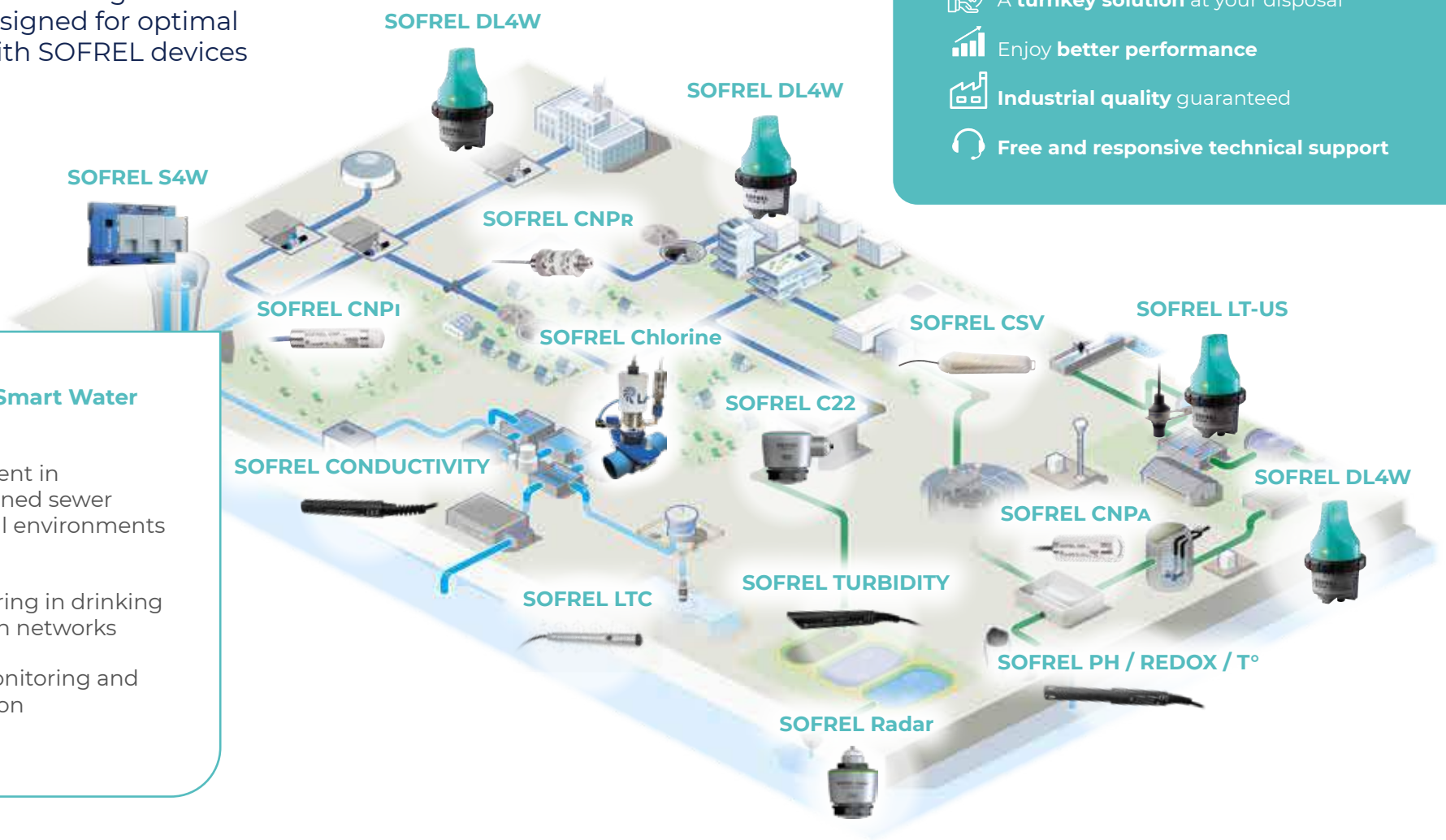
SOFREL Sensors

Sensors portfolio for water networks

LACROIX

A **RANGE** OF **SENSORS DESIGNED** TO SUIT **EVERY NEED**

LACROIX offers a range of sensors and tools designed for optimal operation with SOFREL devices



THE ADVANTAGES OF LACROIX'S ASSISTANCE AND EXPERTISE

- Benefit from **expert advice**
- A **turnkey solution** at your disposal
- Enjoy **better performance**
- **Industrial quality** guaranteed
- **Free and responsive technical support**

Applications for the **Smart Water market** :

- Level measurement in reservoirs, combined sewer overflows, natural environments and lift station
- Pressure monitoring in drinking water distribution networks
- Water quality monitoring and pollution detection

FOR CONNECTED MEASUREMENT

DATA ACQUISITION

PROCESSING AND TRANSMISSION

REMOTE OPERATION

SCADA

CLOUD SOLUTIONS

A RANGE OF SENSORS COVERING ALL NEEDS

LEVEL

Reliable and accurate level measurement, adapted to the environment (drinking water or waste water, immersion sensor or inductive sensor)

PRESSURE

Pressure monitoring in drinking water distribution networks

QUALITY

Monitoring of water quality by analysis of physico-chemical network parameters (drinking water, waste water and natural water)

LEVEL MEASUREMENT

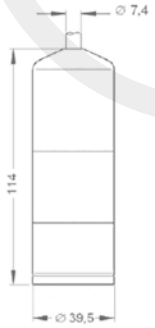
SOFREL CNPI

Immersed piezo-resistive level sensor with a high-quality stainless steel membrane, for measuring drinking water levels.

Featuring ACS certification, this sensor facilitates water level measurement in reservoirs, tanks, boreholes, etc. It determines water depth by measuring the differential pressure between the surface of the liquid and the bottom of the reservoir in which it is submerged.

Technical Information	
Technology	Immersed piezo-resistive sensor with high-quality stainless steel membrane
Measurement	Output: 4 - 20 mA Measurement range: 0–6 m or 0–10 m as standard, or specific to be defined Accuracy: ± 0.35% FSO as per IEC60770
Power supply	7 to 30 VDC Low consumption Built-in over-voltage protection
Temperature	-10°C to +70°C
Cable	With vent to atmosphere capillary 9 meters in length for the 0-to-6-m version 13 meters in length for the 0-to-10-m version Specific length (to be defined)
Certification	ACS (Certificate of Sanitary Conformity

SOFREL CNPA



Submersible sensor for measuring sewage water levels.

This submersible pressure sensor with capacitive ceramic membrane is ideally suited for waste water or sewage water (lift stations, waste water treatment networks).

It determines water depth by measuring the differential pressure between the surface of the liquid and the bottom of the reservoir in which it is submerged.

Technical Information	
Technology	Immersed sensor with capacitive ceramic membrane
Measurement	Output: 4–20 mA Measurement range: 0–3 m or 0–6 m as standard, or specific to be defined Accuracy: ± 0.35% FSO as per IEC60770
Power supply	9 to 36 VDC Low consumption Built-in over-voltage protection
Temperature	-10°C to +70°C
Cable	With vent to atmosphere capillary 10 meters in length for the 0-to-3-m version 15 meters in length for the 0-to-6-m version Specific length (to be defined)

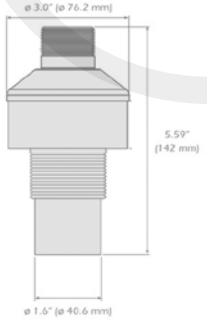
LEVEL MEASUREMENT

SOFREL CSV

Capacitive sensor for detecting an overflow during periods of rainfall.
Typically installed in combined sewer overflows, this sensor detects effluent flow andrelays the duration and number of overflows into the environment.
This sensor requires regular maintenance as it is in contact with effluent.

Technical Information	
Technology	Capacitive sensor
Output	Digital link
Watertightness	IP68
Temperature	-20°C to +50°C
Cable	10 meters
Dimensions	290 x 74 x 44 mm

SOFREL Sonde US

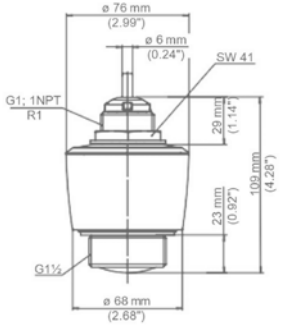


0–3 m ultrasound sensor (US) for measuring levels without coming into contact with effluent.
Compatible with the SOFREL LT-US data logger only, this sensor can be installed in combined sewer overflows, water purification basins,
pumping stations, rainwater collection basins, for level and flow measurement in open channels.

Technical Information	
Technology	Contact-free ultrasound level measurement sensor
Measurement	LT-US output only Measurement range: 0–3 m Accuracy: ≤ 3 mm Beam angle: 8°
Power supply	via SOFREL LT-US only
Temperature	-20°C to +50°C
Cable	5 or 10 meters

LEVEL MEASUREMENT

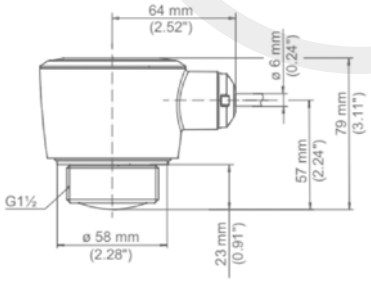
SOFREL C11



4–20 mA/0–8 m radar sensor for measuring levels without coming into contact with effluent.
It can be installed in combined sewer overflows, water purification basins, pumping stations, rainwater collection basins, for level and flow measurement in open channels.

Technical Information	
Technology	Contact-free radar level measurement sensor
Measurement	Output: 4 - 20 mA Measurement range: 0 - 8 m Accuracy: ≤ 5 mm (check the analogue input resolution of the remote monitoring product) Beam angle: 8° Radar measurement frequency: W band (80-GHz technology)
Power supply	12 to 35 VDC
Temperature	-40°C to +60°C
Cable	10 meters
Connection	G1 ½ thread (nut included)
Watertightness	IP66/IP68 (3 bar, 24 hrs) as per IEC 60529, type 6P as per UL 50

SOFREL C22

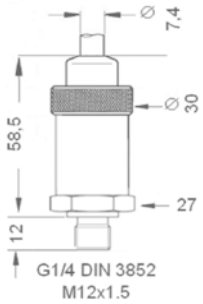


4–20 mA radar sensor or 0–15 m Modbus for measuring levels without coming into contact with effluent.
t can be installed in combined sewer overflows, water purification basins, pumping stations, rainwater collection basins, for level and flow measurement in open channels

Technical Information	
Technology	Contact-free radar level measurement sensor
Measurement	Output: 4–20 mA or Modbus Measurement range: 0 to 15 m Accuracy: ≤ 2mm Beam angle: 8° Radar measurement frequency: W band (80-GHz technology)
Power supply	12 to 30 VDC
Temperature	-40°C to +80°C
Cable	5 meters
Connection	G1 ½ thread (nut included)
Watertightness	IP66/IP68 (3 bar, 24 hrs) as per IEC 60529, type 4X/6P as per UL 50

PRESSURE MEASUREMENT

SOFREL CNPR

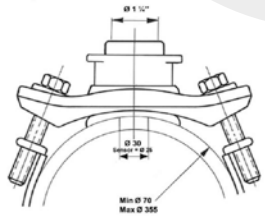


Piezo-resistive pressure sensor for 1/4-inch DIN 3852 gas connection to high-quality stainless steel membrane for clean water.
This sensor facilitates pressure measurement in drinking water distribution networks, in order to detect leaks and monitor the quality of the service.

Technical Information	
Technology	Screw-on piezo-resistive sensor with high-quality stainless steel membrane
Measurement	Output: 4 - 20 mA Measurement range: 0–16 bar or specific (max. 40 bar) Accuracy: ± 0.35% FSO as per IEC60770 Overpressure: up to 60 bar for the standard model
Power supply	7 to 30 VDC
Temperature	25°C to +85°C
Cable	3 meters Cylindrical ¼-inch gas connector DIN 3852, watertight gasket, screw-on connector with Ø 27-mm spanner
Watertightness	IP68

QUALITY MEASUREMENT

SOFREL
Chlorine



Complete kit for monitoring chlorine propensity online and at alert stations.

SOFREL Chlorine remotely monitors chlorine levels in drinking water distribution networks and alerts contract operators if it detects that an alert threshold has been reached.

Featuring ACS certification, this kit is made up of a chlorine sensor, an assembly device, a SOFREL LS42 data logger, a sampling valve and an additional pressure sensor output. It can be easily deployed in loaded pipes (steel, fibre cement, cast iron, PE and PVC-O) continuously along the water distribution network.

Technical Information	
Technology	Amperometric measurement
Measurement	Output: 4 - 20 mA Measurement range: 0.03–5 ppm Measurement resolution: 0,01 ppm Pressure measurement: 0 - 8 bars
Power supply	Remote 12-V supply via the SOFREL LS42 data logger lithium battery
Temperature	0°C to 50°C
Certification	ACS (Certificate of Sanitary Conformity)

QUALITY MEASUREMENT

SOFREL LTC

The SOFREL LTC facilitates measurement of the level and quality of groundwater, in order to preserve the environment and ensure sustainable management of water-based resources.
This sensor, connected to the SOFREL DL4W-LP data logger or SOFREL S4W remote terminal unit via Modbus, facilitates regular monitoring of the state of underground aquifers by measuring levels, temperature and conductivity.

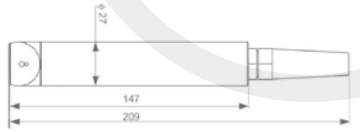
Technical Information	
Measurement	Modbus output
Dimensions	Ø 22 mm x 223 mm
Alimentation	Via SOFREL DL4W or SOFREL S4W
Watertightness	IP68
Cable	Specific length (to be defined)

Level Measurement	
Technology	Relative pressure (with capillary) Piezo-resistive probe
Measurement range	0 to 0.3/1/3/10 bar / 0 to 3/10/30/100 m
Accuracy	± 0.05% FS (± 0.04% FS for the 0-to-0.3-bar version)
Resolution	0 to 50°C

Temperature Measurement	
Technology	PT1000
Measurement range	10 to 80° C
Compensated measurement range	0 to 50°C
Accuracy	± 0,1° C

Conductivity Measurement	
Technology	6 titanium electrodes
Measurement range	0 to 0,2 / 2 / 20 / 200 mS / cm
Accuracy	<2.5% of the range

SOFREL TURBIDITY

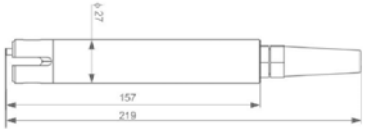


SOFREL Turbidity makes it possible to measure the cloudiness of water or to estimate the volume of suspended solids in waste water and natural water.
Connected to the SOFREL DL4W Open Sensor data logger or to the SOFREL S4W remote terminal unit, this solution can be used to monitor variations in turbidity to ensure compliance with water quality standards.

Technical Information	
Measurement	90° optical IR technology (850 nm)
Measurement range	5 – 50 NTU 5 – 200 NTU 5 – 1000 NTU 5 – 4000 NTU Automatic
Resolution	0.1 to 1 NTU/mg/L depending on the range
Accuracy	< 5% of the measurement
Measurement range	0 – 50° C
Dimensions	Ø 27 x 170 mm
Communication	RS485 Modbus
Power supply voltage	5 to 12 V - Max. 13,2 V
Cable	7 meters with Fischer male connector (Fischer fema wire adaptor available)

QUALITY MEASUREMENT

SOFREL CONDUCTIVITY

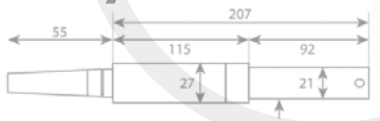


SOFREL Conductivity provides a way of measuring the conductivity of waste water and natural water.

Connected to the SOFREL DL4W Open Sensor data logger or to the SOFREL S4W remote terminal unit, this solution can be used to monitor variations in conductivity associated with the salinity and purity of water to ensure compliance with water quality standards.

Technical Information	
Measurement	Conductivity sensor with 4 electrodes (graphite and platinum)
Measurement range	0 - 200 µS/cm 0 - 2 000 µS/cm 0 - 20 mS/cm 0 - 200 mS/cm
Accuracy	±1% of the full scale
Salinity measurement range	5-60 g/kg
TDS-KCl range	0 – 133 000 ppm
Operating temperature	0 to 50°C
Watertightness	IP68
Power supply voltage	5 to 12 V
Dimensions	Diameter Ø 27 mm Length without cable: 157 mm

SOFREL PH/REDOX/T°



SOFREL pH/Redox/T° provides a way of measuring the pH and REDOX of waste water and natural water.

Connected to the SOFREL DL4W Open Sensor data logger or to the SOFREL S4W remote terminal unit, this solution can be used to monitor pH and REDOX variations resulting from potential pollution to ensure compliance with water quality standards.

Technical Information	
Dimensions	Lower section: Ø 21 x 92 mm Upper section: Ø 27 x 103 mm Length of installed sensor: 210 mm
Communication	RS485 Modbus
Power supply voltage	5 to 12 V - Max. 13,2 V

Measurement Characteristics	PH	Redox	Temperature
Measurement	Potentiometric measurement Combined electrode (pH/reference): special glass sensitive to H3O+ ions, reference Ag/AgCl EGelled electrolyte (KCl)	Potentiometric measurement Combined electrode (Redox/ reference): platinum tip, reference Ag/AgCl Gelled electrolyte (KCl)	Potentiometric measurement Combined electrode (Redox/reference): platinum tip, reference Ag/AgCl Gelled electrolyte (KCl)
Measurement range	0–14 pH temperature-compensated to 25°C	-1,000 to +1,000 mV	-1,000 to +1,000 mV
Resolution	0,01 pH	0,1 mV	0,1 mV
Accuracy	±0.1 pH	±2 mV	±2 mV

CONNECTED TECHNOLOGIES FOR **SMARTER WATER** & **ENERGY**

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