

FCV

Features

- Field Selectable Rate of Change (Four Combinations of ranges available)
- Field Adjustable Output with Manual Override Potentiometer
- 255 Step Resolution
- Current or Voltage Output
- LED Status Indicators
- No Wrap Around
- Relay, Transistor, or Triac Input

Technical Data

Input	Relay contact, transistor, triac, 24Vac, 50/60Hz
Output	
Voltage:	0-10Vdc 3.3kohms min.
Current:	4-20mA 750 ohms max.
Resolution	255 steps
Power supply	Regulated 24Vdc (24 to 35Vdc) or 24Vac 21.6 to 28 Vac @ 50/60Hz
Power consumption	208mA max.
Connections	Screw terminals for 0.5-2.5mm ² cable
Dimensions	96 x 58 x 30mm
Weight	150g
Ambient range	
Temperature	0...50°C
RH	10...95% RH non-condensing
Standards	This product meet the demand of CE-approval

General

The FCV accepts a raise/lower relay signal and provides a 0-10Vdc output.

Additional features include manual override jumper, LED status indication and selectable hysteresis.

Applications

- Floating Point to Analog Conversion
- Motor Speed Control
- Positioner and Actuator Control
- Variable Speed Drives
- Contact put Integration

Product Description

The FCV converts a floating point signal into a linear analog output.

There are two inputs on the FCV, one to increase the analog output and one to decrease the analog output.

The output of the FCV is stable when the inputs are both off.

A contact closure or voltage signal to either input will cause the output of the FCV to begin to ramp either up or down depending on which input was activated.

The output stops ramping once the up or down input is deactivated, and will remain at that value until another up or down signal is received.

If both inputs are "ON" the output will reset to the lowest value of the selected range.

The output of the FCV is in the form of an analog, steady state voltage or current.

This signal can be scaled to fit the needs of the application by selecting one of several preset ranges by dip switch or by adjusting the offset and the gain of the output with two potentiometers.

The output of the FCV is also protected against wraparound.

In the event the output reaches either its maximum or minimum level, the ramping will stop and the output will be held at that value.

The output signal rate of change is field selectable by dip switch.

Custom variations are available for rate of change, reset, input and output configuration.

Ordering Code

- | | |
|--------------|----------------------------------------------------------------------------------------------------------------|
| FCV 1 | Raise/Lower to Analogue Module
5, 15, 30 or 90 seconds selectable |
| FCV 2 | Raise/Lower to Analogue Module
45, 60, 120 or 240 seconds selectable |
| FCV 3 | Raise/Lower to Analogue Module
45, 60, 120 or 240 seconds selectable
Resets to maximum output on startup |
| FCV-4 | Raise/Lower to Analogue Module
5, or 360 seconds selectable |



Raise/Lower to Analogue Current or Voltage Output

FCV

Jan.10

Input (Digital)

Signal Source Relay Contact closure, transistor or triac (24Vac 50/60Hz)

Signal Trigger Level Normal Mode 5 to 26,4Vdc
24 to 26,4Vac

Triac Mode 24 to 26,4Vac

Full range Rates of Change

Custom rates of change available

Version # 1	Version # 2	Version # 3	Version # 4
000000A.HEX	004400A.HEX	008800A.HEX	00FF00A.HEX
5 sec	45 sec	45 sec	5 sec
15 sec	60 sec	60 sec	No Operation
30 sec	120 sec	120 sec	No Operation
90 sec	240 sec	240 sec	360 sec

Version # 3: Resets to maximum signal output on start-up or if both inputs (up/down) pulse 3.5 sec.

Output

Voltage Preset Ranges

Dip Switch Selectable

0 to 1 VDC	1 to 2 VDC
0 to 4 VDC	1 to 5 VDC
0 to 10 VDC	1 to 11 VDC
0 to 18 VDC	1 to 14 VDC

Voltage Preset Ranges (Adjustable)

Adjustable Range 0-20Vdc (with adjustable offset and span)

Voltage Output Load

3300 ohms minimum at 20Volts +/-10%
300 ohms minimum at 10Volts +/-10%

Note: If voltage output is limited to 18Volts on the high end of the output span, the DC suppl limit can be 24Vdc -10% and maintain stated accuracy

Current Ranges (Fixed)

Preset Ranges Dip Switch selectable

0 to 18 mA	4 to 20 mA
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Current Ranges (Adjustable)

0 to 20mA (with adjustable offset and span)

Current Output Load

0 to 750 ohms maximum

Note: If the load is lowered to 700 ohms, the DC supply can be 24Vdc -10% and maintain stated accuracy.

Accuracy - 50Hz

Absolute +/- 2% of span for adjustable ranges, 5% for preset

Accuracy - 60Hz

Absolute +/- 3% of span for adjustable ranges, 5% for preset

Resolution

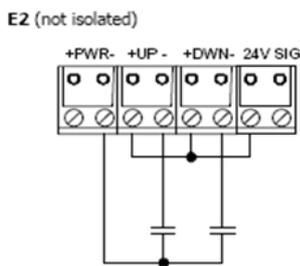
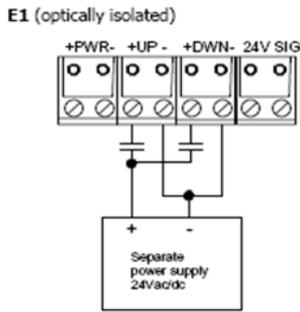
256 steps (all ranges)

Regulated Power Output (for user)

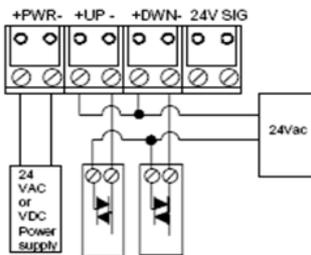
24Vdc (+/-10%), 48mA maximum

Signal inputs

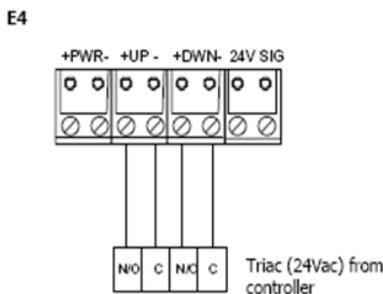
The FCV accepts either pulsed relay contact inputs, pulsed DC, or pulsed AC voltage inputs.



Controller/triac output: E3



Wiring for Siemens TEC-controller



Output

	Dip-Switch	
	7	8
Voltage	Off	On
Current	On	Off

Triac Input:
For a Triac input change jumper setting 31 to;



Span

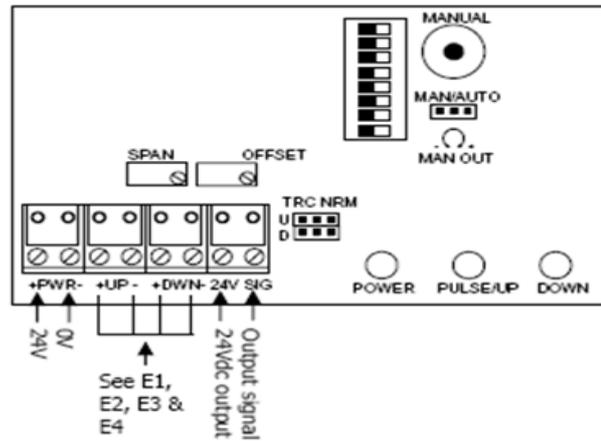
Fixed:

	Dip-Switch		
	3	4	5
1Vdc (no mA)	On	On	On
10Vdc (no mA)	On	On	Off
5Vdc or 16mA (no mA)	Off	On	On
13Vdc (no mA)	Off	Off	On

Adjustable:

	Dip-Switch		
	3	4	5
1 to 9.5Vdc & 4 to 20mA	On	On	Off
10 to 20Vdc (no mA)	On	Off	Off
4 to 14Vdc (no mA)	On	Off	Off

Electrical Connection



Power supply

When using 24Vac supply, check the wiring configuration of any other loads that may be connected to this transformer.

The secondary supply voltage to the interface should be isolated from earth ground, chassis ground, and neutral leg of the primary winding.

Any field device connected to this transformer must use the same common.

If you are not sure of other field device configurations, use separate transformers.

If the 24 volt AC or DC power is shared with other devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV (if AC), a diode (if DC), AC or DC Transorb, or other spike snubbing device across each of the shared coils.

Without these snubbers, coils produce very large voltage spikes when de-energizing that can cause malfunction or destruction of electronic circuits.

If the 24 volt DC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, DC Transorb, or diode placed across the coil or inductor.

The cathode, or banded side of the DC Transorb or diode, connects to the positive side of the power supply.

You should measure the actual voltage output of the secondary.

If the output is not fully loaded you may read a higher voltage than the circuit board can handle

It is highly suggested that the 24Vac neutral of all transformers be earth grounded at the transformer.

Analogue output, digital input, and analogue output circuits should not be earth grounded at two points.

A field device connected to this transformer must use the same common.

If you are not sure of other field device configuration, use separate transformer.

Timing

	Dip-Switch	
	1	2
45 Sec.	Off	Off
60 Sec.	On	Off
120 Sec.	Off	On
240 Sec.	On	On

Offset

	Dip-Switch
1Vdc or 4mA	Off
Adjust. Between	On
1 & 5V or 0 to 20mA	

Make DIO Switch Settings with Power Off

Configuration

Setting output rate of change

Select the rate of change by setting the DIP switch as shown in Fig A.

The rate of change is the time it takes for the analog output to go from minimum to maximum.

Rate of change selections are as follows:

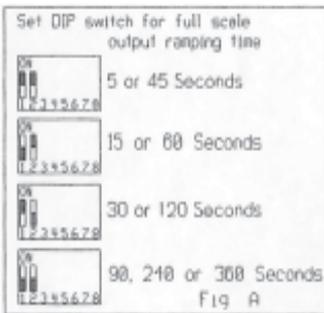
FCV 1 5, 15, 30 and 90 seconds.

FCV 2 45, 60, 120, and 240 seconds

FCV 3 45, 60, 120, and 240 seconds, will reset to maximum on start-up, or if both inputs pulse 3.5 seconds.

FCV 4 5 and 360 seconds.

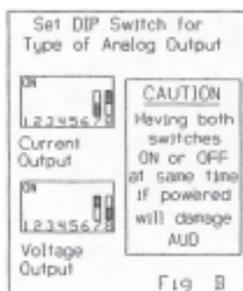
Changing the timing range with power on will result in reset to minimum on FCV 1, 2 and 4.



Setting output signal type

Select either current or voltage output with the two switches shown in Fig B

NEVER have both switches on or off at the same time while powered, or the FCV may be damaged.



Setting output offset and range

The minimum output signal will be equal to the offset.

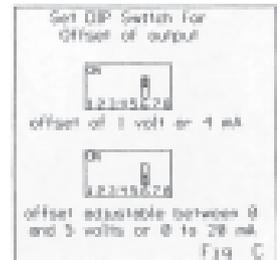
The maximum output signal will be equal to the offset plus the span.

Select offset of 1 volt / 4 mA or adjustable offset by switch 6 as shown in Fig C.

To use adjustable offset setting, set DIP switch 6, and set Offset Pot by turning counter clockwise to decrease and clockwise to increase offset.

Select the desired span by setting the three switches as shown in Fig D.

To use adjustable span setting, set Span Pot by turning counter clockwise to increase and clockwise to decrease span.



Manual Override

The output can be set manually using J2 for testing or setting up adjustable offset and span.

When setting offset, set output to minimum by adjusting override potentiometer fully counter clockwise

Do this first if you are going to adjust the span as well. When setting span, set output to maximum by adjusting override potentiometer fully clockwise.

Be sure to return Jumper J2 to AUTO position after testing.

NB: If powered when making DIP switch settings, power must be reset to allow DIP switch settings to be recognized.

After all connections have been made, activate the power source.

The "POWER" LED should light. The "UP" and "DOWN" LEDs will light when the FCV is receiving input signals.