

iPERL

Static electromagnetic meter with remanent magnetic technology

Intelligent technology meets water management

Whether internet, telephony or electricity - intelligent network communications are all around us and offer almost unlimited possibilities.

So why not apply the same principle to one of our most important resources - water.

Worldwide, water networks need to keep pace with the development of intelligent network communications to ensure they are up to date with demand-driven automation and load management that is standard in the smart grid.

Using a fixed AMI communications network (such as Sensus FlexNet™), iPERL can help identify potential issues, such as leakages in the network, enabling you to address them quickly. This saves your business time, money, improves targeting of field crews, and increases customer service levels.

Type approval

EU design examination certificate DE-12-MI001-PTB010 based on the following regulations (guidelines, standards, normative documents)

- 2014/32/EU (MID)
 - OIML R49
 - EN 14154-4
 - ISO 4064
 - EN 14268
 - WELMEC
- 2014/53/EU (RED)
 - EN 301 489
 - EN 300 220
 - EN 300 330
 - EN 60079
 - EN 62368
 - EN 62479



Certificate of compliance for potable drinking water

- KTW/DVGW (D)
- WRAS (UK)
- ACS (F)
- KIWA (NL)
- Hydrocheck (B)

Other certificates and approvals

- OIML Certificate of Conformity
- OMS Generation 4 Security Profile: A/B
- ATEX Approval (Atmosphères Explosibles)

Always accurate - the concept of iPERL

iPERL delivers constant R800 measurement accuracy in a wide range of installation conditions over its expected 15 year operational life¹⁾ and can be installed in any orientation without the need for linear pipe leads in or out.

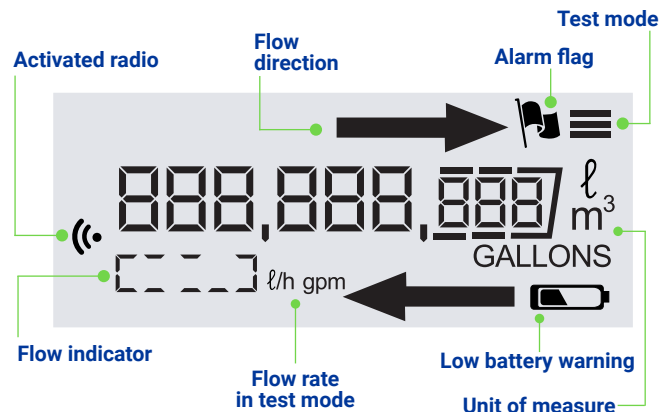
iPERL also has an automatic detection of the direction of flow, further enabling the choice of installation positions when operated in accordance with the framework conditions as set out in MID (European Directive 2014/32/EU) and European standard EN 14154:2005+A2:2011.

Unlike other solid state meters, iPERL uses remanent magnetic field technology which provides a linear measurement range even down to very low flow rates. The magnetic field acting on the water flowing through the flow channel generates an electrical voltage; this is proportional to the velocity of the water (principle of magnetic-inductive flow measurement).

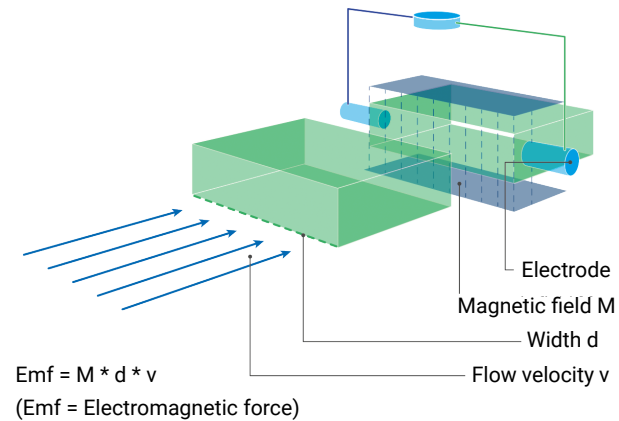
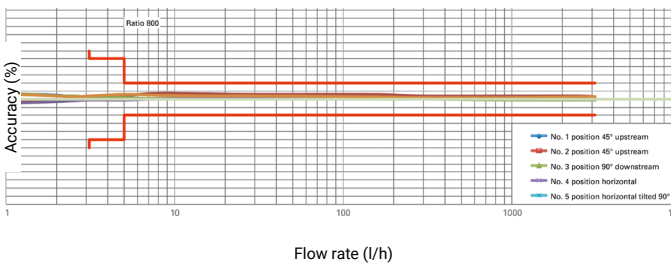
1) Depending on the transmission settings of SensusRF resp. wM-Bus

Legibility

The display with 9 digits (6 for m³, 3 for litres) ensures exceptional readability. The highest resolution in testing mode is 0.001 litres. Icons are also displayed on the LCD to indicate important information have been registered:



Metrological performance, independent of any installation position



iPERL DN40 with composite flanges

Typical marking



Technical data

Parameter	Symbol	Unit					
Nominal diameter	DN	mm	15	20	25	32	40
Permanent flow rate	Q_3	m³/h	2.5	4	6.3	10	16
Transitional flow rate	Q_2	l/h	5	8	12.6	20	32
Minimum flow rate	Q_1	l/h	3.13	5	7.88	12.5	20
Ratio	Q_3/Q_1	R	800 ¹⁾				
Starting flow rate		l/h	1	1.6	2.5	4	6.4
Overload flow rate	Q_4	m³/h	3.1	5	7.9	12.5	20
Pressure range			0.3 bar (0.03 MPa) -16 bar (1.6 MPa)				
Climatic environmental conditions	°C		-10 ... +70 ²⁾				
Water temperature range	°C		+0.1 ... +50 (T50) +0.1 ... +70 (T70)				
Minimum water conductivity			50 µS / cm				
Environmental class (OIML)			O				
Mechanical Environmental Conditions			M2				
Electromagnetic Conditions			E2				

1) also available in R160, 250, 400

2) Battery life depending on the temperature time profile

Dimensions and weight

Nominal diameter	DN	mm	15	20	25	32	40
Lay length	L	mm	165 ¹⁾	190 ³⁾	260 ⁵⁾	260	300 ⁶⁾
Width	D	mm	94	94	114	114	114
Height	H	mm	120	120	138	138	138
Height to pipe axis	h	mm	26	26	40	40	40
Connection	ø	inch	G¾ ²⁾	G1 ⁴⁾	G1¼"	G1½"	G2 ⁷⁾
Weight		kg	0.85	0.85	1.65	1.65	1.75

¹⁾ also available in length 110, 115, 134, 145 and 170 mm

²⁾ also available in G7/8" x G¾" with length 115 mm

³⁾ also available in length 105, 115, 130, 165 and 220 mm

⁴⁾ also available in G1¼" x G1¼" with length 175 mm

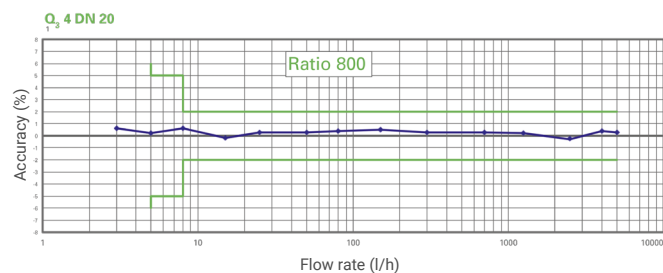
⁵⁾ also available in length 198 mm

⁶⁾ also available in length 170, 245 and 270 mm

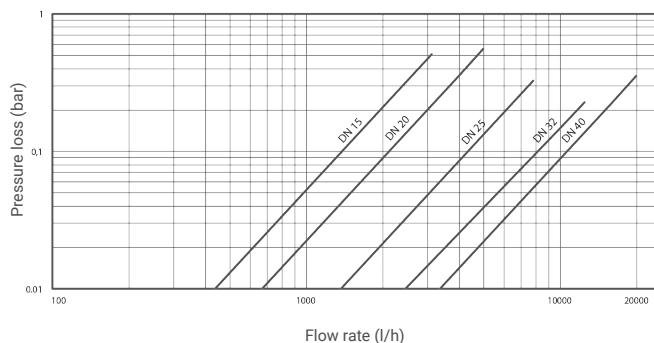
⁷⁾ also available with composite flanges according to EN1092-1

(possibility of an installation into a bulk meter measuring point of DN50)

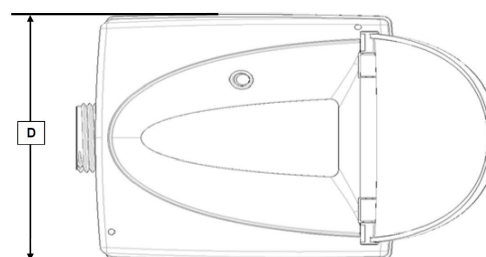
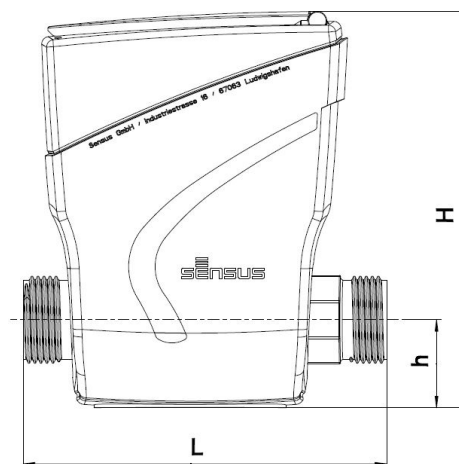
Typical accuracy curve



Typical pressure loss curve



Dimensional diagram



iPERL infrastructure

iPERL has SensusRF integrated technology providing the advantages of both uni- and bidirectional system architecture as described below. SensusRF is the optimized license free radio system for battery driven endpoints and repeaters. Scalable for mobile and remote reading without exchange of components, it is available in 433 MHz and 868 MHz.

OMS® compatible.

SensusRF offers two communication modes:

1. Fixed Radio Network

- Auto configuration wizard (gateway sniffing for endpoints and repeaters)
- Integrating repeaters (up to 7 hops in a chain)
- Self-healing network (using alternative routes)
- Meter reading transparent and local
- Fast track alarms
- DMA snap shot (snap shot of a water network for evaluation)
- TCP/IP technology for the WAN communication
- High level of data security (end-to-end encryption)
- Enables cloud technologies, FTP and other remote database applications

2. Mobile read - Walk-by / Drive-by

- Unidirectional telegrams
- Bidirectional communication
- Spontaneous reception possible without route
- Configuration of the endpoint

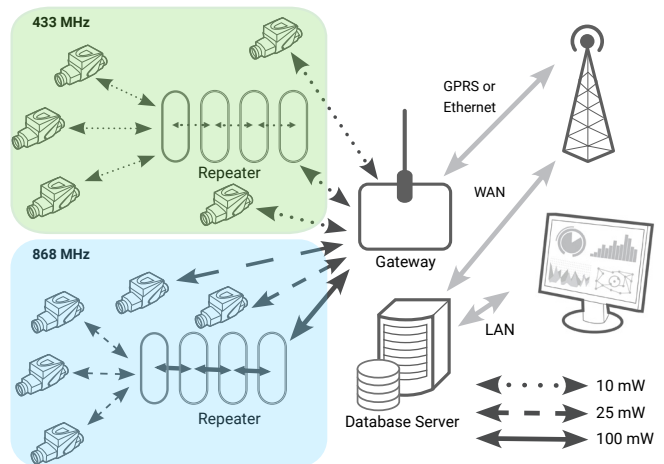
SIRT (Sensus Interface Radio Tool)

SIRT is a radio modem for SensusRF radio, connected to a handheld via Bluetooth and using DIAVASO Mobile Reading software with the following features:

- Installation and readout of devices
- Reception of frequently transmitted radio messages from SensusRF radio endpoints
- Request additional information from the radio endpoints
- Change configuration of radio endpoints (alarm, level settings...)

For further information please refer to the SensusRF brochure.

iPERL fixed radio network - remote access and monitoring



Unidirectional/Bidirectional communication

