QUICKSTART FULL

QF220-5 - 01/25

for digital proportionals without transducer - fieldbus

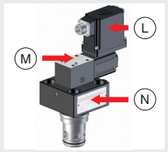
PROPORTIONAL PRESSURE CONTROL CARTRIDGES

Valve model:
LICZO-AES LIMZO-AES LIRZO-AES

Driver model:
E-RI-AES

IDENTIFICATION

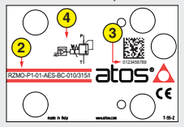
Valve identification plates and label



Cartridge name plate : **M**

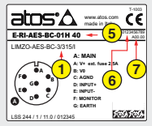
1 : cartridge code

Pilot valve name plate : **N**



2 : pilot valve code
3 : pilot valve matrix code
4 : pilot hydraulic symbol

Driver label : **L**



5 : driver code
6 : driver serial number
7 : factory firmware version

INSTALLATION TOOLS ACCORDING TO VALVE MODEL- not included

Fastening bolts	Wrenches	Screwdriver	Main connectors		Fieldbus connectors		
			std, /Q	/Z	BC	BP	EH
socket head screws	for fastening bolts and mechanical pilot relief	for air bleeding	7 pin metallic	12 pin metallic	5 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
FS300	LI*ZO cartridges - tech. table	**E-MAN-RI-AES**	AES - driver operating manual
P006	Mounting surface - 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		

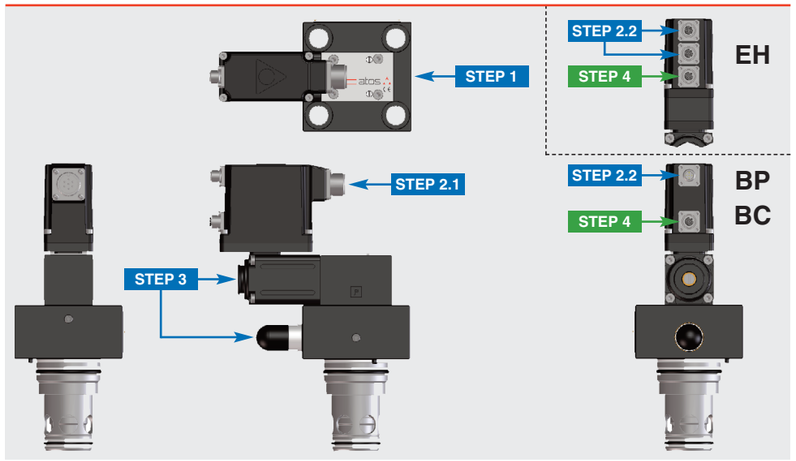
ATTENTION !

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 support@atos.com

PRODUCTS OVERVIEW



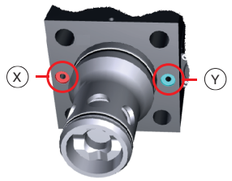
INSTALLATION			PROGRAMMING	
STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
MECHANICAL	ELECTRICAL	HYDRAULICS	PC SOFTWARE	MOBILE APP

STEP 1 MECHANICAL

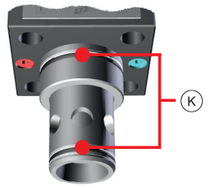
In case of first commissioning, before the valve installation the whole system must be correctly flushed to grant the required cleanliness level:

- 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

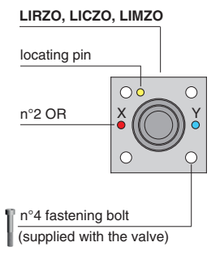


cartridge seals

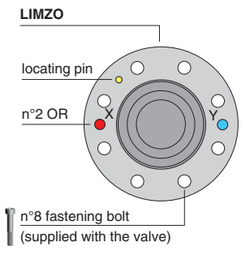


- verify that valve mounting surface and the manifold cavity are clean and free from damages or burrs
- verify the correct valve orientation according to the pattern of the relevant mounting interface
- lock the fastening bolts respecting tightening torque according to valve model

SIZE 16 to 63
mounting surface layout
ISO 7368



SIZE 80
mounting surface layout
ISO 7368



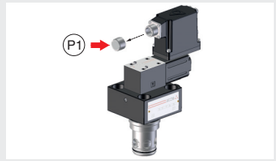
Type	Size	Pressure limiter	Fastening Bolt class: 12.9	Wrench (mm)	Tightening Torque (Nm)	O-Ring (X - Y)
LIRZO LICZO LIMZO	16	standard	n°4 M8 x 45	6	35	n°2 OR-108
	25	standard	n°4 M12 x 45	10	125	n°2 OR-108
	32	standard	n°4 M16 x 55	14	300	n°2 OR-2043
	40	/P option	n°4 M20 x 70	17	600	n°2 OR-3043
LICZO LIMZO	50	/P option	n°4 M20 x 80	17	600	n°2 OR-3043
LIMZO	63	/P option	n°4 M30 x 90	22	2100	n°2 OR-3050
	80	/P option	n°8 M24 x 90	19	1000	n°2 OR-4075

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

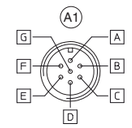
2.1 MAIN CONNECTOR

1 Remove main connector cap **P1**

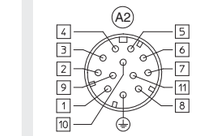


WARNING: remove power supply before any electrical or wiring operations

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

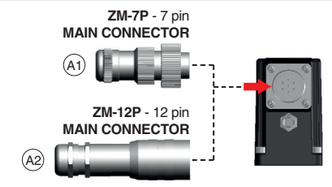


Recommended LiYCY shielded cables:
7 x 0,75 mm² max 20 m
7 x 1 mm² max 40 m



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

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

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

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

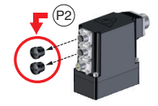
/Z option		
1	**V+**	(power supply 24Vdc)
2	**V0**	(power supply 0Vdc)
3	**ENABLE**	(input 24Vdc)
4	**INPUT+**	(0 ÷ 10Vdc / 4 ÷ 20mA)
5	**INPUT-**	
6	**MONITOR**	(0 ÷ 5Vdc 1V=1A)
7	**NC**	
8	**NC**	
9	**VL+**	(logic power supply 24Vdc)
10	**VL0**	(logic power supply 0Vdc)
11	**FAULT**	(output 24Vdc)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

2.2 FIELDBUS CONNECTORS

1 Remove fieldbus connectors caps **P2**

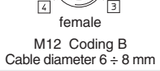
BC, BP

EH

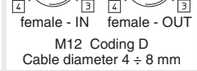


2 Select fieldbus connectors according to valve code and proceed with wirings operations

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**	

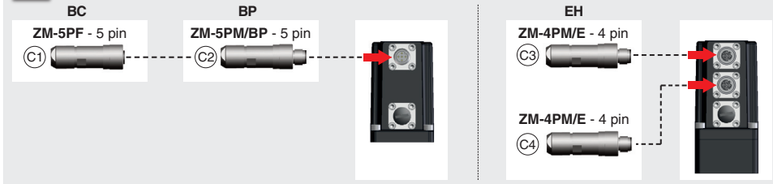
EH		
1	**TX+**	Transmitter
2	**RX-**	Receiver
3	**TX-**	Transmitter
4	**RX-**	Receiver
housing	**SHIELD**	

3 Connect the valve to the fieldbus network. For information about fieldbus terminators see **GS500**

BC
ZM-5PF - 5 pin
C1

BP
ZM-5PM/BP - 5 pin
C2

EH
ZM-4PM/E - 4 pin
C3
ZM-4PM/E - 4 pin
C4

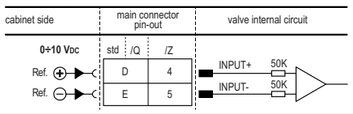


NOTE: the use of above metallic connectors is strongly recommended in order to fulfill EMC requirements

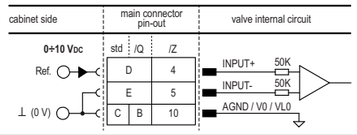
ELECTRICAL WIRING EXAMPLES

MAIN CONNECTOR - VOLTAGE

REFERENCE INPUT - DIFFERENTIAL MODE

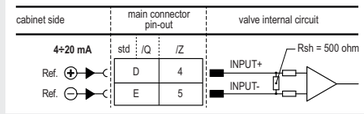


REFERENCE INPUT - COMMON MODE

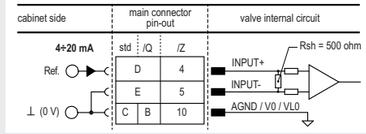


MAIN CONNECTOR - CURRENT

REFERENCE INPUT - DIFFERENTIAL MODE

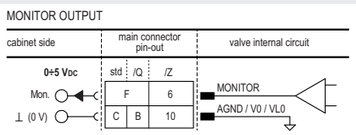


REFERENCE INPUT - COMMON MODE

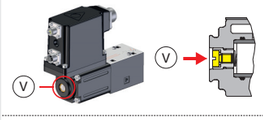


MAIN CONNECTOR - MONITORS VOLTAGE ONLY

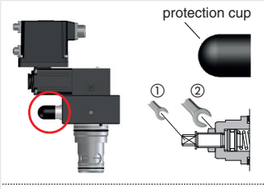
MONITOR OUTPUT



STEP 3 HYDRAULICS



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**



Mechanical pressure limiter setting – only **LIRZO**, **LICZO**, **LIMZO** sizes 16, 25, 32 and /P option

For safety reasons the factory setting of the mechanical pressure limiter is fully unloaded (min pressure).
At the first commissioning it must be set at a value lightly higher than the max pressure regulated with the proportional control, proceeding as follow:
- apply the max reference input signal to the valve's driver. The system pressure will not increase until the mechanical pressure limiter remains unloaded
- release the locknut ②, turn clockwise the adjustment screw ① until the system pressure will increase up to a stable value corresponding to the pressure setpoint at max reference input signal
- turn clockwise the adjustment screw ① of additional 1 or 2 turns to ensure that the mechanical pressure limiter remains closed during the proportional valve working, then tighten the locknut ②

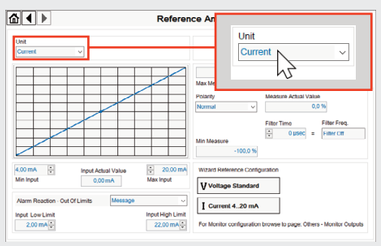
Consult tech table **FS900** for general guidelines about component's commissioning

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

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

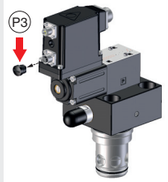
REMARK proportional valves with on-board electronics are factory preset with default parameters, only few programming operations are mandatory for setup the network parameters and the source of reference signals

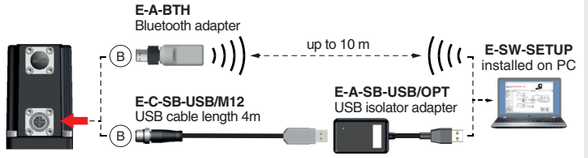
Valve programming can be performed through E-SW-SETUP software or via fieldbus

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)





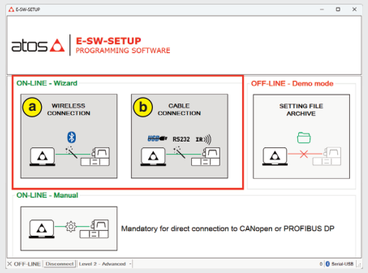
WARNING: drivers USB port is not isolated!
The use of USB isolator adapter is highly recommended for PC protection (see **GS500**)

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:

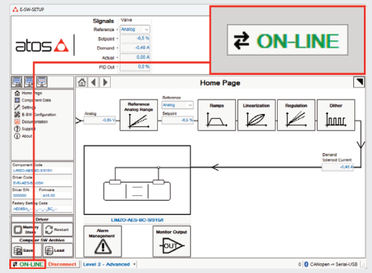
a : **WIRELESS CONNECTION**
Wizard procedure for connection via Bluetooth

b : **CABLE CONNECTION**
Wizard procedure for connection via USB cable



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

NOTE: 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



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

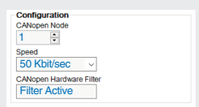
4.2 FIELDBUS - Network Management

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

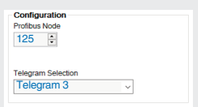
2) E-SW-SETUP
- browse to **Network Management - Configuration** to change below default settings:

BC CANopen
Configuration file: **EDS**



BP PROFIBUS DP
Configuration file: **GSD**

Defaults: Telegram 3



EH EtherCAT
Configuration file: **XML**

Station Alias is assigned automatically by fieldbus master

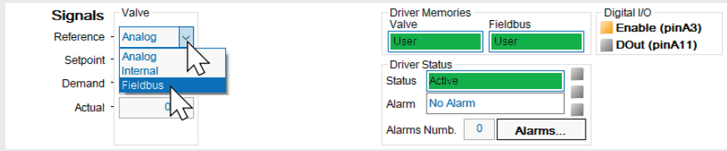
- press **Memory Store** button and press **Save User Set** button to save new setting into the driver (see 4.4)
- network configuration settings will be applied at next driver power on or pressing the **Restart** button

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

4.3 REFERENCES

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 **Valve - Reference** select **Fieldbus**



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

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
- the mechanical pressure limiter interferes with the regulation (only LIRZO, LICZO, LIMZO sizes 16, 25, 32 and /P option) – check the pressure limiter setting
- poppet sticking – contact Atos service center

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!