



EC Type Examination Certificate Number: **0120/SGS0223**

Elster Solutions (Pty) Limited-part of Honeywell

Unit 6
Rodium Industrial Park
Fabriek Road
Strijdom Park
Johannesburg
South Africa

Instrument Identification:
A1120, A1140, A1160 Electricity Meter, LM***_****
**Poly Phase, Credit, Active Import/ Export, Multi-rate, Direct Connected/
Transformer Operated, Electricity Meter**

Instrument Traceable Number
0120/SGS0223

has been assessed and certified as meeting the requirements of

EC Directive 2004/22/EC
Measuring Instruments Annex 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 MI-003 of EC Directive 2004/22/EC

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


This certificate is valid until 17th August 2017
Issue 1

Certification is based on report number(s) EMA106670/ 1/ CT dated 13th August 2007
EMA106670/ 1/ WC dated 13th August 2007
EMA130853 dated 26th November 2009
EMA137547 dated 18th August 2010
EMA180052/1 dated 19th September 2013
EMA180052/1/IEC dated 4th April 2014
EMA180052/2 dated 18th August 2014
EMA198098/1 dated 6th February 2015
EMA205841/1 dated 8th July 2015

Authorised Signature


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	Issue Number: 1	Dated: 22 nd February 2016


1. Technical Data

Manufacturer	Elster Metering Systems
Meter Type(s)	A1120, A1140, A1160
Voltage Rating (<i>Un</i>)	A1120 & A1140 Direct Connection 220-240V (L-N), 380-415V (L-L) 127-139V (L-N), 220-240V (L-L) 105-127V (L-N), 180-220V (L-L) 105-127V (L-L) (LM2***** only) A1160 Direct Connection 220-240V (L-N), 380-415V (L-L) A1120 & A1140 Transformer Operated 220-240V (L-N), 380-415V (L-L) 127-139V (L-N), 220-240V (L-L) 105-127V (L-N), 180-220V (L-L) 105-127V (L-L) (LM2***** only)
Current Rating (<i>I_{min}</i> – <i>I_{ref}</i> (<i>I_{max}</i>))	A1120 & A1140 Direct Connection 0.25-5(100)A (Any multiple of <i>I_{ref}</i> up to <i>I_{max}</i>) A1160 Direct Connection 1-20(160)A (Any multiple of <i>I_{ref}</i> up to <i>I_{max}</i>) A1120 & A1140 Transformer Operated 0.01-1(10)A (Any combination of <i>I_n</i> at 1, 1.5, 2, 2.5, 5 with <i>I_{max}</i> of meter at 1.2 <i>I_n</i> , 1.5 <i>I_n</i> and 2 <i>I_n</i>)
Frequency (<i>Fn</i>)	50Hz
Active Accuracy Class (<i>kWh</i>)	A or B (kWh)
Type of circuit	A1120, A1140 1p2w, 1p3w, 1p4w, 2p of 3p4w, 2p3w, 3p3w, 3p4w. A1160 3p4w
Temperature Range	A1120, A1140: -25°C to +55°C A1160: -40°C to +70°C
Software Version No's	2-01178J, 2-01178L, 2-01178M, 2-01178N, 2-01178P, 2-01178Q 2-01322E, 2-01322G, 2-01322H, 2-01322J, 2-01322K, 2-01322-L 2-01340-A, 2-01340-D, 2-01397-E, 2-01397-F, 2-01397-G, 2-01340-H 2-01398A
Identification Location	Nameplate
Bill Of Materials No.'s	JG05241, JG05241A, JG05242, JG05243, JG05244, JG05246, JG05247, JG05248, JG052412, JG052413, JG052414, JG052422, JG052423, JG052424, JG052432, JG052433, JG052434, JG0524100

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Technical Data (cont)

IP Rating	IP54
Insulation Protective Class	Class II
LED Pulse Constant	1000imp/ kWh
Impulse Voltage Rating	6kV
AC Voltage Rating	4kV
Main Cover Sealing Type	A1120 & A1140 - 2 x wire and crimp A1160 - 2 x wire and crimp or optional 2 x shear head screws
Terminal Cover Sealing Type	2 x wire and crimp
Integrity of meter	Inaccessible without breaking seals
Intended Location of the Meter	A1120, A1140: Indoor A1160: Indoor or Outdoor
Type of Register	LCD
Terminal Arrangement(s)	DIN

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3. Photograph of Meter



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4. Influence factors for temperature, frequency and voltage

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

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


where

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

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Influence factors for temperature, frequency and voltage (cont)

		Influence Factors for Temperature, Frequency & Voltage					
Current	PF Cos	-25	-10	5	30	40	55
I _{min}	1.0	1.03	0.79	0.44	0.93	0.34	0.50
I _{tr}	1.0	0.80	0.62	0.35	0.46	0.23	0.45
10I _{tr}	1.0	0.76	0.56	0.36	0.13	0.16	0.34
I _{max}	1.0	0.78	0.57	0.37	0.17	0.16	0.29
I _{tr}	0.5ind	1.37	0.66	0.18	0.36	0.60	0.99
10I _{tr}	0.5ind	1.06	0.46	0.34	0.26	0.31	0.50
I _{max}	0.5ind	0.55	0.23	0.24	0.17	0.18	0.31
I _{tr}	0.8cap	1.76	1.10	0.39	0.49	0.17	0.32
10I _{tr}	0.8cap	1.47	0.89	0.34	0.08	0.10	0.28
I _{max}	0.8cap	1.26	0.80	0.39	0.15	0.15	0.28
L1							
I _{tr}	1.0	0.82	0.64	0.22	0.64	0.62	0.78
10I _{tr}	1.0	0.76	0.54	0.33	0.12	0.16	0.35
I _{max}	1.0	0.73	0.53	0.34	0.14	0.14	0.28
I _{tr}	0.5ind	0.48	0.48	0.55	0.54	0.67	1.08
10I _{tr}	0.5ind	0.99	0.35	0.44	0.33	0.38	0.60
I _{max}	0.5ind	0.50	0.19	0.32	0.18	0.21	0.35
L2							
I _{tr}	1.0	0.83	0.64	0.20	0.69	0.37	0.62
10I _{tr}	1.0	0.74	0.52	0.32	0.11	0.14	0.33
I _{max}	1.0	0.71	0.50	0.31	0.13	0.13	0.27
I _{tr}	0.5ind	1.50	0.48	0.27	0.66	1.10	1.36
10I _{tr}	0.5ind	1.22	0.50	0.32	0.27	0.34	0.58
I _{max}	0.5ind	0.72	0.27	0.18	0.12	0.16	0.32
L3							
I _{tr}	1.0	1.06	0.79	0.41	0.34	0.34	0.60
10I _{tr}	1.0	0.79	0.58	0.35	0.10	0.15	0.38
I _{max}	1.0	0.78	0.57	0.36	0.14	0.15	0.30
I _{tr}	0.5ind	0.82	0.34	0.29	0.67	0.69	1.25
10I _{tr}	0.5ind	0.92	0.34	0.19	0.20	0.22	0.43
I _{max}	0.5ind	0.46	0.15	0.25	0.00	0.13	1.16

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5. Annex of Variants

Product Variant Identification Details:

POLYPHASE (A1120/A1140) MODEL CODE

V _{ref}		I _b	I _{max}
L-L	L-N		

MODEL


TYPE (nameplate)


example: L M 3 A A B N N B B N N B - A N N N

PRODUCT/TERMINATION

Polyphase, BS/DIN termination

SERVICE TYPE

3Ph 4W for use on:  (Not 3Ph 3W)

3Ph 3W  Direct Connected and 5-10A CT versions only

CURRENT RANGE

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

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

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

CT Operated 1A – 2A

CT Operated 5A – 6/10A

CT Operated 1A – 10A

Direct Connected (10A – 100A) -40°C to 60°C operation

VOLTAGE

220 – 240V (L – N) (See note 2 for Ref voltage ranges)

220 – 240V (L – L) (See note 2 for Ref voltage ranges) (LM2***** variants only)

105 – 127V (L – N) (See note 2 for Ref voltage ranges)

105 – 127V (L – L) (See note 2 for Ref voltage ranges) (LM2***** variants only)

ACCURACY CLASS

50 Hz Cl.0.5 kWh, Cl.2 kvarh (IEC 62053-22, 23 see note 1) Cl.C kWh, (EN 50470-3)

Note:- Class 0.5 or Class C is applicable to 5-6/10A “3Ph 4W and 3Ph3W variant only

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

50 Hz Cl.2 kWh, Cl.3 kvarh (IEC 62053-21, 23 see note 1) Cl.A kWh, (EN 50470-3)

60 Hz Cl.1 kWh, Cl.2 kvarh (IEC 62053-21, 23 see note 1) Not OFGEM / MID Approved

60 Hz Cl.2 kWh, Cl.3 kvarh (IEC 62053-21, 23 see note 1) Not OFGEM / MID Approved

HARDWARE – SWITCHES

No tamper detect switches

Two tamper detect switches

Terminal cover tamper detect switch and CT ratio programming protection switch.

HARDWARE – BUTTONS

No buttons

Two buttons

Backlit LCD, with No buttons

Backlit LCD, with Two buttons

HARDWARE – BATTERY

No external battery connection

External 9V Battery connection. Note! External battery module cannot be fitted when an RS232 comms module is fitted.

Supercapacitor/External battery/ RS485 module connection. (Iranian orders only)

OPERATIONAL MODES

Import kWh only

Import kWh, Q1 and Q4 kvarh

Import kWh, Q1, Q2, Q3, Q4 kvarh and Imp kVAh

Imp/Exp kWh

Imp/Exp kWh, Q1, Q2, Q3, and Q4 kvarh

Imp/Exp kWh and Imp/Exp kVAh

Imp/Exp kWh, Q1, Q2, Q3, Q4 kvarh and Imp/Exp kVAh

Import kWh only (Power Flow Insensitive)

Import kWh, Q1 and Q4 kvarh (Power Flow Insensitive)

Import kWh, Q1, Q2, Q3, Q4 kvarh and Imp kVAh (Power Flow Insensitive)


Import kWh only (Theft Resistant Measurement) – 3Ph 4W variants only

Import kWh, Q1 and Q4 kvarh (Theft Resistant Measurement) – 3Ph 4W variants only


Import kWh, Q1, Q2, Q3, Q4 kvarh and Imp kVAh (Theft Resistant Measurement) – 3Ph 4W variants only

TARIFFS

A1120 Multi Rate

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A1140 Multi Rate (with load profile)	C								
A1120 Multi Rate with Password Protected Register Zeroing and Zero Level Time Shift (Not for MID use)	D								
AUXILIARY OUTPUT									
No Output								N	
SO output, floating, 2 aux terminals. 12 kV isolation (Configurable pulse duration/value) 27V DC only								P	
SO output, floating, 2 aux terminals. 12 kV isolation, replicating centre LED (kWh) 27V DC only								A	
SO output, floating, 2 aux terminals. 12 kV isolation, replicating left hand LED (kvarh) 27V DC only								R	
100mA Relay output, floating, 2 aux terminals. 12 kV isolation (Configurable pulse duration/value) 230V AC, DC								S	
100mA Relay output, floating, 2 aux terminals. 12 kV isolation, replicating centre LED (kWh) 230V AC, DC								D	
100mA Relay output, floating, 2 aux terminals. 12 kV isolation, replicating left hand LED (kvarh) 230V AC, DC								U	
300 mA Relay output, floating, 2 aux terminals, 12kV isolation, indicating tariff/MD state, 230V AC only (Not pulsing)								T	
COMMUNICATIONS									
No Serial Comms.								N	
RS232 Serial Comms Note! An RS232 comms module cannot be fitted when an external battery module is fitted.								R	
OTHER OPTIONS									
Standard (Extended) Terminal cover								B	
Standard (Extended) Terminal cover with cut-out								C	
Standard (Extended) Terminal cover plus 9.0mm main terminal bores								D	
Short Terminal Cover								E	
Standard (Extended) Terminal cover with additional voltage terminals								F	
Standard (Extended) Terminal cover with cut-out and additional voltage terminals								G	
Standard (Extended) Terminal cover plus 9.0mm main terminal bores and additional voltage terminals								H	
Standard (Extended) Terminal cover plus 9.5mm main terminal bores. RS232 connection is via flying leads								J	
Standard (Extended) Terminal cover and main cover with voltage disconnect protection								K	
A Cover Plate cannot be fitted to this variant – seek approval if RS232 or battery module is also required									
Standard (Extended) Terminal cover with slotted head screws								L	
Standard (Extended) Terminal cover with cut-out and slotted head screws								M	
Short Terminal Cover with slotted head screws								P	
Standard (Extended) Terminal cover with cut-out plus 9.0mm main terminal bores								Q	
Standard (Extended) Terminal cover with cut out and main cover with voltage disconnect protection								R	
A Cover Plate cannot be fitted to this variant – seek approval if RS232 or battery module is also required									
Short (clear with smoked tint) Terminal Cover and main cover with voltage disconnect protection								S	
A Cover Plate cannot be fitted to this variant – seek approval if RS232 or battery module is also required									
FEATURE SET									
8 TOU Registers, 4 MD Registers, 15 Historical Registers, DSM. See Note 4 for scheme compatibility								- A	
8 TOU Registers, 4 MD Registers, 15 Historical Registers, DSM, DLS time stamps and 12 external registers. Note! All new customers from November 2007. See Note 4 for scheme compatibility								- C	
8 TOU Registers, 4 MD Registers, 24 Historical Registers, DSM, DLS time stamps 12 external registers, tamper flag in Load Profile, daily billing and per phase registration. See Note 4 for scheme compatibility. Note! This feature set requires the use of PMU version 3.1.4666 or later								- F	
8 TOU Registers, 4 MD Registers, 15 Historical Registers, DSM, DLS time stamps and 12 external registers. Note! Register zeroing by use of the "Register Zeroing Tool" is NOT available in this option. See Note 4 for scheme compatibility								- G	
8 TOU Registers, 4 MD Registers, 15 Historical Registers, DSM, DLS time stamps, 12 external registers and tamper flag in Load Profile. See Note 4 for scheme compatibility								- H	
8 TOU Registers, 4 MD Registers, 15 Historical Registers, DSM, DLS time stamps, 12 external registers and tamper flag in Load Profile. Low level password access to register and load profile data. See Note 4 for scheme compatibility								- K	
REVISION SUFFIX									
Firmware 2-01178-Q (Feature set A only). Enhanced GPRS & COP 10								Q	
Firmware 2-01322-L (Feature set C and H). Enhanced GPRS & COP 10								L	
Firmware 2-01340-G (Feature set F). Daily billing & per phase registration & tampers (Note! Requires PMU version 3.1.4666 or later).								G	
Firmware 2-01398-A (Feature set K). Enhanced GPRS & COP 10 and low level password access to register and load profile data								A	
Firmware 2-01345-A (Feature set G). Enhanced GPRS & COP 10 – No register zeroing								Z	
SPECIAL ADDITIONS – FIRMWARE									
None								N	
Phase angle definition as A1700i								A	
SPECIAL ADDITIONS – HARDWARE									
None								N	

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POLYPHASE A1160 MODEL CODE

V_{ref}		I_b	I_{max}	MODEL
L-L	L-N			


TYPE (nameplate)

example: L P 3 A A B N_B N H M V R B - A H N N

PRODUCT/TERMINATION

Polyphase, BS/DIN termination

SERVICE TYPE

3Ph 4W for use on:  Direct Connected only

CURRENT RANGE

Direct Connected 20A – * (* is any multiple of I_b up to 160A maximum)

VOLTAGE

220 – 240V (L – N) (See note 2 for Ref voltage ranges)

ACCURACY CLASS

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

HARDWARE – SWITCHES

No tamper detect switches

Two tamper detect switches (Terminal Cover & Main Cover)

HARDWARE – BUTTONS

Two buttons

HARDWARE – BATTERY

No external battery connection

External 9V Battery connection. Note! An external battery module cannot be fitted when a comms module is fitted.

OPERATIONAL MODES

Imp/Exp kWh, Q1, Q2, Q3, Q4 kvarh and Imp/Exp kVAh

Import kWh, Q1, Q2, Q3, Q4 kvarh and Imp kVAh (Theft Resistant Measurement)

TARIFFS

A1160 Multi Rate – with load profile

A1160 Multi Rate with load profile and Password Protected Register Zeroing and Zero Level Time Shift (Not for MID use)

A1160 Multi Rate – with load profile and instrumentation profile

A1160 Multi Rate with load profile and Instrumentation profile and Password Protected Register Zeroing and Zero Level Time Shift (Not for MID use)

Auxiliary Outputs

No Output

100mA Relay output, floating, 2 aux terminals. 12 kV isolation (Configurable pulse duration/value) 230V AC, DC

100mA Relay output, floating, 2 aux terminals. 12 kV isolation (Configurable pulse duration/value) 230V AC, DC.

Auxiliary 230V output (Phase 'C' + Neutral)

COMMUNICATIONS

No Serial Comms.

RS232 Serial comms. Note! A comms module cannot be fitted when an external battery module is fitted.

OTHER OPTIONS

Short Terminal Cover

Short Terminal Cover and Main Cover with voltage disconnect protection

Standard (Extended) Terminal Cover

Standard (Extended) Terminal Cover with cut-out

Standard (Extended) Terminal Cover and Main Cover with voltage disconnect protection

Standard (Extended) Terminal Cover with cut out and Main Cover with voltage disconnect protection

FEATURE SET

8 TOU Registers, 4 MD Registers, 24 Historical Registers, DSM, DLS time stamps, 12 external registers, daily billing, per phase registration, tamper flag in Load Profile. **Note!** This feature set requires the use of SmartSet version 1.1 or later

8 TOU Registers, 4 MD Registers, 24 Historical Registers, DSM, DLS time stamps, 12 external registers, daily billing, per phase registration, tamper flag in Load Profile. **Note!** This feature set requires the use of SmartSet version 1.1 or later. **(For multi-drop applications)**

REVISION SUFFIX

Firmware 2-01397-E (Feature set A)

Firmware 2-01397-F

SPECIAL ADDITIONS – FIRMWARE

None

Additional Firmware Function (Phase angle definition as A1700i)

SPECIAL ADDITIONS – HARDWARE

None (Socket Head M8 main terminal screws and shear head main cover screws)


Slotted Head M8 main terminal screws and shear head main cover screws

Socket Head M8 main terminal screws sealed main cover screws

Slotted Head M8 main terminal screws sealed main cover screws

MID-B-06E Rev 5

EC Type Examination Cert.

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Modifications to the meter(s) described according to approval No.**UK/ 0120/ SGS0223** must be notified to the issuing body to confirm the meter(s) continuing compliance to the relevant pattern approval standard(s).