

### ► Pressure Management



#### ► DESCRIPTION

- **Pre-Loaded Dedicated Valve Applications (ValvApps™)**
- **Accurate and stable pressure regulation**
- **Autonomous with micro-turbine capability**
- **Integrated Multi-Channel Datalogger**
- **FLOW, TIME, FIXED PRESSURE or combined modulation mode(s)**
- **Remote programming capability**
- **Submersible (IP68)**

The CLA-VAL D12 Low-Power Electronic Valve Controller brings the pressure management and modulation to a new level of excellence.

It fulfills the needs for an ultra-low-power, integrated and simple electronic controller, capable of efficient and advanced hydraulic regulation in places, where very low or no electrical energy is available.

The D12 implements pre-loaded electronic valve applications called **ValvApps™**, suited for each situation. Every **ValvApps™** is factory programmed to perform the most accurate valve regulation in a simple manner. Scaling of variables and parameters are locally configured to fine tune the valve for smooth regulation.

Through the **ValvApps™**, CLA-VAL has translated in a simple way, the best proven engineering know-how, where efficient and economical new challenges can be met.

The wired connection to the D12 controller is made via dedicated circular plug connectors, protected against wrong connection.

The D12 allows permanently optimizing pressures within a distribution zone to a prescribed critical point set value.

Remote Programming is also possible to modify the pressure profile of the distribution zone or changing regulation set-points without having to send an operator in the field.

The D12 low-power electronic valve controller is capable of TIME, or FLOW based pressure management. More sophisticated programming also permits the combination of several modes acting together. For example fixed demand patterns can be programmed by time, whereas instantaneous irregular service conditions for example within an industrial distributing zone, where the peak demand periods are often unpredictable can be overridden in FLOW mode.

The modulating CLA-VAL valve equipped with the D12 device automatically compensates for any exceptional peak demand (fire or singular event) to a prescribed set pressure.



**Power:** The D12 is fully compatible with the CLA-VAL **e-Power MP** generator turbine, which can charge the controller internal lithium-ion battery, providing a completely autonomous solution.

**Log Memory:** With an internal rolling memory 128 kbytes, 80.000 values can be logged. This memory is extended to 2 Gbytes by SD micro card (80.000.000 values!). The recording speed can be 1 min, 5 min, 15 min, 60 min, or customised.

**PCB (Printed Circuit Board):** Designed with the latest technology and manufactured from high quality electronic components the PCB is fully tropical coated to ensure maximum humidity.

### ▶ TECHNICAL DATA:



#### Power Supply :

#### Electrical Specifications

- 6 VDC to 24 VDC (compatible with CLA-VAL e-Power MP / 2 MP turbines)
- Protection:
  - Reverse polarity & short circuit
  - 80°C stop high temperature
- Distribution: 2x 5 VDC or 12 VDC for sensor devices (20 ms 0-5 V and 120 ms 4-20 mA energizing)
- Consumption:
  - 10 mA stand-by
  - 30 mA nominal in use
  - 2000 mA max. load draw

#### Inputs:

- 2x analog 0-5 V for pressure sensors
  - 2x analog 4-20 mA (or 0-5 V / 0-10 V)
  - 4x digital (dry contact)
- 4 VDC to 24 VDC / 10 mA stand-by, 2000 mA max. load draw  
(Autonomous power supply by e-Power MP)

#### Outputs:

- 4x latching solenoids (6 VDC)

#### Logging & Data Storage:

- Rugged Linux-based system
- Real-time backup on 2 GB SD card
- Logging intervals configurable down to one minute
- Memory protection 10 years lithium battery

#### Communication:

- GPRS Modem Quad band
- BlueTooth
- USB-A (application import/export)
- Optional antenna

#### Enclosure & Display:

- PC/ABS plastic UV resistant
- IP68 standard allowing full immersion 2 m water / 1 month
- 2x LED Status indicator (green/red)
- OLED display 1.5" 128 x 64
- 5x ILS (magnetic) contacts and magnet for navigation
- Mounting bracket in stainless steel
- Temperature Range:- 10 °C to + 60 °C (electronic only)

#### Connection:

- 8x Souriau UTS sockets to connect external sensors
- 1x USB A connector (for external USB key)



#### Control Parameters:

#### Other Specifications

- Password protection
- Proportional band 0 - 100% / 1% increment / independent opening-closing
- Dead band 0 - full scale of set-point signal
- Cycle time 0 - 60 sec. / 1 sec. increment
- 4x Loop zoning
- 4x PID loops
- 4x Conditional actions
- 4x Control curves
- Configurable units and decimal points
- Analog Output ramping 1 - 3600 sec.
- Input signal filter 1 to 60 sec.
- Input totalizer

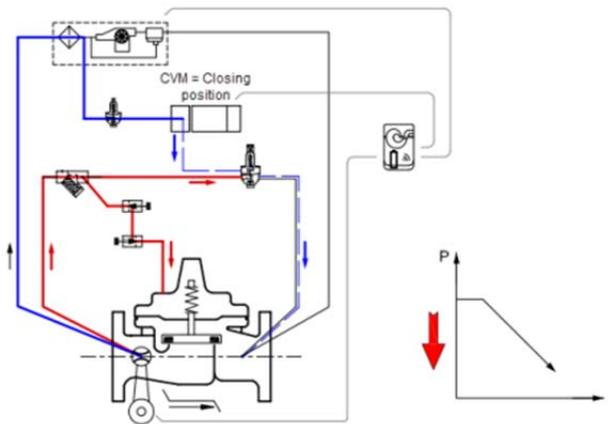
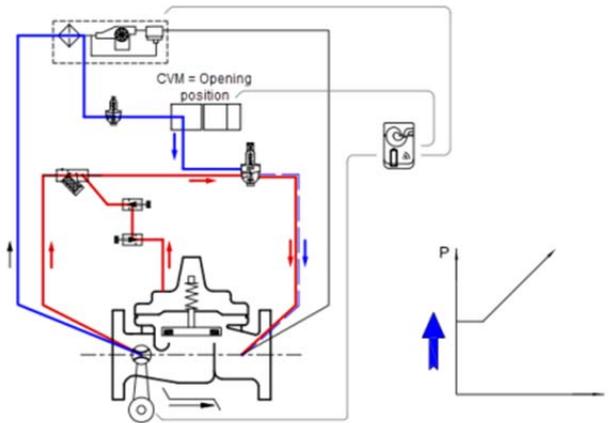
### ► D12 OPERATION - OUTLET PRESSURE MODULATION

The D12 low-power electronic controller regulates the valve downstream pressure via the **CLA-VAL CVM low-power actuator** and **CPM pilot**.

Within the mechanical pressure limits, a pressure increase in the bias chamber will generate a corresponding higher downstream pressure. Conversely, a pressure decrease within the bias chamber will lower downstream pressure. Any action of the CVM low-power actuator will cause a precise and accurate change to the downstream pressure setting.

The D12 controller and CVM actuator are totally autonomous and completely independent of any external power using the **CLA-VAL e-Power-MP turbine**. It requires only 6 l/min flow with a pressure differential of 6 mhd for its entire electrical needs!

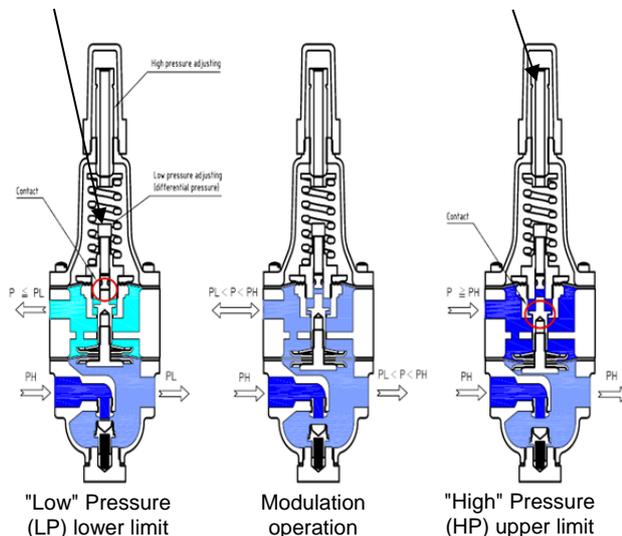
The e-Power MP is combined with a differential pressure control CDHS-26, which controls differential pressure across the turbine, hence controls the electrical power generated by the e-Power MP.



### ► CHECK AND SETTING OF HIGH PRESSURE (HP) AND LOW PRESSURE (LP) WITH THE CPM PILOT

Low Pressure (LP) regulating screw

High Pressure (HP) regulating screw



#### CLA-VAL CPM Pilot Hydraulic Operation

The CLA-VAL CPM pilot hexagonal-headed adjusting screw enables the setting of the High Pressure value (HP), and thus the upper limit of the modulating pressure range. One hole drilled through the centre of the screw provides access to the internal adjusting screw with a standard screwdriver. This enables the setting of the Low Pressure value (LP), corresponding to the lower limit of the modulating pressure range.

Both above adjusting screws provide a high level of safety as their respective pressure set-points are mechanically locked.

Therefore the mechanically locked Low Pressure (LP) and High Pressure (HP) set values remain secure at all times in the event of D12 mishandling or malfunction.

The CLA-VAL CPM pilot with integral safety features and advanced design is patented.