

# ONLINE MONITORING

storage | transportation



-25...+50 C° 10...90 RH



## Real-Time environmental conditions monitoring system for Pharmaceutical Industry

Being compliant with GMP, GDP, ISO/IEC 17025 regulations is good for your company as well



## STORAGE DATA LOGGER KIT



## TRANSPORTATION DATA LOGGER KIT



**\*ISM** (Industrial, Scientific and Medical band) is a part of the radio spectrum that can be used for any purpose without a license in most countries

# SYSTEM REQUIREMENTS FOR MONITORING SOFTWARE



TEMPERATURE



HUMIDITY

Compliance with the appropriate storage and transportation conditions for medicinal products is vital in ensuring its quality.

Shelf life dates are based on ideal storage conditions. Therefore, the protection of the quality of the goods until the end of the shelf life is very important both in terms of working with customers and saving resources.

GMP/GSP (Good Storage Practice) requirements for monitoring of storage conditions:

- Recorded temperature monitoring data should be available for review.
- The equipment used for monitoring should be checked at suitable predetermined intervals and the results of such checks should be recorded and retained.
- All monitoring records should be kept for at least the shelf-life of the stored material or product plus 1 year, or as required by national legislation.
- Temperature mapping should show uniformity of the temperature across the storage facility.
- It is recommended that temperature monitors be located in areas that are most likely to show fluctuations.

## WIRELESS IoT COLD CHAIN\* MONITORING



\* Cold chain — a temperature-controlled supply chain



## BENEFITS



Compliance with regulations

GMP, GDP, ISO/IEC 17025 regulations



High accuracy and long sensors life

Thermohygrometers and thermometers manufactured by UNITESS is a Measuring Instrument with high accuracy:

- $\pm 0.3$  C,  $\pm 3$  % RH,  $\pm 0.2$  kPa.
- Normalized degradation of accuracy at the interval of 10 years.
- Long-term drift max  $<0.03$  °C/yr,  $<0.25$  %RH/yr



Two types of perpetual software license

- Cloud-Based
- Self-Hosted



ISM Wireless Connectivity

Up to 2 km in urban areas



Continuous real time monitoring

Automated report generation



Radio & USB configuration

This allows to reduce the human factor nearly completely.



Star topology without the repeaters

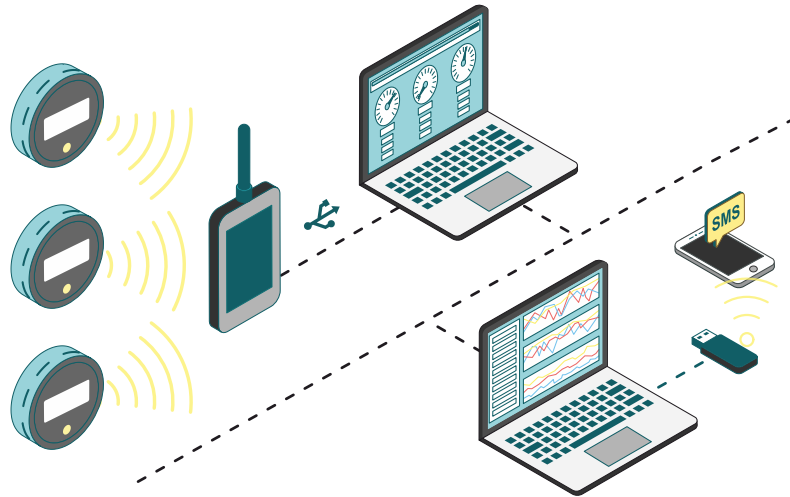
Single receiver for the entire building



Unique battery life

Custom LoRa based RF protocol, E-ink screen and deep microcontroller sleep mode enable unique battery life 1,5-2 years.

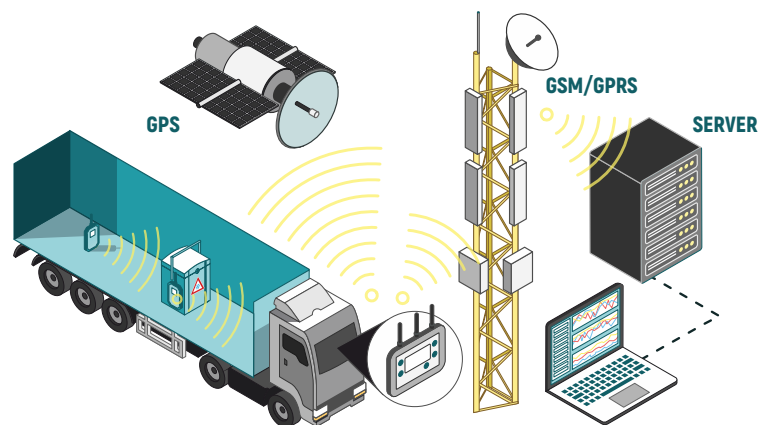
# INDOOR TEMPERATURE AND HUMIDITY MONITORING



## Key features

- THB1 thermohygrometers are installed at control points determined by mapping (the number of points is not limited);
- Data is transmitted via a radio channel (up to 2 km in urban areas) to a receiver connected to a server (PC);
- Information about storage conditions is available from any PC in the network;
- In the absence of a signal, the data is written into the device's memory, when the signal is restored, it is automatically transferred to the database, which ensures the storage of all measurement results;
- The system provides notification of exceeding critical limits (SMS, e-mail).

# MONITORING OF TRANSPORTATION CONDITIONS



## Key features

- THB2 thermometers are installed in the car body according to the mapping. Universal thermometer THB2 suits well production premises, warehousing and transport.
- The data is transmitted via the radio channel to the UNITESS AMBIENT BRIDGE receiving station in the driver's cab and is displayed on the screen.
- In the coverage area of the mobile Internet, UNITESS AMBIENT BRIDGE transmits data about the location of the vehicle and the temperature regime to the server.
- When the power is turned off or the communication session fails, the information is accumulated in the flash memory of the thermometers, or in the memory of the receiving station in the driver's cabin.
- At the points of unloading, it is possible to print a receipt with information about the conditions of carriage.
- Information can be viewed in real time from the Customer's server.

# THERMOHYGROMETER THB1

## SPECIFICATIONS

+5...+50 C°  



Parameter	THB 1C
Temperature measurement range	5...50 C°
Temperature measurement error	±0,5 °C
Temperature measurement resolution	0,1 °C
Thermal reaction time	not more than 10 min
Relative humidity measurement range	10...90 %
Humidity measurement error	±3,0 %
Temperature measurement resolution	0,1 %
Internal memory type	FLASH
Internal memory	32 MB

# UNITESS AMBIENT RF RECEIVER

## SPECIFICATIONS

USB receiver for receiving, processing and transmitting data from thermohygrometers (the number is not limited) to the server. One for the entire building!



Parameter	Description
Dimensions (without antenna)	91x54x17 mm
Antenna length	50 mm
Antenna connector type	SMA
Weight	150 g
Connection interface	USB mini-B
Antenna	868 MH, external

## THERMOHYGROMETER THB2

### SPECIFICATIONS

-25...+50 °C 



Parameter	THB2	THB 2B	THB 2C
Temperature measurement range	0...50 °C <sup>0</sup>		-25...+50 °C <sup>0</sup>
Relative humidity measurement range	0...90%	-	-
Humidity measurement error	± 3 %	-	-
Moisture measurement resolution	0,1 %	-	-
Temperature measurement error,	±0,5 °C	±0,5 °C	±0,5 °C
Temperature measurement resolution	0,1 °C	0,1 °C	0,1 °C
Antenna type	external		
Sensor type	internal		external
Internal memory type	FLASH		
Internal memory	32 MB		

## TRUCK MONITOR UNITESS BRIDGE

### SPECIFICATIONS

Receiving and transmitting device in the driver's cab.



Parameter	Description
DC power	12-24 V
Current consumption — when powered by 12 V — when powered by 24 V	560 mA 250 mA
Max. current consumption	1000 mA
Radio band	ISM (Industrial, Scientific and Medical band) is a part of the radio spectrum that can be used for any purpose without a license in most countries

Parameter	Description
Receiver sensitivity	not more than 148 dBm
GPS receiver sensitivity	not more than 166 dBm
GSM bands	GSM 850, EGSM 900, DCS 1800, PCS 1900
SIM card format	Micro-SIM
Transmitter power output GSM (W): Class 1 ( DCS 1800 и PCS 1900): Class 4 (GSM 850 и EGSM 900):	1 2
Transmitter power	not more than 14 (25) dBm (mW)
GPRS data rate	85,6 kilobit per second
Protection Rating	IP 20
Data Transmission Interface	USB 2.0, GSM, radio channel
Dimensions	not more than 150 x 118 x 27 mm
Weight	not more than 0,45 kg
Battery life	not more than 24 hours

## UNITESS AMBIENT SYSTEM SPECIFICATIONS

Parameter	Description
Configurable parameters for THB 1 and THB 2	<ul style="list-style-type: none"> <li>the name of the premises</li> <li>the measurement interval</li> <li>the data transmission interval</li> <li>the limits of acceptable values</li> <li>the radio channel parameters</li> </ul>
PC connection interface	<ul style="list-style-type: none"> <li>USB</li> <li>radio channel</li> </ul>
Out of Range Alerts	<ul style="list-style-type: none"> <li>on the screen</li> <li>in the program on the PC</li> <li>SMS</li> <li>e-mail</li> </ul>



Parameter	Description
Data displayed on a screen	<ul style="list-style-type: none"> <li>• measured values of temperature and humidity</li> <li>• name / name of the sensor or room</li> <li>• measurement and data transmission intervals</li> <li>• critical limits of measured values (temperature, humidity)</li> <li>• radio channel frequency parameters</li> <li>• radio presence / absence statusbattery indicator</li> </ul>
Measurement interval	from 0 to 90 min
Premices naming format	letters and numbers, up to 6 characters

## SOFTWARE

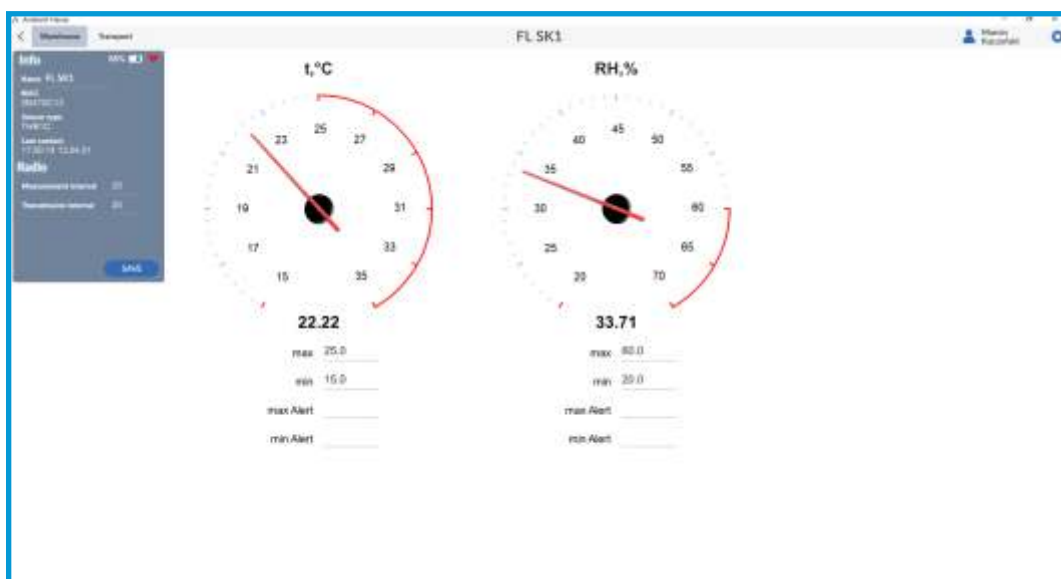
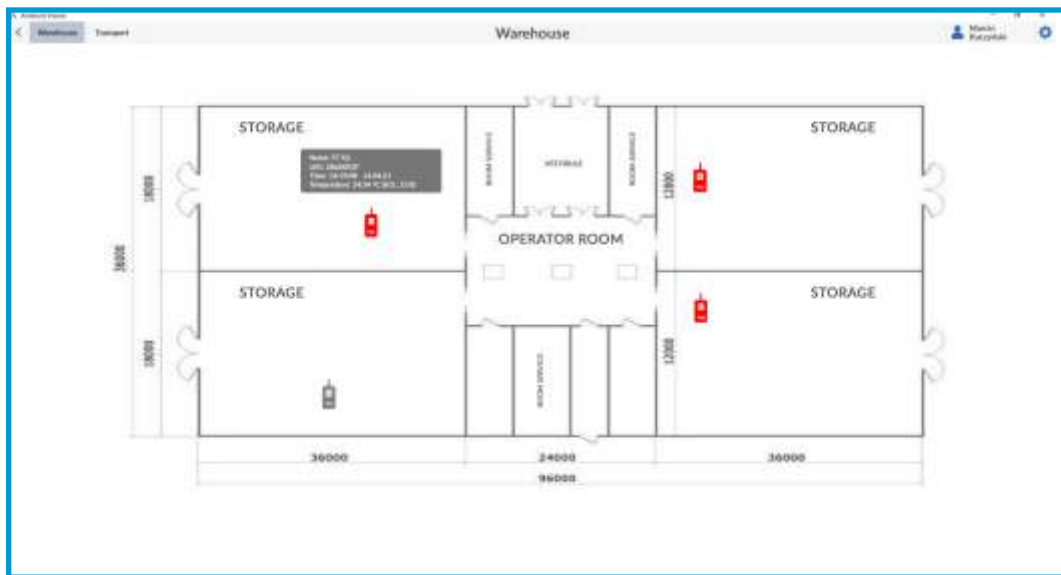
Depending on the request we provide two types of perpetual software license:

- Cloud based
- Self-hosted

The software has flexible settings, simple and intuitive interface. The program allows you to:

- carry out continuous monitoring of temperature and humidity during storage and transportation of drugs in real time;
- save and restore information in cases of signal lost;
- transfer to the server data about the location of the vehicle and the conditions of carriage;
- print out a check with information on the conditions of transportation of medications;
- signal about going beyond the set limits of temperature and humidity;
- adjust the interval for reading information from the thermohygrometer;
- manage the list of users who have access to information;
- automatically generate an electronic «Register of storage conditions for medicinal products»;
- keep a log «audit trails» with time stamps for entering, changing and deleting data, containing the user ID;
- keep a log of sent SMS messages;
- generate various types of reports (Excel, Word, PDF).

# SCREENSHOTS





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