

# Compatibility for EMC, climate and mechanical load

for valve's drivers, controllers and transducers

Electronic drivers and transducers are the most critic valve's components concerning the risk of electromagnetic interferences, water entrance and mechanical stress. As per applicable International Standards, the following tables summarize the environmental resistance features of Atos electronic devices:

- remote or integral to valve's drivers and controllers
- LVDT spool position transducers
- proximity or position inductive switches
- pressure transducers

## 1 EMC ELECTROMAGNETIC COMPATIBILITY according to Directive 2004/108/CE

The EMC Directive identifies the ability of a device, equipment or system to function in an electromagnetic environment in a satisfactory manner (immunity), without produce intolerable electromagnetic interferences into any equipment in same environment (emission).

	<b>EN 61000-6-2</b> (ex EN 50082-2)	Immunity for industrial environments
	<b>EN 61000-6-3</b> (ex EN 50081-1)	Emission standard for residential, commercial and light-industrial environments
	<b>EN 61000-6-4</b> (ex EN 50081-2)	Emission standard for industrial environments

## 2 IP PROTECTION DEGREE CLASSIFICATION according to CEI EN 60529

IP (Ingress Protection) coding system indicates the degree of protection provided by an enclosure against access to hazardous parts, against ingress of solid foreign objects, ingress of water and to give additional information in connection with such protection. The minimum ensured IP protection reported for each component is intended with relevant connectors correctly installed.

Ingress protection	Protection against solid objects	Protection against liquids penetration
<b>IP20</b>	<b>2</b> = protected against solid bodies of superior dimensions to 12 mm; protect against the access with a finger	<b>0</b> = not protect
<b>IP65</b>		<b>5</b> = protect against water jets
<b>IP66</b>	<b>6</b> = totally protect against the powder; protect against the access with a wire	<b>6</b> = protect against powerful water jets
<b>IP67</b>		<b>7</b> = protect against the effects of temporary immersion

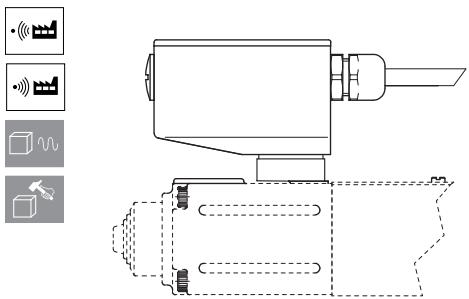
## 3 MECHANICAL RESISTANCE TEST CONDITIONS according to CEI EN 60068-2-6 (Vibrations, Sine & Random) - CEI EN 60068-2-27 (Shock)

The Mechanical Resistance test determines the ability of components, equipment and other articles to withstand specified severities of sinusoidal/random vibration and shock.

	<b>Sine test</b>	10 cycles 5-2000-5 Hz with logarithmic frequency variation 1 Octave/min 5-57 Hz amplitude 1.5 mm (p-p) 57-2000 Hz acceleration 10 g Tested on three axes X, Y, Z
	<b>Random test</b>	20-2000 Hz spectral acceleration density 0.05 g <sup>2</sup> / Hz testing time 30 min. each axis Tested on three axes X, Y, Z
	<b>Shock test</b>	Half sine wave shock 50 g / 11 ms Three tests for each axis, in positive and negative direction, for a total of 18 individual shocks Tested on three axes X, Y, Z
	<b>Shock test</b>	Half sine wave shock 30 g / 11 ms Three tests for each axis, in positive and negative direction, for a total of 18 individual shocks Tested on three axes X, Y, Z
	<b>Sine test (old procedure)</b>	0 ÷ 63 Hz; 0,7 ÷ 6 g
	<b>Shock test (old procedure)</b>	Shock 50 g; impact time 11 ms

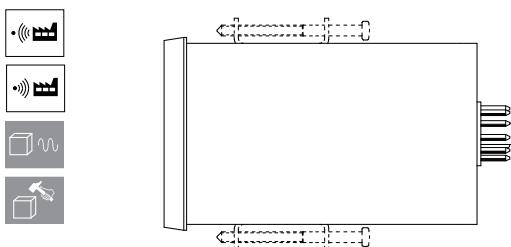
**3 ELECTRONIC DRIVERS TYPE E-MI-AC**, see table G010

minimum ensured protection **IP65**  
operating temperature  $0 \div +50^\circ\text{C}$  (storage  $-20 \div +70^\circ\text{C}$ )



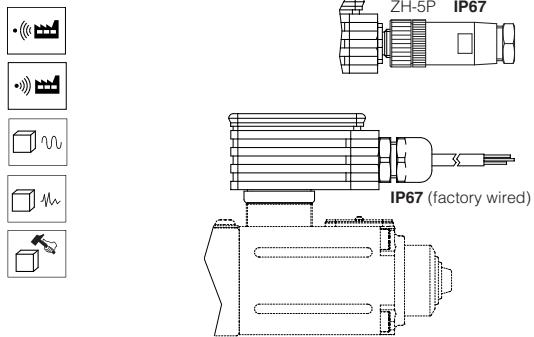
**5 ELECTRONIC DRIVER TYPE E-BM-AC**, see table G025

minimum ensured protection **IP20**  
operating temperature  $-10 \div +60^\circ\text{C}$  (storage  $-20 \div +70^\circ\text{C}$ )



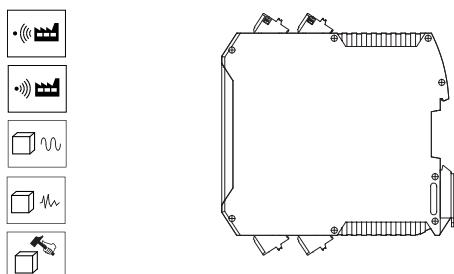
**4 DIGITAL ELECTRONIC DRIVER TYPE E-MI-AS-IR**, see table G020

minimum ensured protection **IP65**  
operating temperature  $-20 \div +50^\circ\text{C}$  (storage  $-25 \div +85^\circ\text{C}$ )



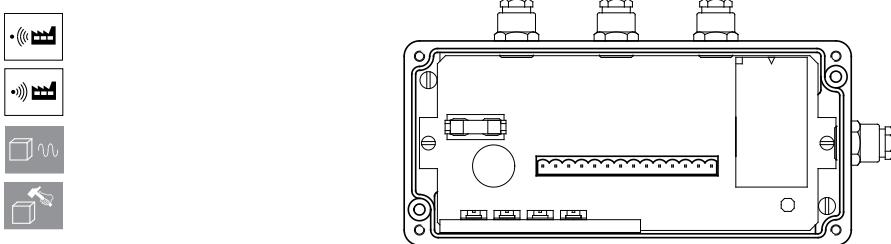
**6 DIGITAL ELECTRONIC DRIVER TYPE E-BM-AS**, see table G030

minimum ensured protection **IP20**  
operating temperature  $-20 \div +60^\circ\text{C}$  (storage  $-25 \div +85^\circ\text{C}$ )  
operating temperature on 05H version for two single solenoid valves  $-20 \div +40^\circ\text{C}$



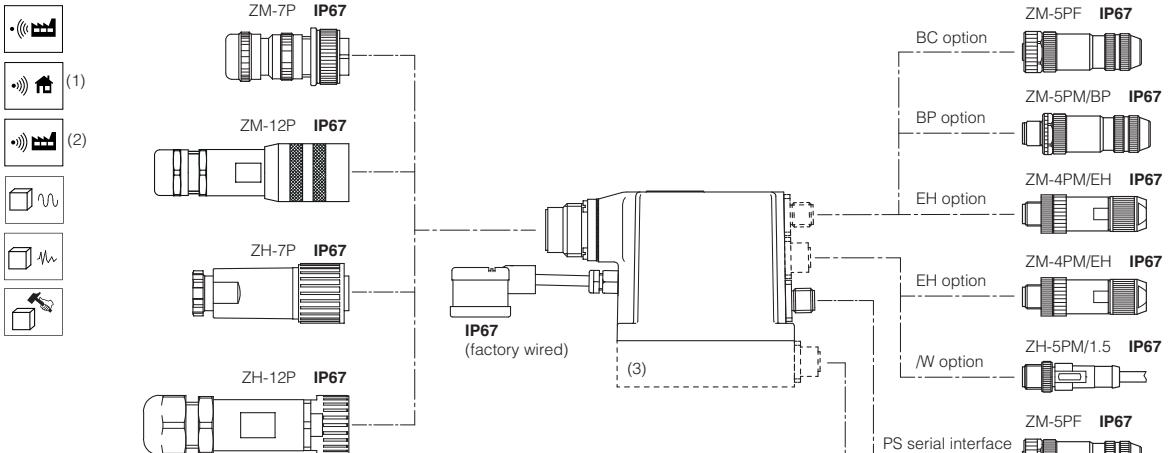
**7 ELECTRONIC DRIVER TYPE E-RP-AC**, see table G100

minimum ensured protection **IP65**  
operating temperature  $0 \div +50^\circ\text{C}$  (storage  $-20 \div +70^\circ\text{C}$ )



**8 INTEGRAL ELECTRONIC DRIVERS TYPE E-RI-AE** analog, see table G110    **E-RI-AES** digital, see table G115  
E-RI-AEG digital, see table TF220    **E-RI-AEZ** digital, see table TF220

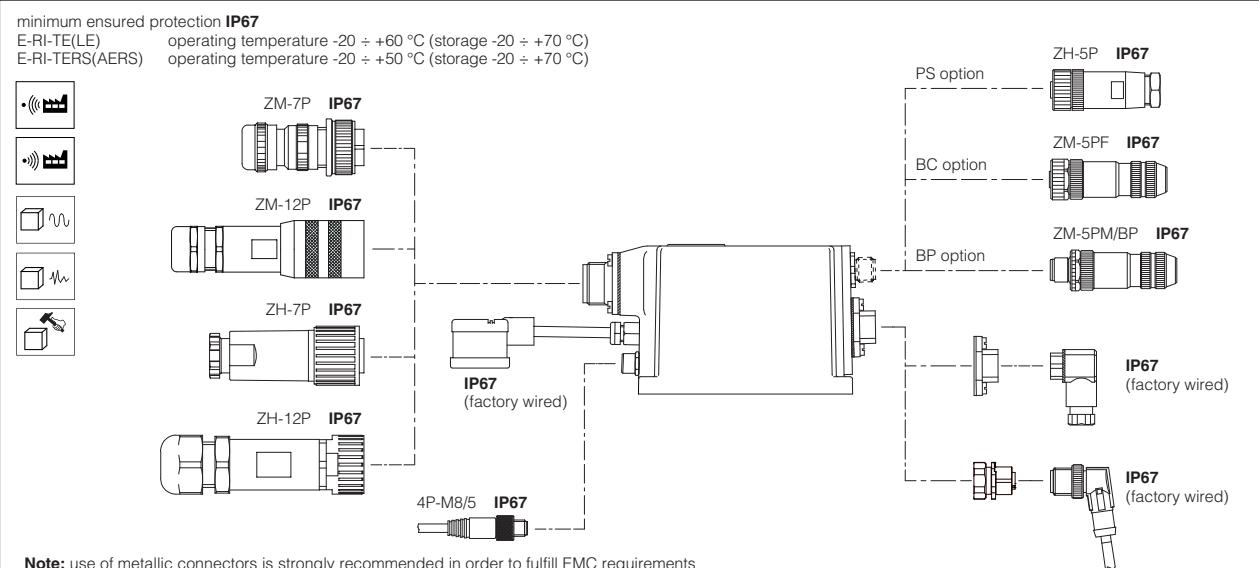
minimum ensured protection **IP67**  
operating temperature  $-20 \div +60^\circ\text{C}$  (storage  $-20 \div +70^\circ\text{C}$ )



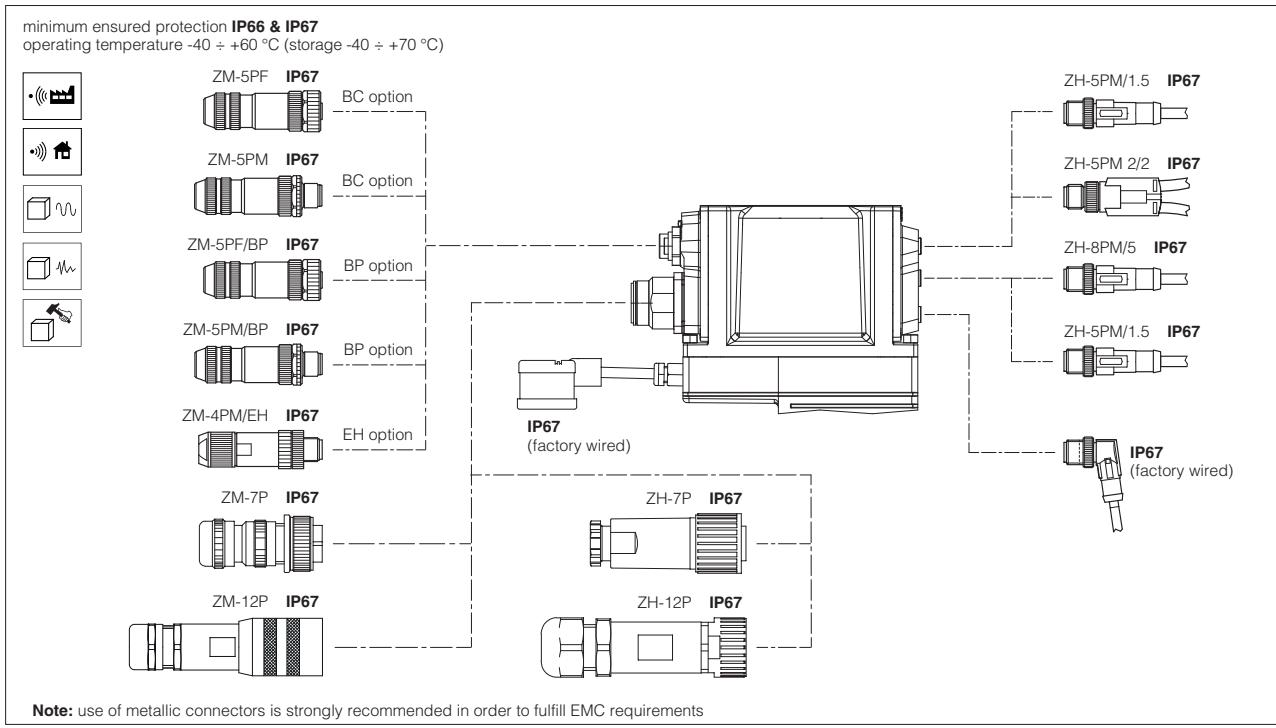
**Notes:**

- use of metallic connectors is strongly recommended in order to fulfill EMC requirements
- (1) for E-RI-AES, E-RI-AEG, E-RI-AEZ
- (2) for E-RI-AE
- (3) only for E-RI-AES-EH

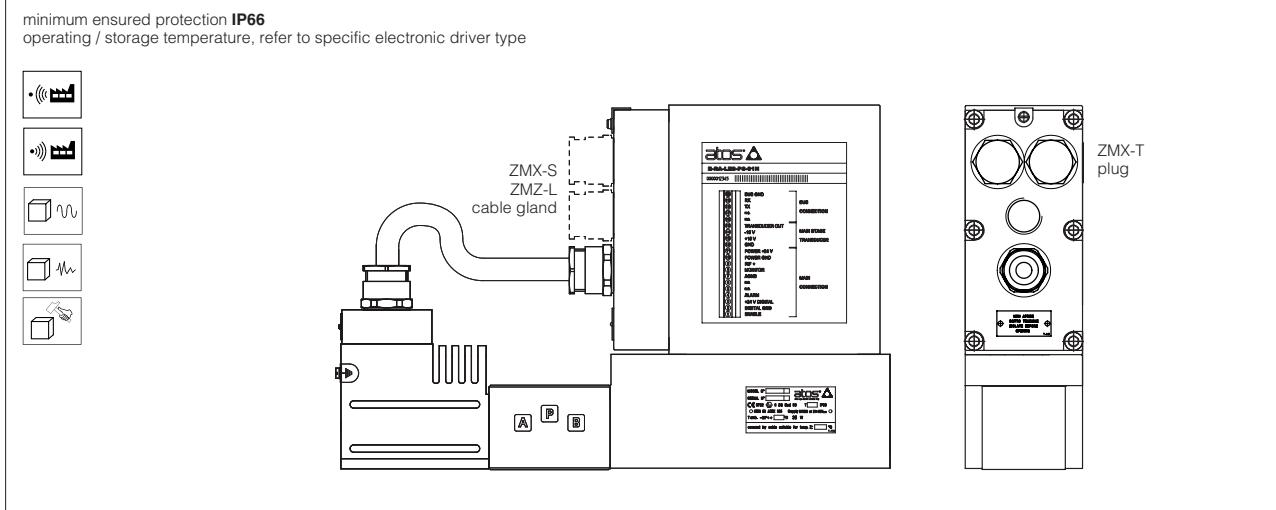
**9 INTEGRAL ELECTRONIC DRIVERS TYPE E-RI-TE(LE) analog, see table G200 E-RI-TERS(AERS) digital, see table G205**



**10 INTEGRAL ELECTRONIC DRIVERS/CONTROLLERS TYPE E-RI-TEB(LEB) digital, see table GS208 E-RI-TES(LES) digital, see table GS210  
E-RI-TES(LES)-S digital, see table GS212 E-RI-TEZ(LEZ) digital, see table FS230**



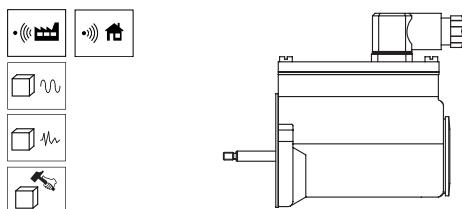
**11 INTEGRAL EX-PROOF DIGITAL DRIVER TYPE E-RA-AES, E-RA-TES(LES) AND E-RA-TERS(AERS) see table F650**



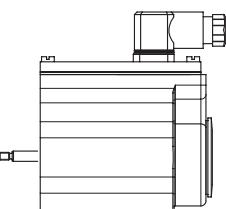
## 12 VALVE'S POSITION TRANSDUCERS

### ETH\*-4 (only for T valves)

minimum ensured protection **IP65**  
operating temperature -20 ÷ +70 °C (storage -20 ÷ +60 °C)



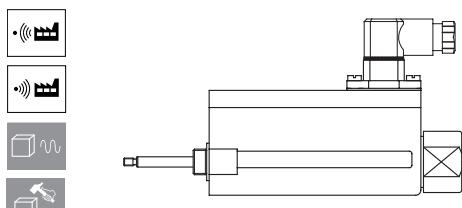
Applied to valves:  
DHZO, see table **FS165**  
DLHZO, see table **FS180**  
QVHZO, see table **FS412**



Applied to valves:  
DKZOR, see table **FS165**  
DLKZOR, see table **FS180**  
QVKZOR, see table **FS412**

### ETH\*-8 (only for TE/LE and TES/LES valves)

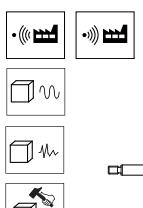
minimum ensured protection **IP67**  
operating temperature -20 ÷ +70 °C (storage -20 ÷ +60 °C)



Applied to valves:  
DPZO-T (TE), see table **FS172**  
DPZO-L (LE), see table **FS175**  
LIQZO-L size, 16 to 40, see table **FS330** and **FS340**

### ETHR\*-8

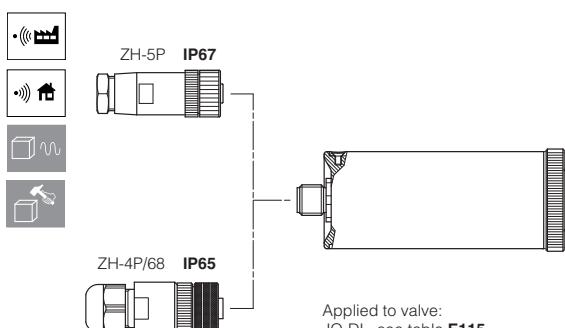
minimum ensured protection **IP67**  
operating temperature -20 ÷ +70 °C (storage -20 ÷ +60 °C)



Applied to valves:  
LIQZO-LE (LES) size 16 to 40  
see table **FS330** and **FS340**

### ETHFI-4/\*

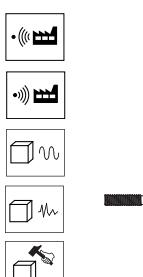
minimum ensured protection **IP65 - IP67**  
operating temperature -20 ÷ +70 °C (storage -20 ÷ +50 °C)



Applied to valve:  
**JO-DL**, see table **E115**

### E-THT-15

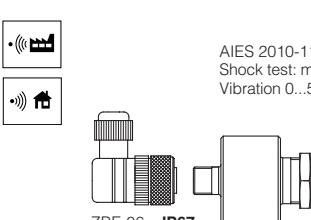
minimum ensured protection **IP67**  
operating temperature -40 ÷ +70 °C (storage -40 ÷ +70 °C)



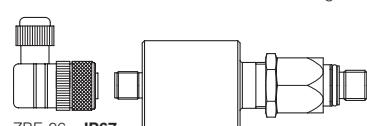
Applied to valves:  
LIQZO-L (LE, LES), size 50 to 100, see table **FS330** and **FS340**

### AIES 20\*\*-110 (/FV option)

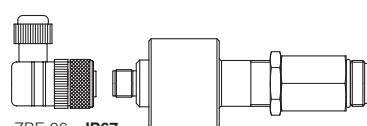
minimum ensured protection **IP65**  
operating temperature -25 ÷ +80 °C (storage -40 ÷ +100 °C)



AIES 2010-110  
Shock test: max 50g  
Vibration 0...500Hz: max 20g



AIES 2015-110  
Shock test: max 20g  
Vibration 0...500Hz: max 5g



AIES 2020-110  
Shock test: max 20g  
Vibration 0...500Hz: max 5g

ZBE-06 **IP67**  
Applied to valve:  
**DHE-06**, **DKE-16**, **DP** and  
**LIDAS** size 16 to 40, see table **E110**

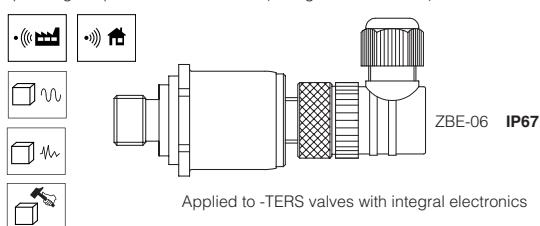
ZBE-06 **IP67**  
Applied to valve:  
**LIDAS** size 50, see table **E110**

ZBE-06 **IP67**  
Applied to valve:  
**DHE-07**, **DKE-17**, see table **E110**

## 13 VALVE'S PRESSURE TRANSDUCERS

### E-ATR-7, see table **G465**

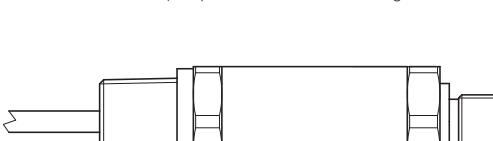
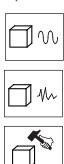
minimum ensured protection **IP67**  
operating temperature -25 ÷ +85 °C (storage -40 ÷ +100 °C)



Applied to -TERS valves with integral electronics

### E-ATRA-7, see table **G466**

minimum ensured protection **IP67**  
operating temperature -30 ÷ +100 °C (compensated 0 ÷ +80 °C; storage -30 ÷ +105 °C)



Applied to -TERS valves with ex-proof integral electronics

EMC: 89/336/EEC emission (class B) and immunity according to EN 61326