

# VC-22D ValvApp™ Worksheet



This worksheet is intended for the configuration of ValvApps™ used in the VC-22D Valve Controller. From the information provided below, Cla-Val will determine whether a standard ValvApp™ should be used or if a custom ValvApp™ is required. Additionally, this worksheet acts as a check list during commissioning to verify all parameters have been correctly configured in the VC-22D Valve Controller. Once this worksheet is completed, please return to your Cla-Val representative for approval. If a custom ValvApp is required and approved, a custom wiring diagram and ValvApp™ will be created and emailed to you. Please verify all \*Required fields have been filled out prior to submittal.

|   |                              |   |                              |
|---|------------------------------|---|------------------------------|
| <b>Information</b>  |                              | <b>Reset Form</b>                                 | <b>Configuration:</b> VC-22D |
| *Project Name   | N/A                          | *Today's Date                                     |                              |
| *Cla-Val Representative   | N/A                          | Project Completion Date                           |                              |
| Control Valve Model Number (if known)   | 350                          | Customer Approval Signature                       |                              |
| <b>Valve Regulation</b> (If more than 2 PID's are required, specify in logic on page 2)               |                              |   |                              |
| <input type="checkbox"/> PID 1 - Valve Regulation   | *Solenoid Config             | <input type="checkbox"/> PID 2 - Valve Regulation | PID Selection Mode           |
| *Control Type   | *Signal Loss                 | Control Type                                      | Signal Loss                  |
| Deadband (+/-)  | Ramping                      | Deadband (+/-)                                    | Ramping                      |
| <b>DP Metering (133 Valve)</b>  |                              |   |                              |
| <input type="checkbox"/> DP Metering  | Pressure Measurement         | <input checked="" type="radio"/> P1+P2            | Output                       |
|   |                              | <input type="radio"/> DPT                         | Analog Out 1                 |
| Size  | Body Style                   | Seat  | Units gpm                    |
|   |                              |   | Output Scaling               |
| <b>Totalizer</b>  |                              |   |                              |
| <input type="checkbox"/> Totalizer  | Reset                        | Units   | Output Scaling               |
|   |                              |   |                              |
| <b>Analog Inputs (4-20mA) 6 Available</b>   |                              |   |                              |
| <input checked="" type="checkbox"/> *Analog Input #1 (Typically reserved for control setpoint signal) | Name                         | Units   | Scaling                      |
|   | Pressure Sustaining Setpoint | psi   | 4mA = 20    20mA = 145       |
|   |                              |   | Decimal 0.0                  |
| <input checked="" type="checkbox"/> *Analog Input #2 (Typically reserved for control feedback signal) | Name                         | Units   | Scaling                      |
|   | Upstream Pressure            | psi   | 4mA = 0    20mA = 290        |
|   |                              |   | Decimal 0.0                  |
| <input checked="" type="checkbox"/> Analog Input #3   | Name                         | Units   | Scaling                      |
|   | 34 Actuator Feedback         | psi   | 4mA = 20    20mA = 145       |
|   |                              |   | Decimal 0.0                  |
| <input type="checkbox"/> Analog Input #4  | Name                         | Units   | Scaling                      |
|   |                              |   | 4mA =    20mA =              |
|   |                              |   | Decimal                      |
| <input type="checkbox"/> Analog Input #5  | Name                         | Units   | Scaling                      |
|   |                              |   | 4mA =    20mA =              |
|   |                              |   | Decimal                      |
| <input type="checkbox"/> Analog Input #6  | Name                         | Units   | Scaling                      |
|   |                              |   | 4mA =    20mA =              |
|   |                              |   | Decimal                      |
| <b>Digital Inputs 6 Available</b>   |                              |   |                              |
| <input checked="" type="checkbox"/> Digital Input 1   | Name                         | Purpose   |                              |
|   | Spare                        |   |                              |
| <input type="checkbox"/> Digital Input 2  | Name                         | Purpose   |                              |
| <input type="checkbox"/> Digital Input 3  | Name                         | Purpose   |                              |
| <input type="checkbox"/> Digital Input 4  | Name                         | Purpose   |                              |
| <input type="checkbox"/> Digital Input 5  | Name                         | Purpose   |                              |
| <input type="checkbox"/> Digital Input 6  | Name                         | Purpose   |                              |

**Analog Outputs (4-20mA)** Note: Analog Outputs are sourced with controller power.

|  |   |  |         |                                       |   |  |
|--|---|--|---------|---------------------------------------|---|--|
| <input checked="" type="checkbox"/> Analog Output #1 | Name <input type="text" value="34 Actuator Command"/> | Units <input type="text" value="psi"/> | Scaling | 4mA = <input type="text" value="20"/> | 20mA = <input type="text" value="145"/> | Decimal <input type="text" value="0.0"/> |
| <input type="checkbox"/> Analog Output #2            | Name <input type="text"/>                             | Units <input type="text"/>             | Scaling | 4mA = <input type="text"/>            | 20mA = <input type="text"/>             | Decimal <input type="text"/>             |
| <input type="checkbox"/> Analog Output #3            | Name <input type="text"/>                             | Units <input type="text"/>             | Scaling | 4mA = <input type="text"/>            | 20mA = <input type="text"/>             | Decimal <input type="text"/>             |
| <input type="checkbox"/> Analog Output #4            | Name <input type="text"/>                             | Units <input type="text"/>             | Scaling | 4mA = <input type="text"/>            | 20mA = <input type="text"/>             | Decimal <input type="text"/>             |

**Solenoid Outputs**

|   |  |   |
|---|--|---|
| <input type="checkbox"/> *Solenoid Output #1 (SO1)<br>Name <input type="text"/><br><small>Default: Closing Solenoid</small> | <input type="checkbox"/> Solenoid Output #2 (SO2)<br>Name <input type="text"/><br><small>Default: Opening Solenoid</small> | <small>Note: SO1 and SO2 are a powered solid state output typically reserved for solenoids used on a 131 or 133 series valve. The output can be configured as PWM (default) or Discrete ON/OFF. If configured as discrete, a value of 0 represents an open circuit, and 1 a closed circuit.</small> |
|---|--|---|

**Relay Output**

|   |   |   |
|---|---|---|
| <input type="checkbox"/> Relay Output #1 (RO1)<br>Name <input type="text"/> | <input type="checkbox"/> Relay Output #2 (RO2)<br>Name <input type="text"/> | <small>Note: RO1 and RO2 are configured as dry contact mechanical relays typically used for alarms. These outputs are configured as Discrete ON/OFF, a value of 0 represents an open circuit, and 1 a closed circuit.</small> |
|---|---|---|

**Actions/Alarms**

|   |
|---|
| <input type="checkbox"/> Action #1<br>Name <input type="text"/> Describe <input type="text"/><br><small>Additional Comments</small><br><input type="text"/> |
| <input type="checkbox"/> Action #2<br>Name <input type="text"/> Describe <input type="text"/><br><small>Additional Comments</small><br><input type="text"/> |
| <input type="checkbox"/> Action #3<br>Name <input type="text"/> Describe <input type="text"/><br><small>Additional Comments</small><br><input type="text"/> |
| <input type="checkbox"/> Action #4<br>Name <input type="text"/> Describe <input type="text"/><br><small>Additional Comments</small><br><input type="text"/> |

**Communication**

|                                   |   |   |   |
|-----------------------------------|---|---|---|
| <input type="checkbox"/> GSM/GPRS | <input checked="" type="checkbox"/> Modbus TCP/IP | <input type="checkbox"/> Modbus RTU (RS485/RS232) | <small>Note: See ModBus specification page for register mapping and implementation. Refer to manual for more details.</small> |
|-----------------------------------|---|---|---|

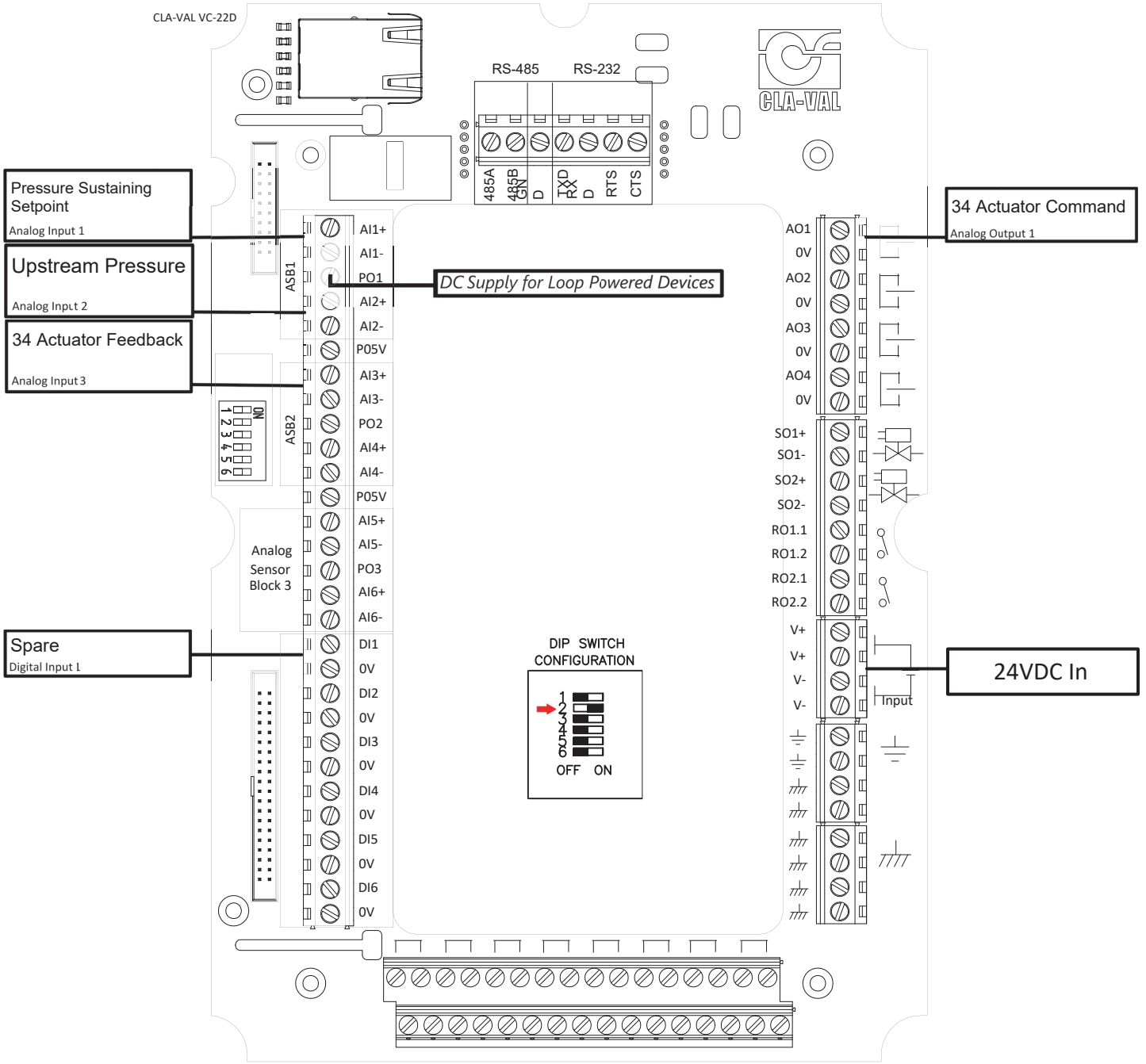
**\*Control Logic** (Please specify all control logic using sketches, diagrams, etc. Attach additional sheets if necessary)

This ValvApp provides a standard open loop pressure sustaining control function for a 350 series valve. The VC-22D will transmit the pressure setpoint via a 4-20mA signal to the 34 series actuator. The 34 series actuator is calibrated to move to a position that applies appropriate spring force on the pilot based on the pressure setpoint it receives.

D11 has been added into this program, even though it is currently not used for anything. This serves as a spare IO point so additional functionality can be added in the field by landing signal cables on this IO point and configuring actions in the VC-22D.

A pressure offset interactive variable has been included. This may be adjusted in the field if the 34 series actuator feedback and command do not match each other.

\* This is only to give an idea of where wires will be landed. Does not account for number of wires and Loop or Field powered. Please refer to **Electrical Wiring** section of VC-22D IOM for help wiring loop or field powered devices.



**Cla-Val VC-22D Modbus Addresses**

**Project Name:**

N/A

**Date:**

| Modbus      | Input                        | Description                   | Data Type | Access     | I/O Mapping | Comments  |
|-------------|------------------------------|-------------------------------|-----------|------------|-------------|---|
| 40007 Bit 0 | Pressure Sustaining Setpoint | Analog Input Modbus Override  | Bit       | Write      | N/A         | Overrides 4-20mA AI1 Input to use Modbus Address 43000/43001                          |
| 40007 Bit 1 | Upstream Pressure            | Analog Input Modbus Override  | Bit       | Write      | N/A         | Overrides 4-20mA AI2 Input to use Modbus Address 43002/43003                          |
| 40007 Bit 2 | 34 Actuator Feedback         | Analog Input Modbus Override  | Bit       | Write      | N/A         | Overrides 4-20mA AI3 Input to use Modbus Address 43004/43005                          |
| 40007 Bit 3 | --                           | Analog Input Modbus Override  | Bit       | Write      | N/A         | Overrides 4-20mA AI4 Input to use Modbus Address 43006/43007                          |
| 40007 Bit 4 | --                           | Analog Input Modbus Override  | Bit       | Write      | N/A         | Overrides 4-20mA AI5 Input to use Modbus Address 43008/43009                          |
| 40007 Bit 5 | --                           | Analog Input Modbus Override  | Bit       | Write      | N/A         | Overrides 4-20mA AI6 Input to use Modbus Address 43010/43011                          |
| 40008 Bit 0 | Spare                        | Digital Input Modbus Override | Bit       | Write      | N/A         | Overrides Hardwire DI1 Input to use Modbus Address 41000                              |
| 40008 Bit 1 | --                           | Digital Input Modbus Override | Bit       | Write      | N/A         | Overrides Hardwire DI2 Input to use Modbus Address 41001                              |
| 40008 Bit 2 | --                           | Digital Input Modbus Override | Bit       | Write      | N/A         | Overrides Hardwire DI3 Input to use Modbus Address 41002                              |
| 40008 Bit 3 | --                           | Digital Input Modbus Override | Bit       | Write      | N/A         | Overrides Hardwire DI4 Input to use Modbus Address 41003                              |
| 40008 Bit 4 | --                           | Digital Input Modbus Override | Bit       | Write      | N/A         | Overrides Hardwire DI5 Input to use Modbus Address 41004                              |
| 40008 Bit 5 | --                           | Digital Input Modbus Override | Bit       | Write      | N/A         | Overrides Hardwire DI6 Input to use Modbus Address 41005                              |
| 41000       | Spare                        | Digital Input                 | Word      | Read/Write | DI1         | Register Holds/Reads DI1 Value  |
| 41001       | --                           | Digital Input                 | Word      | Read/Write | DI2         | Register Holds/Reads DI2 Value  |
| 41002       | --                           | Digital Input                 | Word      | Read/Write | DI3         | Register Holds/Reads DI3 Value  |
| 41003       | --                           | Digital Input                 | Word      | Read/Write | DI4         | Register Holds/Reads DI4 Value  |
| 41004       | --                           | Digital Input                 | Word      | Read/Write | DI5         | Register Holds/Reads DI5 Value  |
| 41005       | --                           | Digital Input                 | Word      | Read/Write | DI6         | Register Holds/Reads DI6 Value  |
| 41006       | --                           | Digital Output                | Word      | Read       | S01         | Monitory Purposes (Optional)  |
| 41007       | --                           | Digital Output                | Word      | Read       | S02         | Monitory Purposes (Optional)  |
| 41008       | --                           | Digital Output                | Word      | Read       | R01         | Monitory Purposes (Optional)  |
| 41009       | --                           | Digital Output                | Word      | Read       | R02         | Monitory Purposes (Optional)  |
| 43000/43001 | Pressure Sustaining Setpoint | Analog Input                  | Int 32    | Read/Write | AI1         | Register Holds/Reads AI1 Value x100 for Two Implied Decimals                          |
| 43002/43003 | Upstream Pressure            | Analog Input                  | Int 32    | Read/Write | AI2         | Register Holds/Reads AI2 Value x100 for Two Implied Decimals                          |
| 43004/43005 | 34 Actuator Feedback         | Analog Input                  | Int 32    | Read/Write | AI3         | Register Holds/Reads AI3 Value x100 for Two Implied Decimals                          |
| 43006/43007 | --                           | Analog Input                  | Int 32    | Read/Write | AI4         | Register Holds/Reads AI4 Value x100 for Two Implied Decimals                          |
| 43008/43009 | --                           | Analog Input                  | Int 32    | Read/Write | AI5         | Register Holds/Reads AI5 Value x100 for Two Implied Decimals                          |
| 43010/43011 | --                           | Analog Input                  | Int 32    | Read/Write | AI6         | Register Holds/Reads AI6 Value x100 for Two Implied Decimals                          |
| 43036/43037 | 34 Actuator Command          | Analog Output                 | Int 32    | Read       | AO1         | Monitory Purposes (Optional) - Register Holds AO1 Value x100 for Two Implied Decimals |
| 43038/43039 | --                           | Analog Output                 | Int 32    | Read       | AO2         | Monitory Purposes (Optional) - Register Holds AO2 Value x100 for Two Implied Decimals |
| 43040/43041 | --                           | Analog Output                 | Int 32    | Read       | AO3         | Monitory Purposes (Optional) - Register Holds AO3 Value x100 for Two Implied Decimals |
| 43042/43043 | --                           | Analog Output                 | Int 32    | Read       | AO4         | Monitory Purposes (Optional) - Register Holds AO4 Value x100 for Two Implied Decimals |

\*\*\*Additional ModBus information can be found in the manual.