

Annex to application for conformity assessment of Heat meters in accordance with MID

This is Annex No. 1

Dated:	
To application dated:	
Company	
Signed	

Documentation required (to be completed by applicant) for testing of Heat meter or sub-assemblies

Note: All documentation must be equipped with date and or revision, which is to be updated in case of a new version.

Usage and design

The supplier shall submit one copy of the following documentation (according to chapter 7 in EN 1434 - 4:2007) to the testing laboratory as well as the items to be tested – including an archival unit of the meter type tested.

Heat meter specification (according to chapter 11 in EN 1434-1:2007)

Flow sensor

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Supplier		
Type identification		
Accuracy class; may differ depending on mounting orientation and on type of liquid		
Limits of flow rate (q_i , q_p and q_s). Different sets of q_i and q_s may be given depending on mounting orientation and type of liquid		
Maximum admissible working pressure (PS in bar)		
Nominal pressure (PN)		
Maximum pressure loss (pressure loss at q_p)		
Maximum admissible temperature Limits of temperature (Θ_{min} and Θ_{max}). An additional set of limits for the cooling range may be specified for heating/cooling meters.		
Nominal meter factor (litres/pulse or corresponding factor for normal and test output)		
Installation requirements including installation pipe lengths etc		
Basic mounting orientation and other specified orientations.		
Physical dimensions (length, height, width, weight, thread/flange specification)		
Pulse output device class (see 7.1.3 of EN 1434- 2:2007)		

Flow sensor (continued)

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Output signal for testing (type/levels)		
Performance at flow rates greater than q_c		
Low flow threshold value		
Liquid if other than water		
Response time - for fast response meters		
Mains power supply requirements - voltage, frequency		
Battery power supply requirements - battery voltage, type, life-time		
Nominal voltage level for external power supply		
Current used (average and peak) at external power supply		
Energy used per year at external power supply		
Cabling requirement at external power supply (max. cable length and possible requirement for shielded or twisted cable)		
Voltage limit at which the meter switches automatically from external power supply to internal battery		
Time limit at which the meter switches automatically from external power supply to internal battery		
Environmental classification		

Temperature sensor pair

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Supplier		
Type identification		
Limits of temperature (Θ_{\min} and Θ_{\max}). An additional set of limits for the cooling range may be specified for heating/cooling meters.		
Limits of temperature difference ($\Delta\Theta_{\min}$ and $\Delta\Theta_{\max}$). An additional set of limits for the cooling range may be specified for heating/cooling meters.		
Maximum admissible working pressure for direct mounted sensors (PS in bar)		
Maximum admissible temperature		
Wiring of sensors (e.g. four or two wire)		
Principle of operation		

Temperature sensor pair (continued)

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Maximum RMS value of sensor current		
Physical dimensions		
Installation requirements (e.g. for pocket mounting)		
Maximum liquid velocity for sensor over 200 mm length		
Total resistance of a 2-wire cable		
Output signal for rated operation (type/levels)		
Response time		

Calculator

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Supplier		
Type identification		
Environmental classification		
Maximum value of thermal power		
Limits of temperature (Θ_{\min} and Θ_{\max}). An additional set of limits for the cooling range may be specified for heating/cooling meters.		
Limits of temperature difference ($\Delta\Theta_{\min}$ and $\Delta\Theta_{\max}$). An additional set of limits for the cooling range may be specified for heating/cooling meters.		
The conditions for switching between heating and cooling metering if applicable		
Display unit options (MJ, kWh)		
Dynamic behaviour (see 5.4 of EN 1434-2:2007)		
Other functions in addition to heat indication		
Installation requirements including wiring of temperature sensors, indicating if screened cables are necessary or not		
Physical dimensions		
Mains power supply requirements - voltage, frequency		
Battery power supply requirements - battery voltage, type, lifetime		
Nominal voltage level for external power supply		
Current used (average and peak) at external power supply		

Calculaor (continued)

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Energy used per year at external power supply		
Cabling requirement at external power supply (max. cable length and possible requirement for shielded or twisted cable)		
Voltage limit at which the meter switches automatically from external power supply to internal battery		
Time limit at which the meter switches automatically from external power supply to internal battery		
Handling of energy indication by external power failure (see 6.3.2)		
Pulse input device class (see 7.1.5 of EN 1434-2:2007)		
Required input signal from temperature sensors		
RMS value of temperature sensor current		
Maximum permissible flow sensor signal (pulse rate)		
Output signal for normal operation (type/levels)		
Pulse output device class (see 7.1.3 of EN 1434-2:2007)		
Output signal for testing (type/levels)		
Liquid if other than water		
If the flow sensor shall be operated at the high or low temperature level		

Complete meters

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Supplier		
Type identification		
Accuracy class ; may differ depending on mounting orientation and on type of liquid		
Environmental classification		
Display unit options (MJ, kWh)		
Other functions in addition to heat indication		
Maximum value of thermal power		
Limits of flow rate (q_i , q_p and q_s). Different sets of q_i and q_s may be given depending on mounting orientation and type of liquid		

Complete meters (continued)

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Low flow threshold value		
Maximum admissible working pressure for flow sensor (PS in bar)		
Nominal pressure (PN)		
Maximum pressure loss of flow sensor (pressure loss at q_p)		
Maximum admissible temperature		
Limits of temperature (Θ_{\min} and Θ_{\max}) of the flow sensor / temperature sensor pair. An additional set of limits for the cooling range may be specified for heating/cooling meters		
Limits of temperature difference ($\Delta\Theta_{\min}$ and $\Delta\Theta_{\max}$). An additional set of limits for the cooling range may be specified for heating/cooling meters.		
The conditions for switching between heating and cooling metering if applicable		
Installation requirements, including installation pipe lengths etc		
Basic mounting orientation and other specified orientations		
Physical dimensions (length, height, width, weight, thread/flange specification)		
Mains power supply requirements - voltage, frequency		
Battery power supply requirements - battery voltage, type, lifetime		
Handling of energy indication by external power failure (see 6.3.2).		
Output signal for normal operation (type/levels)		
Pulse output device class (see 7.1.3 of EN 1434-2:2007)		
Output display/signal for testing (type/levels)		
Performance at flow rates greater than q_s		
Liquid if other than water		
Dynamic behaviour (see 5.4 of EN 1434-2:2007)		
Response time for the temperature sensor pair		
If the meter shall be installed at the high or low temperature level		
Response time - for fast response meters		

Complete meters (continued)

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Nominal voltage level for external power supply		
Current used (average and peak) at external power supply		
Energy used per year at external power supply		
Cabling requirement at external power supply (max. cable length and possible requirement for shielded or twisted cable)		
Voltage limit at which the meter switches automatically from external power supply to internal battery		
Time limit at which the meter switches automatically from external power supply to internal battery		

Further documentation

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Technical description		
Statement of the self heating effect of temperature sensors		
Minimum immersion depth for temperature sensors		
Users manual		
Installation instructions (EN 1434-1:2007, clause 12)		
Installation and security sealing plan		
Mechanical drawings		
Material specifications		
Electrical circuit diagrams		
Components list		
Specification for material in bearings, gaskets etc.		
Software description		
List of programmable constants		
Software flow chart		
Panel lay out and operating instructions		
Initial functions check and instructions		
Test outputs, their use and their relationships to the parameters being measured		
Estimated durability period (clause 3i of MID, article 18 and clause 5 of annex I)		
Condition for compatibility with interfaces and sub-assemblies (clause 5 of MID, article 18)		
Drawings of markings or equivalent information (clause 4 of MID, article 18)		

Suitability and protection

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
Description of how the suitability question is solved (clause 7 of annex I)		
Description of how protection against corruption is solved including sealing (clause 8 of annex I)		
Has the Welmec guide 7.2 (software guide) been applied?		
Software documentation, see note		
Adequate analysis and assessment of the risk(s) (MID module B, 3c)		

Note:

To facilitate an evaluate of the software according to Welmec Guide 7.2 prepare the following:

The test object should be made available to the evaluator. A comprehensible review of the instrument should be addressed by the developer and a demonstration of its functions should also be carried out.

When motivated the communication between the measuring instrument and external units should be demonstrated with suitably specified parameters.

The structure of the program code should be presented with information concerning the development and the operating platform. Information related to the aspects listed below, should be accessible:

- a) Measuring principle
- b) Microprocessor(s) : type (s), programming language
- c) Real-time-clock
- d) Securing of legally-relevant software components and parameters
- e) Securing of measurement data
- f) Monitoring of program execution (watchdog, check of memory ranges, indication of system failure)
- g) Cold start operation, when applicable
- h) Securing components, interfaces, software and preset controls to which access or adjustment is prohibited

The microcontroller functions should also be considered. An overall walk through of the microcontroller software should be carried out. Critical aspects should be identified.

The documents that are required by the WELMEC Guide 7.2 shall be provided.

Other documents

<u>Documentation</u>	<u>Reference</u>	<u>RISE note</u>
A list of the standards and/or normative documents referred to in Article 14 of MID, applied in full or in part (clause 3f)		
Description of the solutions adopted to meet the essential requirements where the standards and/or normative documents referred to in article 14 have not been applied (clause 3g)		
The EC-type examination certificates or EC design examination certificates in respect of instruments containing parts identical to those in the design. (clause 3j)		
Appropriate test report from notified bodies or accredited third-party test laboratories (clause 3i)		