FDC Manual Loading Station

Requirements to have a specific fixed linear output value (mA or VDC) during a process start up or the need for an operator to manually set a specific linear output value from 0-100% can be met with FDC 100 or 300 Series loop controls. Specific configuration of the loop controls allows them to perform as manual loading stations with various mA and VDC outputs (0-20/4-20mA, 0-5, 1-5 and 1-10VDC). Upon power up the linear output will be same as set prior to power down.

The 100 & 300 Series loop controls are available in multiple DIN sizes and depending upon DIN size offer single or dual display. Typically a single display is preferred as the only value shown will be the set value from 0-100%.

With either single or dual display the operator changes the percentage output by changing the control's setpoint value with the up or down arrow keys. The control's setpoint range is configured as 0 to 100 to match the 0 to 100% linear output.

Single and Dual Display Loop Controls

- Single Display loop controls are available in 1/32 and 1/16 DIN sizes.
  - Nema / IP Rating: The 1/32 DIN models 2500 and C21 are Nema 4X / IP65 while the 1/16 DIN model C91 is IP50.
  - Default Display Value: The 2500 and C21 configuration will have the setpoint (percent output) shown as their default display on power up and during operation. The 1/16DIN C91 defaults on power up to display PV. Upon C91 power up the operator must always push the scroll key to view and change the setpoint (percent output).
- Dual display loop controls are available in 1/16, 1/8 and 1/4 DIN.
  - Nema 4X / IP65 is standard on the 1/16 DIN model 9300 and optional on all other models.
  - The loop control's PV value, which is fixed a zero (0), will be seen at all times on dual display controls.
- Best Value: The C21 & C91 (1/32 & 1/16 DIN) are the lowest cost solution for a Manual Loading Setting Station.

Sample 1/32, 1/16, 1/8 & 1/4 DIN Loop Control Models

100/C Series link

300 Series link

Panel or DIN Rail Mounting

The loop controls are designed for traditional panel mounting and may be DIN Rail or even surface mounted with the optional DRA-32 or 16 (1/32 or 1/16 DIN) DIN Rail Mounting adapter; see page two

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The 100 & 300 Series loop control configuration entry, prompts and item sequence are similar but slightly different; review appropriate operational manuals for details.

Regardless of model enter the following choices for each of the following configuration parameters:

Configuration

- Input:	0 to 60mV *note 1*
- Decimal Point:	0 or 1 as required
- Units (degrees C, F or Pu):	Pu (Process units)
- Input Lower & Upper:	0 and 100 *note 2*
- Setpoint Lower & Upper:	0 and 100
- Output #1:	Reverse
- Output #1 Type:	specified linear out *note 3*
- Outputs #2 & #3:	none
- Proportional Band:	100
- Integral:	0
- Derivative:	0
- Offset:	0
- Display (all dual display):	Default value
- Display (1/32 DIN 2500):	Set Value (SV)
- Display (1/32 DIN C21):	Set Point 1 (SP1)
- Display (1/16 DIN C91):	Set Point 1 (SP1) *note 4*
- SEL Functions:	None for all SEL

Note 1: Any zero based VDC input may be used. 0-60mV is specified as it is the only VDC input standard on the 100/C Series; the 300 Series has multiple zero based VDC ranges.

Note 2: Input lower value setting must be zero (0) while the upper value may be any other higher value; specified 100 to match setpoint upper value.

Note 3: The appropriate linear output, mA or VDC, is specified in the order matrix. Loop controls may be configured with mA outputs as 0-20mA or 4-20mA and the VDC outputs as 0-5, 1-5 or 0-10VDC.

Note 4: Regardless of its' display configuration the C91 defaults on power up to read PV (zero). After power up the operator must push the scroll key to view and change the output value.

How the Configuration allows a loop control to be a Manual Loading Station

With the loop controls configured as specified the Setpoint value equals the Percent output.

A zero based VDC PV input, without a VDC input provided, will have a PV of zero (0) at all times. The control will not indicate a sensor break as long as the input terminals are shorted together.

The lower & upper setpoint value settings (0 and 100) provides the setting range to match 0 to 100 percent output.

The Integral, Derivative and Offset configured values of zero eliminates their function in the PID control algorithm.

The proportional band of 0 to 100 matches the configured setpoint range of 0 to 100. With the PV input value fixed at zero (0) the control's linear output will match the setpoint value as a percent of its' output. As an example, with a 0-10VDC output and a setpoint of 25 the control's output will equal 25% of the linear output or 2.5VDC. The actual output will be +/- 0.3VDC of the set value (~3% of span for all output types).

DIN Rail Mounting Adapter for 1/32 and 1/16 DIN Loop Control Models

DIN Rail Mount Accessory.pdf