

EU Type Examination Certificate Number: **0120/ SGS0021/R1**

## **SC Elster Rometrics SRL**

Timisoara Airport Park  
DJ 691 km 8+775 m, 307210 Giarmata  
Timis County  
Romania

Instrument Identification:

**A1120, A1140, A1160 Electricity Meter, LM\*\*\*\*\*\_\*\*  
Poly Phase, Credit, Active Import/ Export, Multi-rate, Direct Connected/  
Transformer Operated, Electricity Meter**

Instrument Traceable Number

**0120/ SGS0021**

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 for 10 years from 6<sup>th</sup> June 2017 until 5<sup>th</sup> June 2027  
Issue 1

Certification is based on report number(s): EMA106670/ 1/ CT dated 13<sup>th</sup> August 2007, EMA106670/ 1/ WC dated 13<sup>th</sup> August 2007  
EMA130853 dated 26<sup>th</sup> November 2009, EMA137547 dated 18<sup>th</sup> August 2010, EMA180052/1 dated 19<sup>th</sup> September 2013,  
EMA180052/1/IEC dated 4<sup>th</sup> April 2014, EMA180052/2 dated 18<sup>th</sup> August 2014, EMA198098/1 dated 6<sup>th</sup> February 2015  
EMA205841/1 dated 8<sup>th</sup> July 2015, EMA239191/1/DC/MID dated 31<sup>st</sup> May 2017  
EMA239191/1/DC/MID dated 6<sup>th</sup> June 2017, EMA239191/1/CT/MID dated 6<sup>th</sup> June 2017


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	Issue Number: 1	Dated: 11 <sup>th</sup> August 2017

## 1. Technical Data

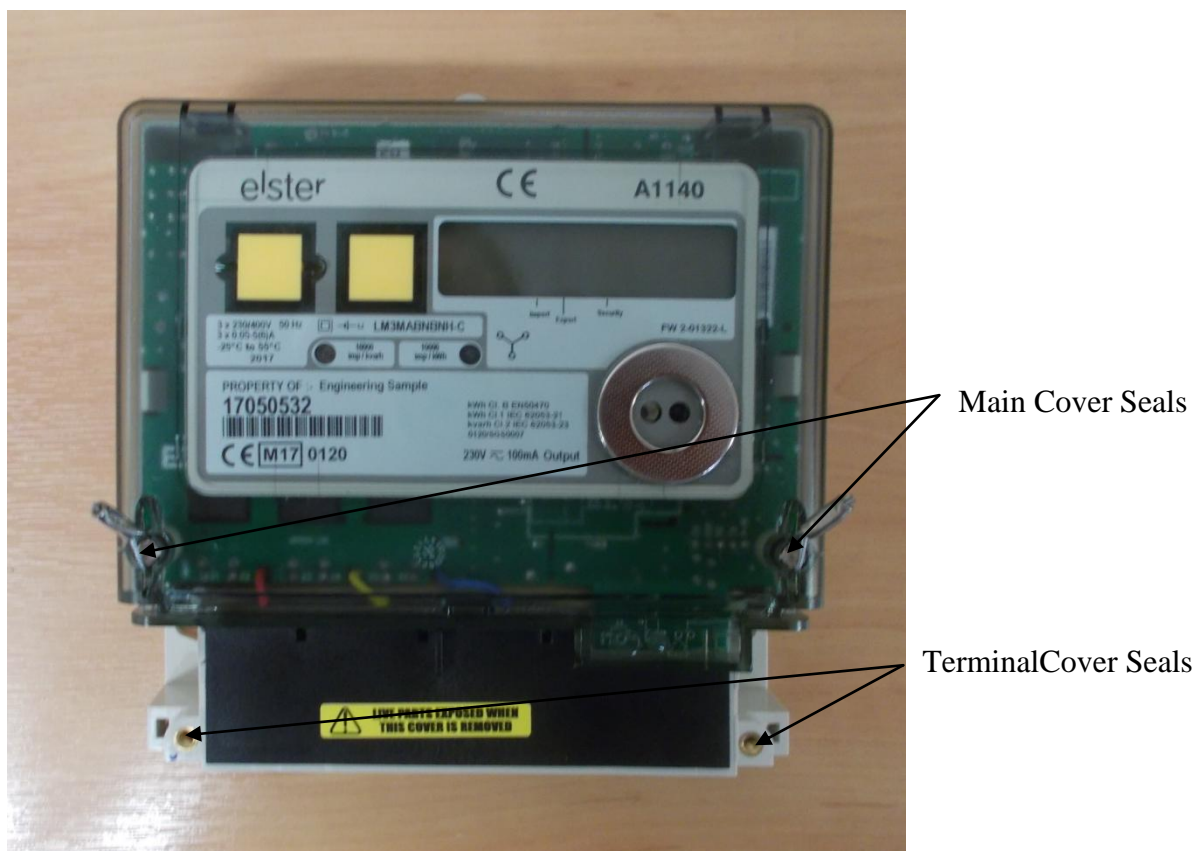
Manufacturer	SC Elster Rometrics SRL
Meter Type	A1120, A1140, A1160
Voltage Rating ( <i>Un</i> )	<b>A1120 &amp; A1140 Direct Connection</b> 220-240V (L-N), 380-415V (L-L) 127-139V (L-N), 220-240V (L-L) 105-127V (L-N), 180-220V (L-L) 105-127V (L-L) (LM2***** only) <b>A1160 Direct Connection</b> 220-240V (L-N), 380-415V (L-L) <b>A1120 &amp; A1140 Transformer Operated</b> 220-240V (L-N), 380-415V (L-L) 127-139V (L-N), 220-240V (L-L) 105-127V (L-N), 180-220V (L-L) 105-127V (L-L) (LM2***** only)
Current Rating ( <i>I<sub>min</sub></i> – <i>I<sub>ref</sub></i> ( <i>I<sub>max</sub></i> ))	<b>A1120 &amp; A1140 Direct Connection</b> 0.25-5(100)A (Any multiple of <i>I<sub>ref</sub></i> up to <i>I<sub>max</sub></i> ) <b>A1160 Direct Connection</b> 1-20(160)A (Any multiple of <i>I<sub>ref</sub></i> up to <i>I<sub>max</sub></i> ) <b>A1120 &amp; A1140 Transformer Operated</b> 0.01-1(10)A (Any combination of <i>I<sub>n</sub></i> at 1, 1.5, 2, 2.5, 5 with <i>I<sub>max</sub></i> of meter at 1.2 <i>I<sub>n</sub></i> , 1.5 <i>I<sub>n</sub></i> and 2 <i>I<sub>n</sub></i> )
Frequency ( <i>Fn</i> )	50Hz
Active Accuracy Class ( <i>kWh</i> )	A or B(kWh)
Type of circuit	<b>A1120, A1140</b> 1p2w, 1p3w, 1p4w, 2p of 3p4w, 2p3w, 3p3w, 3p4w. <b>A1160</b> 3p4w
Temperature Range	<b>A1120, A1140:</b> -25°C to +55°C <b>A1160:</b> -40°C to +70°C
Software/ Firmware Version No's	<b>A1120/A1140:</b> 2-01178-Q. CRC DA2E 2-01322-L. CRC 3872 2-01340-H. CRC 0F34 2-01398-A. CRC 455( 2-01345-A. CRC AA91  <b>A1160:</b> 2-01397-G. CRC N0EC
Identification Location	Nameplate
Bill Of Materials Number	JG05241, JG05241A, JG05242, JG05243, JG05244, JG05246, JG05247, JG05248, JG052412, JG052413, JG052414, JG052422, JG052423, JG052424, JG052432, JG052433, JG052434, JG0524100
IP Rating	IP54


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<b>Insulation Protective Class</b>	Class II
<b>LED Pulse Constant</b>	CT: 10000imp/ kWh DC: 1000imp/kWh
<b>Impulse Voltage Rating</b>	4kV/ 6kV/ 12kV
<b>AC Voltage Rating</b>	2kV/ 4kV
<b>Main Cover Sealing Type</b>	<b>A1120 &amp; A1140</b> - 2 x wire and crimp <b>A1160</b> - 2 x wire and crimp or optional 2 x shear head screws
<b>Integrity of meter</b>	Inaccessible without breaking seals
<b>Intended Location of the Meter</b>	<b>A1120, A1140:</b> Indoor <b>A1160:</b> Indoor or Outdoor
<b>Type of Register</b>	LCD
<b>Terminal Arrangement(s)</b>	DIN
<b>Location of Manufacturers Address</b>	Associated Documents

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## 2. Example of Meter and Sealing Plan



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### 3. Photographs of Meter Name Plates

**A1120**




**A1140**



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**A1160**



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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:-

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

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

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**Direct Connected**


		Influence Factors for Temperature. Frequency & Voltage					
Current	PF Cos	-25°C	-10°C	5°C	30°C	40°C	55°C
I <sub>min</sub>	1.0	0.45	0.37	0.23	0.30	0.53	0.71
I <sub>tr</sub>	1.0	0.42	0.31	0.16	0.18	0.34	0.51
10I <sub>tr</sub>	1.0	0.37	0.33	0.16	0.07	0.19	0.36
I <sub>max</sub>	1.0	0.37	0.31	0.19	0.02	0.07	0.21
I <sub>tr</sub>	0.5ind	1.30	0.53	0.16	0.13	0.46	0.66
10I <sub>tr</sub>	0.5ind	1.13	0.55	0.10	0.09	0.29	0.44
I <sub>max</sub>	0.5ind	0.76	0.35	0.07	0.09	0.05	0.17
I <sub>tr</sub>	0.8cap	1.23	0.73	0.22	0.17	0.22	0.37
10I <sub>tr</sub>	0.8cap	1.09	0.65	0.18	0.10	0.15	0.31
I <sub>max</sub>	0.8cap	0.96	0.63	0.26	0.06	0.04	0.16
L1					0.00	0.00	0.00
I <sub>tr</sub>	1.0	0.53	0.39	0.21	0.37	0.46	0.62
10I <sub>tr</sub>	1.0	0.45	0.30	0.14	0.15	0.23	0.39
I <sub>max</sub>	1.0	0.42	0.29	0.15	0.02	0.09	0.23
I <sub>tr</sub>	0.5ind	1.35	0.44	0.21	0.79	0.89	1.03
10I <sub>tr</sub>	0.5ind	1.22	0.53	0.12	0.28	0.43	0.57
I <sub>max</sub>	0.5ind	0.83	0.37	0.04	0.09	0.16	0.28
L2							
I <sub>tr</sub>	1.0	0.48	0.34	0.16	0.40	0.44	0.59
10I <sub>tr</sub>	1.0	0.45	0.29	0.15	0.13	0.21	0.39
I <sub>max</sub>	1.0	0.42	0.30	0.18	0.01	0.08	0.23
I <sub>tr</sub>	0.5ind	1.15	0.35	0.30	0.66	0.77	0.86
10I <sub>tr</sub>	0.5ind	1.08	0.28	0.18	0.18	0.31	0.45
I <sub>max</sub>	0.5ind	0.71	0.14	0.16	0.08	0.04	0.13
L3							
I <sub>tr</sub>	1.0	0.48	0.35	0.21	0.34	0.39	0.56
10I <sub>tr</sub>	1.0	0.44	0.30	0.16	0.09	0.17	0.34
I <sub>max</sub>	1.0	0.39	0.29	0.18	0.02	0.06	0.22
I <sub>tr</sub>	0.5ind	1.34	0.32	0.19	0.54	0.64	0.76
10I <sub>tr</sub>	0.5ind	1.23	0.45	0.12	0.12	0.25	0.40
I <sub>max</sub>	0.5ind	0.85	0.32	0.10	0.10	0.03	0.11



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### Transformer Operated

		Influence Factors for Temperature. Frequency & Voltage					
Current	PF Cos	-25	-10	5	30	40	55
I <sub>min</sub>	1.0	0.26	0.23	0.20	0.19	0.20	0.26
I <sub>tr</sub>	1.0	0.14	0.13	0.08	0.04	0.06	0.15
10I <sub>tr</sub>	1.0	0.13	0.09	0.04	0.02	0.04	0.12
I <sub>max</sub>	1.0	0.15	0.10	0.04	0.02	0.04	0.12
I <sub>tr</sub>	0.5ind	1.27	0.96	0.14	0.13	0.08	0.20
10I <sub>tr</sub>	0.5ind	1.05	0.68	0.11	0.03	0.02	0.09
I <sub>max</sub>	0.5ind	1.40	0.80	0.24	0.04	0.02	0.09
I <sub>tr</sub>	0.8cap	1.05	0.57	0.13	0.04	0.04	0.11
10I <sub>tr</sub>	0.8cap	0.64	0.40	0.09	0.03	0.05	0.13
I <sub>max</sub>	0.8cap	0.80	0.48	0.16	0.03	0.06	0.13
L1					0.00	0.00	0.00
I <sub>tr</sub>	1.0	0.74	0.28	0.72	0.28	0.10	0.30
10I <sub>tr</sub>	1.0	0.37	0.22	0.10	0.04	0.10	0.21
I <sub>max</sub>	1.0	0.39	0.23	0.11	0.04	0.09	0.20
I <sub>tr</sub>	0.5ind	1.93	1.61	0.36	0.11	0.11	0.10
10I <sub>tr</sub>	0.5ind	1.34	0.71	0.06	0.04	0.06	0.17
I <sub>max</sub>	0.5ind	1.65	1.03	0.43	0.05	0.02	0.18
L2							
I <sub>tr</sub>	1.0	0.36	0.37	0.61	0.35	0.35	0.34
10I <sub>tr</sub>	1.0	0.05	0.04	0.04	0.04	0.05	0.09
I <sub>max</sub>	1.0	0.08	0.04	0.04	0.04	0.05	0.10
I <sub>tr</sub>	0.5ind	1.93	0.92	0.17	0.16	0.19	0.16
10I <sub>tr</sub>	0.5ind	1.15	0.75	0.13	0.05	0.04	0.11
I <sub>max</sub>	0.5ind	1.44	0.78	0.12	0.02	0.03	0.10
L3							
I <sub>tr</sub>	1.0	0.21	0.20	0.21	0.23	0.21	0.22
10I <sub>tr</sub>	1.0	0.01	0.02	0.02	0.01	0.03	0.07
I <sub>max</sub>	1.0	0.03	0.02	0.02	0.02	0.02	0.07
I <sub>tr</sub>	0.5ind	1.76	0.78	0.23	0.28	0.26	0.25
10I <sub>tr</sub>	0.5ind	0.69	0.62	0.17	0.05	0.03	0.02
I <sub>max</sub>	0.5ind	1.19	0.63	0.18	0.02	0.03	0.04

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## 5. Annex of Variants

### Product Variant Identification Details:

#### POLYPHASE (A1120/A1140) MODEL CODE

$V_{ref}$		$I_b$	$I_{max}$
L-L	L-N		

MODEL


TYPE (nameplate)

example: L M 3 A A B N N B B N N B - A N N N

#### PRODUCT/TERMINATION

Polyphase, BS/DIN termination

#### SERVICE TYPE

3Ph 4W for use on:  (Not 3Ph 3W)

3Ph 3W  Direct Connected and 5-10A CT versions only

#### CURRENT RANGE

Direct Connected 20A – \* (\* is any multiple of  $I_b$  up to 100A maximum)

Direct Connected 10A – \* (\* is any multiple of  $I_b$  up to 100A maximum)

Direct Connected 5A – \* (\* is any multiple of  $I_b$  up to 100A maximum)

CT Operated 1A – 2A

CT Operated 5A – 6/10A

CT Operated 1A – 10A

Direct Connected (10A – 100A ) -40°C to 60°C operation

#### VOLTAGE

220 – 240V (L – N) (See note 2 for Ref voltage ranges)

220 – 240V (L – L) (See note 2 for Ref voltage ranges) (LM2\*\*\*\*\* variants only)

105 – 127V (L – N) (See note 2 for Ref voltage ranges)

105 – 127V (L – L) (See note 2 for Ref voltage ranges) (LM2\*\*\*\*\* variants only)

#### ACCURACY CLASS

50 Hz Cl.0.5 kWh, Cl.2 kvarh (IEC 62053-22, 23 see note 1) Cl.C kWh,(EN 50470-3)

Note:- Class 0.5 or Class C is applicable to 5-6/10A “3Ph 4W and 3Ph3W variant only

50 Hz Cl.1 kWh, Cl.2 kvarh (IEC 62053-21, 23 see note 1) Cl.B kWh,(EN 50470-3)

50 Hz Cl.2 kWh, Cl.3 kvarh (IEC 62053-21, 23 see note 1) Cl.A kWh,(EN 50470-3)

60 Hz Cl.1 kWh, Cl.2 kvarh (IEC 62053-21, 23 see note 1) Not OFGEM / MID Approved

60 Hz Cl.2 kWh, Cl.3 kvarh (IEC 62053-21, 23 see note 1) Not OFGEM / MID Approved

#### HARDWARE – SWITCHES

No tamper detect switches

Two tamper detect switches

Terminal cover tamper detect switch and CT ratio programming protection switch.

#### HARDWARE – BUTTONS

No buttons

Two buttons

Backlit LCD, with No buttons

Backlit LCD, with Two buttons

#### HARDWARE – BATTERY

No external battery connection

External 9V Battery connection. Note! External battery module cannot be fitted when an RS232 comms module is fitted.

Supercapacitor/External battery/ RS485 module connection.(Iranian orders only)

#### OPERATIONAL MODES

Import kWh only

Import kWh, Q1 and Q4 kvarh

Import kWh, Q1, Q2, Q3, Q4 kvarh and Imp kVAh

Imp/Exp kWh

Imp/Exp kWh, Q1, Q2, Q3, and Q4 kvarh

Imp/Exp kWh and Imp/Exp kVAh

Imp/Exp kWh, Q1, Q2, Q3, Q4 kvarh and Imp/Exp kVAh

Import kWh only (Power Flow Insensitive)

Import kWh, Q1 and Q4 kvarh (Power Flow Insensitive)

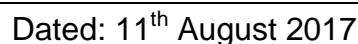
Import kWh, Q1, Q2, Q3, Q4 kvarh and Imp kVAh (Power Flow Insensitive)


Import kWh only (Theft Resistant Measurement) – 3Ph 4W variants only

Import kWh, Q1 and Q4 kvarh (Theft Resistant Measurement) – 3Ph 4W variants only

Import kWh, Q1, Q2, Q3, Q4 kvarh and Imp kVAh (Theft Resistant Measurement) – 3Ph 4W variants only

#### TARIFFS

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**POLYPHASE A1160 MODEL CODE**

<b>V<sub>ref</sub></b>		<b>I<sub>b</sub></b>	<b>I<sub>max</sub></b>	<b>MODEL</b>
L-L	L-N			

TYPE (nameplate)

example: L P 3 A A B N B N H M V R B - A H N N

**PRODUCT/TERMINATION**

Polyphase, BS/DIN termination

**SERVICE TYPE**

3Ph 4W for use on:  Direct Connected only

**CURRENT RANGE**

Direct Connected 20A – \* (\* is any multiple of I<sub>b</sub> up to 160A maximum)

**VOLTAGE**

220 – 240V (L – N) (See note 2 for Ref voltage ranges)

**ACCURACY CLASS**

50 Hz Cl.1 kWh, Cl.2 kvarh (IEC 62053-21, 23 see note 1) Cl.B kWh, (EN 50470-3)

**HARDWARE – SWITCHES**

No tamper detect switches

Two tamper detect switches (Terminal Cover & Main Cover)

**HARDWARE – BUTTONS**

Two buttons

**HARDWARE – BATTERY**

No external battery connection

External 9V Battery connection. Note! An external battery module cannot be fitted when a comms module is fitted.

**OPERATIONAL MODES**

Imp/Exp kWh, Q1, Q2, Q3, Q4 kvarh and Imp/Exp kVAh

Import kWh, Q1, Q2, Q3, Q4 kvarh and Imp kVAh (Theft Resistant Measurement)

**TARIFFS**

A1160 Multi Rate – with load profile

A1160 Multi Rate with load profile and Password Protected Register Zeroing and Zero Level Time Shift (Not for MID use)

A1160 Multi Rate – with load profile and instrumentation profile

A1160 Multi Rate with load profile and Instrumentation profile and Password Protected Register Zeroing and Zero Level Time Shift (Not for MID use)

**Auxiliary Outputs**

No Output

100mA Relay output, floating, 2 aux terminals. 12 kV isolation (Configurable pulse duration/value) 230V AC, DC

100mA Relay output, floating, 2 aux terminals. 12 kV isolation (Configurable pulse duration/value) 230V AC, DC. Auxiliary 230V output (Phase 'C' + Neutral)

**COMMUNICATIONS**

No Serial Comms.

RS232 Serial comms. Note! A comms module cannot be fitted when an external battery module is fitted.

**OTHER OPTIONS**

Short Terminal Cover

Short Terminal Cover and Main Cover with voltage disconnect protection

Standard (Extended) Terminal Cover

Standard (Extended) Terminal Cover with cut-out

Standard (Extended) Terminal Cover and Main Cover with voltage disconnect protection

Standard (Extended) Terminal Cover with cut out and Main Cover with voltage disconnect protection

**FEATURE SET**

8 TOU Registers, 4 MD Registers, 24 Historical Registers, DSM, DLS time stamps, 12 external registers, daily billing, per phase registration, tamper flag in Load Profile. **Note!** This feature set requires the use of SmartSet version 1.1 or later

8 TOU Registers, 4 MD Registers, 24 Historical Registers, DSM, DLS time stamps, 12 external registers, daily billing, per phase registration, tamper flag in Load Profile. **Note!** This feature set requires the use of SmartSet version 1.1 or later. **(For multi-drop applications)**

**REVISION SUFFIX**

Firmware 2-01397-E (Feature set A)

Firmware 2-01397-F

**SPECIAL ADDITIONS – FIRMWARE**

None

Additional Firmware Function (Phase angle definition as A1700i)

**SPECIAL ADDITIONS – HARDWARE**


None (Socket Head M8 main terminal screws and shear head main cover screws)

Slotted Head M8 main terminal screws and shear head main cover screws


Socket Head M8 main terminal screws sealed main cover screws

Slotted Head M8 main terminal screws sealed main cover screws

MID-B-06E Rev 10

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Modifications to the meter(s) described according to approval No.**0120/ SGS0021** 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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### 3. Document Revision History

Issue	Date	Comments
1	11/08/2017	Re certification initial issue

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**\*\* End of Document \*\***

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