



DLB 5-90

Outdoor Wireless Device

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LigoWave's DLB 5-90 delivers the highest performance and stability available in the 5 GHz Bast Station class. This product combines a highly advanced radio core containing MIMO 2x2 technology with an integrated, high-gain, dual polarization directional antenna. The feature-rich operating system is optimized for ultra-high performance wireless communications while optionally allowing compatibility with older 802.11 a standard devices.

The smart dynamic polling based protocol (iPoll 2) ensures reliable communication even in congested areas with 64 client devices connected to a base-station.

Equipped with LigoWave's dual firmware image feature, remote software upgrades are assured even if a power failure interrupts the process. The device will restart using the prior firmware in the event of an upgrade failure.

The enclosure is made of polycarbonate plastic with UV inhibitors to provide years of outdoor exposure in direct sunlight without cracking. The DLB 5-90 was designed and tested to meet an IP-65 rating as well as vibration, temperature, drop, salt, fog, and electrical surge standards to ensure a high level of reliability unsurpassed in the industry. It is equipped with a grounding lug and a grounded 24-volt PoE to allow a professional installation, resistant to electrical surges. The mounting bracket permits installation on a wall or a pole and provides up to 30 degrees of down-tilt adjustment.

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 multi-user 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

Product/ distance recomendation	PTMP mode	PTP mode	PTP mode (full capacity)
DLB 5-90	7 km/ 4.35 mi	N/A	N/A

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 and 5.725 - 5.850 GHz)

Transmit power Up to 29 dBm (country dependent)

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

Receive sensitivity (dBm)	802.11N/ iPoll (20/ 40 MHz)	15 Mbps	30 Mbps	45 Mbps	60 Mbps	90 Mbps	120 Mbps	135 Mbps	150 Mbps
		-97	-95	-93	-88	-85	-81	-79	-77
		30 Mbps	60 Mbps	90 Mbps	120 Mbps	180 Mbps	240 Mbps	270 Mbps	300 Mbps
		-94	-92	-89	-85	-82	-78	-77	-75
	802.11a	6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
		-97	-97	-95	-93	-90	-86	-82	-81
Output power (dBm - combined)	802.11N/ iPoll (20/ 40 MHz)	15 Mbps	30 Mbps	45 Mbps	60 Mbps	90 Mbps	120 Mbps	135 Mbps	150 Mbps
		29	28	28	28	27	27	25	24
		30 Mbps	60 Mbps	90 Mbps	120 Mbps	180 Mbps	240 Mbps	270 Mbps	300 Mbps
		28	28	28	28	26	26	24	23
	802.11a	6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
		29	29	29	29	29	27	26	25

Antenna

Type Integrated dual-polarized 90 degree sector antenna

Gain 18 dBi

Wired

Interface 10/100 Base-T, RJ45

Software

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 without 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, antenna alignment

Physical

Dimensions Length 430 mm (16.9 "), width 150 mm (5.9 "), height 40 mm (1.6 ")

Weight 1000 g (2.2 lb)

Mounting Combination wall / pole mount included

Power

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

Power source 100 – 240 VAC

Power consumption (max) 4.5 W

Environmental

Operating temperature -40°C (-40 F) $\sim +65^{\circ}\text{C}$ (+149 F) Humidity $0 \sim 90 \%$ (non-condensing)

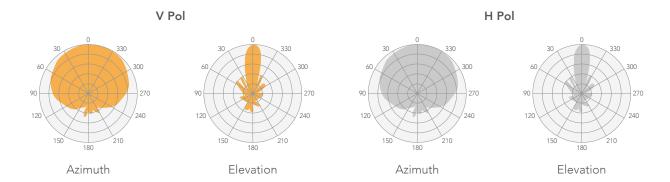
Management

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

Regulatory

Certification FCC/IC/CE

Antenna specifications



Internal Antenna

Frequency range	5.1 - 5.9 GHz
Gain	18 dBi
Polarization	Dual linear
Cross-pol Isolation	24 dBi
VSWR	<1.7
Azimuth beamwidth (H pol)	90 deg
Azimuth beamwidth (V pol)	90 deg
Elevation beamwidth	20 deg