

# ATEX Product Range

## ATEX II3GD

Safety solenoid valves, one-level

MV ... X, MVD ... X

Differential pressure switch

GGW...A4/2 X

GGW...A4-U/2 X

High-pressure switch

GW...A4/2 HP X

**DUNGS®**  
Combustion Controls



### ATEX

The abbreviation **ATEX** stands for the French term "Atmosphère explosible" and is used as synonym for the two EU directives concerning explosion protection:

**Equipment directive 94/9/EC**  
**Workplace directive 1999/92/EC**

### ATEX product range

The equipment of the DUNGS ATEX product range complies with equipment group II, category 3 for gas and dust. It may only be used in zones 2 and 22.

### Approvals/declaration of conformity

DUNGS issues a manufacturer's declaration of conformity for all equipment of the ATEX product range.

The used equipment has an EC type-examination certificate according to the EC gas appliance directive and EC pressure equipment directive based on the corresponding harmonised EN standards.

| DUNGS ATEX product range                                                                                       |      |                               |                                 |
|----------------------------------------------------------------------------------------------------------------|------|-------------------------------|---------------------------------|
| Products                                                                                                       | Page | for use in                    |                                 |
|                                                                                                                |      | Category: II3G<br>Zone 2, gas | Category: II3D<br>Zone 22, dust |
| <b>Single solenoid valve, one stage operation</b><br>MV ... X, MVD ... X                                       | 4    | ✓                             |                                 |
| <b>Differential pressure switch</b><br>GGW...A4/2 X, GGW...A4-U/2 X                                            | 8    | ✓                             |                                 |
| <b>High-pressure switch</b><br>GW...A4/2 HP X                                                                  | 8    | ✓                             |                                 |
| <b>Valve proving system</b><br>VPM-VC, DSLC pxVx 24 V DC<br>(if installed outside of the explosive atmosphere) |      | ✓                             |                                 |



#### ATEX Equipment directive 94/9/EC

Directive 94/9/EC concerning equipment and protective systems intended for use in potentially explosive atmospheres. It determines rules for placing products, which are intended for use in potentially explosive atmospheres, on the market. For the first time, non-electrical equipment is covered by this directive. Turning couplings, for example, can create a risk of ignition due to inadmissibly high warming.

**Annex II of this directive contains the general requirements concerning health and safety protection to be observed by the manufacturer and to be proven by means of the corresponding conformity assessment procedures.**

#### ATEX Workplace directive 1999/92/EC

Determination of minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres. This directive contains basic safety requirements that must be implemented by the operator/employer. These include:

##### ■ Primary explosion protection

Prevention or limitation of the formation of explosive atmospheres

##### ■ Secondary or constructive explosion protection

Avoidance of effective ignition sources

##### ■ Tertiary explosion protection

Mitigation of the detrimental effects of an explosion to a harmless degree

**The purpose of this directive is the protection of persons working in potentially explosive atmospheres.**

#### Explosion protection document

The employer/operator shall create an **explosion protection document** within his **risk assessment** and divide areas with hazardous, potentially explosive atmosphere into **zones**. He shall create an **Ex zone plan** representing the extension of each individual zone and, if necessary, the overall dimensions.

#### The explosion protection document shall demonstrate in particular:

- that the explosion risks have been determined and assessed
- a list of measures taken in order to prevent explosions
- the division of areas with potentially explosive atmospheres into zones (Ex zone plane)
- compliance with minimum requirements

The form of the explosion protection document is not prescribed. All relevant documentation that might be useful for evaluating an explosion hazard may be added to the explosion protection document:

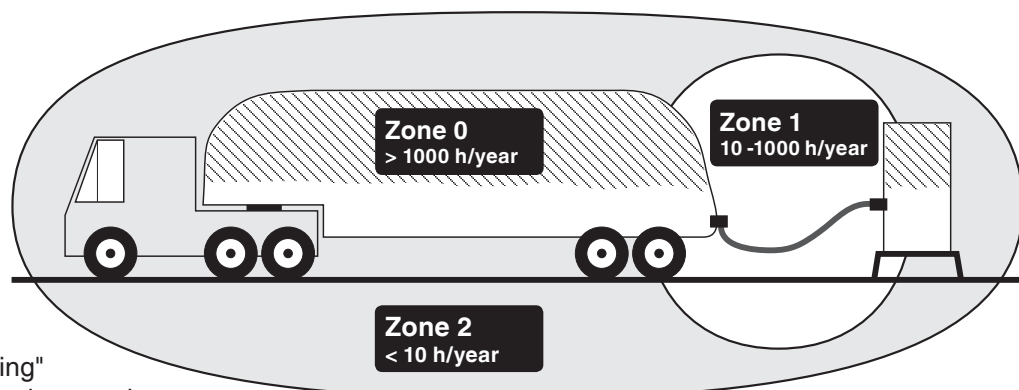
Registers of hazardous substances, user manuals of the used equipment according to ATEX Equipment directive 94/9/EC, operating instructions, organisational measures, risk assessments, alarm and risk prevention plan.

#### The operator is solely responsible for the safety of his installation:

- Creation of the installation-specific explosion protection document
- Determination of the zones
- Use of equipment conform to a certain zone
- Proper installation
- Examination prior to putting into service
- Regular check and maintenance of the installation in order to maintain the proper condition of the overall installation.

| Definition of ATEX terms  |                                                                                                                                                                                                                                                                                                                                                                                                                  |             |                                                                                                                                                                                                     |                                            |                                                                                                                                                                                                                                                        |            |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Equipment                 | 'Equipment' means machines, apparatus, fixed or mobile devices, control components and instrumentation thereof and detection or prevention systems which, separately or jointly, are intended for the generation, transfer, storage, measurement, control and conversion of energy for the processing of material and which are capable of causing an explosion through their own potential sources of ignition. |             |                                                                                                                                                                                                     |                                            |                                                                                                                                                                                                                                                        |            |
| Components                | 'Components' means any item essential to the safe functioning of equipment and protective systems but with no autonomous function.                                                                                                                                                                                                                                                                               |             |                                                                                                                                                                                                     |                                            |                                                                                                                                                                                                                                                        |            |
| Equipment groups          | Equipment group I                                                                                                                                                                                                                                                                                                                                                                                                |             |                                                                                                                                                                                                     | Equipment group II                         |                                                                                                                                                                                                                                                        |            |
|                           | Equipment intended for use in mines, surface and underground parts                                                                                                                                                                                                                                                                                                                                               |             |                                                                                                                                                                                                     | Equipment intended for use in other places |                                                                                                                                                                                                                                                        |            |
| Categories                | Category 1                                                                                                                                                                                                                                                                                                                                                                                                       |             | Category 2                                                                                                                                                                                          |                                            | Category 3                                                                                                                                                                                                                                             |            |
|                           | Very high level of protection                                                                                                                                                                                                                                                                                                                                                                                    |             | High level of protection                                                                                                                                                                            |                                            | Requisite level of protection during normal operation                                                                                                                                                                                                  |            |
| Explosive atmosphere      | Gases, vapours, mists                                                                                                                                                                                                                                                                                                                                                                                            |             |                                                                                                                                                                                                     | Dusts                                      |                                                                                                                                                                                                                                                        |            |
|                           | G                                                                                                                                                                                                                                                                                                                                                                                                                |             |                                                                                                                                                                                                     | D                                          |                                                                                                                                                                                                                                                        |            |
| Explosion groups          | Gases and vapours are classified in three explosion groups due to their special flammability. Their hazardous nature increases from explosion group IIA to IIC. The higher explosion group, e.g. IIC, includes the lower groups IIB and IIA.                                                                                                                                                                     |             |                                                                                                                                                                                                     |                                            |                                                                                                                                                                                                                                                        |            |
|                           | IIA                                                                                                                                                                                                                                                                                                                                                                                                              |             | IIB                                                                                                                                                                                                 |                                            | IIC                                                                                                                                                                                                                                                    |            |
| Temperature classes       | The admissible surface temperatures are divided into 6 temperature classes (T1-T6). Combustible gases and vapours can be classified in these temperature classes based on their ignition points. The following max. allowable surface temperatures of the equipment are valid for the temperature classes. A higher temperature class, e.g. T6, includes any lower temperature classes, e.g. T5 ...T1.           |             |                                                                                                                                                                                                     |                                            |                                                                                                                                                                                                                                                        |            |
|                           | T1 ≤ 450 °C                                                                                                                                                                                                                                                                                                                                                                                                      | T2 ≤ 300 °C | T3 ≤ 200 °C                                                                                                                                                                                         | T4 ≤ 135 °C                                | T5 ≤ 100 °C                                                                                                                                                                                                                                            | T6 ≤ 85 °C |
| Division into zones       | The operator/employer shall classify all areas of his company, independently of the size of the company, into zones with explosion hazard and document them in the explosion protection document. The zones are defined based on the probability of the formation of explosive atmospheres.                                                                                                                      |             |                                                                                                                                                                                                     |                                            |                                                                                                                                                                                                                                                        |            |
| Gases<br>Vapours<br>Mists | Zone 0                                                                                                                                                                                                                                                                                                                                                                                                           |             | Zone 1                                                                                                                                                                                              |                                            | Zone 2                                                                                                                                                                                                                                                 |            |
|                           | Zone 0 is a place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapour or mist is present continuously or for long periods or frequently.                                                                                                                                                                                                        |             | Zone 1 is a place in which an explosive atmosphere consisting of a mixture with air or flammable substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally. |                                            | Zone 2 is a place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only. |            |
| Dusts                     | Zone 20                                                                                                                                                                                                                                                                                                                                                                                                          |             | Zone 21                                                                                                                                                                                             |                                            | Zone 22                                                                                                                                                                                                                                                |            |
|                           | Zone 20 is a place in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or for long periods or frequently.                                                                                                                                                                                                                                                |             | Zone 21 is a place an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur in normal operation occasionally.                                                   |                                            | Zone 22 is a place an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.                                                   |            |

## ATEX zones



Example "Fuelling"

Times are approximate values



**Safety**  
solenoid valves,  
one stage operation

#### ATEX

on valve body: II3GD T3

on solenoid: II 3 G Ex mc nA IIB T3 Gc

II 3 D Ex mc IIIB T100°C Dc

MV ... X

MVD ... X

#### Technology

Solenoid valves for ATEX requirements II3GD.

Automatic shut-off valve acc. to EN 161 for gas burners and gas burning installations:

- Max. operating pressure up to 200 or 500 mbar
- without current closed
- fast opening
- main flow adjustable
- DC solenoid, rectifier wiring in connector box with **connecting cable 5 m**
- Pipe thread as per ISO 7/1
- Flange connection acc. to DIN 26 33, ISO 7005
- reliably operating, robust and maintenance-free

#### Media/use

**MV ... X**

**MVD ... X**

Suitable for gases of gas families 1, 2 and 3 and other neutral gases as well as air, smoke and exhaust gases.

Version without non-ferrous material (S02) suitable for gases up to max. 0.1 vol. % H<sub>2</sub>S, dry.

#### Approvals

ATEX

Manufacturer's declaration according to ATEX directive 94/9/EC:

II3GD

EC type-examination certificate according to the EC gas appliance directive:

CE-0085 AO 3219

EC type-examination certificate according to the EC pressure equipment 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.

**MV ... X:** solenoid valve, one stage operation, closed without current, fast opening, fast closing.

**MVD ... X:** solenoid valve, one stage operation, closed without current, fast opening, fast closing.

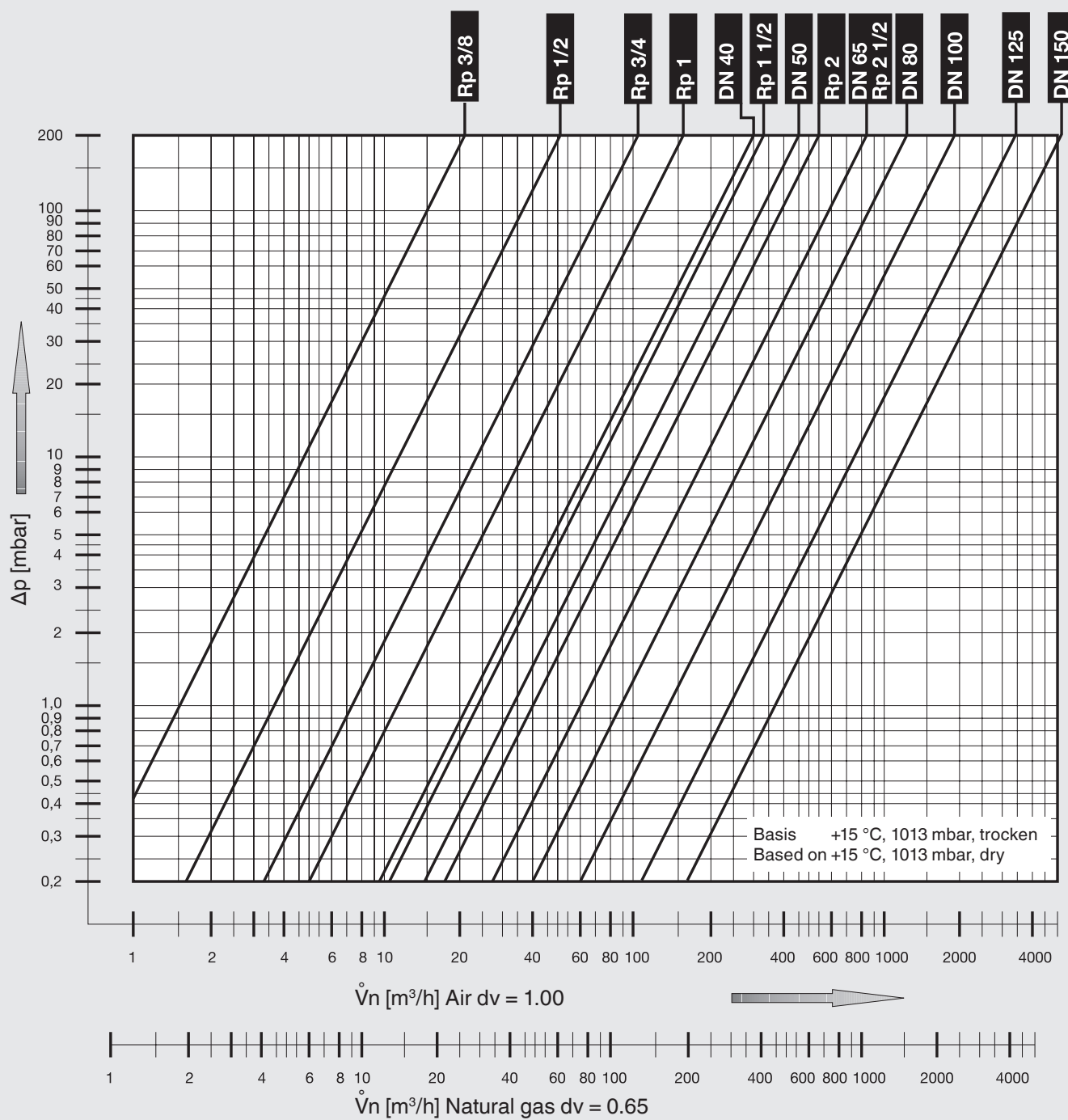
The gas flow can be limited manually by means of the main flow setting.

#### Attention!

Read the operating and mounting instructions before putting the device into service.

|                                                                                          |                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Technical data</b><br><b>ATEX solenoid valves</b>                                     | <b>MV ... X, MVD ... X</b><br><b>Safety solenoid valves, one stage operation</b>                                                                                                                                                              |
| <b>ATEX</b>                                                                              | <b>II3GD</b>                                                                                                                                                                                                                                  |
| <b>ATEX group</b>                                                                        | <b>II</b>                                                                                                                                                                                                                                     |
| <b>ATEX category</b>                                                                     | <b>3</b>                                                                                                                                                                                                                                      |
| <b>Atmosphere</b>                                                                        | <b>Gas (G) and dust (D)</b>                                                                                                                                                                                                                   |
| <b>Temperature class</b>                                                                 | <b>T3</b>                                                                                                                                                                                                                                     |
| <b>Nominal diameter, DN</b><br><b>Pipe thread acc. to DIN 2999, Rp</b><br><b>Flanges</b> | 10 15 20 25 40 50 65 80 100 125 150<br>$\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{2}$ 2<br>Connection flanges as per DIN 2501 part 1 matching welding neck flanges<br>as per DIN 2633, (PN 16) DN 40 - DN 150, ISO 7005-2 (PN 16) |
| <b>Max. operating pressure</b>                                                           | Up to 200 mbar (20 kPa): MV 2...; MVD 2...<br>Up to 500 mbar (50 kPa): MV 5...; MVD 5...                                                                                                                                                      |
| <b>Solenoid valve</b>                                                                    | Valve acc. to EN 161, class A, group 2, one stage operation                                                                                                                                                                                   |
| <b>Closing time</b>                                                                      | < 1 s                                                                                                                                                                                                                                         |
| <b>Opening time</b>                                                                      | < 1 s at an ambient temperature of +20 °C                                                                                                                                                                                                     |
| <b>Main flow setting</b>                                                                 | Manually for MVD X                                                                                                                                                                                                                            |
| <b>Material of the gas-bearing parts</b>                                                 | <b>Standard versions</b><br>Housing: Aluminium, steel, brass<br>Seals: NBR<br><b>Versions without non-ferrous material</b><br>Housing: Aluminium, steel<br>Seals: NBR                                                                         |
| <b>Voltage / frequency</b>                                                               | ~(AC) 230 V (+10 % -15 %); 50-60 Hz - other voltages on request                                                                                                                                                                               |
| <b>Power / current consumption</b>                                                       | See type overview                                                                                                                                                                                                                             |
| <b>Duty cycle</b>                                                                        | Continuous duty                                                                                                                                                                                                                               |
| <b>International protection</b>                                                          | IP 54 as per IEC 529 (EN 60529)                                                                                                                                                                                                               |
| <b>Electrical connection</b>                                                             | Connecting cable 5 m                                                                                                                                                                                                                          |
| <b>Duty classification</b>                                                               | MV X, MVD X Rp $\frac{3}{8}$ - Rp 2: max. 100/h<br>MV X DN 40 - DN 100: max. 100/h<br>MV X DN 125 - DN 150: max. 20/h<br>MVD X DN 40 - DN 80: max. 100/h<br>MVD X DN 100 - DN 150: max. 20/h                                                  |
| <b>Sample and start gas connection</b>                                                   | G $\frac{1}{4}$ DIN ISO 228 on both sides in the supply pressure area,<br>additionally on the input side G $\frac{3}{4}$ , as of DN 40 (flange)                                                                                               |
| <b>Dirt trap</b>                                                                         | Integrated sieve, mesh size 1 mm                                                                                                                                                                                                              |
| <b>Temperature range</b>                                                                 | <b>Ambient temperature:</b> -15 °C to +60 °C<br><b>Medium temperature:</b> -15 °C to +60 °C<br><b>Storage temperature:</b> -30 °C to +80 °C                                                                                                   |
| <b>Mounting position</b>                                                                 | Solenoid standing vertically to lying horizontally                                                                                                                                                                                            |
| <b>Limit switch</b>                                                                      | <b>Mounting not permitted!</b>                                                                                                                                                                                                                |
| <b>Valve check system</b>                                                                | DSLCLC pxVx (installation outside of Ex zone)                                                                                                                                                                                                 |

# Flow diagram



$$\dot{V}_{\text{gas used}} = \dot{V}_{\text{air}} \times f$$

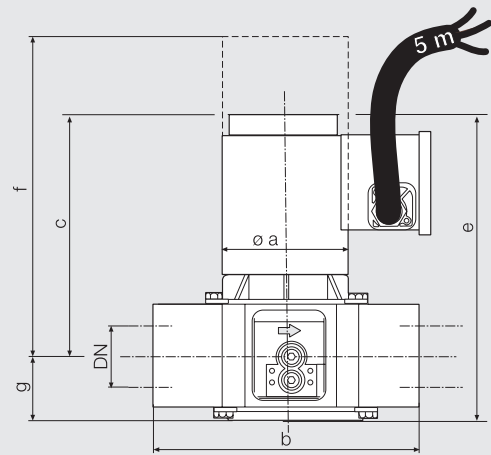
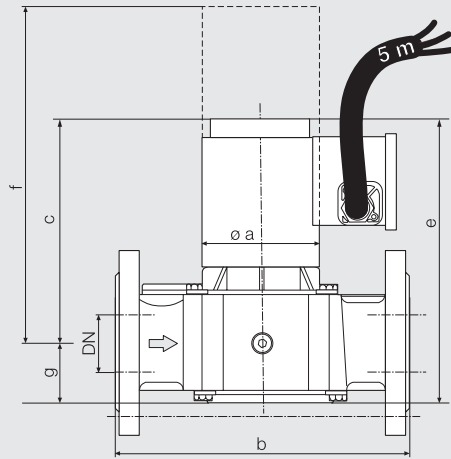
f =

Dichte Luft  
Spec. weight air

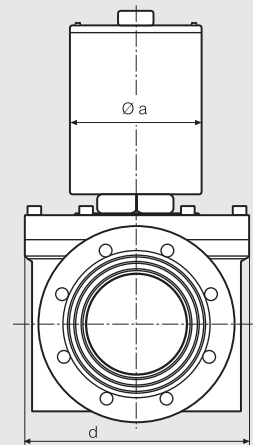
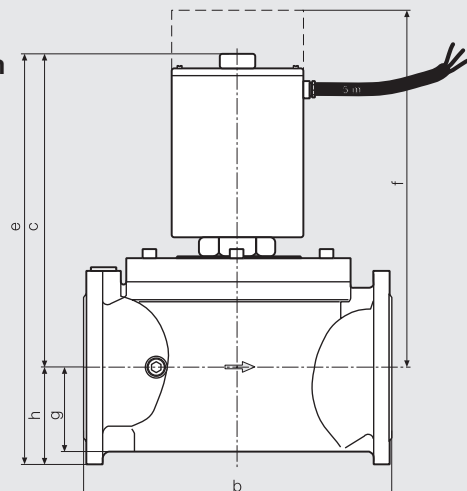
Dichte des verwendeten Gases  
Spec. weight of gas used

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

**Dimensions [mm]**  
**MVD 503 X - MVD 520 X**  
**MVD 2040 S02 X**  
**- MVD 2100 S02 X**



**Dimensions [mm]**  
**MV 5125 X**  
**MV 2150 S02 X Viton**  
**MV 5150 X**  
**MVD 5100 X**  
**MVD 2125 S02 X**  
**MVD 2150 S02 X**



| Type                  | $P_{max.}$<br>[mbar] | DN / Rp  | Solenoid<br>number | Order<br>number | $P_{max.}$<br>[VA] | $I_{max.}$<br>[VA]<br>~(AC)230 V | Opening time | Dimensions [mm] |     |     |     |     |     |     |     | Weight [kg] |
|-----------------------|----------------------|----------|--------------------|-----------------|--------------------|----------------------------------|--------------|-----------------|-----|-----|-----|-----|-----|-----|-----|-------------|
|                       |                      |          |                    |                 |                    |                                  |              | øa              | b   | c   | d   | e   | f   | g   | h   |             |
| <b>MVD 503 X</b>      | 500                  | Rp 3/8   | 100X               | <b>253011</b>   | 17                 | 0.08                             | < 1 s        | 50              | 60  | 90  | 75  | 113 | 190 | 20  |     | 1.6         |
| <b>MVD 505 X</b>      | 500                  | Rp 1/2   | 100X               | <b>253012</b>   | 17                 | 0.08                             | < 1 s        | 50              | 75  | 90  | 75  | 113 | 200 | 23  |     | 1.7         |
| <b>MVD 507 S02 X</b>  | 500                  | Rp 3/4   | 200X               | <b>253013</b>   | 30                 | 0.15                             | < 1 s        | 75              | 100 | 135 | 80  | 160 | 190 | 25  |     | 2.4         |
| <b>MVD 510 X</b>      | 500                  | Rp 1     | 200X               | <b>253014</b>   | 30                 | 0.15                             | < 1 s        | 75              | 110 | 135 | 90  | 165 | 190 | 30  |     | 3.3         |
| <b>MVD 515 X</b>      | 500                  | Rp 1 1/2 | 300X               | <b>253015</b>   | 65                 | 0.30                             | < 1 s        | 95              | 150 | 175 | 116 | 210 | 255 | 35  |     | 5.3         |
| <b>MVD 520 X</b>      | 500                  | Rp 2     | 400X               | <b>253016</b>   | 100                | 0.48                             | < 1 s        | 115             | 170 | 190 | 130 | 235 | 300 | 45  |     | 9.5         |
|                       |                      |          |                    |                 |                    |                                  |              |                 |     |     |     |     |     |     |     |             |
| <b>MVD 2040 S02 X</b> | 200                  | DN 40    | 300X               | <b>253017</b>   | 65                 | 0.30                             | < 1 s        | 95              | 200 | 170 | 150 | 230 | 255 | 40  |     | 6.2         |
| <b>MVD 2050 S02 X</b> | 200                  | DN 50    | 300X               | <b>253018</b>   | 65                 | 0.30                             | < 1 s        | 95              | 230 | 170 | 165 | 230 | 255 | 45  |     | 8.4         |
| <b>MVD 2065 S02 X</b> | 200                  | DN 65    | 400X               | <b>253019</b>   | 100                | 0.48                             | < 1 s        | 115             | 290 | 215 | 185 | 275 | 320 | 55  |     | 13.4        |
| <b>MVD 2080 S02 X</b> | 200                  | DN 80    | 500X               | <b>253020</b>   | 80                 | 0.42                             | < 1 s        | 130             | 310 | 250 | 200 | 305 | 360 | 70  |     | 18.7        |
| <b>MVD 2100 S02 X</b> | 200                  | DN 100   | 550X               | <b>253021</b>   | 100                | 0.48                             | < 1 s        | 150             | 350 | 310 | 240 | 395 | 480 | 85  | 100 | 30.8        |
| <b>MVD 2125 S02 X</b> | 200                  | DN 125   | 61EX               | <b>253022</b>   | 90*                | 10**                             | < 1 s        | 170             | 400 | 406 | 290 | 531 | 514 | 112 | 125 | 54.5        |
| <b>MVD 2150 S02 X</b> | 200                  | DN 150   | 61EX               | <b>253023</b>   | 90*                | 10**                             | < 1 s        | 170             | 480 | 439 | 290 | 582 | 547 | 125 | 143 | 62.7        |
|                       |                      |          |                    |                 |                    |                                  |              |                 |     |     |     |     |     |     |     |             |
| <b>MVD 5100 S02 X</b> | 500                  | DN 100   | 61EX               | <b>253031</b>   | 90*                | 10**                             | < 1 s        | 170             | 350 | 360 | 240 | 418 | 600 | 85  | 100 | 39.7        |
| <b>MV 5125 X</b>      | 500                  | DN 125   | 61EX               | <b>253032</b>   | 90*                | 10**                             | < 1 s        | 170             | 400 | 406 | 290 | 531 | 514 | 112 | 125 | 53.1        |
| <b>MV 5150 X</b>      | 500                  | DN 150   | 61EX               | <b>253033</b>   | 90*                | 10**                             | < 1 s        | 170             | 480 | 439 | 290 | 582 | 547 | 125 | 143 | 62.1        |

\*Electrical power when open  
f = Space required for mounting the solenoid

\*\* Switch-on current for approx. 3 s  
d = Max. width





### High-pressure switch for gas, air, flue and exhaust gases

**Gas:** II3G Ex nC IIB T6 Gc  
**Dust:** II3D Ex tc IIB T75°C Dc  
**Environment:** -15 °C ≤ Ta ≤ +70 °C

**GW...A4/2 HP X**

### Function Overpressure switch

#### **GW...A4 HP/2 X** **Pressure switch in overpressure range**

The pressure acts on the micro switch via the metal bellows against the force of the adjusting spring. The pressure switch works without auxiliary power.

#### **Only GW...A4 HP/2 X**

All gas-bearing parts are made of stainless steel 1.4541 and are suitable for:

- Biogas applications
- Aggressive media such as sulfuric acid with concentrations up to 1.0 vol. %

### Differential pressure switch for gas, air, flue and exhaust gases

**Gas:** II3G Ex nC IIB T6 Gc  
**Dust:** II3D Ex tc IIB T75°C Dc  
**Environment:** -15 °C ≤ Ta ≤ +70 °C

**GGW...A4/2 X**  
**GGW...A4-U/2 X**

### Differential pressure switch function

#### **GGW...A4/2 X and** **GGW...A4-U/2 X** **Differential pressure switch in overpressure 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.

#### **Device selection**

##### **GGW...A4/2 X and** **GGW...A4-U/2 X**

If the lower pressure  $p_2$  (upper chamber) is a positive pressure compared to the atmosphere, type GGW...A4/2 X must be used.

If the lower pressure  $p_2$  (upper chamber) is a negative pressure compared to the atmosphere, type GGW...A4-U/2 X must be used.

#### **Overpressure switch**

##### **GGW...A4/2 X**

##### **Pressure connection G ¼**

The control unit reacts on overpressure, which connects, disconnects or switches a circuit when exceeding or falling below a set nominal value. Simply acting pressure switch in overpressure range. The G ¼ pressure connection must not be closed.

#### **Minimum pressure switch**

##### **GGW...A4-U/2 X**

##### **Pressure connection G ¼**

The control unit reacts on negative pressure, which connects, disconnects or switches a circuit when exceeding or falling below a set nominal value. Simply acting pressure switch in negative pressure range. The G ¼ pressure connection must not be closed.

### Technology

Adjustable pressure switches for ATEX requirements II3G and II3D.

The pressure switches are suitable for activating, deactivating or switching a circuit if the actual value of the pressure changes compared to the set nominal value.

The nominal value (switching point) is set by means of a setting wheel with scale.

### Media/use

#### **GW...A4 HP/2 X**

#### **GGW...A4/2 X**

#### **GGW...A4-U/2 X**

Suitable for gases of gas families 1, 2 and 3 and other neutral gases as well as air, flue and exhaust gases.

Version without non-ferrous material, suitable for gases up to max. 0.1 vol. % H<sub>2</sub>S, dry.

### Approvals

#### **ATEX**

Manufacturer's declaration according to ATEX directive 94/9/EC: II3G and II3D

EC type-examination certificate according to the EC gas appliance directive:

CE-0085 AO 3220

EC type-examination certificate according to the EC pressure equipment directive:

CE0036

### Attention!

Read the operating and mounting instructions before putting the device into service.

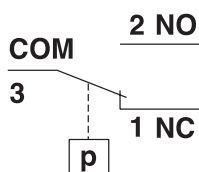
### Switching function

#### **With increasing pressure:**

1 NC opens, 2 NO closes.

#### **With decreasing pressure:**

1 NC closes, 2 NO opens.

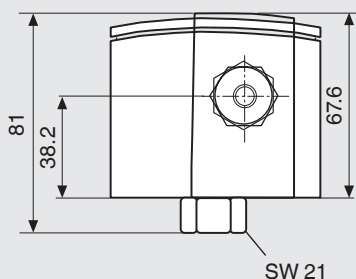




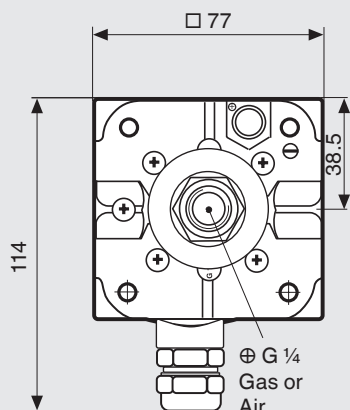
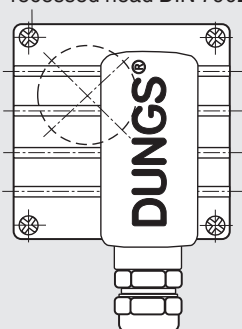
|                                                                |                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Technical data</b><br><b>ATEX pressure switch</b>           | <b>GW...A4/2 HP X</b><br><b>Overpressure switch</b>                                                                                                                                                                                                                                                    | <b>GGW...A4/2 X</b><br><b>GGW...A4-U/2 X</b><br><b>Differential pressure switch</b>                                                                                                                                                                                                                                                   |
| <b>ATEX</b>                                                    | <b>II3G and II3D</b>                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                       |
| <b>ATEX group</b>                                              | <b>II</b>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                       |
| <b>ATEX category</b>                                           | <b>3</b>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                       |
| <b>Atmosphere</b>                                              | <b>Gas (G) and dust (D)</b>                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                       |
| <b>Explosion group</b><br><b>Maximum experimental safe gap</b> | <b>Gas: IIB</b><br><b>Dust: IIB</b>                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                       |
| <b>Max. surface temperature</b>                                | <b>+75 °C</b>                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                       |
| <b>Max. operating pressure</b>                                 | GW 500 A4 HP X<br>$p_{\max} = 2 \text{ bar (Gas) @ setting range 0,1-0,15 bar}$<br>$p_{\max} = 5 \text{ bar (Gas) @ setting range 0,15-0,5 bar}$<br><br>GW 2000 A4 HP X<br>$p_{\max} = 5 \text{ bar (Gas)}$<br>GW 6000 A4 HP X<br>$p_{\max} = 8 \text{ bar (Gas)}$                                     | GGW 3 A4/2 X up to<br>GGW 150 A4/2 X<br><b>500 mbar (50 kPa)</b><br><br>GGW 3 A4-U/2 X up to<br>GGW 150 A4-U/2 X<br><b>500 mbar (50 kPa)</b>                                                                                                                                                                                          |
| <b>Pressure connection</b>                                     | <b>p+</b> : in the centre of the underside of the housing<br>G 1/4-female thread as per ISO 228:<br><b>Gas or air</b>                                                                                                                                                                                  | <b>p+</b> : in the centre of the underside of the housing<br>G 1/4-female thread as per ISO 228:<br><b>Gas or air</b><br><b>p+</b> : laterally on the housing by means of screw plug G 1/4:<br><b>Gas or air</b><br><b>p-</b> : laterally on the underside of the housing<br>G 1/8-female thread as per ISO 228:<br><b>Gas or air</b> |
| <b>Temperature range</b>                                       | <b>Ambient temperature:</b> -15 °C to +70 °C<br><b>Medium temperature:</b> -15 °C to +70 °C<br><b>Storage temperature:</b> -30 °C to +80 °C                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                       |
| <b>Material</b>                                                | <b>Bottom part of the housing</b><br>Aluminium diecast<br><b>Switch part:</b> Polycarbonate<br><b>Metal bellows:</b> 1.4541 (stainless steel)<br><b>Hood</b><br>Zinc diecast, powder-coated<br><b>Switching contact</b><br>Standard: AG gilded (Au), suitable for DDC applications:<br>DC 24 V; 0.02 A | <b>Bottom part of the housing</b><br>Aluminium diecast<br><b>Switch part:</b> Polycarbonate<br><b>Membrane:</b> NBR<br><b>Hood</b><br>Zinc diecast, powder-coated<br><b>Switching contact</b><br>Standard: Gilded Ag (Au), suitable for DDC applications:<br>DC 24 V; 0.02 A                                                          |
| <b>Switching voltage</b>                                       | AC eff. min. 24 V max. 250 V<br>DC min. 24 V max. 48 V<br><b>DDC-Application</b> DC min. 5 V max. 24 V                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                       |
| <b>Rated current</b>                                           | AC eff. 10 A<br><b>DDC-Application</b> DC 20 mA                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                       |
| <b>Switching current</b>                                       | AC eff. min. 20 mA max. 6 A with $\cos \varphi 1$<br>AC eff. max. 3 A with $\cos \varphi 0.6$<br>DC min. 20 mA max. 1 A<br><b>DDC-Application</b> DC min. 5 mA max. 20 mA                                                                                                                              |                                                                                                                                                                                                                                                                                                                                       |
| <b>Electrical connection</b>                                   | on screw-type terminals via cable entry ATEX M20x1.5<br>Line diameter 5 mm - 10 mm                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                       |
| <b>International protection</b>                                | IP 65 as per IEC 529 (EN 60529)                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                       |
| <b>Adjustment</b>                                              | With increasing pressure in vertical mounting position.<br>Optionally increasing or decreasing setting on site.<br>Observe the change of the switching point with deviating mounting position.                                                                                                         |                                                                                                                                                                                                                                                                                                                                       |
| <b>Adjustment tolerance</b>                                    | $\pm 15 \%$ deviation of the switching point compared to the nominal value and installation in vertical mounting position                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                       |

## Dimensions [mm]

### GW...A4/2 HP X

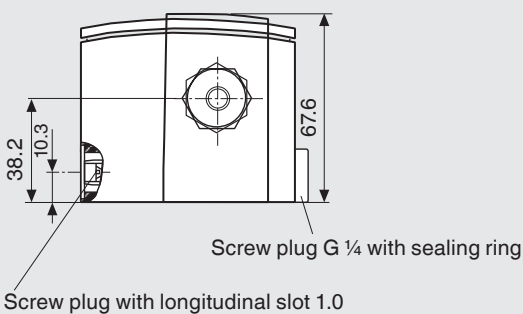


4 self-tapping  
cap screws  
M3 x 14  
longitudinal slot 0.8 and  
recessed head DIN 7902-72

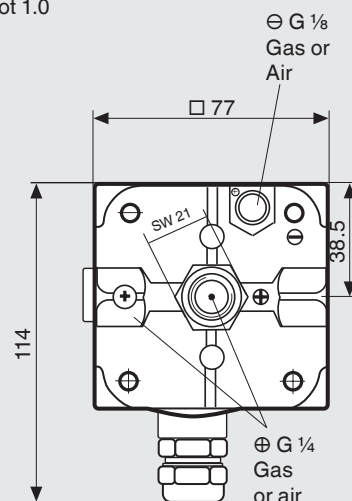
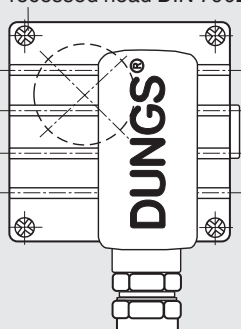


## Dimensions [mm]

### GGW...A4/2 X GGW...A4-U/2 X



4 self-tapping  
cap screws  
M3 x 14  
longitudinal slot 0.8 and  
recessed head DIN 7902-72



## Mounting positions (observe the change of the switching point if mounting position differs from standard)

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|--------------------|------------------|--------------------|
|                   | <p><b>Standard mounting position</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
|                   | <p>The pressure switch is activated at a <b>higher</b> pressure when mounted horizontally:</p> <table border="0"> <tr> <td>GW 500 A4/2 HP X</td> <td>approx. + 10 mbar</td> </tr> <tr> <td>GW 2000 A4/2 HP X</td> <td>approx. + 20 mbar</td> </tr> <tr> <td>GW 6000 A4/2 HP X</td> <td>approx. + 80 mbar</td> </tr> <tr> <td>GGW ... A4/2 X</td> <td>approx. + 0.5 mbar</td> </tr> <tr> <td>GGW ... A4-U/2 X</td> <td>approx. + 0.5 mbar</td> </tr> </table>       | GW 500 A4/2 HP X | approx. + 10 mbar | GW 2000 A4/2 HP X | approx. + 20 mbar | GW 6000 A4/2 HP X | approx. + 80 mbar | GGW ... A4/2 X | approx. + 0.5 mbar | GGW ... A4-U/2 X | approx. + 0.5 mbar |
| GW 500 A4/2 HP X  | approx. + 10 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
| GW 2000 A4/2 HP X | approx. + 20 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
| GW 6000 A4/2 HP X | approx. + 80 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
| GGW ... A4/2 X    | approx. + 0.5 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
| GGW ... A4-U/2 X  | approx. + 0.5 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
|                   | <p>The pressure switch is activated at a <b>lower</b> pressure if mounted horizontally overhead:</p> <table border="0"> <tr> <td>GW 500 A4/2 HP X</td> <td>approx. - 10 mbar</td> </tr> <tr> <td>GW 2000 A4/2 HP X</td> <td>approx. - 20 mbar</td> </tr> <tr> <td>GW 6000 A4/2 HP X</td> <td>approx. - 80 mbar</td> </tr> <tr> <td>GGW ... A4/2 X</td> <td>approx. - 0.5 mbar</td> </tr> <tr> <td>GGW ... A4-U/2 X</td> <td>approx. - 0.5 mbar</td> </tr> </table> | GW 500 A4/2 HP X | approx. - 10 mbar | GW 2000 A4/2 HP X | approx. - 20 mbar | GW 6000 A4/2 HP X | approx. - 80 mbar | GGW ... A4/2 X | approx. - 0.5 mbar | GGW ... A4-U/2 X | approx. - 0.5 mbar |
| GW 500 A4/2 HP X  | approx. - 10 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
| GW 2000 A4/2 HP X | approx. - 20 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
| GW 6000 A4/2 HP X | approx. - 80 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
| GGW ... A4/2 X    | approx. - 0.5 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
| GGW ... A4-U/2 X  | approx. - 0.5 mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |
|                   | <p>If mounted in intermediate mounting position, the pressure switch is activated at a max. higher or lower pressure compared to the set nominal value.</p>                                                                                                                                                                                                                                                                                                        |                  |                   |                   |                   |                   |                   |                |                    |                  |                    |

| Type                                                                                            | Version                                                      | $p_{\max}$<br>[mbar]                                 | Order<br>number | Adjustment<br>range<br>[mbar]<br> | Switching<br>difference<br>$\Delta p$ [mbar] | Inter-<br>national<br>protection |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------|
| ATEX<br>Pressure<br>control device<br>II3G and II3D                                             |                                                              |                                                      |                 |                                                                                                                      |                                              |                                  |
|                                                                                                 | GW ... A4/2 HP X<br>Pressure<br>control device<br>[-Au-M-V0] | GW 500 A4/2 HP X<br>2000 @ 100-150<br>5000 @ 150-500 | 251984          | 100 — 500                                                                                                            | ≤ 30                                         | IP 65                            |
|                                                                                                 |                                                              | GW 2000 A4/2 HP X<br>5000                            | 251985          | 400 — 2000                                                                                                           | ≤ 50 @ 400-1000<br>≤ 100 @ 1000-2000         |                                  |
|                                                                                                 | GW 6000 A4/2 HP X<br>8000                                    | 251986                                               | 1000 — 6000     | ≤ 300                                                                                                                |                                              |                                  |
|                                                                                                 |                                                              |                                                      |                 |                                                                                                                      |                                              |                                  |
| GGW ... A4/2 X<br>Differential<br>pressure switch<br>(overpressure)<br>[Au-M-MS9-V0-VS3]        | GGW 3 A4/2 X                                                 | 500                                                  | 245810          | 0.4 — 3.0                                                                                                            | ≤ 0.3                                        | IP 65                            |
|                                                                                                 | GGW 10 A4/2 X                                                |                                                      | 248694          | 1.0 — 10.0                                                                                                           | ≤ 0.5                                        |                                  |
|                                                                                                 | GGW 50 A4/2 X                                                |                                                      | 245811          | 2.5 — 50                                                                                                             | ≤ 1                                          |                                  |
|                                                                                                 | GGW 150 A4/2 X                                               |                                                      | 248695          | 30 — 150                                                                                                             | ≤ 3                                          |                                  |
|                                                                                                 |                                                              |                                                      |                 |                                                                                                                      |                                              |                                  |
| GGW ... A4-U/2 X<br>Differential<br>pressure switch<br>(negative pressure)<br>[Au-M-MS9-V0-VS3] | GGW 3 A4-U/2 X                                               | 500                                                  | 248390          | -0.4 — -3.0                                                                                                          | ≤ 0.3                                        | IP 65                            |
|                                                                                                 | GGW 10 A4-U/2 X                                              |                                                      | 248391          | -1.0 — -10.0                                                                                                         | ≤ 0.5                                        |                                  |
|                                                                                                 | GGW 50 A4-U/2 X                                              |                                                      | 246180          | -2.5 — -50                                                                                                           | ≤ 1                                          |                                  |
|                                                                                                 | GGW 150 A4-U/2 X                                             |                                                      | 248392          | -30 — -150                                                                                                           | ≤ 3                                          |                                  |
| Accessories                                                                                     |                                                              |                                                      |                 |                                                                                                                      |                                              |                                  |
| Gauge connection G ¼ with sealing ring (1x)                                                     |                                                              |                                                      | 266042          | only for GGW ... A4/2 X, GGW ... A4-U/2 X                                                                            |                                              |                                  |
| Mounting kit Mounting bracket, metal                                                            |                                                              |                                                      | 230288          |                                                                                                                      |                                              |                                  |

## ATEX Product Range ATEX II3GD

**Safety solenoid valve,  
one stage operation**  
MV ... X, MVD ... X  
**Differential pressure switch**  
GGW...A4/2 X  
GGW...A4-U/2 X  
**High-pressure switch**  
GW...A4/2 HP X

**DUNGS®**  
Combustion Controls

### ATEX conformity certificate

The original can be found under [www.dungs.com](http://www.dungs.com)

#### Konformitätserklärung Conformity Certificate

**DUNGS®**  
Combustion Controls

Die **Karl Dungs GmbH & Co. KG** bescheinigt hiermit, daß die in dieser Übersicht genannten Produkte die Anforderungen folgender Richtlinie erfüllen:

**Karl Dungs GmbH & Co. KG** certify that the products specified in this overview fulfil the basic requirements of the:

#### Produkte\_Products

ATEX-Richtlinie  
94/9/EG

ATEX-Directive  
94/9/EC

Die Anforderungen werden erfüllt durch Übereinstimmung mit:

The requirements have been assured by compliance with:

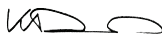
EN 60079-0:2012  
+A11:2013  
EN 60079-15:2010  
EN 60079-18:2009  
EN 60079-31:2009  
EN 13463-1:2009

EN 60079-0:2012  
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EN 60079-15:2010  
EN 60079-18:2009  
EN 60079-31:2009  
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MVD 503 X 230 VAC IP54  
MVD 505 X 230 VAC IP54  
MVD 505 X 24 VDC IP54  
MVD 507 S02 X 230 VAC IP54  
MVD 507 S02 X 24 VDC IP54  
MVD 510 X 230 VAC IP54  
MVD 510 X 24 VDC IP54  
MVD 515 X 230 VAC IP54  
MVD 520 X 230 VAC IP54  
MVD 2040 S02 X 230 VAC IP54  
MVD 2050 S02 X 230 VAC IP54  
MVD 2065 S02 X 230 VAC IP54  
MVD 2080 S02 X 230 VAC IP54  
MVD 2100 S02 X 230 VAC IP54  
MVD 2125 S02 X 230 VAC IP54  
MVD 2150 S02 X 230 VAC IP54  
MVD 2040 S02 X 24 VDC IP54  
MVD 2050 S02 X 24 VDC IP54  
MVD 2065 S02 X 24 VDC IP54  
MVD 2080 S02 X 24 VDC IP54  
MVD 2100 S02 X 24 VDC IP54  
MVD 2125 S02 X 24 VDC IP54  
MVD 2150 S02 X 24 VDC IP54  
MVD 5100 S02 X 230 VAC IP54  
MV 5125 X 230 VAC IP54  
MV 5150 X 230 VAC IP54

**Kennzeichnung/Marking**  
Auf Ventilkörper/on valve body  
Ⓔ II 3 GD T3  
Auf Magnet/on solenoid  
Ⓔ II 3 G Ex mc nA IIB T3 Gc  
Ⓔ II 3 D Ex mc IIIB T100°C Dc

-15 °C ≤ Ta ≤ +60 °C

  
Dipl.-Ing. (BA) Karl Dungs  
Chief Executive Officer  
Karl Dungs GmbH & Co. KG  
Urbach, 16 February 2015

#### Konformitätserklärung Conformity Certificate

**DUNGS®**  
Combustion Controls

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EN 60079-15:2010  
EN 13463-1:2009

EN 60079-0:2012  
+A11:2013  
EN 60079-15:2010  
EN 13463-1:2009

**Druckwächter für Gas und Luft**  
**Pressure switch for gas and air**  
GGW xx A4/2 X-Au-M-MS9-V0-VS3  
GGW xx A4-U/2 X-Au-M-MS9-V0-VS3  
GW xx A4/2 HP X-Au-M-V0

**Kennzeichnung/Marking**  
Ⓔ II3G Ex nC IIB T6 Gc  
Ⓔ II3D Ex tc IIIB T75°C Dc

-15 °C ≤ Ta ≤ +70 °C

  
Dipl.-Ing. (BA) Karl Dungs  
Chief Executive Officer  
Karl Dungs GmbH & Co. KG  
Urbach, 16 February 2015

Subject to technical modification in the interest of technical progress.



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