atos

QUICKSTART FULL
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	Pilot valve name plate : N	Driver label : L

1 : cartridge code
2 : pilot valve code
3 : pilot valve matrix code
4 : pilot hydraulic symbol
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	and — 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

Software	USB connection KIT		OR	Bluetooth connection KIT	
	Cable	Isolator		Cable	Adapter
E-SW-* programming software	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-FIELDBUS	Software startup guide
FS300	LI*ZO cartridges - tech. table	STARTUP BLUETOOTH	Bluetooth adpter startup guide
P006	Mounting surface - tech. table	E-MAN-RI-AES	AES - driver operating manual
GS500	Programming tools - tech. table	E-MAN-S-BC	CANopen protocol programming manual
GS510	Fieldbus - tech. table	E-MAN-S-BP	PROFIBUS DP protocol programming manual
K800	Electric and electronic connectors - tech. table	E-MAN-S-EH	EtherCAT 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

PRODUCTS OVERVIEW

STEP 2.2
STEP 4
EH

STEP 1

STEP 2.1

STEP 2.2
STEP 4
BP
BC

STEP 3

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**)

surface seals

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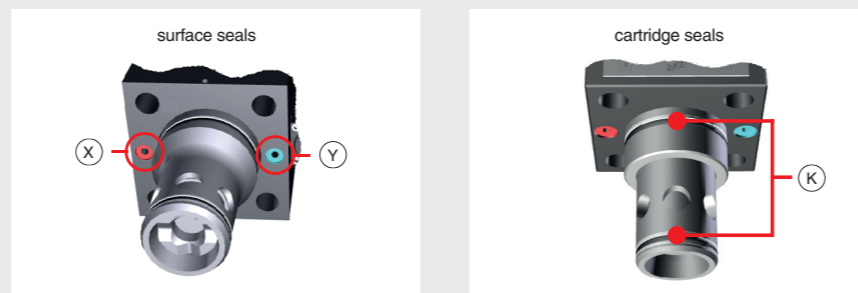
• verify that valve mounting surface and the manifold cavity are clean and free from damages or burrs
• verify the correct valve orientation according to the pattern of the relevant mounting interface
• lock the fastening bolts respecting tightening torque according to valve model

SIZE 16 to 63
mounting surface layout ISO 7368

LIRZO, LICZO, LIMZO

locating pin

n°2 OR

n°4 fastening bolt (supplied with the valve)

SIZE 80
mounting surface layout ISO 7368

LIMZO

locating pin


n°2 OR

n°8 fastening bolt (supplied with the valve)

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
	63	/P option	n°4 M30 x 90	22	2100	n°2 OR-3050
LIMZO	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
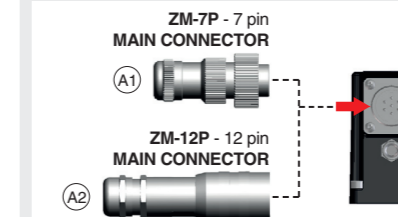
2.1 MAIN CONNECTOR

1 Remove main connector cap **P2**

P2
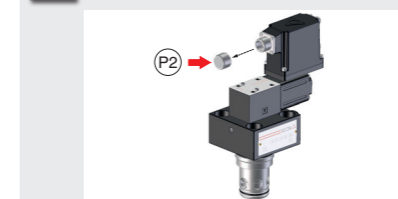
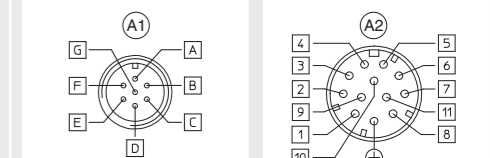⚠ **WARNING:** remove power supply before any electrical or wiring operations

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

(A1)
Recommended LiYCY shielded cables:
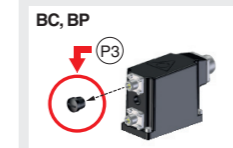7 x 0,75 mm² max 20 m
7 x 1 mm² max 40 m

(A2)
Recommended LiYCY shielded cable:
12 x 0,75 mm² max 20 m

3 Connect the valve to the system

ZM-7P - 7 pin **MAIN CONNECTOR**
(A1)

ZM-12P - 12 pin **MAIN CONNECTOR**
(A2)

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	EARTH	(output 24Vdc)
PE	EARTH	

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

1 Remove fieldbus connectors caps **P3**

BC, BP

P3

EH

P3

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

C1
male
M12 Coding A
Cable diameter 6 ÷ 8 mm

C2
female
M12 Coding B
Cable diameter 6 ÷ 8 mm

C3 female - IN
C4 female - OUT
M12 Coding D
Cable diameter 4 ÷ 8 mm
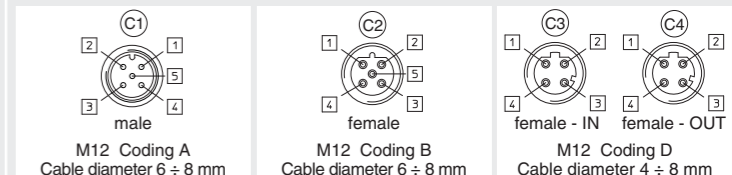
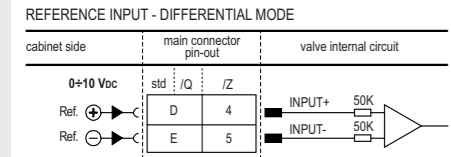|	BC			BP			EH
1	CAN_SHLD Shield	1	+5V Termination supply signal	1	TX+	Transmitter
2	not used	2	LINE-A Bus line (high)	2	RX-	Receiver
3	CAN_GND Signal zero data line	3	DGND Data line - termination signal zero	3	TX-	Transmitter
4	CAN_H Bus line (high)	4	LINE-B Bus line (low)	4	RX-	Receiver
5	CAN_L Bus line (low)	5	SHIELD	housing	SHIELD	

3 Connect the valve to the fieldbus network. For information about T connectors and fieldbus terminators see **GS500**
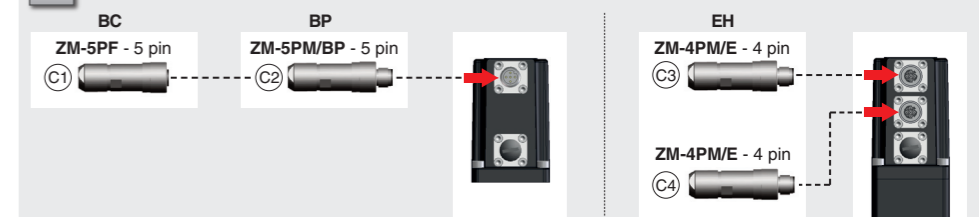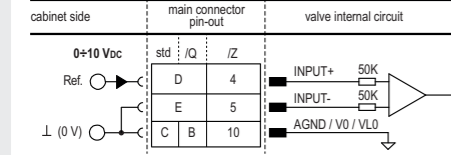
BC
ZM-5PF - 5 pin
C1

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
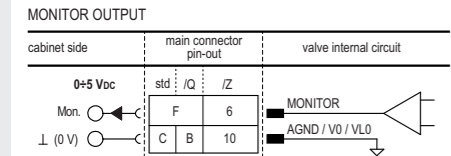
Column 1

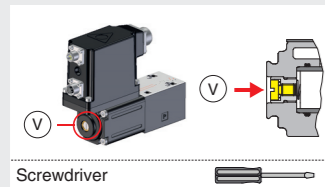## ELECTRICAL WIRING EXAMPLES

MAIN CONNECTOR - VOLTAGE

REFERENCE INPUT - DIFFERENTIAL MODE

cabinet side	main connector pin-out		valve internal circuit
0÷10 Vdc	std /Q	/Z	
Ref. ⊕	D	4	INPUT+ 50K
Ref. ⊖	E	5	INPUT− 50K

REFERENCE INPUT - COMMON MODE

cabinet side	main connector pin-out		valve internal circuit
0÷10 Vdc	std /Q	/Z	
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	
Ref. ⊕	D	4	INPUT+ Rsh = 500 ohm
Ref. ⊖	E	5	INPUT−

REFERENCE INPUT - COMMON MODE

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

MAIN CONNECTOR - MONITORS VOLTAGE ONLY

MONITOR OUTPUT

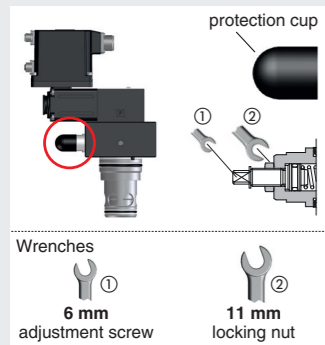| cabinet side	main connector pin-out		valve internal circuit
0÷5 Vdc	std /Q	/Z	
Mon.	F	6	MONITOR
⊥ (0 V)	C B	10	AGND / V0 / VL0

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**

Screwdriver

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

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

Wrenches

6 mm — adjustment screw ①
11 mm — locking nut 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

Column 2

STEP 4 — SOFTWARE

REMARK proportional valves with integral electronics are factory preset with default parameters, only few programming operations are mandatory for setup the network parameters and the source of reference signals
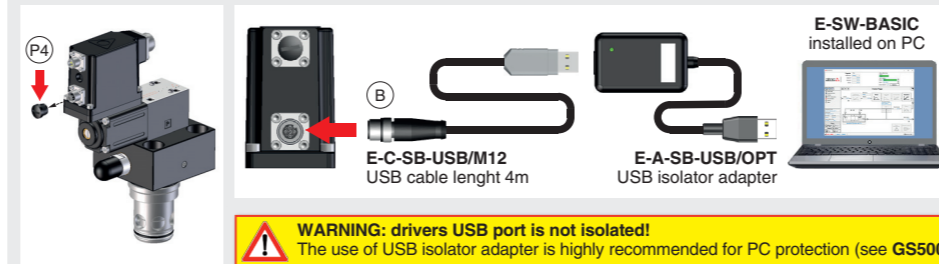
Valve programming can be performed through E-SW software or via fieldbus

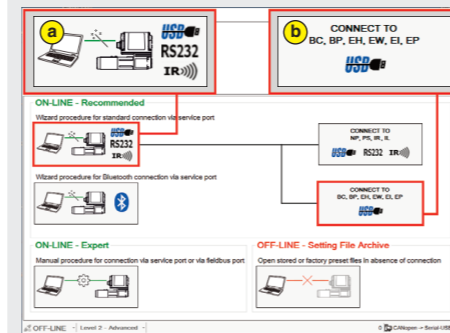| PROGRAMMING				PC
4.1	**4.2**	**4.3**	**4.4**	**4.5**
CONNECTION	FIELDBUS	REFERENCES	STORE	BACK UP

4.1 — CONNECTION

1 **In order to access valve parameterization:**
- Install E-SW 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-SW-BASIC installed on PC

(B)

E-C-SB-USB/M12
USB cable lenght 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 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**

E-SW

4 Press buttons according the below sequence:

a : **ON-LINE - Recommended**
Wizard procedure for standard connection

b : **CONNECT TO BC**, **BP**, **EH**, **EW**, **EI**, **EP**

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
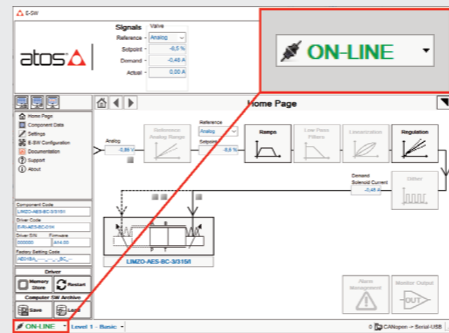
ON-LINE
Home Page

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 — 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 software
- switch to **Level 2 - Advanced** and browse to **Network Management - Configuration** to change below default settings:

BC CANopen
Configuration file: **EDS**

Configuration
CANopen Node: 1
Speed: 50 Kbit/sec
CANopen Hardware Filter: Filter Active

BP PROFIBUS DP
Configuration file: **GSD**

Configuration
Profibus Node: 125
Telegram Selection: Telegram 3

Defaults: Telegram 3

EH EtherCAT
Configuration file: **XML**

Configuration
Station Alias: 0

Station Alias is assigned automatically by fieldbus master

- press **Memory Store** button and in **Fieldbus Parameters** press **Store User** 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
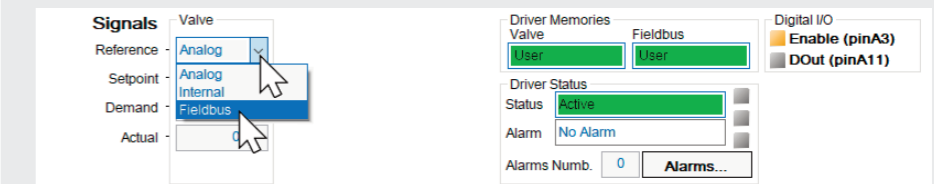
NOTE: configuration files are available in USB memory stick of the software or in MyAtos area - **www.atos.com**

Column 3

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 Store** window

- press [Store User] buttons to store **Valve Parameters** or **Fieldbus Parameters**

WARNING: During valve or fieldbus 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

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

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 modification of valve parameters, the valve doesn't match the desired behavior
- restore factory default settings pressing '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!