



# T202, IEEE 1588 / PTP Client Time Station, with pulse generator, IRIG output, and event input.



## HEOL-T202 : PERFORMANCE and EASY INTEGRATION

The T202 module is a **PTP** client station, able to synchronize automated systems and timestamp events in an industrial environment.

As the T202 doesn't integrate GPS antenna, you can install it anywhere in your system (it is just necessary to connect it to your LAN, so it can synchronize to an external PTP server – T200 GPS PTP master clock for example).

Using the Precision Time Protocol (IEEE1588), the T102 can be synchronized with 1µs accuracy to PTP master clock.

The PTP V2 implementation of the HEOL-T202 is fully compliant to the IEEE 1588-2008 standard (two steps clock) and provides PTP management messages for monitoring and configuration (also available on HTTP server).

If the connection to the PTP master clock is lost, the **hold-over mode** enables the module to keep an accurate internal clock, with very low drift, thanks to the **OCXO**.

A **web server** with secure access allows you to configure the HEOL-T202, and monitor its status at a glance (GPS satellites strength signals, Ethernet connections, alarms, input/outputs...).

Automatic **E-mails** can be sent by the HEOL-T202, periodically or when alarms appear. This function is fully configurable via the http server.

An isolated event input allows you to **time-stamp events from external systems**, with very high accuracy ( $\pm 100$  nanoseconds from local clock).

The TimeStamp information is reported through RS232, SNMP trap, E-mail or Broadcast frame.

**Alarm relay** is available, for driving your external systems in case of failure of the T202.

Alarms are displayed through **SNMP** traps (Ethernet interface) or through RS232. SNMP can also be used to configure T202 parameters (instead of http web server).

A highly accurate **pps (TOP)** signal is available on SUB-D9 or I/O connector (polarity, period, length, and delay compensation are configurable by user). It is also available with optional 1500V isolated static relay.

**IRIG-B003** and **A003** output are available in option on the I/O connector.

A RS232 or RS422 serial port can be accessed for remote control and monitoring (with NMEA protocol output).

In option, a Lithium battery powered internal RTC can provide timing information if no PTP master clock is available at power-up.

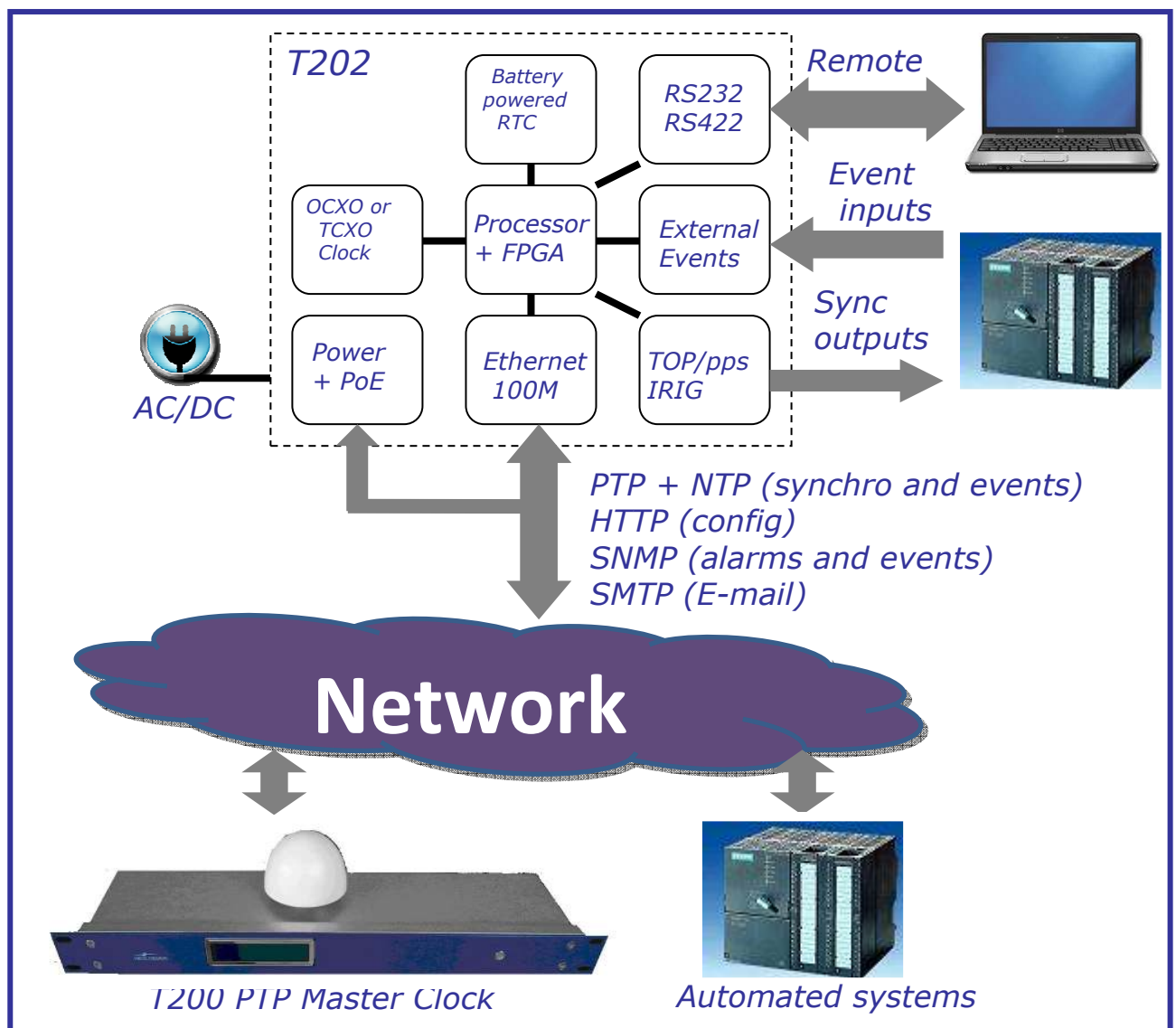
Historic data can be backed-up to an EEPROM (over 8000 status records).

The **Power On Ethernet** enables installation of the HEOL-T202x without the need for additional cables to provide power. It also offers redundancy of the AC/DC in case of failure of one of them.



The T202 is available in 2 different **metal housings**, either compact or 19" rack mounted form factor.

This rack unit displays on a LCD module the status and timing information.



T202 synoptic and external links

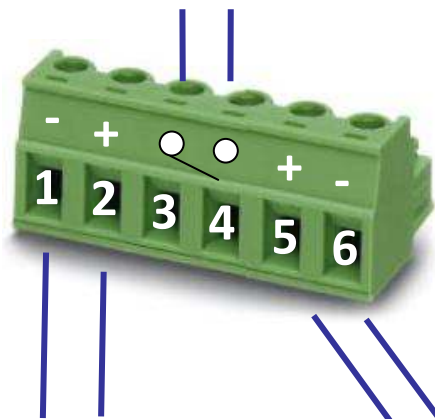
## SPECIFICATIONS

<b>PTP synchronization</b>	Timing Ethernet protocol	PTP IEEE1588-2008 : <ul style="list-style-type: none"> <li>- UDP/IPv4</li> <li>- Addressing mode : Multicast &amp; Unicast</li> <li>- Delay Mechanism : End-to-End</li> <li>- Operation : Two Step Clock</li> <li>- Sync &amp; Announce Intervals : 1, 2, 4, 8, 16, 32, 64 seconds</li> <li>- Priority 1&amp;2 : 0 to 255</li> <li>- Domain Number : 0 to 4</li> <li>- Announce Receipt Timeout Multiplier : 2,3,4,5,6,7,8,9,10</li> </ul> PTP Management Messages for monitoring and configuration PTP Signaling Messages for unicast addressing mode
	Configuration/monitoring	http server
	Absolute timestamp error (refer to Master Clock)	1 $\mu$ s (constant temperature)
	Timestamp drift when synchronization is lost	500 $\mu$ s/day with OCXO option
	RTC option	1 millisecond accuracy Autonomy : 6 months Drift ~ 1 s / day (10°C temp. variation)
<b>Power supply</b>	Input Voltage	Power On Ethernet : compliant with IEEE 802.3af. Compact: 12/60VDC (-48V Telecom compliant) Rack: 85/250VAC, 110/250VDC
	Power consumption	4W (T202C), 6W (T202R)
<b>Interfaces</b>	Auxiliary DC Power Supply	2.54mm header, anti-extraction
	Remote RS232 / RS422	SUB-D9, 38400/8/No/1
	Ethernet link	RJ45, 10/100Mbps + POWER
	Alarm Relay	2A/250V. 2500V isolation
	pps output	RS422, RS232, or fast static relay output. on SUB-D9 or I/O connector
	Event input	25V max peak voltage (add resistor if higher), 2500V isolation, 100ns accuracy to local clock
<b>Environmental</b>	Operating Temperature	From 0/50°C to -40/+70°C, depending Upon the option
	Storage Temperature	-40 / +85°C
	Humidity	90% non-condensing
	Dimensions (T202C)	201 x 95 x 26 (mm)
	Weight (T202C)	340 grams
	Dimensions (T202R)	1U -482.6mm (19" ) Depth 130 mm
	Weight (T202R)	1,85 Kg

- According to **CE** directive, the HEOL-T202 module has passed the following tests :
  - EN55022/55011 class B : conducted and radiated emissions.
  - EN61000-4-2: Immunity to electrostatic discharges.
  - EN61000-4-3: Immunity tests on electromagnetic fields radiated at radio-electrical frequencies, with 10V/m electromagnetic field.
  - EN61000-4-4: Immunity to rapid transients.
  - EN61000-4-5: Immunity to surge.
  - EN61000-4-6: Immunity tests on conducted interference, induced by radio-electrical fields.
  - EN61000-4-8: Immunity to Power frequency magnetic field (30 A/m)
  - EN61000-4-11: Voltage dips, short interruptions and voltage variations immunity tests.
- Compliance with the International Safety Standard for Information Technology (IEC/EN 60950).
- The HEOL-T202 module is RoHS (lead free) compliant.



3&4 pins :  
Alarm relay  
or PPS/TOP output on Static relay (option PPSREL)



1&2 pins :  
Event input #1

5&6 pins :  
PPS/TOP RS422 output  
or IRIG B003 output (option IRIG)  
or Event input #2 (option EVENT2)

I/O connector details

## ORDERING PART NUMBER

## T202R-100ns-AC-I/O-OCXOSR

- Housing R: 19" Rack  
C: Compact
- PTP accuracy 100ns  
1µs  
10µs
- Power DC : 14 to 60V  
DC/POE: DC+Power Ethernet  
AC : 110 to 250V (Rack only)
- I/O option I/O connector mounted  
(blank : not mounted)
- Oscillator option  
OCXOSR : standard (0 / +50°C)  
OCXOMR : medium (-20 / +65°C)  
OCXOHR : high (-40 / +70°C)

If other options are needed, just add the part number of these options at the end of the T202 part number :

- 422 for RS422 serial port instead of RS232
- EVENT2 for secondary Event input
- IRIG for IRIG-B003 output
- PPSREL for PPS/TOP output on fast static relay
- RTC for fast start without GPS satellites