



Innovative Solutions in Engineering

BBG-ACP/ARP-SYN-25VA-60MIL-B Digital Synchro Amplifier



Description

The BBG-ACP/ARP-SYN-25VA-60MIL-B Digital Synchro Amplifier (DSA) is a stand-alone system, which provides data format conversion of ACP/ARP signals into high power synchro signals.

The DSA is factory configurable to customer requirements for easy field installation.

Applications

- Radar Systems (antenna azimuth)
- Navigation Systems (gyrocompass, speed log, course, pitch, and roll)
- Industrial Processes (position, velocity)
- Meteorology Instruments (wind speed and direction)
- Many Others

- Optically isolated ACP/ARP Inputs
- 10VDC Signal Inputs
- 90V, 60Hz, 25VA Synchro Output
- Over-current, Over-temperature and Fuse Protected Synchro Outputs
- Custom Serial Data Formats and Frequencies are available upon request

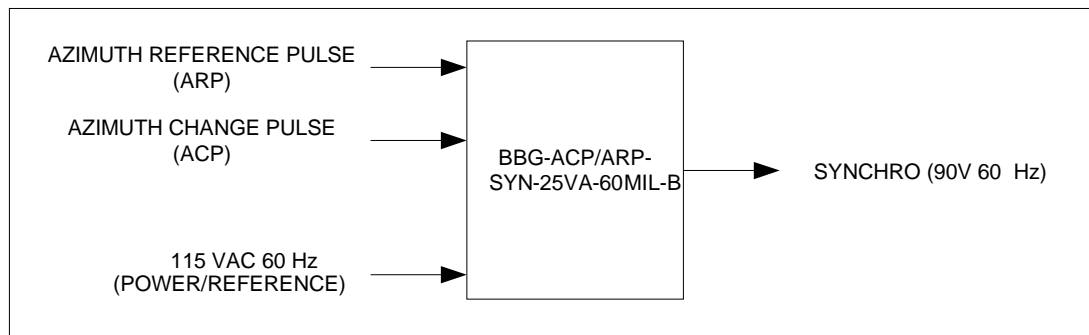
BBG Incorporated

1708 South Park Court • Chesapeake, VA 23320

Phone:(757) 366-9211 • Fax:(757) 366-9170 • E-mail: sales@bbginc.com • Website: www.bbginc.com
210624-300

BBG-ACP/ARP-SYN-25VA-60MIL-B Product Specifications

Chart



The BBG-ACP/ARP-SYN-25VA-60MIL-B operates on 115 VAC 60 Hz power and reference input and is capable of interfacing to one serial input channel and one synchro output channel.

Technical Specifications

Parameter	Value	Units
Inputs		
Power/Reference (60Hz)	115	Volts AC
	60	Hertz
	3.15	Amp
AZIMUTH REFERENCE PULSE	10	VDC
	12	Milliamps
AZIMUTH CHANGE PULSE	10	VDC
	12	Milliamps
Outputs		
Reference (60Hz)	115	Volts
	60	Hertz
	1	Amp
Synchro (1X 60Hz)	90	Volts
	60	Hertz
	25	VA
Accuracy	+/-4	arc minutes
MTBF	Greater than 180,000	Hours
Environmental *		
Intrusion	IP54	IEC, IP Code
Thermal Load	Less Than 100, (341)	W, (BTU/hr)
Temperature Range		
Operating	0 to +50	C°
Storage	-65 to +150	C°



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Dimensions	12 x 10 x 6	In
	30.5 x 25.4 x 15.3	Cm
Weight	10, (4.5)	lbs, (kg)

* Designed to meet MIL-S-901D Class B Shock requirements, Class A with isolation mounts. Designed to meet MIL-STD-461 EMI requirements.
Qualification testing available at customer's expense upon request.

OVERVIEW

The BBG-ACP/ARP-SYN-25VA-60MIL-B Digital Synchro Amplifier (DSA) is a stand-alone system, which provides data format conversion of ACP/ARP signals into high power synchro signals. The DSA operates on 115 Volt, 60 Hz AC power and 115V, 60Hz reference. The DSA accepts one (1) Azimuth Reference Pulse (ARP) and one (1) Azimuth Change Pulse (ACP) signals from a radar system and processes this data into one 90 Volt, 60 Hz, 25 Volt-Amps synchro data. Custom inputs and outputs are available upon request.

The output channel of the DSA is fault protected against over current and over temperature faults. In addition, the DSA provides internal kick circuitry for added control and protection. Synchro data formats, power outputs, synchro and resolver voltages and frequencies are factory configured to user requirements.

Examples of uses include radar systems (antenna azimuth), navigation systems (gyrocompass, speed log, course, pitch, and roll), industrial processes (position, velocity), and meteorology instruments (wind speed and direction).

INPUTS/OUTPUTS

Inputs and outputs are available on circular MIL and BNC connectors provided with the BBG-ACP/ARP-SYN-25VA-60MIL-B.

Digital Interface

Azimuth Reference Pulse (ARP) Input:

The ARP signal indicates the radar antenna is passing through zero degrees and occurs once per revolution of the radar antenna. A status LED (D10) flashes once for each Azimuth Reference Pulse. The ARP signal is optically isolated for system protection and can be inverted by setting switch S2 position 2 to ON as shown in Table 1.

Azimuth Change Pulse (ACP) Input:

The ACP signal indicates the radar antenna is moving an amount of degrees based on the resolution of the ACP signal. Typical radar ACP signals are 1024, 2048, 4096, 8192 and



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16,384 pulses per revolution. A status LED (D11) flashes once for each Azimuth Change Pulse. The ACP signal is optically isolated for system protection and can be inverted by setting switch S2 position 1 to ON as shown in Table 1.

The ACP input can be set for any standard number of pulses per revolution between 1024 and 131,072 based on configuration switch S2 as shown in Figure 1.

BIT Output (Optional):

Monitors for power and input reference loss, and problems with synchro output. Contact output is CLOSED when BIT error present, OPEN during normal operation.

ARP/ACP CONFIGURATION SELECTION								
Function	Configuration Switch S2							
	1	2	3	4	5	6	7	8
Invert ACP Signal	0	X	X	X	X	X	X	X
Invert ARP Signal	X	0	X	X	X	X	X	X
131,072 Pulses Per Revolution	X	X	1	1	1	0	1	0
65,536 Pulses Per Revolution	X	X	1	1	1	1	0	0
32,768 Pulses Per Revolution	X	X	0	1	1	1	1	1
16,384 Pulses Per Revolution	X	X	1	0	1	1	1	1
8,192 Pulses Per Revolution	X	X	1	1	0	1	1	1
4,096 Pulses Per Revolution	X	X	1	1	1	0	1	1
2,048 Pulses Per Revolution	X	X	1	1	1	1	0	1
1,024 Pulses Per Revolution	X	X	1	1	1	1	1	0
1 = off, 0 = on, X = Don't Care								

Table 2. S2 Configuration Switch



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Synchro Interface

Synchro Output:

The output is factory configured for 90-volt Line to Line, 60 Hertz synchro at 25 Volt-Amps. Default synchro format is single channel (Coarse – 1X) output. The synchro output signals are fused at 0.5 Amps each. Custom voltages and frequencies are available upon request.

Reference Interface

Reference Input:

The reference input is 115 Volt, 60 Hertz, provided through J1 along with power, and is fused at 3.15 Amp Slow-Blow.

Reference Output:

The reference output is 115 Volt, 60 Hertz and is fused at 1 Amp Slow-Blow.

CONNECTOR LIST

Inputs and outputs are available on circular MIL and BNC connectors provided with the ACP/ARP-SYN-25VA-60MIL-B. Inputs and outputs are listed below:

J1 AC POWER/REFERENCE

I/O CONNECTOR TYPE: MS3474L14-4P

CONNECTOR MATE: MS3475L14-4S

BACKSHELL: STRAIGHT – M85049/10-116N, OPTIONAL: 90 DEGREE - M85049/8-9N, or 45 DEGREE - M85049/6-9N

Signal	Pin Number
AC 115V AC 60 Hz LINE-1 (FUSED INPUT) (3.15 Amp)	A
AC 115V AC 60 Hz LINE-2 (FUSED INPUT) (3.15 Amp)	B
Chassis Ground (E1)	C
Spare	D



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J2 SYNCHRO OUTPUT

I/O CONNECTOR TYPE: MS3474L16-8S

CONNECTOR MATE: MS3475L16-8P

Signal	Pin Number
R1 115V AC 60 Hz (OUTPUT) (1 Amp Slow-Blow)	A
R2 115V AC 60 Hz (OUTPUT) (1 Amp Slow-Blow)	B
HEADING S1 OUT 1X 60 Hz (OUTPUT) (0.5 Amp Fast-Blow)	C
HEADING S2 OUT 1X 60 Hz (OUTPUT) (0.5 Amp Fast-Blow)	D
HEADING S3 OUT 1X 60 Hz (OUTPUT) (0.5 Amp Fast-Blow)	E
Chassis Ground	F
Spare	G
Spare	H

J3 ACP

I/O CONNECTOR TYPE: Isolated Female BNC, 75Ω

CONNECTOR MATE: Male BNC

Signal	Connection
AZIMUTH CHANGE PULSE + (INPUT)	PIN
AZIMUTH CHANGE PULSE - (INPUT)	BODY

J4 ARP

I/O CONNECTOR TYPE: Isolated Female BNC, 75Ω

CONNECTOR MATE: Male BNC

Signal	Connection
AZIMUTH REFERENCE PULSE + (INPUT)	PIN
AZIMUTH REFERENCE PULSE - (INPUT)	BODY



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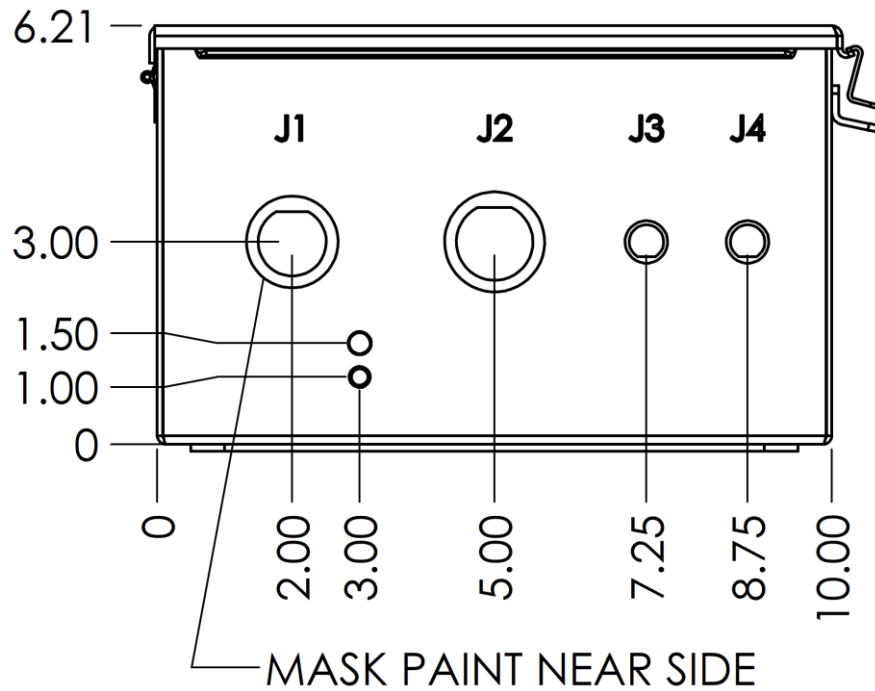
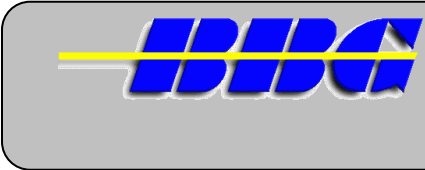
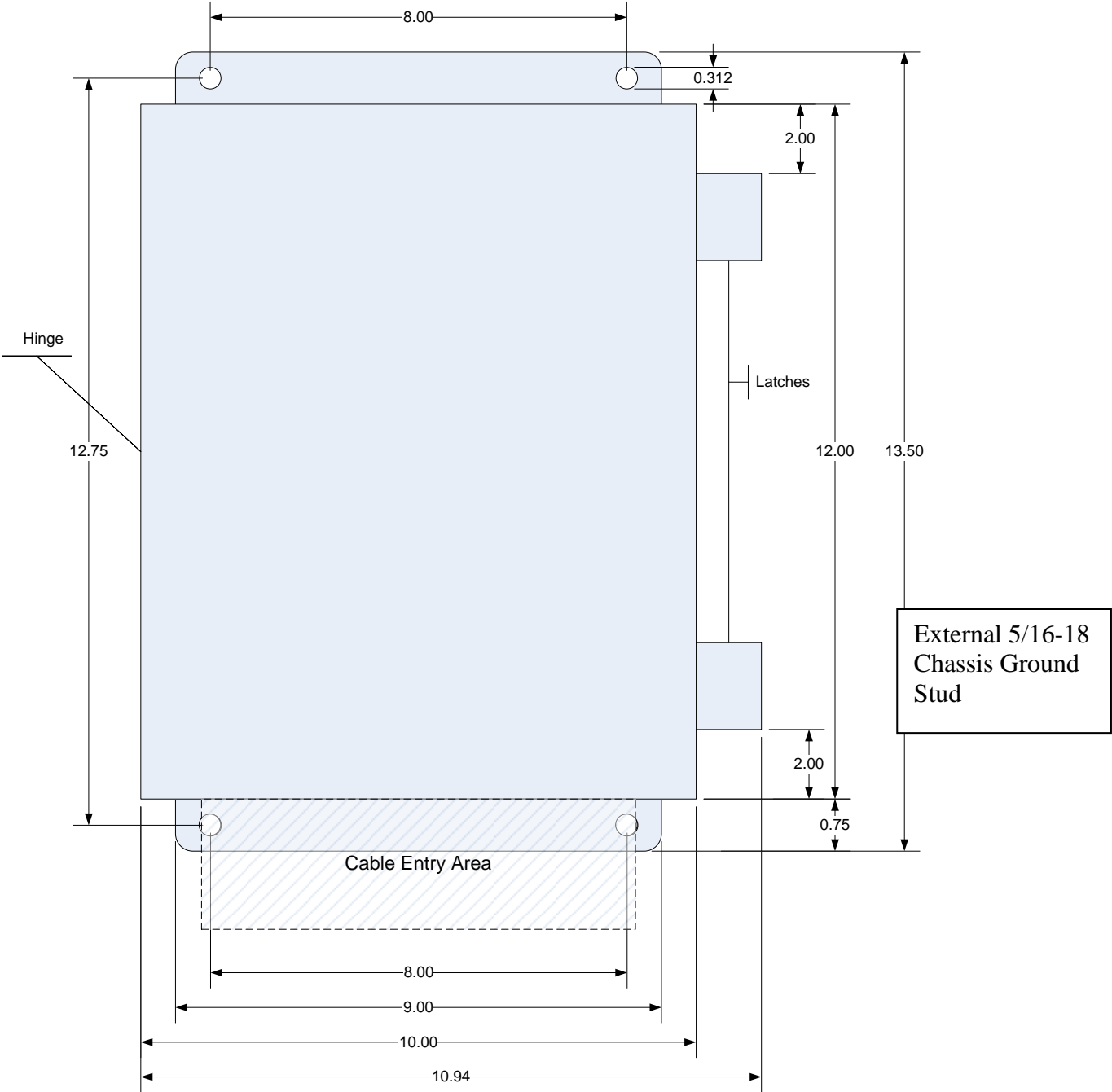


Figure 1. Bottom View, Connector Locations



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