



AV CONDITIONER 3000

TRIPLE CHANNEL CONDITIONER
ICP/IEPE

USER MANUAL

2018

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1. Introduction

AV CONDITIONER 3000 (AVC 3000) is a versatile, three-channel conditioner designed to interface with sensors made in the ICP/IEPE standard.

Thanks to its small size and weight, robust design, very good operational parameters and ease of use, it is ideally suited for carrying out measurements both in the laboratory and in the field.

The conditioner is equipped with input circuits enabling powering up the ICP/IEPE sensor, while maintaining wide frequency response, very good linearity and low noise. Is also equipped with LEDs indicating open or short circuit in the sensor loops.

Each channel allows independent gain setting (1x, 10x or 100x) and enabling 1 kHz low pass and 10 Hz high pass filters.

The device can be powered up either by an adapter or an internal NiMH battery.

2. Technical data

Parameters	Description
Number of channels (in/out)	3/3
Input type	ICP/IEPE 24V DC/2,4 mA
Signaling	On/Off, Charging , Open/Short, Overload, Gain, LP & HP Filters
Input impedance	100 kΩ
Output impedance	100 Ω
Gain	x1, x10, x100 (0dB, 20dB, 40dB)
Gain error	< 0,5%
Gain drift	< 50 ppm/°C
SNR	> 90 dB (10 Hz – 22 kHz)
Frequency response	0,5 Hz to 100 kHz (optional 0,5 Hz to 300 kHz)
Distortions	< 0,1%
Output voltage range	20 Vpp
Offset error	10 mV
Low pass filter	1 kHz, 12 dB/okt
High pass filter	10 Hz, 12 dB/okt
Battery	NiMH with built-in charger, work time +- 10h
Power supply	DC, 12V/400 mA
Dimensions	146 mm x 110 mm x 45 mm
Weight	850 g
Operational temperature	0°C ...+ 50°C
Storage temperature	-10°C ... +60°C

*) optional 300 kHz

3. Description of the AVC 3000 conditioner

The Fig. 2.1 shows the panel of the AVC 3000 conditioner. There are five functional areas marked blue color. These areas include LEDs and buttons in light blue, contrasting with the dark blue background.

The power area contains a red LED signaling power on/off (11), power button and a yellow LED signaling charge (10).

The input area includes the yellow open (1) and short (2) LEDs. They are grouped in columns marked 1, 2 and 3, corresponding to the conditioner inputs. BNC inputs (9) are placed on the rear wall of the casing so that the symbols 1, 2 and 3 clearly indicate the corresponding connector.



Figure 3.1 View of the AVC 3000 conditioner

The gain area includes yellow LEDs signaling overload. Underneath there are red LEDs arranged in columns indicating currently selected gain level: 1x, 10x and 100x (3, 4, 5), and the buttons used to make the selection.

Positioned below there is the filters area containing buttons used to control highpass and (6) and lowpass (7) filters. Above the buttons there are red LEDs indicating activity of the filter.

At the bottom of the panel there is the output area (8). Figures 1, 2 and 3 indicate corresponding output channel connectors. The connectors are located on the front of the chassis.

All the LEDs, buttons and connectors are arranged in columns to indicate clearly the corresponding channel.

The following table lists the panel components with their descriptions:

Item	Function	Description
red LED power on/off	signaling device activation	<ul style="list-style-type: none"> » continuous light indicates that the unit is on » Flashing LED indicates the need to recharge the battery pack
yellow LED charge	signaling charging the batteries	continuous light when charging
yellow LED open	signaling a break in the sensor circuit	flashes when the sensor is not connected or there is a break in the circuit
yellow LED short	indication of short-circuit	flashes in case of short-circuit in the sensor loop
yellow LED overload	indication of overload	continuous light when the output voltage exceeds the range of +/- 10V
Red LED: 0dB 20dB 40dB	indication of the selected gain	continuous light indicates the currently selected gain level for the channel
Red LED: highpass lowpass	signaling filter's activation	continuous light indicates that the filter is active
the power on/off button	conditioner switch	press to turn on the device, pressing again will turn it off
the gain button	selection of gain level	sequentially switched to select gain level: 1x - 10x - 100x on a given channel
Buttons: highpass lowpass	enabling filters	pressing the button activates the filter pressing again will turn it off

4. Power supply

Conditioner AVC 3000 can be powered from the AC adapter supplying 12V DC or internal NiMH battery. The fully charged battery allow working for approximately 10 hours. When the external power supply is used, the internal battery is recharged if necessary. Built-in charger automatically prevents overcharging the battery.

WARNING!

Do not leave the conditioner unused for a long time with a discharged battery. This may result in loss of capacity.

5. Using the conditioner

5.1. Switching on

Before starting, connect the conditioner with sensors and measurement equipment using shielded cables.

After connecting the inputs and outputs of the conditioner, turn it on by pressing the power on/off switch on the panel. The *power on/off* LED button should flash to indicate battery power. For approximately 5 seconds the *open* and *short* LEDs will also blink, while the *overload* LED will illuminate continuously. Pressing the *power on/off* button will disable the device.

When conditioner is connected to the AC adapter, it automatically turns on. The power on/off LED's steady light indicates power from an external source. If the battery is not fully charged, the internal charger will start the process of charging, signaled steady light of the charge LED.

The power on/off button does not affect the operation of the conditioner with external power supply connected.

5.2. Gain level selection

For each channel of the conditioner it is possible to select one of the three gain values: 1x (0 dB), 10x (20 dB) or 100x (40 dB). The gain selection is made by pressing the button corresponding to each channel, resulting in a sequential change in the gain level: 1x - 10x - 100x. The selected value is indicated by steady light of the corresponding LED.

5.3. Enabling filters

For each channel of the conditioner it is possible to enable high pass filter and low-pass filters. The activation of the filter is done by pressing the corresponding button on the panel. Activation of the filter is indicated by the red LED over the button. Pressing the button again turns off the filter.

6. Troubleshooting

Table provides the solution to some problems that you may encounter during the operation of the conditioner.

Problem	Solutions
The unit will not turn on	The cause maybe an empty battery, connect the AC adapter to the conditioner in order to charge the battery

<p>No signal on the conditioner output</p>	<p>Check if either of the <i>open</i> or <i>short</i> LEDs are blinking, if yes - check the connection of the sensor(s) to the conditioner and make sure that the sensor cables are OK - any breaks, cuts and abrasions qualify them to be replaced. Make sure that the sensor(s) are operational.</p>
<p>Output signal conditioner is noisy and/or disturbed</p>	<ul style="list-style-type: none"> » Make sure that the signal cables used to connect the sensors and the measuring equipment are shielded cables » Make sure that nearby there are no electrical devices turned on, that may interfere with the operation of the conditioner » Disconnect the AC adapter from the power conditioner and power it up with battery - in some cases, excessive noise can penetrate from the network through the AC adapter and affect the operation of the conditioner

If the above table does not include the problem or given solution has been unsuccessful, contact AMC VIBRO service.

7. Recycle

7.1. Hazardous Materials

AVC 3000 system does not use any hazardous materials outlined by RoHS. These regulations confirm that lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ether, or other battery related materials are limited to no more than trace amounts.



7.2. Recycling Facilities

When decommissioning out of use devices, minimize the impact of the waste created. Refer to local waste removal administration for current information on proper material collection and recycling.