EC Type Examination Certificate Number: **0120/ SGS0129**

EDMI (Shenzhen) Co. Ltd

Floor 2 & 3
Building 2
Zhong Yuntai Industrial Park
Tang Tou 1st Road
Shi Yan
Bao An
Shenzhen
Guangdong
Province
P. R. China

Instrument Identification:
Mk31

Single Phase, Active Import/ Export, Multi-rate, Electricity Meter
Instrument Traceable Number
0120/ SGS0129
has been assessed and certified as meeting the requirements of

EC Directive 2004/22/EC

on 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 6th February 2014 until 5th February 2024
Issue 1

Certification is based on report number(s)
Report 179466 dated 6th February 2014

Authorised Signature

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1. Technical Data

Manufacturer	EDMI (Shenzhen)
Meter Type	Mk31
Voltage Rating *(Un)*	220-240V
Current Rating *(Imin – Iref (Imax))*	0,25-5(100)A
Frequency *(Fn)*	50Hz
Active Accuracy Class *(kWh)*	A or B (kWh)
Type of circuit	1p2w
Temperature Range	-40°C to +70°C
Software/ Firmware Version No Identification Location	Software Version V1.5.4 r3 Firmware Version V1.5b LCD
Bill Of Materials Number	BOM-MK3100-907 10-15
IP Rating	IP54
Insulation Protective Class	Class II
LED Pulse Constant	1600 imp/ kWh
Impulse Voltage Rating	4kV
AC Voltage Rating	10kV
Main 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

2. Photograph of Meter and Sealing Plan

3. Influence factors for temperature, frequency and voltage

		Influence Factors for temperature, frequency and voltage							
Current	**PF Cos**	-40	-25	-10	5	30	40	55	70
Imin	1.0	*0.56*	*0.45*	*0.29*	*0.15*	*0.01*	*0.04*	*0.07*	*0.12*
Itr	1.0	*0.56*	*0.42*	*0.32*	*0.06*	*0.02*	*0.07*	*0.12*	*0.23*
10Itr	1.0	*0.46*	*0.36*	*0.24*	*0.13*	*0.04*	*0.09*	*0.18*	*0.26*
Imax	1.0	*0.28*	*0.23*	*0.15*	*0.08*	*0.04*	*0.09*	*0.16*	*0.21*
Itr	0.5ind	*0.59*	*0.44*	*0.34*	*0.06*	*0.04*	*0.04*	*0.07*	*0.10*
10Itr	0.5ind	*0.40*	*0.31*	*0.19*	*0.11*	*0.04*	*0.09*	*0.16*	*0.22*
Imax	0.5ind	*0.15*	*0.11*	*0.04*	*0.02*	*0.12*	*0.16*	*0.22*	*0.26*
Itr	0.8cap	*0.60*	*0.46*	*0.33*	*0.06*	*0.01*	*0.04*	*0.10*	*0.17*
10Itr	0.8cap	*0.46*	*0.37*	*0.25*	*0.14*	*0.03*	*0.09*	*0.17*	*0.26*
Imax	0.8cap	*0.25*	*0.19*	*0.11*	*0.04*	*0.09*	*0.13*	*0.21*	*0.26*

During the type approval examination the influence factors for temperature, frequency and voltage are determined per load point. The table below presents 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

4. Annex of Variants

Product Variant Identification Details:

	Type Designation		Description of meter
2001 – 31	Mk31 Single Phase, Multi-rate, Electricity Meter	eg	S - 41E - 2M11 – 01210 – 113 – 11110 – 0032 - 10

Market Area Code
S = Sample
T =Thailand
M =Malaysia
C =China
P =Philippine
I = Indonesia
V =Vietnam
L = Latin
A = Africa
O= Others

Rated Voltage
2 = 220V
3 = 230V
4 = 240V

Accuracy
1 = Class B, Class 1, 50Hz
2 = Class A, Class 2, 50Hz

Current Range
A = 5(15)A
B = 5(20)A
C = 5(30)A
D = 5(60)A
E = 5(100)A
F = 10(40)A
G = 10(60)A
H = 10(100)A
I = 15(45)A
J = 20(80)A
K = 30(100)A

Terminal O/P configuration
1 = LLNN (Future Features)
2 = LNNL
3 = L1L2L2L1,1P3W (Future Features)
4 = L1L1L2L2,1P3W (Future Features)

Terminal Cover Length
M = Middle length Terminal Cover
S = Short Terminal Cover （Future Features)

Terminal Cover type
0 = Opaque PC
1 = Transparent PC

Button option
0 = No Button
1 = Single Button
2 = Reserved

Local Communication port
0 = IEC Flag
1 = No optical port
2 = Modulated Infra Red

Remote Comm Port (Aux Port 1/2/3)
0 = No remote comm
1 = RS485 (2-wire)
4 = RF, for CIU or HHU
5 = RF, for CIU or HHU Dry contact input
6 = Reserved

Aux Port 1 Opt (upper Screw terminals)
0 = No I/O
1 = Energy pulse output

2 = RS485
3 = Dry contact input
4 = Reserved

Aux Port 2 Options(Plug-in Type)
0 = No I/O
1 = Energy pulse output
2 = RS485
3 = Open terminal cover detection
4 = Time signal output
5 = Dry contact input
6 = Reserved

Aux Port 3 Opt (lower screw terminals)
0 = No I/O
1 = Energy pulse output
2 = RS485
3 = Time signal output
4 = Dry contact input
5 = Reserved

LCD Display
0 = Not fitted
1 = LCD, 16x7.1mm, 7 digits

LCD Backlight
0 = No Backlight
1 = With Backlight

LED Options
0 = No LED
1 = 1 Pulse LED
2 = Pulse LED + Rev Energy LED
3 = Pulse LED + Rev Energy LED + Tamper LED
4 = Pulse LED + Rev Energy LED + Tamper LED + 1 Spare LED
5 = Energy Pulse LED + Reverse Energy LED + Tamper LED + 2 Spare LEDs

Open terminal cover detection option (tamper feature,Assigned to Auxiliary Port 2)
0 = Not Fitted
1 = Fitted

Open lid cover detection option (tamper feature)
0 = Not fitted
1 = Fitted

Neutral Current Sensor
0 = Without Neutral Current Sensor
1 = With Neutral / L2 Current Sensor

Magnetic Tamper
0 = No magnetic tamper detection
1 = With magnetic tamper detection

Other Tamper Detection (future features)
0 = Reserved
1 = Reserved

Battery Options
0 = Standard 3.6V Lithium internal battery
1 = no battery

Internal Clock Options
0 = Calibrated Clock, 15s/month at 23°C
1 = standard clock 60s/month at 23°C
2 = no RTC

EEPROM Size
1 = 64k Bits
2 = 128k Bits
3 = 256k Bits
4 = Reserved

Flash Memory Size
0 = Not fitted
1 = 1M Bytes
2 = 2M Bytes
3 = 4M Bytes
4 = 8M Bytes
5 = Reserved

Disconnection Relay
0 = Not fitted
1 = Fitted

Reserved
0 = Reserved
1 = Reserved

Modifications to the meter(s) described according to approval No.**0120/ SGS0129** must be notified to the issuing body to confirm the meter(s) continuing compliance to the relevant pattern approval standard(s).

5. Document Revision History

Issue	Date	Comments
1	06/02/14	Initial Issue