

Sonictrac[®] Series Sonic Measuring Unit

Model SMU100-XXX

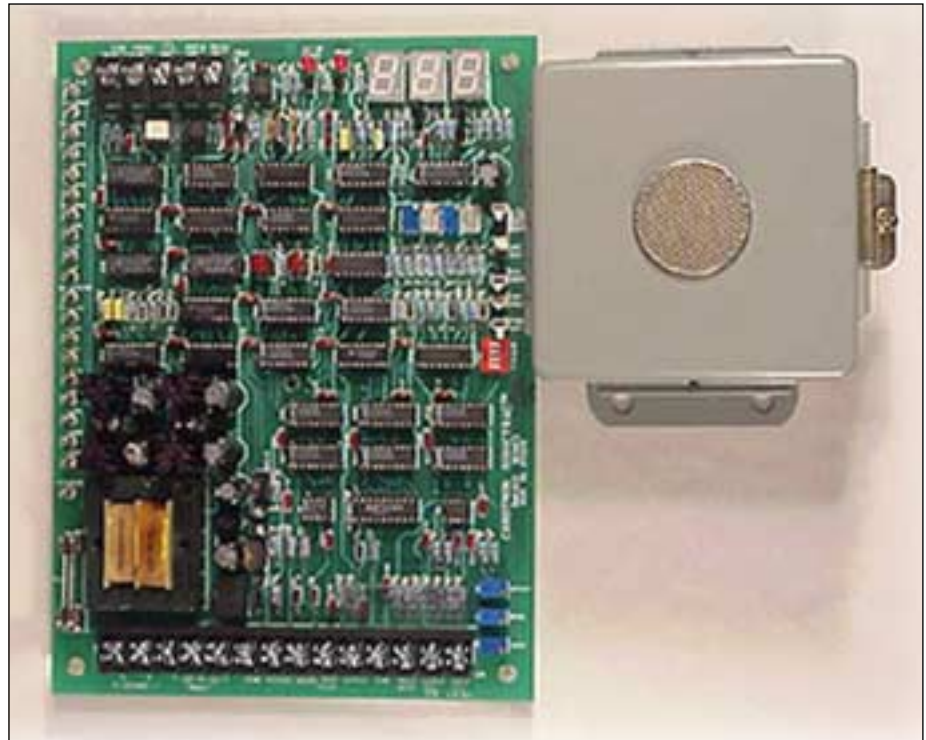
General Description

Model SMU100-XXX is a distance measuring device that uses ultrasonic technology to detect and measure targets up to 30 feet away.

An Environmental Grade electrostatic transducer patented by Polaroid for use in their auto-focus cameras combined with Carotron industrial grade interface and processing circuitry provides reliable and accurate operation in a wide range of applications.

Crystal time-based digital counters display distance to 1/10 foot resolution and give 12-bit resolution to the analog voltage output. The output voltage can be sourced from on-board positive or negative supplies or an external voltage can be multiplied by a percentage of distance.

Distance is divided into four ranges to give maximum output resolution and to establish "valid echo" distances beyond which objects are ignored. The distance to an out-of-range object will be displayed up to 35 feet but the output will not change. Continued operation "out-of-range" for a programmable time period from 1 to 15 seconds will energize a Fault relay whose contacts can be used by the customer to sound an alarm, stop a machine, etc.



Standard Features

- Patented ultrasonic transducer measures distances in 4 selectable ranges: 0.5-5 ft., 0.5-10 ft., 0.5-20 ft. and 0.5-30 ft.
- A 12 bit multiplying digital to analog converter supplies an output voltage as the product of percent distance times the multiplier input. The multiplier input to the D/A converter can be from internal fixed +10 VDC or can be supplied from an external +10 VDC signal.
- A crystal oscillator supplies a consistent and accurate clock frequency for precise distance measurement. The system scans the distance and updates the analog output every 143 mSec.
- Distance is displayed by a 3 digit readout, accurate to 0.1 ft.
- Transducer supplied in JIC enclosure for ease of mounting. Plug-and-twist type connector simplifies wiring from transducer assembly to control board.
- Transducer electronics is electrically isolated from control board.
- Out-of-range led flashes to indicate return signals beyond the distance range selected. When out-of range is detected, the last valid analog output is maintained .
- Fault relay with selectable trip time of 1-15 seconds for out-of-range condition before fault occurs. An LED indicator and a form-C contact for customer use indicate the fault condition.
- Model dash number (-XXX) represents cable length in feet. Complete unit consists of control board, transducer and cable.

Specifications

A.C. INPUT

- 115 VAC, 50/60 Hz, 1 phase fused at .3 amperes

SIGNAL INPUTS

- +10 VDC maximum with 10K ohms input impedance
- External CTL-CLK input, 7 Hz, 50% duty at 5 volts peak maximum for simultaneous "slave" operation as second Sonictrac Measuring Unit without interference or cross-talk

SIGNAL OUTPUTS

- Positive and negative 10 VDC supplies at 2 mA maximum each (5K to 1 OK ohm load impedance)
- Inverted CTL-CLK output - 7 Hz, 50% duty at 1 mA maximum - for "slave" operation of a second Sonictrac
- D.C. Voltage output, variable based on distance, +10 volts maximum at 10 mA maximum. Resolution to 1/4096 of full scale output possible

RELAY OUTPUT

- Fault relay - form "C" contact output, 120 VAC at .2 amps inductive or .5 amps resistive load

DISPLAY

- 3 digit LED display of distance with .1 foot resolution

RANGE

- The LED display will constantly indicate measured distances up to 35 feet regardless of selected range.
- Digital-to-Analog conversion occurs within a distance from 1/2 to 30 feet. This distance is divided into the following four ranges: 1/2 to 5 feet, 1/2 to 10 feet, 1/2 to 20 feet, 1/2 to 30 feet

SCAN RATE

- Cycles occur at 7 Hz or once every 143 millisecc.

Standard Models and Descriptions

Model number	Description	Approx. Shpg. Wt.	Dim.	Conn.
SMU100-020	Sonictrac® control board, NEMA 12 transducer enclosure and 20 ft. cable	7 lbs.	Fig. C.8 Fig. C.9	Fig. C.10
SMU100-040	Sonictrac® control board, NEMA 12 transducer enclosure and 40 ft. cable	8 lbs.	Fig. C.8 Fig. C.9	Fig. C.10
SMU100-060	Sonictrac® control board, NEMA 12 transducer enclosure and 60 ft. cable	8 lbs.	Fig. C.8 Fig. C.9	Fig. C.10
SMU100-100	Sonictrac® control board, NEMA 12 transducer enclosure and 100 ft. cable	9 lbs.	Fig. C.8 Fig. C.9	Fig. C.10

Application Examples

Level Detector

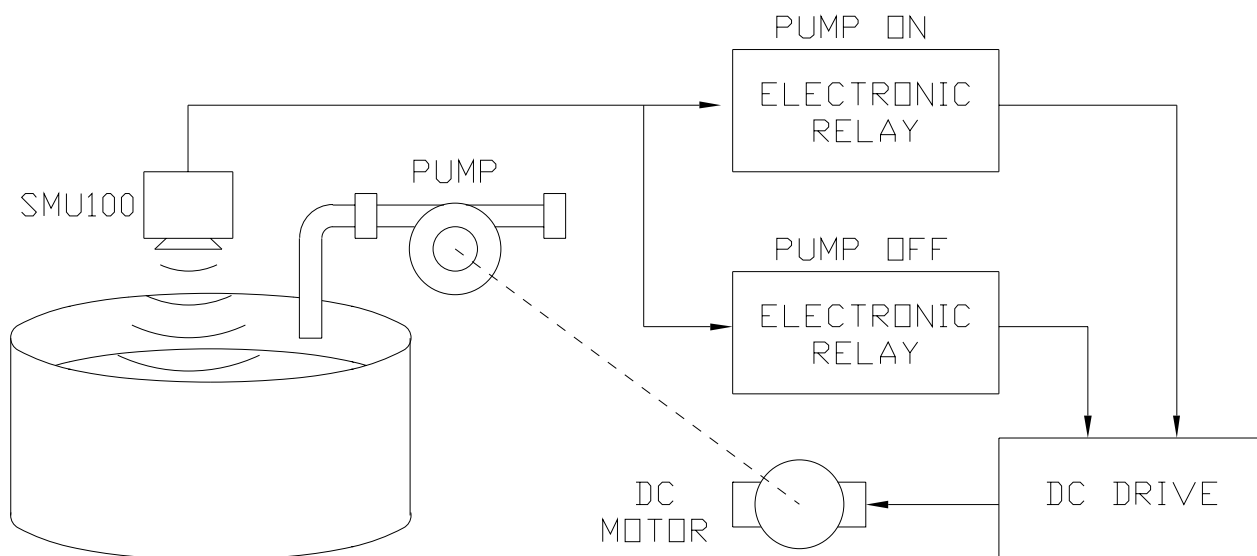


Fig. C.6

Center Winder Tension Control using Diameter Sensing

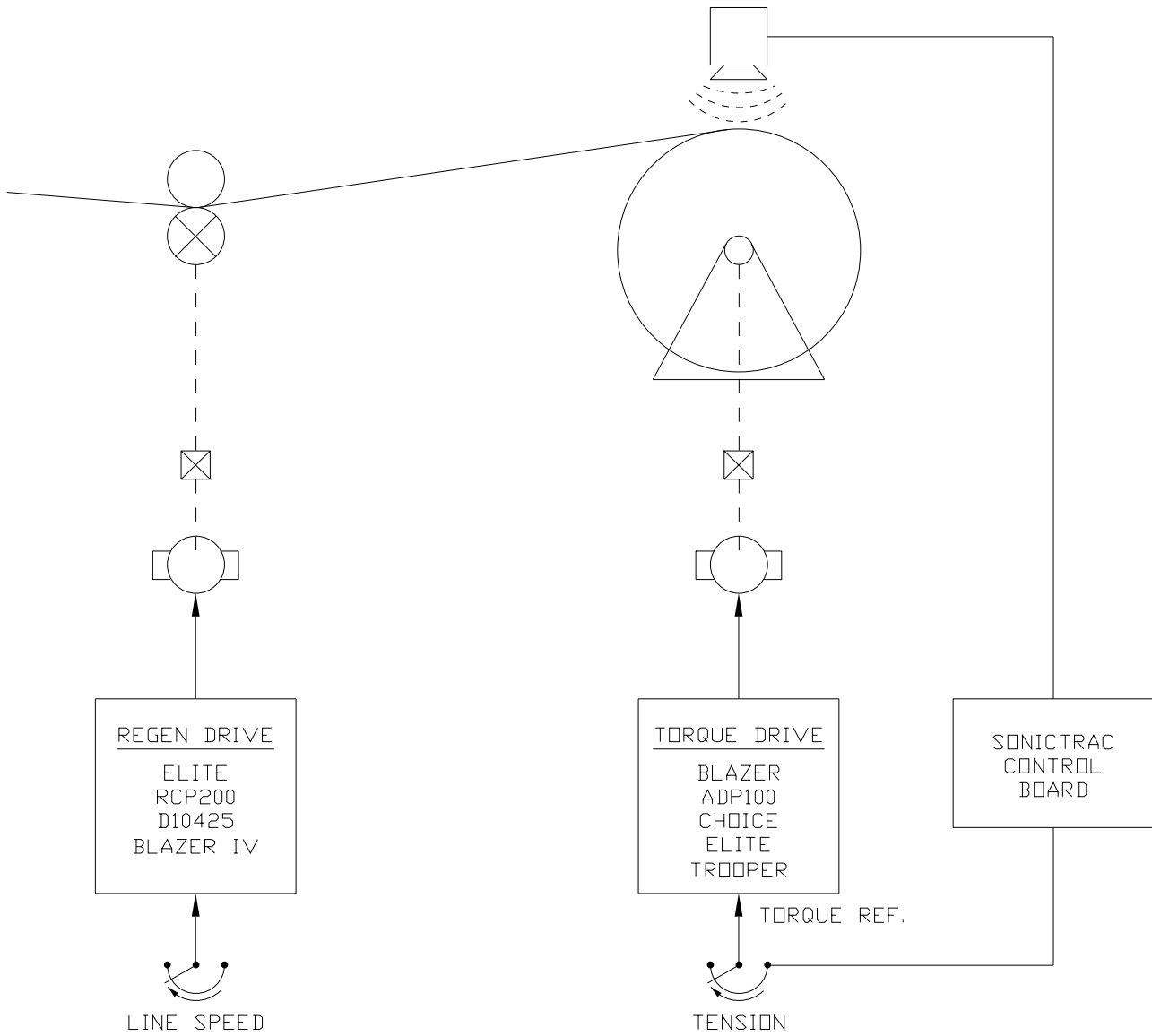


Fig.C.7

Dimensions

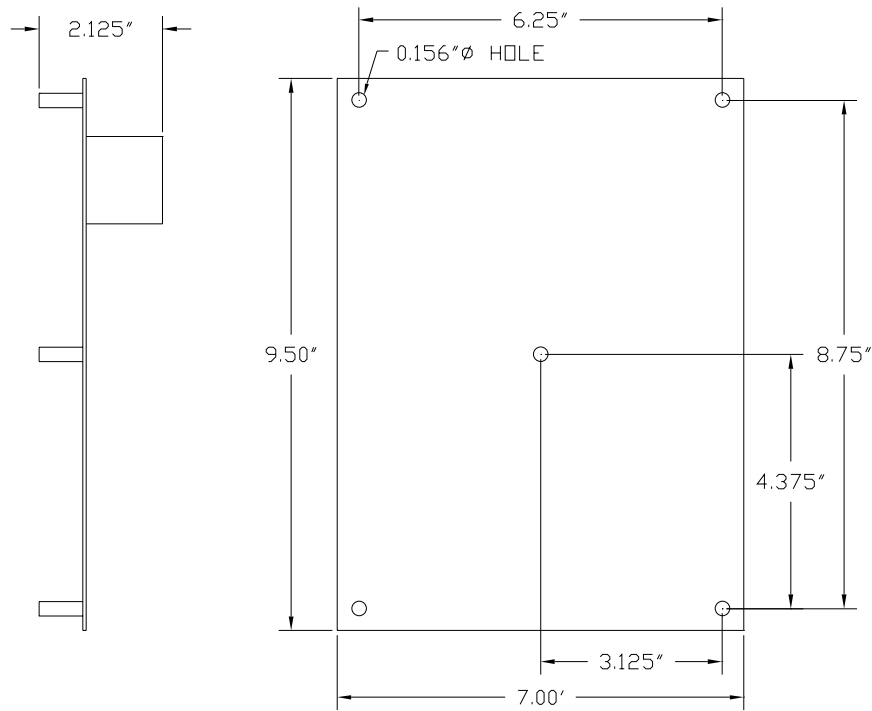


Fig. C.8

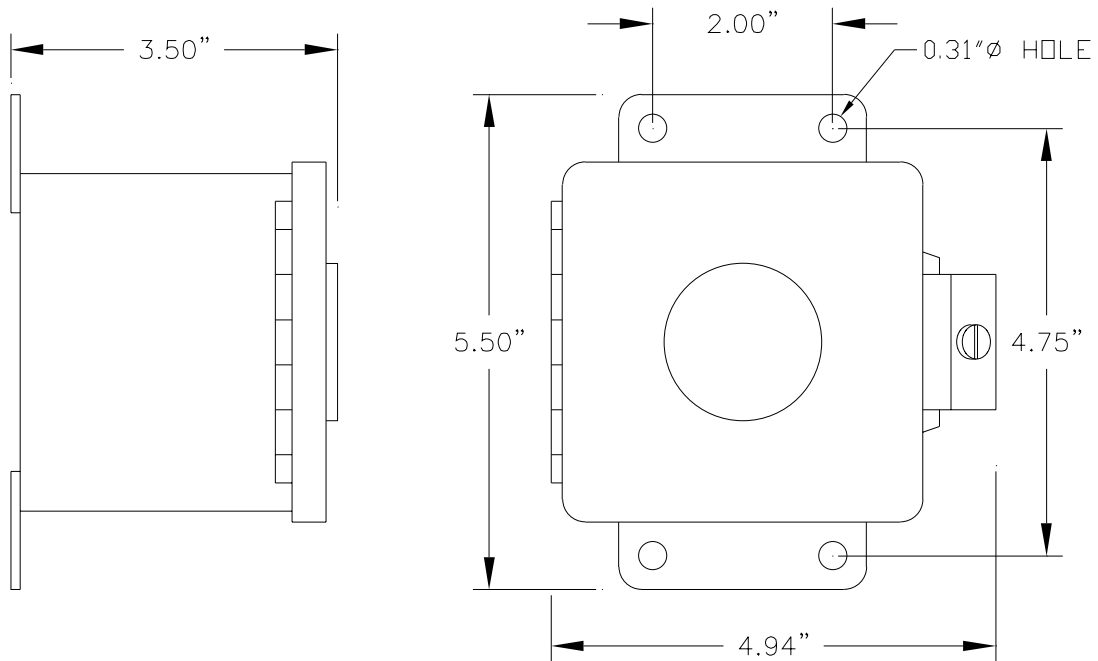


Fig. C.9

Connections

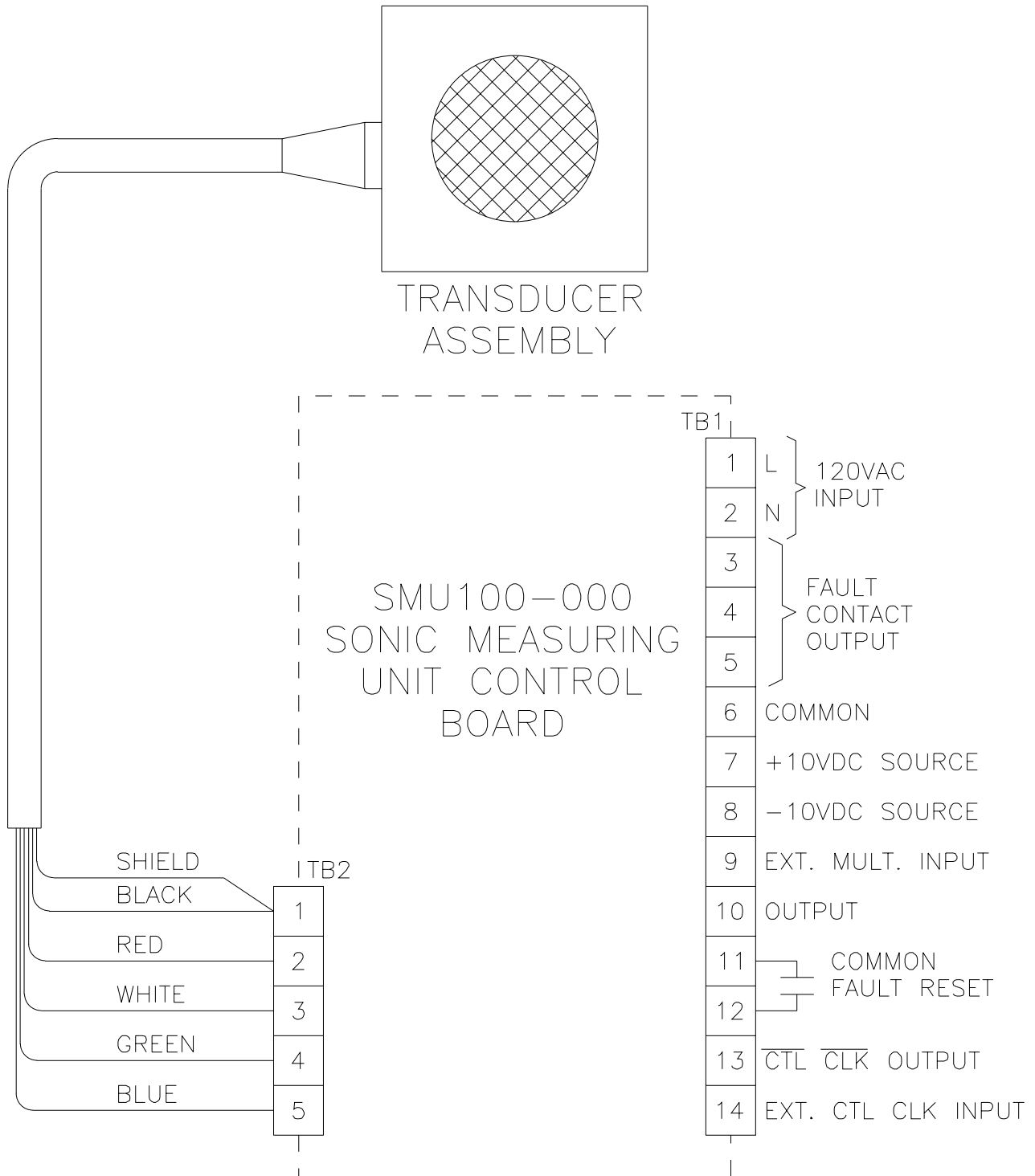


Fig. C.10