

DATA SHEET



DIGMESA

FHKU LCD John Guest 3/8" Arnite
Part number: 938-75XX/21

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Version 02 FHKU JG 3/8" LCD 938-75XX/21 GB Page 1-13

General Description

The Flow Sensor FHKU JG LCD is an universally applicable control device and Flow Sensor. Its working range can be individually defined according to its nozzle size. It guarantees most precise fluid measurements. Excellent suitably to the monitoring of ion exchanger filter cartridges and for the treatment of water.

Specific applications: Linear inlet and outlet. Time and date administration, upward or backwards counters, history with date, instantaneous value announcement, automatic impulse calibration, litres and /or alarm-date, securit code prevents tempering by unauthorised persons. Current supply over lithium battery. With a battery change all attitudes and values are stored. Hose diameters from 3/8" (9.5mm) can be directly connected.

Approvals / Standards

EMV-Standard:
EN 61326: 1997 + A1:1998 + A2: 2001
(IEC 61326: 2002)



Material:

Housing: PBT 35%GF (Arnite)
Bearing pin: Inox 1.4305 (18/8)
Nozzle: Inox 1.4305 (18/8)
O-ring: MVQ (Silikon)
Turbine: PVDF
Magnets: Keramik Sr Fe O
(in contact with the medium)
Screw: PT-screws
(Phillips cross recessed)

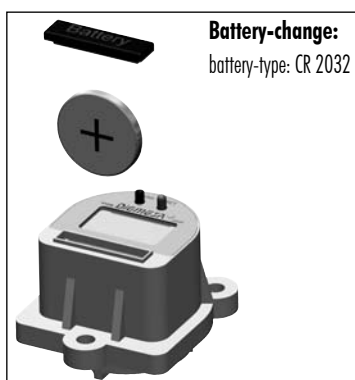
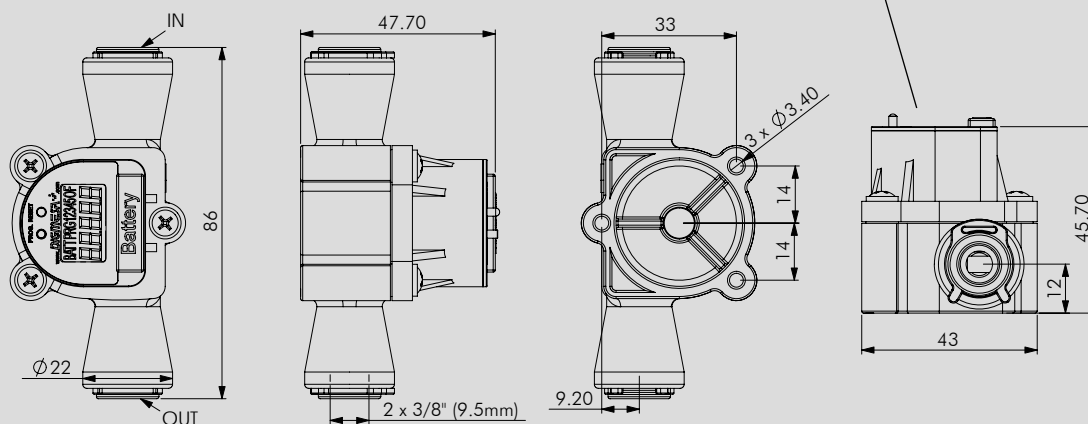
Technical data:

Flow rate: 0.041 - 15 l/min depending on the nozzle diameter
Measuring accuracy: +/- 2.0%
Repetition: < +/- 0.25%
Temperature range: +1°C to +60°C
33.8°F to 140°F
Pressure range: 10 bar at 20°C
145 psi /68°F
Mounting position: **horizontal ***
Nozzle size: Ø 1.0, 1.2, 1.5, 2.0, 2.5, 3.0, 4.0, 5.6 mm

Technical data upper section:

Splash-proof: IP X4
Limit-measurement: 1 - 99999 Litres
Pulses/litre: 1 - 65000
Statistics memory: the last 5 zero resets
Display: 5 digit
Counter: upward 0 to 99999 litres with and without limit
downward 99999 to -9999 litres
Instantaneous value: l/min
Battery: lithium CR 2032

Dimensions in mm:



We reserve the right to make modifications in the interests of technical progress.

RESISTANCE

Special regulations which must be complied with by the flowmeter manufacturer apply to each country, e.g. CE, NSF, FDA and SK. The various media flowing through the flowmeter differ from application to application. You are advised to enquire with the medium manufacturer as to whether the entire installation and the flowmeter are resistant to the medium itself (see Material)!

Working Pressure and Temperature Range

Super Speedfit fittings are suitable for the following

Temp.	Pressure	
	5/32" - 5/16" 4mm - 8mm	3/8" - 1/2" 10mm - 22mm
Air		
- 20°C	16 Bar	10 Bar
Potable Liquids and Air		
+1°C	16 Bar	10 Bar
+23°C	16 Bar	10 Bar
+65°C	10 Bar	7 Bar

Also suitable for vacuum

Depending on the tube used, under certain conditions fittings may be used at higher pressures and temperatures. Please refer to our Customer Services Department for guidance. Note 1 Bar = 14.5 PSIG.

Tube Types

Plastic Tube - Polyethylene, nylon and polyurethane conforming to the tolerances shown below. For soft tubing or thin wall tube we recommend the use of tube inserts.

Braided Tube - Use of Tube to Hose Stems listed on pages 5 and 12 is essential when using tube. Use of clamps to retain braided tube on barbs is recommended.

Metal Tube (soft) - Brass, copper or mild steel conforming to the tolerances below.

Metal Tube (hard) - We do not recommend **Super Speedfit** fittings for hard metal tubes.

For stainless steel and other polished metal tubes we recommend the use of **Superseal** fittings. These are shown on page 9 of this brochure.

It is essential that outside diameters be free from score marks and that the tube be deburred before inserting the fitting.

Tube Tolerances

Super Speedfit fittings are offered for tubes with outside diameters to the following tolerances.

Size (inches)	5/32 - 3/16	1/4 - 1/2
Tolerance (inches)	+0.001 / -0.003	+0.001 / -0.004
Size (mm)	4mm - 5mm	6mm - 22mm
Tolerance (mm)	+0.05 / -0.07	+0.05 / -0.10

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Internet: <http://www.johnguest.com>

<http://www.speedfit.co.uk>

We reserve the right to make modifications in the interests of technical progress.

Installation and System Testing

Fittings and tube should be kept clean and undamaged before use.

All tube and fittings installations must be pressure tested after installation to ensure system integrity before handing over to the final user. See also "How to make a connection".

Chemicals

For use with chemicals or other potentially aggressive liquids, please refer to our Customer Services Department.

Super Speedfit fittings are not recommended for use with explosive gases, petroleum spirits, and other fuels or for central heating systems.

Collet Covers

Are available as additional security against removal of the tube or to provide a simple means of colour coding. The cover is offered in a range of six colours. Please see pages 6 and 12 of this brochure.

Food Quality

All the fittings in the brochure are produced in Food and Drug Administration (FDA) approved materials and are therefore recommended for food quality applications.



Maximum Torque Values for Plastic Threads BSP, BSPT & NPT.

	Threads		
	1/8 - 1/4	3/8 - 1/2	3/4
Max. Torque	1.5Nm	3.0Nm	4.0Nm

- It is recommended that all installations are checked prior to use to determine that a seal has been made.
- The maximum torque figures quoted for use with Speedfit fittings are dependent on the mating thread conforming to the relevant British or International thread standard.

Cleaners and Sanitising of Acetal Fittings

Our advice to customers is to use cleaners and sanitising agents that are above pH4 and low in hypochlorite level. Acetal fittings and parts that are cleaned and/or sanitised should be rinsed immediately with copious amounts of clean tap water to remove all traces of the cleaners. Details of which products are made from acetal are shown in our catalogues but generally John Guest products incorporating acetal are designated by the part number prefix PI, PM, CI, CM and RM. Polypropylene fittings offer greater resistance to aggressive chemicals than acetal fittings. Polypropylene does not have the same mechanical properties as acetal and John Guest polypropylene fittings are generally designated by the part number prefix PP.

Our material suppliers recommend ECOLAB Oasis 133 as a suitable external cleaner for acetal products manufactured by John Guest.

Warranty

Whilst we give a warranty against defects in manufacture or materials, it is the responsibility of the specifier to ensure that fittings and related products are suitable for their application. The installation must be carried out correctly in accordance with our recommendations, complying with recognised codes of practice and relevant national

FHK-LCD query and display function

Upcounter (1 on the display)

Displays the flow quantity in litres.

Measuring range without limit function: 0 to 99999 litres with max. 3 places after the decimal point (dependent on the number of pulses).

With limit function: 0 to 99999 litres (no place after the decimal point).

„OF“ (OverFlow) is displayed if 99999 is exceeded.

Alarm functions: Display blinks when the limit value or the alarm date is reached.

Downcounter (2 on the display)

Displays the remaining quantity in litres through to alarm.

Measuring range without limit function: Downcounter is deactivated. „OFF“ is shown on the display.

With limit function: 99999 to -9999 litres (no place after the decimal point). „OF“ (OverFlow) is displayed if -9999 is undershot.

Alarm functions: Display blinks when value 0 litres or alarm date is reached.

Instantaneous value (3 on the display)

Displays the current flow rate in l/min.

Measuring range: 0 to 999.99 l/min with 2 places after the decimal point.

Time / date (4 on the display)

Displays the time and the date.

Alarm-date (5 on the display)

Without time limit function: The alarm date is deactivated. „OFF“ is shown on the display.

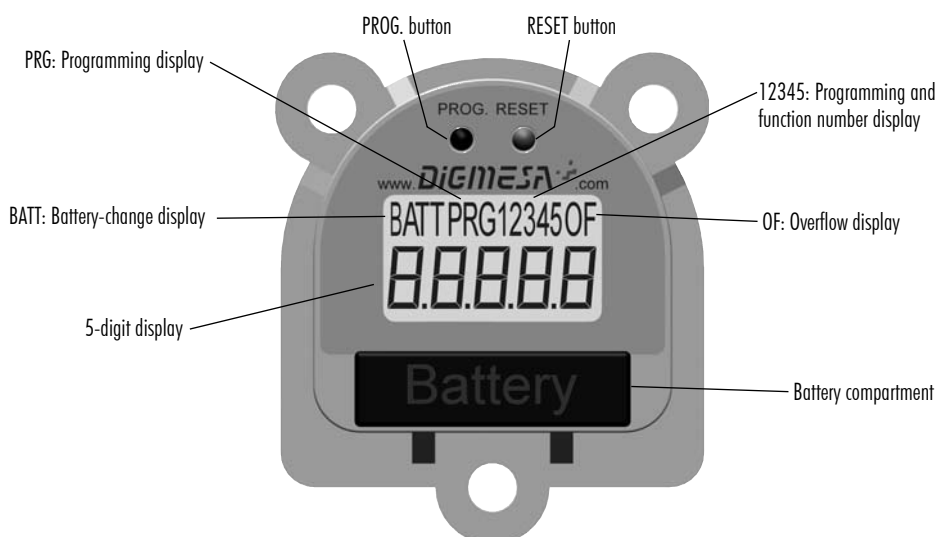
With time limit function: The alarm date is displayed.

History 1-5

The 5 last history values are displayed. They are displayed consecutively with the memory level (1-5). The data of the last reset is saved at memory level 1.

The following values are displayed as a „ticker“ text:

- HL (History Liter) flow quantity
- Hd (History date) reset-date



FHK-LCD programming function

PRG Setting the security code

4-digit security code.

The security function is deactivated if the value of the security code is 0000.

PRG1 Setting time/date

24 h time format (hh-mm)/date (DD.MM.YY).

The current date is saved under Hd (history date) each time the unit is reset.

PRG2 Setting the limit value

Limit value in litres (0 to 99999)

The limit value corresponds to the number of litres before an alarm is triggered and is the initial value when downcounting.

The limit function and downcounter are deactivated if the limit value is 0.

PRG3 Setting the time limit value

Time limit value in months (0 to 99)

The time limit value corresponds to the number of months before an alarm is triggered.

The time limit function is deactivated if the time limit value is 0.

PRG4 Setting the calibration value (manual)

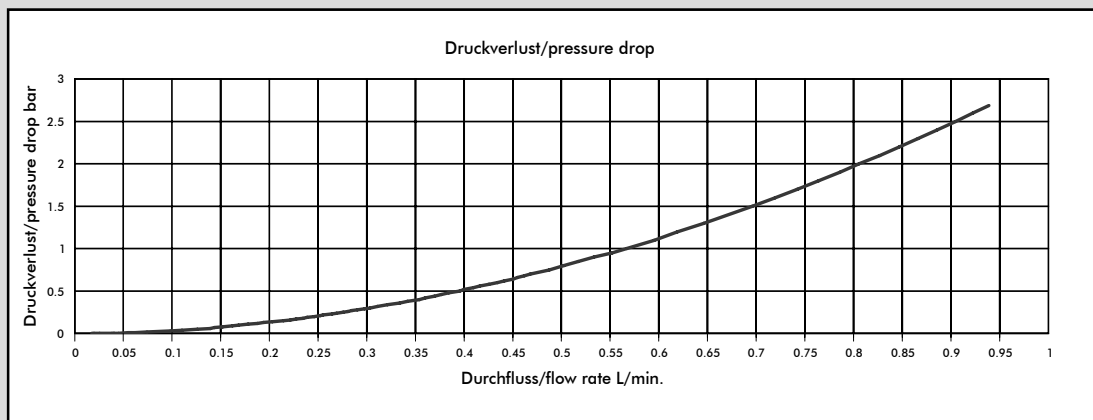
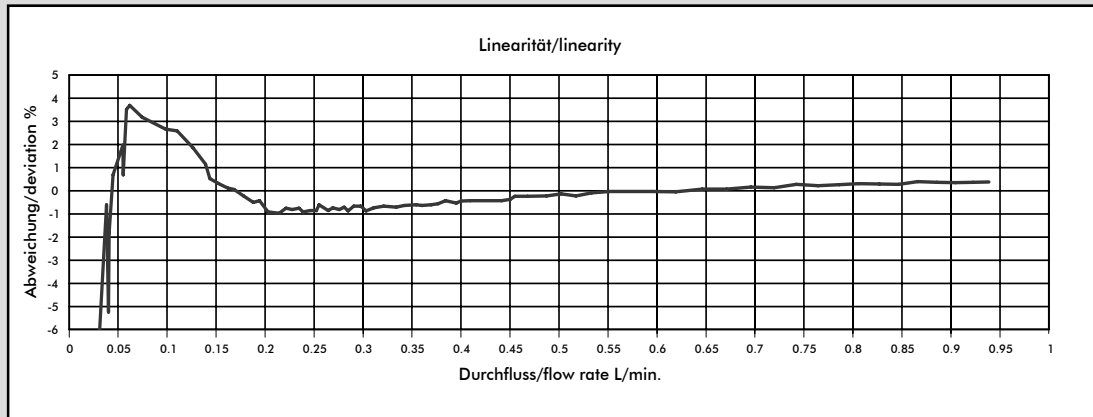
Calibration value in pulses per litre (1 to 65000)

PRG5 Setting the calibration value (automatic)

This function automatically calculates and sets the calibration value of the entire installation and the medium to be measured.

The weight of the flow medium is entered in gram.

Measurement Curve FHKU 1.00 mm



Medium: Water / max. Pressure: 3.3 bar

Nozzle size	Pulses/litre	g/pulse	min. flow rate in litres/min at Linear start	max. flow rate in litres/min	Pressure loss
Ø 1.00 mm	4126	0.2423	0.0410	0.5670	1.00
Ø 1.20 mm	3400	0.2940	0.0505	0.8225	1.00
Ø 1.50 mm	2628	0.3804	0.0427	1.2504	1.00
Ø 2.00 mm	1976	0.5058	0.0911	2.4055	1.00
Ø 2.50 mm	1520	0.6576	0.1503	3.7478	1.00
Ø 3.00 mm	1130	0.8838	0.1022	5.6310	1.00
Ø 4.00 mm	762	1.3107	0.1235	8.3893	0.80
Ø 5.60 mm	472	2.1133	0.3088	9.2647	0.45

The values specified must be considered as approximate values.

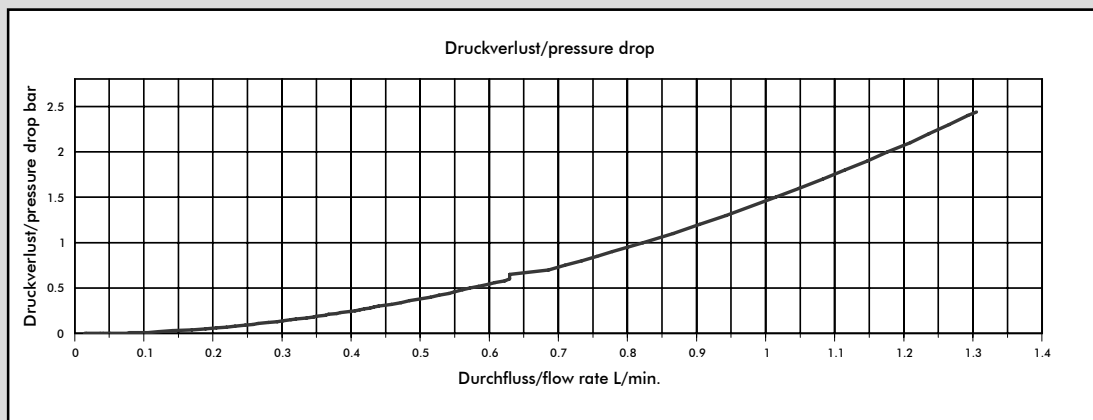
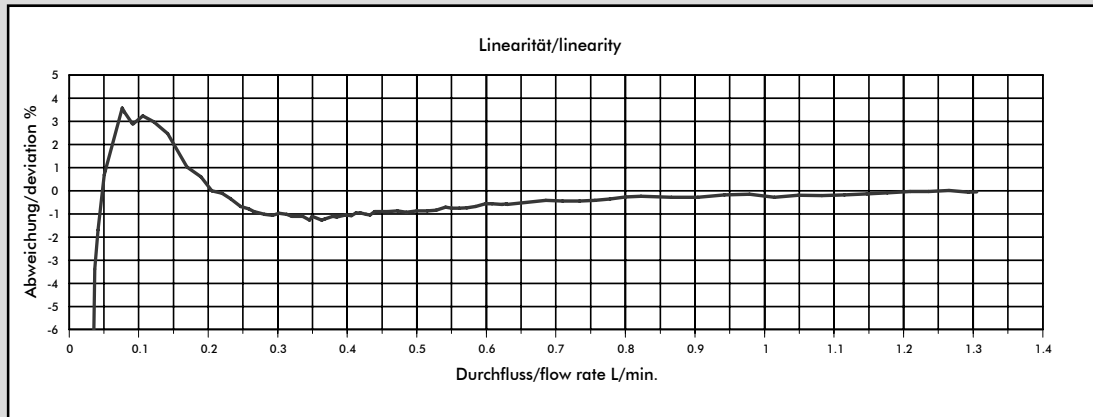
The number of pulses per litre may differ depending on medium and installation.

We recommend to calibrate the number of pulses per litre in line with the complete installation.

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid humidity at the battery and at the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

Measurement Curve FHKU 1.20 mm



Medium: Water / max. Pressure: 3.3 bar

Nozzle size	Pulses/litre	g/pulse	min. flow rate in litres/min at Linear start	max. flow rate in litres/min	Pressure loss
Ø 1.00 mm	4126	0.2423	0.0410	0.5670	1.00
Ø 1.20 mm	3400	0.2940	0.0505	0.8225	1.00
Ø 1.50 mm	2628	0.3804	0.0427	1.2504	1.00
Ø 2.00 mm	1976	0.5058	0.0911	2.4055	1.00
Ø 2.50 mm	1520	0.6576	0.1503	3.7478	1.00
Ø 3.00 mm	1130	0.8838	0.1022	5.6310	1.00
Ø 4.00 mm	762	1.3107	0.1235	8.3893	0.80
Ø 5.60 mm	472	2.1133	0.3088	9.2647	0.45

The values specified must be considered as approximate values.

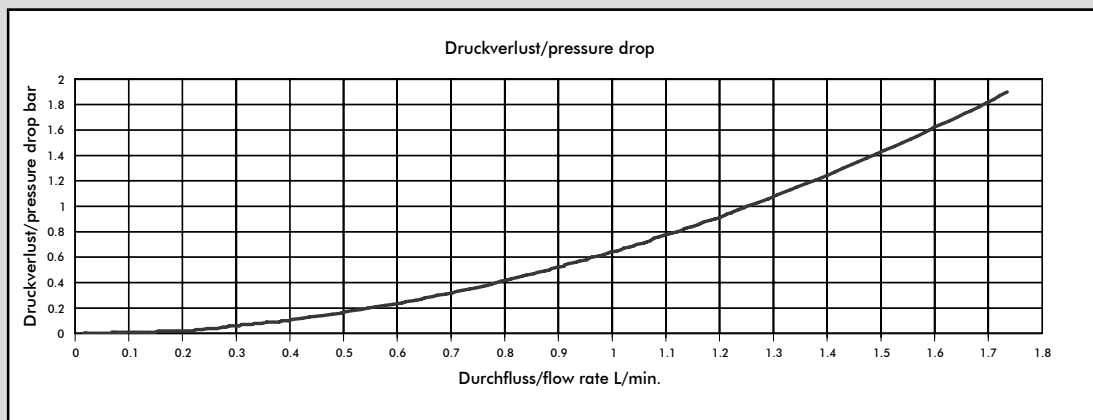
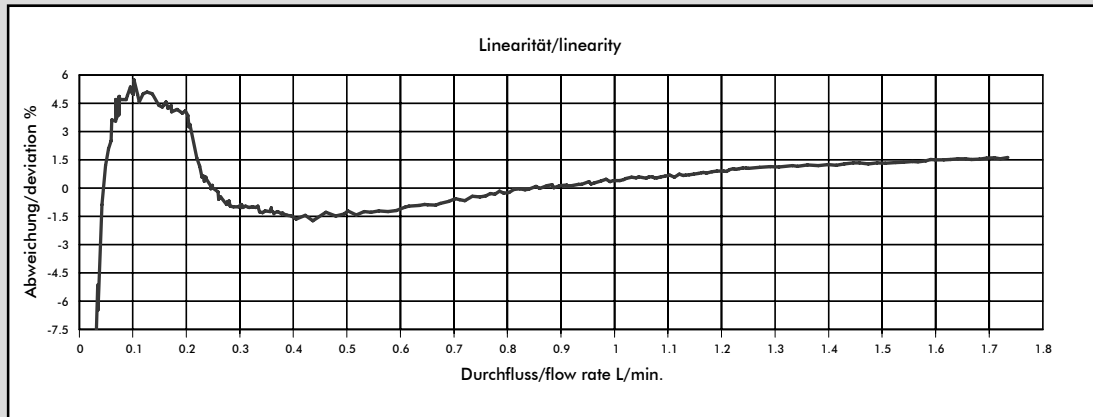
The number of pulses per litre may differ depending on medium and installation.

We recommend to calibrate the number of pulses per litre in line with the complete installation.

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid humidity at the battery and at the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

Measurement Curve FHKU 1.50 mm



Medium: Water / max. Pressure: 3.3 bar

Nozzle size	Pulses/litre	g/pulse	min. flow rate in litres/min at Linear start	max. flow rate in litres/min	Pressure loss
Ø 1.00 mm	4126	0.2423	0.0410	0.5670	1.00
Ø 1.20 mm	3400	0.2940	0.0505	0.8225	1.00
Ø 1.50 mm	2628	0.3804	0.0427	1.2504	1.00
Ø 2.00 mm	1976	0.5058	0.0911	2.4055	1.00
Ø 2.50 mm	1520	0.6576	0.1503	3.7478	1.00
Ø 3.00 mm	1130	0.8838	0.1022	5.6310	1.00
Ø 4.00 mm	762	1.3107	0.1235	8.3893	0.80
Ø 5.60 mm	472	2.1133	0.3088	9.2647	0.45

The values specified must be considered as approximate values.

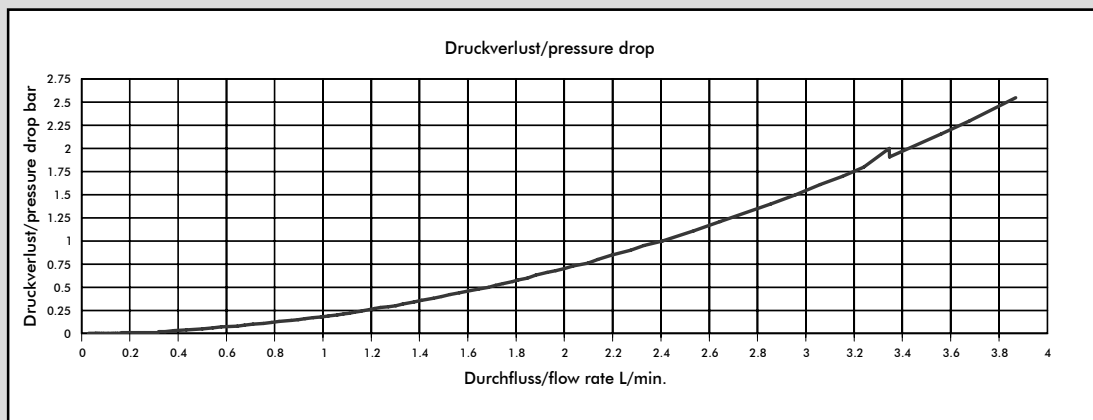
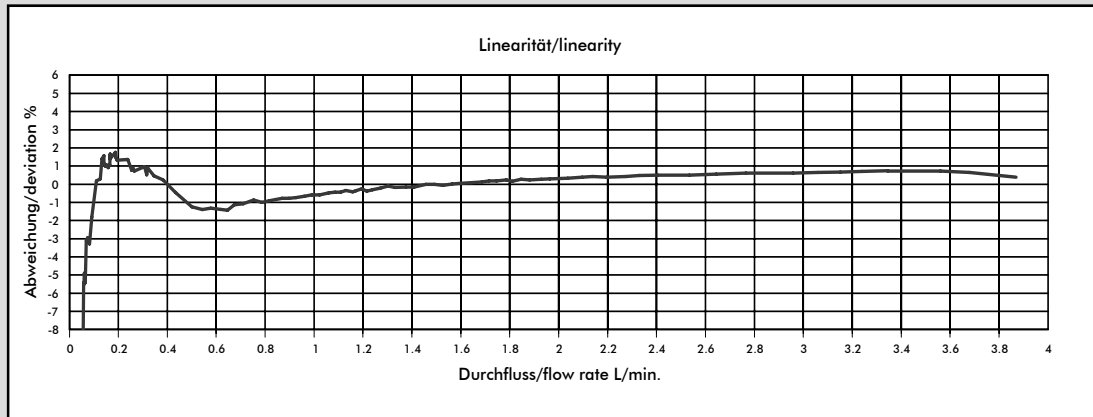
The number of pulses per litre may differ depending on medium and installation.

We recommend to calibrate the number of pulses per litre in line with the complete installation.

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid humidity at the battery and at the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

Measurement Curve FHKU 2.00 mm



Medium: Water / max. Pressure: 3.3 bar

Nozzle size	Pulses/litre	g/pulse	min. flow rate in litres/min at Linear start	max. flow rate in litres/min	Pressure loss
Ø 1.00 mm	4126	0.2423	0.0410	0.5670	1.00
Ø 1.20 mm	3400	0.2940	0.0505	0.8225	1.00
Ø 1.50 mm	2628	0.3804	0.0427	1.2504	1.00
Ø 2.00 mm	1976	0.5058	0.0911	2.4055	1.00
Ø 2.50 mm	1520	0.6576	0.1503	3.7478	1.00
Ø 3.00 mm	1130	0.8838	0.1022	5.6310	1.00
Ø 4.00 mm	762	1.3107	0.1235	8.3893	0.80
Ø 5.60 mm	472	2.1133	0.3088	9.2647	0.45

The values specified must be considered as approximate values.

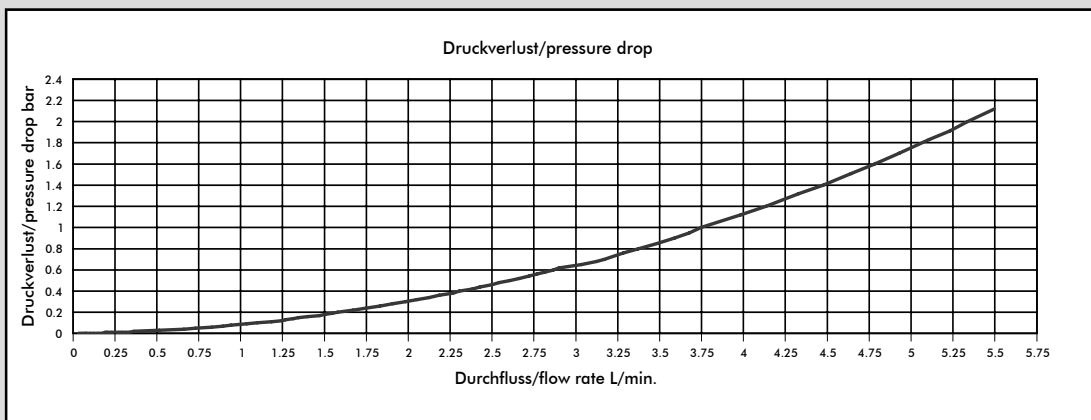
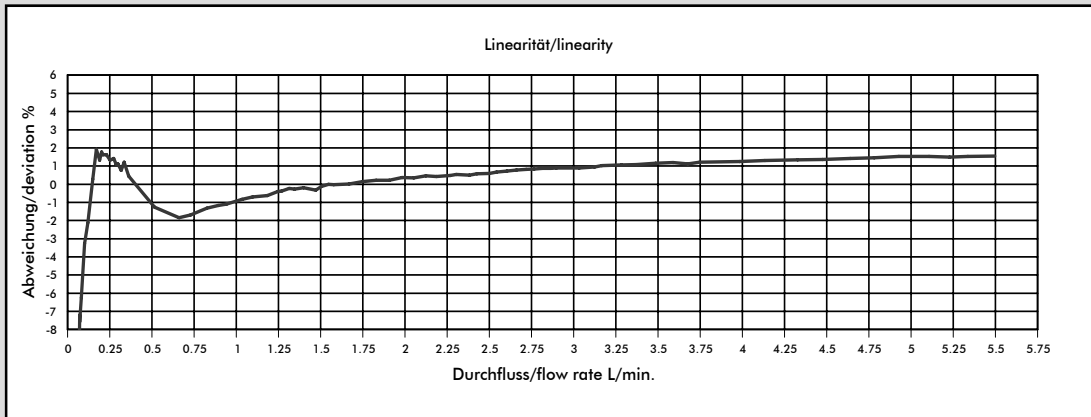
The number of pulses per litre may differ depending on medium and installation.

We recommend to calibrate the number of pulses per litre in line with the complete installation.

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid humidity at the battery and at the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

Measurement Curve FHKU 2.50 mm



Medium: Water / max. Pressure: 3.3 bar

Nozzle size	Pulses/litre	g/pulse	min. flow rate in litres/min at Linear start	max. flow rate in litres/min	Pressure loss
Ø 1.00 mm	4126	0.2423	0.0410	0.5670	1.00
Ø 1.20 mm	3400	0.2940	0.0505	0.8225	1.00
Ø 1.50 mm	2628	0.3804	0.0427	1.2504	1.00
Ø 2.00 mm	1976	0.5058	0.0911	2.4055	1.00
Ø 2.50 mm	1520	0.6576	0.1503	3.7478	1.00
Ø 3.00 mm	1130	0.8838	0.1022	5.6310	1.00
Ø 4.00 mm	762	1.3107	0.1235	8.3893	0.80
Ø 5.60 mm	472	2.1133	0.3088	9.2647	0.45

The values specified must be considered as approximate values.

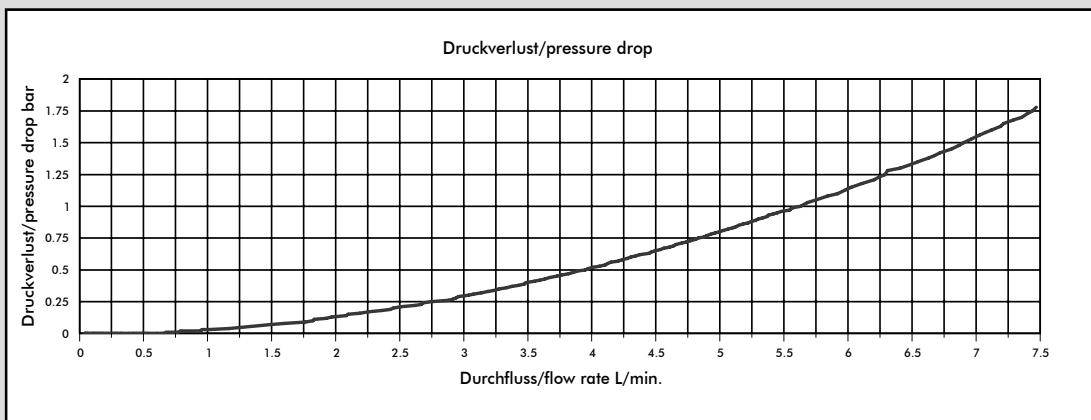
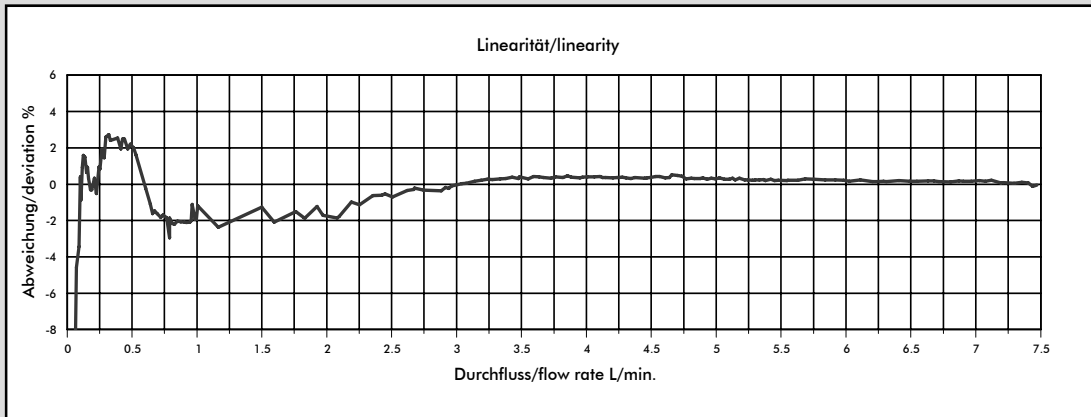
The number of pulses per litre may differ depending on medium and installation.

We recommend to calibrate the number of pulses per litre in line with the complete installation.

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid humidity at the battery and at the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

Measurement Curve FHKU 3.00 mm



Medium: Water / max. Pressure: 3.3 bar

Nozzle size	Pulses/litre	g/pulse	min. flow rate in litres/min at Linear start	max. flow rate in litres/min	Pressure loss
Ø 1.00 mm	4126	0.2423	0.0410	0.5670	1.00
Ø 1.20 mm	3400	0.2940	0.0505	0.8225	1.00
Ø 1.50 mm	2628	0.3804	0.0427	1.2504	1.00
Ø 2.00 mm	1976	0.5058	0.0911	2.4055	1.00
Ø 2.50 mm	1520	0.6576	0.1503	3.7478	1.00
Ø 3.00 mm	1130	0.8838	0.1022	5.6310	1.00
Ø 4.00 mm	762	1.3107	0.1235	8.3893	0.80
Ø 5.60 mm	472	2.1133	0.3088	9.2647	0.45

The values specified must be considered as approximate values.

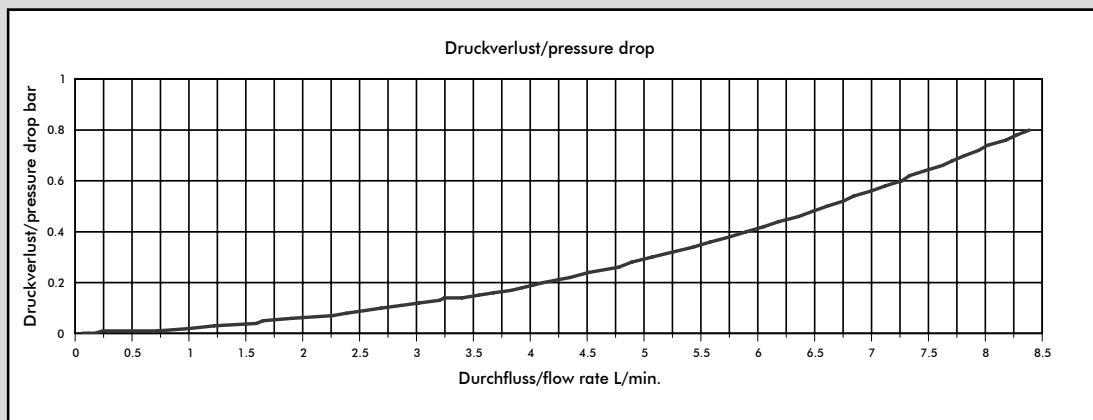
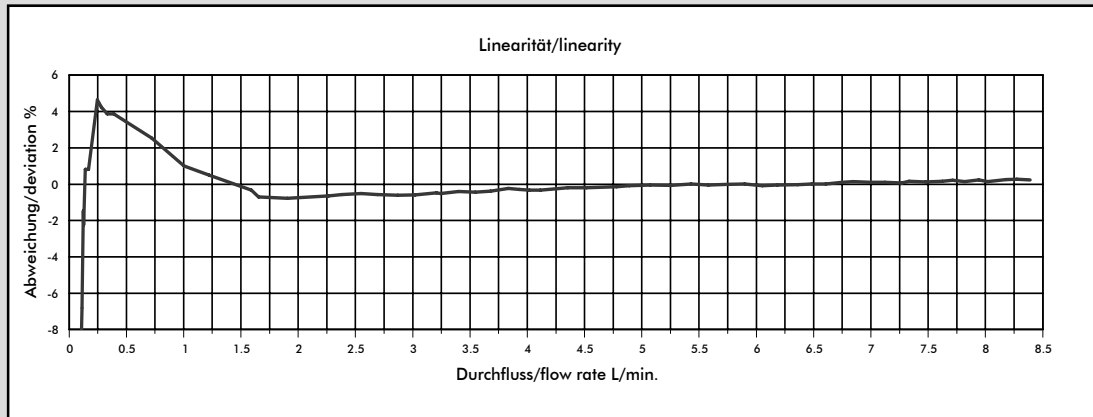
The number of pulses per litre may differ depending on medium and installation.

We recommend to calibrate the number of pulses per litre in line with the complete installation.

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid humidity at the battery and at the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

Measurement Curve FHKU 4.00 mm



Medium: Water / max. Pressure: 3.3 bar

Nozzle size	Pulses/litre	g/pulse	min. flow rate in litres/min at Linear start	max. flow rate in litres/min	Pressure loss
Ø 1.00 mm	4126	0.2423	0.0410	0.5670	1.00
Ø 1.20 mm	3400	0.2940	0.0505	0.8225	1.00
Ø 1.50 mm	2628	0.3804	0.0427	1.2504	1.00
Ø 2.00 mm	1976	0.5058	0.0911	2.4055	1.00
Ø 2.50 mm	1520	0.6576	0.1503	3.7478	1.00
Ø 3.00 mm	1130	0.8838	0.1022	5.6310	1.00
Ø 4.00 mm	762	1.3107	0.1235	8.3893	0.80
Ø 5.60 mm	472	2.1133	0.3088	9.2647	0.45

The values specified must be considered as approximate values.

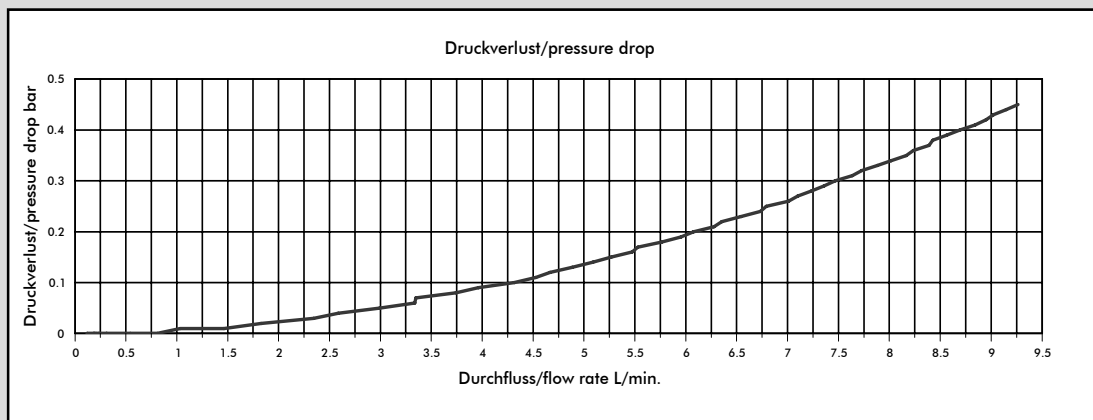
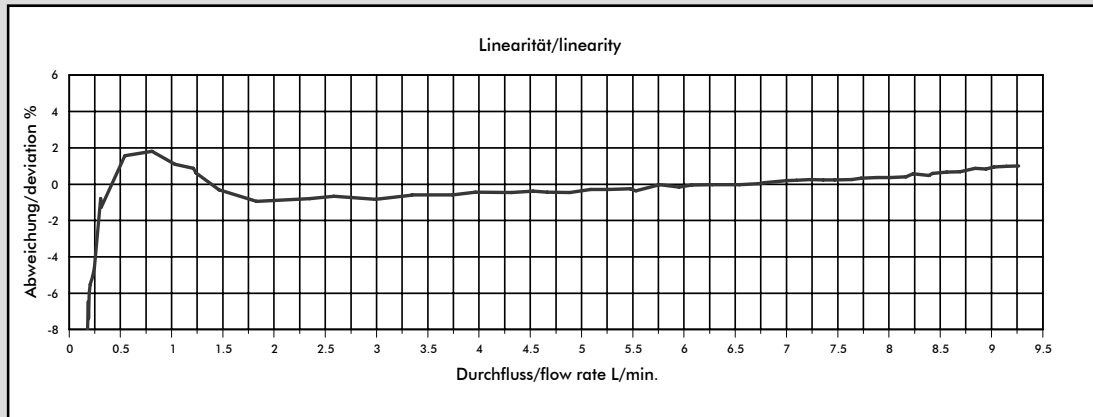
The number of pulses per litre may differ depending on medium and installation.

We recommend to calibrate the number of pulses per litre in line with the complete installation.

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid humidity at the battery and at the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

Measurement Curve FHKU 5.60 mm



Medium: Water / max. Pressure: 3.3 bar

Nozzle size	Pulses/litre	g/pulse	min. flow rate in litres/min at Linear start	max. flow rate in litres/min	Pressure loss
Ø 1.00 mm	4126	0.2423	0.0410	0.5670	1.00
Ø 1.20 mm	3400	0.2940	0.0505	0.8225	1.00
Ø 1.50 mm	2628	0.3804	0.0427	1.2504	1.00
Ø 2.00 mm	1976	0.5058	0.0911	2.4055	1.00
Ø 2.50 mm	1520	0.6576	0.1503	3.7478	1.00
Ø 3.00 mm	1130	0.8838	0.1022	5.6310	1.00
Ø 4.00 mm	762	1.3107	0.1235	8.3893	0.80
Ø 5.60 mm	472	2.1133	0.3088	9.2647	0.45

The values specified must be considered as approximate values.

The number of pulses per litre may differ depending on medium and installation.

We recommend to calibrate the number of pulses per litre in line with the complete installation.

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid humidity at the battery and at the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

