Zeli Systems
SATPAK-CPCI-MGUE-FORCE5M

**Trimble FORCE5M
Military GPS User Equipment (MGUE)
Solution
(M-Code 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 PICMG 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.
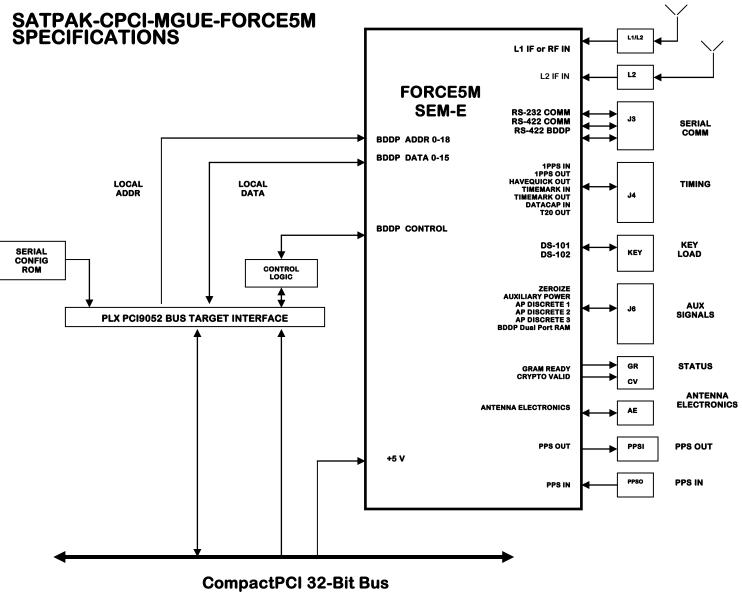
Auxiliary Voltage:

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

**FORCE5M
SEM-E**

L1 IF or RF IN — L1/L2

L2 IF IN — L2

BDDP ADDR 0-18

BDDP DATA 0-15

RS-232 COMM
RS-422 COMM
RS-422 BDDP — J3 — SERIAL COMM

1PPS IN
1PPS OUT
HAVEQUICK OUT
TIMEMARK IN
TIMEMARK OUT
DATACAP IN
T20 OUT — J4 — TIMING

BDDP CONTROL

DS-101
DS-102 — KEY — KEY LOAD

ZEROIZE
AUXILIARY POWER
AP DISCRETE 1
AP DISCRETE 2
AP DISCRETE 3
BDDP Dual Port RAM — J6 — AUX SIGNALS

GRAM READY
CRYPTO VALID — GR / CV — STATUS

ANTENNA ELECTRONICS — AE — ANTENNA ELECTRONICS

PPS OUT — PPSI — PPS OUT

PPS IN — PPSO — PPS IN

+5 V

LOCAL ADDR

LOCAL DATA

SERIAL CONFIG ROM

CONTROL LOGIC

PLX PCI9052 BUS TARGET INTERFACE

CompactPCI 32-Bit Bus

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
Conn:	15 Contact D-Subminiature

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