Ex-proof digital proportional directional valves
Direct operated, without position transducer, with positive spool overlap ATEX and IECEx

DKZA-AES-NP-17*

DKZA: Size: 06 - ISO 4401
Max flow: 60 l/min
Max pressure: 350 bar

DKZA: Size: 10 - ISO 4401
Max flow: 120 l/min
Max pressure: 315 bar

Table FX110-0/E
Replaces F650-4/E

DHZA-AES, DKZA-AES
Ex-proof digital proportional valves direct operated, without position transducer and with positive spool overlap, for open loop directional controls and not compensated flow regulations. They are equipped with ex-proof on-board digital driver and proportional solenoids 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 integral digital driver and solenoid 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.

DHZA:
Size: 06 - ISO 4401
Max flow: 60 l/min
Max pressure: 350 bar

DKZA:
Size: 10 - ISO 4401
Max flow: 120 l/min
Max pressure: 315 bar

Seals material:
see section 8
NBR = NBR
FKM = FKM
HNBR = HNBR

Hydraulic options (1):
B = solenoid with integral digital electronics at side of port A (2)
Y = external drain
Electronic options (1):
C = current feedback for pressure transducer 4 ÷ 20 mA, only for W
(omit for std voltage 0 ÷ 10 Vac)
I = current reference input 4 ÷ 20 mA
(omit for std voltage ±10 VDC)
W = power limitation function

Spool size:
14 (L) 1 (L) 2 (S) 3 (L,S,D) 5 (L,S,D)

DHZA
1 4.5 8 18 28

DKZA
- - - 45 60

Nominal flow (l/min) at Δp 10 bar P-T

Cable entrance threaded connection:
M = M20x1.5

Spool type - regulating characteristics:
L = linear
S = progressive
D = differential-progressive
P-A = Q, B-T = Q/2
P-B = Q/2, A-T = Q

(1) For possible combined options, see section 14
(2) In standard configuration the solenoid with integral electronics and position transducer are at side port B
2 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 F003 and in the user manuals included in the E-SW-* programming software.

3 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) EI (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-SW-USB/M12 cable, the use of isolator adapter is highly recommended for PC protection

**WARNING:** Bluetooth adapter is available only for European, USA and Canadian markets!

Bluetooth adapter is certified according RED (Europe), FCC (USA) and iSED (Canada) directives

4 FIELDBUS - see tech. table GS510

Fieldbus allows valve direct communication with machine control unit for digital reference, valve diagnostics and settings. These execution allow to operate the valves through fieldbus or analog signals available on the terminal board.

5 GENERAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Assembly position</th>
<th>Any position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subplate surface finishing</td>
<td>Roughness index, Ra 0.4 flatness ratio 0.01/100 (ISO 1101)</td>
</tr>
<tr>
<td>MTTFd valves according to EN ISO 13849</td>
<td>150 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 (body) anodization (solenoid housing)</td>
</tr>
<tr>
<td>Compliance</td>
<td>Explosion proof protection, see section 1</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Valve model</th>
<th>DHZA</th>
<th>DKZA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure limits [bar]</td>
<td>ports P, A, B = 350; T = 210 (250 with external drain /Y); Y = 10</td>
<td>ports P, A, B = 315; T = 210 (250 with external drain /Y); Y = 10</td>
</tr>
<tr>
<td>Configuration</td>
<td>51, 53, 71, 73</td>
<td>70</td>
</tr>
<tr>
<td>Spool type</td>
<td>L14</td>
<td>L1</td>
</tr>
<tr>
<td>Nominal flow [l/min]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔP= 10 bar</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>ΔP= 30 bar</td>
<td>4.5</td>
<td>8</td>
</tr>
<tr>
<td>Max flow</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>ΔP max P-T</td>
<td>28</td>
<td>50</td>
</tr>
<tr>
<td>Response time [ms] (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leakage [cm³/min]</td>
<td>&lt;30 (at P = 100 bar); &lt;135 (at P = 350 bar)</td>
<td>&lt;80 (at P = 100 bar); &lt;600 (at P = 315 bar)</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>≤ 5 [% of max regulation]</td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>± 1 [% of max regulation]</td>
<td></td>
</tr>
</tbody>
</table>

(1) 0 ÷ 100% step signal
### ELECTRICAL CHARACTERISTICS

**Power supplies**
- Nominal: +24 VDC
- Rectified and filtered: \( V_{RMS} = 20 \pm 32 \times V_{MAX} \) (ripple max 10 % \( V_{P-P} \))

**Max power consumption**
- 35 W

**Analog input signals**
- Voltage: range \( +10 \) VDC (24 VMAX tolerant)  
- Input impedance: \( R_i > 50 \, k\Omega \)

**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: maximum range \( \pm 5 \) VDC \( \leq \max 5 \) mA

**Enable input**
- Range: 0 \( \leq \) 9 VDC (OFF state), 15 \( \leq \) 24 VDC (ON state), 9 \( \leq \) 15 VDC (not accepted); Input impedance: \( R_i > 87 \, k\Omega \)

**Fault output**
- Output range: 0 \( \leq \) 24 VDC (ON state \( \cong \) VL [logic power supply]; OFF state \( \cong \) 0 V) \( \leq \max 50 \) mA; external negative voltage not allowed (e.g. due to inductive loads)

**Pressure transducer power supply (only W option)**
- 24VDC \( \leq \max 100 \) mA (E-ATRA-7 see tech table GX800)

**Alarms**
- Solenoid not connected/short circuit, cable break with current reference signal; over/under temperature, current control monitoring, power supplies level, pressure transducer failure (W option)

**Protection degree to DIN EN60529**
- P66/67 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
- EN50170-2/IEC61158
- Fast Ethernet, insulated

**Communication physical layer**
- Not insulated
- USB 2.0 + USB OTG
- Optical insulated
- CAN ISO11898
- RS485
- Optical insulated

**Pressure transducer power supply**
- USB 2.0 + USB OTG
- Optical insulated
- CAN ISO11898
- RS485

**Hydraulic fluid**

<table>
<thead>
<tr>
<th>Hydraulic fluid</th>
<th>Suitable seals type</th>
<th>Classification</th>
<th>Ref. Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral oils</td>
<td>NBR, FKM, HNBR</td>
<td>H, HLP, HLPD, HVL, HVLDP</td>
<td>DIN 51524</td>
</tr>
<tr>
<td>Flame resistant without water</td>
<td>FKM</td>
<td>HFUD, HFDR</td>
<td>ISO 12922</td>
</tr>
<tr>
<td>Flame resistant with water (1)</td>
<td>NBR, HNBR</td>
<td>HFC</td>
<td></td>
</tr>
</tbody>
</table>

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

**Recommended viscosity**
- 20 \( \pm 100 \) mm²/s - max allowed range 15 \( \pm 380 \) mm²/s

**Max fluid contamination level**
- ISO4406 class 18/16/13 NAS1638 class 7
- ISO4406 class 16/14/11 NAS1638 class 5

**WARNING:** 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.

### CERTIFICATION DATA

**Valve type**
- DHZA, DKZA

**Certifications**
- Multicertification and Group II
- ATEX, IECEx

**Solenoïd certified code**
- OZA-AES

**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 Gb
- Ex II 2D Ex tb IIIC T85°C/T100°C Db

**Temperature class**
- T6
- T5
- T4

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>T6</th>
<th>T5</th>
<th>T4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>≤85°C</td>
<td>≤100°C</td>
<td>≤135°C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-40°C \leq T &lt; +40°C</td>
<td>-40°C \leq T &lt; +55°C</td>
<td>-40°C \leq T &lt; +70°C</td>
</tr>
</tbody>
</table>

**Applicable Standards**
- EN ISO 7888-0: 2012 + A1:2013
- EN ISO 7888-1:2014
- IEC 60079-0:2012 + A11:2013
- IEC 60079-1:2014
- IEC 60079-31:2013
- IEC 60079-1:2014
- IEC 60079-31:2013
- IEC 60079-1:2014

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

---

(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.
10 CABLE SPECIFICATION AND TEMPERATURE - Power supply and grounding cables have to comply with following characteristics:

<table>
<thead>
<tr>
<th>Power supply: section of coil connection wire = 2.5 mm²</th>
<th>Grounding: section of internal ground wire = 2.5 mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>section of external ground wire = 4 mm²</td>
<td></td>
</tr>
</tbody>
</table>

10.1 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.

<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>T4</td>
<td>135 °C</td>
<td>90 °C</td>
</tr>
<tr>
<td>45 °C</td>
<td>T4</td>
<td>135 °C</td>
<td>95 °C</td>
</tr>
<tr>
<td>55 °C</td>
<td>T3</td>
<td>200 °C</td>
<td>110 °C</td>
</tr>
<tr>
<td>70 °C</td>
<td>T3</td>
<td>200 °C</td>
<td>120 °C</td>
</tr>
</tbody>
</table>

11 CABLE GLANDS
Cable glands with threaded connection M20x1.5 for standard or armoured cables have to be ordered separately, see tech table KX600
Note: a Loctite sealant type 545, should be used on the cable gland entry threads

12 HYDRAULIC OPTIONS
B = Solenoid, integral electronics and position transducer at side of port A of the main stage. For hydraulic configuration vs reference signal, see 15.1
Y = Option /Y is mandatory if the pressure in port T exceeds 210 bar

13 ELECTRONIC OPTIONS
I = It provides 4 ÷ 20 mA current reference signal, instead of the standard ±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.
C = Only in combination with option /W
It is available to connect pressure transducer with 4 ÷ 20 mA current output 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.

W = Only for valves coupled with pressure compensator type HC-011 or KC-011 (see tech table D150).
It provides the hydraulic power limitation function. The driver receives the flow reference signal by the analog input INPUT+ and a pressure transducer, installed in the hydraulic system, has to be connected to the driver’s analog input TR. When the actual requested hydraulic power p1 x Q1 (TR x INPUT+) reaches the max power limit (p1 x Q1), internally set by software, the driver automatically reduces the flow regulation of the valve. The higher is the pressure feedback the lower is the valve’s regulated flow:

\[ \text{Flow regulation} = \min \left( \frac{\text{Power Limit [sw setting]}}{\text{Transducer Pressure [TR]}}, \text{Flow Reference [INPUT+]} \right) \]

Hydraulic Power Limitation - option /W

14 POSSIBLE COMBINED OPTIONS:
/BI, /BW, /BY, /IW, /IWY, /BYW, /BWY, /IWY, /CWBI, /CWBY
15 Regulation diagrams - values measure at Δp 30 bar P-T

1. DHZA 1 = L14, 2 = L1

2. DHZA 3 = S2

3. DHZA 4 = L3, 5 = S3, 6 = D3

4. DHZA 7 = L5, 8 = S5, 9 = D5

5. DKZA 10 = L3, 11 = S3, 12 = D3

6. DKZA 13 = L5, 14 = S5, 15 = D5
**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).

### 16.1 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.

### 16.2 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.

### 16.3 Flow reference input signal (INPUT+)

The driver controls in closed loop the valve spool position proportionally to the external reference input signal.

Reference input signal is factory preset according to selected valve code, defaults are ±10 VDC 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 VDC or ±20 mA.

Drivers with fieldbus interface can be software set to receive reference signal directly from the machine control unit (fieldbus reference). Analog reference input signal can be used as on-off commands with input range 0 ÷ 24 VDC.

### 16.4 Monitor output signals (MONITOR and MONITOR2)

The driver generates an analog output signal (MONITOR) proportional to the actual coil current 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, default settings is ±5 VDC (1V = 1A).

Output signal can be reconfigured via software, within a maximum range of ±5 VDC.

**Option /W**

The driver generates a second analog output signal (MONITOR2) proportional to the actual system pressure.

The output maximum range is ±5 VDC; default setting is 0 ÷ 5 VDC.

### 16.5 Enable input signal (ENABLE)

To enable the driver, supply a 24 V DC 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.

### 16.6 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 VDC, normal working corresponds to 24 VDC. Fault status is not affected by the Enable input signal. Fault output signal can be used as digital output by software selection.

### 16.7 Remote Pressure Transducer Input signal (TR) - only for /W option

Analog pressure transducers can be directly connected to the driver.

Analog input signal is factory preset according to selected valve code, defaults are 0 ÷ 10 VDC for standard and 4 ÷ 20 mA for /C option.

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

Note: transducer feedback can be read as a digital information through fieldbus communication - software selectable.

---

**TERMINAL BOARD OVERVIEW**

![Terminal Board Diagram](image-url)

(1) Connections available only for /W option

(2) For BC and BP executions the fieldbus connections have an internal pass-through connection.
18 ELECTRONIC CONNECTIONS

18.1 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 Vdc</td>
<td>Gnd - power supply</td>
</tr>
<tr>
<td>A</td>
<td>2</td>
<td>V+</td>
<td>Power supply 24 Vdc</td>
<td>Input - power supply</td>
</tr>
<tr>
<td>A</td>
<td>3</td>
<td>VL0</td>
<td>Power supply 0 Vdc: for driver’s logic and communication</td>
<td>Gnd - power supply</td>
</tr>
<tr>
<td>A</td>
<td>4</td>
<td>VL+</td>
<td>Power supply 24 Vdc: for driver’s logic and communication</td>
<td>Input - power supply</td>
</tr>
<tr>
<td>A</td>
<td>5</td>
<td>FAULT</td>
<td>Fault (0 Vdc) or normal working (24 Vdc), referred to VL0</td>
<td>Output - on/off signal</td>
</tr>
<tr>
<td>A</td>
<td>6</td>
<td>ENABLE</td>
<td>Enable (24 Vdc) or disable (0 Vdc) the driver, referred to VL0</td>
<td>Input - on/off signal</td>
</tr>
<tr>
<td>A</td>
<td>7</td>
<td>AGND</td>
<td>Analog ground</td>
<td>Gnd - analog signal</td>
</tr>
<tr>
<td>A</td>
<td>8</td>
<td>INPUT-</td>
<td>Negative reference input signal for INPUT+</td>
<td>Input - on/off signal</td>
</tr>
<tr>
<td>A</td>
<td>9</td>
<td>MONITOR</td>
<td>Monitor output signal: ±5 Vdc maximum range, referred to AGND</td>
<td>Output - analog signal</td>
</tr>
<tr>
<td>A</td>
<td>10</td>
<td>INPUT+</td>
<td>Reference input signal: ±10 Vdc / ±20 mA maximum range (4 – 20 mA only for /I option)</td>
<td>Software selectable</td>
</tr>
<tr>
<td>A</td>
<td>11</td>
<td>MONITOR2</td>
<td>2nd monitor output signal: ±5 Vdc maximum range, referred to AGND (1)</td>
<td>Software selectable</td>
</tr>
<tr>
<td>A</td>
<td>31</td>
<td>EARTH</td>
<td>Internally connected to driver housing</td>
<td></td>
</tr>
</tbody>
</table>

(1) 2nd monitor output signal is available only for /W option

18.2 USB connector - M12 - 5 pin

<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>B</td>
<td>2</td>
<td>ID</td>
<td>Identification</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>GND_USB</td>
<td>Signal zero data line</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>D-</td>
<td>Data line -</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>D+</td>
<td>Data line +</td>
</tr>
</tbody>
</table>

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

18.3 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>C1</td>
<td>16</td>
<td>CAN_SHLD</td>
<td>Shield</td>
</tr>
<tr>
<td>C1</td>
<td>18</td>
<td>CAN_GND</td>
<td>Signal zero data line</td>
</tr>
<tr>
<td>C1</td>
<td>20</td>
<td>CAN_H</td>
<td>Bus line (high)</td>
</tr>
<tr>
<td>C1</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

18.4 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></td>
</tr>
<tr>
<td>C1</td>
<td>16</td>
<td>+5V</td>
<td>Power supply</td>
</tr>
<tr>
<td>C1</td>
<td>18</td>
<td>DGN_D</td>
<td>Data line and termination signal zero</td>
</tr>
<tr>
<td>C1</td>
<td>20</td>
<td>LINE_B</td>
<td>Bus line (low)</td>
</tr>
<tr>
<td>C1</td>
<td>22</td>
<td>LINE_A</td>
<td>Bus line (high)</td>
</tr>
</tbody>
</table>

18.5 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>C1</td>
<td>16</td>
<td>TX_-</td>
<td>Transmitter</td>
</tr>
<tr>
<td>C1</td>
<td>18</td>
<td>TX_+</td>
<td>Transmitter</td>
</tr>
<tr>
<td>C1</td>
<td>20</td>
<td>RX_-</td>
<td>Receiver</td>
</tr>
<tr>
<td>C1</td>
<td>22</td>
<td>RX_+</td>
<td>Receiver</td>
</tr>
</tbody>
</table>

18.6 Remote pressure transducer connector - only for /W option

<table>
<thead>
<tr>
<th>CABLE ENTRANCE</th>
<th>PIN</th>
<th>SIGNAL</th>
<th>TECHNICAL SPECIFICATIONS</th>
<th>NOTES</th>
<th>Voltage</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>34</td>
<td>TR</td>
<td>Signal transducer ±10 Vdc / ±20 mA maximum range</td>
<td>Input - analog signal</td>
<td>Connect</td>
<td>Connect</td>
</tr>
<tr>
<td>D</td>
<td>35</td>
<td>AGND</td>
<td>Common grid for transducer power and signals</td>
<td>Common grid</td>
<td>Connect</td>
<td>/</td>
</tr>
<tr>
<td>D</td>
<td>36</td>
<td>VF +24V</td>
<td>Power supply +24Vc</td>
<td>Output - power supply</td>
<td>Connect</td>
<td>Connect</td>
</tr>
</tbody>
</table>
**E-ATRA remote pressure transducer connection - example**

For /W option

**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 Pressure transducer (only /W option)
- ⑥ Threaded plug

**COIL CONNECTION**

Only for double solenoid version - factory wired
(for single solenoid version - factory plugged)

**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

**USB CONNECTOR**

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
19.1 Cable glands and threaded plug for AES - without pressure transducer

<table>
<thead>
<tr>
<th>Communication interfaces</th>
<th>To be ordered separately</th>
<th>Cable gland entrance quantity</th>
<th>Threaded plug entrance quantity</th>
<th>Cable entrance overview</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP</td>
<td>1</td>
<td>A none none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC, BP, EH &quot;via stub&quot; connection</td>
<td>2</td>
<td>C1 A 1 C2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC, BP, EH &quot;daisy chain&quot; connection</td>
<td>3</td>
<td>C1 C2 A none none</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19.2 Cable glands and threaded plug for AES/W - with pressure transducer

<table>
<thead>
<tr>
<th>Communication interfaces</th>
<th>To be ordered separately</th>
<th>Cable gland entrance quantity</th>
<th>Threaded plug entrance quantity</th>
<th>Cable entrance overview</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP</td>
<td>2</td>
<td>D A none none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC, BP, EH &quot;via stub&quot; connection</td>
<td>3</td>
<td>D C1 A 1 C2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC, BP, EH &quot;daisy chain&quot; connection</td>
<td>4</td>
<td>D C1 - C2 A none none</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20 FASTENING BOLTS AND SEALS

<table>
<thead>
<tr>
<th>DHZA</th>
<th>DKZA</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 M6x40 class 12.9</td>
</tr>
<tr>
<td>Tightening torque = 8 Nm</td>
<td>Tightening torque = 15 Nm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Seals:</strong></th>
<th><strong>Seals:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>4 OR 108; Diameter of ports A, B, P, T: Ø 7,5 mm (max)</td>
<td>5 OR 2050; Diameter of ports A, B, P, T: Ø 11,2 mm (max)</td>
</tr>
<tr>
<td>1 OR 2025 Diameter of port Y: Ø = 3,2 mm (only for /Y option)</td>
<td>1 OR 108 Diameter of port Y: Ø = 5 mm (only for /Y option)</td>
</tr>
</tbody>
</table>
ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
(for /Y surface: 4401-03-03-0-05 without port X)

<table>
<thead>
<tr>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHZA-AES-05</td>
</tr>
<tr>
<td>DHZA-AES-07*</td>
</tr>
</tbody>
</table>

1 = Air bleed off
2 = Space to remove the connectors
3 = The dimensions of cable glands must be considered (see tech table KX600)
ISO 4401: 2005
Mounting surface: 4401-05-04-0-05 (see table P005)
(for /Y surface: 4401-05-05-0-05 without port X)

<table>
<thead>
<tr>
<th></th>
<th>Mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>DKZA-AES-15</td>
<td>10</td>
</tr>
<tr>
<td>DKZA-AES-17</td>
<td>11.7</td>
</tr>
</tbody>
</table>

DKZA-AES-15*

DKZA-AES-15*/B

DKZA-AES-17*

DKZA-AES-17*/B

1 = Air bleed off
2 = Space to remove the connectors
3 = The dimensions of cable glands must be considered (see tech table KX600)

RELATED DOCUMENTATION

X010 General guideline for ex-proof components
TT373 Safety instruction for Multicertification Atex, IECEx, EAC - Group II
GS003 Settings for digital proportionals
GS500 Programming tools
GS510 Fieldbus

KX600 Cable glands for ex-proof valves
P005 Mounting surfaces for electrohydraulic valves