

658 Current to Position Converters

Series 658 Current to Position Converters for Electric Actuators

- **Solid State Switching Output**
- **Adjustable Zero, Span and Deadband**
- **Two Wire Input from Controller**
- **Operates with 90 to 1000 Ω Feedback Slidewire in Electric Actuator**

Model 658A
mounted on the left side
(standard) of an electric actuator



Recognized under the Component Program
of Underwriters' Laboratories, Inc. (except specials.)

Model 658B with
in-Panel Flange Mounts

Optional Features

- Burner Purge

Introduction

The Series 658 is a current to position converter which is typically located electrically between a primary controller and an electric actuator. Model 658A is designed for mounting directly to the side of the actuator; model 658B is designed with a mounting flange for securing it to any flat surface.

The electric actuator's position is proportional to the input current from the primary controller. A built-in potentiometer in the electric actuator, with wiper arm driven by the output shaft, provides a feedback signal to the Series 658 to produce the proportional action. A change in current from the source drives the electric actuator in a direction to restore balance and return the process to the setpoint.

The signal input ordered is factory set, but is adjustable in the field to accept spans such as 4 to 20, 2 to 12, 7 to 12, 4 to 12, and 12 to 20. The Series 658 has a standard input impedance of 250 Ω for current output primary controllers.

A special option (65 or 66 in the model number) is available on Model 658A that provides an extra input lead (white) for activation of the purge option used on a burner control. A dry contact closure between the purge input and the input+ (red) wires will drive the actuator full open to provide 100% flow for air purge of a gas burner.

Converters with special "option 65" are wired for mounting on the left side of the actuator; converters with "option 66" are wired for the right side of the actuator.

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Ordering Information

MODEL 6 5 8 - 0 0 0 - 0 0 0 - -

Field No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Fields 1, 2, 3. BASE MODEL

Field 4. MOUNTING STYLE

- A - Actuator
- B - In-panel (flange)

Fields 5, 6, 7. RESERVED

Field 8. ENCLOSURE

- 0 - Standard Mount, Standard Housing
- 1 - Standard Mount, Rain Tight Housing (658A only)
- 2 - EA7X Mount, Standard Housing (658A only)
- 3 - EA7X Mount, Rain Tight Housing (658A only)

Field 9. INPUT SIGNAL

- 1 - 4 to 20 mAdc
- 2 - 4 to 12 mAdc
- 3 - 12 to 20 mAdc
- 4 - 2 to 12 mAdc
- 5 - 2 to 7 mAdc
- 6 - 7 to 12 mAdc
- 8 - Other. See "special" fields 13, 14, 15.

Fields 10, 11, 12. RESERVED

Fields 13, 14, 15. SPECIAL

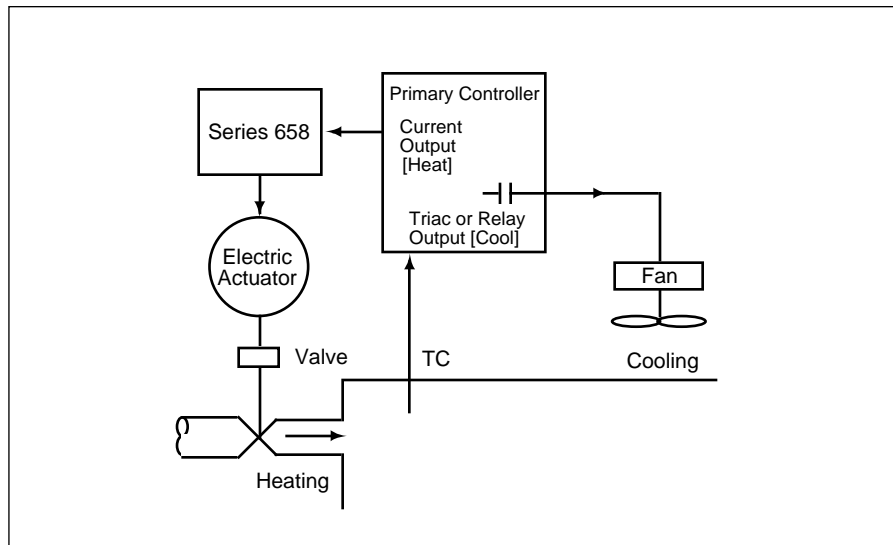
- 0 - 00 None
- 0 - 50 1 to 5 mAdc into 1 k Ω
- 0 - 51 0 to 5 mAdc into 250 Ω
- 0 - 52 2 to 42 mAdc into 100 Ω
- 0 - 53 5 to 10 mAdc into 250 Ω
- 0 - 54 16 to 20 mAdc into 250 Ω
- 0 - 55 0 to 5 Vdc input signal
- 0 - 56 1 to 5 Vdc input signal
- 0 - 57 6 to 9 Vdc input signal
- 0 - 58 3 to 15 Vdc input signal
- 0 - 59 0 to 10 mAdc input signal into 250 Ω
- 0 - 60 10 to 50 mAdc input signal into 100 Ω
- 0 - 62 0 to 10 Vdc input signal
- 0 - 63 4 to 14 mAdc input signal into 250 Ω
- 0 - 64 10 to 20 mAdc input signal into 250 Ω
- 0 - 65 Purge option, left side mount (Model 658A only)
- 0 - 66 Purge option, right side mount (Model 658A only)
- 0 - 67 Right side mount, no purge (Model 658A only)

658 Current to Position Converters

Specifications

Input Signal:	Adjustable to controller spans ranging from 4 to 16 mAdc. Input circuit is isolated from both output circuit and ground.
Input Signal Zero:	Adjustable from 2 to 16 mAdc.
Input Impedance:	250 Ω . Other impedances obtained by adding external series or parallel resistors.
Input/Output Connections:	Color coded pigtail leads on Model 658A. Numbered barrier terminal strip on Model 658B.
Load:	Low, medium or high torque electric actuators.
Feedback Slidewire Inputs:	90 to 1000 Ω .
Grounded Input:	Grounding any input wire will not cause damage.
Open Circuit Input:	Will drive actuator to low position.
Series Operation:	No offset in control point when operated in tandem.
Overranging:	No effect from 100% overrange signal.
Deadband:	Deadband is the difference between the input signal which will drive the motor one way and the level which will drive it the other way. The percent of deadband adjustment is dependent on the input signal span. For example, 2 to 12 mA — 2% to 8% of input span; 4 to 20 mA — 1.2% to 4.8% of input span.
Linearity:	0.15% of slidewire.
Ambient Temperature Limits:	-25 to 58°C.
Power Consumption:	7.0 VA at 120 or 240 Vac, 50 or 60 Hz.
Maximum Continuous Output Current Rating:	2.0 Amp at 24 to 240 Vac rms.
Line Regulation:	120 or 240 Vac, $\pm 10\%$ variation, with fixed input signal offset of 1% maximum.
Mounting:	Upright recommended (as shown) for Model 658A, but other positions are acceptable.
Shipping Weight:	Series 658 only, three pounds.

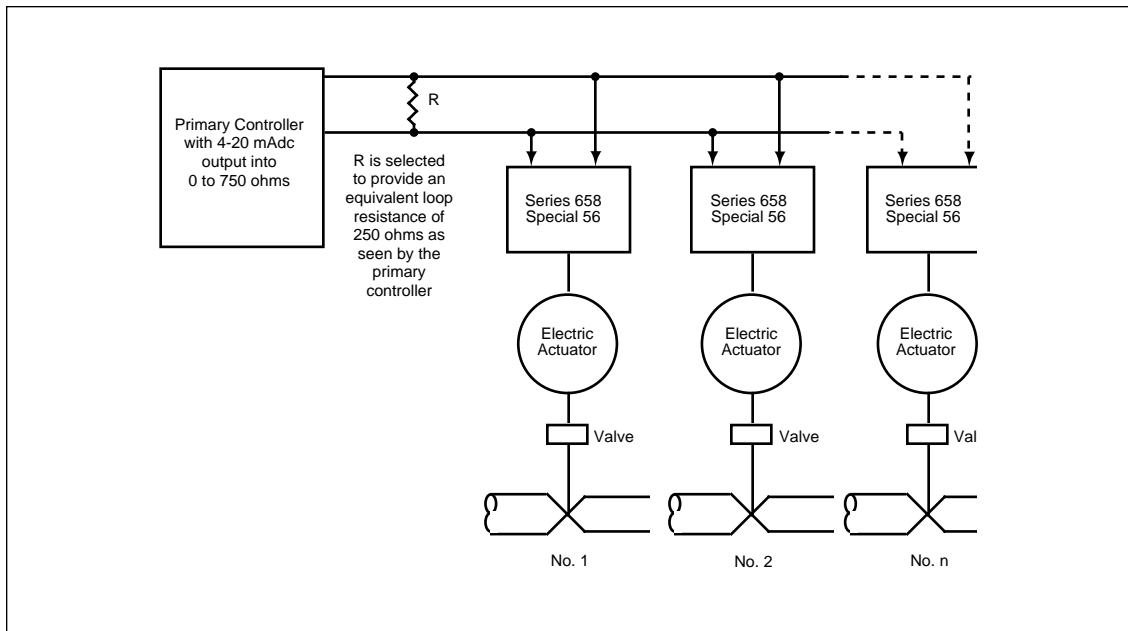
Typical Application



Dual output heat/cool controllers with outputs of 2 to 12 mAdc or 4 to 20 mAdc constant current and on/off.

658 Current to Position Converters

Wiring

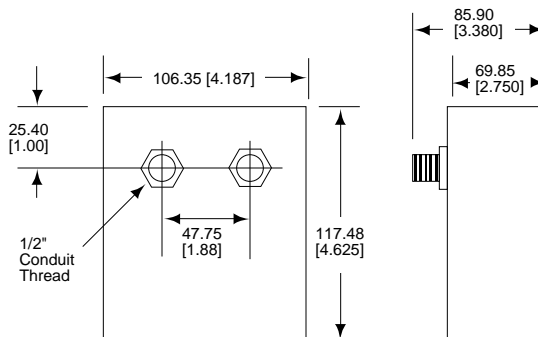


One primary controller can drive up to 12 electric actuators by means of the Series 658, special 56 converters. Input impedance is 127 k Ω

Mounting Dimensions

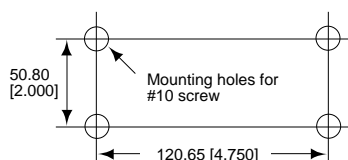
Note: Dimensions slightly different on units designed for mounting to high torque actuator.

Model 658A



Model 658B

Overall dimensions:
136.52 [5.375] H x 139.70 [5.500] W x 69.85 [2.750] D.



659 Resistance to Position Converters

Series 659 Resistance to Position Converters for Electric Actuators

- **Solid State Switching Output**
- **Fast Response**
- **Adjustable Deadband**
- **Input from 100 to 1000 Ω Slidewire**

Model 659A
mounted on the left side
(standard) of an electric actuator



Recognized under the Component Program
of Underwriters' Laboratories, Inc. (except specials.)

Model 659B with
in-Panel Flange Mounts

Introduction

The Series 659 is a resistance to position converter which is typically located electrically between a retransmitting slidewire and an electric actuator. The primary application of the Series 659 is in tandem operation of electric actuators.

Triac switching in the Series 659 drives the actuator through an angular direction corresponding to the position of the master control slidewire. A built-in potentiometer in the actuator, with wiper arm driven by the output shaft, provides a correctional feedback signal to the Series 659 to provide proportional action. The triac switching and feedback continues until balance is reached. Deadband, which is the difference between the input signal which will drive the motor one way and the level which will drive it the other way, is adjustable from 0.1% to 8% of the master control slidewire span. A deadband is recommended for less critical processes, since it will reduce mechanical wear on the actuator.

659 Resistance to Position Converters

Ordering Information

MODEL 6 5 9 - 0 0 0 0 - 0 0 0 - 0 - 0 0
Field No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Fields 1, 2, 3. BASE MODEL

Field 4. MOUNTING STYLE

- A - Actuator (to order installed on actuator, see Literature Number 1321-DB-001-0-XX.)
- B - In-panel (flange)

Fields 5, 6, 7. RESERVED

Field 8. ENCLOSURE

- 0 - Standard Mount, Standard Housing
- 1 - Standard Mount, Rain Tight Housing (659A only)
- 2 - EA7X Mount, Standard Housing (659A only)
- 3 - EA7X Mount, Rain Tight Housing (659A only)

Fields 9 through 15. RESERVED

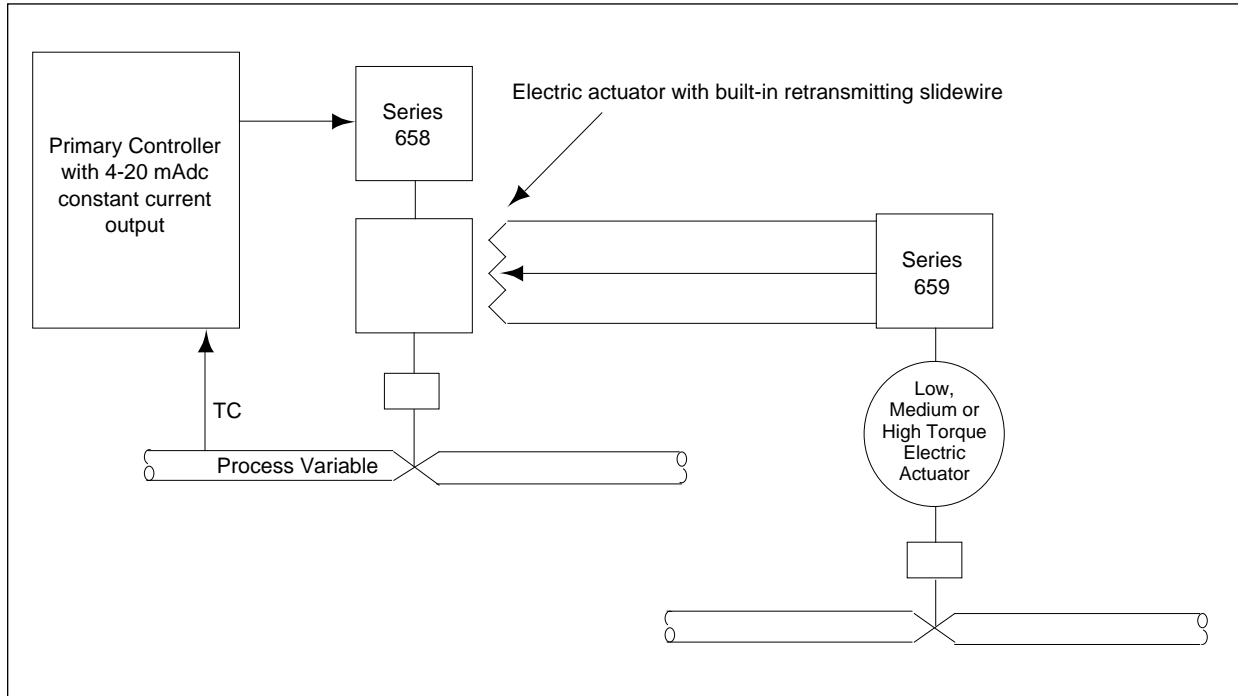
Specifications

Input Signal:	100 to 1000 Ω slidewire.
Zero and Span:	No adjustment.
Input/Output Connections:	Color coded "pigtail" leads on Model 659A; numbered barrier terminal strip on Model 659B.
Load:	Low, medium or high torque electric actuator.
Feedback Slidewire Inputs:	100 to 1000 Ω to match input resistance.
Grounded Input:	Grounding either or both input wires will not cause damage.
Deadband:	Adjustable from 0.1% to 8% of input signal span.
Linearity:	0.15% of slidewire.
Ambient Temperature Limits:	-25 to 58 °C.
Power Consumption:	7.0 VA at 120 or 240 Vac, 50 or 60 Hz.
Maximum Continuous Output Current Rating:	2.0 Amps at 24 to 240 Vac rms.
Line Regulation:	120 or 240 Vac, $\pm 10\%$ variation, with fixed input signal offset of 0.5%.
Mounting:	Upright position recommended (as shown) for Model 659A, but other positions are acceptable.
Shipping Weight:	Series 659 only, three pounds.

659 Resistance to Position Converters

Typical Application

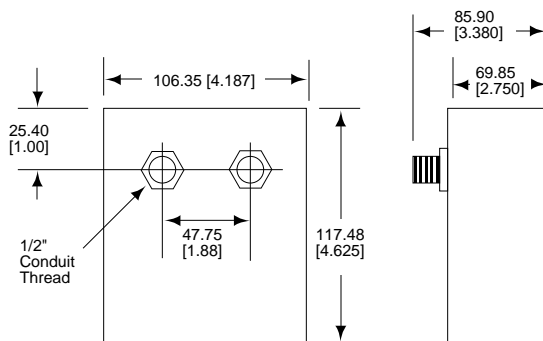
Two actuators driven in tandem. Position limiting resistors are on the second actuator.



Mounting Dimensions

Model 659A

Note: Dimensions slightly different on units designed for mounting to high torque actuator.



Model 659B

Overall dimensions:
136.52 [5.375] H x 139.70 [5.500] W x 69.85 [2.750] D.

