

# SIEMENS SONO – self-contained

The SONO–self-contained is a self-contained meter for the measurement of water flow in full pipe.

The following requirements do not replace the Handbook. The Handbook is essential for the successful installation, operation and maintenance of this device and must always be used.

However, for use of this meter under this module of the standard the following requirements must be met, as a minimum, and have been formulated from recommendations/advice in manufacturer literature and where required with input from the manufacturer.

Requirements to be confirmed by validation type	
<b>Existing meter installation – new controller and new transducers installed into existing factory pipe spool</b>	Section 2.0, Section 3.0, Section 4.0, Section 5.0, Section 6.0, Section 7.0, and Section 8.0
<b>Ongoing (revalidation) or Faulty meter (maintenance) – existing meter installation - new transducers installed into existing factory pipe spool and no new FUS080</b>	Section 2.0, Section 3.0, Section 4.0, Section 5.0, Section 6.0, Section 7.0, and Section 8.0
<b>Ongoing (revalidation) or Faulty meter (maintenance) – existing meter installation – no new transducers and new FUS080 installed</b>  <b>Ongoing (revalidation) or Faulty meter (maintenance) - existing meter installation – no new transducers and no new FUS080</b>	Section 4.0, Section 5.0, Section 6.0, Section 7.0, and Section 8.0

## 1.0 Key terms

Term	Definition
<b>FUS080</b>	The transmitter/logger/brains of the SONO-self-contained.
<b>SONO-self-contained</b>	The transmitter/logger/brains of the device (FUS080) operate the transducers installed in the factory pipe spool, measures the travel times between the transducers and calculates the volume of water passing through the meter. It is a self-contained meter.
<b>Transducers</b>	Accoustic transducers installed in factory pipe spool.

## 2.0 Authorised Meter Validator

From 1 December 2022, a CMI must have completed training by SIEMENS for the SONO-self-contained within the previous 2 years to perform the activities in the following table. The training record/certificate must be provided with the validation certificate where new transducers are installed.

Activity	CMI	Training by SIEMENS
<b>Installation of new transducers</b>	✓	✓
<b>New transducer position uncertainty</b>	✓	✓
<b>Calibration – post installation of new transducers</b>	✓	✓

## 3.0 Measurement Assurance Requirement B

With the installation of new acoustic transducers into the factory pipe spool:

- The sensor-data and transducer-position and calibration must be determined in accordance with SIEMENS procedures.
- Confirmation of attainment of the manufacturer's uncertainty must be demonstrated and submitted with the validation for the meter installation. For example, provision of training certificate from SIEMENS (within the previous 2 years).

## 4.0 Fit for purpose

The SONO-self-contained must not be used to measure velocities more than 10 metres per second.

## 5.0 Installation

The meter has two options available for power supply - internal battery or external power supply.

Where an external power supply is used to power the device, the internal battery backup must be used.

For the respective installation scenarios, the meter must be installed in a straight uniform pipe and with the upstream and downstream lengths specified following (as a minimum):

- No flow disturbance scenario – 10x pipe diameters upstream and 3x pipe diameters downstream.
- Reduced pipe scenario – 10x pipe diameters upstream and 3x pipe diameters downstream.
- Expanded pipe scenario – 20x pipe diameters upstream and 3x pipe diameters downstream.
- Pump causing spiral flow scenario – 40x pipe diameters upstream and 3x pipe diameters downstream.
- Two elbows in plane scenario – 20x pipe diameters upstream and 3x pipe diameters downstream.
- Two elbows out of plan scenario – 40x pipe diameters upstream and 3x pipe diameters downstream.

Must only be used in a full pipe while measuring.

Cables between the transducers and the FUS080 must be enclosed in electrical conduit.

## 6.0 Configuration

Alarms for the following faults must be activated (switched on):

- no water in contact with transducers or transducers defective
- internal software fault – contact SIEMENS
- battery capacity is below pre-set threshold
- datalogger warning/alarm.

## 7.0 Output

Where the department requires meter health as an output from the meter:

Where not already incorporated into the FUS80, a serial communication module must be added to the meter. To have a validation certificate issued, where the meter:

- Is installed after this document came into effect - it must have a serial communication module installed as part of validation post-installation.
- Was installed prior to the effect of this document - it must have a serial communication module installed as part of the next process of validation for the meter.

The serial communication module provides serial output (allows the notification of alarms e.g., low battery) from the meter for interface with third party transmission devices.

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Where a serial communication module is installed, an external power supply must be used.

Where the department requires pulse output only:

The FUS080 must have the pulse output connection in place, which registers a pulse each time a set volume of water passes through the meter. To have a validation certificate issued, where the meter:

- Is installed after this document came into effect - it must have the pulse output connection in place and configured as part of the process of validation, post-installation.
- Was installed prior to the effect of this document - it must have a pulse output connection in place and configured as part of the process of ongoing validation (revalidation) of the meter.

The pulse output connection allows the meter to interface with third party transmission devices.

## 8.0 Maintenance

Where an internal battery is used to power the device - the internal battery must be replaced at a 5-year interval, irrespective of remaining battery life.

When an internal battery is replaced - reset battery operating time and remaining capacity.

Where an external power supply is used to power the device - the backup battery must be replaced at a 5-year interval, irrespective of remaining battery life.