QUICKSTART FULL

QF360-1 - 09/25

for digital proportionals with LVDT transducer - fieldbus

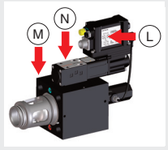
SERVOPROPORTIONAL 2 WAY CARTRIDGES HIGH FLOW, HIGH DYNAMIC

Valve model:
LIQZH-LES 2 way

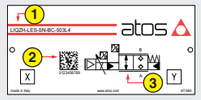
Driver model:
E-RI-LES-N for valves without alternated p/Q control **SN**

IDENTIFICATION

Valve identification plates and label

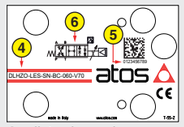


Cartridge name plate : **M**



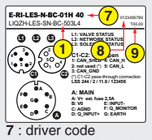
1 : cartridge code
2 : cartridge matrix code
3 : cartridge hydraulic symbol

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		Fieldbus connectors	
		std, /Q, /F	**/Z**	**BC, BP**	**EH, EW, EI, EP**
supplied with the valve					
socket head screws	for fastening bolts and air bleeding	7 pin metallic	12 pin metallic	5 pin metallic	4 pin metallic
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	
		Adapter	Cable	Isolator
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)	**IL** (IO-Link)	**PS** (Serial)	**IR** (Infrared)
		BC (CANopen)	**BP** (PROFIBUS DP)	**EH** (EtherCAT)	
		EW (POWERLINK)	**EI** (EtherNet/IP)	**EP** (PROFINET RT/IRT)	
	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

Download area
electronics

Download PC software at **www.atos.com**
accessing to "**MyAtos** -> **Download area** electronics"

Free registration by filling the form at **www.atos.com/en-it/login**

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

RELATED DOCUMENTATION - www.atos.com

FS900	Operating and maintenance information - tech. table	**STARTUP BLUETOOTH**	Bluetooth adapter startup guide
FS338	LIQZH 2-way cart, high flow, high dynamic - tech. table	**E-MAN-RI-LES**	TES/LES - driver operating manual
P006	Mounting surfaces - tech. table	**E-MAN-S-BC**	CANopen protocol programming manual
GS500	Programming tools - tech. table	**E-MAN-S-BP**	PROFIBUS DP protocol programming manual
GS510	Fieldbus - tech. table	**E-MAN-S-EH**	EtherCAT protocol programming manual
K800	Electric and electronic connectors - tech. table	**E-MAN-S-EW**	POWERLINK protocol programming manual
		E-MAN-S-EI	EtherNet/IP protocol programming manual
		E-MAN-S-EP	PROFINET protocol programming manual

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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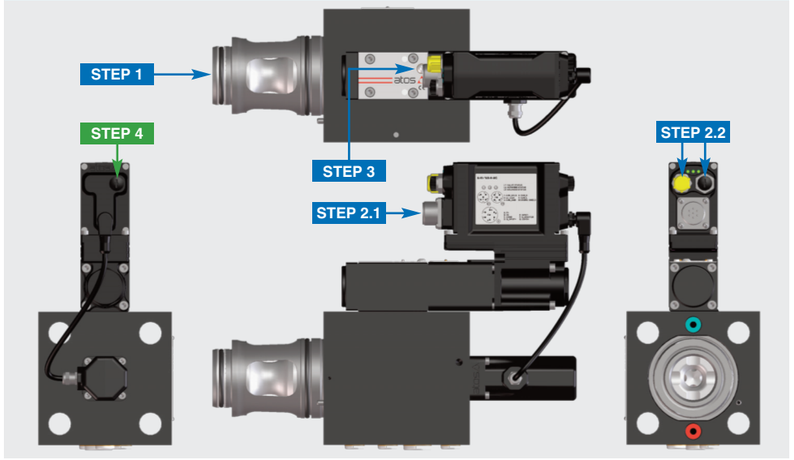
PRODUCTS OVERVIEW



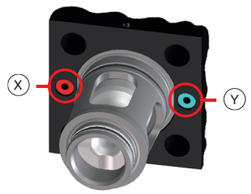
INSTALLATION			PROGRAMMING	
STEP 1	**STEP 2**	**STEP 3**	**STEP 4**	**STEP 5**
MECHANICAL	**ELECTRICAL**	**HYDRAULICS**	**PC SOFTWARE**	**MOBILE APP**

STEP 1 MECHANICAL

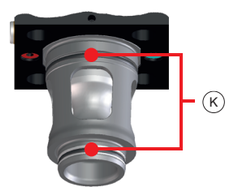
In case of first commissioning, before the valve installation the whole system must be correctly flushed to grant the required cleanliness level:

- 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

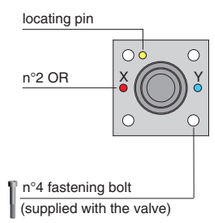


cartridge seals

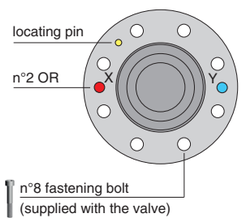


- verify that valve mounting surface and the manifold cavity are clean and free from damages or burrs
- verify the correct valve orientation according to the pattern of the relevant mounting interface
- lock the fastening bolts respecting tightening torque according to valve model

SIZE 25 to 63
mounting surface layout
ISO 7368



SIZE 80 to 100
mounting surface layout
ISO 7368



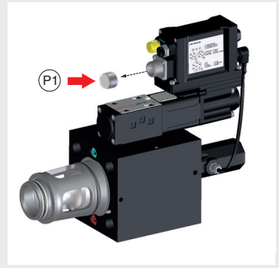
Type	Size	Fastening Bolt class: 12.9	Wrench (mm)	Tightening Torque (Nm)	O-Ring (X - Y)
LIQZH	25	n°4 M12 x 100	10	125	n°2 OR-108
	32	n°4 M16 x 60	14	300	n°2 OR-2043
	40	n°4 M20 x 70	17	600	n°2 OR-2050
	50	n°4 M20 x 80	17	600	n°2 OR-3043
	63	n°4 M30 x 120	22	2100	n°2 OR-3050
	80	n°8 M24 x 80	19	1000	n°2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

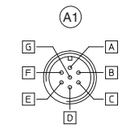
2.1 MAIN CONNECTOR

1 Remove main connector cap **P1**

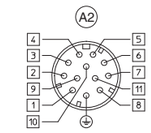


WARNING: remove power supply before any electrical or wiring operations

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



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



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

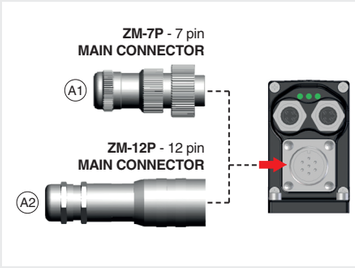
standard		
A	**V+** (power supply 24Vdc)	
B	**V0** (power supply 0Vdc)	
C	**AGND**	
D	**Q_INPUT+**	(±10Vdc / 4 ÷ 20mA)
E	**INPUT-**	
F	**Q_MONITOR** (±10Vdc / 4 ÷ 20mA)	
G	**EARTH**	

/Z option		
1	**V+** (power supply 24Vdc)	
2	**V0** (power supply 0Vdc)	
3	**ENABLE** (input 24Vdc)	
4	**Q_INPUT+**	(±10Vdc / 4 ÷ 20mA)
5	**INPUT-**	
6	**Q_MONITOR** (±10Vdc / 4 ÷ 20mA)	
7	**NC**	
8	**NC**	
9	**VL+** (power supply 24Vdc)	
10	**VL0** (power supply 0Vdc)	
11	**FAULT** (output 24Vdc)	
PE	**EARTH**	

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

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

3 Connect the valve to the system

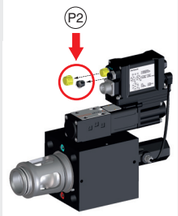


NOTE: the use of above metallic connectors is strongly recommended in order to fulfill EMC requirements

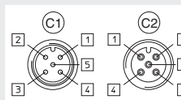
WARNING: a safety fuse is required in series to driver power supply - 2,5 A time lag fuse

2.2 FIELDBUS CONNECTORS - only for BC, BP, EH, EW, EI, EP

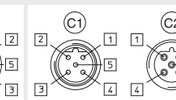
1 Remove fieldbus connectors caps **P2**



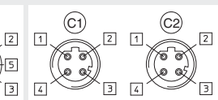
2 Select fieldbus connectors according to valve code and proceed with wirings operations



M12 Coding A
Cable diameter 6 ÷ 8 mm



M12 Coding B
Cable diameter 6 ÷ 8 mm



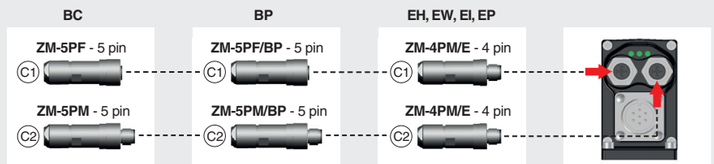
M12 Coding D
Cable diameter 4 ÷ 8 mm

BC		
1	**CAN_SHLD**	Shield
2	**not used**	
3	**CAN_GND**	Signal zero data line
4	**CAN_H**	Bus line (high)
5	**CAN_L**	Bus line (low)

BP		
1	**+5V**	Termination supply signal
2	**LINE-A**	Bus line (high)
3	**DGND**	Data line - termination signal zero
4	**LINE-B**	Bus line (low)
5	**SHIELD**	

EH - EW - EI - EP		
1	**TX+**	Transmitter
2	**RX-**	Receiver
3	**TX-**	Transmitter
4	**RX-**	Receiver
housing	**SHIELD**	

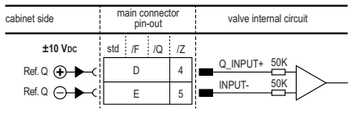
3 Connect the valve to the fieldbus network. For information about fieldbus terminators see **GS500**.
The use of above metallic connectors is strongly recommended in order to fulfill EMC requirements.



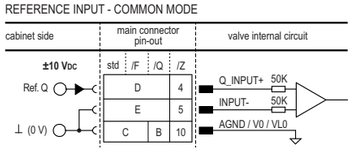
ELECTRICAL WIRING EXAMPLES

MAIN CONNECTOR - VOLTAGE

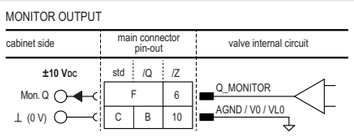
REFERENCE INPUT - DIFFERENTIAL MODE



REFERENCE INPUT - COMMON MODE

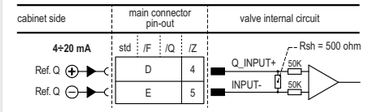


MONITOR OUTPUT

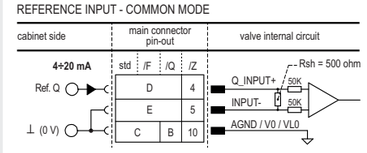


MAIN CONNECTOR - CURRENT

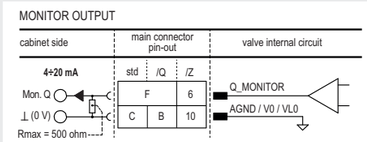
REFERENCE INPUT - DIFFERENTIAL MODE



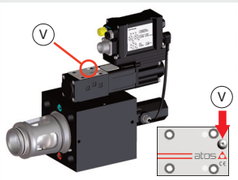
REFERENCE INPUT - COMMON MODE



MONITOR OUTPUT



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

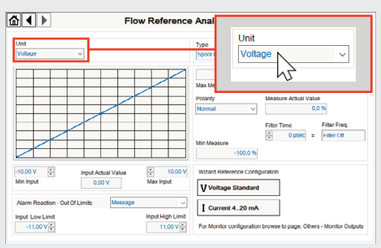
WARNING: To avoid overheating and possible damage of the electronic driver, the valves must be never energized without hydraulic supply to the pilot stage. In case of prolonged pauses of the valve operation during the machine cycle, it is always advisable to switch off or disable the driver (option /Q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

HINT ! - Wizard objects dictionary - only for **BC**, **BP**, **EH**, **EW**, **EI**, **EP**

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

Move arrow on parameter (e.g. **Unit**) to display the objects dictionary information to access the parameter via fieldbus

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



NOTE: alternatively right click on any parameter

STEP 4 PC SOFTWARE

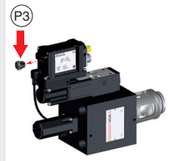
REMARK proportional valves with on-board electronics are factory preset with default parameters, only few programming operations are mandatory for:
- **BC, BP, EH, EW, EI, EP** setup the network parameters and the source of reference signals

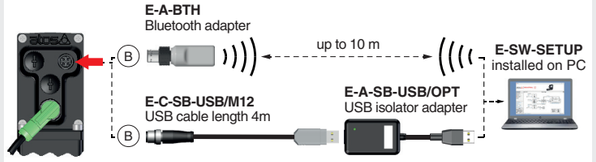
Valve programming can be performed through E-SW-SETUP software or via fieldbus (not for **NP**)

4.1 CONNECTION

1 **In order to access valve parameterization:**
- Install E-SW-SETUP software on PC
- Insert main 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 via Bluetooth (adapter only) or USB (cable and isolator adapter)





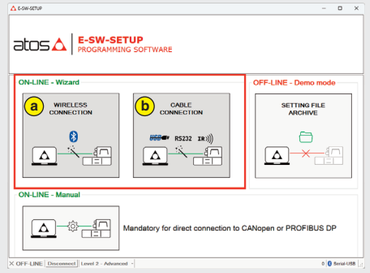
WARNING: drivers USB port is not isolated!
The use of USB isolator adapter is highly recommended for PC protection (see **GS500**)

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

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

(a) : WIRELESS CONNECTION
Wizard procedure for connection via Bluetooth

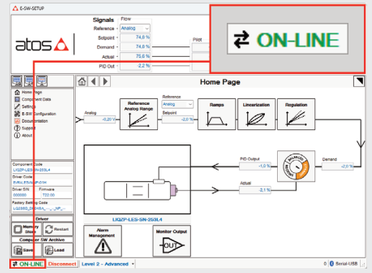
(b) : CABLE CONNECTION
Wizard procedure for connection via USB cable



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

5 Communication established, valve is **ON-LINE** and it is possible change parameters

NOTE: for **BC**, **BP**, **EH**, **EW**, **EI**, **EP** please also refer to the following parameter settings:
- see step 4.2 to change the network setup
- see step 4.3 to change the reference signals setup



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

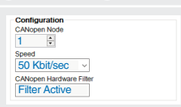
4.2 FIELDBUS - Network Management - only for **BC**, **BP**, **EH**, **EW**, **EI**, **EP**

Node, Station Alias, IP Address, Baudrate, etc... can be set through:

1) Machine central unit (master) - please refer to E-MAN-S-** fieldbus protocol programming manual

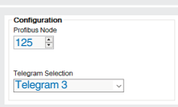
2) E-SW-SETUP software
- browse to **Network Management - Configuration** to change below default settings:

BC CANopen
Configuration file: **EDS**



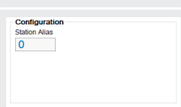
BP PROFIBUS DP
Configuration file: **GSD**

Defaults:
Telegram 3 for **SN**



EH EtherCAT
Configuration file: **XML**

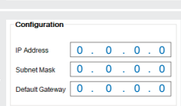
Station Alias is assigned automatically by fieldbus master



EW POWERLINK
Configuration file: **XDD**

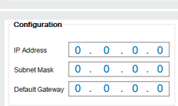
EI EtherNet/IP
Configuration file: **EDS**

IP Address, Subnet Mask and Default Gateway are assigned by fieldbus master, IPconfig or BOOTP/DHCP utility



EP PROFINET
Configuration file: **GSDML**

IP Address, Subnet Mask, Default Gateway and Station Name are assigned automatically by fieldbus master (e.g. Discovery and Configuration Protocol)



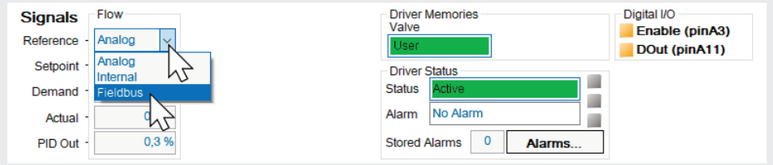
- press **Memory Store** button and press **Save User Set** button to save new setting into the driver (see 4.5)
- network configuration settings will be applied at next driver power on or pressing the **Restart** button

NOTE: configuration files are available in MyAtos area - **www.atos.com**

4.3 REFERENCES - only for **BC**, **BP**, **EH**, **EW**, **EI**, **EP**

The source of reference signals for valves with fieldbus:
- is preset as **Analog** by factory default
- can be managed through machine control unit by setting the source from **Analog** to **Fieldbus**

In **Flow - Reference** select **Fieldbus**



4.4 SMART TUNING - E-SW-SETUP

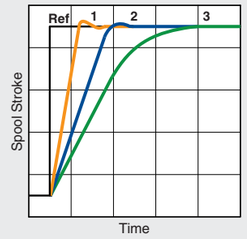
Smart tuning allows to adjust the valve dynamic response in order to match different performance requirements.

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



1 = dynamic
2 = balanced
3 = smooth

4.5 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.

4.6 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

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 4.5

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!