



SGS

EU Type Examination Certificate Number: **0120/SGS0461**

EM-Lite Ltd

1 Stevern Way
Peterborough
United Kingdom
PE1 5EL

Instrument Identification:
EMP1.xx

Polyphase, Active-Import / Export, Electricity Meter

Instrument Traceable Number
0120/SGS0461

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 12th June 2020 until 11th June 2030
Issue 1

Certification is based on report number(s)
EMA277432/1/MID, dated 12th June 2020

Authorised Signature

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SGSPAPER
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EU Type Examination Cert



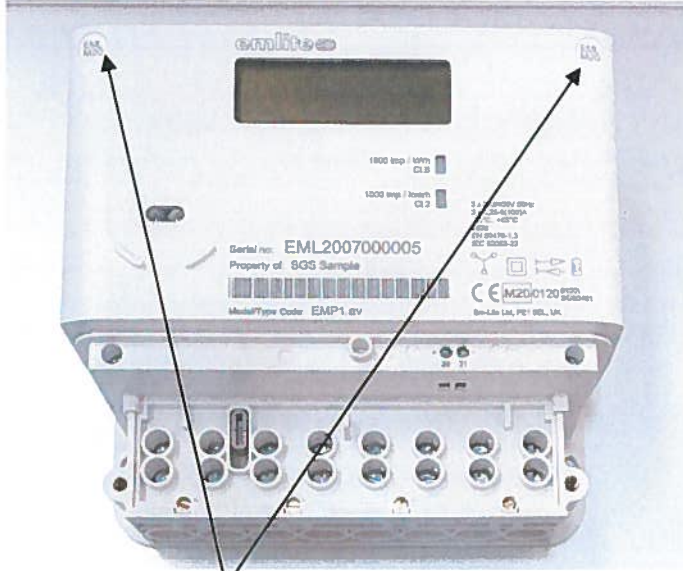
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	Issue Number: 1	Dated: 12 th June 2020

1. Technical Data

Manufacturer	EM-Lite Ltd
Meter Type	EMP1.xx
Voltage Rating (U_n)	3*230/400 V
Current Rating ($I_{min} - I_{ref} (I_{max})$)	0.25-5(100)A 0.5-10(100)A 1-20(100)A
Frequency (F_n)	50Hz
Active Accuracy Class (kWh)	A or B (kWh)
Type of circuit	3p4w
Temperature Range	-40°C to +70°C
Software/ Firmware Version No	V1.00.00
CRC Checksum	LCD
Identification Location	A7E9
Bill Of Materials Number	EMP1.at – EMP1-4006-08 EMP1.av – EMP1-4004-08 EMP1.az – EMP1-4005-08
IP Rating	IP54
Insulation Protective Class	Class II
LED Pulse Constant	1,000 imp/kWh
Impulse Voltage Rating	6kV
AC Voltage Rating	4kV
Main Cover Sealing Type	Press fit non-removable lasered plastic seals
Terminal 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
Location of Manufacturers Address	Nameplate

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2. Photograph of Meter and Sealing Plan




Main cover sealing





Terminal cover sealing

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3. Examples of Nameplates








1000 imp / kWh
Cl.B


1000 imp / kvarh
Cl.2

3 x 230/400V 50Hz
3 x 0,25-5(100)A
-25°C...+55°C
2020
EN 50470-1,3
IEC 62053-23




Display Cycle

Serial no: **EML2007000005**
Property of: **SGS Sample**





Model/Type Code: **EMP1.at**





M20 0120 ⁰¹²⁰ _{SGS0461}

Em-Lite Ltd, PE1 5EL, UK











1000 imp / kWh
Cl.B

1000 imp / kvarh
Cl.2


3 x 230/400V 50Hz
3 x 0,25-5(100)A
-25°C...+55°C
2020
EN 50470-1,3
IEC 62053-23



Serial no: **EML2007000005**
Property of: **SGS Sample**




Model/Type Code: **EMP1.av**



M20 0120 ⁰¹²⁰ _{SGS0461}


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<h1>SGS</h1>	EU-Type Examination Certificate Number:	
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1000 imp / kWh
Cl.B


1000 imp / kvarh
Cl.2

3 x 230/400V 50Hz
3 x 0,25-5(100)A
-25°C...+55°C
2020
EN 50470-1,3
IEC 62053-23



Serial no: **EML2007000005**

Property of: **SGS Sample**




Model/Type Code: **EMP1.az**



M20 0120⁰¹²⁰¹
SGS0461

Em-Lite Ltd, PE1 5EL, UK

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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




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		Influence Factors for Temperature. Frequency & Voltage							
Current	PF Cos	-40°C	-25°C	-10°C	5°C	30°C	40°C	55°C	70°C
I _{min}	1.0	0.49	0.36	0.27	0.16	0.09	0.11	0.13	0.20
I _{tr}	1.0	0.50	0.37	0.25	0.13	0.09	0.11	0.12	0.17
10I _{tr}	1.0	0.58	0.44	0.28	0.20	0.13	0.14	0.13	0.13
I _{max}	1.0	0.71	0.63	0.42	0.22	0.09	0.09	0.09	0.13
I _{tr}	0.5ind	0.51	0.35	0.24	0.11	0.09	0.11	0.18	0.33
10I _{tr}	0.5ind	0.57	0.42	0.33	0.18	0.12	0.17	0.20	0.33
I _{max}	0.5ind	0.67	0.59	0.41	0.16	0.09	0.06	0.11	0.06
I _{tr}	0.8cap	0.55	0.40	0.26	0.14	0.10	0.10	0.11	0.16
10I _{tr}	0.8cap	0.50	0.36	0.23	0.18	0.15	0.15	0.15	0.18
I _{max}	0.8cap	0.71	0.53	0.35	0.20	0.06	0.06	0.09	0.10
						0.00	0.00	0.00	0.00
L1									
I _{tr}	1.0	0.52	0.42	0.25	0.12	0.10	0.11	0.08	0.14
10I _{tr}	1.0	0.62	0.49	0.29	0.19	0.13	0.14	0.13	0.20
I _{max}	1.0	0.79	0.63	0.38	0.23	0.07	0.07	0.02	0.06
I _{tr}	0.5ind	0.48	0.35	0.23	0.12	0.10	0.13	0.17	0.32
10I _{tr}	0.5ind	0.58	0.46	0.26	0.15	0.09	0.15	0.14	0.25
I _{max}	0.5ind	0.72	0.57	0.34	0.25	0.20	0.21	0.21	0.21
L2									
I _{tr}	1.0	0.49	0.33	0.20	0.10	0.09	0.12	0.14	0.26
10I _{tr}	1.0	0.50	0.30	0.21	0.11	0.10	0.09	0.17	0.18
I _{max}	1.0	0.74	0.57	0.35	0.19	0.10	0.10	0.10	0.10
I _{tr}	0.5ind	0.47	0.30	0.14	0.11	0.13	0.16	0.21	0.45
10I _{tr}	0.5ind	0.49	0.33	0.23	0.17	0.18	0.17	0.19	0.32
I _{max}	0.5ind	0.66	0.58	0.29	0.18	0.11	0.08	0.08	0.08
L3									
I _{tr}	1.0	0.62	0.49	0.28	0.16	0.08	0.09	0.11	0.19
10I _{tr}	1.0	0.64	0.51	0.30	0.15	0.11	0.14	0.11	0.14
I _{max}	1.0	0.80	0.64	0.40	0.25	0.06	0.06	0.06	0.10
I _{tr}	0.5ind	0.60	0.44	0.26	0.14	0.08	0.12	0.17	0.29
10I _{tr}	0.5ind	0.65	0.52	0.30	0.13	0.09	0.09	0.13	0.21
I _{max}	0.5ind	0.89	0.65	0.38	0.35	0.01	0.04	0.09	0.05


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5. Annex of Variants

Product Variant Identification Details:

Type Designation	Description of meter
EMP1.at	Multi-Rate Polyphase Meter, TOU, two pulse outputs, one 2A Auxiliary Relay
EMP1.av	Basic Single Rate Polyphase Meter, one pulse output
EMP1.az	Basic Single Rate Polyphase Meter, no outputs

Modifications to the meter(s) described according to approval No.**0120/SGS0461** 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	12/06/2020	Initial Issue

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END OF CERTIFICATE