



EU Type Examination Certificate Number: **0120/SGS0198**

Smart Process & Controls Ltd.

Unit 11 Totman Close
Brook Road Ind Est
Rayleigh
Essex
SS6 7UZ

Instrument Identification:
SMARTRAIL X100 Series
PS7
MR100

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

Instrument Traceable Number
0120/SGS0198

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 29th September 2025
Issue 5

Certification is based on report number(s) SHES141200649301 issued 16th April 2015
EMA207767 issued 9th October 2015
EMA217565 Issued 23rd November 2015
EMA218695/1 Issued 13th April 2016
EMA223971/1 issued 9th June 2016

Authorised Signature


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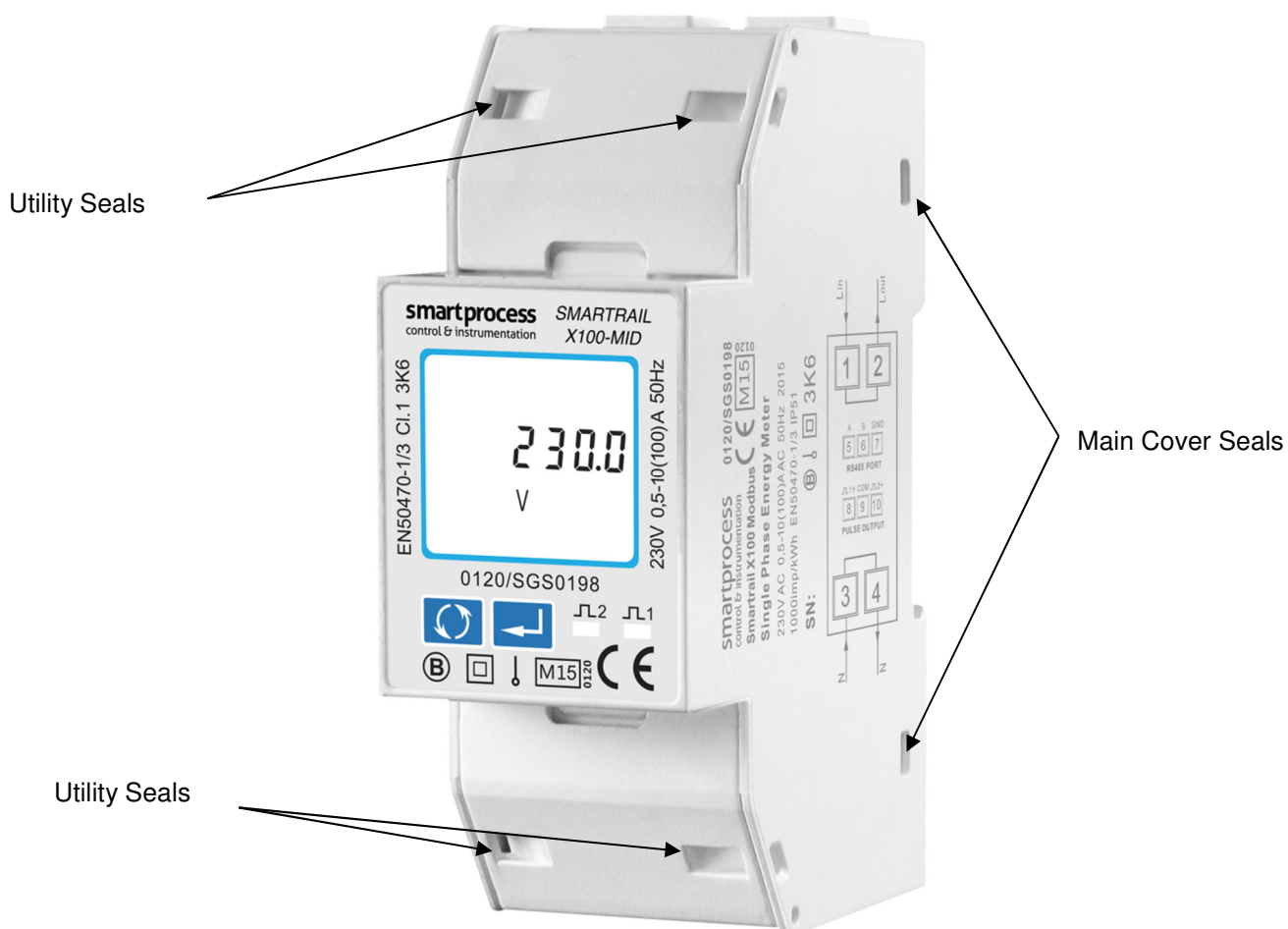
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1. Technical Data

Manufacturer	Smart Process & Control Ltd.
Meter Type	SMARTRAIL X100-MID, SMARTRAIL X100B-MID, SMARTRAIL X100P-MID, SMARTRAIL X100DR-MID, SMARTRAIL X100-MBUS-MID, PS7, MR100
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/ Firmware Version No	V1.2
CRC Checksum	0x000052F2
Identification Location	Nameplate
Bill Of Materials Number	SDM230M-2-V1.2
IP Rating	IP51
Insulation Protective Class	Class II
LED Pulse Constant	1000imp/ kWh
Impulse Voltage Rating	6kV
AC Voltage Rating	4kV
Main Cover Sealing Type	4 x Wire & Crimp
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

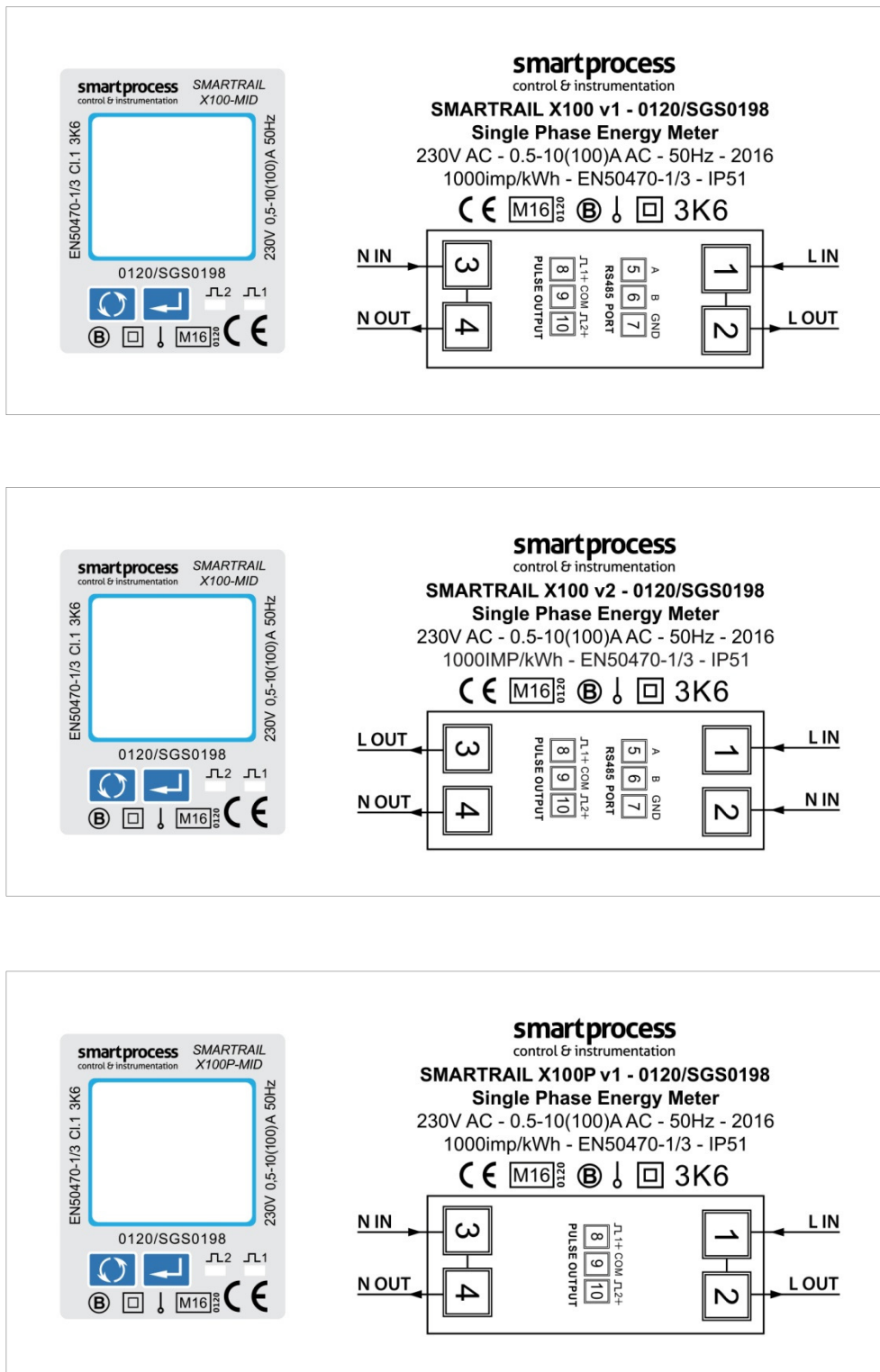
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2. Photograph of Meter and Sealing Plan

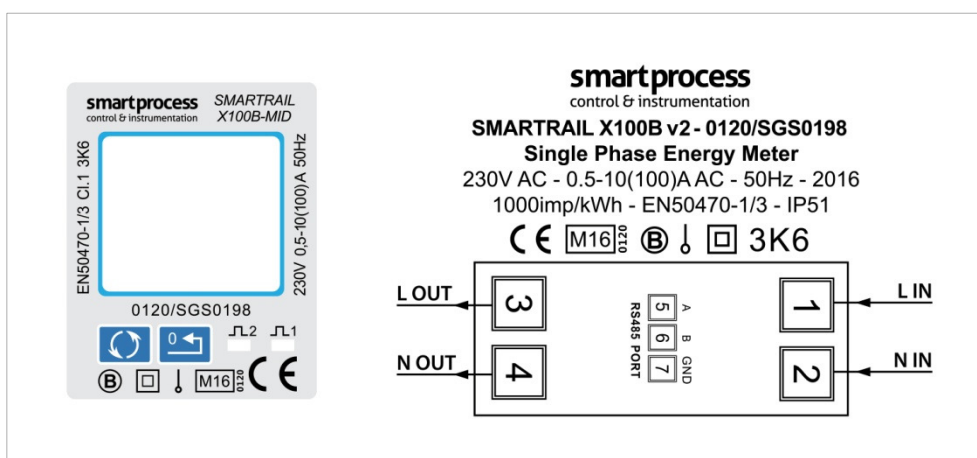
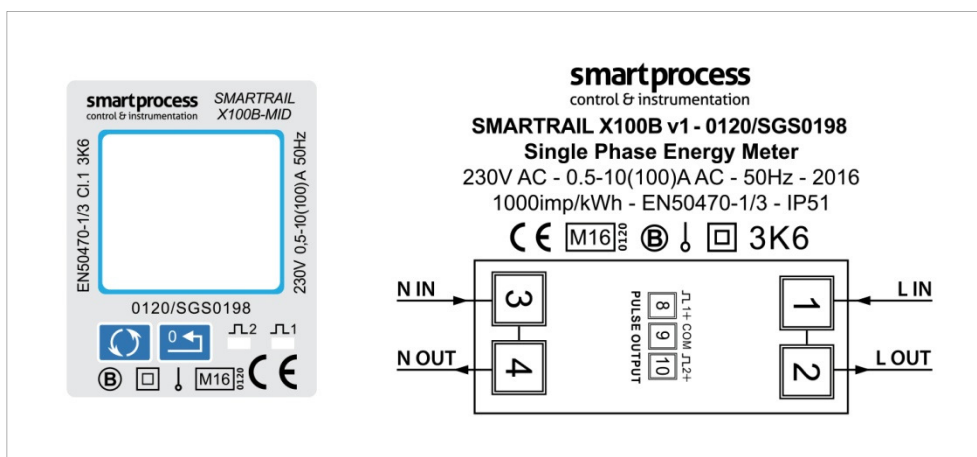
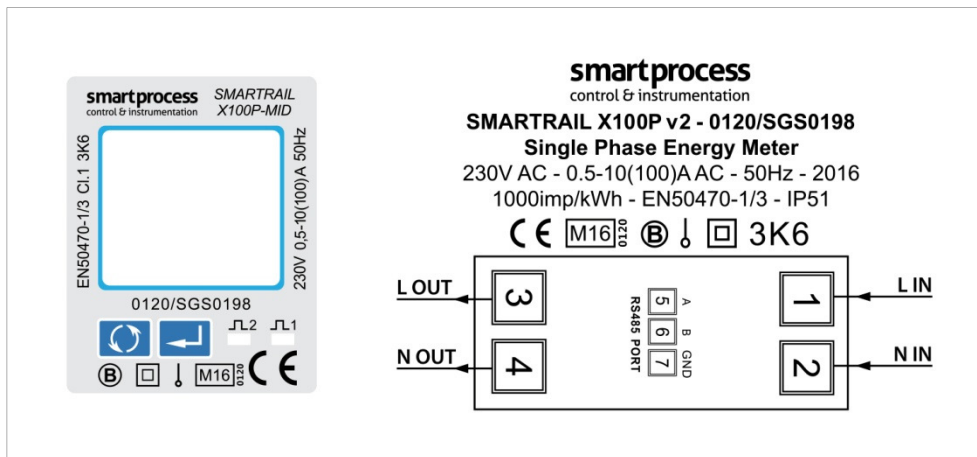



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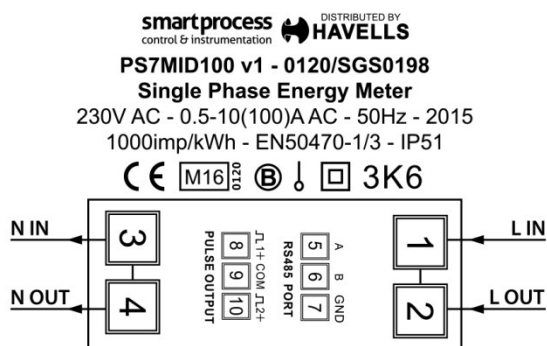
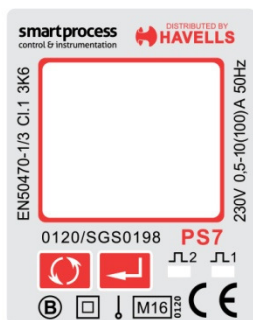
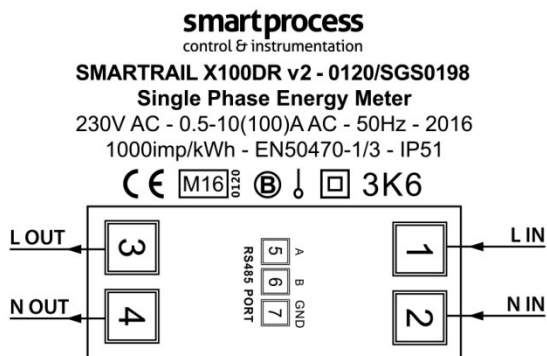
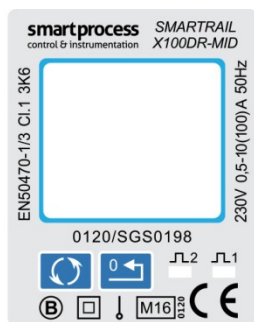
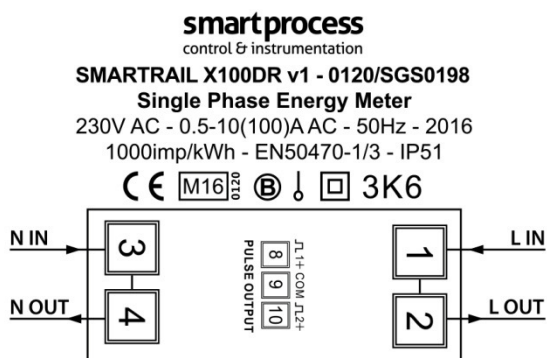
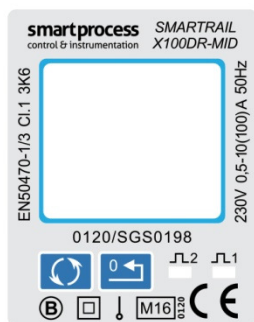
3. Examples of Nameplates




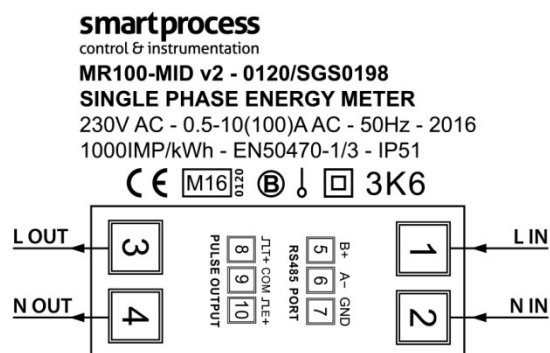
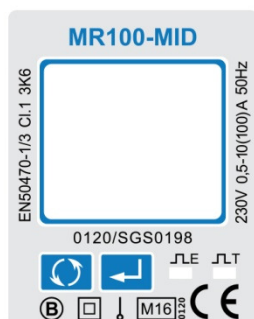
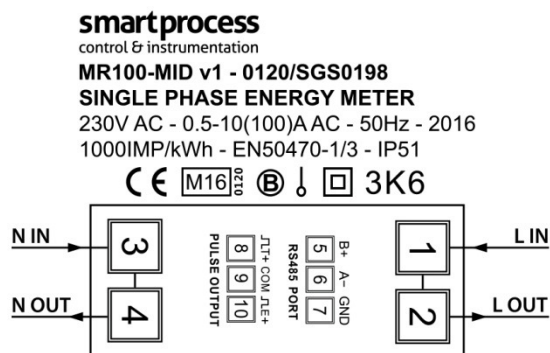
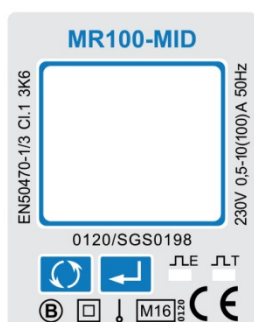
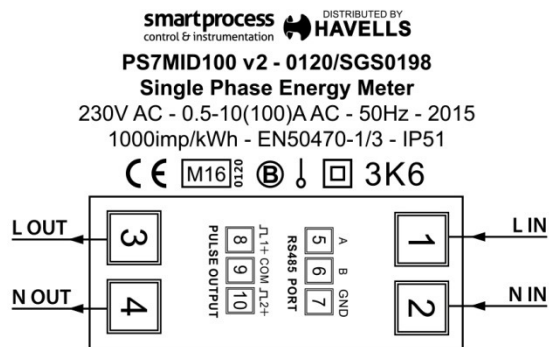
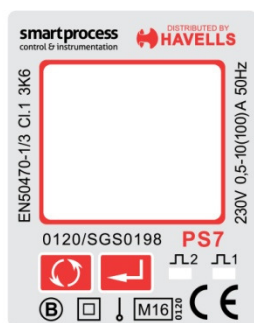
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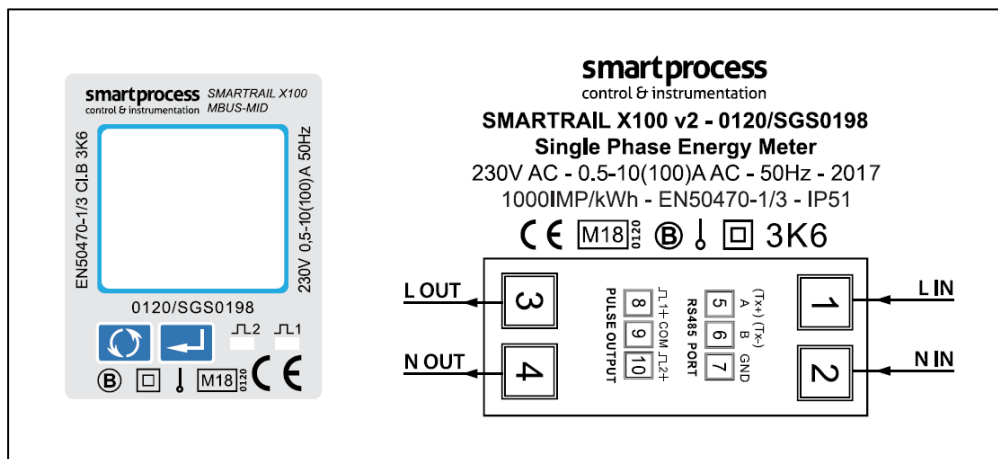
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4. Calculation of the composite error/ MPE


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

		Influence Factors for Temperature, Voltage & Frequency					
Current	PF Cos	-25 °C	-10 °C	5 °C	30 °C	40 °C	55 °C
I _{min}	1.0	0.45	0.33	0.23	0.15	0.17	0.23
I _{tr}	1.0	0.44	0.31	0.19	0.07	0.10	0.18
10I _{tr}	1.0	0.42	0.29	0.18	0.03	0.08	0.16
I _{max}	1.0	0.27	0.19	0.12	0.03	0.06	0.12
I _{tr}	0.5ind	0.48	0.36	0.27	0.17	0.18	0.22
10I _{tr}	0.5ind	0.41	0.28	0.17	0.03	0.08	0.17
I _{max}	0.5ind	0.27	0.18	0.12	0.04	0.07	0.13
I _{tr}	0.8cap	0.45	0.31	0.20	0.09	0.12	0.18
10I _{tr}	0.8cap	0.40	0.27	0.16	0.04	0.10	0.19
I _{max}	0.8cap	0.26	0.19	0.11	0.05	0.08	0.15


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5. Annex of Variants

Product Variant Identification Details:

Type Designation	Description of meter
X100-MID: PS7 MR100	Single tariff, total active energy, resettable active energy, import active energy, export active energy, total reactive energy, import reactive energy, export reactive energy, active power, reactive power, voltage, current, frequency, power factor, power demand, RS485 Modbus.
X100P-MID:	Single tariff, total active energy, resettable active energy, import active energy, export active energy total reactive energy import reactive energy export reactive energy active, power reactive, power, voltage, current, frequency, power factor, power demand.
X100DR-MID:	Single tariff, total active energy, resettable energy, active power
X100B-MID:	Single tariff, import active energy, export active energy, import active power, export active power, total active energy, total active power
X100-MBUS-MID	Single tariff, total active energy, resettable active energy, import active energy, export active energy, total reactive energy, import reactive energy, export reactive energy, active power, reactive power, voltage, current, frequency, power factor, power demand, Mbus communication

Modifications to the meter(s) described according to approval No.**0120/SGS0198** 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	23/11/2015	Initial Issue
2	13/04/2016	PCB modification due to new terminal arrangement. New BOM number.
3	06/05/2016	Neutral wire replaced with brass bar. Updated BOM.
4	09/06/2016	MR100, X100P-MID, X100-DR-MID & X100B-MID models added. Name plates and markings section added.
5	02/11/2018	X100-MBUS-MID model added. Approval updated to reference directive 2014/32/EU

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END OF CERTIFICATE