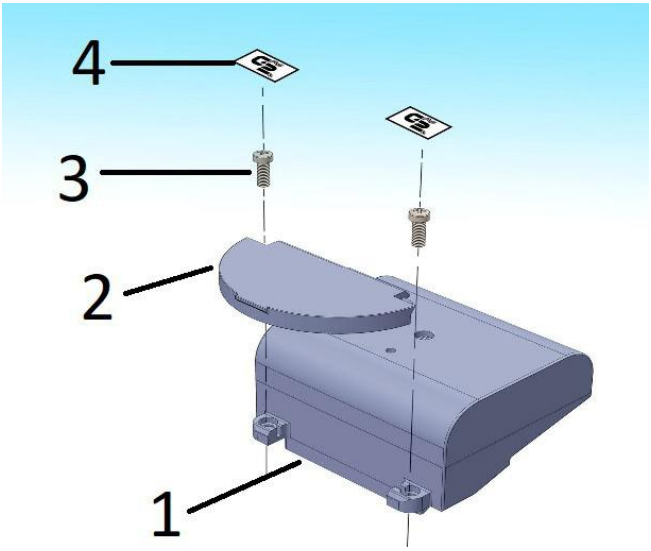
G2-IPS-CW+L Instructions

Assembly on meter

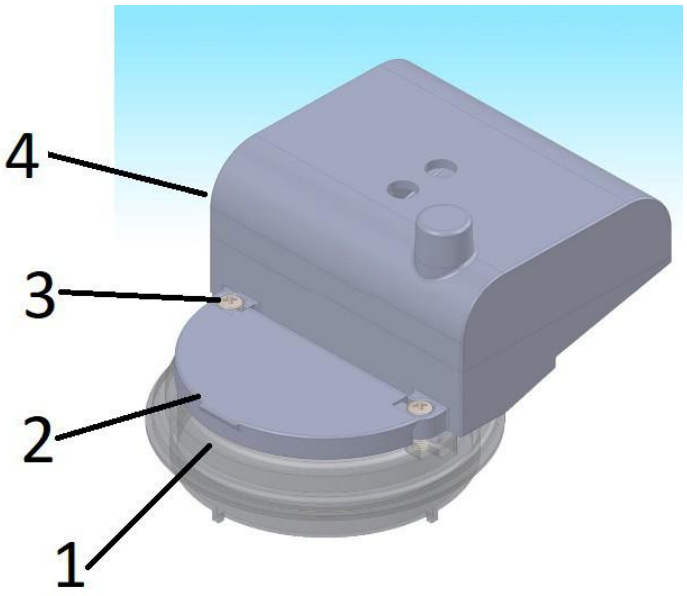


Assembly sequence

1. G2-IPS Sensor
2. Clock face cover
3. Fixing screws (x2)
4. Seal labels (x2)

Mounted module:

1. Clock face ring
2. Clock face cover
3. Fixing screws (x2)
4. G2-IPS sensor



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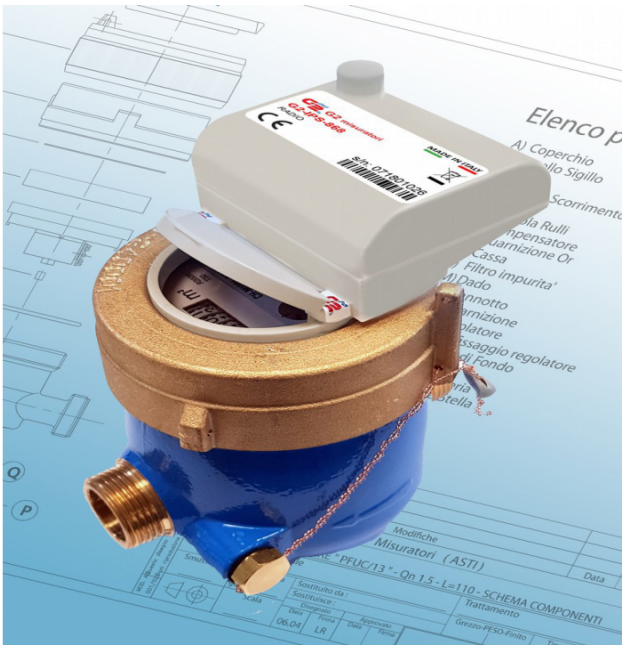
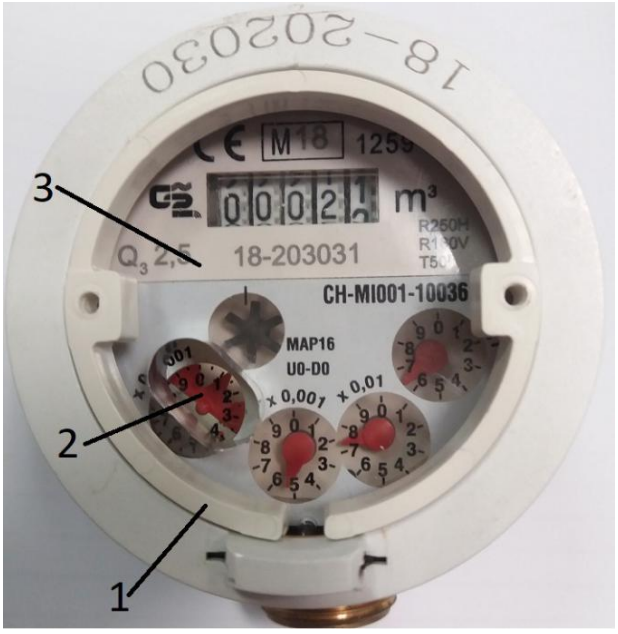
Modules set on meters



Note: Before setting the ring on the clock face, make sure that the glass and the hole are clean in order to make the module corretly stick to the meter avoiding malfunctions. See Fig.1



1. Clock face ring
2. Hole
3. Glas

Fig.1

Functioning principle

The module transmits using WMBUS protocol with its set configuration. After 168 transmissions the device transmits using the LoRaWAN protocol with Ack request. If the module receives a response from the gateway it will keep on transmitting on LoRaWAN with its set configuration, otherwise it will return transmitting on WMBUS for trying again a LoRaWAN transmission.

WMBUS Functioning

Transmission time lapse:120 seconds, Mon - Fri, 8 - 17
Transmission frequency: 868MHz
Manifacture: GTM
Device S/N: See bottom of the device

The module makes a transmission every two minutes highlighted by the lighting of the green LED. It is possible to force a transmission in every moment by putting a magnet on the cover on the further side from the antenna.

LoRaWAN Functioning

When the module switches to LoRaWAN , it transmits an “I’m Alive” signal highlighted by the green LED followed by the red LED.

“I'm Alive” Frame

0	1
0x30	Status (YZ)

Status only transmits Y = cyclic trnsmissions counter (0...7). Z is 0.

It is possible to force another join request even when the module has already joined with the gateway. To do that, keep a magnet on the cover as done previously for about 30 seconds. After that the red led and the green led light alternately and the join procedure starts all over as described before.
Very important: As you will see later, after 6 seconds that the magnet is kept on the cover, the module will send an uplink signal which is punctuated by the blinking of the green led and the red led; if you want to force a join request you have to ignore this uplink and keep the magnet on the cover until the red led and the green led light alternately as described before.

Historical reading frame

The historical reading frame uplinked by the module is the following:

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	..	..	30
0x70	Status	AA-M-G-hh-mm				F	F	F	F	D1	D1	D2	D2	D3	D3	..	..	

Where:
0x70 identifies the code of the historical reading transmission.
Status identifies the status of the module through some flags.
Staus = 0xYZ

Y = cyclic transmissions counter (0...F).
Z- Bit 0: Generical alarm (0 = Ok, 1 = Alarm)
Z- Bit 1: Flow Direction (0 = Right direction, 1 = Opposite direction)
Z- Bit 2: Fraud Alarm (0 = Ok, 1 = Alarm)
Z- Bit 3: Battery Alarm (0= Ok, 1 = Low battery charge)
Y- Bit 3: Leakage Alarm (0 = Ok, 1 = Detected Leakage)

YY-M-D-hh-mm = Year, Month, Day, Hours, Minutes at the moment of the historical transmission.

Year = bit 20..31 =0..4095
Month = bit 16..19 =1..12
Day = bit 11..15 =1..31
Hours = bit 6..10 =0..23
Minutes = bit 0..5 =0..59

FFFF = First instant reading of the meter at preset time (liters). The value has 32 bits and it is expressed in Little Endian Hexadecimal format.
DxDx = Measured delta between the instant measurement read at preset time and the previous one (liters). The value has 16 bits and it is expressed in Little Endian Hexadecimal format.

Example of Received Frame:
70 20 5B C4 31 7E 7F 05 00 00 14 00 16 00 20 00 22 00 30 00 45 00 55 00 66 00 23 01 98 01 00 02

Status = 0x20 à Y = 2 à Storico n.2 ; Z = 0 à No alarm
AA-M-G-hh-mm = 5B C4 31 7E = 24/01/2019 17:27 FFFF =
0x00 00 05 7F = 1407 liters.

		Calculated values (liters)
00 00 05 7F	First value 1407	1407
00 14	20 delta	1427
00 16	22 delta	1449
00 20	32 delta	1481
00 22	34 delta	1515
00 30	48 delta	1563
00 45	69 delta	1632
00 55	85 delta	1717
00 66	102 delta	1819
01 23	291 delta	2110
01 98	408 delta	2518
02 00	512 delta	3030

The module is configured to analyze and report any possible night leakage. In particular, it makes 5 readings every 60 minutes starting from 00:00.

Ore	**Lettura n**
00:00	1
01:00	2
02:00	3
03:00	4
04:00	5

At the end of the fifth reading, the difference for every time interval is calculated. If the consumption is over the preset threshold (10 Liters/houur) for every interval, the Leakage alarm bit will be activated in the Status which will be transmited with the historical.

WARNING! Data transmited in the historical regard the readings of the day before the transmission but LEAKAGE ALARM bit concerns the same day of the transmission. In particular it is activated after the reading of the last value (in this case after 04:00). This means that leakage alarm may not be active for historical transmissions before 4:00 and may be active for historical transmissions after 4:00.

The module in configured to transmit a read mesurement every 24 hours but it is possible to force a transmission every moment by bringing a magnet near the object as seen previously.

Istant Reading Frame

Instant reading uplinked by the module is the following:

0	1	2	3	4	5
0x50	Status (YZ)	A	A	A	A

Where: 0x50 identifies the code of instant reading transmission.
Status identifies the status of the module through some flags.
Staus = 0xYZ

Y = cyclic transmissions counter (0...F).
Z- Bit 0: Generical alarm (0 = Ok, 1 = Alarm)
Z- Bit 1: Flow Direction (0 = Right direction, 1 = Opposite direction)
Z- Bit 2: Fraud Alarm (0 = Ok, 1 = Alarm)
Z- Bit 3: Battery Alarm (0= Ok, 1 = Low battery charge)
Y- Bit 3: Leakage Alarm (0 = Ok, 1 = Detected Leakage)

AAAA = Istant measurement reading (liters). The value has 32 bits and it is expressed in Hexadecimal Little Endian format.

Example of Received Frame: 0x50 32 17 E2 00 00 Status =
0x32 Y = 3 ; Z = 2 Opposite flow direction ◊ ◊ AAAA =
0x00 00 E2 17 = 57879 liters..