

DATASHEET

Force 22E



KEY FEATURES

SGE-41 24 Channel SAASM GPS

Engine All in View Dual Frequency

Simultaneous L1/L2 Tracking

External Oscillator Support

SPS/PPS Firewall Switch

SPS Differential Per RTCM-104 v2.1

Force 22E

The Trimble® Force™ 22E is designed for high performance embedded military applications requiring L1/L2 P(Y) capability in a small, light weight package. The Force 22E is the preferred choice for high performance UAVs, precise timing and mobile network systems.

The Force 22E is built on the Trimble 24-Channel GPS SAASM engine, the SGE-41. The same core engine is found in the industry standard Force 524D GPS receiver. It supports high measurement accuracy under extreme conditions. The Force 22E has also provisioned for an external oscillator input to meet unique timing applications.

The Force 22E provides enhanced Integrity capabilities with real-time Receiver Autonomous Integrity Monitoring (RAIM), and Fault Detection and Exclusion (FDE) per RTCA/DO-229. In addition, the receiver has advanced multipath mitigation functions.

The Trimble Force 22E was designed for easy integration and rugged dependability. Three general-purpose serial ports support ICD-GPS-153 and ICD-GPS-167 Serial Host Control Interface (SHCI) protocols. Popular NMEA 0813 messages are also supported. The same interfaces are supported across the entire Trimble military GPS line, thereby simplifying integration and reducing development effort.

The Trimble Force 22E GPS receiver has been granted Security Approval by the GPS Directorate.



Environmental

Dynamics:

Velocity: ± 400 m/sec

Acceleration: ± 40 m/sec²

Jerk: ± 4 m/sec³

Altitude:

Operating: -700 m to 22,800 m

Non-Op: -700 m to 24,000 m

Thermal:

Operating: -40° C to +85° C

Non-Op: -54° C to +95° C

Shock:

Operating: 15g, half-sine, 11 msec

Non-Op: 35g, half-sine, 3 msec

Vibration: 0.02 G²/Hz, 10 Hz to 2000 Hz

Performance

PPS Position: 3 m (typical)

PPS Velocity: 0.1 m/sec, RMS per axis

PPS Time: 40 nsec to UTC (typical)

TTF: 60 seconds, warm start (typical)

10 seconds, Hot Start

Available Documentation:

Specification: TMAS-GPS-F22E

ICDS: ICD-TMAS-153C

ICD-TMAS-167 (SHCI only)

Note: U.S. Government policy restricts the sale of Precise Positioning Service (PPS) equipment to those authorized by the U.S. Department of Defense. Non-U.S. authorized users must purchase PPS equipment through the Foreign Military Sales (FMS) process. Specifications subject to change without notice.

Approved for public release under case# 12-162.

Interfaces

RF: 5 Vdc Active L1/L2 antenna, +20 to +35 dB Gain

Oscillator: 11.68 or 12.8 MHz, 0 - +10 dBm

Power: 5 Vdc, <4 W

Ports: 1x RS-422, 2x RS-232 (-40 model)

1x RS-422, 2x CMOS (-41 model)

Protocols: ICD-TMAS-153C

ICD-TMAS-167 SHCI

NMEA-0183

RTCM-104

HAVEQUICK

1PPS IN/OUT

PHYSICAL CHARACTERISTICS

Dimensions: 79.8 mm (3.14") x 97.0 mm (3.82") x 14.3 mm (0.56")

Weight: 111 g (3.9 oz.)

I/O Connector: 50-pin SAMTEC TFLM-125-02-S-D-A

RF Connector: MMCX socket

Oscillator in: MMCX socket

Part Numbers:

Force 22E (RS-232/RS-422) 41205-40-Uxxx, 41205-40-Cxxx

Force 22E (CMOS/RS-422) 41205-41-Uxxx, 41205-41-Cxxx

Specifications subject to change without notice.

Made in U.S.A.

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