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SCT 502-1 Isolated Bipolar Signal Transmitter Instruction Manual

1.0 INTRODUCTION

These instructions refer to the above model. Supplementary sheets are attached if the unit has special options or features. For detailed specifications, see page 4 or refer to the Data Bulletin. All ADTECH instruments are factory calibrated and supplied with a label detailing the calibration. Adjustments are normally not necessary. A simple check should be performed to verify calibration before installation to ensure that it matches the field requirement.

2.0 GENERAL DESCRIPTION

The ADTECH SCT 502-1 is an Isolated Signal Transmitter that is offered in any one of the following I/O combinations:

- (a) 4-20 mA DC in, 0-10 VDC out
- (b) 0-10 VDC in, 0-10 VDC out
- (c) 0 - ±10 VDC in, 0 - ±10 VDC out

The output is designed to work into a load of 5k Ω or larger.

The input is electrically isolated from the output and the power supply by 600 volts ac or 1000 vdc peak.

3.0 INSTALLATION

The instrument is supplied in a DIN rail mount general purpose enclosure as standard. Installation area/location must agree with the supplied instruments including operating temperature and ambient conditions.

Mounting

Refer to Section 10 for outline and mounting drawing and clearance dimensions. The instrument is surface mounted by means of DIN rails types G and T 32mm and 35mm respectively.

Electrical Connections

The wire used to connect the instrument to the control system I/O should be a twisted pair(s) and sized according to normal practice. Shielded cable is not normally necessary (if used, the shield must be grounded at the input negative of the ADTECH instrument and left floating at the sensor).

A 12 position compression terminal block is provided for I/O and power connection. A housing ground terminal is not required due to non-metallic housing.

Controls

Multiturn ZERO and SPAN controls are provided to calibrate the instrument. The multiturn controls are accessible through the instrument front panel and are clearly marked for ease of use.

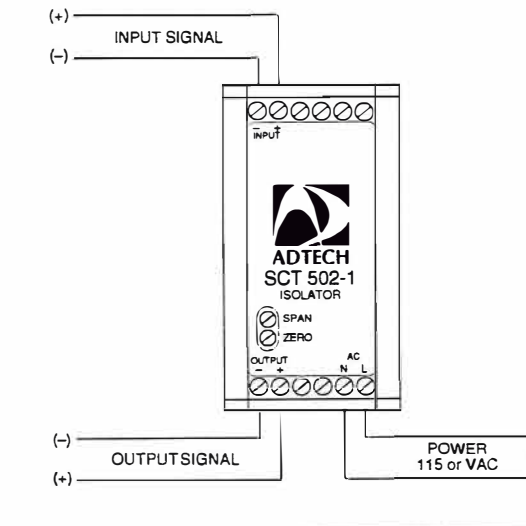
Pin jumpers for SPAN and ZERO are provided for ease of recalibration to other standard or optional inputs. Refer to tables on page 3.

4.0 MAINTENANCE

These instruments are electronic and require no maintenance except periodic cleaning and calibration verification. If the unit appears to be mis-operating it should be checked as installed per section 6.0 or removed for a bench check per sections 6.0-7.0. MOST problems are traced to field wiring and/or associated circuits. If the problem appears to be with the instrument, proceed to sections 6.0 and 7.0.

5.0 CONNECTIONS

Standard connections are shown below and on the instrument face plate, Data Bulletin or on attached supplementary sheets.



6.0 SET UP AND CALIBRATION

All ADTECH units are factory calibrated per your instructions. Usually, a complete recalibration is not required unless it is required to change input types, output types or the range of the unit. Most calibrations will only require a ZERO and SPAN adjustment.

The calibration process is broken into three separate steps as follows:

Input Configuration Sec 6.1
Output Configuration Sec 6.2
Calibration Sec 6.3

6.1 INPUT CONFIGURATION

The ADTECH Series SCT 502-1 Isolated Voltage/Current Transmitter accepts either current or voltage inputs. **IMPORTANT:** refer to the connection diagram for the appropriate connections to the unit.

If you want to change the factory set type of input configuration, refer to page 3.

6.2 OUTPUT CONFIGURATION

The output configuration is standard and fixed at the factory.

6.3 CALIBRATION

To perform a calibration check or re-calibration of the instrument follow this procedure.

- A. Make sure the unit I/O wiring is properly connected and that the correct power source per the label is also connected. The instrument must be at normal power for a minimum of 2 minutes before proceeding to B.
- B. The input signal source(s) must be adjustable from 0 to 100% in steps of 10% or at least 25%. The source(s) should be either precalibrated or an accurate meter must be used to monitor the input(s).
- C. The output may be monitored either as a direct voltage for a voltage output signal or as a current that can be represented as a voltage across a resistor shunt for a current output signal.
- D. Set the input source to minimum input value and adjust the multiturn potentiometer marked ZERO to provide the minimum calibrated output (e.g.) 0.00 ± 0.01 VDC. (Note: For zero based outputs set input at 10% of span and adjust for 10% of span output.)
- E. Set the input source to maximum value and adjust the multiturn potentiometer marked SPAN to provide the maximum calibrated output (e.g.) 10.00 ± 0.01 VDC.
- F. Repeat steps D and E until readings are within calibration.
- G. The instrument should now be checked at 25-50-75% of span minimum.
- H. This completes the calibration.

7.0 FIELD TROUBLE SHOOTING GUIDE

This section offers a simple, first level trouble-shooting aid for an apparent instrument malfunction.

<u>SYMPTOM</u>	<u>CORRECTIVE ACTION</u>
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- | | |
|-----------|--|
| No output | <ol style="list-style-type: none">1. Check the input and output connections carefully.2. Check that the power supply polarity is correct and that power is present on the instrument terminals.3. Check that the input source(s) is correct and that it changes magnitude between zero and full scale values when so adjusted.4. If the output is a current signal (4-20 ma, etc.), make sure the output loop is complete and that the correct meter range is selected. |
|-----------|--|

All external checks are complete. Problem seems to be internal.

If the problem seems to be internal, replace the instrument with a spare and return the defective instrument to ADTECH for prompt check out and repair. To avoid unnecessary delays always send a cover note with name and telephone number of the contact and return address. Along with a brief description of what the unit is doing when it fails.

8.0 TABLES, PCB LAYOUT

Standard Inputs/Outputs

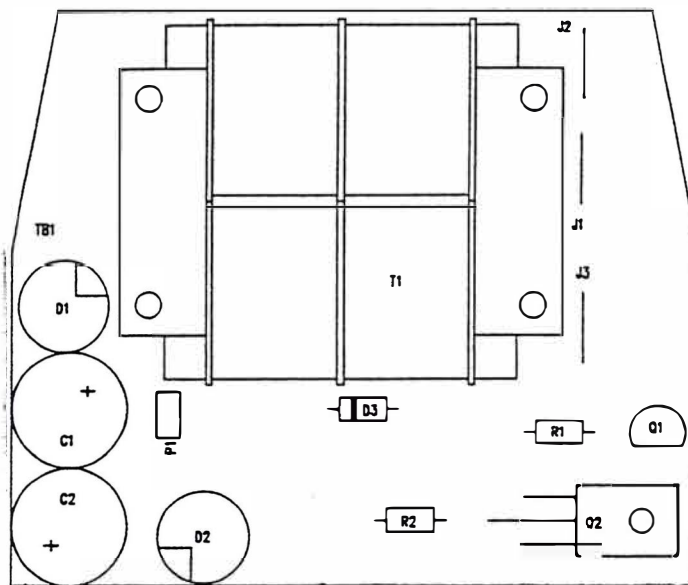
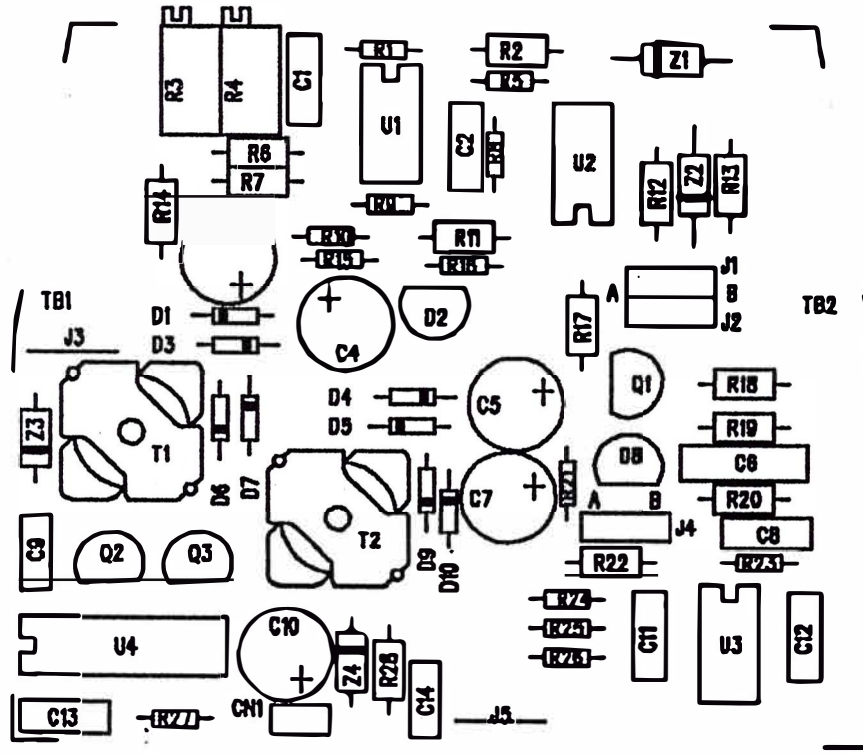
STANDARD INPUTS

INPUT	J1	J2	J4
4-20 mA DC	A	B	B
0-10 VDC	B	A	A
0 - ±10 VDC	B	A	A

AC POWER SELECTION

115V	J1, J2 IN; J3 OUT
230 V	J3 IN; J1, J2 OUT

These jumpers on power supply PCB



9.0 SPECIFICATIONS

INPUT/OUTPUT

- a. 4-20 mA DC in, 0-10 VDC out
- b. 0-10 VDC in, 0-10 VDC out
- c. 0 - ±10 VDC in, 0 - ±10 VDC out

The output is designed to work into 5k Ω or larger.

PERFORMANCE

- a. **Calibrated Accuracy:** ± 0.1%
- b. **Linearity:** ± 0.1% maximum, ± 0.04% typical
- c. **Repeatability:** ± 0.05% maximum
- d. **Temperature Stability:** ± 0.01%/°F maximum, ± 0.004%/°F typical
- e. **Load Effect:** ± 0.01% zero to full load
- f. **Output Ripple:** 10 mv P/P typical
- g. ***Response Time:** 150 milliseconds (2.3 Hz band width)
- h. **Temperature Range:** 0° to 140°F (-18° to 60°C) operating
-40° to 185°F (-40° to 85°C) storage
- i. **Power Supply Effect:** ± 0.05% for a ± 10% power variation
- j. **Common Mode Rejection:** 100 db @ 60 Hz
- k. **Isolation:** Input/output/power 600 vac, 50/60 Hz, 1000 vdc

Note: All accuracies are given as a percentage of span

* Other available to 40k Hz bandwidth: specify

POWER

- a. 115 vac: ± 10%, 50/60 Hz, 2 watts (standard)
- b. 230 vac: ±10% 50/60 Hz 2W (selectable)

10.0 OUTLINE & MOUNTING

