

TBC1-4ETH1SFP card

Installation Manual

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Legal Notice

Warranty

This publication is subject to change.

bintec elmeg offers no warranty whatsoever for information contained in this manual.

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Chapter 1 About this Manual

This installation guide contains step-by-step instructions on how to install, remove and replace the **TBC1-4ETH1SFP** expansion card in bintec RM3000 / RM5000 / RM7000 routers.

1.1 Supported devices

The information provided in this installation manual only applies to the **TBC1-4ETH1SFP** card.

1.2 Warning and notes

Observe the warnings and instructions given in this manual to avoid and prevent injuries or damage during installation and maintenance. Please follow the security procedures and guidelines when working near electrical equipment. The warnings and notes are provided in each chapter as appropriate.

1.3 Who should read this manual?

This manual should be read by installers and network administrators who need to install, configure or maintain networks. This guide assumes that the installer is familiar with network electronics and technologies.

1.4 What is in this manual?

This installation guide contains the following information:

- A description of the general characteristics of the **TBC1-4ETH1SFP** expansion card.
- A description of the steps that need to be carried out in order to install the **TBC1-4ETH1SFP** card in bintec RM3000 / RM5000 / RM7000 routers.
- A description of the **TBC1-4ETH1SFP** expansion card LEDs and connector pinouts.

1.5 How is the information organized?

This document aims to provide all the information necessary to install the **TBC1-4ETH1SFP** expansion card in bintec RM3000 / RM5000 / RM7000 routers.

- **TBC1-4ETH1SFP** expansion card characteristics.
- **TBC1-4ETH1SFP** expansion card connectors.
- Requirements prior to installation.
- Installing the **TBC1-4ETH1SFP** expansion card.

1.6 Technical support

bintec elmeg offers a technical support service. Device software can be upgraded on a regular basis for maintenance purposes and to install new features.

Contact information:

Web: <http://www.bintec-elmeg.com>

Tel. N°: +49 - 911 - 9673 0

Fax: +49 - 911 - 688 0725

Email: support@bintec-elmeg.com

1.7 Related documentation

bintec Dm569-I *bintec RM3000 Installation*.



Note

The manufacturer reserves the right to make changes and/or improvements to any and all parts of the software and hardware of this product, and to modify the specifications of this manual without prior notice.

The images depicting the device's front and rear panels are for information purposes only. The actual device may be slightly different.

Chapter 2 TBC1-4ETH1SFP Expansion Card

This manual focuses on the **TBC1-4ETH1SFP** expansion card.

Sometimes customers require more LAN ports than those available on the router. Depending on the application, these ports can be used as an expansion of the switch ports available or may be assigned to a new, independent interface.

The **TBC1-4ETH1SFP** card, compatible with the new bintec RM3000 / RM5000 / RM7000 router family, is designed to meet these requirements.

The **TBC1-4ETH1SFP** card provides four additional *Gigabit Ethernet* ports and can also act as PoE Power Supply Equipment (PSE) - compatible with the current PoE daughter boards - providing power on the Ethernet cable up to 15.40 W (802.3af).

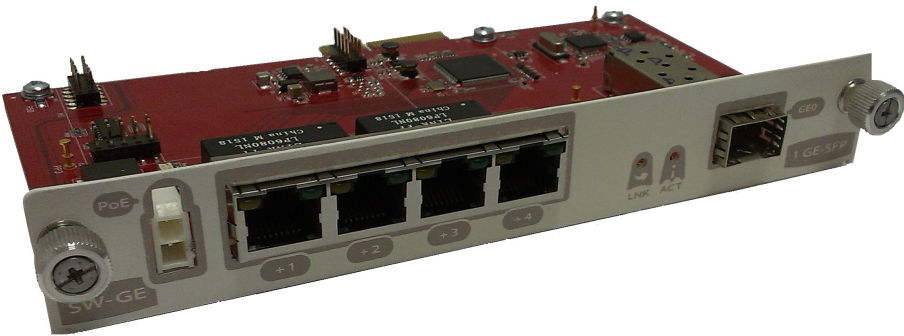


Fig. 1: **TBC1-4ETH1SFP** card

The SFP (*Small Form-Factor Pluggable*) interface provides connectivity to a single *Gigabit Ethernet* device or to a network, allowing customers to use different SFPs for special requirements such as distance, cost, existing infrastructure or future expansions.

2.1 TBC1-4ETH1SFP expansion card: Characteristics

The main characteristics of the **TBC1-4ETH1SFP** expansion card are as follows:

TBC1-4ETH1SFP card: SFP characteristics

Ports	1 SFP Gigabit Ethernet port.
Standards	IEEE: • 802.1Q (VLAN). • 1000-Base-X.
Types	• LX/LH (single-mode 1310 nm). • SX (multi-mode 850 nm). • ZX (single-mode 1550 nm).
Speed	1000 Mbps full duplex.

TBC1-4ETH1SFP card: ETH characteristics

Ports	4 RJ45 Gigabit Ethernet PoE port.
Standards	IEEE: • 802.3af (POE, optional). • 802.1Q (VLAN). • 1000-BaseT.

Speed	1000 Mbps full duplex.
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2.2 TBC1-4ETH1SFP expansion card: Connectors

Figure 2 shows the front of the **TBC1-4ETH1SFP** card:

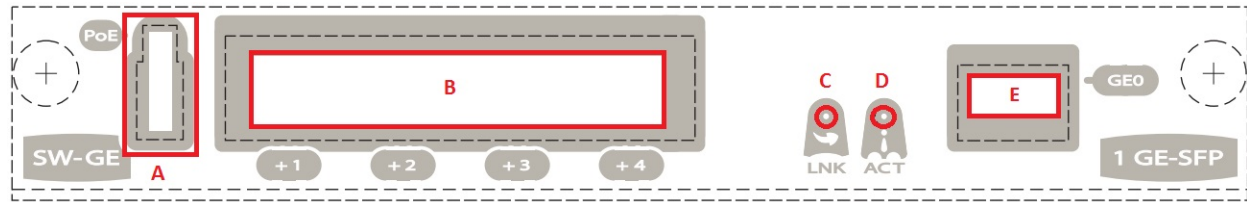


Fig. 2: Front of the TBC1-4ETH1SFP card

The components on the front of the card are as follows:

Summary of components on the front of the TBC1-4ETH1SFP card

Item	Description
A	One power connector for PoE power supply, (1x2 male header), optional.
B	4 Gigabit Ethernet ports. (RJ45 connector).
C	Link SFP LED.
D	Activity SFP LED.
E	SFP port.

The numbering of each port is the offset to the last switch port. If the baseboard switch has 4 ports, then port "+1" is port "5". If the daughter board does not belong to any switch, then port "+1" is port "1" of the new Ethernet interface.

Chapter 3 Installing the TBC1-4ETH1SFP Expansion Card

This chapter provides information on how to install and remove the **TBC1-4ETH1SFP** expansion card in bintec RM3000 / RM5000 / RM7000 routers.

This information includes:

- Requirements prior to installation.
- Installing or replacing a **TBC1-4ETH1SFP** expansion card.

3.1 Installing or replacing the TBC1-4ETH1SFP expansion card.

To install or replace a **TBC1-4ETH1SFP** card, please see the *Expansion Slot* section under the "*bintecDm569-I bintec RM3000 Installation*" manual.

Chapter 4 LEDs and Connector Pinouts: Description

This chapter provides information on the **TBC1-4ETH1SFP** expansion card LEDs and connector pinouts.

4.1 TBC1-4ETH1SFP expansion card: LEDs

The **TBC1-4ETH1SFP** expansion card for bintec RM3000 / RM5000 / RM7000 routers has two LEDs: LINK and ACT.

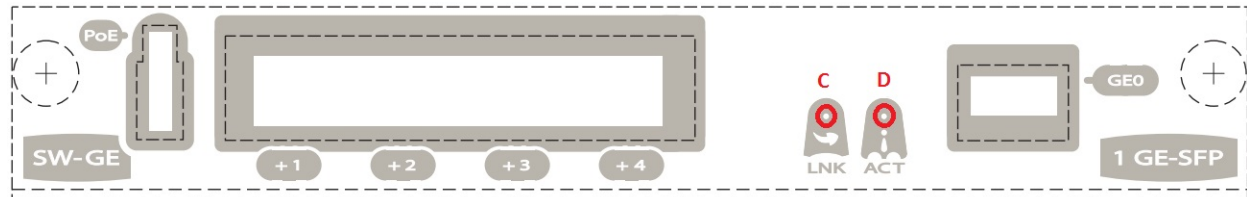


Fig. 3: TBC1-4ETH1SFP card LEDs

Summary of the TBC1-4ETH1SFP card LEDs

Item	State
C	Yellow => This lights up when the link is established.
D	Blue => This lights up when there is activity.

The **TBC1-4ETH1SFP** expansion card for bintec RM3000 / RM5000 / RM7000 routers has two LEDs (one green and one orange) per Ethernet port that work as follows:

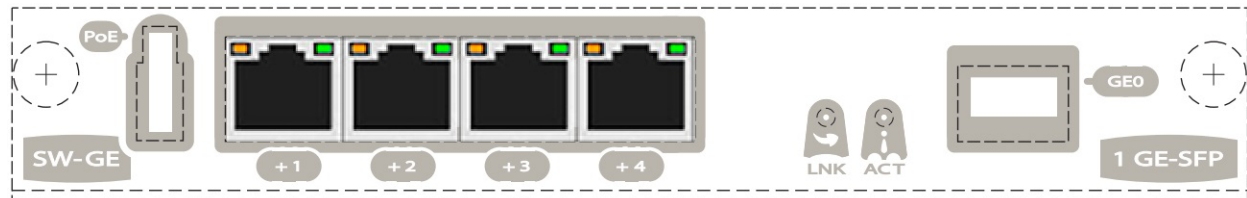


Fig. 4: TBC1-4ETH1SFP card LEDs

Summary of the TBC1-4ETH1SFP card LEDs

Item	State
Green (reflects the link state)	Off => Link has not been detected. On => Link has been detected. Blink => Activity. Blink speed => link speed (1000 blinks at 84 mSec, 100 blinks at 170 mSec and 10 blinks at 340 mSec). The LED will blink three times for every new link up, even if there is no activity, so the speed of the link can be observed.
Orange (reflects the PoE state)	Off => Open Circuit. No PoE is applied or port is disabled. On => Correct class has been detected and power is applied or forced. Rapid blinking => Shortcut detected. Slow blinking => Detection error (Signature Low or High).

4.2 Connector pinouts

The **TBC1-4ETH1SFP** expansion card has four RJ-45 connectors and one SFP connector.

4.2.1 RJ-45 connector

The following figure shows the RJ-45 connector pinouts.

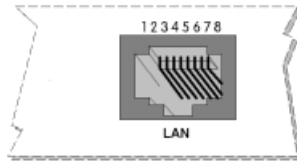


Fig. 5: RJ-45 Connector Pinouts

The following table displays the information associated with each connector pinout:

TBC1-4ETH1SFP card RJ-45 connector Pinouts

RJ-45 pinouts	FE Signals	GE Signals
1	BI-DA+	BI-DA+
2	BI-DA-	BI-DA-
3	BI-DB+	BI-DB+
4	--	BI-DC+
5	--	BI-DC-
6	BI-DB-	BI-DB-
7	--	BI-DD+
8	--	BI-DD-



Note

The Ethernet connectors have an MDI-X and auto-polarity auto-detection feature that acts bidirectionally. You do not need to use a null HUB cable to connect it to another Ethernet interface.

Characteristics of the RJ-45 switch connectors controlled by the TDMNPOE-8P card model:

TBC1-4ETH1SFP card PoE characteristics

Power out	PSE supplying power on top of data pins (Mode A).
Pinout polarity	Pinout 1 (V-) ; Pinout 2 (V+).
Output voltage	48 V.
User port power	15.5 W(max.).



Note

Remember to connect the PSU to the PoE connector in the device.

4.2.2 PoE Connector

The following figure shows the PoE connector pinouts.

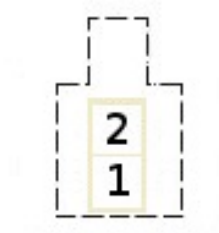


Fig. 6: PoE Connector Pinouts

The following table displays the information associated with each PoE connector pinout:

TBC1-4ETH1SFP card PoE connector pinouts

Pinouts	Voltage
2	+48 Vdc
1	0 Vdc

4.2.3 SFP connector



Warning

SFP modules to be installed in the card socket should be class 1 devices that comply with standard IEC 60825-1.

Chapter 5 Compliance

5.1 Manufacturer information

<i>Brand</i>	bintec
<i>Manufacturer</i>	bintec elmeg
<i>Country</i>	Germany
<i>Postal Address</i>	Suedwestpark 94 90449 Nuremberg Germany
<i>International Phone</i>	+49 - 911 - 9673 0

5.2 Safety warnings

	SFP modules to be installed in the card socket should be class 1 devices complying with standard IEC 60825-1.
	Los módulos SFP que se instalan en el socket de la tarjeta deberían ser dispositivos de clase 1 de acuerdo con la norma IEC 60825-1.
	SFP-Module, die im Kartensocket installiert werden, sollten Class-1-Geräte in Übereinstimmung mit IEC-60825-1 sein.

5.3 WEEE information

	The crossed-out wheeled bin symbol indicates that when the device reaches the end of its useful service life it must be disposed of separately from normal domestic waste at an appropriate waste disposal facility. Das auf dem Gerät befindliche Symbol mit dem durchgekreuzten Müllcontainer bedeutet, dass das Gerät am Ende der Nutzungsdauer bei den hierfür vorgesehenen Entsorgungsstellen getrennt vom normalen Hausmüll zu entsorgen ist. El símbolo del contenedor con la cruz, que se encuentra en el aparato, significa que cuando el equipo haya llegado al final de su vida útil, deberá ser llevado a los centros de recogida previstos, y que su tratamiento debe estar separado del de los residuos urbanos.
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5.4 REACH

In compliance with the REACH Candidate List, the delivered product and product packaging do not contain chemical substances above a concentration limit of 0.1% weight by weight (w/w). This declaration will be updated whenever any changes occur or other chemical substances are added to the REACH Candidate List. Information is currently provided to consumers upon request.

5.5 EC declaration of conformity

English (EN)	This equipment is in compliance with the essential requirements and other relevant provisions of: Directive 2014/30/EU (EMC) Directive 2014/35/EU (LVD) Directive 2011/65/EU (RoHS) of the European Parliament.
Spanish (ES) Español	Este dispositivo cumple con los requisitos esenciales y con las normas correspondientes de las siguientes directivas: Directiva 2014/30/UE (EMC) Directiva 2014/35/UE (LVD) Directiva 2011/65/UE (RoHS) del parlamento Europeo.
German (DE) Deutsch	Dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 2014/30/UE (EMC) Richtlinie 2014/35/UE (LVD) Richtlinie 2011/65/UE (RoHS) des Europäischen Parlaments.

 **Note**

—Directive 2014/30/EU (EMC) replaces Directive 2004/108/EC (EMC) on 20th April 2016.

—Directive 2014/35/EU (LVD) replaces Directive 2006/95/EC (LVD) on 20th April 2016.

The EC declaration of conformity and additional product documentation can be accessed here:
<http://www.bintec-elmeg.com>

5.6 CE marking

This equipment is in conformity with CE procedures and marking.

