

NOKIA

Warnings and Cautions

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Summary of changes

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Changes between document issues are cumulative. Therefore, the latest document issue contains all changes made to previous issues.

Changes made between issues 4–0 and 3–0

A new warning, High leakage current, has been added to section *Warnings* .

Changes made between issues 3–0 and 2–2

A new warning, Hot surfaces, has been added to section *Warnings* .

Changes made between issues 2–2 and 2–1

A note has been added to section *Electromagnetic interference (EMI)* .

Changes made between issues 2–1 and 2–0

Editorial corrections.

Information on Power supply grounding rules in Flexiserver network elements has been added.

1

Warnings and Cautions overview

This document details the recommended safety precautions to be followed when working with the equipment described in the user manuals.

It is important to exercise great caution when working with the Nokia DX 200, IPA2800, and Flexiserver equipment.

Only authorised personnel can perform tasks related to the installation, commissioning, integration, and maintenance of the network element. Install and locate the equipment so that persons, except for the authorised personnel, do not have an access to its dangerous or sensitive parts.

Safety guidelines

The safety guidelines are designed as follows:

- *Warnings* alert for dangers which may cause loss of life, physical injury, or ill health.
- *Cautions* are used to indicate possible damages to equipment but not danger to personnel.

Note

The word 'attention' is used as a synonym for 'caution' on some of the warning labels.

2

Warnings

Hazardous energy levels

Hazardous energy levels are present within this system. Make sure that persons who perform maintenance or commissioning measures on the equipment are aware of this danger. Take the following precautions to minimise the risk of an electrical shock:

- Ensure that the applicable safety precautions for high voltage are implemented before attempting to work on the hardware of the system with the power connected.
- Hazardous energy levels can be induced if the equipment is not grounded correctly. Ensure that all ground connections are secure.

All peripheral devices and measuring and service equipment that are used in conjunction with the network element, or in the exchange room in general, must be powered by an isolating transformer in order to protect the operation and maintenance personnel against the danger of an electric shock.

The risk of accessing hazardous energy levels mainly applies to the power distribution system and the Power Supply units in the cabinets. For this reason, the distributors and Power Supply units are provided with special warning labels attached, described in the following figure. Elsewhere in the system the risk is virtually not existent if the electricity and ground connections are secure and correct and the equipment is in good condition.

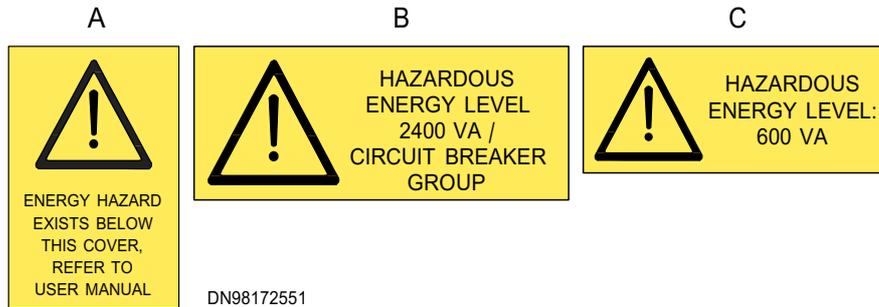


Figure 1. Energy hazard labels

High leakage current

As indicated by the sign at the rear of the ACPEM, there is a high leakage current hazard, which is avoided only by the proper grounding of the cabinet.



Figure 2. High leakage current warning label

When used in parallel to feed a given chassis or a group of chassis, the ACPEM AC/DC power supplies exhibit a leakage current (also known as touch current) that exceeds the requirement given in *IEC 60950*, *EN 60950* and *UL 60950*. To prevent the equipment touchable parts from becoming a safety hazard, the chassis must be grounded to the site protective earth. Also the ground point of each chassis must be connected to the cabinet grounding busbar.

ACPEM units are used in FlexiServer network elements.

Precautions for lead acid batteries

Lead acid batteries might be used to power this equipment. The fluids contained in the batteries are a health hazard.

Follow local safety regulations and specific safety precautions provided by the manufacturer when doing any maintenance or installation work with the batteries.

Follow the precautions listed below when doing any maintenance or installation work with the batteries:

- The incorrect disposal of lead acid batteries constitutes a health and environmental hazard. Any attempt to burn the batteries may result in an explosion and/or generation of toxic fumes.
- Should a lead acid battery suffer damage, move it into a well-ventilated area and avoid any contact with the corrosive fluid.
- Neutralise any spilled acid with generous amounts of the solution of baking soda and water. Wipe off all traces of soda.
- Ensure that protective full face shields, rubber gloves, and aprons are worn and insulated tools are used when working with batteries.
- If a damaged lead acid battery is removed from the equipment, any exposed contacts must be insulated prior to disposal.
- The disposal of lead acid batteries is subject to the control of substances hazardous to health. Therefore, observe all local regulations concerning their disposal.

Battery weight

Be careful when lifting or moving the batteries to avoid any injuries.

Cabinet weight

Be careful when handling the cabinets. At least two persons are needed to lift one cabinet. For detailed information on the cabinet weight, see the *Engineering Description* of the network element in question.

Plug-in unit weight

Be careful when handling heavy plug-in units to avoid any injuries. Do not carry heavy units by the handle, it should only be used for pulling the unit out of the rack.

Sharp edges

Some parts of the equipment can have sharp edges. Whenever you perform any maintenance or installation work at the network element, exercise great caution to avoid any injuries. This is especially important when connecting cables, installing or replacing plug-in units, or installing and handling the cabinets. If possible, wear protective gloves when you perform any of these tasks.

The cabinet doors are provided with warning stickers of the type shown below:



DN98172563

Figure 3. Cabinet door warning label

Hot surfaces

Some parts of the equipment may have hot surfaces. Whenever you perform any maintenance or installation work at the network element, observe great caution to avoid any burning lesions. This is especially important when replacing plug-in units, or installing or handling the cabinets. When possible, wear protective gloves when you perform any of these tasks.

The hot surfaces are provided with warning markings/stickers with the symbol (60417-2-IEC-5041) to provide this information.

Cautions

3

Cautions

Storage and transportation

During storage and transportation, the units of the Nokia network elements must remain in their original packaging in order to avoid mechanical damage, to maintain traceability, and to ensure protection against static electricity. Handle the equipment with care. Do not drop any components of the equipment or packaging containing them.

To ensure the proper functioning of the network element up to the end of its design life, make sure that the transportation, storage, and operation conditions are compliant with the manufacturers recommendations. For the recommended temperature, humidity, mechanical stress, and air pressure values during storage, transportation and operation, refer to the *Site Requirements* .

The SECMO plug-in unit

Any attempt to open the casing of the SECMO plug-in unit will cause the deletion of all data stored in its memory circuits. If you encounter any defects in the functioning of the SECMO, please contact the manufacturer. The warranty on the SECMO unit is not valid if any of the screws in its casing have been unscrewed.

Plug-in units containing Class 1 Laser Products

Exercise appropriate precautions when dealing with plug-in units which include Class 1 Laser Products. These are either marked with a white label inside the unit, or in the case the unit incorporates connectors, they are marked with a printed label on the front plate of the plug-in unit shown in the figure below.

Avoid looking directly at the beam if the laser is exposed.

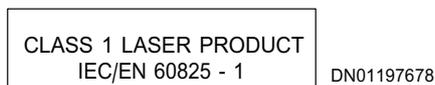


Figure 4. Class 1 Laser Product text

Electromagnetic interference (EMI)

Nokia network elements are compliant with the EMC directive 89/336/EEC and they are tested to meet the requirements of ETSI EN 300 386 (harmonised product family standard). They are also tested to meet the requirements set in FCC Rules Title 47, Part 15, Subpart B, Unintentional Radiators, 1999. The exchanges are designed to withstand electromagnetic interference occurring in a normal industrial environment. The emission of electromagnetic interference does not exceed the corresponding limits.

Nokia network elements endure electromagnetic interference occurring in normal installation sites. Efficient protection against EMI can only be guaranteed, however, when the network element is operated with the cabinet doors properly closed.

Note

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, it 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 is required to correct the interference to radio communications at his own expense. The authority to operate this equipment is conditioned by the requirement that no modifications will be made to the equipment unless the changes or modifications are expressly approved by Nokia.

For more information, see the *Site Requirements* for the specific network element.

Fire safety

During normal operation and when unattended, keep closed the cabinet doors of the network element to ensure efficient protection against fire propagation.

In FlexiServer equipment doors are optional but recommended for added security.

Use of photographic flash

The light of a flash may penetrate the protective covers of EPROM circuits and disturb their functioning, or even cause damage in them. For this reason, do not photograph an exchange in operation using a flash.

Installation and maintenance

Follow strictly the *Installation Instructions* when installing or maintaining this equipment. Failure to follow the instructions may be dangerous to the installation personnel, it can cause serious damages to the equipment or malfunction of the equipment - possibly after a considerable period of time.

Equipment traceability and identification

The plug-in units are delivered with product identification labels which are permanently attached to them and designed to last throughout the design life of the network element. Ensure that product identification labels are in their places.

Warnings

3.1 Power feed and grounding

When grounding the Nokia DX 200, IPA2800, and Flexiserver network elements, follow strictly the instructions given in the user manuals in order to protect the equipment against damaging overvoltages, and the installation and maintenance personnel against hazardous energy levels.

All peripheral devices and measuring and service equipment that are used in conjunction with the network elements, or in the exchange room in general, must be powered by an isolating transformer in order to prevent connecting the main supply grounding to the exchange equipment, and thus causing malfunction or damage in the equipment.

Power supply grounding rules in DX200 M92-mechanics network elements (BSC2A, BSC2i ANSI, and TCSCM2A)

This equipment has a connection between the earthed conductor of the DC supply circuit and the earthing conductor.

This equipment shall be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.

This equipment shall be located in the same immediate area (such as, adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.

The DC supply source is to be located within the same premises as this equipment.

Switching or disconnecting devices shall not be in the earthed circuit conductor between the DC source and the point of the connection of the earthing electrode conductor.

For more information about the grounding of the network elements, see the *Installation Instructions* and *Site Requirements* for the network element in question.

Power supply grounding rules in DX200 M98-mechanics network elements (MSCi, Compact MSCi, Transit MSCi, HLRi, SRRi, and 2G SGSN)

This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. If this connection is made, all of the following conditions must be met:

- This equipment shall be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- This equipment shall be located in the same immediate area (such as, adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.
- The DC supply source is to be located within the same premises as this equipment.
- Switching or disconnecting devices shall not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

For more information about the grounding of the network elements, see *Installing the i-series Network Elements* and *Installation Site Requirements for i-series Network Elements* .

Power supply grounding rules in IPA2800-mechanics network elements (ATM Module, MGW, and RNC)

This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. If this connection is made, all of the following conditions must be met:

- This equipment shall be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- This equipment shall be located in the same immediate area (such as, adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.
- The DC supply source is to be located within the same premises as this equipment.
- Switching or disconnecting devices shall not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

For more information about the grounding of the network elements, see the *Hardware Installation Instructions* for the network element in question and the *Installation Site Requirements for Nokia IPA2800 Network Elements*.

The label warning for power feeding and grounding is attached on top of the rack (see the figure below).



DN01173206

Figure 5. Power feed and grounding label

Power supply grounding rules in Flexiserver network elements

This equipment is designed to permit the connection of the earthed conductor of the AC/DC power supply circuit to the earthing conductor at the equipment. If this connection is made, all of the following conditions must be met:

- This equipment shall be connected directly to the power supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the power supply system earthing electrode conductor is connected.
- This equipment shall be located in the same immediate area (such as, adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same power supply circuit and the earthing conductor, and also the point of earthing of the power supply system. The power supply system shall not be earthed elsewhere.
- The power supply source is to be located within the same premises as this equipment.
- Switching or disconnecting devices shall not be in the earthed circuit conductor between the power source and the point of connection of the earthing electrode conductor.

For more information about the grounding of the network elements, see the *Hardware Installation* and *Installation Site Requirements* manuals for the network element in question.

3.2 ESD and handling of electrostatic sensitive units

An Electrostatic sensitive device is an electronic component that may be permanently damaged by electrostatic charges encountered in routine handling, testing, and transportation.

Electrostatic discharge protection

Electrostatic discharge (ESD) is caused by a direct contact or electrostatic field. If a charged body approaches an electrically conducting surface, the acquired potential is discharged. An equalizing current can then flow in the associated circuitry and generate permanently damaging voltages by induction. The human body should be earthed at the same potential as the component or equipment being handled. An ESD hand strap creates an equipotential electrical connection between the object and the person. The hand strap should be worn as shown in the figure below.

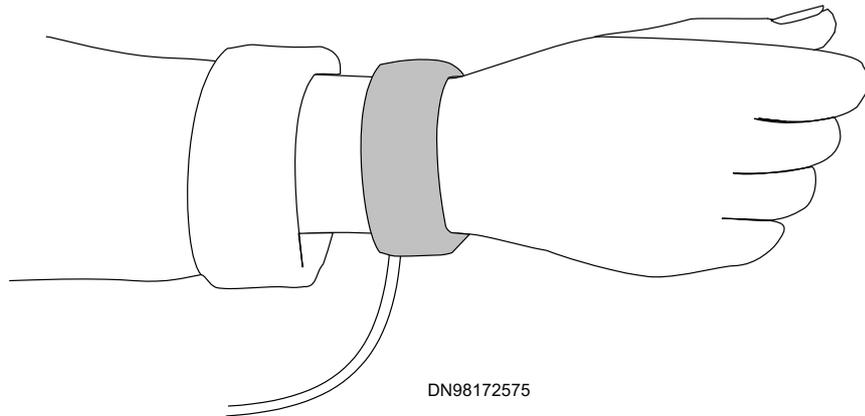


Figure 6. Hand strap

Connect the cord of the hand strap to the earth stud in the door hinge support beam of the DX 200 rack. The earth stud is marked with the label of the type shown in the figure below.

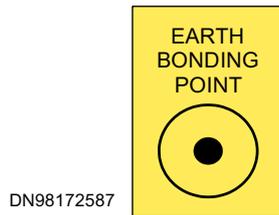


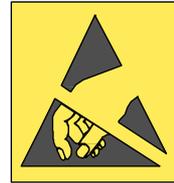
Figure 7. Earth bonding point label

Note

Always wear a close-fitting, properly grounded ESD handstrap around your uncovered wrist when handling the plug-in units.

For more details see the *Installation Instructions* .

Electrostatic sensitive devices are labelled in one of the two following ways:



DN98172599

Figure 8. Signs for electrostatic sensitive devices

Warnings