25-2. Module Groups

Note

When using the I/O Builder to configure the Valve Positioner (VP) module, note that whatever voltage/ current description is displayed in the Slot position at the top of the window does **NOT** impact the configuration of the VP module.

25-2.1. Electronic Modules

There are two Electronics module groups for the Valve Positioner module:

- 1C31194G01 provides 17 Volts AC peak-to-peak 1 KHz LVDT drive.
- 1C31194G02 provides 23.75 Volts AC peak-to-peak 3 KHz LVDT drive.

25-2.2. Personality Modules

There are four Personality module groups for the Valve Positioner module:

- 1C31197G01 has 330 Ohm resistors that provide up to ±24.9 mA into 82 ohm servo coils. Use with any Valve Positioner Electronics module.
- 1C31197G02 has 360 Ohm resistors that provide up to 16.8 mA into 250 ohm servo coils. Use with any Valve Positioner Electronics module.
- 1C31197G03 has 240 Ohm resistors that provide up to 8.3 mA into 1000 ohm servo coils. Use with any Valve Positioner Electronics module.
- 1C31197G04 has 160 Ohm resistors that provide up to 36 mA into 125 ohm servo coils. Only two coils may be driven by 1C31197G04. Use with any Valve Positioner Electronics module. The C3+ and C3- coil outputs are not available.

Table 25-1. Valve Positioner Subsystem [1]

Range	Channels	Electronic Module	Personality Module
17 Volts AC peak-to-peak 1 KHz or 23.75 Volts AC peak-to-peak 3 KHz to an LVDT 24.8 mA into three 82 ohm coils	8	1C31194G01 or 1C31194G02	1C31197G01
23.75 Volts AC peak-to-peak 3 KHz or 17 Volts AC peak-to-peak 1 KHz to an LVDT 16.8 mA into three 250 ohm coils	8	1C31194G02 or 1C31194G01	1C31197G02
23.75 Volts AC peak-to-peak 3 KHz or 17 Volts AC peak-to-peak 1 KHz to an LVDT 8.3 mA into three 1000 ohm coils	8	1C31194G02 or 1C31194G01	1C31197G03
23.75 Volts AC peak-to-peak 3 KHz or 17 Volts AC peak-to-peak 1 KHz to an LVDT 36 mA into two 125 ohm coils	8	1C31194G02 or 1C31194G01	1C31197G04

When using the Point Builder to define points for a Valve Positioner module, only the following point types are valid for each channel:

I/O Channel	Name	Type	Input Source or Output Destination	Terminal Block Connection [2]
1	Shutdown Status	Input	Valve Positioner	DI1
2	Auxiliary (wetting) Voltage Sense	Input	Valve Positioner	DI2
3	SLIM ON Signal	Input	Valve Positioner	DI3
4	Position Feedback	Input	Valve Positioner	
5	Coil 1 Voltage (Read-back)	Input	Valve Positioner	Coil 1
6	Coil 2 Voltage (Read-back)	Input	Valve Positioner	Coil 2
7	Coil 3 Voltage (Read-back)	Input	Valve Positioner	Coil 3
8	Raw Demodulator Voltage	Input	Valve Positioner	

[1] This module will provide an interface between an Ovation Controller and **ONE** Electro-Hydraulic (EH) servo-valve actuator in the field. To use this module, the MASTATION algorithm must reside in the Ovation Controller. Refer to "Ovation Algorithm Reference Manual" (R3-1100) for detailed information about the MASTATION algorithm.

[2] The terminal block connection depends upon the application being used. Refer to wiring diagrams.

25-2.3. Firmware Levels

This table lists all VP module firmware releases that added additional functionality to the VP.

VP Firmware Level (Electronics Module)	VP Revision Level (Electronics Module)	Firmware Features
0F	9	Added support for the following: Calibration from the Controller using graphics. Upload/download of calibration constants to and from the Controller. New tuning constants kServo and kServoD**b** to replace hard-coded constants. They add flexibility in dealing with differing coil impedances. Reduction of valve calibration time.
0C	6	Added support for VP Redundancy.
0B	5	First full production firmware release.

25-3. Specifications

Electronics Module (1C31194)
Personality Module (1C31197)

Table 25-2. Valve Positioner Module Specifications

Description	Value
Valve positioning field interface channels	One
LVDT position feedback Input range	25 V AC peak to peak (LVDT A and LVDT B) maximum
LVDT position feedback input impedance	20 kΩ (LVDT A and LVDT B) differential input with floating source 10 kΩ (LVDT A and LVDT B) one input line referenced to common
LVDT excitation output voltage	17 V AC peak to peak ± 11% @ 1.0 kHz ± 10% (1C31194G01) 23.75 V AC peak to peak ± 11% @ 3.0 kHz ± 10% (1C31194G02) 500 Ω minimum load impedance (1C31194G01 & G02) Drift 0.5% max/yr
Peak servo valve coil output voltages	(1C31197G01) up to three 82 Ω coils, ±2.04 V (1C31197G02) up to three 250 Ω coils, ±4.20 V (1C31197G03) up to three 1000 Ω coils, ±8.26 V (1C31197G04) up to two 125 Ω coils, ±4.5 V
Servo valve coil output voltage accuracy	0.4% of full scale output
Field interface dielectric isolation	1000 V DC The valve positioning field interface has 50 V and 150 V short term isolation from the logic common/Ovation I/O bus
SLIM interface serial port	RS-485
SLIM interface serial port baud rate	9600
SLIM interface dielectric isolation	±1000 V DC
Local serial port	RS-232, non-isolated
Local serial port baud rate	19200
SHUTDOWN digital input Input voltage range Propagation delay of contact change of state Cable length Dielectric isolation	 24 V/48 V DC nominal 18 V DC minimum, 60 V DC maximum 1.9 mSec minimum; 25.5 mSec maximum 1000 feet maximum (cable capacitance ≤ 50 pF/ft) ±1000 V DC

Table 25-2. Valve Positioner Module Specifications (Cont'd)

Description	Value
MANUAL digital output Output voltage Off voltage (maximum) On voltage (maximum) Output current Off current (maximum) On current Maximum propagation time Dielectric isolation	 60 V DC 1.0 V @ 500 mA 0.2 V @ 100 mA 25 µA @ 60 V, TA = 25° C 250 µA @ 60 V, TA = 60° C 500 mA 2.5 mSec for Rload = 500 Ω ±1000 V DC
Module power	Main: 4.3 2W typical, 6.5 W maximum Aux: Digital Input: 0.09 W (24V) typical 0.18 W (48V) typical Digital Output (100mA load) 2.4 W (24V) typical 4.8 W (48V) typical
Logic board processor	80C196KB (16-bit microcontroller)
Operating temperature range	0 to 60˚C (32˚F to 140˚F)
Storage temperature range	-40˚C to 85˚C (-40˚F to 185˚F)
Humidity (non-condensing)	0 to 95%

25-4. Valve Positioner Modes

Rapid or erratic valve movement can damage the turbine. The Valve Positioner enforces a set of rules to accomplish bumpless transfer between modes. The description of each mode includes mode transfer.

25-4.1. Start Mode

When the Valve Positioner is powered-up or restarted, its primary objective is to avoid an indeterminate output that would result in valve movement, and possible damage to the valve or turbine. There are a number of hardware and software features that prevent an indeterminate output.