

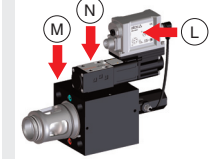
SERVOPROPORTIONAL 2 WAY CARTRIDGES HIGH FLOW, HIGH DYNAMIC

Valve model:  
LIQZH-LEB 2 way

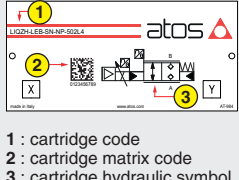
Driver models:  
E-RI-LEB-N-NP for valves without IO-Link communication interface NP  
E-RI-LEB-N-IL for valves with IO-Link communication interface IL

IDENTIFICATION

Valve identification plates and label

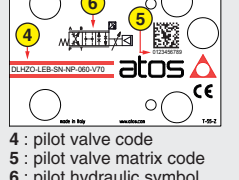


Cartridge name plate : M



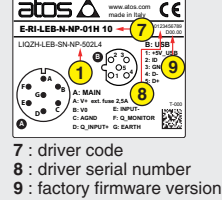
1 : cartridge code  
2 : cartridge matrix code  
3 : cartridge hydraulic symbol

Pilot valve name plate : N








4 : pilot valve code  
5 : pilot valve matrix code  
6 : pilot hydraulic symbol

Driver label : L








7 : driver code  
8 : driver serial number  
9 : factory firmware version

INSTALLATION TOOLS ACCORDING TO VALVE MODEL- not included

Fastening bolts		Wrenches		Main connectors NP		IO-Link connector IL
 socket head screws		 for fastening bolts and air bleeding		 std. / I/Q / F	 /Z	
see STEP 1 and STEP 3		see STEP 2.1		see STEP 2.2		

PROGRAMMING TOOLS - not included

PC software		mobile App	Bluetooth		OR	USB connection KIT	
 E-SW-SETUP		 Atos CONNECT	 E-A-BTH			 E-C-SB-USB/M12	 E-A-SB-USB/OPT


NOTE: Atos CONNECT supports Atos digital valve drivers equipped with E-A-BTH or with built-in Bluetooth, see STEP 5

PC SOFTWARE

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

REMARK Atos PC software is designed for Windows based operative systems - Windows 10 or later

PC SOFTWARE DOWNLOAD



WELCOME  
enter your email  
Password  
Forgot your password?  
Register

Download PC software at [www.atos.com](http://www.atos.com) accessing to "MyAtos -> Download area electronics"

Free registration by filling the form at [www.atos.com/en-it/login](http://www.atos.com/en-it/login)

E-SW-SETUP is free and available in Download area

RELATED DOCUMENTATION - [www.atos.com](http://www.atos.com)

FS900	Operating and maintenance information - tech. table	STARTUP BLUETOOTH	Bluetooth adapter startup guide
FS338	LIQZH 2-way cartridges, high flow, high dynamic - tech. table	E-MAN-RI-LEB	TEB/LEB - driver operating manual
P006	Mounting surfaces - tech. table	E-MAN-S-IL	IO-Link protocol programming manual
GS500	Programming tools - tech. table		
GS520	IO-Link features - tech. table		
K800	Electric and electronic connectors - tech. table		

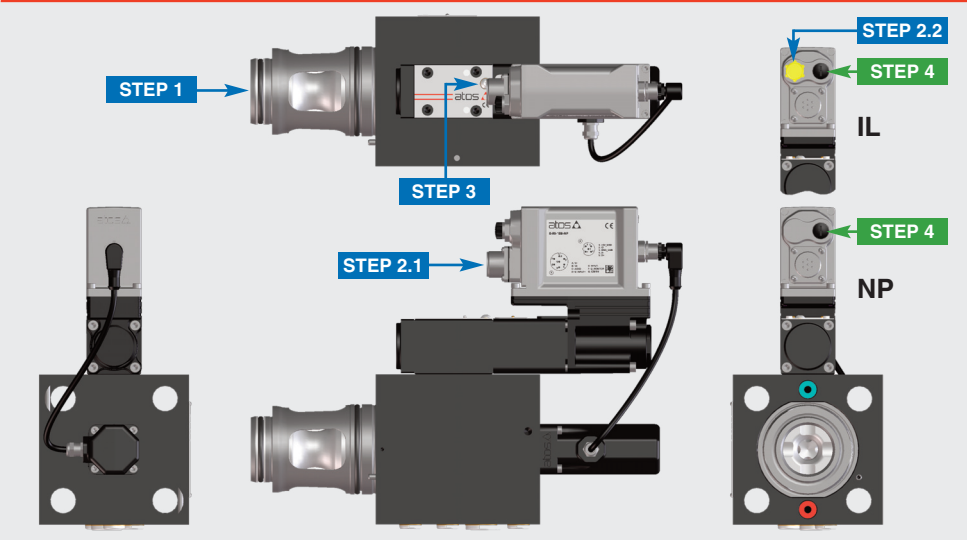
ATTENTION !

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.

CONTACT US

Atos spa - Italy - 21018 Sesto Calende [www.atos.com](http://www.atos.com) [support@atos.com](mailto:support@atos.com)

PRODUCTS OVERVIEW



INSTALLATION			PROGRAMMING	
STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
MECHANICAL	ELECTRICAL	HYDRAULICS	PC SOFTWARE	MOBILE APP

STEP 1 MECHANICAL

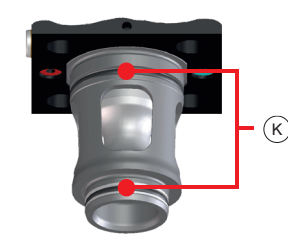
In case of first commissioning, before the valve installation the whole system must be correctly flushed to grant the required cleanliness level:

- 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 )

surface seals

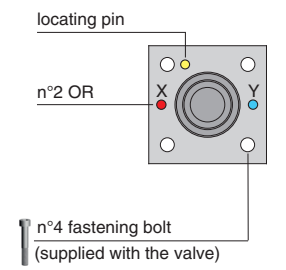


cartridge seals



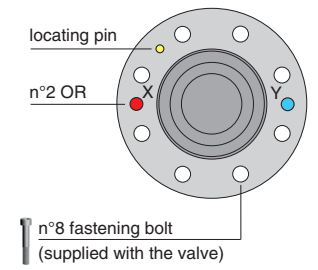
- verify that valve mounting surface and the manifold cavity are clean and free from damages or burrs
- verify the correct valve orientation according to the pattern of the relevant mounting interface
- lock the fastening bolts respecting tightening torque according to valve model

SIZE 25 to 63  
mounting surface layout  
ISO 7368



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

SIZE 80 to 100  
mounting surface layout  
ISO 7368



locating pin  
n°2 OR  
n°8 fastening bolt (supplied with the valve)

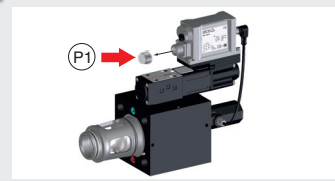
Type	Size	Fastening Bolt class: 12.9	Wrench (mm)	Tightening Torque (Nm)	O-Ring (X - Y)
LIQZH	25	n°4 M12 x 100	10	125	n°2 OR-108
	32	n°4 M16 x 60	14	300	n°2 OR-2043
	40	n°4 M20 x 70	17	600	n°2 OR-2050
	50	n°4 M20 x 80	17	600	n°2 OR-3043
	63	n°4 M30 x 120	22	2100	n°2 OR-3050
	80	n°8 M24 x 80	19	1000	n°2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

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

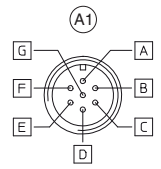
1 Remove main connector cap P1



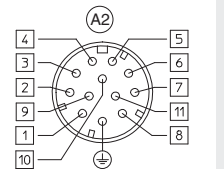
WARNING: remove power supply before any electrical or wiring operations

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

Recommended LIYCY shielded cables:  
7 x 0,75 mm<sup>2</sup> max 20 m  
7 x 1 mm<sup>2</sup> max 40 m




Recommended LIYCY shielded cable:  
12 x 0,75 mm<sup>2</sup> max 20 m

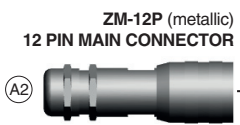


3 Connect the valve to the system

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

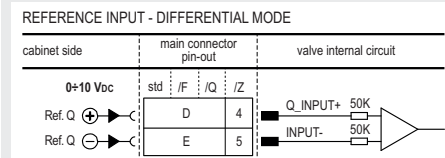
/Z option	
1	V+ (power supply 24Voc)
2	V0 (power supply 0Voc)
3	ENABLE (input 24Voc)
4	Q_INPUT+ (±10Voc / 4 ÷ 20mA)
5	INPUT- (±10Voc / 4 ÷ 20mA)
6	Q_MONITOR (±10Voc / 4 ÷ 20mA)
7	AGND (output 24Voc)
8	R_ENABLE (output 24Voc)
9	NC
10	NC
11	FAULT (output 24Voc)
PE	EARTH

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

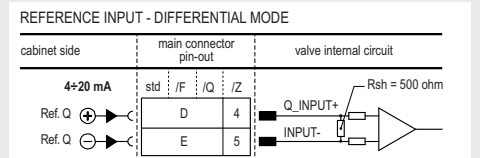
/F option	
A	V+ (power supply 24Voc)
B	V0 (power supply 0Voc)
C	AGND
D	Q_INPUT+ (±10Voc / 4 ÷ 20mA)
E	INPUT- (output 24Voc)
F	FAULT (output 24Voc)
G	EARTH

ELECTRICAL WIRING EXAMPLES - only for NP

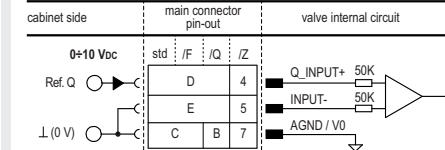
MAIN CONNECTOR - VOLTAGE



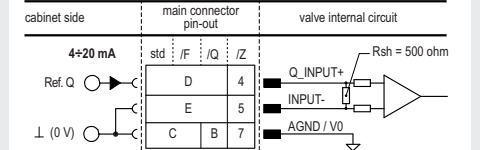
MAIN CONNECTOR - CURRENT



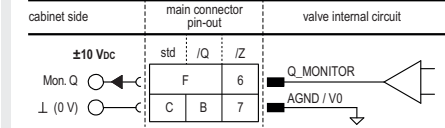
REFERENCE INPUT - COMMON MODE



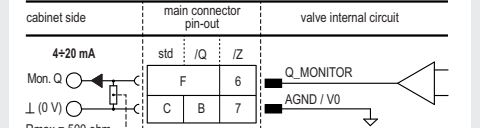
REFERENCE INPUT - COMMON MODE



MONITOR OUTPUT

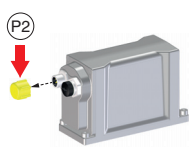


MONITOR OUTPUT

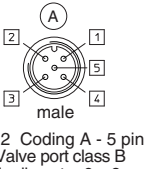


2.2 IO-Link CONNECTOR - only for IL

1 Remove IO-Link connector caps P2



2 Proceed with wirings operations

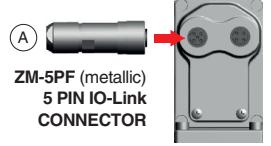


M12 Coding A - 5 pin  
Valve port class B  
Cable diameter 6 ÷ 8 mm

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

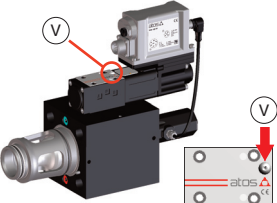
(1) max power consumption 50 W;  
for master ports class A connect P24/N24 to an external power supply

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




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

## STEP 3 HYDRAULICS




Wrench type



3 mm

Tightening torque




4 Nm

**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 100 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 PC SOFTWARE

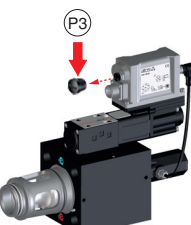
**REMARK** proportional valves with on-board electronics are factory preset with default parameter and ready to use after piping and electrical connections. **Play with parameters is optional, not mandatory!**

### 4.1 CONNECTION

#### 1 In order to access valve parameterization:

- Install E-SW-SETUP 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 show below via Bluetooth (adapter only) or USB (cable and isolator adapter)




**E-A-BTH** Bluetooth adapter

up to 10 m

**E-SW-SETUP** installed on PC

**E-C-SB-USB/M12** USB cable length 4m

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



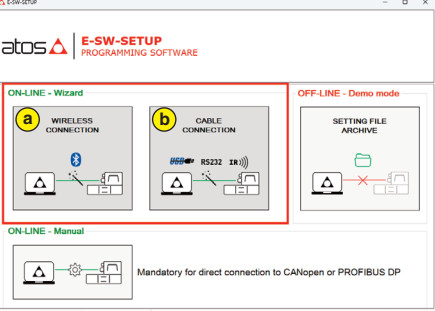
**WARNING: drivers USB port is not isolated!**  
The use of USB isolator adapter is highly recommended for PC protection (see **GS500**)

#### 3 Launch the PC software using E-SW icon:

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

#### 4 In **ON-LINE** - Wizard press button:

- a** : **WIRELESS CONNECTION**  
Wizard procedure for connection via Bluetooth
- b** : **CABLE CONNECTION**  
Wizard procedure for connection via USB cable



ON-LINE - Wizard

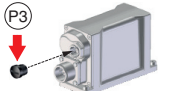
OFF-LINE - Demo mode

ON-LINE - Manual

Mandatory for direct connection to CANopen or PROFIBUS DP

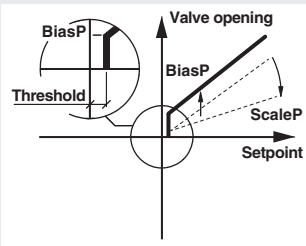
**NOTE:** for more info about E-A-BTH Bluetooth adapter, please refer to STARTUP BLUETOOTH guide

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



Tightening torque  
**0,6 Nm**

## 4.2 CONFIGURATION



**BiasP** positive bias  
**ScaleP** positive scale

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

### BIAS AND SCALE

**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

### RAMPS

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

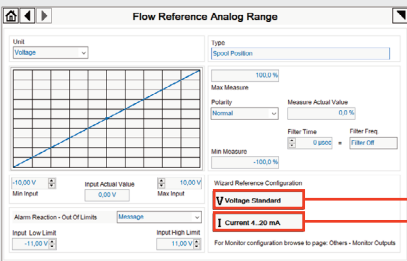
**No Ramp** : no ramps selected

**Single Ramp** : setup **Ramp 1**

**Double Ramp** : setup **Ramp 1** and **2**

## WIZARD REFERENCE - E-SW-SETUP - only for NP

Reference input signal is factory preset, defaults are 0 ÷ 10 Vdc for standard and 4 ÷ 20 mA for /I option. Input signal can be reconfigured via PC 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

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

**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 Output**

## 4.3 SMART TUNING - E-SW-SETUP

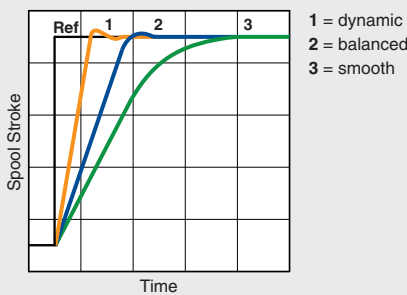
Smart tuning allows to adjust the valve dynamic response in order to match different performance requirements.

The cartridge is provided with 3 factory setting for the spool control:

**dynamic** fast response time and high sensitivity for best dynamic performances (default factory setting)

**balanced** average response time and sensitivity suitable for major applications

**smooth** attenuated response time and sensitivity to improve control stability in critical applications or in environments with electrical disturbances




## 4.4 STORE

Parameters modifications will be stored into driver permanent memory:

• press **Memory Store** button to access **Driver - Memory Save** window

• press **Save User Set** 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.

## 4.5 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

## STEP 5 MOBILE APP

**ATOS CONNECT** for smartphones and tablets is a free downloadable app which allows quick access to valve main functional parameters and configuration via Bluetooth, thus avoiding physical cable connection and significantly reducing commissioning times.

**ATOS CONNECT** app requirements:

- iOS 14 / Android 9
- Bluetooth Low Energy (BLE), version 4.2 or higher
- Atos digital valves/drivers equipped with E-A-BTH Bluetooth adapter or with built-in Bluetooth



Download on the  
**App Store**




GET IT ON  
**Google Play**

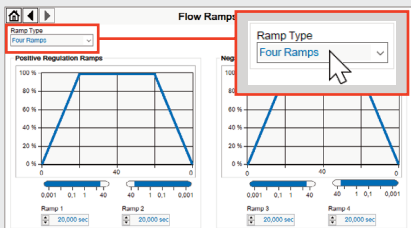


EXPLORE IT ON  
**AppGallery**

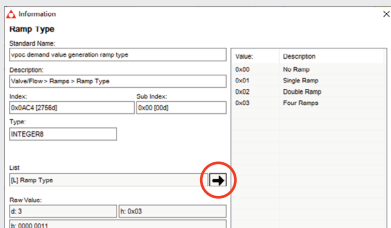
## HINT ! - Wizard objects dictionary - only for IL

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



Ramp Type  
**Four Ramps**



Ramp type

Standard Name: Ramp Type

Description: ValveRamp > Ramps > Ramp Type

Index: 0x0AC4 (27684) Sub Index: 0x00 (000)


Type: INTEGER

List

[1] Ramp Type

New Value: 4 (3) In Out3

In Out3: 0x00 (001)

**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

### PC 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

### PC 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 PC software parameters the valve does not work properly

- restore valve factory parameters using 'Load Factory Set' button, located in 'Driver - Memory Save' 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!