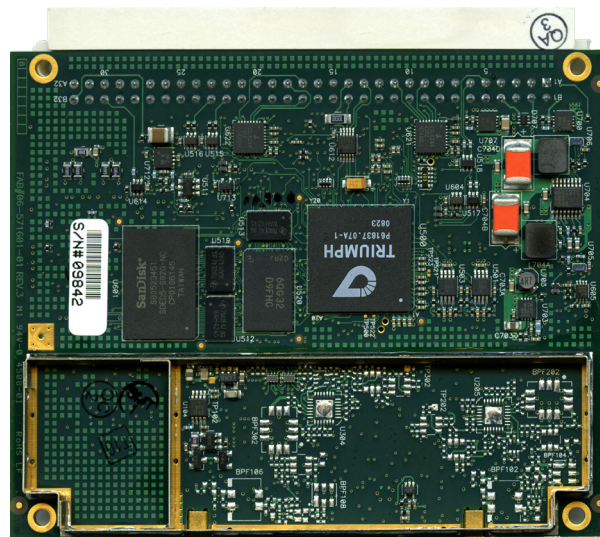




DUO-G2

2x GPS L1; 2x Galileo E1; 2 x BeiDou B1, QZSS L1; SBAS L1



Duo-G2 is a 100x80 mm board that accepts inputs from up to two antennas. It is equivalent to two receivers which operate synchronously with a common oscillator and central processor to coordinate all communications and other activities. The DUO-G2 board tracks GPS L1, Galileo E1, BeiDou B1, QZSS L1, SBAS L. Each of the two receivers track 18 universal channels each of GPS L1 and Galileo E1.

Duo-G2 is for heading applications where single frequency GPS and Galileo can do the job and cost is a significant factor. The board allows determining 2D attitude including pitch and heading. It can also be used in positioning applications where a single antenna is not sufficient to observe satellites in all orientations and positions: in machine navigation and control in road construction, precise agriculture, land, aerial, and marine applications.

The on-board power supply on Duo-G2 OEM board accepts any voltage from +4.5 to +40 volts and delivers cleanly filtered voltage where needed. This eliminates the risk of power contamination (ripples) that can be created when clean power is generated elsewhere and delivered to the board via cables. Duo-G2 board also includes drivers for four LEDs, ON/OFF and function button controllers. Also, the board comes with a large amount of flash for data storage. The CAN interface in Duo-G2 board is provided complete with all associated hardware and firmware, not just the CAN bus. The same is true with all the serial RS232/RS422 ports in our board. Simply stated, additional functions are not needed to incorporate any of our Duo-G2 OEM board in most applications. In addition to timing strobes and event markers, the Duo-G2 OEM board includes the option of complete IRIG timing system.

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Description	i/O	Signal name	Pin #	Pin #	Signal name	I/O	Description
Power Ground		PGND	A1	B1	PGND		Power Ground
+6.0 to +40 VDC Power Input	I	PWR_IN	A2	B2	PWR_IN	I	+6.0 to +40 VDC Power Input
Factory use only, must be left open		FUO	A3	B3	COMMSW#	I	Active Low Command Input (FN Button) *1
Reserved		-	A4	B4	KA_PWR	I	Keep-Alive Power input for Real-Time Clock (+4.5 to +40 VDC, 10µA typ)
External LED Control *2	0	LED2_RED	A5	B5	LED1_RED	0	External LED Control *2
External LED Control *2	0	LED2_GRN	A6	B6	LED1_GRN	0	External LED Control *2
Signal Ground		GND	A7	B7	USB_PWR	I	USB port Power Input line
USB port D- line	I/O	USB_D-	A8	B8	USB_D+	I/O	USB port D+ line
Serial port A TXD line	0	TXDA	A9	B9	CTSA	I	Serial port A CTS line
Serial port A RXD line	I	RXDA	A10	B10	RTSA	0	Serial port A RTS line
Serial port C: RS232 TXD line or RS422 TX- line	0	TXDC/TXC-	A11	B11	CTSC/RXC+	I	Serial port C: RS232 CTS line or RS422 RX+ line
Serial port C: RS232 RXD line or RS422 RX- line	I	RXDC/RXC-	A12	B12	RTSC/TXC+	0	Serial port C: RS232 RTS line or RS422 TX+ line
Serial Port D: RS232 RTS line or RS422 TX+ line	0	RTSD/TXD+	A13	B13	TXDD/TXD-	0	Serial Port D: RS232 TXD line or RS422 TX- line
Serial Port D: RS232 CTS line or RS422 RX+ line	I	CTSD/RXD+	A14	B14	RXDD/RXD-	I	Serial Port D: RS232 RXD line or RS422 RX- line
Signal Ground		GND	A15	B15	-		Reserved
Reserved		-	A16	B16	-		Reserved
Serial port B TXD line	0	TXDB	A17	B17	CTSB	I	Serial port B CTS line
Serial port B RXD line	I	RXDB	A18	B18	RTSB	0	Serial port B RTS line
CAN1 port CAN-H line	I/O	CAN1H	A19	B19	CAN1L	I/O	CAN1 port CAN-L line
CAN2 port CAN-H line	I/O	CAN2H	A20	B20	CAN2L	I/O	CAN2 port CAN-L line
Factory use only, must be left open		FUO	A21	B21	-		Reserved
Signal Ground		GND	A22	B22	1PPSA	0	1 Pulse Per Second output A *3
Signal Ground		GND	A23	B23	1PPSB	0	1 Pulse Per Second output B *3
Signal Ground		GND	A24	B24	EVENTA	I	Event input A *4
Signal Ground		GND	A25	B25	EVENTB	I	Event input B *4
Configurable Logic-Level I/O 0 line	I/O	GPIO0	A26	B26	GPIO1	I/O	Configurable Logic-Level I/O 1 line
Configurable Logic-Level I/O 2 line	I/O	GPIO2	A27	B27	GPIO3	I/O	Configurable Logic-Level I/O 3 line
Signal Ground		GND	A28	B28	RESET_IN#	I	Active Low Reset input *5
Ethernet port TX+ line	0	LAN_TX+	A29	B29	LAN_TX-	0	Ethernet port TX- line
Signal Ground		GND	A30	B30	LAN_LED	0	Ethernet port control for external LED
Ethernet port RX+ line	I	LAN_RX+	A31	B31	LAN_RX-	I	Ethernet port RX- line
Active Low input for ON/OFF switch *7	I	ONOFFSW#	A32	B32	IRIG_OUT	0	IRIG port output line *6

*1. Active Low input from the FN button of the MinPad. Must be left open if not used.

*2. LED1_GRN and LED1_RED are used to control the STAT LED of the MinPad. LED2_GRN and LED2_RED are equivalent to the REC LED of the MinPad. The output is a +3.3V driver in series with 100 Ohm resistor for each LED. LEDs should be with common cathode.

*3. $V_{oh} > 1,8V$ at 50 Ohm load.

*4. Internal pull-up 5 kOhm to +3.3V

*5. Connect to ground to activate. Internal pull-up 2 kOhm to +3.3V.

*6. AM sine-wave signal; 2.1Vp-p (Mark), 0.7Vp-p (Space).

*7. Active Low input which is equivalent to ON/OFF button of the MinPad. The pin must be connected to GND permanently if the board is required to turn on automatically any time external power is applied to pins A2 and B2.

Tracking Features

- Total 216 channels: all-in-view*
- GPS C/A, L1C (P+D)
- Galileo E1 (B+C)
- BeiDou B1
- QZSS C/A, L1C (P+D)
- QZSS SAIF
- SBAS** L1
- Advanced Multipath Reduction
- Fast acquisition channels
- High accuracy velocity measurement
- Almost unlimited altitude and velocity (for authorized users)

Data Features

- Up to 100 Hz update rate for real time position and raw data (code and carrier)
- Up to 50 Hz heading rate
- 10 cm code phase and 1 mm carrier phase precision
- Hardware Viterbi decoder
- RTCM SC104 versions 2.x and 3.x Input/Output
- NMEA 0183 versions 2.x and 3.0 Output
- SBAS/QZSS SAIF/BeiDou/IRNSS wide area code differential mode (available for corresponding systems)
- Code Differential Base
- Code Differential Rover
- Phase differential (RTK) rover
- Phase differential (RTK) base
- Different models of tropospheric delay
- Different models of ionospheric delay
- Support of upload of user geoid data
- Geoid and Magnetic Variation models

Data Storage

- Up to 2048MB of onboard non-removable memory for data storage

Input/Output

- Two high speed RS232 serial ports (up to 460.8 Kbps)
- Two high speed RS232/422 serial port (up to 460.8 Kbps)
- High speed USB 2.0 device port (480 Mbps)
- Full-duplex 10BASE-T/100BASE-TX Ethernet port
- Two CAN 2.0 A/B ports
- IRIG timecode output
- Two 1 PPS outputs synchronized to GPS or UTC
- Two Event Marker inputs
- MinPad interface: Four external LED drivers, ON/OFF control and External Command inputs
- Four Configurable Logic-Level GPIO ports

Electrical

- On-board power supply accepts any unregulated voltage between +4.5 to +40 Volts
- Keep-Alive Power input accepts any unregulated voltage between +4.5 to +40 Volts
- The central pin of the antenna connector outputs +5 VDC to power LNA. The sourced current is 0.1 A max.
- Power consumption: 2.2 Watt

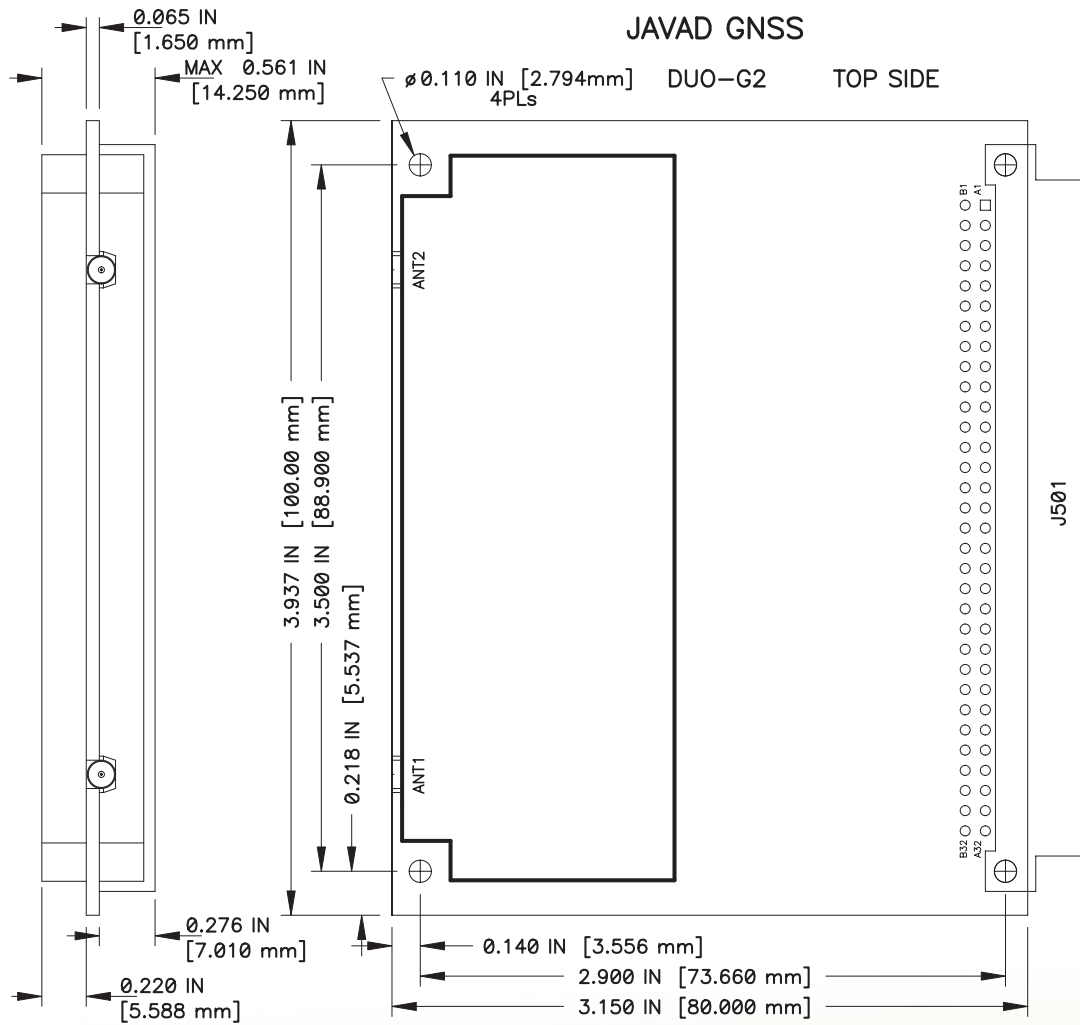
Environmental and Physical

- Operating Temperature: -35°C to +75°C
- Storage Temperature: -40°C to +85°C
- High shock and vibration resistance
- Dimensions: 100x80 mm
- Weight: 90 g
- Digital connector: 64-pin DIN41612 type B Right Angle, AMP p/n 536052-5.
- RF connectors: MMCX Jack, edge mount, AMPHENOL, P/N 908-22100

* May be not applicable for simultaneous tracking of Galileo and BeiDou

** US WAAS, European EGNOS, Russian SDCM, Indian GAGAN, Japanese MSAS, and similar future satellite systems

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Specifications are subject to change without notice



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