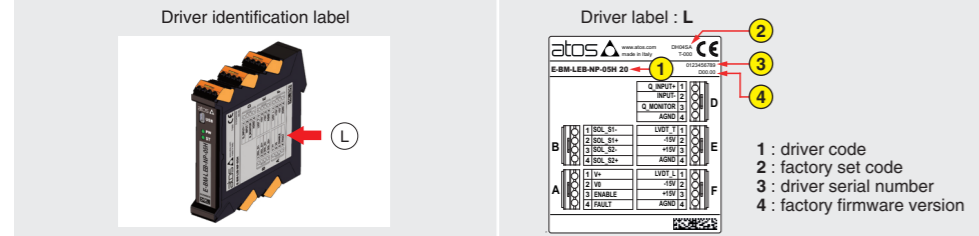


**DIN-RAIL DIGITAL DRIVER FOR DIRECTIONAL AND FLOW VALVES**

<b>Industrial driver model:</b> E-BM-TEB/LEB series 20 or higher	<b>Ex-Proof driver model:</b> E-BM-TEB/LEB /A series 20 or higher
<b>Industrial valve models:</b>	<b>Ex-Proof valve models:</b>
Direct operated DLHZO-T      DHZO-T      QVHZO-T DLKZOR-T    DKZOR-T      QVKZOR-T	Direct operated DLHZA-T      DHZA-T      QVHZA-T DLKZA-T      DKZA-T      QVKZA-T
Pilot operated DPZO-T      LIQZP-L	Pilot operated DPZA-T      LIQZA-L

**IDENTIFICATION**



**INSTALLATION TOOLS**

Screwdriver not included	DIN-rail EN60715 not included	Connectors supplied with the driver see STEP 2
-----------------------------	----------------------------------	--

see STEP 1

**PROGRAMMING TOOLS - not included**

PC software E-SW-SETUP	mobile App Atos CONNECT	Bluetooth connection KIT Adapter E-A-BTH	OR	USB connection KIT Cable E-C-SB-USB/M12	Isolator E-A-SB-USB/OPT
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NOTE: Atos CONNECT supports Atos digital valve drivers equipped with E-A-BTH or with built-in Bluetooth, see STEP 4

**PC SOFTWARE**

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

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

**PC SOFTWARE DOWNLOAD**

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**

<b>FS900</b> Operating and maintenance information - tech. table	<b>STARTUP BLUETOOTH</b> Bluetooth adapter startup guide
<b>F***</b> Proportional valves with one or two LVDT - tech. table	<b>E-MAN-BM-LEB</b> TEB/LEB - driver operating manual
<b>P005</b> Mounting surface - tech. table	
<b>GS230</b> E-BM-TEB/LEB drivers - tech. table	
<b>GS500</b> Programming tools - tech. table	
<b>K800</b> Electric and electronic connectors - tech. table	

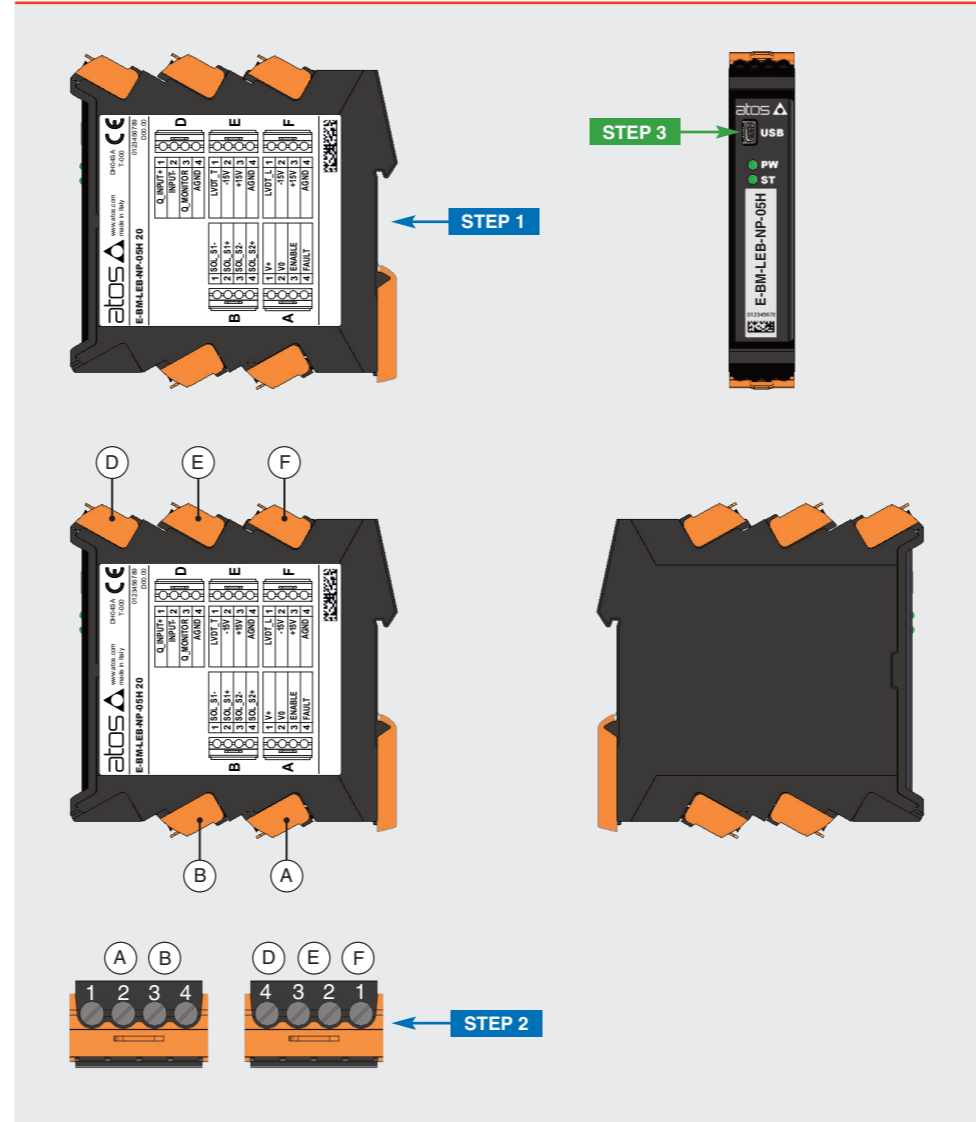
**ATTENTION!**

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)

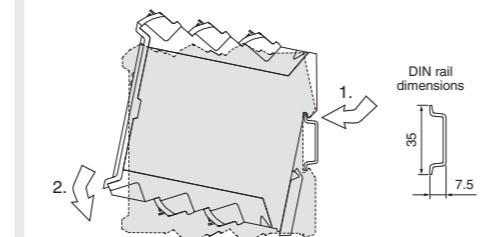
**PRODUCTS OVERVIEW**



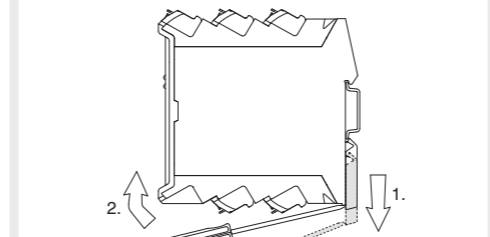
INSTALLATION		PROGRAMMING	
STEP 1	STEP 2	STEP 3	STEP 4
MECHANICAL	ELECTRICAL	PC SOFTWARE	MOBILE APP

**STEP 1 MECHANICAL**

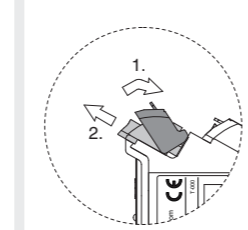
**To lock the driver from the DIN rail:**  
1. place the attach located on the driver bottom on the DIN rail  
2. press the driver against the DIN rail until the locking slide clicks



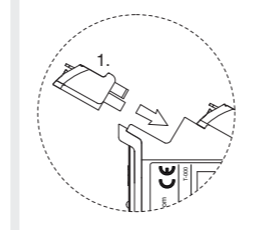
**To unlock the driver from the DIN rail:**  
1. pull down the locking slide with a screwdriver  
2. rotate up the driver



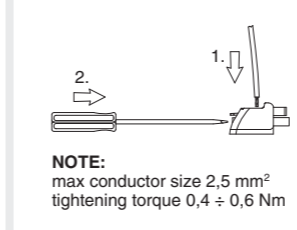
**To extract the connectors:**  
1. push lever  
2. pull connector



**To insert the connectors:**  
1. push the connector in its slot



**To wire cables in the connectors:**  
1. insert the cable termination  
2. turn screw with a screwdriver



NOTE: all connectors are supplied with a mechanical coding. This feature ensures a unique insertion of each connector in the own slot (e.g. connector A can not be inserted into connector slot of B,D,E,F)

**STEP 2 ELECTRICAL**

This section considers the different drivers executions, illustrating the multiple variants of the available electrical connections. The electrical connections have to be wired according to the selected driver code

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

**WARNING:** a safety fuse is required in series to driver power supply - 2.5 A time lag fuse

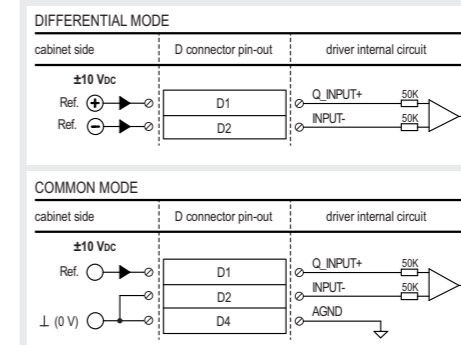
Recommended LiVCY shielded cables: 0,5 mm<sup>2</sup> max 50 m - for logic - 1,5 mm<sup>2</sup> max 50 m - for power supply and solenoids

Power supply		Pressure transducer	
<b>A</b>	1 V+ (power supply 24Voc) 2 V0 (power supply 0Voc) 3 ENABLE (input 24Voc) 4 FAULT (output 24Voc)	<b>D</b>	1 Q_INPUT+ (±10Voc / 4 ÷ 20mA) 2 INPUT- (negative reference for INPUT+) 3 Q_MONITOR (±10Voc / 4 ÷ 20mA) 4 AGND (ground for monitor)
Enable and fault signals		LVDT position transducer - direct valve or pilot valve	
<b>B</b>	1 SOL_S1- (negative current to solenoid S1) 2 SOL_S1+ (positive current to solenoid S1) 3 SOL_S2- (negative current to solenoid S2) 4 SOL_S2+ (positive current to solenoid S2)	<b>E</b>	1 LVDT_T (direct or pilot valve - transducer input signal) 2 -15V (power supply -15Voc) 3 +15V (power supply +15Voc) 4 AGND (ground for transducer power)
		LVDT position transducer - main stage valve	
		<b>F</b>	1 LVDT_L (main stage valve - transducer input signal) 2 -15V (power supply -15Voc) 3 +15V (power supply +15Voc) 4 AGND (ground for transducer power)

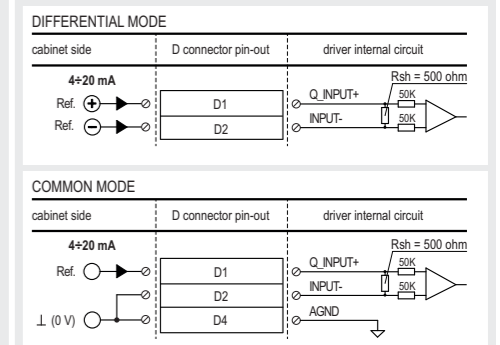
(1) F connector is available only for LEB

**ELECTRICAL WIRING EXAMPLES FOR INDUSTRIAL VALVES - for Ex-Proof valves please refer to relevant tech. tables**

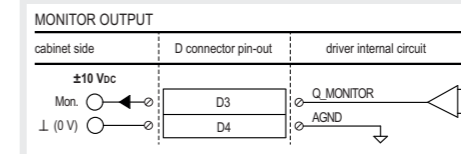
**REFERENCE INPUT - VOLTAGE**



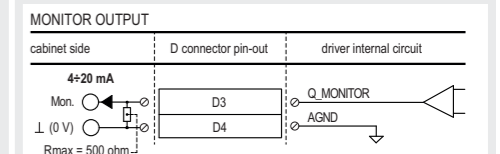
**REFERENCE INPUT - CURRENT**



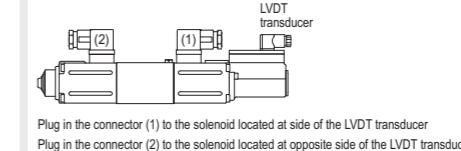
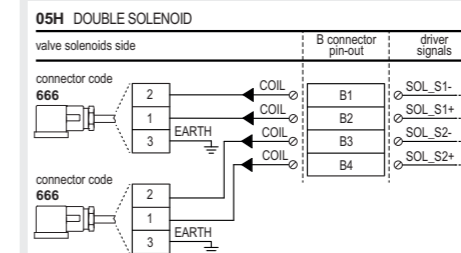
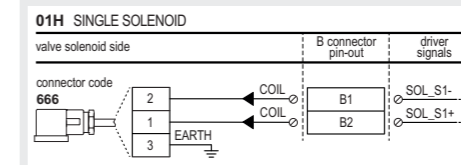
**MONITOR OUTPUT - VOLTAGE**



**MONITOR OUTPUT - CURRENT**

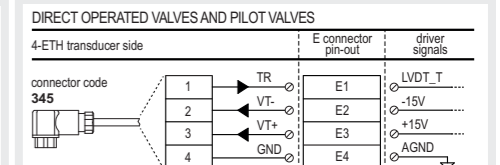


**SOLENOIDS**

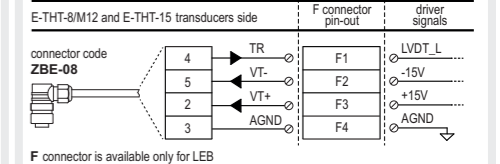


**WARNING:** for double solenoid valve pay attention to do not invert the connectors (1) and (2). If they are not inserted as shown in the example, the valve will not work properly and could cause eventual damages to the system.

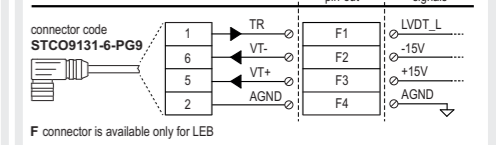
**LVDT TRANSDUCERS**



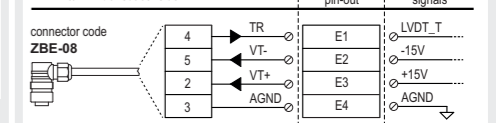
**MAIN STAGE OF PILOT OPERATED VALVES WITH 2 TRANSDUCERS (EXCEPT LIQZP-125)**



**MAIN STAGE OF LIQZP-125**

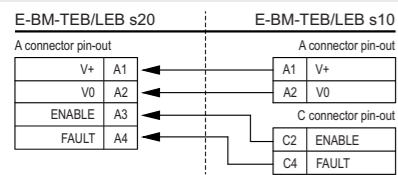


**MAIN STAGE OF PILOT OPERATED VALVES WITH 1 TRANSDUCER**

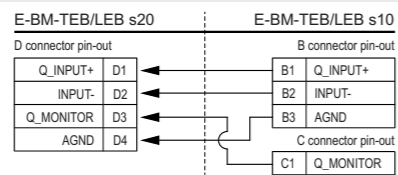


**ELECTRICAL CONNECTIONS QUICK REPLACEMENT OF SERIES 20 OR HIGHER VS SERIES 10**

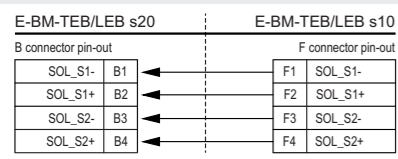
**POWER SUPPLY, ENABLE, FAULT**



**FLOW REFERENCE, FLOW MONITOR, AGND**

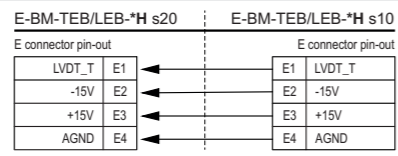


**COILS**



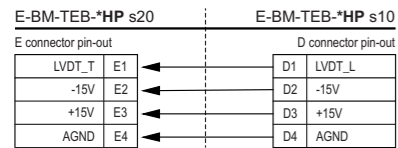
**LVDT TRANSDUCER**

DIRECT VALVES AND PILOT STAGE OF PILOTED VALVES WITH 2 TRANSDUCERS



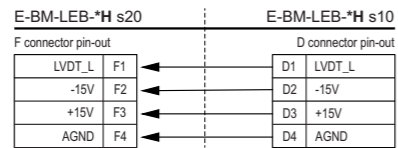
**LVDT TRANSDUCER**

MAIN STAGE OF PILOT OPERATED VALVES WITH 1 TRANSDUCER



**LVDT TRANSDUCER**

MAIN STAGE OF PILOT OPERATED VALVES WITH 2 TRANSDUCERS



NOTE: R\_ENABLE (pin C3) and EARTH (pin B4) of E-BM-TEB/LEB series 10 are not supported by series 20

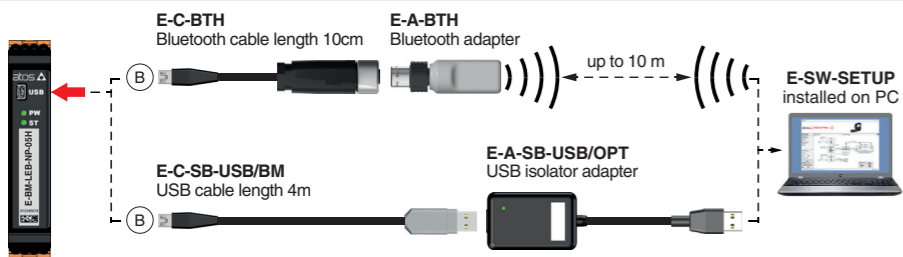
**STEP 3 PC SOFTWARE**

REMARK off-board drivers are factory preset with default parameters and ready to use after piping and electrical connections. Play with parameters is optional, not mandatory!

**3.1 CONNECTION**

- In order to access valve parameterization:
  - Install E-SW-SETUP software on PC
  - Complete the electrical installation and power on the driver with 24Vdc

- Connect driver to the PC as shown below via Bluetooth (cable and adapter) or USB (cable and isolator adapter)



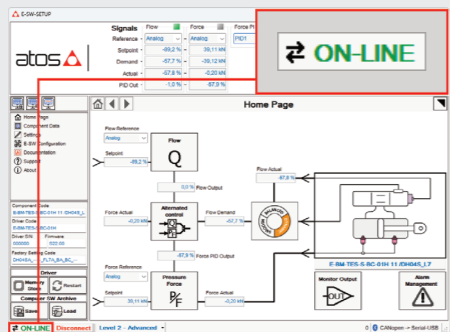
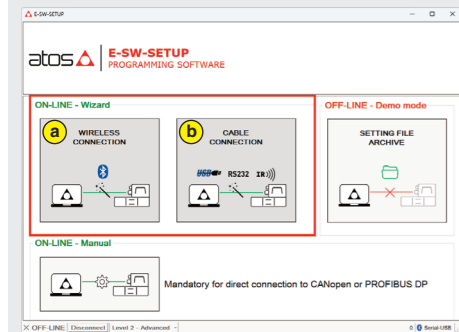
**WARNING: drivers USB port is not isolated!**  
The use of USB isolator adapter is highly recommended for PC protection (see GS500)

- Launch the PC software using E-SW-SETUP 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



- 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

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



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

**3.2 CONFIGURATION**

Single solenoid directional control valve, 2 positions with positive overlapping, flow control valve and cartridges 2 way

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

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

Double solenoid directional control valve, 3 positions with positive overlapping

**BiasP** positive bias  
**ScaleP** positive scale  
**BiasN** negative bias  
**ScaleN** negative scale

Threshold = 2%  
(±200mV or ±0,16mA for I option)

Single or double solenoid directional control valve, 3 positions with zero overlapping and cartridges 3 way

**ScaleP** positive scale  
**ScaleN** negative scale  
**Offset**

**BIAS AND SCALE - 2 POSITION VALVES, FLOW CONTROL VALVES and CARTRIDGES 2 WAY**

**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

**BIAS AND SCALE - 3 POSITION VALVES**

Follow the same indications reported for 2 position valves, flow controls valves and cartridges 2 way, for both valve's solenoids

**OFFSET AND SCALE - 3 POSITION VALVES, ZERO OVERLAP and CARTRIDGES 3 WAY**

**Offset setting:** supply the input signal equal to 0%; adjust the Offset until the actuator is stopped

**Scale setting:** supply the max input signal (positive/negative); adjust the Scale to obtain the max actuator speed in both directions

**WIZARD REFERENCE - E-SW-SETUP**

Reference input signal is factory preset according to selected valve code, defaults are ±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**

**3.3 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.

**3.4 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 4 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 4.0 or higher
- Atos digital valves/drivers equipped with E-A-BTH Bluetooth adapter or with built-in Bluetooth



**TROUBLESHOOTING**

**Valve vibration or noise**  
• presence of air in the solenoid; perform air bleeding procedure – see tech. table of the connected valve

**The valve does not follow the reference signal**  
• driver is powered off, verify presence of 24 Vdc power supply  
• driver is disabled, verify presence of 24 Vdc on enable pin  
• flow/pressure values exceeding the valve's performance limits, verify that hydraulic operating conditions are in compliance with the valve's characteristics  
• spool sticking, contact Atos service center  
• missing piloting pressure, verify that hydraulic pressure in X (for DPZO/E and LIQZP) or P line (DPZO) is compliant with the required value  
• wrong pilot/drain configuration - check if the pilot/drain configuration of the valve corresponds to the effective system layout (only DPZO)

**PC software parameters modifications are lost when valve is switched off**  
• parameter store operation was not performed, check store procedure – see STEP 3, section 3.3

**PC software parameters modifications have no effect on the valve**  
• valve is OFF LINE, check connection procedure – see STEP 3, section 3.1

**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!  
- perform the bias and scale configurations again!