



## Semaphore TBox TG2 TeleControl Gateway

*In a very compact, DIN rail package, the TBox TG2 RTU brings multiplatform Web, wireless connectivity, and advanced automation to remote assets and processes.*



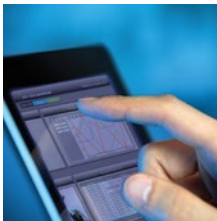
### **A powerful Internet-ready RTU solution for remote automation and monitoring**

TBox TG2 integrates advanced automation, web server, alarm notification, and data logging in a single, rugged module. With connectivity via 3G cellular, Ethernet, RS-232/485, and USB, TG2 is intended for use with process equipment such as drives and short-range, wireless devices, which provide analog and discrete I/O.

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 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 (Master and 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
- I/O expansion
- Embedded battery charger
- ADK application software development kit
- -40 to 70 degree C operating temperature range
- Class I, Division 2 hazardous area approval



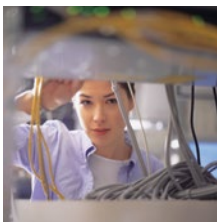
#### **Always in touch**

*Via Web 2.0 and multi-media messaging, TBox TG2 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 TG2 — IP/Web/telemetry 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 TG2 rapidly brings all remote devices onto the system via Ethernet and serial 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 TG2 inexpensively and securely transfers information to smart systems over cellular and wireless networks.

### **WebForm Studio 2.0**

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, Semaphore has deployed Asynchronous JavaScript and XML (AJAX), the agnostic technology of reference for our new Web interface. Without writing code, TBox TG2 users can build device-independent Web pages that include vectorized dynamic objects from an extensive library. WebForm Studio 2.0 provides online information that keeps everyone informed — from local technicians to operations management to mobile device users anywhere—and license-free!

### **Applications**

TBox TG2 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.

### **TBox Advanced Technology**

TBox all-in-one technology creates economical, high-performance monitoring and control installations. Key features and benefits of the TG2 are:

#### **Powerful Automation**

Control applications are readily programmed using BASIC or IEC 61131-3 Ladder Diagram. 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 Semaphore's Report Studio and are readily available via e-mail attached files and FTP.

#### **Push Communications**

Without waiting for a poll, TBox TG2 initiates messages via e-mail, FTP, and SMS text to immediately notify users of alarms and live conditions at remote assets and processes.



**Remote management**  
*Out there, TBox TG2 completely controls remote assets and processes.*



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

### **Security Suite**

TBox TG2 capabilities including authentication, firewall, HTTP secure (HTTPS), and VPN are unprecedented among remote terminal units and provide compatibility with a variety of security measures.

### **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**

TBox TG2 is a version of the TBox LT2 RTU with no process I/O points. If the installation requires analog and discrete I/O in the RTU, TBox LT2 can be used instead.

I/O expansion — Using TBox “RM” Remote Modules, I/O points can be added to a TBox LT2 or TG2 installation. The Remote Modules interface via Ethernet or RS-485.

### **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 TG2-500-3-EU or TG2-500-3-US



*In a compact footprint, TBox TG2 includes Ethernet, RS232, RS485, USB, and a communications option such as 3G. For installations requiring additional I/O, TBox TG2 readily expands using compact modules interfaced via Ethernet or RS-485.*

## TBOX TG2 SPECIFICATIONS

<b>Designation</b>	Industrial grade Remote Terminal Unit (RTU) / Automation Controller		
<b>Processor</b>	32-bit ARM9, 400 MHz		
<b>Clock</b>	Real-time clock with lithium battery backup		
<b>Memory</b>	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		
<b>Front panel switch</b>	RUN-STOP-RESET		
<b>Communication</b>	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)		
<b>3G modem — “EU” model</b>	GSM Quadband (GSM850, GSM900, DCS1800, PCS1900) and UMTS Tripleband (Band I — 2100 MHz, Band II — 1900 MHz, Band VIII — 900 MHz)		
<b>3G modem — “US” model</b>	GSM Quadband (GSM850, GSM900, DCS1800, PCS1900) and UMTS Tripleband (Band I — 2100 MHz, Band II — 1900 MHz, Band V — 850 MHz)		
<b>Antenna</b>	FME male connector		
<b>Power — main</b>	DC Powered, 9 to 30V DC Input voltage must be 24V DC if backup battery is connected		
<b>Power — backup</b>	Embedded battery charger, 13.8 V DC, 250 mA, for sealed lead acid batteries only; recommended size: 7AH, nom. 12 V DC		
<b>Consumption — Vin 24 V dc</b>	No 3G or USB	3G Communicating	USB Connected (Max)
	TG2-500	Add 100 mA	Add 130 mA
<b>Consumption — Vin 12 V dc</b>			
	TG2-500	Add 180 mA	Add 260 mA
<b>Connectors</b>	Spring-cage terminal blocks for power, RS-232 and RS-485		
<b>Operating system</b>	Real-time embedded Linux		
<b>Programming</b>	Via TWinSoft Suite (TWinSoft, Web editor, report editor)		
<b>Advanced programming</b>	TWinSoft supports Microsoft Windows™ Automation; add-ons using ADK (advanced users)		
<b>Automation languages</b>	Ladder logic (IEC61131-3 LD), Basic		
<b>Alarm handling</b>	Smart alarm management with embedded calendar		
<b>Datalogging</b>	Smart datalogging: sampling tables (instantaneous, min, max, average, incremental), digital and analog chronologies		
<b>Datalogging resolution</b>	Down to 1 mS		
<b>IT features</b>	HTTP, HTTPS, FTP, SFTP, SMTP (email), SNMP, IP forwarding, DynDNS, NTP		
<b>Security features</b>	Firewall, HTTP log-in, HTTPS, IEEE802.1x authentication, VPN, SFTP, SSL, Industrial Defender Ready		
<b>Protocols</b>	Support for over 40 protocols, including Modbus (master/slave, RTU, TCP, ASCII), DNP 3.0, IEC60870-5		
<b>DIN rail housing</b>	Proprietary aluminum enclosure, anodized and alodined for corrosion and noise interference resistance		
<b>Size</b>	Height x depth x width: 150mm x 83mm x 29mm/5.91" x 3.27" x 1.14"		
<b>Weight</b>	300 gr/10.6 oz		
<b>Temperature</b>	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		
<b>Humidity</b>	5-95% noncondensing		
<b>MTBF</b>	MTBF > 600,000 hours		
<b>Safety certifications</b>	CE, UL/CSA		
<b>EMC certifications</b>	CE, FCC, C-Tick		
<b>Telecom certifications</b>	All EU standards, Industry Canada, R&TTE, A-Tick		
<b>Other certifications</b>	GOST-R		
<b>Hazardous area approval</b>	Class I, Division 2, Groups A, B, C, D		

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