Testing box **type E-RI-TEST**

for proportional valves with on-board electronic driver

*Available only on request*

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**E-RI-TEST**

Testing box allows to test and start-up proportional valves with on-board electronic driver with 7 pin main connector. It is supplied with 2m cable and with 7 pin main connector, to directly connect the valve driver to be tested.

E-RI-TEST can be used in two operate modalities thanks to a switch selector placed on the frontal panel:

- **Test:**
  - the E-RI-TEST has to be connected between the machine central unit and the proportional valve. During normal working it is possible to monitor the state and value of all signals of the 7 pins connector. It is not necessary to supply the valve electronic driver.

- **Start-up:**
  - the E-RI-TEST operates by multi-selectable potentiometers and switches selectors placed on the frontal panel. With this mode it is possible to start-up the valve with preliminary movements at low speed thanks to an internal reference generator. The machine central unit and all signal management have not to be connected to the E-RI-TEST. The power supply must be connected to the pin A, B of the main connector (see section 2).

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**Model Code**

<table>
<thead>
<tr>
<th>E-RI-TEST</th>
<th>*</th>
</tr>
</thead>
</table>

Testing box for valves with on-board electronics and 7 pin main connector

Series number

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**Block Diagram**

- **7 PIN - MAIN CONNECTOR** (to be ordered separately)
- **FROM MACHINE CENTRAL UNIT**
- **7 PIN - VALVE MAIN CONNECTOR** (included on the supply)
- **TO VALVE**

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(*) To be activated only for driver with /Q option
3 ELECTRONIC CONNECTIONS

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>TECHNICAL SPECIFICATIONS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>V+</td>
<td>Power supply 24 VDC for solenoid power stage and driver logic</td>
<td>Input - power supply</td>
</tr>
<tr>
<td>B</td>
<td>V0</td>
<td>Power supply 0 VDC for solenoid power stage and driver logic</td>
<td>Gnd - power supply</td>
</tr>
<tr>
<td>C</td>
<td>AGND (1)</td>
<td>Ground - signal zero for MONITOR signal</td>
<td>Gnd - analog signal</td>
</tr>
<tr>
<td></td>
<td>ENABLE</td>
<td>Enable (24 Vdc) or disable (0 Vdc) the driver (for /Q option)</td>
<td>Input - on/off signal</td>
</tr>
<tr>
<td>D</td>
<td>INPUT+</td>
<td>Reference analog differential input: ±10 Vdc maximum range</td>
<td>Input - analog signal</td>
</tr>
<tr>
<td></td>
<td>For single solenoid valves: 0÷10 Vdc</td>
<td>(4 ± 20 mA for /I option)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For double solenoid valves: ±10 Vdc</td>
<td>(4 ± 20 mA for /I option)</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>INPUT-</td>
<td>Input signal impedance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voltage: Ri &gt; 50 kΩ</td>
<td>Current: Ri = 316 Ω</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>MONITOR (2)</td>
<td>Monitor analog output: ±10 Vdc maximum range</td>
<td>Output - analog signal</td>
</tr>
<tr>
<td></td>
<td>Fault (0 Vdc) or normal working (24 Vdc)</td>
<td>(for /F option)</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>EARTH</td>
<td>Internally connected to the test adapter housing</td>
<td></td>
</tr>
</tbody>
</table>

(1) With /Q option ENABLE signal replaces AGND on pin C; MONITOR signal is referred to pin B
(2) With /F option FAULT signal replaces MONITOR on pin F

4 TECHNICAL CHARACTERISTICS

Power supply Nominal: ±24 VDC rectified and filtered: Vrms = 20 ± 32 VMAX (ripple max 10 % VPP)
Max. power consumption 10 W
Reference input signal Voltage: ±10 VDC Current: 4 ± 20 mA
Input signal impedance Voltage: Ri > 50 kΩ Current: Ri = 316 Ω
External potentiometers Reference ±2% of input signal range - to be used for positive/negative bias setting
±100% of input signal range - to be used for positive/negative scale setting
±100% continuous range - to be used for preliminar movements
Box format plastic box with aluminium front end; IP20 protection degree
Operating temperature -20 ÷ +60 °C (storage -20 ÷ +70 °C)
Dimensions 221 x 150 x 100 mm
Mass 1,5 kg (included cable + connector)

5 COMPONENTS IDENTIFICATION

1 Main fuse, 4A
2 Internal reference potentiometer: ±100%
3 Enable signal in pin C;
4 Protection fuse in case pin C is supplied by Enable signal (on valves without /Q option)
5 Proportional valve
6 LED on when Enable is active
7 Internal / External reference selector
8 Single solenoid (01) / double solenoid (05) valve selector
9 Voltage (Std [V]) / Current (/I) reference selector
10 Enable signal selector - to be used only on valves with /Q option
11 GND external reference plug
12 Positive external reference plug
13 Reference multi selector
14 7 pin panel male connector
15 7 pin main female connector and cable from PLC (not included on the supply)
16 Jumpers (see 6.4)
6 OPERATING WITH E-RI-TEST

The E-RI-TEST must be interposed between the Machine Control Unit through the main connector (6) and the proportional valve (5) through the annexed connector and cable.

6.1 Power supply
The power supply must be provided through pin A and B of the main connector of the E-RI-TEST. A safety fuse is present in series to the power supply: $\varnothing$ 5 x 20 (4A, F).

Never use the test point A and B to provide power supply to the valve connected: these test points must be used to check power supply presence on the pin A and B of proportional valve main connector.

6.2 External reference signal
It is used for test operations and it is active with switch (7) set to EXT. In this condition it is required to connect the Machine Control Unit connector (6) to the plug (8) and to connect E-RI-TEST to the main connector of the proportional valve (5). The user can monitor the valve signals using the test point available on the front panel of the device (see section 2 for details):
- pins A...G replicate the correspondent ones of the on-board electronics and it is possible to measure the relevant signals
- /Q fuse (9) protects erroneous enable signal (24 Vdc) on pin C if the on-board electronic driver is not equipped with /Q function: in this case light (10) is on.
Replace the fuse and check selector (8) is on Std position.

6.3 Internal reference signal
This configuration is used for start-up operation, and it is active with switch (7) set to INT.
Possible functions:
- to run preliminary valve movement
- to change settings through the reference multi-selector (11) of device front panel
- to test or change the valve parameter settings
It is not requested the Machine Control Unit:
- pins A...G connect these pins to monitor the relevant signals according to the electronic connections (see section 2)
- enable (12) for /Q option: when it is active the light (10) is on. If the enable pin is wrong connected, the light (10) is switched on
- reference type (V, I) internal position by selector (13) and valve configuration selection (14)
  position 01: reference 4 + 20 mA / 0 + 10 Vdc
  position 05: reference 4 + 20 mA / -10 + 10 Vdc
- reference signal can be supplied as follows:
  - selector (11) set to EXT.IN: any external reference signal can be supplied to the female jacks (15) and (16)
  - selector (11) set at -100%, or -2%, or +2%, or +100%: in this way maximum and threshold reference signals are selected
  - selector (11) set to enable the internal reference (12): any reference signal can be selected on potentiometer on the range ±100%

6.4 Jumpers
Jumpers (17) are used to simplify any measurements with external multimeters:
- current measurement (18): disconnect jumper on D or F pins and connect probes in-series
- voltage measurement (19): connect probes between D or F pins and system ground

Note: jumpers have to be connected for regular working operations

7 CONNECTORS CHARACTERISTICS - to be ordered separately

<table>
<thead>
<tr>
<th>CODE</th>
<th>ZH-7P</th>
<th>ZM-7P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Female straight circular socket plug 7pin</td>
<td>Female straight circular socket plug 7pin</td>
</tr>
<tr>
<td>Standard</td>
<td>According to MIL-C-5015</td>
<td>According to MIL-C-5015</td>
</tr>
<tr>
<td>Material</td>
<td>Plastic reinforced with fiber glass</td>
<td>Aluminium alloy with cadmium plating</td>
</tr>
<tr>
<td>Cable gland</td>
<td>PG11</td>
<td>PG11</td>
</tr>
<tr>
<td>Cable</td>
<td>LiYCY 7x 0.75 mm² max 20 m (logic and power supply) or LiYCY 7 x 1 mm² max 40 m (logic and power supply)</td>
<td>LiYCY 7x 0.75 mm² max 20 m (logic and power supply) or LiYCY 7 x 1 mm² max 40 m (logic and power supply)</td>
</tr>
<tr>
<td>Connection type</td>
<td>to solder</td>
<td>to solder</td>
</tr>
<tr>
<td>Protection (DIN 60529)</td>
<td>IP 67</td>
<td>IP 67</td>
</tr>
</tbody>
</table>
ZM-7P - MAIN CONNECTOR
7 pin - metallic
(to be ordered separately)

ZH-7P - MAIN CONNECTOR
7 pin - plastic
(to be ordered separately)

ZH-7P - VALVE MAIN CONNECTOR
7 pin - plastic
(included on the supply)

Cable length = 2m