



Calorimetric Flow Meter, Monitor, Totalizer



measuring
•
monitoring
•
analysing

DVK



- Measuring range:
1-10 ... 600-12 000 l/min air
- Accuracy:
 $\pm 5\%$ f.s.
- LCD display
- Switching outputs PNP, analogue output
- LED switching indication
- Compact and separate version



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Description

The digital KOBOLD flow meter/monitor model DVK serves to measure and monitor small and average flows of air in piping and hoses.

The device is absolutely maintenance-free and uses the calorimetric method. When the operating voltage is applied, a thermistor integrated in the sensor is heated to a defined value above the medium temperature. When air (or gas) flows through the sensor, the heat generated in the sensor is absorbed by the medium. This means that the sensor is cooled down to the medium temperature. Depending on the velocity and rate of flow, the temperatures are equalized and the resistance of the sensor is reduced proportionally. The flow velocity can be determined by measuring the resistance. The medium temperature is measured by a second sensor.

The resistance values of both sensors are compared by the electronics over a Wheatstone bridge circuit and an output relay is actuated if the set switching values has not been made or exceeded. The switch state is signalled by two LEDs (ON: LED on; OUT 1*: green, OUT 2*: red).

The digital KOBOLD flow meter type DVK works with practically no pressure loss.

Typically, the device is available in two different versions (display and sensor as compact instrument, or display and sensor separated but connected with a cable) with the necessary screw connections.

* The two outputs OUT 1 and OUT 2 can only be activated by flow measurement per unit of time, and not by totalizing.

Areas of Application

- Flow monitoring of air and gases
- In air conditioning systems
- In extraction systems

Technical details

Method of measurement:	Calorimetric principle
Mounting position:	Any, flow in direction of arrow
Measuring ranges:	1...10 l/min; 10...100 l/min (switchable to CFMx 10 ⁻²); 20...200 l/min; 5...50 l/min; 50...500 l/min (switchable to CFMx 10 ⁻¹); 150...3000 l/min; 300...6000 l/min; 600...12000 l/min air at 0 °C; 1013 mbar or 20 °C; 1013 mbar
Accuracy:	±5% f.s.
Repeatability:	±1% f.s. (DVK-...01/DVK-...05) ±2% f.s. (other types)
Temperat. characteristic:	±3% f.s. (15 - 35 °C) ±5% f.s. (0 - 50 °C)
Operating pressure:	-0.5...+5.0 bar (DVK-...01/DVK-...05) testing pressure 10 bar -0.5...+7.5 bar (DVK-...10 / 20 / 50) testing pressure 10 bar 1.5...15 bar (DVK-...70 / 80 / 90) testing pressure 22.5 bar
Pressure loss at full scale:	See table
Operating temperature:	0...50 °C
Material:	
Connections:	ADC ≅ aluminium die casting
Sensor and housing:	PBT/PPS/lead glass/PtIr/FeNi/OFC
Sieve:	Stainless steel
Gasket:	NBR
Response time:	1 s
Connections:	G ¼, G ⅜, G ½; G 1, G 1½, G 2
Display:	3-digit 7-segment-LCD, 90° rotatable
Totalizing:	0...999999 (litres or ft ³ x 10 ⁻¹), resettable
Supply:	12...24 V _{DC} , max. 170 mA
Outputs:	2 x PNP open collector, 80 mA, 4 - 20 mA analogue output, load = max. 250 Ω
Switching indication:	2 x LED (OUT 1: green, OUT 2: red)
Minimum switching adjustment:	0.5% of max. range value
Hysteresis:	Adjustable
Shock resistance:	490 m/s ² in X-, Y-, and Z-direction (3 x each direction)
Vibration resistance:	10...500 Hz at amplitude <1.5 mm or acceleration of 98 m/s ² in X-, Y-, and Z-direction (2 hours per direction)
Protection:	IP65
Weight:	< 290 g (without connecting lead) (G ¼ / G ⅜ / G ½) 1.1 kg (G 1); 1.3 kg (G 1½); 2.0 kg (G 2)



Order details (example: **DVK-12 01R08**)

Description	Model	Measuring range/connection	Output
Flow meter compact version	DVK-12...	01R08 = 1-10 l/min air, G ¼ 05R08 = 5-50 l/min air, G ¼	3PP = 2 x PNP switching outputs
Flow meter sensor unit*	DVK-22...	10R10 = 10-100 l/min air, G ¾ 20R10 = 20-200 l/min air, G ¾	
Display unit for DVK-22 panel mounting	DVK-42...	50R15 = 50-500 l/min air, G ½	
Flow meter compact version	DVK-12...	70R25 = 150-3000 l/min air, G 1 80R40 = 300-6000 l/min air, G 1½ 90R50 = 600-12 000 l/min air, G 2	3P4 = 1 x PNP switching output and 4-20 mA analogue output

*A display unit DVK-22 is required for the sensor unit DVK-42. Alternatively 4-20 mA output is available on request.

Accessories: electrical connection

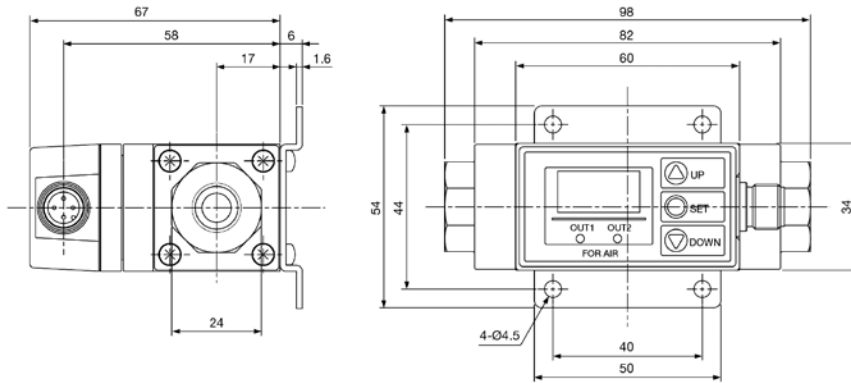
Description	Model
M12x1 box with 2 m cable	ZUB-KAB-12K002
M12x1 box with Quickon-connector	ZUB-KAB-12Q000

Pressure loss

Model	DVK-...01	DVK-...05	DVK-...10	DVK-...20	DVK-...50	DVK-...70	DVK-...80	DVK-...90
ME [l/min]	10	50	100	200	500	3000	6000	12 000
Pressure loss [mbar]	12	30	100	200	450	200	200	200

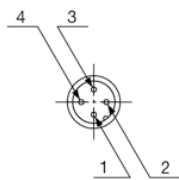
Dimensions [mm]

Compact design DVK-1201 ..., DVK-1205 ...



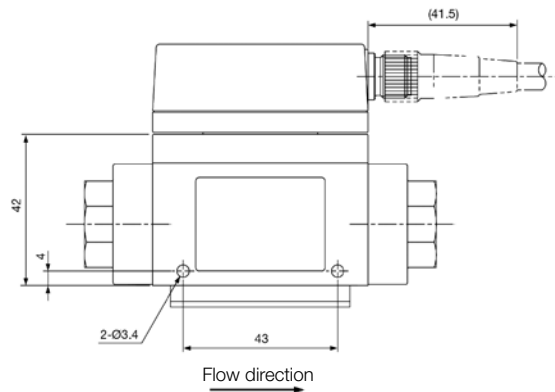
Electrical connection

Pin numbers

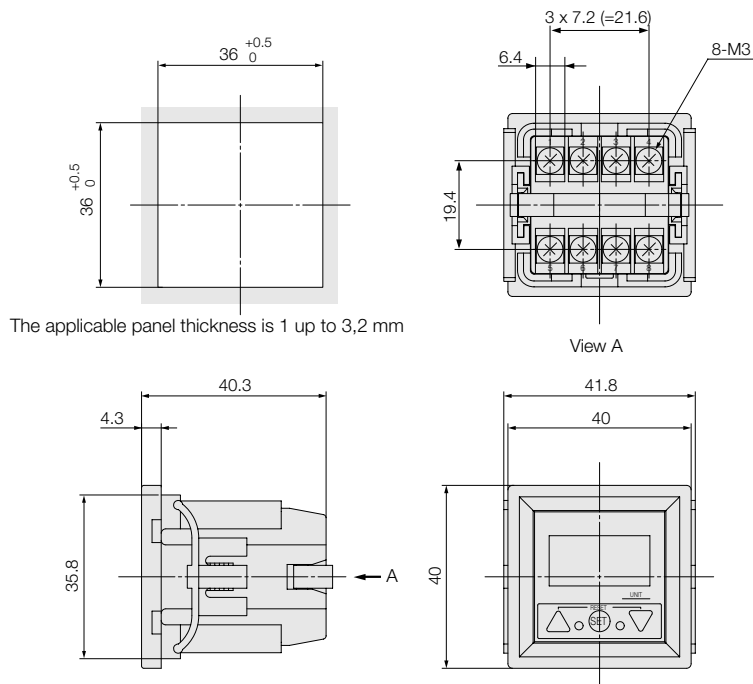


Connector thread M12

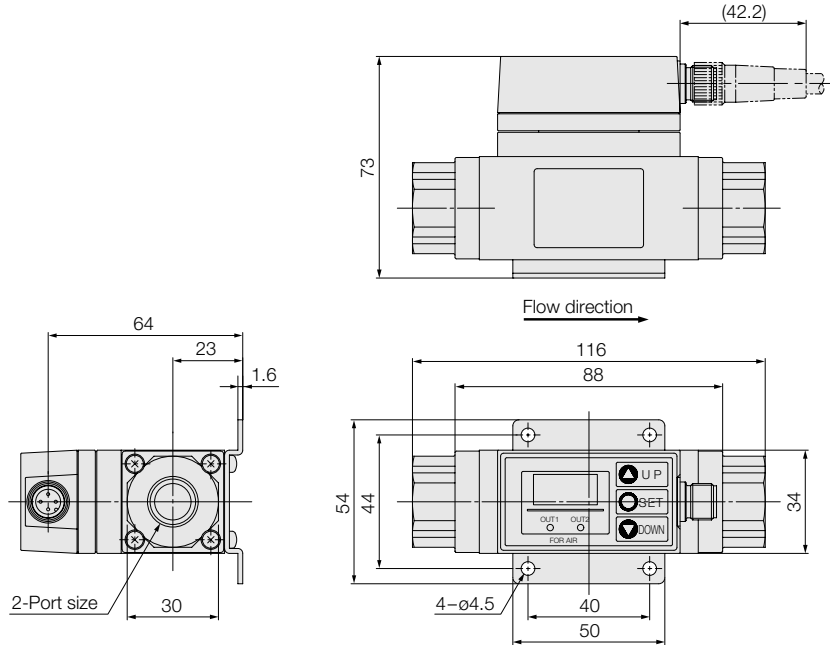
Numbers	Pin name
1	DC (+)
2	OUT 2/analogue output
3	DC (-)
4	OUT 1



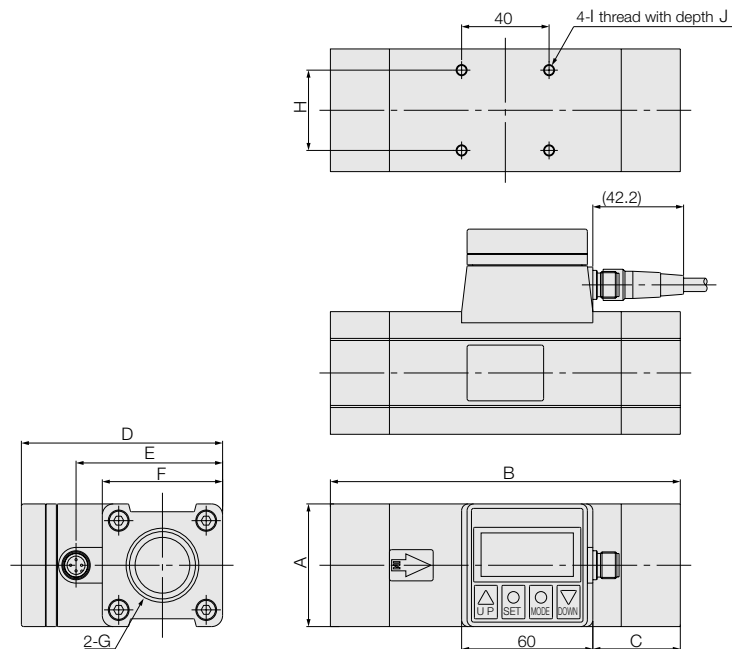
Display unit DVK-42 for panel mount



Compact design DVK-1210 ..., DVK-1220 ..., DVK-1250 ...



Compact design DVK-1270 ..., DVK-1280 ..., DVK-1290 ...



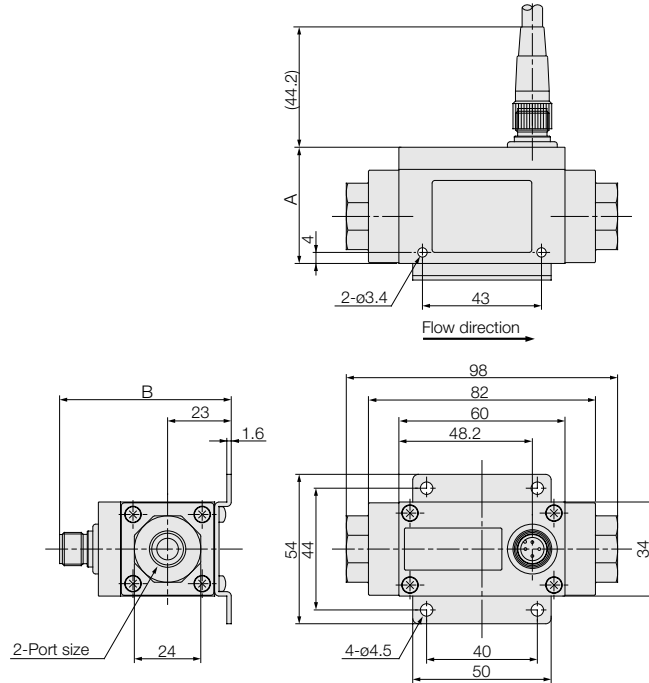
Model	A	B	C	D	E	F	G	H	I	J
DVK-1270	55	160	40	92	67	55	G 1	36	M5	8
DVK-1280	65	180	45	104	79	65	G 1½	46	M6	9
DVK-1290	75	220	55	114	89	75	G 2	56	M6	9



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Separate design DVK-2201 ..., DVK-2205 ...,

A	B
42	62



Separate design DVK-2210 ..., DVK-2220 ..., DVK-2250 ...

A	B
48	62

