
LGTD-R-01
Logginet
24.6 °C
Logginet
RADIO
Temperature Radio Sensor
LGTD-R-01
MIKSTER
INDUSTRIAL TECHNOLOGY
V.1.0 24.05.2004

Sensor work description

Temperature radio sensor is a measuring module, which allows to make readouts through a radio link. It is recommended for all applications, where it is difficult or not advisable to make a wire system.

The sensor enables continuous temperature recording for up to 18 months with recording frequency every 1 minute. Sensor recordings can be read out through a radio-recording unit connected to any computer with “Loggisoft” software installed, using RS232 terminal or RS485 interface.

Built-in LCD display facilitates communication with the unit and allows local visualization of measurements.

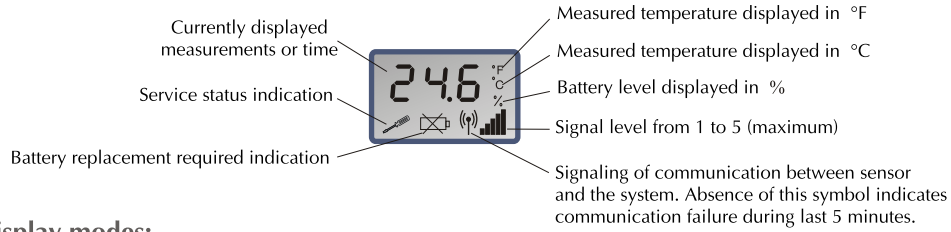
Notes

LGTD-R-01 version: 1.0 15

Notes

Radio Sensor LGTD-R-01 parameters

➔ Display hardware description:



Display modes:

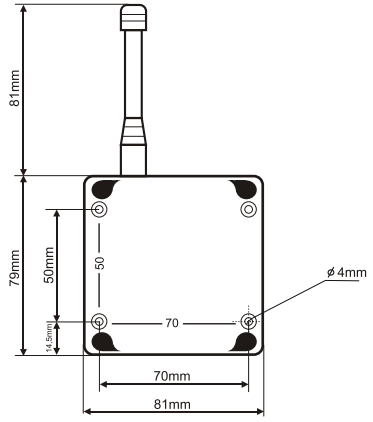
Normal Mode:
Displays alternately: - temperature

or

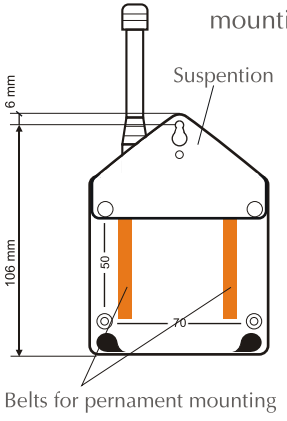
- current time

Service Mode:
Entering Service Mode is described in section **IV** on page 9

➔ **Sensor casing dimensions - front view**



➔ Sensor casing - rear view (with belts for permanent mounting and suspension).



Instructions regarding mounting with belts:
- mounting only in rooms, where working temperature exceeds 10°C,
- mounting allowed only on level and grease-free surface.

Radio Sensor LGTD-R-01 installation

I. Sensor installation procedure

Prior to sensor installation make sure if the following conditions are met:

- Signal level on radio sensor when adding to the system - min. 3 scale marks. (Sensor signal level is indicated by symbol-). In order to check signal level, see par. IV c on page 9.

➔ Signal level will be decreasing in the area of strong industrial interferences. It also depends on individual properties of system location, that is local topographic features, installation height, distance from large metal surfaces, and thickness and material of walls standing in the way of radio link signal.

- Add sensor to the system after setting it in its permanent working location.

➔ It is not advised to add sensor "from your hand" (holding sensor in hand when adding, and then placing it in target mounting location). This procedure may result in communication failure between sensor and the recording unit. This is caused by difference between radio signal level in place, where sensor is being held, and signal level in target location. Correct communication between sensor and the recording unit is achieved when adding radio sensor being supported with hand at target mounting location, e.g. on wall, where sensor is to be placed. Apply the same method to check level of signal transmitted by the recording unit prior to installation.

Use program Loggisoft 2.0 (or higher) to install radio sensor LGTD-R-01, according to Loggisoft service manual.

To enable signal level check and sensor LGTD-R-01 adding to the system, make sure that radio recording unit LGRT-01 (to which sensor is to be added) has been switched to service mode (the unit may be switched to service mode only using the Loggisoft sensor adding wizard). In case if radio recording unit is not working in service mode, all attempts to add sensors **will fail !!!**.

➔ ***There are three possible ways to add radio sensor to the system:***
1. Installing radio sensor in a new system.
2. Adding radio sensor to already existing system.
3. Replacement of already installed sensor in a system.

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Declaration of Conformity

Assuming full responsibility, we declare that our product:

TEMPERATURE RADIO SENSOR
LGTD-R-01

with serial number:

to which this declaration applies, complies with the following standards and normative documents:

- **internal documentation - IU/41/I,**
- **european standard ETSI EN 300 220-1 v1.3.1 (2000-09),**
- **european standard ETSI EN 300 220-3 v1.1.1 (2000-09),**
- **european standard ETSI EN 301 489-1 v1.4.1 (2002-08),**
- **european standard ETSI EN 301 489-3 v1.4.1 (2002-08),**
- **european standard ETS 300-683,**

and meets all health and safety-at-work requirements set for equipment of this type.

CE

By authority of the Company Management Board:

seal

Czeladz,.....

Technical data

-overall dimensions: 81x79x57mm,
(with terminals: 81x244x57mm),
-protection class: IP65 (measuring element: IP30),
-power supply: lithium battery (approximate replacement period: 5 years),
-temperature measurement range: from - 55 to +85 °C,
-temperature measurement uncertainty: < 0.5°C (from -10 to +85 °C),
-temperature measurement uncertainty for extended temperature range:
< 2°C (from -55 to +85 °C),
-LCD display unit with 4 digits and special characters,
-LCD display visible area: - 24x41 mm,
-working temperature range for the display unit: from -20 to +70 °C.

Radio sensor recording parameters:

-Recording storage time for slow temperature changes
(e.g. refrigeration plants): up to 18 months,
-Recording storage time for frequent temperature changes
(e.g. insolated areas): min. 34 days,
-Recording frequency: every minute

Radio link parameters:

-Sensitivity: -100dBm,
-Transmitter output power: <10dBm,
-Operating frequency: 433, 302 MHz,
-Modulation type: FSK,
-Transmission rate: 19 200 b/s,
-Operating time without battery replacement: at least 3 years (remote control),
-Estimated operating range: undeveloped area - up to 200 m,
low development area - up to 100 m,
densely developed area - up to 50 m,

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Radio Sensor LGTD-R-01 installation

Ad.1. Installing radio sensor in a new system.

When following instructions of "System component adding wizard" (selecting Logginet-RADIO), as soon as the recording unit has been detected and configured, we come to radio sensor adding process. Switch the recording unit to configuration status in order to initiate installation of sensors

(function  - Add sensors). Selection of this option activates the process of

adding radio sensors to the recording unit:

Radio unit confirms configuration status by control light pulses  (every second).

Follow the procedure described in section **III** on page 8 to add sensor to the system. If sensor is added to the system, the list "**Serial number**" will show its serial number and counter "S**ensors found"** will show higher value.

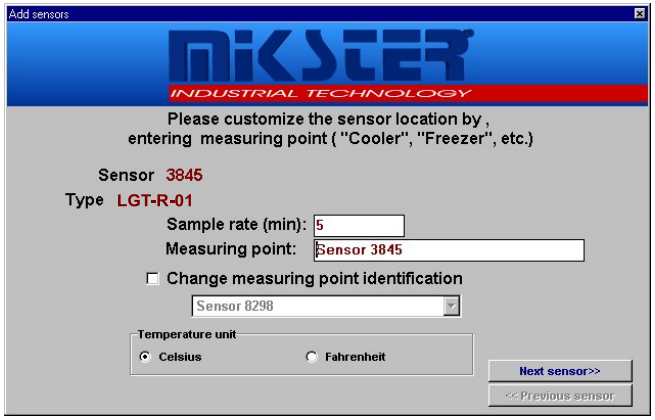
If the procedure of sensor adding to the system is carried out correctly, program Loggisoft will show installed Radio Sensor. Repeat the above steps to add another sensor. In this way it is possible to add up to 64 radio sensors to the radio system. In case if there is no radio range, check its condition (see par. IV c on page 9), and if there are further problems, add Relay Station between Radio Sensor location and Radio Recording Unit and repeat sensor installation procedure.

➔ As soon as new sensor is installed, it automatically switches to normal operating mode and displays screen 

Radio Sensor LGTD-R-01 installation

Ad.2. Adding radio sensor to already existing system.

When proceeding analogically as in par. **1**, concerning installing radio sensor in a new system, we go through the process of adding new sensor until window "A**dd sensors**" will be displayed.
This window allows to set recording frequency and sensor location name in order to facilitate their further identification on the program desktop.



In order to approve all settings press key Next>> or Next sensor>> (in case if we add greater number of sensors). Loggisoft does not automatically add sensor icon on its desktop (if it is needed, carry out this operation manually according to Loggisoft service manual).

If the procedure of sensor adding to the system is carried out correctly, program Loggisoft will show installed Radio Sensor. Repeat the above steps to add another sensor. In this way it is possible to add up to 64 radio sensors to the radio system. In case if there is no radio range, check its condition (see par. IV c on page 9), and if there are further problems, add Relay Station between Radio Sensor location and Radio Recording Unit and repeat sensor installation procedure.

➔ As soon as new sensor is installed, it automatically switches to normal operating mode and displays screen

FAQ

1. What should we do in case of frequent signal level fading ?
Reply:
- move sensor to a new location, where signal level is highest, or add relay station between sensor and recording unit in order to increase signal level.

ATTENTION !!!
Frequent fadeouts do not affect recording.

2. What should we do if there has been sudden ambient temperature change, and sensor does not measure new temperature quickly ?
Example: sensor was moved from ambient temperature of +30 C to refrigeration plant, where temperature is -20 C.
Reply:
- as a resut of sudden measurement location change, the measuring element stabilization takes approximately one hour. If there is no improvement later, sensor may be damaged. Please contact your local distributor to repair it.

3. Sensor cannot be added to the system.
Reply:
- level of radio signal coming from recording unit may be too low; it is recommended to check signal level using function Sign (see par. IV c on page 9), and then to move sensor or recording unit to another location, with higher signal level;
- interference caused by other equipment (computers, uninterruptable power supply units - UPS, Hubs or Network Switches) is also possible. It is recommended to move radio recording unit to another location, distant from the above-mentioned equipment.

4.Recordings are not visible after successful sensor installation.
Reply:
- it is required to wait approximately 1 hour after completion of installation procedure to allow the recording unit to collect all recordings from sensors.

5.After sensor reset program Loggisoft does not display its current recordings.
Reply:
- when resetting there is always risk that recording unit will stop communicating with the sensor. Repeat sensor adding procedure according to par. **III** on page 8 to solve this problem.

Radio Sensor LGTD-R-01 installation

f) Bat.u – This function is used to show battery voltage (Volts). Press the key 6 times after entering service mode in order to access this function, until window shown on fig. 14 appears. Screen showing current battery voltage (fig. 15) will be displayed after approximately 2 seconds. Correct rated voltage for a new battery is 3.6V.

Fig.14

Fig.15

g) Unit – This function is used to change displayed temperature units. In order to change displayed measured temperature unit, press the key 7 times after entering service mode, until window **Unit** (fig. 16) appears. After approximately 3 seconds temperature unit will be automatically changed (from °C to °F and vice versa). Sensor confirms successful unit change showing screen **donE** (fig. 17).

Fig.16

Fig.17

h) S.nr – This function is used to check serial number programmed in sensor. Serial number displayed on screen must correspond to number visible on sensor casing. This number appears on computer screen after successful completion of sensor installation process. Press the key 8 times after entering service mode in order to access this function, until screen **S. nr** (fig. 18) appears. Serial number kept in sensor memory will be displayed after approximately 3 seconds (fig. 19).

Fig.18

Fig.19

SERVICE FUNCTIONS

i) cor.v – function for service only (battery voltage calibration),

j) c.heH - function for service only

k) tunE - function for service only (radio system adjustment check),

l) c.dEc - function for service only (entering serial number),

m) Serv. - function for service only

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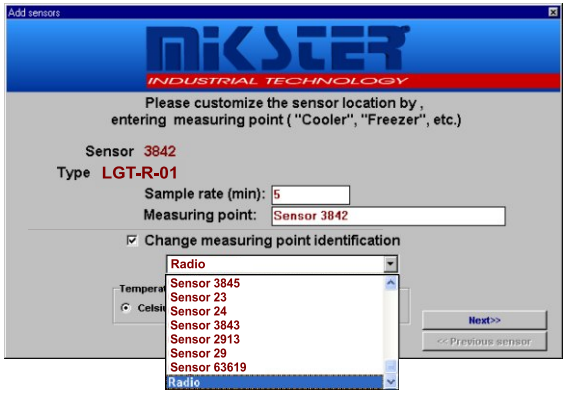
Radio Sensor LGTD-R-01 installation

Ad.3. Replacement of already installed sensor in a system.

When proceeding analogically as in par. **1**, concerning installing radio sensor in a new system, we go through the process of adding new sensor until window "A**dd sensors**" will be displayed.
This window allows to set recording frequency and sensor location name in order to facilitate their further identification on the program desktop.
In order to replace sensor, mark field "**Change measuring point identification**" and select sensor (from the list of already installed sensors).



In order to approve all settings press key Next>> or Next sensor>> (in case if we add greater number of sensors). Loggisoft program automatically refresh all icons of replaced sensors have enabling to read out immediatelly (if replaced sensors have not had icons on program desktop, automatic refreshing will not take place). If it is needed, sensors icons must be added manually according to Loggisoft service manual.

If the procedure of sensor adding to the system is carried out correctly, program Loggisoft will show installed Radio Sensor. Repeat the above steps to add another sensor. In this way it is possible to add up to 64 radio sensors to the radio system. In case if there is no radio range, check its condition (see par. IV c on page 9), and if there are further problems, add Relay Station between Radio Sensor location and Radio Recording Unit and repeat sensor installation procedure.

➔ As soon as new sensor is installed, it automatically switches to normal operating mode and displays screen

II. Radio sensor reset:
Sensor is reset in order to remove all recordings it has collected. Sensor starts to record measurements immediately after battery installation.

➔ **ATTENTION !!!**
Sensor reset results in complete and irreversible removal of all data recorded in it.
Mikster shall not be held responsible for effects of incidental use of this function.

Enter service mode to enable sensor reset (see page 9).

➔ When in service mode, press key 10 times, until screen **c.hEH** appears

➔ Then press the key once and hold it for approximately 5 seconds (screen **tunE** will appear), until screen **donE** appears.

➔ Sensor confirms correct reset with blinking symbol **donE**

III. Adding radio sensor to system:
The procedure of adding sensor to the system shall be carried out after having checked signal level of that sensor.
Enter service mode (see page 9) to enable adding a sensor.

➔ Press key 5 times, until screen **Add** appears

➔ Sensor indicates synchronization with the system by displaying symbol **Sync** (**Sync** lighting longer than 30 seconds indicates that sensor is out of network range)

➔ Sensor reports request to add to the system **r.Add**

➔ Sensor confirms the fact of logging in the system by blinking symbol **donE**

➔ Sensor adding report **rEP.X** (where X shows number of relay stations between sensor and recording unit).

ATTENTION ! If sensor immediately switches out of service mode before request to add (**r.Add**), **THE RECORDING UNIT IS NOT IN SERVICE MODE !**

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Radio Sensor LGTD-R-01 installation

IV. Sensor service modes
In order to enter service mode press and hold for 5 seconds the key. Symbol "Func" indicates entry. Any operation on sensor working modes is performed after switching it into service mode. To move from function to function press the key as many times as needed.

a) Esc - In order to quit service mode and its all functions, find function **Esc** (fig. 1), and then wait a moment. After few seconds sensor returns to its normal operating mode (fig. 2), displaying temperature, and current time in turn. After entering service mode function **Esc** is accessible with single pressing of the key.

Fig.1

Fig.2

b) batt % - In order to check battery level in sensor, find function **batt** (fig. 3), and then wait a moment until battery level in % (fig. 4) is shown. After entering service mode function **batt** is accessible with double pressing of the key.
ATTENTION: In case if battery level is less than 5%, contact your local distributor to replace it. Only authorized personnel may carry out battery replacement operation correctly. Unauthorized battery replacement may result in **IMMEDIATE WARRANTY TERMINATION !!!**

Fig.3

Fig.4

c) Sign – This function allows to check signal level in target sensor installation location. In order to activate this function, press the key 3 times after entering service mode, until **Sign** screen appears.
ATTENTION !! To ensure that sensor indicates signal level correctly, the recording unit should be switched to service mode, otherwise it will be **impossible** to activate function **Sign**.
After correct activation of this function, sensor executes the following work phases:

1. **Sync**(fig. 6) – This phase includes process of synchronization with the system and is started automatically after function **Sign** activation. **Sync** lighting longer than 30 seconds indicates that sensor is out of network range.
2. **Sign**(rys.5) – Signal level indication phase. In order to read out correctly network signal strength in sensor mounting location, wait at least 15 seconds after function **Sign** activation. Signal level refresh frequency depends on number of relay stations between radio recording unit and sensor, and is equal to number of relay stations +1 sec. (e.g. if we have 4 relay stations, signal level refresh period will be 5 seconds). It is recommended to wait at least two of these signal level refresh periods in each measured location. Use function **Esc** (see par. a) to quit function **Sign**; quitting is automatic after adding a sensor or when recording unit leaves service mode.

Fig.5

Fig.6

d) vX.XX – (sensor version number is displayed in place of x, e.g.0.15). In case if you report any problems to Mikster as regards sensor operation, always provide its software version. This function (fig. 7) is available when we press the key 4 times after entering service mode. After displaying software version number, sensor switches to normal operating mode (fig. 8), displaying temperature and current time in turn.

Fig.7

Fig.8

e) Add – sensor adding to the system (fig. 9) (see par. III on page 8),
1. **Sync** – as before (fig. 10),
2. **r.Add** – process of adding to the system (reports request - fig. 11),
3. **donE** – sensor has been added (fig. 12),
4. **rEP.X** – sensor adding report (number of relay stations between sensor and recording unit - fig. 13)

Fig.9

Fig.10

Fig.11

Fig.12

Fig.13