Huawei AR532 Router & AR-DCM-Pa

User Manual

Issue 01

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About This Document

Intended Audience

This document describes the AR532 hardware structure and provides installation instructions, covering the equipment appearance and specifications, installation preparations, equipment installation procedure, and cable connection.
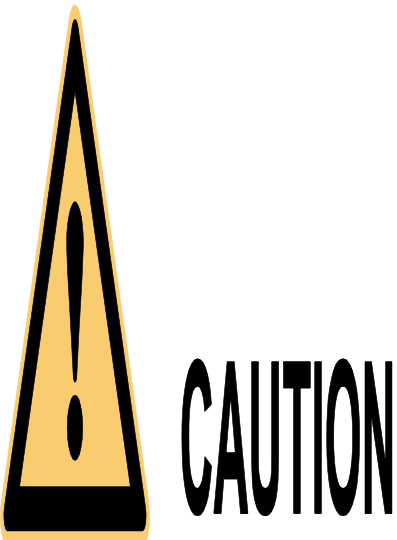
This document is intended for:
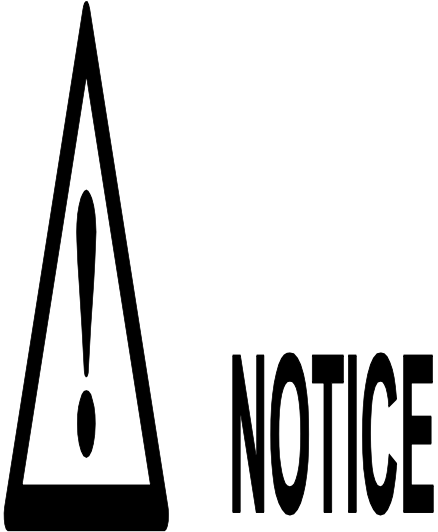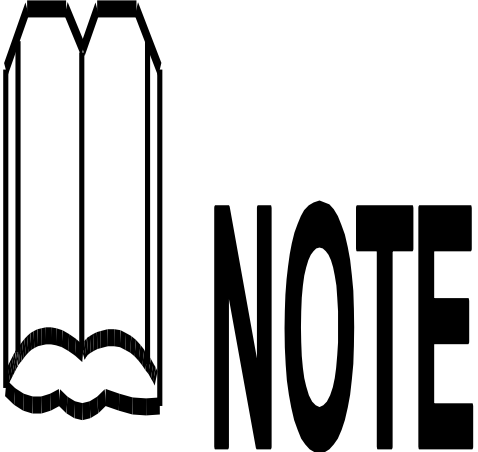
- Hardware installation engineers
- Onsite maintenance engineers

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Symbol	Description
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Symbol	Description
	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 01 (2016-09-20)

This issue is the first official release.

Contents

1 Hardware Description

About This Chapter

1.1 Chassis

1.1.1 Version Mapping

Table 1-1 lists the mapping between the AR532 router and software versions.

Table 1-1 Mapping between the AR532 router and software versions

Router Model	Software Version
AR532	V200R008C20 and later versions

1.1.2 Appearance

Figure 1-1 shows the appearance of the AR532 router.

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Figure 1-1 AR532 appearance

1	Coin battery holder **NOTE** To prevent short circuiting of the coin battery, use insulated tweezers to replace the battery.	2	Cover open sensor
3	USB interface	4	PS/2 (RS232 interface)
5	Operation keys	6	Backup battery holder **NOTE** To ensure optimal performance of the battery, it is recommended that the battery be used within a temperature range of -10 ℃ to +60 ℃ (14 ℉ to 140 ℉).
7	3G module slot	8	PLC/RF module slot
9	Auxiliary terminals **NOTE** Terminals 15 to 18 (A1, B1, A2, B2) are used for RS485 interfaces.	10	AC power socket
11	GE combo interface	12	GE electrical interface

Related Documents

Video: (video)Huawei AR532 Introduction

1.1.3 Indicator Description

Figure 1-2 shows indicators on the AR532 router.

Figure 1-2 Indicators on the AR532

Number	Indicator	Color	Description
1	RUN/ALM	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or is restarting.

Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
2/4	GE electrical interface indicators (GE0 and GE1)	Green	Steady on: A link has been established on the corresponding GE electrical interface. Blinking: Data is being transmitted or received on the corresponding GE electrical interface. Off: No link is established on the corresponding GE electrical interface.
3/5	RS485 interface indicators (RS4850 and RS4851)	Orange	Steady on: The corresponding RS485 link is available, but the interface is not connected or is not transmitting or receiving data. Fast blinking: The corresponding RS485 link is available and is transmitting or receiving data. Off: The corresponding RS485 link is not configured or has failed.

1.1.4 Interface Description

USB Interface

![NOTICE icon]

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. Table 1-2 lists USB interface attributes.

Table 1-2 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. Table 1-3 lists GE electrical interface attributes.

Table 1-3 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on HUB or LAN switch.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	Ethernet Cable

3G-WCDMA Antenna Interface

The 3G-WCDMA antenna interface connects to a 3G-WCDMA antenna to receive and transmit 3G signals. Table 1-4 lists 3G-WCDMA antenna interface attributes.

Table 1-4 3G-WCDMA antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	3GPP TS 134 121-1
Frequency bands supported	UMTS: 2100/900 (MHz) EDGE/GPRS/GSM: 1900/1800/900/850 (MHz)
Rate	GSM CS: ● Uplink: 9.6 kbit/s ● Downlink: 9.6 kbit/s GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS:

Attribute	Description
	• Uplink: 64 kbit/s • Downlink: 64 kbit/s WCDMA PS: • Uplink: 384 kbit/s • Downlink: 384 kbit/s HSDPA: downlink rate of 3.6 Mbit/s
Network protocol	GSM/GPRS/EDGE/WCDMA/HSDPA
Antenna type	3G Whip Antenna

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

📖 NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

1.1.5 Technical Specifications

Table 1-5 lists the technical specifications of the AR532 router.

Table 1-5 AR532 technical specifications

Item	Description
System parameters	
Processor	Dual-core, 700 MHz
Memory	256 MB
Flash memory	512 MB
Dimensions and weight	
Dimensions (W x D x H)	290 mm x 180 mm x 95 mm (11.42 in. x 7.09 in. x 3.74 in.)
Weight	2.5 kg (5.51 lb)
Power specifications	
Rated input voltage	• Single-phase: 100 V to 240 V AC

Item	Description
range	• Three-phase: 173 V to 415 V AC
Maximum input voltage range	• Single-phase: 90 V to 290 V AC • Three-phase: 304 V to 456 V AC
Power consumption	
Maximum power consumption	12.5 W
Environment parameters	
Operating environment temperature	-25 ℃ to +70 ℃ (-13 ℉ to +158 ℉) **NOTE** The operating temperature cannot exceed 65 ℃ (149 ℉) when a 3G module is used in the router.
Storage temperature	-40 ℃ to +85 ℃ (-40 ℉ to +185 ℉)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

1.2 Modules

1.2.1 PLC Module

Appearance

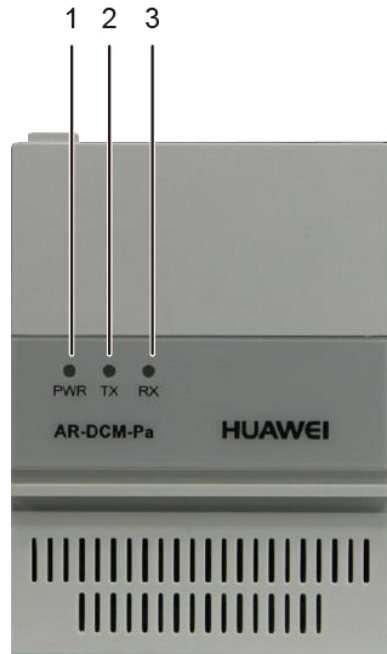Figure 1-3 shows the appearance of a PLC module.

Figure 1-3 PLC module appearance

Panel

Figure 1-4 shows the panel of a PLC module.

Figure 1-4 Panel of a PLC module

Number	Item	Color	Description
1	PWR indicator	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	TX indicator	Green	Startup stage: blinks at variable frequencies. Operation stage: shows the currently working frequency band and serial number identifier (SNID) of the PLC module in the same way. • Show the SNID: The indicator keeps on for 500 ms and then off for 500 ms. The number of alternations between the on and off states depends on the SNID value. • After showing the SNID, the indicator stays off for 5s. • Show the working frequency band: The indicator keeps on for 2s and then off for 2s. This process lasts for 4s to 16s, depending on the frequency band used. – Band 0: The indicator turns on once. – Band 1: The indicator turns on twice. – Band 2: The indicator turns on three times. – Band 3: The indicator turns on four times. • After showing the working frequency band, the indicator stays off for 5s, and then starts to

Number	Item	Color	Description
			show the SNID again.
3	RX	Green	Startup stage: blinks at variable frequencies. Operation stage: steady on when data is being received and off when no data is received.

Ordering Information

To place an order, contact the Huawei local office.

Table 1-6 provides the ordering information.

Table 1-6 Ordering information

Part Number	Module Name	Description
50030153	AR-DCM-Pa	PLC module

2 Hardware Installation

About This Chapter

2.1 Preparations

2.1.1 Safety Precautions

Before you start the installation procedure, read all safety precautions described in this document and observe any warning labels affixed to the equipment. Doing so will ensure your safety and protect the equipment from damage.

Safety precautions provided in this document may not cover every eventuality, so remain mindful of safety at all times.

Only trained and qualified personnel should be allowed to install, operate or maintain the equipment.

General Safety Guidelines

⚠ **CAUTION**

- Always take precautions against ESD whenever you handle the equipment. For example, wear ESD gloves or an ESD wrist strap. To avoid electric shock or burn, remove conductive objects like jewelry and watch.
- After installing the equipment in a cabinet or rack, connect a ground cable to the equipment. The ground cable must be connected first and disconnected last.

Environmental Safety

⚠ **DANGER**

Do not install the equipment in an environment with flammable or explosive gases or smoke.

📖 **NOTE**

● Install the equipment in a dry environment away from sources of water.

● The installation site must be well ventilated to ensure normal operation of the equipment.

Electrical Safety

⚠ **DANGER**

● Contact with high-voltage power can be fatal. Misoperations on high-voltage facilities may result in fire, electric shock, or other accidents.

● Never install or remove the equipment and power cables while the power is on. The electric arc or spark generated between a power cable and conductor may cause fire or eye damage.

● To protect personal and equipment safety, ground the equipment before connecting it to a power source.

Mechanical Safety

⚠ **CAUTION**

● Protect the equipment from collision during transportation and unpacking.

● If damage is found on the shell of the equipment, which may be caused by collision during movement or installation, contact the equipment supplier immediately. Do not power on the equipment in this case.

● Place the equipment on a shelf in your warehouse. Do not stack more than 10 boxes of routers or more than 10 unpacked routers together.

2.1.2 Checking the Installation Environment

Before the installation, ensure that the environment in the installation site meets operation requirements of the equipment.

The following table lists requirements for the installation environment.

Item	Requirement
Heat dissipation	There must be more than 50 mm clearance around the equipment for heat dissipation.
Cleanness	● The equipment must be installed in a clean, dry, well ventilated site.

Item	Requirement
	• The installation site must be free from leaking or dripping water, heavy dew, and humidity.
Temperature and humidity	• Operating temperature: -25 ℃ to +70 ℃ (-13 °F to +158 °F) • Operating relative humidity: 5% to 95% (noncondensing) **NOTE** If the relative humidity exceeds 70%, use dehumidifiers or dehumidifying air conditioners.
Corrosive gases avoidance	There must be no acidic, alkaline, or other corrosive gases in the installation site.
Surge protection	• Deploy signal cables on internal walls. Do not route cables aerially in outdoor environments. • Keep signal cables away from power cables and surge protection devices.
Electromagnetic environment	See Electromagnetism Requirements for the Equipment Room.

2.1.3 Preparing Installation Tools

The following table lists the tools used for the installation.

Tool	Function	Picture
Flat-head screwdriver	Used to turn slotted-head screws and bolts.	
Phillips screwdriver	Used to turn cross-head screws and bolts.	
Marker	Used to draw lines and mark labels.	
Diagonal pliers	Used to cut insulation tubes and cable ties.	

2.2 Installing an AR532 Router

2.2.1 Installing the Router in a Three-Meter Box

Tools and Accessories

- Three-meter box (purchased separately)
- Three-phase four-pin power cable
- M4 screws (two)
- Flat-head screwdriver
- Phillips screwdriver

📖 **NOTE**

The three-phase four-pin power cable and M4 screws are included in the accessory package of the three-meter box.

Procedure

Step 1 Use a Phillips screwdriver to loosen the screws at two sides of the lower protection cover on the AR532 router, and then remove the cover.

Step 2 Hang the AR532 router on the screw in the meter box by the mounting hole at the back of the router, and use two M4 screws to secure the router in the meter box.

Step 3 Remove power cable cover and connect the three-phase four-pin power cable to the AR532 router and circuit breaker.

📖 **NOTE**

The power terminals on the AR532 router are La, Lb, Lc, and N from left to right.

Step 4 Install the power cable cover, and then the lower protection cover to the AR532 router.
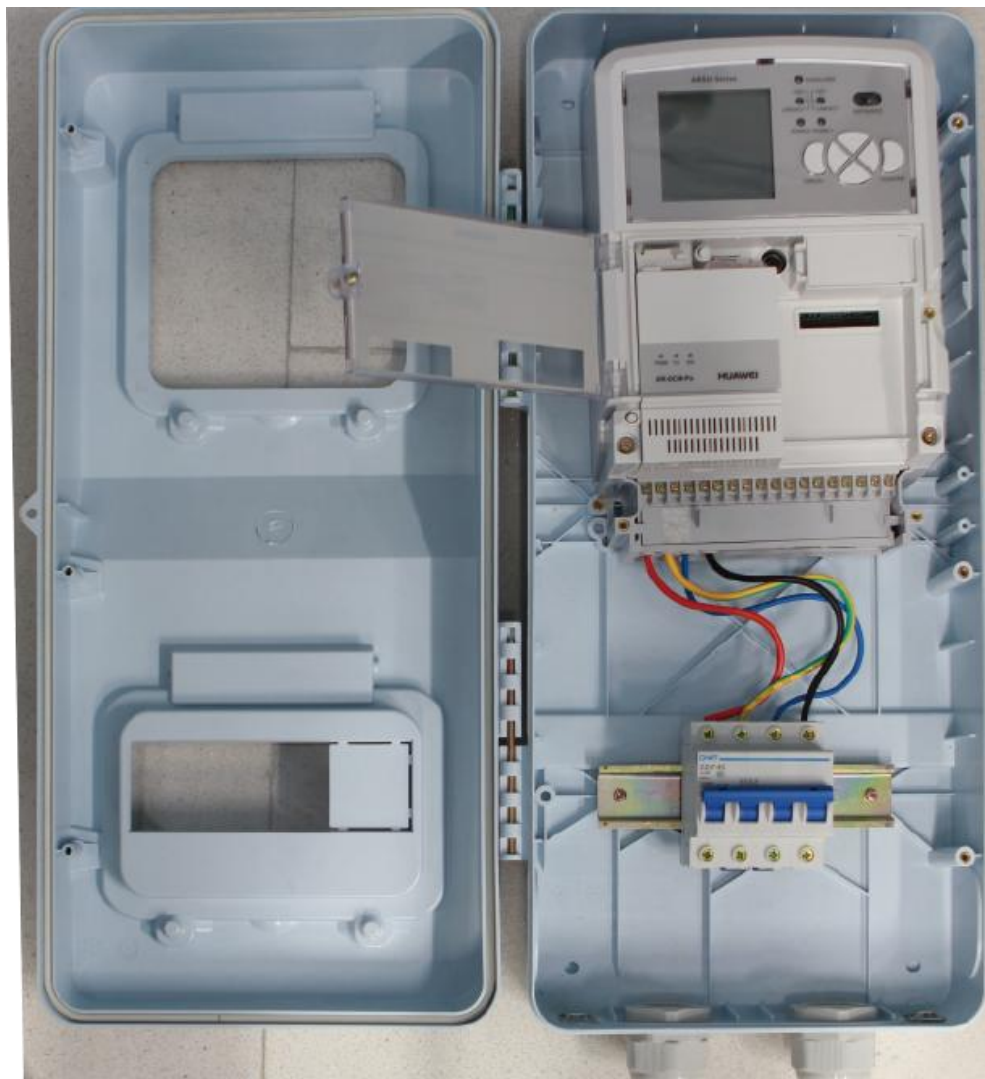
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2.2.2 (Optional) Installing a PLC Module in the Router

Tools and Accessories

- PLC module (purchased separately)
- Phillips screwdriver

Procedure

Step 1 Use a Phillips screwdriver to loosen the screw at the right side of the upper protection cover on the AR532 router, open the upper protection cover, and install the PLC module into the router.

Step 2 Close the upper protection cover, install the lower protection cover, and tighten screws on them.

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This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the

equipment.

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