Zeli Systems
SATPAK-CPCI-MGUE-FORCE5M

Trimble FORCE5M
Military GPS User Equipment (MGUE) Solution
(M-Capable) for the CompactPCI bus

(Note: Photo shows FORCE5GS attached)

Features:
- The SATPAK-CPCI-MGUE-FORCE5M is a 6U form factor carrier board that provides a CompactPCI interface for the Trimble M-Code capable FORCE5M GPS module.
- Accommodates and interfaces with the Standard Electronics Module (SEM-E) form factor adopted by the Trimble FORCE5M.
- The SATPAK-CPCI-MGUE-FORCE5M will also operate with SAASM-based Trimble FORCE5GS/FORCE524D receivers.
- 32-bit PCI CompactPCI interface for FORCE5M.
- Employs a PCI9052 bus target interface chip to provide a CompactPCI interface to the FORCE5M Bi-Directional Data Port (BDDP) Allows complete access for the 64K x 16-bit DPRAM of the FORCE5M.
- Primary FORCE5M power is +5VDC provided by the CompactPCI power pins.
- The SATPAK-CPCI-MGUE-FORCE5M provides access to all the FORCE5M capabilities including: RF or L1/L2 IF antenna equipment (AE) interface, application programmable discrete interface, bi-directional data port (BDDP) interface, time-mark interface, precise time interface, RS232 and RS-422 interfaces, Have Quick interface, GRAM compliance, L1/L2, DS-102/DS-101 key loading, Zeroize, PVT output, navigation capability, and ICD-GPS-153 interface.
- Front-panel connector (J3) is dedicated for serial communication with RS-232 and RS-422 serial communication channels of the FORCE5M. The BDDP channel may be accessed via J3 as selected by the FORCE5M ICD1 input discrete.
- Time mark signals and precise time signals accessed via front-panel connector J4.
- DS-102/DS-101 key loading performed via front-panel female 9-contact D-Subminiature connector labeled KEY.
- Ancillary signals that include zeroize discrete, AE interface, auxiliary power, and application programmable discrete signals are accessed via front-panel connector J6.
- GRAM ready status via green front-panel LED labeled GR.
- Crypto valid indicator via green front-panel LED labeled CV.
- RF or L1 IF IN and L2 IF IN via front panel SMA connectors labeled L1/L2 and L2, respectively.
- The SATPAK-CPCI-MGUE-FORCE5M is compliant with the PIOMG 2.0 R3.0 specification.

SATPAK-CPCI-MGUE-FORCE5M Function:
The SATPAK-CPCI-MGUE-FORCE5M is a 6U form factor carrier board that provides a Compact-PCI interface for the Trimble M-Code capable FORCE5M.

Communicating with the Trimble FORCE5M:
The Trimble FORCE5M utilizes both parallel and serial communication modes. Parallel communication with the FORCE5M is accomplished through the 32-bit CompactPCI Bus and the FORCE5M Bi-Directional Data Port (BDDP). RS-232 and RS-422 serial communication channels of the FORCE5M are accessed at front-panel connector J3. The BDDP serial channel may be accessed via J3 as selected by the FORCE5M ICD1 discrete input.

Time Interface Signals:
The Precise Time Interface signals and Time Mark signals indicated in the block diagram are available on front-panel connector J4.

Key Loading:
DS-101 and DS-102 key loading signals are provided on the 9-contact front-panel D-Subminiature connector labeled “KEY”.

Access to Additional Critical FORCE5M Signals:
Front-panel connector J6 provides access to other critical FORCE5M signals. These signals include zeroize discrete, Antenna Electronics (AE) interface signals, auxiliary power, and Application Programmable (AP) discrete signals.

SATPAK-CPCI-MGUE-FORCE5M Power and Hot Swap:
The SATPAK-CPCI-MGUE-FORCE5M incorporates a CompactPCI connector key to operate at + 5VDC. +12 VDC is used only if a second 1PPS buffered output is required. The CompactPCI hot swap feature is not supported by the SATPAK-CPCI-MGUE-FORCE5M.

Auxiliary Voltage:
Auxiliary voltage for the FORCE5M is provided by an external battery which connects to a contact on the J6 front-panel connector.

Ordering Information:
Part Number 9511xx1:
SATPAK-CPCI-MGUE-FORCE5M
SPECIFICATIONS

Mechanical, Environmental, Power:

Physical Dimensions: 233.35 mm x 160 mm x 15.24 mm
(with FORCE5M attached)
Operating Temp: -40°C to 85°C
Humidity: 0 to 99% (non-condensing)
Power: +5V +/- 5%, 0.5 A
(without FORCE5M)
+5V +/- 5%, 3.7 Amp maximum
(with FORCE5M)
+12V +/- 5%, 0.010 Amp maximum
(required for second 1PPS buffered output only)
Fabrication: 1.6 mm, FR4

Front-Panel Connectors and Indicators:

RF IN or L1 IF IN: L1/L2
Conn: SMA Bulkhead Jack
Type: Coaxial
L2 IF IN: L2
Conn: SMA Bulkhead Jack
Type: Coaxial
Serial Comm: J3
Conn: 15 Contact D-Subminiature
Type: High Density Female

Front-Panel Connectors and Indicators (continued):

Timing: J4
Key Load: KEY
Conn: 9 Contact D-Subminiature
Type: Standard Density Female
Auxiliary Signals: J6
Conn: 15 Contact D-Subminiature
Type: High Density Female
Antenna Electronics: AE
Conn: 15 Contact D-Subminiature
Type: High Density Female
PPS Output: PPSO
Conn: SMA Bulkhead Jack
Type: Coaxial
PPS Input: PPSI
Conn: SMA Bulkhead Jack
Type: Coaxial
Status Indicator: GR
Type: Green LED
Function: GRAM Ready
Status Indicator: CV
Type: Green LED
Function: Crypto Valid
Switch: ZERO
Type: Recessed pushbutton
Function: Zeroize