



OPTICAL MASTER UNIT

The Optical Master Unit (OMU) is used to convert signals from RF to light when fibre fed repeaters are used. The OMU is most often connected to a base station. In these cases, an RF coupler is used to couple off signals that are fed into the OMU. An entry shelf unit can also be used in cases when the base station and the OMU are not located close to each other. In the downlink direction, the OMU picks up the signal from the base station, converts it into an optical signal and transfers it over a fibre optical cable to the repeater. In the uplink direction the OMU receives the signal from the repeater via the fibre optical cable, converts it to a RF signal and sends it back to the base station.

Automatic optical gain setting

The fiber optic system Axell Wireless has designed puts a clear focus on user friendliness and ease of installation and commissioning. Through an automatic optical gain setting, the commissioning is easily performed, thus reducing the time it takes to put the equipment in service. This also means that the training is significantly simplified and the need for installation effort is decreased.

Reliability in security networks

TETRA is often used in security critical applications and Axell Wireless has therefore made reliability and redundancy a key element in its design of fiber optic systems. By using what is often referred to as a star typology, each remote unit has its own direct fiber connection to the OMU. One dedicated single fiber, carrying both UL and DL signals (WDM or Wavelength Division Multiplexing technology), is then used to serve each remote unit. Although it is preferable to use this type of configuration, a chain configuration where the signal in the DL is coupled off to several remote units is also possible to realize when there is a shortage of fiber.

Expandable solution

Each OMU can be equipped with up to six optical modules and therefore support up to six remote units (BSF424). If additional repeaters are to be fed from the same base station, it is simple to expand the system with additional OMU units that in total will support up to 24 remote units.

REMOTE SUPERVISION

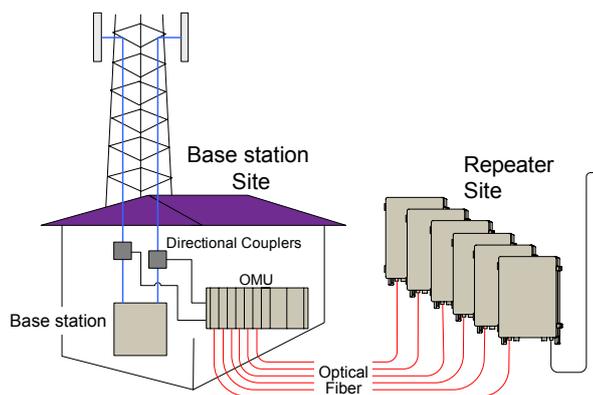
Only one modem is needed to communicate with an OMU and its fibre fed repeaters. The modem types available are : GSM, PSTN, TCP/IP and even GSM-R. The modem is found inside the OMU and communication with the fibre fed remote units is transparently handled via the fibre that connects them. The system can be managed via the Axell Wireless Repeater supervision and remote control software tool, AEM (Axell Wireless Element Manger). All communication between the OMU and the repeaters – both data communication and the transferred RF signal – is managed over the same fibre link, which results in a very reliable supervision of the radio link.

The OMU supports TETRA, TETRAPOL, GSM-R, UMTS and GSM 900, 1800 and 1900 MHz frequency bands and is always used in combination with one or several fibre fed repeater(s).

SPECIFICATIONS

RF Parameters

Frequency bands	380-960/1710-2170 MHz
Gain Flatness	2 dB (p-p)
Nominal RF input power	+10 dBm composite power
Maximum Absolute RF input power	+23 dBm composite power
Number of optical modules	1-6
Laser class	Class 1



Optical Module Electrical Specification

Optical Wavelength	Two color system	Three color system	Four color system
Master1	310 ± 10 nm	1310 ± 10 nm	1310 ± 10 nm
Slave 1	1550 ± 3 nm	1550 ± 3 nm	1530 ± 3 nm
Slave 2	N/A	1510 ± 3 nm	1510 ± 3 nm
Slave 3	N/A	N/A	1550 ± 3 nm

Optical output power

Master	+3 ± 2 dBm
Slave	+3 ± 2 dBm
Maximum Optical Input Power	+2 dBm
Output Power (Tx) max	+5 dBm
Operating Temperature	+5 ~ +45°C
Automatic fibre optic loss compensation	Yes

Power Requirements

Power Requirements	230/115 VAC, 50/60 Hz, 24/-48 VDC
Power Consumption	Typical 50 W (fully equipped)

External Electrical Interfaces

Local Maintenance Terminal	RS232
RF Ports	N-type Connector Female
Optical Ports	SC/APC
AC/DC Mains Input	Plinth
External alarms	Plinth
Modem connector	RJ45 or RJ11
Modem antenna connector	SMA
Ethernet connector	RJ45

Mechanical Specifications

Dimensions (w x h x d)	84 TE x 3 HE x 290 mm
Weight	TBD kg (fully equipped)
IP rating	IP20

Reliability Specification

Lifetime (MTBF)	>70 000 hrs
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All data is subject to change without prior notice.

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