

# DB04A

## Thermal Mass Flowmeter for Gases without Auxiliary Power

- **pressure and temperature independent measurement**
- **range: 0,001...450 NI/min**
- **indication of flow and total consumption (totalisator integrated)**
- **compact design, no need for straight pipe runs**
- **touch display for intuitive navigation**
- **optional with valve, limit switch**
- **high accuracy +/- 1 %**
- **battery operated (AA) – no external power supply needed**



### Description:

The DB04 thermal mass flowmeter is a modular system for the measurement of the flow of gases. Due to its being independent of any power supply because of its integrated battery, and its excellent cost-effectiveness, the device can replace conventional variable area flowmeters in many cases. The DB04 can be supplied in a number of versions: As a flowmeter with an integrated regulating valve, a totaliser or with an adjustable limit switch. Depending on the medium, the device can be made of either stainless steel or aluminium.

The convenient LCD-touch display combines a clear indication with an easy and self-explanatory programming. The device operates in any position and can be easily cleaned without the need for recalibration.

### Typical applications:

The DB04A measures flow rates from 0,001...0,05 NI/min to 9...450 NI/min. The standard calibration medium is air, but a large number of other gases can be measured as well: O<sub>2</sub>, N<sub>2</sub>, He, Ar etc. Because of the totalisator the device can be perfectly use for consumption measurement of the gases.

## Models:

<b>DB04A.1:</b>	Mass flowmeter, battery operated
<b>DB04A.2:</b>	Mass flowmeter, battery operated with integrated manual regulating valve
<b>DB04A.3:</b>	Mass flowmeter 24 VDC voltage supply with 3 integrated limit contacts
<b>DB04A.4:</b>	Mass flowmeter 24 VDC voltage supply with manual regulating valve and 3 integrated limit contacts

## Technical Data:

<b>Pressure:</b>	0,2...11 bar abs.
<b>Medium temperature:</b>	0...50 °C
<b>Media:</b>	air, O <sub>2</sub> , N <sub>2</sub> , He, Ar, CO <sub>2</sub> , H <sub>2</sub> , CH <sub>4</sub> , C <sub>3</sub> H <sub>8</sub> (others on request) all devices are delivered free from oil and grease (wetted parts)
<b>Norm conditions</b>	0 °C, 1013 mbar, other on request
<b>Gas/Calibration:</b>	up to 3 Gas/calibrations (optional)
<b>Gas connection:</b>	G 1/4 female up to 60 NI/min G 1/2 female up to 450 NI/min
<b>Accuracy: (air)</b>	+/- 2 % of full scale, > 200 NI/min: +/- 3 % of full scale optional: +/- 1 % of full scale (up to 50 NI/min)
<b>Dynamic: (measuring range)</b>	1:50, optional 1:100 (up to 50 NI/min)
<b>Response time:</b>	500 ms
<b>Repeatability:</b>	+/- 0,5 % of measured value
<b>Power supply:</b>	standard battery AA micro-USB supply optional: external supply 12...30 VDC (max. 200 mA) (standard at devices with limit switch) 2 m cable
<b>Display:</b>	touch display 128x64 px background light (not at battery operated use)
<b>Units/scale:</b>	free selectable
<b>Password protection:</b>	for menu available
<b>Installation position:</b>	up to 5 bar: any from 5 bar: horizontal
<b>Limit output:</b>	potential-free changer (24 V, 1 A)
<b>Function:</b>	MIN or MAX-alarm, switching point, delay, hysteresis programmable
<b>Protection class:</b>	IP50

## Alarm contacts:

3 alarm contacts: 2 N/O:	max. current: 0,5 A max. voltage: 30 VDC
1 SPDT:	max. current: 1 A max. voltage: 30 VDC
power supply:	12...30 VDC, with reverse-pole protection
2 optical separated input channels:	voltage range: 5...30 VDC, at 5 mA max.
Including 2 m cable connection	

## Measuring ranges for air and dimensions:

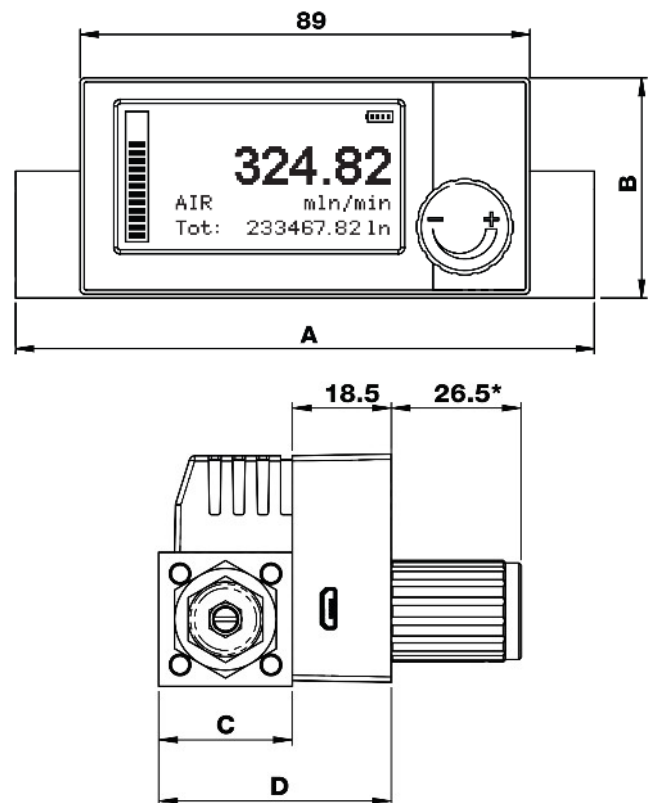
(Standard accuracy and dynamic)

Range [NI/min]	Connec- tion [G female]	A [mm]	B [mm]	C [mm]	D [mm]
0,001...0,05	1/4	114	44	25	44
0,004...0,2	1/4	114	44	25	44
0,01...0,5	1/4	114	44	25	44
0,04...2	1/4	114	44	25	44
0,1...5	1/4	114	44	25	44
0,4...20	1/4	114	44	25	44
0,8...40	1/4	114	44	25	44
1...60	1/4	114	44	25	44
2...100	1/2	160*	54	35	54
4...200	1/2	160*	54	35	54
6...300	1/2	160*	54	35	54
9...450	1/2	160*	54	35	54

relating to 0 °C and 1013 mbar

\* 270 with flanged hand valve

## Dimensions:



## Materials:

- DB04A.x.x.A:** housing made of aluminium, anodised,  
sensor made of PBT, sealing made of FKM
- DB04A.x.x.E:** housing made of st.st 1.4404,  
electropolished,  
sensor made of PBT, sealing made of FKM

## Options:

- special measuring ranges
- other media as air, Nitrogen, Oxygen
- sealings EPDM
- power supply 24 VDC for DB04A.1./2.
- high accuracy +/- 1 % of f.s., dynamic: 1:100
- up to 3 types of gases calibrated
- calibration certificate

### G 1/4 female connection with regulating valve



### G 1/2 female connection, with flanged regulating valve



### G 1/4 female connection, without regulating valve



## Order Code:

Order number: **DB04A. 1. 01. A. B. L.**

### Thermal mass flowmeter for gases

#### Models:

- 1 = flowmeter  
2 = flowmeter with manual regulating valve  
3 = flowmeter and controller  
(3 alarm contacts, only with 24 VDC)  
4 = flowmeter and controller with manual  
regulating valve  
(3 alarm contacts, only with 24 VDC)

#### Measuring range (air, 0 °C, 1013 mbar):

- 1A = 0,001...0,05 NI/min, G 1/4 female thread  
01 = 0,004...0,2 NI/min, G 1/4 female thread  
02 = 0,01...0,5 NI/min, G 1/4 female thread  
03 = 0,04...2 NI/min, G 1/4 female thread  
04 = 0,1...5 NI/min, G 1/4 female thread  
05 = 0,4...20 NI/min, G 1/4 female thread  
5A = 0,8...40 NI/min, G 1/4 female thread  
06 = 1...60 NI/min, G 1/4 female thread  
07 = 2...100 NI/min\*, G 1/2 female thread  
08 = 4...200 NI/min\*, G 1/2 female thread  
09 = 6...300 NI/min\*, G 1/2 female thread  
10 = 9...450 NI/min\*, G 1/2 female thread  
S = special measuring range

#### Material

- A = aluminium housing, valve made of brass  
E = st. st. 1.4404 housing, valve made of st. st.

#### Options:

- B = battery powered  
V = voltage supply 24 VDC  
E = gasket EPDM  
G = higher accuracy +/- 1 % of FS,  
dynamic: 1:100 (up to 50 NI/min)  
3 = calibration for up to 3 different gases  
M = Multigas option (duplicate of a programmed curve for air,  
Nitrogen or Oxygen)  
9 = please indicate in writing

#### Medium:

- L = standard-medium: air  
N = standard-medium: N<sub>2</sub>  
O = standard-medium: O<sub>2</sub>  
H = Helium He  
W = Hydrogen H<sub>2</sub>  
A = Argon Ar  
M = Methane CH<sub>4</sub>  
P = Propane C<sub>3</sub>H<sub>8</sub>  
S = other media (please indicate in writing)

\* manual control valve flange mounted

**For technical configuration of the control valve please indicate the inlet and outlet pressure**

**If required a calibration certificate is available.**