



# Installation Overview

**C33513.85--H0**

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## Summary of changes

Document	Date	Comment
C33513006SE_00	05 Mar 1999	
C33513006SE_A0	11 Jun 1999	RRIC indoor unit added
C33513006SE_B0	25 Oct 1999	
DN99600693 Issue 1-0 en	05 Jan 2000	New document numbering scheme adopted
DN99600693 Issue 4-0 en	07 Jul 2000	Updated
DN99600693 Issue 5-0 en	31 May 2001	New reference added
DN99600693 Issue 6-0 en	30 Apr 2002	FIU 19E, FIU 19RJ, and IFUE added
DN99600693 Issue 7-0 en	03 Feb 2003	Removed FIU 19RJ Added appendix 1: Site acceptance list



# 1

## About this document

This document gives general instructions on the installation of Nokia FlexiHopper with FIU 19, FIU 19E, or RRIC indoor unit.

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### Note

For information on the installation of the IFUE interface unit, refer to the *Nokia FlexiHopper and Nokia MetroHopper with IFUE User Manual*.

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### Note

MartisDXX FBU interface unit can also be used with Nokia FlexiHopper microwave radio. For more information on FBU, refer to *Nokia FBU Manager User's Guide*.

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The document covers the following topics:

- precautions
- general work order of the installation
- general earthing and grounding instructions.

Detailed installation instructions for the indoor units and the outdoor unit are in the following documents in this manual:

- *FIU 19 (E) Indoor Unit Installation*
- *RRIC Indoor Unit Installation*
- *Outdoor Unit Installation*

The instructions are intended for trained installation personnel.





# 2

## Precautions

Before starting the installation, note the following precautions:

- Familiarise yourself thoroughly with the installation instructions.
- Plan the installation in advance.

See the unit-specific installation documents for any special precautions that apply to that unit.



# 3

## Work order

The Nokia FlexiHopper node consists of the following components:

- indoor unit (IU)
- outdoor unit(s) (OU), antenna, and alignment unit
- cabling.

The order of installation of these components can vary slightly depending on the application and the local conditions.

### 3.1 Tools

The tools needed in the installation of the outdoor unit and the indoor unit depend on the installation configuration. See the unit-specific installation documents for complete tool lists.

### 3.2 Task list

The following is the recommended task list for the installation of Nokia FlexiHopper node. The document detailing the task is indicated after the task.

1. Prepare the cabling.
2. Install the indoor unit (see *FIU 19 (E) Indoor Unit Installation* or *RRIC Indoor Unit Installation*).
3. Connect the cabling to the indoor unit (Flexbus cables, 2M cables, Q1 cables, power supply cable).
4. Install the outdoor unit, antenna, and alignment unit (see *Outdoor Unit Installation*).

5. Pre-align the antenna (see *Outdoor Unit Installation*).
6. Connect the grounding wire and the Flexbus cable to the OU (see *Outdoor Unit Installation*).

### 3.3 Completing installation

The installation is completed when the indoor and outdoor units are on their places, the cables have been connected, and the antenna has been pre-aligned to the far-end station.

Fine alignment of the antenna, a part of the commissioning process of the microwave radio, is described in the *Outdoor Unit Installation* part of this manual. For information on other tasks of the commissioning process refer to the *Commissioning and Maintenance* part of this manual.

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#### Note

If it is likely that moisture will condense in the outdoor unit, do not leave it outdoors without power.

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# 4

## Protective grounding

To ensure safe installation conditions for both personnel and equipment, the grounding of an equipment station must be done before installing the equipment. The purpose of protective grounding is to keep the potential of the equipment at the same level as the potential of the surrounding ground. This prevents generation of dangerous voltages between the equipment and the ground. Because of the high locations of the radio and base station equipment, equipment stations are particularly susceptible to lightning strokes.

Do the grounding according to rules and regulations issued by the local authorities. Refer also to site level documentation, if applicable, and to document *Installing DMR Radios to Base Station Sites*, which is available in NOLS → Product Information → Cellular Transmission → Microwave Radios → DMR 18–38.

For further information on protection against interference, refer to *ITU-T K.27 (Bonding configurations and earthing inside a telecommunication building)* or corresponding recommendations.

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### Note

To ensure the operation of the equipment, connect all equipment of an equipment station to the same ground potential.

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### 4.1 Outdoor unit

The outdoor unit must be grounded. For more information, refer to Chapter ‘Connecting interfaces’ in *Outdoor Unit Installation*.

### 4.2 Indoor unit

The indoor unit does not require specific grounding arrangements.

## **4.3 IU-OU Flexbus cable**

Ground the sheath of the Flexbus cable between the indoor unit and the outdoor unit at approximately 50 m intervals. Ground the sheath also at the inlet to the equipment space. National regulations may require grounding every 20 m.

## **4.4 Electrostatic sensitive devices**

Use an antistatic wrist strap or equivalent protection when handling FIU 19 (E) plug-in units or the RRIC indoor unit. Discharge of static electricity may damage components.

Appendix A. Transmission installation report

A.1 FlexiHopper terminal information

Hop /  
Near end /  
Far end /

Connected in Flexbus: 1 ☐ 2 ☐ 3 ☐ 4 ☐

Near end frequency : \_\_\_\_\_ kHz  
Maximum transmit power: \_\_\_\_\_ dBm

Connected in Flexbus: 1 ☐ 2 ☐ 3 ☐ 4 ☐

Far end frequency : \_\_\_\_\_ kHz  
Maximum transmit power: \_\_\_\_\_ dBm

Transmission capacity: \_\_\_\_\_ x 2 Mbit/s

Interleaving status: Off ☐ Depth 2 ☐ Depth 4 ☐

ALCQ (ATPC): ON ☐ OFF ☐

Fading margin measurement performed: ☐ (YES)

Average result: \_\_\_\_\_ dB

## A.2 Outdoor unit and cable installation

### Method of installation (outdoor unit)

Roof mounting	<input type="checkbox"/>	Wall mounting	<input type="checkbox"/>
Tower installation	<input type="checkbox"/>	Pole installation	<input type="checkbox"/>
Inhouse	<input type="checkbox"/>		

### General information about antenna and cables

Near end antenna product code: \_\_\_\_\_

Far end antenna product code: \_\_\_\_\_

#### ITEM

Antenna height (from ground/sea level)

Cable length (between IU and OU)

Cable type (between IU and OU)

#### TERMINAL A

\_\_\_\_\_/\_\_\_\_m

\_\_\_\_m

RG-\_\_\_\_\_

### Installation checklist

#### INSTALLATION ITEM CHECKED

General appearance of outdoor unit

IU-OU cables marked and connected to OU

Pass

☐☐

Fail

☐☐



OU link address clearly marked	<input type="checkbox"/>	<input type="checkbox"/>
All external connectors and cables checked for correct sealing	<input type="checkbox"/>	<input type="checkbox"/>
Grounding of outdoor unit	<input type="checkbox"/>	<input type="checkbox"/>
Grounding of IU-OU cables	<input type="checkbox"/>	<input type="checkbox"/>

Notes on FlexiHopper OU check:

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A.3 Indoor unit installation

Method of installation (indoor unit)

FIU 19/FIU 19E	Site support cabinet/BBU	<input type="checkbox"/>
	Mounting onto 19" rack	<input type="checkbox"/>
	Other equipment	<input type="checkbox"/>
	Name:_____	

**Installation checklist**

ITEM	Pass	Fail
General appearance of IU	<input type="checkbox"/>	<input type="checkbox"/>
IU-OU cables marked and connected to the IU	<input type="checkbox"/>	<input type="checkbox"/>
2 Mbit/s cables labelled	<input type="checkbox"/>	<input type="checkbox"/>
Power cable connected to IU	<input type="checkbox"/>	<input type="checkbox"/>
FB plug-in unit power cable connected	<input type="checkbox"/>	<input type="checkbox"/>
Power supply cables securely attached	<input type="checkbox"/>	<input type="checkbox"/>
Cables arranged and secured to cable tray	<input type="checkbox"/>	<input type="checkbox"/>
2Mbit/s attached to DDF/BTS (other equipment)	<input type="checkbox"/>	<input type="checkbox"/>
Q1 / 10BaseT cable connected	<input type="checkbox"/>	<input type="checkbox"/>
All equipment grounded and securely fastened	<input type="checkbox"/>	<input type="checkbox"/>
Alarm cable connected & labelled	<input type="checkbox"/>	<input type="checkbox"/>
AUX-Data: cable connected & labelled	<input type="checkbox"/>	<input type="checkbox"/>

**A.4 Test reports****FlexiHopper configuration report**

Is included in site folder

Yes ☐No ☐

A.5 Node (\*.nod) files

Is included in site folder Yes ☐ No ☐

A.6 Inventory checklist

Indoor and outdoor units

Refer to unit labels for version and serial numbers.

ITEM	CHECKED
OUTDOOR UNIT	
Serial number	<input type="checkbox"/>
Program (Version)	<input type="checkbox"/>
INDOOR UNIT	
Serial number	<input type="checkbox"/>
Program (Version)	<input type="checkbox"/>

A.7 Installation inspection

Outdoor unit installation	Pass	Fail
Installation completed and checklist filled	<input type="checkbox"/>	<input type="checkbox"/>
Indoor unit installation		
Installation completed and checklist filled	<input type="checkbox"/>	<input type="checkbox"/>
IU-OU Cables		

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Installation completed and checklist filled☐☐

Transmission

Installation completed and checklist filled

☐☐**Acceptance certificate**

Customer name:	Site address:
Contract No.:	
Delivery No.:	
Site name:	
Site No.:	

STAGE	COMPLETE/ OK (Initials)	COMMENTS/DEFICIENCIES
Installation of IU		
Installation of mounting bracket/ alignment unit		
Installation of outdoor unit		
Running cables		
Alignment		
Commissioning		

Nokia Corporation hereby states that all of the items detailed above have been inspected, tested and unless otherwise stated conform to the specified requirements in the contract or order identified above.

Date:\_\_\_\_\_

Signature of Nokia's site responsible:\_\_\_\_\_

(In capital letters)

Signature of Customer's site responsible:\_\_\_\_\_

(In capital letters)