

# MICROPHONE PREAMPLIFIER

## MIC-AMP F311 D(ual)



## MIC-AMP F311 Q(quad)



## USER'S MANUAL



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development and manufacturing of audio electronic  
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## **Cordial thanks for your decision in favour of a Lake People product !**

Lake People electronic GmbH develops, manufactures and distributes products in the professional range, for broadcast, television, airports, exhibition halls, festival venues, theatres, large-scale installations, private studios and more. In the private sector as well, Lake People products become increasingly popular due to their outstanding quality.

### **Who develops Lake People equipment ?**

The devices are exclusively developed in Germany by the engineers of Lake People electronic GmbH. In doing so, the team of developers can draw on thirty years of experience and countless products for the pro-audio domain.

Among others, the first German-made 20-bit A/D and D/A converters were developed by Lake People in the early nineties of the past century.

### **Who manufactures Lake People equipment ?**

The devices are exclusively manufactured in Germany by Lake People electronic GmbH or contractors in the company's vicinity.

Lake People puts high emphasis on domestic manufacturing. As well, all component suppliers are chosen in order to achieve the main part of added value inland.

### **How do Lake People devices get to the customer ?**

Lake People devices can be obtained from respective specialist suppliers. If there is none such accessible regionally, the customer is supported by transregional distribution partners (google may help...) and, of course, by Lake People on-line shop.

## **... and if it doesn't work like it should ?**

Lake People devices are covered by a 24-month warranty. In case of any malfunction during this period, they can be shipped to the manufacturer directly. Of course, the client will benefit from Lake People's full technical support even when warranty has expired. Any technical questions or need for advice is welcome.



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# General Safety Instructions

## WARNING

For your protection, please read the following:

### Water, Liquids, Moisture

This appliance should not be used near water or other sources of liquids. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

### Power Sources

The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

### Fuse

The fuse of this appliance is soldered in place and accessible from the inside only!!

A blown fuse may indicate an internal problem and should be replaced during qualified servicing or repair works !!

### Power Cord:

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

This unit is equipped with a 3-pole mains cable with German 3-pin mains plug. On request this units may be delivered with a 3-pole mains cable with North American 3-pin mains plug. In some countrys this unit must be operated with a mains cable, supplied by the owner.

Please refer to the table below to connect a mains plug:

Übersicht: Netzkabelfunktionen und Farben						
Leiter / CONDUCTOR			Farbe	COLOR	Alternativ	Alternativ
L	Phase	LIVE	Braun	BROWN	Schwarz	BLACK
N	Null	NEUTRAL	Blau	BLUE	Weiss	WHITE
E $\frac{\perp}{\equiv}$	Erde	EARTH GND	Grün-Gelb	GRN+YLW	Grün	GREEN

### **U.K. Mains Plug Warning:**

A moulded mains plug that has been cut off from the cord is unsafe. Discard the mains plug at a suitable disposal facility.

**NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAINS PLUG INTO A 13 AMP POWER SOCKET.** Do not use the mains plug without the fuse cover in place. Replacement fuse covers can be obtained from your local retailer. Replacement fuses are 13 amps and **MUST** be ASTA approved to BS 1362.

### **Mains Fuse:**

The mains fuse of this appliance is soldered in place and only accessible from the inside !!

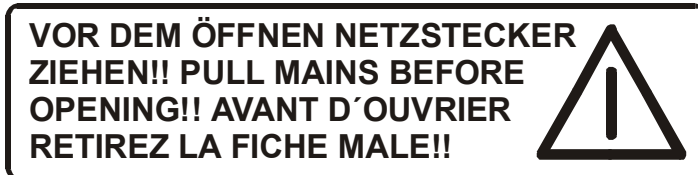
A burnt fuse may be an indicator of internal problems and should be replaced during a qualified servicing or repairing works !!

### **Switchable Power Supply, Multimode Power Supply:**

Connect this unit only to the power source indicated on the equipment rear panel to ensure safe operation !! This unit is provided with a internally solderable mains supply of 115 / 230 V AC.

### **.Service / Repair:**

To reduce the risk of fire or electric shock, the user should not attempt to service the appliance beyond that described in the operating manual. All other servicing or repair should be referred to qualified personal !!



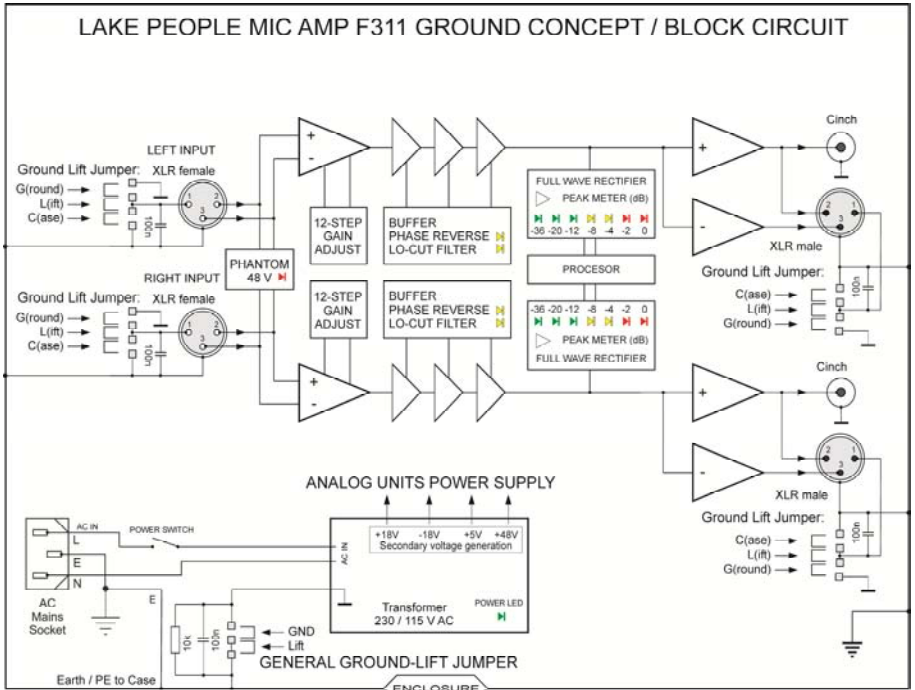
### **Electromagnetic Compatibility**

This unit conforms to the Product Specifications noted as **Declaration of Conformity** at the end of this manual.

Operation is subject to the following conditions:

- this device may not cause harmful interferences
- this device must accept any interference received, including interference that may cause undesired operation
- this device must not be operated within significant electromagnetic field

# Das Erde / Masse Konzept



## General GROUND-LIFT Jumper (accessible from the rear of the case):

Ex works this jumper is plugged to **GND/GROUND** position.

The internal ground potential, which is normally connected to the external earth reference at this point may be lifted with the aid of this jumper. As a result the interconnection for DC voltages and lower frequencies (< 160 Hz) will be cut. Higher frequency are allowed to find their way to earth potential through the RC filter. The LIFT position may be helpful when e. g. because of different ground/earth potentials hum or jitter is generated.

Unfortunately there is no general recommendation how to solve hum and jitter problems - or even minimize them. The best way to succeed is

to check different options !! In case of balanced cables it should always been verified if the shield of the cable is connected to the body of the XLR connector. The connector is ALWAYS connected to Earth potential when plugged in !!

Concerning ANALOG inputs and outputs, the relationship between ground and earth may be modified. In any case the electrical security is ensured, because the earth conductor is always connected to the enclosure !!

**XLR GROUD-LIFT Jumper , see also page 17  
(accessible from the inside, follow the SECURITY  
INSTRUCTIONS !! ):**

**G(ROUND):** Ex works all jumpers are set to **G(ROUND)** position. Pin 1 is connected to the internal ground reference. High frequency interferences are deflected to the case via a 100 nF capacitor.

**L(IFT):** The interconnection between Pin 1 and ground is open. High frequency interferences are deflected to the case via a 100 nF capacitor. This jumper position is useful when the unit is equipped with transformers !!

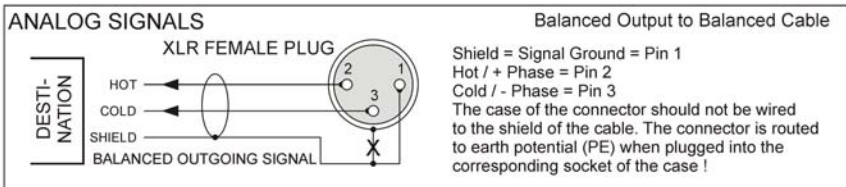
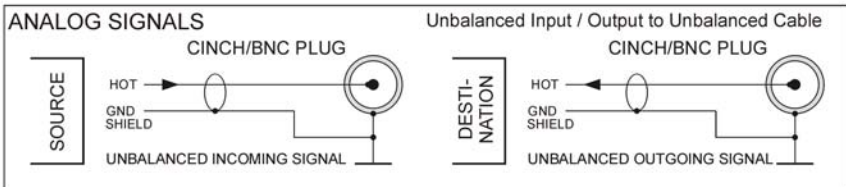
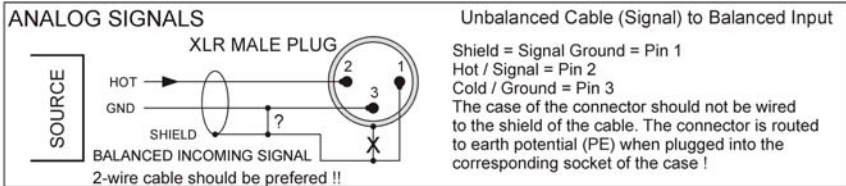
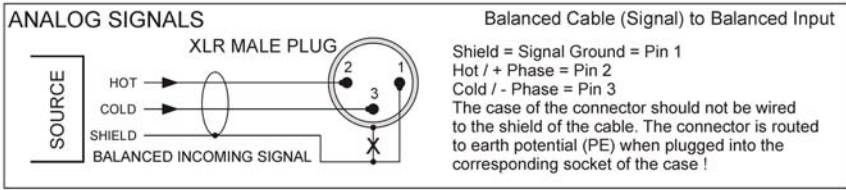
**C/ASE):** Pin 1 is connected to the case, the 100 nF capacitor is bridged. This jumper position may be varied together with the **General GROUND-LIFT jumper**.

**Please note that with jumpers in LIFT or GROUND position EMC problems might occur.**

**Theses are in the field of the user's responsibility !**



## Connection / Connectors



## GENERAL

The LAKE PEOPLE MIC AMP F311 is an excellent and extremely low-noise microphone preamplifier in a compact 19", 1U case with two (F311 Dual) or 4 (F311 Quad) channels.

Due to its versatile concept and high level capability it is also suitable for line signal boosting and balancing.

Gain is controlled with a twelve-step rotary switch which sets gain in 6-dB steps from 0 to +66 dB.

Each channel is equipped with switches for Phase Reverse and Low Cut. 48V Phantom supply may be activated for both channels simultaneously. The state of all these switches is reported by LEDs. A seven-segment LED bargraph displays the output level over a range of 36 dB. Display sensitivity can be adjusted internally to the user's requirements.

The inputs and outputs are situated on the back panel, they are equipped with gold plated XLR connectors for balanced output signals and RCA connectors for unbalanced output signals.

## **FEATURES**

- 2 balanced inputs via XLR
- Gain switchable from 0 ... +66 dB in 12 steps of 6 dB
- Switchable Lo-Cut, 12 dB/Oct. with 70 Hz corner
- Switchable phase reverse
- Noise -129 dB @ 60 dB gain
- 7-segment level control, -36 ... 0 dBr, internally adjustable
- Electronically balanced output via XLR
- Further unbalanced outputs via RCA
- Switchable phantom supply, 48 Volt
- Power supply via USB Typ B, 5 - 5.5 V, 1 A

## **THE CASE**

The grounded case is made of 1 - 2 mm thick stainless steel. This provides high mechanical stability and resistance against rough handling.

The cases surfaces are not treated with any material, so providing excellent electrical conductances for optimum EMC characteristics.

## **THE POWER SUPPLY**

Mains is connected via a built-in IEC-CEE mains socket. If necessary, mains voltage can be internally altered from 230 to 115 V.

The "POWER"-switch is situated on the front panel. Power status is displayed by a LED situated below the power switch.

An oversized toroidal transformer delivers the internal supply voltages.

These are:

- +/-18 V linear stabilized for the analog circuitry
- +5 V linear stabilized for the processors
- +48 V via DC/DC converter for phantom powering

## THE MAINS FUSE

The 0,25 AT fuse is internally soldered in place on the power supply PCB. A blown fuse may indicate an internal problem and should be replaced during qualified servicing or repair works !!

### CAUTION !!

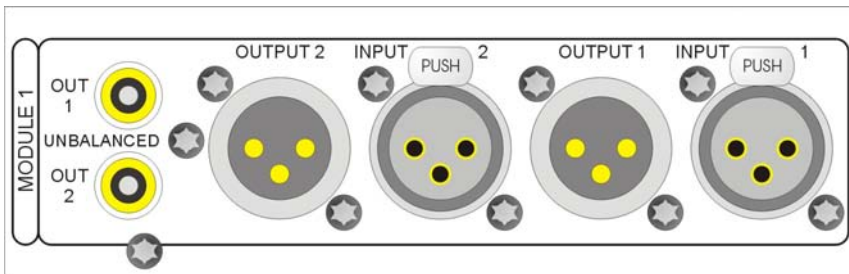
#### MIND THE SAFETY INSTRUCTIONS:

A blown fuse indicates an internal fault and should be replaced during qualified repair or servicing only !!



## THE POWER SWITCH

The unit is activated by means of the power switch. Power-on status is indicated by the green "ON" LED.



## THE INPUTS

The back mounted balanced inputs appear as gold plated XLR connectors. They are marked “INPUT 1/3” and “INPUT 2/4”.

The inputs accept balanced as well as unbalanced audio signals.

XLR wiring corresponds to international standard with

Pin 1 = ground, Pin 2 = + (in phase) and Pin 3 = - (out of phase).

If an unbalanced source must be connected, one of the phases (preferably the negative one) should be connected to signal ground (see page 9).



## PHANTOM POWERING

The use of professional condenser microphones requires so-called phantom powering.

The MIC AMP F311 offers stabilized 48V phantom powering, which is activated by the "48 V"-button on the front panel.

This voltage is applied to pins 2 and 3 via matched 6.8 kOhm resistors of **both** input connectors of a module.

Active phantom powering is indicated by the red "ON"-LED.

## NOTE:

Switching the phantom power during operation produces low-frequency voltage swing at the MIC AMP F311's outputs. To avoid damage of monitor loudspeakers or other equipment, the subsequent input should be muted when activating or deactivating the phantom power.

## NOTE:

If unbalanced equipment such as synthesizers etc. is connected to the MIC AMP F311's inputs, the 48V phantom voltage might cause damage if the connection is not made properly.

This problem is faced with all phantom powered inputs and can be avoided by using a transformer coupled D.I. box or by strictly keeping the unbalanced wiring apart from pin 1 (ground).



## GAIN SETTING

The input signal applied to the XLR terminal is fed to an extremely low-noise integrated instrumentation amplifier.

Gain is set by the "GAIN"-rotary switch in 6dB steps from 0 to +66 dB.

The deviation from the indicated value is less than +/- 0.3 dB.

## THE AMPLIFIER STAGE: THEORY AND PRACTICE

The MIC AMP's gain is affected by a so called instrumentation amplifier. It is represented by an IC specially designed for this task, distinguishing itself by very low noise figures and a high gain/bandwidth product.

When gain is set to +60 dB (x1000), the amount of noise added is only approx. 2 dB more than the theoretically achievable minimum.

The gain/bandwidth product (GBW) and the slew rate are basically responsible for the sonic quality of an amplifier. The higher they are, the more transparent the sound becomes.

Slew rate is 10V/s, while the GBW is calculated from the frequency response at a certain gain ratio.

The MIC AMP F311's internal linear frequency response at +60 dB gain exceeds 200 kHz. The resulting GBW is as high as 200 MHz (200.000 Hz x 1000).



## PHASE REVERSE

In multiple microphone applications, inverting one or several microphones' phase can significantly improve the overall mix. Reason therefore may be position-dependent time lags between microphones or, in the worst case, an incorrectly soldered microphone lead.

The "PHASE"-switch inverts signal polarity and is confirmed by the yellow "REV"- LED.

## LOW CUT

In order to reduce undesired frequencies such as wind or microphone handling noise, the MIC AMP F311 offers a Low-Cut Filter with a corner frequency of 70 Hz.

It is inserted into the signal path by the "LOW-CUT"-Switch situated on the front panel. Active state is displayed by the "70 Hz"- LED.

## LEVEL METER

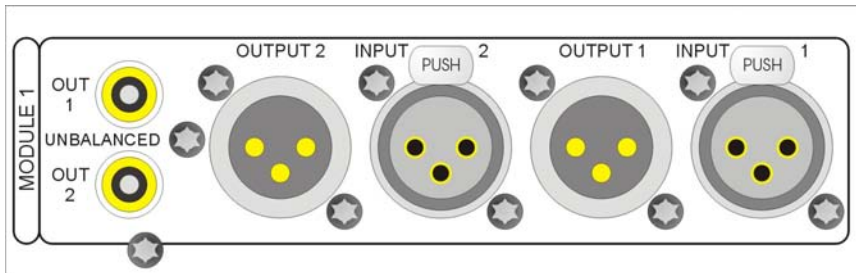
Situated on the front panel between the gain switches, a seven-segment LED bar-graph displays the momentary output level. The overall display range is 36 dB.

The dynamic characteristics are according to DIN specifications, with a rise time of <10 milliseconds and 1.5 seconds release time for a 20 dB level change.

The display's sensitivity can be adjusted on the main PCB to meet user-specific requirements (see page 17 for details).

Ex works the red 0 dB LED is adjusted to a level of +15 dBu.

Please note that MIC AMP F311 is able to output a level of over +20 dBu, thus a headroom of 5 dB remains.



## THE OUTPUTS (balanced)

Each channel offers a balanced output with gold plated XLR-type connectors. They are situated on the rear of the unit and marked "OUTPUT 1/2" and "OUTPUT 2/4".

The polarity meets AES 14-1992:

1 = Ground, 2 = (+) Phase, 3 = (-) Phase

The output impedance is approx. 30 ohms.

### HINT:

In case of unbalanced termination of these outputs, pin 3 of the XLR connector may not be shortened but must be left open!

Signal level is reduced by 6 dB!

## **THE OUTPUTS (unbalanced)**

MIC AMP F311 offers additional unbalanced outputs with gold plated RCA connectors. They are situated on the rear of the unit and marked "L 1/3" and "R 2/4".

Please note that the level on these outputs is 6 dB lower than the balanced level

## **DISMANTLING / JUMPER SETTINGS**

### **Hint:**

Here we are talking about internal adjustments inside your MIC-AMP F311.

You are in need of a screw drivers TORX style size T10.

**You should by all means**

**DISCONNECT THE POWER SUPPLY!!!**

## **DISMANTLING**

To avoid damages please follow the instruction below:

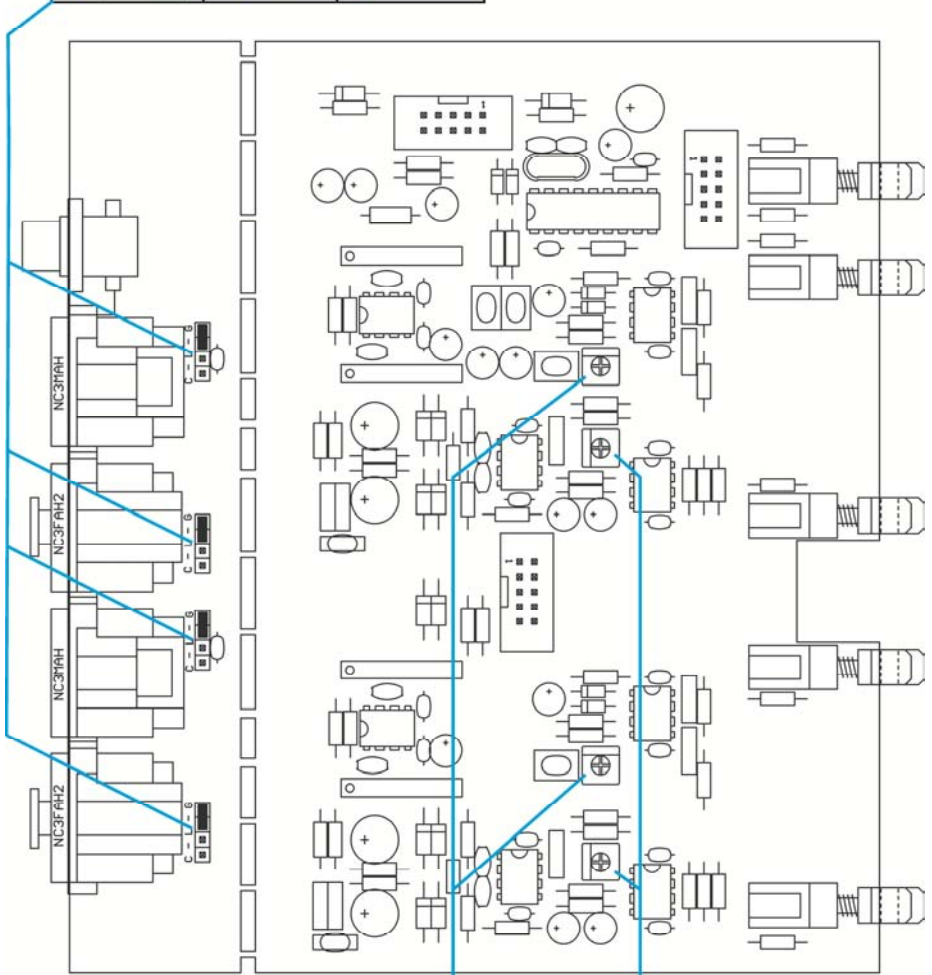
1. Screw off 8 screws of the upper lid of the case
2. now lift the upper lid
3. make your personal jumper setting

Assemble the unit in reverse order



# SETTINGS MIC-AMP F311

XLR-GROUNDLIFT JUMPER (see Page 7/8)					
	GROUND POSITION (Ex Works)		LIFT POSITION		CHASSIS POSITION



Left / Right Meter sensitivity adjust  
 Approx. +6 ... +25 dBu for 0 dB<sub>r</sub> LED  
 Ex works adjusted to +15 dBu  
 for 0 dB<sub>r</sub> LED

Left / Right Gain Fine Trim  
 Totl range approx +/- 0,5 dB  
 Adjustment:  
 with -3 dBu input signal and +18 dB gain  
 adjust to +15 dBu output level

## TECHNICAL DATA MIC AMP F311

All measurement RMS unweighted, 20 Hz - 20 kHz, relativ to 0 dBu as not otherwise noted

Number of channels:	2 / 4
Input:	electronically balanced
Input impedance:	5 kOhm
Input CMRR (15 kHz):	< 60dB (G = 0 dB) / < 80dB (G = +60 dB)
max. input level:	> +20 dBu
Gain:	0...+66 dB in 12 Steps of 6 dB (Accuracy < 0.3 dB)
Phantom voltage:	48 Volt ( +/- 5 %)
Phase reverse switchable:	180°
Lo-cut:	70 Hz (-3 dB), 12 dB/oct. 2-pol filter
Internal Bandwidth (-3 dB):	> 200 kHz (@ +60 dB gain)
Frequency range:	5 Hz...40 kHz (-0.5 dB)
THD+N:	< 0.002% (G=0dB) / 0.03 % (G=+60 dB)
Noise (Rin = 200 Ohm):	< -100 dB (G=0dB) / -69 dB (G=+60dB)
max. output level (sym.):	> +20 dBu in RL > 600 Ohm
Output CMRR (15 kHz):	< -60 dB
Level display:	7 LEDs, range 36 dB, adjustable
Characteristic referred to DIN:	Attack <10ms, Release 1.5 s (20 dB)
Internal voltages:	Audio voltages +/- 15 Volt, Phantom +48 Volt, +/- 5% Logic voltage +5 Volt, +/- 5 %

### General

External power supply:	230 / 115 V AC via IEC/CEE socket
Case, back:	stainless steel
Front:	Aluminum, grey powdered
Dimensions:	19", 1 HE, 483x44x166 mm (WxHxD)

# EC CONFORMITY STATEMENT:

We herewith declare that the following unit

Name: **VIOLECTRIC MIC AMP F311**

Serial No. : -all -

is in conformity with the following EC directives:

<b>2006/95/EG</b>	Low voltage directive
<b>20rs</b>	
<b>/30/EC</b>	EMC directive
<b>EN 60065:2002+A12:2011</b>	Security directives for audio-,
<b>JIS C6065:2013</b>	video- und similar electronic devices
<b>2001/95/EC</b>	General Product Safety Directive

For verification of conformity with regard to electromagnetic compatibility the following harmonized standards are applied:

<b>EN 50081-1:1992</b>	Generic emission standard
<b>EN 50082-1:1992</b>	Generic immunity standard

Product family standard for audio, video, audio-visual entertainment apparatus:

<b>EN 55013:2001</b>	<b>EN 61000-3-2:2000</b>
<b>EN 55020:2002</b>	<b>EN 61000-3-3:1995</b>

**2011/65/EU**, RoHS directive

**2012/19/EU**, WEEE directive / Member No.: DE 26076388

This declaration is given under responsibility of:



**LAKE PEOPLE *electronic GmbH***  
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**Fon +49 (0) 7531 73678**  
**Fax +49 (0) 7531 74998**



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Konstanz 24.01.2018    Fried Reim    Geschäftsführer

# WARRANTY

Since 1986 we are constructing and manufacturing sophisticated electronics for ambitious customers.

Since the early beginnings we are trying hard by accompanying measures, the use of 1st choice components and multiple quality checks during production to avoid faults at large.

We are quite effective in that and this is – amongst others - why we enjoy such a good reputation.

Despite all accurateness faults may show up which may derogate the proper operation of your product.

In this case your unit is protected by a **2-year Warranty !**

Needless to say that we will care for your product even after the expiration of the warranty. If it is necessary please dispatch the item to:

Lake People electronic GmbH  
Turmstrasse 7a  
D-78467 Konstanz

Fon +49 (0) 7531 73678  
Fax +49 (0) 7531 74998  
E-Mail [info@lake-people.de](mailto:info@lake-people.de)

Your warranty claim begins with the date of purchase, which should be denoted on your proof of purchase.

In case of return do not forget to include the receipt of sales or a copy of the receipt.

Please also include a short description of the fault(s).

For the reshipment we need you correct address !!

Care for a safe packaging. Best is to use the original packaging.

Please keep in mind that we cannot accept collect freight.

We will grant a quick repair and quick return of the unit.

In case of a warranty repair we will reship free of charge.

Please denote here the serial number and the date of purchase:

Serial Number

Date of Purchase