

Via Acquanera 29, 22100 COMO (Italy) tel. +39.031.525391 - fax +39.031.507984 - info@instrumentation.it



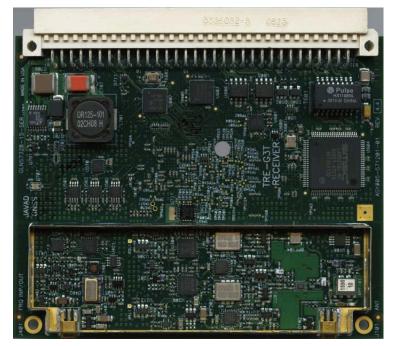
TRE-G3T

TRE-G3T OEM board is based on our TRIUMPH Technology implemented in our TRIUMPH Chip. For the first time in the GNSS history we offer up to 100 Hz RTK. The TRE-G3T board includes the true Galileo option.

The on-board power supply on TRE-G3T 0EM board accepts any voltage from +4.5 to +40 volts and delivers clean 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.

TRE-G3T board also includes drivers for four LEDs, ON/OFF and function button controllers. In addition,





the board comes with large amount of flash for data storage.

The CAN interface in TRE-G3T 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 TRE-G3T OEM board in most applications.

In addition to timing strobes and event markers, the TRE-G3T OEM board includes the option of complete IRIG timing system.

TRE-G3T OEM BOARD

4.4.5 to +40 VDC Power Input	Description	1/0	Signal Name	Pin #		Signal Name	1/0	Description
Factory use only, must be left open	Power Ground		PGND	A1				Power Ground
Reserved			PWR_IN	A2	B2	PWR_IN		
ASSESSION CANONIC CA	Factory use only, must be left open		FU0	A3	В3	COMMSW#		Active Low Command Input (FN Button) *1
External LED Control *2	Reserved		-	A4	B4	KA_PWR	I	Keep-Alive Power input for Real-Time Clock
External LED Control *2								(+4.5 to +40 VDC, 10μA typ)
Signal Ground	External LED Control *2	0	LED2_RED	A5	B5	LED1_RED	0	External LED Control *2
USB port D - line	External LED Control *2	0	LED2_GRN	A6	B6		0	External LED Control *2
Serial port A TXD line	Signal Ground			A7				
RXDA		1/0		A8			1/0	
Serial port C TXD line		0						
Serial port C RXD line							0	
RS-422 port TXD+ line O TXDD+ A13 B13 TXDD- O RS-422 port TXD- line RS-422 port RXD+ line I RXDD+ A14 B14 RXDD- I RS-422 port RXD- line Reserved GND A15 B15 - Reserved Reserved - A16 B16 - Reserved Reserved - A16 B16 - Reserved Reserved Reserved - Reserved RA16 RA17 B17 CTSB I Serial port B CTS line GAN1 December 1 December 2 December 3				A11				
RS-422 port RXD+ line	Serial port C RXD line			A12	B12	RTSC		
Signal Ground GND A15 B15 - Reserved Reserved - A16 B16 - Reserved Reserved - A16 B16 - Reserved Reserved - A16 B17 CTSB I Serial port B CTS line Serial port B RXD line I RXDB A18 B18 RTSB O Serial port B RTS line CAN1 port CAN-H line I/O CAN1 H 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 CAN2 port CAN-L line Reserved Reserved Reserved Reserved A21 B21 - Reserved Reserved A22 B22 IPPSA O IPUISE PER Second output A*3 Signal Ground GND A23 B23 IPPSB O IPUISE 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 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 I LAN_RX+ A31 B31 LAN_RX- I Ethernet port RX- line Ethernet port RX- line I LAN_RX+ A31 B31 LAN_RX- I Ethernet port RX- line	RS-422 port TXD+ line	0	TXDD+	A13	B13	TXDD-	0	RS-422 port TXD- line
Reserved - A16 B16 - Reserved Serial port B TXD line O TXDB A17 B17 CTSB I Serial port B CTS line Serial port B RXD line I RXDB A18 B18 RTSB O 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 O 1 Pulse Per Second output A *3 Signal Ground GND A23 B23 1PPSB O 1 Pulse Per Second output B *3 Signal Ground GND A24 B24 EVENTA I Event input A *4 Signal Ground Configurable Logic-Level I/O 0 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 O LAN_TX+ A29 B29 LAN_TX- O Ethernet port TX- line Signal Ground Ethernet port RX+ line I LAN_RX+ A31 B31 LAN_RX- I Ethernet port RX- line	RS-422 port RXD+ line		RXDD+	A14		RXDD-		RS-422 port RXD- line
Serial port B TXD line 0 TXDB A17 B17 CTSB 1 Serial port B CTS line Serial port B RXD line 1 RXDB A18 B18 RTSB 0 Serial port B RTS line CAN1 port CAN-H line 1/0 CAN1H A19 B19 CAN1L 1/0 CAN1 port CAN-L line CAN2 port CAN-H line 1/0 CAN2H A20 B20 CAN2L 1/0 CAN2 port CAN-L line Factory use only, must be left open FU0 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 1 Event input A *4 Signal Ground GND A25 B25 EVENTB 1 Event input A *4 Configurable Logic-Level I/0 0 line I/0 GPI00 A26 B26 GPI01 I/0 Configurable Logic-Level I/0 1 line Configurable Logic-Level I/0 2 line GND A28 B28 RESET_IN# 1 Active Low Reset input *5 Ethernet port TX+ line 0 LAN_TX+ A29 B29 LAN_TX- 0 Ethernet port control for external LED Ethernet port RX+ line I LAN_RX+ A31 B31 LAN_RX- I Ethernet port RX- line	Signal Ground		GND	A15	B15	-		Reserved
Serial port B RXD line	Reserved		-	A16		-		
CAN1 port CAN-H line					B17			
CAN2 port CAN-H line				A18	B18			
Factory use only, must be left open FUO A21 B21 Reserved GND A22 B22 IPPSA O 1 Pulse Per Second output A *3 Signal Ground GND A23 B23 IPPSB O 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 O LAN_TX+ A29 B29 LAN_TX- O Ethernet port TX- line Ethernet port RX+ line I LAN_RX+ A31 B31 LAN_RX- I Ethernet port RX- line		1/0	CAN1H	A19	B19	CAN1L	1/0	CAN1 port CAN-L line
Signal Ground GND A22 B22 IPPSA O 1 Pulse Per Second output A *3 Signal Ground GND A23 B23 IPPSB O 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/0 0 line I/0 GPI00 A26 B26 GPI01 I/0 Configurable Logic-Level I/0 1 line Configurable Logic-Level I/0 2 line I/0 GPI02 A27 B27 GPI03 I/0 Configurable Logic-Level I/0 3 line Signal Ground GND A28 B28 RESET_IN# I Active Low Reset input *5 Ethernet port TX+ line O LAN_TX+ A29 B29 LAN_TX- O Ethernet port TX- line Signal Ground GND A30 B30 LAN_LED O Ethernet port RX- line Ethernet port RX- line		1/0		A20		CAN2L	1/0	CAN2 port CAN-L line
Signal Ground GND A23 B23 1PPSB 0 1 Pulse Per Second output B *3 Signal Ground GND A24 B24 EVENTA 1 Event input A *4 Signal Ground GND A25 B25 EVENTB 1 Event input B *4 Configurable Logic-Level I/O 0 line I/O GPIOO 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# 1 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	Factory use only, must be left open			A21	B21	-		
Signal Ground GND A23 B23 1PPSB 0 1 Pulse Per Second output B *3 Signal Ground GND A24 B24 EVENTA 1 Event input A *4 Signal Ground GND A25 B25 EVENTB 1 Event input B *4 Configurable Logic-Level I/O 0 line I/O GPIOO 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# 1 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			GND	A22	B22	1PPSA	0	1 Pulse Per Second output A *3
Signal Ground GND A25 B25 EVENTB I Event input B *4 Configurable Logic-Level I/O 0 line I/O GPIOO 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 O LAN_TX+ A29 B29 LAN_TX- O Ethernet port TX- line Signal Ground GND A30 B30 LAN_LED O Ethernet port control for external LED Ethernet port RX+ line I LAN_RX+ A31 B31 LAN_RX- I Ethernet port RX- line	Signal Ground		GND	A23	B23	1PPSB	0	1 Pulse Per Second output B *3
Configurable Logic-Level I/O 0 line I/O GPIOO 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 O LAN_TX+ A29 B29 LAN_TX- O Ethernet port TX- line Signal Ground GND A30 B30 LAN_LED O Ethernet port control for external LED Ethernet port RX+ line I LAN_RX+ A31 B31 LAN_RX- I Ethernet port RX- line	Signal Ground			A24	B24	EVENTA		Event input A *4
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 O LAN_TX+ A29 B29 LAN_TX- O Ethernet port TX- line Signal Ground GND A30 B30 LAN_LED O Ethernet port control for external LED Ethernet port RX+ line I LAN_RX+ A31 B31 LAN_RX- I Ethernet port RX- line				A25	B25	EVENTB		Event input B *4
Signal Ground GND A28 B28 RESET_IN# I Active Low Reset input *5 Ethernet port TX+ line O LAN_TX+ A29 B29 LAN_TX- O Ethernet port TX- line Signal Ground GND A30 B30 LAN_LED O Ethernet port control for external LED Ethernet port RX+ line I LAN_RX+ A31 B31 LAN_RX- I Ethernet port RX- line		1/0	GPI00	A26	B26	GPI01	1/0	Configurable Logic-Level I/O 1 line
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	Configurable Logic-Level I/O 2 line	1/0	GPI02	A27	B27		1/0	
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	Signal Ground		GND	A28	B28	RESET_IN#		Active Low Reset input *5
Ethernet port RX+ line LAN_RX+ A31 B31 LAN_RX- Ethernet port RX- line	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
Active Low input for ON/OFF switch *7 I ON/OFFSW# A22 R22 IDIC OUT O IDIC part output line *6	Ethernet port RX+ line		LAN_RX+	A31				
nouve cow input for one or over the first of	Active Low input for ON/OFF switch *7		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

Tracking Features

- Total 216 channels: all-in-view
- GPS L1/L2/L2C/L5
- Galileo E1/E5A
- GLONASS L1/L2
- SBAS
- 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)
- 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
- · Code Differential Rover
- Code Differential Base
- Geoid and Magnetic Variation models
- RAIM
- Different DATUMs support
- Output of grid coordinates

Data Storage

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

Specifications are subject to change without notice.

Input/Output

- Three high speed RS232 serial ports (up to 460.8 Kbps)
- High speed RS422 serial port (up to 460.8 Kbps)

pins A2 and B2.

- High speed USB 2.0 device port (480 Mbps)
- Full-duplex 10BASE-T/100BASE-TX Ethemet port
- Two CAN 2.0 A/B ports
- IRIG timecode output
- Two 1 PPS outputs synchronized to GPS, GLONASS or UTC
- Two Event Marker inputs
- External Reference Frequency Input/Output
- MinPad interface: Four external LED drivers, ON/OFF control and External Command inputs
- Four Configurable Lodic-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: 3.6 Watt

Environmental

- Operating Temperature: -35°C to +75°C
- Storage Temperature: -40°C to +85°C

· High shock and vibration resistance

Physical

*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).

• Dimensions: 100x80 mm

*7. Active Low input which is equivalent to ON/OFF button of the MinPad. The pin must be connected to

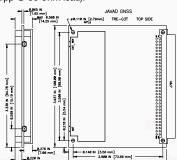
GND permanently if the board is required to turn on automatically any time external power is applied to

- Weight: 77 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

J101 is GNSS antenna input connector. The central pin of this connector supplies +5V voltage for LNA with sourced current up to 0.1A.

J401 is External Reference Frequency connector.
Analog reference clock input (0.5Vpp to 3Vpp,

5/10/20MHz). This input can be configured as output for 20 MHz internal reference oscillator (clipped sine wave, 0.5Vpp @ 50 Ohm load).





JAVAD GNSS www.javad.com

^{*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 0hm resistor for each LED. LEDs should be with common cathode.

^{*3.} Voh>1,8V at 50 0hm load.

^{*4.} Internal pull-up 5 k0hm to +3.3V