

DIGITAL DRIVER IN DIN-RAIL FORMAT EN 60715

Valve model:
directional, pressure and flow valves without transducer

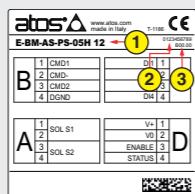
Driver model:
E-BM-AS

IDENTIFICATION

Driver identification label



Driver label : L



1 : driver code
2 : driver serial number
3 : factory firmware version

INSTALLATION TOOLS

Screwdriver	DIN-rail EN60715	Connectors
not included	not included	supplied with the driver
see STEP 1		see STEP 2.1

PROGRAMMING TOOLS - not included

Software	Serial RS232 connection KIT
E-SW-BASIC free basic software download from MyAtos at www.atos.com	Cable E-C-PS-DB9/RJ45 Adapter E-A-PS-USB/DB9

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)	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-BASIC Software startup guide
FS*** Proportional valves without transducer - tech. table	E-MAN-BM-AS E-BM-AS - driver operating manual
P005 Mounting surfaces - tech. table	
G030 E-BM-AS drivers - tech. table	
GS500 Programming tools - tech. table	
K800 Electric and electronic connectors - tech. table	

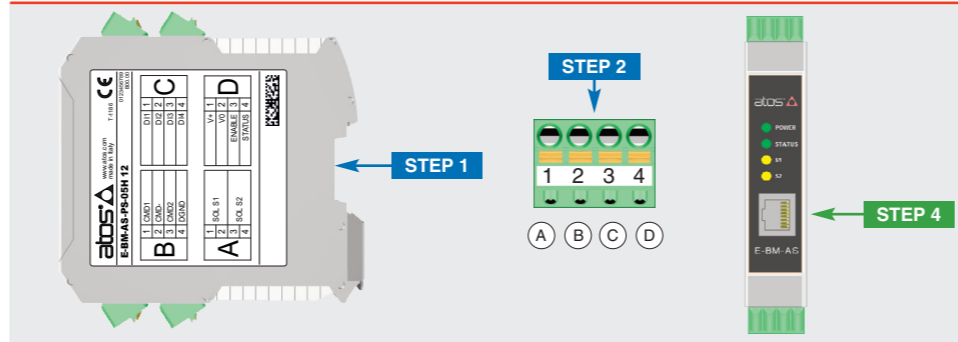
ATTENTION !

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

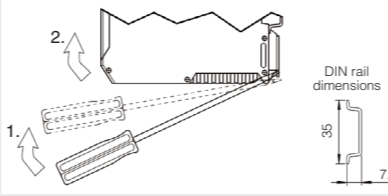
PRODUCTS OVERVIEW



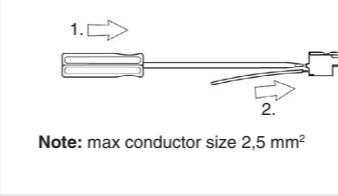
INSTALLATION		OPTIONAL	
STEP 1	STEP 2	STEP 3	STEP 4
INSTALLATION	ELECTRICAL	DIGITAL vs ANALOG	SOFTWARE

STEP 1 INSTALLATION

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



To wire cables in the connectors:
1. press the button with a screwdriver
2. insert the cable termination



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 CONNECTORS

Recommended LiYCY shielded cables, max lenght 40 m: 0,5 mm² for logic - 1,5 mm² for power supply and solenoids

Connector A	
A1	SOL S1 (Current to solenoid S1)
A2	
A3	SOL S2 (Current to solenoid S2)
A4	

Connector B		/P option
B1	CMD1 (±10Vdc / 4 + 20mA)	
B2	CMD- (ground for reference)	Reference for ±5Vdc output
B3	CMD2 (±10Vdc / 4 + 20mA)	
B4	DGND (optical insulated ground for on/off inputs DI1 + DI4)	

Connector C		/P option
C1	DI1 (input 24Vdc)	
C2	DI2 (input 24Vdc)	
C3	DI3 (input 24Vdc)	+5Vdc 10mA output supply
C4	DI4 (input 24Vdc)	-5Vdc 10mA output supply

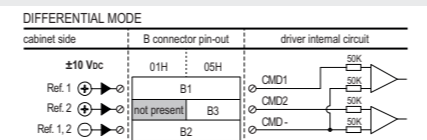
Connector D	
D1	V+ (power supply 24Vdc)
D2	V0 (power supply 0Vdc)
D3	ENABLE (input 24Vdc)
D4	STATUS (output 24Vdc)

WARNING: remove power supply before any electrical or wiring operations

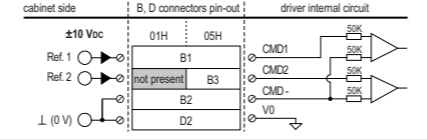
WARNING: a safety fuse is required in series to driver power supply - 2,5 A time lag fuse

ELECTRICAL WIRING EXAMPLES

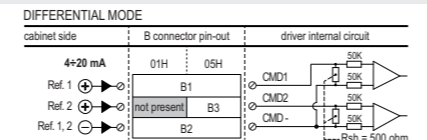
REFERENCE INPUTS - VOLTAGE



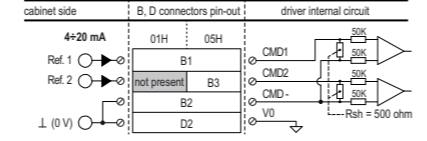
REFERENCE INPUTS - CURRENT



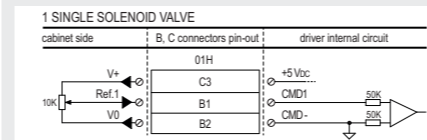
REFERENCE INPUTS - CURRENT



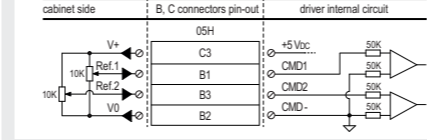
REFERENCE INPUTS - CURRENT



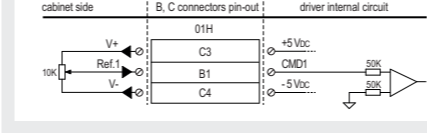
EXTERNAL POTENTIOMETER(S) - only for /P option



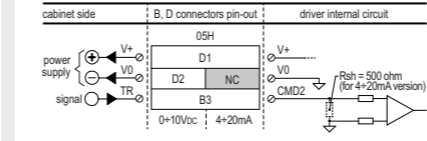
EXTERNAL POTENTIOMETER(S) - only for /P option



EXTERNAL POTENTIOMETER(S) - only for /P option



PRESSURE TRANSDUCER - only for /W option



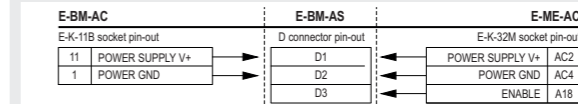
STEP 3 DIGITAL vs ANALOG - only for E-BM-AS series 12 or higher

E-BM-AS digital driver replaces the E-BM-AC and E-ME-AC

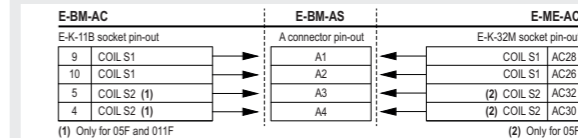
3.1 E-BM-AC / E-ME-AC ELECTRICAL CONNECTIONS QUICK REPLACEMENT

Disconnect the cables from E-BM-AC or E-ME-AC analog driver and connect them to the E-BM-AS digital driver connectors.

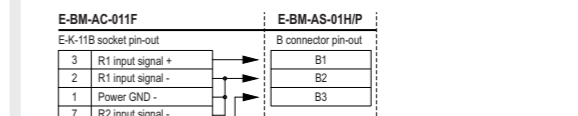
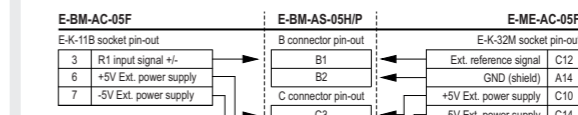
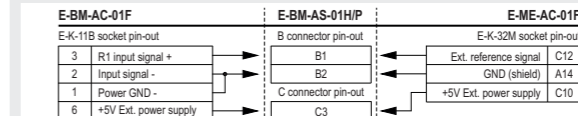
POWER SUPPLY AND ENABLE



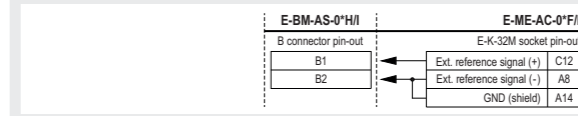
COILS



EXTERNAL POTENTIOMETERS



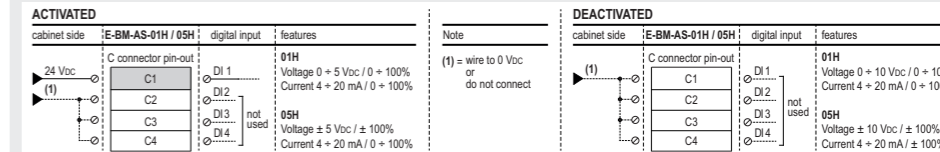
EXTERNAL REFERENCE - only for /I option



3.2 E-BM-AS COMPATIBILITY FUNCTIONALITIES ACTIVATION

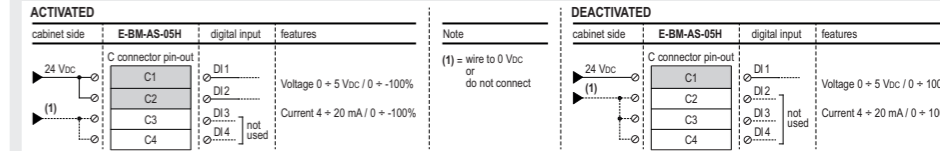
E-BM-AS digital inputs (DI1..DI4) activate compatibility functionalities with E-BM-AC and E-ME-AC analog drivers.

REFERENCE COMPATIBILITY - for E-BM-AC 01F/05F/011F or E-ME-AC 01F/05F/011F



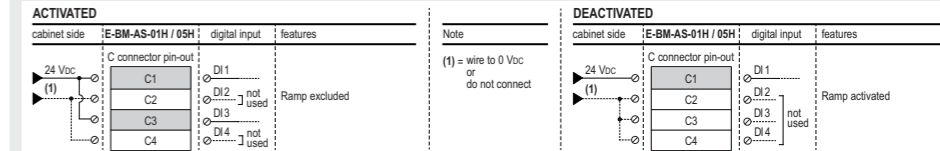
REMARK set 0 Vdc to DI1 and power-off/on the driver to restore latest settings

REFERENCE INVERSION - for E-ME-AC 05F



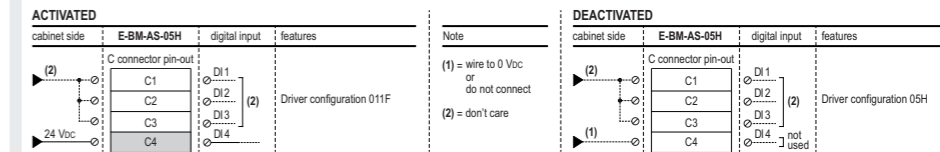
REMARK to enable reference inversion, set 24 Vdc to DI1 before driver power-on

RAMP SWITCH OFF - for E-ME-AC 01F/05F

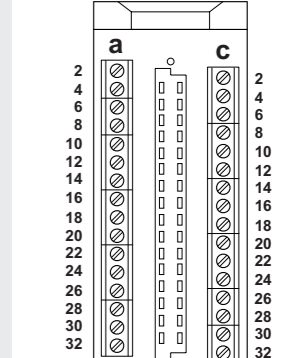
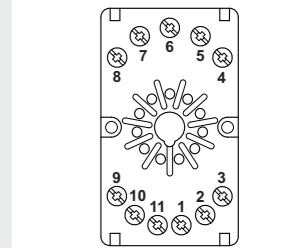


REMARK to enable ramp switch off, set 24 Vdc to DI1 before driver power-on; DI3 not available for /P option

011F CONFIGURATION - for E-BM-AC 011F



REMARK set 0 Vdc to DI4 and power-off/on the driver to restore latest settings; DI4 not available for /P option



STEP 4 SOFTWARE

REMARK proportional valves with integral electronics are factory preset with default parameter and ready to use after piping and electrical connections. **Play with parameters is optional, not mandatory!**

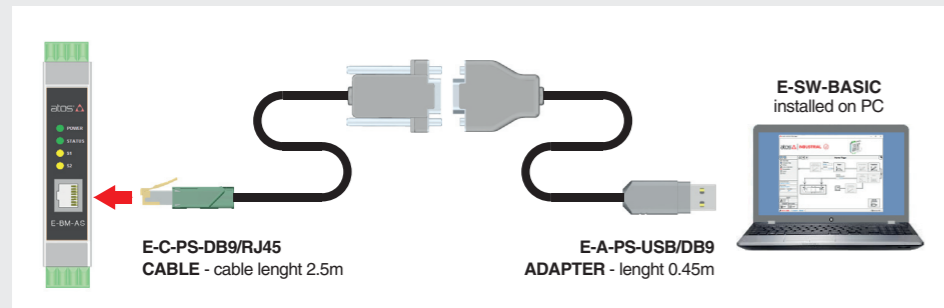
PROGRAMMING			PC
4.1	4.2	4.3	4.4
CONNECTION	CONFIGURATION	STORE	BACK UP

4.1 CONNECTION

1 In order to access valve parameterization:

- Install E-SW-BASIC software on PC
- Power on the driver with 24Vdc

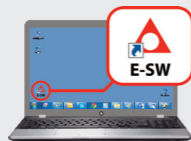
2 Connect driver to the PC as shown below



WARNING: drivers RS232 port is not isolated!

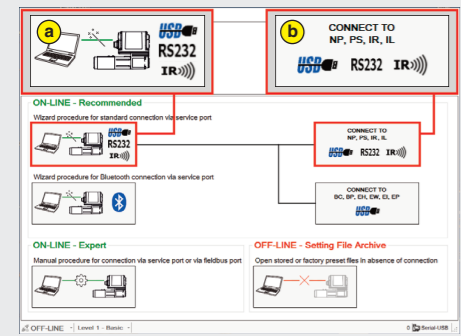
3 Launch the software using E-SW icon:

- software does NOT detect valid connection communication is not established, please follow wizard procedure
- software detects valid connection communication automatically established - valve is ON-LINE see

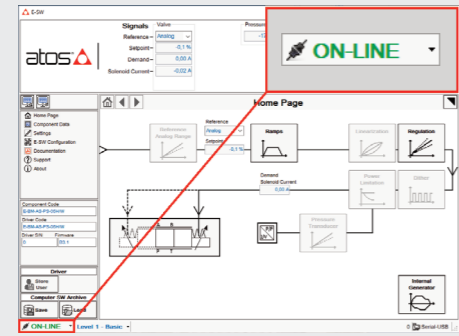


4 Press buttons according the below sequence:

- a) ON-LINE - Recommended Wizard procedure for standard connection
- b) CONNECT TO NP, PS, IR, IL



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



4.2 CONFIGURATION

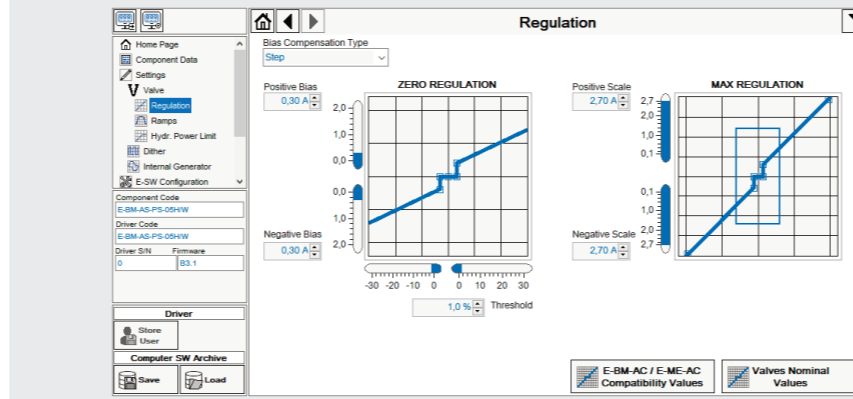
<p>Single solenoid directional control valve, 2 positions with positive overlapping</p> <p>BiasP positive bias ScaleP positive scale</p> <p>Threshold = 2% (200mV or 0,32mA for I option)</p>	<p>Double solenoid directional control valve, 3 positions with positive overlapping</p> <p>BiasP positive bias ScaleP positive scale BiasN negative bias ScaleN negative scale</p> <p>Threshold = 2% (±200mV or ±0,16mA for I option)</p>	<p>Single or double solenoid directional control valve, 3 positions with zero overlapping</p> <p>ScaleP positive scale ScaleN negative scale Offset</p>
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BIAS AND SCALE - 2 and 3 POSITION VALVES

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

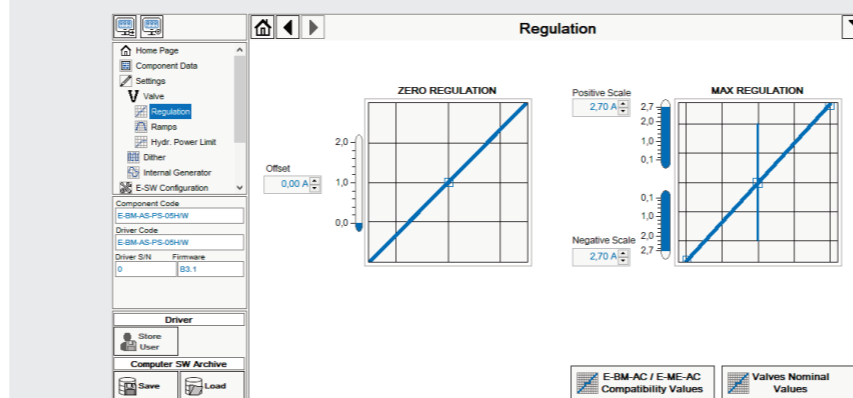
NOTE: bias and scale negative parameter are available only for 3 position valves



OFFSET AND SCALE - 3 POSITION VALVES, ZERO OVERLAP

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

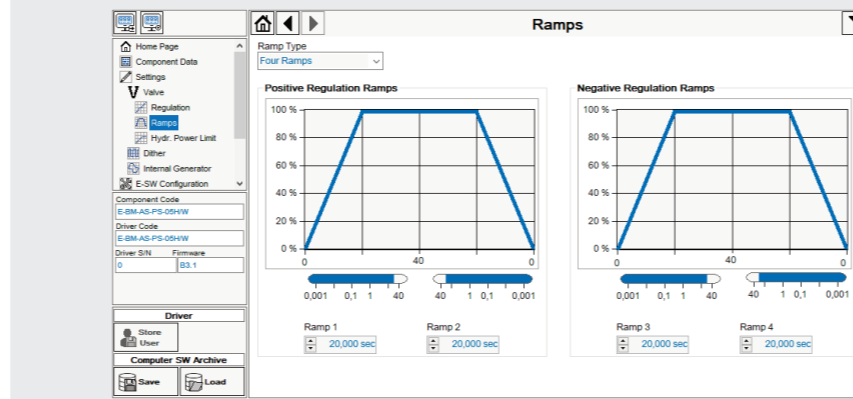
Scale setting: supply the max input signal (positive/negative); adjust the Scale to obtain the max actuator speed in both directions



RAMPS

Ramps setting: select required ramp configuration and adjust ramp time to optimize the actuator's acceleration and deceleration

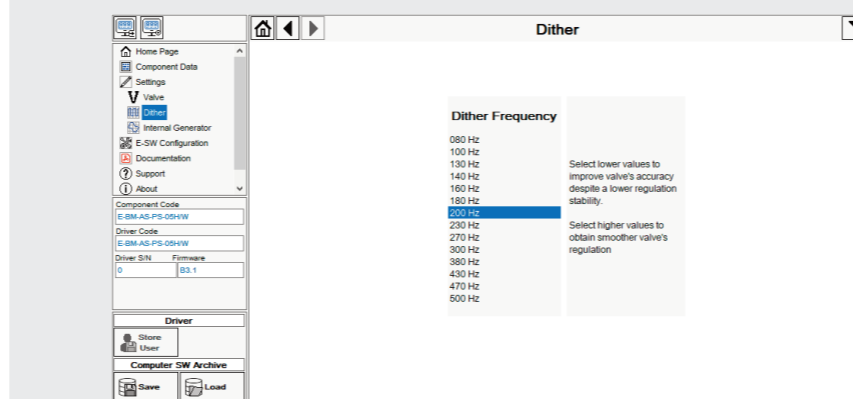
- No Ramp : no ramps selected
- Single Ramp : setup Ramp 1
- Double Ramp : setup Ramp 1 and 2
- Four Ramps : setup Ramp 1, 2, 3 and 4 (only 3 way)



DITHER

Dither setting: factory default 200 Hz

- lower frequencies reduce the hysteresis of the valve, too low values can affect the valve stability
- higher frequencies increase regulation stability, but increase also the hysteresis of the valve



REFERENCE ANALOG INPUT RANGE - E-SW level 2 functionality

Reference input signal can be selected between different options. Defaults: 0 ± 10 V for standard and 4 ± 20 mA for I option.

Input signal is configurable via software selecting between voltage and current, browsing to Reference page:

select **Signal Range** control to set the analog input signal

NOTE: if different settings are required use **Custom** option

4.3 STORE

Parameters modifications will be stored into driver permanent memory:

- press **Store User** 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.

4.4 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

TROUBLESHOOTING

Valve vibration or noise

- presence of air in the solenoid; perform valve air bleeding procedure – see tech. table of the connected valve
- dither frequency too low; increase value of the frequency – see STEP 4, section 4.2

The valve does not follow the reference signal

- driver is powered off, verify presence of 24 Vdc power supply and the coil(s) connection
- 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
- big hysteresis or spool stick-slip, reduce the dither frequency
- spool 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 4.3

Software parameters modifications have no effect on the valve

- driver is OFF LINE, check connection procedure – see STEP 4, section 4.1

After the modifications of software parameters the valve/driver does not work properly

- restore driver factory parameters using 'Restore Factory' button, located in 'Driver Signals - Extended Page' 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!