



# AR60 & AR60X

60 GHz AdaptRate™ Wireless Links

## 60 GHz WIRELESS LINKS FOR HIGH-BANDWIDTH APPLICATIONS

BridgeWave is the leading supplier of gigabit RF connectivity solutions for service provider, government, military and enterprise applications. BridgeWave Gigabit Ethernet links extend network operator fiber to provide high-capacity access and backhaul, as well as extending enterprise LANs between buildings and sites.

### FEATURES

#### PERFORMANCE:

- Full rate, full duplex, Gigabit or Fast Ethernet
- License-free operation in the U.S. and Canada
- AdaptRate switching overcomes rain downpours
- AdaptPath provides secondary path switching for maximum service availability
- Interference-free operation enabling high-density deployments
- Low latency for fiber-equivalent performance
- Forward Error Correction provides maximum link range



AR60



AR60X

## WIRELESS VIRTUAL FIBER SOLUTIONS FOR:



### Enterprise

Server centralization, remote data storage and backup, leased line replacement.



### Healthcare

Secure, HIPAA-compliant connectivity, medical office, lab network access, real-time imaging & records, application connectivity.



### Education

High-performance campus connectivity, Wi-Fi and security camera backbone.



### Government/Municipalities

Video surveillance systems, traffic control and monitoring, Wi-Fi/4.9GHz backhaul.



### Service Provider

High-capacity business services, fiber extensions, cellular/Wi-Fi/WiMAX backhaul, redundant fiber overlays, mesh.



### Mobile Backhaul

Future-proof full-rate gigabit backhaul for next generation 4G/LTE/WiMAX backhaul.

#### SECURITY:

- Highly secure narrow beamwidth antennas
- Secure Management software option provides HTTPS management access and RADIUS authentication (see Advanced Security datasheet)
- AES Encryption hardware option provides the ultimate level of full line-rate data protection (see Advanced Security datasheet)

#### RELIABILITY:

- Rigorous HALT/HASS testing; 28-Year MTBF
- Up to 99.999%, carrier-grade availability

#### EASE-OF-USE:

- Connects directly to standard network equipment
- All-outdoor, compact design
- Low voltage power cabling
- Rapid & flexible deployment
- Embedded web and SNMP based network management agent

## CONNECTIVITY RANGES

AR60

Up to 1 Mile  
(1.6 km)

AR60X

Up to 1.5 Miles  
(2.5 km)



# Specifications

|                                   | <b>AR60</b><br>AdaptRate™ Gigabit Ethernet  |                                  | <b>AR60X</b><br>AdaptRate™ Extended Range                                       |                                  |
|-----------------------------------|---|----------------------------------|---|----------------------------------|
| Operating Mode                    | 1000 Mbps full-duplex, 100 Mbps full-duplex, 1000/100 Mbps AdaptRate  |                                  |   |                                  |
| AdaptRate and AdaptPath Switching | Normal operation: 1000 Mbps / Path fade mode: 100 Mbps / Secondary link: Dependant of user supplied product capability                |                                  |   |                                  |
|                                   | Switching time: < 50 milliseconds   |                                  |   |                                  |
|                                   | AdaptRate switch point: -57 dBm / -59 dBm   |                                  |   |                                  |
|                                   | AdaptPath switch point: Configurable  |                                  |   |                                  |
|                                   | <b>1000 Mbps</b>  | <b>100 Mbps</b>                  | <b>1000 Mbps</b>  | <b>100 Mbps</b>                  |
| Data Rate                         | 1000 Mbps full duplex   | 100 Mbps full duplex             | 1000 Mbps full duplex   | 100 Mbps full duplex             |
| Latency                           | < 40 uSec   | < 220 uSec                       | < 40 uSec   | < 220 uSec                       |
| Link Budget                       | 150.5 dB @ 10 <sup>-12</sup> BER  | 161.5 dB @ 10 <sup>-12</sup> BER | 163.5 dB @ 10 <sup>-12</sup> BER  | 174.5 dB @ 10 <sup>-12</sup> BER |
|                                   | 152.5 dB @ 10 <sup>-6</sup> BER   | 163.5 dB @ 10 <sup>-6</sup> BER  | 165.5 dB @ 10 <sup>-6</sup> BER   | 176.5 dB @ 10 <sup>-6</sup> BER  |
| RF Interface                      | 58.1 GHz/62.9 GHz (FDD), digitally modulated (BFSK) with forward error correction RS(204,188)   |                                  |   |                                  |
|                                   | 1.4 GHz bandwidth   | 285 MHz bandwidth                | 1.4 GHz bandwidth   | 285 MHz bandwidth                |
|                                   | Min. link distance 65 ft (20 m)   |                                  | Min. link distance 330 ft (100 m)   |                                  |
|                                   | 256-Bit AES Encryption option (see Advanced Security datasheet for details)   |                                  |   |                                  |
| Antenna                           | Integrated 10 in (25 cm) directional cassegrain   |                                  | External 24 in (62 cm) directional cassegrain                                   |                                  |
|                                   | Linear polarized (H/V), 40 dBi gain, 1.4° beam  |                                  | Linear polarized (H/V), 46 dBi gain, 0.6° beam                                  |                                  |
| Ethernet Interfaces               | 1000base-SX with LC connectors - up to 270 m 62.5/125µm MMF, or 500 m 50/125µm MMF  |                                  |   |                                  |
|                                   | 10/100base-TX with RJ-45 connector (with integral surge suppressor) - up to 100 m CAT5 cable  |                                  |   |                                  |
|                                   | Maximum Ethernet frame length: 1632 bytes   |                                  |   |                                  |
| Management                        | Web-based (HTML) embedded management agent: setup, security, status, statistics, software update                                      |                                  |   |                                  |
|                                   | Secure Management Access (see Advanced Security datasheet for details)  |                                  |   |                                  |
|                                   | SNMP support: MIB-II and BridgeWave enterprise MIB  |                                  |   |                                  |
|                                   | Voltmeter test points: Receive Signal Level and Link Quality  |                                  |   |                                  |
|                                   | RADIUS Authentication, SysLog support   |                                  |   |                                  |
| Power                             | Supplied 100 – 240 VAC input, +24 VDC output, indoor rated power supply (0°C to +40°C). 45 watts max. consumption                     |                                  |   |                                  |
|                                   | Max. cable length: 650 ft (200 m) with 12AWG 400 ft (125 m) with 14AWG, stranded wires highly recommended (surge suppressor required) |                                  |   |                                  |
| Mount                             | Pole mount: 2-4.5 in (5-11 cm) OD   |                                  | Fine-adjust pole mount: 3.5-4.5 in (8.9-11.4 cm) OD -- SCH40 or higher          |                                  |
|                                   | Wall mount bracket  |                                  |   |                                  |
| Size                              | Radio/antenna unit: 12 w * 12 h * 6 d (in) / 30 w * 30 h * 15 d (cm)  |                                  | Radio with antenna and mount: 24 w * 24 h * 20 d (in) / 62 w * 62 h * 50 d (cm) |                                  |
| Weight                            | Radio with antenna and mount: 22 lbs (10 kg)  |                                  | Radio with antenna and mount: 38.5 lbs (17.5 kg)                                |                                  |
| Environmental                     | Operating temperature: -33 to +55°C (-27 to 131°F)  |                                  |   |                                  |
|                                   | Operating altitude: 14,764 ft maximum (4,500 m)   |                                  |   |                                  |
| Wind Loading                      | 50 lbs. force @ 100 MPH   |                                  | 202 lbs. force @ 125 MPH  |                                  |
| Regulatory                        | Safety: UL Listed, CE Mark, EN60950, meets FCC 1.1310 general population RF MPE limits  |                                  |   |                                  |
|                                   | RF Certifications: U.S. FCC Part 15.255, Industry Canada RSS-210  |                                  |   |                                  |
| Install Kit                       | Voltmeter test cable, power connectors, visual alignment tool   |                                  | Voltmeter test cable, power connectors  |                                  |

