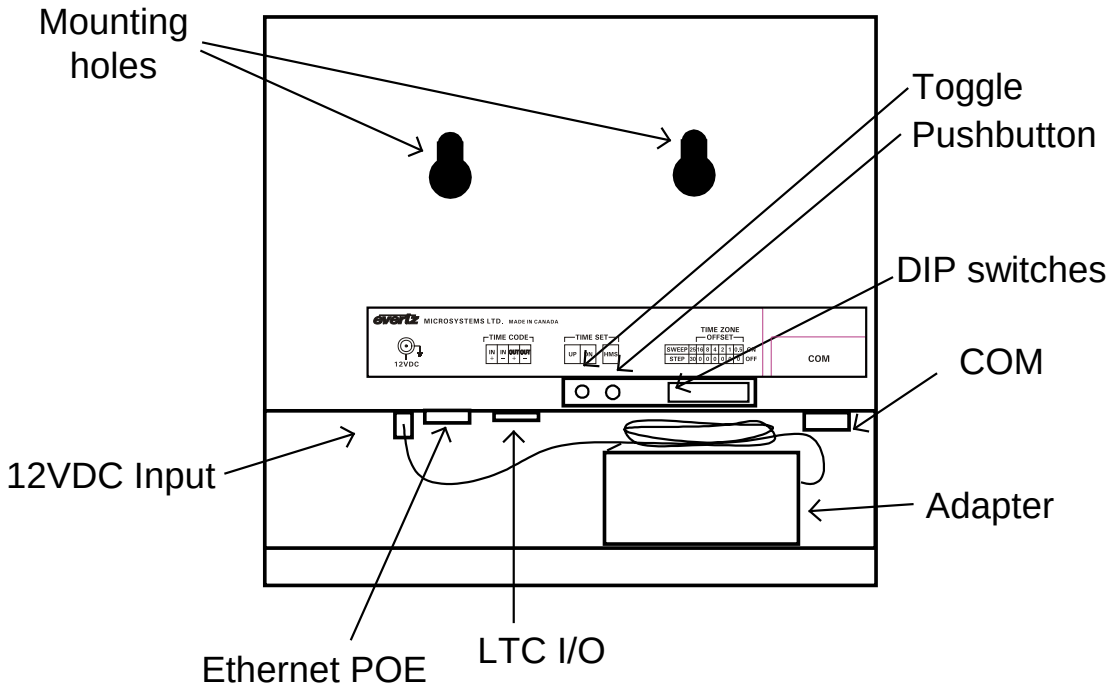



**Figure 2-1: Rear Panel Overview**

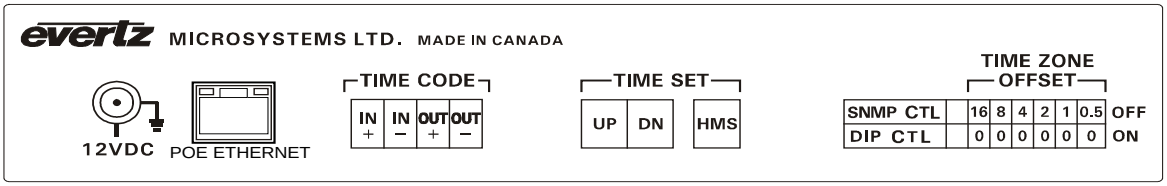



**Figure 2-2: Rear Panel Connections and Controls**

**If you wish to control the 1200T series clock using the VistaLINK® software, it is important to set up the IP address before the clock is installed. This is done using the com port and a computer. See section 7.**

## 2.1. TIMECODE INPUTS AND OUTPUTS

There is a terminal block at the rear of the clock that can contain the time code inputs and outputs.

**IN+, IN-** These two input pins are for connecting SMPTE/EBU linear timecode (LTC) to the clock.

**OUT+, OUT-** These two output pins are for connecting LTC to other clocks.

The LTC output can be configured to operate as a loop through from the input LTC, for connection to downstream clocks, or an output of the local clock time.

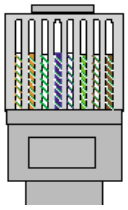

**The 1200T Series clocks are not compatible with the power over LTC feature of the 1200 Series analog clocks. As such they can not be powered from an upstream 1200 Series clock, neither can they power downstream 1200 Series clocks. The LTC inputs of the 1200T Series clocks will not be damaged if they are connected to powered LTC outputs from a 1200 Series clock.**

## 2.2. ETHERNET CONNECTIONS

The 1200T clocks are designed to be used with either 10Base-T (10 Mbps) or 100Base-TX (100 Mbps) also known as Fast Ethernet, twisted pair Ethernet cabling systems. When connecting for 10Base-T systems, category 3, 4, or 5 UTP cable as well as EIA/TIA – 568 100 ☐ STP cab connecting for 100Base-TX systems, category 5 UTP cable is required. The cable must be “straight through” with a RJ-45 connector.

The straight-through RJ-45 cable can be purchased or can be constructed using the pinout information in Figure 2-3. A colour code wiring table is provided in Figure 2-3 for the current RJ 45 standards (AT&T 258A or EIA/TIA 258B colour coding shown). Also refer to the notes following the table for additional wiring guide information.

Pin 1



| Pin # | Signal | EIA/TIA 568A | AT&T 258A or EIA/TIA 568B | 10BaseT or 100BaseT |
|---|---|---|---|---|
| 1 | Transmit + | White/Green | White/Orange | X |
| 2 | Transmit – | Green/White or White | Orange/White or Orange | X |
| 3 | Receive + | White/Orange | White/Green | X |
| 4 | N/A | Blue/White or Blue | Blue/White or Blue | Not used (required) |
| 5 | N/A | White/Blue | White/Blue | Not used (required) |
| 6 | Receive – | Orange/White or Orange | Green/White or Green | X |
| 7 | N/A | White/Brown | White/Brown | Not used (required) |
| 8 | N/A | Brown/White or Brown | Brown/White or Brown | Not used (required) |

**Figure 2-3. Standard RJ45 Wiring Colour Codes**

Note the following cabling information for this wiring guide:

- Only two pairs of wires are used in the 8-pin RJ 45 connector to carry Ethernet signals.
- Even though pins 4, 5, 7 and 8 are not used, it is mandatory that they be present in the cable.
- 10BaseT and 100BaseT use the same pins, a crossover cable made for one will also work with the other.
- Pairs may be solid colours and not have a stripe.
- Category 5 cable must use Category 5 rated connectors.

The maximum cable run between the 1200 and the supporting hub is 300 ft (90 m). The maximum combined cable run between any two end points (i.e. 1200 and PC/laptop via network hub) is 675 feet (205 m).

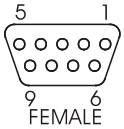
Devices on the Ethernet network continually monitor the receive data path for activity as a means of checking that the link is working correctly. When the network is idle, the devices also send a link test signal to one another to verify link integrity. The 1200T rear panel is fitted with two LEDs to monitor the Ethernet connection.

**10/100** This Amber LED is ON when a 100Base-TX link is last detected. The LED is OFF when a 10Base-T link is last detected (the LINK LED is ON). Upon power-up the LED is OFF as the last detected rate is not known and therefore defaults to the 10Base-T state until rate detection is completed.

**LN/ACT** This dual purpose Green LED indicates that the 1200 has established a valid link to its hub, and whether the 1200T is sending or receiving data. This LED will be ON when the 1200T has established a good link to its supporting hub. This gives you a good indication that the segment is wired correctly. The LED will BLINK when the 1200T is sending or receiving data. The LED will be OFF if there is no valid connection.

## 2.3. RS-232 COMMUNICATIONS PORT

The **COM** connector is a female 9 pin D connector used for connecting a computer to control the 1200T series clocks. This port is wired at the factory as an RS232 DCE port as shown in Table 2-1 and can be connected directly to most PC COM ports using a 'straight through' cable. The RS-232 communication is 57600 baud, 8 bits, no parity, 2 stop bits, no flow control. See section 7 for information on controlling the clock using the serial port.




| Pin # | Name | Description |
|---|---|---|
| 1 | | |
| 2 | TxD | RS-232 Transmit Output |
| 3 | RxD | RS-232 Receive Input |
| 4 | | |
| 5 | Sig Gnd | RS-232 Signal Ground |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |

**Table 2-1: COM Port Pinout**

## 2.4. POWER


The 1200T series clocks come with an auto-ranging DC voltage adapter that automatically senses the input voltage. This power adapter should be used when the clock is operating in Master mode. Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry module on the DC voltage adapter. The power cord should be minimum 18 AWG wire size; type SST marked VW-1, maximum 2.5 m in length. The DC cable of the voltage adapter should be connected to the DC power jack on the rear panel.

Alternativly, they can be powered from the Ethernet port if the Ethernet supports “Power Over Ethernet”, type 1. If it is powered from Ethernet, then no power needs to be applied to the power adapter.


**The 1200T Series clocks are not compatible with the power over LTC feature of the 1200 Series analog clocks. As such they can not be powered from an upstream 1200 Series clock, neither can they power downstream 1200 Series clocks. The LTC inputs of the 1200T Series clocks will not be damaged if they are connected to powered LTC outputs from a 1200 Series clock.**

## 2.5. MOUNTING

The 1200T series clocks are designed to be surface mounted on a wall using two screws in the keyhole slots provided. The rear panel drawing shown in Figure 2-4 shows the location of the keyhole slots for the 1212T and 1216T clocks.

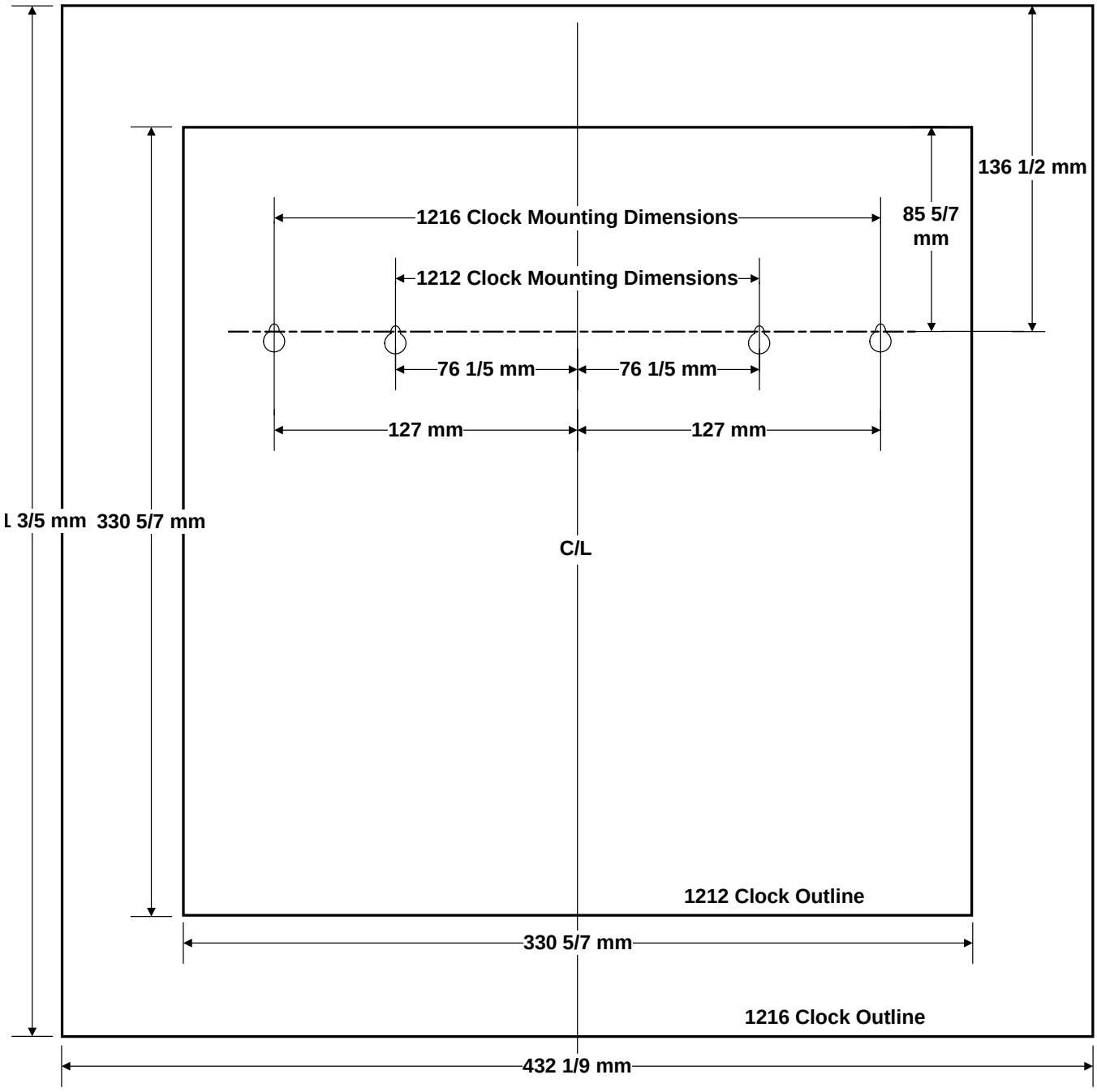



**Figure 2-4: Rear Panel Mounting Template**

# 3. SPECIFICATIONS

## 3.1. LTC INPUT

| | |
|---|---|
| **Standard:** | SMPTE ST 12-1 linear time code - 25 or 29.97 drop-frame Fps nominal. |
| **Connector:** | Phoenix 4 pin terminal connector. |
| **Signal Level:** | 1 Vp-p nominal. |
| **Input impedance:** | > 30K Ohm |

## 3.2. LTC OUTPUT

| | |
|---|---|
| **Standard:** | SMPTE ST 12-1 linear time code - 25 or 29.97 drop-frame Fps nominal. |
| **Connector:** | Phoenix 4 pin terminal connector. |
| **Signal Level:** | 2 Vp-p nominal |
| **Mode:** | configurable as loop thru from input or output of local clock time. |

## 3.3. TIME KEEPING

| | |
|---|---|
| **Accuracy:** | < 2 seconds per day with power on, no timecode present.<br>< 10 seconds / day with power removed. |
| **Time Zone Offset:** | 0 to 23½ hours in ½ hour increments<br>Set with DIP switches or serial port command or VistaLINK®.<br>Automatic daylight saving time can be enabled. |

## 3.4. SERIAL PORT:

| | |
|---|---|
| **Connector:** | Female DB-9 |
| **Level:** | RS232 |
| **Baud Rate:** | 57.6 Kbaud |
| **Format:** | 8 data bits, no parity, 2 stop bits |

## 3.5. ETHERNET:

| | |
|---|---|
| **Network Type:** | Fast Ethernet 100 Base-TX IEEE 802.3u standard for 100 Mbps baseband CSMA/CD local area network.<br>Ethernet 10 Base-T IEEE 802.3 standard for 10 Mbps baseband CSMA/CD local area network.<br>Supports type 1 Power Over Ethernet. |
| **Connector:** | RJ-45 |
| **NTP Standard:** | NTP v4 compliant, client mode support when +T option is installed |

## 3.6. BACKUP BATTERY

| | |
|---|---|
| **Type:** | CR-2032 3 volt lithium cell. |
| **Life expectancy:** | > 5 years |

## 3.7. ELECTRICAL

**Voltage:**

| | |
|---|---|
| **AC/DC** | 12 VDC nominal.<br>Auto ranging 100⇔240 VAC 50/60 Hz to 12VDC adapter provided. |
| **Power over Ethernet** | IEEE 802.3at Type 1 |
| **Power consumption:** | 12 Watts |

## 3.8. PHYSICAL

**Outside Dimensions:**

| | |
|---|---|
| **1212, 1212L:** | 13" W x 13" H x 2.5" D<br>(330 mm W x 330 mm H x 64 mm D) |
| **1216, 1216L:** | 17" W x 17" H x 2.5" D<br>(432 mm W x 432 mm H x 64 mm D) |

**Clock Face:**

| | |
|---|---|
| **1212, 1212L:** | 12” diameter |
| **1216, 1216L:** | 16” diameter |

**Weight:**

| | |
|---|---|
| **1212, 1212L:** | 6.5 lb (2.9 Kg) |
| **1216, 1216L:** | 10.5 lb (4.75 Kg) |

# 4. STATUS LED

The 1200T series clocks are fitted with a red status LED located at the bottom of the front face of the clock, just below the number "**6**". The LED has three modes:

**OFF:** The clock is running normally and has input LTC.

**ON:** The clock is running normally but has no LTC input.

**FLASHING:** The clock is in manual time or brightness setting mode.

# 5. REAR PANEL CONTROLS

The 1200T series clocks are equipped with a three position, return to center toggle switch that is used in conjunction with a momentary pushbutton to set the clock time (see section 5.2). An 8 position DIP switch allows the user to select various functions. DIP switch 1 is located at the right of the DIP switch, and the On position is Up. Table 5-1 gives an overview of the DIP switch functions. Section 5.1 describes the DIP switch functions in more detail.

| DIP Switch | Function |
|---|---|
| 1 | Sets Time zone Offset |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | Not used |
| 8 | When Down enables Time zone from DIP switches. When up, Time zone set via serial port or VistaLINK® |

**Table 5-1: DIP Switch Functions Overview**

## 5.1. SETTING THE TIME ZONE OFFSET

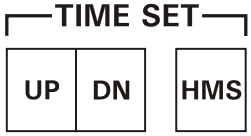
When DIP switch 8 is in the down position, DIP switches 1 to 6 are used to set the time zone offset for the clock. The Time zone offsets can be set from 0 to 23.5 hours in one half our intervals and will be added to the LTC time being received. Table 5-2 shows the settings for the various time zones. When DIP switch 8 is in the up position, the time zone must be set by software control (see section 7.2.2.10 for more information).

| 6 | 5 | 4 | 3 | 2 | 1 | Time Offset | Time Zone Code (Hex) |
|---|---|---|---|---|---|---|---|
| Off | Off | Off | Off | Off | Off | + 0 hours | 0x00 |
| Off | Off | Off | Off | Off | On | + ½ hours | 0x01 |
| Off | Off | Off | Off | On | Off | + 1 hours | 0x02 |
| Off | Off | Off | Off | On | On | + 1½ hours | 0x03 |
| Off | Off | Off | On | Off | Off | + 2 hours | 0x04 |
| Off | Off | Off | On | Off | On | + 2½ hours | 0x05 |
| Off | Off | Off | On | On | Off | + 3 hours | 0x06 |
| Off | Off | Off | On | On | On | + 3½ hours | 0x07 |
| Off | Off | On | Off | Off | Off | + 4 hours | 0x08 |
| Off | Off | On | Off | Off | On | + 4½ hours | 0x09 |
| Off | Off | On | Off | On | Off | + 5 hours | 0x0A |
| Off | Off | On | Off | On | On | + 5½ hours | 0X0B |
| Off | Off | On | On | Off | Off | + 6 hours | 0X0C |
| Off | Off | On | On | Off | On | + 6½ hours | 0X0D |
| Off | Off | On | On | On | Off | + 7 hours | 0X0E |
| Off | Off | On | On | On | On | + 7½ hours | 0X0F |
| Off | On | Off | Off | Off | Off | + 8 hours | 0x10 |
| Off | On | Off | Off | Off | On | + 8½ hours | 0x11 |
| Off | On | Off | Off | On | Off | + 9 hours | 0x12 |
| Off | On | Off | Off | On | On | + 9½ hours | 0x13 |
| Off | On | Off | On | Off | Off | + 10 hours | 0x14 |
| Off | On | Off | On | Off | On | + 10½ hours | 0x15 |
| Off | On | Off | On | On | Off | + 11 hours | 0x16 |
| Off | On | Off | On | On | On | + 11½ hours | 0x17 |
| Off | On | On | Off | Off | Off | + 12 hours | 0x18 |
| Off | On | On | Off | Off | On | + 12½ hours | 0x19 |
| Off | On | On | Off | On | Off | + 13 hours | 0x1A |
| Off | On | On | Off | On | On | + 13½ hours | 0X1B |
| Off | On | On | On | Off | Off | + 14 hours | 0X1C |
| Off | On | On | On | Off | On | + 14½ hours | 0X1D |
| Off | On | On | On | On | Off | + 15 hours | 0X1E |
| Off | On | On | On | On | On | + 15½ hours | 0X1F |
| On | Off | Off | Off | Off | Off | + 16 hours | 0x20 |
| On | Off | Off | Off | Off | On | + 16½ hours | 0x21 |
| On | Off | Off | Off | On | Off | + 17 hours | 0x22 |
| On | Off | Off | Off | On | On | + 17½ hours | 0x23 |
| On | Off | Off | On | Off | Off | + 18 hours | 0x24 |
| On | Off | Off | On | Off | On | + 18½ hours | 0x25 |
| On | Off | Off | On | On | Off | + 19 hours | 0x26 |
| On | Off | Off | On | On | On | + 19½ hours | 0x27 |
| On | Off | On | Off | Off | Off | + 20 hours | 0x28 |
| On | Off | On | Off | Off | On | + 20½ hours | 0x29 |
| On | Off | On | Off | On | Off | + 21 hours | 0x2A |
| On | Off | On | Off | On | On | + 21½ hours | 0X2B |
| On | Off | On | On | Off | Off | + 22 hours | 0X2C |
| On | Off | On | On | Off | On | + 22½ hours | 0X2D |
| On | Off | On | On | On | Off | + 23 hours | 0X2E |
| On | Off | On | On | On | On | + 23½ hours | 0X2F |
| On | On | On | On | On | On | Software control | 0X3F |

**Table 5-2: Time Zone Offset Switch Settings**

### 5.2. SETTING TIME AND BRIGHTNESS MANUALLY

The 1200T series clocks are equipped with a three position, return to center, toggle switch that is used in conjunction with a momentary pushbutton to manually set the time.




If the lighting option is present, to set the lighting brightness, press the **HMS** pushbutton once. The lighting will go off and on once. The LED on the front panel will flash. Press the toggle switch in the **UP** or **DN** position to adjust the brightness. If you are finished setting brightness, do not perform any further action. In 15 seconds, the clock will exit the brightness setting mode and the LED will stop flashing. If the lightning option is not present, then the first button push will go to Hours setting mode below.

To set the time, press the **HMS** pushbutton again. The LED on the front panel will flash, and the hour hand will wiggle once. Press the toggle switch in the **UP** or **DN** position to set the hour hand to the correct time. If you are finished setting time, do not perform any further action. In 15 seconds, the clock will exit the time setting mode and the LED will stop flashing.

To set the minutes press the **HMS** pushbutton again, and the minute hand will wiggle. Press the toggle switch in the **UP** or **DN** position to set the minute hand to the correct time. If you are finished setting time, do not perform any further action. In 15 seconds, the clock will exit the time setting mode and the LED will stop flashing.

To set the seconds press the **HMS** pushbutton again, and the second hand will wiggle and stop. Press the toggle switch in the **UP** or **DN** position to set the second hand to the correct time. Press the **HMS** pushbutton again to restart the second hand. Note that you can set the second hand to a future time, and wait for that time to occur. Pressing the **HMS** pushbutton will then restart the second hand at the correct time.

## 6. BATTERY REPLACEMENT

The 1200T series clocks are fitted with a 3V Lithium battery type CR2032. This battery is used to power non-volatile memory of some of the frame controller's parameters while power is removed from the frame. Before attempting to change the battery remove power from the clock. If you are using Power over Ethernet, disconnect the Ethernet cable.

| **CAUTION** |
| --- |
| **Danger of explosion if battery is incorrectly replaced** |
| **Replace only with the same or equivalent type** |

| **CAUTION** |
| --- |
| **Danger of explosion if battery is exposed to excessive heat such as direct sunlight, fire, etc.** |

In order to replace the lithium battery you will need to remove the back cover of the clock using the procedure outlined in sections 6.2 and 6.4

## 6.1. SAFETY GUIDELINES AND PRECAUTIONS CONCERNING THE USE OF 3V LITHIUM BATTERIES

Please observe the following warnings strictly. If misused, the batteries may explode or leak, causing injury or damage to the equipment.

- The batteries must be inserted into the equipment with the correct polarity (+ and -)
- Do not attempt to revive used batteries by heating, charging or other means
- Do not dispose of batteries in fire. Do not dismantle batteries
- Do not short circuit batteries
- Do not expose batteries to high temperatures, moisture or direct sunlight
- Do not place batteries on a conductive surface (anti-static work mat, packaging bag or form trays) as it can cause the battery to short

## 6.2. REMOVING THE BACK COVER:

1. Unplug the power cord.
2. Unplug the LTC input/output connector.
3. Unplug the RS-232 connector.
4. Unplug the power adapter from the 12 VDC input.
5. Unplug the Ethernet connector.
6. On the 1216T and 1216TL clocks, remove 4 small black screws from the outside edges of the clock.
7. Remove 4 screws from the corners of the back panel.
8. Slide the back panel downwards about 1 cm / 3/8 inch, while lifting the bottom edge slightly.
9. When the 12 VDC power jack is clear of the rear panel, lift the rear panel off of the clock.


**Be careful not to damage the cable running from the rear panel DB-9 to the circuit board.**

10. Remove the ribbon connector from the COM connector to the circuit board.

## 6.3. CHANGING THE BATTERY:

1. Remove the back cover of the clock as described in section 6.2.
2. The battery is located in a socket on the main circuit board.
3. Carefully remove battery.
4. Replace with a new CR-2032 or equivalent 3 volt lithium cell. The + side of the battery should be facing up. Make sure the battery is firmly inserted into the socket.
5. Replace the back cover of the clock as described in section 6.4.

## 6.4. REPLACING THE BACK COVER:

1. Replace the cable from the COM connector to the circuit board. Note that the cable runs toward the black motor chassis.
2. Place the rear cover over the clock.
3. Insert the top of the rear panel in the clock with it in place about 1 cm / 3/8 inch downwards.
4. Place the bottom of the rear panel in the clock.


**Be careful to not damage the 12 VDC power jack**

5. Slide the rear panel into position while lifting the bottom edge of the rear panel slightly.
6. On the 1216 and 1216L clocks replace the 4 small black screws around the outside edges of the clock.
7. Replace 4 screws around the corners of the rear panel.
8. Replace any connectors removed during removal of the back cover.

# 7. SOFTWARE CONTROL

The 1200T series clocks can be programmed using commands from the COM port, or via SNMP and the Evertz Vista Link.

## 7.1. CONNECTING THE CLOCK TO A COMPUTER

### 7.1.1. Requirements

You will need the following equipment in order to communicate with the 1200T series clocks:

- PC with available communications port.
- "Straight-thru" serial extension cable (DB9 female to DB9 male) or (DB25 female to DB9 male).
- Terminal program such as HyperTerminal.

### 7.1.2. Connecting the COM Port

1. Connect the 9 pin male connector on the straight through serial extension cable to the COM port on the back of the 1200T series clock. Connect the 9 pin female connector to the PCs' RS-232 communications port.

### 7.1.3. Terminal Program Setup

2. Start the terminal program.

3. Configure the port settings of the terminal program as follows:

| | |
|---|---|
| Baud | **57600** |
| Parity | **no** |
| Data bits | **8** |
| Stop bits | **2** |
| Flow Control | **None** |

## 7.2. COMMAND DESCRIPTIONS

The following conventions are used in describing the command interface to the clocks.

- Hexadecimal [hex] numbers are represented with the prefix “0x.”
- Unless otherwise noted, all commands must be followed by a carriage return <cr> (0x0d)

### 7.2.1. Show Commands Available

Enter “H”, or “HELP” or “?” to show a list of commands available.
It will show a screen as follows. Note that this may change with firmware upgrades.

```
HELP      Show this help message.
UPGRADE   Goto UPGRADE.
REFERENCE Set input reference.
IP        Set IP addresses.
NTP       Set NTP server IP addresses.
LIGHT     Set light brightness.
DST       Set DST rules.
STATUS    Show system status.
SERIAL    Show serial number.
DUMP      Send all settings to this COM port.
CLOCK     Set clock
ZONE      Set timezone
FLUSH     Flush all nv storage to on-board flash.
```

### 7.2.2. Commands

Note that with all commands, any changes will take 60 seconds to save to memory. To cause them to store immediately, enter the “FLUSH” command.

#### 7.2.2.1. HELP

This shows the help screen.
When entering the commands, not all of the letters have to be entered. For instance, for REFERENCE, only “R” needs to be entered.
Entering a command followed with “?” will give further information on usage of that command.

#### 7.2.2.2. UPGRADE

This will reboot the clock, and go to an upgrade mode. It will then expect a download of new firmware. This can be exited from by repowereing the clock.

#### 7.2.2.3. REFERENCE

This sets the source of time reference.
The choices are:
“REFERENCE D” LTC with date information. The clock will expect to find valid date in the incoming LTC.
“REFERENCE L” LTC without date information. The clock will ignore any date information on the incoming LTC. If this is used, you must set the date manually if you wish to use the automatic Daylight Saving Time capability of the clock.

"REFERENCE N" NTP. For this to operate, The Ethernet port must be connected and IP mode or IP addresses must be set, and at least one valid NTP server must be set.

#### 7.2.2.4. IP

This sets up the Internet Protocol Address and mode for the Ethernet.
Entering this with no parmeters will show the current IP address/netmask/gateway set, and the address/netmask/gateway in use. This may differ from the set if the mode is dhcp, and not static.

When setting addresses, or netmask, or gateway, or server addresses, the address format is "a.a.a.a", where a is a number from 0 to 255.

Set IP static address. "IP A a.a.a.a".
Set IP static netmask. "IP N a.a.a.a".
Set IP static gateway. "IP G a.a.a.a". Set this to 0.0.0.0 if no gateway is in use.
Set IP address mode to static. "IP D S".
Set IP address mode to dhcp. "IP D D".

#### 7.2.2.5. NTP

This sets up the NTP server addresses.
Entering this with no parmeters will show the current NTP servers in use.
The clock can use up to 8 servers. It will automatically pick the best one available.

NTP with no parameters will show the currently set servers.

When setting addresses, or netmask, or gateway, or server addresses, the address format is "a.a.a.a", where a is a number from 0 to 255.

Set IP static address. "IP N a.a.a.a". N is a number from 1 to 8. To remove a server from the list, set its address to 0.0.0.0.

#### 7.2.2.6. LIGHT

This sets the brightness of the back lighting. It is only valid if the lighting option is present.

"LIGHT N". N is a number from 1 to 17. 1 is off, and 17 is full brightness.

#### 7.2.2.7. DST

This sets the Daylight Saving Time rules.

DST with no parameters will show the current rule settings.

"DST MD 0" sets the mode to Day of week of month. For example 2$^{nd}$ Sunday of March.
"DST MD 1" sets the mode to Day of month. For example March 17.
"DST ON 0" disables the DST function. No DST time will be added at any time of the year.

"DST ON 1" enables the DST function. DST time will be added if the time and date is after the start date, and before the end time of the year.
"DST SH HH" sets the start hour of dst. HH is a number from 0 to 23.
"DST SD DD" sets the start hour of dst. If DST MD was set to 0, DD is a number from 1 to 7 which represents Sunday to Saturday. if DST MD was set to 1, the range is 1 to 31.
"DST SW W" sets the start week. Range is 0 to 4. 0 is last week, 1 to 4 is week. This is only valid if DST MD is set to 0.
"DST SM MM" sets the start month. Range is 1 to 12 which represents January for December.
"DST EH HH" sets the end hour of dst. HH is a number from 0 to 23.
"DST ED DD" sets the end hour of dst. If DST MD was set to 0, DD is a number from 1 to 7 which represents Sunday to Saturday. if DST MD was set to 1, the range is 1 to 31.
"DST EW W" sets the end week. Range is 0 to 4. 0 is last week, 1 to 4 is week. This is only valid if DST MD is set to 0.
"DST EM MM" sets the end month. Range is 1 to 12 which represents January for December.

#### 7.2.2.8. STATUS

This sets shows a system status. No parameters are expected.
For example:

```
>STATUS
  16 inch clock with lighting option
  System status.
Reference set to NTP.
locked
Stored static IP addresses:
IP Address =  10.  0.  0.  1
IP Netmask = 255.255.255.  0
IP Gateway =   0.  0.  0.  0
The operating mode is set to dhcp
The addresses in use are:
IP Address = 192.168.192.158
IP Netmask = 255.255.192.  0
IP Gateway =   0.  0.  0.  0
Stored NTP server IP addresses:
Server 1, IP Address = 192.168.192.230
Server 2, Not in use
Server 3, Not in use
Server 4, Not in use
Server 5, Not in use
Server 6, Not in use
Server 7, Not in use
Server 8, Not in use
Debug set to 0 = No debug enabled.
Control from DIP switches.  SNMP off
```

#### 7.2.2.9. CLOCK

This sets the time and date.

With no parameters, it shows the current time and date.

To set the time ”CLOCK Thh:mm:ss” where hh is hours from 0 to 23, mm is minutes from 0 to 59 and ss is seconds from 0 to 59.
For example: To set time to 9:30 am, “CLOCK T09:30:00”.

To set the date “CLOCK Ddd:mm:yy” where dd is the day from 1 to 31, mm is the month from 1 to 12, and year is the last 2 digits of year from 0 to 99.
For example: To set date to March 11, 2012, CLOCK D11:03:12

#### 7.2.2.10. ZONE

This sets the time zone.

With no parameters, it shows the current zone, and all the choices.

To set the time zone, ”ZONE zz” where zz is a zone from 0 to 48, representing -12:00 to +12:00, in half hour steps.
For example: To set time zone to -5:00, “ZONE 14”.
For example: To set time zone to 0:00, “ZONE 24”.

## 7.3. UPGRADING THE FIRMWARE

### 7.3.1. Overview and Setup

The firmware in the 1200T is contained on a FLASH EEPROM. From time to time firmware updates will be provided to add additional features to the unit. Check the Evertz web site for information on firmware releases (www.evertz.com).

The following equipment is required in order to update the firmware:

- **PC with available communications port. The communication speed is 57600 baud, therefore a PC with a COM port built into the motherboard is recommended.**
- **“Straight-thru” serial extension cable (DB9 female to DB9 male) or (DB25 female to DB9 male).**
- **Terminal program that is capable of XModem file transfer protocol such as HyperTerminal.**
- **New firmware supplied by Evertz.**

Perform the following steps to establish communications with the 5601MSC:

1. Connect the serial cable to the COM DB9 connector on the rear of the 5601MSC.
2. Connect the other end of the serial cable to the RS-232 COM port on the PC.
3. Start the terminal program.
4. Configure the port settings of the terminal program as follows:

| | |
|---|---|
| Baud | **57600** |
| Parity | **no** |
| Data bits | **8** |
| Stop bits | **2** |
| Flow Control | **None** |

5. In the terminal program window, press the **ENTER** key several times and you should see a ">" prompt appear with each key press. This verifies that the PC is communicating properly with the 1200.

### 7.3.2. Putting the 1200T into Upgrade Mode

1. Power cycle the 1200T series clock, while holding in the white hms pushbutton on the back.
2. Alternatively, at the ">" prompt, type "UPGRADE" and press enter.

### 7.3.3. Uploading the Firmware

1. Once the unit has been placed into upgrade mode, the 1200T will print out an initialization message and ask for the firmware file to be uploaded. Below is an example:

```
EVERTZ MCF5272 MONITOR 2.4 BUILD 2 (66 MHZ)
COPYRIGHT 1997, 1998, 2000, 2001, 2002 EVERTZ MICROSYSTEMS LTD.
28F160C3B FLASH DETECTED
PROD=1212T
FRAME=7000FR

UPLOAD FILE NOW, CONTROL-X TO CANCEL
```

2. Send the new firmware .bin file using the XModem protocol (checksum mode). The file transfer will take about 1-2 minutes depending on the speed of the PC.
3. When the transfer has completed, you should see a message stating "UPLOAD OK". If for some reason the transfer aborted or was cancelled accidentally you may see messages stating "UPLOAD FAILED" or "NO PROGRAM". In this case, enter the command "upgrade" and press enter. Press "Y" to upload flash and resend the firmware .bin file using XModem.
4. On a successful upload, the unit should reboot automatically. If it does not, either power-cycle the unit or enter the "boot" command. The unit will become operational after about 5 seconds.

Contact Evertz customer service at +1 905-335-7570 or service@evertz.com for more information

# 8. *VISTA*LINK® CONFIGURATION AND CONTROL

VistaLINK® is Evertz's remote monitoring and configuration platform which operates over an Ethernet network using Simple Network Management Protocol (SNMP). SNMP is a standard computer network protocol that enables different devices sharing the same network to communicate with each other. VistaLINK® provides centralized alarm management, which monitors, reports, and logs all incoming alarm events and dispatches alerts to all the VLPro Clients connected to the server. Card configuration through VistaLINK® PRO can be performed on an individual or multi-card basis using simple copy and paste routines, which reduces the time to configure each module separately. Finally, VistaLINK® enables the user to configure devices in the network from a central station and receive feedback that the configuration has been carried out.

There are 3 components of SNMP:

1. An SNMP manager, also known as a Network Management System (NMS), is a computer running special software that communicates with the devices in the network. Evertz *Vista*LINK®-C Configuration Utility graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK® enabled products.

2. Managed devices, (such as 1200T series clocks), each with a unique address (OID), communicate with the NMS through an SNMP Agent. The 1200T series clocks communicate directly with the manager using its internal mini-Agent.

3. A virtual database known as the Management Information Base (MIB) lists all the variables being controlled, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

### 8.1.1. Connecting the 1200T Series Display to *Vista*LINK®

Follow the instructions in section 0 to connect the 1200T series clock to the Ethernet network. Once you have established a physical connection you will need to set up the IP address, subnet, and gateway addresses of the 1200T series clock using the procedure outlined in section 7.2.2.4.

### 8.1.2. Installing *Vista*LINK®

In order to control the 1200T series clock, you will need the *Vista*LINK®-C configuration tool. If you received the *Vista*LINK® Toolkit CD-ROM with the 1200T series clock, insert it into the PC's CD-ROM drive. In a few seconds a screen will appear with a menu guiding you through the *Vista*LINK® installation. You want to press the button to install the *Vista*LINK-C Configuration tool.

If you do not have *Vista*LINK® contact the Evertz customer support department to receive your free copy of the *Vista*LINK®-C Configuration utility.

### 8.1.3. Using *Vista*LINK® to Configure the 1200T series clock

The 1200T series clock should be auto-discovered by *Vista*LINK® PRO and appear under the *Hardware* section of the *Vista*LINK® PRO Navigation Tree named with its given IP Address. If the 1200T series clock is not auto-detected (because it is on another subnet) it can be manually added by right clicking the *Hardware* node and selecting *Add/Update frame*.

Right click the discovered 1200T series clock to open the *Configuration View* screen. The screen is broken into eight tabs. To view the other screens, click on the appropriate tab of the configuration screen. Figure 8-1 to Figure 8-3 shows the VistaLINK® screens.

Once you have finished configuring the 1200T series clock on the configuration screen you can save the configuration in VistaLINK®. You can also send it to the 1200T series clock by pressing the *Apply* button on the VistaLINK® toolbar.

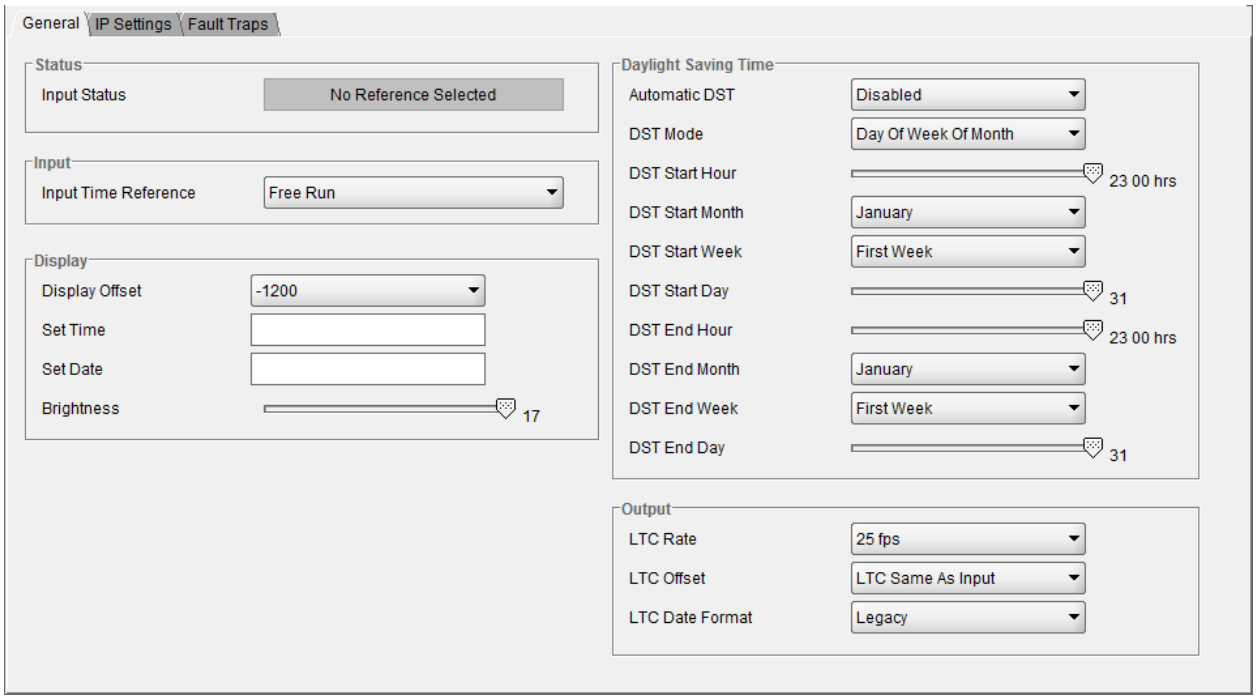



**Figure 8-1: VistaLINK® Configuration - General Settings**

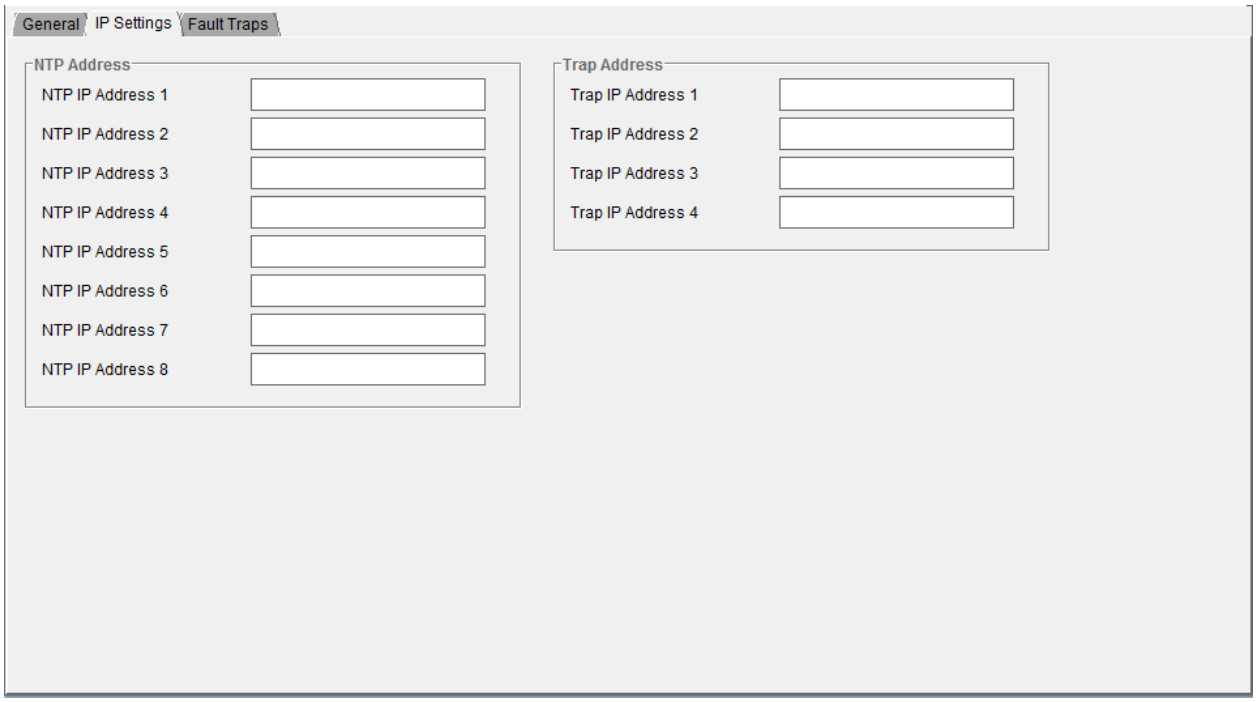



**Figure 8-2: VistaLINK® Configuration - NTP and SNMP Trap IP Settings**

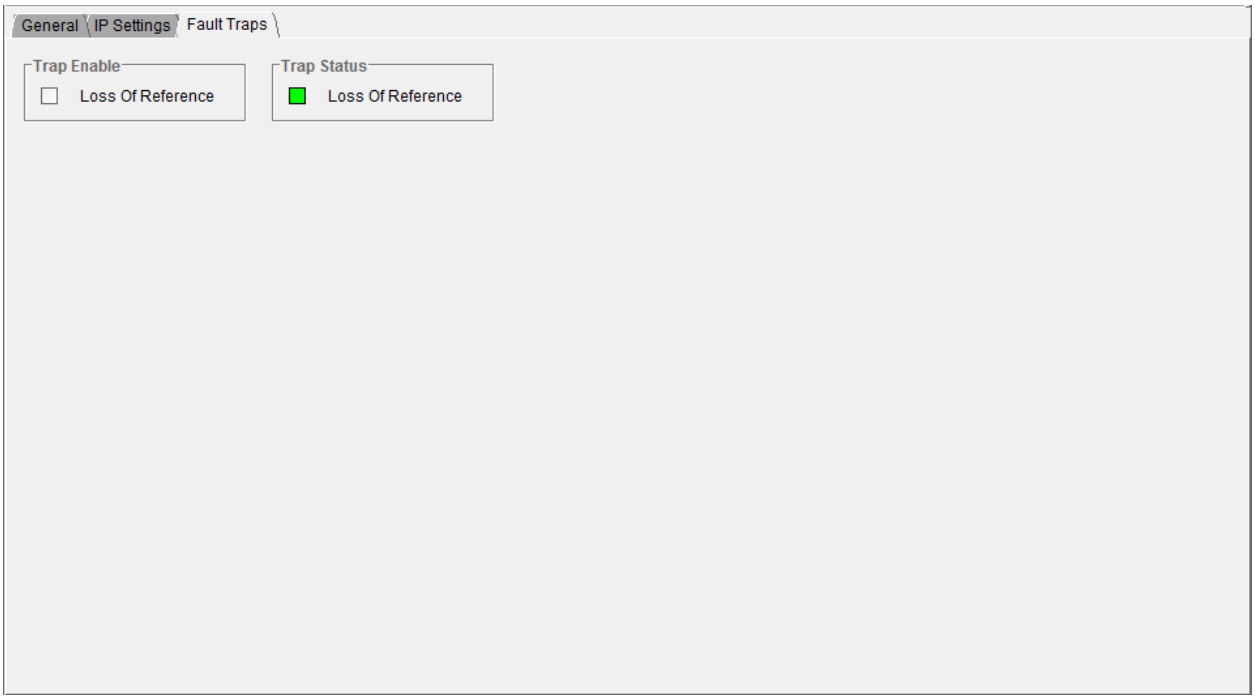



**Figure 8-3: VistaLINK® Configuration - Fault Traps Settings**