BEDIENUNGSANLEITUNG

USER´s MANUAL

MIC-AMP F355

MIC-AMP F355-A

(Class-A Input)

AVAILABLE MODELS

MIC-AMP F355:	2-channel Microphone Preamplifier
MIC-AMP F355-A:	2-channel Microphone Preamplifier with Class-A Input

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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.

Grounding:
Care should be taken that this appliance is operated only properly grounded.

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 countries this unit must be operated with a mains cable, supplied by the owner.
Please refer to the table below to connect a mains plug:

OVERVIEW: POWER CORD FUNCTION AND COLORS						
Leiter / CONDUCTOR			Farbe	COLOR	Alternativ	Alternativ
L	Phase	LIVE	Braun	BROWN	Schwarz	BLACK
N	Null	NEUTRAL	Blau	BLUE	Weiss	WHITE
E ⏚	Erde	EARTH GND	Grün-Gelb	GREEN+YELLOW	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 !!

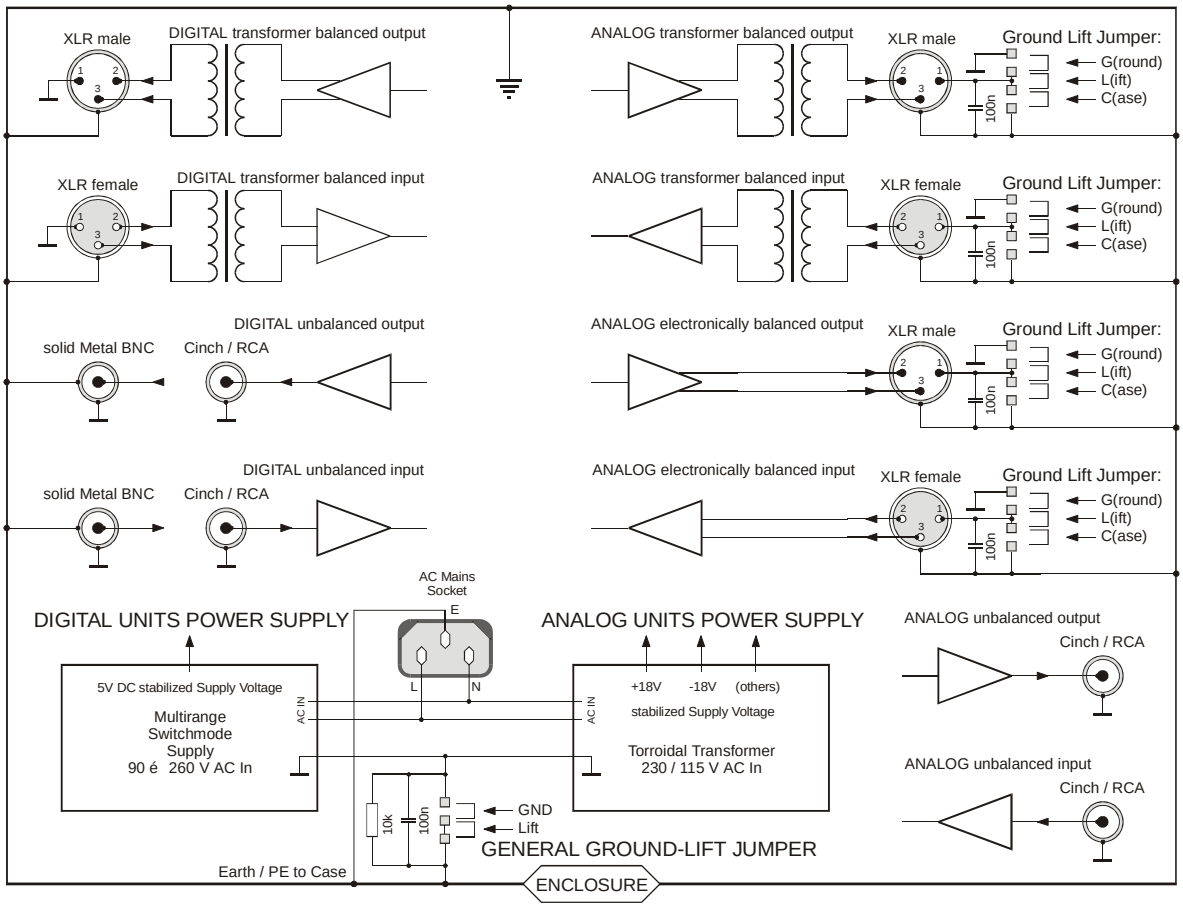
Switchable Power Supply, Multimode Power Supply:
Connect this unit only to the power source indicated on the equipment rear panel to ensure safe operation !!
This unit is provided with either a internally solderable mains supply of 115 / 230 V AC or
a multimode power supply which covers the range of 90 ... 260 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 !!

VOR DEM ÖFFNEN NETZSTECKER ZIEHEN!! PULL MAINS BEFORE OPENING!! AVANT D´OUVRIER RETIREZ LA FICHE MALE!!

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

The Earth / Grounding Concept



General GROUND-LIFT Jumper (accesible 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 helpfull 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 (accesible 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.

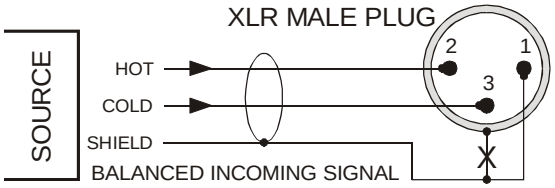
L(IFT): The interconnection between Pin 1 and ground is open. High frequency interferences are deflected to the case via a 100 nF capacitor. This jumper position is useful when the unit is equipped with transformers !!

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 occure.
Theses are in the field of the user´s responsibility !!!!

ANALOG SIGNALS

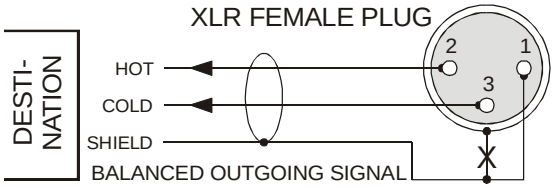
Balanced Cable (Signal) to (Transformer) Balanced Input



Shield = Signal Ground = Pin 1
Hot / + Phase = Pin 2
Cold / - Phase = Pin 3
The case of the connector should not be wired to the shield of the cable. The connector is routed to earth potential (PE) when plugged into the corresponding socket of the case !

ANALOG SIGNALS

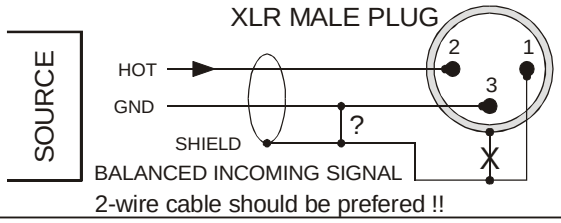
(Transformer) Balanced Output to Balanced Cable



Shield = Signal Ground = Pin 1
Hot / + Phase = Pin 2
Cold / - Phase = Pin 3
The case of the connector should not be wired to the shield of the cable. The connector is routed to earth potential (PE) when plugged into the corresponding socket of the case !

ANALOG SIGNALS

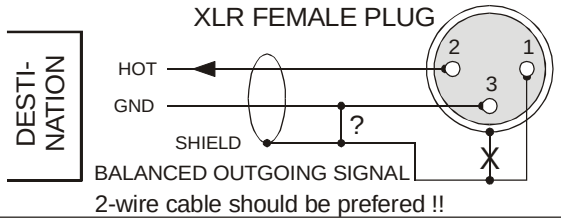
Unbalanced Cable (Signal) to (Transformer) Balanced Input



Shield = Signal Ground = Pin 1
Hot / Signal = Pin 2
Cold / Ground = Pin 3
The case of the connector should not be wired to the shield of the cable. The connector is routed to earth potential (PE) when plugged into the corresponding socket of the case !

ANALOG SIGNALS

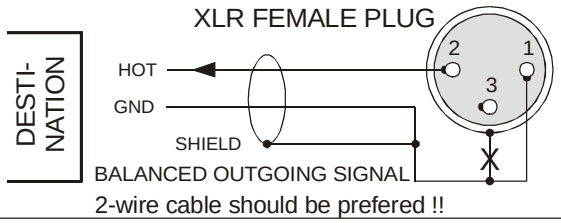
Transformer Balanced Output to Unbalanced Cable



Shield = Signal Ground = Pin 1
Hot / Signal = Pin 2
Cold / Ground = Pin 3
The case of the connector should not be wired to the shield of the cable. The connector is routed to earth potential (PE) when plugged into the corresponding socket of the case !

ANALOG SIGNALS

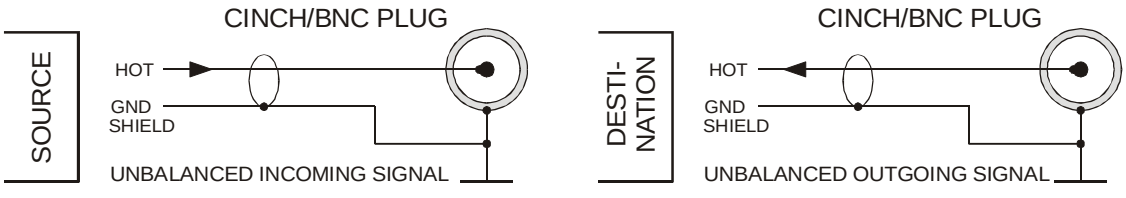
Electronically Balanced Output to Unbalanced Cable



Shield = Signal Ground = Pin 1
Hot / Signal = Pin 2
(Cold) = Pin 3 = must be left open !!
The case of the connector should not be wired to the shield of the cable. The connector is routed to earth potential (PE) when plugged into the corresponding socket of the case !

ANALOG SIGNALS

Unbalanced Input / Output to Unbalanced Cable



GENERAL

The LAKE PEOPLE MIC-AMP F355 is an extremely low-noise and fully featured microphone preamplifier with excellent specifications.

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

The gain element of the standard version is a high quality instrumentation amplifier. As an option, MIC-AMP F355 may be equipped with a sophisticated Class-A frontend, built with discret components.

Gain is controlled with two knobs per channel: a twelve-step rotary switch sets coarse gain in 6-dB steps from 0 to +66 dB. A center-detented potentiometer allows fine adjustment within a range of +/- 5 dB.

The lo-cut filter may be set individually from 10 to 250 Hz.

Each channel is equipped with buttons for

- Phantom powering
- Pad
- Phase reverse
- (de-) activation of Gain-Fine adjust
- (de-) activation of Lo-Cut control
- Mute

The state of all these buttons is reported by LEDs.

In order to keep the signal path as pure as possible, the electronic components of the Gain-Fine control and the Lo-Cut filter stage may be removed completely with the aid of relais.

Whilst switching on or off the phantom power, the outputs may be muted during 4 seconds.

A sixteen-segment LED bargraph with semi-logarithmical law displays the output level over a range of 36 dB. Display sensitivity can be adjusted to the user's requirements with a trim located on the front panel.

A clip LED starts flashing at levels above +20 dBu and thus reliably warns against distortion.

The electronically balanced inputs and outputs are situated on the rear panel.

Each channel is equipped with two outputs.

OPTIONS (see page 19 for more details)

Each channel may be equipped with a Class-A input stage.

Each output can be equipped with transformer balanced outputs consisting of active feedback transformers.

Each channel may be equipped with a versatile GP-I/O interface.

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:

- +24 V unregulated for LED´s and relais
- +/-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.

ATTENTION !!

FOLLOW THE SAFETY INSTRUCTIONS:

A blown fuse may refer to internal problems and should only been replaced during qualified servicing works !!

THE AMPLIFIER STAGE: THEORY AND PRACTICE

The MIC AMP F355's gain is effected 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 1-2 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 F355's internal linear frequency response at +60 dB gain exceeds 200 kHz. This results in a theoretical GBW as high as 200 MHz (200.000 Hz x 1000).
As an option MIC-AMP F355 may be equipped with a Class-A input amplifier. It is the actual version of circuit designs which can be found in classic applications.
Compared to the version with integrated instrumentation amplifier there are small disadvantages concerning THD when dealing with high level input signals. As the relevant operation range of a microphone preamplifier is a gain make-up of +10 é +50 dB, here the Class-A version shows lower THD.
Also, with higher level signals the noise floor is significantly lower.

é and how does it sound ???
Well, since the beginning we at LAKE PEOPLE spend lots of efforts to create no sounding instruments !!
The author´s opinion is, that the standard version of MIC-AMP F355 is best suited for all standard applications.
Whereas the Class-A version is predestinated for "Special" Recording.

THE SIGNAL PATH AND THE CONTROLS

THE INPUT

The balanced input is situated on the rear panel, fitted with XLR type socket. It is denoted "INPUT 1" and "INPUT 2" respectively. The input accepts balanced as well as unbalanced audio signals. XLR wiring corresponds to international standards with

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

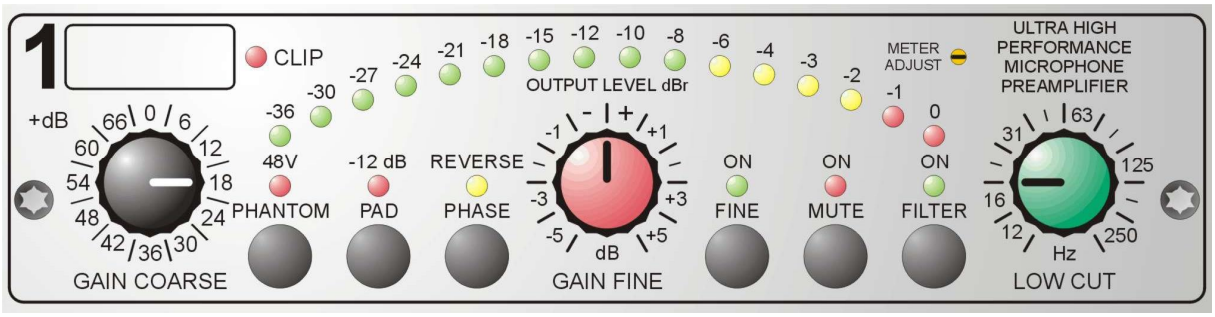
If an unbalanced source is connected, one of the phases (preferably the negative one) should be connected to signal ground.

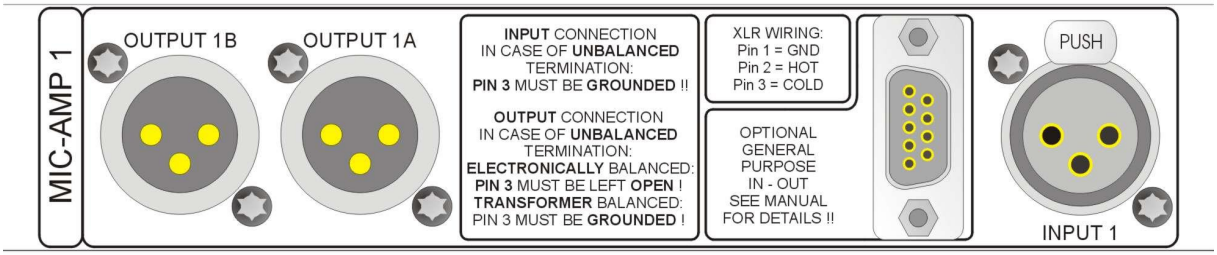
PHANTOM POWERING

The use of professional condenser microphones requires in general a polarisation voltage or operating voltage, the so called phantom power.
The MIC AMP F355 offers a stabilized 48V phantom voltage, which is activated by the "PHANTOM"-button on the front panel.
This voltage is applied to the input pins 2 and 3 via matched 6,8 kOhms resistors.
Active phantom powering is indicated by the red "48V"-LED.
Normal microphone preamplifiers will produce low-frequency voltage swing at their outputs when switching the phantom power on or off. This may damage subsequent equipment !
Therefore MIC-AMP F355 provides the "AUTO-MUTE"-feature which offers a 4-seconds output mute whilst switching pantom on or off.

NOTE: If unbalanced equipment such as synthesizers etc. are connected to the MIC AMP F355's input, 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).

THE OPERATION





AUTO-MUTE

When engaged, the "AUTO-MUTE"-function will create a 4 seconds mute whilst switching phantom on or off.

When you want to check or alter this function depress the ñPHANTOMò-button permanently.

After two seconds the "48V"-LED will start flashing and the ñONò-LED over the ñMUTEò-button shows the actual state of the Auto-Mute function.

LED on: Auto-Mute enabled

LED off: Auto Mute disabled

Pushing the ñMuteò-button will change the state. Releasing the ñPANTOMò button will save the actual state.

THE PAD

The MIC AMP F355's inputs accept levels of up to +21 dBu. In some applications, this level capability may still not be sufficient.

Therefore, a resistive network can be inserted into the signal path by pressing the "PAD"-button. Offering an attenuation of 12 dB, it increases the maximum input level to +33 dBu.

Active pad is indicated by the red ñ12dBñ-LED.

This function is realized without active components in the signal path.

NOTE: The PAD-switch should only be used if really necessary. Otherwise an eventually redundant attenuation must be compensated by a higher gain setting, which practically means nothing else but decreasing signal-to-noise ratio.

PHASE REVERSE

In multiple microphone applications, inverting one or several microphones' phase can significantly improve the 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"-button serves to invert signal polarity. It is situated on the front panel.

The activated function is displayed by the yellow ñREVERSEò-LED.

This function is realized without active components in the signal path.

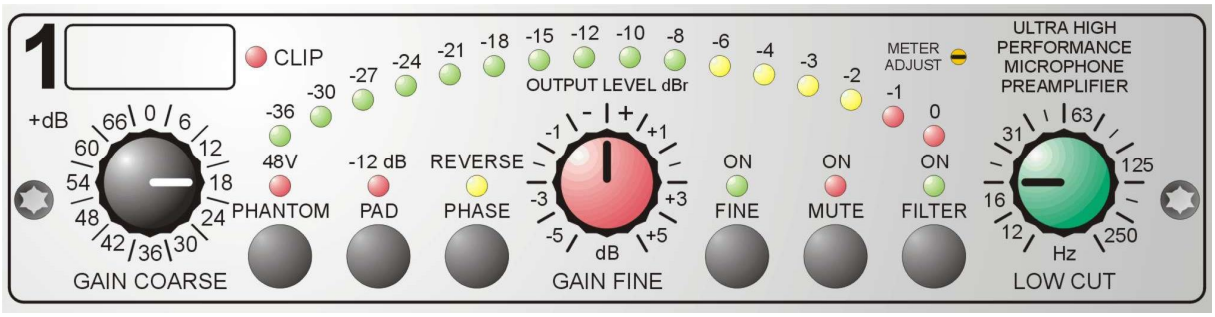
GAIN SETTING

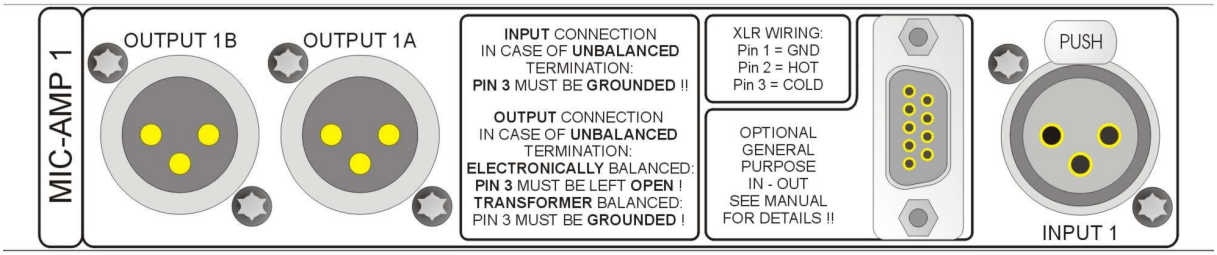
COARSE

The signal which is input to the XLR socket on the back is routed to the extremely low noise gain cell.

THE OPERATION

(1 of 2 Modules)





By means of the precisely detentend 12-steps ñCOARSEò-rotary switch on the front panel gain is adjusted in steps of 6 dB from 0 é +66 dB.

The deviation from the indicated value is less than +/- 0,3 dB.

FINE

The "FINE"-control is intended to precisely adjust the gain between two coarse steps.

The setting range covers +/-5 dB. The important +/- 3 dB points are marked on the scale.

Due to the center detent, the 'neutral' position of this control is easy to reproduce.

DE/ACTIVATING GAIN FINE

The complete electronic circuitry of the fine adjustement may be enabled/disabled by means of the ñFINEò-button.

The active state is displayed by the green ñONò-LED over the ñFINEò-button.

When disabled, the complete fine adjust circuitry is removed from the signal path.

THE LOW-CUT FILTER

In order to reduce undesired frequencies such as wind or microphone handling noise, the MIC-AMP F355 offers a variable Low-Cut Filter.

The two-pole lowcut filter may be adjusted from 10-250 Hz by the "LOW-CUT"-Control.

DE/ACTIVATING THE LOW-CUT

The complete electronic circuitry of the low-cut filter may be enabled/disabled by means of the ñFILTERò-button.

The active state is displayed by the green ñONò-LED over the ñFILTERò-button.

When disabled, the complete filter-circuitry is removed from the signal path.

MUTE

The ñMUTEò-button serves to mute the outputs of MIC-AMP F355. The enabled mute function is displayed by the red ñONò-LED over the ñMUTEò-button.

NOTE: An automatic mute is proceeded for 2 seconds during power-up and during shut down of MIC-AMP F355.

Please refer also to ñAuto-Muteò function whilst enable/disable phantom powering decribed on page 16.

THE OPERATION

between ï 12 é -4 dBr and 1 dB gaps between ï 4 é 0 dBr.

The range from ï 36 é -8 dB consitst of green LEDs, while the range from ï 6 é -2 dBr is displayed by yellow LEDs. The LEDs for ï 1 dBr and 0 dBr are red.

The full-wave peak detector (PPM) accurately controls the display at DIN specifications, with a rise time of <10 milliseconds and 1,5 seconds release time for a 20 dB level change.

Behind the drilling denoted "METER-ADJUST" on the front panel, a trimmer accessible with a small screwdriver is provided for display range adjustment.

NOTE: The standard factory setting is +15 dBu output level for a 0 dBr display.

THE CLIP INDICATOR

The red ñCLIPò-LED is situated near to the ñGAIN-COARSEò-control.

It starts flashing at about +20 dBu and thus reliably warns against internal overload. The trigger is fixed and may not be altered.

THE OUTPUTS

In its standard version, the MIC AMP F355 is equipped with two electronically balanced output per channel.

All outputs are equipped with XLR sockets and situated on the rear panel.

XLR wiring corresponds to international standards with

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

NOTE: In case of unbalanced termination neither the positiv nor the negative phase may be tied to ground. To prevent unwanted distortion, the not used output pin should remain open.

In case of unbalanced termination the output level is reduced by 6 dB !

TECHNICAL DATA MIC-AMP F355

All measurements as not otherwise noted: RMS unweighted, 20 Hz - 20 kHz

Inputs:	2 x XLR female, electronically balanced		
Outputs:	2 x 2 XLR male, electronically balanced, optional transformer		
Max. Input:	+21 dBu, +33 dBu with pad		
Input Impedance:	>2 kohms / >5 kohms with Pad		
Nominal input sensitivity:	+6 dBu		
Input CMRR (100Hz):	>78dB (A=0dB),	>78dB (A=42dB),	>78dB (A=60dB)
Input CMRR (15kHz):	>57dB (A=0dB),	>87dB (A=42dB),	>84dB (A=60dB)
Gain Coarse:	0 dB é +66 dB, 11 x 6dB steps		
Gain Fine:	-5dBé +5dB		
Phantom Voltage:	48V		
Pad:	12dB		
Phase Reverse:	180°		
Lo-Cut:	12Hzé 250Hz adjustable		
Output Noise unwtd. (Rin = 200R) :	<-94dBU (A=0dB),	<-84dBU (A=42dB),	<-68dBU (A=60dB)
Output Noise ó(Rin = 200R) :	<-96dBU (A=0dB),	<-86dBU (A=42dB),	<-70dBU (A=60dB)
Output Noise ó CCIR ô(Rin = 200R) :	<-83dBqp (A=0dB),	<-72dBqp (A=42dB)	<-56dBqp (A=60dB)
Crosstalk (20Hzé 20kHz):	<< -100dB		

A) Electronically balanced Outputs:

Frequency range (-0.5dB):	10Hz ... 61kHz (A=0dB),		12Hz ... 40kHz (A=60dB)
Frequency range (-3dB):	<5Hz é 165kHz (A=0dB),		<5Hz é 106kHz (A=60dB)
Thd+N (20Hzé 20kHz): pout = 6dBU @600R	<-98dB (A=0dB),	<-89dB (A=42dB),	<-73dB (A=60dB)
Thd+N (20Hzé 20kHz): pout = 20dBU @600R	<-96dB (A=0dB),	<-96dB (A=42dB),	<-84dB (A=60dB)
Thd+N (1kHz): pout = 20dBU @600R	<-99dB (A=0dB),	<-99dB (A=42dB),	<-88dB (A=60dB)
Max. Output @600R:	+23dBU Fine off, +26dBU Fine: +5dB		
Output CMRR (20Hzé 20kHz):	>80dB		

B) Transformer balanced Outputs:

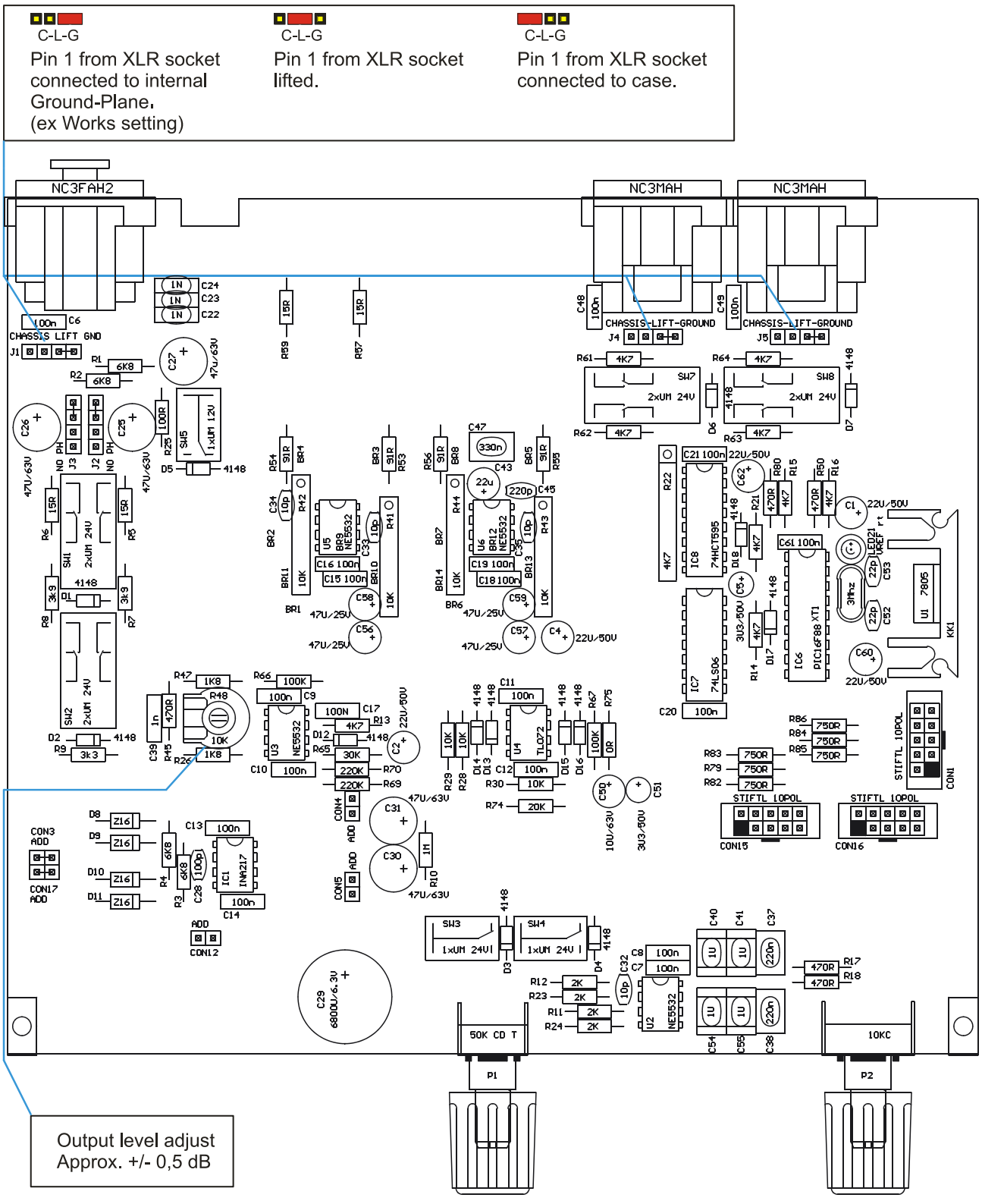
Frequency range (-0.5dB):	10Hz ... 30kHz (A=0dB),		12Hz ... 25kHz (A=60dB)
Frequency range (-3dB):	<5Hz é 80kHz (A=0dB),		<5Hz é 68kHz (A=60dB)
Thd+N (40Hzé 20kHz): pout = 6dBU @600R	<-96dB (A=0dB),	<-89dB (A=42dB),	<-73dB (A=60dB)
Thd+N (40Hzé 20kHz): pout = 20dBU @600R	<-90dB (A=0dB),	<-90dB (A=42dB),	<-83dB (A=60dB)
Thd+N (1kHz): pout = 20dBU @600R	<-98dB (A=0dB),	<-98dB (A=42dB),	<-87dB (A=60dB)
Max. Output @600R:	+22dBU		
Output CMRR (20Hzé 20kHz):	>60dB		

General

Supply Voltage:	230 / 115 V AC / 15 Watt
Case:	Stainless Steel
Front / Back:	Aluminium, dark grey / Stainless Steel
Dimensions:	19ñ 1U, 483 x 44 x 166 (WxHxD)

PCB LAYOUT AND JUMPER SETTING
MIC-AMP F355

PCB LAYOUT, ADJUSTMENTS, JUMPER SETTING



KONFORMITÄTSERKLÄRUNG
CONFORMITY STATEMENT

Wir bestätigen hiermit, dass das folgende Gerät:

Bezeichnung: **MIC-AMP F355**

Serien Nr. : -Alle-

mit folgenden EU-Richtlinien bzw. Normen übereinstimmt:

2014/35/EU Niederspannungsrichtlinie
2014/30/EU Elektromagnetische Verträglichkeit
EN 60065:2014/AC:2016 / **JIS C6065:2016**
Sicherheitsbestimmungen für Audio-, Video- und ähnliche elektronische Geräte
2001/95/EG Produktsicherheitsrichtlinie

Zur Beurteilung des Erzeugnisses hinsichtlich seiner elektromagnetischen Verträglichkeit wurden folgende, harmonisierte Vorschriften angewendet:
EN 61000-6-1:2019
Fachgrundnorm Störaussendung (Wohnbereich)
EN 61000-6-2:2019
Fachgrundnorm Störaussendung (Industrie)
EN 61000-6-3:2007+A1:2011
Fachgrundnorm Störfestigkeit (Wohnbereich)
EN 61000-6-4:2007+A1:2011
Fachgrundnorm Störfestigkeit (Industrie)

Produktfamiliennorm Haushaltsgeräte; Multimediageräte- und Einrichtungen; Einrichtungen der Informationstechnik::
EN 55014-1:2017 **EN 55032:2015**
EN 55014-2:2015 **EN 55024:2010+A1:2015**

2011/65/EU, RoHS Richtlinie

2012/19/EU, WEEE Richtlinie
Mitgliedsnummer DE 26076388

Für diese Erklärung ist der Hersteller verantwortlich:

We herewith declare that the following unit:

Name : **MIC-AMP F355**

Serial No: -all-

is in conformity with the following EC directives:

2014/35/EC Low voltage directive
20014/30/EC EMC directive
EN 60065:2014/AC:2016 / JIS C6065:2016
Security directives for audio-, video- und similar electronic devices
2001/95/EC General Product Safety Directive

For verification of conformity with regards to electromagnetic compatibility the following harmonized standards are applied:
IEC 61000-6-1:2019
Generic emission standard (residential)
IEC 61000-6-2:2019
Generic emission standard (industrial)
IEC 61000-6-3:2007+A1:2011
Generic immunity standard (residential)
IEC 61000-6-4:2007+A1:2011
Generic immunity standard (industrial)

Product family standard for household appliances, multimedia equipment, information technology equipment.
CISPR 14-1:2016 **CISPR 32:2015**
CISPR 14-2 :2015 **CISPR 24:2010**

2011/65/EC, RoHS directive

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

This declaration is given under responsibility of:

Lake People electronic GmbH
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Konstanz 26.09.2021, Fried Reim, Geschäftsführer / CEO

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FCC Notice (U.S. Only)

NOTICE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules.
Operation is subject to the following two conditions:
1. This device may not cause harmful interference.
2. This device must accept any interference received including interference that may cause undesired operation.

NOTICE:
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.