



# SGS

EU Type Examination Certificate Number: **0120/SGS0315**

## Shanghai Fangqiu Electric Co., Ltd.

Room 1903  
No1958 North Zhongshan Road  
Putuo District  
Shanghai  
China

Instrument Identification:  
**EM115-Mod Series**

**Single Phase, Active Import/Export (kWh), Electricity Meter**

Instrument Traceable Number  
**0120/SGS0315**

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 26<sup>th</sup> September 2017 until 25<sup>th</sup> September 2027  
Issue 2

Certification is based on report number(s) EMA244344/1 dated 26<sup>th</sup> September 2017, SHES170600509001 dated 26<sup>th</sup> September 2017

Authorised Signature

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EU Type Examination Cert.



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	Issue Number: 2	Dated: 1 <sup>st</sup> November 2018


## 1. Technical Data

Manufacturer	Shanghai Fangqiu Electric Co., Ltd
Meter Types	EM115-Mod EM115-Mod-PO EM115-Mod-DO EM115-Mod-WL
Voltage Rating ( $U_n$ )	230V
Current Rating ( $I_{min}$ – $I_{ref}$ ( $I_{max}$ ))	EM115-Mod: 1-20(100)A EM115-Mod-PO: 0.25-5(6)A EM115-Mod-DO: 0.25-5(6)A EM115-Mod-WL: 0.25-5(6)A
Frequency ( $F_n$ )	50Hz
Active Accuracy Class ( $kWh$ )	B ( $kWh$ )
Type of circuit	1p2w
Temperature Range	-25°C to +55°C
Software/ Firmware Version No's	EM115-Mod: 0115.1.1 checksum: D8159C09 EM115-Mod-PO: 0115.1.1 checksum: 0x30F5C375 EM115-Mod-DO: 0115.2.1 checksum: 0xF07A3204 EM115-Mod-WL: 0115.1.1 checksum: 0x30F5C375
Identification Location	LCD
Bill Of Materials No's	EM115-Mod: FQ-JS-001-062 EM115-Mod-PO: FQJS-001-092 EM115-Mod-DO: FQJS-001-112 EM115-Mod-WL: FQJS-001-142
IP Rating	IP51 Must be installed in a suitable IP rated enclosure
Insulation Protective Class	Class II
LED Pulse Constant	1000imp/ kWh
Impulse Voltage Rating	6kV
AC Voltage Rating	4kV
Main Cover Sealing Type	Terminal covers wire & crimp. Main cover clipped in place and sealed with tamper proof sealing tape
Integrity of meter	Inaccessible without breaking seals
Intended Location of the Meter	Indoor
Type of Register	LCD
Terminal Arrangement(s)	DIN
Location of Manufacturers Address	Associated Documents

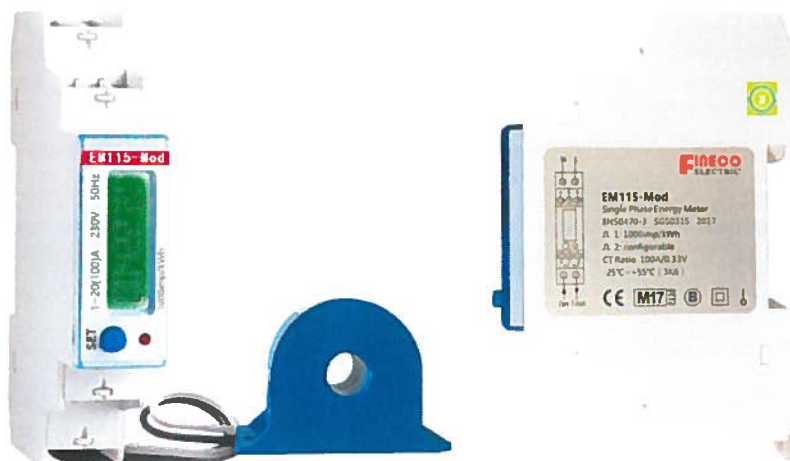
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## 2. Sealing Points (Applicable to all meter models)

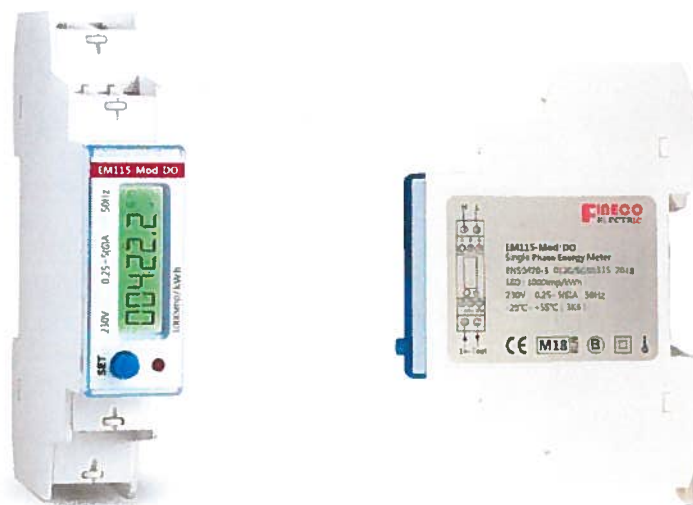


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### 3. Photographs of Meters and Nameplates



EM115-MOD



EM115-MOD-DO

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## Photographs of Meters and Nameplates (cont.)



**EM115-MOD-PO**




**EM115-MOD-WL**

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### 3. Nameplates



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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:-

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


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

		Influence Factors for temperature, frequency and voltage					
Current	PF Cos	-25	-10	5	30	40	55
I <sub>min</sub>	1.0	0.60	0.56	0.13	0.45	0.48	0.79
I <sub>tr</sub>	1.0	0.67	0.58	0.07	0.28	0.46	0.75
10I <sub>tr</sub>	1.0	0.70	0.58	0.10	0.13	0.44	0.77
I <sub>max</sub>	1.0	0.78	0.61	0.14	0.09	0.41	0.69
I <sub>tr</sub>	0.5ind	0.51	0.43	0.23	0.60	0.63	0.92
10I <sub>tr</sub>	0.5ind	0.44	0.36	0.14	0.38	0.67	0.97
I <sub>max</sub>	0.5ind	0.55	0.36	0.10	0.33	0.64	0.95
I <sub>tr</sub>	0.8cap	1.03	0.81	0.39	0.36	0.44	0.67
10I <sub>tr</sub>	0.8cap	0.95	0.77	0.37	0.31	0.45	0.69
I <sub>max</sub>	0.8cap	0.91	0.80	0.42	0.34	0.46	0.69


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## 5. Annex of Variants

Product Variant Identification Details:

Type Designation	Description of meter
EM115-Mod	230V, 1-20(100)A, 50Hz, External Solid Core CT, RS485 communication
EM115-Mod-PO	230V, 0.25-5(6)A, 50Hz, Pulse output, RS485 communication
EM115-Mod-DO	230V, 0.25-5(6)A, 50Hz, Digital output, RS485 communication
EM115-Mod-WL	230V, 0.25-5(6)A, 50Hz, LoRa output

Modifications to the meter(s) described according to approval No.**0120/ SGS0315** 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	26/09/2017	Initial Issue
2	01/11/2018	Additional variants added to approval

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