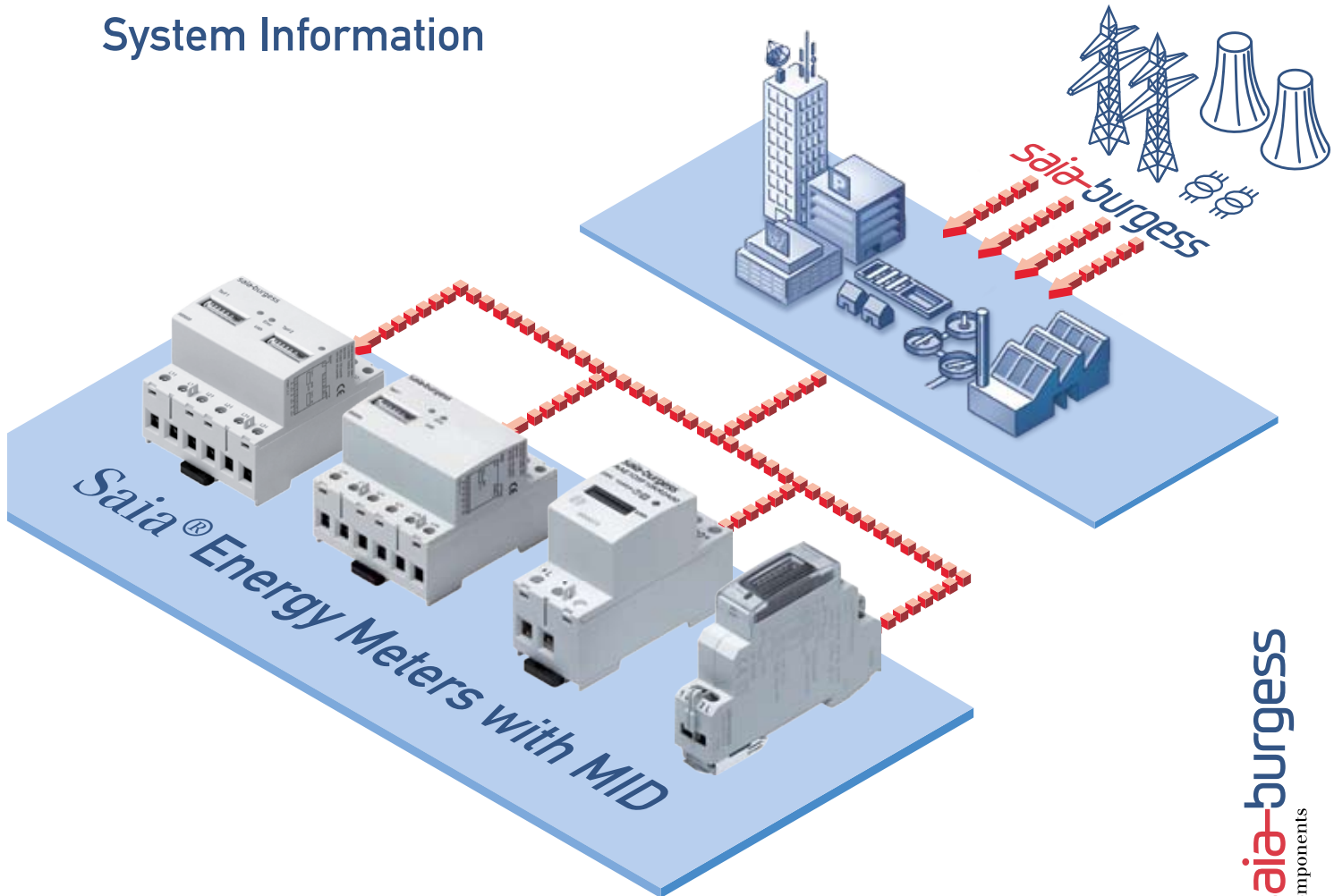


# System Information



## Saia® Energy Meters satisfy the European Union's Measurement Instrument Directive (MID)

Controls Division

The European Union's Measurement Instrument Directive (MID) was published on 30th April 2004 in the Official Journal L 135 of the European Union as Directive 2004/22/EG. It came into force on the day of publication and had to be implemented by EU member states before 30th October 2006. Temporary approvals already granted to devices remain valid up to their expiry date. This date is usually 10 years after the approval date. Approvals with indefinite validity remain valid until 29th October 2016.

MID approved energy meters from Saia® can be used for energy billing without additional calibration.

Previously, calibration had been a matter for national law. This meant that any device requiring calibration could only come into commercial circulation once a sample of it had obtained national approval and every device had been calibrated. The MID follows EU principles that seek to simplify cross-border trade with harmonization of requirements and mutual recognition of declarations of conformity. The MID concept seeks to regulate the commercialization of measurement instruments up to the commissioning stage.

The MID includes the following requirements:

- Requirements up to first commercialization or device commissioning
- Fundamental requirements placed on measurement instruments
- Assumption of conformity through standards
- Procedure for assessing conformity
- Requirements of nominated body
- Identification of measuring instruments
- Market supervision

The MID does not, however, regulate how statutory inspection takes place (calibration duty), nor does it define any requirements after first commercialization, such as recalibration, calibration lifetime, or limits of traffic error. MID approval is described with the procedure for assessing MID conformity.

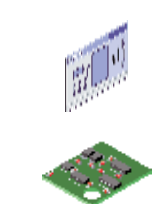
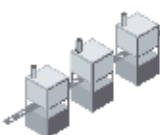
## Procedure for assessing MID conformity

Assessing the conformity of a measurement instrument takes place according to the manufacturer's chosen procedure. The criteria for assessment are divided into development stages, type of assessment and assessing body. For true-watt electric power meters, manufacturers may choose from the following modules: module B + F; module B + D or module H1.

Saia-Burgess Controls Ltd has chosen modules B and D as the procedure for assessing the conformity of their energy meters. The body nominated to carry out the conformity test is METAS, the Swiss Federal Office for Metrology.

Development stages and procedures are set out below with reference to the assessment modules.

## Procedure for assessing MID conformity

Production phases at manufacturing site		Module B + F	Module B + D	Module H1
 Development	Plan			Plan inspection
	Design	Design inspection(B)	Design inspection(B)	Full QM system
 Series production		QM system production (D)		
	End product	First calibration (F)		
Declaration of conformity + identification mark				

**Module B:** 'Type examination' is the part of a conformity assessment procedure whereby a notified body examines the technical design of a measuring instrument and ensures and declares that the technical design meets the requirements of the MID Directive that apply to it

**Module D:** 'Declaration of conformity to type based on quality assurance of the production process' is the part of a conformity assessment procedure whereby the manufacturer fulfils statutory obligations and ensures that the measuring instruments concerned are in conformity with the type as described in the EC-type examination certificate and satisfy the appropriate requirements of this Directive

**Module F:** 'Declaration of conformity to type based on product verification' is the part of a conformity assessment procedure whereby the manufacturer fulfils statutory obligations, both ensuring and declaring that the measuring instruments that have been subjected to inspection and testing are in conformity with the type as described in the EC type examination certificate and satisfy the appropriate requirements of this Directive

**Module H1:** 'Declaration of conformity based on full quality assurance' is the conformity assessment procedure whereby the manufacturer fulfils statutory obligations, both ensuring and declaring that the measuring instruments concerned satisfy the appropriate requirements of this Directive

## Standards applicable to electricity meters

Standards for energy meters have also been redefined in association with the MID. The manufacturers' organization CITEF and CENELEC (the European standards committee) have been driving forces. The object was to make the necessary EN standards as close as possible to existing IEC standards. However, it was impossible to prevent serious differences arising compared with IEC standards. :

- Class designation according to EN 50470 with class A, class B, class C
- Class designation according to IEC 62053 with class 2, class 1, class 0.5

New terminology has also be defined for power ranges and their error limits.

### Error limit for class B in percent according to EN 50470-3 (MID)

Power range for measurement Direct or with current converter	Ohmic load, $\cos\phi$ 1	Inductive load, $\cos\phi$ 0.5 - 1	Capacitive load, $\cos\phi$ 0.8 - 1
$I_{\min} \leq I < I_{tr}$	$\pm 1.5$	–	–
$I_{tr} \leq I < I_{\max}$	$\pm 1$	$\pm 1$	$\pm 1$

### Error limit for class 1 as percent, according to IEC 62053-21

Power range for direct measurement	Ohmic load, $\cos\phi$ 1	Inductive load, $\cos\phi$ 0.5 – 1	Capacitive load, $\cos\phi$ 0.8 - 1
$0.05 I_b \leq 0.1 I_b$	$\pm 1.5$	–	–
$0.1 I_b \leq 0.2 I_b$	$\pm 1$	$\pm 1.5$	$\pm 1.5$
$0.2 I_b \leq I_{\max}$	$\pm 1$	$\pm 1$	$\pm 1$

### Electrical current values applicable for Saia® energy meters

Terminology	AAD 5(20)A <sup>1)</sup>	AAD 5(32)A	AAE 10(65)A
$I_{st}$ Current at which meter commences counting, but without definition of error limit	20 mA	20 mA	40 mA
$I_{\min}$ Current at which meter must measure within error limits, but additional errors are allowed	0.25 A	0.25 A	0.5 A
$I_{tr}$ Current value at which the defined precision applies, up to $I_{\max}$ .	0.5 A	0.5 A	1 A
$I_{\max}$ Highest current value for which the defined precision still applies	20 A	32 A	65 A
$I_b$ (IEC) Basic current from which the current values defined according to IEC are derived	5 A	5 A	10 A
$I_{ref}$ (EN) Represents in direct measurement 10 times $I_{tr}$	5 A	5 A	10 A

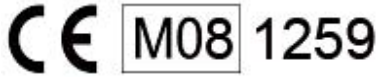
<sup>1)</sup> AAD 5(20)A is only produced in IEC 62053 compliant version.

### MID categories for measurement instruments

- MI-001 Water meters
- MI-002 Gas meters and volume conversion devices
- MI-003 Active electrical energy meters
- MI-004 Heat meters
- MI-005 Measuring systems for continuous and dynamic measurement of liquids other than water (flow meters)
- MI-006 Automatic weighing instruments
- MI-007 Taximeters
- MI-008 Material measures
- MI-009 Dimensional measuring instruments
- MI-010 Exhaust gas analysers

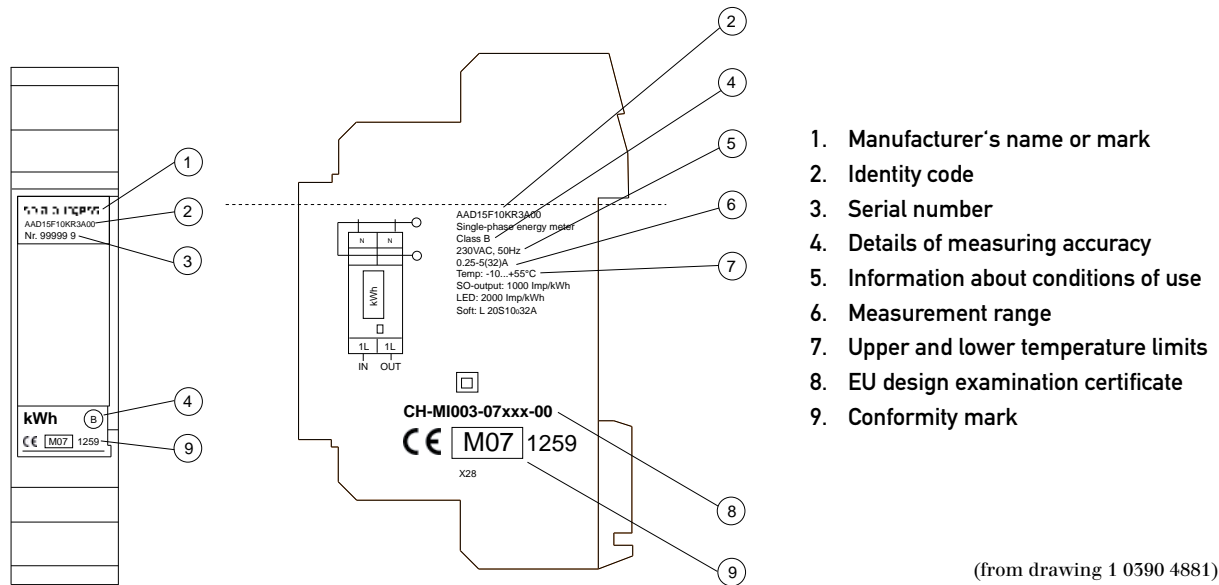
## Marks required for active electrical energy meters

Electrical energy meters brought to market under the MID directive must, in addition to the manufacturer's name and product name, also bear certain additional identification marks. Devices must carry the CE mark. In addition, a rectangular mark must be applied with a frame containing the letter M, the last two digits of the year of manufacture and finally the identification number of the relevant named body. The precision class, unit of measurement and serial number must also be clearly visible.



MID mark

Additional information includes technical data, a diagram, test certificate number and, in the case of electronic counters, the software version.



(from drawing 1 0390 4881)

In addition, each delivery of energy meters must be accompanied by the relevant declaration of conformity for the EU country concerned. Saia-Burgess Controls has integrated a declaration of conformity into its user guide and mounting instructions, available in all 23 languages of the EU member states.

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