
ELECTRONIC ACTUATED PRESSURE REDUCING PILOT CONTROL

PART 1 - GENERAL

The Electronic Actuated Pressure Reducing Pilot Control is an optional pilot control for use on pilot systems on all sizes of new Cla-Val Pressure Reducing Control Valves. The Electronic Pilot Control shall have an integral hydraulic pilot and electronic controller contained in an IP-68 rated submersible enclosure to provide interface between remote telemetry and remote valve set-point control, providing an accurate downstream pressure control. Remote set-point command signals can be from any SCADA-type control system using an analog 4-20 mA signal, by contact closure for clockwise / counter clockwise rotation or through Modbus RTU.

PART 2 - PRODUCTS

2.01 ELECTRONIC ACTUATED PRESSURE REDUCING PILOT CONTROL

A. FUNCTION

- a. Primary function of the Electronic Actuated Pressure Reducing Pilot Control; it shall be used on continuous flowing pilot systems of new Cla-Val Pressure Reducing Automatic control valves. Electronic pilot control can also be used in conjunction with other pilot control(s) on combination / multi-function control valves. Electronic pilot shall have an integral electronic actuator (motor) and hydraulic pilot control. Electronic pilot control shall be a direct-acting, electronically adjustable, spring-loaded, normally open diaphragm actuated pilot valve. The electronic actuated pressure reducing pilot shall be designed to permit flow when controlled pressure is less than the spring setting. The pressure reducing pilot control shall have a second downstream sensing port which can be utilized to install a pressure gauge.
- b. Electronic pilot shall accept a remote set-point command, positioning the pilots to maintain the desired pressure at valve outlet within preset limits. Electronic actuated pilot shall be actuated using a DC powered 4-20 mA analog command signal received from SCADA or an Electronic Valve Controller. This enables simple remote set-point control over the electronic pilot actuator. The remote analog signal input shall be isolated and reverse polarity protected. Electronic Pilot shall have an isolated 4-20mA feedback signal that provides up-to-date pilot position. Continuous internal monitoring of actuator position results in smooth transitions between pilot set-points with no backlash or dithering. Electronic pilot shall configurable opening/closing speed along with an adjustable off period to prevent changes from occurring too quickly or slowly. Upon loss of power or remote set-point signal, the DC powered actuator(s) shall continue to control the main valve by leaving the hydraulic set point in the last position, assuring system stability under all conditions.
- c. The electronic pilot control actuator shall be factory configured to the specific spring range in the pilot control. If other than the default settings are required, these changes shall be accomplished by using only the manufacturer's free downloadable software and special USB connector cable. A full range of spring settings shall be available in ranges of 0 to 400 psi.
- d. The electronic pilot control shall be capable of being combined with other hydraulic solenoid pilot(s) and/or hydraulic controls to create an overall dual function pilot system, or fail-safe capability.
- e. Electronic actuated pilot control shall be manufactured by the control valve manufacture. Pilot shall comply with NSF/ANSI 61 and certified lead free to NSF/ANSI 372 as a safe drinking water component. Electronic pilot control actuator enclosure shall be totally dust / dirt tight and moisture resistant. Pilot actuator enclosures shall be protected against prolonged effects of immersion under pressure; and shall be rated IP-68.
- f. Pilot control shall be direct mounted onto the control valve or be capable of being remotely mounted. Pilot control shall be mounted in a position to allow for ease of adjustment, maintenance, servicing and repairs. The pilot control shall be serviceable without removing it from the control valve.

- g. The overall electronic pilot control system shall include a fixed orifice closing speed. No variable orifices shall be permitted. Pilot system shall have an adjustable opening speed control on all valves sizes 3" and smaller as standard equipment. The pilot control system shall include strainers, shut-off cocks, and all required control accessories, equipment, control tubing and fittings.

B. MATERIALS

1. Material Specification for Electronic Actuated Pressure Reducing Pilot Control:

<u>Component</u>	<u>Material</u>
Body & Cover	Bronze, Low Lead CuZn21Si3P or UNS C87850 <i>Stainless Steel (optional)</i>
Enclosure and Bracket	Anodized Aluminum
Coupling Assembly	Stainless Steel
Gear Train	Stainless Steel, permanently lubricated
Pilot Trim	Brass & Stainless Steel 303
Rubber	Buna-N®
Connections	FNPT
Pressure Rating	400 psi Max.
Temperature Range	Water: to 176° F (80°C)
Supply Power Input	10V to 32V DC 12 Watts Max at 230 psi No Load draw: 30 mA
Remote Command Inputs	4-20mA analog signal (isolated and reverse-polarity protected) 2x Dry contact closure (CW/CCW) Modbus RTU
Position Feedback Signal	4-20 mA analog signal
Alarm Output:	Dry-contact closure (High/Low) or Modbus
Speed of Rotation	Adjustable On/Off time, max 16 rpm
Diagnostic	LED Indicator
Loss of Power	Actuator will remain in last commanded position.
Loss of Signal Position	Programmable - 4 mA, Last, or 20 mA
Electrical Connections	Single, 30 feet of permanently attached cable with color-coded power supply and signal wire
Environmental:	
Protection Class	Water and dust tight, Rated to IP68 (Temporary submersible)
Ambient Temperature	15° to 150° F (-10° to 65° C)
Control Tubing	Copper <i>Stainless Steel (optional)</i> <i>Flexible Braided Stainless Steel (optional)</i> <i>Polyethylene (optional)</i>
Control Fittings	Brass <i>Stainless Steel (optional)</i>

2. Factory Assembly and Testing:

- a. Each Electronic Actuated Pressure Reducing Pilot shall be factory assembled.
- b. The Quality Management System of the factory shall be certified in accordance with ISO 9001: 2008.

- c. During factory assembly the Electronic pilot control, manufacture shall make all necessary adjustments and correct any defects.
3. Nameplates:
 - a. Each electronic pilot control shall be provided with an identifying nameplate.
 - b. Nameplates shall be mounted in the most practical position possible, typically on the cover of the pilot.
 - c. Pertinent electronic pilot control data shall be stamped onto the nameplate. Data shall include pilot Catalog number, item number, size and pilot control adjustment range.
4. Factory Testing:
 - a. Each Electronic Pilot shall be factory tested.
 - b. The Quality Management System of the factory shall be certified in accordance with ISO 9001: 2008
 - c. Tests shall conform to approved test procedures.
 - d. The standard factory tests shall include a pilot body and cover leakage test, seat leakage test and an operational test. Pilot control, in the partially open position, with both ends closed off with pipe plugs, shall be subject to an air test. The applied air pressure shall be 90 psi minimum. All air pressure tests shall be applied for a minimum of 15 minutes. No visible leakage is permitted through the pilot body seat, the pressure boundary walls of the pilot body, pilot cover or the pilot body-cover joint.

D. PRODUCT DATA

1. The following information shall be provided:
 - a. Electronic Pilot Control manufacturer's technical product data.
 - b. Electronic Pilot Control manufacturer's Installation, Operation and Maintenance manual (IOM).

The Electronic Actuated Pressure Reducing Pilot manufacturer shall warrant the pilot control to be free of defects in material and workmanship for a period of one year from date of shipment provided the pilot is installed and used in accordance with all applicable instructions.

The pilot control shall be **CLA-VAL Company Model No. CRD-34**, Electronic Actuated Pressure Reducing Pilot Control as manufactured by Cla-Val Co., Costa Mesa, CA 92627-4416.

END OF SECTION