DWG

- wide measuring range
- sturdy construction
- burnt in scale

01

DUG

- wide measuring range
- sturdy construction
- any orientation

01

RVO/U

- burnt in scale
- sturdy construction
- any orientation

01

DWG-L

- wide measuring range
- sturdy construction
- burnt in scale

01

RVO/U-L

- burnt in scale
- sturdy construction
- any orientation

01

2100, 2150, 2300, 2340

- high accuracy
- simple installation
- low pressure drop

01

6001, 6002

- high accuracy
- high chemical resistance
- low pressure drop

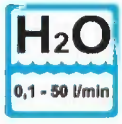
01

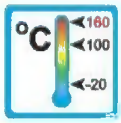
Flow Monitor Flow Indicator

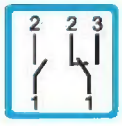
DWG

Operation

The flow monitors and indicators type DWG operate with the float measuring principle







Application

The flow monitors and indicators type DWG are used for indicating and monitoring volumeflow of liquid media.

Areas of application:

- Coolingsystems and cooling-circuits
- Mechanical Engineering e.g. Weldingmachinery and Laserplants
- Medicine technology
- Pharma industry
- Chemical industry
- Research and development

Features

The DWG series proves itself through reliable function and easy handling.
Further characteristics of this sturdy type are:

- high reliability
- high switch accuracy
- wide switch range
- infinitely variable switchpoint adjustment through user
- EX-version to ATEX available
- Scales are burned into the sightglass
- Threaded connection Special threads on request

Installation hints

The instrument must be installed vertically in the system. The flow direction is from bottom to top.

The flow monitor must not be used as a supporting part in a pipeconstruction!

The medium must not contain any solid particles!
We recommend the installation of strainer type SFD or SFM.

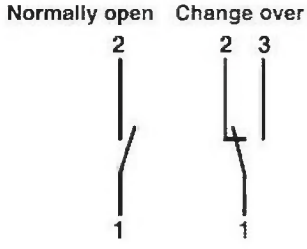
External magnetic fields influence the switch contact.
Keep adequate distance to those magnetic fields (e.g. electromotors)!

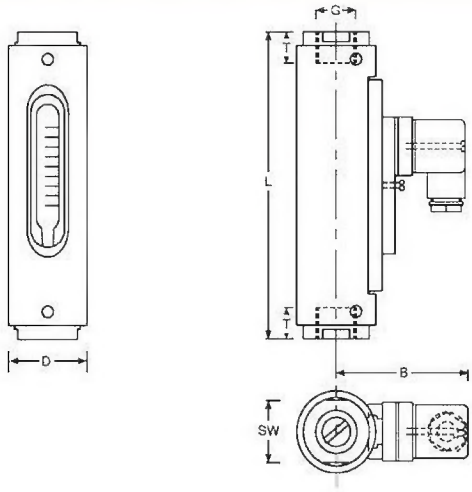
The operating instruction for DWG must be observed under any circumstances!

DWG 1 0002 08-04 E M

Measuring Ranges, Technical Data

Connection diagram





Summary of types DWG

Type	Switch range* H_2O [l/min]	Overall dimensions mm SW	D	B	G	DN	T	L	Weight approx. [g]
DWG - 1,5	0,1 - 1,5	32	43	73	1/4"	8	14	132	625
DWG - 3	0,2 - 3,0				3/8"	10	14	135	
DWG - 8	0,3 - 8,0								
DWG - 12	1 - 12				1/2"	15	15	135	
DWG - 18	2 - 18	32	43	73	1/2"	15	15	163	650
					3/4"	20	16	167	
DWG - 35	3 - 35	41	50	76	3/4"	20	18	164	850
DWG - 50	4 - 50				1"	25	19	184	1000

* Other media on request

Operating data	**DWG**	
Operating pressure:	PN 10 bar	
Pressure drop:	0,01 - 0,2 bar	
Maximum temperature:	100 °C (optional 160 °C)	
Accuracy:	± 5% of full scale	
Electrical data	**Normally open**	**Change over**
IP 65 (plug connection DIN 43650)	max. 250V • 3A • 100VA	max. 250V • 1,5A • 50VA *
IP 67 (1m sealed in cable)		
Atex II 2G EEx m II T6 (2m sealed in cable)	max. 250V • 2A • 60VA	max. 250V • 1A • 30VA
EEx m II T6 (2m sealed in cable)	max. 250V • 2A • 60VA	max. 250V • 1A • 30VA
Output signal:	The contact opens / changes, when the flow falls below the set point.	
Power supply:	Not required (potentialfree reed contacts)	
Other plug type or cable length on request		
Material	**Brass**	**Stainless Steel**
Wetted parts:	Brass nickel-plated	1.4571
Float: (wetted part)	Brass nickel-plated	1.4571
Sight glass: (wetted part)	Duran 50	
Gaskets: (wetted part)	Perbunan (optional Viton, EPDM) **	Viton (optional Perbunan, EPDM) **
Housing: (non wetted part)	Aluminium anodized	

* Minimum load 3VA

** Other gasket materials on request

DWG 2 0010 07-07 E M

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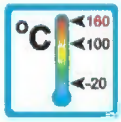
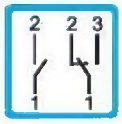
Flow monitor Flow indicator

DUG

Operation

The flow monitors and indicators type DUG operate with the float measuring principle





Application

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

Areas of application:

- Coolingsystems and cooling-circuits
- Mechanical Engineering e.g. Weldingmachinery, Laserplants
- Medicine technology
- Pharma industry
- Chemical industry
- Research and development

Features

The DUG series proves itself through reliable function and easy handling.
Further characteristics of this sturdy type are:

- universal mounting
- high switch accuracy
- wide switch range
- infinitely variable switchpoint adjustment through user
- EX-version to ATEX available
- Scales are burned into to the sightglass
- Threaded connection Special threads on request

Installation hints

The installation of the flow monitor can be done in any way in the system. The flow direction must be observed.

The flow monitor must not be used as a supporting part in a pipeconstruction!

The medium must not contain solid particles!
We recommend the installation of strainers type SFD or SFM.

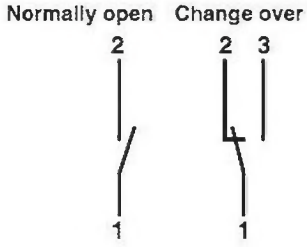
External magnetic fields influence the switch contact. Keep adequate distance to those magnetic fields (e.g. electromotors)!

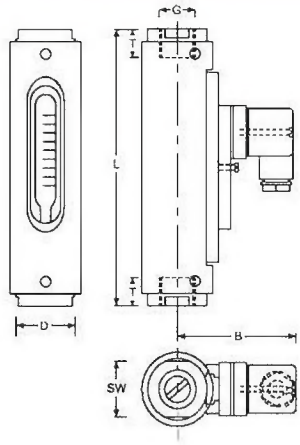
The operating instruction for DUG must be observed under any circumstances!

DUG 1 0001 09-04 E M

Measuring Ranges, Technical Data

Connection diagram





Summary of types DUG

Type	Switch range (1) H_2O [l/min]	Overall dimensions mm SW	D	B	G	DN	T	L	Weight approx. [g]
DUG - 4	0,2 - 4	32	43	73	1/4"	8	14	132	625
DUG - 6	0,5 - 6				3/8"	10	14	132	
DUG - 8	0,5 - 8								
DUG - 14	0,5 - 14				1/2"	15	15	135	
DUG - 22	2 - 22	32	43	73	1/2"	15	15	135	650
DUG - 28	1 - 28								
DUG - 45	1 - 45	32	43	73	3/4"	20	18	167	850
DUG - 80	2 - 80	41	50	76	3/4"	20	18	164	1000
DUG - 90	6 - 90				1"	25	19	184	
DUG - 110	6 - 110	41	50	76	1"	25	19	184	1000
DUG - 150	15 - 150	50	55	79	1 1/4"	32	21	216	1300
DUG - 220	30 - 220	55	60	81	1 1/4"	32	21	210	1700
DUG - 250	35 - 250	50	55	79	1 1/4"	32	21	222	1400

(1) Other media on request

Operating data	**DUG**	
Operating pressure:	PN 10 bar	
Pressure drop:	0,02 - 0,8 bar	
Maximum temperature:	100 °C (optional 160 °C)	
Accuracy:	± 5% of full scale	
Electrical data	**Normally open**	**Change over**
IP 65 (plug connection DIN 43650)	max. 250V • 3A • 100VA	max. 250V • 1,5A • 50VA (2)
IP 67 (1m sealed in cable)		
Atex II 2G EEx m II T6 (2m sealed in cable)	max. 250V • 2A • 60VA	max. 250V • 1A • 30VA
EEx m II T6 (2m sealed in cable)	max. 250V • 2A • 60VA	max. 250V • 1A • 30VA
Output signal:	The contact opens / changes, when the flow falls below the set point.	
Power supply:	Not required (potentialfree reed contacts)	
Other plug types or cable lengths on request		
Material	**Brass**	**Stainless Steel**
Wetted parts:	Brass nickel-plated	1.4571
Spring: (wetted part)	1.4571	1.4571
Sight glass: (wetted part)	Duran 50	
Gaskets: (wetted part)	Perbunan (optional Viton, EPDM) (3)	Viton (optional Perbunan, EPDM) (3)
Housing: (non wetted part)	Aluminium anodized	

(2) Minimum load 3VA
(3) Other gasket materials on request

DUG 2 0011 07-07 E M

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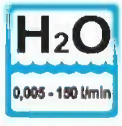
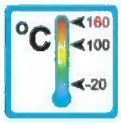
Flow Monitor Flow Indicator

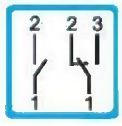
RVO/U

Operation

The flow monitors and indicators type RVO/U operate with the float measuring principle







Application

The flow monitors and indicators type RVO/U are used for indicating and monitoring volumeflow of liquid media.

Areas of application:

- Coolingsystems and cooling-circuits
- Mechanical Engineering e.g. Weldingmachinery and Laserplants
- Medicine technology
- Pharma industry
- Chemical industry
- Research and development

Features

The RVO/U series proves itself through reliable function and easy handling.
Further characteristics of this sturdy type are:

- universal orientation
- high switch accuracy
- infinitely variable switchpoint adjustment through user
- EX-version to ATEX for RVO/U-1... available
- Scales are burned into the sightglass
- Threaded connection Special threads on request

Installation hints

The installation of the flow monitor can be done in any way in the system. The flow direction must be observed.

The flow monitor must not be used as a supporting part in a pipeconstruction!

The medium must not contain any solid particles!
We recommend the installation of strainers type SFD or SFM.

External magnetic fields influence the switch contact. Keep adequate distance to those magnetic fields (e.g. electromotors)!

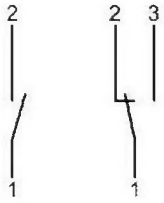
The operating instruction for RVO/U must be observed under any circumstances!

RVO/U 1 0002 10-04 E M

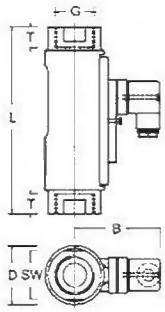
Measuring Ranges, Technical Data

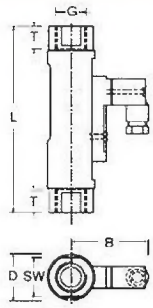
Connection diagram:

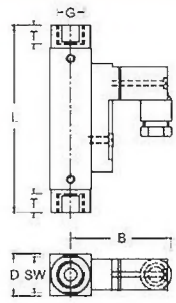
Normally open



Change over:







Summary of types RVO/U **RVO/U-1** **RVO/U-2** **RVO/U-4**

Type	Switch range [1] l/min H_2O	Overall dimensions mm SW	D	B	G	DN	T	L	Weight approx. [g]
RVO/U-4/01	0,005 - 0,06	17	20	49	1/4"	8	10	90	140
RVO/U-4/02	0,025 - 0,13								
RVO/U-4/06	0,1 - 0,6								
RVO/U-4/1	0,2 - 1,2								
RVO/U-4/2	0,4 - 2,0								
RVO/U-4/3	0,5 - 3,0								
RVO/U-4/5	1,0 - 5,0								
RVO/U-2/05	0,1 - 0,5	27	32	53	1/2"	15	14	114	300
RVO/U-2/1	0,2 - 1								
RVO/U-2/2	0,4 - 1,6								
RVO/U-2/4	1 - 4								
RVO/U-2/8	2 - 8								
RVO/U-2/15	4 - 15								
RVO/U-2/20	5 - 22								
RVO/U-2/28	6 - 28								
RVO/U-1/30	8 - 30	41	50	77	3/4"	20	18	139	800
RVO/U-1/45	15 - 45				1"	25		158	900
RVO/U-1/90	30 - 90								
RVO/U-1/150	60 - 150	41	50	77	1"	25	18	158	900

(1) The stated values are switch-off points, other switch ranges on request.

Operating data	**RVO/U-1**	**RVO/U-2**	**RVO/U-4**
Operating pressure:	PN 10 bar	PN 10 bar	PN 16 bar
Pressure drop:	0,02 - 0,4 bar	0,02 - 0,3 bar	0,02 - 0,2 bar
Maximum temperature:	100 °C (optional 160 °C)		
Accuracy:	±10% of full scale		
Electrical data			
Normally open:	max. 250V • 3A • 100VA	max. 230V • 3A • 60VA	max. 200V • 1A • 20VA
Change over:	max. 250V • 1,5A • 50VA [2]	max. 250V • 1,5A • 50VA [2]	max. 200V • 1A • 20VA
Atex II 2 G EEx m II T6 (only for RVO/U-1)	Change over: 250V • 1A • 30VA, IP67 / Normally open: 250V • 2A • 60 VA, IP67		
Atex II 2 D IP67 T80 °C (only for RVO/U-1)	Change over: 250V • 1A • 30VA, IP67 / Normally open: 250V • 2A • 60 VA, IP67		
Ingress Protection:	IP65 (plug connection DIN 43650 Form A or C)		
	IP67 (1 m sealed in cable, with EEx-version 2 m)		
Output signal:	The contact opens / changes, when the flow falls below the set point.		
Power supply:	Not required (potentialfree reed contacts)		
other plug types or cable lengths on request			

Material	**Brass**	**Stainless Steel**
Wetted parts:	Brass nickel-plated	1.4571
Sight glass: (wetted part)	Duran 50	Duran 50
Spring: (wetted part)	1.4571	1.4571
Gaskets: (wetted part)	Perbunan (optional Viton, EPDM) [3]	Viton (optional Perbunan, EPDM) [3]
Magnets: (wetted part)	Hardferrit	Hardferrit
Housing: (non wetted part)	Aluminium anodized	Aluminium anodized

(2) Minimum load 3VA
(3) Other gasket materials on request

RVO/U 2 0008 07-07 E M

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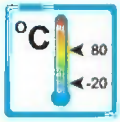
Flow Monitor Flow Indicator

DWG-L

Operation

The flow monitors and indicators type DWG-L operate with the float measuring principle



Application

The flow monitors and indicators type DWG-L are used for indicating and monitoring volumeflow of gaseous media.

Areas of application for example:

- Coolingsystems and cooling-circuits
- Mechanical Engineering e.g. Weldingmachinery and Laserplants
- Medicine technology
- Pharma industry
- Chemical industry
- Research and development

Features

The DWG-L series proves itself through reliable function and easy handling.
Further characteristics of this sturdy type are:

- high reliability
- high switch accuracy
- wide switch range
- infinitely variable switchpoint adjustment through user
- EX-version to ATEX available
- Scales are burned into the sightglass
- Threaded connections special threads on request

Installation hints

The instrument must be installed vertical in the system. The flow direction is from bottom to top.

The flow monitor must not be used as a supporting part in a pipeconstruction!

The medium must not contain any solid particles!
We recommend the installation of strainer type SFD or SFM.

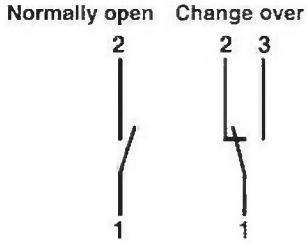
External magnetic fields influence the switch contact.
Keep adequate distance to those magnetic fields (e.g. electromotors)!

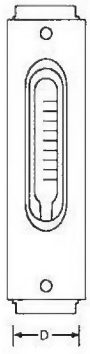
The operating instruction for DWG-L must be observed under any circumstances!

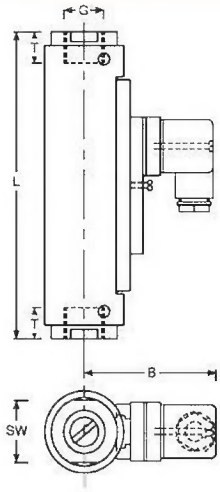
DWG-L 1 0001 05-04 E M

Measuring Ranges, Technical Data

Connection diagram







Summary of types DWG-L

Type	Switch range (1) Nl/min Air	Overall dimensions mm SW	D	B	G	DN	T	L	Weight approx. [g]
DWG-L1,5	3 - 30	32	43	73	1/4"	8	14	132	625
DWG-L3	6 - 60				3/8"	10	14	135	
DWG-L8	6 - 160								
DWG-L12	20 - 220				1/2"	15	15	135	
DWG-L18	40 - 360	32	43	73	1/2"	15	15	163	650
					3/4"	20	16	167	
DWG-L35	60 - 700	41	50	76	3/4"	20	18	164	850
DWG-L50	60 - 825				1"	25	19	184	1000
DWG-L100	200 - 1600	41	50	76	1"	25	19	204	1100

(1) At 1 bar abs. and 20 °C, other media and/or working conditions on request

Operating data:	**DWG-L**	
Operating pressure:	PN 10 bar	
Pressure drop:	0,01 - 0,2 bar	
Maximum temperature:	80 °C	
Accuracy:	± 10% of final value	
Electrical data:	**Normally open**	**Change over**
IP 65 (plug connection DIN 43650)	max. 250V • 3A • 100VA	max. 250V • 1,5A • 50VA (2)
IP 67 (with 1m sealed in cable)		
Atex II 2G EEx m II T6 (with 2m sealed in cable)	max. 250V • 2A • 60VA	max. 250V • 1A • 30VA
EEx m II T6 (with 2m sealed in cable)	max. 250V • 2A • 60VA	max. 250V • 1A • 30VA
Output signal:	The contact opens / changes, when the flow falls below the set point	
Powersupply:	Not required (potentialfree reed contacts)	
Other plug-types or cable length on request		
Material:	**Brass**	**Stainless steel**
Wetted parts:	Brass nickel-plated	1.4571
Float: (wetted part)	Delrin	
Sight glass: (wetted part)	Duran 50	
Gaskets: (wetted part)	Perbunan (optional Viton, EPDM) (3)	Viton (optional Perbunan, EPDM) (3)
Housing: (non wetted part)	Aluminium anodised	

(2) Minimum load 3VA

(3) Other gasket materials on request

DWG-L 2 0008 07-07 E M

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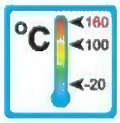
Flow Monitor Flow Indicator

RVO/U-L

Operation

The flow monitors and indicators type RVO/U-L operate with the float measuring principle



Application

The flow monitors and indicators type RVO/U-L are used for indicating and monitoring volumeflow of gaseous media.

Areas of application for example:

- Coolingsystems and cooling-circuits
- Mechanical Engineering e.g. Weldingmachinery and Laserplants
- Medicine technology
- Pharma industry
- Chemical industry
- Research and development

Features

The RVO/U-L series proves itself through reliable function and easy handling.
Further characteristics of this sturdy type are:

- universal mounting
- high reliability
- high switch accuracy
- infinitely variable switchpoint adjustment through user
- EX-version to ATEX for RVO/U-L1... available
- Scales are burned into the sight glass
- Threaded connections special threads on request

Installation hints

The installation of the flow can be done in any way in the system. The flow direction must be observed.

The flow monitor must not be used as a supporting part in a pipeconstruction!

The medium must not contain any solid particles!
We recommend the installation of strainers type SFD or SFM.

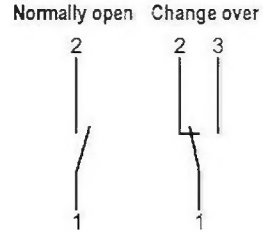
External magnetic fields influence the switch contact. Keep adequate distance to those magnetic fields (e.g. electromotors)!

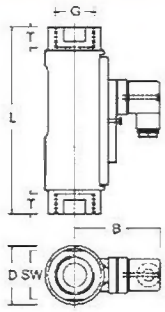
The operating instruction for RVO/U-L must be observed under any circumstances!

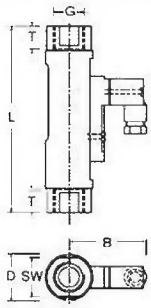
RVO/U-L 1 0001 05-04 E M

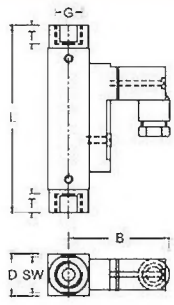
Measuring Ranges, Technical Data

Connection diagram









Summary of types RVO/U-L **RVO/U-L1** **RVO/U-L2** **RVO/U-L4**

Type	Switch range (1) Nl/min Air	Overall dimensions mm SW	D	B	G	DN	T	L	Weight approx. [g]
RVO/U-L40001	0,2 - 1,3	17	20	49	1/4"	8	10	90	140
RVO/U-L40002	0,5 - 2								
RVO/U-L40003	0,8 - 3								
RVO/U-L40005	1,5 - 5								
RVO/U-L40008	2 - 8								
RVO/U-L40012	3 - 12								
RVO/U-L40014	3,5 - 14								
RVO/U-L40020	5,5 - 20								
RVO/U-L40024	7 - 24								
RVO/U-L40035	10 - 35								
RVO/U-L40042	10 - 42								
RVO/U-L20012	3 - 12	27	32	53	1/2"	15	14	114	300
RVO/U-L20030	7 - 30								
RVO/U-L20040	12 - 40								
RVO/U-L20125	28 - 125								
RVO/U-L20200	50 - 200								
RVO/U-2/15L	100 - 420								
RVO/U-2/20L	120 - 480								
RVO/U-L10080	22,5 - 80	41	50	77	3/4"	20	18	139	800
RVO/U-L10130	50 - 130								
RVO/U-L10420	130 - 420				1"	25		158	900
RVO/U-L10625	200 - 625								

(1) At 1 bar abs. and 20 °C, other switch ranges on request

Operating data:		**RVO/U-L1**	**RVO/U-L2**	**RVO/U-L4**
Operating pressure:		PN 10 bar	PN 10 bar	PN 16 bar
Pressure drop:		0,02 - 0,4 bar	0,02 - 0,3 bar	0,02 - 0,2 bar
Maximum temperature:		100 °C (optional 160 °C)		
Accuracy:		±10% of full scale		
Electrical data:				
Normally open:		max. 250V • 3A • 100VA	max. 230V • 3A • 60VA	max. 200V • 1A • 20VA
Change over:		max. 250V • 1,5A • 50VA (2)	max. 250V • 1,5A • 50VA (2)	max. 200V • 1A • 20VA
Atex II 2G EEx m II T6	(only for RVO/U-L1)	Change over: 250V • 1A • 30VA, IP67 / Normally open: 250V • 2A • 60 VA, IP67		
EEx m II T6	(only for RVO/U-L1)	Change over: 250V • 1A • 30VA, IP67 / Normally open: 250V • 2A • 60 VA, IP67		
Protection type:		IP65 (plug connection DIN 43650 Form A or C)		
		IP67 (1m sealed in cable, with EEx-version 2m)		
Output signal:		The contact opens / changes, when the flow falls below the set point		
Powersupply:		Not required (potentialfree reed contacts)		
Other plug-types or cable length on request				

Material:		**Brass**	**Stainless Steel**
Wetted parts:		Brass nickel-plated	1.4571
Sight glass:	(wetted part)	Duran 50	Duran 50
Spring:	(wetted part)	1.4571	1.4571
Gaskets:	(wetted part)	Perbunan (optional Viton, EPDM) (3)	Viton (optional Perbunan, EPDM) (3)
Magnets:	(wetted part)	Hartferrit	Hartferrit
Housing:	(non wetted part)	Aluminium anodised	Aluminium anodised

(2) Minimum load 3VA
(3) Other gasket materials on request

RVO/U-L 2 0008 07-07 E M

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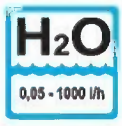
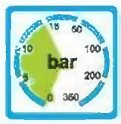
Flow monitor

2100 / 2150
2300 / 2340

Operation

The 2100, 2150, 2300 and 2340 flow monitors are operating with the float measuring principle. Additional they have a valve for flow regulation.





Application

The 2100, 2150, 2300 and 2340 flow monitors are used to monitor flow volume of liquid and gas media.
This flow monitors are for example used in following areas:

- Control panels
- Pilot plants
- Water treatment
- Chemical industry
- Medical industry
- Cosmetic industry
- Heat treatment

Features

The 2100, 2150, 2300 and 2340 series proves itself through reliable function and easy handling.
Further characteristics of these types are:

- Easy installation
- Small size
- No flow straightening section necessary
- Horizontal ports
- Low pressure drop
- Options:
  variable limit switches,
  constant flow regulation
  (with pressure regulators
  RCA and RCD)

Installation hints

The 2100, 2150, 2300 and 2340 flow monitors must be mounted vertical. The flow direction must be upward.

The unit must not be used as a supporting part in a pipe construction.

The liquids must not contain any particles!

The operating instruction for 2100, 2150, 2300 and 2340 must be observed under any circumstances!

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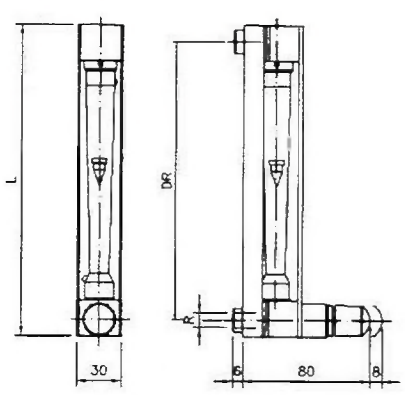
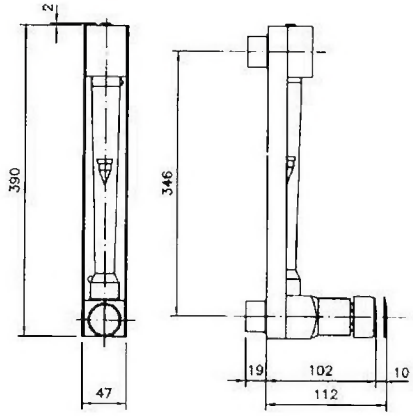
Technical data



Typ 2100, 2150, 2300



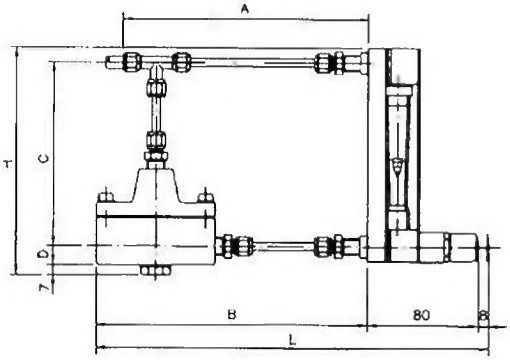
Typ 2340

Type overview

Type	DR	L	Connection (female thread) Size	Connection (female thread) Type of thread	Weight [kg] flow monitor	Weight [kg] pressure regulator
2100	136	158	1/4"	BSP/NPT	0,70	2,5
2150	186	208	1/4"	BSP/NPT	0,85	2,5
2300	336	358	1/4"	BSP/NPT	0,85	2,5
2340	346	390	1/2" / 3/4"	BSP/NPT	1,80	3,0

Combination with pressure regulator (optional)

Type	flow water [l/h] min.	flow water [l/h] max.	flow air [Nl/h] min.	flow air [Nl/h] max.
2100	1	250	10	4000
2150				
2300				
2340	60	400	700	7000

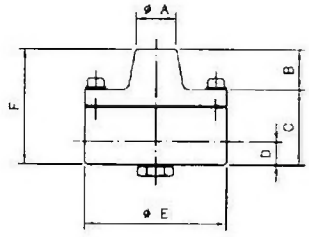


Dimensions of flow monitor and pressure regulator

Type	Dimensions A	B	C	H	L	Connections D
2100	150	170	136	172	266	1/4" BSP/NPT
2150	150	170	186	222	266	1/4" BSP/NPT
2300	150	170	336	372	266	1/4" / 1/2" BSP/NPT
2340	180	200	346	397	320	1/2" BSP/NPT

Dimensions of pressure regulator

Type	R	A	B	C	D	E	F
RCA RCD	1/4" BSP/NPT	35	11	52	13	88	63
RA40 RD40	1/2" BSP/NPT	40	16	65	18	100	81



Operating data	2100	2150	2300	2340
Operating pressure	PN 15			
Pressure drop	see table page 4			
Ambient temperature	0 - 80 °C			
Media temperature	0 - 100 °C			
Accuracy classified VDE / VDI 3513	± 3,5 %	± 3,0 %	± 1,6 %	± 1,6 %

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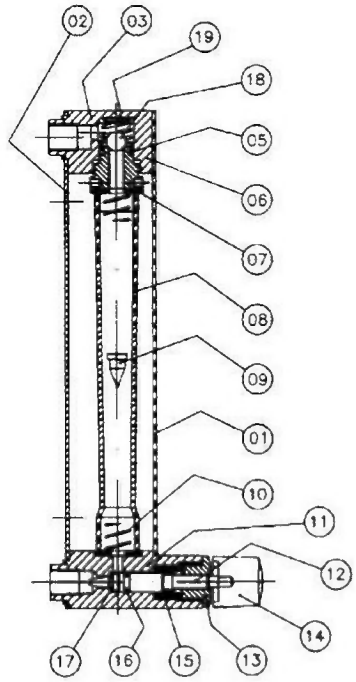
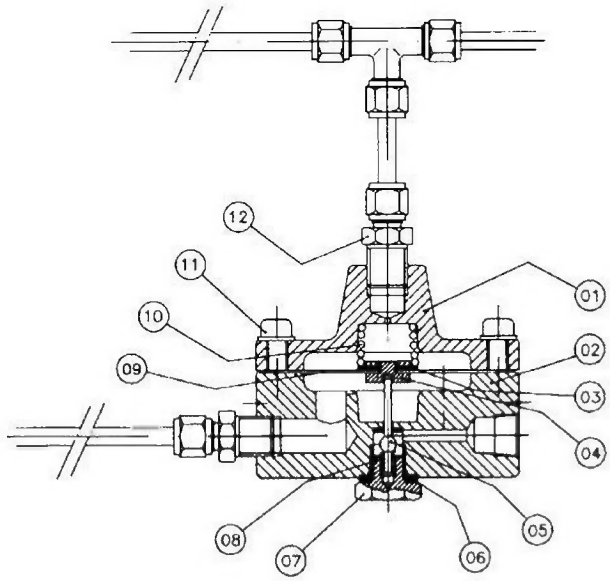
Material

Flow monitor



Pressure regulator



Material flow monitor

Nr.	Description	Marterial
1	Shield *	Polycarbonate
2	Body	Stainless steel 1.4401
3	End piece	Stainless steel 1.4401
5	O - Ring	NBR / Viton / EPDM
6	Piston	Stainless steel 1.4401
7	Gaskets	NBR / Viton / EPDM
8	Measuring tube	Borosilicate Glass
9	Float	Stainless steel 1.4404 Glass / Aluminium Plastic
10	Spring	Stainless steel 1.4401
11	Valve body	Stainless steel 1.4404
12	Valve stem	Stainless steel 1.4404
13	Guide Nut	Stainless steel 1.4404
14	Adjusting knob	Plastic
15	Valve guide	PTFE
16	O - Ring	NBR / Viton / EPDM
17	Valve seat	PTFE
18	Option	Stainless steel 1.4401
19	Option	Stainless steel 1.4401

* not available for the type 2340

Material pressure regulator

Nr.	Description	Material
1	Diaphragm body	Stainless steel 1.4404
2	Valve body	Stainless steel 1.4404
3	Diaphragm	NBR / Viton / PTFE
4	Valve guide	Stainless steel 1.4404
5	Regulating valve	Stainless steel 1.4404
6	Gasket	PTFE
7	Stop for spring	Stainless steel 1.4404
8	Valve spring	Stainless steel 1.4401
9	Diaphragm plate	Stainless steel 1.4401
10	Diaphragm spring	Stainless steel 1.4401
11	Screw	Stainless steel 1.4401
12	Connectors	Stainless steel 1.4401

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Measuring ranges

Measuring ranges for floats types ECG and AC

Tube No.	Tube length [mm]	Water 20 °C [l/h]		Air 20 °C, 1013 mbar abs. [Nl/h]			Pressure drop [mm H_2O]		
		Stainless Steel	Glass	Stainless Steel	Glass	Plastic	Stainless Steel	Glass	Plastic
Type 2100									
C110/0001	100	0,1 – 1	0,05 – 0,5	3 – 30	1 – 15	0,5 – 5	20	10	5
C110/0002,5	100	0,2 – 2,5	0,1 – 1	8 – 80	4 – 40	1,5 – 16			
C111/0005	100	0,5 – 5	0,2 – 2	15 – 160	7 – 70	3 – 30			
C111/0010	100	1 – 10	0,4 – 4	30 – 350	15 – 180	8 – 110			
C111/0016	100	1,6 – 16	0,6 – 6	40 – 450	20 – 240	10 – 140			
C112/0025	100	2,5 – 25	1 – 10	80 – 800	40 – 400	20 – 250	35	20	10
C113/0040	100	4 – 40	1,6 – 16	120 – 1200	70 – 700	40 – 400			
C114/0060	100	6 – 60	2 – 20	200 – 2000	100 – 1000	70 – 700			
C115/0100	100	10 – 100	4 – 40	300 – 3500	150 – 1600	100 – 1100	50	25	15
Type 2150									
C210/0001	150	0,1 – 1	0,05 – 0,5	3 – 30	2 – 20	0,5 – 5	20	10	5
C210/0002,5	150	0,2 – 2,5	0,1 – 1	8 – 80	5 – 50	1 – 16			
C211/0005	150	0,5 – 5	0,2 – 2	15 – 180	10 – 100	3 – 30			
C211/0010	150	1 – 10	0,4 – 4	30 – 300	15 – 180	10 – 100			
C211/0016	150	1,6 – 16	0,6 – 6	50 – 500	30 – 300	10 – 150			
C212/0025	150	2,5 – 25	1 – 10	80 – 800	40 – 400	20 – 250	35	20	10
C213/0040	150	4 – 40	1,6 – 16	100 – 1000	70 – 700	40 – 400			
C214/0060	150	6 – 60	2 – 20	150 – 1500	100 – 1000	70 – 700			
C215/0100	150	10 – 100	4 – 40	300 – 3000	150 – 1500	100 – 1100	50	25	15

Measuring ranges for floats types AC

Tube No.	Tube length [mm]	Water 20 °C [l/h]	Air 20 °C, 1013 mbar abs. [Nl/h]		Pressure drop [mm H_2O]	
		Stainless Steel	Aluminium	Stainless Steel	Aluminium	Stainless Steel
Serie 2300						
C311/0025	300	2,5 – 25	40 – 400	120 – 800	22	55
C311/0040	300	4 – 40	70 – 700	150 – 1400		
C311/0060	300	6 – 60	100 – 1000	150 – 2000		
C312/0100	300	10 – 100	170 – 1700	300 – 3000	35	90
C312/0160	300	16 – 160	250 – 2500	400 – 4500		
C312/0250	300	25 – 250	400 – 4000	700 – 7000		
Serie 2340						
C313/0400	300	40 – 400	700 – 7000	1000 – 10000	50	125
C313/0630	300	60 – 630	1000 – 10000	1800 – 18000		
C313/1000	300	100 – 1000	1700 – 17000	3000 – 30000		

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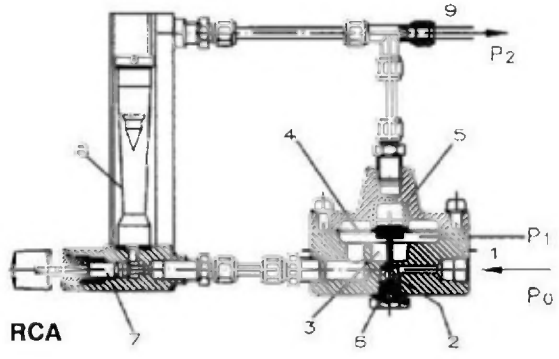
Differential pressure regulator RCA, RCD

The construction of the series 2000 allows the use of the regulator types RCA or RCD. The regulator keeps the flow constant during appearing pressure changes. The RCA will be used for gases with variable input pressure and constant output pressure. The RCD will be used for gases with constant input pressure and variable output pressure.
For liquid media only the type RCA can be used.

Operation-principle of the regulator RCA:

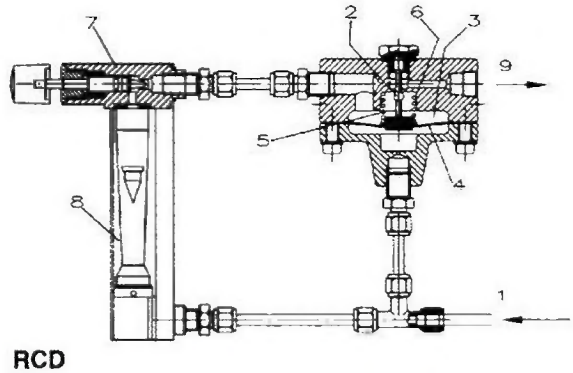
The media streams with variable input pressure P_0 through the connector (1), via the regulating valve (2) into the regulation chamber (3) with low pressure P_1 on the diaphragm (4). The valve (2), which is connected with the diaphragm (4), will be held open by force of the spring (5). During the media flow through the control valve (7) and the measuring tube (8) to the outlet (9), exists a constant counter pressure P_2 on the diaphragm (4).
The springs (5;6) are so designed, that the valve (2) opens, when the input pressure P_0 drops and closes when the pressure P_0 rises, so the flow, which is adjusted at the control valve, will be constant.
The differential pressure between P_0 and P_2 must be larger than 200 mbar, for correct function of the RCA flow rate regulator and the springs (5;6) to be operational.



RCA

Operation-principle of the regulator RCD:

The operation of the flow rate regulator (RCD) is reversed to the RCA. The change of the position of the valve (2) depends on the output pressure and the adjustment of the valve (7).

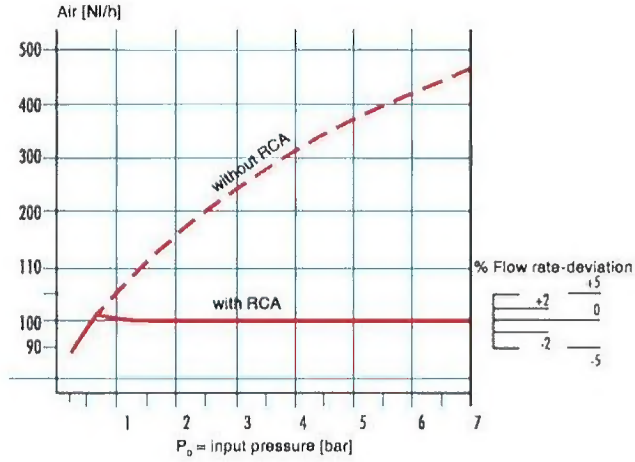


RCD

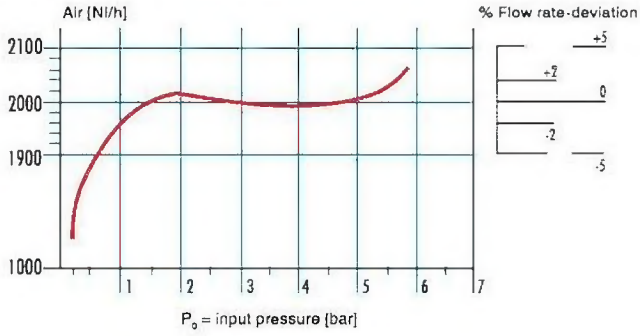
Control diagrams

The flow curves show the relationship between input pressure P_0 and the counter pressure P_2 in an RCA-regulator. The different flow rates will be adjusted with the control valve (7) to the flow monitor. The counter pressure P_2 in the diagram represents in this case the atmospheric pressure. The flow is constant, when the pressure difference between the input P_0 and counter pressure P_2 is larger than 200 mbar.

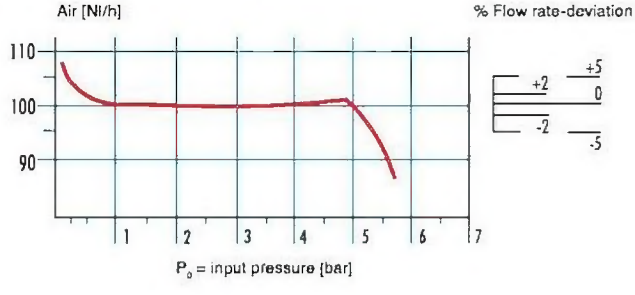
Regulator RCA at small flow rates



Regulator RCA at large flow rates



Regulator RCD at large flow rates



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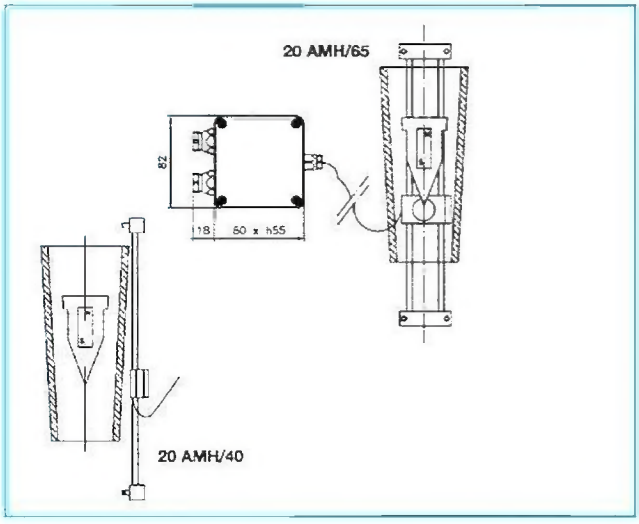
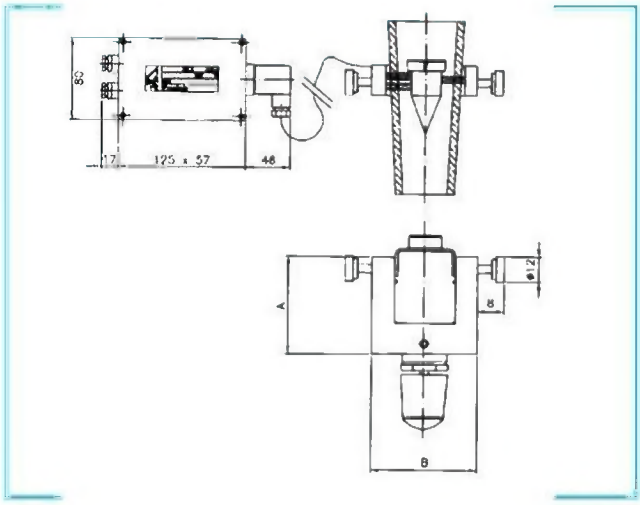


Variable hall-sensor-contact, type 20-AMH

For measuring ranges from 2,5 - 25 l/h water (float AC)

The magnet inside the float triggers the bi-stable switch (hall-sensor).
(connecting cables are not in the scope of supply !)

- 1 or 2 adjustable limit switches
- Hysteresis: ± 5 % from the full scale
- Ambient temperature: -15 °C to +60 °C
- Power supply: 230 V AC / 50 - 60 Hz
  (on request: 240 V, 110 V und 24 V, 50 - 60 Hz and 24 V DC)
- Power input: ≤ 1 VA
- Load: 3 A
- Max. voltage: 250 V
- Max. capacity: 250 VA
- Box: plastic, IP 65 (20-AMH/65)
  (on request: plastic, IP 40 at DIN 46121 (20-AMH/40)



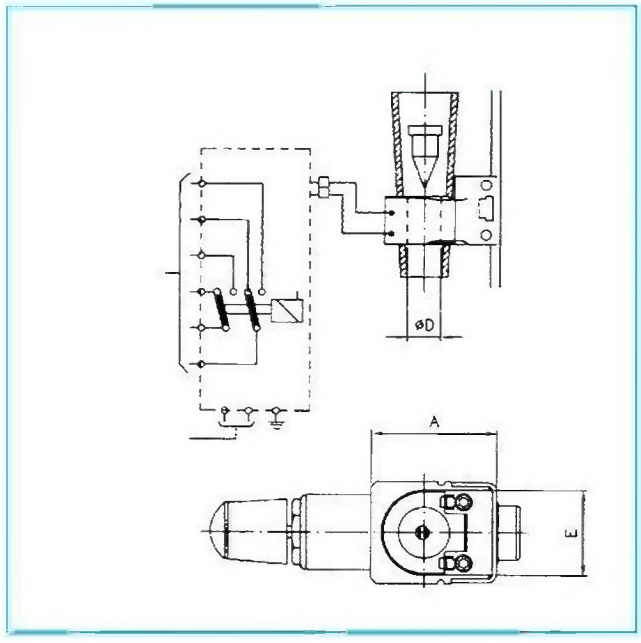
Variable optical contact, type 20-AMO

The optical contact (infrared light) will be triggered by interruption of the lightbeam through the float. The sensor is mounted in a PVC support. The relay is in a seperate aluminium box. The cable between the control relay and the sensor is 2 m.

- 1 or 2 adjustable limit switches
- Load: 1 A @ 220 V AC / 50 Hz
- Hysteresis: ± 5 % from the full scale
- Ambient temperature: -10 °C bis +80 °C
- Power supply: 220 V AC / 50 Hz, 24 V DC

Dimensions

Type	A [mm]	B [mm]	C [mm]	Max. flow Air [Nl/h]	Max. flow Water [l/h]
20 - AMO	48	52	15	700	60



Inductive contact 20-AMD and 24-AMD

The magnet inside the float triggers the inductive contact mounted in an aluminium case.
(Type SJ 3,5 n. NAMUR / DIN 19234)

- 1 or 2 adjustable limit switches
- Power supply: 8 V DC (from switch amplifier)
- Ambient temperature: -25 °C to +70 °C

Switch amplifier
Model NAMUR (Din 19234), for 1 or 2 inductive contacts

- Power supply: 24...230 V AC, 50 - 60 Hz
  24...250 V DC
- Input: intrinsically safe circuit EEx ia IIC
- Output: 1 or. 2 relays
- Load: 2...5 A / 40 V DC
- Ambient temperature: -25 °C bis +70 °C

Dimensions

Type	A [mm]	Ø D [mm]	E [mm]	Max. flow Air [Nl/h]	Max. flow Water [l/h]
20 - AMD	37	15	25	300	10
24 - AMD	87	21	45	2000	60

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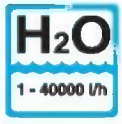
TEL: 01895 200015 FAX: 01895 252205 E-Mail: info@tamo.co.uk Website: www.tamo.co.uk

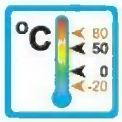
Flowmeter

6001 / 6002

Operation

The 6001 and 6002 flowmeters operate with the float measuring principle.





Application

The 6001 and 6002 flowmeters are used to measure and monitor flow of liquid and gaseous media.
The flow meters are for example used in following areas:

- Water treatment
- Chemical industry
- Laboratories
- Air-conditioning
- Cooling systems

Features

The 6001 / 6002 series proves itself through reliable function an easy handling.
Further characteristics of these sturdy types are:

- Easy installation
- Low pressure drop
- Good chemical resistance
- Direct readable scale
- Threaded connection (6001) or flange-connection (6002)
- Options:
  adjustable limit switches
  analog transmitter

Installation hints

The 6001 and 6002 flowmeters must be mounted vertically. The flow direction must be upward.

The unit must not be used as a supporting part in a pipe construction.

The liquids must not contain any particles!

The operating instruction for 6001 and 6002 must be observed under any circumstances.

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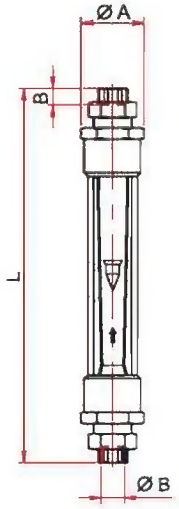
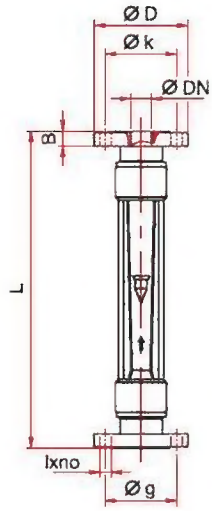
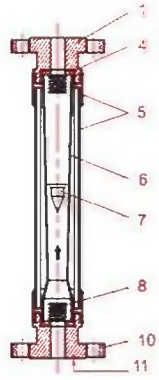
Technical data



6001





6002

Dimensions and weights of Type 6001						Dimensions and weights of Type 6002 (DIN 2501)							
R	DN	A	B	L	weight [kg]	DN	D	k	g	B	lxno	L	weight [kg]
1/2"	15	60	15	410	1,8	15	95	65	45	14	14x4	380	2,5
3/4"	20	60	15	415	2,2	20	105	75	58	14	14x4	380	3,3
1"	25	75	20	425	3,3	25	115	85	68	16	14x4	390	4,8
1 1/2"	40	105	20	445	5,9	40	150	110	88	16	18x4	400	8
2"	50	120	25	460	9,6	50	165	125	102	18	18x4	410	11
2 1/2"	65	150	25	505	12,5	65	185	145	122	18	18x4	420	15,3
3"	80	150	30	510	16,5	80	200	160	138	20	18x4	420	19,3

Material

Nr.	Description	6001 / 6002	6001-SS / 6002-SS	6001-PVC / 6002-PVC	6001-PTFE / 6002-PTFE
1	**End pieces**	Steel	SS 1.4404	PVC	PTFE
2	**Connection**	Steel	SS 1.4404	PVC	PTFE
3	**Nut**	Steel	Steel	PVC	PTFE
4	**Gaskets**	Acrylnitrile	Acrylnitrile	Acrylnitrile	PTFE
5	**Body**	Steel, coated *	Steel, coated *	Steel, coated *	Steel, coated *
6	**Measuring tube**	Borosilicate glass	Borosilicate glass	Borosilicate glass	Borosilicate glass
7	**Float**	1.4404, glass, aluminium	1.4404, glass, aluminium	PVC	PTFE
8	**Spring**	SS 1.4310 NS	SS 1.4310 NS	PVC	PTFE
9	**Gaskets**	Acrylnitrile	Acrylnitrile	Acrylnitrile	PTFE
10	**Flange**	Steel	Steel / SS 1.4401	Steel / PVC	Steel / PTFE
11	**Flange face**	Steel	SS 1.4401	PVC	PTFE

* Stainless steel 1.4401 on request

Operating data

Type	6001 / 6002	6001-SS / 6002-SS	6001-PVC / 6002-PVC	6001-PTFE / 6002-PTFE
Operating temperature	-20 °C to +80 °C	-20 °C to +80 °C	0 °C to +50 °C	-20 °C to +80 °C
Operating pressure	PN 5 to PN 15 depending on type (see table on page 3)			
Pressure drop	see table on page 3			
Accuracy	classified 1,6 (VDI / VDE 3513)			
Connection	thread (6001), flange (6002)			

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Measuring ranges

Tube Type C Model-No.	Float type AC — Stainless Steel 1.4404 7,95 g/cm³ Water 20 °C [l/h] min	max	Air *1 [Nm³/h] min	max	Aluminium 2,85 g/cm³ Air *1 [Nm³/h] min	max	Pressure [bar] max	1.4404 Pressure drop for water [mm H_2O]	Alum. Pressure drop for water [mm H_2O]	Model 6001 and 6002 Tube length (± 1mm) [mm]	R	DN
C31-00251	2,5	25	0,07	0,7	0,04	0,4	15	55	22	300	1/2" / 3/4"	15 / 20
C31-00401	4	40	0,11	1,1	0,07	0,7	15	55	22	300	1/2" / 3/4"	15 / 20
C31-00601	6	60	0,18	1,8	0,10	1	15	55	22	300	1/2" / 3/4"	15 / 20
C32-01001	10	100	0,30	3	0,17	1,7	15	90	35	300	1/2" / 3/4"	15 / 20
C32-01601	16	160	0,45	4,5	0,25	2,5	15	90	35	300	1/2" / 3/4"	15 / 20
C32-02501	25	250	0,7	7	0,4	4	15	90	35	300	1/2" / 3/4"	15 / 20
C33-04001	40	400	1,1	11	0,7	7	15	125	50	300	3/4" / 1"	20 / 25
C33-06301	60	630	1,8	18	1	10	15	125	50	300	3/4" / 1"	20 / 25
C33-10001	100	1000	3	30	1,7	17	15	125	50	300	3/4" / 1"	25 / 25
C34-16001	160	1600	4,5	45	2,5	25	10	175	75	300	1 1/2"	40
C34-25001	250	2500	7	70	4	40	10	175	75	300	1 1/2"	40
C35-40001	400	4000	11	110	7	70	8	230	95	300	1 1/2"	40
C35-63001	500	6300	18	180	10	100	8	230	95	300	1 1/2"	40
C36-M0101	1000	10000	30	300	17	170	6	300	125	300	2"	50
C36-M0141	2000	14000	120	420	45	200	6	300	125	300	2"	50
C37-M0161	1600	16000	45	450	25	250	5	400	170	300	2 1/2" / 3"	65 / 80
C37-M0201	2000	20000	60	600	35	350	5	400	170	300	2 1/2" / 3"	65 / 80
C37-M0251	2500	25000	70	700	40	400	5	400	170	300	2 1/2" / 3"	65 / 80
C37-M0301	3000	30000	90	900	50	500	5	400	170	300	2 1/2" / 3"	65 / 80
C37-M0401	6000	40000	180	1200	100	712	5	400	170	300	2 1/2" / 3"	65 / 80

*1 at 1,013 bar abs. and 20 °C

Tube Typ CG Modell-No.	Float type AC — Stainless steel 1.4404 7,95 g/cm³ Water 20 °C [l/h] min	max	Air *1 [Nl/h] min	max	ECG — Glass 2,6 g/cm³ Water 20 °C [l/h] min	max	Air *1 [Nl/h] min	max	Pressure [bar] max	SS 1.4404 Pressure drop for water [mm H_2O]	Glass Pressure drop for water [mm H_2O]	Model 6001 and 6002 Tube length (± 1mm) [mm]	R	DN
C30-00251	2,5	25	70	700	1	10	40	400	15	30	15	300	1/2"	15
C30-00401	4	40	120	1200	1,6	16	70	700	15	30	15	300	1/2"	15

*1 at 1,013 bar abs. and 20 °C

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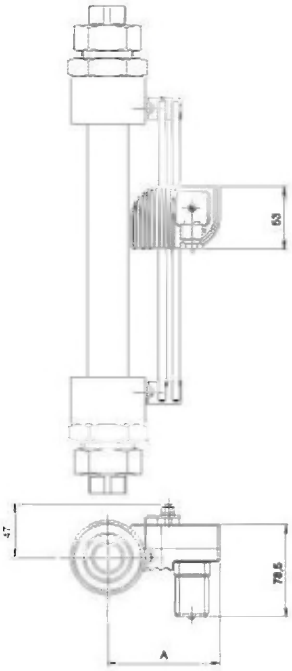
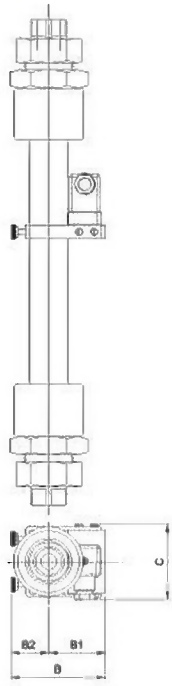
Options

60-AMM ... 60-AMD



60-AMR ... 60-AMO



Dimensions of 60-AMM ... 60-AMD

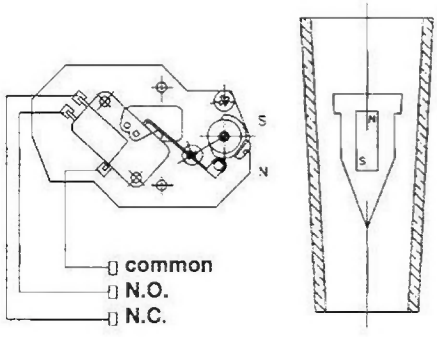
DN	A
15 – 20	90
20 – 25	96
40	111
50	117
65 – 80	130

Dimensions of 60-AMR ... 60-AMO

DN	B1	B2	B	C
15 – 20	50	31	81	56
20 – 25	52	35	87	70
40	60	41	101	96
50	71	45	116	112
65 – 80	84	52	136	135

Micro switch 60-AMM

for measuring ranges from 40 to 400 l/h water and 0,7 to 7 Nm³/h air



The magnet in the float operates the micro switch mounted in a aluminium case.

- 1 or 2 adjustable limit switches
- Switch values: 3 (1) A, 250 V ~ (VDE/CEE)
- Hysteresis: ± 10 % from full scale
- Ambient temperature: -25 °C to +80 °C
- Mechanical lifetime: 10^7 switch operations
- Power supply: 220 V AC, load (max. current): 6 A
  24 V DC, load (max. current): 0,5 A

(gold-plated on request)

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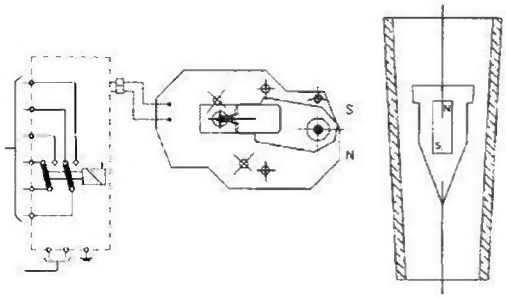
Options

Inductive contact 60-AMD

for measuring ranges from 40 - 400 l/h water and 0,7 - 7 Nm³/h air



The magnet in the float operates the inductive contact in an aluminium box.
(Type SJ 3,5 N NAMUR / DIN 19234)

- 1 or 2 adjustable limit switches
- Power supply: 8 V DC (switch amplifier)
- Ambient temperature: -25 °C to +70 °C

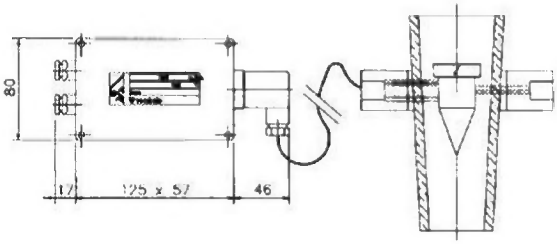
switch amplifier

Model NAMUR (DIN 19234), for 1 or 2 inductive contacts

- Power supply: 24...230 V AC, 50 - 60 Hz
  24...250 V DC
- Input: intrinsically safe circuit EEx ia IIC
- Output: 1 or. 2 relays
- Load: 2...5 A / 40 V DC
- Ambient temperature: -25 °C to +70 °C

Optical alarm 60-AMO

for measuring ranges up to 6 - 60 l/h water and 70 - 700 Nl/h air

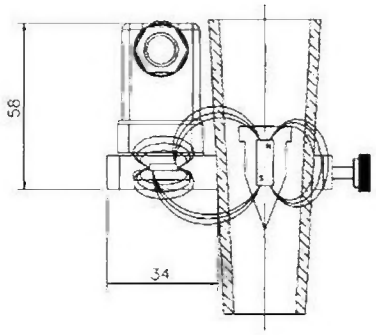


The optical contact (infrared light) will be activated by interruption of the light beam through the float. The sensor is mounted in a PVC support. The relay is in a separate aluminium box. The cable length between the control relay and the sensor is 2 m.

- 1 or 2 adjustable limit switches
- Load: 1 A / 250 V ~
- Hysteresis: ± 5 % from full scale
- Ambient temperature: -10 °C to +50 °C
- Power supply: 24 V, 110 V, 220 V,
  240 V, 50/60 Hz

Reed-contact 60-AMR

for measuring ranges from 2,5 - 25 l/h water and 0,04 - 0,4 Nm³/h air



The magnet in the float operates the bi-stable Reed-contact in a plastic box.

- 1 or 2 adjustable limit switches
- Switch values: 0,5 A / 250 V DC / 12 VA
- Hysteresis: ± 5 % from full scale
- Ambient temperature: -15 °C to +60 °C
- Power supply: 220 V AC, load: 1 A
  24 V DC, load: 1 A

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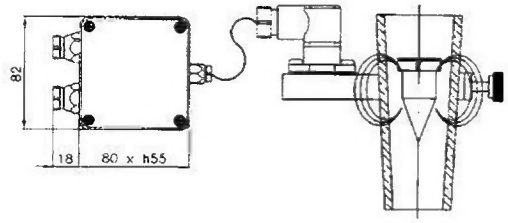
Options

Hall-sensor-contact 60-AMH

for measuring ranges from 2,5 - 25 l/h water and 0,04 - 0,4 Nm³/h air

The magnet inside the float triggers the bi-stable switch (hall-sensor).
(The connecting cable is not in the scope of supply !)

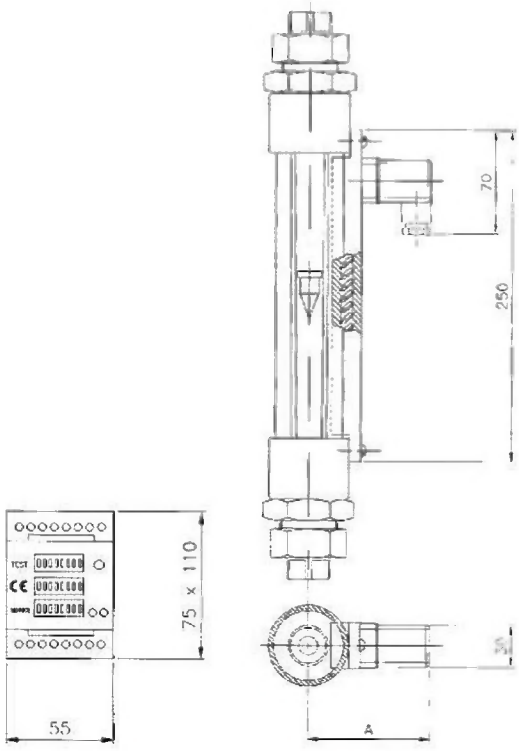


- 1 or 2 adjustable limit switches
- Hysteresis: ± 5 % from full scale
- Ambient temperature: -15 °C to +60 °C
- Power supply: 230 V AC, 50 - 60 Hz
  on request: 240 V, 110 V and 24 V, 50 - 60 Hz
- Power input: ≤ 1 VA
- Load: 3 A
- Max. voltage: 250 V
- Max. capacity: 250 VA
- Box: Plastic, IP 65 (60-AMH/65)
  on request: Plastic, IP 40 according to DIN 46277 (60-AMH/40)

Analog transmitter 60-TMUR 0...4 - 20 mA

for measuring ranges from 40 - 400 l/h water and 0,7 - 7 Nm³/h air

On the body of the flow monitor is a movable plastic case (PP), with an integrated reed switch chain, fitted.
The electronic is in a seperate IP 40 Box (DIN 46277).



- Power supply: 24, 110, 220 V AC 50 - 60 Hz
  24 V DC
- Input: 0 - 20 mA, 4 - 20 mA
  0 - 5 V, 0 - 10 V
- Electrical connection: 4-wire system
- Number of steps: max. 18 steps on the full range
- Accuracy: ± 7 % from full scale
- Ambient temperature -20 °C to +70 °C

Dimensions of 60-TMUR

DN	A
15 – 20	80
20 – 25	85
40	101
50	107
65 – 80	120

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