

# EDN312 Installation Guide

## Ethernet DSL Access

IP DSLAM



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# 1 Introduction

This guide describes how to install the Ethernet DSL Access (EDA) IP DSLAM EDN312.

The guide is intended for installation and maintenance personnel.

An overview of the installation process of a complete Access Domain is described in the *Access Domain Installation Guide*.

The reader should have a basic understanding of the Internet Protocol (IP). The guide can be read separately, but for a full understanding of the EDA system the reader is referred to the *System Overview*.

The guide can be printed on a monochrome printer, but illustrations are easier to understand if a color printer is used.

## 1.1 Revision History

The guide is valid for EDA 1.3. Please refer to the Release Notes for valid versions of the EDN312 IP DSLAM and the application SW. Other product versions with functions not described in this guide may be available.

## 2 Environmental and Space Requirements

The 12-line IP DSLAM (EDN312) complies with the following standards regarding storage, transportation and operation. The operation category is also designated stationary in-use at weather-protected locations.

- ETS 300 019-2-1: Storage, class 1.2
- ETS 300 019-2-2: Transportation, class 2.3
- ETS 300 019-2-3: Operation, class 3.2
- GR-63-CORE Section 2.9.4 (-40°C to 65°C) for non-environment controlled equipment housings (Outdoor cabinet installation).

The storage class 1.2 means tested for storage in weather-protected area, not temperature-controlled.

The transportation class 2.3 means tested for public transportation.

The operation class 3.2 means tested for partly temperature-controlled location.

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### Caution!



The temperature within a rack assembly may be higher than the ambient room temperature. Check that the rack environment temperature is within the specified operating temperature range.

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The EDN312 can be mounted in Ericsson subracks prepared for installation in a 19" or ETSI rack. This includes micro subracks, small subracks and medium subracks. For detailed information, please see the *Subracks Installation Guide*. The EDN312 is also used in an EDN288 IP DSLAM and for additional information, please see the *EDN288 Installation Guide*. The EDN312 can also be mounted in a Outdoor cabinet and for specification and installation details please see the *Outdoor Cabinet Installation Guide*.

Mounting in the rack must be done in such a way that there is sufficient space to allow airflow around the EDN312 as shown in Figure 1 on page 3.

The distance between the IP DSLAMs must be at least 20 mm so that an IP DSLAM can be dismantled without interfering with the adjacent IP DSLAMs.

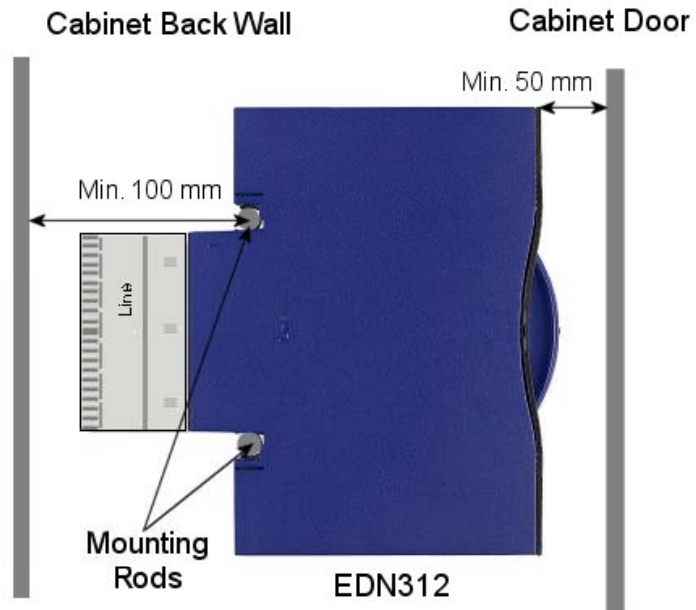


Figure 1 Space Requirements when Mounting in Rack or Cabinet

### 3 Cabling

#### 3.1 Cabling of Subscriber Lines

Before the IP DSLAM is mounted the connections between the Line MDF and the Exchange MDF have to be rewired. The wires are disconnected, and then reconnected through typically a Broadband MDF and the EDA System according to planning.

##### 3.1.1 Cabling Lines

The following description explains how to rewire the connections between the Line MDF and Exchange MDF through the EDGE connectors.

Figure 2 on page 4 shows the subscriber line connections through the EDGE connectors both for exchange and line side.

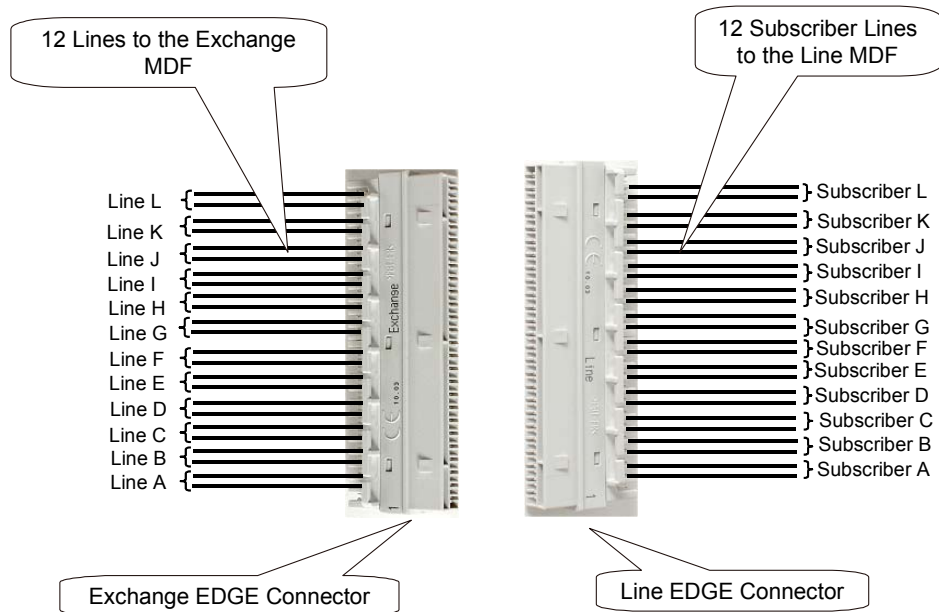


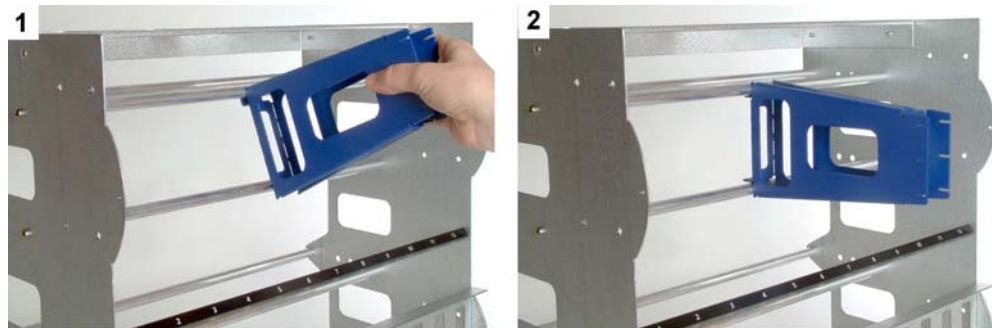
Figure 2 Rewiring the Subscriber Line through EDGE Connectors



### 3.1.2 Wiring EDGE Connectors

It is recommended to follow the “Best practice” wiring procedure when wiring the EDGE connectors.

The EDGE connector can be mounted by using a Tool Kit. The kit consists of a wiring bracket-tool and an LSA+ inserter-tool. Figure 3 on page 5 shows how to mount the wiring bracket-tool on the rods in a subrack.



*Figure 3 Mounting the Wiring Bracket-Tool*

The EDGE connectors must be mounted as shown in Figure 4 on page 6. The wiring bracket-tool ensures that the cables are long enough so that the IP DSLAM can be dismantled by pulling it out. In case the wiring bracket-tool is not used, it is important to ensure that the cables are long enough.

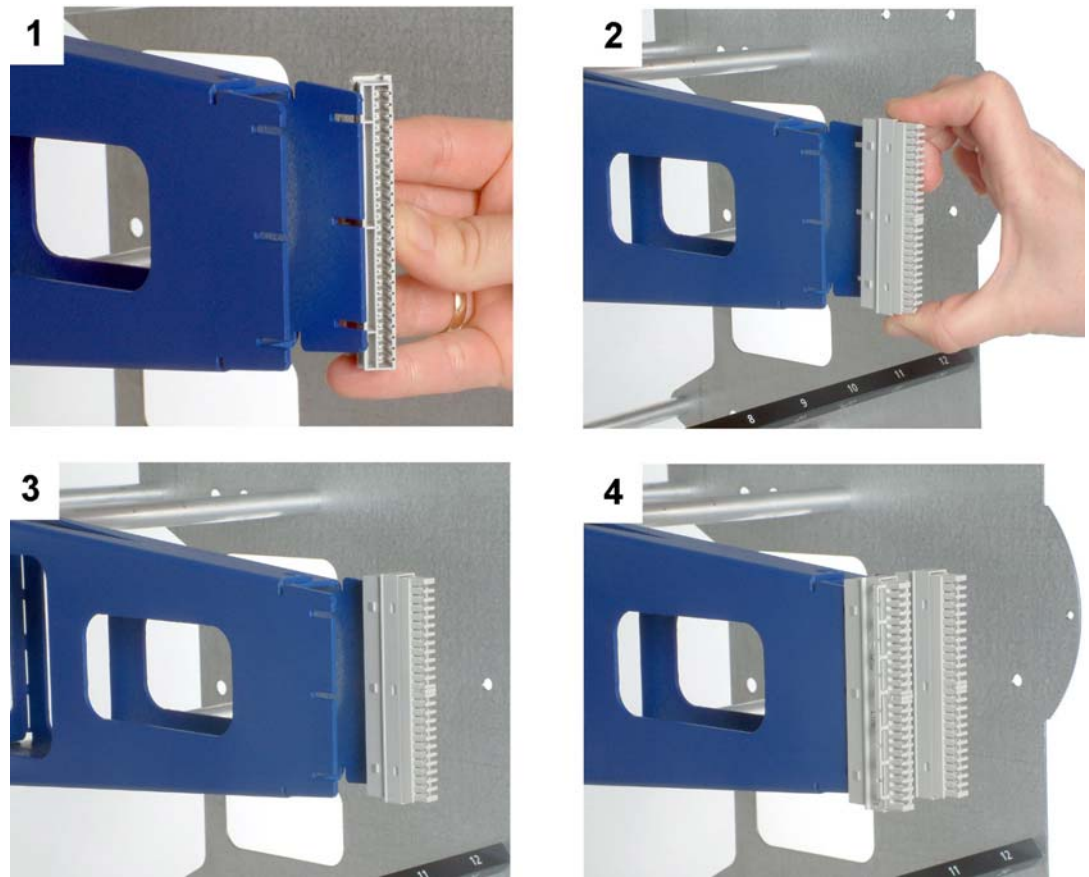
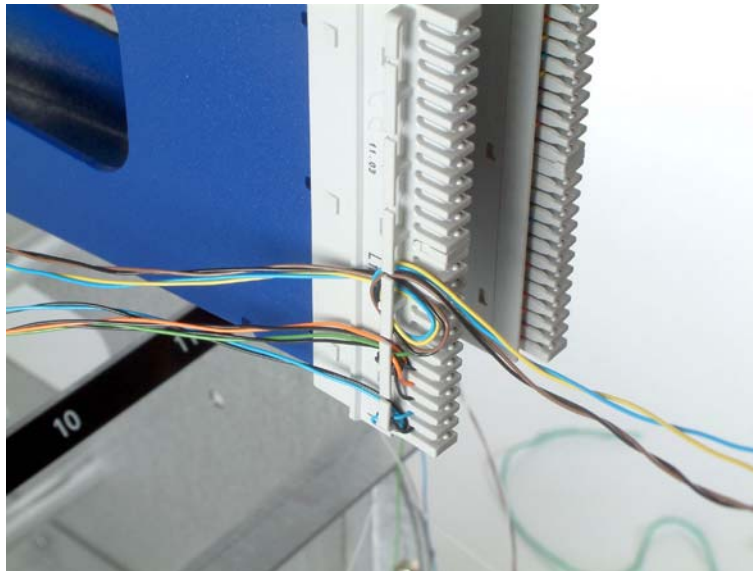


Figure 4 Mounting the EDGE Connectors

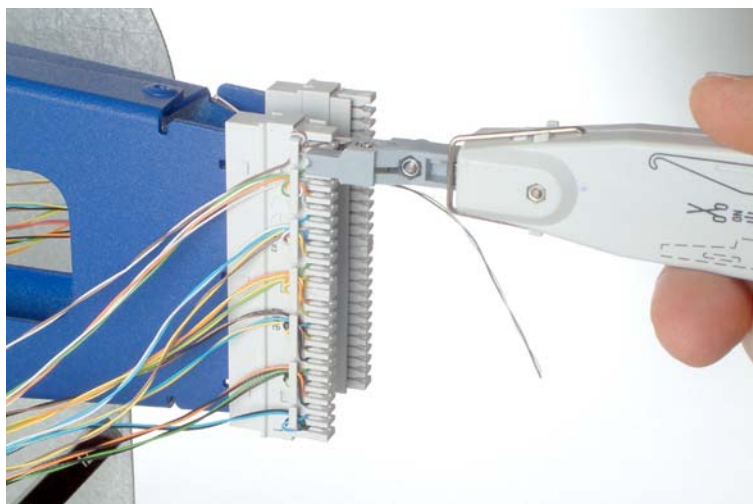
Strip approximately 20 cm off the new cable and tie it up with a cable tie to the existing cable as illustrated in Figure 5 on page 7. Alternatively, make a loop around the cable guide.

**Note:** It is recommended to use 0.4 mm thick wiring cables



*Figure 5 Tie Up the New cable*

Connect and cut the wires (one action using the KRONE LSA+ Insertion-Tool S, see Figure 6 on page 7) by placing the Insertion tool above the slit (place the cutting end towards the connector's center), and firmly press towards the connector. Repeat this step for all wires.



*Figure 6 Cutting and Connection a Wire*

It is recommended to label the EDGE connectors with the same number as the LAN cable and tie up the **Exchange** and **Line** EDGE connectors together according to Figure 7 on page 8.



Figure 7 Tie Up and Label the EDGE Connectors

## 3.2 Cabling of Ethernet Connections

The EDN312 IP DSLAM is connected to the network with cat. 5 straight through standard LAN cables.

The total cable length from a switch to the IP DSLAM must not exceed 100 m and must conform to category 5 standard for LAN cables.

**Note:** The cable resistance must not exceed 8.5  $\Omega$  (one cable one way), when the ECN310 switch and/or the ECN320 switch is used. When EPN124 power nodes are used the resistance must not exceed 10 and ECN320  $\Omega$  (one cable one way).

The length of the LAN cable must be long enough to make it easy to mount and dismount the IP DSLAM.

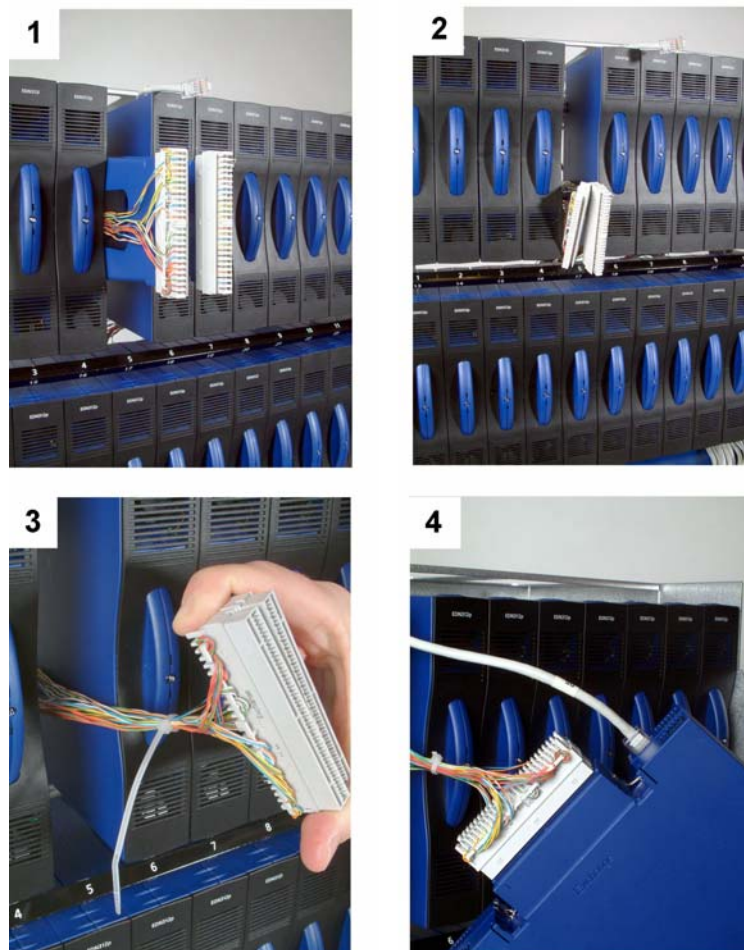
Typically the IP DSLAM is connected directly to an ECN310 switch, an ECN320 Controller Node or an ECN108 switch. If the IP DSLAM is connected to other switches, which does not supply power over Ethernet, then the EPN124 Ethernet Power Node must be connected between the switch and the IP DSLAM.

## 4 Mounting the IP DSLAM

The illustration below shows how to mount the EDN312 after the subscriber lines, exchange lines through the EDGE connector have been pulled.

The EDGE connector is removed from the bracket-tool and inserted in the rear of the IP DSLAM. The IP DSLAM has been labelled with “line” on one side and “exchange” on the other side.

After the EDGE connectors have been inserted the IP DSLAM is pressed into place on the two rods in the subrack.



*Figure 8 Insert EDGE Connectors and LAN Cable*

# 5 Verifying the Installation

The purpose of the verification is to ensure the following:

- No errors in the rewiring of the subscriber lines
- The old services (POTS or ISDN) function
- The physical installation of the EDA Access Domain nodes was done correctly
- The power and Ethernet connections function
- It is possible to make an ADSL connection to a CPE modem
- The registration in PEM has been done correctly

The following methods can be used for verification, each implying a different level of verification and effort:

1. Verification without connection to PEM or any management system
2. Verification using the Local Craft Tool (LCT).
3. Verification using PEM.

## 5.1 Verification without Connection to PEM

It is not possible to activate the IP DSLAM by this method. It is the least time consuming method but also gives the least assurance. This method involves the following:

*Table 1 Verification without Connection to Management System*

<b>Verification Activity</b>	<b>Comments</b>
Perform continuity check on each line from the Exchange MDF to the Line MDF	Best to perform after rewiring and before installing nodes
Verify (if possible) that the ECN320 switch port where the IP DSLAMs are connected, indicates active Ethernet connection	Active Ethernet connection is verified
Recommended to perform continuity check on each POTS or ISDN line	Test that the new installation has not affected the old services

## 5.2 Verification with the Local Craft Tool

The LCT can be used without a connection to PEM or to any backbone network as described in section section **Error! Reference source not found.** on page **Error! Bookmark not defined.**.

The LCT activates the IP DSLAMs (as well as providing an IP address to other nodes) and configures each IP DSLAM to start all the lines, and by using a CPE modem on each line, it is possible to verify that the ADSL connection is up and running. The registration process cannot be verified by using this method. Using the LCT is more time consuming than method 1, but not as time consuming as method 3.

*Table 2 Verification with the Local Craft Tool*

<b>Verification Activity</b>	<b>Comments</b>
Perform continuity check on each line from the Exchange MDF to the Line MDF	Best to perform after rewiring and before installing nodes
Verify that the green LED is lit on the IP DSLAMs	Green – The IP DSLAM has booted and received an IP address and SW
Verify (if possible) that the ECN320 switch port where the IP DSLAMs are connected, indicates active Ethernet connection	Active Ethernet connection is verified
Recommended to perform check on each ADSL line	Testing the IP DSLAM functionality
Recommended to perform continuity check on each POTS or ISDN line	Test that the new installation has not affected the old services

### The ECN320 Local Craft Tool

When the EDN312 IP DSLAM is embedded in an EAN as for example the EDN288 and connected to the ECN320 Ethernet Controller Node the line verification is done by means of the ECN320 Local Craft Tool. The ECN320 Local Craft Tool is an application used for checking the function of each IP DSLAM embedded in an EAN. When the ECN320 LCT has been connected to the ECN320 the line verification is done by activating a line configuration script placed on the LCT, so the user starts a Windows Command Prompt, navigates to a folder with the script and activates the script. The following steps are taken:

1. Copy the 24 standard (“empty”) configuration files from the ECN320 flash disk to a folder on the LCT. The files are needed when reverting to the initial state.

2. Copy 24 configuration files with line configurations from the LCT tool to the ECN320 flash disk.
3. Restart the embedded IP DSLAMs by using the Command Line Interface (CLI)
4. Test the ADSL lines by connecting a CPE modem to each line one at a time. The LCT has an SNMP Notification Receiver, which enables the user to receive traps from the embedded IP DSLAMs.
5. When the test is finished the initial, standard configuration files are copied back to ECN320 flash disk.
6. Finally the embedded IP DSLAMs are restarted from the CLI.

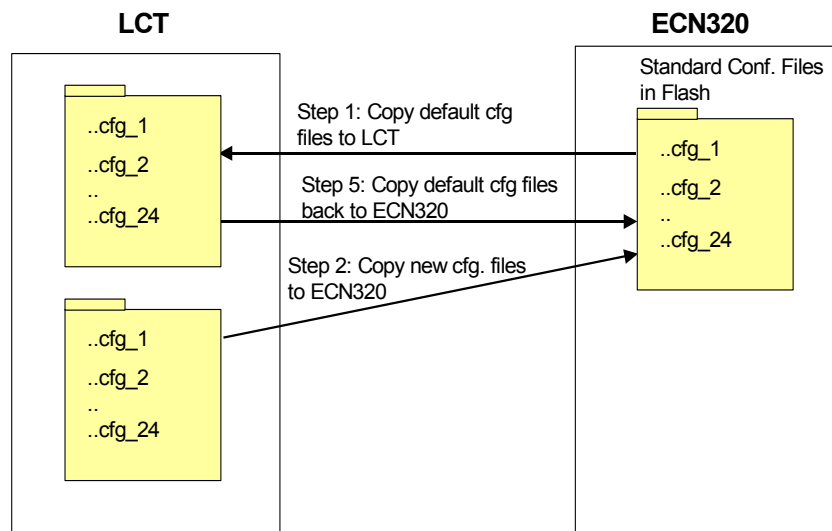


Figure 9 Verification of the ADSL Lines with the LCT

The ECN320 has by default 24 standard configuration files installed on the flash disc. The files are “empty”, which means that they do not contain any line configurations. The LCT has been installed with 24 configuration files containing line configurations.

### 5.3 Verification Using PEM

This is the most time-consuming method, and the only method, which gives 100% verification. Verification of the ADSL connection is done by configuring an end-user with a service in PEM for each line.



This method is similar to activating real subscribers. In order to use this method the following preconditions have to be fulfilled:

- The PEM installation has succeeded
- The PEM configuration of the network has been done
- The servers in the network are running
- All registration has been transferred to the PEM

The Service Configuration Manager is used for this task. Alternatively the Bulk Configuration Manager can be used instead of the Service Configuration Manager and may simplify the task of configuring an end-user with a service for each line; please see the *Bulk Configuration User's Guide* for further details.

Please refer to *Local Craft Tool User's Guide* and the *PEM User's Guide* for detailed information of how to use them.

**Table 3**      *Verification with the ECN320 Local Craft Tool*

<b>Verification Activity</b>	<b>Comments</b>
Perform continuity check on each line from the Exchange MDF to the Line MDF	Best to perform after rewiring and before installing nodes
Verify that the green LED is lit on the IP DSLAMs	Green – The IP DSLAM has booted and received an IP address and SW
Verify (if possible) that the ECN320 switch port where the IP DSLAMs are connected, indicates active Ethernet connection	Active Ethernet connection is verified
Recommended to perform check on each ADSL line	Testing the IP DSLAM functionality
Recommended to perform continuity check on each POTS or ISDN line	Test that the new installation has not affected the old services
Start the Status Manager and use the Flash LEDs button to verify the MDF position of the IP DSLAMs (verification of the registration)	Test of the registration process

## Reference List

*System Overview, 1/1551-HSC 901 26/4, Ericsson AB 2004*

*PEM User's Guide, 1553-AOM 901 018/3, Ericsson AB 2004*

*EDN312 User's Guide, 1/1553-HSD 101 41, Ericsson AB 2004*

*Subrack Installation Guide, 1/1531-HSC 901 026/4, Ericsson AB 2004*

*Outdoor Cabinet Installation Guide, 1531-1/BFM 901 097, Ericsson AB 2004*

*EDN288 Installation Guide, 2/1531-HSD 101 41, Ericsson AB 2004*

*Release Notes, 109 47-HSC 901 26/4, Ericsson AB 2004*



