

## VDSL2/ADSL Expansion Card

Teldat-Dm 613

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### **Warranty**

This publication is subject to change.

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# Chapter 1 About This Guide

This installation guide contains the step by step instructions that you need to follow in order to correctly install, un-install and replace the ATH-1xDSL<sup>1</sup> expansion card in the ATLAS router family.

## 1.1 Supported Devices

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

## 1.2 Warnings 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 ATH-1xDSL expansion card.
- A description of the steps to install the ATH-1xDSL card in the ATLAS routers.
- A description of the ATH-1xDSL expansion card LEDs and the pinouts for their connectors.

## 1.5 How is the information organized?

This document aims to provide all the information necessary for installing the ATH-1xDSL expansion card in the ATLAS router family.

- ATH-1xDSL expansion card characteristics.
- ATH-1xDSL expansion card connectors.
- Requirements prior to installation.
- Installing the ATH-1xDSL expansion card.

## 1.6 Technical Support

Teldat SA offers a technical support service.

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] This description covers the ATH-1ADSL2+ and ATH-1VDSL2 models.

## 1.7 Related documentation

Teldat-Dm614-I *xDSL Expansion Cards ATLAS 60 Installation.*

Teldat-Dm693-I *ATLAS 60 Installation.*

Teldat-Dm741-I *ADSL-VDSL.*

Teldat-Dm748-I *Software Updating.*

**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 notice.**

**The images presented on the front and back panels of the devices are provided as information guidelines only. Some small modifications may exist in the actual device.**

## Chapter 2 ATH-1xDSL expansion card

ADSL stands for Asymmetric Digital Subscriber Line. ADSL is a model within the xDSL family (HDSL, SDSL, etc.). This is a technology that, based on a normal copper pair telephone line, converts this into a high-speed digital line offering broadband services. ADSL is a modem technology permitting you to simultaneously transmit voice and data over a conventional copper line. Three independent channels are established for this:

- Two high-speed channels (one for data reception and the other to transmit data).
- A third channel for normal voice communications (basic telephone service)

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 are as follows:

- Upstream and downstream channel multiplicity.
- Supports up to 200 Mbps, symmetric (profile 30a).
- It only uses FDM mode, EC mode isn't defined (echo cancelation or carrier overlapping).
- Permits a new encapsulation to be used: PTM.
- Multiple link diagnostics.

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



Fig. 1: ATH-1xDSL Card

### 2.1 ATH-1xDSL expansion card: Models

There are different types of xDSL cards. The type depends on the standards upon which it is based and to distinguish them, you need to consult the xDSL monitoring as follows:

```
*monitor
Console Operator

+network atmx/0
-- ATM Console -
atmx/0 monitor+list interface global
```

In global monitoring you must consult the required firmware as explained in section [Determining the firmware file](#) on page 6 .

#### 2.1.1 ATH-1ADSL2+

##### 2.1.1.1 ATH-1ADSL2+ POTS

The output of the *list interface global* command of this card model is:

```
Description: ADSL2+ POTS over SOFTSAR-I (Broadcom BCM96328)
```

The firmware corresponding to this card is: fw000012.bfw

Annexes supported: G.992.x Annex A, L, M (POTS)

## 2.1.2 ATH-1VDSL2

### 2.1.2.1 ATH-1VDSL2 POTS

The output of the *list interface global* command of this card model is:

```
Description: VDSL2/ADSL2+ POTS over SOFTSAR-I (Broadcom BCM963268)
```

The firmware corresponding to this card is: fw000013.bfw

Annexes supported: VDSL2 Annex A and B, ADSL/ADSL2/ADSL2+ Annex A, L and M (POTS)

### 2.1.2.2 ATH-1VDSL2 ISDN

The output of the *list interface global* command of this card model is:

```
Description: VDSL2/ADSL2+ Annex J over SOFTSAR-I (Broadcom BCM963268)
```

The firmware corresponding to this card is: fw000014.bfw

Annexes supported: VDSL2 Annex A and B, ADSL/ADSL2/ADSL2+ Annex B and J (ISDN)

## 2.2 ATH-1xDSL expansion card: Characteristics

The main characteristics of the ATH-1xDSL expansion card are as follows:

### ATH-1xDSL Card: Characteristics

<b>ADSL</b>	
<b>Ports</b>	One RJ-11 ADSL port
<b>Standards</b>	<p>ANSI</p> <ul style="list-style-type: none"> <li>• T1.413 Issue 2</li> </ul> <p>ITU</p> <ul style="list-style-type: none"> <li>• G.992.1 (G.DMT/ADSL): "Full Rate ADSL"</li> </ul> <p>Annex A: "Over POTS"</p> <p>Annex B: "Over ISDN"</p> <ul style="list-style-type: none"> <li>• G.992.2 (G.Lite) "Lite ADSL over POTS"</li> <li>• G.992.3 (ADSL2):</li> </ul> <p>Annex A: "Over POTS"</p> <p>Annex B: "Over ISDN"</p> <p>Annex J: "All digital over ISDN"</p> <p>Annex L: "RE-ADSL2 over POTS"</p> <p>Annex M: "Extended upstream over POTS"</p> <ul style="list-style-type: none"> <li>• G.992.5 (ADSL2+):</li> </ul> <p>Annex A: "Over POTS"</p> <p>Annex B: "Over ISDN"</p> <p>Annex J: "All digital over ISDN"</p>

	Annex M: "Extended upstream over POTS"
<b>Downstream Speed</b>	27 Mbps
<b>Upstream Speed</b>	3 Mbps
<b>Transfer Mode</b>	ATM ("Asynchronous Transfer Mode")
<b>Other characteristics</b>	Dying Gasp: <ul style="list-style-type: none"> <li>• ITU G.991.2 standard recommendation</li> </ul>
<b>VDSL<sup>2</sup></b>	
<b>Ports</b>	One RJ-11 VDSL2/ADSL port
<b>Standards</b>	ITU-T <ul style="list-style-type: none"> <li>• G.993.2 (Annex A and B)</li> </ul> Profiles: 8a, 8b, 8c, 8d, 12a, 12b, 17a
<b>Downstream Speed</b>	Up to 100 Mbps
<b>Upstream Speed</b>	Up to 50 Mbps
<b>Transfer Mode</b>	<ul style="list-style-type: none"> <li>• PTM ("Packet Transfer Mode")</li> </ul>
<b>Other characteristics</b>	<ul style="list-style-type: none"> <li>• PTM Transmission Convergence (PTM-TC)</li> </ul> G.993.2 Annex K <ul style="list-style-type: none"> <li>• Dual-Latency supported</li> </ul>

## 2.3 ATH-1xDSL expansion card: Connectors

The following figure shows the ATH-1xDSL card connector.

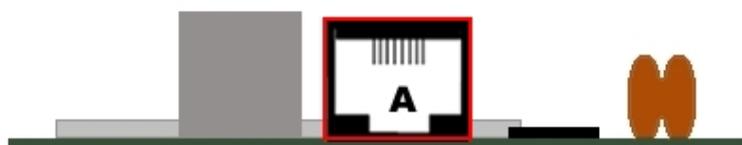


Fig. 2: ATH-1xDSL Card Connector

The front board elements are as follows:

### Elements Table for the Front of the ATH-1xDSL Card

Item	Description
A	RJ-11 Connector

[2] Only for ATH-1VDSL2 model.

## Chapter 3 Installing the ATH-1xDSL expansion card

This chapter provides information on how to install and uninstall the ATH-1xDSL expansion card in the ATLAS 60 routers.

This information includes:

- Requirements prior to installation
- Installing or replacing an ATH-1xDSL expansion card

### 3.1 Requirements prior to installation

In order to configure the card, you must have access to the ATLAS 60 router through a console or a Telnet connection. For further information, please see the section on “Connecting for configuration” found in manual *“Teldat-Dm693-I ATLAS 60 Installation”*.

So that the cards operate properly, you need to 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 determine the firmware file you need.

#### 3.1.1 Determining the firmware file

We have two options to determine the firmware file needed for the installed card:

##### 3.1.1.1 FTP “quote site listfirmwares” command

The FTP command **“quote site listfirmwares”** returns a list with the names of the firmware files needed so the device operates correctly:

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

##### 3.1.1.2 The “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
-----
fw000013.bfw  Broadcom 63268 TSS-mode v3.1
+
```

Once the necessary firmware file has been detected, you need to load it in the device through a FTP connection.

For further information on how to load firmware files in the router, please see manual *“Teldat-Dm748-I Software Updating”*.

### 3.2 Installing or replacing the ATH-1xDSL expansion card

To install or replace an ATH-1xDSL card, please see the *“Teldat-Dm614-I xDSL Expansion Cards ATLAS 60 Installation”* manual.

## Chapter 4 LEDs and connector Pinouts: Description

This chapter provides information on the ATH-1xDSL expansion card LEDs and the connector pinouts.

### 4.1 ATH-1xDSL expansion card: LEDs

The ATH-1xDSL expansion card doesn't have any LEDs of its own.

### 4.2 Connector Pinouts

The ATH-1xDSL expansion card has one RJ-11 connector:

#### 4.2.1 RJ-11 Connector

The following figure shows the RJ-11 connector pinouts.

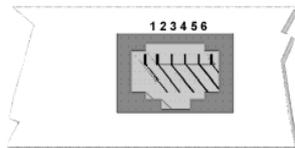


Fig. 3: RJ-11 Connector Pinouts

Table 3 shows the information associated with each connector pinout:

#### RJ-11 Connector Pinouts

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

We recommend that you use a 26 AWG cable at the very least. This may be supplied with the card itself or 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.

## Appendix A Regulatory compliance and safety information

### A.1 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.

## A.2 Compliance

### A.2.1 FCC Statement

#### A.2.1.1 Federal Communications Commission Interference

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

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

This product 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 of the device.

#### A.2.1.2 FCC Part 68 Notice<sup>3</sup>

This equipment complies with Part 68 of the FCC rules and the requirements adopted by ACTA. On the bottom of this equipment is a label that contains, among other information, a product identifier of US:TLDOTNANATH-1VDSL. If requested, this number must be provided to the telephone company.

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. But 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 to 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 necessary modifications to maintain uninterrupted service.

If you experience trouble with this equipment, you disconnect it from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. Please follow instructions to repair your problem, if

[3] Only for the ATH-1VDSL2 model.

any (e.g. battery replacement section); otherwise do not replace or repair any part of device except those specified.

If the telephone company requests information on what equipment is connected to their lines, inform them of:

(a) The telephone number that this unit is connected to,

(b) The ringer equivalence number [NAN]

(c) The USOC jack required [RJ11C], and

(d) The FCC Registration Number [TLD]

Items (b) and (d) are indicated on the label. The ringer equivalence number (REN) is used to determine how many devices can be connected to your telephone line. In most areas, the sum of the RENs of all devices on any one line should not exceed five (5.0). If too many devices are attached, they may not ring properly.

### A.2.1.3 Service Requirements

In the event of equipment malfunction, all repairs should be performed by our Company or an authorized agent. It is the responsibility of users requiring service to report the need for service to our Company or to one of our authorized agents. The contact information can be found at:

<http://www.part68.org/tteDetails.aspx?id=95197>

## A.2.2 IC Statement

### A.2.2.1 CAN ICES-3 (A)/NMB-3(A)

This digital apparatus does not exceed the Class A 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 A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par le ministère des Communications.*

### A.2.2.2 IC Notice<sup>4</sup>

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 allowed to be connected to a telephone interface. The termination of an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices 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'exécède pas cinq.

[4] Only for the ATH-1VDSL2 model.