Product Information

PipeSens

Network analysis of district heating pipes via LoRaWAN

The *PipeSens* is LANCIER Monitoring's **district heating pipe monitoring system** that uses LoRaWAN® communication for fast and effective data transmission. It can be easily integrated into existing LoRaWAN® networks.

As a LoRa node, the *PipeSens* sensor measures the insulation and loop resistance of surveillance pairs in the insulation layer of district heating pipes on a daily basis, both in the Nordic, hierarchical and NiCr system, thus ensuring monitoring according to **EN 14419**.

The rapid detection of damage enables immediate reaction and thus prevents major damage and costs.

The *PipeSens plus* additionally records **contact conditions**, e.g. for access control or float switches, as well as **ambient or pipe temperature**.

The battery-powered *PipeSens* is independent of external power sources. It transmits measured values and device status information via LoRaWAN® to the control room. Here a meaningful route assessment and visualisation can be carried out.

The range of data transmission in the LoRaWAN® is up to 2 km in urban areas and up to 15 km in rural, less built-up areas, depending on the local structural conditions. Data transmission is also possible through manhole covers, building walls and even out of cellars.

The *PipeSens* can also be used as a r**eplacement for manual measuring point control**. This saves the complex coordination of appointments with operators or residents as well as the time-consuming entry into manholes etc.

PipeSens is particularly suitable for:
- NiCr, Nordic (EMS) system and the hierarchical system.
- Small and large route sections.
- All routes whose previous monitoring system did not trigger a central alarm.
- Any operator of heating networks.

Technical Data

Supply voltage	Exchangeable lithium battery, 3.6 V
Battery lifetime	> 5 years at daily measurement
Measurement channels for pipes	2 (e. g. for flow and return line of a district heat pipe)
Measurement range insulation	0 .. 10 MΩ (fault: ±3 % of measured value ±10 kΩ absolute)
Measurement range loop	0 .. 5 kΩ (fault: ±3 % of measured value ±0.05 kΩ absolute)
Pipe length	NiCr: max. 750 m HDW / Cu (Nordic System): max. 2.500 m
Measuring voltage	≤ 12 V DC
Contacts	2 access ports for dry contacts, line length 10 m max., permanently monitored (PipeSens plus)
Measuring range temperature	-20 °C .. +140 °C (PipeSens plus)
Data transfer	LoRaWAN® standard
On-site display	5 LED: 3 x Status, 1 x USB-Power, 1 x USB-Detect
On-site operation	1 button for real-time measurement
Interface	USB 2.0 interface for configuration of device
Operating temperature	-20 .. +60 °C
Degree of protection by enclosure	IP 66/67
Dimensions	130 x 100 x 180 mm (W x D x H)

Ordering Data

PipeSens LoRaWAN® radio sensor for mobile measurement data readouts	**Order-no. 076262.000**
PipeSens plus LoRaWAN® radio sensor for mobile measurement data readouts equipped with 2 contact inputs and temperature sensor	**Order-no. 076262.100**

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System diagramme

PipeSens

2 x Pipe monitoring

2 x Contact monitoring
(PipeSens plus)

1 x Temperature monitoring
(PipeSens plus)

Flow line

Return line

LoRaWAN®-Gateway

LoRaWAN

Evaluation of the measurement data and alarm report with visualisation of its geographical position in the LANCIER Monitoring UMS System.