



SW6000 User Manual

ECA External Control Application

User guide for Shure SW6000 Conference Management Software
Version: 9.2 (2021)



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1 Introduction

This document describes the RS232 protocol for communication between customer applications and SW6000 Conference Management Software by use of the ECA External Control Application.

Customer applications can include but are not limited to AMX or Crestron room control systems, PC's or micro controller based applications e.g. for button mimics.

The RS232 protocol is an easy to use protocol.

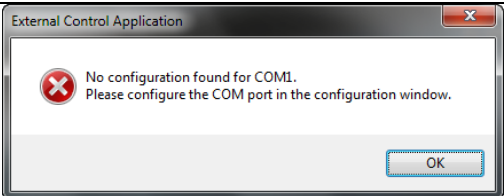
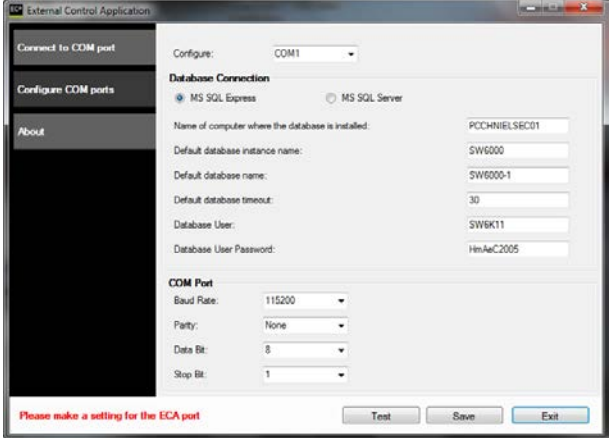
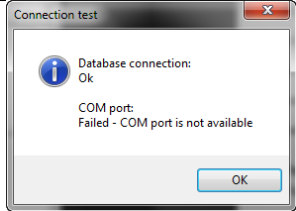
For installation of the ECA application, please refer to the 'Installation Manual SW6000'.

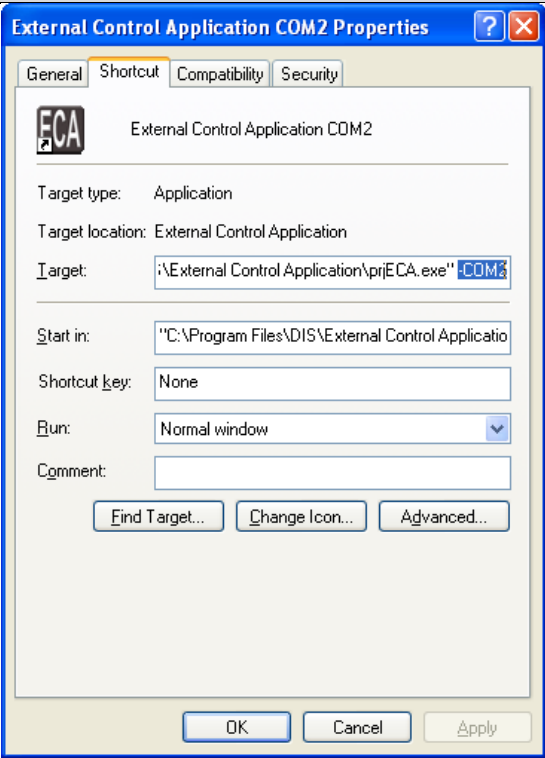
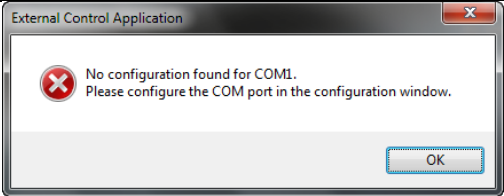
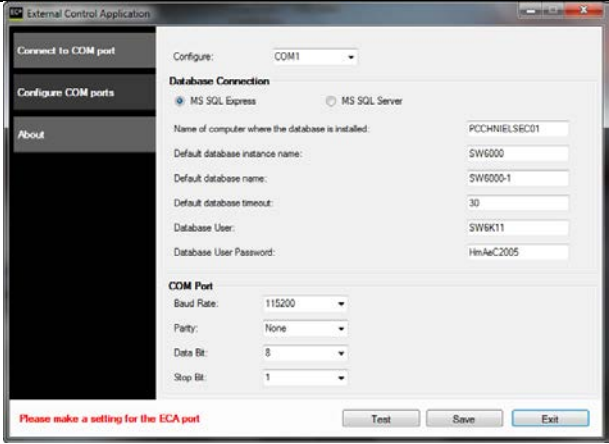
1.1 Licensing

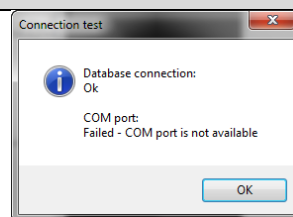
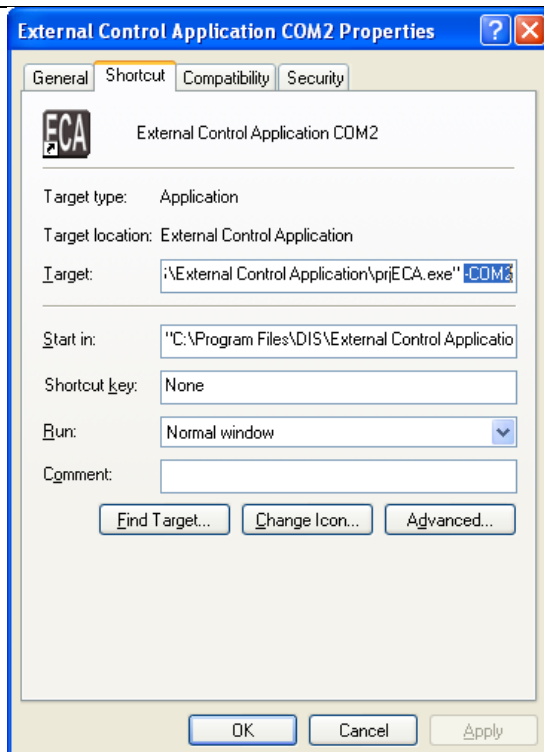
The ECA application is included in the SW6000 Conference Management Software (basic) and no separate license is needed.



2 Configuring the ECA

#	Description	Comment or picture
1.	Start the ECA by selecting the ECA shortcut on the desktop	
2.	A message is shown, that the ECA configuration is not found. Select 'OK'	
3.	Select the Configure COM port Insert the correct parameters for the ECA application: Select COM port from 1 to 8 that will be used The COM ports, which are configured, will be highlighted. Insert the Name of the Computer, where the database is installed Insert the 'Default Database name' Insert the COM Port parameters. Set Baud Rate to fit with connected equipment. Handshake is not used with ECA communication.	
4.	Select 'Test'. Note: If the test fails, change the setting which failed. If the saved configuration connects to another Com port than selected during installation, the command line parameter for the ECA short must be changed to the configured port. Please refer to next point. Select 'Save' Select 'Exit'	

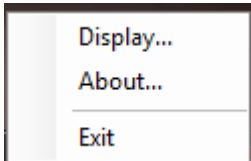
#	Description	Comment or picture
5.	If the Com port must be changed in the ECA short cut Right-click the ECA shortcut Select Properties Select the 'Shortcut' tab Change COM port number in the 'Target' line Select 'Apply' Select 'OK'	
6.	Start the ECA by selecting the ECA shortcut on the desktop	
7.	A message is shown, that the ECA configuration is not found. Select OK	
8.	Select the Configure COM port Insert the correct parameters for the ECA application: Select COM port from 1 to 8 that will be used The COM ports, which are configured, will be highlighted. Insert the Name of the Computer, where the database is installed Insert the 'Default Database name' Insert the COM Port parameters. Set Baud Rate to fit with connected equipment. Handshake is not used with ECA communication.	

#	Description	Comment or picture
9.	Select 'Test'. Note: If the test fails, change the setting which failed. If the saved configuration connects to another Com port than selected during installation, the command line parameter for the ECA short must be changed to the configured port. Please refer to next point. Select 'Save' Select 'Exit'	
10.	If the Com port must be changed in the ECA short cut Right select the ECA shortcut Select Properties Select the 'Shortcut' tab Change COM port number in the 'Target' line Select 'Apply' Select 'OK'	

2.1 Command line parameters for the ECA

-W	Show a communication window (debug) when the ECA is started. Don't use this parameter in normal use.
-COMx	Specifies the COM port to use. COM1 to COM8 are valid entries. When the COM port is specified, the 'Select COM port' popup is disabled.
-STARTUPDELAYx	Specifies a delay that the application will wait before initializing completely. The delay x, is given in milliseconds. This is useful if the ECA shortcut is placed in the Start-up folder in windows, giving windows time to start services related to SQL, before the ECA starts communicating with the SQL server
-DELAY	Please refer to the section 'RS 232 Commands' for details .

3 Starting the ECA

#	Description	Comment or picture
1.	Select the ECA shortcut to start the application	
2.	When started an ECA icon is shown in the task bar. If debugging is needed right select on the ECA icon and select display	 

4 RS 232 Commands

4.1 'Delay' command line parameter

As it has been experienced that external RS232 parsers can have difficulties in handling commands sent in quick succession it's possible to introduce a minimum "dead-time" between commands from the ECA.

To introduce this delay use the following command line parameter on the ECA application '**-DELAYx**' where x has to be a number specifying the delay in milliseconds.

This delay must be an integer greater than 0 and smaller than 2000 – corresponding to 2 seconds.

Important: Introducing this delay has a severe impact on the number of messages that can be transmitted over the RS232 interface – so it should preferably be avoided.

4.2 Commands from ECA to external RS232 device

The commands sent from the ECA to an external RS232 device are described here. The commands are all ASCII commands – the commands should be possible to send and receive from any terminal e.g. HyperTerminal. Only printable characters are used so it's possible to use any terminal program to key in commands and see the response. This approach has been used to facilitate testing and development by customers.

<Seat no> 1-5 ASCII bytes with the seat number – this is equivalent to the content in the seat table for identifying the microphone e.g. "**50001**" or "**123**"

<CHKSUM> 2 ASCII characters representing the hexadecimal checksum calculated over the command and seat no.

The checksum shall be calculated as shown in this example with the command "**!S1234:1D**":

'S'=83 (ASCII value)

'1'=49 (ASCII value)

'2'=50 (ASCII value)

'3'=51 (ASCII value)

'4'=52 (ASCII value)

The sum is calculated:

$$\text{sum} = 83 + 49 + 50 + 51 + 52 = 285$$

Modulus is calculated:

$$285 \bmod 256 = 29$$

Hex values is calculated:

$$29 = 1D$$

The two characters are used in the command as the checksum.

<CR> Carriage return – 0D = 13

Command direction is identified using arrows – from ECA to EXT and from EXT to ECA, as well as both ways.

4.2.1 Microphone On (ECA ↔ EXT)

!S<Seat no>:<CHKSUM><CR>

Sent when microphone is switched on.

4.2.2 Microphone in speak (ECA $\leftrightarrow$ EXT)

!s<Seat no>:<CHKSUM><CR>

Sent as a response to a microphone status request message to indicate that the microphone is in speak.

4.2.3 Microphone Off (ECA $\leftrightarrow$ EXT)

!O<Seat no>:<CHKSUM><CR>

Sent when microphone in speak is switched off.

4.2.4 Request On (ECA $\leftrightarrow$ EXT)

!R<Seat no>:<CHKSUM><CR>

Sent when microphone is set into request.

4.2.5 Microphone in request (ECA $\rightarrow$ EXT)

!r<Seat no>:<CHKSUM><CR>

Sent as a response to a microphone status request message to indicate that the microphone is in request.

4.2.6 Request Off (ECA $\leftrightarrow$ EXT)

!N<Seat no>:<CHKSUM><CR>

Sent when microphone is switched off from request.

4.2.7 Max Total Speakers (ECA $\leftrightarrow$ EXT)

!T<max spk>:<CHKSUM><CR>

Maximum number of speakers allowed to speak.

<max spk> Can be set to "1" to "8"

4.2.8 Max Delegate Speakers (ECA $\leftrightarrow$ EXT)

!K<max spk>:<CHKSUM><CR>

Maximum number of delegates allowed to speak.

<max spk> Can be set to "1" to "8"

4.2.9 Max Requests (ECA $\leftrightarrow$ EXT)

!Q<max req>:<CHKSUM><CR>

Maximum number of delegates allowed in the request list. **<max req>** Can be set to "0" to "255".

4.2.10 System Operation Mode (ECA $\leftrightarrow$ EXT)

!E<mode>:<CHKSUM><CR>

System operation mode possible values are: "AUTO", "FIFO", "MANU", "VOX", "AUTO-REP", "MANU-REP" and "VOX-REP".

4.2.11 System Interruptability (ECA $\leftrightarrow$ EXT)

!I<mode>:<CHKSUM><CR>

System operation mode possible values are: "NONE", "LOWER", and "SAMELOWER"

4.2.12 Speaking Too Fast (ECA $\leftrightarrow$ EXT)

!P<state>:<CHKSUM><CR>

Speaking too fast indicates that speakers should slow down to enable interpreters to keep up.

<state> may be "0" or "1", where "1" indicates that currently the speaking too fast condition is active.

4.2.13 Voting Start/Stop (ECA ↔ EXT)

!V<start-stop>:<CHKSUM><CR>

Command is used for starting and stopping a voting session, as well as indicating whether a voting session is running.

<start-stop> may be "0" or "1", where "0" indicates the voting session is stopped and "1" indicates the voting session is started (or running).

The type of voting session, when started from ECA, is the default one.

4.2.14 Status done (ECA → EXT)

!D<CR>

Sent to indicate that complete status of the microphone system has been transmitted.

4.2.15 All microphones off (ECA → EXT)

!F<CR>

Sent to indicate that the number of microphones "On" is zero. This command is only sent when the last microphone is switched off.

Observe that sending this command is not enabled as default – to enable this command use the command line parameter "-ALLMICOFF" on the CUI application.

4.2.16 All replies off (ECA → EXT)

!ALLREPLYOFF<CR>

Sent when the 'All Reply Off' button is activated in the CUA.

Observe that the command is sent when a conference is started or stopped.

4.2.17 User Validation request (ECA → EXT)

!U<User id>S<Seat id>:<CHKSUM><CR>

Sent to request external validation of user identified by <User id> using external validation equipment e.g. fingerprint reader identified by <Seat id>.

4.2.18 Alert Status change (ECA → EXT)

!A<status>:<CHKSUM><CR>

Send when an alert is issued or cancelled.

<status> may be "0" or "1", where "1" indicates the alert is active.

4.2.19 Speech Time Alarm (ECA → EXT)

!L<status>S<Seat no>:<CHKSUM><CR>

Sent to external units to indicate current status of speech time for the speaker seat (podiums).

<status> may be one of the following values:

- "0" – no alarm or expiration; issued only after another value was indicated in a previous "!L" for this seat, and then the microphone was switched off. It arrives before the corresponding "!O" notification.
- "1" – alarm (if there was one set, otherwise this value is skipped).
- "2" – time expired.

When a microphone is closed, alarm state is always reverted to value 0.

Note – this command is only sent for seats of Podium types.

4.3 Commands from external RS232 to ECA

The commands issued to control microphones are identical to the commands that relay status from the ECA. E.g. to set microphone seat no 7 on the command “!S7:8A<CR>” is issued – the same command will return from the ECA to reflect that the microphone has actually been switched on.

4.3.1 Request System Status (ECA ← EXT)

?D<CR>

Sending this command will cause the ECA to transmit the current status of the system as a series of commands for max speakers, max total speakers, max requests, operation mode and a series of microphone in speak and microphone in request commands. When the ECA has transmitted all pending status information the Status done command is received.

Observe that activity during a status request may cause e.g. speak on commands to be transmitted before all microphones in speak commands have been issued – this should not cause problems as the two commands use a different syntax.

4.3.2 User Validation response (ECA ← EXT)

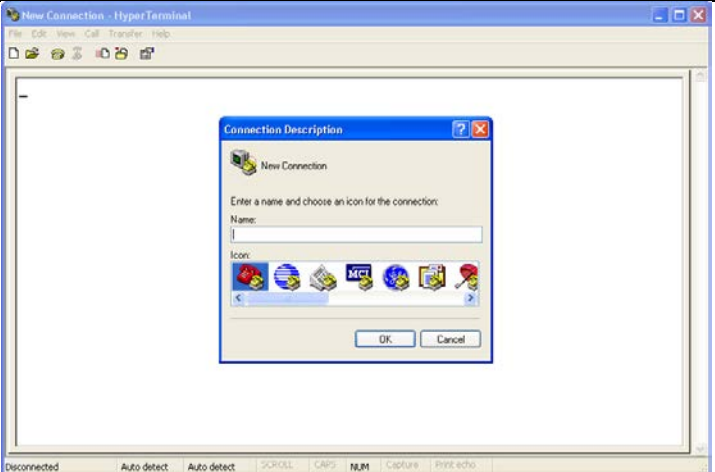
!U<User id>S<Seat id>R”<Validation response>”:<CHKSUM><CR>

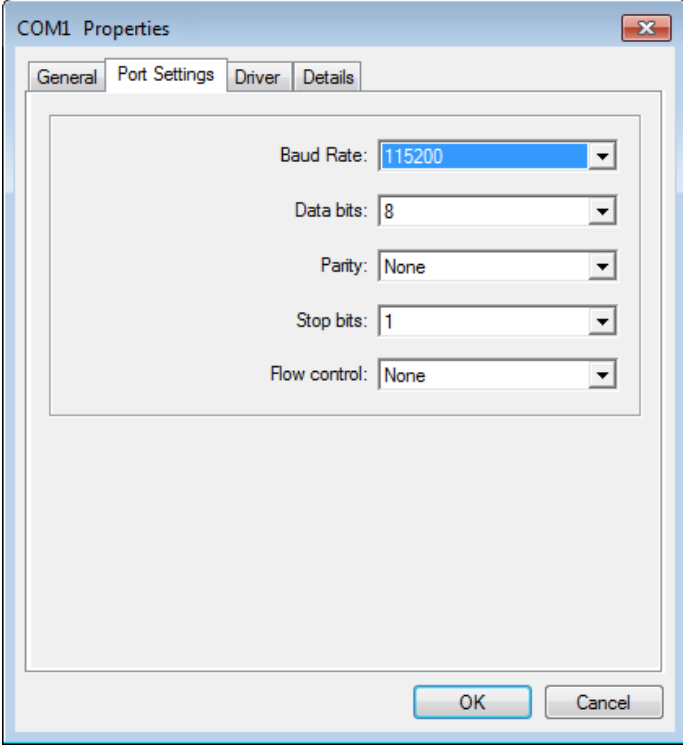
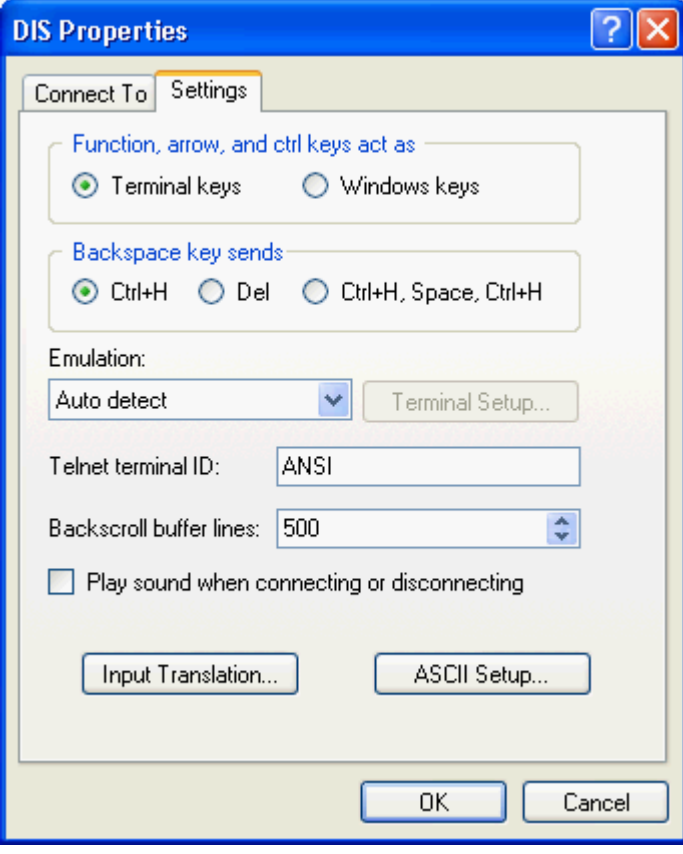
This command should only be sent as response to a user validation request. <User id> and <Seat id> should be identical to what was included in the user validation request. <Validation response> should have one of the following values:

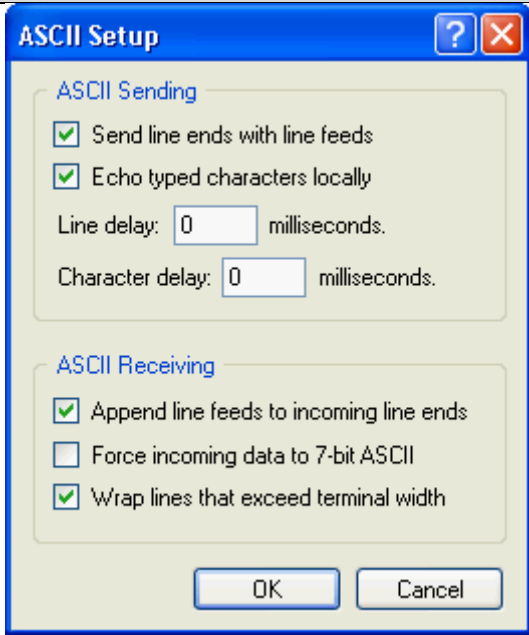
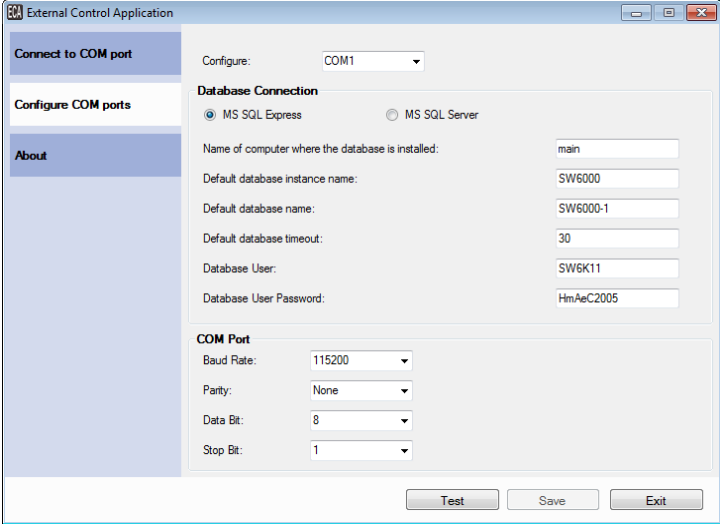
- “Verified” – used when external verification equipment is able to verify the presence of the user at the specified seat
- “Failed” – used when external verification equipment evaluates user and evaluation is negative – e.g. wrong fingerprint.
- “Seat unknown” – used when external verification equipment has no entries for this seat.
- “User unknown” – used when external verification equipment has no entries for this user.
- External validation system may use other string up to 25 characters long to describe other error situations – string must not include character <“>.

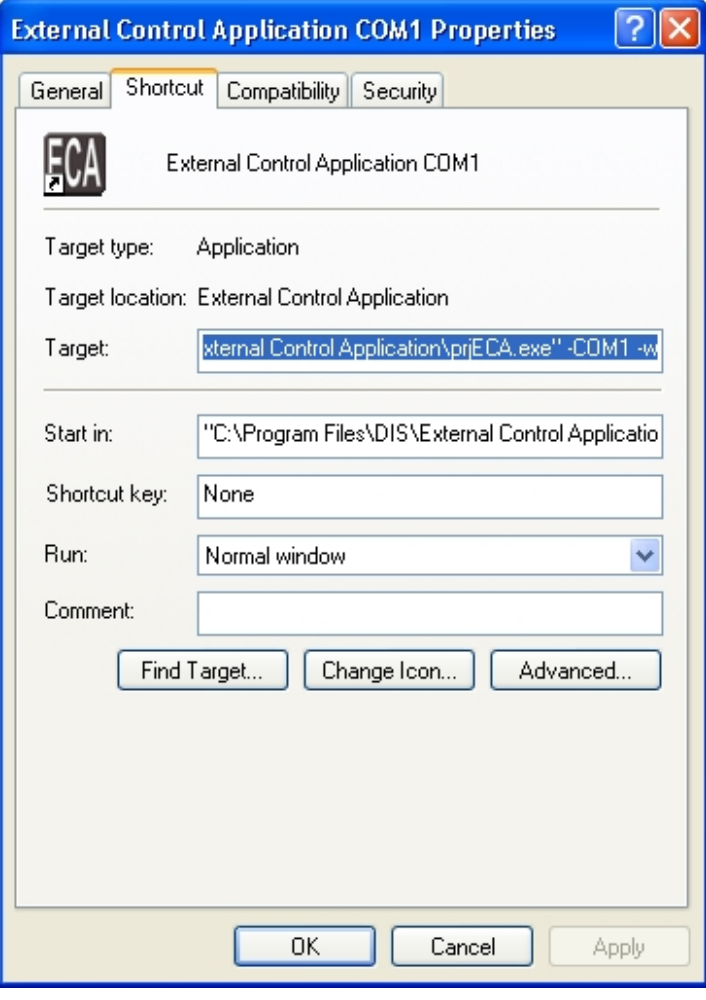
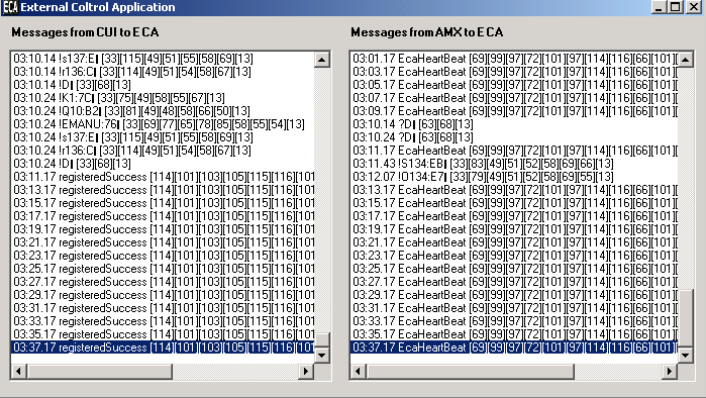
5 Get familiar with the RS232 commands to/from ECA

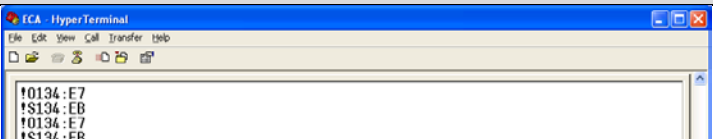
This section describes how to test the ECA commands using a second PC and Microsoft Terminal program.

#	Description	Comment or picture
1	Connect the PC with the ECA installation to a second PC with a null-modem cable.	
2	Start the Microsoft Terminal program on both PCs from Start/Programs/Accessories/Communications/HyperTerminal.	
3	Enter a name and choose an icon for the connection.	
4	Select the proper COM port.	

#	Description	Comment or picture
5	Configure as shown to the right. Press OK.	
6	Open Properties in the File menu. Selects Settings tab. Press ASCII Setup.	

#	Description	Comment or picture
7	Set the ACSII setup as shown to the right on both PCs.	
8	Check that communication is working between the two PCs. If this is not the case, one of the settings is incorrect or the cable is defective.	
9	When the communication is working close the HyperTerminal program on the PC with the ECA installation.	
10	Configure the ECA application as explained in the Installation Manual.	

#	Description	Comment or picture
11	Make a shortcut to the ECA, select properties and set the command line parameters as shown if you are using COM1. If not type in the COM port in use. The -W parameter brings up a window. Remember to make a space between the two commands.	
12	Start the ECA application using the short cut.	

#	Description	Comment or picture
13	Check that you receive messages in the terminal window and check that you can send messages.	

www.shure.com

**United States, Canada, Latin
America, Caribbean:**

Shure Incorporated
5800 West Touhy Avenue
Niles, IL 60714-4608
USA

Phone: +1 847 600 2000
Fax: +1 847 600 1212 (USA)
Fax: +1 847 600 6446
Email: info@shure.com

Europe, Middle East, Africa:

Shure Europe GmbH
Jakob-Dieffenbacher-Str. 12
75031 Eppingen
Germany

Phone: +49 (0) 7262-9249-100
Fax: +49 (0) 7262-9249-114
Email: info@shure.de

Asia, Pacific:

Shure Asia Limited
22/F, 625 King's Road
North Point, Island East,
Hong Kong

Phone: (+852) 2893-4290
Fax: (+852) 2893-4055
Email: info@shure.com.hk

