QUICKSTART BASIC
for digital proportionals without transducer - analog reference signal

PILOTED OPERATED PROPORTIONAL DIRECTIONAL VALVES

Valve model:
DPZO-AEB-1   DPZO-AEB-2   DPZO-AEB-4   DPZO-AEB-6

Driver model:
E-RI-AEB

IDENTIFICATION

Valve identification plates and label

Valve name plate : **M**   Pilot valve name plate : **N**   Driver label : **L**

1 : valve code
2 : valve matrix code
3 : valve hydraulic symbol
4 : pilot valve code
5 : pilot valve matrix code
6 : pilot hydraulic symbol
7 : driver code
8 : driver serial number
9 : factory firmware version

INSTALLATION TOOLS ACCORDING TO VALVE MODEL - not included

Fastening bolts	Wrenches	Main connectors		Transducer cable
		std, /Q	/Z, /W	/W
socket head screws	for fastening bolts and air bleeding	7 pin - metallic	12 pin - metallic	5 pin - plastic
see STEP 1 and STEP 3	see STEP 2.1			see STEP 2.2

PROGRAMMING TOOLS - not included

Software	USB connection KIT		OR	Bluetooth connection KIT	
	Cable	Isolator		Cable	Adapter
E-SW-BASIC free basic software download from MyAtos at www.atos.com	**E-C-SB-USB/M12**	**E-A-SB-USB/OPT**		**E-C-SB-M12/BTH**	**E-A-SB-USB/BTH**

PROGRAMMING SOFTWARE

The software is available in different versions according to the driver's options:

E-SW-BASIC	supports	**NP** (USB)	**IL** (IO-Link)	**PS** (Serial)		**IR** (Infrared)
E-SW-FIELDBUS	supports	**BC** (CANopen)	**BP** (PROFIBUS DP)	**EH** (EtherCAT)		
		EW (POWERLINK)	**EI** (EtherNet/IP)	**EP** (PROFINET RT/IRT)		
E-SW-*/PQ	supports	valves with **SP**, **SF**, **SL** alternated P/Q control				

E-SW-FIELDBUS supports also valves without fieldbus communication;   E-SW-*/PQ supports also valves without P/Q control

REMARK Atos software is designed for Windows based operative systems - Windows XP SP3 or later

DOWNLOAD AREA

Perform the registration at **www.atos.com/en-it/login** by filling the form. In MyAtos area, perform login with personal username and password and then press the **Download area electronics** button

Free version of E-SW-BASIC can be downloaded and used by the "**FREE Activation Code**"

The software remains active for 10 days from the installation date and then it stops until the user inputs the Activation Code

RELATED DOCUMENTATION - www.atos.com - section Catalog on-line

FS900	Operating and maintenance information - tech. table	**STARTUP E-SW-BASIC**	Software startup guide
FS170	DPZO positive spool overlap - tech. table	**STARTUP BLUETOOTH**	Bluetooth adpter startup guide
P005	Mounting surfaces - tech. table	**E-MAN-RI-AEB**	AEB - driver operating manual
GS500	Programming tools - tech. table		
K800	Electric and electronic connectors - tech. table		

ATTENTION !

The purpose of this quickstart guide is show a logical sequence of basic operations. This guide does not cover all details or variants of Atos valves. All operations described in this document should be performed only by qualified personnel.
Operations and images could be subject to change without notice. For further information please refer to related documentation.

CONTACT US

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PRODUCTS OVERVIEW

STEP 1
STEP 3
STEP 2.1
STEP 4

INSTALLATION			PROGRAMMING
STEP 1	STEP 2	STEP 3	STEP 4
MECHANICAL	ELECTRICAL	HYDRAULICS	SOFTWARE

STEP 1   MECHANICAL

In case of first commissioning, before the valve installation the whole system must be correctly flushed to grant the required cleanliness level:
During the flushing operation use on-off or by-pass valves in place of the proportional valve
- remove protection pad **P1** located on the valve bottom face only immediately before installation (do not remove connectors caps)
- check the presence and correct positioning of the seals on valve ports
- verify that valve mounting surface is clean and free from damages or burrs
- verify the correct valve orientation according to the pattern of the relevant mounting interface
- lock the fastening bolts respecting below sequence and tightening torque according to valve model

DPZO-AEB-*-1
Mounting surface layout
4401-05-05-0-05
Valve size ISO 4401: 10
n°2 OR 108
n°5 OR 2050
Fastening bolts socket head screws
Tightening torque: **15 Nm**
n°4 M6x40 class:12.9
wrench 5 mm

DPZO-AEB-*-2
Mounting surface layout
4401-07-07-0-05
Valve size ISO 4401: 16
n°2 OR 2043
n°4 OR 130
Fastening bolts socket head screws
Tightening torque: 15 Nm for M6 / 70 Nm for M10
n°4 M10x50   n°2 M6x45 class:12.9
wrench 5 mm
wrench 8 mm

DPZO-AEB-*-4
Mounting surface layout
4401-08-08-0-05
Valve size ISO 4401: 25
n°2 OR 3056
n°4 OR 4112
Fastening bolts socket head screws
Tightening torque: **125 Nm**
n°6 M12x60 class:12.9
wrench 10 mm

DPZO-AEB-*-6
Mounting surface layout
4401-10-09-0-05
Valve size ISO 4401: 32
n°2 OR 3056
n°4 OR 144
Fastening bolts socket head screws
Tightening torque: **600 Nm**
n°6 M20x90 class:12.9
wrench 17 mm

STEP 2   ELECTRICAL

This section considers the different valves options, illustrating the multiple variants of the available electrical connections.
The electrical connections have to be wired according to the selected valve code

2.1   MAIN CONNECTOR

1 Remove main connector cap **P2**

WARNING: remove power supply before any electrical or wiring operations

3 Connect the valve to the system

ZM-7P (metallic) **7 PIN MAIN CONNECTOR** (A1)
ZM-12P (metallic) **12 PIN MAIN CONNECTOR** (A2)

NOTE: the use of above metallic connectors is strongly recommended in order to fulfill EMC requirements

WARNING: a safety fuse is required in series to driver power supply - 2,5 A time lag fuse

2 Select main connector according to valve code and proceed with wirings operations

(A1)   (A2)

Recommended LiYCY shielded cables:
7 x 0,75 mm² max 20 m
7 x 1 mm² max 40 m

Recommended LiYCY shielded cable:
12 x 0,75 mm² max 20 m

	Standard	
A	V+	(power supply 24Vpc)
B	V0	(power supply 0Vpc)
C	AGND	
D	INPUT+	(±10Vpc / 4 ÷ 20mA)
E	INPUT-	
F	MONITOR	(±5Vpc 1V=1A)
G	EARTH	

	/Z and /W options	
1	V+	(power supply 24Vpc)
2	V0	(power supply 0Vpc)
3	ENABLE	(input 24Vpc)
4	INPUT+	(±10Vpc / 4 ÷ 20mA)
5	INPUT-	
6	MONITOR	(±5Vpc 1V=1A)
7	NC	
8	NC	for /Z option
	MONITOR2	(0 ÷ 5Vpc) for /W option
9	VL+	(logic power supply 24Vpc)
10	VL0	(logic power supply 0Vpc)
11	FAULT	(output 24Vpc)
PE	EARTH	

	/Q option	
A	V+	(power supply 24Vpc)
B	V0	(power supply 0Vpc)
C	ENABLE	(input 24Vpc)
D	INPUT+	(±10Vpc / 4 ÷ 20mA)
E	INPUT-	
F	MONITOR	(±5Vpc 1V=1A)
G	EARTH	

2.2   PRESSURE TRANSDUCERS CONNECTOR - only for /W option

1 Remove transducer connector cap **P3**

2 Proceed with wirings operations

	/W option	
1	VF+ 24V	(power supply 24Vpc)
2	TR	(0 ÷ 10Vpc / 4 ÷ 20mA)
3	AGND	
4	NC	
5	NC	

Recommended cable: 3 x 0,25 mm²

3 Connect the valve to the transducer)

ZH-5PM/1.5 - 1.5 m length
ZH-5PM/5 - 5 m length
5 pin plastic - single cable

ELECTRICAL WIRING EXAMPLES

MAIN CONNECTOR - VOLTAGE

REFERENCE INPUT - DIFFERENTIAL MODE

cabinet side		main connector pin-out				valve internal circuit
±10 Vpc		std	/Q	/Z	/W	
Ref. ⊕		D		4		INPUT+ 50K
Ref. ⊖		E		5		INPUT- 50K

REFERENCE INPUT - COMMON MODE

cabinet side		main connector pin-out				valve internal circuit
±10 Vpc		std	/Q	/Z	/W	
Ref.		D		4		INPUT+ 50K
		E		5		INPUT- 50K
⊥ (0 V)		C	B	10		AGND / V0 / VL0

MAIN CONNECTOR - CURRENT

REFERENCE INPUT - DIFFERENTIAL MODE

cabinet side		main connector pin-out				valve internal circuit
4÷20 mA		std	/Q	/Z	/W	Rsh = 500 ohm
Ref. ⊕		D		4		INPUT+
Ref. ⊖		E		5		INPUT-

REFERENCE INPUT - COMMON MODE

cabinet side		main connector pin-out				valve internal circuit
4÷20 mA		std	/Q	/Z	/W	Rsh = 500 ohm
Ref.		D		4		INPUT+ 50K
		E		5		INPUT- 50K
⊥ (0 V)		C	B	10		AGND / V0 / VL0

MAIN CONNECTOR - MONITORS VOLTAGE ONLY

MONITOR OUTPUT

cabinet side		main connector pin-out				valve internal circuit
±5 Vpc		std	/Q	/Z	/W	
Mon.		F		6		MONITOR
⊥ (0 V)		C	B	10		AGND / V0 / VL0

MONITOR2 OUTPUT - only for /W option

cabinet side		main connector pin-out		valve internal circuit
0÷5 Vpc		/W		
Mon.		8		MONITOR2
⊥ (0 V)		10		VL0

PRESSURE TRANSDUCER - only for /W option

transducer side		transducer connector pin-out		valve internal circuit
power supply ⊕	V+	std	/C	VF +24V
	V0	1		AGND
		3	NC	Rsh = 500 ohm (/C option)
signal	TR	2		
		0÷10Vpc	4÷20mA	

STEP 3   HYDRAULICS

Wrench type
3 mm
Tightening torque 4 Nm

Air bleeding:
- release 2 or 3 turns the air bleed screw **V**
- cycle the valve at low pressure until the oil leaking from the **V** port is exempted from air bubbles
- lock the air bleed screw **V**

Consult tech table **FS900** for general guidelines about component's commissioning
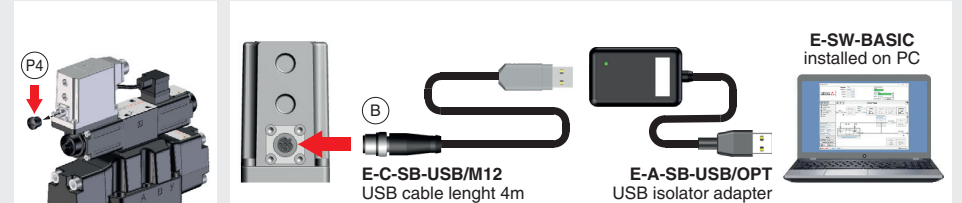
REMARK proportional valves with integral electronics are factory preset with default parameter and ready to use after piping and electrical connections. **Play with parameters is optional, not mandatory!**

PROGRAMMING				PC
4.1	**4.2**	**4.3**		**4.4**
CONNECTION	CONFIGURATION	STORE		BACK UP

4.1 | **CONNECTION**

1 In order to access valve parameterization:
- Install E-SW-BASIC software on PC
- Insert main connector to the valve and power on with **24VDC**

2 Remove USB plastic protection cap **P4** and connect valve to the PC as shown below

E-C-SB-USB/M12
USB cable lenght 4m

E-A-SB-USB/OPT
USB isolator adapter

E-SW-BASIC
installed on PC

WARNING: drivers USB port is not isolated!
The use of USB isolator adapter is highly recommended for PC protection (see **GS500**)

3 Launch the software using E-SW icon:
- **software does NOT detect valid connection**
  communication is not established, please follow wizard procedure **4**
- **software detects valid connection**
  communication automatically established - valve is ON-LINE see **5**

4 Press buttons according the below sequence:
- **a** : ON-LINE - Recommended
  Wizard procedure for standard connection
- **b** : CONNECT TO NP, PS, IR, IL

5 Communication established, valve is ON-LINE and it is possible change parameters
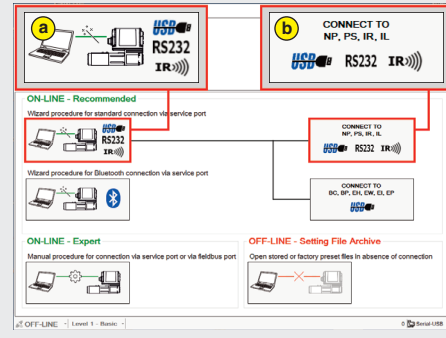
NOTE: Bluetooth adapter available!
For more info please refer to STARTUP BLUETOOTH guide

REMARK: once removed the USB cable E-C-SB-USB/M12, screw the plastic protection cap **P4** applying the correct tightening torque, in order to preserve valve's IP protection characteristics

Tightening torque **0,6 Nm**
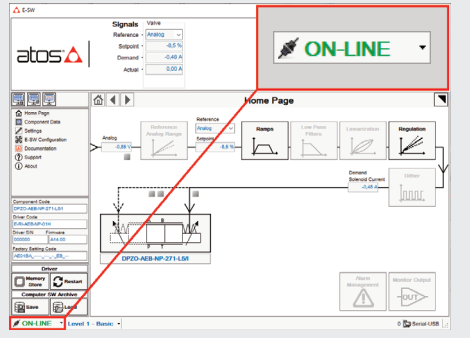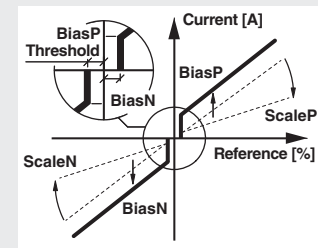
4.2 | **CONFIGURATION**

Single solenoid directional control valve, 2 positions with positive overlapping and flow control valve
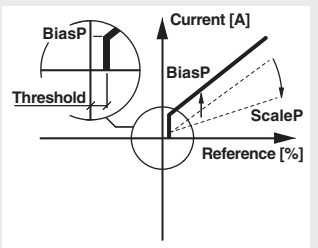
BiasP positive bias
ScaleP positive scale

Threshold = 2%
(200mV or 0,32mA for **/l** option)

Double solenoid directional control valve, 3 positions with positive overlapping

BiasP positive bias
ScaleP positive scale
BiasN negative bias
ScaleN negative scale

Threshold = 2%
(±200mV or ±0,16mA for **/l** option)

BIAS AND SCALE - 2 POSITION VALVES and FLOW CONTROL VALVES

Bias setting: supply input signal just over the Threshold value; increase the Bias until the actuator is start moving, then lightly reduce the Bias just to stop the actuator
Scale setting: supply the max input signal; adjust the Scale to obtain the max actuator speed
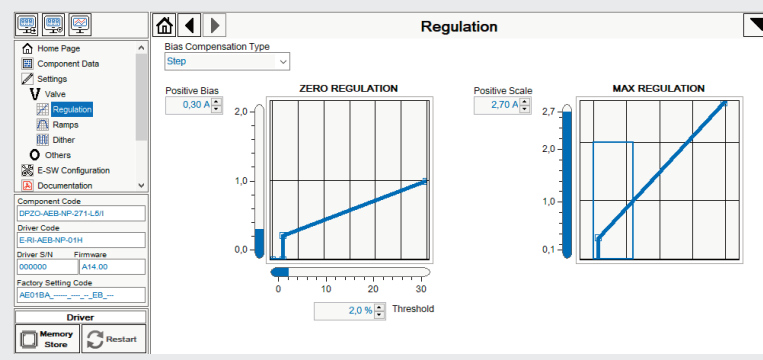

BIAS AND SCALE - 3 POSITION VALVES

Follow the same indications reported for 2 position valves for both valve's solenoids
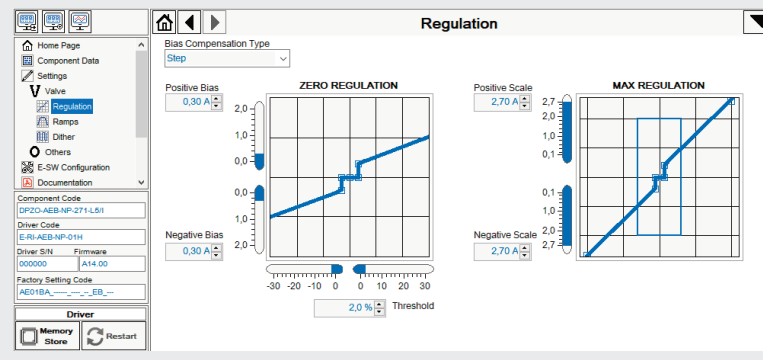
RAMPS

Ramps setting: select the required ramp configuration and adjust the ramp time to optimize the actuator's acceleration and deceleration

No Ramp : no ramps selected
Single Ramp : setup **Ramp 1**
Double Ramp : setup **Ramp 1** and **2**
Four Ramps : setup **Ramp 1**, **2**, **3** and **4** (only 3 way)
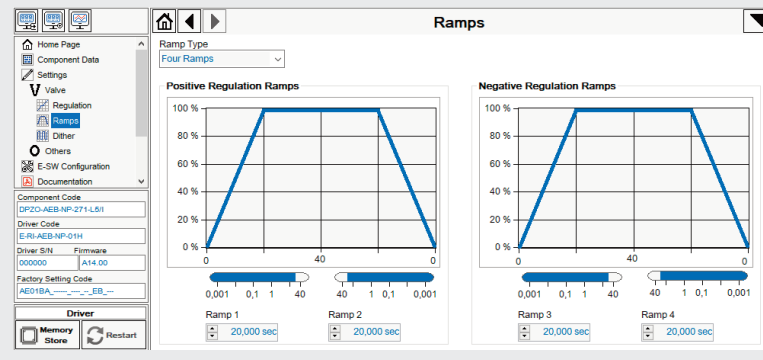

DITHER

Dither setting: factory default 200 Hz
- lower frequencies reduce the hysteresis of the valve, too low values can affect the valve stability
- higher frequencies increase regulation stability, but increase also the hysteresis of the valve

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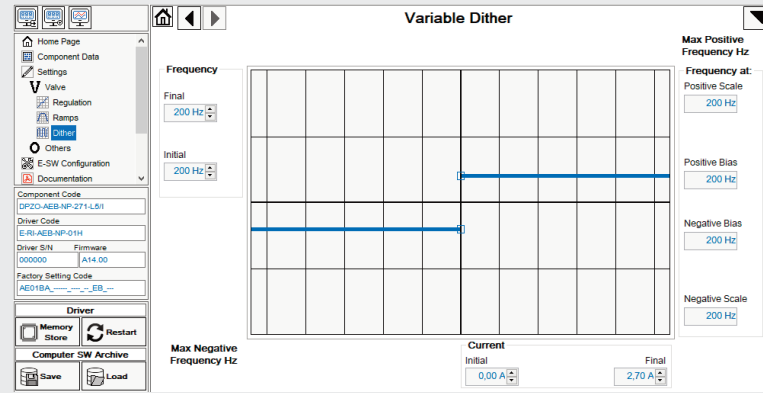
WIZARD REFERENCE - E-SW level 2 functionality

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, browsing to **Reference Analog Range** page:
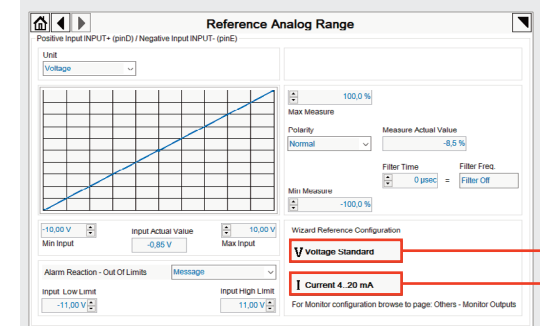
press **Voltage Standard** button to automatically set the analog input signal to voltage

V Voltage Standard

press **Current 4..20 mA** button to automatically set the analog input signal to current

I Current 4..20 mA

REMARK: Voltage Standard or **Current 4..20 mA** buttons do not act on Monitor output signal configuration!
For Monitor output signal configuration browse to page **Others - Monitor Outputs**

4.3 | **STORE**

Parameters modifications will be stored into driver permanent memory:
- press **Memory Store** button to access **Driver - Memory Store** window
- press **Store User** button to store **Valve Parameters**

WARNING: During valve parameters storing operations, the driver automatically shuts down the solenoid power supply for a short time. Do not perform any storing commands while the system is working.

4.4 | **BACK UP**

Parameter modifications will be saved into PC memory:
- press **Save** button to access **Computer SW Archive - Setting Files** page, **Setting File Name** pop-up appears
- input a valid name into **Description** field and press **Ok** button

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TROUBLESHOOTING

Valve vibration or noise
- presence of air in the solenoid; perform air bleeding procedure – see STEP 3
- dither frequency too low; increase value of the frequency – see STEP 4.2

The valve does not follow the reference signal
- valve is powered off, verify presence of 24 Vdc power supply
- valve is disabled, verify presence of 24 Vdc on enable pin - only for /Q, /Z and /W options
- flow/pressure values exceeding the valve's performance limits, verify that hydraulic operating conditions are in compliance with the valve's characteristics
- big hysteresis or spool stick-slip, reduce the dither frequency
- spool sticking, contact Atos service center
- missing piloting pressure, verify that hydraulic power level is compliant with valve's characteristics
- wrong pilot/drain configuration - check if the pilot/drain configuration of the valve corresponds to the effective system layout

Software parameters modifications are lost when valve is switched off
- parameter store operation was not performed, check store procedure – see STEP 4, section 4.3

Software parameters modifications have no effect on the valve
- valve is OFF LINE, check connection procedure – see STEP 4, section 4.1

After the modifications of software parameters the valve does not work properly
- restore valve factory parameters using 'Restore Factory' button, located in 'Driver - Memory Store' window:
  - during restore, the current to the solenoid(s) will be temporarily switched off!
  - factory parameters will be applied at next driver restart or after power off-on sequence!