



# DynaLabs DYN-PM-10 10 N PM Shaker Owner's Manual

[Home](#) » [Dynalabs](#) » DynaLabs DYN-PM-10 10 N PM Shaker Owner's Manual 

## Contents

- [1 DynaLabs DYN-PM-10 10 N PM Shaker](#)
- [2 Product Information](#)
- [3 Product Usage Instructions](#)
- [4 Specifications](#)
- [5 Usage](#)
- [6 General Information](#)
- [7 Description](#)
  - [7.1 Specifications](#)
  - [7.2 Outline Drawing](#)
- [8 Operation and Installation](#)
  - [8.1 Mounting Interface](#)
- [9 Maintenance and Troubleshooting](#)
- [10 Safety](#)
- [11 Documents / Resources](#)
- [12 Related Posts](#)

# DynaLabs

**DynaLabs DYN-PM-10 10 N PM Shaker**



## Product Information

### DYN-PM-10 10 N PM Shaker

The DYN-PM-10 is a compact and lightweight electrodynamic shaker designed to provide dynamic force excitation for vibration and shock testing of small-sized mechanical structures. It is a powerful general-purpose shaker that can provide up to 10 N peak sine force. The shaker comes with an external signal input, GND signal output, GND DC power input, sine frequency generator, gain knob, and LCD display. It is equipped with a carbon fiber suspension system and a natural convection cooling system. The shaker body weighs 1 kg, and the outer frame weighs 0.3 kg.

## Product Usage Instructions

Before using the DYN-PM-10 shaker, ensure that you have read and understood the user manual. If you have any questions or problems with the shaker, contact a Dynalabs engineer at the provided phone number or email address.

## Specifications

The DYN-PM-10 shaker can operate in both vertical and horizontal excitation types. It has an output force of 10 N for sinusoidal frequencies ranging from 10 to 10000 Hz. The shaker can produce a displacement of 4 mm peak to peak. The amplifier has a weight of 0.65 kg and requires a power supply voltage of 19V DC with a current of 4.74 A. The maximum input current is 4A (RMS). The external signal voltage level should be 1 VAC(PEAK).

## Usage

1. Connect the external signal input to the device under test.
2. Connect the GND signal output to the ground terminal of the device under test.
3. Connect the GND DC power input to a suitable power supply.
4. Adjust the sine frequency generator to the desired frequency and use the gain knob to adjust the amplitude of the signal.
5. The LCD display will show the current frequency and amplitude of the signal.

6. Ensure that the shaker is properly suspended in either a vertical or horizontal orientation, depending on the test requirements.
7. Turn on the amplifier and begin the test.

**Note:** The DYN-PM-10 shaker is warranted against defective materials or workmanship for one year. However, defects arising from user errors are not covered by the warranty.

## **Introduction**

The DYN-PM-10 is designed to provide dynamic force excitation for vibration and shock testing of small sized mechanical structures.

The DYN-PM-10 is a compact, lightweight and powerful general purpose electrodynamic shaker providing up to 10 N peak sine force.

## **General Information**

### **Unpacking and Inspection**

Dynalabs products provide adequate protection for undamaged products to be transported. Document the damages that occur indirectly during the transport and contact the customer representative. Check all components of the shaker. If there is a defect, please contact us.

### **System Components**

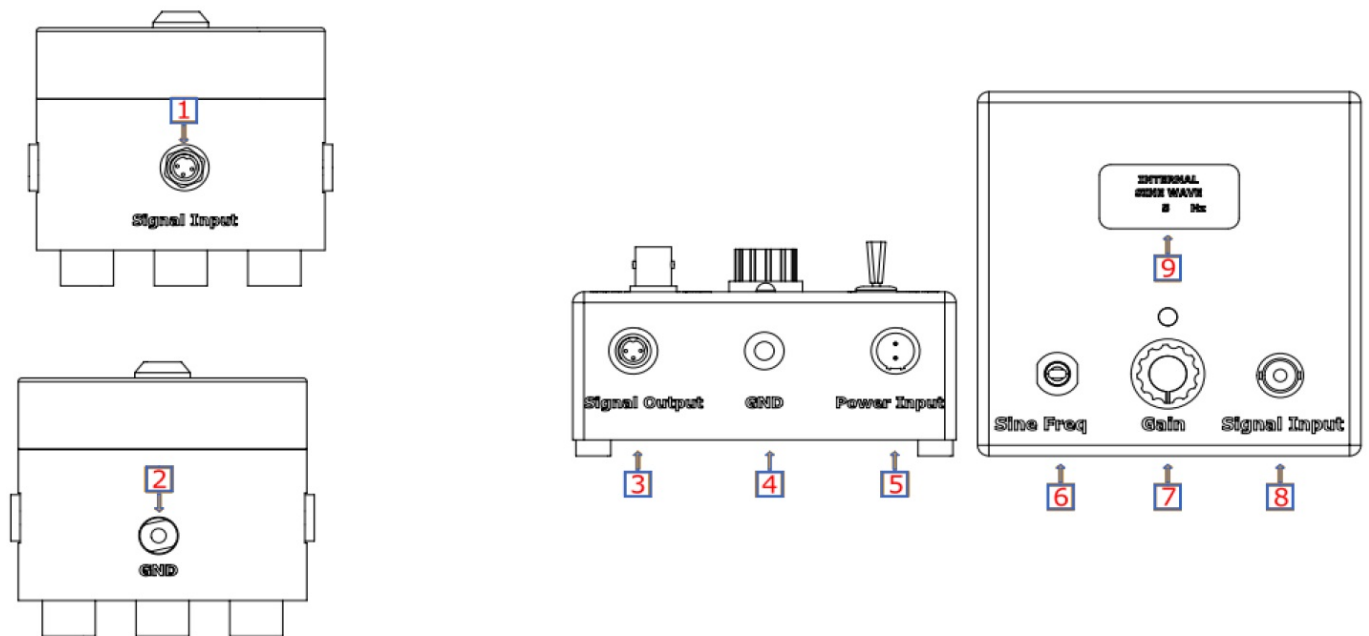
DYN-PM-10 has the following components:

- Electrodynamic Shaker Body
- Amplifier (DYN-SA-150)
- Power Adapter
- Power Cable
- Signal Cable
- Ground Cable
- User Manual

### **Theory of Operation**

DYN-PM-10 is an electromagnetic actuator. Electromagnetic actuators are basically a voice coil consisting of magnet and coil. The moving element can be a coil or magnet depending on the design requirements. The moving element is usually suspended by an elastic spring. DYN-PM-10 has a stationary coil (drive coil) whose current is controlled to produce vibration. The stationary magnetic field is produced by a magnet.

## **Description**



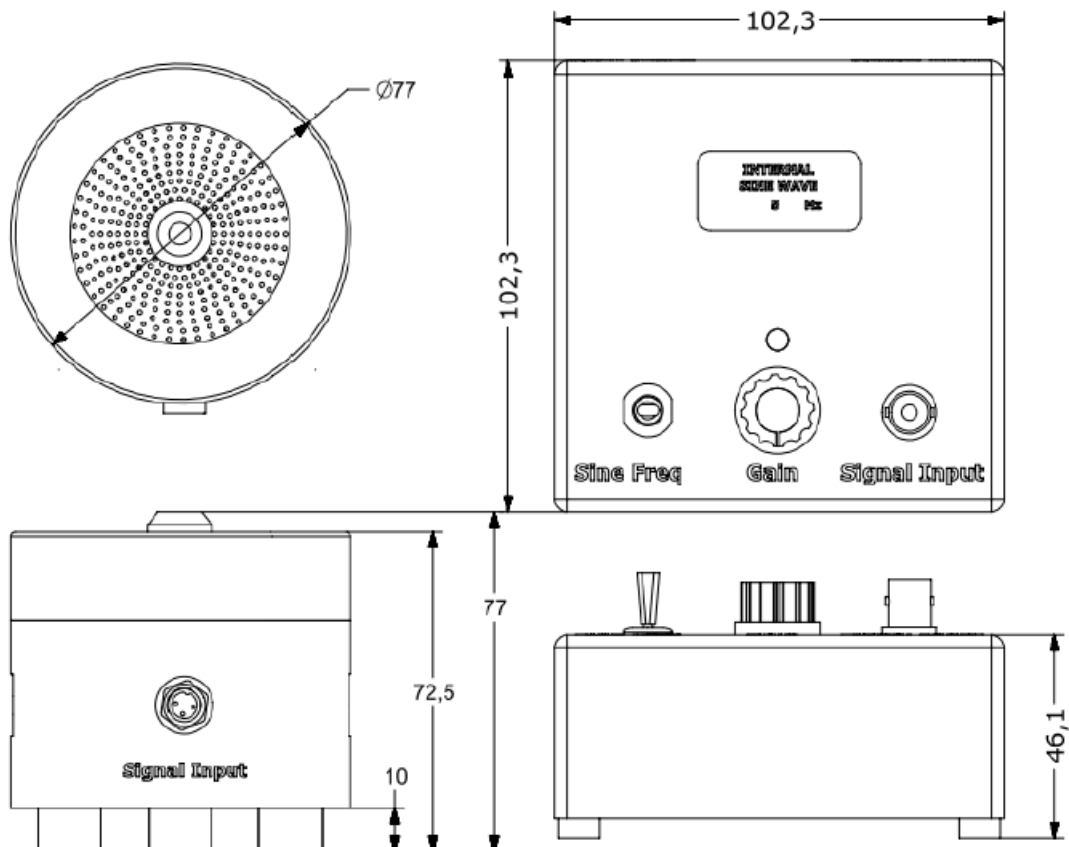
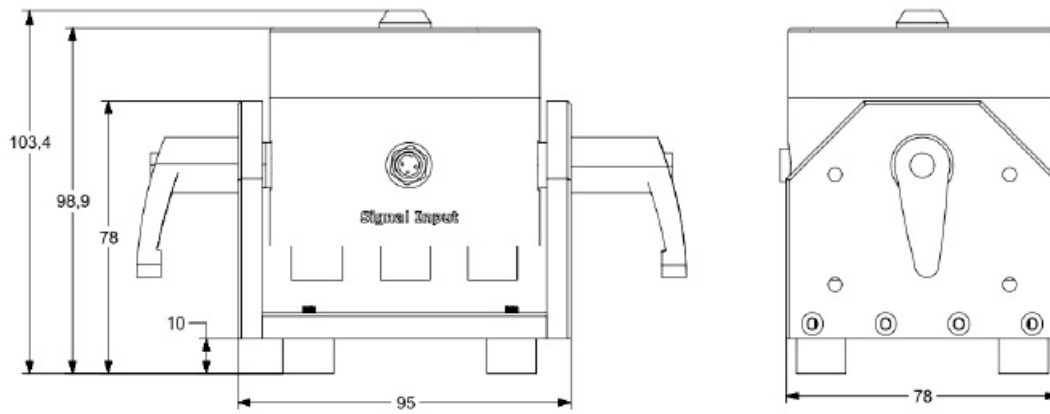
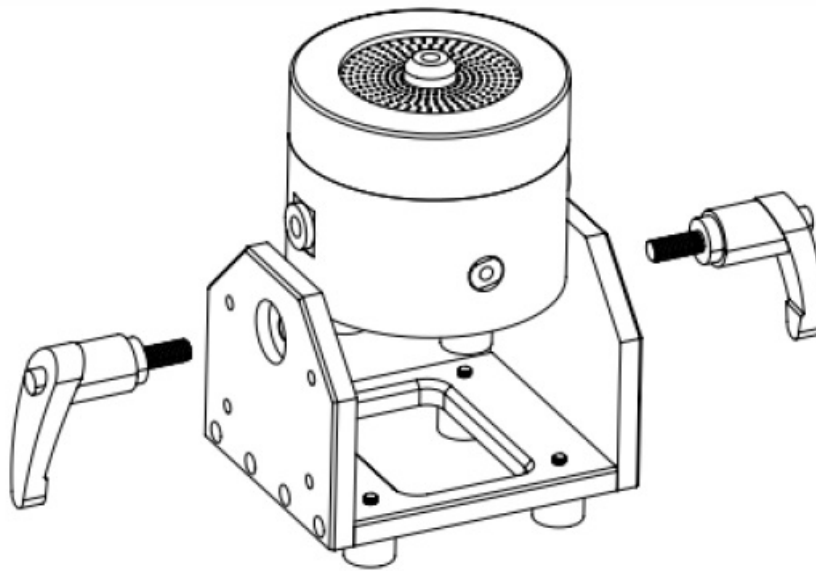
Item	Description
1	External Signal Input
2	GND
3	Signal Output
4	GND
5	DC Power Input
6	Sine Frequency Generator
7	Gain Knob
8	External Signal Input
9	LCD Display

## Specifications

Parameters	Specifications
Excitation Type	Vertical or Horizontal
Output Force (Sinus)	10 N
Frequency	10-10000 Hz
Displacement (Peak to Peak)	4 mm
Shaker Weight	Shaker body (1 kg) + outer frame (0.3 kg)
Suspension	Carbon Fiber
Cooling System	Natural Convection
Operating Temperature Range	5-35 °C
Maximum Input Current	4A (RMS)
<b>AMPLIFIER</b>	<b>EXTERNAL</b>
Amplifier Weight	0.65 kg
Power Supply Voltage	19V DC
Power Supply Current	4.74 A
External Signal Voltage Level	1 VAC(PEAK)

#### Outline Drawing

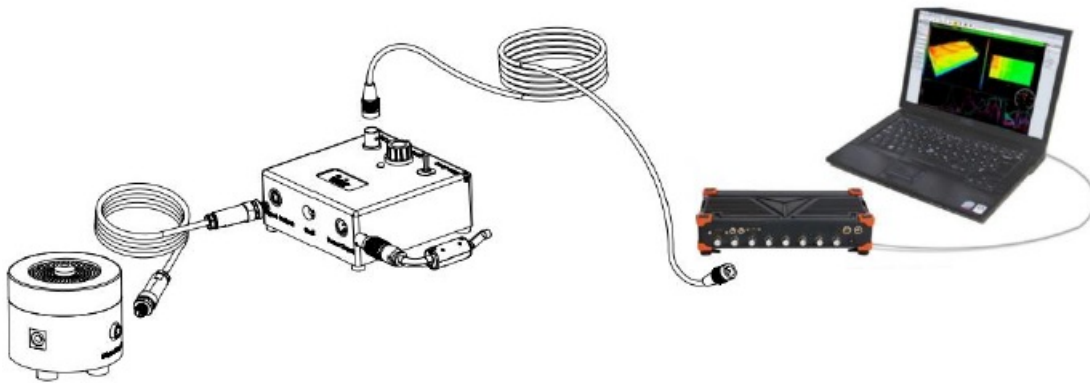
The dimensional properties of DYN-PM-10 shakers are given below. All dimensions are in mm.  
It can be used by removing the outer frame and the shaker body.



## Operation and Installation

### General

The general shaker connector configuration is given below.

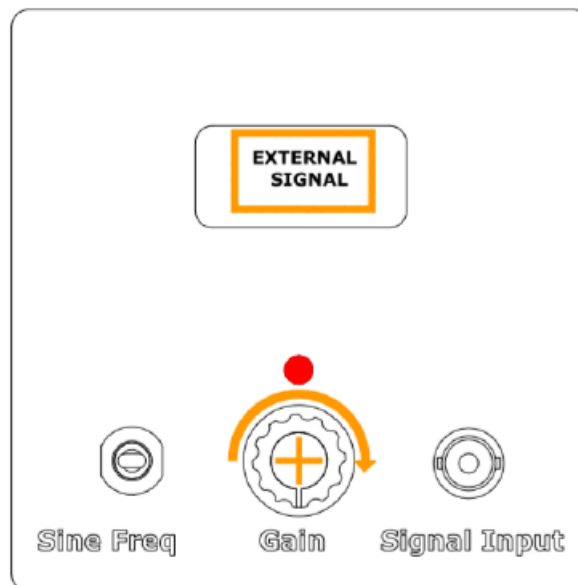


The Gain Knob is a push-pull and rotational switch. The amplifier is in External Signal Mode when the Gain Knob is pushed in and the amplifier is in Internal Signal Mode when it is pulled out.

In order to protect the amplifier from electrical problems, it is advised to turn the Gain Knob counter clockwise to the lowest gain position before connecting the external signal cable or before changing operational modes.

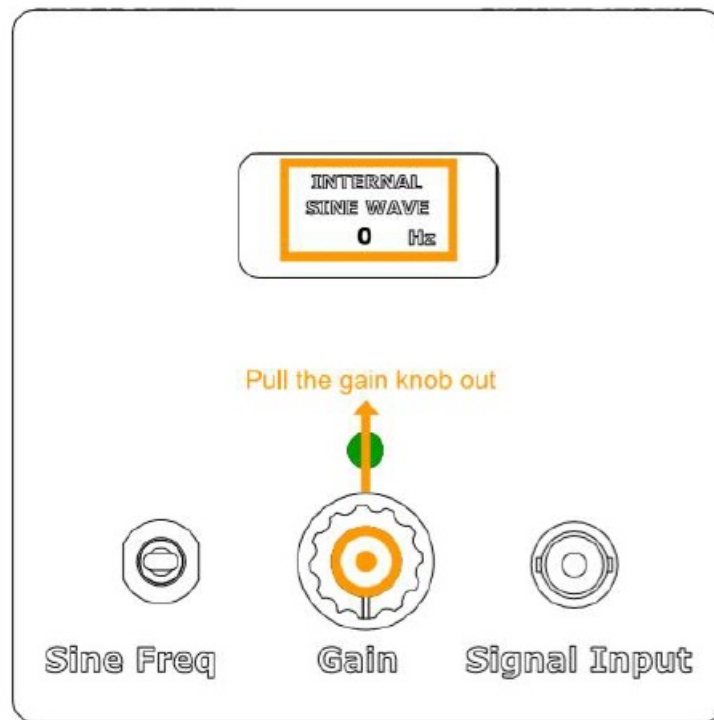
#### 1. External Signal Mode:

Connect DC power source and drive signal to shaker power input and signal input respectively. Start the external signal source. Adjust the Gain of the amplifier by turning the Gain Knob clockwise.

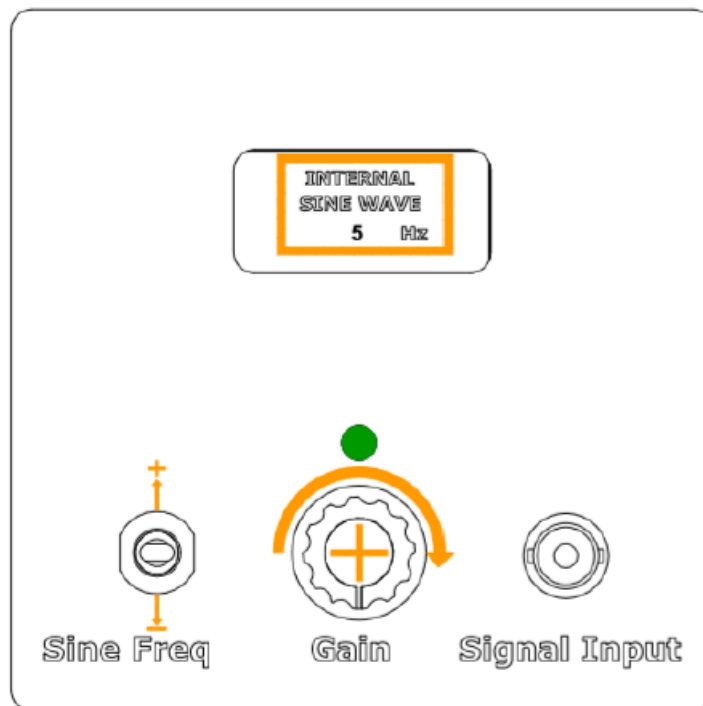


#### 2. Internal Signal Mode:

The amplifier can generate sine signal from 1Hz to 15kHz with 1 Hz increments that the user can adjust with the Sine Frequency Generator Switch. Connect DC power source and drive signal to shaker power input. Pull the Gain Knob out.



Raise or lower the Sine Frequency Generator Switch to the desired Sine frequency. Adjust the Gain of the amplifier by turning the Gain Knob clockwise. The frequency of the generated sine signal will be visible on the LCD Screen.



### Power Requirements

DYN-PM-10 has an external power amplifier which is powered by its power adaptor. Please note the output voltage and current ratings of the adaptor if a replacement adaptor is to be used.

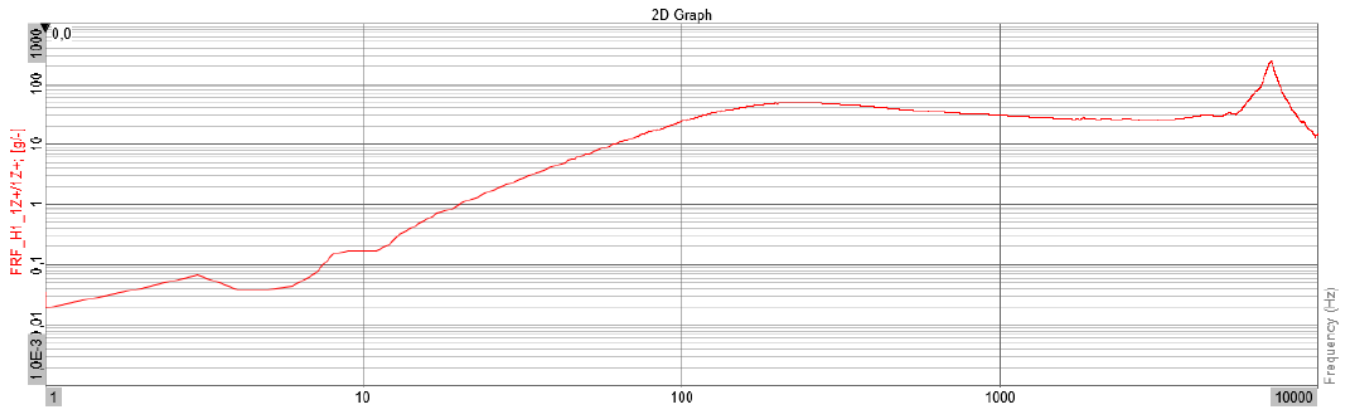
### Cooling

DYN-PM-10 does not require forced cooling. Air convection cooling is sufficient for the force levels given in the specifications.

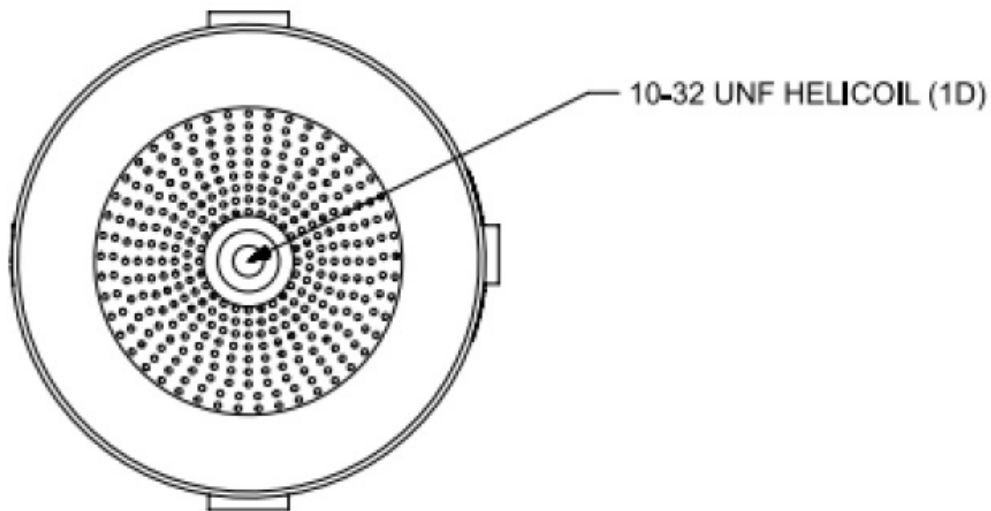
### Frequency Response

The following figure shows the acceleration levels/Input voltage versus frequency of the shaker.





## Mounting Interface



## Maintenance and Troubleshooting

The DYN-PM-10 shaker is a sealed device requiring no maintenance if the operating instructions described in this manual are followed. Repair of the coil, exciter body or magnet core should not be attempted. Please return the shaker to Dynalabs for proper repair.

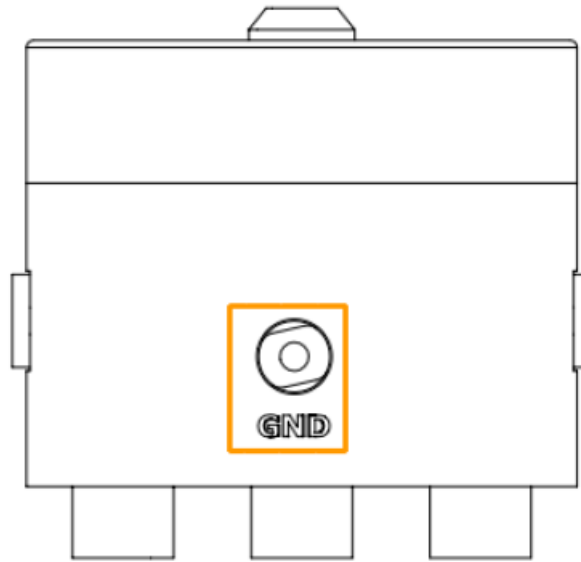
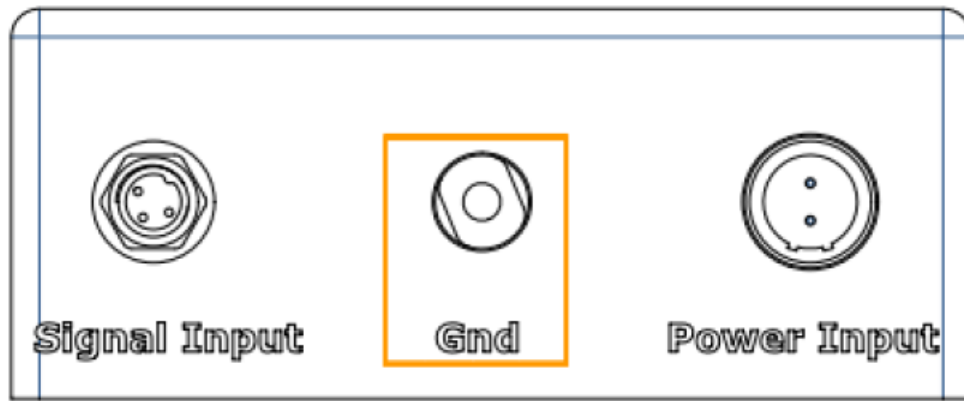
## Safety

Please ensure that this manual section is reviewed and understood prior to installation, operation or maintenance of the equipment. The danger of electrical shock or fire always exists in electrical equipment.

The DYN-PM-10 Shaker is designed for safe operation. Safety features such as electrical insulation on outer surfaces are provided for the safe operation of the shaker system. Always monitor the applied voltage to the amplifier and shut down the shaker if the temperature of the shaker body rises drastically or smoke is observed from the shaker due to high voltage levels applied.

## Grounding

The shaker is internally grounded via the power adapter. However, if further grounding is necessary a grounding socket is available on the shaker as shown. Appropriate grounding cable is also supplied with the shaker.



### **Product Support**

If at any time you have questions or problems with the DYN-PM-10 shaker, please contact a Dynalabs engineer at:

Phone: +90 312 386 21 89 (9 a.m. to 5 p.m., UTC +3)

e-mail: [info@dynalabs.com.tr](mailto:info@dynalabs.com.tr)

### **Warranty**

Our products are warranted against defective materials and workmanship for one year. Defects arising from user errors are not covered by the warranty.

### **Copyright**

All copyrights of this manual belonging to Dynalabs products are reserved. It cannot be reproduced without written consent.

### **Disclaimer**

Dynalabs Ltd. provides this publication “as is” without warranty of any kind, express or implied, including but not limited to, the implied warranties of merchantability or fitness for a particular purpose. This document is subject to change without notice, and should not be construed as a commitment or representation by Dynalabs.

This publication may contain inaccuracies or typographical errors Dynalabs will periodically update the material for inclusion in new editions. Changes and improvements to the product described in this manual may be made at any time.

### **Declaration of Conformity**

This declaration of conformity is issued under the sole responsibility of the manufacturer. The product(s) are developed, produced and tested according to following EC- directives:

- 2014/35/EU – Low Voltage Directive (LVD)
- 2006/42/EU – Machinery Safety Directive
- 2015/863/EU – RoHS Directive

Applied standards:


- EN 61010-1:2010
- EN ISO 12100:2010
- MIL-STD-810-H-2019 (Test Methods: 501.7 – High Temperature, 502.7 – Low Temperature, 514.8 – Vibration, 516.8 – Shock)

DYNALABS MÜHENDİSLİK SANAYİ TİCARET LİMİTED ŞİRKETİ declares that above mentioned products meet all the requirements of the above mentioned standards and regulations.

Murat Aykan, Technical Manager  
Ankara, 15.07.2021

All rights reserved. Reproduction or issue to third parties in any form whatsoever is not permitted without written authority from the proprietors.

## Documents / Resources

 <small>Model DYN-PM-10 10 N PM Shaker Product Manual</small>	<a href="#">DynaLabs DYN-PM-10 10 N PM Shaker</a> [pdf] Owner's Manual DYN-PM-10, DYN-PM-10 10 N PM Shaker, 10 N PM Shaker, PM Shaker, Shaker
---	--