



**TBOXMS**

Market leading fully modular remote control and automation solution

<b>Designation</b>	Industrial-grade remote terminal unit (RTU)
<b>Processor</b>	32 bits ARM9, 400MHz
<b>Redundancy</b>	Power supply, communications, processor level (cold start)
<b>Clock</b>	Real-time clock with lithium battery backup — External GPS synchronization (optional)
<b>Memory</b>	32MB NOR Flash 64MB DDR2 SDRAM 1MB SRAM with lithium battery backup Industrial grade SD / µSD card to 32GB (see our price list)
<b>Backplane rack</b>	Passive backplane. Available for 3, 5, 10, 15 and 20 slots
<b>Mounting</b>	DIN rail fixing, Wall, 19" 4U cabinet
<b>Communication</b>	Ethernet (10/100), 3 x USB, PSTN, LTE/4G Modem, Serial (RS-232/RS-485), and many more
<b>Power supplies</b>	MS-PS-AC30W 30W 85 to 265 VAC (50/60Hz) and +90 to +375 VDC MS-PS230V 15W 85 to 265 VAC (50/60Hz) and +90 to +375 VDC MS-PS-DCN 30W +8 to +30 VDC and -60 to -24 VDC (railways -48VDC) MS-CHARGER Intelligent battery charging - Ensure the rack is powered off before removing the CPU and the power supply
<b>I/O cards</b>	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 -10/+10 V, -20 mA/+20 mA, 4-20 mA, 24-bit MS-8RTD 8 RTD temperature inputs, 24 bit 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 8 DI (12-60VDC) + 4 DO (12-60VDC, max 200mA) + 3 AI (4-20mA)
<b>Comms cards</b>	MS-GSM-4W-2, 18 Band LTE (4G), (FDD-LTE: 15 bands, TD-LTE: 3 bands) MS-GSM-M1, 18 Band LTE (5G/4G) MS-GSM-4W 12 bands LTE(4G), 7 bands UMTS/HSPA+ (3G), 4 bands GPRS/EDGE (2G) + 1 RS232/RS485 MS-SERIAL 2 RS-232/RS-485 ports MS-ETHER-4 Ethernet (10/100) with 4 ports embedded industrial switch
<b>Special cards</b>	MS-IO-SIMUL Simulation + test: 8 DI (switches), 8 DO (LEDs), 4 AI (potentiometers), 4 AO (LEDs)
<b>Hot swapping protection</b>	All cards except for the CPU and power supply
<b>Operating System</b>	Linux Kernel with TBox Telecontrol stack
<b>Programming</b>	Via TWinSoft Suite (including WebForm Studio 2.0 and Report Studio)
<b>Languages</b>	Ladder logic, Basic & Function blocks (IEC 61131-3) and optional C/C++ add-ons
<b>Alarm handling</b>	Smart alarm management with embedded calendar
<b>Data logging</b>	Smart data logging: Sampling tables (periodic) + digital & analogue chronologies (event) Up to 250 000 timestamp data. Possible expansion on SD card.
<b>SCADA compatible</b>	TView, InTouch, iFix, Control Maestro, CITECT, Topkapi, Cube, Labview, Panorama, Scope-X, VTScada
<b>Remote upload</b>	Up to firmware level
<b>IT features</b>	HTTP(S), FTP(S), SMTP(S) & POP3(S), SNMP, IP forwarding, DynDNS, NTP, SSH/SCP/SFTP
<b>Protocol support</b>	Support for over 40 protocols, including Modbus (master/slave, RTU/TCP/ASCII), DNP 3.0, IEC 60870-5-101/104, OPC UA, MQTT(S), Siemens ISO-on-TCP, Allen Bradley DF1 & EtherNET/IP, and many more
<b>Security</b>	Firewall, 4 levels of authority, HTTP Session Authentication, SSL/TLS & X.509 Certificates, IEEE802.1X
<b>Temperature</b>	Storage: -40°C to +80°C / -40°F to 176°F Working: -40°C to +70°C / -40°F to +158°F
<b>Humidity</b>	0-95% non-condensing
<b>Altitude</b>	Max. 4000m
<b>Material</b>	Proprietary aluminum enclosure, Alodine coating against corrosion
<b>Approvals</b>	CE, UL/CSA, FCC, IC, RCM, RED
<b>MTBF</b>	>400,000 hours, statement available upon request

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