

SYNCHRO AND RESOLVER ANGLE INDICATORS Convert Synchro and Resolver Signals to BCD Angle



Replaced by
SR-103/SR-203 Series
for new designs

FEATURES

- **PROGRAMMABLE SYNCHRO OR RESOLVER INPUTS:**
Selectable 90V, 26V, or 11.8 signal voltage levels for a full 47 – 1000 Hz carrier frequency range, and for a 10 – 130V reference voltage range
- **WORST CASE ACCURACY:**
 $\pm 0.03^\circ$ (SR) or $\pm 0.01^\circ$ (HSR)
- **TRANSFORMER ISOLATION FOR SIGNAL AND REFERENCE INPUTS**
- **TYPE II SERVO TRACKING LOOP; NO VELOCITY LAG AND CONTINUOUSLY AVAILABLE OUTPUT FOR RATES UP TO 3 RPS (1080°/SEC)**
- **LOGIC CONTROL WITH CONVERTER BUSY, INHIBIT, DATA ENABLE AND LAMP TEST**
- **FAULT MONITOR INDICATES FAILURE TO TRACK**
- **NO ADJUSTMENTS OR CALIBRATIONS; NO WARM UP, DRIFT, OR JITTER**
- **OPERATES WITH TRANSFORMER ISOLATION FROM LINE VOLTAGE: 115/230V; 47 – 440 Hz**

DESCRIPTION

The SR-102A and SR-202 are high quality angle indicators intended to meet the demand for compact precision synchro and resolver test equipment. These instruments can be easily interfaced with external digital control equipment for such applications as information translators in quality control inspection systems, production testing of synchros and resolvers, aircraft navigation systems, machine tool control, and antenna positioning. The HSR-102A and HSR-202 are higher accuracy versions of the SR-102A and SR-202, respectively.

The SR-102A is normally supplied in a standard half-rack mount enclosure. It is designed mainly for dedicated applications, since it must be programmed remotely or by jumpers at the rear connector.

The SR-202, on the other hand, is an enclosed bench-type instrument with a carry handle which also can serve as a tilt stand. Input selection, status and fault tests may be controlled either manually by front panel switches or remotely via signals to the rear connector. A single switch transfers control between the front panel and the rear connector. Front panel and rear connector signal inputs are fully iso-

lated and can be multiplexed with the local/remote switch.

Both instruments are available in two accuracy grades: $\pm 0.03^\circ$ (prefix SR), and $\pm 0.01^\circ$ (prefix HSR). Resolution is $\pm 0.01^\circ$, with parallel digital outputs. Control logic includes a Converter Busy output; an Inhibit input which stops tracking for data read-out, and a Data Enable input which enables the parallel output data at the rear connector. All logic is TTL/DTL compatible.

A BITE logic signal indicates a fault or failure to maintain tracking; at the user's option the display can be blanked to signal the BITE condition. The display has five seven-segment LED digits, equipped with a polarizing filter for better readability.

An internal 400 Hz reference excitation source may be ordered as an option for the SR-102A. This instrument may then be used as a shaft encoder in conjunction with a suitably accurate resolver or synchro.

The angle indicator SR-202 and its sister instrument, the angle simulator SR-400, together provide a complete synchro/resolver measurement and stimuli capacity for automatic and semi-automatic test equipment (ATE).

SR/HSR-102A and SR/HSR-202



ILC DATA DEVICE CORPORATION

SPECIFICATIONS		PARAMETER	
PARAMETER	VALUE	PARAMETER	VALUE
RESOLUTION	0.01°	TEMPERATURE RANGE	
ACCURACY (ALL CAUSES) SR-102A and SR-202 HSR-102A and HSR-202	±0.03° ±0.01°	Operating, Standard	0°C to +50°C
ANGLE RANGE	000.00° to 359.99°, continuous rotation	Optional	-55°C to +85°C
DISPLAY	5-Digit, 7-Segment LED with polarizing filter	Storage	-65°C to +125°C
REFERENCE INPUT		POWER INPUT	
Input Type	Transformer isolation	Voltage	115/230V RMS ±10%
Voltage	10 to 130V	Power Frequency	47 to 440Hz
Frequency	47 to 1000Hz	Fuse (on Rear Panel)	Buss, GMW -1, 1 Amp
Input Impedance	25K ohms min	Isolation	Transformer
Allowed Phase Shift	±20° relative to signal, for full accuracy	PHYSICAL CHARACTERISTICS	
Breakdown Voltage	±500VDC to Logic Gnd	SR-102A	
SIGNAL INPUT		Size	9-1/2 x 1-3/4 x 12-5/8 in. (24.1 x 4.4 x 32.1 cm)
Input Type	Synchro or Resolver, transformer isolation	Weight	6 lb (2.7 kg)
Voltage	11.8V, 26V, or 90V Line-to-Line	SR-202	
Frequency	Same as Reference	Size	8-1/8 x 3-1/2 x 14-1/2 in. (20.6 x 8.9 x 36.8 cm)
Impedance	750KΩ min	Weight	9 lb (4.1 kg)
Tolerances:			
Voltage	±20%		
Harmonics	±10%		
Breakdown Voltage	±500VDC to Logic Gnd		
DYNAMICS			
Tracking Rate, no error	1080°/sec Hi Bandwidth, 250°/sec Lo Bandwidth		
Synchronizing Time	0.3 sec		
DIGITAL SIGNALS (DTL & TTL Compatible)			
Inputs:			
Loading	3 Standard TTL loads		
Inhibit	"1" or open = Normal tracking "0" or GND = Hold (Freeze)		
Data Enable	"1" or open: Remote-output digital data = input angle "0" or GND: Remote-output digital data = 000.00°		
Lamp Test	"1" or open = Normal display operation "0" or GND = all display segments "on" = (888.88°)		
Outputs:			
Drive Capability	5 Standard TTL loads with buffered output		
BCD Angle	5 BCD decades, 18 data lines total, positive true logic, continuously available: 200°, 100°, 80°, 40°, 20°, 10°, 8°, 4°, 2°, 1°, 0.8°, 0.4°, 0.2°, 0.1°, 0.08°, 0.04°, 0.02°, 0.01°		
BITE	"1" = Fault or loss of tracking "0" = Normal tracking		
Converter Busy	"0" = Busy (Counter is being updated) "1" = Data Stable		
FRONT PANEL CONTROLS (SR-202 only)			
Track/Freeze	Inhibits converter tracking		
Bandwidth - Hi/Lo	Optimizes loop bandwidth; Hi = 360-1000Hz, Lo = 47 - 1000Hz carrier frequency		
Local/Remote	Transfers control of the unit from manual (Front Panel) to remote (Rear Connector)		
Lamp Test	Displays all 8's for seven segment display test		
L-L Voltage	Selects either 11.8V, 26V or 90V L-L operation		
Mode - Syn/Rslvr	Selects either synchro or resolver inputs		
Power - On/Off	Main power control		

ORDERING INFORMATION

All instruments are supplied with a mating connector, a detachable line cord, and an instruction manual.

1. Order the SR-102A or HSR-102A as follows:
SR-102A - DBA-488

IEEE-488 Data Bus Adaptor:
Blank = SR-102A or HSR-102A only.
DBA-488 = SR-102A or HSR-102A mounted together with DBA-488 on a 3 1/2" high, 19" wide rack mounting panel, including cable connections.

Accuracy (worst case, all causes):
SR = ±0.03°
HSR = ±0.01°

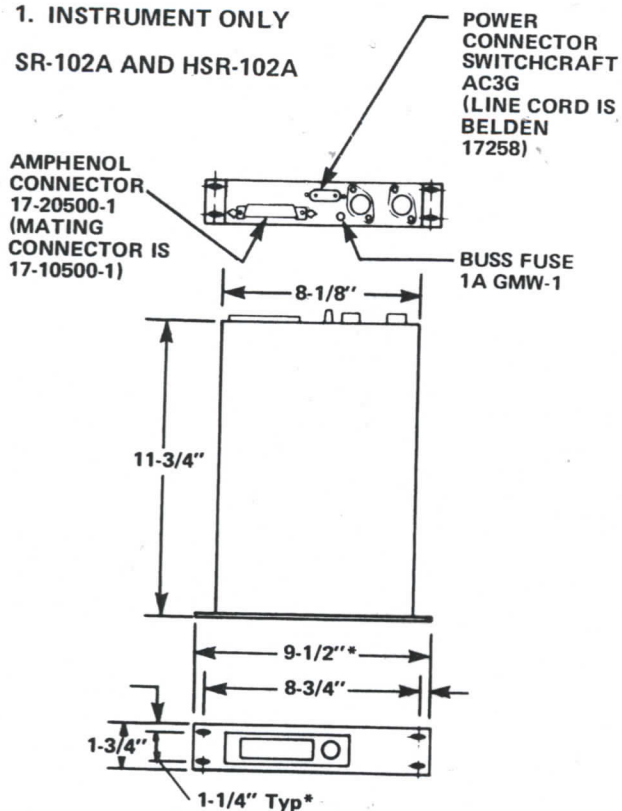
2. Order the SR-202 or HSR-202 as follows:
SR-202 - DBA-488

IEE-488 Data Bus Adaptor:
Blank = SR-202 or HSR-202 only.
DBA-488 = SR-202 or HSR-202 with a DBA-488 mounted with a bracket at the rear of the instrument, including cable connections.

Accuracy (worst case, all causes):
SR = ±0.03°
HSR = ±0.01°

MECHANICAL OUTLINES

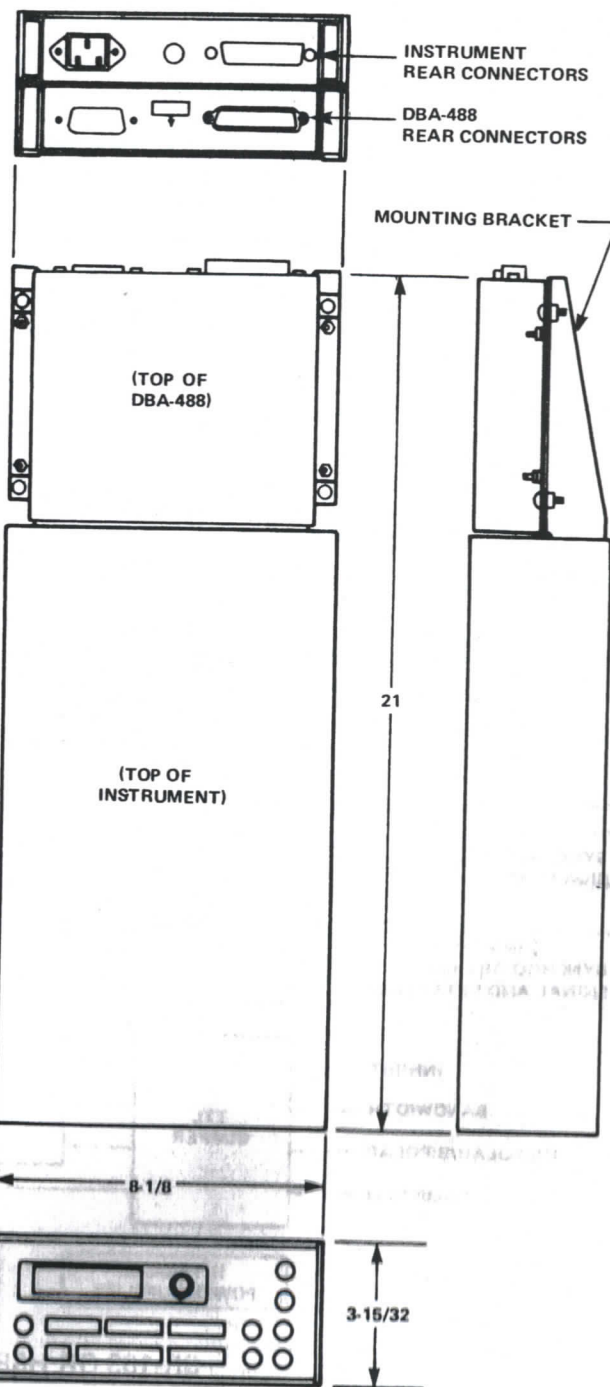
1. INSTRUMENT ONLY SR-102A AND HSR-102A



2. INSTRUMENT WITH DBA-488 DATA BUS ADAPTOR SR-102A AND HSR-102A

The mechanical outline is the same as for the SR-103 instrument mounted with a DBA-488 on a 19" rack panel. Refer to the diagram shown in the Mechanical Outline section of the SR-103.

SR-202 AND HSR-102



SR-202 AND HSR-202

