TÜRK STANDARDLARI ENSTİTÜSÜ

TURKISH STANDARDS INSTITUTION

EU - TYPE EXAMINATION CERTIFICATE

2014/32/EU Measuring Instruments Directive

Certificate No : 1783-MID-058

In accordance with Measuring Instruments Directive dated February 26, 2014 and numbered 2014/32/EU of the European Union Parliament and "Ölçü Aletleri Yönetmeliği (Measuring Instruments Directive)" numbered 2014/32/AB which was published in Official Journal of Turkish Republic dated 29.06.2016 and numbered 29757:

Manufacturer : **BAYLAN ÖLÇÜ ALETLERİ SANAYİ VE TİCARET LTD. ŞTİ.**

Atatürk Organize San. Böl. 10053. Sokak No:6 Çiğli / İZMİR

Essential requirements Applied : **MID Annex I and Annex MI-003**

Name of Measuring : **Single-Phase Active Electrical Energy Meters**

Type : **BM.31**

Environmental Classes

- Climatic	-40 °C / +70 °C
- Mechanic	M1
- Electromagnetic	E2

Project Number : **1863-18/411924**

Comformity Assessment Report : **1863-MID-058/2018-01, 1863-MID-058/2021-01**

Date of issue : **05.05.2021 (First Date of Issue: 07.12.2018)**

Valid until : **06.12.2028**

Total Page Number : **14**

İhsan AĞIR
Deputy Director of Directives
Ankara, 05.05.2021 Rev. 01

TÜRK STANDARTLARI ENSTİTÜSÜ * DİREKTİFLER MÜDÜRLÜĞÜ * DIRECTORATE OF DIRECTIVE * TURKISH STANDARDS INSTITUTION 1783 TSE

This certificate is only valid with annex and TSE-Notified Body 1783 seal.

1. General Information about Electical Energy Meter

1.1 Designation

Electronical electric meter measuring active electrical energy and maximum power and showing these data on the LCD Display, auto-correcting day light saving time in summer and winter, keeping the intended data and programs in memory, getting a line on these data when required.

1.2 Design

Essential Parts of the Meter

- Electronic (circuit) card
- Lower cover-housing
- Upper cover
- Terminal cover

1.3 Metrological Characteristic

Measurement of the electrical energy

1.4 Software

Ver 1.01

Checksum: 0x2B6E63F9

1.5 Supplementary equipments

RS485 communication port

1.6 Equipments out of the scope of MID

Not applicable

2. Technical data

Type	BM.31
Definition	1 phases, 2 wired, multi tariff, with demand meter, outdoor, active, import&export electronic electrical meter with RS485 port
Accuracy Class	Class C
Software Version No **Checksum** **Place**	Ver 1.01 0x2B6E63F9 İzmir
Meter Location	Outdoor
Meter Integrity	Meter integrity is preserved by seal and intervention from the outside is inhibited
Sealing Type	Plastic Pounding Seal
Circuit Type	Directly connected
Frequency	50 Hz
Reference Voltage (V)	230 V
Operating Voltage (V)	Between 0,8Un and 1,15Un
Starting Current (Ist)	20 mA (0,04Itr)
Minimum Current (Imin)	0,15 A
Transitional Current (Itr)	0,5 A
Reference Current (Iref)	5 A
Maximum Current (Imax)	100 A
Meter Constant	1000 imp/kWh
Operating Temperature	-40°C …+70°C (3K7)
Relative Humidity	Max. %95
IP Rating	IP54 (Outdoor)
Protection Class	II (Two)
Mechanical Environment Class	M1
Electromagnetic Environment Class	E2
Voltage Circuit Power Consumption	< 2W, 10 VA
Current Circuit Power Consumption	< 4 VA
Electrostatic Discharges	Contact: 8 kV Air: 15 kV
Impulse Voltage	6 kV
Communication	Optic, RS485 300-19200 Baud

3. Marking

The following data shall be marked on the electricity meter

- manufacturer's name and/or registered trademark,
- phase number and connection cable number
- year of production and serial number,
- current gauging interval, minimum current (Imin), reference current (Iref), maximum current (Imax)
- reference frequency (Hz),
- meter constant
- accurancy class
- electric security class (double square mark for meters with insulating lining)
- operating temperature interval or environmental class
- nominal voltage (primary and secondary voltage if with transformer),
- EU-type examination certificate number,
- conformity marking according to the regulation in regards to the measuring intruments

3.1 Registered trademark of the manufacturer

The manufacturer uses the following figure inscription commercial trademark on the electrical energy meters

BAYLAN

4. Sealing

Lower housing of the meter and upper cover are screwed together and it is stamped by attaching a plastic seal on the gap above the screw. Terminal cover is sealed by authorised personnel after the meter has been mounted.

5. Terms of Production, putting into use and usage

5.1 Production

- no special terms identified for production

5.2 Putting into use

- electrical energy meters must be installed in the power grid as mentioned in installation instructions and/or user's manual of the manufacturer.
- type tests of the meter were carried out according to EN 50470-1:2006 and EN 50470-2:2006

5.3 Requirements for usage

- must be used in accordance with the terms of the user's manual given by the manufacturer.

6. Documentation used within the scope of assessment

- Test report dated 03.12.2018 and 318120301 issued by Baylan Ölçü Aletleri San. ve Tic. Ltd. Şti.
- Testing report dated 04.12.2018 and EL18-0047 issued by Eldaş Elektrik, Elektronik San. ve Tic. A.Ş.
- Manufacturer's technical file, technical drawings, component lists

7. Standards and regulations used within the scope of assessment

7.1 Regulations, harmonised standards and mandatory normative documents

- Measuring Instruments Directive numbered 2014/32/AB published in the Official Journal dated 29.06.2016 and number 29757
- EN 50470-1:2006
- EN 50470-3:2006
- OIML R 46:2012

7.2 Reference documents

- WELMEC Guide 7.2

8. Conclusion

Structural, technical and metrological parameters of the meters which are going to be put into market must be compatible with the documentation submitted with this EU-Type Examination Certificate. The tested meters meet the requirements of the Measuring Instruments Directive numbered 2014/32/EU of the European Union Parliament and the Council and the Measuring Instruments Directive numbered 2014/32/AB published in the Official Journal dated 29.06.2016 and number 29757 of Turkish Republic.

9. Annexes

Annex-1: Illustrative pictures of the electricity meter

Annex-2: Demonstration of Sealing

Annex-3: Marking

Annex-4: Meter Dimensions

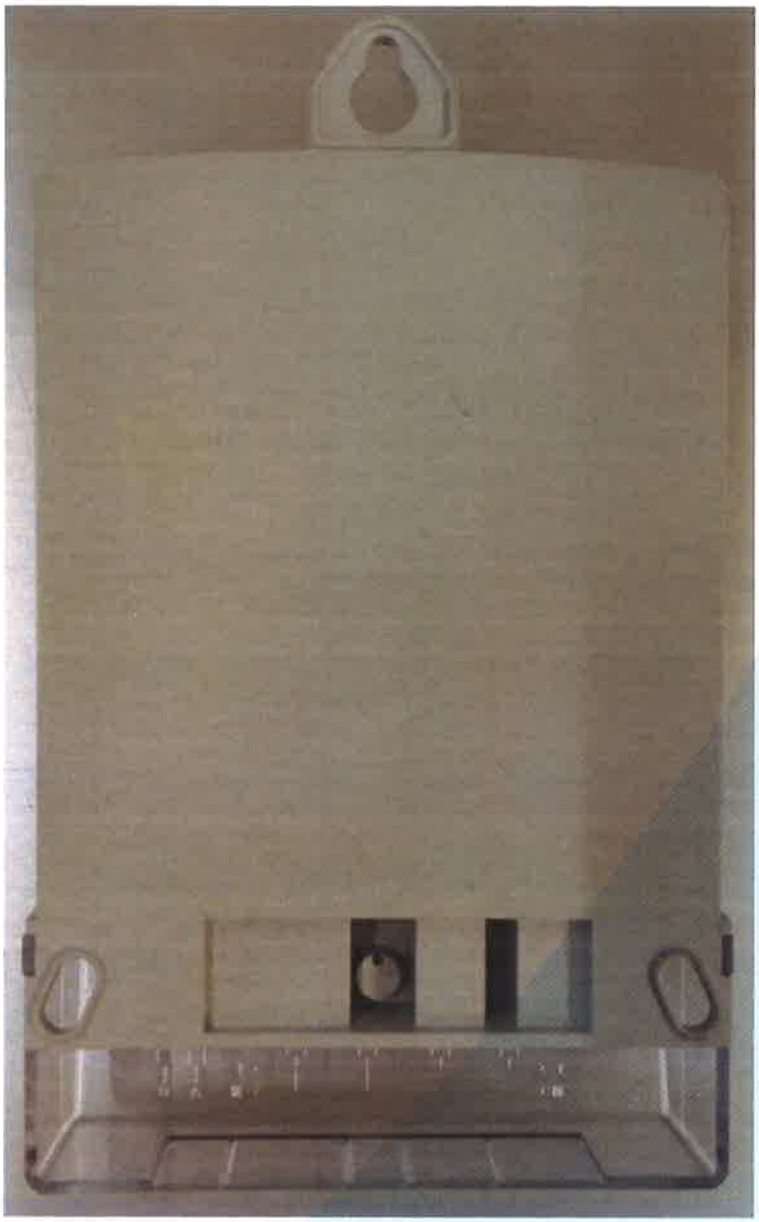
Annex-5: Influence Factors for Temperature, Frequency, and Voltage Variation

Revision Page

Annex-1:

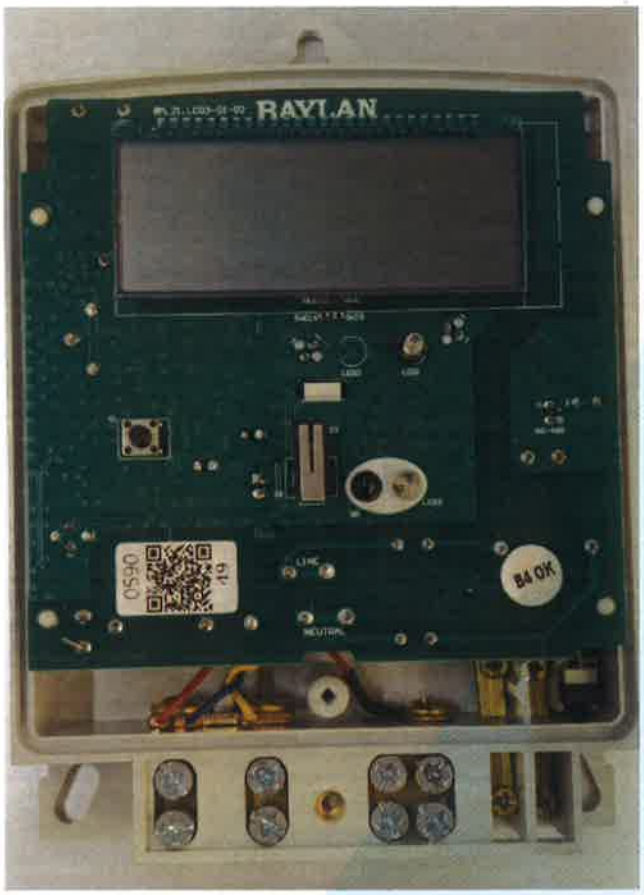
Front Picture of Meter

Back Picture of Meter

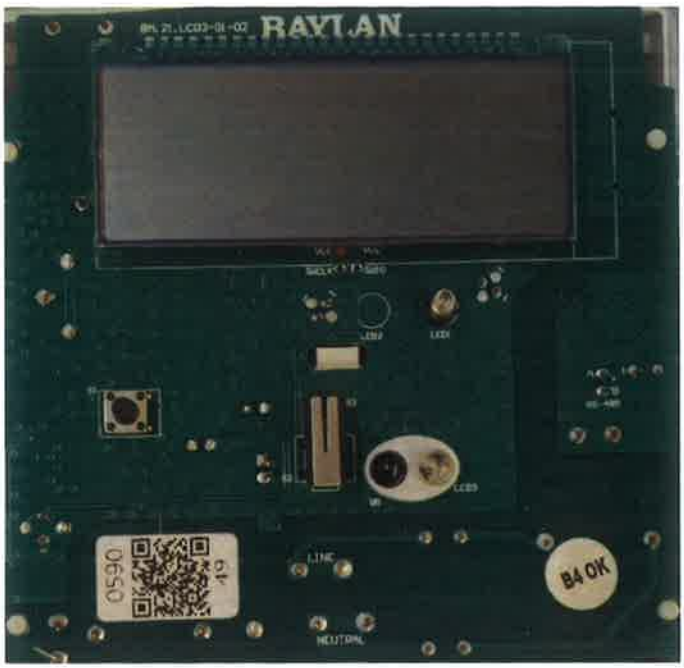


Right View Picture Of Meter

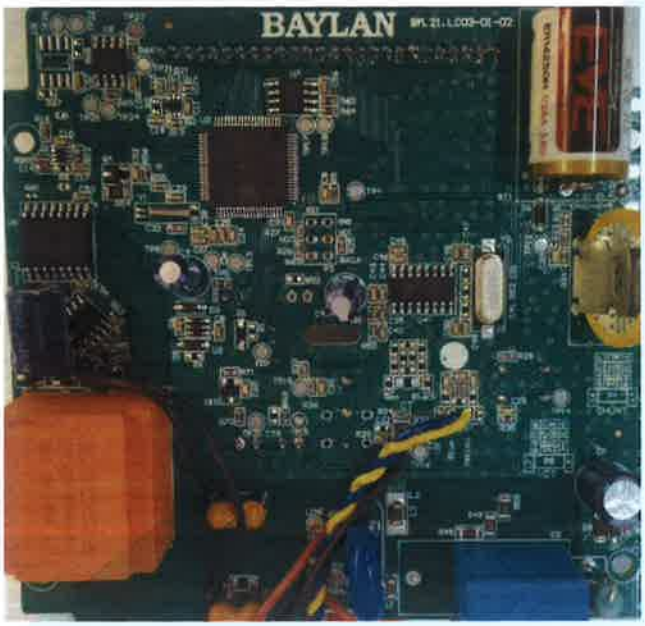
Inside view of the Meter



Electronic Card Front View



Electronic Card Back View

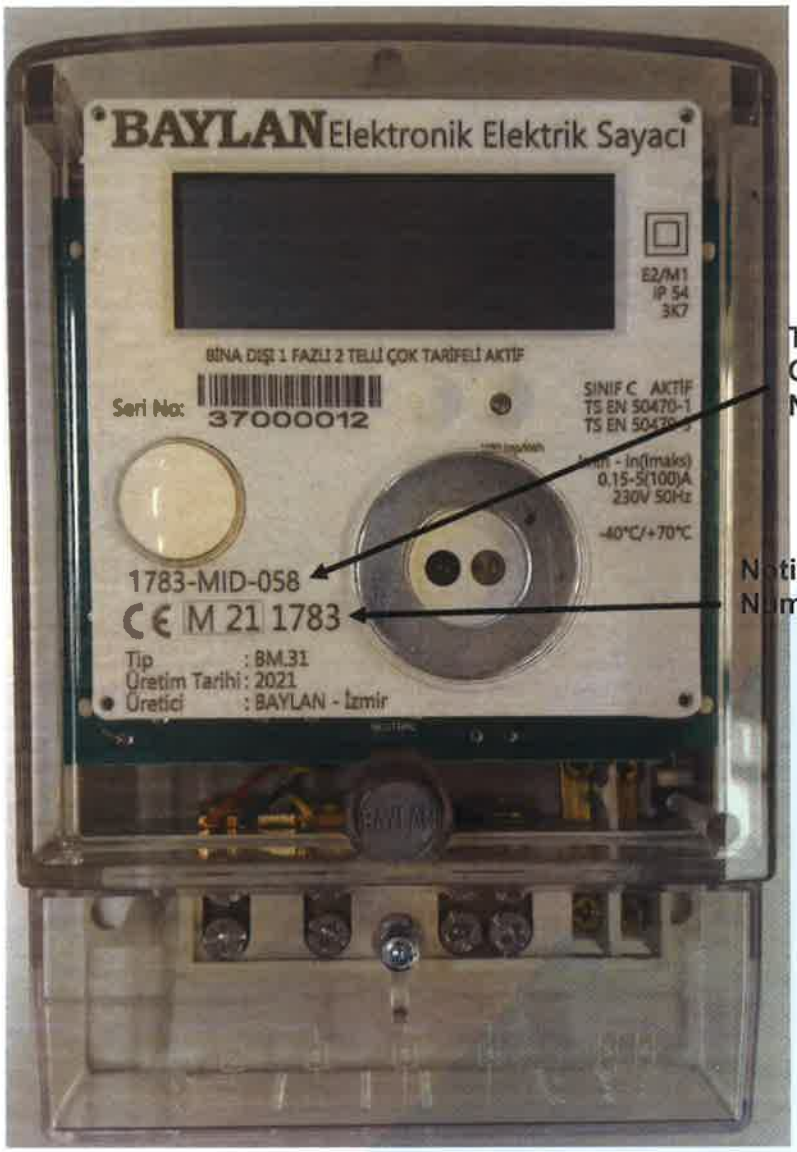


Annex-2:

Sealing

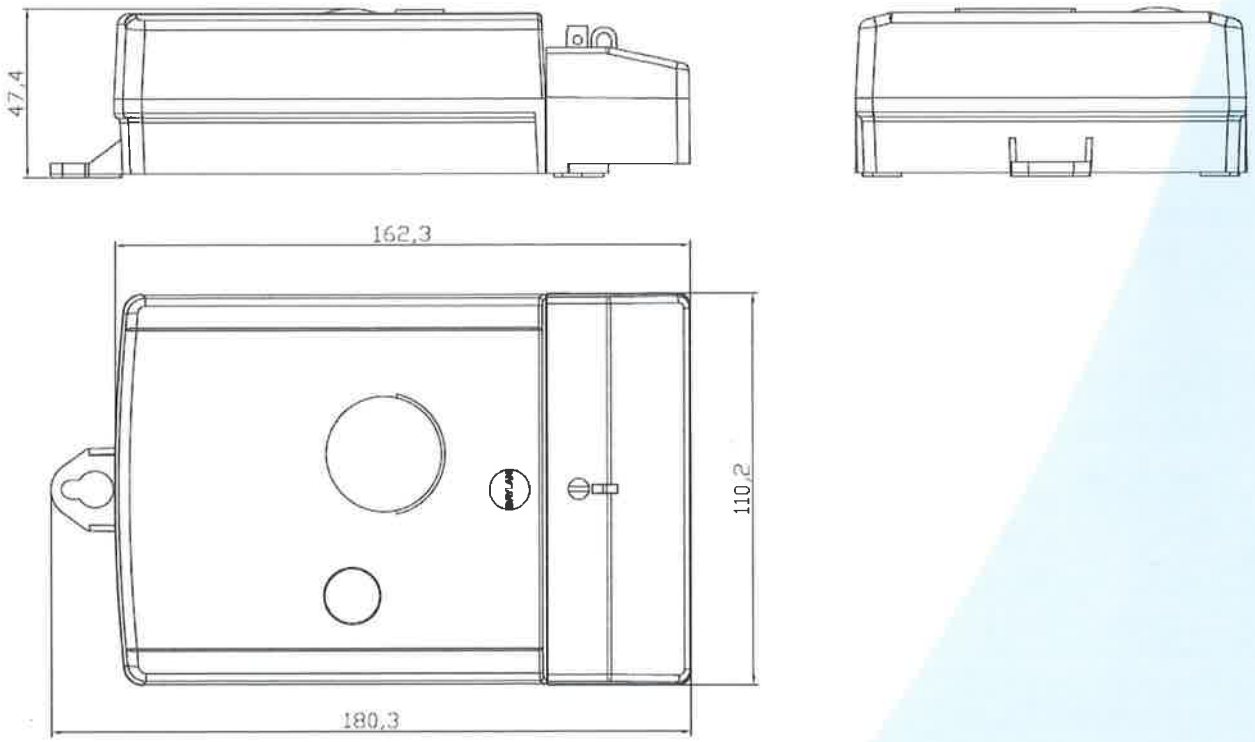
Annex 3 :

Marking



Annex 4 :

Meter Dimensions



Annex-5: Influence Factors for Temperature, Frequency, and Voltage Variation

During the Type Examination the influence factors for temperature, frequency and voltage are determined at each load. The sum of square values at tested loads has been calculated from the following formula;

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

e(I, cosϕ) - intrinsic error of meter at a certain load
δ(T,I, cosϕ) - additional percentage error due to variation of temperature at certain load
δ(U,I, cosϕ) - additional percentage error due to variation of voltage at certain load
δ(f,I, cosϕ) - additional percentage error due to variation of frequency at certain load

Temperature Variation (Sıcaklık Değişimi)	Value of Current (Akım Değeri)	Composite Error Value (Kompozit Hata Değeri)			Maximum Permissible Error (MPE) for Class C (C sınıfı için max. izin verilen hata)	
		Cos f=1	Cos f=0,5	Cos f=0,8	Cos f=1	Cosf=0,5 / Cosf=0,8
-40°C	I_{min} = 0,15A	1,27	--	--	± 2,0	--
	I_b = 0,5A	0,63	0,97	0,60	± 1,5	± 1,5
	I_{ref} = 5A	0,47	0,50	0,49	± 1,5	± 1,5
	I_{max} = 100A	0,75	0,82	0,76	± 1,5	± 1,5
-25°C	I_{min} = 0,15A	0,74	--	--	± 1,7	--
	I_b = 0,5A	0,32	0,60	0,29	± 1,3	± 1,3
	I_{ref} = 5A	0,23	0,31	0,26	± 1,3	± 1,3
	I_{max} = 100A	0,53	0,71	0,67	± 1,3	± 1,3
-10°C	I_{min} = 0,15A	0,58	--	--	± 1,3	--
	I_b = 0,5A	0,19	0,53	0,20	± 1,0	± 1,0
	I_{ref} = 5A	0,21	0,28	0,20	± 1,0	± 1,0
	I_{max} = 100A	0,50	0,66	0,54	± 1,0	± 1,0
5°C	I_{min} = 0,15A	0,31	--	--	± 1,0	--
	I_b = 0,5A	0,10	0,35	0,10	± 0,7	± 0,7
	I_{ref} = 5A	0,15	0,23	0,14	± 0,7	± 0,7
	I_{max} = 100A	0,40	0,61	0,49	± 0,7	± 0,7
30°C	I_{min} = 0,15A	0,30	--	--	± 1,0	--
	I_b = 0,5A	0,08	0,33	0,28	± 0,7	± 0,7
	I_{ref} = 5A	0,05	0,19	0,13	± 0,7	± 0,7
	I_{max} = 100A	0,32	0,46	0,30	± 0,7	± 0,7
40°C	I_{min} = 0,15A	0,43	--	--	± 1,3	--
	I_b = 0,5A	0,29	0,40	0,49	± 1,0	± 1,0
	I_{ref} = 5A	0,31	0,35	0,30	± 1,0	± 1,0
	I_{max} = 100A	0,32	0,46	0,29	± 1,0	± 1,0
55°C	I_{min} = 0,15A	0,63	--	--	± 1,7	--
	I_b = 0,5A	0,48	0,54	0,61	± 1,3	± 1,3
	I_{ref} = 5A	0,33	0,40	0,34	± 1,3	± 1,3
	I_{max} = 100A	0,32	0,46	0,29	± 1,3	± 1,3
	I_{min} = 0,15A	0,66	--	--	± 2,0	--
	I_b = 0,5A	0,52	0,57	0,65	± 1,8	± 1,8
	I_{ref} = 5A	0,39	0,44	0,40	± 1,8	± 1,8
	I_{max} = 100A	0,37	0,52	0,33	± 1,8	± 1,8

REVISION PAGE

Rev. No.	Date	Revision Reason
00	07.12.2018	First Issue
01	05.05.2021	Software Revision