FL3X
Interface–L²

BENEFITS

- Five pluggable transceiver modules (2–6 channels per module depending on the bus system)
- Pluggable transceiver modules available for CAN-HS, CAN-FD, CAN-FD SIC, FlexRay, LIN*, SENT*, K-Line*, RS232*, SPI*
- Compact form factor
- Synchronous timestamp generation for all bussystems (resolution up to 1 μs)
- Configurable bus termination
- Bosch E-Ray IP core FlexRay controller
- Bosch D_CAN IP core CAN controller
- Bosch M_CAN IP core CAN-FD Controller
- V2.1 A FlexRay protocol specification
- V2.0 A/B CAN protocol specification
- ISO 11898-1:2015 CAN protocol specification
- Bosch CAN-FD specification 1.0

*API possible but not available at the moment

FL3X INTERFACE–L² — OVERVIEW

With the FL3X Interface family a highly variable automotive bus interface solution for Dataloggers and PCs, which supports the current and upcoming bus and network systems via pluggable physical layer modules and the usage of a FPGA.

The FL3X Interface-L² is the high-end solution of the FL3X Interface Family with a 1000BASE-T Uplink Port to the Logger or Measurement PC. It can be used with the Standard CMP or PLP Logger Protocol for the usage with a datalogger or alternatively as a full functional Interface with writing and reading ability with our Driver for Linux and Windows.

The FL3X Interface-L² has two FPGAs for the hosting of bussystems and five FL3X Tiny3 Slots for pluggable transceivers which can provide FlexRay, CAN-HS/FD/SIC and LIN/SENT channels. Because of its free mountable Tinyslots and the FPGA, it can be extended with any available or upcoming FL3X Tiny 3 and communication channel.

- 1Gbit/s Ethernet and WiFi interface
- 5 x FL3X Tiny3 exchangeable Physical Layer slots
- 5 x M9 connector
- 8-42 V
- LEDs signal the state of the network

DRIVER

- Driver for Windows and Linux (same API for all FL3X Interfaces)
- PLP and CMP Support with IEEE1588v2 PTP synchronisation

SOFTWARE SUPPORT

- The device is supported by FL3X Config 1.1, FL3X Config mobile 1.1, FL3X Config SDK 1.6 and the FL3X Interface API starting with S6V10.

SCOPE OF DELIVERY

- FL3X Interface-L²
- Documentation
- FL3X Interface API driver

CAN-HS / CAN-FD*

- Silent mode useable for listening without bus interference
- Configurable TX-acknowledges

* no ACK Flag, no Bus Errors,

FLEXRAY*

- Asynchronous monitoring mode allows listening without FlexRay-Synchronicity
- Configurable TX-acknowledges
- Chronological correlation of bus messages with one timestamp base

* no state messages available, no bus states, no error messages, no bus symbols, no CC State

HARDWARE

Electrical characteristics

Supply voltage	8-42 VDC
Supply current (Sleep Mode)	<5 mA (@ 12 V)
Supply current (Operation Mode)	<600 mA (@ 12 V)

Physical characteristics

Power	M9 series 702/712 - 2pol.
DIO, ADI	M9 series 702/712 - 7pol.
Ethernet, Con 1-5	M9 series 702/712 - 8pol.
Weight approx.	975 g
Dimensions L x W x H	241 x 124 x 36 mm

Environmental conditions

Temperature	Operating/Storage: -40°C to +85°C
IP-Code	IP20
Relative humidity	Operating/Storage: 0 % to 90 % RH, condensing

PC INTERFACES

- 1000BASE-T
- WiFi

PHYSICAL LAYER FL3X TINY3

You can use the following FL3X Tiny3 combinations out of the box. For other combinations feel free to contact us.

CON1	CON2	CON3	CON4	CON5
2x CAN-HS/-FD	2x CAN-HS/-FD	2x CAN-HS/-FD	2x CAN-HS/-FD	2x CAN-HS/-FD
1x FlexRay A/B	2x CAN-HS	1x FlexRay A/B SelfSync	1x FlexRay A/B	2x CAN-HS
1x FlexRay A/B	2x CAN-HS	2x CAN-FD	2x CAN-FD	4x LIN
1x FlexRay A/B SelfSync	2x CAN-HS	2x CAN-FD	1x SPI + 1x UART + 1x K-Line	4x LIN 2x SENT
2x CAN-FD	1x FlexRay A/B SelfSync	1x FlexRay A/B SelfSync	1x FlexRay A/B SelfSync	2x CAN-FD
2x CAN-FD	1x FlexRay A/B SelfSync	1x FlexRay A/B SelfSync	1x FlexRay A/B	4x CAN-FD
2x FlexRay A 2 x SelfSync	2x CAN-HS	1x FlexRay A SelfSync	4x LIN	4x CAN-HS
4x CAN-FD	-	4x CAN-FD	4x CAN-FD	4x CAN-FD

ORDER INFORMATION FL3X INTERFACE-L²

Product	Description	Order number
FL3X Interface-L²	The FL3X Interface-L² is a high-end bus interface.	3-V0872B01

ORDER INFORMATION ACCESSORY PARTS

Product	Description	Order number
FL3X Tiny3 2*FlexRay	Pluggable transceiver module with two FlexRay transceivers (TJA1081BTS, NXP)	3-00880A01
FL3X Tiny3 4*CAN-FD/HS	Pluggable transceiver module with four CAN-FD/HS transceivers (MCP2562FD, Micrel)	3-00881G02
FL3X Tiny3 2*CAN-FD/HS	Pluggable transceiver module with two CAN-FD/HS transceivers (TJA1145T/FD, NXP)	3-00881E01
FL3X Tiny3 4*LIN/2*SENT	Pluggable transceiver module with four LIN (TJA1021T, NXP) and two SENT transceivers	3-00884A02
FL3X Tiny3 1*K-Line/1*UART/1*SPI	Pluggable transceiver module with one K-Line (TJA1021T, NXP), one UART and one SPI transceivers	3-00884B01
PowerCable 200 2M9m 1BANm2	1. End: 2-pole M9 male connector, type 712 2. End: 2 x banana connectors (black/red) Length: approx. 2 m	3-00341D02
ConfigCable 200 8M9m 8RJ45m	1. End: 8-pole M9 male connector, type 712 2. End: 8-pole RJ45 connector Length: approx. 2 m	3-00342L01
BusCable 200 8M9m 9SUBDf UNIVERSAL	1. End: 7-pole M9 male connector, type 712 2. End: 9-pole SubD female connector Length: approx. 2 m	3-00342Z01
BusCable 2Way 200 8M9m 9SUBDf CAN&FR	1. End: 8-pole M9 male connector, type 712 2. End: 2 x 9-pole SubD female connector Length: approx. 2 m	3-00341L02
BusCable 4Way 200 8M9m 9SUBDf CAN&FR	1. End: 8-pole Binder male connector, type 712 2. End: 4 x 9-pole SubD female connector (Pin2,7) Length: approx. 2 m	3-00342S01
BusCable 2Way 200 8M9m 8RJ45m ETH	1. End: 7-pole M9 male connector, type 712 2. End: 2 x 8-pole RJ45 connector Length: approx. 2 m	3-00342M01
BusCable 100 8M9m 9SUBDf CAN&FR	1. End: 7-pole M9 male connector, type 712 2. End: 9-pole SubD female connector Length: approx. 1 m	3-00342J01
BusCable 200 8M9m 9SUBDf CAN&FR	1. End: 7-pole M9 male connector, type 712 2. End: 9-pole SubD female connector Length: approx. 2 m	3-00341J02