



## Test Certificate

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Project number: 2228152  
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Issued by NMI Certin B.V.

In accordance with The "Metrologiewet" (Stb. 2006, 137) and the "Regeling nationaal autonoom geregelde meetinstrumenten"

Producer Endress+Hauser SE+Co. KG  
Hauptstrasse 1  
79689 Maulburg  
Germany

Part A **calculating and indicating device**, intended for use as part of a liquid level gauge

Manufacturer's mark or name : Endress+Hauser GmbH + Co. KG  
Type designation : NRF81

Further properties are described in the annexes:

- Description TC8909 revision 2;
- Documentation folder TC8909-2.

Remark

- This revision replaces the previous revisions;
- The documentation folder replaces the previous documentation folder.

Issuing Authority

**The Designated Body, NMI Certin B.V.**  
15 February 2019

  
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# Description

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## 1 General information about the calculating and indicating device

Properties of the calculating and indicating device, whether mentioned or not, shall not conflict with the legislation.

### 1.1 Essential parts

See document number 8909/0-02 for assembly drawing of the calculating and indicating device housing.

#### 1.1.1 Electronics parts

The calculating and indicating device is composed of the following parts:

Part	Documentation	Remarks
Display/Keyboard	8909/0-03, 0-04, 0-05	-
Frontplane	8909/0-06, 0-07	-
IOM-Analog AEXd	8909/0-08, 0-09, 0-10, 2-01	-
IOM-Analog AEXi	8909/0-11, 0-12, 0-13, 2-02	-
IOM-Digital	8909/0-14, 0-15, 0-16	-
IOM-Modbus	8909/0-17, 0-18, 0-19	-
IOM-V1	8909/0-20, 0-21, 0-22	-
Main Board (CPU)	8909/0-23, 0-24, 0-23	-
Power supply	8909/0-26, 0-27, 0-28	-

#### 1.1.2 Remote indications (optional)

The following remote indications can be used optionally:

- Tankvision, as described in the Test Certificate TC7445.
- Tankvision Professional, as described in the Test Certificate TC8732.

### 1.2 Essential characteristics

The calculating and indicating device is a tank gauging device without a sensor. It has several I/O functionalities in order to acquire measurement data from the tank, calculate the level in a tank and provide the data to a host system.

#### 1.2.1 Temperature range ambient

- -40 °C / +70 °C

#### 1.2.2 Indication

- Indication of the measured level, in m or mm, with a resolution of 0,1 mm.
- Level indication information and gauge status (level balance, etc.).
- Indication of status messages, error messages and alarm messages.
- Indication of the device locking status.



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### 1.2.3 Software specification (refer to WELMEC guide 7.2):

- Software type P;
- Risk Class C;
- Extension T, while extensions L, S and D are not applicable.

Software version	Checksum	Remarks
01.02.00	0x02FE	-
01.02.01	0x0D3E	-
01.03.03	0x8D45	-

Software version and belonging checksum can be viewed by the display as stated in paragraph 1.5.1.

### 1.3 Essential shapes

#### 1.3.1 Markings

The main nameplate is bearing at least, good legible, the following information:

- Test certificate number TC8909;
- Name or trade mark of the manufacturer;
- Serial number and year of manufacture;
- Identification of the measuring tank the connected level gauged is mounted upon.

### 1.4 Conditional parts

#### 1.4.1 Power supply

The calculating and indicating device is powered by an external AC power supply, in the range of 100 - 240Vac (-15% / +10%) @ 50/60Hz.

#### 1.4.2 Housing

The material of the housing of the calculating and indicating device is aluminium or stainless steel.



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## 1.5 Conditional characteristics

1.5.1 Programming  
When the Weights & Measures switch is set to “W&M sealed” W&M parameters cannot be changed.

Below an overview is given of the parameters that are important from a legal point of view, with the correct setting:

Parameter	Value	Remarks
<b>Setup</b>		
Units preset	mm or m	Used to select one of a preset unit settings.
Tank reference height	verification	Defines the distance from the dipping reference point to the zero position (tank bottom or datum plate).
Level source	verification	Defines the level source .
<b>Setup-&gt;Advanced Setup-&gt;Display</b>		
Value 1 display	tank level	Select the measured value that is shown on the local display.
<b>Setup-&gt;Advanced Setup-&gt;System units</b>		
Distance unit	mm or m	Select the unit for distance. This selection does not affect the measurement and calculation accuracy of the device.
<b>Diagnostics-&gt;Device info</b>		
Firmware version	See § 1.2.3	Shows the device firmware version installed.
Firmware CRC	See § 1.2.3	Shows the checksum of the installed firmware version.
W&M config CRC	information	Shows the checksum of all W&M parameter.

1.5.2 Error messages  
On the indication or indications a message is presented if the measured value is not legal and/or a technical problem occurs.

## 2 Seals

- The following seals are applied:
- The Weights and Measures key switch. A seal or sealing sticker has to be place over the switch after system is configured and sealed and switch is closed;
  - The data plate is fixed to the calculating and indicating device and secured against removal by seal or it will be destroyed when removed;
  - The housing is sealed against opening.

For an example of the sealing see document number 8909/0-01.



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### 3 Conditions for conformity assessment

- The calculating and indicating device shall be constructed in conformity with the description and documentation folder that belong to this Type approval certificate;
- The seals shall be applied as described in chapter 2;
- Other parties may use this Test Certificate only with the written permission of Endress+Hauser.

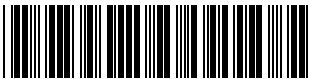
### 4 Reports

An overview of performed tests is given in the reports:

- NMI-16200591-05;
- NMI-16200591-06.







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