

OMX-7027, 7028

Video / Audio Distributors

Congratulations on your purchase of this OCEAN MATRIX Electronics amplifier. This manual includes configuration, operation and option information for the **OMX-7027** and **OMX-7028** distribution amplifiers.

A Word On Distribution Amplifiers

Distribution amplifiers are used to distribute one source to several acceptors for simultaneous recording or monitoring of one source, with no discernible signal degradation. They vary in the number of inputs, looping capability, programming capability, number of outputs, operating format, bandwidth and input/output coupling. A good quality distribution amplifier amplifies the incoming signal, pre-compensates the signal for potential losses (resulting from the use of long cables, noisy source, etc.) and generates several identical buffered and amplified outputs.

Table 1: Factors Affecting Quality of Results

FACTOR	EFFECT
Connection cables	Low quality cables are susceptible to interference; they degrade signal quality due to poor matching and cause elevated noise levels. They should therefore be of the best quality.
Sockets and connectors of the sources and acceptors	So often ignored, they should be of highest quality, since "Zero Ohm" connection resistance is the objective. Sockets and connectors also must match the required impedance (75ohm in video). Cheap, low quality connectors tend to rust, thus causing breaks in the signal path
Amplifying circuitry	Must have quality performance when the desired end result is high linearity, low distortion and low noise operation
Distance between sources and acceptors	Plays a major role in the final result. For long distances between sources and acceptors, special measures should be taken in order to avoid cable losses. These include using higher quality cables or adding line amplifiers.

Interference from neighboring electrical appliances	These can have an adverse effect on signal quality. Balanced audio lines are less prone to interference, but unbalanced audio should be installed far from any mains power cables, electric motors, transmitters, etc. even when the cables are shielded
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How Do I Get Started?

The fastest way to get started is to take your time and do everything right the first time. Taking 15 minutes to read the manual may save you a few hours later. You don't even have to read the whole manual. At the beginning of each section, you'll find an overview of the section. So if the section doesn't apply to you, you don't have to spend your time reading it.

Unpacking and Contents

The items contained in your OCEAN MATRIX OMX amplifier package are listed below. Please save the original box and packaging materials for possible future transportation and shipment of the amplifier.

- Desktop size amplifier
- AC power cable
- User's Manual
- Rubber feet

For additional information regarding optional cables and additional accessories, contact your OCEAN MATRIX dealer.

USING THE MACHINES

OMX Series Amplifiers

This section describes all the controls and connections of your amplifier. Understanding all of the controls and connections helps you realize its full power.

Getting To Know Your OMX-7027

The OCEAN MATRIX **OMX-7027** is a broadcast quality distribution amplifier designed primarily for composite video signals on BNC connectors. Using a simple rear panel switch, it can be configured either as a single 1:8 DA, or as two separate 1:4s. In either mode its purpose is to provide identical outputs to drive multiple

monitors, projectors or other receiving devices. Bandwidth exceeding 330MHz ensures transparent performance, even with high-resolution analog and SDI (serial digital) video signals. The inputs can be un-terminated to provide looping capability, making it easy to create larger systems. Two sets of recessed front panel controls are provided for fine-tuning of gain and high frequency EQ. The **OMX-7027** is housed in a rugged, professional half-rack enclosure with an internal power supply allowing the use of a standard, detachable AC power cord. Two **OMX-7027** series products can be mounted in one vertical rack space using an optional rack adapter.

Getting To Know Your OMX-7028 Amplifier

The OCEAN MATRIX **OMX-7028** is a compact, high quality 1:10 distribution amplifier using BNC connectors for composite video, and RCA connectors for stereo audio signals. It accepts one set of inputs, provides correct buffering and isolation, and distributes it to up to ten identical outputs designed to drive monitors, projectors, and other receiving devices. Bandwidth exceeding 70MHz ensures transparent performance with typical video and audio sources. Looping inputs make it easy to expand to larger distribution systems. The **OMX-7028** can also be mounted in a standard 19" rack using an optional special adapter.

INSTALLATION

The amplifier is provided with four rubber feet packed in a separate bag. Fit the feet to the unit, place it on the table remote from heat generating sources and make the required connections. Use a rack adapter in case a rack installation is required; in this case, do not attach the rubber feet.

Connecting To VIDEO Devices

Video sources and output devices (such as amplifiers or recorders) may be connected to the amplifier through the BNC connectors located at the back of the machine. Please keep in mind that the output signal format will match that of the input signal format.

Connecting To audio Devices

Audio sources and output devices (such as amplifiers or recorders) may be connected to the amplifier through the RCA type connectors (**OMX-7028**) located at the back of the machines.

Powering On the Amplifier

NOTES

Amplifier should only be powered on after all connections are completed and all source devices have been powered on. Do not attempt to connect or disconnect any video, audio or control signals to the amplifier while it is powered on! The socket-outlet should be near the equipment and should be easily accessible. To fully disconnect equipment, remove power cord from its socket.

- 1) Press the toggle switch on the far-left front panel to the up position. In the up position, the toggle switch glows, and the active input button illuminates as well.
- 2) Operate the sources and acceptors.

Looping

The looping function enables the operator to extend the number of outputs per input. The following example describes looping performed by using 3 amplifiers with one input and 5 outputs each: A video signal reaches input of amplifier No. 1. From looping connector of amplifier No. 1 a cable is connected to input socket of amplifier No. 2. The loop output of amplifier No. 2 is connected to the input socket of amplifier No. 3. In this way the input signal is divided into 15 separate output signals. The operator must always switch to "**Hi-z**" the termination switch of all the amplifiers but the last. The **last** amplifier's termination switch should always be at "**75ohm**" to maintain well-matched video line (of 75ohm impedance) from first to last amplifier. Note that if looping function is not used, the termination switch should be set to "**75 ohm**".

Coupling

The coupling function enables the operator to determine whether the incoming video signal is DC or AC coupled. When DC coupling is selected and proper standard video signal is applied to the amplifier's input, the output signal is equal to the input signal. When AC coupling is selected, DC components of the incoming signal are removed. DC coupling is always preferable since AC coupling might cause some linearity distortions in low and high frequencies (due to non-ideal behavior of capacitors). A problem may arise when the incoming signal is riding on a DC offset especially when the acceptors are highly effected by deviation of DC offsets (A to D converters, LCD monitors etc.), which in turn results in a distorted picture.

Coupling Selection

The **OMX-7027** and the **OMX-7028** come with a DC coupling from the factory. Removing the internal jumper performs selecting AC Coupling. To remove jumper, perform the following steps:

- 1) Disconnect the machine from the mains supply by removing the power cord from the wall outlet.
- 2) Using a Philips screwdriver, remove the Philips head screws from the cover and remove the cover.
- 3) Locate the internal jumper on the internal printed board near the input sockets and remove it.
- 4) Reinstall the cover.

Operating the OMX-7027

- ❖ Connect a cable from the video sources to the input sockets of the **OMX-7027**.
- ❖ If a 1:8 operation is needed, press the rear button marked 1:8.
- ❖ If looping is needed, release the rear termination switch, if looping is not needed, press the switch in to the 75-Ohm position. If 1:8 operation is selected, one of the termination switches should always be in "Hi-Z" state (released) and the other according to looping requirements.
- ❖ Connect up to 8 acceptors to the OUTPUT sockets.
- ❖ Adjust, if necessary, the trimmers on the front panel of the machine to achieve best results.
- ❖ Connect a mains power source to the socket on the rear panel of the **OMX-7027**.
- ❖ Operate source, acceptors and the **OMX-7027** machine.

Operating the OMX-7028

- ❖ Connect a video cable from the video source to the video input socket of the **OMX-7028** and an audio-stereo cable from the source to the Right and Left Audio inputs sockets.
- ❖ If looping is needed, release the rear termination switch, if looping is not needed, press the switch in to the 75-Ohm position.
- ❖ Connect up to 10 Video / Audio stereo acceptors to the OUTPUT sockets.
- ❖ Connect the machine to a mains power source via its power cord.
- ❖ Operate source, acceptors and the **OMX-7028** machine.

Technical Specifications:

	OMX-7027	OMX-7028
Function	1:8 Video Distribution Amplifier	1:10 AV Distribution Amplifier
Inputs	2 Composite/single component video 1Vpp/75ohm on BNCs with termination switches	1 video looping, 1Vpp/75ohm on a BNC with a termination switch. 1 stereo audio 1Vpp / 50 K ohm on RCAs
Outputs	2x4 Composite/single component video 1Vpp/75ohm on BNCs	10 video, 1Vpp/75ohm on BNCs, 10 stereo audio 1Vpp / 100 ohm on RCAs
Input Coupling	DC/AC internally selectable	DC/AC internally selectable
S/N Ratio	>74 dB	> 89dB (audio), >74dB (video)
Audio Bandwidth	NA	20 kHz -1dB
Video Bandwidth	>330 MHz (-3dB)	>77 MHz (-3dB)
Max video Output	2 Vpp	2.5 Vpp
Differential Gain	0.12%	0.33%
Differential Phase	0.5Deg.	0.26Deg.
Audio THD+N	NA	<0.025%
K-Factor	<0.1%	<0.05%
Dimensions (W, D, H)	22 cm x 18cm x 4.5cm 8.7" x 7" x 1.8"	24.5 cm x 16 cm x 5cm 9.6" x 6.3" x 2"
Weight	1.3 Kg (2.9lbs) Approx.	1.8 Kg (4 lbs.) Approx.
Power Source	115 VAC 50/60Hz, 6.2VA.	115 VAC, 50/60Hz, 10.5VA.

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