Ex-proof digital proportional relief valves  
high performance  
direct or piloted, with on board driver and pressure transducer - ATEX and IECEx

**RZMA-RES, AGMZA-RES**
Ex-proof high performance digital proportional relief valves direct or piloted with pressure transducer for pressure closed loop controls.

They are equipped with ex-proof on-board digital driver, pressure transducer and proportional solenoid certified for safe operations in hazardous environments with potentially explosive atmosphere.

- **Multicertification ATEX and IECEx** for gas group II 2G and dust category II 2D

The flameproof enclosure of on-board digital driver, solenoid and transducer, prevents the propagation of accidental internal sparks or fire to the external environment.

The driver and solenoid are also designed to limit the surface temperature within the classified limits.

**RZMA**, direct or piloted:
Size: 06 - ISO 4401
Max flow: 4 and 40 l/min

**AGMZA**, piloted:
Size: 10, 20 and 32 - ISO 6264
Max flow: 200, 400 and 600 l/min
Max pressure: 250 bar

**Seals material**, see section:
- NBR
- FKM
- HNBR

**Series number**
Dynamic response preset, see section:
The driver and solenoid are also designed to limit the surface temperature within the classified limits.

**Hydraulic options** - only AGMZA (1):
- E = external pilot
- Y = external drain

**Electronic options** (1):
- I = current reference input and monitor
  - 4÷20mA (omit for std voltage 0÷10Vdc)

**Cable entrance threaded connection**:
- M = M20x1.5

**Max regulated pressure**:
- 80 = 80 bar
- 180 = 180 bar
- 250 = 250 bar

---

**MODEL CODE**

<table>
<thead>
<tr>
<th>RZMA</th>
<th>RES</th>
<th>P</th>
<th>NP</th>
<th>010</th>
<th>250</th>
<th>M</th>
</tr>
</thead>
</table>
| Ex-proof proportional pressure relief valves  
RZMA = subplate size 06  
AGMZA = subplate size 10, 20, 32  
RES = on-board driver  
P = on-board ex-proof pressure transducer  
Fieldbus interfaces, USB port always present:  
NP = Not Present  
BC = CANopen  
BP = PROFIBUS DP  
EH = EtherCAT  
Valve size and configuration:  
RZMA: direct 010 = Qmax 4 l/min  
RZMA: piloted 030 = Qmax 40 l/min  
AGMZA: piloted 10, 20, 32 = Qmax 200, 400, 600 l/min

(1) Possible combined options: /EY, /EI, /YI

---

**CONFIGURATIONS AND HYDRAULIC SYMBOLS** (representation according to ISO 1219-1)

| RZMA-RES-*010 | RZMA-RES-*030 | AGMZA-RES-* |
3 GENERAL NOTES
Atos digital proportional valves are CE marked according to the applicable directives (e.g. Immunity and Emission EMC Directive). Installation, wirings and start-up procedures must be performed according to the general prescriptions shown in tech table FX900 and in the user manuals included in the E-SW-* programming software.

4 VALVE SETTINGS AND PROGRAMMING TOOLS

**WARNING:** The below operation must be performed in a safety area.

Valve’s functional parameters and configurations, can be easily set and optimized using Atos E-SW programming software connected via USB port to the digital driver (see table GS003). For fieldbus versions, the software permits valve’s parameterization through USB port also if the driver is connected to the central machine unit via fieldbus.

The software is available in different versions according to the driver’s options (see table GS500):

**E-SW-BASIC** support: NP (USB) PS (Serial) IR (Infrared)

**E-SW-FIELDBUS** support: BC (CANopen) BP (PROFIBUS DP) EH (EtherCAT) EW (POWERLINK) El (EtherNet/IP) EP (PROFINET)

**E-SW-*/PQ** support: valves with SP, SF, SL alternated control (e.g. E-SW-BASIC/PQ)

**WARNING:** drivers USB port is not isolated! For E-C-SB-USB/M12 cable, the use of isolator adapter is highly recommended for PC protection.

**WARNING:** see tech table GS500 for the list of countries where the Bluetooth adapter has been approved.

5 FIELDBUS - see tech. table GS510
Fieldbus allows valve direct communication with machine control unit for digital reference, valve diagnostics and settings. These executions allow to operate the valves through fieldbus or analog signals available on the terminal board.

6 GENERAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Assembly position</th>
<th>Any position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subplate surface finishing to ISO 4401</td>
<td>Acceptable roughness index, Ra ≤ 0,8 recommended Ra 0,4 - flatness ratio 0,01/100</td>
</tr>
<tr>
<td>MTTFd valves according to EN ISO 13849</td>
<td>RZMA-010 150 years, RZMA-030 and AGZMA 75 years, see technical table P007</td>
</tr>
<tr>
<td>Ambient temperature range</td>
<td>Standard = -20°C ÷ +60°C /PE option = -20°C ÷ +60°C /BT option = -40°C ÷ +60°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>Standard = -20°C ÷ +70°C /PE option = -20°C ÷ +70°C /BT option = -40°C ÷ +70°C</td>
</tr>
<tr>
<td>Surface protection</td>
<td>Zinc coating with black passivation - salt spray test (EN ISO 9227) &gt; 200 h</td>
</tr>
<tr>
<td>Compliance</td>
<td>Explosion proof protection, see section [9] - Flame proof enclosure &quot;Ex d&quot; - Dust ignition protection by enclosure &quot;Ex t”</td>
</tr>
<tr>
<td></td>
<td>RoHs Directive 2011/65/EU as last update by 2015/65/EU</td>
</tr>
<tr>
<td></td>
<td>REACH Regulation (EC) n°1907/2006</td>
</tr>
</tbody>
</table>

7 HYDRAULIC CHARACTERISTICS - based on mineral oil ISO VG 46 at 50 °C

<table>
<thead>
<tr>
<th>Valve model</th>
<th>RZMA</th>
<th>AGMZA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RZMA</td>
<td>010</td>
<td>030</td>
</tr>
<tr>
<td>AGMZA</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve size</td>
<td>06</td>
<td>10</td>
</tr>
<tr>
<td>20</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Max regulated pressure [bar]</td>
<td>80</td>
<td>180</td>
</tr>
<tr>
<td>Min regulated pressure [bar]</td>
<td>see min. pressure / flow diagrams at sections [20] [21] [22]</td>
<td></td>
</tr>
<tr>
<td>Max pressure at port P, A, B, X [bar]</td>
<td>315</td>
<td></td>
</tr>
<tr>
<td>Max pressure at port T, Y [bar]</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Max flow [l/min]</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>200</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time 0-100% step signal (depending on installation) (1) [ms]</td>
<td>≤ 60</td>
<td>≤ 90</td>
</tr>
<tr>
<td>110</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Hysteresis [% of the max pressure]</td>
<td>≤ 0,3</td>
<td></td>
</tr>
<tr>
<td>Linearity [% of the max pressure]</td>
<td>≤ 1,0</td>
<td></td>
</tr>
<tr>
<td>Repeatability [% of the max pressure]</td>
<td>≤ 0,2</td>
<td></td>
</tr>
</tbody>
</table>

(1) Average response time value; the pressure variation in consequence of a modification of the reference input signal to the valve is affected by the stiffness of the hydraulic circuit: greater is the stiffness of the circuit, faster is the dynamic response.
8 ELECTRICAL CHARACTERISTICS

Power supplies
Nominal: +24 Vdc
Rectified and filtered: \( V_{\text{RMS}} = 20 \pm 32 \text{ Vmax (ripple max 10\% Vpp)} \)

Max power consumption
35 W

Analog input signals
Voltage: range \(-10 \text{ Vdc} \) (24 Vmax tolerant)
Input impedance: \( R_i > 50 \text{ kΩ} \)
Current: range \( 0 \pm 20 \text{ mA} \) max 500 Ω load resistance

Insulation class
H (180°C) Due to the occurring surface temperatures of the solenoid coils, the European standards ISO 13732-1 and EN982 must be taken into account

Monitor outputs
Voltage: range \( 0 \div 10 \text{ Vdc} \) @ max 5 mA
Current: range \( 0 \div 20 \text{ mA} \) @ max 500 Ω load resistance

Enable input
Range: \( 0 \div 5 \text{ Vdc (off state), 5 \div 24 \text{ Vdc (on state)} \)
Input impedance: \( R_i > 50 \text{ kΩ} \)

Fault output
Output range: \( 0 \div 24 \text{ Vdc (on state)} \) \( \cong \) \( V_L + \text{logic power supply} \) ; \( 0 \text{ Vdc (off state)} \) @ max 50 mA; external negative voltage not allowed (e.g. due to inductive loads)

Pressure transducer power supply
\(+24\text{Vdc} \) @ max 100 mA (E-ATRA-7 see tech table GX800)

Alarms
Solenoid not connected/short circuit, cable break with current reference signal, over/under temperature, power supplies level, pressure transducer failure

Protection degree to DIN EN60529
IP66/67 with relevant cable gland

Duty factor
Continuous rating (ED=100\%)

Tropicalization
Tropical coating on electronics PCB

Additional characteristics
Short circuit protection of solenoid current supply; current control by P.I.D. with rapid solenoid switching; protection against reverse polarity of power supply

Electromagnetic compatibility (EMC)
According to Directive 2014/30/UE (Immunity: EN 61000-6-2; Emission: EN 61000-6-3)

Communication interface
USB Atos ASCII coding
Canopen
PROFIBUS DP
EtherCAT,

Communication physical layer
not insulated
optical insulated
CAN ISO11898
optical insulated
RS485
Fast Ethernet, insulated
100 Base TX

Note: a maximum time of 500 ms (depending on communication type) have be considered between the driver energizing with the 24 Vdc power supply and when the valve is ready to operate. During this time the current to the valve coils is switched to zero

9 SEALS AND HYDRAULIC FLUIDS
- for other fluids not included in below table, consult our technical office

Seals, recommended fluid temperature
NBR seals (standard) = \(-20°C \div +60°C\), with HFC hydraulic fluids = \(-20°C \div +50°C\)
FKM seals (IEP option) = \(-20°C \div +80°C\)
HNBR seals (BT option) = \(-40°C \div +60°C\), with HFC hydraulic fluids = \(-40°C \div +50°C\)

Recommended viscosity
20\%=100 \text{ mm2/s} - max allowed range 15 \div 380 \text{ mm2/s}

Max fluid contamination level
ISO4406 class 18/16/13 NAS1638 class 7 see also filter section at www.atos.com or KTF catalog

Hydraulic fluid
Suitable seals type
Classification
Ref. Standard
Mineral oils
NBR, FKM, HNBR
HL, HLP, HLPD, HVLP, HVLPD
DIN 51524

Flame resistant without water
FKM
HFDU, HFDR
ISO 12922

Flame resistant with water (1)
NBR, HNBR
HFC

\(\text{\textdegree C}\)
The ignition temperature of the hydraulic fluid must be 50\°C higher than the max solenoid surface temperature

(1) Performance limitations in case of flame resistant fluids with water:
- max operating pressure = 210 bar
- max fluid temperature = 50\°C

10 CERTIFICATION DATA

Valve type
RZMA, AGMZA

Certifications
Multicertification Group II
ATEX IECEx

Solenoide certified code
OZA-RES

Type examination certificate (1)
ATEX: TUV IT 18 ATEX 068 X
IECEx: IECEx TPS 19.0004X

Method of protection
ATEX 2014/34/EU
Ex II 2G Ex db IIC T6/T5/T4 Db
Ex II 2D Ex tb IIIC T85°C/T100°C/T135°C Db
IECEx
Ex db IIC T6/T5/T4 Db
Ex tb IIIC T85°C/T100°C/T135°C Db

Temperature class
T6
T5
T4

Surface temperature
\( \leq 85 \text{ °C} \)
\( \leq 100 \text{ °C} \)
\( \leq 135 \text{ °C} \)

Ambient temperature (2)
\(-40 \pm +40 \text{ °C} \)
\(-40 \pm +55 \text{ °C} \)
\(-40 \pm +70 \text{ °C} \)

Applicable standards
EN 60079-0
EN 60079-31
IEC 60079-0
IEC 60079-31

Cable entrance: threaded connection
\( M = M20 \times 1.5 \)

(1) The type examiner certificates can be downloaded from www.atos.com
(2) The driver and solenoids are certified for minimum ambient temperature -40°C, in case the complete valve must withstand with minimum ambient temperature -40°C, select /BT in the model code.

Warning: service work performed on the valve by the end users or not qualified personnel invalidates the certification
11 CABLE SPECIFICATION AND TEMPERATURE - Power supply and grounding cables have to comply with following characteristics:

<table>
<thead>
<tr>
<th>Max ambient temperature [°C]</th>
<th>Temperature class</th>
<th>Max surface temperature [°C]</th>
<th>Min. cable temperature [°C]</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 °C</td>
<td>T6</td>
<td>85 °C</td>
<td>80 °C</td>
</tr>
<tr>
<td>55 °C</td>
<td>T5</td>
<td>100 °C</td>
<td>90 °C</td>
</tr>
<tr>
<td>70 °C</td>
<td>T4</td>
<td>135 °C</td>
<td>110 °C</td>
</tr>
</tbody>
</table>

11.1 Cable temperature
The cable must be suitable for the working temperature as specified in the “safety instructions” delivered with the first supply of the products.

12 CABLE GLANDS
Cable glands with threaded connections M20x1,5 for standard or armoured cables have to be ordered separately, see tech table KX800

Note: a Loctite sealant type 545, should be used on the cable gland entry threads

13 HYDRAULIC OPTIONS - only for AGMZA

E = External pilot option to be selected when the pilot pressure is supplied from a different line respect to the P main line.
With option E the internal connection between port P and X of the valve is plugged.
The pilot pressure must be connected to the X port available on the valve’s mounting surface or on main body (threaded pipe connection G ¼”).

Y = The external drain is mandatory in case the main line T is subjected to pressure peaks or it is pressurized.
The Y drain port has a threaded connection G ¼” available on the pilot stage body.

14 ELECTRONIC OPTIONS
I = It provides 4 ÷ 20 mA current reference signal, instead of the standard 0 ÷ 10 Vcc. Input signal can be reconfigured via software selecting between voltage and current, within a maximum range of ±10 Vcc or ±20 mA. It is normally used in case of long distance between the machine control unit and the valve or where the reference signal can be affected by electrical noise; the valve functioning is disabled in case of reference signal cable breakage.

15 POSSIBLE COMBINED OPTIONS
EY, /EI, /YI

16 MECHANICAL PRESSURE LIMITER - only for AGMZA
The AGMZA are provided with mechanical pressure limiter acting as protection against overpressure. For safety reasons the factory setting of the mechanical pressure limiter is fully unloaded (min pressure).
At the first commissioning it must be set at a value lightly higher than the max pressure regulated with the proportional control.
For the pressure setting of the mechanical pressure limiter, proceed according to following steps:
- apply the max reference input signal to the valve’s driver. The system pressure will not increase until the mechanical pressure limiter remains unloaded.
- turn clockwise the adjustment screw until the system pressure will increase up to a stable value corresponding to the pressure setpoint at max reference input signal.
- turn clockwise the adjustment screw of additional 1 or 2 turns to ensure that the mechanical pressure limiter remains closed during the proportional valve working.

17 REMOTE PRESSURE UNLOADING - only for AGMZA
The P main line can be remotely unloaded by connecting the valve X port to a solenoid valve as shown in the below scheme (venting valve).
This function can be used in emergency to unload the system pressure by-passing the proportional control.

18 DYNAMIC RESPONSE - 4 pressure PIDs
The valve is provided with 4 PIDs configurations to match different hydraulic conditions. The required PID configuration can be selected before the valve commissioning, through Atos E-SW software via USB port. Only for RES the PID can be also selected in real time, through PLC via fieldbus.

(1) Interchangeable with previous TERS version

19 PRESSURE TRANSDUCER FAILURE
In case of pressure transducer failure, the valve’s reaction can be configured through Atos E-SW software to:
- cut off the current to solenoid, therefore the regulated pressure will be reduced to minimum value (default setting)
- automatically switch the pressure control from closed loop (PID1,2,3) to open loop (PID4), to let the valve to temporarily operate with reduced regulation accuracy
1. Regulation diagrams with flow rate \( Q = 1 \) l/min.

2. Pressure/flow diagrams with reference signal set at \( Q = 1 \) l/min.

3-5. Min. pressure/flow diagrams with zero reference signal.

Note: the presence of counter pressure at port T can affect the pressure regulation and the minimum pressure.

---

1. Regulation diagrams with flow rate \( Q = 10 \) l/min.

2. Pressure/flow diagrams with reference signal set at \( Q = 10 \) l/min.


Note: the presence of counter pressure at port T can affect the pressure regulation and the minimum pressure.

---

1. Regulation diagrams with flow rate \( Q = 50 \) l/min.

2. Pressure/flow diagrams with reference signal set at \( Q = 50 \) l/min.

3-5. Min. pressure/flow diagrams with zero reference signal.

Note: the presence of counter pressure at port T can affect the pressure regulation and the minimum pressure.

---

1. Regulation diagrams with flow rate \( Q = 50 \) l/min.

2. Pressure/flow diagrams with reference signal set at \( Q = 50 \) l/min.


Note: the presence of counter pressure at port T can affect the pressure regulation and the minimum pressure.

---

1. Regulation diagrams with flow rate \( Q = 1 \) l/min.

2. Pressure/flow diagrams with reference signal set at \( Q = 1 \) l/min.

3-5. Min. pressure/flow diagrams with zero reference signal.

Note: the presence of counter pressure at port T can affect the pressure regulation and the minimum pressure.
23 POWER SUPPLY AND SIGNALS SPECIFICATIONS

Generic electrical output signals of the valve (e.g. fault or monitor signals) must not be directly used to activate safety functions, like to switch-ON/OFF the machine’s safety components, as prescribed by the European standards (Safety requirements of fluid technology systems and components-hydraulics, EN-982).

23.1 Power supply (V+ and V0)

The power supply must be appropriately stabilized or rectified and filtered: apply at least a 10000 \( \mu \)F/40 V capacitance to single phase rectifiers or a 4700 \( \mu \)F/40 V capacitance to three phase rectifiers.

A safety fuse is required in series to each power supply: 2,5 A time lag fuse.

23.2 Power supply for driver’s logic and communication (VL+ and VL0)

The power supply for driver’s logic and communication must be appropriately stabilized or rectified and filtered: apply at least a 10000 \( \mu \)F/40 V capacitance to single phase rectifiers or a 4700 \( \mu \)F/40 V capacitance to three phase rectifiers.

The separate power supply for driver’s logic on pin 3 and 4, allow to remove solenoid power supply from pin 1 and 2 maintaining active the diagnostics, USB and fieldbus communications.

A safety fuse is required in series to each driver’s logic and communication power supply: 500 mA fast fuse.

23.3 Pressure reference input signal (P_INPUT+)

The driver controls in closed loop the current to the valve pressure proportionally to the external reference input signal. Reference input signal is factory preset according to selected valve code, defaults are 0 ÷ 10 Vcc for standard and 4 ÷ 20 mA for \( \text{I} \) option.

Input signal can be reconfigured via software selecting between voltage and current, within a maximum range of ±10 Vcc or ± 20 mA.

Drivers with fieldbus interface can be software set to receive reference signal directly by the machine control unit (fieldbus reference).

Analog reference input signal can be used as on-off commands with input range 0 ÷ 24Vcc.

23.4 Pressure monitor output signal (P_MONITOR)

The driver generates an analog output signal proportional to the actual pressure of the valve; the monitor output signal can be software set to show other signals available in the driver (e.g. analog reference, fieldbus reference).

Monitor output signal is factory preset according to selected valve code, defaults settings are 0 ÷10 Vcc for standard and 4 ÷ 20 mA for \( \text{I} \) option.

Output signal can be reconfigured via software selecting between voltage and current, within a maximum range of 0 ÷10 Vcc or 0 ÷ 20 mA.

23.5 Enable input signal (ENABLE)

To enable the driver, supply a 24 Vcc on pin 6: Enable input signal allows to enable/disable the current supply to the solenoid, without removing the electrical power supply to the driver; it is used to active the communication and the other driver functions when the valve must be disabled for safety reasons. This condition does not comply with norms IEC 61508 and ISO 13849.

Enable input signal can be used as generic digital input by software selection.

23.6 Fault output signal (FAULT)

Fault output signal indicates fault conditions of the driver (solenoid short circuits/not connected, reference signal cable broken for 4 ÷ 20 mA input, spool position transducer cable broken, etc.). Fault presence corresponds to 0 Vcc, normal working corresponds to 24 Vcc. Fault status is not affected by the Enable input signal. Fault output signal can be used as digital output by software selection.

24 TERMINAL BOARD OVERVIEW

(1) For BC and BP executions the fieldbus connections have an internal pass-through connection
25 ELECTRONIC CONNECTIONS

25.1 Main connections signals

<table>
<thead>
<tr>
<th>CABLE ENTRANCE</th>
<th>PIN</th>
<th>SIGNAL</th>
<th>TECHNICAL SPECIFICATIONS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>V0</td>
<td>Power supply 0 Vcc</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>V+</td>
<td>Power supply 24 Vcc</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>VLD</td>
<td>Power supply 0 Vcc for driver’s logic and communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>VL+</td>
<td>Power supply 24 Vcc for driver’s logic and communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>FAULT</td>
<td>Fault (0 Vcc) or normal working (24 Vcc), referred to VLD</td>
<td>Output - on/off signal</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>ENABLE</td>
<td>Enable (24 Vcc) or disable (0 Vcc) the driver, referred to VLD</td>
<td>Input - on/off signal</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>AGND</td>
<td>Analog ground</td>
<td>Gnd - analog signal</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>INPUT-</td>
<td>Negative pressure reference input signal for INPUT+</td>
<td>Input - on/off signal</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>P_MONITOR</td>
<td>Pressure monitor output signal: 0 ÷ 10 Vcc / 0 ÷ 20 mA maximum range, referred to AGND</td>
<td>Output - analog signal</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>P_INPUT+</td>
<td>Pressure reference input signal: ±10 Vcc / ±20 mA maximum range</td>
<td>Input - analog signal Software selectable</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>EARTH</td>
<td>Internally connected to driver housing</td>
<td></td>
</tr>
</tbody>
</table>

25.2 USB connector - M12 - 5 pin always present

<table>
<thead>
<tr>
<th>CABLE ENTRANCE</th>
<th>PIN</th>
<th>SIGNAL</th>
<th>TECHNICAL SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1</td>
<td>+5V_USB</td>
<td>Power supply</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>ID</td>
<td>Identification</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>GND_USB</td>
<td>Signal zero data line</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>D-</td>
<td>Data line -</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>D+</td>
<td>Data line +</td>
</tr>
</tbody>
</table>

25.3 BC fieldbus execution connections

<table>
<thead>
<tr>
<th>CABLE ENTRANCE</th>
<th>PIN</th>
<th>SIGNAL</th>
<th>TECHNICAL SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>14</td>
<td>CAN_L</td>
<td>Bus line (low)</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>CAN_SHLD</td>
<td>Shield</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>CAN_GND</td>
<td>Signal zero data line</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>CAN_H</td>
<td>Bus line (high)</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>not used</td>
<td>Pass-through connection (1)</td>
</tr>
</tbody>
</table>

(1) pin 19 and 22 can be fed with external +5V supply of CAN interface

25.4 BP fieldbus execution connections

<table>
<thead>
<tr>
<th>CABLE ENTRANCE</th>
<th>PIN</th>
<th>SIGNAL</th>
<th>TECHNICAL SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>14</td>
<td>SHIELD</td>
<td>Bus line (low)</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>+5V</td>
<td>Power supply</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>DGND</td>
<td>Data line and termination signal zero</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>LINE_B</td>
<td>Bus line (low)</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>LINE_A</td>
<td>Bus line (high)</td>
</tr>
</tbody>
</table>

25.5 EH fieldbus execution connections

<table>
<thead>
<tr>
<th>CABLE ENTRANCE</th>
<th>PIN</th>
<th>SIGNAL</th>
<th>TECHNICAL SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>14</td>
<td>NC</td>
<td>do not connect</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>TX-</td>
<td>Transmitter</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>TX+</td>
<td>Transmitter</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>RX-</td>
<td>Receiver</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>RX+</td>
<td>Receiver</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CABLE ENTRANCE</th>
<th>PIN</th>
<th>SIGNAL</th>
<th>TECHNICAL SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>13</td>
<td>NC</td>
<td>do not connect</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>TX-</td>
<td>Transmitter</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>TX+</td>
<td>Transmitter</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>RX-</td>
<td>Receiver</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>RX+</td>
<td>Receiver</td>
</tr>
</tbody>
</table>
CABLE ENTRANCE OVERVIEW

Cables entrance description:

1. main connections
2. USB connector always present (factory plugged)
3. fieldbus interface (input)
4. fieldbus interface (output)
5. threaded plug

PRESSURE TRANSUDER CONNECTION
factory wired

FRONT

TERMINAL BOARD AND FIELDBUS TERMINATOR

Remove the 4 screws of driver’s rear cover to access terminal board and fieldbus terminator

WARNING: the above operation must be performed in a safety area

Terminal board - see section 24
Fieldbus terminator only for BC and BP executions (1)

BC - CANopen setting:

<table>
<thead>
<tr>
<th>Switch</th>
<th>Termination enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OFF</td>
</tr>
<tr>
<td>2</td>
<td>OFF</td>
</tr>
<tr>
<td>3</td>
<td>OFF</td>
</tr>
<tr>
<td>4</td>
<td>ON</td>
</tr>
</tbody>
</table>

BP - PROFIBUS DP setting:

<table>
<thead>
<tr>
<th>Switch</th>
<th>Termination enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ON</td>
</tr>
<tr>
<td>2</td>
<td>ON</td>
</tr>
<tr>
<td>3</td>
<td>ON</td>
</tr>
<tr>
<td>4</td>
<td>OFF</td>
</tr>
</tbody>
</table>

USB CONNECTOR

USB E-C-SB-USB/M12
USB CABLE cable length 4m

PRESSURE TRANSUDER CONNECTION
(factory wired)

METALLIC PROTECTION CAP - supplied with the valves

PRESSURE TRANSUDER CONNECTION
(factory wired)

(1) Drivers with BC and BP fieldbus interface are delivered by default "Not Terminated". All switches are set OFF

(2) Pin layout always referred to driver’s view
### Communication interfaces

<table>
<thead>
<tr>
<th>Communication interfaces</th>
<th>To be ordered separately</th>
<th>Cable entrance overview</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cable gland entrance</td>
<td>Threaded plug entrance</td>
<td></td>
</tr>
<tr>
<td>NP</td>
<td>1</td>
<td>A</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cable entrance P are factory plugged
Cable entrance A is open for customers

<table>
<thead>
<tr>
<th>BC, BP, EH “via stub” connection</th>
<th>2</th>
<th>C1</th>
<th>A</th>
<th>1</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cable entrance A, C1, C2 are open for customers

<table>
<thead>
<tr>
<th>BC, BP, EH “daisy chain” connection</th>
<th>3</th>
<th>C1</th>
<th>C2</th>
<th>none</th>
<th>none</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cable entrance A, C1, C2 are open for customers

### FASTENING BOLTS AND SEALS

#### 27.1 RZMA valves

<table>
<thead>
<tr>
<th>RZMA-RES-*-010</th>
<th>RZMA-RES-*-030</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fastening bolts:</strong></td>
<td><strong>Fastening bolts:</strong></td>
</tr>
<tr>
<td>4 socket head screws M5x50 class 12.9</td>
<td>4 socket head screws M5x50 class 12.9</td>
</tr>
<tr>
<td>Tightening torque = 8 Nm</td>
<td>Tightening torque = 8 Nm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Seals:</strong></th>
<th><strong>Seals:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 OR 108</td>
<td>4 OR 108</td>
</tr>
<tr>
<td>Diameter of ports P, T: Ø 5 mm</td>
<td>Diameter of ports P, T: Ø 7.5 mm</td>
</tr>
</tbody>
</table>

#### 27.2 AGMZA valves

<table>
<thead>
<tr>
<th>AGMZA-RES-*-10</th>
<th>AGMZA-RES-*-20</th>
<th>AGMZA-RES-*-32</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fastening bolts:</strong></td>
<td><strong>Fastening bolts:</strong></td>
<td><strong>Fastening bolts:</strong></td>
</tr>
<tr>
<td>4 socket head screws M12x35 class 12.9</td>
<td>4 socket head screws M16x50 class 12.9</td>
<td>4 socket head screws M20x60 class 12.9</td>
</tr>
<tr>
<td>Tightening torque = 125 Nm</td>
<td>Tightening torque = 300 Nm</td>
<td>Tightening torque = 600 Nm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Seals:</strong></th>
<th><strong>Seals:</strong></th>
<th><strong>Seals:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 OR 123</td>
<td>2 OR 4112</td>
<td>2 OR 4131</td>
</tr>
<tr>
<td>Diameter of ports P, T: Ø 14 mm</td>
<td>Diameter of ports P, T: Ø 24 mm</td>
<td>Diameter of ports P, T: Ø 28 mm</td>
</tr>
<tr>
<td>1 OR 109/70</td>
<td>1 OR 109/70</td>
<td>1 OR 109/70</td>
</tr>
<tr>
<td>Diameter of port X: Ø 3.2 mm</td>
<td>Diameter of port X: Ø 3.2 mm</td>
<td>Diameter of port X: Ø 3.2 mm</td>
</tr>
</tbody>
</table>
### INSTALLATION DIMENSIONS FOR RZMA [mm]

**RZMA-RES-**-010
ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
(without ports A and B)

<table>
<thead>
<tr>
<th>Mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>RZMA-RES-**-010</td>
</tr>
</tbody>
</table>

1 = Air bleed off
2 = Space to remove the USB connector
3 = The dimensions of cable glands must be considered (see tech table KX800)

---

**RZMA-RES-**-030
ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
(ports A and B connected to port T)

<table>
<thead>
<tr>
<th>Mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>RZMA-RES-**-030</td>
</tr>
</tbody>
</table>

1 = Air bleed off
2 = Space to remove the USB connector
3 = The dimensions of cable glands must be considered (see tech table KX800)
AGMZA-RES-*-10
ISO 6264: 2007
Mounting surface: 6264-06-09-1-97
(see table P005)

| Mass [kg] | AGMZA-RES-*-10 | 12,1 |

AGMZA-RES-*-20
ISO 6264: 2007
Mounting surface: 6264-08-13-1-97
(see table P005)

| Mass [kg] | AGMZA-RES-*-20 | 13,3 |

AGMZA-RES-*-32
ISO 6264: 2007
Mounting surface: 6264-10-17-1-97
(with M20 fixing holes instead of standard M18)
(see table P005)

| Mass [kg] | AGMZA-RES-*-32 | 15,3 |

1 = Air bleed off
2 = Space to remove the USB connector
3 = The dimensions of cable glands must be considered
   (see tech table KX800)