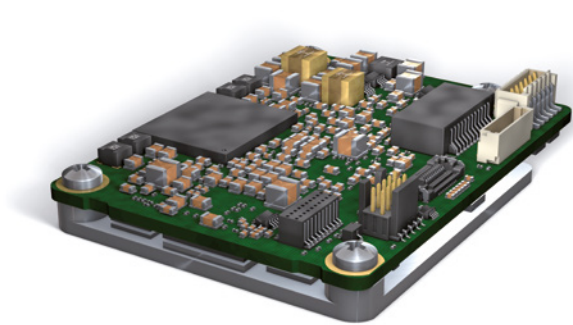


# FETK

## ECU Interfaces



FETK ECU Interfaces provide an extremely powerful access to ECUs. Because of its high user data transmission rate, FETKs fit perfectly for validation and calibration of ECUs. On the other hand because of their excellent real-time behavior FETKs are ideally suited for prototyping new functions of automotive electronic systems.

### Twice applicable

The combination of high transmission rate and small latency, as FETK ECU Interfaces offer it, is unique on the market. Because the investment in a FETK development ECU pays twice, for measurement and calibration as well as for prototyping experiments, the use of FETK ECU interfaces can make a major contribution to save development costs. In contrast to validation and calibration of ECUs, where as much data as possible from the ECU has to be recorded simultaneously, prototyping of fast controls is depending on as small latency as possible. Functions are often model-based developed by means of ETAS ASCET or MATLAB®/Simulink® and then implemented on a special prototyping hardware, which communicates with the ECU in realtime. The latency of the

### At a glance

- High data transmission rates up to 20 MB/s
- XCP-on-Ethernet access to FETK-ECUs via an ES89x ECU and Bus Interface Module
- Best real-time behavior. Supports control cycles up to 10  $\mu$ s
- Latency smaller than 250  $\mu$ s in prototyping applications
- Simultaneous access of up to four applications to one ECU possible
- Compliant with ETK-S20.1 and ETK-S21.1

communication when a 128 Byte long signal is exchanged between an FETK ECU interface and the prototyping hardware and back amounts less than 250  $\mu$ s in the complete cycle. The flash memory of an ECU can be programmed via an FETK interface just as fast and save as with a debugger. Different from the use of serial interfaces such as CAN, FETK interface operation by the ECU barely requires computing power. The independent power supply of an FETK enables to perform tests, as for example cold start tests independently of the operating state of the ECU.

### Universal and comfortable

The new FETK ECU Interface can be profitably and universally employed for diverse applications which demand different functionalities from the interface. From a user's perspective, FETKs offer high ease of use: the Gigabit Ethernet interface is generic. This means it abstracts from the specific connection to the particular microcontroller of an ECU. By means of an ES891 ECU and Bus Interface Module, applications can access ECUs with FETK interface via the standardized XCP-on-Ethernet protocol from their host device.





Figure 1: System view  
ECUs with FETK Interfaces communicate with the host application via an ES891 ECU and Bus Interface Module. In addition, measurement data from bus communication via CAN, FlexRay, LIN and measuring modules can be recorded by the ES891 module. It captures the signals from the connected source synchronously, bundles and transmits them to the host application, e.g. to ETAS INCA, as shown in the figure.

## Technical Data

### µC Interface

FETK variants	FETK-T1.0	FETK-S1.0	FETK-S2.0
Supported Microprocessors	Infineon Aurix family (TC2xx/TC3xx)	Infineon Aurix family (TC2xx/TC3xx)	NXP MPC57xx und STMicro. EMU57xx families
Payload data rates between µC and host	20 MB/s (with INCA V7.2)	2 MB/s (typical)	2 MB/s (typical)
Smallest measurement raster	5 µs	50 µs	50 µs
Flash programming time	8 MB/s		
Memory emulation	µC-dependent emulation and measured data memory		
Configuration	Project-specific memory configuration is stored in EEPROM		

### Host interface

Connection	1 Gbit/s Ethernet
Maximum cable length	30 m / 100 ft
Ethernet interface	DC decoupling

### Power supply

Input voltage	6.6 V to 32 V; cranking voltage <3 sec: 3V		
Input current at 12V	Approx. 240 mA	Approx. 94 mA	Approx. 94 mA
In normal standby	Approx. 106 mA	Approx. 16 mA	Approx. 16 mA
In deep standby	Approx. 3 mA	Approx. 3 mA	Approx. 3 mA

### Operating temperature

Temperature range	-40°C to +110°C / -40°F to +230°F
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### Board dimensions

Length	60 mm / 2.36 in	46 mm / 1.81 in	46 mm / 1.81 in
Width	45.25 mm / 1.78 in	37 mm / 1.46 in	37 mm / 1.46 in
Height	12 mm / 0.47 in	13.1 mm / 0.52 in	13.1 mm / 0.52 in



These products have been developed and released for use in automotive applications. For a complete overview of ETK, FETK, and XETK ECU Interfaces see [www.etas.com/ETK](http://www.etas.com/ETK). For more information, please contact your local ETAS representative.