CLA-VAL®

MODEL — **VC-22D**

Electronic Valve Controller

Model VC-22D Valve Controller

SWISS ACCREDITATION
saa.admin.ch SIS 0072
CE 1253

- Provides remote or local setpoint control for valves in a variety of fluid applications

- Highly accurate and stable valve control

- Controller is supplied with pre-loaded ValvApps™ for most common valve functions

- Custom ValvApps™ can be created for Multi-Function Control

- Simple Control Curves graphical programming

- High resolution color screen graphics with color-coded indicators

- Communications via standard 4-20 mA retransmission and relays or by Modbus RTU/TCP

- Internal logging : programmable and download to USB

- Less than 3 Watts power: solar or hydro powered remote valve control

- Simple and intuitive programming and set-up

- Option of: IP-65 NEMA Type 4 Housing Enclosure
  IP-68 Submersible (verified by independent lab)
  Panel Mount (fits 1/4 DIN or surface mount)

Product Description

The Cla-Val VC-22D is designed to provide state of the art valve control for a variety of fluid control parameters. Intuitive programming screens allow easy and fast programming for standard and customized applications such as flow, pressure, level, or position. Complete capabilities allow either stand-alone operation or easy integration into SCADA systems with standard wired signals or Modbus (TCP or RTU) communications.
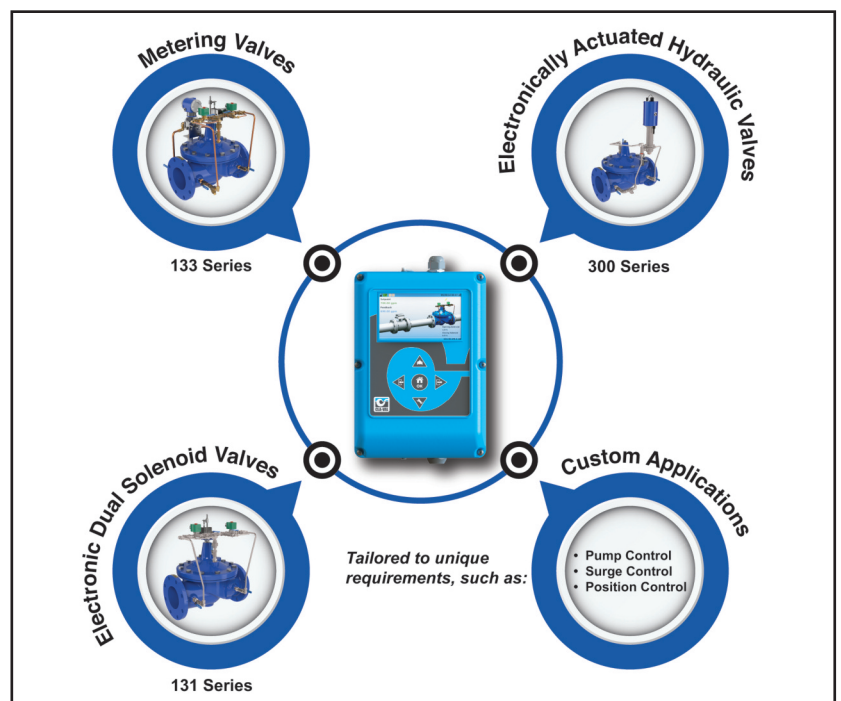
For ease of use, the controller is pre-loaded with a wide variety of typical valve applications (ValvApps™). Additional custom ValvApps™ can be created by Cla-Val to meet any operational requirement. For example 2 or 3 modulating control functions can be combined into one custom ValveApp.
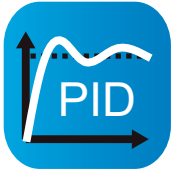
Pre-Loaded Typical ValvApps™ include:

- Flow Control with Mag Meter or e-Flowmeter Feedback
- Pressure Control with Upstream or Downstream Feedback
- Position Control with Position Feedback
- Modulating Level Control with Level and Position or Flow Feedback
- Metering Valve with Position and DP or P1-P2 Feedback
- Ratio Control with 2 Flowmeter feedbacks
- Altitude On/Off Level Control with Delayed Opening and Level Feedback
- Pressure Management with CRD-34 Electronic Pilots and Flow Feedback

Controller Applications

Metering Valves — 133 Series

Electronically Actuated Hydraulic Valves — 300 Series

Electronic Dual Solenoid Valves — 131 Series

Custom Applications
Tailored to unique requirements, such as:
- Pump Control
- Surge Control
- Position Control

VC-22D Valve Functions

PID Control
Used in maintaining a control valve at setpoint, multiple PID loops can be programmed with each of them offering local or remote setpoints. A real-time chart view helps to visualize valve response and fine tune valve response. Programmable setpoint ramping prevents hydraulic shocks.

Actions
Used to take "action" (or alarms) when programmable conditions (1 or 2) are met by forcing an output relay, solenoid, or 4-20 mA output. The closing relay can be used to send an alarm to SCADA. Up to four actions can be programmed including deadband.
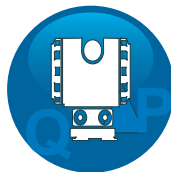
Retransmission
Used to retransmit any input signal, variable, or calculation to a SCADA system. Up to four input signals such as pressure, flow, or level can be redirected through the 4-20 mA outputs.

DP Metering
A built-in function to calculate flowrate based on valve position and DP. The returned flow value can be displayed and controlled without a separate flow meter. A metering ValvApp with this feature is included in the standard internal library. All standard Cla-Val valve sizes curves are included.

Control Curves
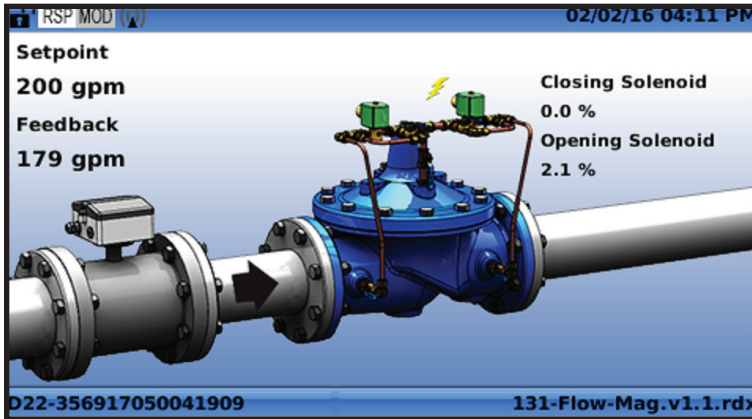Offers an easy way to create a relationship between two system variables. Using graphical functions, the user draws the control curve relationship linking pressure, flow, level, and/or time directly on the screen. Up to four control curves allowing independent pump control valve opening and closing or tailored modulating level control.

Totalizer
Keeps track of total volume as a function of time. Customizable units & reset functionality allow for simplified set-up and configuration. Can be used for volume (or batch) control applications limiting water volume taken from supplier per day or into tank trucks.

Data Logging and Log File
All input and output values are logged according to a programmable schedule. Default logging is every 5 minutes but can be as low as 1 minute or at customized intervals. 4 GB SD card memory allows greater than 80,000,000 values storage. Data is stored in MS-Excel (CSV) readable format. Transfer is by USB.

Enclosures

IP-65
Conduit Connection

Conduit Connectors Included (1/2" NPT)
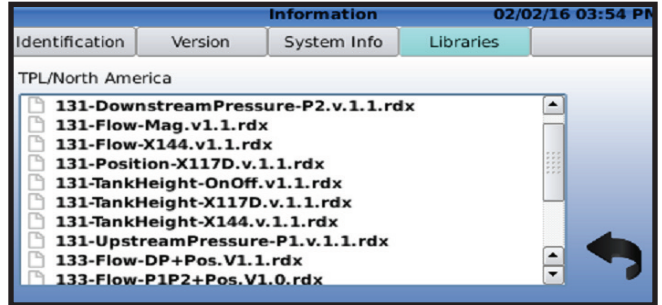
IP-68
Water Tight Glands

Panel Mount
Flush Back

Standard & Custom ValvApps™

Standard ValvApps™

At startup the user can select from an internal library of Standard ValvApps designed for the most common control applications such as flow, pressure, level, position, or pressure management. Pre-configured graphics displays actual valve installation and minimizes startup time.
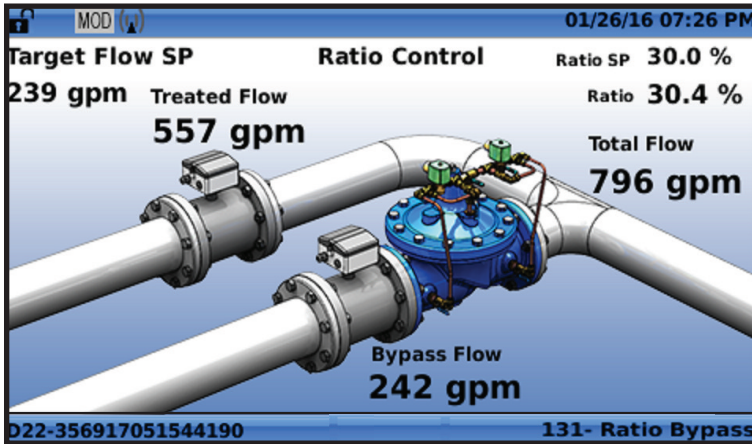
Custom ValvApps™

Special requirements can easily be handled by importing Custom ValvApps from the USB port. Program files may be either pre-programmed into the controller or sent by email and downloaded into the controller. All within minutes. Typical non-standard applications include ratio (blending), multiple functions, multiple inputs, custom graphics, differential pressure, temperature, salinity, electrical conductivity, parallel valves, etc.
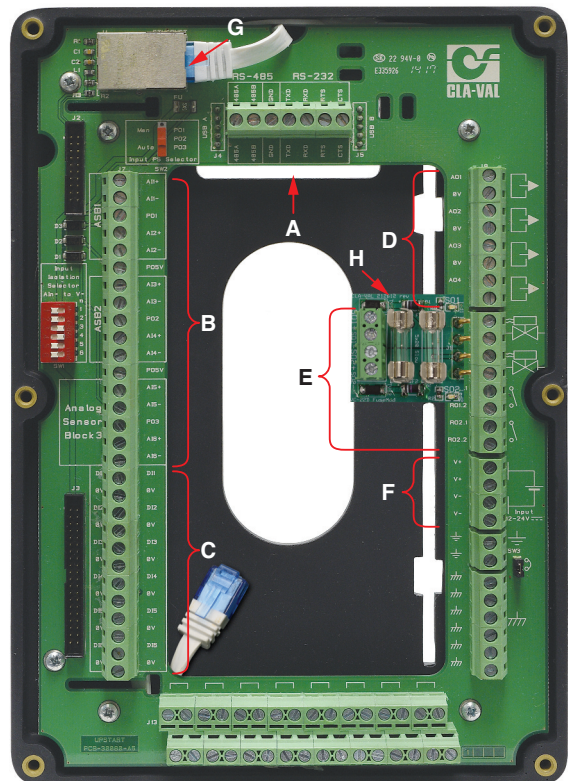

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Import Application

Inputs, Outputs & Communications

Features

A) RS-232/485
B) Six 4-20 mA Analog Inputs
C) Six Digital inputs
D) Four 4-20 mA Analog Outputs
E) Two Solenoid + Two Relay Outputs
F) 12 - 24 VDC Power
G) Ethernet Connection (External)
H) 1A Fuse Module

Typical installation with mounting bracket

VC-22D Valve Controller Product Specifications

Inputs
6x Analog 4-20 mA
6x Digital (dry contact max 5 VDC @ 0.1A - 100 Hz max)
Reverse polarity and short circuit protection
Optocoupler isolation @ CMR 1000 V - 2 wires insulated

Outputs
4x 4-20 mA Analog
2x Solenoid solid state relay 24 VDC @ 0.5 A - binary or proportional
1A Fuse protection provided
2x Mechanical relay 24 VDC - 240 VAC @ 1 A max.
Reverse polarity & short circuit protection

Control Parameters
Proportional band 0-100% / independent opening and closing
Deadband 0 - full scale
Cycle time 0 - 60 sec
Integral and Derivative available
Output limits - % of Cycle Time / Independent opening and closing
Multi-zone tuning - up to 4 zones
4x PID loops
4x Actions or Alarms - 1 or 2 triggering conditions
4x Control Curves (graphically programmed)
Setpoint ramping
Input signal filter 0-100%
Flow Totalizer (usable for volume control)

Logging & Data Storage
Configurable logging intervals
Real-time back-up on 4 GB SD card
Memory protection 10 year lithium battery
CSV file format MS-Excel compatible
File transfer to USB memory

Power Requirements
12 24 VDC Input
Consumption: 1.5 W standby, 3 W in use
Max 32 VDC over voltage protection
Reverse polarity and short circuit protection

Communications
Modbus TCP / Ethernet
Modbus RTU / RS-485
USB
VNC
GPRS modem quad band (consult factory)

Enclosure & Display
IP-65 Enclosure • 1/2" NPT Conduit Connections • IP-65 NEMA Type 4
IP-68 Enclosure • Water tight cable glands • Water resistant up to 2 meters for 1 month
Panel Mount Enclosure • IP-20 • Surface mount or 1/4" DIN rail mount
8.75" (223 mm) H x 6" (153 mm) W x 3.5" (89 mm) D
Weight 3 lbs (1.4 kg)
PC / ABS plastic UV resistant
USB, Ethernet
5 mechanical pushbuttons
Silicon sealed polycarbonate screen
4.3" color display 480 x 272 - 24 bit
Password 5-digit
Mounting bracket - anodized aluminum
Temperature range 14 to 158 F (-10 to 70 C)
PCB coating - 90% RH, non condensing

Optional External AC/DC Power Converter
Used to operate AC solenoids
Can be purchased with IP-68 or Panel Mount enclosures