



OIML Member State
SLOVAKIA

OIML Certificate No.
R49/2013-A-SK1-25.06

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: **Slovak Legal Metrology (SLM)**
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Product Certification Body
Hviezdoslavova 31
974 01 Banská Bystrica, Slovakia
Person responsible: Ing. Dušan Šmigura, PhD., Director of PCB

Applicant

Name: **Spire Metering Technology LLC**
Address: 34 Saint Martin Dr., Suite 13 A-9,
Marlborough, MA 01752, USA

Manufacturer

Name: **Spire Metering Technology LLC**
Address: 34 Saint Martin Dr., Suite 13 A-9,
Marlborough, MA 01752, USA

Identification of the certified type (*the detailed characteristics are defined in the additional pages*)

Water meter type **280W-CI**

Designation of the module (*if applicable*)

Ultrasonic water meter with electronic indication device

This OIML Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML type evaluation report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

OIML R 49, Edition (year): 2013
For accuracy class (if applicable): 1 and 2



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R49/2013-A-SK1-25.06

This OIML Certificate relates only to metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML Recommendation identified above.

This OIML Certificate does not bestow any form of legal international approval.

The conformity was established by the results of tests and examinations provided in the associated:
OIML Type Evaluation Report No. 2025/ER043/SK1 dated 23th January 2025 that includes 16 pages.

The technical documentation relating to the identified type is contained in documentation file name:
„Technical documentation file Spire Metering_280W-CI_00“ dated 23th January 2025 that includes a sum of documents 92 pages.

OIML Certificate History

Revision No.	Date	Description of the modification
0	23 th January 2025	Certificate first issued
-	-	-

Identification, signature and stamp

The OIML Issuing Authority




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Dušan Šmigura

Date: 23th January 2025

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated OIML type evaluation report(s) is not permitted, although either may be reproduced in full.

1. Designation

The water meter type **280W-CI** is designed to measure, memorise and display the volume of water passing through the measurement transducer at metering conditions. The water meter is intended for the measurement of volume of clean water in residential use.

The water meter type 280W-CI is compact ultrasonic water meter with electronic indication device. The measurement is based on ultrasonic bidirectional transit-time principle.

The flow is measured by the difference in time-of-flight of ultrasonic pulses with flow (downstream) and opposite to flow (upstream).

The water meter type 280W-CI can be installed to operate in the horizontal and in the vertical positions. The water meter is not designed to measure the reverse flow.

2. Description

Essential parts of the water meter type 280W-CI:

Flow sensor:

- the iron cylindrical body with inlet and outlet firmly connected with the plastic housing for the calculator;

Calculator and indication device:

- the iron housing of the calculator with indication device directly mounted on the flow sensor;
- the PCB board;
- measurement transducers (4 pcs);
- the electronic LCD display with 9 digits and indication range of 999.999999 m³ to 9999999,99 m³;
- non-replaceable lithium battery for metering. The battery voltage is below 3,6 V, lifetime 10 years;
- red button on the front panel for cycle through different display windows.

Non-essential parts of the water meters:

- communication protocol: M-Bus;
- pulse output, RS485 with MODBUS support, optical isolated, BACnet/MSTP, Radio, GSM (optionally).

2.1 Metrological functions

- measuring, memorizing and displaying the volume of water passing through the water meter.

2.2 Operation and presentation of legal data

By pressing the red button, the display of the LCD can be changed:

Water meter has two display menus (layer A1 and A2).

Menu A1:

- total volume (GAL, m³)
- flow rate (GPM, m³/h)
- serial number (ID)
- date (military time)
- working time (h)
- temperature (°C)
- software version
- checksum
- blank display
- full display



Menu A2:

- total volume with high resolution 0,000001 m³;
- current time;
- error code;
- factory data 1 to 5;
- meter size;
- flow rate (m³/h).

2.3 Software specification

Software version and checksum of legally relevant software for water meter types 280W-CI:

Software versions	Checksum	The software version and checksum on the scrolling display in the form
20.5.P.7	1202	20.5.P.71202

2.4 Accountable alarms

If a fault condition occurs and the measurement stops, follow the user manual issued by the manufacturer.

2.5 Integrated equipment and functions

- Communication Interface: M-Bus (default)
- Optional: RS485 with MODBUS support, Pulse, optical isolated, BACnet/MSTP, Radio, GSM.

Via the parts listed in the point 2.5 no legally relevant data shall be altered. Data transferred via these parts are not considered as a metrological relevant data.

3. Technical and metrological data

Characteristics	Unit	280W-CI					
		50	80	100	150	200	250
Nominal diameter DN	mm	50	80	100	150	200	250
Permanent flowrate Q_3	m ³ /h	25	63	100	160	250	400
Minimum flowrate Q_1	m ³ /h	0,1	0,252	0,4	0,64	1	1,6
Transitional flowrate Q_2	m ³ /h	0,16	0,4	0,64	1	1,6	2,56
Overload flowrate Q_4	m ³ /h	31,25	78,75	125	200	312,5	500
Ratio Q_3/Q_1	R	250					
Ratio Q_2/Q_1	-	1,6					
Connection	mm	flange					
Construction length L	mm	200	225	250	300	350	450
Installation orientation	-	H/V					
Water temperature range (temperature class)	°C	0,1 to 50 T50					
Maximum admissible pressure MAP	bar	16					
Pressure loss class Δp	bar	0,16 Δp 16					
MPE in upper flowrates range $Q_2 \leq Q \leq Q_4$	%	± 2 (at $\theta \leq 30^\circ\text{C}$) ± 3 (at $\theta > 30^\circ\text{C}$)					
MPE in lower flowrates range $Q_1 \leq Q < Q_2$	%	± 5					



Capacity of calculator	m ³	9999999.99
Capacity of calculator with high resolution	m ³	999,999999
Scale interval	m ³	0,01
Scale interval (high resolution)	L	0,000001
Accuracy class	-	2
Mechanical class	-	M1
Climatic class	°C	-55 to +85
Electromagnetic class	-	E1
Climatic and mechanical environmental conditions (class) according to EN ISO 4064-1/OIML R 49-1	-	B / O
Flow profile sensitivity class	-	U5D3
Battery	-	non-replaceable li-battery 3,6 V, life time 10 years

4. Marking and inscriptions

The following data shall be marked on the water meter:

- a) unit of measurement (m³);
- b) flowrate Q_3 and ratio Q_3/Q_1 (R);
- c) type of water meter;
- d) manufacturers name or trademark;
- e) year of manufacture or the month and year of manufacture;
- f) serial number;
- g) the flow direction shall be marked on a water meter's body in form of an arrow;
- h) maximum admissible pressure (MAP);
- i) temperature class (T);
- j) pressure loss class (Δp);
- k) letter H, if the meter can only be operated in the horizontal position, letter V, if the meter can only be operated in the vertical position;
- l) the installation sensitivity class U5/D3;
- m) the latest date by which the meter shall be replaced;
- n) environmental classification (can be given on a document supplied separately);
- o) electromagnetic environmental class (can be given on a document supplied separately);
- p) type approval sign according to national regulations.

Manufacturer uses the following trademarks on the water meter:



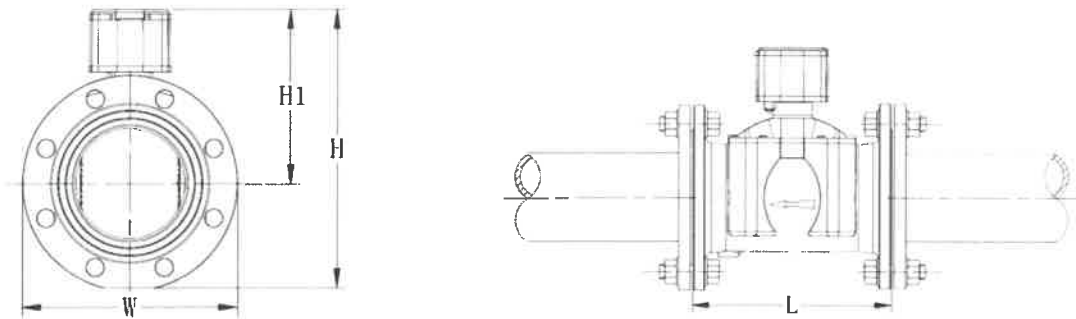
5. Security measures

The water meter type 280W-CI shall be protected against unauthorized manipulation and opening by:

- a sealing cap permanently adhered to the water meter;
- two screws that are horizontally aligned with the display, surrounding the face plate of the water meter with seals prevent access to the screws required to open the water meter top cover/face plate;
- recommended is electrode protection.



6. Figures



Dimensions in mm

Type	DN	L	W	H1	H
280W-CI	50	200	175	178	263
	80	225	200	203	292
	100	250	220	209	315
	150	300	285	245	383
	200	350	340	274	438
	250	450	405	300	480

Fig. 1: Dimensions of the water meter type 280W-CI

