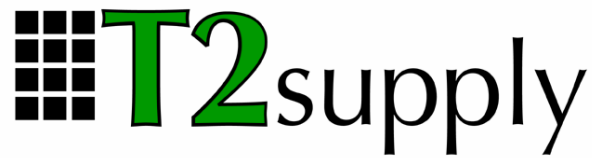


Vortex Technical Study Guide

1. The version of firmware installed on a device can be found:
 - a. In CC on the Options page or on the front panel under System -> Software Version
 - b. In CC on the System page or on the front panel under System -> Software Version
 - c. Firmware?
 - d. In CC by clicking Help-> About
2. The Noise canceller in the EF2280 looks for
 - a. Steady background noise
 - b. The number of microphones
 - c. Noise that is random and moving
 - d. All of these
3. A microphone AGC helps to
 - a. Maintain the mic signal at the right level
 - b. Bring up the level when it is too quiet
 - c. Bring down the level when it is too loud
 - d. All of these
4. The telephone line input on the EF2241 may be connected
 - a. A POTS line, an analog PBX extension, or a digital PBX extension
 - b. A POTS line or an ISDN line
 - c. A POTS line or an analog PBX extension
 - d. An ISDN line or an analog PBX extension
5. Equalizers are available on
 - a. Mic/line inputs 1-8 on the EF2280
 - b. Telephone input and output
 - c. Line inputs and outputs
 - d. All of these
6. Which Vortex features are accessible from the front panel LCD?
 - a. Much like our competitor, basic features only: system settings, input gains and mute, output gains and mute, some matrix control
 - b. Nothing. The primary function of the LCD is its backlight, which helps you find the Vortex in a dark equipment room
 - c. Minimal settings: some system settings, input and output gains
 - d. Basically everything: system settings, Input gain and mute, input signal processing, output gain and mute, automixer settings, matrix crosspoint gains and mute, parametric eq, presets, and macros
7. Entry tones on the EF2241, and EF2211 are used to indicate
 - a. Auto answer has picked up the phone
 - b. The PHONE button has been pressed
 - c. A call progress tone has been detected
 - d. Someone on the far end has picked up the phone
8. What does the polarity function perform on the Logic Output page?
 - a. It inverts the commands that are assigned each Activated and Deactivated column
 - b. It lets you connect polarized switches to the unit

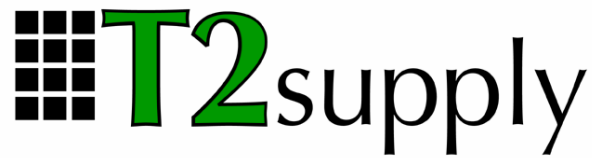
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Vortex Technical Study Guide

- c. It inverts the voltage that is applied to the pin
 - d. It inverts the state of the pin so that what was previously considered "open" is now "closed" with respect to the switch
9. Lifting the safety ground of the AC power cord on a Vortex is OK when:
- a. It is never OK to lift the safety ground
 - b. You want to connect a balanced output to an unbalanced input to prevent a ground loop
 - c. You want to connect an unbalanced output to a balanced input to prevent a ground loop
 - d. You want to connect a balanced output to a balanced input that may not be pin-1 compatible
10. Which type of input should most likely have the phantom power button turned off on the mic/line input page
- a. Ceiling mics
 - b. Lectern mics
 - c. Table mics
 - d. Wireless mics with a line input
11. Logic input pins can be used for
- a. Supporting push to talk microphones
 - b. Simple push button control systems
 - c. All of these answers are corrects
 - d. None of these answers are correct
12. When connecting a Vortex to a Video Codec with internal audio processing, you should:
- a. Disable the codec VCR out
 - b. Disable the codec AEC
 - c. Disable the Vortex AEC
 - d. Enable the codec AEC
13. A line echo canceller [LEC] is used to
- a. Prevent the far end from hearing themselves
 - b. Prevent multiple delayed versions of signals from being sent down the line
 - c. Remove reflections from the telephone hybrid
 - d. Remove echoes from international long distance calls
14. The T input on the EF2241 stands for
- a. Telephone
 - b. Mr. T
 - c. vTx1000
 - d. ViewsTation
15. How many EF2201's can be linked together
- a. 16
 - b. 2
 - c. 4
 - d. 8

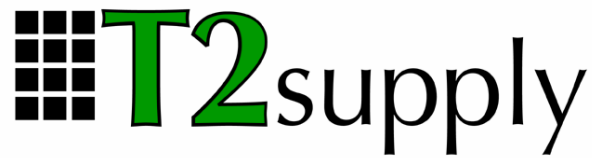
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16. DTMF tones are used for
 - a. Indicating auto answer has occurred
 - b. Busy signals
 - c. Dialing telephone numbers
 - d. Sending Caller ID information
17. Push to talk microphones for conferencing should
 - a. Have to be held down the whole time people are talking
 - b. Have an extra set of wires connected to the logic port on the EF22xx devices
 - c. Mute at the element of the mic to minimize wiring
 - d. Have a large button so the participants know how to use the button
18. What is the total number of EF2280's and EF2201's that can be linked together?
 - a. 8
 - b. 2
 - c. 4
 - d. 16
19. If the front panel LCD has been locked to prevent tampering, how can access be restored?
 - a. I can't. Once the front panel is locked, it can never be unlocked
 - b. By entering a 5-button sequence on your PDA
 - c. By entering the password at the front panel, via Conference Composer, or by the FPLOCK RS-232 command
 - d. By rebooting the Vortex
20. When performing local sound reinforcement, if feedback occurs, what should you do?
 - a. Try to determine the feedback frequencies and filter them out.
 - b. Try to use those frequencies for ultra-sonic pest control during meetings
 - c. Assign all of the local microphones to the AEC Reference Signal
 - d. Assign some of the local microphones to the AEC Reference Signal
21. Multiple devices in a chin should:
 - a. All have the same device ID
 - b. All have different device ID's
 - c. It doesn't matter-do what you like
 - d. Dissimilar devices should have the same ID, but similar devices must all have different ID's
22. A Microphone Noise Canceller is canceling
 - a. The local noise picked by the mics
 - b. The remote noise from the telephone lines
 - c. The noise from the speaker
 - d. All of these
23. How can you determine the version of firmware running in a Vortex?
 - a. Either through the front panel LCD, the SWVER? RS-232 command, or Conference Composer
 - b. Call tech support with the device's serial number
 - c. Only via Conference Composer

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- d. Only via the front panel LCD
- 24. The way to test the effectiveness of the noise canceller is to
 - a. Increase the microphone gain
 - b. Turn off everything else except the noise canceller
 - c. On the diagnostic page toggle the NC tab on and off and ask the remote party to count to 10
 - d. Increase the NC level on the input page
- 25. The latency of the Vortex products [delay from input to output] is
 - a. 1 minute
 - b. 500msec
 - c. 13msec
 - d. 250msec
- 26. If an installation requires two phone lines and 6 mics, 1 would use
 - a. An EF2280 and an EF2201
 - b. An EF2280 and an EF2241
 - c. Two EF2241's
 - d. Two EF2201's
- 27. The transmission delay of a system refers to
 - a. How long it takes for the signal to bounce around the local room
 - b. How long it takes to ship the system from the factory
 - c. How long it takes for a signal to go from the local site to the remote site
 - d. How long it takes before tech support answers the phone queue
- 28. What is monitored by the front panel level meter?
 - a. The sum of all outputs
 - b. The sum of all inputs
 - c. It is user-configurable to monitor any input and output
 - d. The most recently gated microphone
- 29. The EF2211 is a:
 - a. Single channel echo canceller
 - b. 4 channel acoustic echo canceller with telephony interface
 - c. a single channel echo canceller and phone add
 - d. digital phone add with noise cancellation and RS232 control
- 30. The EF2241 is a:
 - a. Digital phone add with noise cancellation and RS232 control
 - b. 4 channel acoustic echo canceller with telephony interface
 - c. 8 channel echo/noise canceller with automatic mic/matrix mixer
 - d. a single channel canceller and phone add
- 31. The EF-IR11 is a/an:
 - a. Infrared controller for EchoFree products
 - b. Single channel echo canceller and phone add
 - c. Digital phone add with noise cancellation and RS232 control
 - d. Single channel echo canceller

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32. The acoustic echo canceller in your room:
- Benefits the local participants
 - Benefits the integrator
 - Benefits both side
 - Benefits the remote participants
33. The term "AEC" in audio conferencing means
- Acoustic Electrical Construction
 - Alternative Echo Control
 - Acoustic Echo Cancellation
 - Ambient Echo Cancellation
34. The EF2210 is a
- Digital phone add with a noise cancellation and RS232 control
 - Single channel echo canceller
 - A single channel echo canceller and phone add
 - 8 channel echo/noise canceller with automatic mic/matrix mixer
35. If an installation requires 8 microphones plus a wireless mic for conferencing, and a telephony interface I would use:
- An EF2280 and an EF2210
 - Two EF2241's
 - An EF2280 and an EF2241
 - An EF2280 and an EF2201
36. What is the total number of EF2280's and EF2241's can be linked together?
- 2
 - 8
 - 4
 - 16
37. The EF2201 is a:
- Digital phone add with noise cancellation and RS232 control
 - A single channel echo canceller and phone add
 - Single channel echo canceller
 - An infrared controller for EchoFree products

38. How many User Presets can be stored are in a Vortex device?
32

39. Which presets are reserved for factory use, and thus read-only?
Presets 0-15

40. How is the Vortex firmware upgraded?
It can be upgraded in the field through Conference Composer using RS-232.

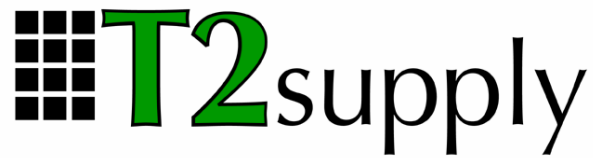
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41. If you want the Vortex to be the best full duplex echo canceller, you should set the suppression level to?
None
42. Gain settings are permanently and automatically saved in the Vortex after they are changed by a user?
False
43. What does the polarity function perform on the Logic Output page?
It lets you connect polarized switches to the unit.
44. The T input on the EF2241 stands for?
Telephone
45. If your EF2241 calls someone using handset and you hear your speech coming back, This echo is from your local room
46. When connecting a Vortex to a Video Codec with internal audio processing, you should do what to the Video Codec input?
Disable all processing on that input (AEC, AGC, NC, Automixer)
47. Acoustic echo in the local room is
Speech that has looped through the remote room and come back to the local room.
48. The purpose of the automixer reference is
To make the local mic harder to open when someone is talking remotely
49. The adaptive threshold of the automixer setting of 10dB means
The signal must be at least 10dB higher than the background noise before the system can gate on.
50. If you only want to use the vortex as an effective automixer in a sound reinforcement system, which component of the system should be turned off?
AEC Enable
51. The case sensitivity of the Vortex RS-232 commands are always upper case.
True
52. When can the RS-232 command set reference be found?
On the Vortex CD, in the Conference Composer help files, and on the Polycom web site.

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53. It is possible to copy items using Conference Composer from one device to another by drag and drop?

Yes

54. How many devices may export their reference on the EF bus?

1

55. How many commands can a single Macro contain?

256

56. Gain settings are permanently and automatically saved in the Vortex after they are changed by a user.

False

57. If multiple Vortexes are linked via EF Bus, can they simultaneously be controlled by separate controllers on different RS-232 ports? For example, could a Crestron panel be connected to one RS-232 port and Conference Composer be connected to another?

Yes. All controllers will have full access to all devices, even when multiple controllers are present.

58. You have four Vortexes linked via EF Bus that do not seem to be communicating. What is the best way to diagnose the problem?

Connect a PC via RS-232 and use a terminal program to send a '***Ping' command and note which devices respond. Repeat for each device and determine where the bus communication is failing.

59. If you hear yourself in the local loudspeaker while you are talking, it most likely that
The matrix crosspoints for the loudspeakers include the local microphone

60. To get the best performance you need one AEC per microphone because
Each mic is positioned differently in the room, each mic has a different speaker-microphone coupling, and this approach avoids the constant switching of echo paths when different mics are gated on

61. If you see a positive room gain in the diagnostic page
It means the local echo of the remote speech, as picked up by the local microphone, is louder than your speech.

62. NOM attenuation is applied to
All ungated signals going to an output with NOM enabled.

63. If you have a wireless mic along with 7 table mics, the best way to configure them is to
Set the wireless mic to a different automixer group

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64. The “Maximum Synchronization Speed” sets the rate at which data will be transferred during upload or download.

True

65. What does the Bus AutoMixer page display?

A and C

66. The way to measure the room gain of your local room is

To ask the remote party to talk into the remote mic and watch room gain meter in your diagnostic page

67. NOM stands for

Number of open mics

68. Automatic gain control on the microphones

Adjusts the input signal to match a target level.

69. You want the audio from Input 1 available on outputs 1 and A – where can you change this setting?

Matrix Mixer Page, Mic/Line Inputs Page, AutoMixer Page

70. The blue background on cross points in the matrix indicates

The gated version of the signal is used.

71. If the integrator does not save the current settings to a preset which can happen

If the device loses power, the settings will be lost, causing a service call to go back to the site.

72. In order to save the current settings in the unit (mic gains, matrix mixer settings, etc.), what must you do?

Save to a User Preset

73. How is the Vortex firmware upgraded?

It can be upgraded in the field through Conference Composer using RS-232.

74. Automatic microphone mixers

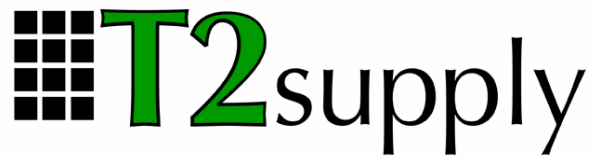
Improve the audio quality by turning on only the mics that are active

75. Which command can be used to query the presence of all Vortex devices on the EF Bus?

***PING

76. Where can you find the option to print a report detailing project setup?

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A and C

77. In the cross point matrix, the output signals are created by summing the signals
In each column to form the output

78. The transmission delay of a system refers to
How long it takes for a signal to go from the local site to the remote site

79. The performance of an acoustic echo canceller depends on
The microphone/loudspeaker positioning, signal levels of the remote signal, and
the room size

80. What is room gain?
The difference between the amplitude of the acoustically coupled signal from the
local microphones versus the reference signal.

81. Which statement is true?
An Echo Canceller should never be used as a feedback eliminator

82. The following baud rates are supported by the Vortex RS-232 interface: 9600, 19200,
38400.
True

83. A longer tail length echo canceller can
Cancel longer delayed echo

84. Tail time is:
The amount of time an echo can bounce around the room and still be treated as an
echo of the remote signal.

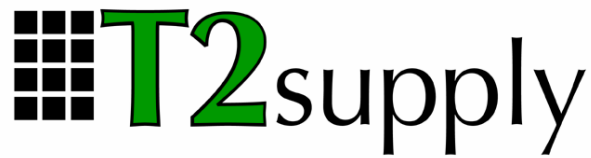
85. The acoustic echo canceller reference should contain
The remote and program audio signals

86. You can lower the room gain by
Moving speaker further away from the mic, lowering the mic input gain, or
lowering the speaker volume

87. Which statement is true?
An Echo Canceller should never be used as a feedback eliminator.

88. Your local echo canceller is canceling the echo of
Remote speech

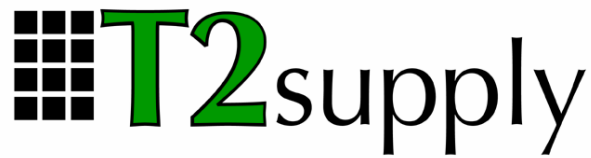
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89. To reduce reverberation and increase intelligibility:
Use directional microphones and loudspeakers, place microphones close to talker, use acoustical treatments.
90. What is the difference between the MACROQ/PRESETQ commands versus the MACROX/PRESETX commands?
The Q (Quiet) commands do not generate any acknowledgements, while the X commands generate acknowledgements for every parameter.
91. Can you delete the factory presets for a device?
No.
92. When monitoring RS232 data via the Console in Conference Composer, red and blue text tells whether a command was sent to or received from a device.
True
93. What does the "Ready/Waiting" indicator in the lower left corner of the Conference Composer window indicate?
Sending data to a device or receiving data from a device.
94. The matrix in the Vortex products allows one to
Send any combination of input signals to outputs
95. What does the "DSP Load" indicator on the bottom edge of the Conference Composer window indicate?
The amount of digital signal processing power currently used.
96. The safety mute button does which function:
Mutes inputs and outputs
97. To send a signal to the loudspeaker on an EF2241, it should be sent to output:
L
98. When a user changes a setting on the Vortex, such as a gain, or mute status, the preset is automatically updated.
False
99. What is the maximum recommended baud rate and cable length when using a good quality RS-232 cable? When using speaker/microphone cable?
Good cable: 20' @38400'
Microphone cable: 10' or less @ 9600.

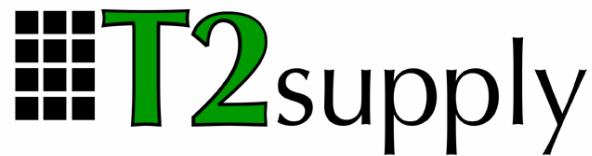
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101. You have a hand build RS-232 cable with only Transmit, Receive, and Ground wired. Can you use this cable with Conference Composer?
Yes, but it is not recommended. You will have to change Conference Composer's maximum connection rate to 9600 and disable flow control, resulting in a painfully slow connection.
101. Equalizers are available on
Line inputs and outputs, Mic/line inputs 1-8 on the EF2280, and telephone input and output
102. Entry tones on the EF2241, EF2201, and EF2211 are used to indicate
Auto answer has picked up the phone
103. Room gain relates to
Speaker and mic coupling
104. Reverberation in the local room is
Echo of local speech in the local room
105. Audio Echo Cancellation is for the benefit of:
The far side
106. Diagnostic page is best used to
Adjust speaker and microphone level during installation, measure the room gain information, and make sure all signals are at the right level.
107. Phantom power is
A power source to power the microphones
108. Ceiling microphones require
More input gain than tabletop mics
109. NOM attenuation means
The attenuation applied to compensate for more than one microphone gating on
110. To have multiple linked devices operate as one large automixer, they must
Use the same bus mixer number
111. When would a control system use the PRESETQ or MACROQ commands instead of PRESETX OR MACROX?

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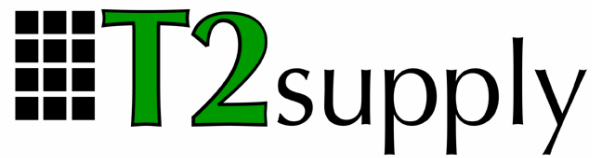


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When the control system is not processing acknowledgements and wants to minimize RS-232 traffic to the control system.

112. What can one do with the conference composer software?
Configure the Vortex Products
113. The PDF reports generated by Conference composer include information on matrix settings, equalization settings and echo cancellation settings.
True
114. The Autoscan item on the Project menu will:
Detect the baud rate of any attached devices, download the settings of all connected devices to the PC, and set compatible devices to a common baud rate during up/download
115. Where can you find a display of the current amount of gain being applied by the AGC?
Diagnostics Page
116. If a room contains local sound reinforcement and you want to control the volume of the microphones, where should you perform that volume control?
Outputs and Cross-points only
117. Local Max NOM refers to
The maximum number of microphones that can be gated on at any given time.
118. On the EF2280, which crosspoints may be gated?
Inputs 1-8 to all outputs
119. The Console Window is used to provide communication information between the PC and the EF Device
a. True
b. False
120. A Conference Composer Report will automatically generate a report of all settings within a group of connected Vortex units in print or PDF file
a. True
b. False
121. Which of the following can be applied to the mic/line inputs on the EF2280, EF2241, EF2210 and EF2211
a. Acoustic Echo Cancellation (AEC)
b. Automatic Gain Control (AGC)
c. Noise Cancellation
d. All of these

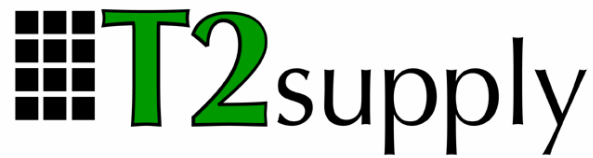
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122. A THOROUGH update will erase all settings that have been stored in the unit, but will restore settings if the device was autoscanned prior to the update.
- True
 - False
123. When using sound reinforcement, can an AEC help to reduce any acoustic coupling from the original speech and the electronically generated speech? (feedback elimination)
- Yes
 - No
124. Which of the following is NOT the best course to take when designing a basic conference room
- Start from scratch and take a lot of time to build a new configuration
 - Use Factory preset 1
 - Use Factory preset 2
 - Use Factory preset 3
125. The SoundStation Premier can be used as the echo canceller for the VS4000
- True
 - False
126. The advantage of having two independent automatic microphone mixers is
- When used in two rooms, mic signals in one room do not affect gating of the other
 - It costs twice as much
 - It allows for connection to an amplifier
 - It allows for fewer mics to cover the room
127. Room gain in a system can be verified using the ROOM GAIN meter on the DIAGNOSTICS page of Conference Composer
- True
 - False
128. A macro is a good way to interface with external control systems because
- The control system needs to send only one command that will execute up to 256 different commands in the Vortex
 - It is easier to troubleshoot control system issues
 - Commands such as volume up over multiple channels are smoother
 - All of these
129. The country code must be selected in order to begin using an EF2201
- True
 - False
130. There are 256 macros in a Vortex and each macro can have up to 256 single commands that are executed sequentially when the macro is executed
- True
 - False
131. Up to 8 EF2201's can be linked together and digitally connected to 8 EF2280's that are linked together

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- a. True
 - b. False
132. It is NOT important to set Device ID's on the actual devices to match those in the Conference Composer Project before uploading the Project to the devices
- a. True
 - b. False
133. The following items are included with a Vortex product package
- a. Microphones
 - b. Loudspeakers
 - c. Videoconferencing codec
 - d. None of the above
134. In Conference Composer it is possible to set the gain of a collection of cross points by clicking and dragging over a rectangular area of the matrix
- a. True
 - b. False
135. The Logic inputs page allows the user to assign individual logic input pins to trigger specific functions, macros or complete presets
- a. True
 - b. False
136. The most common cause of poor echo cancellation performance is incorrectly adjusted room gain
- a. True
 - b. False
137. The EF2241
- a. Has 4 mic/line inputs, 4 line inputs and 8 line outputs
 - b. Has 4 channels of AEC and noise cancellation
 - c. Has a built in "phone add" to bring telephone calls in the conference
 - d. All of these
138. If the settings of the Vortex change after power is recycled
- a. Changes to the settings were not saved before powering down
 - b. The Power on Preset was not selected
 - c. Answers A & B
 - d. The product is not working properly
139. The EF2280 can be used with a video codec
- a. True
 - b. False
140. The Vortex products can be operated
- a. Through the LCD menu on the front panel
 - b. Through TS-232
 - c. Both A & B
 - d. By telepathy
- 141.

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