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PDT 80 Non-Isolated Pulse Duration 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 PDT 80 is a Non-Isolated Pulse Duration Transmitter that accepts a process input signal of 1-5 vdc or 4-20 ma dc and converts it into any of the standard pulse duration signal outputs such as 3-12 seconds.

The output pulse width can be 0.1 to 300 seconds. This pulse duration on time, is linearly proportional to the analog input signal amplitude with the repetition time adjustable over a 1:1 to 1000:1 selected range. A reed or mercury wetted relay contact output is optional.

3.0 INSTALLATION

The instrument is supplied in a general purpose enclosure as standard. NEMA 4, 7 or 12 and plug in chassis enclosures 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 #10-32 screws on 8.00 inch centers.

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 barrier terminal block with #6-32 screws and 3/8" spacing is provided for I/O and power connection. A housing ground terminal marked G is also provided.

Controls

Multiturn ZERO, SPAN and PERIOD 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.

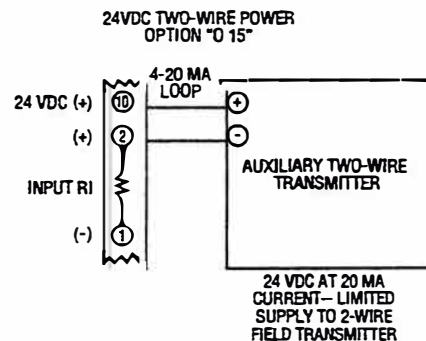
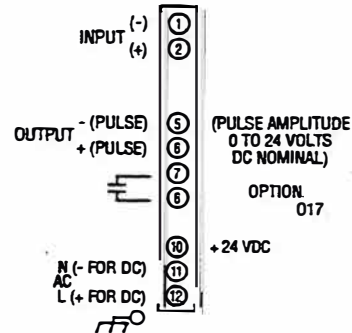
4.0 MAINTENANCE

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.

CAUTION: NO customer connection to Terminal No. 4



6.0 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 as a 24 vdc pulse into a 500 W minimum load using a pulse width counter/timer.
- D. Look up values of T(sec) and N from Output Table on page 3. Connect a frequency meter across terminals 4(+) and 5. Adjust control #3 to obtain $\text{freq} = \frac{8192N}{T(\text{sec})}$ Hz.
- E. Set the input source to minimum input value and adjust the multiturn potentiometer marked ZERO to provide the minimum calibrated output (e.g.) 3.00 ± 0.01 seconds pulse.
- F. Set the input source to maximum value and adjust the multiturn potentiometer marked SPAN to provide the maximum calibrated output (e.g.) 12.00 ± 0.01 seconds pulse.
- G. Repeat steps D and E until readings are within calibration.
- H. The instrument should now be checked at 25-50-75% of span minimum.
- I. This completes the calibration.

NOTE:

If recalibration to a different input and/or output signal is required, proceed to the tables listed under section 8.0

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

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. 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.

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

<u>CHECKPOINT/ COMPONENT</u>	<u>VOLTAGE/ RANGE</u>
(across) C11	11 ± 0.6 vdc
(across) C24	11 ± 0.6 vdc
(across) C16	26 ± 4 vdc
(across) C9	12 ± 0.6 vdc
(across) D10	6.9 ± 0.35 vdc
From Term 1 to J23	Saw tooth wave of approx. 120% of full span time pulse output.

8.0 TABLES, PCB LAYOUT

INPUT TABLE

INPUT SIGNAL FULL SCALE	J12 Position	J16 Position
50 ma dc	B	A
20 ma dc	B	B
10 ma dc	B	C
1 ma dc	B	D
10 vdc	A	OUT
5 vdc	B	OUT

J9 = A for Live Zero Input
 J9 = B for Zero Base Input

OUTPUT TABLE

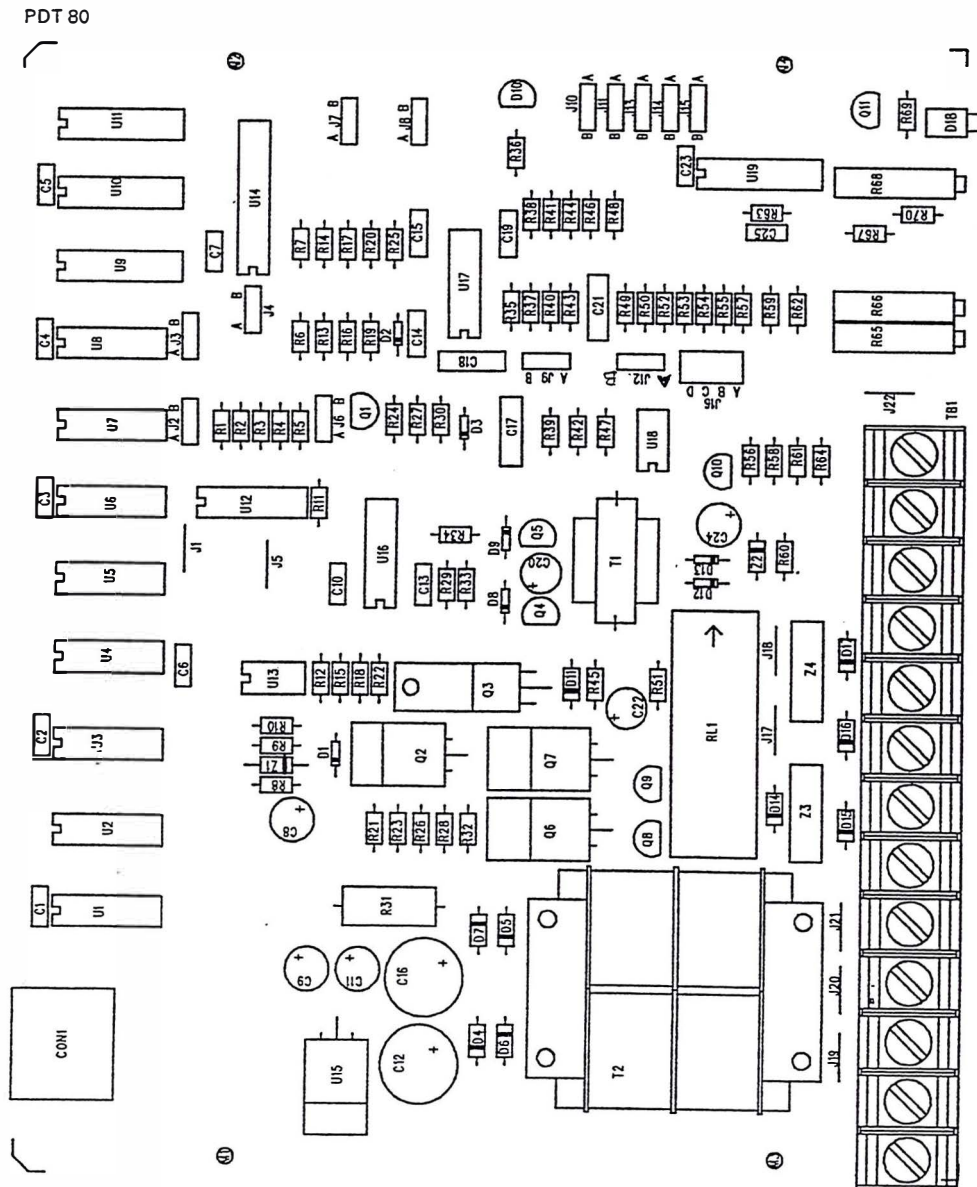
PERIOD T SEC	J11	J12	J13	J14	J15	N (RATIO)
0.95 - 1.9	A	A	A	A	B	1
1.9 - 3.8	A	A	A	B	B	2
3.8 - 7.6	A	A	B	A	B	4
7.6 - 15.2	A	A	B	B	B	8
15.2 - 30.4	A	B	A	A	B	16
30.4 - 60.8	A	B	A	B	B	32
60.8 - 122	A	B	B	A	B	64
122 - 244	A	B	B	B	B	128
244 - 488	B	A	A	A	B	256

NOTE 1: A & B are two selectable positions of a jumper.

J7 = A for Zero Based Output

J7 = B for Live Zero Output

NOTE 2: All components shown below may not be present.



9.0 SPECIFICATIONS

INPUT/OUTPUT

INPUT SIGNALS

- 4-20 ma dc (Z in 250 ohms)
- 10-50 ma dc (Z in 100 ohms)
- 0-1 ma dc (z in 5K ohms)
- 0-10 ma dc (Z in 500 ohms)
- 1-5 vdc (Z in 10 megohms)
- 0-5 vdc (Z in 10 megohms)
- 0-10 vdc (Z in 100K ohms)
- Other zero based current and voltages available
- Low impedance current inputs, 1/10 standard (Option I 18)

OUTPUT SIGNALS

- Voltage:** 24 vdc pulses into 500 W minimum
- Contact:** dry, 10 va @ 24 vdc rating: Optional
- Period:** 0.1 to 300 seconds
- Output Ranges:**
 - 0 to 2 seconds
 - 0 to 13.33 seconds
 - 1 to 5 seconds
 - 3 to 12 seconds
 - 5 to 25 seconds
- Other Periods/Ranges: Optional

PERFORMANCE

- Calibrated Accuracy:** $\pm 0.1\%$
 - Linearity:** $\pm 0.1\%$ maximum, $\pm 0.04\%$ typical
 - Repeatability:** $\pm 0.05\%$ maximum
 - Temperature Stability:** $\pm 0.01\%/^{\circ}\text{F}$ maximum, $\pm 0.004\%/^{\circ}\text{F}$ typical
 - Response Time:** 150 milliseconds
 - Temperature Range:** 0° to 140°F (-18° to 60°C) operating
 -40° to 185°F (-40° to 85°C) storage
 - Power Supply Effect:** $\pm 0.05\%$ for a $\pm 10\%$ power variation
- Note: All accuracies are given as a percentage of span

POWER

- 115 vac: $\pm 10\%$, 50/60 Hz, 3 watts, 0.7 Pf (standard)
- 24 vdc: $\pm 10\%$ non-isolated, 3 watts (Option P1)
- 24 vdc: $\pm 10\%$ isolated, 3 watts (Option P2)
- 48 vdc: $\pm 10\%$ isolated, 3 watts (Option P3)
- 125 vdc: Nominal (105-140 vdc) isolated, 3 watts (Option P4)
- 230 vac: $\pm 10\%$, 50/60 Hz, 3 watts, 0.7 PF (Option P5)

10.0 OUTLINE & MOUNTING

