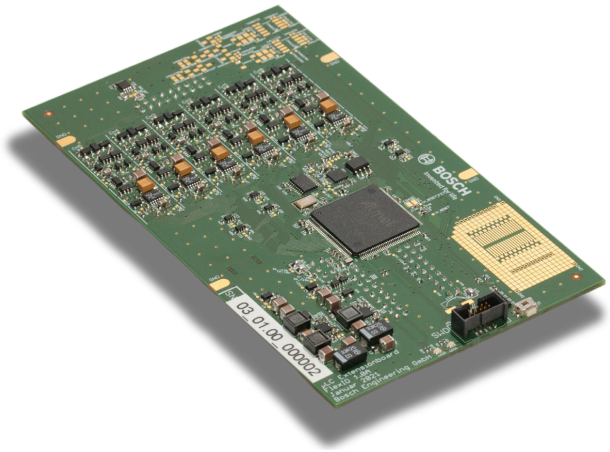
Expansion Board FlexIO



- 6 additional channels, freely selectable between ADC, DAC, DOut, PWM, SENT
- SENT signals according to SAE J2716 standard from 2016 with integrated fault simulation
- Manipulation of analogue, PWM, and SENT signals

The Expansion Board FlexIO extends the functions of the µLC Test System by adding six versatile channels that can handle various types of signals, including analog and digital. It enables manipulation of different signal types, such as PWM and SENT, and supports complex configurations for advanced testing scenarios.
With features like error simulation and flexible signal processing, the board is well-suited for automotive and engineering applications where precision and adaptability are essential.

Technical Specifications

Channel	Specification
ADC	Input voltage 0 to 56 V ± 100 mV
DAC	Output voltage 0 to 5 V ± 50 mV
DOut	Output voltage 12 V or high impedance
PWM-Out	Frequency 0.1 to 25,000 HZ ± 0,05 % Duty cycle 0 to 100 % ± 0,5 % Output voltage 0, 3.3 to 12 V, or high impedance
PWM-In	Frequency 1 to 20,000 Hz ± 0,5 % Duty cycle 0 to 100 % ± 1 %
SENT	Sensor types in the SAE J2716 Norm Tick length 2 to 90 µs Message type Short 8, enhanced 12 or 16 Bit Multiplexing Error simulation

Edge steepness for DOut, PWM-Out, SENT

Output	Conditions	trise max	tfall max
0 V / 3,3 V	*Ulow* = 0,5 V, *Uhigh* = 2,5 V, *RL* = 390 Ohm	120 ns	120 ns
0 V / 5 V	*Ulow* = 0,5 V, *Uhigh* = 4,1 V, *RL* = 390 Ohm	312 ns	66 ns
0 V / 12 V	*Ulow* = 1,2 V, *Uhigh* = 10,8 V, *RL* = 390 Ohm	58 ns	120 ns

To determine the slew rate, an upper (*Uhigh*) and a lower (*Ulow*) threshold voltage were defined. Subsequently, the maximum time span required for a switching process to transition from one voltage range to the other was determined. A load resistor (*RL*) value of 390 Ohm was selected.

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.

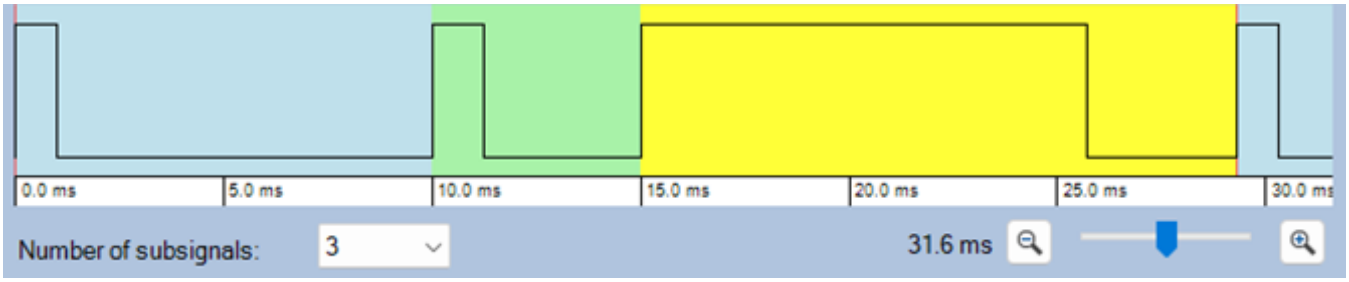
Ordering Information

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

Dimensions

Manipulation
The manipulation module is used to manipulate analogue, PWM and SENT signals. To do this, the respective signal is read in via one of the six channels, manipulated and then output via one of the six channels. This means that up to three manipulations can be carried out simultaneously.

The output voltage of the analog signals, the frequency, the duty cycle, and the output voltage of the PWM signal as well as the fast channel data of the SENT signal can be manipulated. Additionally, you can limit the SENT data by defining a maximum and minimum value for the data.



PWM
The PWM signals can be set and inverted according to the table. Furthermore, it is possible to generate complex PWM signals, which consist of up to 7 partial signals. The frequency and duty cycle of the partial signals can be freely adjusted.

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