

## 5300 Programmable Resolver/Synchro Standard



- 0.0001° resolution
- 2 arc-second accuracy (NIST traceable)
- Continuous CW or CCW rotation to 100,000°/sec
- Frequency: 47 Hz to 20 kHz
- Size: 19" W x 3.5" H x 18.43" D (483mm x 89mm x 468mm)

The 5300 is the most accurate programmable Synchro/Resolver Standard available. It is designed for flexibility so that a variety of servo systems can be simulated under various operating conditions. The instrument simulates all types of static or continuous synchro/resolver rotations, from slow rolls to fast slew rates. It can be used to test or calibrate high accuracy synchro/resolver-to-digital converters for static or dynamic characteristics such as tracking rate and bandwidth remote sensing. The instrument provides a true synchro/resolver standard for calibration/metrology labs, engineering design, ATE or production environments, and can be used to calibrate the most accurate angle position indicators (API) or synchro-to-digital converters

On command the unit checks its calibration, and if an error is detected, the unit immediately generates a digital error correction factor. Self-calibration not only compensates for errors due to changes in voltage and frequency settings, but also those due to temperatures and long-term drifts.

### REFERENCE INPUT SPECIFICATIONS

#### *Synchro Mode*

<b>Frequency Range</b>	47 Hz to 1.2 kHz
<b>Voltage Range</b>	2 to 115 $V_{rms}$ (47 Hz to 1.2 kHz)
<b>Input Impedance</b>	200 k minimum

#### *Resolver Mode*

<b>Frequency Range</b>	360 Hz to 20 kHz
<b>Voltage Range</b>	2 to 115 $V_{rms}$ (47 Hz to 1.2 kHz) 2 to 26 $V_{rms}$ (1.2 kHz to 20 kHz)
<b>Input Impedance</b>	200 kW minimum

## REFERENCE OUTPUT SPECIFICATIONS

<b>Voltage range</b>	2 to 115 V <sub>rms</sub> (47 Hz to 1.2 kHz) 2 to 26 V <sub>rms</sub> (1.2 kHz to 20 kHz)
<b>Output Impedance</b>	< 5 W
<b>Voltage Accuracy</b>	±3% of setting
<b>Voltage Resolution</b>	3 digits
<b>Output Current</b>	2 to 26 V <sub>rms</sub> 100 mArms minimum 26 to 115 V <sub>rms</sub> 25 mArms minimum
<b>DC Offset</b>	5 mV maximum
<b>Phase shift range</b>	0 to ±180° to 0.001° resolution
<b>Phase shift accuracy</b>	47 Hz to 2 kHz      ±0.5° >2 kHz to 20 kHz    ±5°

## OUTPUTS (ISOLATED) SPECIFICATIONS

<b>Voltage accuracy</b>	2% of setting
<b>Voltage resolution</b>	1% of setting minimum
<b>DC offset</b>	5 mV maximum
<b>Voltage range (L-L)</b>	1 to 90 V <sub>rms</sub>
<b>Angular accuracy vs F</b>	See <a href="#">Table A</a>
<b>Angular accuracy vs load - Synchro Mode</b>	47 to 2 kHz      ±2 arc-sec/VA
<b>Angular accuracy vs load - Resolver Mode (remote sensing capability)</b>	47 to 2 kHz      ±1.5 arc-sec/VA >2 kHz to 4 kHz    ±3 arc-sec/VA >4 kHz to 10 kHz   ±6 arc-sec/VA >10 kHz to 20 kHz ±12 arc-sec/VA
<b>Angular resolution</b>	0.0001° (0.36 arc-sec)
<b>Angular accuracy vs temperature</b>	±0.2 arc-sec/°C maximum
<b>Output Current (minimum)<sup>c</sup></b>	2 to 11.8 V <sub>rms</sub> 330 mArms >11.8 to 26 V <sub>rms</sub> 150 mArms >26 to 90 V <sub>rms</sub> 33 mArms
<b>Output impedance max - Synchro Mode</b>	47 to 2 kHz      0.5 W
<b>Output impedance max - Resolver Mode</b>	47 to 2 kHz      0.5 W >2 kHz to 10 kHz   2.0 W >10 kHz to 20 kHz 5.0 W
<b>Radius (sinusoidal) accuracy</b>	±0.005% typical

## DYNAMIC ANGULAR MODULATION SPECIFICATIONS

<b>Continuous</b> (CW or CCW)	to 100,000°/sec (278 rps)
<b>Cyclical</b>	sine, triangle or square wave to 1 kHz or between preset angles
<b>Incremental</b>	successive equal angles on command

## GENERAL SPECIFICATIONS

<b>Front panel control</b>	pushbuttons; additional rotary control for manual angular positioning
<b>Remote control</b>	IEEE-488
<b>Operating Temperature</b>	0° to 50°C
<b>Storage Temperature</b>	-40°C to 71°C per MIL-T-28800E Type III, Class 6, Style E
<b>Size</b>	19" x 3.5" x 18 7/16" (48.3 cm x 8.9 cm x 46.8 cm) rack mounting or bench top
<b>Power</b>	115/220 VAC ±10% 47-440 Hz, 115 VA

Table A: Output Accuracy (arc-sec) vs Frequency <sup>a</sup>

Mode	47-360 Hz	400 Hz	600 Hz	800 Hz	1.2 kHz	2 kHz	5 kHz	10 kHz	16 kHz	20 kHz
<b>Synchro</b>										
*6-11.8 VL-L	---	±2	±2	±2	±2	---	---	---	---	---
>11.8-70 VL-L	±3	±2	±2	±2	±2	---	---	---	---	---
>70-90 VL-L	±3	±2	±2	±2.4	±3	---	---	---	---	---
<b>Resolver</b>										
*6-26 VL-L	---	±2	±2	±2	±2	±5	±11	±15	±45	±60
>26-90 VL-L	---	±2	±2	±2	±2	---	---	---	---	---

<sup>a</sup> applies over full voltage range unless otherwise indicated and includes resolution uncertainty

<sup>c</sup> 0°C to 70°C inductive load; outputs are overload and short circuit protected

\* For voltages less than 6 VL-L derate accuracy using Table B:

L-L Voltage	Derate By
5V	5%
4V	12%
3V	20%
2V	30%
1V	50%