Internet compatible Telecontrol in
LOW and ULTRA LOW
power version

New Range

Low Power e-RTU

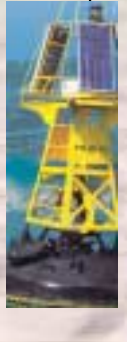
Internet

TBOX
Low Power e-RTU

Internet compatible Telecontrol in LOW and ULTRA LOW power version

Techno Trade, one of the European leaders in Telecontrol solutions for more than 15 years, has released a new range of low and ultra low power Telecontrol systems designed to be used by applications where regular electricity supply is not available. Powered by battery, or solar panel & battery combination, the **TBOX LP** (Low Power) introduces advanced capabilities to remote monitoring of technical equipment.

Advanced standby/active power saving algorithms used by the processor combined with Internet technology the **TBOX LP** offers unrivalled functionality for monitoring and control of remote non-electricity powered distributed sites.



Fields of application

- **Water distribution (water network sectors, pumping stations, leak detection)**
- **Irrigation**
- **Fence security**
- **Frost and soil moisture monitoring**
- **Mines**
- **Pipelines**
- **Flood monitoring**
- **Rivers flow and level**
- **Remote metering**
- **Buoys**
- **Grain silos**
- **Cranes, traveling cranes...**

Low and ultra low power consumption

In standby mode, the input/output functions and communications ports are not consuming any power. The consumption is thus only a few micro-amps! In the sampling mode and the automation cycle mode, the consumption increases to a few mA for a very short period of time in order to take the readings. In the communications mode, the consumption barely increases any further. In reality, the processor generally stays in standby mode in low power applications, with short sampling times and very short communication times, such that the total consumption is extremely low.

Power supply

Depending on the model, the **TBOX LP** is powered by small lithium batteries or by rechargeable batteries combined with a solar panel, a small wind-powered generator, or any other external source. In all models, the operational life of the units is able to exceed 10 years. In Switched Telephone Networks (STN) communications, the LP models 100 & 200 modem and processor are powered directly by the telephone line, thus with no effect on the equipment lifetime. The LP model 300 uses its internal battery and solar panel to power its circuitry.

Communications

The **TBOX LP** uses the switched telephone network, the GSM network, or license free radio communication depending on the model and options. All our equipment is approved by international bodies. Their design complies with the strictest telecommunications standards.

Data logging

Events are recorded intelligently in order to optimize the use of the available memory. More than 100,000 time-stamped records can be stored in memory. For slow analog profiles, registers ensure that (programmable) changes in the measurement with respect to the previous sample are saved. For fast processes, sampling tables enable the samples to be registered in a maximum, minimum, average, instantaneous or incremental form over specific periods of time, going from a second to several hours.

This optimization of records reduces the memory size while minimizing daily or weekly (or even monthly) communication times with the central station, thus achieving lowest operating costs possible.

In addition to recording process data, an “internal events” database is available for all system events as they occur (remote control resets, minimum voltage for measurements, changing the time of the internal clock, watchdog timer, open alarms, debugging information, etc).

Alarm management

With an internal Real Time Clock (RTC) and schedule as standard, **TBOX LP** can help manage your technical service staff. Depending on the severity of the event, it will send alarm messages by GSM (SMS), e-mail, or FTP (File Transfer Protocol).

Internet compatibility

TBOX LP has Internet technology integrated into its operating system. This compatibility with the TCP/IP protocol on several levels enables TBOX LP to send regular statistical reports to Internet portals using FTP technology, or to send them by e-mail.

Programming and process automation

TBOX LP is managed by a software that makes maximum use of the 32-bit power of Windows (95, 98, NT/2000, XP). User friendly and intuitive, it does full justice to the various **TBOX LP** functions. You can thus create and save the different configurations of your stations and then download them locally or remotely over the phone network, by GSM or by radio. A programming language similar to Basic provides power and flexibility in the definition of your process automation.

TBOX
Low Power e-RTU

A **new range** of products appropriate to **your** r

The new range of **TBOX LP** products comes in three models:**LP100**, **LP2**
With **ULTRA LOW POWER CONSUMPTION** of barely a few µA, the L
monitoring and logging systems designed to operate autonomously for up
maintenance. Just one or two lithium batteries are enough for the entire ur

The LP300 is a **LOW POWER** "wireless" selective monitoring, loggi
containing inputs and outputs with consumption of the order of a
few dozen mA. Powered by a small 12VDC battery and a s
LP300 communicates by radio and/or GSM

TBox LP 100

The TBOX LP100 is a new autonomous Telecontrol set with data logging and alarm functions that do not require an external supply. With its small size, it is able to remotely monitor isolated sites. Designed for water distribution in particular, the LP100 is an ultra low power system enabling you to permanently monitor consumption and detect any leaks in water distribution network. It can record data on alarms, pulse/flow meters or other digital measurements, and archive it in the form of logs, statements and statistical calculations. Internet compatible, it can send e-mails and data logger files by FTP. The TBOX LP has its own STN dial up modem (switched telephone network) so that alarms and information can be sent to a central Telecontrol station and/or Internet portals. Designed to be installed in meter cabinets, it comes in the form of a sealed box containing ultra low power electronics guaranteeing several years of autonomy.

- **Power supplied by lithium batteries: Up to 10 years of operational life**
- **8 X Digital inputs (alarms and/or metering) self powered**
- **Sending of e-mails, SMS, log files to WEB server...**
- **Built in PSTN modem**
- **IP66 sealed housing**

TBox LP 200

An ultra low power system, the TBOX LP200 is very similar to the TBOX LP100 With additional 4 x analog inputs enabling pressures to be read, or any other Analog sensors measurements with the 0/4-20 mA standard.
It also has a specific analog input enabling cathode protection information to be read (-10 VDC to + 10 VDC).

- **Power supplied by lithium batteries: Up to 10 years of operational life**
- **8 X Digital inputs (alarms and/or metering) self powered**
- **3 analog inputs (pressure, 4-20 mA, 0-5 VDC, etc) self powered**
- **1 input for measuring cathode protection –10V to +10V**
- **Sending of e-mails, SMS, log files to WEB server...**
- **Built in PSTN modem**
- **IP66 sealed housing**

needs

00 and **LP300**.
P100 and LP200 are
to **10 years** without
it.

g & control system
few hundred µA to a
olar panel supply, the

300 TBox LP 300

A low power system, the TBOX LP300 is a “wireless” selective Telecontrol product. It is designed to monitor and control equipment on sites where standard power supply or telephone wire communications link (STN, LS/LP, etc) are not available. The LP300 can use a low power license free RF modem or a GSM modem, or may even use both. The combination of RF and GSM enables a set of remote inputs/outputs to be used over short or long distances. The LP300 integrates perfectly into an existing TBOX network by providing a solution of decentralized wireless remote inputs/outputs. Compatible with the ModBus protocol, the LP300 can also be interfaced with other programmable controllers or telemetry systems compatible with this standard.

- **Power supplied by small 12VDC battery rechargeable by solar panel**
- **8 X Digital inputs (alarms and/or metering), self powered**
- **4 X Analog inputs 0-5VDC, 0/4-20mA, self powered**
- **8 X Digital outputs (solenoids, etc.) with 3 states per output**
- **Sending of e-mails, SMS, log files to WEB server...**
- **Radio modem (license free) spread spectrum frequency hopping – distance up to 10 km**
- **GSM modem**
- **IP66 sealed housing**

Technical Specifications

	LP100	LP200	LP300
Digital inputs	8 (dry contacts 0 to 12 VDC)	8 (dry contacts 0 to 12 VDC)	8 (dry contacts 0 to 12 VDC)
Sampling of digital inputs	8 Hz or 32 Hz	8 Hz or 32 Hz	8 Hz or 32 Hz
Meter MAX pulse frequency	4 Hz - 50% or 3.2 Hz - 10%	4 Hz - 50% or 3.2 Hz - 10%	4 Hz - 50% or 3.2 Hz - 10%
Standard analog inputs	-	3 (0 to 5VDC or 0/4-20mA 10-bit resolution with supply (12 or 24V) (example: pressure probe, ground moisture sensor, etc.)	4 (0 to 5VDC or 0/4-20mA 10 bit resolution with supply (12 or 24V) (example: soil moisture sensors, Temperature, %RH, flow etc.)
Specific analog inputs	-	1 10 bit analog input for voltage measurement -10 to +10V (e.g.: cathode protection)	-
Digital outputs	-	-	8 (e.g.: solenoids) - capacitive outputs - or 12 V / + control bit for correctly executed command
Power Supply	1 or 2 3V6 lithium batteries, estimated lifetime: 5 to 10 years - 1 lithium battery supplied as standard	1 or 2 3V6 batteries 1 lithium battery supplied as standard	Internal 12 VDC lead battery (1.3 to 7Ah MAX. – no limit with external battery) – battery not supplied as standard
Possibility to supply the unit externally	YES, 8 to 16 volts (standard 10mA)	YES, 8 to 16 volts (standard 10mA)	YES. Solar panel (max. 26 VDC)
Supply by solar panel	-	-	YES (direct input + integrated regulator)
Battery charger	-	-	12V nominal charger with temperature compensation. Maximum charge current programmable to 1A or 0.25A in order to support batteries of different capacities
RS232 port	1	1	1
RS485 port	-	-	via ModCom
Low power STN modem	1 (V22, V22bis)	1 (V22, V22bis)	NO
Optional RF modem	NO	NO	YES. 900MHz or 2.4GHz – license free – Standard communication speed: 9600 baud (option: 19200 or 1200 Baud) – communication distance up to 30 km in line of sight with high gain antenna – 1.2 km urban area
Optional GSM modem	NO	NO	YES. GSM dual band modem EGSM900/GSM1800 Complete approvals according to the GSM Phase 2/2+ standard
Intelligent data logging with time stamp	YES	YES	YES
Alarm management	YES	YES	YES
Local programming	YES (language Pseudo-Basic)	YES (language Pseudo-Basic)	YES (language Pseudo-Basic)
Internet compatibility: e-mail support:	YES*	YES*	YES*
Internet compatibility: FTP support:	YES*	YES*	YES*
Microcontroller	16 bits 7.4MIPS	16 bits 7.4 MIPS	16 bits 7.4 MIPS
Memory on microcontroller	256 Ko Flash and 20 Kb RAM	256 Ko Flash and 20 Kb RAM	256 Ko Flash and 20 Kb RAM
Memory off microcontroller	512 Ko Flash and 128 Kb static RAM battery backed	512 Ko Flash and 128 Kb static RAM battery backed	512 Ko Flash and 128 Kb static RAM battery backed
Real-time clock	YES	YES	YES
Battery voltage measurement	YES	YES	YES
Standby consumption	10µA at 3.6 VDC	10µA at 3.6 VDC	200µA at 12 VDC
Communication protocol	ModBus/JBus (other protocol on request)	ModBus/JBus (other protocol on request)	ModBus/JBus (other protocol on request)
Lithium backup battery	NO	NO	YES
Pushbuttons	Reset, program mode	Reset, program mode	Reset, program mode and LED
LEDs	1	1	25 (Digital outputs and communication modules) + 1 LED 'heart beat'
Internal temperature measurement	-	-	YES
LCD	-	-	optional
Housing	IP66 sealed (EN60529), IK08 (EN50105)	IP66 sealed (EN60529), IK08 (EN50105)	IP66 sealed (EN60529), IK08 (EN50105)
Cabling	via pin-removable screw connectors – cables inserted via glands	via pin-removable screw connectors – cables inserted via glands	via pin-removable screw connectors – cables inserted via glands
Dimensions	180x180x60 mm (HxLxD)	180x180x60 mm (HxLxD)	180x255x175 mm (HxLxD)
Weight	700 gr.	700 gr.	1000 gr. (without battery)
Operating conditions	-20°C to +50°C (up to 65°C possible with shorter lifetime and higher consumption)	-20°C to +50°C (up to 65°C possible with shorter lifetime and higher consumption)	-20°C to +50°C (up to 65°C possible with shorter lifetime and higher consumption)
Storage conditions	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C
Product reference	TBOX LP100	TBOX LP200	TBOX LP300

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* Available in 2003

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