

Product Information

BKT EMS - Environmental Monitoring System

Sheet No. PI_BKT-EMS_01.21

Product description

The BKT EMS (environmental monitoring system) is used to monitor parameters (such as temperature, humidity, etc.) in the IT cabinet and in small IT facilities. It is designed to warn a user about possible danger and to alert of failures occurred. The EC335 controller allows a user to connect up to 28 analogue sensors (using 3 additional EE321 modules), up to 68 sensors with voltage-free contacts (using 2 additional EE322 modules), up to 4 1-wire sensors (using 1 additional EE323 module) and two signalling devices. In order to keep a satisfactory system performance, it is not recommended to connect more than 40 sensors to the controller.



Technical Specification of EC335 controller

Hardware

Analogue Inputs	4 inputs A1-A4 (RJ12 sockets) for dedicated analogue sensors. Any combination of 4 sensors can be connected to the device. Some sensors can be connected in a chain. The type of the connected sensor is detected automatically.
Voltage-free Inputs	4 inputs IN1-IN4 (releasable terminal block) for any sensors with voltage-free contacts.
Outputs	2 outputs E1-E2 (releasable terminal block) with voltage 12V/250mA
CAN port	1 connector (RJ12 socket) for max 8 CAN devices ex. optional extension modules or CAN sensors.
Other ports	<ul style="list-style-type: none"> Ethernet port 10/100Mbps (RJ45 socket) Port USB 2.0 (Mini-B socket)
Others	Optional GSM card
Power Supply	External power supply 12V/1A, power consumption ≤10W
Dimensions	206x80x33 (W x D x H) - controller 482x80x44 (W x D x H) - with 1U 19" bracket
Operating Conditions	<ul style="list-style-type: none"> Temperature: 0°C - 60°C Humidity: 0% - 90% RH (without condensation)
Weight	1200g
Index	122EC003352



Software

Operating System	Linux
Configuration interface	Web
Protocols that are used	HTTP, HTTPS, PING, DHCP, RADIUS, SYSLOG, FTP, SNTIP, SMTP, SNMP (v1,v2,v3)
Alarm Notifications	E-mail, SNMP trap, internet SMS gateway, SMS (optional with EA317 GSM modem)
Functionality	Please see the tables below

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Functionality

MONITORING



Temperature



Humidity



Smoke



Flood



Vibration



Motion



Door opening



Status of free-voltage contacts of other systems



AC and DC voltage



Presence of other devices on the network using PING protocol



Parameters of other devices on the network using SNMP protocol

NOTIFICATION



Alarm via email.



Alarm via text message (sms).



Alarm via SNMP Trap message.

CONTROL



2 12V/250mA outputs to connect an optical or a sound alarm device or to control external devices via relay.

OTHER



WEB interface for system configuration and monitoring.



Users with different access rights.



Archiving data on USB flash drive connected to the controller's USB port.



Expansion modules to increase the number of available ports and extend the functionality of the system.



Programmable logic functions that enable linking the values read from the sensors to the device outputs and generating dedicated events.



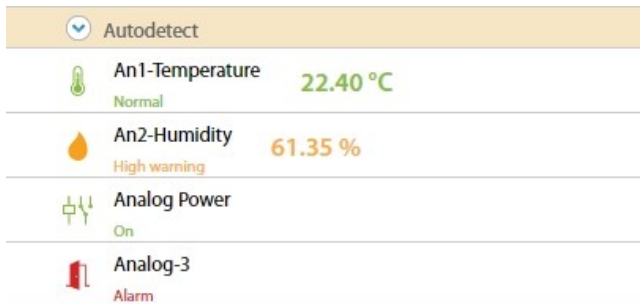
Programmable time functions to limit the generation of events to the specific time ranges.

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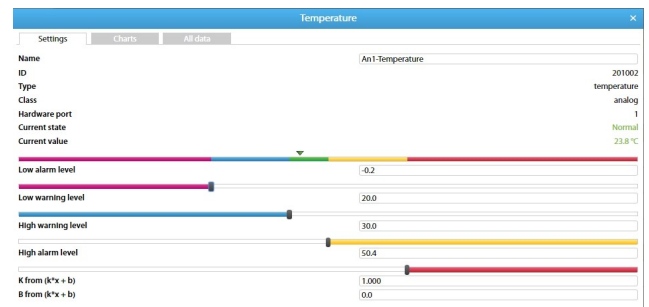
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Functionality



Automatic detection of presence and type of analogue sensor.



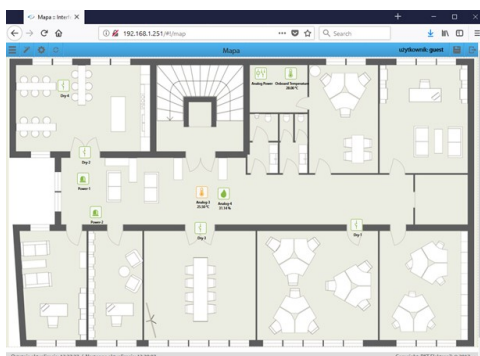
4 alarm thresholds for the sensor, two lower and two upper, the exceeding of which can generate alarms. Possibility to set hysteresis.



Configuring logical dependencies between inputs (sensors), outputs and generated alarms



Displaying a limited (100s, 100min, 100h, 100days) log of sensor measurements on graph.



Visualization of sensor states on site layout from the device's web interface



The ability to visualize device statuses with external software, such as BKT SM4DC, using SNMP protocol.

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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 EE321 extension modules (extension module with additional 8 analogue inputs). One controller can support up to 28 analogue sensors, when connecting 3 additional EE321 modules. If longer than included cable is needed, it is a UTP Cat5e suggested.





Type	Description	Index
	ES350 - Temperature sensor Measurement range: -10°C - +100°C Dimensions: 60x18x18 Maximum cable length: 100m (2m included)	122ES003500
	ES351 - Humidity sensor Measurement range: 0% -100% RH (±5% uncertainty for RH 10% - 95% RH) Dimensions: 60x18x18 Maximum cable length: 50m (2m included)	122ES003510
	ES352 - AC Voltage monitor Measurement range: 90VAC - 250VAC Dimensions: 63x66x30 Maximum cable length: 100m (2m included)	122ES003520
	ES353 - Door sensor (reed + magnet) Possibility to connect up to 10 sensors in a daisy chain Dimensions: 60x18x18 Maximum cable length: 150m (2m included)	122ES003530
	ES354 - Vibration sensor Possibility to connect up to 10 sensors in a daisy chain Dimensions: 60x18x18 Maximum cable length: 150m (2m included)	122ES003540
	ES356 - Optical smoke sensor Possibility to connect up to 10 sensors in a daisy chain Dimensions: φ100x45 Maximum cable length: 150m (2m included)	122ES003560
	ES357 - PIR passive infrared detector Movement detection range: 100° x 12m Dimensions: 105x57x40 Maximum cable length: 50m (2m included)	122ES003570
	ES358 - Outdoor temperature sensor Measurement range: -40°C - +100°C Dimensions: φ7x30 + 15m cable Maximum cable length: 100m (15m included)	122ES003580
	ES359 - Leak sensor Detection delay: 1s Dimensions: 60x18x18 Maximum cable length: 100m (2m included)	122ES003590

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Analogue sensors continuation

Type	Description	Index
	ES360 - Leak sensor for water sensitive cable Requires water sensitive cable ES361 Dimensions: 60x18x18 Maximum cable length: 100m (2m included)	122ES003600
	ES361 - Water sensitive cable Requires ES360 sensor Dimensions: 60x18x18 Available lengths: 6m, 10m, 17m, 25m, 50m	122ES003610
	ES362 - 4-20mA sensor It enables to connect any 4-20mA sensors to the EC335 controller. It has 1kV galvanic isolation between the input and the output. Dimensions: 60x18x18 Maximum cable length: 50m (2m included)	122ES003620
	ES363 - DC voltage monitor 0-75VDC It has 1kV galvanic isolation between the input and the output. Measurement range: 0VDC - 75VDC Dimensions: 60x18x18 Maximum cable length: 50m (2m included)	122ES003630

1-wire digital sensors

The 1-wire sensors can be connected to the controller only via an additional EE323 extension module (1-wire module). The 1-wire is a serial bus and allows connecting 4 sensors. The length of the 1-wire bus should not exceed 100m. It is a UTP Cat5e suggested as a 1-wire bus cable.

Type	Description	Index
	ES367 - 1-wire temperature sensor -50...+105°C with 2m wire, RJ14 plug Measurement range: -50...+105°C Dimensions: ϕ 7x30 + 2m cable Maximum cable length: 100m (2m included)	122ES003670
	1-wire 2 way splitter 1x plug RJ9(4P4C)-2x socket RJ14(6P4C)	122EA003032
	1-wire 4 way splitter 1x plug RJ9(4P4C)-4x socket RJ14(6P4C)	122EA003034


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CAN digital sensors

These sensors are connected to the CAN interface of the EC335 controller. The CAN interface is a serial bus and allows connecting devices in a daisy chain (from device to device). A maximum of 8 ES340 sensors 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	Indeks
	<p>ES340 - Integrated smoke, humidity 0% -100% RH ($\pm 3\%$ uncertainty for RH 10% - 95% RH), temperature -10...+85°C sensors; CAN bus.</p> <p>Possibility to connect up to 8 devices in a daisy chain. The sensor has 2 CAN ports for daisy chain connecting.</p> <p>Dimensions: $\phi 100 \times 45$</p> <p>Maximum cable length: 200m (2m included)</p>	122ES003400

Extension modules

Extension modules increase the number of available ports for sensors connected to one controller. The EE321 and EE322 modules must be connected to the CAN interface of the EC335 controller. The CAN interface is a serial bus and allows connecting in a daisy chain (from device to device). A maximum of 8 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. The EE323 module is to be mounted inside the controller. This module provides a 1-wire bus for up to 4 1-wire sensors. The length of the 1-wire bus should not exceed 100m. It is a UTP Cat5e suggested as a 1-wire bus cable.







Type	Description	Indeks
	<p>EE321 – extension module of 8 analogue inputs (RJ12)</p> <p>The module must be connected to the controller CAN port. There are 2 CAN ports (RJ12) for daisy chain connecting. The controller can support up to 24 additional analogue sensors (3 EE321 units). There are no 19" brackets for this module. The power supply is included.</p> <p>Dimensions: 110x68x40</p> <p>Maximum cable length of CAN bus: 200m</p>	122EE003210
	<p>EE322 – extension module of 32 dry contact inputs</p> <p>The module must be connected to the controller CAN port. There are 2 CAN ports (RJ12) for daisy chain connecting. The controller can support up to 64 additional dry contact inputs (2 EE322 units). There are 19" brackets included.</p> <p>Dimensions: 215x40x40</p> <p>Maximum cable length of CAN bus: 200m</p>	122EE003220
	<p>EE323 – 1-wire extension module</p> <p>The module is to be mounted inside the controller. It has RJ9 (4P4C) connector for 1-wire sensors. The module is supplied with a connection cable.</p> <p>Dimensions: 44x23x15</p>	122EE003230
	<p>EE324 – moduł Modbus RTU</p> <p>The module is to be mounted inside the controller. It has 3 pin terminal block for modbus sensors. The module is supplied with a connection cable.</p> <p>Dimensions: 44x23x13</p>	122EE003240

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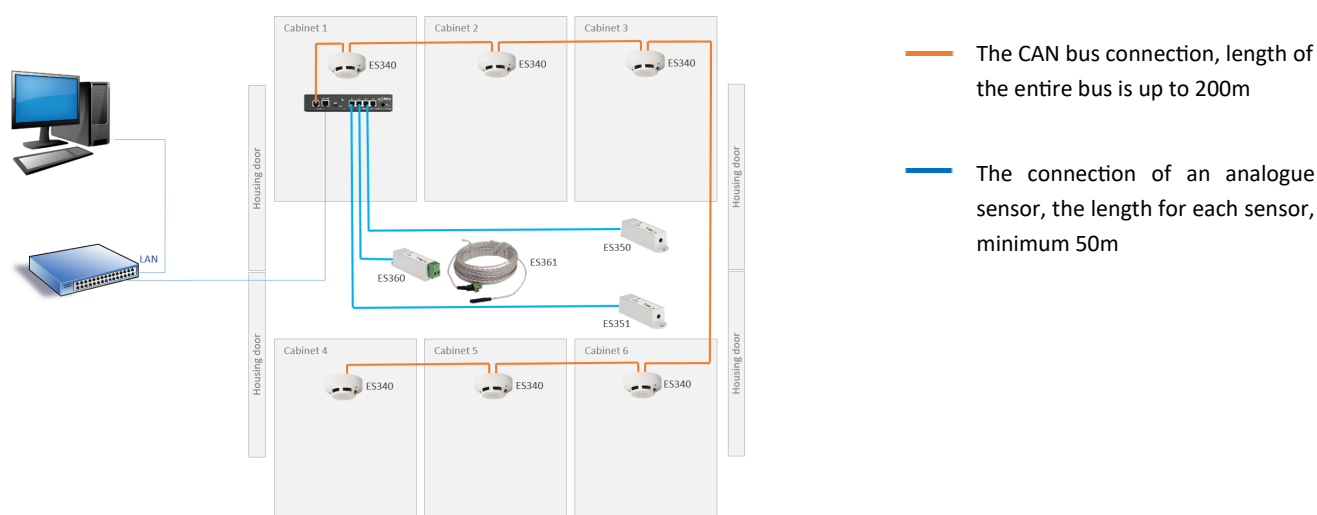
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Accessories

Type	Description	Index
	EA313 - 30VDC/5A relay Dimensions: 60x18x18	122EA003130
	EA314 - 1U 19" bracket for EC335 (version 122EC003352) Dimensions: 482x44x80	122EA003140
	EA315 - Light signal 12v/80mA Dimensions: ϕ 73x45	122EA003150
	EA316 - 19" 1U bracket for 3xEE321 Dimensions: 482x44x80	122EA003160
	EA317 - GSM modem for EC335 for SMS (text message) communication. The module is to be mounted inside the controller. SMA connector for antenna. Works in 850/900/1800/1900 MHz GSM networks. Dimensions: 60x50x15	122EA003170
	EA318 - 125kHz card reader with 1-wire interface. The module requires EE323 extension module (1-wire extension module). Dimensions: 82x82x22	122EA003180

System structure

Example of an environmental conditions monitoring system in 6 IT cabinets: temperature (ES350) and humidity (ES351) in the aisle, temperature, humidity and presence of smoke in cabinets (ES340). A flood detection sensor was placed under the raised floor (ES360 + ES361).

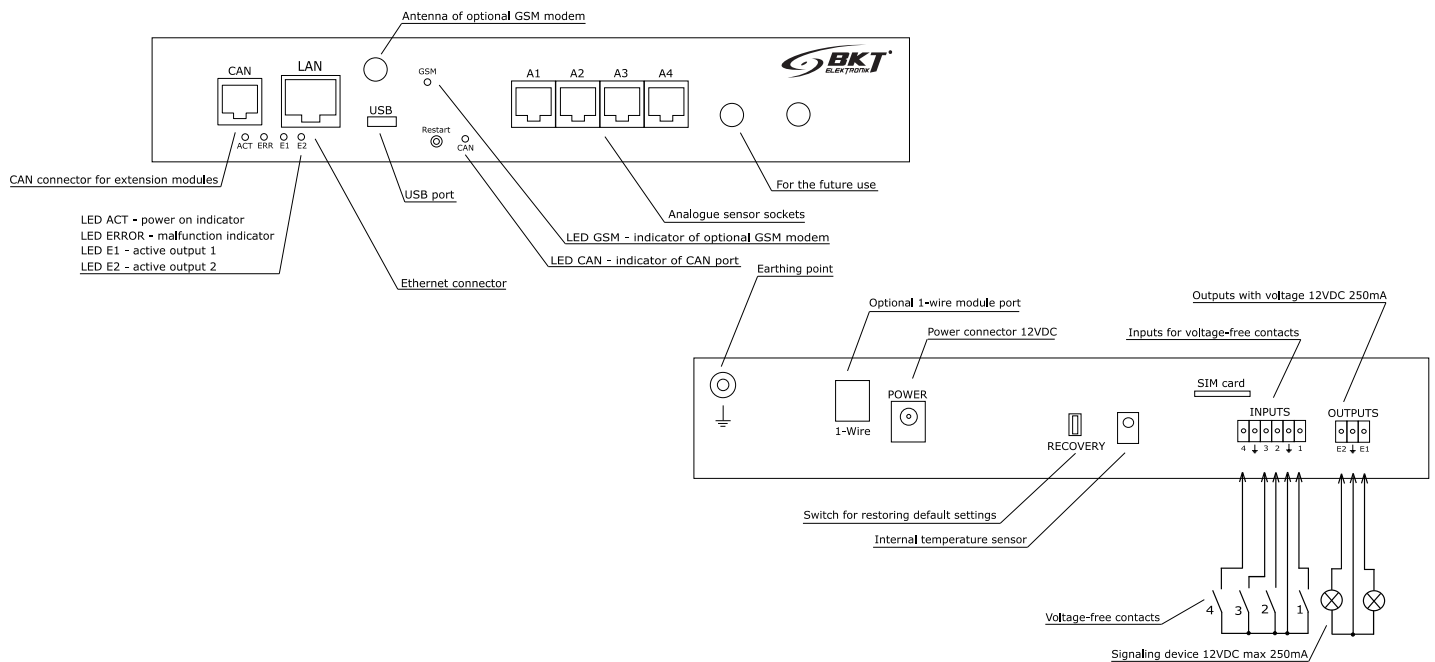


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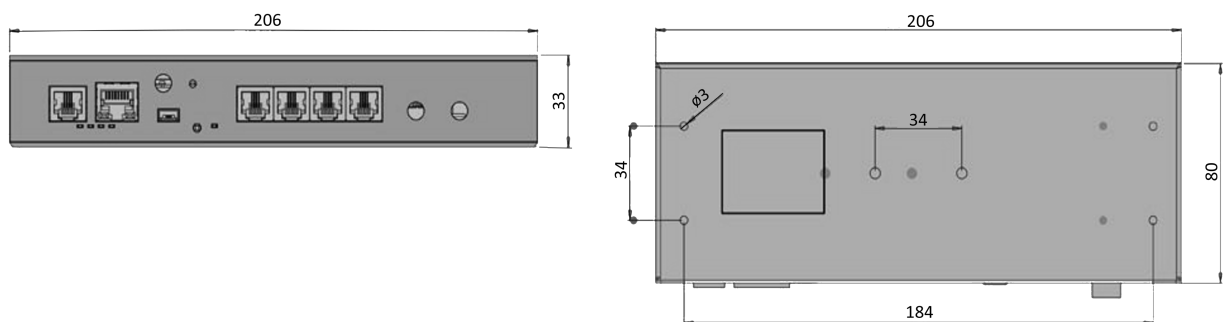
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Device connectors



Dimensions



Factory settings

Default Factory Settings

IP Address	192.168.0.193
Subnet Mask	255.255.255.0
Gateway	192.168.0.1
DNS	192.168.0.1
DHCP	Turned off
Credentials	User: guest; Password: guest