BKT Elektronik - Headquarter
Poland, Wiejska 6
86-065 Lisi Ogon
Phone: +48 52 36 36 750
e-mail: export@bkte.pl

BKT EMS

Environmental Monitoring System

- the environmental parameters monitoring system

- installation and configuration manual
- version 9

Analog sensors
A 1
A 2
A 3
A 4
CAN
LAN 10/100
Thermo sensor
ALARM
CAN
ACT
ERR
USB
SD card
Relays
E1
E2
ENVIRONMENTAL CONTROLLER EC335i
BKT ELEKTRONIK

© 2023 BKT Elektronik

Table of contents

1 OVERVIEW 5

2 SYSTEM COMPONENTS 5

- 2.1 EC335i controller 5
- 2.2 Analogue sensors 5
- 2.3 CAN digital sensors 7
- 2.4 Extension modules and accessories 8

3 SYSTEM STRUCTURE 9

- 3.1 Number of sensors and wiring 9
- 3.2 Example 1. Extension modules EE321t 10
- 3.3 Example 2. Extension modules EE322 10
- 3.4 Example 3. CAN devices 11
- 3.5 Example 4. IT cabinet monitoring 12

4 INSTALLATION OF DEVICES 13

- 4.1 EC335i controller installation 13
  - 4.1.1 Package contents 13
  - 4.1.2 Controller dimensions 13
  - 4.1.3 1U 19'' bracket installation 13
  - 4.1.4 Device connectors 14
- 4.2 Installation of EA319i – LTE modem 14
  - 4.2.1 Package contents 14
  - 4.2.2 Assembly procedure 15
- 4.3 Installation of EE321t module – 8 analogue inputs extension 16
  - 4.3.1 Package contents 16
  - 4.3.2 EE321t dimensions 16
  - 4.3.3 1U 19'' bracket installation 16
  - 4.3.4 Device connectors 17
  - 4.3.5 Connecting the EE321t module 18
- 4.4 Installation of EE322 module– extension of 32 inputs for voltage-free contacts 19
  - 4.4.1 Package contents 19
  - 4.4.2 EE322 dimensions 19
  - 4.4.3 1U 19'' bracket installation 20
  - 4.4.4 Device connectors 20
  - 4.4.5 Connecting the EE322 module 21
- 4.5 Installation of ES340 sensor – smoke, humidity, temperature 22
- 4.6 Installation of ES341 sensor – pressure, humidity, temperature 24
- 4.7 Installation of analogue sensors 25
  - 4.7.1 ES352 - 230VAC voltage sensor 25
  - 4.7.2 ES353 – door sensor 26
  - 4.7.3 ES356 – smoke sensor 26
  - 4.7.4 ES357 – PIR sensor 27
  - 4.7.5 ES359 – point leak sensor 28
  - 4.7.6 ES360 + ES368 - linear leak sensor 28
  - 4.7.7 ES362 - 4-20mA current sensor 29
  - 4.7.8 ES363 - 0-75VDC voltage sensor 29
- 4.8 Installation of accessories 29
  - 4.8.1 EA313 - 30V/5A relay 29
  - 4.8.2 EA315 - light signal 31
- 4.9 An example of placing devices in the cabinet 32

5 CONFIGURATION 33
5.1 Horizontal menu 33
5.2 Vertical menu 33
5.3 Saving settings into non-volatile memory 34
5.4 Dashboard 34
5.5 General statistics 34
5.6 System tree (system components) 35
5.6.1 Setting the sensor parameters 37
5.6.2 Adding a new group 38
5.6.3 Adding an email notification 39
5.6.4 Adding a trap notification 40
5.6.5 Adding an SMS notification 41
5.6.6 Adding WEB SMS notification 42
5.6.7 Adding sms gate notification 43
5.6.8 Adding phone call 43
5.6.9 Adding HTTP notification 44
5.6.10 Adding a timer 45
5.6.11 Adding a trigger 45
5.6.12 Adding PING functions 45
5.6.13 Adding an SNMP Get 46
5.6.14 Adding Modbus TCP element 47
5.6.15 Adding virtual mathematical element 48
5.6.16 Adding a camera 49
5.6.17 Adding a dew point 49
5.7 Dry contacts (binary inputs for potential-free contacts) 50
5.8 GSM modem settings 50
5.9 Event log 51
5.10 Logical schemes 51
5.11 Cameras 53
5.12 Map 53
5.13 Users 53
5.14 CAN configuration (extension module) 55
5.15 Graphs 56
5.16 Reset smoke detectors 56
5.17 Preferences (system settings) 56
5.17.1 Web interface settings 56
5.17.2 Network settings 57
5.17.3 LTE modem settings 57
5.17.4 Time settings 58
5.17.5 Saving of events and measured values on a USB disk or SD card 58
5.17.6 Sending logs and sensor values to FTP, MAIL 59
5.17.7 Saving logs to SYSLOG 59
5.17.8 DynDNS settings 59
5.17.9 SNMP settings 60
5.17.10 RADIUS settings 63
5.17.11 FTP backup settings 63
5.17.12 VPN client settings 63
5.17.13 SMTP settings 64
5.18 System menu (system management) 64
5.18.1 Restoring default settings through a website 64

5.18.2 Restarting the device 64
5.18.3 Firmware update 65
5.18.4 Export data to a file 66
5.18.5 Restoring settings from a file 66
6 QUICK START GUIDE 67
6.1 Connection 67
6.2 Commissioning 67
6.3 Restoring default settings 67
6.4 Initial configuration 68
6.5 Identification of the controller IP address 69
6.6 User Logging out 69
6.7 Configuration of sensor status email notifications 69
7 DOCUMENT REVISIONS 72

Warning:
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

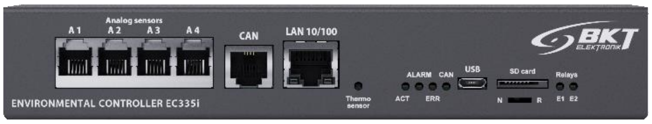
The specification is owned and copyrighted by BKT Elektronik Sp. z o.o. Information contained herein may be changed at owner's discretion without any notice. BKT Elektronik may not be held liable for any possible inaccuracies and discrepancies in this document.

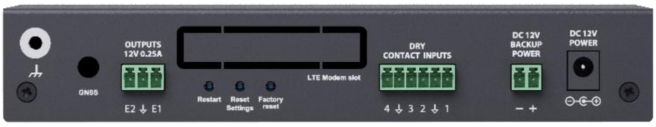
1 OVERVIEW

The BKT EMS system is designed to monitor environmental parameters (temperature, humidity, etc.) in a telecommunications cabinet or small rooms. Its purpose is to warn users about possible emergency situations and report any failures. The single system controller can support: up to 4 analogue sensors, 4 sensors with potential-free contacts and two signalling devices. With expansion modules there are up to 28 analogue sensors, 68 sensors with potential-free contacts, 10 sensors with CAN bus interface. To keep a satisfactory system performance, it is not recommended to connect more than 60 sensors to the controller.

2 SYSTEM COMPONENTS

2.1 EC335i controller





Hardware	
Analogue inputs	4 inputs (RJ12 sockets) for compatible analogue sensors. Any combination of 4 sensors can be connected to the device. Some sensors can be connected in stacks. The type of a sensor is detected automatically.
Inputs for potential-free contacts	4 inputs (removable 6-pin terminal strip) for any sensors with potential-free contacts
Outputs	2x 12V/250mA voltage outputs (removable 3-pin terminal strip)
CAN connector	Connector (RJ12 socket) for up to 10 CAN devices, e.g., extension modules for additional analogue inputs, additional inputs for potential-free contacts or CAN sensors
Other connectors	10/100Mbps (RJ45 socket) Ethernet port, USB 2.0 port (Mini-B socket)
Other	Optional card of a GSM module; SDHC 512GB, SDXC 128GB slot
Power supply	External 12VDC/1A plug adapter, power consumption ≤ 10W. Power backup from additional power source 12VDC/1A
Dimensions	190x90x33 (width x depth x height)
Operating conditions	Temperature: 0°C - 60°C, Humidity: 0% - 90% RH (no condensation)
Storage conditions	Temperature: -25°C - 85°C, Humidity: 0% - 95% RH (no condensation)
Weight	700g
Part number	122EC003353
Software	
Operating system	Linux
Configuration	Through a web interface
Supported protocols	HTTP, HTTPS, VPN, PING, DHCP, RADIUS, SYSLOG, FTP, SNTP, SMTP, SNMP (v1,v2c,v3), MODBUS TCP
Alarm notification	E-mail, SNMP trap, internet SMS gateway, SMS (optionally with GSM modem)

2.2 Analogue sensors

Any sensors from the table below can be connected to 4 analogue inputs (A1-A4) of the controller or inputs (A1-A8) in additional EE321t extension modules (extension module with additional 8 analogue inputs). One controller can support up to 28 analogue sensors. If longer than included cable is needed, it is a UTP Cat5e cable suggested wit terminated RJ14 (6P4C) plugs. Warning: some analogue sensors e.g., ES363 require 6-wire cable terminated with RJ12 (6P6C) cable.

Type	Description	Part number
Front Rear	**ES350** – Temperature sensor Measurement range: -10°C - +100°C Measurement uncertainty: ±1°C Measurement resolution: 0,1°C Power consumption: 60mW Connectors: 1x RJ12 socket Cable: RJ14(6P4C)-RJ14(6P4C), included 2m, maximum allowed length of a connection cable: 100m Dimensions: 60x18x18	122ES003500
Front Rear	**ES351** – Humidity sensor Measurement range: 0% - 100% RH Measurement uncertainty: ±5% RH for 10% - 95% RH Measurement resolution: 0,01% RH Power consumption: 60mW Connectors: 1x RJ12 socket Cable: RJ14(6P4C)-RJ14(6P4C) included 2m, maximum allowed length of a connection cable: 50m Dimensions: 60x18x18	122ES003510
	ES352 – 230V AC voltage sensor Measurement range: 90VAC - 250VAC Power consumption: 60mW Connectors: 1x USB-A socket Cable: USB-A-RJ14(6P4C) included 1,8m, maximum allowed length of a connection cable: 100m Dimensions: 63x66x30	122ES003520
Front Rear	**ES353** – Door sensor (reed relay + magnet) Stack connection of up to 10 sensors Power consumption: 60mW Connectors: 2x RJ12 socket Cable: RJ14(6P4C)-RJ14(6P4C) included 2m, maximum allowed length of a connection cable: 150m Dimensions: 60x18x18	122ES003530
Front Rear	**ES354** – Vibration sensor Stack connection of up to 10 sensors Power consumption: 60mW Connectors: 2x RJ12 socket Cable: RJ14(6P4C)-RJ14(6P4C) included 2m, maximum allowed length of a connection cable: 150m Dimensions: 60x18x18	122ES003540
	ES356 – Optical smoke sensor Stack connection of up to 10 sensors Power consumption: 100mW Connectors: 2x RJ12 socket Cable: RJ14(6P4C)-RJ14(6P4C) included 2m, maximum allowed length of a connection cable: 150m Dimensions: ϕ100x45	122ES003560
	ES357 – Passive infrared sensor Movement detection range: 100° x 12m Power consumption: 100mW Connectors: 2m long cable from the casing, terminated with a RJ14 (6P4C) plug, maximum allowed length of a connection cable: 50m Dimensions: 112x71x48	122ES003570
	ES358 – External temperature sensor Measurement range: -40°C - +100°C Measurement uncertainty: ±1°C Measurement resolution: 0,1°C Power consumption: 60mW Connectors: 15m long cable from the casing, terminated with a RJ14 (6P4C) plug, maximum allowed length of a connection cable: 100m Dimensions: ϕ7x30 + 15 m cable	122ES003580

	ES359 – Flood sensor Detection delay: 1s, Power consumption: 60mW, Dimensions: 60x18x18 Connectors: 2m long cable from the casing, terminated with a RJ14 (6P4C) plug, maximum allowed length of a connection cable: 100m WARNING: The sensor should be mounted in such a way that the liquid touches only to the metal contacts during flooding. Liquid entering the sensor housing will damage it.	122ES003590
 Front Rear	**ES360** – Flood sensor for a water detection cable Detection delay: 15s Power consumption: 60mW Connectors: 1x RJ12 socket, 1x 2pin terminal block for ES361 wire Cable: RJ14(6P4C)-RJ14(6P4C) included 2m, maximum allowed length of a connection cable: 100m Dimensions: 60x18x18	122ES003600
	ES368 – Sensor detecting water and other conductive liquids An ES360 sensor is required for connection Available lengths: 3m (122ES003680), 6m (122ES003685), 10m (122ES003682), 15m (122ES003683), 25m (122ES003684)	122ES003680 122ES003685 122ES003682 122ES003683 122ES003684
 Front Rear	**ES362** - 4-20mA sensor Any sensors with 4-20mA output can be connected to the controller. Galvanic insulation 1kV between the input and the output. Measurement uncertainty: 2% (0,4mA) Measurement resolution: 0,1mA Power consumption: 100mW Input voltage: 5V Maximal input current: 24mA Connectors: 1x RJ12 socket, 1x 2pin terminal block for 4-20mA sensor Cable: RJ14(6P4C)-RJ14(6P4C) included 2m, maximum allowed length of a connection cable: 50m Dimensions: 60x18x18	122ES003620
 Front Rear	**ES363** - 75V DC voltage sensor Galvanic insulation 1kV between the input and the output. Measurement range: 0VDC - 75VDC Measurement uncertainty: ±1% (0,75V) Measurement resolution: 0,1V Power consumption: 100mW Connectors: 1x RJ12 socket, 1x 2pin terminal block as DC voltage input Cable: RJ12(6P6C)-RJ12(6P6C) included 2m, maximum allowed length of a connection cable: 50m Dimensions: 60x18x18	122ES003630

2.3 CAN digital sensors

These sensors are connected to the CAN interface of the EC335i controller. The CAN interface is a serial bus and allows connecting devices in a daisy chain (from device to device). A maximum of 10 devices can be connected to the controller via the CAN interface. The length of the CAN bus should not exceed 200m. It is a UTP Cat 5e suggested as a CAN bus cable.

Type	Description	Part number
	ES340 - Integrated smoke, humidity, temperature sensors; CAN bus Temperature measurement range: -10 - +85°C Measurement uncertainty: ±0,5°C Measurement resolution: 0,1°C Humidity measurement range: 0% - 100% RH Measurement uncertainty: ±3% RH for 10-95% RH Measurement resolution: 1% RH Possibility to connect up to 10 devices in a daisy chain (sensor has 2 CAN ports); Power consumption: 1000mW Connectors: 2x RJ12 socket of CAN bus Cable: RJ12(6P4C)-RJ12(6P4C), included 2m, maximum allowed length of CAN bus: 200m; Dimensions: ϕ100x45	122ES003400

	ES341 - Integrated pressure 300-1100hPa, humidity 0% -100% RH (±3% uncertainty for RH 10% - 95% RH), temperature –40...+85°C sensors; CAN bus. Possibility to connect up to 10 devices in a daisy chain. The sensor has 2 CAN ports for daisy chain connection. Measurement uncertainty: ±1,5°C Measurement resolution: 0,1°C Measurement uncertainty: ±3% RH Measurement resolution: 1% RH Measurement uncertainty: ±1,7hPa Measurement resolution: 1hPa Connectors: 2x RJ12 socket of CAN bus Cable: RJ12(6P4C)-RJ12(6P4C), included 2m, maximum allowed length of CAN bus: 200m Dimensions: 78x66x27 mm.	122ES003410

2.4 Extension modules and accessories

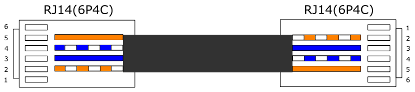
Expansion modules increase the number of available ports for sensors connected to one controller. The EE321t and EE322 modules must be connected to the CAN interface of the EC335i controller. The CAN interface is a serial bus and allows connecting in a daisy chain (from device to device). A maximum of 10 devices can be connected to the controller via the CAN interface. The length of the CAN bus should not exceed 200m. It is a UTP Cat5e suggested as a CAN bus cable.

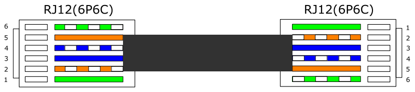
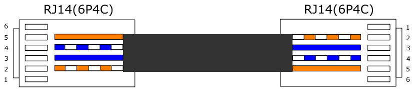
Type	Description	Part number
Front Rear	**EE321t** – Extension module with additional 8 analogue inputs. The module is connected to a CAN controller connector. The controller supports up to 3 EE321t devices. The module has no 19" brackets. Connectors: 2x RJ12 socket of CAN bus, 8xRJ12 for analogue sensors, power socket 12V@1A Dimensions: 129x29x56	122EE003211
Front Rear	**EE322** – Extension module with additional 32 inputs for potential-free contacts. The module is connected to a CAN controller connector. The controller supports up to 32 inputs of potential-free contacts. 19" brackets included. Connectors: 2x RJ12 socket of CAN bus, 32 terminal blocks for potential-free contacts Dimensions: 215x40x40	122EE003220
Front Rear	**EA313** - Relay 30VDC/5A Maximal contact voltage: 30VDC Maximal contact load: 5A Coil voltage: 12VDC Dimensions: 60x18x18	122EA003130
	EA314i – 1U 19" bracket for EC335i (part number 122EC003353) Dimensions: 482x44x80	122EA003143
	EA315 – Light signal Flashing frequency: 1Hz Power supply 12V, 80mA Connectors: 1x 2pin terminal block Cable: 1.5m 2-wire cable included Dimensions: ϕ73x45	122EA003150
	EA316t – 1U 19'' bracket for 2x EE321t Dimensions: 482x44x80	122EA003161
	EA319i - LTE modem for EC335i (part number 122EC003353) The modem is mounted in a dedicated controller slot. The modem has SMA connectors for antennas. 2 bayonet antennas are included.	122EA003193

3 SYSTEM STRUCTURE

3.1 Number of sensors and wiring

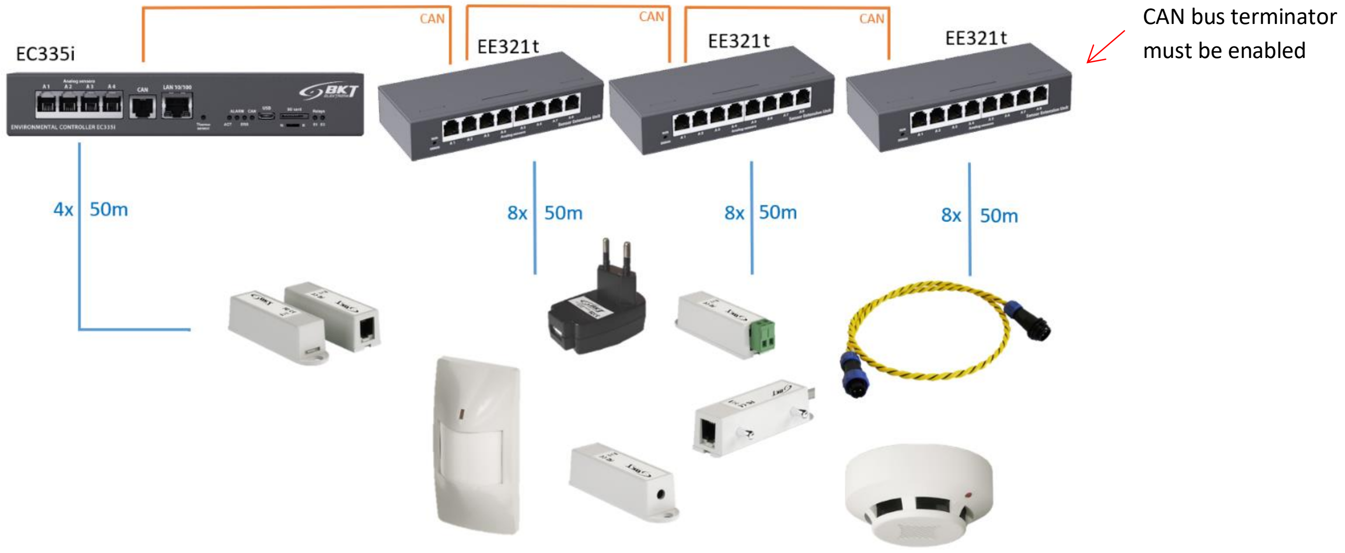
In order to maintain optimal system performance, the number of sensors supported by the controller should be limited to 60.
NOTE: Use only the original cables supplied with the sensor or the UTP cat.5e cable when a longer cable is required.

<table>
<tr><th>Device connected to the EC335i controller</th><th>Restrictions</th><th>Type of connection cable</th><th>Maximum cable length</th></tr>
<tr><td>All sensors</td><td>Maximum 60 sensor of any type</td><td></td><td></td></tr>
<tr><td>Analogue sensors</td><td>Up to 28 analogue sensors of any type connected directly to the controller and via extension modules EE321t .</td><td>UTP kat5e with RJ14 (6P4C) -RJ14 (6P4C) connectors


<table>
<tr><td>1</td><td>NC</td></tr>
<tr><td>2</td><td>12V</td></tr>
<tr><td>3</td><td>Sensor detection</td></tr>
<tr><td>4</td><td>Signal output</td></tr>
<tr><td>5</td><td>GND</td></tr>
<tr><td>6</td><td>NC</td></tr>
</table>
For the ES363 sensor, use UTP kat5e cable with RJ12 (6P6C) -RJ12 (6P6C) connectors

</td><td>A minimum of 50m. See the description of individual sensors 2.2 Analogue sensors</td></tr>
<tr><td>CAN devices</td><td>Up to 10 CAN devices (up to 3x EE321t and up to 2x EE322 and up to 10x ES340/ES341).</td><td>UTP kat5e with RJ14 (6P4C) -RJ14 (6P4C) connectors

</td><td>The entire bus is up to 200m.</td></tr>
<tr><td>Sensors with potential-free contacts</td><td>Up to 68 sensors with potential-free contacts connected directly to the controller and via the EE322 extension modules. It should be assumed that each sensor with a potential-free output loads the controller as much as 0.5 analogue sensor.</td><td>UTP Cat 5e or other with 0.5mm wire diameter</td><td>50m for each sensor.</td></tr>
</table>

3.2 Example 1. Extension modules EE321t

Up to three EE321t modules (extension module with an additional 8 analogue inputs) can be connected to one controller.


EC335i
CAN
EE321t
CAN
EE321t
CAN
EE321t
CAN bus terminator must be enabled
4x 50m
8x 50m
8x 50m
8x 50m

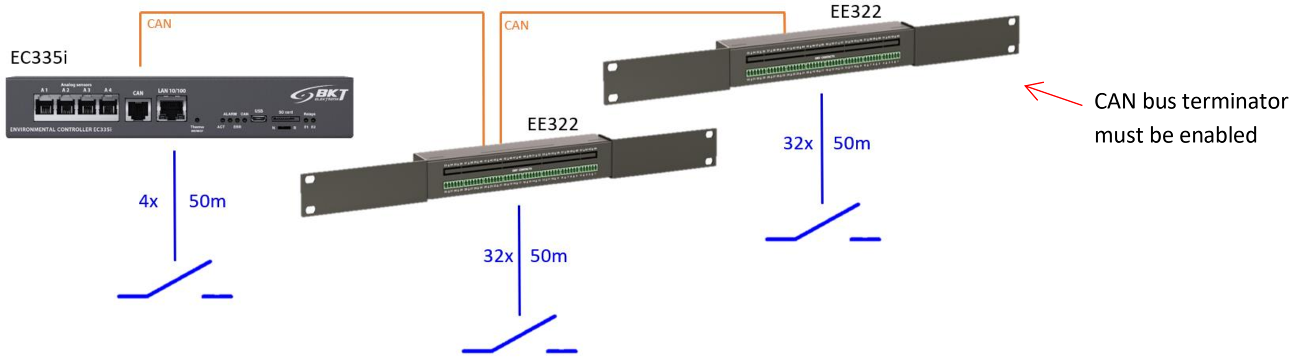
— The CAN bus connection, the length of the entire bus is up to 200m

— The connection of an analogue sensor, the length for each sensor: minimum 50m

Sensor type	Number of sensors as a load for the controller
Analogue sensors connected directly to the controller	4
Analogue sensors connected via EE321t extension modules	24
Total	28

3.3 Example 2. Extension modules EE322

A maximum of two EE322 modules (extension module with an additional 32 inputs for potential-free contacts) can be connected to one controller. It should be assumed that each sensor with a potential-free output loads the controller as much as 0.5 analogue sensors.


EC335i
CAN
CAN
EE322
EE322
CAN bus terminator must be enabled
4x 50m
32x 50m
32x 50m

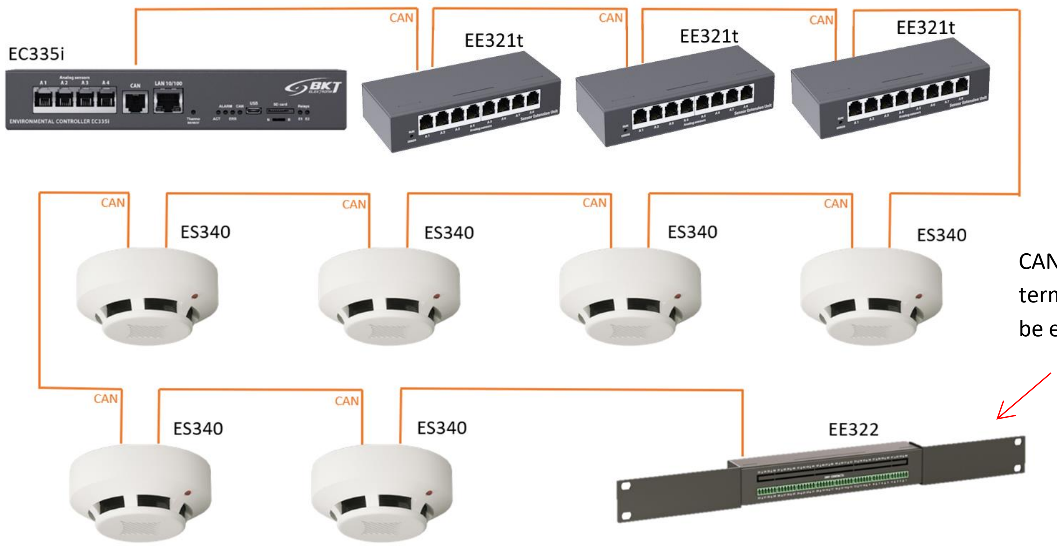
— The CAN bus connection, the length of the entire bus is up to 200m

— The connection of sensors with potential-free contacts. Cable length for each connection up to 50m.

Sensor type	Number of sensors as a load for the controller
Sensors with potential-free contacts connected directly to the controller	2 (in real 4)
Sensors with potential-free contacts connected via EE322 extension modules	32 (in real 64)
Total	34

3.4 Example 3. CAN devices

Up to 10 CAN devices can be connected to one controller, but maximum 3 units EE321t , 2 units EE322 or 10 units ES340.


EC335i
CAN
EE321t
CAN
EE321t
CAN
EE321t
CAN
ES340
CAN
ES340
CAN
ES340
CAN
ES340
CAN
ES340
CAN
ES340
EE322

CAN bus terminator must be enabled

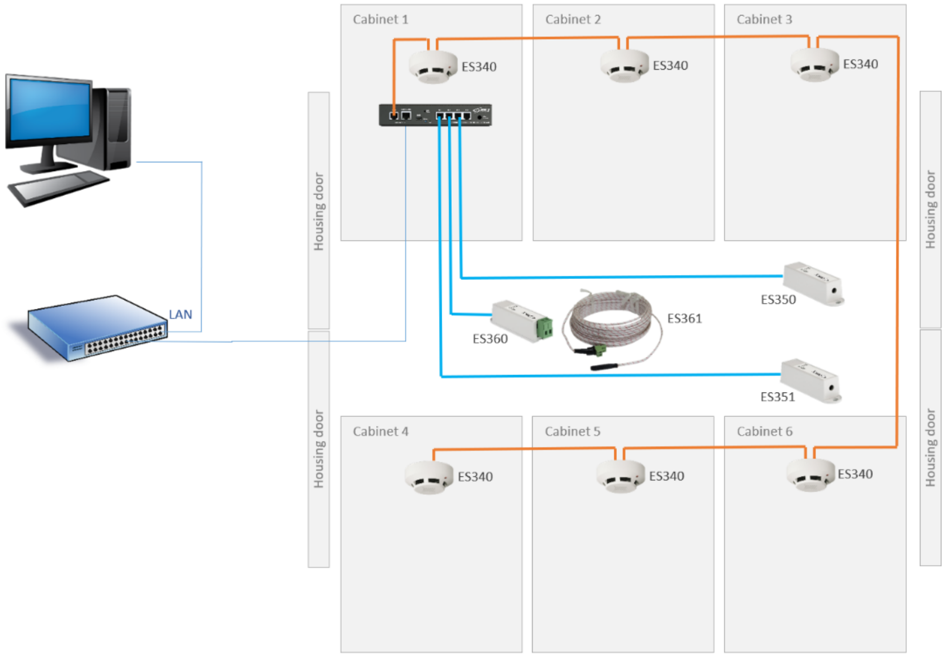
— The CAN bus connection, the length of the entire bus is up to 200m

— The connection of an analogue sensor, the length for each sensor: minimum 50m

Sensor type	Number of sensors as a load for the controller
Analogue sensors connected to EC335i controller	4
Analogue sensors connected via EE321t extension modules	24
ES340 CAN sensors (temperature, humidity, smoke)	18 (6x3)
Sensors with potential-free contacts connected via EE322 extension modules	16 (in real 32)
Total	62 (over suggested 60)

3.5 Example 4. IT cabinet monitoring

An example of an environmental conditions monitoring system in cold aisle containment built of 6 cabinets: temperature (ES350) and humidity (ES351) in the aisle, temperature at the top of the cabinet, humidity and presence of smoke (ES340). A flood detection sensor was placed under the floor (ES360 + ES368).


Cabinet 1
ES340
Cabinet 2
ES340
Cabinet 3
ES340
Housing door
Housing door
LAN
ES350
ES361
ES360
ES351
Housing door
Housing door
Cabinet 4
ES340
Cabinet 5
ES340
Cabinet 6
ES340

🟧 The CAN bus connection, the length of the entire bus is up to 200m

🟦 The connection of an analogue sensor, the length for each sensor: minimum 50m

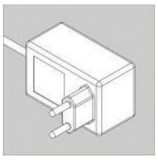
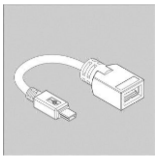
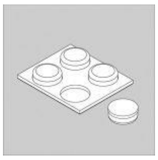
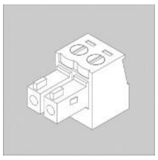
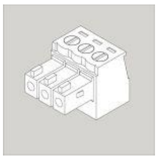
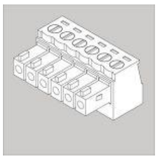
Sensor type	Number of sensors as a load for the controller
Analogue sensors connected directly to the controller	3
ES340 CAN sensors (temperature, humidity, smoke)	18 (6x3)
Total	21

4 INSTALLATION OF DEVICES

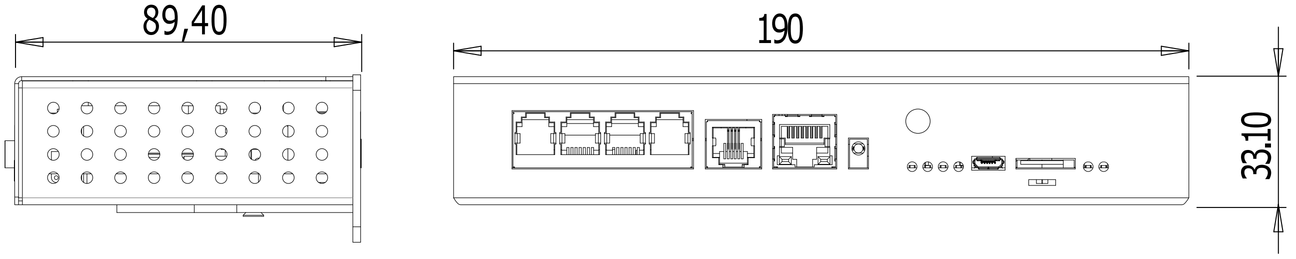
4.1 EC335i controller installation

4.1.1 Package contents

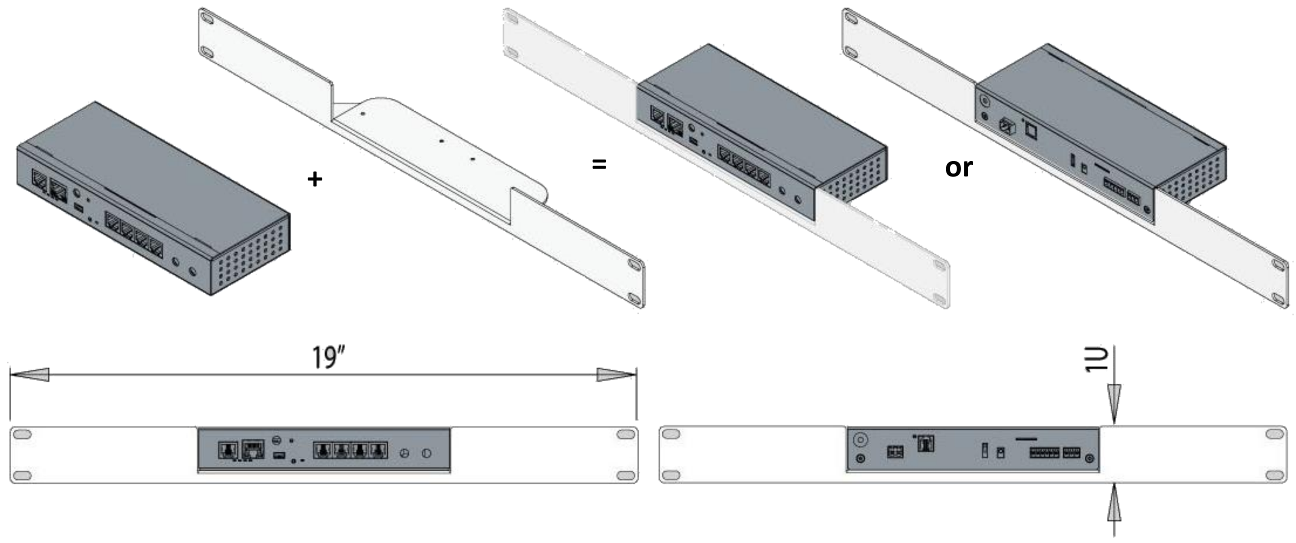
EC335i box contains:

							
EC335i controller – 1pc.	Power supply 230V AC, 12V DC 1A – 1pc.	RJ45-RJ45 patchcord – 1pc.	USB cable: mini B USB plug – USB A socket – 1pc.	Self-adhesive foot – 4pcs.	2-pin terminal block – 1pc.	3-pin terminal block – 1pc.	6-pin terminal block – 1pc.

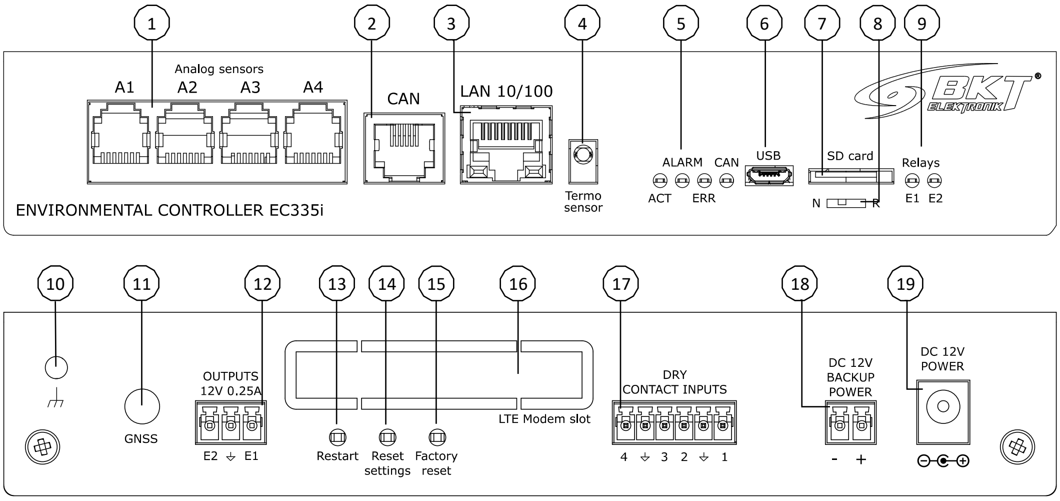
4.1.2 Controller dimensions



4.1.3 1U 19’’ bracket installation



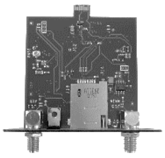
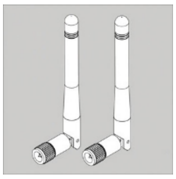
4.1.4 Device connectors


1
2
3
4
5
6
7
8
9
Analog sensors
A1
A2
A3
A4
CAN
LAN 10/100
Termo sensor
ALARM
CAN
ACT
ERR
USB
SD card
N
R
Relays
E1
E2
ENVIRONMENTAL CONTROLLER EC335i
10
11
12
13
14
15
16
17
18
19
GNSS
OUTPUTS 12V 0,25A
E2 ⏚ E1
Restart
Reset settings
Factory reset
LTE Modem slot
DRY CONTACT INPUTS
4 ⏚ 3 2 ⏚ 1
DC 12V BACKUP POWER
- +
DC 12V POWER

1. Analogue sensor inputs	6. Mini-B USB for pendrive or camera	14. Restore factory settings button. Press and hold for 5s
2. CAN bus connector for extension units	7. SD card socket for measurements storage	
3. RJ45 Ethernet connection	8. Working mode switch: N-normal mode, R-factory programming (do not use)	15. Unimplemented button (do not use)
4. Local temperature sensor		16. EA319i LTE modem slot
5. Status LEDs ACT- device status LED ALARM – programmable LED, ERR – error LED, CAN – CAN bus status LED	9. Voltage output status LEDs	17. Inputs for external voltage-free contacts
	10. Enclosure earthing (M4 thread)	18. Power backup from additional power source 12VDC/1A
	11. Optional antenna cutout	
	12. Voltage outputs 12VDC 0.25A	19. Main power supply 12VDC/1A
	13. Controller reboot button	

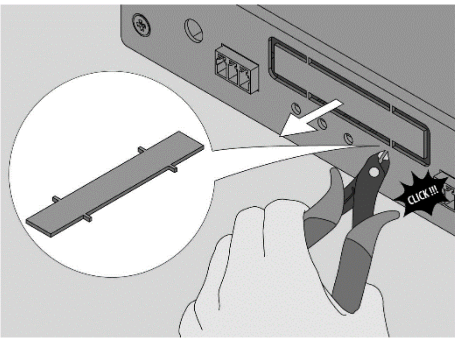
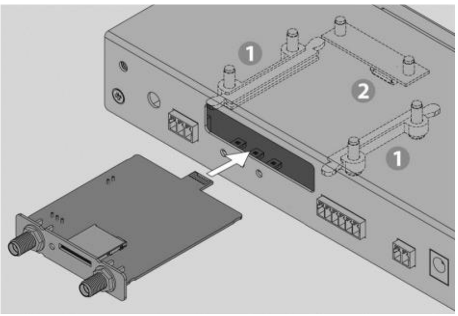
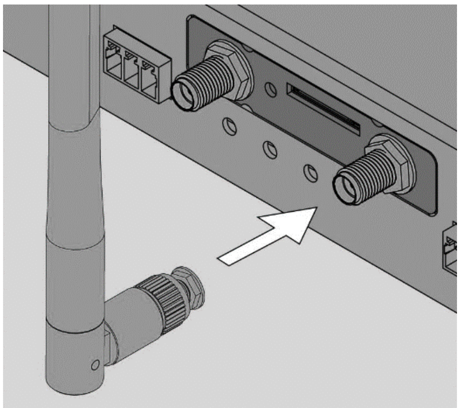
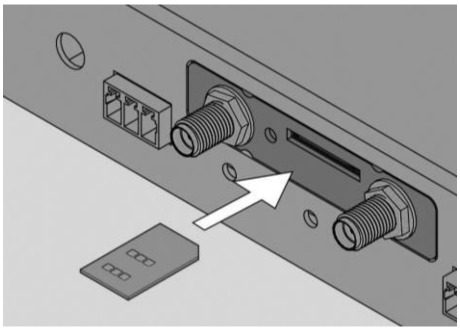
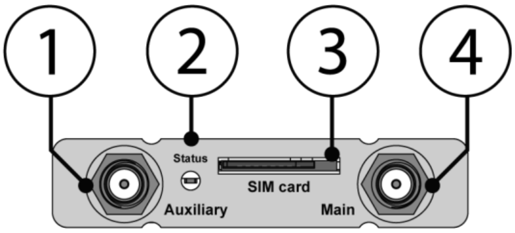
4.2 Installation of EA319i – LTE modem

4.2.1 Package contents

	
Module pcb board – 1pc.	Antenna – 2pcs.

4.2.2 Assembly procedure

The method of assembling the modem is shown below.

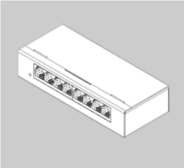
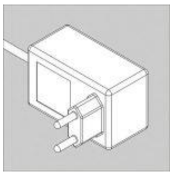
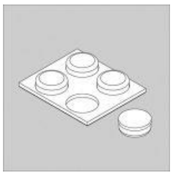
	Cut the cover on the back of the controller using, for example, side cutters.
	Carefully slide the modem pcb into the controller.
	Install the bayonet antennas on the modem.
	Place the microSIM card in the module with the contacts facing down and the cutout facing the inside of the controller. Push the card until it clicks. To remove the card, push it in again until it clicks.
	1. 1. SMA socket for GSM antenna 2. 2. LED, blinks when modem is powered 3. 3. microSIM card slot 4. 4. SMA socket for GSM antenna

4.3 Installation of EE321t module – 8 analogue inputs extension

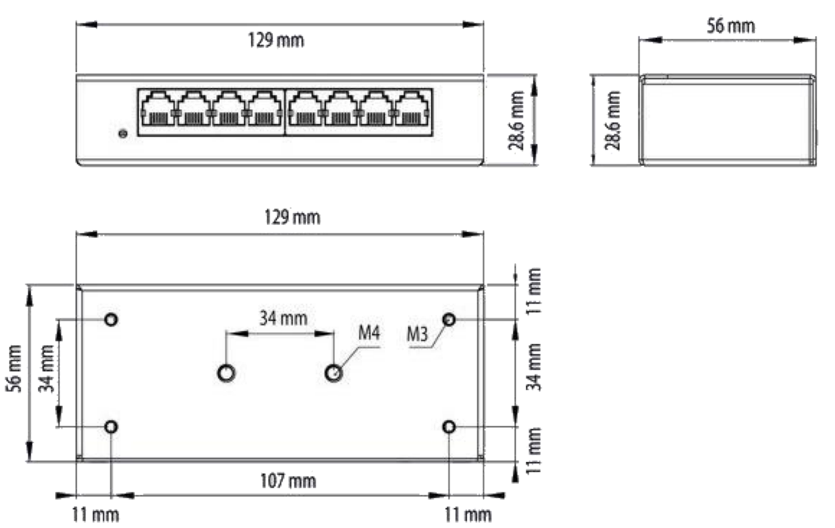
You can connect 3 EE321t devices that extend the number of analogue ports to the controller.

4.3.1 Package contents

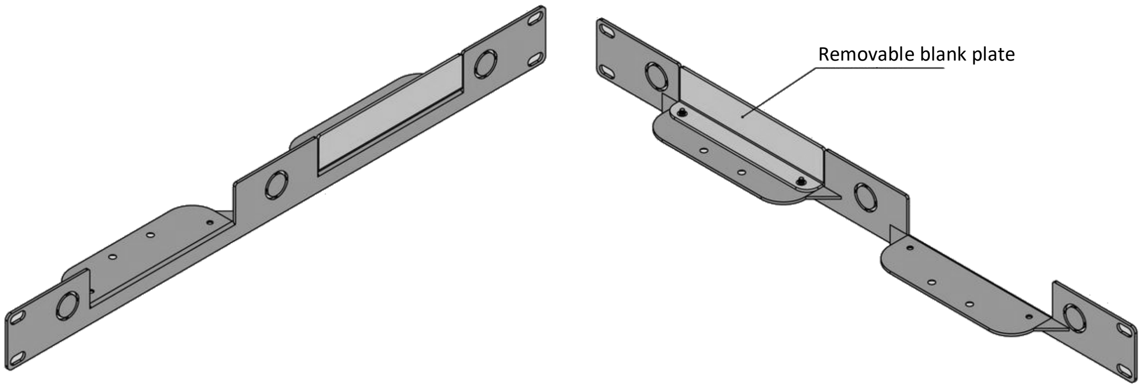
The packaging of the EE321t module includes:

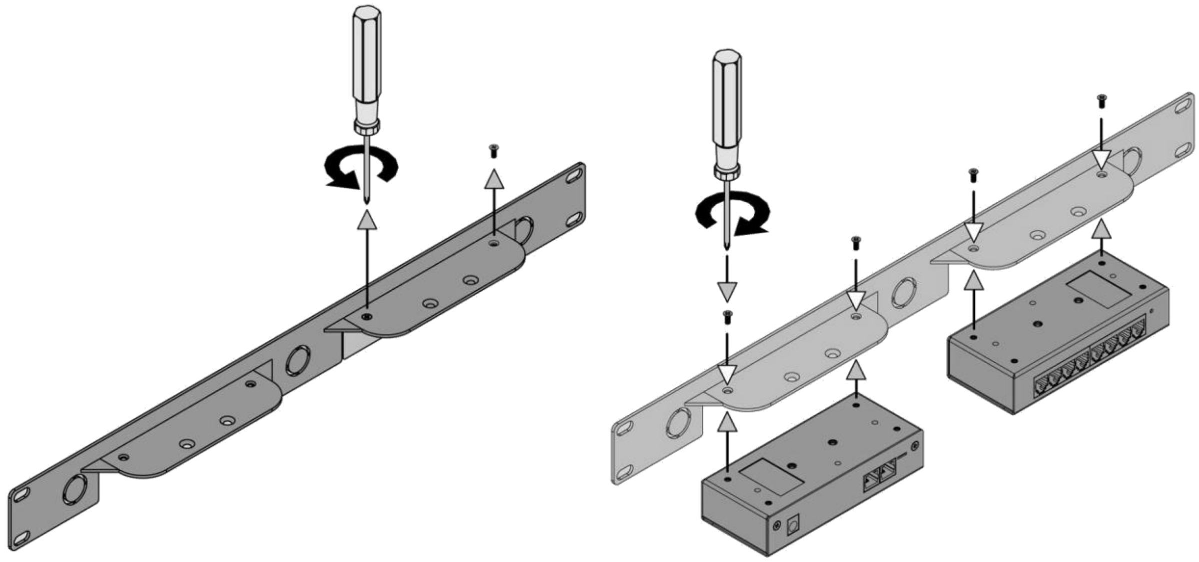
 EE321t module – 1szt.	 Power supply 230VAC, 12VDC 1A – 1pc.	 Cable RJ14(6P4C)-RJ14(6P4C), 2m – 1pc.	 Self-adhesive foot – 4pcs.

4.3.2 EE321t dimensions

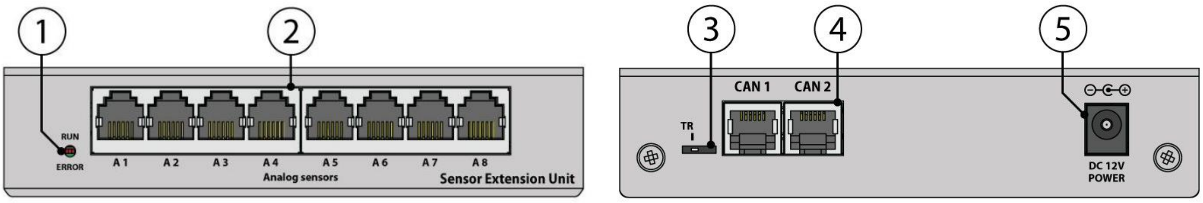

129 mm
28.6 mm
56 mm
28.6 mm
129 mm
56 mm
34 mm
34 mm
M4
M3
11 mm
34 mm
11 mm
107 mm
11 mm
11 mm

4.3.3 1U 19’’ bracket installation


Removable blank plate

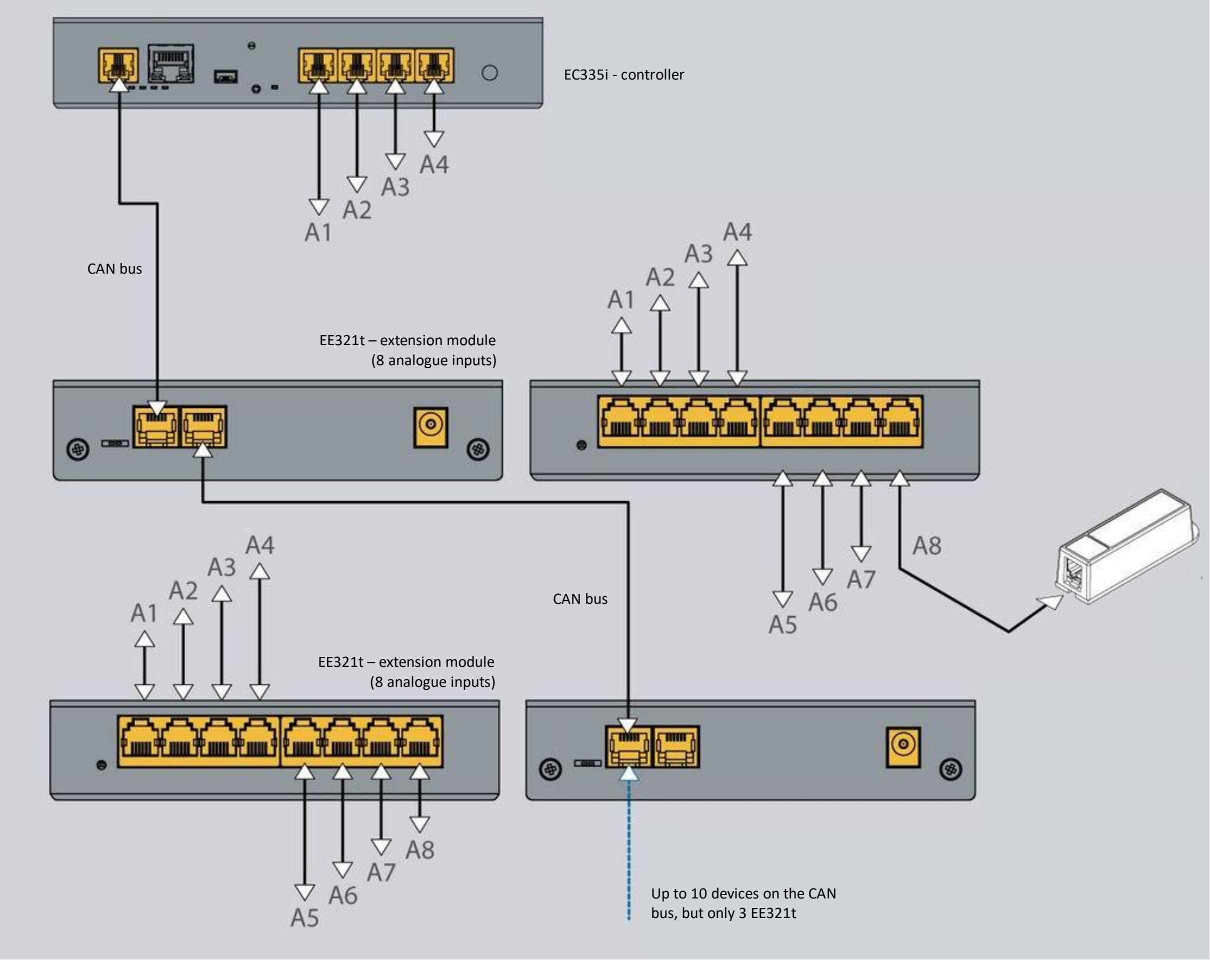


4.3.4 Device connectors

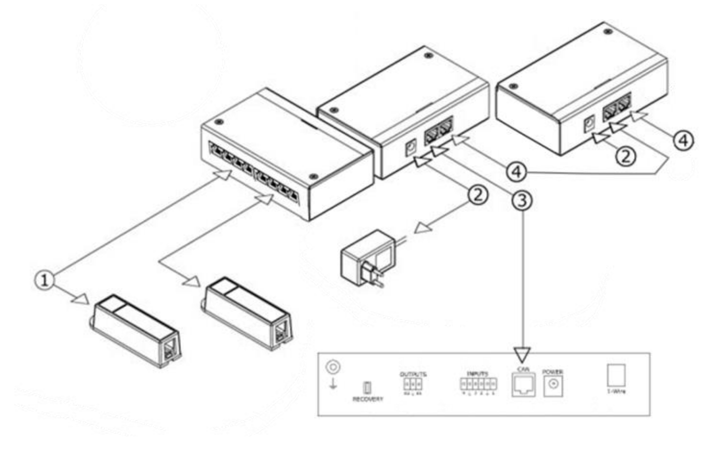

1
2
3
4
5
RUN
ERROR
A 1
A 2
A 3
A 4
A 5
A 6
A 7
A 8
Analog sensors
Sensor Extension Unit
TR
CAN 1
CAN 2
DC 12V
POWER

1. Signal LEDs (see in table 4.3.5 Connecting the EE321t module)
2. 8 inputs for analogue sensors
3. Switches: FR - firmware update and TR – bus terminator (see in the table 4.3.5 Connecting the EE321t module)
4. CAN bus connectors
5. Power connector 12VDC/1A

4.3.5 Connecting the EE321t module

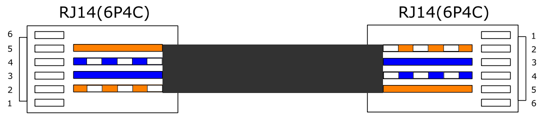

EC335i - controller
A1
A2
A3
A4
CAN bus
EE321t – extension module
(8 analogue inputs)
A1
A2
A3
A4
A5
A6
A7
A8
A1
A2
A3
A4
CAN bus
EE321t – extension module
(8 analogue inputs)
A5
A6
A7
A8

Up to 10 devices on the CAN bus, but only 3 EE321t

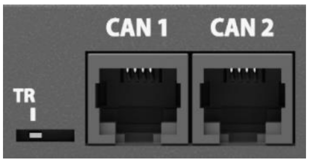
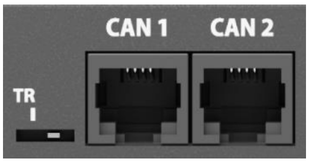
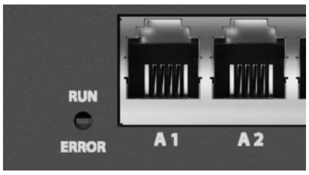

①
②
③
④
②
④
OUTPUTS
INPUTS
CAN
POWER
RECOVERY
1-Wire

The devices should be connected in a cascade (from one device to another). The CAN socket number is irrelevant, either CAN1 or CAN2 can be used. The maximum CAN bus length is 200 m.

1. Connection of sensors to a device extending the number of analogue inputs.
2. Connection of 12VDC/1A power supply.
3. Connection of a CAN bus to the EC335i controller.
4. Cascade connection of the CAN bus (from one device to another).


RJ14(6P4C)
RJ14(6P4C)
6
5
4
3
2
1
1
2
3
4
5
6

For CAN bus connections, UTP cat5e cable terminated with RJ14(6P4C) - RJ14(6P4C) plugs.

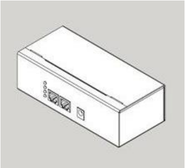
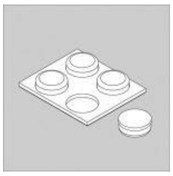
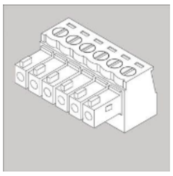
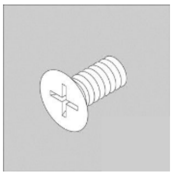
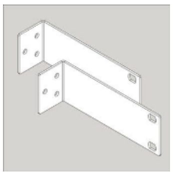
 TR-on  TR-off	The bus terminator in the last device (from the controller) must be enabled. The bus terminator in the other devices must be disabled. The TR switch (activating the terminator) in ON and OFF position is shown in the drawing on the left.
	The EE321t module has two LEDs that signal the states: RUN (green) flashes - the EE321t module is not connected to the controller RUN (green) is on - the EE321t module is connected to the EC335i controller and is correctly configured in the controller ERR (red) is on - the EE321t module is connected to the EC335i controller but is not configured correctly in the controller

4.4 Installation of EE322 module– extension of 32 inputs for voltage-free contacts

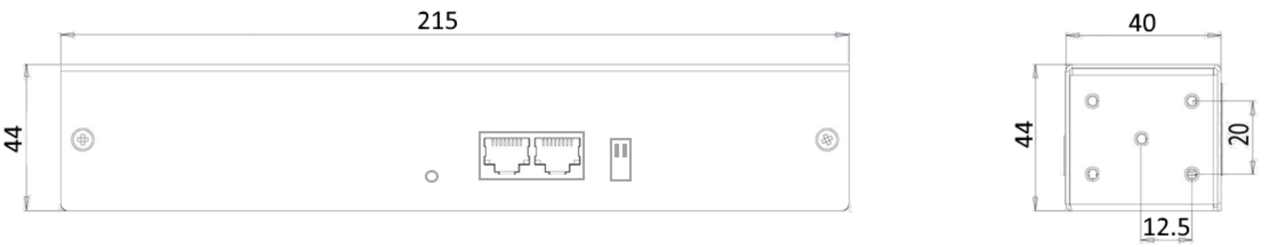
Up to two EE322 devices, that extend the number of inputs for potential-free contacts, can be connected to the controller.

4.4.1 Package contents

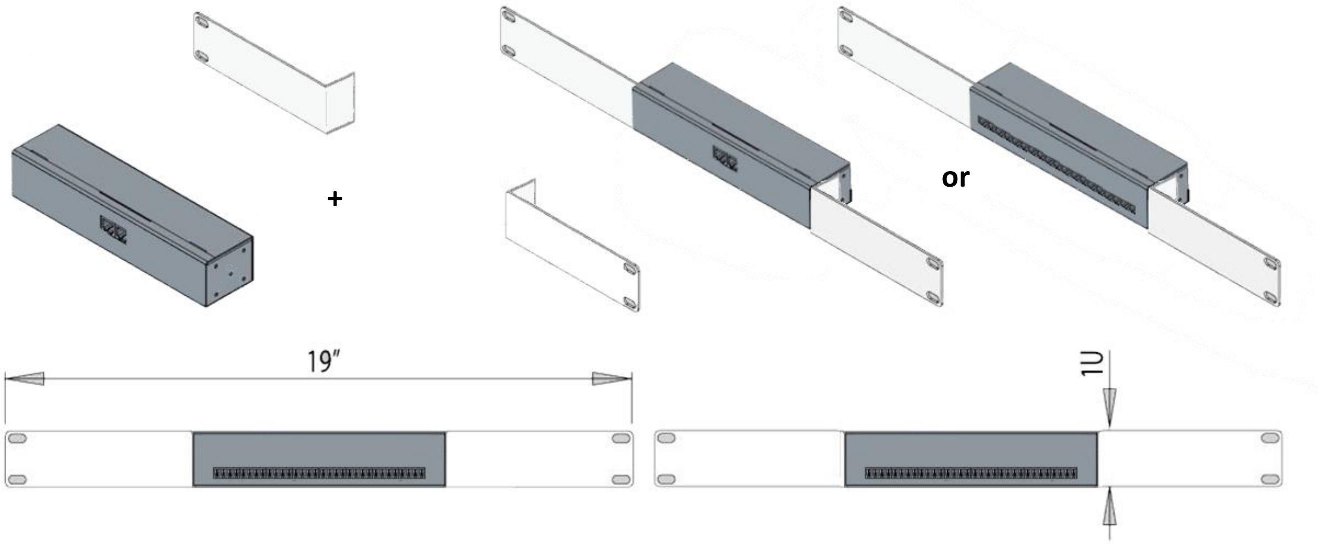
The packaging of the EE322 module includes:

 EE322 module – 1pc.	 Cable RJ14(6P4C)-RJ14(6P4C), 2m – 1pc.	 Self-adhesive foot – 4pcs.	 6-pin terminal block– 1pc.	 M3x8 bolts – 6pcs.	 1U 19'' bracket - 2pcs.

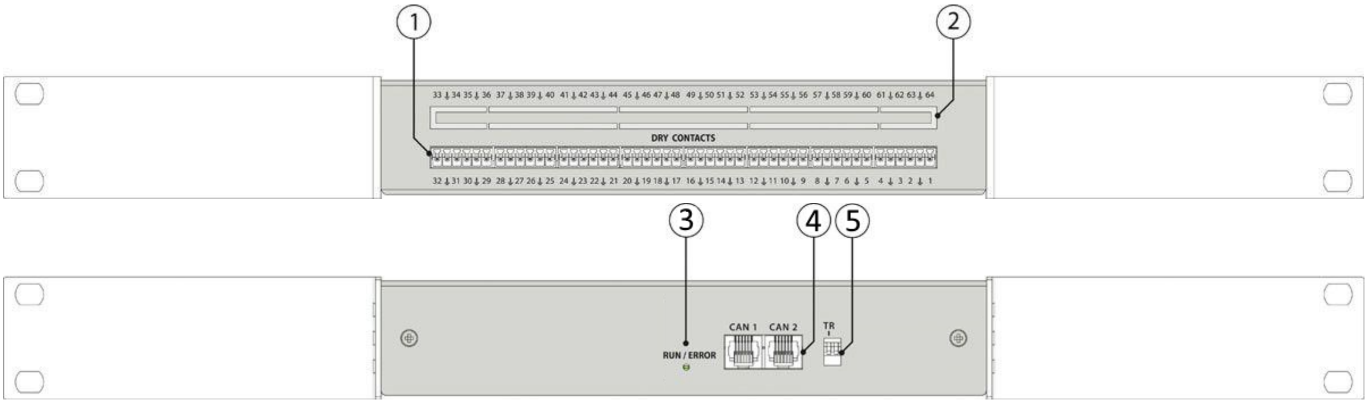
4.4.2 EE322 dimensions



4.4.3 1U 19’’ bracket installation

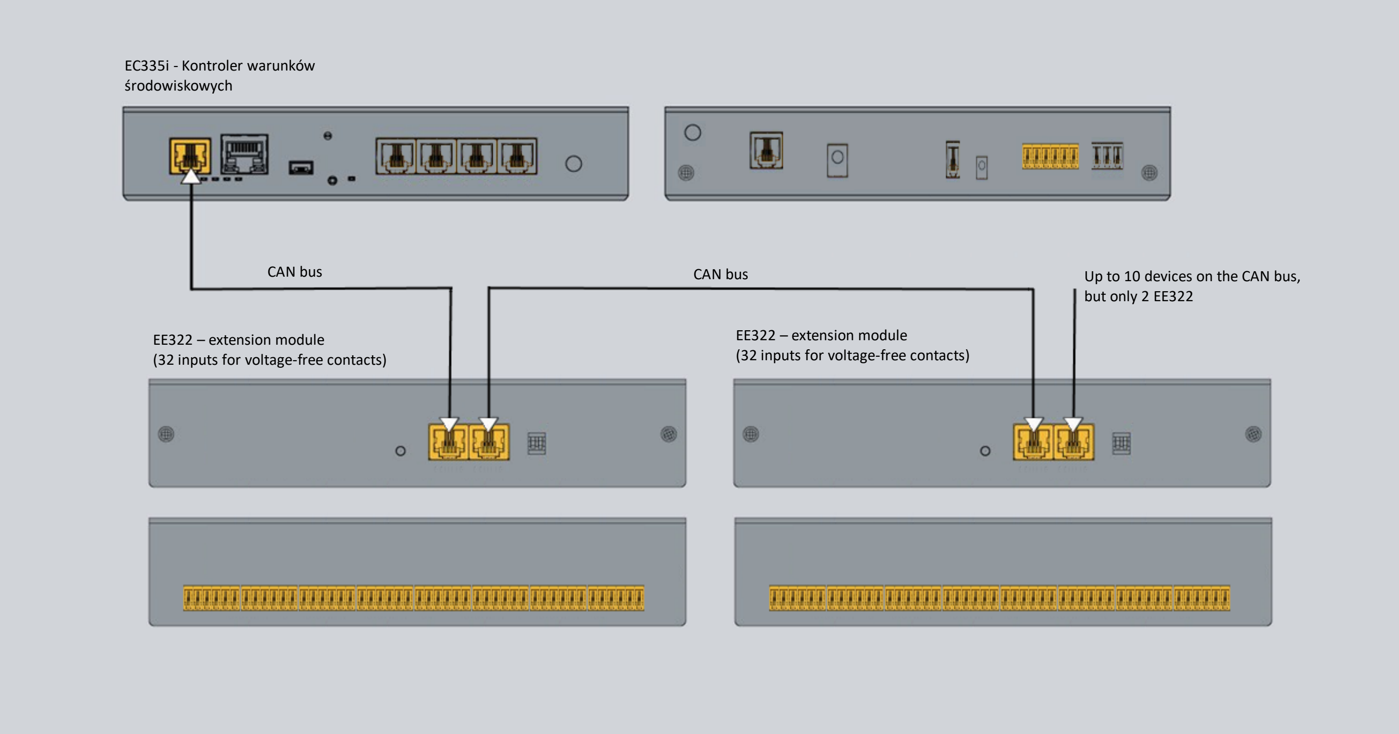


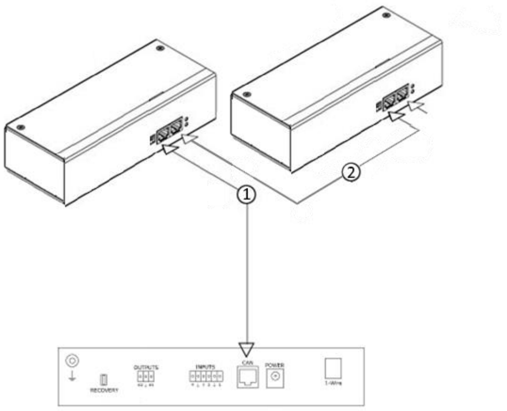
4.4.4 Device connectors



1. 1. Inputs for 32 sensors with potential-free contacts
2. 2. Optional additional inputs
3. 3.LED indicating connection error with the EC335i controller
4. 4. CAN bus inputs
5. 5. FR switches - firmware update and TR - bus terminator (see in the table 4.4.5 Connecting the EE322 module)

4.4.5 Connecting the EE322 module

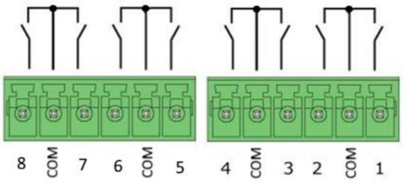

EC335i - Kontroler warunków środowiskowych
CAN bus
CAN bus
Up to 10 devices on the CAN bus, but only 2 EE322
EE322 – extension module (32 inputs for voltage-free contacts)
EE322 – extension module (32 inputs for voltage-free contacts)



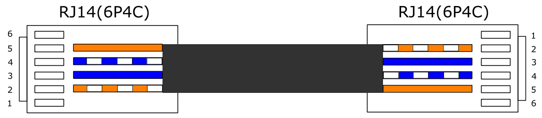
The devices should be connected in a cascade (from the EC335i controller to the next EE322 device, etc.). The CAN socket number does not matter, you can use any CAN1 or CAN2. The maximum length of the CAN bus can be 200m.

1. Connection of the CAN bus to the EC335i controller
2. Cascade connection of the CAN bus (from the device to the device)

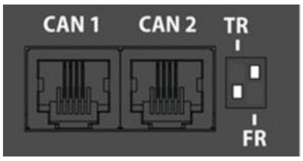
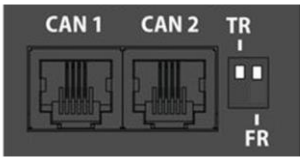
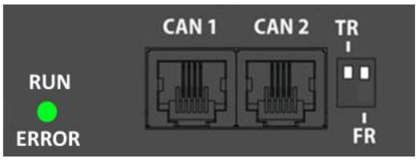
EE322 devices do not require an additional power supply - they are powered from the CAN bus.


8
COM
7
6
COM
5
4
COM
3
2
COM
1

A way to connect voltage-free contacts to the EE322 module.

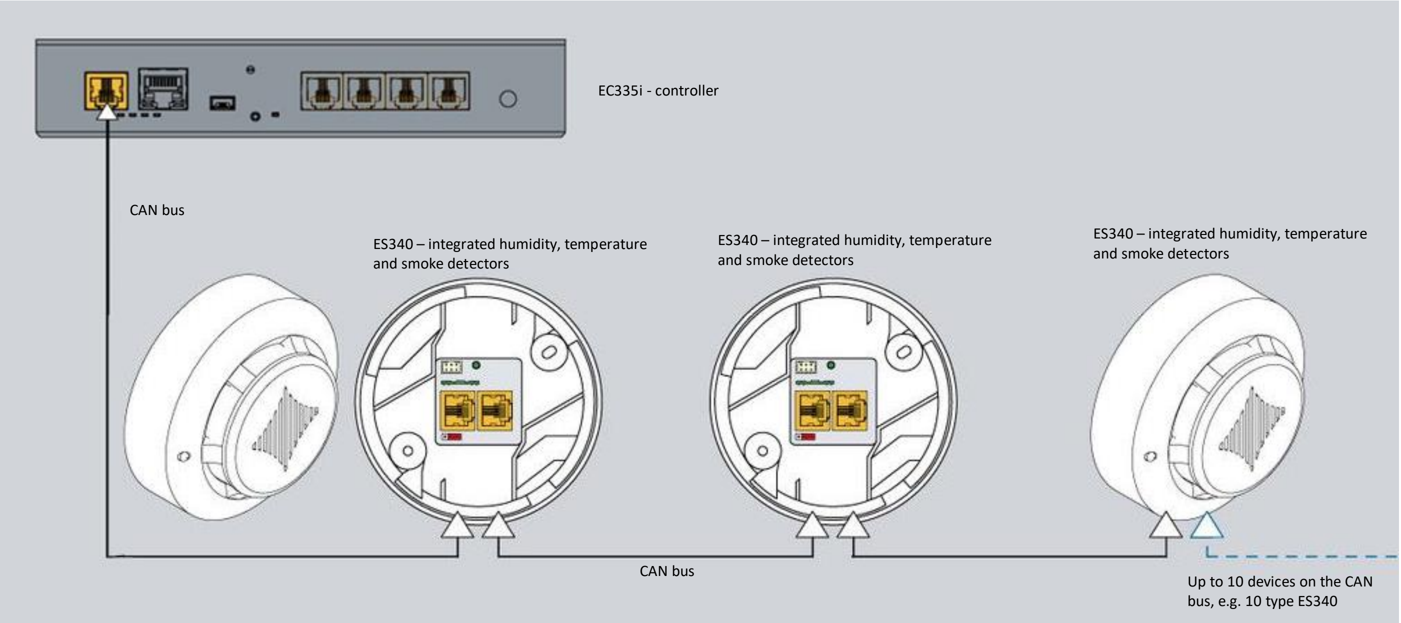

RJ14(6P4C)
RJ14(6P4C)
6
5
4
3
2
1
1
2
3
4
5
6

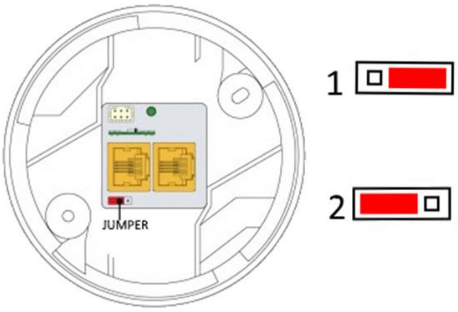
For CAN bus connections, use UTP cat5e cable terminated with RJ14 (6P4C) - RJ14 plugs (6P4C).

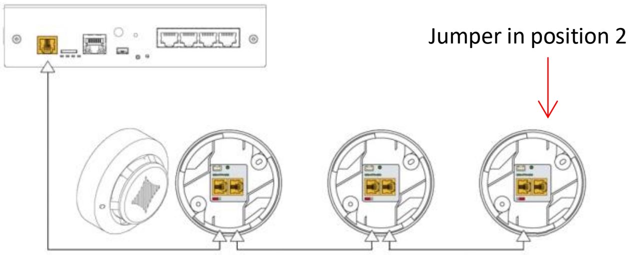
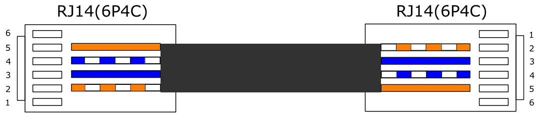
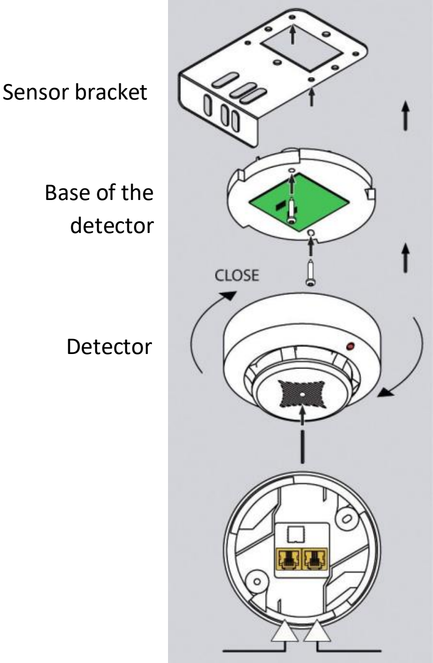
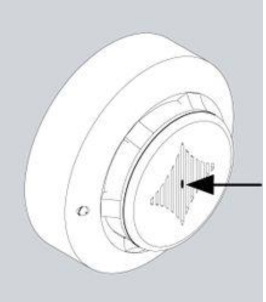
 CAN 1 CAN 2 TR FR TR-on, FR-off  CAN 1 CAN 2 TR FR TR-off, FR-off	The last (from the controller) device must have the bus terminator turned on. The other devices must have the terminator turned off. The TR switch (activating the terminator) in the on and off position is shown in the drawing on the left. The FR switch is for service and must always be in the off position during normal operation.
 CAN 1 CAN 2 TR RUN ERROR FR	The EE322 module has one LED indicating the status: LED off - the EE322 module is not connected to the controller Lights up in red - the EE322 module is connected to the EC335i controller but is not configured correctly in the controller Lights up green - the EE322 module is connected to the EC335i controller and is correctly configured in the controller

4.5 Installation of ES340 sensor – smoke, humidity, temperature

ES340 is a detector with three sensors integrated in one housing: optical smoke, temperature and humidity. The sensor is connected to the CAN bus connector on the EC335i controller.

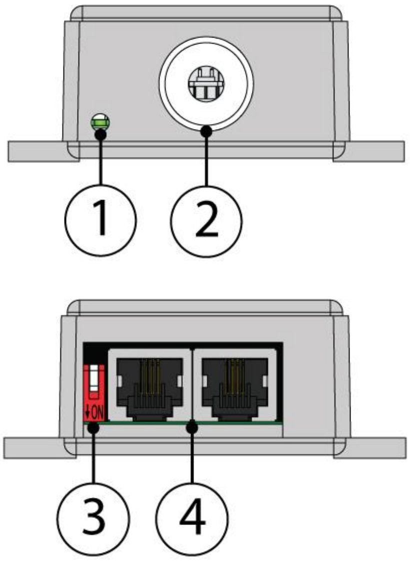

EC335i - controller
CAN bus
ES340 – integrated humidity, temperature and smoke detectors
ES340 – integrated humidity, temperature and smoke detectors
ES340 – integrated humidity, temperature and smoke detectors
CAN bus
Up to 10 devices on the CAN bus, e.g. 10 type ES340

	The devices should be connected in a cascade (from the EC335i controller to the next ES340 sensor, etc.). The CAN socket number does not matter, you can use any CAN1 or CAN2. The maximum length of the CAN bus can be 200m. In the ES340 sensor, place the jumper in the appropriate position: 1 – CAN bus terminator disabled 2 – CAN bus terminator enabled. Only the last device on the CAN bus should have a jumper in position 2.

	
 RJ14(6P4C) RJ14(6P4C) 6 5 4 3 2 1 1 2 3 4 5 6	For CAN bus connections, use UTP cat5e cable terminated with RJ14 (6P4C) - RJ14 plugs (6P4C).
	The detector should be mounted in a horizontal position - with CAN connectors facing up. For mounting in the cabinet, you can use the attached bracket to which the detector base should be screwed, and then place the detector in it and lock it by a small rotation. To avoid false alarms, the mounting location should be chosen accordingly: - away from ventilation openings, dusty places, smoky areas, etc.
	It is possible to test the operation of the optical smoke sensor by inserting, for example, an office paper clip into the hole shown in the picture. The detector should react by permanently lighting the LED. It is an alarm condition of the detector and to turn it off, disconnect the detector for a moment from the power supply or perform a reset via the web interface of the controller.

4.6 Installation of ES341 sensor – pressure, humidity, temperature

The ES341 is a detector with three sensors integrated in one housing: pressure, temperature and humidity. The detector is connected to the CAN bus connector on the EC335i controller.

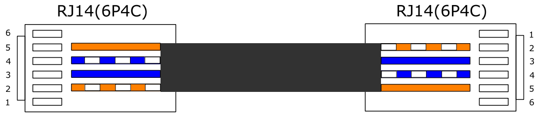


1. The ES341 sensor has one LED to indicate the status:

   LED off – the sensor is not connected to the controller

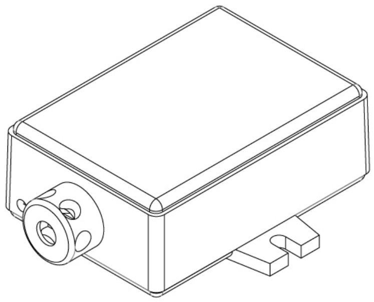
   Solid red light – The sensor is connected to the EC335i controller, but not properly configured in the controller

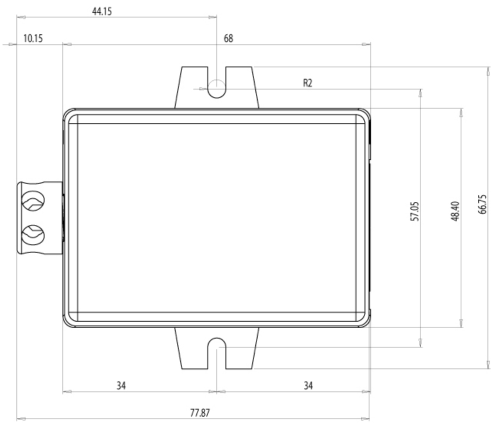
   Solid green light – The sensor is connected to the EC335i controller and is properly configured in the controller
2. Sensor.
3. Bus terminator. Only the last device on the CAN bus should have the jumper in the ON position.
4. CAN bus connectors.

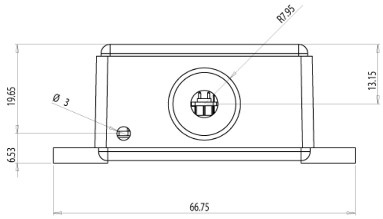

RJ14(6P4C)
RJ14(6P4C)
6
5
4
3
2
1
1
2
3
4
5
6

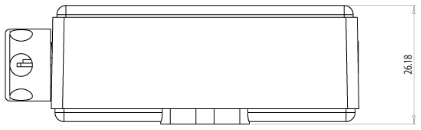
For CAN bus connections, use the original 4-core cable or UTP cat5e terminated with RJ14 (6P4C) -RJ14 (6P4C) plugs.

Dimensions of the ES341 sensor



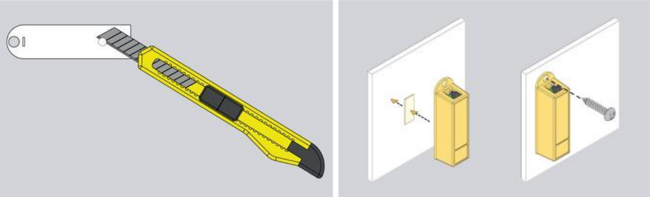

44.15
10.15
68
R2
57.05
48.40
66.75
34
34
77.87


R7.95
19.65
Ø 3
6.53
13.15
66.75



4.7 Installation of analogue sensors

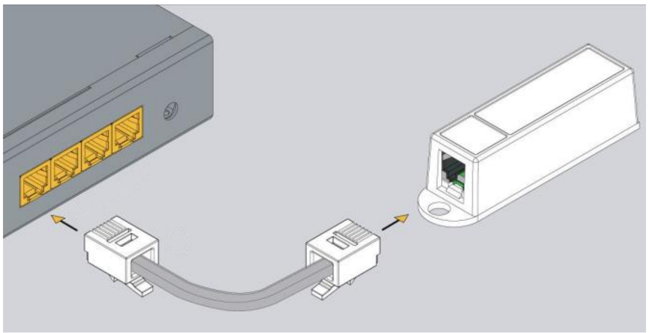
Installation



The assembly of most analogue sensors is uncomplicated and consists in mounting the sensor in the selected location. You can use the hole in the sensor housing with a diameter of 5.5mm or an adhesive double-sided tape.

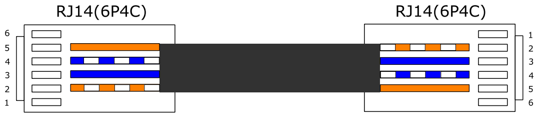
For mounting in IT cabinets, use a cage nuts and bolts with M4 or M5 size.

Connection

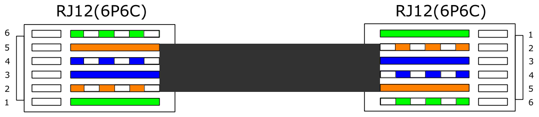


Analog sensors should be connected to the analogue inputs of the controller or inputs of the EE321t extension module. Use the cable supplied with the sensor or cable:

Supplied cable or UTP cat5e with RJ14 (6P4C) -RJ14 (6P4C) connectors

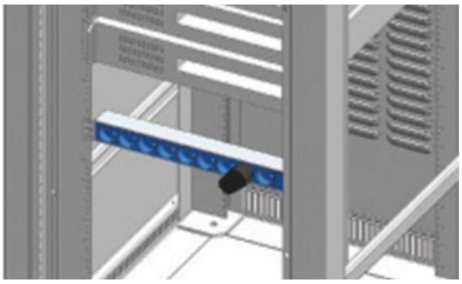

RJ14(6P4C)
RJ14(6P4C)
6
5
4
3
2
1
1
2
3
4
5
6

For the ES363 sensor, use supplied cable or UTP cat5e cable with RJ12 (6P6C) -RJ12 (6P6C) connectors


RJ12(6P6C)
RJ12(6P6C)
6
5
4
3
2
1
1
2
3
4
5
6

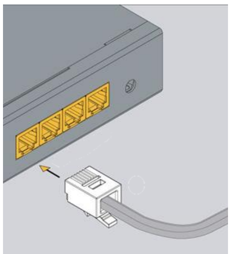
4.7.1 ES352 - 230VAC voltage sensor

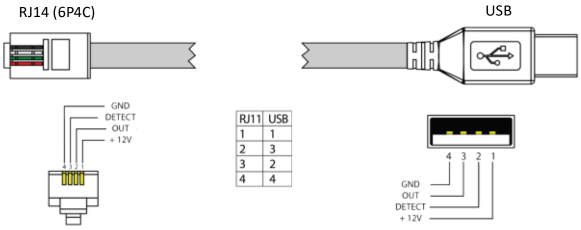
Installation



The ES352 sensor should be placed in a socket, e.g., in a power strip.

Connection



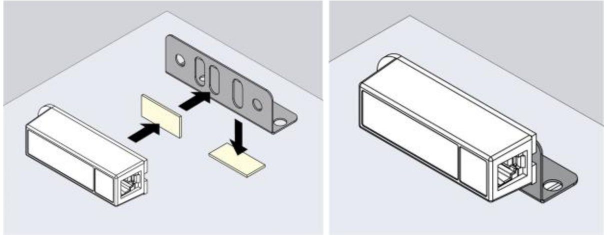

RJ14 (6P4C)
USB
GND
DETECT
OUT
+ 12V
4 3 2 1
4 3 2 1
GND
OUT
DETECT
+ 12V

RJ11	USB
1	1
2	3
3	2
4	4

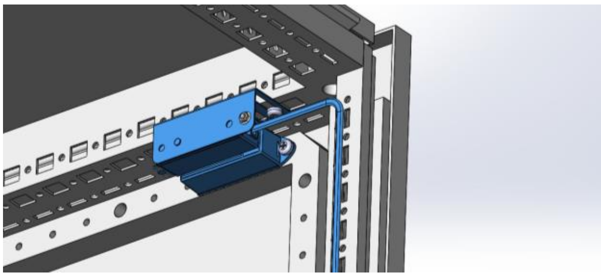
To connect with the controller, use the supplied cable, which can be extended to a maximum of 100m. The sensor should be connected to one of the analogue inputs of the controller or the EE321t extension module.

4.7.2 ES353 – door sensor

Installation

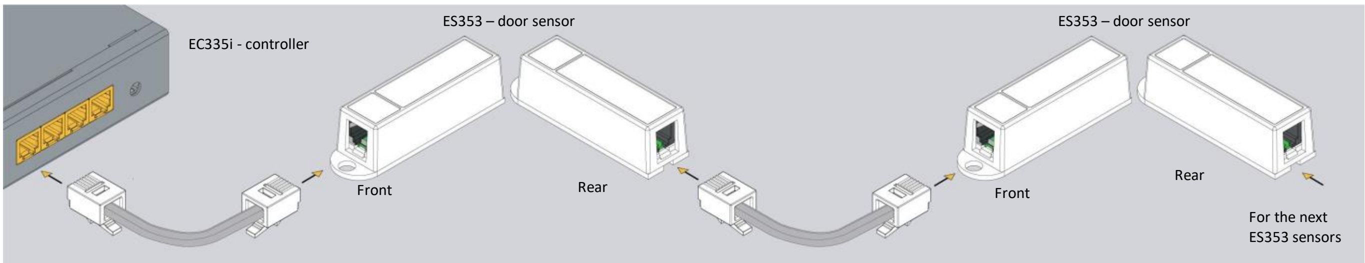


The ES353 door sensor additionally has a metal bracket that allows the sensor to be mounted in a different plane from the magnet, if necessary.



The bracket should be used when mounting the sensor in an IT cabinet. The assembly method is shown in the figure beside. If the magnet cannot be screwed to the door leaf, stick it using double-sided tape.

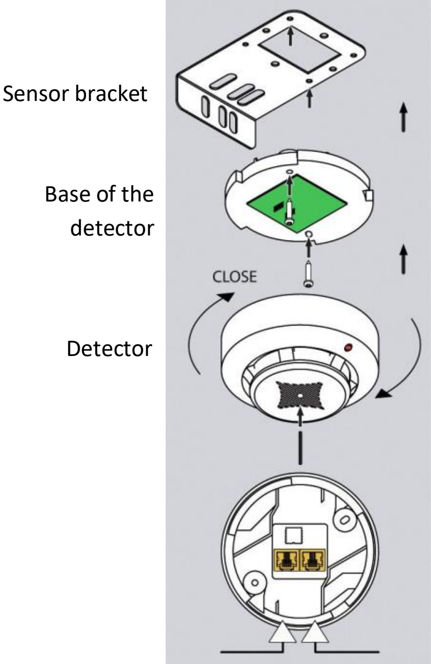
Connection


EC335i - controller
ES353 – door sensor
Front
Rear
ES353 – door sensor
Front
Rear
For the next ES353 sensors

Sensors ES353 - door sensor, ES354 - vibration sensor, ES356 - a smoke detector can be connected in a cascade, that is, from the sensor to the sensor. Up to 10 sensors can be placed in one cascade. The entire cascade occupies only one analogue port in the controller, but the controller is then unable to distinguish the sensors in the cascade and determine from which of them an alarm was generated.

4.7.3 ES356 – smoke sensor

Installation

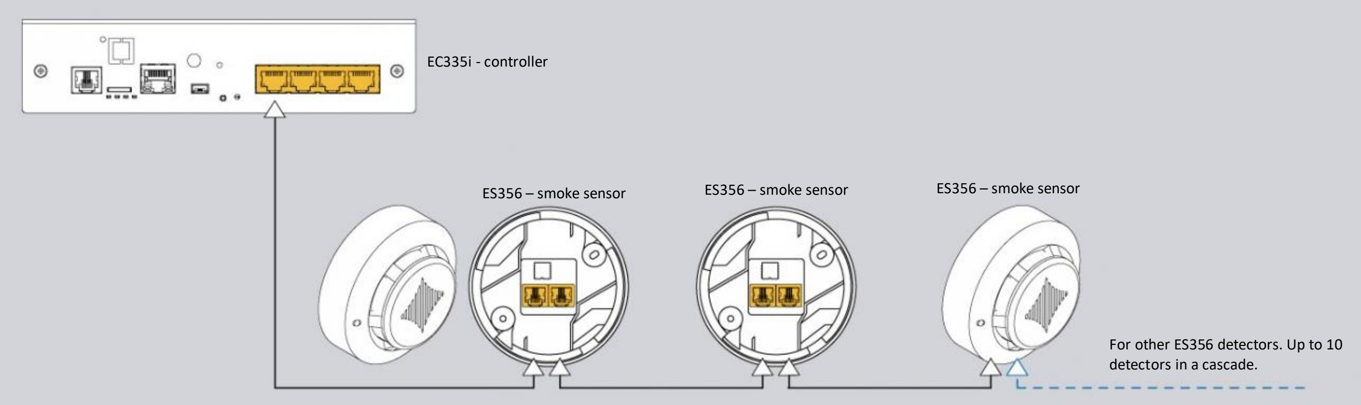

Sensor bracket
Base of the detector
CLOSE
Detector

The detector should be mounted in a horizontal position - with RJ12 connectors facing up.

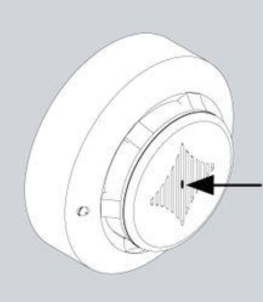
For mounting in the cabinet, you can use the attached bracket to which the detector base should be screwed, and then place the detector in it and lock it by a small rotation.

To avoid false alarms, the mounting location should be chosen accordingly: - away from ventilation openings, dusty places, smoky areas, etc.

Connection



The ES356 smoke detectors can be connected in a cascade, from the detector to the detector. Up to 10 detectors can be placed in one cascade. The entire cascade occupies only one analogue port in the controller, but the controller is then unable to distinguish the sensors in the cascade and determine from which of them an alarm was generated.



It is possible to test the operation of the optical smoke sensor by inserting, for example, an office paper clip into the hole shown in the picture. The detector should react by permanently lighting the LED. It is an alarm condition of the detector and to turn it off, disconnect the detector for a moment from the power supply or perform a reset via the web interface of the controller. Reset via the web interface disconnects power from all analogue sensors, which may result in additional alarms being generated during this time.

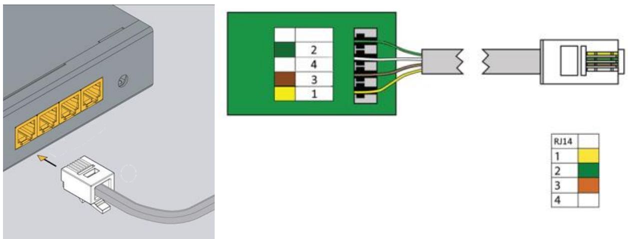
4.7.4 ES357 – PIR sensor

Installation

The detector should be mounted to the wall at a height of about 2.2 m using the attached adjustable handle.

Do not install the detector in the vicinity of heat or cold sources, or in direct sunlight, which may cause false alarms.

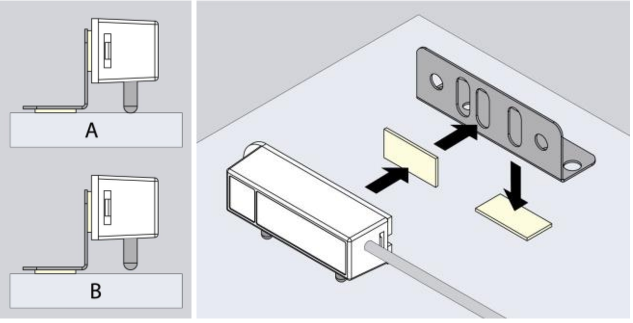
Connection



The ES357 detector has a cable permanently connected to the detector, which should be connected to the analogue input of the controller. This cable can be extended to a maximum of 50m.

4.7.5 ES359 – point leak sensor

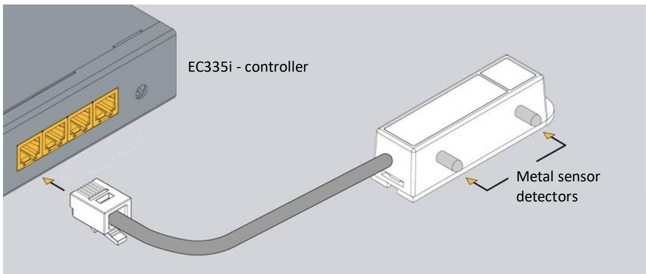
Installation



The ES359 sensor should be mounted in such a way that its metal detectors are shorted with liquid during a leak. If the surface is not conductive, the detectors can touch it (figure A). Otherwise, the sensor must be mounted in such a way that the detectors are slightly above the surface (figure B). The attached metal angle bracket can be used for mounting.

The sensor can be damaged if it is completely immersed in the liquid. Then it will be necessary to replace it.

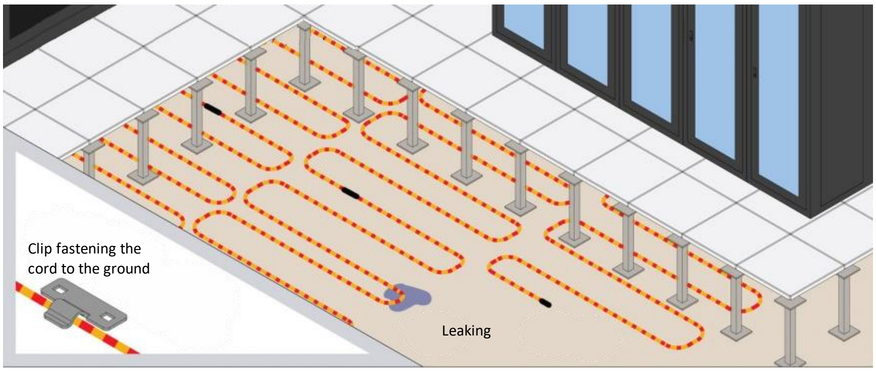
Connection


EC335i - controller
Metal sensor detectors

The sensor has a wire permanently connected to the detector, which should be connected to the analogue input of the controller. This cable can be extended to a maximum of 100m,

4.7.6 ES360 + ES368 - linear leak sensor

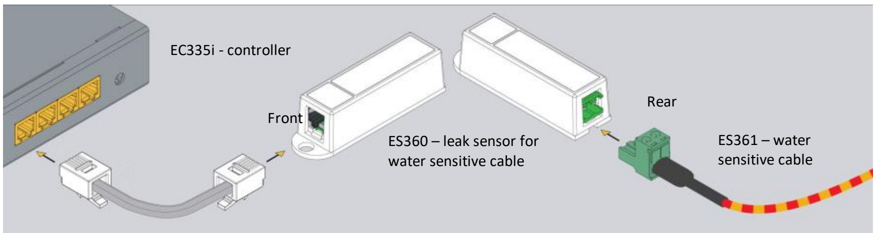
Installation


Clip fastening the cord to the ground
Leaking

The ES368 water detection cable should be placed on the monitored surface, e.g. under the technical raised floor of the server room. The cable can be distributed evenly over the whole surface of the floor or only in sensitive parts, e.g. under air conditioning modules.

Use non-metallic fastening brackets to fasten the cable. You can use the attached plastic handles. Together with the cable, 1 holder is provided for every 2 m of cable. The conduit is even sensitive to condensed air when the air humidity is high and the temperature is around the dew point. This situation can cause false flood alarms.

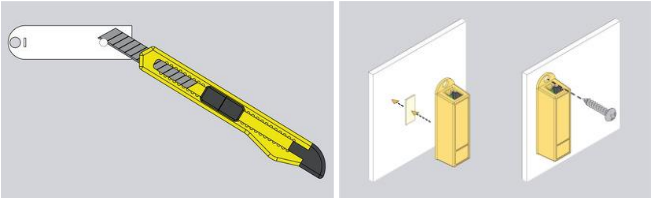
Connection


EC335i - controller
Front
ES360 – leak sensor for water sensitive cable
Rear
ES361 – water sensitive cable

For the ES360 sensor (flood sensor for the water sensitive cable), connect the ES368 water sensitive cable using the terminal block provided.

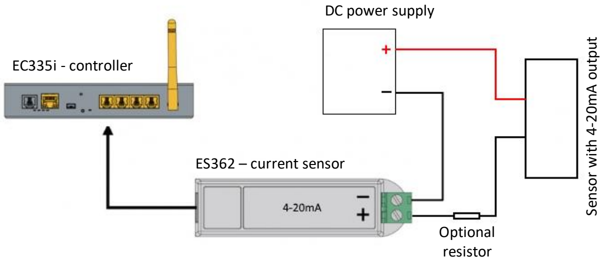
4.7.7 ES362 - 4-20mA current sensor

Installation



The sensor can be installed using a hole in its housing with a diameter of 5.5mm or use a double-sided adhesive tape.
For mounting in IT cabinets, use a cage nuts and bolts with M4 or M5 size.

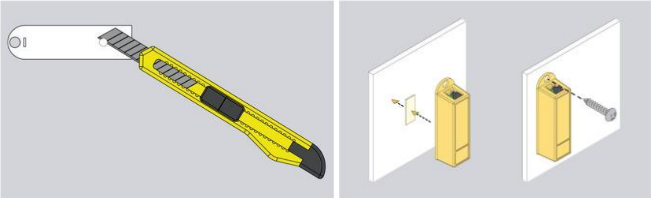
Connection



The ES362 sensor should be connected to one of the analogue inputs of the controller using the supplied cable. A circuit in which the current from the 4-20 mA range will be monitored should be connected to the sensor's connector terminal, paying attention to the correct polarity. Use a 1mm^2 wire.
ES362 input voltage: 5V
ES362 maximum input current: 24mA

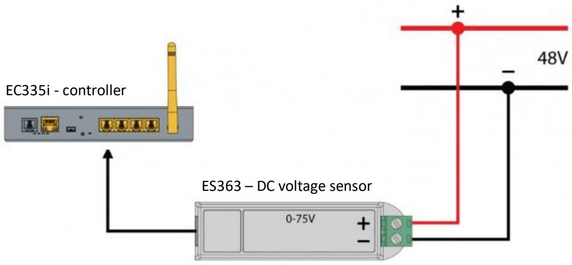
4.7.8 ES363 - 0-75VDC voltage sensor

Installation



The sensor can be installed using a hole in its housing with a diameter of 5.5mm or use a double-sided adhesive tape.
For mounting in IT cabinets, use a cage nuts and bolts with M4 or M5 size.

Connection

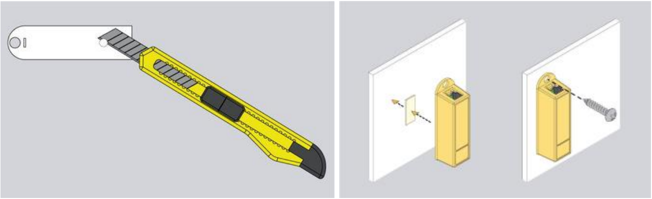


The ES363 sensor should be connected to one of the analogue inputs of the controller using the supplied wire or wire terminated with RJ12 (6P6C) -RJ12 (6P6C) plugs with a maximum length of 50m.
A monitored voltage should be connected to the sensor's connector terminal, observing the correct polarity. Use a 1mm^2 wire.

4.8 Installation of accessories

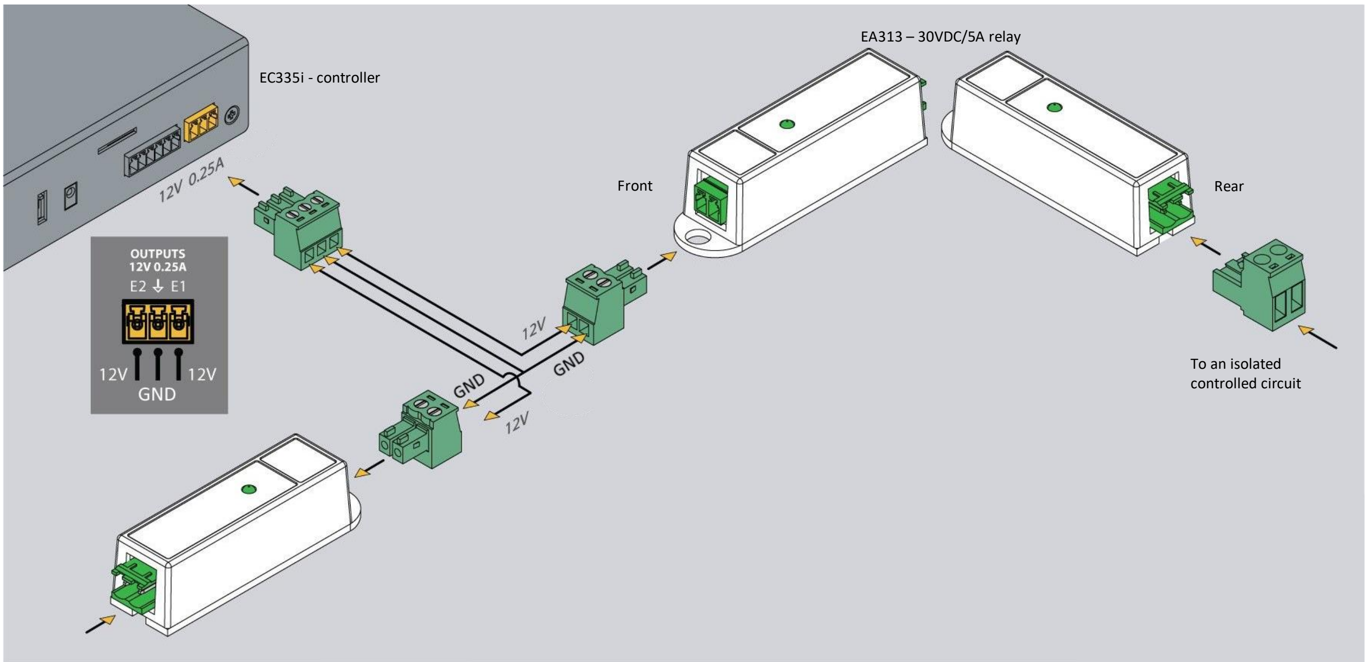
4.8.1 EA313 - 30V/5A relay

Installation

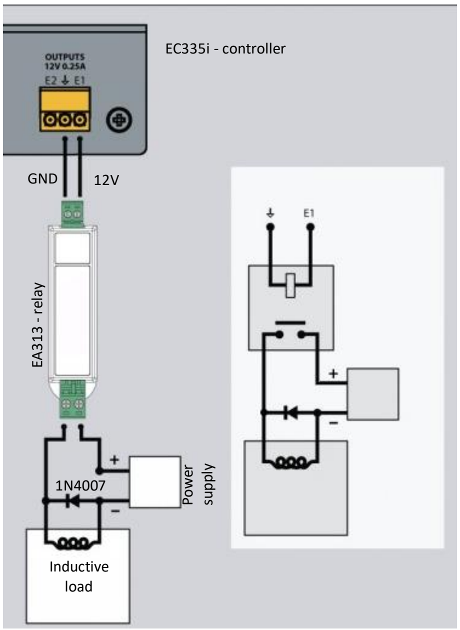


The installation of the relay is similar to the installation of analogue sensors in the same housing. You can use the hole in the sensor housing with a diameter of 5.5mm or adhesive double-sided tape.
For mounting in IT cabinets, use a cage nuts and bolts with M4 or M5 size.

Connection


EC335i - controller
EA313 – 30VDC/5A relay
12V 0.25A
OUTPUTS
12V 0.25A
E2 ⏚ E1
12V
12V
GND
Front
Rear
12V
GND
GND
12V
To an isolated controlled circuit

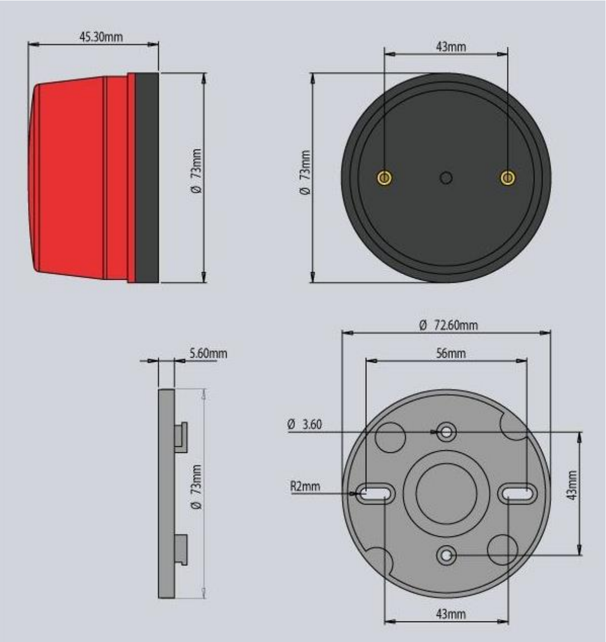
The EA313 relay is used to isolate the EC335i controller output circuit from the circuit of the controlled device. To connect between the controller and EA313, use a wire with a cross-section of 1mm². The cable should not be longer than 100m


EC335i - controller
OUTPUTS
12V 0.25A
E2 ⏚ E1
GND
12V
EA313 - relay
1N4007
+
-
Power supply
Inductive load
⏚
E1
+
-

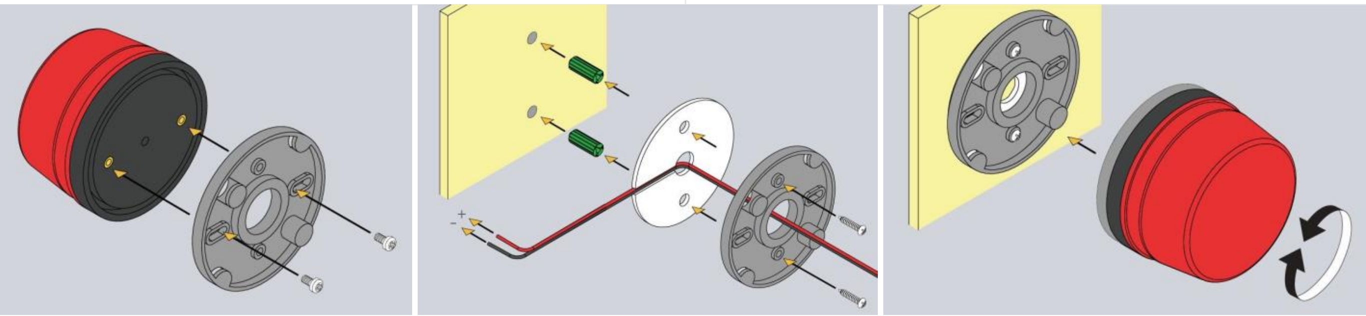
In the case of controlling an inductive load (e.g. an electromagnetic lock of the door), a diode connected in parallel with the load should be used. It protects the contacts of the relay against overvoltage.

4.8.2 EA315 - light signal

Installation

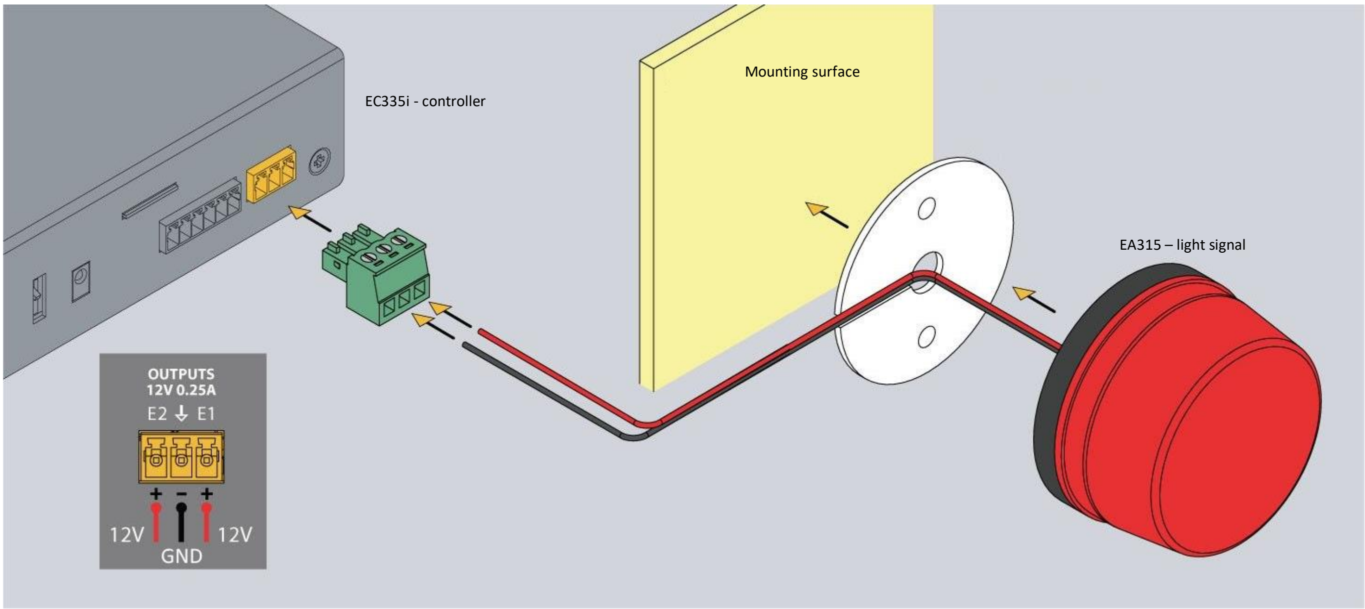

45.30mm
Ø 73mm
43mm
Ø 73mm
Ø 72.60mm
56mm
5.60mm
Ø 3.60
R2mm
43mm
Ø 73mm
43mm

The dimensions of the device are shown in the figure on the left.



The method of mounting the device is shown in the above drawings.

Connection


EC335i - controller
Mounting surface
EA315 – light signal
OUTPUTS
12V 0.25A
E2 ⏚ E1
+ - +
12V
12V
GND

The light signal should be connected to one of the controller voltage outputs. Use the attached wire or cable with a cross-section of 1mm^2. The maximum length of the connecting cable should not exceed 100m.

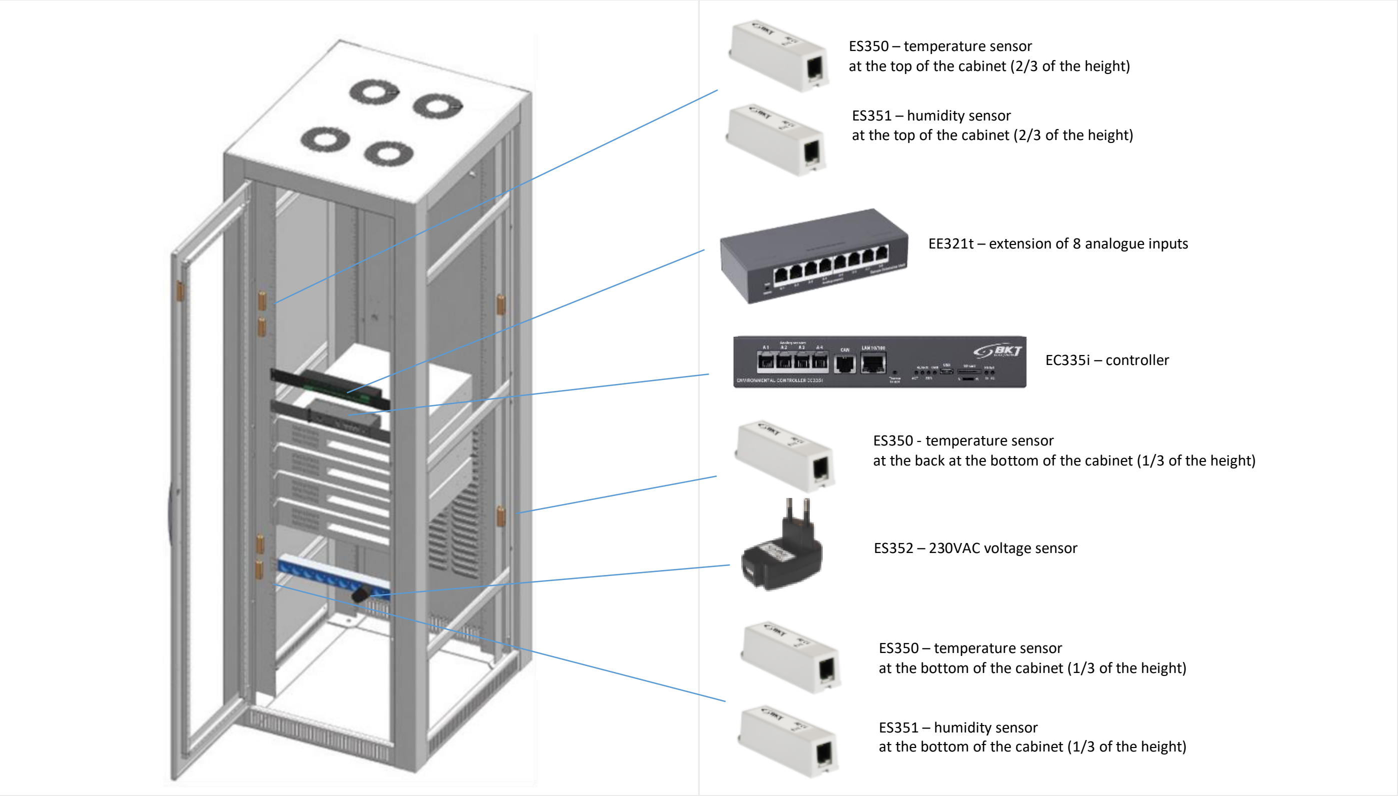
4.9 An example of placing devices in the cabinet

The number and type of sensors in the cabinet should be selected depending on the parameters to be monitored and the conditions in which the devices in the cabinet operate. For example, if a rack is completely filled with high-power appliances or there is no forced ventilation, two or more temperature sensors may be appropriate. In server racks, sensors installed at the front of the rack will measure the temperature of the air entering the rack, and sensors at the back will measure the air leaving the rack. The temperature measurement on the back of the rack may be corrupted if the temperature sensor is installed directly in front of the active device fan.

Proposed arrangement of temperature sensors in the cabinet

Number of temperature sensors	Cabinet installation location
1	At the front, half the height of the cabinet
2	At the front and back of the cabinet halfway up
4	Two at the front and two at the rear of the cabinet at 1/3 and 2/3 of its height

The figure below shows a proposed arrangement of devices in the cabinet

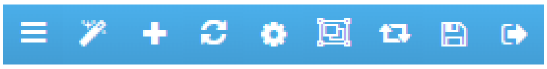

ES350 – temperature sensor
at the top of the cabinet (2/3 of the height)
ES351 – humidity sensor
at the top of the cabinet (2/3 of the height)
EE321t – extension of 8 analogue inputs
EC335i – controller
ES350 - temperature sensor
at the back at the bottom of the cabinet (1/3 of the height)
ES352 – 230VAC voltage sensor
ES350 – temperature sensor
at the bottom of the cabinet (1/3 of the height)
ES351 – humidity sensor
at the bottom of the cabinet (1/3 of the height)

Sensor cables should be neatly routed along the cabinet frame and fastened with cable ties.

5 CONFIGURATION

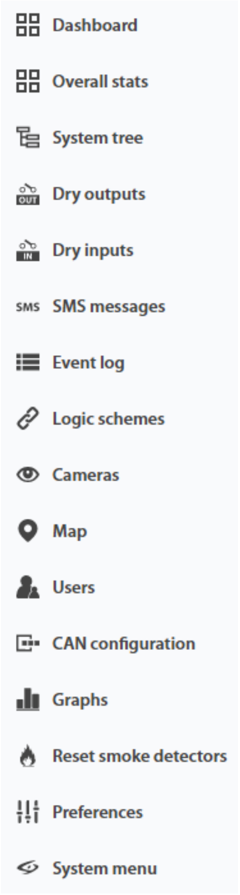
The configuration information provided is related to firmware version 5.0.1 b176. Devices with a different version of the firmware may have a user interface that is slightly different from the one described here.

5.1 Horizontal menu



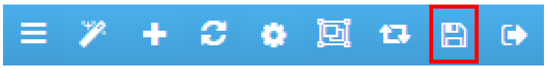
☰	Show and hide the vertical menu.
🪄	Run the initial configuration wizard.
✚	Add a new element. This function is available only on certain screens selected from the vertical menu.
⟳	Refresh the view.
⚙	Additional settings. This function is availeble only on certain screens selected from the vertical menu.
⧉	Creates desktop templates. The function is available only after selecting *Dashboard* from the vertical menu.
⇄	Reset the smoke sensors. This function is available only after selecting 'Reset the smoke sensors' from the vertical menu.
💾	Write the configuration to non-volatile memory of the module. Any configuration changes must be written to non-volatile memory, if they need to be kept after resetting the device.
⇥	Log out.

5.2 Vertical menu



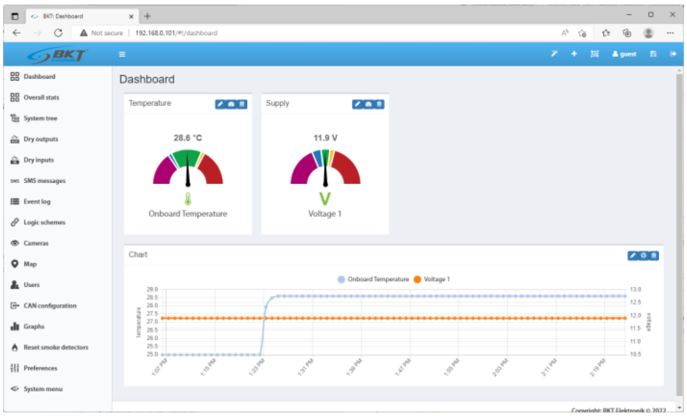
Dashboard	Customizable dashboard.
Overall stats	General view of the system status.
System tree	View of all system components, incl. sensor values.
Dry outputs	View of the relay outputs status (not available in EC335i).
Dry inputs	View of the potential-free contact status.
SMS messages	Text message settings (available only if modem is installed)
Event log	View of the system event history.
Logic schemes	Creating relations between the sensors and potential alarms.
Cameras	Camera image preview.
Map	View of sensotr parameters against the room layout.
Users	User management.
CAN configuration	Configuration of extension modules.
Graphs	Displaying sensor values on charts.
Reset smoke detectors	Resetting the smoke sensors following an alarm.
Preferences	System settings.
System menu	Firmware update and data export.

5.3 Saving settings into non-volatile memory

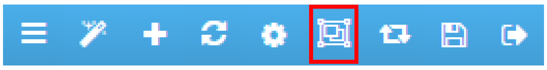


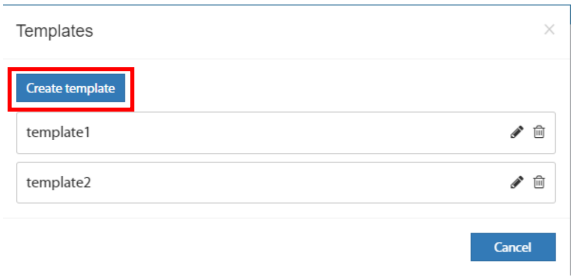
All new setting must be saved into FLASH non-volatile memory. Otherwise, they will only be valid until the next reboot.

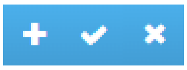
5.4 Dashboard


BKT: Dashboard
Not secure | 192.168.0.101/#!/dashboard
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Dashboard
Temperature
28.6 °C
Onboard Temperature
Supply
11.9 V
V
Voltage 1
Chart
Onboard Temperature
Voltage 1
temperature
voltage
29.0
28.5
28.0
27.5
27.0
26.5
26.0
25.5
25.0
13.0
12.5
12.0
11.5
11.0
10.5
1:07 PM
1:15 PM
1:23 PM
1:31 PM
1:39 PM
1:47 PM
1:55 PM
2:03 PM
2:11 PM
2:19 PM
Copyright: BKT Elektronik © 2022

Selecting the *Dashboard* from the vertical menu allows you to view the previously configured views of the system. Each user can set their own desktop.




Templates
Create template
template1
template2
Cancel



The administrator (user with the full access to the system) can additionally define templates that will be available to other users.

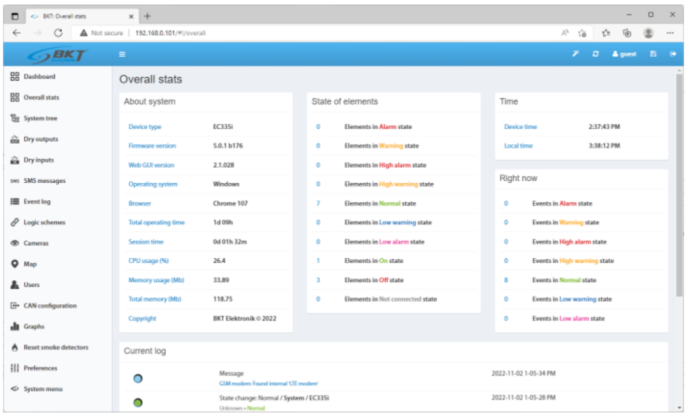
- manage templates

- add element to the template

- save template

- end template editing

5.5 General statistics


BKT: Overall stats
Not secure | 192.168.0.101/#!/overall
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu

Overall stats

About system

Device type	EC335i
Firmware version	5.0.1 b176
Web GUI version	2.1.028
Operating system	Windows
Browser	Chrome 107
Total operating time	1d 09h
Session time	0d 01h 32m
CPU usage (%)	26.4
Memory usage (Mb)	33.89
Total memory (Mb)	118.75
Copyright	BKT Elektronik © 2022

State of elements

0	Elements in Alarm state
0	Elements in Warning state
0	Elements in High alarm state
0	Elements in High warning state
7	Elements in Normal state
0	Elements in Low warning state
0	Elements in Low alarm state
1	Elements in On state
3	Elements in Off state
0	Elements in Not connected state

Time

Device time	2:37:43 PM
Local time	3:38:12 PM

Right now

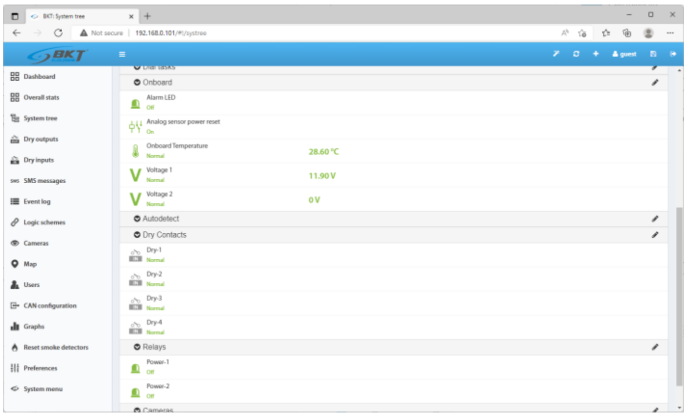
0	Events in Alarm state
0	Events in Warning state
0	Events in High alarm state
0	Events in High warning state
8	Events in Normal state
0	Events in Low warning state
0	Events in Low alarm state

Current log

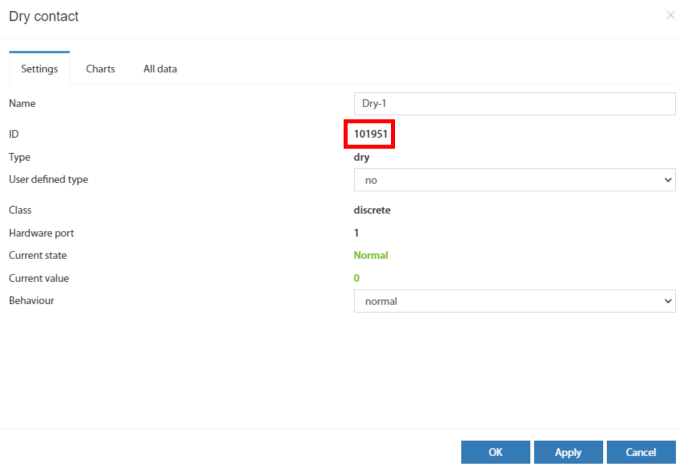
```
Message                                      2022-11-02 1-05-34 PM
GSM modem: Found internal 'LTE modem'
State change: Normal / System / EC335i       2022-11-02 1-05-28 PM
Unknown » Normal
```

Select *Overall Stats* from the vertical menu to display basic data on the system status.

5.6 System tree (system components)


BKT: System tree
Not secure | 192.168.0.101/#!/systree
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Dial tasks
Onboard
Alarm LED
Off
Analog sensor power reset
On
Onboard Temperature
Normal
28.60 °C
Voltage 1
Normal
11.90 V
Voltage 2
Normal
0 V
Autodetect
Dry Contacts
Dry-1
Normal
Dry-2
Normal
Dry-3
Normal
Dry-4
Normal
Relays
Power-1
Off
Power-2
Off
Cameras

Select *System tree* from the vertical menu to display all system components. On this page, you can add, remove and modify settings of individual components.


Dry contact

Settings
Charts
All data

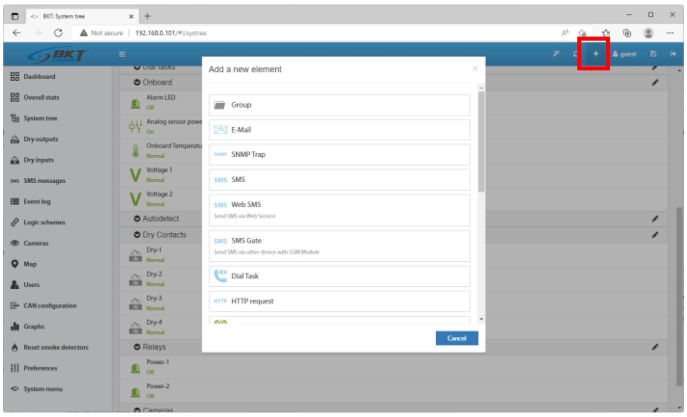
Name	Dry-1
ID	101951
Type	dry
User defined type	no
Class	discrete
Hardware port	1
Current state	Normal
Current value	0
Behaviour	normal

OK
Apply
Cancel

Each element of the system has an individual 6-digit ID number. This number can be used when configuring email or text messages. The first 3 digits indicate the type of element, and the remaining three the consecutive number of element of such type:

101xxx - input for potential-free contacts
201xxx - temperature sensor
202xxx - humidity sensor
203xxx - voltage sensor
etc.

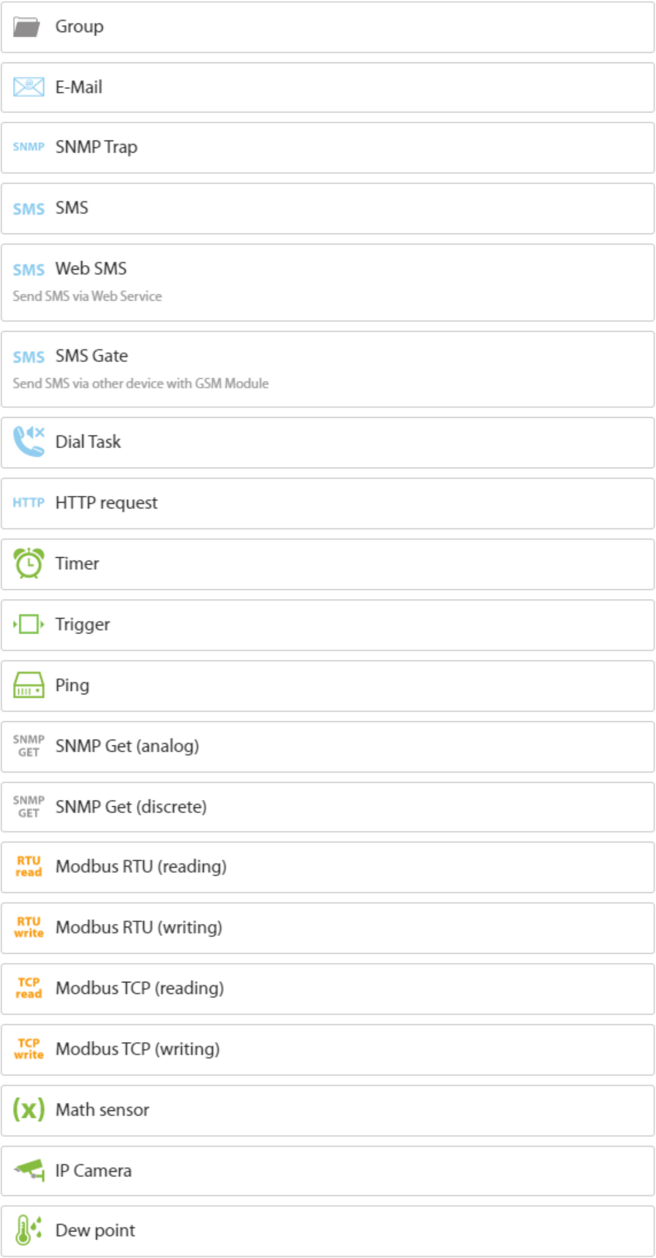
The item ID number can be read after clicking on the item in the system tree.


BKT: System tree
Not secure | 192.168.0.101/#!/systree
guest
Add a new element
Group
E-Mail
SNMP Trap
SMS
Web SMS
Send SMS via Web Service
SMS Gate
Send SMS via other device with GSM Module
Dial Task
HTTP request
Cancel
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu

In order to add a new component, click the '+' button in the horizontal menu.

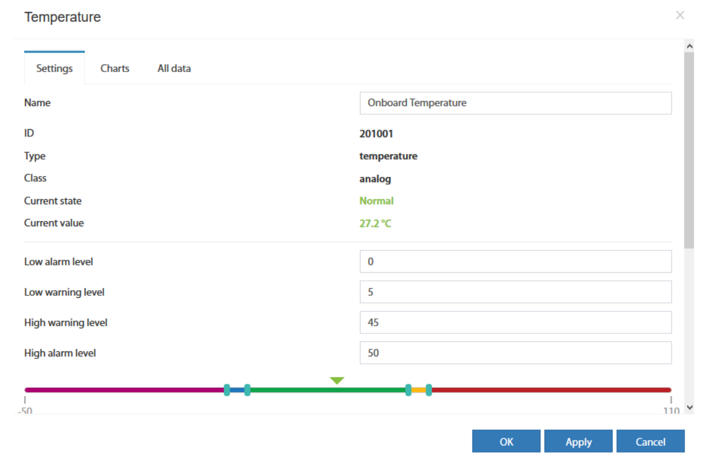
To maintain proper performance of the device, it is recommended to use max 200 components in the system.

To maintain the settings after restarting the controller, write them to non-volatile memory.



Group	Add sensor groups
E-Mail	Add email notification content
SNMP Trap	Add SNMP Trap notifications
SMS	Add SMS (text message) notifications
Web SMS Send SMS via Web Service	- sent by the WEB gateway
SMS Gate Send SMS via other device with GSM Module	- sent by a modem installed in another device
Dial Task	Add dial notification
HTTP request	Add REST notification
Timer	Add schedule
Trigger	Add triggers (flags)
Ping	Add PING query
SNMP Get (analog)	Add SNMP Get query for analogue value
SNMP Get (discrete)	Add SNMP Get query for binary value
Modbus RTU (reading)	Add Modbus RTU read query (not applicable)
Modbus RTU (writing)	Add Modbus RTU write query (not applicable)
Modbus TCP (reading)	Add Modbus TCP read query
Modbus TCP (writing)	Add Modbus TCP write query
Math sensor	Add mathematical sensor
IP Camera	Add IP camera
Dew point	Add virtual dew point sensor

5.6.1 Setting the sensor parameters



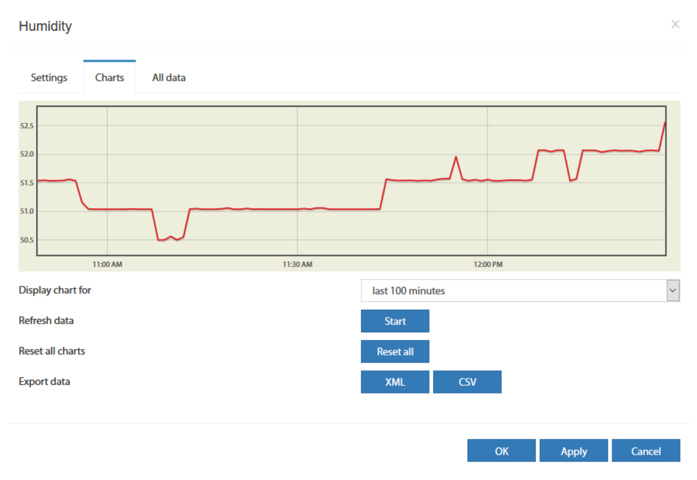
Temperature

Name: Onboard Temperature
ID: 201001
Type: temperature
Class: analog
Current state: Normal
Current value: 27.2 °C
Low alarm level: 0
Low warning level: 5
High warning level: 45
High alarm level: 50

Analog sensors are automatically recognized by the controller shortly after they are connected to the appropriate ports and then they are displayed in the system tree. In order for the sensors connected to the CAN bus to be visible in the system tree, the procedure *5.14 CAN configuration (extension module)* must be carried out beforehand.

After clicking on the sensor symbol in the system tree a window will pop up, where you can configure the basic parameters of the sensor.

Field	Description
Name	Name of the element in the system
Low alarm level	Threshold for low value alarm
Low warning level	Threshold for low value warning
High warning level	Threshold for high value warning
High alarm level	Threshold for high value alarm
Hysteresis type	**Disabled** – hysteresis and delay deactivated. The alarm will be generated immediately after exceeding the threshold value **Value** – hysteresis is on. The alarm will be generated immediately after exceeding the value = threshold value ± hysteresis value. **Time** – alarm delay is on. The alarm will be generated with a defined delay after exceeding the threshold value. The alarm will not be generated if the measured value falls below the alarm threshold within the specified delay.
Value	The hysteresis value in the unit of a given sensor
Low alarm	Delay time in seconds before low state alarm signalling
Low warning	Delay time in seconds before the low state warning signalling
Normal	Delay time in seconds before the normal state signalling
High warning	Delay time in seconds before the high state warning signalling
High alarm	Delay time in seconds before the high state alarm signalling
Formula type	Select the method of correction of the value read from the sensor. **Linear** – correction by linear function „y=kx+b" **Simple** – offset correction with value „b"
K z (k*x + b)	The **k** value of the function y = kx + b that allows to recalculate the value read from the sensor before comparing it with the threshold values
B z (k*x + b)	The **b** value of the function y = kx + b that allows to recalculate the value read from the sensor before comparing it with the threshold values



Humidity

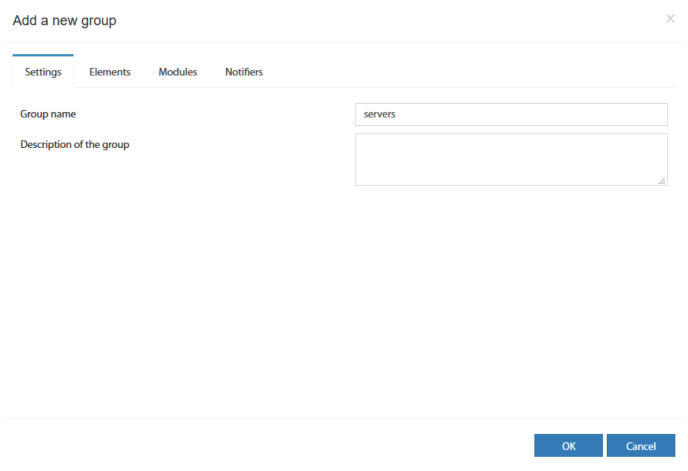
Display chart for: last 100 minutes

After clicking on the *Charts* tab, the graphs of the measurement values from the last 100 seconds (reading every 1s), 100 minutes (reading every 1 minute), 100 hours (reading every 1h) and 100 days (reading every 1 day) are available.

It is possible to export this data to xml or csv files.

5.6.2 Adding a new group

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.

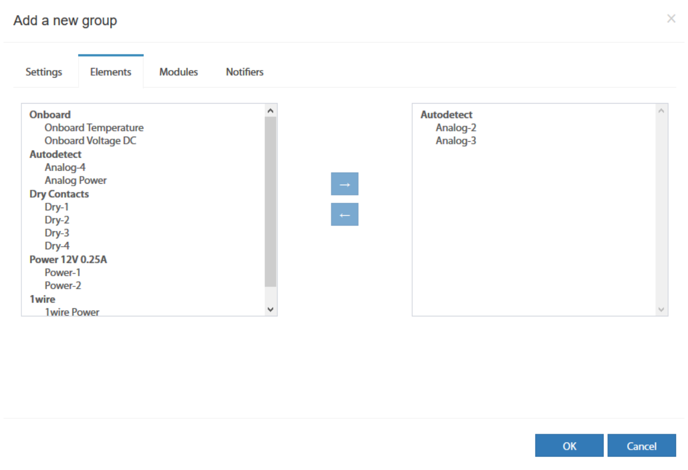

Add a new group
×
Settings
Elements
Modules
Notifiers
OK
Cancel

Group name: servers

Description of the group:

By default, there is one group of devices in the system (system group). Additional groups divide the system into parts. It is then possible to assign individual elements (sensors) to the appropriate groups. You can give the user permission to manage a specific group. It is also possible to set individual email or text messages for individual groups.

In the *Settings* tab, enter the unique name of the created group.


Add a new group
×
Settings
Elements
Modules
Notifiers
→
←
OK
Cancel

Onboard
- Onboard Temperature
- Onboard Voltage DC

Autodetect
- Analog-4
- Analog Power

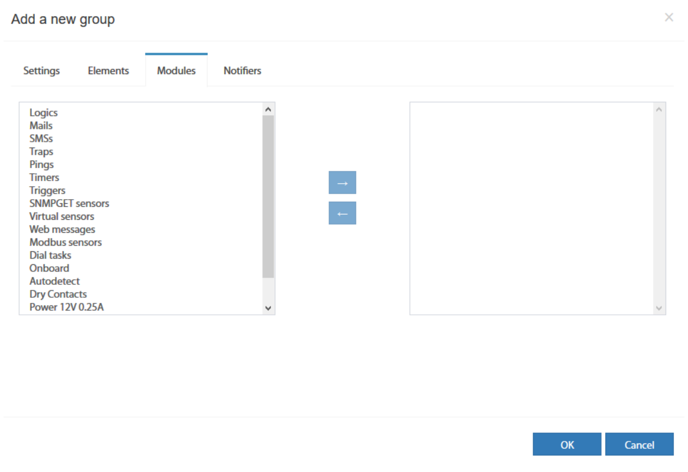
Dry Contacts
- Dry-1
- Dry-2
- Dry-3
- Dry-4

Power 12V 0.25A
- Power-1
- Power-2

1wire
- 1wire Power

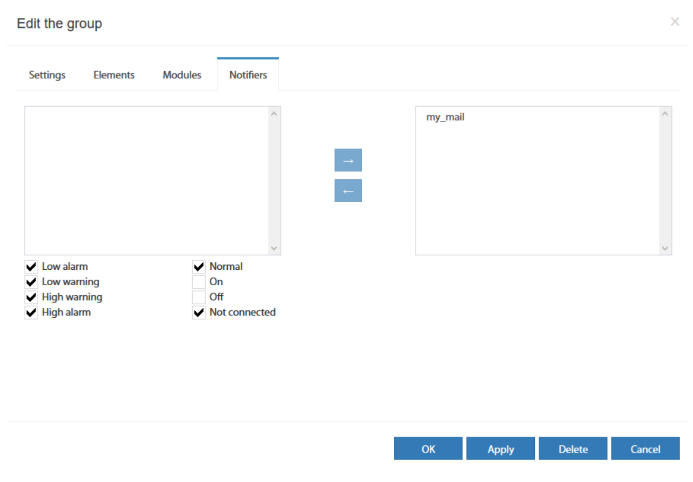
Autodetect
- Analog-2
- Analog-3

In the *Elements* tab, select individual system elements (sensors) that will belong to the given group.


Add a new group
×
Settings
Elements
Modules
Notifiers
→
←
OK
Cancel

- Logics
- Mails
- SMSs
- Traps
- Pings
- Timers
- Triggers
- SNMPGET sensors
- Virtual sensors
- Web messages
- Modbus sensors
- Dial tasks
- Onboard
- Autodetect
- Dry Contacts
- Power 12V 0.25A

In the *Modules* tab it is possible to add to the group entire modules present in the system tree. It is recommended to add individual elements (sensors) to a group rather than entire modules, as notifications are then more precise. They apply to a single sensor, not the entire module.



Edit the group

my_mail

☑ Low alarm
☑ Low warning
☑ High warning
☑ High alarm
☑ Normal
☐ On
☐ Off
☑ Not connected

In the *Notifications* tab, you can choose how to notify about any alarm conditions of any sensor in a given group.

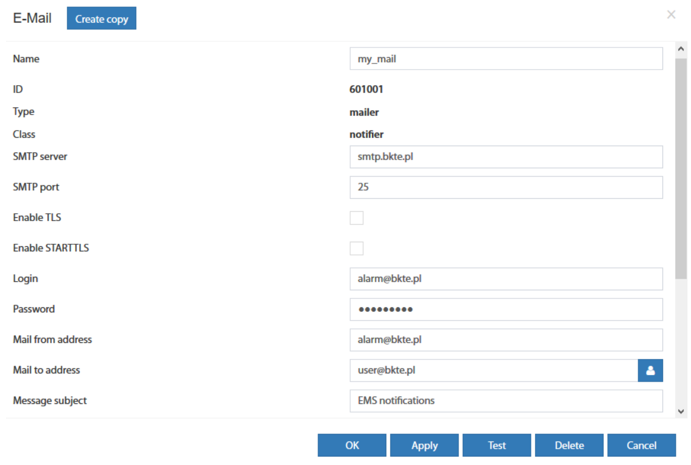
You must configure e-mail, sms or snmp trap notifications to make them visible in this window (see chapter *5.6.3 Adding an email notification* and *5.6.5 Adding an SMS notification*).

Using tickboxes, you can choose in which emergency situations you want to send a notification.

Low alarm	Exceeding the low alarm threshold
Low warning	Exceeding the low warning threshold
High warning	Exceeding the high warning threshold
High alarm / Alarm	Exceeding the high alarm threshold or alarm (for sensors without alarm thresholds)
Normal	Normal state of element
On	Element on (e.g. Power output)
Off	Element off (e.g. Power output)
Not connected	Element disconnected from controller

5.6.3 Adding an email notification

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



E-Mail

Name	my_mail
ID	601001
Type	mailer
Class	notifier
SMTP server	smtp.bkte.pl
SMTP port	25
Enable TLS	☐
Enable STARTTLS	☐
Login	alarm@bkte.pl
Password	•••••••••
Mail from address	alarm@bkte.pl
Mail to address	user@bkte.pl
Message subject	EMS notifications

The system allows you to configure notifications that will be used to inform about alarm situations.

Each notification contains a configuration of the e-mail account and the content of the message. In order not to have to enter them each time, you can set the default mail settings (see chapter 5.17.13 SMTP settings).

In order for the notification to be sent during an alarm, it should be placed in a logic scheme diagram (see chapter 5.10 Logical schemes) or in a group notification (see chapter 5.6.2 Adding a new group).

Configuration of email notification

Field	Description
Name	The name of the notification. The system can have many different notifications. It is to facilitate their recognition.
SMTP server	The name or IP number of the SMTP mail server
SMTP port	Communication port of the mail server
Enable TLS	Use an encrypted connection
Enable STARTTLS	Start with an unencrypted connection and negotiate encryption
Login	The username of the e-mail account
Password	The password of the user of the e-mail account
Mail from address	The Email address of user
Mail to address	Email addresses of recipients. Up to 10 addresses to be separated by semicolon ";"
Message subject	Subject of email
Message text	The content of the email. The text of the message is limited to 1024 characters. The content may contain variables that will be inserted dynamically when the notification is activated. Dynamic variables: %1 — Definition of logic scheme (see chapter 5.10 Logical schemes) or name of the group generating the notification (see chapter 5.6.2 Adding a new group).

	%2	The status of system elements that have been entered as a condition of the logic scheme or state of the element in the element group which generated notification.
	%3	Date and time of the event
	%4	The name of the logical scheme or name of the group generating the notification
	%5{id}	Sensor name with id or %8
	%6{id}	Sensor status with id or %8
	%7{id}	The value read from the sensor with id or %8
	%8	The identifier of the sensor that generated the notification
	\n	New line character

Examples of the dynamic content of an email notification message

Notification with information about the activated logic diagram, and the state of the system elements that were entered as the conditions of the logic scheme.

The content of the email notification configured	The content of the sent email
Logic activated:\n %4\n System element status:\n %2	Logic activated: 'Warning state' System element status: 'Onboard Temperature' (id=201001) in state 'normal' 'EC335i' (id=100) in state 'warning'

Notification with information on the status of selected sensors:

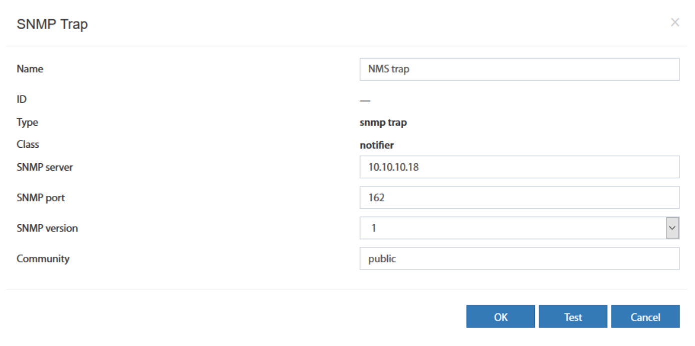
The content of the email notification configured	The content of the sent email
Status of system sensors:\n %5{201002} - %7{201002} - %6{201002}\n %5{201003} - %7{201003} - %6{201003}\n %5{202001} - %7{202001} - %6{202001}\n	Status of system sensors: 'Temperature in cabinet 1' - '18,2°C' - 'normal' 'Temperature in cabinet 2' - '17,1°C' - 'low warning' 'Humidity' - '42%' - 'normal'

By default, a notification similar to the following is proposed in the notification:

The content of the email notification configured	The content of the sent email
Logic %4:\n --\n Definition:\n %1\n	Logic 'Warning state': -- Definition: if 'Onboard Temperature' (id=201001) in state 'high warning' or 'EC335i' (id=100) in state 'warning' then 'email-service' (id=601001) changes to state 'on' immediately, once
Current sensor state:\n %2\n --\n System time: %3	Current sensor state: 'EC335i' (id=100) in state 'warning' -- System time: 12:18:04 2020/11/25

5.6.4 Adding a trap notification

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



SNMP Trap

Name	NMS trap
ID	—
Type	snmp trap
Class	notifier
SNMP server	10.10.10.18
SNMP port	162
SNMP version	1
Community	public

Trap is an alarm message used in the SNMP protocol. Such a message can be sent to the master monitoring system.

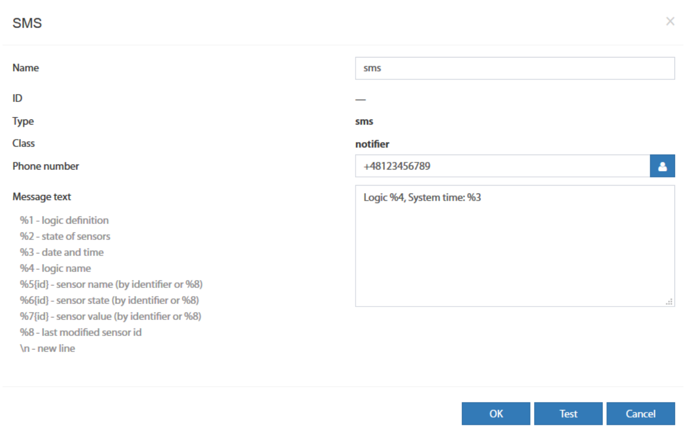
In order for the notification to be sent during an alarm, it should be placed in a logic scheme diagram (see chapter 5.10 Logical schemes) or in a group notification (see chapter 5.6.2 Adding a new group).

Example Trap message

```
Source: 192.168.0.101
Timestamp: 191 hours 30 minutes 1 second
SNMP Version: 1
Enterprise: .iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification
Community: public
Specific: 201999
Generic: enterpriseSpecific
Variable Bindings:
    Name: .1.3.6.1.4.1.47394.2.2.1.1
    (.iso.org.dod.internet.private.enterprises.bkt.ctlNotifiers.ctlNotifiersTrapsTable.ctlNotifiersTrapsEntry.ctlNotifiersTrapId.602001)
    Value: [Integer] 602001

    Name: .1.3.6.1.4.1.47394.1.5 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification)
    Value: [OctetString] Trap (name: trap, ID: 602001) was worked. Time: 14:30:00 2019/05/06 Logic: &apos;grupa-temp&apos;, Element: &apos;Analog-
    3&apos;, in state: &apos;normal&apos;, value: &apos;21.40&apos;

    Name: .1.3.6.1.4.1.47394.1.5.1 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.macroLogicDefinition)
    Value: [OctetString] group &apos;grupa-temp&apos; notification

    Name: .1.3.6.1.4.1.47394.1.5.2 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.macroStateOfSensors)
    Value: [OctetString] &apos;Analog-3&apos; (id=201999) in state &apos;normal&apos;


    Name: .1.3.6.1.4.1.47394.1.5.3 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.macroDataAndTime)
    Value: [OctetString] 14:30:00 2019/05/06

    Name: .1.3.6.1.4.1.47394.1.5.4 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.macroLogicName)
    Value: [OctetString] group-temp

    Name: .1.3.6.1.4.1.47394.1.5.5 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.macroSensorName)
    Value: [OctetString] Analog-3

    Name: .1.3.6.1.4.1.47394.1.5.6 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.macroSensorState)
    Value: [OctetString] normal

    Name: .1.3.6.1.4.1.47394.1.5.7 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.macroSensorValue)
    Value: [OctetString] 21.40

    Name: .1.3.6.1.4.1.47394.1.5.8 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.macroLastModifiedSensorID)
    Value: [Integer] 201999

    Name: .1.3.6.1.4.1.47394.1.5.20 (.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.trapID)
    Value: [Integer] 602001

    Name: .1.3.6.1.4.1.47394.1.5.21(.iso.org.dod.internet.private.enterprises.bkt.ctlUnit.ctlUnitTrapNotification.trapName)
    Value: [OctetString] trap
```

5.6.5 Adding an SMS notification

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



SMS

Name: sms

ID: —

Type: sms

Class: notifier

Phone number: +48123456789

Message text: Logic %4, System time: %3

%1 - logic definition
%2 - state of sensors
%3 - date and time
%4 - logic name
%5{id} - sensor name (by identifier or %8)
%6{id} - sensor state (by identifier or %8)
%7{id} - sensor value (by identifier or %8)
%8 - last modified sensor id
\n - new line

If an optional GSM modem is installed in the controller, it is possible to send an SMS notification. After installing the modem, configure it, see chapter *5.8 GSM modem settings*.

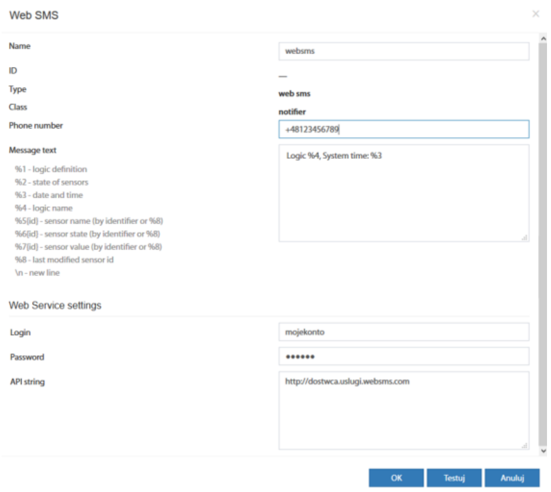
In order for the notification to be sent during an alarm, it should be placed in a logic scheme diagram (see chapter 5.10 Logical schemes) or in a group notification (see chapter 5.6.2 Adding a new group).

Configuration of SMS notification

<table>
<tr><th>Field</th><th>Description</th></tr>
<tr><td>Name</td><td>The name of the notification. The system can have many different notifications. It is to facilitate their recognition.</td></tr>
<tr><td>Phone number</td><td>Up to 10 numbers in one notification, which should be separated by semicolon ";"
The numbers should be in the format + 48xxxxxxxxx</td></tr>
<tr><td>Message text</td><td>The content of the text message. The content may contain variables that will be inserted dynamically when the notification is activated.
Dynamic variables:
<table>
<tr><td>%1</td><td>Definition of logic scheme (see chapter 5.10 Logical schemes) or name of the group generating the notification (see chapter 5.6.2 Adding a new group).</td></tr>
<tr><td>%2</td><td>The status of system elements that have been entered as a condition of the logic scheme or state of the element in the element group which generated notification.</td></tr>
<tr><td>%3</td><td>Date and time of the event</td></tr>
<tr><td>%4</td><td>The name of the logical scheme or name of the group generating the notification</td></tr>
<tr><td>%5{id}</td><td>Sensor name with id or %8</td></tr>
<tr><td>%6{id}</td><td>Sensor status with id or %8</td></tr>
<tr><td>%7{id}</td><td>The value read from the sensor with id or %8</td></tr>
<tr><td>%8</td><td>The identifier of the sensor that generated the notification</td></tr>
<tr><td>\n</td><td>New line character</td></tr>
</table>
Examples of the use of dynamic variables are similar to those used in email notifications. See chapter <i>5.6.3 Adding an email notification</i>.</td></tr>
</table>

5.6.6 Adding WEB SMS notification

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



Web SMS

Name: websms
ID: —
Type: web sms
Class: notifier
Phone number: +48123456789
Message text: Logic %4, System time: %3

%1 - logic definition
%2 - state of sensors
%3 - date and time
%4 - logic name
%5{id} - sensor name (by identifier or %8)
%6{id} - sensor state (by identifier or %8)
%7{id} - sensor value (by identifier or %8)
%8 - last modified sensor id
\n - new line

Web Service settings

Login: mojekonto
Password: ••••••
API string: http://dostwca.uslugi.websms.com

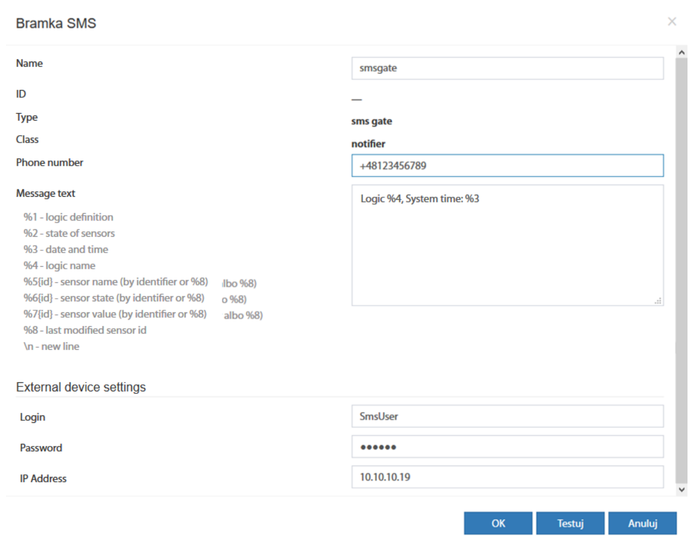
SMS notifications can also be sent via an SMS web gateway. A GSM modem is not required then. Get configuration data from your service provider.

Configuration of web sms notification

<table>
<tr><th>Field</th><th>Description</th></tr>
<tr><td>Name</td><td>The name of the notification. The system can have many different notifications. It is to facilitate their recognition.</td></tr>
<tr><td>Phone number</td><td>Up to 10 numbers in one notification, which should be separated by semicolon ";"
The numbers should be in the format + 48xxxxxxxxx</td></tr>
<tr><td>Message text</td><td>See chapter <i>5.6.5 Adding an SMS notification</i>.</td></tr>
<tr><td>Login</td><td>The username of the web-> sms service</td></tr>
<tr><td>Password</td><td>The user password of the web-> sms service</td></tr>
<tr><td>API string</td><td>The service provider's url, which sends an SMS message, for example:
https://api.smsglobal.com/http-api.php?action=sendsms&user=user&password=secret&to=12345678&text=Hello
The following variables can be used in the url address:
<table>
<tr><td>$LOGIN$</td><td>User name from the <i>Login</i> field</td></tr>
<tr><td>$PASSWORD$</td><td>User's password from the <i>Password</i> field</td></tr>
<tr><td>$PASSWORD_MD5$</td><td>User password encrypted with the MD5 algorithm</td></tr>
<tr><td>$PASSWORD_SHA1$</td><td>The user's password is encrypted with the SHA-1 algorithm</td></tr>
<tr><td>$PHONES$</td><td>The telephone number of the SMS recipient from the <i>Phone number</i> field</td></tr>
<tr><td>$MESSAGE$</td><td>Message text from the <i>Message text</i> field</td></tr>
</table></td></tr>
</table>

5.6.7 Adding sms gate notification

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



Bramka SMS

Name: smsgate

ID: —

Type: **sms gate**

Class: **notifier**

Phone number: +48123456789

Message text: Logic %4, System time: %3

%1 - logic definition
%2 - state of sensors
%3 - date and time
%4 - logic name
%5{id} - sensor name (by identifier or %8)
%6{id} - sensor state (by identifier or %8)
%7{id} - sensor value (by identifier or %8)
%8 - last modified sensor id
\n - new line

External device settings

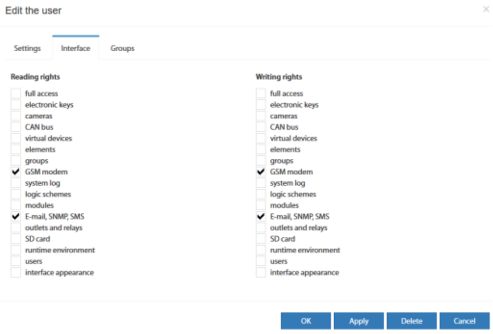
Login: SmsUser

Password: ••••••

IP Address: 10.10.10.19

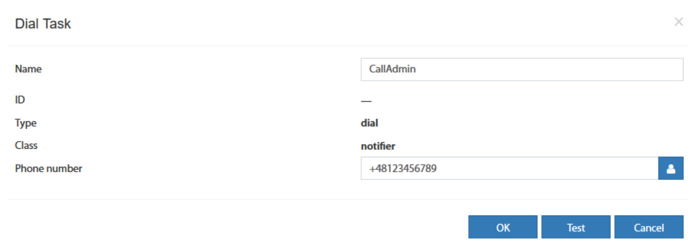
It is also possible to send SMS via a GSM module installed in another controller (SMS Gate option).

Configuration of sms gate notification

Field	Description
Name	The name of the notification. The system can have many different notifications. It is to facilitate their recognition.
Phone number	Up to 10 numbers in one notification, which should be separated by semicolon ";" The numbers should be in the format + 48xxxxxxxxx
Message text	See chapter *5.6.5 Adding an SMS notification*.
Login	The name of the user who can log in to another EC335i device where a GSM modem is installed. Such user must have read and write permissions for the GSM modem and E-mail, SNMP and SMS notifications. See chapter *5.13 Users*.  Edit the user Settings · Interface · Groups Reading rights: ☐ full access, ☐ electronic keys, ☐ cameras, ☐ CAN bus, ☐ virtual devices, ☐ elements, ☐ groups, ☑ GSM modem, ☐ system log, ☐ logic schemes, ☐ modules, ☑ E-mail, SNMP, SMS, ☐ outlets and relays, ☐ SD card, ☐ runtime environment, ☐ users, ☐ interface appearance Writing rights: ☐ full access, ☐ electronic keys, ☐ cameras, ☐ CAN bus, ☐ virtual devices, ☐ elements, ☐ groups, ☑ GSM modem, ☐ system log, ☐ logic schemes, ☐ modules, ☑ E-mail, SNMP, SMS, ☐ outlets and relays, ☐ SD card, ☐ runtime environment, ☐ users, ☐ interface appearance
Password	The password of this user
IP Address	The IP address of the EC335i device with the GSM modem installed

5.6.8 Adding phone call

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



Dial Task

Name: CallAdmin

ID: —

Type: **dial**

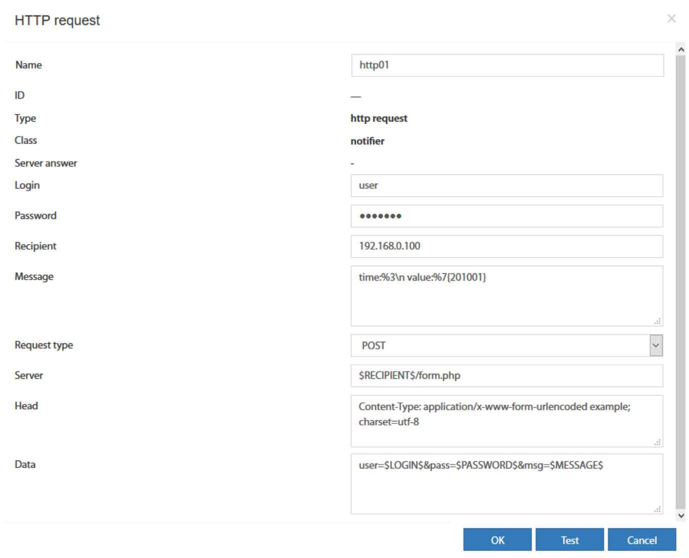
Class: **notifier**

Phone number: +48123456789

It is also possible to get the user's attention by making a call to him. It is only a ringing tone. The device does not have a voice communicator, e.g. playing a voice message.

5.6.9 Adding HTTP notification

To add a new element, select **System tree** from the vertical menu, and then click on + in the horizontal menu.



HTTP request

Name	http01
ID	—
Type	**http request**
Class	**notifier**
Server answer	-
Login	user
Password	•••••••
Recipient	192.168.0.100
Message	time:%3\n value:%7{201001}
Request type	POST
Server	$RECIPIENT$/form.php
Head	Content-Type: application/x-www-form-urlencoded example; charset=utf-8
Data	user=$LOGIN$&pass=$PASSWORD$&msg=$MESSAGE$

The controller enables sending an HTTP notification (GET, POST, DELETE, PUT) to a defined server. It can be used to send e.g. an alarm value of defined sensor. Such feature can be used together with logical schemes (*5.10 Logical schemes*).

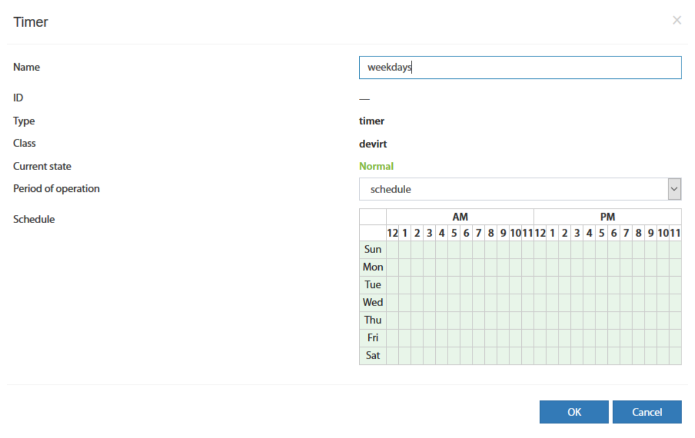
<table>
<tr><th>Field</th><th>Description</th></tr>
<tr><td>Name</td><td>Element name.</td></tr>
<tr><td>Login</td><td>User name – to the http query can be entered as: $LOGIN$</td></tr>
<tr><td>Password</td><td>User password – to the http query can be entered as: $PASSWORD$</td></tr>
<tr><td>Recipient</td><td>Server address – to the http query can be entered as: $RECIPIENT$</td></tr>
<tr><td>Message</td><td>Message content - to the http query can be entered as: $MESSAGE$
The message may contain the following characters:
<table>
<tr><td>%1</td><td>Definition of logic scheme (see chapter 5.10 Logical schemes) or name of the group generating the notification (see chapter 5.6.2 Adding a new group).</td></tr>
<tr><td>%2</td><td>The status of system elements that have been entered as a condition of the logic scheme or state of the element in the element group which generated notification.</td></tr>
<tr><td>%3</td><td>Date and time of the event</td></tr>
<tr><td>%4</td><td>The name of the logical scheme or name of the group generating the notification</td></tr>
<tr><td>%5{id}</td><td>Sensor name with id or %8</td></tr>
<tr><td>%6{id}</td><td>Sensor status with id or %8</td></tr>
<tr><td>%7{id}</td><td>The value read from the sensor with id or %8</td></tr>
<tr><td>%8</td><td>The identifier of the sensor that generated the notification</td></tr>
<tr><td>\n</td><td>New line character</td></tr>
</table></td></tr>
<tr><td>Request type</td><td>Type of HTTP request: GET, POST, DELETE, PUT</td></tr>
<tr><td>Server</td><td>Server path – may contain definitions: $LOGIN$, $PASSWORD$, $RECIPIENT$, $MESSAGE$</td></tr>
<tr><td>Head</td><td>Header of HTTP request – may contain definitions: $LOGIN$, $PASSWORD$, $RECIPIENT$, $MESSAGE$</td></tr>
<tr><td>Data</td><td>Body of HTTP request - may contain definitions: $LOGIN$, $PASSWORD$, $RECIPIENT$, $MESSAGE$
e.g. https://$RECIPIENT/agregate/cgi.php?action=put&user=$LOGIN&password=$PASSWORD&message=$MESSAGE</td></tr>
</table>

In fields *Server, Head* and *Data* the following variables can be used:

$LOGIN$	User name from the ***Login*** field
$PASSWORD$	User's password from the **Password** field
$PASSWORD_MD5$	User password encrypted with the MD5 algorithm
$PASSWORD_SHA1$	The user's password is encrypted with the SHA-1 algorithm
$RECIPIENT	Server address from ***Recipient*** field
$MESSAGE$	Message text from the ***Message*** field

5.6.10 Adding a timer

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



Timer

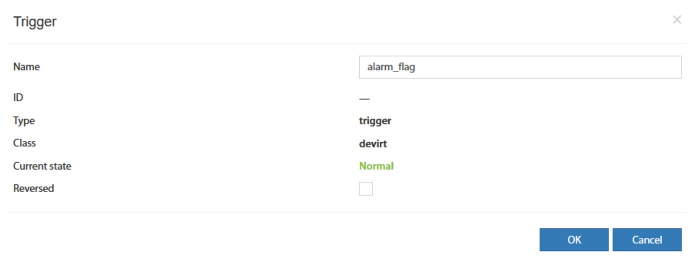
Name: weekdays
ID: —
Type: timer
Class: devirt
Current state: Normal
Period of operation: schedule
Schedule

Time dependencies can be added to the system. Timers (schedulers) are used for this. The timer can be in an active (alarm) or normal state at defined times. The timer can be configured as one-time or periodical weekly or monthly.

In logical schemes, they can be used as conditions for the execution of instructions.

5.6.11 Adding a trigger

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



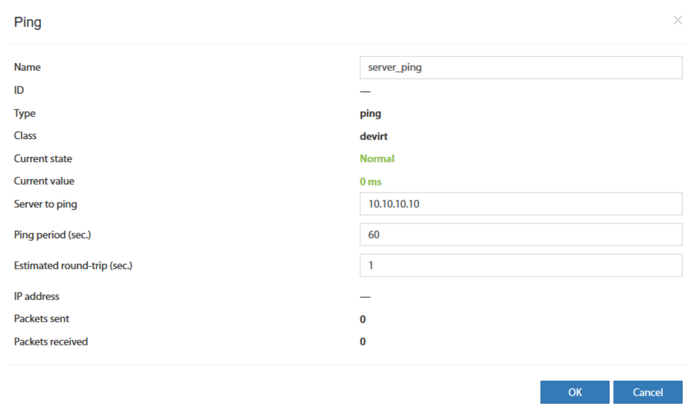
Trigger

Name: alarm_flag
ID: —
Type: trigger
Class: devirt
Current state: Normal
Reversed: ☐

Trigger has a similar function as the flag. It can be in two states: alarm and normal state. It allows you to link two independent logic schemes.

5.6.12 Adding PING functions

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



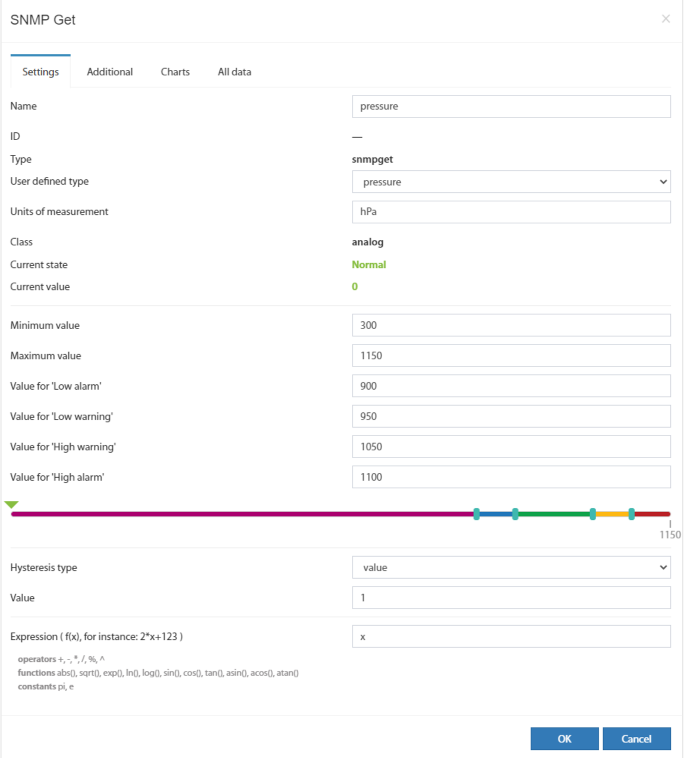
Ping

Name: server_ping
ID: —
Type: ping
Class: devirt
Current state: Normal
Current value: 0 ms
Server to ping: 10.10.10.10
Ping period (sec.): 60
Estimated round-trip (sec.): 1
IP address: —
Packets sent: 0
Packets received: 0

The controller can control external devices by sending PING periodically. In logic diagrams (see chapter *5.10 Logical schemes*) or in notifications for groups (see chapter *5.6.2 Adding a new group*), you can define e.g. sending an alarm email when the external device stops responding to PING.

5.6.13 Adding an SNMP Get

To add a new element, select System tree from the vertical menu, and then click on ✚ in the horizontal menu.



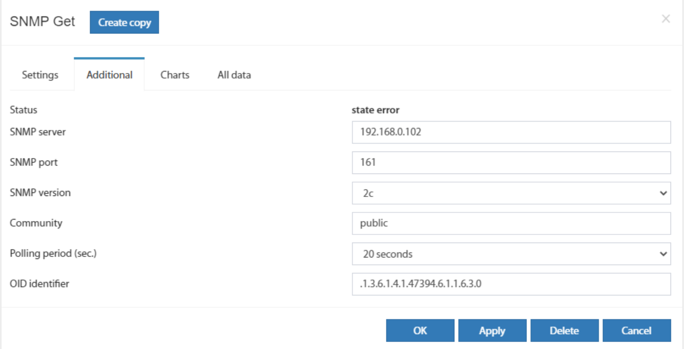
Name	pressure
ID	—
Type	snmpget
User defined type	pressure
Units of measurement	hPa
Class	analog
Current state	Normal
Current value	0
Minimum value	300
Maximum value	1150
Value for 'Low alarm'	900
Value for 'Low warning'	950
Value for 'High warning'	1050
Value for 'High alarm'	1100
Hysteresis type	value
Value	1
Expression (f(x), for instance: 2*x+123)	x

operators +, -, *, /, %, ^
functions abs(), sqrt(), exp(), ln(), log(), sin(), cos(), tan(), asin(), acos(), atan()
constants pi, e

The controller can query the external device for its parameters using the SNMP v1 or v2 protocol. The values of this parameter deviating from the defined one can generate notifications.
There are two types of read variables – analogue and discrete:

Analogue value – the read integer or String type numerical variable. After being recalculated with the formula contained in the *Expression* field, it is comparable to the four alarm thresholds and on this basis the normal or alarm condition of the SNMP Get element is determined.

Discrete (binary) – this variable can exist only in two states: normal or alarm. The current state is defined using *Normal value* field entered on *Additional* tab. The read Integer or String variable is compared to the string contained in the *Normal value* field. Then the SNMP Get element status is set.

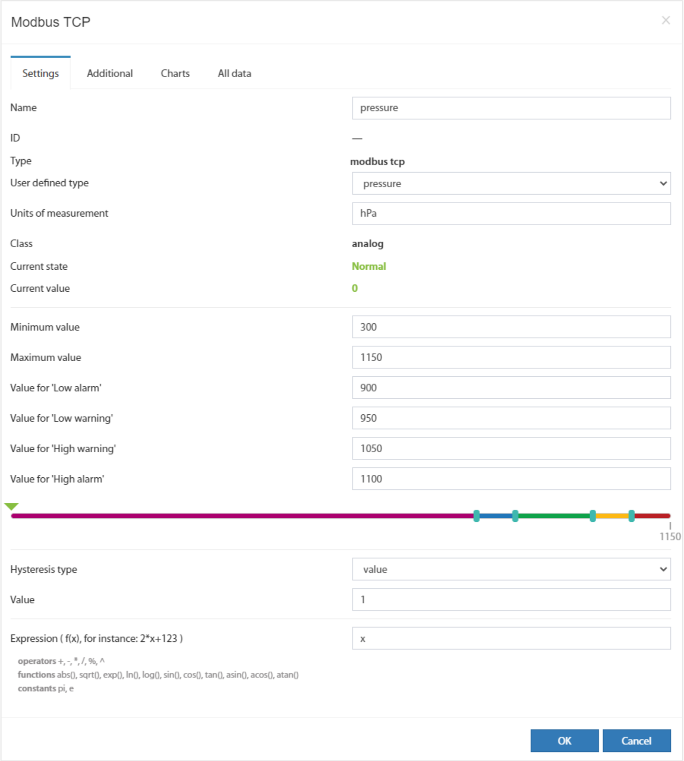


Status	state error
SNMP server	192.168.0.102
SNMP port	161
SNMP version	2c
Community	public
Polling period (sec.)	20 seconds
OID identifier	.1.3.6.1.4.1.47394.6.1.1.6.3.0

Field	Description
Name	SNMP Get element name.
User defined type	Sets adequate icon for this element.
Unit	Unit of read variable.
Minimum value	Defines the range of changes of the read value.
Maximum value	Defines the range of changes of the read value.
Value for low alarm	Threshold for low value alarm.
Value for low warning	Threshold for low value warning.
Value for high warning	Threshold for high value warning.
Value for high alarm	Threshold for high value alarm.
Hysteresis type	Please see *5.6.1 Setting the sensor parameters*
Expression f(x)	Field available for the Analog variable type. The function enables the conversion of the read analogue value "x" before comparison with the alarm thresholds. The expression can contain the following characters: operators: "+", "-", "*", "/", "%" (the remainder), "^" (exponentiation); functions: "abs()","sqrt()","exp()","ln()","log()","sin()","cos()","tan()","asin()","acos()","atan()"; constants: "pi" (3.1415926...), "e" (2.7182818...)
Normal value	Field available for a discrete variable. In this field, enter the string that the read variable must contain in order for the SNMP Get element to be in the normal state.
SNMP Server	The IP address of the device being polled.
SNMP Port	Communication port of the device being polled (usually 161).
SNMP version	Version 1 or 2c can be chosen.
Community	SNMP password to read (read-only community string).
Polling period (sec.)	The frequency of sending queries to the device being polled (in seconds).
OID identifier	The identifier of the SNMP variable in the format „.1.3.6.1.2.1.1.3.0”.

5.6.14 Adding Modbus TCP element

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.

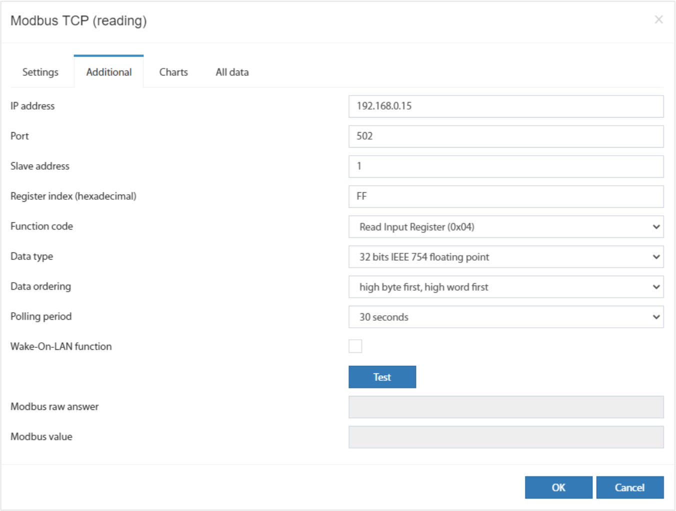


Modbus TCP

Name	pressure
ID	—
Type	modbus tcp
User defined type	pressure
Units of measurement	hPa
Class	analog
Current state	Normal
Current value	0
Minimum value	300
Maximum value	1150
Value for 'Low alarm'	900
Value for 'Low warning'	950
Value for 'High warning'	1050
Value for 'High alarm'	1100
Hysteresis type	value
Value	1
Expression (f(x), for instance: 2*x+123)	x

operators +, -, *, /, %, ^
functions abs(), sqrt(), exp(), ln(), log(), sin(), cos(), tan(), asin(), acos(), atan()
constants pi, e

The controller can query the external device about its parameters using the Modbus TCP protocol. It can also write the defined value to the appropriate modbus register.



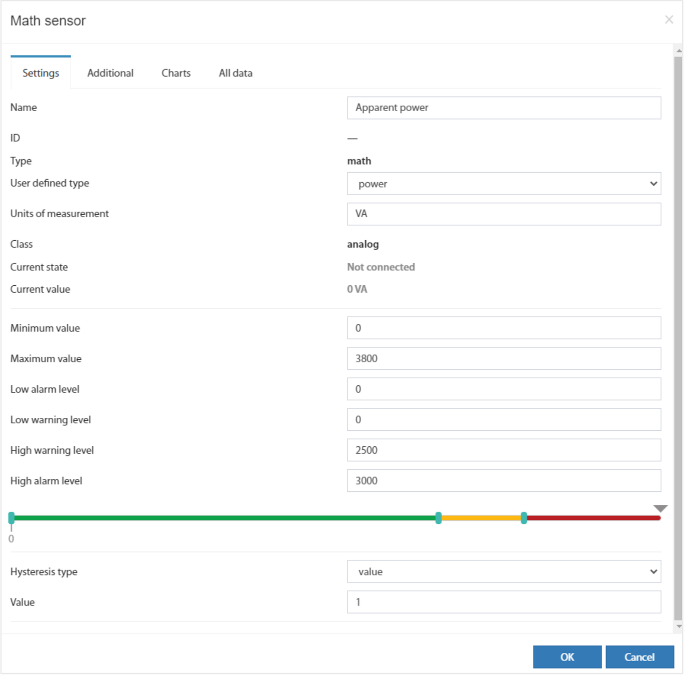
Modbus TCP (reading)

IP address	192.168.0.15
Port	502
Slave address	1
Register index (hexadecimal)	FF
Function code	Read Input Register (0x04)
Data type	32 bits IEEE 754 floating point
Data ordering	high byte first, high word first
Polling period	30 seconds
Wake-On-LAN function	☐
Modbus raw answer	
Modbus value	

Field	Description
Name	Element name.
User defined type	Sets adequate icon for this element.
Unit	Unit of read variable.
Minimum value	Defines the range of changes of the read value.
Maximum value	Defines the range of changes of the read value.
Value for low alarm	Threshold for low value alarm.
Value for low warning	Threshold for low value warning.
Value for high warning	Threshold for high value warning.
Value for high alarm	Threshold for high value alarm.
Hysteresis type	Please see *5.6.1 Setting the sensor parameters*
Expression f(x)	Field available for the Analog variable type. The function enables the conversion of the read analogue value "x" before comparison with the alarm thresholds. The expression can contain the following characters: operators: "+", "-", "*", "/", "%" (the remainder), "^" (exponentiation); functions: "abs()","sqrt()","exp()","ln()","log()","sin()","cos()","tan()","asin()","acos()","atan()"; constants: "pi" (3.1415926...), "e" (2.7182818...)
IP address	The IP address of the device being polled.
Port modbus	Communication port of the device being polled (usually 502).
Slave address	Modbus device slave address
Register index	Address of polled modbus register.
Function code	Modbus function code. Available: 0x01, 0x02, 0x03, 0x04 for reading and 0x05, 0x06 for writing
Data type	Type of the date being polled. Available: unsigned and signed 16 bit and 32 bit word, 32 bit float value.
Data order	The order of reading bytes from the register.
Polling period (sec.)	The frequency of sending queries to the device being polled (in seconds).

5.6.15 Adding virtual mathematical element

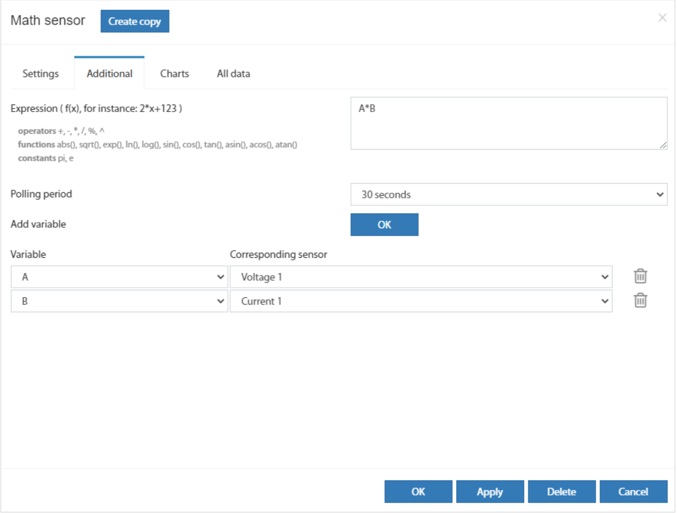
To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.



Math sensor

Name: Apparent power
ID: —
Type: math
User defined type: power
Units of measurement: VA
Class: analog
Current state: Not connected
Current value: 0 VA
Minimum value: 0
Maximum value: 3800
Low alarm level: 0
Low warning level: 0
High warning level: 2500
High alarm level: 3000
Hysteresis type: value
Value: 1

The controller enables monitoring of a virtual variable created from the conversion of the values of other variables monitored in the system. In this way, you can, for example, monitor the apparent power consumed by a device, with the following variables available: current consumption and voltage.



Math sensor

Expression (f(x), for instance: 2*x+123): A*B

operators +, -, *, /, %, ^
functions abs(), sqrt(), exp(), ln(), log(), sin(), cos(), tan(), asin(), acos(), atan()
constants pi, e

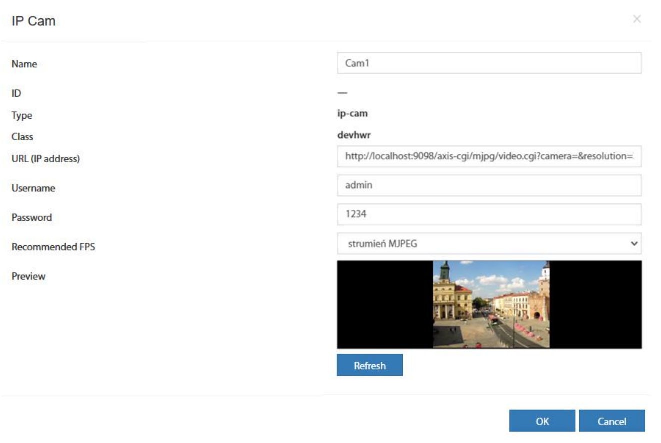
Polling period: 30 seconds
Add variable: OK

Variable	Corresponding sensor
A	Voltage 1
B	Current 1

Field	Description
Name	Element name.
User defined type	Sets adequate icon for this element.
Unit	Unit of read variable.
Minimum value	Defines the range of changes of the read value.
Maximum value	Defines the range of changes of the read value.
Value for low alarm	Threshold for low value alarm.
Value for low warning	Threshold for low value warning.
Value for high warning	Threshold for high value warning.
Value for high alarm	Threshold for high value alarm.
Hysteresis type	Please see *5.6.1 Setting the sensor parameters*
Expression f(x)	Field available for the Analog variable type. The function enables the conversion of the read analogue value "x" before comparison with the alarm thresholds. The expression can contain the following characters: operators: "+", "-", "*", "/", "%" (the remainder), "^" (exponentiation); functions: "abs()","sqrt()","exp()","ln()","log()","sin()","cos()","tan()","asin()","acos()","atan()"; constants: "pi" (3.1415926...), "e" (2.7182818...)

5.6.16 Adding a camera

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.


IP Cam

Name: Cam1
ID: —
Type: ip-cam
Class: devhwr
URL (IP address): http://localhost:9098/axis-cgi/mjpg/video.cgi?camera=&resolution=
Username: admin
Password: 1234
Recommended FPS: strumień MJPEG
Preview

The camera's handling function is treated as a gadget and is not recommended for larger installations because it can affect system performance. In very small installations this gadget may be desirable.

The controller automatically recognizes a UVC (USB Video Class) camera connected to a USB port that supports MPEG compression. It is recommended to use Logitech type C210, C270, C310, C510 cameras.

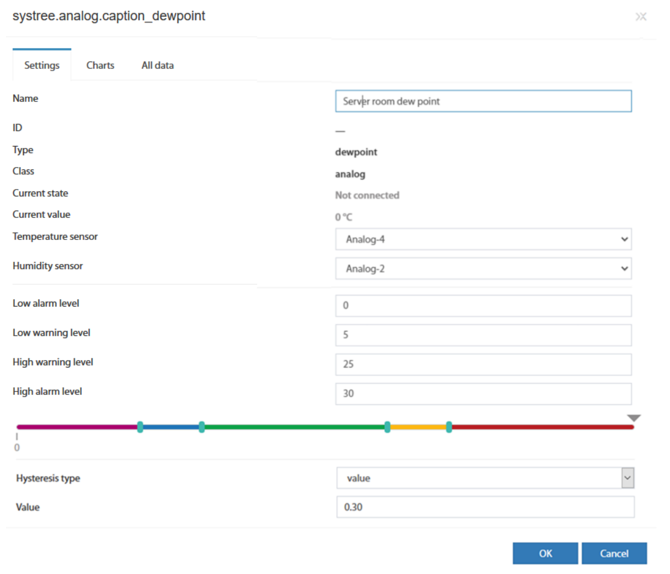
The controller also allows you to configure IP cameras transmitting JPEG images or an MJPEG stream. The controller can handle up to 4 cameras.

The preview of the image from the cameras is available after selecting the Cameras button from the vertical menu.

Field	Description
Name	Camera name.
URL	The address for the video stream of the camera available via the http or https protocol.
Username	Username, if necessary.
Password	User password.
Recommended FPS	The frame rate refresh of the JPEG image or the direct MJPEG stream.

5.6.17 Adding a dew point

To add a new element, select System tree from the vertical menu, and then click on + in the horizontal menu.

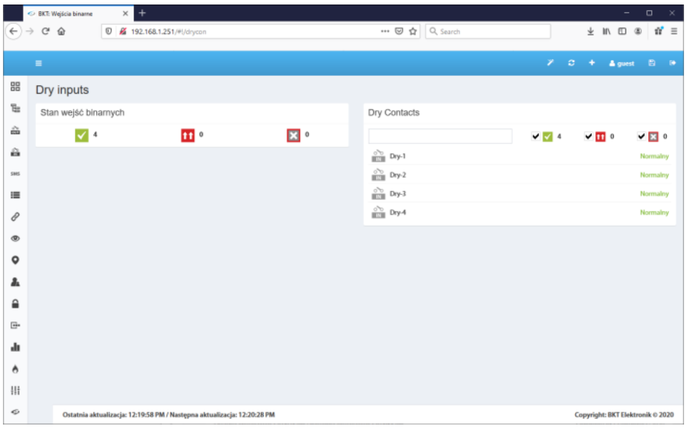

systree.analog.caption_dewpoint

Name: Server room dew point
ID: —
Type: dewpoint
Class: analog
Current state: Not connected
Current value: 0 °C
Temperature sensor: Analog-4
Humidity sensor: Analog-2
Low alarm level: 0
Low warning level: 5
High warning level: 25
High alarm level: 30
Hysteresis type: value
Value: 0.30

It is possible to add a virtual dew point sensor that calculates the condensing temperature based on temperature and humidity sensors selected connected to the system.

Field	Description
Name	Element name.
Temperature sensor	Selected temperature sensor.
Humidity sensor	Selected humidity sensor.
Low alarm level	Threshold for low value alarm.
Low warning level	Threshold for low value warning.
High warning level	Threshold for high value warning
High alarm level	Threshold for high value alarm.
Hysteresis type	Please see *5.6.1 Setting the sensor parameters*

5.7 Dry contacts (binary inputs for potential-free contacts)



BKT: Wejścia binarne

192.168.1.251/#!/drycon

Dry inputs

Stan wejść binarnych

✓	⇈	☒
4	0	0

Dry Contacts

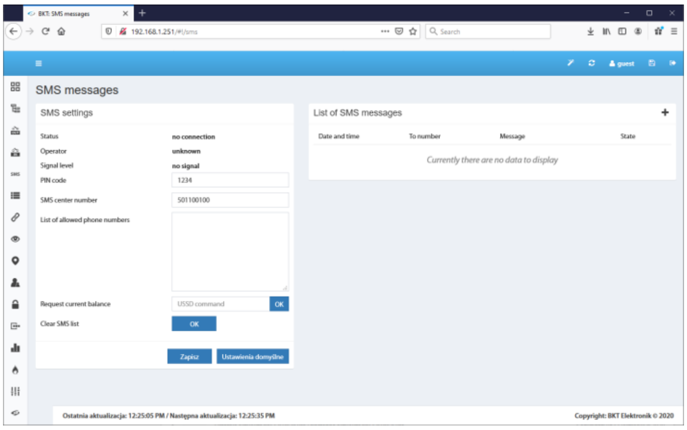
	✓ 4	⇈ 0	☒ 0
Dry-1			Normalny
Dry-2			Normalny
Dry-3			Normalny
Dry-4			Normalny

Ostatnia aktualizacja: 12:19:58 PM / Następna aktualizacja: 12:20:28 PM

Copyright: BKT Elektronik © 2020

Select *Dry contacts* from the vertical menu to view the state of binary inputs for potential-free contacts.

5.8 GSM modem settings



BKT: SMS messages

192.168.1.251/#!/sms

SMS messages

SMS settings

Status	no connection
Operator	unknown
Signal level	no signal
PIN code	1234
SMS center number	501100100
List of allowed phone numbers	
Request current balance	USSD command
Clear SMS list	OK

List of SMS messages

Date and time	To number	Message	State
Currently there are no data to display			

Ostatnia aktualizacja: 12:25:05 PM / Następna aktualizacja: 12:25:35 PM

Copyright: BKT Elektronik © 2020

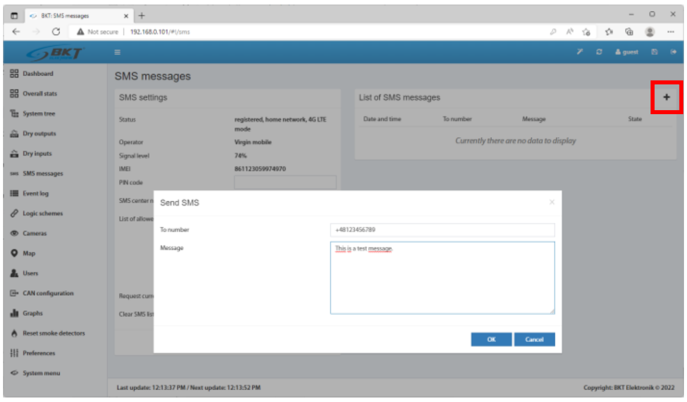
The modem allows sending text messages by the device and receive SMS commands sent from authorized phone numbers.

The configuration of the GSM/SMS modem can be done by selecting *SMS Messages* from the vertical menu. This button is visible only when the modem is installed in the controller and the correct SIM card PIN has been entered.

There was a problem observed with SIM cards from some GSM providers that were protected with a PIN code. In this case, it is suggested to remove the PIN code from the SIM card before inserting it in the controller.

<table>
<tr><th>Field</th><th>Description</th></tr>
<tr><td>PIN code</td><td>The PIN code must be entered before inserting the SIM card.</td></tr>
<tr><td>SMS center number</td><td>GSM provider number of short message system center. Usually in format +48xxxxxxxxx or without the country prefix.</td></tr>
<tr><td>List of allowed phone numbers</td><td>List of telephone numbers from which you can send commands to the controller. The list can contain a maximum of 10 phone numbers separated by a semicolon ";". The numbers should have format +48xxxxxxxxx

Available commands:
<table>
<tr><th>Command</th><th>Example</th><th>Response</th></tr>
<tr><td colspan="3">Sensor status reading</td></tr>
<tr><td>get ‘sensor ID’
get ‘sensor-name’</td><td>get 201001
get Onboard-Temperature</td><td>Onboard-Temperature[201001] state=normal value=23.5</td></tr>
<tr><td colspan="3">Switching on the Power-1 output</td></tr>
<tr><td>set ‘sensor ID’ on
set ‘sensor-name’ on</td><td>set 304001 on
set ‘Power-1’ on</td><td>The element was switched on</td></tr>
<tr><td colspan="3">Switching off the Power-1 output</td></tr>
<tr><td>set ‘sensor ID’ off
set ‘sensor-name’ off</td><td>set 304001 off
set ‘Power-1’ off</td><td>The element was switched off</td></tr>
</table></td></tr>
<tr><td>Request current balance (USSD code)</td><td>In the case of prepaid phones, you can enter the balance inquiry code here or any other USSD code.</td></tr>
<tr><td>Clear SMS list</td><td>Clears the list of sent text messages.</td></tr>
</table>


BKT: SMS messages
Not secure | 192.168.0.101/#!/sms
BKT
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
+
OK
Cancel

SMS messages

SMS settings

Status	registered, home network, 4G LTE mode
Operator	Virgin mobile
Signal level	74%
IMEI	861123059974970
PIN code	

List of SMS messages

Date and time	To number	Message	State

Currently there are no data to display

Send SMS

To number	+48123456789
Message	This is a test message

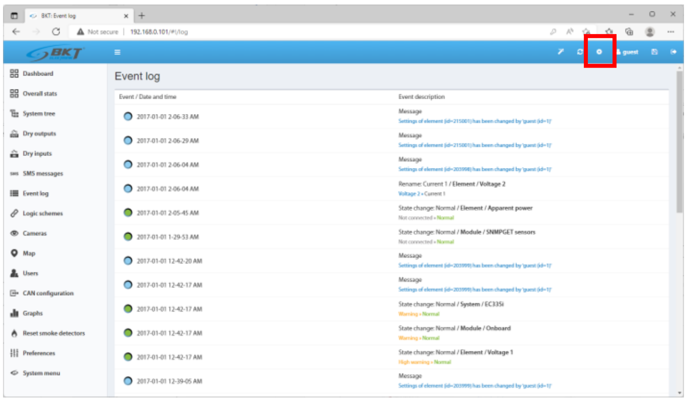
Last update: 12:13:37 PM / Next update: 12:13:52 PM

Copyright: BKT Elektronik © 2022

The device also allows you to send any SMS to any recipient directly from the web interface.

The function is available after clicking on the '+' button.

5.9 Event log


BKT: Event log
Not secure | 192.168.0.101/#!/log
BKT
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu

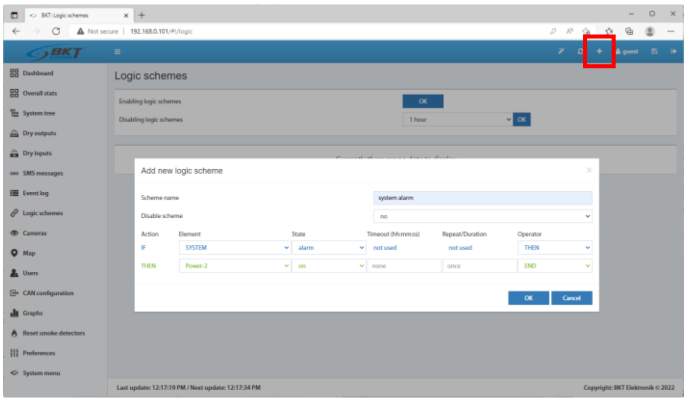
Event log

Event / Date and time	Event description
2017-01-01 2-06-33 AM	Message Settings of element (id=215001) has been changed by 'guest (id=1)'
2017-01-01 2-06-29 AM	Message Settings of element (id=215001) has been changed by 'guest (id=1)'
2017-01-01 2-06-04 AM	Message Settings of element (id=203998) has been changed by 'guest (id=1)'
2017-01-01 2-06-04 AM	Rename: Current 1 / Element / Voltage 2 Voltage 2 » Current 1
2017-01-01 2-05-45 AM	State change: Normal / Element / Apparent power Not connected » Normal
2017-01-01 1-29-53 AM	State change: Normal / Module / SNMPGET sensors Not connected » Normal
2017-01-01 12-42-20 AM	Message Settings of element (id=203999) has been changed by 'guest (id=1)'
2017-01-01 12-42-17 AM	Message Settings of element (id=203999) has been changed by 'guest (id=1)'
2017-01-01 12-42-17 AM	State change: Normal / System / EC335i Warning » Normal
2017-01-01 12-42-17 AM	State change: Normal / Module / Onboard Warning » Normal
2017-01-01 12-42-17 AM	State change: Normal / Element / Voltage 1 High warning » Normal
2017-01-01 12-39-05 AM	Message Settings of element (id=203999) has been changed by 'guest (id=1)'

After selecting the Event Log from the vertical menu, logs of all system events are displayed. See also the chapter *5.17.5 Saving of events and measured values on a USB disk.*

The export of events to the file is possible after selecting ⚙

5.10 Logical schemes


BKT: Logic schemes
Not secure | 192.168.0.101/#!/logic
BKT
+
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
OK
Cancel

Logic schemes

Enabling logic schemes	OK
Disabling logic schemes	1 hour OK

Add new logic scheme

Scheme name	system alarm
Disable scheme	no

Action	Element	State	Timeout (hh:mm:ss)	Repeat/Duration	Operator
IF	SYSTEM	alarm	not used	not used	THEN
THEN	Power-2	on	none	once	END

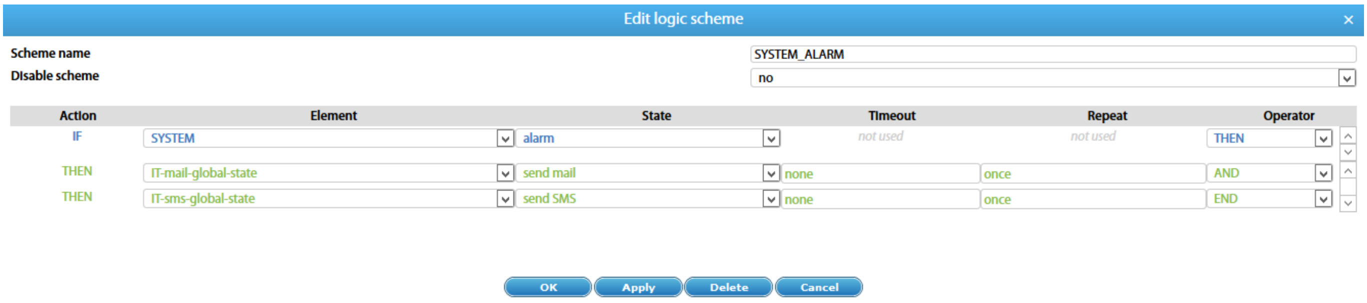
Last update: 12:17:19 PM / Next update: 12:17:34 PM

Copyright: BKT Elektronik © 2022

Creating links between system elements (sensors, inputs, outputs, etc.) is possible after selecting the *Logic Schemes* from the vertical menu. To add a new logical dependence, click on the "+" button in the horizontal menu. The IF THEN conditional sentence is used, as well as the logical functions AND and OR. The Timeout function means a delay in the execution of instructions. The Repeat function allows you to repeat the execution of an instruction after a defined time if the logic diagram still remains active. This can be, for example, for resending an email with information about the alarm.

In order for the settings to be kept after restarting the controller, they should be saved to non-volatile memory.

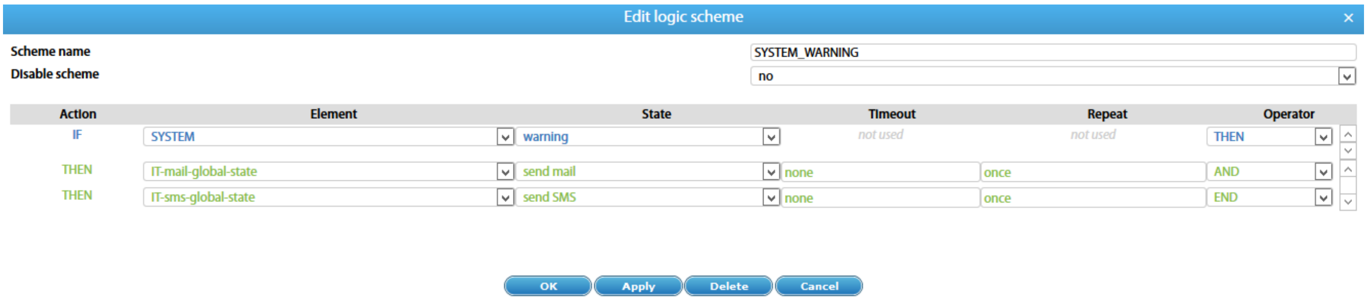
An example of the simplest logical scheme that sends an email notification and sms when an alarm condition occurs in the system.



Scheme name: SYSTEM_ALARM
Disable scheme: no

Action	Element	State	Timeout	Repeat	Operator
IF	SYSTEM	alarm	not used	not used	THEN
THEN	IT-mail-global-state	send mail	none	once	AND
THEN	IT-sms-global-state	send SMS	none	once	END

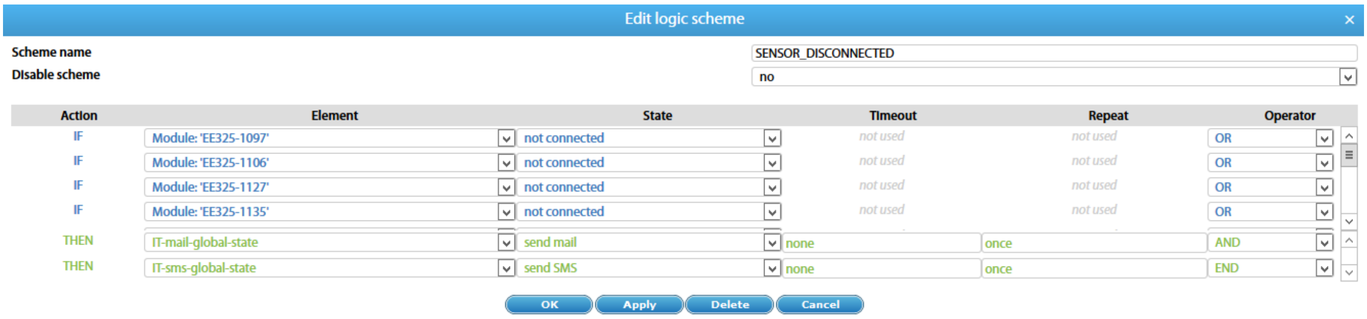
An example of a logic scheme that sends an email and sms notifications when a warning state occurs in the system.



Scheme name: SYSTEM_WARNING
Disable scheme: no

Action	Element	State	Timeout	Repeat	Operator
IF	SYSTEM	warning	not used	not used	THEN
THEN	IT-mail-global-state	send mail	none	once	AND
THEN	IT-sms-global-state	send SMS	none	once	END

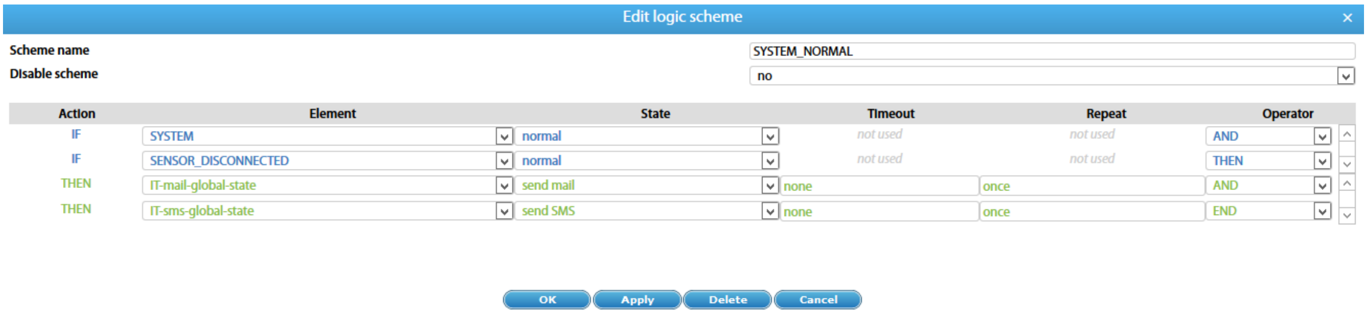
An example of a logic scheme that sends an email and sms notification when the sensors are disconnected from the controller.



Scheme name: SENSOR_DISCONNECTED
Disable scheme: no

Action	Element	State	Timeout	Repeat	Operator
IF	Module: 'EE325-1097'	not connected	not used	not used	OR
IF	Module: 'EE325-1106'	not connected	not used	not used	OR
IF	Module: 'EE325-1127'	not connected	not used	not used	OR
IF	Module: 'EE325-1135'	not connected	not used	not used	OR
THEN	IT-mail-global-state	send mail	none	once	AND
THEN	IT-sms-global-state	send SMS	none	once	END

If the system returns to normal, you must create the logical scheme below to notify the user.



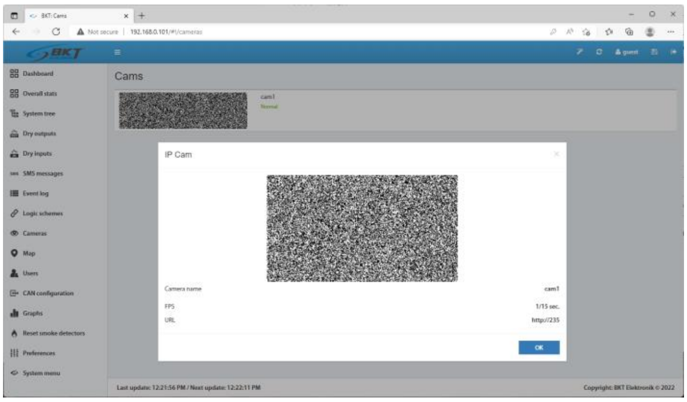
Scheme name: SYSTEM_NORMAL
Disable scheme: no

Action	Element	State	Timeout	Repeat	Operator
IF	SYSTEM	normal	not used	not used	AND
IF	SENSOR_DISCONNECTED	normal	not used	not used	THEN
THEN	IT-mail-global-state	send mail	none	once	AND
THEN	IT-sms-global-state	send SMS	none	once	END

In the above examples, as the text of the sms and email messages the status of all sensors was entered, as shown in the table below. See also chapter *5.6.3 Adding an email notification*.

The content of the email notification configured	The content of the sent email
Server room status: %4\n	Server room status: 'SYSTEM_NORMAL'
CONTROLLER\n	CONTROLLER
%5{201001}-%7{201001}°C-%6{201001}\n	'Onboard-Temperature'-'27.80'°C-'normal'
%5{203001}-%7{203001}V-%6{203001}\n	'Onboard-Voltage DC'-'12.00'V-'normal'
SERVER ROOM\n	SERVER ROOM
%5{107001}-%6{107001}\n	'Leak under raised floor'-'normal'
%5{201006}-%7{201006}°C-%6{201006}\n	'Cab_GPD__temp_dn'-'23.06'°C-'normal'
%5{201023}-%7{201023}°C-%6{201023}\n	'Cab_GPD__temp_up'-'24.50'°C-'normal'
%5{202009}-%7{202009}%-%6{202009}\n	'Cab _GPD__humi'-'27.00'% 'normal'
%5{106009}-%6{106009}\n	'Cab _GPD__smoke'-'normal'

5.11 Cameras

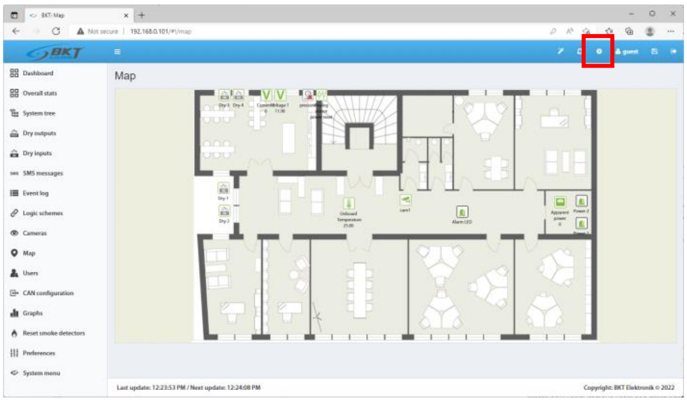

BKT: Cams
Not secure | 192.168.0.101/#!/cameras
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Cams
cam1
Normal
IP Cam
OK

Camera name cam1
FPS 1/15 sec.
URL http://235

Last update: 12:21:56 PM / Next update: 12:22:11 PM
Copyright: BKT Elektronik © 2022

Select *Cameras* from the vertical menu to view the image captured from installed cameras. Select *System tree* to configure the cameras. See chapter *5.6.16 Adding a camera*.

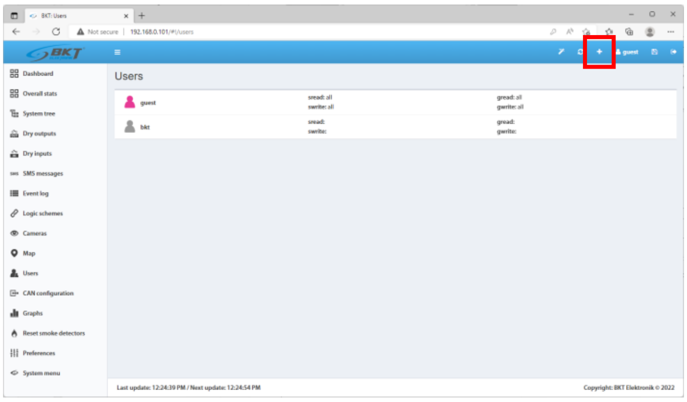
5.12 Map


BKT: Map
Not secure | 192.168.0.101/#!/map
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Map

Last update: 12:23:53 PM / Next update: 12:24:08 PM
Copyright: BKT Elektronik © 2022

The system provides a function of displaying the state of sensors against the building layout. Select *Map* from the vertical menu. Click *Settings* in the horizontal menu to configure this page. To maintain the settings after restarting the controller, write them to non-volatile memory.

5.13 Users

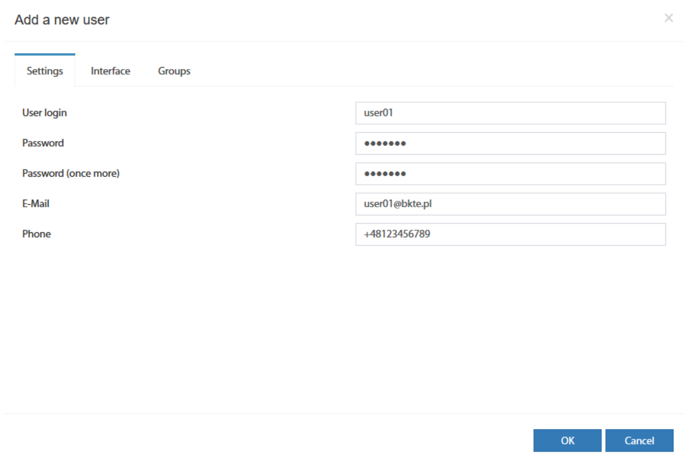

BKT: Users
Not secure | 192.168.0.101/#!/users
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Users

guest sread: all swrite: all gread: all gwrite: all
bkt sread: swrite: gread: gwrite:

Last update: 12:24:39 PM / Next update: 12:24:54 PM
Copyright: BKT Elektronik © 2022

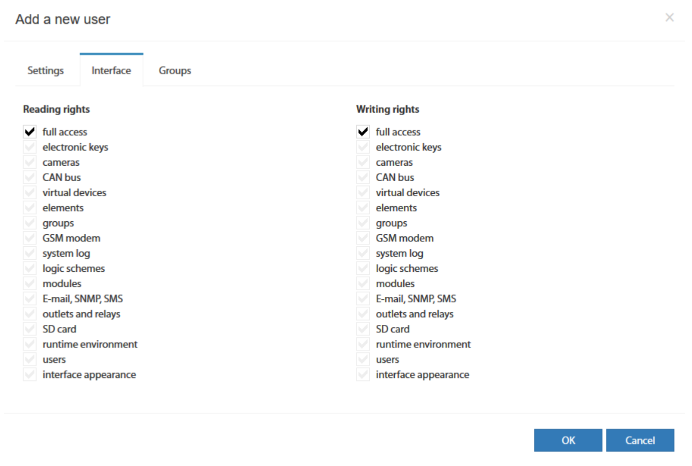
Select *Users* from the vertical menu to manage system users, create new users, remove users and grant rights.

Click the ‘+’ button in the horizontal menu to add a new user.


Add a new user
×
Settings
Interface
Groups
OK
Cancel

User login: user01
Password: •••••••
Password (once more): •••••••
E-Mail: user01@bkte.pl
Phone: +48123456789

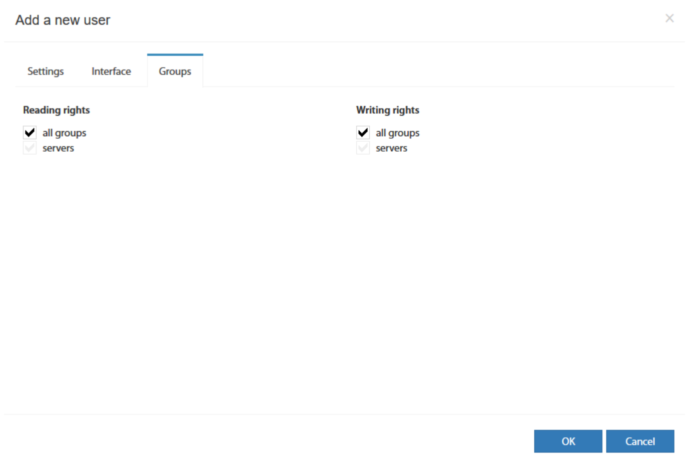
Enter the user name and password in the pop-up window and grant it appropriate right.


Add a new user
×
Settings
Interface
Groups
OK
Cancel

Reading rights
- ☑ full access
- ☐ electronic keys
- ☐ cameras
- ☐ CAN bus
- ☐ virtual devices
- ☐ elements
- ☐ groups
- ☐ GSM modem
- ☐ system log
- ☐ logic schemes
- ☐ modules
- ☐ E-mail, SNMP, SMS
- ☐ outlets and relays
- ☐ SD card
- ☐ runtime environment
- ☐ users
- ☐ interface appearance

Writing rights
- ☑ full access
- ☐ electronic keys
- ☐ cameras
- ☐ CAN bus
- ☐ virtual devices
- ☐ elements
- ☐ groups
- ☐ GSM modem
- ☐ system log
- ☐ logic schemes
- ☐ modules
- ☐ E-mail, SNMP, SMS
- ☐ outlets and relays
- ☐ SD card
- ☐ runtime environment
- ☐ users
- ☐ interface appearance

On the second tab give the user permission to read and/or write to individual parts of the system.


Add a new user
×
Settings
Interface
Groups
OK
Cancel

Reading rights
- ☑ all groups
- ☐ servers

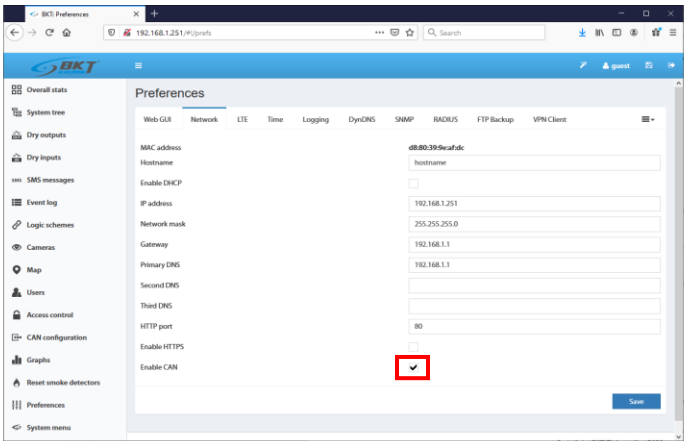
Writing rights
- ☑ all groups
- ☐ servers

The last tab allows you to grant read and/or write permissions to individual groups of elements defined in chapter 5.6.2 Adding a new group.

To maintain the settings after restarting the controller, write them to non-volatile memory.

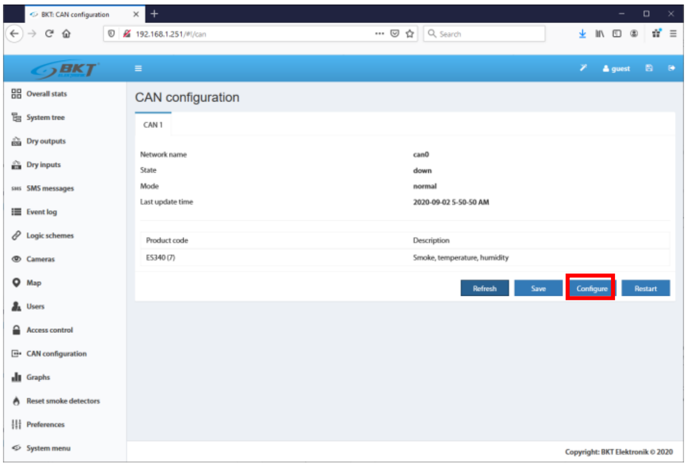
5.14 CAN configuration (extension module)

Devices extending the number of analogue ports - EE321t , binary input ports for potential-free contacts - EE322 and ES340 sensors can be connected to the controller.


BKT: Preferences
192.168.1.251/#!/prefs
Search
guest
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
Access control
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Save

MAC address	d8:80:39:9e:af:dc
Hostname	hostname
Enable DHCP	☐
IP address	192.168.1.251
Network mask	255.255.255.0
Gateway	192.168.1.1
Primary DNS	192.168.1.1
Second DNS	
Third DNS	
HTTP port	80
Enable HTTPS	☐
Enable CAN	☑

Activate the CAN bus. Select Preferences→*Network* from the vertical menu. Check the *Enable CAN* box and click *Save*.


BKT: CAN configuration
192.168.1.251/#!/can
Search
guest
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
Access control
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
CAN configuration
CAN 1
Refresh
Save
Configure
Restart
Copyright: BKT Elektronik © 2020

Network name	can0
State	down
Mode	normal
Last update time	2020-09-02 5-50-50 AM

Product code	Description
ES340 (7)	Smoke, temperature, humidity

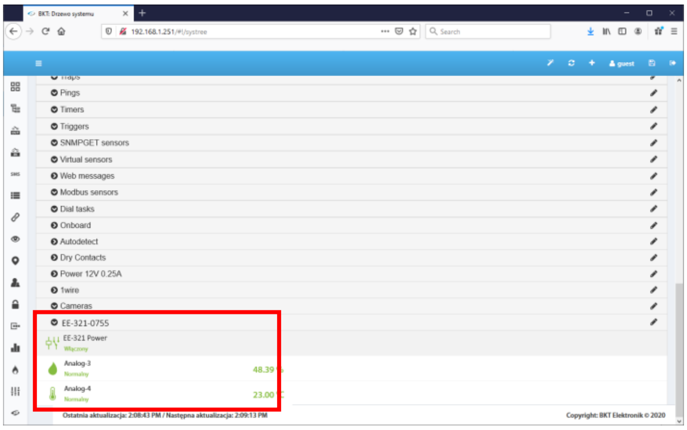
Select *CAN configuration* from the vertical menu, then click the *Configure* button and wait approx. 2 minutes until the CAN bus is scanned and the device is configured. When the device appears on the list, click the *Save* button.

Refresh – refresh the list of devices on the bus and their status.

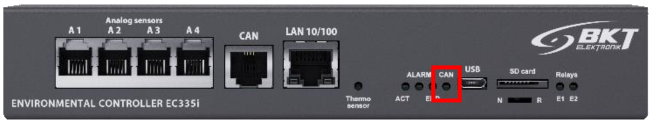
Save – write CAN settings to non-volatile memory.

Configure – search for extension modules on the bus.

Restart – restart the CAN bus.


BKT: Drzewo systemu
192.168.1.251/#!/systree
Search
guest
Traps
Pings
Timers
Triggers
SNMPGET sensors
Virtual sensors
Web messages
Modbus sensors
Dial tasks
Onboard
Autodetect
Dry Contacts
Power 12V 0.25A
1wire
Cameras
EE-321-0755
EE-321 Power
Włączony
Analog-3
Normalny
48.39
Analog-4
Normalny
23.00
Ostatnia aktualizacja: 2:08:43 PM / Następna aktualizacja: 2:09:13 PM
Copyright: BKT Elektronik © 2020

Following configuration, the extension module and sensors connected to it will be automatically detected and displayed in the system tree. Select *System tree* from the vertical menu.


Analog sensors
A 1
A 2
A 3
A 4
CAN
LAN 10/100
ALARM
CAN
USB
SD card
Relays
ACT
Thermo sensor
N
R
E1
E2
ENVIRONMENTAL CONTROLLER EC3351

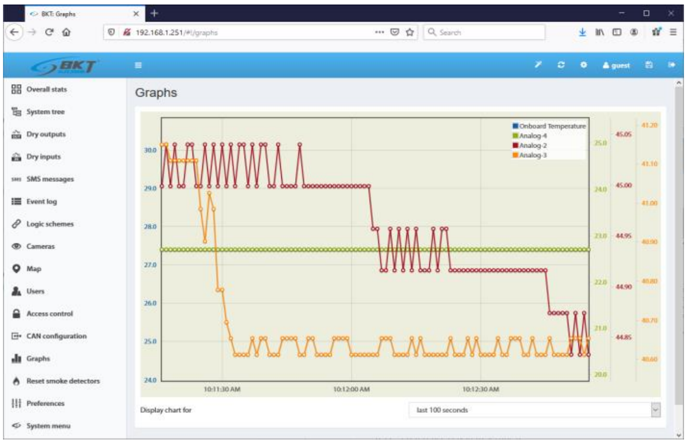
The operating status of the CAN bus is signalled on the controller with the CAN indicator light.

CAN is off – the CAN bus has not been activated in the configuration.

CAN flashes – the CAN bus is active, but there is no communication with the extension module.

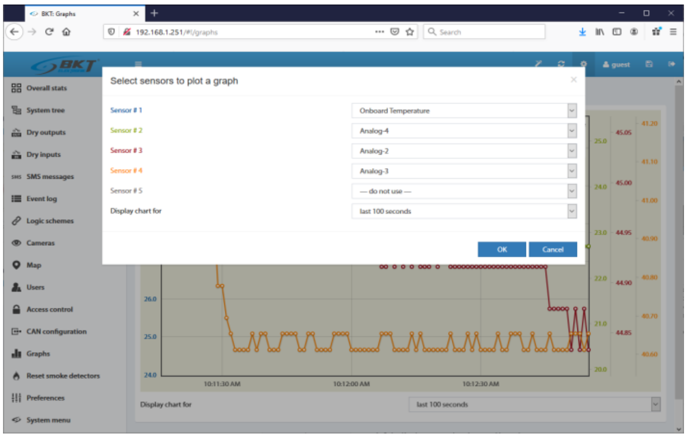
CAN is on – the CAN bus is active and there is communication with the extension module.

5.15 Graphs


BKT: Graphs
192.168.1.251/#!/graphs
guest
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
Access control
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Graphs
Onboard Temperature
Analog-4
Analog-2
Analog-3
10:11:30 AM
10:12:00 AM
10:12:30 AM

Display chart for: last 100 seconds

It is possible to display changes of values from the sensors on a chart. Select *Graphs* from the vertical menu.

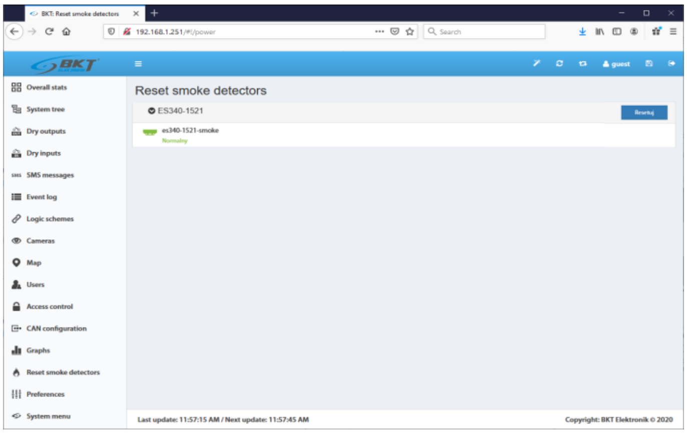


Select sensors to plot a graph

Sensor # 1: Onboard Temperature
Sensor # 2: Analog-4
Sensor # 3: Analog-2
Sensor # 4: Analog-3
Sensor # 5: — do not use —
Display chart for: last 100 seconds

To add the sensor to a chart, use the '+' button from the horizontal menu.

5.16 Reset smoke detectors


BKT: Reset smoke detectors
192.168.1.251/#!/power
guest
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
Access control
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Reset smoke detectors
ES340-1521
Resetuj
es340-1521-smoke
Normalny

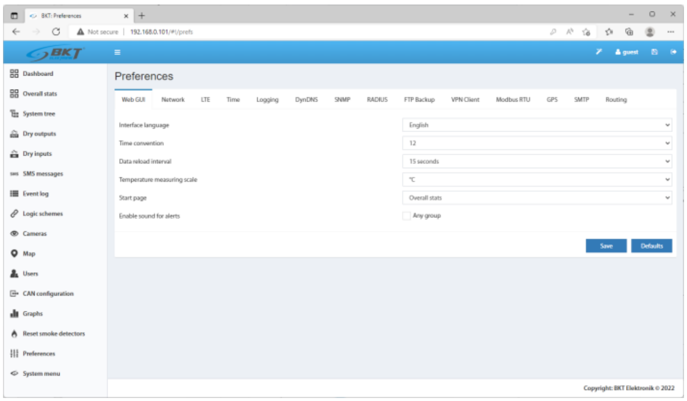
Last update: 11:57:15 AM / Next update: 11:57:45 AM

Copyright: BKT Elektronik © 2020

Once triggered (smoke detection), the sensors require a manual restart. This can be done through the controller web interface. Select *Reset smoke detectors* from the vertical menu. Resetting involves disconnecting the power supply from the sensors for a few seconds. All analogue sensors connected to the device where smoke is will be disconnected from the power supply for a moment.

5.17 Preferences (system settings)

5.17.1 Web interface settings

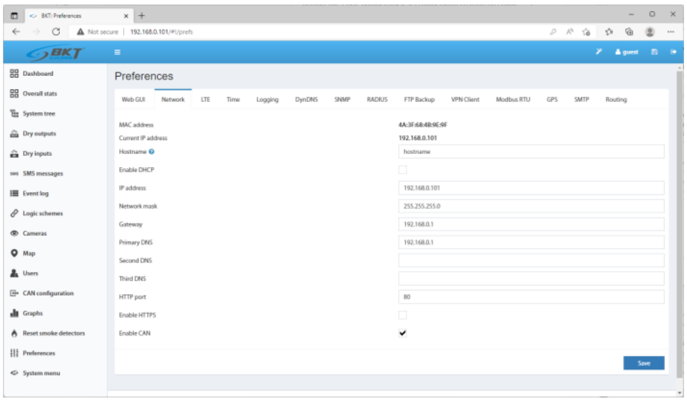

BKT: Preferences
Not secure
192.168.0.101/#!/prefs
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Save
Defaults
Copyright: BKT Elektronik © 2022

Interface language: English
Time convention: 12
Data reload interval: 15 seconds
Temperature measuring scale: °C
Start page: Overall stats
Enable sound for alerts: ☐ Any group

Select *Preferences→Web GUI* from the vertical menu.
Set the following web interface parameters:

- Language
- time format 12h/24h
- automatic refresh rate
- temperature unit (Celsius or Fahrenheit degrees)
- default start page
- activate an acoustic signal via the website when the alarms are active

5.17.2 Network settings


Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Save

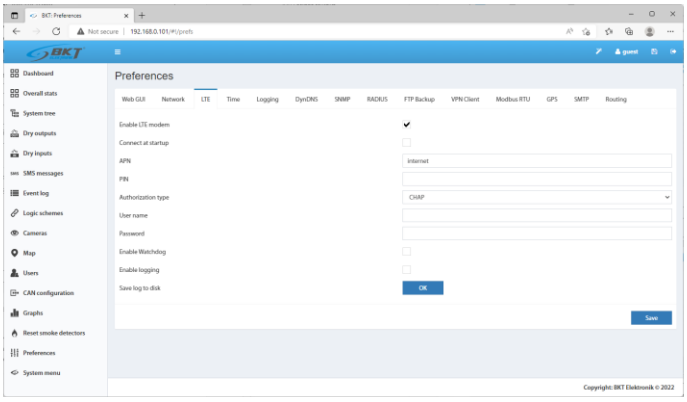
MAC address	4A:3F:68:4B:9E:9F
Current IP address	192.168.0.101
Hostname	hostname
Enable DHCP	☐
IP address	192.168.0.101
Network mask	255.255.255.0
Gateway	192.168.0.1
Primary DNS	192.168.0.1
Second DNS	
Third DNS	
HTTP port	80
Enable HTTPS	☐
Enable CAN	☑

Select *Preferences→Network* from the vertical menu.

- IP address, subnetwork mask, broadcast, gate, DNS – to enter static network settings.
- HTTP port – it determines an access port to the device via a browser (default: 80).
- Enable HTTPS – activate encrypted connection via a browser.
- Enable DHCP – activate automatic import of network settings from a DHCP server.
- Enable CAN – this function must be checked if extension modules are to be used in the system.

Saving the settings will restart the controller. Wait until the ACT LED starts flashing on the controller front panel. Only then the controller will be available under the new IP address.

5.17.3 LTE modem settings


Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
OK
Save
Copyright: BKT Elektronik © 2022

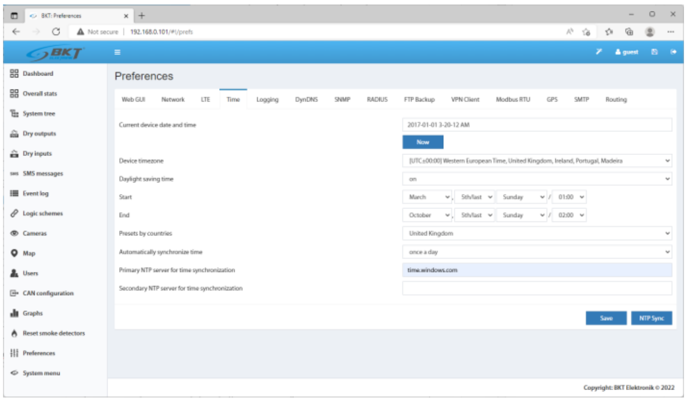
Enable LTE modem	☑
Connect at startup	☐
APN	internet
PIN	
Authorization type	CHAP
User name	
Password	
Enable Watchdog	☐
Enable logging	☐
Save log to disk	OK

If an LTE modem is installed in the device, it enables connection to the Internet. The LTE connection can serve as a failover to Ethernet or as a primary connection. For a remote connection to the EC335i controller via LTE connection, a global static IP address from the GSM provider is required.

From the vertical menu, select Properties-> LTE. The menu is only available when the modem is installed.

Field	Description
Enable LTE modem	Enables LTE connection
Connect at startup	It activates the LTE connection right after starting the controller. If checked, then LTE connection will be used as primary for all network services. If unchecked, the connection will only be activated after the Ethernet connection is lost. The Ethernet connection is tested by pinging the DNS server (see chapter 5.17.2 Network Settings). If any of the DNS servers respond to the ping, the controller considers the Ethernet connection to be active. For this reason, all DNS servers should be in the external network.
APN	Access point name – GSM provider name
PIN	Personal identification number if required by provider
Authorization type	Authorization type defined by GSM provider.
User name	User name if required by provider
Password	Password if required by provider
Enable Watchdog	Enables checking the LTE connection. If checked, the modem sends a ping to the server defined in *"IP Address or hostname of ping destination"* with the frequency specified in *"Watchdog period"*. If the modem does not receive a response within the time specified in the *"Watchdog timeout"*, it recognizes the LTE connection as broken and will attempt to re-establish the LTE connection.
Watchdog period	The frequency of checking the connection to the server.
Watchdog timeout	Time for a reply from the server.
IP Address or hostname of ping destination	The IP address of the server used to test the LTE connection.
Enable logging	Enable logging of LTE connection status. Use this feature only for debugging when setting up a connection. During normal operation, logging should be turned off.
Save log to disk	Button to download LTE logs.

5.17.4 Time settings

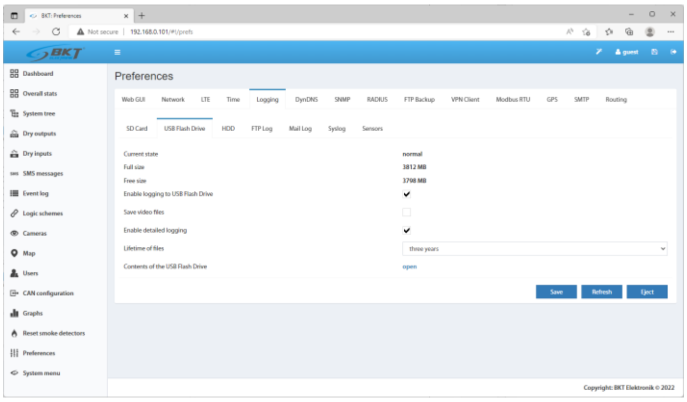

BKT: Preferences
Not secure | 192.168.0.101/#!/prefs
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Now
Save
NTP Sync
Copyright: BKT Elektronik © 2022

Preferences

Current device date and time: 2017-01-01 3-20-12 AM
Device timezone: [UTC±00:00] Western European Time, United Kingdom, Ireland, Portugal, Madeira
Daylight saving time: on
Start: March, 5th/last Sunday / 01:00
End: October, 5th/last Sunday / 02:00
Presets by countries: United Kingdom
Automatically synchronize time: once a day
Primary NTP server for time synchronization: time.windows.com
Secondary NTP server for time synchronization:

It is possible to set the device clock time manually and to set cyclical synchronisation with NTP servers. Select *Preferences→Time* from the vertical menu.

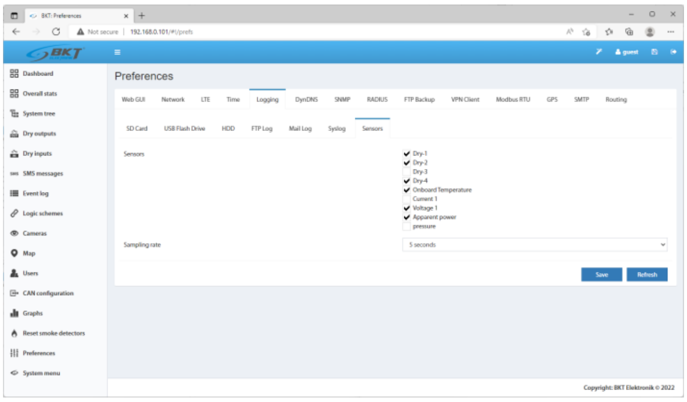
5.17.5 Saving of events and measured values on a USB disk or SD card


BKT: Preferences
Not secure | 192.168.0.101/#!/prefs
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
SD Card
USB Flash Drive
HDD
FTP Log
Mail Log
Syslog
Sensors
Save
Refresh
Eject
Copyright: BKT Elektronik © 2022

Preferences

Current state: normal
Full size: 3812 MB
Free size: 3798 MB
Enable logging to USB Flash Drive: ☑
Save video files: ☐
Enable detailed logging: ☑
Lifetime of files: three years
Contents of the USB Flash Drive: open

In the vertical menu select: *Preferences->Logging->USB Flash Drive* Values read from the sensors and system logs can be saved to files on a USB disk or SD card previously formatted to the FAT32 system. After installing the USB drive or SD card you will be able to view its contents directly from the device's web interface after clicking on *Open Contents of the USB Flash Drive.*

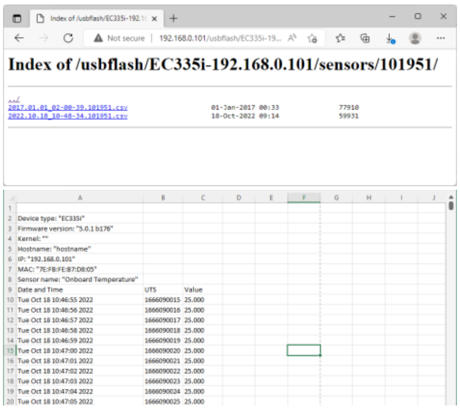

BKT: Preferences
Not secure | 192.168.0.101/#!/prefs
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
SD Card
USB Flash Drive
HDD
FTP Log
Mail Log
Syslog
Sensors
Save
Refresh
Copyright: BKT Elektronik © 2022

Preferences

Sensors:
- ☑ Dry-1
- ☑ Dry-2
- ☐ Dry-3
- ☑ Dry-4
- ☑ Onboard Temperature
- ☐ Current 1
- ☑ Voltage 1
- ☑ Apparent power
- ☐ pressure

Sampling rate: 5 seconds

To save the values read from the sensors on the USB disk, on the *Preferences*->Logging->Sensors tab, select required sensors and specify the measurement interval. The device can record measured values from up to 30 sensors.


Index of /usbflash/EC335i-192.1
Not secure | 192.168.0.101/usbflash/EC335i-19...

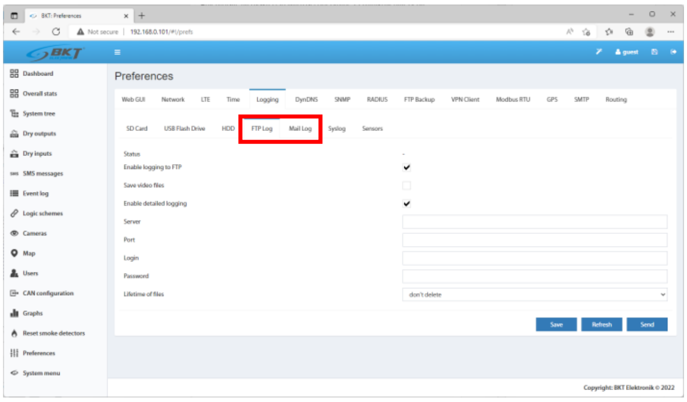
Index of /usbflash/EC335i-192.168.0.101/sensors/101951/

```
../
2017.01.01_02-00-39.101951.csv                01-Jan-2017 00:33          77910
2022.10.18_10-48-34.101951.csv                18-Oct-2022 09:14          59931
```

	A	B	C
1			
2	Device type: "EC335i"		
3	Firmware version: "5.0.1 b176"		
4	Kernel: ""		
5	Hostname: "hostname"		
6	IP: "192.168.0.101"		
7	MAC: "7E:FB:FE:B7:D8:05"		
8	Sensor name: "Onboard Temperature"		
9	Date and Time	UTS	Value
10	Tue Oct 18 10:46:55 2022	1666090015	25.000
11	Tue Oct 18 10:46:56 2022	1666090016	25.000
12	Tue Oct 18 10:46:57 2022	1666090017	25.000
13	Tue Oct 18 10:46:58 2022	1666090018	25.000
14	Tue Oct 18 10:46:59 2022	1666090019	25.000
15	Tue Oct 18 10:47:00 2022	1666090020	25.000
16	Tue Oct 18 10:47:01 2022	1666090021	25.000
17	Tue Oct 18 10:47:02 2022	1666090022	25.000
18	Tue Oct 18 10:47:03 2022	1666090023	25.000
19	Tue Oct 18 10:47:04 2022	1666090024	25.000
20	Tue Oct 18 10:47:05 2022	1666090025	25.000

The values read from the sensors are saved on the USB drive in csv files.
Direct access path to data on the SD card:
http://{login}:{pass}@192.168.0.101/sdcard/
Direct access path to data on the USB drive:
http://{login}:{pass}@192.168.0.101/usbflash/

5.17.6 Sending logs and sensor values to FTP, MAIL


Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
SD Card
USB Flash Drive
HDD
FTP Log
Mail Log
Syslog
Sensors
Save
Refresh
Send
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Copyright: BKT Elektronik © 2022

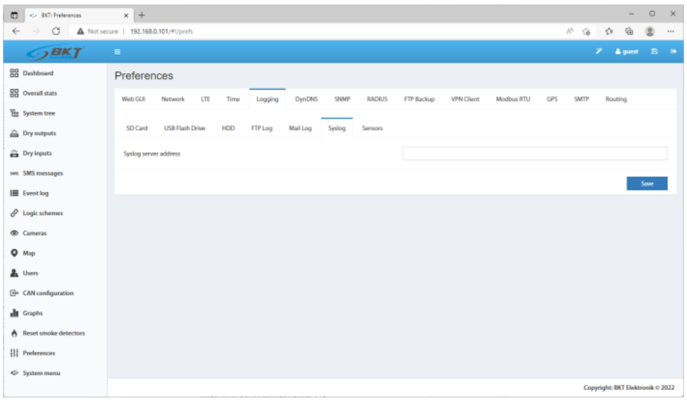
Status -
Enable logging to FTP ✓
Save video files ☐
Enable detailed logging ✓
Server
Port
Login
Password
Lifetime of files: don't delete

The device enables the transmission of system events and measurement values to an FTP server and via e-mail. Install an SD card or USB flash drive in advance. Data is sent to the FTP server once a day at 00:00. The e-mail message with the data in the attachment is sent once a day at the selected time.

Preferences->Logging-> FTP Log

Preferences->Logging-> Mail Log

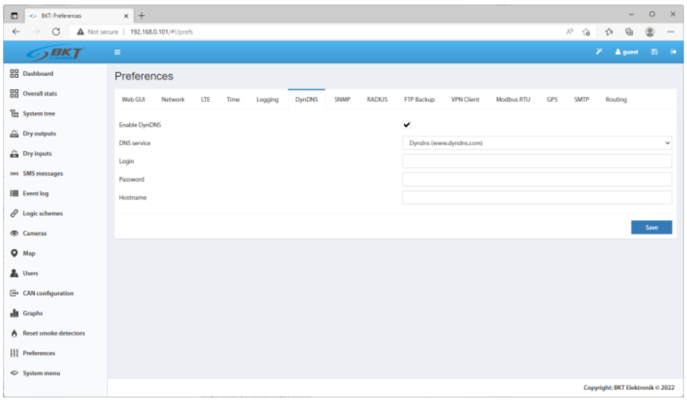
5.17.7 Saving logs to SYSLOG


Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
SD Card
USB Flash Drive
HDD
FTP Log
Mail Log
Syslog
Sensors
Save
Copyright: BKT Elektronik © 2022

Syslog server address

The device also allows transfer only system events to the SYSLOG server. Select *Preferences->Logging-> Syslog*

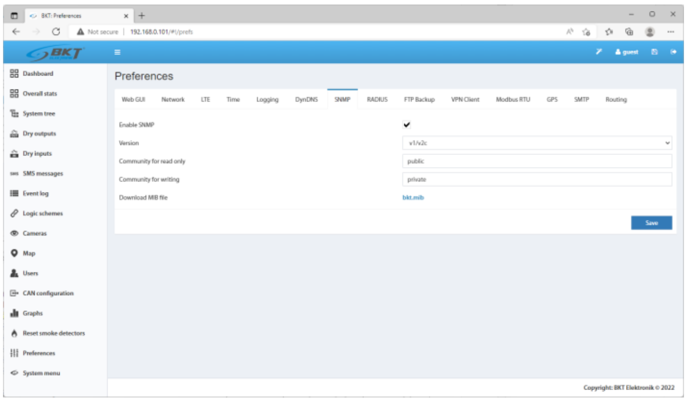
5.17.8 DynDNS settings


Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Save
Copyright: BKT Elektronik © 2022

Enable DynDNS ✓
DNS service: Dyndns (www.dyndns.com)
Login
Password
Hostname

The DynDNS (www.dynDNS.com) or no-IP (www.no-ip.org) services can be used with the device. Select *Preferences→DynDNS* from the vertical menu.

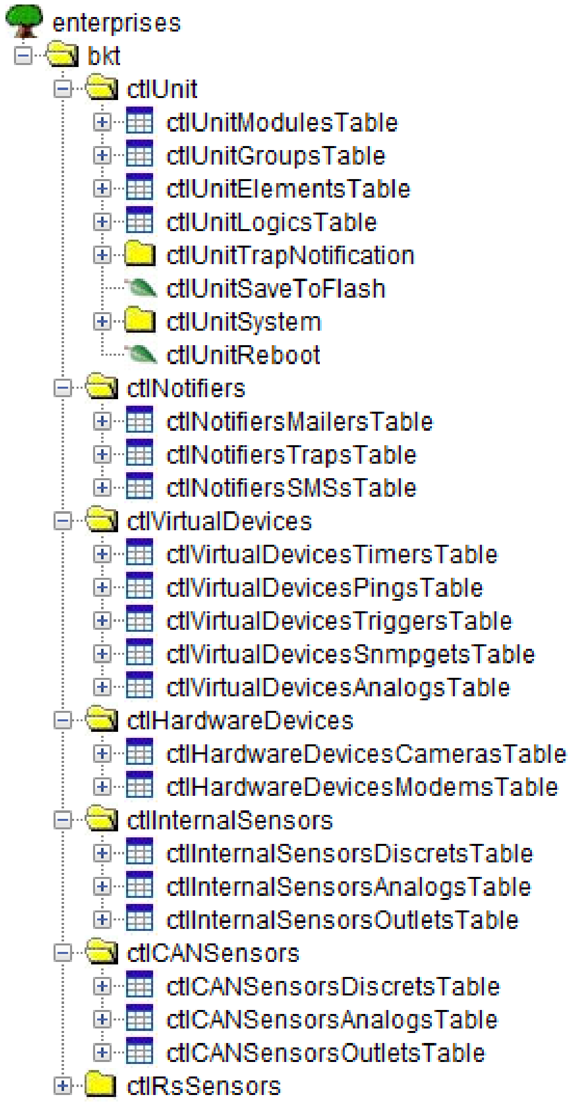
5.17.9 SNMP settings


BKT: Preferences
Not secure | 192.168.0.101/#!/prefs
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Save
Copyright: BKT Elektronik © 2022

Enable SNMP ☑
Version: v1/v2c
Community for read only: public
Community for writing: private
Download MIB file: bkt.mib

The device supports the SNMP (Simple Network Management Protocol) in versions 1, 2c and 3. The default port to access the device via SNMP is 161. In this tab, a MIB (Management Information Base) with communication data can be downloaded. Select Właściwości→*SNMP* Preferences→*SNMP*) from the vertical menu.

Baza MIB systemu



- enterprises
  - bkt
    - ctlUnit
      - ctlUnitModulesTable
      - ctlUnitGroupsTable
      - ctlUnitElementsTable
      - ctlUnitLogicsTable
      - ctlUnitTrapNotification
      - ctlUnitSaveToFlash
      - ctlUnitSystem
      - ctlUnitReboot
    - ctlNotifiers
      - ctlNotifiersMailersTable
      - ctlNotifiersTrapsTable
      - ctlNotifiersSMSsTable
    - ctlVirtualDevices
      - ctlVirtualDevicesTimersTable
      - ctlVirtualDevicesPingsTable
      - ctlVirtualDevicesTriggersTable
      - ctlVirtualDevicesSnmpgetsTable
      - ctlVirtualDevicesAnalogsTable
    - ctlHardwareDevices
      - ctlHardwareDevicesCamerasTable
      - ctlHardwareDevicesModemsTable
    - ctlInternalSensors
      - ctlInternalSensorsDiscretsTable
      - ctlInternalSensorsAnalogsTable
      - ctlInternalSensorsOutletsTable
    - ctlCANSensors
      - ctlCANSensorsDiscretsTable
      - ctlCANSensorsAnalogsTable
      - ctlCANSensorsOutletsTable
    - ctlRsSensors

The SNMP MIB database is a reflection of the system tree available from the vertical menu. All information required to establish communication with the controller is located in the MIB database.

ctlUnit – units in the system tree
  ctlUnitModulesTable – modules in the system tree
  ctlUnitGroupsTable – created groups of units
  ctlUnitElementsTable – elements (sensors)
  ctlUnitLogicsTable – created logical schemes
  ctlUnitTrapNotification – system SNMP Trap messsage
  ctlUnitSaveToFlash – saving settings to flash memeory
  ctlUnitSystem – device information (sn, mac, firmware etc.)
  ctlUnitReboot – device rebooting
ctlNotifiers – created notifications
  ctlNotifiersMailersTable – created mail notyfications
  ctlNotifiersTrapsTable - created SNMP Trap notyfications
  ctlNotifiersSMSsTable - created text message notyfications
ctlVirtualDevices - virtual elements
  ctlVirtualDevicesTimersTable – timers
  ctlVirtualDevicesPingsTable – pings
  ctlVirtualDevicesTriggersTable – triggers
  ctlVirtualDevicesSnmpgetsTable - SNMP Get (virtual sensors)
  ctlVirtualDevicesAnalogsTable – mathematical values
ctlHardwareDevices – other devices
  ctlHardwareDevicesCamerasTable – USB and IP cameras
  ctlHardwareDevicesModemsTable – GSM modem
ctlInternalSensors – details of system sensors
  ctlInternalSensorsDiscretsTable – inputs for potential-free contacts
  ctlInternalSensorsAnalogsTable – analogue sensors
  ctlInternalSensorsOutletsTable – output modules (relays)
ctlCANSensors – details of CAN sensors
  ctlCANSensorsDiscretsTable - inputs for potential-free contacts
  ctlCANSensorsAnalogsTable - analogue sensors
  ctlCANSensorsOutletsTable – output modules (relays)
ctlRsSensors – not available in current firmware

Section **ctlUnit** – system tree

This section contains the full system tree. Chapter 5.6 System tree (system components).

- **ctlUnitModulesTable** – information about modules in the system tree, ie: Logics, Mails, SMSs, Traps, Pings, Timers, Triggers, etc.
- **ctlUnitGroupsTable** – information about created groups of elements. Chapter *5.6.2 Adding a new group*.
- **ctlUnitElementsTable** – basic information about sensors in the system tree. Chapter 5.6.1 Setting the sensor parameters.
- **ctlUnitLogicsTable** – information about created logic diagrams. Chapter *5.10 Logical schemes*.
- **ctlUnitTrapNotification** – object identifier OID of system SNMP Trap notification.
- **ctlUnitSaveToFlash** - saving settings to the flash memory when set to "1"
- **ctlUnitSystem** – device information informacje o urządzeniu (serial number, mac, firmware etc.)
- **ctlUnitReboot** – device rebooting when seet to „1"

Section **ctlNotifiers** – created notifications

This section contains notifications that were created while programming the controller.

- **ctlNotifiersMailersTable** – created MAIL notifications. Chapter *5.6.3 Adding an email notification*.
- **ctlNotifiersTrapsTable** - created SNMP Trap notifications. Chapter *5.6.4 Adding a trap notification*.
- **ctlNotifiersSMSsTable** – created SMS notifications. Chapter *5.6.5 Adding an SMS notification.*

Section **ctlVirtualDevices** - virtual elements

This section contains elements that were created while programming the controller.

- **ctlVirtualDevicesTimersTable** – created timers. Chapter *5.6.10 Adding a timer.*
- **ctlVirtualDevicesPingsTable** – created pings. Chapter 5.6.12 Adding PING functions.
- **ctlVirtualDevicesTriggersTable** – created triggers. Chapter *5.6.11 Adding a trigger.*
- **ctlVirtualDevicesSnmpgetsTable** - created SNMP Get. Chapter *5.6.13 Adding an SNMP Get.*
- **ctlVirtualDevicesAnalogsTable** - created mathematical values. Chapter *5.6.15 Adding virtual mathematical element.*

Section **ctlHardwareDevices** – other devices

This section contains other elements that have been connected to the system.

- **ctlHardwareDevicesCamerasTable** – USB and IP cameras. Chapter 5.6.16 Adding a camera.
- **ctlHardwareDevicesModemsTable** – GSM modem. Chapter *5.8 GSM modem settings*.

Section **ctlInternalSensors** – details of system sensors

This section contains detailed information about sensors connected to the system, except for CAN sensors.

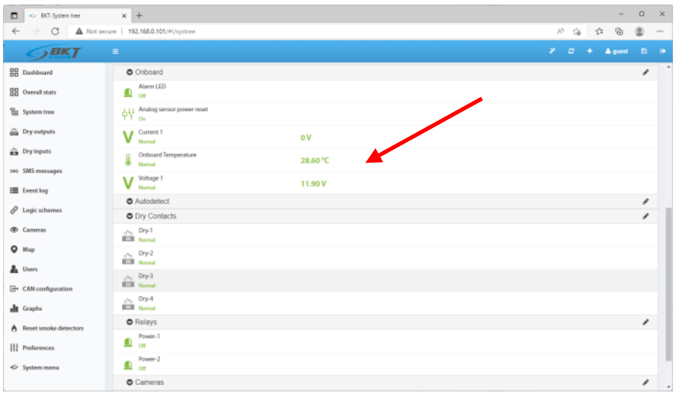
- **ctlInternalSensorsDiscretsTable** – inputs for potential-free contacts.
- **ctlInternalSensorsAnalogsTable** – analogue sensors.
- **ctlInternalSensorsOutletsTable** - output modules (relays).

Section **ctlCANSensors** - details of CAN sensors

This section contains detailed information about CAN sensors connected to the system.

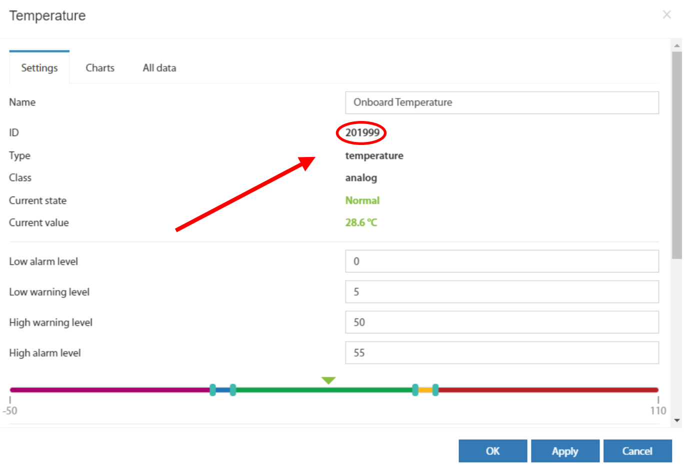
- **ctlCANSensorsDiscretsTable** - inputs for potential-free contacts of CAN modules.
- **ctlCANSensorsAnalogsTable** – analogue sensors of CAN modules.
- **ctlCANSensorsOutletsTable** – output modules (relays) of CAN modules.

Example of query for a temperature sensor installed inside the controller



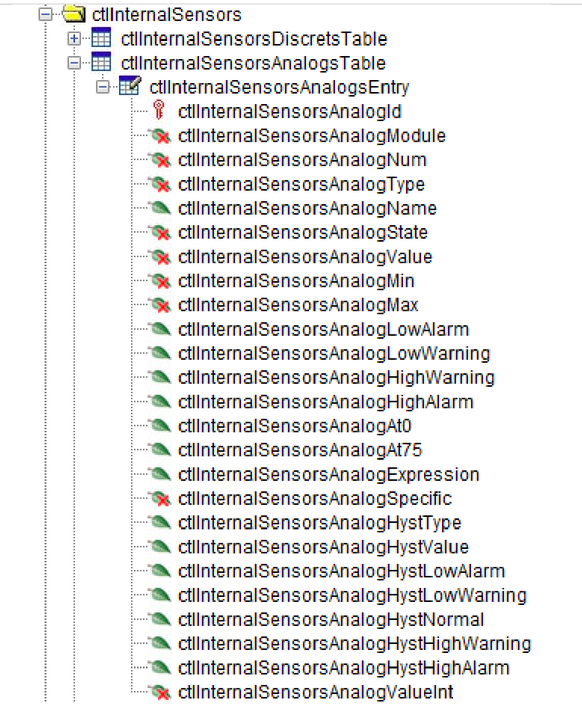
Onboard
Alarm LED Off
Analog sensor power reset On
Current 1 Normal 0 V
Onboard Temperature Normal 28.60 °C
Voltage 1 Normal 11.90 V
Autodetect
Dry Contacts
Dry-1 Normal
Dry-2 Normal
Dry-3 Normal
Dry-4 Normal
Relays
Power-1 Off
Power-2 Off
Cameras

The required temperature sensor in the system tree.



Name: Onboard Temperature
ID: 201999
Type: temperature
Class: analog
Current state: Normal
Current value: 28.6 °C
Low alarm level: 0
Low warning level: 5
High warning level: 50
High alarm level: 55

Identifier of required sensor.

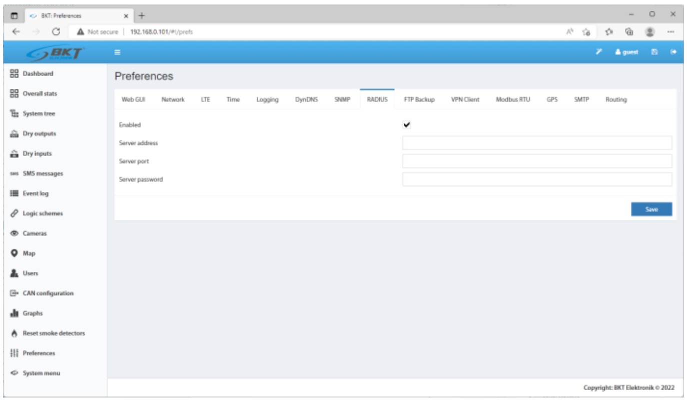


- ctlInternalSensors
  - ctlInternalSensorsDiscretsTable
  - ctlInternalSensorsAnalogsTable
    - ctlInternalSensorsAnalogsEntry
      - ctlInternalSensorsAnalogId
      - ctlInternalSensorsAnalogModule
      - ctlInternalSensorsAnalogNum
      - ctlInternalSensorsAnalogType
      - ctlInternalSensorsAnalogName
      - ctlInternalSensorsAnalogState
      - ctlInternalSensorsAnalogValue
      - ctlInternalSensorsAnalogMin
      - ctlInternalSensorsAnalogMax
      - ctlInternalSensorsAnalogLowAlarm
      - ctlInternalSensorsAnalogLowWarning
      - ctlInternalSensorsAnalogHighWarning
      - ctlInternalSensorsAnalogHighAlarm
      - ctlInternalSensorsAnalogAt0
      - ctlInternalSensorsAnalogAt75
      - ctlInternalSensorsAnalogExpression
      - ctlInternalSensorsAnalogSpecific
      - ctlInternalSensorsAnalogHystType
      - ctlInternalSensorsAnalogHystValue
      - ctlInternalSensorsAnalogHystLowAlarm
      - ctlInternalSensorsAnalogHystLowWarning
      - ctlInternalSensorsAnalogHystNormal
      - ctlInternalSensorsAnalogHystHighWarning
      - ctlInternalSensorsAnalogHystHighAlarm
      - ctlInternalSensorsAnalogValueInt

Table **ctlInternalSensorsAnalogsTable** from section **ctlInternalSensors.**
To ask for the sensor, use the SNMP object identifier (OID) extended after the dot with the sensor identification number, eg:
ctlInternalSensorsAnalogValue.201999 (.1.3.6.1.4.1.47394.5.2.1.7.201999) – value read from sensor 201999.
The complete query table for the 201999 sensor is given below.

OID – SNMP object identifier	Value	Desription
ctlInternalSensorsAnalogId.201999 .1.3.6.1.4.1.47394.5.2.1.1.201999	201999	Identifier of the element in the system
ctlInternalSensorsAnalogModule.201999 .1.3.6.1.4.1.47394.5.2.1.2.201999	2020	The identifier of the module to which this element belongs (onboard sensors)
ctlInternalSensorsAnalogNum.201999 .1.3.6.1.4.1.47394.5.2.1.3.201999	-1	Consecutive number of element in the module
ctlInternalSensorsAnalogType.201999 .1.3.6.1.4.1.47394.5.2.1.4.201999	temperature	Type of element (temperature sensor)
ctlInternalSensorsAnalogName.201999 .1.3.6.1.4.1.47394.5.2.1.5.201999	Onboard Temperature	Name of element
ctlInternalSensorsAnalogState.201999 .1.3.6.1.4.1.47394.5.2.1.6.201999	normal	Element current status
ctlInternalSensorsAnalogValue.201999 .1.3.6.1.4.1.47394.5.2.1.7.201999	28.6	Temperature value read from sensor
ctlInternalSensorsAnalogMin.201999 .1.3.6.1.4.1.47394.5.2.1.8.201999	-50.0	Permissible minimum value of the alarm threshold
ctlInternalSensorsAnalogMax.201999 .1.3.6.1.4.1.47394.5.2.1.9.201999	110.0	Permissible maximum value of the alarm threshold
ctlInternalSensorsAnalogLowAlarm.201999 .1.3.6.1.4.1.47394.5.2.1.10.201999	0.0	Set value of the low alarm threshold
ctlInternalSensorsAnalogLowWarning.201999 .1.3.6.1.4.1.47394.5.2.1.11.201999	5.0	Set value of the low warning threshold
ctlInternalSensorsAnalogHighWarning.201999 .1.3.6.1.4.1.47394.5.2.1.12.201999	45.0	Set value of the high warning threshold
ctlInternalSensorsAnalogHighAlarm.201999 .1.3.6.1.4.1.47394.5.2.1.13.201999	50.0	Set value of the high alarm threshold
ctlInternalSensorsAnalogExpression.201999 .1.3.6.1.4.1.47394.5.2.1.16.201999	x	A function that converts the value read from the sensor into a value that will be processed in the system
ctlInternalSensorsAnalogSpecific.201999 .1.3.6.1.4.1.47394.5.2.1.17.201999	um="°C"	A unit of value read from the sensor
ctlInternalSensorsAnalogHystType.201999 .1.3.6.1.4.1.47394.5.2.1.18.201999	value	Hysteresis type (value – hysteresis enabled)
ctlInternalSensorsAnalogHystValue.201999 .1.3.6.1.4.1.47394.5.2.1.19.201999	0.30	Hysteresis value (0.30°C)
ctlInternalSensorsAnalogValueInt.201999 .1.3.6.1.4.1.47394.5.2.1.25.201999	2860	Inteager value read from the element (sensor) (sensor value multiplied by 100)

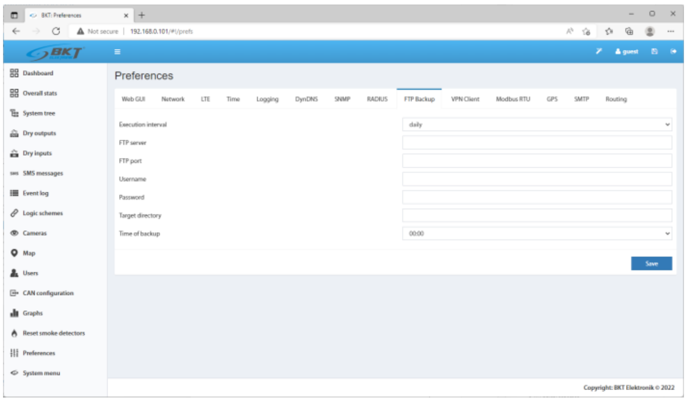
5.17.10 RADIUS settings


BKT: Preferences
Not secure | 192.168.0.101/#!/prefs
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Save
Copyright: BKT Elektronik © 2022

Enabled ☑
Server address
Server port
Server password

The device supports the RADIUS (Remote Authentication Dial-In User Service) protocol. Select *Preferences→RADIUS* from the vertical menu.

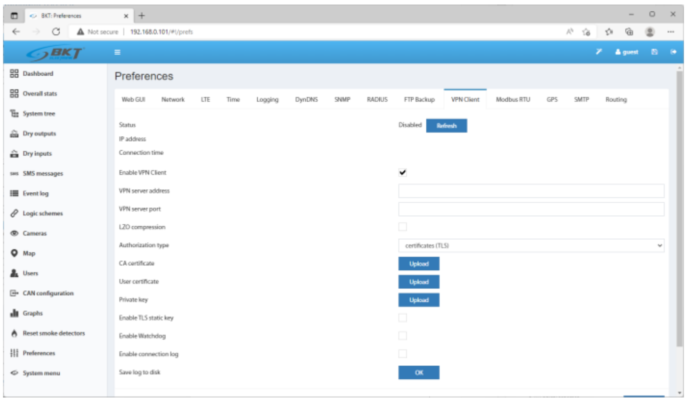
5.17.11 FTP backup settings


BKT: Preferences
Not secure | 192.168.0.101/#!/prefs
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Save
Copyright: BKT Elektronik © 2022

Execution interval: daily
FTP server
FTP port
Username
Password
Target directory
Time of backup: 00:00

Device settings can be saved to a file on an FTP server on a regular basis. Select *Preferences→FTP Backup* from the vertical menu.

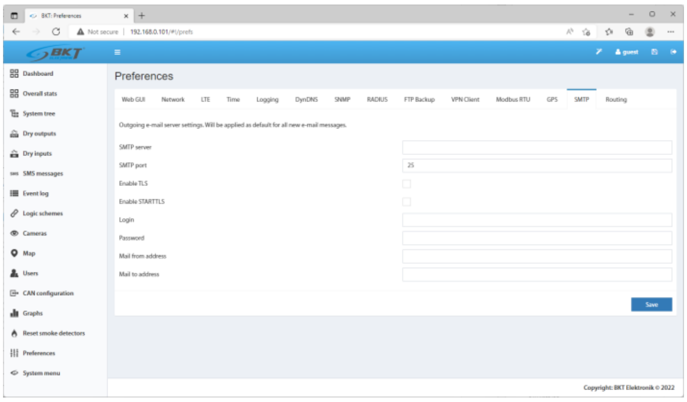
5.17.12 VPN client settings


BKT: Preferences
Not secure | 192.168.0.101/#!/prefs
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Preferences
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Refresh
Upload
Upload
Upload
OK

Status: Disabled
IP address
Connection time
Enable VPN Client ☑
VPN server address
VPN server port
LZO compression ☐
Authorization type: certificates (TLS)
CA certificate
User certificate
Private key
Enable TLS static key ☐
Enable Watchdog ☐
Enable connection log ☐
Save log to disk

The device uses the OpenVPN library to provide a VPN client. The service configuration is available after selecting Preferences-> VPN Client from the vertical menu.

5.17.13 SMTP settings


BKT: Preferences
Not secure | 192.168.0.101/#!/prefs
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
Web GUI
Network
LTE
Time
Logging
DynDNS
SNMP
RADIUS
FTP Backup
VPN Client
Modbus RTU
GPS
SMTP
Routing
Save

Preferences

Outgoing e-mail server settings. Will be applied as default for all new e-mail messages.

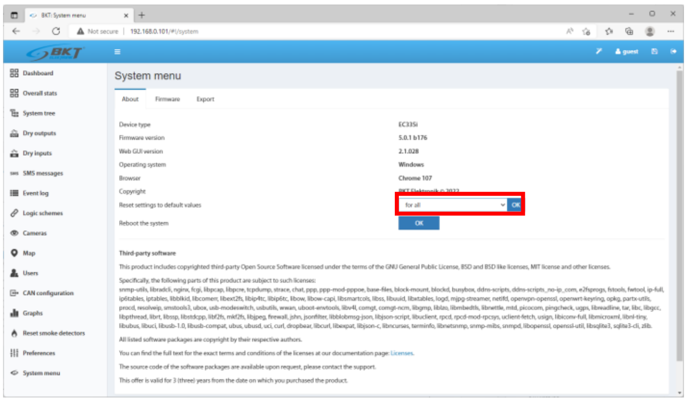
SMTP server	
SMTP port	25
Enable TLS	☐
Enable STARTTLS	☐
Login	
Password	
Mail from address	
Mail to address	

Copyright: BKT Elektronik © 2022

In the Properties-> SMTP menu it is possible to set the default mail server configuration for the email notifications created later.

5.18 System menu (system management)

5.18.1 Restoring default settings through a website


BKT: System menu
Not secure | 192.168.0.101/#!/system
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
About
Firmware
Export
OK
OK

System menu

Device type	EC335i
Firmware version	5.0.1 b176
Web GUI version	2.1.028
Operating system	Windows
Browser	Chrome 107
Copyright	BKT Elektronik © 2022
Reset settings to default values	for all
Reboot the system	

Third-party software

This product includes copyrighted third-party Open Source Software licensed under the terms of the GNU General Public License, BSD and BSD like licenses, MIT license and other licenses.

Specifically, the following parts of this product are subject to such licenses:
snmp-utils, libradcli, nginx, fcgi, libpcap, libpcre, tcpdump, strace, chat, ppp, ppp-mod-pppoe, base-files, block-mount, blockd, busybox, ddns-scripts, ddns-scripts_no-ip_com, e2fsprogs, fstools, fwtool, ip-full, ip6tables, iptables, libblkid, libcomerr, libext2fs, libip4tc, libip6tc, libow, libow-capi, libsmartcols, libss, libuuid, libxtables, logd, mjpg-streamer, netifd, openvpn-openssl, openwrt-keyring, opkg, partx-utils, procd, resolveip, smstools3, ubox, usb-modeswitch, usbutils, wwan, uboot-envtools, libv4l, comgt, comgt-ncm, libgmp, liblzo, libmbedtls, libnettle, mtd, picocom, pingcheck, ugps, libreadline, tar, libc, libgcc, libpthread, librt, libssp, libstdcpp, libf2fs, mkf2fs, libjpeg, firewall, jshn, jsonfilter, libblobmsg-json, libjson-script, libuclient, rpcd, rpcd-mod-rpcsys, uclient-fetch, usign, libiconv-full, libmicroxml, libnl-tiny, libubus, libuci, libusb-1.0, libusb-compat, ubus, ubusd, uci, curl, dropbear, libcurl, libexpat, libjson-c, libncurses, terminfo, libnetsnmp, snmp-mibs, snmpd, libopenssl, openssl-util, libsqlite3, sqlite3-cli, zlib.

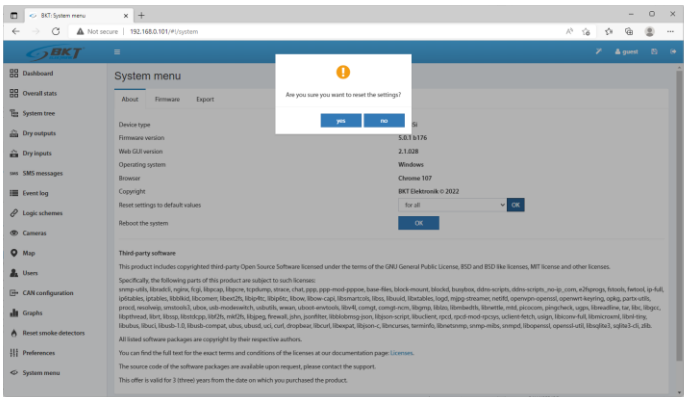
All listed software packages are copyright by their respective authors.

You can find the full text for the exact terms and conditions of the licenses at our documentation page: Licenses.

The source code of the software packages are available upon request, please contact the support.

This offer is valid for 3 (three) years from the date on which you purchased the product.

Select *System menu→About* from the vertical menu, select *Sensors* or *All settings* and click *OK* next to *Reset settings to default values.*

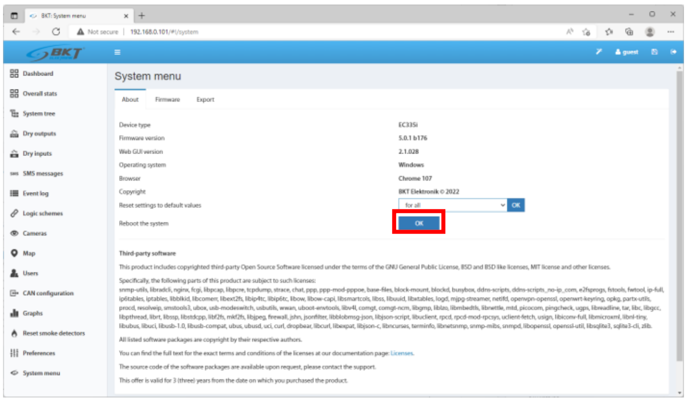


Are you sure you want to reset the settings?

Reset settings to default values: for all

Confirm to reset default values and wait until the process is completed. When resetting all settings, the device's IP number will be changed to the default (192.168.0.101).

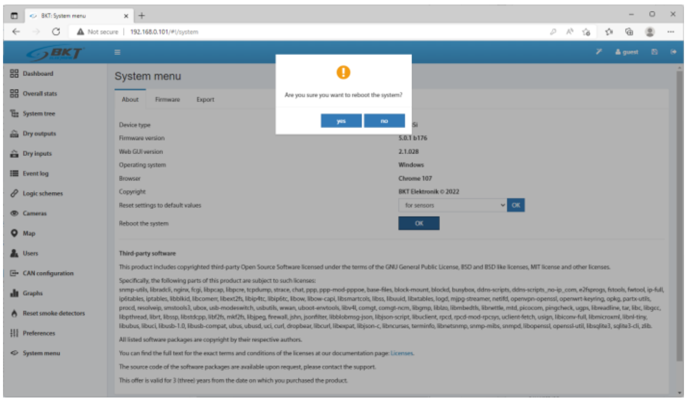
5.18.2 Restarting the device


BKT: System menu
Not secure | 192.168.0.101/#!/system
About
Firmware
Export
OK
OK

Reset settings to default values: for all

Reboot the system

Select *System menu→About* from the vertical menu and click *OK* next to Reboot the system.



Are you sure you want to reboot the system?

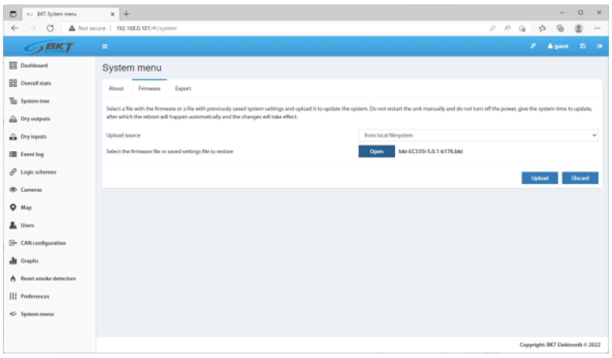
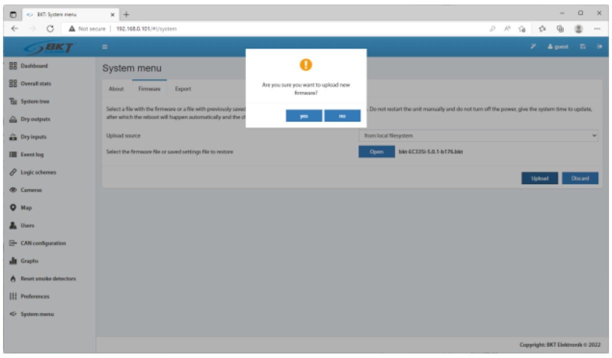
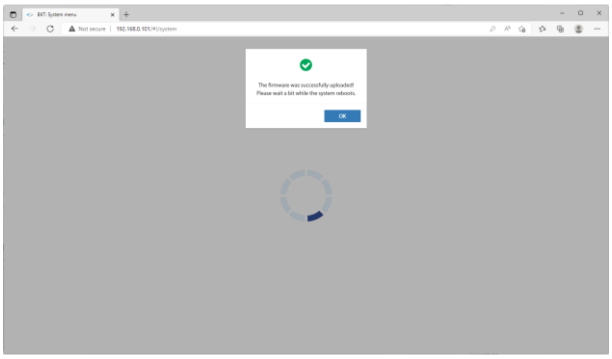
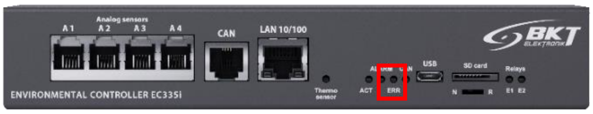
Reset settings to default values: for sensors

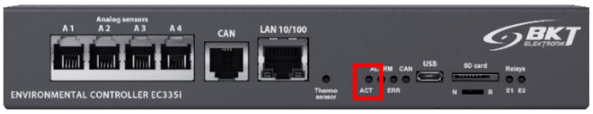
Confirm to restart the device and wait until the restarting process is completed.

5.18.3 Firmware update

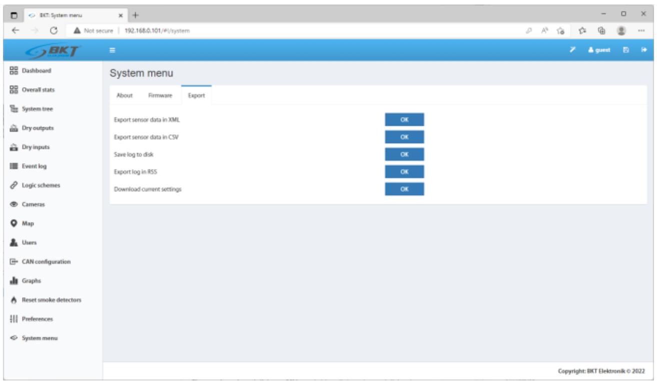
Note:

- A file with a firmware update is available at https://www.bkte.pl.
- Make sure that the device will not be disconnected from the power supply while updating the firmware.
- After the upgrade, the device may need to be manually reconfigured.

1		Back up the current system settings, see chapter *5.18.4 Export data to a file* (*Download current settings*).
2	 System menu Select a file with the firmware or a file with previously saved system settings and upload it to update the system. Do not restart the unit manually and do not turn off the power, give the system time to update, after which the reboot will happen automatically and the changes will take effect. Upload source: from local filesystem Select the firmware file or saved settings file to restore: Open bkt-EC335i-5.0.1-b176.bkt BKT: System menu Not secure | 192.168.0.101/#!/system guest Dashboard Overall stats System tree Dry outputs Dry inputs Event log Logic schemes Cameras Map Users CAN configuration Graphs Reset smoke detectors Preferences System menu About Firmware Export Upload Discard Copyright: BKT Elektronik © 2022	Sometimes the firmware updates consist of two files: • system kernel update, e.g. *firmware-kernel.bkt* • firmware update, e.g. *bkt_EC335i-5.0.1-b176.bkt* In this case, begin the update from the kernel file. From the vertical menu, select Menu system->Firmware and after clicking on Browse, point to the file with the firmware file update, eg *firmware-kernel.bkt*
3	 Are you sure you want to upload new firmware? 	Click the *Upload* button and confirm to upload new firmware.
4	 The firmware was successfully uploaded! Please wait a bit while the system reboots. 	Wait until information on the completed update is displayed and the device is restarted. Confirm.
5	 Analog sensors A1 A2 A3 A4 CAN LAN 10/100 ENVIRONMENTAL CONTROLLER EC335i Thermo sensor ACT ERR USB SD card Relays N R E1 E2 BKT ELEKTRONIK	Then, the automatic firmware update process will start, and the device will be restarted after the update is completed. The firmware replacing process is signaled by the flashing red ERR LED. The whole process can take several minutes. Do not disconnect the power supply at this time. If you are updating remotely and are unable to observe the LED indicator, do not refresh the page for more than a few minutes.

6	 Analog sensors A 1 A 2 A 3 A 4 CAN LAN 10/100 ENVIRONMENTAL CONTROLLER EC335i Thermo sensor ALARM CAN ACT ERR USB SD card Relays N R E1 E2	After a few minutes, when green ACT LED is flashing, refresh the browser using the CTRL + F5 keys. You may also need to clear your browser's Cache by clearing your browsing history.
7		If the update consists of two files, repeat the procedure with the second file (eg. bkt_2.8.2-b177.bkt) from point 3.
8		It is recommended to restore the factory settings before uploading the configuration from the backuped file, see 6.3 Restoring default settings.
9		Restore the previous configuration. Try to use a file with a backup copy of the system settings, see section *5.18.5 Restoring settings from a file* or manually enter reqaired settings.

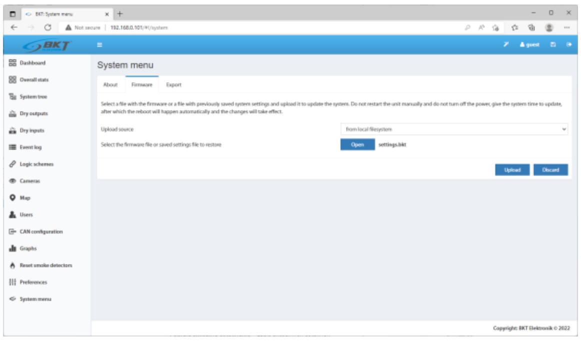
5.18.4 Export data to a file

 BKT: System menu Not secure 192.168.0.101/#!/system guest Dashboard Overall stats System tree Dry outputs Dry inputs Event log Logic schemes Cameras Map Users CAN configuration Graphs Reset smoke detectors Preferences System menu System menu About Firmware Export Export sensor data in XML OK Export sensor data in CSV OK Save log to disk OK Export log in RSS OK Download current settings OK Copyright: BKT Elektronik © 2022	Select *Menu_Systemu→Export* from the vertical menu. **Export sensor data in XML** – save the sensor data to an XML file. The file contains max 400 readings from each sensor: 100 readings (every second) from the last 100 seconds 100 readings (every minute) from the last 100 minutes 100 readings (every hours) from the last 100 hours 100 readings (every day) from the last 100 days **Export sensor data in CSV** – save the sensor data in a CSV file. **Save log to disk** – save system events to a TXT file. **Export log in RSS** – system events in the RSS format. **Download current settings** – save the current device settings to the settings.bkt file.

5.18.5 Restoring settings from a file

The method of saving data to a file is described in 5.18.4 Export data to a file.
NOTE: The current setting will be overwritten by the settings included in the file. The IP address of the device will not be changed.

METHOD 1.

 BKT: System menu Not secure 192.168.0.101/#!/system guest Dashboard Overall stats System tree Dry outputs Dry inputs Event log Logic schemes Cameras Map Users CAN configuration Graphs Reset smoke detectors Preferences System menu System menu About Firmware Export Open Upload Discard Copyright: BKT Elektronik © 2022Select a file with the firmware or a file with previously saved system settings and upload it to update the system. Do not restart the unit manually and do not turn off the power, give the system time to update, after which the reboot will happen automatically and the changes will take effect. Upload source: from local filesystem Select the firmware file or saved settings file to restore: settings.bkt	Select *System menu→Firmware* from the vertical menu, click *Browse* and choose a settings file *settings.bkt* Click the *Upload* button and confirm to upload new firmware. Wait until the information about the file upload appears, then update and restart the device. Refresh the browser using the CTRL+F5 keys. You may also need to clear your browser's Cache by clearing your browsing history.

METHOD 2.

To restore the settings:

1. Copy the settings.bkt file to a USB flash drive (pendrive).
2. Connect the flash drive (pendrive) to the mini-B USB socket of the controller using an attached cable and wait for a while.
3. Start of the setting restoration process is indicated by the ERROR light, whereas successful completion of the same is indicated by the ACT light flashing.
4. Restart is restarting.
5. Remove pendrive
6. The device settings have been restored from the file.

6 QUICK START GUIDE

6.1 Connection

1. Connect the analogue sensors to any A1-A4 socket.
2. Connect the RJ45-RJ45 patchcord to the LAN socket and the other end to the computer.
3. Connect the power adapter to the POWER socket.

6.2 Commissioning

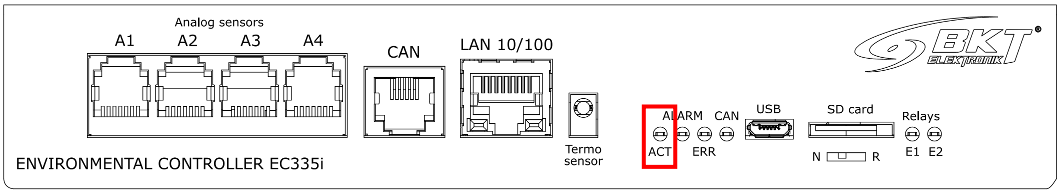
After connecting the power supply, the device starts up for several tens of seconds. The flashing ACT LED on the front panel signals that the Linux system on device is fully booted. Before starting the configuration, make sure that the ACT diode is flashing.
The device may require a restart during configuration, e.g. after saving the network settings. In this case, proceed with the configuration only after the ACT LED lights up.

6.3 Restoring default settings

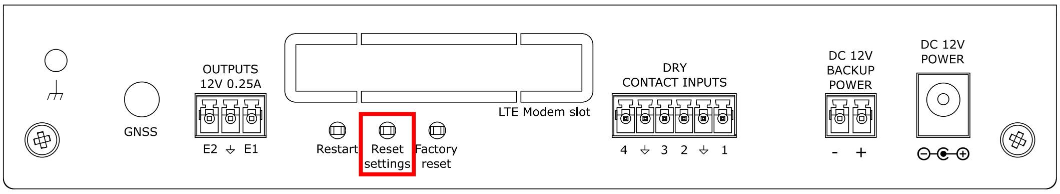
In order to make sure that all settings have default values, it is recommended to reset the default setting before the first start-up.

NOTE: All current settings will be deleted.

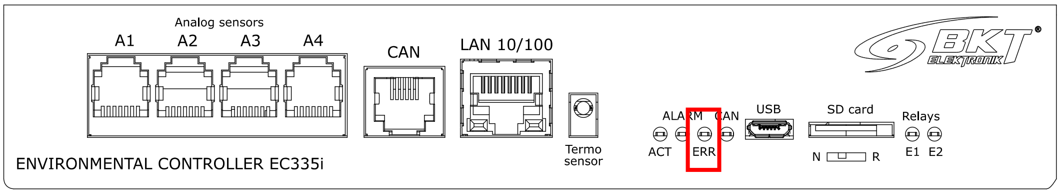
1. Connect the device to the power supply and make sure that the controller has fully started up (the ACT LED is blinking). It may take several tens of seconds to complete the booting.


Analog sensors
A1
A2
A3
A4
CAN
LAN 10/100
Termo sensor
ALARM
CAN
ACT
ERR
USB
SD card
N
R
Relays
E1
E2
ENVIRONMENTAL CONTROLLER EC335i

2. Press and hold for 5 seconds the *Reset settings* button at the back of the controller.


GNSS
OUTPUTS 12V 0.25A
E2
E1
Restart
Reset settings
Factory reset
LTE Modem slot
DRY CONTACT INPUTS
4
3
2
1
DC 12V BACKUP POWER
-
+
DC 12V POWER

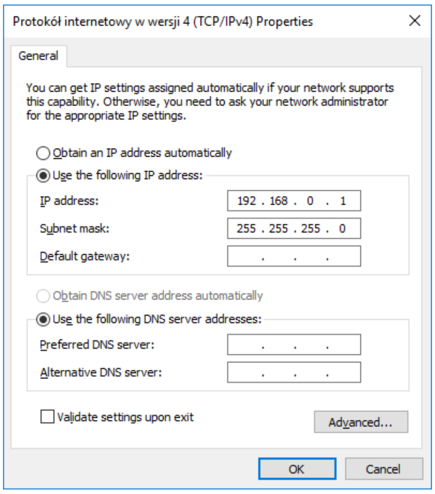
3. The ERROR LED should light up indicating the restore procedure.


Analog sensors
A1
A2
A3
A4
CAN
LAN 10/100
Termo sensor
ALARM
CAN
ACT
ERR
USB
SD card
N
R
Relays
E1
E2
ENVIRONMENTAL CONTROLLER EC335i

4. When all the LEDs are off, wait for the device to restart.
5. The default settings have been restored. Start configuring the device when the ACT LED starts blinking.

Default settings	
IP address	192.168.0.101
Network mask	255.255.255.0
Network gate	192.168.0.1
DNS server	192.168.0.1
DHCP client	Disabled
Passwords	User: guest; password: guest

6.4 Initial configuration



Protokół internetowy w wersji 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

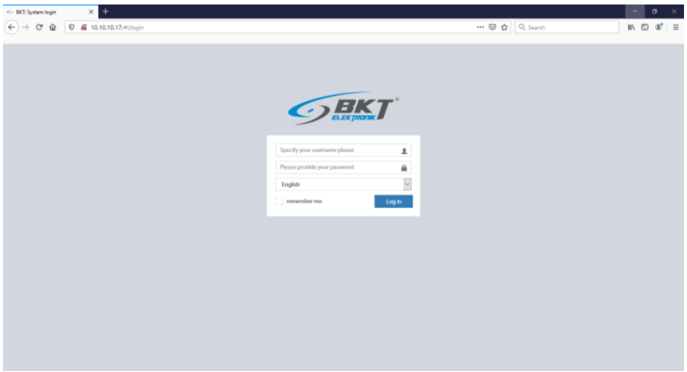
○ Obtain an IP address automatically
● Use the following IP address:
IP address: 192 . 168 . 0 . 1
Subnet mask: 255 . 255 . 255 . 0
Default gateway: . . .

○ Obtain DNS server address automatically
● Use the following DNS server addresses:
Preferred DNS server: . . .
Alternative DNS server: . . .

☐ Validate settings upon exit

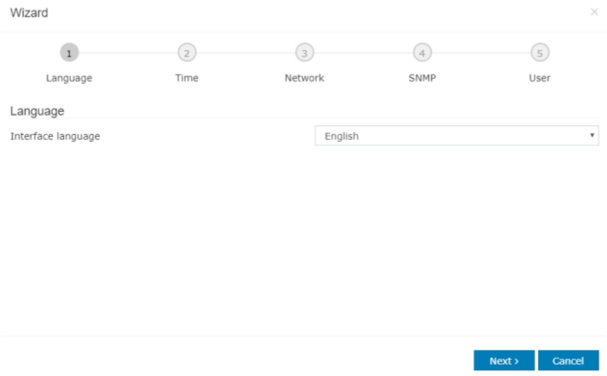
Advanced...
OK
Cancel

Configure the computer network card for operation in the same network as EC335i. For example, you can use settings as shown in the figure.



BKT: System login
10.10.10.17/#!/login
Search
Specify your username please
Please provide your password
English
remember me
Log in

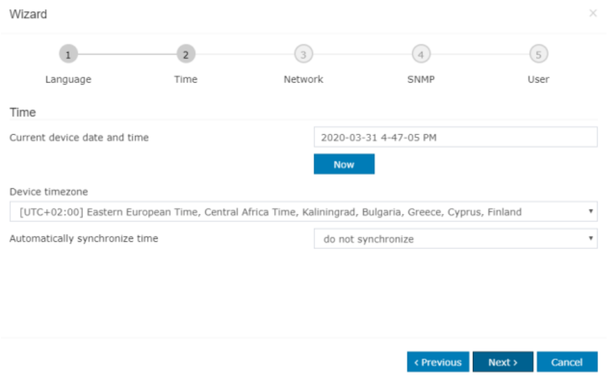
Run the browser and enter http://192.168.0.101 in the address bar.
Enter the following in the login window:
user: guest
password: guest.
Use the displayed wizard for initial configuration.



Wizard
1 Language
2 Time
3 Network
4 SNMP
5 User
Next ›
Cancel

Language
Interface language: English

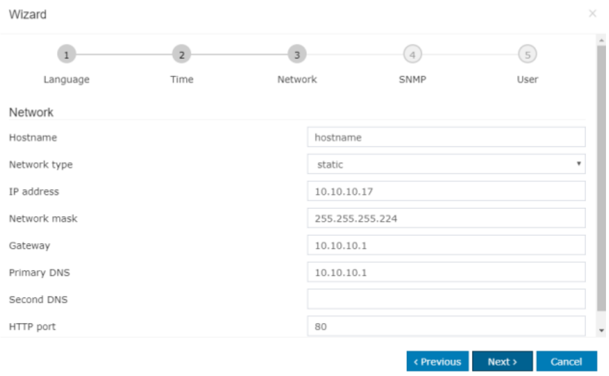
Choose the interface language.



Wizard
1 Language
2 Time
3 Network
4 SNMP
5 User
Now
‹ Previous
Next ›
Cancel

Time
Current device date and time: 2020-03-31 4-47-05 PM
Device timezone: [UTC+02:00] Eastern European Time, Central Africa Time, Kalinigrad, Bulgaria, Greece, Cyprus, Finland
Automatically synchronize time: do not synchronize

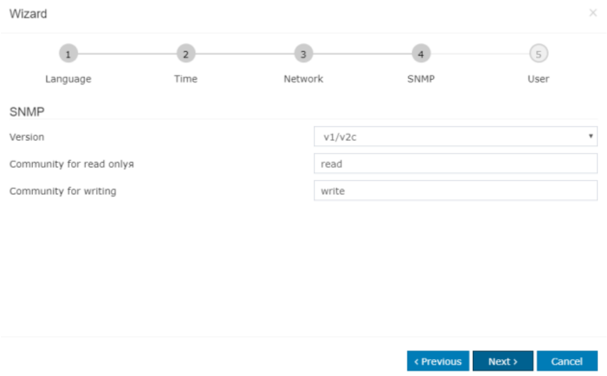
Set the date and time.



Wizard
1 Language
2 Time
3 Network
4 SNMP
5 User
‹ Previous
Next ›
Cancel

Network
Hostname: hostname
Network type: static
IP address: 10.10.10.17
Network mask: 255.255.255.224
Gateway: 10.10.10.1
Primary DNS: 10.10.10.1
Second DNS:
HTTP port: 80

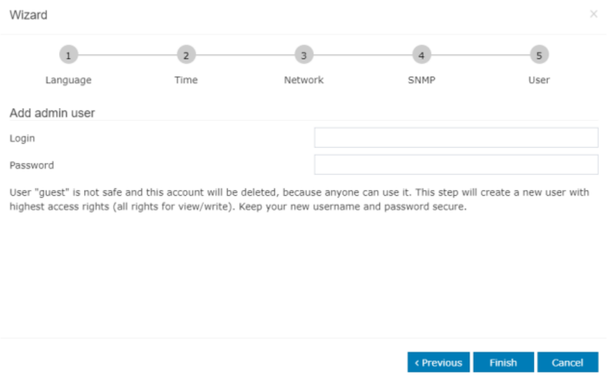
If necessary, change the network settings.



Wizard
1 Language
2 Time
3 Network
4 SNMP
5 User
‹ Previous
Next ›
Cancel

SNMP
Version: v1/v2c
Community for read onlya: read
Community for writing: write

If necessary, change the SNMP protocol communication settings.


Wizard
×
1 Language
2 Time
3 Network
4 SNMP
5 User
‹ Previous
Finish
Cancel

Add admin user

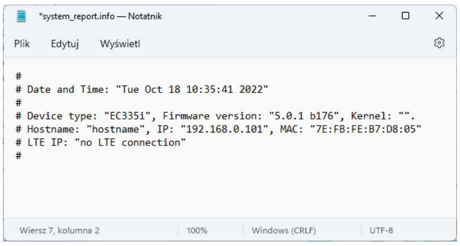
Login

Password

User "guest" is not safe and this account will be deleted, because anyone can use it. This step will create a new user with highest access rights (all rights for view/write). Keep your new username and password secure.

Create a new user. Click *Finish* and wait until the configuration is saved and controller rebooted.

6.5 Identification of the controller IP address

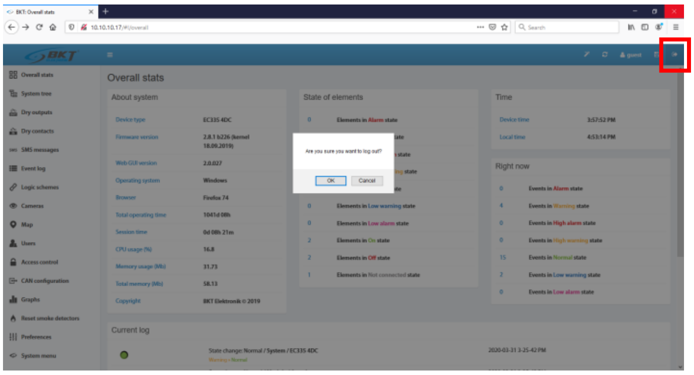

*system_report.info — Notatnik
Plik
Edytuj
Wyświetl
Wiersz 7, kolumna 2
100%
Windows (CRLF)
UTF-8

```
#
# Date and Time: "Tue Oct 18 10:35:41 2022"
#
# Device type: "EC335i", Firmware version: "5.0.1 b176", Kernel: "".
# Hostname: "hostname", IP: "192.168.0.101", MAC: "7E:FB:FE:B7:D8:05"
# LTE IP: "no LTE connection"
#
```

It is possible to check the current IP address of the controller, if it has been forgotten.

Connect the FAT32 formatted USB flash drive to the powered controller using the attached cable "mini USB B plug - USB A socket". Wait until the ERROR LED flashes once. Disconnect the flash drive and read its contents. There should be a file *system_report.info* containing the data as in the picture on the right.

6.6 User Logging out


BKT: Overall stats
10.10.10.17/#!/overall
Search
BKT
guest
Overall stats
System tree
Dry outputs
Dry contacts
SMS messages
Event log
Logic schemes
Cameras
Map
Users
Access control
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
About system
State of elements
Time
Right now
Current log
OK
Cancel

Overall stats

Device type EC335 4DC
Firmware version 2.8.1 b226 (kernel 18.09.2019)
Web GUI version 2.0.027
Operating system Windows
Browser Firefox 74
Total operating time 1041d 08h
Session time 0d 08h 21m
CPU usage (%) 16.8
Memory usage (Mb) 31.73
Total memory (Mb) 58.13
Copyright BKT Elektronik © 2019

0 Elements in Alarm state
0 Elements in Low warning state
0 Elements in Low alarm state
2 Elements in On state
2 Elements in Off state
1 Elements in Not connected state

Device time 3:57:52 PM
Local time 4:53:14 PM

0 Events in Alarm state
4 Events in Warning state
0 Events in High alarm state
0 Events in High warning state
15 Events in Normal state
2 Events in Low warning state
0 Events in Low alarm state

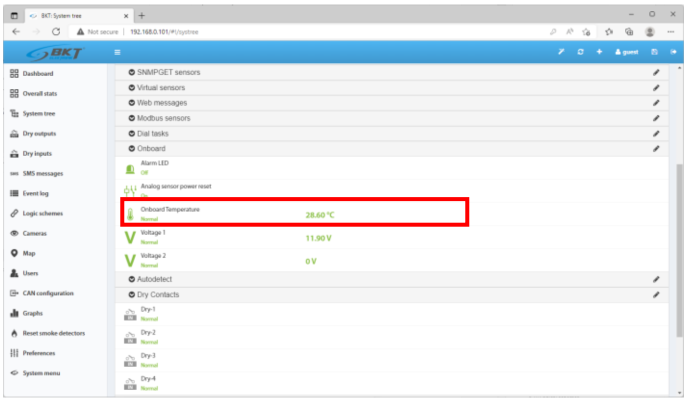
Are you sure you want to log out?

State change: Normal / System / EC335 4DC
Warning › Normal
2020-03-31 3-25-42 PM

You can log out when you click on the *Logout* button from horizontal menu.

6.7 Configuration of sensor status email notifications

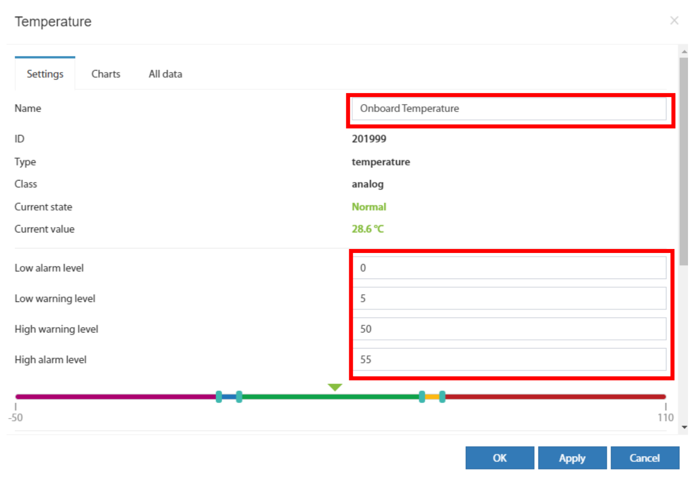
The following procedure allows you to quickly configure email notifications about changes in the status of sensors installed in the system.


BKT: System tree
Not secure
192.168.0.101/#!/systree
BKT
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
SNMPGET sensors
Virtual sensors
Web messages
Modbus sensors
Dial tasks
Onboard
Autodetect
Dry Contacts

Alarm LED Off
Analog sensor power reset On
Onboard Temperature Normal 28.60 °C
Voltage 1 Normal 11.90 V
Voltage 2 Normal 0 V
Dry-1 Normal
Dry-2 Normal
Dry-3 Normal
Dry-4 Normal

Select *System tree* in the vertical menu.

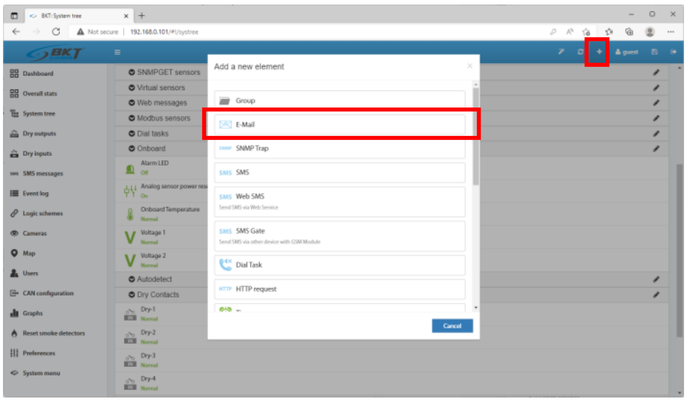
Click on individual sensors visible in the system that require renaming or adjusting the default assigned alarm thresholds.


Temperature
Settings
Charts
All data
-50
110
OK
Apply
Cancel

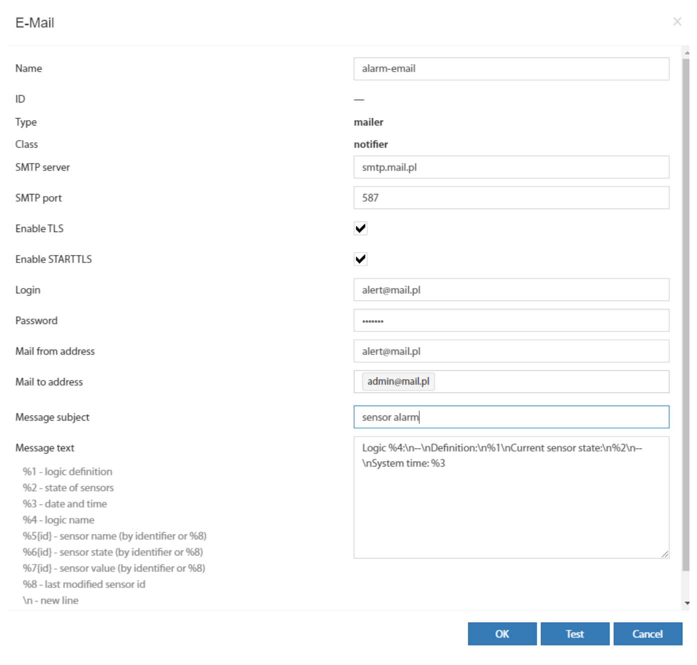
Name	Onboard Temperature
ID	201999
Type	temperature
Class	analog
Current state	Normal
Current value	28.6 °C
Low alarm level	0
Low warning level	5
High warning level	50
High alarm level	55

Enter corrections to the names of sensors and alarm thresholds. Confirm the changes.

For more information, see section *5.6.1 Setting the sensor parameters*.


Add a new element
Group
E-Mail
SNMP Trap
SMS
Web SMS
Send SMS via Web Service
SMS Gate
Send SMS via other device with GSM Module
Dial Task
HTTP request
Cancel
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu

Add email notification.


E-Mail
OK
Test
Cancel

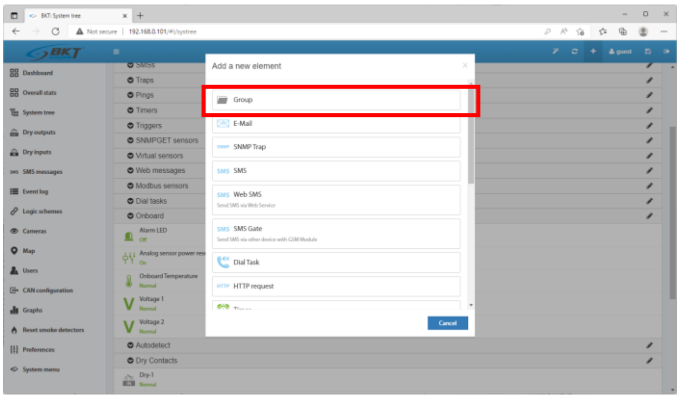
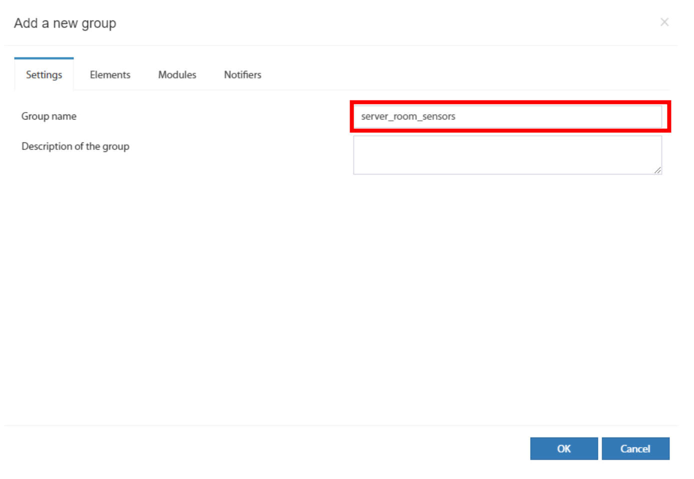
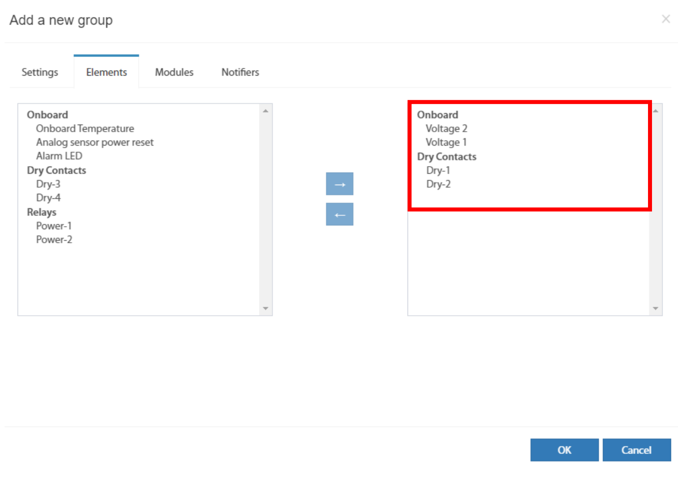
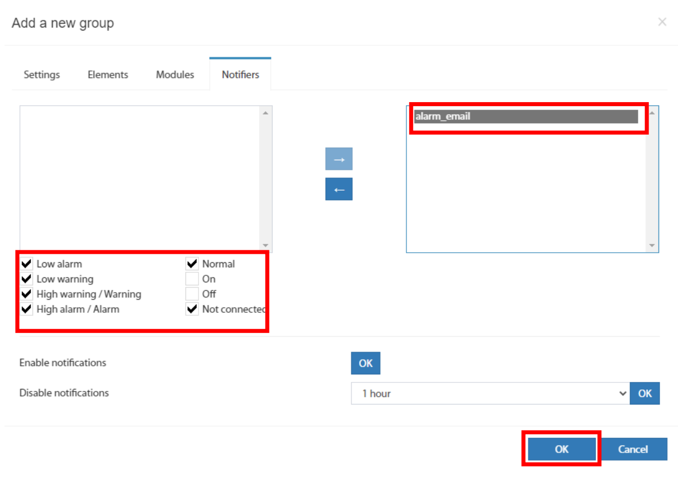
Name	alarm-email
ID	—
Type	mailer
Class	notifier
SMTP server	smtp.mail.pl
SMTP port	587
Enable TLS	☑
Enable STARTTLS	☑
Login	alert@mail.pl
Password	••••••
Mail from address	alert@mail.pl
Mail to address	admin@mail.pl
Message subject	sensor alarm
Message text	Logic %4:\n--\nDefinition:\n%1\nCurrent sensor state:\n%2\n--\nSystem time: %3

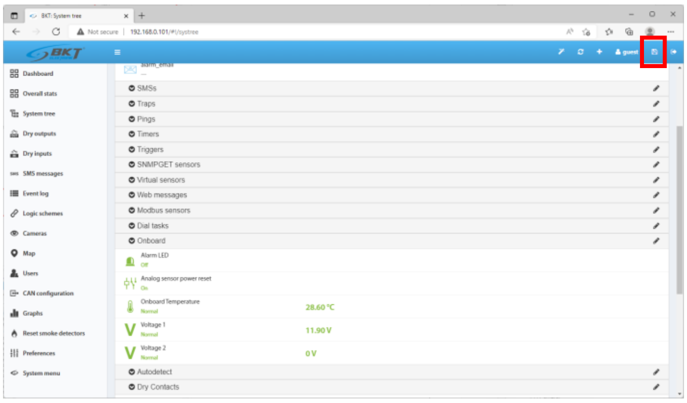
%1 - logic definition
%2 - state of sensors
%3 - date and time
%4 - logic name
%5{id} - sensor name (by identifier or %8)
%6{id} - sensor state (by identifier or %8)
%7{id} - sensor value (by identifier or %8)
%8 - last modified sensor id
\n - new line

Configure the email notification. Enter the details of the email account from which the messages will be sent. Enter the subject of the message and recipients (up to 10 in one notification). The text of the message does not need to be changed, it can remain the default.

Confirm the changes.

For more information, see *5.6.3 Adding an email notification*.

 Add a new element Group E-Mail SNMP Trap SMS Web SMS SMS Gate Dial Task HTTP request Cancel	Add group of elements. For more information, see *5.6.2 Adding a new group*.
 Add a new group Settings Elements Modules Notifiers OK CancelGroup name: server_room_sensors Description of the group:	In the Settings tab, name the group of elements. This name will appear in the email notification.
 Add a new group Settings Elements Modules Notifiers → ← OK Cancel**Onboard** Onboard Temperature Analog sensor power reset Alarm LED **Dry Contacts** Dry-3 Dry-4 **Relays** Power-1 Power-2 **Onboard** Voltage 2 Voltage 1 **Dry Contacts** Dry-1 Dry-2	In the Elements tab, move all sensors that are to send notifications to the right pane.
 Add a new group Settings Elements Modules Notifiers → ← OK Cancelalarm_email ☑ Low alarm ☑ Normal ☑ Low warning ☐ On ☑ High warning / Warning ☐ Off ☑ High alarm / Alarm ☑ Not connected Enable notifications OK Disable notifications 1 hour OK	From the Notifications tab, move the previously configured email notification to the right window. Check the types of sensor status changes you want to be informed about. Confirm the changes.


BKT: System tree
Not secure | 192.168.0.101/#/systree
guest
Dashboard
Overall stats
System tree
Dry outputs
Dry inputs
SMS messages
Event log
Logic schemes
Cameras
Map
Users
CAN configuration
Graphs
Reset smoke detectors
Preferences
System menu
alarm_email
SMSs
Traps
Pings
Timers
Triggers
SNMPGET sensors
Virtual sensors
Web messages
Modbus sensors
Dial tasks
Onboard
Alarm LED
Off
Analog sensor power reset
On
Onboard Temperature
Normal
28.60 °C
Voltage 1
Normal
11.90 V
Voltage 2
Normal
0 V
Autodetect
Dry Contacts

Save changes to non-volatile memory.

Notifications of changes to the selected sensors have been configured.

7 DOCUMENT REVISIONS

Version	Changes	Date
1	Initial version	May 2017
2	Updated with hardware modifications	January 2018
3	System structure section. General update	June 2018
4	EC335 controller in a new housing. Hardware part has been extended - assembly and connection of devices	February 2019
5	The device configuration description has been extended	May 2019
6	Updated with new software functionalities 2.8.2b177	September 2020
7	New controller version EC335i	October 2022
8	Corrected power backup information	March 2023
9	New version of the extension module - EE321t	September 2023