Environment monitoring and control unit

- Temperature and humidity monitoring with dew point calculation or multi-point external temperature monitoring
- Monitor and control of environmental conditions over IP/Ethernet network
- **Response to alarms**: SNMP trap, E-mail, WWW alarms, optional sending a SMS alert
- Control of 4(8) outputs a "relay contact"
- Monitoring of status 4 (8) parametric inputs with optical isolation optional
- Optically isolated measurement of two DC voltages within the range of 0–60 V, optionally third measurement inputs in additional built-in module
- 1-wire interface for external sensors
- RS232/485 virtual console to provide serial communication with external devices over IP/Ethernet network
- Management: WWW, SNMPv1, SMTP, TELNET, SNTP,

Description of the device

Functionality

SETEBOS device is environment monitoring and control unit that provides supervising and recording of critical environmental conditions of the facilities such as temperature and humidity, monitors - through relevant inputs - the events of violation of the facility's space, flooding, fire etc. In addition, it enables remote control of devices placed in the monitored facility by means of four embedded type "relay contact" outputs. Two of them allow for direct connection of relays to control the elements powered with 230V AC voltage, for example, to automatically switch on air-conditioning after the temperature rises above a set point or to restart a server.
RS232/485/422 interfaces allow communication with external devices via Ethernet/IP networks, or connection of peripherals or extensions for the measuring and monitoring functions. The serial interface also allows the connection of additional external modules to further expand the device's functionality. DC voltage measuring inputs are also available.
There is a possibility to extend the scope of operation of the device with the following additional modules:
four outputs module, four inputs module, GSM module. All device interfaces brought outside (apart from inputs of T and of T/H sensors) are galvanically insulated.
Dedicated applications are provided with an application which, depending on the modules installed, can be used for object control and monitoring purposes as well as smart-building automation control based on the applicable algorithms. **SETEBOS**, depending on the version, can be powered with direct voltage within the range of 9-60V DC. The total device power input does not exceed 6W. **SETEBO**S can be mounted on the DIN rail or in Rack using fastening strip.

The inclusion of a ***HTTP*** server, a ***TELNET*** server and ***SNMP v1*** agent facilitates free configuration of the devices parameters using a ***WWW*** browser or constant monitoring of the device's condition from any ***SNMP*** compatible management platform.

Moreover, the included **SMTP** support allows operator notification via email if any system-defined event is detected. The content of messages sent by the device via ***SNMP (TRAP)*** and ***syslog*** protocols is fully customisable.

Example of such application is presented on the drawing below.

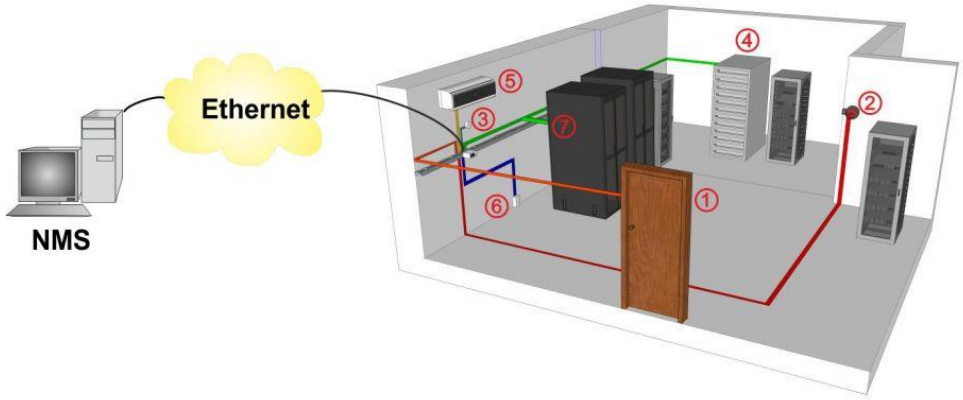


Figure 1. One of the possible usages is control and environment monitoring for data centers:

Sensor Group:

1. Door opening detector connected to digital input, informs about violation of the facility's space
2. Alarm sirene, can be switch on using digital output
3. Smoke detector, informs about fire presence
4. Temperature and humidity probe mounted in Rack
5. Air conditioner controlled by relay output, switched on automatically when the temperature rises above set point
6. Water leak detector
7. Telecom rectifier managed by RS232 virtual console

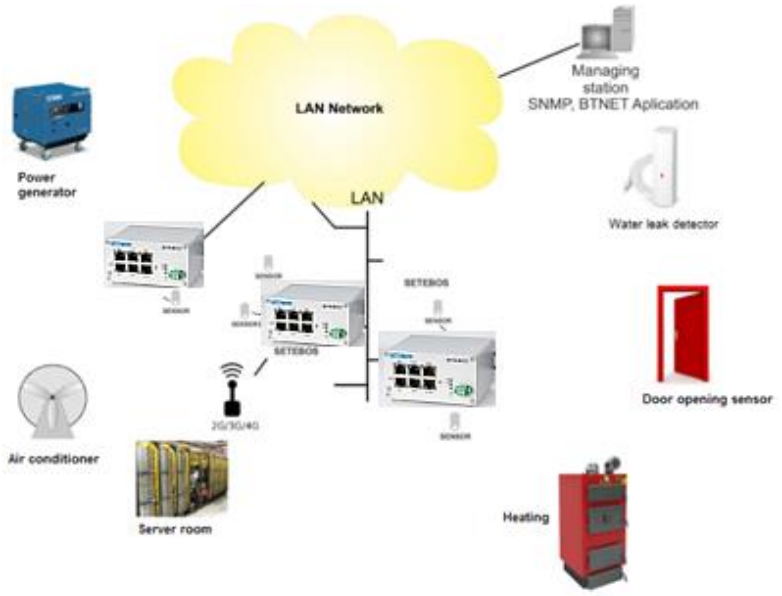
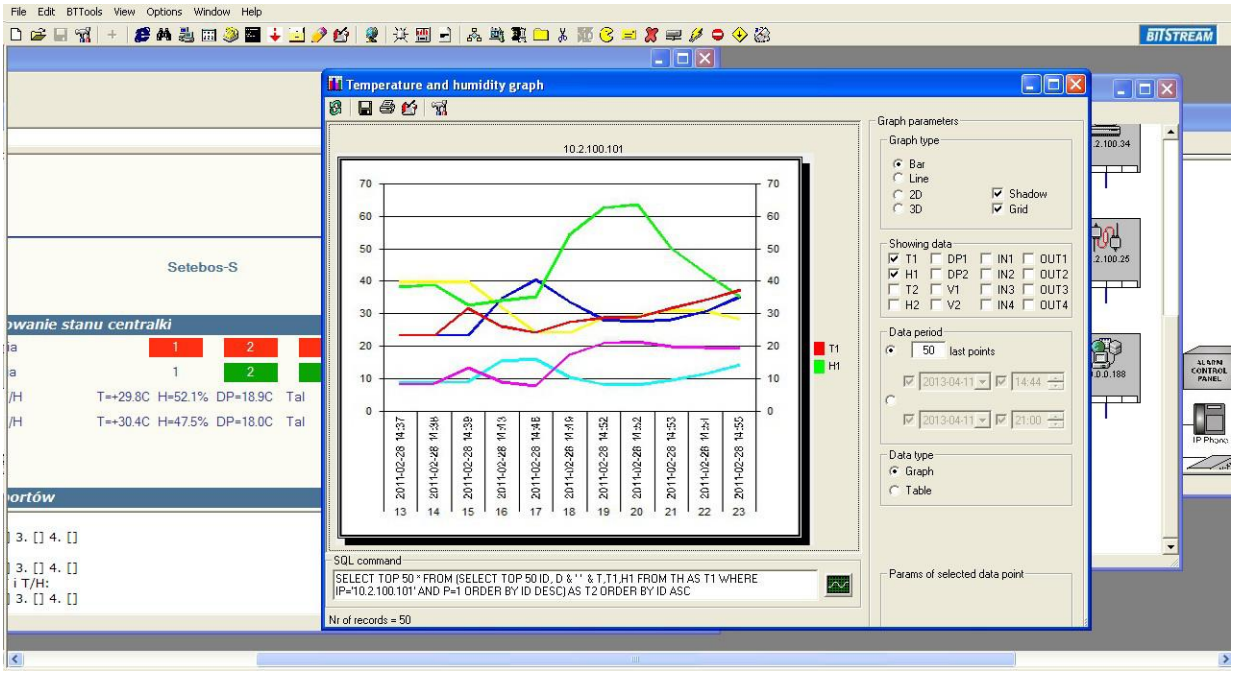


Figure 2. Example application illustrating the connection of peripheral systems for the measurement of detector state or environmental conditions in maintenance-free stations

Units can be grouped to form a single control and management system supervised via the provided free BTNET application or other management applications (e.g. via SNMPv1). BTNET software allows the user to gather alarm notifications, monitor the operation of a group of devices and generate measurement visualizations.



Technical specifications

Supported standards, recommendations and directives EMC Security*:

- PN-EN 55022:2010/AC:2011 - Information technology equipment - Radio disturbance characteristics - Limits
- and methods of measurement
- PN-EN 55024:2011/A1:2015-08 – Electromagnetic compatibility (EMC) - Information technology equipment
- immunity characteristics - Limits and methods of measurement
- PN-EN 60950-1:2007/A2:2014-05- Information technology equipment–Safety– Part 1: General requirements
- EMC 2004/108/WE – Electromagnetic Compatibility Directive
- LVD 2006/95/WE – Low Voltage Directive
- PN-EN 60825-1:2014-11 – Safety of laser products Part 1: Equipment classification and requirements
- IEC 61000-4-2 Electromagnetic compatibility (EMC)- Part 4-2: Testing and measurement techniques –
- Electrostatic discharge immunity test
- IEC 61000-4-3 Electromagnetic compatibility (EMC)- Part 4-3: Testing and measurement techniques –
- Radiated, radio-frequency, electromagnetic field immunity test
- IEC 61000-4-4 Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques –
- Electrical fast transient/burst immunity test
- IEC 61000-4-5 Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques –
- Surge immunity test
- IEC 61000-4-6 Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques –
- Immunity to conducted disturbances, induced by radio-frequency fields
- IEC 61000-4-8 Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques –
- Power frequency magnetic field immunity test
- IEC 61000-4-11 Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques –
- Voltage dips, short interruptions and voltage variations immunity tests
- IEC 61000-4-12 Electromagnetic compatibility (EMC) – Part 4-12: Testing and measurement techniques –
- Ring wave immunity test

- IEC 61000-4-29 Electromagnetic compatibility (EMC) – Part 4-29: Testing and measurement techniques –
- Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests

*- list of supported standards may vary with the development of the device

Temperature and humidity measurement interface

- Range of temperature measurement: -40 - +125 °C
- Accuracy of temperature measurements: +/- 0.2°C for 25°C
- Range of humidity measurement: 0-100% RH
- Accuracy of humidity measurement: +/- 2% RH
- RJ-45 connector

RS485/ RS422 interface **

- Transmission speed: 0-230 kbit/s
- Interface configuration:
  - RS422 – 4 wire
  - RS485 – 2 wire
- RJ-45 connector

Output contacts

- Number of outputs – 4 (8)
- Type - „relay contact”
- Maximum working DC voltage – 60V DC
- Maximum switched DC current – 0,5A DC
- Two outputs dedicated connection of external auxiliary relays

Measurement inputs*

- Number of inputs - 2
- Measuring range – 0÷60V DC, 0 ÷ 20A DC
- Measurement accuracy – ±0,25V, ±20mA
- Galvanically insulated

RS-232 interface **

- Transmission speed: 0-115,2 kbit/s
- Standard describing electric compliance: RS232C, ITU-T V.28, (Rx,Tx)
- RJ-45 connector

Input contacts

- Number of input – 4 (8)
- Type – parametric, short-circuit detection, open circuit and load resistance characteristic
- Galvanically insulated

1-wire interface

- Transmission speed:0-16,3 bit/s
- Range < 100m
- RJ-45 connector

Ethernet interface

- Standard describing electric compliance: IEEE 802.3
- Transmission speed: 10 MBit/s
- RJ-45 connector
- No automatic detection of MDI/MDIX

Management

- SNMP v1, Syslog, SMTP
- HTTP protocol and web browser as a management application

Power

- Supply voltage range 9-29V DC or 43-60V DC
- Up to 6W power consumption

Physical design:

- Mounted on a DIN TH35 bus
- IP-30 DIN mounted metal enclosure
- Dimensions 103x53x83mm
- Weight up to 0,50kg

Environmental requirements:

- Operating temperature: 0°C to +50°C
- Operating humidity (non condensing): ≤ 80%

*** - interface available in SETEBOS-M and SETEBOS-L**
**** - interface available in SETEBOS-L**

WARNING!!! The external relay that will be used with SETEBOS must be selected in such a way that the rated voltage of its coil must be identical to the supply voltage of the device.

Code

SETEBOS–(X)–(Y)–(U)

Power Supply:
9 – Supply voltage range: 9 ÷ 29V DC
10 – Supply voltage range: 43 ÷ 60V DC

Additional modules (option for S, M, L):
1 – additional module 4 inputs
2 – additional module 4 outputs
3 – Voltage measurement module (galvanic isolation) and additional RS232 serial port
4 – current measurement module (galvanic isolation) and additional RS232 serial port
5 - module GSM modem

Versions:
S – version standard - T/H measurement, 4x input, 4x output,
M – version extended with measurement of two DC voltages within the range of 0–60 V
L – version extended with measurement of two DC voltages within the range of 0–60 V and isolated RS232/485/422 interface
F – version extended by two 0-60V voltage measurement and isolated RS232/485/422 interface, equipped with optical interface for connecting external data loggers
O – version with built-in 1310nm optical module

Additional accessories:

- **ZAS-48-25-W-C –** power adapter 230V AC(DC) / 48V DC 0,5A, 0+50°C
- **ZAS-ANYMUX-03** – power adapter 85÷264VAC, 120÷370VDC / 48-56VDC; 40W dla -25+60C, 24W dla -60+70C, 2x PoE; Mounted on a DIN TH35 bus, 0.5kg.; 40*90*100mm

- **T-2** – Temperature sensor, 2 meters
- **T-5** – Temperature sensor, 5 meters
- **T-10** – Temperature sensor, 10 meters
- **T-50** – Temperature sensor, 50 meters
- **T/H-10 -** Temperature/humidity sensor, 10 meters
- **T/H-5 -** Temperature/humidity sensor, 5 meters
- **T/H-2 -** Temperature/humidity sensor, 2 meters
- **RL230 -** AC Relay o control the elements powered with 230 V voltage
- **CZ -** Flood detector
- **CG -** Methane detector

BITSTREAM Sp. z o.o.
ul.. Mełgiewska Street 7/9
20-209 Lublin, Poland

Tel. +48 81 743 86 43,
Fax +48 81 442 02 98
info@bitstream.com.pl