ICOM

PROGRAMMING GUIDE

380 - 430 Version
with Transcrypt® DES Board
Installed

UHF PORTABLE TRANSCEIVER

IC–F43G

Icom Inc.

TABLE OF CONTENTS

■ Programming Kit Components

The following items are included in the programming kit.

Package Items	Quantity
• F43GS UHF Portable 380-430 MHz, for programming without keypad	1 ea.
• FASC03U – 380 – 430 MHz Antenna	1 ea.
• 7.2V/2000mA/h Li-ion BP232 Battery	1 ea.
• BC160-01 (117V) and BC160-02 (220) Rapid charger	1 ea.
• TRAN TR-DES (Keyload) Software	1 ea.
• TRAN TRC30-3061 Controller Modem	1 ea.
• CSF33G Programming Software	1 ea.
• OPC478 (serial) and OPC478U (USB) Cloning Cable	1 ea.

■ Programming Overview

Please note: the IC-F43GS Encrypted radios are programmed with two separate pieces of programming software. The CS-F33G software is used to configure channels, banks, button assignments and miscellaneous radio parameters. The TR-DES (Keyload) software is used to program and update encryption keys. It is also used to remotely disable and re-enable encrypted radios.

■ Radio Programming Overview

This section will discuss the procedures for programming with the CS-F33G software. For encryption operations please see section called “Encryption Overview”. Also note that the programming radios (unencrypted) can be completely configured with the CS-F33G software as discussed in this section.

Programming all radios involves both software and hardware. The following hardware and software is required:

- Cloning Software CS-F33G (version 1.1)
- Baseline Configuration file (baseline.icf)
- Cloning cable (OPC-478 serial or OPC-478U USB)

◇ Software

Cloning Software CS-F33G

This software is a programming application that runs on a Windows® compatible PC. With this software you can:

- Read the programming file from your radio
- Edit the programming file for your radio
- Write the programming file to your radio

Baseline Configuration File

This file contains the actual programming information that resides in your radio.
Your radio already has this file with specified programming defaults.

USB Cloning Cable Driver

Driver software for the USB version of the cloning cable.

◇ Hardware

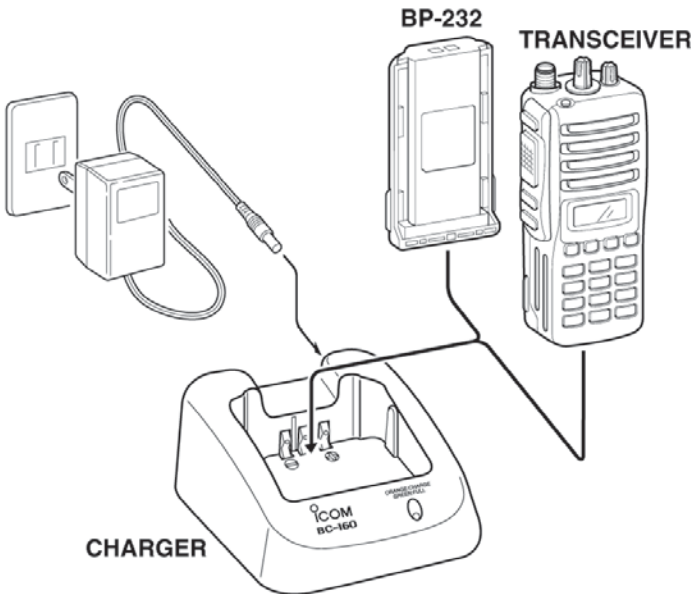
OPC-478 or OPC-478U (cloning cable)

Connects between the computer and the radio.

For details, refer to Setting Up the Programming Interface (see page 4).

Charging with the BC-160

The BC-160 provides rapid charging of a Li-ion battery pack. Two versions are supplied for 110V or 220V operation.



■ Radio Programming

◇ Installing the Cloning Software

The cloning software (CS-F33G) enables you to program the features of your radio from a computer.

What you will need

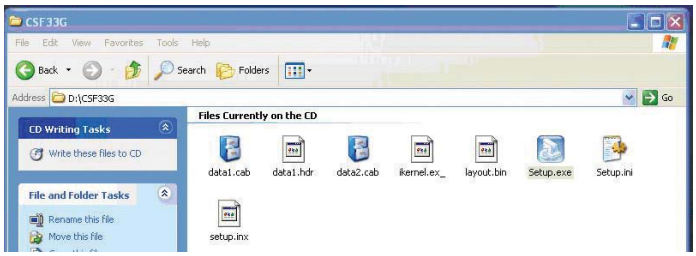
- USB or RS-232C serial port
- Microsoft® Windows® 98/98SE/Me/2000/XP
- OPC-478U Cloning Cable (USB) or OPC-478 Cloning Cable (RS232)
- 800 x 600 pixels display minimum
- Programming Kit CD

⚠*NOTE*

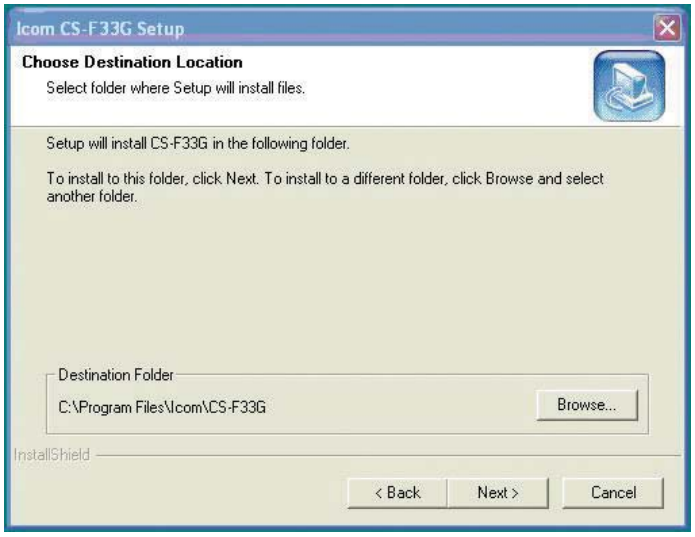
When using the OPC-478U, (USB type cloning cable), USB driver installation is necessary. The driver software is supplied with the OPC-478U cable or also on the Programming Kit CD (in the OPC-478U folder). See the OPC-478U instruction manual for the driver installation details or also Appendix F of this Guide.

Installation

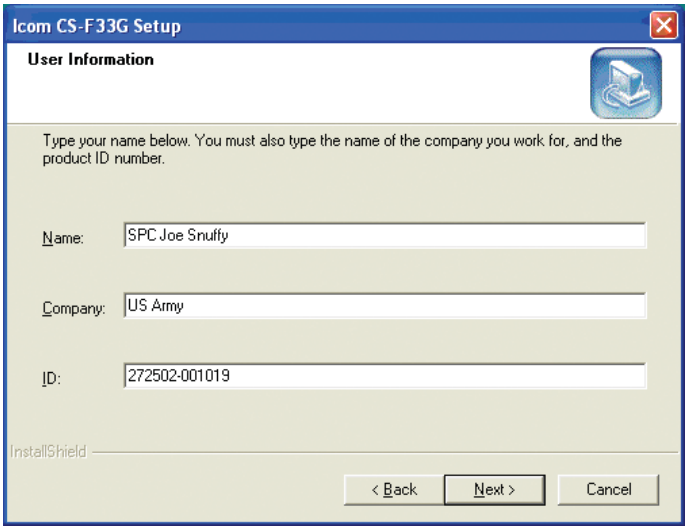
① Boot up Windows®. Be sure that no applications are running.
② Insert the CD into a CD drive.
③ Navigate to the contents of the CD drive from My Computer. Open the folder named **CS-F33G**.
④ Double click **Setup.exe**.



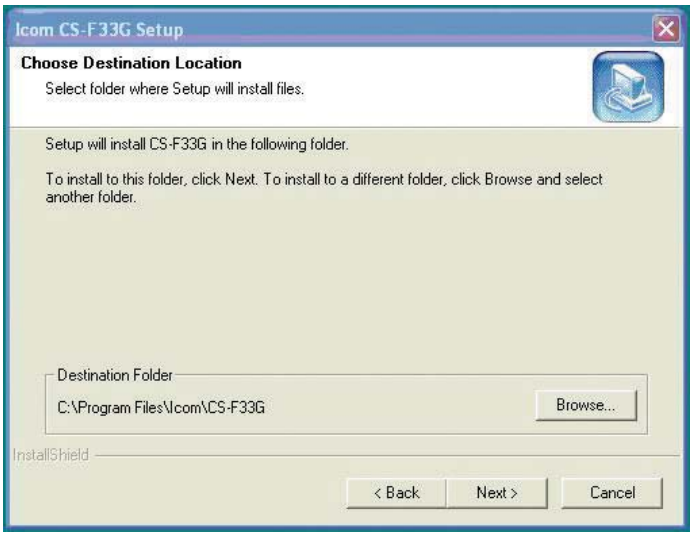
⑤ The following screen appears. Click **Next**.



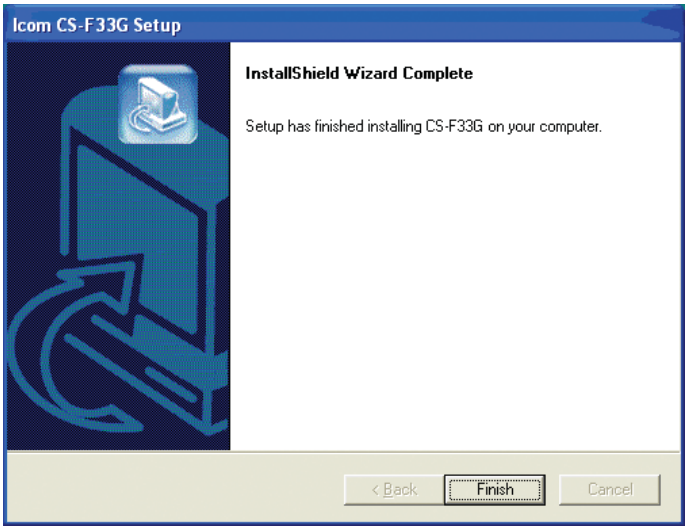
⑥ Enter your name, company (required) and the product ID. Enter the product ID number 272502-001019 (this number appears on the CD case included). Click **Next**.



⑦ The following screen appears. Click **Next**.



⑧ The following screen appears. Click **Finish**.



Installation is now complete. The following icon appears on your desktop after installation.

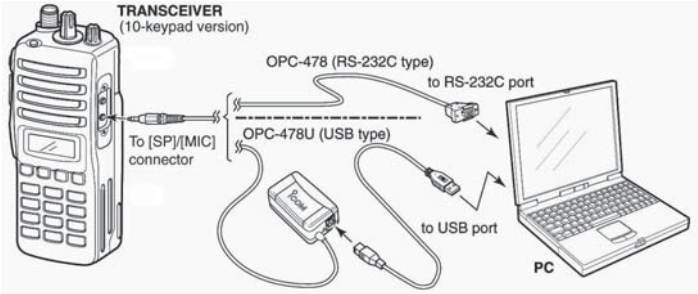
◇ Setting Up the Programming Interface

What you will need

• Windows® compatible PC (refer to Installing the Cloning Software for requirements)
• Cloning cable OPC-478 or OPC-478U (USB driver may need to be installed)
• Radio(s) to be programmed

Installing the Interface Cable

Install the cloning cable between your radio and computer as shown.

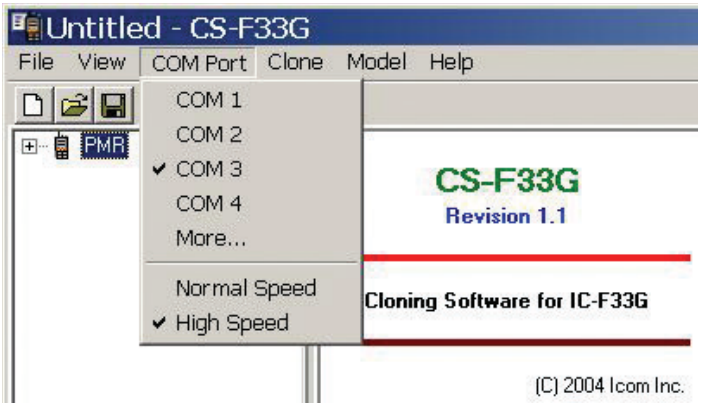


Configuring the Port

You need to select a port on your computer to act as the interface between the radio and your computer.
① From the Main Screen Menu of your cloning software, click **COM Port** and select the port where your interface cable is connected.
② From the **COM Port** menu, select **High Speed**.

⚠*NOTE*

If you experience problems when reading from or writing to the radio at **High Speed**, you should revert back to **Normal Speed**.



◇ Reading Existing Programmed Parameters from the Radio

To upgrade, change, or merely observe your programming information, you will need to read the current programmed information from your radio.

What you will need:

• Windows® compatible PC (refer to Installing the Cloning Software for requirements) with CS-F33G software installed (see page 2)
• Cloning cable OPC-478 or OPC-478U (USB driver may need to be installed)
• Radio(s) to be programmed

To Read the Radio

① Connect the cloning cable between the assigned port on the computer and the speaker connector on the radio.
② Switch on the radio.
③ Open CSF33G cloning software.
④ Click **Clone** on the Main Menu, then select **Read**.

The cloning software reads the currently programmed information from the radio and displays it in the cloning software. You can then make changes to the settings, write them to your radio or save them to your computer.

◇ Saving a File

You may wish to save the file you have just read for future reference. To save a file:

① Click **File Save/Save As** or simply click the **Save** icon. Use **Save As** if you want to save the file under a different name.
② Using the **Save** or **Save As** dialog box, identify a location to save a modified file on your computer.
③ At **File Name**, enter name of the file.
④ Click **Save**.

◇ Modifying Radio Parameters

Radio parameters may be changed in the following programming screens ONLY:

- **Memory CH -> Bank Operation, Bank 1 - 16**
- **Common -> Key & Display**

⚠ *CAUTION*

DO NOT CHANGE SETTINGS IN THE OTHER FOLDERS. CHANGING SETTINGS IN THE OTHER FOLDERS MAY IMPAIR THE OPERATION OF THE RADIO.

Memory Channels/Banks

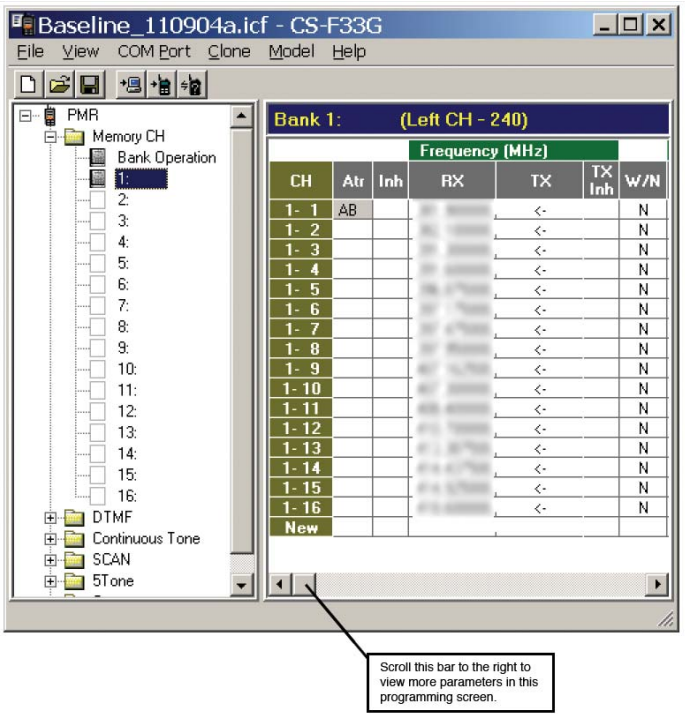
Programming screens in the **Memory CH** folder allow you to create lists of specific frequencies (nets) in your radio. You may organize these channels into as many as 16 separate groups (banks). Each bank can be assigned a unique name. This name, when selected, displays momentarily on your radio.

As programmed by the factory, there is one bank with 16 channels, using frequencies specified by the Army. By using the following instructions, you can change the frequencies of existing channels, or add new channels in banks 2-16 for additional operating frequencies.

Double Click on the **Memory CH** folder, or single click on the **+** that appears next to **Memory CH** in the Tree View screen to access the programming screens for each channel bank.

The **Bank Operation** screen allows you to activate new channel banks. It also allows you to assign text names to each bank, display the total number of memory channels used, and the number of channels left for use in the radio.

Bank 1-16 icons provide access to the programming screens for each channel bank.



Modifying Existing Frequencies

① Select the memory channel containing the frequency you wish to change by clicking on the **RX** field.
② Type the desired frequency; be sure to include the decimal point.

⚠*IMPORTANT*

WHEN CHANGING OR ADDING FREQUENCIES, USE ONLY AUTHORIZED FREQUENCIES.

⚠*NOTE*

Ensure that the frequencies entered are within the operational range and channel step of the radio.

Adding New Frequencies

Your radio has 16 issued frequencies pre-programmed into **Bank 1** that are authorized by the Army. You may add additional frequencies to your radio.

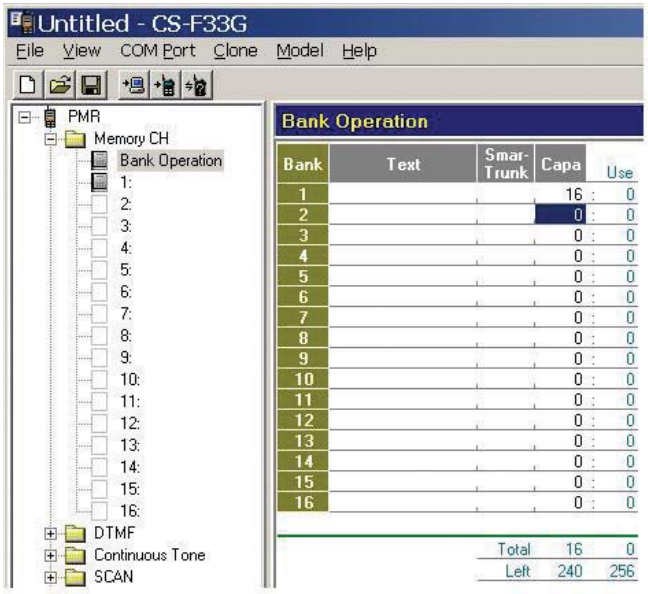
You are limited to 16 channels per bank. To add new frequencies, you will need to activate additional banks.

⚠*CAUTION*

If more than one bank exists in the radio, a “bank button” must be activated (see section on Selecting Banks on Radio). Remember to instruct your users in the use of the bank button.

Activate New Banks

① Open **Memory CH** folder.
② Click **Bank Operation**.
③ Click the **Capa** field of the new bank you want to activate.



④ Enter 16 in the field, then press Enter on your keyboard.

Adding Frequencies

To ensure that all channel parameters are properly configured, you should copy and paste existing frequencies with their parameters into a new bank, then edit the frequencies. This helps to eliminate entering incorrect settings in the channel.

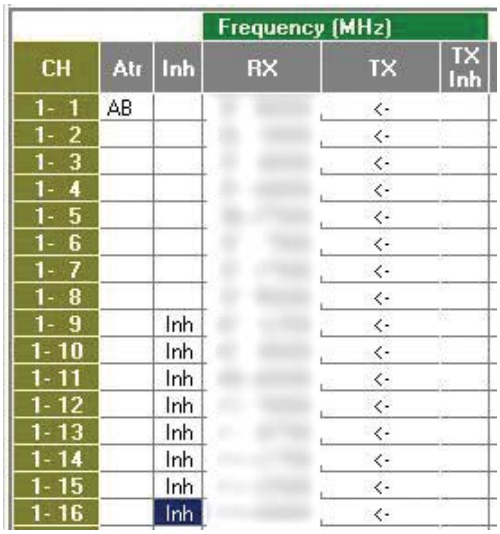
① Click **Bank 1** on the Tree view screen.
② In the programming screen, click and hold in the Ch 1-1 **Atr** field. Drag down to Ch 1-16, selecting all the channels. Release the mouse button.
③ Hover the mouse cursor over the selected field. Right-click to select **Copy**.
④ Click the appropriate **Bank** (numbered 2 to16) in the Tree View screen.
⑤ Click the **Atr** field in the top row of the programming screen.
⑥ Right-click and select **Paste**.
⑦ Enter the new frequencies in each channel by clicking in the **RX** field (or **TX** field, if needed for repeater operation) and typing the new frequencies over the existing ones you just pasted. Press Enter or the down arrow on your keyboard to select the **RX** field of the next memory channel.

⚠*IMPORTANT*

WHEN CHANGING OR ADDING FREQUENCIES, USE ONLY AUTHORIZED FREQUENCIES.

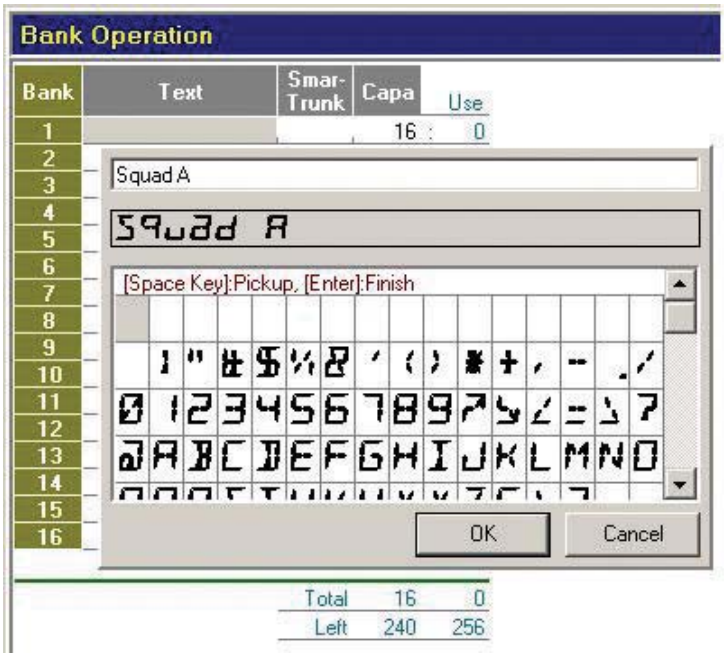
⚠*NOTE*

If you add fewer than 16 new frequencies, you will need to inhibit the unused channels in the bank. Click the **Inh** field and press the keyboard space bar to inactivate the unused channel(s).



Naming Bank Assignments

① Open the **Memory CH** folder.
② Click **Bank Operation**.
③ Select the Text field of the bank you wish to name or rename.
④ Type the new name of the bank. Click **OK** or press Enter on your keyboard. The new name appears in the Tree View screen.

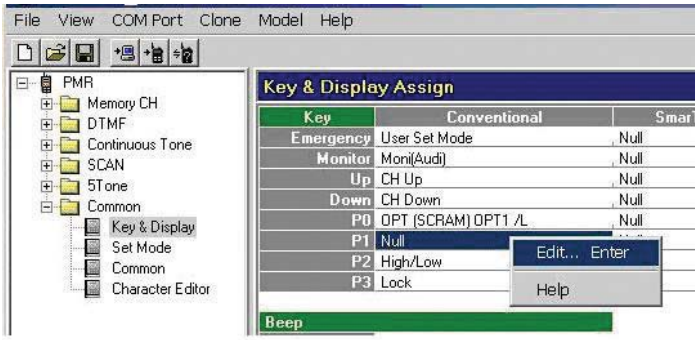


When creating a name, you are limited to 8 characters.

Enabling Bank Select

By default, your radio has one bank containing 16 channels. To access any additional banks that have been programmed, you will need to set your radio so that you can select them.

① Expand the **Common** folder in the Tree View screen.
② Click **Key & Display**.



③ In the Conventional column, right-click the **P1** row and select **Edit... Enter**.

④ Select **Bank** from the drop down menu that appears.

Selecting Banks on Radio

Remember to instruct your users in the use of the bank button.

① To access channel banks on your radio, push the P1 button on the front panel.
② Select the desired bank using the up/down buttons.
③ Push P1 button.
④ Select the channels in bank by rotating the numbered channel switch on top of your radio.

◇ PROGRAMMING SCREENS THAT MUST NOT BE EDITED

The programming screens in the following folders contain settings that **MUST NOT BE CHANGED**.

- **DTMF**
- **Continuous Tone**
- **SCAN**
- **5 Tone**
- **Common (except Key & Display)**

◇ PROGRAMMING SCREENS THAT MAY BE EDITED

The following programming screens contain settings that can be changed.

- **Bank Operation**
- **Bank 1-16**
- **Key & Display**

⚠*CAUTION*

ONLY THE SETTINGS IN THE PROGRAMMING SCREENS AND FIELDS DISCUSSED IN THIS DOCUMENT CAN BE CHANGED. Changing other fields may impair the operation of the radio. Defaults for these screens are listed in Appendix B.

◇ Saving Modified File

If needed, a modified file can be saved for future reference. See section on Saving a File (page 5).

◇ Writing Modification to Radio

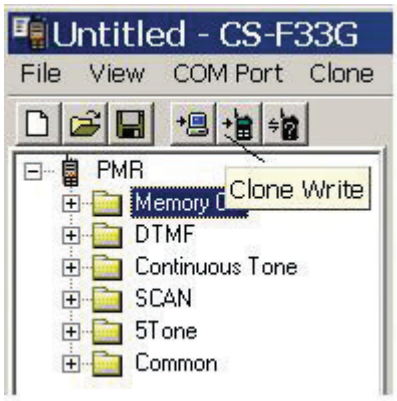
You can write updated settings to your radio.

What you will need:

• Windows® compatible PC (refer to Installing the Cloning Software for requirements) with CS-F33G software installed (see page 3 Installing the Cloning Software 7)
• Cloning cable OPC-478 or OPC-478U (USB driver may need to be installed)
• Radio(s) to be programmed

To Write to the Radio

① Connect the cloning cable between the assigned port on the computer and the speaker connector on the radio.
② Switch on the radio.
③ Open CS-F33G Cloning Software.
④ Click **File** then **Open**. Navigate to the location of the file you wish to write. If you are already editing a file, skip this step.
⑤ Click **Clone** then **Write ->TR** in the main menu.
⑥ The radio now contains the modified file.



■ Encryption Overview

There are a number of encryption-related tasks that need to be performed for your radios. These include:
- Generating encryption keys
- Distributing encryption keys
- Over the air rekeying (OTAR)

Encryption functions involve both software and hardware. You will need following software and hardware:
- Programming Kit CD
- Programming radio
- Encryption modem
- Modem/computer cable
- Modem/radio cable

◇ Software

TR-DES (Keyload) Encryption Software

This software enables you to do the following:
- Generate a new encryption key
- Send encryption keys to radios over the air (OTAR)
- Query radios
- Disable/Re-enable radios

◇ Hardware

Programming (Unencrypted) radio

A special radio that allows you to perform over the air (OTAR) encryption to other radios. You can distinguish between an encrypted radio and a programming radio by removing the battery and looking at the radio back panel. Programming radios do not have an encryption serial number. Refer to section Identifying Programming Radios (page 11).

Encryption modem

Allows you to interface to other radios for encryption purposes.

Modem/computer cable

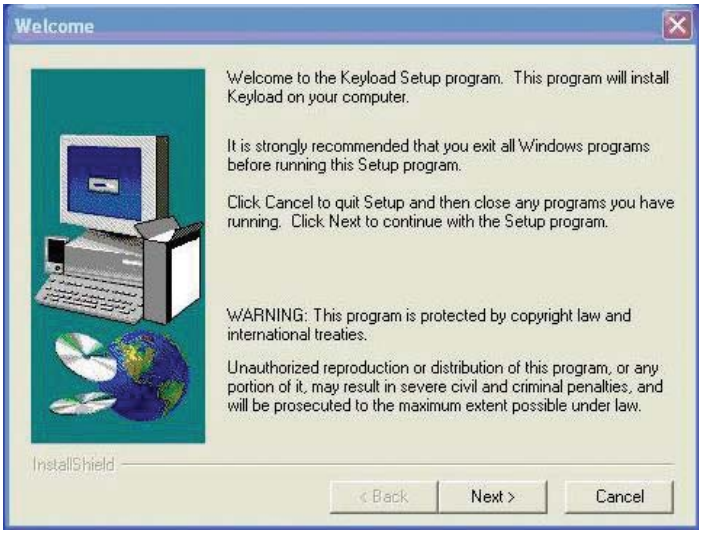
Connects between the computer and the encryption modem.

Modem/radio cable

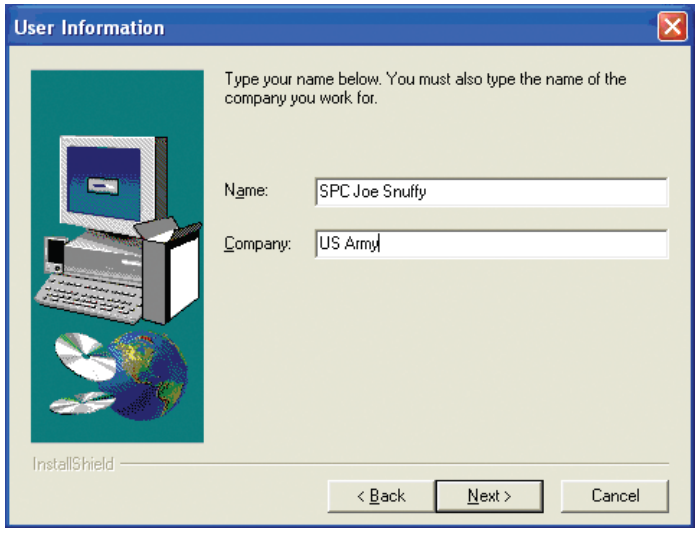
Connects between the computer and the programming radio.
For details, refer to Setting Up the Encryption Interface (page10).

◇ Installing Keyload Software

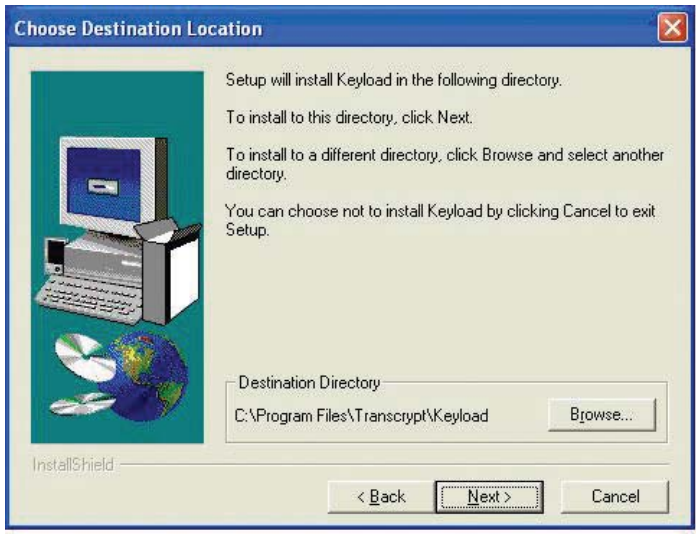
① Install the CD containing the Keyload software.
② Navigate to the Keyload folder.
③ The contents of the Keyload folder will appear. Click **Setup.exe**.
④ Click **Next** on the **Welcome** screen.



⑤ At the **User Information** screen, enter your name and company. Click **Next**.

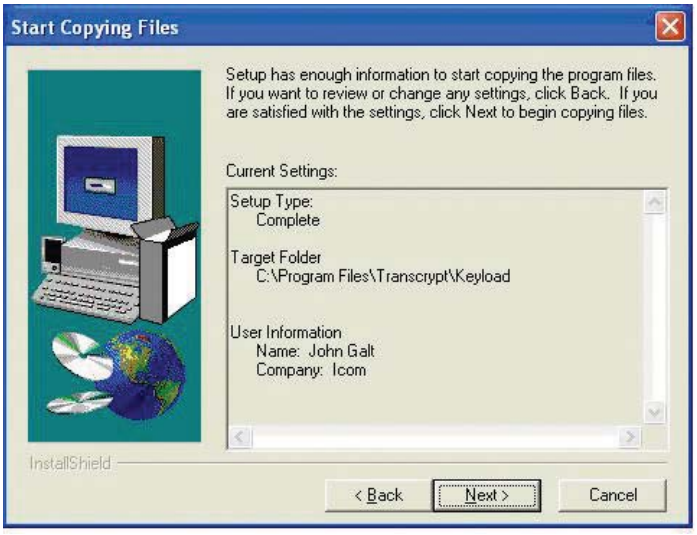


⑥ At the **Choose Destination Location** screen, click **Next**.

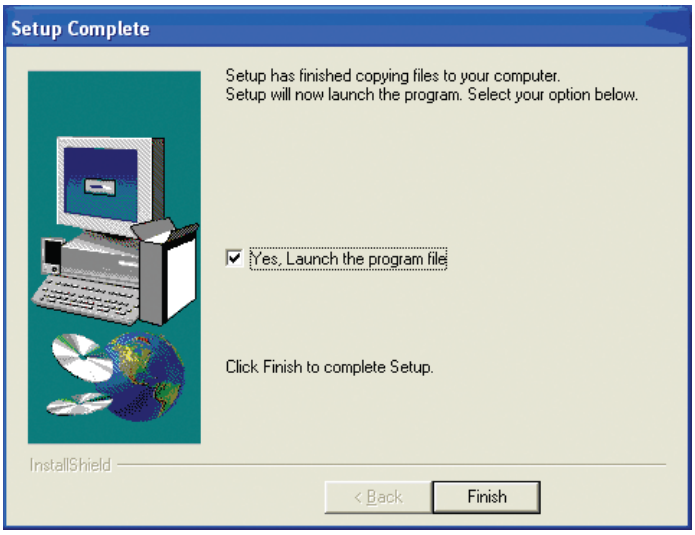


⑦ At the **Select Program Folder** screen, click **Next**.

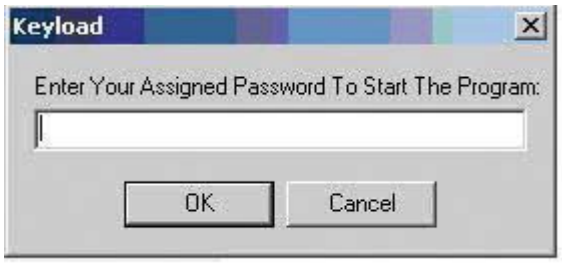
⑧ At the **Start Copying Files** screen, click **Next**.



⑨ At the **Setup Complete** screen, check the box next to **Yes, Launch the program file**, then click **Finish**.



⑩ The software will launch and you will be prompted to enter the Keyload password. The password is located on the Programming CD. Click **OK**.
11 The Keyload software will open and the installation is now complete.



12. Navigate to the **Keyload** folder on your CD. To load the operating parameters for encryption, you will need to copy the army01.pgm file from the Programming Kit CD.
13. Copy the file to **Program Files->Transcrypt->Keyload**.

◇ Setting Up the Encryption Interface

What You will Need:

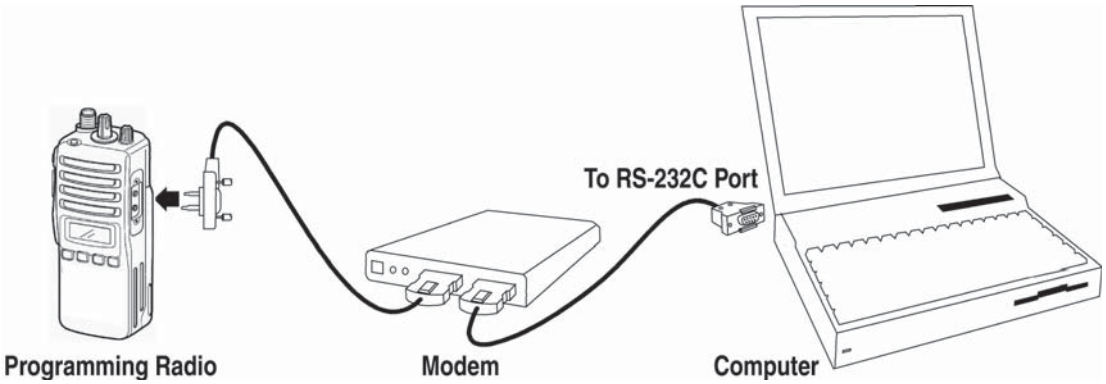
• 2 Cables: an encryption modem to programming radio cable and a serial computer to modem cable.
• Keyload encryption software loaded on a Windows® compatible PC
• Port configured for the Keyload encryption software
• Encryption modem
• Programming Radio (unencrypted)
• Radio(s) to be encrypted (must be switched on and within range)

Configuring the Port

You need select a port on your computer to act as the interface between the encryption radio and your computer.
① From the Main Screen Menu of your Keyload software, click **Options** and select the serial port where your interface cable will be connected.

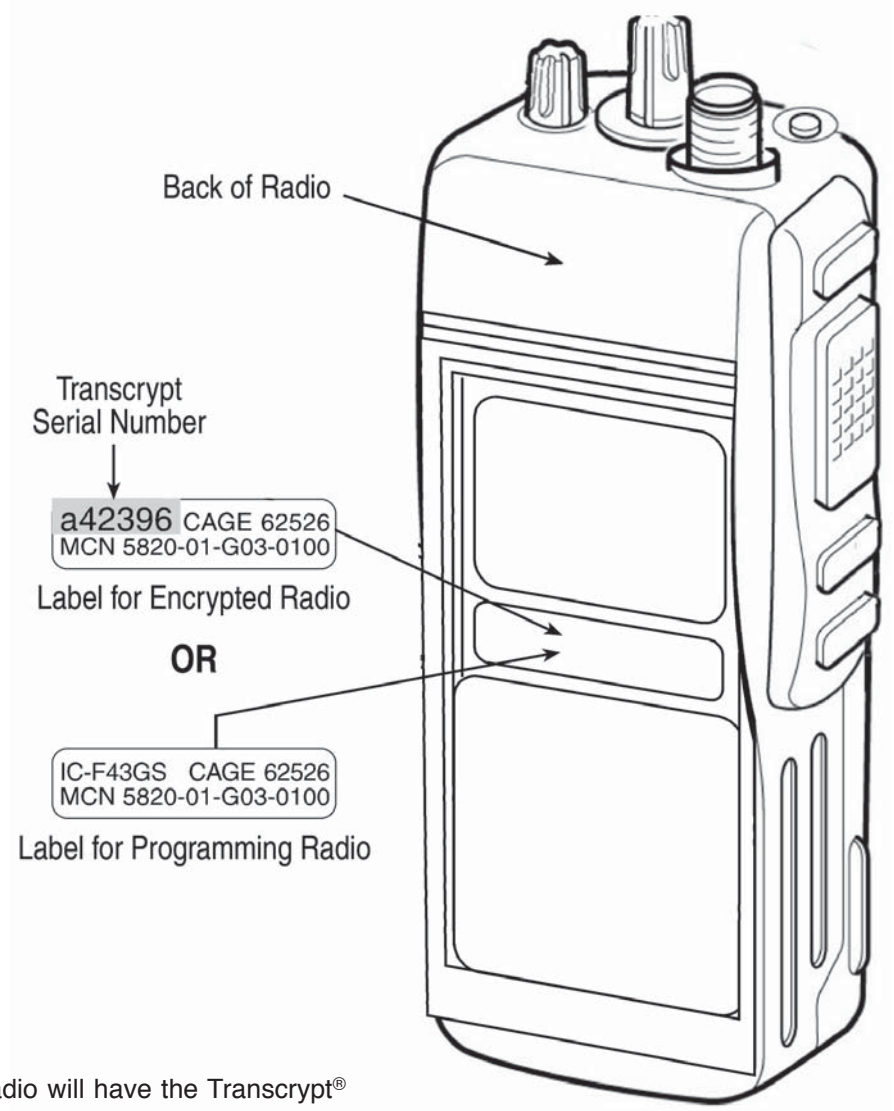
Installing the Cables

(as shown in the following diagram)
① Connect the modem to radio cable between the programming radio's speaker jack and 15 pin (DB-15) port on the encryption modem.
② Connect the computer to modem cable between the programming computer and the 9 pin (DB-9) serial port on the modem.
③ Ensure that the Encryption Modem has a 9V battery installed. The battery compartment is located on the end of the modem that is opposite the connectors. To install, open the compartment latch and plug the battery into the connector.
④ Switch modem to ON. Make sure to switch this to OFF when you are finished using the modem.

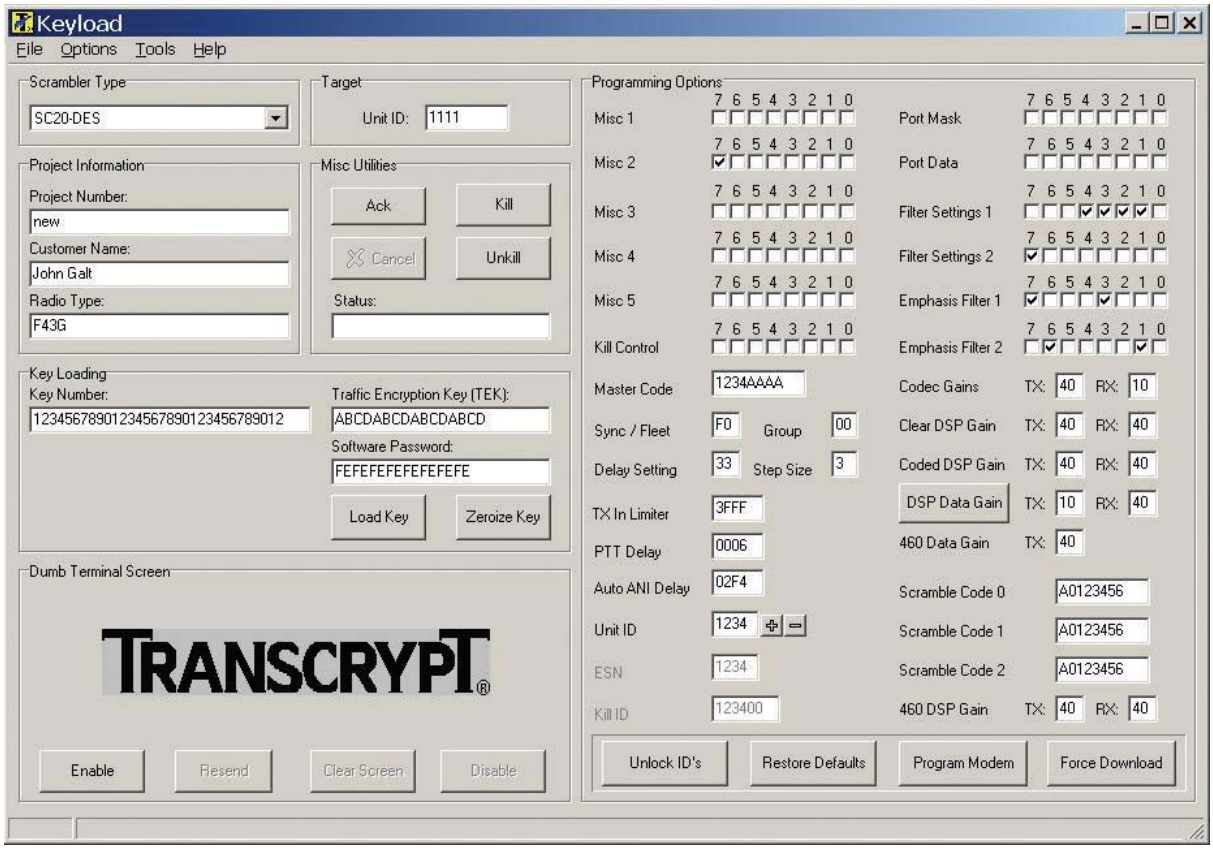


◇ Identifying Programming Radios and Transcrypt® Serial Numbers.

Only a programming radio may be connected to the encryption modem to perform Over-the-Air (OTAR) operations. You can identify programming radios by the label on the back of the radio. As shown in the following, remove the battery and read the label. The label on the programming radio will always read IC-F43GS in the top left corner.



The label on the encrypted radio will have the Transcrypt® serial number in the top left corner.



Keyload Main Menu

◇ Generating/Saving an Encryption Key

⚠Important

DO NOT CHANGE SETTINGS IN THE KEYLOAD SOFTWARE UNLESS SPECIFICALLY INSTRUCTED IN THIS DOCUMENT. CHANGING OTHER SETTINGS WILL CAUSE THE ENCRYPTION TO OPERATE UNPREDICTABLY.

① Open the Keyload software. The main menu appears (see Keyload Main Menu).
② From the **Tools** menu, select **Generate Random TEK**. A new number will appear in the **Traffic Encryption Key** field. You may also type your own number in the field.

③ To save the key file, Click **File**, then **Save Key File**.
④ From the **Save Key File** dialog box, identify a location to save a modified file on your computer.
⑤ At **File Name**:, enter the name of the file.
⑥ Click **Save**.

◇ Over the Air Re-keying (OTAR)

Each radio is individually re-keyed from the Keyload software.

① Connect the programming radio as described in Setting Up the Encryption Interface. The programming radio volume should be set to 3/4. The target radio must be switched on, within range, and on a matching channel.
② Open the Keyload software. The main menu appears (see Keyload Main Menu).
③ Click **File**, then **Open Program File**. Navigate to **Program Files->Transcrypt->Keyload->army01.pgm**.
④ Select **army01.pgm**.
⑤ Click **Open**.
⑥ Click File, then **Open Key File**. Navigate to the folder containing the previously saved .key file (see Generating/ Saving an Encryption Key).
⑦ Select the .key file.
⑧ Click **Open**.

⑨ Click **Program Modem** (see Keyload Main Menu).
⑩ Identify the four digit Unit ID for the radio you wish to re-key. This number will be the last 4 numbers of the Transcrypt® serial number (see diagram in Identifying Programming Radios). For example: if the Transcrypt® serial number is a12345, enter 2345.
⑪ Enter the 4 digit unit ID number (identified in step 9) in the Unit ID field.
⑫ Click **Load Key**. The screen shows **Writing to Modem**. If successful, a dialog box will show **Load Key Command Successful**. Click **OK** to close.

⚠NOTE

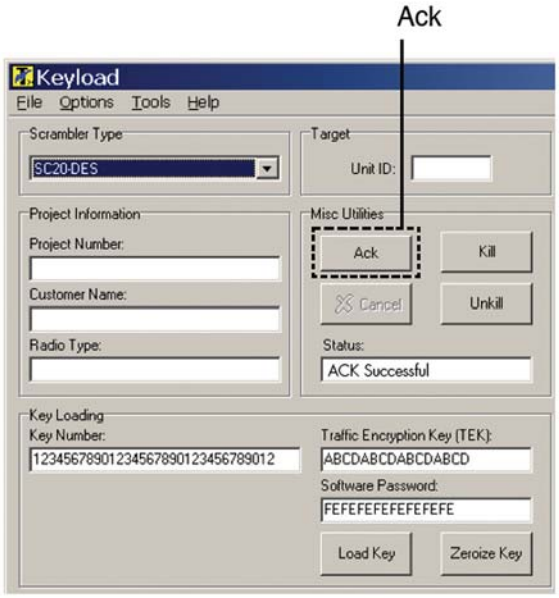
The first time Keyload is clicked after opening the Keyload software, a dialog box will ask if you wish to preserve the existing scramble codes in the modem. Click **No**. It will not ask again unless the Keyload software is restarted.

---

⑬ Repeat steps 10-12 for each radio that requires re-keying.

◇ Querying (Ack) Radios

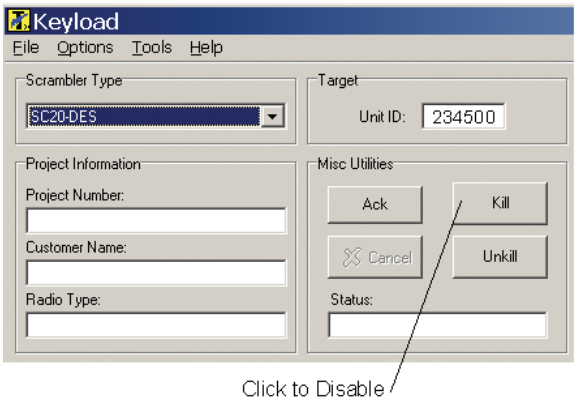
You have the ability to check the transmission path to another radio using the Keyload software.
① Connect the programming radio as specified in Setting up the Encryption Interface. The programming radio volume should be set to 3/4. The target radio must be switched on, within range, and on a matching channel.
② Open the Keyload software. The main menu appears (see Keyload Main Menu).
③ Identify the four digit Unit ID for the radio you wish to query. This number will be the last 4 numbers of the Transcrypt® serial number (see diagram in Identifying Programming Radios and Transcrypt® Serial Numbers). For example: if the Transcrypt® serial number is a12345, enter 2345.
④ Enter the 4 digit unit ID number (identified in step 3) in the **Unit ID** field.
⑤ Click **Ack** in the **Misc Utilities** button group.



If the radio is in range and the Ack is successful, the message **ACK Successful** appears in the **Status** field. If the Ack is unsuccessful, the Status field will display **Ack Failed**.

◇ Disabling Radios

A radio can be disabled remotely.
① Connect a programming radio as specified in Setting Up the Encryption Interface. The programming radio volume should be set to 3/4. The target radio must be switched on, within range, and on a matching channel.
② Open the Keyload software. The main menu appears (see Keyload Main Menu).
③ Identify the four digit Unit ID for the radio you wish to re-key. This number will be the last 4 numbers of the Transcrypt® serial number (see diagram in Identifying Programming Radios and Transcrypt® Serial Numbers). For example: if the Transcrypt® serial number is a12345, enter 2345.
④ Enter the 4 digit unit ID number (identified in step 3) followed by “00” in the **Unit ID** field. For example: If the Transcrypt serial number is a12345, enter 234500. The extra “00” is necessary to properly disable a radio.
⑤ Click the **Kill** button. The **Status** field displays **Attempting KILL**.



⑥ If the kill is successful, the **Status** field displays **KILL Successful**; if the kill is not successful the **Status** field displays **KILL Failed**.

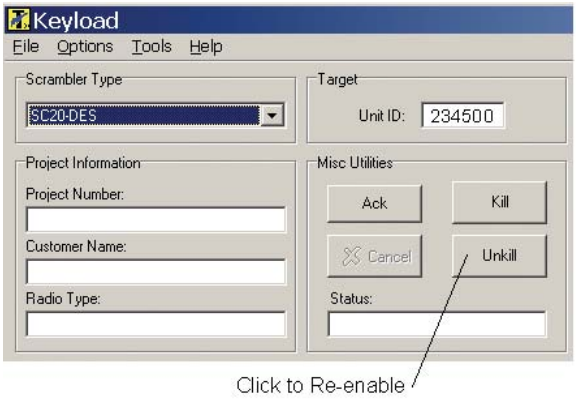
◇ Re-enabling Radios

You can re-enable a “killed” radio so that is can be used again.
① Connect a programming radio as described in Setting Up the Encryption Interface. The programming radio volume should be set to 3/4. The target radio must be switched on, within range, and on a matching channel.
② Open the Keyload software. The main menu appears (see Keyload Main Menu).
③ Identify the four digit Unit ID for the radio you wish to

re-key. This number will be the last 4 numbers of the Transcrypt® serial number (see diagram in Identifying Programming Radios and Transcrypt® Serial Numbers). For example: if the Transcrypt® serial number is a12345, enter 2345.

④ Enter the 4 digit unit ID number (identified in step 3) followed by “00” in the **Unit ID** field. For example: If the Transcrypt serial number is a12345, enter 234500. The extra “00” is necessary to properly re-enable a radio.

⑤ Click the **Unkill** button. The **Status** field displays **Attempting UnKILL**.



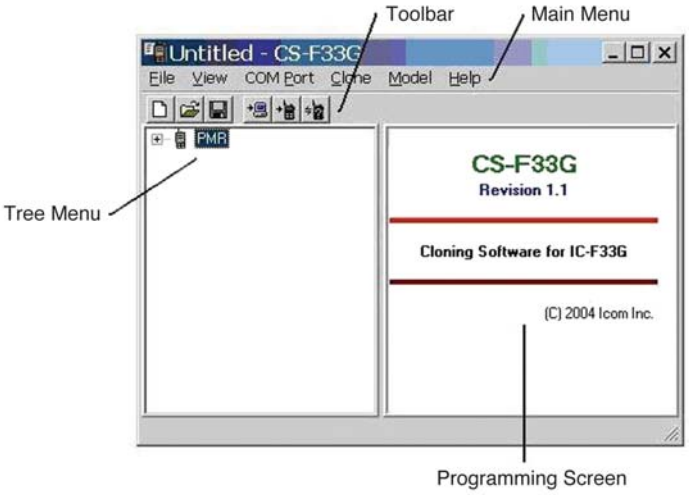
⑥ If the unkill is successful, the **Status** field displays **UnKILL Successful**; if the unkill is not successful the **Status** field displays **UnKILL Failed**.

■ Appendix A

◇ Navigating the Cloning Software

Once you have installed the software, click on the icon that appears on your desktop.

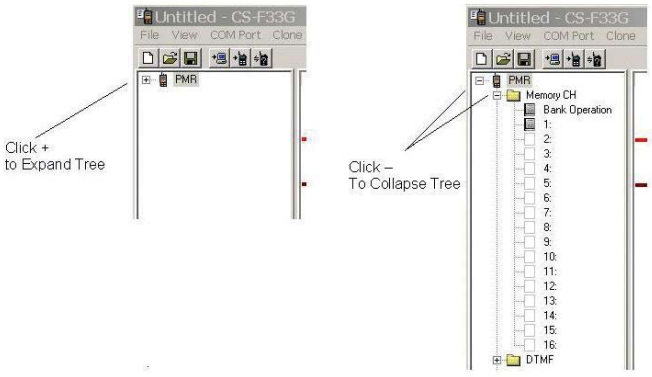
The Main Screen appears.



The Main Screen provides access to all basic programming functions, including programming navigation, file menus, and toolbar.

Tree View Screen Navigation

In the Tree View screen you can select a variety of icons and folders. The folders in the Tree View screen contain icons that permit access to the programming screens which appear to the right.



Selecting the screen icon displays its associated programming screen to the right. To open a folder in the Tree View screen, either double click on the folder or select the “plus” sign next to it. If the sign is a “minus” then you will see the contents of the selected folder.

Main Screen Menus

There are six Menu selections as follows.

File Menu

You can use this menu for radio file options, printing, and quitting the program.

New
Creates a new radio configuration file.

Open...
Opens an existing radio configuration file from the programming Computer’s hard drive, floppy drive, etc.

Save
Saves a radio configuration (.ICF) file to the programming computers hard drive, floppy drive, etc.

Save As...
Saves a radio configuration file to the programming computers hard drive, floppy drive, etc. under a name different from the currently open file.

Print Current Sheet
Prints the contents of the current programming screen. When selected, a dialog box
appears.

Print All
Prints the contents of all programming screens. When selected, a dialog box appears.

Recent File Section
Displays the last 4 configuration files saved or opened.

Exit
Quits the program.

View Menu

You can customize your programmingview from this menu.

Font Size
Change the displayed font size in the programming screens from 60% to 150%. While making the font size bigger gives greater legibility, doing so also makes fewer columns visible in the programming screens, requiring more scrolling. Select the font size that offers the best compromise between

legibility and amount of displayed information.

Toolbar
Select to display/un-display the toolbar.

Com Port Menu
From this menu, you can select COM ports and port speed.

COM 1, COM 2, COM 3, COM 4
Select the port where the cloning cable is plugged. Selecting a port here will automatically deselect any other selected port including More... . Requires that the Cloning Cable drivers are installed.

More...
Manually select a COM port number between 1 and 256. Selecting a port here will automatically deselect any other selected port.

Normal
Use when radio read/write errors occur. Normal Speed is 9600 bps. Selecting this speed automatically deselects High Speed.

High Speed
Use high speed unless you are having problems with radio read/write errors. High Speed is 38400 bps. Selecting this speed will automatically deselect Normal

Clone Menu
Contain selections for reading and writing to the IC-F43G series radio.

Read <- TR
Reads the configuration of a radio into the programming software.

Write -> TR
Writes the configuration of a radio from the radio to the software.

Information
Reads basic information concerning the attached radio including serial number, transceiver model, revision, comments and any installed option(s).

Model Menu
Do not change the settings in this menu.

⚠*Caution*
This radio should be set only to **PMR**.
Setting the radio to any other models will clear the entire programming memory.

Help Menu
You can access help files as well as general version and registration information.

Contents
Allows access to all of the help files.

About CS-33G
Displays the current software version and registration information.

Toolbar
The Toolbar provides quick access to commonly used functions. If you let your mouse “hover” over a Toolbar button for about one second a tool tip will display, briefly describing the function of that button. The following describes the icons in order, left to right.

New Button
Create new radio configuration file.

Open Button
Opens configuration data (.icf file) stored in a file on the programming computer. When selected, use the dialog box to navigate to the correct data file.

Save Button
Use this icon to save configuration data to a file. During the first save, a dialog box will prompt you to save in a location of your choice. Note: if you save under a different name, it will overwrite the existing file.

Clone Read
Use this icon to read configuration information from an attached radio. If you get a “No answer from transceiver” dialog box, follow the onscreen recommendations.

Clone Write
Use this icon to write configuration information to an attached radio. If you get a “No answer from transceiver” dialog box, follow the onscreen recommendations.

Clone Info
Read basic information concerning the attached radio including, serial number, transceiver model, revision, comments and any installed option(s).

◇ Programming Editing Tools

Text Dialog Box

Many programming screens use a common text entry dialog box. This box helps you quickly enter text that the radio will display to the end user. You can select the text you require by simply typing in the Text Entry field. As characters are entered in the Text Entry field they are displayed in the Text Results field as they will appear to the end user on the radio's display.

Space Bar

You can use the space bar of your computer's keyboard to advance through data choices in programming screen fields that have drop down selections.

Right Click

You can right click with your mouse on many of the fields of the programming screens. Doing so usually brings up a menu showing you the selections for that field or row.

■ Appendix B

◇ Programming Default Screens

Bank Operation

Bank	Text	Smar-Trunk	Capa	Use
1			16 :	16
2			0 :	0
3			0 :	0
4			0 :	0
5			0 :	0
6			0 :	0
7			0 :	0
8			0 :	0
9			0 :	0
10			0 :	0
11			0 :	0
12			0 :	0
13			0 :	0
14			0 :	0
15			0 :	0
16			0 :	0
		Total	16	16
		Left	240	240

CH Bank 1:

CS-F33G Rev.1.1

			Frequency (MHz)				C.Tone							
CH	Atr	Inh	RX	TX	TX Inh	W/N	RX	TX	Text	Com-pander	TOT	RF PWR	PWR Save	Lock -out
1- 1	AB		381.900000	<-		N	151.4	<-	CHAN 1		ON	H	ON	
1- 2			382.100000	<-		N	151.4	<-	CHAN 2		ON	H	ON	
1- 3			391.300000	<-		N	151.4	<-	CHAN 3		ON	H	ON	
1- 4			391.600000	<-		N	151.4	<-	CHAN 4		ON	H	ON	
1- 5			396.875000	<-		N	151.4	<-	CHAN 5		ON	H	ON	
1- 6			397.175000	<-		N	151.4	<-	CHAN 6		ON	H	ON	
1- 7			397.475000	<-		N	151.4	<-	CHAN 7		ON	H	ON	
1- 8			397.950000	<-		N	151.4	<-	CHAN 8		ON	H	ON	
1- 9			407.162500	<-		N	151.4	<-	CHAN 9		ON	H	ON	
1- 10			407.300000	<-		N	151.4	<-	CHAN 10		ON	H	ON	
1- 11			408.400000	<-		N	151.4	<-	CHAN 11		ON	H	ON	
1- 12			410.700000	<-		N	151.4	<-	CHAN 12		ON	H	ON	
1- 13			413.387500	<-		N	151.4	<-	CHAN 13		ON	H	ON	
1- 14			414.437500	<-		N	151.4	<-	CHAN 14		ON	H	ON	
1- 15			414.925000	<-		N	151.4	<-	CHAN 15		ON	H	ON	
1- 16			418.600000	<-		N	151.4	<-	CHAN 16		ON	H	ON	

CH Bank 1:

	Scan List					Switch Action			
CH	Scan List	Inc	Auto Reset	CH Mute	Log-In/Off	Moni	Sel	Call	PTT
1- 1	1	Inc	Tim-B	CONT		Both			
1- 2	1	Inc	Tim-B	CONT		Both			
1- 3	1	Inc	Tim-B	CONT		Both			
1- 4	1	Inc	Tim-B	CONT		Both			
1- 5	1	Inc	Tim-B	CONT		Both			
1- 6	1	Inc	Tim-B	CONT		Both			
1- 7	1	Inc	Tim-B	CONT		Both			
1- 8	1	Inc	Tim-B	CONT		Both			
1- 9	1	Inc	Tim-B	CONT		Both			
1- 10	1	Inc	Tim-B	CONT		Both			
1- 11	1	Inc	Tim-B	CONT		Both			
1- 12	1	Inc	Tim-B	CONT		Both			
1- 13	1	Inc	Tim-B	CONT		Both			
1- 14	1	Inc	Tim-B	CONT		Both			
1- 15	1	Inc	Tim-B	CONT		Both			
1- 16	1	Inc	Tim-B	CONT		Both			

Continuous Tone

No.	RX	TX
1		
2		
3		
4		
5		
6		
7		
8		
9		

CH Bank 1:

	5Tone Signaling									Scrambler	
CH	Form	RPT	L	STN	L	ID	L	Pos	RX C.No	ON/ OFF	Code/ Type
1- 1	EIA									ON	1
1- 2	EIA									ON	1
1- 3	EIA									ON	1
1- 4	EIA									ON	1
1- 5	EIA									ON	1
1- 6	EIA									ON	1
1- 7	EIA									ON	1
1- 8	EIA									ON	1
1- 9	EIA									ON	1
1- 10	EIA									ON	1
1- 11	EIA									ON	1
1- 12	EIA									ON	1
1- 13	EIA									ON	1
1- 14	EIA									ON	1
1- 15	EIA									ON	1
1- 16	EIA									ON	1

DTMF Autodial

No.	Code	Text
1		DTMF 1
2		DTMF 2
3		DTMF 3
4		DTMF 4
5		DTMF 5
6		DTMF 6
7		DTMF 7
8		DTMF 8

DTMF Setting

DTMF Timer	0.100
First Timer	0.100
* # Timer	0.100

Scan Setting

Timer	
Stop	5.000
Resume	3.000
Fast Scan	0.100
Slow Scan	0.500
Power ON Scan	OFF
Auto CH Call	OFF

Continuous Tone - Setting

Tone Burst	Notone
CTCSS Reverse Burst Timer	0.300
User CTCSS Freq (Hz)	88.5
TX DTCS Inverse	Normal
RX DTCS Inverse	Normal

Scan List

List	Scan Mode	Display Text	Text ON	PWR Save
1	M3(R.Sel)	SCAN		
2				
3				
4				
5				
6				
7				
8				
9				
10				

5Tone RX Code CH

CH	RX Code	Text	ID Dec	Bell	Emer Cancel	ABC	Beep	Auto TX	Aud	Stun	Scan
1	00000										
2	00000										
3	00000										
4	00000										
5	00000										
6	00000										
7	00000										
8	00000										
G	----					----		----			

5Tone RX Code Setting

Timer	
Link A	0.800
ID Decode	1.600
Beep Repeat	10.000
Compare Digit	12345__

5Tone User Tone

Tone No.	Encode	Decode Low	Decode High
0	1981.0	1921.6	2040.4
1	1124.0	1090.3	1157.7
2	1197.0	1161.1	1232.9
3	1275.0	1236.8	1313.3
4	1358.0	1317.3	1398.7
5	1446.0	1402.6	1489.4
6	1540.0	1493.8	1586.2
7	1640.0	1590.8	1689.2
8	1747.0	1694.6	1799.4
9	1860.0	1804.2	1915.8
A	2400.0	2328.0	2472.0
B	930.0	902.1	957.9
C	2247.0	2179.6	2314.4
D	991.0	961.3	1020.7
E	2110.0	2046.7	2173.3

Set Mode

	Value	Enable /Inhibit
Backlight	Auto	Enable
Beep	OFF	Enable
SQL Level	110	Enable
Mic Gain	3	Inhibit
Battery Voltage	ON	Inhibit

5Tone TX Code CH

CH	TX Code	Input Digit	Text	Update	ABC Dec	ABC Aud	ABC Sel
1	00000	_____					
2	00000	_____					
3	00000	_____					
4	00000	_____					
5	00000	_____					
6	00000	_____					
7	00000	_____					
8	00000	_____					
9	00000	_____					
10	00000	_____					
11	00000	_____					
12	00000	_____					
13	00000	_____					
14	00000	_____					
15	00000	_____					
16	00000	_____					
17	00000	_____					
18	00000	_____					
19	00000	_____					
20	00000	_____					
21	00000	_____					
22	00000	_____					
23	00000	_____					
24	00000	_____					
25	00000	_____					
26	00000	_____					
27	00000	_____					
28	00000	_____					
29	00000	_____	CALL B				
30	00000	_____	CALL A				
31	00000	_____	RESET 2				
32	00000	_____	RESET 1				

Character Editor

%10	%11	%12	%13
%14	%15	%16	%17
%18	%19	%1A	%1B
%1C	%1D	%1E	%1F

Common

Clone Comment	
(1)	
(2)	

Security	
User Password	1234
PWR ON Password	OFF
Transceiver Data Out	Enable

Auto Reset	
Timer A	30.000
Timer B	3.000
Inactive Timer	60.000

TOT/Lockout	
TOT Timer	30.000
Penalty Timer	5.000
5TONE ID Out	OFF
TOT Beep	ON
Lockout Penalty Timer	5.000

PWR Save	
Start Timer(1st)	5.000
Start Timer(2nd)	60.000

Auto TX	
Auto TX Timer	15.000

Scrambler	
Type	Rolling
Group Code	1
Synchronous Capture	Standard
Tone Start Timing	OFF

Emergency	
Emer SW ON	2.000
Emer SW OFF	1.000
Start/Repeat	10.000

Man Down	
Man Down	OFF
ON Timer	10.000

etc.	
Beat Cancel	Auto
Wide Band Width	Wide
Battery Type	Enable EMER
PTT SW	Disable

5Tone TX Code Setting

Timer	
Long Tone	0.700
Link R	0.800
Link 1	0.800
Link 2	0.800
Lead out Delay	0.100
ABC Decode	1.600
Displayed Digit	12345__
PTT Call at Inaudible	OFF

Special Tone	
Group	A
Repeat	E
Link2	F

5Tone Format

Format	Tone Period	Notone Timer	Tone Length
USER	0.100	0.160	0.164
CCIR	0.100	0.160	0.164
ZVEI1	0.070	0.100	0.109
ZVEI2	0.070	0.100	0.109
DZVEI	0.070	0.100	0.109
EEA	0.040	0.060	0.066
EEA2	0.040	0.060	0.066
DAPL	0.100	0.160	0.164
EIA	0.033	0.060	0.066
DTMF	0.050	0.080	----

Key & Display Assign

Key	Conventional	SmarTrunk
Emergency	User Set Mode	Null
Monitor	Moni(Audi)	Null
Up	CH Up	Null
Down	CH Down	Null
P0	OPT (SCRAM) OPT1 /L	Null
P1	Null	Null
P2	High/Low	Null
P3	Lock	Null

Beep	
Low Freq	500
High Freq	1000

Display	
Opening Text	
MR/Code Display	MR CH
Rotary Selector	MR CH

Selection	
RF Power	Override

Move to Prio A CH	
Power SW ON	Disable

■ Appendix C

◇ Troubleshooting Information

Encryption

Should you experience excessively distorted audio, the radio should be serviced.

Restoring the Baseline File into the Cloning Software

If you should need to restore a radio to the original issued settings, you may do so by reloading the baseline .icf file into your radio. The baseline file is a pre-programmed file that is stored on the Programming Kit CD. This file contains pre-programmed settings for the radio configuration.

⚠NOTE

Writing this file will restore all default programming settings to your radio.

What you will need:

- Cloning software loaded on your computer
- Cloning cable
- Port assigned to the cable
- Baseline file available on computer, computer network, or removable drive/disk

① Open the Cloning software.
② Click **File** on the main menu, then **Open**.
③ Navigate to the location of the baseline .icf file on your computer or removable drive/disk.
④ Click **Clone** then **Write**. The baseline file has now been transferred to your radio.

■ Appendix D

◇ Warranty Period and Replacement Prices

Model	Description	Retail	GSA	Bundle Price
F43GS 86 BUNDLE - TAN	UHF Portable 380-430 MHz, without Keypad. Includes Antenna, 2 BP232 Batteries, MB94 Belt Clip, DES Transcrypt® Encryption Board, Commander Headset with Single Speaker in-line PTT, BEE F33GS MB TAN Carrying Case and Owners Manual	$ 2,900.00	$ 1,848.75	$ 1,296.91
F43GS 86 BUNDLE - BLACK	UHF Portable 380-430 MHz, without Keypad. Includes Antenna, 2 BP232 Batteries, MB94 Belt Clip, DES Transcrypt® Encryption Board, Commander Headset with Single Speaker in-line PTT, BEE F33GS MB BLACK Carrying Case and Owners Manual	$ 2,900.00	$ 1,848.75	$ 1,296.91
F43GS 86 BUNDLE - GREEN	UHF Portable 380-430 MHz, without Keypad. Includes Antenna, 2 BP232 Batteries, MB94 Belt Clip, DES Transcrypt® Encryption Board, Commander Headset with Single Speaker in-line PTT, BEE F33GS MB GREEN Carrying Case and Owners Manual	$ 2,900.00	$ 1,848.75	$ 1,296.91
MILITARY BUNDLE PRG KIT-F43G	Includes 1 each of TRAN TR-DES Software, TRAN TRC30-3061 Controller Modem, CSF33G Programming Software, OPC478 Cloning Cable (serial), OPC478U Cloning Cable (USB), F43GS 86 UHF Portable with BP232 Battery (radio for OTAR), BC160 01 117V Rapid Charger, and BC160 02 220V Rapid Charger. Requires Windows® Compatible PC	$ 2,051.00	$ 1,307.51	$ 1,307.51

ACCESSORIES

Model	Description	Retail	GSA	Bundle Price
F43GS 86	UHF Portable 380-430 MHz, no Keypad Includes Antenna, BP231 Battery, MB94 Belt Clip, and Owners Manual	$ 460.00	$ 293.25	n/a
BC121N	Multi-Unit Desktop Charger (requires BC124 Power Supply and (6) AD106)	$ 420.00	$ 267.75	n/a
BC121N F33G 220V	BC121+BC124E+(6) AD106 220V Multi-unit Charger Kit	$ 631.00	$ 402.26	n/a
BC121N F33G	BC121+BC124+(6) AD106 117V Multi-unit Charger Kit	$ 631.00	$ 402.26	n/a
BC124	117V AC Power Supply for BC121N Charger	$ 109.00	$ 69.49	n/a
BC124E	220V AC Power Supply for BC121N Charger	$ 109.00	$ 69.49	n/a
BC160 01	117V Individual Desktop Rapid Charger	$ 105.00	$ 66.94	n/a
BC160 02	220V Individual Desktop Rapid Charger	$ 105.00	$ 66.94	n/a
BEE F33GS MB BLACK	Nylon Carrying Case (Black)	$ 59.00	$ 37.61	n/a
BEE F33GS MB GREEN	Nylon Carrying Case (Green)	$ 59.00	$ 37.61	n/a

Model	Description	Retail	GSA	Bundle Price
BEE F33GS MB TAN	Nylon Carrying Case (Tan)	$ 59.00	$ 37.61	n/a
BP231	7.2V/1150 mAh Li-Ion battery (standard with radio)	$ 60.00	$ 38.25	n/a
BP232	7.2V/2000 mAh Li-Ion Battery (upgrade with radio)	$ 75.00	$ 47.81	n/a
BP240	AAA Alkaline Battery Case (holds 6) *No batteries included	$ 20.00	$ 12.75	n/a
CP17L	Cigarette Lighter Cable 12V for BC119N and BC121N	$ 24.00	$ 15.30	n/a
CSF33G	Programming Software (radio only - not for encryption. Requires OPC478)	$ 72.00	$ 45.90	n/a
OPC478	Programming cloning cable for PC to Radio (serial) - use with CSF33G	$ 45.00	$ 28.69	n/a
OPC478U	Programming cloning cable for PC to Radio (USB) – use with CSF33G			
FASC03U*	Flexible Antenna for 380-430 MHz	$ 11.00	$ 7.01	n/a
MB94	Alligator Belt Clip (standard belt clip)	$ 10.00	$ 6.38	n/a
OTTO C807203-05*	Replacement Windscreen for Commander Headset	$ 12.00	$ 7.65	n/a
OTTO C807204-05*	Replacement Speaker Cover for Commander Headset	$ 12.00	$ 7.65	n/a
OTTO V4-10484*	Commander Headset with Single Speaker In-line PTT	$ 370.00	$ 235.88	n/a
IC20-DES	Transcrypt® DES Encryption Board Installed	$ 1,100.00	$ 701.25	n/a
TRAN TRC30-3061	Controller Modem for Over The Air Re-keying (OTAR) - requires 9V Battery; use with TRAN TR-DES	$ 1,700.00	$ 1,083.75	n/a
TRAN TR-DES	Transcrypt® DES Software (use with TRAN TRC30-3061)	$ 500.00	$ 318.75	n/a
8610011920	Channel Select Knob (replacement part)	$ 1.40	$ 1.33	n/a
8610011930	Volume Control Knob (replacement part)	$ 1.34	$ 1.27	n/a
EXTWARPOR3-MB*	3 Year Extended Warranty	$ 89.40	$ 57.00	n/a

* These items are open market, pending GSA Contract Modification.

■ Appendix E

◇ OPC-478U Driver Installation

■ IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the OPC-478U.

SAVE THESE INSTRUCTIONS!— These instructions contain important safety and operating details for the **OPC-478U**.

■ PRECAUTION

⚠ **USE INDOORS ONLY! NEVER** expose the cloning cable to rain, snow or any liquids.

NEVER let metal, wire, etc. touch any internal part of the unit.

Please ensure that the USB port(s) operation is supported by your PC. This can be checked by confirming the Universal Serial Bus controller in the Device Manager. The USB port(s) operation of PC's installed with Microsoft® Windows® 98/Me/2000/XP are likely supported, thus operation with the OPC-478U should be possible.

About the USB port
The OPC-478U can also be connected to a USB 2.0 port, however, the OPC-478U will be transferring data as USB 1.1 format.

Use the supplied USB cable, OPC-1045, only. **DO NOT** extend the USB cable. When the cable is extended/use longer than 1 m (3 ft), a cloning error may occur.

Connecting the OPC-478U to PC's USB port directly or USB hub with bus-power is recommended. Approximately 20 mA of current capacity is required for the OPC-478U. When the USB port has insufficient current capacity, the cloning operation may unstable, or a cloning error may occur.

AVOID the use of chemical agents such as benzine or alcohol when cleaning, as they can damage the OPC-478U.

■ Supplied accessories

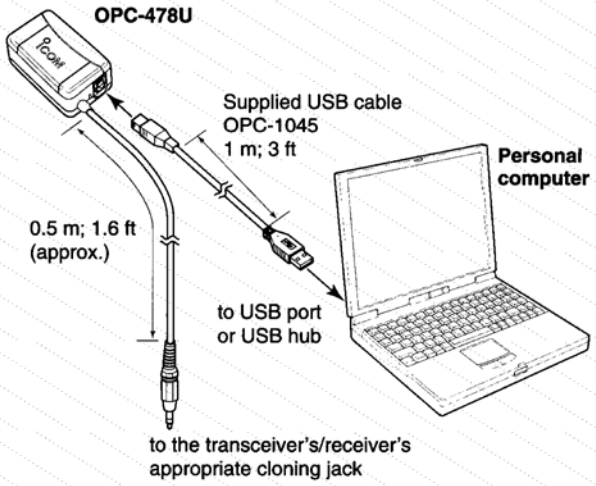
	Qty.
• OPC-478U	1
• USB cable (OPC-1045)	1
• USB driver software (FD)	1

■ Cloning software compatibility

The USB type cloning cable, OPC-478U, is almost the same as the current OPC-478 (RS-232C type), therefore, most of the current Icom cloning software which require the OPC-478 can be used with the OPC-478U.

IMPORTANT
The current Icom cloning software has only 4 COM port selections. When several peripheral equipment, such as printer, scanner, hard-disk drive, are connected via the USB port of the PC, the cloning software may not detect the cable connection.

■ Connection



When connecting the OPC-478U for the first time while Windows is running, the "New Hardware is found" dialog box appears. In this case, the USB driver installation is necessary.

See "■ Driver installation" for installation details.

■ Driver installation

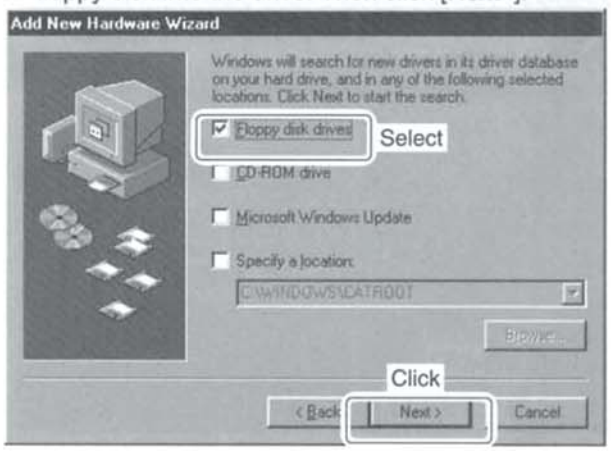
◇ Microsoft® Windows® 98/Me environment

① Connect the OPC-478U to the desired USB port.
- "New Hardware is found" dialog box appears.

② The "Add New Hardware Wizard" will come up as below. Click [Next>].

③ Select "Search for the best driver for your device (Recommended)." Then click [Next>].

④ Select "Floppy disk drives," and insert the supplied floppy disk into the drive. Then click [Next>].



⑤ Click [Next>].
- The driver installation starts after clicking.

⑥ After the installation is completed, click [Finish].

⑦ Eject the floppy disk
- Rebooting the PC is recommended.

The displayed dialog boxes or indications may differ slightly from the above instructions according to your system conditions, or environment.

■ Driver installation— continued

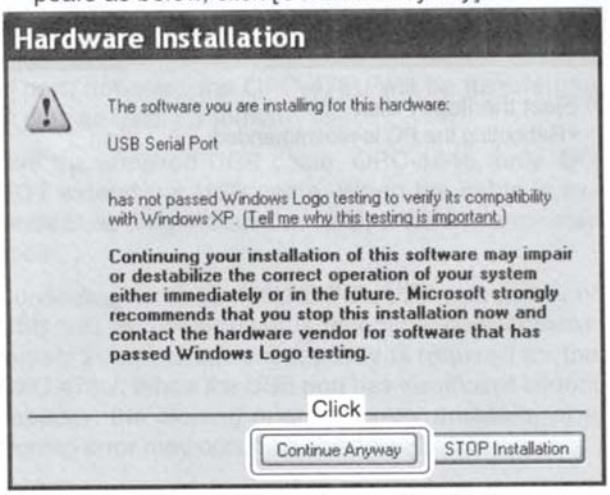
◇ Microsoft® Windows® XP environment

① Connect the OPC-478U to the desired USB port.

• "Found New Hardware" appears as below.

② The "Found New Hardware Wizard" will come up as below. Insert the supplied floppy disk into the drive, select "Install the software automatically (Recommended)", then click [Next>].

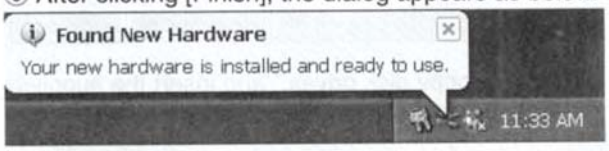
③ In case the "Hardware Installation" dialog box appears as below, click [Continue Anyway].



④ Windows starts searching and installing the USB driver automatically.

⑤ After the installation is completed, click [Finish].

⑥ After clicking [Finish], the dialog appears as below.



⑦ Eject the floppy disk.

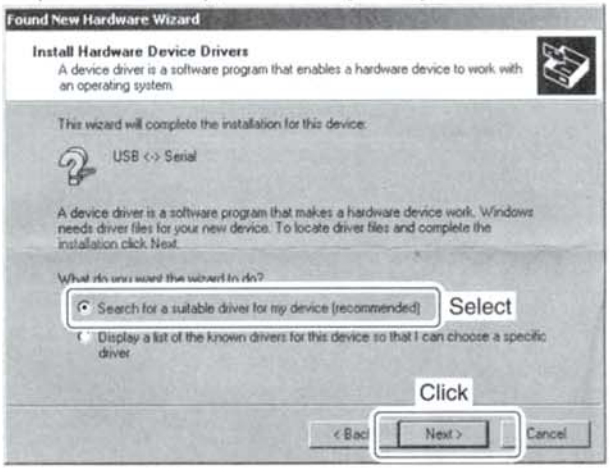
• Rebooting the PC is recommended.

◇ Microsoft® Windows® 2000 environment

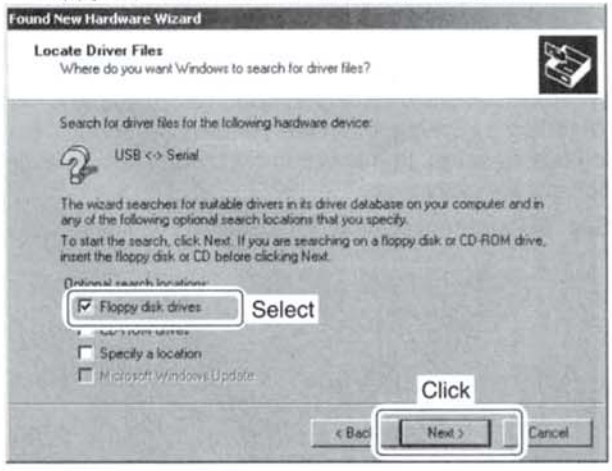
① Connect the OPC-478U to the desired USB port.
- "Found New Hardware" dialog box appears.

② The "Found New Hardware Wizard" will come up as below. Click [Next>].

③ Select "Search for a suitable driver for my device (recommended)", then click [Next>].



④ Select "Floppy disk drives", and insert the supplied floppy disk into the drive, then click [Next>].



⑤ After the installation is completed, click [Finish].

⑥ Eject the floppy disk.
- Rebooting the PC is recommended.

■ Appendix F

◇ Icom America Support Contacts

Technical Support (7:00am to 5:00pm PT):		(800) 858-3437
Government Customer Service:		(425) 450-6090
		Fax: (425) 454-1509
		gsa@icomamerica.com
Government Division Manager:	Jim Smith	(334) 271-5238
Vice-President:	Chris Lougee	(425) 450-6073

Notes

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