SMART Laboratory car
MLBA3 Light

▶ **Efficient Testing despite severe cost control - Sensor and Actuator simulation for motor control units**

Function

The MLBA3 Light is a simplified test system from the MLBA3 test system family. The test system simulates all sensors and actuators needed to satisfy the ECU. The operation takes place via toggle switch, pushbutton, incremental encoders, potentiometers or similar devices. Complex sensor simulation assemblies are programmable and configurable through available PC Tools.

Field of application

The MLBA3 Light is used throughout the product life cycle of the control unit - from development to testing to quality assurance and appraisal. The following test types are covered:

Software function test
- Module Test
- Unit tests
- System integration test
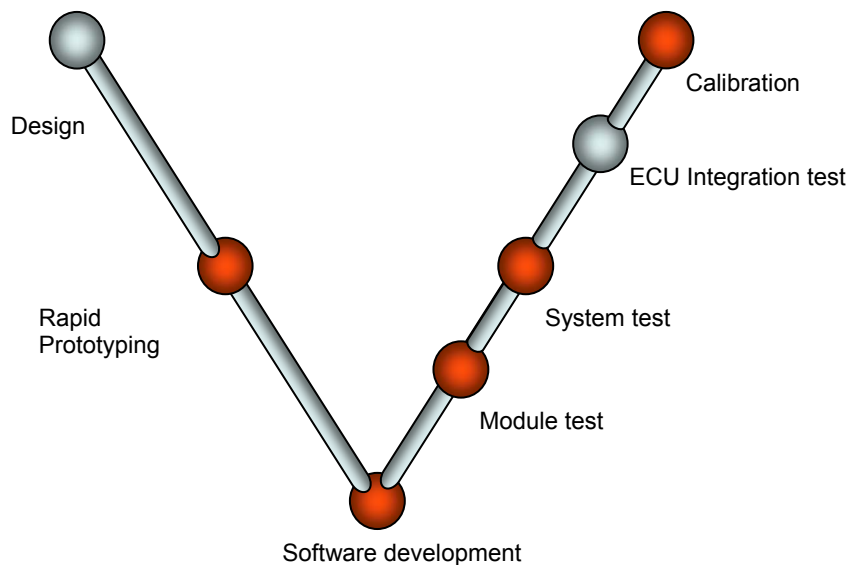- Diagnostic test

Key features
- The MLBA3 Light has a fixed configuration (number of I / O channels) and is thus an "Out of the shelf" product. A quick delivery is guaranteed!
- A Cable harness connecting the MLBA3 Light to the ECU can also be delivered on request.
- In order to implement the connection between your ECU and MLBA3 Light a functional separation adapter has to be ordered.
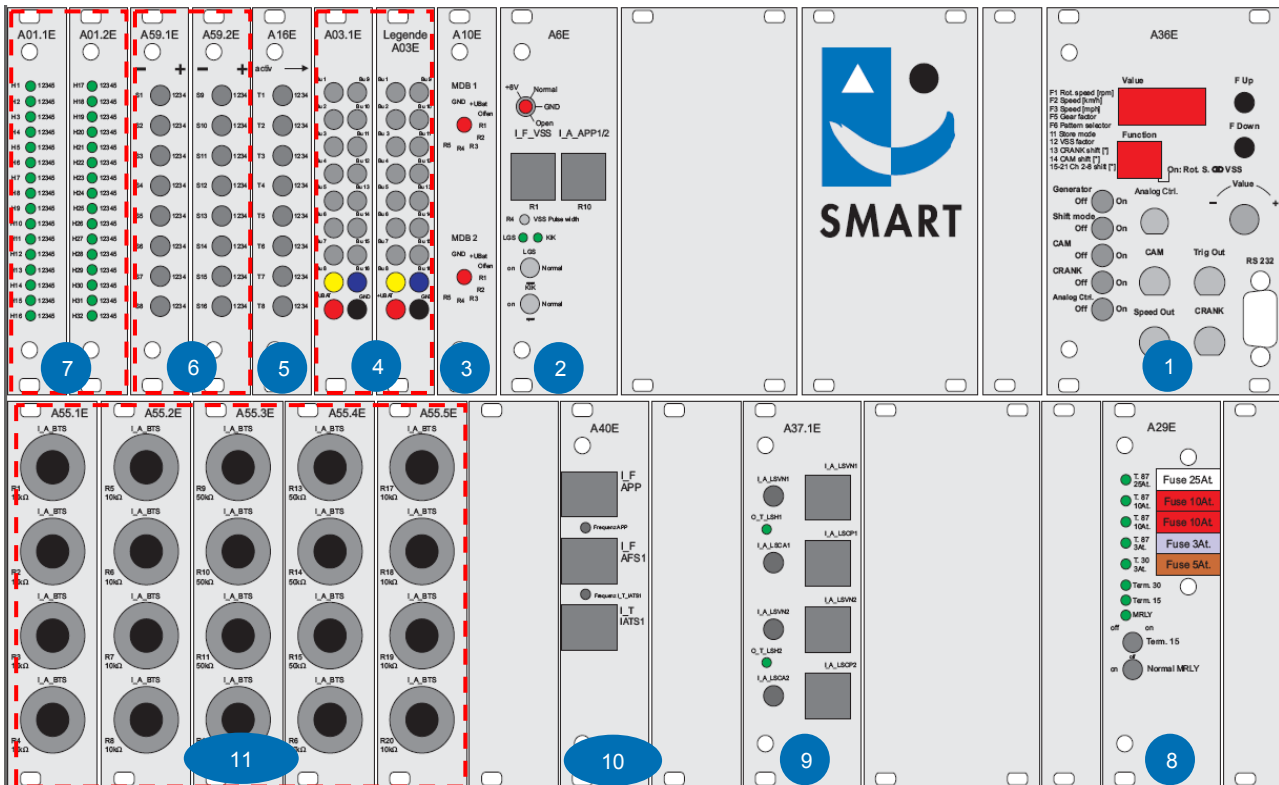
Customer Benefits
- Efficient testing despite severe cost control than the MLBA3 Light helps you to optimize your costs:
    - Low price of the test system
    - Low maintenance costs
    - No Engineering costs are needed than the MLBA3 Light is an „Out of the shelf" test system
- The setup of the MLBA3 Light test system for use with the ECU is done easily and quickly. The MLBA3 is furthermore an easy to use test system.
- Optimizing costs is also achieved by quick delivery as well as easy adaptation of the test system to new ECU projects.

The V-Model

The MLBA4 covers the following tests - along the V-model:

Discription of the MLBA3 Light.

NO.	MODULE	FUNCTIONS
1	A36E	Simulation speed module − Up to 48 speed sensor signals can be stored on simulation speed module − Adjustable phases of crank and camshaft against one another − About 5V controllable input signal − Individually interruptible fault simulation for crankshaft, camshaft signals − Speed signals are programmable via additional PC tools − Vehicle speed sensor signals − 4-digit seven segment display for speed
2	A6E	Double acceleratory pedal sensor with vehicle speed sensor signal generator, including impedance converter with no load and Kick-down comparator
3	A10E	2x 8-tap changer switch for fault simulation
4	A03E	16 2mm Jacks for feeding or measure of control signals
5	A16E	8 Digital channels (groped)
6	A59E	16 Digital channels (Switch with middle position for example Fault Simulation)
7	A01E	32 LED Display Elements
8	A29E	8x Original Motor Relay
9	A37E	Simulation of 2- lambda probes with fat and lean operation mode.
10	A40E	PWM acceleratory pedal sensor signal(APP): − Variable frequency up to 200Hz − Pulse width ratio 10% bis 90% Air flow meter HFM6 / HFM7 (AFS1): − Variable frequency from 2kHz to 30kHz − Pulse width ratio contact (Flip-Flop) Intake air temperature signal of the HFM6 (IATS1): − Frequency 19,07Hz − Pulse width ratio from 10 to 90%
11	A55E	20 Analog channels as 10-tread potentiometers, such as sensor simulation or as a voltage sensor

Options

Other optional modules offer additional functions:

MODULE	FUNCTIONS
A32E	Up to 12x Injector dummy loads
A26E	Up to 12x Piezo Injector dummy loads
A31E	Up to 8x Multi (resistive inductive) loads for example, Pressure regulating valve and pressure relief valve
A35E	4 PWM Signals, individually switchable − 4 PWM generators with variable frequency – specific signal MOK − 4- digit seen segment display for pulse ratio or frequency
A33E	KFZ Relay 12V or 24V

In addition, a functional breakout adapter provides the ability to connect the ECU with MLBA3 Light by the customer itself. This will be as follows:

Delivered by SMART ← | → **Done by the Customer**

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