



UKCA Type Examination Certificate Number: 0120/SGS0083

EM-Lite Limited

1 Stevern Way
Peterborough
Cambridgeshire
PE1 5EL

Instrument Identification:
ECA1.* & EM*1.*

Single Phase, Credit, Active Import/ Export, Modular, Electricity Meter

Instrument Traceable Number
0120/SGS0083

has been assessed and certified as meeting the requirements of

Measuring Instruments Regulations 2016

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 UK Measuring Instruments Regulations 2016

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 until 22nd March 2030
Issue 1

Certification is based on report number(s): EMA146218 dated 24th May 2011
EMA149885 dated 12th August 2011
EMA155457 dated 17th January 2012
EMA190713 dated 23rd January 2015
EMA277441 dated 23rd March 2020
EMA288609

Authorised Signature

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	UKCA Type Examination Certificate Number:	
	0120/SGS0083	
	Issue Number: 1	Dated: 26 th April 2021

1. Technical Data

Manufacturer	EM-Lite Ltd
Meter Type(s)	ECA1.* & EM*1.*
Voltage Rating (U_n)	220-240V
Current Rating (I_{min} – I_{ref} (I_{max}))	0,25-5(100)A 0,5-10(100)A 0,75-15(100)A 1-20(100)A
Frequency (F_n)	50Hz
Active Accuracy Class (kWh)	A or B (kWh)
Type of circuit	1p2w
Temperature Range	-40°C to +70°C
Software/ Firmware Version No(s)	See list overleaf
CRC Checksum	See list overleaf
Identification Location	LCD
Bill Of Materials Number(s)	See list overleaf
IP Rating	IP52
Insulation Protective Class	Class II
LED Pulse Constant	1000imp/kWh
Impulse Voltage Rating	8kV
AC Voltage Rating	4kV
Main Cover Sealing Type	Wire & Crimp x 1
Integrity of meter	Inaccessible without breaking seals
Intended Location of the Meter	Indoor
Type of Register	LCD
Terminal Arrangement(s)	BS
Location of Manufacturers Address	Nameplate

	UKCA Type Examination Certificate Number:	
	0120/SGS0083	
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Bill of Materials

Meter Variant	BOM Number
ECA1. z	ECA1-4002-03
ECA1. y	ECA1-4001-05
EMA1.z	EMA1-4002-03
EMA1.az	EMA1-4003-07
EMA1.y	EMA1-4001-07
EMA1.ay	EMA1-4004-03
EMA1.x	EMA1-4002-03
EMA1.w	EMA1-4001-07
EMB1.z	EMB1-4002-03
EMB1.y	EMB1-4001-07
EMB1.ay	EMB1-4003-04
EMB1.x	EMB1-4002-03
EMB1.w	EMB1-4001-07
EMC1.z	EMC1-4002-03
EMC1.az	EMC1-4003-03
EMC1.y	EMC1-4001-06
EMC1.ay	EMC1-4004-02
EMC1.x	EMC1-4002-03
EMC1.w	EMC1-4001-06
EMC1.by	EMC1-4005-02
EMC1.cz	EMC1-4007-04

	UKCA Type Examination Certificate Number:	
	0120/SGS0083	
	Issue Number: 1	Dated: 26 th April 2021

Software Version Numbers

EMA1, EMB1, ECA1

V3.00-1
 V3.02-0
 V3.03-2
 V3.04-0 Checksum 32995
 V3.20-1 Checksum 61849
 V3.20-2 Checksum 64953
 V3.20-4 Checksum 60932

EMA1.y or .z, EMB1.y or .z

V3.10-0 Checksum 39352
 V3.11-1 Checksum 16259
 V3.11-2 Checksum 08820
 V3.20-1 Checksum 61849
 V3.20-2 Checksum 64953
 V3.20-4 Checksum 60932

EMC1.*

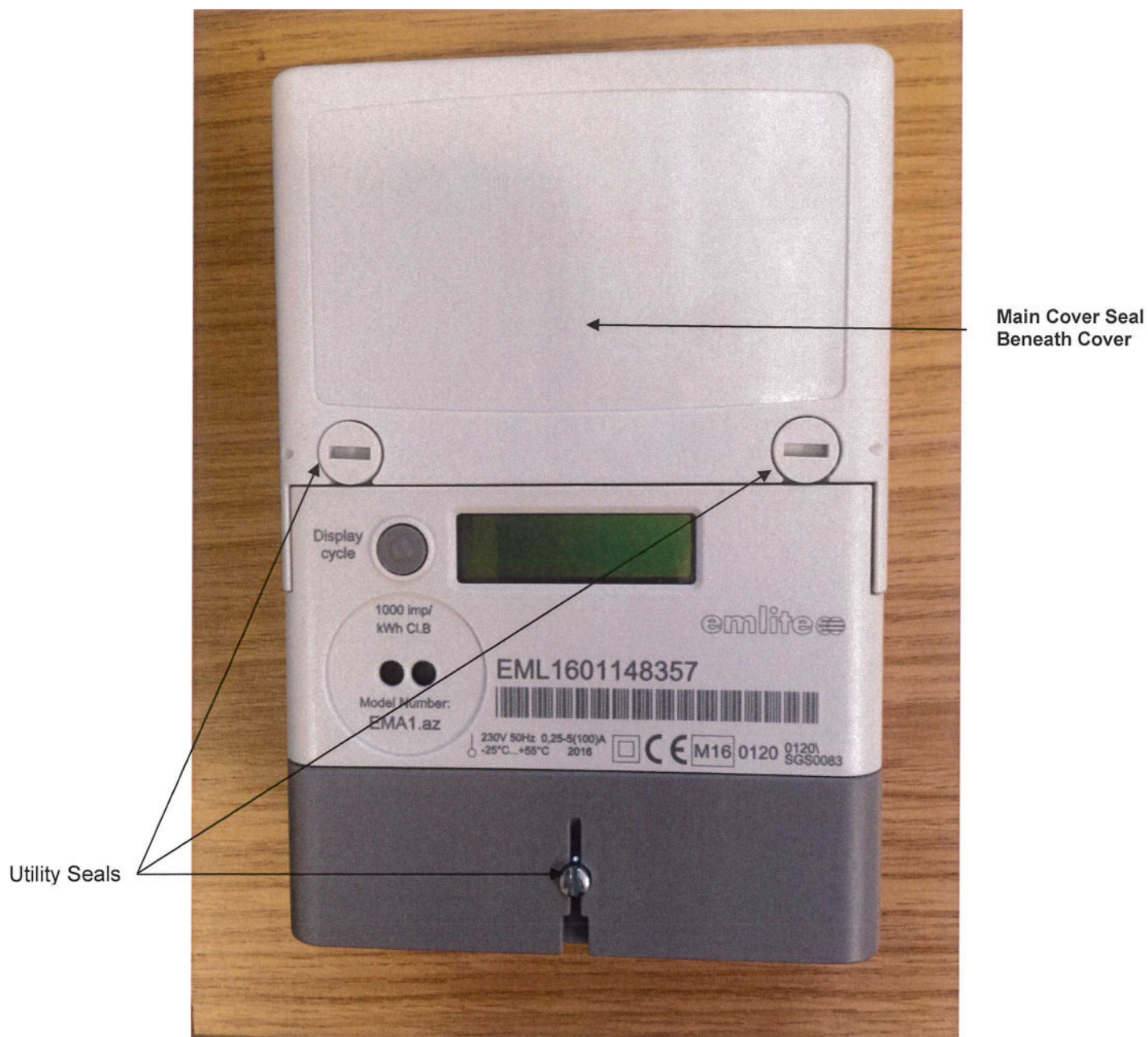
V0.00-3
 V1.00-0
 V1.01-3
 V1.02-0 Checksum 10305
 V1.02-1 Checksum 22571
 V2.00-1 Checksum 49889
 V2.00-3 Checksum 40683
 V3.00-0 Checksum 18714
 V3.00-3 Checksum 25532
 V3.10-1 Checksum 42711

EMC1.cz

V3.80-4 Checksum 19684

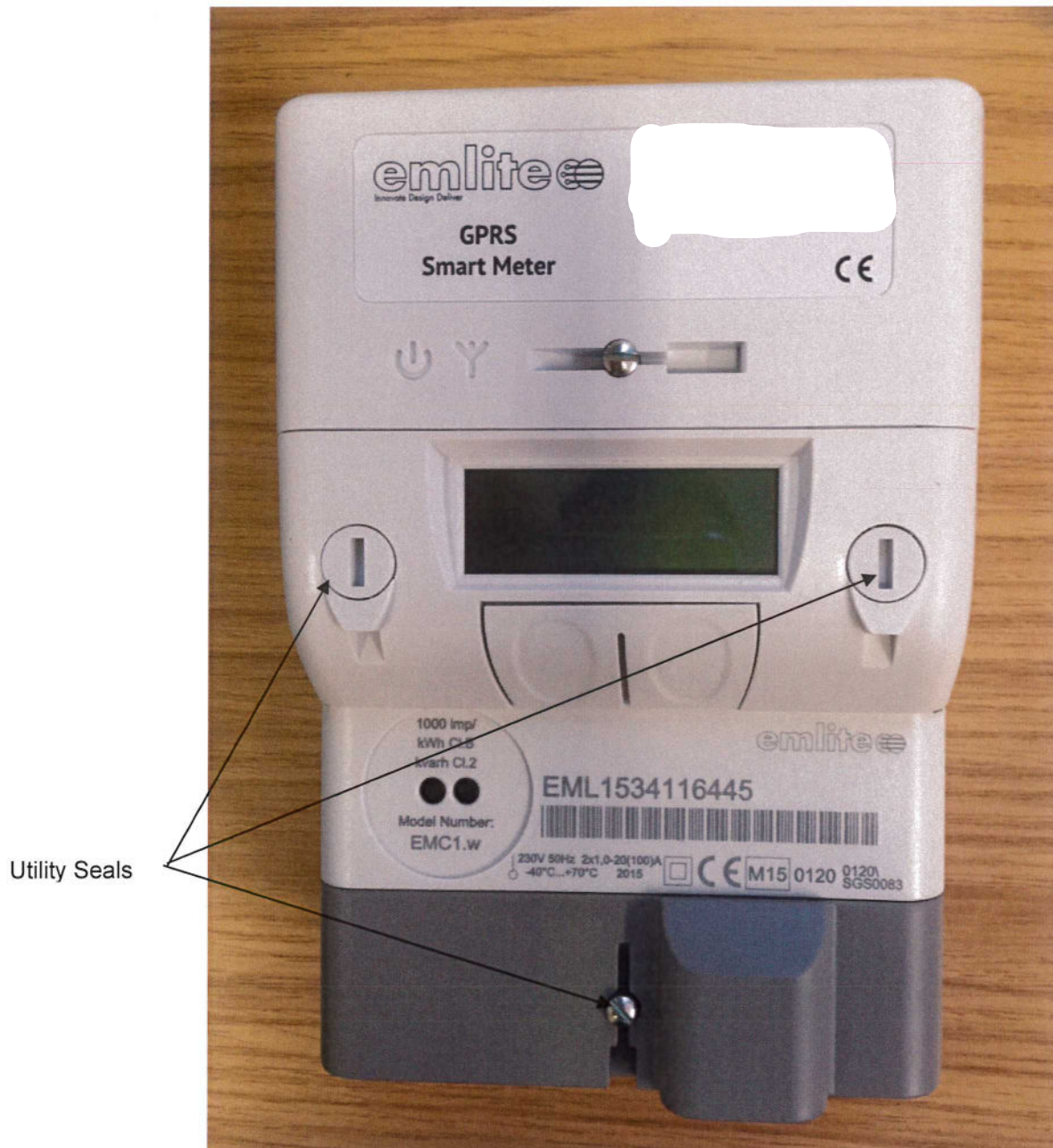
	UKCA Type Examination Certificate Number:	
	0120/SGS0083	
	Issue Number: 1	Dated: 26 th April 2021

2. Photograph of Meter EM*1 and Sealing Plan



	UKCA Type Examination Certificate Number:	
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Photographs of Meter EMC1w with MC11ba and MC11b Modules Fitted and Sealing Plan



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	0120/SGS0083	
	Issue Number: 1	Dated: 26 th April 2021

3. Examples of Nameplate



	UKCA Type Examination Certificate Number:	
	0120/SGS0083	
	Issue Number: 1	Dated: 26 th April 2021

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	-40°C	-25°C	-10°C	5°C	30°C	40°C	55°C	70°C
I _{min}	1.0	0.30	0.42	0.29	0.15	0.10	0.16	0.36	0.39
I _{tr}	1.0	0.41	0.46	0.33	0.20	0.05	0.13	0.28	0.45
10I _{tr}	1.0	0.23	0.11	0.03	0.04	0.14	0.17	0.24	0.33
I _{max}	1.0	0.28	0.09	0.09	0.14	0.25	0.27	0.37	0.25
I _{tr}	0.5ind	0.31	0.48	0.39	0.29	0.17	0.14	0.20	0.24
10I _{tr}	0.5ind	0.25	0.05	0.06	0.09	0.17	0.20	0.23	0.25
I _{max}	0.5ind	0.27	0.19	0.26	0.32	0.41	0.44	0.53	0.12
I _{tr}	0.8cap	0.57	0.64	0.50	0.37	0.16	0.15	0.27	0.44
10I _{tr}	0.8cap	0.24	0.15	0.06	0.04	0.13	0.16	0.24	0.38
I _{max}	0.8cap	0.27	0.07	0.10	0.17	0.30	0.33	0.43	0.28

	UKCA Type Examination Certificate Number:	
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5. Annex of Variants

Product Variant Identification Details:

Type Designation	Description of meter
ECA1.z	4 terminal basic variant, no auxiliary connections, no modular comms, no breaker
ECA1.y	4 terminal with auxiliary relay, no modular comms, no breaker
EMA1.z	4 terminal basic variant, no auxiliary connections
EMA1.az	4 terminal basic variant, no auxiliary connections, no breaker
EMA1.y	4 terminal with auxiliary relay
EMA1.ay	4 terminal with auxiliary relay, no breaker
EMA1.x	4 terminal with external hub connections
EMA1.w	4 terminal with auxiliary relay and external hub connections
EMB1.z	5 terminal (100A Heating Control) basic variant, no auxiliary connections
EMB1.y	5 terminal with auxiliary relay
EMB1.ay	5 terminal (100A Heating Control) with auxiliary relay, no breaker
EMB1.x	5 terminal with external hub connections
EMB1.w	5 terminal with auxiliary relay and external hub connections
EMC1.z	twin element basic variant, no auxiliary connections
EMC1.az	twin element basic variant, no auxiliary connections, no breakers
EMC1.y	twin element with auxiliary relay
EMC1.ay	twin element basic variant, with auxiliary relay, breaker on element 2
EMC1.x	twin element with external hub connections
EMC1.w	twin element with auxiliary relay and external hub connections
EMC1.w	twin element with auxiliary relay and external hub connections
EMC1.by	twin element basic variant, with auxiliary relay, breaker on element 1
MC11b + MC11a	smart module and gateway for use with all variants
EMC1.cz	twin element basic variant, with 25A relay and breaker on element 2

Modifications to the meter(s) described according to approval No. **0120/SGS0083** 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	26/04/2021	Initial Issue

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