

hidroconta
metering technology

WHEN WATER COUNTS



water meter

hidrotangencial

hidroconta.com

Technology
tangencial

Class A



Convertible into a
Smart meter

Pulse output
Pre-equipped

Magnetic
transmission

REV4

Hydrodynamic design

The operation of the water meter is based on a turbine in the upper part of the water meter, which allows the passage of solid particles at the top of the water meter, which allows solid particles to pass through without clogging the meter, obstructing the meter. There are no obstructions in the metering tube, and therefore the head losses are very low. pressure losses are very low.

Independent mechanism

With a completely independent mechanism protected against magnetic fields, the water meter allows for easier repair, without the need to remove the water meter from the installation, greater durability and security against fraud.

High flow rate

The system on which the Hidrotangencial water meter is based is designed to provide a high flow rate with the minimum possible loss of head.

Technical specifications

- ✓ - Tangential propeller and removable mechanism.
- ✓ - Class A horizontal installation (note the direction of flow indicated on the body by an arrow).
- ✓ - Low pressure losses.
- ✓ - Dry sphere.
- ✓ - Magnetic transmission.
- ✓ - Direct reading on dial.
- ✓ - Protective cover.
- ✓ - Cast iron body.

Dial



Permanent
flow value

Nominal
pressure

Class A
according to
ISO 4064.

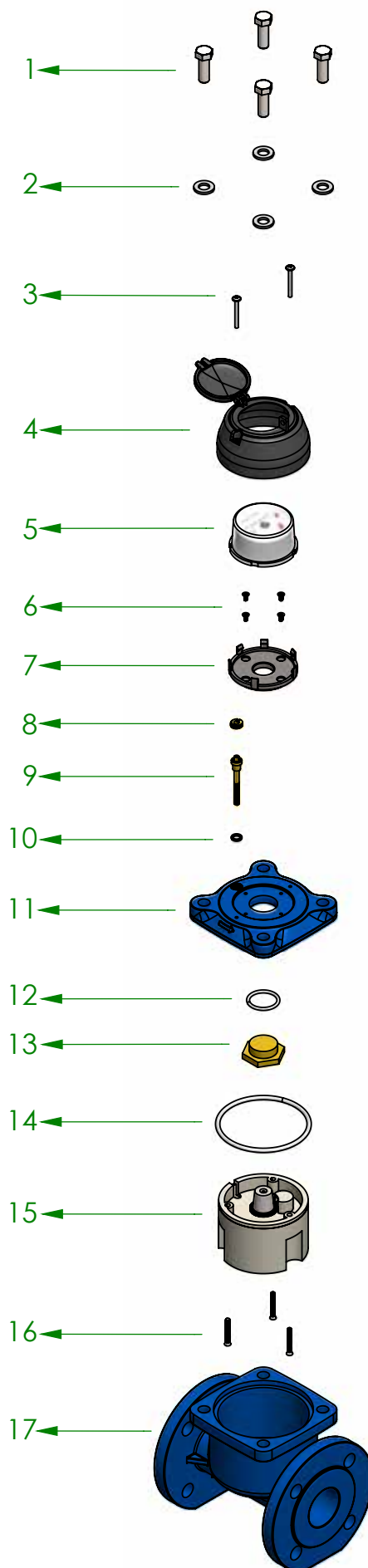
Rotating star for
leak detection



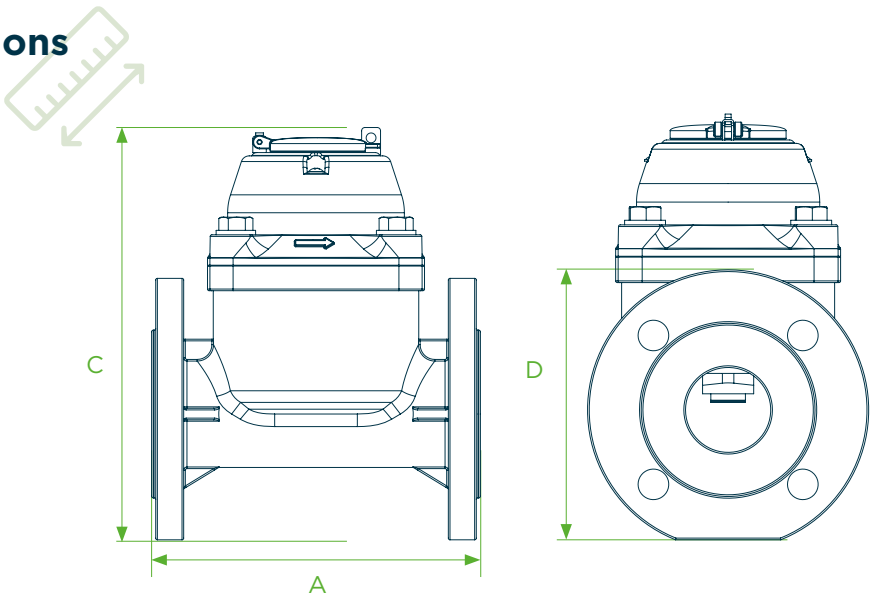
Disassembly



Nº	DESCRIPTION	MATERIAL
1	Screws	Stainless steel
2	Washers	Stainless steel
3	Screws	Stainless steel
4	Clock casing	Iron
5	Watchmaking	Assembly
6	Screws	Stainless steel
7	Pulse guide plate	Plastic
8	Adjusting screw	Brass
9	Control paddle shaft	Brass
10	Flat gasket	NBR
11	Cover	Cast iron
12	O-ring	NBR
13	Insert	Brass
14	O-ring	NBR
15	Grinder assembly	Assembly
16	Screws	Stainless steel
17	Water meter body	Cast iron



Dimensions



DN		A	D	C	WEIGHT	CONNECTIONS
mm	in	mm		kg		
50	2"	200	165	253	9,7	Flange
65	2-1/2"	200	185	268	11,82	
80	3"	225	200	284	13,06	
100	4"	250	220	295	15,44	
125	5"	250	250	310	18,63	
150	6"	300	285	339	25,16	
200	8"	350	340	382	37,65	
250	10"	450	405	438	61,40	
300	12"	500	460	488	77,95	

Packing



DN		PCS. PER BOX	DIMENSIONS PER BOX (CM)			GROSS WEIGHT	CONNECTIONS
mm	in		Length	Width	Height	Kg	
50	2"	1	30,5	20,0	23,5	11,0	Flange
65	2-1/2"	1	32,5	21,5	24,5	12,5	
80	3"	1	33,5	23,5	25,5	14,0	
100	4"	1	35,0	26,5	28,5	16,0	
125	5"	1	36,5	28,5	28,0	19,0	
150	6"	1	40,0	32,5	35,0	23,0	
200	8"	1	46,0	39,5	40,0	42,0	
250	10"	1	53,0	46,5	50,0	58,5	
300	12"	1	55,5	52,0	55,0	74,5	

Working conditions

WATER TEMPERATURE
RANGE

0,1 °C - 40 °C

MAXIMUM PRESSURE

≤ 16 bar

Maximum permissible error

RANGE

ERROR (%)

$Q_{\min} \leq Q \leq Q_t$

± 5%

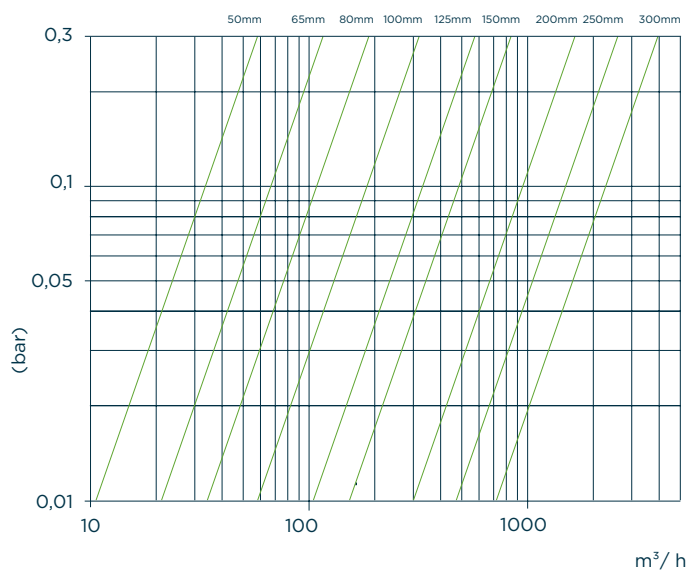
$Q_t \leq Q \leq Q_{\max}$

± 2%

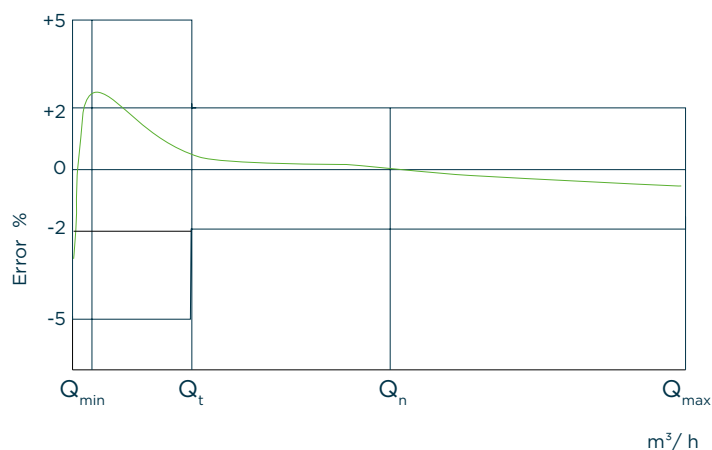
Technical specifications

DN		$Q_{\max}$	Q_{nom}	Q_{tran}	$Q_{\min}$	MINIMUM READING	MAXIMUM READING
mm	in.	m^3/h				m^3	
50	2"	30	15	4,5	1,2	0,002	999.999
65	2-1/2"	50	25	7,5	2,0	0,002	999.999
80	3"	80	40	12	3,2	0,002	999.999
100	4"	120	60	18	4,8	0,002	999.999
125	5"	200	100	30	8	0,002	999.999
150	6"	300	150	45	12	0,002	999.999
200	8"	500	250	75	20	0,002	999.999
250	10"	800	400	120	32	0,02	9.999.999
300	12"	1.200	600	180	48	0,02	9.999.999

Pressure loss curve



Flow error curve



Installation diagrams



Water disrupting elements upstream from the meter. DN= Ø Water meter	Required length upstream from the meter = L	
	With flow stabilizer	Without flow stabilizer
Centrifugal pump	L=15DN	L=5DN 3DN
Gate valve fully open	L=0DN	
Regulating gate valve	L=10DN	L=3DN
Sieve filter	L=5DN	L=3DN
Elbow/ Tee	L=10DN	L=3DN
Reduction cones	L=5DN	L=3DN
Extension cones	L=10DN	L=3DN

The accuracy of a water meter can be affected by turbulences caused by various elements such as elbows, regulating valves, tees, etc..., therefore in these cases it is necessary to have a straight run in front of the water meter.

However, this straight run can be reduced or replaced by a flow stabiliser spool upstream of the water meter and connected to the water meter.

Installation instructions

It is recommended to always place the water meter at a low point in the installation.

Position the water meter so that the arrow corresponds to the direction of water flow.

Do not force the water meter during installation, avoid tensile and torsion stresses.

The water meters must always be filled with water. A minimum pressure of 0.3 bar is recommended at the outlet of the water meter to ensure that it is completely filled with water. Install at a lower level with respect to the slope of the rest of the pipe, thus also eliminating the formation of air pockets inside it.

If air is present in the pipe, it is necessary to place release valves to avoid erroneous readings.

If the water in the pipe has coarse particles in suspension, it is recommended to install a roughing filter beforehand.

Provide a shut-off valve upstream of the water meter to facilitate its maintenance and/or repair.

Before installing a water meter in a new pipe, it is recommended to drain it to eliminate particles.

The inner diameter of the pipe must be equal to the nominal diameter of the water meter.

Pulse output



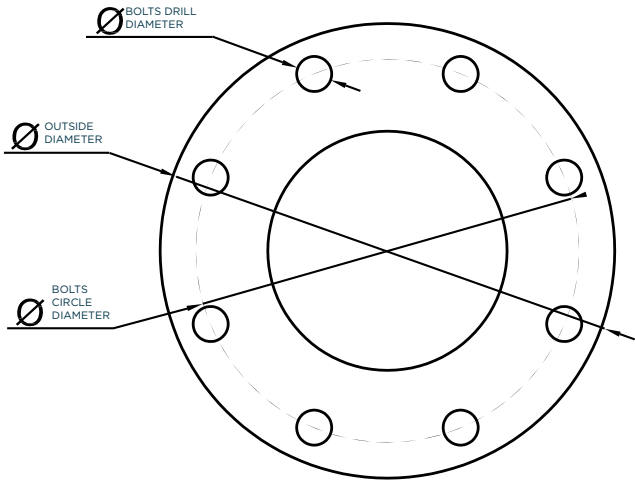
PULSE OUTPUT REED BULB

Pulse value	DN: 50-125: 1 pulse 100L DN 150-300: 1 pulse 1000L
Minimum current for contact closure	0mA
Maximum current for contact closure	100mA
Contact closed resistance	< 1 Ω
Contact open resistance	~ ∞
Max. withstand voltage	24V
Max. contact stabilisation time	100 us
Contact closed contact duration	40% of cycle
Standard cable length	1,5 m

Coupling



	DN		PN	OUTSIDE DIAMETER	BOLTS CIRCLE DIAMETER	BOLTS DRILL DIAMETER	Nº BOLTS	NORMATIVE
	mm	in		mm				
FLANGE	50	2"	10/16	165	125	18	4	UNE - EN 1092-1
	65	2-1/2"	10/16	185	145	18	4	
	80	3"	10/16	200	160	18	8	
	100	4"	10/16	220	180	18	8	
	125	5"	10/16	250	210	18	8	
	150	6"	10/16	285	240	22	8	
	200	8"	16	340	295	22	12	
	250	10"	16	405	355	26	12	
	300	12"	16	460	410	26	12	



Automatic meter reading

Adding the IRIS communications module to the water meter will enable automatic remote readings. IRIS devices allow mechanical meters to access the world of IoT communications. Its great versatility allows it to be integrated with a wide range of meters.

The IRIS communications module is integrated with the Demeter system. It supports the integration of a wide range of devices using various communication technologies to suit the needs of the installation.



NB-IoT

Belts	LTE NB2/B1/B2/B3/B3/B4/B5/B8/ B12/B13/ B17/B18/B19/ B20/B25/B28/B66/ B70/B85
Transmission power	23 dBm +/-2dB
Firmware Update	Via FOTA

M-Bus wireless

868 MHz

OMS T1 and C1

LoRaWAN

Modulation	CSS	CSS
Frequency	EU868* ISM band	ISM band US915, AU915, AS923**/ ***
Power	14 dBm	20 dBm
Sensitivity	168 dBm	168 dBm
Bandwidth	125 kHz	125 kHz
LoRaWAN Configuration	SF12	SF12
Bidirectional	Yes/Half-duplex	Yes/Half-duplex
Encryption	AES128	AES128
Standardisation	LoRa-Alliance	LoRa-Alliance

GPRS

Frequency	- Quad-band: GSM850, ESM900, DCS1800, PCS1900. - The module can search for these frequency bands automatically. - The frequency bands can be configured by AT command. - GSM Phase 2/2+ compliant
Transmission power	Class 4 (2W) on GSM850 and EGSM900 Class 1 (1 W) on DCS 1800 and PCS1900
Bidirectional	Yes/Half-duplex
SIM	MFF2 eSIM and nano SIM card supported

sigfox

Geographical availability	RC1*	RC2**	RC4***
Modulation	BPSK	BPSK	BPSK
Frequency	Tx Freq. : 868.13MHz Rx Freq. : 869.525MHz	Tx Freq. : 902.2MHz Rx Freq. : 905.2MHz	Tx Freq. : 920.8MHz Rx Freq. : 922.3MHz
Power	14 dBm (max.) @600bps	+24dBm (max.) @600bps	+24dBm (max.) @600bps
Sensitivity	-127dBm @600bps	-129dBm(min.) @600bps	-129dBm(min.) @600bps
Bandwidth	100 Hz	100 Hz	100 Hz
Bidirectional	Limited/Half-duplex	Limited/Half-duplex	Limited/Half-duplex



Alarms

- **Leakage alarm:**

Detection of continuous consumption for a maximum period of time. Configuration adjusted by communications.
- **Under-dimensioned water meter alarm:**

Detection of flow rate higher than the overload flow rate for a maximum period of time. Configuration adjusted by communications.
- **Water meter stopped alarm:**

The alarm is activated if no consumption is detected for a maximum period of time. Configuration adjusted by communications.
- **Battery status alarm:**

Various battery alarm levels are activated depending on the remaining battery life.

Functionality



Operating profiles based on the recording consumption and communications records requirements:

- 
- Normal-24: Sending data every 24 hours and recording every hour.
 - Normal-8: Sending data every 8 hours and recording every hour.
 - Medium: Sending data every 12 hours and recording every 30 minutes.
 - Extreme: Sending data every 6 hours and recording every 15 minutes.

MODE	AUTONOMY	COMUNICACION	DATA HISTORY RECORD
Normal -24	12 years	24 h	1 h
Normal -8	TBD	8 h	1 h
Medium	TBD	12 h	30 min
Extreme	TBD	6 h	15 min

* TBD (to be determined). 24 maximum storage and sending readings: each sending allows accumulating up to 24 values for each communication interval.



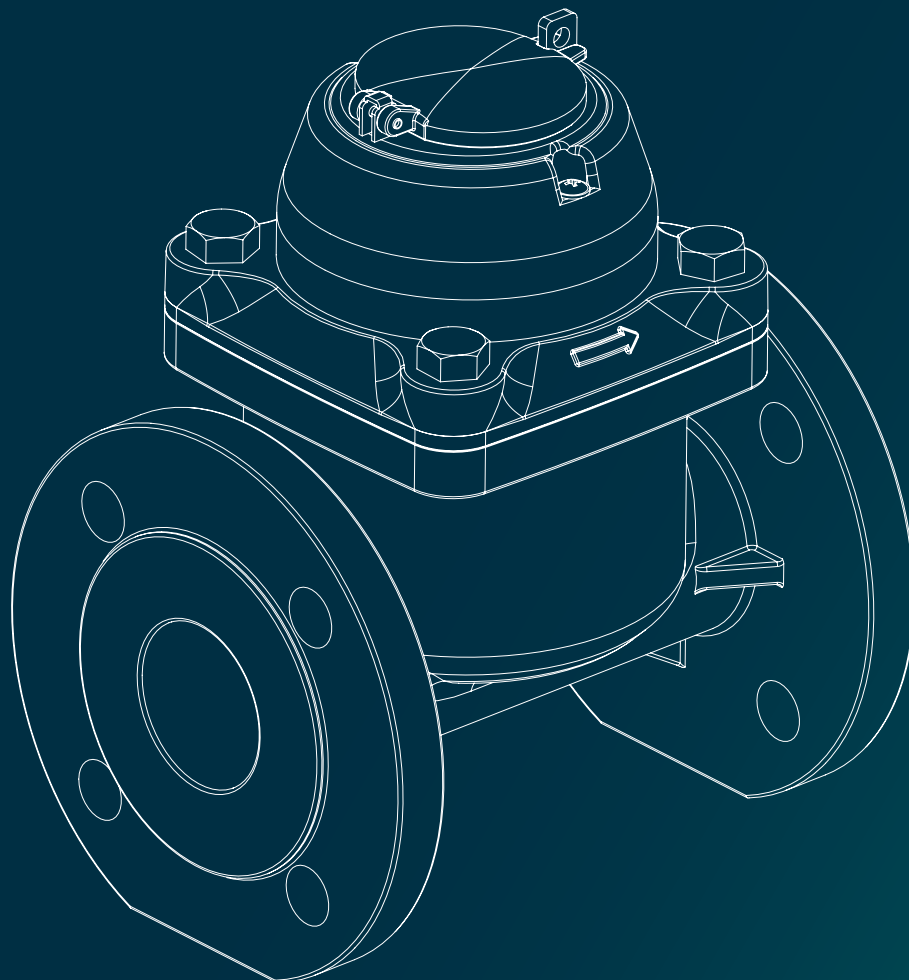
1- Has the turbine broken down?

Turbine breakage may be caused by the presence of solid particles of considerable size, e.g. stones and pebbles that may be suspended in the water.

In this case you should replace the water meter mechanism and place either a “Y” or basket strainer upstream of the water meter to prevent this from happening again.

2- Does the water meter not add up?

It is likely that it is clogged, has a faulty internal part or has suffered from age-related wear and tear. When wear due to ageing occurs, the water meter may add up m³, but not the actual m³. In this case, the faulty element must be replaced. Our water meters, thanks to their hydrodynamic design with independent mechanism, make this type of repairs very easy.



Water meter

hidrocontangencial

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ER-0362/2000



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