

TBC1-1VDSL2

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 correctly install, uninstall and replace the **TBC1-1VDSL2** expansion card in the bintec RM3000 / RM5000 / RM7000 router family.

1.1 Supported Devices

The information provided in this installation manual only applies to the **TBC1-1VDSL2** 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 **TBC1-1VDSL2** expansion card.
- A description of the steps to carry out in order to install the **TBC1-1VDSL2** card in the bintec RM3000 / RM5000 / RM7000 routers.
- A description of the **TBC1-1VDSL2** expansion card LEDs and connector pin-outs.

1.5 How is the information organized?

This document aims to provide all the information necessary for installing the **TBC1-1VDSL2** expansion card in the bintec RM3000 / RM5000 / RM7000 router family.

- **TBC1-1VDSL2** expansion card characteristics.
- **TBC1-1VDSL2** expansion card connectors.
- Requirements prior to installation.
- Installing the **TBC1-1VDSL2** 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 for 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 Dm741-I *ADSL-VDSL*

bintecDm569-I *bintec RM3000 Installation*.



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 TBC1-1VDSL2 expansion card

This manual focuses on the **TBC1-1VDSL2** expansion card.

VDSL2 stands for Very high bit rate Digital Subscriber Line version 2, which is defined in the ITU 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 the use of a new encapsulation: PTM.
- Multiple link diagnostics.

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

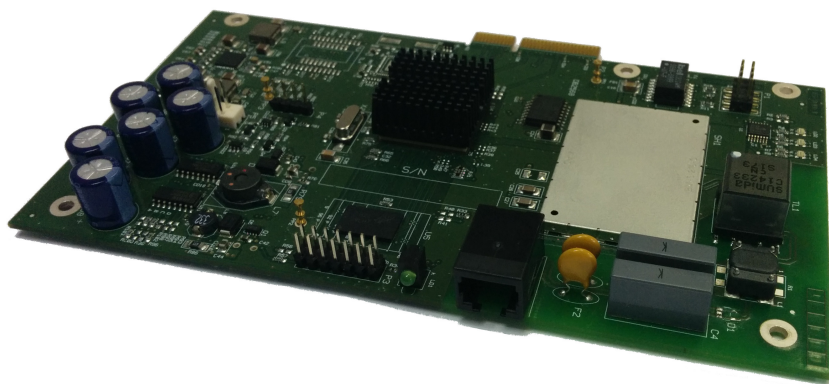


Fig. 1: TBC1-1VDSL2 card

2.1 TBC1-1VDSL2 expansion card: Characteristics

The main characteristics of the **TBC1-1VDSL2** expansion card are as follows:

TBC1-1VDSL2 card: Characteristics

Ports	One RJ-11 VDSL/ADSL port.
ADSL	
Standards	ANSI: <ul style="list-style-type: none"> • T1.413 Issue 2. ITU-T G.991.1 (G.DMT): <ul style="list-style-type: none"> • Annex A: Full Rate ADSL over POTS. ITU-T G.991.2 (G. Lite) Lite ADSL over POTS. G.992.3 (ADSL2): <ul style="list-style-type: none"> • Annex A: ADSL2 over POTS. • Annex L: RE-ADSL2 over POTS. • Annex M: ADSL2 with extended upstream overPOTS. G.992.5 (ADSL2+):

	<ul style="list-style-type: none"> Annex A: ADSL2+ over POTS. Annex M: ADSL2+ with extended upstream overPOTS.
Downstream Speed	27 Mbps.
Upstream Speed	3 Mbps.
Transfer Mode	ATM (<i>Asynchronous Transfer Mode</i>).
Other characteristics	Dying Gasp: <ul style="list-style-type: none"> ITU G.991.2 standard recommendation.
VDSL	
Standards	ITU-T G.993.2 (Annex A and B): <ul style="list-style-type: none"> Profiles: 8a, 8b, 8c, 8d, 12a, 12b, 17a.
Downstream Speed	Up to 100 Mbps.
Upstream Speed	Up to 50 Mbps.
Transfer Mode	PTM (<i>Packet Transfer Mode</i>).
Other characteristics	PTM Transmission Convergence (PTM-TC): <ul style="list-style-type: none"> G.993.2 Annex K. Dual-Latency supported. Dying Gasp: <ul style="list-style-type: none"> ITU G.991.2 standard recommendation.

2.2 TBC1-1VDSL2 expansion card: Connectors

Figure 2 shows the front board of the **TBC1-1VDSL2** card:

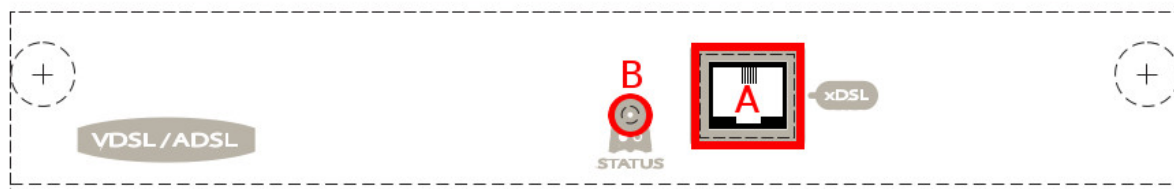


Fig. 2: Front of the TBC1-1VDSL2 card

The front board elements are as follows:

Elements table for the front of the TBC1-1VDSL2 card

Item	Description
A	RJ-11 Connector.
B	LED.

Chapter 3 Installing the TBC1-1VDSL2 expansion card

This chapter provides information on how to install and uninstall the **TBC1-1VDSL2** expansion card in the bintec RM3000 / RM5000 / RM7000 routers.

This information includes:

- Requirements prior to installation.
- Installing or replacing a **TBC1-1VDSL2** 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 in the *bintec Dm569-I bintec RM3000 Installation* manual.

For the **TBC1-1VDSL2** 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 into the device prior to installing the card, you can still 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 correctly:

```
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, you need to load it into the device through an FTP connection.

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

3.2 Installing or replacing the TBC1-1VDSL2 expansion card.

To install or replace a **TBC1-1VDSL2** card, please see the *Expansion Slot* section in the *bintec Dm569-I bintec RM3000 Installation* manual.

Chapter 4 LEDs and connector pinouts: Description

This chapter provides information on the **TBC1-1VDSL2** expansion card LEDs and connector pinouts.

4.1 TBC1-1VDSL2 expansion card: LEDs

The **TBC1-1VDSL2** expansion card for the bintec RM3000 / RM5000 / RM7000 routers has one LED.

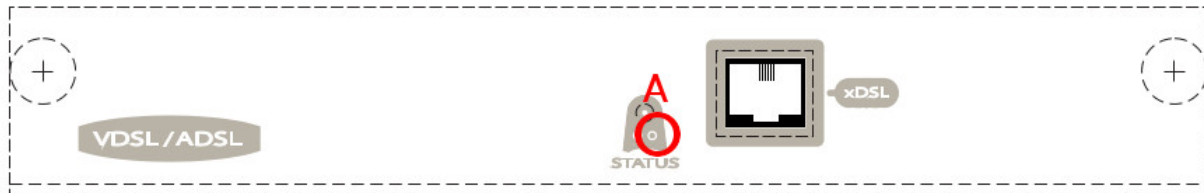


Fig. 3: TBC1-1VDSL2 card: LEDs

LED table of the TBC1-1VDSL2 card

Item	Description
A	<p>Slow blinking => looking for connection.</p> <p>Rapid blinking => negotiation.</p> <p>Steady => connected.</p>

4.2 Connector Pinouts

The **TBC1-1VDSL2** expansion card has one RJ-11 connector.

4.2.1 RJ-11 Connector

The following figure shows the RJ-11 connector pinouts.

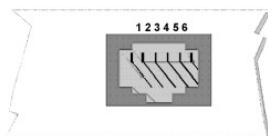


Fig. 4: RJ-11 Connector Pinouts

The following table display the information associated to each connector pinout:

TBC1-1VDSL2 card Connector Pinouts

RJ-11 pinouts	Signal
1	--
2	--
3	TIP
4	RING
5	--
6	--

We recommend you use (at the very least) a 26 AWG cable. 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.

Chapter 5 Regulatory compliance and safety information


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 Translated Safety Warnings

	To reduce the risk of fire, only use a 26 AWG cable or a cable with a larger diameter.
	Чтобы снизить риск воспламенения, используйте только кабель 26 AWG или кабель большего диаметра.
	Pour réduire le risque d'incendie, utilisez uniquement un câble 26 AWG ou de diamètre plus grand.
	Para reducir el riesgo de incendio, utilice sólo un cable 26 AWG o de un diámetro mayor.

5.3 WEEE Information

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



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.

