



## EU TYPE EXAMINATION CERTIFICATE

### n. IT-002-15-MI004-2213

*Issued in accordance with the Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measuring instruments (MID) and with the Italian decree n° 22/2007 as modified by decree n. 84/2016 of 2016 May 19, which implements the Directive 2014/32/EU (MID) and 2015/13/EU.*

**Issued by:** Parco Scientifico e Tecnologico del Lazio Meridionale Srl  
*Emesso da* Via Casilina Nord 246 km 68 03013 – Ferentino (FR) Italy

**Issued to:** B Meters  
*Emesso da* Via Friuli, 3 - 33050 Gonars (UD) Italy

**Type of instrument:** Heat meter  
*Strumento*

**Type designation:** Hydrocal M3  
*Modelli*

Measurand	Heat energy
Accuracy Class	2 and 3
Environmental Class	A-MI-E1
Location	Closed
Temperature Range	(5 ÷ 55) °C
Applicable essential requirements	Annex I and MI-004
Reference standards	EN 1434 and OIML R75

	DN15		DN20
q <sub>i</sub> [m <sup>3</sup> /h]	0,012	0,030	0,050
q <sub>p</sub> [m <sup>3</sup> /h]	0,6	1,5	2,5
q <sub>s</sub> [m <sup>3</sup> /h]	1,2	3,0	5,0
Δθ <sub>min</sub> [K]	3		
Δθ <sub>max</sub> [K]	70		
θ <sub>min</sub> [°C]	5		
θ <sub>max</sub> [°C]	90		

**Date of issue:** 3<sup>rd</sup> Version issued on May 08, 2018 (actual version)  
*Data di emissione del certificato* 2<sup>nd</sup> Version issued on May 08, 2017  
1<sup>st</sup> Version issued on January 15, 2016

**Certificate valid until:** January 15, 2026  
*Certificato valido fino al*

On behalf of the Chief Executive Officer  
*Prof. Paolo Kigo*

**CLAUSES**

*The principal characteristics, approval conditions are set out in the appendix hereto, which forms part of the approval documents and consists of 5 pages. Partial publication or distribution of this report is forbidden. In accordance with the European Directive 2014/32/EU (MID), the manufacturer has to inform Pa.L.Mer. about any modifications, even if not significant, made or planned to be made to the above mentioned product. Any modifications made to the model without Pa.L.Mer. approval could invalidate the certificate. In case of new revisions of the certificate the latter version supersedes and reply the previous version.*

Mod-36 rev.1 issued on 2017-01-30

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## 1. Design of the instrument

### 1.1. Construction, sensors and indication of the measurement results

Hydrocal M3 is a complete heat meter for heating and cooling applications. This report refers only to heating application according MID Directive. The investigated measuring instrument is made up of: i) a turbine flow sensor, ii) a platinum thermoresistance temperature sensors pair for the flow and return temperature measurements and iii) a calculator. The heat meter is already MID approved (certificate IT-002-15-MI004-2213 issued on January 15, 2016) and the modification refers to the material of the turbine and the reduction of  $Q_i$  for DN15 model. All the performed test has been report in folder MI-002.262/2015 issued on 2015 december 02 and MI-002.145/2017 issued on 2017 may 08 All the properties of the heat meter, whether mentioned or not, shall not be in conflict with the applicable EU legislation.

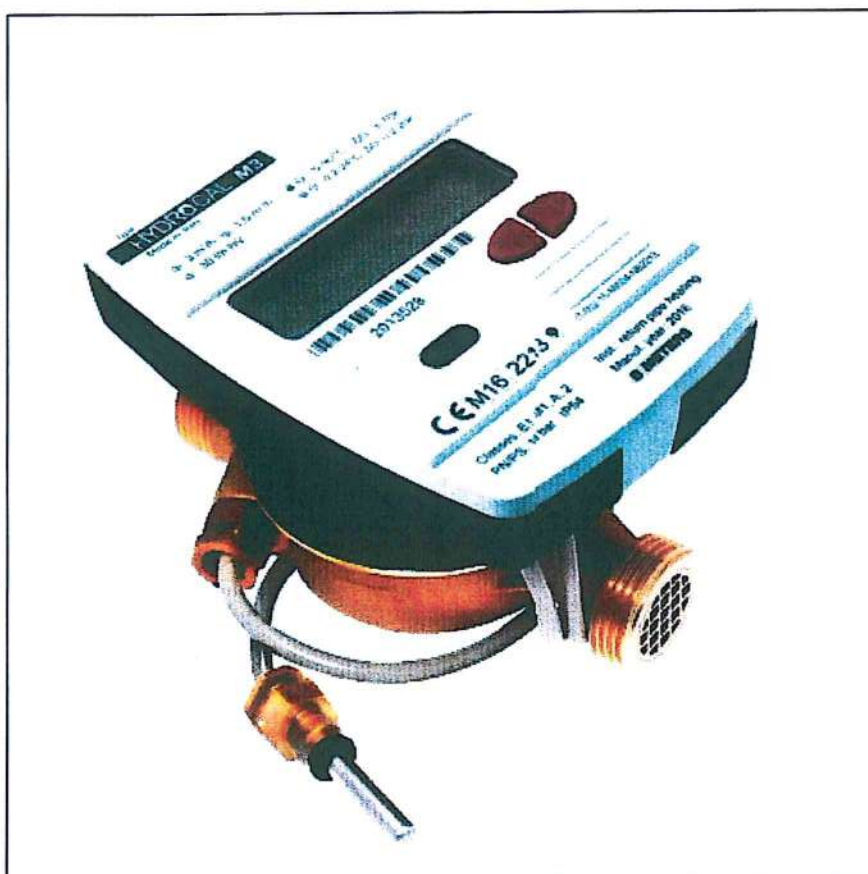


Figure 1 – Hydrocal M3 Heat meter model

### 1.2. Technical documentation folder

<i>Technical Description of the meter:</i>	HYDROCAL M3 technical data sheet v1.4
<i>Installation and operation instructions:</i>	Hydrocal-M3 Manuale Utente v1.1.1 ITA ENG
<i>Sealing Plan unit:</i>	Piano di legalizzazione Hydrocal M3 v1.1
<i>Drawing of the meter and dimension of the housing:</i>	Mechanical drawings folder Ver.1.2017





## 2. Technical data

<i>Measurement of:</i>	Heat		
<i>MID Accuracy Class:</i>	2		
<i>Environment Class:</i>	A		
<i>Mechanical Environment Class:</i>	M1		
<i>Electrical Environment Class:</i>	E1		
<i>IP class protection:</i>	IP54		
<i>Flow profile sensitivity:</i>	U0 D0		
<i>Location:</i>	Closed		
<i>Operating Temperature Range[°C]:</i>	5 ÷ 55		
<i>Flow sensor type:</i>	Mechanical (turbine)		
<i>Temperature sensor pair:</i>	Pt 1000		
<i>Temperature sensor cable length:</i>	1,5 meters		
<i>Display unit options:</i>	MWh and GJ		
<i>Display digits:</i>	5 + (3 decimal)		
<i>Model:</i>	<b>DN15 Qp0,6</b>	<b>DN15 Qp1,5</b>	<b>DN20</b>
$q_i$ [m <sup>3</sup> /h]:	0,012	0,030	0,050
$q_p$ [m <sup>3</sup> /h]:	0,6	1,5	2,5
$q_s$ [m <sup>3</sup> /h]:	1,2	3,0	5,0
$\Delta\theta_{min}$ [K]:	3		
$\Delta\theta_{max}$ [K]:	70		
$\theta_{min}$ [°C]:	5		
$\theta_{max}$ [°C]:	90		
<i>Max. admissible working pressure[bar]:</i>	16		
<i>Unit and resolution under test:</i>	1 mL for volume; 1 Wh for heat; 0,01 °C for temperature		
<i>P<sub>s</sub> Maximum value of thermal power (kW):</i>	650 kW		
<i>Flow sensor to be operated:</i>	Return (default) – Flow (Optional)		

## 3. Software specification

The legally relevant software version can be visualized on display in menu level 3 / item 2. The application software is stored in the processor memory. The meter has an embedded infrared interface that is used only on the production for rapid testing operation during the Initial verification by the manufacturer. The meter has a unique software identification for the metrologically relevant part, each modification will be identified by a new version code, incremented by a progression of the last digit. Anytime a new software version has been released by the manufacturer it need to be approved by NB Pa.L.Mer.

Software type	P
Software Version	Fuer 0.01
Risk Class	C
Extension	L and I4

Completeness and correctness of software structure submitted for type evaluation (requirements of Welmeç. 7.2 Rev.5):

Yes

No

Remarks: None



## 4. Security sealing

The following items of the meters are sealed:

- flow sensor
- Temperature sensor pair
- Calculator

The Hydrocal M3 heat meter is equipped with a plastic cover aimed to prevent any kind of tampering. The manufacturer applies the following seals after the initial verification.

- Flow meter and calculator - Not removable plastic adhesive (see figure 2 and 3) on the front view of the meter
- Flow meter and calculator - Not removable plastic adhesive (see figure 4) on the lateral side of the meter
- the flow temperature sensor is sealed through an hole on the nut of the sensor itself and the body of the flow sensor allowing the lead sealing wire to be applied (Figure 5).

A further seal is provided for the return temperature sensor and it is to be applied by the installer.

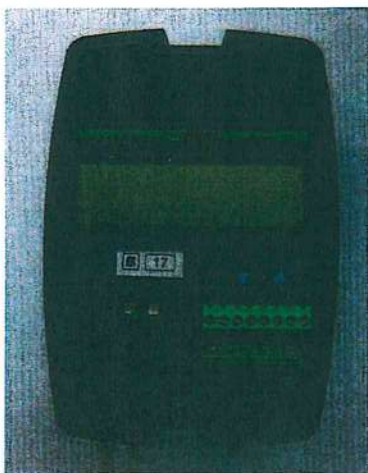
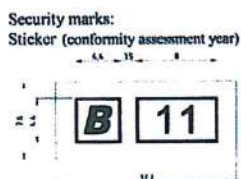
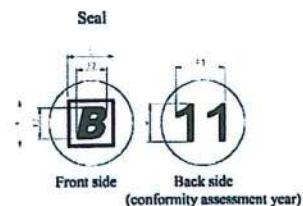


Figure 2 –Heat meter sealing after positive initial verification



a)



b)

Figure 3a – not removable plastic adhesives applied by the manufacturer  
Figure 3b – not removable lead seal applied by the manufacturer



Figure 4 –Heat meter sealing of the calculator after positive initial verification

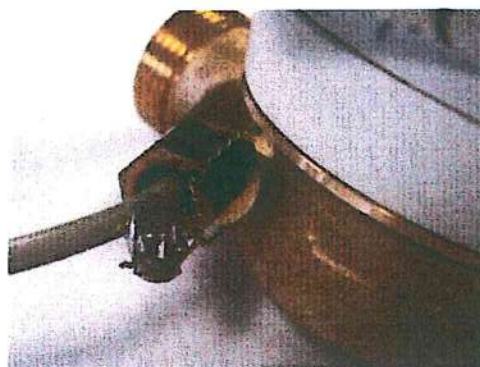


Figure 5 –Heat meter sealing of the temperature sensor after positive initial verification

For further details see Legalization plan “Piano di legalizzazione Hydrocal M3\_v1.1” and technical drawings.





#### 4.1. Labeling and inscriptions

The label contains the following inscriptions, as shown in Figure 6:

- name of the manufacturer, or his trade mark;
- type, year of manufacture, serial number;
- limits of the temperature ( $\Theta_{\min}$  and  $\Theta_{\max}$ );
- limits of temperature differences ( $\Delta\Theta_{\min}$  and  $\Delta\Theta_{\max}$ );
- $q_i$ ,  $q_p$  and  $q_s$  flow-rates
- setup for the flow sensor (flow or return temperature);
- maximum admissible working pressure
- environmental classes
- MID accuracy class
- Nominal pressure;

The body of the flow sensor is marked with an arrow that shows the flow direction, as reported in Figure 4 and 5.

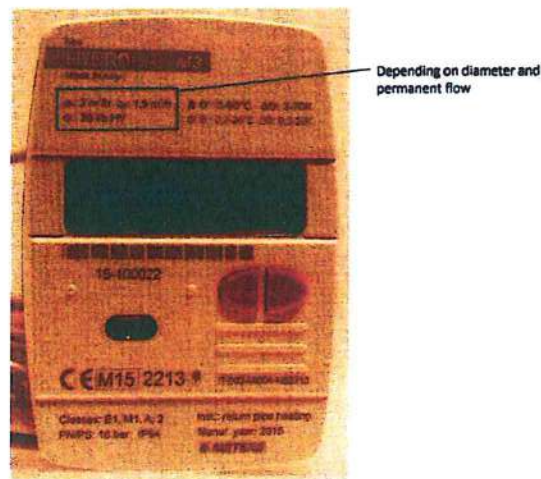


Figure 6 – Hydrocal M3 label

#### 4.2. Certificate revisions

- Rev.1 First issue
- Rev.2 Second issue. New plastic cover, new turbine and extension of the flow range for model DN15  $Q_p$  0,6 up to 12 L/h
- Rev.3 reissue for mistake on the first page (DN25 instead of DN20)