



T102R, network/industrial Time Server



**Time server / Master Clock,
with PoE and advanced Input/Output features**

HEOL-T102 V2: PERFORMANCE and EASY INTEGRATION

The T102 module is a server/client **SNTP/NTP**, able to synchronize automated systems and networks in an industrial environment. This synchronization is done using an **Ethernet** link (IEC61850), a serial link RS232/RS422 (**NMEA** with or without pps signal), or an **IRIG-B003** optical link.

As the T102 doesn't integrate GPS antenna, you can install it anywhere in your factory or office (it is just necessary to connect it to your network, so it can synchronize to an external NTP server – T101 GPS master clock, or to an external GPS receiver with NMEA output, or to an external master clock with optical IRIG output).

If the synchronization is lost, the **hold-over mode** enables the module to keep an accurate internal clock, with a drift better than 1ms/day (with **OCXO** option).

A **2500V isolated** event input allows you to time-stamp events from any external system.

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

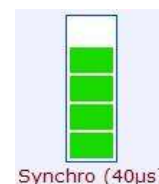
A **pps/TOP** signal is available on I/O connector (polarity, period, length, and delay compensation are configurable by user). It is also available with optional 1500V isolated static relay.



The **Time Service software** can be installed on any host computer, to synchronize computers using SNTP protocol.

Accuracy and specific alarms are displayed at every connection.

A **web server** with secure access allows you to configure the HEOL-T102, 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-T102, periodically or when alarms appear. This function is fully configurable via the http server.

Alarm relay is available, for driving your external systems in case of failure of the T102.

Alarms are displayed through **SNMP** traps (Ethernet interface) or through RS232. SNMP can also be used to configure T102 parameters (instead of http web server).

IRIG-B003 and **B123** outputs available on the I/O connector, as well as sync signals through optic fiber (5 seconds and 1mn pulse synchro).

A RS232 or RS422 serial port can be accessed for remote control and monitoring (with NMEA protocol output, and NMEA input for connection to external GPS receiver).

Industrial V24 is also available in option, with date/time information in UTC or Local Time.

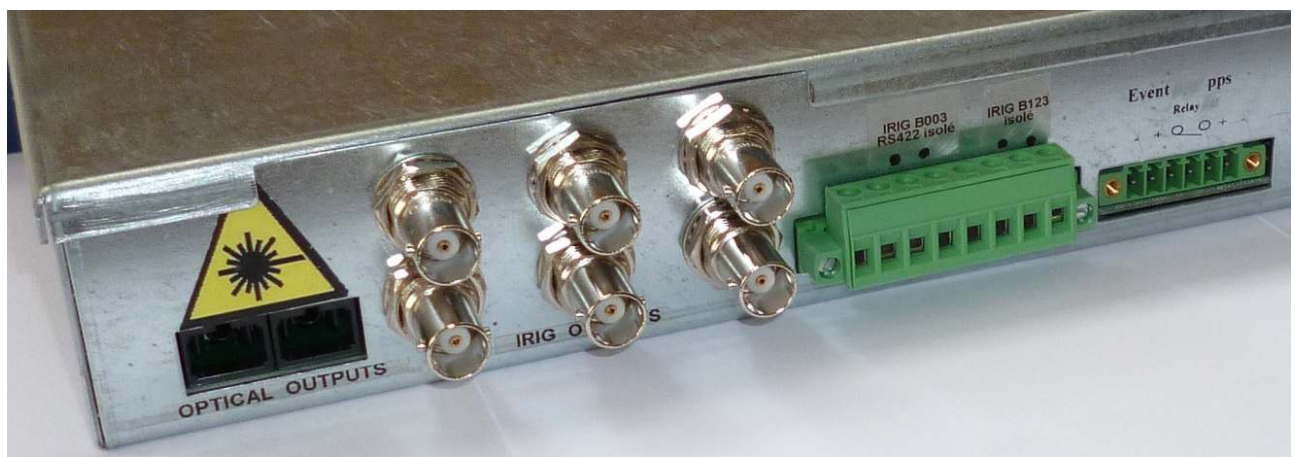
Historic data can be backed-up to an EEPROM (over 8000 status records).

The **Power On Ethernet** enables installation of the HEOL-T102 without the need for additional cables to provide power.

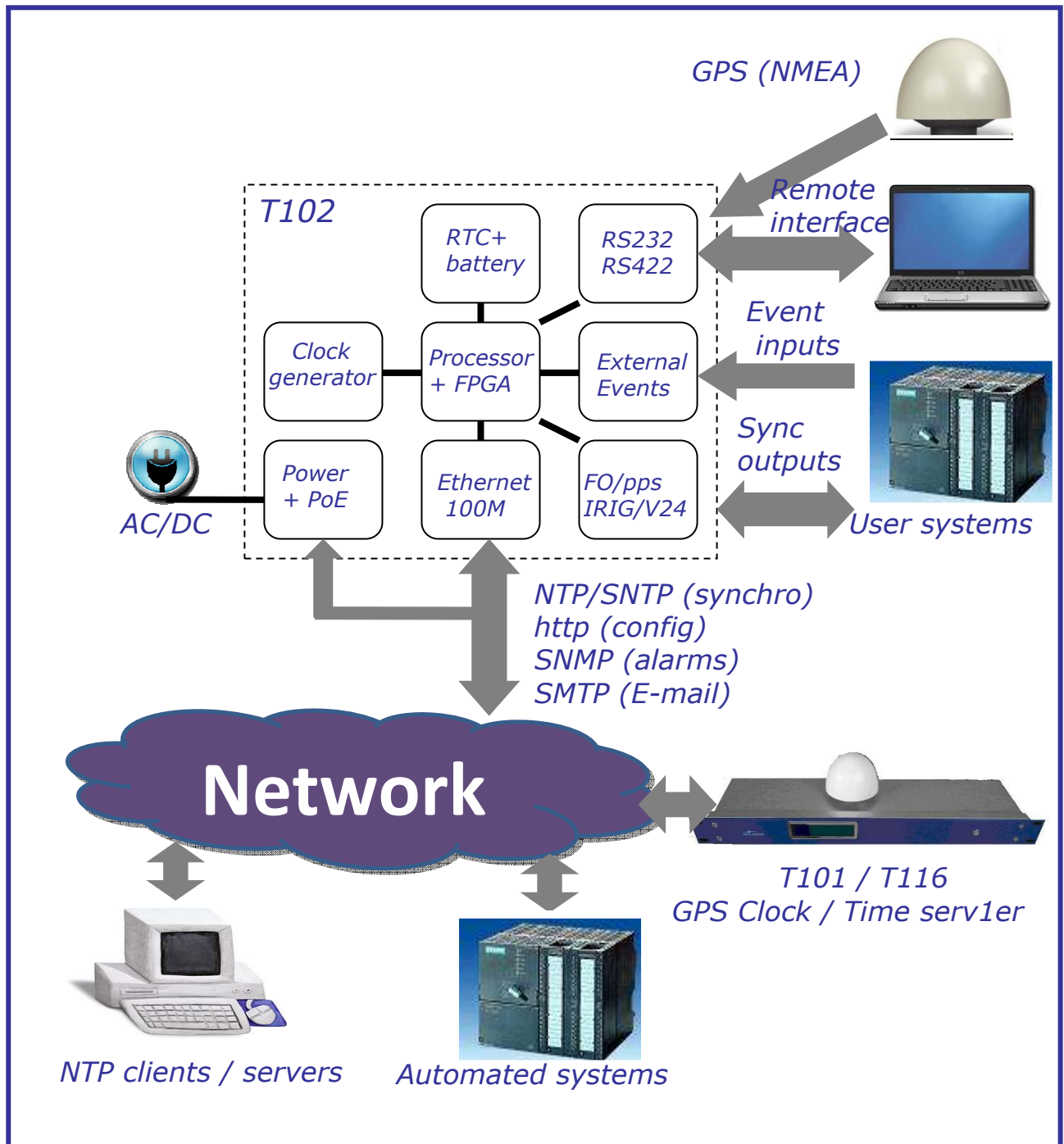


In option, a battery powered internal RTC can provide timing information if no external synchronization is available at power-up.

The T102 is available in 2 different **metal housings**, either 19" rack or compact form factor (with limited number of outputs). This rack unit displays on a LCD module the status and timing information.



T102 Rack rear view with IRIG and optical inputs/outputs.



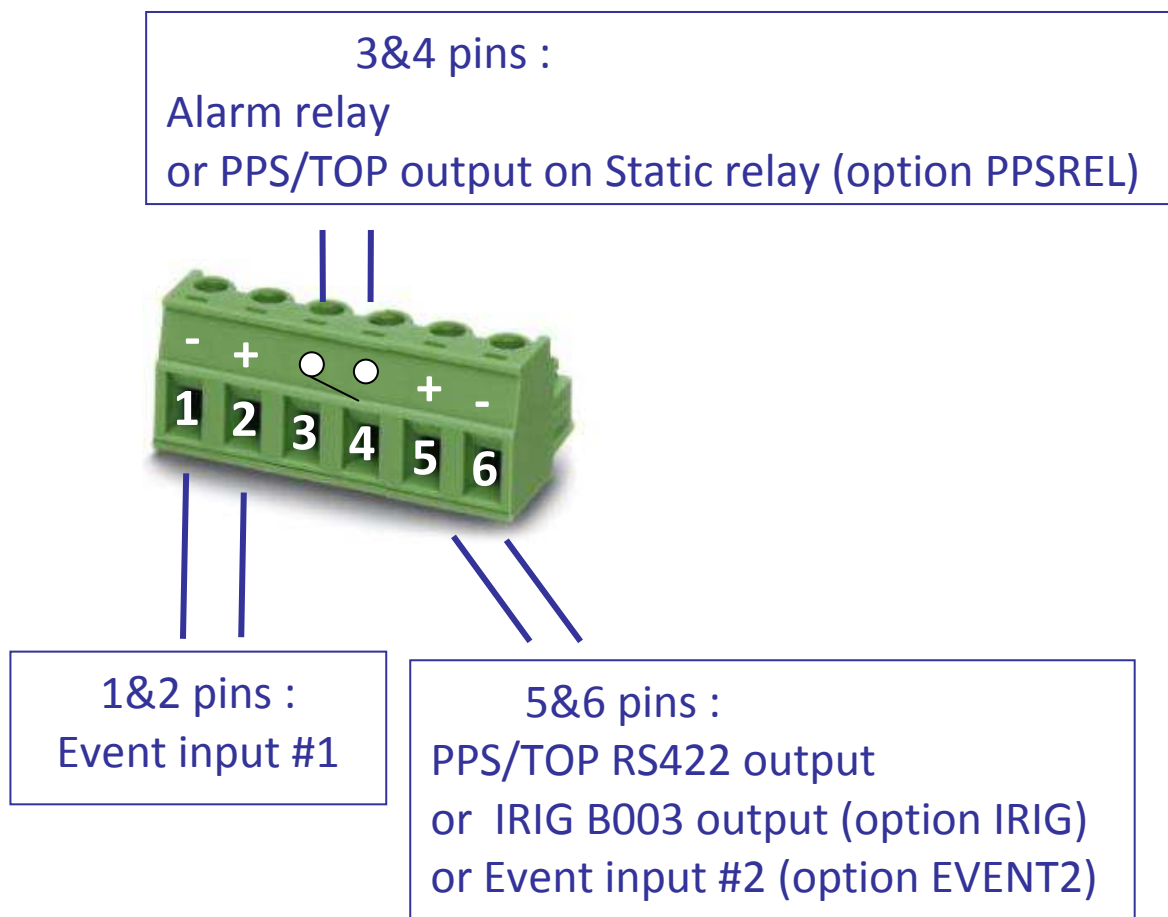
T102 synoptic and external links

SPECIFICATIONS

Ethernet synchronization	Timing Ethernet protocol	SNTPV4, Broadcast/Unicast(client/server) (100 requests per second maximum)
	Configuration / monitoring	http server
	Absolute timestamp error (refer to UTC time)	±100µs / external server clock
	Timestamp drift when synchronization lost	500µs/day with OCXO option 100µs/hour with TCXO option
	RTC option	1 millisecond accuracy Autonomy: 3 to 5 days(other on request) Drift ~ 1 s / day (10°C temp. variation)
Power supply	Input Voltage	Power On Ethernet : compliant with IEEE 802.3af. Auxiliary: 12 to 60 VDC (-48V Telecom compliant) or 85/250VAC, 110/250VDC (T102R) 47/63Hz, (400 Hz in option)
	Power consumption	4W (T102C), 6W (T102R)
Interfaces	Auxiliary DC Power Supply	2.54mm header, anti-extraction
	AC power supply	CEE plug
	Ethernet link	RJ45, 10/100Mbps + POWER
	Remote RS232/RS422	SUB-D9, 38400/8/N/1 (other on request)
	pps output	RS422, RS232, or fast static relay output. on SUB-D9 or I/O connector
	Alarm Relay	2A/250V. 2500V isolation
	Event input	25V max peak voltage (add R series for more), 2500V isolation.
	Optical inputs / outputs	1x or 2x SC, ST, SMA, FC connector Wavelength 820nm
	V24 outputs	SUB-D9 isolated, RS232 level (STET EGS protocol)
Environmental	Operating Temperature	From 0/50°C to -40/+85°C, depending Upon the option
	Storage Temperature	-40 / +85°C
	Humidity	90% non-condensing
	19" Rack - dimensions - weight	483 x 130 x 44 (mm) 1,85kg

- According to **CE** directive, the HEOL-T102 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-T102 module is RoHS (lead free) compliant.



ORDERING PART NUMBER

T102R-100 μ s-AC-I/O-OCXOSR-RTC

- Housing R: 19" Rack
C: Compact
- NTP accuracy 100 μ s
1ms
10ms
- 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)
- OCXO option
OCXOSR : standard (0 / +50°C)
OCXOMR : medium (-20 / +65°C)
OCXOHR : high (-40 / +70°C)
- RTC option, battery powered : for fast start without GPS satellites

If other options are needed, just add the part number of these options at the end of the T102 part number :

- 422 for RS422 serial port instead of RS232
- EVENTx for additional Event input(s)
- xIRIG003 for IRIG-B003 output(s)
- xIRIG123 for IRIG-B123 output(s)
- IRIG-xisc : for x optical input(s) with IRIG-B003 signal
- IRIG-i : for electrical isolated DC-shift IRIG input (IRIG-B003 signal)
- IRIG-im : for electrical isolated amplitude modulated IRIG input (IRIG-B123 signal)
- xST5 for fiber optic output(s) (pulse at 5 seconds) with ST connector
- xST60 for fiber optic output(s) (pulse at 60 seconds) with ST connector
- xSC5 for fiber optic output(s) (pulse at 5 seconds) with ST connector
- xSC60 for fiber optic output(s) (pulse at 60 seconds) with ST connector
- xPPSREL for PPS/TOP output(s) on fast static relay
- NMEA232 for connection to external GPS receiver (RS232 link)
- NMEA422 for connection to external GPS receiver (RS422 link)
- xV24 for isolated RS232 connector with timestamp output(s) (local time/UTC)