



# FL3X Device-S

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## BENEFITS

- ARM Cortex A9 Dual Core (800 MHz) with 1 GByte DDR3 RAM
- Up to 14 bus/network channels
- 8 hardwired bus/network channels
  - 2 x CAN-HS channels
  - 2 x CAN-FD/HS channels
  - 1 x FlexRay A channel (SelfSync)
  - 1 x FlexRay B channel (SelfSync)
  - 1 x 100BASE-T1 channel
  - 1 x LIN channel
- 1 flexible FlexTiny3 Slot for additional bus/network transceivers (2x CAN-FD/HS or 4x CAN-FD/HS or 2 x FlexRay (1 A-channel / 1 B-channel) or 2 x 100BASE-T1 or 4 x LIN & 2 x SENT- channels)
- Integrated WiFi module
- D-sub connectors for automotive bus systems
- Wake-up/sleep mode support
- Startup <200 ms possible
- Micro SD card slot
- IP20
- Temperature range -40°C to +85°C

## FL3X DEVICE-S - THE MULTIFUNCTIONAL BUS CONTROL UNIT

FL3X Device-S is the starter of the FL3X Device product family which is used and recognized by many car manufacturers and component suppliers in their automotive electronics development. The FL3X Device family provides manifold solutions for

- gateways between different automotive bus systems
- bus interfaces
- remaining bus simulation
- signal manipulation
- data logging
- rapid prototyping

The multifunctional bus control unit FL3X Device-S supports the current and upcoming bus/network systems and has one variable interface, so it covers most of the application fields where bus interfaces are required. This device is appreciated by embedded software developers since it facilitates the implementation and testing of even very tricky gateway applications and prototyping functionalities.

Together with the comprehensive FL3X Config software family, the developers are enabled to set up and control their bus systems and ECU environment in a smart manner.

## TECHNICAL FEATURES

- Altera Cyclone V SOC (integrated ARM Cortex A9 Dual Core CPU)
- 1 GByte DDR3 RAM
- 3 D-sub bus connectors with fixed and pluggable transceivers
  - Up to 6 bus/network interfaces on each connector
- Supported automotive bus/network systems
  - Up to 4 FlexRay controllers (Bosch E-Ray cores)\*
  - Up to 2 FlexRay channels (2 channel A and 2 channel B) available on the connectors
  - A connector with 2 FlexRay cores provides SelfSync
  - Up to 6 CAN-FD controllers\*
  - Up to 8 CAN-HS controllers\*
  - Up to 3 100 Mbit/s Ethernet controllers\*
- Wake-up/sleep mode support (wake-up possible via FlexRay or CAN)
- 1 Gbit/s Ethernet configuration interface via RJ45
- Integrated 1 Gbit/s Ethernet switch
- Micro SD card slot
- 4 digital inputs/outputs, or analog inputs (ADIO) via D-sub

\*several bus combinations are possible, please contact us regarding your desired bus configuration.

## SOFTWARE SUPPORT

The device is supported by FL3X Config starting with version 1.0.

## HARDWARE

### Electrical characteristics

Supply voltage	8-42 VDC
Supply current (Sleep Mode)	<10 mA (@ 12 V)
Supply current (Operation Mode)	<500 mA (@ 12 V)

### Physical characteristics

Power	Binder series 702/712 – 2 pol.
ADIO	D-Sub female– 9 pol.
Ethernet	RJ45 – 8 pol.
Con 1 - 3	D-Sub male – 9 pol
Weight approx.	665 g
Dimensions (L x W x H)	166 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

## SCOPE OF DELIVERY

- FL3X Device-S
- Documentation

## ORDER INFORMATION FL3X DEVICE-S

Product	Description	Order number
FL3X Device-S	The FL3X Device-S is a multifunctional autonomous bus system platform.	3-V0860A01

## ORDER INFORMATION ACCESSORY PARTS

Product	Description	Order number
FL3X Config Standard Runtime 1 year	Standard Runtime license for 1 year. Required once per device.	3-01142A01
FL3X Config Extended Runtime 1 year	Extended Runtime license for 1 year. Required once per device.	3-01142H01
FL3X Tiny3 2*1000BASE-T1	Pluggable transceiver module with two 1000BASE-T1 transceivers (88Q2112-A2-NYD2A000, Marvell)	3-00882H02
FL3X Tiny3 2*100BASE-T1	Pluggable transceiver module with two 100BASE-T1 transceivers (BCM89810A2AMLG, Broadcom)	3-00882C02
FL3X Tiny3 3*100BASE-T1 switch	Pluggable transceiver module with three 100BASE-T1 switch (BCM89500BQLEG, Broadcom)	3-00882D01
FL3X Tiny3 2*100BASE-TX switch	Pluggable transceiver module with two 100BASE-TX switch (88E6350RA1-TFJ2I000, Marvell)	3-00882B01
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 2002M9m 1BANm2	1. End: 2-pole Binder male connector, type 712 2. End: 2 x banana connectors (black/red) Length: approx. 2 m	3-00341D02
BusCable 4Way 2009SUBDf 9SUBDfU CAN&FR	1. End: 9-pole SubD female connector 2. End: 4 x 9-pole SubD female connector Length: approx. 2 m (unshielded)	3-00343A01
BusCable 4Way 609SUBDf 9SUBDf	1. End: 9-pole SubD female connector 2. End: 4 x 9-pole SubD female connector Length: approx. 0.6 m	3-00342V01
BusCable 209SUBDf 8M9f CAN&FR	1. End: 9-pole SubD female connector 2. End: 8-pole M9 female connector Length: approx. 0.2 m	3-00342W01