



## Flow Monitor – Indicator DUG

Flow monitor / flow indicator operating on the principle of the float type indicator for liquids



- High functional reliability
- High switch accuracy
- Continuous adjustment of the switching point by the user
- Scales are etched into the sight (or level indicator) glass
- Threaded connection, special threads are available on request

D-EN-DUG-20200519



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### Features

The DUG series proves itself by reliable function and easy handling. The compression spring

- allows position-independent installation
- extends the measuring range
- permits use in contaminated media (dirt resistance)

Further characteristics of this sturdy type are:

- Universal mounting
- High switch accuracy
- Wide switch accuracy
- Continuous adjustment of the switching point by the user
- EX-version to ATEX available
- Scales are etched into the sight glass
- Threaded connection, special threads on request

### Application

The monitors and indicators of the type DUG series are used for measuring and monitoring the volume flow of liquid media.

Areas of application:

- Cooling systems and cooling circuits
- Mechanical engineering, e.g. welding machinery, laser plants
- Medical technology
- Pharmaceutical industry
- Chemical industry
- Research and development

Operating data	
<b>Operating pressure max.</b>	10 bar
<b>Pressure drop</b>	0,02 – 0,8 bar
<b>Temperature max.</b>	100°C (optional 160°C)
<b>Accuracy</b>	±5% of full scale
<p>Changed operating data apply to the devices in explosion-proof design according to ATEX directive. Refer to the Operating Instructions for DUG Module ATEX.</p> <p>For UL Recognized devices, changed operating data apply. Refer to the Operating Instructions for DUG Module BASICS</p>	



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Measuring range			
Type	switch range H <sub>2</sub> O, 20°C (1)		
	[l/min]	[gph]	[gpm]
<b>DUG-4</b>	0,2 – 4	3,0 – 63,0	
<b>DUG-6</b>	0,5 – 6	8,0 – 95,0	
<b>DUG-8</b>	0,5 – 8	8,0 – 127,0	
<b>DUG-14</b>	0,5 – 14	8,0 – 222,0	
<b>DUG-22</b>	2 - 22	32,0 – 350,0	
<b>DUG-28</b>	1 – 28	16,0 – 444,0	
<b>DUG-45</b>	1 – 45	15,0 – 710,0	
<b>DUG-80</b>	2 – 80		0,5 – 21,0
<b>DUG-90</b>	6 – 90		1,6 – 23,8
<b>DUG-110</b>	6 – 110		1,6 – 29,0
<b>DUG-150</b>	15 – 150		4,0 – 39,5
<b>DUG-220</b>	30 – 220		8,0 – 58,0
<b>DUG-250</b>	35 - 250		9,0 – 66,0

(1) The specified measuring ranges / switch ranges are valid for water having a density of 1.00 kg/dm<sup>3</sup>, vertical installation of the device and flow direction from bottom to top.

Other installation positions or deviation from the operating densities will increase the measurement error specified in the data-sheet.

Operating density for water at 20 °C and 1.013 bar (absolute value): 1.00 kg/dm<sup>3</sup>.

Upon request, special scales for deviating media, different operating conditions and installation positions (only for devices which can be installed in any position) are available.

The specified switch values are switch-off points, i.e. switch values by decreasing flow.

Other measuring ranges / switch ranges are available on request.



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Material	Brass	Stainless steel
<b>Wetted parts:</b>	Brass nickel-plated	1.4571
Spring	1.4571	1.4571
Gaskets	NBR (optional FKM, EPDM) <sup>(2)</sup>	FKM (optional NBR, EPDM) <sup>(2)</sup>
Sight glass	Duran® 50	Duran® 50
All other wetted parts	Brass, nickel-plated	1.4571
<b>Non-wetted parts (housing)</b>	Aluminum, anodized	Aluminum, anodized

(2) Other types of gaskets on request

Types of DUG														
Type	overall dimensions [mm]												approx. weight [g]	
	G	DN	SW	L1	L2	T	D1	D2	A1	A2	A3	A4		
<b>DUG-4</b>														625
<b>DUG-6</b>	1/4"	8	32	121	132	10	35	43	-	-	-	~96	625	
<b>DUG-8</b>	3/8"	10	32	121	135	11	35	43	-	-	-	~96	625	
<b>DUG-14</b>	1/2"	15	32	121	135	14	35	43	-	-	-	~96	625	
<b>DUG-22</b>	1/2"	15	32	121	135	14	35	43	-	-	-	~96	650	
<b>DUG-28</b>	1/2"	15	32	121	135	14	35	43	-	-	-	~96	650	
<b>DUG-45</b>	1/2"	15	32	143	161	14	35	43	-	-	-	~96	850	
	3/4"	20	32	143	166	15	35	43	-	-	-	~96	850	
<b>DUG-80</b>	3/4"	20	41	143	163	15 <sup>(3)</sup>	45	50	-	-	-	~104	1000	
	1"	25	41	143	181	17	45	50	-	-	-	~104	1000	
<b>DUG-90</b>	3/4"	20	41	143	163	15	45	50	-	-	-	~104	1000	
	1"	25	41	143	181	17	45	50	-	-	-	~104	1000	
<b>DUG-110</b>	1"	25	41	143	181	17	45	50	-	-	-	~104	1000	
<b>DUG-150</b>	1 1/4"	32	50	174	222	20	55	55	-	-	-	~109	1300	
<b>DUG-220</b>	1 1/4"	32	55	159	209	20	60	60	-	-	-	~113	1700	
<b>DUG-250</b>	1 1/4"	32	50	174	222	20	55	55	-	-	-	~109	1400	

(3) 14 mm in NPT version

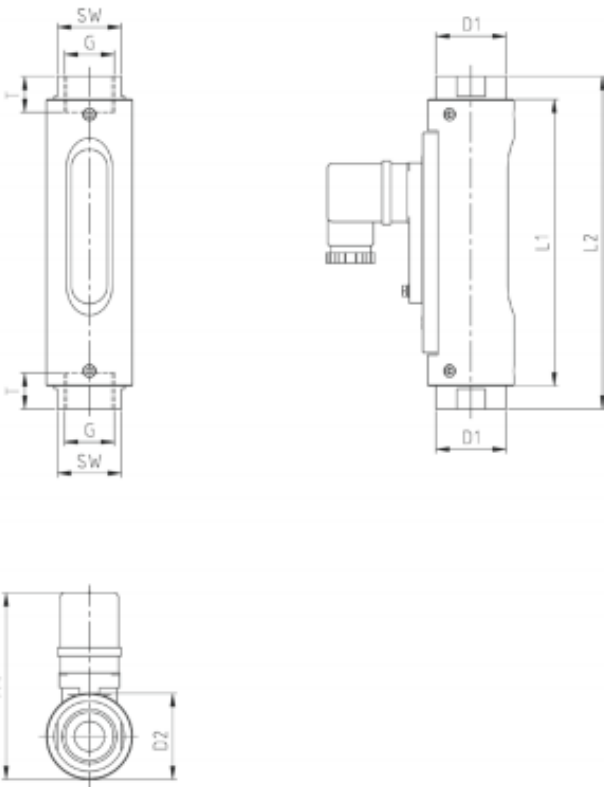
D-EN-DUG-20200519



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## Technical drawing



## Connector in compliance with EN 175301-803 Form A and cable

Change over (COC)

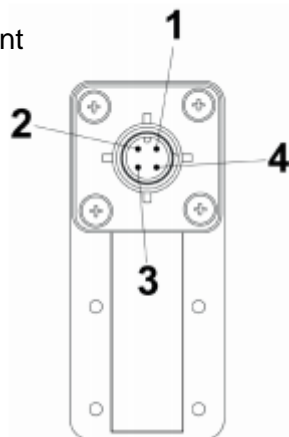


Normally open (NOC)



## M12x1

Pin assignment



Change over (COC)



Normally open (NOC)



D-EN-DUG-20200519



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<b>Electrical Data</b>	
Change over (COC)	250 V • 1,5A • 50 VA <sup>(4)</sup>
Normally open (NOC)	250 V • 3A • 100 VA
Change over M 12x1 (-20 °C – 85 °C)	250 V • 1,5A • 50 VA <sup>(4)</sup>
Normally open M 12x1 (-20 °C – 85 °C)	250 V • 3A • 100 VA
<b>EX-version in compliance with ATEX directive</b>	
ATEX II 2G Ex mb IIC T6 Gb & ATEX II 2 D Ex tb IIIC T80 °C Db	
ATEX II 2G Ex mb IIC T5 Gb & ATEX II 2 D Ex tb IIIC T100 °C Db	
Change over	250 V • 1A • 30 VA
Normally open	250 V • 2A • 60 VA
<b>UL recognized switch contacts</b>	
Change over	240 V • 1,5A • 50 VA <sup>(4)</sup>
Normally open	250 V • 3A • 100 VA
(4) Minimum load 3 VA	



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<b>Electrical connection</b>
<ul style="list-style-type: none"> <li>• Connector in compliance with EN 175301-803, Form A (DIN 43650, Form A)</li> <li>• Connector M12x1</li> <li>• Cable (1 m)</li> </ul>
<b>EX-version in compliance with ATEX directive</b>
<ul style="list-style-type: none"> <li>• Cable (2 m)</li> </ul>
<b>UL recognized switch contacts</b>
<ul style="list-style-type: none"> <li>• Connector in compliance with EN 175301-803, Form A</li> <li>• Cable (1 m)</li> </ul>
<b>Ingress protection:</b>
IP65: Connector in compliance with EN 175301-803, Form A IP67: cable or connector M12x1
<b>Output signal</b>
The contact opens / changes when the flow decreases below the set point.
<b>Power supply</b>
Not required (potential-free reed contacts)
<b>Plug types</b>
Other connector types or cable lengths on request

### Important instructions!

Technical changes and errors reserved.

Pictures can be similar.

The operating instructions belonging to this device must be observed! Download at [www.schmidt-messtechnik.com](http://www.schmidt-messtechnik.com).