The PRE3G valve is a pilot operated pressure control valve with electric proportional control and mounting surface in compliance with ISO 4401 standards, controlled by an integral digital amplifier.

It is suitable to modulate the pressure in hydraulic circuits.

The valves are available with command signal in voltage or current and on board electronics with internal enable, external enable or 0V monitor on pin C. A solenoid current monitoring signal is available.

Valves are easy to install. The driver directly manages digital settings.

Maximum operating pressure:
- P port 350 bar
- T port 350 bar

Minimum controlled pressure:
see p min= f(Q) diagram

Minimum flow:
Maximum flow (see p max = f(Q) diagram)
l/min 2 40

Step response:
see paragraph 6

Hysteresis:
% of p nom < 3%

Repeatability:
% of p nom < ±1%

Electrical characteristic:
see paragraph 2

Ambient temperature range:
°C -20 / +60

Fluid temperature range:
°C -20 / +80

Fluid viscosity range:
cSt 10 ÷ 400

Fluid contamination degree:
According to ISO 4406:1999 class 18/16/13

Recommended viscosity:
cSt 25

Mass:
kg 3.8
1 - IDENTIFICATION CODE

Pressure control valve
Electrical proportional control
Size ISO 4401-03
Digital integrated electronics for open loop
Pressure control range

070 = 4 - 70 bar
140 = 4 - 140 bar
210 = 5 - 210 bar
350 = 5 - 350 bar

Pin C function:
A = external enable
B = internal enable
C = 0V monitor
Main connector 6 pin + PE
Reference signal:
E0 = voltage 0 ÷ 10 V
E1 = current 4 ÷ 20 mA
Seals:
N = NBR seals for mineral oil (standard)
V = FPM seals for special fluids
Series No.
(the overall and mounting dimensions remain unchanged from 30 to 39)

2 - DETAILED SYMBOL

Diagram of the pressure control valve with pin connections and signal inputs.

P - inlet
T - outlet
3 - ELECTRICAL CHARACTERISTICS

3.1 - Electrical on board electronics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duty cycle</strong></td>
<td>100% (continuous operation)</td>
</tr>
<tr>
<td><strong>Protection class</strong></td>
<td>IP65 / IP67</td>
</tr>
<tr>
<td><strong>Supply voltage</strong></td>
<td>V DC 24 (from 19 to 30 VDC), ripple max 3 Vpp</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>VA 25</td>
</tr>
<tr>
<td><strong>Maximum solenoid current</strong></td>
<td>A 1.88</td>
</tr>
<tr>
<td><strong>Fuse protection, external</strong></td>
<td>2A time lag</td>
</tr>
<tr>
<td><strong>Command signals:</strong></td>
<td>voltage (E0) V DC, current (E1) mA 0 ÷ 10 (Impedance Ri &gt; 11 kOhm), 4 ÷ 20 (Impedance Ri = 58 Ohm)</td>
</tr>
<tr>
<td><strong>Monitor signal:</strong></td>
<td>voltage (E0) V DC, current (E1) mA 0 ÷ 10 (Impedance Ro &gt; 1 kOhm), 4 ÷ 20 (Impedance Ro = 500 Ohm)</td>
</tr>
<tr>
<td><strong>Managed breakdowns</strong></td>
<td>Overload and electronics overheating, cable breakdown, supply voltage failures</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>LIN-bus Interface (with the optional kit)</td>
</tr>
<tr>
<td><strong>Connection</strong></td>
<td>7 - pin MIL-C-5015-G (DIN-EN 175201-804)</td>
</tr>
<tr>
<td><strong>Electromagnetic compatibility (EMC)</strong></td>
<td>emissions EN 61000-6-4, immunity EN 61000-6-2 According to 2014/30/EU standards</td>
</tr>
</tbody>
</table>

3.2 - On-board electronics diagrams

**VERSION A - External Enable**

**VERSION B - Internal Enable**

**VERSION C - 0V Monitor**
4 - VERSIONS WITH VOLTAGE COMMAND (E0)
The reference signal is between 0 ÷ 10V. The monitor feature of versions B and C becomes available with a delay of 0.5 sec from the power-on of the card.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Values</th>
<th>version A</th>
<th>version B</th>
<th>version C</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>24 V DC</td>
<td>Supply Voltage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Enable</td>
<td>not used</td>
<td>PIN F reference</td>
<td>0 V</td>
</tr>
<tr>
<td>D</td>
<td>0 ÷10 V</td>
<td>Command (differential input)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>0 V</td>
<td>PIN D reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0 ÷10 V</td>
<td>Monitor (0V reference: pin B)</td>
<td>Monitor</td>
<td></td>
</tr>
<tr>
<td>PE</td>
<td>GND</td>
<td>Ground (Earth)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5 - VERSIONS WITH CURRENT COMMAND (E1)
The reference signal is supplied in current 4 ÷ 20 mA. If the current for command is lower, the card shows a breakdown cable error. To reset the error is sufficient to restore the signal. The monitor feature of versions B and C becomes available with a delay of 0.5 sec from the power-on of the card.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Values</th>
<th>version A</th>
<th>version B</th>
<th>version C</th>
</tr>
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<tbody>
<tr>
<td>A</td>
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<td>Supply Voltage</td>
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<td>B</td>
<td>0 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Enable</td>
<td>not used</td>
<td>PIN F reference</td>
<td>0 V</td>
</tr>
<tr>
<td>D</td>
<td>4 ÷ 20 mA</td>
<td>Command</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>0 V</td>
<td>PIN D reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>4 ÷ 20 mA</td>
<td>Monitor (0V reference: pin B)</td>
<td>Monitor</td>
<td></td>
</tr>
<tr>
<td>PE</td>
<td>GND</td>
<td>Ground (Earth)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6 - CHARACTERISTIC CURVES
(measured with viscosity of 36 cSt at 50°C)

Typical control characteristics, according to the reference signal for available pressure control ranges, measured with input flow rate Q = 10 l/min. Characteristic curves measured without backpressure in T, with linearity compensation set by the onboard electronics.

The full scale pressure is set in factory with a flow rate of 10 l/min. In case of higher flow rate, the full scale pressure will increase (see diagram p max = f (Q)).

7 - STEP RESPONSE
(obtained with mineral oil with viscosity of 36 cSt at 50°C and electronic control card)

Step response is the time taken for the valve to reach 90% of the set pressure value following a step change of reference signal. The table illustrates typical step response times measured with a PRE3G-210 and with an input flow rate of Q = 10 l/min and pressure oil volume of 0,1 litre.

The response time is affected both by the flow rate and the oil volume in the pipework.
NOTE: at the first start up, or after a long period of no use, it is necessary to vent the air through the breather (3) placed at the end of the solenoid tube.

Fastening bolts: 4 SHC screws  M5x70 - ISO 4762
Torque: 5 Nm (A8.8)
Threads of mounting holes: M5x10

1 Mounting surface with sealing rings:
4 OR type 2037 - 90 shore (9.25 x 1.78)
2 Breather: Allen key 4
3 Main connection
4 Mating electrical connector
to be ordered separately.
See at section 11
9 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics.

The fluid must be preserved in its physical and chemical characteristics.

10 - INSTALLATION

We recommend to install the valves either in horizontal position, or vertical position with the solenoid downward. If the valve is installed in vertical position and with the solenoid upward, you must consider possible variations of the minimum controlled pressure, if compared to what is indicated in paragraph 6.

Ensure that there is no air in the hydraulic circuit. In particular applications, can be necessary to vent the air entrapped in the solenoid tube, by using the appropriate drain screw in the solenoid tube.

Ensure the solenoid tube is always filled with oil. At the end of the operation, make sure of having correctly replaced the drain screw.

Connect the valve T port directly to the tank. Add any backpressure value detected in the T line to the controlled pressure value.

Maximum admissible backpressure in the T line, under operational conditions, is 2 bar.

Valves are fixed by means of screws or tie rods on a flat surface with planarity and roughness equal to or better than those indicated in the relative symbols. If minimum values are not observed, fluid can easily leak between the valve and support surface.

11 - ACCESSORIES

(to be ordered separately)

11.1- Mating connector

These valves have a plug for 7-pin mating connector, that is placed on the box of the integral motion control.

So as to avoid electromagnetic troubles and comply with the electromagnetic compatibility regulation EMC, it is recommended the use of a metal connector.

If a plastic connector is used, make sure that the protection characteristics IP and EMC of the valve are guaranteed.

Duplomatic offers a metal cable connector type MIL-C-5015-G (EN 175201-804).

name: EX7S/L/10  code 3890000003

11.2 - Connection cables size

Power supply:
- up to 20 m cable length : 1,0 mm²
- up to 40 m cable length : 1,5 mm²

Signal: 0,50 mm²

A suitable cable would have 7 isolated conductors, a separate screen for the signal wires and an overall screen.

11.3 - Kit for start-up LINPC-USB

Device for service start-up and diagnostic, see catalogue 89850.

12 - SUBPLATES

(see catalogue 51 000)

| PMMD-AI3G with ports on rear |
| PMMD-AL3G with side ports |
| Ports dimensions P, T, A, B: 3/8” BSP thread |