KEMA Labs

EU-TYPE EXAMINATION CERTIFICATE

Basic Electronics Company Limited, CR # 2050129466
Al Hassan Al Basri Street, Al Khaldiah Al Janobiah District, Dammam,
Kingdom of Saudi Arabia

EU-Type Examination
Certificate No.
1654-23
Revision 5

Type	BE3100WC BE3160WC
Object	Electronic three-phase four-wire energy meter Direct connected

The object has been assessed and meets the requirements of

EU Directive 2014/32/EU,
Module B

The energy meter(s) meet(s) the essential requirements of Annex V of EU Directive 2014/32/EU, on the harmonization of the laws of Member States relating to the making available on the market of measuring instruments (recast).

This Certification is based on the report(s) listed in the report list in this Certificate.

This Certificate is valid until: June 6, 2034.

This Certificate comprises 11 pages in total.

Issued by KEMA B.V.
Klingelbeekseweg 195,
Arnhem, The Netherlands
Notified Body 2290

Alessandro Bertani
Director,
Services & Smart Technologies

Arnhem, June 6, 2024

REVISION OVERVIEW

The highest revision always replaces the earlier issued versions.

Rev. No.	Date of issue	Reason
0	October 19, 2023	First issue
1	November 30, 2023	Photo (type plate) update.
2	January 26, 2024	Correction on production locations listed
3	March 26, 2024	Report 1563-24 added
4	April 25, 2024	• Report 1563-24 revision updated • Pictures page 4 changed
5	June 6, 2024	Report 1563-24 revision updated

REPORT LIST

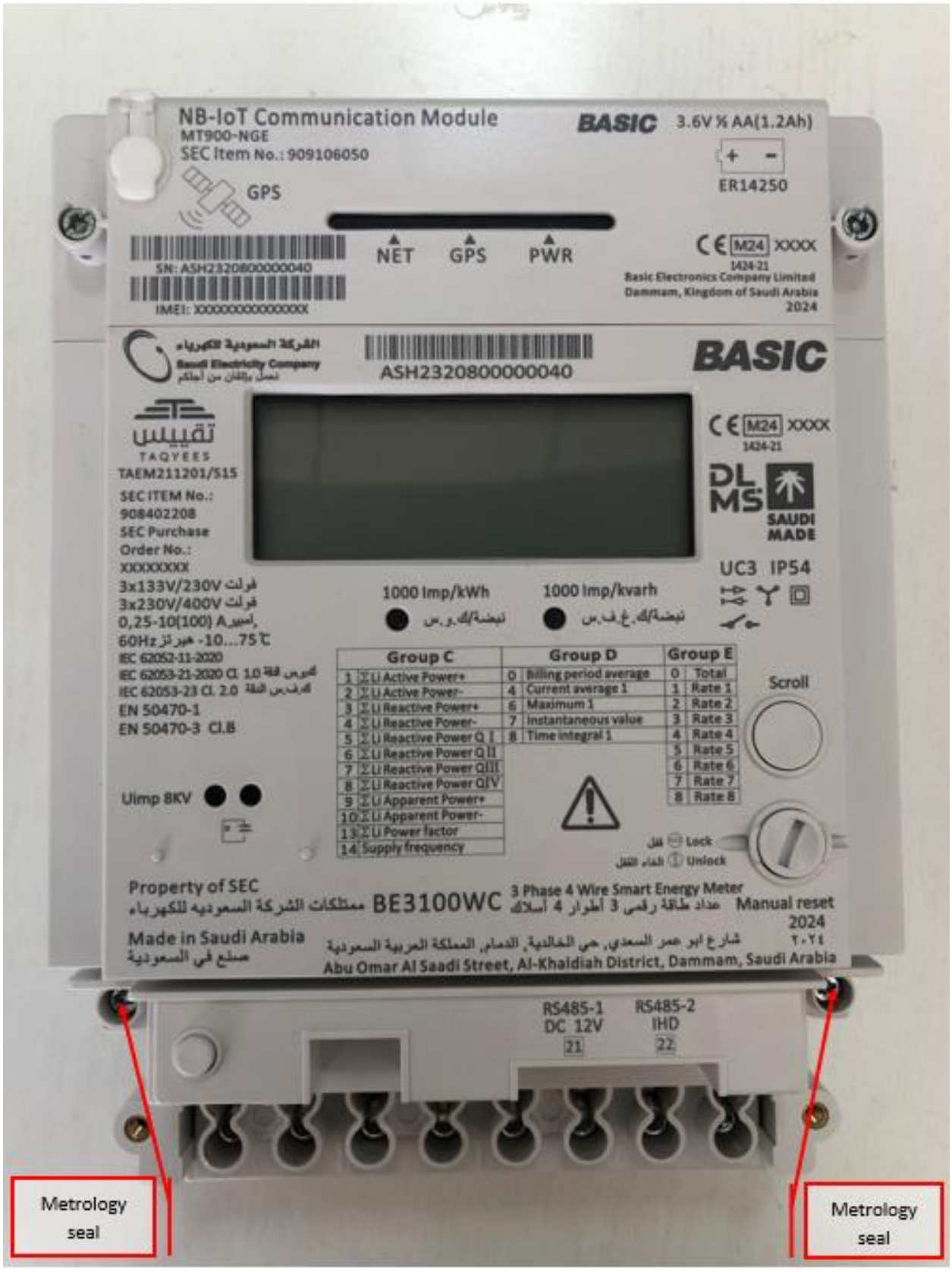
This Certificate is issued based on the following reports.

Report number	Revision
1652-23	2
1655-23	0
1563-24	2

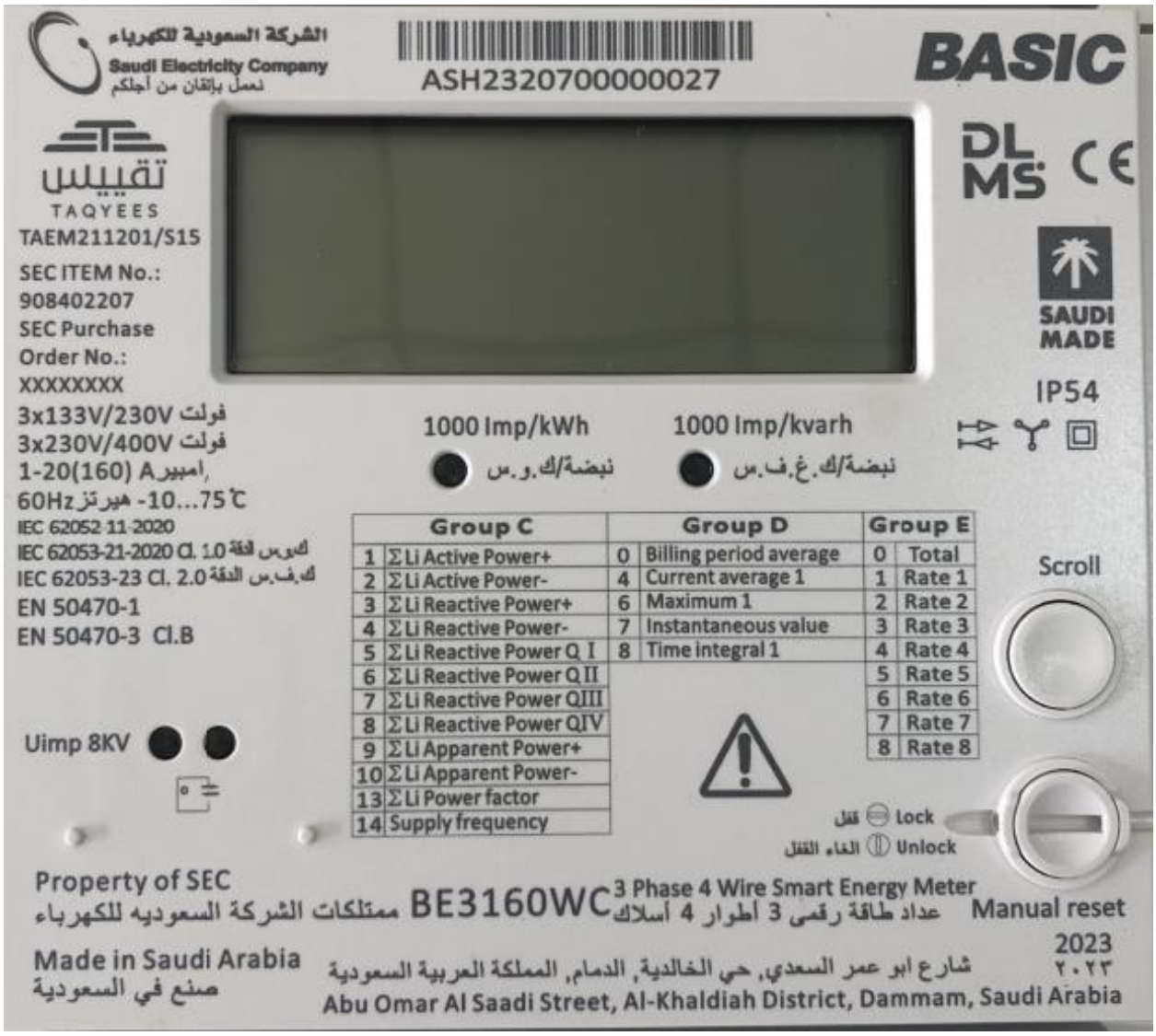
1 TECHNICAL DATA

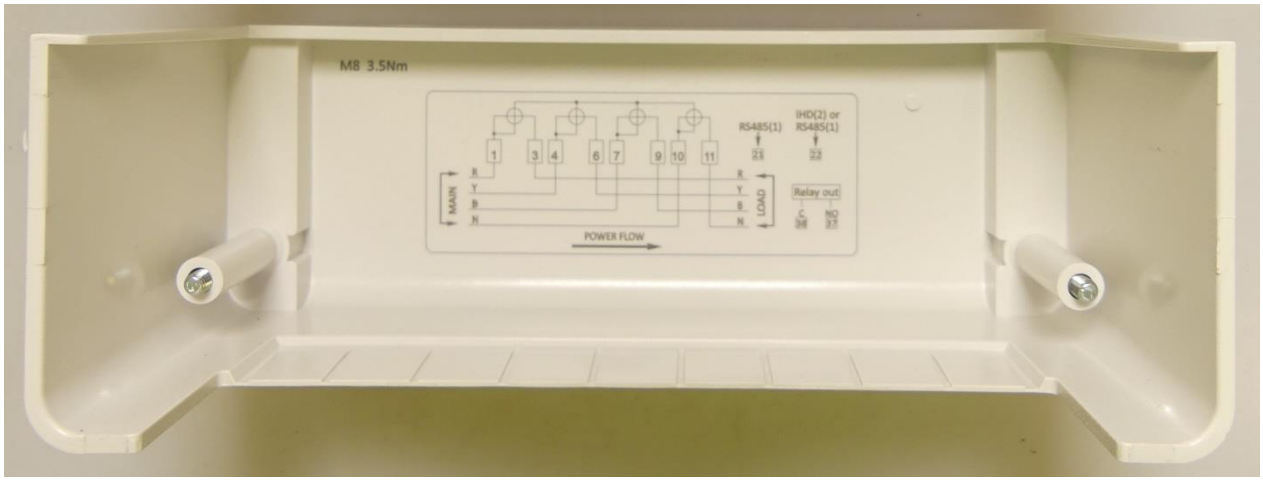
Manufacturer	Basic Electronics Company Limited, CR # 2050129466 Al Hassan Al Basri Street, Al Khaldiah Al Janobiah District, Dammam, Kingdom of Saudi Arabia	
Production location 1	Basic Electronics Company Limited, CR # 2050129466 Al Hassan Al Basri Street, Al Khaldiah Al Janobiah District, Dammam, Kingdom of Saudi Arabia	
Production location 2	Hangzhou Meteronic Technology Co., Ltd. Building 3, No. 2620 Yuhangtang Road, Cangqian street, Yuhang District, Hangzhou 311100 Zhejiang China	
Type	BE3100WC	BE3160WC
Connection	Direct	
Type of circuit	3P4W	
Accuracy class Wh	1/B	
Accuracy class varh	2	
Standard	IEC 62053-21/23 EN 50470-3	
Meter constant	1000 imp/kWh 1000 imp/kvarh	
V range	133/230 V - 230/400 V	
I range I_{min}-I_n(I_{max})	0,5..10(100) A	1..20(160) A
Frequency	60 Hz	
Temperature range	-40 .. 75 °C	
Use	Indoor	
IP rating	IP54	
Protection Class	II	
Impulse voltage	8 kV	
Internal clock	Crystal controlled	
Environmental class	M1, M2, E1 and E2, CISPR32 class B	
Utilisation category	UC3	NA
LR Firmware ID	P0024	P0017
Register	LCD	
Registry method(s):	Vectoral computation method	

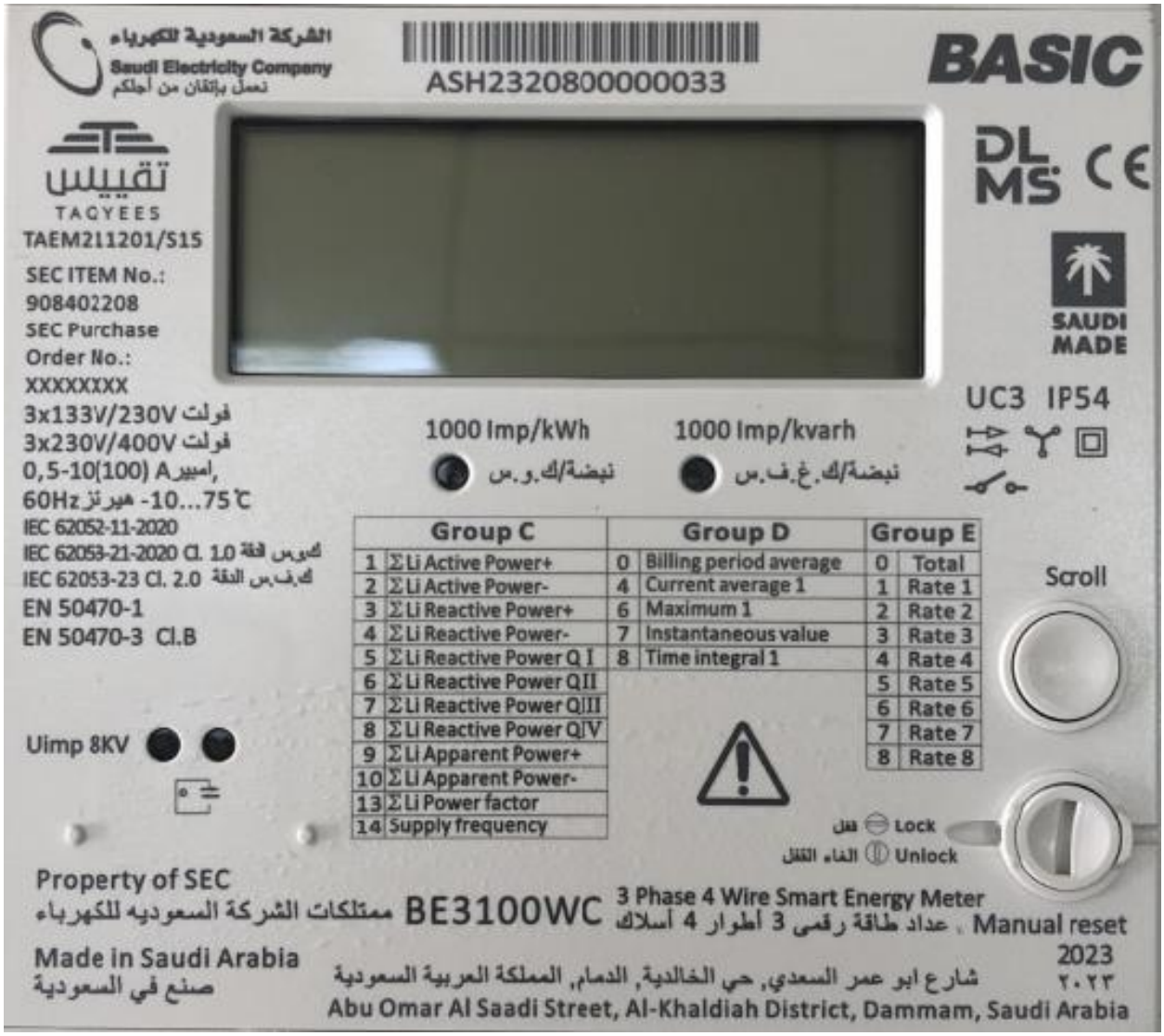
2 PHOTOGRAPHS AND SEALING

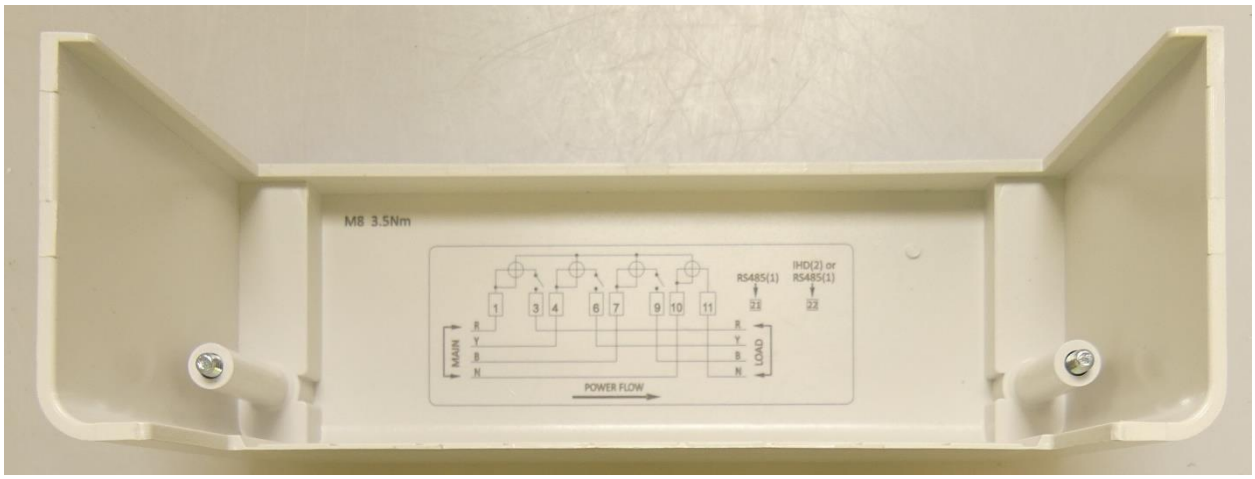

NB-IoT Communication Module
MT900-NGE
SEC Item No.: 909106050
BASIC
3.6V ½ AA(1.2Ah)
ER14250
GPS
NET
GPS
PWR
SN: ASH2320800000040
IMEI: XXXXXXXXXXXXXX
Basic Electronics Company Limited
Dammam, Kingdom of Saudi Arabia
2024
Saudi Electricity Company
ASH2320800000040
BASIC
TAQYEES
TAEM211201/S15
SEC ITEM No.:
908402208
SEC Purchase
Order No.:
XXXXXXXX
3x133V/230V
3x230V/400V
0,25-10(100) A
60Hz -10...75℃
IEC 62052-11-2020
IEC 62053-21-2020 Cl. 1.0
IEC 62053-23 Cl. 2.0
EN 50470-1
EN 50470-3 Cl.B
1000 Imp/kWh
1000 Imp/kvarh
UC3 IP54
DLMS
SAUDI MADE
Uimp 8KV
Group C
Group D
Group E
Scroll
Lock
Unlock
Property of SEC
BE3100WC
3 Phase 4 Wire Smart Energy Meter
Manual reset
2024
Made in Saudi Arabia
Abu Omar Al Saadi Street, Al-Khaldiah District, Dammam, Saudi Arabia
RS485-1
DC 12V
21
RS485-2
IHD
22
Metrology seal
Metrology seal

3 EXAMPLES OF NAME PLATES






الشركة السعودية للكهرباء
Saudi Electricity Company
نعمل بإتقان من أجلكم
ASH2320800000033
BASIC
تقييس
TAQYEES
TAEM211201/S15
SEC ITEM No.:
908402208
SEC Purchase
Order No.:
XXXXXXXX
3x133V/230V فولت
3x230V/400V فولت
0,5-10(100) A أمبير,
60Hz هيرتز -10...75℃
IEC 62052-11-2020
IEC 62053-21-2020 Cl. 1.0 كيلوواط ساعة
IEC 62053-23 Cl. 2.0 كيلوفار ساعة
EN 50470-1
EN 50470-3 Cl.B
1000 Imp/kWh
نبضة/ك.و.س
1000 Imp/kvarh
نبضة/ك.غ.ف.س
UC3 IP54
SAUDI MADE
Group C
1 ΣLi Active Power+
2 ΣLi Active Power-
3 ΣLi Reactive Power+
4 ΣLi Reactive Power-
5 ΣLi Reactive Power Q I
6 ΣLi Reactive Power QII
7 ΣLi Reactive Power QIII
8 ΣLi Reactive Power QIV
9 ΣLi Apparent Power+
10 ΣLi Apparent Power-
13 ΣLi Power factor
14 Supply frequency
Group D
0 Billing period average
4 Current average 1
6 Maximum 1
7 Instantaneous value
8 Time integral 1
Group E
0 Total
1 Rate 1
2 Rate 2
3 Rate 3
4 Rate 4
5 Rate 5
6 Rate 6
7 Rate 7
8 Rate 8
Scroll
Uimp 8KV
قفل Lock
الغاء القفل Unlock
Property of SEC
ممتلكات الشركة السعوديه للكهرباء
BE3100WC
3 Phase 4 Wire Smart Energy Meter
عداد طاقة رقمي 3 أطوار 4 أسلاك
Manual reset
2023
٢٠٢٣
Made in Saudi Arabia
صنع في السعودية
شارع ابو عمر السعدي, حي الخالدية, الدمام, المملكة العربية السعودية
Abu Omar Al Saadi Street, Al-Khaldiah District, Dammam, Saudi Arabia


M8 3.5Nm
RS485(1)
IHD(2) or RS485(1)
MAIN
LOAD
POWER FLOW

4 CALCULATION OF THE COMPOSITE ERROR / MPE

During the type approval test the intrinsic errors for temperature, voltage and frequency variation are determined per load point. The composite error is determined with the following formula:

$$\varepsilon_m = \sqrt{\varepsilon^2(I, cos\varphi) + \delta^2(T, I, cos\varphi) + +\delta^2(U, I, cos\varphi) + \delta^2(f, I, cos\varphi)}$$

Where
$\varepsilon^2(I, cos\varphi)$ = Intrinsic error of the meter at a certain load
$\delta^2(T, I, cos\varphi)$ = Additional error due to the variation of the temperature at the same load
$\delta^2(U, I, cos\varphi)$ = Additional error due to the variation of the voltage at the same load
$\delta^2(f, I, cos\varphi)$ = Additional error due to the variation of the frequency at the same load

Results are in the table below:

Serial number:			ASH2320700000505							
Wh, 230/400 V, 1-20(160) A, 60 Hz										
			Composite error							
Current	**cosϕ**	**Phase**	**-40°C**	**-25°C**	**-10°C**	**5°C**	**30°C**	**40°C**	**55°C**	**75°C**
Imin	**1**	**3ph**	0,04%	0,04%	0,04%	0,04%	0,04%	0,04%	0,05%	0,05%
Itr	**1**	**3ph**	0,02%	0,03%	0,04%	0,04%	0,03%	0,02%	0,03%	0,04%
Itr	**1**	**1ph,1**	0,17%	0,11%	0,07%	0,05%	0,06%	0,07%	0,12%	0,18%
Itr	**1**	**1ph,2**	0,17%	0,08%	0,03%	0,03%	0,04%	0,04%	0,03%	0,04%
Itr	**1**	**1ph,3**	0,30%	0,28%	0,21%	0,13%	0,05%	0,10%	0,22%	0,32%
Itr	**0,5i**	**3ph**	0,12%	0,12%	0,13%	0,13%	0,12%	0,12%	0,12%	0,13%
Itr	**0,5i**	**1ph,1**	0,19%	0,16%	0,15%	0,13%	0,12%	0,14%	0,18%	0,28%
Itr	**0,5i**	**1ph,2**	0,21%	0,16%	0,14%	0,13%	0,13%	0,13%	0,14%	0,13%
Itr	**0,5i**	**1ph,3**	0,36%	0,35%	0,29%	0,24%	0,20%	0,22%	0,30%	0,37%
Itr	**0,8c**	**3ph**	0,06%	0,07%	0,07%	0,07%	0,06%	0,06%	0,07%	0,09%
In	**1**	**3ph**	0,02%	0,03%	0,05%	0,03%	0,02%	0,02%	0,04%	0,05%
In	**1**	**1ph,1**	0,17%	0,13%	0,08%	0,03%	0,01%	0,02%	0,08%	0,12%
In	**1**	**1ph,2**	0,17%	0,09%	0,05%	0,02%	0,02%	0,02%	0,02%	0,02%
In	**1**	**1ph,3**	0,29%	0,27%	0,21%	0,11%	0,05%	0,12%	0,22%	0,34%
In	**0,5i**	**3ph**	0,12%	0,13%	0,13%	0,13%	0,12%	0,12%	0,13%	0,13%
In	**0,5i**	**1ph,1**	0,21%	0,16%	0,13%	0,12%	0,11%	0,12%	0,16%	0,20%
In	**0,5i**	**1ph,2**	0,20%	0,16%	0,14%	0,13%	0,13%	0,14%	0,14%	0,14%
In	**0,5i**	**1ph,3**	0,34%	0,33%	0,26%	0,19%	0,14%	0,17%	0,25%	0,35%
In	**0,8c**	**3ph**	0,06%	0,07%	0,07%	0,07%	0,06%	0,06%	0,07%	0,09%
Imax	**1**	**3ph**	0,09%	0,09%	0,08%	0,04%	0,02%	0,03%	0,06%	0,10%
Imax	**1**	**1ph,1**	0,03%	0,03%	0,03%	0,03%	0,04%	0,04%	0,05%	0,06%
Imax	**1**	**1ph,2**	0,06%	0,06%	0,07%	0,07%	0,06%	0,06%	0,06%	0,07%
Imax	**1**	**1ph,3**	0,45%	0,38%	0,28%	0,16%	0,09%	0,16%	0,28%	0,41%
Imax	**0,5i**	**3ph**	0,21%	0,20%	0,18%	0,15%	0,13%	0,14%	0,15%	0,18%
Imax	**0,5i**	**1ph,1**	0,13%	0,13%	0,13%	0,13%	0,13%	0,13%	0,14%	0,15%
Imax	**0,5i**	**1ph,2**	0,13%	0,13%	0,13%	0,13%	0,12%	0,12%	0,13%	0,13%
Imax	**0,5i**	**1ph,3**	0,53%	0,46%	0,35%	0,24%	0,18%	0,23%	0,33%	0,45%
Imax	**0,8c**	**3ph**	0,22%	0,20%	0,16%	0,11%	0,09%	0,11%	0,14%	0,17%
Requirements										
Imin	**1**	**3ph**	4,00%	3,50%	2,50%	2,00%	2,00%	2,50%	3,50%	4,00%
>Imin	**Any**	**3ph**	4,00%	3,50%	2,50%	2,00%	2,00%	2,50%	3,50%	4,00%
>Imin	**Any**	**1ph**	4,50%	4,00%	3,00%	2,50%	2,50%	3,00%	4,00%	4,50%

5 OPTIONS AND VARIANTS

Overview of variants with details

Type designation	Details of the meter
BE3100WC	With UC3 SCS
BE3160WC	With Latching relay

END OF DOCUMENT

The laboratories of KEMA Labs are:

- CESI S.p.A., Milan, Italy.
- FGH Engineering & Test GmbH, Mannheim, Germany.
- IPH Institut “Prüffeld für elektrische Hochleistungstechnik” GmbH, Berlin, Germany.
- KEMA B.V., Arnhem, The Netherlands.
- KEMA Labs, Zkušebnictví, a.s., Prague, the Czech Republic.
- KEMA-Powertest, LLC, Chalfont, United States.