



Reference Series

MICROPHONE PRE-AMPLIFIER MPA RS 01



USER'S MANUAL



LAKE PEOPLE electronic GmbH

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.



LAKE PEOPLE

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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 Supply

The unit should be operated with the provided wall-plug adaptor – but also standard USB cell-phone supplies are suitable.

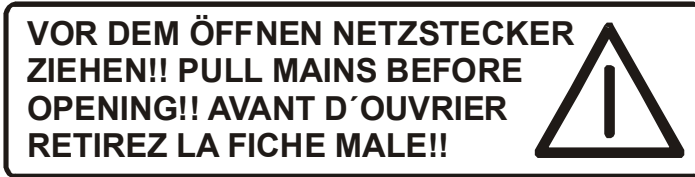
However, because of the sometimes relatively thin cables of these devices, there might be a significant voltage drop on the cable which might impair the proper operation of MPA RS 01.

Other (USB) power sources may be used under the following circumstances:

- a proper DC voltage within the range of 5 – 5,5 V
- a current capacity of min 1 A

Service / Repair:

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

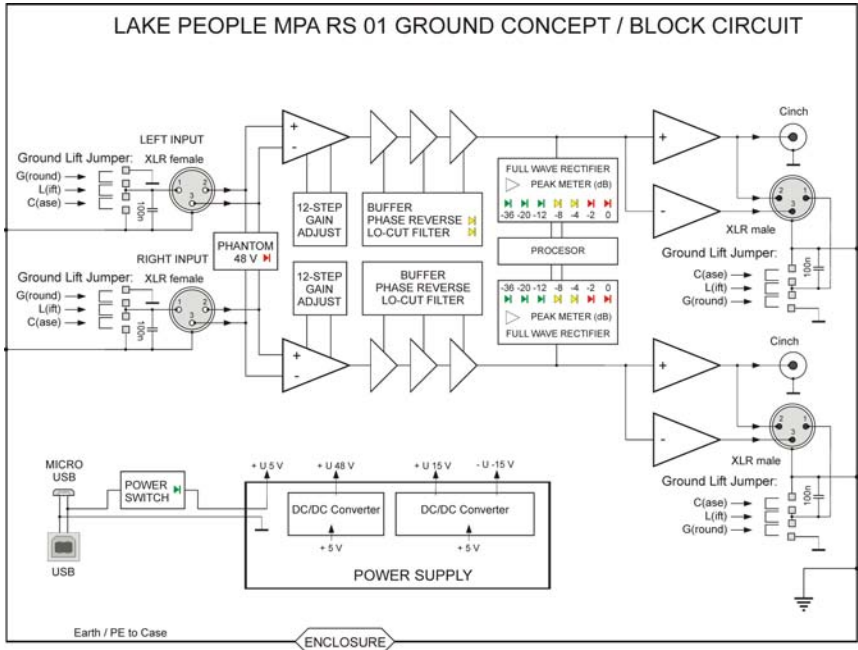


Electromagnetic Compatibility

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



THE EARTH/GROUND CONCEPT

This unit is powered by an external source and thus is not including a power cord with ground/earth facilities.

The internal reference point (Ground) is connected to the case !!

XLR GROUD-LIFT Jumper

(accessible from the inside, see also page 17)

To minimize or avoid ground buzz and hum the earth-ground relationship may be altered as follows:

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):

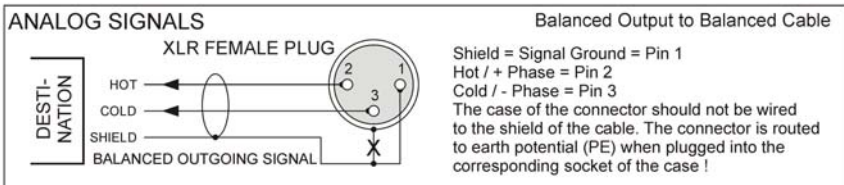
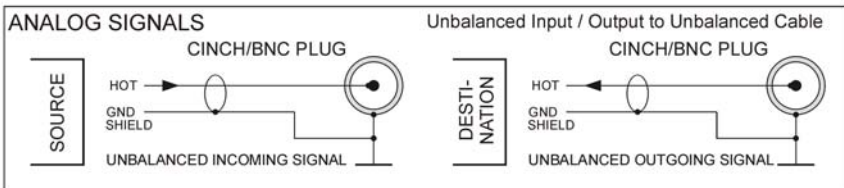
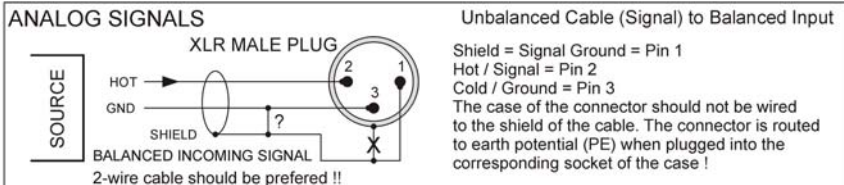
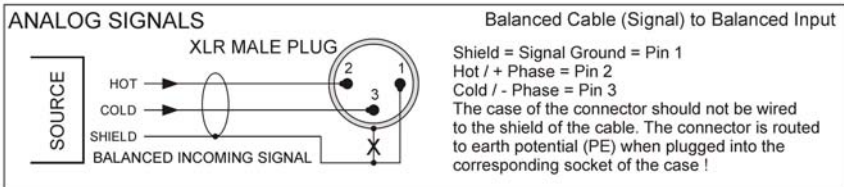
Pin 1 is connected to the case, the 100 nF capacitor is bridged.

Please note that with jumpers in LIFT or CASE position

EMC problems might occur.

These are in the field of the user's responsibility !!!!

Connection / Connectors



GENERAL

The LAKE PEOPLE MPA RS 01 is an excellent and extremely low-noise 2-channel microphone preamplifier in a compact “Desk-Top” case.

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 case is made of aluminum including the front and back panel. This provides high mechanical stability and resistance against rough handling. The cases surfaces are black anodized.

EARTH AND GROUD

This unit is operated with an external wall plug adaptor and so is not grounded by a 3-wire mains cord. The internal reference point (ground) is connected to the case and may be lifted by means of a jumper (see page 17). Sometimes it may be helpful to additionally connect the case to an external earth/ground potential.

THE POWER SUPPLY

MPA RS 01 should be operated with the provided wall-plug adaptor, but also any other USB supply is suitable.

However, because of the often relatively thin cables of these devices, there might be a significant voltage drop on the cable which might impair the proper operation of MPA RS 01.

Other USB power sources may be used under the following circumstances:

- a proper DC voltage within the range of 5 – 5,5 V
- a current capacity of min 1 A

THE 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 !!

CAUTION !!

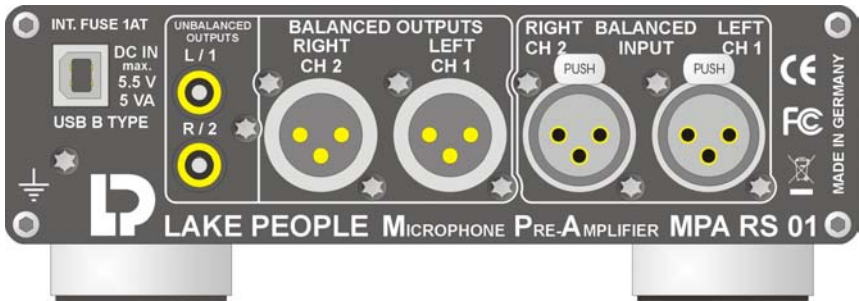
MIND THE SAFETY INSTRUCTIONS:

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 “LEFT CH 1” and “RIGHT CH 2”. 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 8).



PHANTOM POWERING

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

The MPA RS 01 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.

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

NOTE:

Switching the phantom power during operation produces low-frequency voltage swing at the MPA RS 01's output. 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 MPA RS 01'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 MPA RS 01'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 MPA RS 01'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 MPA RS 01 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

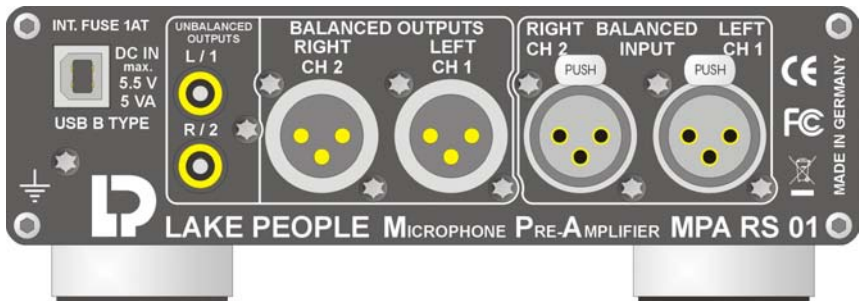
Situated on the front panel between the gain switches, a seven-segment LED bar-graph displays the momentary output level. The overall display range is 36 dB.

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 MPA RS 01 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 "LEFT / CH 1" and "RIGHT / CH 2".

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)

MPA RS 01 offers additional unbalanced outputs with gold plated RCA connectors. They are situated on the rear of the unit and marked "L / 1" and "R / 2".

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 MPA RS 01. You are in need of a screw drivers TORX style size T10 or a 2,5 mm hex allen key.

You should by all means

DISCONNECT THE POWER SUPPLY!!!

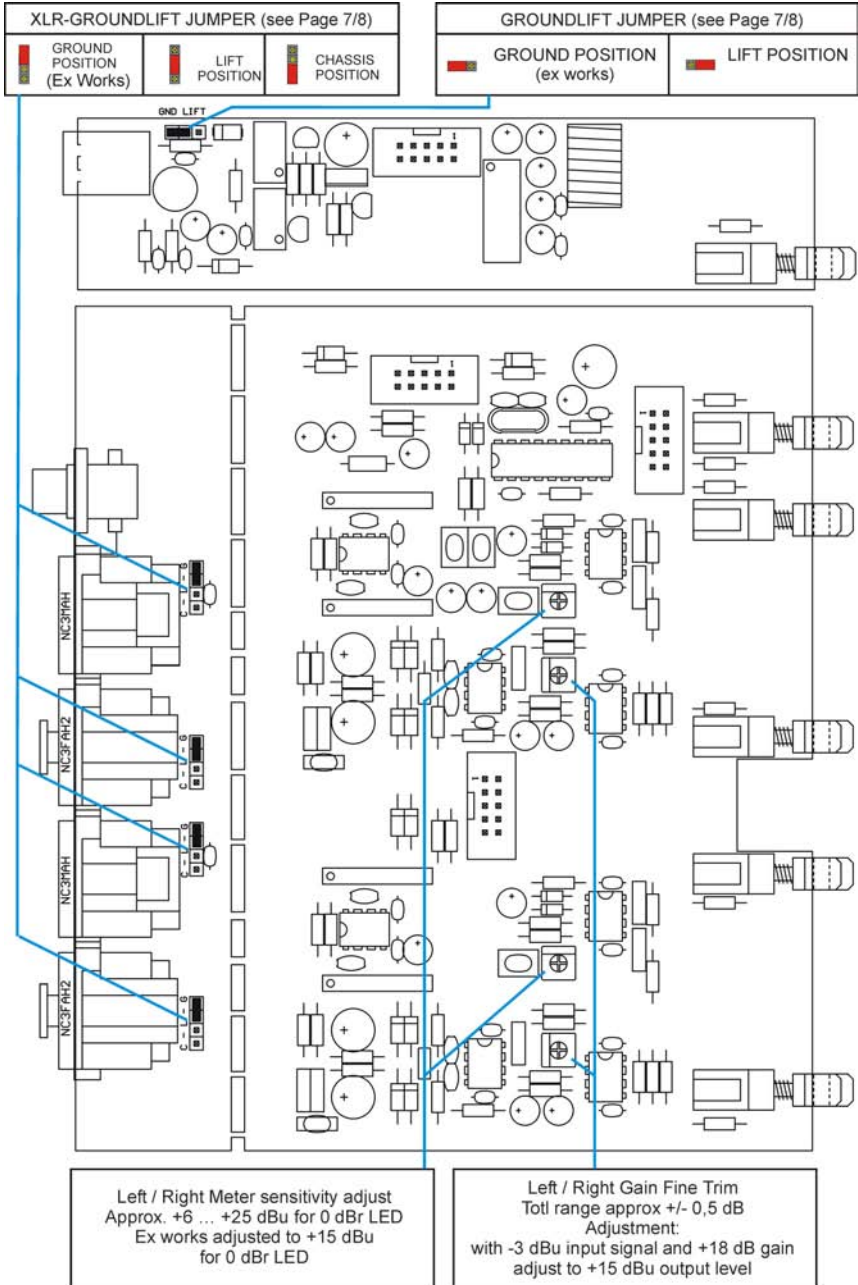
DISMANTLING

To avoid damages please follow the instruction below:

1. screw off both upper screws on the front panel
2. screw off both upper screws on the back panel
3. now lift the upper lid
4. make your personal jumper settings

Assemble the unit in reverse order.

JUMPER SETTING MPA RS 01



TECHNICAL DATA MPA RS 01

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

Number of channels:	2
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 %

Allgemein

External power supply:	via USB 5 – 5.5 V, 1 A
Case, front, back:	Aluminum, black anodized
Dimensions:	168 x 49 x 145 mm (W x H x D)

EC CONFORMITY STATEMENT:

We herewith declare that the following unit

Name: **VIOLECTRIC MPA RS 01**

Serial No. : -all -

is in conformity with the following EC directives:

2006/95/EG	Low voltage directive
20014/30/EC	EMC directive
EN 60065:2002+A12:2011	Security directives for audio-, video- und similar electronic devices
JIS C6065:2013	
2001/95/EC	General Product Safety Directive

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

EN 50081-1:1992	Generic emission standard
EN 50082-1:1992	Generic immunity standard

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

EN 55013:2001	EN 61000-3-2:2000
EN 55020:2002	EN 61000-3-3:1995

2011/65/EU, RoHS directive

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

This declaration is given under responsibility of:



LAKE PEOPLE

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A handwritten signature in blue ink that reads "Fried Reim".

Konstanz 06.03.2016 Fried Reim CEO

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 your item to:

Lake People electronic GmbH
Turmstrasse 7a
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Fon +49 (0) 7531 73678
Fax +49 (0) 7531 74998
E-Mail 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