

# FL3X Media 100BASE-T1

## Instructions for Use



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## Revision History

Document number: 3-0093-0A01-D04

Version	Date	Description
D1V0-4	25-Jun-2018	Preliminary release
D1V0-F	23-Apr-2019	First release
D1V1-F	01-Feb-2022	Updated chapter EC Conformity Added chapter UK Conformity changed product pictures
D1V2-F	20-Feb-2023	Product name changed


## Related Hardware / Software Versions

Product	Reference No.	Version	Remarks
FL3X Media 100BASE-T1	3-0093-A01-01	20	Old Product: FL3X Media 100BASE-T1

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NOTICE	
	<p>To prevent damage to the FL3X Media 100BASE-T1, or consequential damages:</p> <p style="text-align: center;">Do not open the FL3X Media 100BASE-T1.</p> <p>Do not connect any other signals to the interfaces as described in the chapter “Interfaces”. Ensure that all signals are within the specified range.</p> <p>High temperatures can damage the FL3X Media 100BASE-T1. Keep the FL3X Media 100BASE-T1 away from heaters, stoves, fireplaces, and other sources of heat.</p> <p style="text-align: center;">Do not expose the FL3X Media 100BASE-T1 to rain or use it near water.</p> <p style="text-align: center;">Do not use the FL3X Media 100BASE-T1 in areas of explosion hazard.</p> <p style="text-align: center;">The maximum allowed length of the power cable is 3m.</p> <p style="text-align: center;">Do not use the FL3X Media 100BASE-T1 in DC power supply networks.</p>

### 1.4 User Group

This document is written for expert technicians who are familiar with electronic components and systems.

Each person involved with assembly, line-up, operation, maintenance, or disposal of the FL3X Media 100BASE-T1 has to

- be a qualified technician, or electrician, or engineer
- strictly adhere to this manual
- receive a briefing by an authorized person

### 1.5 Meaning of Text Styles

In this document *filenames*, are marked with a different text format.

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## 2 Product Description

### 2.1 FL3X Media 100BASE-T1 at a glance

The FL3X Media 100BASE-T1 is a bidirectional 100 Mbit Ethernet converter between the 2-wire standard 100BASE-T1 and the 4-wire standard 100BASE-Tx.

The Broadcom BCM89810 transceiver is used for the 100BASE-T1 conversion.


- Master and slave feature selectable with DIP-switch
- RJ45 connector for Ethernet
- D-Sub 9 pin for 2 wire Ethernet
- Power supply range: 8 – 48 V

#### Field of application

- Testing
- Diagnostics

### 2.2 Accessory Parts

For further information about accessories for the FL3X Media 100BASE-T1 see chapter 7.2 Accessory Parts.

NOTICE	
	<p>Use only accessory parts from <i>STAR ELECTRONICS GmbH &amp; Co. KG</i> listed in chapter 7.2 Accessory Parts to ensure proper function and for warranty reasons! Other accessories without prior written consent of <i>STAR ELECTRONICS GmbH &amp; Co. KG</i> must not be used.</p>



## 3 Technical Data

### 3.1 Electrical Characteristics

Supply voltage	Min.	Typ.	Max.
Operating	+8.0 V	-	+48.0 V
Absolute maximum (non-operating)	-60.0 V	-	+60.0 V
Supply current - operating	Typ.: 80 mA; Max.: 140 mA		

Table 1: Electrical characteristics

### 3.2 Physical Characteristics

Connectors	RJ45, D-Sub 9
Weight approx.	145 g
Dimensions approx. L x W x H	92 * 65 * 28 mm <sup>3</sup>

Table 2: Physical characteristics

### 3.3 Environmental Conditions

Temperature	Operating:	-40°C - +85°C
	Non-operating:	-40°C - +85°C
	Storage:	-40°C - +85°C
Relative Humidity	0% - 90% r. H., non-condensing	

Table 3: Environmental conditions

### 3.4 Interfaces

The FL3X Media 100BASE-T1 has a power cable, two connectors, a 2 pin DIP-switch and some LED's. The following figures show the position of each interface.

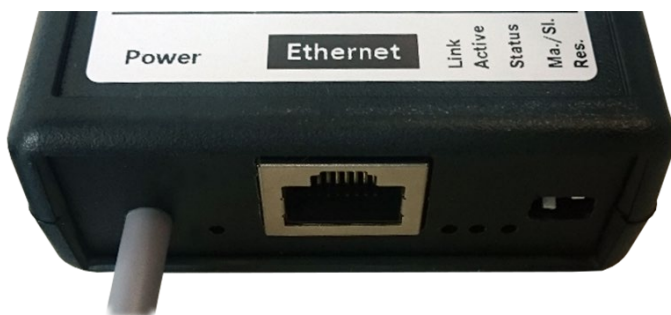


Figure 1: Side with Power and Ethernet




Figure 2: Side with 100BASE-T1

#### 3.4.1 Power

The valid range of the power supply for the FL3X Media 100BASE-T1 is within 8 - 48 V DC. The power supply input of the FL3X Media 100BASE-T1 is EMC and reverse protected.

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Internal voltage regulators generate the operating voltages out of this supply voltage.

	NOTICE	
	<p>The maximum allowed length of the power cable is 3m. Do <b>not</b> use the FL3X Media 100BASE-T1 in DC power supply networks.</p>	

The green LED near the power cable shows the power supply status, if the LED is on, the power is OK.




Figure 3: Power cable and green power LED

Power cable		
Pin	Signal Name	Description
1	GND	Ground signal
2	Uin	Power in allowed in the range from 8 – 48 V

Table 4: Power cable

### 3.4.2 Ethernet (RJ45)

The FL3X Media 100BASE-T1 support a 100BASE-TX (100 Mbit/s Ethernet) interface at the power connector side. This connector supports only “100MBit/s full-duplex” mode.

	NOTICE	
	<p>The maximum allowed length of the Ethernet cable is 30m.</p>	

There are two LEDs near the RJ45 connector, a green LED and a yellow LED. The yellow LED shows the link state. The green LED shows traffic.

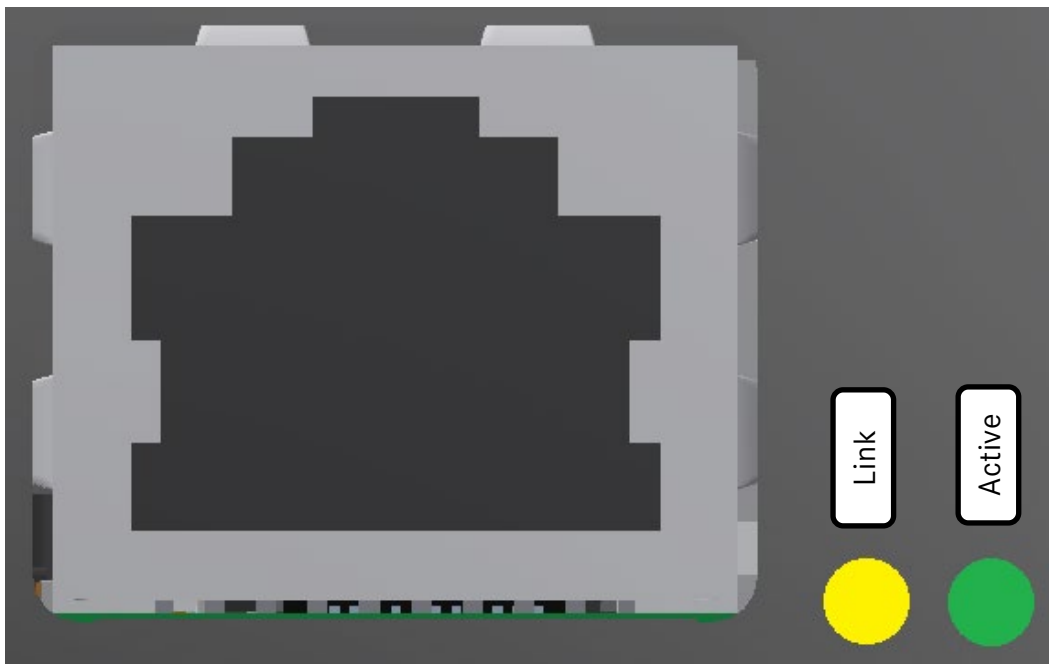


Figure 4: Ethernet connector with yellow and green LED

Connector RJ45 (Ethernet)		
Pin	Signal Name	Description
1	TP0+	Ethernet signal plus 0.
2	TP0-	Ethernet signal minus 0.
3	TP1+	Ethernet signal plus 2.
4	TP2+	Not needed (100 Mbit/s only)
5	TP2-	Not needed (100 Mbit/s only)
6	TP1-	Ethernet signal minus 1.
7	TP3+	Not needed (100 Mbit/s only)
8	TP3-	Not needed (100 Mbit/s only)

Table 5: Ethernet (RJ45) Connector

### 3.4.3 Status LED and DIP-switch

The FL3X Media 100BASE-T1 has a yellow Status LED at the power connector side.

Status LED	Description
blinking	The device tries to establish a link at the 100BASE-TX connector.
permanently ON	A link is established at the 100BASE-TX connector.

The DIP-Switch '1' configures the 100BASE-T1 interface - it changes between Master or Slave function. If the switch is up the transceiver is configured as Slave, if the switch is down it is configured as Master.

The DIP-Switch '2' has no function (reserved).

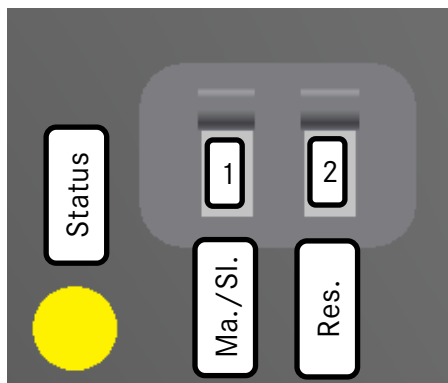


Figure 5: Yellow status LED and DIP-switch

### 3.4.4 2-Wire Ethernet (D-Sub)

The FL3X Media 100BASE-T1 support a 100BASE-T1 interface.

There are two LEDs near the D-Sub connector: a green LED and a yellow LED. The yellow LED shows the link state. The green LED shows traffic.

The following LED states are shown:

State	Link LED	Active LED	Description
No Link	cyclically switching between ON and OFF (period 2s)	permanently ON	The device tries to establish a link.
Link	permanently ON	toggles between ON and OFF	The active LED has inverted logic. If no communication is present, the LED is ON. Any communication switches the LED OFF.

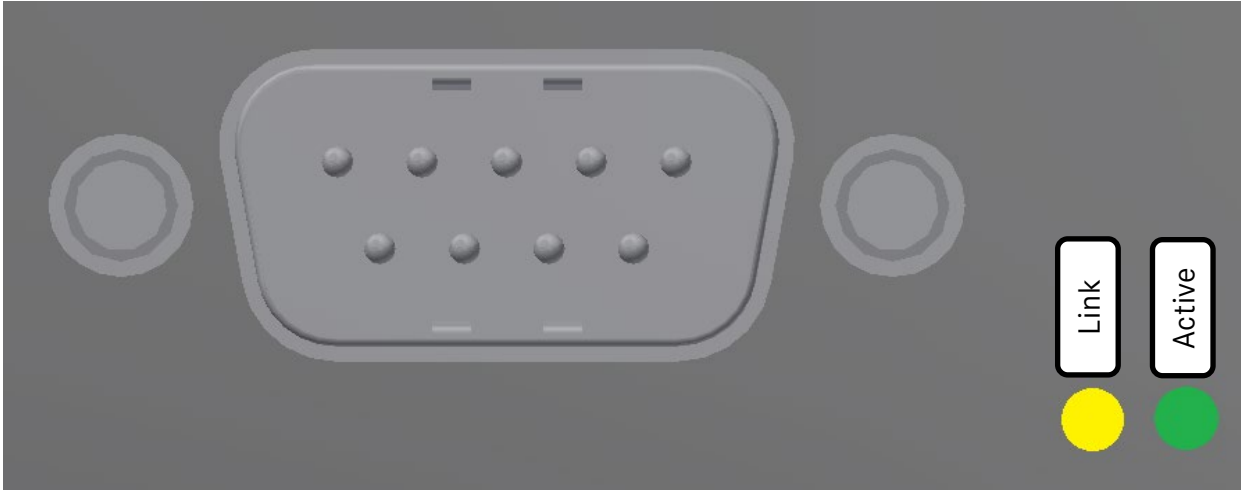


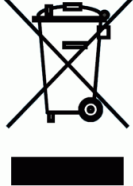
Figure 6: 100BASE-T1 D-Sub connector with yellow and green LED

Connector DSub (100BASE-T1 2-wire ethernet)		
Pin	Signal Name	Description
1, 2, 6 - 9	NC	Not connected
3	ETH-GND	Ground for ethernet, connect over an inductor to internal ground.
4	ETH_BP	100BASE-T1 bus plus signal.
5	ETH_BM	100BASE-T1 bus minus signal

Table 6: Connector for DSub (2-wire ethernet)



## 5 Shipping, Maintenance and Disposal

	Dispose off properly per regulations of the country where end-of-life occurs.
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## 6 Troubleshooting

This chapter contains some frequently asked questions about the FL3X Media 100BASE-T1.

<b>1</b>	Effect	No LINK at the 100BASE-T1 connector.
	Solution	Check the DIP-Switch for correct Master/Slave configuration. A 100BASE-T1 communication is a Point-to-Point- Connection where on communication partner acts as 'Master' and one communication partner acts as 'Slave'.

<b>2</b>	Effect	No LINK at the Ethernet connector.
	Solution	Check the "Link Speed & Duplex" settings of the connected network adapter. See chapter 3.4.2 for supported configurations.

## 7 Ordering Information

### 7.1 FL3X Media 100BASE-T1

Product	Description	Ordering number
FL3X Media BASE100-T1	FL3X Media BASE100-T1	3-V0930A01

### 7.2 Accessory Parts

Product	Description	Ordering number
Customer specific parts		Please contact <i>STAR ELECTRONICS</i> <i>GmbH &amp; Co. KG</i>

### 7.3 Related Documents

Document	Description	Ordering number
-		





Figure 6: 100BASE-T1 D-Sub connector with yellow and green LED..... 12

P:\0010\001014\00101004\00101004\_P113\_01.dwg 100BASE-T1\_100.Plot

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