

TBOX

SIX FUNCTIONS
IN ONE SYSTEM

BOX

THE INTELLIGENCE
OF THE T-BOX®

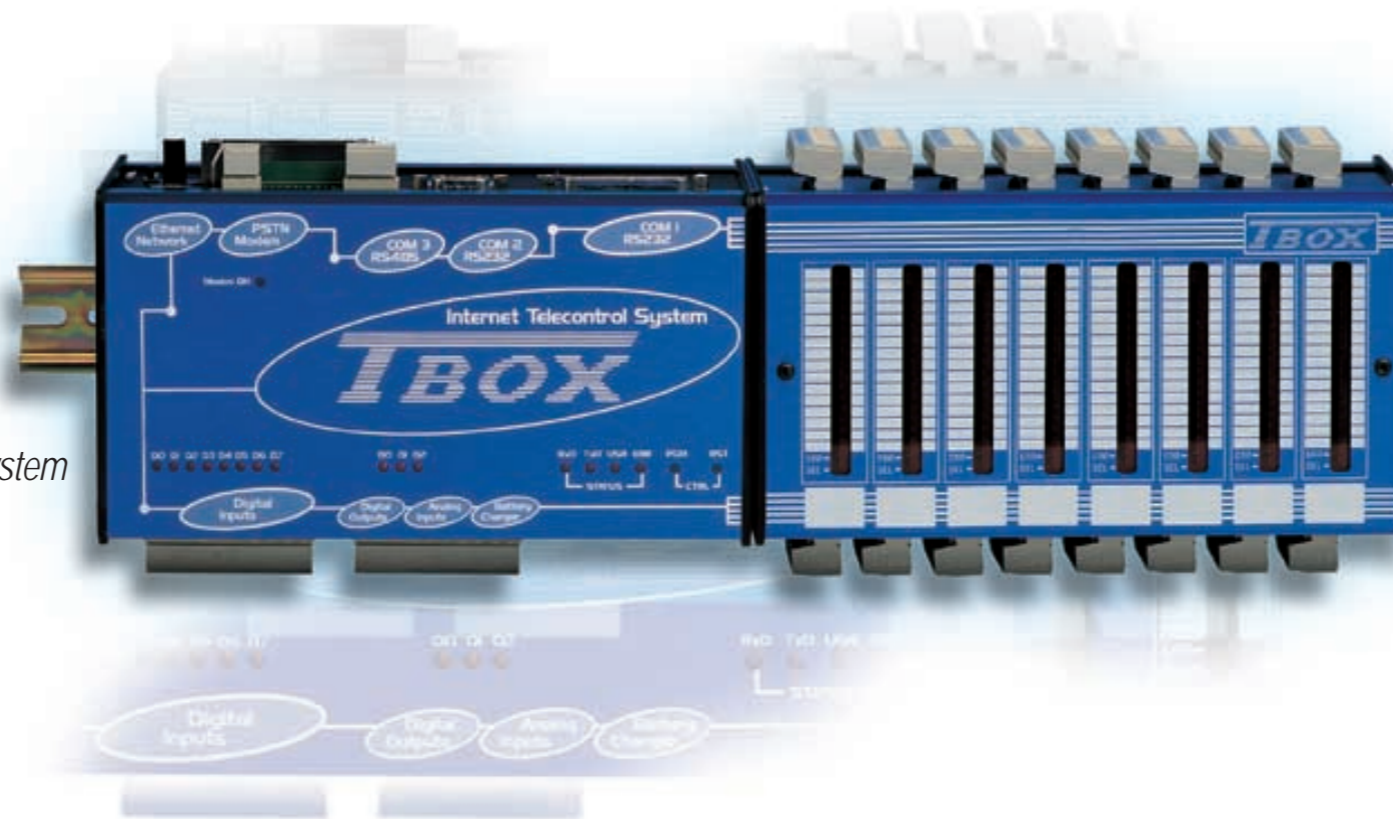
You understand the benefits of telecontrol: complete control of technical equipment from a distance. The T-Box collects the data you need and manages your alarm systems.

It is perfect for applications situated in difficult to access areas or with no staff on site requiring:

- Automation of local actions
- Complete remote control.

In response to these increasing needs, Techno Trade has brought out T-BOX®: the first programmable controller (IEC61131-3) that includes telecontrol and Internet functions as standard.

In one single unit.

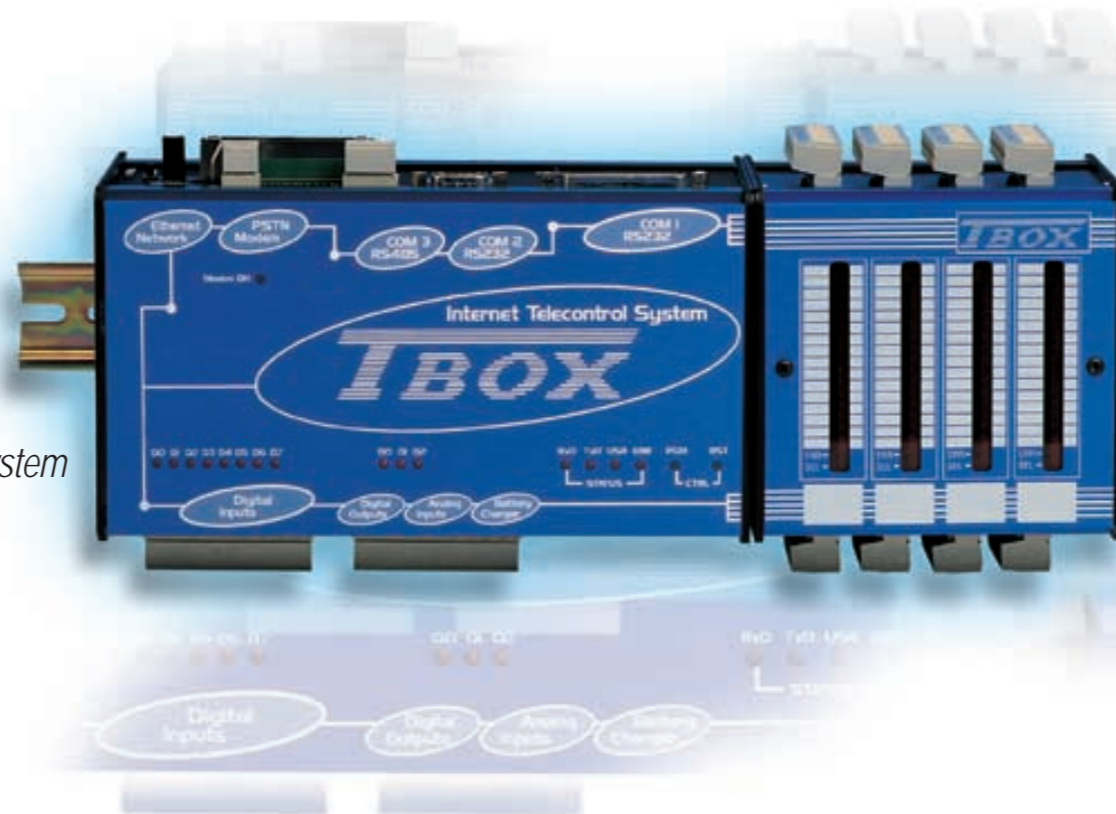


- ✓ *Internet compatible telemetry system*
- ✓ *Multi-communication platform*
- ✓ *Powerful PLC*
- ✓ *Alarm notification system*
- ✓ *Intelligent datalogger*
- ✓ *Protocol converter*

T-BOX

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1. AN INTERNET COMPATIBLE TELECONTROL UNIT

T-BOX[®] includes Internet technology, which not only allows alarms or complete statistical reports to be sent by e-mail, but also for the remote site to be controlled using an ordinary browser. Your normal PC can now operate your technical equipment using a universal tool. T-BOX[®] is thus the first telecontrol system capable of directly managing the Internet communications standard without the need for a communications front end. By supporting FTP technology, T-BOX[®] can update a WEB server on event or automatically at programmed time intervals.

2. A MULTI-COMMUNICATION PLATFORM

With multiple independent universal communication ports, all types of links can be used with T-BOX[®]: digital or analog internal modems, Ethernet TCP/IP, radio frequency communications, GSM, GPRS, RS485 local network, fiber optic, private or leased line, etc. In brief, T-BOX[®] supports all modern communications media.

3. A POWERFUL PROGRAMMABLE CONTROLLER

T-BOX[®] is a fast and powerful programmable controller. Using a simple and interactive programming language under the IEC61131-3 standard, you can define the most sophisticated control applications (PID regulation, mathematical functions, comparisons, edge detection, timer, counters, etc).

4. AN ALARM TELETRANSMITTER

Using simple alarm definitions, you can be alerted when one of them is triggered (numeric or alphanumeric pager system, GSM, supervisory software, Internet e-mail, printer, etc). T-BOX[®] also records all events and allows you to consult them locally or remotely (terminal, SCADA, Internet browser, etc).

5. AN INTELLIGENT DATALOGGING SYSTEM

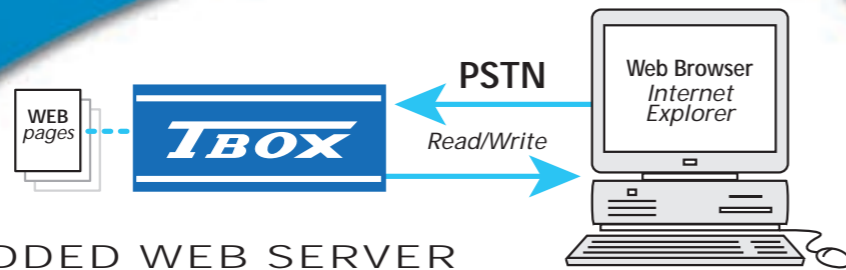
With its high memory capacity, T-BOX[®] is able to archive and time mark a very large volume of information intelligently. Several criteria can thus be defined (change of state, regular sampling with search for minimum, maximum or average) in order to obtain optimum archiving with the work being pre-processed at the remote station. All this information can be consulted or retrieved for subsequent analysis at a central station.

6. A PROTOCOL CONVERTER

For more specific applications T-BOX has the all the power of C programming language for developing tailor-made communication drivers. Interfaces with all equipment not communicating in ModBus can be easily programmed. This interface also opens the door to expanding the many functions of T-BOX[®], with the support of the most sophisticated mathematical functions.

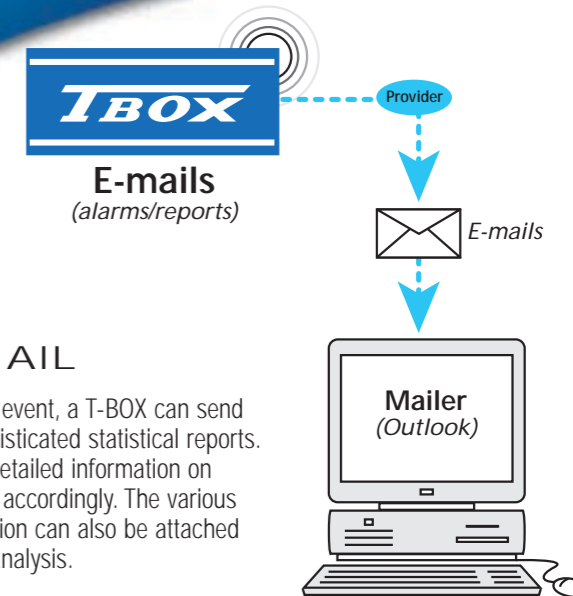
TELECONTROL WITH

INTERNET POWER



EMBEDDED WEB SERVER

T-BOX is the first programmable controller with full "Internet ready" telemetry system. An embedded WEB server is part of the unit which allows operators to monitor an outstation from a standard and universal tool: a simple WEB browser. The "SCADA" concept is now directly located in each RTU, at no extra cost! All security means are of course integrated not only in viewing but also when remote controlling the site or uploading a new configuration.

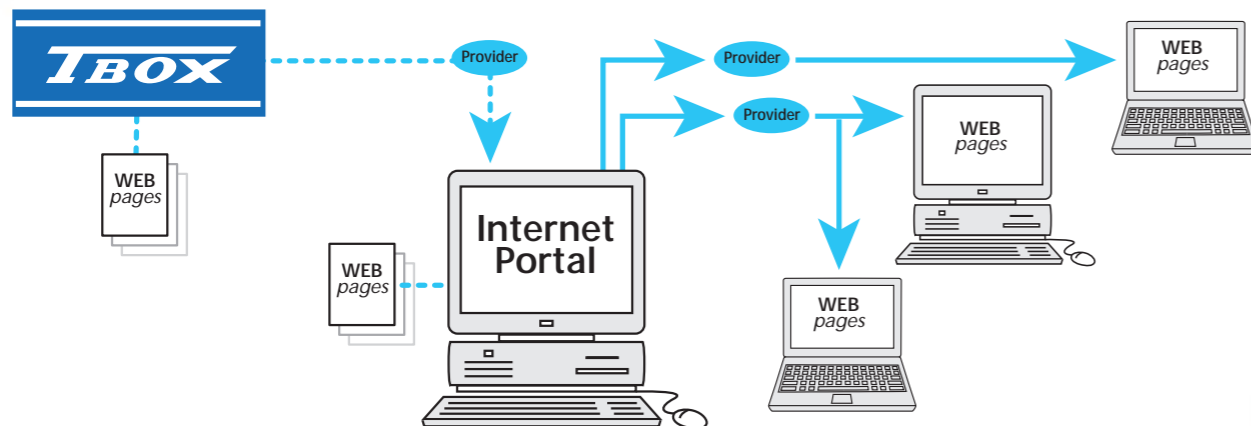


ELECTRONIC MAIL

Automatically at fixed hours or on event, a T-BOX can send e-mails containing alarms or sophisticated statistical reports. Different users can daily receive detailed information on the on-going processes and react accordingly. The various database files stored in an outstation can also be attached to the mails for consultation and analysis.

FTP

With full support of FTP technology (File Transfer Protocol), each T-BOX outstation can update a WEB portal giving accurate information accessible from the Internet. Automatically or on event, HTML pages containing process variables or complete calculated reports are generated by T-BOX and uploaded to a WEB server site.



TWINSOFT: THE CONFIGURATION SUITE

Techno Trade has supplied T-BOX with some very user-friendly software packages. They allow you to adapt the system to your requirements and to personalise it according to your expectations.



Ladder diagram programming: intuitive and user friendly with contextual on-line help.

TWINSOFT: the simple and powerful configuration software

The programming and settings tool, TWINSOFT, exploits the 32 bit power of Windows (95, 98, Millenium, 2000, NT) to the maximum.

User friendly and intuitive, it brings out the full scope of the various T-BOX functions. You can create and save different configurations for your T-BOX systems and then download them locally or remotely over the telephone network, for example.



Definition of database per sampling table.

TWINSOFT enables you to:

- **Define:**
 - Your outstations (inputs/outputs, communications, connected equipment)
 - Your alarms (recipients, messages, calendar, constraints) and actions to be taken
 - The events to be saved and the archiving criteria to be selected
 - Your interface displays for the operating terminals (T-BOX Terminal, PC, ...)
 - Your regular reports and their sending by e-mail.
- **Rapidly create, modify, and debug** your automation program, presented in the form of a ladder logic diagram.
- **Analyse locally or remotely** (for example by telephone link, radio, satellite, GSM, etc)
 - The states of the outstations
 - List the alarms
 - List the contents of different archives
 - Diagnose the condition of the unit step by step.
- **To update** (directly and without manipulating equipment) the software versions of your various outstations.



Configuration of alarms and recipients.

The design of the controller programs is facilitated by use of a ladder diagram editor that is user friendly, interactive and complies with the international IEC1131-3 standards. Nothing could be easier than adding lines or comments, copying entire parts of the program, creating new variables, modules or macros. Reduce your design time by using libraries of predefined functions and subprograms in which will also find powerful regulation functions (PID), mathematical functions (+, -, /, x, rule of 3, etc) and conversions, Boolean functions, etc.

Rapidly develop your programs using the dynamic analysis tools: Display ladder, time delay states, meter and internal register states, etc. Even remotely !

Embedded live mimics



WebForm Studio: a normal browser for dynamically displaying a remote station.

WEBFORM STUDIO

Managing a remote site through a normal browser: the assurance of using a user friendly access tool to operate technical equipment. T-BOX is the first telecontrol system able to directly deal with the Internet communication standard without going through a communications front end.

Simple and user friendly, WebForm Studio permits to create:

- **dynamic pages thanks to a cluster library** (buttons, viewmeters, bargraphs,...)
- **hyperlinks to other pages**
- **buttons and dialog boxes for control, associated to the appropriate access levels of the users**
- **alarm pages allowing remote acknowledgement of the events**
- **sophisticated charts to visualize historical data in the remote site**

Embedded Reports



Report Studio: editor for statistical reports by e-mail.

REPORT STUDIO

Report Studio is part of the TwinSoft Suite; it is user-friendly editor to create sophisticated statistical reports that will be issued automatically by your outstations. Several pages of complex calculations can be generated based on on-line or historical data. E-mails can also be sent with attached files containing historical database for analysis.



Advanced graphical solutions on conventional PC platforms.

ACCESS TO SUPERVISORY PRODUCTS:

T-BOX provides local access to all supervisory packages on the market that comply with the industrial standard "ModBus/Jbus" protocol, including SCADA, DCS and simple MMI (Man Machine Interface) packages. Some of them have specific tools for use with T-BOX, incorporating time stamping ("time stamped ModBus"). You can obtain these optional modules for all remote links and they are capable of easily managing your telecontrol operations.

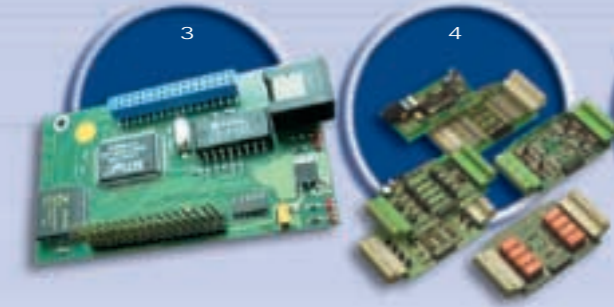
These different software modules act as an intelligent communications front end that can manage several telephone links simultaneously, while still able to perfectly operate the memory archives and alarms originating from the outstations. Finally, as proof of complete access to the software market, T-BOX has a driver that complies with the OPC server standard.

MULTIFORM INTELLIGENCE

T-BOX is not content with just providing the most suitable software available. It completes its offering with a range of accessories to enable you to adapt it to your environment.

SIMPLIFIED INSTALLATION AND EXPANSION

Based on a completely modular and reduced size design consisting of a central unit and expansion racks (of 4 or 8 cards) that can be directly connected to a DIN rail, the T-BOX system is perfectly suited to the modern requirements of telecontrol installations.



The diversity of cards (analog and digital I/O, counters, Pt100, Ni1000, etc) and their detachable and accessible connectors allow for full expansion and rapid maintenance. In order to avoid cabling costs, a range of remote I/O modules enable communications up to several kilometres with a T-BOX.

A COMPACT PRODUCT

The T-BOX is significantly more compact than other control or telecontrol products. This means the space in the electrical cabinet can be reduced, and consequently its cost and weight.

AN INDUSTRIAL DESIGN

Based on the philosophy of the industrial programmable controller, the design of the T-BOX system is based on three fundamental criteria: immunity, reliability and autonomy. T-BOX uses the latest technology (multilayer printed circuits, low consumption surface mounted electronic components). On more remote sites or ones with greater fault problems, T-BOX can still be left to run on its own. Its integrated battery charger, low consumption, and long term memory backup (lithium battery) enable it to keep on working.



1. PCMCIA slot
for using fast analog, digital or GSM modems
2. Extension racks
for 4 or 8 cards
3. Internal 10Base-T Ethernet card
Supports high speed Ethernet communication (10 Mbits/sec)
in TCP/IP, ARP, Ping, Modbus/TCP, HTTP, SMTP and FTP
4. Input/Output cards
for digital and analog signals with individual or group isolation
- with various resolutions
5. GSM data modem
for data communications over the GSM network
6. Lightning protector module
with 3 levels of protection
7. Booster
Auxiliary power supply for large applications
8. Isolator/Converter interface RS232/RS485
with galvanic isolation
9. RM10
remote I/O module in RS485 (4DI/4AI)
10. RM21
remote ModBus Input/Output module in RS485 (24DI/12AI/8DIO)
11. RFID
proximity detection access control system

OVER 12.000 CUSTOMER REFERENCES

T-BOX® is suitable for all situations. From the most modest infrastructure to the largest, from the ordinary to the most complicated.

You will find it in public institutions and private companies. As an example, here are some applications where it has been utilized.



Water distribution

Water towers, reservoirs, pumping stations, valve rooms, remote reading of meters, etc.



Electricity

Low, medium and high voltage cabinets, distribution, remote reading, etc.



Gas

Telecontrol of gas volume converters, distribution, transport, storage, regulation, etc.



Water treatment

Treatment works, chemical stations, filters, etc.



Oil and chemicals

Pipelines, storage tanks, delivery stations, etc.



Building Automation

Air conditioning, heating, intrusion, generator sets, life safety, parking, access control, etc.



Climatic engineering

Boiler rooms, incinerators, refrigeration monitoring, cold rooms, refrigerating circuits, etc.



Environment

Soil cleaning stations, storm channels, weather stations, etc.

Signalling

Traffic light control, locks, railways, underground transport, etc.

Agriculture

Poultry farming, greenhouses, irrigation, etc.

Telecommunications

Remote control of GSM antennas, telephone exchanges.

Public sector

Public lighting, tunnels, urban heating, watering of public gardens, fountains, public toilets, etc.

Rivers

Measurement of water level increases with opening of dams.

Medical

Telecontrol of dialysis equipment, hospitals, clean rooms, etc.

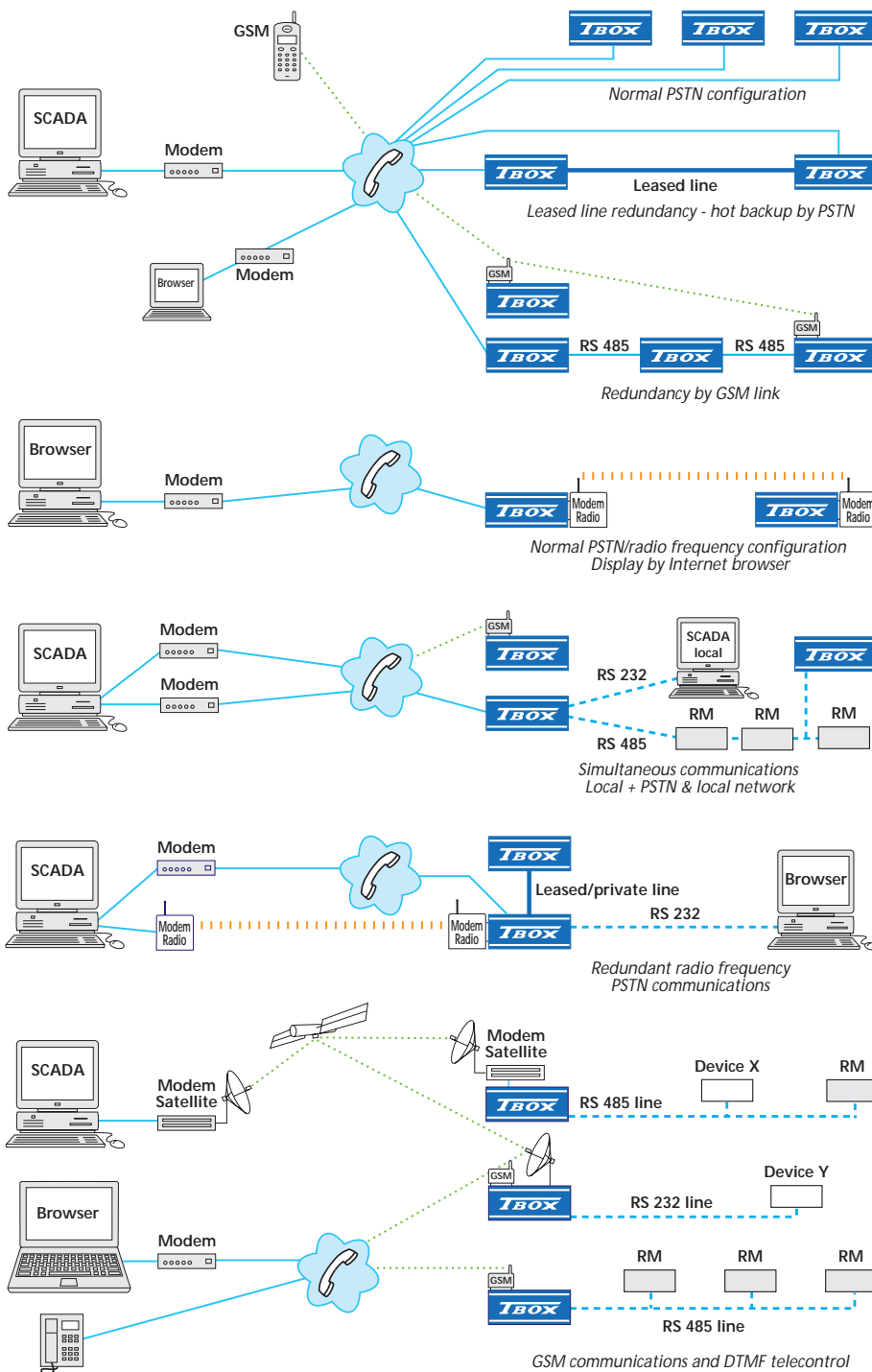
Public swimming pools

Measurements of chlorine concentration, pH and temperature.



A MULTITUDE OF TOPOLOGIES

T-BOX interfaces with all topologies. Its local or remote communication possibilities and interconnection types are many: you keep full control of your application in terms of development and updates. Any subsequent update of the application, even up to the operating system, can be done without having to go on site.



GENERAL TECHNICAL SPECIFICATIONS OF THE T-BOX® SYSTEM

Internal supply 110/130-220/230 VAC 1A or 16 to 48 VDC 2A

12 V integrated battery charger

Number of I/O available on the T-BOX® CPU:

- 8 digital inputs (5-48 Volts)
- 3 open collector digital outputs (48 Volts)
- 2 x 8 bit analog inputs (0-20 mA or 4-20 mA)

Maximum number of I/O: 4096 divided among 31 expansion racks

3 serial communication ports as standard:

- 2 x RS232 ports: COM1, COM2 (ModBus/JBus, Printer, Terminal, Hayes compatible modem, etc)
- 1 x RS485 port: COM3 for local network (ModBus/JBus, specific protocol, etc)

Serial communications speed: 300 to 115.000 Bps

Multi-protocols support:

ModBus/JBus, TCP/IP, IEC870-5, Siemens, Cerberus, TTG, ABB, Landis & Gyr, etc.

2 optional internal modems:

- 1 x PSTN/LL modem: V21, V22, V22Bis, V23, V23r
- 1 x LS modem: V21, V22, V22bis, V23, V23r - Multipoint LL mode up to 10 stations

Dual PCMCIA slot:

Fast analog modem (56 kbps, etc), ISDN digital modem, X25, etc.

Optional Ethernet 10Base-T internal card: up to 10 Mbits/sec (UTP cabling)

Maximum number of simultaneous specific drivers: 4

Types of I/O available on the card:

- Digital inputs: per 16 (5-48 Volts)
- Digital outputs: per 16 (open collector type PNP with electronic protection)
- Relay outputs: per 8 (250 Volts, 2 A)
- 12 bit analog inputs: per 8 (0-10 Volts, 0-20 mA, 4-20 mA, Pt 1000, Ni 1000)
- 8 bit analog outputs: per 2 (0-10 Volts, 0-20 mA, 4-20 mA)
- 16 bit fast counters: per 4 (6 Mhz, cascadable)

Configuration and system memory: 128 Kbytes

(Operating System can be updated remotely)

Data storage memory: 128 k bytes of RAM extendable to 640 Kbytes

Real time clock backed up by lithium battery (10 years)

Remote I/O module: slave modules on RS485 3 wires (up to 255 modules - 10 km)

CPU T-BOX® consumption: 150 mA

Number of 16 bit internal registers: 256

" " digital internal registers: 2048

" " 16 bit counters: 256

" " 32 bit counters: 64

" " time delays: 256 (3 time bases)

" " storage registers: 6144

Configuration by TwinSoft software on PC, locally or remotely

Operating conditions:

Temperature: 0°C to +50°C (storage: -20°C to +70°C)

Humidity: 0 to 85%, non-condensing

CPU dimensions: 210 x 106 x 106 mm

8 card rack: same as CPU

4 card rack: 111 x 106 x 106 mm

Mounting on symmetric DIN rail (EN 5022)

Housing in anodised aluminium

Compatibility and approvals:

Compatible with the majority of international pager systems and GSM (SMS)

Complies with European electrical and magnetic standards IEC 801-4

Modem has European approval (complies with the CTR21 standards - Directive 91/263/EEC)

Programming software complies with the IEC61131-3 standards

Communication driver complies with the Microsoft OPC server standard

The technical specifications may be changed without notice. Certain logical or equipment functions presented here may be optional depending on the version, country, or type of application.

