



DIRIS Digiware MID



socomec
Innovative Power Solutions

Measuring Instruments Directive (MID)

Ensuring fairness in commercial transactions

Compliance with MID

Thanks to certified measuring instruments

Meters installed in applications requiring billing (residential, commercial, light industrial use, etc.) and sub-billing (co-located data centres, stores in malls or airports, etc.) of consumption must comply with the MID (Measuring Instrument Directive) in Europe.

Fair trading

Ensuring consumer protection

Compliance

Assess the measuring instrument
via a notified body

Ensuring a high level of metrological security

The **MID (Measuring Instrument Directive)** is an **EU directive** of the European Parliament and Council of 26 February 2014 (2014/32/EU). It applies to **measuring instruments** such as water, gas, electrical energy, thermal energy, weighing or quantities of liquids meters used in a commercial transaction.

- The MID sets out a **legal framework** to ensure **consumer protection and fair trading**.
- The design and manufacture of a **MID certified measuring instrument** must be of a high standard for metrology and measurement data security.
- The main objective of the MID is to ensure that all parties involved have **confidence in the measurement result**.
- A specific annex of the directive (MI-003) is dedicated to **active electrical energy meters (kWh)**.
- Validation time : 8/10 years (depending of the countries)

Ensuring fairness in commercial transactions

Compliance with MID

Thanks to certified measuring instruments

How to assess compliance with the MID?

Conformity assessment of measuring instruments is carried out by a notified body.

For **electricity meters**, different evaluation procedures are possible.

Most manufacturers choose the **B+D procedure**:

Module B Examination of product design

Module D Production process quality assurance

What are the requirements?

EN 50470-1 & EN50470-3 give **presumption of conformity to the MID**.

They define the requirements in terms of mechanics, electromagnetic compatibility and accuracy. A product designed in accordance with these standards will meet the essential and specific requirements of the MID.

The notified body uses these standards and the directive to verify the conformity of the meters.

The **accuracy of the active energy** measured by the meter is defined as **Class A, B or C**.
Class C is the most accurate.

Value of current for direct connected or transformer operated meters	Power factor	Percentage error limits for meters of class index		
		A	B	C
$I_{min} \leq I < I_N$	1	± 2,5	± 1,5	± 1,0
$I_N \leq I \leq I_{max}$	0,5 ind...1...cap 0,8	± 2,0	± 1,0	± 0,5

NOTE For the relationships I_{min} / I_N and I_{max} / I_N see EN 50470-1, Table 3.

Extract from EN 50470-3

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The Socomec solution

MID certified measuring instruments

Socomec provides a **wide range of MID certified measuring instruments**. Electrical energy metering is carried out either in direct connection or through current transformers.

Two types are offered:

- The traditional **COUNTIS** meters in a modular format that allow the measurement of active energy from one load.
- The **DIRIS Digiware S-xxMID, I-3xMID and I-6xMID** meters which are part of the Digiware ecosystem. These **Class C certified** meters are ideally suited to accurately measure the consumption of multiple electrical loads. A **single display** simplifies the reading of all measurements.



COUNTIS MID
& DIRIS A-14



DIRIS Digiware
S-xxMID



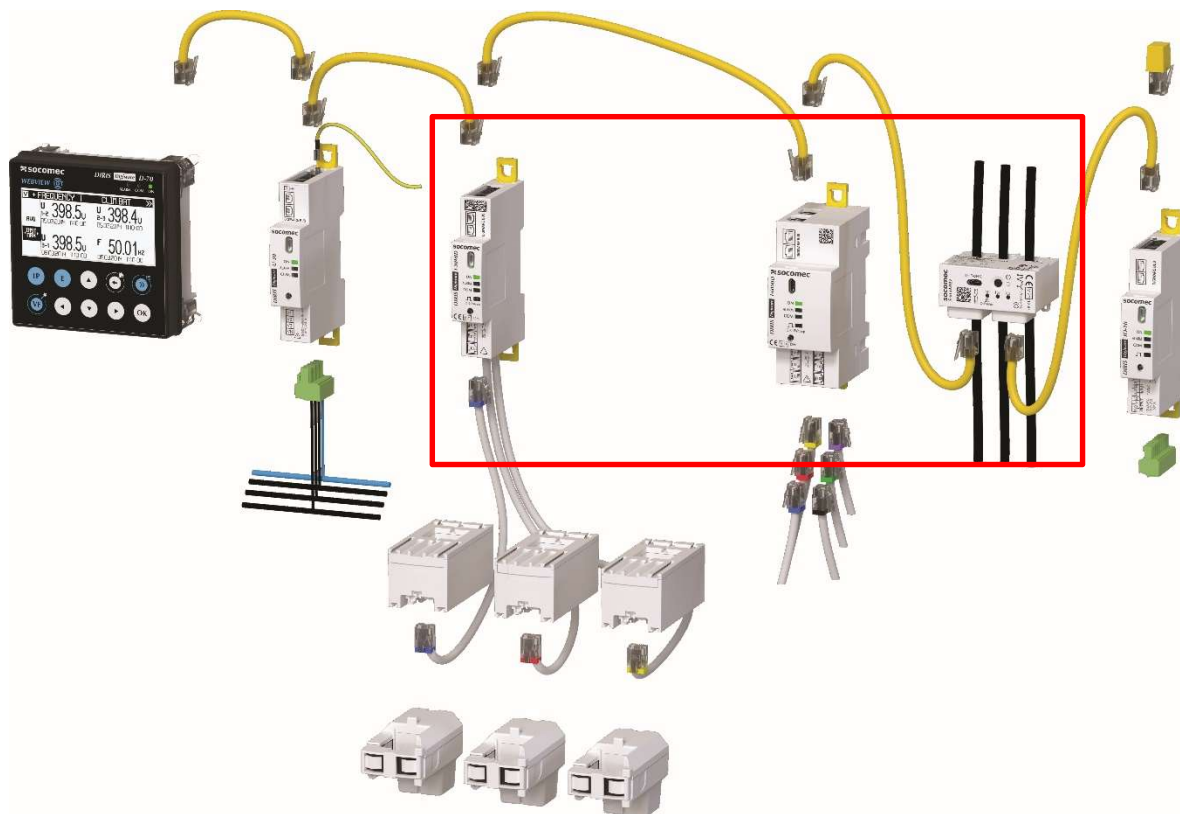
DIRIS Digiware
I-3xMID & I-6xMID

DIRIS Digiware MID offer and features

DIRIS Digiware MID : Demo



DIRIS Digiware MID



DIRIS Digiware MID

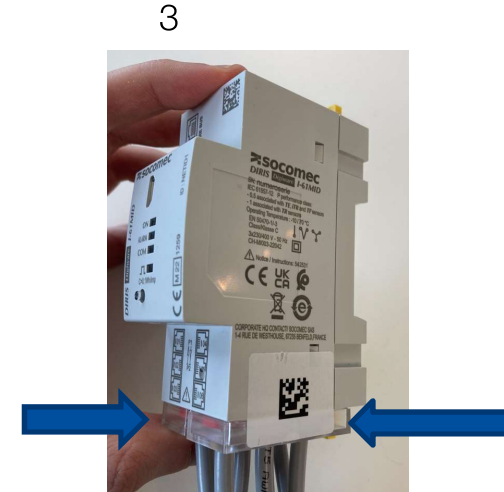
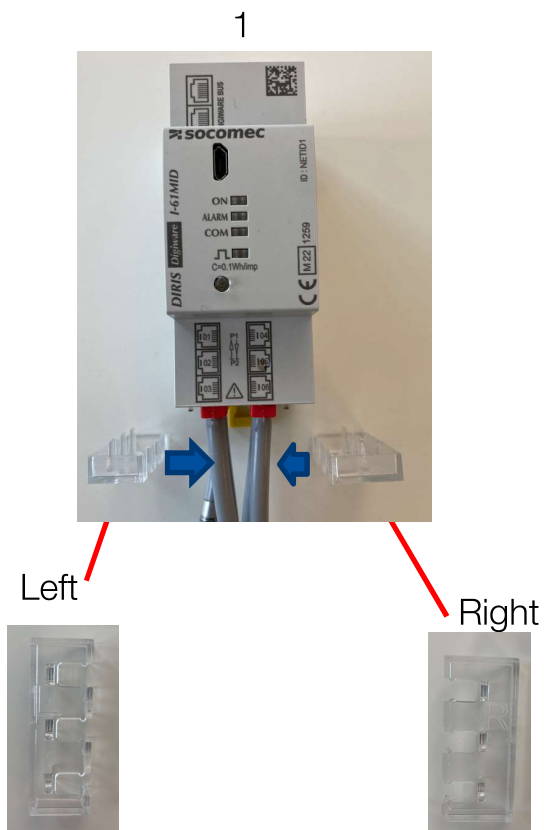
Part no	Description
48290163	DIRIS Digiware S-130MID
48290164	DIRIS Digiware S-135MID
48290133	DIRIS Digiware I-30MID
48290134	DIRIS Digiware I-60MID
48290135	DIRIS Digiware I-35MID
48290136	DIRIS Digiware I-61MID



Features :

- D-50/D-70 display mandatory (Digiware system equipped with M-50/M-70 is not compliant with MID)
- 1 or 2 clips to seal the RJ12 inputs for I-3x/I-6x

DIRIS Digiware MID : Clips mounting I-6x



DIRIS Digiware MID : Clips mounting I-3x

1



2



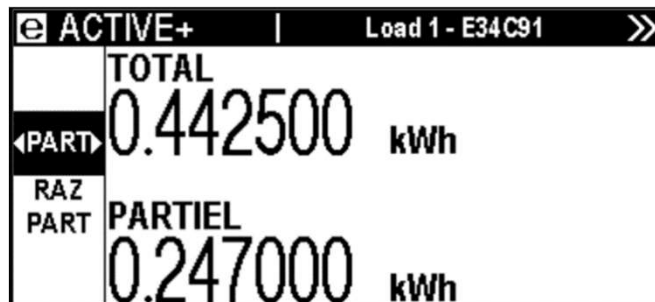
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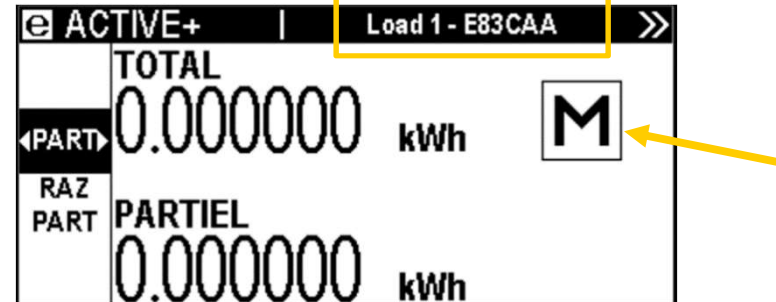
DIRIS Digiware MID : Energy visualisation

- Energy readings from MID meters are identified with an “M”
- Energy meter is identified in the top right corner (name can be customized)
- Total Energy meters cannot be reset

Standard ***DIRIS Digiware I-xx / S-xx***



DIRIS Digiware I-xxMID / S-xxMID



MID System Alarm

Any change (both intentional and accidental) impacting the authenticity of energy readings will result in the activation of a dedicated **MID SYSTEM ALARM**.

IN PROGRESS I-35MID@6 >>	MID SYSTEM ALARM I-35MID@6	MID SYSTEM ALARM I-35MID@6
MID SYSTEM ALARM 12.29.01 09:43	TYPE POWER CYCLE START 12.29.2001 09:43:44 STATUS FINISHED NOT ACK. ACKNOWLEDGEMENT	TYPE POWER CYCLE START 12.29.2001 09:43:44 STATUS FINISHED AND ACK. ACKNOWLEDGED ✓

- Upon activation, red ALARM LED on energy meter and D-xx will blink
- Must be acknowledged manually
- A MID Event Log is available



*When the DIRIS Digiware MID system is in operating condition, the activation of a MID System Alarm should encourage the user to consult their **MID EVENT LOG** to verify the reason for the MID alarm activation.*



List of changes impacting energies

The following changes may impact the authenticity of energy readings and will activate the MID System Alarm

- **Intentional configuration change**
 - > Electrical network
 - > Nominal frequency
 - > Voltage transformer (use an ratio change)
 - > Load status change
 - > Load name
 - > Load type
 - > CT rating
 - > CT orientation
 - > CT associated voltage
 - > Date/time
- **Physical tampering**
 - > U-xx module Swap
 - > Inconsistent CT
 - > CT disconnection
 - > Power cycle
 - > Digiware bus alteration
- **MID CRC periodic check failure (accidental changes)**
 - > Software ID
 - > Calibration values
 - > Energies
 - > Legal parameters

DIRIS Digiware MID : MID event log

EVENTS	S-135MID@5
IN PROGRESS	
HISTORY	
MID EVENT LOG	

OK

MID EVENT LOG	I-35MID@6
DATE/TIME	03.04.22 12:04
POWER CYCLE	03.04.22 11:32
LOAD NAME	03.04.22 11:09
CT3 - CT SETTINGS	03.04.22 11:09
CT2 - CT SETTINGS	03.04.22 11:09
LOAD TYPE	03.04.22 11:09

Config. change

MID EVENT LOG	S-135MID@5
TYPE	CONFIG. CHANGE
PARAMETERS	NETWORK TYPE
NEW VALUE	1P + N
PREVIOUS VALUE	3P + N
DATE/TIME	10.27.2021 18:04:38

MID EVENT LOG	S-135MID@5
TYPE	CONFIG. CHANGE
PARAMETERS	I01 - WAY
NEW VALUE	-INV
PREVIOUS VALUE	+DIRECT
DATE/TIME	10.27.2021 18:57:57

Physical tampering

MID EVENT LOG	S-135MID@2
TYPE	POWER CYCLE
DURATION	00h 00mn 14s
DATE/TIME	12.02.2021 18:25:19

MID EVENT LOG	I-35MID@5
TYPE	CONFIG. CHANGE
PARAMETERS	U-XX MODULE SWAP
NEW VALUE	ID:8F90A6
PREVIOUS VALUE	ID:D503BA
DATE/TIME	12.03.2021 12:38:50

MID CRC ERROR

MID EVENT LOG	I-30MID@5
TYPE	MID CRC ERROR
SOFTWARE ID	
DATE/TIME	06/12/2021 10:49:37

MID EVENT LOG	I-30MID@5
TYPE	MID CRC ERROR
ENERGY METERS	
DATE/TIME	06/12/2021 10:50:07


- All events which might have altered the energy reading
- Provides additional information about each change
- The MID EVENT log cannot be reset

DIRIS Digiware MID verification reports

DIRIS Digiware MID : verification reports

- MID : mandatory to provide verification reports individually for each device
- Sustainable connected approach
- Online access to verification reports by typing the **netID** or **Serial Number**





Verification Report / Constat de vérification

EN 50470-1 - Class C electricity metering equipment

TESTED VALUES / VALEURS TESTÉES					
TEST TYPE	1	2	3	4	5
I_{n1}	0.2	0.3	0.3	0.3	0.3
I_{n2}	0.2	0.3	0.3	0.3	0.3
I_{n3}	0.2	0.3	0.3	0.3	0.3

MEASUREMENTS OF ERRORS / MESUREMENTS D'ERREURS					
TEST TYPE	1	2	3	4	5
$\epsilon_{100\%}$	0.25%	0.25%	0.45%	0.75%	1.0%
$\epsilon_{50\%}$	0.25%	0.25%	0.45%	0.75%	1.0%
$\epsilon_{20\%}$	0.25%	0.25%	0.45%	0.75%	1.0%
$\epsilon_{10\%}$	0.25%	0.25%	0.45%	0.75%	1.0%

$\epsilon =$ Measurement error, defined by the formula / Erreur de mesure, définie par la formule :

$$\epsilon = \frac{E_{meas} - E_{ref}}{E_{ref}} \times 100$$

E_{ref} = Reference energy (kWh) / Energie de référence (kWh)

E_{meas} = Measured active energy / Energie active mesurée

$\epsilon =$ Integrated accuracy at $\cos \phi = 1$ / Précision intégrée à $\cos \phi = 1$

$\epsilon =$ Integral error of the meter as defined by IEC 61557-1

$\epsilon =$ Comparison error, defined by IEC 61557-12 / Erreur de comparaison, définie par la norme IEC 61557-12

$\epsilon_{100\%}$ = Maximum percentage error at 100% load / Erreur maximale en pourcentage à 100% de charge

$\epsilon_{50\%}$ = Maximum percentage error at 50% load / Erreur maximale en pourcentage à 50% de charge

$\epsilon_{20\%}$ = Maximum percentage error at 20% load / Erreur maximale en pourcentage à 20% de charge

$\epsilon_{10\%}$ = Maximum percentage error at 10% load / Erreur maximale en pourcentage à 10% de charge

This meter is declared compliant at each test point / Ce compteur est déclaré conforme à tous les points de test

ec ≤ MPE

APPROVED / CONFORME

IEC 61557-12 - power metering and monitoring device

TESTED VALUES / VALEURS TESTÉES					
TEST TYPE	1	2	3	4	5
I_{n1}	0.2	0.3	0.3	0.3	0.3
I_{n2}	0.2	0.3	0.3	0.3	0.3
I_{n3}	0.2	0.3	0.3	0.3	0.3

MEASUREMENTS OF ERRORS / MESUREMENTS D'ERREURS					
TEST TYPE	1	2	3	4	5
$\epsilon_{100\%}$	0.25%	0.25%	0.45%	0.75%	1.0%
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$\epsilon_{10\%}$ = Maximum percentage error at 10% load / Erreur maximale en pourcentage à 10% de charge

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ec ≤ MPE

APPROVED / CONFORME

SOCOMEc confirms that the accuracy of the results above have been obtained with an independent monitoring system.

La marque SOCOMEc confirme l'exactitude des résultats ci-dessus obtenus au moyen d'un système externe à son contrôle métrologique.