SOFREL DL4W

4G M2M data loggers for monitoring and controlling the performance of water networks
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

**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

Act on the performance of drinking water networks
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

PERMANENT NETWORK DIAGNOSTICS AND SELF-MONITORING

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

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
4G M2M 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 •

Reliable, autonomous, with a very-high-performance built-in antenna communicating via 4G M2M, SOFREL DL4W guarantee the deliverability of all data necessary for the monitoring of your networks and inform you of any incidents in real time.

DATA ACQUISITION

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

**CENTRALISATION/SUPERVISION**

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

**ON-FIELD MOBILE ACCESS**

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

**COMMUNICATION AND USE OF DATA**

**NETWORK MANAGEMENT**

- SOFREL PCWin2
- SOFREL WEB LS

**OPERATIONAL PERFORMANCE**

- Hypervision
- Data Analytics

**SMART CITIES**

- Big Data

**COMMUNICATION WITH SCADA**

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

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**2G & 4G M2M COMMUNICATION**

- Integrated 4G LTE-M & NB-IoT modem
- Sending of data to 1 or 2 SCADA
- SMS-enabled alarm*
- 4G M2M / 2G reception level test
- Flex Option to have a remotely deployed antenna
- 2G / 4G M2M Redundancy

* Depending on the activation of the telecom operator

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**SERIAL PORT**

- Modbus communication with flow meters and RS485 sensors
- Reading of Modbus records, device diagnostics and alarm on faults
4G M2M 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 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 M2M 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 M2M network unavailability

WATERPROOFNESS AND RELIABILITY

- Designed for underground use (manholes with a flood risk)
- Enhanced IP68 watertightness (certified 200 days at a depth of 2 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
**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
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 remote utility
- No longer limit the operation of data loggers to save battery life...

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.
OPTIMIZING THE PERFORMANCE OF DRINKING WATER NETWORKS

**SOFREL LS-10**
“Large consumers” remote meter reading
- 1DI
- Internal antenna
- Standard or high capacity battery

**SOFREL LS-P**
Pressure monitoring and measurement
- 2AI
- Internal antenna or Flex versions
- 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 LS42**
Sectorization, Remote meter reading and pressure monitoring
- 4DI - 2AI
- Internal antenna or Flex versions
- Standard or high capacity battery

**DL4W range: 4G M2M DATA LOGGERS ADAPTED TO ALL APPLICATIONS**
**SOFREL LT42**
Permanent diagnosis and water quality monitoring
- 4DI - 2AI
- Dynamic archiving
- Internal antenna or Flex versions
- Standard or 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**
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 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