



## Quick Installation Guide



**TFC-1000**  
**TFC-210 Series**  
**TFC-2000 Series**

# Table of Contents

|   |    |
|---|----|
| Русский .....                             | 1  |
| 1. Что нужно сделать в самом начале ..... | 1  |
| 2. Описание изделия .....                 | 2  |
| 3. Установка оборудования .....           | 3  |
| LLCF Function .....                       | 9  |
| Technical Specifications .....            | 11 |
| Troubleshooting .....                     | 13 |

# 1. Что нужно сделать в самом начале

Шасси для волоконных преобразователей TFC-1000, для преобразователей серии TFC-210 и TFC-2000:



## Содержимое упаковки

- TFC-1000
- Руководство по быстрой установке
- Сетевой провод
- Кронштейн с винтами

Волоконный преобразователь серии TFC-210 или TFC-2000 :



## Содержимое упаковки

- Волоконный преобразователь
- Руководство по быстрой установке
- Блок питания (9В пост. т., 700mA)

## 2. Описание изделия

| Преобразователи с носителей 10/100Base-TX на 100Base-FX |                                      |                             |  |  |            |
|---|--------------------------------------|-----------------------------|--|--|------------|
| Название модели   | Многомодовый/<br>Одномодовый         | Волоконно-оптический разъем | Энергетический потенциал               | Длина волны  | Расстояние |
| TFC-210MST  | Многомодовый                         | ST<br>(дуплексный)          | 50/125um: 7,5dBm<br>62,5/125um: 11dBm  | 1310nm<br>(1270nm ~ 1380nm)                                      | 2км        |
| TFC-210MSC  |                                      | SC<br>(дуплексный)          | 50/125um: 8,5dBm<br>62,5/125um: 8,5dBm |  |            |
| TFC-210S30  | Одномодовый                          |                             |  | 1310nm<br>(1260nm ~ 1360nm)                                      | 30км       |
| TFC-210S20D3  | Одномодовый<br>Много/<br>одномодовый | SC<br>(симплексный)         | 9/125um: 12dBm                         | TX:1310nm<br>(1280nm ~ 1355nm)<br>RX:1550nm<br>(1530nm ~ 1570nm) | 10км       |
| TFC-210S20D5  |                                      |                             |  | TX:1550nm<br>(1530nm ~ 1570nm)<br>RX:1310nm<br>(1280nm ~ 1355nm) |            |

| Преобразователи с носителей 1000Base-T на 1000Base-SX/LX |                                      |                             |                          |  |            |
|--|--------------------------------------|-----------------------------|--------------------------|--|------------|
| Название модели  | Многомодовый/<br>Одномодовый         | Волоконно-оптический разъем | Энергетический потенциал | Длина волны  | Расстояние |
| TFC-2000MSC  | Многомодовый                         |                             | 50/125um:8,5dBm          | 850nm<br>(830nm ~ 860nm)   | 550м       |
|  |                                      |                             | 62,5/125um:8,5dBm        |  | 220м       |
| TFC-2000S20  | Одномодовый                          | SC<br>(дуплексный)          | 9/125um:15dBm            | 1310nm<br>(1270nm ~ 1355nm)                                      | 20км       |
| TFC-2000S50  |                                      |                             | 9/125um:19dBm            | 1550nm<br>(1520nm ~ 1580nm)                                      | 50км       |
| TFC-2000S10D3  | Одномодовый<br>Много/<br>одномодовый | SC<br>(симплексный)         | 9/125um:12dBm            | TX:1310nm<br>(1280nm ~ 1355nm)<br>RX:1550nm<br>(1530nm ~ 1570nm) | 10км       |
| TFC-2000S10D5  |                                      |                             |                          | TX:1550nm<br>(1530nm ~ 1570nm)<br>RX:1310nm<br>(1280nm ~ 1355nm) |            |

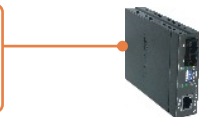
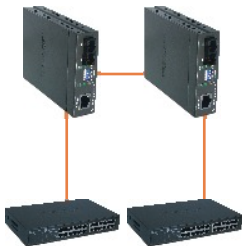
## 3. Установка оборудования

### Установка 2 отдельных преобразователей

1. Присоедините волоконный кабель к преобразователю.

2. Подключите кабель RJ-45 Ethernet от порта Ethernet на преобразователе к порту Ethernet на коммутаторе (напр., TE100-S24R или TEG-S240TX).

3. Присоедините силовой адаптер к задней панели преобразователя.



#### Примечание:

- Кабели:
  - Многомодовый оптический кабель: TFC-210MST, TFC-210MSC, TFC-2000MSC
  - Одномодовый оптический кабель: TFC-210S30, TFC-210S50, TFC-2000S30, TFC-2000S50
  - Одножильный оптический кабель для TFC-210S20D3/D5, TFC-210S10D3/D5
- кабели TX и RX нужно переставить на противоположном волоконном соединении.
- Устройство TFC-210S20D3 должно быть спарено с устройством TFC-210S20D5. Устройство TFC-2000S10D3 должно быть спарено с устройством TFC-2000S10D5.
- Порты TX и FX на устройствах Серия TFC-210 не поддерживают автосогласование. Противоположное соединение типа Copper и Fiber должно быть по технологии Gigabit.

## Подключение волоконного преобразователя к коммутатору

1. Подключите волоконно-оптический кабель от преобразователя к коммутатору (напр., TE100-S810Fi)

2. Подключите кабель RJ-45 Ethernet от порта Ethernet на преобразователе к порту Ethernet на коммутаторе (напр., TE100-S24R или TEG-S240TX).

3. Присоедините силовой адаптер к задней панели преобразователя.



Примечание: данное применение не относится к устройству TFC-210S20D3, TFC-210S20D5, TFC-2000S10D3 и TFC-2000S10D5.

## Подключение волоконного преобразователя к компьютеру

1. Подключите волоконно-оптический кабель от преобразователя к компьютеру в волоконно-оптическим адаптером (напр., TE100-PCIFX+)

2. Подключите кабель RJ-45 Ethernet от порта Ethernet на преобразователе к порту Ethernet на коммутаторе (напр., TE100-S24R или TEG-S240TX).

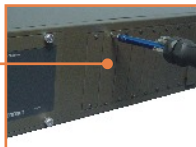
3. Присоедините силовой адаптер к задней панели преобразователя.



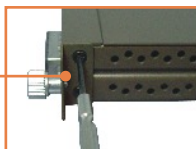
Примечание: данное применение не относится к устройству TFC-210S20D3, TFC-210S20D5, TFC-2000S10D3 и TFC-2000S10D5.

## Установка волоконного преобразователя в шасси

1. Отверткой отверните винты модульного отсека в нужном месте на шасси и снимите крышку. Сохраняйте винт и крышку на случай, если модельный отсек понадобится закрыть в последующем.



2. Прикрепите кронштейн к боковой стороне волоконного преобразователя.



3. Задвиньте преобразователь в имеющееся гнездо. Установите преобразователь, расположив волоконный порт рядом с днищем шасси. Затем приверните винты для закрепления преобразователя.





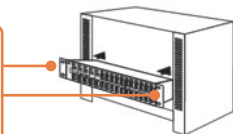
## Установка в стойке

Шасси может быть установлено в 19-дюймовой стойке EIA стандартного размера, которая располагается в электромонтажном шкафу вместе с другой аппаратурой.

1. Приложите монтажные скобы к передней панели шасси (по одной с каждой стороны) и закрепите их винтами из комплекта.



2. Аккуратно расположите шасси на стойке. Выровняйте кронштейн относительно винтовых отверстий на стойке, затем прикрепите шасси винтами из комплекта к приборной стойке.



## Подключение к источнику электропитания

1. Присоедините сетевой провод из комплекта к тыльной стороне
2. Присоедините сетевой провод к сетевой розетке.
3. Переведите выключатель в положение ON (ВКЛ.) для подачи питания к шасси.



## Пакеты DIP Switch

|                           |  |
|---------------------------|--|
| <b>Серия<br/>TFC-210</b>  | Переключатель 1: ВКЛ: TX – дуплексный режим<br>ВЫКЛ.: TX - автосогласование<br>Переключатель 2: ВКЛ: FX – полудупл. режим<br>ВЫКЛ.: FX – дуплексный режим<br>Переключатель 3: ВКЛ: LLCF – вкл.<br>ВЫКЛ.: LLCF – откл.<br>Переключатель 4: ВКЛ: режим Pure<br>ВЫКЛ.: Режим переключения |
| <b>Серия<br/>TFC-2000</b> | Переключатель 1: ВКЛ: TX LLCF – вкл.<br>ВЫКЛ.: TX LLCF (откл.)<br>Переключатель 2: ВКЛ: Fiber LLCF – вкл.<br>ВЫКЛ.: Fiber LLCF (откл.)   |

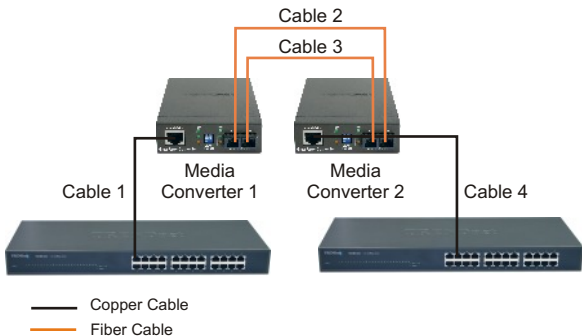
\* после изменения настроек пакета DIP Switch - энергетический цикл для волоконно-оптического преобразователя.

\*\*LLCF – функция управления Link Loss Carry Forward.

# LLCF Function

LLCF allows the network administrator to quickly troubleshoot the network connection based on the LEDs on the Fiber Converters. When the TX port link is down, the converter will force the fiber port link to shutdown. When the fiber port link is down, the converter will force the TX port link to shutdown.

## LLCF (Link Loss Carry Forward) Diagram



Below are examples on how to read the LLCF Function Table:

**Example 1:** If LLCF is enabled on Fiber Converter 1 and disabled on Media Converter 2, when Cable 1 link is down, Fiber Converter 1's Copper and Fiber LED and Fiber Converter 2's Fiber LED will shut off. Fiber Converter 2's Copper LED remains on.

**Example 2:** If LLCF is disabled on both Fiber Converters, when Cable 4 link is down, Fiber Converter 1's Copper and Fiber LED and Fiber Converter 2's Fiber LED remains on. Fiber Converter 2's Copper LED will shut off.

## LLCF (Link Loss Carry Forward) Function Table

|                                   |                                   | Media Converter 1 |           | Media Converter 2 |           |     |
|-----------------------------------|-----------------------------------|-------------------|-----------|-------------------|-----------|-----|
|                                   |                                   | Copper LED        | Fiber LED | Copper LED        | Fiber LED |     |
| Media Converter 1<br>LLCF Enable  | Cable 1 Link Down                 | OFF               | OFF       | OFF               | OFF       |     |
|                                   | Cable 2 Link Down                 | OFF               | OFF       | OFF               | OFF       |     |
|                                   | Media Converter 2<br>LLCF Enable  | Cable 3 Link Down | OFF       | OFF               | OFF       | OFF |
|                                   |                                   | Cable 4 Link Down | OFF       | OFF               | OFF       | OFF |
| Media Converter 1<br>LLCF Enable  | Cable 1 Link Down                 | OFF               | OFF       | ON                | OFF       |     |
|                                   | Cable 2 Link Down                 | OFF               | OFF       | ON                | OFF       |     |
|                                   | Media Converter 2<br>LLCF Disable | Cable 3 Link Down | OFF       | OFF               | ON        | OFF |
|                                   |                                   | Cable 4 Link Down | ON        | ON                | OFF       | ON  |
| Media Converter 1<br>LLCF Disable | Cable 1 Link Down                 | OFF               | ON        | ON                | ON        |     |
|                                   | Cable 2 Link Down                 | ON                | OFF       | OFF               | OFF       |     |
|                                   | Media Converter 2<br>LLCF Enable  | Cable 3 Link Down | ON        | OFF               | OFF       | OFF |
|                                   |                                   | Cable 4 Link Down | ON        | OFF               | OFF       | OFF |
| Media Converter 1<br>LLCF Disable | Cable 1 Link Down                 | OFF               | ON        | ON                | ON        |     |
|                                   | Cable 2 Link Down                 | ON                | OFF       | ON                | OFF       |     |
|                                   | Media Converter 2<br>LLCF Disable | Cable 3 Link Down | ON        | OFF               | ON        | OFF |
|                                   |                                   | Cable 4 Link Down | ON        | ON                | OFF       | ON  |

# Specifications

| Fiber Converters       |  |
|------------------------|--|
| <b>Standards:</b>      | <p><u>TFC-210 series:</u><br/>IEEE 802.3 10Base-T<br/>IEEE 802.3u 100Base-TX &amp; 100Base-FX</p> <p><u>TFC-2000 series:</u><br/>1000Base-T, 1000Base-SX/LX, IEEE 802.3ab/ 802.3z</p>  |
| <b>LED Indicators:</b> | <p><u>TFC-210 series:</u><br/>Power; 100Mbps, Full Duplex/ Collision, Link/Activity</p> <p><u>TFC-2000 series:</u><br/>Power; 1000Mbps, Full Duplex/ Collision, Link/Activity</p>  |
| <b>Cable :</b>         | <p><u>TFC-210 series:</u><br/><b>10Base-T</b> – UTP/STP Cat. 3, 4, 5<br/><b>100Base-TX</b> – UTP/STP Cat 5<br/><b>100Base-FX – Multi-Mode</b> –<br/>62.5/125µm or 50/125µm Multi-Mode Fiber Optic Cable<br/><b>100Base-FX – Single-Mode</b> –<br/>9/125µm Single-Mode Fiber Optic Cable</p> <p><u>TFC-2000 series:</u><br/><b>1000Base-T</b> – UTP/STP: Cat. 5e or Cat. 6<br/><b>1000Base-SX– Multi-Mode</b> –<br/>50/125µm or 62.5/125µm Multi-Mode Fiber Optic Cable<br/><b>1000Base-LX– Single-Mode</b> –<br/>9/125µm Single-Mode Fiber Optic Cable</p> |
| <b>Dimensions:</b>     | 85mm × 125mm × 25mm (W × D × H)  |
| <b>Weight:</b>         | Around 300 g (10 oz.)  |
| <b>Power:</b>          | 9VDC, 700mA External Power Adapter   |
| <b>Temperature:</b>    | Operating: 0°C ~ 40°C (32°F ~ 104°F)<br>Storage: -25°C ~ 70°C (-13°F ~ 158°F)  |
| <b>Humidity:</b>       | 10 ~ 90%, non-condensing   |
| <b>Certifications:</b> | CE, FCC  |

## Fiber Chassis

|                           |   |
|---------------------------|---|
| <b>Capacity:</b>          | Ten bays for housing up to Ten media converters                               |
| <b>Material:</b>          | Metal   |
| <b>Power:</b>             | AC 100~240V AC, 50/60Hz   |
| <b>Power Consumption:</b> | 90 Watts (Max)  |
| <b>Cooling:</b>           | One Fan   |
| <b>Dimensions:</b>        | 440 mm × 266mm × 133 mm (W × D × H)<br>Standard 19" Rack Mount Size (3U)      |
| <b>Weight:</b>            | 6.4 kg (14.2 lb.)   |
| <b>Temperature:</b>       | Operating: 0°C ~ 40°C (32°F ~ 104°F)<br>Storage: -25°C ~ 70°C (-13°F ~ 158°F) |
| <b>Humidity:</b>          | 10 ~ 90%, non-condensing  |
| <b>Certification:</b>     | CE, FCC   |

**Q1: After connecting the Fiber Converter, the LEDs do not turn on. What should I do?**

**A1:** First, check that the power outlet is receiving power. Second, make sure the power adapter is firmly connected to the Fiber Converter and the power outlet. Third, make sure the Ethernet and the Fiber cables are connected.

**Q2: All the LEDs are on, but I can't make a connection. What should I do?**

**A2:** First, verify that you are using the proper fiber cable (e.g. multi-mode fiber cable for multi-mode converters; single-mode fiber cables for single-mode converters). Second, verify that the TX and RX cables have been reversed on the opposite Fiber connection. Third, power down the Fiber Converters and the switches. Wait 15 seconds, then plug the switches and the Fiber Converters back in.

**Q3: What is the maximum distance that is supported by the Fiber Converter?**

**A3:** Please refer to Product Detail for distance information.

**Q4: After connecting the Chassis to a power outlet, the LEDs do not turn on.**

**A4:** First, check that the power outlet is receiving power. Second, make sure the power cord is firmly connected to the chassis and the power outlet. Third, make sure the power switch is flipped to the **ON** position.

If you still encounter problems or have any questions please contact TRENDnet's Technical Support Department.

## Limited Warranty

TRENDnet warrants its products against defects in material and workmanship, under normal use and service, for the following lengths of time from the date of purchase.

### **Fiber Chassis / Fiber Converters - 5-Year Warranty**

If a product does not operate as warranted above during the applicable warranty period, TRENDnet shall, at its option and expense, repair the defective product or deliver to customer an equivalent product to replace the defective item. All products that are replaced will become the property of TRENDnet. Replacement products may be new or reconditioned.

TRENDnet shall not be responsible for any software, firmware, information, or memory data of customer contained in, stored on, or integrated with any products returned to TRENDnet pursuant to any warranty.

There are no user serviceable parts inside the product. Do not remove or attempt to service the product through any unauthorized service center. This warranty is voided if (i) the product has been modified or repaired by any unauthorized service center, (ii) the product was subject to accident, abuse, or improper use (iii) the product was subject to conditions more severe than those specified in the manual.

Warranty service may be obtained by contacting TRENDnet office within the applicable warranty period for a Return Material Authorization (RMA) number, accompanied by a copy of the dated proof of the purchase. Products returned to TRENDnet must be pre-authorized by TRENDnet with RMA number marked on the outside of the package, and sent prepaid, insured and packaged appropriately for safe shipment.



**WARRANTIES EXCLUSIVE:** IF THE TRENDNET PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, THE CUSTOMER'S SOLE REMEDY SHALL BE, AT TRENDNET'S OPTION, REPAIR OR REPLACEMENT. THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. TRENDNET NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF TRENDNET'S PRODUCTS.

TRENDNET SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLIGENCE, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR OR MODIFY, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OR OTHER HAZARD.

**LIMITATION OF LIABILITY:** TO THE FULL EXTENT ALLOWED BY LAW TRENDNET ALSO EXCLUDES FOR ITSELF AND ITS SUPPLIERS ANY LIABILITY, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE), FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATA, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF THE POSSIBILITY OF SUCH DAMAGES, AND LIMITS ITS LIABILITY TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT TRENDNET'S OPTION. THIS DISCLAIMER OF LIABILITY FOR DAMAGES WILL NOT BE AFFECTED IF ANY REMEDY PROVIDED HEREIN SHALL FAIL OF ITS ESSENTIAL PURPOSE.

**Governing Law:** This Limited Warranty shall be governed by the laws of the state of California.

**Note:** AC/DC Power Adapter, Cooling Fan, Cables and Power Supply carry a 1-Year Warranty

## Certifications

This equipment has been tested and found to comply with FCC and CE Rules.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received. Including interference that may cause undesired operation.



Waste electrical and electronic products must not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or Retailer for recycling advice.



**NOTE:** THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

## ADVERTENCIA

En todos nuestros equipos se mencionan claramente las características del adaptador de alimentación necesario para su funcionamiento. El uso de un adaptador distinto al mencionado puede producir daños físicos y/o daños al equipo conectado. El adaptador de alimentación debe operar con voltaje y frecuencia de la energía eléctrica domiciliar existente en el país o zona de instalación.



## TRENDnet Technical Support

**Toll Free Telephone:** 1(866) 845-3673

### US • Canada

24/7 Tech Support

**Europe** (Germany • France • Italy • Spain • Switzerland • UK)

**Toll Free Telephone:** +00800 60 76 76 67

English/Espanol - 24/7

Francais/Deutsch - 11am-8pm, Monday - Friday MET

**Telephone:** +(31) (0) 20 504 05 35

### Worldwide

English/Espanol - 24/7

Francais/Deutsch - 11am-8pm, Monday - Friday MET



## Product Warranty Registration

Please take a moment to register your product online.

Go to TRENDnet's website at <http://www.trendnet.com>

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