

# SC-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> SC-22D
*Project Name	N/A	*Today's Date	
*Cla-Val Representative	N/A	Project Completion Date	
Control Valve Model Number (if known)	52-08	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	
Size	Body Style	Seat	Units
			Output Scaling
<b>Totalizer</b>			
<input type="checkbox"/> Totalizer	Reset	Units	Output
			Output Scaling
<b>Analog Inputs (4-20mA) 6 Available</b>			
<input type="checkbox"/> *Analog Input #1 (Typically reserved for control setpoint signal)	Scaling	<input type="checkbox"/> Signal Powered by Controller	
Name	Units	4mA =	20mA =
			Decimal
<input type="checkbox"/> *Analog Input #2 (Typically reserved for control feedback signal)	Scaling	<input type="checkbox"/> Signal Powered by Controller	
Name	Units	4mA =	20mA =
			Decimal
<input type="checkbox"/> Analog Input #3	Scaling	<input type="checkbox"/> Signal Powered by Controller	
Name	Units	4mA =	20mA =
			Decimal
<input type="checkbox"/> Analog Input #4	Scaling	<input type="checkbox"/> Signal Powered by Controller	
Name	Units	4mA =	20mA =
			Decimal
<input type="checkbox"/> Analog Input #5	Scaling	<input type="checkbox"/> Signal Powered by Controller	
Name	Units	4mA =	20mA =
			Decimal
<input type="checkbox"/> Analog Input #6	Scaling	<input type="checkbox"/> Signal Powered by Controller	
Name	Units	4mA =	20mA =
			Decimal
<b>Digital Inputs 6 Available</b>			
<input checked="" type="checkbox"/> Digital Input 1 Name	Mode Selection	<input type="checkbox"/> Digital Input 2 Name	
Purpose	Mode selection from SCADA	Purpose	
<input checked="" type="checkbox"/> Digital Input 3 Name	UPS Indicator	<input checked="" type="checkbox"/> Digital Input 5 Name	Pressure Switch
Purpose	Indicate switch to battery	Purpose	Contact closed when pressure is met
<input checked="" type="checkbox"/> Digital Input 4 Name	Valve Limit Switch	<input checked="" type="checkbox"/> Digital Input 6 Name	Pump Start Indicator
Purpose	Contact closed when valve open	Purpose	Gives pump status

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

<input type="checkbox"/> Analog Output #1	<b>Scaling</b>
Name <input type="text"/> Units <input type="text"/>	4mA = <input type="text"/> 20mA = <input type="text"/> Decimal <input type="text"/>
<input type="checkbox"/> Analog Output #2	<b>Scaling</b>
Name <input type="text"/> Units <input type="text"/>	4mA = <input type="text"/> 20mA = <input type="text"/> Decimal <input type="text"/>
<input type="checkbox"/> Analog Output #3	<b>Scaling</b>
Name <input type="text"/> Units <input type="text"/>	4mA = <input type="text"/> 20mA = <input type="text"/> Decimal <input type="text"/>
<input type="checkbox"/> Analog Output #4	<b>Scaling</b>
Name <input type="text"/> Units <input type="text"/>	4mA = <input type="text"/> 20mA = <input type="text"/> Decimal <input type="text"/>

**Solenoid Outputs**

<input checked="" type="checkbox"/> *Solenoid Output #1 (SO1)	<input type="checkbox"/> Solenoid Output #2 (SO2)	<b>Note:</b> 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.
Name <input type="text"/> Valve Control Solenoid <small>Default: Closing Solenoid</small>	Name <input type="text"/> <small>Default: Opening Solenoid</small>	

**Relay Output**

<input type="checkbox"/> Relay Output #1 (RO1)	<input type="checkbox"/> Relay Output #2 (RO2)	<b>Note:</b> 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.
Name <input type="text"/>	Name <input type="text"/>	

**Actions/Alarms**

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

**Communication**

<input type="checkbox"/> GSM/GPRS	<input checked="" type="checkbox"/> Modbus TCP/IP	<input type="checkbox"/> Modbus RTU (RS485/RS232)	<b>Note:</b> See ModBus specification page for register mapping and implementation. Refer to manual for more details.
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**\*Control Logic** (Please specify all control logic using sketches, diagrams, etc. Attach additional sheets if necessary)

This app will control a 52-08 Surge Anticipator Valve.

The valve will energize the control solenoid and open in anticipation of a surge event based on incoming power and a pressure switch. Surge Mode is selectable via DI1.

DI1=0 results in Mode A. DI1=1 results in Mode B.

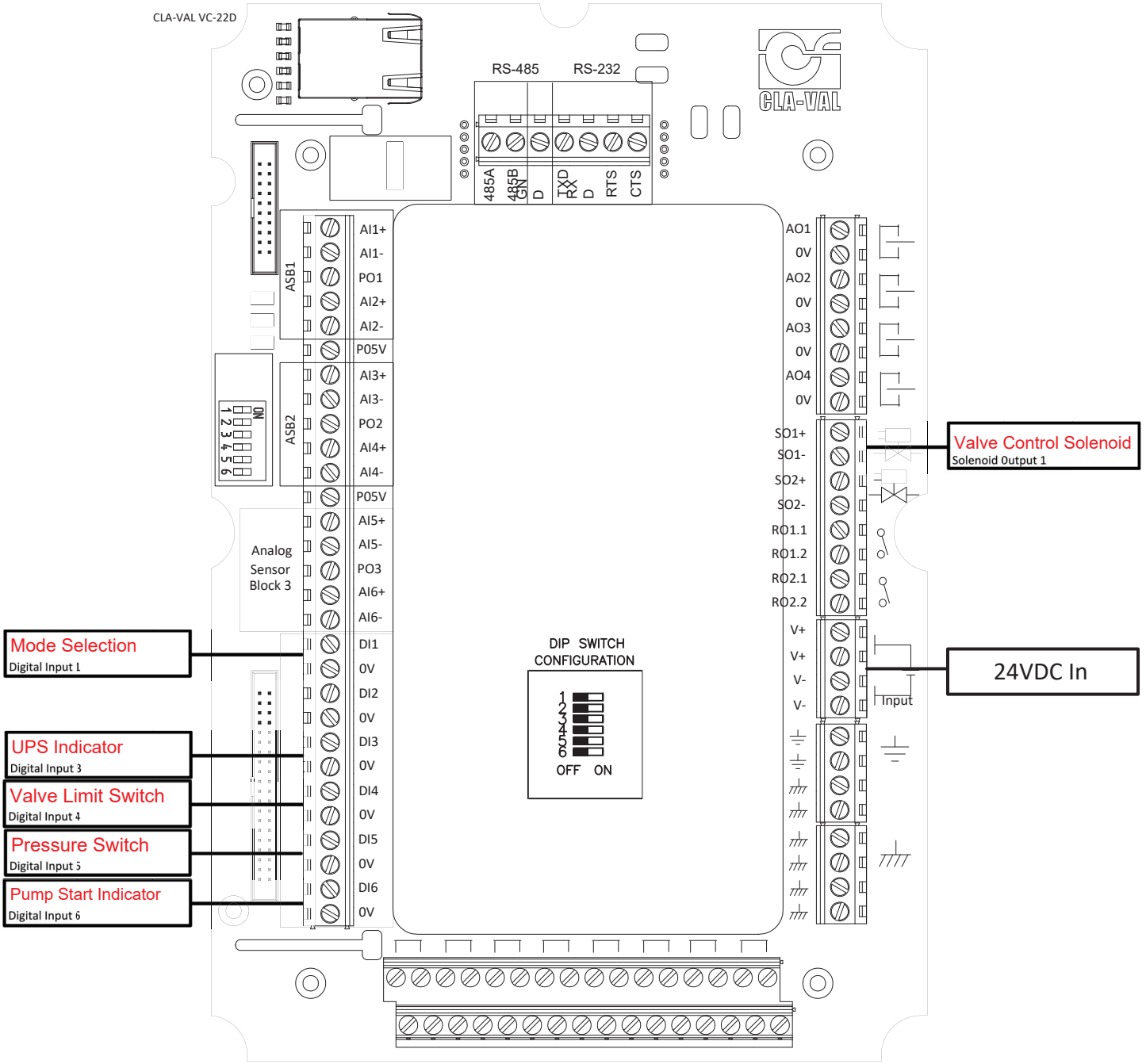
Mode A will open the valve on a Loss of Power OR a Loss of Pressure.  
Mode B will open the valve on a Loss of Power AND a Loss of Pressure.

The amount of time the valve stays open after a surge event can be configured using the Surge Wave variable. Once the time defined to stay open after a surge event has passed, the valve will de-energize the control solenoid and close the valve. At this point, the valve will be in standby either waiting for power to turn back on or a pressure drop to occur.

While power is out, the valve will operate as a hydraulic relief valve.

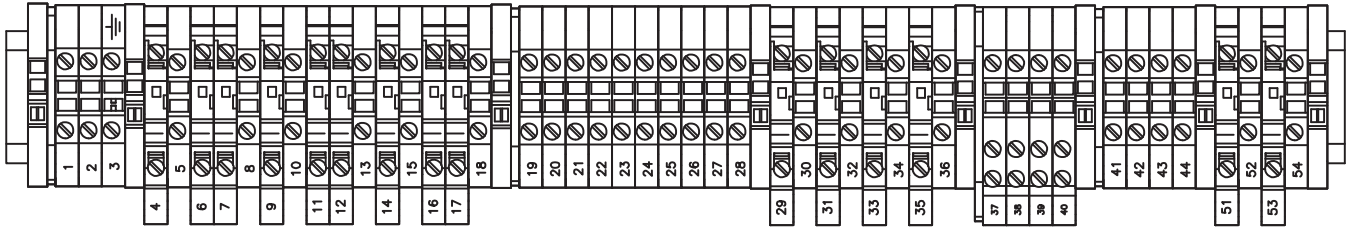
\* This is only to give an idea of where wires will be landed. Does not account for number of wires and Loop or Field powered. Please refer to **Electrical Wiring** section of VC-22D IOM for help wiring loop or field powered devices.

\*\* This page for troubleshooting and reference only! Red text represents predefined I/O within the App. Controller wiring should not be changed in the field, but additional I/O can be landed at the DIN rail. To add functionality or use optional I/O for something else, contact your Cla-Val Rep.



\*Please refer to individual I/O sensor documents for correct wiring. 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.

\*\*Optional I/O does not need to be landed for App to function. To add functionality or additional I/O, contact Cla-Val rep.



*Terminal numbers and assignments only apply to panels manufactured after 11/1/2022.*

CUSTOMER CONNECTIONS	
TERM	DESCRIPTION
POWER SUPPLY	
1 ; (L)	120-240 VAC/50-60 HZ
2 ; (N)	
3 ; GROUND	
ANALOG INPUTS 4-20MA	
4 ; AI1+	Not used
5 ; AI1-	
6 ; PO1	Not used
7 ; AI2+	Not used
8 ; AI2-	
9 ; AI3+	Not used
10 ; AI3-	
11 ; PO2	Not used
12 ; AI4+	Not used
13 ; AI4-	
14 ; AI5+	Not used
15 ; AI5-	
16 ; PO3	Not used
17 ; AI6+	Not used
18 ; AI6-	
DIGITAL INPUTS (USE WITH DRY CONTACT ONLY)	
19 ; DI1+	Mode Selection
20 ; DI1-	
21 ; DI2+	Not used
22 ; DI2-	
23 ; DI4+	Valve Limit Switch
24 ; DI4-	
25 ; DI5+	Pressure Switch
26 ; DI5-	

CUSTOMER CONNECTIONS	
TERM	DESCRIPTION
DIGITAL INPUTS (USE WITH DRY CONTACT ONLY) CONT'D	
27 ; DI6+	Pump Start Indicator
28 ; DI6-	
ANALOG OUTPUTS 4-20MA	
29 ; AO1+	Not used
30 ; AO1-	
31 ; AO2+	Not used
32 ; AO2-	
33 ; AO3+	Not used
34 ; AO3-	
35 ; AO4+	Not used
36 ; AO4-	
SOLENOID OUTPUTS 24 VDC	
37 ; SO1+ (24VDC)	Valve Control Solenoid
38 ; SO1- (0VDC)	
39 ; SO2+ (24VDC)	Not used
40 ; SO2- (0VDC)	
DIGITAL OUTPUTS (OPEN/CLOSES DRY CONTACT)	
41 ; RO1.1	Not used
42 ; RO1.2	
43 ; RO2.1	Not used
44 ; RO2.2	
SPARE 24 VDC OUTPUTS	
51	24 VDC
52	0 VDC
53	24 VDC
54	0 VDC

Land DC Solenoids here

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

**Project Name:**

N/A

**Date:**

Modbus	Input	Description	Data Type	Access	I/O Mapping	Comments
40007 Bit 0	--	Analog Input Modbus Override	Bit	Write	N/A	Overrides 4-20mA AI1 Input to use Modbus Address 43000/43001
40007 Bit 1	--	Analog Input Modbus Override	Bit	Write	N/A	Overrides 4-20mA AI2 Input to use Modbus Address 43002/43003
40007 Bit 2	--	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	Mode Selection	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	UPS Indicator	Digital Input Modbus Override	Bit	Write	N/A	Overrides Hardwire DI3 Input to use Modbus Address 41002
40008 Bit 3	Valve Limit Switch	Digital Input Modbus Override	Bit	Write	N/A	Overrides Hardwire DI4 Input to use Modbus Address 41003
40008 Bit 4	Pressure Switch	Digital Input Modbus Override	Bit	Write	N/A	Overrides Hardwire DI5 Input to use Modbus Address 41004
40008 Bit 5	Pump Start Indicator	Digital Input Modbus Override	Bit	Write	N/A	Overrides Hardwire DI6 Input to use Modbus Address 41005
41000	Mode Selection	Digital Input	Word	Read/Write	DI1	Register Holds/Reads DI1 Value
41001	--	Digital Input	Word	Read/Write	DI2	Register Holds/Reads DI2 Value
41002	UPS Indicator	Digital Input	Word	Read/Write	DI3	Register Holds/Reads DI3 Value
41003	Valve Limit Switch	Digital Input	Word	Read/Write	DI4	Register Holds/Reads DI4 Value
41004	Pressure Switch	Digital Input	Word	Read/Write	DI5	Register Holds/Reads DI5 Value
41005	Pump Start Indicator	Digital Input	Word	Read/Write	DI6	Register Holds/Reads DI6 Value
41006	Valve Control Solenoid	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	--	Analog Input	Int 32	Read/Write	AI1	Register Holds/Reads AI1 Value x100 for Two Implied Decimals
43002/43003	--	Analog Input	Int 32	Read/Write	AI2	Register Holds/Reads AI2 Value x100 for Two Implied Decimals
43004/43005	--	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	--	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.