

CASIO
DT-X7 Series
Quick Start Guide
(Version 1.18)

CASIO Computer Co., Ltd.

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Editorial Record

Manual Version no.	Date edited	Page	Content
1.01	September 2007	all	Tentative version
1.10	October 2007	all	Original version
1.11	November 2007	54	Figures 3.1 and 3.2 in Chapter 3.4 are corrected.
		50	An explanation about the Visual Studio 2005 is added.
		17	The list of software required in Chapter 2.3 is updated.
		47	Chapter 5.4 "ActiveSync Connection via Ethernet" is added.
		67	Chapter 11 "Connecting via Windows Mobile Device Center" is added.
1.12	December 2007	12	Chapter 3.1 "Application Development" is added.
		14	Installing the cab file for Windows Mobile Device Center is added in Chapter 3.3.
		33 to 34	Chapter 5.3 "USB Connection via Windows Mobile Device Center" is added.
		55 to 57	In Chapter 8.3 "Using CASIO Libraries from C++", a development method for VCC++ Project with Visual Studio is added.
1.13	April 2008	56	In Chapter 8.3, the explanation on page 56 is updated.
1.14	January 2009	7 to 9	In Chapter 1.2, Library Configuration, Development Reference Manuals, and Sample Program are added.
		15	In Chapter 3.2, a note about User Account Control is added.
		19	In Chapter 4.1, the explanation about setting up on HA-F60IO is corrected.
		21	In Chapter 4.2, the explanation about setting up on HA-F62IO is corrected.
		15 to 19, 48 to 51	Chapter 3 is divided into Installing BDK to PC and Setting Up the Development Environment.
		38 to 42	The chapter of Connection via WLAN is unified into Chapter 5.
		48	The CAB files configuration is changed.
		52 to 66	The chapter of Device Emulator is relocated and rearranged.
		53	The limitation of an audio system device in chapter of Device Emulator is eliminated.
		54 to 60	In Chapter 7, images and usage of I/O Simulator are changed.
		6, 13 to 19, 52 to 79	Microsoft Visual Studio 2008 is added to development platform.
		72 to 79	In Chapter 9, the sample is updated.
1.15	March 2009	7	In Chapter 1.1, all supported 2D codes are added.
		10	In Chapter 1.2, Imager Library is added in Tables 1.1 and 1.2.
		11	In Chapter 1.3, Imager Library is added in Table 1.3.
		12	In Chapter 1.4, notes for Table 1.4 are corrected.
		14	In Chapter 2.2, the new model numbers are added in Table 2.1.
		41	In Chapter 5.4, "Communication via Bluetooth" is added.
		42	In Chapter 5.5, WPA2 is added in Table 5.3.
		54	In Chapter 6.3, CAB file for Imager Library is added in Table 6.1.
		62	In Chapter 7.3.2, note for the step 4 is added.

Preface

This guide clearly and concisely sets out the information developers need to know to get started with the CASIO DT-X7 series development. The best methods of connecting to your development system are covered and step by step instructions for installing and testing the CASIO BDKs 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.

Important Note

Since the DT-X7 does not have a touch panel display, it is not possible to click on a tab or icon on the screen. However, you can change the focus using the F3 key (similar to Tab key on PC's keyboard) or the F2 key (similar to Shift+Tab keys on PC's keyboard).

The Mouse Emulator preinstalled in the DT-X7 series can be invoked by pressing the Fn key and then 4 key to make the mouse pointer appear in the center of the screen. It can be freely moved in any direction on the screen you wish using one of the 1, 2, 3, 4, 6, 7, 8, and 9 numeric keys. The 5 key is the same as left-clicking the PC's mouse. For details, see "Using the mouse cursor" on page E-28 of DT-X7 Series User's Guide.

In this reference manual, all explanations assume that the preinstalled Mouse Emulator is in the invoked state.

1. Product Overview

1.1 Features at a Glance

The DT-X7 has been designed using the new concept of the Human-centered Design Processes and is capable of performing a wide variety of powerful functions.

The following is a brief overview of the features available on the DT-X7 series handheld terminals. For further detail on the hardware specifications, refer to DT-X7 Series Hardware Manual.

Supporting the outstanding development environment

- Windows® CE 5.0 English Version as the built-in OS
- Visual Studio 2005
- Visual Studio .NET 2003 (Windows® CE .NET Utilities v 1.1 for Visual Studio .NET 2003)
- eMbedded Visual C++ 4.0

Compatibility with various communication interfaces

- Built-in ultra-small WLAN module compatible with the IEEE802.11b/g standard
- High speed infrared communication with IrDA Ver1.3
- Bluetooth® Version 2.0
- Serial interface with USB version 1.1 (Host/Client)

Small size and light weight for improved portability

- Dimensions : Approx. 52.5 (W) x 166 (D) x 30.5 (H) mm (Laser Scanner models), or 52.5 (W) x 169 (D) x 30.5 (H) mm (C-MOS Imager models with bumper)
- Weight : Approx. 145 g (Laser Scanner models), or 160 g (C-MOS Imager models with bumper)

Improved durability

- Impact resistance to fall impact : 1.0 m or 1.5 m in height* (model dependant)
- Dust/Water-splash proof : IP54 level (compliant with IEC60529 International Standard)

*; The drop durability height is a measured value resulting from actual testing. It does not necessarily guarantee the product from damage

Capable of scanning industrial standard bar code symbologies

- Readable 1D bar code symbologies (with Laser Scanner and Linear Imager models):
UPC-A/E, EAN8, EAN13, Codabar (NW-7), Code39, Code93, Code128/EAN128, ITF, MSI, Industrial 2of5, IATA, RSS-14 (GS1DataBar Omnidirectional), RSS Limited (GS1 DataBar Limited), RSS Expanded (GS1 DataBar Expanded), RSS14 Stacked (GS1 DataBar Omnidirectional Stacked), RSS Expanded Stacked (GS1 DataBar Expanded Stacked)
- Readable 1D bar code symbologies (with C-MOS Imager models):
UPC-A/E, EAN8, EAN13, Codabar (NW-7), Code39, Code93, Code128/EAN128, MSI, Industrial 2of5, IATA, Code11, RSS-14 (GS1DataBar Omnidirectional), RSS Limited (GS1 DataBar Limited), RSS Expanded (GS1 DataBar Expanded), RSS-14Truncated(GS1 DataBar Truncated), Code32, ISBT
- Readable Stacked 2D bar code symbologies (with C-MOS Imager models):
PDF417, Micro PDF, Code49, Composite, Codablock F, TLC39, RSS Expanded Stacked(GS1 DataBar Expanded Stacked), RSS-14 Stacked(GS1 DataBar Omnidirectional Stacked)

- Readable Matrix 2D bar code symbologies (with C-MOS Imager models):
Aztec, DataMatrix, Maxicode, QR Code, Micor QR, HanXin Code

High speed CPU and large memory

- High-performance CPU Marvell[®] PXA270 Application Processor (Max. 416 MHz)
 Marvell[®] PXA320 Application Processor (Max. 620 MHz)
 (DT-X7M50R/70R)
- Large-capacity memory
 RAM : 64MB (user area; approximately 40 MB)
 F-ROM : 64MB (user area; approximately 30 MB)
- Large-capacity memory (DT-X7M50R/70R)
 RAM : 128MB (user area; approximately 65 MB)
 F-ROM : 256MB (user area; approximately 100 MB)

1.2 Library Configuration

The CASIO Basic Development Kit ("BDK") for DT-X7 series provides various libraries listed in the table.

Table 1.1

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 1.2

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

The CASIO Basic Development Kit ("BDK") for DT-X7 series includes the development reference manuals listed in the table.

Table 1.3

Development Manual	Description
Quick Start Guide	This reference manual.
Hardware Manual	Reference manual that describes hardware specifications in detail on each dedicated option and DT-X7 handheld terminal
Software Manual	Reference manual that describes software specifications in detail for all the software integrated in DT-X7 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 **DT-X7 BDK**.

Table 1.4

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 2.
IMGLIBSAMPLE	Scans bar codes using the Imager with settings set with Imager setting 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 2.
SYSTEMLIBSAMPLE	Demonstrates LED and buzzer functions.
JPEG Library	
JPEGSAMPLE	Displays JPEG files.
FLINK Library	
FLINKLIBSAMPLE	Demonstrate infrared communication via FLINK protocol between two terminals.

Notes:

- Two-character abbreviation showing the development platform is added at the end of each folder name.

VC : Visual C++

VB : Visual Basic .NET

CS : Visual C# .NET
- Some of the sample programs such as **CAMERALIBSAMPLE** and **PRNLIBSAMPLE** in the table do not run because the dedicated devices are not integrated in the DT-X7.

2. Prerequisites

2.1 Skills Required

The following skills are required by developers aiming to develop application software for the DT-X7.

- Windows programming
- A good knowledge of one or more of the following
 - Visual C++
 - Visual Basic .NET
 - Visual C# .NET
 - Browser based applications (not covered in this guide)

The following skills or experience are also desirable.

- Windows CE devices
- ActiveSync
- Windows Mobile Device Center
- Some networking experience

2.2 Hardware Required

The following models of the DT-X7 series and dedicated options are available.

DT-X7

Table 2.1 Available models and features

Model no.	Scan Engine	Bluetooth		WLAN	
				WPA Encryption	
				WEP/TKIP	AES
DT-X7M10U	Linear Imager	Class 1	No	No	No
DT-X7M10E	Laser Scanner	Class 2	No	No	No
DT-X7M10R	Laser Scanner	Class 2	Yes	Yes	No
DT-X7M10R2	Laser Scanner	Class 2	Yes	Yes	Yes
DT-X7M30E	C-MOS Imager	Class 2	No	No	No
DT-X7M30R	C-MOS Imager	Class 2	Yes	Yes	Yes
DT-X7M10E-CN	Laser Scanner	Class 2	No	No	No
DT-X7M10R-CN	Laser Scanner	Class 2	Yes	Yes	No
DT-X7M10R2-CN	Laser Scanner	Class 2	Yes	Yes	Yes
DT-X7M30E-CN	C-MOS Imager	Class 2	No	No	No
DT-X7M30R-CN	C-MOS Imager	Class 2	Yes	Yes	Yes
DT-X7M50R	Laser Scanner	Class 2	Yes	Yes	Yes
DT-X7M70R	C-MOS Imager	Class 2	Yes	Yes	Yes

Note:

The model with "-CN" denotation is for destination of China only.

Note:

The memory up model is DT-X7M50R/70R (RAM 128MB).

Battery Packs

- HA-F20BAT (Battery Pack, 1100 mAh)
- HA-F21LBAT (Large-capacity Battery Pack, 1880 mAh)

Options

- AD-S15050BE (AC Adaptor for HA-F30CHG)
- AD-S42120B (AC Adaptor for HA-F60IO, HA-F62IO, HA-F32DCHG)
- AD-S60160BE, AD-S60160BU (AC Adaptor for HA-F36DCHG)
- HA-F60IO (USB Cradle)
- HA-F62IO (Ethernet Cradle)
- HA-F30CHG (Cradle-type Battery Charger)
- HA-F32DCHG (Dual Battery Charger)
- HA-F36DCHG (Cradle-type Dual Battery Charger)
- DT-380USB (USB cable)
- HA-F95HB (Hand Belt)
- 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)

Note:

"-CN" attached at the end of model number denotes that the model is dedicated for the final destination of China. A note about compliance with the Chinese "RoHS" requirement promulgated by the

Ministerial Decree No. 39 is included in the carton box; the RoHS compliant seal is affixed on the body and the seal of the packing material recycle marking is affixed on the carton box.
See the following page for external views of the DT-X7 and the dedicated options.

External views of the DT-X7 and the dedicated options

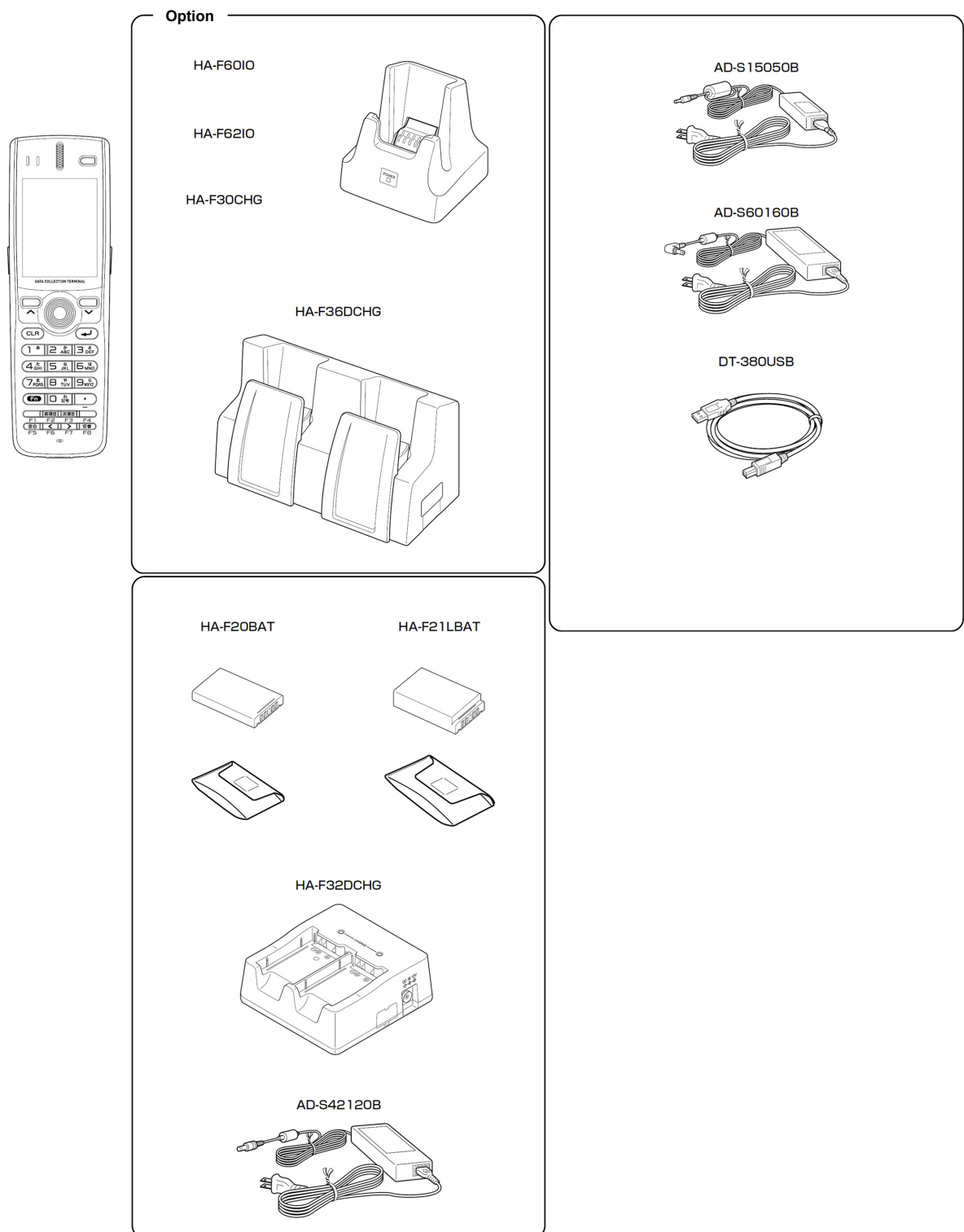


Figure 2.1

2.3 Software Required

PC Operating System

- Microsoft Windows 2000 Professional Service Pack 4 or later
- Or Microsoft Windows 2000 Server Service Pack 4 or later
- Or Microsoft Windows XP Professional Service Pack 2 or later
- Or Microsoft Windows 2003 Server Service Pack 1 or later
- Or Microsoft Windows Vista (Business / Ultimate)
- Or Microsoft Windows 7
- Or Microsoft Windows Server 2008

The following software tools and libraries are required in order to develop application software for the DT-X7. 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>

CASIO DT-X7 BDK

Download the DT-X7 BDK from

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.)

3. Installing BDK to PC

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 2008, Visual Studio 2005, and Visual Studio .NET 2003. For detail, refer to Chapter 2.3 "Software Required".

2. Installing CASIO BDK

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

3. Connecting DT-X7 to PC (via ActiveSync/Windows Mobile Device Center)

Connect the DT-X7 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 or later). For connection method, refer to Chapter 5 "Connecting the DT-X7 to PC".

4. Setting Up the Development Environment

Copy all necessary CASIO libraries to the DT-X7.
For detail, refer to Chapter 6 "Setting Up the Development Environment".

5. Installing the Device Emulator

Install the Device Emulator for the DT-X7. 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-X7 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 Chapter 9 "Visual Studio".

3.2 Installing CASIO BDK Files

Download the CASIO DT-X7 BDK 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 had already installed DT-X7 BDK Ver. 1.xx, be sure to uninstall it before installing Ver. 2.xx.
- If any file of the DT-X7 BBDK Ver. 1.xx remains 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 Windows Vista or later OS, first you must disable the User Account Control ("UAC") by following the process below before installing the CASIO BDK Files.

Case of using Windows Vista and Windows Server 2008

- 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.

Case of using Windows 7

- Navigate to **Control Panel** → **User Accounts** → **Change User Account Control Settings**. Select **Never notify** in Choose when to be notified about changed to your computer setting.

Installing ExportBDK

1. When the CASIO DT-X7 BDK CD-ROM is inserted in the drive of your PC, the following menu screen appears automatically.



Figure 3.1

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



Figure 3.2

3. Click **DT-X7 ExportBDK** to display the Setup Wizard. Choose any one of the buttons in the screen.

Installing Library

The DT-X7 Library is available for the below development platforms. The library can be installed for each development platform in the **Installation List** screen.

- 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. Connecting Power Supply to HA-F60IO, HA-F62IO

4.1 HA-F60IO

Use the dedicated AC adaptor (AD-S42120B) for supplying power to the HA-F60IO USB Cradle. Ensure that you connect the AC adaptor to the cradle before starting communication between the DT-X7 and PC via the cradle. Follow the steps below to connect the power supply to the DT-X7 using the dedicated AC adaptor.

1. Plug the AC adaptor into the AC adaptor jack where "DCIN12V" is printed on the back of the cradle.

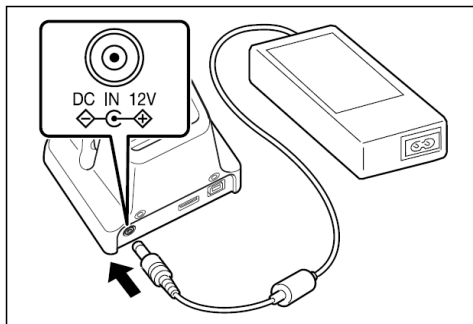


Figure 4.1

2. After connecting the power cable to the AC adaptor, plug in the plug to an electrical outlet.

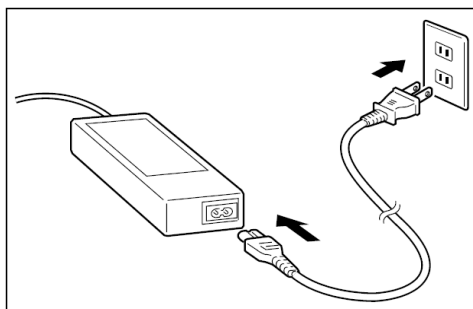


Figure 4.2

3. Make sure the selector switch on the left side of the cradle is set to position "B" for USB client or position A for USB host.

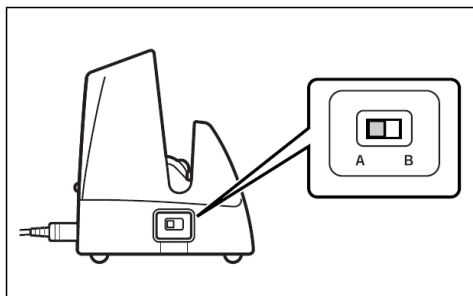


Figure 4.3

4. Connect a USB cable (DT-380USB) to the USB client port on the back of the cradle, and then connect the other end of the cable to the PC. USB host port is used when connecting the cradle with other USB peripheral device.

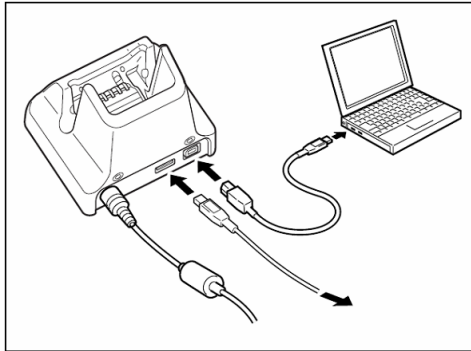


Figure 4.4

5. Align the USB cradle mount holes on the back of the DT-X7 with the mount hooks on the cradle after aligning the contacts on the bottom of the DT-X7 with the power contacts of the cradle. The power LED on the front of the cradle will light green if the DT-X7 has been properly mounted.

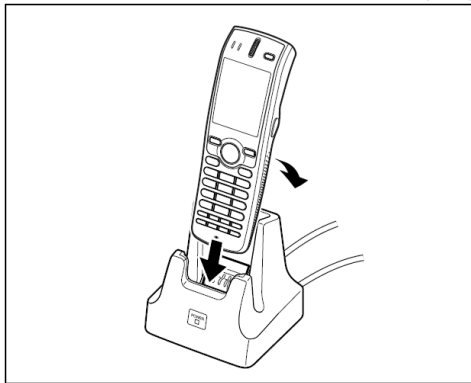


Figure 4.5

Status of Indicator 1 on DT-X7

- Orange : Charging the battery pack.
- Red : Standby due to battery pack error or the surrounding temperature is out of the range (charging begins when the temperature returns within the correct range.)
- Green : Charging the battery pack is complete.

Important notes:

- Always remove the DT-X7 from the cradle when switching the selector switch on the cradle.
- Never short the power contacts of the cradle. This damages the cradle.
- Do not subject the DT-X7 and cradle to vibration or impact during communication. This results in communication being interrupted.
- When mounting the DT-X7, securely attach it to the mount hooks of the cradle and check that the power LED on the front of the cradle lights green. Charging the battery pack or communication will not proceed if it is not mounted properly.

4.2 HA-F62IO

Use the dedicated AC adaptor (AD-S42120B) for supplying power to the HA-F62IO Ethernet Cradle. Ensure that you connect the AC adaptor to the cradle before starting communication between the DT-X7 and PC via the cradle. Follow the steps below to connect the power supply to the DT-X7 using the dedicated AC adaptor.

1. Plug the AC adaptor into the AC adaptor jack on the back of the Ethernet Cradle.

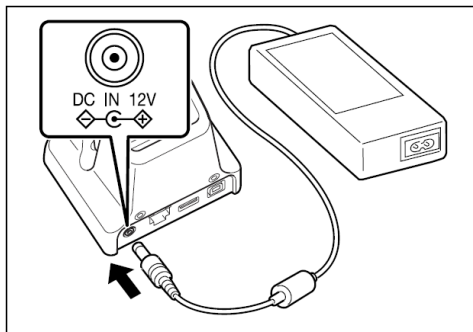


Figure 4.6

2. After connecting the AC adaptor to the power cable, plug in the plug of the power cable to an electrical outlet.

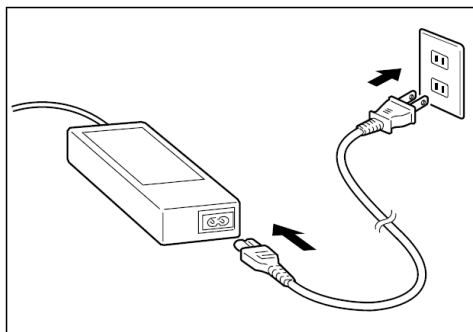


Figure 4.7

3. Set the selector switch on the left side of the Ethernet cradle to the port that will be used. Set the switch to "LAN" to use the LAN port or to either "A" or "B" to use one of two USB ports. The position "A" is for USB host, or "B" for USB client.

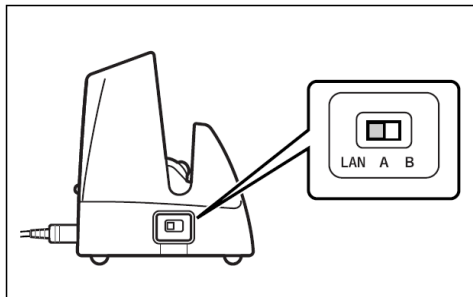


Figure 4.8

4. Before using the cradle ports, remove the caps from the ports. When using a LAN, connect one end of the LAN cable to the LAN port and the other end to the PC or hub. When using a USB connection, connect one end of the USB cable (DT-380USB) to the USB port and the other end to the PC.

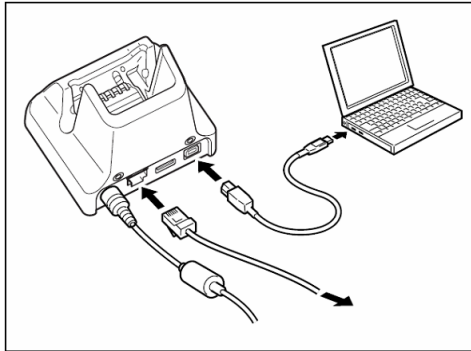


Figure 4.9

5. Align the contacts on the underside of the DT-X7 with the power supply contacts on the Ethernet Cradle and then set the DT-X7 into the cradle so that mount holes in the back of the DT-X7 are aligned with the mount hooks on the cradle. Once the DT-X7 is properly set in the cradle, the power LED on the front of the Ethernet cradle lights green.

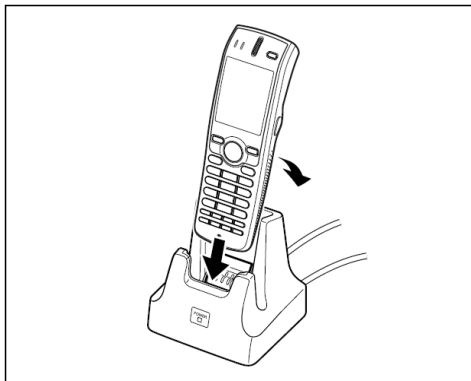


Figure 4.10

Status of Indicator 1 on DT-X7

- | | |
|--------|--|
| Orange | : Charging the battery pack. |
| Red | : Standby due to battery pack error or the surrounding temperature is out of range (charging begins when the temperature is within the correct range.) |
| Green | : Charging the battery pack is complete. |

Important notes:

- Always remove the DT-X7 from the Ethernet Cradle before changing the selector switch setting.
- Never short out the power contacts of the cradle. This damages the cradle.
- Do not subject the DT-X7 and cradle to vibration or impact during communication. This results in communication being interrupted.
- When mounting the DT-X7, securely attach it to the mount hooks of the cradle and check that the power LED on the front of the cradle lights green. Charging battery pack or communication will not proceed if it is not mounted properly.
- The LAN and USB connections cannot be used concurrently.
- Always cap ports that are not being used. Using the Ethernet Cradle while the ports are uncapped can cause damage.

5. Connecting the DT-X7 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-X7 to PC if the PC runs in Windows XP or other OS earlier than Windows XP. See Chapter 5.1 "ActiveSync Connection via USB" for the use of ActiveSync.

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 or later)

Use the Windows Mobile Device Center to connect the DT-X7 to PC if the PC runs in Windows Vista OS. See Chapter 5.2 "USB Connection via Windows Mobile Device Center" for the use of Windows Mobile Device Center. 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 ActiveSync Connection via USB

In nearly all cases during development work you will be communicating with the DT-X7 via an ActiveSync connection. There are many ways to connect the DT-X7 to a PC via ActiveSync.

If you have already installed ActiveSync and connected the DT-X7 to the PC via direct USB, You may skip Chapter 5.1.1 "Installing ActiveSync for the First Time". You already have the USB driver and ActiveSync in your development environment. If you do not yet have the cradle driver on your PC, download the USB driver files "wceusbsh.inf" and "wceusbsh.sys" from the CASIO Web Site and copy them to an appropriate folder.

5.1.1 Installing ActiveSync for the First Time

1. Install ActiveSync first. Run the ActiveSync 'msi' file.

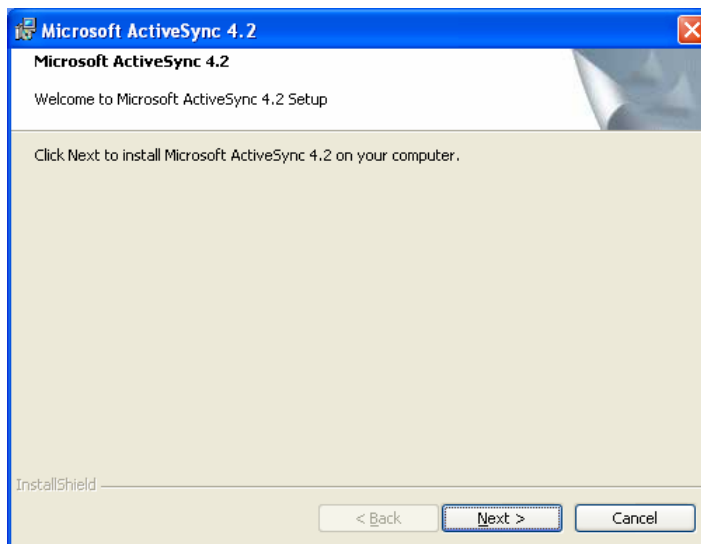


Figure 5.1

2. Click **Install** button.

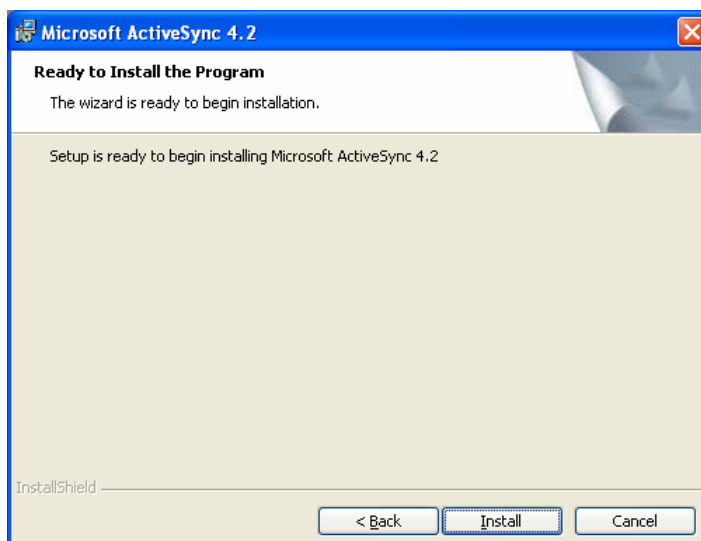


Figure 5.2

3. Pause the installation when the menu in Figure 5.3 is displayed; you have to install the driver at this point.

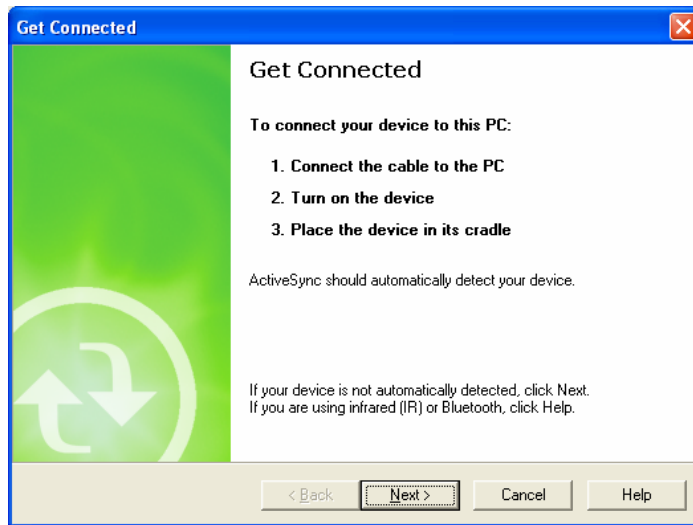


Figure 5.3

4. Connect the USB cable to the PC and the other end to the USB Cradle and also the AC adaptor to the USB Cradle.
5. Put the DT-X7 on the cradle and confirm that the green LED on the front of the cradle is lit. If not, be sure the DT-X7 is positioned firmly on the cradle.
6. When the DT-X7 is mounted on the USB Cradle, a dialog is displayed to prompt you to install the suitable driver. If you have not yet obtained the driver files, see page 23 for details of what you need to download.
7. Choose **No, not this time** radio button in Figure 5.4 and then click **Next >** button.



Figure 5.4

8. Then, choose **Install from a list or specific location [Advanced]** radio button in the menu.

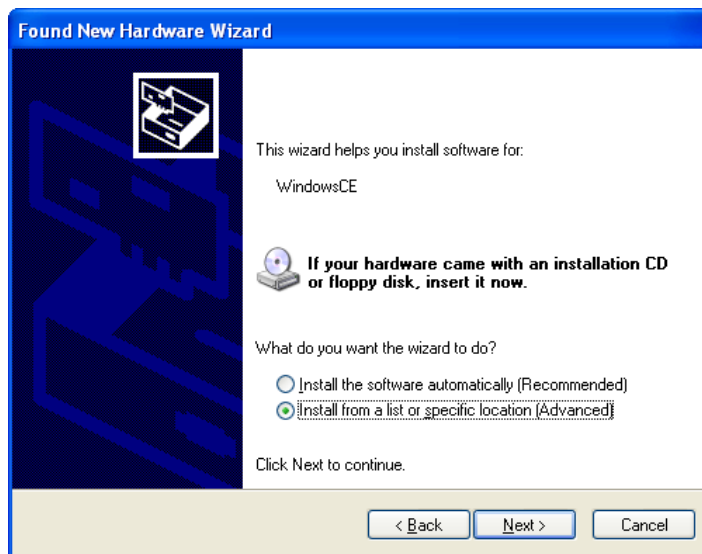


Figure 5.5

9. Click **Next >** button.



Figure 5.6

10. Choose **Windows CE USB Devices** icon.

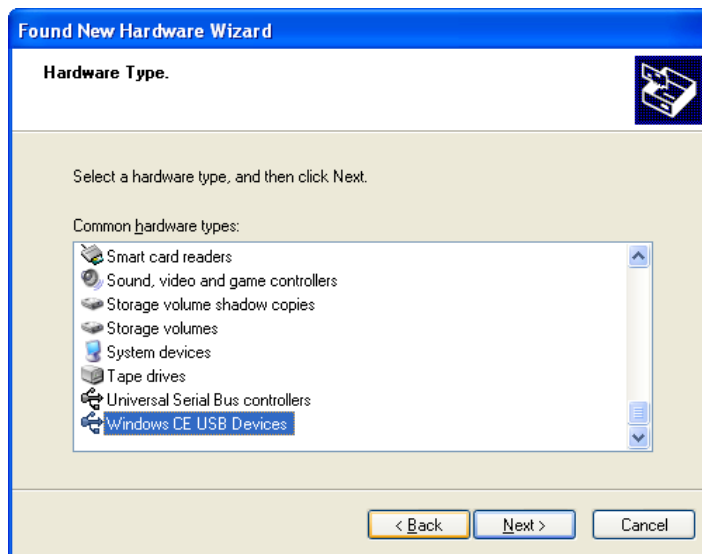


Figure 5.7

11. Click **Have Disk...** button.

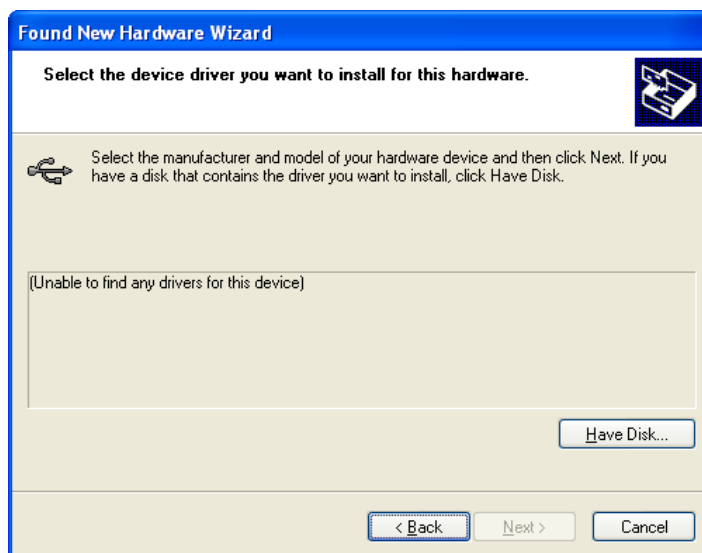


Figure 5.8

12. Click **Browse...** button. Choose "wceusbsh.inf" from the folder you created in step 6.

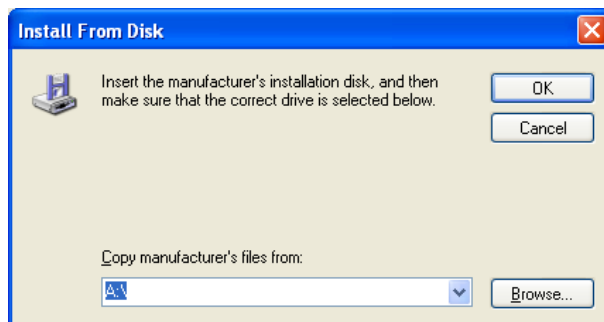


Figure 5.9

13. The installation of the driver will start.

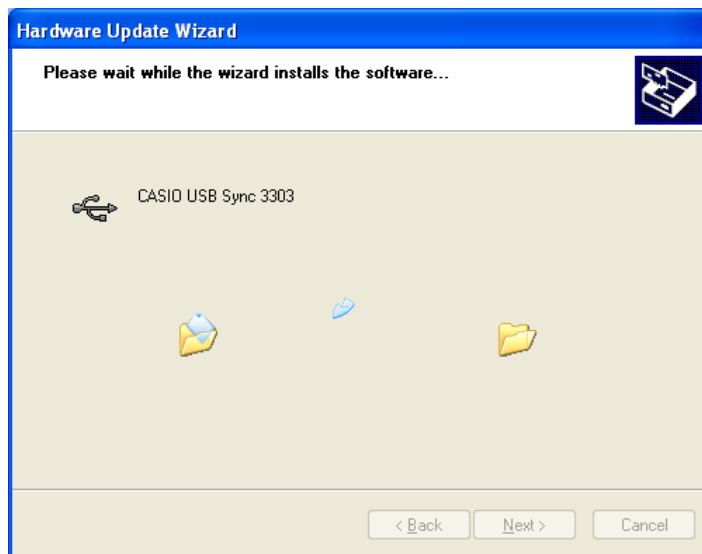


Figure 5.10

14. Click **Continue Anyway** button.



Figure 5.11

15. A menu might be displayed to prompt you to install "wceusbsh.sys". This happens if "wceusbsh.sys" is not in the same folder as "wceusbsh.inf". Download this file from the CASIO Web Site and follow the prompts to specify the location of "wceusbsh.sys".

16. Now the installation of the driver is finished.

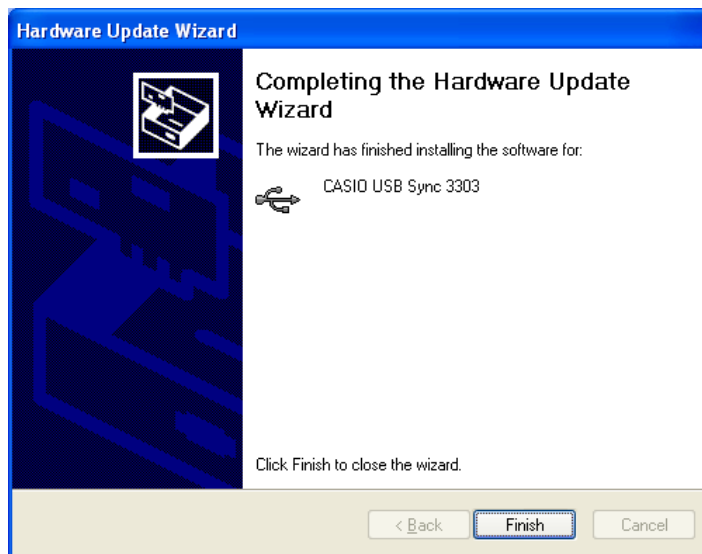


Figure 5.12

17. Now go back to the ActiveSync Installation Wizard that you left on the desktop. Click **Next >** button.

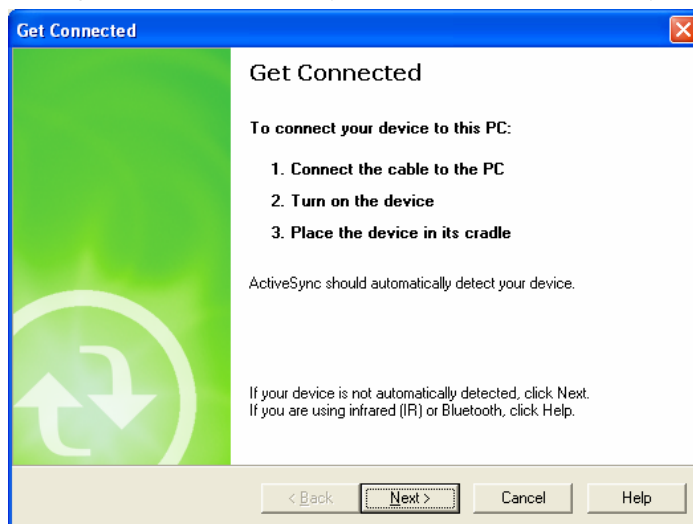


Figure 5.13

18. Now the connection is established. You can choose either partnership option according to your needs. Then click **Next >** button.



Figure 5.14

19. Now the connection is completed. You can start up eMbedded VC++ or Visual Studio and create a program and deploy it to the DT-X7.

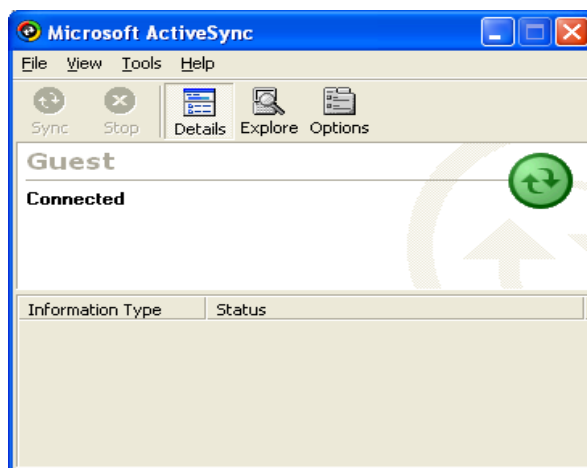


Figure 5.15

Notes:

- When you change the setting of the USB interface using the switch on the HA-F60IO USB Cradle, be sure to take the DT-X7 out of the cradle first.
- Never short-circuit the pins of the cradle. Shorting the pins will cause serious damage to the cradle.
- Do not vibrate or knock the cradle or the DT-X7 while communicating. Any vibration might cause disconnection of communication.

5.1.2 If ActiveSync Is Already Installed

This is the procedure if ActiveSync is already installed on the PC. You just need to let the PC recognize the DT-X7 and install the cradle driver as in steps 6 to 16 in Chapter 5.1.1 "Installing ActiveSync for the First Time".

1. Choose **File** → **Connection Settings....** from the menu in ActiveSync. See Figure 5.16.



Figure 5.16

2. Check **Allow USB connection with this desktop computer. USB is available.**

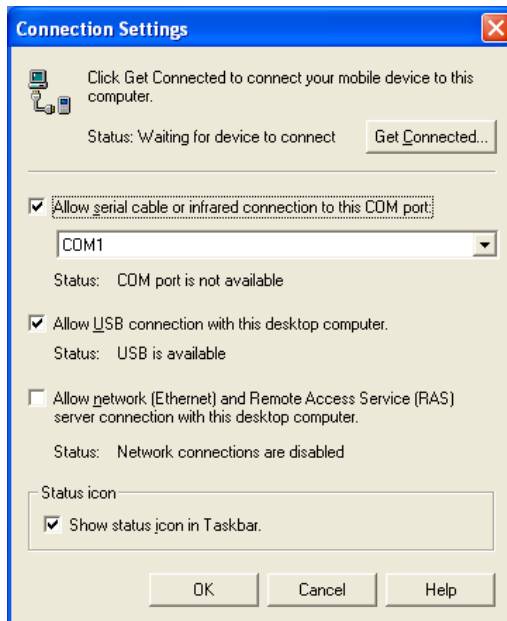


Figure 5.17

3. On the DT-X7, in **Control Panel**, choose the **PC Connection** option. Confirm that PC Connection is set to "USB Default". If not, choose 'USB Default' and tap **OK** button.

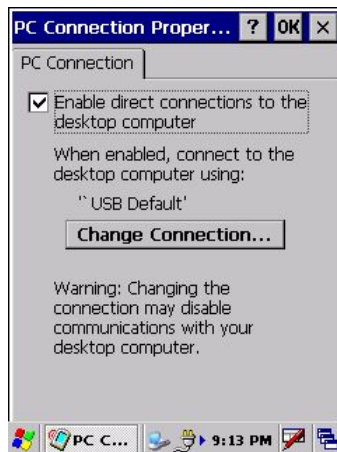


Figure 5.18

4. When the DT-X7 is mounted on the USB Cradle, a menu to prompt to install the driver is displayed. Follow the same steps in Chapter 5.1.1 "Installing ActiveSync for the First Time".



Figure 5.19

5.2 USB 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-X7 with the factory-setting (default) does not support the WMDC. Follow the procedure below to change the setting on the DT-X7.

Note that the CAB file, **USBClientDTX7E.110.CAB**, must be installed in the DT-X7 prior to establishing connection with the DT-X7 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-X7.
2. Navigate to **Settings** → **Control Panel** → **USB Connection**.
3. Click **Connect Utility** tab.

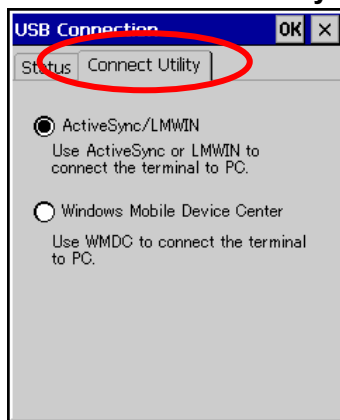


Figure 5.20

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

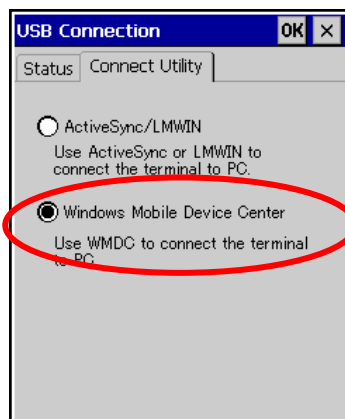


Figure 5.21

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

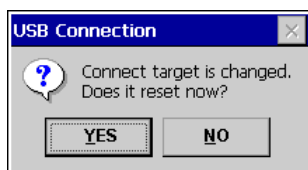


Figure 5.22

6. The DT-X7 starts up again.
7. Mount the DT-X7 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 3 on the previous page, and start up the DT-X7 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.

5.3 Connection via IrDA


If the PC has an IrDA interface, it is possible to connect the DT-X7 to the PC via IrDA using ActiveSync.

Follow the steps below to establish connection via IrDA:

1. Choose **PC Connection** in the **Control Panel** on the DT-X7.
2. Set PC Connection to IrDA.
3. Set the COM port used by ActiveSync on the PC to **Infrared Port(IR)**.
4. Place the IrDA port located on the bottom of the DT-X7 facing the IrDA port on the PC.
Communication can be established if the distance is between zero and approximately 1 m. In the case of 4Mbps rate, the maximum distance is approximately 30 cm.
5. On the DT-X7, from **Start** menu, navigate to **Programs** → **Communication** → **ActiveSync** to start up ActiveSync.

5.4 Connection via Bluetooth

To establish communication between DT-X7 and PC via Bluetooth configuration, follow the steps, 1 to 4, below to set up a Bluetooth configuration on the DT-X7. Note that all the models of DT-X7 series integrate the Bluetooth module.

1. Navigate to **Start** menu → **Settings** → **Control Panel** → **Bluetooth Connection** icon.
2. Click and hold the **Serial Port Profile** icon to display the context menu (see Figure 5.23), and highlight **Use to connect for ActiveSync** in the menu. The icon changes to the  icon (ActiveSync). See Figure 5.24.

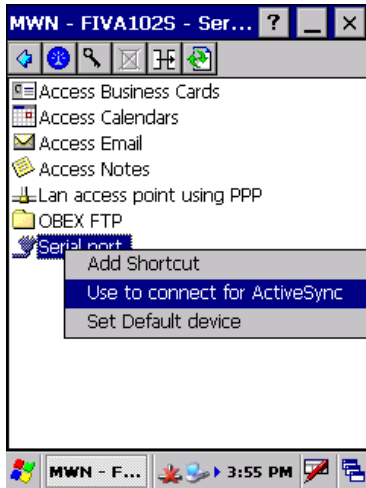


Figure 5.23

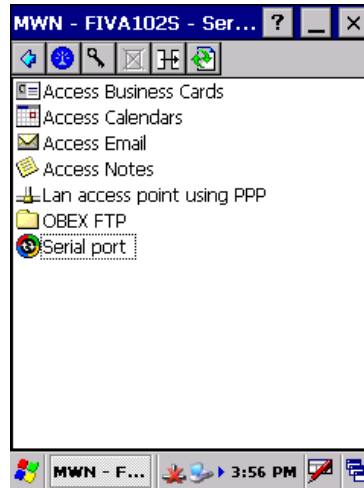




Figure 5.24

3. Double click the icon establishes connection via ActiveSync in Serial Port Profile. If Serial Port Profile is not used, click and hold the icon, and then highlight **Do not use for ActiveSync connection**.
4. Click the  icon in the Toolbar to close the communication. To close the Bluetooth connection screen, click the  icon in the Toolbar.

Note:

When establishing connection with PC via ActiveSync, set a virtual COM port to the same COM port number in the ActiveSync setting that uses Bluetooth Serial Port Profile.

5.5 Connection via WLAN

To establish communication between the DT-X7 and PC via WLAN configuration, follow the steps, 1 to 6, below to set up a WLAN configuration on the DT-X7. After setting up the configuration, be sure to perform a site survey prior to starting communication via WLAN.

1. Navigate to **Start** → **Settings** → **WLANConfig** and then click **IP** tab.

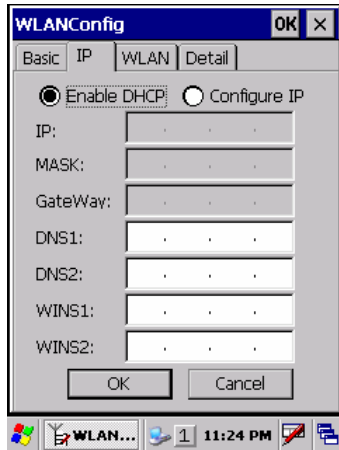


Figure 5.25

Table 5.1

Parameter	Description
Enable DHCP or Configure IP	Determines "Enable" or "Disable" for DHCP.
IP	Determines IP address.
MASK	Determines subnet mask.
GateWay	Determines default gateway.
DNS1	Determines primary DNS address.
DNS2	Determines secondary DNS address.
WINS1	Determines primary WINS address.
WINS2	Determines secondary WINS address.

2. If any of the settings in Figure 5.25 is omitted, the process described in the following table will automatically take effect in the field.

Table 5.2

Parameter	Nothing is set (DHCP)	"Configure IP" is set
Enable DHCP or Configure IP	"Enable DHCP" is assumed.	"Configure IP" is set.
IP	Does not determine IP address.	Entered address is set as is.
MASK	Does not determine subnet mask.	Entered address is set as is.
GateWay	Does not determine gateway.	Entered address is set as is.
DNS1	Does not determine primary DNS address.	Entered address is set as is.
DNS2	Does not determine secondary DNS address.	Entered address is set as is.
WINS1	Does not determine primary WINS address.	Entered address is set as is.
WINS2	Does not determine secondary WINS address.	Entered address is set as is.

- Click **Basic** tab. Set each parameter in the tab by referring to the descriptions for the parameters in Table 5.3 and Table 5.4.

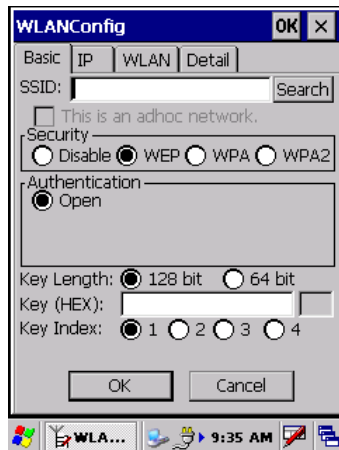


Figure 5.26

Table 5.3

Parameter		Description
SSID		Enter the SSID of the network you want to connect to.
Security	Disable	None.
	WEP	Open in Authentication field.
	WPA	PSK in Authentication field (if selected, the Key field must be set also.)
	WPA2 (note)	EAP-PEAP in Authentication field EAP-TLS in Authentication field
Key		Enter 26 (maximum) alphanumeric digits (13 hex pairs) in the Key field if 128 bit radio button is selected. Or, enter 10 (maximum) alphanumeric digits (5 hex pairs) in the Key field if 64 bit radio button is selected. The field displays the number of characters that have been entered. ***** in the field implies that the key has been extracted from the ini file. If ***** in the field is edited, a new key has been deemed to be set. Or, if it has never been edited, the key extracted from the ini file becomes effective as is.

Note:

WPA2 is available on DT-X7M10R2, M50R, M10R2-CN, M30R, and M30R-CN.

4. If **EAP-PEAP** radio button in Authentication field is selected, click the **EAP-Properties** button that appears when selecting the **EAP-PEAP** radio button to set also the following parameters.

Table 5.4

Parameters in EAP-Properties screen	Description	Default
User name	Input a user name in alphanumeric (maximum 100 alphanumeric).	None
Password	Input a password in alphanumeric (maximum 100 alphanumeric). ***** in the field implies that the password has been extracted from the ini file. If ***** in the field is edited, a new password has been deemed to be set. Or, if it has never been edited, the password extracted from the ini file becomes effective as is.	None
Domain	Input a domain in alphanumeric (maximum 100 alphanumeric).	None
Validate server certificate	Set up the requisition for server certificate. With checkmark : certificate is required. Without checkmark: certificate is not required.	Certificate is not necessary

5. If **EAP-TLS** radio button in Authentication field is selected, click the **EAP-Properties** button that appears when selecting the **EAP-TLS** radio button to set the following settings.

Table 5.5

Parameters in EAP-Properties screen	Description	Default
User name	Input a user name in alphanumeric (maximum 100 alphanumeric).	None
Certificate	Select a client certificate installed already (maximum 100 alphanumeric). Search button in the field will display a list of installed client certificates. Select one by highlighting it.	None
Domain	Input in alphanumeric (maximum 100 alphanumeric)	None
Validate server certificate	Set up the requisition for server certificate. With checkmark : certificate is required. Without checkmark : certificate is not required.	Certificate is required.

6. Click **WLAN** tab.

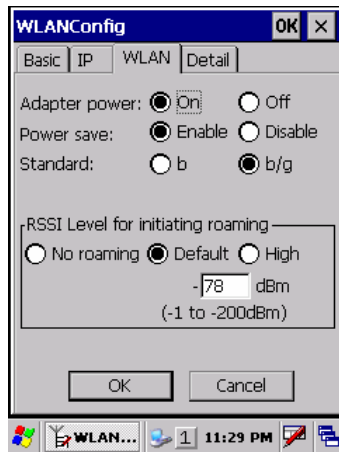


Figure 5.27

Table 5.6

Field / Radio Buttons	Description		Default
Adapter power	On	Enable power to the integrated WLAN module.	Yes
	Off	Disable power to the integrated WLAN module.	
Power save	Enable	Enable power save mode for the WLAN module.	Yes
	Disable	Disable power save mode for the WLAN module.	
Standard	b	Set up IEEE802.11b standard effect.	Yes
	b/g	Set up IEEE802.11b/g standard effect.	
RSSI Level for initiating roaming	No roaming	Set up "-100 dBm" for roaming starting threshold level, a level where communication via WLAN is practically impossible, so that roaming should not be carried out.	Yes
	Default	Set up "-78 dBm" for the roaming starting threshold level.	
	High	Set up "-72 dBm" for roaming starting threshold level, for faster (more frequent) roaming	

7. Click **Detail** tab.

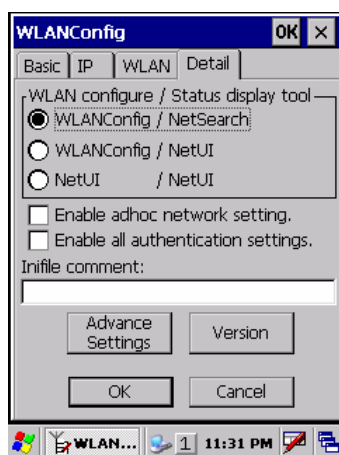


Figure 5.28

Table 5.7

Field / Radio Buttons		Description	Default
WLAN configure / Status display tool	WLANConfig / NetSearch	<ul style="list-style-type: none"> - Use only CASIO provided WLAN tool. - Configure WLAN setting with settings extracted from the ini file. - Initiate NetSearch when tapping the icon in the task tray. 	Yes
	WLANConfig / NetUI	<ul style="list-style-type: none"> - Use both CASIO provided WLAN tool and MS tool. - Configure WLAN setting with settings extracted from the ini file. - Initiate NetUI (MS tool) when tapping the icon in the task tray. 	
	NetUI / NetUI	<ul style="list-style-type: none"> - Use only the MS tool. - Configure WLAN setting, not with settings extracted from the ini file. - Initiate NetUI when tapping the icon in the task tray. <p>If this radio button is selected and the OK button that appears in the subsequent popup warning message is clicked, other settings in the ini file will be deleted. Only the WLAN configuration set with NetUI is saved.</p>	
Enable adhoc network setting		With checkmark : enable the setting.	
		Without checkmark : disable the setting.	Yes
Enable all authentication settings		With checkmark : enable the setting.	
		Without checkmark : disable the setting.	Yes
Inifile comment		Enter a comment of up to 100 characters to be written in the ini file.	None

8. If **OK** button in the popup warning message (see Table 5.7 for description of NetUI/NetUI radio button) is clicked, the screen in Figure 5.29 appears. Click **OK** button to perform a reset on the terminal so that the setting takes effect.

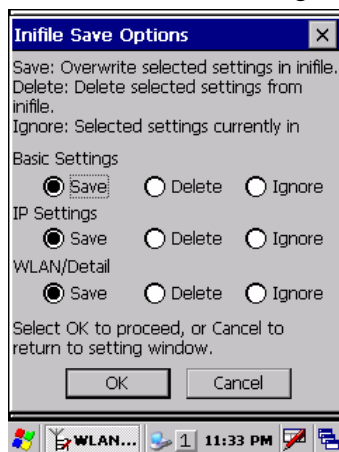


Figure 5.29

9. Check to make sure that the connection has been established using the **NetSearch** utility, and then navigating to the **Ping** function in there. Enter HostName first and then click **Ping** to check that you are connected to the network correctly.

5.6 Connection via Ethernet Cradle

This chapter describes how to establish a high speed LAN connection on the WLAN non-integrated models with HA-F62IO Ethernet cradle via ActiveSync 3.8 (see note) or earlier.

Note:

Later versions of the Microsoft ActiveSync do not support this connection. Use version 3.8 or earlier to establish the connection.

Follow the steps below:

1. Establish partnership first between the DT-X7 and PC using any method so far described in this guide (connection establishment via IrDA, WLAN, Bluetooth or USB cradle).
2. Connect the dedicated AC adapter to the Ethernet cradle as described in Chapter 4.2.
3. Connect one end of the network cable to the Ethernet cradle and the other end to the network hub.
4. Make sure the selector switch on the left side of the HA-F62IO Ethernet cradle is set to the "LAN" position. See Figure 5.30 below.

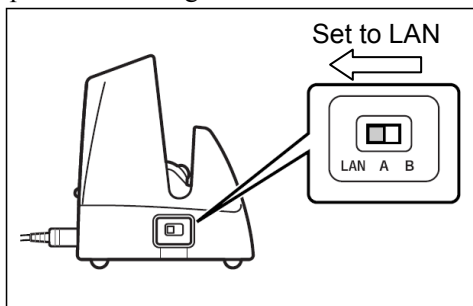


Figure 5.30

5. Place the DT-X7 in the cradle and navigate to **Start** → **Settings** → **Control Panel** → **Network and Dial-up Connections**.
6. The following screen will appear. Double click the **AX887721** icon. The icon will not appear unless the terminal is seated in the cradle.

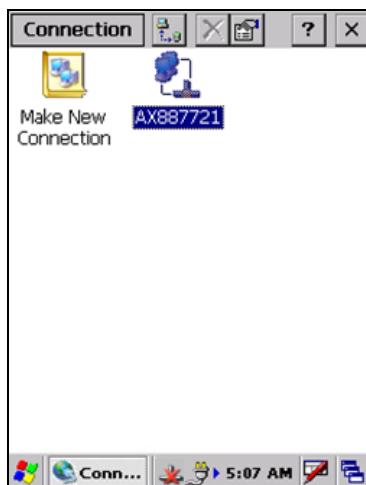


Figure 5.31

7. The following TCP/IP screen appears. Set all the parameters in **IP Address** and **Name Servers** tabs as required and click **OK** button.



Figure 5.32

8. If the connection is established correctly, the icon (🔴) in the taskbar changes to (🟢).
9. On the PC, make sure that **Allow network...** checkbox is checked in the ActiveSync setting.
10. On the DT-X7, navigate to **Start** → **Programs** → **Communication** → **LAN ActiveSync** to initiate the connection. Make sure in the popup ActiveSync menu box that **Network Connection** is the selected connection method and **Connect to:** field is the name of your PC. Click **Connect ...** button and then the connection should be established.

5.7 Accessing Shared Network Drive on Your LAN

Assuming you have a valid network connection established, you can access shared drives on your PC from the **File Explorer** on the DT-X7. The following shows the steps to initiate this.

1. Configure a network connection on the DT-X7.
2. Double click 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-X7.

5.8 Direct TCP/IP Connection from Visual Studio

If you have a network connection to the DT-X7 (for example, via WLAN or the Ethernet cradle) then you can establish a direct link to the development PC without using ActiveSync.

For Visual Studio .NET 2003

If network connection has been established between the DT-X7 and the PC that is under the application development environment, the WindowsCE Utilities add-on pack (described in Chapter 2.3) can be used to make direct link possible. Refer to the readme file supplied with the add-on pack for detail on how to set up the connection.

For Visual Studio 2005

1. Download the files listed below from the PC running in Visual Studio 2005 to the DT-X7.

- Clientsshutdown.exe
- ConmanClient2.exe
- CMAccept.exe
- DeviceDMA.dll
- eDbgTL.dll
- TcpConnectionA.dll

The source folder in the PC:

C:\Program Files\Common Files\Microsoft Shared\CoreCon\1.0\Target\wce400\armv4i

The destination folder in the DT-X7:

\Windows

2. Run **ConmanClient2.exe** on the DT-X7.
3. Set the device IP address in Visual Studio 2005.
4. Navigate to **Tools** in the main menu of Visual Studio 2005 → **Options...** → **Device Tools** → **Devices**.
5. Choose **DT-X7 Device** in the pull-down menu of **Devices:** and click **Properties....**
6. Click **Transport:** to access **Configure...** and set up **Device IP address** as shown in Figure 5.33.

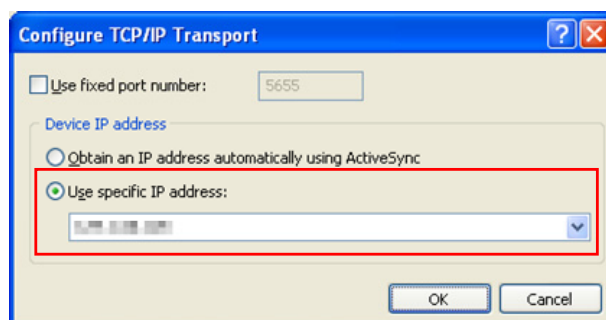


Figure 5.33

7. Run **CMAccept.exe** on the DT-X7.
8. Navigate to **Tools** in the main menu of Visual Studio 2005 → **Connect to Device....**

9. Choose **DT-X7 Device** in the list of **Devices:** and click **Connect** button. The screen in Figure 5.34 if appear indicates the success of connection establishment.

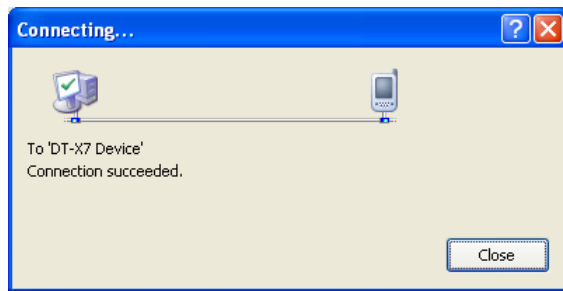


Figure 5.34

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
Imager Library	en_ImagerLib.ARMV4I.CAB	Yes
Bluetooth Library	en_BluetoothLib.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-X7 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-X7. Use the FlinkLib.dll installed by default in the terminal.

Download the CAB file in

2. 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
USBClientDTX7.110.CAB	USB client supported by Windows Mobile Device Center

Copy all the CAB files in Table 6.1 and

3. Table 6.2 to any folder on the DT-X7 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

ExportBDK for DT-X7 is required to develop application software in eMbedded Visual C++ 4.0 (see note 1). Follow the steps below to install it.

1. Double click the **DT-X7_BDK.msi** (see note 2) file and follow the prompts that appear on the screen to install the BDK.
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 "eMbedded Visual C++" and follow the instructions to verify that the BDK has been installed correctly.

If eMbedded Visual C++ has been installed in your PC already, you will notice that you now have a new BDK and, once you choose that new BDK, a new target device (DT-X7) in the comb-box menu in the Toolbar. Also, if you use any of the Remote Tools in eVC++ then you will find DT-X7 is listed as a new target (for example, try the Remote Registry Editor).

For more detail, refer to Chapter 8 "eMbedded Visual C++".

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 BDKs (e.g. standard BDK etc.) released before the **ExportBDK** are also operable.
3. Application software developed using MFC (Microsoft Foundation Class) for CASIO IT-10 is not operable on the DT-X7.
4. Any application developed not using MFC is operable on the DT-X7.

6.3 Visual Studio 2005

Follow the steps in Chapter 5 "Connecting the DT-X7 to PC" before checking the steps below to confirm that you can connect to the DT-X7 from Visual Studio 2005.

1. Establish connection with the DT-X7 via ActiveSync.
2. Open the application project for VB or C# in Visual Studio 2005.
3. Click the button shown in the red box below (see Figure 6.1) to make sure that Visual Studio 2005 has recognized the connection established with the DT-X7 via ActiveSync. If it does not, start up ActiveSync again to establish connection.

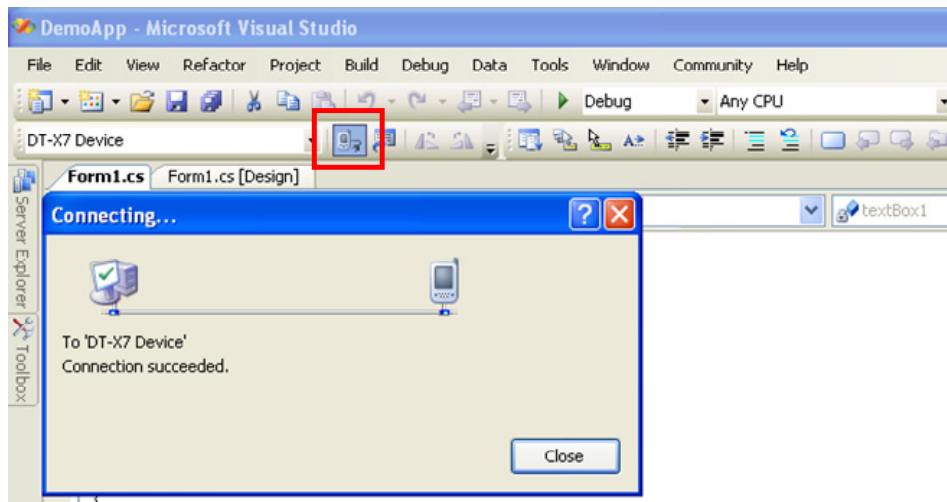


Figure 6.1

4. Choose **DT-X7 Device** in the pull-down menu box in Figure 6.2.

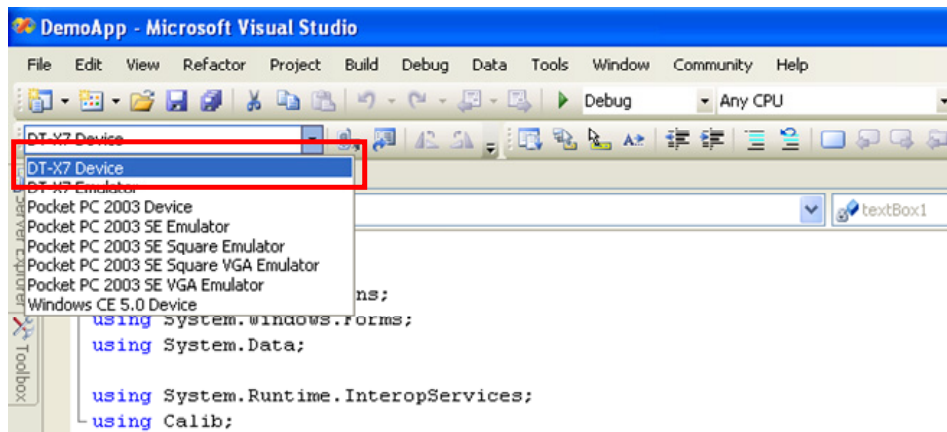


Figure 6.2

5. You will now be able to deploy solutions and also debug application software while observing actual movement of the application running on the DT-X7 using the Visual Studio 2005 debugging features.

6.4 Visual Studio .NET 2003

Follow the steps in Chapter 5 "Connecting the DT-X7 to PC" before checking the steps below to confirm that you can connect to the DT-X7 from Visual Studio .NET 2003. 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-X7 and PC using any of the methods described in this guide.
3. Start up Visual Studio .NET 2003 and navigate to **Tools** → **Select Windows CE Device CPU**. In this case, an error message appears if the connection via ActiveSync has not been established.
4. In **Select the device architecture** pull-down menu box, choose **ARMV4I**, and then click **Configure** and **Close** buttons.
5. Start up Visual Studio .NET 2003 again.

You will now, for example, be able to choose **Deploy <appname>** from the **Build** menu and your project will be directly deployed to the DT-X7. You will 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 source 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-X7 BDK (Required)
- Microsoft Device Emulator 3.0 (Optional)
<http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=a6f6adaf-12e3-4b2f-a394-356e2c2fb114>
See "Microsoft Device Emulator 3.0" described in the next page.

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>
- Microsoft Device Emulator 3.0 (If required. See "Microsoft Device Emulator 3.0".)
<http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=a6f6adaf-12e3-4b2f-a394-356e2c2fb114>
- Visual Studio .NET 2003 (Required)
- CASIO DT-X7 BDK (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>
- Microsoft Device Emulator 3.0 (If required. See note and "Microsoft Device Emulator 3.0".)
<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-X7 BDK (Required)

Note:

The software is not required if your PC has already **Visual Studio 2005** installed.

Microsoft Device Emulator 3.0

Follow the steps below to use Microsoft Device Emulator 3.0.

- Install DT-X7 ExportBDK and Device Emulator from the DT-X7 BDK into your PC.
- Download the Microsoft Device Emulator 3.0 and install it in the PC.
- Edit the following file and save the change made.

C:\Program Files\Windows CE Tools\wce500\DT-X7\Emulation\DT-X7.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-X7 BDK by the mentioned procedure above.

Case of using after Windows Vista OS

If you use OS after Windows Vista (Windows 7 or Windows Server 2008), please set device emulation and I/O simulator as administrator.

Please check "Run this program as an administrator" of property from opening Explorer.
(Ex. Execute I/O simulator in Windows Vista as administrator.)

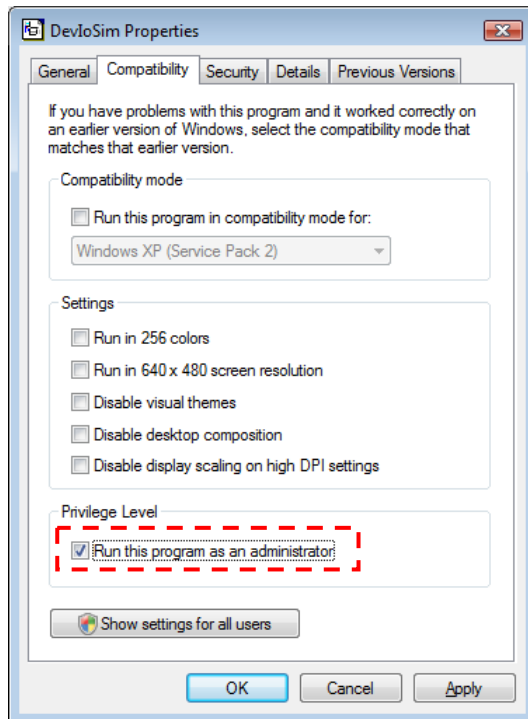


Figure 7.1

These program have installed the following location as default setting.

- Device emulator
C:\Program Files\Microsoft Device Emulator\1.0\DeviceEmulator.exe
- I/O simulator
C:\Program Files\Common Files\CASIO\Emulator\DevIoSim.exe

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-X7**.
2. Make sure that the DT-X7 **Device Emulator** has started up on the screen. See Figure 7.1.
3. Navigate to **Start** menu → **All Programs** → **CASIO Device IO Simulator** and click **IO Simulator**.
4. Make sure that the **IO Simulator** has started up on the screen. See Figure 7.2.
5. If Figure 7.1 and Figure 7.2 appear on your PC, you are ready to use the emulator.

Note.

If do not appear "DT-X7" in "CASIO Device Emulator", please execute "Add Device".

If you use OS after Windows Vista, please execute "DevEmuLoader.exe" as administrator by referring "Case of using after Windows Vista OS" section.

C:\Program Files\Common Files\CASIO\Emulator\DevEmuLoader.exe



Figure 7.2 DT-X7 Device Emulator

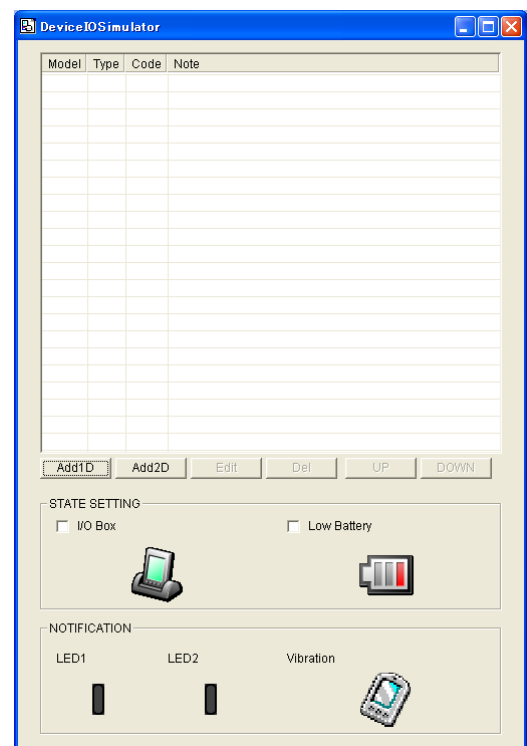


Figure 7.3 I/O Simulator

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-X7 Device Emulator

The **DT-X7 Device Emulator** emulates various operations carried out by the actual DT-X7 device 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-X7 device on the screen of a PC.

The emulator does not have the capability to save the condition at a time of closing the emulator causing the emulator's clock and file system to be initialized every time when it starts up.



Figure 7.4

Key Input

The emulator offers key input capability similar to that of the actual DT-X7 device. For instance, a key on the emulated keyboard of DT-X7 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-X7 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 **ADD1D** or **ADD2D** button (circled in red in Figure 7.4) to go into the bar code registration mode.

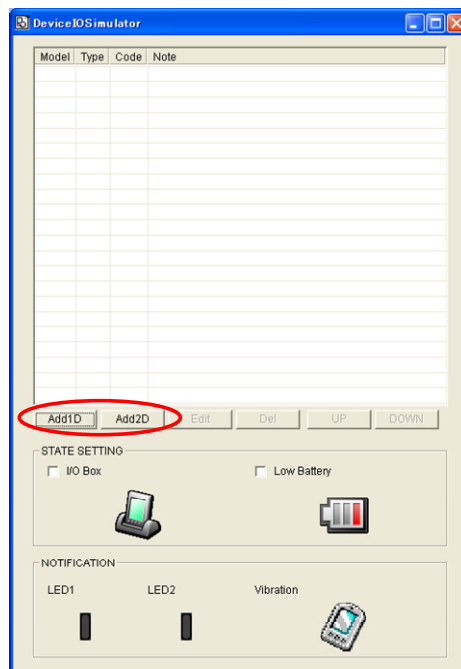


Figure 7.5

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**.

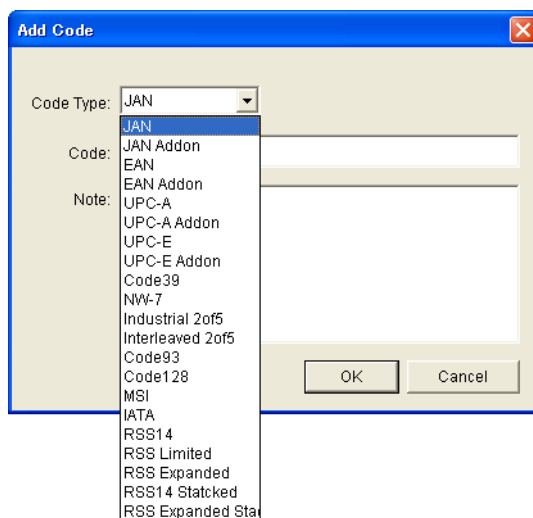


Figure 7.6

- Enter bar code data in the **Code** 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.

Figure 7.7

- 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.

Figure 7.8

In the DT-X7 Device Emulator, types of bar code symbology can be registered are limited to ones which are set effect for reading. At a time of starting up the emulator, all the types of bar code symbology are set readable by default. However, readable bar code symbologies in debugging application software are defined by the setting of the application software to be debugged.

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.

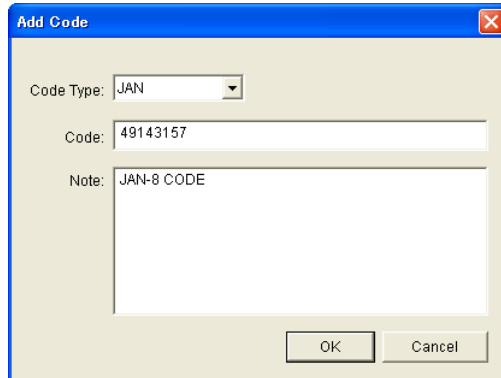
A dialog box titled "Add Code" with a blue header bar and a close button (X) in the top right corner. The dialog has a light beige background. It contains three input fields: "Code Type:" with a dropdown menu showing "JAN", "Code:" with a text box containing "49143157", and "Note:" with a larger text box containing "JAN-8 CODE". At the bottom right, there are two buttons: "OK" and "Cancel".

Figure 7.9

6. Deleting registered bar code content

Highlight a bar code in the list of registered bar codes (see Figure 7.7) and click the **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.

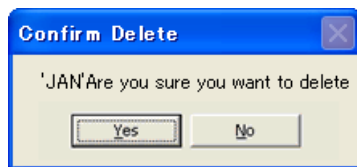
A dialog box titled "Confirm Delete" with a blue header bar and a close button (X) in the top right corner. The dialog has a light beige background. It contains a text box with the text "'JAN'Are you sure you want to delete". At the bottom, there are two buttons: "Yes" and "No".

Figure 7.10

Detection of 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.

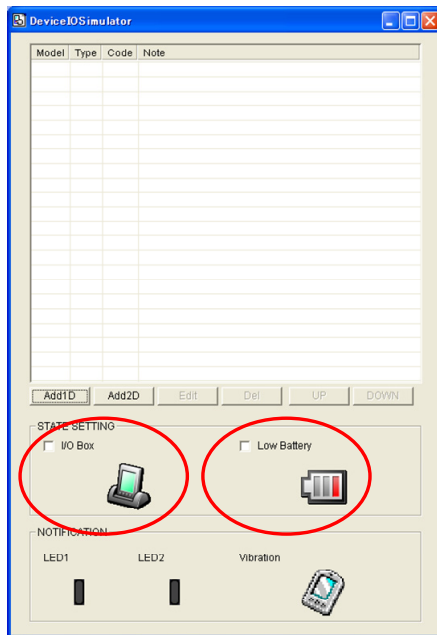


Figure 7.11

I/O Box

If this box is checked, a notification is issued that the connection between the DT-X7 **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-X7 **Device Emulator**.

- **LED**
When the DT-X7 **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-X7 **Device Emulator** vibrates, the vibration icon in the I/O Simulator also turns on. See Figure 7.11.

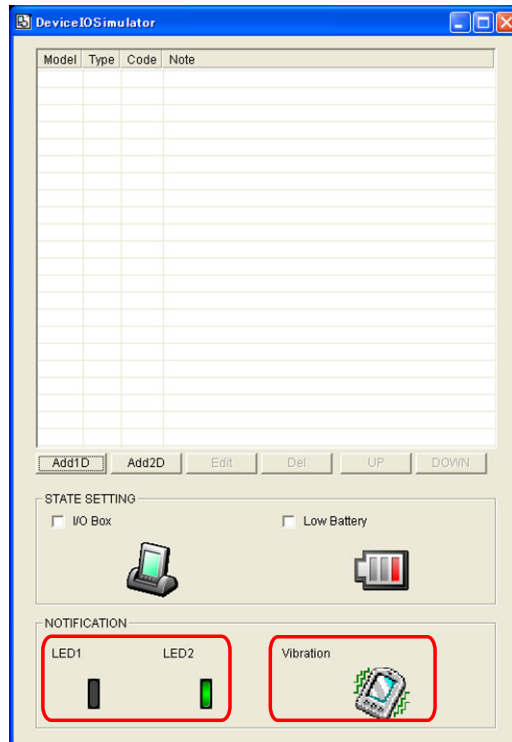


Figure 7.12

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**

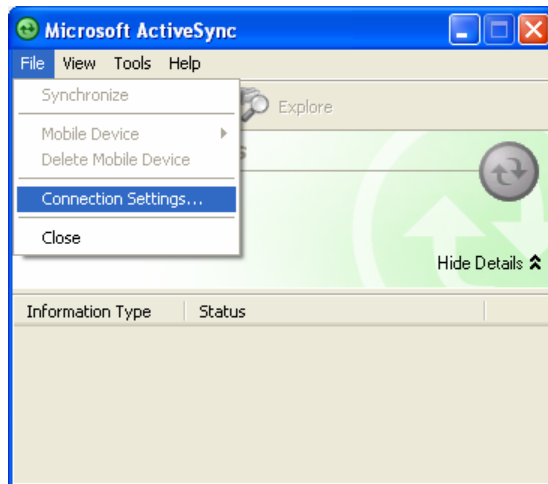


Figure 7.13

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



Figure 7.14

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, start up the Microsoft Device Emulator 3.0.

C:\Program Files\Microsoft Device Emulator\1.0\dvcemumanager.exe

3. Right-click **DT-X7 Emulator** in **Available Emulators** list and then choose **Cradle** in the popup menu. See Figure 7.14.

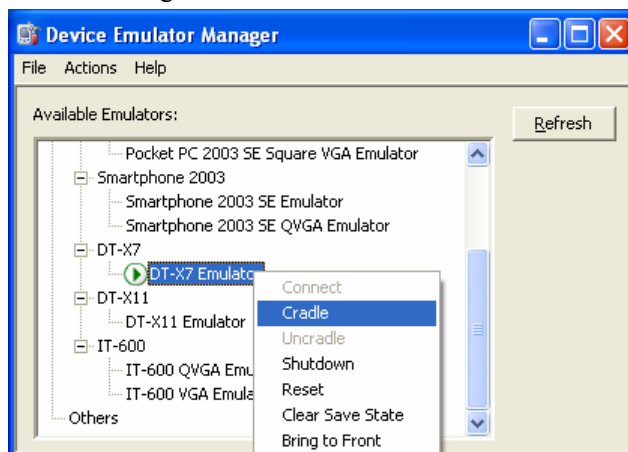


Figure 7.15


4. Make sure ActiveSync has started up and the  icon in the status bar appears. See the emulated screen of DT-X7 in Figure 7.15. The icon indicates that the connection via ActiveSync has been established.



Figure 7.16

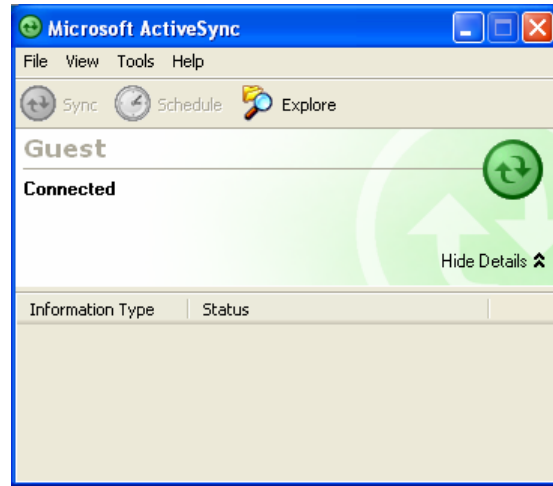


Figure 7.17

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-X7 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-X7 Emulator** in the target device pull-down menu. See Figure 7.17.

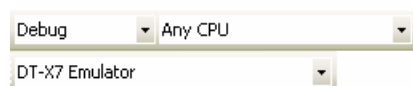


Figure 7.18

When using eMbedded Visual C++ 4.0

- Choose **DT-X7** 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-X7 Device** in the Default Device pull-down menu.



Figure 7.19

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 of DT-X7.

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.

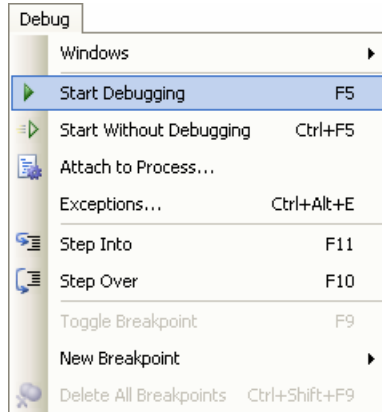


Figure 7.20

2. Similar to ordinary debugging operations with an actual DT-X7, the **Device Emulator** allows break point setting (circled in red in Figure 7.20) in the source code and step-by-step debugging.

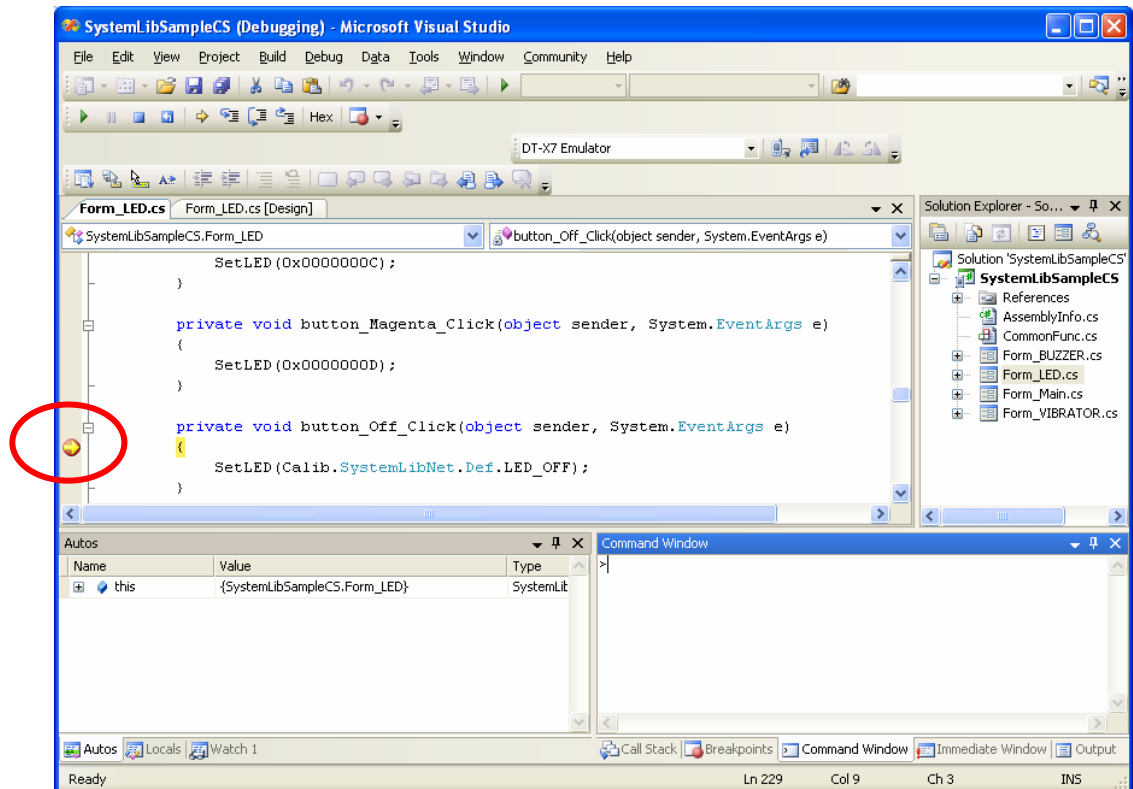


Figure 7.21

Note:

If the step-by-step debug process does not stop at any setting break point, install Microsoft .NET Compact Framework 2.0 SP2 in the PC.

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.

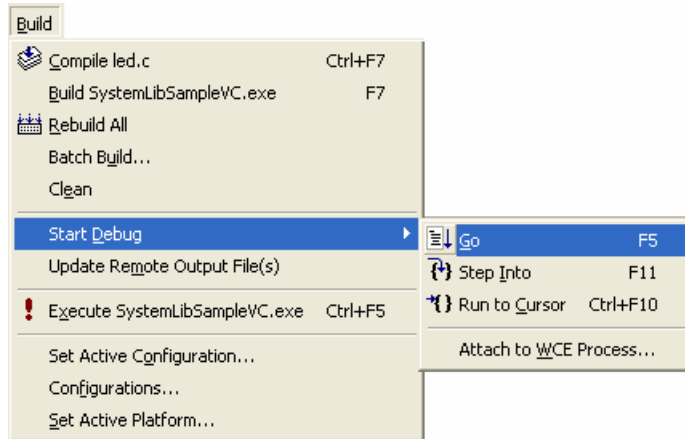


Figure 7.22

3. Similar to ordinary debugging operations with an actual DT-X7, the **Device Emulator** allows break point setting (circled in red in Figure 7.22) in the source code and step-by-step debugging.

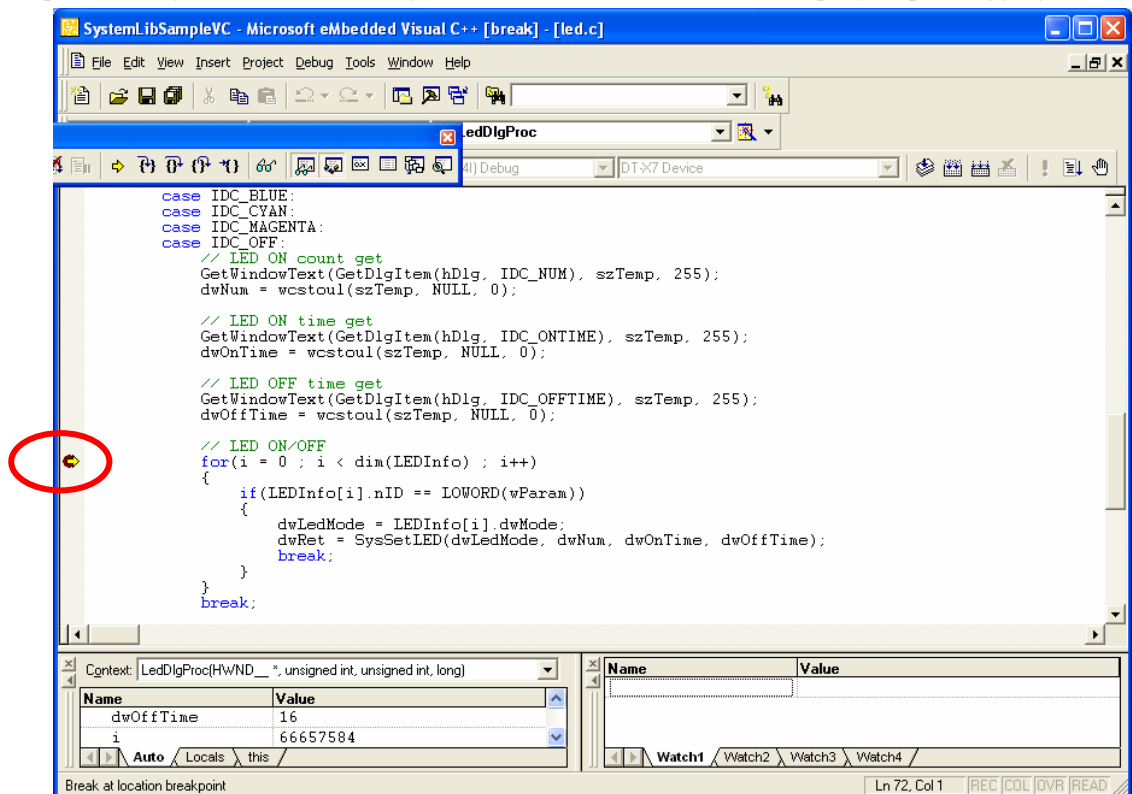


Figure 7.23

8. eMbedded Visual C++

8.1 Building a Simple eVC++ 4.0 Test Program

1. On the PC, initiate eVC++ 4.0.
2. Navigate to **File** → **New** in the **File** menu.

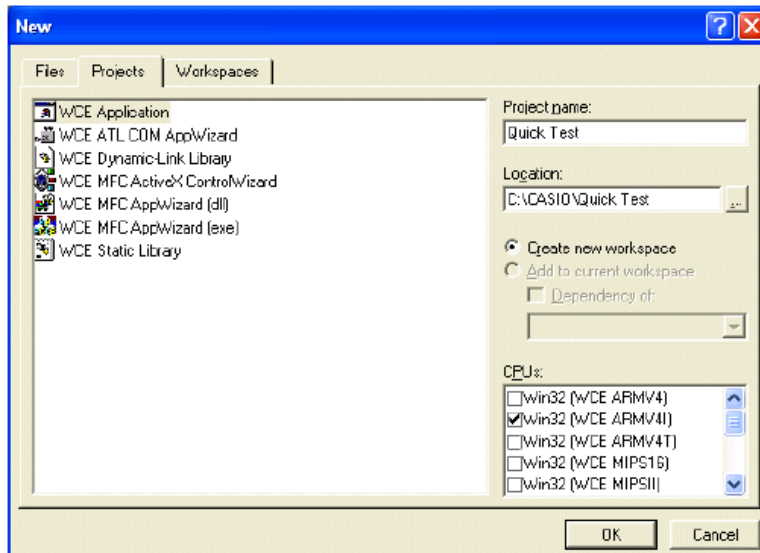


Figure 8.1

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 of the project.
6. In **CPUs:** pull-down menu, check **Win32 (WCE ARMV4I)**.
7. In the next dialog, leave **A typical "Hello World!" application** checked. Click **Finish** 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 **the target devices available to you** and choose **DT-X7** in the list. The right most pull-down menu list will change to **DT-X7 Device**.

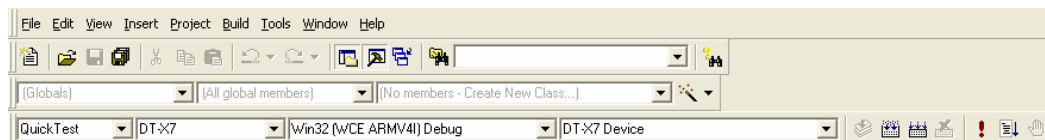


Figure 8.2

9. Initiate an ActiveSync connection using one of the methods described 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-X7. By default, the program will be copied to the root folder on the terminal. Run the program to check that the process was successful. Note that for this basic example you will need to use the mouse emulator to close the application on the device.

You are now ready to begin development work with the DT-X7. The full operation of eVC++ 4.0 and the use of features such as remote debugging are beyond the scope of this guide. See the Chapter 10 "Resources" for details on where to start if you are new to eMbedded Visual C++ development.

8.2 Using CASIO Libraries from eVC++ 4.0

The **DT-X7 BDK** 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-X7 and you do not need to download them. 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 all the ".h" files for the CASIO libraries are installed in **C:\Program Files\CASIO\MBSys\INCLUDE** (This is the default installation location but yours will be different if you installed the BDK to another location).
2. Make sure all the ".lib" files for the CASIO libraries have been installed in **C:\Program Files\CASIO\MBSys\LIB\ARMV4I**
3. In eVC++ 4.0, select **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** and then click **OK** button.
6. Make sure the DT-X7 is the selected BDK and target device in the pull-down list boxes.
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 **Add To Project** → **Files...**
11. Change **Files of type:** pull-down menu list to **Library files (.lib)**.
12. Navigate to the folder where the CASIO library files are stored (see step no. 2 in the previous page), highlight **SystemLib** file and click **OK** button.
13. Initiate **ActiveSync** to establish connection between the DT-X7 and the PC.
14. Choose **Build All** from **Build** menu. The project will be built and copied to the DT-X7.
15. Check the operation by running the program. You should find that each time the program is executed, the screen flips 180°.

You should now be able to use the CASIO System library in your C++ applications. See the System 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 environments.

- Visual Studio 2008
 - Visual Studio 2005
 - Visual Studio .Net 2003
-
- The functions of the Common Device Control Library which control various individual devices integrated in the DT-X7 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. The exceptions are DT-X11 and IT-600 which do use the same libraries.
 - VB or C# applications developed with Visual Studio .NET 2003, but not with the CASIO dedicated libraries will run on the DT-X7.
 - Applications developed with any functions of CASIO dedicated library must be rewritten by replacing the dedicated functions with the appropriate functions from the Common Device Control Library.
 - New applications for the DT-X7 can be developed using either VB 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 using that tool for other handheld terminals when porting them to the DT-X7.
 - However, if Visual Studio 2005 is used to make modifications, the solution/project from Visual Studio .NET 2003 is automatically upgraded by Visual Studio 2005. This may result in different configuration of the output folder according to the parameter settings for the project file. Please take care when using Visual Studio 2005 to upgrade an existing application and always keep a backup of your existing project.

9.1 Using CASIO .NET Libraries from VB

The **DT-X7 BDK** 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 Smart Device Application in Visual Studio.
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.

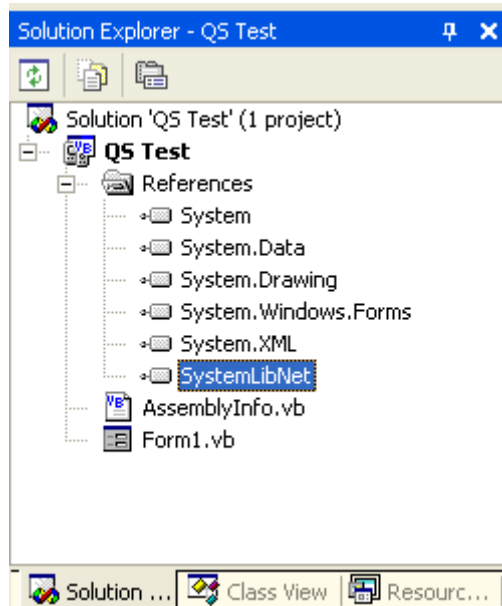


Figure 9.1

4. Add a button to the form, rename it **LED**, 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-X7 and PC.
7. Choose **Deploy <name of project>** on **Build** menu.
8. The project will be built and copied to the DT-X7. 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-X7.

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

9.2 Using CASIO .NET Libraries from C#

The DT-X7 BDK 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.

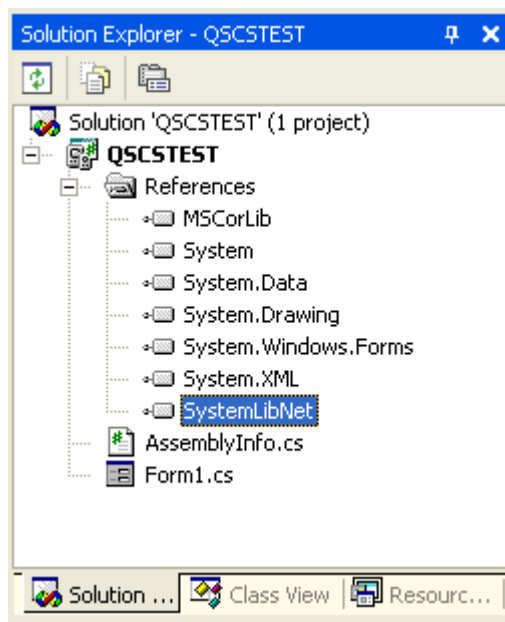


Figure 9.2

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-X7 and PC.
7. Choose **Deploy <name of project>** on **Build** menu.
8. The project will be built and copied to the DT-X7. 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-X7 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-X7" and add the path to the CASIO header and library files to the respective lists for "Include files" and "Library files".

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

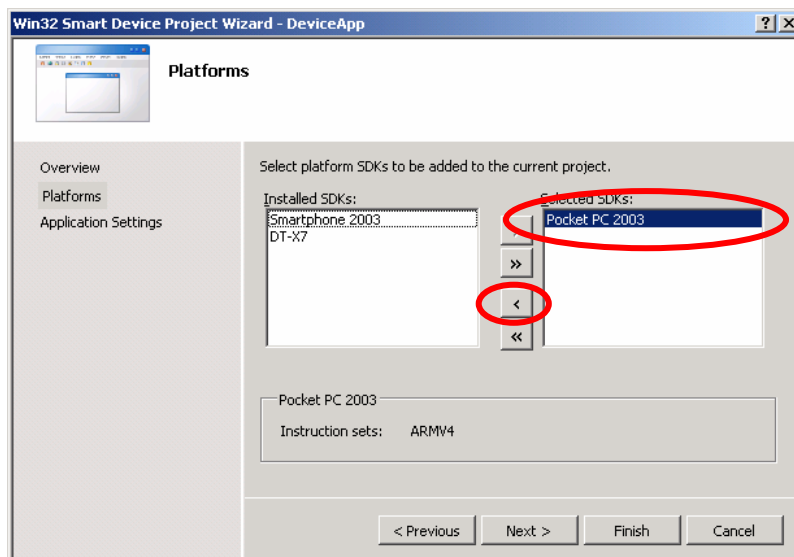


Figure 9.3

3. Choose **DT-X7** in the Installed BDKs field and click **>** button.

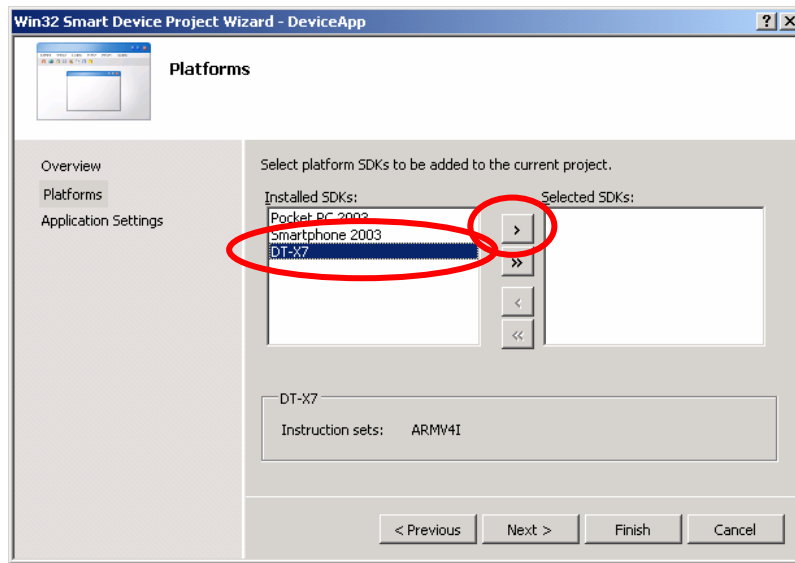


Figure 9.4

4. Click **Next >** button while **DT-X7** is kept being highlighted in the Selectd BDKs (or Selected SDKs in Figure 9.5) field.

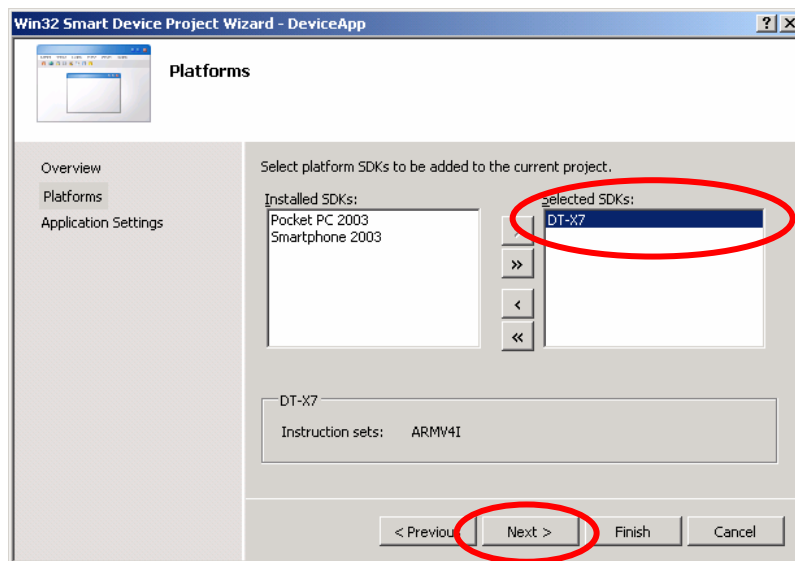


Figure 9.5

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 append 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 append **SystemLib.lib** (see red circle).

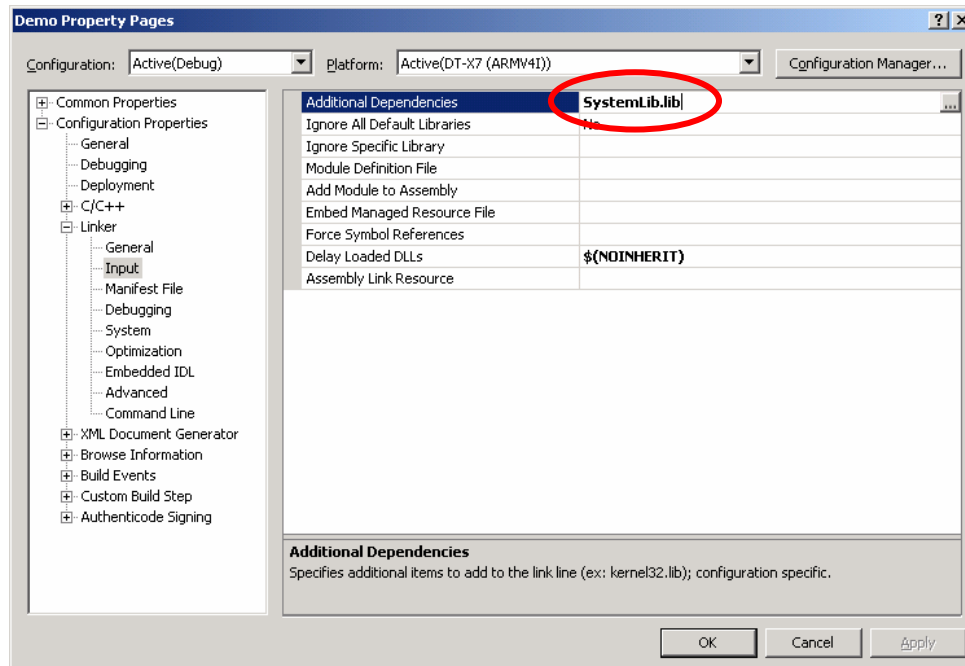


Figure 9.6

9. Choose **DT-X7 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-X7.
12. Check that the program runs correctly on the DT-X7.

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

10. Resources

Microsoft's own <http://msdn.microsoft.com/mobility/> is an extremely comprehensive resource for programmers targeting WindowsCE .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>.