

ETC



ESSENTIAL TRADING SYSTEMS CORP.

The possibilities are endless.

VG-600

SIP - Multicast - Analog Gateway

Installation Guide



THE POSSIBILITIES ARE *ENDLESS.*

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Introduction

ETC's VG-600 device interconnects a radio over a LAN/WAN connection to multicast or SIP devices.

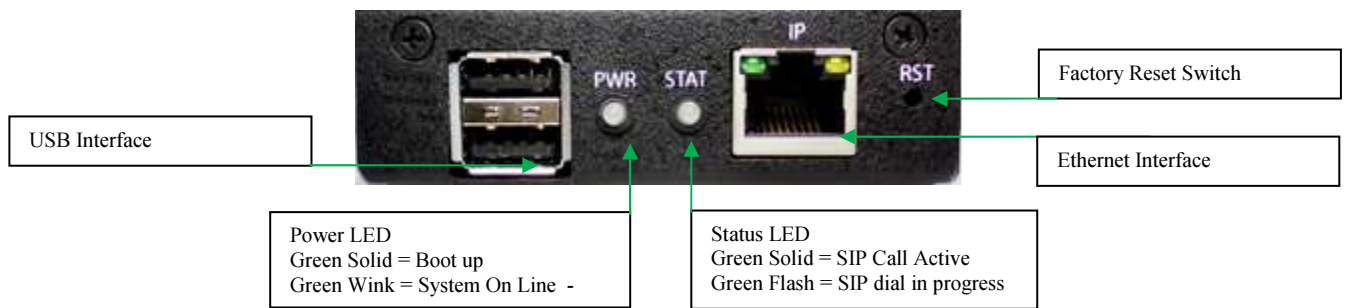
A VG-600 device is equipped with 4 wire analog port. The analog port provides a full duplex non-blocking Tx/Rx radio communication. The VG-600 device is capable of transmitting and receiving audio in either simplex or duplex operation.

The analog port consists of 600/150 Ω analog transmit and receive transformer isolated audio pair.

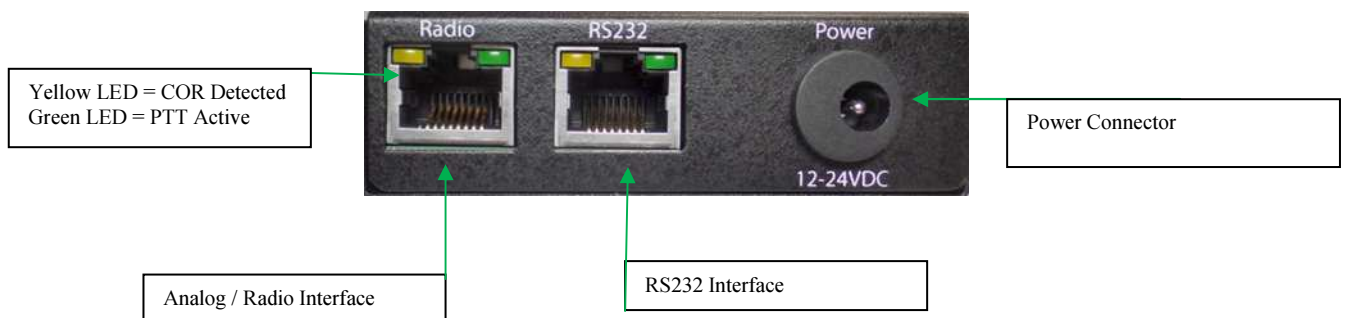
Management and configuration is accomplished using a Web browser. A password must be provided to access the unit.

A VG-600 unit front and rear view is shown in Figure 1.

Figure 1
Front View



Rear View



Installation

Placing the VG-600 in service.

1. The VG-600 is a fully enclosed chassis.
2. Mount the VG-600 in a location near the associated radio equipment.
 The analog radio interface connects to the rear panel Radio RJ45 connector.
 The radio command and control RS232 interface connects to the rear panel RS232 RJ45 connector. Check with your system administrator for availability of this function.
 Baud rate = 115,000
3. The Ethernet interface connects to the front panel IP RJ45 connector.
4. Connect the AC power supply to the rear panel Db9 connector.
 The Power LED will show a solid Green during power-up. The Power LED display will wink Green to show the unit has completed its boot-up and is ready for operation.
5. Connect an Ethernet cable between the IP connector and a Personal Computer (PC) to the program the unit.

VG-600 Interface Pin Out

IP Connector		Radio Connector		RS232 Connector		db9 Power	
RJ45	Signal Name	RJ45	Signal Name	RJ45	Signal Name	RJ45	Signal Name
Pin 1	RCV (RD+)	Pin 1	RT (Rcv In)	Pin 1		Pin 1	PS#1 +5 Volt
Pin 2	RCV (RD-)	Pin 2	RR (Rcv In)	Pin 2		Pin 2	PS#2 +5 Volt
Pin 3	XMT (TD+)	Pin 3	COR (In)	Pin 3	Rx (In)	Pin 3	PS#2 +5 Volt
Pin 4	NU	Pin 4	TT (Xmt Out)	Pin 4	Gnd	Pin 4	PS#1 +5 Volt
Pin 5	NU	Pin 5	TR (Xmt Out)	Pin 5	Gnd	Pin 5	Power return
Pin 6	XMT (TD-)	Pin 6	COR (return)	Pin 6	Tx (out)	Pin 6	Power return
Pin 7	NU	Pin 7	PTT (Out)	Pin 7		Pin 7	Reset
Pin 8	NU	Pin 8	PTT (return)	Pin 8		Pin 8	Yellow Fault
						Pin 9	Red Fault

Connect Device to Ethernet

The device may be connected to a single computer or Ethernet device through the IP Ethernet port on the front panel. Any connection to an Ethernet concentrating device such as a switch or hub must operate at a speed of 10/100 Mbps only. When connecting the device to any Ethernet device that is capable of operating at speeds higher than 10Mbps, be sure that the device has auto-negotiation enabled for the connecting port.

Use standard twisted-pair cable with RJ-45 connectors. Follow standard Ethernet guidelines when deciding what type of cable to use to make this connection. When connecting the Device directly to a PC or server use a normal straight-through cable. Be sure that the cable connecting the LAN to the device does not exceed 100 meters.

Programming:

A Web Browser is utilized to program the VG-600 device.

In the Address bar of your browser, type the address of the VG-600 device, either the default address or the address that has been assigned to the VG-600 by your organization.

Default IP Address = *http://10.2.158.254* / Net mask = *255.255.0.0*

The Web Browser will display the sign-in window shown below.

Essential Trading Systems Corp.

Configuration Control Facility

User ID: Admin

Password:

The name in the User ID box will be provided.

Type *admin1* (case sensitive) in the Password Box and click the *Sign-In* button.

Factory Default Settings:

To set the VG-600 to factory default settings depress the micro switch located on the front of the VG-600 for approximately 2-3 seconds at which time the Power LED will flash Green (release the micro switch). The VG-600 will start its reboot and re-configuration process (2-3 minutes). The Power LED will wink Green at the completion of the reboot process.

The default IP settings = *http://10.2.158.254* with a net mask of *255.255.0.0*

At successful enter of password the VG-600 Selection Setup Screen is displayed.

Analog Radio Setup:



VG-600

Label: VG-600

Analog Radio Setup	Conference Server Setup	IP Setup	Multicast Setup	Recorder Setup	Sip Setup	Sip Phone Setup	Tone Setup	Unicast Point to Point	Version Info	Web Password Setup																								
<table border="1"> <tr> <td>Radio Audio Input Gate</td> <td>COR <input type="radio"/> VOX <input checked="" type="radio"/> EIA <input type="radio"/></td> </tr> <tr> <td>Radio In Vox Level</td> <td>-30 dBm</td> </tr> <tr> <td>Vox Holdover</td> <td>0.0s</td> </tr> <tr> <td>Interface Type</td> <td>4 Wire</td> </tr> <tr> <td>Radio Type</td> <td>Duplex</td> </tr> <tr> <td>Simplex Holdover</td> <td>0.0s</td> </tr> <tr> <td>Receive Level IN to VG-600</td> <td>-18.0 dB</td> </tr> <tr> <td>Transmit Level OUT of VG-600</td> <td>+6.0 dBm</td> </tr> <tr> <td>2175 PTT Threshold</td> <td>-18.0 dBm</td> </tr> <tr> <td>F Key Setting</td> <td>OFF</td> </tr> <tr> <td>PTT Timeout</td> <td>OFF</td> </tr> </table>		Radio Audio Input Gate	COR <input type="radio"/> VOX <input checked="" type="radio"/> EIA <input type="radio"/>	Radio In Vox Level	-30 dBm	Vox Holdover	0.0s	Interface Type	4 Wire	Radio Type	Duplex	Simplex Holdover	0.0s	Receive Level IN to VG-600	-18.0 dB	Transmit Level OUT of VG-600	+6.0 dBm	2175 PTT Threshold	-18.0 dBm	F Key Setting	OFF	PTT Timeout	OFF	<table border="1"> <tr> <td>Bridge/Conference/ΣAudio</td> <td>Enable <input checked="" type="radio"/> Disable <input type="radio"/></td> </tr> </table>									Bridge/Conference/ΣAudio	Enable <input checked="" type="radio"/> Disable <input type="radio"/>
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<input type="button" value="Submit"/> <input type="button" value="Reboot"/> <input type="button" value="Logoff"/> <input type="button" value="Upgrade Software"/>																																		

Radio Audio Input Gate	COR / VOX / EIA Tone
Radio In Vox Level	Analog level to start packet transmission
Vox Holdover	Delay holdover at the end of Vox detection
Interface Type	2 Wire or 4 Wire Note: When selecting 2-Wire operation Radio Type must be set for Simplex.
Radio Type	Selects between Simplex and Duplex
Simplex Holdover	Delay holdover before audio into the unit is allowed after a transmission
Receive Level In	Adjusts the level of incoming audio attenuation
Transmit Level Out	Adjusts the level of outgoing audio
2175 PTT Threshold	2175 detection threshold to set PTT
F Key Setting	F Key Setting
PTT Timeout	If PTT is greater than value PTT will be auto released
Test	OFF / Milliwatt / Loop back Radio interface test - digital milliwatt sends 0dbm milliwatt out the TX port. Local loop back sends the incoming Rx audio and sends it out the Tx port.
Bridge/Conference/ Σ Audio	Enable / Disable bridge function. Bridge function allows the audio to be summed between all sources - Analog+Multicast+SIP+Unicast

Conference Server Setup Page:



VG-600

Label: VG-600

Analog Radio Setup	Conference Server Setup	IP Setup	Multicast Setup	Recorder Setup	Sip Setup	Sip Phone Setup	Tone Setup	Unicast Point to Point	Version Info	Web Password Setup
--------------------	-------------------------	----------	-----------------	----------------	-----------	-----------------	------------	------------------------	--------------	--------------------

Active	Enable <input type="radio"/> Disable <input checked="" type="radio"/>
IP Address	10.2.99.150
Channel	1
RX Jitter Buffer	20ms

Active	Enable / Disable - Setting used to connect the VG-600 to an Conference Server
IP Address	Address of Orion Conference Server
Channel	Channel Assignment - Channel within the Conference Server
RX Jitter Buffer	Amount of packets stored before playback begins

IP Setup:



VG-600

Label:

Analog Radio Setup	Conference Server Setup	IP Setup	Multicast Setup	Recorder Setup	Sip Setup	Sip Phone Setup	Tone Setup	Unicast Point to Point	Version Info	Web Password Setup
--------------------	-------------------------	-----------------	-----------------	----------------	-----------	-----------------	------------	------------------------	--------------	--------------------

Host Name	<input type="text" value="VG-600"/>
IP Address	<input type="text" value="192.168.0.232"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
Gateway	<input type="text" value="192.168.0.254"/>
Log Svr	<input type="text" value="0.0.0.0"/>

Hostname	The hostname of the VG-600, The entire hostname (including the delimiting dots) has a maximum of 24 characters. Please note RTC 952.
IP Address	The IPv4 address on the VG-600.
Subnet Mask	The IPv4 Subnet mask of the VG-600
Gateway	The gateway address of the VG-600
Log Svr	Syslog server IP address - Used to send diagnostic information of the VG-600 unit

Multicast Setup:



VG-600

Label: VG-600

- Analog Radio Setup
- Conference Server Setup
- IP Setup
- Multicast Setup
- Recorder Setup
- Sip Setup
- Sip Phone Setup
- Tone Setup
- Unicast Point to Point
- Version Info
- Web Password Setup

Active	Enable <input checked="" type="radio"/> Disable <input type="radio"/>
IP Address	<input type="text" value="234.5.6.7"/>
Port TX	<input type="text" value="23458"/>
Port RX	<input type="text" value="23458"/>
Receive Level IN to VG-600	<input type="text" value="0.0 dB"/>
RX Jitter Buffer	<input type="text" value="20ms"/>

- Submit
 - Reboot
 - Logoff
- Upgrade Software

Active	Enable / Disable Multicast port
IP Address	Multicast address
Port Tx	Multicast TX port
Port Rx	Multicast RX port
Receive Level IN	Multicast Volume adjustment
RX Jitter Buffer	Amount of packets stored before playback begins

Note 1: All port settings within the VG-600 must be unique

Note 2: The following ports cannot be used for port settings - 10,000, 20,000, or 20,001.

Recorder Setup:



VG-600

Label: VG-600

Analog Radio Setup	Conference Server Setup	IP Setup	Multicast Setup	Recorder Setup	Sip Setup	Sip Phone Setup	Tone Setup	Unicast Point to Point	Version Info	Web Password Setup
--------------------	-------------------------	----------	-----------------	----------------	-----------	-----------------	------------	------------------------	--------------	--------------------

Active	Enable <input type="radio"/> Disable <input checked="" type="radio"/>
Recorder IP	<input type="text" value="0.0.0.0"/>
Recorder Port	<input type="text" value="10000"/>
Record	<input type="text" value="Tx to radio"/>

Recorder Active	Enable / Disable - Enables the sending of composite audio to an IP voice Recorder
Recorder IP	Address of the IP Voice Recorder
Recorder Port	Port number of the IP Voice Recorder for this channel
Record	Selection of what to record

Note 1: All port settings within the VG-600 must be unique

Note 2: The following ports cannot be used for port settings - 10,000, 20,000, or 20,001.

SIP Setup:



VG-600

Label: VG-600

- Analog Radio Setup
- Conference Server Setup
- IP Setup
- Multicast Setup
- Recorder Setup
- Sip Setup
- Sip Phone Setup
- Tone Setup
- Unicast Point to Point
- Version Info
- Web Password Setup

Primary		HA <input type="checkbox"/> Secondary	
Active	Enable <input checked="" type="radio"/> Disable <input type="radio"/>	Active	Enable <input type="radio"/> Disable <input checked="" type="radio"/>
SIP Server 1	<input type="text" value="192.168.3.232"/>	SIP Server 2	<input type="text"/>
SIP Trunk	<input type="checkbox"/> (Telephone <input checked="" type="checkbox"/>)	SIP Trunk	<input checked="" type="checkbox"/> (Telephone <input type="checkbox"/>)
SIP Port	<input type="text" value="5060"/>	SIP Port	<input type="text" value="5060"/>
SIP User	<input type="text" value="160"/>	SIP User	<input type="text"/>
SIP Password	<input type="text" value="speaker11"/>	SIP Password	<input type="text"/>
Caller ID	<input type="text" value="VG"/>	Caller ID	<input type="text"/>
Dial Info	<input type="text" value="2"/>	Dial Info	<input type="text"/>

- Submit

Reboot

Logoff
- Upgrade Software

Primary SIP

Active	Enable/Disable Telephone operation
SIP Server 1	The IP Address for the first SIP Server/PBX
Call Type - SIP Trunk or PBX	Select if this is to be used as a SIP trunk or as SIP Telephone and register with PBX
SIP Port	The local SIP port and remote SIP trunk port
SIP User	The User ID used to register to the PBX
SIP Password	The password associated to this user
Caller ID	This is a suggested Caller ID for the VG-600. Based on PBX configuration it may not be used.
Dial Info	The number to auto dial

HA SIP Setup (Secondary):

Select the check box next to HA if the VG-600 is to be used in an HA solution

Active	Enable/Disable Telephone operation
SIP Server 2	The IP Address for the first SIP Server/PBX
Call Type - SIP Trunk or PBX	Select if this is to be used as a SIP trunk or as SIP Telephone and register with PBX
SIP Port	The local SIP port and remote SIP trunk port
SIP User	The User ID used to register to the PBX
SIP Password	The password associated to this user
Caller ID	This is a suggested Caller ID for the VG-600. Based on PBX configuration it may not be used.
Dial Info	The number to auto dial

SIP Phone Setup:



VG-600

Label: VG-600

- Analog Radio Setup
- Conference Server Setup
- IP Setup
- Multicast Setup
- Recorder Setup
- Sip Setup
- Sip Phone Setup
- Tone Setup
- Unicast Point to Point
- Version Info
- Web Password Setup

SIP Reinvite	RIP Send Sip Reinvite	Hold Time	0.0s
Send SIP Reinvite Frequency	60 s	Auto Answer	Enable <input type="radio"/> Disable <input checked="" type="radio"/>
Idle	Send Silent RTP Packet	Auto Dial	Enable <input checked="" type="radio"/> Disable <input type="radio"/>
DTMF Event Frequency	1 s	Dial On Start	Enable <input checked="" type="radio"/> Disable <input type="radio"/>
		Phone to Radio PTT Level	PTT Always ON
		Keep Alive	Yes <input checked="" type="radio"/> No <input type="radio"/>

-
-

SIP Reinvite	Reinvite generated by VG-600 or PBX
Send SIP Reinvite Frequency	If the above = Send SIP Reinvite Frequency - time between Reinvites
Idle	Used to keep an inactive phone line active - VG-600 sends silent packets or send a DTMF 254 event
DTMF Event Frequency	If the above = DTMF - time between events
Hold Time	For VOX this is the hold over time
	The next two options are mutually exclusive.
Auto Answer	Allows the device to automatically answer a SIP call When used as SIP Trunk this must be <i>disabled</i>
Auto Dial	On detection of COR the VG-600 will automatically dial the number provided in the dial info field of SIP Setup. When used as SIP Trunk this must be <i>disabled</i>
Dial on Start	If selected the device will automatically dial the number provided in the dial info field of SIP Setup on startup and attempt to maintain the call while running. <i>Enabled</i> for SIP Trunk or Standard Telephone call
Phone to Radio to PTT Level	Level of incoming phone audio required to activate PTT
Keep Alive	Yes/No - Continuously send keep alive messages

Tone Setup:



VG-600

Label: VG-600

Analog Radio Setup	Conference Server Setup	IP Setup	Multicast Setup	Recorder Setup	Sip Setup	Sip Phone Setup	Tone Setup	Unicast Point to Point	Version Info	Web Password Setup
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F1	Frequency (Hz)	Level (dbm)	Duration (ms)	F2	Frequency (Hz)	Level (dbm)	Duration (ms)
Tone 1	2175	+8	120	Tone 1	2175	+8	120
Tone 2	1950	-2	40	Tone 2	1850	-2	40
Tone 3	2175	-24	Cont	Tone 3	2175	-24	Cont

F3	Frequency (Hz)	Level (dbm)	Duration (ms)	F4	Frequency (Hz)	Level (dbm)	Duration (ms)
Tone 1	2175	+8	120	Tone 1	2175	+8	120
Tone 2	1350	-2	40	Tone 2	1250	-2	40
Tone 3	2175	-24	Cont	Tone 3	2175	-24	Cont

Frequency (Hz)	Sets the first 1st tone of the three tone pair
Level (dbm)	Sets the level of the tone
Duration (ms)	Sets the length of the tone.

Tone Setup:

This page is used to set the F1-F4 function tone frequency, level, and duration for Tone keying. Tone keying consists of a 3 Tone pair for each Function tone. There are a total of 4 Function tones available

Unicast Setup:



VG-600

Label: VG-600

- Analog Radio Setup
- Conference Server Setup
- IP Setup
- Multicast Setup
- Recorder Setup
- Sip Setup
- Sip Phone Setup
- Tone Setup
- Unicast Point to Point
- Version Info
- Web Password Setup

Active	Enable <input type="radio"/> Disable <input checked="" type="radio"/>
IP Address	10.2.252.254
Port *	10002
Output EIA	Local <input type="radio"/> Network <input checked="" type="radio"/>
Orion Handshake	Enable <input checked="" type="radio"/> Disable <input type="radio"/>
RX Jitter Buffer	20ms
* - port can not be 10000,20000 or 20001	

- -
 -
-

Active	<p>Enable / Disable Unicast.</p> <p>Enabled - Used to interconnect a 2 VG-600 devices in a point-to-point link.</p>
IP Address	Address of the far end unicast stream
Port	Unicast Port #
Output EIA	<p>Local / Network</p> <p>When using Unicast to interconnect two VG-600's in a point-to-point link and when the Radio Audio Input Gate is set to EIA tones ; The VG-600 receiving analog audio will decode the second function tone (ie 1950, 1850, 1750, ...) and pass it across IP network to the far end VG-600.</p> <p>Network - The VG-600 will play out the received IP packet EIA tone sequence to the analog radio.</p> <p>Local - The VG-600 will ignore the network setting and follow the setup found under the Analog Setup Tab. (F Key Settings)</p>
Orion Handshake	<p>Enable / Disable - Handshake is to be enabled when using the VG-600 with the Orion 1 Key Radio Access PC application.</p> <p>Disabled for all other uses</p>
RX Jitter Buffer	Amount of packets stored before playback begins

Note 1: All port settings within the VG-600 must be unique.

Note 2: The following ports cannot be used for port settings - 10,000, 20,000, or 20,001.

Web Password Setup:



VG-600

Label: VG-600

Analog Radio Setup	Conference Server Setup	IP Setup	Multicast Setup	Recorder Setup	Sip Setup	Sip Phone Setup	Tone Setup	Unicast Point to Point	Version Info	Web Password Setup
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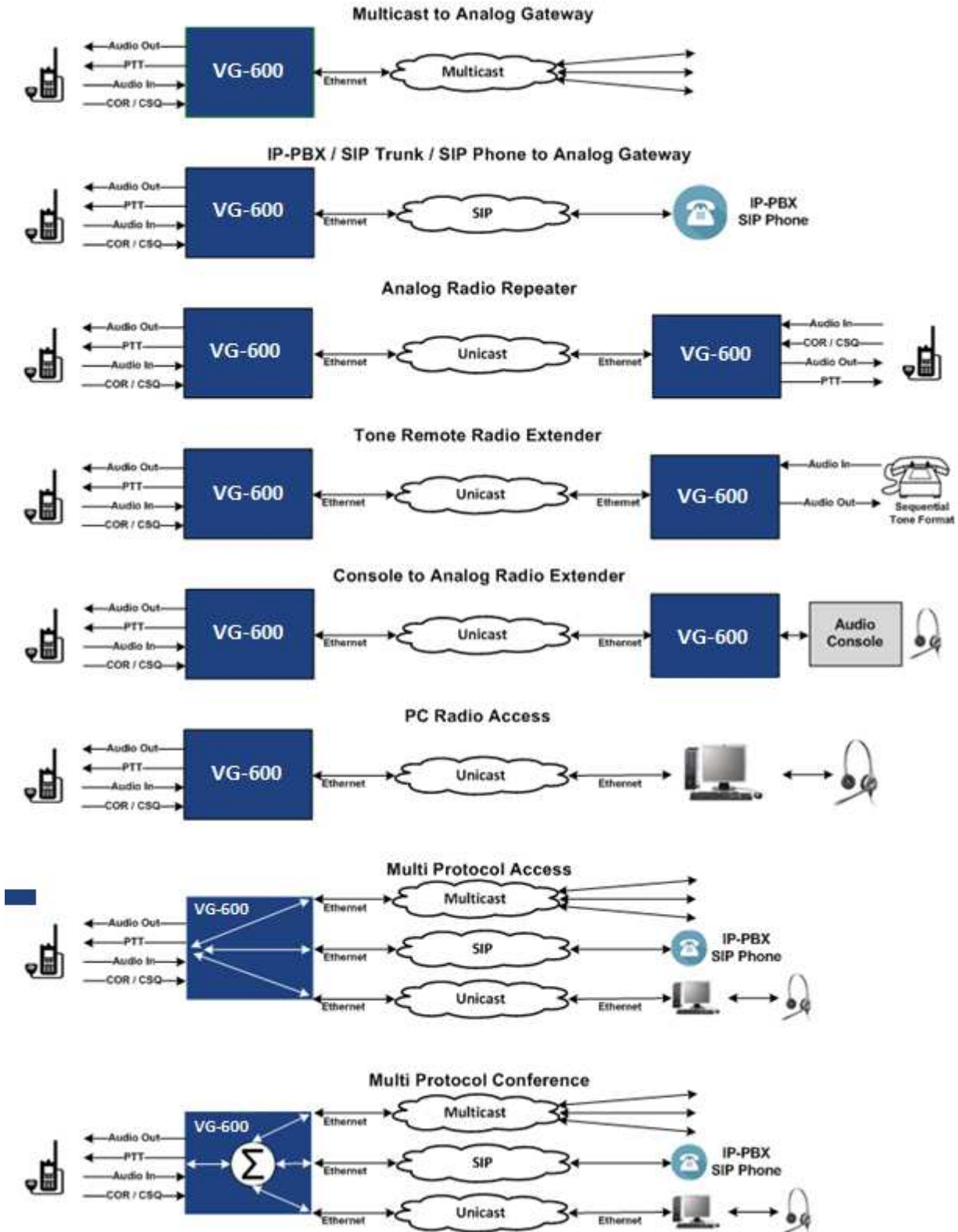
Password:	<input type="text"/>
New Password:	<input type="text"/>
New Password Again:	<input type="text"/>

<input type="button" value="Submit"/>	<input type="button" value="Reboot"/>	<input type="button" value="Logoff"/>
<input type="button" value="Upgrade Software"/>		

Password	Insert current password
New Password	Type new password
New Password again	Type new password again

Sample Configurations:

The VG-600 interconnects analog radios to a LAN/WAN using SIP, Multicast, or Unicast. A pair of VG-600 units form a transparent digital point-to-point VoIP/RoIP link. The diagrams below show the various uses and deployment options.



VG-600 Hardware Product Limited Warranty

ETC warrants that your ETC hardware product shall be free from defects in material and workmanship for the length of time specified in the Warranty Periods below, beginning from the date of purchase. Except where prohibited by applicable law, this warranty is nontransferable and is limited to the original purchaser. This warranty gives you specific legal rights, you may also have other rights that vary under local laws

Remedies

ETC's entire liability and your exclusive remedy for any breach of warranty shall be, at ETC's option, (1) to repair or replace the hardware, or (2) to refund the price paid, provided that the hardware is returned to the point of purchase or such other place as ETC may direct with a copy of the sales receipt or dated itemized receipt. Shipping and handling charges may apply except where prohibited by applicable law. ETC may, at its option, use new or refurbished or used parts in good working condition to repair or replace any hardware product. Any replacement hardware product will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer or for any additional period of time that may be applicable in your jurisdiction. This warranty does not cover problems or damage resulting from (1) accident, abuse, misapplication, or any unauthorized repair, modification or disassembly; (2) improper operation or maintenance, usage not in accordance with product instructions or connection to improper voltage supply; or (3) use of consumables, such as replacement batteries, not supplied by ETC except where such restriction is prohibited by applicable law.

How to Obtain Warranty Support

Before submitting a warranty claim, we recommend you contact ETC support at support@essentialtel.com for technical assistance. Valid warranty claims are generally processed through the point of purchase during the first thirty (30) days after purchase; however, this period of time may vary depending on where you purchased your product - please check with ETC for details. Warranty claims or other product related questions should be addressed directly to ETC. at support@essentialtel.com or call (860) 295-8100 option 3 between the hours of 8:30 AM and 5:00 PM.

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