



SGS

EC Type Examination Certificate Number: 0120/ SGS0098

Schneider Electric

Wuxi Pro-Face Electronics Co. Ltd
51-A block of Wuxi High-tech Industrial Development Zone
Wuxi
Jiangsu, 214028
P.R.C

Instrument Identification:
iEM31**
iEM33**

Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter

Instrument Traceable Number
0120/ SGS0098

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 until 2nd April 2022
Issue 8

Certification is based on report number(s)
EMA153420-2 Issue 2 dated 3rd April 2012, EMA184255/1/MID dated 7th March 2014, EMA184255/1/1p4w dated 21st August 2015

Authorised Signature

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	EC-Type Examination Certificate Number:	
	0120/ SGS0098	
	Issue Number: 8	Dated: 27 th November 2015

1. Technical Data – iEM31xx

Manufacturer	Schneider Electric
Meter Type	iEM31xx
Voltage Rating (U_n)	100/173V - 277/480V
Current Rating (I_{min} – I_{ref} (I_{max}))	0,5-10(63)A
Frequency (F_n)	50Hz
Active Accuracy Class (kWh)	A or B (kWh)
Type of circuit	3p4w, 1p4w
Temperature Range	-25°C to +55°C
Software/ Firmware Version No's	V1.0.200, V1.0.300, V1.0.400, V1.0.500, V1.2.000,V1.3.007
Identification Location	LCD
Bill Of Materials Number	BOM_MainboardE_V02 BOM_HMI_V00 BOM_Comm_V03
IP Rating *= The meter casing is only IP20 complaint. Therefore the meter MUST always be fitted into an IP51 approved enclosure.	IP20 Casing*
Insulation Protective Class	Class II
LED Pulse Constant	500 imp/ kWh
Impulse Voltage Rating	6kV
AC Voltage Rating	4kV
Main Cover Sealing Type	1 x Tamper-proof Adhesive Label
Integrity of meter	Inaccessible without breaking seals
Intended Location of the Meter	Indoor
Type of Register	LCD
Terminal Arrangement(s)	BS

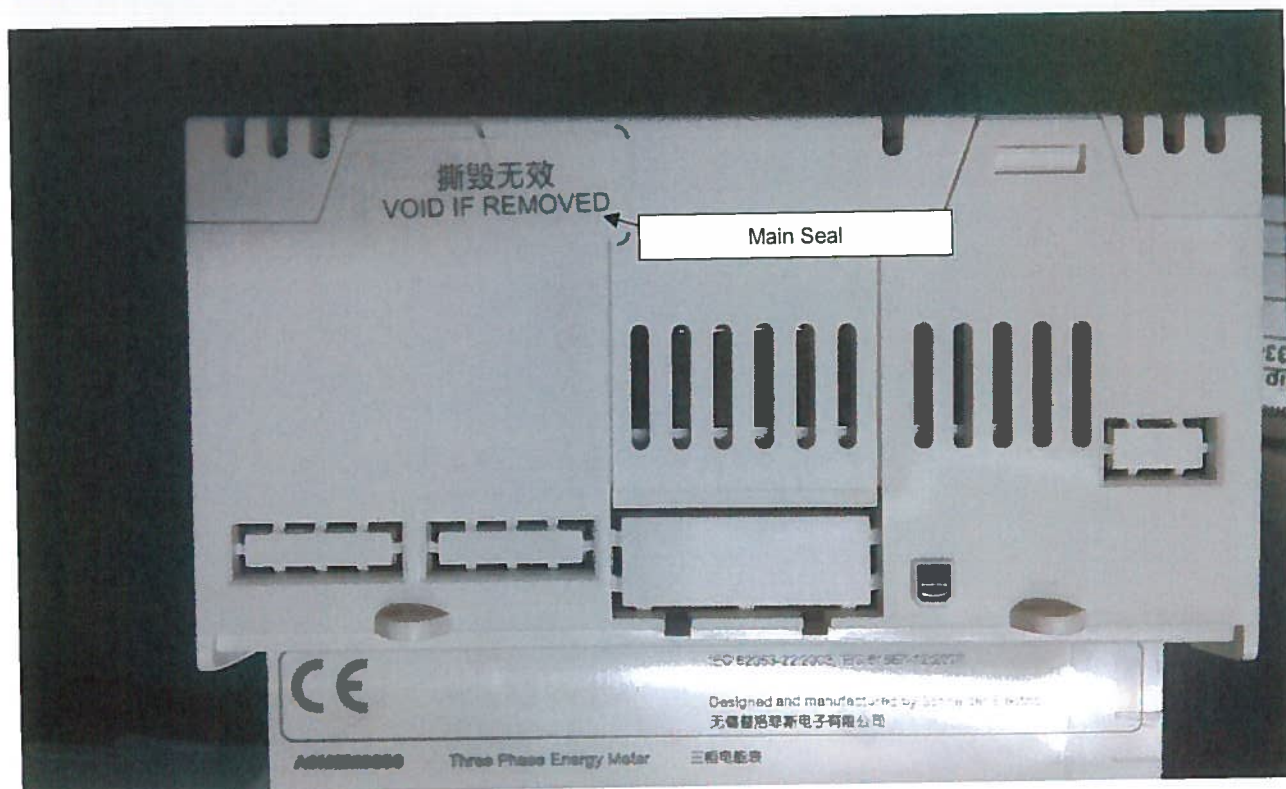
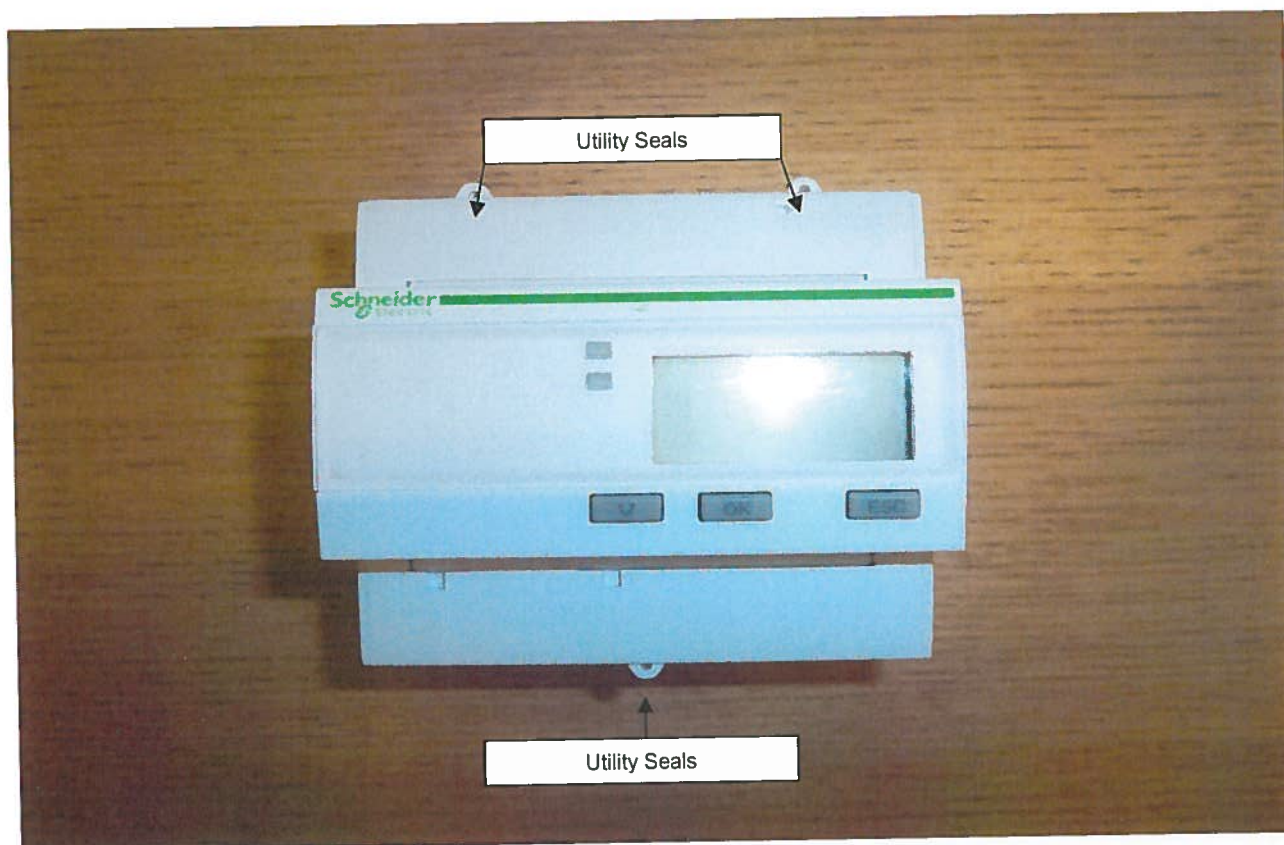
	EC-Type Examination Certificate Number:	
	0120/ SGS0098	
	Issue Number: 8	Dated: 27 th November 2015

Technical Data – iEM33xx

Manufacturer	Schneider Electric
Meter Type	iEM33xx
Voltage Rating (<i>Un</i>)	100/173V - 277/480V
Current Rating (<i>I_{min}</i> – <i>I_{ref}</i> (<i>I_{max}</i>))	1-20(125)A
Frequency (<i>Fn</i>)	50Hz
Active Accuracy Class (<i>kWh</i>)	A or B (kWh)
Type of circuit	3p4w, 1p4w
Temperature Range	-25°C to +55°C
Software/ Firmware Version No's	V1.0.200, V1.05.00, V1.0.904, V1.1.003
Identification Location	LCD
Bill Of Materials Number	iEM3310 – HRB90606 iEM3355 – HRB90608
IP Rating	IP20 Casing*
* = The meter casing is only IP20 complaint. Therefore the meter MUST always be fitted into an IP51 approved enclosure.	
Insulation Protective Class	Class II
LED Pulse Constant	200 imp/ kWh
Impulse Voltage Rating	6kV
AC Voltage Rating	4kV
Main Cover Sealing Type	1 x Tamper-proof Adhesive Label
Integrity of meter	Inaccessible without breaking seals
Intended Location of the Meter	Indoor
Type of Register	LCD
Terminal Arrangement(s)	BS

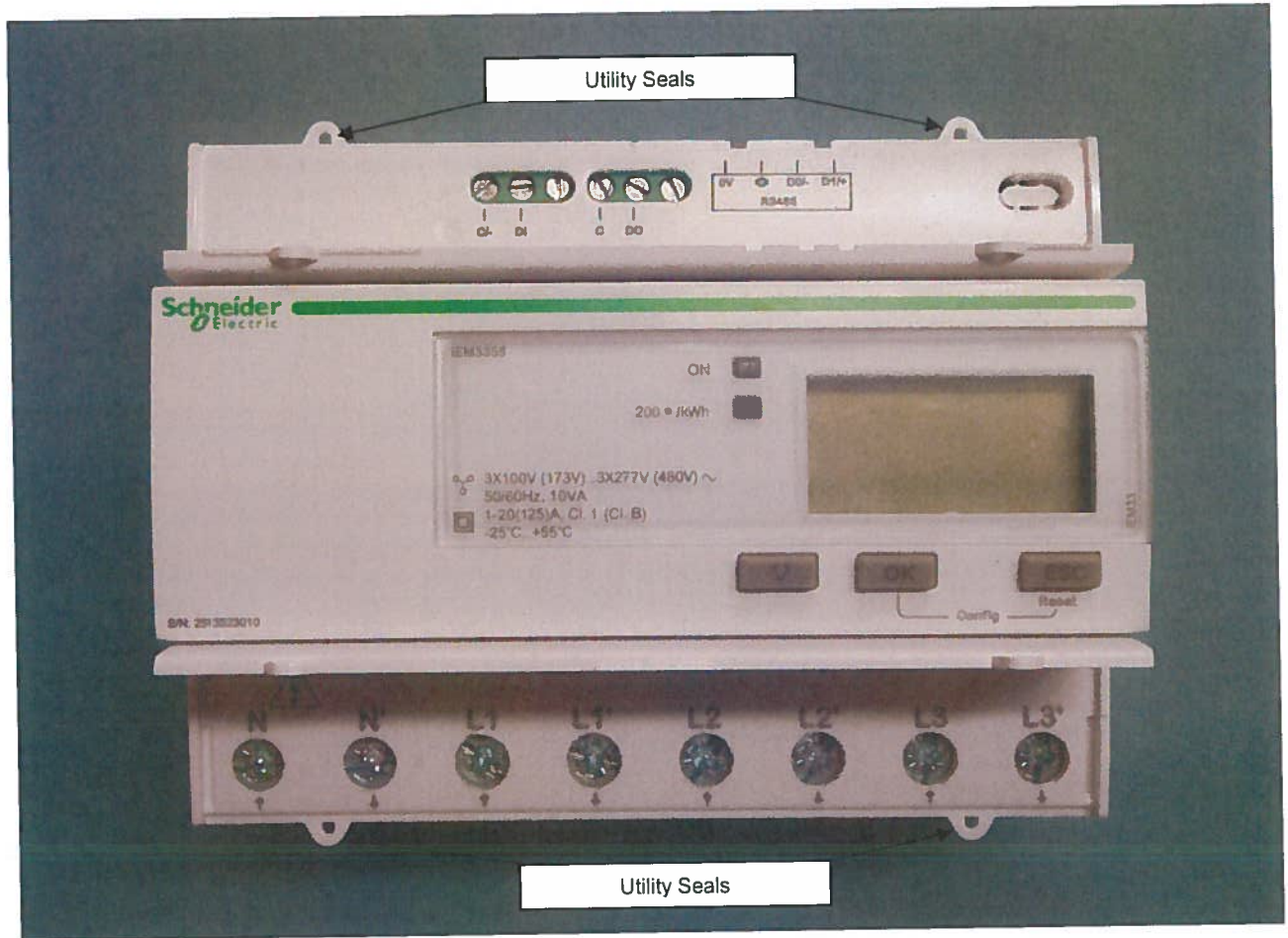
	EC-Type Examination Certificate Number:	
	0120/ SGS0098	
	Issue Number: 8	Dated: 27 th November 2015

2. Photograph of Meter and Sealing Plan for iEM31xx



	EC-Type Examination Certificate Number:	
	0120/ SGS0098	
	Issue Number: 8	Dated: 27 th November 2015

Photograph of Meter and Sealing Plan for iEM33xx



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	0120/ SGS0098	
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3. Calculation of the composite error/ MPE for iEM31xx

In addition to the accuracy requirements the composite error e_c of the meter is shown below

The composite error at a certain load is calculated from the following formula:

$$e_c = \sqrt{e^2(l.\cos\theta) + e^2(T.l.\cos\theta) + e^2(U.l.\cos\theta) + e^2(f.l.\cos\theta)}$$

where

$e^2(l.\cos\theta)$	=	Intrinsic error of meter at a certain load
$e^2(T.l.\cos\theta)$	=	Additional error due to variation of the temperature at the same load
$e^2(U.l.\cos\theta)$	=	Additional error due to variation of the voltage at the same load
$e^2(f.l.\cos\theta)$	=	Additional error due to variation of the frequency at the same load

Ambient Temperature Range 5 to 30 Degrees C						
Current	PF Cos	e(lcos)	e(Tlcos)	e(Ulcos)	e(flcos)	%MPE
Imin	1.0	-0.24	-0.17	-0.24	-0.21	0.43
Itr	1.0	-0.05	0.06	-0.20	-0.08	0.23
10Itr	1.0	-0.02	0.08	0.10	-0.02	0.13
Imax	1.0	-0.01	0.09	0.09	-0.02	0.13
Itr	0.5ind	0.17	0.32	0.29	0.50	0.68
10Itr	0.5ind	0.04	0.26	0.19	0.41	0.52
Imax	0.5ind	0.33	0.33	0.23	0.47	0.70
Itr	0.8cap	-0.11	-0.19	-0.28	-0.33	0.49
10Itr	0.8cap	-0.04	-0.11	-0.17	-0.24	0.32
Imax	0.8cap	-0.10	-0.12	-0.17	-0.25	0.34

Ambient Temperature Range -10 to 40 Degrees C						
Current	PF Cos	e(lcos)	e(Tlcos)	e(Ulcos)	e(flcos)	%MPE
Imin	1.0	-0.24	-0.10	-0.24	-0.21	0.41
Itr	1.0	-0.05	-0.01	-0.20	-0.08	0.22
10Itr	1.0	-0.02	0.09	0.10	-0.02	0.14
Imax	1.0	-0.01	0.09	0.09	-0.02	0.13
Itr	0.5ind	0.17	0.55	0.29	0.50	0.82
10Itr	0.5ind	0.04	0.41	0.19	0.41	0.61
Imax	0.5ind	0.33	0.49	0.23	0.47	0.79
Itr	0.8cap	-0.11	-0.26	-0.28	-0.33	0.52
10Itr	0.8cap	-0.04	-0.20	-0.17	-0.24	0.36
Imax	0.8cap	-0.10	-0.22	-0.17	-0.25	0.39



EC-Type Examination Certificate Number:

0120/ SGS0098

Issue Number: 8

Dated: 27th November 2015

Ambient Temperature Range -25 to 55 Degrees C						
Current	PF Cos	e(lcos)	e(Tlcos)	e(Ulcos)	e(flcos)	%MPE
Imin	1.0	-0.24	-0.10	-0.24	-0.21	0.41
Itr	1.0	-0.05	-0.10	-0.20	-0.08	0.24
10ltr	1.0	-0.02	0.13	0.10	-0.02	0.17
Imax	1.0	-0.01	0.14	0.09	-0.02	0.17
Itr	0.5ind	0.17	-0.12	0.29	0.50	0.61
10ltr	0.5ind	0.04	-0.15	0.19	0.41	0.48
Imax	0.5ind	0.33	-0.07	0.23	0.47	0.62
Itr	0.8cap	-0.11	0.08	-0.28	-0.33	0.45
10ltr	0.8cap	-0.04	0.22	-0.17	-0.24	0.37
Imax	0.8cap	-0.10	0.19	-0.17	-0.25	0.37

Calculation of the composite error/ MPE for iEM33xx

In addition to the accuracy requirements the composite error e_c of the meter is shown below

The composite error at a certain load is calculated from the following formula:

$$e_c = \sqrt{e^2(I.\cos\theta) + e^2(T.I.\cos\theta) + e^2(U.I.\cos\theta) + e^2(f.I.\cos\theta)}$$

where

$e^2(I.\cos\theta)$	=	Intrinsic error of meter at a certain load
$e^2(T.I.\cos\theta)$	=	Additional error due to variation of the temperature at the same load
$e^2(U.I.\cos\theta)$	=	Additional error due to variation of the voltage at the same load
$e^2(f.I.\cos\theta)$	=	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
Imin	1.0	0.45	0.46	0.46	0.42	0.42	0.41
Itr	1.0	0.34	0.34	0.31	0.33	0.29	0.29
10Itr	1.0	0.23	0.23	0.22	0.23	0.21	0.20
Imax	1.0	0.26	0.21	0.21	0.22	0.20	0.21
Itr	0.5ind	0.47	0.48	0.42	0.37	0.34	0.43
10Itr	0.5ind	0.35	0.36	0.42	0.34	0.37	0.38
Imax	0.5ind	0.41	0.41	0.41	0.38	0.38	0.39
Itr	0.8cap	0.49	0.49	0.46	0.47	0.44	0.45
10Itr	0.8cap	0.35	0.36	0.34	0.35	0.34	0.34
Imax	0.8cap	0.31	0.32	0.31	0.32	0.30	0.31
					0.00	0.00	0.00
L1							
Itr	1.0	0.26	0.25	0.25	0.29	0.23	0.25
10Itr	1.0	0.11	0.12	0.15	0.13	0.14	0.13
Imax	1.0	0.16	0.16	0.19	0.18	0.17	0.18
Itr	0.5ind	0.56	0.56	0.57	0.64	0.54	0.61
10Itr	0.5ind	0.43	0.43	0.52	0.46	0.49	0.48
Imax	0.5ind	0.38	0.38	0.45	0.40	0.41	0.43
L2							
Itr	1.0	0.41	0.41	0.36	0.33	0.32	0.32
10Itr	1.0	0.28	0.26	0.27	0.27	0.25	0.27
Imax	1.0	0.31	0.30	0.27	0.25	0.25	0.27
Itr	0.5ind	0.56	0.56	0.52	0.51	0.51	0.51
10Itr	0.5ind	0.38	0.38	0.47	0.42	0.40	0.42
Imax	0.5ind	0.46	0.52	0.45	0.42	0.42	0.46
L3							
Itr	1.0	0.49	0.48	0.47	0.47	0.48	0.48
10Itr	1.0	0.15	0.16	0.17	0.15	0.16	0.16
Imax	1.0	0.18	0.18	0.19	0.17	0.17	0.19
Itr	0.5ind	0.32	0.27	0.34	0.29	0.32	0.36
10Itr	0.5ind	0.35	0.35	0.45	0.41	0.42	0.39
Imax	0.5ind	0.75	0.75	0.75	0.29	0.76	0.76

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	0120/ SGS0098	
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4. Annex of Variants

Product Variant Identification Details:

Type Designation		Description of meter
Model	-	Description
iEM3110	-	Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter, with 1 pulse output
iEM3115	-	Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter, with Multi-tariff by 2 Digital Inputs
iEM3155	-	Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter, with 1 Digital Input & 1 Digital Output and modbus communication
iEM3135	-	Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter, with 1 Digital Input & 1 Digital Output and M-Bus communication.
iEM3165	-	Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter, with 1 Digital Input & 1 Digital Output and BACnet communication.
iEM3175	-	Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter, with 1 Digital Input and LonWorks communication.
iEM3310	-	Poly phase, Active Import/ Export (kWh), Direct Connected (125A max), Electricity Meter, with 1 Pulse out.
iEM3355	-	Poly phase, Active Import/ Export (kWh), Direct Connected (125A max), Electricity Meter, with 1 Digital Input, 1 Digital Output and Modbus (RS485) communication.
iEM3335	-	Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter, With 1 Digital Input & 1 Digital Output and M-Bus communication.
iEM3365	-	Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter, With 1 Digital Input & 1 Digital Output and BACnet communication.
iEM3375	-	Poly phase, Active Import/ Export (kWh), Direct Connected, Electricity Meter, With 1 Digital Input and LonWorks communication.

Modifications to the meter(s) described according to approval No.**0120/ SGS0098** 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	03/04/2012	Initial Issue
2	17/04/2012	Updated Address and Sealing Plan
3	10/06/2013	Minor Firmware update to V1.05.00 and additional comms build options
4	24/07/2013	iEM3165 additional comms build option
5	07/03/2014	New 125A Variants iEM3310 & iEM3355 to the existing family of meters
6	07/05/2014	Minor Firmware update to ALL iEM33xx variants from V1.0.902 to V1.0.904 and additional comms build options
7	21/08/2015	1P4W wiring configuration added
8	27/11/2015	Firmware update