SOFREL DL4W

2G/4G LPWAN data loggers for monitoring and controlling the performance of water networks

5G
Ready

SOFREL
DL4W-S

LACROIX

Reliable, independent and watertight data logger FOR REAL-TIME MONITORING OF YOUR WATER NETWORK

ACT ON THE PERFORMANCE OF DRINKING WATER NETWORKS

REMOTE READING OF WATER METERS AND FLOW METERS

- **Monitoring of the consumption of "Major consumers"**
- **Detection of consumption anomalies**
- **Monitoring of the transfers between 2 networks** in the context of an interconnection
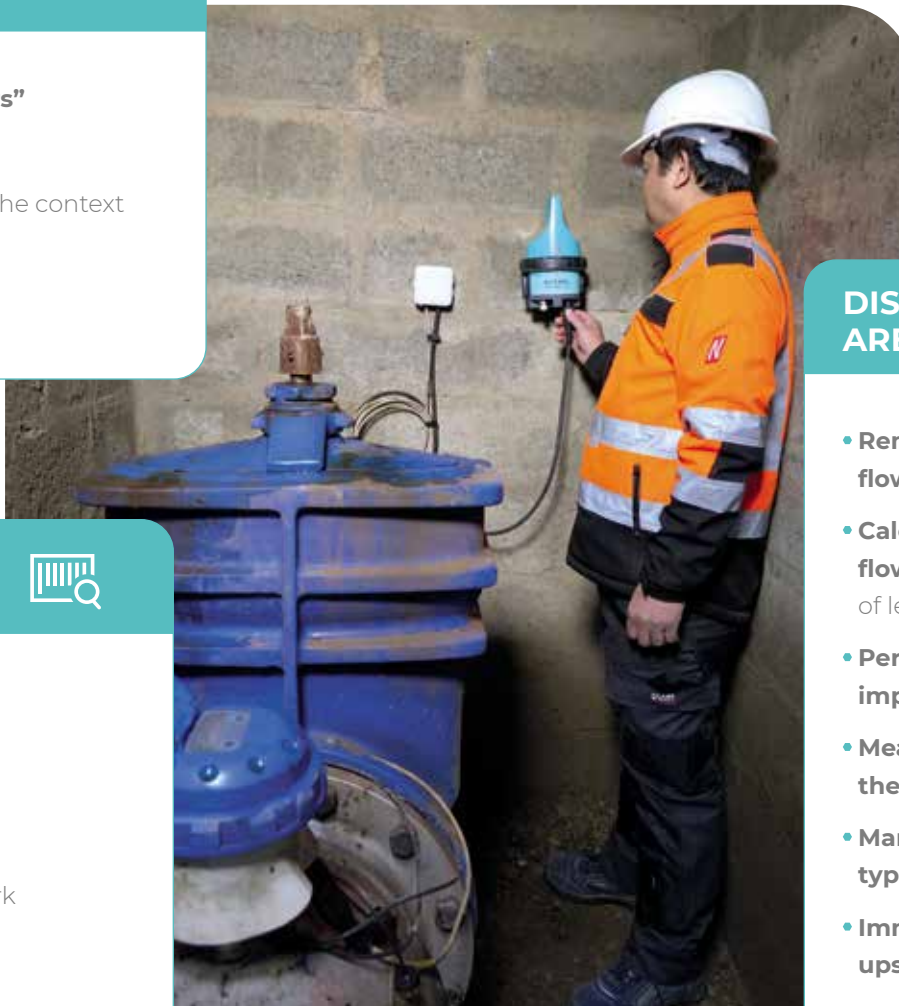- **Billing support**

PRESSURE AND QUALITY MONITORING

- **Measurement and monitoring of 2 pressure points**
- **Monitoring of water quality parameters** (pH, Chlorine, conductivity, etc.)
- **Alert of pressure threshold overrun**
- **Alert in the case of pollution detection** in the network
- **Measurement of the service quality level**

DISTRICT METERING AREA MONITORING

- **Remote reading of meter indexes and flow meters of each water district area**
- **Calculation of average, max. and night flowrates... and automatic detection** of leakage
- **Performance monitoring and improvement** of the network efficiency
- **Measurement and registration of the pressure**
- **Management of the "in/out" type meters**
- **Immediate alert in the case of upstream or downstream pipe bursts**

Dedicated to 24/7 surveillance and monitoring of the most isolated sites, SOFREL DL4W data loggers adapt perfectly to difficult environments.

The business functions, the power supply and dynamic control of sensors, and the processing capacity of the SOFREL DL4W help you control the performance of your networks on a daily basis.

MONITOR THE WASTEWATER AND RAIN WATER COLLECTION NETWORKS

PERMANENT NETWORK DIAGNOSTICS AND SELF-MONITORING

- **Measurement of effluent heights and speed**
- **Overflow detection** in the Combine Sewer Overflow
- **Periodic calculations** of the number of overflows and their duration
- **Simultaneous measurement of 2 water levels** (main channel / diversion channel) via 4-20mA probes or Modbus radars
- **Recording of flows and volumes released**
- **Confirmation of correct scaling of network**
- **Measurement of inputs** from surrounding municipalities
- **Control and measurement of industrial discharges** into the network
- **Detection of the presence of infiltration water**
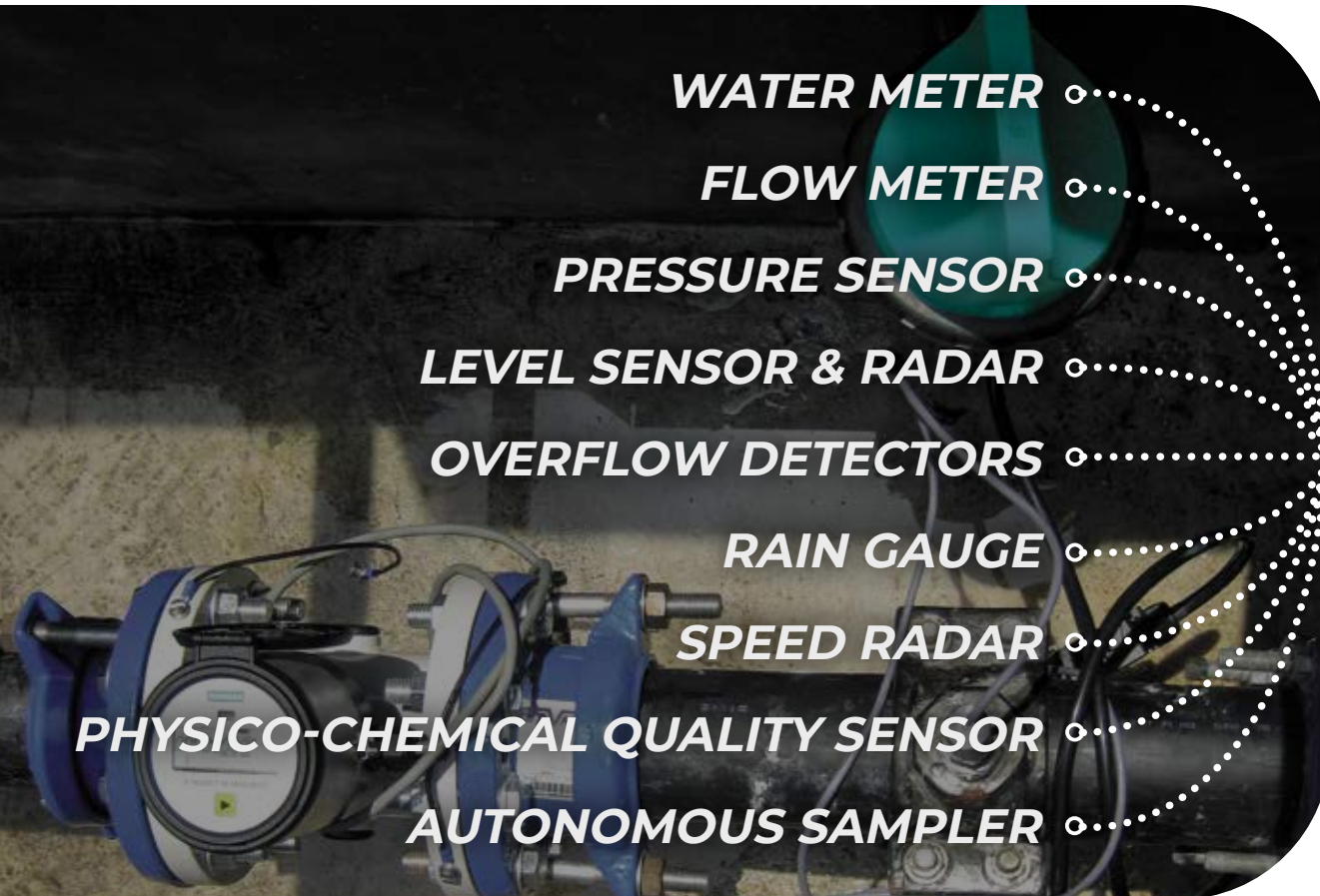
RAIN GAUGE MONITORING

- **Metering of rain gauge pulses**
- **Calculation of rainfall intensity**
- **Alignment of rain gauge indications** with the operation of the network

WATER QUALITY AND PHYSICO-CHEMICAL MONITORING

- **Power supply and control of the quality measurement** of 8 Modbus sensors (conductivity, pH, Redox, ORP, etc.)
- **Water quality parameters measurement and registration**
- **Control of the autonomous samplers** and estimation of the pollutant load

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4G LPWAN data loggers for **CONNECTED** AND **SMART** water networks

WATER METER

FLOW METER

PRESSURE SENSOR

LEVEL SENSOR & RADAR

OVERFLOW DETECTORS

RAIN GAUGE

SPEED RADAR

PHYSICO-CHEMICAL QUALITY SENSOR

AUTONOMOUS SAMPLER

DATA ACQUISITION

Reliable, autonomous, with a very-high-perfomance built-in antenna communicating via 2G/4G LPWAN, SOFREL DL4W guarantee the deliverability of all data necessary for the monitoring of your networks and inform you of any incidents in real time.

ON SITE COMMUNICATION

• **Bluetooth link**

• **Local data transfer**

• **Device configuration**

TIME STAMPING / DATA PROCESSING

INTER-RTU COMMUNICATION

- M2M link with SOFREL RTU
- Control of remote installation

ON-FIELD MOBILE ACCESS

- Secure HTML5 app
- Can be used on PC/Tablet/Smartphone
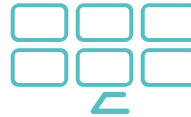
NETWORK MANAGEMENT

SOFREL PCWin2

SOFREL WEB LS

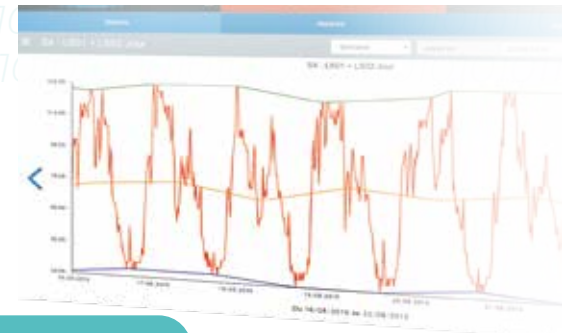### OPERATIONAL PERFORMANCE

Hypervision

Data Analytics

SMART CITIES

Big Data

CENTRALISATION/SUPERVISION

- Permanent network and facilities control
- Alarms and maintenance management
- Data management and analysis

COMMUNICATION WITH SCADA

- Data transfer to SCADA or hypervision solutions
- Monitoring and analysis of operational performances
- Provision of SMART CITY data

COMMUNICATION AND USE OF DATA

The simplicity and performance of the SOFREL DL4W: configure, install and forget about them...

THEY WILL **KEEP AN EYE** ON YOUR **NETWORKS** FOR **MANY YEARS**

With the SOFREL DL4W range, the concept of "Plug and forget" makes perfect sense. Designed to operate in buried manholes, and very simple to install and configure, they will become a critical necessity in the sustainable provision of monitoring data for your networks.

Remote diagnostics of devices, alarms on sensor faults and the precise monitoring of remaining battery life will minimise any routine on-site trips.

2G/4G LPWAN COMMUNICATION 📶

- Integrated 4G LPWAN (LTE-M & NB-IoT) modem
- Sending of data to 1 or 2 SCADA
- SMS-enabled alarm*
- 2G / 4G LPWAN reception level test
- Flex Option to have a remotely deployed antenna
- 2G / 4G LPWAN redundancy

Depending on the activation of the telecom operator

SERIAL PORT ⇄

- Modbus communication with flow meters and RS485 sensors
- Reading of Modbus records, device diagnostics and alarm on faults

WATERPROOFNESS AND RELIABILITY

- Designed for underground use (manholes with a flood risk)
- Enhanced IP68 watertightness (certified 30 days at a depth of 4 m)
- Safe and simple access to the on-site SIM card and battery
- "Military" type connections

AUTONOMY

- Long-life lithium battery (up to 10 years of battery life)
- Energy efficient electronics
- 4-20mA and Modbus sensors power supply
- Indication of remaining run time
- External power supply option (DL4W-HP only)

SIMPLIFIED IMPLEMENTATION AND MAINTENANCE

- Access to the data logger on-site via a Bluetooth connection
- On-site or remote graphic configuration
- Diagnostics functions

4G LPWAN communication with 2G redundancy

The reliability of communications is the historical strength of SOFREL data loggers and has largely contributed to their success.

With this new version of the 4G LPWAN (LTE-M & NB-IoT) data logger we reinforce the requirements related to the quality of the communication and guarantee that no data is lost.

ADVANTAGES OF 4G LPWAN COMMUNICATION

- **Interoperability of equipment via IP protocol** (without changing the client architecture)
- **Deep indoor signal penetration** (even through concrete)
- **Improvement of the data logger autonomy**

INTEGRAL DATA TRANSMISSION

- **Very high performance antenna** designed to communicate in underground manholes or metering chambers
- **Negotiation-based protocol** with failover mechanisms to ensure full data transmission
- **Automatic switching to 2G network** in case of 4G LPWAN network unavailability
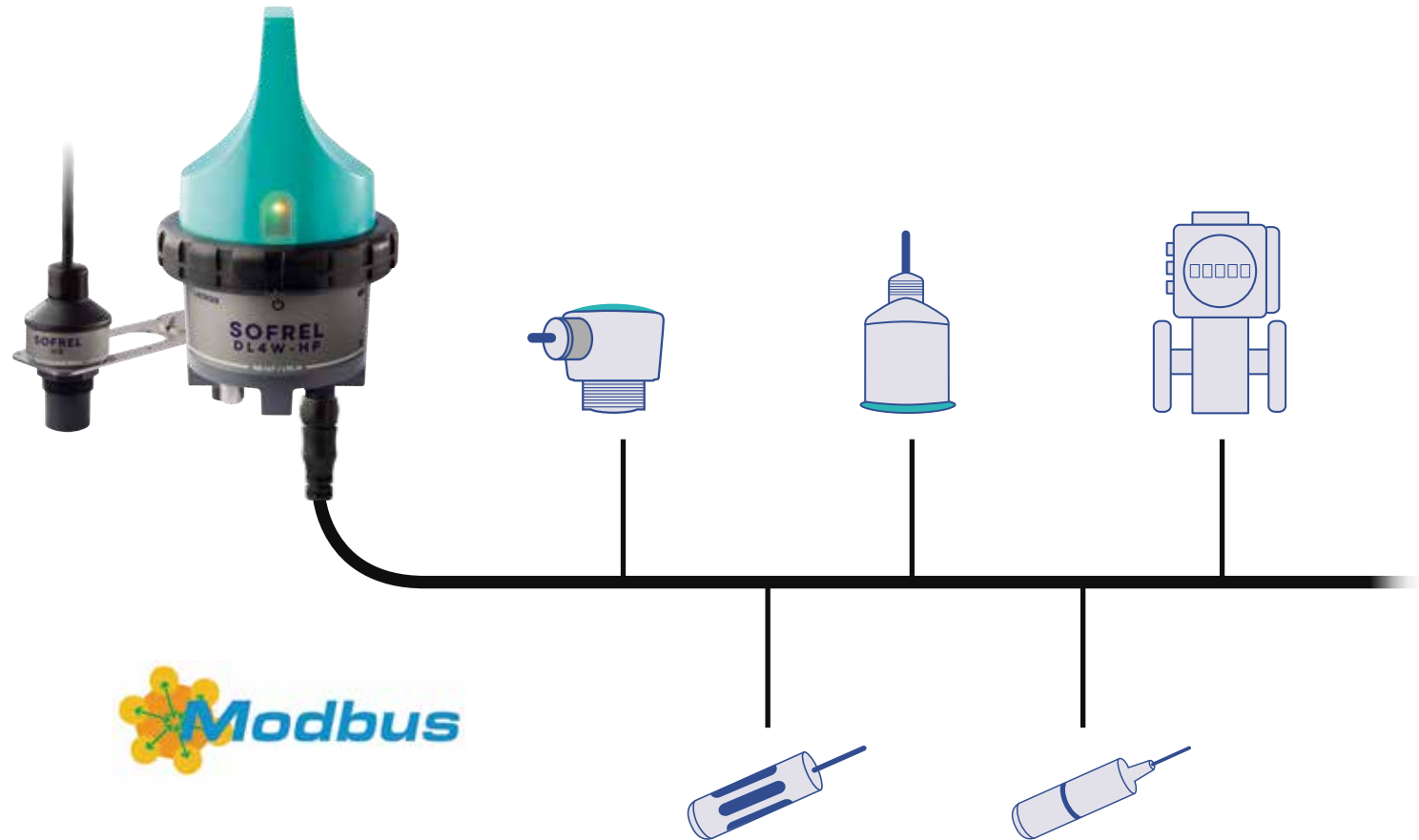
Open Modbus data loggers TO INTERFACE WITH ALL
NETWORK INSTRUMENTATION

SOFREL OpenSensor LP and HP (Low power & High power) data loggers offer **openness and compatibility with all Modbus equipment** (sensors, radars, flow meters) present on the networks.

Universal, they address all the monitoring **needs of isolated sites** on water and wastewater networks.

MANAGEMENT OF MODBUS SENSORS

- Connection, management and control of 8 sensors communicating in Modbus via an RS485 input

- 2 versions available for remote powering of sensors:
  - DL4W LP: 0.8W - For 5V and 12V voltages
  - DL4W HP: 2W - For 12V and 20V voltages

- Reading of 14 registers (internal information) accumulated

- Diagnosis of operation and alert in case of sensor defect

- Programmed or event-driven transmission of sensor Modbus registers to 1 or 2 central stations

Simplified sensors configuration

The set-up of the sensors and the communication parameters is fully integrated in the **software SOFTOOLS**

Particularly user-friendly, a few clicks are enough to set the polling periods, the **management of the sensors' warm-up times** and the **definition of the Modbus registers**.

EXTERNAL POWER SUPPLY

SOFREL OpenSensor HP EPS version (External Power Supply) can be powered by an external source (battery, mains, solar panel, micro-turbine…) allowing to:

- Provide power to the **most energy consuming sensors**

- Realize more **frequent measurements**

- **Communicate** information to the SCADA **"in real time"**

- **Communicate** thresholds to a SOFREL RTU each time they are exceeded in order to control a r**emote utility**

- **No longer limit** the operation of data loggers to save battery life…

DL4W range: 4G LPWAN DATA LOGGERS ADAPTED TO ALL APPLICATIONS

SOFREL LS-10
"Large consumers" remote meter reading

- 1DI
- Internal antenna
- Standard or high capacity battery

SOFREL LS-Flow
Sectorization and remote reading of flow meters SIEMENS MAG 8000, ABB Aquamaster, KROHNE Waterflux or ARAD Octave

- 1DI – 1AI
- RS-485 Modbus RTU link
- Internal or Flex antenna versions
- Standard or high capacity battery

SOFREL LS-P
Pressure monitoring and measurement

- 2AI
- Internal antenna or Flex versions
- Standard or high capacity battery

SOFREL LS42
Sectorization, Remote meter reading and pressure monitoring

- 4DI - 2AI
- Internal antenna or Flex versions
- Standard or high capacity battery

OPTIMIZING THE PERFORMANCE OF DRINKING WATER NETWORKS

SOFREL LT42
Permanent diagnosis and water quality monitoring

- 4DI - 2AI
- Dynamic archiving
- Internal antenna or Flex versions
- Standard or high capacity battery

SOFREL DL OPEN SENSOR
Low Power
Remote reading of flow meters and quality sensors

- 2DI - 1AI
- RS-485 Modbus RTU link
- Remote power supply for 8 sensors 0V, 5V and 12V
- Dynamic archiving
- Flex version
- High capacity battery

SOFREL LT-US
Overflow and flow monitoring by US probe

- 2DI - 1AI
- 1 US probe
- Dynamic archiving
- Internal antenna or Flex versions
- Standard or high capacity battery

SOFREL DL OPEN SENSOR
High Power
Remote flow meter reading, quality sensor control and flow monitoring by US probe

- 2DI - 1AI
- RS-485 Modbus RTU link
- Remote power supply for 8 sensors 12V and 20V
- Dynamic archiving
- Flex version
- High capacity battery or external power supply

SELF-MONITORING OF WASTEWATER NETWORKS

MULTI-SENSOR APPLICATIONS

CONNECTED TECHNOLOGIES
FOR **SMARTER**
WATER &
ENERGY

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