

# MEDENUS

Gas Pressure Regulation



**MEDENUS**

**Gas Pressure Regulator  
RS 254 / RS 255**

**EN**



## Table of Contents

|  |          |
|--|----------|
| <b>Gas pressure regulators with integrated safety shut off valve RS 254 / RS 255</b> | <b>4</b> |
| Information on device selection  | 4        |
| Characteristics RS 254 / RS 255  | 5        |
| Versions RS 254  | 5        |
| Versions RS 255  | 6        |
| Options RS 254 / RS 255  | 6        |
| Dimensions RS 254 / RS 255   | 7        |
| $K_G$ - Value [(Nm <sup>3</sup> /h)/bar]   | 7        |

## List of abbreviations and formula symbols

|           |   |               |                                   |            |                       |
|-----------|---|---------------|-----------------------------------|------------|-----------------------|
| ATC       | acceptance test certificate                         | $p_d$         | outlet pressure                   | DA         | diaphragm assembly    |
| DN        | nominal size  | $p_{ds\ o,u}$ | setpoint of the response pressure | RSA        | Vent valve            |
| DVGW      | Deutsche Vereinigung des Gas- und Wasserfaches e.V. | PS            | maximum allowable pressure        | RSS        | switching valve       |
| f         | conversion factor Gases                             | re            |                                   | RSD        | throttle valve        |
| FPR       | fluoro polymer rubber                               | $p_u$         | inlet pressure                    | SSV        | safety shut-off valve |
| HD        | high-pressure                                       | $Q_n$         | standard volumetric flow rate     | SRV        | safety relief valve   |
| HDS       | high-pressure screw spindle                         | $Q_{max}$     | maximum volumetric flow rate      | $t_{gas}$  | gas temperature       |
| $H_{s,n}$ | calorific value                                     | $Q_{min}$     | minimum volumetric flow rate      | VA         | stainless steel       |
| KG        | value   |               |                                   | $w_d$      | outlet gas velocity   |
| p         | absolute pressure                                   |               |                                   | $w_u$      | inlet gas velocity    |
|           |   |               |                                   | $\rho_n$   | gas density           |
|           |   |               |                                   | $\Delta p$ | differential pressure |

## Gas pressure regulators with integrated safety shut off valve RS 254 / RS 255

The spring-loaded gas pressure regulators RS 254 / RS 255 have the function of keeping the outlet pressure of a gaseous medium constant within allowable limit values, independently of the effect of interferences, such as changes in the inlet pressure and/or in the gas flow, in the connected regulating line on the outlet side. The gas pressure regulator is composed of the actuator housing and the „diaphragm assembly plus actuator“ and „SSV controller/switching device plus actuator“ functional units.

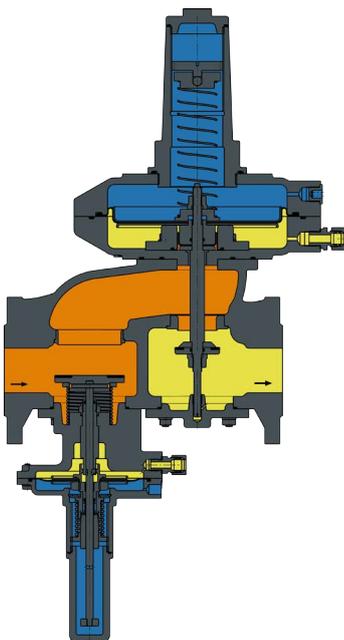
For each nominal size, the actuator of the diaphragm assembly can be designed in different valve seat diameters. The diaphragm assembly is pre-pressure-compensated and can be equipped with noise reduction on request.

The gas flows through the actuator housing in the direction of the arrow. The measurement line port is used to pass the outlet pressure to be regulated to the bottom of the diaphragm comparator of the diaphragm assembly. It compares the actual value with the command variable preset by the force of the setpoint spring. The setpoint required in each case is set via the setting screw. Any deviation from the setpoint is transmitted by the valve stem to the actuator, which is adjusted such that the actual value is adjusted to the setpoint. In case of zero flow, the actuator will close tight, causing the closing pressure to be established. In case of inadmissible overpressure or lack of gas in the regulating section, the actuator of the safety shut-off valve arranged in the same housing on the inlet side will shut off the gas flow. To this end, the outlet pressure to be monitored is passed to the SSV control device via a separate measurement line. As a function of the change in pressure, the diaphragm comparator in the controller is raised or lowered. When the outlet pressure in the regulating section exceeds or falls below a certain response pressure, the switch socket connected to the SSV diaphragm will move to the corresponding disengaging position, the balls of the engaging mechanism will release the SSV valve stem, and the closing spring will press the SSV valve disc against the valve seat. The SSV actuator shuts off the gas flow gas-tight. The SSV can only be opened by hand and engaged in the open position. To do so, the outlet pressure at the measuring point must be lowered below the upper response pressure or raised above the lower response pressure by at least the re-engaging differential amount ( $\Delta p$ ).

### Information on device selection

This is how you select your gas pressure regulator RS 254 / RS 255:

- 1.) Calculate the required KG value (see MEDENUS Price List page 8)
- 2.) Using the KG value you have just calculated, select a suitably sized valve from the „KG - Value“ table below. Allow at least an additional 10% spare capacity in the valve you select.
- 3.) Select the diaphragm assembly that has the relevant outlet pressure from the „Version“ table below.
- 4.) For the selection of the relevant safety shut-off valve, please refer to our Product information leaflet RS 254 / RS 255, which can be found on our website in the Service / Downloads area
- 5.) Select any options you require
- 6.) In addition, check the flow rates (see MEDENUS Price page 8)
- 7.) When ordering please advise the direction of the gas flow (from right to left or left to right). For safety reasons, please also provide us with your process details ( $P_u$ ,  $P_d$ ,  $Q_n$  and the type of gas) so we can check your selection.



## Characteristics RS 254 / RS 255

|                                      |                           |
|--------------------------------------|---------------------------|
| <b><math>p_{u \max.} = PS</math></b> | 16 bar                    |
| <b><math>p_d</math></b>              | 18 - 3.000 mbar           |
| <b>Ambient temperature</b>           | -20...+60 °C              |
| <b>Mounting position</b>             | any                       |
| <b>SAV <math>p_{ds o}</math></b>     | 50 - 4.000 mbar           |
| <b>SAV <math>p_{ds u}</math></b>     | 10 - 1.000 mbar           |
| <b>Housing material:</b>             | Aluminium                 |
| <b>Approval:</b>                     | approved according to PED |
| <b>Gas specification:</b>            |                           |

Suitable for gases of gas families 1, 2, 3 (DVGW - G 260) and non-aggressive gases. (other gases on request)



## Versions RS 254

| Nominal size     | Description | Recommended use of the high-pressure screw spindle in the pressure range | Outlet pressure ranges [mbar] |
|------------------|-------------|--|-------------------------------|
| RS 254<br>DN 25  | with RE 320 | 200 - 800  | 18 - 200                      |
|                  | with RE 205 | 750 - 1.200  | 200 - 750                     |
|                  | with RE 160 | 1.200 - 3.000  | 750 - 3.000                   |
| RS 254<br>DN 50  | with RE 320 | 200 - 800  | 18 - 200                      |
|                  | with RE 205 | 750 - 1.200  | 200 - 750                     |
|                  | with RE 160 | 1.200 - 3.000  | 750 - 3.000                   |
| RS 254 DN<br>80  | with RE 390 | 130 - 450  | 18 - 100                      |
|                  | with RE 275 | 400 - 1.100  | 100 - 400                     |
|                  | with RE 205 | 750 - 3.000  | 400 - 3.000                   |
| RS 254<br>DN 100 | with RE 390 | 130 - 450  | 18 - 100                      |
|                  | with RE 275 | 400 - 1.100  | 100 - 400                     |
|                  | with RE 205 | 750 - 3.000  | 400 - 3.000                   |
| RS 254<br>DN 150 | with RE 485 | 150 - 450  | 18 - 150                      |
|                  | with RE 385 | 350 - 850  | 150 - 350                     |
|                  | with RE 275 | 850 - 3.000  | 350 - 3.000                   |
| RS 254<br>DN 200 | with RE 485 | 150 - 450  | 18 - 150                      |
|                  | with RE 385 | 350 - 850  | 150 - 350                     |
|                  | with RE 275 | 850 - 3.000  | 350 - 3.000                   |

## Versions RS 255

| Nominal size     | Description   | Recommended use of the high-pressure screw spindle in the pressure range | Outlet pressure ranges [mbar] |
|------------------|---------------|--|-------------------------------|
| RS 255<br>DN 50  | with RE 390   | 130 - 450  | 18 - 100                      |
|                  | with RE 275   | 400 - 1.100  | 100 - 400                     |
|                  | with RE 205   | 750 - 3.000  | 400 - 3.000                   |
| RS 255<br>DN 80  | with RE 385   | 350 - 850  | 18 - 350                      |
|                  | with RE 275   | 850 - 3.000  | 350 - 3.000                   |
| RS 255<br>DN 100 | with RE 485   | 150 - 450  | 18 - 150                      |
|                  | with RE 385-2 | 350 - 850  | 150 - 350                     |
|                  | with RE 275-2 | 850 - 3.000  | 350 - 3.000                   |

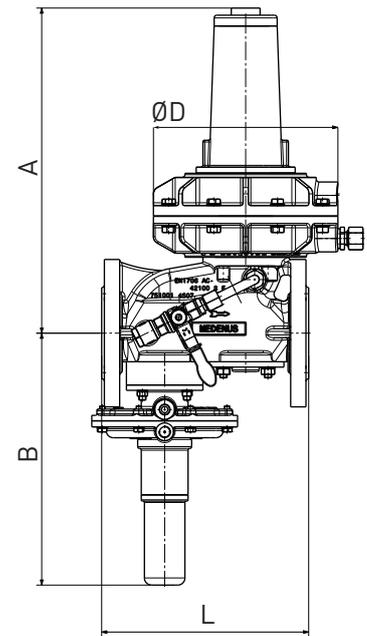
## Options RS 254 / RS 255

|  | Nominal size  |
|--|---|
| <ul style="list-style-type: none"> <li>High-pressure screw spindle (<b>HDS</b>) for convenient and accurate setting of the regulator despite high spring forces*</li> </ul>  | RS 254:<br>DN 25 - DN 100<br>DN 150 - DN 200<br>RS 255:<br>DN 50<br>DN 80 - DN 100                  |
| <ul style="list-style-type: none"> <li>Noise reduction by metal foam ring</li> </ul>   | RS 254:<br>DN 25 / DN 50<br>DN 80 / DN 100<br>DN 150 / DN 200<br>RS 255:<br>DN 50 / DN 80<br>DN 100 |
| <ul style="list-style-type: none"> <li>Safety diaphragm for the control device</li> </ul>  | RE 205 / RE 275<br>RE 320 / RE 385<br>RE 485  |
| <ul style="list-style-type: none"> <li>Safety relief valve (<b>SRV</b>) for the diaphragm assembly</li> </ul>  |   |
| <ul style="list-style-type: none"> <li>Vent valve (<b>BV</b>) for the breathing connection</li> </ul>  | (BV-1/4") or (BV-3/8")  |
| <ul style="list-style-type: none"> <li>Throttle valve (<b>RSD</b>) for breather connection</li> </ul>  |   |
| <ul style="list-style-type: none"> <li>Shift valve (<b>RSS</b>) for the breathing port on SAV as diaphragm rupture</li> </ul>  |   |
| <ul style="list-style-type: none"> <li>SSV position indicator "close"               <ul style="list-style-type: none"> <li>Inductive</li> <li>Reed kontakt</li> </ul> </li> </ul>  |   |
| <ul style="list-style-type: none"> <li>SSV release               <ul style="list-style-type: none"> <li>Manual release</li> <li>Remote release (upon current supply or in case of power failure)</li> <li>Manual and remote release (upon current supply or in case of power failure)</li> </ul> </li> </ul> |   |
| <ul style="list-style-type: none"> <li>Suitable for oxygen (<math>p_u \leq 10</math> bar)</li> </ul>   |   |
| <ul style="list-style-type: none"> <li>Coating with epoxy resin in RAL colours</li> </ul>  | RS 254:<br>DN 25 - DN 100<br>DN 150 - DN 200<br>RS 255:<br>DN 50<br>DN 80 - DN 100                  |
| <ul style="list-style-type: none"> <li>Acceptance test certificate (ATC) to EN 10204/3.1</li> </ul>  |   |

## Dimensions RS 254 / RS 255

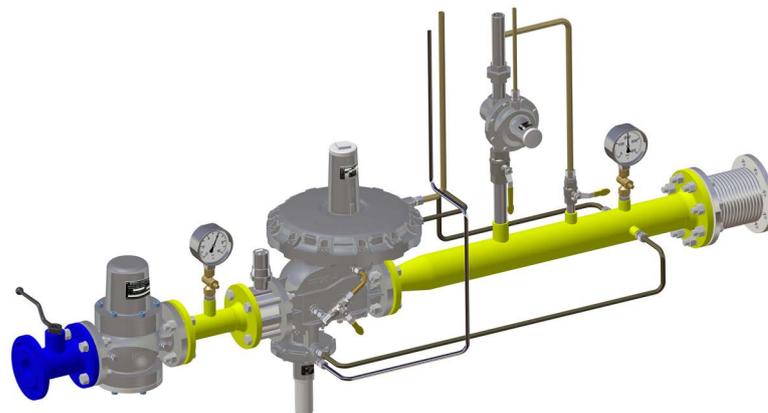
| Nominal size    | RS 254                  |             |             |             |             |                 | RS 255          |             |             |
|-----------------|-------------------------|-------------|-------------|-------------|-------------|-----------------|-----------------|-------------|-------------|
|                 | DN 25                   | DN 50       | DN 80       | DN 100      | DN 150      | DN 200          | DN 50           | DN 80       | DN 100      |
| A** [mm]        | 328<br>-338             | 348<br>-364 | 406         | 421         | 716<br>-730 | 784,5<br>-798,5 | 406             | 664<br>-658 | 716<br>-730 |
| B [mm]          | 269                     | 282         | 305         | 315         | 386         | 400             | 305             | 311         | 386         |
| L [mm]          | 230                     | 230         | 310         | 350         | 480         | 600             | 310             | 410         | 480         |
| D** [mm]        | 160<br>-318             | 160<br>-318 | 205<br>-385 | 205<br>-385 | 275<br>-485 | 275<br>-485     | 205<br>-385     | 275<br>-385 | 275<br>-485 |
| Connection type | DIN 1092 - PN16         |             |             |             |             | -PN 10          | DIN 1092 - PN16 |             |             |
|                 | ASME B 16.5 - Class 150 |             |             |             |             |                 |                 |             |             |

Please refer to the product information leaflet to get to know the clearance required above the valve for maintenance works or changes of the spring.



## K<sub>G</sub> - Value [(Nm<sup>3</sup>/h)/bar]

| Nominal size<br>Ø Valve [mm] | RS 254 |       |       |        |        |        | RS 255 |       |        |
|------------------------------|--------|-------|-------|--------|--------|--------|--------|-------|--------|
|                              | DN 25  | DN 50 | DN 80 | DN 100 | DN 150 | DN 200 | DN 50  | DN 80 | DN 100 |
| 17,5                         | 200    | 220   |       |        |        |        |        |       |        |
| 27,5                         | 420    | 500   | 550   | 600    |        |        | 550    |       |        |
| 32,5                         |        | 750   | 850   | 900    |        |        | 750    |       |        |
| 42,5                         |        |       | 1.450 | 1.500  | 1.600  |        | 1.250  | 1.500 | 1.500  |
| 52,5                         |        |       |       | 1.800  | 2.000  |        | 1.700  | 1.800 | 1.850  |
| 65,0                         |        |       |       |        | 3.500  |        |        | 2.600 | 3.200  |
| 85,0                         |        |       |       |        | 4.600  |        |        | 3.500 | 4.300  |
| 95,0                         |        |       |       |        | 5.800  | 6.100  |        |       | 4.800  |
| 115,0                        |        |       |       |        |        | 8.950  |        |       |        |



\*) When using a high pressure screw spindle the height is different to that quoted.

\*\*\*) Dimensions depend on the diaphragm assembly used



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