TimeLord

Atomic-Locked Master Time Source — TIMELORD-Lite

REFERENCES

V-488.00B GPS receiver system

V-484.02 MSF (Rugby) receiver

V-484.03 DCF (Frankfurt) receiver

Internal timebase (free-run mode)

Off-Air Receivers
GPS system includes active Antenna which must have 80% view of the sky, Receiver/Interface which must be located within about 6m of the antenna (mini coax provided) - remote powered by the Timelord - 25m cable included. Timekeeping accuracy to within 50µS of UTC
GMT/BST receiver - omni-directional high sensitivity wallmount in IP65 ABS case. Timekeeping accuracy to within 30mS of UTC
CET/CEST receiver - omni-directional high sensitivity wallmount in IP65 ABS case. Timekeeping accuracy to within 30mS of UTC
High stability quartz crystal oscillator. Timekeeping accuracy to within about 0.1 seconds per day, 18-22C

OFF AIR RECEIVERS should be ordered separately

OUTPUTS

Serial data signals
Serial data format
Serial data messages
Repetition rate
Serial "on-time" signal

Time Date code for V-400A digital displays
Number of digital displays

Optional IRIG output

Optional EBU output

SMPTE / EBU Timecode
Serial Time/Date Data
RS-232 and RS-422/RS-485 on D-9F connector
7/8 bit, even,odd or no parity, 1200 - 9600 baud
Date and/or time in various formats
1 sec, 1 min, 5 mins, 1 hour, 24 hours or on request
RS232 levels signal every second

482 Time and Date Code
15 managed time zones for single twisted pair on screw terminals
Up to 50 clocks / multi-zone displays on up to1km cable

IRIG
IRIG-B (B123), IRIG-E (E123), Afnor NFS 87-500,
NEMA 911, IEEE 1344 (see manual regarding
IEEE 1344 extensions implemented)

EBU Timecode
Unbalanced EBU timecode NOT video-locked, for use with self-setting analogue clocks. For video-locked timecode, please see the TimeLord which incorporates a full broadcast timecode generator system

FRONT PANEL

LED Clock Display

Parameter Setup

Controls and Indicators
HH:MM:SS / DD:MM:YY switchable with Locked to Off-Air LED
Time / Date / Time Zones (15) / Serial Data

via 4x pushbuttons
Timecode via serial port using setup program supplied

ACCESSORIES

Cables
Software Utilities

Included
IEC Mains power cord, RS-232 serial cable, Receiver Head -
ClockLok software for running on computers to lock their internal clocks to the TimeLord serial tine data output
SchedulePak Programmable Timer package for running on Windows 98 PC to provide GPI relay trigger outputs
Timecode / Character Inserter setup package

PHYSICAL

Dimensions	173 x 49 x 178mm (WxHxD)
Weight	2.5Kg
Power	90-263VAC 47-63Hz fused T315mA Slo-Blo

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NEW YORK   LONDON   PARIS
07:47   12:47   13:47

DESCRIPTION

The TimeLord Lite Atomic-locked Master Time Source is an entry-level master clock designed to drive digital displays and provide accurate time data for video servers and timestamping equipment. It is housed in a 1-U rackmount enclosure with integral mains power supply and is battery-backed to keep the logic running in case of mains failure.
There are 15 internal time zones with individual seasonal daylight saving information already programmed for the next hundred years or so, and the logic is battery-backed in case of mains failure. The 482 Time/Date code output is used to reference digital clocks, day/date and multi-zone displays from the established V-400A series.
The TimeLord Lite may be synchronized to an off-air atomic reference, automatically maintaining the correct time throughout the year. GPS (satellite), MSF (Rugby) or DCF (Frankfurt) receivers are available.   The GPS system consists of an active antenna plus receiver/interface whilst the MSF and DCF receivers are housed in ABS IP65 boxes.
The Serial time data output is designed for locking computer servers and timestamping applications, providing accurate time and date information in numerous data formats.

SERIAL TIME DATA

Serial time data output is provided at both RS232 and RS422/485 levels with front panel selection of the the transmission format which may be 7 or 8 bit; odd, even or no parity; 1200, 2400, 4800 or 9600 baud data rates. The data repetition rate may be set to regularly transmit at intervals of one second, one minute, five minutes, one hour or 24 hours, or on request from the synchronized device. In addition, there is a 1pps "on time" signal at RS232 data levels.

The serial data content may be selected from a number of the pre-programmed formats commonly-used in computer networks, machine control and security time-stamping equipment. Please contact us for information concerning data compatibility with specific equipment; more than 30 formats are included as standard and additional custom formats can be implemented on request.

CLOCK-LOK SOFTWARE

A "Freeware" suite of software is included with all TimeLords to lock their internal clocks to the accurate time information carried in the serial data stream. The software may be used with Win™ 95 / 98 / 2000 / NT4 / XP whilst for DOS applications, we are able to provide a TSR program. Please also refer to our application note on using the TimeLord to provide time data as an NTP server for locking Linux and Unix systems.

IP Interface

Two TimeLord models provide direct network interconnection; the TimeLord Net acts as a time server whilst the TimeLord Net Client locks the master clock to network time.

482-CODE OUTPUT FOR DIGITAL DISPLAYS

Up to 50x V-400A series digital time, time/date and multi-zone displays can be driven from the 482 multi-zone time data output. Literally hundreds of types of display are available with Red, Green, Yellow, Blue and dual-colour with character sizes from 10mm to 220mm high, 7-segment and dot-matrix. Please see separate specification sheet for the various models available.

GPI RELAY CONTACT OUTPUTS

The changeover relay (30V DC 500mA contacts) may be programmed to trigger every 5 seconds, 1 minute, 1 hour or 24 hours at a specfic time of day. Alternatively it can be programmed as an "alarm" relay, triggering on power failure, loss of reference or logic error. Additionally, the SchedulePak programable PC timer package to provide timed GPI relay contact closures is included as standard.

EBU / SMPTE TIMECODE OUTPUT for self-setting analogue clocks

An optional LTC output is available for the TimeLord Lite, to provide timecode in the correct format for locking self-setting timecode driven analogue clocks (with hands). It is not suitable for broadcast applications which require full video-locked EBU or SMPTE timecode for which the normal TimeLord has been developed.
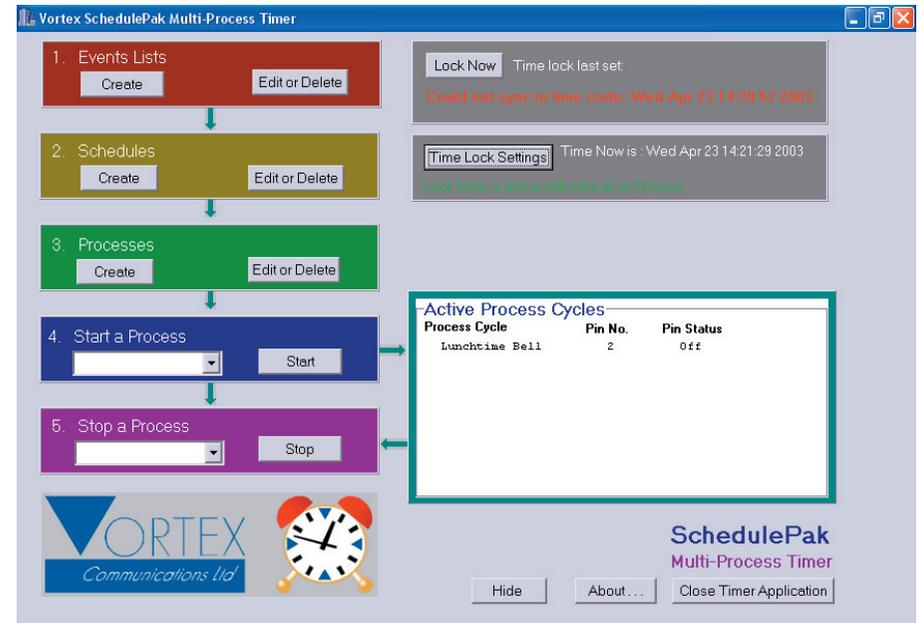
IRIG OUTPUTS

An IRIG interface is optionally available for the TimeLord Lite, providing time data output in IRIG-B, IRIG-E, Afnor NFS 87-500, NEMA 911 and IEEE 1344 formats

Please note, it is only possible to have either the Timecode output option or the IRIG output option installed at any one time (not both) as they use the same output BNC connector.

IMPULSE-DRIVEN ANALOGUE CLOCKS

An intelligent dual impulse driver rack may be connected downstream of the TimeLord to provide seconds, half-minute or minutes impulses (24V bi-phase) to drive up to around 50 analogue clocks. Daylight savings changes are automatically followed and initial setup of the is straightforward. Internal batteries keep clocks running in case of mains failure and provision is made for automatic catch-up if the batteries can no longer keep the clocks showing accurate time.

The SchedulePak Universal Timer Package is included as part of the TimeLord Master Time Source system. It runs on a PC and provides a relay contact closure at times which may be freely programmed up to many years ahead. The package consists of a Windows™ Software Module with graphical user interface (GUI) through which all data is entered, plus an Output Module which plugs into the parallel port of the PC to provide the relay contact closures and logic level outputs. **The PCs internal clock is locked to the TimeLord serial time data output** and this time used to trigger the various programmed events.

The following example describes the operation. An *Event* may be to ring an alarm bell which may need to ring at different times on different days. Different *Events* are created for each day which could be called Bell Monday, Bell Tuesday, Bell Wednesday and so on. Each *Event's* schedule may have any number of On-times and an Off-times which may be edited.

A number of *Events* may then be combined to form a *Schedule* which may be repeated every day, every week or every month. Taking our example, the "Alarm Bell Weekly *Schedule*" may consist of 7 *Events* which would be "Bell Monday", "Bell Tuesday" and so on.

A *Schedule* is then assigned to a relay or logic output to activate the *Process* - in this case to "Ring the Bell". This may be programmed to run only between certain dates and times - for example only ringing the bell during term time and not during the holidays starting next term.

An enhanced version - SchedulePak-8 provides 2 relay contact closures plus 6 other logic level outputs compared with the single relay in the standard version.