

# SOFREL LT/LT-US Data loggers

## Wastewater network solutions



SOFREL LT and LT-US data loggers are designed to monitor wastewater and rainwater networks (collectors, Combined Sewer Overflows, etc.). Robust, totally watertight (IP 68), powered by a 10 year battery life, they feature a GSM/GPRS modem and a high performance antenna (specially designed for use in underground manholes).

Innovative and simple to install, SOFREL LT and LT-US provide an effective and economical solution to the instrumentation needs for wastewater networks:

- Self-monitoring,
- Monitoring of Combined Sewer Overflows,
- Continuous diagnostics.



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# Network instrumentation and monitoring

## Monitoring of Combined Sewer Overflows

- Overflow detection
- Metering the number of overflows
- Recording the duration of the overflows
- Threshold overrun alert



## Continuous diagnostics

- Level measurement using LT-US ultrasonic transducer or external 4-20 mA sensor
- Flow calculation using conversion table
- Daily balance of discharged water



## Autonomous sampler control

- Sampler control using 12V pulse
- Event-triggered sampling (high level threshold or overflow)
- Sampling based on measurement of effluent volume
- Alert regarding the number of samplings



# Transmission and centralisation

What sets SOFREL LT data loggers apart from other products on the market is the performance of their antenna and reliability of transmissions. Further more, the LT comes with software to test GSM coverage for each operator, enabling the optimal installation location to be identified.

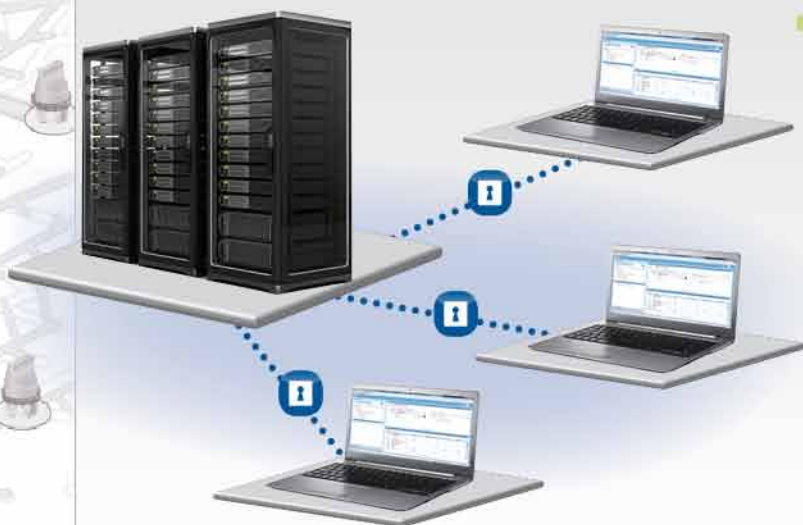
Every day, LT data loggers transmit recorded data and balances to central systems. Communications to central PCs or directly to the mobile phones of duty personnel can be set up for certain events (threshold exceeded, manhole cover opened, etc.).

## SCADA Central Stations or Supervisory control software systems



- Compatibility with central terminals and market supervisors
- OPC communications server
- Data use (curves, transfer to Excel operational dashboards)
- LT Autoconfiguration
- Alarm and stand-by duty management

## WEB LS server: hosted solution



- Network data hosted on a secure web server
- Customised curves and operation tables
- Data transfer in Excel
- Remote management of LT (reading/writing configuration, operating commands, etc.)
- Centralised LT geolocation (creation, configuration, display)
- Data acquisition by external computer system (ftp, web services)
- Distribution of information and alerts via e-mail, etc.

## Smartphones



The Smart LS and Smart PCWin applications enable consultation and acknowledgment of alarms using Android smartphones.

Alarms (status changes and exceeded thresholds) can also be sent directly by the data logger using SMS.



# Performance and innovation

## GSM Communications

- Integrated GSM modem and high performance antenna
- GPRS communication
- Designed for manhole installation (low reception level, interference due to concrete structure or manhole cover, etc.)

## Local communications

- Bluetooth data logger/PC connection (work safely outside manholes)
- Read/write configuration using Softtools software
- Onsite data transfer and use
- Access to equipment diagnostics functions

## Configuration

- User-friendly graphic settings interface for assisted set-up
- Configuration transfer via local Bluetooth connection or remote WEB LS

## Diagnostics

- via LEDs: notification of active status, network connection, GSM signal strength, etc.
- via PC: best GSM operator test, manhole cover closed test, battery charge, etc.
- via telephone: consultation of status, data logger test

## Water-tightness and robustness

- Sealing system ensuring total watertightness (IP68)
- "Military" grade connections

## Accessibility

- SIM card installation by user
- Onsite battery replacement

## Operating time

- Powered by high-capacity internal battery (up to 10 years' battery life)
- Ultra low-energy technology
- Measurement of real consumption and remaining battery life
- Remote power feeding of 4-20 mA sensors



# Technical characteristics

## Hardware description

### ■ Dimensions

- H 261 x L 155 x P 176 mm

### ■ Weight

- 1,1 kg

### ■ Watertightness

- IP68: certified for 1 meter of water 100 days
- "Military" type watertight connectors for DI and AI
- Screwless opening offers easy user access to SIM card and battery

### ■ Operating time

- Powered by internal lithium battery:
- > Standard battery: up to 5 years' battery life
- > High capacity battery: up to 10 years' battery life

### ■ Modem

- Built-in SMS/GPRS modem
- Built-in quadri-band GSM antenna
- Optional external antenna with 4m watertight cable (LT EA and LT-US EA)

### ■ Ultrasound cell (LT-US)

- Measuring range: 0.2 – 3.0m
- Accuracy: +/- 3 mm
- Cable length: 5 m
- Powered by the LT-US battery

		Data logger type:	
		LT	LT-US
Application type	- Self-monitoring of wastewater and rainwater network	✓	✓
	- Monitoring combined sewer overflows	✓	✓
	- Measurement of wastewater collector flow	✓	✓
	- Autonomous sampler control	✓	✓
I/O management	<b>Max DI Inputs/Outputs available for:</b>		
	- Flow meter (metering input)	<b>4</b>	<b>4</b>
	- Dry contacts (manhole cover open, overflow, submerged manhole, etc.)	<b>4</b>	<b>4</b>
	- Overflow sensors	<b>2</b>	<b>2</b>
	- Autonomous sampler control (requires 2 AI option)	<b>1</b>	<b>1</b>
	- Max frequency: 250 Hz / ½ duty cycle (min stable status duration: 2 ms)	✓	✓
Features	<b>Max. analogue inputs (optional AI), compatible with:</b>		
	- LT-US Ultrasonic measurement cell management		✓
	- Other «4-20 mA» type sensors (Ultrasonic or radar sensors)	<b>2</b>	<b>2</b>
	<b>Calculations &amp; balances</b>		
	- Daily balances (minimum and maximum volumes)	✓	✓
	- Daily balance for number of DI or threshold appearances	✓	✓
- Daily balance of active status duration for DI or thresholds	✓	✓	
- Daily count of the number and duration of overflows	✓	✓	
- Conversion tables: Calculation of daily volume and flow using AI	<b>2</b>	<b>2</b>	
Features	<b>Archiving</b>		
	- Archiving of indexes, flows, AIs for a configurable time interval	<b>1, 2, 3, 5, 10, 15, 30 et 60 mn</b>	
	- Archiving of indices and flows independent of AIs	✓	✓
	- Archiving of DI and threshold status changes	✓	✓
	- Variable archiving periods (change of period for an event or set time)	✓	✓
	- Archiving of daily balances	✓	✓
- Archiving capacity: 50,000 values	✓	✓	
Features	<b>Diagnostics</b>		
	- Best GSM operator selection	✓	✓
	- GSM signal strength	✓	✓
	- DI and AI connection tests	✓	✓
	- Calculation of remaining battery life	✓	✓
	Communications	<b>Onsite</b>	
- Operator dialogue via Bluetooth for configuration and diagnostics		✓	✓
- Local operation via Bluetooth :		✓	✓
• Curve charts		✓	✓
• Data transfer in Excel		✓	✓
- Coloured LEDs for visual diagnostics of operation and GSM signal		✓	✓
Communications	<b>Remote</b>		
	- Communication media	<b>GPRS</b>	
	- To 1 or 2 central terminals or WEB LS server	✓	✓
	- Multiple transmissions, user-defined according to date, time or period	✓	✓
	- To mobile phone for alerts:	✓	✓
	• 2 possible events (threshold exceeded or DI status change)	✓	✓
• Configurable text message	✓	✓	
- Smart LS and Smart PCWin applications for Android Smartphone (alarm display and acknowledgement)	✓	✓	
- Automatic time synchronisation	✓	✓	