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## Manual Magnetic stirrer PCE-MSR 400



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## 1 Introduction

Thank you for purchasing a magnetic stirrer from PCE Instruments.

The PCE-MSR 400 magnetic stirrer comes with 4 stirring positions for synchronous stirring. When fully loaded, each position fits laboratory glassware with diameters up to 95 mm. With the magnetic stirrer, you can adjust the rotations per minute to your needs in 50 rpm steps up to 1200 rpm. You can also set a timer between 1 and 99 minutes.

## 2 Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. The warranty does not cover damages due to non-observance of the manual..

- The device may only be used in the approved temperature range.
- The case should only be opened by qualified personnel of the PCE Instruments.
- The instrument should never be placed with the user interface facing an object (e. g. keyboard side on a table).
- You should not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth / use only pH-neutral cleaner.
- Do not place any steel or other magnetic material on the base plate except the recommended magnetic stirring bar with a beaker or flask in between. Doing so can affect the magnetism of the device.
- Place the device on a flat, stable, clean, non-slippery and fire-proof surface.
- The base plate must be clean and intact.
- Do not try to mix liquid more than 400 ml with the 25 mm magnetic stirring bar on a single stirring position. It may lead to improper mixing.
- Wear personal protective equipment in accordance with the hazardous category of the media to be processed.
- Do not lift or hold the device from the cable.
- Do not use damaged beakers, flasks, stirring bars or any other damaged component for operation.
- Reduce the speed if the medium splashes out of the vessel because of high speed, if the appliance is not running smoothly or if the container moves on the base plate.
- Wear protective gloves while cleaning the device.
- The base plate may warm up during continuous usage. Do not touch the base plate right after operation.
- Pathogenic materials should only be processed in closed vessels and under a suitable extractor hood. Do not operate the device in explosive atmospheres, with hazardous substances or under water.
- Only use liquids which do not react in a way that could cause damage to the equipment or to people.
- The stirring bars are coated with PTFE, which can react with molten or dissolved alkaline earth metals (especially at temperatures of 300-400 °C) and other reactive elements, such as fluoride and chloride.
- The temperature of the stirring media and the beakers/flasks should not be more than 45 °C
- The equipment will not restart in case of mains interruption or mechanical interruption.

This user's handbook is published by PCE Instruments without any guarantee.

We expressly point to our general guarantee terms which can be found in our general terms of business.

If you have any questions please contact PCE Instruments.





### 3 Specification

#### 3.1 Technical specifications

Number of stirring positions	4
Stirred quantity (Max) (Tested in H <sub>2</sub> O)	400 ml at 1200 RPM with 25 mm stirring bar per stirring position
Speed range	15 ... 1200 rpm
Time range	1 ... 99 minutes
Auto direction change/ Pulse mode	Yes
Auto direction change time interval	30 seconds
Digital display	Yes
Recommended stirring bar length	25 mm
Set-up plate material	Stainless steel
Set-up dimensions (L x W)	385 x 122 mm
Distance between 2 stirring points	95 mm
Power supply	Input: 100...240 VAC, 50/60 Hz Output: 9 VDC
Power consumption	13 W
Protection class	IP 65
Permissible ambient temperature	+5 ... +40 °C
Dimensions (L x W x H)	457 x 126 x 13.4 mm
Weight	1.9 kg

### 4 System description


#### 4.1 Button description

Button	Button name	Function
	ON / OFF button	Press this button to turn the device on an off.
	Pulse & time mode button	Briefly press this button once to activate the pulse mode. A LED blinks for indication.  Press and hold the button to activate the time mode. A “t” indication appears on the display.
	Increase button	Press this button to increase the speed/ time value.
	Decrease button	Press this button to decrease the speed/time value.



## 5 Operation

### 5.1 Getting started

To use the magnetic stirrer, please follow these steps:

1. Connect the power supply.
2. Fill the beakers or flasks with the media to be processed and put a magnetic stirring bar in each beaker/flask.
3. Place the beakers/flasks on the marks on the base plate.
4. Turn on the magnetic stirrer by pressing the ON / OFF button .

### 5.2 Speed settings

You can adjust the stirring speed on the device by using the Increment  and Decrement  buttons.


- **Press once:** Increase/decrease the speed by 50 RPM
- **Press and hold:** Increase/decrease the speed at a higher rate.



The speed value can be seen on the display after adjusting it. After 3 flashes, the adjusted speed value is set.

The speed can be adjusted at any time.

After a restart, the device starts with the last run speed.

### 5.3 Time settings

To activate the time mode, press and hold the Pulse & Time mode button . A “t” indication appears on the display and the default time is set to infinite.

Now, you can adjust the timer by using the Increase  and Decrease  buttons.

- **Press once:** Increase/decrease the time value by 1 minute.
- **Press and hold:** Increase/decrease the time value at a higher rate.

After adjusting the time value, it can be seen on the display. After 3 flashes, the time is set.


The timer is a countdown timer which starts as soon as the set stirring speed is reached.

The speed and the time are displayed alternatively, once the RPM are reached.

You can also adjust the speed when the timer is already running. In this case however, the timer is not affected by the adjustments.

Once the timer hits “0”, the stirring stops. You can now press any key (except the ON / Off button) to start the stirring with the last used speed and time settings.


### 5.4 Pulse mode

You can activate the pulse mode with a single press of the Pulse & Time mode button .

In pulse mode, the stirring direction changes every 30 seconds. An LED indication flashes when pulse mode is activated.

Please make sure to set the desired stirring speed before activating the pulse mode.

It is also possible to use a timer in pulse mode. To do so, set a timer (see chapter 5.3) and a speed and

briefly press the Pulse & Time mode button  to start the stirring in pulse mode. The stirring will automatically stop once the timer hits “0”.

## 6 Disposal

For the disposal of batteries, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.

If you have any questions, please contact PCE Instruments.



## 7 Contact

If you have any questions about our range of products or measuring instruments please contact PCE Instruments.

### 7.1 PCE Instruments UK

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