# PRODUCT DATASHEET

**EC SYSTEM ECM-P5-A28R500-500M**

**4.9 – 6.0 GHz**

## Description

**EC SYSTEM** high-capacity Integrated 28 dBi Dual-polarization Antenna Point-to-Point backhaul

## Performance

- **Distances**: 60 km

## Radio

- **Radio technology**: MIMO 2x2 (Cyclic single carrier)
- **Modulation types**: from QPSK to QAM256, as well as QAM1024
- **Transmit power**: up to 27 dBm (average, per Tx chain) @ QPSK to QAM256. Up to 24 dBm @ QAM1024
- **Receiver sensitivity**: -94 dBm @ 10 MHz, QPSK
- **Frequency bands**: 4.9-6.0 GHz
- **Channel bandwidth**: 10, 20, 40 MHz

## Wired Interfaces

- **2x 10/100/1000 Base-T metallic ports, RJ-45**
- **SFP port**

## Power Consumption

- **Consumption**: up to 30 Watts
- **Power options**:
  - 90-240 VAC~ @ 50/60 Hz
  - 43..56 VDC

## Form Factor and Dimensions

![Image](image.png)

- **600 x 600 x 75 mm, 6.2 kg**

## Part Number Options

- **ECM-P5-A28R500-500M**
Features

RADIO
- Voice/RTP Aware Superpacking
  - to minimize jitter and latency for multimedia applications
- DFS
  - intelligent search for a cleanest channel
  - interference avoidance
  - radar detection (depending on regulatory domain)
- continuous background spectrum monitoring
  (for Instant DFS enabled units only)
- seamless channel change in case of congestion or radar detection
  (for Instant DFS enabled units only)
- Automatic Bitrate Control
  - to ensure a 100% stable link irrelevant of changes in external conditions
- Automatic Transmit Power Control
  - to track and keep optimal input signal level to maximize performance for each link
  - and reduce overall interference within a given transmit power and ERP limitations
- Automatic Distance Learning
  - to optimize performance for any link distances from dozens of meters to 100 km and above
- Channel Time Adjustment
  - to improve performance on heavily loaded links
- Spectrum Analyzer mode
  - interference detection
  - non-invasive spectrum analysis (for Instant DFS enabled units only)
- Channel testing tools
  - channel performance measurement
  - advanced diagnostics

MANAGEMENT FEATURES
- Web-interface
  - basic settings
  - channel diagnostics: spectrum analysis, antenna alignment, channel throughput measurement
  - unit and RF links monitoring
  - maintenance: firmware upgrade, license and configuration import/export
  - tech support diagnostic reports generation
- command-line access
- Command-line interface for in-depth configuration and diagnostics accessible via:
  - secure shell (SSH)
  - telnet
  - serial port
  - remote shell
- SNMPv1 / SNMPv3 support
  (MIB II, private MIB)
- Configurable SNMP Traps

NETWORKING
- Ethernet-over-IP tunneling
  - ARP protocol support
- MAC/IP filtering
- Full-fledged 2nd layer switch:
  - Transparent transport for any type of Ethernet traffic including MPLS, stacked VLANs, etc.
  - Multiple switching groups
  - Full VLAN support including Q-in-Q
  (IEEE 802.1q and 802.1ad)
  - STP/VTP support
  - IGMP Snooping with Querier mode
  - Trunk groups support
- RIPv2 / OSPFv2 / static routing
- Tunneling
  (Ethernet-over-IP, IP-over-IP)
- L2/L3 Firewall
- NAT (multipool, H.323-aware)
- DHCP client/server/relay

QUALITY-OF-SERVICE
With many QoS permutations, QoS implementation works transparently in the network based on IEEE802.1p standard as well as ToS/DiffServ, guaranteeing optimal performance under any load conditions and lowest jitter/delays for priority traffic.

Quality-of-Service features:
- 16 priority queues
- IEEE 802.1p support
- IP ToS / DiffServ support
- Full voice support
- Traffic limiting (absolute, relative, mixed)
- Traffic redirection

MAC
- Dynamic adaptive Polling
  - Centralized marker grant mode
  - Dynamically takes into account channel activity
  - Permanent channel testing
- Pseudo-radio Interface
  - unique Wireless feature to join Wireless networks via 3rd party equipment
  (Wired Ethernet segments, IP clouds)
- Automatic over-the-air firmware upgrade

STANDARD COMPLIANCE
- Radio
  - EN 301 893 v1.5.1
  - EN 302 500 v1.2.1
  - RoHS
  - Directiv 2002/95/EC
- EMC
  - EN 301 489-1
  - EN 301 489-17
  - FCC Part 15 Class B
  - RoHS
  - Directive 2002/95/EC
  - EN 60950-1:2006

SECURITY FEATURES
- Storm / flood protection
- Password protection
- Protocol messages encryption
- Secure command-line access via SSH protocol

ENVIRONMENTAL
- Outdoor Units:
  - 40...-60°C, 100% humidity, condensing
- Indoor Units:
  - 0...+40°C, 95% humidity, non-condensing

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