

Product Information for the BBG-SSBA Serial to Synchro/Resolver Booster Amplifier

The BBG-SSBA-25 and BBG-SSBA-125 are 6U VMEbus format pc cards which interface between a serial data stream and a synchro or resolver system. The BBG-SSBA-25 has 25VA power output and the BBG-SSBA-125 has 125VA power output. The BBG-SSBA standard message format uses the NMEA 0183 message structures and supports RS-232, RS-422, RS-423, RS-485, and MIL-STD-188C protocols.

The BBG-SSBA is a "SMART" interface due to the onboard processor which controls all message parsing, data conversion, and output driving, thus, requiring no host processor. Outputs provide user control, thermal shutdown, locked rotor "KICK" circuit, and fault indication.

In situations not requiring a VMEbus interface, the BBG-SSBA operates in a "STAND-ALONE" mode. With the addition of an external power supplies, the onboard processor converts the serial data stream into synchro/resolver outputs without the requirement of a host CPU. Upon applying power, the BBG-SSBA reads the configuration switch, and fully configures and operates with no operator intervention required.

Synchro/resolver signals, reference inputs, and serial inputs are available on standard DB25 and DB37 pin connectors.

6U VMEBUS FORMAT

**HIGH POWER 25VA or 125VA
SYNCHRO / RESOLVER
OUTPUT**

**THERMAL PROTECTION,
LOCK ROTOR KICK CIRCUIT**

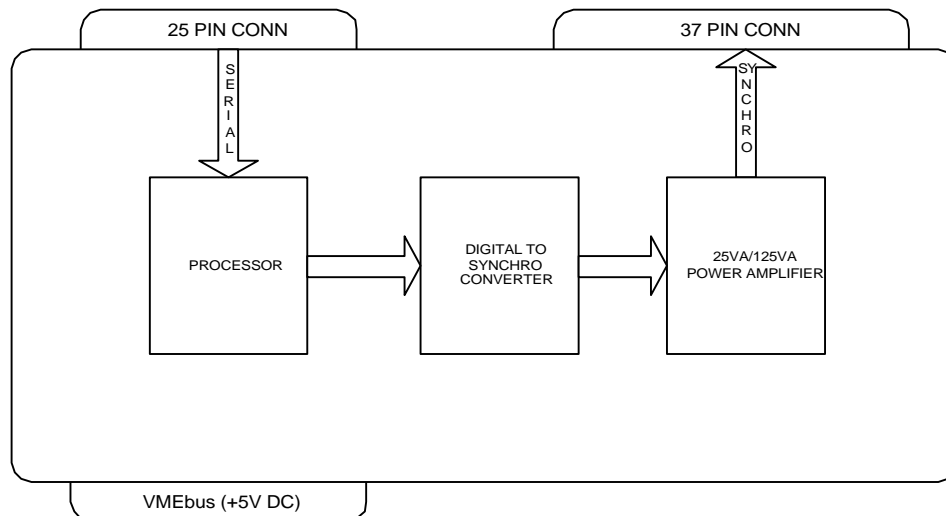
**RS-232, RS-422, RS-423,
RS-485, MIL-STD-188C
PROTOCOLS**

**NEMA-0183 SERIAL DATA
COMPATIBLE INPUT**

**STAND-ALONE MODE
REQUIRES NO HOST CPU**

**SWITCH SELECTABLE BAUD
RATES**

**CUSTOM IMPLEMENTATIONS
AVAILABLE UPON REQUEST**



BBG-SSBA-25 SPECIFICATIONS		
PARAMETER	VALUE	UNITS
POWER SUPPLY	5	Volts
	300	MiliAmps
	15	Volts
	8 (max)	Amps
	-15	Volts
	8 (max)	Amps
TEMPERATURE RANGE OPERATING STORAGE	0 to +50	C°
	-65 to +150	C°
PHYSICAL CHARACTERISTICS 6U VMEbus PC CARD	9.2 x 6.41 x 0.78	in.
	23.37 x 16.28 x 1.99	cm.

Table 1. BBG-SSBA-25 Specifications

BBG-SSBA-125 SPECIFICATIONS		
PARAMETER	VALUE	UNITS
POWER SUPPLY	5	Volts
	300	MiliAmps
	15	Volts
	15 (max)	Amps
	-15	Volts
	15 (max)	Amps
TEMPERATURE RANGE OPERATING STORAGE	0 to +50	C°
	-65 to +150	C°
PHYSICAL CHARACTERISTICS 6U VMEbus PC CARD	9.2 x 6.41 x 0.78	in.
	23.37 x 16.28 x 1.99	cm.

Table 2. BBG-SSBA-125 Specifications

OVERVIEW

The BBG-SSBA is a 6U VME FORMAT pc card which inputs a serial data message containing a speed or angular position. This information is processed by the onboard microcontroller and output in a synchro or resolver format. The BBG-SSBA-25 has an output power of 25VA and the BBG-SSBA-125 has an output power of 125VA. An onboard microcontroller configures the card from power up or reset and provides all signals and control to read the serial information and output the synchro/resolver information. Serial data formats, power outputs, synchro and resolver voltages and frequencies are factory configured to user requirements.

Synchro information is passed over the serial data bus in a binary angle measurement format (BAM) as shown in Table 2. The BBG-SSBA accepts serial data in RS-232, RS-422, RS-423, RS-485, or MIL-STD-188C protocols. Serial baud rates are switch selectable at: 2400, 4800, 9600, 19,200, and 38,400 bits per second. Default data output is 9600, 8 bits, no parity, and one stop bit (9600, 8, N, 1). Table 3 defines the switch position for the available baud rates. Custom serial data formats and frequencies are available upon request.

BINARY ANGLE MEASUREMENT FORMAT		
BIT	DEG/BIT	MIN/BIT
1 (MSB)	180	10,800
2	90	5,400
3	45	2,700
4	22.5	1,350
5	11.25	675
6	5.625	337.5
7	2.813	168.75
8	1.405	84.38
9	0.7031	42.19
10	0.3516	21.09
11	0.1758	10.55
12	0.0879	5.27
13	0.0439	2.64
14	0.0220	1.32
15	0.0110	0.66
16 (LSB)	0.0055	0.33

Table 3. BINARY ANGLE MEASUREMENT FORMAT

BBG-SSBA BAUD RATE SELECTION								
BAUD RATE (bits per sec)	Configuration Switch S1							
	1	2	3	4	5	6	7	8
2400	1	1	0	X	X	X	X	X
4800	0	0	1	X	X	X	X	X
9600	1	0	1	X	X	X	X	X
19200	0	1	1	X	X	X	X	X
38400	1	1	1	X	X	X	X	X
1 = off, 0 = on, X = Don't Care								

Table 4. BBG-SSBA Baud Rate Selection

NMEA 0183 FORMAT

The BBG-SSBA can be factory programmed to accept any NMEA 0183 data format. Current data format is as follows:

\$PTBBG,XXX.XX,A*CSCRLF

\$ - start of message ascii character 24 Hex
PT - Proprietary message
BBG - BBG Incorporated
XXX.XX - channel 1 synchro/resolver angle (ex: 045.01)
A - validity (A = valid, V = Invalid)
* - ascii character 2A Hex
CS - checksum (8 bit XOR of characters between \$ and *)
CR - carriage return
LF - Line feed

OPTIONS

SYNCHRO OUTPUT

The BBG-SSBA can be factory configured for 90Vrms, 11.8Vrms, and/or 6.8Vrms synchro or resolver outputs at 60Hz or 400Hz. Custom voltages and frequencies are available upon request. Please specify desired voltage when ordering card.

CONFIGURATION JUMPER LIST

BBG-SSBA JUMPER CONFIGURATION		
JUMPER	PINS	FUNCTION
P25	1-2	RS232 RECEIVER ENABLE
P25	2-3	RS422 RECEIVER ENABLE
P27	19-20	CTL OUT ENABLE
P29	1-2	115V Ref. Input ENABLE
P30	1-2	115V Ref. Input ENABLE

Table 5. BBG-SSBA Configuration Jumper List

CONNECTOR LIST FOR BBG-SSBA

I/O CONNECTOR: J1

I/O CONNECTOR TYPE: 96 PIN DIN MALE

CONNECTOR MATE: 96 PIN DIN FEMALE

PIN NO	SIGNAL	PIN NO	SIGNAL
A9	GND	B23	GND
A11	GND	C9	GND
A15	GND	A32	+5 VOLTS
A17	GND	B32	+5 VOLTS
A19	GND	C32	+5 VOLTS
B20	GND		ALL OTHERS NOT CONNECTED

I/O CONNECTOR: J2

I/O CONNECTOR TYPE: DB37PA

CONNECTOR MATE: DB37S

PIN NO	SIGNAL	PIN NO	SIGNAL
1	RL26 (26V REF- INPUT)	20	+5 VOLTS (INPUT)
2	RL115 (115V REF- INPUT)	21	SPARE
3	RH26 (26V REF+ INPUT)	22	GND
4	RH115 (115V REF+ INPUT)	23	GND
5	S1N	24	RELAY1 (OUTPUT)
6	S1 (OUTPUT)	25	GND
7	S1P	26	RELAY2 (OUTPUT)
8	S2N	27	SPARE
9	S2 (OUTPUT)	28	DISABLE (INPUT)
10	S2P	29	THERMAL SHUTDOWN (INPUT)
11	S3N	30	FAULT (OUTPUT)
12	S3 (OUTPUT)	31	SPARE
13	S3P (OUTPUT)	32	SPARE
14	CS-	33	SPARE
15	CS+	34	S4 (S/D INPUT)
16	+15VOLTS (INPUT)	35	S3 (S/D INPUT)
17	-15VOLTS (INPUT)	36	S2 (S/D INPUT)
18	RL1 (S/D INPUT)	37	S1 (S/D INPUT)
19	RH1 (S/D INPUT)		

I/O CONNECTOR: J3

I/O CONNECTOR TYPE: DB25PA

CONNECTOR MATE: DB25S

PIN NO	SIGNAL	PIN NO	SIGNAL
1	SPARE	14	RXD422+ (INPUT)
2	RXD232 (INPUT)	15	RXD422- (INPUT)
3	TXD232 (OUTPUT)	16	TXC422+ (OUTPUT)
4	RXC232 (INPUT)	17	TXC422- (OUTPUT)
5	TXC232 (OUTPUT)	18	RXC422+ (INPUT)
6	SPARE	19	RXC422- (INPUT)
7	GND	20	CTL11 (INPUT)
8	SPARE	21	CTLO2 (OUTPUT)
9	SPARE	22	SPARE
10	SPARE	23	SPARE
11	SPARE	24	SPARE
12	TXD422+ (OUTPUT)	25	SPARE
13	TXD422- (OUTPUT)		