



EC Type Examination Certificate Number: **0120/SGS0201**

Shanghai Fangqiu Electric Co., Ltd

Room 1903
No. 1958 North Zhongshan Road
Putuo District
Shanghai
China

Instrument Identification:
EM415 Series

Instrument Traceable Number
0120/SGS0201

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

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 for 10 years from 15th October 2015 to 14th October 2025
Issue 1

Certification is based on report number(s) SHES150800466201 issued 14th October 2015

Authorised Signature

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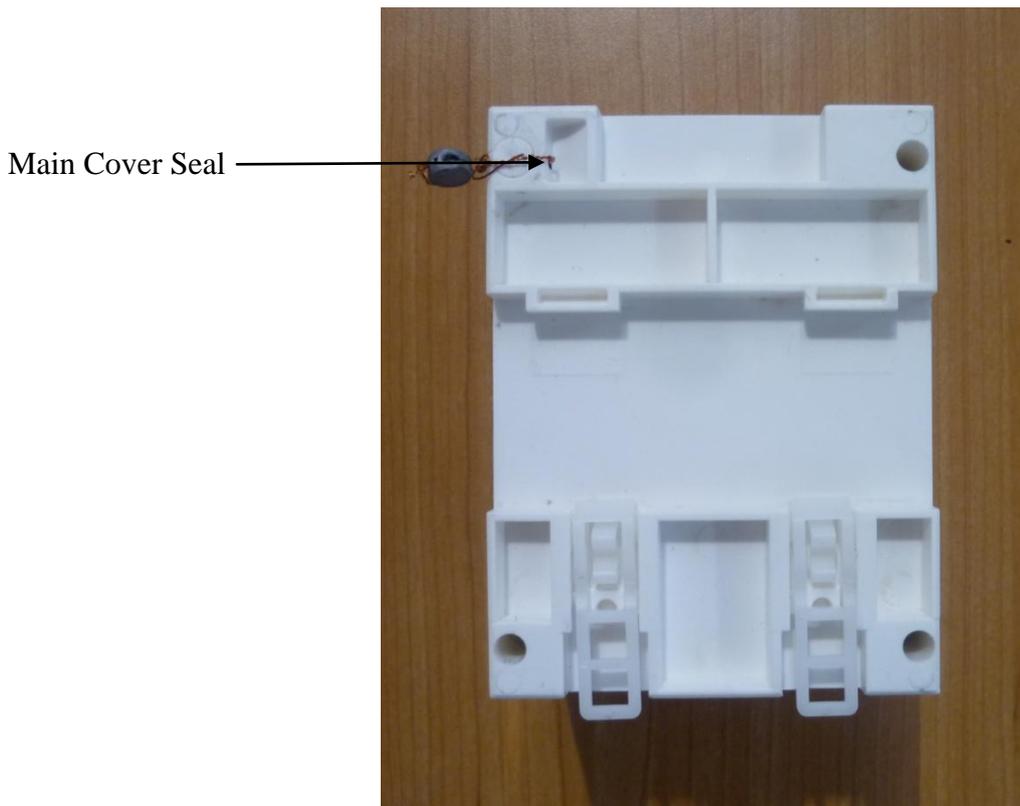
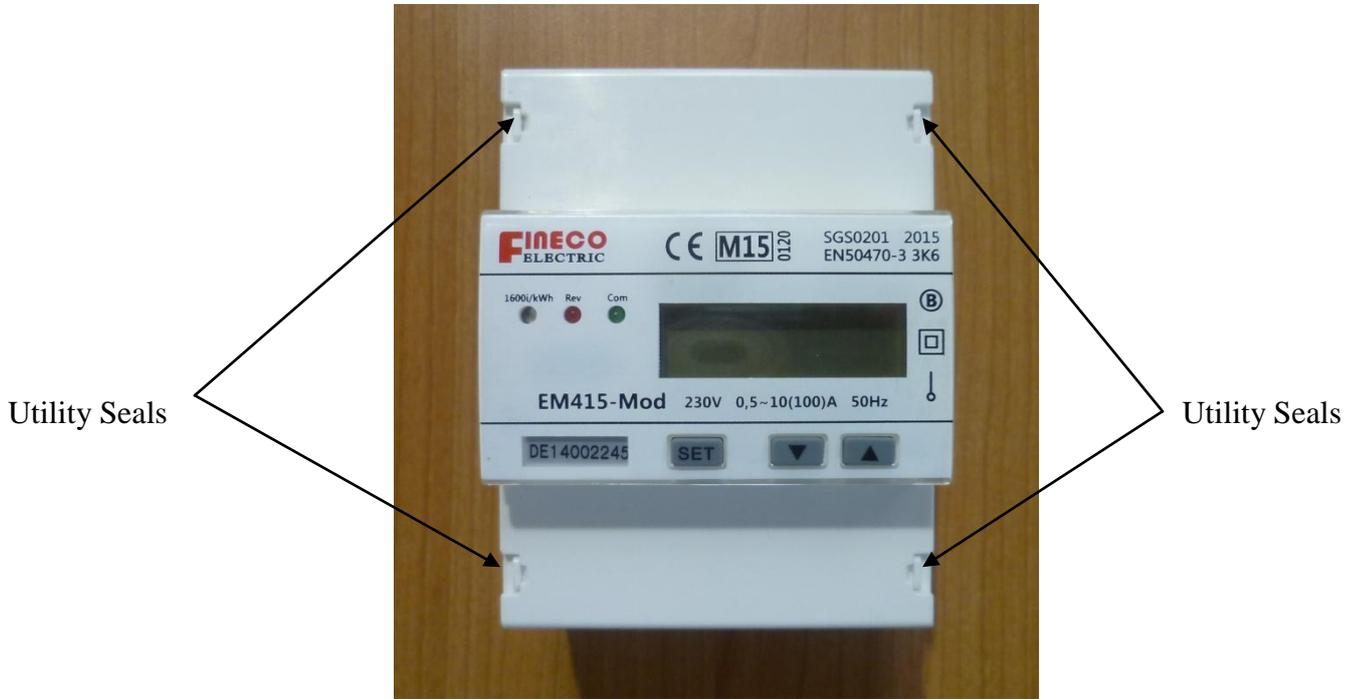
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|  | EC-Type Examination Certificate Number: | |
| | 0120/ SGS0201 | |
| | Issue Number: 1 | Dated: 15 th October 2015 |

1. Technical Data

| | |
|--|---|
| Manufacturer | Shanghai Fangqiu Electric Co., Ltd. |
| Meter Type(s) | EM415-S EM415-Mod EM415-Mb |
| Voltage Rating (U_n) | 230V |
| Current Rating ($I_{min} - I_{ref} (I_{max})$) | 0.5-10(100)A |
| Frequency (F_n) | 50Hz |
| Active Accuracy Class (kWh) | A or B (kWh) |
| Type of circuit | 1p2w |
| Temperature Range | -25°C to +55°C |
| Software Version No's. | 415.3.0 (EM415-S) 415.3.2 (EM415-Mod) 415.2.0 (EM415-Mb) |
| Identification Location | Nameplate |
| Bill Of Materials No. | FQ-JS-301-304 |
| IP Rating | IP51 |
| Insulation Protective Class | Class II |
| LED Pulse Constant | 1600imp/ kWh |
| Impulse Voltage Rating | 6kV |
| AC Voltage Rating | 4kV |
| Terminal Cover Sealing Type | 4 x Wire & Crimp |
| Integrity of meter | Inaccessible without breaking seals |
| Intended Location of the Meter | Indoor |
| Type of Register | LCD |

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2. Photographs of Meter and Sealing Plan



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EC-Type Examination Certificate Number:

0120/ SGS0201

Issue Number: 1

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3. Influence factors for temperature, frequency and voltage

| Current | PF Cos | -25°C | -10°C | 5°C | 30°C | 40°C | 55°C |
|-------------------|--------|-------|-------|------|------|------|------|
| I _{min} | 1.0 | 1.37 | 0.95 | 0.65 | 0.14 | 0.38 | 0.84 |
| I _{tr} | 1.0 | 1.36 | 0.98 | 0.52 | 0.21 | 0.49 | 0.90 |
| 10I _{tr} | 1.0 | 1.36 | 0.96 | 0.55 | 0.24 | 0.53 | 0.91 |
| I _{max} | 1.0 | 1.50 | 1.10 | 0.71 | 0.16 | 0.37 | 0.76 |
| I _{tr} | 0.5ind | 1.34 | 0.92 | 0.52 | 0.21 | 0.46 | 0.94 |
| 10I _{tr} | 0.5ind | 1.37 | 0.91 | 0.49 | 0.28 | 0.56 | 0.97 |
| I _{max} | 0.5ind | 1.76 | 1.36 | 0.91 | 0.27 | 0.63 | 1.37 |
| I _{tr} | 0.8cap | 1.36 | 0.88 | 0.54 | 0.23 | 0.50 | 0.86 |
| 10I _{tr} | 0.8cap | 1.36 | 0.92 | 0.51 | 0.26 | 0.52 | 0.93 |
| I _{max} | 0.8cap | 1.27 | 0.85 | 0.46 | 0.29 | 0.42 | 0.65 |

During the type approval examination the influence factors for temperature, frequency and voltage are determined per load point. The table above 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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4. Annex of Variants

Product Variant Identification Details:

| Type Designation | Description of meter |
|------------------|---|
| EM415-S: | Single phase energy meter with pulse output |
| EM415-Mod: | Single phase energy meter with modbus |
| EM415-Mb: | Single phase energy meter with M-bus |

Modifications to the meter(s) described according to approval No.**0120/ SGS0201** 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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5. Document Revision History

| Issue | Date | Comments |
|-------|------------|---------------|
| 1 | 15/10/2015 | Initial Issue |