

# CT 159 MODULAR TEST STAND FOR SINGLE CYLINDER ENGINES WITH POWER OUTPUT OF UP TO 2.2 KW



In conjunction with the HM 365 Universal brake and drive unit, the CT 159 can be used for a wide range of experiments on small internal combustion engines with a power output of up to 2.2 kW. There is a choice of 4 different engines, which can be mounted on the base plate in the test stand as required. A test engine can be installed in just a few minutes. A load is applied to the engines by the HM 365 unit, which is actuated by a frequency converter.

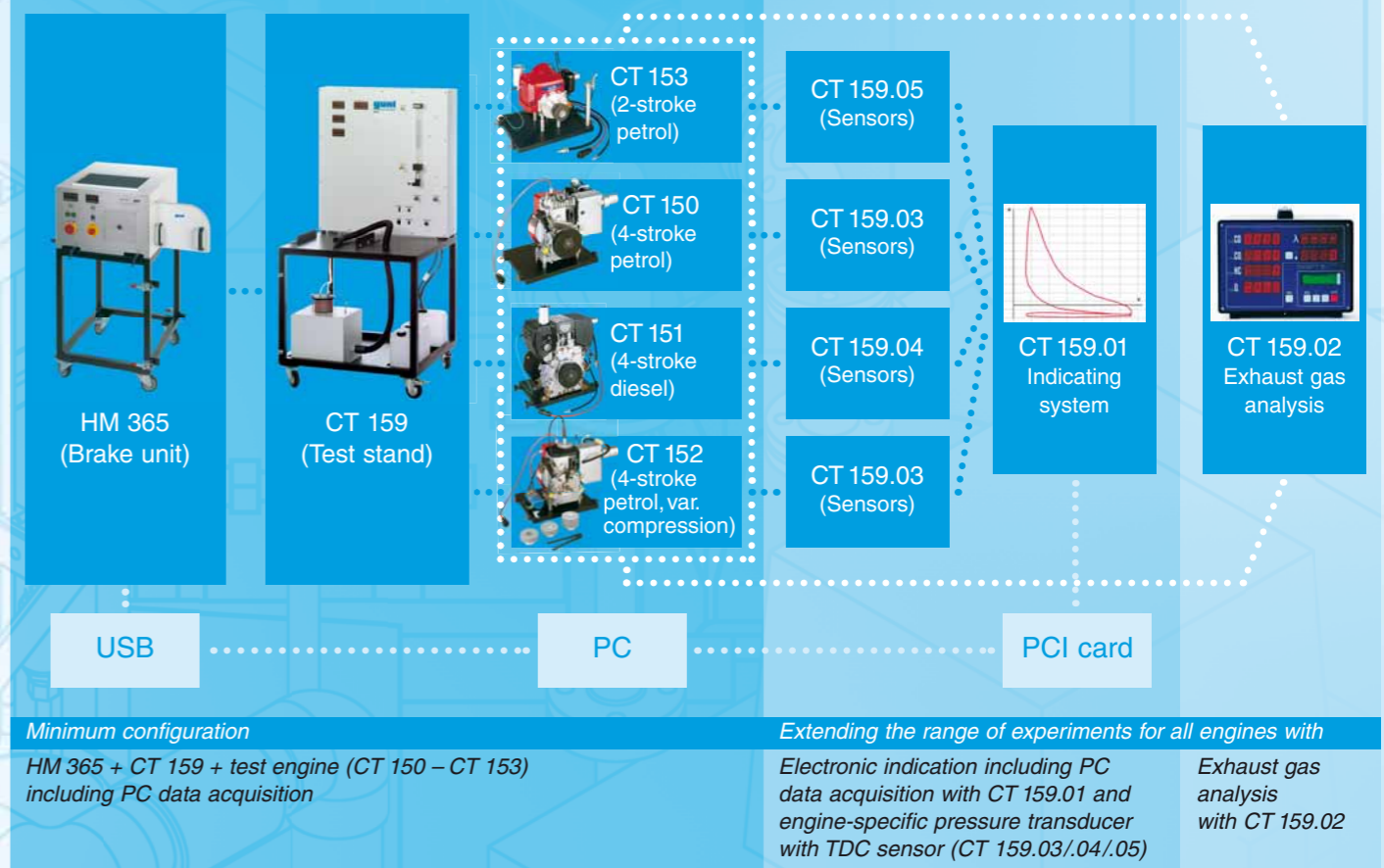
The engines can be investigated under full and partial load. A variable load and speed is used to determine the characteristic diagram for the engine. The interaction of the brake and the engine can also be investigated.

The test stand is ideal both for demonstrations and for independent experiments by students. The powerful software provides excellent support for the learning process. The comprehensive and well structured instructional material sets out the basic technological principles and provides a step-by-step guide to the experiments.

The test stand can be operated in normal laboratory facilities. Noise emissions are within an acceptable range. The exhaust gases are vented externally via a hose.

The CT159 is part of a modular series of equipment along with the HM 365, a core component for investigating a variety of engines and machines.

## CONFIGURATIONS



## Learning content/Exercises

- Familiarisation with a four-stroke petrol engine
- Familiarisation with a four-stroke diesel engine
- Familiarisation with a two-stroke petrol engine
- Familiarisation with a four stroke petrol engine with variable compression
- Characteristic curves at full and partial load
  - ▶ Plotting of torque and power curves
  - ▶ Specific fuel consumption
  - ▶ Volumetric efficiency
  - ▶ Excess air factor
- Determination of engine friction loss (passive mode with dynamometer)
- Comparison of diesel and petrol engines
- Comparison of two-stroke and four-stroke engines

- Four-stroke petrol engine with variable compression
  - ▶ Influence of compression ratio
  - ▶ Influence of different ignition points
  - ▶ Influence of mixture composition

In conjunction with other accessories

- Exhaust gas analysis with CT 159.02

- Electronic indication (CT 159.01) with appropriate set of sensors for engine (CT 159.03/.04/.05)
  - ▶ p-V diagram
  - ▶ p-t diagram
  - ▶ Pressure curve for gas cycle
  - ▶ Determination of indicated power
  - ▶ Determination of mechanical efficiency

## SOFTWARE FOR CT 159

Modern LabVIEW software under Windows with comprehensive visualisation functions

- Process diagrams for all engines with real time display of all measured and calculated variables
- Calculated variables
  - ▶ Specific fuel consumption
  - ▶ Intake air volumetric flow
  - ▶ Mechanical power
  - ▶ Efficiency
  - ▶ Volumetric efficiency
  - ▶ Excess air factor
- Representation of up to four characteristic curves simultaneously
- Characteristic curve representation: freely selectable assignment of axes
- Storage of measured data
- Four preselectable languages
- Simple connection to PC via USB

