Kingfisher Plus

Highly resilient and secure modular remote telemetry data platform for critical and demanding SCADA applications.

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The Kingfisher Plus RTU platform is capable of managing intensive SCADA and telemetry applications.

Kingfisher Plus provides:

- High availability via:
  - redundant processors.
  - redundant power supply.
  - redundant communications.
- Modular and scalable construction.
- High security.
- Wide operating temperature range.
- Integrated field power for DI, AI and AO.
- High accuracy and performance.
- OLED colour display for onsite diagnostics and configuration.













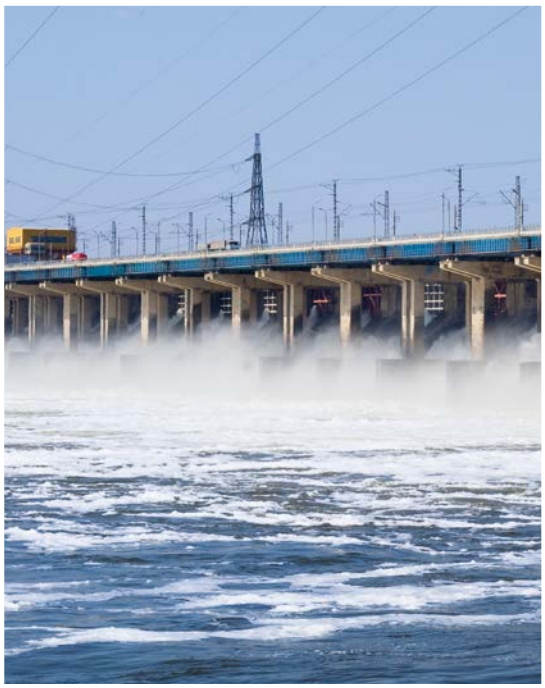


The Kingfisher Plus platform features:

- A modular design enabling scalable communications and I/O expansion.
- Protection against unauthorised access via enhanced security on a project and user access basis.
- Colour OLED display for dynamic real-time onsite diagnostics.
- One to over 20 communications ports and up to 1008 direct I/O points.
- Redundant processors, power supply and communications modules.
- Intelligent I/O modules capable of counting up to 10kHz, quadrature counting, sequence of events monitoring and GPS time synchronisation.
- -40°C to +85°C operating temperature range.
- Extensive support with industry leading DNP3, Modbus and SNMP protocols.
- Reliable, industrial quality memory with 256MB ECC RAM, and 2GB eMMC FLASH.

Features and Benefits

High-performance processing platform

32-bit, 1GHz multi-core ARM CPU that easily manages high I/O and data loading.

Open, programmable automation environment

Based on ISaGRAF, Toolbox Plus supports all IEC 61131-3 languages.

Rich function block library

Pre-engineered function blocks provide invaluable programming shortcuts and rich, easily implemented, functionality.

Broad communications compatibility

A complete array of hardware options plus a rich protocol and function library for network compatibility.

Architecture

Intelligent I/O modules that are easy to install and configure, eliminating issues with third party hardware.

Toolbox Plus software

Toolbox Plus configuration software simplifies complex telemetry applications by eliminating the need to open and switch between multiple software packages. The Toolbox Plus integrated environment combines configuration, programme development and maintenance in one easy to use package. With Toolbox Plus:

- CP-30 projects can be converted to CP-35 projects in a single click.
- Plug and go replacement is supported.
- Multiple versions of firmware and configuration are available for instant, real time switching and fall back.
- Enhanced security and public/private key signed firmware prevents unauthorised tampering.
- Redundancy and configuration is simplified.
- An integrated webserver provides access to key RTU data via any web browser.

The Kingfisher Plus RTU range.

The Kingfisher Plus RTU range is a highly resilient and secure automation and data processing platform featuring IP connectivity, extensive I/O capability and open programming for critical and demanding industrial applications. The Kingfisher Plus RTU range is available in a cost effective modular format and is an ideal solution for a broad range of applications where remote processing, communications power, security and resilience is essential. Applications include:

Water

- Water distribution networks
- Wastewater networks
- Pump station control and monitoring
- Irrigation, channel, and reuse schemes
- Pressure and flow monitoring and control

Oil & Gas

- Upstream generation and compression
- Metering
- Transmission
- Domestic distribution networks

Transport

- Rail fixed asset monitoring and non-critical control
- Power track monitoring and control
- Remote signalling monitoring and non-critical control
- Rail communication infrastructure

Broadcast

- Remote asset monitoring and control for national broadcasters
- Site asset control and monitoring
- Remote monitoring of feed, Tx levels and site conditions
- SMS and SNMP data coordination

Power

- Electrical transmission and distribution monitoring and control
- Power generation water management
- Substation automation
- Line and power condition monitoring
- Power generator remote control

Other Applications

- Mining, water distribution, pondage and environmental
- Airports, water distribution, power reticulation and airbridge control
- Asset monitoring (cement silos, chemical tanks)

Plus many more...

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Kingfisher LP-3 RTU

For monitoring, control and data logging applications

Intelligent management of power consumption allows the Kingfisher LP-3 Remote Telemetry Unit (RTU) to be used with battery or solar power sources.

A sleep-mode current draw of less than 1 mA minimises the size and cost of the required power systems.

A powerful solution for low-power monitoring, control and data logging applications.

The LP-3 cost-effectively opens up the world of high-tech communications and SCADA (supervisory control and data acquisition) functionality to practically all remote locations.

The LP-3 low-power RTU suits a wide range of applications including agriculture operations, environmental monitoring, gas metering, power metering and data logging. These smart, easy-to-use RTUs have ladder logic capability and highly flexible I/O and communication ports.

Very low power consumption is achieved using three modes; communication, scanning and sleeping. The RTU is packaged in a two-part, rugged plastic enclosure that houses the electronics and communication interfaces.

The LP-3 low-power RTU is compatible with the entire range of Kingfisher RTU products and is configured using Toolbox software from Servelec.

The LP-3 is compatible with virtually any SCADA system including Servelec's Scope5 solution through the use of a broad variety of industry-standard communications protocols.

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KINGFISHER LP-3 RTU SPECIFICATIONS

Overview of specification
Full specification details are available in the hardware manual.

General	
Input supply	9.0 - 15.0 V DC @2A max
Power consumption, I/O scan	<55 mA (option ports 3 & 4 not loaded)
Power consumption, sleeping	<2 mA via DC supply
Operating temperature range	-20 ° C to +70 ° C (excluding battery)
Operating humidity	5% to 98% R.H. non condensing
CPU	Hitachi H8S/2144 operating at 32KHz or 7.38MHz
Flash RAM	4Mb
Static CMOS RAM	4K internal, 512K external (battery backed)
Real-time clock	Yes
Battery backup for RAM & RTC	Yes, Lithium
Backup battery lifetime	7 years at 25 °C
Dimensions	185mm (H) x 130mm (W) x 50mm (D)
Comm Port 1	RS-232, 300 to 38,400bps non isolated
Comm Port 2	RS-232/RS-485, 300 to 38,400bps isolated
Comm Port 3 & Comm Port 4	Refer to list of card options below:
A3 Ethernet MTRJ Fiber D PSTN F Serial Fibre H HART	I Isolated Serial L Private line 1200 Baud Rx Spread Spectrum T3 Ethernet
Digital inputs	
Number of inputs	8 Max. Channels 5 to 8 can be configured as digital outputs
Input voltage range	5 to 30V DC=ON; 0 to 1.0V DC = OFF
Digital outputs	
Number of outputs	2 latching relays, plus up to 4 Open Drain (Channels 5 - 8)
Maximum voltage	Relays 30V AC/DC, Open Drain 30V DC
Maximum switching current	Relays 2A, Open Drain 300mA total
Isolation	500V (relay)
Analogue inputs	
Number of inputs	4 plus (inc. battery. V, RTU current, RTU temp & ADC V Ref)
Input voltage range	0-5V (0-20mA with ext. 250 Ohm resistance)
A/D converter resolution	12 bit
Binary input range	0 to 32,760
Analogue output	
Output range	1 x 0-5V, 4-20mA sink
D/A converter resolution	15 bit
Isolation	500V RMS
Certifications include	
A-Tick	Comms options D, R1 and R2
C-Tick	Main module plus comms options A3, D, I, L, R2, R3, T3

TBox Nano specifications

INPUTS & OUTPUTS

Removable I/O connectors	Yes
Maximum I/O points	1 x Digital Output 4 x Digital Input 3 x Analogue Input 1 x RS485 serial port
Digital modules	Built in
Analog modules	Built in

ANALOGUE INPUTS

Type of input (not independent)	2 x 4 - 20mA 1 x 0 - 5V
Resolution	20 bits
Accuracy	0.1% (voltage) 0.15% (current)
Sensor supply output	24V DC

DIGITAL INPUTS

Type of input	Volt free contacts
Contact wetting voltage	5V DC nominal
Input pulse frequency	0 - 5Hz

PROCESSOR UNIT

Type	Kinetis K66 (ARM Cortex M4) 96Mhz
Flash	8MB Flash + 2 x 1MB CPU Flash
RAM	4MB SRAM + 256KB CPU SRAM
Memory (SD card)	Up to 32GB
Real-time clock	Yes
Event logging	Expansive historical data storage capability

COMMUNICATIONS

Wireless	3G
Local	USB RS485
Protocols	Modbus (RTU/TCP, Master/Slave), DNP3 IEC 60870-5-104 Others available on request

CONFIGURATION

Local (PC/Laptop)	Yes
Remote via network	Yes
Programmable Logic	Yes

POWER

Battery (default)	19.2V DC lithium battery 12.4Ah
Power down modes	Yes

ENVIRONMENTAL

Working temperature	-40°C to +70°C
Storage temperature	-40°C to +85°C
Submersion	IP68 4 metres for 4 days

DIMENSIONS

Width	142mm (5.59”)
Height	197mm (7.75”)
Depth	115mm (4.52”)
Weight	1.5kg

APPROVALS

CE, UL/CSA, FCC, RCM, RED

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TBox Nano

Battery operated, ultra-low power wireless telemetry unit and data logger for remote applications

Introducing the TBox Nano, a battery-powered telemetry unit and data logger which combines advanced logic processing for control applications with ultra-low power monitoring and exceptional battery life for wireless monitoring. With the TBox Nano, you will never be in the dark about the operation of your remote assets.

The TBox Nano:

Is a state-of-the-art data logger with the logic processing and control capability of an RTU.

Provides innovative push technology for instant notifications.

Accurately logs and transmits data wirelessly, year after year.

Has a robust, IP68-rated rugged construction.

Servelec Technologies' TBox Nano is a powerful self-contained data logger, RTU and machine to machine (M2M) transmitter.

Included in the TBox Nano are many of the RTU features already available in TBox application software including logic processing and push technology.

- Up to ten years' battery life (depending on usage)
- Submersible casing (IP68, 4 metres at 4 days)
- Wide operating temperature range (-40°C – +70°C)
- Remove the need for multiple devices
- Chamber, pole and wall mounting options
- 30 years telemetry industry experience inside every unit

Typical applications

The TBox Nano saves you money. With the logic and control capability of an RTU and the ultra-low power operation of a wireless logger the TBox Nano removes the necessity for multiple devices for one application. Its digital output and logic processing capability means it operates like an RTU, enabling you to control your remote dispersed assets wirelessly.

The TBox Nano's exceptional battery life and expansive historical data storage capability means it can collect, log and transmit data year-after-year. The TBox Nano is ideal for control and monitoring applications such as:

- Sewer monitoring and pump control
- River level monitoring and sluice gate control
- Temperature monitoring
- Water level monitoring
- Flow monitoring
- Pressure monitoring

Features

The wide range of TBox Nano features include:

- 1 DO, 4 DI, 3 AI and 1 RS485 serial port
- Built in 3G modem
- Lithium battery with up to ten years' battery life
- IP68 enclosure, submersible 4 metres for 4 days
- Modbus, DNP3 and IEC 60870-5-104 protocols supported
- Advanced logic processing
- Highly configurable alarms
- User friendly configuration
- Expansive historical data storage capacity

Intuitive configuration

TBox TWinSoft

TWinSoft is an easy-to-use and intuitive Windows application which is used to configure TBox hardware. The wizard, simple dialogue boxes and predefined variables allow users to rapidly create their applications and dynamically control communication, alarms, data logging and logic, locally or remotely, in complete security.

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TBox LT2

All-in-one Internet-ready RTU
for automation and monitoring
applications.

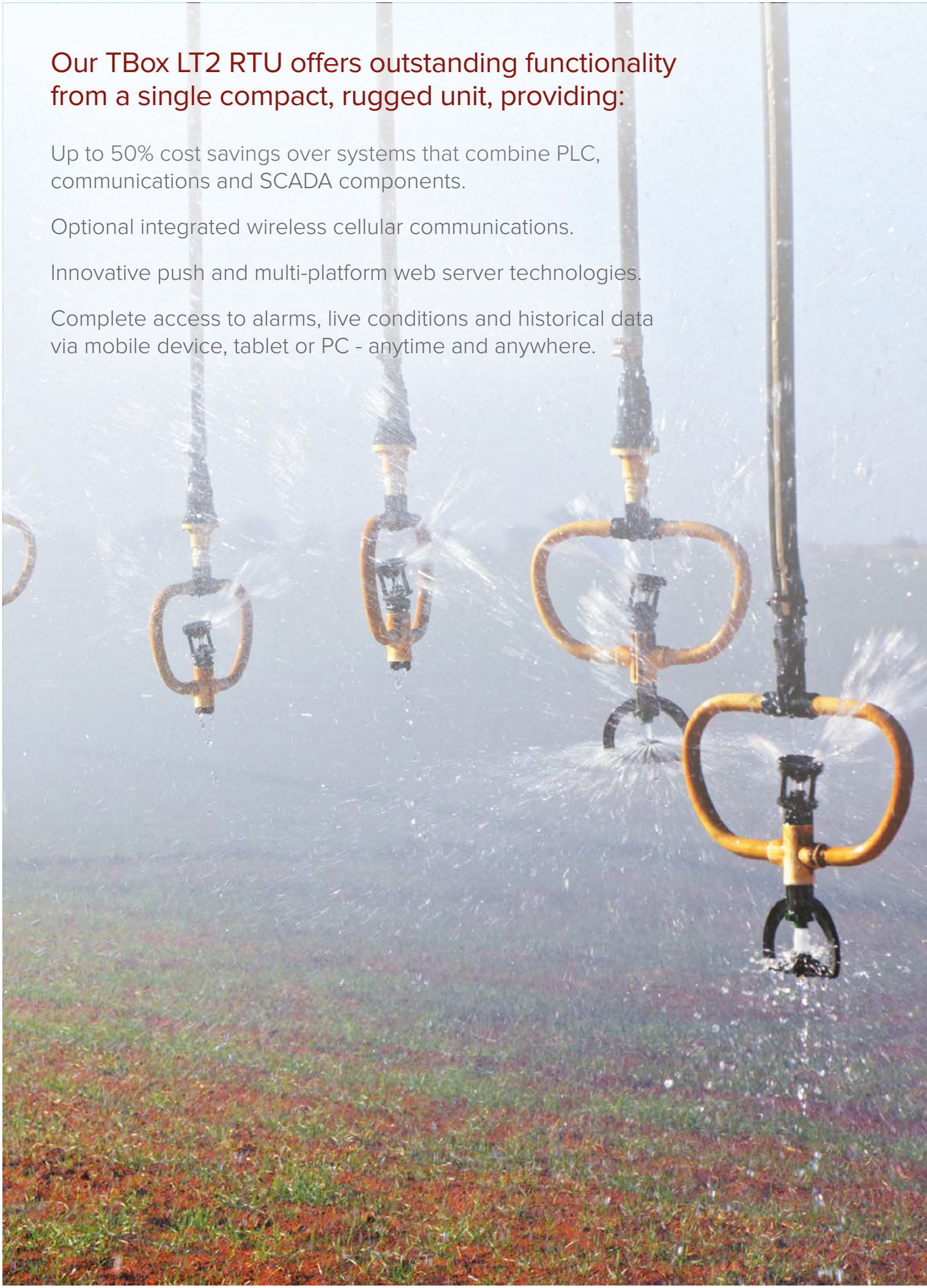
Our TBox LT2 RTU offers outstanding functionality from a single compact, rugged unit, providing:

Up to 50% cost savings over systems that combine PLC, communications and SCADA components.

Optional integrated wireless cellular communications.

Innovative push and multi-platform web server technologies.

Complete access to alarms, live conditions and historical data via mobile device, tablet or PC - anytime and anywhere.



Servelec Technologies' TBox LT2 is a powerful self-contained remote telemetry unit with the versatility for almost any remote monitoring and control application. Thousands of TBox LT2 units are in operation across the globe controlling building systems at world-renowned landmarks, monitoring broadcast transmissions to millions of people and monitoring supply levels of essential commodities such as oil, gas and water.

Onboard web server technology, eliminating the need for complex SCADA software and costly HMI displays.

Integrated wireless communication providing complete access to alarms, live conditions and historical data on your mobile device.

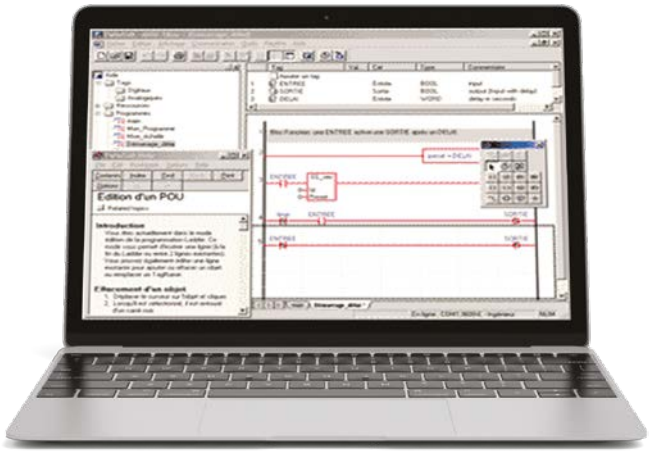
Servelec's advanced Series 2 super-powerful processing engine.

A built-in cyber-security suite with state-of-the-art authentication and encryption technology.

Push notifications by email, FTP and SMS and sophisticated alarm management

A rugged design which withstands the harshest environments and carries Class 1, Division 2 hazardous area approval.

Built within every TBox device is Servelec Technologies' 30 years of experience in the telemetry industry. TBox products can provide everything you need to create high-performing yet economical SCADA and control applications for critical functions. The TBox range of scalable products also includes state-of-the-art, user-centric software packages and additional hardware to transform your measurement and control aspirations into time and cost saving solutions.



Intuitive configuration

- TWinSoft

Designed with a Windows-style menu, TWinSoft is an easy-to-use and intuitive tool to configure TBox hardware. The wizard, simple dialogue boxes and predefined variables allow users to rapidly complete their applications and dynamically control communication, alarms, data logging and logic, locally or remotely, in complete security. TWinSoft also includes WebForm Studio which allows users to create dynamic embedded web pages without any coding knowledge.

Control and monitor your network on the move

- TConnect

TConnect is a secure software package that simplifies remote access, configuration, monitoring and control of all TBox hardware. With TConnect you can access any TBox hardware connected to a GSM/cellular network without the need for a fixed and costly IP address or a dynamic DNS. TConnect takes care of registration automatically, removing the need to manage a VPN network.

TBox LT2 specifications

INPUTS & OUTPUTS

Removable I/O connectors	Removable spring-cage terminal blocks
Digital modules	16 digital inputs or outputs (3 DI can be counter inputs)
Analog modules	8 analog inputs, 2 analog outputs
Temperature modules	2 temperature inputs

PROCESSOR UNIT

Type	32-bit ARM9, 400MHz
Flash RAM	32MB NOR Flash
RAM	64MB DDR2 SDRAM
Real-time clock	Yes with battery backup
Battery backup	1MB SRAM with lithium battery backup
Event logging	Up to 100,000 events

COMMUNICATIONS SUPPORTED

Communication	Ethernet, USB, RS-232, RS-485, GSM 3G/LTE modem, full serial port
Total Ports / RTU	5
Master/slave	Yes
Peer-to-peer	No
Fallback levels	No
PC link	Yes
Protocol	SMTPS IP forwarding DynDNS NTP Modbus DNP 3.0, IEC 60870-5 Siemens ISO-TCP Allen Bradley

CONFIGURATION

Local (PC/Laptop)	Yes
Remote via network	Yes
Programming	Via TWinSoft suite (including WebForm Studio and Report Studio)
Languages	Ladder logic, Basic, Web Services, advanced development via ADK

DEBUG

Local watchdog timer	Yes
Communication status	Yes
Configuration display	Yes
I/O status	Yes
Debug	Yes

DIAGNOSTICS

Instant alarm notification	Yes
Datalogging	Yes
Pre programmed	Yes
Trace log	Yes
Reports	Yes

POWER

DC supply	DC powered, 9 to 30V DC
Solar supply	Solar panel can be used
Power down modes	No
Battery backup	Yes
Battery size	7AH, nom. 12V DC
Battery charging option	Embedded battery charger, 13.8VDC temperature compensated

ENVIRONMENTAL

Ambient temperature	-40°C to +70°C / -40°F to +158°F
Storage temperature	Storage: -40°C to +80°C / -40°F to 176°F
Humidity	0-95% non-condensing

CYBER SECURITY

Authentication	Four level of authority, HTTP login, SSL/TLS, Certificates, IEEE802.1x
IP Security	Firewall (level 1, 2 and 3), HTTP login, HTTPS, SFTP, SMTPS, VPN, SSH

DIMENSION

Width	29mm (1.4”)
Height	150mm (5.91”)
Depth	83mm (3.27”

CERTIFICATIONS

CE, UL/CSA, FCC, RCM, RED, Class I Div 2, IEC 60068-2/6/27/31/64

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Specification

Designation	Industrial-grade remote terminal unit (RTU)
Processor	32 bits ARM9, 400MHz
Redundancy	Power supply, communications, processor level (cold start)
Clock	Real-time clock with battery backup — GPS synchronization (optional)
Memory	32MB NOR Flash 64MB DDR2 SDRAM 1MB SRAM with lithium battery backup Industrial grade SD / µSD card to 32GB (see our price list)
Backplane rack	Passive backplane. Available for 3, 5, 10, 15 and 20 slots
Communication	Ethernet (10/100), 3 x USB, PSTN, GSM/GPRS/3G/LTE, Serial (RS-232/RS-485), and many more
I/O cards	MS-16DI 16 digital inputs, 12-60VDC MS-48DI 48 digital inputs, 12-60VDC — no LED MS-10DI-HS 10 digital inputs, 5-30VDC, Counting (50KHz), Quad inputs, SOE, Debounce filter, Isolated 1/1 MS-16DO 16 digital outputs, 12-60VDC, max 200 mA, Current Sinking, Protected MS-16DIO 16 digital inputs + outputs, 12-60VDC, max 200 mA, Current Sinking, Protected MS-RELAY 8 digital outputs relay, 230VAC or 30VDC max 3A, Isolated 1/1 MS-8AIVC 8 analogue inputs voltage -10/+10 V, -20 mA/+20 mA, 4-20 mA, 14-bit — 2 inputs out of the 8 can be configured with Pt100 or Pt1000 (2 wires) MS-4AI420 4 analogue inputs 4-20 mA, 14-bit, Isolated 1/1 MS-8AI420 8 analogue inputs 4-20 mA, 14-bit, Isolated 1/1 MS-4AOVC 4 analogue outputs, 12-bit, 4-20 mA, -10 V/+10 V, Active, Isolated 1/1 MS-COMBO-18 DI (12-60VDC) + 4 DO (12-60VDC, max 200mA) + 3 AI (4-20mA)
Comms cards	MS-PSTN PSTN 56K modem + 1 RS-232/RS-485 MS-GSM-3G Quad Band GSM/GPRS/3G Modem + 1 RS232/RS485 MS-ETHER-4 Ethernet (10/100) with 4 ports embedded industrial switch MS-SERIAL 2 RS-232/RS-485 ports
Special cards	MS-GPS GPS time synchronisation and positioning module + 1 RS-232/RS-485 MS-IO-SIMUL Simulation + test: 8 DI (switches), 8 DO (LEDs), 4 AI (potentiometers), 4 AO (LEDs)
Hot swapping	All cards
Operating System	LinuxRT (real-time) based
Programming	Via TWinSoft Suite (including WebForm Studio and Report Studio)
Languages	Ladder logic, Basic & Function blocks (IEC 61131-3) and optional C/C++ add-ons
Alarm handling	Smart alarm management with embedded calendar
Data logging	Smart data logging: Sampling tables (periodic) + digital & analogue chronologies (event)
SCADA compatible	TView, InTouch, iFix, WIZCON, CITECT, Topkapi, Cube, Labview, Panorama, Scope-X ...
Remote upload	Up to firmware level
IT features	HTTP, FTP, SMTP & POP3, SNMP, IP forwarding, DynDNS, NTP
Protocol support	Support for over 40 protocols, including Modbus (master/slave, RTU/TCP/ASCII), DNP 3.0, IEC 60870-5, Siemens ISO-TCP, Allen Bradley DF1, EtherNet/IP, IEC 61850 and many more
Security	4 levels of authority, HTTP login, SSL/TLS, IEEE802.1x "IP Security" with: Firewall, HTTP log-in, HTTPS, SFTP, FTPS, SMTPS, VPN, SSH
Power supplies	AC: 85 to 265 VAC (50 or 60Hz) — DC: 90 to 375 VDC DC: +8 to +30 VDC and -60 to -24 VDC (railways -48VDC) Intelligent battery charging
Temperature	Storage: -40°C to +80°C / -40°F to 176°F Working: -40°C to +70°C / -40°F to +158°F
Humidity	0-95% non-condensing
Material	Proprietary aluminum enclosure, Alodine coating for corrosion
Approvals	CE, UL/CSA, FCC, RCM, RED
MTBF	>400,000 hours, statement available upon request

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TBoxMS

Market leading modular remote control and automation solution.

Welcome to the web generation of telemetry. TBox MS provides:

Real-time remote access and control of your site, using the latest web server technology.

Multi-communications capability to suit virtually any process.

Innovative push technology for instant notifications, allowing you to keep key people informed and reduce overheads.

Access to historical data and trending charts anytime, anywhere.

Servelec Technologies' TBox MS features 'plug and go' technology, allowing you to distribute your full site configuration on an SD card or via USB connection, enabling your maintenance team to deploy it without switching on a computer. The TBox MS system includes:

- Onboard web server technology, eliminating the need for complex SCADA software and costly HMI displays.
- Real-time access to alarm management and event logs.
- Ability to connect multiple clients to the same TBox MS device, avoiding costly software licensing fees.
- Intelligent alarm management with instant multiple-recipient notifications, integrated escalation and scheduled team reporting.
- A built-in cyber-security suite with state-of-the-art authentication and encryption technology.
- A robust, all-alloy construction which withstands the harshest environments and provides noise immunity and a -40 - +70°C operating temperature range.

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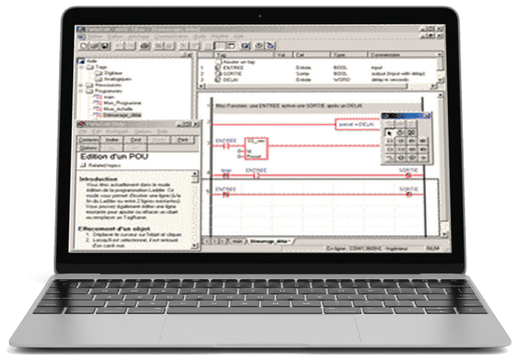

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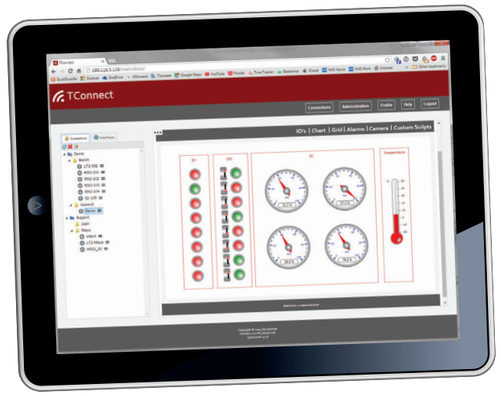

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