



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 12<sup>th</sup> June 2020 until 11<sup>th</sup> June 2030  
Issue 1

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

Authorised Signature


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	Issue Number: 1	Dated: 12 <sup>th</sup> June 2020

## 1. Technical Data

<b>Manufacturer</b>	EM-Lite Ltd
<b>Meter Type</b>	EMP1.xx
<b>Voltage Rating (<math>U_n</math>)</b>	3*230/400 V
<b>Current Rating (<math>I_{min}</math> – <math>I_{ref}</math> (<math>I_{max}</math>))</b>	0.25-5(100)A 0.5-10(100)A 1-20(100)A
<b>Frequency (<math>F_n</math>)</b>	50Hz
<b>Active Accuracy Class (<math>kWh</math>)</b>	A or B (kWh)
<b>Type of circuit</b>	3p4w
<b>Temperature Range</b>	-40°C to +70°C
<b>Software/ Firmware Version No</b>	V1.00.00
<b>CRC Checksum</b>	LCD
<b>Identification Location</b>	A7E9
<b>Bill Of Materials Number</b>	EMP1.at – EMP1-4006-08 EMP1.av – EMP1-4004-08 EMP1.az – EMP1-4005-08
<b>IP Rating</b>	IP54
<b>Insulation Protective Class</b>	Class II
<b>LED Pulse Constant</b>	1,000 imp/kWh
<b>Impulse Voltage Rating</b>	6kV
<b>AC Voltage Rating</b>	4kV
<b>Main Cover Sealing Type</b>	Press fit non-removable lasered plastic seals
<b>Terminal Cover Sealing Type</b>	Wire & Crimp
<b>Integrity of meter</b>	Inaccessible without breaking seals
<b>Intended Location of the Meter</b>	Indoor
<b>Type of Register</b>	LCD
<b>Terminal Arrangement(s)</b>	BS
<b>Location of Manufacturers Address</b>	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

EML  
M20




EML  
M20

**Display  
Cycle**

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**



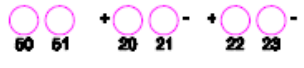
Model/Type Code: **EMP1.at**

CE


M20

0120 0120  
SGS0461

Em-Lite Ltd, PE1 5EL, UK



EML  
M20



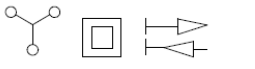
EML  
M20

**Display  
Cycle**

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**



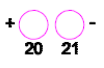
Model/Type Code: **EMP1.av**


CE


M20


0120 0120  
SGS0461


Em-Lite Ltd, PE1 5EL, UK

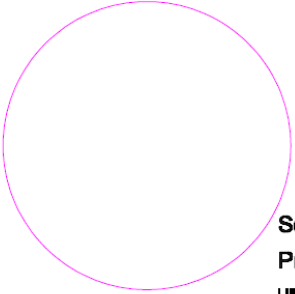


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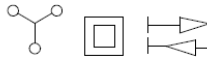
1000 imp / kWh

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**

**0120<sup>0120</sup>**  
**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 <sub>min</sub>	1.0	0.49	0.36	0.27	0.16	0.09	0.11	0.13	0.20
I <sub>tr</sub>	1.0	0.50	0.37	0.25	0.13	0.09	0.11	0.12	0.17
10I <sub>tr</sub>	1.0	0.58	0.44	0.28	0.20	0.13	0.14	0.13	0.13
I <sub>max</sub>	1.0	0.71	0.63	0.42	0.22	0.09	0.09	0.09	0.13
I <sub>tr</sub>	0.5ind	0.51	0.35	0.24	0.11	0.09	0.11	0.18	0.33
10I <sub>tr</sub>	0.5ind	0.57	0.42	0.33	0.18	0.12	0.17	0.20	0.33
I <sub>max</sub>	0.5ind	0.67	0.59	0.41	0.16	0.09	0.06	0.11	0.06
I <sub>tr</sub>	0.8cap	0.55	0.40	0.26	0.14	0.10	0.10	0.11	0.16
10I <sub>tr</sub>	0.8cap	0.50	0.36	0.23	0.18	0.15	0.15	0.15	0.18
I <sub>max</sub>	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 <sub>tr</sub>	1.0	0.52	0.42	0.25	0.12	0.10	0.11	0.08	0.14
10I <sub>tr</sub>	1.0	0.62	0.49	0.29	0.19	0.13	0.14	0.13	0.20
I <sub>max</sub>	1.0	0.79	0.63	0.38	0.23	0.07	0.07	0.02	0.06
I <sub>tr</sub>	0.5ind	0.48	0.35	0.23	0.12	0.10	0.13	0.17	0.32
10I <sub>tr</sub>	0.5ind	0.58	0.46	0.26	0.15	0.09	0.15	0.14	0.25
I <sub>max</sub>	0.5ind	0.72	0.57	0.34	0.25	0.20	0.21	0.21	0.21
L2									
I <sub>tr</sub>	1.0	0.49	0.33	0.20	0.10	0.09	0.12	0.14	0.26
10I <sub>tr</sub>	1.0	0.50	0.30	0.21	0.11	0.10	0.09	0.17	0.18
I <sub>max</sub>	1.0	0.74	0.57	0.35	0.19	0.10	0.10	0.10	0.10
I <sub>tr</sub>	0.5ind	0.47	0.30	0.14	0.11	0.13	0.16	0.21	0.45
10I <sub>tr</sub>	0.5ind	0.49	0.33	0.23	0.17	0.18	0.17	0.19	0.32
I <sub>max</sub>	0.5ind	0.66	0.58	0.29	0.18	0.11	0.08	0.08	0.08
L3									
I <sub>tr</sub>	1.0	0.62	0.49	0.28	0.16	0.08	0.09	0.11	0.19
10I <sub>tr</sub>	1.0	0.64	0.51	0.30	0.15	0.11	0.14	0.11	0.14
I <sub>max</sub>	1.0	0.80	0.64	0.40	0.25	0.06	0.06	0.06	0.10
I <sub>tr</sub>	0.5ind	0.60	0.44	0.26	0.14	0.08	0.12	0.17	0.29
10I <sub>tr</sub>	0.5ind	0.65	0.52	0.30	0.13	0.09	0.09	0.13	0.21
I <sub>max</sub>	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***