



The **4860 master clock** provides the time synchronisation solution for complete systems of equipment including computer networks, CCTV security, voice recording, industrial process control, CCC and many other applications requiring accurate time synchronisation.

The system is available as standard with GPS, MSF, DCF and NTP input synchronisation options. This flexibility allows the 4860 to be used as a universal solution for providing time synchronisation to many different devices.

The **4860net** master clock is supplied fitted with a 10Base-T Ethernet interface to allow it to act as an *NTP Time Server* on a TCP/IP network.

All 4860 series master clocks are supplied as standard with one RS232 / RS485 serial ASCII Time and Date output. The **4860.S2** and **4860.S4** versions are optionally available providing a total of two or four RS232/RS485 serial ASCII Time and Date outputs.

The **4861** variant adds a 1Khz amplitude modulated IRIG-B output for time synchronisation of various voice recording, data logging and distributed control system equipment.

The **4862** variant adds balanced 600 $\Omega$  and low impedance EBU outputs for use in broadcast applications .

## Features

- **Operational**  
High visibility 6 digit display.  
Display and timecode output messages can be referenced to UTC or 'Local' time.  
'Set Once' local time zone setup, automatically calculating future time zone changes for local time zone.  
256 Year Calendar, 4 digit year setting. (Range 2000-2255)  
Easy to install, 'setup and forget' operation.
- **Timing accuracy**  
Integrated TCXO module as standard.  
Unsynchronised: 0.1/sec/day @ 0-45°C  
Locked to MSF or DCF: within 30mS of UTC  
Locked to GPS: within 50uS of UTC
- **Network Timing Accuracy (4860net only)**  
Clients typically synchronised within 1-10 milliseconds of 4860net timebase depending on network delay and jitter. (NTP)
- **RS232 and RS485/422 interface**  
One RS232 and RS485 serial output as standard.  
63 preset data formats for specific CCTV and embedded equipment.  
Time telegram output interval programmable for every second, every minute, 5 minutes, every hour, every day or on request.  
User selection of 1200, 2400, 4800, 9600 or 19200 baud, 7 or 8 data bits and odd, even or no parity on nonspecific message formats.  
High accuracy RS232 level 1 pulse per second output.  
Optional 2 or 4 RS232 / RS485 port versions available (4860.S2 & 4860.S4 versions only).
- **Relay**  
30v DC. @ 500mA rated contacts  
Change-over configuration  
0.1 second programmable contact change-over to occur every 5 seconds, every minute, every hour, once per day at a user programmable time, on power failure, whilst locked to an external time reference or during an error state.
- **w482 interface**  
Supports up to 50 400A series digital clocks and time zone displays  
'Set Once' time zone setup, automatically calculating future seasonal time changes for 15 time zones.

The 4860net Master Clock is supplied fitted with a 10Base-T Ethernet interface to allow it to act as a time server on a TCP/IP network. The 4860net interface supports the following protocols:

- **NTP and SNTP**  
Network Time Protocol (NTP) v2, v3 and v4 clients are supported in both unicast and broadcast modes of operation. (RFC1305 & RFC1119)  
Simple Network Time Protocol (SNTP) v3 and v4 clients are supported in both unicast and broadcast modes of operation. (RFC2030 & RFC1769)

- **TIME Protocol**  
TIME protocol (RFC868) is supported in UDP mode.
- **Syslog**  
The 4860net can send event messages to a syslog server.

Additional output interfaces present on 4861x version

- **IRIG interface**  
1KHz amplitude modulated 3v p-p, 600Ω transformer coupled output.  
Output formats: IRIG-B (B123), Afnor NFS 87-500, NENA 911, IEEE 1344

Additional output interfaces present on 4862x version

- **EBU interface**  
EBU longitudinal timecode (LTC) output, 2000 bps with 25 complete messages every second.  
Balanced 600Ω and Low impedance outputs.

Additional output interfaces present on .IMP version

- **Impulse outputs**  
Dual 24V alternate polarity impulse outputs rated at 200mA per channel.  
Each output programmable for one second, half minute or one minute alternate polarity impulses  
Fully protected output drive circuitry detects power failure and short circuit line fault conditions which are automatically corrected for on fault removal.

## Environment

- Power supply: Internal PSU 110-240V ac. 50/60Hz  
Power consumption < 0.4A @ 230V AC
- Battery Backup: >1 Year. (The battery backup maintains the internal time count during periods of mains failure)
- Enclosure: 1u high 19" rack mount  
483mm wide x 185mm deep x 44mm high (19" x 7.3" x 1.75")  
Weight: 2.8Kg
- Operating temperature: 0-50°C  
Relative Humidity: 0% to 90% (non-condensing.)  
Altitude: 0 to 3,000m  
MTBF: > 50,000 hours

## Electromagnetic Compatibility & Safety

The 4860 series master clock when used in accordance with our recommendations, complies with the European Community Electromagnetic Compatibility Directive 89/336/EEC and Low Voltage Directive 73/23/EEC and conforms to the following standards:

- EN 50081-1 55022 class B
- EN 50082-1 IEC 801-2 level 3  
IEC 801-3 level 3  
IEC 801-4 level 3
- EN 60950

*Designed and manufactured by:*

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