

# Personal Health and Safety Information

## Ericsson System Products

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### SAFETY INSTRUCTION

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## **Abstract**

This document presents the personal health and safety information that applies when working with Ericsson system products.



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# 1 Introduction

This document presents the personal health and safety information that applies when working with Ericsson system products. The instructions included are mandatory to ensure personal safety while working with Ericsson system products.

**Note:** Reduce the risk of accidents by studying all the information carefully before starting work. If questions arise regarding health and safety information, contact the supervisor or the local Ericsson company for clarification.

For information on product safety for Ericsson system products, see:



*System Safety Information,  
Ericsson System Products*

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## Local Regulations

Local regulations, first and foremost national regulations, override the information in this document. Where applicable local regulations are not available, the information herein prevails.

## Product Exclusion Indication

The information in this document covers personal health and safety aspects of all Ericsson system products. As all the information does not apply to a specific product, the readers must familiarize themselves with the potential hazards indicated on the product they are working with to understand which document parts apply to their product.

## 1.1 Target Group

The target group for this health and safety information is personnel who work with Ericsson products. All personnel who work with engineering, installation, test, and operation and maintenance of Ericsson products must familiarize themselves with this information.

## 1.2 Educational Requirements

The safety instructions in the relevant manuals or documents require that persons performing work on Ericsson products have the necessary education, training and competence required to perform work correctly. For certain work,



additional or special training may be required, for example authorization for Authorized Service Providers (ASP). ASP is an Ericsson certification procedure.

A good understanding of technical English is required, or of the language that the information is presented in, to ensure that these and other instructions can be understood and complied with.

## 2 Hazard Symbols and Admonitions

This section presents the types of admonitions and hazard symbols used in all Ericsson documentation. There are three levels of personal health and safety admonitions that indicate risk to persons: danger, warning and caution. Hazard symbols are used to indicate these and to present various other hazards.

The admonition levels for personal health and safety are presented in order of severity, with danger being the highest level, warning the intermediary and caution the lowest. When admonitions are encountered anywhere in a document, the information included should be read and any instructions should be followed.

### 2.1 Personal Health and Safety Admonitions

Personal health and safety admonitions are used to indicate hazardous activities and are normally preceded by the common hazard symbol shown in the figure below, or in specific cases by specialized symbols, *see Section 2.2 Special Hazard Symbols on page 3*.



*Figure 1 Safety Hazard Symbol*

The hazard symbol is common for all three admonition levels. The three admonition levels are defined below:

- |                 |   |
|-----------------|---|
| <b>Danger!</b>  | Indicates that there is an imminent hazard that is likely to result in death or serious injury. |
|                 | <b>Note:</b> Danger can be accompanied by other symbols depending on the country of operation.  |
| <b>Warning!</b> | Indicates that there is a potential hazard that could result in death or injury.                |



**Caution!** Indicates a hazard that could result in minor or moderate injury.

## 2.2 Special Hazard Symbols

This section presents special hazard symbols used to indicate the risk of chemical, electric shock, fire, heat, laser and Radio Frequency (RF) exposure hazards:



P010387A

*Figure 2 Chemical Hazard Symbol*



P002645A

*Figure 3 Electrical Hazard Symbol*



P010385A

*Figure 4 Fire Hazard Symbol*



P010274A

*Figure 5 Heat Hazard Symbol*



P010341A

*Figure 6 Laser Hazard Symbol*



P002644A

*Figure 7 RF Exposure Hazard Symbol*



## 3 General Safety Precautions

This section presents general safety precautions to ensure that persons are not injured when working with equipment.

- Items of jewelry, for example rings, watches and necklaces should be removed as they can catch on moving parts, or when lifting equipment.
- Pay attention to the hazard labels and other information labels on products.
- Never remove or cover hazard symbols as this can endanger persons working with the product.
- Only use the tools described, in the manner indicated, in instructions.

## 4 Electric Shock Hazards

This section provides information and instructions relating to equipment operating on voltage that entails an electric shock hazard.

**Note:** This information only applies to products marked with the electric shock hazard symbol.

The term Electric Shock Hazard is defined below:

<b>Electric Shock Hazard</b>	Hazard at voltage equal to or above 42.4 V peak or 60 V DC.
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**Danger!**

Electric shock risk. Avoid both direct and indirect contact with parts connected to mains power as this is likely to be fatal. Switch off the mains power before starting work.

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## Danger!

Improper electrical installation may cause fire or electric shock that is likely to be fatal. Only a qualified and authorized electrician is permitted to install or modify electrical installations.

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**Note:** Only qualified electricians are allowed to work directly with equipment that presents an electric shock hazard.

**Note:** AC mains installation must be carried out according to local regulations.

### 4.1 Safety Precautions for Working with Electrical Equipment

The following precautions must be observed when working with electrical equipment:

- The AC mains is switched off.
- Equipment exposed to moisture is protected with a tent or other equipment.
- Power cables are installed according to instructions.
- Installed cables are always clearly marked with labels.
- All personnel are familiar with and understand the warning signs on equipment.
- Only tested electrical tools are used.
- Holes are never drilled in equipment, or walls, without ensuring that there are no concealed cables.

## 5 Energy Hazards

This section provides information on how to avoid energy hazards.

The term energy hazard is defined below:



**Energy Hazard** Hazard at a stored energy level of 20 J or an available continuous power level of 240 VA.

## 5.1 Batteries

This section provides instructions and information on the proper handling of batteries.

**Note:** Where Ericsson is not the supplier of battery equipment, see the manufacturer's information on battery safety.



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### Caution!

Improper handling of batteries can result in the batteries short-circuiting, which can result in serious injury due to high energy levels. Exercise the necessary care when working with batteries.

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### Lithium Batteries

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### Warning!

Switching poles when replacing lithium batteries can result in an explosion that can lead to injury. Always ensure that lithium batteries are connected to the right poles.

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## 5.2 Capacitors and Uninterruptible Power Systems

This section provides information on how to avoid energy hazards in Capacitors and Uninterruptible Power Systems (UPS).

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### Warning!

High energy levels are present in this unit. Improper handling of the unit can lead to short circuiting that can result in serious injury. Exercise care when working with this unit.

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**Note:** Some capacitors and UPSs have energy levels above 240 VA. If this is the case this is indicated on the product with a voltage hazard.

## 5.3 Safety Precautions for Avoiding Energy Hazards

The following precautions must be observed when working with batteries and other units that present an energy hazard:

- All metallic objects worn, such as wrist watches, rings, bracelets, and so on are removed.
- Disconnect the charger power supply until the work is complete.
- Only use insulated tools.

## 6 Fire Hazard

This section provides instructions and information on safety precautions for preventing fire.



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### Warning!

In the event of a fire, evacuate the building or equipment site and raise the fire alarm at the closest alarm point, or call the emergency number. Do not re-enter a burning building under any circumstances.

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### Warning!

Heater in operation. Do not block the heater vents or place combustible materials close to the unit, as this can cause a fire that can endanger life.

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## 6.1 Fire Precautions

**Note:** When working with the installation or maintenance of equipment that involves interfering with the fire sectioning of a building, this should be carried out as quickly as possible.

Fire can spread to neighboring rooms. When working on equipment cable ducts, channels and access holes might have to be opened, thereby interfering with the fire sectioning of the building. The instructions below have to be followed when work has been completed to restore the building's fire sectioning:

1. Close the cable ducts and fire doors (if applicable) as soon as possible.
2. Seal cable ducts according to the regulations for the building.
3. Minimize the amount of inflammable material.
4. Remove empty packaging material from the equipment site.
5. Check that there is a functioning powder or carbon dioxide fire extinguisher for electric apparatus at the equipment site.

## 7 Heat Hazards

This section describes how to avoid injury from hot surfaces or hot air in equipment.



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### Caution!

Parts inside this equipment attain high temperatures during normal operation, which can cause burns to the skin if touched without heat protective clothing. Always use heat protective clothing when working with equipment containing hot surfaces, or switch the equipment off and allow it to cool before starting work.

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### Caution!

A heater, producing hot air, is in use in this equipment. Direct contact with hot air can lead to burns. When the heater is in operation, avoid close contact with the heater air evacuation vent.

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## 8 Mechanical Hazards

This section provides information on mechanical hazards in equipment containing sharp edges or rotating blades.



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### Caution!

Sharp metal edges may exist that can cause cuts to the skin or clothing. Wear protective gloves when handling this equipment.

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### Caution!

Rotating fan blades can cause injury to body parts that come into contact with the blades. Blades in fan units continue to rotate for a period of time, even after the fan has been switched off. Wait until fans have stopped rotating completely before starting work on or near fans.

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## 9 Radio Frequency Exposure Hazards

This section provides instructions and information on potential hazards related to radio frequency (RF) electromagnetic field (EMF) exposure from fixed radio transmitters (as opposed to mobile phones).

### 9.1 General RF Safety Information



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#### Caution!

Excessive RF exposure can result in potentially adverse health effects. If it is suspected that RF exposure limits may be exceeded, ensure that transmitting antennas are switched off, or reduce output power whilst working with, or near, antennas.

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**Note:** RF exposure limits are specified by national and international health authorities in standards, regulations or guidelines. The limits include wide safety margins to protect from potentially harmful tissue heating.

### 9.2 RF Safety for Installation and Maintenance Personnel

It is important that all personnel working with the installation and maintenance of transmitting equipment and antennas have basic knowledge regarding RF safety. They must have been informed or trained to be observant of potential risks of RF exposure exceeding specified safety limits, and be aware of precautionary measures necessary for differing situations.



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#### Caution!

Do not stand or work in front of an operational antenna, unless it has been verified or documented that RF exposure levels are within specified safety limits.

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### Caution!

Always be aware of other RF transmission antennas located close to the antenna you will be working with. If the RF exposure level is unknown, contact the equipment operator or ensure that measurements are done to verify that levels are below specified safety limits before starting work.

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### Caution!

Broken or disconnected RF cables can lead to exposure levels reaching, or exceeding, specified safety limits. Repair or reconnect cables before starting work.

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**Note:** Working outside of the main transmission direction of ordinarily configured antennas is in most situations possible, since the RF exposure does not normally reach specified safety limits in these directions.

## 10 Laser Hazards

This section provides information on working with products that have devices that communicate through optical fibres using laser.

**Note:** This information only applies to products marked with the laser hazard symbol, stating the class of laser in use.

### 10.1 Class 1 Laser

This section provides information on working with equipment containing Class 1 laser.

Products containing a Class 1 laser, according to IEC/EN 60825, are safe to use and therefore have no requirements for cautions or warnings during operation or maintenance procedures.



## 10.2 Class 3 Laser

This section provides information on working with equipment containing Class 3 laser.



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### Danger!

Never look directly into the end of a fiber optic cable, or other laser source. Equipment that transmits laser light can cause permanent eye damage. Switch off the laser before starting work on laser equipment.

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#### Safety Precautions for Working with Class 3 Laser

The following precautions must be observed when working with products containing a Class 3 laser hazard symbol:

- Never look into the light emitting end of a functioning optical fibre.
- Switch off units producing the laser signal before disconnecting an optical fibre.

## 11 Chemical Hazards

This section provides information on chemical hazards that can be present in products.

### 11.1 Beryllium Oxide Hazard

This section provides information on Beryllium Oxide (BeO). BeO is a restricted substance that is contained in certain components in some Ericsson products. If a product contains BeO, this is clearly marked on the unit containing BeO. The BeO hazard symbol is shown in the figure below.



Figure 8 BeO Hazard Symbol

**Note:** This information only applies to products marked with the BeO symbol.



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Poison BeO 

## **Danger!**

This product contains Beryllium Oxide (BeO), which can cause injury to skin or mucous membranes severe enough to endanger life or cause permanent injury. BeO dust is created by chafing, filing, or breakage and is extremely dangerous if inhaled, even for only a few seconds. Particles penetrating the skin through wounds or abrasions are liable to cause chronic ulcerations. Do not handle components containing BeO without protection.

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### **Symptoms of BeO Poisoning**

Symptoms of BeO poisoning are respiratory distress, cyanosis (grey-blue discoloration of the skin and mucous membranes), or both. These symptoms may develop within a week, or after a period of several years.

### **Safety Precautions for Working with Components Containing BeO**

The following precautions must be observed when working with components containing BeO:

- Do not carry loose components in pockets, bags, or containers, or tamper with them in any way that could cause breakage or disintegration.
- Do not apply excessive heat during soldering.
- Do not break open components for inspection.
- Store components in their original packaging and do not mix them with other components.
- Ensure that components do not become mechanically damaged.
- Use care when replacing defective components.
- Do not blow on exposed surfaces due to the danger of BeO dust.
- In case of accident, or if you feel unwell, seek medical advice immediately and show the label where possible.

## **11.2 Battery Acid Hazard**

This section provides information on chemical hazards related to lead-acid batteries.



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### **Caution!**

Excessive heat can cause battery casing to soften and warp, potentially allowing acid to escape. In contact with the skin, acid can cause injury, and if breathed in, can affect the airways. Use protective equipment when replacing batteries.

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### **Caution!**

Batteries can leak electrolyte if improperly handled. Electrolyte in contact with skin or eyes can cause injury. In the event of electrolyte injuries, rinse the affected area with water and seek medical attention immediately. Use protective equipment when replacing batteries.

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#### **Safety Precautions for Working with Lead-acid Batteries**

The following precautions must be observed when working with lead-acid batteries:

- Eye wash facilities, and protective gloves or aprons are available.

## **11.3 Gas Explosion Hazard**

Open-cell lead acid batteries can give off gases that in the event of a fire can cause an explosion that is likely to be fatal. All battery areas must be adequately ventilated and protected from fire.

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### **Danger!**

Do not use open-cell lead acid batteries. Open-cell lead acid batteries give off hazardous gases that, if ignited, can cause an explosion that is likely to be fatal.

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## 12 Other Hazards

This section includes safety instructions and rules for the following hazards:

- Handling Heavy Goods
- Working at Height

### 12.1 Handling Heavy Goods

This section provides instructions and rules for handling heavy goods.

**Note:** Follow local regulations for safety clothing and safety equipment for hoisting and moving goods.

#### Falling Objects



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#### Warning!

Risk for falling objects, work at height in progress. Falling objects can cause serious injury or even be fatal. Always wear a helmet and avoid standing in the danger area.

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#### Overloading



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#### Warning!

Overloading, or other wrong use of lifting devices, can cause serious injury to anyone hit by falling equipment. Do not create an angle exceeding 90° between lifting straps as this increases the strain on them and can cause them to snap.

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### Caution!

The equipment is heavy. Lifting the equipment without the aid of a lifting device can cause injury.

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### Unsecured Equipment

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### Caution!

Tip risk! Unsecured equipment can tip over if not secured properly, causing injury to personnel. Secure products with a high center of gravity as soon as possible to avoid accidents.

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## 12.2

### Working at Height

This section provides information about working at height.

For information on climbing instructions for working at height, see:



*Safe Climbing*

*LZY 213 715/02*

### Safety Precautions for Working at Height

The following precautions must be observed when working at height:

- Personnel have the appropriate training and medical certificate.
- A full-body safety harness and safety helmet are available.
- Adequate protective clothing, essential in cold and wet weather, is available.
- All lifting devices are tested and approved, and ready for use.
- All personnel in the area are wearing helmets.