

POLYCOM®

Installed Voice Business Group

Application Note:

Using a Modem with Vortex Devices

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INTRODUCTION / MODEM OPERATION

You may connect an external modem to a Vortex device (EF2280, EF2241, EF2201, EF2210, EF2211) to perform remote diagnostics. The basic requirement for the modem is that it should be capable of connecting at 9600 bps.

The key to making a reliable modem connection is that you have to force the modem's to handshake at 9600 bps. If you do not, the Autoscanning process will hang as buffers in the modems are not filled with data fast enough. If your modem has a loudspeaker, you should be able to listen to the handshaking signals. If the signals sound like you are trying to connect at 33600 bps or higher, chances are the Autoscanning process will hang as the modems think that they can send data back and forth at that rate. The EF2280's and EF2241's will only be able to send data at 9600 bps to the modem. Even with RTS enabled between the modem and the EF2280/EF2241, the RS-232 buffer of the modem will still underflow which will normally cause the modem to disconnect the call.



You may leave all devices connected to the RS-232 ports of the EF Devices (control system, IR-10, PC, etc.) while using the modem. However, if that device does not parse the incoming data and clear its buffers, the EF Devices will not be able to successfully send data to the modem. This would normally happen if a PC was connected to an EF Device, but software to interface with the Comm port (Conference Composer, Hyperterminal, etc.) was not open during a remote autoscan of the system via the modem. If Conference Composer, Hyperterminal, etc. are open during the remote autoscan via the modem, you will not experience any problems.



The above comments do not apply if you are going to use a 3Com (U.S. Robotics) modem. Please see the 3Com (U.S. Robotics) Modem Bug page for more information.

EXTERNAL MODEMS WE HAVE TESTED:

Any modem will work as long as it can connect at 9600 bps. Below are the modems we have verified that will connect and successfully Autoscan the remote site.

- ActionTec External Fax/Voice 56k V.90
- 3Com (U.S. Robotics) Sportster 33.6
- 3Com (U.S. Robotics) Faxmodem 56k V.90
- 3Com (U.S. Robotics) Faxmodem 56k V.92
- Motorola VoiceSurfr 56k V.90

FLOW CONTROL / BAUD RATE

Make sure that the Vortex device has its baud rate set to 9600 and its flow control set for Off. To view those settings, press the Home button on the front panel so that Vortex System Settings is shown on the LCD display. Then, press the Enter button and use either the Down or Up buttons to scroll through the menu items until you see Flow Control. Press Enter and use the Down or Up buttons to change the Flow Control of the unit. If you've changed Flow Control to Off, press Enter in order to save the flow control setting to the non-volatile memory of the unit.

Press the DOWN button to change the Baud Rate of the unit. If you've changed the Baud Rate to 9600, press Enter in order to save the Baud Rate setting to the non-volatile memory of the unit.

BASIC REQUIREMENTS FOR ALL LOCAL MODEMS (MODEMS CALLING INTO A REMOTE SITE)

DIP SWITCHES

Some modems have DIP Switches that control certain features. The settings for these switches are **vital** to the proper operation of the modem. Even if the NVRAM is set correctly, the modem will still look to the state of the switches upon power-up and can override any NVRAM settings if not set correctly.

CONFERENCE COMPOSER INITIALIZATION STRING

Below is an example of an initialization string from a 3Com (U.S. Robotics) External 56k V.92 Modem. Most modem command sets have many similar commands, so you can use the example as a baseline to start from. The commands that typically will differ from each brand of modem are the RTS/CTS enable commands and the commands to limit the connection speed of the modem to 9600 bps. Consult the AT Command Set documentation that came with your modem for the proper command strings.

```
ATE0F1Q0V1S32=248S27=32&D0&H1&R2
```

AT: Required command prefix to get modem's attention

E0: Disable echo to the Vortex device

F1: Disable on-line character echo from the DTE

Q0: Enables modem to send result codes to PC

V1: Display result codes as words

S32=248: Disables V.34, V.34+, x2, V.90, and V.92 modulation

S27=32: Disables V.32bis mode. This in combination with S32=248 forces the modem to connect at 9600 bps

&D0: Modem ignores DTR and turns DTR LED on always

&H1: Enables CTS

&R2: Enables RTS

BASIC REQUIREMENTS FOR ALL REMOTE MODEMS (RECEIVING A CALL FROM THE LOCAL SITE)

DIP SWITCHES

Some modems have DIP Switches that control certain features. The settings for these switches are **vital** to the proper operation of the modem. Even if the NVRAM is set correctly, the modem will still look to the state of the switches upon power-up and can override any NVRAM settings if not set correctly.

VORTEX INITIALIZATION STRING

Below is an example of an initialization string from a 3Com (U.S. Robotics) External 56k V.92 Modem. Most modem command sets have many similar commands, so you can use the example as a baseline to start from. The commands that typically will differ from each brand of modem are the RTS/CTS enable commands. Consult the AT Command Set documentation that came with your modem for the proper command strings.

```
ATE0F1Q1V0Y0S0=2&B1&D0&H1&R2&W0
```

AT: Required command prefix to get modem's attention

E0: Disable echo to the Vortex device

F1: Disable on-line character echo from the DTE

Q1: Disable modem from sending result codes to Vortex device

V0: Display result codes as numbers

Y0: Recalls Profile 0 upon modem power-up

S0=2: Modem answers incoming call after two rings

&B1: Modem uses fixed serial port rate

&D0: Modem ignores DTR and turns DTR LED on always

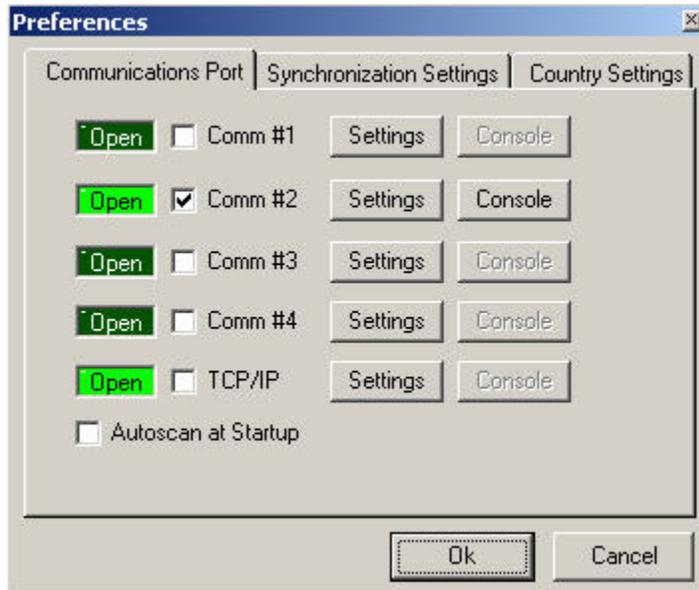
&H1: Enables CTS

&R2: Enables RTS

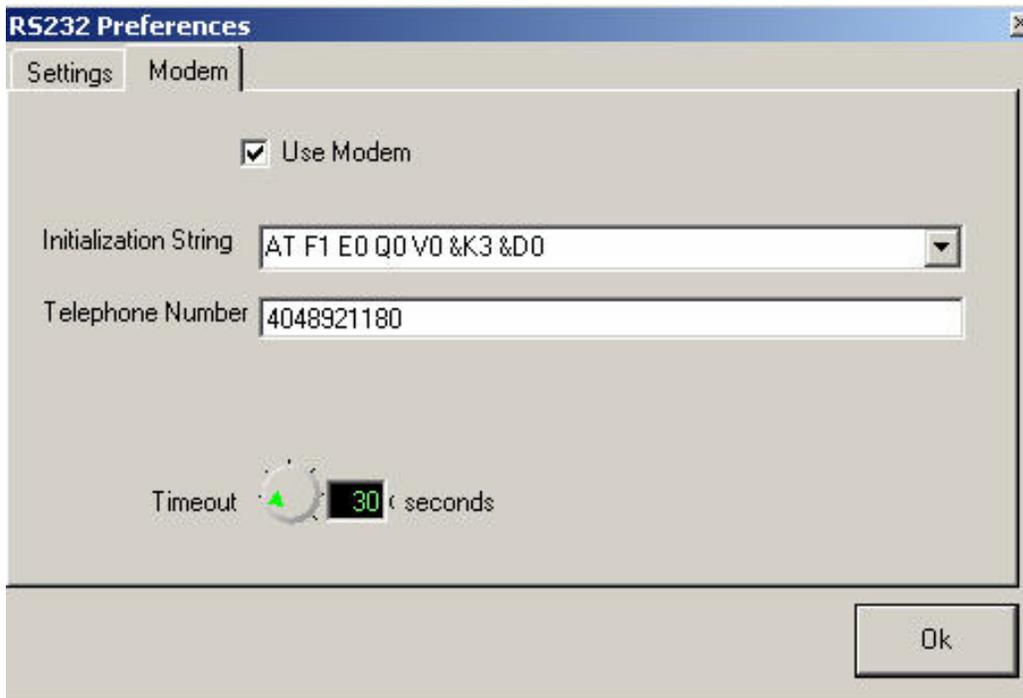
&W0: Store current configuration in Profile 0 of Modem NVRAM

CONFERENCE COMPOSER MODEM SETUP

Go to FILE, PREFERENCES and you will see this window:



Select the proper Comm port via the checkboxes. Next click the SETTINGS button.



Check the USE MODEM box. Enter the INITIALIZATION STRING so that the local modem has the proper parameters to establish a connection. Enter the TELEPHONE NUMBER of the remote modem to call. The TIMEOUT knob selects how long Conference Composer will wait before a connection is completed. This can be set from 30 to 300 seconds in 1 second increments.



Make sure the far end modem is connected to a direct phone line. The local modem must be able to start handshaking when the far end picks up the call. If you need to dial an extension to reach the phone line the modem is using, the local modem will not be able to delay the handshaking past when the far end phone is initially taken off hook.

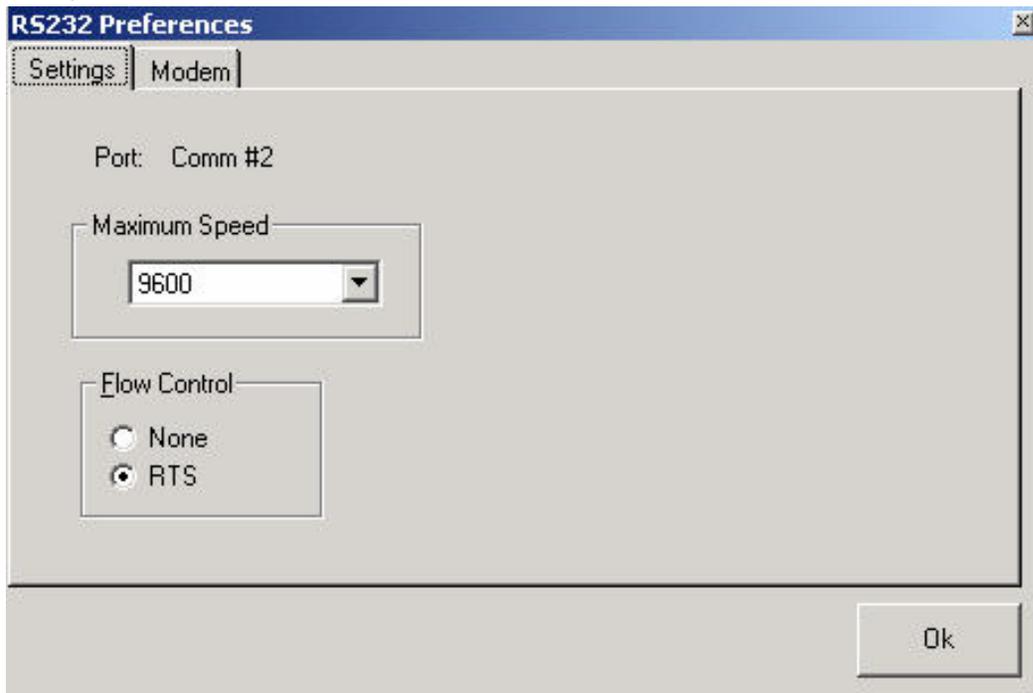


Most modems we have tested will work properly with the default INITIALIZATION STRING settings. The Actiontec external modem did require one addition to the default string.



If the default TIMEOUT is not long enough for the local modem to handshake with the far end modem, raise the TIMEOUT value.

Next, click the SETTINGS Tab and make sure that RTS button is clicked.

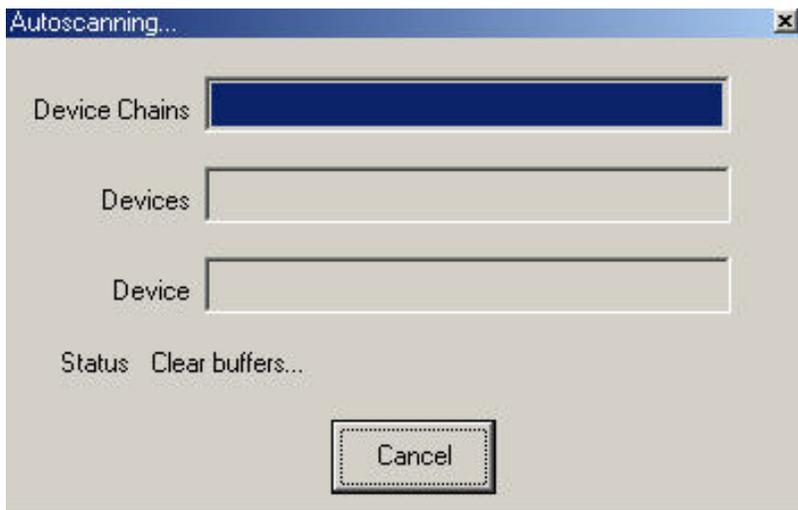
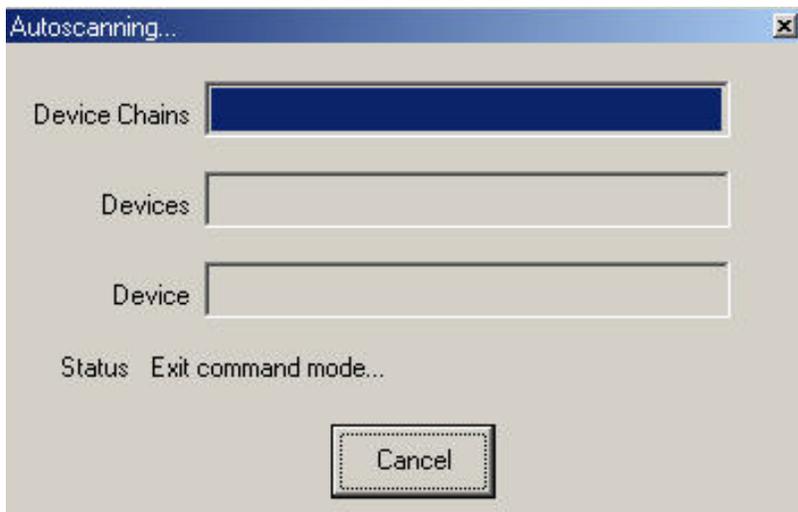
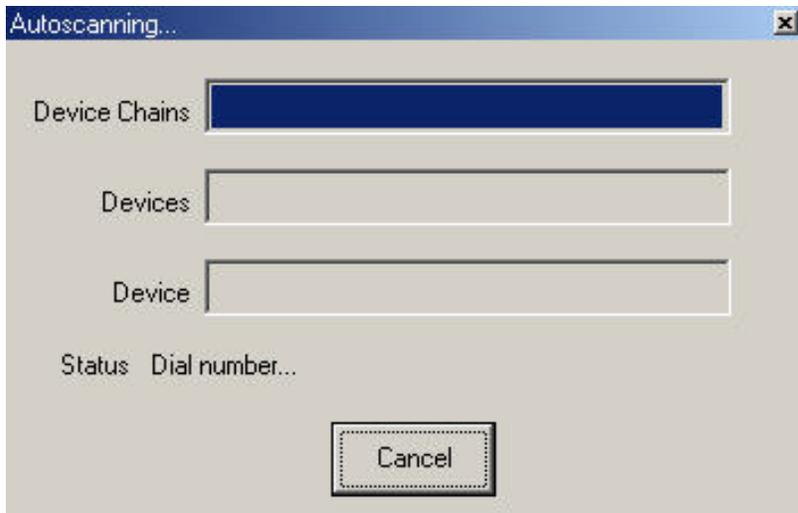


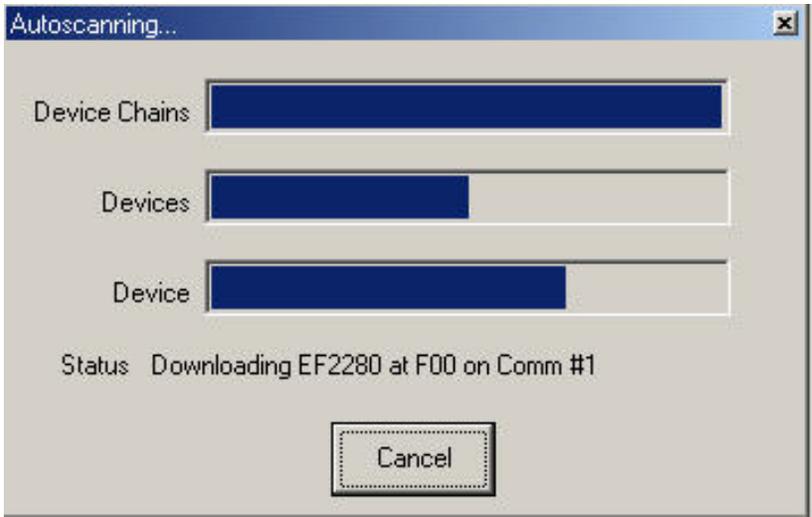
Hit OK to save the settings.

In order to AUTOSCAN , make sure that the only Comm port checked is the modem Comm port. When you select AUTOSCAN, Conference Composer will make sure that the modem is on the Comm port, hang up the modem, send the initialization string, and dial the number. Once the two modems have performed their handshaking, Conference Composer will AUTOSCAN the remote system, and you will be able to make changes in real time just as if you were on-site.

Here are some screenshots showing this process:







MODEM CABLING

Here is a chart showing how to make a cable to connect the modem's DB-25 port to the Vortex device's DB-9 port:

DB-25 Pin	DB-9 Pin	Function
2	2	Transmit Data
3	3	Receive Data
4	8	Request to Send (RTS Stands for Request to Send. A way for the computer or control system to indicate to the EF Device that it is ready to accept data.)
5	7	Clear to Send (CTS Stands for Clear to Send. A way for the EF Device to indicate to the control system or computer that it is ready to receive commands.)



Remember that the modem and the Vortex device are wired as DCE; thus, the wiring is exactly like wiring a null-modem connection.

3Com (U.S. ROBOTICS) MODEM BUG

In the process of testing various modems to use with the Vortex, we have discovered a bug that only occurs with 3Com modems. The bug is quite simple: During an Autoscan, the Vortex will send many commands back to the device that requests that information and one piece of that information causes the 3Com modem to change its echo mode from off to on. This results in all information that the Vortex generates on the Transmit pin of the RS-232 port to be placed on the Receive pin of its RS-232 port. This causes the Vortex to enter into an infinite loop since all acknowledgments are now processed by the Vortex as commands.

If you have multiple units connected together (for example 3 EF2280's), and try to Autoscan the units from a PC, one of the commands that the EF2280 will send back to the PC will cause the modem to revert into echo mode (E1). For example, during the the Autoscan, the EF2280 sends this command:

```
F00PRESETL16, MGATE1, *, 000000001100000000
```

This command causes the 3Com modem to change from no echo of commands (E0) into echo (E1). Here's a text capture of this event from a terminal window. Note that the 3Com modem responded with an error message, but the next characters typed into the terminal window were echoed!

```
ATI4
```

```
U.S. Robotics 56K FAX EXT Settings...
```

```
  B0  E0  F1  M1  Q0  V1  X4  Y0  
BAUD=9600  PARITY=N  WORDLEN=8  
DIAL=TONE  ON HOOK  CID=0
```

```
  &A3  &B1  &C1  &D0  &G0  &H1  &I2  &K3  
&M4  &N0  &P0  &R2  &S0  &T5  &U0  &Y1
```

```
  S00=002 S01=000 S02=043 S03=013 S04=010 S05=008 S06=004  
S07=060 S08=002 S09=006 S10=014 S11=070 S12=050 S13=000  
S15=000 S16=000 S18=000 S19=000 S21=010 S22=017 S23=019  
S25=005 S27=000 S28=008 S29=020 S30=000 S31=128 S32=002  
S33=000 S34=000 S35=000 S36=014 S38=000 S39=000 S40=001
```

```
S41=000 S42=000
LAST DIALED #:
```

OK

```
F00PRESETL16, MGATE1, *, 000000001100000000
```

ERROR

```
AATTII44
```

U.S. Robotics 56K FAX EXT Settings...

```
  B0  E1  F1  M1  Q0  V1  X4  Y0
BAUD=9600  PARITY=N  WORDLEN=8
DIAL=TONE  ON HOOK  CID=0
```

```
&A3  &B1  &C1  &D0  &G0  &H1  &I2  &K3
&M4  &N0  &P0  &R2  &S0  &T5  &U0  &Y1
```

```
S00=002 S01=000 S02=043 S03=013 S04=010 S05=008 S06=004
S07=060 S08=002 S09=006 S10=014 S11=070 S12=050 S13=000
S15=000 S16=000 S18=000 S19=000 S21=010 S22=017 S23=019
S25=005 S27=000 S28=008 S29=020 S30=000 S31=128 S32=002
S33=000 S34=000 S35=000 S36=014 S38=000 S39=000 S40=001
S41=000 S42=000
LAST DIALED #:
```

OK

At this point, all commands echoed from the Vortex are echoed back into its receive buffers. This causes an infinite loop to be created as the Vortex keeps sending the same information over and over. This is not good!

Here are the firmware The system code that each EF Device needs to properly function versions we have tested and confirmed the bug with:

- **Sportster 33.6** V5.6.1
- **Faxmodem 56k V.90** V5.2.9
- **Faxmodem 56k V.92** V5.2.9

Here's the good news. This bug only happens when a PC tries to Autoscan while the 3Com modem is **simultaneously** connected to another Vortex **and** the modem is on-hook. If you try to Autoscan while the modem is off-hook, this bug does not occur. Also, because the bug doesn't happen while the modem is off-hook, the bug will not occur if one tries to remotely call into the system.

Our recommendation is as follows: When setting up a system with a 3Com modem, disconnect the modem while you are setting the system up. Once you are finished, connect the 3Com modem and call into the system and verify that the modem works. If you need to Autoscan the system in the future, disconnect the 3Com modem.

We want to emphasize that this is not a bug with the Vortex. If the modem enters into echo mode, the Vortex thinks that the echoed commands are legitimate commands that must be processed. This is where the infinite loop is generated.

MODEM TROUBLESHOOTING

- DTR must be forced on. Most modems have a LED that will show DTR status. some modems have a DIP Switch that must be enabled or disabled in order to force DTR on.
- Make sure that RTS Stands for Request to Send. A way for the computer or control system to indicate to the EF Device that it is ready to accept data. and CTS Stands for Clear to Send. A way for the EF Device to indicate to the control system or computer that it is ready to receive commands. are enabled both on the cable and inside the modem .
- Double-check the AT Command Set documentation to verify the proper commands to force the modem into connecting at 9600 bps.
- If you try to Autoscan This process finds all devices that are connected to the PC and downloads their settings into Conference Composer in Conference Composer and it seems to hang while showing the Hanging Up message, that means that the modems display codes are suppressed. Conference Composer needs these codes in order to know that the modem received and processed the previous command. If the modem has a DIP Switch, re-enable result codes by that method, or open up a terminal program such as Hyperterminal and send this command: `ATQ0` .

3COM (U.S. ROBOTICS) SPORTSTER 33.6

WHEN USED ON THE LOCAL END TO CALL A REMOTE SYSTEM

DIP SWITCHES

The settings for these switches are **vital** to the proper operation of the modem. Even if the NVRAM is set correctly, the modem will still look to the state of the switches upon power-up and can override any NVRAM settings if not set correctly.

Switch 1 (DOWN): Data Terminal Ready Override. Forces modem to ignore DTR.

Switch 2 (UP): Verbal Result Codes. Codes that are issued for certain status indicators in a text format such as OK, CONNECT, RING, NO CARRIER, etc.

Switch 3 (DOWN): Display Result Codes. Modem will issue commands to verify certain operations such as connection speed and acknowledgments of command.

Switch 4 (DOWN): No echo, offline commands. Modem will copy each character sent and return it to the sending device if this switch is not disabled.

Switch 5 (UP): Auto Answer. Modem will automatically go off hook after a certain number of rings which is specified in NVRAM by the S0 register.

Switch 6 (UP): Carrier detect normal. Modem will go on hook if carrier signal is not present.

Switch 7 (UP): Load NVRAM defaults. Modem will power-up with the settings programmed in NVRAM.

Switch 8 (DOWN): Smart Mode. Modem will parse incoming commands.

INITIALIZATION STRING

Here is the initialization string that should be stored in the Conference Composer:

```
ATE0F1Q0V1S32=24S27=32&D0&H1&R2
```

AT: Required command prefix to get modem's attention

E0: Disable echo to the Vortex device

F1: Disable on-line character echo from the DTE

Q0: Enables modem to send result codes to PC

V1: Display result codes as words

S32=24: Disables V.34, and V.34+

S27=32: Disables V.32bis mode. This in combination with S32=24 forces the modem to connect at 9600 bps

&D0: Modem ignores DTR and turns DTR LED on always

&H1: Enables CTS

&R2: Enables RTS

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: AA, TR, and CS should be lit.

Off Hook: CD, TR, CS, ARQ/FAX should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

AA: Auto Answer. On when modem is set to Auto Answer. Blinks during an incoming phone call.

CD: Carrier Detect. On when modem receives a valid carrier signal from remote modem.

RD: Receive Data. Blinks when receiving incoming data from phone line.

SD: Send Data. Blinks when modem sends data to phone line.

TR: Data Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).

CS: Clear to Send. On when CTS is active.

ARQ/FAX: Error Control/Fax Operations. On if modem establishes an error control connection to remote modem.

WHEN USED AT THE REMOTE END CONNECTED TO A VORTEX DEVICE

DIP SWITCHES

The setting for these switches are **vital** to the proper operation of the modem. Even if the NVRAM is set correctly, the modem will still look to the state of the switches upon power-up and can override any NVRAM settings if not set correctly.

Switch 1 (DOWN): Data Terminal Ready Override. Forces modem to ignore DTR.

Switch 2 (DOWN): Numeric Result Codes. Codes that are issued for certain status indicators numeric or text format such as 0, 3, or 4.

Switch 3 (UP): Suppress Result Codes. Modem will not issue commands to verify command has been received.

Switch 4 (DOWN): No echo, offline commands. Modem will copy each character sent and return it to the sending device if this switch is not disabled.

Switch 5 (UP): Auto Answer. Modem will automatically go off hook after a certain number of rings which is specified in NVRAM by the S0 register.

Switch 6 (UP): Carrier detect normal. Modem will go on hook if carrier signal is not present.

Switch 7 (UP): Load NVRAM defaults. Modem will power-up with the settings programmed in NVRAM.

Switch 8 (DOWN): Smart Mode. Modem will parse incoming commands.

INITIALIZATION STRING

Here is the initialization string that should be stored in the Vortex device:

```
ATE0F1Q1V0Y0S0=2&B1&D0&H1&R2&W0
```

AT: Required command prefix to get modem's attention

E0: Disable echo to the Vortex device

F1: Disable on-line character echo from the DTE

Q1 : Disable modem from sending result codes to Vortex device
V0 : Display result codes as numbers
Y0 : Recalls Profile 0 upon modem power-up
S0=2 : Modem answers incoming call after two rings
&B1 : Modem uses fixed serial port rate
&D0 : Modem ignores DTR and turns DTR LED on always
&H1 : Enables CTS
&R2 : Enables RTS
&W0 : Store current configuration in Profile 0 of Modem NVRAM

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: AA, TR, and CS should be lit.

Off Hook: AA, CD, TR, CS, ARQ/FAX should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

AA: Auto Answer. On when modem is set to Auto Answer. Blinks during an incoming phone call.

CD: Carrier Detect. On when modem receives a valid carrier signal from remote modem.

RD: Receive Data. Blinks when receiving incoming data from phone line.

SD: Send Data. Blinks when modem sends data to phone line.

TR: Data Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).

CS: Clear to Send. On when CTS is active.

ARQ/FAX: Error Control/Fax Operations. On if modem establishes an error control connection to remote modem.

3Com (U.S. ROBOTICS) FAXMODEM 56K V.90

WHEN USED ON THE LOCAL END TO CALL A REMOTE SYSTEM

DIP SWITCHES

The settings for these switches are **vital** to the proper operation of the modem. Even if the NVRAM is set correctly, the modem will still look to the state of the switches upon power-up and can override any NVRAM settings if not set correctly.

Switch 1 (DOWN): Data Terminal Ready Override. Forces modem to ignore DTR.

Switch 2 (UP): Verbal Result Codes. Codes that are issued for certain status indicators in a text format such as OK, CONNECT, RING, NO CARRIER, etc.

Switch 3 (DOWN): Display Result Codes. Modem will issue commands to verify certain operations such as connection speed and acknowledgments of command.

Switch 4 (DOWN): No echo, offline commands. Modem will copy each character sent and return it to the sending device if this switch is not disabled.

Switch 5 (UP): Auto Answer. Modem will automatically go off hook after a certain number of rings which is specified in NVRAM by the S0 register.

Switch 6 (UP): Carrier detect normal. Modem will go on hook if carrier signal is not present.

Switch 7 (UP): Load NVRAM defaults. Modem will power-up with the settings programmed in NVRAM.

Switch 8 (DOWN): Smart Mode. Modem will parse incoming commands.

INITIALIZATION STRING

Here is the initialization string that should be stored in the Conference Composer:

```
ATE0F1Q0V1S32=120S27=32&D0&H1&R2
```

AT: Required command prefix to get modem's attention

E0: Disable echo to the Vortex device

F1: Disable on-line character echo from the DTE

Q0: Enables modem to send result codes to PC

V1: Display result codes as words

S32=120: Disables V.34, and V.34+

S27=32: Disables V.32bis mode. This in combination with S32=120 forces the modem to connect at 9600 bps

&D0: Modem ignores DTR and turns DTR LED on always

&H1: Enables CTS

&R2: Enables RTS

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: AA, TR, and CS should be lit.

Off Hook: CD, TR, CS, ARQ/FAX should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

AA: Auto Answer. On when modem is set to Auto Answer. Blinks during an incoming phone call.

CD: Carrier Detect. On when modem receives a valid carrier signal from remote modem.

RD: Receive Data. Blinks when receiving incoming data from phone line.

SD: Send Data. Blinks when modem sends data to phone line.

TR: Data Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).

CS: Clear to Send. On when CTS is active.

ARQ/FAX: Error Control/Fax Operations. On if modem establishes an error control connection to remote modem.

WHEN USED AT THE REMOTE END CONNECTED TO A VORTEX DEVICE

DIP SWITCHES

The settings for these switches are **vital** to the proper operation of the modem. Even if the NVRAM is set correctly, the modem will still look to the state of the switches upon power-up and can override any NVRAM settings if not set correctly.

Switch 1 (DOWN): Data Terminal Ready Override. Forces modem to ignore DTR.

Switch 2 (DOWN): Numeric Result Codes. Codes that are issued for certain status indicators numeric or text format such as 0, 3, or 4.

Switch 3 (UP): Suppress Result Codes. Modem will not issue commands to verify command has been received.

Switch 4 (DOWN): No echo, offline commands. Modem will copy each character sent and return it to the sending device if this switch is not disabled.

Switch 5 (UP): Auto Answer. Modem will automatically go off hook after a certain number of rings which is specified in NVRAM by the S0 register.

Switch 6 (UP): Carrier detect normal. Modem will go on hook if carrier signal is not present.

Switch 7 (UP): Load NVRAM defaults. Modem will power-up with the settings programmed in NVRAM.

Switch 8 (DOWN): Smart Mode. Modem will parse incoming commands.

INITIALIZATION STRING

Here is the initialization string that should be stored in the Vortex device:

```
ATE0F1Q1V0Y0S0=2&B1&D0&H1&R2&W0
```

AT: Required command prefix to get modem's attention

E0: Disable echo to the Vortex device

F1: Disable on-line character echo from the DTE

Q1: Disable modem from sending result codes to the Vortex device

v0 : Display result codes as numbers
y0 : Recalls Profile 0 upon modem power-up
s0=2 : Modem answers incoming call after two rings
&B1 : Modem uses fixed serial port rate
&D0 : Modem ignores DTR and turns DTR LED on always
&H1 : Enables CTS
&R2 : Enables RTS
&W0 : Store current configuration in Profile 0 of Modem NVRAM

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: AA, TR, and CS should be lit.

Off Hook: AA, CD, TR, CS, ARQ/FAX should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

AA: Auto Answer. On when modem is set to Auto Answer. Blinks during an incoming phone call.

CD: Carrier Detect. On when modem receives a valid carrier signal from remote modem.

RD: Receive Data. Blinks when receiving incoming data from phone line.

SD: Send Data. Blinks when modem sends data to phone line.

TR: Data Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).

CS: Clear to Send. On when CTS is active.

ARQ/FAX: Error Control/Fax Operations. On if modem establishes an error control connection to remote modem.

3Com (U.S. ROBOTICS) FAXMODEM 56K V.92

WHEN USED ON THE LOCAL END TO CALL A REMOTE SYSTEM

DIP SWITCHES

The settings for these switches are **vital** to the proper operation of the modem. Even if the NVRAM is set correctly, the modem will still look to the state of the switches upon power-up and can override any NVRAM settings if not set correctly.

Switch 1 (DOWN): Data Terminal Ready Override. Forces modem to ignore DTR.

Switch 2 (UP): Verbal Result Codes. Codes that are issued for certain status indicators in a text format such as OK, CONNECT, RING, NO CARRIER, etc.

Switch 3 (DOWN): Display Result Codes. Modem will issue commands to verify certain operations such as connection speed and acknowledgments of command.

Switch 4 (DOWN): No echo, offline commands. Modem will copy each character sent and return it to the sending device if this switch is not disabled.

Switch 5 (UP): Auto Answer. Modem will automatically go off hook after a certain number of rings which is specified in NVRAM by the S0 register.

Switch 6 (UP): Carrier detect normal. Modem will go on hook if carrier signal is not present.

Switch 7 (UP): Load NVRAM defaults. Modem will power-up with the settings programmed in NVRAM.

Switch 8 (DOWN): Smart Mode. Modem will parse incoming commands.

INITIALIZATION STRING

Here is the initialization string that should be stored in the Conference Composer:

```
ATE0F1Q0V1S32=248S27=32&D0&H1&R2
```

AT: Required command prefix to get modem's attention

E0: Disable echo to the Vortex device

F1: Disable on-line character echo from the DTE

Q0: Enables modem to send result codes to PC

V1: Display result codes as words

S32=248: Disables V.34, V.34+, x2, V.90, and V.92 modulation

S27=32: Disables V.32bis mode. This in combination with S32=248 forces the modem to connect at 9600 bps

&D0: Modem ignores DTR and turns DTR LED on always

&H1: Enables CTS

&R2: Enables RTS

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: AA, TR, and CS should be lit.

Off Hook: CD, TR, CS, ARQ/FAX should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

AA: Auto Answer. On when modem is set to Auto Answer. Blinks during an incoming phone call.

CD: Carrier Detect. On when modem receives a valid carrier signal from remote modem.

RD: Receive Data. Blinks when receiving incoming data from phone line.

SD: Send Data. Blinks when modem sends data to phone line.

TR: Data Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).

CS: Clear to Send. On when CTS is active.

ARQ/FAX: Error Control/Fax Operations. On if modem establishes an error control connection to remote modem.

WHEN USED AT THE REMOTE END CONNECTED TO A VORTEX DEVICE

DIP SWITCHES

The setting for these switches are **vital** to the proper operation of the modem. Even if the NVRAM is set correctly, the modem will still look to the state of the switches upon power-up and can override any NVRAM settings if not set correctly.

Switch 1 (DOWN): Data Terminal Ready Override. Forces modem to ignore DTR.

Switch 2 (DOWN): Numeric Result Codes. Codes that are issued for certain status indicators numeric or text format such as 0, 3, or 4.

Switch 3 (UP): Suppress Result Codes. Modem will not issue commands to verify command has been received.

Switch 4 (DOWN): No echo, offline commands. Modem will copy each character sent and return it to the sending device if this switch is not disabled.

Switch 5 (UP): Auto Answer. Modem will automatically go off hook after a certain number of rings which is specified in NVRAM by the S0 register.

Switch 6 (UP): Carrier detect normal. Modem will go on hook if carrier signal is not present.

Switch 7 (UP): Load NVRAM defaults. Modem will power-up with the settings programmed in NVRAM.

Switch 8 (DOWN): Smart Mode. Modem will parse incoming commands.

INITIALIZATION STRING

Here is the initialization string that should be stored in the Vortex device:

```
ATE0F1Q1V0Y0S0=2&B1&D0&H1&R2&W0
```

AT: Required command prefix to get modem's attention

E0: Disable echo to the Vortex device

F1: Disable on-line character echo from the DTE

Q1: Disable modem from sending result codes to Vortex device

V0: Display result codes as numbers

Y0 : Recalls Profile 0 upon modem power-up
S0=2 : Modem answers incoming call after two rings
&B1 : Modem uses fixed serial port rate
&D0 : Modem ignores DTR and turns DTR LED on always
&H1 : Enables CTS
&R2 : Enables RTS
&W0 : Store current configuration in Profile 0 of Modem NVRAM

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: AA, TR, and CS should be lit.

Off Hook: AA, CD, TR, CS, ARQ/FAX should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

AA: Auto Answer. On when modem is set to Auto Answer. Blinks during an incoming phone call.

CD: Carrier Detect. On when modem receives a valid carrier signal from remote modem.

RD: Receive Data. Blinks when receiving incoming data from phone line.

SD: Send Data. Blinks when modem sends data to phone line.

TR: Data Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).

CS: Clear to Send. On when CTS is active.

ARQ/FAX: Error Control/Fax Operations. On if modem establishes an error control connection to remote modem.

ACTIONTEC EXTERNAL FAX/VOICE 56K

V.90

WHEN USED ON THE LOCAL END TO CALL A REMOTE SYSTEM

INITIALIZATION STRING

Here is the initialization string that should be stored in Conference Composer:

```
ATE0F1Q0V1&D0&K3+MS=9
```

- AT**: Required command prefix to get modem's attention
- E0**: Disable echo to the PC
- F1**: Disable on-line character echo from the DTE
- Q0**: Enables modem to send result codes to the PC
- V1**: Display result codes as words
- &D0**: Modem ignores DTR and turns DTR LED on always
- &K3**: Enables both RTS and CTS.
- +MS=9**: Forces modem to connect using V.32 modulation

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: CS, RS, TR, and MR should be lit.



TR will not be lit if you initially power up the modem. After Conference composer sends the initialization string, TR will be lit for the duration the modem is powered up.

Off Hook: CS, RS, OH, TR, MR, and CD should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

CS: Clear to Send. On when CTS is active.

RS: Request to Send. On when RTS is active.
CD: Carrier Detect. On when remote carrier signal is detected.
OH: Off Hook. On when the modem is off hook.
RD: Receive Data. On when modem is receiving incoming data from the phone line.
SD: Transmit Data. On when modem is sending data to phone line.
TR: Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).
MR: Modem Ready. On after modem has booted up and passed power on self test.

WHEN USED AT THE REMOTE END CONNECTED TO A VORTEX DEVICE

INITIALIZATION STRING

Here is the initialization string that should be stored in the Vortex device:

```
ATE0F1Q1V0S0=2&D0&K3&W0&Y0
```

AT: Required command prefix to get modem's attention
E0: Disable echo to the Vortex device
F1: Disable on-line character echo from the DTE
Q1: Disable modem from sending result codes.
V0: Display result codes as numbers
S0=2: Modem answers incoming call after two rings
&D0: Modem ignores DTR and turns DTR LED on always
&K3: Enables RTS and CTS
&W0: Store current configuration in Profile 0 of Modem NVRAM
&Y0: Recall Profile 0 upon modem power-up



Make sure that you send the above command in the same order as

it is written. It seems that this modem is sensitive to the arrangement of each commands in the string.



We recommend cycling power to the modem after the initialization string is sent to double check that the modem correctly received the initialization string. The LED's should light up appropriately as soon as the modem power up. See the Front Panel LED's section for more details.



If you don't see the proper LED's on the front of the modem, turn the power off, wait about 5 seconds, and turn the power on. This seems to be an issue with the modem not correctly using the settings saved in NVRAM upon power-up.

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: CS, RS, TR, and MR should be lit.

Off Hook: CS, RS, OH, TR, MR, and CD should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

CS: Clear to Send. On when CTS is active.

RS: Request to Send. On when RTS is active.

CD: Carrier Detect. On when remote carrier signal is detected.

OH: Off Hook. On when the modem is off hook.

RD: Receive Data. On when modem is receiving incoming data from the phone line.

SD: Transmit Data. On when modem is sending data to phone line.

TR: Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).

MR: Modem Ready. On after modem has booted up and passed power on self test.

MOTOROLA VOICESURFR 56K V.90

WHEN USED ON THE LOCAL END TO CALL A REMOTE SYSTEM

INITIALIZATION STRING

Here is the initialization string that should be stored in Conference Composer:

```
ATE0Q0V1&D0&K3+MS=9
```

AT: Required command prefix to get modem Stands for Modulator, Demodulator. This unit uses analog signals to represent digital bits so that digital devices can use a phone line to communicate bi-directionally. 's attention

E0: Disable echo to the PC

Q0: Enables modem to send result codes to the PC

V1: Display result codes as words

&D0: Modem ignores DTR and turns DTR LED on always

&K3: Enables both RTS and CTS

+MS=9: Forces modem to connect using V.32 modulation

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: TR, and RI should be lit.

Off Hook: TR, CD, OH, RI should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

TR: Data Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).

CD: Carrier Detect. On when modem receives a valid carrier signal from remote modem.

RD: Receive Data. Blinks when receiving incoming data from phone line.

SD: Send Data. Blinks when modem sends data to phone line.

OH: Off Hook. On when modem is off hook. This does not indicate the presence of loop current or the presence of a successful connection.

RI: Ring Indicator. If flashing, modem is receiving an incoming call. If solid, modem is receiving power.

WHEN USED AT THE REMOTE END CONNECTED TO A VORTEX DEVICE

INITIALIZATION STRING

Here is the initialization string that should be stored in the Vortex device:

```
ATE0Q1V0S0=2&D0&K3&W0&Y0
```

AT: Required command prefix to get modem's attention

E0: Disable echo to the Vortex device

Q1: Disable modem from sending result codes.

V0: Display result codes as numbers

S0=2: Modem answers incoming call after two rings

&D0: Modem ignores DTR and turns DTR LED on always

&K3: Enables RTS and CTS

&W0: Store current configuration in Profile 0 of Modem NVRAM

&Y0: Recall Profile 0 upon modem power-up

FRONT PANEL LED'S

The LED's on the front panel should look as follows:

On Hook: TR, and RI should be lit.

Off Hook: TR, CD, OH, RI should be constantly lit. RD and SD should light up when data is received or sent.

Here is the information on what each LED means:

TR: Data Terminal Ready. On when DTR signal is active or if modem ignores DTR signal (&D0 command forces LED on constantly).

CD: Carrier Detect. On when modem receives a valid carrier signal from remote modem.

RD: Receive Data. Blinks when receiving incoming data from phone line.

SD: Send Data. Blinks when modem sends data to phone line.

OH: Off Hook. On when modem is off hook. This does not indicate the presence of loop current or the presence of a successful connection.

RI: Ring Indicator. If flashing, modem is receiving an incoming call. If solid, modem is receiving power.

TECHNICAL SUPPORT

For Polycom products (EF2280, EF2241, EF1210, EF400, EF200):

- Call 404-892-3200 between 9 am to 6 pm and Press 3
- Send an email to help@aspi.com

For other Polycom products (VS4000, Viewstation FX, iPower, etc.):

- Call 408-474-2048
- Send an email to: pass@polycom.com

POLYCOM IVB CONTACT INFORMATION

Our address is:

1720 Peachtree Street, NW
Suite 220
Atlanta, GA 30309
404-892-3200 Phone
404-892-2512 Fax