Surveyor+ GNSS System
Now supporting OmniSTAR

Comes with the Novatel OEM628™ on board that optimizes satellite availability in any condition & supports current & future GNSS signals

- ACCURATE
- AFFORDABLE
- RUGGED
- RELIABLE

VERSATILE: Network RTK, Base/Rover RTK & static capable

SCALABLE: Get Surveyor+ collector only, add RTK engine anytime

FLEXIBLE: Drivers for most total stations & robotics. Localize the set-up and backsight

Loaded with Carlson SurvCE

- Internal Dual Frequency GPS plus Glonass RTK Receiver
- Data Rate – Measurement 5Hz, Position 5Hz
- Dual Frequency WASS rated to .6M
- Network RTK Ready: Internal GSM SIM Card Enabled Modem
- Internal Wi-Fi & Bluetooth® Connectivity
- System provides 8-plus hours total operation
- Robust full alphanumeric keyboard
- Memory: 1 GB internal / expandable MicroSD card slot
- Screen: sunlight viewable color display
- IP67: Rugged Rating / 5-foot drop / Magnesium housing
- Office Compatibility: Carlson Survey, Civil, Mining, Takeoff, Construction – full suite solutions.
Carlson Surveyor+ Specifications

### Processor
- Type: PXA270
- Maximum Clock Speed: 624 Mhz/Surveyor+
- Both include:
  - Real Time Clock
  - Battery Warm Swapping Ability
  - Microphone
  - Speaker

### Display
- Type: TFT
- Resolution (240x320 pixels): QVGA
- Color/Mono: Color
- Size: 3.5” diagonal
- Both also include:
  - Backlight (LCD)
  - Touchscreen
  - Ability to disable Touchscreen from keyboard

### Operating System — WM 6.1
- Languages: English, Simplified Chinese, Portuguese, French, German, Spanish
- Applications included: All standard WM6 applications (Word Mobile, Excel Mobile, Outlook Mobile, etc.)
- Bluetooth Audio: A2DP supported
- Speed Switch Utility: Sets processor clock speed to conserve battery

### Interface (I/O Connector)
- RS-232: 9 pin D: Two DB-9
- Bluetooth: 2.0 w EDR
- 802.11 b/g
- USB Client: Mini-B connector
- USB Host: Full-size USB connector

### Expansion
- MicroSD Card Slot
- Expansion Packs for GPS, cell modem, MicroSD Card Slot
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- Enclosure
- Dimensions: 10.2” x 5” x 1.5”
- Weight: ~ 2 lbs.

### Keyboard
- Type: Elastomer
- Navigation: 9-way (9) navigation pad with center enter
- Numeric Keys: 0-9 (10)
- Alpha Keys: A-Z (26)
- Command/Modifier Keys: 18 – Shift, Tab, Control, 2nd, Escape, Alt, Space, Backspace, Delete
- Enter Key: Large, easy to use both right- and left-handed
- Left & Right Soft Keys
- Function Key: Left Soft Function key loads SurvCE
- Windows Key: Displays the Start Menu
- Power Key
- Backlight Control Keys: Alt- Yellow, 2nd- Blue, Control-Green, Shift-Red
- LED Emitters/Notifiers: 2 – One LED displays charging status and the second one can be programmed by the application software
- Number of keys: 52

### Memory
- Feature
- Surveyor+
- RAM
- 128 MB
- Data Storage
- 1GB
- Data Storage Expansion
- MicroSD memory card behind 2nd battery

### Battery
- Battery Type: Lithium
- Battery Pack: Come standard with one (1) battery pack; user can add a second battery pack
- Battery Capacity: 3900 mAh (7800 mAh capacity reached when using two battery packs)
- Battery Life: 8-10 hours standard (battery life is determined by the number of battery packs used, by the amount of time the backlight is on, the backlight brightness and the type of expansion pack installed)
- Charging Plug: Included
- Vehicle Charge Adapter: Included

### Environmental
- Operating Temperature: -30°C to 45°C
- Storage Temperature: -30°C to 60°C
- Humidity: MIL-STD-810F (Designed to this standard)
- Water Resistance: IP67
- Shock Resistance: MIL-STD 810F (Designed to withstand 5-foot drop onto concrete)
- Dust Resistance: IP67

### Enclosure
- Dimensions: 10.2” x 5” x 1.5”
- Weight: ~ 2 lbs.
- Both include:
  - Handstrap
  - Full-size Stylus
  - Stylus Storage
  - Full-size Stylus
  - Handstrap

### Warranty
- Electronics: 24 months
- Battery & Chargers: 90 days

### Optional Accessories
- Wall Charger with choice of adapter
- Styli
- Screen Protectors
- Battery Pack – Standard
- Vehicle Charger
- External Battery Charger

### Expansion Packs
- 3G Cellular Modem – GSM
- SurvCev+ GPS System

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### GNSS Receiver Specifications

#### Performance
- Channel Configuration
  - 120 Channels
- Signal Tracking
  - GPS: L1, L2, L2C, L5
  - QZSS: L1, L2
  - Galileo: E1, E5
  - GO=O/A/GIOVE-B (text)
- Compass
  - SBAS
  - QZSS
  - L-Band

#### Horizontal Position Accuracy (RMS)
- Single point L1: 1.5 m
- Single point L1/L2: 1.2 m
- SBAS: 0.6 m
- DDPS: 0.4 m
- L-Band: 0.6 m
- XP: 0.15 m
- HP: 0.1 m

#### Initialization Time
- Initialization time < 10 s
- Initialization reliability > 99.9%

#### Measurement Precision (RMS)
- Fully independent code and carrier measurements:
  - GPS GLO
    - L1 C/A code: 4 cm
    - L1 carrier phase: 0.5 mm
    - L1 P(Y) code: 8 cm
    - L2 carrier phase: 1.0 mm
    - L2C code: 8 cm
    - L2C carrier phase: 0.5 mm
    - L5 code: 3 cm
    - L5 carrier phase: 0.5 mm

#### Maximum Data Rate
- Measurements: 100 Hz
- Position: 100 Hz

#### Time to First Fix
- Cold start: < 50 s
- Hot start: < 30 s

#### Signal Reacquisition
- L1: < 0.5 s (typical)
- L2: < 1.0 s (typical)

#### Velocity Accuracy
- 0.5 m/s RMS

#### Physical and Electrical
- Dimensions: 60 x 100 x 9.1 mm
- Weight: 37 g

#### Power
- Input voltage: +3.3 VDC (+5%/+5%)
- Power consumption: 1.3 W
- Antenna LMA Power Output
  - Output voltage: 5 VDC (±5%)
  - Maximum current: 100 mA

#### Features
- Field upgradeable software
- 20 Hz measurement and position data rate
- PAC multipath mitigating technology
- Differential GPS positioning
- Differential correction support for RTCM 2.1, 2.3, 3.0, 3.1, CMR, CMR+ and RTCA
- Navigation output support for NMEA-0183 and detailed NovAtel ASCH and binary logs
- Outputs to drive external LEDs
- External oscillator input

#### Firmware Options
- RT-2
- L-Band
- ALIGN
- GL1DE
- SurvCE

### Carlson Surveyor+ GNSS Flyer Back 10-1-12

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