B METERS
metering solutions

EN

HYDRODIGIT

Digital Impeller Single Jet Water meter

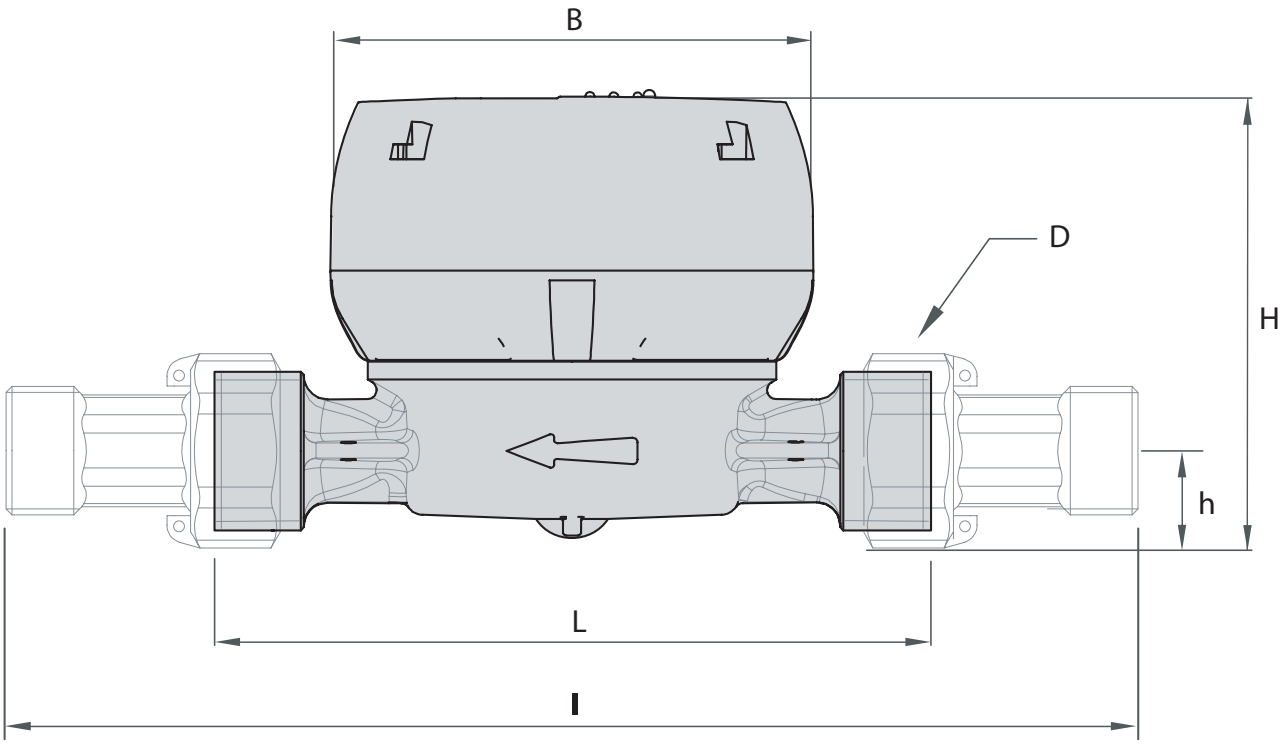
OPERATING INSTRUCTIONS

INDEX

CONTENT

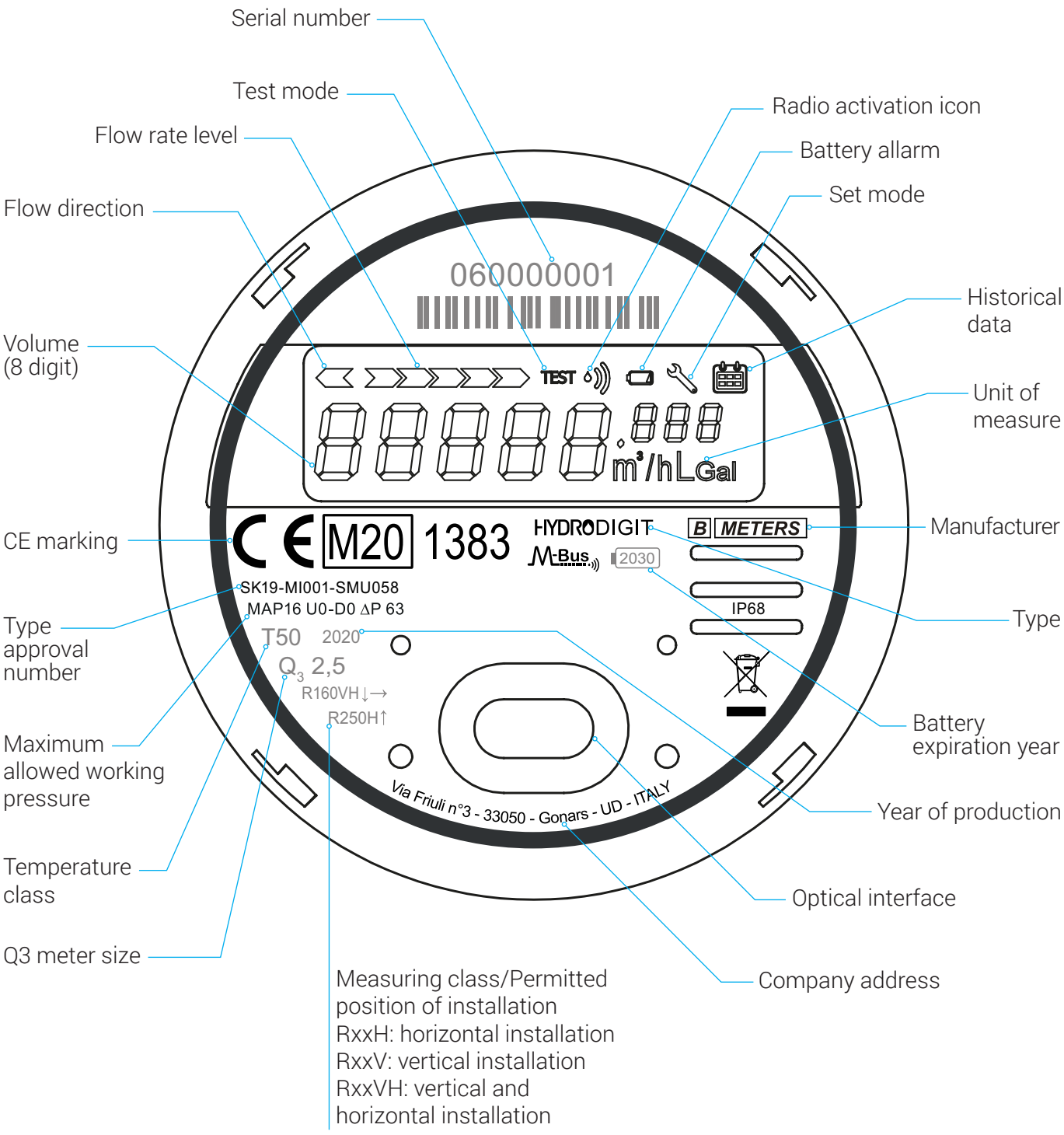
DESIGN

According ISO4064



Size	mm in	15 (1/2”)	15 (1/2”)	20 (3/4”)
L	mm	80	110	130
B	mm	85	85	85
l	mm	160	190	228
D Threading	in	3/4”	3/4”	1”
H	mm	73	73	73
h	mm	18	18	18

DEVICE DIAL


Serial number
Test mode
Flow rate level
Flow direction
Volume (8 digit)
CE marking
Type approval number
Maximum allowed working pressure
Temperature class
Q3 meter size
Measuring class/Permitted position of installation
RxxH: horizontal installation
RxxV: vertical installation
RxxVH: vertical and horizontal installation
Company address
Optical interface
Year of production
Battery expiration year
Type
Manufacturer
Unit of measure
Historical data
Set mode
Battery allarm
Radio activation icon
060000001
TEST
m³/h L Gal
M20 1383
HYDRODIGIT
B METERS
M-Bus
2030
SK19-MI001-SMU058
MAP16 U0-D0 ΔP 63
IP68
T50
2020
Q3 2,5
R160VH↓→
R250H↑
Via Friuli n°3 - 33050 - Gonars - UD - ITALY

FUNCTIONALITY

The water meter **HYDRODIGIT** is a single jet water meter with digital display and inductive rotation detection, anti-magnetic. It is available for both cold and hot water.

PACKING CONTENT

- Hydrodigit water meter
- Connection gaskets*
- Connectors*
- Seal*

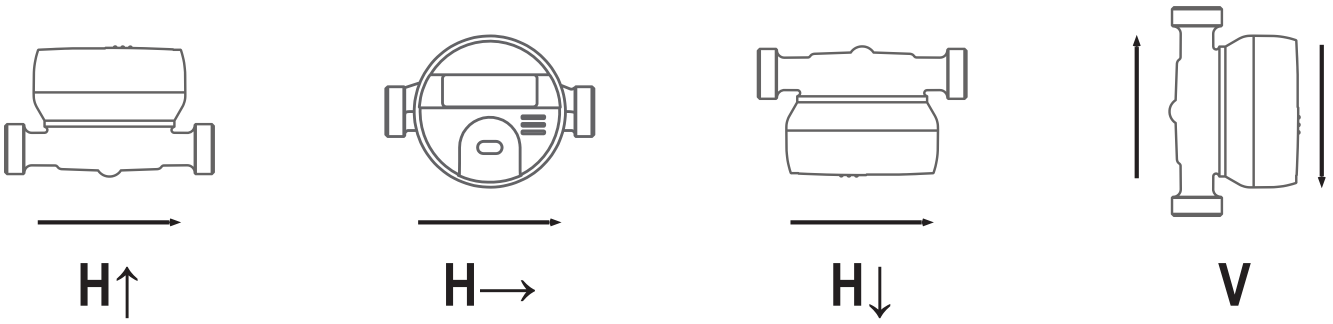
*depending if ordered with the meter

ENVINRONMENTAL CONDITIONS

- Storage: 1°C – 55°C
- Operating: 1°C – 55°C

INSTALLATION REQUIREMENTS

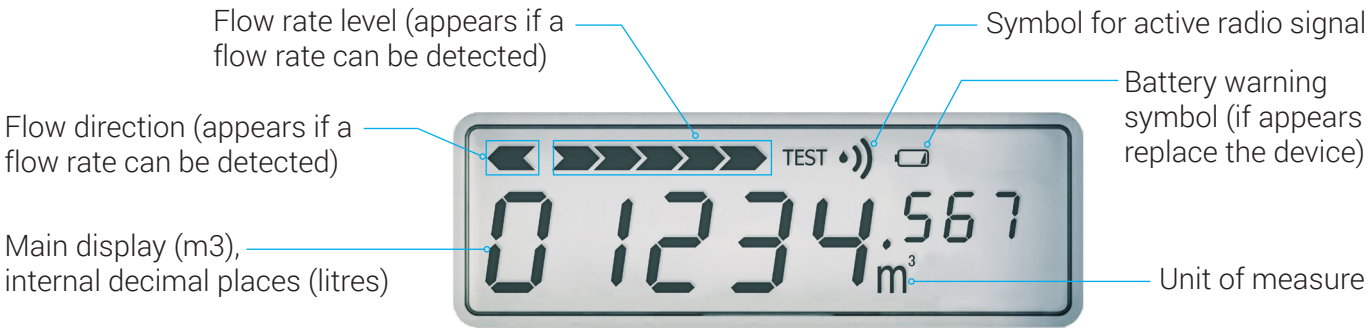
All the versions of the water meter can be installed both horizontally and vertically. For a better performance it is preferable, however, the horizontal installation, with the turbine axis perpendicular to the ground and the reading mechanism facing upwards.



OPERATION

Note: the following display pictures are given as example.

DISPLAY



DELIVERY STATUS

The factory setting is the energy saving mode. In this mode the radio transmission function is not yet activated, in order to save battery power during shipping and stock. However, the device can account the consumption and send, if any, errors (e.g. reverse flow for incorrect installation).

OPERATING MODE – RADIO ACTIVATION

Once the water meter is installed, the radio transmission activates automatically after 5 liters of water passed through the device.
The display changes and the flow direction / level appear if the flow rate is detected.

RADIO PARAMETERS

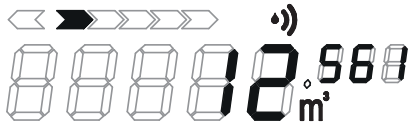
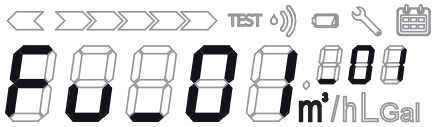
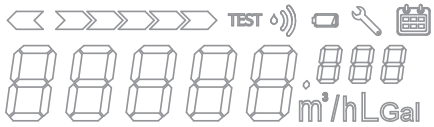
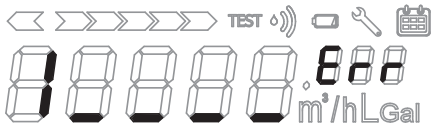
As soon as radio operation mode is activated, the meter sends a radio telegram according to Wireless MBUS OMS (*Open Metering System*) T1 mode (unidirectional transmission).

Preconfigured Radio parameters (AMR Mode):
- Transmission frequency: every 200 seconds (current values).
- Transmission span: every day, from 0 to 24 h.
- Encryption: disabled (default).
- No historical data.
- Transmitted data: volume, actual date and hour, reverse flow, alarms.

It is possible to change the configuration parameters into Walk-By mode with an USB to IR interface (B METERS mod. UC-Cable) and the B Metering software.

Walk-by mode parameters:
• Transmission frequency: every 60 seconds (current values).
• Transmission span: every day from 6 to 20.
• Encryption: enabled/disabled.
• Historical Data (12 months).
• Transmitted data: volume, actual date and hour, reverse flow, alarms, leakage date, fraud date (Q4 overflow or Backward flow detection)

DEVICE DISPLAY LOOP

Device Display	Display time	Example
	10 seconds	Consumption: 12,561 m³ Flow: present Radio: activated
	2 seconds	Firmware version Fu_01_01
	2 seconds	Segment - Test “ALL ON”
	2 seconds	Segment - Test “ALL OFF”
	2 seconds	Error message

ERROR MESSAGES

If an error occurs, an error message is displayed. The error message will be integrated into the device display loop for 2 seconds.

Error	Type	Description	Activation	Troubleshooting	Restoration	Radio payload
I_ _ _ _ Err	Backflow	Reverse flow detected, a flow in opposite direction is detected.	The error activates after continuous reverse flow higher than 20 liters.	Check water network and the meter installation.	Reset the alarm on field with IR interface and B Metering software.	The payload contains the status of the alarm and the date of the alarm activation. After resetting it the status is updated and the date will be removed from the radio payload.
_O_ _ _ Err	Overflow	Water meters was used in an improper condition, flow rate exceeded the operating conditions. Manufacturer warranty expires.	The error activates after the meter operates at a flow rate higher than Q4 for 10 minutes continuously.	Check water network parameters.	Reset the alarm on field with IR interface and B Metering software.	The payload contains the status of the alarm and the date of the alarm activation. After resetting it the status is updated and the date will be removed from the radio payload.
_ _B_ _ Err	Burst	High consumption in a short term is detected. This is probably linked to a pipeline failure / break.	If the flow rate of the meter stays continuously over Q3 for 30 minutes the alarm is set.	Check water network.	The alarm automatically resets when the flow rate decreases below 0,5*Q3.	The payload contains the status of the alarm and the date of the alarm activation. After the alarm resets, the date changes to the date of deactivation.
_ _ _R_ Err	Reverse installation	The meter starts flowing in the opposite direction. This is probably due to a wrong installation.	During first installation only, if the meter starts from 0 liters and a reverse flow (higher than 8 liters) is detected.	Check water meter installation.	Automatically resets when flow is on the correct direction.	The payload contains the status of the alarm and when flow direction turns to the correct one the status updates.
_ _ _ _L Err	Leakage	A continuous flow for a long time is detected. This is probably linked to a leakage in the water network.	The meter detects a continuous flow of >0.5*Q1 for 12 hours.	Check water network\system\ taps against leakages.	Resets automatically when a flow interruption happens.	The payload contains the status of the alarm and the date of the alarm activation. After the alarm reset the date changes to the date of deactivation.

End of battery lifetime – the icon will be displayed one year before the total discharge of the battery. For the replacement, contact the manufacturer.

Warning: the meter is equipped with non-rechargeable batteries, that can be dangerous when used improperly. To reduce the risks, it is necessary to respect the following precautions:

- Don’t recharge the battery;
- Don’t put the battery in short circuit;
- Don’t expose the battery at temperatures higher than 85°C;
- Don’t put inside ovens, crush or cut: these actions could cause an explosion or a leakage of flammable gas or liquids;
- Don’t use open flames near the meter;
- Don’t expose the battery to extremely low-pressure environment which could cause an explosion or a loss of flammable gas or liquids;
- Always dispose the batteries in compliance with current regulations;
- Always use original spare parts authorized by the manufacturer.

PAYLOAD DESCRIPTION

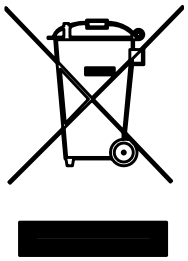
			Telegram reading (direction: meter → other)		
Code Field	**No. Bytes**	**Value (hex)**	**Total Length**	**Description**	**Notes**
L field	1	xx	1	Message length	
C field	1	44	2	Control Field: indicates one-direction al-direction of a slave-to-master reading	
M field	2	09 B4	4	Constructor Code Encoding: BMT	
A field	4	xx xx xx xx	8	8-digit serial number of the device	
Generation, In	1	17	9	WMBus generation used	
Medium	1	07/06	10	Measured medium (water / hot water)	
CI field	1	7A	11	Control Information: indicates the encoding of the following data	
Count, Inc.	1	xx	12	Progressive count	
Status	1	xx	13	Contains the alarm flags (if bits with value 1 are present, the alarm is active): bit 7: contrary counter bit 6: continuous inverse flow greater than the threshold bit 5: overflow bit 4: burst (probable tube break) bit 3: don't care bit 2: battery removal or battery life less than 1 year bit 1-0: 0: no error 1: application busy (currently unused) 2: application error (currently unused) 3: water leak age in the plant (continuous water flow detected)	
Configuration field (Signature)	2	xx xx xx	15	Encryption code used: 00 00: no encryption x0 05: CBC AES 128 bit (Pre-Shared Key with Cipher Block Chaining)	
AES verify	2	2F 2F		If AES is enabled	

			Telegram reading (direction: meter → other)		
Code Field	**No. Bytes**	**Value (hex)**	**Total Length**	**Description**	**Notes**
Dif	1	0C		Data Information Field: indicates the format of the read (8 BCD digits)	
Vif	1	13/14/15/16		Value Information Field: indicates the unit of measurement (13-liter, 14-decaliters, 15-hectoliters, 16-m3)	
Data	4	xx xx xx xx		Instant counter value	
Dif	1	04		Date and time	
Vif	1	6d		Date and time – Type F	
Data	4	xx xx xx xx xx		Data and hour value	
Dif	1	0F		Data Information Field: start of manifacture specific data	Optional
MS Code	1	xx		Bit encoding of subsequent fields: bit0: if set, the battery voltage field is present bit1: if set, the reverse stream field is present bit2: if set, fraud date is present bit3: if set, the date in which the water leakage was detected or has been finished is present bit4: if set, the date in which the burst was detected is present bit5: if set, value at memory day 1 is present bit6: if set, value at memory day 2 is present bit7: if set, the historic is present	
Batt data	1	xx		Percentage by credits (00 invalid data)	Optional
Data rev flux	4	xx xx xx xx		Instant reverse flow value (HEX) – LITERS	Optional
Fraud date	3	dd mm yy		Day month year of the first fraud detected (00 00 00 if it did not happen). In the H nibble of the month there is the type of fraud: bit 7: - bit 6: Reverse stream bit 5: overflow	Optional

			Telegram reading (direction: meter → other)		
Code Field	**No. Bytes**	**Value (hex)**	**Total Length**	**Description**	**Notes**
Water loss date	3	dd mm yy		Day month year in which it was detected that there is a water leak (00 00 00 if it did not happen)	Optional
Date burst	3	dd mm yy		Day month year when it was detected that there is burst (00 00 00 if it did not happen)	Optional
Mem day 1	5	xx xx xx xx dd mm		Litres (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF -15, 10xm3 if VIF-16) – day and mese Memory day 1	Optional
Mem day 2	5	xx xx xx xx dd mm		Litres (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF -15, 10xm3 if VIF-16) – day and mese Memory day 2	Optional
Data	3	xx xx xx xx		January-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		February-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		March-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		April-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		May-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		June-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		July-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		August-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional

			Telegram reading (direction: meter → other)		
Code Field	**No. Bytes**	**Value (hex)**	**Total Length**	**Description**	**Notes**
Data	3	xx xx xx xx		September-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		October-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		November-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	3	xx xx xx xx		December-relative reading (HEX, decalitres if VIF is 13, hectolitres if VIF is 14, m3 if VIF-15, 10xm3 if VIF-16)	Optional
Data	1	xx		Reading Acquisition Day (1-28 BCD) with note at 0.00. Value 0 indicates the last day of the month with note at h23.59.	Optional
AES fill	N	2F (-n)		If AES is enabled	cript

INFORMATION FOR CORRECT DISPOSAL OF THE PRODUCT



This product falls into the scope of the Directive 2012/19/EU concerning the management of Waste Electrical and Electronic Equipment (WEEE). This product shall not be disposing into the domestic waste as it is made of different materials that must be recycled at the appropriate facilities. Inquire through the municipal authority regarding the location of the ecological platforms to receive the product for disposal and its subsequent correct recycling.

The product is not potentially dangerous for human health and the environment, but if abandoned in the environment can have negative impact on the environment.
The crossed-out wheeled dustbin symbol, on the label on the product, indicates the compliance of this product with the regulations regarding Waste Electrical and Electronic Equipment.
Abandonment in the environment or illegal disposal of the product is punishable by law.

TRANSLATION

For deliveries to countries in the European Economic Area, the operating instructions are to be translated into the appropriate language of user country.
Should there be any inconsistencies in the translated text, the original operating instructions (Italian) are to be consulted or the manufacturer should be contacted.

TECHNICAL DATA

Model	HYDRODIGIT
Measuring class/Permitted installation	R400 H↑, R160 V H↓→ R250 H↑, R160 V H↓→ R160 Depending on the order
Flow detection technology	Turbine reading by inductive system
Temperature class	T50, cold water, T30-90 hot water
Display	LCD, 8 digits + icons
Protection class	IP68*
Local Interface	Optical interface IR IEC 62056-21
Radio standard	EN-13757-4 OMS (Open Metering System), WMBUS T1 mode
Radio Frequency	[868.7 – 869.2 MHz Fc: 868.95 MHz]
Radio range / radio power	300 meters**
Battery life	10 years***

* IP68: maximum 24 hours of continuous submersion at 1 m depth.
Note: in case of damage caused by involuntary impact, the meter must be replaced with a new one, to restore the protection class.
** Under optimal propagation conditions, the radio range depends on physical conditions (building constructions, climatic conditions, …) where propagation of the radio signal can therefore vary.
*** The battery life strongly depends on the working time window, set during the configuration process, and on the environmental conditions. Estimation of the battery life is given by the configuration software.

DECLARATION OF CONFORMITY

EU DECLARATION OF CONFORMIT

1. **Product type/model**: Water Meter – HYDRODIGIT
2. **Name and address of the manufacturer**:

   B METERS SRL Via del Friuli, 3 – 33050 GONARS (UDINE) ITALY
3. **This declaration of conformity is issued under the sole responsibility of the manufacturer.**
4. **Object of declaration:** **HYDRODIGIT**

   Vane-wheel single jet with electronic indicating device and radio transmitter
5. **Above mentioned object is in conformity with relevant EU harmonization legislation:**

   Directive No. 2014/32/EU
6. **Relevant harmonized standards or normative documents and references or other technical specifications or instructions used for the declaration:**

OIML R 49-1:2006	EN 14154-1:2005+A2:2011	EN ISO 4064-1:2017
OIML R 49-2:2004	EN 14154-2:2005+A2:2011	EN ISO 4064-2:2017
OIML R 49-1:2013	EN 14154-3:2005+A2:2011	
OIML R 49-2:2013		

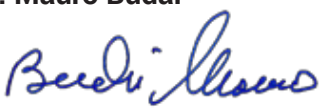
7. **Notified body**

Name and number of NB	Performed	Issue the Certificate No.
Slovensky mtrologicky ustav, NB 178 Karloveska 63 84255 Bratislava 4 Slovenska Republika	EU type certification in accordance with Module B of Directive No. **2014/32/EU**	SK 19-MI001-SMU058 (rev. 1)
Czech Metrology Institute, NB 1383 Okruzni 31 638 00 Brno Czech Republic	Certification of production, final product inspection and testing in accordance with Module D of Directive No. **2014/32/EU**	0119-SJ-A011-08

8. **Another Information**

Signed by the General Manager:

Mr. Mauro Budai



On behalf of:

B Meters Srl

Place and date of declaration issue:

Gonars, Italy, 7th July 2020

MANUFACTURER ADDRESS

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