



DESCRIPTION

TMCP. Pressure Measurement and Calibration Unit is designed to study pressure and how different methods and techniques can be used to measure this variable.

This unit introduces students to pressure, pressure scales and common devices available to measure pressure.

It comprises a dead-weight pressure calibrator to generate a number of predetermined pressures, connected to a Bourdon type manometer and electronic pressure sensor to allow their characteristics, including accuracy and linearity, to be determined.

Using the dead-weight pressure calibrator different fixed pressures are generated for calibrating the measuring elements.

The dead-weight pressure calibrator consists of a precision piston and cylinder with a set of weights.

The Bourdon type manometer and the pressure sensor are mounted on a manifold block with a separate reservoir to contain the water.

Valves allow for easy priming, restricted flow of water to demonstrate the application of damping and the connection of alternative devices for calibration.

An electric console with a digital meter displays the output from the pressure sensor. A conditioning circuit with adjustable zero and span controls allows the output to be displayed as a direct reading pressure meter calibrated in units of pressure. Both signals can be simultaneously routed to an I/O port for connection to a PC if the user uses the optional interface device.



ISO 9000: Quality Management
(for Design, Manufacturing,
Commercialization and After-sales service)



European Union Certificate
(total safety)



**Certificates ISO 14000 and
ECO-Management and Audit Scheme**
(environmental management)



**Worlddidac Quality Charter
Certificate**
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SPECIFICATIONS

Bench-top unit mounted on an anodized aluminum structure and panel in painted steel (epoxy paint).

Main metallic elements in stainless steel.

Diagram in the front panel with similar distribution to the elements in the real unit.

Dead-weight pressure calibrator, using water, consists of a precision piston and a cylinder, with a set of weights to generate different pressures.

Bourdon type manometer, connected to the dead-weight calibrator.

Electronic pressure sensor, connected to the dead-weight calibrator.

Both Bourdon manometer and pressure sensor are mounted on a manifold block with a separate reservoir (to contain water) .

Valves for allowing the priming, restricted flow of water to demonstrate the application of damping and the connection of other alternative devices for calibration.

Electronic console:

Metallic box.

Protection devices.

Sensor connectors.

Digital meter with selector switch to display the output from the pressure sensor and the conditioned reading in engineering units.

Conditioning circuit with span and zero controls to allow the output to be displayed as a direct reading pressure meter calibrated in units of pressure.

Cables and accessories, for normal operation.

Manuals:

This unit is supplied **with the following manuals**: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilities of the Unit:

- 1.- Study the concept of pressure.
- 2.- Study of the concepts of measurement and calibration (gauge and absolute pressures, zero error, non-linearity, scale error, conversion of arbitrary scale into energy units).
- 3.- Study of pressure scales.
- 4.- Study of the function of a dead-weight pressure calibrator.
- 5.- Study of the operation of a Bourdon type manometer.
- 6.- Study of the characteristic behaviour of a Bourdon type manometer.
- 7.- Calibration of a Bourdon type manometer in engineering units.
- 8.- Calibration of a Bourdon type manometer in arbitrary units (angular displacement of needle).
- 9.- Study of the characteristic behaviour of a pressure sensor.
- 10.- Calibration of a pressure sensor and signal conditioning circuit in engineering units
- 11.- Calibration of a pressure sensor (voltage output from sensor).
- 12.- Study of the sources of error in measurement and calibration (signal conditioning, display resolution; wear, friction and backlash, etc.).
- 13.- Study of calibration of conditioning circuits and display using a reference signal.

REQUIRED SERVICES

- Electrical supply: single-phase, 220V./50 Hz or 110V./60 Hz.
- Water supply.

DIMENSIONS & WEIGHTS

TMCP:	
Unit:	-Dimensions: 500 x 350 x 350 mm. approx. -Weight: 15 Kg. approx.
Electrical console:	-Dimensions: 310 x 220 x 145 mm. approx. -Weight: 3 Kg. Approx.

*Specifications subject to change without previous notice, due to the convenience of improvements of the product.



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