



## Modus – ALX22

Universal outdoor unit for WISP providers and WLAN systems.

- Motherboard x86 ALIX
- 2 radios 802.11abg with N-female antenna ports, high power option
- selectable bands 2.4 GHz ISM, 5 GHz CEPT (EU) and 5.8 GHz ISM
- data rates 1-11 Mbps DSSS, 6-54 Mbps OFDM
- 2 Ethernet ports 10/100 RJ45
- Power over Ethernet 802.3af/at or pasive PoE 20-56 VDC
- Eth/PoE/antenna ports surge protection
- PoE chaining, outdoor clustering
- operating temperature -30 to +60 °C
- IEC IP68
- RouterOS on Compact Flash (-ML4 model) or without CF (-O model), SW supplied by customer
- mounting on mast or wall
- CE, RoHS conformity

Modus-ALX22 is ideal solution for Internet Service Providers, outdoor installations of WLAN, Hot Spot, private networks over large geographic area, campus networks, IP-video security systems, especially in harsh environments. The compact unit, rugged design and flexible SW provides robust wireless solution for quick deployment of many applications.

Two multi-mode 802.11abg radios can be controlled independently of each other. So you can configure to run multiple 802.11b, b/g, g or a/h mode on the radio/ antenna ports, as appropriate. 5 GHz 802.11a high power radios as option provide more power for long-distance links. Dual 10/100 Ethernet ports with PoE and power chaining provides simple installation and possible outdoor clustering more units without any other network components as switches or routers. With Modus-ALX you can get flexible, multi-functional wireless unit for your data network infrastructure.

Embedded ALIX 2d2 / 500 MHz CPU can run a number of different types of operating systems. The unit comes alternatively with RouterOS/L4 pre-installed on CF (-ML4 model) or without CF (-O model), so customer can use its own SW.

Choosing RouterOS, that provides rich functionality in wireless, bridging, routing, security, data throughput shaping and QoS, that can meet any application in converged networks carrying data, VoIP, IP-video traffic and provides diagnostic tools to quickly analyze network problems.

Fully sealed cast aluminum box with pressure vent and stainless steel mounting hardware provides reliable solution in any harsh environments as a telecom towers, city area, heavy-industry plants, see coasts and harbours with salt fog. Mounting kit on the mast or wall for a simple installation is provided.

Product models:

**Modus-ALX22-NX-ML4** – universal unit for 2,4/5 GHz bands with RouterOS on Compact Flash

**Modus-ALX22-H5-ML4** - 5GHZ RF optimized unit for full-duplex operation with DualNstreme

**Modus-ALX22-NX-0** – universal unit for 2,4/5 GHz bands without Compact Flash (no SW)

**Modus-ALX22-H5-ML4** - 5GHZ RF optimized unit without Compact Flash (no SW)

## Technical specifications (sw features only for RouterOS –ML4 model)

### Radio performance

|                      |  |
|----------------------|--|
| Frequency bands      | 2,400 – 2,483 GHz ISM (13 channels)<br>5,150 – 5,350 GHz (8 channels - indoor) a 5,470 – 5,725 GHz (11 channels indoor / outdoor) CEPT WAS/RLAN<br>5,725 – 5,875 ISM (5 channels)<br>Selectable channel width 5/10/20/40 MHz |
| Radio standard       | 802.11 abg,h (DFS and TPC)   |
| Modulation           | OFDM / BPSK, QPSK, 16QAM 802.11ag<br>DSSS / DBPSK, DQPSK, CCK 802.11b  |
| Data rates           | OFDM 6,9,12,18,24,36,48,54 Mbps<br>DSSS 1,2,5,5,11 Mbps  |
| Transmitt power      | typ. 17 dBm (2,4/5GHz) 1-36 Mbps, on antenna ports, 5 Ghz 23dBm radio option   |
| Receiver sensitivity | 802.11b: -93 dBm/1 Mbps, -86 dBm/11 Mbps<br>802.11g: -86 dBm/6 Mbps, -80 dBm/36 Mbps<br>802.11a: -86 dBm/6 Mbps, -75 dBm/36 Mbps   |
| Antenna port         | 2 N-female, 1 per radio  |

### Wireless protocol

|                   |   |
|-------------------|---|
| Wi-Fi             | Wi-Fi 802.11 abgh AP, bridge/WDS/client, virtual AP (up 7 per radio), Hot Spot  |
| N-streme protocol | P-MP, P-P mode<br>Proprietary protocol for throughput optimization – client stations polling, adaptive radio link, packet aggregation |

### Networking

|                    |  |
|--------------------|--|
| Ethernet           | 2 ports 10/100 Base – TX (RJ45)  |
| Transparent bridge | MAC address/protocol ID/multicast/broadcast filters, Spanning tree, VLAN bridging                |
| IP router          | NAT, static routing, RIP v1/v2, OSPF v2, BGP v4<br>PPTP, PPPoE, L2TP, EoIP<br>DHCP client/server |
| Data Rate Mgmt     | CIR, MIR, QoS  |

### Security

|               |   |
|---------------|---|
| 802.11abgh HW | 64/128 WEP, WPA – PSK/TKIP, WPA – PSK/AES-CCM |
| SW            | ACL, RADIUS authentication, firewall, IP Sec  |

### Configuration / Management

|                  |  |
|------------------|--|
| Config           | GUI for Windows (WinBox), monitoring, wireless link test, reset, reboot over Ethernet or wireless interface<br>http (WebBox),Telnet, MACTelnet, SSH, serial port (service) |
| Firmware upgrade | FTP,HTTP   |

### Electrical parameters

|                   |   |
|-------------------|---|
| Power consumption | max. 10 W   |
| Power             | Indoor PoE injector 100 - 250 VAC, 47-63 Hz / 48 VDC, 20 W<br>Outdoor PoE 802.3af /at or pasive PoE 20-56 VDC, PoE chaining |
| Surge protection  | Ethernet, PoE, antenna ports – for all bands up to 6 GHz  |

### Fysical parameters

|                       |  |
|-----------------------|--|
| Dimensions            | 190x190x55 mm (w x h x d), without mounting hardware |
| Weight                | 1,58/1,65 kg, without mounting hardware              |
| Operating temperature | -30 to + 60°C  |
| Storage temperature   | -40 to + 75°C  |
| Protection            | IEC IP68   |

### Mounting hardware

|         |  |
|---------|--|
| Options | Mast bracket (for 30-80mm diameter)<br>Wall bracket, security option |
|---------|--|

### Standards

|            |                                    |
|------------|------------------------------------|
| Radio      | ETSI EN 300 328, ETSI EN 301 893   |
| EMC        | ETSI EN 301 489 – 17, EN 61000-4-5 |
| Safety     | EN 60950                           |
| Conformity | CE,RoHS                            |

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