



Semaphore T-BOX LT2

A powerful Internet-ready RTU solution for remote automation and monitoring

In a very compact, DIN rail package, the new TBox LT2 brick RTU brings multiplatform Web, wireless connectivity, and advanced automation to remote assets and processes.

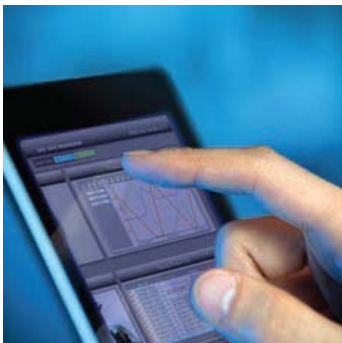
CSE Semaphore's TBox all-in-one architecture provides up to 50% cost savings over systems that combine PLC, communications, and SCADA components. The new TBox LT2 RTU integrates advanced automation, web server, alarm notification, and data logging with Ethernet and wireless communications in a single, rugged module. Now all remote assets and processes are under your control and within reach.

Innovative push and multi-platform Web server technologies open up new possibilities. Users have complete access to alarms, live conditions, and historical data on their mobile devices, tablets, and PCs — anytime and anywhere. This self-contained system gives you everything needed to create high-performance yet economical automation and monitoring installations.

Key Features

- Powered by CSE Semaphore's advanced, Series 2 processing engine
- Multiplatform vector-based Webserver 2.0
- Powerful PLC features
- Alarm management
- Smart Data Logging™
- Security suite with authentication, encryption, firewall, HTTPS, VPN, SSL, SFTP
- IP Pass-through, FTP, e-mail, text messaging
- SNMP and Network Time Protocol (NTP)
- Modbus (Master and Slave), DNP3 Slave, DF1, IEC60870 Slave Protocols, and more
- Ethernet, USB 2.0, RS232, and RS485 ports
- Integral 3G
- Micro SD card for local archives, program backup, and remote start-up
- Mixed I/O configurations up to 26 points
- I/O expansion
- Embedded battery charger
- ADK application software development kit for Linux





Always in touch

Via Web 2.0 and multi-media messaging, TBox LT2 keeps users informed, anytime, anywhere.



SCADA compatibility

Support of over 40 protocols including Modbus, DNP3, DF1, and IEC 60870 provide broad compatibility.



IT and security

A security suite and IT tools including SNMP fully support systems management operations.

TBox LT2 — PinPoint technology for smart solutions

A major engineering challenge for smart systems is collecting and aggregating data from a wide variety of remote meters, sensors, and process equipment. TBox LT2 with PinPoint™ technology rapidly brings all remote devices onto the system via Ethernet, serial, and I/O interfaces. Alarm/event management, live data processing, and intelligent data logging provide the full spectrum of information required by smart solutions. Using efficient, push technology, TBox LT2 inexpensively and securely transfers information to smart systems over cellular and wireless networks.

WebForm Studio 2.0

CSE Semaphore's unique WebForm™ Studio 2.0 unlocks the potential of today's web-enabled devices in automation and monitoring systems. Instead of producing device-specific apps, CSE Semaphore has deployed Asynchronous JavaScript and XML (AJAX), the agnostic technology of reference for our new Web interface. Without writing code, TBox LT2 users can build device-independent Web pages that include vectorized dynamic objects from an extensive library. WebForm Studio 2.0 further enables a common reporting engine that keeps everyone informed — from local technicians to operations management to mobile device users anywhere—and license-free!

Applications

TBox LT2 is ideal for remote automation and monitoring applications in a broad variety of industries, including agriculture, broadcast/telecommunications, energy management, mobile asset management, oil & gas, smart grid, transportation, utilities, irrigation, signaling, vendor-managed inventory, and water/wastewater.

CSE Semaphore TBox LT2

TBox all-in-one technology creates economical, high-performance monitoring and control installations. Key features and benefits of the LT2 are:

Powerful Automation

Control applications are readily programmed using BASIC or IEC 61131-3 Ladder Diagram with an extensive function block library. For large RTU deployment, advanced programmers will benefit from the compatibility of our programming environments with Microsoft Automation in order to configure applications using common tools such as Microsoft Excel or Visual Basic.

Alarm Management

Alarm notification includes multimedia messaging, recipient groups, escalation, and shift management. Users can acknowledge alarms and initiate logic operations from their smart phones, tablets, or any wireless devices.

Smart Data Logging

Special routines are available to only log the necessary events with their appropriate time stamps. Reports in CSV, text, or XML formats are quickly configured using CSE Semaphore's Report Studio and are readily available via e-mail attached files and FTP.

Push Communications

Without waiting for a poll, TBox LT2 initiates messages via e-mail, FTP, and SMS text to immediately notify users of alarms and live conditions at remote assets and processes.

Security Suite

TBox LT2 capabilities including authentication, firewall, HTTP secure (HTTPS), and VPN are unprecedented among remote terminal units and provide compatibility with a variety of security measures.



Remote management

Out there, TBox LT2 completely controls remote assets and processes.



Operations and maintenance

Extensive capabilities including Web 2.0 and Plug & Go expedite service and support.

Simple Network Management Protocol (SNMP)

An in-depth implementation provides broad compatibility with IT networks as an agent or manager. An array of SNMP function blocks simplifies programming of network messaging.

I/O Configurations

LT2-530 meets a broad range of asset management, monitoring, and process automation applications. I/O includes 8 AI and 16 DI/DO (3 of which can be counter inputs).

LT2-532 adds two analog outputs to the LT2-530 count for a total of 8 AI, 16 DI/DO (3 of which can be counter inputs), and 2 AO.

LT2-540 includes two temperature inputs in place of analog inputs. I/O count is 6 AI, 2 Pt1000, and 16DI/DO (3 of which can be counter inputs).

LT2-542 adds two analog outputs to the LT2-540 count for a total of 6 AI, 2 Pt1000, 16 DI/DO (3 of which can be counter inputs) and 2 AO.

Communications Configurations

Five ports include the following:

- RS-232 for local configuration and programming
- RS-485 for field device networking
- Ethernet for IP networking, local configuration, and programming
- USB 2.0 host
- Remote communications option:
3G modem — model L
T2-5xx-3-EU
or LT2-5xx-3-US



In a compact footprint, TBox LT2 includes Ethernet, RS232, RS485, USB, a communications option such as 3G and up to 26 I/O points. For installations requiring additional I/O, TBox LT2 readily expands using compact modules interfaced via Ethernet or RS-485.

TBox LT2 Specifications

Designation	Industrial grade Remote Terminal Unit (RTU)/Automation Controller	
Processor	32-bit ARM9, 400 MHz	
Clock	Real-time clock with lithium battery backup	
Memory	32 MB NOR Flash (Boot loader, Linux, OS, application, sources, web and reports) 64 MB DDR2 SDRAM (Linux execution, OS, application) 1 MB SRAM with lithium battery backup (data logging, copy of tags value) Micro SD card slot — Optional industrial grade SD card — up to 32 GB	
Front panel switch	RUN-STOP-RESET	
Communication	Ethernet RJ-45 100-BASE T, 4 wires; LEDs for 100, LK and FD RS-232 2 wires (Rx/D/TxD) plus GND RS-485 2 wires plus GND USB 2.0 Host Optional GSM 3G modem (see below)	
3G modem — “EU” model	GSM Quadband (GSM850, GSM900, DCS1800, PCS1900) and UMTS Tripleband (Band I — 2100 MHz, Band II — 1900 MHz, Band VIII — 900 MHz)	
3G modem — “US” model	GSM Quadband (GSM850, GSM900, DCS1800, PCS1900) and UMTS Tripleband (Band I — 2100 MHz, Band II — 1900 MHz, Band V — 850 MHz)	
Antenna	FME male connector	
Inputs/outputs	LT2-530: 16 digital inputs or outputs (3 DI can be counter inputs) 8 analog inputs (4–20 mA or 0–10 Vdc) LT2-532: Adds 2 analog outputs (4–20 mA) to the I/O count above LT2-540: 16 digital inputs or outputs (3 DI can be counter inputs) 6 analog inputs (4–20 mA or 0–10 Vdc) 2 temperature inputs (Pt1000) LT2-542: Adds 2 analog outputs (4–20 mA) to the I/O count above	
Power — main	DC Powered, 9 to 30V DC Input voltage must be 24V DC if backup battery is connected	
Power — backup	Embedded battery charger, 13.8 V DC, 250 mA, for sealed lead acid batteries only; recommended size: 7AH, nom. 12 V DC	
Consumption — Vin 24 V dc	LT2-530/540	LT2-532/542
	-E 50 mA	90 mA
	-3 75 mA	105 mA
Consumption — Vin 12 V dc	LT2-530/540	LT2-532/542
	-E 80 mA	120 mA
	-3 125 mA	165 mA
Connectors	Spring-cage terminal blocks for power, I/O, RS-232 and RS-485	
Operating system	Real-time embedded Linux	
Programming	Via TWinSoft Suite (Automation, Web Editor, Report Editors) or Linux open programming	
Automation languages	Ladder logic (IEC61131-3 LD), Function Blocks, Basic, Microsoft Windows® Automation, optional C	
Alarm handling	Smart alarm management with embedded calendar	
Datalogging	Smart datalogging: sampling tables (instantaneous, min, max, average, incremental), digital and analog chronologies	
Datalogging resolution	down to 1 mS	
IT features	HTTP, HTTPS, FTP, SFTP, SMTP (email), SNMP, IP forwarding, DynDNS, NTP	
Security features	Firewall, HTTP log-in, HTTPS, IEEE802.1x authentication, VPN, SFTP, SSL, Industrial Defender Ready	
Protocols	Support for over 40 protocols, including Modbus (master/slave, RTU, TCP, ASCII), DNP 3.0, IEC60870-5	
DIN rail housing	Proprietary aluminum enclosure, anodized and alodined for corrosion and noise interference resistance	
Size	Height x depth x width: 150mm x 83mm x 29mm	
Weight	300 gr	
Temperature	Storage: -40° to +80°C/-40° to + 176°F Working: -40° to +70°C/-40° to +158°F Industrial grade SIM card is required for 3G operation down to -40°C	
Humidity	5-95% noncondensing	
MTBF	MTBF > 600,000 hours	
Safety certifications	CE, UL/CSA	
EMC certifications	CE, FCC, C-Tick	
Telecom certifications	All EU standards, Industry Canada, R&TTE, A-Tick, Telepermit	
Other certifications	GOST-R	
Hazardous area approval	Pending	