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

RZMA-RES-P-BC-10-*

**MODEL CODE**

<table>
<thead>
<tr>
<th>RZMA</th>
<th>RES</th>
<th>P</th>
<th>NP</th>
<th>010</th>
<th>315</th>
<th>M</th>
<th>*</th>
<th>*</th>
<th>*</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex-proof proportional pressure relief valves</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RZMA = subplate size 06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGMZA = subplate size 10, 20, 32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RES = on-board driver</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P = on-board ex-proof pressure transducer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Seals material**, see section:  
- = NBR  
PE = FKM  
BT = HNBR  

**Series number**

- Dynamic response preset, see section  
1 = omit for PID 1 fast (default)  
2 = PID 2 standard  
3 = PID 3 smooth  

- 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  

**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  

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

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

| 1 | CONFIGURATIONS AND HYDRAULIC SYMBOLS (representation according to ISO 1219-1) |
|---|---|---|
| RZMA-RES-*-010 | RZMA-RES-*-030 | AGMZA-RES-* |

---

Replaces F650-4 /E
3 GENERAL NOTES
Atos digital proportionals 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)
- **E-W-/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 spay test (EN ISO 9227) &gt; 200 h</td>
</tr>
</tbody>
</table>

Compliance

- Explosion proof protection, see section [9]
- Flame proof enclosure “Ex d”
- Dust ignition protection by enclosure “Ex t”
- RoHs Directive 2011/65/EU as last update by 2015/65/EU
- REACH Regulation (EC) n°1907/2006

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>Size code</td>
<td>010</td>
<td>030</td>
</tr>
<tr>
<td>Valve size</td>
<td></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>Response time 0-100% step signal (depending on installation) [ms]</td>
<td>≤60</td>
<td>≤90</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: \( V_{\text{in}} = 20 - 32 \text{ Vmax} \text{ (ripple max 10 % Vpp)} \)
- Max power consumption: 35 W
- Analog input signals:
  - Voltage: range \( \pm 10 \text{ VDC} \) (24 Vmax tolerant)
  - Input impedance: \( R_i > 50 \text{ k\Omega} \)
- 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 \( 0 - 10 \text{ VDC} \)
  - Current: range \( 0 - 20 \text{ mA} \) max 500 \text{ \Omega} load resistance
- Enable input:
  - Range: 0 - 9 VDC (OFF state), 15 - 24 VDC (ON state), 9 - 15 VDC (not accepted)
  - Input impedance: \( R_i > 50 \text{ k\Omega} \)
- Fault output:
  - Output range: 0 - 24 VDC
  - \( V_{\text{out}} \approx V_{\text{logic power supply}} \) (OFF state) \( \approx 0 \text{ V} \) (ON state)
- Pressure transducer power supply: +24 VDC \( \max 100 \text{ mA} \) (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
    - IP66/7 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
    - PROFINET
  - Communication physical layer:
    - Not insulated
    - USB 2.0 + USB OTG
    - Optical insulated
    - USB 1.1/2.0
    - CAN ISO11898
    - Optical isolated
    - RS485
  - Fast Ethernet, insulated

Note: a maximum time of 500 ms (depending on communication type) have to 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 ÷ 60°C, with HFC hydraulic fluids = -20°C ÷ 50°C
  - FKM seals (PIE option) = -20°C ÷ 80°C
  - HNBR seals (BT option) = -40°C ÷ 60°C, with HFC hydraulic fluids = -40°C ÷ 50°C
- Recommended viscosity:
  - 20÷100 mm²/s - max allowed range 15 ÷ 380 mm²/s
- Max fluid contamination level:
  - ISO4406 class 18/16/13 NAS1638 class 7
  - ISO4406 class 16/14/11 NAS1638 class 5
  - 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, HVLDP
    - DIN 51524
  - Flame resistant without water
    - FKM
    - HFDU, HFDR
    - DIN 51524
  - Flame resistant with water (1)
    - NBR, HNBR
    - HFC
    - ISO 12922
  - Flame resistant with water (2)

WARNING: service work performed on the valve by the end users or not qualified personnel invalidates the certification

10 CERTIFICATION DATA

- Valve type: RZMA, AGMZA
- Certifications: Multicertification Group II
  - ATEX
  - IECEx
- Solenoid 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 Gb
    - Ex II 2D Ex tb IIIC T85°C/T100°C/T135°C Dc
  - IECEx
    - Ex db IIC T6/T5/T4 Gb
    - Ex tb IIIC T85°C/T100°C/T135°C Dc
- Temperature class:
  - T6
    - \( T_6 \leq 85 °C \)
    - \( T_6 \leq 100 °C \)
    - \( T_6 \leq 135 °C \)
  - T5
  - T4
- Surface temperature:
  - \( -40 +40 °C \)
  - \( -40 +55 °C \)
  - \( -40 +70 °C \)
- Ambient temperature (2):
  - \( -40 +40 °C \)
  - \( -40 +55 °C \)
  - \( -40 +70 °C \)
- Applicable standards:
  - EN 60079-0
  - EN 60079-1
  - IEC 60079-0
  - IEC 60079-1
- Cable entrance: threaded connection
  - M = M20x1.5

WARNING: service work performed on the valve by the end users or not qualified personnel invalidates the certification

(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.
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 Vdc. The input signal can be reconfigured via software selecting between voltage and current, within a maximum range of ±10 Vdc 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 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
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 μF/40 V capacitance to single phase rectifiers or a 4700 μF/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 μF/40 V capacitance to single phase rectifiers or a 4700 μF/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 /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 /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
# 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>Gnd - power supply</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>V+</td>
<td>Power supply 24 Vcc</td>
<td>Input - power supply</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>VL0</td>
<td>Power supply 0 Vcc for driver’s logic and communication</td>
<td>Gnd - power supply</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>VL+</td>
<td>Power supply 24 Vcc for driver’s logic and communication</td>
<td>Input - power supply</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>FAULT</td>
<td>Fault (0 Vcc) or normal working (24 Vcc), referred to VLO</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 VLO</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 - analog 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></td>
<td></td>
<td>Default is: 0 ÷ 10 Vcc for standard and 4 ÷ 20 mA for /I option</td>
<td>Software selectable</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</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>

Driver view

```
1 2 3 (female) 4 5
```

## 25.3 BC fieldbus execution connections

<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>C1</td>
<td>14</td>
<td>CAN_L</td>
<td>Bus line (low)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>CAN_SHLD</td>
<td>Shield</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>CAN_GND</td>
<td>Signal zero data line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>CAN_H</td>
<td>Bus line (high)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>not used</td>
<td>Pass-through connection (1)</td>
<td></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>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>14</td>
<td>SHIELD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>+5V</td>
<td>Power supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>DGND</td>
<td>Data line and termination signal zero</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>LINE_B</td>
<td>Bus line (low)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>LINE_A</td>
<td>Bus line (high)</td>
<td></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>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>14</td>
<td>NC</td>
<td>do not connect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>TX-</td>
<td>Transmitter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>TX+</td>
<td>Transmitter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>RX-</td>
<td>Receiver</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>RX+</td>
<td>Receiver</td>
<td></td>
</tr>
</tbody>
</table>

<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>C2</td>
<td>13</td>
<td>NC</td>
<td>do not connect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>TX-</td>
<td>Transmitter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>TX+</td>
<td>Transmitter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>RX-</td>
<td>Receiver</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>RX+</td>
<td>Receiver</td>
<td></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 TRANSDUCER CONNECTION
(factory wired)

TERMINAL BOARD AND FIELD BUS 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)

USB CONNECTOR

E-C-SB-USB/M12
USB CABLE
(length 4m)

METALLIC PROTECTION CAP - supplied with the valves

(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
### 26.1 Cable glands and threaded plug - see tech table KX800

<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 quantity</td>
<td>Threaded plug quantity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>entrance</td>
<td>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>none</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC, BP, EH &quot;via stub&quot; connection</td>
<td>2</td>
<td>C1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td></td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC, BP, EH &quot;daisy chain&quot; connection</td>
<td>3</td>
<td>C1</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>C2</td>
<td></td>
<td>none</td>
</tr>
</tbody>
</table>

- Cable entrance P are factory plugged
- Cable entrance A is open for costumers
- Cable entrance A, C1, C2 are open for costumers

### 27 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>
<tr>
<td><strong>Seals:</strong></td>
<td><strong>Seals:</strong></td>
</tr>
<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>
<tr>
<td><strong>Seals:</strong></td>
<td><strong>Seals:</strong></td>
<td><strong>Seals:</strong></td>
</tr>
<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>
RZMA-RES-\*-010
ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
(without ports A and B)

Mass [kg]

| RZMA-RES-\*-010 | 8.5 |

---

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

Mass [kg]

| RZMA-RES-\*-030 | 9.5 |

---

1 = Air bleed off
2 = Space to remove the USB connector
3 = The dimensions of cable glands must be considered (see tech table KX800)
### INSTALLATION DIMENSIONS FOR AGMZA [mm]

#### AGMZA-RES-*-10

**ISO 6264: 2007**  
Mounting surface: 6264-06-09-1-97  
(see table P005)

<table>
<thead>
<tr>
<th>Mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGMZA-RES-*-10</td>
</tr>
</tbody>
</table>

#### AGMZA-RES-*-20

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

<table>
<thead>
<tr>
<th>Mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGMZA-RES-*-20</td>
</tr>
</tbody>
</table>

#### AGMZA-RES-*-32

**ISO 6264: 2007**  
Mounting surface: 6264-08-13-1-97  
(with M20 fixing holes instead of standard M18)  
(see table P005)

<table>
<thead>
<tr>
<th>Mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGMZA-RES-*-32</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)

---

### RELATED DOCUMENTATION

- **X010**: Basics for electrohydraulics in hazardous environments  
- **X020**: Summary of Atos ex-proof components certified to ATEX, IECEx, EAC, PESO  
- **FX900**: Operating and maintenance information for ex-proof proportional valves  
- **GS500**: Programming tools  
- **GS510**: Fieldbus  
- **GX800**: Ex-proof pressure transducer type E-ATRA-7  
- **KX800**: Cable glands for ex-proof valves  
- **P005**: Mounting surfaces for electrohydraulic valves