The E-SW and Z-SW programming software are the entry door to the Atos digital technology. They are supplied in DVD format and can be easily installed on a desktop or a notebook computer. The intuitive graphic interface allows:
- set up valve’s functional parameters
- verify the actual working conditions
- identify and quickly solve fault conditions
- adapt the factory preset parameters to the application requirements
- store the customized setting into the valve
- archive the customized setting into the PC

The graphic interface is organized in pages related to different specific groups of functions and parameters.

The software automatically recognizes the connected valve model and adapts the displayed parameter groups, according to the selected access level.

The software is available in different versions according to the driver and controller communication interfacing.

Fieldbus communication software includes also dedicated manuals and configuration files for user self-management of the Atos electronics, using a fieldbus master.

Features:
- automatic valve recognition
- multilevel graphic interface
- numeric parameters settings (scale, bias, ramp, linearization, dither, etc.)
- real-time parameters modification
- diagnostic and monitor signals
- preset data storing into the digital driver and controller
- internal oscilloscope function
- internal database of customized preset

DVD contents:
- software installer
- user and fieldbus communication manuals
- fieldbus configuration files

Valve’s functional parameters can be easily set up with Atos E-SW / Z-SW programming software using proper connection to the digital driver/controller.

**E-SW**

- for valve drivers

Supported valve drivers communication:

<table>
<thead>
<tr>
<th>BASIC</th>
<th>PS (Serial)</th>
<th>IR (Infrared)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP (USB)</td>
<td>BC (CANopen)</td>
<td>BP (PROFIBUS DP)</td>
</tr>
<tr>
<td>EW (POWERLINK)</td>
<td>EI (EtherNet/IP)</td>
<td>EP (PROFINET)</td>
</tr>
</tbody>
</table>

**FIELDBUS**

- BC (CANopen)
- BP (PROFIBUS DP)
- EH (EtherCAT)
- EW (POWERLINK)
- EI (EtherNet/IP)
- EP (PROFINET)

Note: E-SW*/PQ software supports also valve drivers without P/Q control

**Z-SW**

- for axis controllers

Supported axis controllers communication:

<table>
<thead>
<tr>
<th>FULL</th>
<th>PS (Serial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP (USB)</td>
<td>BC (CANopen)</td>
</tr>
<tr>
<td>EW (POWERLINK)</td>
<td>BP (PROFIBUS DP)</td>
</tr>
<tr>
<td>EI (EtherNet/IP)</td>
<td>EH (EtherCAT)</td>
</tr>
<tr>
<td>EP (PROFINET)</td>
<td></td>
</tr>
</tbody>
</table>

Note: E-SW / Z-SW software allow drivers/controllers programming:
- NP, EH, EW, EI, EP only via USB / Bluetooth connection
- BC, BP via USB / Bluetooth connection or via fieldbus using a specific adapter (see 6.1 and 7.1)

### 1 PROGRAMMING SOFTWARE

**Valve’s functional parameters** can be easily set up with Atos E-SW / Z-SW programming software using proper connection to the digital driver/controller.

**E - SW**

<table>
<thead>
<tr>
<th>E-SW</th>
<th>-</th>
<th>BASIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>-</td>
<td>*</td>
</tr>
</tbody>
</table>

**FIELDBUS**

BASIC = NP (USB) PS (Serial) IR (Infrared)

<table>
<thead>
<tr>
<th>FIELDBUS</th>
<th>PS (Serial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC (CANopen)</td>
<td>BP (PROFIBUS DP)</td>
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<tr>
<td>EW (POWERLINK)</td>
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</tr>
<tr>
<td>EP (PROFINET)</td>
<td></td>
</tr>
</tbody>
</table>

Note: E-SW*/PQ software supports also valve drivers without P/Q control

**Z - SW**

<table>
<thead>
<tr>
<th>Z-SW</th>
<th>-</th>
<th>FULL</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>-</td>
<td>*</td>
</tr>
</tbody>
</table>

**FIELDBUS**

FULL = NP (USB) PS (Serial) IR (Infrared)

- BC (CANopen) BP (PROFIBUS DP) EH (EtherCAT)
- EW (POWERLINK) EI (EtherNet/IP) EP (PROFINET)

Note: E-SW / Z-SW software allow drivers/controllers programming:
- NP, EH, EW, EI, EP only via USB / Bluetooth connection
- BC, BP via USB / Bluetooth connection or via fieldbus using a specific adapter (see 6.1 and 7.1)

**Option:**

**PQ** = for drivers with alternated P/Q controls SP, SF, SL

**Supplies:**

- * = first supply
- **N** = next supply
Free programming software, web download:
E-SW-BASIC  Software can be downloaded upon web registration at www.atos.com; service and DVD not included
Upon web registration user receive via email the Activation Code (software free license) and login data to access Atos Download Area
The software remains active for 10 days from the installation date and then it stops until the user inputs the Activation Code

DVD first supply of programming software, to be ordered separately:
E-SW-BASIC  Software has to be activated via web registration at www.atos.com; 1 year service included
E-SW-BASIC/PQ  Upon web registration user receive via email the Activation Code (software license) and login data to access personal Atos Download Area
E-SW-FIELDBUS/PQ  The software remains active for 10 days from the installation date and then it stops until the user inputs the Activation Code
Z-SW-FULL

DVD next supplies of programming software, to be ordered separately:
E-SW-BASIC-N  Only for supplies after the first; service not included, web registration not allowed
E-SW-BASIC/PQ-N  Software has to be activated with Activation Code received upon first supply web registration
E-SW-FIELDBUS-N
E-SW-FIELDBUS/PQ-N
Z-SW-FULL-N
Note: the software BASIC, FIELDBUS and FULL are NOT interchangeable and must be ordered separately

Programming software FIELDBUS and FULL can program digital electronics through:
- Serial RS232 communication port for all standard versions of drivers/controllers
- Serial RS232 communication port for all versions of AES s30 drivers and Z-ME-KZ s10 or higher controllers

DVD contents
Include software installer, user manuals and fieldbus configuration files:
EDS for BC - GSD for BP - XML for EH - XDD for EW - EDS for EI - GSDML for EP

Atos Download Area
Direct access to latest releases of programming software, manuals, USB drivers and fieldbus configuration files at www.atos.com
Software and USB drivers can be easily installed following the instruction contained in the “info.txt” files.
An automatic mailing message will inform all the registered users whenever a new software upgrade is available.

E-SW / Z-SW minimum PC requirements

<table>
<thead>
<tr>
<th>Personal Computer</th>
<th>Operating System</th>
<th>Monitor Resolution</th>
<th>Memory</th>
<th>Device</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentium® processor 1GHz or equivalent</td>
<td>Windows XP SP3</td>
<td>1024 x 768</td>
<td>512 MB RAM + Hard Disk with 250MB free space</td>
<td>DVD reader</td>
<td>Serial RS232 port (only for PS) or USB port</td>
</tr>
</tbody>
</table>

2  USB connection - ISOLATOR AND CABLE
E-SW / Z-SW software permit valve’s parameterization through USB port.

2.1 Connection tools by driver/controller type
Isolator and cables shown in the image below can be ordered individually or in a single solution purchasing a dedicated kit: E-KIT-USB

2.2  E-A-SB-USB/OPT - isolator adapter

2.3  E-SW-BASIC/PQ - 4 m cable

2.4  E-SW-BASIC/PQ - 3 m cable

Note: the software BASIC, FIELDBUS and FULL are NOT interchangeable and must be ordered separately

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</tr>
</tbody>
</table>
3  BLUETOOTH connection - ADAPTER AND CABLE
E-SW / Z-SW software permit valve’s parameterization through Bluetooth (1).

3.1 Connection tools by driver/controller type
Adapter and cables shown in the image below can be ordered individually or in a single solution purchasing a dedicated kit: E-KIT-BTH

(1) Bluetooth adapter is not compatible with E-BM-AES and E-BM-RES drivers
(2) If PC has not built-in Bluetooth, use standard USB to Bluetooth dongle compatible with E-A-SB-USB/BTH specification
(please refer to STARTUP-BTH guide)

3.2 E-A-SB-USB/BTH - Bluetooth adapter

USB type A, male to E-C-SB-USB/BTH

E-SW / Z-SW software permit valve’s parameterization through Bluetooth (1).

3.3 E-C-SB-M12/BTH - 0.4 m cable

Connector to driver/controller side
M12 - 4poles - male

Shield connected to the housing

Connector to Bluetooth adapter side
USB type A - female

+5V_USB  +5V_USB
GND_USB  GND_USB
D -  D -
D +  D +

3.4 E-C-SB-BM/BTH - 0.2 m cable OTG

Connector to driver/controller side
Mini USB type B - male

Shield connected to the housing

Connector to Bluetooth adapter side
USB type A - female

+5V_USB  +5V_USB
GND_USB  GND_USB
D -  D -
D +  D +

4  IR infrared - USB COMMUNICATION ADAPTER
The adapter have to be connected to the USB communication port of PC to activate the IR infrared communication interface towards Atos digital electrohydraulics.

4.1 Connection tools by driver type

from drivers IR interface

E-A-PS-USB/IR adapter
to PC USB port

E-MI-AS-IR s10
E-MI-AS-IR s11

4.2 E-A-PS-USB/IR - 3 m adapter

- direct infrared communication with the driver
- USB male connector, type A
- plug-in format for direct infrared connection on the driver
- transmission rate 9.6 kbit/s
- external power supply not required (USB supply)
PS serial RS232 - USB COMMUNICATION ADAPTER AND CROSS CABLES

The adapter have to be connected to the USB communication port of PC to activate the PS serial RS232 communication interface towards Atos digital electrohydraulics. The cross cables connect the relevant connector of the USB adapter with the communication port of the digital drivers/controllers.

5.1 Connection tools by driver/controller type

- **E-C-PS-DB9/M12 cable**
  - Connector to driver side: M12 - 5poles - female
  - Connector to adapter/PC side: DB9 - 9poles - female
  - Connect the cable shield to the metallic housing of DB9 connector

- **E-C-PS-DB9/M8 cable**
  - Connector to driver side: M8 - 3poles - female
  - Connector to adapter/PC side: DB9 - 9poles - female
  - Connect the cable shield to the metallic housing of DB9 connector

- **E-C-PS-DB9/RJ45 cable**
  - Connector to driver side: RJ45 - 8poles - male
  - Connector to adapter/PC side: DB9 - 9poles - female
  - Connect the cable shield to the metallic housing of DB9 connector

Note: the adapter is not required if PC is already equipped with a serial RS232 communication port.

5.2 E-A-PS-USB/DB9 - 0.45 m adapter

- DB9 male connector according to serial RS232 specification
- USB male connector, type A
- Transmission rate from 1.6 kbit/s up to 225 kbit/s
- External power supply not required (USB supply)

5.3 E-C-PS-DB9/DB9 cable

5.4 E-C-PS-DB9/RJ45 - 2.5 m cable

5.5 E-C-PS-DB9/DB9 - 4 m cable

6.1 Connection tools by driver/controller type

- **E-A-BC-USB/DB9 adapter**
  - for usage prescriptions of the fieldbus terminator E-TRM-BC-DB9/DB9, see 9.2

Note: for AES s30 drivers the CANbus adapter and cable are not required since driver programming can be performed via serial RS232 communication port, see 5.1
6.2 E-A-BC-USB/DB9 - 2 m adapter

Model: isCAN USB - Brand: ifak system

- DB9 male connector according to the CiA specification DR303-1
- USB male connector, type A
- transmission rate from 10 kbit/s to 1 Mbit/s
- external power supply not required (USB supply)
- LEDs indicate the actual working condition

6.3 E-C-BC-DB9/M12 - 2 m cable

Connector to driver side
M12 - 5poles - female

Connector to adapter side
DB9 - 9poles - female

6.4 E-C-BC-DB9/RA - 2 m cable

Driver side
wires to driver terminal block

Connector to adapter side
DB9 - 9poles - male

7. BP PROFIBUS - USB COMMUNICATION ADAPTER AND CROSS CABLES

The adapter have to be connected to the USB communication port of PC to activate the BP PROFIBUS communication interface towards Atos digital electrohydraulics. The cross cables connect the relevant connector of the USB adapter with the communication port of the digital drivers/controllers.

7.1 Connection tools by driver/controller type

from drivers/controllers PS serial RS232 port
to PC USB port

Note: for AES s30 drivers and Z-ME-KZ-PS/BP controllers, the PROFIBUS adapter and cable are not required since driver programming can be performed via serial RS232 communication port, see 5.1

7.2 E-A-BC-USB/DB9 - 2 m adapter

Model: isPro USBx12 - Brand: ifak system

- DB9 female connector according to the PROFIBUS RS485 specification
- USB male connector, type A
- transmission rate from 1,6 kbit/s to 12 Mbit/s
- external power supply not required (USB supply)
- LEDs indicate the actual working condition

7.3 E-C-BC-DB9/M12 - 2 m cable

Connector to controller side
DB9 - 9poles - male

Connector to adapter/PC side
DB9 - 9poles - male
**ETHERNET CABLE WIRING DIAGRAM** - only for EH, EW, EI and EP

Typical ethernet cable wiring diagram from industrial M12 connectors to standard RJ45 ethernet connectors.

<table>
<thead>
<tr>
<th>Connector to driver side</th>
<th>Connector to ethernet network</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M12 - 4poles - male</strong></td>
<td><strong>RJ45 - 8poles - male</strong></td>
</tr>
<tr>
<td>1  TX+ white/orange</td>
<td>1  TX+ white/orange</td>
</tr>
<tr>
<td>2  RX+ white/green</td>
<td>2  RX+ white/green</td>
</tr>
<tr>
<td>3  TX- orange</td>
<td>3  TX- orange</td>
</tr>
<tr>
<td>4  RX- green</td>
<td>4  RX- green</td>
</tr>
</tbody>
</table>

Connect the cable shield to the metallic housing of M12 connector.

**FIELDBUS TERMINATORS** - only for BC and BP

For drivers/controllers in BC and BP executions, the fieldbus terminator has to be used.

<table>
<thead>
<tr>
<th>E - TRM</th>
<th>BC</th>
<th>M12</th>
<th>5PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminator</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fieldbus interfaces:
- **BC** = CANopen
- **BP** = PROFIBUS DP

(1) for TES, LES, PES, TEZ, LEZ series 40 or higher

**9.1 M12 - terminators for fieldbus network**

The fieldbus terminators are required when output fieldbus connector has to be used as network end point.

**E-TRM-BC-M12/5PM** network CANopen terminator

**E-TRM-BP-M12/4PF** network PROFIBUS DP terminator

**9.2 DB9 - terminators for USB adapter connection**

The fieldbus terminators are required when USB adapter has to be connected directly to the digital driver/controller.

**E-TRM-BC-DB9/DB9** CANOpen terminator for E-ABC-US/BDB9 adapter

**E-TRM-BP-DB9/DB9** PROFIBUS DP terminator for E-ABC-US/BDB9 adapter
FIRMWARE UPDATE

It is possible to update the firmware of the following digital drivers and controllers, using proper USB communication port. The firmware update is allowed starting from electronics series listed into the table or higher series:

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Ri-AEB s10</td>
<td>E-Ri-REB s10</td>
</tr>
<tr>
<td>E-Ri-AES s40</td>
<td>E-Ri-RES s40</td>
</tr>
<tr>
<td>E-Bm-AEB s10</td>
<td>E-Bm-REB s10</td>
</tr>
<tr>
<td>E-Bm-AES s40</td>
<td>E-Bm-RES s40</td>
</tr>
<tr>
<td>Z-Ri-TEZ s40</td>
<td>Z-Ri-LEZ s40</td>
</tr>
<tr>
<td>Z-Bm-TEZ s10</td>
<td>Z-Bm-LEZ s10</td>
</tr>
</tbody>
</table>

Note: for AES s30 drivers and Z-ME-KZ s10 or higher controllers the firmware update can be performed using serial RS232 communication port

RECOMMENDED TOOLS SELECTION

11.1 Standard electronics

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Series</th>
<th>Software</th>
<th>Cable</th>
<th>USB Adapter</th>
<th>Terminator</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR</td>
<td>11</td>
<td></td>
<td></td>
<td>E-A-PS-US0IR</td>
<td></td>
</tr>
<tr>
<td>PS E-BM-AS</td>
<td>10 or higher</td>
<td></td>
<td>E-SW-BASIC</td>
<td>E-C-SB-US0B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AEB, REB (1)</td>
<td></td>
<td>E-SW-BASIC</td>
<td>E-C-SB-US0B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TEB, LES (1)</td>
<td></td>
<td>E-SW-BASIC</td>
<td>E-C-SB-US0B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TES, LES, ESP with SP, SF, SL options (1)</td>
<td>E-SW-BASICPQ</td>
<td>E-C-SB-US0B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TEZ, LEZ (1)</td>
<td></td>
<td>Z-SW-FULL</td>
<td>E-C-SB-US0B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Z-BM-KZ, Z-BM-TEZ, Z-BM-LEZ (1)</td>
<td>10 or higher</td>
<td>E-C-SB-US0B</td>
<td></td>
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<td></td>
<td>TEZ, LEZ (1)</td>
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(1) Drivers/controllers compatible with Bluetooth adapter E-A-SB-USB/BTH (see 3.1)

11.2 Ex-proof electronics

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<tr>
<th>Model Code</th>
<th>Series</th>
<th>Software</th>
<th>Cable</th>
<th>USB Adapter</th>
<th>Terminator</th>
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11.3 Phase out electronics

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Note: recommended to use tools compatible with Bluetooth adapter E-A-SB-USB/BTH (see 3.1)