

Precision Biological Pressure Meter

PRM-4x series

User Manual

SUPERTECH Instruments

General Description

PRM-4x Precision Biological Pressure Meter is a research grade pressure monitor. It is optimized for biological measurements carried out with PC-based data acquisition (DAQ) systems.

PRM-4x Pressure Meter has extremely high input sensitivity, excellent linearity and very fast recording speed.

The input pressure range is wide enough to cover nearly every biological research application. Any pressure appearing in the body of an experimental animal can be measured with it, such as blood pressure, intra-cranial pressure (ICP), breathing in the mouth, pressure in the lung, or any other pressure signal.

PRM-4x Pressure Meter has been designed to use the standard, popular, surprisingly reliable, however cheap Combitrans pressure detector (sensor) units. The Combitrans detectors are standardized products. They are cheap, because they are used in the human practice as disposable parts, but in spite of this, they have got excellent linearity, very high recording speed and surprisingly good long-term stability. Supertech Instruments provides non sterile Combitrans sensors assembled with the appropriate plug for PRM-4x.

Specifications

Units of measure are selectable by a front plate switch

Units of measure:

- Hgmm
- mBar

Sensor: standard Combitrans detector (non sterile)

Measurement range (referring to the pressure applied to the input of the Combitrans detector): -200 Hgmm to 200 Hgmm or -200 mBar to 200 mBar

Resolution: 0.1 Hgmm or 0.1 mBar

Linearity error maximum: +/- 2 Hgmm or +/- 2 mBar

Input offset pressure adjustment with a 10-turn helical potmeter

Correction range of the input offset pressure appearing at the input of the Combitrans pressure sensor: +/- 200 Hgmm or +/- 200 mBar

Sampling speed of the digital pressure display: 3 samples/sec

Bandwidth at the Analogue Monitor Output: 0 to 33 Hz

Scale factor of the Analog Monitor Output: 1 V equals to 100 Hgmm or 100 mBar

Analog output impedance: 300 Ohms

Supply voltage: 15 to 24 V DC with any polarity

DC Supply current: 500 mA

Accessories

Combitrans pressure sensor

1.5 meter long sensor extension cable

Wall plug power supply

BNC cable to the PC-based DAQ system (optional)

Security Rules

The measuring equipments manufactured by Supertech Instruments are for experimental and/or lab animal purposes only and are not intended for human use.

In many of the measuring situations you should establish an invasive connection to the input of the Combitrans pressure detector. To do this you must strictly follow the legal animal protection rules.

Electrical safety measurements of proper operation of the 115/230 VAC mains electric system (from the equipments have been supplied) is the sole responsibility of the user.

The external wall plug power supply must have a valid CE identifier and certificate. Supertech Instruments provides such certified power supply units.

First Time Installation and Setup

In switched off state of the PRM-4x Pressure Meter please connect all the cables: the output jack of the wall plug power supply, the 10-pin plug of the sensor extension cable and the BNC cable to your PC-based DAQ system. Connect the Combitrans sensor to the 10-pin socket at the far end of the sensor extension cable. Plug in the external power supply to the power point. Establish the appropriate pressure connection to your species. Switch on the PRM-4x Pressure Meter and the system is ready to use.

Front Panel Controls

Digital pressure display: 3.5 digits LCD with backlight. The readout is ± 199.9 as maximum. If you want to record fast pressure changes, use the Analogue Monitor Output at the back side, because the digital pressure display has a low time resolution of 3 samples/sec only.

Unit of measure switch: Hgmm or mBar selectable

Input Offset potmeter: the correctable pressure range is ± 200 Hgmm or ± 200 mBar, referring to the input of the Combitrans detector. This potmeter is not scaled, because the offset pressure is usually some constant, additive hydrostatic pressure, which should only be compensated to zero. You can use the Input Offset potmeter to eliminate it. However, if you do not want to eliminate it, but you intend to measure the exact value of the input offset pressure, you can measure it. Just disconnect or close the input of the Combitrans sensor, adjust the Input Offset potmeter as long as the readout is zero, then apply the input pressure. Now the constant (time invariant) part of the pressure you can see is the input offset pressure.

Power On LED: it indicates the proper supply voltage condition

Mains switch

Connectors at the Back Side

External DC Power Supply: 2.1 mm coaxial connector

Sensor Input: 10-pin socket to connect the sensor extension cable

Analogue Monitor Output: BNC connector to the PC-based DAQ system. If you want to record fast pressure changes, this output is the only point where you can get valid data, because the front panel digital pressure display has a low time resolution.

Calibration

PRM-4x Precision Biological Pressure Meter equipment is calibrated by the factory. You can check its calibration any time using a calibrated pressure meter. You should apply different, stable and constant pressures covering the whole input range at the input of the Combitrans sensor and your reference pressure meter simultaneously.

Warranty

Supertech Instruments gives you 5 years of full warranty for electronic products and 3 years of full warranty for mechanical products by default. Longer warranty periods

can also be defined and agreed (the actual conditions should be discussed before placing the order).

Supertech Instruments gives you full warranty for its products against defects in materials or workmanship as long as the equipment has been subjected to normal and proper use. During the warranty period, faulty products will be repaired or replaced free of charge provided they are returned to our workshop. Postage of the warranty repair actions is paid by the Customer. The exceptions are the Vibration Isolation Tables. There are special conditions introduced for repairing of Vibration Isolation Tables (see the appropriate User Manual). Supertech Instruments will undertake the servicing and calibration after the expiration of the warranty period for a nominal fee.

The warranty does not cover the faults made by the user.

Supertech Instruments provides 5 years of warranty for the PRM-4x Precision Biological Pressure Meter only in that case if it is supplied from a wall plug power supply approved in advance by Supertech Instruments.

Further information sources

Technical hotline via email (all of them work):

office@superte.ch

office@supertechinstruments.co.uk

office@super-tech.eu

International technical hotline on the phone: +36 20 9234 386

For further technical information please visit our websites. Supertech Instruments continuously uses several websites with the same content. Please use that one, which is the easiest for you to remember:

www.superte.ch

www.supertechinstruments.co.uk

www.supertech-instruments.co.uk

www.supertech-instruments.com

www.super-tech.eu