

Technical Manual
**APPLICATION NOTE FOR DCTH
TRANSDUCERS**

Doc. Ref CD1043M



Affirmed by Declaration
of Conformity

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APPLICATION NOTE FOR DCTH TRANSDUCERS

The DCTH series is a range of DC in – DC out LVDTs offering high quality electronics for energisation and signal conditioning fully integrated inside the transducer housing. The DCTH has been specifically designed for compatibility with A-D converters and process control systems, as well as for general purpose use. There are both short stroke and long stroke ranges available in a variety of mechanical configurations.

Connections

| SINGLE SUPPLY (Note 1) | CABLE CORE | DUAL SUPPLY |
|------------------------|-----------------|----------------------|
| Supply Positive (V+) | RED | Supply Positive (V+) |
| Supply Common | BLUE | Supply Negative (V-) |
| Output Common (Note 2) | BLACK | 0V Common I/P O/P |
| Output 2: $\pm 5V$ | GREEN | Output 2: $\pm 5V$ |
| Output 1: 0 to 10V | YELLOW | Output 1: 0 to 10V |
| Ground | Screen (Note 3) | Ground |

- Note:
1. Supply must be floating w.r.t. output.
 2. Output common floats at $\frac{1}{2} V+$
 3. Cable screen is not connected to device.
 4. Incorrect connection may cause irreparable damage. Contact our Sales Department if you require assistance.
 5. The transducer is factory-calibrated with an energising voltage of $\pm 15V$ fitted with 2 metres of cable.
 6. If a cable longer than the standard 2m length is used, note that the output ripple (noise) can increase by typically 1mV p-p per metre.

Setting up Procedure

1. Once the transducer is fixed in place, connect to suitable power supply and switch on.
2. To find centre position of transducer stroke (electrical null), move armature until Output 2 = 0V.
3. Move armature in/out by appropriate distance (e.g. 25mm for DCTH1000) to measure negative or positive full stroke

Specification

| | Output 2 | Output 1 |
|--|--|---|
| Supply Requirements | ±12V to ±18V or 24V to 36V smoothed dc @ 30mA typical | ±12V to ±18V or 24V to 36V smoothed dc @ 30mA typical |
| Output Voltage | <u>Arm.In</u> <u>Null</u> <u>Arm.Out</u> -5V 0V +5V | <u>Arm.In</u> <u>Null</u> <u>Arm.Out</u> 0V 5V 10V |
| Short Circuit Proof | | |
| Supply Voltage Rejection Ratio | 1.25mV/V typical | 5mV/V typical |
| Minimum Output Load Resistance with Supply at: 24V (±12V) 30V (±15V) | } 2K } | 10K 2K |
| Output Ripple | 30mV p-p typical (Note 6) | |
| Output Bandwidth | 200Hz Flat 350Hz – 3dB | |
| Output Impedance | 2 ohms | |
| Output 1 and Output 2 Relationship | Output 1 = Output 2 + 5V (±100mV) | |
| Linearity | 0.5% of full range max. as standard, or, 0.25% and 0.1% available on some models | |
| Zero Temp. Coefficient | ±0.01% FS/°C | |
| Span Temp. Coefficient | ±0.03% FS/°C | |
| Operating Temperature Range | -40°C to +80°C | |

The DCTH family comprises:-

| Model | Model Range | Type | Cable Outlet | Special Features | Outling Drawing |
|-------------|-------------|---------------|--------------|------------------|-----------------|
| DCTH100 | 100 – 400 | Free armature | Axial | | D13917 |
| DCTH100RA | 100 – 400 | Free armature | Radial | | D14988 |
| DCTH100AG | 100 – 400 | Spring return | Axial | | D13919 |
| DCTH100AGRA | 100 – 400 | Spring return | Radial | | D14992 |

| | | | | | |
|-----------------|-----------|---------------|--------|---------------------------|--------|
| DCTH100AG/714 | 100 – 400 | Spring return | Axial | ½ - 20 UNF thread mount | D14678 |
| DCTH100AGRA/714 | 100 – 400 | Spring return | Radial | ½ - 20 UNF thread mount | D14995 |
| DCTH100AG/717 | 100 – 400 | Spring return | Axial | Plain 9.45 mm sleeve | D14708 |
| DCTH100AGRA/717 | 100 – 400 | Spring return | Radial | Plain 9.45 mm sleeve | D14998 |
| DCTH100AG/739 | 100 – 400 | Spring return | Axial | 3/8 – 32 UNF thread mount | D14862 |

| | | | | | |
|---------------|-----------|---------------|--------|---|--------|
| DCTH100AG/881 | 100 – 400 | Spring return | Axial | Bendix connector | D15013 |
| DCTH100/881 | 100 – 400 | Free armature | Axial | Bendix connector | D15009 |
| DCTH100/883 | 100 – 400 | Free armature | Radial | Bendix connector | D15002 |
| DCTH100AG/882 | 100 – 400 | Spring return | Axial | Bendix con plus ½ - 20 UNF thread mounted | D15862 |
| DCTH100AG/883 | 100 – 400 | Spring return | Radial | Bendix connector | D15006 |

| | | | | | |
|----------|-------------|----------------|--------|--|-------|
| DCTH500 | 500 - 8000 | Free armature | Radial | | D9311 |
| DCTH500A | 500 - 3000 | Spring return | Radial | | D9312 |
| DCTH500C | 500 - 18500 | Captive guided | Radial | | D9313 |

WARRANTY AND SERVICE

WARRANTY.

R.D.P. Electronics products are warranted against defects in materials or workmanship. This warranty applies for one year from the date of delivery. We will repair or replace products that prove to be defective during the warranty period provided they are returned to R.D.P. Electronics.

This warranty is in lieu of all other warranties, expressed or implied, including the implied warranty of fitness for a particular purpose to the original purchaser or to any other person. R.D.P. Electronics shall not be liable for consequential damages of any kind.

If the instrument is to be returned to R.D.P. Electronics for repair under warranty, it is essential that the type and serial number be quoted, together with full details of any fault.

SERVICE.

We maintain comprehensive after-sales facilities and the instrument can, if necessary be returned to our factory for servicing.

Equipment returned to us for servicing, other than under warranty, must be accompanied by an official order as all repairs and investigations are subject to at least the minimum charge prevailing at the date of return.

The type and serial number of the instrument should always be quoted, together with full details of any fault and services required.

IMPORTANT NOTES.

1. No service work should be undertaken by the customer while the unit is under warranty except with the authorisation of RDP Electronics.
2. If the instrument is to be returned to R.D.P. Electronics for repair, (including repair under warranty) it is essential that it is suitably packed and that carriage is insured and prepaid. R.D.P. Electronics can accept no liability whatsoever for damage sustained during transit.
3. It is regretted that the above warranty only covers repairs carried out at our factory. Should the instrument have been incorporated into other equipment that requires our engineers to perform the repair on site, a charge will be made for the engineer's time to and from the site, plus any expenses incurred.

The aforementioned provisions do not extend the original warranty period of any product that has been either repaired or replaced by R.D.P. Electronics.

**THIS WARRANTY MAY BE NULL AND VOID SHOULD
THE CUSTOMER FAIL TO MEET OUR TERMS OF PAYMENT**