



SGS

EU Type Examination Certificate Number: **0120/SGS0027/R1**

Honeywell Elster Metering Limited

Tollgate Business Park
Beaconside
Stafford
ST16 3EF

Instrument Identification:
AS230

Single Phase, Direct Connected, Credit, Import/Export, Active/Reactive, Multi Rate, Electricity Meter

Instrument Traceable Number
0120/SGS0027

has been assessed and certified as meeting the requirements of

EU Directive 2014/32/EU

on Measuring Instruments Annex II, Module B

It is certified that the manufacturer's technical design and specimen for the above instrument has been examined and, based on the evidence submitted, it is considered that the instrument conforms to the requirements of Annex V of EU Directive 2014/32/EU

This certificate must be used in conjunction with a certificate covering the product verification as required in Annex II, Module D or Annex II, Module F

This certificate is valid for 10 years from 24th October 2018 until 23rd October 2028
Issue 1

Certification is based on report number(s): EMA121661 dated 24th October 2008, EMA125056 dated 27th March 2009, EMA139902 dated 21st September 2010, EMA258164 dated 24th September 2018, EMA258164/TR50579 dated 24th September 2018

Authorised Signature

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DU_CST-ME-002 Rev 2

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service printed overleaf. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Clients instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

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General Conditions of Service

1 General

- (a) Unless otherwise agreed in writing or except where they are at variance with (i) the regulations governing services performed on behalf of governments, government bodies or any other public entity or (ii) the mandatory provisions of local law, all offers or services and all resulting contractual relationship(s) between any of the affiliated companies of SGS SA or any of their agents (each a "Company") and Client (the "Contractual Relationship(s)") shall be governed by these general conditions of service (hereinafter the "General Conditions").
- (b) The Company may perform services for persons or entities (private, public or governmental) issuing instructions (hereinafter, the "Client").
- (c) Unless the Company receives prior written instructions to the contrary from Client, no other party is entitled to give instructions, particularly on the scope of the services or the delivery of reports or certificates resulting therefrom (the "Reports of Findings"). Client hereby irrevocably authorises the Company to deliver Reports of Findings to a third party where so instructed by Client or, at its discretion, where it implicitly follows from circumstances, trade custom, usage or practice.

2 Provision of Services

- (a) The Company will provide services using reasonable care and skill and in accordance with Client's specific instructions as confirmed by the Company or, in the absence of such instructions:
- (1) the terms of any standard order form or standard specification sheet of the Company; and/or
- (2) any relevant trade custom, usage or practice; and/or
- (3) such methods as the Company shall consider appropriate on technical, operational and/or financial grounds.
- (b) Information stated in Reports of Findings is derived from the results of inspection or testing procedures carried out in accordance with the instructions of Client, and/or our assessment of such results on the basis of any technical standards, trade custom or practice, or other circumstances which should in our professional opinion be taken into account.
- (c) Reports of Findings issued further to the testing of samples contain the Company's opinion on those samples only and do not express any opinion upon the lot from which the samples were drawn.
- (d) Should Client request that the Company witness any third party intervention, Client agrees that the Company's sole responsibility is to be present at the time of the third party's intervention and to forward the results, or confirm the occurrence, of the intervention. Client agrees that the Company is not responsible for the condition or calibration of apparatus, instruments and measuring devices used, the analysis methods applied, the qualifications, actions or omissions of third party personnel or the analysis results.
- (e) Reports of Findings issued by the Company will reflect the facts as recorded by it at the time of its intervention only and within the limits of the instructions received or, in the absence of such instructions, within the limits of the alternative parameters applied as provided for in clause 2(a). The Company is under no obligation to refer to, or report upon, any facts or circumstances which are outside the specific instructions received or alternative parameters applied.
- (f) The Company may delegate the performance of all or part of the services to an agent or subcontractor and Client authorises Company to disclose all information necessary for such performance to the agent or subcontractor.
- (g) Should Company receive documents reflecting engagements contracted between Client and third parties or third party documents, such as copies of sale contracts, letters of credit, bills of lading, etc., they are considered to be for information only, and do not extend or restrict the scope of the services or the obligations accepted by the Company.
- (h) Client acknowledges that the Company, by providing the services, neither takes the place of Client or any third party, nor releases them from any of their obligations, nor otherwise assumes, abridges, abrogates or undertakes to discharge any duty of Client to any third party or that of any third party to Client.
- (i) All samples shall be retained for a maximum of 3 months or such other shorter time period as the nature of the sample permits and then returned to Client or otherwise disposed of at the Company's discretion after which time Company shall cease to have any responsibility for such samples. Storage of samples for more than 3 months shall incur a storage charge payable by Client. Client will be billed a handling and freight fee if samples are returned. Special disposal charges will be billed to Client if incurred.

3 Obligations of Client

The Client will:

- (a) ensure that sufficient information, instructions and documents are given in due time (and, in any event not later than 48 hours prior to the desired intervention) to enable the required services to be performed;
- (b) procure all necessary access for the Company's representatives to the premises where the services are to be performed and take all necessary steps to eliminate or remedy any obstacles to, or interruptions in, the performance of the services;
- (c) Supply, if required, any special equipment and personnel necessary for the performance of the services;
- (d) ensure that all necessary measures are taken for safety and security of working conditions, sites and installations during the performance of services and will not rely, in this respect, on the Company's advice whether required or not;
- (e) inform Company in advance of any known hazards or dangers, actual or potential, associated with any order or samples or testing including, for example, presence or risk of radiation, toxic or noxious or explosive elements or materials, environmental pollution or poisons;
- (f) Fully exercise all its rights and discharge all its liabilities under any relevant sales or other contract with a third party and at law.

4 Fees and Payment

- (a) Fees not established between the Company and Client at the time the order is placed or a contract is negotiated shall be at the Company's standard rates (which are subject to change) and all applicable taxes shall be payable by Client.

- (b) Unless a shorter period is established in the invoice, Client will promptly pay not later than 30 days from the relevant invoice date or within such other period as may be established by the Company in the invoice (the "Due Date") all fees due to the Company failing which interest will become due at a rate of 1.5% per month (or such other rate as may be established in the invoice) from the Due Date up to and including the date payment is actually received.
- (c) Client shall not be entitled to retain or defer payment of any sums due to the Company on account of any dispute, counter claim or set off which it may allege against the Company.
- (d) Company may elect to bring action for the collection of unpaid fees in any court having competent jurisdiction.
- (e) Client shall pay all of the Company's collection costs, including attorney's fees and related costs.
- (f) In the event any unforeseen problems or expenses arise in the course of carrying out the services the Company shall endeavour to inform Client and shall be entitled to charge additional fees to cover extra time and cost necessarily incurred to complete the services.
- (g) If the Company is unable to perform all or part of the services for any cause whatsoever outside the Company's control including failure by Client to comply with any of its obligations provided for in clause 3 above the Company shall nevertheless be entitled to payment of:
- (1) the amount of all non-refundable expenses incurred by the Company; and
- (2) a proportion of the agreed fee equal to the proportion of the services actually carried out.

5 Suspension or Termination of Services

The Company shall be entitled to immediately and without liability either suspend or terminate provision of the services in the event of:

- (a) failure by the Client to comply with any of its obligations hereunder and such failure is not remedied within 10 days that notice of such failure has been notified to Client; or
- (b) any suspension of payment, arrangement with creditors, bankruptcy, insolvency, receivership or cessation of business by Client.

6 Liability and Indemnification

(a) Limitation of Liability:


- (1) The Company is neither an insurer nor a guarantor and disclaims all liability in such capacity. Clients seeking a guarantee against loss or damage should obtain appropriate insurance.
- (2) Reports of Findings are issued on the basis of information, documents and/or samples provided by, or on behalf of, Client and solely for the benefit of Client who is responsible for acting as it sees fit on the basis of such Reports of Findings. Neither the Company nor any of its officers, employees, agents or subcontractors shall be liable to Client nor any third party for any actions taken or not taken on the basis of such Reports of Findings nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to the Company.
- (3) The Company shall not be liable for any delayed, partial or total non-performance of the services arising directly or indirectly from any event outside the Company's control including failure by Client to comply with any of its obligations hereunder.
- (4) The liability of the Company in respect of any claim for loss, damage or expense of any nature and howsoever arising shall in no circumstances exceed a total aggregate sum equal to 10 times the amount of the fee paid in respect of the specific service which gives rise to such claim or **US\$ 20,000** (or its equivalent in local currency), whichever is the lesser.
- (5) The Company shall have no liability for any indirect or consequential loss including without limitation loss of profits, loss of business, loss of opportunity, loss of goodwill and cost of product recall. It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Client.
- (6) In the event of any claim, Client must give written notice to the Company within 30 days of discovery of the facts alleged to justify such claim and, in any case, the Company shall be discharged from all liability for all claims for loss, damage or expense unless suit is brought within one year from:
- (i) the date of performance by the Company of the service which gives rise to the claim; or (ii) the date when the service should have been completed in the event of any alleged nonperformance.
- (b) Indemnification: Client shall guarantee, hold harmless and indemnify the Company and its officers, employees, agents or subcontractors against all claims (actual or threatened) by any third party for loss, damage or expense of whatsoever nature including all legal expenses and related costs and howsoever arising relating to the performance, purported performance or non-performance, of any services.

7 Miscellaneous

- (a) If any one or more provisions of these General Conditions are found to be illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.
- (b) During the course of providing the services and for a period of one year thereafter Client shall not directly or indirectly entice, encourage or make any offer to Company's employees to leave their employment with the Company.
- (c) Use of the Company's corporate name or registered marks for advertising purposes is not permitted without the Company's prior written authorisation.


8 Governing Law, Jurisdiction and Dispute Resolution

Unless specifically agreed otherwise, all disputes arising out or in connection with Contractual Relationship(s) hereunder shall be governed by the substantive laws of Switzerland exclusive of any rules with respect to conflicts of laws and be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said rules. The arbitration shall take place in Paris (France) and be conducted in the English language.

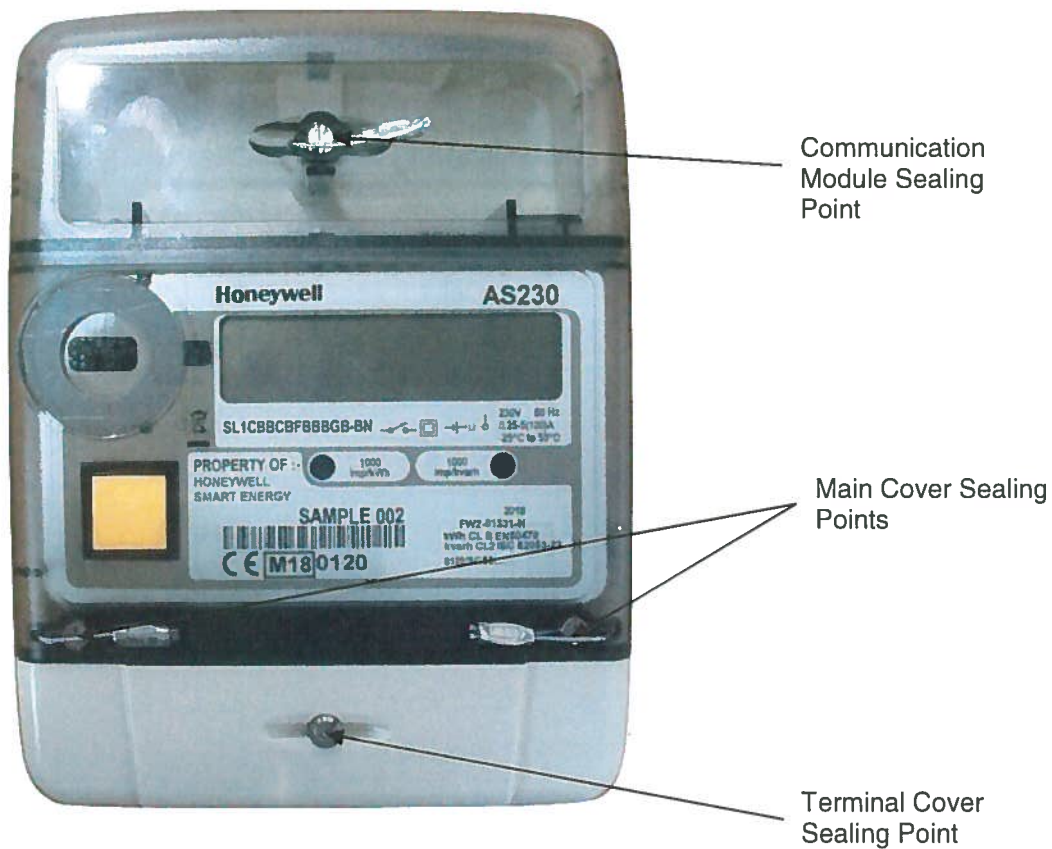
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1. Technical Data

Manufacturer	Honeywell Elster Metering Limited
Meter Type	AS230
Voltage Rating (U_n)	220V-240V
Current Rating ($I_{min} - I_{ref} (I_{max})$)	0,25-5(100)A
Frequency (F_n)	50Hz
Active Accuracy Class (kWh)	A or B (kWh)
Type of circuit	1p2w
Temperature Range	-25°C to +55°C
Software/ Firmware Version No's	2-01331-E, 2-01331-F, 2-01331-G, 2-01331-J, 2-01331-K, 2-01331-L, 2-01331-N, 2-01396-A
CRC Checksum No's	2-01331-N: 0x 63 95 2-01396-A: 0x 63 7B
Identification Location	Nameplate
Bill Of Materials No's	BS Terminals v1.4 DIN Terminals v1.0
IP Rating	IP51
Insulation Protective Class	Class II
LED Pulse Constant	1000imp/kWh
Impulse Voltage Rating	6kV
AC Voltage Rating	4kV
Main Cover Sealing Type	Wire & Crimp
Integrity of meter	Inaccessible without breaking seals
Intended Location of the Meter	Indoor
Type of Register	LCD
Terminal Arrangement(s)	BS or DIN
Location of Manufacturers Address	Associated Documents

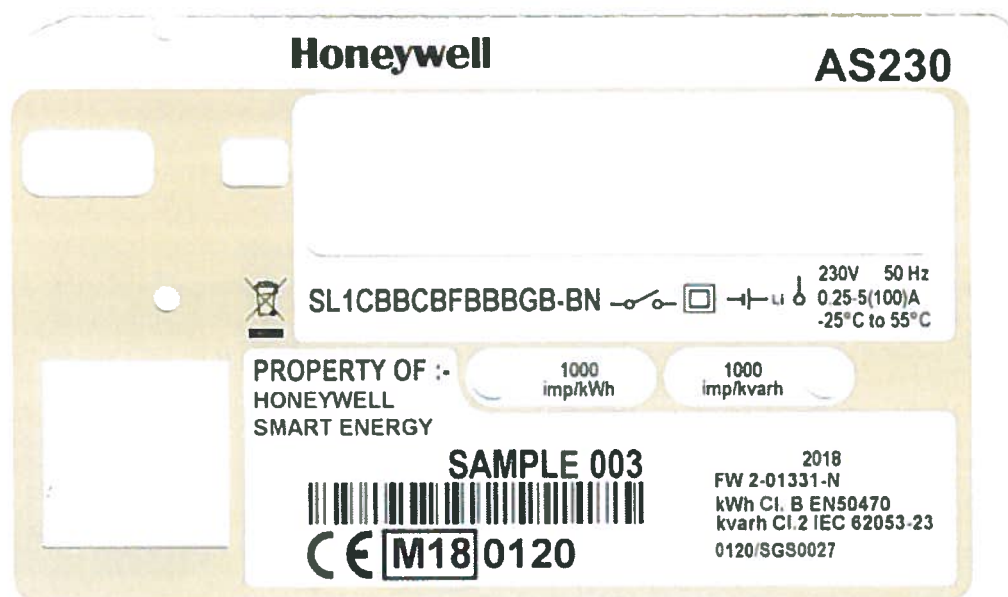
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2. Photograph of Meter and Sealing Plan



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3. Example of Nameplate



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4. Calculation of the composite error/ MPE


During the type approval examination the influence factors for temperature, frequency and voltage are determined per load point. The table below represents the sum of the square values per load, determined via the following formula:-

$$\delta e(T, U, f) = \sqrt{(\delta e^2(T, I, \cos\phi) + \delta e^2(U, I, \cos\phi) + \delta e^2(f, I, \cos\phi))}$$

where

$\delta e(T, I, \cos\phi)$ = Additional error due to variation of the temperature at the same load
 $\delta e(U, I, \cos\phi)$ = Additional error due to variation of the voltage at the same load
 $\delta e(f, I, \cos\phi)$ = Additional error due to variation of the frequency at the same load

		Influence Factors for Temperature, Voltage & Frequency					
Current	PF Cos	-25°C	-10°C	5°C	30°C	40°C	55°C
I _{min}	1.0	0.77	1.15	0.85	0.75	0.76	1.36
I _{tr}	1.0	0.44	0.53	0.44	0.49	0.56	0.75
10I _{tr}	1.0	0.22	0.09	0.13	0.10	0.09	0.11
I _{max}	1.0	0.05	0.04	0.09	0.05	0.05	0.03
I _{tr}	0.5ind	0.89	1.13	0.90	0.94	1.04	1.44
10I _{tr}	0.5ind	0.21	0.11	0.14	0.12	0.12	0.14
I _{max}	0.5ind	0.10	0.07	0.11	0.09	0.07	0.07
I _{tr}	0.8cap	0.59	0.62	0.43	0.52	0.65	0.96
10I _{tr}	0.8cap	0.19	0.07	0.13	0.10	0.09	0.14
I _{max}	0.8cap	0.08	0.04	0.10	0.07	0.80	0.06

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5. Annex of Variants

SINGLE PHASE (AS230) MODEL CODE

V _{ref}	I _{tr}	I _b / I _{ref}	I _{max}

MODEL

TYPE (nameplate)

example: S L 1 A B N B_B N N N N B B - A N

PRODUCT/TERMINATION

Single Phase, BS terminal arrangement (L-N-N-L), Multi Rate with Load Profile

Single Phase, DIN terminal arrangement (L-L-N-N), Multi Rate with Load Profile

Obsolete

SERVICE TYPE

1-phase 2-wire

1

CURRENT RANGE

Direct Connected 20A – * (* is any multiple of I_b up to 100A maximum)

A

Direct Connected 10A – * (* is any multiple of I_b up to 100A maximum)

B

Direct Connected 5A – * (* is any multiple of I_b up to 100A maximum)

C

VOLTAGE/ ACCURACY CLASS

220 – 240V 50 Hz Cl.1 kWh, Cl.2 kvarh (IEC 62053-21, 23 see note 2) Cl.B kWh, (EN 50470-3)

B

220 – 240V 50 Hz Cl.2 kWh, Cl.3 kvarh (IEC 62053-21, 23 see note 2) Cl.A kWh, (EN 50470-3)

C

CONTACTOR

No contactor

N

With contactor

B

LCD/BACKLIGHT

"English" LCD option - no kvarh LED, no backlight

B

"English" LCD option - with kvarh LED, no backlight

C

"English" LCD option - no kvarh LED, with backlight (see Note 4)

D

"Chevrons" LCD option - no kvarh LED, no backlight

F

"Chevrons" LCD option - with kvarh LED, no backlight

G

"Chevrons" LCD option - no kvarh LED, with backlight (see Note 4)

H

BATTERY OPTIONS

Real Time Clock battery support

B

AUXILIARY OUTPUT

No SO or relay output

N

SO output (as kWh LED)

B

100mA/230V relay output (configurable to track tariff – not pulses)

F

100mA/230V relay output (as kWh LED)

G

MAIN COVER TAMPER

No main cover tamper

N

With main cover tamper

B

TERMINAL COVER TAMPER

No terminal cover tamper

N

With terminal cover tamper

B

MAGNETIC FIELD SENSOR

No magnetic field sensor

N

With magnetic field sensor

B

OPERATIONAL MODES

Import kWh only (plus reverse active energy)

B

Import kWh, import (Q1 + Q2) kvarh plus reverse active energy

C

Import/Export kWh

D

Import/Export kWh, import (Q1 + Q2) and export (Q3 + Q4) kvarh

F

Import/Export kWh, import (Q1 + Q2) and export (Q3 + Q4) kvarh and kVAh.

G

OTHER OPTIONS

Short Terminal Cover

B

Extended Terminal cover

C

Extended Terminal cover with cut-out

D


FEATURE SET

Original (Revision suffix 'F' only) Obsolete

- A


Load Profile data packet ID included (From revision suffix 'K')

- B

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Load Profile data packet ID included and low level password access to load profile data	-	C
REVISION SUFFIX		
Firmware 2-01331-F (selected customers only) Obsolete		F
Firmware 2-01331-N (Feature set B)		N
Firmware 2-01395-B (Feature set B) (Not IEC 62056.21 compliant) Only for use with meters for South Africa		1
Firmware 2-01396-A (Feature set C)		A

Modifications to the meter(s) described according to approval No.**0120/SGS0027** must be notified to the issuing body to confirm the meter(s) continuing compliance to the relevant pattern approval standard(s).

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6. Document Revision History

Issue	Date	Comments
1	24/10/2018	Initial Issue

This document is issued by the Company subject to its General Conditions for Certification Services, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested *and such sample(s) are retained for 28 days only*.

END OF CERTIFICATE

