# PA-3000

*Portable 3-channel IEPE signal conditioner*

## Front Panel



1. Self-diagnostic indicators
2. Power supply indicators (low battery indicator and charging indicator)
3. Gain selection keys and overload indicators
4. Filter selection keys
5. Outputs designation
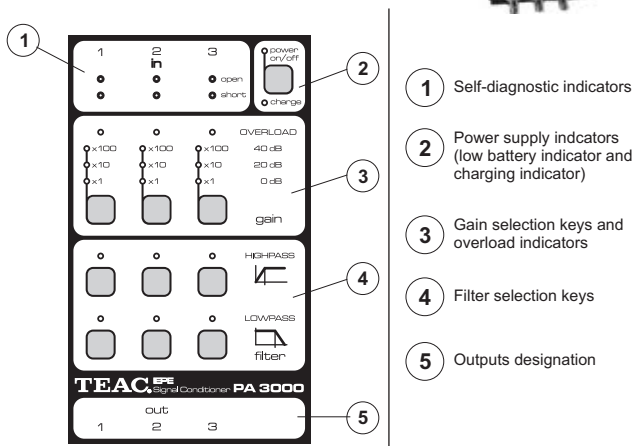
## Internal Battery

The conditioner is equipped with the built-in rechargeable battery allowing for its autonomous operation.
In order to turn the conditioner on (while the external power is not connected), press the **POWER ON/OFF** button. Once the module turned on, the diode **POWER** remains illuminated.
To turn the conditioner off, press again the **POWER ON/OFF** button.

**Battery Level Indicator**

Low battery is indicated by flickering **POWER** diode. In this case the conditioner should be connected to the external power supply.

Illuminated **CHARGE** diode indicates that battery is being properly charged.

> ⚠ **WARNING**
> **Blinking CHARGE diode signals a problem with the charging circuity.**
> **Contact the MAINTENANCE department!**

## Setting up the conditioner through RS232*  *option

RS232 serial link and Hyper Terminal program are used to communicate with the module. Once the program is launched the following parameters should be set:
   -Baud Rate - 9600
   -port number - COM1, COM2, …
   -number of bits - 8
   -parity - NO
   -stop bit - 1
   -data transfer control  NO

In order to read out the set-up of the PA-3000 module, type in the following command:
**#<module address>?** For example: **#2?**

\# - start-of-message character
2  device address (to distinguish between several modules working in the RS485 network
   **NOT AS STANDARD OPTION**)

In case when only one module is connected then any address in the range <0 - 9> may be used.

After pressing the CR (Enter) key, the module configuration is displayed.
It looks, for example, like this:

#2?
PARAMETERS:

ADRESS: 2

| CHANNEL 1: | CHANNEL 2: | CHANNEL 3: |
|---|---|---|
| K= 100 | K= 1 | K= 10 |
| FDP: OFF | FDP: ON | FDP: ON |
| FGP: ON | FGP: OFF | FGP: ON |

   In order to change the set up of the instrument the following command should be typed in:
*#Address <09>,Channel <13>,Gain<13>,FDP<1,0>,FGP<1,0>*

For example:
#3,2,3,0,1

\#- start-of-message character
3- device address (to differentiate the modules working in the RS485 network.
   In case when only one module is connected, then any address in the range <0-9> may be used)

2- channel two (any one of three available channels may be selected: 1, 2, 3)

3-  x100 gain, (1 = x1, 2 = x10, 3 = x100)

0- FDP OFF (this parameter is used to turn ON and OFF low pass filter: 0- OFF, 1- ON)

1- - FGP ON (this parameter is used to turn ON and OFF high pass filter: 0- OFF, 1- ON)

## External power supply

Connecting the external power supply automatically turns the conditioner ON and, if necessary, starts charging the batteries.
The illuminated **POWER** diode indicates proper operation of the instrument, and, if the batteries are being charged, the diode **CHARGE** is shinning.

IT IS IMPOSSIBLE TO OVERCHARGE THE BATTERIES  the battery charging is controlled by the built in charger.

**WARNING!**
**The POWER ON/OFF button is inactive during the operation with the external power supply.**

The conditioner is turned off automatically once the external power supply is disconnected.

## Self-diagnostics

The conditioner is capable of performing the self-diagnostics of the measurement channels. The self-diagnostic circuitry will indicate whether the measurement channel is short-circuited or open (for example, if the connection cable or the transducer are broken).

- **Short-circuit in the sensor line** is indicated by a flashing **SHORT** diode in the defective channel

- **Open sensor line** is indicated by a flashing **OPEN** diode in the broken channel

## Setting up the gain

In PA-3000 it is possible to set up the gain of the conditioned signal. The gain is set up with the button **GAIN,** independently for each channel. The following settings are available:

**x1 (0dB)  x10 (20dB)  x100 (40dB)**

The selected gain is indicated by the illumination of the corresponding diode.

> ⚠ **EXCEEDING THE ALLOWED LEVEL  OVERLOAD**
> The **OVERLOAD** diode indicates that for a given gain value the allowed level is exceeded.
> One should set up such a gain value that the signal level does not exceed the measurement range.

## Filtering the signal

The **FILTER** buttons include into the measurement channel the high-pass or low-pass filters. The corresponding diode is illuminated when a given filter is turned on. The cut-off frequencies are the following:

| low-pass filter: | 1 kHz |
|---|---|
| high-pass filter: | 10 Hz |

Filters can be switched on independently for each channel.

## Specifications

| | |
|---|---|
| Input/output channels | 3/3 |
| Input type | IEPE 4 mA/20V with improved settling characteristics |
| Indicators for input | open and short and overload per channel |
| Input impedance | 100 KOhm AC-coupled |
| Output impedance | 100 Ohm |
| Input gain | 1, 10, 100 (0 dB, 20 dB, 40 dB) |
| SNR | > 90 dB (10 Hz – 22 KHz) |
| Distortion | < 0,1% |
| Gain error | < 0,5% |
| Gain drift | < 50 ppm/°C |
| Output range | 15 Vpp |
| Offset error | < 10 mV on output (DC-coupled) |
| Filters | 12 dB/oct, individually selectable on/off |
| High pass filter | 10 Hz or custom |
| Low pass filter | 1 KHz or custom |
| Battery | NiMh with internal charging, duration approx.10 h |
| Control interface | RS232 using 3,5 mm jack to sub-D cable |
| Power supply | 12V / 200 mA DC |
| Housing | extruded aluminium with dirt and moisture repelling membrane keypad |
| Dimensions | 196mmx 110mmx 45mm(l xwx h) |
| Weight aprox. | 850 g |
| operating temperature | 0 °C – 50 °C |
| storage temp | -10 °C – 60 °C |
| AC/DC adaper and RS232 cable are supplied with the unit | |

## Contact

www.roga-instruments.com