



ZXR10 ZSR V2

Intelligent Integrated Multi-Service Router

Safety Precautions

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ZTE CORPORATION
No. 55, Hi-tech Road South, ShenZhen, P.R.China
Postcode: 518057
Tel: +86-755-26771900
Fax: +86-755-26770801
URL: <http://support.zte.com.cn>
E-mail: support@zte.com.cn

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Contents

About This Manual	I
Chapter 1 Personal Health and Safety Information.....	1-1
1.1 Hazard Symbols.....	1-1
1.2 General Safety Precautions	1-2
1.3 Electric Shock Hazards.....	1-2
1.4 Energy Hazards	1-3
1.5 Fire Hazards	1-4
1.6 Heat Hazards.....	1-4
1.7 Mechanical Hazards.....	1-5
1.8 Laser Hazards	1-6
1.9 RF Exposure Hazards	1-6
1.10 Hoisting Heavy Objects.....	1-7
Chapter 2 System Safety Information.....	2-1
2.1 Hazard Symbols.....	2-1
2.2 General Safety Precautions	2-1
2.3 Batteries	2-2
2.4 Electrostatic Protection	2-3
Chapter 3 FCC Warning	3-1
Glossary	I

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About This Manual

Purpose

This manual describes the personal health and safety information and system safety information that apply when you work with ZTE system products.

The information contained herein is subject to your local laws and regulations.



Note:

This manual must be read carefully before working to minimize the risk of personal injury. For any personal safety or system safety questions, consult your supervisor or your local ZTE office.

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 manual pertains to these risks.

Intended Audience

This manual is intended for those who work with ZTE products. These persons should fully understand the safety instructions and other safety information contained herein to minimize personal injuries and system damage.

What Is in This Manual

This manual contains the following chapters:

Chapter 1, Personal Health and Safety Information	Describes the instructions and precautions for personal health and safety.
Chapter 2, System Safety Information	Describes the instructions and precautions for system safety.

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Chapter 1

Personal Health and Safety Information

Table of Contents




Hazard Symbols	1-1
General Safety Precautions	1-2
Electric Shock Hazards	1-2
Energy Hazards	1-3
Fire Hazards	1-4
Heat Hazards	1-4
Mechanical Hazards	1-5
Laser Hazards	1-6
RF Exposure Hazards	1-6
Hoisting Heavy Objects	1-7



1.1 Hazard Symbols

This section describes the hazard symbols for personal health and safety used in ZTE manuals.

Table 1-1 lists and explains these hazard symbols.

Table 1-1 Hazard Symbols for Personal Health and Safety

Hazard Symbol	Meaning
	Danger: indicates an imminently hazardous situation. Failure to comply can result in death or serious injury, equipment damage, or site breakdown.
	Warning: indicates a potentially hazardous situation. Failure to comply can result in serious injury, equipment damage, or interruption of major services.
	Caution: indicates a potentially hazardous situation. Failure to comply can result in moderate injury, equipment damage, or interruption of minor services.
	Electrical hazard symbol: Beware of electric shock.
	Laser hazard symbol: Beware of strong laser beam.

Hazard Symbol	Meaning
	RF exposure hazard Symbol: Beware of strong electromagnetic field.
	Heat hazard symbol: Beware of heat source or hot surface that can cause burns.

1.2 General Safety Precautions

Educational Requirements

All personnel who work with ZTE products must meet the following requirements:

- Only well-trained personnel are allowed to install, configure, operate, and maintain ZTE products.
- Only the personnel authorized by ZTE CORPORATION are allowed to replace or modify ZTE equipment, parts, or software.

Operational Requirements

The following precautions must be observed to avoid personal injuries:

- Report any potential safety problems to the person in charge before working with ZTE products.
- 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 or information.
- Only use the tools described in instructions.
- Be familiar with equipment documents and special materials.

1.3 Electric Shock Hazards

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.

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

**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 equipment.

**Danger!**

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

**Danger!**

Always shut off the power supply before connecting or disconnecting a power cable. When the core of a power cable contacts a conductor, electric arcs or electric sparks may occur and result in fire or eye injury.

**Note:**

Power supply installation must be carried out according to applicable local laws and regulations.

1.4 Energy Hazards

**Danger!**

Some ZTE products contain energy storage devices with high energy levels, for example capacitors and inductors, which store electrical energy even when switched off. Only professional maintenance personnel are allowed to maintain such products. Failure to comply can result in serious personal injury or death.

1.5 Fire Hazards

 **Danger!**

If a fire occurs and is out of control, evacuate the building or equipment site immediately. Raise the nearest fire alarm, or call the emergency number. Do not re-enter a burning building under any circumstances. Failure to comply can result in serious personal injury or death.

 **Caution!**

Do not expose the equipment to combustible or explosive gases or fumes, or operate the equipment in such an environment. Failure to comply can result in fire and personal injury.

General fire precautions are described as follows:

- 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, flammable materials may be stored 30 feet away 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 debris from the equipment site.
- Make sure that there is an adequate number of functional carbon dioxide fire extinguishers for electrical fires at the equipment site.

1.6 Heat Hazards

Caution!

The parts inside this equipment attain high temperatures during normal operation. Always wear heat protective clothing when working with hot surfaces, or switch off the equipment and allow it to cool down before starting work. Failure to comply can result in personal injury.

Caution!

Do not touch the heater or directly contact the heater vents when the heater is in operation. Failure to comply can result in burns.

1.7 Mechanical Hazards

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

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

**Caution!**

Do not put fingers or any tools in an operating fan because this can result in personal injury. Keep tools away from an operating fan.

**Caution!**

Sharp metal edges may exist in this equipment. Wear protective clothing and gloves when operating or moving the equipment. Failure to comply can result in personal injury.

**Caution!**

Improper use of power tools can result in personal injury. Do not use damaged tools. Switch off the tools when they are not in use or when replacing tool 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 or jewelry and result in personal injury.



Do not place the equipment on a floor with a tilting angle of more than ten degrees. Failure to comply can result in personal injury.

1.8 Laser Hazards



Do not look directly into or keep your eyes close to the end of an optical fiber. Failure to comply can result in permanent eye damage.

General laser precautions are described as follows:

- Only specially-trained personnel are allowed to work with laser.
- Always wear goggles when working with laser or optical fibers.
- Switch off the laser source before disconnecting a fiber connector.

1.9 RF Exposure Hazards

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



Switch off transmitting antennas, or reduce their output power to a safe level when working with, or staying near, these antennas. Failure to comply can result in personal injury.

All personnel who are responsible for installing and maintaining RF transmitting equipment must have sufficient 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.

- All personnel entering an Electromagnetic Energy (EME) controlled area must know how to reduce potential exposure to RF radiation.
- All personnel who will be required to wear PPE must know how to use the PPE correctly.
- If RF exposure cannot be reduced to a level within the occupational exposure limits, appropriate personal safety monitoring equipment must be used.
- Never operate transmitters without taking protective measures.

- Do not operate base station antennas in an equipment room.
- Broken or disconnected RF cables can result in exposure levels exceeding specified safety limits. Repair or reconnect such cables before starting work.

1.10 Hoisting Heavy Objects

General Information



Danger!

Falling objects can result in serious or even fatal injury. Always wear a safety helmet. Never stand or walk under an object that is being lifted.



Warning!

The equipment is heavy. Lifting the equipment without using a lifting device can result in serious personal injury.

Crane and Rigging Operations



Note:

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



Danger!

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 injury.

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Chapter 2

System Safety Information

Table of Contents


Hazard Symbols.....	2-1
General Safety Precautions.....	2-1
Batteries.....	2-2
Electrostatic Protection.....	2-3

2.1 Hazard Symbols

This section describes the hazard symbols for system safety used in ZTE manuals.

Table 2-1 lists and explains these symbols.

Table 2-1 Hazard Symbols for System Safety

Hazard Symbol	Meaning
	Warning: indicates a potentially hazardous situation. Failure to comply can result in serious injury, equipment damage, or interruption of major services.
	Caution: indicates a potentially hazardous situation. Failure to comply can result in moderate injury, equipment damage, or interruption of minor services.

2.2 General Safety Precautions

Educational Requirements

All personnel who work with ZTE products must meet the following requirements:

- Only well-trained personnel are allowed to install, configure, operate, and maintain ZTE products.
- Only the personnel authorized by ZTE CORPORATION are allowed to replace or modify ZTE equipment, parts, or software.

Grounding Requirements

The following requirements apply to the equipment that should be grounded:

- Install the grounding cables first when installing the equipment, and remove the grounding cables last when removing the equipment.
- Never operate the equipment without grounding.
- The equipment must be connected permanently to the protective ground.

Operational Requirements

The following precautions must be observed when you install, replace, or test ZTE products:

- Report any potential safety problems to the person in charge before working with ZTE products.
- When replacing parts, place the parts, screws, and tools safely to prevent them from dropping into operating fans.
- Never lift a board or unit by pulling the cables on it.
- Never disconnect a connector by pulling the cables on a board or unit.
- Do not block or cover the vents when the equipment is in operation.
- Always use a proper tool to tighten the screws when installing a panel.
- After installing and replacing the equipment, remove empty packaging material from the equipment site.

2.3 Batteries

Battery Temperature



Caution!

Check lead-acid batteries for signs of overheating. Overtemperature can result in deformation, damage, and electrolyte spill.

When the temperature of a lead-acid battery is above 60 °C, check whether there are electrolyte spills. If so, dispose of the spills properly and immediately.

Electrolyte Spills



Warning!

Electrolyte spills erode metal objects and boards and cause equipment damage.

When electrolyte spills occur, absorb and neutralize the spilled liquid by using the absorbent and neutralizer specified by the battery manufacturer. Typical neutralizers are as follows:

- Sodium bicarbonate (baking soda): NaHCO_3
- Sodium carbonate (soda): Na_2CO_3

2.4 Electrostatic Protection

Electrostatic Protection in Equipment Operations



Warning!

An Electrostatic Discharge (ESD) wrist strap must be used to prevent the equipment from being damaged when you operate the equipment.

The following precautions must be taken as electrostatic protection:


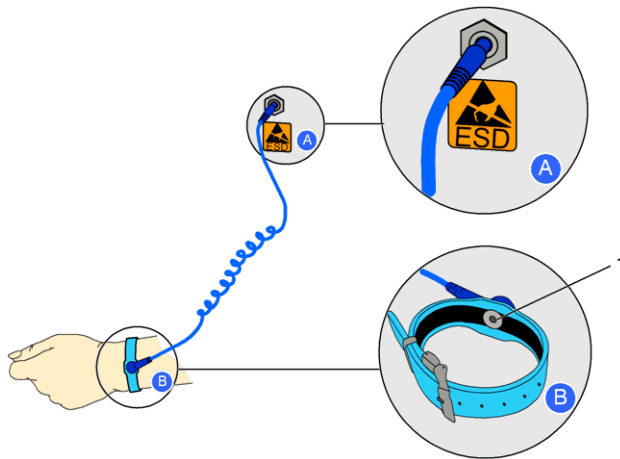
- Before operating the equipment, make sure that the metal buckle of the ESD wrist strap is in good contact with your skin. Make sure that the other end of the wrist strap is plugged into the ESD jack on the equipment (), as shown in [Figure 2-1](#).
- When the ESD wrist strap is in good condition, the resistance of the system ranges from 0.8 MΩ to 1.2 MΩ. Generally, an ESD wrist strap has a service life of two years. It should be replaced when the resistance is out of the range.
- The ESD wrist strap cannot prevent the ESD that occurs when your clothes contact a board. Avoid contacts between boards and clothing.

Figure 2-1 Wearing ESD Wrist Strap



1. Metal buckle

Electrostatic Protection in Equipment Storage and Handling



When storing or handling circuit boards or other parts, use the original package or other antistatic materials for electrostatic protection. Failure to comply can result in equipment damage.

Chapter 3

FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.

MODIFICATION: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the device.

REDUCING RADIATION EXPOSURE - USE PROPERLY

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.

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Glossary

EME

- Electromagnetic Energy

ESD

- Electrostatic Discharge

PPE

- Personal Protective Equipment