MECON
SAFETY CONTROL

TURBO-LUX® 3 DIGITAL

Measuring transducer orifice flow meter

FM APPROVED

made in Germany

EN OPERATING MANUAL

IMPRINT

CONTENT

1 SAFETY INSTRUCTIONS

1.1 Intended use

The Turbo-Lux® 3 orifice flow meter – consisting of a measurement orifice and a bypass flow meter – serves to measure the volume flow of water in test pipes of water supply systems in stationary water extinguishing systems.

The microprocessor-controlled Turbo-Lux® 3 Digital indicator described here can be used as an alternative to the mechanical bypass flow meter. Using the operating unit on the device, the nominal size and rated power of the pump can be adjusted to match the individual system properties. The digital indicator registers and processes the measurement signals from the associated measurement orifices of the Turbo-Lux® 3 series. In addition to the visual display, the device also has a 4 ... 20 mA output for further communication (12 ... 24 V DC version).

The installation location, installation position and flow direction can be chosen as desired, taking the arrow direction into account. Installing the measurement orifice incorrectly (wrong flow direction) can destroy the pressure sensor.

This document supplements the existing operating manual of the Turbo-Lux® 3 orifice flow meters.

⚠ NOTICE!

Responsibility for the use of the meters in respect to suitability, intended use, and in particular the corrosion resistance of the used materials in relation to the substance being measured, lies with the user alone. In particular, care must be taken to ensure that the chosen materials of the parts of the meter in contact with the medium are suitable for the process media used.

The manufacturer is not liable for damage which occurs through improper use of these devices or use they are not intended for.

⚠ ATTENTION!

The device may only be used within the pressure and temperature limits specified in the operating manual.

Incorrect operation (against the arrow direction depicted on the orifice) of the orifice – backflow – can destroy the measuring transducer's sensor.

1.2 Approvals

» FM Approval Class: 1046
- Identification PR 455022
» CE mark

Fig. 1: Logos of the certification bodies

By attaching the CE mark, the manufacturer certifies that the Turbo-Lux® 3 Digital satisfies the legal requirements of the following EU directives, in so far as they are pertinent:

RoHS Directive 2011/65/EU as well as 2015/863/EU environmentally compatible

1.3 Manufacturer's safety instructions

The manufacturer is not liable for damages of any kind caused by use of the device, including, but not limited to, damage and consequential damage occurring directly, indirectly and incidentally.

For every product purchased from the manufacturer, the warranty applies according to the relevant product documentation and our terms and conditions.

The manufacturer reserves the right to revise the content of the documents, including this disclaimer, without prior notice, and is not liable in any way for possible consequences of such changes.

The responsibility for whether the flow displays are suitable for the particular application, rests solely with the operator. MECON GmbH assumes no liability for consequences of misuse, modifications or repairs that were carried out by the customer without prior consultation.

In the case of a complaint, the rejected parts must be returned to us cleaned of hazardous substances, unless otherwise agreed (see 5.3).

To prevent injury to the user or damage to the unit, it is necessary that you read the information in this manual carefully before putting the unit into operation.

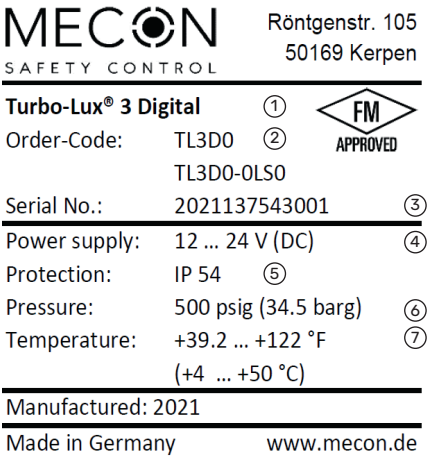
2 SCOPE OF DEVICES

2.1 Scope of delivery

Included in the scope of delivery are:

» Measuring transducer Turbo-Lux® 3 Digital
» Operating manual
» Calibration certificate
» Spare gaskets

2.2 Type plate



① Device type
② Name key / order code
③ Serial no.
④ Power supply
⑤ Protection class
⑥ Max. operating pressure
⑦ Medium temperature

Fig 2.: Type plate Turbo-Lux® 3 Digital measuring transducer

3 INSTALLATION AND MODE OF OPERATION

3.1 Installation instructions

⚠ NOTICE!

All devices have been carefully checked for functionality before being shipped out. Check the packaging for damage or indications of improper handling immediately after receiving it.

Notify the carrier and your responsible sales representative of any possible damage. In such cases, provide a description of the problem, as well as the type and serial number of the device.

Unpack the device carefully to avoid any damage.

Use the packing list to check the completeness of the delivery. Using the type plate, check to ensure that the flow meter supplied corresponds to your order.

The Turbo-Lux® 3 Digital can only be used in operation together with the Turbo-Lux® 3 Set measurement orifice. Please refer to the associated operating instructions for details on installation of this device.

3.2 Installation

3.2.1 Installation of the measurement orifice

Installation of the measurement orifice is described in the associated Turbo-Lux® 3 Set operating instructions.

The digital indicator can be used together with every Turbo-Lux® 3 measurement orifice. Before removing the cap, the pipeline must be emptied to prevent liquid from escaping. The digital indicator is mounted and screwed on with the help of the screw cap.

It should be attached in a way that it is easy to read after installation. The positioning of the Turbo-Lux® 3 Digital is not of importance here. If possible, the screw cap or cap should only be tightened by hand. The threads must be lubricated (using grease, for example).

3.3 Mode of operation

The digital indicator determines the differential pressure generated in the measurement orifice. The microprocessor shows the current measured value on the display, based on the installed and configured nominal size of the measurement orifice and the rated power of the pump.

3.4 Electrical connection

» M12 x 1 (4-pole plug)
» 2 voltage supply
» 2 analogue, active 4 ... 20 mA power output
» Connection (plus pin assignment)

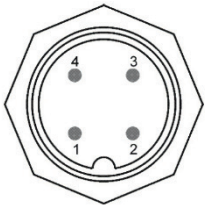


Fig. 3: Electrical connection

PIN	Leads (if applicable)	Function
1	Brown	I_out-
2	White	I_out+
3	Blue	0 V
4	Black	12 ... 24 V

To show the measured values and installation, the Turbo-Lux® 3 Digital is equipped with a back-lit LCD display. Without the need for any other equipment, the operator can easily adjust the parameters of the transducer using three operating keys

Fig. 4: Display with transducer's operating keys

3.4.1 Output

» Active power output 4 ... 20 mA (only with 24 V (DC) supply)
» Volume flow rate

3.4.2 Failure signal

A malfunction in the meter can be signalled either via the power outputs or via the status output.
The power outputs can be adjusted here to a failure signal (alarm) of I < 3.8 mA or I > 22 mA.

3.5 Overview of operating element functions

3.5.1 General

The Turbo-Lux® 3 Digital is operated via the operating unit.

How to operate the digital indicator and adjust parameters via the integrated operating unit is described as follows

3.5.2 Display

Integrated in the operating unit of the Turbo-Lux® 3 Digital is an illuminated graphical 2.4 inch LCD. Measurements and settings can be read directly here.
The flow range depends on the measurement orifice chosen and the associated rated power of the pump. This can be directly configured using the menu on the digital indicator.

3.5.3 Keys and their functions

Three keys are available to change the settings.

⚠ NOTICE!

The keys may not be operated using sharp-edged or pointed objects, such as ballpoint pens or screwdrivers!

Fig. 5: Keys of the Turbo-Lux® 3 Digital

3.5.4 Cursor keys - operating elements

ON key
» Switch on the digital indicator
» Up arrow

MIDDLE key
» Down arrow

OFF key
» Confirm selection
» Pressing and holding cancels the selected function
» Pressing and holding in start mode switches it off

3.6 Settings

In its condition on delivery, the measuring transducer is set as follows after being switched on using the “ON” key:

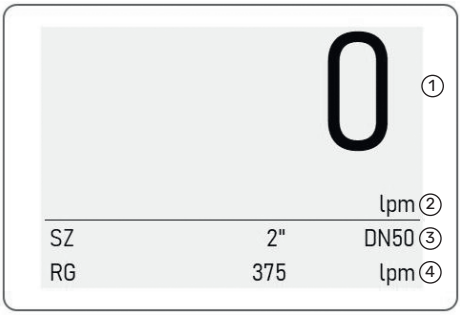


Fig. 6: Display start mode

① Measured value
② Unit
③ SZ - nominal size
④ RG - flow range

Nominal sizes and flow ranges correspond to the table in the Turbo-Lux® 3 manuals.

Access the setup menu by pressing the middle key.

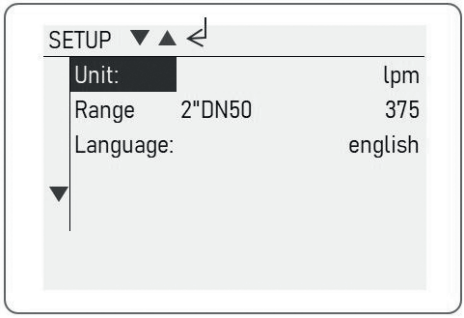


Fig. 7: Display setup menu

Positioning is done using the “ON” key or the middle key.

The reversed marking / readout on the display indicates the current position of the parameter to be changed. Briefly pressing the “OFF” key changes the readout to an editable parameter value.

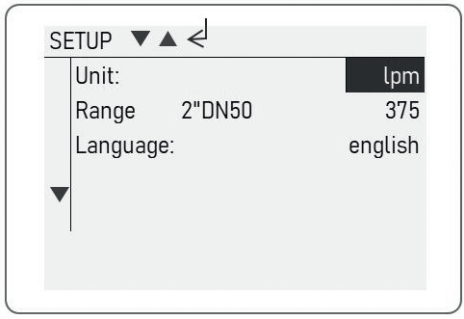


Fig. 8: Display setup menu parameter

After that, changes can be made within the range of values available using the “ON” or middle key.

Briefly pressing the “OFF” key confirms the selection. The display switches back to the parameter.

Pressing the “OFF” key for a minimum of 3 seconds causes the changed parameter to be saved. This is confirmed via the prompt “Write parameter”.
Parameters can be confirmed in any line.

4 COMMISSIONING

When measuring, the measured value is only to be read when a constant flow level has established itself. This means that the measured value displayed remains at a constant level. The pipe must always be completely full.

Before starting up, care must be taken to ensure that the measurement orifice is correctly mounted in relation to the flow direction. Incorrect mounting could lead to the measuring transducer’s pressure sensor being destroyed.

When starting up the Turbo-Lux® 3 Digital, before starting the pump it is necessary for the control valve after the bypass filter (in direction of flow) to be open 30 % at a minimum, to avoid water hammers/ hydraulic shocks, which could damage the measuring transducer.

4.1 Ambient conditions

» Ambient temperature:
1 ... 50 °C (34 ... 122 °F)
» Storage temperature:
-20 ... 60 °C (-4 ... 140 °F)

5 SERVICE

5.1 Storage

Store the emptied Turbo-Lux® 3 Digital in a dry and dust-free place. Avoid direct sunlight and heat. Avoid weights on the exterior of the meter. Permissible storage temperature range is - 20 °C ... 60 °C (-4 ... 140 °F).

5.2 Maintenance

The Turbo-Lux® 3 Digital is maintenance free. It has no parts that need to be cyclically replaced or adjusted.

All installation and connection work may only be carried out while the supply voltage is switched off.

5.3 Returning the device to the manufacturer

Based on careful manufacturing processes and final inspections on the digital indicator, problem-free use of the Turbo-Lux® 3 Digital can be expected if installed and operated in accordance with this manual.

Should it be necessary to return the Turbo-Lux® 3 Digital to MECON GmbH despite this, the following must be observed:

⚠ ATTENTION!

For legal reasons related to environmental protection and work safety and to protect the health and safety of our employees, all devices sent back to MECON GmbH for repair must be free of all toxic and hazardous substances. This also applies to the cavities in the device. If necessary, the device must be neutralised or flushed by the customer before sending it back to MECON GmbH.

The customer must confirm this by filling in a related form, which can be downloaded from the MECON GmbH website, and include this form with the returned item:

https://www.mecon.de/files/daten/downloads/en/Confirmation-of-decontamination.pdf

5.4 Disposal

⚠ ATTENTION!!

The pertinent regulations of your country must be complied with when disposing of the meters.

MECON
SAFETY CONTROL

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