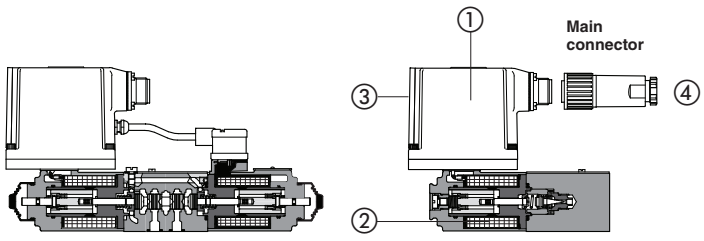
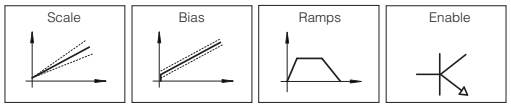
Analog electronic drivers type E-RI-AE

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





④ to be ordered separately

E-RI-AE integral analog 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.
E-RI-AE can drive one single or one double solenoid proportional valve.

Features:

- Integral-to-valve analog electronics, factory preset for best performances
- Potentiometer adjustment ③ of bias, scale and ramps
- Standard 7 pin main connector ④ for power supply, analog input reference and monitor signals
- Switch selector for dither frequency adjustement
- IP67 protection degree
- CE mark to EMC and Low Voltage directives

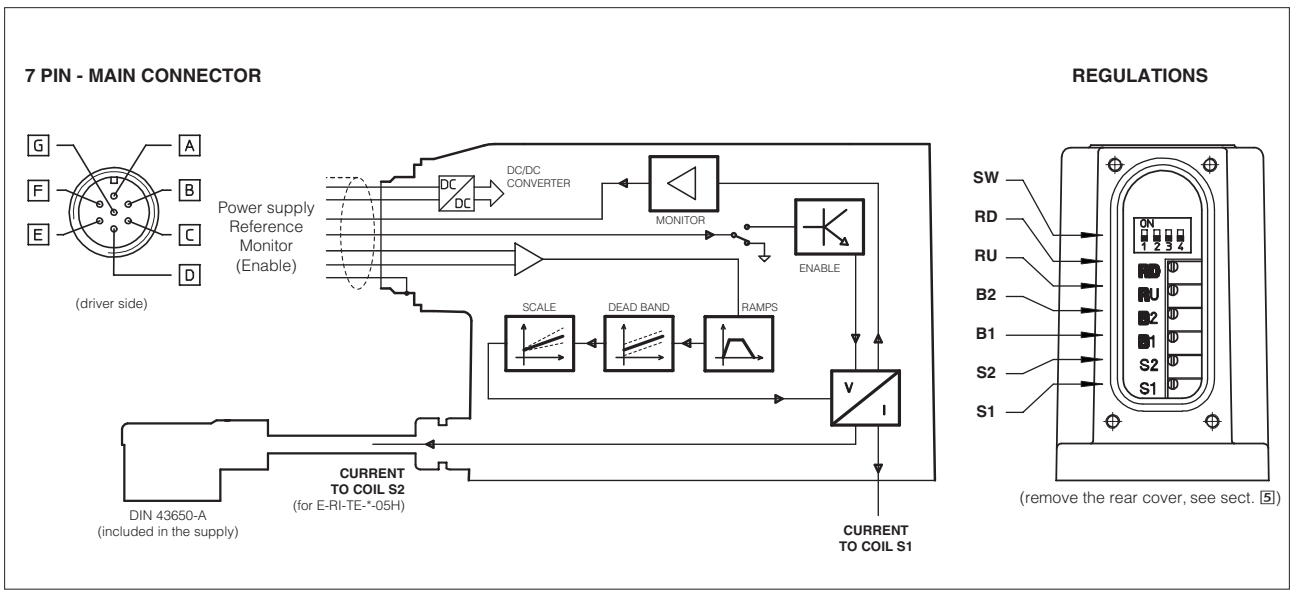
1 MODEL CODE

E - RI	AE	-	01F	/*	**	/	*

- **E - RI**: Integral electronic driver
- **AE**: = for proportional valves without transducer
- **01F**: = for single solenoid proportional valve
- **05F**: = for double solenoid proportional valve
- **Options, see section 4**
  - **I** = current reference input (4 ÷ 20 mA)
  - **Q** = enable signal
- ******: Series number
- *****: Set code (see note)

Note: the set code identifies the corrispondance between the integral driver and the relevant valve; it is assigned by Atos when the driver is ordered as spare part.

2 BLOCK DIAGRAM



3 ELECTRONIC CONNECTIONS - 7 PIN MAIN CONNECTOR

PIN	SIGNAL	TECHNICAL SPECIFICATIONS		NOTES
A	V+	Power supply 24 VDC for solenoid power stage and driver logic		Input - power supply
B	V0	Power supply 0 VDC for solenoid power stage and driver logic		Gnd - power supply
C (1)	AGND	Ground - signal zero for MONITOR signal		Gnd - analog signal
	ENABLE	Enable (24 VDC) or disable (0 VDC) the driver	(for /Q option)	Input - on/off signal
D	INPUT+	Reference analog differential input: ±10 VDC maximum range For single solenoid valves the reference input is 0÷+10 VDC For double solenoid valves the reference input is ±10 VDC	(4 ÷ 20 mA for /I option) (4 ÷ 20 mA for /I option) (4 ÷ 20 mA for /I option)	Input - analog signal
E	INPUT -			
F	MONITOR	Monitor analog output: ±10 VDC maximum range		Output - analog signal
G	EARTH	Internally connected to the driver housing		

Notes (1) with /Q option ENABLE signal replaces AGND on pin C; MONITOR signal is reffered to pin B

A minimum time of 60ms to 160ms 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

4 OPTIONS

Standard driver execution provides on the 7 pin main connector:

Power supply - 24VDC must be appropriately stabilized or rectified and filtered; a 2,5 A safety fuse is required in series to the driver power supply. Apply at least a 10000 µF/40 V capacitance to single phase rectifiers or a 4700 µF/40 V capacitance to three phase rectifiers

Reference input signal - analogue differential input with ±10 VDC nominal range (pin D,E), proportional to desired coil current

Monitor output signal - analog output signal proportional to the actual valve's coil current (1V monitor = 1A coil current)

Atos drivers are CE marked according to the applicable directives (e.g. Immunity/Emission EMC Directive and Low Voltage Directive).
Installation, wirings and start-up procedures must be performed according to the general prescriptions shown in table F003.
The electrical signals of the valve (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-892)

Following options are available to adapt standard execution to special application requirements:

4.1 Option /I

It provides the 4÷20 mA current reference signal instead of the standard ±10 VDC; Monitor output signal is still the standard ±10 VDC.
It is normally used in case of long distance between the machine control unit and the valve or whenever the reference signal can be affected by electrical noise; the valve functioning is disabled in case of reference signal cable breakage.

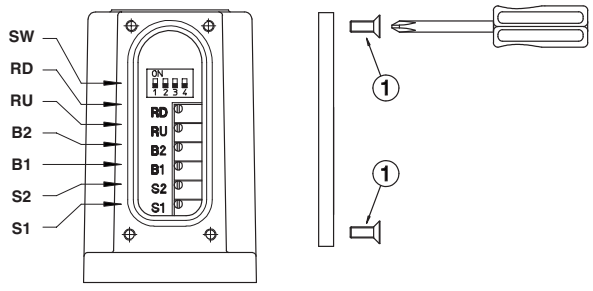
4.3 Option /Q

It provides the possibility to enable or disable the valve functioning without cutting the power supply (the valve functioning is disabled but the driver current output stage is still active). To enable the driver supply a 24VDC on the enable input signal

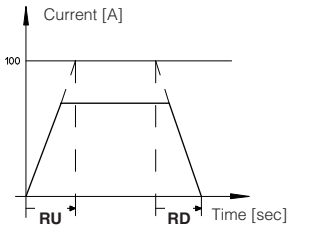
4.4 Possible combined options: /IQ

5 REGULATIONS AND LED

Remove the 4 screws ① of driver's rear cover to access the regulations adjustments.

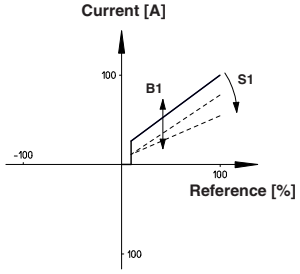


RISING AND FALLING RAMPS



RU ramp for increasing reference signal
RD ramp for decreasing reference signal

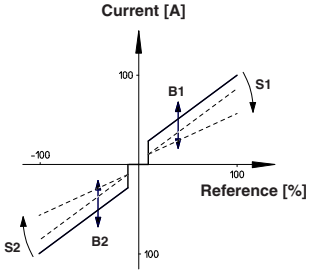
Single solenoid directional control valve, two positions and with positive overlapping



B1 bias adjust
S1 scale adjust

Threshold = 2% (200mV or 0.32mA for /I option)

Double solenoid directional control valve, three position with positive overlapping



B1 positive bias adjust
S1 positive scale adjust
B2 negative bias adjust
S2 negative scale adjust

Threshold = 2% (±200mV or ±0.16mA for /I option)

DITHER

Selector SW				Dither frequency [Hz]
SW1	SW2	SW3	SW4	
				100
ON				130
	ON			160
		ON		**200 (Standard)**
ON		ON		230
	ON	ON		270
ON	ON	ON		300
ON	ON		ON	380
ON		ON	ON	430
	ON	ON	ON	470
ON	ON	ON	ON	500

The dither frequency is factory preset at 200 Hz and its regulation may be adjusted after contact with Atos technical department

6 DRIVER CHARACTERISTICS

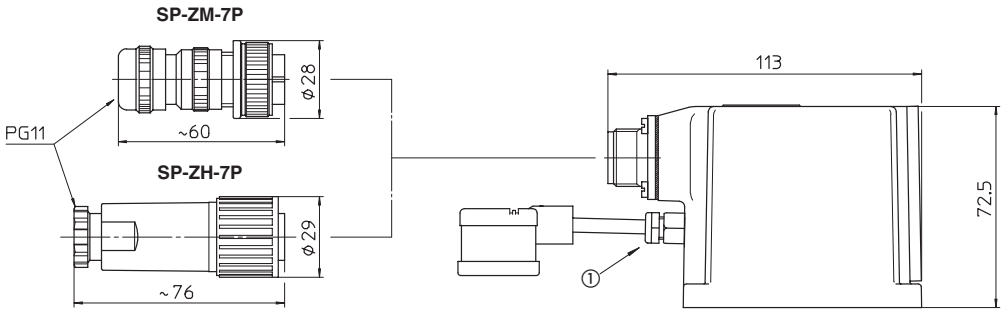
Power supply	Nominal: +24 VDC Rectified and filtered: Vrms = 21 ÷ 32 VMAX (ripple max 10 % VPP)
Max power consumption	50 W
Reference input signal	Input impedance: voltage Ri > 50 kΩ (range ±10 VDC) current Ri = 316 Ω (range 4 ÷ 20 mA)
Monitor output	Output range : ±10 VDC @ max 5mA
Enable input	Input impedance: Ri > 10 kΩ ; range : 0 ÷ 5 VDC (ON state), 9 ÷ 24VDC (OFF state), 5 ÷ 9 VDC (not accepted)
Alarms	cable break with current reference signal
Format	Sealed box on the valve; IP67 protection degree
Operating temperature	-20 ÷ 60 °C (storage -20 ÷ 70 °C)
Mass	approx. 385g
Additional characteristics	Short circuit protection of solenoid's current supply; solenoid current control by P.I.D. with rapid solenoid switching
Electromagnetic compatibility (EMC)	Immunity: EN 50082-2; Emission: EN 50081-2
Calibrations	remove the rear cover to access bias, scale, ramps and dither regulations
Recommended wiring cable	LiYCY shielded cables: 0,5 mm^2 for length up to 40m [1,5 mm^2 for power supply and solenoid]

7 MAIN CONNECTOR CHARACTERISTICS (to be ordered separately)

CODE	SP-ZH-7P	SP-ZM-7P
Type	Female straight circular socket plug 7pin	Female straight circular socket plug 7pin
Standard	DIN 43563-BF6-3-PG11	According to MIL-C-5015 G
Material	Plastic reinforced with fiber glass	Aluminium alloy with cadmiun plating
Cable gland	PG11	PG11
Cable	LiYCY 7x 0,75 mm^2 max 20 m 7 x 1 mm^2 max 40 m	LiYCY 7x 0,75 mm^2 max 20 m 7 x 1 mm^2 max 40 m
Connection type	to solder	to solder
Protection (DIN 40050)	IP 67	IP 67

8 OVERALL DIMENSIONS [mm]

7 PIN CONNECTOR



① Coil connection for double solenoid valves

Note: female plug connectors to be ordered separately