

**Checklist for electromechanical and electronic active energy meters in accordance with the MID Directive (2004/22/EC)**

**Applicant:**

**Instrument type:**

**1. General requirements**

**NOTE:**  
**Definitions are based on Annex MI-003 of the MID Directive**

<b>General regulations</b>	
1.1	<b>Durability</b> A measuring instrument must be designed in such a way that its metrological characteristics remain sufficiently stable over a period of time stated by the manufacturer, provided the instrument has been properly installed and maintained and is used under the intended ambient conditions in accordance with the operating instructions.
1.2	<b>Reliability</b> A measuring instrument is to be designed in such a way that the influence of a defect, which would lead to an incorrect measurement result, is reduced as far as possible provided that such a defect is not obvious.
1.3	<b>Suitability</b> A measuring instrument must not show any characteristics that facilitate use in fraudulent intent. The possibility of unintentional false operation must be kept as low as possible.
1.4	A measuring instrument must be suitable for the intended use, taking the practical conditions of use into account.
1.5	The constructive characteristics of a measuring instrument must be so that it complies with the permissible conditions of use.
1.6	A measuring instrument must be designed in such a way that the measuring operations can be checked after the measuring instrument has been put into circulation and operation. If necessary, the measuring instrument must be equipped for this check with a special equipment or software. The test procedure must be described in the testing instructions or has to be enclosed with the measuring instrument in the form of a testing instruction.  If a measuring instrument is equipped with associated additional software which performs other functions in addition to the measuring function, the software decisive for the metrological characteristics must be identifiable; it must not be influenced by the associated additional software in an inadmissible way.

<b><i>The manufacturer must submit the application for type examination to a Notified Body of his choice. The application must contain the following:</i></b>		<b>yes/no</b>	<b><i>Please indicate where found in the documentation</i></b>
1.7	Name and address of the manufacturer and - if the application is submitted by a representative - also name and address of the representative		
<b><u>NOTE:</u></b> <b><i>The representative of the manufacturer is allowed to submit the application. All obligations are incumbent on him. If the manufacturer is not domiciled in the European Community and if he has no representative, the person designated by the manufacturer is responsible to make the technical documents available by request.</i></b>			
1.8	Written declaration of the manufacturer or of his representative that the same application has not been submitted to any other Notified Body		
1.9	List in accordance with article 13 of the MID Directive (2004/22/EC) in which the standards stated (which have been applied completely or in part) and/or the normative documents are described		
1.10	Requirements in addition to the regulations stated in article 13 (MID Directive)		

1.11	Declarations of the manufacturer within the scope of the EC type test certificate for electricity meters, related to the following sections of DIN EN 50470-1:2006 and DIN EN 50470-3:2006.		
	Please furnish written proof (test report, certificate, measurement protocol, description...) that it is ensured for every required characteristic in the following sections that the requirements are met.		
	The declarations of the manufacturers regarding the individual sections must be signed with legally binding effect and must be provided with date and company's stamp.		
	<u>DIN EN 50470-1:</u>		
	5.4 Terminals, terminal block and protective conductor terminal		
	5.6 Creepage distances and clearances		
	5.10 Display of measured values		
	5.11 Output device and operation indicator		
	<u>DIN EN 50470-2 or 3:</u>		
	9 Durability		
	10 Reliability		
11 Requirements regarding the software and the protection against manipulation			

## 2. Technical requirements

<b>For evaluation and identification of the instrument type, the documents must contain the following information:</b>		<b>yes/no</b>	<b>Please indicate where found in the documentation</b>
2.1	Meter for direct connection		
2.2	Transformer-coupled meter		
2.3	Class C		
	Class B		
	Class A		
2.4	General functional description and operating principle of the sensory function		
2.5	Manufacturing drawings and plans:		
	- Enclosure		
	- Components		
	- Sub-assemblies		
	- Circuits		
	- Layout of printed circuit cards		
	Identification of the information sheets:		
	- Number of the drawing		
	- Date of the drawing		
	- Designation of the information shown in the drawing		
2.6	Parts list of all components		
2.7	Coherent description of the electronic circuit(s)		
2.8	Descriptions of the manufacturing procedures used to ensure uniform production		
2.9	Photos and drawings of the measuring instrument (view of the three directions in space)		
2.10	Information about the adjustment elements (only for electromechanical meters)		
2.11	List of all enclosure materials used		
2.12	Descriptions or drawings of operating elements and displays		

2.13	Rated operating conditions: ( <b>Please indicate directly</b> )		
	- $f_n$		
	- $U_n$		
	- $I_{st}$		
	- $I_{min}$		
	- $I_{tr}$		
	- $I_n$		
	- $I_{max}$		
	- Temperature range		
2.14	Frequency range min. ( $0.98 \times f_n \leq f \leq 1.02 \times f_n$ )		
	Voltage range min. ( $0.9 \times U_n \leq U \leq 1.1 \times U_n$ )		
	Power factor in the range $\cos \varphi = 0.5$ inductive and $\cos \varphi = 0.8$ capacitive		
2.15	Indication of the following measuring instrument data:		
	- Current range		
	- Connection voltages		
	- Frequency		
	- Meter constants		
	- Resolution of the counting mechanism		
	- Run time at $U_n, I_{max}; \cos \beta = 1 > 4000$ h (Energy recording and energy display)		
	- Data storage time of non-volatile memories > 4 months (electronic meter)		
	- Temperature range ( <b>please indicate directly</b> )		
	- Interior or outdoor meters		
	- Humidity conditions		
2.16	Indication of the number of impulses to ensure an accuracy of measurement of at least 1/10 of the meter's class accuracy at the different test points		
2.17	Do the documents comprise:		
	- Block flow diagrams		
	- Diagrams		
	- Logic flowcharts (block diagrams)		
2.18	Description of the identification of the software		

2.19	Description of the measurement data and software which are decisive for the metrological characteristics		
	Description of all stored or transmitted metrological parameters		
	Measures for protection against accidental or intentional falsifications		
	Identification and protection of the software		
	Information about the non-reactiveness of connected auxiliary devices or optionally connected circuits in the measuring instrument		
2.20	Documentation of all signal statuses (test LED, D0 interface, S0 interface)		
2.21	Description of all interfaces		
	Type and use of the interfaces		
	Design of the interfaces		
	Software description of all interfaces		
2.22	Results of construction calculations and already performed tests		
2.23	Additional proof for the technical design of partial measuring instruments for which no samples are required		
2.24	Description of all required protective locations and design of the rating plates		
	Drawing of the rating plate		
	Connection diagrams		
2.25	Meter inscriptions according to 50470-1 / 5.12 and MID		
2.26	Additional information/maintenance manuals in accordance with 50470-1 / 5.13 and MID		

### 3. External tests

If the applicant does not make use of the integrated conformity assessment procedure offered by the Notified Body (PTB) and composed of:

- Type examination (module B) incl. metrological test
- Environmental test
- Investigation for electromagnetic compatibility (EMC),

the results must be submitted as described in the following by an accredited test laboratory for environment and EMC .

**NOTE:**  
**Before the order is placed with external environmental and EMC laboratories, the applicant is asked to contact the Notified Body. The scope of the documentation must by all means be agreed with the Notified Body before the test is started.**

<b>Environmental test in accordance with DIN EN 50470-1</b>			
<b>Type of the test</b>		<b>yes/no</b>	<b>Indicate name of test laboratory</b>
3.1	Environmental test in accordance with DIN EN 50470-1 / 5.2.2		
3.1.1	Spring hammer test / 5.2.2.1		
3.1.2	Impact test / 5.2.2.2		
3.1.3	Vibration test / 5.2.2.3		
3.1.4	Meters in insulant enclosures of protection class II / 5.7 (not applicable for installation in the control cabinet when terminals are protected against touch)		
3.2.1	Thermal endurance to heat and fire / 5.8		
3.2.2	Protection against penetration of dust and water / 5.9		
3.2.3	Test of climatic influences / 6.3		
3.2.4	Test at dry heat / 6.3.2		
3.2.5	Test at cold / 6.3.3		
3.2.6	Test at damp heat, cyclic 6.3.4		
3.2.7	Protection against solar irradiation 6.3.5		
3.2.8	Test of the insulation / 7.3 (must be performed in accordance with test 6.3.4)		

<b>EMC tests according to DIN EN 50470-1</b>		
<b>Type of the test</b>	<b>yes/no</b>	<b>Indicate name of test laboratory</b>
3.3	Test (electromagnetic compatibility) DIN EN 50470-1 / 7.4	
3.3.1	Electromagnetic compatibility against electrostatic discharges / 7.4.5	
3.3.2	Electromagnetic compatibility against irradiated electromagnetic high-frequency fields / 7.4.6	
3.3.3	Electromagnetic compatibility against fast electrical transients (bursts) / 7.4.7	
3.3.4	Electromagnetic compatibility against conducted susceptibilities induced by high-frequency fields / 7.4.8	
3.3.5	Electromagnetic compatibility against surges / 7.4.9	
3.3.6	Electromagnetic compatibility against damped vibrations / 7.4.10 (only for voltage transformer meters)	
3.3.7	Suppression of radio interference / 7.4.13	

*Dear user of this checklist,*

*If the checklist is completely filled out, please send it to **telefax 0049 531 592 2304**.*

*If you have any questions about it or suggestions of improvement, please inform us by sending an email to: **e-zaehler.zulassung@ptb.de***