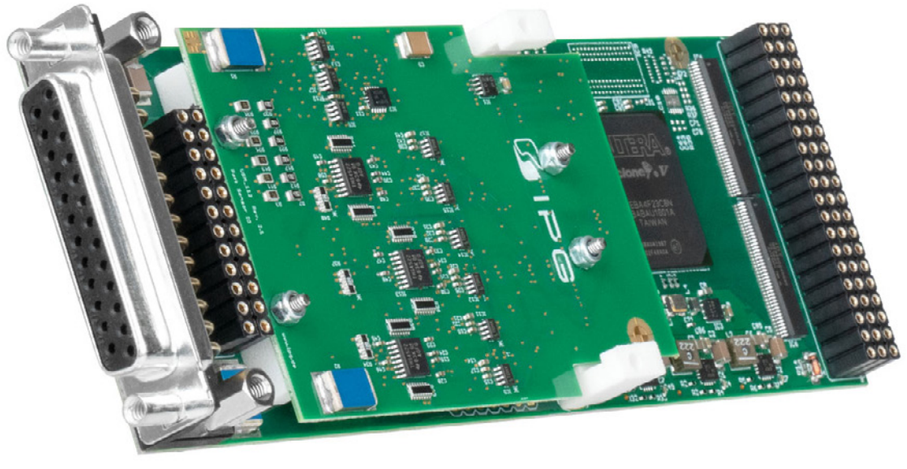
# M412 – Ultrasonic Sensor Interface



## Features

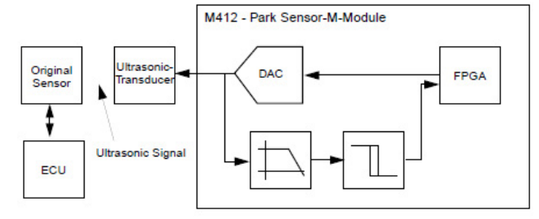
- Simulation of 6 ultrasonic sensors per module
- Frequency range: 25-100 kHz
- Distance resolution: 1us ~ 0.15mm
- Input sensitivity: 30mVpp
- 2 Simulation modes available:
  - Mode 1: Ultrasonic Mode - Module creates (cross-) echoes on ultrasonic signals of original sensor. In this mode the obstacle is simulated by the module
  - Mode 2: Binary Mode - Module is connected to the control lines of the ECU. In this mode the behavior of the original sensor is emulated
- Cross-echo emulation for up to 16 echoes per sensor
- Variably configurable protocol in binary mode
- Galvanic isolation between system ground and IO-ground for binary signal

## Use Cases

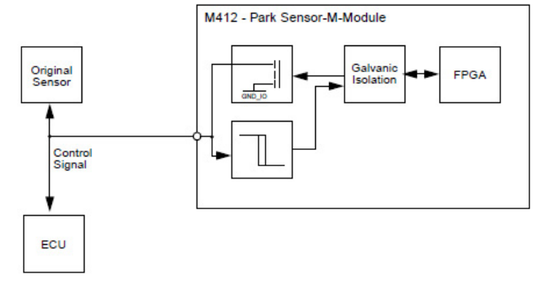
- Emulating object- and cross echoes for testing complete parking assistance systems in HIL applications
- Emulating the digital sensor interface to test parking systems ECUs

## Block Diagram

Block Diagram of one Transducer Channel




Block Diagram of one Binary Channel




## Technical Data

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|---|---|
| Channels | 6 (transducer), 6 (binary) |
| Transducer output | • +/-4V differential output voltage range<br>• +/-50mA output current<br>• 12 Bit output resolution |
| Transducer input | • 0..12V input voltage range<br>• about 20mV input voltage treshold |
| Binary I/O | • 0..30V voltage range<br>• 5V input voltage treshold |
| Sampling rate | 1MHz |
| Address space | A08D16 and A24D32 |
| Connectors | 25 pin SUBD receptacle connector , female |

## Order Information

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|---|---|
| Order Number | IO-M412 |