BBG INCORPORATED

Innovative Solutions in Engineering

BBG-SIU-GC184 MOD1 Synchro Interface Unit

The actual product may differ from image shown.

Description

The BBG-SIU-GC184 MOD1 is a stand-alone system, which provides data format conversion of serial or synchro data into low power synchro data.

The SIU is factory configurable for low power synchro data, high power synchro data, or both depending on customer requirements. *Note: Configuration changes will result in a different part number.*

Applications

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

Features

- 90V, 400Hz Synchro Outputs
- Real-Time Input Monitoring
- NMEA-0183 and Binary Serial Messages
- Eight Channel, low power (4.5 VA) Synchro Output
- Custom Synchro Data Formats and Frequencies are available upon Request

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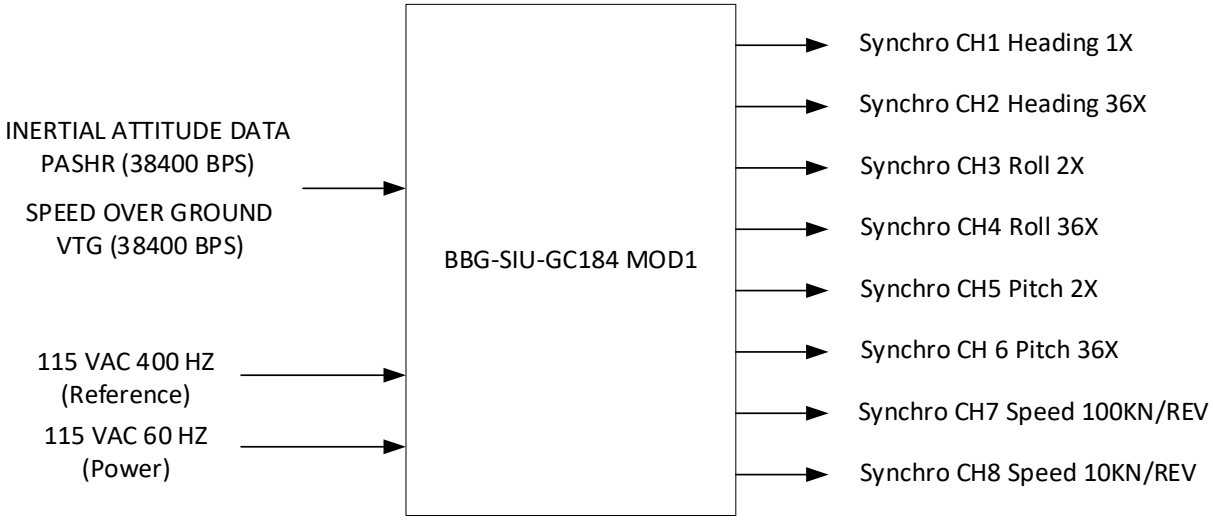
BBG-SIU-GC184 MOD1 Product Specifications

Chart



The BBG-SIU-GC184 MOD 1 operates on 115 VAC 60 Hz power and 115 VAC 400 Hz reference inputs and is capable of interfacing a serial input channel to eight synchro output channels. Synchro output channels are configurable via dip switches located on each PCB.

Technical Specifications

Parameter	Value	Units
Inputs		
Power (60Hz)	115	Volts AC
	60	Hertz
	3.15	Amp
Reference (400Hz)	115	Volts
	400	Hertz
	3.15	Amp
Serial (PASHR)	38,400 BPS @ 10HZ*	NMEA
Serial (VTG)	38,400 BPS @ 10HZ*	NMEA
Outputs		
Synchro	90	Volts
	400	Hertz
	4.5	VA
Accuracy	+/-4	arc minutes
Temperature Range		
Operating	0 to +60	C°
Storage	-65 to +150	C°
Weight	30	Lbs

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Dimensions	19.0 W x 24.0 D x 7.0 H	In
	48.26 W x 60.96 D x 17.78 H	Cm

**Unit can automatically handle higher input data rates up to serial line saturation at baud rates up to 115200.*

BAUD RATE AND MODE SELECTION								
	Configuration Switch S1							
	8	7	6	5	4	3	2	1
4800	X	X	X	X	X	X	0	0
38400	X	X	X	X	X	X	0	1
57600	X	X	X	X	X	X	1	0
115200	X	X	X	X	X	X	1	1
HEADING (PASHR)	X	X	X	X	0	0	X	X
ROLL (PASHR)	X	X	X	X	0	1	X	X
PITCH (PASHR)	X	X	X	X	1	0	X	X
SPEED (VTG)	X	X	X	X	1	1	X	X
ROLL/PITCH POLARITY: U.S. NAVY	X	X	X	1	X	X	X	X
ROLL/PITCH POLARITY: STANAG	X	X	X	0	X	X	X	X
RELAY INDICATES ON DATA ERROR*	X	X	1	X	X	X	X	X
RELAY INDICATES AT POWER ON	X	X	0	X	X	X	X	X
TEST MODE ACTIVE	X	0	X	X	X	X	X	X
NORMAL OPERATION MODE	T	1	X	X	X	X	X	X
1 = OFF, 0 = ON, X = DON'T CARE								

**Factory default setting for "relay indicates on data error" is 2 sec after valid data is no longer being received.*

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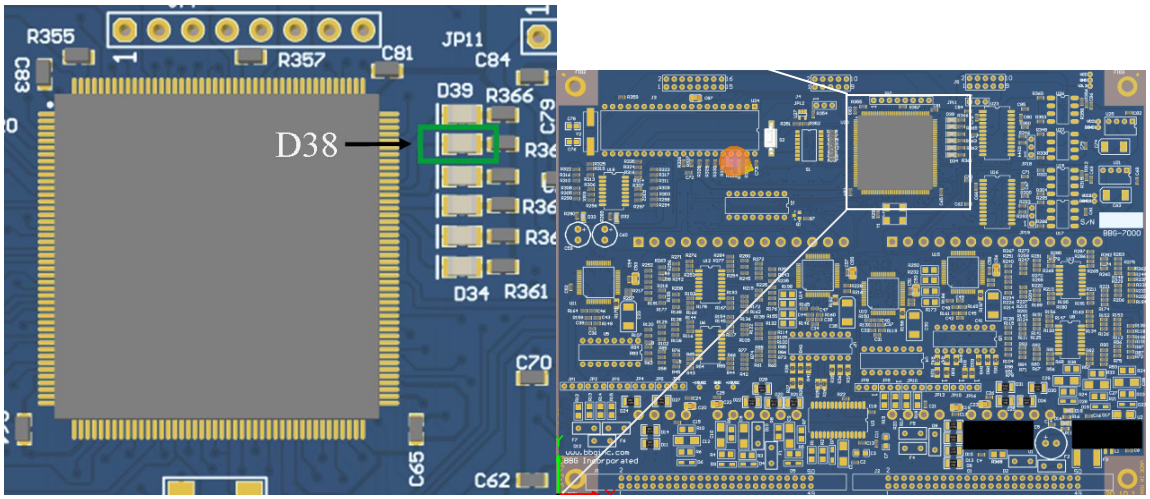
DEFAULT CONFIGURATION

PCB Configuration Switch S1 comes factory set to customer requirements. Configurations changes can be made based on the above configuration table. A power reset is required after any configuration changes. Below are the PCB default configuration settings:

DEFAULT PCB CONFIGURATION SETTINGS								
	Configuration Switch S1							
	8	**7**	**6**	**5**	**4**	**3**	**2**	**1**
PCB1	1	1	1	1	0	0	0	1
PCB2	1	1	1	1	0	1	0	1
PCB3	1	1	1	1	1	0	0	1
PCB4	1	1	1	1	1	1	0	1
1 = off, 0 = on, X = Don't Care								

LED D38 provides visual indication that valid data is being received. When a valid message is received, based on dip-switch configuration, D38 flashes. If D38 does not flash regularly, this indicates that valid data is not being received. Only messages with "VALID" message flag trigger LED. "INVALID" and other flags do not trigger the LED.



Close-up View

Overall PCB View

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TEST MODE

The BBG-SIU-GC184 MOD1 is equipped with a test mode that can be utilized to verify synchro connections and system operation. To activate test mode, switch the TEST MODE ACTIVE switch on configuration switch S1 to the "on" position while the system power is off. Please refer to the "BAUD RATE AND MODE SELECTION" table on page 3 to locate the switch settings. The SIU must then be powered on with the switch in this position for the unit to enter test mode. Test mode must be enabled on all PCBs simultaneously to ensure proper functioning.

When the unit boots up in test mode, it will output a synchro value of zero degrees on all channels, and the alarm contact output will indicate good data. If different angles are desired, the user can toggle the configuration switch S1 position 8, as indicated by "T" in the "BAUD RATE AND MODE SELECTION" table on page 3, while the system is in test mode and power is still applied. Each time the position 8 switch is toggled, either from "on" to "off" or "off" to "on," the output for that PCB will increment according to the table below. The output value depends on the current PCB mode selection, and the columns in the table represent values for each setting.

Factory default configuration:
PCB1 =1X, 36X.
PCB2, PCB3 = 2X, 36X.
PCB4 = 100KN, 10KN.

To return to normal operation, set TEST MODE ACTIVE switch position to NORMAL OPERATION MODE on all PCBs and cycle power to unit.

Test Angle Output Values			
Toggle Count	**Heading**	**Roll/Pitch**	**Speed**
0	0	0	0
1	3.6	0.3	0.3
2	22.5	3.5	3.5
3	45	10	10
4	288	22	22
5	352.8	28	98

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CONNECTOR LIST

Inputs and outputs are available via circular MIL Style Connectors provided with the SIU.

J1 POWER (115V 60Hz)

I/O CONNECTOR TYPE: MS3470L12-3P
CONNECTOR MATE: MS3475L12-3S

Signal	Connector
115V AC 60 Hz NEUTRAL (FUSED INPUT) (3.15 Amp)	J1 – A
115V AC 60 Hz LINE (FUSED INPUT) (3.15 Amp)	J1 – B
Chassis Ground (E1)	J1 – C

J2 REFERENCE (115V 400Hz)

I/O CONNECTOR TYPE: MS3470L12-3PY
CONNECTOR MATE: MS3475L12-3SY

Signal	Connector
R1 115V AC 400 Hz NEUTRAL (FUSED INPUT) (3.15 Amp)	J2 – A
R2 115V AC 400 Hz LINE (FUSED INPUT) (3.15 Amp)	J2 – B
Chassis Ground (E1)	J2 – C

J3 SYNCHRO & ALARM

I/O CONNECTOR TYPE: MS3452L28-21SW
CONNECTOR MATE: MS3456L28-21PW

Signal	Connector
R1 115V AC 400 Hz HEADING (1 Amp)	J3-H
R2 115V AC 400 Hz HEADING (1 Amp)	J3-J
HEADING S1 OUT 1X 400 Hz	J3-A
HEADING S2 OUT 1X 400 Hz	J3-F
HEADING S3 OUT 1X 400 Hz	J3-E
HEADING S1 OUT 36X 400 Hz	J3-G
HEADING S2 OUT 36X 400 Hz	J3-B

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Signal	Connector
HEADING S3 OUT 36X 400 Hz	J3-C
R1 115V AC 400 Hz ROLL (1 Amp)	J3-p
R2 115V AC 400 Hz ROLL (1 Amp)	J3-r
ROLL S1 OUT 2X 400 Hz	J3-W
ROLL S2 OUT 2X 400 Hz	J3-N
ROLL S3 OUT 2X 400 Hz	J3-P
ROLL S1 OUT 36X 400 Hz	J3-R
ROLL S2 OUT 36X 400 Hz	J3-Z
ROLL S3 OUT 36X 400 Hz	J3-X
R1 115V AC 400 Hz PITCH (1 Amp)	J3-k
R2 115V AC 400 Hz PITCH (1 Amp)	J3-m
PITCH S1 OUT 2X 400 Hz	J3-M
PITCH S2 OUT 2X 400 Hz	J3-V
PITCH S3 OUT 2X 400 Hz	J3-U
PITCH S1 OUT 36X 400 Hz	J3-T
PITCH S2 OUT 36X 400 Hz	J3-K
PITCH S3 OUT 36X 400 Hz	J3-L
R1 115V AC 400 Hz SPEED (1 Amp)	J3-a
R2 115V AC 400 Hz SPEED (1 Amp)	J3-b
SPEED S1 OUT 100KN 400 Hz	J3-j
SPEED S2 OUT 100KN 400 Hz	J3-c
SPEED S3 OUT 100KN 400 Hz	J3-d
SPEED S1 OUT 10KN 400 Hz	J3-n
SPEED S2 OUT 10KN 400 Hz	J3-g
SPEED S3 OUT 10KN 400 Hz	J3-h
ALARM NC	J3-D
ALARM COM	J3-f
ALARM NO	J3-e
NO CONNECTION	J3-S
NO CONNECTION	J3-s

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J4 SERIAL

I/O CONNECTOR TYPE: MS3470L10-6S
CONNECTOR MATE: MS3475L10-6P

Signal	Connector
RS422- (A) Serial ($PASHR & $GPVTG)	J4 – A
RS422+ (B) Serial ($PASHR & $GPVTG)	J4 – B
RS422 RETURN	J4 – C
NO CONNECTION	J4 – D
NO CONNECTION	J4 – E
NO CONNECTION	J4 – F
Chassis Ground (E1)	CHASSIS

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