



The TBox ultra-low-power Wireless Monitor cost effectively extends advanced IP, web and telemetry technologies to even the smallest remote assets and processes. To meet all installation needs, it is available in a very compact, self-powered DIN rail-mounting module or IP68 package.

CSE Semaphore TBox WM Wireless Monitor

Compact, ultra-low-power solution for remote monitoring provides long life using a lithium battery.



TBox provides an affordable solution for managing your previously unmanaged mobile and fixed assets. The TBox Wireless Monitor is ideal for low I/O count applications such as asset tracking and monitoring of remote measurements from analytical, flow, level, pressure, and temperature instrumentation. It is available in an IP68 package and has Class I, Division 1 hazardous area approvals. Use of D size lithium ion batteries gives it both long life and a compact size.

Even when only one or two measurements are required, remote locations can benefit from the advanced IP, Web, and telemetry technologies provided by CSE Semaphore's TBox architecture. TBox technology provides users real-time access to alarms, live information, and historical data, anytime, anywhere, through a standard Web browser. TBox best manages inexpensive public networks by transmitting information via e-mail, IP and SMS text messaging, only when necessary, and allows personnel to be kept fully up-to-date using a mobile phone or PDA.

Unlike other solutions for remote monitoring, TBox also incorporates programmable automation, calculations and logic operations with support for IEC 61131-3 Ladder Diagram, Basic and Microsoft Automation.

Integrating the TBox IP/Web technology platform in a rugged, ultra low-power package, the Wireless Monitor provides unprecedented automation and IP/telemetry capabilities to comprise a complete solution for management of remote assets and operations.

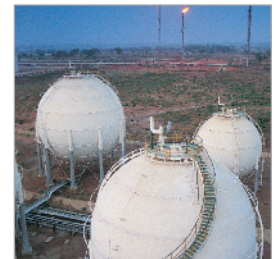
TBox WM Wireless Monitor

NETWORK MESSAGING AND NOTIFICATION

Via 2 AI, 4 DI, 4 DO and RS-485 2-wire, TBox WM directly interfaces with a broad array of devices such as access controllers, analytical instruments, barcode readers, flow meters, intrusion alarms, level probes, smart transmitters, and wireless sensors. Multi-communications gateway capabilities link all users to alarms, live information and historical data.



END DEVICE INTERFACING



TBox WM is ideal for remote monitoring applications in a variety of industries, including energy management, mobile asset management, oil & gas, smart grid, utilities, vendor-managed inventory and water/wastewater.



The TBox Wireless Monitor is available in an IP68 housing (shown on the front page) that is suitable for outdoor locations, which may find themselves briefly under water, and a DIN rail-mounting enclosure (shown here), which presents a very compact footprint for installation in third-party enclosures.

TBox WM Wireless Monitor

Bringing TBox technology to remote asset monitoring:

Communications Management

Timely updates on consumables, inventory and process status substantially reduce site visits. Intelligent management of communications and push technology minimize networking costs while providing the comprehensive information that is needed to optimize maintenance and operations. TBox WM transmits alarms, live updates and historical reports via e-mail, SMS text or IP when required without continual polling on the network.

Integral Web Server

TBox WM serves very informative Web pages, which comprise an inexpensive HMI for operations and local maintenance. Semaphore's WebForm Studio greatly simplifies configuration of web pages using dynamic objects.

Alarm Management

Using multi-media messaging, TBox WM notifies multiple recipients upon an alarm and escalates unacknowledged alarms. Users can acknowledge alarms via phone, PDA or PC.

Data Logging

TBox WM supports sophisticated archiving that maintains values in the form of averages, maxima, minima or instantaneous samples to provide reports for auditing, maintenance, and optimization purposes.

SCADA Compatibility

TBox WM is also compatible with traditional, SCADA systems, which use a variety of common protocols such as Modbus.

Programmable Automation

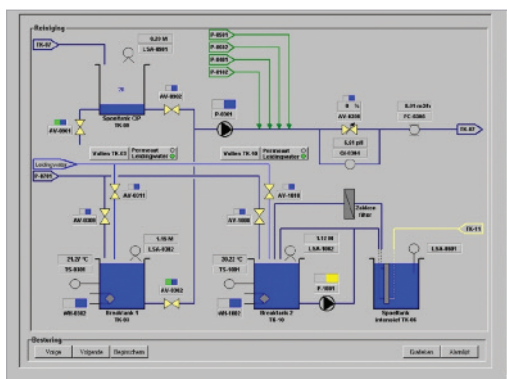
Automation tasks, custom calculations and logic operations are programmable using IEC 61131-3 ladder diagram or BASIC. Microsoft Automation support allows compilation of source from Microsoft Excel, Visual Basic, etc.

Integrated Packaging

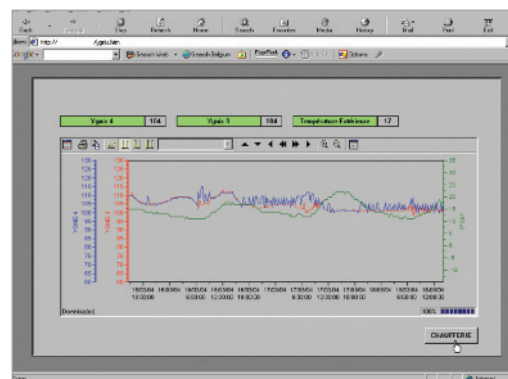
The compact, easy-to-install, IP68 package completely integrates the TBox platform, communications devices and batteries. For installations in third-party enclosures, a DIN rail-mounting package is also available.

Ultra Low Power Management

Ultra low power consumption keeps power source costs at a minimum and provides long life using a single battery. Optionally, a second battery further extends operating time and allows TBox WM to continue operating while the other battery is replaced. Unlike most "low power" devices, TBox WM can source loop current for 4–20 mA instruments.



Web pages can be dynamic, "mimic" displays, which incorporate multiple process objects, tabular displays or trend displays.



TBOX WM WIRELESS MONITOR — SPECIFICATIONS

	Models		
	WM-100	WM-200	WM-201
Designation	Ultra-low-power Remote Terminal Unit (RTU)		
Processor/Memory			
Processor	Low power Mitsubishi 16-bit microprocessor		
Real time clock	Yes		
Flash	768K		
RAM	128K (chronologies + sample tables: 72k)		
Communication			
RS-232 local “programming” port w/RTS and CTS	Yes		
RS-485 2-wire port	Yes		
RS-232 network port full modem control option	Yes		
GSM quad band option	Yes		
Inputs/Outputs			
Digital inputs, dry contact, 0-12 V dc*	4		
Digital outputs, open drain	4		
Analog Inputs, 0-5 V dc only			2
Analog inputs, 0-5 V dc and 0/4-20 mA		2	
Source low power voltage transmitters via 12 V dc		Yes	
Source 4-20 mA transmitters via 12 and 24 V dc	Yes		
*2 Digital input points are also 1KHz counters. Optional front panel pushbuttons use 2 points.			
Power			
Internal battery	Lithium D Cell		
Number of batteries	1 or 2		
Operating voltage	3.6V dc		
Battery voltage measurement, low power	Yes		
Average current draw at 3.6 V dc	0.1 to 1.3 mA	0.2 to 2.0 mA	
Battery life using 2 batteries**	2 to 12 Years	1 to 10 Years	
**Please refer to the TBox WM Battery Life Calculator spreadsheet to determine life time based on specific operating conditions.			
Functionality			
Programming	Via TWinSoft Suite (TWinSoft, Web editor, report editor)		
Automation languages	Ladder logic (IEC 61131-3 LD), Basic, Microsoft Windows® Automation		
Alarm handling	Smart alarm management with embedded calendar		
Datalogging	Smart Data Logging: sampling tables (instantaneous, min, max, average, incremental), digital and analog chronologies		
Timestamp resolution	1 second		
Security	4 levels of authority		
Protocol	Modbus (RTU, ASCII)		
DIN rail housing	TBox WM	Battery compartment	
Size, inches	5.91 H x 4.53 D x 1.58 W	4.4 H x 4.33 D x 1.97 W	
Size, mm	150 H x 115 D x 40 W	112 H x 110 D x 50 W	
Weight	300 g (9.65 oz)	140 g (4.83 oz)	
IP68 housing			
Approvals	IP68 and Nema 6		
Size, inches	8.15 H x 3.0 D x 8.15 W		
Size, mm	207 H x 77 D x 207 W		
Weight with GSM, LCD, one battery	2.35 kg (5.2 lb)		
Installation	Wall-mount and pipe-mount accessories optional		
LCD and pushbutton option	Yes		
Environment			
Operating temperature	-40 to 70° C (GSM option requires industrial-grade SIM)		
Storage temperature	-40 to 80° C		
Humidity	5 to 95% RH		
Certifications			
Safety certifications	CE LVD 2006/95/EC; CEBEC IEC 60950-1:2005 (2nd edition) and IEC 60950-1:2006; CAN/CSA C22.2 No. 60950-1-07; ANSI/UL 60950-1, 2nd Edition		
EMC certifications	CE EMC 2004/108/EC, EN61000-4-2, 3, 4, 5, 6, 11, EN61326-1; C-Tick EN61326-1:2006; FCC CFR47: 2008 (Part 15 Sub Part B), EN55011: 1998+A1+A2		
Telecom certifications	Industry Canada RSS-132 Issue 2, RSS-133 Issue 5; A-Tick AS/ACIF S002:2005		
Other certifications	GOST-R		
Hazardous area approvals	WM-100	WM-200	WM-201
Class I, Division 1, Groups C, D	Configurations without LCD Approved		
Class I, Division 2, Groups C, D		Configurations with LCD Approved	
ATEX Zone 1			Approved
	Configurations with LCD and configurations using the DIN rail-mounting package are not ATEX approved.		

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