# QUICKSTART BASIC

QB420-8 - 01/25

**for digital proportionals with pressure transducer - analog reference signal**

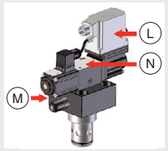
## PROPORTIONAL PRESSURE CONTROL CARTRIDGES

**Valve model:**
LICZO-REB LIMZO-REB LIRZO-REB

**Driver model:**
E-RI-REB-P

## IDENTIFICATION

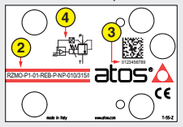
Valve identification plates and label




Cartridge name plate : **M**

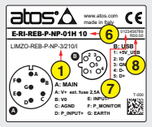

**1** : cartridge code

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 | | IO-Link connector **IL** |
|---|---|---|---|---|---|
| | | | **std, /Q** | **/Z** | |
| socket head screws | for fastening bolts and mechanical pilot relief | for air bleeding | 7 pin metallic | 12 pin metallic | 5 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 |
| **FS305** | LI*ZO cartridges - tech. table | **E-MAN-RI-REB** | REB - 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 | | |

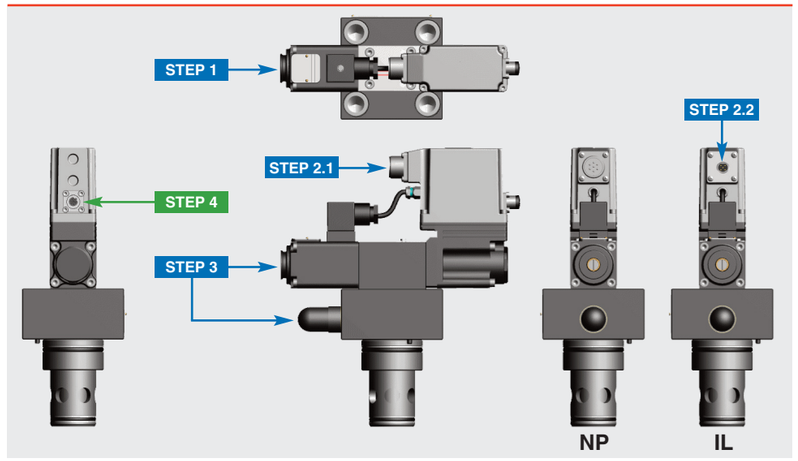
## ATTENTION !

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 support@atos.com


## PRODUCTS OVERVIEW



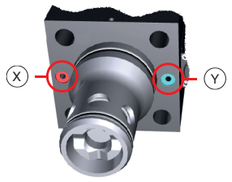

| INSTALLATION | | | PROGRAMMING | |
|---|---|---|---|---|
| **STEP 1** | **STEP 2** | **STEP 3** | **STEP 4** | **STEP 5** |
| **MECHANICAL** | **ELECTRICAL** | **HYDRAULICS** | **PC SOFTWARE** | **MOBILE APP** |

## STEP 1 MECHANICAL

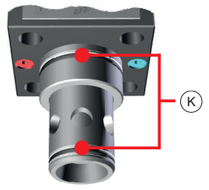
**In case of first commissioning, before the valve installation the whole system must be correctly flushed to grant the required cleanliness level:**

- 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



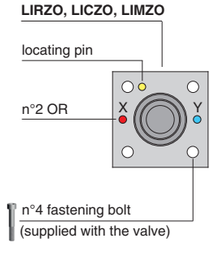

cartridge seals




- 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

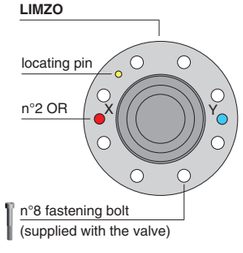
**SIZE 16 to 63**
mounting surface layout
**ISO 7368**

**LIRZO, LICZO, LIMZO**




**SIZE 80**
mounting surface layout
**ISO 7368**

**LIMZO**



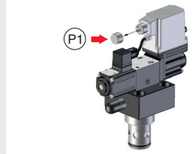

| Type | Size | Pressure limiter | Fastening Bolt class: 12.9 | Wrench (mm) | Tightening Torque (Nm) | O-Ring (X - Y) |
|---|---|---|---|---|---|---|
| LIRZO LICZO LIMZO | 16 | standard | n°4 M8 x 45 | 6 | 35 | n°2 OR-108 |
| | 25 | standard | n°4 M12 x 45 | 10 | 125 | n°2 OR-108 |
| | 32 | standard | 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

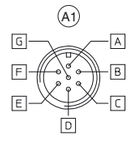
### 2.1 MAIN CONNECTOR - only for NP

**1** Remove main connector cap **P1**

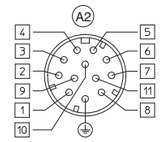



**WARNING:** remove power supply before any electrical or wiring operations

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




Recommended LiYCY shielded cables:
7 x 0,75 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 | **P_INPUT+** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| E | **INPUT-** | |
| F | **P_MONITOR** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| G | **EARTH** | |

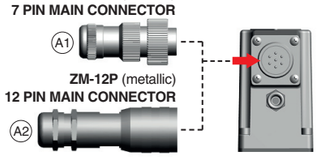
| /Q option | | |
|---|---|---|
| A | **V+** | (power supply 24Vdc) |
| B | **V0** | (power supply 0Vdc) |
| C | **ENABLE** | (input 24Vdc) |
| D | **P_INPUT+** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| E | **INPUT-** | |
| F | **P_MONITOR** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| G | **EARTH** | |

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

**3** Connect the valve to the system

**ZM-7P** (metallic)
**7 PIN MAIN CONNECTOR**

**ZM-12P** (metallic)
**12 PIN MAIN CONNECTOR**



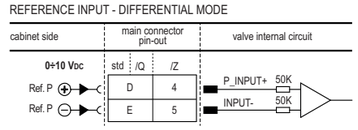

**NOTE:** the use of above metallic connectors is strongly recommended in order to fulfill EMC requirements

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

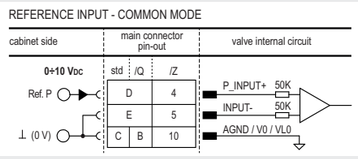
## ELECTRICAL WIRING EXAMPLES - only for NP

### MAIN CONNECTOR - VOLTAGE

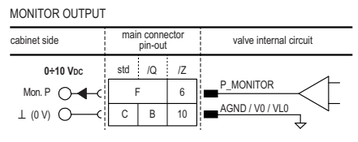
REFERENCE INPUT - DIFFERENTIAL MODE




REFERENCE INPUT - COMMON MODE

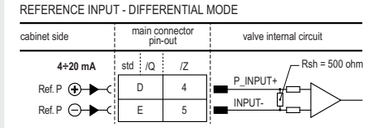



MONITOR OUTPUT

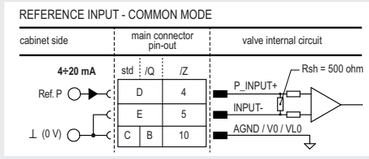



### MAIN CONNECTOR - CURRENT

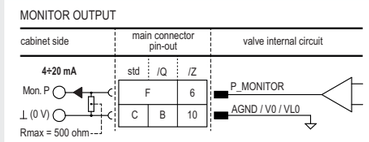
REFERENCE INPUT - DIFFERENTIAL MODE




REFERENCE INPUT - COMMON MODE

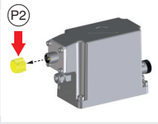



MONITOR OUTPUT




### 2.2 IO-Link CONNECTOR - only for IL

**1** Remove IO-Link connector caps **P2**




**2** Proceed with wirings operations


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

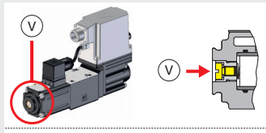
| | | |
|---|---|---|
| 1 | **L+** | (power supply 24Vdc - IO-Link) |
| 2 | **P24** | (power supply 24Vdc - others) **(1)** |
| 3 | **L-** | (power supply 0Vdc - IO-Link) |
| 4 | **C/Q** | IO-Link data-line |
| 5 | **N24** | (power supply 0Vdc - others) **(1)** |

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

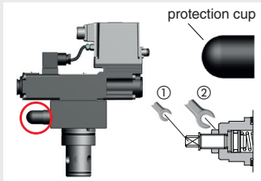
**3** Connect the valve to the IO-Link network of the system

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

## STEP 3 HYDRAULICS




**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 for 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 set-point 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

**WARNING:** To avoid overheating and possible damage of the electronic driver, the valves must be never energized without hydraulic supply to the valve. 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)

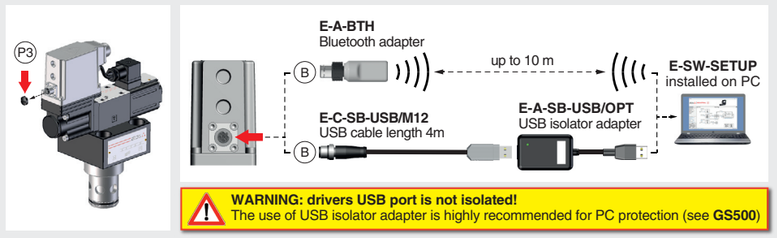
## STEP 4 PC SOFTWARE

**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**

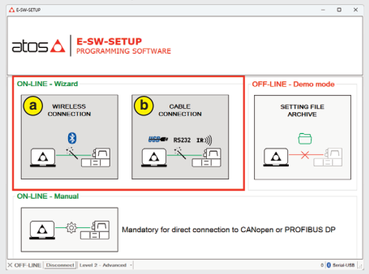
**2** Remove USB plastic protection cap **P3** and connect valve to the PC as show below via Bluetooth (adapter only) or USB (cable and isolator adapter)




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

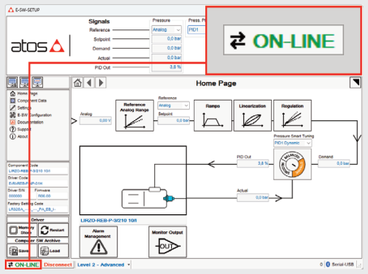
**3** Launch the PC software using E-SW-SETUP icon:
- **PC software does NOT detect valid connection** communication is not established, please follow wizard procedure **4**
- **PC software detects valid connection** communication automatically established **-** valve is **ON-LINE** see **5**


**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

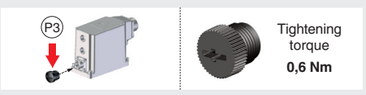



**NOTE:** for more info about E-A-BTH Bluetooth adapter, please refer to STARTUP BLUETOOTH guide

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

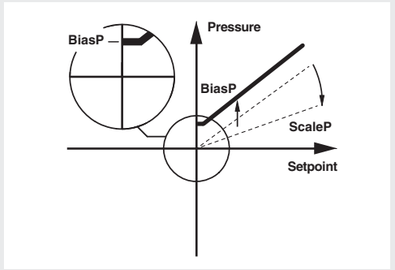



**REMARK:** once removed the E-A-BTH Bluetooth adapter or E-C-SB-USB/M12 USB cable, screw the plastic protection cap **P3** applying the correct tightening torque, in order to preserve valve's IP protection characteristics




### 4.2 CONFIGURATION

All valves




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

**BIAS AND SCALE**

**Bias setting:** supply the input signal equal to 0 bar
- **relief valves:** increase the Bias until the pressure starts to increase, then lightly reduce the Bias just to bring back the pressure lightly over the minimum regulated value
- **reducing valves:** increase the Bias until is reached the minimum desired value of starting pressure

**Scale setting:** supply the max input signal; adjust the Scale to obtain the max regulated pressure

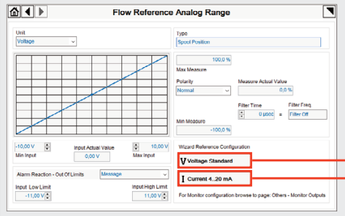
**RAMPS**

**Ramps setting:** select the required ramp configuration and adjust the ramp time to optimize the pressure response according to the system characteristics

**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 according to selected valve code, 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

**V** Voltage Standard

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

**I** Current 4..20 mA

**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

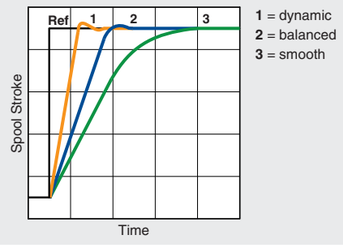
Smart tuning allows to adjust the valve dynamic response in order to match different performance requirements.

The valve is provided with 3 factory setting for the pressure control:

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

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

**smooth** attenuated response time for slow regulation without overshoots




**1** = dynamic
**2** = balanced
**3** = smooth

### 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

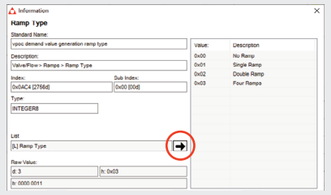
**ATOS CONNECT** for smartphones and tablets is a free downloadable app which allows quick access to valve main functional parameters and configuration via Bluetooth, thus avoiding physical cable connection and significantly reducing commissioning times.

**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


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

**Pressure instability or vibration**
- select PID4 to operate the valve in open loop:
  - if the instability still persists, check eventual anomalies in the hydraulic circuit as the presence of air
  - if the instability disappears, select an alternative configuration within PID selection 1, 2 or 3 which better matches the application requirements
  - if no one of the above selection fulfills the application, tune P - I - D parameters at E-SW-SETUP software to obtain the desired dynamic response

**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!