

TM

SCHERTLER[®]
ACOUSTIC FIDELITY

ARTHUR
FORMAT48 - MICLINE X

USER MANUAL

INTRODUCTION

Thank you for choosing the **ART48-MIC/LINE X** module. This high-end, Class-A, 4-channel input unit features sophisticated MIC/LINE switching capabilities that enable either a microphone or a line level sound source to be connected to each channel as and when needed, with automatic adaptation of the sensitivity range and input impedance. Fully compatible with all existing Arthur48 and X mixer modules, and equipped with six separately controllable AUX SENDS on each channel, the MIC/LINE X is ideally suited to both live sound use and studio applications where more flexible input and output options are required.

Like all Arthur modules, the MIC/LINE X features circuits that are built using single, discrete Class-A electronic components and pure high-voltage DC amps (without a single capacitor in the signal path), offering 30 dB headroom and low noise, as well as unparalleled stability, warmth and transparency.

To make the most of your MIC/LINE X module and to ensure trouble-free operation, **please read this manual carefully** before using the unit for the first time. It's also advisable to retain the manual for future reference.

For instructions on installing and combining the various Arthur modules and advice on starting up the mixer, please read the separate ART48 ASSEMBLY manual.

IMPORTANT SAFETY INFORMATION

SAFETY FIRST!

Safety is of major importance when operating any electrical equipment, so please note the following:



On a product, a lightning flash within a triangle indicates the presence of uninsulated "dangerous voltage" within the product enclosure. This may be of sufficient magnitude to cause risk of electric shock.

ELECTRICAL SAFETY

This information applies to all modules and power supplies that form your ARTHUR mixer:

- Before connecting your mixer to the mains, make sure that the mains voltage does not exceed the voltage specified on the mixer/power supply.
- Do not use your mixer if its power supply, cable or plug are not in perfect condition. Replace these as necessary, using the exact models/types specified. If any fixed cables need replacing, this should be done by a suitably qualified professional.
- Your mixer should only be connected to a mains socket with a ground protection system.
- When setting up or installing your mixer, make sure that the mains socket and the power supply's mains cable and plug are easily accessible.
- Do not, under any circumstances, defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade and third prong are provided for your safety. If the supplied plug does not fit your mains socket, consult an electrician for replacement of the obsolete socket.
- Do not expose your mixer to rain or any other water (even in small amounts). Do not use the mixer near water.
- Avoid spilling drinks or any other liquids on the mixer.

IMPORTANT SAFETY INFORMATION

- Do not operate your mixer in excessively humid conditions. Avoid excessive heat from sunshine, fire or similar. If your mixer is being used in a dusty environment, make sure it is adequately protected.
- Avoid installing your mixer near any heat sources such as radiators, heat registers, stoves, or other heat-producing apparatus (including amplifiers).
- Do not put any sources of open flame (e.g. candles or pyrotechnics) on or near your mixer.
- Do not cover your mixer during use, or obstruct the ventilation flow in any way.
- Unplug your mixer during lightning storms, or if it is not going to be used for a while. (Remove the plug from the mains socket to completely disconnect the mixer.)
- Your mixer does not contain any "user serviceable" parts. Servicing and/or repairs should only be carried out by qualified personnel. See MAINTENANCE AND REPAIR (below).

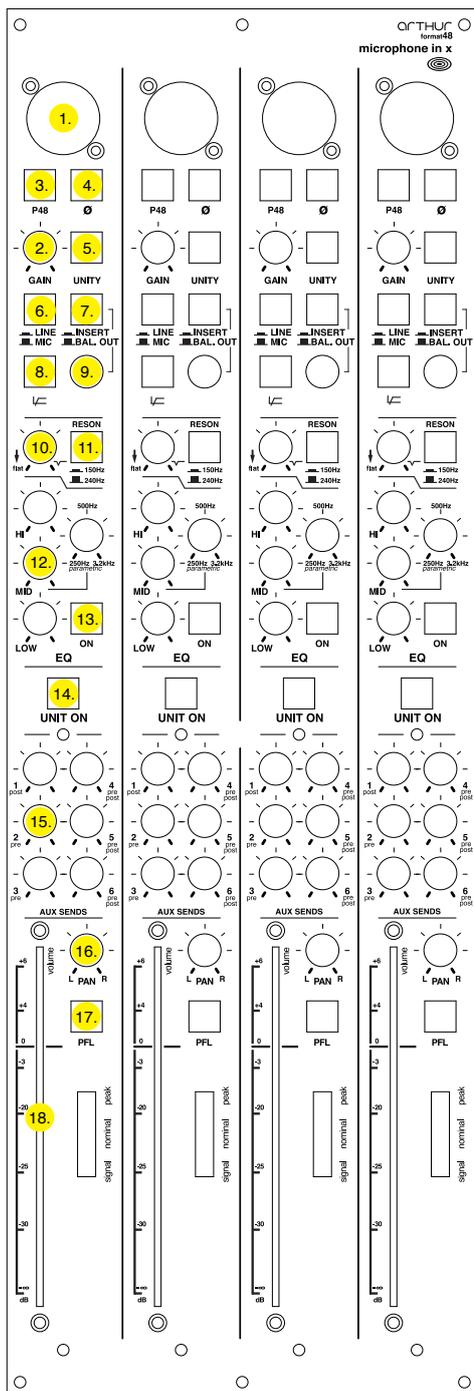
OPERATIONAL SAFETY

- During installation or live performances, make sure that your mixer's power supply cable cannot be walked on, tripped over or "pinched" – particularly at sockets, around waste bins etc. Also make sure that the power supply cable is not "stressed" at its point of connection to the mixer.
- To avoid interference, do not install your mixer near power transformers, TV sets, RF transmitters, electric motors, or any other sources of electrical energy.
- To avoid potential accidents, only use attachments, accessories and other equipment such as carts, stands, tripods, brackets or cases that are specified or recommended by the manufacturer, or sold with your mixer.
- Loud volume levels can cause irreparable damage to hearing, so avoid the following while using your mixer:
 - acoustic feedback (never point microphones directly at a loudspeaker)
 - high levels of distortion
 - impulse noises (loud "pops") that can occur when a device is switched on/off, connected to or disconnected from a system.

MAINTENANCE AND REPAIR

- Your mixer can be carefully cleaned, as necessary, using a dry cloth. No water must be used.
- When cleaning, do not use any solvents (such as acetone or alcohol). These could damage the mixer's finish and its labeling.
- Visually check your mixer on a regular basis for any signs of wear and tear or damage, but do not attempt any kind of servicing or repair.
- If your mixer malfunctions, or has been damaged, e.g. if the power supply/cable or plug is damaged, liquid has been spilled or objects have fallen inside, the mixer has been exposed to rain or moisture, does not operate normally, or has been dropped, please call your nearest Schertler technical assistance centre. (For more information, contact us at the address on the last page of this manual.)

ART48-MICLINE X



The **MIC/LINE X**'s four input channels are identically equipped.

1. XLR input: This input can receive balanced signals from -63 dBu to +6 dBu in MIC mode - a range of 69 dB, which therefore permits you to connect any audio signal to the mic unit. (Also see 5 and 6 below.)

2. GAIN: Adjusting the Gain affects the amplification rate of the input amplifier. A weak signal is amplified to a nominal level of 0 dBV and a stronger signal is attenuated so that a nominal signal level of 0 dB is always present at the output of the mic input amp. (Also see 5 and 6 below.)

On the VU level meters, positioned at the side of each channel fader, you can "read" the amount of gain set. Turn up the gain to a point where the red overload occasionally shows. But don't worry too much about this. Thanks to the amount of headroom from input to output on Arthur, even strong overloads can be absorbed by the mixer's electronics without resulting in distortion.

3. P48: In MIC mode, depressing the P48 button (red light), delivers 48V of phantom power to the microphone, which, in most cases will be a condenser or active ribbon type. A dynamic mic cannot normally "see" phantom power (as the name suggests), but passive ribbon mics could be permanently damaged by it. Only use this button with mics that you definitely know require phantom power in order to work. Note: The internal circuitry raises the 48V slowly, to avoid "pops" and to protect the microphone. Therefore, allow around 10 seconds for the mic to be working fully.

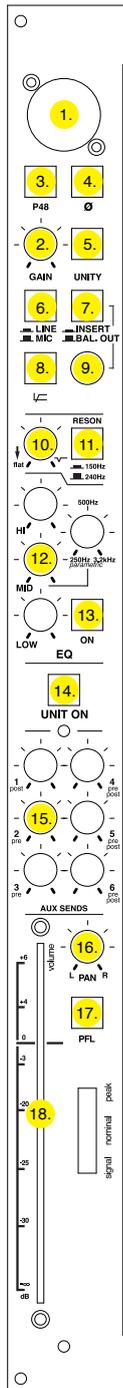
4. PHASE (∅): This swaps the "hot" and "cold" aspects of the input signal, inverting its phase by 180°. This can be helpful if, for example, two microphones are positioned at a distance, or reverse-faced (i.e. as with bottom and top snare drum miking). Depressing the ∅ button on one mic means that the reverse-faced mic will get "in phase", or a distantly placed mic (for certain frequencies at least), will become

"better" in phase with a second mic. Note: The button positioning is subjective and the results really need to be evaluated through listening.

5. UNITY and 6. LINE-MIC: The LINE-MIC (gain) button (6) adapts the signal processing to the nature of the input signal. When this button is set to LINE (green light), the impedance is automatically adapted for line signals and the 48V phantom power is deactivated to prevent any damage to the "line" device connected. When the channel is switched to LINE mode, the sensitivity range adapts from -21 dBu to +8 dBu. You can automatically set the nominal level at 0 dBV by activating the UNITY button (5).

7. INSERT/BALANCED DIRECT OUT and 9. INSERT: The INSERT (9) works in a similar way to inserts on other mixers. However, a related "bypass" button (7) offers additional possibilities. When this is depressed, the signal in the mixer is interrupted and the Insert will work in the usual way. By

ART48-MICLINE X



connecting a mono jack, you get the simple output line signal on the “tip”. By connecting a standard stereo phone jack, you get the (output) signal from the “tip” (send) and the return signal will be connected to the mixer through the “ring” (return) of the jack. When the button is not depressed, the signal will not be interrupted by the insertion of a phone jack into the Insert. Here, the insert connection works as a sleeve out or “dry line out post input amp”. You can connect a simple mono phone jack or a stereo phone jack to the insert. The unbalanced line signal will be transmitted through the “tip” of the phone jack. Red light = depressed (Insert functionality active.) White light = not depressed (Insert functionality bypassed).

8. LOW CUT: The Low Cut button limits low frequencies at 100 Hz/second order, cutting out unwanted low frequencies from “boomy” signals. The filter can also be helpful in shaping signals from smaller instruments (violin, mandolin etc).

10. RESONANCE: The resonance filter is a kind of notch filter, but one that is gradually adjustable over its attenuation level. This filter is designed to avoid, or at least attenuate, feedback on acoustic instruments that are miked up in live situations using pickups, e.g. the SCHERTLER DYN series. A double bass or ‘cello might get in resonance at ca. 150 Hz, whereas guitars and similar musical instruments will do so at ca. 240 Hz. The Q is very high, cutting out a very narrow band at the respective frequency.

If the RESONANCE control is set to the FLAT (far left) position it will not be active, thus having no effect on the incoming signal. When the rotary control is turned slowly clockwise, the filter will gradually attenuate at the chosen frequency (see 11 below). Turn the control to the point where a “boomy” feedback effect can be minimized without cutting too much from the signal and subsequently losing some of its lower end.

11. 150Hz-240Hz button: This lets you select the frequency. When the button is not depressed (red light), the filter will attenuate at 150 Hz. When the button is depressed (blue light), the filter will attenuate at 240 Hz.

12 and 13 EQ section: The EQ ON button (13) bypasses or activates the filter section. (White light = bypassed, green light/depressed = activated.). This is helpful for comparing a filter configuration with the unfiltered sound. Sound engineers often bypass filters to avoid a reduction in sound quality, letting the signal go through the filter circuitry. However, Arthur’s innovative circuitry enables loss of sound to be kept to an absolute minimum, so you should hardly hear any difference in sound quality regardless of whether the filters have been bypassed or are active.

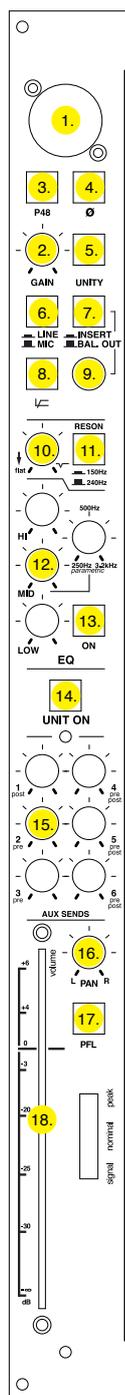
Note: The EQ ON button will not bypass the RESONANCE filter.

EQ controls (12): The HI control lets you tune the high range of the audio spectrum (from 4 kHz) by +/- 14 dB with a slope of 18 dB / octave. The 3rd order structure “keeps” the circle of influence within the filter’s audio band so as not to overlap with the MID filters. This makes adjustment of the higher frequencies more accurate.

The MID control, together with the MID FREQ control, acts on frequencies within a wide mid range of 250 Hz to 3 kHz, with amplification or attenuation of +/- 12 dB. (The MID control affects the amplitude (amplification or attenuation) while the MID FREQ control affects the frequency.)

The LOW control lets you adjust the signal by +/-16 dB up to 110 Hz with a slope of 12 dB / octave. The higher order prevents the low frequencies from overlapping with the parametric mid, making adjustment of the lower frequencies more accurate.

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The HI, MID and LOW rotary controls all have a detent at their mid positions. This indicates the filter's "flat" position.

14. UNIT ON/OFF: The UNIT ON button connects/disconnects that channel's output routing for all outputs (AUX1 to AUX6 and L/R), except the PFL routing. This function is similar to the MUTE button used on other mixers, but here the functionality is reversed. When the button is depressed, all outputs get connected - whereas a MUTE button disconnects the output when pressed. Also, whereas a MUTE button normally only disconnects the L/R routing (the channel's fader), this button affects all outputs. Being able to switch off a channel strip makes sense in order to prevent the signal from still going through to stage monitors, or to the input of the reverb unit for example. Note: Even if the button is in the switched off position (not depressed, white light), the PFL and INSERT will still be ready to function, (as shown by the lights on their respective buttons), even though all other button lights are off.

15. AUX SENDS: There are six rotary controls - one for the level control of each send (AUX1 to AUX 6). This enables each individual AUX SEND to be controlled independently from the others.

The signal to AUX1 is "taken" post fade because this auxiliary line can be used with the Spring unit for reverb effect, while AUX2 and AUX3 are pre fade for use with stage monitors. The other 3 AUX can be independently assigned pre- or post fade on the Master X unit.

This means that you can have an AUX configuration of up to one post and five pre (1 effect + 5 monitors) or up to four post and two pre (4 effects + 2 monitors). The level of the AUX sends can be read on the MASTER X unit's dedicated VU meter.

16-18. Fader section: Operation of this fader section is identical to that on other mixers. The channel faders and their associated functionality probably form the most important part of the output process. In most cases, the signal(s) going through this section will be mixed in the MASTER X and will appear on the main L/R outputs that drive the recording device or the front-of-house PA speakers. This is the signal usually heard by the public.

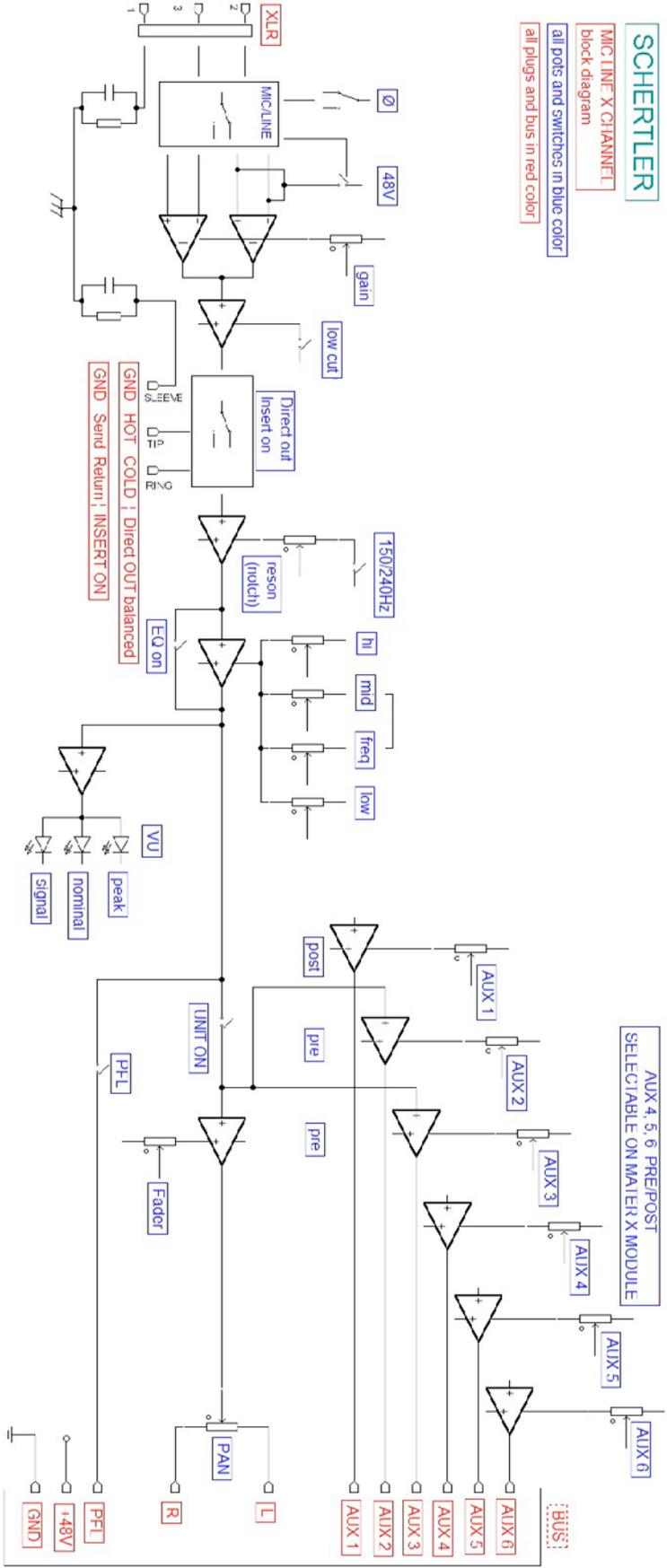
The PAN pot (16) enables the signal to be sent to the Left or Right master channel. Its configuration is designed to guarantee minimum noise and maximum dynamics in the central position. In this position, the signal flows to both channels at maximum level. When the pot is set hard left, you will only hear the signal on the left channel. While turning the pot from the left to the central position, the left channel's signal will not change, but the right channel's signal will continuously increase, reaching its maximum level at the central position - and vice versa.

As well as being a traditional PFL (pre fade listen), the PFL button (17) also serves as an additional AUX send, albeit without the possibility to set any levels. All channels that have their PFL activated (red light) will be mixed in the MASTER X unit and sent to the PFL output, controlled by the PFL fader and "visible" on the Master X's VU meter. This function can be useful if you have an additional monitor and only need one signal, e.g. for a singer who only requires the "voice channel". Note: The PFL section still runs if the UNIT ON is deactivated (white light).

The channel fader (18) controls the total amount of signal going to the master. To exclude this signal from the MASTER X without changing the fader position, simply switch the UNIT ON button to its OFF position (white light). The button will then act as a MUTE.

TECHNICAL INFORMATION

ART48 - MIC/LINE X: SIGNAL FLOW



SCHERTLER

MIC/LINE X CHANNEL

block diagram

all pots and switches in blue color

all plugs and bus in red color

GND HOT COLD ! Direct OUT balanced

GND Send Return ! INSERT ON

AUX 4, 5, 6 PRE/POST
SELECTABLE ON WATER X MODULE

BUS

TECHNICAL INFORMATION

Input impedance:	4.6 kohm	MIC mode
	43 kohm	LINE mode
Output impedance (Bal. DIR. OUT):	240 ohm	
Maximum input level:	+24 dBu (@1kHz; THD<0.5%) LINE mode	
Maximum output level (headroom):	+30 dBu (@1kHz ; THD <0.5%)	
Sensitivity:	-63 dBu to +6 dBu	MIC mode
	-21 dBu to +8 dBu	LINE mode
Total Gain (through Master X):	72 dB	
Frequency response: (-3 dB)	<10 Hz - 55 kHz	
Low cut: (-3 dB)	100 Hz (Shelving, 2nd order)	
Reson attenuation:	10 dB @ 150 Hz / 240 Hz	
Low EQ:	110 Hz (Shelving)	-16 dB / +16 dB
Parametric Mid EQ:	250 Hz - 3 kHz	-12 dB / +12 dB
High EQ:	4 kHz (Shelving)	-14 dB / +14 dB
Equivalent input noise (EIN):	129.4 dB (Insert, 60 dB Gain, 150 ohm)	
Distortion (THD+N; @1 kHz):	0.041%	Total
-30 dBu input level	0.04%	(2nd harmonic)
0 dBu output level	0.019%	(3rd harmonic)
	0.0006%	(4th harmonic)
	0.0011%	(5th harmonic)
Power consumption:	420 mA	
Size & Weight:	143x58x475mm; 1.75 kg	

NOTES

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APPENDIX

WARRANTY

All Schertler products are covered by a limited two-year factory warranty (from the date of purchase) in respect of manufacturer defects. Details can be obtained from your local dealer / representative.

Schertler S.A. strongly believes in "common sense". Therefore, misuse of our products is not covered under rights obtained through our warranty policy, or through internationally recognised terms and conditions. For more information on warranty, please visit the Schertler website.

PRODUCT DISPOSAL

This product must not be disposed of in general household waste. It should be taken to a disposal centre for electrical / electronic waste. Please note any local or national regulations that may be applicable here.

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