2.4GHz/5GHz 300Mbps Outdoor CPE
Pharos CPE Series Datasheet

**Highlights**

- Wireless N speed up to 300Mbps
- Selectable bandwidth of 5/10/20/40MHz
- Adjustable transmission power by 1dBm
- Broad operating frequency channels ensure less wireless interference
- Built-in 2×2 dual-polarized directional MIMO antenna
- Passive PoE Adapter supports up to 60 meter (200 feet) Power over Ethernet deployment
- 1 10/100Mbps Ethernet port for passive PoE (all CPE products) and 1 10/100Mbps Ethernet port for extended applications (CPE220/CPE520)
- TP-Link Pharos MAXtream (Time-Division-Multiple-Access) technology improves product throughput, capacity and latency performance, ideal for PtMP applications
- Centralized Management System – Pharos Control
Typical Applications

TP-Link’s Outdoor CPE is dedicated to reliable solutions for outdoor wireless networking applications. With its centralized management application, it is flexible and ideal for point-to-point and point-to-multipoint applications.

- **Long-distance Wireless Connection**
  Using two CPEs to build a long-distance wireless connection

- **Large-area Wireless Coverage**
  Using Base Station combined with Sector Antenna as the Access Point at the central station, and several CPEs as client to build a Point to Multi-Point coverage.
TP-Link MAXstream TDMA Technology

As network scale increases, wireless competition and collisions among outdoor devices will be so fierce that the real throughput of the network will drop, resulting in a serious impact on end-user experience. To mitigate these effects, TP-Link’s Pharos series uses MAXstream TDMA Technology.

Pharos Control – Centralized Management System

Pharos also comes equipped with centralized management software that helps users easily manage all the devices in their network from a single PC - Pharos Control. Functions like device discovery, status monitoring, firmware upgrading, and network maintenance can be managed using Pharos Control.

PharOS

User-friendly web-based management system allows professionals to do more specific configurations.
### Features & Performance

#### Model

<table>
<thead>
<tr>
<th>CPE210 / CPE220</th>
<th>CPE510 / CPE520</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4GHz 300Mbps 9dBi / 12dBi</td>
<td>5GHz 300Mbps 13dBi / 16dBi</td>
</tr>
<tr>
<td>Outdoor CPE</td>
<td>Outdoor CPE</td>
</tr>
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</table>

#### Hardware Features

<table>
<thead>
<tr>
<th>Processor</th>
<th>Qualcomm 650MHz CPU, MIPS 24Kc (CPE210)</th>
<th>Qualcomm 560MHz CPU, MIPS 74Kc (CPE220, CPE510, CPE520)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>64MB DDR2 RAM, 8MB Flash</td>
<td></td>
</tr>
<tr>
<td>Antenna Gain</td>
<td>CPE210: 9dBi</td>
<td>CPE510: 13dBi</td>
</tr>
<tr>
<td>Beamwidth</td>
<td>CPE220: 12dBi</td>
<td>CPE520: 16dBi</td>
</tr>
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</table>

- **CPE210**: 65° (Azimuth) / 35° (Elevation)  
- **CPE220**: 60° (Azimuth) / 30° (Elevation)  
- **CPE510**: 45° (Azimuth) / 30° (Elevation)  
- **CPE520**: 45° (Azimuth) / 30° (Elevation)

#### Interfaces

- CPE210/CPE510: 1 10/100Mbps Shielded Ethernet Port (LAN/POE)  
- CPE220/CPE520:  
  - 1 10/100Mbps Shielded Ethernet Port (LAN0/POE)  
  - 1 10/100Mbps Shielded Ethernet Port (LAN1)  
  - 1 Grounding Terminal  
  - 1 Reset Button

#### Power Supply

- Passive Power over Ethernet via LAN (+4.5pins; -7.8pins)  
- Voltage range: 16-27VDC

#### Dimensions (L x W x H)

- 224×79×60 mm (CPE210, CPE510)  
- 276×79×60 mm (CPE220, CPE520)

#### Protection

- 15KV ESD Protection  
- 6KV Lightning Protection

#### Enclosure

- Material: Outdoor ASA stabilized plastic  
- Weatherproof: IPX5 water and dust proof design

#### Wireless Features

<table>
<thead>
<tr>
<th>Wireless Standards</th>
<th>IEEE 802.11b/g/n</th>
<th>IEEE 802.11ah</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Protocol</td>
<td>TDMA Mode (with Pharos MAXtream enabled)</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>2.4~2.483GHz</td>
<td>5.15~5.85GHz</td>
</tr>
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</table>

- **Wireless Speed**:  
  - Up to 300Mbps (40MHz, Dynamic)  
  - Up to 144.4Mbps (20MHz, Dynamic)  
  - Up to 72.2Mbps (10MHz, Dynamic)  
  - Up to 36.1Mbps (5MHz, Dynamic)

#### Maximum Transmit Power

- **CPE210**: 27dBm/500mW (Adjustable power by 1dBm)  
- **CPE220**: 30dBm/1000mW (Adjustable power by 1dBm)  
- **CPE510**: 23dBm/200mW (Adjustable power by 1dBm)  
- **CPE520**: 27dBm/500mW (Adjustable power by 1dBm)

#### Operation Modes

- AP / Client / Bridge / Repeater / AP Router / AP Client Router (WISP Client)

#### Network Configurations

- WAN: Static/Dynamic/PPPoE/L2TP/PPTP  
- LAN: Static/Dynamic/DHCP  
- Forwarding: DMZ/IAGL/UPnP/Virtual Server/Port Trigger  
- Security: SPI Firewall/ Ping Forbidden/VPN/DoS Protection  
- Access Control  
- Static Routing  
- Bandwidth Control  
- IP & MAC Binding

#### Wireless Configurations

- Pharos MAXtream TDMA Technology  
- Selectable Channel Width: 5/10/20/40MHz  
- Auto Channel Selection  
- Transmit Power Control  
- Dynamic Frequency Selection (DFS)  
- WDS Enable/Disable  
- Security: WPA/WPA2, WPA-PSK/WPA2-PSK (AES/TKIP) Encryption

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1. Available operation frequency may vary depending on the limitation of the countries or regions in which the device is used.
2. Maximum transmit power is limited by local regulatory settings.
## Features & Performance

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### Wireless Configurations
- 64/128/152-bit WEP Encryption
- SSID Broadcast Enable/Disable
- Multi-SSID with VLAN Tagging (AP mode only)
- Distance/ACK Timeout Setting
- Wireless MAC Address Filter
- Wireless Advanced:
  - Beacon Intervl/RTS Threshold/Fragmentation Threshold/DTIM Intervl/AP Isolation/Short GI/Wi-Fi Multimedia

### Management
- Discovery and Remote Management via Pharos Control application
- HTTP/HTTPS Web-based management
- System Log
- SNMP Agent (v2c)
- Ping Watch Dog
- Dynamic DDNS
- SSH Server

### System Tools
- Indicators: Signal Strength/Noise/Transmit CCQ/CPU/Memory
- Monitors: Throughput/Stations/Interfaces/ARP/Routes/WAN/DHCP
- Spectrum Analysis
- Speed Test
- Ping
- Traceroute

### System-level Optimizations
- IGMP Snooping/Proxy for multicast applications
- Hardware watch dog

### Certification
- CE, FCC, RoHS, IPX5

### Package Contents
- Outdoor CPE
- 24V 0.6A Passive PoE Adapter
- Pole Mounting Strap
- AC Power Cord
- Quick Installation Guide

### System Requirements
- Microsoft Windows 98SE, NT, 2000, XP, VistaTM or Windows 10, Windows 8, Windows 7, MAC OS, NetWare, UNIX or Linux.
- Note: We recommend you to use one of following Web browsers for better experience: Google Chrome, Safari, Firefox. IE browsers are not recommended.

### Environment
- Operating Temperature: -40°C~70°C (-40°F~158°F)
- Storage Temperature: -40°C~70°C (-40°F~158°F)
- Operating Humidity: 10%~90% non-condensing
- Storage Humidity: 5%~95% non-condensing

### Dimensions(WxDxH)
- 85.8×43.9×29.7mm

### Input Voltage
- 100VAC~240VAC@50Hz-60Hz

### Input Current
- 0.4A Max @ 100VAC

### Output Voltage
- 24VDC(+4.5pins; -7.8pins)

### Output Current
- 0.6A Max (Support up to 60m Power over Ethernet)

### Efficiency
- >84.28%

### Interfaces
- 1 AC Jack with Earth Ground
- 1 10/100/1000Mbps Shielded Ethernet Port (Power + Data)
- 1 10/100/1000Mbps Shielded Ethernet Port (Data)

### Power LED
- Green

### Certifications
- CE/FCC/UL/C/GS/PSB/C-tick/SAA/S-Mar/PSE
CPE210 Antenna Patterns

Vertical Azimuth

Vertical Elevation

Horizontal Azimuth

Horizontal Elevation

Return Loss – Vertical Polarization

Return Loss – Horizontal Polarization
CPE220 Antenna Patterns

Vertical Azimuth

Vertical Elevation

Horizontal Azimuth

Horizontal Elevation

Return Loss – Vertical Polarization

Return Loss – Horizontal Polarization
CPE510 Antenna Patterns

Vertical Azimuth

Vertical Elevation

Horizontal Azimuth

Horizontal Elevation

Return Loss – Vertical Polarization

Return Loss – Horizontal Polarization