TBOX

Intelligent Solutions for Remote Monitoring and Automation
Semaphore T-BOX Ultra Low Power Wireless RTU Products

T-BOX ultra low power wireless products cost effectively extend advanced, IP, web and telemetry technologies to even the smallest, remote assets and processes. To meet all installation needs, they are available in very compact, DIN rail-mounting modules and a variety of weatherproof enclosures with integrated battery power sources.

Introducing T-BOX Ultra Low Power Wireless Products — now stay connected to your most remote assets, at a price you never thought possible. Only T-BOX gives you both monitoring and control with Web server simplicity and setup. Communicate from almost anywhere with long-range, multi-communication capabilities. T-BOX provides an affordable solution for managing your previously unmanaged mobile and fixed assets.

By leveraging easy-to-use web technologies and a variety of wide area networks, T-BOX products offer up to 50% less total installed cost, per point, versus traditional systems and provide highly informative access to data through automated reporting and browser software.

T-BOX ultra low power products are ideal for decentralized applications, such as infrastructure management and mobile asset management, where their push and Web technologies enable high performance yet economical implementation and operation. T-BOX technology provides users real-time access to alarms, live information and historical data, anytime, anywhere, through a standard Web browser. Since T-BOX also supports e-mail and SMS text messaging, personnel can be kept fully up-to-date using a cell phone or PDA.

Semaphore's Windows menus provide a great deal of flexibility in formatting reports, trends and web pages and can adapt to widely varying requirements of individual users. Menu tools also simplify configuration of all communications messaging. No programming is required.

Unlike other solutions for remote monitoring, T-BOX products further incorporate advanced, programmable automation capabilities. IEC 61131-3 Ladder Diagram, Basic and Microsoft Automation environments expedite configuration of automation tasks and custom calculations for virtually any remote asset or process.

By integrating automation with monitoring and telemetry capabilities, a T-BOX ultra low power product is a complete solution for management of assets and remote sites.

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T-BOX Ultra Low Power Wireless Products for Remote Monitoring and Automation

Wireless Monitor — T-BOX WM

T-BOX WM extends advanced monitoring, automation and telemetry capabilities to processes requiring as few as one or two measurements. Designed for locations which lack a power source, intelligent power management allows T-BOX WM to operate using a small lithium battery. This ready-to-install solution is available in a variety of enclosures, including DIN rail-mount and the IP66 weatherproof housing as shown, with internal single or dual lithium battery, and a wireless communications device or PSTN modem. Wireless options include GSM cellular, CDMA cellular and spread spectrum radio. A variety of optional sensors for level or pressure completes the solution.

Ultra Low Power RTU — T-BOX LP

With up to 20 I/O points, T-BOX LP is ideal for mobile assets such as generators and pumps as well as remote processes such as lift stations. The DIN rail-mounting package presents a very small footprint to enable easy installation in conjunction with end devices. Like the Wireless Monitor, T-BOX LP is also available in a variety of weatherproof enclosures. T-BOX LP features the same communications options as the Wireless Monitor and is compatible with battery or solar power systems.

Ethernet RTU — T-BOX LT

T-BOX "Lite" adds Ethernet 10/100 Base T communications and a variety of I/O selections to the line. In addition to Ethernet, T-BOX LT includes an RS 232 port, RS 485 port and a choice of PSTN modem or wireless communications devices. T-BOX LT offers a choice of I/O counts, which are optimized for applications such as building / energy management (LT200), heating systems (LT201) and transportation systems (LT300). T-BOX LT is available in the standard, DIN rail-mounting package as well as a variety of enclosure solutions.

NETWORK MESSAGING AND NOTIFICATION

END DEVICE INTERFACING

A T-BOX ultra low power RTU integrates monitoring, automation and telemetry functionality. Interfaces with discrete I/O and intelligent end devices such as wireless sensors provide "gateway" capabilities for push communications and wide area networking.

WebPages Served via the Internet or an Intranet

E-mail Messaging

SMS Text Messaging

SCADA Protocol "Pull" Messaging, e.g. Modbus

T-Box Ultra Low Power RTU

Flow Meters and Sensors

Low Power Sensors for level, Pressure, etc.

Analog, 4—20 mA Transmitters

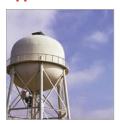Access Control, Contact Inputs, Security Devices

T-BOX Ultra Low Power Products — Core Capabilities

T-BOX enables the complete integration of monitoring, automation and telemetry functionality in a single, rugged package. Compatibility with a broad array of discrete devices and intelligent end devices, combined with advanced, telemetry and web capabilities, provides a solution for virtually any application.

Applications

T-BOX ultra low power products are ideal for monitoring and automation applications in a variety of industries, including building and energy management, mobile asset management, transportation and water/wastewater.

Integrated Packaging
Complete monitoring, telemetry and automation functionality is provided in a single package. Standard enclosures including internal battery power eliminates added costs and scheduling delays due to systems integration work.

Ultra Low Power Management
Ultra low power consumption in the WM and LP models keeps power source costs at a minimum and provides long life, up to eight years, using a single battery. Redundant batteries allow the RTU to continue operating even when one battery fails.

Integral Web Server
As a standard feature, all T-BOX products manage Internet and Intranet communications without the need for a front-end device. Semaphore's software tools greatly simplify configuration of web pages and communications messaging. No complex programming is required. Dynamic objects, entry fields, tables, trends, and links to other pages are simply added with a few clicks.

E-mail
On a programmed schedule or change of state, a T-BOX RTU can send e-mail messages to multiple recipients. E-mail messages can have attached files, which include complete reports with live and historical information as well as alarms and events.

Text Messaging
Like e-mail, SMS text messages can be transmitted to multiple recipients on a programmed schedule or change of state. This allows mobile phone and PDA users, anywhere in the world, to be fully informed of conditions at the site.

Alarm Management
Using push communications, a T-BOX RTU sends alarms to a variety of recipients, including e-mail boxes, mobile phones, pagers, web portals, etc. Integrated alarm management includes control of repeated call attempts, escalation/redirection, acknowledgement management and multiple levels of authority. Alarms can be acknowledged even via a mobile phone.

Data Logging
T-BOX products support sophisticated archiving, with elaborate preprocessing locally at the RTU. Values can be maintained in the form of averages, maxima, minima or instantaneous samples. Event tables include alarms and events for the controller as well as the asset/process.

Intelligent End Device (IED) Compatibility
A T-BOX ultra low power RTU directly interfaces with a broad array of devices such as access control, analyzers, barcode readers, chromatographs, flow meters, smart transmitters, and wireless sensors. T-BOX provides alarming, historical logging, programmable control, remote configuration, and "gateway" capabilities, which link such devices with wide area networks.

SCADA Compatibility
While T-BOX ultra low power products feature IP, push and web technologies, they also drop in to traditional SCADA systems, which use a variety of common or standard protocols, such as Modbus.

Integral Data Communication Devices (DCEs)
T-BOX ultra low power products are very flexible in terms of hardware compatibility. To meet communications requirements in any location, available physical interfaces include Ethernet (T-BOX LT models, only), RS 232, RS 485, GSM cellular, CDMA cellular, PSTN modem, and spread spectrum radio.

Programmable Automation
T-BOX processing capabilities are appropriate to automation requirements as well as custom calculations and logic. The LD programmer will find the IEC 61131-3 ladder diagram editor to be familiar and intuitive. For those who prefer structured text, a BASIC environment is also provided. Systems suppliers who use Microsoft tools are also supported through Microsoft Automation.

Product Specifications at a Glance

T-BOX Model	WM	LP	LT100	LT200	LT201	LT300
DI	4	8	2	2	2	6
Above, with PI	2	2	2	2	2	2
DO	4	8		4	4	
DI/DO			8	8	8	16
AI	0 or 2	0 or 4		6	2	8
AO						2
RTD Input				2	6	
GSM/GPRS, CDMA, SS Radio, PSTN Options	Yes	Yes	Yes	Yes	Yes	Yes
Ethernet	No	No	Yes	Yes	Yes	Yes
SD/MMC Card	No	No	Yes	Yes	Yes	Yes
Protocols	Over 40 drivers, including Modbus Master/Slave, DNP 3.0, IEC 60870-5, etc.					
SD/MMC Card	No	No	Yes	Yes	Yes	Yes
Operator Display	Optional	Optional	External	External	External	External
Lithium Battery	Yes	Yes	No	No	No	No
Redundant Lithium	Yes	Yes	No	No	No	No
Battery Life	4 to 8 Years	2 to 5 Years	N/A	N/A	N/A	N/A
Solar Power	No	Yes	Yes	Yes	Yes	Yes
Ext. DC Power	No	Yes	Yes	Yes	Yes	Yes
Integral Charger	No	No	Yes	Yes	Yes	Yes
Power Draw	Ultra Low 0.1 mA	Ultra Low 0.2 mA	Low 85 mA	Low 85 mA	Low 85 mA	Low 85 mA
Hazardous Area	C1 D1/Z1	C1 D1/Z1				

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