

COMPREHENSIVE LEAK DETECTION SYSTEM



RATMON



www.ratmon.com

Product		District		System		Function		Pipe		Working modes		Page
		Heating	Cooling	Impulse	Resistance	Detection	Location	Steel	Plastic/Pex	Remote	Portable	
	RAT-2	X		X	X	X		X		X		2
	RAT-2b	X			X	X	X	X		X		4
	RAT-Combo	X	X	X		X	X	X	X	X		6
	ILA 1.0	X	X	X		X	X	X	X	X		8
	MEGALOC-1/1b	X	X	X	X	X	X	X			X	10
	SMARTLOC-1	X	X	X	X	X	X	X			X	12
	SMARTBOX-1	X	X	X			X	X	X		X	14
	SAM-1	X	X	X	X	X				X		15
	MSC-1 sensor cable	X	X	X		X	X	X	X			18

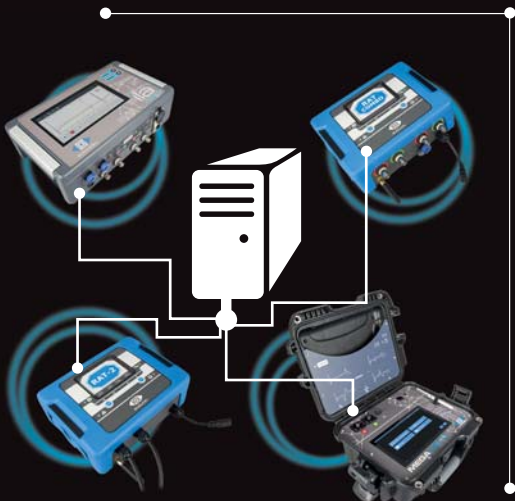


www.RATMON.com

RATMON

Remote monitoring.

RATMON is the leak detection system, that carries out 24/7 remote supervision over pre-insulated pipe network. Installed detectors send automatically to the server all measuring data, thanks to which the operator is kept informed about the state of the network and about the possible occurrence of an alarm. The operator has access to the system from any place with internet access. In the event of detecting the leak system sends automatically alarm notification to network supervisor.



SYSTEM DETAILS:

- Automated data transfer from detector to the server
- Full data analysis for selected pipe loop
- Automated analysis of TDR curve
- Alarm notifications by SMS, e-mail
- Configuration of alarm thresholds and notifications
- Data visualisation by chart or table
- History of measurements
- Drawing of pipe loops on the google.maps
- Printing of documentation and reports
- Inventory of network elements
- Access to the system from any place
- Access to the system regardless the operating system
- Monitoring and configuration of detectors



RAT-2



RAT-2

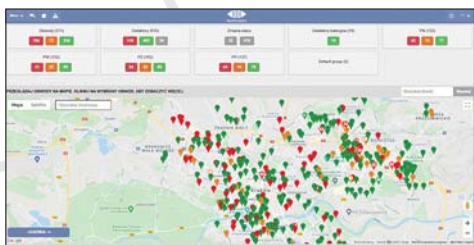
Leak detector for remote monitoring of district heating network.

Leak detection by insulation and loop resistance measurements.

General information:	Leak detection in impulse and resistance networks	
Application:	District heating	
Technical specification:	Type of measurement	Specification
Main functions:	Insulation resistance	0 - 200 MΩ
	Loop resistance	0 - 100 kΩ
	Galvanic voltage	0 - 2000 mV
	Continuous loop control	Triggering of detector by breaking of loop
	Control of connection to the pipe	Resistance measurement between supply and return pipe
Insulation resistance measurement:	Test range	0 - 200 MΩ
	Test voltage	24 V
	Test current	max. 100 mA
	Accuracy up to 1 MΩ	+/- (2% of m. + 8 digits)
	Accuracy over 1 MΩ	+/- (5% of m. + 8 digits)
	<i>Measurement in both polarities</i>	
Loop resistance measurement:	Test range	0 - 100 kΩ
	Test voltage	24 V
	Test current	max. 100 mA
	Accuracy	+/- (2% of m. + 8 digits)
	<i>Measurement in both polarities</i>	

Galvanic voltage:	Test range Accuracy	0 - 2000 mV +/- 5%
Communication:	2g/CAT-M/NB-IoT/LAN/MODBUS (RS485)/MODBUS TCP/IP (LAN)/RELAY	
Number of channels:	2 or 4	
Power supply:	12 V DC / 120 - 240 V AC	
Housing:	IP65	
Dimensions:	200 x 150 x 75 mm	
Weight:	0,64 kg	

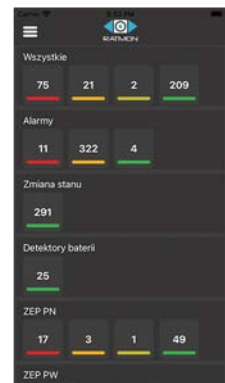
Software:



RATMON - web application for remote data acquisition and analysis of test results as well as configuration and operation of detectors.



RATMON MOBILE - Android and iOS application for reviewing of pipe loops state.



RATMANAGER - PC software for configuration and operation of detectors.

Scope of delivery:

- RAT-2 device with DIN mounting bracket
- 12 V AC/DC power adapter
- GSM antenna (for devices with GSM module)

Optional accessories:

- DESCRIPTION
- Battery module
- External GSM antenna
- Basic connection box, two loops
- Constant impedance connection box, one loop
- Five-core wire connection box, two loops
- BNC/UHF connection box, two loops
- Hermetic power adapter
- Grounding bracket
- External cabinet with NEMA certificate

INDEX

- BAT-1
- ANT-1
- BOX-1
- BOX-3
- BOX-4
- BOX-5
- ZH-1
- GND-1
- SK-1



RAT-2b



RAT-2b
 leak detector for remote monitoring
 of district heating network.
 Leak detection and location in resistance network.

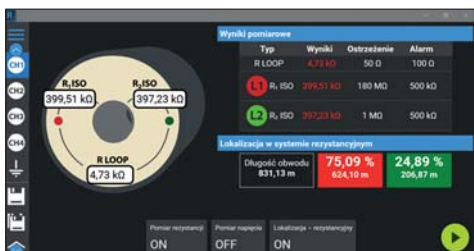
General information:	Leak detection and location in resistance network	
Application:	District heating	
Technical specification:	Type of measurement	Specification
Main functions:	Insulation resistance	0 - 200 MΩ
	Loop resistance	0 - 100 kΩ
	Galvanic voltage	0 - 2000 mV
	Continuous loop control	Triggering of detector by breaking of loop
	Control of connection to the pipe	Resistance measurement between supply and return pipe
Insulation resistance measurement:	Test range	0 - 200 MΩ
	Test voltage	24 V
	Test current	max. 100 mA
	Accuracy up to 1 MΩ	+/- (2% of m. + 8 digits)
	Accuracy over MΩ	+/- (5% of m. + 8 digits)
	Measurement in both polarities	
Loop resistance measurement:	Test range	0 - 100 kΩ
	Test voltage	24 V
	Test current	max. 100 mA
	Accuracy	+/- (2% of m. + 8 digits)
	Measurement in both polarities	

Galvanic voltage:	Test range Accuracy	0 - 2000 mV +/- 5%
Leak location in resistance pipe network:	Accuracy Location threshold <i>Test results displayed in RATMON system</i> <i>Test results displayed in % or meters</i>	+/- 2 m +/- 0,2% of measured length < 2 MΩ
Communication:	2g/CAT-M/NB-IoT/LAN/MODBUS (RS485)/MODBUS TCP/IP (LAN)/RELAY	
Number of channels:	2 or 4	
Power supply:	12 V DC / 120 - 240 V AC	
Housing:	IP65	
Dimensions:	200 x 150 x 75 mm	
Weight:	0,64 kg	

Software:



RATMON - web application for remote data acquisition and analysis of test results as well as configuration and operation of detectors.



RATMON MOBILE - Android and iOS application for reviewing of pipe loops state.



RATMANAGER - PC software for configuration and operation of detectors.

Scope of delivery:

- RAT-2 device with DIN mounting bracket
- 12 V AC/DC power adapter
- GSM antenna (for devices with GSM module)

Optional accessories:

- | DESCRIPTION | INDEX |
|---|-------|
| Battery module | BAT-1 |
| External GSM antenna | ANT-1 |
| Basic connection box, two loops | BOX-1 |
| Five-core wire connection box, two loop | BOX-4 |
| BNC/UHF connection box, two loops | BOX-5 |
| M16 6pin connection box, two loops | BOX-6 |
| M16 6pin connection box, one loops | BOX-8 |
| Hermetic power adapter | ZH-1 |
| Grounding | GND-1 |
| M16 6PIN measuring adapter | ZM-16 |
| External cabinet with NEMA certificate | SK-1 |

INDEX

- BAT-1
- ANT-1
- BOX-1
- BOX-4
- BOX-5
- BOX-6
- BOX-8
- ZH-1
- GND-1
- ZM-16
- SK-1



RAT-Combo



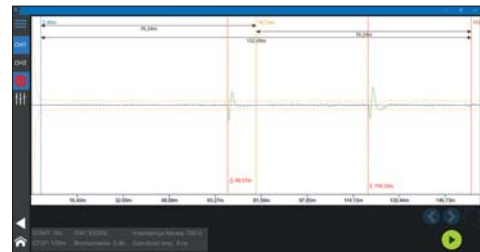
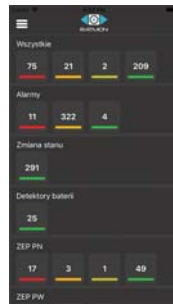
RAT-Combo diagnostic device for leak detection and location in impulse pipe network.

Leak detection is done by resistance measurements and fault location by TDR technology.

General information:	Leak detection and location in impulse network	
Application:	District heating and cooling	
Technical specification:	Type of measurement	Specification
Main functions:	Insulation resistance	0 - 200 MΩ
	Loop resistance	0 - 100 kΩ
	Galvanic voltage	0 - 2000 mV
	Continuous loop control	Triggering of detector by breaking of loop
	Control of connection to the pipe	Resistance measurement between supply and return pipe
Insulation resistance measurement:	Test range	0 - 200 MΩ
	Test voltage	24 V
	Test current	max. 100 mA
	Accuracy up to 1 MΩ	+/- (2% of m. + 8 digits)
	Accuracy over 1 MΩ	+/- (5% of m. + 8 digits)
	Measurement in both polarities	
Loop resistance measurement:	Test range	0 - 100 kΩ
	Test voltage	24 V
	Test current	max. 100 mA
	Accuracy	+/- (2% of m. + 8 digits)
	Measurement in both polarities	

Galvanic voltage:	Test range Accuracy	0 - 2000 mV +/- 5%
TDR (reflectometer) module:	Type of measurement Test range Pulse rate Gain adjustment Velocity of propagation (VoP) Possibility to select any part of the chart Accuracy Noise filtration Selectable output impedance	Specification up to 10 km (by VOP 100%) 1 - 70 ns x 30 40 - 100% 0 - 10 km +/- 0,01% of range +/- 1 px 50/60 Hz; 20 MHz, 100 MHz, 200 MHz, 350 MHz, 650 MHz, 750 MHz, 900 MHz 42 Ω, 50 Ω, 75 Ω, 100 Ω
Communication:	GSM / LAN / RELAY	
Number of channels:	2	
Power supply:	12 V DC / 120 - 240 V AC	
Housing:	IP65	
Dimensions:	200 x 150 x 75 mm	
Weight:	0,64 kg	

Software:



RATMON - web application for remote data acquisition and analysis of test results as well as configuration and operation of detectors.



RATMON MOBILE - Android and iOS application for reviewing of pipe loops state.



RATMANAGER - PC software for configuration and operation of detectors.

Scope of delivery:

- RAT-COMBO device with DIN mounting bracket, 2 BNC cable and boxes
- 12 V AC/DC power adapter
- GSM antenna (for devices with GSM module)

Optional accessories:

DESCRIPTION	INDEX
Battery module	BAT-1
External GSM antenna	ANT-1
Constant impedance connection box, one loop	BOX-3
3-wire sensor cable connection box, 2 alarm loops	BOX-7
MSC-1 connection box, two loops	BOX-9
Grounding	GND-1
External cabinet with NEMA certificate	SK-1



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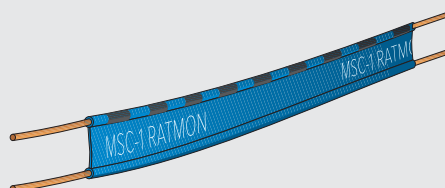
LEAK DETECTION



ILA 1.0 Leak detector and fault locator in pre-insulated pipes.

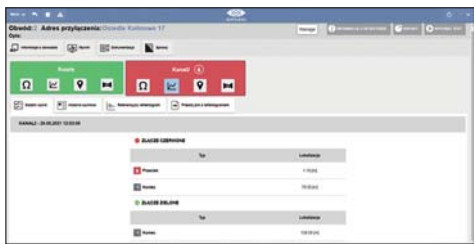
Detection and location is done by TDR technology.

General information:	Leak detection and location in pre-insulated pipes
Application:	District heating and cooling
Technical specification:	6000 m sensor cable / 3000 m pipe (MSC-1)
Measuring range:	2000 m sensor loop / 1000 m pipe (other manufacturers)
Channels:	2 - looped sections 4 - not looped sections
Accuracy:	+/- 0,1% of range, +/- 2 m
Display:	LCD touch screen
Alarm indication:	Visualisation on screen, buzzer, LED light
Multileak detection:	YES
Cable type and application:	District cooling - MSC-1 sensor cable District heating, steel pipes - cooper wires District heating, plastic pipes - MSC-1 sensor cable



Leak identification:	Fault detection and location (leak/break/short)
BMS & SCADA:	Yes
Memory (fault & alarm date):	Yes
External communication:	Ethernet (RJ 45) GPRS Communication with PC by USB or wireless Relay (BMS, SCADA) Communication with external systems by MODBUS TCP/IP Detector positioning and status on Google Maps Communication with RATMON system
Power supply:	12 V DC / 120 - 240 V AC
Working temperature:	-20°C / +70°C
Battery back-up:	Accumulator
Housing:	IP54/IP65 (in external cabinet)
Dimensions:	300 x 170 x 90 mm
Weight:	3,2 kg

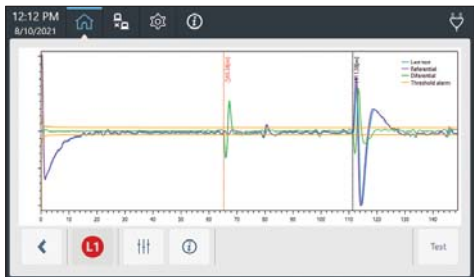
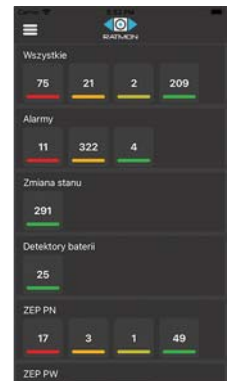
Software:



RATMON - web application for remote data acquisition and analysis of test results as well as configuration and operation of detectors.



RATMON MOBILE - Android and iOS application for reviewing of pipe loops state.



ILA - integrated software.

Scope of delivery:

- ILA device
- Power supply: 12 V DC / 120 - 240 V AC

Optional accessories:

DESCRIPTION	INDEX
External GSM antenna	ANT-1
3-wire sensor cable connection box, 2 alarm loops	BOX-7
MSC-1 connection box, two loops	BOX-9
Sensor cable	MSC-1
Mounting bracket	UM-1
External cabinet	SK-1



MEGALOC - 1

**DIAGNOSTIC DEVICE
FOR LEAK DETECTION AND LOCATION
IN IMPULSE AND RESISTANCE
PIPE NETWORK**



MegaLoc- 1/1b

Portable diagnostic tester for fault detection and location, designed to work in difficult job site terrain.

Device enables fault detection and location in various network, including impulse and resistance. Compatible with RATMON system.

Test results can be saved in internal memory or to be sent to RATMON system.

General information:

- Fault location in impulse network by TDR technology
- Leak location in resistance network
- Foam insulation resistance test
- Loop resistance test
- Touch screen
- Water and shock resistant housing
- Battery powered
- Data saving in internal memory or in RATMON system
- Housing IP65

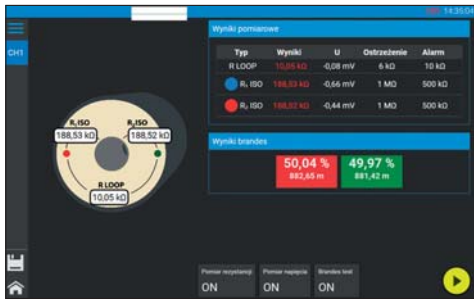
Technical specification:

Fault location by TDR technology:

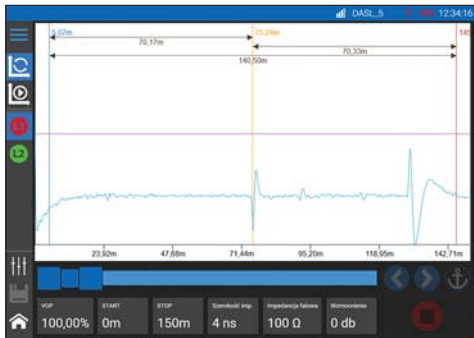
Test range	up to 10 km (by VOP 100%)
Pulse rate	1 - 70 ns
Gain adjustment	x 30
Velocity of propagation (VoP)	40 - 100%
Possibility to select any part of the chart	0 - 10 km
Accuracy	+/- 0,01% range +/- 1 px
Noise filtration	50/60 Hz; 20 Hz; 100 MHz, 200 MHz, 350 MHz, 650 MHz, 750 MHz, 900 MHz
Selectable output impedance	42 Ω; 50 Ω; 75 Ω; 100 Ω

Leak location in resistance pipe network: <i>(option - MegaLoc - 1b)</i>	Measurement accuracy Location threshold <i>Test results displayed in % or meters</i>	+/- 2 m +/- 0,2% of the range < 2 MΩ
Insulation resistance measurement:	Test range Test voltage Test current Accuracy up to 1 MΩ Accuracy over 1 MΩ <i>Measurement in both polarities</i>	0 - 200 MΩ 24 V max. 100 mA +/- (2% of m. + 8 digits) +/- (5% of m. + 8 digits)
Loop resistance measurement:	Test range Test voltage Test current Accuracy <i>Measurement in both polarities</i>	0 - 100 kΩ 24 V max. 100 mA +/- (2% of m. + 8 digits)
Galvanic voltage::	Test range Accuracy	0 - 2000 mV +/- 5%
Abmessungen:	290 x 280 x 140 mm	
Waage:	3,2 kg	

Software:



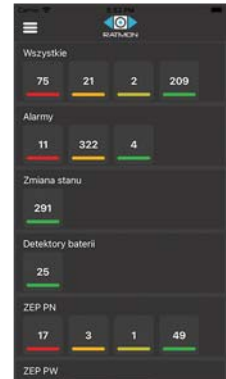
RATMON - web application for remote data acquisition and analysis of test results as well as configuration and operation of detectors.



RATMON MOBILE - Android and iOS application for reviewing of pipe loops state.



RATMANAGER - PC software for configuration and operation of detectors.



Scope of delivery:

- MEGALOC-1 device
- Magnetic pipe connector
- Power supply: 12 V DC / 120 - 240 V AC
- Measuring wires
- Pendrive
- Alligator clips
- Suitcase

Optional accessories:

- DESCRIPTION
- M16 6pin measuring adapter

INDEX
ZM-16



SMARTLOC-1

PORTABLE TESTER OF ALARM LOOPS IN PRE-INSULATED NETWORKS



Smartloc-1

Dedicated diagnostic device for monitoring alarm systems in any type of pre-insulated networks including impulse and resistance.

Designed for harsh working conditions

It performs well during the construction of the network and during its operation.

Compatible with mobile application and RATMON system.

General Information:

- Measurement of alarm loop continuity resistance
- Loop length determination
- Foam insulation resistance measurement
- Moisture level given in Ω and degrees MH
- Preset leakage localization in resistive networks
- Battery power supply
- Easy-to-read display
- Intuitive operation with large keyboard buttons
- Automatic measurement evaluation
- Ergonomic housing
- Wireless communication
- Protection class IP65
- Cooperation with dedicated mobile application and RATMON system
- GPS coordinates recording
- Report for each measurement point (muffs)
- Possibility to add photos and comments
- Inspection of the connection of measuring wires to the pipe

Technical specification:

Insulation resistance measurement:

Test range	0 - 100 M Ω (24 V)
Test voltage	24 V optionally 250 V, 500 V
Test current	max. 10 mA (2 mA at 500 V)
Accuracy up to 1 M Ω	+/- (2% of m. + 8 digits)
Accuracy over 1 M Ω	+/- (5% of. m. + 8 digits)
Measurement in both polarities	

SMARTLOC-1

Loop resistance measurement:

Test range 0 - 20 k Ω
Test voltage max. 24 V
Test current max. 10 mA
Accuracy +/- (2% of m. + 8 digits)
Measurement in both polarities

Galvanic voltage:

Test range 0 - 2000 mV
Accuracy +/- 5%

Dimensions:

200 x 100 x 60 mm

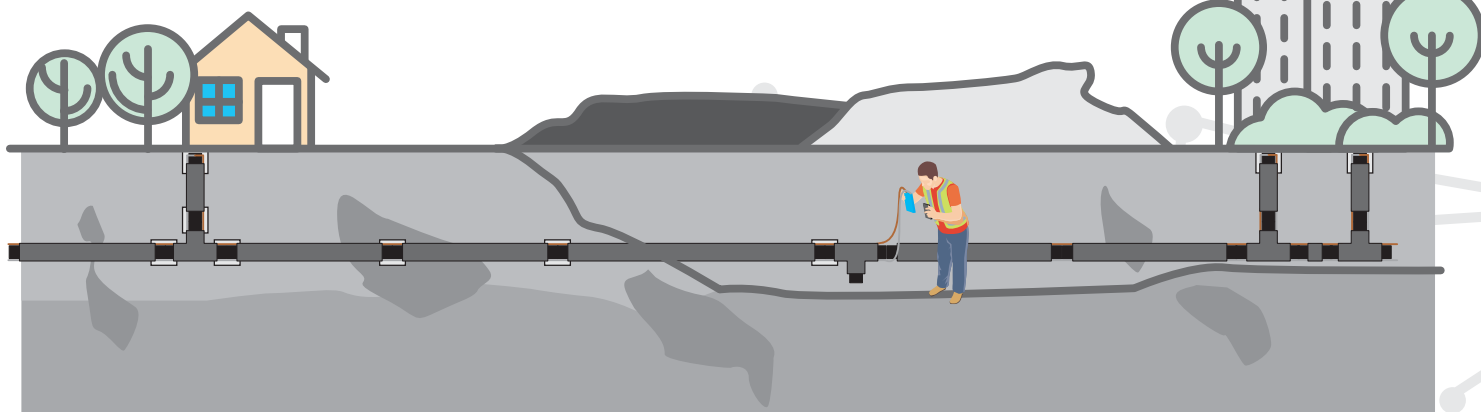
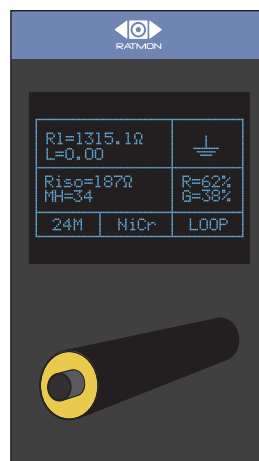
Weight:

0,6 kg

Software:



FUSION MOBILE - Android and iOS application for wireless communication with the device, as well as management of results and generation of reports.



Scope of delivery:

- SMARTLOC-1 device
- Magnetic pipe connector
- Batteries
- Measuring wires 4 pcs
- Aligator clips 2 pcs
- Suitcase



SMARTBOX-1

PORTABLE SIMULATOR OF ALARM NETWORK STATES



SMARTBOX-1

A device that allows remote simulation of network conditions for easier fault location. Thanks to the possibility of remote control, there is no need for an additional person at the place where the simulation is performed.

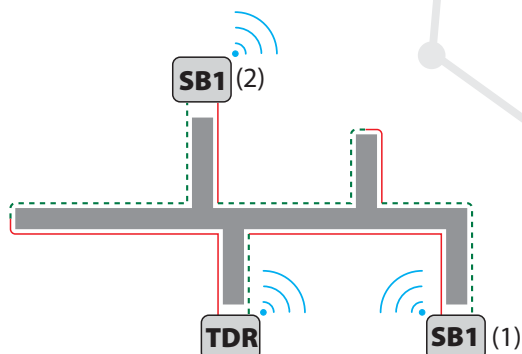
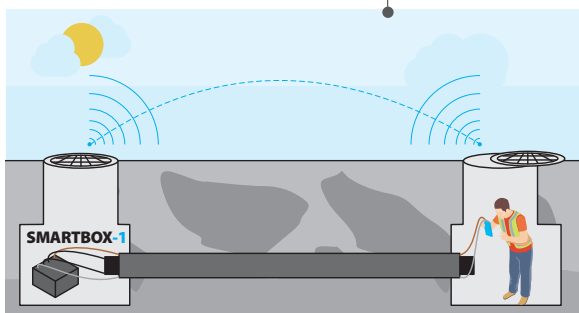
General Information:





- Remote control of the device using a smartphone
- Simulations: wire-to-pipe short-circuit, loop break, looping, check for correct wire connection
- Network and battery power supply
- Built-in GSM modem
- Heavy-duty case

Standard equipment:

- SMARTBOX-1
- Two magnetic connector for pipes
- Case
- Power supply
- Smartphone app for remote control (Android, iOS)
- 8 wires 1,5 m
- 4 crocodiles
- 2 USB cables
- SIM card (2 years included in the price of the device)

Software:



-  MANHOLES
-  CHAMBERS
-  TANKS
-  TEMPERATURE
-  OTHER SENSOR

SAM-1



SAM-1 SMART MONITORING

SAM-1 is a standalone alarm unit to monitor remotely following chambers or tanks conditions: water levels, manhole opening, temperature, humidity etc.

SAM-1 can also be utilized as a potential leak detector for traditional/channel pipe networks (*non-pre-insulated pipe networks*). All data collected by the device are sent via IoT technology to the RATMON system. Thanks to the opened MQTT protocol, data can also be sent directly to any external system.

Specification:

- Up to 5 independent inputs/sensors
- 5 years of working on battery
- Temperature measurement: -55°C to +135°C
- Humidity measurement: 0 - 100% RH
- Opened MQTT protocol to communicate with any external systems
- Communication: IoT
- Compatible with RATMON system
- Housing: IP67
- Dimensions: 190 x 130 x 60 mm
- Weight: 0,25 kg

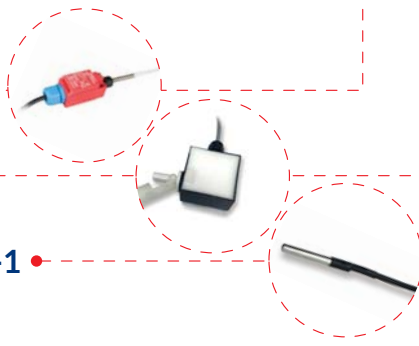
Sensors:

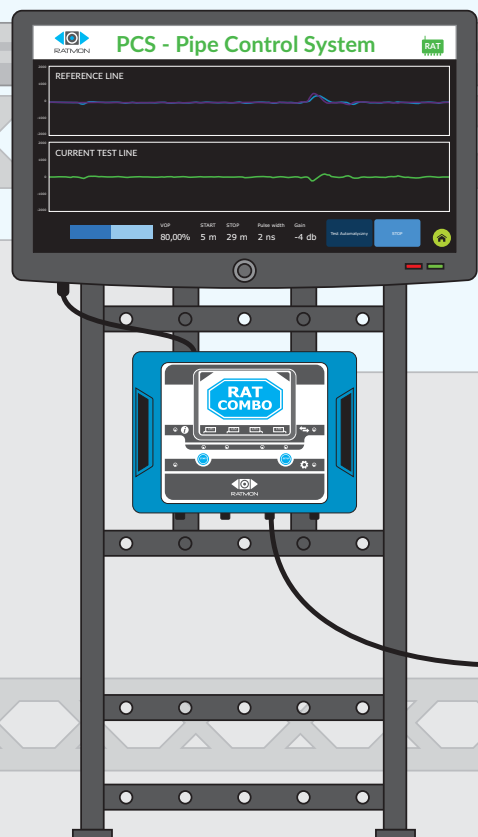
Manhole opening S-2

Flooding sensor S-1

Temperature sensor TEMP-1

Additional 4-20 mA input





PCS

Pipe Control System

PCS

Production test system for pre-insulated pipes

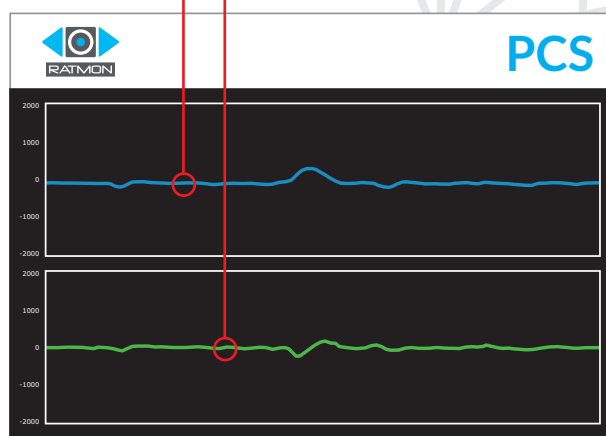
Quality control of pre-insulated pipes and fittings with TDR technology helps detect:

- incorrect position of the alarm wire
- quality of foam filling
- wire break

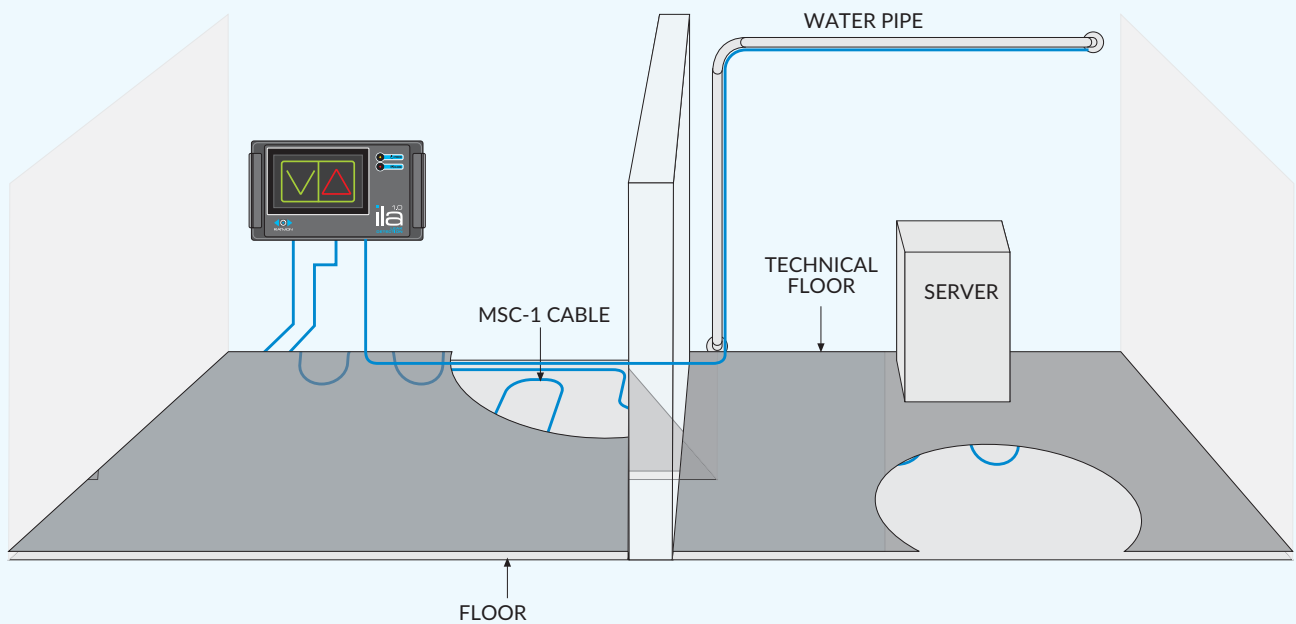
Inspection is done in seconds by comparing the image of the object being inspected to a reference curve.

○ reference reflectogram

○ differential graphs



Leak detection system for internal building installation



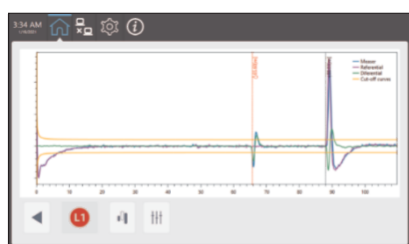
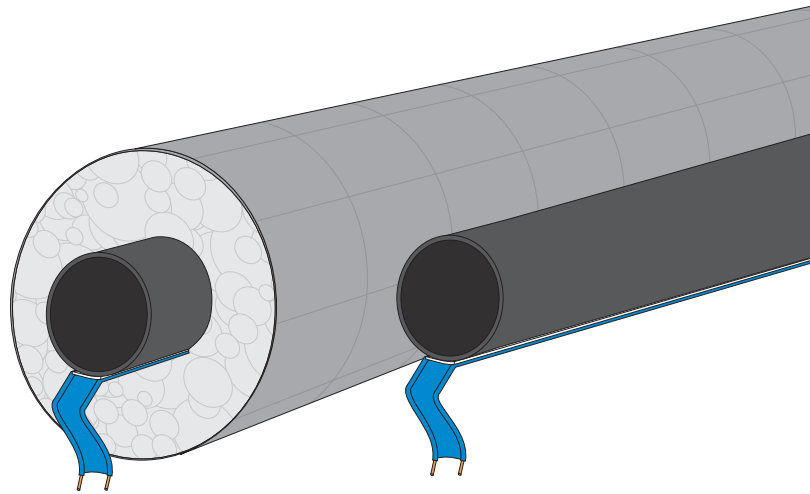
LDS consists of:

- ILA-1 alarm unit
- MSC-1 sensor cable that can be installed directly under the pipe, on the floor or around the sensitive equipment.

MSC-1 sensor cable is installed to the pipe by self-adhesive tape.

MSC-1 can be integrated with pipes with or without insulation.

Leak detection and location is based on TDR technology.

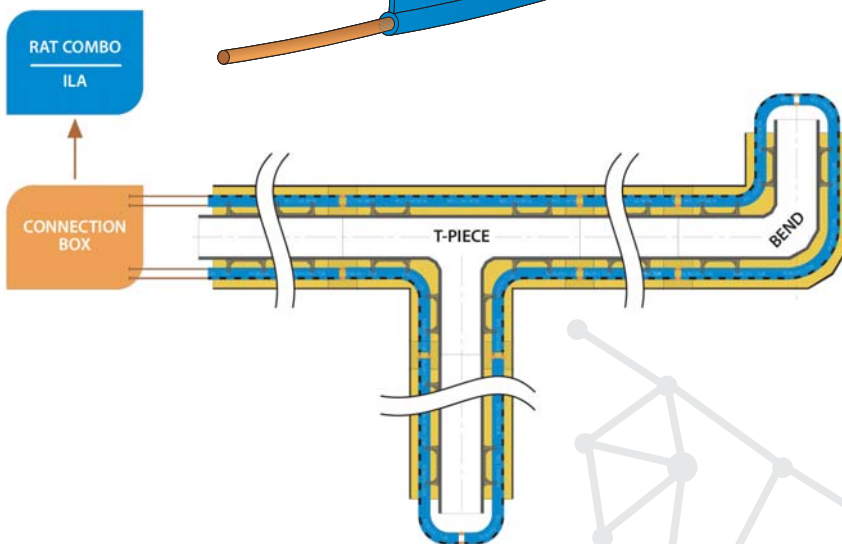




SENSOR CABLE MSC-1

MSC-1 Sensor cable

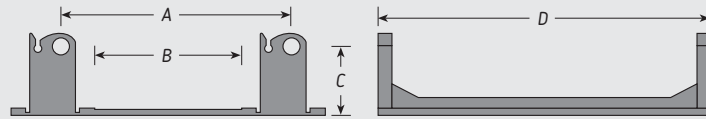
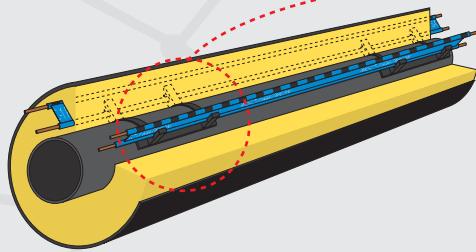
Our patented solution of two double-wire MSC-1 cables enables precise detection and location of faults in pre-insulated pipes, used in district cooling and heating. Fully insulated cables, mitigates the risk of false alarms, caused by condensation effect. It is also great solution for monitoring of pre-insulated plastic pipes, straight or PEX type, where using of conventional alarm wires is not efficient.



General information:	Fault detection and location
Application:	District heating and cooling Pre-insulated pipes: steel and plastic
Leak location:	Reflectometer (TDR)
Technical data:	
Cable insulation:	Insulation resistant to high temperature and oil
Cable wires:	2 parallel copper wire 2 x 0,98 mm
Dimensions:	8,3 x 2,2 mm
Working temperature:	-40°C to +120°C
Loop resistance:	30 Ω / 1 km of wire
VOP (velocity of propagation):	80% for polyurethane foam

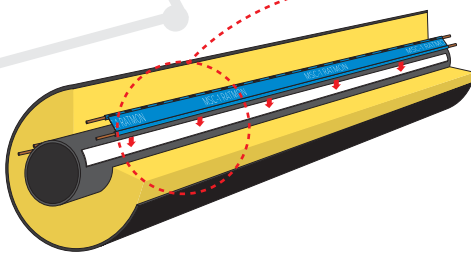
Installation in pipes:

Double wire clip



A = 55,5 mm
B = 35,5 mm
C = 16,5 mm
D = 80,0 mm

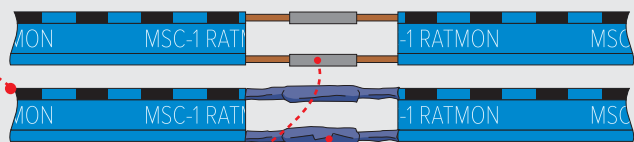
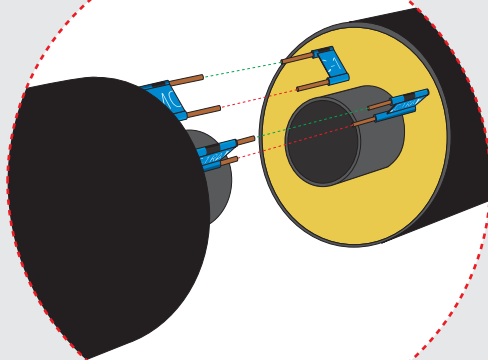
Self-adhesive foam tape



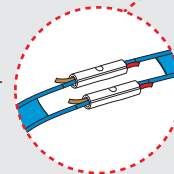
A = 10,0 mm



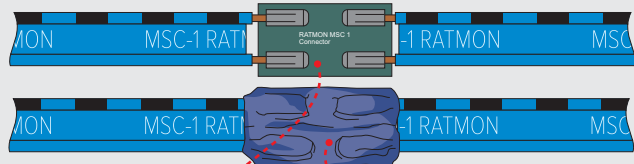
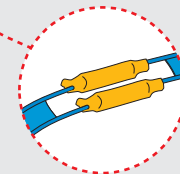
Connection between pipes



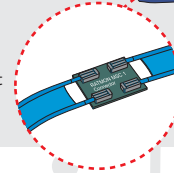
Crimp connector



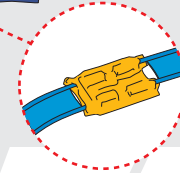
Heat shrink tube



Quick connector set



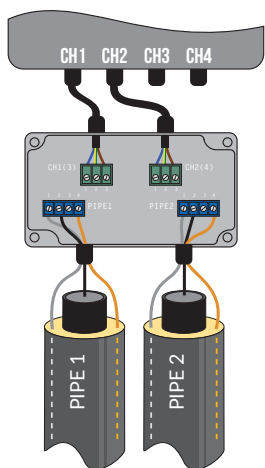
Heat shrink tube



Optional accessories:

DESCRIPTION	PACKAGING	INDEX
Sensor cable	500 m	MSC-1
Cable clip	1500 pcs	CLIP-1
Adhesive tape	60 m	TAPE-1
Crimp connector	100 pcs	CON-1
Quick connector set	100 pcs	CON-2
Heat shrink tube	100 pcs	HST-1

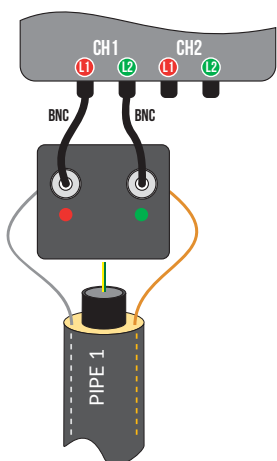
BOX-1
Basic connection box, two loops



Compatible with:
RAT-2
RAT-2b

- Application in impulse and resistance network
- Connection of preinsulated pipes with RAT-2 and RAT-2B detectors
- Two channels (two alarm loops)
- Mechanical installation with mounting brackets
- Connection of cables by terminal block connectors
- Connection of detector by terminal block connectors
- Max wire diameter 7 mm
- Housing IP65
- Dimensions: 150 x 70 x 60 mm
- Weight: 0,2 kg

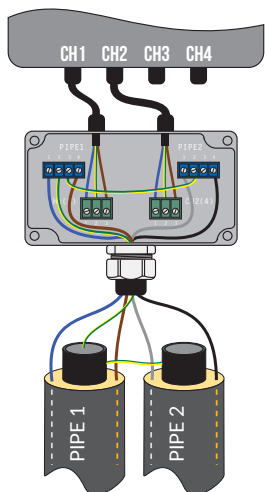
BOX-3
Constant impedance connection box, one loop



Compatible with:
RAT-Combo

- Application in impulse network
- Stationary connection of RAT-Combo
- One channel (one alarm loop)
- Mechanical installation by pipe
- Connection of detector by BNC cables
- Housing IP65
- Dimensions: 50 x 50 x 50 mm
- Weight: 0,15 kg

BOX-4
Five-core wire connection box, two loops



Compatible with:
RAT-2
RAT-2b

- Application in impulse and resistance network
- Connection of RAT-2 and RAT-2b
- Two channels (two alarm loops)
- Mechanical connection by mounting brackets
- Wires connection by terminal block connectors
- Detectors connection by terminal block connectors
- Max average diameter of wire 16 mm
- Application by 5-wire connection cables
- Housing IP65
- Dimensions: 150 x 70 x 60 mm
- Weight: 0,2 kg

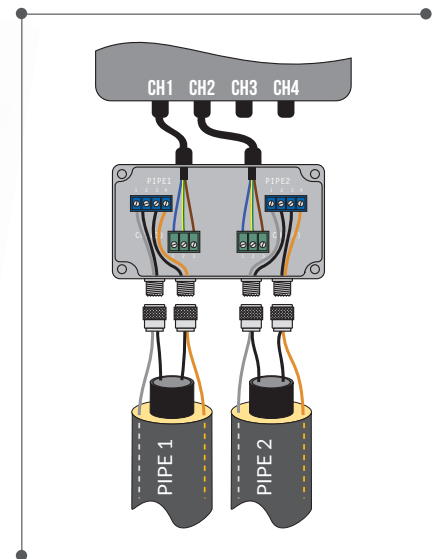
Compatible with:

RAT-2

- Application in impulse
- Connection of RAT-2 detectors
- Two channels (two alarm loops)
- Mechanical installation by two mounting brackets
- Alarm wires connected by UHF (concentric cables)
- Detectors connection by terminal block connectors
- Housing IP65
- Dimensions: 190 x 130 x 60 mm
- Weight: 0,3 kg



BOX-5
BNC/UHF connection box, two loops



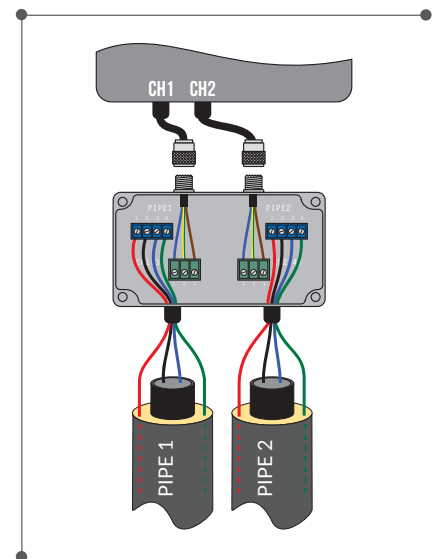
Compatible with:

RAT-2b

- Application in resistance network
- Connection of RAT-2b detectors
- Two channels (two alarm loops)
- Mechanical installation by two mounting brackets
- Alarm wires connected by terminal block connectors
- Detectors connection by industrial connectors M16 6PIN
- Housing IP65
- Dimensions: 190 x 130 x 90 mm
- Weight: 0,2 kg



BOX-6
M16 6pin connection box, two loops



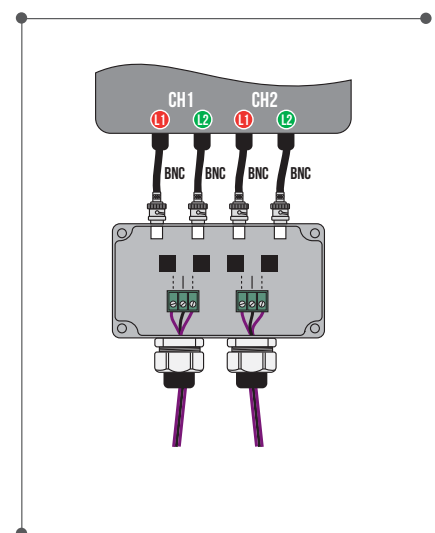
Compatible with:

RAT-Combo
ILA 1.0

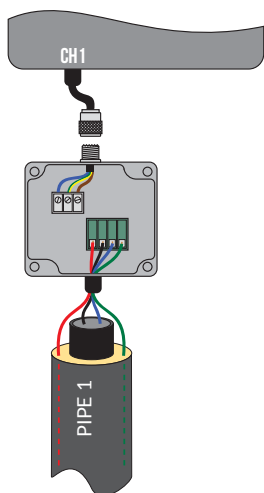
- Application in impulse network
- Connection of RAT-Combo and ILA detectors
- Two channels (two alarm loops)
- Mechanical installation by two mounting brackets
- Alarm wires connection by terminal block connectors
- Detectors connection by BNC cables
- Housing IP65
- Dimensions: 190 x 130 x 60 mm
- Weight: 0,36 kg



BOX-7
3-wire sensor cable connection box, 2 alarm loops



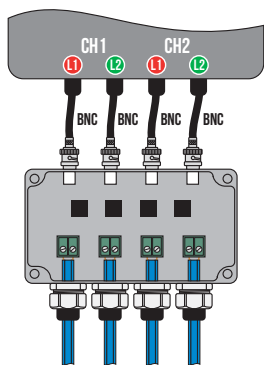
BOX-8 M16 6pin connection box, one loops



- Application in resistance network
- Connection of RAT-2b
- One channel (one alarm loop)
- Mechanical installation by two mounting holes
- Alarm wires connection by terminal block connectors
- Detectors connection by industrial connectors M16 6PIN
- Housing IP65
- Dimensions: 50 x 50 x 50 mm
- Weight: 0,15 kg

Compatible with:
RAT-2b

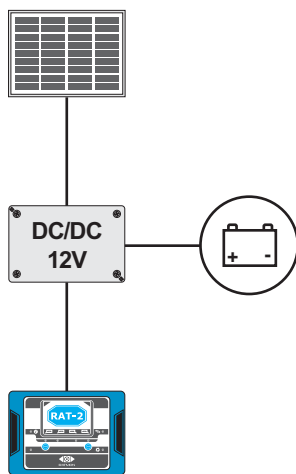
BOX-9 MSC-1 connection box, two loops



- Application in impulse network
- Connection of RAT-Combo and ILA detectors
- Two channels (two alarm loops)
- Mechanical installation by two mounting brackets
- Alarm wires connection by terminal block connectors
- Detectors connection by BNC cables
- Housing IP65
- Dimensions: 190 x 130 x 60 mm
- Weight: 0,36 kg

Compatible with:
RAT-Combo
ILA 1.0

SOL-1 Solar Power Kit



A complete solar kit that allows the installation of equipment for monitoring pre-insulated networks of the RAT series in a remote location, where access to power supply is difficult. The kit was selected so as to ensure stable operation of the equipment even during extended periods of cloudy days.

The complex includes:

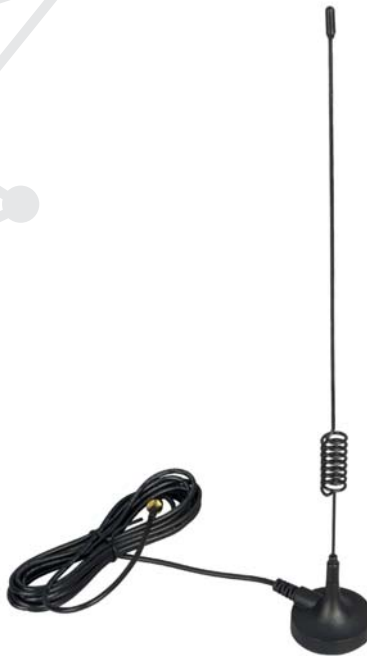
- Solar panel
- Charge controller
- Accumulator
- Airtight housing for the accumulator and charge regulator
- Dimensions: 251 x 186 x 107 mm
- Weight: 1,75 kg

Compatible with:
RAT-2
RAT-2b
RAT-Combo

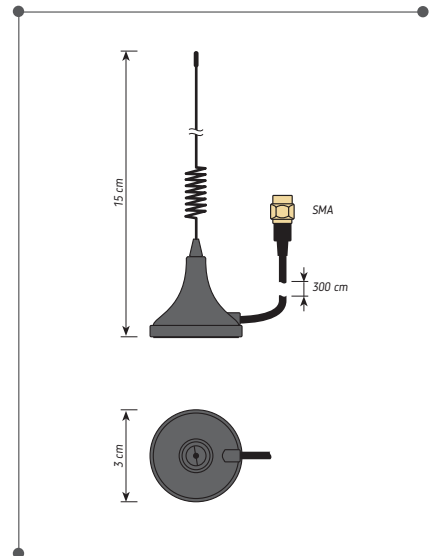
Compatible with:

- RAT-2
- RAT-2b
- RAT-Combo
- ILA 1.0

- Additional external GSM antenna
- Type: RF
- Antenna energy gain: 3dBi
- Linear polarization
- Impedance 50 Ω
- Frequency 470...862 Mhz
- Magnetic base for easy mounting
- 3 m cable with SMA connection
- Weight: 0,15 kg



ANT-1
External GSM antenna



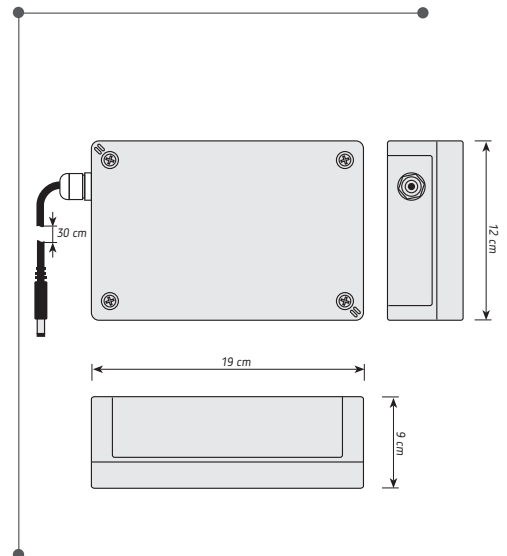
Compatible with:

- RAT-2
- RAT-2b
- RAT-Combo



- Output: 12 V DC
- 8 R20 batteries
- Housing IP65
- Installation by DIN rail
- Dimensions: 19 x 12 x 9 cm
- Weight: 1,55 kg

BAT-1
Battery module

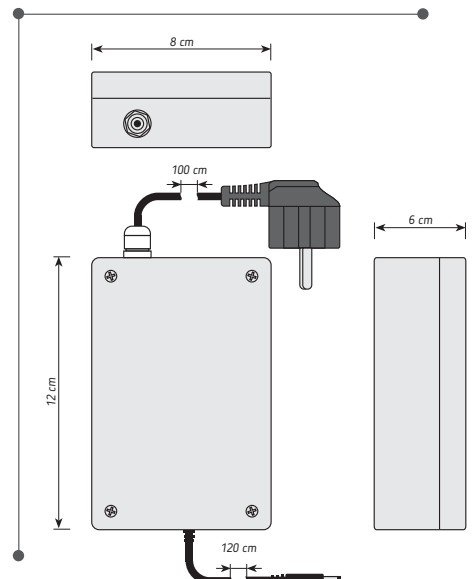


Compatible with:

- RAT-2
- RAT-2b
- RAT-Combo
- ILA 1.0

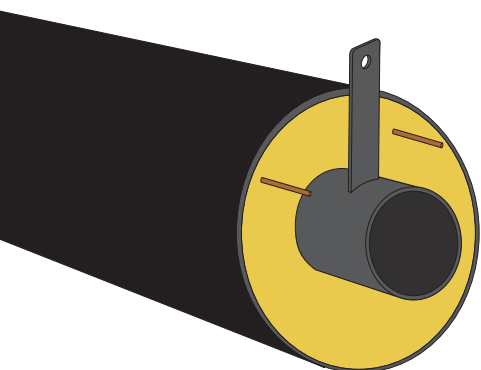


ZH-1
Hermetic power adapter

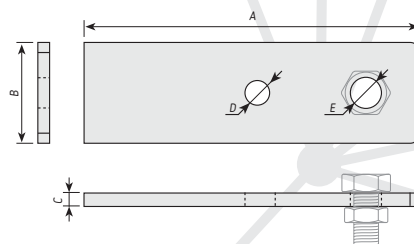


- Protection class: IP65
- Voltage: 230 V / 12 V
- Current: 500 mA
- Dimensions: 12 x 8 x 6 cm
- Weight: 0,42 kg

GND-1 Grounding bracket

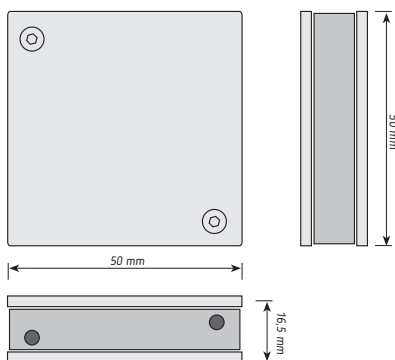


Compatible with:
steel,
pre-insulated pipes



- M8 bolt with nut
- Dimensions: (A) 100 x (B) 30 x (C) 4 mm, (D) 6 mm, (E) 9 mm
- Weight: 0,08 kg

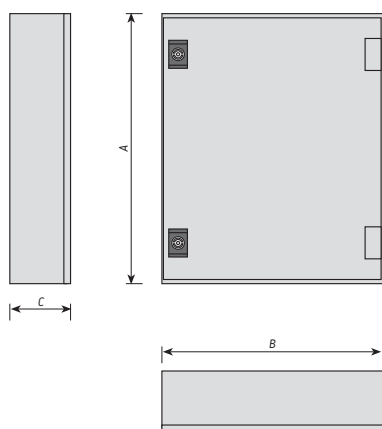
MZM-1 Magnetic pipe connector



Kompatybilne z:
RAT-Combo
MEGALOC-1/1b
SMARTLOC-1

- Reliable, stable connection with the pipe
- Designed to check the quality of the connection to the pipe
- Two independent banana sockets
- Made of high quality stainless steel
- Weight: 0,1 kg

SK-1 External, hermetic cabinet



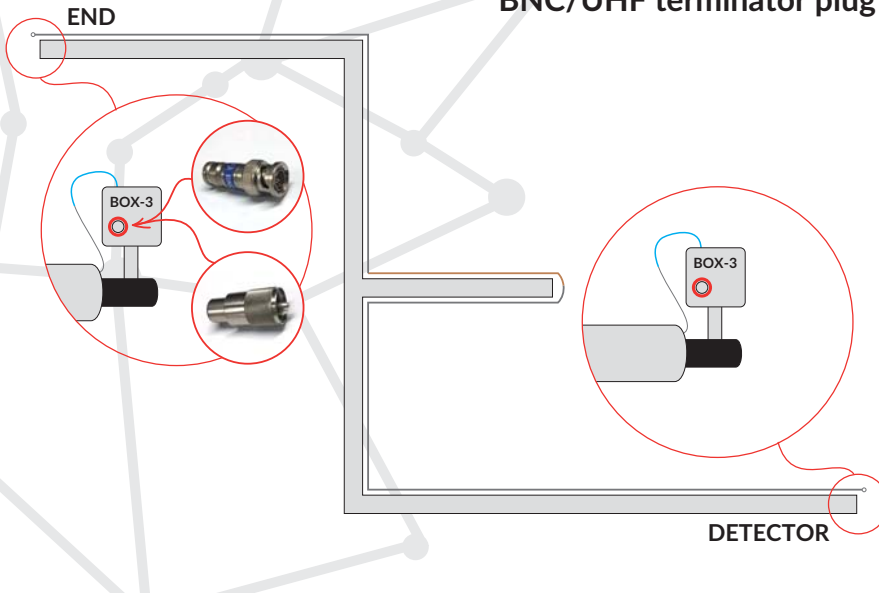
Compatible with:
RAT-2
RAT-2b
RAT-Combo
ILA 1.0

- Material poliester
- Lock with key
- Mouting plate
- Protection cable
- Protection class 1
- Housing IP66 (NEMA 4X)
- Dimensions: (A) 530 x (B) 430 x (C) 200 mm
- Weight: 5,5 kg



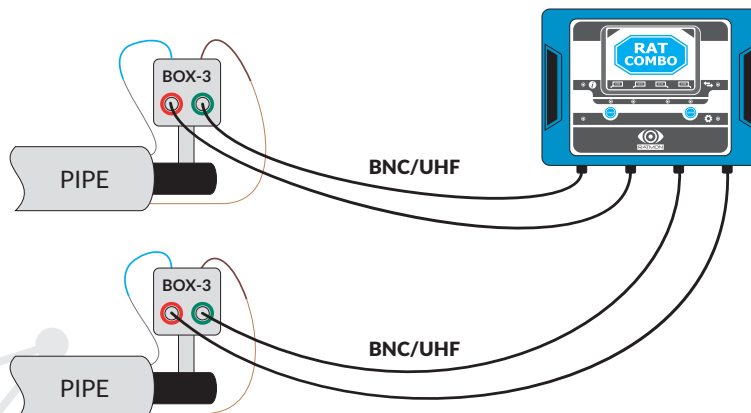
TB-1 · TU-1

BNC/UHF terminator plug for unlooped alarm systems

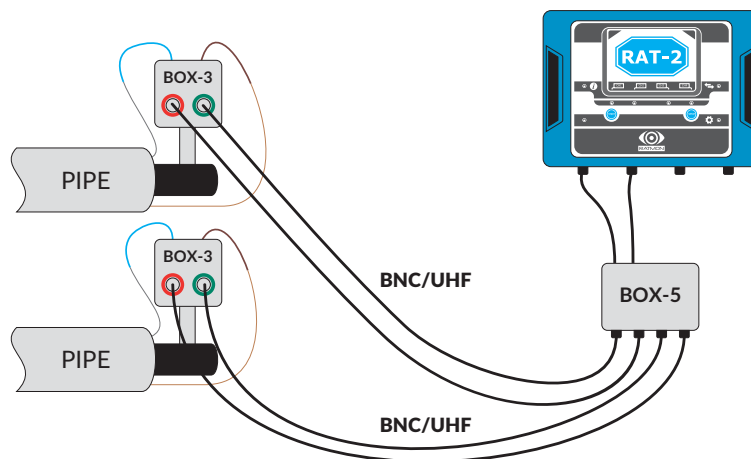


Exemplary methods of connecting devices with pipes

RAT-Combo



RAT-2



Manufacturer:
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Poland

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ratmon@ratmon.com
www.ratmon.com



DISTRIBUTOR: