

Electronic Water meter

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Application

The **Superaqua 1** is an autonomous compact water meter portfolio consisting of single-jet and multi-jet measuring capsules. It's used in sub-metering, home automation, local and district water supply systems to measure the consumption of cold and hot water for individual billing.

The **Superaqua 1** is available in various models, it measures the water volume within the range of +0,1°C to +90° and meets the requirements of the European Measuring Instruments Directive (MID) 2014/32/EU and the International Organisation of Legal Metrology OIML R49.

Standard features

- Integrated radio flexible and programmable for Walk-by/ Drive-by/AMI/AMR
- Sontex Radio, OMS wM-Bus and LoRaWAN communication
- NFC interface (Near Field Communication) for readout and settings
- Individual or global 128 bits AES Key
- Easy to read with digital LCD Display with clear and informative presentation
- Battery Monitoring and Battery life up to 15 years
- Long term data logging storage of 1 due date value, 15 monthly values
- Starting flow value from 1 l/h (single jet), from 3 l/h (measuring capsule)
- Backflow- Leakage- No Flow- and Flow > Q_{max}- detection
- Temperature range up to 50 °C (Cold Water) and up to 90 °C (Warm Water)
- MID measurement range class (Q₃/Q₁) single jet up to R500 horizontal and R315 vertical (standard R160H/V)
- MID measurement range class (Q₃/Q₁) measuring capsule up to R250 horizontal and R200 vertical
- Measuring Class 2
- Protection Class IP68 (4 weeks, 1m under water)
- Switch to operation mode with a set volume value (Standard 10 l)

Measuring Principle

The water flows through the system and drives the impeller wheel. The rotational speed is scanned electronically using an inductive detection principle. The water meter can be mounted in a horizontal or vertical position.

The device parameters, as well as the cumulative values for volume monthly values, set day value, operating hours and error type are stored in the memory. Error messages are stored in a rolling list of the last 10 error messages. The parameters and the error messages are saved even in case of a power failure.

Model and Size

The Superaqua 1 is available in the following sizes:

- Single-Jet flow meter for Q₃ 2.5 m³/h, with a length 80, 110, 115, 130 or 165 mm
- Single-Jet flow meter for Q₃ 4 m³/h, with a length of 115, 130 or 190 mm
- Multi-Jet measuring capsule for Q₃ 2.5 m³/h, with a standard diameter D1 of 75 mm

Approvals and Certificates

EU-Type Examination Certificate acc. to 2014/32/EZ (MID)
EU-Type Examination Certificate acc. to 2011/65/EU (RoHS)
RED Conformity
OIML R49
EN 14154
OMS Conformity Gen. 4 Security Profil A/B
ACS (France)
KTW / W270 (Germany)

SVGW (Switzerland)

ÖVGW (Austria)

Options

The Superaqua 1 can be ordered with following options:

- Cold or Hot water meter
- 6+1, 12+1 and up to 15 years battery life
- One of the following communications options:
 - Without communication
 - Bidirectional Radio SONTEx interface
 - OMS Wireless M-Bus
 - LoRaWAN
- Various Applicable National Drinking Water Norms

Functions

- Measure and record water volume of the flow in cold or warm water supply applications
- The configuration can be done either through the NFC interface or by Radio SONTEx.
- Display the totalized consumption and optionally the totalized consumption at the set date
- Display operating data including self-monitoring with error display
- Prepared for full integration into the Sontex Sonexa open SW Platform
- Individual or global AES Key 128 bits

Digital Display

The Digital Display is equipped with a large 8-digits display and can be rotated by 360°. The housing has a protection index of IP68 against dust and humidity.

The LCD display of the Superaqua 1 has a large, clear design and high contrast, making it easy to read the data.



The totalized consumption of the display is displayed for 10 seconds and other parameters can be displayed on request and for a pre-programmed time.

Display Sequences

| Position | Type | Displayed |
|----------|---------------------------------|---|
| 0 | Default: 1 second per error | Error code, only in case of errors |
| 1 | Default: 10 seconds | Totalizer and Flow Rate |
| 2 | Optional | Set day |
| 3 | Optional | Firmware version + Postcard + Totalizer stored at set day |
| 4 | LCD Test: 1 sec ON 1 sec OFF | LCD Test |

Error Messages

| Code | Message | Displayed |
|-------|--------------------------------|-----------|
| Err01 | System Error | Default |
| Err02 | Battery low | Default |
| InF03 | Manipulation | Default |
| InF04 | Radio Error | Default |
| InF05 | Pipe break | Default |
| InF06 | Leakage | Default |
| InF07 | Flow > Q _{max} | Default |
| InF08 | Backflow | Default |
| Err09 | Device EOL (Germany / Austria) | Optional |
| InF10 | No Flow | Default |

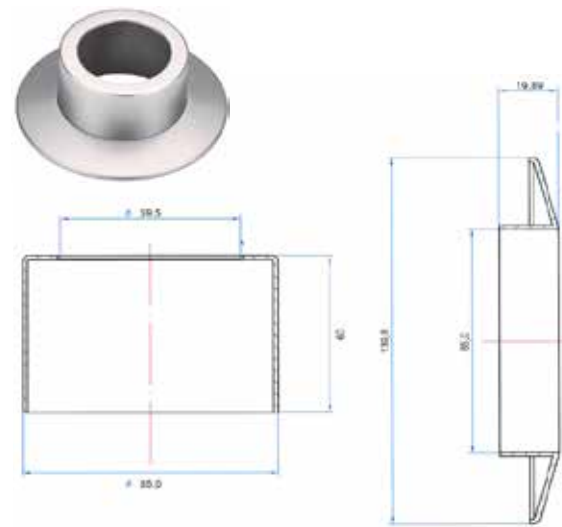
Radio Connections

- **Sontex Radio**
Frequency: 433 MHz, bidirectional
Transmission power: 10dBm (10mW)
- **wM-Bus OMS**
Frequency: 868 MHz, unidirectional
Mode 5 or 7
Radio telegram C1 or T1
Transmission power: 14dBm (25mW)
- **LoRaWAN**
Frequency: 868 MHz, bidirectional
Transmission power: 14dBm (25mW)

Communication options

Several communication interfaces are available. For the daily operational read out of the water meter values the Superaqua 1 can be ordered with either Radio Sontex, OMS or LoRaWAN communication. The standard settings can be changed by the use of the free Software SuperProg from Sontex and the NFC (Near Field Communication) interface on the water meter.

Optional In-wall Rosette to Multi-Jets measuring capsule



Existing chrome-plated rosettes of Supercom 281 and water meters with Supercom 581 / 587 can still be used. However, due to the high chrome content, a reduced radio range must be expected. Existing original rosettes from Minol and Techem cannot be used.

Technical Data

| | | |
|------------------------------------|--|---|
| Dimension | <ul style="list-style-type: none"> ■ Single Jet length L height H ■ Multi-Jets measuring capsule Diameter D1 Diameter D2 height H | 80, 110, 115, 130, 165 or 190 mm approx. 52 mm (approx. 56 mm by the 190 mm version) |
| Measurement | <ul style="list-style-type: none"> ■ Approved temperature Cold water ■ Approved temperature Warm water ■ Volume measurement cycle at nominal flow | +0.1°C ... +50°C +0.1°C ... +90°C 0.5 seconds |
| Digital Register | <ul style="list-style-type: none"> ■ Environment class ■ Mechanics ■ Electronics ■ Battery protection class ■ Protection class ■ Operating temperature (electronic circuit) ■ Storage and transport temperature | B M1 E1 III IP68 ¹⁾ (4 weeks under 1m water) 5...55°C -10...60°C (dry environment) |
| Display & Display Units | <ul style="list-style-type: none"> ■ LCD ■ Volume resolution (display) ■ Volume ■ Flow ■ Flow symbol ■ Battery status ■ Radio | 8 digits 0.001 m ³ l/h |
| Power Supply | <ul style="list-style-type: none"> ■ Lithium Battery (< 1 g) 3 VDC | up to 15 years |
| Pressure | <ul style="list-style-type: none"> ■ Nominal pressure ■ Maximum pressure | PN16 16MPa or 16 bar |

¹⁾ Protection code IP68 - Suitable for all types of installation (except for pit installation)

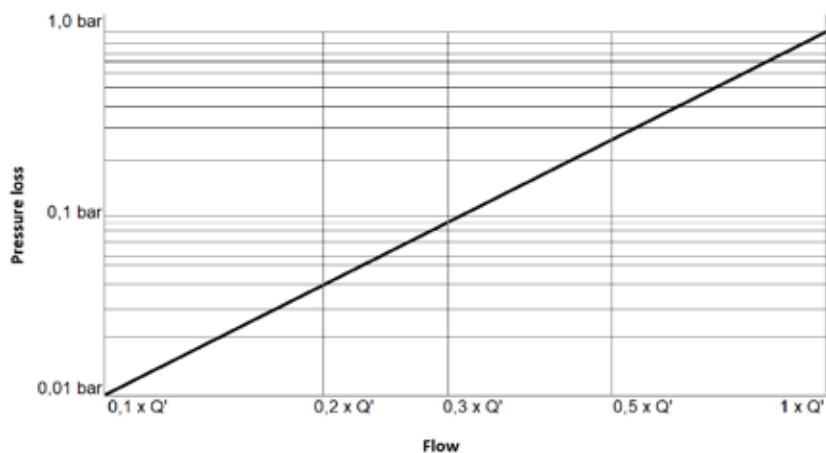
Single-Jet

| Installation | Lenght | Part N° | Height H (Approx.) | Nominal Flow Q ₃ | Nominal width DN | Threaded connection | Typical Starting flow value * | Flow rate Q (Approx.) | Weight (Approx.) |
|--------------|--------|---------|--------------------|-----------------------------|------------------|---------------------|-------------------------------|-----------------------|------------------|
| H / V | mm | | mm | m ³ / h | mm | Inch | l / h | l / h | Kg |
| H | 80 | SQ1S1 | 52 | 2.5 | 15 | G3/4B | 1-2 | 3300 | 0.4 |
| H | 110 | SQ1S2 | 52 | 2.5 | 15 | G3/4B | 1-2 | 3300 | 0.4 |
| H | 115 | SQ1S3 | 52 | 2.5 | 13 | G7/8 - G3/4B | 1-2 | 3300 | 0.4 |
| H | 115 | SQ1S4 | 52 | 2.5 | 15 | G3/4B | 1-2 | 3300 | 0.4 |
| H | 115 | SQ1S5 | 52 | 4 | 20 | G1B | 1-2 | 5100 | 0.5 |
| H | 130 | SQ1S6 | 52 | 2.5 | 15 | G3/4B | 1-2 | 3300 | 0.5 |
| H | 130 | SQ1S7 | 52 | 2.5 | 20 | G1B | 1-2 | 3300 | 0.5 |
| H | 130 | SQ1S8 | 52 | 4 | 20 | G1B | 1-2 | 5100 | 0.5 |
| H | 165 | SQ1S9 | 52 | 2.5 | 15 | G3/4B | 1-2 | 3300 | 0.7 |
| H | 190 | SQ1SA | 56 | 4 | 20 | G1B | 1-2 | 5100 | 0.8 |

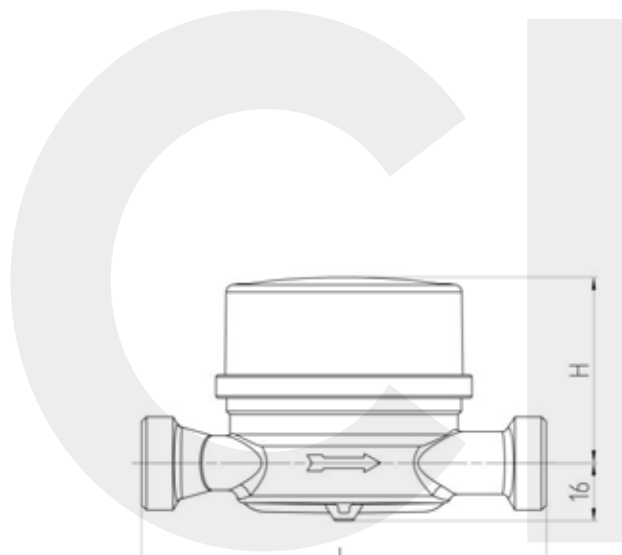
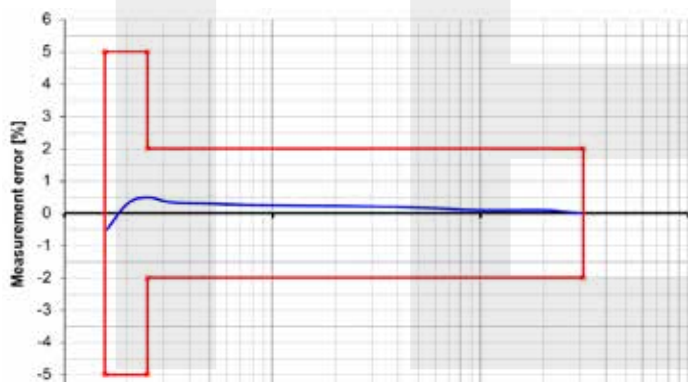
* Typical values in horizontal installation position

The meter does not require any upstream or downstream straight length (U0/D0).

Typical pressure loss curve



Typical error curve Q₃ 2.5 R160H/V

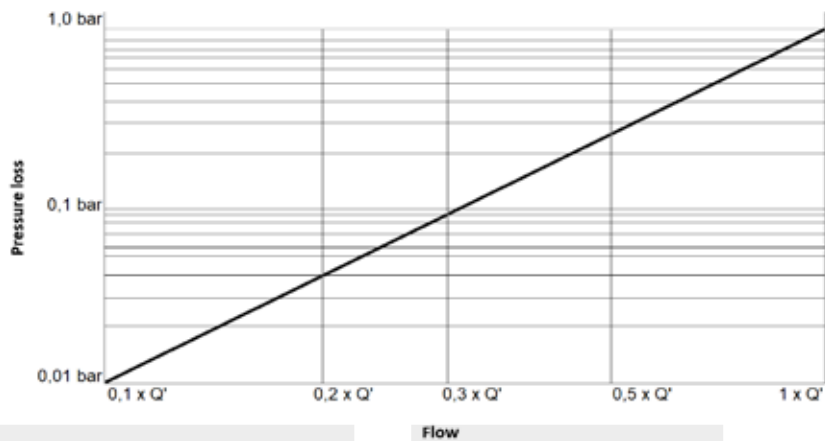


Multi-Jet Measuring Capsule

| Compatible to | Part N° | Type | Height (Approx.) | D1 | D2 | Nominal Flow Q ₃ | Threaded connection | Typical Starting flow value * | Flow rate Q (Approx.) | Weight (Approx.) |
|--------------------------------|---------|------|------------------|----|----|-----------------------------|---------------------|-------------------------------|-----------------------|------------------|
| | | | mm | mm | mm | m ³ /h | | l/h | l/h | Kg |
| ISTA EAS-N | SQ1M1 | IST | 62 | 75 | 70 | 2.5 | G2" | 3 | 3400 | 0.2 |
| Elster/ABB MO-E/ EAS-H | SQ1M2 | MOE | 35 | 75 | 70 | 2.5 | M65x2 | 3 | 3400 | 0.2 |
| AllmessUP6000 | SQ1M3 | A34 | 43 | 75 | 70 | 2.5 | M77x1.5 | 3 | 3400 | 0.5 |
| Techem UPTE1 | SQ1M4 | TE1 | 40 | 75 | 70 | 2.5 | M62x2 | 3 | 3400 | 0.2 |
| Metrona/ BrunataHT3 | SQ1M5 | MET | 35 | 75 | 70 | 2.5 | M64x2 | 3 | 3400 | 0.2 |
| DeltamesTRK | SQ1M6 | DM1 | 55 | 75 | 70 | 2.5 | M60x2 | 3 | 3400 | 0.4 |
| Metrona307/1 | SQ1M7 | HT2 | 51 | 75 | 70 | 2.5 | M66x1 | 3 | 3400 | 0.4 |
| SPX/Spanner Pollux Pollomuk | SQ1M8 | MUK | 35 | 75 | 70 | 2.5 | G2 1/4" | 3 | 3400 | 0.3 |
| WEHRLE Unterputz | SQ1M9 | WE1 | 45 | 75 | 70 | 2.5 | M78x1.5 | 3 | 3400 | 0.6 |
| Wasser-Geräte WGU | SQ1MA | WGU | 51 | 75 | 70 | 2.5 | M66x1.25 | 3 | 3400 | 0.4 |
| Minol MB3 | SQ1MB | MB3 | 47 | 75 | 70 | 2.5 | M76x1.5 | 3 | 3400 | 0.5 |
| Minol MB2 | SQ1MC | MB2 | 50 | - | - | 2.5 | - | 3 | 2800 | 0.5 |

* Typical values in horizontal installation position

Typical pressure loss curve



Typical error curve Q₃ 2.5 R160H/V

