Carlson Vx7

Smart Antenna

Carlson
—MACHINE CONTROL—

OEM Hardware for MC Systems

The **Carlson Vx7** is the rugged all-in-one multifrequency, multi-GNSS smart antenna which provides RTK-level position and precise heading. This rugged design is compliant to IP69, MIL-STD81 0G, MIL-STD-202F, and IEC 60068-2 standards for water ingress, shock, and vibration for the harshest environments. The **Vx7** is a great solution for machine control and other challenging applications.

The all-in-one **Vx7** with set antenna separation provides consistent and reliable position and heading accuracy.

Key Features

- Simple all-in-one RTK capable heading solution
- Athena™ RTK and Atlas® L-band capable
- Integrated IMU delivers fast start-up times and provides heading during temporary GNSS loss
- Fully rugged IP69, MIL-STD81 0G, MIL-STD202F, IEC 60068-2 compliant solution for the harshest environments

Experts in Machine Control Applications since 1996
- Mining - Landfill - Piling - Dredging - Construction - Contract Drilling - Custom Applications -

Learn more: **www.carlsonmachinecontrol.com**
or contact at: **info@carlsonmachinecontrol.com**

BREAK NEW GROUND

Carlson Vx7 - Specifications

GNSS Receiver Specifications

Receiver Type:	Vector GNSS RTK Receiver
Signals Received:	GPS, GLONASS, BeiDou, Galileo, QZSS, IRNSS and Atlas
Channels:	744
GPS Sensitivity:	-142 dBm
SBAS Tracking:	3-channel, parallel tracking
Update Rate:	10 Hz standard, 50 Hz optional
Timing (1 PPS) Accuracy:	20 ns
Rate of Turn:	100°/s maximum
Cold Start:	40 s (no almanac or RTC)
Warm Start:	20 s typical (almanac and RTC)
Hot Start:	5 s typical (almanac, RTC and position)
Heading Fix:	10 s typical (Hot Start)
Anlenna lnput lmpedance:	50 Ω
Maximum Speed:	1,850 mph (999 kts)
Maximum Allilude:	18,288 m (60,000 ft)
Differential Options:	SBAS, Atlas (L-band), RTK

Accuracy

Positioning:	**Horizontal (95%)**	**Vertical (95%)**
Autonomous, no SA [2]**:**	1.2 m	2.5 m
SBAS (WAAS)[2]**:**	0.25 m	0.5 m
Atlas (L-Band)[2,8]**:**	0.04 m	0.08 m
RTK[1]**:**	10 mm + 1 ppm	20 mm + 2 ppm
Heading (RMS):	<0.2°	
Pitch/Roll (RMS):	1°	
Heave (RMS):	30 cm (DGPS)[6], l O cm (RTK)[6]	

L-Band Receiver Specifications

Channels:	1530 to 1560 MHz
Sensitivity:	-130 dBm
Channel Spacing:	5 kHz
Satellile Selection:	Manual or Automatic
Reacquisition Time:	15 sec (typical)
Processor:	DSP tor demodulation and protocol decoding module provides processing for the differential algorithms

Communications

Ports:	1x full-duplex RS-232/RS-422, 1x RS232, 2x CAN, 1x Ethernet
Baud Rates:	4800 - 115200
Radio lnlerfaces:	Bluetooth 2.0 (Class 2), Wi-Fi 2.4 GHz, UHF (400 MHz)
Correction I/0 Protocol:	Atlas, Hemisphere GNSS proprietary, RTCM v2.3 (DGPS), RTCM v3 (RTK), CMR, CMR+[1]
Dala I/0 Protocol:	NMEA 0183, Hemisphere GNSS binary
Timing Output:	1PPS, CMOS, active low, falling edge sync, 10 kΩ, 10 pF load
Event Marker lnput:	CMOS, active low, falling edge sync, 10 kΩ, 10 pF load
Heading Warning I/0:	Open relay system indicates invalid heading

Power

lnput Voltage:	9-32 VDC
Power Consumption:	10.5W max (All signals and L-band)
Current Consumption:	1.2A max
Power lsolation:	No
Reverse Polarity Protection:	Yes

Environmental

Operating Temperature:	-40°C to + 70°C (-40°F to + 158°F)
Storage Temperature:	-40°C to +85°C (-40°F to + 185°F)
Humidity:	95% non-condensing
Mechanical Shock:	50Gs, 11 ms half sine pulse, 10 shocks in each direction and axis, total 60 shocks. Operational IEC 60068-2-29 MIL-STD-81OG
Vibration:	Vibration Sine: 30.6Grms MIL-STD-81OG SAE J1211 ISO 16750-3:2007 Vibration Random: 5.96Grms IEC 60068-2-64 MIL-STD-202F
EMC:	EN 13309 Conslruction Machinery ISO 137 66 Earth Moving E-Mark FCC part 15 Subpart B, CISPR22
IMO Wheelmark Certification:	No
Enclosure:	IP69

Mechanical

Dimensions:	66.3L x 20.9 W x 14.6 H cm
Weight:	2.1 kg
Status lndications (LED):	Power, GNSS Lock, Heading, UHF corrections
Power/Data Connector:	22-pin environmentally sealed

Aiding Devices

Gyro:	Provides smooth heading, fast heading reacquisition and reliable < 0.5° per min heading for periods up to 3 min. when loss of GPS has occurred[4]
Tilt Sensors:	Provide pitch, roli data and assist in fast start-up and reacquisition of heading solution

1 Depends on multipath environment, number of satellites in view, satellite geometry, no SA and ionospheric activity
2 Depends on multipath environment, number of satellites in view, WAAS coverage and satellite geometry
3 Depends on multipath environment, number of satellites in view, satellite geometry, baseline length (for differential services), and ionospheric activity
4 Based on a 40 second time constant
5 Hemisphere GNSS proprietary
6 Requires a Hemisphere GNSS subscription

Carlson Software Inc | 33 East Second Street | Maysville, KY 41056 USA | 800-942-2540 | www.carlsonsw.com

810-211-80