RDP Customer Document

Technical Manual

APPLICATION NOTE FOR DCTH TRANSDUCERS

Doc. Ref CD1043N

ISO 9001:2015 Quality Management FM 13141

Affirmed by Declaration of Conformity

USA & Canada

RDP Electrosense Inc.

2216 Pottstown Pike
Pottstown, PA 19465
U.S.A.

Tel (610) 469-0850
Fax (610) 469-0852
E-mail info@rdpe.com
www.rdpe.com

All other countries

RDP Electronics Ltd

Grove Street, Heath Town,
Wolverhampton, WV10 0PY
United Kingdom

Tel: +44 (0) 1902 457512

E-mail: sales@rdpe.com
www.rdpe.com

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: ±5V	GREEN	Output 2: ±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 ½ 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 ±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 Short Circuit Proof	Arm.In Null Arm.Out -5V 0V +5V	Arm.In Null Arm.Out 0V 5V 10V
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