AirLaser IP1000plus
Secure wireless true Gigabit Ethernet transmission!

- Free space optical link for distances up to 1.000 m

- Optimized for Gigabit Ethernet with true 1.000 Mbps full duplex data throughput

- License free

- Integrated backup radio, 100 Mbps high speed 2x2 MIMO bridge unit

- All weather and fully redundant two way operation for permanent connection

- Eye safe multibeam system classified in laser class 1m with low latency

- Extensive in- or outband management via web-browser

- Powered over Ethernet, also for backup system and front screen heater

- Engineered and manufactured in Germany

System description

The AirLaser IP1000plus is specially optimized for Gigabit-Ethernet-transmission over distances of up to 100 meters alternatively 100...1.000 meters. The transmitter is powered by 4 VCSEL-Lasers. With an output power of 10 mW each and a large aperture they are still classified to laser class 1m. Therefore the AirLaser is eye safe. Together with an optical dynamic of up to 40 dB the system has enough reserve for foul weather.

A unique feature of the AirLaser IP1000plus is an additional built-in RJ45-Port (GbE) with PoE to support backup-system connections. This backup capability will ensure the data connection during extreme weather conditions if the infrared link is interrupted. An integrated GbE-switch together with a high performance network processor make the automatic switchover within 50 ms; ensuring the connection will not break down independent of weather.

AirLaser IP1000plus has an in- or outband-management. A comfortable graphic user interface gives access via standard web browser to the internal webserver. The administrator can see both terminals and the actual link status at a glance. Features of the management are: DHCP, VLAN suited, firmware update via HTTP file upload, long term analysis possible, built-in real time clock and event log, distribution of any messages to different email-addresses (SMTP), time synchronisation via NTP. For further details, please refer to our live demo page: www.airlaser.de

The AirLaser's housing is designed for life long outdoor operation even under harsh environment conditions. A built in telescope enables easy and rapid alignment between terminals. Protection against snow and frost is guaranteed by an invisible two step front screen heater.

Network connection

Only one single CAT5e-cable is required for the connection of the AirLaser to networks and AirLaser access unit for power supply. The RJ45-connector at the AirLaser terminal is designed for outdoor operation and it is waterproof. All TP-ports are protected against overvoltage pulses. Optional for cables longer than 90 m, data connection is possible via fiber optic cable, waterproof outdoor fiber connector and 1000BaseSX/LX protocol.
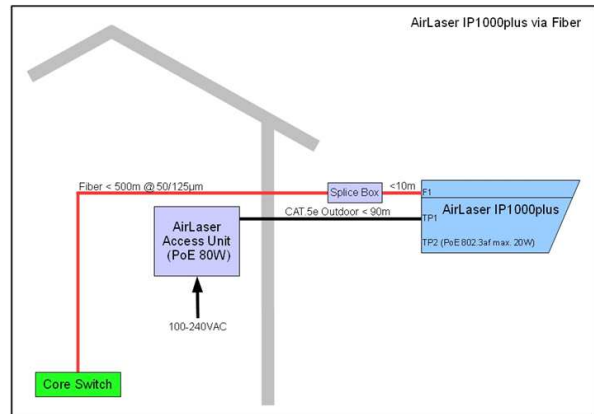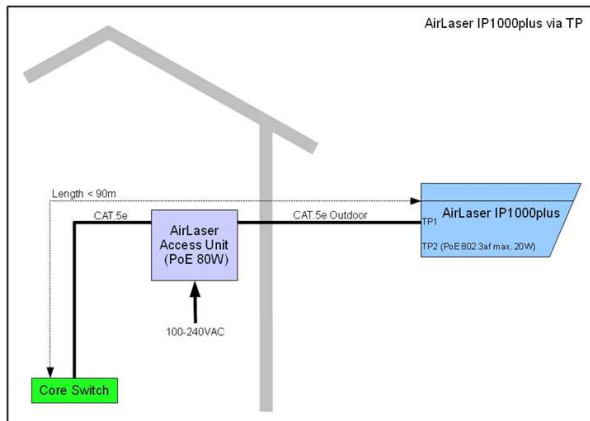

AirLaser backup

AirLaser IP1000plus comes with an optional outdoor backup radio. This is a high capacity bridge based on state of the art high power/high sensitivity radio on a chip (ROC) RF components and it is recommended for distances beyond 120 m depending on local climate.

The units provide point to point connectivity, when free space optics connection is not available i.e. during dense fog. The backup radio stands for "Carrier Class" performance in the 5 GHz unlicensed band for up to 100 Mbps data throughput (full duplex). The automatic switching process from the FSO-link to the backup and back needs only 10 to 50 ms.

An adjustable optical hysteresis threshold assures stable Ethernet connection without backup link flapping. 128 bit AES encryption supports security. Power for backup is supplied via CAT5 outdoor cabling with PoE (IEEE802.3af) direct from the AirLaser.

A professional mounting kit allows both wall and pole installation, with both azimuth and elevation control.
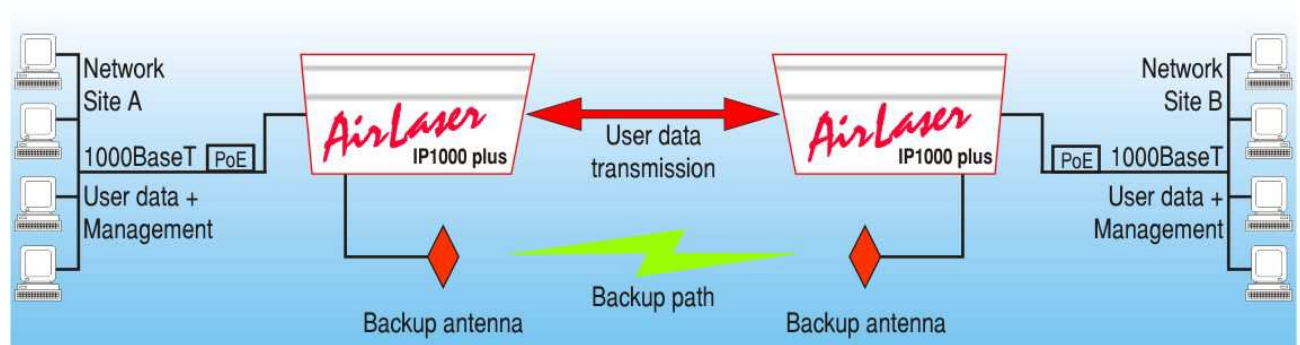
Technical data	AirLaser IP1000plus / 100	AirLaser IP1000plus	Unit
Transmission	Gigabit Ethernet		
Rec. distance, max.	30..100	100..1.000	m
Data rate	1.250	1.250	Mbps
Management	In-/ Outband	In- / Outband	-
Air interface			
Transmitter	1 VCSEL laser, 830..870	4 VCSEL laser, 830...870	nm
Power	10	4 x 10	mW
Aperture	28,25	4 x 28,25	cm²
Laser class	1 M (eye safe)		
TX dynamic	4 steps, 0, -3, -6, -9		dB
RX dynamic	29		dB
Divergence	1,8	1,8	mrad
RX, sensitivity	APD, -32	APD, -32	dBm
Interfaces			
F1 (optional)			
Fiber, wavelength	Multimode (optional singlemode) @ 850 (optional 1310)		nm
Connector	SC-RJ (waterproof IP67 version)		
Standard	1000BaseSX/LX	1000BaseSX/LX	-
TX power	-4/-10	-4/-10	dBm
RX sensitivity	-16..0 @ 850nm (-20..-3 @ 1310nm)		dBm
TP1 (PD), no PoE			
Connector	RJ 45, weather sealed		
Standard	10/100/1000BaseTX, autonegotiation, auto crossover		
TP2 (PSE)			
PoE standard	IEEE802.3af or forced mode		
Connector	RJ 45, weather sealed		
Power output	56 VDC: 20		W
Standard	10/100/1000BaseTX, autonegotiation, auto crossover		
Backup radio			
Radio frequency	U-NII-1/2/2e/3 selectable for regulatory domain, 20/40 MHz bandwidth, DFS, TPC, 5GHz wide band (4.900–6.100 GHz)		
Integrated antenna	Dual polarity, 18		dBi
Beam	Linear, vertical or horizontal polarisation, 22 x 22 degrees beam width		
RP output power	EIRP or selectable for regulatory domain, 1		W
Power consumption	PoE IEEE802.3af compatible, 13		W
Connector	RJ 45, weather sealed		
Material	Stainless steel and aluminium		
Colour	White radom and silver grey enclosure		
Mounting	Wall or pole 30-50 mm Ø, adjustment for azimuth and elevation		
Environment	Up to 100 % humidity, IEC/IP 67, -20…+70		Degree C
Size / weight	260 x 260 x 90 / 2,5		mm / kg
Additional data			
Power supply	48...57 (PoE)		VDC
Power consumption	Min. 27, max. 75 (incl. front screen heater)		W
Operational temperature	-25 ... +50 -13 ... +122		Degree C Degree F
Dimensions / weight (w/o backup & holder)	263 x 165 x 343 (width, length, depth) / 3		mm / kg