Special gas range
Biogas range

Safety solenoid valves, single-stage
Pressure switches
Differential pressure switches
High-pressure switches

DUNGS®
Combustion Controls

TÜV Standard for Biogas Components

The Octagon approval mark of TÜV SÜD applies to media- or flue-gas-charged components of fuel ducts and gas equipment (e.g. valves according to EN 161, pressure switches according to DIN EN 1854) of biogas installations operated with biogases and sewage gases according to DVGW worksheet G 262.

Certification

The gas equipment safety and functional safety is proven by inspection and certification of the components on the basis of test standards for gas equipment parts.

Approvals

The appliances of the DUNGS biogas and special gas range have an EC type-examination certificate according to the EC gas appliances directive and EC pressure equipment directive based on the corresponding harmonised EN standards.

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DUNGS Biogas & Special Gas Range of Appliances	
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Biogas
Biogas is one of the most successful renewable sources of energy.
Biogas is formed during an anaerobic fermentation process of organic substances such as liquid manure, plant residues or slaughtering waste in a fermenter.
Biogas is an explosive mixture of methane (50-75 %), carbon dioxide (25-50 %) and other gas components such as nitrogen, ammonia and hydrogen sulphide.

Owing to its physicochemical properties, biogas attacks metals. This is why the corrosion behaviour must be taken into account when selecting materials.
DUNGS standard biogas components, due to their special sealing materials and coatings, are suitable for use with biogas according to DVGW worksheet G 262.

Types of gas
DUNGS differentiates between:

- **Gases according to DVGW worksheet G 260/1: Gas families 1, 2, 3 (city gas, natural gas, LPG)**
- **Gases according to DVGW worksheet G 262 (Biogases)**
- **Special gases**

TÜV approval mark for components of biogas installations operated according to DVGW worksheet G 262 with biogases and sewage gases.

Scope of the type approval

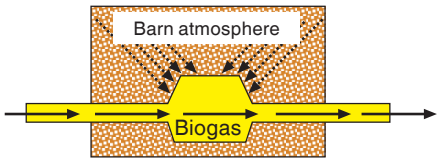
- Gas equipment safety and functional safety
- Electrical safety
- Electromagnetic compatibility (interference immunity)
- Resistance to biogases and flue gases of biogases
- Technical tightness

Resistance to biogases and flue gases of biogases
The media-charged parts of the components are free of non-ferrous metals. The resistance of the materials used to biogases and flue gases of biogases was proven by the assessment (according to the DVGW G 263) and the following tests:

Medium: Biogas
- Storage in humid air containing 40 % by volume of $C0_2$ (carbon dioxide) at 35 °C
- Storage in humid air containing 1 % by volume of H_2S (hydrogen sulphide) at 25 °C

Medium: Flue gas of biogases
- Storage in humid air containing 40 % by volume of CO_2 (carbon dioxide) and 0.1 % by volume of SO_2 (sulphur dioxide) at 35 °C.

Barn atmosphere
For applications in aggressive ambient air, for example in chicken coops (ammonia), an additional test was carried out.



Suitability for **barn atmosphere** was proven in accordance with **DIN EN 60730-2-9**:

- Storage in a wet carbon dioxide/ sulphur dioxide/air mixture
- Storage in a wet hydrogen sulphide/air mixture
- Storage in a wet ammonia/air mixture

Special gases
The appliances of the DUNGS standard range of biogas components are also suitable for other gas applications that are **not** gases according to DVGW worksheet G 262.

Special gas applications Appliance selection & gas analysis
- The materials of the components react differently to the different gas components.
- These mutual dependencies have a major effect on the reactivity of the gas.
- **This is why an installation specific gas analysis for selecting the special gas component is absolutely required.**
- **Products may have a shorter service life if the gas quality during operation differs from the gas analysis that was carried out.**

Materials & Naming				
Materials **Biogas** **Special gas**	For different gas grades, DUNGS is using different sealing materials. These materials are part of the article designation and allow easier allocation of the appliances.			
Material designations **SG ...**	SG**N**	SG**H**	SG**V**	SG**S**
Material	**N**BR Nitrile rubber	**H**NBR Hydrogenated acrylic nitrile butadiene rubber	**V**iton® FKM Fluoro elastomer	"**S**tainless Steel"
Resistance (Concentration 100 %)				
Ammonia NH_3, cold	☺	☺	😐	☺
Ammonia NH_3, hot	😐	😐	☹	☺
Chlorine Cl_2, dry	☹	☹	☺	☺
Chlorine Cl_2, wet	☹	☹	☺	☹
Fluorine F_2, dry	☹	☹	☺	☺
Naphthaline $C_{10}H_8$	😐	😐	☺	☺
Octane C_8H_{18}	😐	😐	☺	☺
Ozone O_3	☹	😐	☺	☺
Propene C_3H_6	☹	☹	☺	☺
Hydrogen sulphide H_2S, wet	☹	☹	😐	☺
Tar	☹	☹	☺	☺
☺	**good resistance**			
😐	**less applicable**			
☹	**not resistant**			

Landfill gas - Please note!

- Owing to its constantly changing gas compositions, landfill gas is excluded from the standard biogas components certification.
- Resistance to landfill gas **cannot** be ensured.

Maintenance

Standard biogas components and special gas components must be subjected to regular tests and, if required, maintenance, in order to maintain the entire installation in perfect condition.

- In case of non-observance, personal injury and material damage are possible.
- In accordance with Technical Information 4 "Safety Regulation for Biogas Installations" of the German Agricultural Institution for Statutory Accident Insurance and Prevention, DUNGS recommends a **weekly** inspection.
- Inspection and maintenance must be carried out by authorised skilled personnel only.

Safety solenoid valves, single-stage

Octagon

MVD ... SGN
MVD ... SGV

Technology

Single-stage solenoid valves for biogas and special gas applications according to TÜV Octagon approval mark for standard biogas components.
Automatic shut-off valve according to EN 161 for gas burners and gas appliances:

- max. operating pressure up to 200 mbar or 500 mbar
- currentless closed
- fast opening
- main flow adjustable
- DC solenoid, rectifier wiring in connector box with PG screw connection
- Pipe thread to ISO 7/1
- flange connection according to DIN 1092-1
- reliably operating, robust
- free of non-ferrous metals
- housing anodised

Media/Use

MVD ...SGN
MVD ... SGV
Suitable for gases of gas families 1,2,3 (DVGW G 260), Biogases and sewage gases (DVGW G 262), special gases up to max. 1.0 % by volume of H_2S (wet, +25 °C) subject to installation specific gas analysis. Flue gases of biogas installations up to max. 0.1 % by volume of SO_2 (wet, +35 °C). Proven suitability for barn atmosphere in accordance with DIN EN 60730-2-9.

Approvals

TÜV Octagon approval mark

EC type-examination certificate according to the EC gas appliances directive:
CE-0085 AO 3219

EC type-examination certificate according to the EC pressure installation directive:
CE0036

Function

The safety solenoid valve by DUNGS is an automatic shut-off valve activated by auxiliary power.
The electromagnetic drive opens against the closing spring. The armature stroke can be limited by means of an adjustment screw (D function).
If the auxiliary power (operating voltage) is interrupted, the closing spring closes the valve within 1 s.

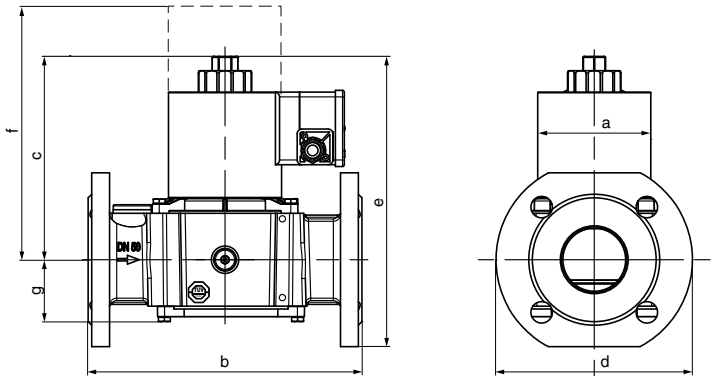
MVD ... SGN: Single-stage solenoid valve currentless closed, fast opening, fast closing, gas flow volume can be limited manually by setting the main flow, **NBR sealing element**

MVD ... SGV: Single-stage solenoid valve currentless closed, fast opening, fast closing, gas flow volume can be limited manually by setting the main flow, **Viton sealing element**.

Attention!
Read the operating and mounting instructions, before putting the appliance into service, and observe the maintenance intervals.

Technical Data SG Solenoid valves	MVD ... SGN, MVD ... SGV Safety solenoid valves, single-stage
Nominal diameter, DN **Pipe thread acc. to DIN 2999,** **Rp Flanges**	40 50 65 80 100 1/2 3/4 1 Connecting flanges according to DIN EN 1092-1
Max. operating pressure	DN 40-DN 100: up to 200 mbar (20 kPa) Rp 1/2-Rp 1 : up to 500 mbar (50 kPa)
Solenoid valve	Valve acc. to EN 161, class A, group 2 single-stage operation
Closing time	< 1 s
Opening time	< 1 s at an ambient temperature of +20 °C
Main flow setting	manually
Material **of the gas-bearing parts**	**Version MVD ... SGN** Housing: Aluminium, steel, stainless steel, Eloxal Sealing material: NBR **Version MVD ... SGV** Housing: Aluminium, steel, stainless steel, Eloxal Sealing material: Viton
Voltage / frequency	~(AC) 230 V (+10 % -15 %); 50-60 Hz = (DC) 24 V
Power / current consumption	see type overview
Duty cycle	Continuous duty
Type of protection	IP 65 as per IEC 529 (EN 60529)
Electrical connection	to screw terminals via PG 11 Plug-in connection according to DIN EN ISO 175301-803 can be retrofitted
Duty classification	max. 1000/h
Sample and start gas connection	G ¼ DIN ISO 228 on both sides in the supply pressure area, additionally G ¾ on the supply pressure side, as of DN 40 (flange)
Dirt trap	Integrated sieve, mesh size 1 mm
Temperature range MVD ... SGN **Temperature range MVD ... SGV**	**Ambient temperature**: -15 °C to +60 °C **Medium temperature**: -15 °C to +60 °C **Storage temperature**: -30 °C to +80 °C **Ambient temperature**: 0 °C to +60 °C **Medium temperature**: 0 °C to +60 °C **Storage temperature**: -30 °C to +80 °C
Mounting position	Solenoid standing vertically to lying horizontally
Limit switch	Type K01/1 DIN-inspected, Attention: not free of non-ferrous metals, check resistance!
Valve proving system	Type DSLC pxVx Type VPS 504 can be mounted via adapter up to DN 80 Attention: check resistance!

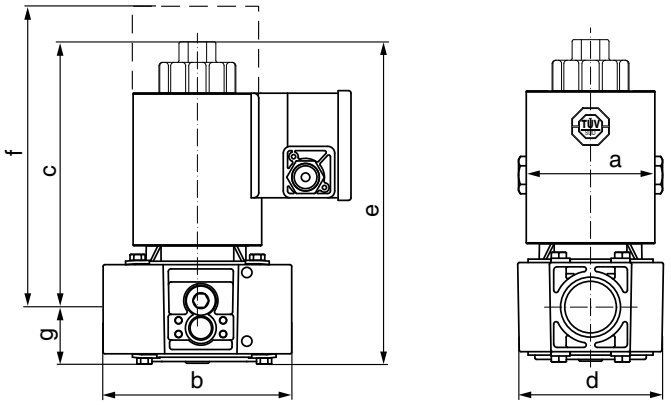
Dimensions [mm]
MVD 2040 SGN - MVD 2100 SGN
MVD 2040 SGV - MVD 2100 SGV



Type	$p_{max.}$	DN	Solenoid no.	Order.-No.	Voltage	P* max. [VA]	I** max. [A]	Opening time	Dimensions [mm] a	b	c	d	e	f	g	Weight kg
MVD 2040/5 S02 SGN	200	40	300	256 097	~ (AC) 230 V	65	0,26	< 1 s	95	200	170	150	235	255	45	7,0
MVD 2050/5 S02 SGN	200	50	300	256 098		65	0,26	< 1 s	95	230	171	165	245	255	52	7,7
MVD 2065/5 S02 SGN	200	65	400	256 099		100	0,48	< 1 s	115	290	221	185	315	320	55	12,7
MVD 2080/5 S02 SGN	200	80	500	252707		90	0,42	< 1 s	130	310	250	200	340	360	70	19,0
MVD 2100/5 S02 SGN	200	100	550	252708		100	0,48	< 1 s	150	350	310	240	410	480	85	31,0
MVD 2040/5 S02 SGV	200	40	300	256 175		65	0,26	< 1 s	90	200	170	150	235	255	45	7,0
MVD 2050/5 S02 SGV	200	50	300	256 176		65	0,26	< 1 s	95	230	171	165	245	255	52	7,7
MVD 2065/5 S02 SGV	200	65	400	256 177		100	0,48	< 1 s	115	290	221	185	315	330	55	12,7
MVD 2080/5 S02 SGV	200	80	500	256 178		90	0,42	< 1 s	130	310	250	200	340	375	70	19,0
MVD 2100/5 S02 SGV	200	100	550	256 179		100	0,48	< 1 s	150	350	310	240	410	480	85	31,0
MVD 2040/5 S02 SGN	200	40	300	256 189	= (DC) 24 V	65	2,23	< 1 s	95	200	170	150	235	255	45	7,0
MVD 2050/5 S02 SGN	200	50	300	256 190		65	2,34	< 1 s	95	230	171	165	245	255	52	7,7
MVD 2065/5 S02 SGN	200	65	400	256 191		80	3,06	< 1 s	115	290	221	185	315	320	55	12,7
MVD 2080/5 S02 SGN	200	80	500	254 351		90	3,48	< 1 s	130	310	250	200	340	360	70	19,0
MVD 2100/5 S02 SGN	200	100	550	254 932		100	3,86	< 1 s	150	350	310	240	410	480	85	31,0
MVD 2040/5 S02 SGV	200	40	300	256 194		65	2,23	< 1 s	90	200	170	150	235	255	45	7,0
MVD 2050/5 S02 SGV	200	50	300	256 195		65	2,34	< 1 s	95	230	171	165	245	255	52	7,7
MVD 2065/5 S02 SGV	200	65	400	256 196		80	3,06	< 1 s	115 55	290	221	185	315	330		12,7
MVD 2080/5 S02 SGV	200	80	500	256 197		90	3,48	< 1 s	130	310	250	200	340	375	70	19,0
MVD 2100/5 S02 SGV	200	100	550	256 200		100	3,86	< 1 s	150	350	310	240	410	480	85	31,0

*** Electrical power when open**
**** Switch-on current for approx. 3 s**
f = Space required for mounting the solenoid
d = Max. width

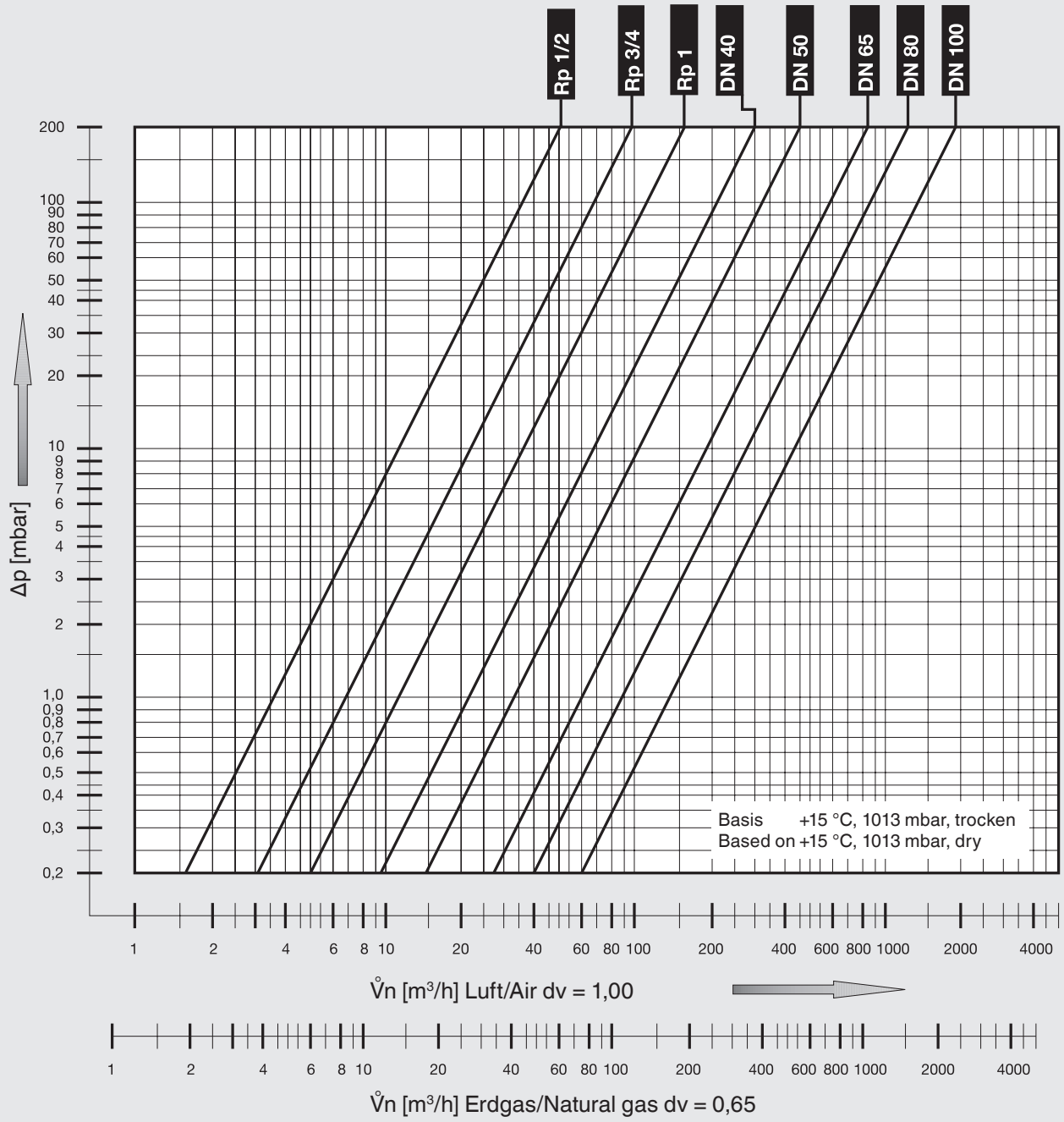
Dimensions [mm]
MVD 505 SGN - MVD 510 SGN
MVD 505 SGV - MVD 510 SGV



Type	$p_{max.}$	Rp	Solenoid no.	Order.-No.	Voltage	P* $_{max.}$ [VA]	I** $_{max.}$ [A]	Opening time	Dimensions [mm] a	b	c	d	e	f	g	Weight kg
MVD 505/5 S02 SGN	500	1/2	120	257 668	~ (AC) 230 V	25	0,11	< 1 s	50	80	105	75	128	160	23	1,1
MVD 507/5 S02 SGN	500	3/4	200	257 670		30	0,15	< 1 s	75	100	135	85	160	200	25	2,4
MVD 510/5 S02 SGN	500	1	250	257 672		26	0,12	< 1 s	75	110	158	90	188	230	30	3,0
MVD 505/5 S02 SGV	500	1/2	120	257 760		25	0,11	< 1 s	50	80	105	75	128	160	23	1,1
MVD 507/5 S02 SGV	500	3/4	200	257 761		30	0,15	< 1 s	75	100	135	85	160	200	25	2,4
MVD 510/5 S02 SGV	500	1	250	257 762		26	0,12	< 1 s	75	110	158	90	188	230	30	3,0
MVD 505/5 S02 SGN	500	1/2	120	257 667	= (DC) 24 V	25	0,94	< 1 s	50	80	105	75	128	160	23	1,1
MVD 507/5 S02 SGN	500	3/4	200	257 669		30	1,08	< 1 s	75	100	135	85	160	260	25	2,4
MVD 510/5 S02 SGN	500	1	250	257 671		26	0,95	< 1 s	75	110	158	90	188	230	30	3,0
MVD 505/5 S02 SGV	500	1/2	120	257 763		25	0,94	< 1 s	50	80	105	75	128	160	23	1,1
MVD 507/5 S02 SGV	500	3/4	200	257 764		30	1,08	< 1 s	75	100	135	85	160	200	25	2,4
MVD 510/5 S02 SGV	500	1	250	257 765		26	0,95	< 1 s	75	110	158	90	188	230	30	3,0

*** Electrical power when open**
**** Switch-on current for approx. 3 s**
f = Space required for mounting the solenoid
d = Max. width

Flow diagram

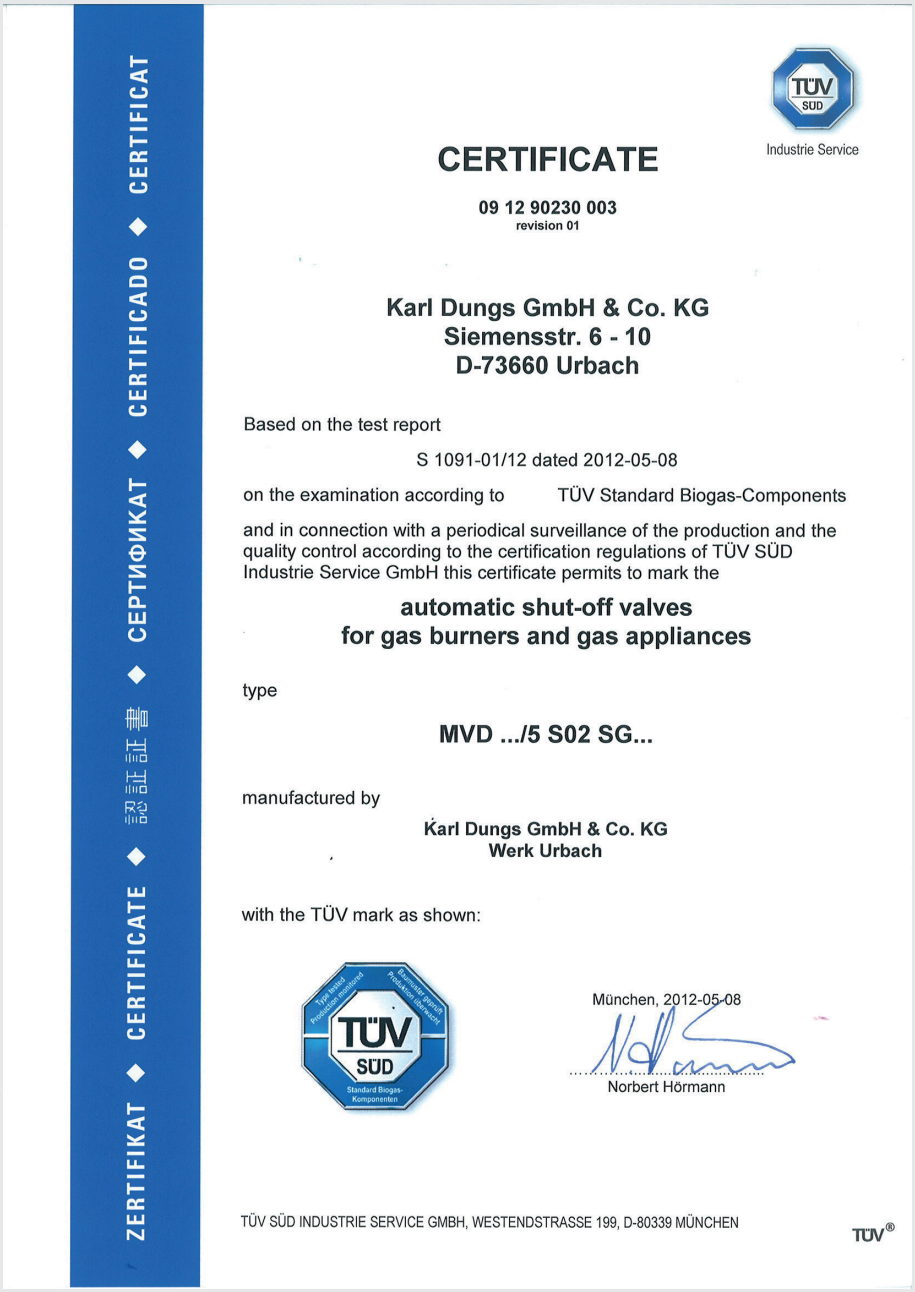


$$\mathring{V}_{\text{verwendetes Gas/gas used}} = \mathring{V}_{\text{Luft/air}} \times f$$

$$f = \sqrt{\frac{\text{Dichte Luft / Spec. weight air}}{\text{Dichte des verwendeten Gases / Spec. weight of gas used}}}$$

Gasart Type of gas	Dichte Spec. Wgt. [kg/m³]	dv	f
Erdgas Natural gas	0.81	0.65	1.24
Stadtgas City gas	0.58	0.47	1.46
Flüssiggas LPG	2.08	1.67	0.77
Luft Air	1.24	1.00	1.00

Certificate Safety solenoid valves, single-stage



ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Industrie Service

CERTIFICATE

09 12 90230 003
revision 01

Karl Dungs GmbH & Co. KG
Siemensstr. 6 - 10
D-73660 Urbach

Based on the test report

S 1091-01/12 dated 2012-05-08

on the examination according to TÜV Standard Biogas-Components

and in connection with a periodical surveillance of the production and the quality control according to the certification regulations of TÜV SÜD Industrie Service GmbH this certificate permits to mark the

automatic shut-off valves
for gas burners and gas appliances

type

MVD .../5 S02 SG...

manufactured by

Karl Dungs GmbH & Co. KG
Werk Urbach

with the TÜV mark as shown:

TÜV SÜD Standard Biogas-Komponenten

München, 2012-05-08

Norbert Hörmann

TÜV SÜD INDUSTRIE SERVICE GMBH, WESTENDSTRASSE 199, D-80339 MÜNCHEN

TÜV®

The original can be found at www.dungs.com

Differential pressure switch for air, smoke and flue gases of biogas installations
LGW...A2 SGN

Differential pressure switch for air, smoke and flue gases of biogas installations
Overpressure switch for biogases and special gases
LGW...A4 SGV

Technology

Adjustable differential pressure switches according to EN 1854.
The pressure switches are suitable for activating, deactivating or switching a circuit if the actual value of the pressure changes compared with the set nominal value.
The nominal value (switching point) is set by means of a setting wheel with scale.

Media/Use

LGW…A2 SGN
Differential pressure switch for
- air, smoke gases and flue gases
- flue gas of biogas

LGW…A4 SGV
Pressure switch suitable for
- gases according to DVGW worksheet G260/1: gas families 1, 2, 3
- gases according to DVGW worksheet G262 (biogases)
- special gases

Differential pressure switch for
- air, smoke and flue gases
- flue gas of biogas

Pressure monitoring of biogas installations operated with biogases and sewage gases according to DVGW worksheet G 262.

All pressure switches have proven suitability for barn atmosphere in accordance with DIN EN 60730-2-9.

Differential pressure switch LGW...A2, LGW...A4

The control unit reacts to differential pressure, which connects, disconnects or switches a circuit when exceeding or falling below a set nominal value.

Function

Differential pressure switch in the positive and negative pressure range.
The differential pressure acts on the micro switch via the membrane against the force of the adjusting spring. The pressure switch works without auxiliary power.

Approvals

EC type-examination certificate according to the EC gas appliances directive:
CE-0085 AQ 0673

EC type-examination certificate according to the EC pressure installation directive:
CE0036

TÜV-inspected component for biogas installations according to TÜV work instruction IS-TAF 411.Mrz.-2007.

Overpressure switch
GW...A2 SGV

High-pressure switch
GW...A4/2 HP SGS

for biogases and special gases and their combustion products.

Technology

The GW...A2 SGV is an adjustable pressure switch according to EN 1854 for DUNGS multiple actuators
The GW...A4/2 HP SGS is an adjustable pressure switch according to EN 1854 (GW 6000 A4 HP SGS according to DIN 3398 T3)

The pressure switches are suitable for activating, deactivating or switching a circuit if the actual value of the pressure changes compared with the set nominal value.
The nominal value (switching point) is set by means of a setting wheel with scale.

Media/Use

GW…A2 SGV, GW...A4 HP SGS
Pressure switch for

- air, smoke and exhaust gases
- flue gas of biogas
- gases according to DVGW worksheet G260/1: gas families 1, 2, 3
- gases according to G262 (biogases)
- special gases

GW...A4 HP SGS only

All gas-bearing parts are made of stainless steel 1.4541

Pressure monitoring of biogas installations operated with biogases and sewage gases according to DVGW worksheet G 262.

All pressure switches have proven suitability for barn atmosphere in accordance with DIN EN 60730-2-9.

Pressure switch GW...A2 SGV, High-pressure switch GW...A4 HP SGS

The control unit reacts on overpressure, which connects, disconnects or switches a circuit when exceeding or falling below a set nominal value.

Function

The overpressure acts via the membrane (GW...A2) or the metal bellows (GW...A4/2 HP) against the force of the adjusting spring on the micro switch. The pressure switch works without auxiliary power.

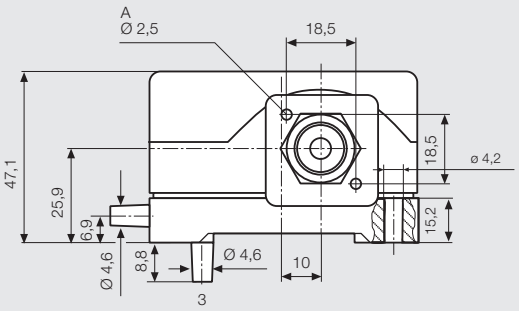
Approvals

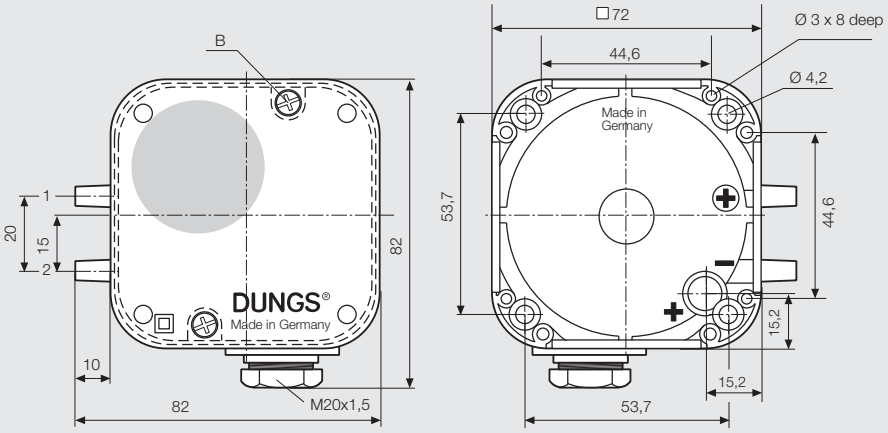
EC type-examination certificate according to the EC gas appliances directive:
CE-0085 AO 3220

EC type-examination certificate according to the EC pressure installation directive:
CE0036

TÜV-inspected component for biogas installations according to TÜV work instruction IS-TAF 411.Mrz.-2007.

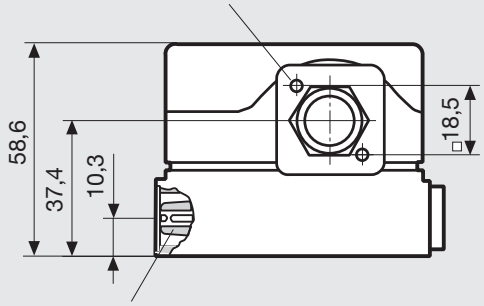
Dimensions [mm]
LGW...A2 SGN



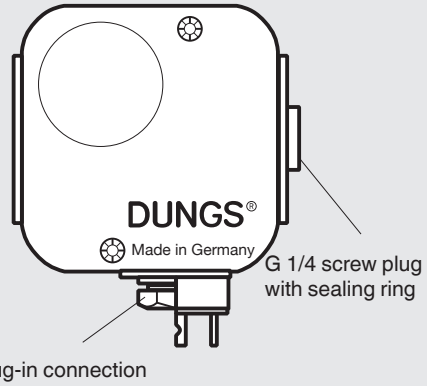


Dimensions [mm]
LGW...A4 SGV

ø 2.5 x 9 deep for appliance plug
DIN EN 175 301-803



Gauge connection, integrated ø 9

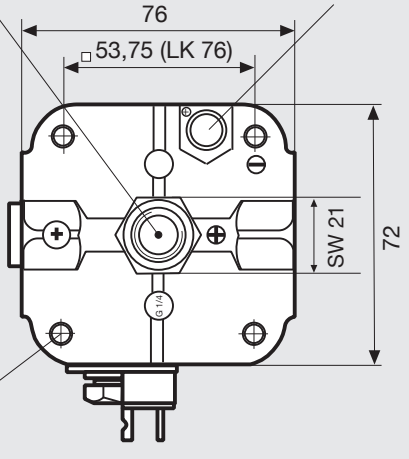


G 1/4 screw plug
with sealing ring

M 20 x 1.5 or plug-in connection
socket according to
DIN EN 175 301-803

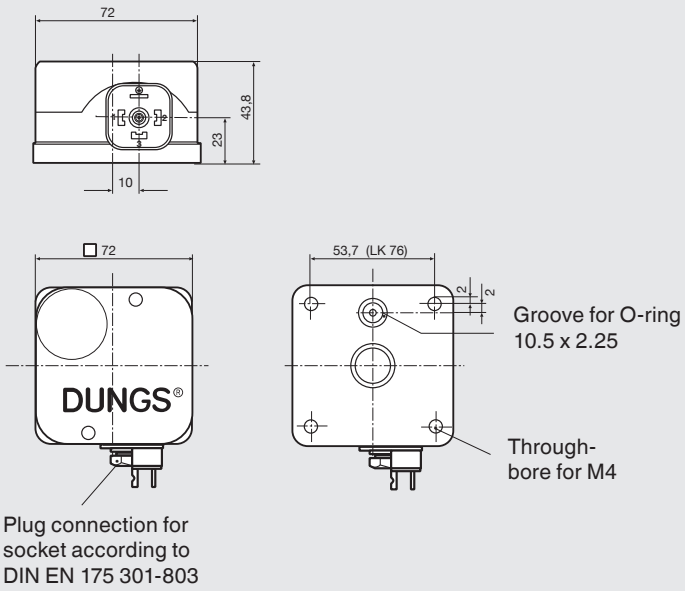
G 1/4 pressure connection

G 1/8 pressure connection

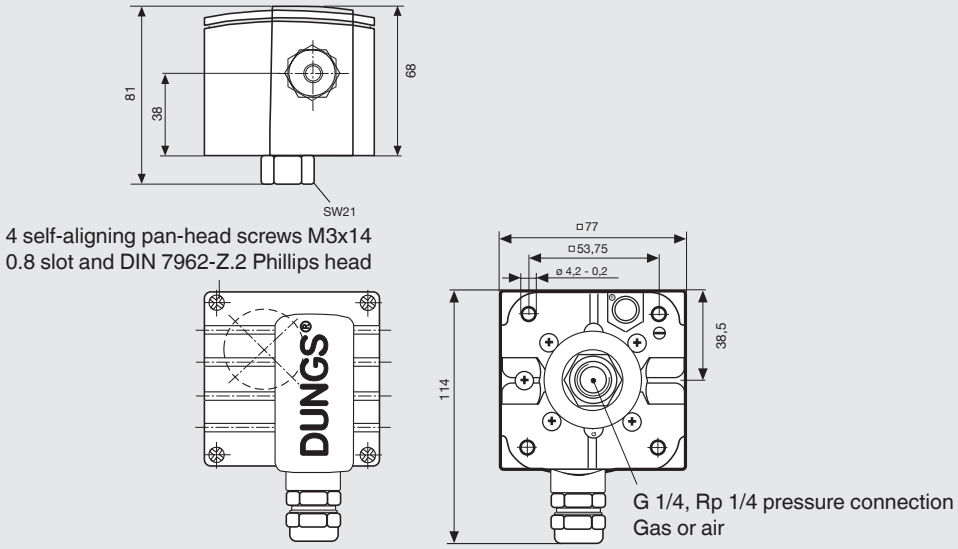


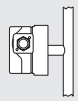
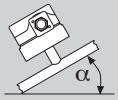
4 x ø 4.2
for screws M4 ISO 1207, 912

Dimensions [mm]
GW...A2 SGV



Dimensions [mm]
GW...A4/2 HP IP 65
with metal housing,
cable entry M 20 x 1.5



Mounting positions (observe the change of the switching point if mounting position differs from standard)				
	**Standard mounting position**			
	The pressure switch is activated at a **higher** pressure when mounted horizontally:			
	LGW...A2 SGN	**ca. + 0,5 mbar**	**GW...500.. HP SGS**	**ca. + 10 mbar**
	LGW...A4 SGV	**ca. + 0,5 mbar**	**GW...2000.. HP SGS**	**ca. + 20 mbar**
	GW...A2 SGV	**ca. + 0,5 mbar**	**GW...6000.. HP SGS**	**ca. + 80 mbar**
	The pressure switch is activated at a **lower** pressure if mounted horizontally overhead:			
	LGW...A2 SGN	**ca. - 0,5 mbar**	**GW...500.. HP SGS**	**ca. - 10 mbar**
	LGW...A4 SGV	**ca. - 0,5 mbar**	**GW...2000.. HP SGS**	**ca. - 20 mbar**
	GW...A2 SGV	**ca. - 0,5 mbar**	**GW...6000.. HP SGS**	**ca. - 80 mbar**
	Intermediate mounting position			
	LGW...A2 SGN	**ca. ± 0,5 mbar**	**GW...500.. HP SGS**	**ca. ± 10 mbar**
	LGW...A4 SGV	**ca. ± 0,5 mbar**	**GW...2000.. HP SGS**	**ca. ± 20 mbar**
	GW...A2 SGV	**ca. ± 0,5 mbar**	**GW...6000.. HP SGS**	**ca. ± 80 mbar**

Technical Data SG pressure switch	LGW…A2 SGN Differential pressure switch	LGW…A4 SGV Differential pressure switch
Nomenclature / Version	AU-M-V9	AU-M-MS9-V0-VS3
Pressure connection	**p+**: Hose connector ø 4.6 mm **p-**: Hose connector ø 4.6 mm	**p+**: G ¼ female thread as per ISO 228 at the bottom on the housing **p-**: G ⅛ female thread as per ISO 228 at the bottom of the housing
Medium	**p+**: Air, smoke and exhaust gases, flue gas of biogas **p-**: Air, smoke and exhaust gases, flue gas of biogas	**p+**: Air, smoke and exhaust gases, flue gas of biogas gases according to DVGW worksheet G260/1: gas families 1, 2, 3 gases according to DVGW worksheet G 262 (biogases) special gases **p-**: Air, smoke and exhaust gases, flue gas of biogas
Environment	Proven suitability for barn atmosphere in accordance with DIN EN 60730-2-9.	
Temperature range	**Ambient**: -15 °C to +70 °C **Medium**: -15 °C to +70 °C **Storage**: -30 °C to +85 °C	**Ambient**: 0 °C to +70 °C **Medium**: 0 °C to +70 °C **Storage**: -30 °C to +85 °C
Materials	**Bottom part of the housing** Polycarbonate **Bottom part of the switch part** Polycarbonate **Membrane / Metal bellows** NBR **Hood** Polycarbonate **Switch part** tin-plated **Switching contact** Silver (Ag), galv. gold-plated (Au)	**Bottom part of the housing** Aluminium diecast **Bottom part of the switch part** Polycarbonate **Membrane / Metal bellows** Viton **Hood** Polycarbonate **Switch part** tin-plated **Switching contact** Silver (Ag), galv. gold-plated (Au)
Switching voltage	**Standard application** ~(AC) eff. min. 24 V ~(AC) max. 250 V =(DC) min. 24 V =(DC) max. 48 V **DDC application** =(DC) min. 5 V =(DC) max. 24 V **Attention:** After application (> 24 V / > 20 mA), a later DDC application is no longer possible!	
Rated current	**Standard application**: ~(AC) 10 A **DDC application**: =(DC) 20 mA	
Switching current	**Standard application** ~(AC) eff. min. 20 mA ~(AC) max. 6 A at cos φ 1 ~(AC) max. 3 A at cos φ 0.6 =(DC) min. 20 mA =(DC) max. 1 A **DDC application** =(DC) min. 5 mA =(DC) max. 20 mA	
Electrical connection	to screw terminals via cable entry M20x1.5	
Type of protection	IP 65 as per IEC 529 (EN 60529), protective insulation	IP 65 as per IEC 529 (EN 60529)
Adjustment	With increasing pressure in vertical mounting position. Optionally increasing or decreasing setting on site. Observe the change of the switching point with deviating mounting position.	
Adjustment tolerance	See adjusting range page 16 deviation of the switching point compared to the nominal value and installation in vertical mounting position	

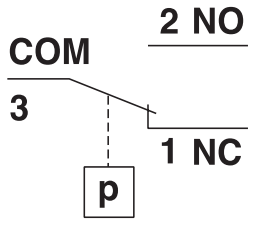
Technical Data SG pressure switch	GW…A2 SGV Overpressure switch	GW…A4/2 HP SGS High-pressure switch
Nomenclature / Version	AU-G3-V12	AU-M-V0
Pressure connection	**p+**: O-ring flange connection at the underside of the pressure switch	**p+:** in centre of housing bottom Female thread G ¼, Rp ¼
Medium	**p+**: Air, smoke and exhaust gases, flue gas of biogas gases according to DVGW worksheet G260/1: gas families 1, 2, 3 gases according to DVGW worksheet G 262 (biogases) special gases	**p+**: Air, smoke and exhaust gases, flue gas of biogas gases according to DVGW worksheet G260/1: gas families 1, 2, 3 gases according to DVGW worksheet G 262 (biogases) special gases Liquids on request
Environment	Proven suitability for barn atmosphere in accordance with DIN EN 60730-2-9.	
Temperature range	**Ambient**: 0 °C to +70 °C **Medium**: 0 °C to +70 °C **Storage**: -30 °C to +85 °C	**Ambient**: -15 °C to +70 °C **Medium**: -15 °C to +70 °C **Storage**: -30 °C to +85 °C
Materials	**Bottom part of the housing** Aluminium diecast **Bottom part of the switch part** Polycarbonate **Membrane / Metal bellows** Viton **Hood** Polycarbonate **Switch part** tin-plated **Switching contact** Silver (Ag), galv. gold-plated (Au)	**Bottom part of the housing** Aluminium diecast, powder-coated **Bottom part of the switch part** Polycarbonate **Membrane / Metal bellows** Stainless steel 1.4541 **Hood** Zinc diecast, powder-coated **Switch part** tin-plated **Switching contact** Silver (Ag), galv. gold-plated (Au)
Switching voltage	**Standard application** ~(AC) eff. min. 24 V ~(AC) max. 250 V =(DC) min. 24 V =(DC) max. 48 V **DDC application** =(DC) min. 5 V =(DC) max. 24 V **Attention:** After application (> 24 V / > 20 mA), a later DDC application is no longer possible!	
Rated current	**Standard application**: ~(AC) 10 A **DDC application**: =(DC) 20 mA	
Switching current	**Standard application** ~(AC) eff. min. 20 mA ~(AC) max. 6 A at cos φ 1 ~(AC) max. 3 A at cos φ 0.6 =(DC) min. 20 mA =(DC) max. 1 A **DDC application** =(DC) min. 5 mA =(DC) max. 20 mA	
Electrical connection	plug connection for line sockets as per DIN EN 175 301-803. 3-pin with protective contact	to screw terminals via cable entry M20x1.5
Type of protection	IP 65 as per IEC 529 (EN 60529)	
Adjustment	With increasing pressure in vertical mounting position. Optionally increasing or decreasing setting on site. Observe the change of the switching point with deviating mounting position.	
Adjustment tolerance	See adjusting range page 16 deviation of the switching point compared to the nominal value and installation in vertical mounting position	

Type	Version	$p_{max.}$	Order number 1 pieces	Adjusting range [mbar]	Adjusting tolerance [mbar]	Switching difference Δp [mbar] p ⬆min.	Switching difference Δp [mbar] p ⬆max.	Type of protection
LGW... A2 SGN Differential pressure switch [AU-M-V9]	LGW 3 A2 SGN	**500 mbar**	**247964**	**0.4 - 3.0**	**min. ± 0.1 max. ± 15%**	**≤ 0.03**	**≤ 0.03**	**IP 65**
	LGW 10 A2 SGN		**248247**	**2 - 10**	**max. ± 15%**	**≤ 0.5**	**≤ 0.5**	
	LGW 50 A2 SGN		**255574**	**2.5 - 50**	**min. ± 0.75 max. ± 15%**	**≤ 1.0**	**≤ 1.5**	
	LGW 150 A2 SGN		**248248**	**7 - 150**	**min. ± 2 max. ± 15%**	**≤ 3**	**≤ 5**	
LGW... A4 SGV Differential pressure switch [AU-M-V0-VS3]	LGW 10 A4 SGV	**500 mbar**	**246749**	**2 - 10**	**max. ± 15%**	**≤ 0.5**	**≤ 0.5**	**IP 65**
	LGW 150 A4 SGV		**246557**	**7 - 150**	**max. ± 15%**	**≤ 3**	**≤ 5**	
GW... A2 SGV Pressure switch [AU-G3-V12]	GW 10 A2 SGV	**500 mbar**	**248244**	**2 - 10**	**max. ± 15%**	**≤ 0.5**	**≤ 0.5**	**IP 65**
	GW 150 A2 SGV		**248245**	**7 - 150**	**max. ± 15 %**	**≤ 3**	**≤ 5**	
GW... A4/2 HP SGS High-pressure switch [AU-M-V0)]	GW 500 A4/2 HP SGS	**2 bar @ 0.1 – 0.15 5 bar @ > 0.15 – 0.5**	**255569**	**0.1 - 0.5 bar**	**max. ± 15%**	**≤ 0.03 bar**	**≤ 0.03 bar**	**IP 65**
	GW 2000 A4/2 HP SGS	**5 bar**	**255570**	**0.4 - 2.0 bar**	**max. ± 15%**	**≤ 0.05 bar**	**≤ 0.1 bar**	
	GW 6000 A4/2 HP SGS	**8 bar**	**255571**	**1.0 - 6.0 bar**	**max. ± 15%**	**≤ 0.3 bar**	**≤ 0.3 bar**	

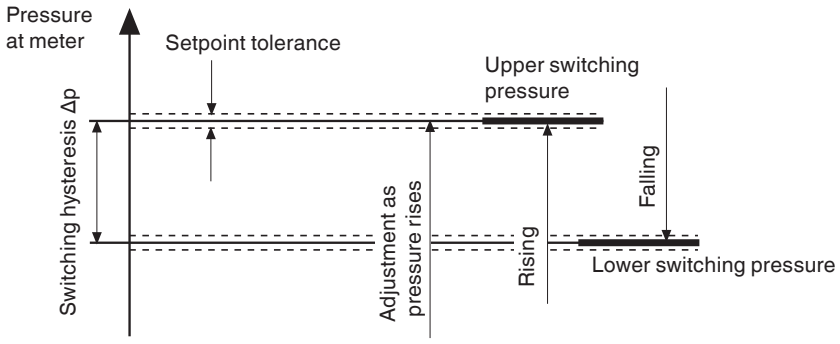
Accessories		
Gauge connection G ¼ with sealing ring (1 x)	**266044**	for LGW...A4 only
Mounting bracket, metal	**230288**	for LGW...A4 only
Retaining bracket	**230273**	for LGW...A4 only
Mounting kit for yellow incandescent lamp, 230 V	**231773**	
Mounting kit for yellow incandescent lamp, 120 V	**231772**	
Mounting kit for display LED 24 V DC yellow	**231774**	
Set of appliance plugs 3-pin +E	**219659**	
Socket 3-pin +E	**210318**	

Switching function LGW...A2/A4, GW... A2/A4

As pressure rises:
1 NC opens, 2 NO closes.
As pressure falls:
1 NC closes, 2 NO opens.



Definition of the switching hysteresis Δp
The switching hysteresis Δp is the pressure difference between the upper and lower switching pressure



IP 65

6 Protection from dust entry (dust-proof).
Protection from access to dangerous parts by means of wire, ø ≥ 1 mm
Complete protection from accidental contact

5 Protection from a water jet from a nozzle directed in all directions at the operating equipment (housing).
It must not have any adverse effect (hose water).

Certificate pressure switches/Differential pressure switches/High-pressure switches

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Industrie Service

CERTIFICATE

09 09 90230 002

Karl Dungs GmbH & Co. KG
Siemensstr. 6 - 10
D-73660 Urbach

Based on the test report

S 1111-00/09 dated 2009-09-18

on the examination according to TÜV Standard Biogas-Components

and in connection with a periodical surveillance of the production and the quality control according to the certification regulations of TÜV SÜD Industrie Service GmbH this certificate permits to mark the

pressure sensing devices
for gas burners and gas appliances

type

LGW ... A... SG
GW ... A... SG

manufactured by

Karl Dungs GmbH & Co. KG
Werk Urbach

with the TÜV mark as shown:

TÜV SÜD Standard Biogas-Komponenten

München, 2009-09-18

Norbert Hörmann

TÜV SÜD INDUSTRIE SERVICE GMBH, RIDLERSTRASSE 65, D-80339 MÜNCHEN

TÜV®

The original can be found at www.dungs.com