



FortiVoice™ FVC D-Series Hardware Specification Guide

FVC-40D2
FVC-70D4
FVC-100D8
FVC-100DT
FVC-180D8
FVC-180DT
FVC-300DT
FVC-500DT2



FortiVoice™ FVC D-Series Hardware Specification Guide
for FVC-40D2, FVC-70D4, FVC-100D8, FVC-100DT, FVC-180D8, FVC-180DT, FVC-300DT
and FVC-500DT2

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Introduction

FortiVoice phone systems meet the technical standards for use in specific countries and for connection to major telephone service providers in those countries. They are subject to regulatory certification and compliances.

If you are installing the system

- The system can be configured by anyone with basic computer skills once it's installed.
- While most buildings are wired to accommodate the system, you may need to route cabling.
- You may need to connect the system to network equipment such as a router, switch or hub with a connection to the Internet, and to configure a firewall, computer and the system for network use.

If you are installing a single system, anyone with basic computer skills can use the *FortiVoice Systems QuickStart Guide* and this guide to perform a full installation and configuration.

Important information

Electrical shock

Do not open the enclosure.

Do not expose the system to any liquids; that can pose a risk of electrical shock.

Power and lightning surge protection

Surge protection devices are recommended in areas subject to lightning or power surges. Please consult your reseller for recommended surge protection devices.

If the system has been supplied with surge protection devices to meet local regulatory requirements, these devices must be installed as described in their installation instructions.

Do not connect or disconnect any telephone lines during thunderstorms.

Telecommunication equipment connected to the FXS port should be UL-listed, and the connections shall be made in accordance with Article 800 of the NEC.

L'équipement de télécommunication connecté au port FXS doit être homologué UL, et les connexions doivent être effectuées conformément à l'article 800 du NEC.



To reduce the risk of fire, use only No. 26 AWG or larger (e.g., 24 AWG) UL-listed or CSA-certified telecommunication line cord.

Pour réduire le risque d'incendie, utilisez uniquement une jauge de 26 AWG ou supérieur (par exemple, 24 AWG) homologué UL ou un cordon certifié par la CSA.

Power adapter and power cord

Use only the power adapter and power cord supplied with your phone system.

For safe operation, connect the supplied ground cable to the screw post on the back of the phone system (⊖) and the other end to the screw of the face plate of an outlet.

What happens if the power goes out?

To ensure a reliable network connection, all elements of the VoIP network should be connected to back-up power supplies (UPS).

Cleaning

Use a slightly moistened cloth or an anti-static cloth to clean the system. Do not use any solvents. Never use a dry cloth; electrostatic charges could damage the electronics in the system. Ensure, however, that no moisture gets into the system.

Specifications

Capacity

	FVC-40D2	FVC-70D4	FVC-100D8	FVC-100DT	FVC-180D8	FVC-180DT	FVC-300DT	FVC-500DT2
Telephone lines (FXO)	2	4	8	4	8	4	4	4
T1/E1 port	0	0	0	1	0	1	1	2
PRI numbers	0	0	0	100	0	180	300	500
VoIP ports	8	8	15	15	30	30	50	50
VoIP numbers	40	70	100	100	180	180	300	500
Analog extensions (FXS)	2	2	2	2	2	2	2	2
Local extensions (analog and IP)	40	70	100	100	180	180	300	500
Remote extensions	20	35	50	50	90	90	150	250
Memory (hours)	360	360	900	900	900	900	900	900

Interface specifications

LAN interface	2x RJ-45 Ethernet (10/100/1000BaseT)
Power source	Input: 100–240V AC 50–60 Hz Output: 12V DC 2.5 A
USB management	Future feature

Analog extension specifications

Connector type	RJ-11, 2-pin
Trunk type	Loop start
Interface impedance	Either 600 Ω , 900 Ω , TBR21, BT complex, AU complex or ZA complex, depending on region.
Loop range	0–600 Ω
Flash supported	Yes
On-hook voltage	35 V
Off-hook loop current	23 mA to 40 mA

Dial tone level	-2.4 dBm
Ringing voltage	45 V RMS
Ringing frequency	20 Hz or 25 Hz (depending on region) – True sine wave
Total ringing load	5 REN

Devices designed to respond to particular ringing cadences may not respond when used with this equipment.

Telephone line specifications

Connector type	RJ-11, 2-pin
Trunk type	Loop start
Interface impedance	600 Ω , 600 complex, 900 Ω , 900 complex
Ringing sensitivity	45 V RMS @ 20 Hz or 25 Hz (depending on region)
REN	0.2 B
Longitudinal balance	30 dB
Caller ID support	FSK, all lines

T1/E1 PRI specifications

	North America	Outside North America
Framing format	ESF	CRC4
Line coding	B8ZS	HDB3
Signaling	NI-2, 4ESS, 5ESS, DMS-100	Net5, R2

Dimensions

	Desktop	Rack Mount
Metric (mm)	44 x 216 x 219	44 x 432 x 290
Imperial (inches)	1.8 x 8.5 x 8.6	1.8 x 17 x 11.4

Weight

	Desktop	Rack Mount
Metric (kg)	1.6	4.1
Imperial (lbs)	3.6	9.0

Regulatory approvals



ACTA TIA/EIA/IS-968A and FCC Part 68, Industry Canada CS-03
FCC Part 15B, Industry Canada ICES-003



System and power adapter comply with UL and CSA

Reduction of Hazardous Substances (RoHS) Directive 2002/95/EC

VoIP features

- Embedded SIP server for IP extensions
- Adaptive jitter buffer
- Multilocation VoIP networking
- Packet loss concealment
- G.711 μ -law/A-law, G.729a codecs
- Up to 4 service provider accounts
- G.168 echo cancellation
- Fax tone detection
- VAD, silence suppression

Front panel lights

What the flashing lights mean

Power solid green, Status solid red

The system's network IP address is the same as another device on the network.

If the IP address of your system was automatically assigned by a DHCP server (e.g. router) on your network, reboot the unit to allow it to obtain a new IP address.

If your system was assigned a fixed IP address (i.e. not using DHCP), you will need to provide it with an available IP address. From your PC command window, send a ping command to a candidate IP address (e.g. 192.168.1.200). If the ping is responded to, the address is assigned, and therefore unavailable. If the response is a timeout, the IP address should be available. Once an available IP address is identified, you can assign it as follows:

From the Web interface, select the *Network* page. Enter the IP address for the unit in the *System address* field. For more information, see the "IP Configuration" section of the [FortiVoice Admin Guide](#).

Power solid green, Alarm solid red

Indicates a system error. From the Web interface, select *Dashboard > Reboot*.

If this pattern does not change, contact your authorized reseller or technical support for further assistance.



When a system is powering on, it will display a variety of patterns not described here.

Reset button

Press and hold the reset button on the unit. The status on the front of the unit will flash slowly to indicate what will happen when you release the button.

The light will flash green for 10 seconds. If you release the button while the light is green, the system will reboot.

Then the light will quickly flash green for 10 seconds. If you release the button while the light is green, you will clear the admin password.

Then the light will flash red for 10 seconds. If you release the button, you will default the system's configuration including the system's IP address.

Safety and Regulatory Information

Safety precautions

Before using the system, please review and ensure the following safety instructions are adhered to:

1. Read, follow and retain instructions — All safety and operating instructions should be read, followed and retained for future reference before operating the equipment.
2. Heed warnings — All warnings on the equipment and in the operating instructions should be adhered to.
3. Temperature — Do not operate in environments where the temperature is below 0°C or 32°F. If the product was shipped in cold weather, please let the system warm up at room temperature for at least two hours before plugging it in to a power outlet.
4. Moisture — Do not place the system in a high-humidity environment.
5. Heat — Never place the system near heat sources such as radiators, floor registers or in direct sunlight.
6. Power supply — The equipment should only be connected to an approved power supply of the type described in the operating instructions or marked on the equipment. Use only the power adapter supplied with the system.
7. Damage requiring service — Do not attempt to service the system yourself. Unplug the system and refer servicing to a licensed technician when:
 - The plug or power cord has been damaged.
 - The system has been exposed to moisture.
8. Emergency services — If you call an emergency service using an external IP extension, the system will not send the address of your location. You must provide your address to the emergency operator.



Call Redirection & Service Provider Billing Advisory

Use of the automatic route selection, toll restriction and Call Detail Recording features does not imply any guarantee whatsoever by regulatory authorities, your telephone service provider(s), the company or its distributors and resellers, with regard to the accuracy of these features and that the use of such a features may not be considered by a telephone company in any disputes which may arise regarding the accuracy of any subscriber's telephone account.

Important notices

CE Compliance

The product models listed below comply with the essential requirements of the European “Radio and Telecom Terminal Equipment” (R&TTE) directive 1999/5/EC, and are for connection to regular telephone lines (PSTN). This equipment has been tested and found to comply with the following standards:

EN55022:2010
EN55024:1998 + amendment A1:2001 + amendment A2:2003
EN61000-3-2:2006 +A1:2009 +A2:2009
EN61000-3-3:2008
CISPR22:2009



This equipment is marked with the CE symbol, indicating compliance with CE standards.

UL Compliance



System and power adapter comply with UL and CSA.

FCC and IC Warnings

This equipment complies with ACTA TIA/EIA/IS-968A and Part 68 of the Federal Communications Commission (FCC) rules in the United States. It also complies with regulations RSS210 and CS-03 of Industry Canada and Science Canada. This equipment also complies with Part 15 of the FCC Rules, as well as ICES003 of Industry Canada. 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 of the device.

FCC Part 15

This equipment has been tested and found to comply with the limits for a CLASS A (rack mount) / CLASS B (desktop) Digital Device pursuant to Part 15 of the FCC rules. These limits are designed to provide a reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with these instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television 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 to an outlet on a circuit different to that which the receiver is connected.
- Consult the dealer or an experienced Radio/TV technician for help.



This CLASS A (rack mount) / CLASS B (desktop) Digital apparatus meets all requirements of the Canadian interference-causing equipment regulations.

Changes or modifications not expressly approved by Fortinet could void the user’s authority to operate the equipment.

ACTA TIA/EIA/IS-968A, FCC Part 68 and IC CS-03

Notice: The Industry Canada label identifies certified equipment. This certification means the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure, for their own protection, that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.



Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

A label is located on the underside of the base unit containing both the FCC registration number and Ringer Equivalency Number (REN) or the IC registration number and Load Number. You must, upon request, provide this information to your local telephone company.

The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.



This equipment is compatible with inductively-coupled hearing aids.

If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is corrected.

This equipment cannot be used on public coin telephone services provided by the telephone company. Connection to party line service is subject to state tariffs.

The FCC requires that you connect your cordless telephone to the nation-wide telephone network through a modular telephone jack (USOC, RF11C, RJ11W, or RJ14).

Your telephone company may discontinue your service if your equipment causes harm to the telephone network. They will notify you in advance of disconnection, if possible. During notification, you will be informed of your right to file a complaint to the FCC.

Occasionally, your telephone company may make changes in its facilities, equipment, operation, or procedures that could affect the operation of your equipment. If so, you will be given advance notice of the change to give you an opportunity to maintain uninterrupted service.

DOC Compliance

This digital apparatus does not exceed the Class B limits for radio noise emissions for digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

ICASA

For all ICASA license enquiries, please contact your South African authorized distributor for your phone system.

RoHS Compliance

This equipment conforms with the Reduction of Hazardous Substances (RoHS) Directive 2002/95/EC. The RoHS directive provides for restriction or elimination of the following substances:

- Lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ether (PBDE).

RoHS and related legislations are initiatives to reduce the environmental issues related to the manufacture of electronic equipment.

Disposal



At the end of the product's life, please ensure disposal is in compliance with local regulations for electrical and electronic waste.

