

PROPORTIONAL AND SERVOPROPORTIONAL CARTRIDGES

Valve model: LIQZP-LEB 2 or 3 way Valve model: LIQZP-TEB 2 way

Driver models:
E-RI-LEB/TEB-N-NP for valves without IO-Link communication interface NP
E-RI-LEB/TEB-N-IL for valves with IO-Link communication interface IL

IDENTIFICATION

Valve identification plates and label

Cartridge name plate : M Pilot valve name plate : N Driver label : L

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

INSTALLATION TOOLS ACCORDING TO VALVE MODEL- not included

Fastening bolts	Wrenches	Main connectors NP	IO-Link connector IL
<p>supplied with the valve</p> <p>socket head screws</p>	<p>for fastening bolts and air bleeding</p> <p>see STEP 1 and STEP 3</p>	<p>7 pin - metallic 12 pin - metallic</p> <p>see STEP 2.1</p>	<p>5 pin - metallic</p> <p>see STEP 2.2</p>

PROGRAMMING TOOLS - not included

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

PROGRAMMING SOFTWARE

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

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

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
FS330 LIQZP 2-way cartridges, high performance - tech. table	STARTUP BLUETOOTH Bluetooth adapter startup guide
FS340 LIQZP 3-way cartridges - tech. table	E-MAN-RI-LEB TEB/LEB - driver operating manual
TFS325 LIQZP 2-way cartridges, throttling functions - tech. table	E-MAN-S-IL IO-Link protocol programming manual
P006 Mounting surfaces - tech. table	
GS500 Programming tools - tech. table	
GS520 IO-Link features - 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.

PRODUCTS OVERVIEW

STEP 1 → STEP 2 → STEP 3 → STEP 4

IL NP

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:

- remove the cartridge protection (do not remove connectors caps)
- check the presence and correct positioning of the seals on the mounting surface ports (X - Y) and on the cartridge (K)

2 or 3 way surface seals 2 way cartridge seals 3 way cartridge seals

(X) (Y) (K)

- verify that valve mounting surface and the manifold cavity are 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 tightening torque according to valve model

SIZE 16 to 63
mounting surface layout ISO 7368

LIQZP

locating pin n°2 OR n°4 fastening bolt (supplied with the valve)

SIZE 80 to 125
mounting surface layout ISO 7368

LIQZP

locating pin size 125 locating pin size 80 ÷ 100 n°2 OR locating pin size 125 n°8 fastening bolt (supplied with the valve)

Notes: ISO 7368 cavity only for 2 way version

Type	Size	Fastening Bolt class: 12.9	Wrench (mm)	Tightening Torque (Nm)	O-Ring (X - Y)
LIQZP	16	n°4 M8 x 90	6	35	n°2 OR-108
	25	n°4 M12 x 100	10	125	n°2 OR-108
	32	n°4 M16 x 60	14	300	n°2 OR-2043
	40	n°4 M20 x 70	17	600	n°2 OR-2050
	50	n°4 M20 x 80	17	600	n°2 OR-3043
	63	n°4 M30 x 120	22	2100	n°2 OR-3050
	80	n°8 M24 x 80	19	1000	n°2 OR-4075
	100	n°8 M30 x 120	22	2100	n°2 OR-4087
	125	n°8 M36 x 260	27	3600	n°2 OR-37x5

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 - only for NP

1 Remove main connector cap P1

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

WARNING: remove power supply before any electrical or wiring operations

3 Connect the valve to the system

ZM-7P (metallic) 7 PIN MAIN CONNECTOR

ZM-12P (metallic) 12 PIN MAIN CONNECTOR

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

Standard		/Z option	
A V+	(power supply 24Voc)	1 V+	(power supply 24Voc)
B V0	(power supply 0Voc)	2 V0	(power supply 0Voc)
C AGND		3 ENABLE	(input 24Voc)
D Q_INPUT+	(±10Voc / 4 ÷ 20mA)	4 Q_INPUT+	(±10Voc / 4 ÷ 20mA)
E INPUT-		5 INPUT-	
F Q_MONITOR	(±10Voc / 4 ÷ 20mA)	6 Q_MONITOR	(±10Voc / 4 ÷ 20mA)
G EARTH		7 AGND	
		8 R_ENABLE	(output 24Voc)
		9 NC	
		10 NC	
		11 FAULT	(output 24Voc)
		PE	EARTH

/Q option	
A V+	(power supply 24Voc)
B V0	(power supply 0Voc)
C AGND	
D Q_INPUT+	(±10Voc / 4 ÷ 20mA)
E INPUT-	
F Q_MONITOR	(±10Voc / 4 ÷ 20mA)
G EARTH	

/F option	
A V+	(power supply 24Voc)
B V0	(power supply 0Voc)
C AGND	
D Q_INPUT+	(±10Voc / 4 ÷ 20mA)
E INPUT-	
F FAULT	(output 24Voc)
G EARTH	

ELECTRICAL WIRING EXAMPLES - only for NP

MAIN CONNECTOR - VOLTAGE

REFERENCE INPUT - DIFFERENTIAL MODE

REFERENCE INPUT - COMMON MODE

MAIN CONNECTOR - CURRENT

REFERENCE INPUT - DIFFERENTIAL MODE

REFERENCE INPUT - COMMON MODE

MONITOR OUTPUT

2.2 IO-Link CONNECTOR - only for IL

1 Remove IO-Link connector caps P2

2 Proceed with wirings operations

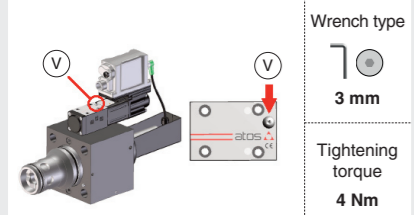
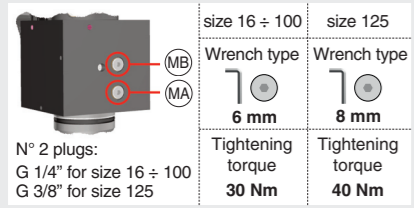
3 Connect the valve to the IO-Link network of the system

ZM-5PF (metallic) 5 PIN IO-Link CONNECTOR

1 L+	(power supply 24Voc - IO-Link)
2 P24	(power supply 24Voc - others)
3 L-	(power supply 0Voc - IO-Link)
4 C/Q	IO-Link data-line
5 N24	(power supply 0Voc - others)

M12 Coding A - 5 pin
Cable diameter 6 ÷ 8 mm

STEP 3 HYDRAULICS



Main stage air bleeding - only LEB:

- at the machine commissioning it is advisable to bleed the air from spool piloting chambers, by loosening the **MA** and **MB** plugs

Pilot 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**

NOTE: to facilitate bleeding operations, apply a light backpressure (1 or 2 bar) by adding a check valve on Y line. The check valve is particularly suggested for valves size 63 to 125 installed with the solenoid upward

Consult **FS900** for general guidelines about component's commissioning

WARNING: To avoid overheating and possible damage of the electronic driver, the valves must be never energized without hydraulic supply to the pilot stage. In case of prolonged pauses of the valve operation during the machine cycle, it is always advisable to switch off or disable the driver (option /Q or /Z)

STEP 4 SOFTWARE

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!**

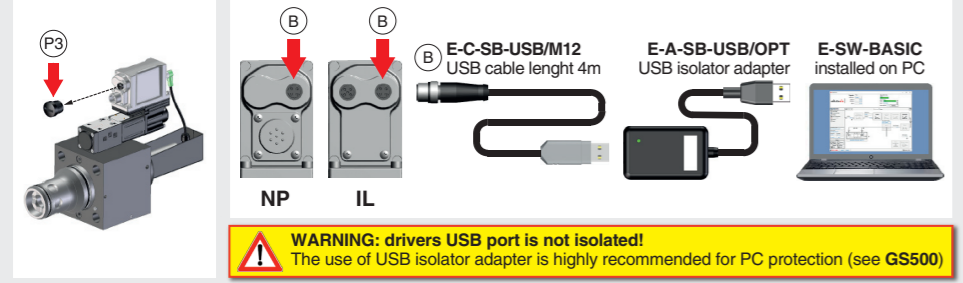
PROGRAMMING				PC
4.1	4.2	4.3	4.4	4.5
CONNECTION	CONFIGURATION	SMART TUNING	STORE	BACK UP

4.1 CONNECTION

1 In order to access valve parameterization:

- Install E-SW-BASIC software on PC
- Insert main connector or IO-Link connector to the valve and power on with 24Vdc

2 Remove USB plastic protection cap **P3** and connect valve to the PC as shown below



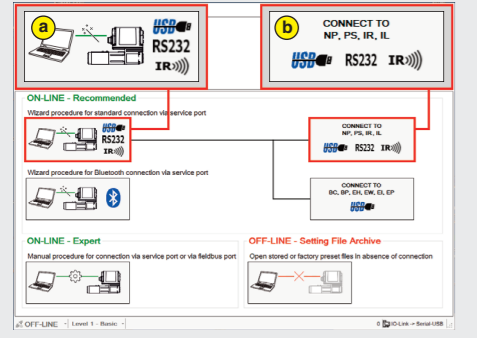
3 Launch the software using E-SW icon:

- software does NOT detect valid connection communication is not established, please follow wizard procedure
- software detects valid connection communication automatically established - valve is ON-LINE see

4 Press buttons according the below sequence:

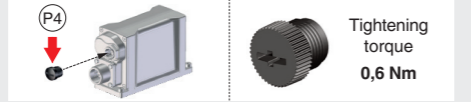
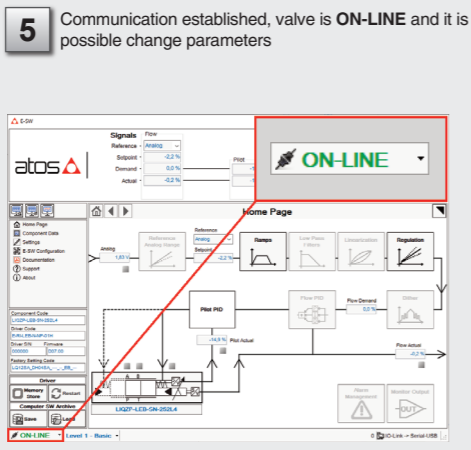
a) ON-LINE - Recommended
Wizard procedure for standard connection

b) CONNECT TO NP, PS, IR, IL
Wizard procedure for Bluetooth connection via service port

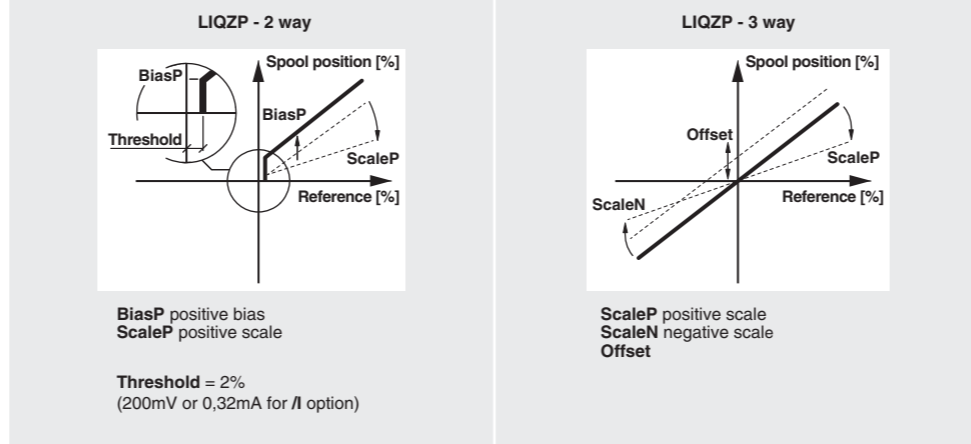


NOTE: Bluetooth adapter available!
For more info please refer to STARTUP BLUETOOTH guide

REMARK: once removed the USB cable E-C-SB-USB/M12, screw the plastic protection cap **P3** applying the correct tightening torque, in order to preserve valve's IP protection characteristics



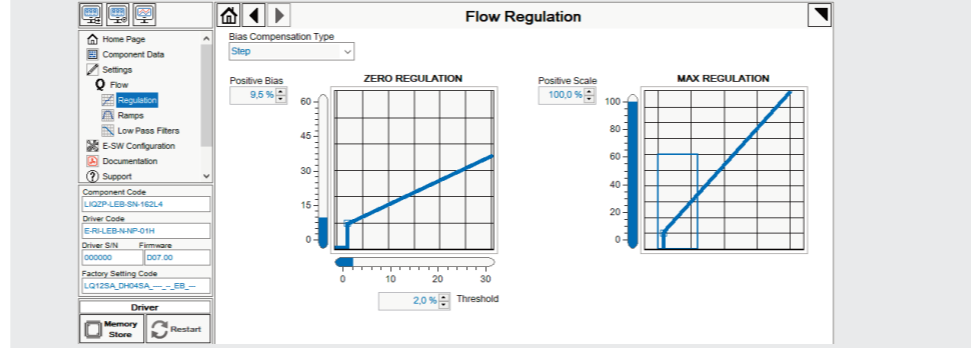
4.2 CONFIGURATION



BIAS AND SCALE - LIQZP 2 way

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

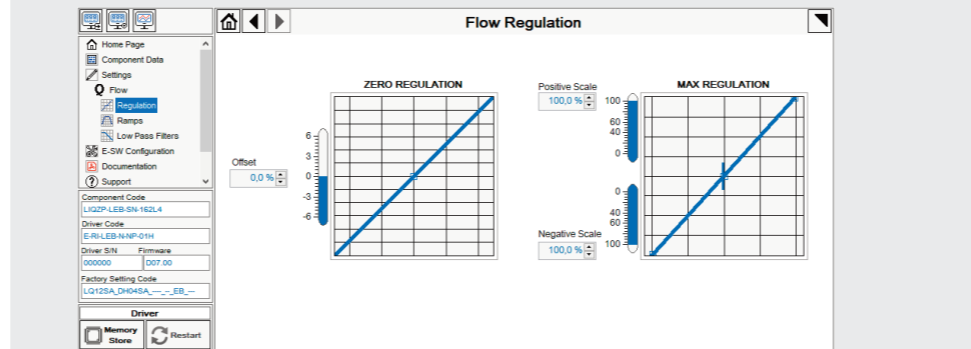
Scale setting: supply the max input signal; adjust the Scale to obtain the max actuator speed



OFFSET AND SCALE - LIQZP 3 way

Offset setting: supply the input signal equal to 0%; adjust the Offset until the actuator is stopped

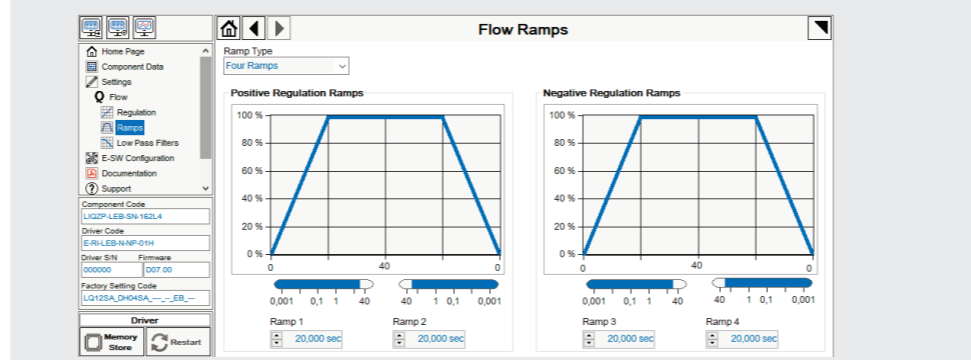
Scale setting: supply the max input signal (positive/negative); adjust the Scale to obtain the max actuator speed in both directions



RAMPS - LIQZP 2 or 3 way

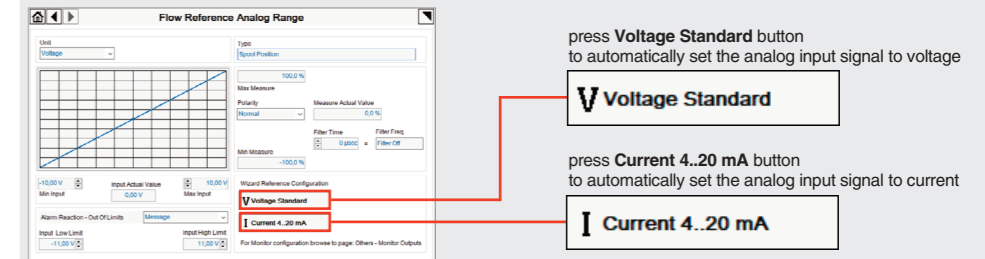
Ramps setting: select the required ramp configuration and adjust the ramp time to optimize the actuator's acceleration and deceleration

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



WIZARD REFERENCE - E-SW level 2 functionality - only for NP

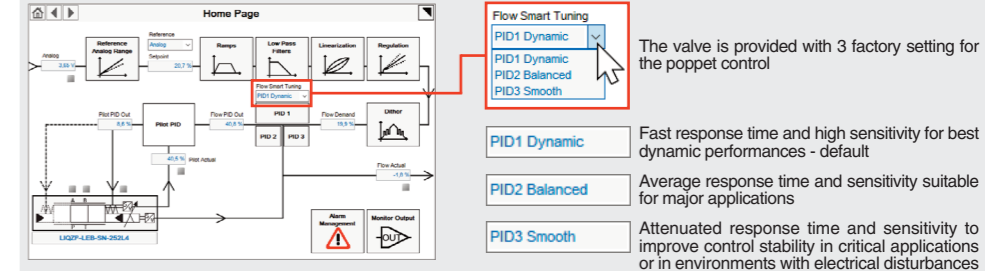
Reference input signal is factory preset according to selected valve code, defaults are ±10 Vdc for standard and 4 ÷ ±20 mA for /I option. Input signal can be reconfigured via software selecting between voltage and current, browsing to **Reference Analog Range** page:



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 SMART TUNING - E-SW level 2 functionality

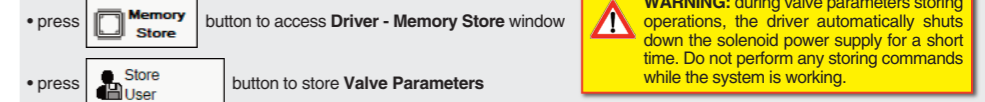
Smart tuning allows to adjust the valve dynamic response in order to match different performance requirements.



Note: smart tuning function not available for LIQZP-TEB cartridges

4.4 STORE

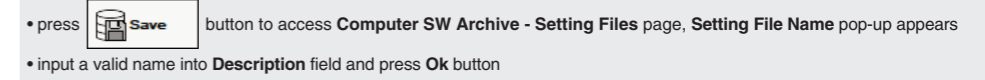
Parameters modifications will be stored into driver permanent memory:



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.

4.5 BACK UP

Parameter modifications will be saved into PC memory:

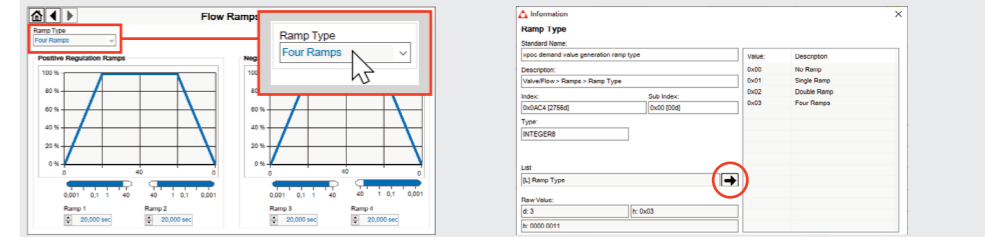


HINT ! - Wizard objects dictionary - only for IL

Press **CTRL + H** on the PC keyboard to open the context help form

Move arrow on parameter (e.g. **Ramp Type**) to display the objects dictionary information to access the parameter via IO-Link

If present **List**, press **→** to display values accepted by the parameter



NOTE: alternatively right click on any parameter

TROUBLESHOOTING

Valve vibration or noise

- presence of air in the solenoid; perform air bleeding procedure – see STEP 3

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 and /Z options
- spool sticking, contact Atos service center
- missing piloting pressure, verify that hydraulic power level is compliant with valve's characteristics

Software parameters modifications are lost when valve is switched off

- parameter store operation was not performed, check store procedure – see STEP 4, section 4.4

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 to off!
 - factory parameters will be applied at next driver restart or after power off-on sequence!