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Analogue Electronics

Basic Operation of the DC-DC Transducer

Application Note
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Issue 3

Introduction

The DC-DC transducer is supplied with a DC voltage (minimum operation voltage 10 VDC, maximum operation voltage 24 VDC) and will provide a DC output voltage.

The functionality of this transducer is based on an LVDT (Linear Variable Differential Transformer) winding configuration. This requires an AC voltage to be supplied to the coils of the primary winding, which will induce an AC voltage in the secondary windings which is dependant on the position of the transducer tip.

There is a basic oscillator which uses the DC supply voltage, and provides the primary windings the AC voltage. The output of the secondary coil is fed into a demodulator and through a bi-polar output to provide a DC voltage.

Transducer Electrical connections

Positive energising	Red
Negative energising	Blue
Signal output	White
Signal output	Green

Output Voltage

For the sensitivity of the DC-DC transducer, refer to the electrical specification in the catalogue or to the Calibration Certificate that is attached to the lead of the transducer.

The transducer output voltage at the centre of its stroke is 0 Volts, i.e. the NULL of the transducer. The table below shows the polarity of the output voltage with respect to the output 0 Volts.

	Fully In	Null	Fully Out
White Wire +ve with respect to the Green Wire 0V	+ve voltage	0.0 volts	-ve output
White Wire 0V with respect to the Green Wire +ve	-ve voltage	0.0 volts	+ve output

The transducer can also be referenced to the power supply 0 Volts. In this case the following will apply:

	Fully In	Null	Fully Out
White Wire +ve Green Wire 0V with the Green connected to the Blue (0 V)	+ve voltage	0.0 volts	-ve output
White Wire +ve Green Wire 0V with the White connected to the Blue (0 V)	+ve voltage	0.0 volts	-ve output
Green Wire +ve White Wire 0V with the Green connected to the Blue (0 V)	-ve voltage	0.0 volts	+ve output
Green Wire +ve White Wire 0V with the White connected to the Blue (0 V)	-ve voltage	0.0 volts	+ve output