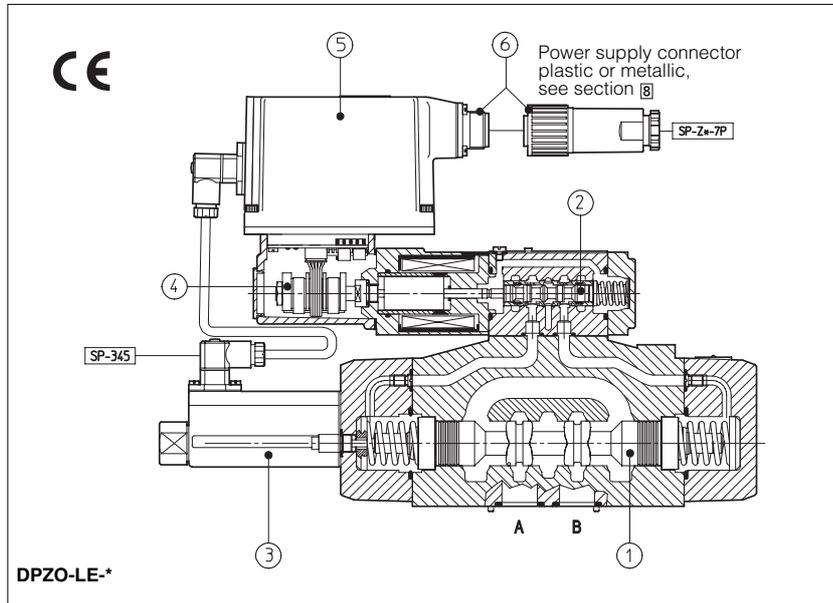


Integral electronic driver type **E-RI-TE, E-RI-LE** for proportional valves with transducer



These drivers are integral to the Atos proportional valves and they control in closed loop the spool position ① and ② according to the electronic reference signal.

They are available in two different executions:

- TE for proportional valves with single position transducer ③
- LE for proportional valves with double position transducers ③, ④

Features:

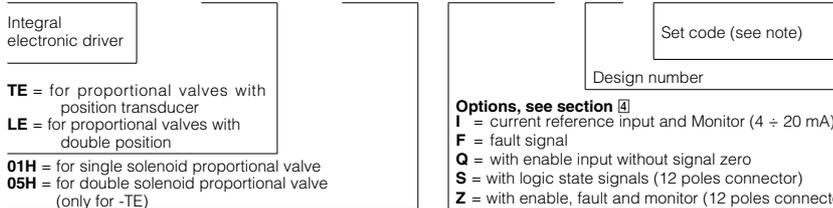
- integral electronic ⑤, factory preset
- potentiometer adjustment of the hydraulic zero
- 7 poles connector ⑥ arranged to receive the power supply, the reference signal (input) and to supply the monitor of the main stage transducer (output)
- 12 poles connector for option /Z with enable, signal, fault signal, transducer monitor, and for option /S with enable, fault, transducer monitor plus logic state signals of the valve's spool position.
- IP67 protection degree
- 3,3A maximum current to the coils
- rapid solenoid excitation and switching off
- CE marking grants the conformity to the EMC Directive (Electro-magnetic Compatibility)

Applications:

Integrated solution for closed loop valves.

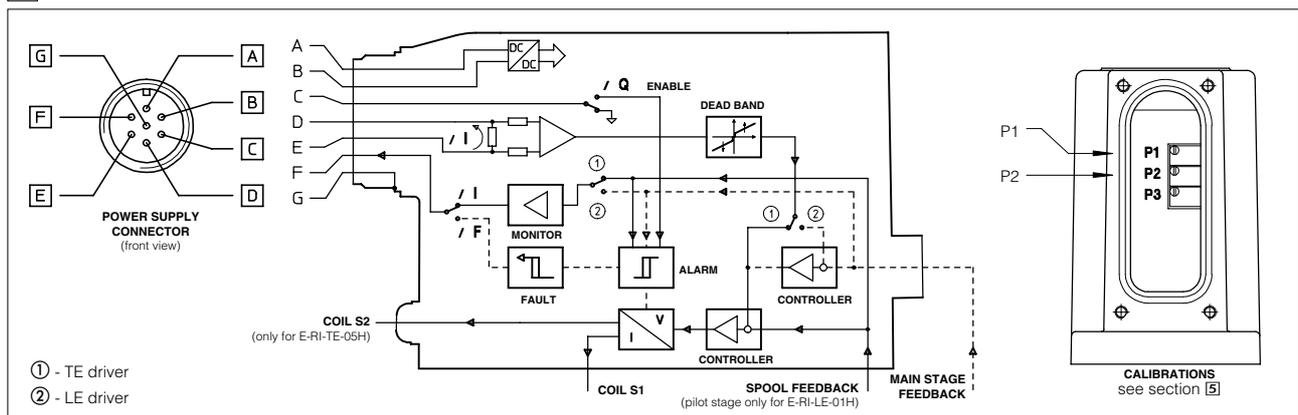
1 MODEL CODE: PROPORTIONAL VALVES WITH INTEGRAL DRIVERS

E-RI - TE - 01H / * ** / *



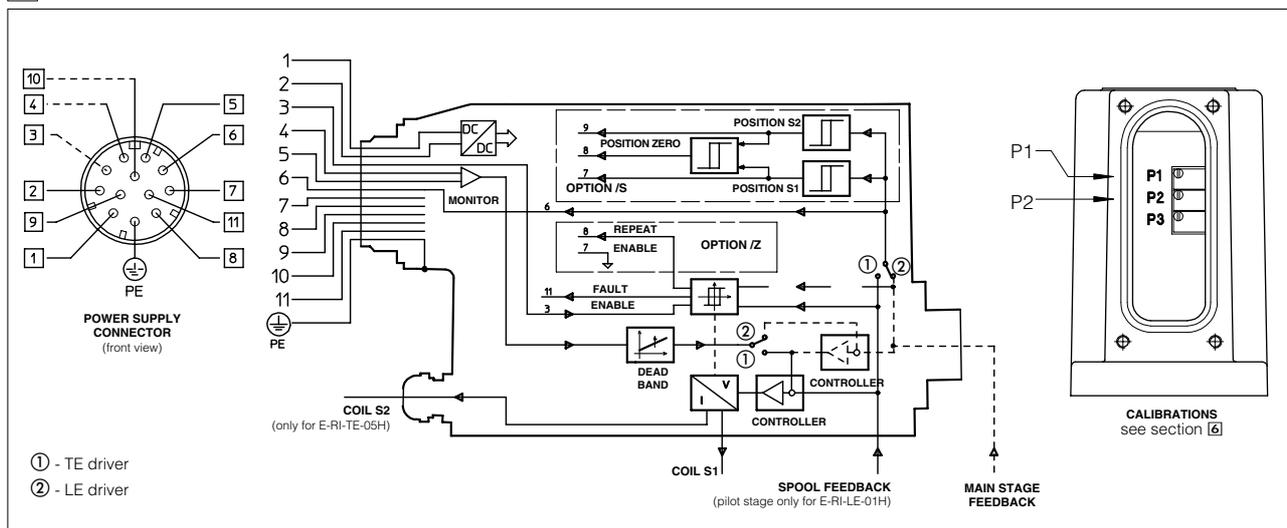
Note: the set code identifies the correspondance between the digital integral driver and the relevant valve.

2 ELECTRONIC AND WIRING BLOCK DIAGRAM - FOR -TE AND -LE (7 POLES CONNECTOR)



| POWER SUPPLY CONNECTOR (STANDARD VERSION) | | | POWER SUPPLY CONNECTOR (OPTIONS) | | |
|---|---------------------------------|--|---|---|--|
| PIN | SIGNAL DESCRIPTION | TECHNICAL SPECIFICATION | Option /I | Option /F | Option /Q |
| A | Power supply 24 V _{dc} | Stabilized: +24V _{dc} | Stabilized: +24V _{dc} | | |
| B | Power supply zero | Filtered and rectified: V _{rms} = 21 ÷ 33 (ripple max 2V _{pp}) | Filtered and rectified: V _{rms} = 21 ÷ 33 (ripple max 2V _{pp}) | | |
| C | Signal zero | Reference 0 V _{dc} | Reference 0 V _{dc} | Reference 0 V _{dc} | Enabling input Normal working + 24 V _{dc} |
| D | Input signal + | 0 ÷ 10 V _{dc} (depending on the valve model) | 0 ÷ 10 V _{dc} (depending on the valve model) | | |
| E | Input signal - | ± 10 V _{dc} (see the relevant technical table) | ± 10 V _{dc} (see the relevant technical table) | | |
| F | Monitor | 0 ÷ 10 V Depending to the valve type (see the relevant technical table) ± 10 V 1 V = 10% of spool position | 4 ÷ 20 mA referred to pin C 4 ÷ 20 mA = 0 ÷ 100% of spool position | Fault signal - alarm 0 V _{dc} Normal working + 24 V _{dc} | 0 ÷ 10 V _{dc} ± 10 V _{dc} 1V = 10% of spool position |
| G | Earth | Connect only when the power supply is not conform to VDE 0551 (CEI 14/6) | Earth | Earth | Earth |

3 ELECTRONIC AND WIRING BLOCK DIAGRAM - FOR -TE/S, -LE/S, -TE/Z, -LE/Z (12 POLES CONNECTOR)

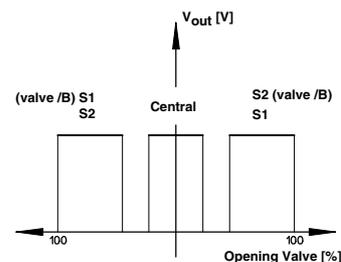


| POWER SUPPLY CONNECTOR (OPTION /Z) | | | POWER SUPPLY CONNECTOR (OPTION /S) | | |
|------------------------------------|---------------------|--|------------------------------------|---------------------|--|
| PIN | SIGNAL DESCRIPTION | TECHNICAL SPECIFICATIONS | PIN | SIGNAL DESCRIPTION | TECHNICAL SPECIFICATIONS |
| 1 | Power supply 24 Vdc | Stabilized: +24 Vdc | 1 | Power supply 24 Vdc | Stabilized: +24 Vdc |
| 2 | Power supply zero | Filtered and rectified: V_{rms} 21-33 (ripple max 2 Vpp) | 2 | Power supply zero | Filtered and rectified: V_{rms} 21-33 (ripple max 2 Vpp) |
| 3 | Enable | Enabling input normal working 24 Vdc | 3 | Enable | Enabling input normal working 24 Vdc |
| 4 | Input + | ± 10 Vdc (depending on the valve model) | 4 | Input + | ± 10 Vdc (depending on the valve model) |
| 5 | Input - | $0 \div 10$ Vdc (see the relevant technical table) | 5 | Input - | $0 \div 10$ Vdc (see the relevant technical table) |
| 6 | Monitor | ± 10 Vdc referred to 7 (signal 0 Vdc) | 6 | Monitor | ± 10 Vdc referred to pin 10 |
| 7 | Signal zero | Reference 0 Vdc | 7 | Position S1 | Solenoid S1 active |
| 8 | Repeat enable | Output enable active | 8 | Zero position | Rest position |
| 9 | NC | Not connected | 9 | Position S2 | Solenoid S2 active |
| 10 | NC | Not connected | 10 | Signal zero | Reference 0 Vdc |
| 11 | Fault | Alarm = 0 Vdc Correct functioning = +24 Vdc | 11 | Fault | Alarm = 0 Vdc Correct functioning = +24 Vdc |
| PE | Earth | Connect only when the power supply is not conform to VDE 0551 (CEI 16/6) | PE | Earth | Connect only when the power supply is not conform to VDE 0551 (CEI 16/6) |

4 OPTIONS

- 4.1 Option /I** It provides the $4 \div 20$ mA current reference signal and the current feedback signals instead of the standard $0 \div 10V$ ($\pm 10V$). 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. In case of breakage of the reference signal cable, the valve functioning is disabled.
- 4.2 Option /F** Safety option providing an output signal which switches to zero in case of interruption of the transducer feedback cable. In this condition the valve functioning is disabled.
- 4.3 Option /Q** Safety option providing the possibility to enable or disable the valve functioning without cutting the power supply.
- 4.4 Option /S - State logic signals - Pin 7, 8, 9**
Option available only for the following valves:
DHZO-TE-071-*
DKZOR-TE-171-*
This function gives three output signals in order to control in real time the valve's spool position to allow the diagnostic controls. The signal "Zero position" is up (22V 20 mA) when the spool is in the central position, while the other two signals ("Position S1" and "Position S2") are up when the spool is moving according to the excitation of the S1 or S2 solenoid, see the below diagram.
- 4.5 Option /Z - 12 poles connector**
Option providing the same characteristics of /F and /Q plus the monitor signal $0 \div 10$ V (or ± 10 V) of the spool position.
- 4.6 Combined options - option /I**
Option providing the combined characteristics of /F (fault signal) and /I (current signal)

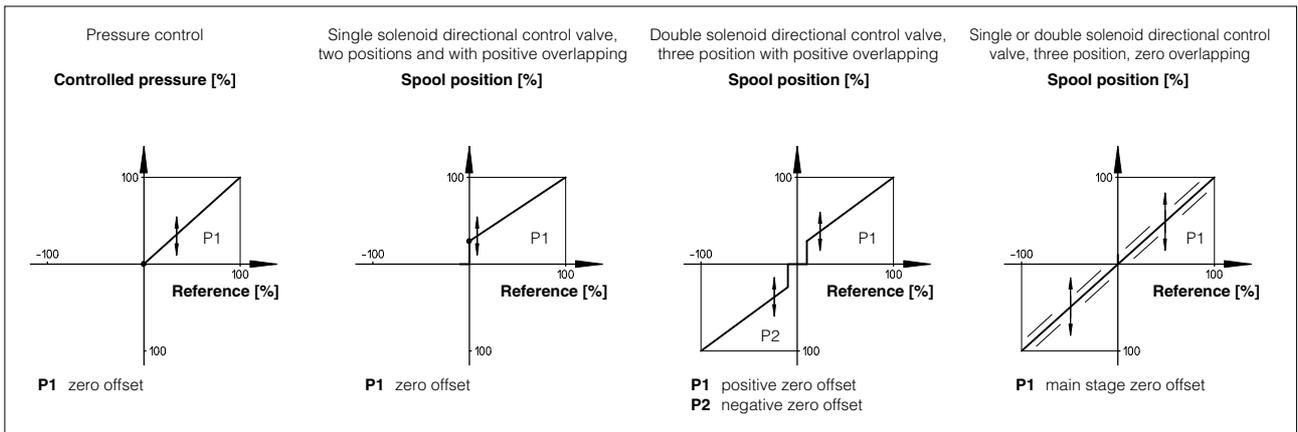
LOGIC STATE SIGNALS (OPTION /S)



5 MAIN CHARACTERISTICS OF INTEGRAL ELECTRONIC DRIVERS

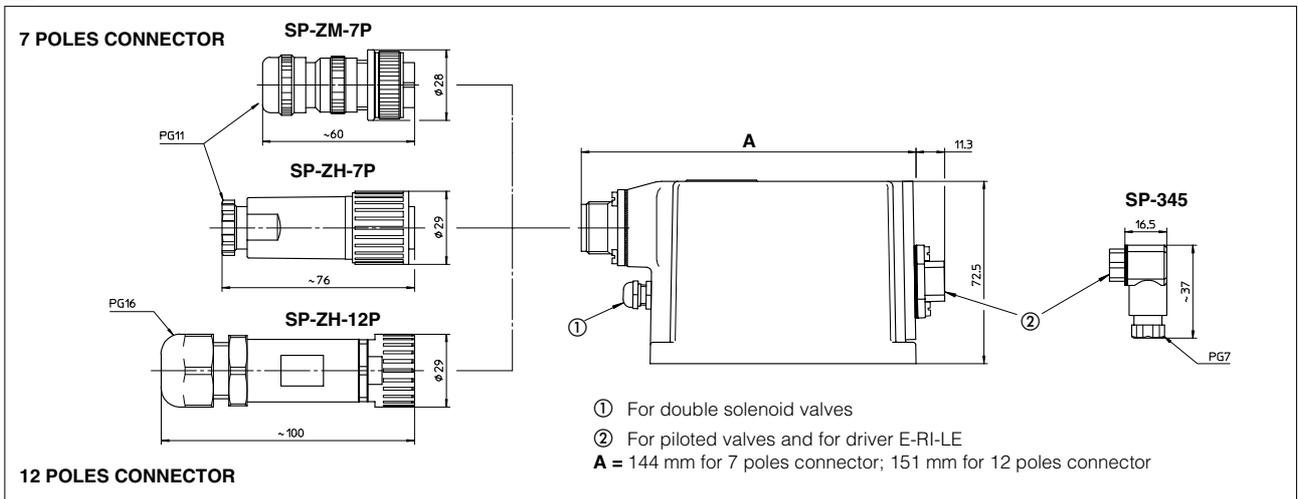
| | |
|-------------------------------------|--|
| Driver section | |
| Format | Sealed box on the valve - Protection: IP67 DIN 40050 - Insulation: VDE0110 |
| Electromagnetic compatibility (EMC) | Emission: EN 50081-2 - Immunity: EN 50082-2 |
| Max power consumption | 50 W |
| Current supplied to solenoids | $I_{max} = 3.3$ A square wave PWM type |
| Input signal impedance | Voltage signal $R_i > 50K\Omega$ (option / $R_i = 316\Omega$) |
| Operating temperature | $-20^\circ\text{C} \div +60^\circ\text{C}$ (storage $-20^\circ\text{C} \div +70^\circ\text{C}$) |
| Features | Position control by PID action - Rapid solenoid excitation and switching off - Output to solenoids protected against accidental short circuits - Feedback cable break produces an inhibition of the driver, zeroing the current and creating a fail safe position in the valve |
| Notes | For installation and set-up refer to the table "Installation of proportional valves ZO(R)-TE" enclosed to the product |

6 DEAD BAND REGULATION



Note: **P3** potentiometer factory set - do not touch

7 DIMENSIONS OF ELECTRONIC DRIVER AND CONNECTORS [mm]



Note: female plug connectors can be supplied separately on request

8 CHARACTERISTICS OF POWER SUPPLY CONNECTORS (to be ordered separately)

| CONNECTOR TYPE | POWER SUPPLY CONNECTOR | | |
|-----------------------------------|---|--------------------------------------|---|
| CODE | SP-ZH-7P | SP-ZM-7P | SP-ZH-12P |
| TYPE | Female straight circular socket plug 7 pins | | Female straight circular socket plug 11 pins + PE |
| MATERIAL | Plastic reinforced with fiber glass | Aluminium alloy with cadmium plating | Plastic reinforced with fiber glass |
| CABLE GLAND | PG11 | | PG16 |
| CABLE | LiYCY 7 x 0.75 mm ² max 20m 7 x 1 mm ² max 40m | | LiCY 10 x 0.14 mm ² (signal) LiYY 3 x 1 mm ² (power) |
| CONNECTION TYPE | to solder | | to crimp |
| STANDARD | DIN 43563-BF6-3-PG11 | According to MIL-C-5015 G | DIN 43563 |
| PROTECTION ACCORDING TO DIN 40050 | IP 67 | IP 66 | IP 65 |