MODEL 660
Trip Control

- **Automatic reset**
- **Adjustable trip points**
- **Adjustable dead band**
- **5-Year unconditional warranty**

DESCRIPTION

The **Model 660 Trip Control,** part of the **600 series** line of instrumentation controls, is designed to monitor and maintain a set level on a measurable variable, such as liquid level, temperature, pressure, flow, etc. A user-provided 4-20ma current loop represents the measurable application.

Two trip points, the rising setpoint, and the falling setpoint are field adjustable. They are set by calibrating the DEAD BAND and TRIP adjustments. If the input is between the two set-points, the relays are de-energized. If the input goes above the rising setpoint, the RISING TRIP relay energizes to provide a tripped condition. This tripped condition will automatically reset when the input falls back below the setpoint. If the input falls below the falling setpoint the FALLING TRIP relay energizes to provide a tripped condition. The tripped condition resets when the input rises back above the setpoint.

The Model 660 has top-mounted LEDs for status indication. Individual RISING TRIP or FALLING TRIP LEDs turn ON in a tripped condition. The INPUT LOOP ERROR LED turns ON if the input is outside the 4-20ma range.

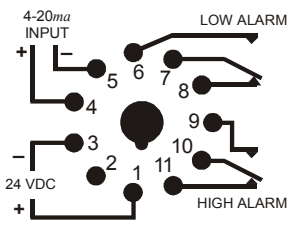
A Time Mark **Model 650 Loop Power Supply** (or equivalent) is required to provide DC operating voltage. A Time Mark **Model 672-15 Pressure Transducer** (or equivalent) is required to provide the input signal.

SPECIFICATIONS

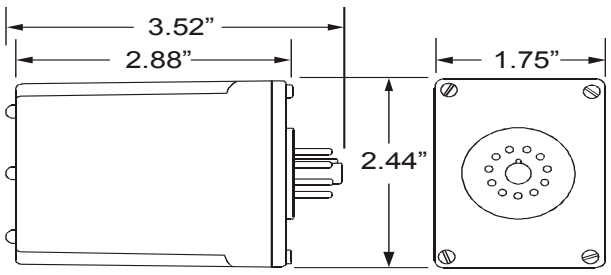
Model	**660**
Operating voltage	24VDC ±5%
Supply current	30mA maximum
Input signal	4-20mA
Input resistance	50W
Input loop error	High: 23 - 25mA
Trip adjustment	4 - 20mA
Dead band adjustment	1 - 10%
Hysteresis	Rising trip point: 0.9% at midrange Falling trip point: 0.4% at midrange
Contact	10 amps at 240VAC resistive
Operating temperature	-13º to +122º F
Expected relay life	Mechanical: 10 million operations Electrical: 100,000 at rated load
Humidity tolerance	0-97% w/o condensation
Enclosure material	ABS plastic
Weight	6 oz.
Mounting	11-pin socket (*order separately)

*order 11-pin socket number **51X016**

PIN DRAWING



DIMENSIONS



(dimensions have tolerance of ± 0.06)

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01/2012

MODEL 660 Trip Control

READ ALL INSTRUCTIONS BEFORE INSTALLING, OPERATING OR SERVICING THIS DEVICE.
KEEP THIS DATA SHEET FOR FUTURE REFERENCE.

GENERAL SAFETY

THE MODEL 660 TRIP CONTROL IS NOT TO BE USED WITH INPUT VOLTAGES OTHER THAN 24VDC.
ALL ELECTRICAL POWER SHOULD BE REMOVED WHEN CONNECTING OR DISCONNECTING WIRING.
THIS DEVICE SHOULD BE INSTALLED AND SERVICED BY QUALIFIED PERSONNEL.

Installation Instructions

INSTALLATION

Connect 24 VDC power to pins 1 and 3 on the 11-pin socket.

Connect the 4-20*ma* input signal to pins 4 and 5.

Connect the other pins to the appropriate units in your loop system, following the base diagram shown on the Model 660 device (and on this data sheet).

Pay careful attention to polarity.

NOTE: *When installing the Model 660 Trip Control in areas of high humidity or contamination, it is recommended that the base area and all exposed metal parts of the socket be coated liberally with a good quality silicon grease, such as Dow Corning DC-4 or DC-4X. Insert the unit into the socket and wipe off excess grease around the base. This will prevent the entrance of moisture and other contaminates into the base and socket areas.*

ADJUSTMENT PROCEDURE

The Model 660 Trip Control relays are normally de-energized when the input is between the trip points. If the input rises above the RISING TRIP point, or falls below the FALLING TRIP trip point, the high or low relay will energize. Either way, the relay returns to the de-energized state when the input signal is again between the two setpoints (see the OPERATION DIAGRAM).

The RISING TRIP and FALLING TRIP LEDs may be used to indicate the tripped condition in the following adjustments.

BEFORE ADJUSTMENT: It is necessary to determine the TRIP setpoint before adjustment of the Model 660. In order to determine this setpoint, you must know the RISING TRIP, and the FALLING TRIP setpoints in milliamps, for your application, in order to calculate the TRIP setpoint. It is determined by averaging these two setpoints.

$$\text{TRIP} = (\text{RISING TRIP} + \text{FALLING TRIP}) \div 2$$

The DEADBAND is also required. This value is expressed as a percent, determined as shown:

$$\text{DEADBAND} = \frac{\text{RISING TRIP} - \text{TRIP}}{\text{TRIP}} \times 100$$

NOTE: *The DEADBAND value must be in the range of 1-10%. If it is not, contact the factory for special instructions.*

TRIP POINT: Turn the DEADBAND adjustment fully counter-clockwise, to it's lowest setting. With the **Model 680 4-20*ma* Simulator** (or other adjustable, known signal source), apply the current level for the TRIP (as calculated in the previous step). Adjust the TRIP pot until both the RISING TRIP and the FALLING TRIP LEDs are off.

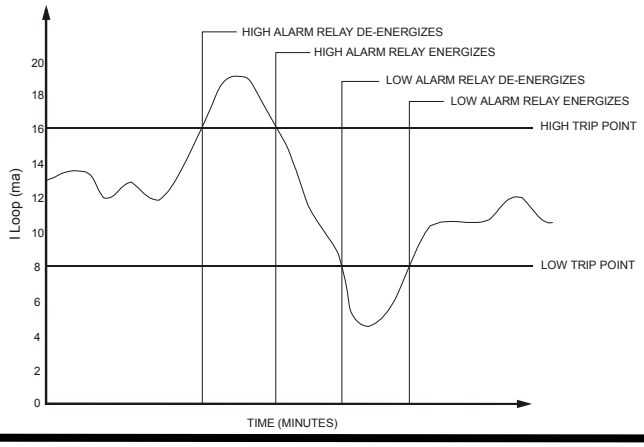
DEADBAND: With the DEADBAND still at it's lowest setting, apply the current level for the RISING TRIP. Turn the DEADBAND slowly clockwise, until the RISING TRIP LED goes off. Then turn it slowly counter-clockwise, until the RISING TRIP LED comes on. You can check the RISING TRIP and FALLING TRIP setpoints by varying the input current, and noting where the relays trip.

INPUT LOOP ERROR: Check the INPUT LOOP ERROR function by applying current levels above and below the 4-20*ma* range. The INPUT LOOP ERROR LED should illuminate when the current is above 20*ma* or below 4 *ma*.

WARRANTY

This product is warranted to be free from defects in materials and workmanship, and is covered by our exclusive **5-year Unconditional Warranty**. Should this device fail to operate for any reason, we will repair it for five years from the date of manufacture. For complete warranty details, see the Terms and Conditions of Sales page in the front section of the Time Mark catalog or contact Time Mark at 1-800-862-2875.

OPERATION DIAGRAM



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