

MODULATING CONTROL VALVES

Series MDV-D1 (Modulating Disc Valve)

The modulating control valves of the newly conceived MDV-D1 series are built according to the norms EN 161 to be used on industrial combustion systems.

They are particularly suitable for the proportional regulation of all combustion gas flows of the first, second and third family and of air.

The electric motor is unipolar and bidirectional, with high static and maintaining torque for 3-position-control, or proportional with analogic input control signal: current or voltage change or change in the resistance value of the potentiometer.

The exact linear rating is achieved by means of particular, patented shutter disks, rotating on the same axis.

Six different orifice sizes are available according to the operating conditions.



FEATURES

- Electric gear motor separated from the gas flow.
- Sturdy, compact construction, specially suitable for industrial applications.
- Installation in any position.
- Mechanical position indicator.
- Adjustable rotation angle.
- Manual/automatic operation and service switch Open/Stop/Closed with relay for cut phase.
- Wide range of accessories on request.
 - 1 or 2 potentiometers ranging from 150 Ohm to 2.5 kOhm
 - 2 adjustable auxiliary microswitches with free electric contacts
 - input control signal: 4÷20 mA or 0÷10 V (Supply voltage 24V/50-60Hz)
 - multipolar connector for wiring
 - auxiliary shaft with 8 mm ø or with 9,5 mm square shaft.

TECHNICAL DATA

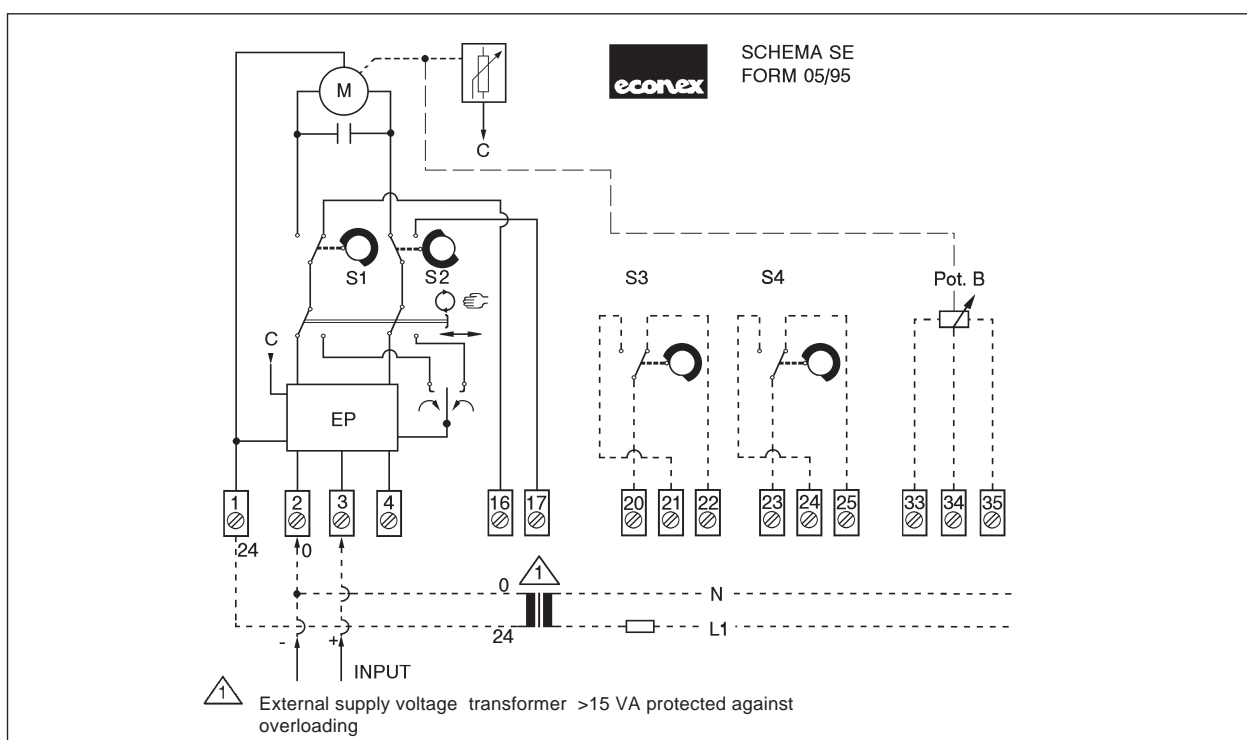
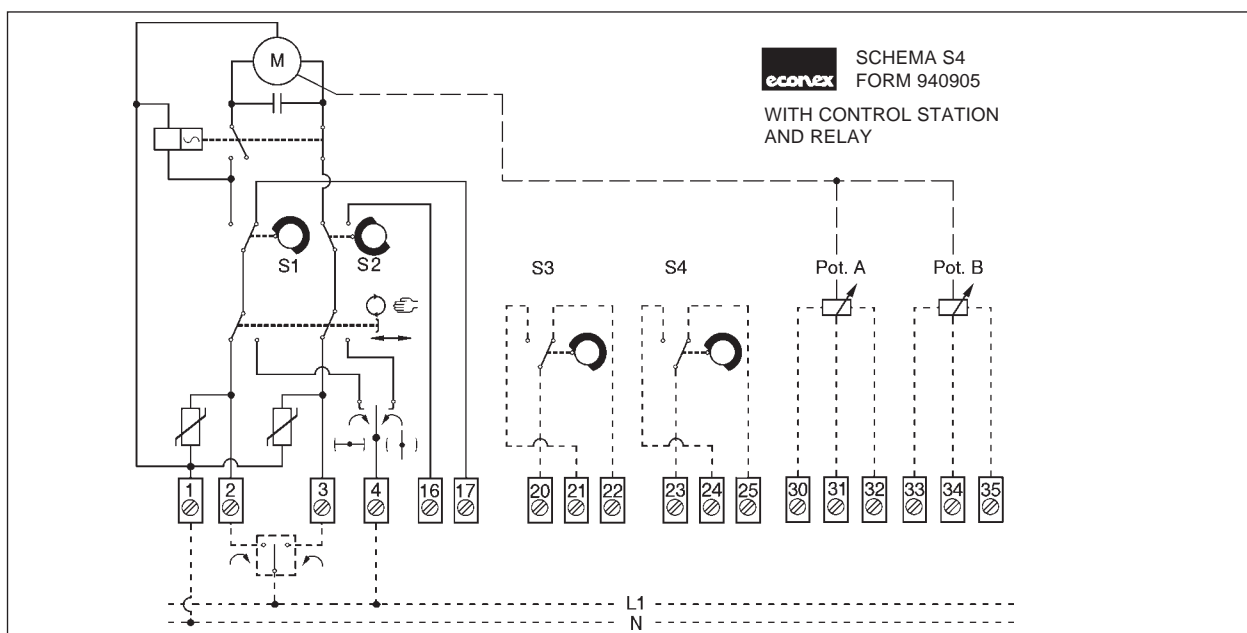
VALVE

- construction : die-cast aluminium
- group : 2
- control device : without zero setting
- ambient temperature : $-10 \div + 60^{\circ}\text{C}$
- opening/closing time : 30 sec. or 60 sec.
- operating pressure : max. 1 bar
- connections (flanges) : UNI 2282/2229,
DIN 2633 PN 16
- rating feature : linear
- control ratio : $>25:1$

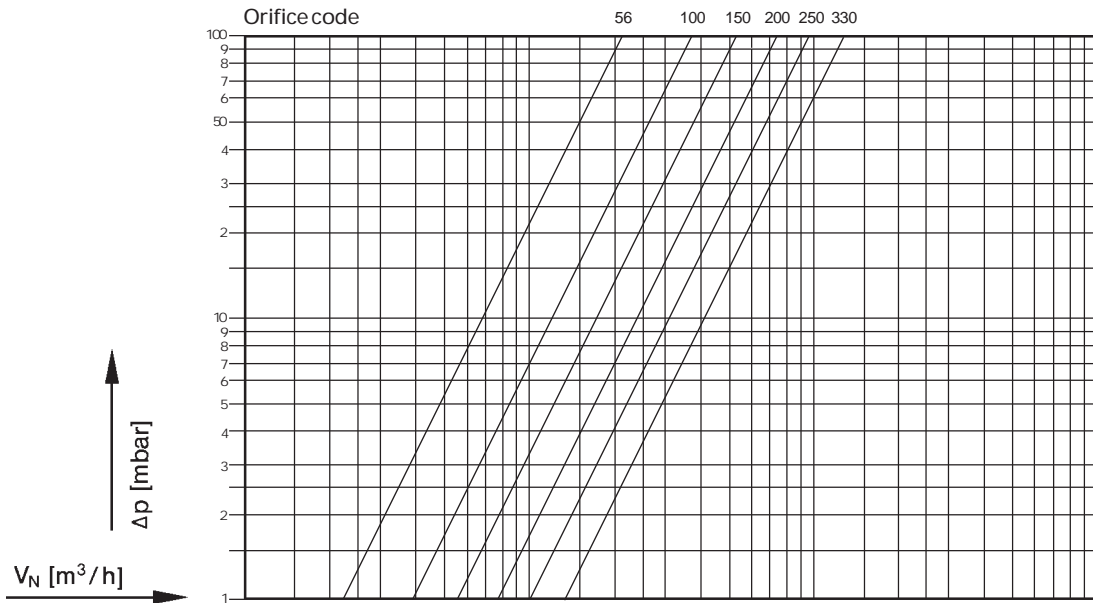
GEAR MOTOR

- base and cover : die-cast aluminium
- standard supply voltage : 230V/50-60Hz
on request : 110V/50-60Hz or
24V/50-60Hz
- nominal load : 7 VA
- enclosure : IP 54 - IEC 529
- duty cycle : continuous 100%
- aux. switch rating : 5(1)A/250 V A.C.
- potentiometer/s : 150;1000;2500 Ω
- cable gland : 2 x Pg 13.5
- input signal : $4 \div 20$ mA or $0 \div 10$ V
on request : (24V A.C.. 50/60Hz)

WIRING DIAGRAM



FLOW CHART



| Gas | dv | Scale 1 (10-100) | Scale 2 (2-1000) | Scale 3 (2-10000) |
|-------------|------|------------------------|----------------------|-----------------------|
| Air | 1 | 10 2 3 4 5 6 7 8 9 100 | 2 3 4 5 6 7 8 9 1000 | 2 3 4 5 6 7 8 9 10000 |
| Natural gas | 0,64 | 20 3 4 5 6 7 8 9 100 | 2 3 4 5 6 7 8 9 1000 | 2 3 4 5 6 7 8 9 10000 |
| Town gas | 0,45 | 20 3 4 5 6 7 8 9 100 | 2 3 4 5 6 7 8 9 1000 | 2 3 4 5 6 7 8 9 10000 |
| Propane | 1,56 | 10 2 3 4 5 6 7 8 9 100 | 2 3 4 5 6 7 8 9 1000 | 2 3 4 5 6 7000 |
| Butane | 2,04 | 10 2 3 4 5 6 7 8 9 100 | 2 3 4 5 6 7 8 9 1000 | 2 3 4 5 6000 |
| L.P.G. | 1,70 | 10 2 3 4 5 6 7 8 9 100 | 2 3 4 5 6 7 8 9 1000 | 2 3 4 5 6 7000 |

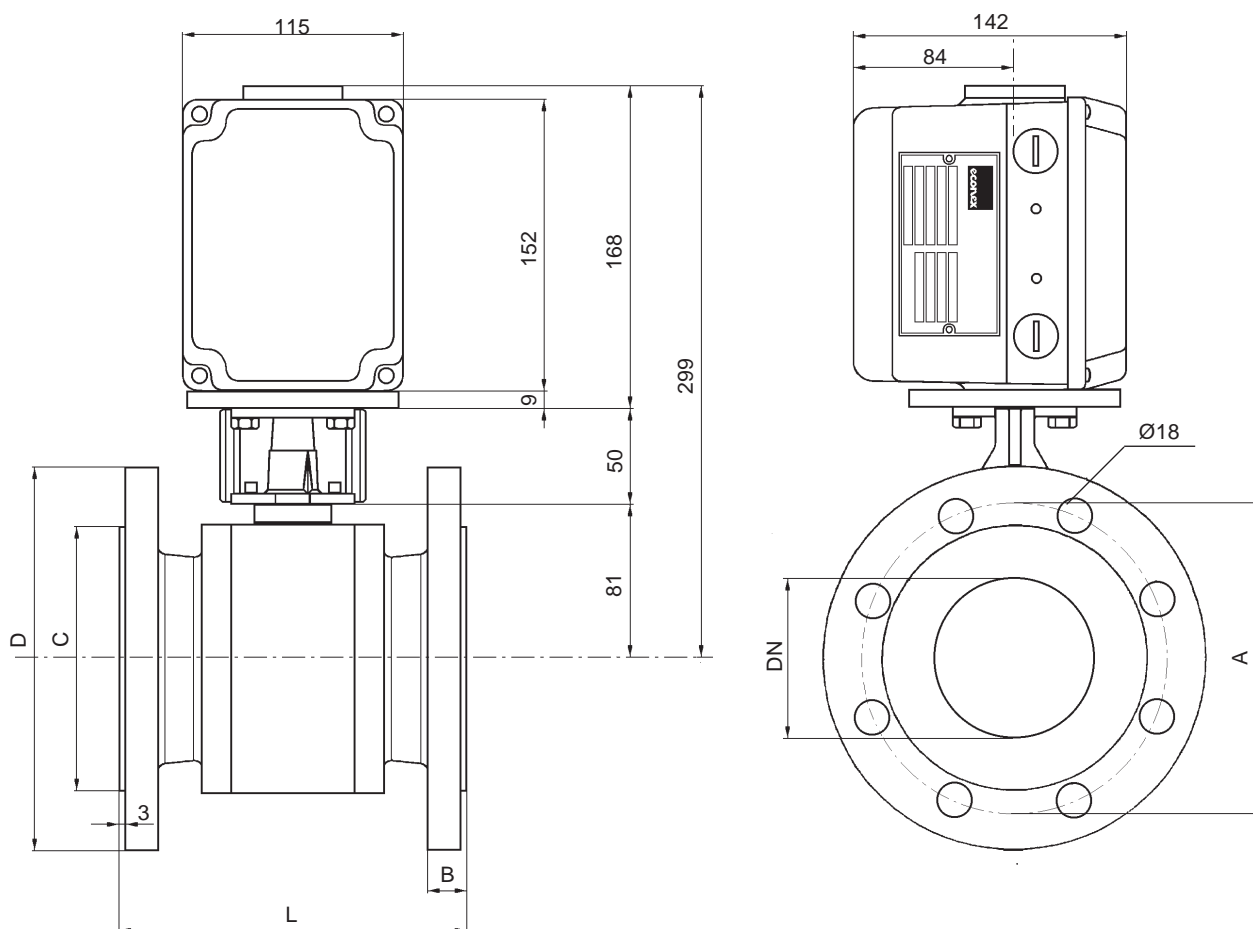
HOW TO ORDER

| <p>D1=valve body</p> <table border="1"> <thead> <tr> <th>Orifice</th> <th>mm²</th> <th>max. P. (mbar)</th> <th>Flange diam.</th> </tr> </thead> <tbody> <tr> <td>56</td> <td>562</td> <td>1000</td> <td>DN 50 = P DN 65 = Q</td> </tr> <tr> <td>100</td> <td>984</td> <td>1000</td> <td>DN 50 = P DN 65 = Q DN 80 = R</td> </tr> <tr> <td>150</td> <td>1405</td> <td>1000</td> <td>DN 65 = Q DN 80 = R DN 100 = S</td> </tr> <tr> <td>200</td> <td>1967</td> <td>1000</td> <td>DN 65 = Q DN 80 = R DN 100 = S</td> </tr> <tr> <td>250</td> <td>2529</td> <td>1000</td> <td>DN 80 = R DN 100 = S</td> </tr> <tr> <td>330</td> <td>3300</td> <td>1000</td> <td>DN 100 = S</td> </tr> </tbody> </table> | Orifice | mm ² | max. P. (mbar) | Flange diam. | 56 | 562 | 1000 | DN 50 = P DN 65 = Q | 100 | 984 | 1000 | DN 50 = P DN 65 = Q DN 80 = R | 150 | 1405 | 1000 | DN 65 = Q DN 80 = R DN 100 = S | 200 | 1967 | 1000 | DN 65 = Q DN 80 = R DN 100 = S | 250 | 2529 | 1000 | DN 80 = R DN 100 = S | 330 | 3300 | 1000 | DN 100 = S | <p>AR2 = Rotary gear motor</p> <table border="1"> <thead> <tr> <th>Voltage/Frequency</th> </tr> </thead> <tbody> <tr> <td>A = 24V/50-60Hz</td> </tr> <tr> <td>B = 110V/50-60Hz</td> </tr> <tr> <td>C = 230V/50-60Hz</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Rotation time at 50 Hz</th> </tr> </thead> <tbody> <tr> <td>2 = 30 sec.</td> </tr> <tr> <td>3 = 60 sec.</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Feedback Potentiometer</th> </tr> </thead> <tbody> <tr> <td>00 = No</td> </tr> <tr> <td>11 = 1 " 150 Ohm</td> </tr> <tr> <td>13 = 1 " 1000 Ohm</td> </tr> <tr> <td>15 = 1 " 2500 Ohm</td> </tr> <tr> <td>21 = 2 " 150 Ohm</td> </tr> <tr> <td>23 = 2 " 1000 Ohm</td> </tr> <tr> <td>25 = 2 " 2500 Ohm</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Micro auxiliary switches</th> </tr> </thead> <tbody> <tr> <td>0 = No Micro</td> </tr> <tr> <td>2 = 2 "</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Accessories</th> </tr> </thead> <tbody> <tr> <td>S = Service switch + relais</td> </tr> <tr> <td>M = Multipolar connector</td> </tr> <tr> <td>A1 = Auxiliary shaft Ø 8 mm</td> </tr> <tr> <td>A2 = Auxiliary shaft □ 9,5 mm</td> </tr> <tr> <td>A3 = Auxiliary shaft Ø 12 mm with key</td> </tr> <tr> <td>E2 = In 0÷135 Ohm</td> </tr> <tr> <td>E4 = In 0÷10 V D.C.</td> </tr> <tr> <td>E5 = In 4÷20 mA</td> </tr> <tr> <td>E6 = In 0÷10 V D.C. Out 0÷10 V D.C.</td> </tr> <tr> <td>E7 = In 4÷20 V D.C. Out 0÷10 V D.C.</td> </tr> <tr> <td>Z = Special execution and/or further combinations</td> </tr> </tbody> </table> | Voltage/Frequency | A = 24V/50-60Hz | B = 110V/50-60Hz | C = 230V/50-60Hz | Rotation time at 50 Hz | 2 = 30 sec. | 3 = 60 sec. | Feedback Potentiometer | 00 = No | 11 = 1 " 150 Ohm | 13 = 1 " 1000 Ohm | 15 = 1 " 2500 Ohm | 21 = 2 " 150 Ohm | 23 = 2 " 1000 Ohm | 25 = 2 " 2500 Ohm | Micro auxiliary switches | 0 = No Micro | 2 = 2 " | Accessories | S = Service switch + relais | M = Multipolar connector | A1 = Auxiliary shaft Ø 8 mm | A2 = Auxiliary shaft □ 9,5 mm | A3 = Auxiliary shaft Ø 12 mm with key | E2 = In 0÷135 Ohm | E4 = In 0÷10 V D.C. | E5 = In 4÷20 mA | E6 = In 0÷10 V D.C. Out 0÷10 V D.C. | E7 = In 4÷20 V D.C. Out 0÷10 V D.C. | Z = Special execution and/or further combinations |
|--|-----------------|-----------------|--------------------------------------|--------------|-----------|-----|------|------------------------|------------|-----|------|-------------------------------------|------------|------|------|--------------------------------------|------------|------|------|--------------------------------------|------------|------|------|-------------------------|------------|------|------|------------|---|-------------------|------------------------|-------------------------|-------------------------|------------------------|--------------------|--------------------|------------------------|----------------|-------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|---------------------|----------------|-------------|------------------------------------|---------------------------------|------------------------------------|--------------------------------------|--|--------------------------|----------------------------|------------------------|--|--|--|
| Orifice | mm ² | max. P. (mbar) | Flange diam. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56 | 562 | 1000 | DN 50 = P DN 65 = Q | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 984 | 1000 | DN 50 = P DN 65 = Q DN 80 = R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | 1405 | 1000 | DN 65 = Q DN 80 = R DN 100 = S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 1967 | 1000 | DN 65 = Q DN 80 = R DN 100 = S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 250 | 2529 | 1000 | DN 80 = R DN 100 = S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 330 | 3300 | 1000 | DN 100 = S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage/Frequency | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A = 24V/50-60Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B = 110V/50-60Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C = 230V/50-60Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rotation time at 50 Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 = 30 sec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 = 60 sec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feedback Potentiometer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 00 = No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 = 1 " 150 Ohm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 = 1 " 1000 Ohm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 = 1 " 2500 Ohm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 = 2 " 150 Ohm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 = 2 " 1000 Ohm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 = 2 " 2500 Ohm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Micro auxiliary switches | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 = No Micro | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 = 2 " | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accessories | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S = Service switch + relais | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M = Multipolar connector | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A1 = Auxiliary shaft Ø 8 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A2 = Auxiliary shaft □ 9,5 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A3 = Auxiliary shaft Ø 12 mm with key | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E2 = In 0÷135 Ohm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E4 = In 0÷10 V D.C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E5 = In 4÷20 mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E6 = In 0÷10 V D.C. Out 0÷10 V D.C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E7 = In 4÷20 V D.C. Out 0÷10 V D.C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z = Special execution and/or further combinations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

D1 56 Q AR2 C 3 13 0 - S

N.B.: the max. torque on the auxiliary shaft is 3 Nm.

DIMENSIONS (mm)



| DN | PN | A | B | C | D | L | Hole number | Weight kg |
|-----|----|-----|----|-----|-----|-----|-------------|-----------|
| 50 | 16 | 125 | 18 | 102 | 165 | 191 | 4 | 7,5 |
| 65 | 16 | 145 | 18 | 122 | 185 | 191 | 4 | 8 |
| 80 | 16 | 160 | 20 | 138 | 200 | 203 | 8 | 9 |
| 100 | 16 | 180 | 20 | 158 | 220 | 229 | 8 | 11 |

All the reported data are subject to be changed without notice.

Distributed by:

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Form 010410