ADVANCED SYSTEK

PULSE TRANSMITTER VS300

The VS300 is a pulse transmitter which converts the angular rotation of its input shaft into two separate electrical pulse trains, phase shifted by 90°. It is specifically designed for positive displacement volume flow metering applications in the oil and petrochemicals industry, and is certified for use in hazardous areas. The VS300 finds use in control systems applications as a general purpose, robust, industrial pulse transmitter.

FEATURES

- Flameproof enclosure.
- Twin output pulse trains, 90° phase shifted.
- Resolution of 100 pulses per revolution for each pulse stream.
- Optically generated pulses using LED sources.
- Signal outputs driven by dual differential line drivers.
- For use in ambient temperatures from -20°C to +100°C
- Environmental protection meets the requirements of IP 65.
- Special anti-chatter mechanism included.
- Contains built in regulator.
- Designed to co-operate with all PD Meters to complete I.P.Level 'A' pulse security transmission as defined in IP252/76., ISO 6551 and API Chapter 5.
- Finished in bright orange epoxy resin.

VS300 PULSE TRANSMITTER

The VS300 pulser uses a chemically etched stainless steel disc with 100 radial slots to interrupt the infra-red emission from two solid state light sources. The resulting modulation is detected by two silicon photo-diodes whose electrical outputs are amplified, squared and then used to switch a pair of differential line drivers. The phase displacement between the two pulse streams is trimmed to 90°, +/- 10°.

To reduce the effects of P.D. meter chatter and spurious pulses generated by small angular oscillations of the input shaft when it is basically stationary, the pulser has a built in peg and slot mechanism designed to introduce 5° of lost motion. The rotation of the disc and its support are also lightly damped by the bearing friction and lubricant viscosity.

Heat generated by the internal voltage regulator is dissipated in the optical components to combat condensation and icing. The standard VS300 supplied at 15V can operate down to -20°C.

The maximum input shaft speed is 1200 r.p.m. This yields two 90° separated pulse streams at 2kHz. The 20mA source/sink capability of the TTL differential drivers allows a typical twisted pair telephone cable up to two kilometres long to be satisfactorily driven.

Connections are made to the VS300 by a factory-fitted length of flame-proof six core screened cable. A variety of adaptor kits are available for mechanically interfacing with all popular P.D. meter flanges and couplings.

Electrical Load

The VS300 provides two separate differential electrical outputpulses. The first pulse stream consists of two electrical signals which are relatively inverted i.e. A and A. The second pulse stream is shifted 90^0 relative to the A stream and also consists of two electrical signals which are relatively inverted, i.e. B and B.

Each of these four pulse streams is a typical TTL level relative to the 0V common (the black wire). The design intends the user to employ all four signals and to draw a differential load from each pair of about 10mA, typically into a pair of back-to-back opto couplers.

The consequence of this is that at all times there will be a total load current of at least 20mA (10mA from A and A and 10mA B-B). This current is then used by the internal regulator, which is thermally coupled to the optics, to raise the internal temperature sufficiently to combat the formation of ice and condensation down -20^0C. Failure to comply with this load current requirement may jeopardise the performance at low temperatures.

The required load current may be accomplished by a resistance of 270 ohms between A and A and 270 ohms between B and B. It is possible to use the VS300 as a TTL voltage source by using any four output signals as TTL levels relative to 0V supply, but the recommended 270 ohm resistors must be fitted.

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Technical Notes

The VS300 is designed to be driven by applying a rotary torque to the input shaft by means of the roll pin. Side thrusts and end thrusts are reduced by this method.

This method of drive is necessary because the input

TYPICAL SPECIFICATION @ 25°C	
Differential driver type	88C30
Differential output voltage	3V at 10mA load
Maximum Output current	20mA
Supply Volts	7.5 to 15V Maximum
Supply current	50mA typical