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# CLA 114 DC Current Loop Powered Trip Alarm Instruction Manual

## 1.0 INTRODUCTION

These instructions refer to the above models. Supplementary sheets are attached if the unit has special options or features. For detailed specifications, 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 calibration check should be performed to verify calibration before installing the instrument per 3.0 below.

## 2.0 GENERAL DESCRIPTION

The ADTECH CLA 114 is a loop powered current trip alarm that accepts a 4-20 mA DC input signal and provides a relay contact output.

A SPDT relay contact output is standard, with Option O 49 a DPDT output is provided.

Relay action: Hi or Low and is set by internal jumper arrangement as per table on page 3.

Unless otherwise specified, the alarm is set as a Hi trip.

A pulsing Green LED indicator that indicates the magnitude of the input signal (i.e.) the pulse rate increases (decreases) with the input signal is also supplied.

A Red LED indicator for alarm condition is also provided.

## 3.0 INSTALLATION

The instrument is supplied in a general purpose enclosure as standard. NEMA 4, 7 or 12, snap track and DIN are optionally available. Installation area/location must agree with the supplied instruments including operating temperature and ambient conditions.

### Mounting

Refer to the appropriate outline drawing for mounting and clearance dimensions. The instrument is surface mounted with two #6-32 screws on 3.00 inch centers.

### Electrical Connections

The wire used to connect the instrument to the control system Input/Output 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).

Six position compression terminals are provided for I/O connections. An added 3 position plug-in terminal block is available for option 049-DPDT output.

### Controls

Multiturn set point (SP) control is provided to set the trip point level on all units. Adjustable deadband (DB) control is also provided as option O46S.

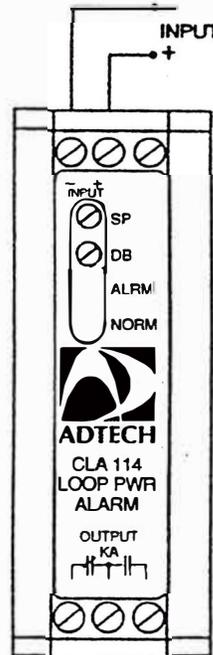
The multiturn control(s) is accessible through the instrument front panel and is clearly marked for ease of use.

## 4.0 MAINTENANCE

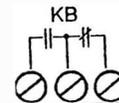
These instruments are electronic except for the relay(s) output(s) and require no maintenance except for periodic cleaning and calibration verification. The standard relay is rated by the manufacturer for 200,000 4 amp operations at 30 vdc and 10<sup>8</sup> mechanical operations. Relay output(s) should be verified at user established time intervals. If the unit appears to be mis-operating it should be checked in place per section 6.0 or removed for a bench check per sections 6.0 and 7.0. MOST problems are traced to field wiring and/or associated circuits. If the problem appears to be within the instrument, proceed to sections 6.0 and 7.0.

## 5.0 CONNECTIONS

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



FRONT VIEW



RIGHT SIDE VIEW

OPTION O-49

## 6.0 CALIBRATION

To perform a calibration check or re-calibration of these alarms follow this procedure. To set the relay trip mode refer to the output table on page 3. Select the appropriate jumpers.

- A. Make sure the unit I/O wiring is properly connected. The alarm must be at normal input for a minimum of 2 minutes before proceeding to B.
- B. The input signal source must be adjustable from 0-100% in steps of 10% or at least 25%. The source should either be precalibrated or an accurate meter must be used to monitor the input.
- C. The output contacts may be monitored with an ohmmeter or a suitable source with indicator lights to prove contact transfer and LED action.
- D. Set the input source to the value desired for a trip.
- E. Adjust the set point "SP" multiturn potentiometer until the relay operates. The associated LED will come on when the relay actuates if so equipped.
- F. Vary the adjustment CW and CCW to get as close as possible to the actual trip point.
- G. Vary the input source to verify that the relay operates at the desired trip point. The DIFFERENCE between the trip setpoint that activates the relay and when it drops out is the amount of deadband.
- H. Adjust the deadband "DB" multiturn potentiometer and vary the input source between pull in/drop out until the desired deadband is obtained if so equipped.
- I. The deadband adjustment has a minimal effect on the trip point. For improved accuracy/resolution, check and adjust (if needed) the trip point control as described in Steps D, E and F.
- J. 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.

SYMPTOM	CORRECTIVE ACTION
No output	<ol style="list-style-type: none"><li>1. Check the input and output connections carefully.</li><li>2. Check that the input signal polarity is correct and that it is present on the instrument terminals.</li><li>3. Check that the input source(s) is correct and that it changes magnitude between zero and full scale values when so adjusted.</li></ol>

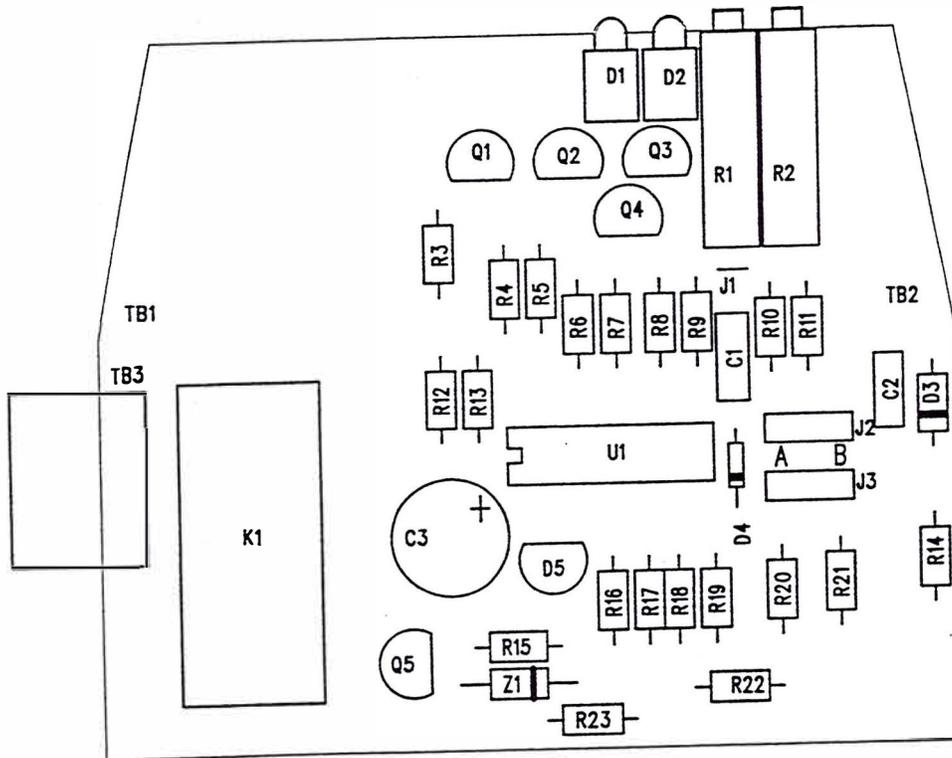
The following information is provided for a qualified technician or serviceman as check points for use in internal troubleshooting.

CHECKPOINT/ COMPONENT	VOLTAGE/ RANGE
(across) D5	2.5 ± 0.25 vdc
(across) R14	40 to 200 mv dc

8.0 TABLES, PCB LAYOUT

OUTPUT TABLE

Set Point	J2	J3
High	A	A
Low	B	B



# SPECIFICATIONS CLA 114

## INPUT/OUTPUT

### INPUT SIGNAL

- a. 4-20 ma dc

### OUTPUT SIGNALS

#### Standard

- a. CLA 114 one (1) set SPDT output contact rated 4 amps at 30 vdc or 250 vac resistive

#### Optional

- a. DPDT output contact rated 4 amps at 30 vdc or 250 vac resistive

## PERFORMANCE

- a. **Repeatability:**  $\pm 0.1\%$  of span
- b. **Trip Point Stability:** zero and span  $\pm 0.005\%/^{\circ}\text{F}$  typical  $\pm 0.01\%/^{\circ}\text{F}$  maximum for a  $50^{\circ}\text{F}$  change from ambient
- c. **Trip Adjustment:** 0-100% of span continuously adjustable  
Blind set: infinite resolution
- d. **Fixed Dead Band:** factory set at 0.5% of span
- e. **Adjustable Dead Band:** 1% to 100% of span  
Blind Set: infinite resolution option O46S.
- f. **Response Time:** less than 200 milliseconds
- g. **Temperature Range:**  $0^{\circ}$  to  $140^{\circ}\text{F}$  ( $-18^{\circ}$  to  $60^{\circ}\text{C}$ ) operating  
 $-40^{\circ}$  to  $185^{\circ}\text{F}$  ( $-40^{\circ}$  to  $85^{\circ}\text{C}$ ) storage
- h. **Input Voltage drop:** 7 Vdc nom.

Note: All accuracies are given as a percentage of span

## 9.0 OUTLINE AND MOUNTING

