TBC1-1E1T1 Expansion Card

bintec Dm621

Legal Notice

Warranty

This publication is subject to change.

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

bintec 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 Guide

This installation guide contains step by step instructions on how to correctly install, uninstall and replace the TBC1-1E1T1 expansion card in bintec RM3000 / RM5000 / RM7000 routers.

1.1 Supported Devices

The information contained in this installation guide only applies to the TBC1-1E1T1 expansion card.

1.2 Warning and notes

Observe the warnings and instructions contained 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 TBC1-1E1T1 expansion card.

• A description of the steps to carry out to install the TBC1-1E1T1 expansion card.

• A description of the TBC1-1E1T1 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 TBC1-1E1T1 expansion card in bintec RM3000 / RM5000 / RM7000 routers.

• TBC1-1E1T1 expansion card characteristics.

• TBC1-1E1T1 expansion card connectors.

• Requirements prior to installation.

• Installing the TBC1-1E1T1 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 Dm746-I *bintec G703 Interface.*

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 TBC1-1E1T1 expansion card

The TBC1-1E1T1 card has a unique interface. This card is inserted in the slot for the bintec RM3000 / RM5000 / RM7000 router expansion cards.

The E1/T1/G.703 interface is a serial interface that comprises the following standards:

- G.703 is an ITU (formally CCITT) standard that describes a physical layer i.e. the physical and electrical signal characteristics transmitted between both ends of the communication..
- G.704 standard that defines the structure of the frame used to transmit data.

The board supported modes are:

- E1/T1 selectable mode.
- Fractional T1 mode (n*DS0). Multiple channel support.
- Fractional E1 mode (n*64Kbps). Multiple channel support.
- Full E1 mode (unframed).
- Balanced (120 Ohm) or unbalanced (75 Ohm) E1 termination in the same module

For further information on configuration commands, please see the bintec Dm746-I *bintec G703 Interface* manual.
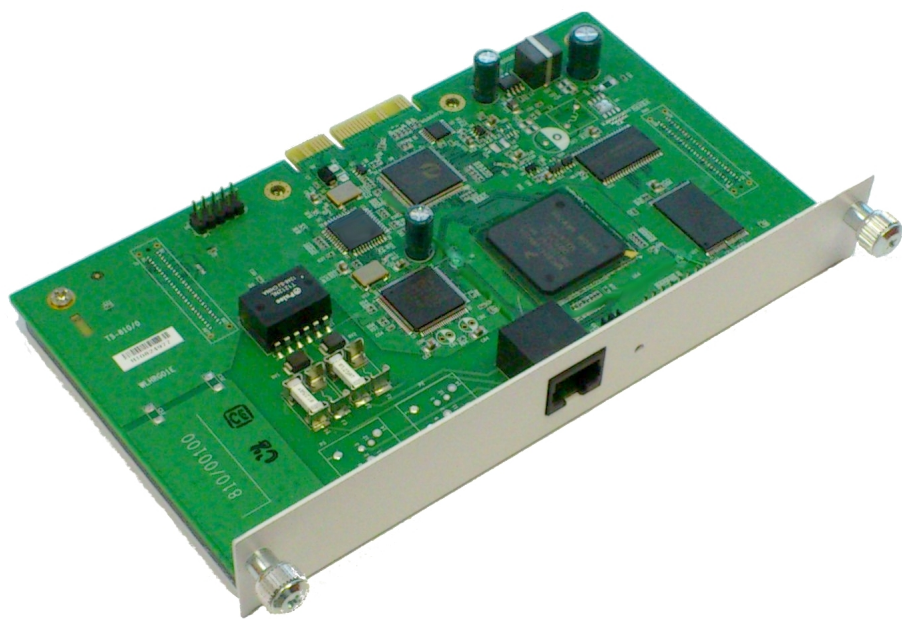

Fig. 1: TBC1-1E1T1 Card

2.1 TBC1-1E1T1 expansion card: Characteristics

The main characteristics of the TBC1-1E1T1 expansion card are as follows:

TBC1-1E1T1 Card: Characteristics

Port	1 RJ-45 port.
Standards	ANSI: • T1. 403. ITU-T: • G.703 (2Mb unstructured). • G.704 (nx64Kb up to 2 Mb structured).

Speed	• 2 Mbps per E1 port. • 1544 Kbps per T1 port.
Line Code	E1: • AMI, HDB3 T1: • AMI, B8ZS
Framing Modes	E1: • CRC44, NO-CRC4, Unframed-2048 T1: • SF (T1 Super frame), ESF (Extended T1 super frame)
Clock Source	• Internal (Master mode) • Line recovered (slave mode)
Equalizer	E1: • Long-haul, Short-haul T1: • Gain26 (sets the receive sensitivity to 26 dB), Gain36 (sets the receive sensitivity to 36 dB)
Impedance	E1: • 75 Ohm, 120 Ohm T1: • DX1_133 (0 to 133 feet), DX1_266 (134 to 266 feet), DX1_399 (267 to 399 feet), DX1_533 (400 to 533 feet), DX1_655 (534 to 655 feet), CSU_7dot5 (-7.5dB), CSU_15 (-15dB), CSU_22dot5 (-22.5dB)

2.2 TBC1-1E1T1 expansion card: Connectors

Figure 2 shows the front board of the TBC1-1E1T1 card:
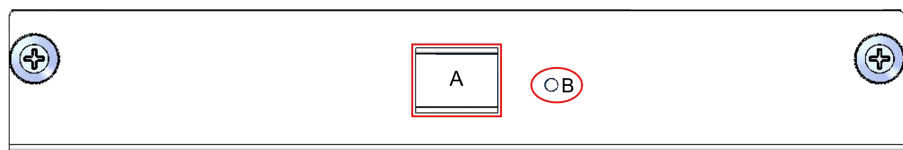

Fig. 2: Front of the TBC1-1E1T1 card

The front panel elements are as follows:

Elements Table for the Front of the TBC1-1E1T1 Card

Item	Description
A	E1/T1. RJ45 Connector.
B	Status LED.

Chapter 3 TBC1-1E1T1 expansion card: Installation and Maintenance

This chapter provides information on how to install and uninstall TBC1-1E1T1 expansion cards in bintec RM3000 / RM5000 / RM7000 routers, as well as details on their maintenance.

This information includes:

- Requirements prior to installation.
- Installing or replacing a TBC1-1E1T1 expansion card.
- Substituting the fuses.

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 *bintec Dm569-I bintec RM3000 Installation* manual.

3.2 Installing or replacing the TBC1-1E1T1 expansion card

To install or replace a TBC1-1E1T1 card, please see the section on the *Expansion Slot* in the *bintec Dm569-I bintec RM3000 Installation* manual.

3.3 Substituting the fuses

Should a fuse blow, the technician in charge of maintaining the device must replace it for a new LittelFuse 04611.25ER model.

The electric specifications are as follows:

Amps (A)	1,25
Maximum voltage (V)	600

The fuses used in this card are specifically designed for telecommunication purposes. Consequently, using any fuses that are different from those recommended (LittelFuse 04611.25ER), even if they share the same electrical characteristics, can affect the performance of the card.

Chapter 4 LEDs and connector pinouts: Description

This chapter provides information on the TBC1-1E1T1 expansion card LEDs and connector pinouts.

4.1 TBC1-1E1T1 expansion card: LEDs

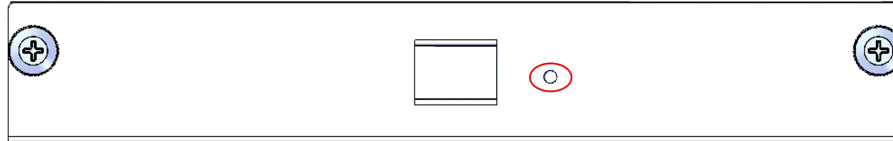The TBC1-1E1T1 expansion card has its own LED.

Fig. 3: TBC1-1E1T1 card: LEDs

LEDs Table of the TBC1-1E1T1 Card

LED Color	Description
Off	Link not established.
Green	Link established.
Yellow	Remote alarm received.

4.2 Connector Pinouts

Figure 4 shows the RJ-45 connector pinouts, where the E1 port has an impedance of 120 Ohms and the T1 port one of 100 Ohms.
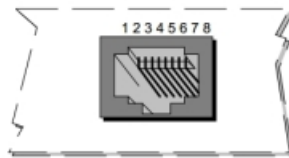
Fig. 4: RJ-45 Connector Pinouts

Table 4 shows the information associated to each connector pinout:

RJ-45 Connector Pinouts

RJ-45 pinouts	Signal
1	Rx+
2	Rx-
3	--
4	Tx+
5	Tx-
6	--
7	--
8	--

The Tx signals are considered as outgoing and the Rx as incoming.

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.

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 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.

5.3 REACH

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

5.4 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

5.5 CE Marking

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

$C\epsilon$

5.6 FCC Statement

5.6.1 Federal Communications Commission Interference

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's Authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

5.6.2 FCC Part 68 Notice

This equipment complies with Part 68 of the FCC rules and the requirements adopted by ACTA. Located on the equipment is a label that contains, among other information, the ACTA registration number [US:TLDDENANTM11E1T1] and ringer equivalence number (REN.) If requested, this information must be provided to the telephone company.

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

This equipment cannot be used on the telephone company-provided coin service. Connection to Party Line Service is subject to State Tariffs.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right the file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, you can find contact information at:

http://www.part68.org/tteDetails.aspx?id=95265

If the trouble is causing harm to the telephone network, the telephone company may request you to remove the equipment from the network until the problem is resolved.

This equipment uses the following USOC jacks: [RJ48C]

It is recommended that the customer install an AC surge arrester in the AC outlet to which this device is connected. This is to avoid damaging the equipment caused by local lightning strikes and other electrical surges.

5.7 IC Statement

5.7.1 CAN ICES-3(B)/NMB-3(B)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par le ministère des Communications.

5.7.2 IC Notice

This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications.

Le présent matériel est conforme aux spécifications techniques applicables d'Industrie Canada.

The ringer equivalence number (REN) is an indication of the maximum number of devices that can be connected to a telephone interface. The termination of an interface may consist of any combination of devices (as long as the sum of the RENs does not exceed five).

L'indice d'équivalence de la sonnerie (IES) sert à indiquer le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas cinq.