DLB PROPELLER 5 - TH

Outdoor Wireless Device
DLB PROPELLER 5 - TH

The DLB Propeller 5 is a new generation wireless device designed for client and small scale base-station applications. It has a unique mechanism to do mechanical antenna parameter shifting and achieve the best performance in different operating modes (patent pending).

This product is equipped with a high output power MIMO radio (up to 15 dBm) and 15 dBi dual-polarized antenna which make the device ideal for short to medium range wireless communication.

Our dual firmware image will allow safe software upgrades. The device will restart using the prior firmware in the event of an upgrade failure.

The DLB Propeller 5 uses an advanced and feature-rich operating system which supports bridge/router and repeater modes (repeater mode allows the product to operate as an access point and as a station at the same time). The DLB OS also supports LigoWave’s iPoll2 (proprietary wireless communication technology) to increase throughput, packet per second rate and stabilize latency on your network. It has a user-friendly HTML 5 based GUI with instant reconfiguration without a reboot, includes useful installation tools (site survey, delayed reboot, spectrum analyzer, ping, traceroute) and is compatible with our standalone and cloud based Wireless Network Management System (WNMS) - one of the most advanced management tools on the market.

The DLB Propeller 5 can be rotated to the horizontal orientation for use as a client device. This greatly reduces interference, as the main noise source is on the azimuth. Alignment is easy as only left and right movement of the device is necessary (no need to move it upwards or downwards as the antenna angle on the elevation is wide).

OS

The DLB OS is a highly functional and easy to use operating system. This powerful and flexible operating system ensures flawless operation of all DLB hardware devices and effortless setup for those deploying the networks.

- Smart polling data transmission protocol (iPoll 2)
- Dual-firmware image support
- Responsive HTML 5 based GUI
- 170 Mbps capacity
- 80,000 PPS rate
- IPv6 support
- WNMS compatible

WNMS

WNMS is a FREE enterprise grade Wireless Network Management System. A single software solution simplifies a large number of management and monitoring tasks for network administrators. LigoWave’s comprehensive network management system supports several thousands of nodes. Multiple networks may be maintained and monitored using one server. A rich feature set helps to diagnose network problems effectively, visualize networks on a map, perform scheduled firmware upgrades automatically, track states of devices, get failure alerts, and collect statistics. The Web-based system environment supports multiuser accounts. Several administrators may manage different networks on the same server, without having access to each other’s equipment. WNMS is available as a stand-alone version for Linux and Windows servers, as a cloud-based system and as a mobile application for Android devices.
### Specifications

<table>
<thead>
<tr>
<th>Product/distance recommendation</th>
<th>PTMP mode</th>
<th>PTP mode</th>
<th>PTP mode (full capacity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLB Propeller 5</td>
<td>5 km/ 3.11 mi</td>
<td>7 km/ 4.35 mi</td>
<td>4.5 km/ 2.8 mi</td>
</tr>
</tbody>
</table>

### Wireless

- **WLAN standard**: IEEE 802.11 a/n, iPoll (proprietary)
- **Radio mode**: MIMO 2x2
- **Radio frequency band**: 5.150 - 5.850 GHz (FCC 5.150 - 5.250 & 5.745 - 5.850 GHz)
- **Transmit power**: Up to 15 dBm (Thailand version only)
- **Receive sensitivity**: Varying between -97 and -75 dBm depending on modulation
- **Channel size**: 5, 10, 20, 40 MHz
- **Modulation schemes**: 802.11 a/n: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
- **Data rates**:
  - 802.11 n: 300, 270, 240, 180, 120, 90, 60, 30 Mbps
  - 802.11 a: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
- **Error correction**: FEC, Selective ARQ
- **Duplexing scheme**: Time division duplex

<table>
<thead>
<tr>
<th>802.11N/iPoll (20/40 MHz)</th>
<th>15 Mbps</th>
<th>30 Mbps</th>
<th>45 Mbps</th>
<th>60 Mbps</th>
<th>90 Mbps</th>
<th>120 Mbps</th>
<th>135 Mbps</th>
<th>150 Mbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11a</td>
<td>-97</td>
<td>-95</td>
<td>-93</td>
<td>-88</td>
<td>-85</td>
<td>-81</td>
<td>-79</td>
<td>-77</td>
</tr>
<tr>
<td>30 Mbps</td>
<td>-94</td>
<td>-92</td>
<td>-89</td>
<td>-85</td>
<td>-82</td>
<td>-78</td>
<td>-77</td>
<td>-75</td>
</tr>
<tr>
<td>6 Mbps</td>
<td>-97</td>
<td>-97</td>
<td>-95</td>
<td>-93</td>
<td>-90</td>
<td>-86</td>
<td>-82</td>
<td>-81</td>
</tr>
<tr>
<td>15 Mbps</td>
<td>29</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>27</td>
<td>27</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>802.11N/iPoll (20/40 MHz)</td>
<td>30 Mbps</td>
<td>60 Mbps</td>
<td>90 Mbps</td>
<td>120 Mbps</td>
<td>180 Mbps</td>
<td>240 Mbps</td>
<td>270 Mbps</td>
<td>300 Mbps</td>
</tr>
<tr>
<td>802.11a</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>26</td>
<td>26</td>
<td>24</td>
<td>23</td>
</tr>
<tr>
<td>6 Mbps</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>27</td>
<td>26</td>
<td>26</td>
<td>25</td>
</tr>
</tbody>
</table>

### Antenna

- **Type**: Integrated directional dual - polarized panel
- **Gain**: 15 dBi

### Wired

- **Interface**: 10/100 Base-T, RJ45

---

COPYRIGHT © 2015 LigoWave
**Networking**

**Operating modes**
Bridge, Router

**WAN**
Static IP, DHCP client, PPPoE client

**NAT**
Routing w/ or w/o NAT

**Static routing**
Supported

**DHCP**
Client, Server, Relay

**Port forwarding**
Supported

**VLAN**
Supported for management and data

**Wireless security**
WEP, WPA/WPA2 Personal, WPA/WPA2 Enterprise, WMM, WACL

**User isolation**
Supported

**Softwave**

**Wireless operating modes**
Access point (auto WDS), access point (iPoll 2), station (WDS, iPoll 2), station (ARP NAT)

**Wireless techniques**
Smart station polling, smart auto-channel, adaptive auto modulation, automatic transmit power control (ATPC)

**Wireless security**
WPA/WPA2 personal, WPA/WPA2 enterprise, WACL, user isolation

**Wireless QoS**
4 queues prioritization on iPoll 2

**Network operating modes**
Bridge, router IPv4, router IPv6

**Network techniques**
Routing with and withouth NAT, VLAN

**WAN protocols**
Static IP, DHCP client, PPPoE client

**Services**
DHCP server, SNMP server, NTP client, router advertisement daemon, ping watchdog

**Management**
HTTP(S) GUI, SSH, SNMP read, WNMS, Telnet

**Tools**
Site survey, link test, ping, traceroute, spectrum analyzer, delayed reboot

**Physical**

**Dimensions**
Length 175 mm (6.89 ""), width 65 mm (2.56 ""), height 29 mm (1.14 "")

**Weight**
94 g (3.32 oz)

**Power supply**
12 - 24 VDC passive PoE (24 V passive PoE adapter is included in the package)

**Power source**
100 – 240 VAC via included adapter

**Power consumption**
4.5 W

**Environmental**

**Operating temperature**
-40°C (-40 F) ~ +65°C (+149 F)

**Humidity**
0 ~ 90 % (non-condensing)

**Management**

**System monitoring**
SNMP v1/2c/3 server, Syslogs, system alerts via e-mail and SNMP trap

**Regulatory**

**Certification**
FCC/IC/CE
Antenna specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-pol Isolation</td>
<td>30 dBi</td>
</tr>
<tr>
<td>VSWR</td>
<td>&lt;1.4</td>
</tr>
<tr>
<td>Azimuth beamwidth (H pol)</td>
<td>60 deg</td>
</tr>
<tr>
<td>Azimuth beamwidth (V pol)</td>
<td>60 deg</td>
</tr>
<tr>
<td>Elevation beamwidth</td>
<td>15 deg</td>
</tr>
<tr>
<td>Vertical position</td>
<td></td>
</tr>
<tr>
<td>Frequency range</td>
<td>5.1 - 5.9 GHz</td>
</tr>
<tr>
<td>Gain</td>
<td>15 dBi</td>
</tr>
<tr>
<td>Polarization</td>
<td>Dual linear</td>
</tr>
<tr>
<td>Horizontal position</td>
<td></td>
</tr>
<tr>
<td>Frequency range</td>
<td>5.1 - 5.9 GHz</td>
</tr>
</tbody>
</table>

DLB PROPELLER 5

Copyright © 2015 LigoWave. All rights reserved. LigoWave, the LigoWave logo, are trademarks of LigoWave. All other company and product names may be trademarks of their respective companies. While every effort is made to ensure the information given is accurate, LigoWave does not accept liability for any errors or mistakes which may arise. Specifications and other information in this document may be subject to change without notice. To learn more about LigoWave products, visit www.ligowave.com.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain</td>
<td>15 dBi</td>
</tr>
<tr>
<td>Polarization</td>
<td>Dual linear</td>
</tr>
<tr>
<td>Cross-pol Isolation</td>
<td>30 dBi</td>
</tr>
<tr>
<td>VSWR</td>
<td>&lt;1.4</td>
</tr>
<tr>
<td>Azimuth beamwidth (H pol)</td>
<td>15 deg</td>
</tr>
<tr>
<td>Azimuth beamwidth (V pol)</td>
<td>15 deg</td>
</tr>
<tr>
<td>Elevation beamwidth</td>
<td>60 deg</td>
</tr>
</tbody>
</table>