

DIN-RAIL DIGITAL DRIVER FOR DIRECTIONAL, PRESSURE AND FLOW VALVES

Industrial driver model: E-BM-AES		Ex-Proof driver model: E-BM-AES /A	
Industrial valve models:		Ex-Proof valve models:	
Directional DHZO-A DKZOR-A DHZE-A DKZE-A	DPZO-A DPZE-A DHZEM-A	Flow QVHZO-A QVKZOR-A QVHMZO-A QVKMZOR-A	Directional DHZA-A DKZA-A DPZA-A
Pressure RZMO-A RZME-A CART RZME-A AGMZO-A AGMZE-A	RZGO-A RZGE-A CART RZGE-A AGRCZO-A	HZMO-A HZGO KZGO DRHZO-A DRHZE-A	Flow QVHZA-A QVKZA-A
Pressure		Pressure	
RZMA-A HZMA-A AGMZA-A DHRZA-A	RZGA-A HZGA-A KZGA-A AGRCZA-A	LIMZA-A LIRZA-A LICZA-A	Directional DHZA-A DKZA-A DPZA-A

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	USB connection KIT
E-SW-* programming software	E-C-SB-USB/BM
	E-A-SB-USB/OPT

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)	
E-SW-/PQ	supports drivers with SP, SF, SL alternated P/Q control	EI (EtherNet/IP)	EP (PROFINET RT/IRT)	

E-SW-FIELDBUS supports also drivers without fieldbus communication; E-SW-/PQ supports also drivers 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
F** Proportional valves with one or two LVDT - tech. table	STARTUP E-SW-FIELDBUS Software startup guide
P005 Mounting surface - tech. table	E-MAN-BM-AES AES - driver operating manual
GS050 E-BM-AES drivers - 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

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PRODUCTS OVERVIEW

STEP 1 MECHANICAL: Locking the driver to the DIN rail.

STEP 2 ELECTRICAL: Connecting the connectors (A, B, C, E, F, G, H) to the driver terminals.

STEP 3 SOFTWARE: Programming the driver.

INSTALLATION		PROGRAMMING
STEP 1	STEP 2	STEP 3
MECHANICAL	ELECTRICAL	SOFTWARE

STEP 1 MECHANICAL

To lock the driver from the DIN rail:

- place the attach located on the driver bottom on the DIN rail
- press the driver against the DIN rail until the locking slide clicks

To unlock the driver from the DIN rail:

- pull down the locking slide with a screwdriver
- rotate up the driver

To extract the connectors:

- push lever
- pull connector

To insert the connectors:

- push the connector in its slot

To wire cables in the connectors:

- insert the cable termination
- turn screw with a screwdriver

NOTE: max conductor size 2,5 mm² tightening torque 0,4 ÷ 0,6 Nm

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,C,E,F,G,H)

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

2.1 CONNECTORS

Recommended LiVCY shielded cables: 0,5 mm² max 50 m - for logic - 1,5 mm² max 50 m - for power supply and solenoids

E-BM-AES		E-BM-AES drivers with /W option	
Power supply		Power supply	
A	1 V+ (power supply 24Voc) 2 V0 (power supply 0Voc) 3 VL+ (power supply 24Voc) 4 VL0 (power supply 0Voc)	A	1 V+ (power supply 24Voc) 2 V0 (power supply 0Voc) 3 VL+ (power supply 24Voc) 4 VL0 (power supply 0Voc)
Enable and fault signals		Enable and fault signals	
B	1 ENABLE (input 24Voc) 2 FAULT (output 24Voc) 3 VL0 (ground for ENABLE and FAULT) 4 EARTH	B	1 ENABLE (input 24Voc) 2 FAULT (output 24Voc) 3 VL0 (ground for ENABLE and FAULT) 4 EARTH
Solenoids		Solenoids	
C	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)	C	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)
Valve signal and potentiometer power supply		Pressure transducer	
F	1 +5V_REF (power supply +5Voc) 2 INPUT+ (±10Voc / 4 ÷ 20mA) 3 INPUT- (negative reference for INPUT+) 4 -5V_REF (power supply -5Voc)	E	1 VF +24V (power supply 24Voc) 2 TR+ (±10Voc / 4 ÷ 20mA) 3 NC 4 AGND (ground for transducer and potentiometer)
Monitor signal		Valve signal and potentiometer power supply	
G	1 EARTH 2 AGND (ground for MONITOR and potentiometer) 3 NC 4 MONITOR (±5Voc ; 1V=1A)	F	1 +5V_REF (power supply +5Voc) 2 INPUT+ (±10Voc / 4 ÷ 20mA) 3 INPUT- (negative reference for INPUT+) 4 -5V_REF (power supply -5Voc)
Digital inputs		Monitor signals	
H	1 VL0 (power supply 0Voc for digital input) 2 D_IN1 (input 24Voc) 3 D_IN0 (input 24Voc) 4 VL+ (power supply 24Voc for digital input)	G	1 EARTH 2 AGND (ground for MONITOR and potentiometer) 3 MONITOR2 (0 ÷ 5Voc) (2) 4 MONITOR (±5Voc ; 1V=1A)
		Digital inputs	
H	1 VL0 (power supply 0Voc for digital input) 2 D_IN1 (input 24Voc) 3 D_IN0 (input 24Voc) 4 VL+ (power supply 24Voc for digital input)	H	1 VL0 (power supply 0Voc for digital input) 2 D_IN1 (input 24Voc) 3 D_IN0 (input 24Voc) 4 VL+ (power supply 24Voc for digital input)

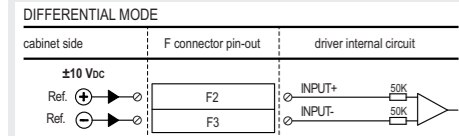
(1) E connector is available only for /W option
(2) MONITOR2 signal is available only for /W option

2.2 FIELDBUS CONNECTORS - only for BC, BP, EH

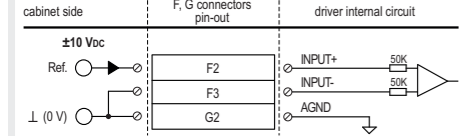
Select fieldbus connectors according to driver code and proceed with wirings operations

BC (DB9 - 9 pin)	BP (DB9 - 9 pin)	EH (RJ45 - 8 pin)
2 CAN_L Bus line (low) 3 CAN_GND Signal zero data line 5 CAN_SHLD Shield 7 CAN_H Bus line (high)	1 SHIELD 3 LINE-B Bus line (low) 5 DGND Data line - termination signal zero 6 +5V Termination supply signal 8 LINE-A Bus line (high)	1 TX+ Transmitter 2 RX- Receiver 3 TX- Transmitter 4 RX- Receiver

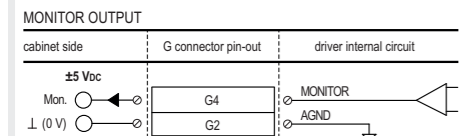
REFERENCE INPUT - VOLTAGE



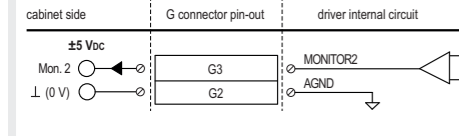
COMMON MODE



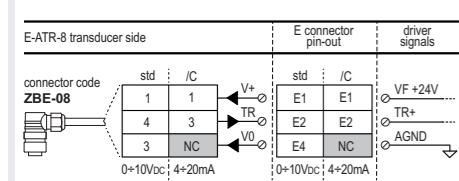
MONITORS OUTPUT - VOLTAGE ONLY



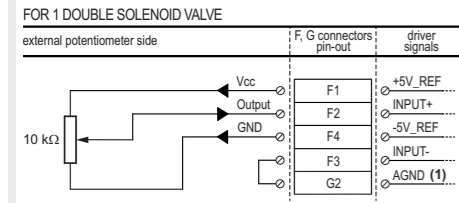
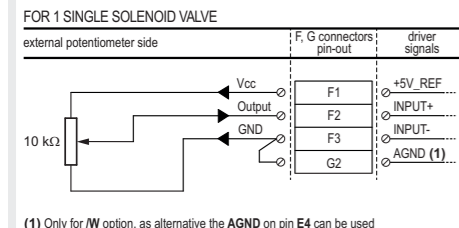
MONITOR2 OUTPUT - only for /W option



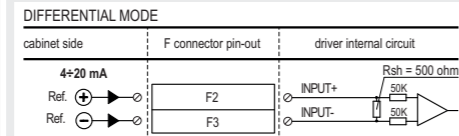
PRESSURE TRANSDUCER - only for /W option



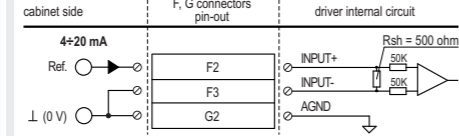
EXTERNAL POTENTIOMETER



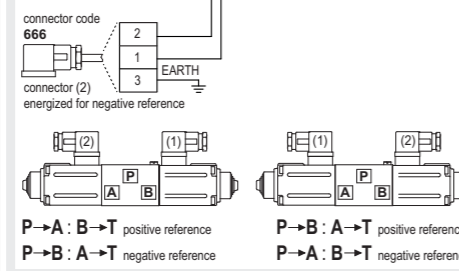
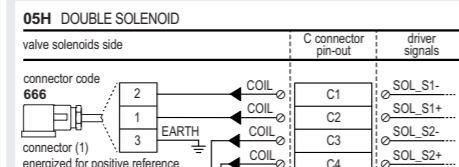
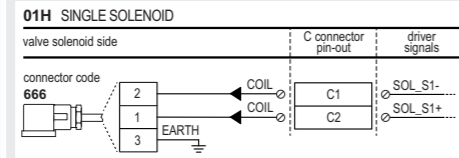
REFERENCE INPUT - CURRENT



COMMON MODE



SOLENOIDS



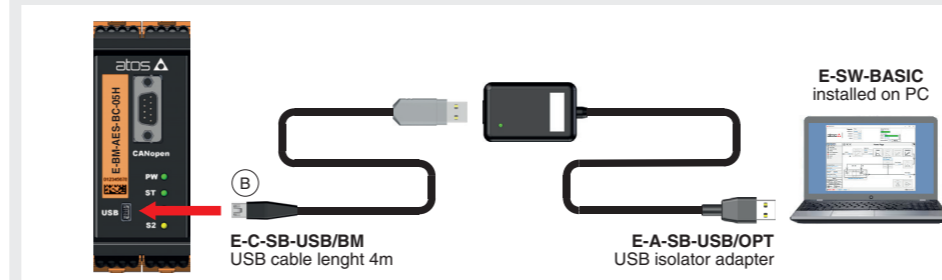
STEP 3 SOFTWARE

REMARK off-board drivers are factory preset with default parameters, only few programming operations are mandatory for:
 • setup the network parameters and the source of reference signals
 • setup the feedback's scale for pressure transducers only for /W option; please refer the E-MAN-BM-AES manual
 Driver programming can be performed through E-SW software or via fieldbus

PROGRAMMING				PC
3.1	3.2	3.3	3.4	3.5
CONNECTION	FIELDBUS	REFERENCES	STORE	BACK UP

3.1 CONNECTION

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



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

- 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 - driver is ON-LINE see

- Press buttons according the below sequence:
 a) ON-LINE - Recommended
 Wizard procedure for standard connection
 b) CONNECT TO NP, PS, IR, IL
 for driver without fieldbus communication
 c) CONNECT TO BC, BP, EH, EW, EI, EP
 for driver with fieldbus communication

NOTE: Bluetooth adapter is not compatible with E-BM-AES

3.2 FIELDBUS - Network Management

Node, Station Alias, IP Address, Baudrate, etc... can be set through:

- Machine central unit (master) - please refer to E-MAN-S-** fieldbus protocol programming manual
- 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, Filter Active	BP PROFIBUS DP Configuration file: GSD Defaults: Telegram 3 Configuration: Profibus Node 125, Telegram Selection Telegram 3
EH EtherCAT Configuration file: XML Station Alias is assigned automatically by fieldbus master Configuration: Station Alias 0	

- press Memory Store button and in Fieldbus Parameters press Store User button to save new setting into the driver (see 3.4)
- 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

3.3 REFERENCES - only for BC, BP, EH

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

3.4 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.

3.5 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

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

TROUBLESHOOTING

- Valve vibration or noise
- presence of air in the solenoid; perform air bleeding procedure – see tech. table of the connected valve
 - dither frequency too low; increase value of the frequency – please refer to E-MAN-BM-AES operating manual

- 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
 - the mechanical pressure limiter interferes with the regulation (only AGMZO and AGRCZO with /P option and only LIRZO, LICZO, LIMZO sizes 16, 25, 32 and /P option) – check the pressure limiter setting
 - spool sticking, contact Atos service center
 - poppet sticking (only LIRZO, LICZO, LIMZO) – contact Atos service center
 - missing piloting pressure, verify that hydraulic pressure in X (for valves with external pilot /E) or system pressure 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

Software parameters modifications are lost when driver is switched off

- parameter store operation was not performed, check store procedure – see STEP 3, section 3.4

Software parameters modifications have no effect on the valve

- driver is OFF LINE, check connection procedure – see STEP 3, section 3.1

- After the modifications of software parameters the valve does not work properly
- restore valve factory parameters using 'Restore Factory' button, located in 'Driver - Memory Store' 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!