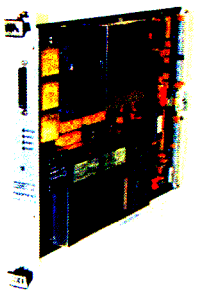
North Atlantic Industries
Instruments Division

VXI-A5410C-30-1

Synchro/Resolver Measurement & Simulation

ONE SYNCHRO/RESOLVER MEASUREMENT CHANNEL & TWO SIMULATOR CHANNELS - VXIbus



FEATURES:

- Three Instruments on a card
- Accuracy to 0.004°
- Autoranging Measurement
- Built in Self Test
- Message Based

Description:
The Model A5410C-30-1 provides, two synchro/resolver simulators and one synchro/resolver-to-digital converter within a message based VXI compatible size "C" IAC per IEEE-STD-1014. The design consists essentially of modules and relays that can be replaced in minutes.

The transformer isolated synchro/resolver simulators provide individual programmable sources of three-wire synchro or four- wire resolver signals. Static angles and various output voltages can be independently selected for each channel.

The transformer isolated autoranging synchro/resolver-to-digital converters are used as a very stable, independent angle-measuring device that is also utilized for the wraparound self-test mode. Synchro or resolver format can be selected via the bus.

This card automatically senses and adjusts to any line to line and reference voltage by auto ranging the input from 3.5-100V and the reference from 5-115V, eliminating the need to pre-program the input signal levels. There is no hang-up possibility with a 180° step input and no adjustments or trimming required.

Confidence test: A CNF command will cause relays to disconnect the outputs of the Simulators and the inputs to the Angle Measurement and interconnect them to each other. The microprocessor will then activate the internal reference supply and verify each simulator performance by using the angle measurement channel. This test will be completed in less than one minute and will provide 95% detection of all faults to the module level.

Internal self test: This test is initiated via the IST CIIL command and is otherwise identical to the confidence test.

Specifications: Applies to each channel

Simulator Section:

Number of channels:	Two
Resolution:	0.01°
Accuracy:	400Hz, no load
	3.5V and 11.8V L-L, ±0.0075°
	90V L-L, ±0.0090°
	5KHz, no load
	3.5V and 11.8V L-L, ±0.0280°
	400Hz, 1.5 VA inductive load
	±0.03°
	400Hz, 5.0 VA inductive load
	±0.06°

Angle Range:	0.00° to 359.99°
Reference Voltage:	7.8/26 or 115 Vrms
Reference frequency:	360 to 5Khz
Reference Current:	1.2 mA max
Output Format:	Synchro or Resolver, programmable. Output varies directly with changes in reference voltage.
Load:	3.5 V_{L-L} Resolver: 1 K Ω min 11.8 V_{L-L} Synchro: 5.0 VA max 11.8 V_{L-L} Resolver: 1 K Ω min 90 V_{L-L} Synchro: 1.3 VA
Settling Time:	Less than 100 us
Magnitude variation:	±0.05% max

Angle Measuring Section:

Number of channels:	One
Resolution:	0.001°
Accuracy:	±0.004° at 400Hz ±0.0075° at 2KHz ±0.035° at 5KHz ±0.150° at 10KHz
Angle Range:	0-359.999°
Input Type:	Synchro or resolver, transformer isolated
Input Impedance:	100 kΩ min.
Input Voltage:	3.5-100 V_{L-L} autoranging
Reference Voltage:	5-100 Vrms, autoranging, transformer isolated
Reference Frequency:	360 to 10KHz
Tracking Speed:	180°/sec min
Auto Phase Correction:	±60° input to reference
Reference Current:	1 mA
Settling time:	2 seconds for 180° step change

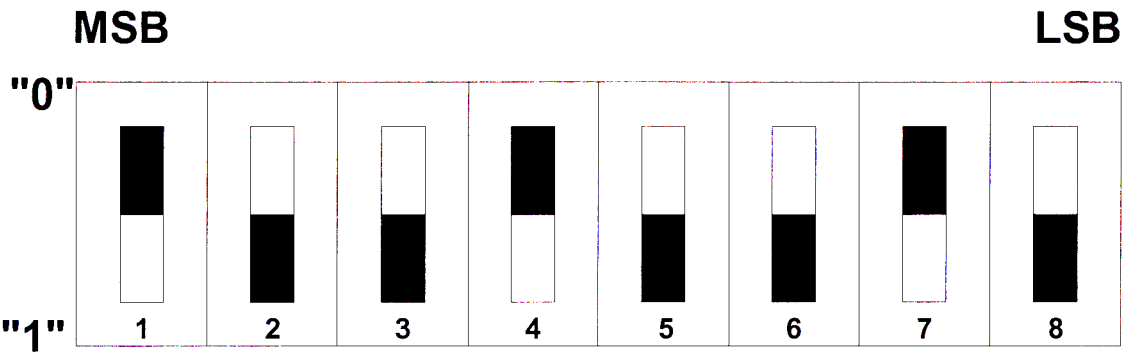
General Specifications

Interface:	VXIbus Native (MATE/CIIL)
Operating temperature:	-10° C to +65° C
Storage temperature:	-40° C to +85° C
Relative humidity:	to 93% RH, non-condensing
Shock:	Designed to meet 15G, 11 ms
Vibration:	Designed to meet MIL-T-28800C for class V equipment.
Altitude, operating:	10,000 feet
Altitude, non-operating:	40,000 feet
Power Requirements:	±24 VDC at 600 mA at full load +12 VDC at 250 mA +5 VDC at 1.3 A
Size:	VXIbus, C size standard, single slot
Weight:	5.5 lbs. (2.475 kg)
Manuals:	Will be supplied to best commercial practice.
Logistic support:	Will be provided.
Acoustic noise:	None
MTBF:	210,000 hours at 55° and GF.
Calibration interval:	1 year
Connectors:	All connections are via front panel 25 pin male "D" connector. Mating connectors are not supplied.
Max corrective time:	0.5 hours, no preventive maintenance required
Cooling:	External cooling is required

J1 Connector Pin Out

Pin #	Signal	Pin #	Signal
1	RHI CH 2	14	S3 CH2
2	RLO CH2	15	S1 CH2
3	S4 CH2	16	NOT USED
4	S2 CH2	17	NOT USED
5	RLO CH0	18	NOT USED
6	RHI CH0	19	NOT USED
7	S2 CH0	20	NOT USED
8	S4 CH0	21	NOT USED
9	S3 CH0	22	NOT USED
10	S1 CH0	23	S1 CH1
11	RLO CH1	24	S3 CH1
12	S2 CH1	25	S4 CH1
13	RHI CH1		

ADDRESS SWITCH SETTING EXAMPLE



ON = "0"
OFF = "1"

EXAMPLE: 109 BINARY

(0 1 1 0 1 1 0 1)

A5410C-30-1 FRONT PANEL VIEW