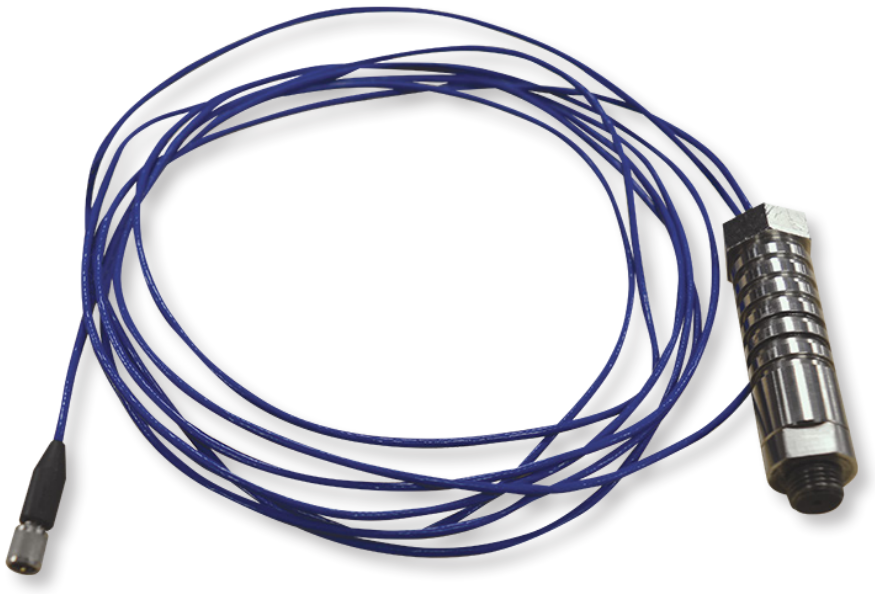
CYLINDER HEAD PRESSURE TRANSDUCER

ECA101 MK2

A quartz charge mode, high-temperature pressure sensor with an integral cable connected for measuring cylinder pressures in combustion engines.



KEY FEATURES

- Significantly enhances practical investigations, demonstrations and studies of internal combustion engines.
- For use with TecQuipment's Engine Cycle Analyser (ECA100).
- Designed to measure in-cylinder pressure during compression, combustion and expansion strokes.
- Captures rapid pressure changes during engine operation, making it suitable for combustion analysis and pressure v/s Crank-angle measurements.
- Suitable for the thermal conditions associated with engine combustion, with temperature limits specified for the sensing element, mounting interface, and electrical connector.
- Provides consistent pressure readings over repeated engine cycles, supporting the evaluation of peak cylinder pressure, compression pressure and combustion behaviour.

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TECQUIPMENT

CYLINDER HEAD PRESSURE TRANSDUCER

ECA101 MK2

DESCRIPTION

A cylinder head pressure transducer measures rapid, dynamic pressure changes inside an engine cylinder through a cylinder head access port. It converts the pressure into an electrical signal for monitoring, testing and analysing engine performance.

The features include:

- High frequency response
- Ability to withstand high shock events
- Wide dynamic range application
- Very low load-change drift

The sensing element used is a quartz crystal that uses the piezoelectric properties of quartz to convert an applied pressure into an electrical charge. The internal design of the sensor ensures high sensitivity across a broad pressure range.

The sensor is characterised by minimal thermal shock and outstanding linearity. They capture high frequency pressure spikes during the engine cycle. The flush-mount installation ensures there is no reduced passage area from the sensor diaphragm to the test chamber of the engine cylinder.

The high-temperature sensor is supplied with a low-noise cable to withstand peak combustion temperatures and to eliminate false pressure changes.

The sensor assembly can be easily fitted onto the cylinder head.

Pressure measurement range: 0–345 bar

Maximum pressure: 690 bar

Sensitivity: approximately 16 p.C/bar

LEARNING OUTCOMES

When used with Engine Cycle Analyser (ECA100) and Crank Angle Shaft Encoder (ECA102), it allows investigations into a variety of internal combustion engine characteristics, including:

- The thermodynamic cycle of an internal combustion engine
- Calculation of indicated mean effective pressure and indicated power
- Comparison of indicated mean effective pressure and brake mean effective pressure
- Mechanical efficiency of the test engine
- Further work using exported data such as combustion analysis

ESSENTIAL ANCILLARIES

- Engine Cycle Analyser (ECA100)
- Crank Angle Shaft Encoder (ECA102)
- Suitable computer – see specifications

TecQuipment also offers a complete package (the ECA100S). This includes the ECA100, one ECA101 Mk2 and one ECA102.

For engine test sets or engines other than TecQuipment's TD200 or TD300 series, please get in touch with TecQuipment or your local TecQuipment Agent.

ANCILLARY FOR

- Modified Four-Stroke Petrol Engines (TD211, TD211ES)
- Modified Four-Stroke Diesel Engine (TD212, TD212ES)
- Four-Stroke Petrol Engine (TD301)
- Four-Stroke Diesel Engine (TD302)

STANDARD FEATURES

- Five-year warranty
- Made in accordance with the latest European Union directives
- ISO9001 certified manufacturer

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Well ventilated laboratory

STORAGE TEMPERATURE RANGE:

–25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; we reserve the right to alter the design and product specification without prior notice.

NETT DIMENSIONS AND WEIGHTS:

Supplied in a storage box 230 mm x 185 mm x 45 mm and weighs 0.4 kg

ACCESSORIES (INCLUDED):

- Tapping sealing washer
- 10 ft low noise coax cable

CYLINDER HEAD PRESSURE TRANSDUCER

ECA101 MK2

ESSENTIAL BASE UNIT

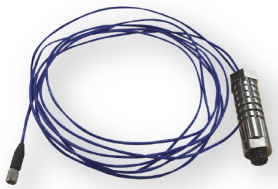
- Small Engine Test Set TD200
  - **EXPERIMENT MODULES**
    - **UNMODIFIED ENGINES**
      - Four-Stroke Petrol Engine TD201
      - Four-Stroke Diesel Engine TD202
      - Petrol Engine with Electric Start TD201ES
      - Diesel Engine with Electric Start TD202ES
    - **MODIFIED ENGINES**
      - Modified Four-Stroke Petrol Engine TD211
      - Modified Four-Stroke Diesel Engine TD212
      - Modified Four-Stroke Petrol Engine with Electric Start TD211ES
      - Modified Four-Stroke Diesel Engine with Electric Start TD212EES
- Regnerative Engine Test Set TD300
  - **EXPERIMENT MODULES**
    - **MODIFIED ENGINES**
      - Four-Stroke Petrol Engine TD301
      - Four-Stroke Diesel Engine TD302

MEASUREMENT AND VISUALISATION ANCILLARIES

- Engine Cycle Analyser ECA100



- Cylinder Head Pressure Transducer ECA101 MK2



- Crank Angle Encoder ECA102



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