



# Optical Fibre Router EtherCAN FX

## Special Features

- Optical fibre based Ethernet/CAN router for the connection of CAN subnetworks
- Powerful 32 bit microcontroller Samsung S3C4510B with CAN controller SJA1000
- Abrogation of the extension/datarate restrictions of the CAN bus
- The CAN typical error handling mechanisms are preserved
- Optical fibre extensions up to 15/40 km possible (2 different device types)
- Adaptation to higher layer protocols (e.g. SafetyBus p, CANopen) using specific firmware

## Description

The rail mountable Ethernet/CAN-Router EtherCAN FX transmits data between CAN networks using optical fibre. To achieve the connection two devices are linked back-to-back. The transmission protocol used on the optical fibre is the reliable TCP/IP protocol. The use of TCP/IP abrogates the length/datarate restrictions, the typical error handling mechanisms of CAN are preserved within the single subnets. Depending on the type of the device, extensions up to 15km or 40km are possible.

EtherCAN FX includes a Samsung S3C4510B (ARM7 core) with 50Mhz clock and a Linux operating system. In addition, the device has 16MB SDRAM and 2MB Flash. The connection to the CAN bus is done by a CAN controller of type NXP SJA1000 which supports the CAN protocols 2.0A and 2.0B.

The use of Embedded Linux as operating system allows the development of application specific software for EtherCAN FX, an application development kit is separately available.

Safety-related applications with SafetyBUS p are supported by the version SBR-FX.

## Technical Data

### Layout and connection

EtherCAN FX includes a CAN segment connected by connectors of type D-Sub 9. The pin assignment complies to CiA DS-102 standard. Besides the CAN signals the connectors also carry the power supply for EtherCAN FX. In addition, EtherCAN FX includes a fibre optic connector and a serial connector (D-Sub).

The following table shows the assignment of the CAN connectors:

Pin	Name	Function
2	CAN_L	CAN_L bus line (dominant low)
3	GND	Ground line
6	–	Reserved
7	CAN_H	CAN_H bus line (dominant high)
8,9	–	Reserved

### Limiting Values

Parameter	Minimum	Maximum	Unit
Storage temperature	- 25	+ 70	°C
Operating temperature	0	+ 50	°C
Supply voltage	- 100	+ 35	V
Voltage on bus connections	- 30	+ 30	V

Any (also temporary) stress in excess of the limiting values may cause permanent damage on EtherCAN FX and other connected devices. Exposure to limiting conditions for extended periods may affect the reliability and shorten the life cycle of the device.

### Nominal Values

Parameter	Minimum	Typical	Maximum	Unit
Current consumption	–	80	200	mA
Supply voltage	+ 20	+ 24	+ 30	V
Optical damping (EtherCAN FX -15000/RMD)	–	+ 13	–	dB
Optical damping (EtherCAN FX -40000/RMD)	+ 4	+ 28	–	dB
Admissible fibre length (EtherCAN FX -15000/RMD)	–	15000	–	m
Admissible fibre length (EtherCAN FX -40000/RMD)	–	40000	–	m

All values, unless otherwise specified, refer to a supply voltage of 24V and an environmental temperature of 20°C. Fibre length specifications are valid for fibre damping of 0,55dB/km without additional patch panels.

## Scope of Delivery

- EtherCAN FX
- User Manual