TBC1-1VDSL1SFP 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.

bintec elmeg is not liable for any direct, indirect, collateral, consequential or any other damage connected to the delivery, supply or use of this manual.

Table of Contents

Chapter 1 About This Manual

This installation guide contains step by step instructions on how to correctly install, uninstall and replace the **TBC1-1VDSL1SFP** expansion card in bintec RM3000 / RM5000 / RM7000 routers.

1.1 Supported Devices

The information provided in this installation manual only applies to the **TBC1-1VDSL1SFP** 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 **TBC1-1VDSL1SFP** expansion card.
- A description of the steps to carry out in order to install the **TBC1-1VDSL1SFP** card in bintec RM3000 / RM5000 / RM7000 routers.
- A description of the **TBC1-1VDSL1SFP** 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 **TBC1-1VDSL1SFP** expansion card in bintec RM3000 / RM5000 / RM7000 routers.

- **TBC1-1VDSL1SFP** expansion card characteristics.
- **TBC1-1VDSL1SFP** expansion card connectors.
- Requirements prior to installation.
- Installing the **TBC1-1VDSL1SFP** 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. Nº: +49 - 911 - 9673 0

Fax: +49 - 911 - 688 0725

Email: support@bintec-elmeg.com

1.7 Related Documentation

bintec Dm569-I *bintec RM3000 Installation.*

bintec Dm741-I *ADSL-VDSL*

> **Note**
>
> The manufacturer reserves the right to make changes and improvements to the appropriate features in both the software and hardware of this product, modifying the specifications of this manual without prior notice.
>
> The images showing the front and back panels of the device are for information purposes only. Some small modifications may exist in the actual device.

Chapter 2 TBC1-1VDSL1SFP Expansion Card

This manual focuses on the **TBC1-1VDSL1SFP** expansion card.

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

VDSL2 stands for Very high bit rate Digital Subscriber Line version 2, which is defined in theITU G.993.2 standard.

VDSL2 has evolved from the ADSL/ADSL2/ADSL2+ technologies and the main differences areas follows:

- Upstream and downstream channel multiplicity.
- Supports up to 200 Mbps, symmetric (profile 30a).
- It only uses FDM mode, EC mode is not defined (echo cancellation or carrier overlapping).
- Allows for a new encapsulation to be used: PTM.
- Multiple link diagnostics.

For further information on ADSL and VDSL technologies, please see the bintec *Dm741-I ADSL-VDSL* manual.

Fig. 1: **TBC1-1VDSL1SFP card**

2.1 TBC1-1VDSL1SFP expansion card: Characteristics

The main characteristics of the **TBC1-1VDSL1SFP** expansion card are as follows:

TBC1-1VDSL1SFP 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.

TBC1-1VDSL1SFP card: xDSL Characteristics

Ports	One RJ-11 VDSL/ADSL port
ADSL	
Standards	ANSI:

	• T1.413 Issue 2.
	ITU-T G.991.1 (G.DMT):
	• Annex A: Full Rate ADSL over POTS.
	ITU-T G.991.2 (G. Lite) Lite ADSL over POTS.
	G.992.3 (ADSL2):
	• Annex A: ADSL2 over POTS.
	• Annex L: RE-ADSL2 over POTS.
	• Annex M: ADSL2 with extended upstream over POTS.
	G.992.5 (ADSL2+):
	• Annex A: ADSL2+ over POTS.
	• Annex M: ADSL2+ with extended upstream over POTS.
Downstream Speed	27 Mbps.
Upstream Speed	3 Mbps.
Transfer Mode	ATM (*Asynchronous Transfer Mode*).
Other characteristics	Dying Gasp: • ITU G.991.2 standard recommendation.
VDSL	
Standards	ITU-T G.993.2 (Annex A and B): • Profiles: 8a, 8b, 8c, 8d, 12a, 12b, 17a
Downstream Speed	Up to 100 Mbps.
Upstream Speed	Up to 50 Mbps.
Transfer Mode	PTM (*Packet Transfer Mode*).
Other characteristics	PTM Transmission Convergence (PTM-TC): • G.993.2 Annex K. Dual-Latency supported. Dying Gasp: • ITU G.991.2 standard recommendation.

2.2 TBC1-1VDSL1SFP expansion card: Connectors

Figure 2 shows the front board of the **TBC1-1VDSL1SFP** card:

Fig. 2: **Front of the TBC1-1VDSL1SFP card**

The front board elements are as follows:

Elements table for the front of the TBC1-1VDSL1SFP card

Item	Description
A	SFP port.
B	xDSL port.
C	Activity SFP LED.
D	Link SFP LED.
E	Status xDSL LED.

Chapter 3 Installing the TBC1-1VDSL1SFP expansion card

This chapter provides information on how to install and uninstall the **TBC1-1VDSL1SFP** expansion card in bintec RM3000 / RM5000 / RM7000 routers.

This information includes:

- Requirements prior to installation.
- Installing or replacing a **TBC1-1VDSL1SFP** expansion card.

3.1 Requirements prior to installation

To configure the card, you must be able to access the bintec RM3000 / RM5000 / RM7000 router through a console or a Telnet connection. For further information, please see the *Connecting for configuration* section under the *bintecDm569-I bintec RM3000 Installation* manual.

For the **TBC1-1VDSL1SFP** expansion cards to operate properly, you need to load the appropriate firmware file for each card into the router.

If the firmware has not been loaded in the device prior to installing the card, you'll still be able to find out what firmware file you need.

3.1.1 Determining the firmware file

There are two options to determine the firmware file needed for the installed xDSL card:

3.1.1.1 FTP quote site listfirmwares command

The FTP command **quote site listfirmwares** returns a list containing the names of the firmware files needed for the device to operate properly:

```
ftp> quote site listfirmwares
211 fw000013.bfw
ftp>
```

3.1.1.2 FTP system firmwares-required monitoring command

The **system firmwares-required** monitoring command displays the same information as the previous command, but in the local console:

```
+system firmwares-required
List of required firmwares for detected hardware
---------------------------------------------
Filename              Description        Version/Subv
------------- --------------------------- ---------------
fw000013.bfw  Broadcom 63268 TSS-mode     v3.1
+
```

Once the necessary firmware file has been detected, load it into the device through an FTP connection.

For further information on how to load firmware files in the router, please see the bintecDm 748-I *Software Updating* manual.

3.2 Installing or replacing the TBC1-1VDSL1SFP expansion card.

To install or replace a **TBC1-1VDSL1SFP** 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 **TBC1-1VDSL1SFP** expansion card LEDs and connector pinouts.

4.1 TBC1-1VDSL1SFP expansion card: LEDs

The **TBC1-1VDSL1SFP** expansion card has three LEDs: ACT, LINK and STATUS.

Fig. 3: **TBC1-1VDSL1SFP card : LEDs**.
LEDs table of the TBC1-1VDSL1SFP card

Item	State
C	Blue => Lights up when there is activity.
D	Yellow => Lights up when the link is established.
E	Slow blinking => looking for connection. Rapid blinking => negotiation. Steady => connected.

4.2 Connector Pinouts

The **TBC1-1VDSL1SFP** expansion card has one RJ-11 connector and one SFP connector.

4.2.1 RJ-11 Connector

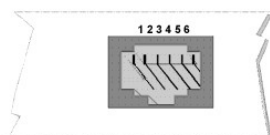The following figure shows the RJ-11 connector pinouts:

Fig. 4: **RJ-11 connector pinouts**

The following table display the information associated to each connector pinout:
TBC1-1VDSL1SFP card RJ-11 Connector Pinouts

RJ-11 pinouts	Signal
1	--
2	--
3	TIP
4	RING

5	--
6	--

We recommend you use a 26 AWG cable, at the very least. This may be supplied with the card itself or, be described in the safety instructions.

> **Warning**
>
> To reduce the risk of fire, only use a 26 AWG cable or a cable with a larger diameter.

4.2.2 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 Regulatory compliance and safety information

5.1 Manufacturer Information

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

5.2 Translated Safety Warnings

⚠️	To reduce the risk of fire, only use a 26 AWG cable or a cable with a larger diameter.
	Pour réduire le risque d'incendie, utilisez uniquement un câble 26 AWG ou de diamètre plus grand.
	Чтобы снизить риск воспламенения, используйте только кабель 26 AWG или кабель большего диаметра.
	Para reducir el riesgo de incendio, utilice sólo un cable 26 AWG o de un diámetro mayor.
	Um das Risiko eines Brands zu reduzieren, verwenden Sie nur Kabel mit einem Durchmesser von 26 AWG oder größer.
⚠️	SFP modules to be installed in the card socket should be class 1 devices complying with standard IEC-60825-1.
	Les modules SPF à installer dans le port de carte doivent être des appareils de classe 1 conformes à la norme CEI-60825-1.
	Модули SFP в слоте карты должны быть устройствами класса 1, соответствующими стандарту IEC-60825-1.
	SFP-Module, die im Kartenschacht installiert werden sollen, sollten Klasse-1-Geräte in Übereinstimmung mit IEC/EN 60825-1:2007 sein.
	Los módulos SFP que se instalen en el socket de la tarjeta deberían ser dispositivos de clase 1 de acuerdo con la norma IEC-60825-1.

5.3 WEEE Information

	The waste container symbol with the >X< indicates that the device must be disposed of separately from normal domestic waste at an appropriate waste disposal facility at the end of its useful service life.
	Das auf dem Gerät befindliche Symbol mit dem durchgekreuzten Müllcontainerbedeutet, dass das Gerät am Ende der Nutzungsdauer bei den hierfür vorgesehenenEntsorgungsstellen 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.

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 the CE procedures and marking.