

CMCP-DVS Digital Vibration Switch

User Manual



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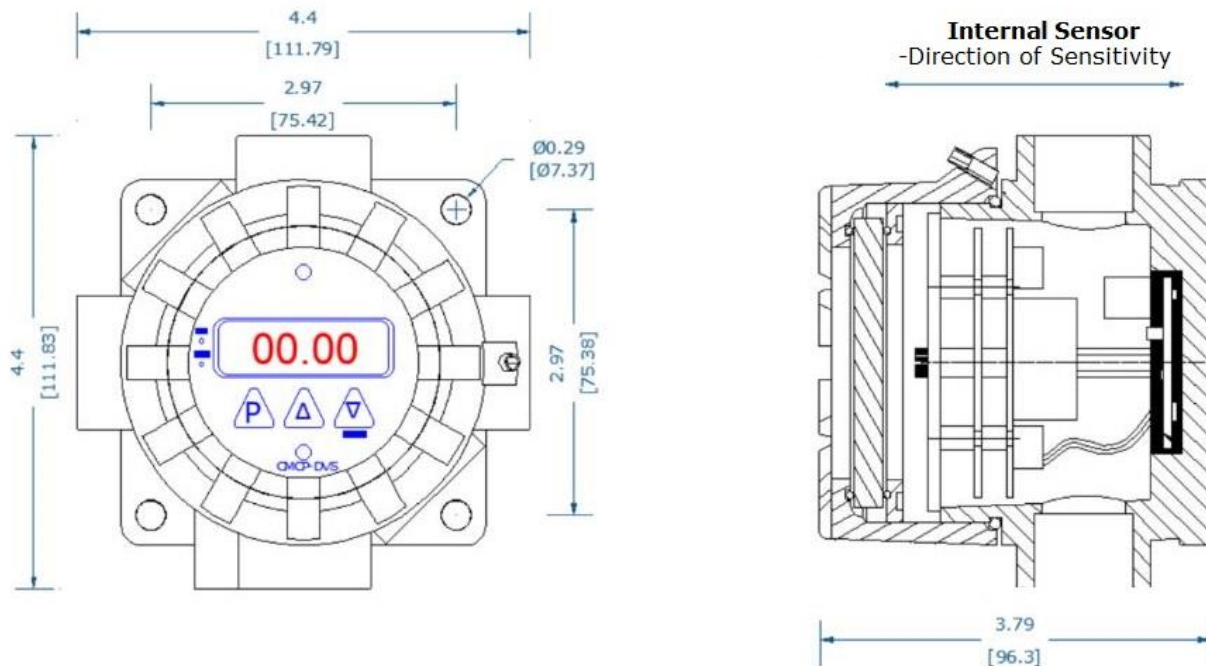
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INSTALLATION

All interconnections to the instrument should be made with strong multi-strand wire between 20 to 18AWG. The ends of the wires should be properly ferruled and suitable lugs must be used for effective termination.

The cables carrying the input signal should be routed separately and properly isolated from any power line cables in the vicinity, to prevent any electromagnetic interference in the input signal readings from the mains power line. Use of shielded twisted pair cable is recommended for input signals. The shield must be connected to Earth only at the instrument end. The Relay contacts are potential free and any desired voltage may be used in conjunction with the same.

The CMCP-DVS housing is mounted using the four-hole mounting pattern as shown below. The housing should be mounted flush to the surface and secured using coarse thread bolts and a medium strength thread locker. Pay special attention to the direction of sensitivity of the internal sensor, if used.

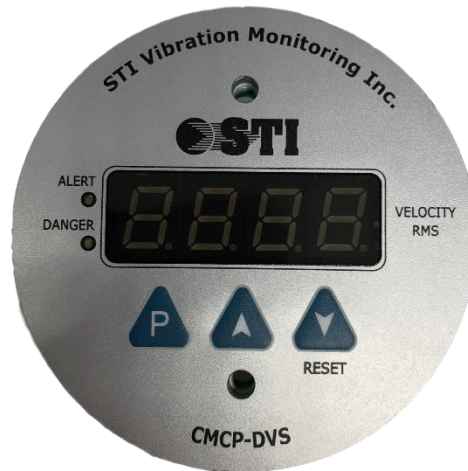


USE WITH EXTERNAL SENSORS


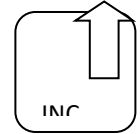
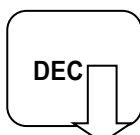
The CMCP-DVS Controller can accept an input from any 4-20mA transducer. STI carries a wide variety of 4-20mA output sensors which can be used in conjunction with the CMCP-DVS controller. External sensors may be required to measure in area where the CMCP-DVS housing may not fit due to size constrictions.

OPERATION & SETTINGS

The front panel of the CMCP-DVS controller is as shown below:



The CMCP-DVS controller has a four-digit display window on the front panel for indicating the vibration value. Further, two LED indications show the over-range status of the two control Relays. The controller accepts a 4-20mA input from the vibration sensor installed either internally or externally to the CMCP-DVS housing. The controller must be setup to match the full-scale range of the 4-20mA sensor.

	<p>The PROG or PROGRAM key is the central coordinating key to access the settings of the controller. Pressing this Key allows the operator to sequentially view, change and save the parameters, such as Zero and Span settings, Decimal position, Relay Set-points and Time delays.</p>
	<p>The INC or Incrementing key allows the operator to select the numeral in the digit being set on an increasing scale. The digit will sequentially display 0, 1, 2....9 on each pressing of the INC key. This may be used to set the Zero/Span of the display and Set-points of the Relays. The incrementing speed increases if the key is kept pressed.</p>
	<p>The DEC or Decrementing key allows the operator to select the numeral in the digit being set on a decreasing scale. The digit will sequentially display 9, 8, 7....1 on each pressing of the DEC key. This may be used to set the Zero/Span of the display and Set-points of the Relays. The decrementing speed increases if the key is kept pressed.</p>

SETTINGS & CALIBRATION

The following is the sequence for the CMCP-DVS controller menu. The Controller may be calibrated at any time to match the calibration of the sensor. The sensor is epoxy encapsulated and cannot be calibrated.

CONTROLLER MENU SEQUENCE

KEY PRESSED	INITIAL DISPLAY	ALTERNATING DISPLAY	FUNCTION
(POWER ON)	0000	- - - -	Initialization of internal controller and Lamp Test (self-diagnostics).
-	LO		If Input Signal is below 2 mA or is not connected. A signal of 2mA or less indicates a sensor fault.
-	HI		If Input Signal is above 22 mA. A signal of 22mA or more indicates the sensor is not connected.
PROG P	PASS	0000	Use Increment (▲) or decrement (▼) key to set Password. Factory Default Password is "1".
PROG P	dP	0000	Set the DECIMAL POSITION. [Options are : 1000,100.0,10.00, 1.000] For English units, the decimal position should be 100.0 For Metric units, the decimal position should be 10.00
PROG P	r nGL	0000	RANGE LOW setting: The Zero range for the process being measured may be set using ▲ and ▼ keys. The default range must be set for 0000.
PROG P	r nGH	1000	RANGE HIGH setting: The Full Scale range setting for the process being measured may be set using ▲ and ▼ keys from 0000 to 9999.. The Range High setting must match the full scale range of the sensor being used. Refer to Part ID for more information.
PROG P	SEt1	0500	The SET-POINT "Set1" for Relay-1 is displayed alternately with the factory preset value. Set 1 is the Alert Relay value.
PROG P	HyS1	0000	The HYSTERESIS value for Relay-1 can be set using Increment (▲) and Decrement (▼) keys from 0000 to 9999. Factory default is 0003.
PROG P	rdL1	0005	RELAY 1 TIME DELAY: This is the delay time in seconds to activate Relay 1. It can be set from 00 to 99 seconds by using Increment (▲) and Decrement (▼) keys. Factory default is 3 Seconds.
PROG P	LAt1	yES	This is the LATCHING function for Relay-1. [Options are "yES or "nO"] Factory default setting is No
PROG P	LOG1	HI	The CONTROL LOGIC for Relay-1. Factory Default is Hi
PROG P	Set2	0800	The SET-POINT "Set2" for Relay-2 is displayed alternately with the factory preset value. Set 2 is the Danger Relay value.
PROG P	HyS2	000.5	The HYSTERESIS value for Relay-2 can be set using Increment (▲) and Decrement (▼) keys from 0000 to 9999. Factory default is 0003.
PROG P	rdL2	0005	RELAY 2 TIME DELAY: This is the delay time in seconds to activate Relay 1. It can be set from 00 to 99 seconds by using Increment (▲) and Decrement (▼) keys. Factory default is 3 Seconds.
PROG P	LAt2	yES	This is the LATCHING function for Relay-2. [Options are "yES or "nO"] Factory default setting is No
PROG P	LOG2	HI	The CONTROL LOGIC for Relay-2. Factory Default is Hi
PROG P	(process value)		(if Input Signal is connected)
End of Menu			

LATCHING AND NON-LATCHING RELAYS

In Latching function, the relays will energize and stay latched with blinking LED indication when its set point is crossed. The relays will not reset to normal even when the process value regains normalcy.

It will de-energize after getting Reset command from either the front panel button or optional external reset switch. The internal reset button needs to be pressed for 2 seconds to reset the Relays.

TERMINAL DIAGRAM

FRONT-VIEW



REAR-VIEW



TERMINAL BLOCK – 1

(Power, Sensor Input, Reset Switch, 4-20mA Output)

+	I/P	Sensor 4-20mA Loop Return
+	24 V	+24VDC to Sensor
SW	SW	External Reset Switch +
+	4-20mA O/P	4-20mA Output +
- / SW	4 to 20mA O/P	4-20mA Output - Shared with External Reset -
-	24 VDC	0V
+	24 VDC	24VDC Power Input

TERMINAL BLOCK – 2

(Relay 1 and Relay 2 Outputs)

Relay 1 (Alert) Normally Closed	NC	Relay-1
Relay 1 (Alert) Common	C	
Relay 1 (Alert) Normally Open	NO	
Relay 2 (Danger) Normally Closed	NC	Relay-2
Relay 2 (Danger) Common	C	
Relay 2 (Danger) Normally Open	NO	

CONTROLLER SPECIFICATIONS

Model	:	CMCP-DVS
Type	:	Microcontroller based Digital Process Indicator
Input Signal	:	4 to 20 mA DC.
Display	:	Seven-segment, Red LED display.
Indications	:	Four-digit display.
Scale Range	:	-999 to 9999 [Fully configurable].
Calibration Range	:	May be calibrated as required.
Decimal point	:	Selectable.
Response time	:	Typically 200 mS.
Output	:	Two Relay Outputs and One 4-20mA Output
Contact rating	:	5 Amps @ 230 V AC (Res. Loads).
Memory	:	Non-Volatile (on EEPROM).
Reset function	:	Hard-wired as well as with Reset (Dec) Key.
Settings	:	By Membrane Switchpad on front panel.
Features	:	Configurable for Scale Calibration, Decimal point, Number of active Relays, Control Logic, Set points, Time Delay, etc.
Accuracy	:	± 0.1% of Full Scale Range
Power Supply	:	24 V DC (± 20%).

INTERNAL VIBRATION SENSOR SPECIFICATIONS

Model	:	420DVS-XX
Type	:	Loop Powered Velocity Sensor
Detection	:	Velocity RMS
Frequency Range	:	2 Hz to 2,000Hz
Power Requirements	:	24VDC (Supplied from Controller)
Maximum Load:	:	600 Ohms
Output Signal	:	4 to 20 mA DC Proportional to Full Scale Range
Sensing Element	:	100mV/g IEPE Accelerometer, Single Axis
Accuracy:	:	±5% of Full Scale Range
Sealing:	:	Epoxy Encapsulated
Zero:	:	0 in/sec (0 mm/sec)
Full Scale Range	:	
E1 Option	:	1.00 In/Sec
E2 Option	:	2.00 In/Sec
M1 Option	:	25.4mm/Sec
M2 Option	:	50.8mm/Sec
Temperature Range	:	-20°C to +80°C
Connection to Controller	:	20AWG Wire Blue Wire to 24V + on Controller Black Wire to I/P+ on Controller