DT-X11 Series

Quick Start Guide

(Version 1.03)

CASIO Computer Co., Ltd.

January 2009

Table of Contents

No part of this document may be produced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of CASIO Computer Co., Ltd. in Tokyo Japan. Information in this document is subject to change without advance notice. CASIO Computer Co., Ltd. makes no representations or warranties with respect to the contents or use of this manual and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose.

Editorial Record

Manual Version no.	Date edited	Page	Content
0.90	February 2006		Tentative version
1.00	March 2006		Original version
1.01	January 2008	10	Explanation in Chapter 2.2 is updated.
		11	Notes about the AC adaptors are added.
		12	"-CN" models are added.
		13	In Chapter 2.3, the list of software required is updated.
		15	Chapter 3.1 "Application Development" is added.
		16	Chapter 3.2 "Installing CASIO SDK Files" is added.
		17	Chapter 3.3 "Installing CAB Files" is added.
		18	Figure 3.1 in Chapter 3.4 is corrected.
		19	Figure 3.2 in Chapter 3.5 is corrected.
		39 to 40	Chapter 5.3 "USB Connection via Windows Mobile Device Center" is added.
		52	Chapter 6.3 "Sample Program" is added.
		58 to 60	In Chapter 7.3 "Using CASIO Libraries from C++", development method for VCC++ Project with Visual Studio is added.
		61	Chapter 7.4 "Sample Program" is added.
		62 to 75	Chapter 8 "Device Emulator" is added.
1.02	April 2008	58	In Chapter 7.3, the explanation on page 58 is updated.
		77	In Chapter 10, note about "VCC++ application development with Visual Studio 2005" is removed.
1.03	January 2009	9 to 11	In Chapter 1, Library Configuration, Development Reference Manuals, and Sample Program are added.
		18 to 22,	Chapter 3 is divided into two chapters, Installing SDK to PC and Setting Up the Development Environment.
		50	The configuration of the CAB files is changed.
		54 to 68	Chapter of Device Emulator is relocated and rearranged.
		55	The limitation of audio system device in chapter of Device Emulator is deleted.
		56 to 62	In Chapter 7, images and usage of I/O Simulator are changed.
		17 to 22, 54 to 81	Microsoft Visual Studio 2008 is added to development platform.
		73 to 81	In Chapter 9, the sample is updated.

Preface

This guide clearly and concisely sets out the information developers need to know to get started with the CASIO DT-X11 development. Every method of connecting to your development system is covered and step by step instructions for installing and testing the CASIO SDKs are included.

The purpose of this guide is to get you to the point where you can start development; you should refer to the Library manuals for detailed information on the specific APIs.

1. Product Overview

1.1 Hardware Specifications

Table 1.1

Item	Specification	Remark
CPU, Memory		
CPU	Marvell® PXA255 Application Processor	Operating clock; max 400 MHz
RAM	64 MB	
FROM	128 MB (user area; approx. 115 MB)	FlashFX built in.
OS	Microsoft® Windows® CE 5.0 operating system	
C-MOS Imager (applicable to DT-X11M30E, DT-X11M30U and DT-X11M30RC)		
Method	C-MOS Imager, 752 x 480 (Wide VGA), monochrome	
Emitting window	Redirected downward at 45 degree	
Resolution	1-D: 0.15mm 2-D Stacked: 0.169mm 2-D Matrix: 0.33mm Composite: 0.33mm	
PCS	1-D:0.45 (minimum) 2-D:0.45 (minimum)	Print contrast signal
Readable distance (Resolution = 1.0 mm)	1-D: Approx. 40 to 410 mm 2-D Stacked: Approx. 50 to 250 mm 2-D Matrix: Approx. 60 to 130 mm	
Readable width	Max. 29 mm	When the distance is at 40 mm.
	Max. 265 mm	When the distance is at 365 mm.
Focal distance	4.5 inches	
Readable 1D symbologies	EAN8/JAN8, EAN13/JAN12, UPC-A, UPC-E, Code39, Codabar(NW7), Interleaved 2of5(ITF), Code93, Code128(EAN128), MSI(Plessey), IATA, Code11, RSS-14, RSS Limited, RSS Expanded, ISBT	
Readable 2D Stacked symbologies	Code49, PDF417, Micro PDF, Codablock F, EAN8/13 Composite, TLC39, UCC/EAN128 Composite, RSS-14(Stacked type), RSS Expanded(Stacked type), RSS Composite	
Readable 2D Matrix symbologies	Aztec, DataMatrix, Maxicode, QR Code	
Laser Scanner (applicable to DT-X11M10E and DT-X11M10RC)		
Method	Semi-conductor laser light	
Emitting window	Direct	
Wave Length	650±10 nm	
Optical Output	<1 mW	
No. of scannings	100±20 times per second	
Resolution	0.127 mm (minimum)	
PCS	0.45 (minimum)	Print contrast signal
Readable distance	Approximately 40 to 300 mm	
Readable width	Max. 40 mm	When the distance is at 40 mm.
	Max. 238 mm	When the distance is at 300 mm.
Daylight for scanning	50,000 Lux or less	
Readable 1D bar code symbologies	EAN8/JAN8, EAN13/JAN13, UPCA, UPCE, Code39, Codabar(NW7), Interleaved 2of5(ITF), Code93, Code128(EAN128), MSI(Plessey), IATA, Industrial 2of5(IDF), RSS-14, RSS Limited, RSS Expanded	

Continue.

Display			
	Display device	3.5-inch 2-Way TFT color LCD	See note 5.
	No. of dots	240 (h) x 320 (w)	
	Dot pitch	0.22 (h) x 0.22 (w) mm	
	Display font	Scalable font	See note 1.
	Backlight	LED	
Indicator			
	Confirmation /Status	LED x 2 pcs in red/green	Left: Programmable Right: Battery charge status
Input			
	Keyboard	Numeric (Alphabet) keys, CLR key, Execute key, Fn key, Text key, Cursor key	
	Control keys	Power ON/OFF key, Reset switch	
	Trigger keys	2 keys (on the left and right sides)	
	Touch panel	Plastic panel (Resolution 240 x 320) Possible to display character input pad	
IrDA interface			
	Standard	IrDA ver.1.1 compatible	
	Communication process	Half duplex	
	Synchronization	Start/Stop bits	
	Baud rate (in bps)	9,600/115,200/4M	
	Comm. range	0 (contact) to 1m	Max 0.25m at 4Mbps
Bluetooth®			
	Standard	Bluetooth® Specification Ver.1.2	
	Communication range	Approx. 3 m	Depending on the surrounding conditions.
	Output power	Maximum. 3dBm (PowerClass 2)	
Serial interface			
	Standard	USB Slave	Mini B 5 Pin.
	Baud rate	Full speed (12 Mbps)	
Audio		Earphone jack ϕ 2.5mm 3-pole	Supports headset.
PC Card (applicable to DT-X11M10E, DT-X11M30E, and DT-X11M30U)			
	Standard	PC Card Type I / Type II	3.3V
	Supply current	450 mA(5V), 500 mA(3.3V)	Constant supply current values
WLAN (applicable to DT-X11M10RC and DT-X11M30RC)			
	Frequency category	2.4 GHz ISM bandwidth	
	Standard	IEEE802.11b	See note 2.
	Modulation	Direct Sequence Spread Spectrum	
	Frequency range	2.400 to 2.4835 GHz	
	Baud rate	11 Mbps (maximum)	
	Communication range	50 m (indoor) to 150 m (outdoor)	The range may vary depending on the environment.
	Number of channels	13	3 channels are available at the same time.
	Other feature	Roaming between Access-Points	
CF Card (applicable to DT-X11M10E, DT-X11M30E, and DT-X11M30U)			
	Card type	CF card Types I/II (3.3V)	CF Card Extension Unit (option)
	Supply current	300 mA (3.3V) maximum	
Security		PEAP MS-CHAP-V2, PEAP EAR-TLS, MD5+WEP128	

Continue.

Power			
	Operation	Lithium-ion battery pack	HA-A20BAT or DT-5025LBAT
	Memory backup	Lithium battery (rechargeable) on board	Built-in, not replaceable 50mAH
	Operating period (in hours)	DT-X11M10E/M30E/M30U	DT-X11M10RC/30RC
		Approx. 8 (with HA-A20BAT)[*3] Approx. 18 (with DT-5025LBAT)[*3]	Approx. 4 (with HA-A20BAT)[*4] Approx. 10 (with DT-5025LBAT)[*4]
	Memory back up period	RAM : Approx. 10 minutes, Clock : Approx. 2 weeks	- Lithium battery pack is fully charged. - At room temperature.
	Memory backup battery charge period	Approximately 4 days	- Time period until when the battery is fully charged. - Battery pack is being installed. - At room temperature.
Buzzer		Sound pressure 70dB (minimum)	

Notes:

1. A font that can be used to print characters of any size.
2. Concurrent use of WLAN communication with Bluetooth communication is not recommended.
3. Based on the operating cyclic ratio of “standby:calculation:scan” at 20:1:1
4. Based on the operating cyclic ratio of “standby:scan:wireless” at 6.5:1.5:2.
5. Dead Pixels
   The LCD panel employed in this product uses high precision and substantial number of components which commonly cause a small number of the pixels not to light or to remain lit all the time. This is due to the characteristics of LCD panel yield in accuracy over 99.99% and permissible.

1.2 Library Configuration

The CASIO Software Development Kit ("SDK") for DT-X11 series provides various libraries listed in the table.

Table 1.2

Library	Description	C++	VB C#
System Library	Library that is used to control the system.	Yes	Yes
Laser Scanner Library	Library that is used to control the built-in laser scan engine.	Yes	Yes
Bluetooth Library	Library that is used to control the built-in Bluetooth module.	Yes	Yes
Imager Library	Library that is used to control the built-in CMOS Imager.	Yes	Yes
JPEG Library	Library that is used to handle and manipulate JPEG image functions.	Yes	-
FLINK Library	Library that is used to control and carry out transmission/reception of files between PC and other device.	Yes	Yes

Note:

The abbreviations used in the table are;

C++	: Visual C++
VB	: Visual Basic .NET
C#	: Visual C# .NET

The names of the Dynamic Link Libraries for C++ and C#/VB for the device oriented libraries are listed in the table.

Table 1.3

Library	Dynamic Link Library	Dynamic Link Library (Class Library)
System Library	SystemLib.dll	SystemLibNet.dll
Laser Scanner Library	OBReadLib.dll	OBReadLibNet.dll
Bluetooth Library	BluetoothLib.dll	BluetoothLibNet.dll
Imager Library	ImagerLib.dll	ImagerLibNet.dll
JPEG Library	JpegCe.dll	None
FLINK Library	FlinkLib.dll	MoFlinkLib.dll

1.3 Development Reference Manuals

Besides the various library manuals listed in Table 1.1, the CASIO Software Development Kit (“SDK”) for DT-X11 series provides also the development reference manuals listed in the table.

Table 1.4

Development Manual	Description
Quick Start Guide	This reference manual.
Hardware Manual	Reference manual that describes hardware specifications in detail for each dedicated option and DT-X11 series handheld terminal.
Software Manual	Reference manual that describes software specifications in detail for all the software integrated in DT-X11 series handheld terminal.
System Library Manual	Reference manual that describes individual functions in detail for System Library.
Laser Scanner Library Manual	Reference manual that describes individual functions in detail for Laser Scanner Library.
Bluetooth Library Manual	Reference manual that describes individual functions in detail for Bluetooth Library.
Imager Library Manual	Reference manual that describes individual functions in detail for Imager Library.
JPEG Library Manual	Reference manual that describes individual functions in detail for JPEG Library.
FLINK Library Manual	Reference manual that describes individual functions in detail for FLINK Library.

1.4 Sample Program

The following sample programs are included in the CASIO Software Development Kit (“SDK”).

Table 1.5

Sample Program		Description
Common Device Control Library		
	BLUETOOTHLIBSAMPLE	Connects the terminal to a Bluetooth printer and prints out data.
	CAMERALIBSAMPLE	Takes pictures and displays them on the screen. See note.
	IMGLIBSAMPLE	Scans bar codes using the Imager with settings set with the configuration file.
	IMGLIBSAMPLE2	Program of IMGDemo.exe
	OBRLIBSAMPLE	Reads a bar code using the Laser library.
	PRNLIBSAMPLE	Prints out data on the built-in printer. See note.
	SYSTEMLIBSAMPLE	Demonstrates the LED and buzzer functions.
JPEG Library		
	JPEGSAMPLE	Displays images in the JPEG file.
FLINK Library		
	FLINKLIBSAMPLE	Demonstrate infrared communication via FLINK protocol between terminals.

Note:

Some of the sample programs such as **CAMERALIBSAMPLE** and **PRNLIBSAMPLE** in the table do not run because the respective devices are not integrated in the DT-X11 series handheld terminal.

2. Prerequisites

2.1 Skills Required

The following skills are required by developers aiming to develop application software for the DT-X11;

- Windows programming
- A good knowledge of one or more of the following:
    - Visual C++
    - Visual Basic .NET
    - Visual C#
    - Active Server Pages and web programming (not covered in detail in this guide)

The following skills or experiences are also desirable;

- Windows CE devices
- ActiveSync
- Some networking experience

2.2 Hardware Required

The following models of the DT-X11 series (see Table 2.1) and the dedicated options are available.

Table 2.1 Available models and features

Model No.	Scan Engine	Wireless Communication		PC Card slot	Remark
		Bluetooth	IEEE802.11b		
DT-X11M10E	Laser Scanner	Yes	No	Yes	
DT-X11M10RC	Laser Scanner	Yes	Yes	No	
DT-X11M30E	C-MOS Imager	Yes	No	Yes	
DT-X11M30U	C-MOS Imager	Yes	No	Yes	
DT-X11M30RC	C-MOS Imager	Yes	Yes	No	
DT-X11M10E-CN	Laser Scanner	Yes	No	Yes	See note.
DT-X11M10RC-CN	Laser Scanner	Yes	Yes	No	
DT-X11M30E-CN	C-MOS Imager	Yes	No	Yes	
DT-X11M30RC-CN	C-MOS Imager	Yes	Yes	No	

Note:
"-CN" in the "Model No." boxes denotes that the model is dedicated for China only.

Dedicated Options

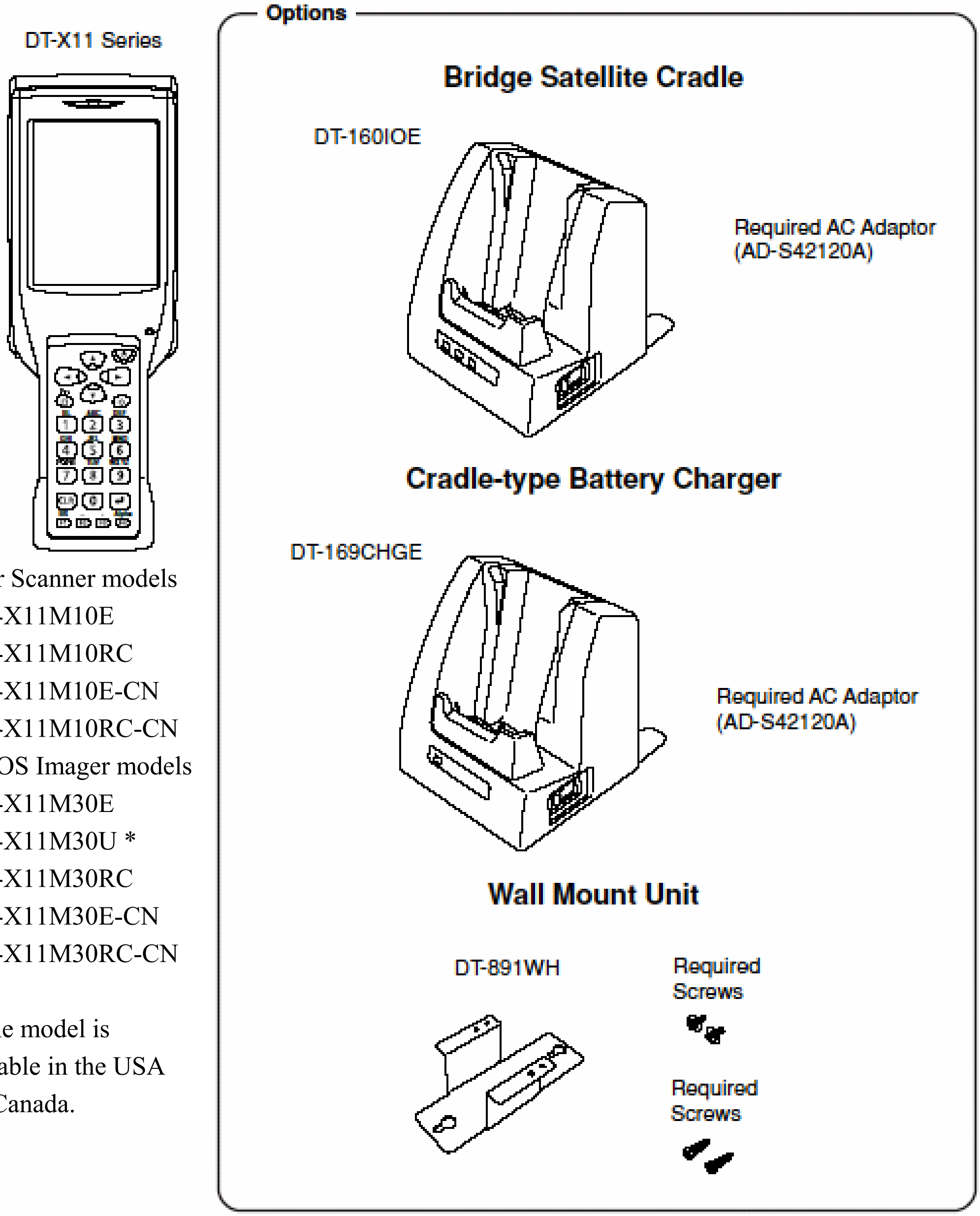
- HA-A20BAT (Battery Pack)
- DT-5025LBAT (Large-capacity Battery Pack)
- DT-160IOE (Bridge Satellite Cradle)
- DT-169CHGE (Cradle-type Battery Charger)
- DT-891WH (Wall Mount Unit)
- DT-167CHGE (Car Mounted Battery Charger)
- DT-827CAC (Car Power Cable)
- DT-5022CHG (Dual Battery Charger)
- AD-S45150AU (AC Adaptor with input capability of AC100V to 230V, and US power cord) See note 1.
- AD-S45150AE (AC Adaptor with input capability of AC100 to 230V, and Europe power cord) See note 1.
- AD-S60160BE (AC Adaptor with input capability of AC100V to 230V, and Europe power cord)
- AD-S60160BU (AC Adaptor with input capability of AC100V to 230V, and US power cord)
- AD-S42120AE (AC Adaptor with input capability of AC100 to 230V) See note 2.
- AD-S42120B (AC Adaptor with input capability of AC100 to 230V)
- DT-894CFU (CF Card Extension Unit)
- DT-892TCV (Communication Card Cover)
- DT-893LTCV (Communication Card Cover, Large size)
- AC-CORD-EU (Power cord for AD-S42120B/Europe)
- AC-CORD-US (Power cord for AD-S42120B/USA and Canada)
- AC-CORD-TW (Power cord for AD-S42120B/Taiwan)
- AC-CORD-KR (Power cord for AD-S42120B/Korea)
- AC-CORD-AU (Power cord for AD-S42120B/Australia)
- DT-882RSC (RS-232C Cable)
- DT-883RSC (RS-232C Cable)
- DT-887AXA (RS-232C Cable)
- DT-888RSC (RS-422 Cable)
- DT-380USB (USB Cable)

Notes:

1. The AC adaptor, AD-S45150AE (and AD-S45150AU), phased out current as of February 2008 and was replaced with the successor model, AD-S60160BE (and AD-S60160BU).
2. The AC adaptor, AD-S42120AE, phased out current as of February 2008 and was replaced with the successor model, AD-S42120B.

See the following page for external views of the DT-X11 and its dedicated options.

External views of the DT-X11 and the options



Laser Scanner models
  DT-X11M10E
  DT-X11M10RC
  DT-X11M10E-CN
  DT-X11M10RC-CN
C-MOS Imager models
  DT-X11M30E
  DT-X11M30U *
  DT-X11M30RC
  DT-X11M30E-CN
  DT-X11M30RC-CN

*; The model is available in the USA and Canada.

Figure 2.1

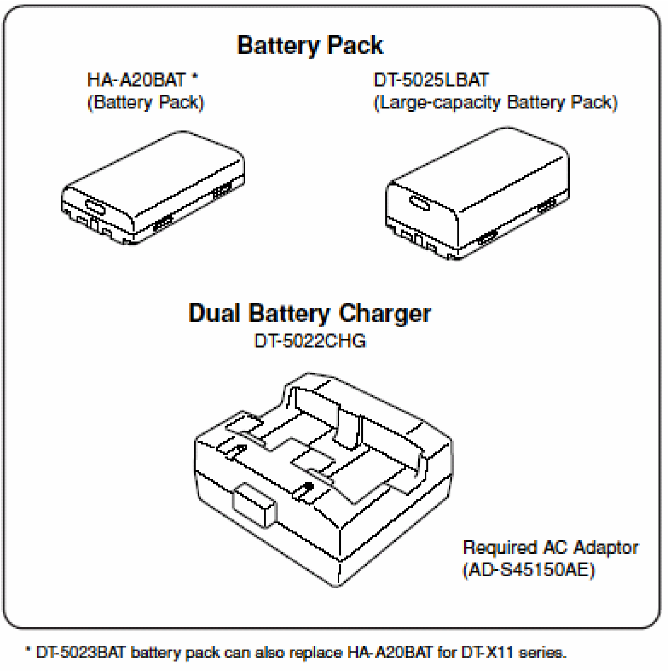


Figure 2.2

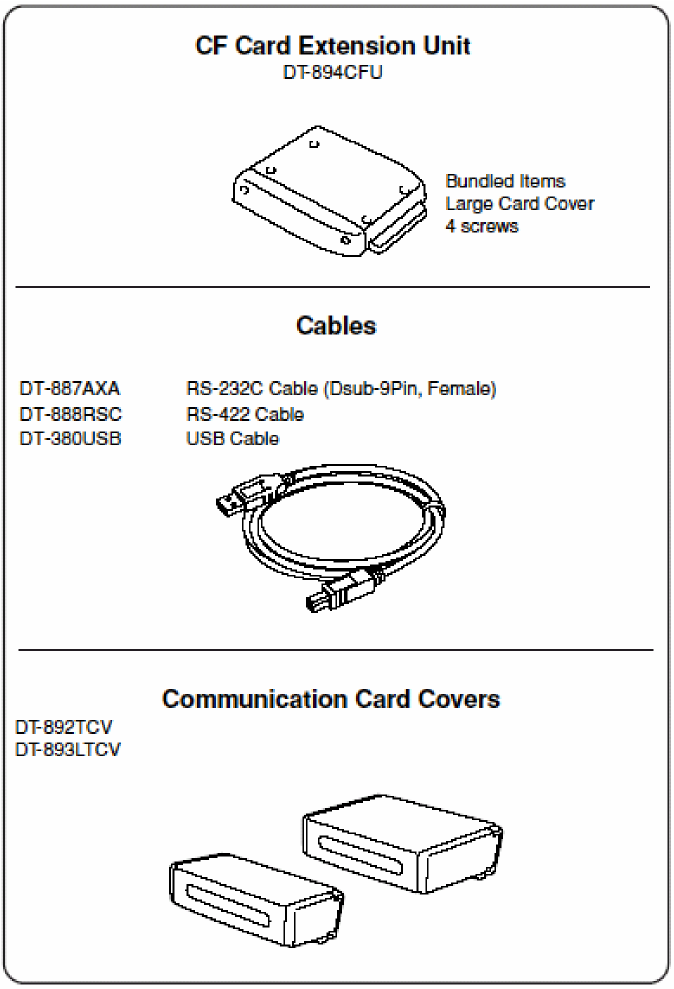


Figure 2.3

2.3 Software Required

The following software tools and libraries are required in order to develop software for the DT-X11. Ensure that you download or purchase the correct Microsoft tools as appropriate.

C / C++

- Microsoft Visual Studio 2008 (not free of charge)
- Microsoft Visual Studio 2005 (not free of charge)
- Microsoft eMbedded Visual C++ 4.0
  Download for free from;
  http://www.Microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=1DACDB3D-50D1-41B2-A107-FA75AE960856
- Microsoft eMbedded Visual C++ 4.0 SP4
  Download for free from;
  http://www.microsoft.com/downloads/details.aspx?familyid=4A4ED1F4-91D3-4DBE-986E-A812984318E5&displaylang=en
- Microsoft ActiveSync 4.2 (or later)
  Download for free from;
  http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en
- Microsoft Windows Mobile Device Center 6.1 (for Windows Vista)
  Download for free from;
  http://www.microsoft.com/downloads/details.aspx?familyid=46F72DF1-E46A-4A5F-A791-09F07AAA1914&displaylang=en

Visual Basic / Visual C#

- Microsoft Visual Studio 2008 (not free of charge)
- Microsoft Visual Studio 2005 (not free of charge)
- Microsoft Visual Studio .NET 2003 (not free of charge)
- Windows CE Utilities for Visual Studio .NET 2003 Add-on Pack 1.1
  From Microsoft web site, see
  http://www.microsoft.com/downloads/details.aspx?familyid=7ec99ca6-2095-4086-b0cc-7c6c39b28762&displaylang=en
- Microsoft ActiveSync 4.2 (or later)
  Download for free from;
  http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en
- Microsoft Windows Mobile Device Center 6.1 (for Windows Vista)
  Download for free from;
  http://www.microsoft.com/downloads/details.aspx?familyid=46F72DF1-E46A-4A5F-A791-09F07AAA1914&displaylang=en

3. Setting Up the Development Environment

3.1 Application Development

This chapter explains about what you need to set up for the development environment before starting your application development.

1. **Installing Development Platform**
   Install Microsoft's development platform which supports eMbedded Visual C++, Visual Studio 2005 and Visual Studio .NET 2003. For detail, refer to Chapter 2.3 "Software Required".

2. **Installing CASIO SDK**
   Install CASIO's SDK and various libraries if necessary. For installation method, refer to Chapter 3.2 "Installing CASIO SDK Files".

3. **Connecting DT-X11 to PC (via ActiveSync or Windows Mobile Device Center)**
   Connect the DT-X11 to PC via Microsoft's ActiveSync (for Windows XP or any other OS before Windows XP) or via Windows Mobile Device Center (for Windows Vista). For connection method, refer to Chapter 5 "Connecting the DT-X11 to PC".

4. **Setting Up the Development Environment**
   Copy all necessary CASIO libraries to the DT-X11.
   For detail, refer to Chapter 6 "Setting Up the Development Environment".

5. **Installing the Device Emulator**
   Install the Device Emulator for the DT-X11. For installation method, refer to Chapter 7 "Device Emulator". If not necessary to install, go to "6. Application Development" below.

6. **Application Development**
   Now, the application development environment is set up and your development with the development platform can be started. After application is developed, transfer it to the Device Emulator or an actual terminal of the DT-X11 via ActiveSync or Windows Mobile Device Center for check on the operability. For application development method and transferring your application, refer to Chapters 8 "eMbedded Visual C++", and 9 "Visual Studio".

3.2 Installing CASIO SDK Files

Download the CASIO DT-X11 SDK installation CD image file from the following site and write it to a CD-ROM media.
http://www2.casio.co.jp/system_en/pa/PADealer/
(The site requires your user name and password. Enter your user name and password as issued by CASIO.)

Notes:

- If you already installed DT-X11 SDK Ver. 1.xx in your PC, uninstall it before installing Ver. 2.xx.
- If any file of the version is remained in the following folders after uninstalling, delete it manually.

  C:\Program Files\CASIO\MBSYS
  C:\Program Files\Windows CE Tools\wce500
- If your PC runs in the Window Vista, first you must disable the User Account Control ("UAC") by following the process below before installing the CASIO SDK Files.
  - Navigate to **Control Panel** → **User Accounts** → **Enable or Disable the User Account Control**. Remove the check on **User Account Control (UAC)** to protect your PC, and then click **OK** button.

Installing ExportSDK

1. When the CASIO DT-X11 SDK CD-ROM is inserted into the CD-ROM drive of your PC, the following screen appears automatically.

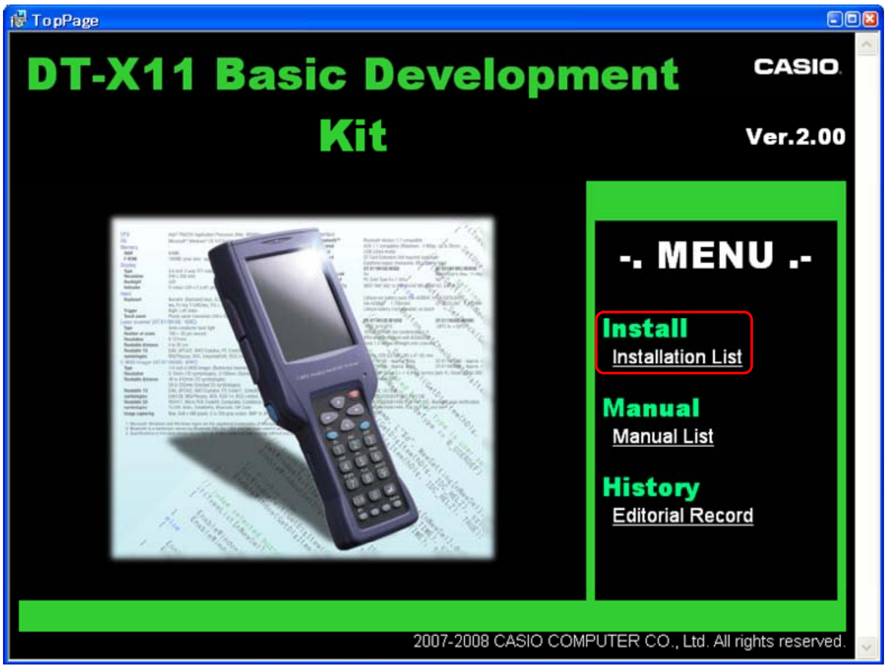
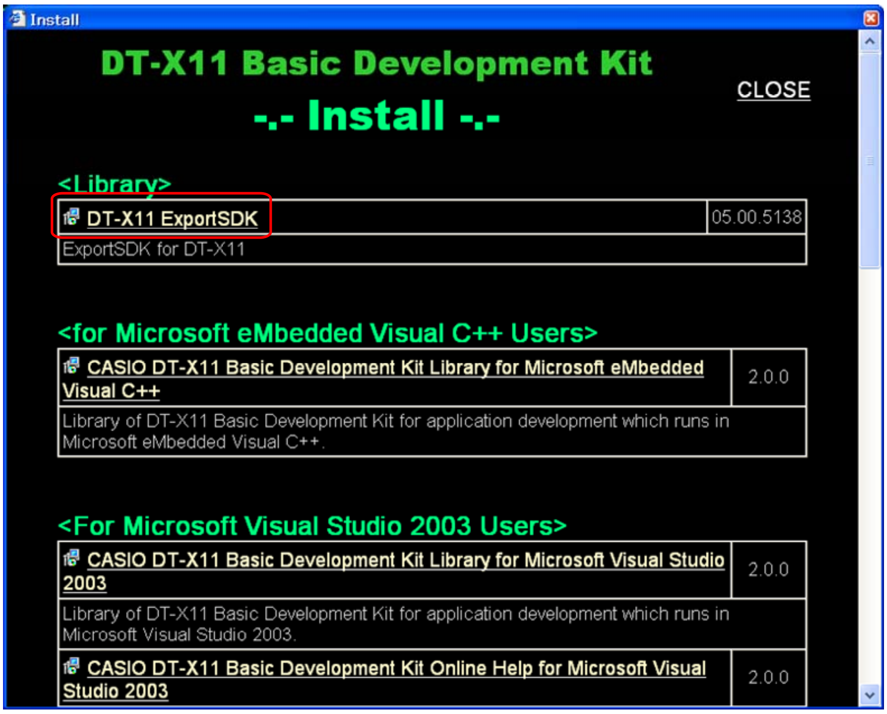


Figure 3.1

2. Click **Installation List** in Figure 3.1. The installation screen appears.



<Library>

DT-X11 ExportSDK	05.00.5138
ExportSDK for DT-X11	

<for Microsoft eMbedded Visual C++ Users>

CASIO DT-X11 Basic Development Kit Library for Microsoft eMbedded Visual C++	2.0.0
Library of DT-X11 Basic Development Kit for application development which runs in Microsoft eMbedded Visual C++.	

<For Microsoft Visual Studio 2003 Users>

CASIO DT-X11 Basic Development Kit Library for Microsoft Visual Studio 2003	2.0.0
Library of DT-X11 Basic Development Kit for application development which runs in Microsoft Visual Studio 2003.	
CASIO DT-X11 Basic Development Kit Online Help for Microsoft Visual Studio 2003	2.0.0

Figure 3.2

3. Click **DT-X11 ExportSDK** to display the Setup Wizard. Choose any one of the buttons in the screen.

Installing Library

The DT-X11 Library is available for the below development platforms.

- Microsoft eMbedded Visual C++ 4.0
- Microsoft Visual Studio .NET 2003
- Microsoft Visual Studio 2005
- Microsoft Visual Studio 2008

Notes:

1. The Library header file (*.h) and the Import library file (*.lib) are installed in the following folder.

C:\Program Files\CASIO\MBSYS\include	Header file
C:\Program Files\CASIO\MBSYS\lib\ARMV4I	Import library file

2. The Class library DLL file (*.dll) is installed in the following folder.
   C:\Program Files\CASIO\MBSYS\WindowsCE
3. When the Library is installed in your PC, the Help file (*.chm) is installed in the following folder.
   C:\Program Files\CASIO\MBSYS\HELP

   The Help file can be accessed by navigating to **Start** menu → **All Programs** → **CASIO Basic Development Kit** → **Help**

Installing Online Help

Besides the Help file described above, the Online Help is also available for the below development platforms. The installation of the Online Help is initiated in the **Installation List** for each development platform.

- Microsoft Visual Studio .NET 2003
- Microsoft Visual Studio 2005
- Microsoft Visual Studio 2008

After the installation is complete, Microsoft Visual Studio starts up. The Online Help file can be accessed by navigating to **Help** → **Contents** menu.

Installing Sample Program

When the **Sample** is chosen in the **Installation List**, the sample program folder in the CD-ROM appears. The Sample program folder is available for each development platform. Copy one of the folders you wish to use into your PC.

- EVC for Microsoft embedded Visual C++
- VS2003 for Microsoft Visual Studio.NET 2003
- VS2005 for Microsoft Visual Studio 2005
- VS2008 for Microsoft Visual Studio 2008

If your sample program is with "Read-only" attribute set effect. Be sure to disable the attribute before using it.

4. Setting Up Bridge Satellite Cradle

Use the dedicated AC adaptor (AD-S42120B) available as option for the DT-160IOE Bridge Satellite Cradle to supply the power to the terminal. Always make sure that the power is being supplied to the cradle by the AC adaptor before performing any kind of communication with the terminal. The terminal draws the power via the cradle during communication.

1. After making sure that the Bridge Satellite Cradle power switch is turned off, plug the AC adaptor into the AC adaptor jack on the back of the cradle.

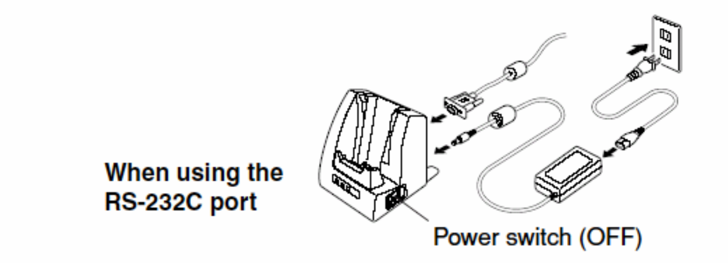


Figure 4.1

2. Next, plug the AC adaptor into a power outlet on wall.

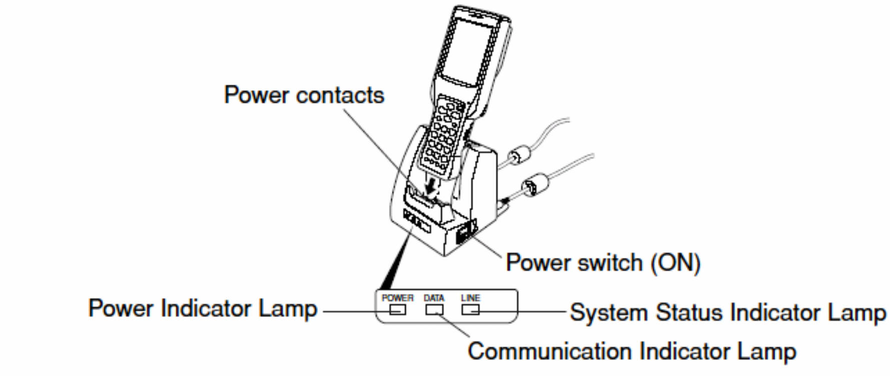


Figure 4.2

3. After making sure that the Bridge Satellite Cradle and your PC are both turned off, remove the cap from each connection port on the cradle, and then perform one of the following steps to establish connection between the terminal and the PC. Be sure to keep the connection ports covered whenever you are not using them.

   - **RS-232C Connection**
     Connect an RS-232C cable (DT-887AXA) to the RS-232C port on the cradle. Connect the other end of the cable to your PC's RS-232C port.
   - **USB Connection**
     Connect a USB cable (DT-380USB) to the USB port on the cradle. Connect the other end of the cable to your PC's USB port.

4. Turn on the power. This causes the cradle’s power indicator lamp to light in red.
5. Making sure that their IR ports come into contact with each other, place the terminal onto the cradle. This causes the cradle’s power indicator lamp to light in green.
    - If the system is operating normally and communication is enabled, the system status indicator lamp lights in green.
    - The communication indicator lamp flashes in green when communication starts.

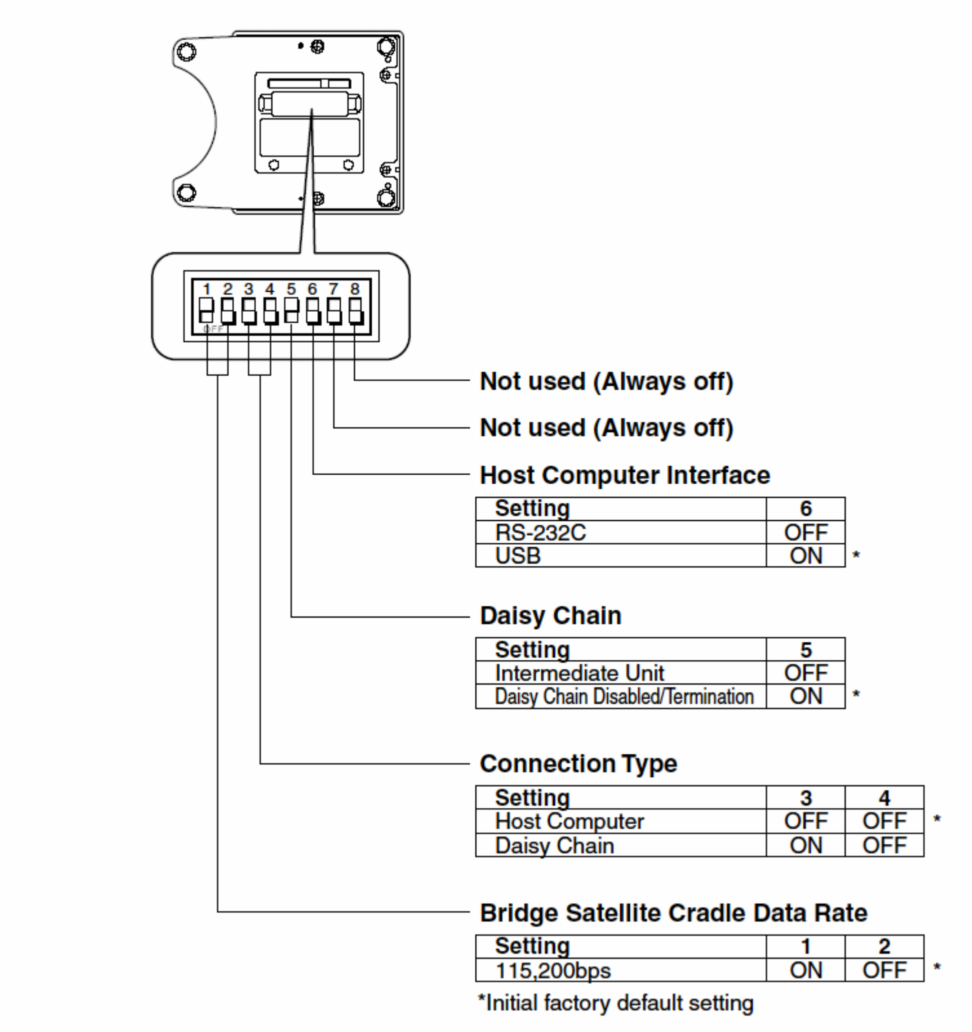
6. When charging is initiated, Indicator 2 (right side LED) on the DT-X11 lights up in red. When charging has been completed, it changes its color from red to green.

Notes:

- A high-sensitivity communication element is used for IR communication. In order to ensure successful communication, avoid using cellular phones or other devices that emit radio wave in the area where you are performing IR communication. If you need to use such a device, move away from the terminals that are in communication. In case of a cellular phone, keep it at least 30cm (11$\frac{13}{16}$") away.
- Take care to avoid allowing the cradle power contacts to become connected to each other, which creates an electric short. Shorting the power contacts can damage the cradle.

4.1 Configuring DIP Switch Settings

Dismounting the bottom cover of the Bridge Satellite Cradle exposes the DIP switches. You can change the ON/OFF settings of the DIP switches to set the configuration. Please, set after switching OFF the power.



Not used (Always off)

Not used (Always off)

Host Computer Interface

Setting	6
RS-232C	OFF
USB	ON *

Daisy Chain

Setting	5
Intermediate Unit	OFF
Daisy Chain Disabled/Termination	ON *

Connection Type

Setting	3	4
Host Computer	OFF	OFF *
Daisy Chain	ON	OFF

Bridge Satellite Cradle Data Rate

Setting	1	2
115,200bps	ON	OFF *

*Initial factory default setting

Figure 4.3

Note:
Other DIP switch settings are used for testing and inspection purposes. Because of this, you should never use any DIP switch settings other than those described above.

5. Connecting the DT-X11 to PC

To make connection establishment with PC, use one of the methods, depending on the OS your PC runs, described below.

- **ActiveSync** (for Windows XP or any other OS earlier)
  Use the ActiveSync to connect the DT-X11 to PC if the PC runs in Windows XP or other OS earlier than Windows XP. The ActiveSync can be downloaded at the URL below.
  http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en

- **Windows Mobile Device Center** (for Windows Vista)
  Use the Windows Mobile Device Center to connect the DT-X11 to PC if the PC runs in Windows Vista OS. The Windows Mobile Device Center (“WMDC”) can be downloaded at the URL below.
  http://www.microsoft.com/downloads/details.aspx?familyid=46F72DF1-E46A-4A5F-A791-09F07AAA1914&displaylang=en

5.1 Connection via PCMCIA or CF Card

An effective way of getting files from PC to the DT-X11 and vice versa is to use a PCMCIA Storage Card. Assuming you have a PC with a PC Card slot you can easily copy files to the card and transfer them to the DT-X11. Similarly, if your PC has a Compact Flash slot you can use the DT-X11's PCMCIA slot with a CF card if you use a suitable CF-PCMCIA adaptor. Also, you could use the optional DT-894CFU ("CF Card Extension Unit") to give the DT-X11 a dedicated Compact Flash slot.

5.2 Connections via ActiveSync

In nearly all cases during development work you will be communicating with the DT-X11 via **ActiveSync** connection. There are many ways to connect the DT-X11 to PC via **ActiveSync**.

Table 5.1

Connection	Install to your PC			
	ActiveSync	Direct USB driver	IrExpress USB driver	IrExpress Serial driver
Direct IrDA	Yes	---	---	---
Direct USB	Yes	Yes	---	---
Bridge Satellite Cradle via USB	Yes	---	Yes	---
Bridge Satellite Cradle via RS-232C	Yes	---	---	Yes
WLAN	Yes	---	---	---
Bluetooth	Yes	---	---	---
Ethernet PC Card	Yes	---	---	---

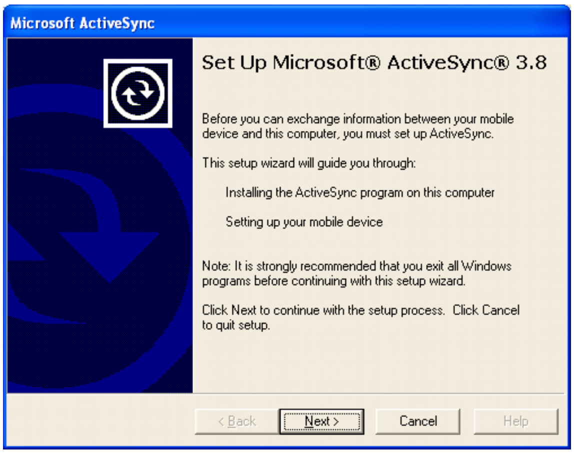
5.2.1 Via Direct IrDA

If your PC supports an IrDA port, it is possible to connect the DT-X11 to the PC via IrDA port using **ActiveSync**.

Install ActiveSync to Your PC

If you have already installed **ActiveSync 3.8**, you may skip the steps 1 to 3 below.

1. First of all, install **ActiveSync**. Initiate the MSI file of **ActiveSync 3.8**. Then, click **Next >** button. See Figure 5.1.



Microsoft ActiveSync

Set Up Microsoft® ActiveSync® 3.8

Before you can exchange information between your mobile device and this computer, you must set up ActiveSync.

This setup wizard will guide you through:

Installing the ActiveSync program on this computer

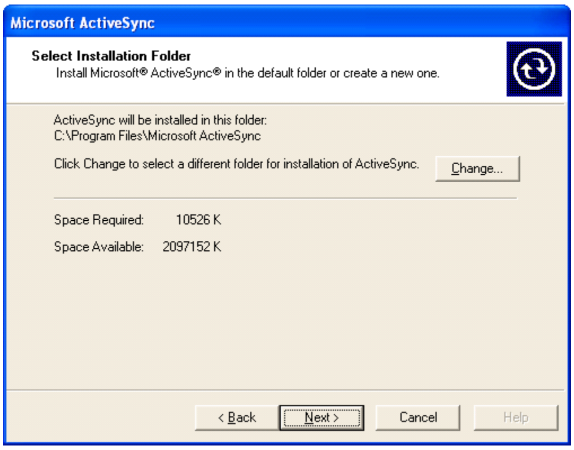
Setting up your mobile device

Note: It is strongly recommended that you exit all Windows programs before continuing with this setup wizard.

Click Next to continue with the setup process. Click Cancel to quit setup.

Figure 5.1

2. Click **Next >** button.



Microsoft ActiveSync

Select Installation Folder

Install Microsoft® ActiveSync® in the default folder or create a new one.

ActiveSync will be installed in this folder:
C:\Program Files\Microsoft ActiveSync

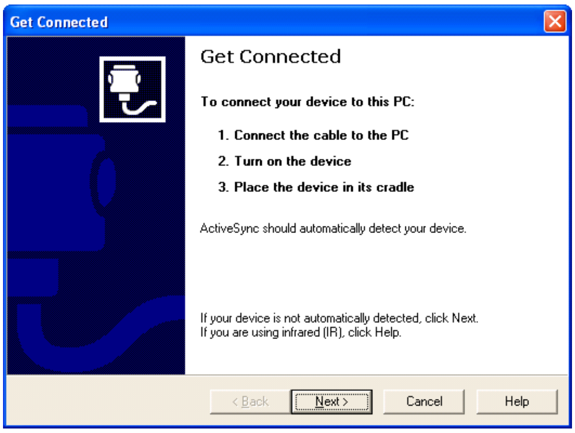
Click Change to select a different folder for installation of ActiveSync.

Space Required: 10526 K

Space Available: 2097152 K

Figure 5.2

3. Hold the installation process when the menu in Figure 5.3 appears. Go to the next procedure **Establish Connection with Your PC** in the next page.



Get Connected

To connect your device to this PC:

1. Connect the cable to the PC
2. Turn on the device
3. Place the device in its cradle

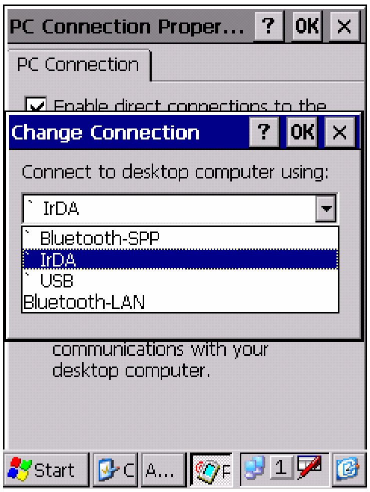
ActiveSync should automatically detect your device.

If your device is not automatically detected, click Next.
If you are using infrared (IR), click Help.

Figure 5.3

Establish Connection with Your PC

1. Choose **PC Connection** icon in the Control Panel on the DT-X11.
2. Set **PC Connection** to **IrDA**. If it is not IrDA, tap **Change Connection…** button in **PC Connection** tab (see Figure 5.4) and choose **IrDA** in the pull-down menu box in the window in Figure 5.4. Tap **OK** button twice.



☑ Enable direct connections to the

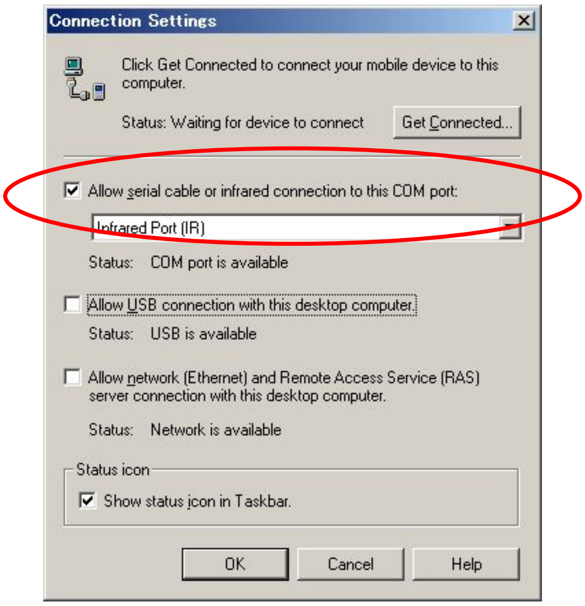
Connect to desktop computer using:

IrDA

communications with your desktop computer.

Figure 5.4

3. On the PC, make sure **Allow serial cable or infrared connection to this COM port** has been set effect and **Infrared Port [IR]** is chosen in the pull-down menu box (see Figure 5.5).



Click Get Connected to connect your mobile device to this computer.

Status: Waiting for device to connect

☑ Allow serial cable or infrared connection to this COM port:

Infrared Port (IR)

Status: COM port is available

□ Allow USB connection with this desktop computer.

Status: USB is available

□ Allow network (Ethernet) and Remote Access Service (RAS) server connection with this desktop computer.

Status: Network is available

Status icon

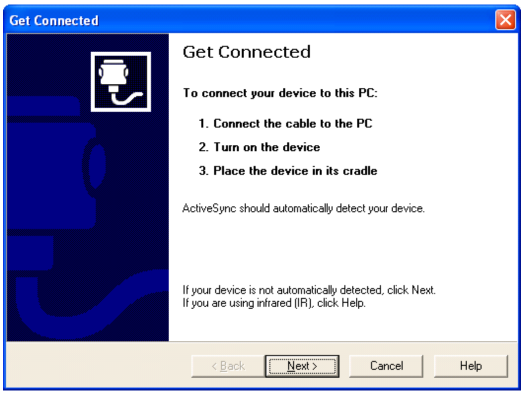
☑ Show status icon in Taskbar.

Figure 5.5

4. Place the IrDA port located on the bottom side of the DT-X11 facing to the IrDA port on the PC directly. Communication can be established if the distance is within zero to one meter. The maximum distance is 30cm when communicating at 4 Mbps.
5. From **Start** menu, navigate to **Programs** → **Communication** → **ActiveSync** and then start up **ActiveSync**.

Establish Partnership

1. Now go back to the procedure **Install ActiveSync to Your PC** in Chapter 5.2.1 “Via Direct IrDA”. Click **Next >** button in Figure 5.6.



Get Connected

To connect your device to this PC:

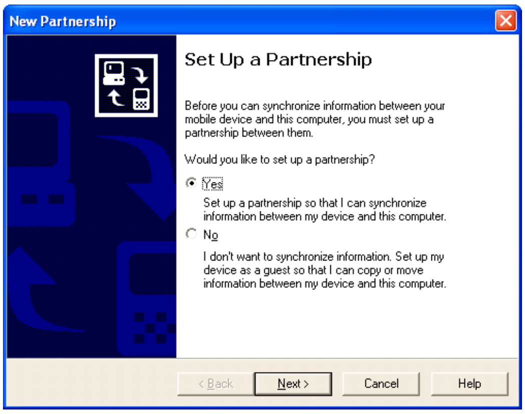
1. Connect the cable to the PC
2. Turn on the device
3. Place the device in its cradle

ActiveSync should automatically detect your device.

If your device is not automatically detected, click Next.
If you are using infrared (IR), click Help.

Figure 5.6

2. Now the connection is established. You can choose either one of the radio buttons (see Figure 5.7) according to your need. Then click **Next >** button.



Set Up a Partnership

Before you can synchronize information between your mobile device and this computer, you must set up a partnership between them.

Would you like to set up a partnership?

● Yes

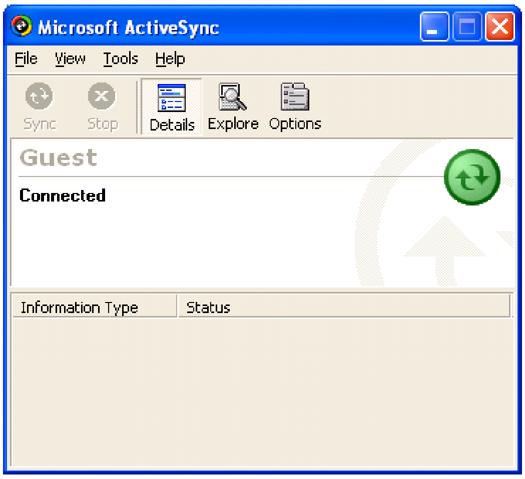
Set up a partnership so that I can synchronize information between my device and this computer.

○ No

I don't want to synchronize information. Set up my device as a guest so that I can copy or move information between my device and this computer.

Figure 5.7

3. Now establishing connection is completed. You can start up eMbedded VC++ and create a program and then deploy it into the DT-X11.



Guest

Connected

Figure 5.8

5.2.2 Via Direct USB

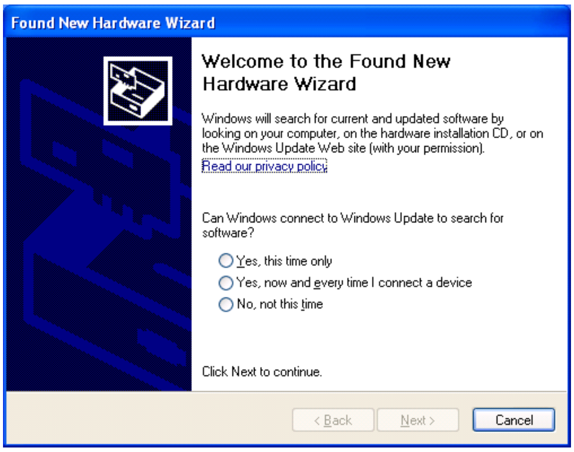
The DT-X11 has a mini USB connector on its left hand side. You can use this to directly connect the DT-X11 to your PC using a mini USB A-B cable.

Install ActiveSync to Your PC

1. If you have already installed **ActiveSync 3.8**, you may skip this step. For installing **ActiveSync**, refer to **Install ActiveSync to Your PC** in Chapter 5.2.1 "Via Direct IrDA”.

Install USB Driver to Your PC

1. Connect a mini-USB cable to the port on the DT-X11, and connect the other end of the cable to a USB port on your PC. When the DT-X11 is connected for the first time, a dialog appears to prompt you to install the suitable driver.
2. Download the USB driver “wceusbsh.inf” and “wceusbsh.sys” at the CASIO website and copy them to appropriate folder in your PC.
3. Choose **No, not this time** and then click **Next >** button (see Figure 5.9).



Welcome to the Found New Hardware Wizard

Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).

Read our privacy policy

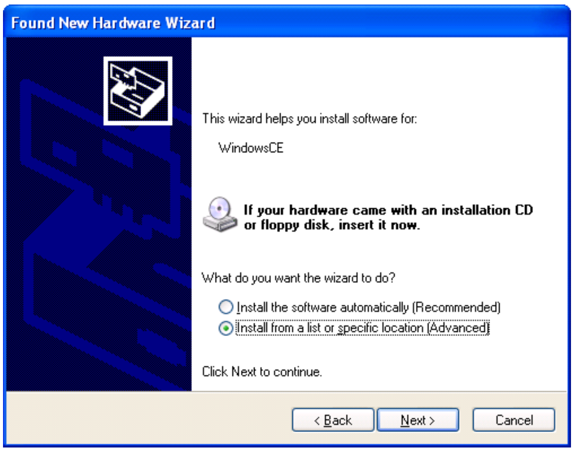
Can Windows connect to Windows Update to search for software?

○ Yes, this time only
○ Yes, now and every time I connect a device
○ No, not this time

Click Next to continue.

Figure 5.9

4. Choose **Install from a list or specific location [Advanced]** and then click **Next >** button (see Figure 5.10).



This wizard helps you install software for:

WindowsCE

If your hardware came with an installation CD or floppy disk, insert it now.

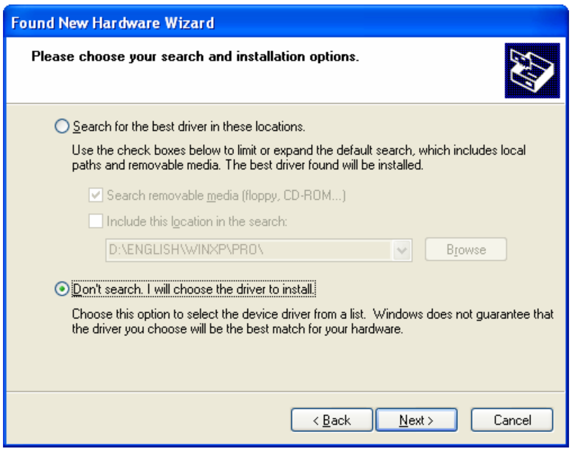
What do you want the wizard to do?

○ Install the software automatically (Recommended)
● Install from a list or specific location (Advanced)

Click Next to continue.

Figure 5.10

5. Click **Next >** button.



Found New Hardware Wizard

Please choose your search and installation options.

○ Search for the best driver in these locations.

Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.

☑ Search removable media (floppy, CD-ROM...)

☐ Include this location in the search:

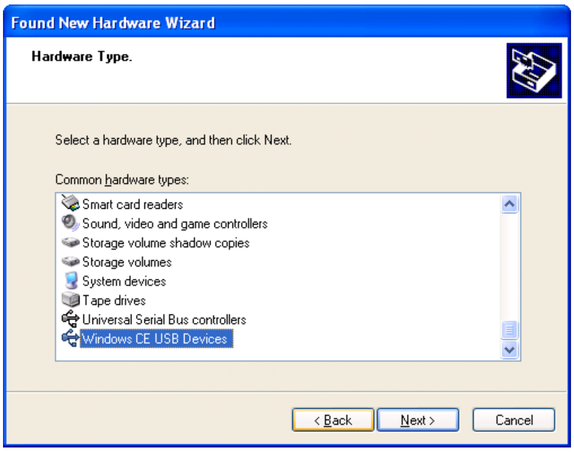
D:\ENGLISH\WINXP\PRO\

● Don't search. I will choose the driver to install.

Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

Figure 5.11

6. Choose **Windows CE USB Devices** icon (see Figure 5.12).



Found New Hardware Wizard

Hardware Type.

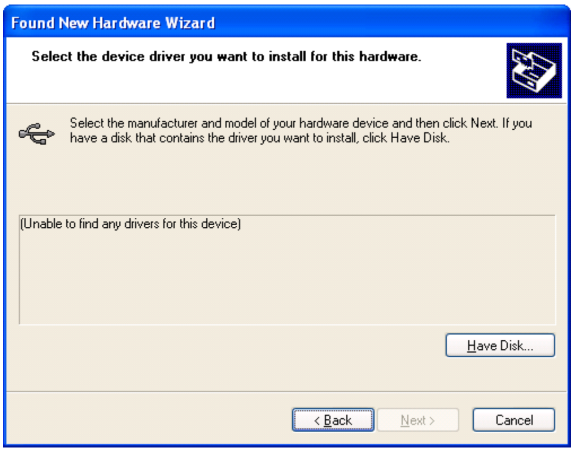
Select a hardware type, and then click Next.

Common hardware types:

- Smart card readers
- Sound, video and game controllers
- Storage volume shadow copies
- Storage volumes
- System devices
- Tape drives
- Universal Serial Bus controllers
- Windows CE USB Devices

Figure 5.12

7. Click **Have Disk…** button (see Figure 5.13).



Found New Hardware Wizard

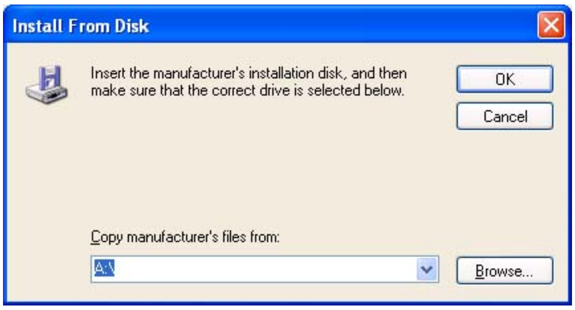
Select the device driver you want to install for this hardware.

Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.

(Unable to find any drivers for this device)

Figure 5.13

8. Click **Browse…** button (see Figure 5.14)**,** and choose “wceusbsh.inf” in the folder you have created in the step 2 of **Install USB Driver to Your PC** on page 32.



Install From Disk

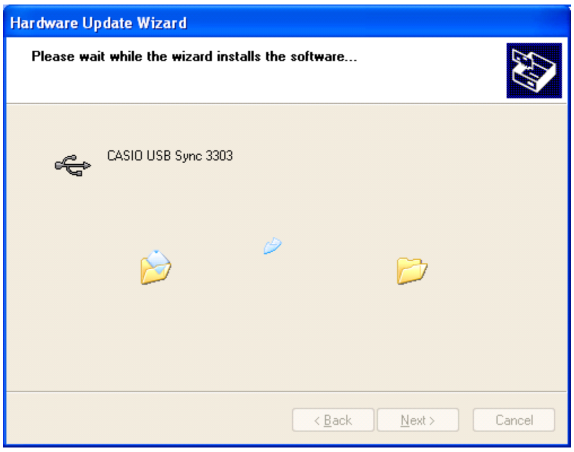
Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below.

Copy manufacturer's files from:

A:\

Figure 5.14

9. Then installing the driver will start.



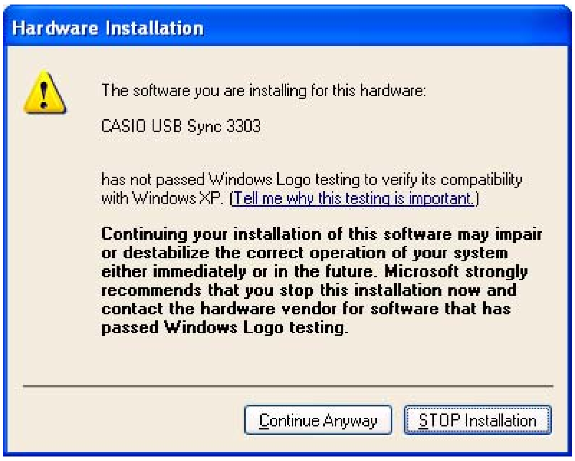
Hardware Update Wizard

Please wait while the wizard installs the software...

CASIO USB Sync 3303

Figure 5.15

10. Click **Continue Anyway** button. A menu may prompt you to install the “wceusbsh.sys” file. This happens if it is not in the same folder in where “wceusbsh.inf” is located. Download the file from the CASIO website and follow instruction appeared and then specify the location of the file.



Hardware Installation

The software you are installing for this hardware:

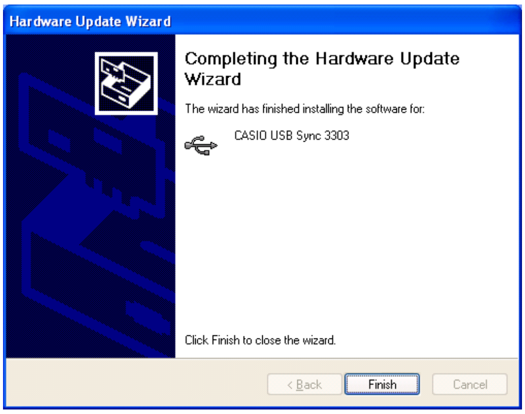
CASIO USB Sync 3303

has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)

Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

Figure 5.16

11. Now installing the driver is completed.



Completing the Hardware Update Wizard

The wizard has finished installing the software for:

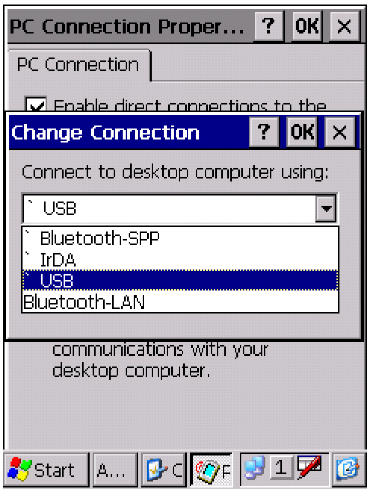
CASIO USB Sync 3303

Click Finish to close the wizard.

Figure 5.17

Establish Connection with Your PC

1. Choose **PC Connection** icon in the Control Panel on the DT-X11.
2. Set PC Connection to **USB**. If it is not USB, tap **Change Connection…** button and choose **USB** in the pull-down menu box in the window in Figure 5.18. Tap **OK** button twice.


PC Connection Proper…

PC Connection

☑ Enable direct connections to the

Change Connection

Connect to desktop computer using:

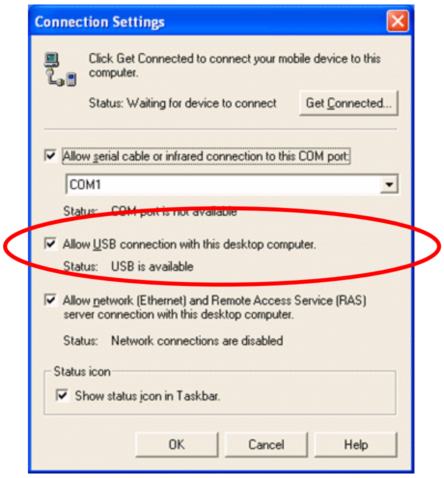
USB

Bluetooth-SPP
IrDA
USB
Bluetooth-LAN

communications with your desktop computer.

Figure 5.18

3. On the PC, make sure **Allow USB connection with this desktop computer.** has been set enabled (see Figure 5.19).


Connection Settings

Click Get Connected to connect your mobile device to this computer.

Status: Waiting for device to connect

☑ Allow serial cable or infrared connection to this COM port:

COM1

Status: COM port is not available

☑ Allow USB connection with this desktop computer.

Status: USB is available

☑ Allow network (Ethernet) and Remote Access Service (RAS) server connection with this desktop computer.

Status: Network connections are disabled

Status icon

☑ Show status icon in Taskbar.

Figure 5.19

4. From Start menu, navigate to **Programs** → **Communication** → **ActiveSync** and then start up ActiveSync.

Establish Partnership

For establishing the partnership, see the procedure **Establish Partnership** in Chapter 5.2.1 "Via Direct IrDA” on page 31.

5.2.3 Through Bridge Satellite Cradle via USB

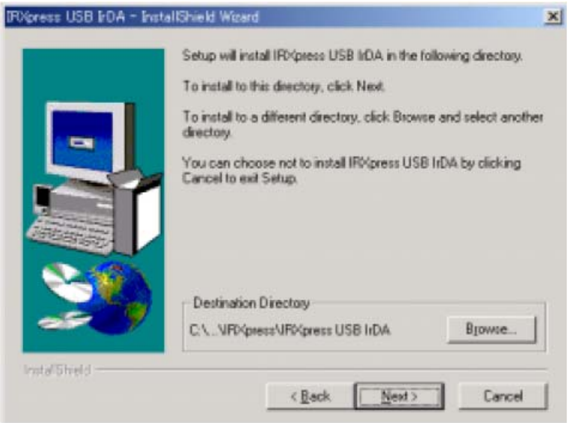
In order to communicate through the Bridge Satellite Cradle (DT-160IOE) via USB, you will need to install the IrXpress USB driver on your PC.

Install ActiveSync to Your PC

If you have already installed **ActiveSync 3.8**, you may skip this step. For detailed explanation on installing **ActiveSync**, see the procedure **Install ActiveSync to Your PC** in Chapter 5.2.1 "Via Direct IrDA" on page 31.

Install IrXpress USB Driver to Your PC

1. Initiate the IRXpressUSBIrDA.exe. Specify the folder in where the file has been saved and then click **Next >** button.



Setup will install IRXpress USB IrDA in the following directory.

To install to this directory, click Next.

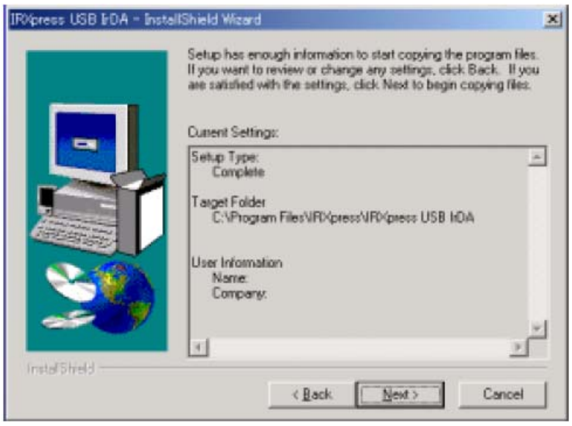
To install to a different directory, click Browse and select another directory.

You can choose not to install IRXpress USB IrDA by clicking Cancel to exit Setup.

Destination Directory: C:\...\IRXpress\IRXpress USB IrDA

Figure 5.20

2. Click **Next >** button.



Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.

Current Settings:

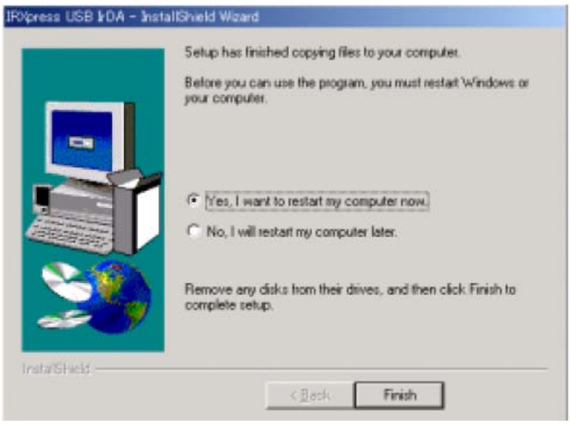
Setup Type:
Complete

Target Folder
C:\Program Files\IRXpress\IRXpress USB IrDA

User Information
Name:
Company:

Figure 5.21

3. Choose **Yes, I want to restart my computer now**. radio button, and then click **Finish** button. Reboot your PC to set the IrXpress driver enabled.



IRXpress USB IrDA - InstallShield Wizard

Setup has finished copying files to your computer.

Before you can use the program, you must restart Windows or your computer.

● Yes, I want to restart my computer now.

○ No, I will restart my computer later.

Remove any disks from their drives, and then click Finish to complete setup.

Figure 5.22

Connect Bridge Satellite Cradle to Your PC

1. On the base of the Bridge Satellite Cradle you will find a bank of DIP switches. Ensure that switch no. 6 is in the ON position to enable USB connection. If you change the switch settings, ensure that you power off and then on again so that the settings take effect.
2. Insert the client end of the USB cable into the USB port on the Bridge Satellite Cradle.
3. Insert the host end of the USB cable into a USB port on your PC.
4. The hardware will be detected and configured automatically.

Establish Connection to Your PC

For detailed explanation on establishing connection, see the procedure **Establish Connection to Your PC** in Chapter 5.2.1 "Via Direct IrDA” on page 28.

Establish Partnership

For detailed explanation on establishing the partnership, see the procedure **Establish Partnership** in Chapter 5.2.1 "Via Direct IrDA” on page 31.

5.2.4 Through Bridge Satellite Cradle via RS-232C

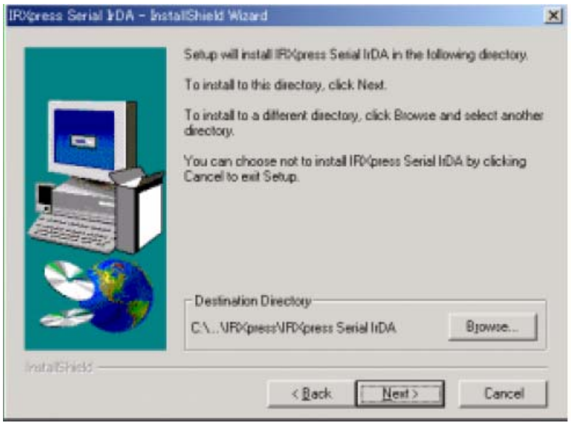
In order to communicate through the Bridge Satellite Cradle (DT-160IOE) via RS-232C, you will need to install the IrXpress Serial Driver on your PC.

Install ActiveSync to Your PC

If you have already installed **ActiveSync 3.8**, you may skip this step. For detailed explanation on installing ActiveSync, see the procedure **Install ActiveSync to Your PC** in Chapter 5.2.1 "Via Direct IrDA" on page 28.

Install IrXpress Serial Driver to Your PC

1. Initiate the IRXpressSerialIrDA.exe. Specify the folder in where the file is saved, and then click **Next >** button.



IRXpress Serial IrDA - InstallShield Wizard

Setup will install IRXpress Serial IrDA in the following directory.

To install to this directory, click Next.

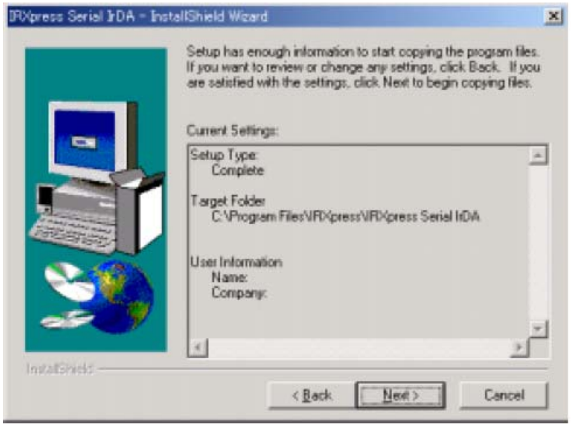
To install to a different directory, click Browse and select another directory.

You can choose not to install IRXpress Serial IrDA by clicking Cancel to exit Setup.

Destination Directory
C:\...\IRXpress\IRXpress Serial IrDA

Figure 5.23

2. Click **Next >** button.



IRXpress Serial IrDA - InstallShield Wizard

Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.

Current Settings:

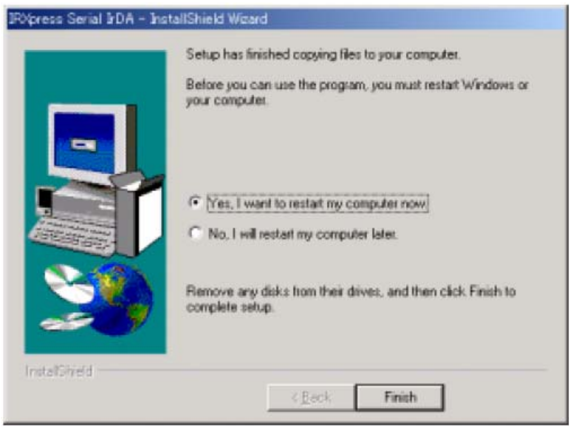
Setup Type:
    Complete

Target Folder
    C:\Program Files\IRXpress\IRXpress Serial IrDA

User Information
    Name:
    Company:

Figure 5.24

3. Choose **Yes, I want to restart my computer now**. radio button, and then click **Finish** button (see Figure 5.25). Reboot your PC to set the IrXpress driver enabled.



IRXpress Serial IrDA - InstallShield Wizard

Setup has finished copying files to your computer.

Before you can use the program, you must restart Windows or your computer.

● Yes, I want to restart my computer now.

○ No, I will restart my computer later.

Remove any disks from their drives, and then click Finish to complete setup.

Figure 5.25

Establish Connection to Your PC

1. On the base of the Bridge Satellite Cradle you will find a bank of DIP switches. Ensure that switch no. 6 is in the OFF position to enable RS-232C connection. If you change the switch settings, ensure that you power off and then on again so that the settings take effect.
2. Plug one end of the 9 pin RS-232C cable (DT-887AXA) into the Serial port on the Bridge Satellite Cradle.
3. Plug the other end of the RS-232C cable (DT-887AXA) into the correct COM port on your PC.
4. In order to set which COM port the IrXpress driver uses on your PC, choose Wireless Link in the Control Panel.
5. Click **Hardware** tab and choose CASIO IrXpress Serial Infrared from the Devices list. Click **Properties**.
6. Click **Advanced** tab. You can now choose the physical COM port to which the cradle is attached and maximum connection speed (set this to 115200 bps). Click **OK** button and then **OK** button again. The connection is now ready to use.

Establish Partnership

For detailed explanation on establishing the partnership, see the procedure **Establish Partnership** in Chapter 5.2.1 "Via Direct IrDA” on page 31.

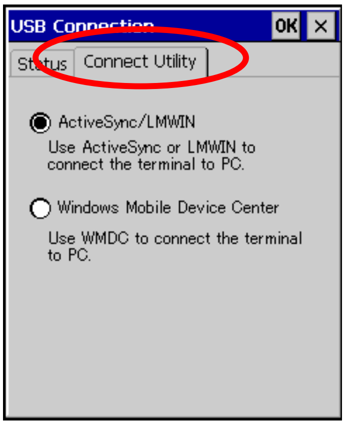
5.3 Connection via Windows Mobile Device Center

To establish connection via USB interface with PC runs in Windows Vista, use Windows Mobile Device Center ("WMDC"). The DT-X11 with the factory-setting (default) does not support the WMDC. Follow the procedure below to change the setting on the DT-X11.

Note that the CAB file, **USBClientDTX11.110.CAB**, must be installed in the DT-X11 prior to establishing connection with the DT-X11 via Windows Mobile Device Center. For installation method, refer to Chapter 6.1 "Installing CAB Files".

Procedure

1. Close all applications running on the DT-X11.
2. Navigate to **Settings** → **Control Panel** → **USB Connection**.
3. Click **Connect Utility** tab (see red circle).



● ActiveSync/LMWIN

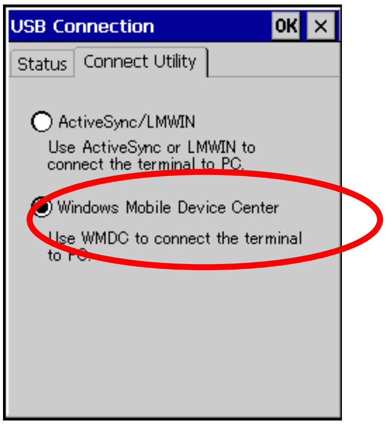
Use ActiveSync or LMWIN to connect the terminal to PC.

○ Windows Mobile Device Center

Use WMDC to connect the terminal to PC.

Figure 5.26

4. Choose **Windows Mobile Device Center** radio button and then click **OK** button.



○ ActiveSync/LMWIN

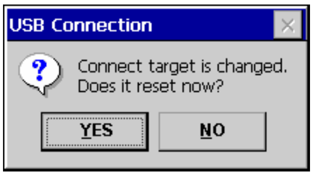
Use ActiveSync or LMWIN to connect the terminal to PC.

● Windows Mobile Device Center

Use WMDC to connect the terminal to PC.

Figure 5.27

5. A dialogue asking your final confirmation appears. Click **YES** button.



Connect target is changed. Does it reset now?

Figure 5.28

6. The DT-X11 starts up again.
7. Mount the DT-X11 on the cradle, and then follow a message appeared in the WMDC on the PC.

Notes:

- To resume the factory default setting, choose **ActiveSync/LMWIN** radio button in Step 4 on the previous page, and start up the DT-X11 again.
- The WMDC version 6.1 or later will support the connection establishment via USB interface. Any other versions of the WMDC earlier are not interoperable with Windows CE devices.

5.4 Connection via WLAN

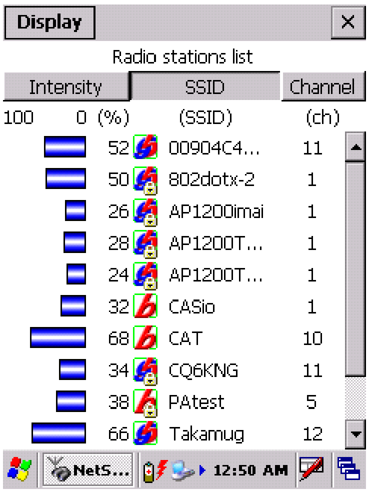
The fastest and easiest way to connect the DT-X11 to your PC for development purpose is WLAN compliant with the IEEE802.11b standard. In this configuration, models with WLAN module integrated (applicable to DT-X11M10RC, M30RC, M10RC-CN, and M30RC-CN) are operable. Follow the steps below to establish connection between the DT-X11 and PC via WLAN.

Establish Partnership

Establish partnership first between the DT-X11 and PC via Direct IrDA or Direct USB, or via Bridge Satellite Cradle.

Set up WLAN Connection on the DT-X11

1. Initiate **NetSearch** tool by navigating to **Programs** → **Communication** → **NetSearch**. Figure 5.29 displays a list of WLAN stations.



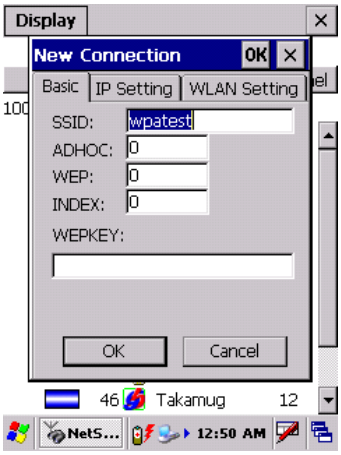
Display

Radio stations list

Intensity	SSID	Channel
100 0 (%)	(SSID)	(ch)
52	00904C4...	11
50	802dotx-2	1
26	AP1200imai	1
28	AP1200T...	1
24	AP1200T...	1
32	CASio	1
68	CAT	10
34	CQ6KNG	11
38	PAtest	5
66	Takamug	12

Figure 5.29

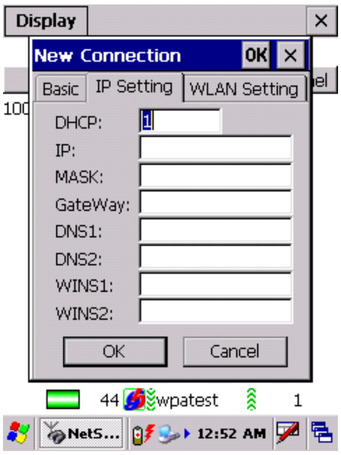
2. Navigate to **Display** → **New Connection** menu and set up the parameters shown in **Basic** (see Figure 5.30), **IP Setting** (see Figure 5.31), and **WLAN Setting** (see Figure 5.32) tabs.
3. Enter the SSID (see Figure 5.30) and other necessary security parameters for the network. Tap **OK** button and then close the configuration window.
4. A prompt that informs you that a reset is necessary to confirm these changes. Tap **OK** button.



New Connection — Basic

SSID: wpatest
ADHOC: 0
WEP: 0
INDEX: 0
WEPKEY:

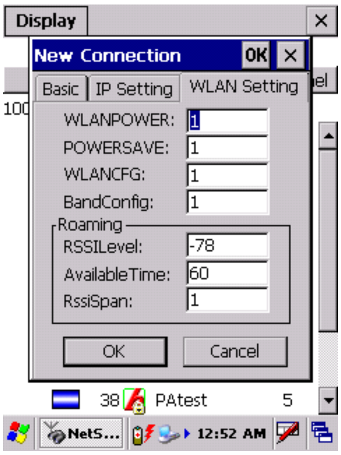
Figure 5.30



New Connection — IP Setting

DHCP: 1
IP:
MASK:
GateWay:
DNS1:
DNS2:
WINS1:
WINS2:

Figure 5.31



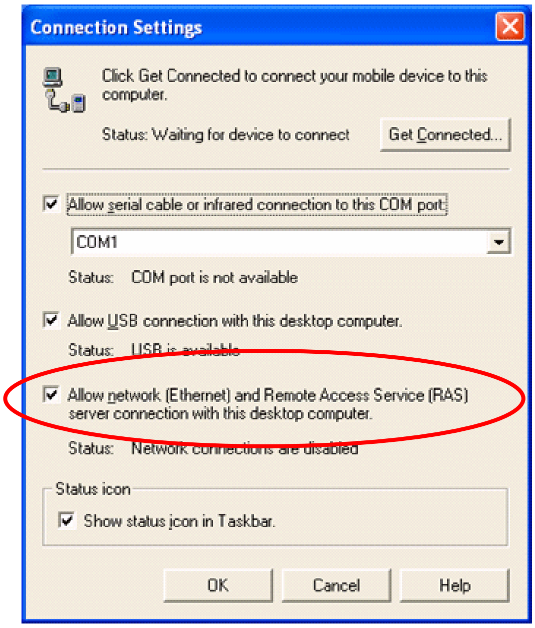
New Connection — WLAN Setting

WLANPOWER: 1
POWERSAVE: 1
WLANCFG: 1
BandConfig: 1
Roaming
RSSILevel: -78
AvailableTime: 60
RssiSpan: 1

Figure 5.32

Establish Connection to Your PC

1. On the PC, make sure **Allow network [Ethernet] and Remote Access Service [RAS] server connection with this desktop computer.** has been set enabled (see Figure 5.33).



Connection Settings

Click Get Connected to connect your mobile device to this computer.

Status: Waiting for device to connect

☑ Allow serial cable or infrared connection to this COM port

COM1

Status: COM port is not available

☑ Allow USB connection with this desktop computer.

Status: USB is available

☑ Allow network (Ethernet) and Remote Access Service (RAS) server connection with this desktop computer.

Status: Network connections are disabled

Status icon

☑ Show status icon in Taskbar.

Figure 5.33

2. On the DT-X11, navigate to **Start** → **Programs** → **Communication** → **LAN ActiveSync** to initiate the connection.
3. Ensure that **Network Connection** is the name of the connection method and that **Connect to** line is the name of your PC.
4. Tap **Connect …** button and then the connection should be established.

5.5 Connection via Bluetooth

There are many peripherals such as USB dongles and PC Cards on the market that will allow you to add a Bluetooth serial port to a PC. This guide only covers the DT-X11 side of the connection and assumes that you have a suitably configured Bluetooth COM port available on your PC. Your PC may require a Passkey during connection; if so, you will be prompted on the DT-X11 at some point to enter the Passkey before the connection can be completed.

Establish Partnership

Establish partnership first between the DT-X11 and PC via Direct IrDA or Direct USB, or via Bridge Satellite Cradle.

Set up Bluetooth Connection on the DT-X11

1. On the DT-X11, navigate to **Start** → **Settings** → **Control Panel** → **Bluetooth Connection**.
2. After a few seconds, a list of detected Bluetooth devices should appear. Identify the PC amongst these and double tap its icon in the list.
3. A list of available services for the PC will appear. **Bluetooth Serial Port** should be among them (the exact name may vary depending on the Bluetooth hardware you are using on the PC).
4. Tap and hold **Bluetooth Serial Port** icon (see Figure 5.34) and a pop-up menu should appear with an icon **Use to connect for ActiveSync**.
5. Tap this icon, and then it will change to an **ActiveSync** icon.

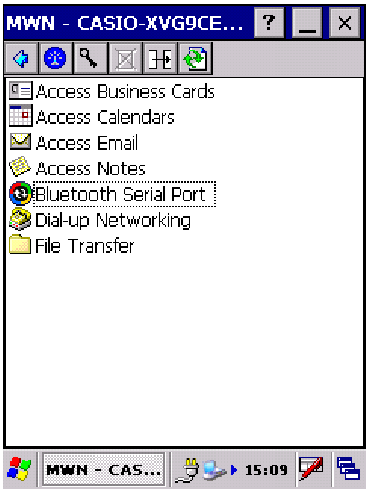


Figure 5.34

6. Tap **Bluetooth Serial Port** (or whatever the specific item is on your PC) and then ActiveSync connection to the PC will be established.
7. If you tap and hold **Bluetooth Serial Port** icon in the screen that displays the PC side services, you can choose **Add Shortcut** menu to create a shortcut to this connection.
8. Tap the blue icon in the Taskbar (see Figure 5.34) and choose **Shortcut**.
9. Tap and hold the shortcut you created in the step 5 and tap **Auto Connection** in the context menu (see Figure 5.35).

10. The ActiveSync connection will then be launched as soon as you start the Bluetooth connection utility.

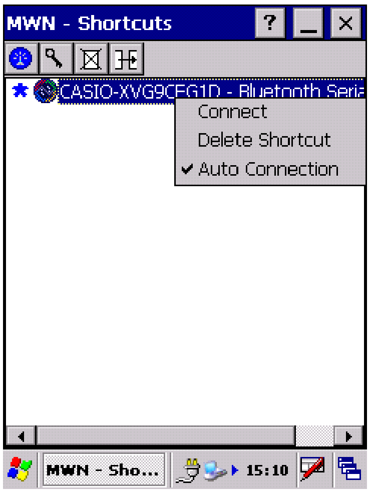


Figure 5.35

11. To disconnect the ActiveSync session it is best to double tap the connection icon in the Taskbar and tap **Disconnect** button**.**

5.6 Connection via Ethernet PC Card

This procedure has been tested using a SOCKET LP-E (CF card) in a CF to PCMCIA converter.

Establish Partnership.

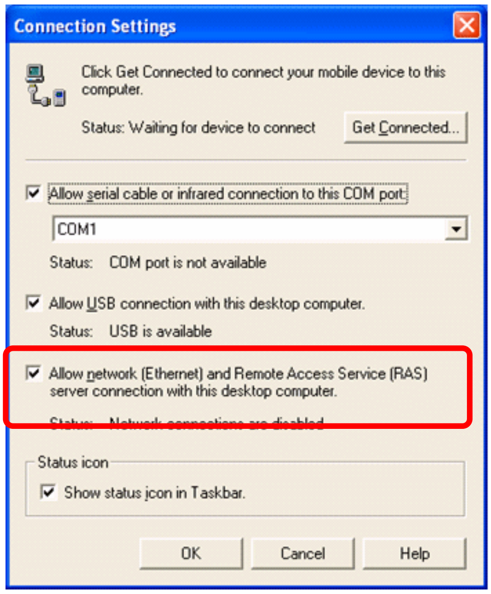
Establish partnership first between the DT-X11 and PC via either Direct IrDA or Direct USB, or via Bridge Satellite Cradle.

Set up Ethernet Connection on the DT-X11

1. Insert the LAN card into the PC Card slot on the DT-X11.
2. On the DT-X11, navigate to **Start** → **Settings** → **Control Panel** → **Network and Dialup Connections**.
3. You should see **NE20001** as an option. Highlight this and choose **Properties** from the **Connection** menu.
4. Configure the settings suitably for your network.
5. On the **Name Servers** tab, you should enter the IP address of your PC on the **Primary WINS** line.

Establish Connection to your PC

1. On the PC, make sure **Allow network [Ethernet] and Remote Access Service [RAS] server connection with this desktop computer.** has been set enabled (see Figure 5.36).



Connection Settings

Click Get Connected to connect your mobile device to this computer.

Status: Waiting for device to connect

☑ Allow serial cable or infrared connection to this COM port:

COM1

Status: COM port is not available

☑ Allow USB connection with this desktop computer.

Status: USB is available

☑ Allow network (Ethernet) and Remote Access Service (RAS) server connection with this desktop computer.

Status: Network connections are disabled

Status icon

☑ Show status icon in Taskbar.

Figure 5.36

2. On the DT-X11, navigate to **Start** → **Programs** → **Communication** → **LAN ActiveSync** to initiate the connection.
3. Ensure that **Network Connection** is the name of the connection method and that **Connect to** line is the name of your PC.
4. Tap **Connect …** button and then the connection should be made.

5.7 Accessing Shared Network Drive via WLAN

Assuming you have a valid network connection established, you can access shared drives on your PC from the **File Explorer** on the DT-X11. The following shows the steps to initiate.

1. Configure a network connection on the DT-X11.
2. Double tap **My Computer**.
3. Type \\xxxx\ where xxxx is the network name of the PC.
4. A network logon dialog box will appear. Enter a valid User ID, Password and Network Domain.
5. Any shared network drives on the target PC will be displayed and you will be able to copy files freely between them and the DT-X11.

5.8 Connection via Direct TCP/IP from Visual Studio

Visual Studio .NET 2003

If you have a network connection from the DT-X11 (for example, via WLAN) then you can use the Windows CE Utilities add-on pack (described in Chapter 3) to establish a direct link to the development PC. Refer to the readme file supplied with the add-on pack for details.

Visual Studio 2005

Visual Studio 2005 does not support remote debugging via the direct TCP/IP connection.

6. Setting Up the Development Environment

6.1 Installing CAB Files

1. After installing the library files, the CAB files in Table 6.1 will be installed in the folder below.
   C:\Program Files\CASIO\MBSYS\CAB

   Table 6.1

Library	CAB file	Preinstalled
System Library	en_SystemLib.ARMV4I.CAB	Yes
Laser Scanner Library	en_OBReadLib.ARMV4I.CAB	Yes
Bluetooth Library	en_BluetoothLib.ARMV4I.CAB	Yes
Imager Library	en_ImagerLib.ARMV4I.CAB	Yes
JPEG library	en_JPEG.ARMV4I.CAB	Yes
FLINK library	en_Flink.ARMV4I.CAB	Yes (note 2)

   Notes:

   1. The library with "Yes" in "Preinstalled" column is preinstalled in the DT-X11 and in the Device Emulator. Thus, it is not necessary to install it, unless it has been updated or changed.
   2. The CAB file, en_Flink.ARMV4I.CAB, in the table does not operate for the DT-X11. Use the FlinkLib.dll installed by default in the terminal.

2. Download the CAB file in Table 6.2 from the following site.
   http://www2.casio.co.jp/system_en/pa/PADealer/
   (The site requires your user name and password. Enter your user name and password as issued by CASIO.)

   Table 6.2

CAB file	Description
USBClientDTX11.110.CAB	USB client supported by Windows Mobile Device Center

3. Copy all the CAB files in Tables 6.1 and 6.2 to any folder on the DT-X11 via ActiveSync.
4. Carry out each CAB file.
5. When the installation starts, the installation status will appear.

6.2 eMbedded Visual C++ 4.0

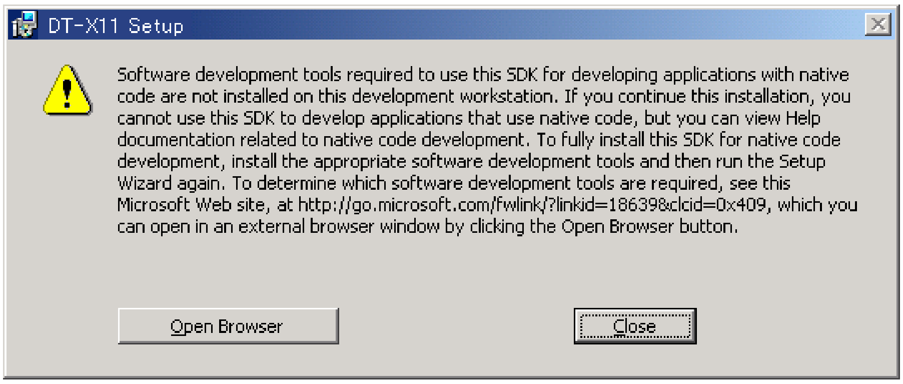
ExportSDK for DT-X11 is required to develop application software with eMbedded Visual C++ 4.0 (see note 1). Follow the steps below to install it.

1. Double click **DT-X11_SDK.msi** (see note 2) file and follow the prompts appeared on the screen to install the SDK.
2. When prompted whether you want to install **Custom** or **Complete** installation, choose **Complete**.
3. When the installation is finished, start up eMbedded Visual C++ 4.0.
4. Go to Chapter 8 and follow the instructions to verify that the SDK has been installed correctly.

If eMbedded C++ has been installed in your PC already, you will notice that you now have a new SDK and, once you select that new SDK, a new target device (DT-X11) in the comb-box menu in the Toolbar. Also, if you use any of the Remote Tools in eVC++ then you will find DT-X11 is listed as a new target (for example, try the Remote Registry Editor).

Notes:

1. If eMbedded Visual C++ 4.0 is used to develop application software, be sure to install Service Pack 4 prior to the development.
2. Other SDK (e.g. standard SDK etc.) released before **ExportSDK** for DT-X11 is also operable.
3. If **DT-X11_SDK** is installed when standard SDK has been installed already, the following dialog box in Figure 6.1 appears for warning.



Software development tools required to use this SDK for developing applications with native code are not installed on this development workstation. If you continue this installation, you cannot use this SDK to develop applications that use native code, but you can view Help documentation related to native code development. To fully install this SDK for native code development, install the appropriate software development tools and then run the Setup Wizard again. To determine which software development tools are required, see this Microsoft Web site, at http://go.microsoft.com/fwlink/?linkid=18639&clcid=0x409, which you can open in an external browser window by clicking the Open Browser button.

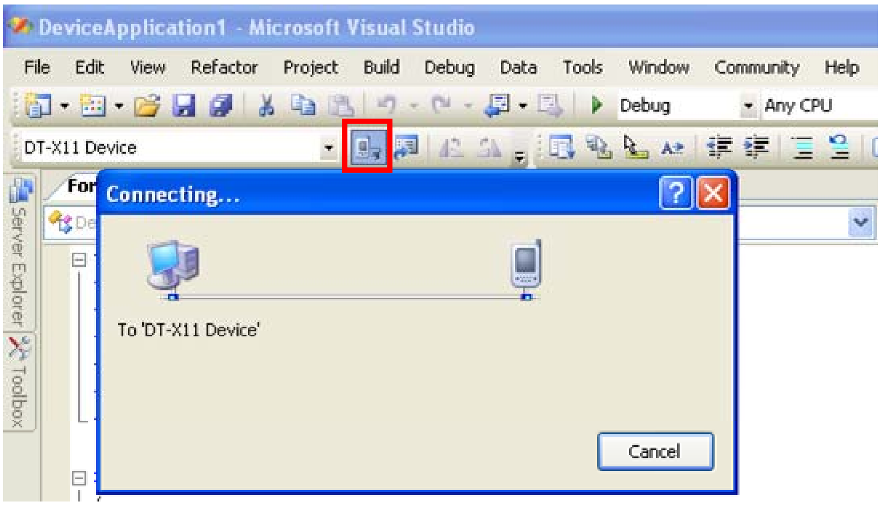
Figure 6.1

4. Application software developed using MFC (Microsoft Foundation Class) for CASIO IT-10 is not operable on the DT-X11.
5. Any application developed not using MFC is operable on the DT-X11.

6.3 Visual Studio 2005

There is no actual SDK available for Visual Studio as such. However, the CASIO libraries have been released for VB .NET and C#. See Chapter 9 for basic usage instructions. In this chapter, the remote debugging procedure using the DT-X11 for application development in VB .NET and C# environments is explained.

1. Establish connection with the DT-X11 via ActiveSync.
2. Open the application project for VB .NET or C# in Visual Studio 2005.
3. Click the button in square box drawn by red line (see Figure 6.2) to make sure that Visual Studio 2005 has recognized the connection established with the DT-X11 via ActiveSync. If it does not, start up ActiveSync again to establish connection.

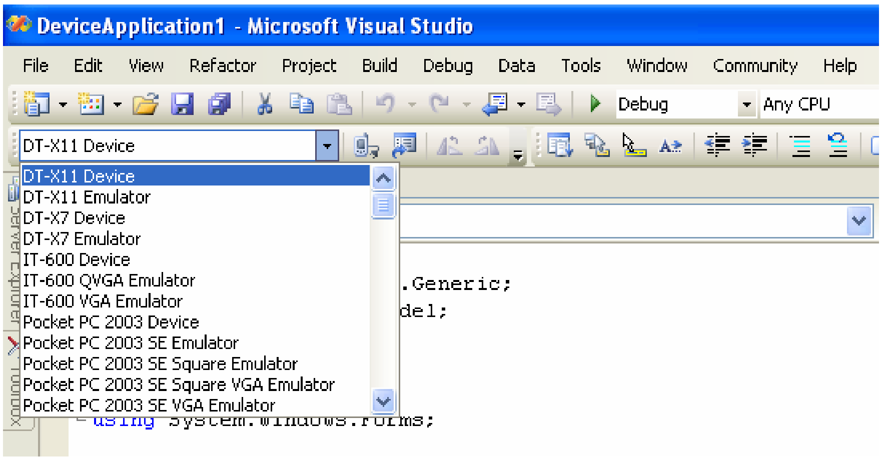


DeviceApplication1 - Microsoft Visual Studio
File Edit View Refactor Project Build Debug Data Tools Window Community Help
Debug
Any CPU
DT-X11 Device
Server Explorer
Toolbox
Connecting...
Cancel

To 'DT-X11 Device'

Figure 6.2

4. Choose **DT-X11 Device** in the pull-down menu box in Figure 6.3.



DeviceApplication1 - Microsoft Visual Studio
File Edit View Refactor Project Build Debug Data Tools Window Community Help
Debug
Any CPU
DT-X11 Device
DT-X11 Device
DT-X11 Emulator
DT-X7 Device
DT-X7 Emulator
IT-600 Device
IT-600 QVGA Emulator
IT-600 VGA Emulator
Pocket PC 2003 Device
Pocket PC 2003 SE Emulator
Pocket PC 2003 SE Square Emulator
Pocket PC 2003 SE Square VGA Emulator
Pocket PC 2003 SE VGA Emulator

```
.Generic;
del;
using System.Windows.Forms;
```

Figure 6.3

5. If the debugger has started, debugging for the application can be carried out while checking each operation by the application running on the DT-X11.

6.4 Visual Studio .NET 2003

There is no actual SDK available for Visual Studio as such. However, the CASIO libraries have been released for VB .NET and C#. See Chapter 9 for basic usage instructions. Microsoft has released an add-on for Visual Studio .NET 2003 that allows you to set the target CPU for a connected device (Visual Studio is unable to detect the target CPU of non-Pocket PC devices). Follow the steps below to install the add-on pack.

1. Download “Windows CE Utilities for Visual Studio .NET 2003 Add-on Pack 1.1” from the site described in Chapter 2.3 “Software Required”.
2. Establish connection via **ActiveSync** between the DT-X11 and PC using any of the methods described in Chapter 5 “Connecting the DT-X11 to PC”.
3. Navigate to **Tools** → **Select Windows CE Device CPU**.
4. In **Select the device architecture** pull-down menu box, choose ARMV4I.
5. Click **Configure**.
6. Re-start Visual Studio .NET 2003.

You will now, for example, be able to choose **Deploy <appname>** from the **Build** menu and your project will be deployed directly to the DT-X11. You will now also be able to remotely debug applications over your ActiveSync connection.

7. Device Emulator

The **Device Emulator** provides application developers with an environment that, without having the actual device available, allows them to debug basic functions and performance of an application at source level by stepping through the code.

7.1 Software Required

The **Device Emulator** requires the software(s) listed below before installing the emulator.

Using Visual Studio 2008 or Visual Studio 2005

- ActiveSync 4.2 or a later version (If required)
  http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en
- Visual Studio 2008 or Visual Studio 2005 (Required)
- CASIO DT-X11 SDK (Required)
- Standalone Device Emulator 3.0 (Optional. See note 2.)
  http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=a6f6adaf-12e3-4b2f-a394-356e2c2fb114

Using Visual Studio .NET 2003

- ActiveSync 4.2 or a later version (If required)
  http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en
- Standalone Device Emulator 3.0 (If required. See notes 1 and 2.)
  http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=a6f6adaf-12e3-4b2f-a394-356e2c2fb114
- Visual Studio .NET 2003 (Required)
- CASIO DT-X11 SDK (Required)

Using eMbedded Visual C++ 4.0

- ActiveSync 4.2 or a later version (Required)
  http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en
- Standalone Device Emulator 3.0 (If required. See notes 1 and 2.)
  http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=a6f6adaf-12e3-4b2f-a394-356e2c2fb114
- Microsoft eMbedded Visual C++ 4.0 (Required)
  http://www.Microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=1DACDB3D-50D1-41B2-A107-FA75AE960856
- Microsoft eMbedded Visual C++ 4.0 ServicePack4 (Required)
  http://www.microsoft.com/downloads/details.aspx?familyid=4A4ED1F4-91D3-4DBE-986E-A812984318E5&displaylang=en
- CASIO DT-X11 SDK (Required)

Notes:

1. The software is not required if your PC already has **Visual Studio 2005** installed.
2. To use Microsoft Device Emulator 3.0, follow the steps below.
   2-1. Install DT-X11 ExportSDK and Device Emulator of the DT-X11 SDK.
   2-2. Download Microsoft Device Emulator 3.0 and install it.
   2-3. Edit the following file and save the change.
   C:\Program Files\Windows CE Tools\wce500\DT-X11\Emulation\DT-X11.cdes

   Before you change, the default parameter in the file is described as follows.

   ```
   module=DevEmu500.exe
   ```

   Change the parameter to the one below. Be sure to describe the whole parameter in single one line.

   ```
   module=C:\Program Files\Microsoft Device Emulator\1.0\
   DeviceEmulator.exe
   ```

You can substitute the Device Emulator Version 3.0 released in Visual Studio 2008 for an engine of Device Emulator included in the DT-X11 SDK by the mentioned procedure above.

7.2 Starting Up the Device Emulator

After installing all required software described in Chapter 7.1, follow the steps below to start up the **Device Emulator** on your PC.

1. Navigate to **Start** menu → **All Programs** → **CASIO Device Emulator** and click **DT-X11**. Make sure that the DT-X11 **Device Emulator** has started up on the screen. See Figure 7.1. If Figure 7.1 and Figure 7.2 appear on your PC, you are ready to use the emulator.

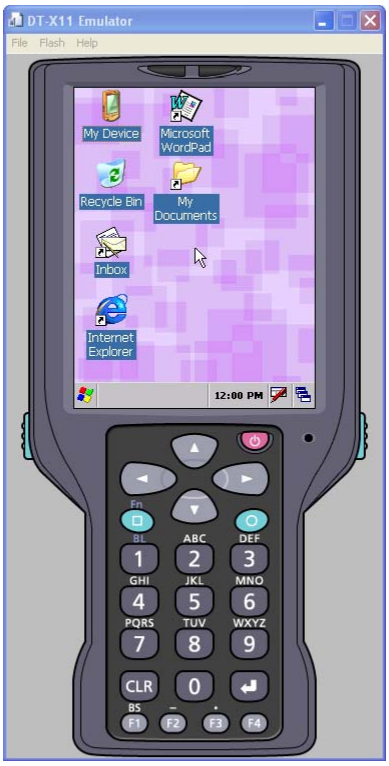


Figure 7.1 DT-X11 Device Emulator

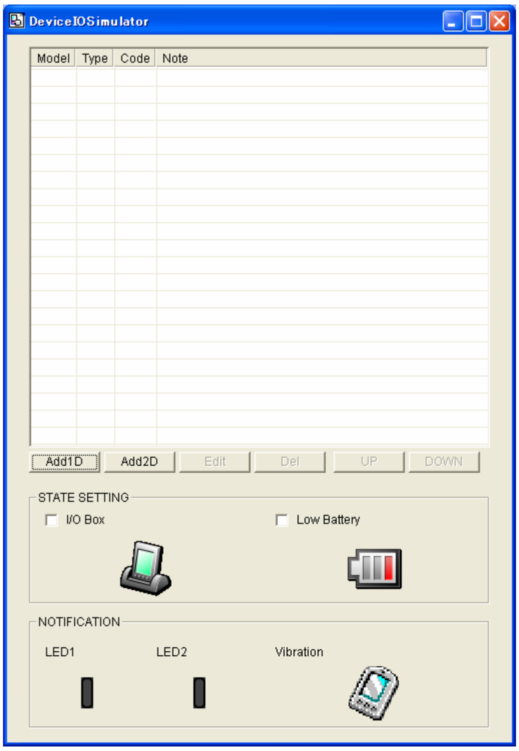


Figure 7.2 I/O Simulator

Terminology of **Emulator** and **Simulator**;
The **Emulator** described in this reference manual is a software application that behaves in a very similar way to the actual device by imitating individual hardware components or protocols present in the actual hardware.
On the other hand, the **Simulator** is also a software application that logically integrates application programming interfaces ("API") and certain other functions to allow debugging of the application program using external events. The **Emulator** performs in a pseudo CPU and hardware environment and it is impossible for the application to recognize whether it is in the actual device environment or pseudo environment. However, actions carried out by the **Simulator** are not as alike to those performed by actual components but merely mimic them very closely.

7.3 Using the Device Emulator

7.3.1 DT-X11 Device Emulator

The **DT-X11 Device Emulator** emulates various operations carried out by the actual DT-X11 terminal on the PC’s screen such as mouse operation, input on PC’s keyboard, displaying execution of applications, and operations by actual devices such as the scanner. Figure 7.3 shows an emulated DT-X11 device on the screen of a PC.

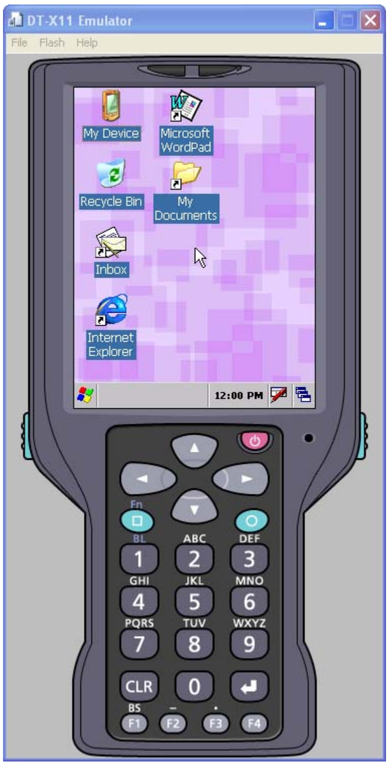


Figure 7.3

Key Input

The emulator offers key input capability similar to that of the actual DT-X11 device. For instance, a key on the emulated keyboard of DT-X11 on the screen (see Figure 7.3) can be clicked with the PC mouse as well as key input made directly on the PC’s keyboard.

Reading Bar Codes

The emulator enables bar codes pre-registered in the I/O Simulator (see Figure 7.2) to be input when clicking Trigger key on the emulated keyboard (see Figure 7.3). Note however that the Trigger key must be continuously pressed for a second or more otherwise an incorrect key input may result.

Sound

The emulator offers beep and sound capability similar to that of the actual DT-X11 device.

7.3.2 I/O Simulator

The I/O Simulator simulates registration of bar codes, generation of low battery warning, detection of terminal being mounted on cradle.

Registration of bar code symbologies

1. Registration
   Click either **ADD1D** or **ADD2D** button (circled in red in Figure 7.4) to go into the bar code registration mode.

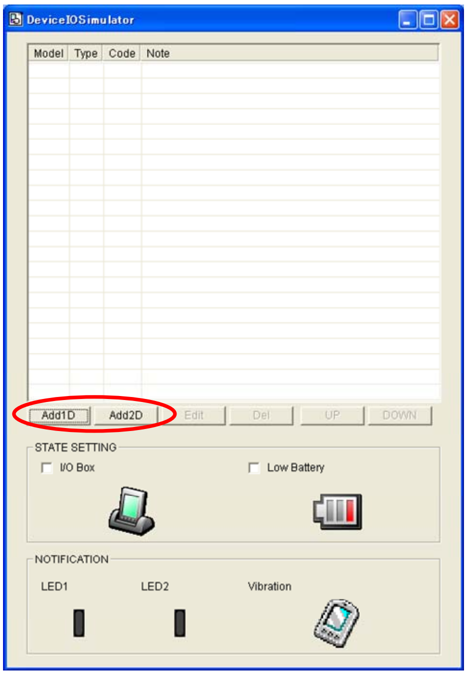


Figure 7.4

2. Bar code registration
   Choose a bar code symbology in the **Code Type** pull-down menu that you wish to register in the **I/O Simulator**.

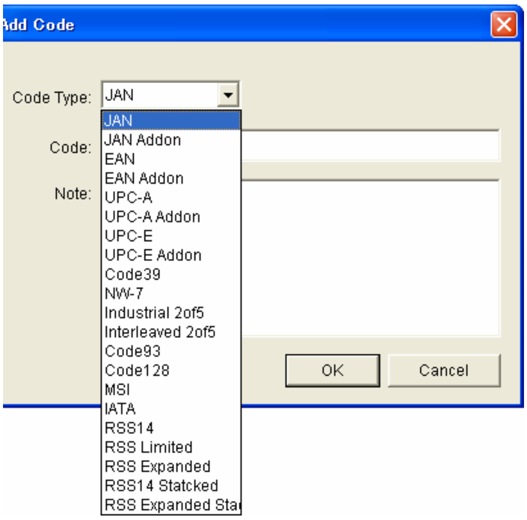
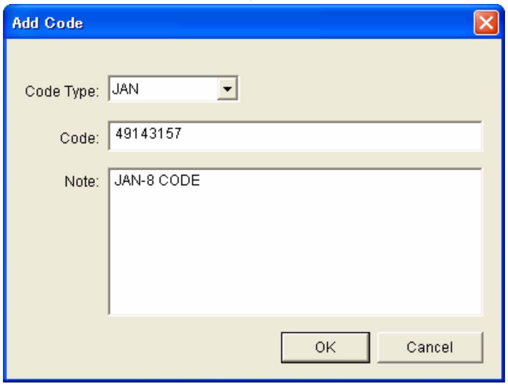

Code Type: JAN

Figure 7.5

3. Registration of bar code and note

   Enter bar code data in the **Barcode** field (see Figure 7.6) and a note about the bar code in the **Note** field if necessary. Click **OK** button to complete the bar code registration.



Code Type: JAN

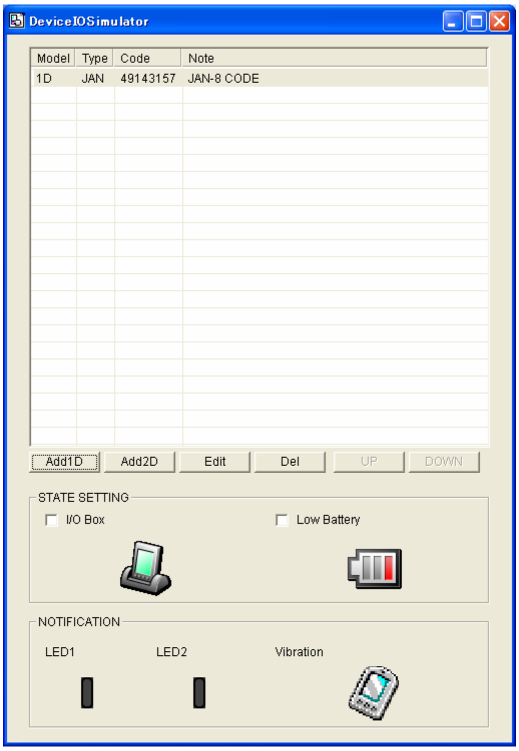
Code: 49143157

Note: JAN-8 CODE

Figure 7.6

4. Completion of registration

   After completion of the bar codes registration, the screen in Figure 7.7 shows a list of bar codes that have been registered in the **I/O Simulator**. Prior to debugging with the **Device Emulator**, make sure that you register all bar codes you wish to use in debugging.



Model	Type	Code	Note
1D	JAN	49143157	JAN-8 CODE

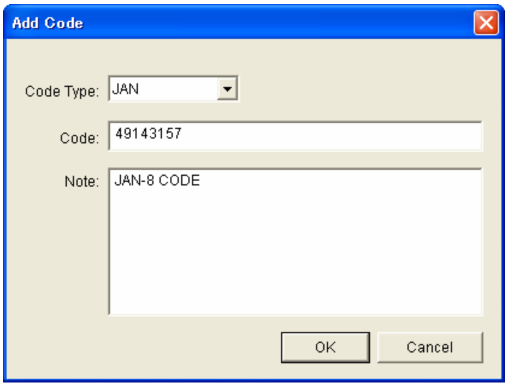
□ I/O Box

□ Low Battery

Figure 7.7

5. Editing registered bar code content

   Highlight a bar code in the list of registered bar codes (see Figure 7.7) and click **Edit** button. Figure 7.8 appears for editing the bar code and its information.



Add Code

Code Type: JAN

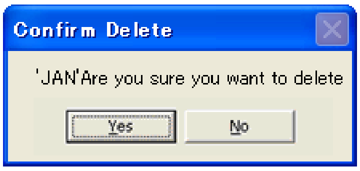
Code: 49143157

Note: JAN-8 CODE

Figure 7.8

6. Deleting registered bar code content

   Highlight a bar code in the list of registered bar codes (see Figure 7.7) and click **Del** button. Dialogue screen in Figure 7.9 appears for you to confirm the deletion. If it is okay to delete, click **Yes** button, otherwise click **No** button.



Confirm Delete

'JAN'Are you sure you want to delete

Figure 7.9

Detecting Terminal in Cradle and Low Battery Warning

If you check the **I/O Box** and **Low Battery** boxes in STATE SETTING field (see Figure 7.10), the simulator simulates the respective events in the emulator.

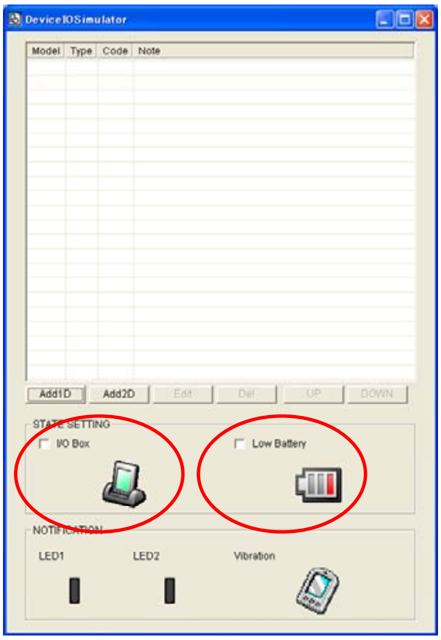


Figure 7.10

I/O Box

If this box is checked, a notification is issued that the connection between the DT-X11 **Device Emulator** and cradle has been established. This notification can be utilized by the application.

Low Battery

If this box is checked, a notification that a low battery state has occurred is raised. The icon in the toolbar in the emulated screen appears too. The notification can be utilized by the application to recognize the low battery state in the hardware.

Indications

The I/O Simulator expresses a change of state that occurred in the DT-X11 **Device Emulator**.

- LED

When the DT-X11 **Device Emulator** turns on the LED, the LED icon (LED2) in the I/O Simulator also turns on. See Figure 7.11.

- Vibration

When the DT-X11 **Device Emulator** vibrates, the vibration icon in the I/O Simulator also turns on. See Figure 7.11.

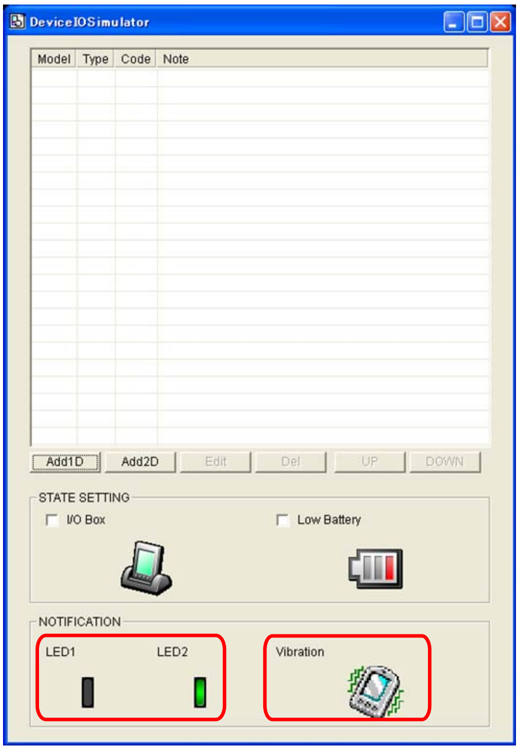


Figure 7.11

7.3.3 Connecting via ActiveSync

If debugging with the **Device Emulator** is carried out in either eMbedded Visual C++ 4.0 or Visual Studio 2008 or Visual Studio 2005, or transmission/reception of a file with the **Device Emulator** is carried out, **ActiveSync** must be used.

Setting ActiveSync

1. Start up **ActiveSync** and then navigate to **File** → **Connection Settings ….**

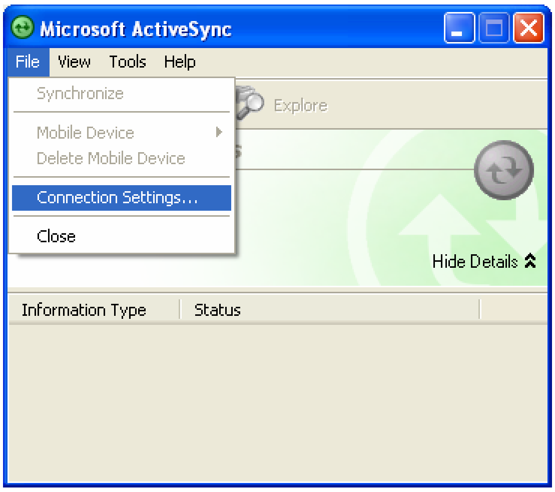
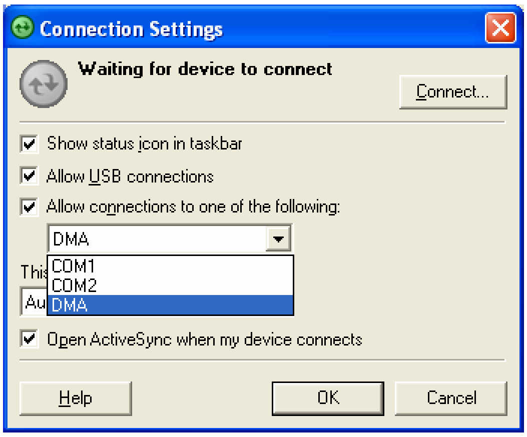


Figure 7.12

2. In **Connection Settings** screen, check in the **Allow connections to one of the following** box and choose **DMA** in the pull-down menu. See Figure 7.13.



☑ Show status icon in taskbar

☑ Allow USB connections

☑ Allow connections to one of the following:

DMA

☑ Open ActiveSync when my device connects

Figure 7.13

Connection via ActiveSync

The ways to establish connection of the **Device Emulator** via **ActiveSync** are;

- Using Visual Studio 2008 or Visual Studio 2005
- Using Standalone Device Emulator 3.0 (if Visual Studio 2008 or Visual Studio 2005 is not available.)

1. Start up the **Device Emulator** by referring to Chapter 7.2 “Starting Up the Device Emulator”.
2. Start up Visual Studio 2008 or Visual Studio 2005, and then navigate to **Tools** → **Device Emulator Manager**.

   If Visual Studio 2008 or Visual Studio 2005 is not available, use the Standalone Device Emulator 3.0.
   C:\Program Files\Microsoft Device Emulator\1.0\dvcemumanager.exe

3. Right-click **DT-X11 Emulator** in **Available Emulators** list and then choose **Cradle** in the popup menu. See Figure 7.14.

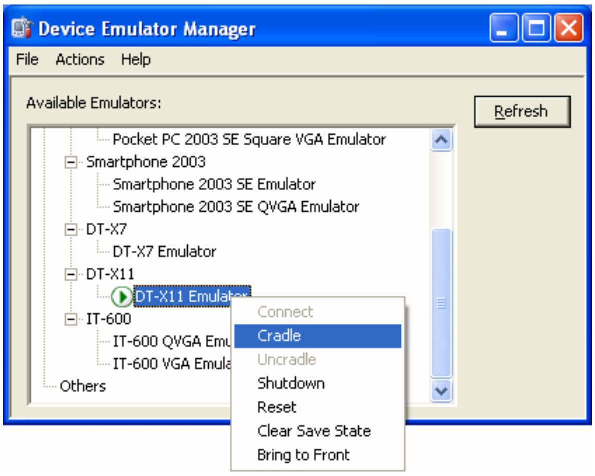
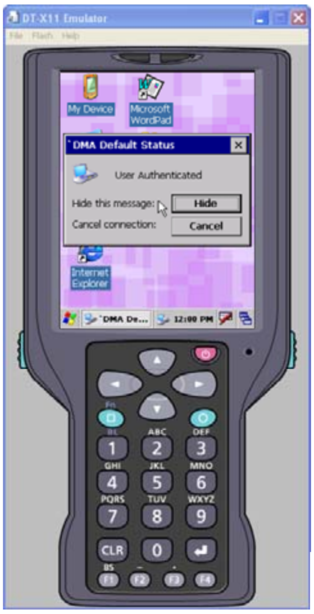


Figure 7.14

4. Make sure ActiveSync has started up and the icon in the status bar appears in Figure 7.15. The icon indicates that the connection via ActiveSync has been established.



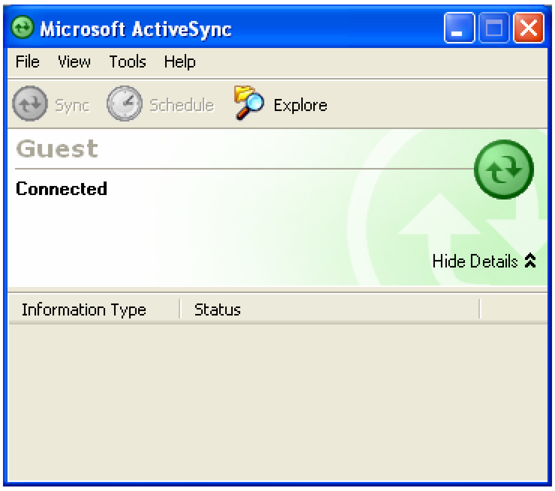
'DMA Default Status

User Authenticated

Hide this message: Hide

Cancel connection: Cancel

Figure 7.15



Guest

Connected

Figure 7.16

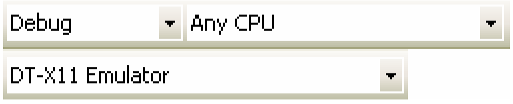
7.4 Debugging Applications

This chapter describes how to debug your application using the **Device Emulator**. Before starting to "Build", establish a connection between the DT-X11 and your PC via ActiveSync by referring to Chapter 7.3 "Using the Device Emulator".
For the basic order of developing an application, refer to Chapters 8 "eMbedded Visual C++" and 9 "Visual Studio".

7.4.1 Setting Build Configuration

When using Visual Studio 2008 or Visual Studio 2005

- Choose **Debug** in the Solution Configurations pull-down menu in Visual Studio 2008 or Visual Studio 2005 and **DT-X11 Emulator** in the target device pull-down menu. See Figure 7.17.



Debug

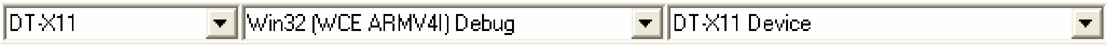
Any CPU

DT-X11 Emulator

Figure 7.17

When using eMbedded Visual C++ 4.0

- Choose **DT-X11** in the Active WCE Configuration in the pull-down menu in eMbedded Visual C++ 4.0, **Win32 (WCE ARMV4I) Debug** in the Active Configuration pull-down menu, and **DT-X11 Device** in the Device pull-down menu.



DT-X11

Win32 (WCE ARMV4I) Debug

DT-X11 Device

Figure 7.18

7.4.2 Debugging Applications

Basic Debug Operation

The debug operation used for the **Device Emulator** in both Visual Studio 2005 and eMbedded Visual C++ 4.0 is the same as an ordinary debug operation using the actual terminal.

Debugging with the Device Emulator

With the **Device Emulator**, it is possible to set a break point in the source code of the application for step-by-step debugging.

When using Visual Studio 2008 or Visual Studio 2005

1. Navigate to **Debug** menu → **Start Debugging** to start up the debugger.

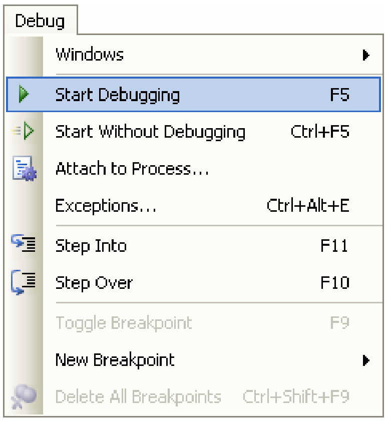
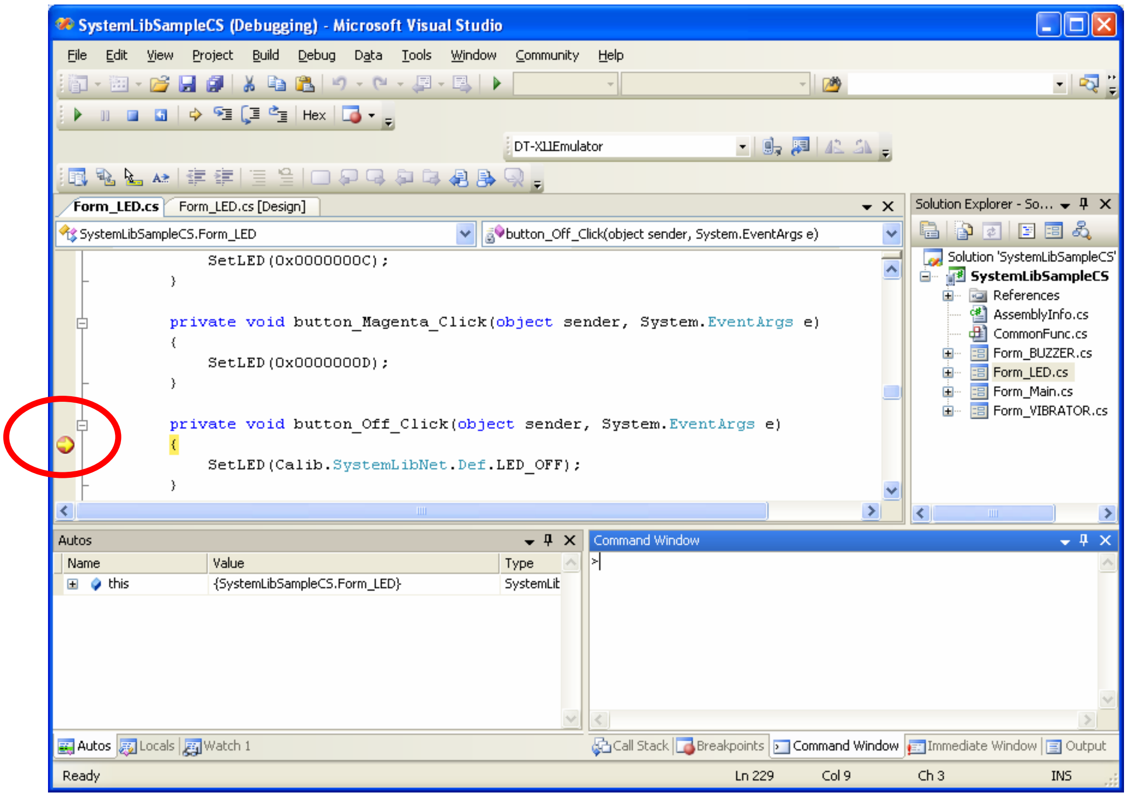


Figure 7.19

2. Similar to ordinary debugging operations with an actual DT-X11, the **Device Emulator** allows break point setting (circled in red in Figure 7.20) in the source code and step-by-step debugging.


SystemLibSampleCS (Debugging) - Microsoft Visual Studio
File Edit View Project Build Debug Data Tools Window Community Help
Hex
DT-X11Emulator
Form_LED.cs
Form_LED.cs [Design]
SystemLibSampleCS.Form_LED
button_Off_Click(object sender, System.EventArgs e)
Solution Explorer - So...
Solution 'SystemLibSampleCS'
SystemLibSampleCS
References
AssemblyInfo.cs
CommonFunc.cs
Form_BUZZER.cs
Form_LED.cs
Form_Main.cs
Form_VIBRATOR.cs
Autos
Command Window
Autos Locals Watch 1
Call Stack Breakpoints Command Window Immediate Window Output
Ready
Ln 229
Col 9
Ch 3
INS

```
            SetLED(0x0000000C);
        }

        private void button_Magenta_Click(object sender, System.EventArgs e)
        {
            SetLED(0x0000000D);
        }

        private void button_Off_Click(object sender, System.EventArgs e)
        {
            SetLED(Calib.SystemLibNet.Def.LED_OFF);
        }
```

Name	Value	Type
this	{SystemLibSampleCS.Form_LED}	SystemLit

Figure 7.20

When using eMbedded Visual C++ 4.0

1. Establish a connection between the **Device Emulator** and PC via ActiveSync before starting debugging in eMbedded Visual C++ 4.0. For establishing connection via ActiveSync, refer to Chapter 7.3.3 “Connecting via ActiveSync”.
2. Navigate to **Build** in the menu bar → **Start Debug** → **Go** to start up debugging.

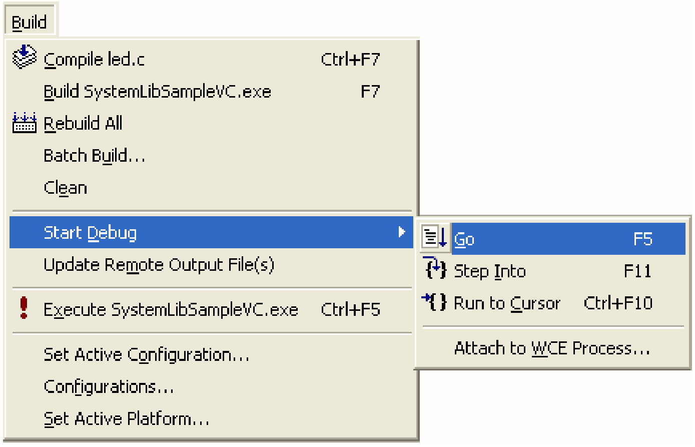
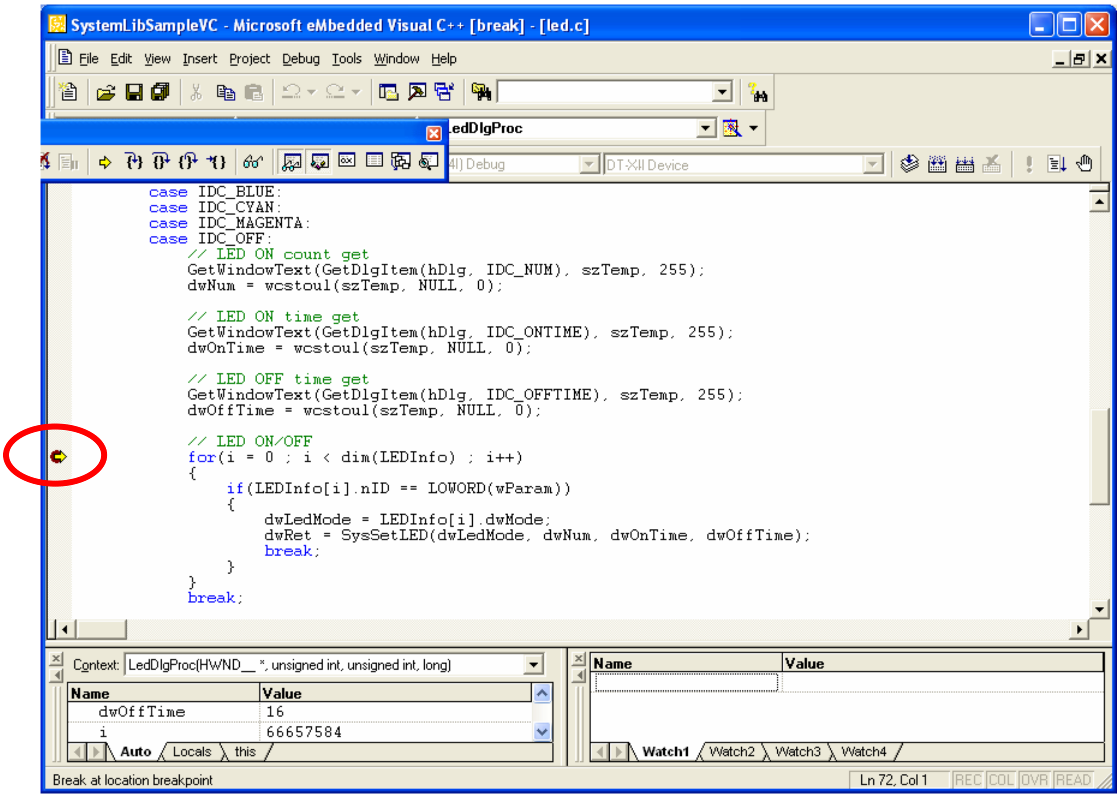


Figure 7.21

3. Similar to ordinary debugging operations with an actual DT-X11, the **Device Emulator** allows break point setting (circled in red in Figure 7.22) in the source code and step-by-step debugging.


SystemLibSampleVC - Microsoft eMbedded Visual C++ [break] - [led.c]
File Edit View Insert Project Debug Tools Window Help
LedDlgProc
4I) Debug
DT-XII Device

```
        case IDC_BLUE:
        case IDC_CYAN:
        case IDC_MAGENTA:
        case IDC_OFF:
            // LED ON count get
            GetWindowText(GetDlgItem(hDlg, IDC_NUM), szTemp, 255);
            dwNum = wcstoul(szTemp, NULL, 0);

            // LED ON time get
            GetWindowText(GetDlgItem(hDlg, IDC_ONTIME), szTemp, 255);
            dwOnTime = wcstoul(szTemp, NULL, 0);

            // LED OFF time get
            GetWindowText(GetDlgItem(hDlg, IDC_OFFTIME), szTemp, 255);
            dwOffTime = wcstoul(szTemp, NULL, 0);

            // LED ON/OFF
            for(i = 0 ; i < dim(LEDInfo) ; i++)
            {
                if(LEDInfo[i].nID == LOWORD(wParam))
                {
                    dwLedMode = LEDInfo[i].dwMode;
                    dwRet = SysSetLED(dwLedMode, dwNum, dwOnTime, dwOffTime);
                    break;
                }
            }
            break;
```

Context: LedDlgProc(HWND__ *, unsigned int, unsigned int, long)

Name	Value
dwOffTime	16
i	66657584

Break at location breakpoint

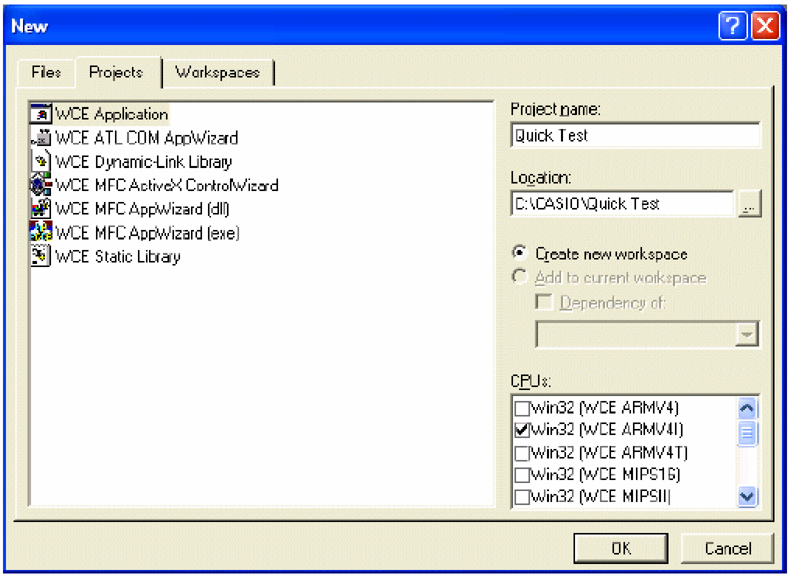
Ln 72, Col 1

Figure 7.22

8. eMbedded Visual C++

8.1 Building Simple eVC++ 4.0 Test Program

1. Initiate eVC++ 4.0.
2. Navigate to **File** → **New** in the **File** menu.



Project name: Quick Test

Location: C:\CASIO\Quick Test

● Create new workspace

○ Add to current workspace

□ Dependency of:

CPUs:

□ Win32 (WCE ARMV4)

☑ Win32 (WCE ARMV4I)

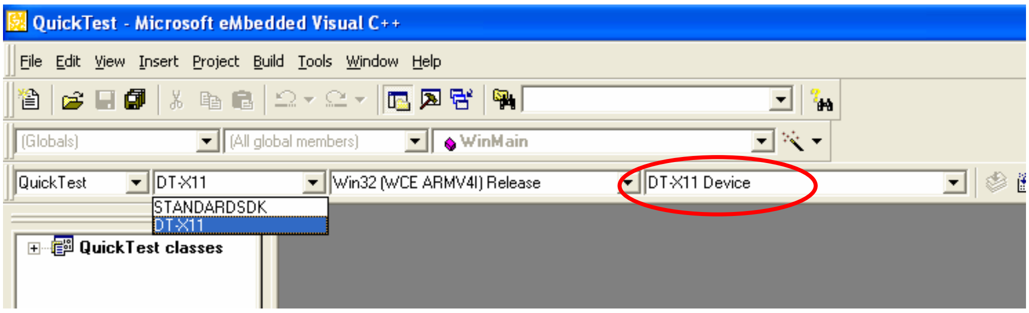
□ Win32 (WCE ARMV4T)

□ Win32 (WCE MIPS16)

□ Win32 (WCE MIPSII)

Figure 8.1

3. Highlight **WCE Application** in Projects tab (see Figure 8.1).
4. In Location field, navigate to the folder where you want to create the new project.
5. In Project name field, type in the name for the project.
6. In CPUs pull-down menu, set **Win32 (WCE ARMV4I)** enabled. You can also set **Win32(WCE emulator)** and **Win32 (WCE x86)** enabled.
7. In the next dialog, leave **A typical "Hello World!" application** checked. Click **Finish** button and then click **OK** button.
8. Below the Toolbar you will see a line of pull-down menu lists. Look for the one that indicates **STANDARD SDK** and choose **DT-X11** from this list. The right most pull-down menu list will now change to **DT-X11 Device** (see red circle in Figure 8.2)



QuickTest | DT-X11 | Win32 (WCE ARMV4I) Release | DT-X11 Device

Figure 8.2

9. Initiate an ActiveSync connection as described elsewhere in this guide.
10. Choose **Rebuild All** from **Build** menu (or use the appropriate icon on the Toolbar).

11. The program will be built and automatically downloaded to the DT-X11. By default, the program will be copied to the root folder on the terminal. Run the program to check that the process was successful.

You are now ready to begin development work with the DT-X11. The full operation of eVC++ 4.0 and the use of features such as remote debugging are beyond the scope of this guide.

8.2 Using CASIO Libraries from eVC++ 4.0

The **DT-X11 SDK** provides the libraries for C++ applications. See Chapter 1.2 “Library Configuration” for the list of libraries provided.

Each library consists of a header file, a dll and a library file. The dlls are built into the ROM of the DT-X11 and you do not need to download. The following is a simple example using one of the System Library functions in the simplest kind of WindowsCE program. The screen will flip 180° each time this program is carried out.

1. Make sure the four “.h” files for the CASIO libraries have been installed in **\Program Files\Windows CE Tools\wce500\DT-X11\include\ARMV4I\**
   (The path is the default but yours will be different if you install the SDK to other location).
2. Make sure the four “.lib” files for the CASIO libraries have been installed in **Program Files\Windows CE Tools\wce500\DT-X11\lib\ARMV4I\**.
3. In eVC++ 4.0, choose **New** from the **File** menu.
4. Highlight **WCE Application**. Choose a location and a name for the project and make sure the ARMV4I option is checked. Click **Next >** button**.**
5. On the next dialog click **A simple Windows CE application** option. Click **Finish** button and then click **OK** button.
6. Make sure the DT-X11 is the selected SDK and target device in the pull-down menu box.
7. Click **ClassView** tab in **Solution Explorer** and expand **classes** fully until you can see **WinMain()** class. Double click it.
8. At the top of the source file, under **#include stdafx.h** code add the following code.

```
#include SystemLib.h
#include SystemLibdef.h
```

9. Move to the line // **TO DO: Place code here** and add the following code.

```
int  result;

result = SysGet180Rotate();
if( result == FALSE )
{
     SysSet180Rotate( TRUE );
}
else
{
     SysSet180Rotate( FALSE );
}
```

10. On the **Project** menu, navigate to **Add To Project → Files…**
11. Change **Files of type:** pull-down menu to **Library files (.lib)**.
12. Navigate to the folder where the CASIO library files are stored (see step no. 2 above), highlight **SystemLib** file and click **OK** button.
13. Initiate **ActiveSync** to establish connection between the DT-X11 and the PC.
14. Choose **Build All** from **Build** menu. The project will be built and copied to the DT-X11.
15. Check the operation by running the program. You should find that each time the program is carried out, the screen flips 180°.

You should now be able to use the CASIO System Library in your C++ applications. See the Common Device Control Library manual for full detail of all the functions.

You can also use the CASIO samples as described in Chapter 1.4.

9. Visual Studio

This chapter explains the development procedure of the application that uses the following development platforms.

- Visual Studio 2008
- Visual Studio 2005
- Visual Studio .Net 2003

- Compact Framework 2.0 is implemented in the DT-X11. It is upper-compatible with Compact Framework 1.0 implemented in the CASIO DT-X10 and IT-500.
- The functions of the Common Device Control Library which control various individual devices integrated in the DT-X11 have different name spaces and names from those available for the previous CASIO handheld terminals. They are not compatible with the ones in the previous CASIO library.
- VB .NET application or C# application developed with Visual Studio .NET 2003, but not with the CASIO dedicated libraries will run on the DT-X11.
- Application developed with any functions of CASIO dedicated library must be rewritten by replacing the dedicated functions with the appropriate functions from the Device Common Library.
- New application for the DT-X11 can be developed using either VB .NET or C# in Visual Studio .NET 2003 or Visual Studio 2005.
- It is recommended that Visual Studio .NET 2003 is used to modify applications developed for other handheld terminals when porting them to the DT-X11.
- However, if Visual Studio 2005 is used to make modification, the solution/project of Visual Studio .NET 2003 is automatically changed by Visual Studio 2005. This may result in different configuration of the output folder according to the parameter settings for the project file. Process your application development with care focusing to this change.

9.1 Using CASIO .NET Libraries from VB .NET

The **DT-X11 SDK** provides the libraries for VB applications. See Chapter 1.2 “Library Configuration” for the list of libraries provided.

This chapter explains how to create and start up a simple test program using one of the System functions. The test program flashes the LED in red for 5 seconds.

1. Create a new VB .NET Smart Device Application in Visual Studio .NET.
2. Click **Add Reference…** from Project menu.
3. Click **Browse** and navigate to the folder where you have stored the CASIO .NET library files. Highlight **SystemLibNet.dll** and click **Open**. Click **OK** button.

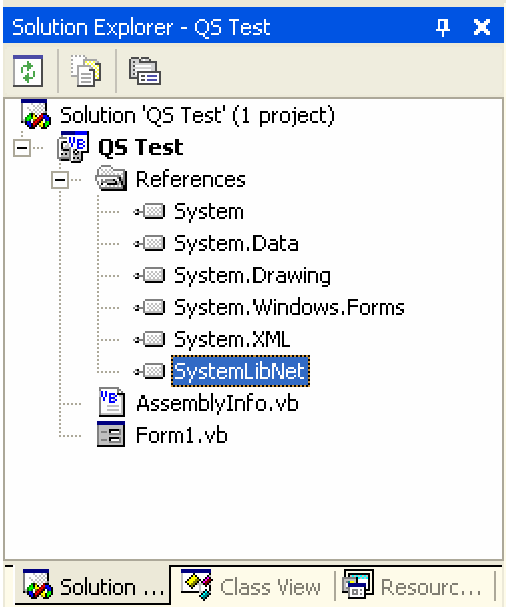


Figure 9.1

4. Add a button to the form, rename it Rotate, and double click it.

5. In the event function for the button click, add the following code.

```
Dim result As Int32
Dim msg As String

result = Calib.SystemLibNet.Api.SysSetLED( _
          Calib.SystemLibNet.Def.LED_RED, 5, 8, 8)

'.NET vales of “true” and “false” are “-1” and “0” respectively.
If result = -1 Then
   result = Calib.SystemLibNet.Api.SysGetLED()
   Select Case (result And &HF)
       Case Calib.SystemLibNet.Def.LED_OFF
          msg = "LED_OFF"
       Case Calib.SystemLibNet.Def.LED_RED
          msg = "LED_RED"
       Case Calib.SystemLibNet.Def.LED_GREEN
          msg = "LED_GREEN"
       Case Calib.SystemLibNet.Def.LED_ORANGE
          msg = "LED_ORANGE"
       Case Else
          msg = "LED_UNKNOWN"
   End Select
   MessageBox.Show(msg, "LED")
End If
```

Note:
If you type this code manually you should see the IntelliSense offer you suitable options as appropriate. If you do not, make sure you review steps 1 to 5 to make sure you have added the reference correctly.

6. Initiate **ActiveSync** to establish connection between the DT-X11 and PC.
7. Choose **Deploy <name of project>** on **Build** menu.
8. The project will be built and copied to the DT-X11. By default, it will be copied to **\Program Files\<name of project>** folder. **SystemLibNet.dll** will be deployed to the same folder.
9. Check that the program works correctly on the DT-X11.

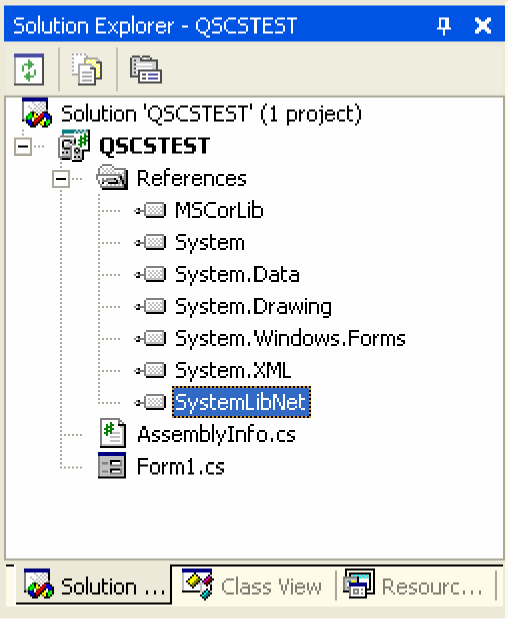
You can also use the CASIO samples as described in Chapter 1.4.

9.2 Using CASIO .NET Libraries from C#

The DT-X11 SDK provides the libraries for C# applications. See Chapter 1.2 “Library Configuration” for the list of libraries provided.

This chapter explains how to create and start up a simple test program using one of the System functions. The test program flashes the LED in red for 5 seconds.

1. Create a new C# Smart Device Application in Visual Studio .NET.
2. Click **Add Reference…** from Project menu.
3. Click **Browse** and navigate to the folder where you have stored the CASIO .NET library files. Highlight **SystemLibNet.dll** and click **Open**. Click **OK** button.



Solution Explorer - QSCSTEST

Solution 'QSCSTEST' (1 project)
- **QSCSTEST**
  - References
    - MSCorLib
    - System
    - System.Data
    - System.Drawing
    - System.Windows.Forms
    - System.XML
    - SystemLibNet
  - AssemblyInfo.cs
  - Form1.cs

Figure 9.2

4. At the top of your source file add the following code.

```
Using Calib;
```

5. Add a button to your form, double click it and add the following code:

```
Int32 result = new Int32();
string msg;

result = SystemLibNet.Api.SysSetLED(SystemLibNet.Def.LED_RED, 5,
8, 8);

// .Net values “true” and “false” are “-1” and “0” respectively.
if(result == -1)
{
   result = SystemLibNet.Api.SysGetLED();
   switch(result & 0x0000000F)
   {
      case SystemLibNet.Def.LED_OFF:
         msg = "LED_OFF";
         break;
      case SystemLibNet.Def.LED_RED:
         msg = "LED_RED";
         break;
      case SystemLibNet.Def.LED_GREEN:
         msg = "LED_GREEN";
         break;
      case SystemLibNet.Def.LED_ORANGE:
         msg = "LED_ORANGE";
         break;
      default:
         msg = "LED_UNKNOWN";
         break;
   }
   MessageBox.Show( msg, "LED");
}
```

Note:
If you add this code manually you should see the IntelliSense offer you suitable options as appropriate. If you do not see this, then review steps 2 to 4 in the previous page to make sure you have not made a mistake.

6. Initiate **ActiveSync** to establish connection between the DT-X11 and PC.
7. Choose **Deploy <name of project>** on **Build** menu.
8. The project will be built and copied to the DT-X11. By default, it will be copied to **\Program Files\<name of project>** folder. SystemLibNet.dll will be deployed to the same folder.
9. Check that the program works correctly on the device.

You can also use the CASIO samples as described in Chapter 1.4.

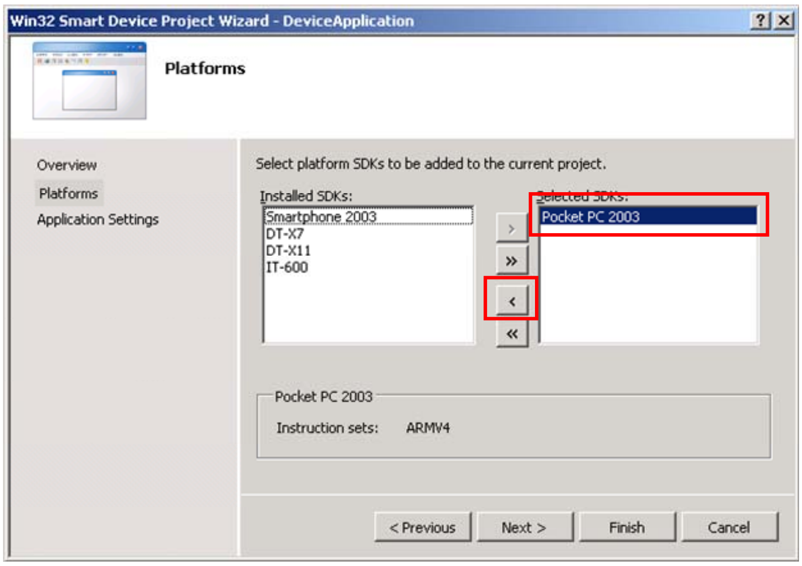
9.3 Using CASIO Libraries from C++

This chapter explains how to create and start up a simple test program using one of the System functions. The test program flashes the LED in red for 5 seconds.

The intention of this chapter is just to check that the development environment is set up correctly. See Chapters 6.3 and 6.4 for information on how to set up a connection between the DT-X11 and Visual Studio. You must install Visual Studio 2005 Service Pack 1 from Microsoft.

Before following the steps below, you will need to add the paths for the CASIO header and library files to Visual Studio 2008 or Visual Studio 2005. Choose **Tools-Options-Projects and Solutions-VC++ Directories**. Change the “Platform” to “DT-X11” and add the path to the CASIO header and library files to the respective lists for “Include files” and “Library files”.

1. First, create **Win32 Smart Device Project** with its device name **DeviceApp** for Visual C++ in Visual Studio 2008 or Visual Studio 2005.
2. Choose default platform in the Selected SDKs field in the Platforms of Win32 Smart Device Project Wizard and click **<** button.



Win32 Smart Device Project Wizard - DeviceApplication

Platforms

Select platform SDKs to be added to the current project.

Installed SDKs: Smartphone 2003, DT-X7, DT-X11, IT-600

Selected SDKs: Pocket PC 2003

Pocket PC 2003 Instruction sets: ARMV4

Figure 9.3

3. Choose **DT-X11** in the Installed SDKs field and click **>** button.

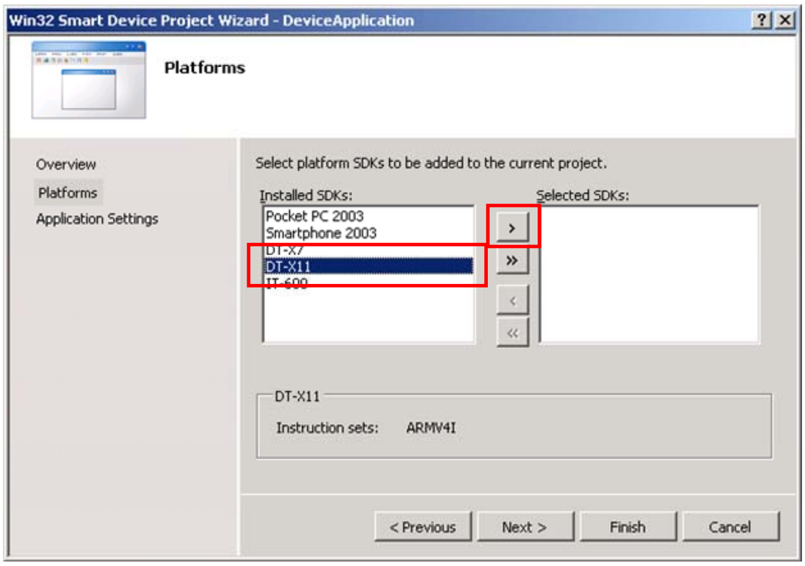


Figure 9.4

4. Click **Next >** button while **DT-X11** is kept being highlighted in the Selected SDKs field.

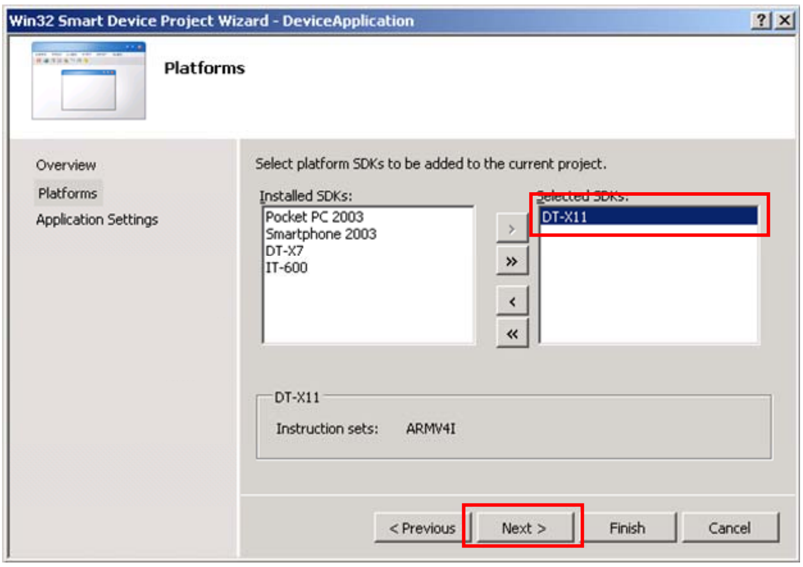


Figure 9.5

5. Choose **Console Application** for the Application type in the Application Settings menu, and click **Finish** button.
6. In **Solution Explorer**, click **DeviceApp.cpp** and then add the source code below subsequent to “#include <commctrl.h>”.

```
#include <SystemLib.h>
#if !defined(_countof)
#define _countof(_Array) (sizeof(_Array) / sizeof(_Array[0]))
#endif
```

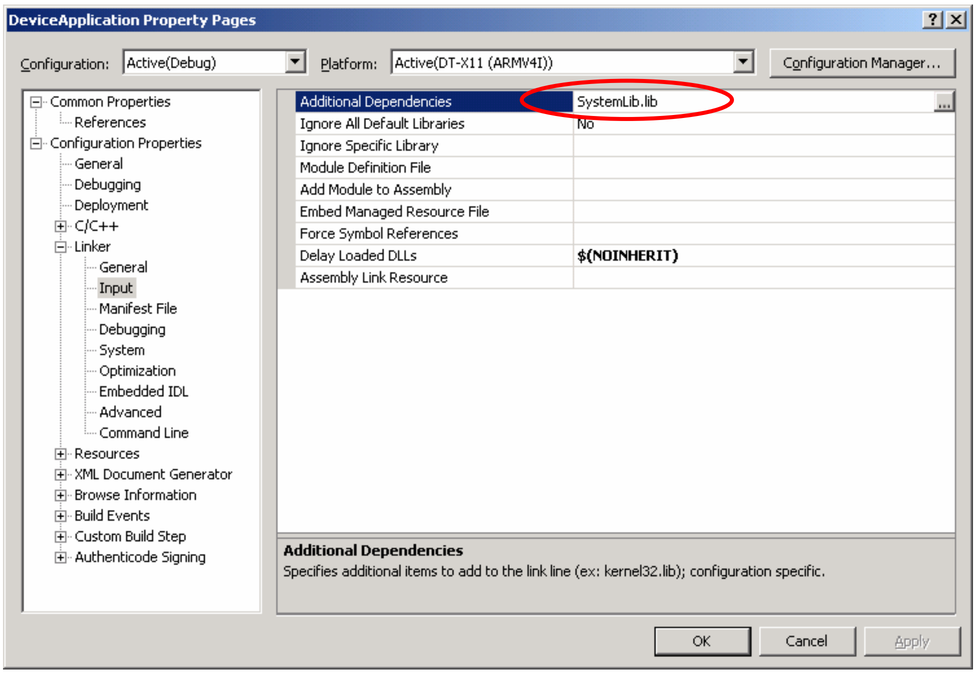
7. Append the source code below in the main function of **DeviceApp.cpp**.

```
DWORD result;
TCHAR msg[16];

result = SysSetLED(LED_RED, 5, 8, 8);

if(result == TRUE)
{
   result = SysGetLED();
   switch(result & 0x0000000F) {
   case LED_OFF:
      wcscpy_s( msg, _countof(msg), TEXT("LED_OFF") );
      break;
   case LED_RED:
      wcscpy_s( msg, _countof(msg), TEXT("LED_RED") );
      break;
   case LED_GREEN:
      wcscpy_s( msg, _countof(msg), TEXT("LED_GREEN") );
      break;
   case LED_ORANGE:
      wcscpy_s( msg, _countof(msg), TEXT("LED_ORANGE") );
      break;
   default:
      wcscpy_s( msg, _countof(msg), TEXT("LED_UNKNOWN") );
      break;
   }
   MessageBox(NULL, msg, TEXT("LED"), MB_OK);
}
```

8. Choose **Properties** in the Project of Visual Studio 2008 or Visual Studio 2005, and navigate to **Configuration Properties** → **Linker** → **Input** → **Additional Dependencies** and then add **SystemLib.lib** (see red circle in Figure 9.6).



DeviceApplication Property Pages

Configuration: Active(Debug)

Platform: Active(DT-X11 (ARMV4I))

Additional Dependencies	SystemLib.lib
Ignore All Default Libraries	No
Ignore Specific Library	
Module Definition File	
Add Module to Assembly	
Embed Managed Resource File	
Force Symbol References	
Delay Loaded DLLs	$(NOINHERIT)
Assembly Link Resource	

Additional Dependencies

Specifies additional items to add to the link line (ex: kernel32.lib); configuration specific.

Figure 9.6

9. Choose **DT-X11 Device** for the Target Device to establish connection with the PC.
10. Choose **Debug** in Visual Studio 2008 or Visual Studio 2005 and then click either **Start Debugging** or **Start Without Debugging**.
11. The project will be built and copied to the "\Program Files\<name of project>" folder by default in the DT-X11.
12. Check that the program runs correctly on the DT-X11.

You can also use the CASIO samples as described in Chapter 1.4.

10. Resources

Microsoft's http://msdn.microsoft.com/mobility/ is an extremely comprehensive resource for programmers targeting Windows CE .NET based devices. It includes links to most other useful web based resources.
You will find detailed Software, Library and .NET Library manuals on http://world.casio.com/system/pa.

11. Troubleshooting

Connections from Visual Studio.NET 2003 to Pocket PC and Windows CE .NET devices can be difficult to establish. This appears to be a Visual Studio issue and is not limited to only CASIO handheld terminals. The good news is that once you have established an initial connection, you are unlikely to experience problems thereafter. Here are some things to try if you find that you have this problem:

- Start with an empty, out of the box device. If necessary, hard reset the DT-X11 by holding down the power key, the CLR key and poking the reset hole on the back of the terminal. Follow the on-screen instructions to complete the hard reset. If in doubt, see the User Guide. Please note that this will erase any data currently held in RAM on the device.
- In Visual Studio, choose **Tools-Options-Device Tools-Devices**. Set the Platform to Windows CE. Make sure that **Transport** is set to **TCP Connect Transport**. Note that once you have successfully connected you can use the **Save as option** to rename the connection type to DT-X11 - this makes it clearer which device you are deploying to in future.
- Follow the instruction in the **Windows CE Utilities for Visual Studio 2003** readme file in order to identify the processor type of the connected device. For DT-X11, choose ARMV4I. The default location for the utilities is; \Program Files\Microsoft Visual Studio .NET 2003\CompactFrameworkSDK\WinCE Utilities.
- Establish the ActiveSync connection, and then initiate Visual Studio. Try to deploy a solution. If it fails, exit Visual Studio, re-start it and try to deploy again.
- Try running the ProxyPorts.reg file that comes with the **Windows CE Utilities for Visual Studio 2003** from Microsoft. See the Readme file that comes with the utilities for detail about this. After doing this, follow the steps above.
- Follow the other advice in the WinCE Utilities readme file.
- Run the Visual Studio .NET 2003 setup again. Uninstall Smart Device Programmability (by removing the check boxes) and then re-install Smart Device Programmability.