

IWM-PL3

Pulse module for B METERS water meters

Product description

The IWM-PL3 module is a device that allows to transmit via pulse output the reading data detected by the GMDM-I and GMB-I water meters manufactured by B METERS.

The module must be configured using an Android device (smartphone, tablet, etc.) with an NFC interface and the *NFC IWM Config* application. This allows to set the impulsive value, the various operating options and to monitor the status and the alarms. To download the app, please connect to the Google Play, type *NFC IWM Config* and press the button "Install". Please refer to the configuration software manual for a detailed description of the configuration features and options available. A quick manual is also available on the app: to consult it, launch the app and press the button "?".

Package Content

- IWM-PL3 module
- Mounting screw
- Anti-tampering sticker
- Installation guide

Technical data

- Working temperature: From +1°C to +55 °C
- Power supply: Lithium battery 3.6V Li-SOCl₂ – 1,65 Ah*
- Maximum battery duration: 10 years**
- Communication interface: Open Collector, polarized – max 30 VDC (100mA)
- Protection level: IP68***
- Dimensions (l x p x h, without cable): 88 x 70 x 25 mm
- Cable length: 1,5 m
- Weight: 120g

* Batteries are not replaceable, DO NOT ATTEMPT TO REPLACE. Any attempt will void the warranty, moreover will irreversibly damage the device.

** in ideal operative conditions.

*** maximum 24 hours of continuous submersion at 1 m depth

Installation

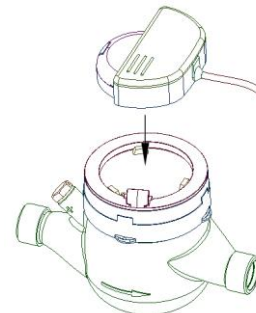
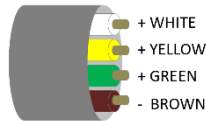
The installation of the module IWM-PL3 is allowed on GMB-I e GMDM-I meters.

Install the module on the meter as shown in the picture [1]. It is necessary to combine the hooks of the meter with the ones on the module.

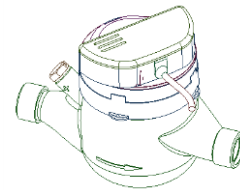
With one hand keep the meter steady, with the other hand push the module gently [2] and turn in a counter-clockwise direction to fix it on the meter [3].

Connect the wires as follows:

- **White [+]:** regular count wire, NO contact (Normally Open). The contact closes every time the pulse is sent, independently from the water flow direction.
- **Yellow [+]:** tampering wire, NC contact (Normally Closed). The contact opens when one (or more) of the following events occurs:
 - Module removal
 - Fraud on the inductive sensor
 - Cable cut
 - Magnetic fraud
- **Green [+]:** programmable wire, NO contact (Normally Open). The user can set one of the following functions:
 - Absolute counting (closes when the pulse is sent, with backward flow revolution compensation);
 - Backward counting (closes when the pulse is sent, when the flow goes backwards);
 - Dosing (closes every "x" liters, with "x" freely programmable).
- **Brown [-]:** Ground (common wire)

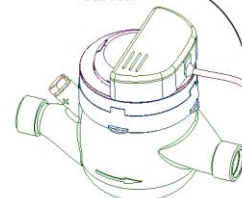


Step 1

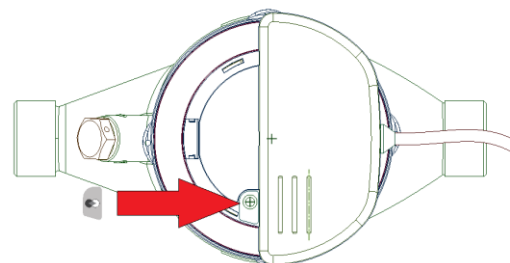


Step 2

CLICK!



Step 3



Step 4

Safety

- During the installation process, handle the device with care, don't crush, don't bent, don't exposure to electrostatic discharges which could damage permanently the device, do not install close to heat sources (radiators, conditioners, convectors etc.).
- The module doesn't contain hazardous materials in accordance with European directives 2011/65/UE (RoHS) and subsequent modifications. The device requires specific disposal on the end of its lifetime. Recycling is mandatory or recommended following the Directive RAEE inside European Union region, or anyway dispose in accordance with local laws and regulations. Do not burn, or undergo to high temperatures.
- The IWM-PL3 works reliably in the environmental conditions specified in this manual. Any unauthorized intervention and/or modification may cause malfunctions or total damaging of the product.

Warranty

The warranty period is set at 24 (twenty-four) months from the date of the shipping of the material. Warranty is against defects in materials or workmanship when the product is properly used and maintained in normal efficiency. This Warranty is valid and enforceable in the country where the product was purchased. In the event that the product has been purchased in a country of the European Union, the warranty is still valid in all countries of the Community.

To obtain warranty service, it is requested to comply with the following clauses:

1. Products must be delivered for repair at the expense of the customer.
2. The product warranty will be subject to the exhibition of a tax document (receipt, receipt or bill of sale), which attests to the date of purchase of the product.
3. The repair will not affect the original date of expiration of the warranty and will not involve the renewal or extension thereof.
4. If at the time of the repair, the product has not any defect, it will be charged the costs of the technical analysis.
5. The warranty is void if the failure was due to: impacts, falls, misuse or abuse of the product, use of non-original batteries, accidents, product alteration, replacement/detachment of seals and/or product tampering. The same also does not cover damage caused during transport if packages used are unsuitable.
6. The warranty is not covering the battery of the product.
7. The warranty does not cover the inability to use the product, other costs incidental or consequential damages or other expenses incurred by the purchaser.
8. The warranty doesn't cover damage to the product caused by usage in any other way than described in this manual.

Support on the products

If the product needs to be sent to the technical assistance, contact your dealer or contact the BMETERS After sales service at support@bmeters.com.

Declaration of Conformity

Hereby, B METERS, declares that this IWM-PL3 is in compliance with the essential requirements and other relevant provisions of Directive 2014/30/EU.

The complete declaration can be downloaded from the official website www.bmeters.com.

Contact Info

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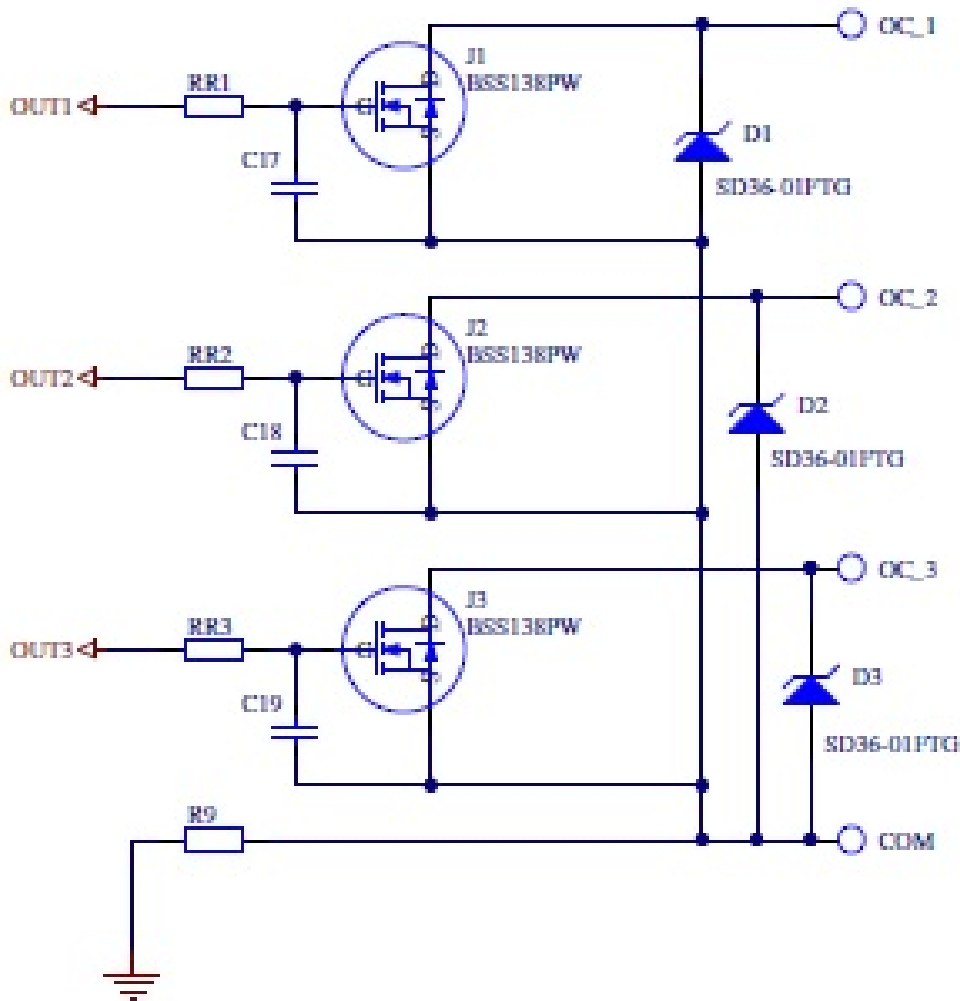
E-mail (technical support): support@bmeters.com

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INSTRUCTIONS FOR CONNECTING THE IMPULSIVE OUTPUTS OF THE B METERS IWM-PL3-IWM-PL4 MODULES

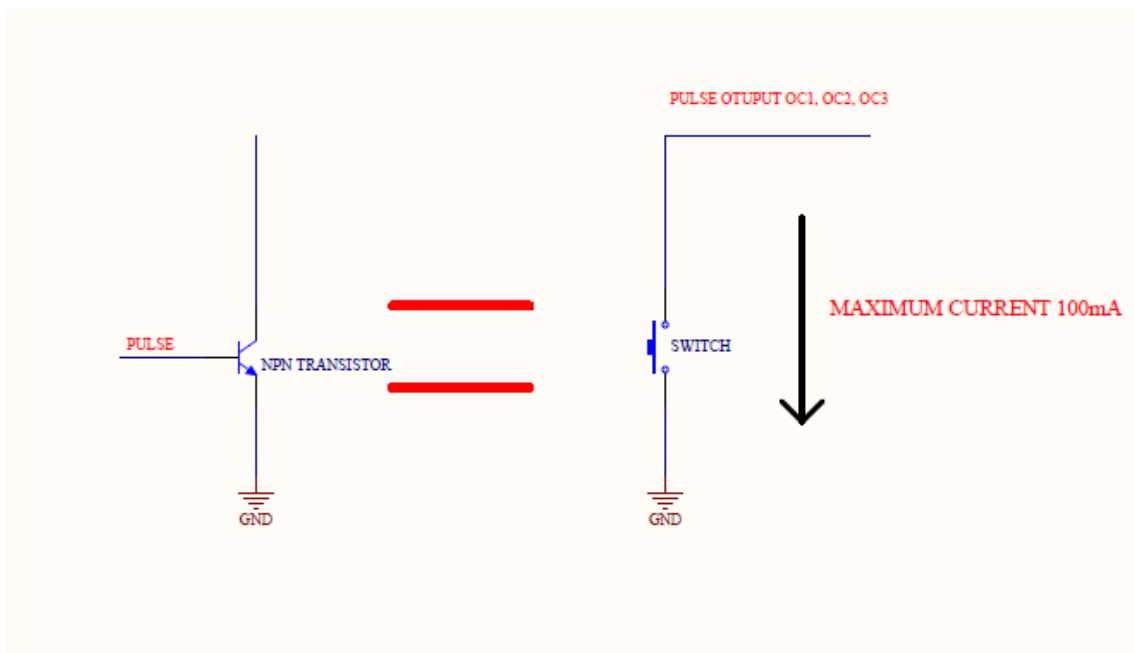
The pulse emitter IWM-PL3/PL4 modules with inductive principle provide polarized Open Collector (OC) NPN type outputs (they do not provide a “clean” contact).

The reference scheme is the following:



The figure shows that the OC1, OC2, OC3 outputs (where we'll connect the impulse emitter, the PLC input or any device that receives the pulses) are connected to an NPN type transistor (J1, J2, J3 in the figure). The output operation is as follow:

"When a pulse is generated the output transistor is a switch that closes the contact to ground".



This type of output (Open collector) is usually accepted as valid for devices such as PLCs. However, it's necessary to check that the voltage applied to the contact, by the external device, does not exceed the maximum bearable voltage. For IWM-PL3 and IWM-PL4 products this voltage is 30V in continuous electric current (DC).

NB: remember that the voltage applied to the contact is supplied by the external device, not by the B METERS IWM-PL3/PL4 module.

IT'S NECESSARY TO VERIFY THAT THE INPUT OF THE DEVICE TO WHICH WE WILL CONNECT OUR OUTPUT IS:

- 1) Open collector type (NO CLEAN CONTACT or DRY CONTACT)
- 2) The voltage applied to the contact is less than 30V. This voltage coincides with the supply voltage of the external reading device. Usually these voltage values are present: 3.3V, 5V, 12V or 24V therefore lower than 30VDC.
- 3) The type of input accepted is **NPN**.

The last point is necessary because the contact is linked to a type of transistor which can be of two "polarities" PNP or NPN.

The possibilities that can occur for an Open collector output are two:

- NPN type Open collector output: when there is an impulse the output goes to ground (which must be in common between the IWM-PL3 or IWM-PL4 device and the external device).
- PNP type Open collector output: when there is an impulse the output goes to the supply voltage (which must be in common between the IWM-PL3 or IWM-PL4 device and the external device).

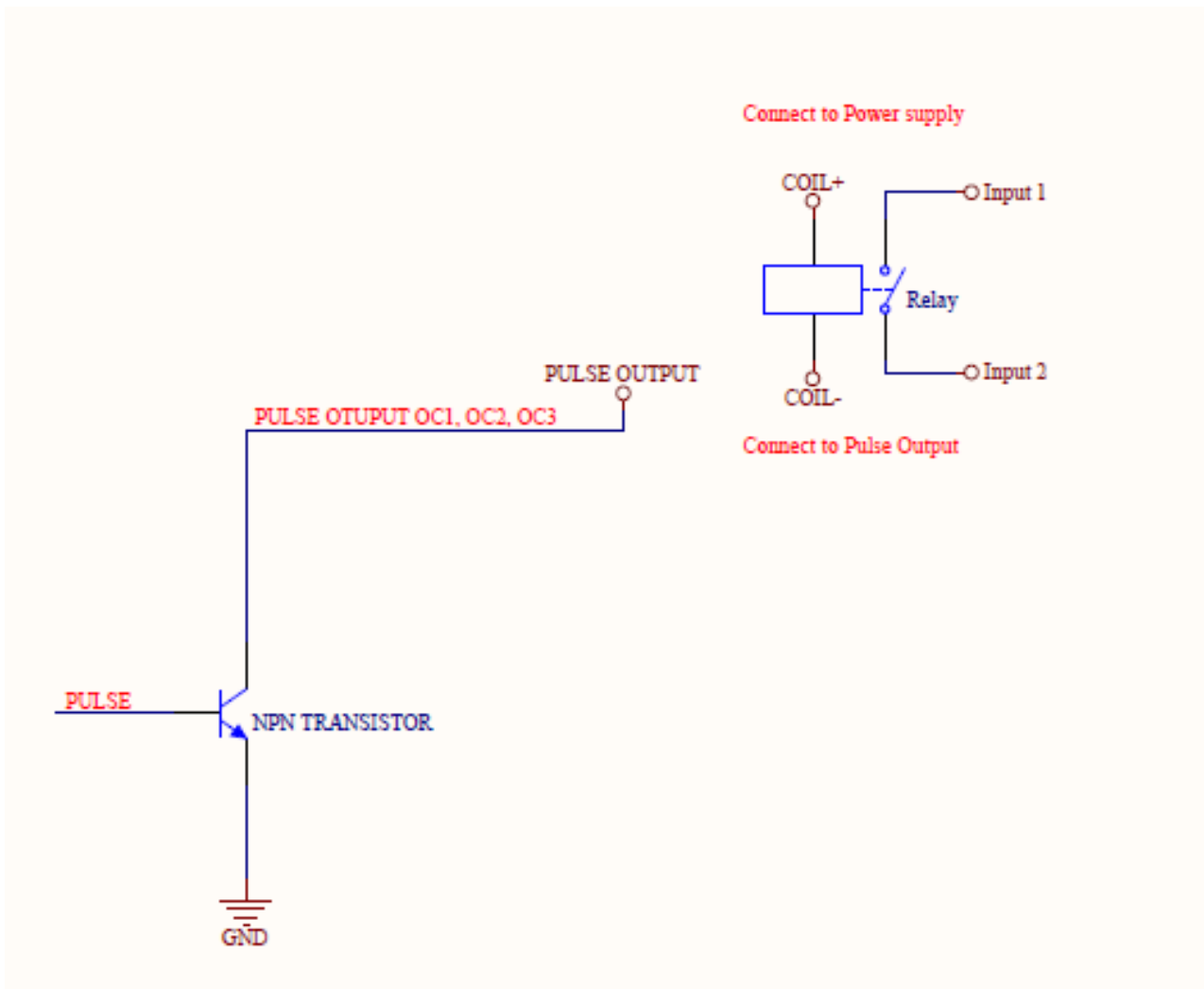
The outputs of the IWM-PL3 and IMW-PL4 modules are of the first type: **NPN**.

The IWM-PL3 and IWM-PL4 modules are connected as follows:

- 1) Ground (**BROWN**) wire connected to the negative reference (Ground) of the output device that reads the pulses. PLCs usually have opto-isolated inputs therefore sharing the masses does not create anomalous currents.
- 2) Pulse output wire (**WHITE, YELLOW AND GREEN**) connected to the input of the device that reads the pulses (PLC for example). Please note that this input must accept an NPN polarized Open collector output with a voltage not exceeding 30V.

Sometimes it is necessary to connect the output of the IWM-PL3 or PL4 device with a device that only accepts "clean" contacts. The clean contacts have thin name because they are not related to the mass (NPN) or to the supply voltage (PNP). In this case, to make the two devices "talk" it is necessary to insert an interface relay between the output and the input.

The principle connection scheme is as follows:



It's necessary to:

1) Select an appropriate relay:

- With NO (normally open) or NC (normally closed) output depending on the type of input you want.
- With an excitation coil voltage compatible with the available voltage. The voltage will normally be the one supplied by the reading device (PLC for example) and must NOT be greater than 30V.
- **With a coil excitation current not exceeding 100mA.**

These data are provided by the device manufacturer and are generally indicated by the relay technical sheet. Then proceed as follows:

- 1) Connect the relay input (excitation coil) to the IWM-PL3 or IWM-PL4 output as shown in the diagram. One terminal of the coil must be connected to the supply voltage and the other must be connected to the output of the IWM-PL3 or IWM-PL4.
- 2) Connect the relay output (the “clean” contact) to the inputs of the external device (there is no polarity).

In the example we referred to an electromechanical relay. There are semiconductor devices on the market, called solid-state relays, which can be used.

The advantages are:

- Less switching noise (no bounces, no noise emission, noiselessness)
- Smaller footprint
- Higher switching speed

The disadvantages are:

- ☠ Greater cost
- ☠ Minimum consumption but not zero even at rest

When switching speeds are high it's preferable to use a suitably sized solid-state relay.