Slovenský metrologický ústav
Karloveská 63, 842 55 Bratislava 4, Slovenská republika

ES CERTIFIKÁT TYPU

EC – Type-examination certificate

Číslo dokumentu:
Document number:
SK 14-MI001-SMU036 **Revízia 2**
Revízia 2 nahrádza certifikát zo dňa 9. júna 2015 *Revision 2*
Revision 2 replaces the certificate issued by June 9, 2015

V súlade s:
In accordance with:
nariadením vlády Slovenskej republiky č. 294/2005 Z. z. o meradlách v znení nariadenia vlády SR č. 445/2010 Z. z., ktorým sa preberá smernica Európskeho parlamentu a rady 2004/22/ES v znení smernice 2009/137/ES
Government Ordinance of the Slovak Republic No. 294/2005 Coll., on measuring instruments as amended by Government Ordinance No. 445/2010 Coll., which implemented the Directive 2004/22/EC on measuring instruments as amended by Directive 2009/137/EC of the European Parliament and Council

Žiadateľ/Výrobca:
Issued to (Manufacturer):
BMETERS s.r.l.
Via Friuli, 3
33050, Gonars (UD), Italy

Druh meradla:
Type of instrument:
Vodomer (MI-001)
Water meter (MI-001)

Označenie typu:
Type designation:
GMDM

Základné požiadavky:
Essential requirements:
príloha č. 1 a príloha MI-001 k nariadeniu vlády SR č. 294/2005 Z. z. v znení nariadenia vlády SR č. 445/2010 Z. z.
Annex No. 1 and Annex MI-001 to Government Ordinance of SR No. 294/2005 Coll. as amended by Government Ordinance No. 445/2010 Coll.

Platnosť do:
Valid until:
2. júna 2024
June 2, 2024

Notifikovaná osoba:
Notified body:
Slovenský metrologický ústav **1781**
Slovak Institute of Metrology *1781*

Dátum vydania:
Date of issue:
3. marca 2016
March 3, 2016

Základné charakteristiky, popis meradla a podmienky schválenia sú uvedené v prílohe, ktorá je súčasťou tohto certifikátu. Certifikát vrátane prílohy má spolu 9 strán.
Essential characteristics, instrument description and approval conditions are set out in the appendix hereto, which forms the part of the certificate. The certificate including the appendix contains 9 pages.

Emanuel Godál
zástupca notifikovanej osoby
representative of notified body

Poznámka: ES certifikát typu je bez pečiatky a podpisu neplatný. Tento ES certifikát typu môže byť rozmnožovaný len celý a nezmenený. Rozmnožovať jeho časti je možné len s písomným súhlasom Slovenského metrologického ústavu.

Note: *EC-type examination certificate without signature and seal is not valid. This EC-type examination certificate may not be reproduced other than in full. Extracts may be taken only with the permission of the Slovak Institute of Metrology.*

1 Instructions and standards used within assessment

1.1 Generally binding instructions

Meter type was examined in terms of request for given type provisions Government Ordinance of the Slovak Republic No. 294/2005 Coll., on measuring instruments as amended by Government Ordinance No. 445/2010 Coll. which implemented the Directive 2004/22/EC on measuring instruments as amended by Directive 2009/137/EC of the European Parliament and Council (next Government Ordinance).

Requirements are listed in No. 1 and Annex MI-001 to Government Ordinance of SR No. 294/2005 Coll.

1.2 Harmonized standards and normative documents used

OIML R 49-1:2006 - Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements
OIML R 49-2:2004 - Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
EN 14154-1:2005+A2:2011 - Water meters - Part 1: General requirements
EN 14154-2:2005+A2:2011 - Water meters - Part 2: Installation and conditions of use
EN 14154-3:2005+A2:2011 - Water meters - Part 3: Test methods and equipment

1.3 Other instructions used:

OIML R 49-2:2006 - Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
OIML R 49-3:2006 - Water meters intended for the metering of cold potable water and hot water. Part 3: Test report format

2 Type marking

Multi-Jet magnetic water meter – GMDM

Meter is made in following subgroups:

Type of meter	Temperature class	Class	Nominal Diameter
GMDM	T30, T50	M1[1])	DN15, DN20, DN25, DN32, DN40, DN50

3 Description of measuring instrument

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Meter name: Multi-Jet magnetic water meter

Type marking: GMDM

Description of operating principle instrument design:

Multi-Jet magnetic vane-wheel water meter with sealed dry magnetic register and permanent flowrate of 2,5 m^3/h, 4 m^3/h, 6,3 m^3/h, 10 m^3/h, 16 m^3/h and 25 m^3/h have been designed to measure actual volume of clean cold potable water flowing in a completely filled up closed

[1] according to Government Ordinance of the Slovak Republic, Annex No. 1

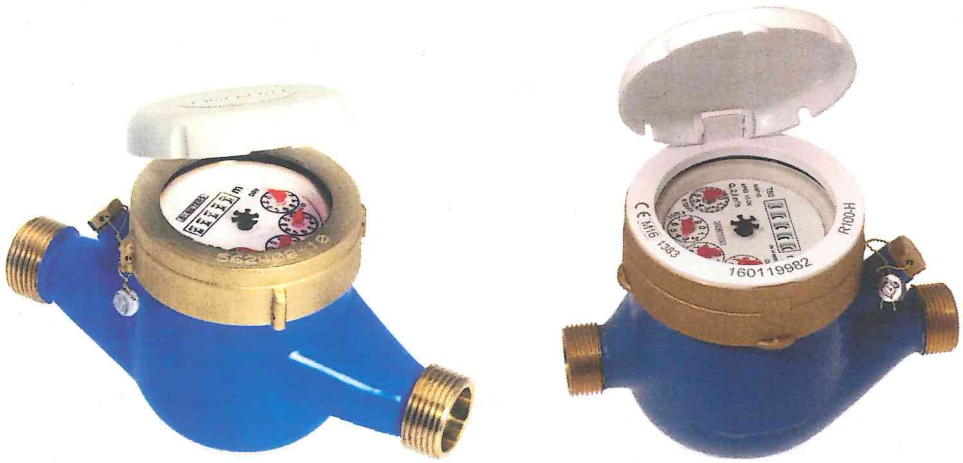
pipeline. The water meter is composed of a body, of the measuring mechanism and the counter. Water flowing through a meter sets the vane-wheel in a rotary motion that is transferred by magnetic coupling to the counting mechanism.
The meter is mainly composed of the body group and measuring unit group.

The body group consists of the body, the cap, the lid, adjusting device and the inlet strainer. The glass or plastic cover can protect the register against the external damages, and the lid provides the further protection to the register. The adjusting device built in the body is used to calibrate the meter.

The body of the water meter is a brass with inlet and outlet screw parts (for DN 50 could be body with flange).

Water meters have been fitted for mounting on pipelines in horizontal positions or in pipeline in vertical position depends of type of body. In all fitting positions the indicating device must be positioned on the top. Accidental occurrence of a reverse flow does not affect metrological characteristics provided for a normal flow.

Water meter can be equipped with a reed contact impulse emitter or by radio or M-BUS module which was not part of this certification.



Picture No.1 Multi-Jet magnetic water meter

3.1 Description of subgroups

Marking:	GMDM
DN:	DN 15, DN 20, DN 25, DN 32, DN 40, DN 50

The GMDM meter can be equipped by following devices:

- Impulse emitter device which was not part of this certification.
- Radio or M-BUS device which was not part of this certification.

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3.2 Measuring insert

The measuring unit group consists of the sealed register, the measuring chamber and the vane wheel assembly. It is a key group for the accuracy performance of the meter. The magnetic disc on the top of wane wheel shaft transmits the movement of the turbine to the clockwork and register. The calibration of the water meter can be done by adjusting the regulation screw.

3.3 Indicating device

The capacity of the counter is 99 999 m^3 (for sizes DN15, DN20, DN25 and DN32) and 999 999 m^3 (for sizes DN40 and DN50) minimum resolution of the reading is 0,05 dm^3.

The counter design does not allow for resetting of meter indications.
Counter pointers rotate clockwise. Indicated digital values increase as the drums with digits marked on them move upwards. An indication increase by one digit is complete when a digit in a lower decade changes from 9 to 0. In a decade of the lowest values digital indications change continuously. Black digits marked on digital drums or black pointers indicate cubic meters or their multiples whereas red digits or pointers indicate submultiples of cubic meters.
The pointers move round scales marked with proper multipliers and placed on an indicating dial.

3.4 Principle of operation

The potable water enters the meter from the inlet of the meter and distributed by the lower orifices that equally spaced on the circumference of the measuring chamber, the Multi-Jet distributed strike the vane wheel at the tip of the vane blades to make it rotation, the measured water by the vane wheel flows out from the top orifices on the measuring chamber. The rotation of the vane wheel (proportional to the velocity of water flow) is transmitted directly to the sealed register, the register totalizes the rotation of the vane wheel and indicates the water volume passing through the meter. The water meter is dedicated to measure the flow and the delivered water quantity.

3.5 Technical documentation

A numbers of drawings of technical documentation are listed in the following tables:

Drawing No.	Description
3.0.DM.12	EXPLODED VIEW
1.DM.13	SECTION VIEW DN 15-32
2.5.DM.2	SECTION VIEW DN 40-50
2.6.DM.3	SECTION VIEW DN50 FLANGE
2.1.DM.14 rev. 1	TOTALISIM MECHANISM DN 15-32
2.5.DM.4	TOTALISIM MECHANISM DN40-50
2.1.DM.5	DISPLAY DN 15-32
2.1.DM.6	DISPLAY FOR RADIO OR MBUS DN 15-32
2.4.DM.7	DISPLAY DN 40-50
2.4.DM.8	DISPLAY FOR RADIO OR MBUS DN 40-50
2.1.DM.8	RADIO OR MBUS SECTION VIEW
2.1.DM.9	RADIO OR MBUS MODULE CONNECTION
2.0.DM.10	PULSE OUTPUT

Drawing No.	Description
2.0.DM.11	ANTIFRAUD PROTECTION
2.0.DM.12	GMDM vertical body

Drawing No.					
1.1.01.04.0	1.5.01.01.9	2.1.15.16.9	2.5.04.01.7	2.5.34.01.9	9.3.18.01.9
1.1.01.04.9	1.5.21.05.0	2.1.18.09.9	2.5.05.01.9	2.5.44.01.9	1.4.01.01.9
1.1.01.05.9	1.5.21.05.9	2.1.33.06.9	2.5.05.02.9	3.1.14.01.9	1.5.01.01.0
1.1.01.06.9	1.5.36.01.9	2.1.37.01.9	2.5.06.01.9	3.3.03.02.9	2.1.11.08.7
1.1.01.07.0	1.6.01.01.9	2.1.44.02.9	2.5.09.01.9	3.3.03.01.9	2.1.12.05.9
1.1.01.07.9	10.6.01.02.9	2.2.02.02.9	2.5.09.02.9	3.5.03.01.9	2.3.09.02.9
1.1.01.10.0	2.1.02.04.9	2.2.09.01.9	2.5.09.03.9	3.5.14.01.9	2.3.18.01.9
1.1.01.10.9	2.1.09.03.9	2.2.09.05.9	2.5.09.04.9	4.1.18.06.9	2.5.12.01.9
1.1.21.05.0	2.1.09.04.9	2.2.09.13.9	2.5.09.05.9	4.1.18.07.9	2.5.13.01.9
1.1.21.05.9	2.1.09.05.9	2.2.09.14.9	2.5.09.06.9	4.5.18.02.9	7.1.38.02.9
1.1.36.01.9	2.1.09.06.9	2.2.34.02.9	2.5.09.07.9	4.5.18.03.9	1.2.01.22.9
1.2.01.03.0	2.1.09.07.9	2.3.02.02.9	2.5.09.08.9	5.1.20.02.9	2.1.06.09.9
1.2.01.03.9	2.1.09.08.9	2.3.04.03.7	2.5.09.09.9	5.5.20.01.9	2.1.06.08.9
1.2.01.20.0	2.1.10.01.9	2.3.09.01.9	2.5.11.01.7	1.2.01.22.9	1.1.19.02.9
1.2.01.20.9	2.1.11.01.9	2.1.11.14.7	2.1.04.15.7	7.5.38.01.9	1.1.36.03.9
1.3.01.01.0	2.3.34.01.9	2.3.33.03.9	2.5.15.01.9	7.5.38.02.9	1.5.19.01.9
1.3.01.01.9	2.1.12.06.9	2.3.34.02.9	2.5.15.02.9	8.1.29.03.9	2.1.04.15.7
1.3.36.01.9	2.1.13.03.9	2.3.37.01.9	2.5.22.03.9	8.5.29.01.9	2.1.15.02.9
2.1.05.105.9	2.1.15.06.9	2.4.02.01.9	2.5.33.02.9	2.1.28.10.9	2.1.28.11.9
2.1.15.14.9	2.1.17.04.9	2.1.18.25.9	2.1.22.41.9	2.1.34.02.9	2.1.42.02.9
2.1.28.14.9	2.1.28.15.9	2.1.28.24.9	2.1.30.07.9	2.5.12.02.9	2.5.12.03.9
2.2.09.02.9	2.2.09.03.9	2.2.09.04.9	2.5.10.01.9	4.1.18.05.9	4.1.18.06.9
2.5.28.01.9	2.5.30.01.9	3.1.03.10.9	3.1.03.13.9	9.1.18.09.9	4.1.18.18.9
7.1.25.05.9	7.1.25.06.9	8.1.29.01.9	2.4.DM.8	2.4.DM.7	2.1.DM.6
2.1.DM.5	2.0.DM.13	2.1.22.45.9	2.1.22.46.9	1.1.21.37.9	1.1.21.36.9

All drawings, schemes and technical documentations used during the conformity assessment are saved in document No. NO-262/14, NO-284/14 and NO-315/15.

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4 Basic technical characteristics

Type marking		**GMDM**					
Nominal diameter DN	mm	15	20	25	32	40	50
Indicating range	m^3	10^5				10^6	
Resolution of the reading	m^3	0,00005					
Maximum admissible pressure	-	MAP16					
Working pressure range	bar	from 0,3 to 16					
Pressure loss	-	Δp 63					
Temperature class	-	T30, T50					
Flow profile sensitivity classes	-	U0, D0					
Position	-	H					
Climatic and mechanical environments	-	closed spaces /from 5°C to 55°C/mech. class M1					

4.1 Additional technical characteristics

Weight	from 1,35 kg to 7,25 kg

5 Basic metrological characteristics

The maximum permissible error (accurate class):

± 5 % ($Q_1 \leq Q < Q_2$)

± 2 % ($Q_2 \leq Q \leq Q_4$) for water temperature (from 0,1 to 30) °C

± 3 % ($Q_2 \leq Q \leq Q_4$) for water temperature greater than 30 °C

Diameter	DN	mm	15	20	25	32	40	50
Minimum flowrate	Q_1	m^3/h	≥ 0,0156	≥ 0,025	≥ 0,0393	≥ 0,0625	≥ 0,1	≥ 0,1562
Transitional flowrate	Q_2	m^3/h	≥ 0,025	≥ 0,04	≥ 0,063	≥ 0,1	≥ 0,16	≥ 0,25
Permanent flowrate	Q_3	m^3/h	**≤ 2,5** [2]	**≤ 4** [2]	**≤ 6,3** [2]	**≤ 10** [2]	**≤ 16** [2]	**≤ 25** [2]
Overload flowrate	Q_4	m^3/h	≤ 3,125	≤ 5	≤ 7,875	≤ 12,5	≤ 20	≤ 31,25
Measuring range R	Q_3/Q_1	-	**≤ 160** [3]					
Ratio	Q_2/Q_1	-	1,6					

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[2] according to EN 14154-1-2005+A2:2011, 7.1 Permanent flowrate (Q_3)

[3] according to EN 14154-1-2005+A2:2011, 7.2 Measuring range

6 Results of conformity assessment

The results of tests, assessments and evaluations given in the evaluation report No. NO-315/16/B/ER dated March 2, 2016 give sufficient evidence, that the technical design of the measuring instrument – Multi-Jet magnetic water meter type GMDM is in compliance with the technical requirements of the Slovak Republic Governmental Ordinance No. 294/2005 Coll. On measuring instruments, Annex No. 1 and MI-001, and the STN EN 14154-1:2005+A2 and OIML R 49-1:2006 standards.

7 Datas placed on the measuring instrument

On the shroud, the dial of the indicating device or on an identification plate of every water meter or in the product documentation minimum the following data should be marked:

a) producer´s name or his production mark
b) type of the Multi-Jet meter
c) measuring unit m^3
d) numerical value of Q_3 and ratio Q_3/Q_1
e) production serial number and the year of production
f) number of EC certificate type and conformity mark
g) the highest admissible pressure if it differs from 1 MPa
h) flow direction
i) the letter V or H, if the meter can only be operated in the vertical or horizontal position
j) class of pressure loss if it differs from Δp63
k) flow profile sensitivity classes
l) the temperature class where it differs from T30

8 Conditions of conformity assessment of measuring instruments produced with type approval

Multi-Jet magnetic water meter put onto the market in line with the procedure of conformity assessment according to the D or F Annexes of the Governmental ordinance should be in compliance with the technical description by the item 3 of this report and at test should be in compliance with the requirements determined in OIML R 49-1:2006. Metrological test is performed by testing equipment which should be in compliance with the requirements determined in STN EN 14154-3:2005+A2 and water at temperature 20 °C ± 5 °C in following point of flowrate:

a) Minimum flowrate $Q_1 \leq Q \leq 1{,}1Q_1$
b) Transitional flowrate $Q_2 \leq Q \leq 1{,}1Q_2$
c) Permanent flowrate $0{,}9Q_3 \leq Q \leq Q_3$

A metrological test may only be performed by a producer, or a notified body respectively in line with the conformity assessment procedure according to the D or F Annexes of the Governmental ordinance respectively.

9 Measures asked for providing measuring instrument integrity

9.1 Identification

The Multi-Jet magnetic meter should be in compliance with the description provided on the item 3 of this Annex and should be in compliance with the marking specified by the item 7 of this Annex. The number given to the EC certificate is put at each piece of the measuring instrument.

Emplacement of the conformity mark is followed by § 7 of the Governmental ordinance.

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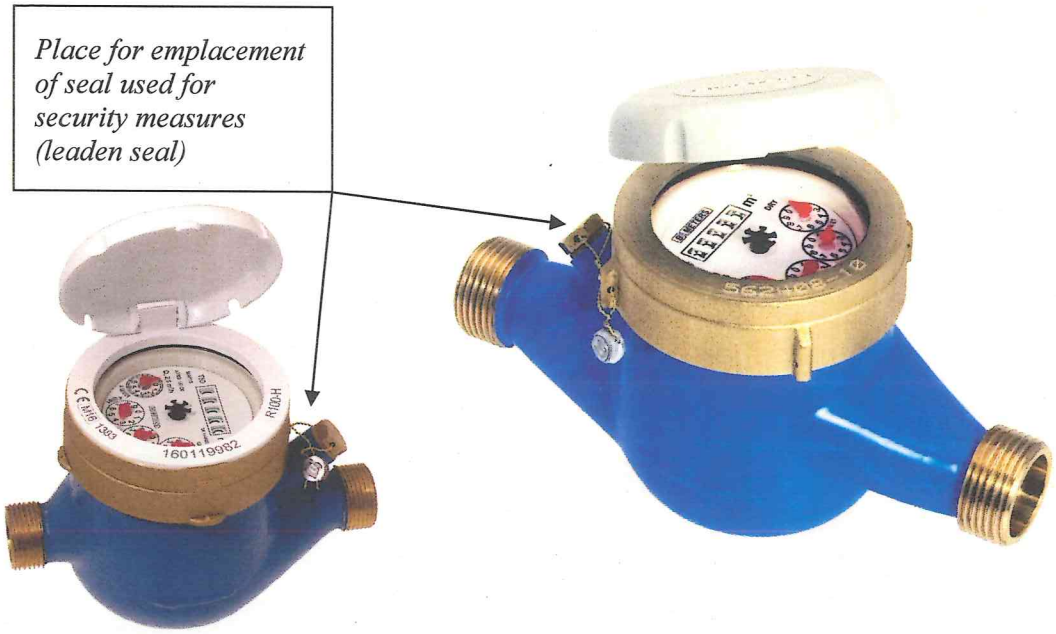
9.2 Sealing of the measuring instrument

The Multi-Jet magnetic water meter shall be before the conformity assessment according to the D or F Annexes sealed by following sealing marks:

Connection of counter shroud and water meter body shall be sealed by seal used for security measures (leaden seal) (Picture No. 2)



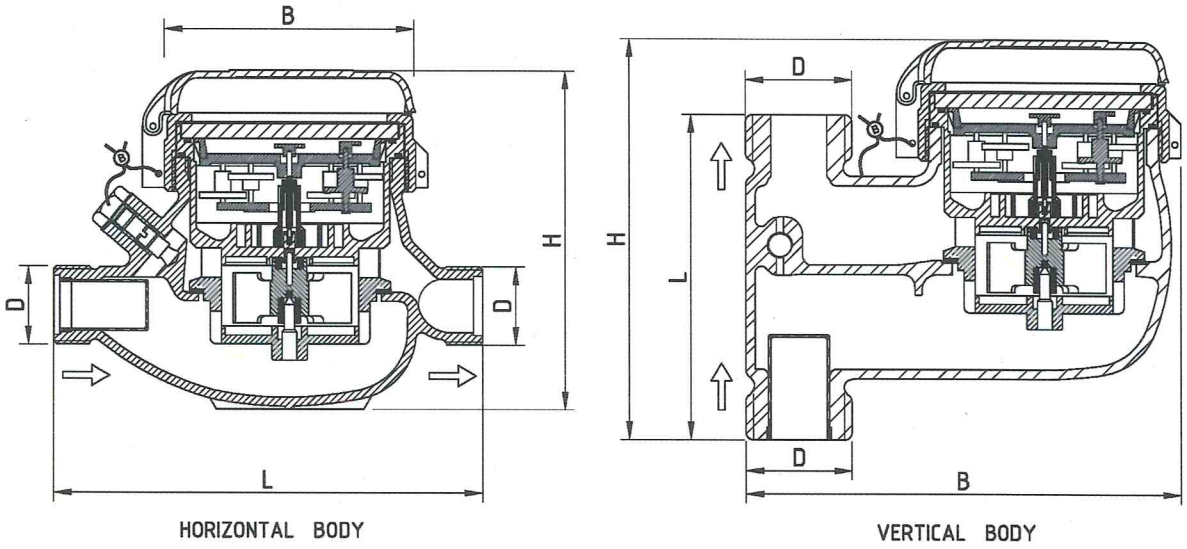
Picture No.2 Emplacement of the seal for security measures

10 Requirements for installation, especially conditions of usage

10.1 Installation data

Horizontal body							
Nominal size	[mm]	15	20	25	32	40	50
	[inch]	1/2"	3/4"	1"	1"1/4	1"1/2	2"
Construction length [mm] - *L*		from 145 to 190	from 160 to 190	260	260	300	300
Width [mm] - *B*		85	85	85	85	112	112
High [mm] - *H*		115	115	120	120	155	167
Connection - *D*		3/4" or 1"	1"	1"1/4	1"1/2	2"	2"1/2 or flange
Weight [kg]		1,35	1,45	2,04	2,11	4,58	7,25

Vertical body		
Nominal size	[mm]	15 or 20
	[inch]	1/2" or 3/4"
Construction length [mm] - *L*		105
Width [mm] - *B*		147
High [mm] - *H*		135
Connection - *D*		3/4" or 1"
Weight [kg]		1,45



Picture No.3 Installation dimensions

10.2 Installation requirements

A Multi-Jet magnetic water meter is introduced into the operation by a worker having a certificate for this activity performance. The Multi-Jet magnetic meter is possible to be put into use after a construction in line with this report and in line with a producer instruction by "Instruction of installation and conditions of use of water meters". A measuring instrument should be installed in direction of water flow arrow marked on the meter body.

10.3 Conditions of use

Within using the measuring instrument it is needed to be managed by recommendations of a producer by "Instruction of installation and conditions of use of water meters".

Assessment done by: Ing. Viliam Mazúr

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