

EU Type Examination Certificate Number: 0120/SGS0215

F&F Filipowski sp.j.

Ul. Konstytucyjna 79/81
Pabianice
Poland

Instrument Identification:
LE-03 Series

Polyphase, Active Import/ Export (kWh), Indoor, Electricity Meter

Instrument Traceable Number
0120/SGS0215

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 until 5th January 2025
Issue 2

Certification is based on report number(s) SHES130800321501 dated 26th December 2014
EMA198278 dated 26th December 2014
EMA217860 dated 17th December 2015
EMA281686 dated 14th September 2020



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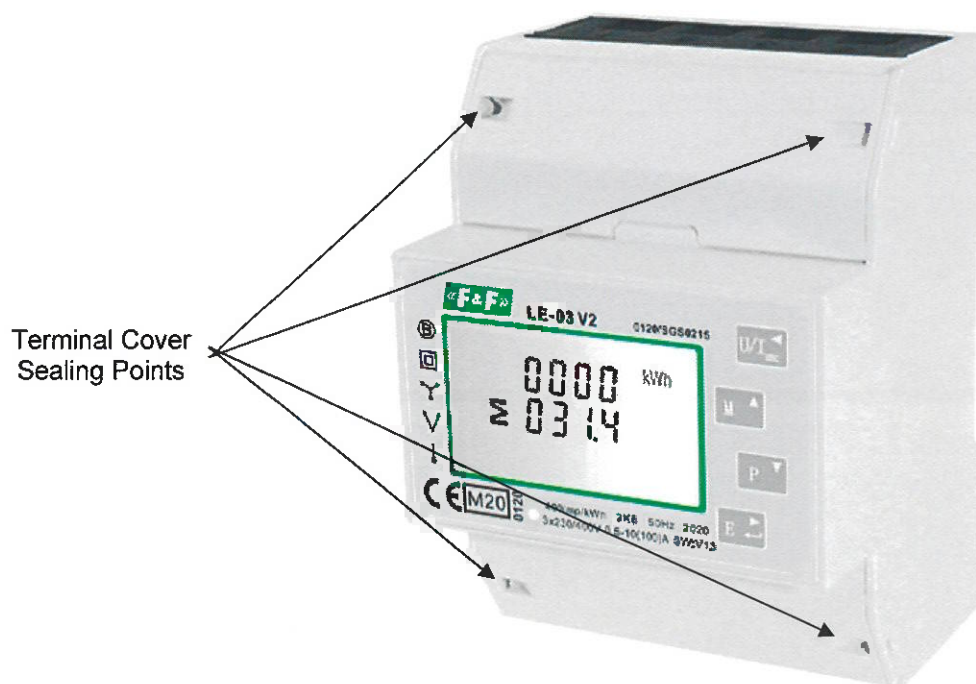
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1. Technical Data

Manufacturer	F&F Filipowski sp.j.
Meter Type	LE-03, LE-03M-T, LE-03MQ, LE-03MB, LE-03Q, LE-03 V2, LE-03M-T V2, LE-03MQ V2, LE-03MB V2, LE-03Q V2
Voltage Rating (U_n)	3x230/400V
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	3p4w, 3p3w, 1p2w
Temperature Range	-25°C to +55°C
Software/ Firmware Version No	V1.3
Identification Location	Nameplate
Bill Of Materials Number	20151210LE-03 20151210LE-03M-T 20151210LE-03MQ 20151210LE-03MB 20151210LE-03Q
IP Rating	IP51
Insulation Protective Class	Class II
LED Pulse Constant	400imp/kWh
Impulse Voltage Rating	6kV
AC Voltage Rating	4kV
Main Cover Sealing Type	4 clips one of which is ultrasonic welded
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	Nameplate

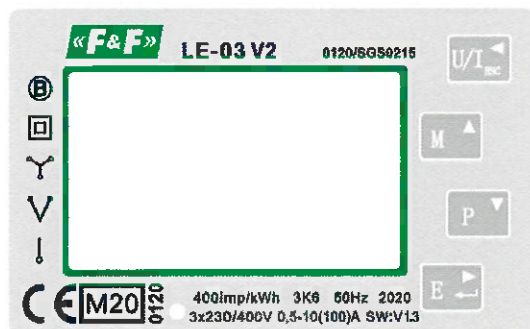
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2. Photograph of Meters and Sealing Plans

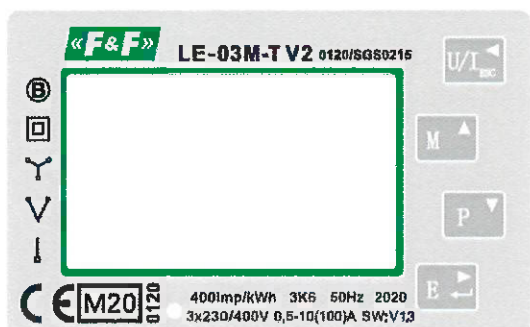


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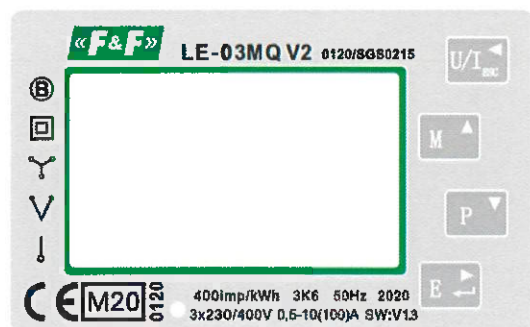
3. Examples of Nameplates



«F&F»
LE-03 V2 0120/SGS0215
Three Phase Energy Meter
 3x230/400V AC 0,5-10(100)AAC 50Hz 2020
 400imp/kWh EN50470-1/3 IP51 SW:1.3 CAT III
CE M20 0120 
 F&F Filipowski sp.j.
 ul.Konstantynowska 79/81,95-200 Pabianice, Poland
 www.fif.com.pl



«F&F»
LE-03M-T V2 0120/SGS0215
Three Phase Energy Meter
 3x230/400V AC 0,5-10(100)AAC 50Hz 2020
 400imp/kWh EN50470-1/3 IP51 SW:1.3 CAT III
CE M20 0120 
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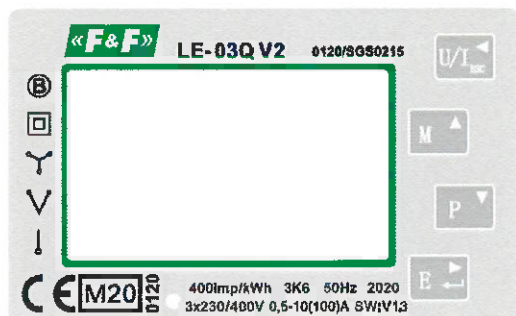


«F&F»
LE-03MQ V2 0120/SGS0215
Three Phase Energy Meter
 3x230/400V AC 0,5-10(100)AAC 50Hz 2020
 400imp/kWh EN50470-1/3 IP51 SW:1.3 CAT III
CE M20 0120 
 F&F Filipowski sp.j.
 ul.Konstantynowska 79/81,95-200 Pabianice, Poland
 www.fif.com.pl



«F&F»
LE-03MB V2 0120/SGS0215
Three Phase Energy Meter
 3x230/400V AC 0,5-10(100)AAC 50Hz 2020
 400imp/kWh EN50470-1/3 IP51 SW:1.3 CAT III
CE M20 0120 
 F&F Filipowski sp.j.
 ul.Konstantynowska 79/81,95-200 Pabianice, Poland
 www.fif.com.pl

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LE-03Q V2 0120/SGS0215
Three Phase Energy Meter
 3x230/400V AC 0,5-10(100)AAC 50Hz 2020
 400imp/kWh EN50470-1/3 IP51 SW:1.3 CAT III
 CE       **3K6**
 F&F Filipowski sp.j.
 ul.Konstantynowska 79/81,95-200 Pabianice, Poland
www.fif.com.pl

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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

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		Influence Factors for Temperature. Frequency & Voltage					
Current	PF Cos	-25	-10	5	30	40	55
I _{min}	1.0	0.46	0.34	0.14	0.18	0.29	0.52
I _{tr}	1.0	0.57	0.39	0.19	0.11	0.24	0.46
10I _{tr}	1.0	0.64	0.45	0.25	0.06	0.20	0.42
I _{max}	1.0	0.75	0.60	0.44	0.26	0.23	0.30
I _{tr}	0.5ind	0.56	0.40	0.20	0.14	0.24	0.49
10I _{tr}	0.5ind	0.60	0.43	0.23	0.11	0.23	0.45
I _{max}	0.5ind	0.62	0.47	0.30	0.05	0.10	0.28
I _{tr}	0.8cap	0.65	0.46	0.27	0.11	0.21	0.43
10I _{tr}	0.8cap	0.62	0.44	0.24	0.12	0.24	0.46
I _{max}	0.8cap	0.69	0.55	0.37	0.16	0.14	0.28
L1							
I _{tr}	1.0	0.84	0.60	0.32	0.08	0.20	0.48
10I _{tr}	1.0	0.97	0.71	0.46	0.10	0.13	0.36
I _{max}	1.0	0.93	0.70	0.48	0.16	0.06	0.25
I _{tr}	0.5ind	0.60	0.32	0.09	0.25	0.42	0.66
10I _{tr}	0.5ind	0.79	0.56	0.29	0.12	0.27	0.53
I _{max}	0.5ind	0.84	0.63	0.40	0.10	0.11	0.33
L2							
I _{tr}	1.0	0.40	0.26	0.09	0.08	0.16	0.37
10I _{tr}	1.0	0.42	0.31	0.19	0.08	0.17	0.36
I _{max}	1.0	0.44	0.36	0.25	0.08	0.08	0.23
I _{tr}	0.5ind	0.20	0.09	0.24	0.27	0.35	0.53
10I _{tr}	0.5ind	0.43	0.30	0.17	0.10	0.20	0.40
I _{max}	0.5ind	0.46	0.35	0.25	0.09	0.06	0.20
L3							
I _{tr}	1.0	0.55	0.37	0.15	0.14	0.30	0.51
10I _{tr}	1.0	0.51	0.33	0.11	0.20	0.33	0.56
I _{max}	1.0	0.55	0.39	0.21	0.10	0.21	0.52
I _{tr}	0.5ind	0.41	0.24	0.06	0.32	0.46	0.66
10I _{tr}	0.5ind	0.41	0.22	0.04	0.31	0.46	0.67
I _{max}	0.5ind	0.43	0.30	0.34	0.17	0.30	0.53

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5. Annex of Variants

Product Variant Identification Details:

Type Designation	Description of meter
LE-03M-T:	Three phase, multi-function, multi-tariff, 2 pulse outputs and 1 RS485 Modbus communication port
LE-03MQ:	Three phase, multi-function, 2 pulse outputs and 1 RS485 communication port
LE-03MB:	Three phase, multi-function, 2 pulse outputs and 1 Mbus communication port
LE-03Q:	Three phase, multi-function, 2 pulse outputs
LE-03:	Three phase, 2 pulse outputs and 1 RS485 communication port
LE-03M-T V2:	Three phase, multi-function, multi-tariff, 2 pulse outputs and 1 RS485 Modbus communication port
LE-03MQ V2:	Three phase, multi-function, 2 pulse outputs and 1 RS485 communication port
LE-03MB V2:	Three phase, multi-function, 2 pulse outputs and 1 Mbus communication port
LE-03Q V2:	Three phase, multi-function, 2 pulse outputs
LE-03 V2:	Three phase, 2 pulse outputs and 1 RS485 communication port

Modifications to the meter(s) described according to approval No.**0120/SGS0215** 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	17/12/2015	Initial Issue
2	14/09/2020	Change of directive to 2014/32/EU, nameplate designs added and addition of LE-03 V2, LE-03M-T V2, LE-03MQ V2, LE-03MB V2, LE-03Q V2 model variants

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END OF CERTIFICATE