Wiren Board 7
Programmable Automation Controller

GND V+ V+ 9-48V | Ethernet 1 | Ethernet 2 | Debug Console | O1 O2 O3 mod out 1 | O1 O2 O3 mod out 2 | O1 O2 O3 mod out 3

S ON OFF

open cover — nano SIM 1

GSM — nano SIM 2

MODBUS 1-Wire CAN

USB 1 | USB 2 | FW | Wi-Fi | AI/DI/DO A1 A2 A3 A4 | 5V out | GND | DI/DO W1 W2 | V out | GND | RS-485 A B | V out | GND | RS-485 AI L BI H

wirenboard

Home and building automation

2022

Wiren Board 7

Versatile programmable automation controller
with open source Linux-based software

Hardware

- 1.2 GHz Quad Core ARM Cortex A7 industrial-grade CPU
- up to 2 GB DDR3 RAM
- up to 64 GB industrial-grade eMMC Flash
- microSD slot, up to 25 MB / s

Linux Inside

- Debian GNU/Linux OS
- Wiren Board open-source software
- You can build a firmware image with your own or our software

Interfaces and Communications

- 2 x Ethernet 10/100
- 1 x USB Host
- Wi-Fi 802.11n (AP, client)
- Bluetooth 4.0
- 2 x RS-485: Modbus RTU and other protocols
- 1 x CAN
- 6 universal inputs/outputs analog, discrete and 1-Wire

4G (LTE) modem

Backup or main communication channel

- dual SIM-card
- Sending SMS
- 3G/4G (up to 150 MB / s)

Power

- 9-48 VDC
- Backup power input
- Passive PoE
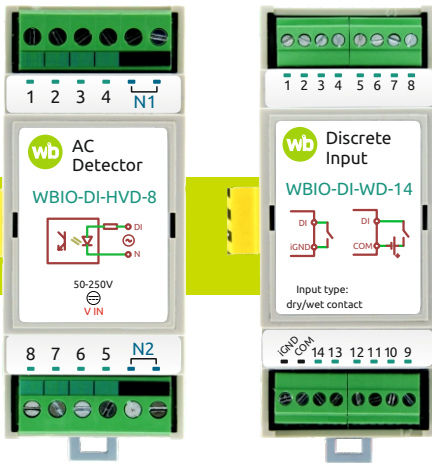- Li-Ion or supercap backup power

Industrial Grade, -40...+75 °C

ARM Cortex A7 1.2 GHz, RAM DDR3 512 MB, eMMC 8 GB	220 €
ARM Cortex A7 1.2 GHz, RAM DDR3 1 GB, eMMC 8 GB	275 €
ARM Cortex A7 1.2 GHz, RAM DDR3 2 GB, eMMC 64 GB	375 €

Commercial Grade, 0...+75 °C

ARM Cortex A7 1.2 GHz, RAM DDR3 2 GB, eMMC 64 GB	313 €

It fits your needs

AC Detector
WBIO-DI-HVD-8
50-250V
V IN

Discrete Input
WBIO-DI-WD-14
Input type: dry/wet contact

WBIO I/O Modules

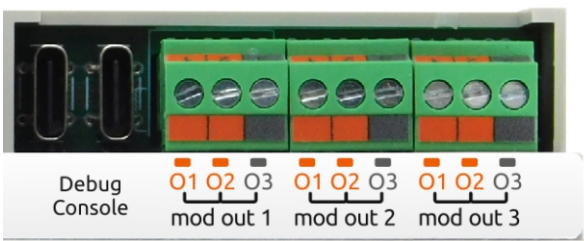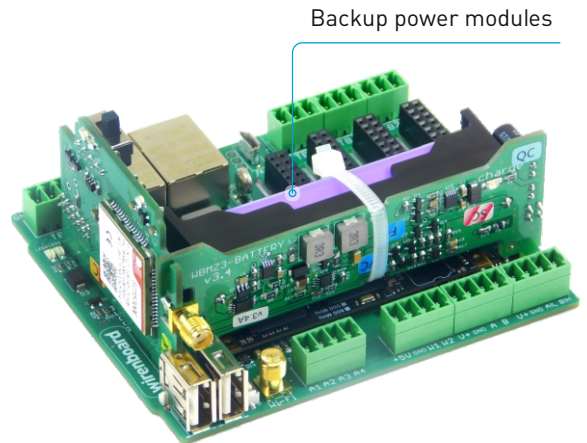Stackable I/O modules provide up to 128 additional input or output ports to the controller

- Discrete and analog inputs/outputs
- Mechanical and solid state relays
- Mains voltage detectors

starting at 26€

Backup power modules

Built-in uninterruptible power supply. The module powers the controller itself, the expansion and modules, and external devices connected via the 5Vout, Vout and USB terminals.

29 €

Backup power modules

Debug Console

O1 O2 O3 O1 O2 O3 O1 O2 O3
mod out 1 mod out 2 mod out 3

Terminals for connecting external devices to extension modules

Extension modules

Four extension modules are installed in slots inside the controller housing

- Additional inputs and outputs
- eBUS, KNX, OpenTherm, Z-Wave, Zigbee, GPS

starting at 9€

4G modem

Zigbee

KNX

RS-232

Internal extension modules

Wiren Board controllers can be easily customized for specific tasks with extension and input-output modules.

Extension modules are small circuit boards designed to be installed inside a controller. They expand the functionality of a controller by adding additional interfaces.

Stackable modules for input-output are stacked together with a controller on a DIN-rail by adding 8-16 digital and analog ports

Interfaces

WBE2-I-RS232	Auxiliary RS-232 bus port	9 €
WBE2-I-KNX	KNX TCP Interface	65 €
WBE2-I-RS485-ISO	Auxiliary RS-485 (Isolated) bus port	16 €
WBE2-I-1-WIRE	Auxiliary 1-Wire bus port	9 €
WBE2-I-EBUS, WBE2-I-OPENTHERM	Electric and gas boiler controls via eBus and OpenTherm protocol	72 €

Discrete Inputs

WBE2-DI-DR-3	3 "dry contact" inputs	9 €

Discrete Outputs

WBE2-DO-R6C-1	1 relay output (SPST)	9 €
WBE2-DO-SSR-2	2 "dry contact" outputs (SSR)	9 €
WBE2-DO-OC-2	2 "open collector" outputs	9 €

Wireless

WBE2R-R-GPS	GPS/Glonass module	25 €
WBE2R-R-ZIGBEE v.2	ZigBee interface (2.4 GHz)	26 €
WBE2R-R-LORA	Wireless, 869.125 MHz	26 €
WBE2R-R-ZWAVE-ZWAY	Radio protocol Z-Wave 7th generation	111 €

Backup Power

WBMZ4-SUPERCAP	Supercapacitor back-up module	30 €
WBMZ4-BATTERY	Battery module	30 €

Modems

WBC-4G v.2	Supports 2G, 3G, 4G (Cat.4 LTE)	43 €

WBIO Modules
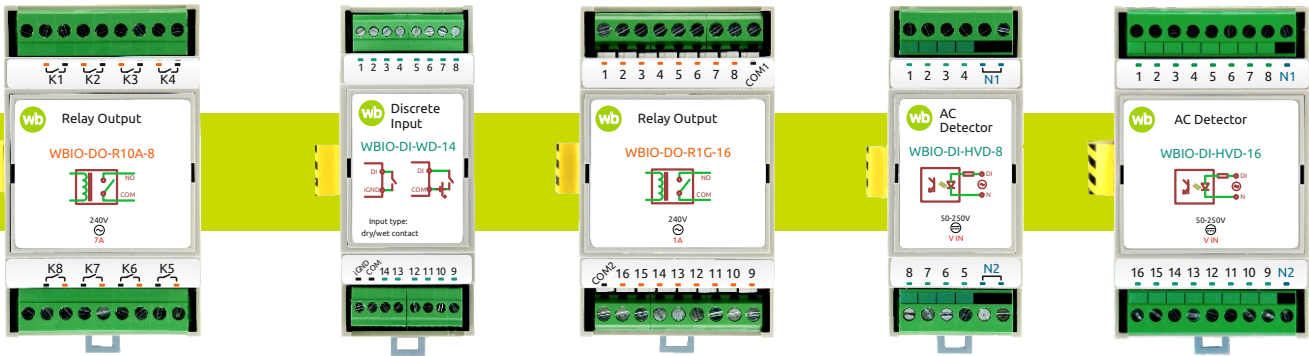
WBIO-DO-R10R-4	4 mechanical relay outputs (SPCO) rated 10A for controlling roller doors	38 €
WBIO-DO-SSR-8	8 discrete outputs equipped with low-voltage solid state relays (optorelays, SPST, up to 40V)	26 €
WBIO-DO-R1G-16	16 mechanical relay outputs (SPST, 1..5A)	65 €
WBIO-DI-HVD-8	8 channels of mains (230VAC) voltage presence detection	29 €
WBIO-DI-HVD-16	16 channels of mains (230VAC) voltage presence detection	43 €
WBIO-DI-WD-14	14 universal digital inputs. 2 operation modes: "dry contact" and 12/24V voltage presence	33 €

Demo kit

The demo suitcase is an assembled and customized set of equipment. It is used for demonstration to the end customer or for quick independent mastering of Wiren Board devices.

The demo suitcase comes with detailed documentation: a complete connection diagram, a power supply diagram, a detailed description of the scenarios.

It implements the functions:

- climate control
- ventilation and air conditioning control
- lighting control
- polling of water and electricity meters
- multi-zone electricity metering
- leakage protection systems
- prevention of equipment failure
- system operation in case of external power failure

It can be used to show:

- management of engineering systems of a store or warehouse
- control of data center equipment, base stations and transformer substations
- automation of apartments and residential complexes

1005$^€$

Retail price for standart configuration

Supported hardware

Modbus RTU (RS-485)

- Sensors, I/O and lighting control modules
- Wide variety of industrial I/O modules and other equipment manufactured by: S+S, Advantech and so on

KNX (EIB)

- Supports both KNX TP (KNX bus) and KNX/IP
- A wide variety of KNX devices for automation of residential and commercial facilities
- The controller functions as a KNX IP Gateway

1-Wire (DS18B20)

- Inexpensive and reliable digital temperature sensors
- Used in underfloor heating, boilers and climate control
- Measure temperatures from -55°C to +125°C with an accuracy of ±0.5°C

M-Bus/DLMS/COSEM Meters

- M-Bus bus master interface
- Electricity, heat and gas meters
- Meters operating on DLMS/COSEM protocols

Z-Wave

- Certified software package with Z-Wave Plus support
- Over 1000 compatible wireless devices

Zigbee

- Operation via zigbee2mqtt bridge
- Wide range of compatible wireless devices

Other

- Boilers with eBUS and OpenTherm protocols
- Curtain drives Akko AM82, Dooya DT82, WinDeco, Somfy SDN

User Interfaces

Wiren Board controller web interface
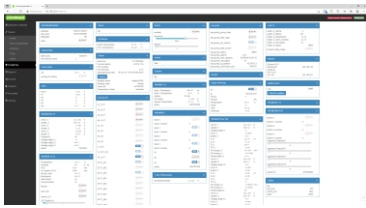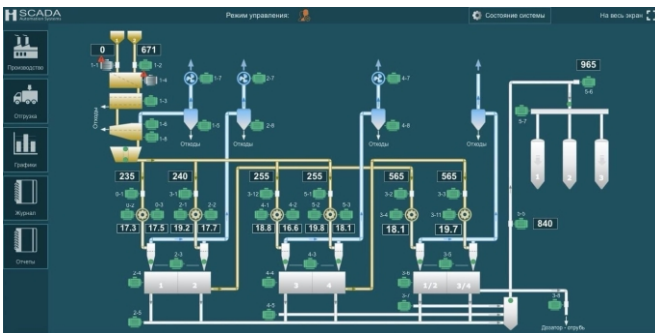

Dashboard

History
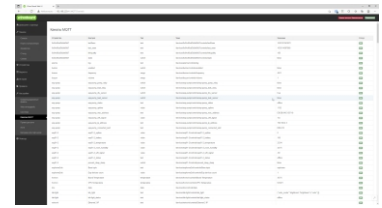
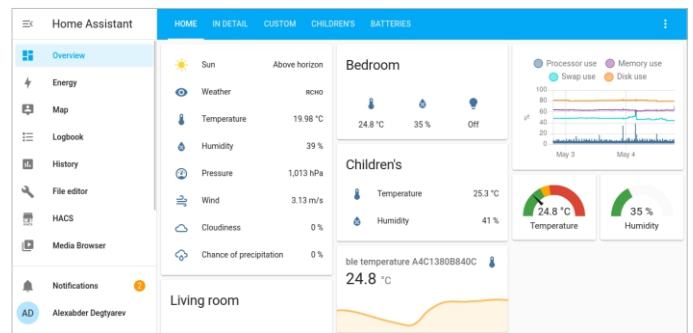MQTT-channels
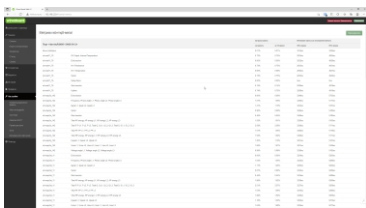
RS-485 metrics
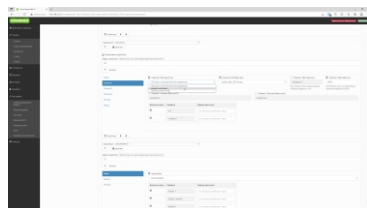
Device Configuration
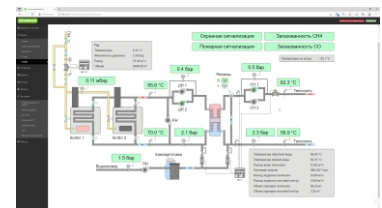
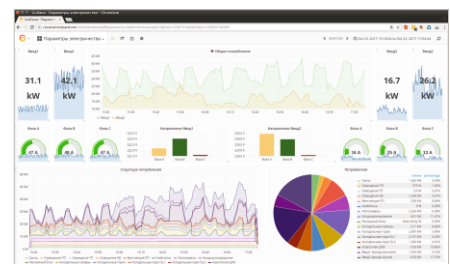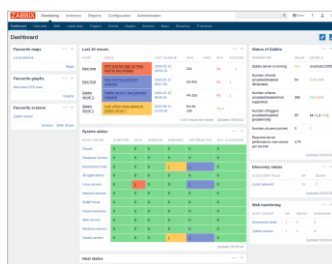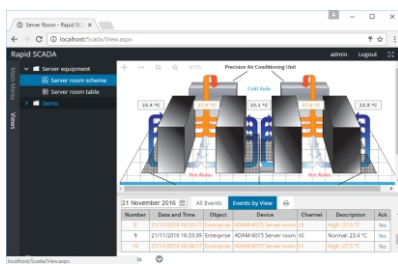Interactive mnemonic

Third party software

IntraSCADA

Universal and flexible software platform for creating professional automation and monitoring systems

Home Assistant

Open source home automation that puts local control and privacy first.


Rapid SCADA, Zabbix, Grafana and other monitoring software

WB-MAP Multi-Circuit Energy Meters

WB-MAP multi-circuit energy meters are designed for energy management, industrial metering and monitoring of electric power supply quality.

These devices take significantly less space in a cabinet compared to traditional energy meters.

Split-core current transformers used by the WB-MAP meters are clamped on existing cabling eliminating the need to reassemble the electrical cabinet.
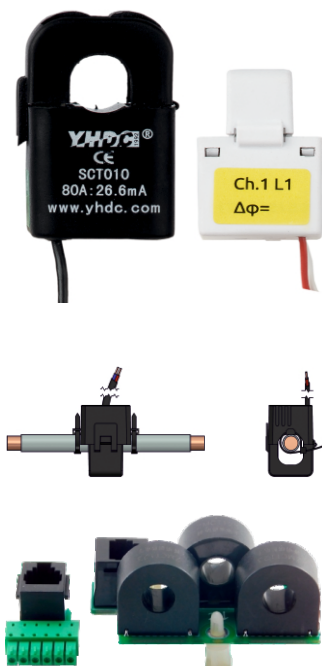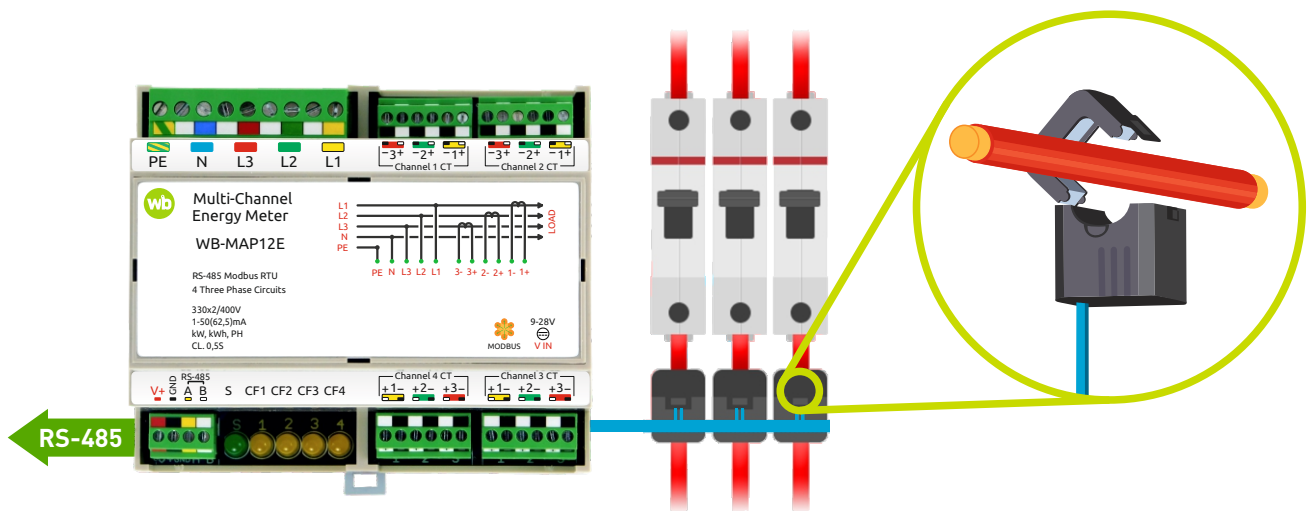
- External split-core transformers with the rated current up to 400 A
- DIN-rail mount
- Instantaneous measurement of parameters of each line: current, voltage, power (kW, kVA, kVAr)
- Active, reactive and apparent energy metering
- Measurement of surges of voltages and currents with a duration of 300 us
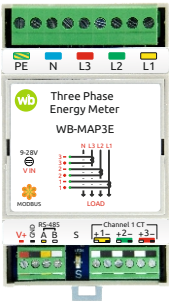
WB-MAP3E

- Compact three-phase energy meter using Modbus RTU protocol
- Accuracy class 0.5S
- Measuring peak values of current and voltage in a predefined interval
- Powered by phase voltage
- DIN-rail mount (3 modules)

75 €

complete with 3 plug-in transformers for 75 A

WB-MAP3EV

- Compact three-phase voltmeter using Modbus RTU protocol
- Accuracy class 0.5S
- Measures instantaneous voltage parameters, voltage peaks and phase angles
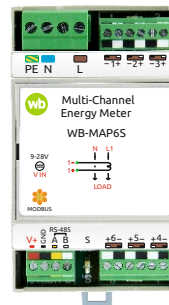- DIN-rail mount (2 modules)

45 €

WB-MAP3ET

- Compact three-phase energy meter using Modbus RTU protocol
- Built-in integral transformers
- Accuracy class 0.5S
- Measuring peak values of current and voltage in a predefined interval
- Powered by phase voltage
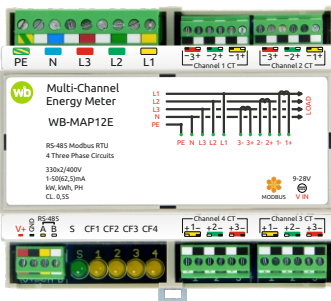- DIN-rail mount (3 modules)

71 €

WB-MAP6S

- Multi-channel single-phase energy meter for 6 consumers with Modbus RTU
- Accuracy class 0.5S
- For flats, apartments, offices
- DIN-rail mount (3 modules)

80 €

complete with 6 plug-in transformers for 75 A

WB-MAP12E

- Single-handedly replaces 4 three-phase or 12 single-phase energy meters
- Accuracy class 0.5S
- Powered by phase voltage
- Measuring peak values of current and voltage in a predefined interval
- DIN-rail mount (6 modules)

222 €

complete with 6 plug-in transformers for 75 A

WB-MR relay modules

WB-MR are relay modules controlled via Modbus RTU. They are used for switching various load types: lighting, ventilation, heated floors, equipment power supply units etc.

The series includes modules with a large selection of number of channels and load capacities. We are particularly proud of our relay modules designed for direct control of loads with high inrush current (up to 800A) eliminating the need for a separate contactor: LED lighting, incandescent lamps etc.

The majority of modules in the series are equipped with discrete inputs that can be used for direct control of the relay channels or as general purpose inputs.

Connection of wires
with cross-section up to 4 sq. mm

DIN-rail mount
3M or 6M wide
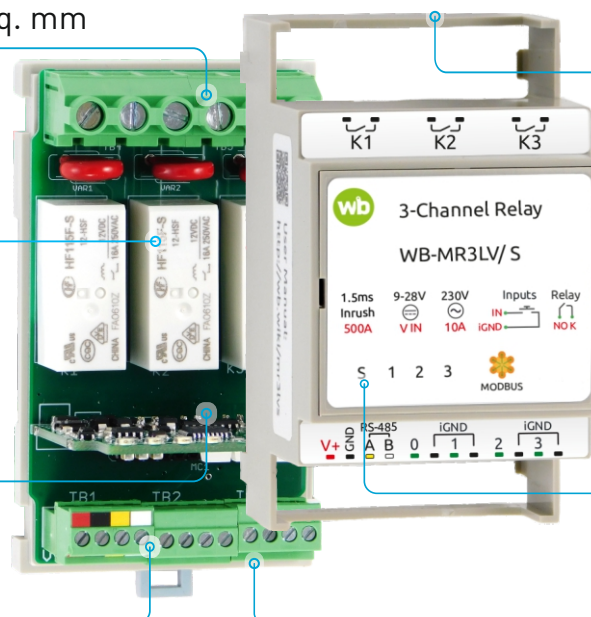
Reliable Hongfa relays

Three-tier
quality control

Control of coil current
for increased
energy efficiency

Output status indication

Wide range of
power voltages: 9-28 V

Inputs may be used to
control relay channels

WB-MR6C v.2

Designed for direct control of LED, incandescent and fluorescent lighting and other loads

- 6 relay channels 10 A 230 V AC
- High inrush current up to 80 A
- Continuous current 16 A
- 7 isolated inputs
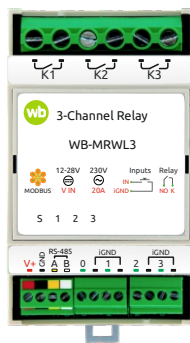- DIN-rail mount (3 modules)

45 €

WB-MR6C v.3

WB-MR6C v.2 module version with built-in power supply

- Advanced safety settings mode
- Relay emulation with normally closed contacts
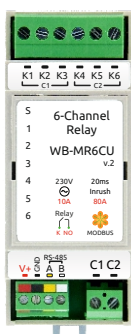- DIN-rail mount (3 modules)

60 €

WB-MRWL3

Direct control (without contactor) of groups of mains sockets

- 3 relays 20 A 230 V AC
- Continuous current 31 A
- 4 isolated inputs
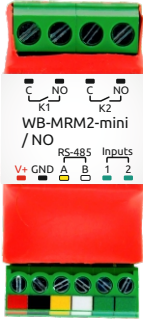- DIN-rail mount (3 modules)

47 €

WB-MR6CU v.2

Compact relay module without inputs

- 6 relay channels 10 A 230 V AC
- High inrush current up to 80 A
- Continuous current 16 A
- DIN-rail mount (2 modules)

42 €

WB-MRM2-mini v.2

Built-in module for installation
in junction boxes and sockets

- 2 relay channels 10 A
- Inrush current up to 80 A
- NO and NC configurations
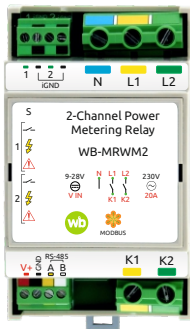- 2 discrete inputs
- Small size: 52 x 22 x 20 mm

26 €

WB-MRPS6

Six high-power relay outputs

- 6 independent relay channels rated 10 A 230 V AC
- High inrush current up to 800 A
- Ideal for lighting and PSU control
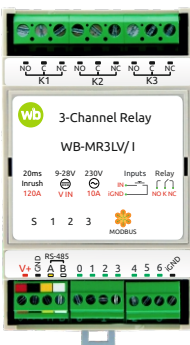- DIN-rail mount (3 modules)

54 €

WB-MRWM2

Switch of power outlets, motors, heaters
and power consumption measurement

- 2 relay channels 20 A 230 V AC
- 2 isolated inputs
- The measurement of active power
  of the load and the input voltage
- DIN-rail mount (3 modules)

54 €

WB-MR3LV и WB-MR6LV

For switching LED lamps, PSU and other powerful
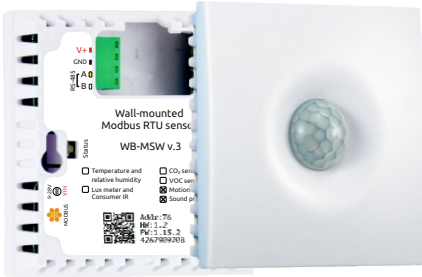loads without intermediate contactors

- 3 or 6 relay channels 10 A 230 V AC
- High inrush current up to 800 A
- Continuous current 16 A
- 7 isolated inputs
- DIN-rail mount (3 or 6 modules)
- Models with normally open
  and changeover contacts

WB-MR3LV/S
3 relay
inputs «dry contact»

42 €

WB-MR6LV/S
6 relay
inputs «dry contact»

62 €

Sensors

![Modbus]

WB-MSW v.3

Wall mount 8-in-1 sensor
with Modbus RTU for residential
and office spaces

- Temperature and humidity
- Light sensor (lux)
- Noise level
- CO_2 concentration
- Built-in buzzer and status lights
- PIR sensor for presence detection
- Air quality (Volatile organic compounds)
- IR codes emitter

45 €
temperature
and humidity

+ 11 €
Light sensor and IR

+ 3 €
Noise level

+ 5 €
PIR sensor

+ 26 €
Air quality

+ 39 €
CO_2 concentration

Z·WAVE 153 €
Z-Wave version in full configuration

zigbee 153 €
Zigbee version in full configuration

LoRa 153 €
Lora version in full configuration

Modbus 128 €
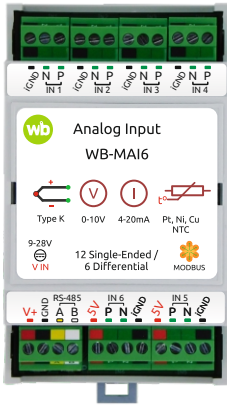Modbus version in full configuration

WB-MS v.2

Universal sensor with Modbus RTU
surface mount and DIN rail

- Temperature and humidity
- Light sensor (lux)
- Air quality (Volatile organic compounds)
- Connecting up to two external 1-Wire
  temperature sensors
- 1-Wire inputs can be used as counter or discrete inputs

32 €
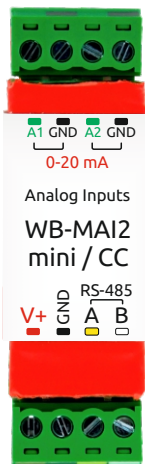temperature
and humidity

Bus couplers

WB-MAI6

12 inputs for analog sensors

- Thermal resistors Pt 100, Pt 1000, etc. two-wire and three-wire
- K-type thermocouples, NTC thermistors
- Sensors with output 0-10V, 1-10V, -50-50mV, 4-20mA, 0-20mA, 0-5mA
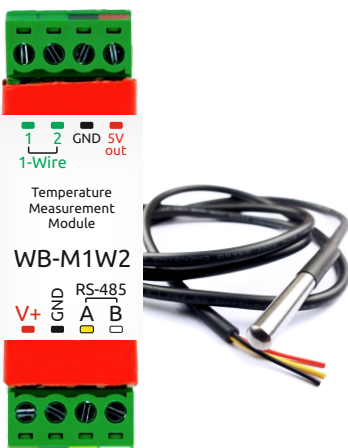- DIN-rail mount (3 modules)

65 €

WB-MAI2-mini / CC

Reading data of two 0-20mA signals via Modbus RTU

- For installation into junction boxes
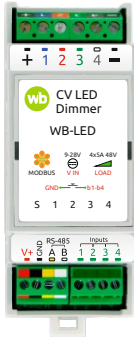- Dimensions: 57x18 x12 mm

20 €

WB-M1W2

The built-in module allows polling two remote digital 1-Wire temperature sensors via RS-485

- For installation into junction boxes
- -40°C to +125°
- Accuracy ±0.5°C
- Dimensions: 57x18 x12 mm

17 €

Lighting control

The modules support direct control from switches and remote control via RS-485 Modbus RTU
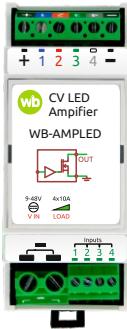
WB-LED

4-channel dimmer to control LED strips:
RGB, RGB+W, CCT (yellow-white) or W (white)

- 4 channels, up to 48 V DC, up to 5A per channel
- PWM frequency from 100 Hz to 24 kHz, changeable in settings
- Programmable digital inputs
- Short circuit and overheat protection
- DIN-rail mount (2 modules)

38 €

WB-AMPLED

4-channel amplifier for dimming LED strips

- 4 channels, 10 A each, up to 48 V
- 4 inputs for control signals
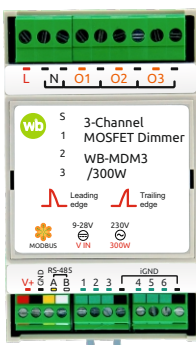- DIN-rail mount (2 modules)
- Built-in overload protection

31 €

WB-MAO4

4-channel control module for lighting and other equipment

- 4 outputs 0-10 V AC and PWM
- 3 digital inputs
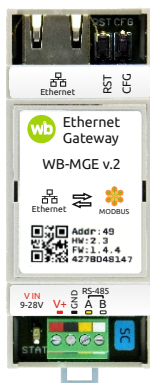- DIN-rail mount (2 modules)

45 €

WB-MDM3

Suitable for dimming LED lamps.
Three channels, 300W per channel.

- 300 W load per channel
- Trailing or leading edge dimming
- 6 discrete inputs for direct control
- Overload protection
- DIN-rail mount (2 modules)
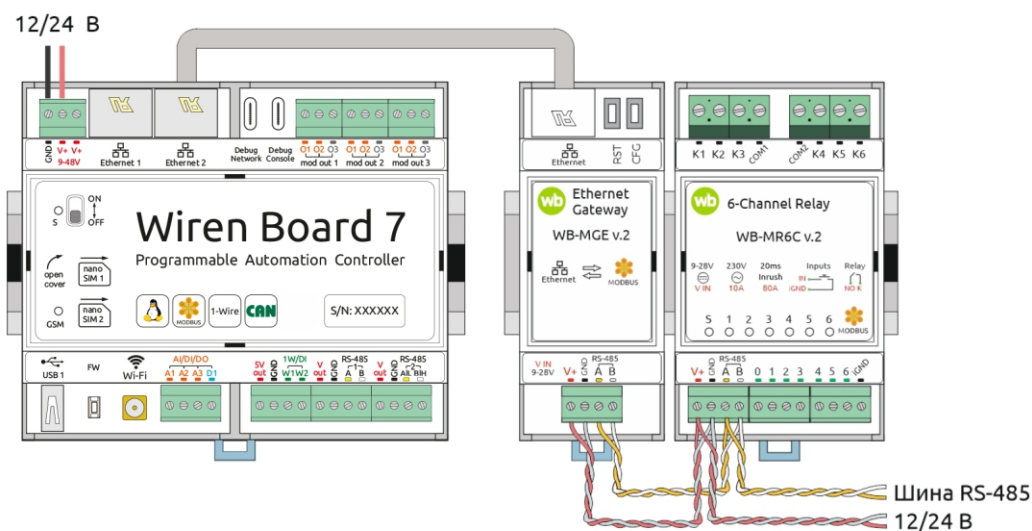
72 €

Modbus RTU — Modbus TCP gateway
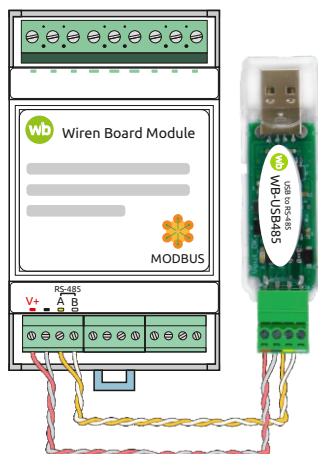

WB-MGE v.2

Gateway for connecting the RS-485 bus via Ethernet. Can operate as a transparent bridge for data exchange between two remote RS-485 bus segments

- Support Modbus TCP and Modbus RTU over TCP
- DIN-rail mount (2 modules)

63[€]

Connecting a remote segment of the RS-485 bus with Modbus RTU via a local network or the Internet

WB-USB485

Interface converter for controlling devices via the RS-485 bus

- Output 12 V with current up to 400 mA
- Short circuit protection
- Works without drivers on Windows, Linux, macOS and Android

25[€]

IR control

WB-MIR v.2

Programable IR remote control module for wide range of devices: climate control stations, fan coils, TV, lightening and other devices with IR-interface.

- Up to 80 IR-commands can be stored in internal memory
- Programming and control by RS-485 interface with Modbus RTU protocol
- Small wired transmitter with 3.5 mm jack
- External 1-wire temperature sensor or discrete input
- Small size: 40x15x11 mm

28 €

Uninterruptible Power Supply
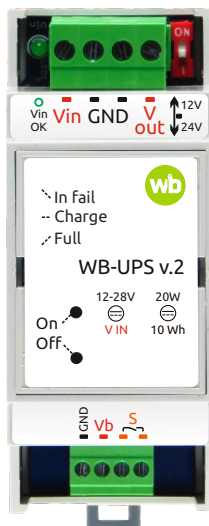
WB-UPS v.2

UPS module with lithium polymer batteries

- 2 operating modes: 12/24 V
- Charge: 0°C to 55°C / Discharge: -20°C to 60°C
- Power 15 W
- Status indicator
- DIN-rail mount (2 modules)
- Operating time up to 60 min (at 10 W)

52 €

Refrigerator network cards

Our network cards add an RS-485 interface with Modbus RTU support to Danfoss, Carel и Eliwell refrigeration controllers.

You can connect cooling chests and other commercial refrigeration equipment to SCADA or a controller with Modbus RTU support and monitor their technical condition, as well as control: defrost, change temperature settings, etc.

WB-REF-DF-ERC21	For Danfoss controllers models ERC 211, ERC 213, ERC 214	18 €
WB-REF-DF-178A	For Danfoss controllers models EKC 202D, EKC 202B, EKC 204A1 / AK-CC 210	34 €
WB-REF-U-R	For Carel controllers models Carel BASIC, EASY, µRack, µC2SE, µC2, µGEO и Eliwell ID/ID PLUS	34 €

PLC/ SCADA
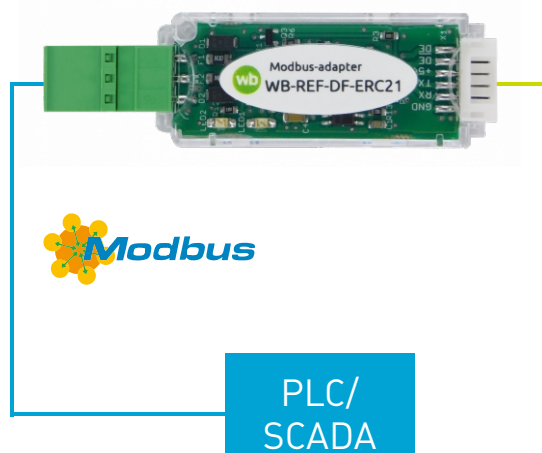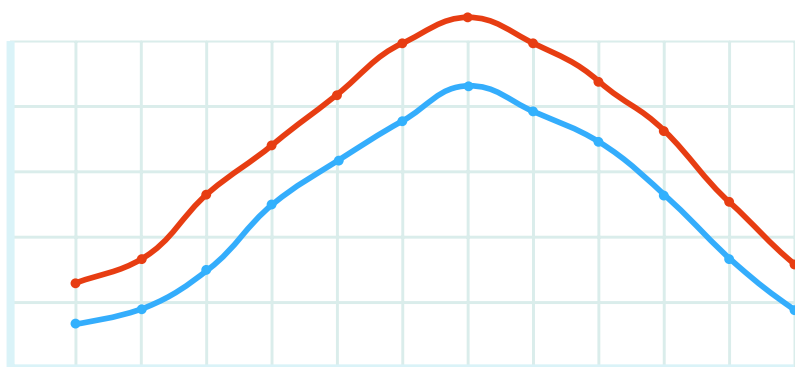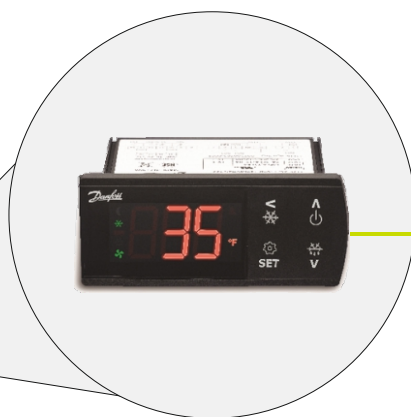
Devices for polling meters
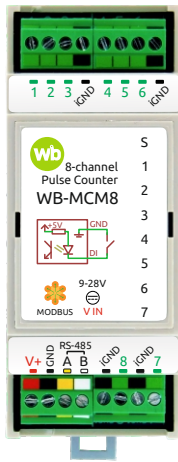
WB-MCM8

Polls 8 counters with pulse outputs

- 8 discrete/counter inputs for connection of "dry contract" or "open collector" outputs
- DIN-rail mount (2 modules)
- Connection of water, electricity, gas meters
- Current status, pulse frequency and number of pulses for each input

32€
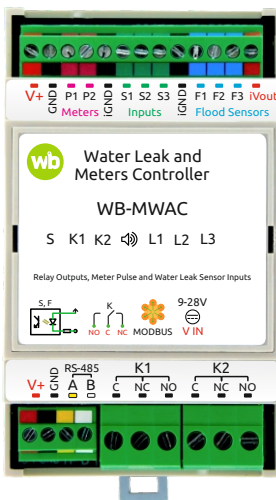
WB-MWAC

This standalone water leak controller polls two meters with pulse outputs

- 2 pulse counter inputs with backup power supply
- 6 discrete inputs for leak sensors and buttons connection
- 2 SPDT relays for connection of motorized valves
- Works autonomously and via RS-485 Modbus RTU
- DIN-rail mount (3 modules)

71€

Pulse water meters

Water leakage sensors

Electric valves

Reliable control for extreme applications

Control of digital TV retransmission stations

Located all over Kazakhstan, TV retransmission stations consist of complex TV equipment as well as uninterruptible power supplies and sensors.

A special version of Wiren Board PAC manages the state of every device and is capable of turning it on and off.

Due to its own battery, Wiren Board stays operational in case of power loss. The controller's GPRS signal is totally independent from the main communication channel. All these measures ensure the controller's ability to send a signal in any emergency situation.

Oil well automation

In Azerbaijan oil fields, Wiren Board PACs are used to collect data, to control variable-frequency drives and to manage the oil well's peripherals.

The controllers have specialized K-Logic software on board.

The control stations are polled using the Modbus RTU protocol.

Oil well equipment control station. Binagadi field, Azerbaijan

Building and home automation

Building management system for bank branches

Wiren Board PACs, I/O modules and sensors are used on more than 3000 offices to control lighting, HVAC, humidity systems in the building, as well as security, fire and flood safety.

Wiren Board sensors managed by the bank's software provide a comfortable environment for employees and customers, including temperature and humidity, illuminance, carbon dioxide (CO_2) concentration.

Collecting data from electricity, water and heat meters helps to identify energy-inefficient branches and decrease their consumption after engineering systems optimization.

Smart home automation for apartments in residential complex

Wiren Board PACs and I/O modules allow to control lighting (including scenarios-based) and HVAC systems in every apartment. The PAC also controls the water leak and security system detectors.

Apple iPads are used as HMI-panels.

About us

Wiren Board is an international group of companies with R&D and production facilities in Yerevan, Kyiv and Dolgoprudny. Since 2013 we design and manufacture electronics for automation and monitoring.

Our goal is to make industrial-grade reliability and quality affordable for more customers. The company is focused on developing Linux-based embedded controllers and Modbus supporting I/O modules, sensors, meters.

For almost ten years we have been producing equipment which controls oil wells, bank offices, private residences and entire residential areas, monitors the microclimate in the data centers, supermarkets and offices, collects and analyzes data from sensors and external devices. Today Wiren Board is a great team of more than 50 highly skilled professionals including electronic engineers, embedded software developers, QA and production engineers.

We manufacture tens of thousands of high-tech devices per year. To ensure the outstanding quality of our products we supervise or directly perform all the crucial steps in production process, including parts sourcing, functional testing and final assembly. All our devices are 100% tested on one-by-one basis using specially designed state-of-art automated testing equipment. The products comply with European and international regulations.

Reliable Wiren Board controllers are used in cases of monitoring of data centers and climate equipment, operation control and collecting data from metering devices, as the main devices for the Smart Home. Controllers can work as parts of the various cloud platforms.
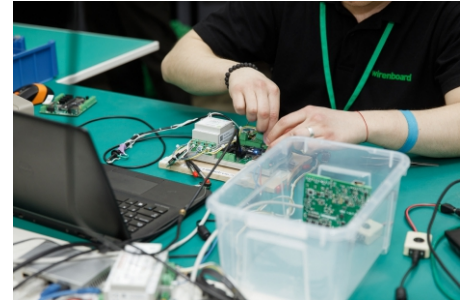
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