



## TBC1-1VDSL2-1 card

### Installation Manual

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## **Legal Notice**

### Warranty

This publication is subject to change.

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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 **TBC1-1VDSL2-1** expansion card in Teldat M/iM routers.

## 1.1 Supported Devices

The information provided in this installation manual only applies to the **TBC1-1VDSL2-1** card.

## 1.2 Warning and notes

Observe the warnings and instructions set forth in this manual to avoid any 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 **TBC1-1VDSL2-1** expansion card.
- A description of the steps to carry out in order to install the **TBC1-1VDSL2-1** card in Teldat M/iM routers.
- A description of the **TBC1-1VDSL2-1** expansion card LEDs and connector pin-outs.

## 1.5 How is the information organized?

This document aims to provide all the information necessary to install the **TBC1-1VDSL2-1** expansion card in the Teldat M/iM router family.

- **TBC1-1VDSL2-1** expansion card characteristics.
- **TBC1-1VDSL2-1** expansion card connectors.
- Requirements prior to installation.
- Installing the **TBC1-1VDSL2-1** expansion card.

## 1.6 Technical Support

Teldat S.A. offers a technical support service. Device software can be upgraded on a regular basis for maintenance purposes and in case new features are developed.

Contact information:

Web: <http://www.teldat.com>

Tel.: +34 918 076 565

Fax: +34 918 076 566

Email: [support@teldat.com](mailto:support@teldat.com)

## 1.7 Related Documentation

Teldat- Dm569-I *Teldat M1 Installation*.

Teldat- 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 that show the front and back panels of the device are for information purposes only. Some small modifications may exist in the actual device.

## Chapter 2 TBC1-1VDSL2-1 expansion card

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

VDSL2 stands for Very high bit rate Digital Subscriber Line version 2, which is defined in the ITU G.993.2 and G.993.5 standards.

VDSL2 has been developed using the ADSL/ADSL2/ADSL2+ technologies as basis, 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 Teldat-*Dm741-I ADSL-VDSL* manual.

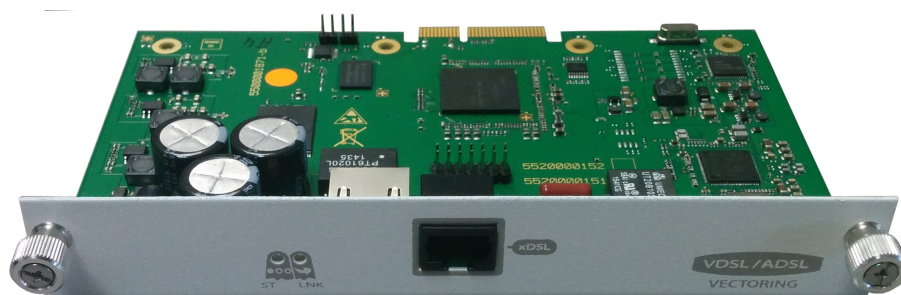


Fig. 1: TBC1-1VDSL2-1 card

### 2.1 TBC1-1VDSL2-1 expansion card: Characteristics

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

#### TBC1-1VDSL2-1 card: xDSL characteristics

<b>Ports</b>	One RJ-45 VDSL/ADSL port.
<b>ADSL</b>	
<b>Standards</b>	<p>ANSI:</p> <ul style="list-style-type: none"> <li>• T1.413 Issue 2.</li> </ul> <p>ITU-T G.991.1 (G.DMT):</p> <ul style="list-style-type: none"> <li>• Annex A: Full Rate ADSL over POTS.</li> </ul> <p>ITU-T G.991.2 (G. Lite) Lite ADSL over POTS.</p> <p>G.992.3 (ADSL2):</p> <ul style="list-style-type: none"> <li>• Annex A: ADSL2 over POTS.</li> <li>• Annex L: RE-ADSL2 over POTS,</li> <li>• Annex M: ADSL2 with extended upstream over POTS.</li> </ul> <p>G.992.5 (ADSL2+):</p> <ul style="list-style-type: none"> <li>• Annex A: ADSL2+ over POTS.</li> <li>• Annex M: ADSL2+ with extended upstream over POTS.</li> </ul>

<b>Downstream Speed</b>	27 Mbps.
<b>Upstream Speed</b>	3 Mbps.
<b>Transfer Mode</b>	ATM ( <i>Asynchronous Transfer Mode</i> ).
<b>Other characteristics</b>	Dying Gasp: <ul style="list-style-type: none"> <li>• ITU G.991.2 standard recommendation.</li> </ul>
<b>VDSL</b>	
<b>Standards</b>	ITU-T G.993.2 (Annex A and B): <ul style="list-style-type: none"> <li>• Profiles: 8a, 8b, 8c, 8d, 12a, 12b, 17a</li> </ul> ITU-T G.993.5 (vectoring).
<b>Downstream Speed</b>	Up to 100 Mbps.
<b>Upstream Speed</b>	Up to 50 Mbps.
<b>Transfer Mode</b>	PTM ( <i>Packet Transfer Mode</i> ).
<b>Other characteristics</b>	PTM Transmission Convergence (PTM-TC): <ul style="list-style-type: none"> <li>• G.993.2 Annex K.</li> </ul> Dual-Latency supported. <p>Dying Gasp:</p> <ul style="list-style-type: none"> <li>• ITU G.991.2 standard recommendation.</li> </ul>

## 2.2 TBC1-1VDSL2-1 expansion card: Connectors

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

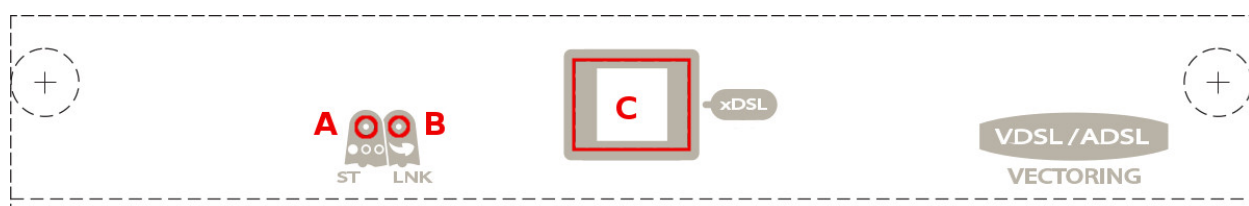


Fig. 2: Front of the TBC1-1VDSL2-1 card

The front board elements are as follows:

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

Item	Description
A	Status LED
B	Link LED
C	xDSL port



## Chapter 3 Installing the TBC1-1VDSL2-1 expansion card

This chapter provides information on how to install and uninstall the **TBC1-1VDSL2-1** expansion card in Teldat M/iM routers.

This information includes:

- Requirements prior to installation.
- Installing or replacing a **TBC1-1VDSL2-1** expansion card.

### 3.1 Requirements prior to installation

To configure the card, you must be able to access the Teldat M/iM router through a console or a Telnet connection. For further information, please see the *Connecting for configuration* section under the *Teldat-Dm569-I Teldat M1 Installation* manual.

For the **TBC1-1VDSL2-1** expansion cards to operate properly, you must load the appropriate firmware file for each card in the router.

If the firmware has not been loaded in 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 properly:

```
ftp> quote site listfirmwares
211 fw000016.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
-----
fw000016.bfw  Lantiq VRX288 TSS-mode          v1.0
+
```

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

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

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

To install or replace a **TBC1-1VDSL2-1** card, please see the *Expansion Slot* section under the *Teldat-Dm569-I Teldat M1 Installation* manual.

## Chapter 4 LEDs and connector pinouts: Description

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

### 4.1 TBC1-1VDSL2-1 expansion card: LEDs

The **TBC1-1VDSL2-1** expansion card for Teldat M/iM routers has three LEDs: STATUS and LINK.

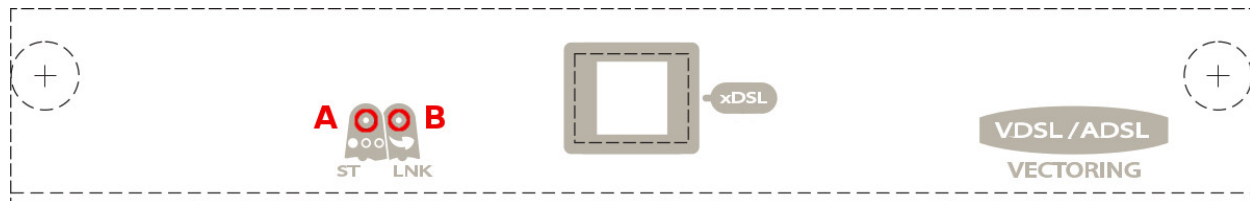


Fig. 3: TBC1-1VDSL2-1 card

#### LEDs table of the TBC1-1VDSL2-1 card

Item	State
A (Status)	<p>OFF: card not detected.</p> <p>ON: card detected (firmware loaded).</p>
B (Link)	<p>OFF: disabled.</p> <p>Slow blinking: active.</p> <p>Fast blinking: negotiating.</p> <p>Steady: synchronized.</p>

### 4.2 Connector pinouts

The **TBC1-1VDSL2-1** expansion card has one RJ-45 connector.

#### 4.2.1 RJ-45 Connector

The following figure shows the RJ-45 connector pinouts.

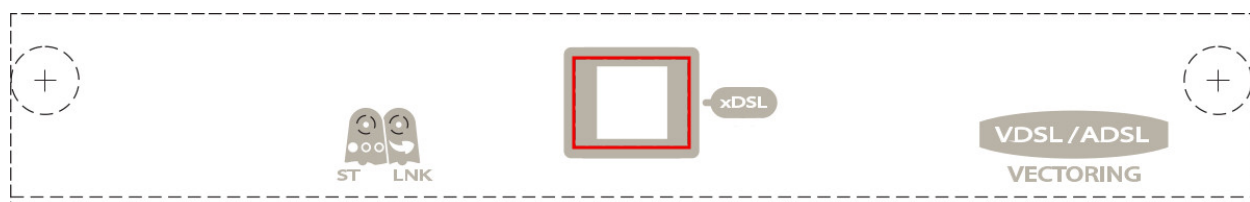


Fig. 4: xDSL connector

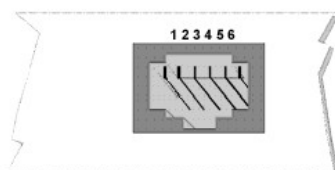


Fig. 5: RJ-45 Connector Pinouts

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

#### TBC1-1VDSL2-1 card RJ-11 Connector Pinouts

RJ-45 pinouts	Signal
1	--
2	--
3	--
4	TIP
5	RING
6	--
7	--
8	--

We recommend that 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.

## Chapter 5 Compliance


### 5.1 Manufacturer Information

<i>Brand</i>	Teldat
<i>Manufacturer</i>	Teldat S.A.
<i>Country</i>	Spain
<i>Postal Address</i>	Isacc Newton, 10 Parque Tecnológico de Madrid, 28760 Tres Cantos, Madrid, Spain
<i>International Phone</i>	+34 91 807 65 65

### 5.2 Safety Warnings

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

### 5.3 WEEE Information

	<p>The waste container symbol with the &gt;X&lt; 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>Hereby, Teldat S.A. declares that the radio equipment type <b>TBC1-1VDSL2-1</b> is in compliance with:</p> <p>Directive 2014/30/EU (EMC)</p> <p>Directive 2014/35/EU (LVD)</p> <p>of the European Parliament and of the Council.</p>
Spanish (ES) Español	<p>Por la presente, Teldat S.A. declara que el tipo de equipo radioeléctrico <b>TBC1-1VDSL2-1</b> es conforme con:</p> <p>Directiva 2014/30/UE (EMC)</p> <p>Directiva 2014/35/UE (LVD)</p> <p>del Parlamento Europeo y del Consejo.</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>

The full text of the EU declaration of conformity and additional product documentation is available at the following internet address: <http://www.teldat.com>

This equipment is in conformity with the CE procedures and marking.

## 5.6 CE marking

This equipment is in conformity with CE procedures and marking.

