



MRX.mini

Client Mesh Wireless Router with PoE option (PSE I/F)

- x Wireless Router / Wireless Switch
- x Mobile Ad-Hoc Network (MANET)
- x High Throughput on the radio interface (up to 867 Mbit/s)
- x Encrypted and meshed radio based on 802.11s (Mesh)
- x Up to 4x Gig-Ethernet-Ports (1000Mbit/s) or
up to 7x Fast-Ethernet-Ports (100Mbit/s)
- x Integrated PoE+ PSE functionality (total 200W)



The "wireless mesh" is an ad-hoc and mobile network based on Wi-Fi technology. Each MRX station serves as relay point as well as access point within the mesh. The mesh can be arbitrarily enlarged and designed redundantly. New MRX stations are automatically recognized and integrated into the mesh. All user data and communication within the mesh are encrypted. Only devices that know the mesh-key can log in, collaborate and send/receive data.

The mesh can be used as a supply network which is flexible and very easy to expand. Places hard to reached are easily accessible through a daisy chain of MRX stations.

Introduction

The AZG.mesh router product family aims to build wireless infrastructures using mesh technology. AZG.mesh is a wireless backbone for connecting and interconnecting CCTVs, access points, sensors, etc.. AZG.mesh is a self-discovering, self-configuring and self-healing system that makes installation and use very easy. AZG.mesh is suitable in use cases where cable laying is very expensive, permanent installation is not necessary or mobile communication is required.

When an AZG.mesh router enters the range of other routers, a fully automatic discovery and setup procedure is started to integrate the new member into the existing AZG.mesh. Once the new device is accepted as a member, it participates in AZG.mesh routing and can be used as an entry point and relay point. When an AZG.mesh router leaves the area of the network, the new situation is automatically taken into account by AZG.mesh routing and the routes in the entire network are modified.

AZG.mesh routers can move within the network and this may result in new connection possibilities. New routes within the network are searched for and found independently. AZG.mesh routing discovers the new routes. With each additional AZG.mesh router in the network, the area covered is enlarged and the redundancy within the network is increased.

There are a large number of different variants of the MRX devices. All members of the MRX.family are fully compatible with each other and can thus form heterogeneous networks with very different characteristics.



Features

- Mesh acc. IEEE 802.11s
 - ⤿ PHY compliant to IEEE 802.11 a/b/g/n/ac
 - ⤿ 2.4GHz and 5GHz supported
 - ⤿ SDR integrated
 - ⤿ Mesh operates in 2x2 MIMO
 - ⤿ Interoperability with all members of MRX.family
- High Bandwidth
 - ⤿ up to 867Mbps on the radio interface
- High Distances (up to 2000m)
 - ⤿ max.TX power limited by law (30dBm)
 - ⤿ higher distances possible
- Mesh-Encryption AES256 (SAE)
- up to 4x 10/100/1000BaseT or up to 7x 10/100BaseT interfaces
 - ⤿ usage as LAN or uplink port
 - ⤿ PoE+ as option for all ports (4x or 7x)
 - ⤿ active or passive PoE is possible
- Web-GUI (http/https)
 - ⤿ local and remote access
- Redundant
- Easy to use
 - ⤿ short installation time
 - ⤿ easy to expand / modify
 - ⤿ stations are free to move
- Full autonomous operation
 - ⤿ self-finding
 - ⤿ self-healing
- Low power demand (<11W)
 - ⤿ depends on connected PoE devices (PDs)
- Outdoor systems
 - ⤿ IP66 hardened housing
 - ⤿ extended temp.-range

Application Example

The MRX.mini is designed to build an (ad hoc) network for special situations where a reliable infrastructure is needed. The MRX.mini can build a network for CCTV surveillance on a campus, in public places or for observation. Data is transported to the local server or to a cloud via an Internet uplink. Any additional camera location can be easily integrated into the mesh. In combination with MRX.compact or MRX.vehicle, a cellular uplink is possible.



Technical Specifications

Common

- Wireless Router / Wireless Switch
- Full encrypted wireless meshed network
- 1x Mesh-IF
- Battery/UPS available (optional)

Mesh Radio

- 2x2 MIMO
- Possible Bands:
 - ↪ 2.4GHz:
 - ↪ BW: 5/10/20/40MHz
 - ↪ Std: 2.412 ~ 2.472GHz
 - ↪ SDR: 2.19 ~ 2.73GHz
 - ↪ max. 30dBm
 - ↪ 5GHz:
 - ↪ BW: 5/10/20/40/80MHz
 - ↪ Std: 5.180 ~ 5.825GHz
 - ↪ SDR: 4.92 ~ 5.92GHz
 - ↪ max. 30dBm
- Throughput: up to 867 Mbit/s
- Modulation Techniques
 - ↪ OFDM: BPSK, QPSK, DBPSK, DQPSK, CCK, 16-QAM, 64-QAM, 256-QAM
- Support of radar detection (DFS)
- Connector: 2x N-type

Mesh Features

- IEEE 802.11s
- Full encrypted (AES 256)
 - ↪ SAE key exchange
 - ↪ AES-SIV (RFC5297)
- HWMP routing
 - ↪ Self-forming, self-healing
- Up to 32 nodes per mesh network

LAN Interfaces

- 10/100BaseT or 10/100/1000BaseT
 - ↪ opt. PoE+ IEEE 802.3at (PSE)
 - ↪ opt. passive PoE (12/24V-feeding)
 - ↪ IEEE 802.3
 - ↪ Auto-MDIX
 - ↪ Auto-negotiation
- Connector: M12 (X-code)

Security

- Encryption of all wireless traffic
- Login to device always secured

System Management

- Web-GUI
- SNMPv2c, SNMPv3

Build-in Servers and Clients

- DHCP server / client
- NTP server / client

Hardware

- CPU: 880MHz
- RAM: 256MB
- Non-volatile storage: 32MB flash

Physical

- Fanless design
- Weight: 3.0kg
- Dim: 150x340x80mm (WxHxD)
- Housing: Steel sheet
- Mounting:
 - ↪ Wall-mount
 - ↪ Antenna pole kit (optional)
 - ↪ DIN rail kit (optional)

Power

- Power supply:
 - ↪ mains power supply (AC), Connector M12 (S-code)
- Power demand
 - ↪ <11W (MRX only)
 - ↪ peak demand up to 220W
 - ↪ depends on connected PoE/PoE+ devices

Environment

- Operation: -20 .. +55°C, ambient w/air
- Storage: -40 .. +80°C
- Rel. humidity: 5-95%, non-cond.
- IP66 protection

Certification

- CE, eMark compliance

Different between MRX.minis

	MRX.mini1 /AC	MRX.mini1 /PoE	MRX.mini1+ /AC	MRX.mini4+ /AC	MRX.mini4p /AC	MRX.mini5+ /AC	MRX.mini7+ /AC
Mesh IF	1x 2.4 GHz or 1x 5.8 GHz						
Ethernet							
Ethernet IF	1x GigE	1x GigE	1x GigE	4x GigE	4x GigE	5x FastE	7x FastE
PoE+ (IEEE)	-	-	1x	4x	-	5x	7x
passive PoE	-	-	-	-	4x	-	-
Power							
Power Supply	AC	PoE (PD)	AC	AC	AC	AC	AC
PowerDemand w/o PoE	10 W	10W	10W	14W	14W	19W	19W
Max. Power over Ethernet (PSE)	-	-	1x 30W	4x 30W	4x 30W	5x 30W	7x 30W

