



## Meinberg Radio Clocks

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## IMS-LNO: 10 MHz sine low phase noise output module

This product is only compatible with Meinberg's line of modular **IMS LANTIME** systems. Visit the [1][IMS Information Page](#) to learn more. The IMS-LNO180 is a 10 MHz generator card and provides sinewave signals with low phase noise at four outputs. It has a microprocessor system which monitors the output signals and generates status signals for the management system. It may be preferably used in our modular IMS Systems, M900 timeserver platform and GPS based 3U housing.

### Key Features

- Four 10 MHz sine outputs
- Four LEDs: Signal status at corresponding output
- Input: 10 MHz, sine (1Vpp min.) or TTL
- Output Level: 5 dBm +/- 1 dBm into 50 Ohm Option: LNO-8dB with 8 dBm output level or LNO-12dB with 12 dBm output level

## Description

### Functionality

A high-quality oscillator is synchronized by the 10 MHz signal of the external reference clock and thus provides the high-precision clock for the IMS-LNO180. The microprocessor monitors the lock state of the PLL synchronization circuit and the warm-up phase of the oscillator and only enables the outputs after a successful phase synchronization. This state is also indicated by the four status LEDs (transition from red to green). In the phase synchronous state, the output level of the four outputs is monitored and in case of an error is signaled by the assigned red LED.

### Compatibility

The IMS-LNO180 is an IMS module which is compatible with all systems of the IMS family. It can also be used on any slot (MRI, ESI, I/O).

## Characteristics

<b>Status Indicators</b>	All LEDs red: outputs disabled All LEDs green: normal operation, outputs activated Associated LED red: defect output or short circuit during normal operation
<b>Frequency input</b>	10 MHz, sine (1Vpp min.) or TTL
<b>Interface</b>	<b>4 sine outputs</b> 10 MHz Output level: 5 dBm +/- 1 dBm into 50 ohm  Option: LNO-8dB with 8 dBm output level LNO-12dB with 12 dBm output level
<b>Quartz Filter</b>	Bandwidth 1 kHz
<b>Operating Voltage</b>	<b>5 dBm:</b> +5 V @ 550 mA (steady state), +5V @670 mA (warm-Up) <b>8 dBm:</b> +5 V @ 720 mA (steady state), +5 V @ 640 mA (warm up) <b>12 dBm</b> +5 V @ 970 mA (steady state), + 5V @ 620 mA (warm up)
<b>Phase Noise Performance</b>	<b>LNO180 - 10 MHz</b> <u>OCXO-SQ</u>  * 1 Hz - 80 dBc/Hz  * 10 Hz - 100 dBc/Hz  * 100 Hz - 130 dBc/Hz  * 1 kHz - 140 dBc/Hz  * 10 kHz - 150 dBc/Hz  <u>OCXO-HQ</u>  * 1 Hz - 93 dBc/Hz

\* 10 Hz - 126 dBc/Hz

\* 100 Hz - 140 dBc/Hz

\* 1 kHz - 145 dBc/Hz

\* 10 kHz - 165 dBc/Hz

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<b>Supported Temperature</b>	Operational: 0 - 50 °C (32 - 122 °F) Storage: -20 - 70 °C (-4 - 158 °F)
<b>Supported Humidity</b>	Max. 85 % (non-condensing) at 40 °C
<b>Warranty</b>	Three-year warranty
<b>RoHS Status of Product</b>	This product is fully RoHS-compliant.
<b>WEEE Status of Product</b>	This product is handled as a B2B (Business to Business) category product. To ensure that the product is disposed of in a WEEE-compliant fashion, it can be returned to the manufacturer. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will bear the costs for the waste disposal itself.

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## Manual

The English manual is available as a PDF file: [2][Download \(PDF\)](https://www.meinbergglobal.com/download/docs/manuals/english/ims-lno.pdf)

### Links:

[1] <https://www.meinbergglobal.com/english/products/modular-sync-system.htm>

[2] <https://www.meinbergglobal.com/download/docs/manuals/english/ims-lno.pdf>