µLC Test System

- User-friendly interface
- Functions can be extended with Expansion Boards
- Prepared for test automation
- Favorable test setup, consuming low space
- Simulation of typical automotive interfaces combined in one unit

The new and modern hardware-in-the-loop test system µLC Test System is suitable for mobile application, measuring a compact 17 x 11 x 6 cm. Initial test setup typically takes under ten minutes, since the system allows for a simple test setup.
It is a compact open-loop test system for quality assurance of control unit development and combines the simulation of all typical automotive sensors and communication protocols in one unit. Its interface is user-friendly and enables an easy operation and evaluation.
The µLC Test System is especially used for automotive control units with typical interfaces for sensors and bus systems such as analog/digital inputs and outputs, PWM signals, SENT, CAN, LIN and speed sensors.

Application

Engine Speed Simulation

- Up to 20,000 rpm
- Supported sensors: Hall, inductive, DG23i, TL4953
- Up to 2 crankshafts, up to 4 camshafts
  - each is independently configurable
  - auxiliary shaft
  - -180 to 180° camshaft adjustment
- Oscilloscope trigger signal for easier monitoring
- Error simulation for engine position management EPM

Vehicle Busses

- 2 * CAN, up to 1 MBit/s,
  switchable 120 Ohm CAN bus terminator
- LIN Master/Slave
- SENT, full J2716 Jan. 2012 standard
  4 Outputs, alternative to PWM output

Analog Interfaces

- 8 * 10 bit DAC 0 to 5 V, max. 5 mA
  Internal or external supply
- 4 * 12 bit DAC 0 to 5 V, max. 5 mA
- 6 * 12 bit ADC 0 to 40 V, GND reference

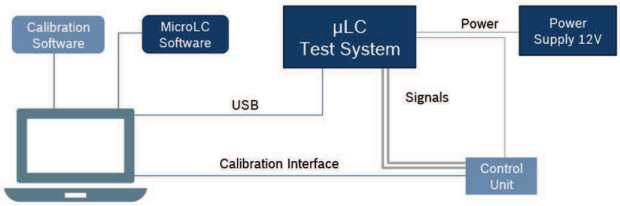
Digital Interfaces

- 6 * Digital Out, max. 200 mA in total
  Output modes: Ground, 12 V, High impedance
- 2 * Relays, max. 10 A, separate ECU power supply possible and incl. main relay sensing
- 2 * PWM input, 8 Hz to 20 kHz
- 4 * PWM output, max. 90 mA in total,
  0.1 Hz to 20 kHz
  Output voltages: 12 V, 5 V, GND
- Complex PWM with sub signals, each separately adjustable in frequency, duty cycle and pulse count

Additional Features

- Throttle body simulation
- Cylinder pressure simulation
  - Up to 8 cylinders with one device
  - Expandable with multiple devices
- USB connection completely galvanic decoupled
- All in- and outputs short-circuit protected and ESD protected
- EMC tested
- Expansion boards for additional HW features
- Multi device support with sync option for engine speed signals

Test Setup



Note: Calculation intensive modules like cylinder pressure simulation can cause a limitation of e.g. the max. engine speed.

Technical Specifications

Operating voltage	12 V DC
Current consumption	typ. < 1 A
ECU voltage	12 V / 24 V DC
ECU current	10 A
Permissible operation temperature	0 to 40°C
Housing material	Aluminum
Dimensions	175 x 107 x 61 mm
Weight	690 g

The screenshot shows the MicroLC Software with analog outputs, crank-/ camshaft, RPM and complex PWM.

Update and Support Subscription

- Free in the first year of use, chargeable from the second year

Legal Restrictions

The sale of this product in Mexico is prohibited. Due to embargo restrictions, sale of this product in Russia, Belarus, Iran, Syria, and North Korea is prohibited.

Ordering Information

µLC Test System
Order number **F02U.V02.303-02**

Software Options

Update and Support Subscription
Order number **F02U.V02.838-01**

Accessories

Expansion Board CAN-FD
Order number **F02U.V03.095-01**

Expansion Board Current Loop Interface
Order number **F02U.V02.889-01**

Expansion Board Digital Multichannel Pot.
Order number **F02U.V03.129-01**

Expansion Board Digital Outputs
Order number **F02U.V02.904-01**

Expansion Board FlexIO
Order number **F02U. V03.360-01**

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