

Digital electronic AES drivers

integral-to-valve format, for proportional valves without transducer

**AES execution included in this table is available only for running supplies or spare parts
For new applications it is suggested new AEB and AES executions, see table GS115**

RZMO-AES-PS Serial

DHZO-AES-BC CANopen
BP PROFIBUS DP

DHZO-AES-EH EtherCAT

Connectors ③ and ④ not included, to be ordered separately

AES

Digital drivers ① supply and control the current to the solenoid of Atos proportional valves without transducer, according to the electronic reference input signal. The solenoid ② proportionally transforms the current into a force, acting on the valve spool or poppet, against a reacting spring, thus providing the valve's hydraulic regulation.

AES can drive single or double solenoid proportional valve.

The electronic main connector is fully interchangeable with the analog drivers one.

Atos PC software allows to customize the driver configuration to the specific application requirements.

Electrical Features:

- Functional factory preset parameters for best performances
- 7 pin main connector ③ for power supply, analog input reference and monitor signals
- 5 pin serial communication port ④ (always present)
- 5 pin CANopen or PROFIBUS DP communication connector ⑤
- 4 pin EtherCAT communication connectors ⑥ and ⑦ (input - output)
- /Q option 7 pin main connector for enable signal
- /Z option 12 pin main connector for additional double power supply, enable and fault signals
- /W option 5 pin connector ⑧ for external pressure transducer
- Electrical protection against reverse polarity of power supply
- IP67 protection degree
- CE mark according to EMC directive

Software Features:

- Intuitive graphic interface
- Setting of valve's functional parameters: bias, scale, ramps, dither
- Linearization function for hydraulic regulation
- Setting of valve's dynamic response to optimize the application performances
- Selection of analog IN / OUT range
- /W option software selectable max power limitation function (see 6.7)
- Complete diagnostics of driver status
- Internal oscilloscope function
- In field firmware update through serial communication port ④

1 VALVES RANGE

| Valves model | Pressure | | | | Directional | | Cartridge | Flow | Ex-proof proportional valves (1) |
|--------------|--------------|--------------|-------|--------|-------------|------|-------------------------|-----------------|----------------------------------|
| | RZMO | RZGO | AGMZO | AGRCZO | DHZO DKZOR | DPZO | LICZO LIMZO LIRZO | QVHZO QVKZOR | ATEX or IECEx certification |
| Data sheet | F007 F065 | F015 F070 | F035 | F050 | F160 | F170 | F300 | F410 | F650 |
| Driver model | AES | | | | | | | | |

Note: (1) AES drivers are available also in Ex-proof execution, refer to technical table F650

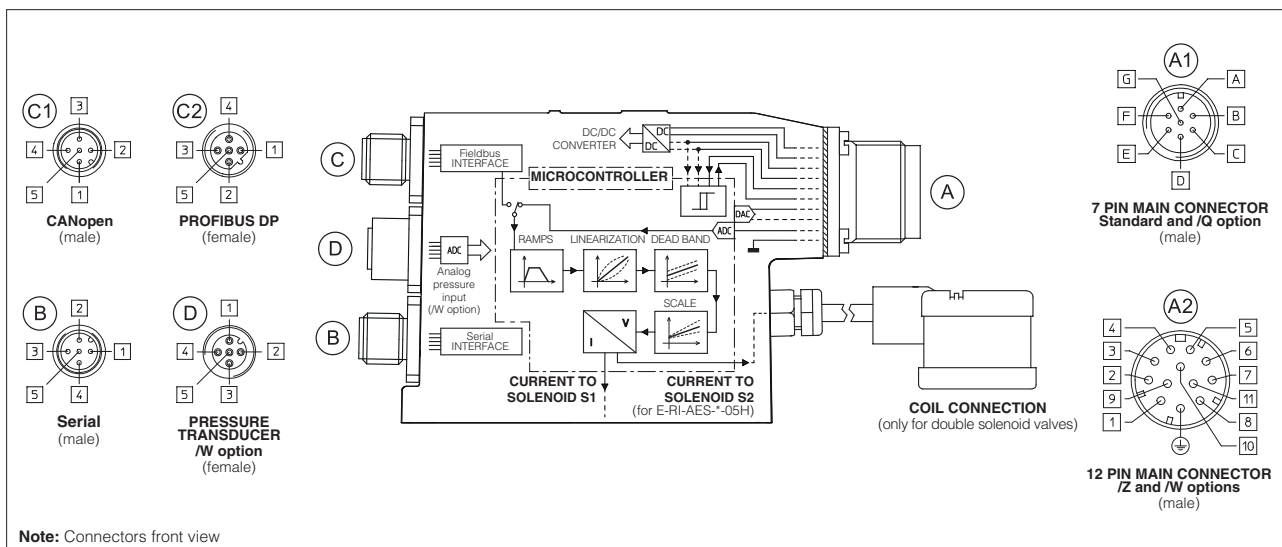
2 MAIN CHARACTERISTICS

| | | | | |
|-------------------------------------|--|-----------------------------------|--------------------------------|------------------------------|
| Power supply (see 4.1, 4.4) | Nominal : +24 V _{DC} Rectified and filtered : V _{RMS} = 21 ÷ 32 V _{MAX} (ripple max 10 % V _{PP}) | | | |
| Max power consumption | 50 W | | | |
| Reference input signal (see 4.2) | Voltage: range ±10 V _{DC} Input impedance: R _i > 50 kΩ Current: range ±20 mA Input impedance: R _i = 500 Ω | | | |
| Monitor output (see 4.3) | Output range : ±5 V _{DC} (max 5 mA) | | | |
| Enable input (see 4.5) | Range : 0 ÷ 9 V _{DC} (OFF state), 15 ÷ 24 V _{DC} (ON state), 9 ÷ 15 V _{DC} (not accepted); Input impedance: R _i > 37 kΩ | | | |
| Fault output (see 4.6) | Output range : 0 ÷ 24 V _{DC} (ON state ≅ VL+ [logic power supply] ; OFF state ≅ 0 V) @ max 50 mA | | | |
| Alarms | Solenoid not connected/short circuit, cable break with current reference signal, over/under temperature, pressure transducer cable break with current signal (/W option) | | | |
| Format | Sealed box on the valve; IP67 protection degree | | | |
| Operating temperature | -20 ÷ +60 °C (storage -20 ÷ +70 °C) | | | |
| Mass | Approx. 455 g (approx. 570 g for -EH execution) | | | |
| Additional characteristics | Short circuit protection of solenoid current supply; current control by P.I.D. with rapid solenoid switching | | | |
| Electromagnetic compatibility (EMC) | According to Directive 2004/108/CE (Immunity: EN 61000-6-2; Emission: EN 61000-6-3) | | | |
| Communication interface | Serial Atos ASCII coding | CANopen EN50325-4 + DS408 | PROFIBUS EN50170-2/IEC61158 | EtherCAT IEC61158 |
| Communication physical layer | not insulated serial RS232 | optical insulated CAN ISO11898 | optical insulated RS485 | Fast Ethernet 100 Base TX |
| Recommended wiring cable (see 8) | LiYCY shielded cables | | | |

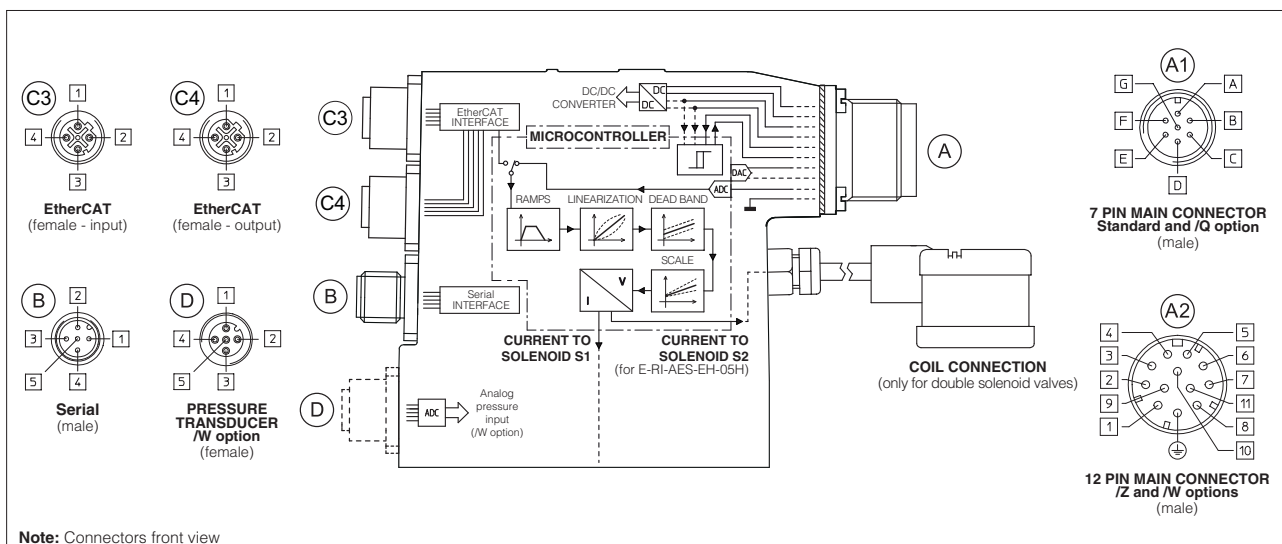
Note: a maximum time of 380 ms (depending on communication type) have be considered between the driver energizing with the 24 VDC power supply and when the valve is ready to operate. During this time the current to the valve coils is switched to zero

3 CONNECTIONS

3.1 Serial PS, CANopen BC and PROFIBUS DP BP executions



3.2 EtherCAT EH execution



3.3 Main connector signals - 7 pin - standard and /Q options (A1) - see 8.1

| PIN | Standard | /Q | TECHNICAL SPECIFICATIONS | NOTES |
|-----|-----------------------------------|--------|---|------------------------|
| A | V+ | | Power supply 24 Vdc (see 4.1) | Input - power supply |
| B | V0 | | Power supply 0 Vdc (see 4.1) | Gnd - power supply |
| C | AGND | | Analog ground | Gnd - analog signal |
| | | ENABLE | Enable (24 Vdc) or disable (0 Vdc) the driver, referred to V0 (see 4.5) | Input - on/off signal |
| D | INPUT+ | | Reference input signal: ± 10 Vdc / ± 20 mA maximum range, software selectable (see 4.2) | Input - analog signal |
| E | INPUT- | | Negative reference input signal for INPUT+ | Input - analog signal |
| F | MONITOR referred to: AGND V0 | | Monitor output signal: ± 5 Vdc maximum range (see 4.3) | Output - analog signal |
| G | EARTH | | Internally connected to driver housing | |

3.4 Main connector signals - 12 pin - /Z and /W options (A2) - see 8.2

| PIN | /Z | /W | TECHNICAL SPECIFICATIONS | NOTES |
|-----|---------|----------|---|------------------------|
| 1 | V+ | | Power supply 24 Vdc (see 4.1) | Input - power supply |
| 2 | V0 | | Power supply 0 Vdc (see 4.1) | Gnd - power supply |
| 3 | ENABLE | | Enable (24 Vdc) or disable (0 Vdc) the driver, referred to V0 (see 4.5) | Input - on/off signal |
| 4 | INPUT+ | | Reference input signal: ± 10 Vdc / ± 20 mA maximum range, software selectable. Referred to AGND (see 4.2) | Input - analog signal |
| 5 | AGND | | Analog ground | Gnd - analog signal |
| 6 | MONITOR | | Monitor output signal: ± 5 Vdc maximum range, referred to AGND (see 4.3) | Output - analog signal |
| 7 | NC | | Do not connect | |
| 8 | NC | | Do not connect | |
| | | MONITOR2 | 2nd monitor output signal: ± 5 Vdc maximum range, referred to AGND (see 4.3) | Output - analog signal |
| 9 | VL+ | | Power supply 24 Vdc for driver's logic and communication (see 4.4) | Input - power supply |
| 10 | VLO | | Power supply 0 Vdc for driver's logic and communication (see 4.4) | Gnd - power supply |
| 11 | FAULT | | Fault (0 Vdc) or normal working (24 Vdc), referred to V0 (see 4.6) | Output - on/off signal |
| PE | EARTH | | Internally connected to driver housing | |

3.5 Communication connectors (B) - (C) - see 8.3

| (B) Serial connector - M12 - 5 pin always present | | |
|---|--------|-------------------------------|
| PIN | SIGNAL | TECHNICAL SPECIFICATION (1) |
| 1 | NC | do not connect |
| 2 | NC | do not connect |
| 3 | RS_GND | Signal zero data line |
| 4 | RS_RX | Valves receiving data line |
| 5 | RS_TX | Valves transmitting data line |

| (C1) BC fieldbus execution, connector - M12 - 5 pin | | |
|---|----------|-----------------------------|
| PIN | SIGNAL | TECHNICAL SPECIFICATION (1) |
| 1 | CAN_SHLD | Shield |
| 2 | NC | do not connect |
| 3 | CAN_GND | Signal zero data line |
| 4 | CAN_H | Bus line (high) |
| 5 | CAN_L | Bus line (low) |

| (C2) BP fieldbus execution, connector - M12 - 5 pin | | |
|---|--------|---------------------------------------|
| PIN | SIGNAL | TECHNICAL SPECIFICATION (1) |
| 1 | +5V | Termination supply signal |
| 2 | LINE-A | Bus line (high) |
| 3 | DGND | Data line and termination signal zero |
| 4 | LINE-B | Bus line (low) |
| 5 | SHIELD | |

| (C3) (C4) EH fieldbus execution, connector - M12 - 4 pin | | |
|--|--------|-----------------------------|
| PIN | SIGNAL | TECHNICAL SPECIFICATION (1) |
| 1 | TX+ | Transmitter |
| 2 | RX+ | Receiver |
| 3 | TX- | Transmitter |
| 4 | RX- | Receiver |
| Housing | SHIELD | |

Note: (1) shield connection on connector's housing is recommended

3.6 Pressure transducer connector - M12 - 5 pin - only for /W option (D) - see 8.4

| Voltage Input (1) | | | Current Input (1) | |
|-------------------|--------|---|-------------------|--|
| PIN | SIGNAL | TECHNICAL SPECIFICATION | SIGNAL | TECHNICAL SPECIFICATION |
| 1 | VT | Remote transducer power supply 24 Vdc | VT | Remote transducer power supply 24 Vdc |
| 2 | TR | Remote transducer signal (0 ÷ 10 Vdc) - see 4.7 | TR | Remote transducer signal (0 ÷ 20 mA) - see 4.7 |
| 3 | AGND | Signal zero for power supply and signal | NC | do not connect |
| 4 | NC | do not connect | NC | do not connect |
| 5 | NC | do not connect | NC | do not connect |

Note: (1) Analog input range is software selectable - see 4.7

4 SIGNALS SPECIFICATIONS

Atos proportional valves are CE marked according to the applicable directives (e.g. Immunity/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.

The electrical signals of the driver (e.g. 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).

4.1 Power supply (V+ and V0)

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

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

Note: pin 2 and 10 (zero Volt) are connected together inside the electronics.

4.2 Reference input signal (INPUT+ and INPUT-)

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

The driver is designed to receive one analog reference input (INPUT+, INPUT- differential mode input).

The input range and polarity are software selectable among voltage ($0 \div \pm 10$ Vdc) and current ($4 \div 20$ mA with cable break detection or ± 20 mA); default settings are $0 \div 10$ Vdc for two position and pressure single solenoid valves and ± 10 Vdc for double solenoid valves and three position single solenoid valves (see valve's tech. table). Other ranges can be set by software.

Drivers with fieldbus interface (-BC, -BP or -EH) can be software set to receive reference value directly from the machine control unit (fieldbus master); in this case the analog reference input signal can be used for start-up and maintenance operations.

Option /Z and Option /W

The reference input is available in common mode (INPUT+ referred to AGND) instead of the standard differential mode

4.3 Monitor output signals (MONITOR and MONITOR2) - only for /W option

The driver generates an analog output signal (MONITOR) to monitor the actual valve's coil current referred to AGND for standard version or to V0 for /Q option; the monitor output signal can be software set to show other signals available in the driver (e.g. analog reference, fieldbus reference).

The output maximum range is ± 5 Vdc : $0 \div 5$ Vdc for two position and pressure single solenoid valves and ± 5 Vdc for double solenoid valves and three position single solenoid valves (see valve's tech. table).

Option /W

The driver generates a second analog output signal (MONITOR2) to monitor the actual system pressure referred to AGND. The output maximum range is ± 5 Vdc; default setting is $0 \div 5$ Vdc

4.4 Power supply for driver's logic and communication (VL+ and VL0) - only for /Z and /W options

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

Separate power supply (pin 9,10) allow to cut solenoid power supply (pin 1,2) while maintaining active diagnostics, serial and fieldbus communication. A safety fuse is required in series to each driver power supply: 500 mA fast fuse.

Note: pin 2 and 10 (zero Volt) are connected together inside the electronics.

4.5 Enable input signal (ENABLE) - only for /Q, /Z and /W options

To enable the driver, supply 24 Vdc on pin 3 (pin C) referred to pin 2 (pin B): 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 European Norms EN13849-1 (ex EN954-1).

4.6 Fault output signal (FAULT) - only for /Z and /W options

Fault output signal indicates fault conditions of the driver (solenoid short circuits/not connected, reference signal cable broken for $4 \div 20$ mA input, etc.).

Fault presence corresponds to 0 Vdc, normal working corresponds to 24 Vdc (pin 11 referred to pin 2).

Fault status is not affected by the Enable input signal.

4.7 Pressure transducer input signal (TR) - only for /W option

When hydraulic power limitation is active (see 6.7), input signal TR must be connected to an external pressure transducer installed on the hydraulic system. The input signal is software selectable as voltage or current (default $0 \div 10$ Vdc). The maximum range of external pressure transducer for voltage input is $0 \div 10$ Vdc. For current input the selection is among $0 \div 20$ mA or $4 \div 20$ mA for cable break detection.

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

5 PROGRAMMING TOOLS - see tech table GS500

Valve's functional parameters and configurations, can be easily set and optimized using Atos E-SW programming software connected via serial communication port to the digital driver. E-SW software is available in different versions according to the driver's communication interface: PS (Serial) E-SW-PS, BC (CANopen) E-SW-BC, BP (PROFIBUS DP) E-SW-BP and EH (EtherCAT) E-SW-EH. For fieldbus versions, E-SW software permits valve's parameterization through serial communication port also if the driver is connected to the central machine unit via fieldbus.

Basic programming software, free download :

E-SW-PS web download = software can be downloaded upon web registration at www.download.atos.com ; service and DVD not included

Upon web registration user receive via email the Activation Code (software free license) and login data to access Atos Download Area. The software remains active for 10 days from the installation date and then it stops until the user inputs the Activation Code.

Full programming software, to be ordered separately :

E-SW-* DVD first supply = software has to be activated via web registration at www.download.atos.com ; 1 year service included

Upon web registration user receive via email the Activation Code (software license) and login data to access personal Atos Download Area. The software remains active for 10 days from the installation date and then it stops until the user inputs the Activation Code.

E-SW-*-N DVD next supplies = only for supplies after the first; service not included, web registration not allowed

Software has to be activated with Activation Code received upon first supply web registration

Atos Download Area: direct access to latest releases of E-SW software, manuals, USB drivers and fieldbus configuration files at www.download.atos.com

USB Adapters, Cables and Terminators, can be ordered separately

6 MAIN SOFTWARE PARAMETER SETTINGS

The following is a brief description of the main settings and features of digital drivers. For a detailed descriptions of available settings, wirings and installation procedures, please refer to the user manual included in the E-SW-* DVD programming software:

E-MAN-RI-AES - user manual for **AES**

6.1 Scale

Scale function allows to set the maximum current supplied to the solenoid, corresponding to the max valve regulation, at maximum reference signal value.

This regulation allows to adapt the maximum current supplied from the driver to the specific nominal current of the proportional valves to which the driver is coupled; it is also useful to reduce the maximum valve regulation in front of maximum reference signal.

Two different Scale regulations are available for double solenoid valves: ScaleA for positive reference signal and ScaleB for negative reference signal.

6.2 Bias and Threshold

Proportional valves may be provided with a dead band in the hydraulic regulation corresponding to their switch-off status.

This dead band discontinuity in the valve's regulation can be compensated by activating the Bias function, which adds a fixed preset Bias value to the reference signal (analog or fieldbus external input).

The Bias function is activated when the reference signal overcomes the Threshold value, preset into the driver.

The Bias setting allows to calibrate the Bias current to the specific proportional valve to which the driver is coupled.

The Threshold setting is useful to avoid undesired valve regulation at zero reference signal when electric noise is present on the analog input signal: smaller threshold reduces the reference signal dead band, greater values are less affected by electric noise presence.

If fieldbus reference signal is active (see 4.2), threshold should be set to zero.

Two different Bias regulations are available for double solenoid valves: positive reference signals activate BiasA and negative reference signals activate BiasB.

Refer to the programming manuals for a detailed description of other software selectable Bias functions.

6.3 Offset

Proportional valves may be provided with zero overlapping in the hydraulic regulation corresponding to zero reference input signal (valve's central spool position).

The Offset function allows to calibrate the Offset current, required to obtain valve's spool central position, to the specific hydraulic system setup (e.g. valve applied to cylinder with differential areas).

6.4 Ramps

The ramp generator allows to convert sudden change of electronic reference signal into smooth time-dependent increasing/decreasing of the current supplied to the solenoid.

Different ramp mode can be set:

- single ramp for any reference variation
- two ramps for increasing and for decreasing reference variations
- four ramps for positive/negative signal values and increasing/decreasing reference variations

Ramp generator is useful for application where smooth hydraulic actuation is necessary to avoid machine vibration and shocks.

If the proportional valve is driven by a closed loop controller, the ramps can lead to unstable behaviour, for these applications ramp function can be software disabled (default setting).

6.5 Linearization

Linearization function allows to set the relation between the reference input signal and the controlled valve's regulation.

Linearization is useful for applications where it is required to linearize the valve's regulation in a defined working condition.

6.6 Variable Dither

The dither is the frequency modulation of the current supplied to the solenoid. To reduce the hysteresis should be selected a lower value of frequency, despite a lower regulation stability, because a small vibration in the valve regulating parts considerably reduces static friction effects.

To improve the regulation stability, should be selected a high value of frequency, despite a higher hysteresis. This solution in some application can lead to vibration and noise. Normally, the right setting is a compromise and depends on system setup.

Digital AES drivers series 30 allow to realize a variable dither frequency that linearly depends on the demanded current: variable dither frequency allows an higher degree to optimize the valve hysteresis.

6.7 Hydraulic Power Limitation - only for /W option

Digital AES drivers with /W option electronically perform hydraulic power limitation on:

- direct and pilot operated flow control valves
- direct and pilot operated directional control valves + mechanical pressure compensator
- variable displacement pumps with proportional flow regulator (e.g. PVPC*-LQZ, tech table **A170**)

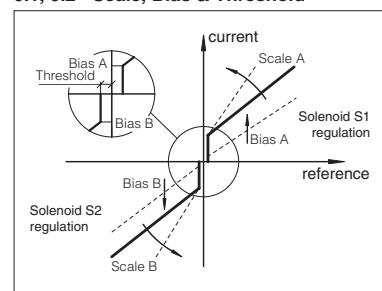
The driver receives the flow reference signal by the analog external input INPUT+ (see 4.2) and a pressure transducer, installed in the hydraulic system, has to be connected to the driver's analog input TR (see 4.7).

When the actual requested hydraulic power $p \times Q$ (TR x INPUT+) reaches the max power limit ($p_1 \times Q_1$), internally set by software, the driver automatically reduces the flow regulation of the valve.

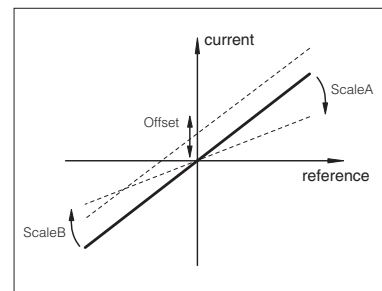
The higher is the pressure feedback the lower is the valve's regulated flow:

$$\text{Flow regulation} = \text{Min} \left(\frac{\text{PowerLimit [sw setting]}}{\text{Transducer Pressure [TR]}} ; \text{Flow Reference [INPUT+]} \right)$$

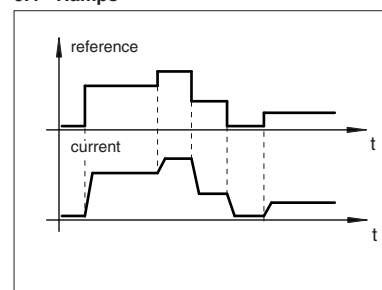
6.1, 6.2 - Scale, Bias & Threshold



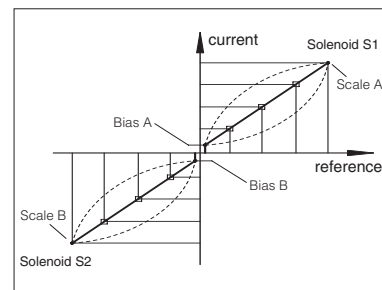
6.3 - Offset



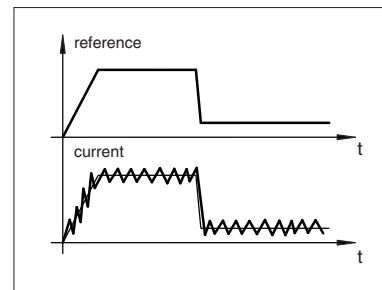
6.4 - Ramps



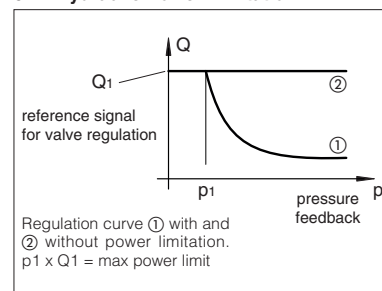
6.5 - Linearization



6.6 - Variable Dither

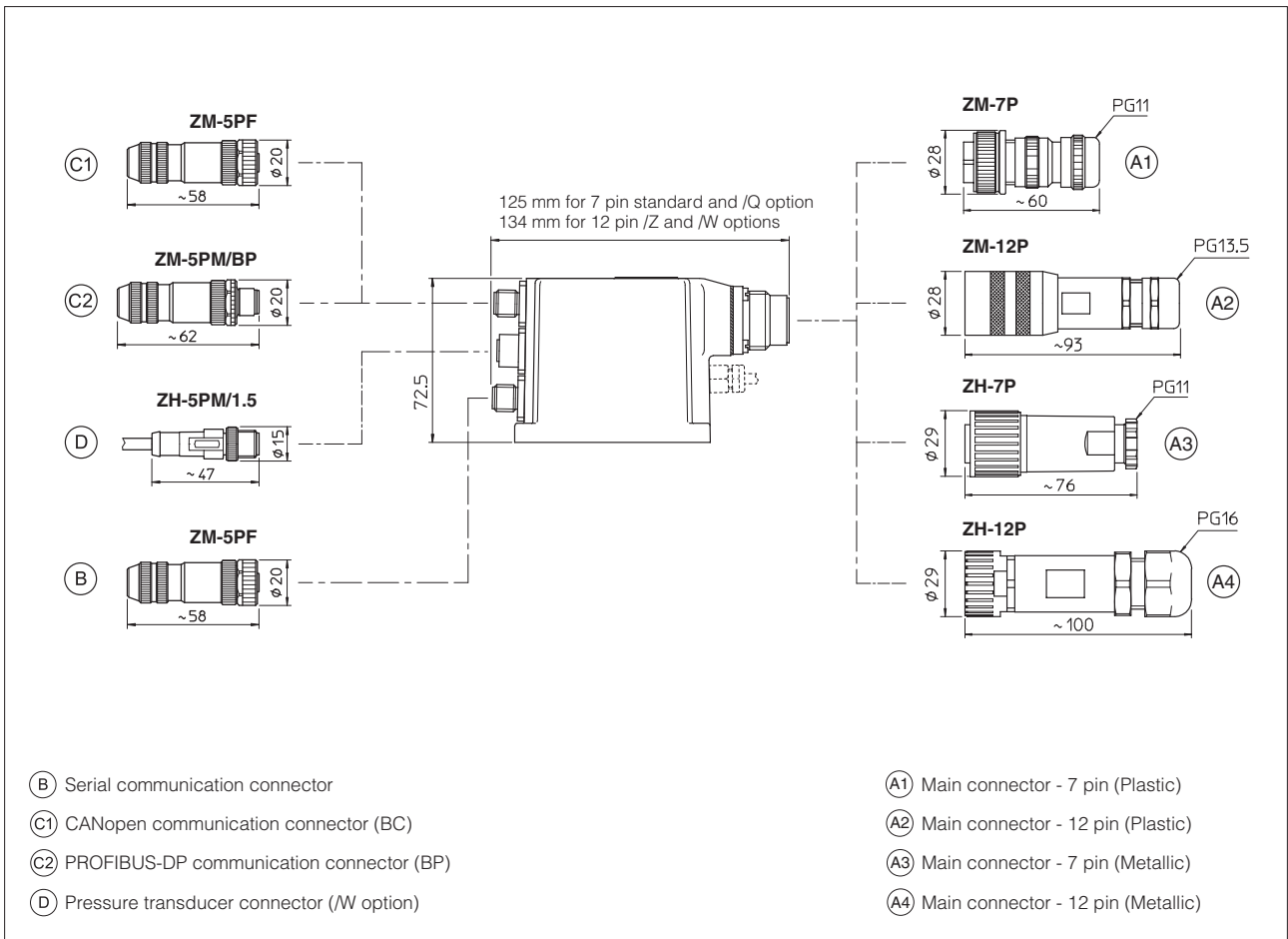


6.7 - Hydraulic Power Limitation

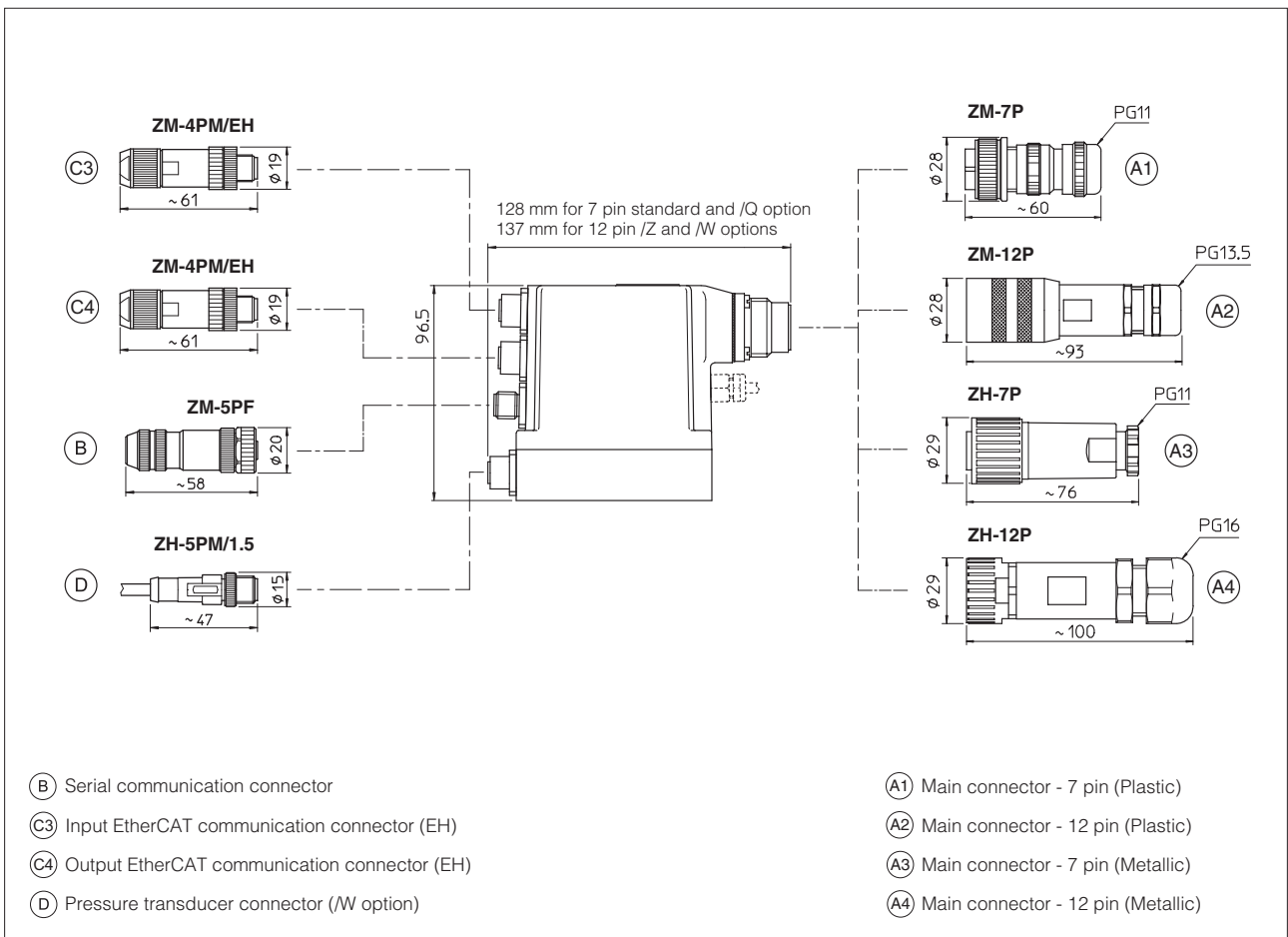


7 OVERALL DIMENSIONS [mm]

7.1 Serial PS, CANopen BC and PROFIBUS BP executions



7.2 EtherCAT EH execution



8 CONNECTORS CHARACTERISTICS - to be ordered separately

8.1 Main connectors - 7 pin

| CONNECTOR TYPE | POWER SUPPLY | POWER SUPPLY |
|-----------------------|---|---|
| CODE | (A1) ZM-7P | (A3) ZH-7P |
| Type | 7pin female straight circular | 7pin female straight circular |
| Standard | According to MIL-C-5015 | According to MIL-C-5015 |
| Material | Metallic | Plastic reinforced with fiber glass |
| Cable gland | PG11 | PG11 |
| Cable | LiYCY 7 x 0,75 mm ² max 20 m (logic and power supply) LiYCY 7 x 1 mm ² max 40 m (logic and power supply) | LiYCY 7 x 0,75 mm ² max 20 m (logic and power supply) LiYCY 7 x 1 mm ² max 40 m (logic and power supply) |
| Connection type | to solder | to solder |
| Protection (EN 60529) | IP 67 | IP 67 |

8.2 Main connectors - 12 pin

| CONNECTOR TYPE | POWER SUPPLY | POWER SUPPLY |
|-----------------------|---|--|
| CODE | (A2) ZM-12P | (A4) ZH-12P |
| Type | 12pin female straight circular | 12pin female straight circular |
| Standard | DIN 43651 | DIN 43651 |
| Material | Metallic | Plastic reinforced with fiber glass |
| Cable gland | PG13,5 | PG16 |
| Cable | LiYCY 12 x 0,75 mm ² max 20 m (logic and power supply) | LiYCY 10 x 0,14mm ² max 40 m (logic) LiYY 3 x 1mm ² max 40 m (power supply) |
| Connection type | to crimp | to crimp |
| Protection (EN 60529) | IP 67 | IP 67 |

8.3 Serial and fieldbus communication connectors

| CONNECTOR TYPE | PS SERIAL RS232 |
|-----------------------|---|
| CODE | (B) ZM-5PF |
| Type | 5pin female straight circular |
| Standard | M12 coding A – IEC 60947-5-2 |
| Material | Metallic |
| Cable gland | Pressure nut - cable diameter 6÷8 mm |
| Cable | LiYCY 5 x 0,25 mm ² shielded |
| Connection type | screw terminal |
| Protection (EN 60529) | IP 67 |

| CONNECTOR TYPE | BC CANopen (1) |
|-----------------------|--------------------------------------|
| CODE | (C1) ZM-5PF |
| Type | 5pin female straight circular |
| Standard | M12 coding A – IEC 60947-5-2 |
| Material | Metallic |
| Cable gland | Pressure nut - cable diameter 6÷8 mm |
| Cable | CANBus Standard (DR303-1) |
| Connection type | screw terminal |
| Protection (EN 60529) | IP 67 |

| CONNECTOR TYPE | BP PROFIBUS DP (1) |
|-----------------------|--------------------------------------|
| CODE | (C2) ZM-5PM/BP |
| Type | 5pin male straight circular |
| Standard | M12 coding B – IEC 60947-5-2 |
| Material | Metallic |
| Cable gland | Pressure nut - cable diameter 6÷8 mm |
| Cable | PROFIBUS DP Standard |
| Connection type | screw terminal |
| Protection (EN 60529) | IP 67 |

| CONNECTOR TYPE | EH EtherCAT (2) |
|-----------------------|--------------------------------------|
| CODE | (C3) (C4) ZM-4PM/EH |
| Type | 4pin male straight circular |
| Standard | M12 coding D – IEC 61076-2-101 |
| Material | Metallic |
| Cable gland | Pressure nut - cable diameter 4÷8 mm |
| Cable | Ethernet Standard CAT-5 |
| Connection type | terminal block |
| Protection (EN 60529) | IP 67 |

Notes: (1) E-TRM-** terminators can be ordered separately - see tech table **GS500**

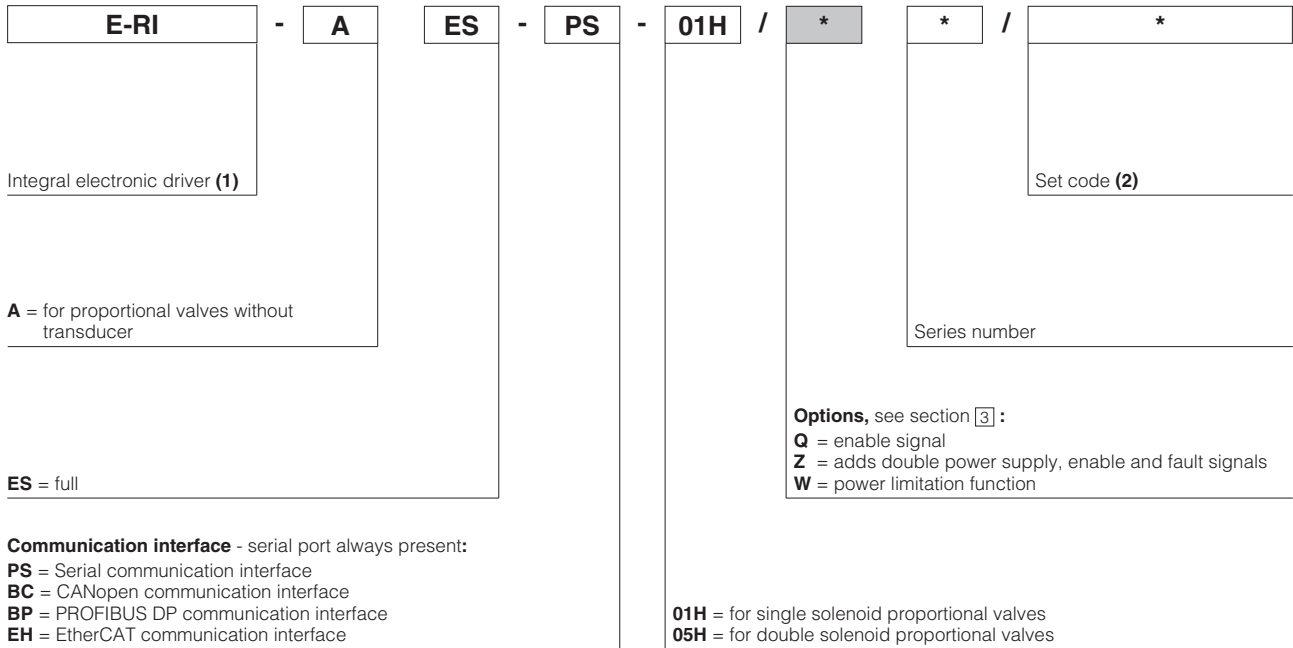
(2) Internally terminated.

8.4 Pressure transducer connector - only for /W option)

| CONNECTOR TYPE | TRANSDUCER |
|-----------------------|--|
| CODE | (D) ZH-5PM/1.5 |
| Type | 5 pin male straight circular |
| Standard | M12 coding A – IEC 60947-5-2 |
| Material | Plastic |
| Cable gland | Connector moulded on cables 1,5 m length |
| Cable | 3 x 0,25 mm ² |
| Connection type | molded cable |
| Protection (EN 60529) | IP 67 |

9 MODEL CODE FOR SPARE PARTS

Integral drivers are available as spare parts only for Atos authorized service centers.



(1) for Ex-proof execution, please contact Atos technical support

(2) set code identifies the correspondance between the integral driver and the relevant valve; it is assigned by Atos when the driver is ordered as spare part