Mini optical receiver with AGC function

MOB-823A, MOB-923A

Operation manual

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1. Important information

Disposal of disused electrical and electronic equipment.

This symbol on a product or its packaging means that the product may not be disposed of with household waste, but should be referred to an electrical and electronic equipment collection facility for recycling and recovery.

Different waste segregation regulations relating to the disposal of waste electrical and electronic equipment are in force in individual EU and other European countries. With such an eco-aware approach you help prevent from potential harmful effects on the environment and human health which might otherwise arise if handling the product improperly. Natural resources are also saved by proper disposal.

Contact your local authority for more details on the recycling and recovery of electronic materials in this product.

CAUTION!

Laser radiation is damaging to vision. Do not look into an open source of laser light. It may cause permanent vision damage. It is recommended to turn on the AC power supply only after closing the optical path, i.e. connection of optical fibre line.

2. Key features

- Mini optical receiver for use in residential, office and other buildings.
- Maximum RF signal input level: 1 x 107dBuV for CENELEC 42 channels.
- Built in input optical power indicator – 3-colour LED.
- Easy receiver configuration with JXP inserts.
- Very low power consumption < 5.5 W.
- Built in power supply.
- Attractive lightweight cast aluminium enclosure.

2.1. Designation

MOB-823A, MOB-923A series optical receivers are designed for use in HFC networks and other unidirectional optical cable transmission systems from the head station to the end user.

3.*Indications for use*

3.1. Environment

Observe the following rules during everyday use:

- Do not place other objects closer than 5 cm away from the device to ensure adequate ventilation.
- Do not cover the device with any items, e.g. newspapers, boxes etc.
- It is not recommended place the device near sources of heat.
- The device should be used in moderate climate. To ensure maximum device uptime it should be operated in areas (cabinets) with temperature not exceeding 50°C, not exposed to humidity, dust and strong magnetic field.
- Do not expose the device to splashes and drops of water.
- Do not place any items containing liquids on the device.

3.2. Power supply

The device should be supplied with network voltage in the range 180-253 VAC. Exceeding the above supply voltage limits may cause device malfunction or even lead to permanent damage.

3.3. Installation

Disconnect the AC supply voltage while installing the MOB-823A, MOB-923A receiver. Prior to installation, make sure the input optical power level to be connected to the MOB input does not exceed the limit + 3dBm. Exceeding this value may damage the receiving photodiode.

3.4. Storage

The equipment in original packaging should be stored in areas providing protection from precipitation, in temperature from -20 to +50°C.

4. Operation, starting up and adjustments

The MOB-823A, MOB-923A can be operated in either of two gain control modes:

- ***manual***– gain is set with JXP attenuator insert with a constant value.
  The signal level value at the receiver output depends in this case on the parameters of the optical input signal.
- ***automatic***– gain level is selected by the AGC (automatic gain control) system based on continuous power measurement of the optical input signal supplied to the receiver input.

The automatic gain control system enables maintaining a constant value of signal level at the receiver output regardless of the changes of the input signal within the range -6...0 dBm.

The automatic gain control system compensates the optical signal power changes within the range -6…0dBm, but it does not compensate the changes of the optical transmitter modulation depth.

Attenuator insert - must be present to maintain signal path continuity, also with the AGC system activated. The output level with the AGC system activated depends on the optical signal modulation depth ratio and the attenuator insert rating. The receiver gain has been selected so as to achieve the assumed working level at its output for the input power range -6...+0dBm, modulation depth 3.2% and 0 dB insert. The use of an attenuator insert with other attenuation rate will change the output signal level by the value of the insert used.

The power of the optical input system and gain control system regime is indicated by the LED as follows:

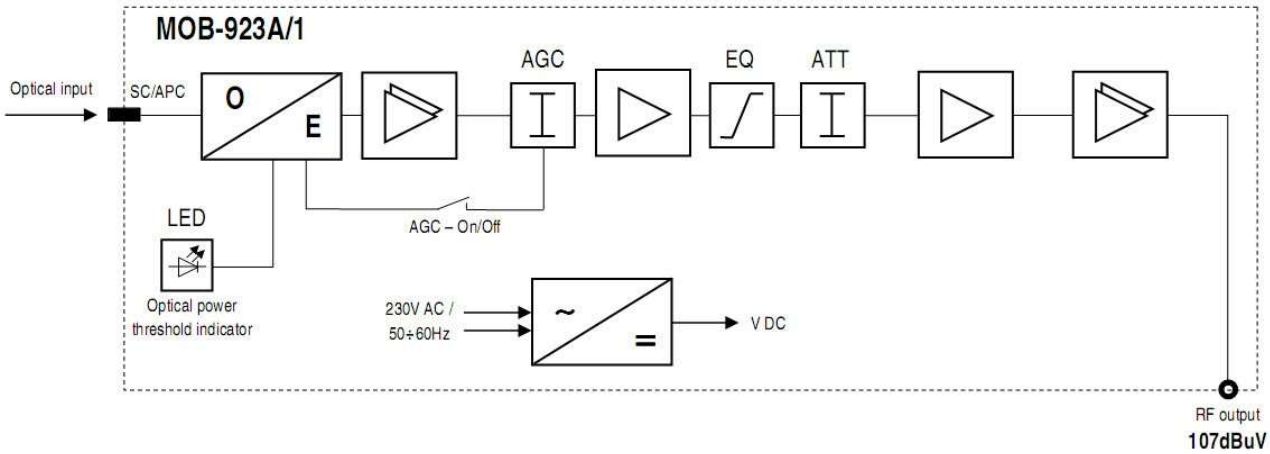
- ***green*** – AGC disabled (blinking LED), input power -6dBm < PIN < 0dBm (recommended receiver operating power);
- ***red*** – AGC disabled (blinking LED), input power PIN > 0dBm (possible photodiode and preamplifier overdrive and even photodiode damage);
- ***orange***– AGC disabled (blinking LED), input power PIN <- 6dBm (low C/N ration at the receiver output, impossible to achieve the output working level).

LED steady on (colour corresponding to the input signal power) indicates that AGC is active. The AGC is activated with a switch mounted in the MOB optical receiver housing.

4.1. Starting up and adjustments

1. Connect the optical fiber input patch-cord.
2. Connect MOB receiver to 230 VAC power supply.
3. Check the input signal level value (LED at the receiver front should be blinking green indicating the optimum optical input power level).
4. Connect the TV signal level meter to the receiver output.
5. With the attenuator and correction inserts 0dB and AGC inactive, measure the output level at the RF receiver output.
6. Set the AGC mode switch to active (the LED should be steady green). Check the FR signal output level at the receiver input.
7. Correct the value to the achieve the RF output level with an attenuator insert.
8. With the correction insert, select the appropriate slope of the receiver curve.
9. Connect the coaxial distribution network to the receiver output.

5.***Block diagram***



6. *Technical data*

OPTICAL PATH		**MOB-823A**	**MOB-923 A**
Optical power input level (P_{IN})		-6…0	
Attenuation of reflections	dB	≥ 40	
Optical wavelength	nm	1100 – 1650	
Maximum optical power level	dBm	+3	
Optical input power index	/	Tri-colour LED: - orange: P_{IN} < -6 dBm - green: -6 < P_{IN} < 0 dBm - red: P_{IN} > 0 dBm	
Equivalent noise input current	pA / $(Hz)^{1/2}$	8	
Output interface type	/	SC / APC	
RF PATH			
Frequency range	MHz	47 – 862	
Gain curve irregularity	dB	± 0.75	
AGC stability	dB	± 1 in the range -6…0dBm	
Curve slope adjustment range (EQU)	dB	0 – 15 (JXP insert)	
Attenuation control range (ATT)	dB	0 – 20 (stepless adjustment)	0 – 15 (JXP insert)
Maximum output level (42 channels CENELEC) - CTB ≤ 60 dBc - CSO ≤ 60 dBc	 dBµV dBµV	 107 107	
Output match	dB	≥ 18 (40MHz) – 1,5dB / oct	
Output interface type	/	F type socket	
Output impedance	Ohm	75	
OTHERS			
Supply voltage	V_{AC} / Hz	180 – 253 / 50...60	
Power consumption	W	5.5	
Dimensions	mm	155 x 56 x 96	
Weight	kg	0.76	
Operating temperature range:	°C	-20…+55	
Protection class	/	IP 40	

CAUTION!
The specifications given are subject to change without notice.