



Personal Health and Safety Information

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Preface

Purpose

This document describes the personal health and safety information that applies when working with ZTE system products. The instructions contained herein are mandatory to ensure personal safety when working with ZTE system products.



Note:

The information contained herein must be read carefully before working to minimize the risk of personal injury. For any personal safety questions, ask your supervisor or contact your local ZTE office for advice.

Target Group

This document is designed for those who work or supervise with ZTE products in engineering, installation, commissioning, and maintenance. All these persons should fully understand the safety instructions and other safety information contained herein to minimize personal injuries.

Scope

The information contained herein applies to all ZTE products. Users must clearly understand the potential risks when working with ZTE products, and know which part of this document can be used to deal with these risks.

Local Laws and Regulations

Any work relating to ZTE system products is subject to local laws and regulations. If there are no applicable local laws or regulations, the information contained herein should be followed.

Educational Requirements

According to the safety instructions in ZTE user manuals or other documents, all personnel who work with ZTE products must have the necessary education, training, and competence required to work correctly. For certain work, special training or certification may be required, for example, ZTE certification.

First Aid

First aid kits must be stored in designated places in buildings and vehicles, with their locations prominently marked. A suitable number of people should be trained as first aiders. The names of trained first aiders must be prominently shown.

Chapter 1

Hazard Symbols

This chapter describes the hazard symbols used in ZTE manuals. Hazard symbols are classified into three levels, danger, warning, and caution, which are used to indicate different hazards.

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1.1 Hazard Symbols illustrations

Table 1-1 lists and explains hazard symbols.

Table 1-1 Hazard Symbols

Hazard Symbol	Meaning
	Hazard Symbol: General safety precautions. Danger: Indicates an imminent hazard that, if not avoided, could result in death or serious injury. Warning: Indicates a hazard that, if not avoided, could result in serious injuries, equipment damages or interruptions of major services. Caution: Indicates a potential hazard that, if not avoided, could result in moderate injuries, equipment damages or partial service interruption.
	Electrical Hazard Symbol: There is a risk of electric shock.
	Laser Hazard Symbol: Beware of strong laser beam.
	RF Exposure Hazard Symbol: Beware of strong electromagnetic field.
	Heat Hazard Symbol: Beware of heat source or hot surface that can cause burns.

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Chapter 2

General Safety Precautions

This chapter describes general safety precautions to avoid personal injuries.

- Remove items of jewelry, such as rings, necklaces, and watches because they can catch on moving parts. Metal jewelry items are conductors that can result in electric shock.
- Always wear appropriate personal protective equipment ([PPE](#)) when working.
- Pay attention to the hazard labels and caution or warning information on products. Never cover or remove the labels and information.
- Only use the tools described in instructions.
- Be familiar with equipment documents and special materials.

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Chapter 3

Electric Shock Hazards

This chapter provides instructions and information on how to avoid electric shock.

An electric shock hazard refers to a hazard at a voltage equal to or above 42.4V peak or 60V DC within the contact area of one hand.



Danger!

Avoid direct or indirect contact with parts connected to the main power supply because this is likely to be fatal.

Do shut off the power supply before connecting or disconnecting a power cable.



Danger!

Improper electrical installation can result in fire, electric shock, or explosion that is likely to be fatal. Only qualified electricians are allowed to install or modify electrical installations.



Note:

Power supply installation must be carried out by qualified and certified personnel according to applicable local laws and regulations.

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Chapter 4

Energy Hazards

This chapter provides instructions and information on how to avoid energy hazards.



Caution!

Some products contains energy storage devices with high energy levels, such as capacitor and inductor, which store electrical energy even when switched off. Only professional maintenance personnel are allowed to maintain such products.

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Chapter 5

Fire Hazard

This chapter provides instructions and information on how to avoid fire.



Caution!

In case of a fire, try to use appropriate fire extinguishers to extinguish the fire. If the fire is out of control, evacuate the building or equipment site immediately and raise the nearest fire alarm, or call the emergency number. Do not re-enter a burning building under any circumstances.



Caution!

Do not cover the heater vents or place combustible materials close to the heater because this can cause a fire that endangers personal life.

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5.1 General Fire Precautions

- All flammable or volatile liquids must be stored in approved and properly labeled cans or containers. All aerosol cans and flammable solvents should be stored in NFPA (or equivalent) approved metal cabinets. (Alternatively, a flammable may be stored 30 feet from the building).
- Storage of chemicals should conform to the Hazardous substance policy, that is, incompatible chemicals should be separated. Review this with the Safety Coordinator if there are any questions.
- Keep floor and aisle space clean and free of obstacles. Use non-flammable cleaning agents whenever possible.
- Remove empty packaging material and installation remains from the equipment site.
- Make sure that there are an adequate number of functional carbon dioxide fire extinguishers for electric fires at the equipment site.
- The location of fire extinguishers, fire doors, and fire exits should be marked clearly. All fire exits should be inspected regularly.

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Chapter 6

Heat Hazards



Caution!

Parts inside this equipment attain high temperatures during normal operation. Always wear heat protective clothing when working with hot surfaces, or switch the equipment off and allow it to cool down before starting work.



Caution!

Do not touch the heater or directly contact hot air it produces, or the heater vents, which can result in burns.



Caution!

Turn off the soldering irons after use and store them safely in appropriate stand. Never touch the front end of the soldering irons and keep away from solder drops.

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Chapter 7

Mechanical Hazards

This chapter provides instructions and information on how to avoid mechanical hazards.

A mechanical hazard refers to a hazard that is caused by the sharp edges or rotating blades in equipment.



Caution!

Do not put fingers or any tools in the running fan to avoid personal injuries. Keep tools away from the running fan.



Caution!

Sharp metal edges may exist in this equipment. Wear protective clothing and gloves when handling this equipment.



Caution!

Improper use of power tools can result in personal injuries. Do not use damaged tools. Switch off the tools when they are not in use or when replacing parts.



Caution!

Wear protective clothing and gloves and use eye protection when using power tools. Rotating parts of the tools are dangerous because they can catch loose clothing, ties, or jewelry.



Caution!

Do not place the equipment on a floor with a tilting angle of more than ten degrees. Otherwise, the equipment may topple to cause personal injuries.



Caution!

All hazardous mechanical equipment is protected by guards. Do not operate any equipment with the guard open or removed.

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Chapter 8

Laser Hazards

This chapter provides instructions and information on how to avoid laser hazards.

According to IEC/EN 60825, lasers can be classified into four types: Class 1, Class 2, Class 3, and Class 4. Class 1 lasers are safe to use and have no requirements for cautions or warnings during operation or maintenance procedures. Looking directly into, or direct exposure to, the other three types of lasers can result in serious personal injuries.



Warning!

Do not look into the beams of Class 2 laser products.



Warning!

Do not look directly into, or use an optical instrument to look into, the beams of Class 3 laser products. Switch off the laser before starting work on laser equipment.



Warning!

Avoid exposure to beams of Class 3b laser products. Switch off the laser before starting work on laser equipment.



Warning!

Avoid eye or skin exposure to direct or scattered radiation of Class 4 laser products. Switch off the laser before starting work on laser equipment.



Note:

All equipment containing lasers is marked with a laser warning sign and the class of laser.

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Chapter 9

RF Exposure Hazards

This chapter provides instructions and information on how to avoid radio frequency (RF) exposure hazards.

Excessive RF exposure can result in personal injuries. RF exposure limits are specified by national and international health standards, regulations, or guidelines.



Caution!

Switch off transmitting antennas, or reduce their output power to a safe level when working with, or staying near, these antennas.

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9.1 RF Safety for Installation and Maintenance Personnel

It is important that all personnel who are responsible for installing and maintaining RF transmitting equipment have enough knowledge about RF safety. They must have been trained to be aware of potential risks of RF exposure. They must observe relevant regulations during RF equipment installation and operation.



Note:

EME-controlled areas are marked and all personnel entering an [EME](#) (Electro Magnetic Energy) controlled area must be trained in the measures that may reduce their potential exposure.



Note:

All personnel who will be required to wear protective equipment must be trained in its proper use, inspection, and limitations.



Note:

If RF Exposure can not be reduced to within the occupational exposure limits by following normal precautionary measures, personal monitoring equipment should be used.

**Caution!**

Do not stand in front of antennas unless it has been verified or documented that RF exposure levels are within specified safety limits.

**Caution!**

Never operate transmitters without shields during normal operation.

**Caution!**

Do not operate base station antennas in equipment room.

**Caution!**

Always pay attention to other RF transmission antennas around the antenna you will be working with. If the RF exposure level is unknown, contact the equipment operator to verify that levels are below specified safety limits before starting work.

**Caution!**

Broken or disconnected RF cables can result in exposure levels exceeding specified safety limits. Repair or reconnect such cables before starting work.

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Other Hazards

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10.1 Hoisting Heavy Objects

This section provides instructions and information on how to hoist heavy objects.

Hoisting heavy objects must comply with local laws and regulations.

10.1.1 General Information



Caution!

Falling objects can cause serious or even fatal injuries. Always wear a safety helmet. Never stand or walk under any object that is being lifted.



Caution!

The equipment is heavy. Lifting the equipment without using a lifting device can cause personal injuries.

10.1.2 Crane and Rigging Operations



Note:

All crane operators must have valid National Council for the Certification of Crane Operators (NCCCO, or equivalent) card for the type of equipment being operated.



Caution!

Only qualified riggers are allowed to attach rigging from the load to the mechanical lifting equipment. Improper rigging can result in falling objects, which can lead to serious or even fatal personal injuries.

10.2 Working at Height

This section provides instructions and information on how to avoid hazards when working at height.

All personnel working at height must be specially-trained and certified. Working at height must comply with local laws, regulations, and guidelines.



Caution!

One or more of these protective systems must be in place 100% of the time when persons are exposed to falling 6 feet or more.



Caution!

Antenna mounts, step bolts (climbing pegs), and gin poles are not structural members, and attaching fall protection equipment to these items is prohibited.



Danger!

The act of rappelling on towers to a lower elevation is strictly prohibited.

10.3 Batteries

This section provides instructions and information on how to handle batteries. For batteries that are not provided by ZTE Corporation, instructions provided by the battery manufacturer must be observed.



Caution!

Batteries are generally bulky and heavy. Always use a mechanical aid. Take proper precautions before lifting.



Caution!

Batteries contain sulfuric acid, which is extremely corrosive, and protective equipment should be worn to prevent contact with the eyes or skin. An eyewash fountain should be located near battery storage areas for use if battery acid comes in contact with the eyes.



Caution!

When some types of batteries are under a "load," hydrogen gas is formed and vented. Because hydrogen is extremely flammable, no smoking is allowed around batteries.



Caution!

Any battery must only be replaced by a battery of the same type. Otherwise, there is a risk of explosion.

**Note:**

All batteries must be regularly maintained.

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Glossary

PPE

- Personal Protective Equipment

EME

- Electromagnetic Energy