TRC-4 Steerable Antenna/Radio System

Groundbreaking Steerable Antenna

The TRC-4 is a point to point antenna technology that electronically steers a focus beam to maintain a strong wireless broadband link with a 360º horizontal and 30º vertical range. This proprietary steering capability requires only microseconds to adjust to changes in position, allowing for robust links for fixed, nomadic or mobile applications including marine and terrestrial vehicles. Additionally, TRC-4 blocks and deflects RF interference, further enhancing performance in crowded environments.

The TRC-4 system's plug and play adaptability doesn't require difficult configuration or realignments allowing for rapid deployment and minimal maintenance. The antenna and radio are both fully contained in a weather proof enclosure without moving parts or external hardware further reducing the need for costly maintenance. The TRC line is available in a range of broadband frequencies including 5.x, and 4.9 GHz.

Solution For:

- Rapid deployment of wireless network communications
- Mobile to mobile broadband communications over long distances
- When the direction to access points is unknown
- Systems requiring recurrent antenna re-alignment
- When there is limited trained personnel to deploy wireless broadband networks

Steerable AntennaTechnology

- Maximum range, 100 km
- Maximum gain, 23 dB
- 360º horizontal and 30º vertical steering range
- Continuous link optimization for maximum throughput
- Plug and play simplicity for rapid deployment
- No realignments or configuration required
- No moving parts
- Low power draw, solar powerable

Powerful and Flexible Throughput

- Up to 108 Mb/s over-the-air rate and up to 60 Mb/s TCP/IP throughput
- 16/32 Mb/s throughput in TDM mode
- RF bandwidth adjustable (5/10/20/40 MHz)
- Low fixed latency (bounded delay)

Fast Deployment and Easy Network Control

- Self configures MAC addresses, encryption and SSIDs
- Monitor status and control radios from anywhere
- Integrated power and temperature monitoring capabilities
- User configurable alarms via the interface, GUI or e-mail
- SNMP (v1 or v2 basic)

Built Rugged for Extreme Weather and Industrial Applications

- IP67 rated ODU with highest level lightning protection
- Optional extended temperature range from -40ºC to +60ºC

Security and Encryption

- Secure 64, 128 and 152 bits WPA and AES-128 encryption

US/International Frequency Plans

- Accommodates US and International frequency plans within the US unlicensed 5.x and 4.9 GHz public safety band

Applications

- Emergency Response
- Homeland Security
- Public Safety
- Construction
- Military
- Ports
- Maritime
- Rural Development

GSA

MADE IN U. S. A.

CARLSON WIRELESS™
Microwave Broadband and Telephone

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TRC-4

Designed and Built for Plug and Play

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SECURITY

Security Mechanism	WPA2 PSK
Encryption	AES (NIST/FIPS 140-2 compliant), WEP, WEP2, WPA, AES-128, 64, 128, 152 -bit WEP data encryption

PHYSICAL/MECHANICAL

Two POE injectors connect via outdoor CAT-6e cable (300m max length)

RADIO POWER SUPPLY

Voltage	100-240 VAC, -24 VDC or -48 VDC optional
Power Consumption	6 - 8 watts typical

ANTENNA SPECIFICATIONS

Gain of the antenna array (in dBi)	17, 20, 23 dBi
Frequency range	4.9 GHz and 5.x GHz
Power consumption (W) - for antenna + embedded SBC	14, 24, 44W
Range	20 km, 50 km, 100 km
TX radio power	800 mW, 1600 mW, 2000 mW

PERFORMANCE TABLE

Product Name	Gain (dBi)	TX Power Output* (mW)	Range to get 9 Mbps for 25 dB Fade Margin (km)	Power Consumption (Watts)
TRC-416	17	800	20	14
TRC-432	20	1600	50	24
TRC-464	23	2000	100	44

* Maximum Allowed By FCC: 2000 mW

USER DATA THROUGHPUT

Data Throughput (IP Mode)	60+ Mb/s asymmetric throughput in CSMA (802.11a)
Data Throughput (TDM Mode)	16/32 Mb/s symmetric throughput in TDM
Over the Air Data Rate	54 Mb/s (108 Mb/s in turbo mode) per radio

RF PERFORMANCE

Frequency Bands Supported	5.2 GHz, 5.4 GHz, 5.8 GHz 4.9GHz Public Safety band also available
RF Channel Width	5/10/20/40 MHz
Modulation	OFDMA - BPSK, QPSK, 16QAM, 64QAM
Tx Power	6-24 Mb/s +23 dBm, 54 Mb/s +18 dBm
Receiver Sensitivity	54 Mb/s -72 dBm, 48 Mb/s -77 dBm, 36 Mb/s -82 dBm, 24 Mb/s -85 dBm, 18 Mb/s -89 dBm, 6 - 12 Mb/s -90 dBm
End-to-End Latency	(CSMA) per IEEE 802.3 + propagation, (TDM) 5 ms

ENVIRONMENTAL

Ingress Protection	IP67 (dust tight, 1 m water immersion)
Outdoor Unit Temperature	-40˚C to 60˚C
Outdoor Unit Humidity	Up to 100% humidity (non-condensing)
Safety	UL 60950, CAN-CSA C22.2 60950, EN 60950, IEC 60950
EMC	FCC 47CFR class B part 15, subpart B, CAN/CSA-CEI/IEC CISPR 22-02, EN300 386, EN301 489, EN55022, EN61000, EN55024, AS/NZS CISPR 22
Environmental	IEC 60721 class 4M5 IP67

ETHERNET INTERFACE

Type	10/100BaseT with Auto-negotiation
Number of Ethernet Ports	1 data port and 1 management port
Framing/Coding	IEEE 802.3/U
Bridging	Self-learning up to 2047 MAC addresses
Connector	RJ-48
QoS Services	WME - Prioritizes traffic according to voice, video, best effort and background
Compatibility	IPv6

NETWORK MANAGEMENT INTERFACE

User Interface	Browser based access via Ethernet port w/Flash GUI
Setup and Alignment	Audio tone varies with signal strength
Protocol	HTTPS
Upgrade Capabilities	Local and remote software upgrades
Telemetry Alerts Mechanism	Email and GUI
Diagnostics	Local and remote loopback testing
Management Port	DHCP based
Configuration Management System	Built-in w/full history
Voltage Input/Monitoring Range	9-56 V at ± 3%
Temperature Monitor Range	-40 to124°C at ± 2°
Programmable Alert System	Email and GUI

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