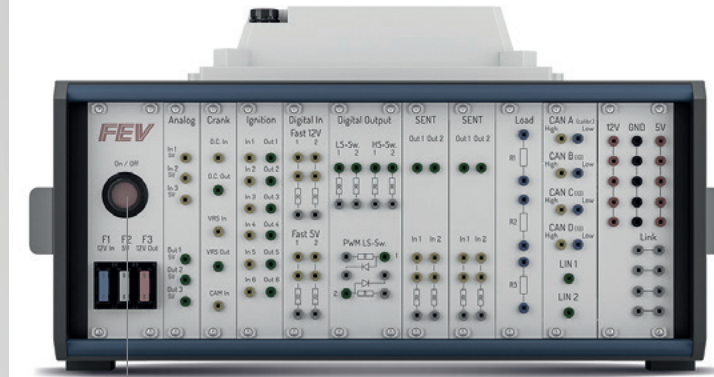
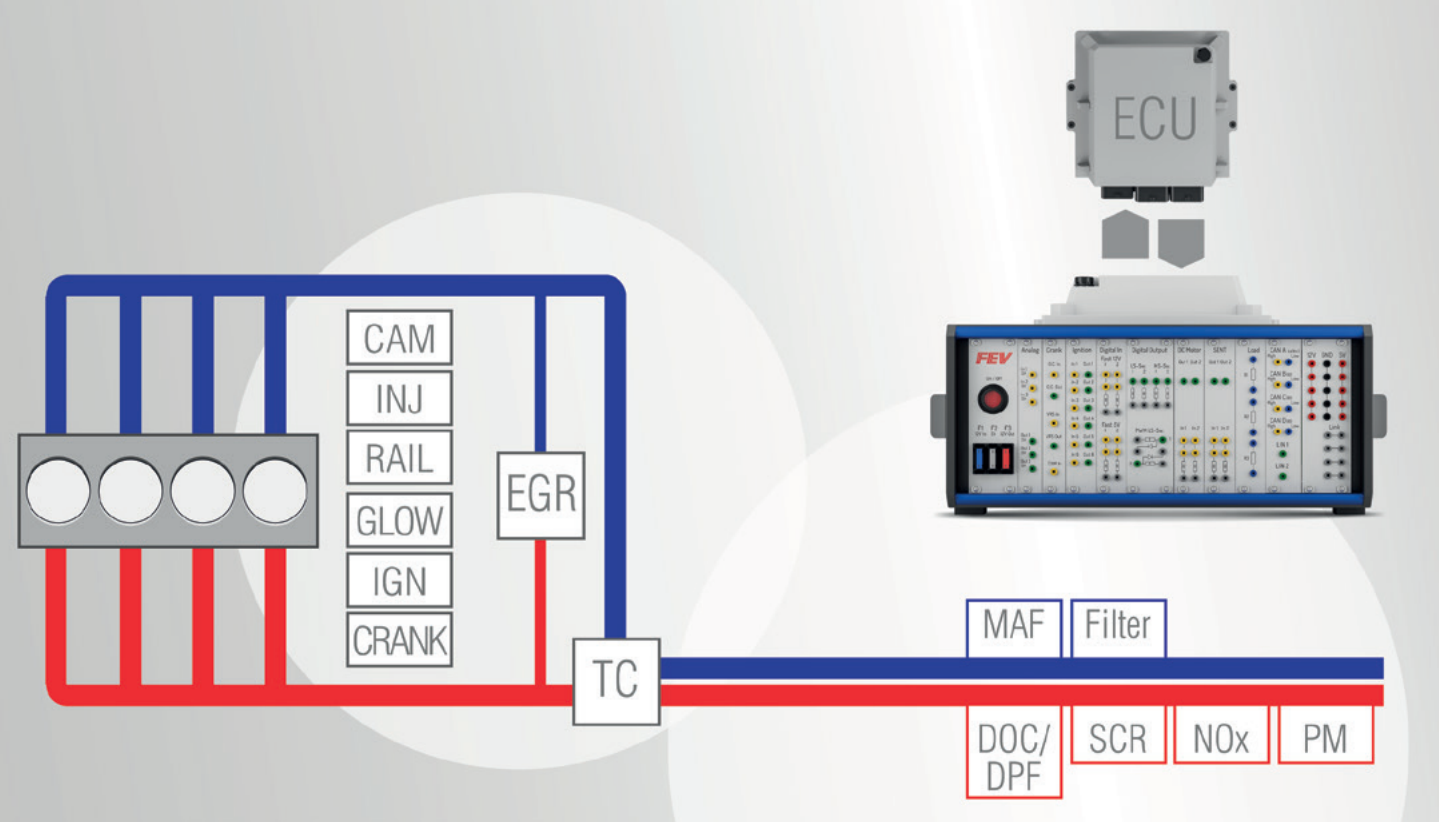


## ONE SOLUTION COVERING ALL SIGNAL MANIPULATION PATTERN

## CONTACT TOPEXPERT ASM BOX

### ASM BOX OBD FAILURE SIMULATION



#### Fields of application

Homologation	Robustness Evaluation	Production Vehicle Evaluation
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The ASM Box allows efficient verification of PVE and OBD calibration via electrical manipulation of actuator and sensor signals, especially for U.S. homologation with government mode in addition to the common user mode. Because no faulty hardware is required for failure generation it achieves a cost savings of at least 20 percent in typical use cases. Using the ASM Box for automated drifting of sensor signals for robustness testing improves the quality as well as the efficiency.

FEV's ASM Box is based on a model-based automotive RCP system. With predefined Simulink® models, efficient and fast manipulation of any engine component can be realized. The standard models can be easily customized to satisfy individual manipulation needs. In the case of calibration tasks, it is possible to use a calibration tool with XCP support to control the model behavior and simultaneously handle ECU labels and signals. In the case of homologation, the ASM Box offers a user friendly GUI with the possibility of controlling the system via WiFi and LAN.

#### Learn more about the ASM Box:

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 Neuenhofstraße 181  
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 phone +49 241 5689-838  
 Mail: [calibrationmethods@fev.com](mailto:calibrationmethods@fev.com)  
[www.fev.com/topexpert](http://www.fev.com/topexpert)



## BENEFITS AT A GLANCE

- > Easy realization of complex fuel system manipulation including:
  - > Injection cut-off
  - > Changing start of injection and injection duration
  - > Applicable for each partial injection
- > Ignition turn-off
- > Convenient handling by versatile break-out box
- > Full flexibility by failure pattern development in MATLAB/Simulink®
- > Includes a base set of failure models
- > XCP access for comfortable parametrization of failure models
- > Oxygen sensor signal manipulation
- > Control system manipulation e.g. SENT, LIN and CAN



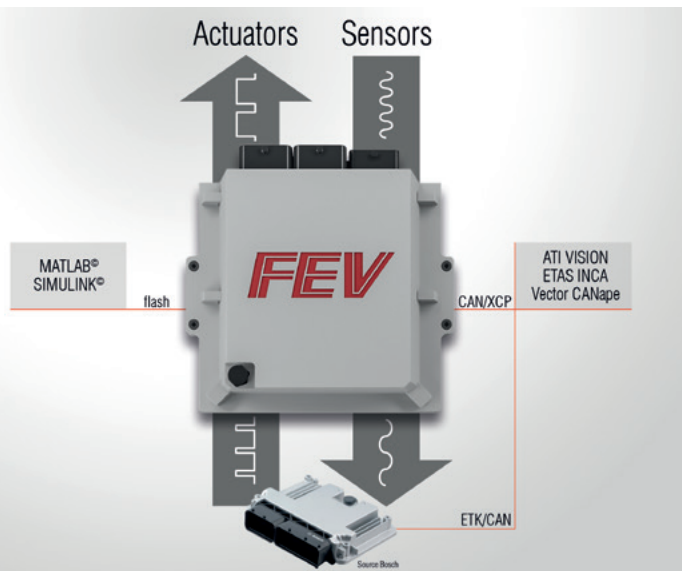
ASM box with ruggedly designed breakout box.

Ease of operability through government mode.

## ASM BOX IS AVAILABLE IN THREE VARIATIONS

	ASM BOX	ASM BOX COMPACT	ASM BOX OXYGEN
Analog I/O	✓ 3/3	✓ 3/3	✓ 3/3
PWM I/O	✓ 4/6	✓ 3/3	✓ 3/3
DC motor I/O	✓ 2/2	✗	✗
SENT I/O	✓ 2/2	✓ 2/2	✓ 2/2
Speed sensor (inductive) I/O	✓ 1/1	✗	✗
Solenoid injectors I/O	✓ 6/6	✗	✗
Ignition signal (TTL) I/O	✓ 6/6	✗	✗
CAN I/O	✓ 4/4	✓ 4/4	✓ 3/3
LIN I/O	✓ 1/1	✗	✗
Break-out Box	✓	✓	✓
ASM Box Manipulation Models	Base set	optional	O2 model
ASM Box Model Generation Toolkit	✓	optional	✗
Cables and plugs	optional	optional	✓
CJ 135 + LSU 5.1 module	optional	optional	✓

Special configurations on request.



## SUMMARY OF REALIZED SIGNAL MANIPULATION PATTERNS

The following signal manipulation patterns have been successfully realized with the ASM Box:

- > CAN protocol for NOx sensors and PM sensors as well as manipulation of any message on a powertrain CAN bus without interfering with other messages.
- > For SENT protocol the feedback message of the Delta P sensor, EGR-LF and MAF sensor signals have been manipulated.
- > Successful manipulation via PWM signals of EGR-HF, AIR flap, MAF sensors, ignition and VVT actuators.
- > Any temperature sensor and rail pressure sensor via analog signals.
- > Oxygen sensor manipulation for CJ135 has been realized for LSF, LSU4.9, LSU5.1 and LSU-ADV.
- > One of the highlights is injection manipulation for both Solenoid and Piezo injectors. The common misfire patterns are realized as well as complex scenarios such as shifting the start and end of injection.

