

CrossCheck XR

Intelligent GPS Mobile Unit with Communications Support and Optional Dead Reckoning for Commercial Fleet Applications

KEY FEATURES AND BENEFITS

- GSM and Transparent Protocol support
- Lower Acquisition and Operating Costs
- Configurable IQEvent Engine firmware
- Seamless Mobile Unit to Base Station Data Communications
- Slim Profile for Easy Installation
- Optional DGPS and Dead Reckoning for Improved Accuracy
- PowerTools Software for Installation and Maintenance

The CrossCheck™ XR mobile units provide a value-added platform for development of mobile positioning applications.

The CrossCheck unit integrates GPS, protocol support and computing power onto a *single board* enclosed in a low profile housing for *lower acquisition costs*.

The CrossCheck unit has intelligent reporting and storage with its IQEvent Engine™ firmware, providing improved security, efficiency, and *lower operating costs*.

Asset Management

The CrossCheck unit is ideal for enhanced asset management and security. First, asset monitoring and control is enhanced using operating events (e.g., trailer connect, ignition on/off, time clock) and digital inputs to notify an operations center of normal vehicle activity.

Second, driver, vehicle and cargo security is enhanced using security events (e.g., out of area, motion detection) and digital inputs to alert an operations center of unauthorized activity. The CrossCheck unit also provides digital outputs to activate vehicle security peripherals (e.g., ignition lock-out) in response.

Route Management

The CrossCheck unit can continuously record position, event,



CrossCheck XR and CrossCheck XR Plus with optional Dead Reckoning sensor

vehicle and *application* (mobile) data which can be immediately downloaded over-the-air or, for vehicles with pre-set routes, stored for downloading at a later time.

Once downloaded, the data can: support real-time dispatch; highlight exceptions; improve route efficiency (with third-party software); improve customer service and provide route verification for contract compliance, thus improving overall efficiency.

Optional Dead Reckoning

By blending GPS and DR continuously, the CrossCheck unit minimizes the effects of GPS outages, resulting in improved position accuracy in urban environments.

Fleet Management Software

The CrossCheck unit is part of Trimble's seamless middleware architecture for AVL applications, which is designed to help resellers quickly develop end-user software solutions.

The CrossCheck PowerTools software has a graphic interface for: configuring the IQEvent Engine, GPS diagnostics; and reflash (to update the unit).

In addition, Trimble's FleetVision® software is cost-effective for many fleet applications. For customized applications, FleetVision's ESI SDK enables developers to integrate AVL and FleetVision into their solutions.

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STANDARD COMPONENTS (Part Numbers 30838-XX and 30376-XX; XX=40, 80)

- In-vehicle Mobile Unit (with integrated mounting bracket)
- Power cable with 1A fuse (reverse polarity protection)

GENERAL SPECIFICATIONS

Power (typical):	Source: 10-32 VDC, capable of 500 mA Operation: 250mA @ 13V; 3.25W (Max) Standby: 10mA @ 13V; 1.3W Backup: Lithium battery, 3.6 VDC; 5 year shelf life
Serial ports:	Radio: (1) RS-232 DTE MDT (XR): (1) RS-232 DCE MDT/RTCM (XR Plus): (2) RS-232 DCE
Serial port speed, bps:	300, 600, 1200, 2400, 4800, 9600(def), 19200, 38400
Message formats:	TAIP, TSIP, NMEA-0183 Version 2.1, RTCM SC-104
Comm protocols:	GSM (Circuit Switched and SMS), Transparent IQEvent Engine
Digital I/O port:	Inputs: (2) switch closures Outputs: (2) 300mA low-side drivers; ignition; GPS, power, 1 pps

IQEVENT ENGINE FIRMWARE SPECIFICATIONS

Event triggers: Inputs (2); Outputs (2); Power; Power management; Data log; Ignition; First GPS fix; GPS fix; DGPS fix; Regions; Speeds; Distance/Counter/Timer; Time elapsed or Time of day; User defined; or any combination

Event actions: Report to base (up to 10 destinations); Log report; Report to serial port; Modify another event; Change output driver status; Set or Increment a counter/timer/distance; Modify time/distance reporting; or Change power management

Messaging: Accommodates a variety of mobile data terminals, laptops, and Windows CE platforms

Output data: Latitude, longitude, altitude, speed, heading, time, and events

GPS SPECIFICATIONS

Receiver:	L1 frequency, C/A code (SPS), 8-channel continuous tracking receiver, 16 correlators
Update rate:	Once per second; up to once per 9,999 seconds
Accuracy, S/A*:	Position, meters (1 sigma): CrossCheck DR** Non-Differential 58 45 Differential (1 Hz) [†] 2 1 Velocity (1 sigma): 1 meter/second Time: UTC to nearest microsecond
First acquisition:	Typical (seconds): CrossCheck DR Cold start: <120 <120 Warm start: <45 <2 Hot back-up: <20 <2 Reacquisition: <2 0
Datum:	WGS-84
Differential:	Inverted Differential (non-DR operation), RTCM SC-104, TAIP DC and DD messages via network

FOR MORE INFORMATION

- E-mail us at sales_info@trimble.com
- Visit our website at www.trimble.com/mpc
- Access our FaxBack database at 1-408-481-7704

Specifications subject to change without notice.

PHYSICAL SPECIFICATIONS

Integrated Electronics:

Assembly:	XR: Sheet metal, gold anodized XR Plus: Sheet metal, black anodized Heading sensor: Injection molded plastic
Size:	XR and XR Plus: 229mm W x 95mm D x 33mm H 9" W x 3.75" D x 1.28" H Heading sensor: 102mm W x 64mm D x 92mm H 4" W x 2.5" D x 3.625" H
Weight:	XR: 0.43 kg (0.95 lbs) XR Plus: 0.45 kg (1 lbs) Heading sensor: 0.16 kg (0.35 lbs)

Connectors (450/455):

GPS antenna:	SMB (receptacle)
Radio:	DB9 (receptacle)
MDT (XR):	DB9 (receptacle)
MDT/RTCM (XR Plus):	DB9 (receptacle)
Digital I/O:	DB9 (receptacle)
Heading sensor (XR Plus):	DB9 (receptacle)
Power:	Switchcraft TA3 (plug)

ENVIRONMENTAL SPECIFICATIONS

Temperature:	Operating: -40°C to +60°C ^{††} Non-operating: -55°C to +85°C
Humidity:	5% to 95% RH, non-condensing at +40°C
Altitude:	-400 to +5,000 meters
Velocity:	446 meters/second (999 miles/hour)
Vibration:	0.008g ² /Hz 5Hz to 20Hz 0.05g ² /Hz 20Hz to 100Hz -3dB/Octave 100Hz to 900Hz
Shock:	40g for 11 milliseconds
Casing:	Splash-resistant and dust-resistant

HEADING SENSOR SPECIFICATIONS (XR Plus version only)

Gyro:	Piezoelectric vibrating beam
Port:	Gyro, Odometer, Backup light
Odometer pulse:	100mV to 28V peak to peak signal (user-supplied) digital frequency proportional to speed. Min. output 2,000 pulses/mile. Recommended output: >8,000 pulses/mile. Use signal conditioner for analog.

ACCESSORIES (Ordered separately)

- GPS antennas/cables: Permanent or magnetic mount
- Heading sensor (XR Plus only) and cable
- FleetVision and FleetVision External Systems Interface SDK
- CrossCheck PowerTools
- Serial and Digital I/O cables

* All GPS receivers are subject to degradation of position and velocity accuracies under Department of Defense imposed Selective Availability (S/A).

** In DR/GPS operation; in DR only operation, an additional 3% to 5% of distance traveled up to 1 km.

[†] At least five satellites; PDOP <4.

^{††} Operating temperatures for the Heading sensor are -20°C to +60°C.



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