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VXI-5410C-83

8-Channel Differential LVDT/RVDT Stimulus



- **Wideband frequency range from 360 Hz to 20 kHz**
- **Programmable Output and Excitation**
- **Ratiometric conversion**
- **Transformer isolation**

GENERAL

The model 5410C-83 provides eight transformer isolated LVDT/RVDT differential output channels with wrap-around self-test. This card is a uniquely versatile instrument because each wideband (360 Hz to 20kHz) output channel and each excitation input is programmable. The ratiometric design eliminates errors caused by excitation voltage variations, and careful shielding and design techniques assures that no switching spikes will appear on the outputs.

Each channel can be programmed to be controlled by an external ±10 VDC or ±5 VAC differential input. Maximum latency with all channels externally controlled is 20 µs. Output voltage is programmable as a percent of full-scale, thus simplifying the programmable task.

SPECIFICATIONS

Number of Channels	Eight
Resolution	14 bits
Linearity	0.05% F.S. (At 20 kHz degrates to 0.2% F.S.)
Load	10 k ohm min per channel. Outputs are short circuit protected.
Regulation	1% (10 k ohm to No Load)
Excitation Voltage	Transformer Isolated, Programmable. See part number designation
Excitation Current	1.5 mA max. per channel @ 360 Hz
Excitation Frequency	360 Hz to 20 kHz. Output voltage Va and Vb will not vary more than 1% over frequency range.
Phase Shift	1.5° max.
Output Voltage (Va + Vb)	Transformer isolated. See part number designation.
Output Format - Standard *(Outputs are out-of-phase)*	Va - Vb = K ±3%. Transformer isolated differential output. At 0% Va-Vb = 10V Va = 0V, Vb = -10V At 50% Va-Vb = 10V Va = 5V, Vb = -5V At 100% Va-Vb = 10V Va = 10V, Vb = 0V K is programmable. Output voltage will vary directly with excitation voltage.
Output Format - Prefix "B" *(Outputs are in-phase)*	Va + Vb = K ±3%. Transformer isolated differential output. At 0% Va+Vb = 10V Va-Vb = -10V At 50% Va+Vb = 10V Va-Vb = 0V At 100% Va+Vb = 10V Va-Vb = 10V The Va+Vb output is programmable using SET SCALE. The common mode voltage is defined as (Va+Vb)/2. Setting a specific value is done by sending a command string with the argument containing the desired (Va+Vb)/2 common mode value; ex. SET SCALE 4.60 would set the (Va+Vb)/2 common mode value to 2.30 V_{rms}.
Output Control, Internal Mode	The Va and Vb outputs are controllable in two different modes. In this mode, the Va and Vb outputs are controlled by sending a position command string to the card over the VXIbus; ex. SET POSITION 40%. This single command will cause both the Va and Vb outputs to be set to the values corresponding to the desired setpoint. Selection of the internal mode is accomplished by sending the command string with an argument that contains a position between 0 and 100%.
Output Control, External Mode	The Va and Vb outputs are controllable in two different modes. In this mode, the Va and Vb outputs are controlled by an external analog signal. The differential input signal of ±10 VDC corresponds to 0 to 100% position. Selection of the external mode is accomplished by sending a position command string to the card over the VXIbus with the argument set to "EXT"; ex. SET POSITION EXT selects the external input.
Latency	Va to Vb Latency: The differential latency between Va and Vb output changes due to a change in position will be less than 500 nsec. *External Position to Output Latency:* The time between a change in the analog position input voltage and the corresponding Va and Vb outputs changing will not exceed 8 msec. This condition is met with up to all eight (8) channels operating in the External Mode. *Internal Position to Output Latency:* The time between a position change commanded over the VXIbus for any given channel (i.e. SET POSITION XX%) and the corresponding Va and Vb outputs changing will not exceed 8 msec after reception of the position change command.

GENERAL SPECIFICATIONS

Resolution	14 bits
Interface	VXIbus Native (MATE/CIIL)
Operating Temperature	-10°C to +65°C
Storage Temperature	-40°C to +85°C
Relative humidity	to 90% RH
Shock	Designed to meet 15G, 11 ms
Vibration	Designed to meet MIL-T-28800C for class V equipment.
Operating altitude	10,000 feet
Non-operating altitude	40,000 feet
Power Requirements	±12 Vdc at 200 mA +5 Vdc at 500 mA
Size	VXIbus C-size standard, single slot
Weight	4.3 lbs.
Acoustic noise	None
Max. corrective time	0.5 hours. No preventive maintenance is required
Calibration intervals	1 year
Connectors	All LVDT/RVDT outputs and excitation inputs via front panel 50 pin Male "D" connector. All analog control inputs via front panel 25 pin Male "D" connector. Mating connectors not supplied
Cooling	External cooling air is not required

PART NUMBER DESIGNATION

PART NUMBER	OUTPUT (Vrms)	EXCITATION (Vrms)
5410C-83	0-10	2-10
5410C-83-3	2.5-20	2-26

Standard Format: Outputs out-of-phase
For outputs that are in-phase add prefix "B" to part number

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