**DENSO**

Bar Code Handy Terminal

BHT-400-CE

Class Library Reference Manual

Introduction

This reference manual is intended for software developers using VB.NET or C# to develop software applications using barcode read functions and so forth for the BHT400.

➢ Related Manuals

Please refer to the following related manuals for further information.

- kbifCE User's Guide
- BHT-400-CE API Reference Manual
- BHT-400B-CE/400BW-CE User's Manual

➢ Contacts

Please forward any opinions or questions that you may have regarding this manual to the address below or contact us by telephone.

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➢ Latest Information

Please access our Web site using the following URL for the latest information on this manual and our full range of products.

http://www.denso-wave.com/

More detailed information is available for product owners at our dedicated Web site (QBNet) for registered users. Please access the above URL for user registration and details on QBNet.

Contents

1. Development Environment

➢ Development tool

- Microsoft Visual Studio .NET 2003

➢ Application development kit

- This is a redistributable package intended for use by .NET Compact Framework and Service Pack developers.
  - Assembly required for application development
  - Tool for application assignment
  - CPU: ARMV4I
  - SP3 can be downloaded by accessing the following URL:
    http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=7BF313B9-71ED-4E15-AD6E-315DAE6FAF9F

- DNWA.BHT400CL.dll
  - Assembly equipped with dedicated BHT functions such as barcode reading
  - Used as a reference when developing applications employing dedicated BHT functions.
  - This file can be downloaded from QBNet.

- DNWA.BHT400CL.xml
  - DNWA.BHT400CL.dll document comment file
  - IntelliSense can be used by storing the file in the same folder as DNWA.BHT400CL.dll.

- DNWA.Tools.BHT.Communication400.dll
  - Assembly equipped with file transfer and serial communication functions
  - Used as a reference when developing applications employing file transfer and serial communication.
  - This file can be downloaded from QBNet.

- DNWA.Tools.BHT.Communication400.xml
  - DNWA.Tools.BHT.Communication400.dll document comment file
  - IntelliSense can be used by storing the file in the same folder as DNWA.Tools.BHT.Communication400.dll.

- DNWA.Exception.xml
  - Assembly equipped with dedicated BHT exceptions
  - DNWA.Exception.dll document comment file
  - IntelliSense can be used by storing the file in the same folder as DNWA.Exception.dll.

➢ Hardware

- Dedicated BHT-400 USB cable
  - Used when employing USB ActiveSync for assignment of applications and debugging.

2. Development Procedure

2.1. Project Creation Procedure

1. Store the dedicated BHT class library (dll, xml file) in a suitable folder in the computer used for development.

2. Start up Visual Studio.NET.

3. Select [File] – [New] – [Project…] to create a new project.

4. At the [New Project] dialog box, set the [Project Types:] to "Visual Basic Projects" or "Visual C# Projects", and the [Templates] to "Smart Device Application".

5. At the [Smart Device Application Wizard], set the [What platform do you want to target?] to "Windows CE ", and the [What project type do you want to create?] to the actual project type to be created.

6. Open the [View] – [Solution Explorer] window.

7. Right-click the [Reference] icon, and select [Add References…] to start up the reference add menu.

8. Press [Browse…] and select the dll saved at step 1.

2.2. Assignment Procedure

➢ Assignment using USB ActiveSync

1. Select [Tools] – [Options…] – [Device Tools] – [Devices] to start up the Device Tool.

2. Press [Save As…] with "Windows CE" selected at the [Show devices for platform:] and enter an appropriate filename (e.g., "BHT AS").

3. With the "BHT AS" file created at step 2 selected, set [Transport:] to "TCP Connect Transport".

4. Press [Configure…] to open the "Configure TCP/IP Transport Settings" dialog box.

5. Select "Obtain an IP address automatically using ActiveSync" for the device IP address.

6. Press [OK] to exit the [Options] menu.

7. Connect the BHT and computer with the USB ActiveSync cable.

8. Select [Build…] – [Build solution] and then assign a solution.

Step 8 only is required from the second time onwards.

➢ Assignment using Smart Device Authentication

1. Connect the BHT to the same network as the computer used for development.

2. Run SDAuthUtilDevice.exe at the BHT and press START.

3. Perform steps 1 to 4 listed above for the "Assignment using USB ActiveSync" procedure.

4. Select "Use Specific IP Address" for the device IP address, and enter the IP address that displays when the SDAuthUtilDevice.exe file run at step 2 starts up.

5. Press [OK] to exit the [Options] menu.

6. Select [Tools] - [Smart Device Authentication Utility] to start up the Smart Device Authentication Utility.

7. Enter the IP address entered at step 4 in the [Smart Device Authentication Utility] dialog box and press [Set up device].

8. If authentication is successful, press [Close] at the [Smart Device Authentication Utility] dialog box.

9. Select [Build…] – [Build solution] and then assign a solution.

Unless the IP address is changed, step 9 only is required from the second time onwards.

When debugging, change both methods from [Build…] – [Build solution] to [Debug] – [Start].

3. Device Control

The following table lists devices that can be controlled from the dedicated BHT class library and the respective classes used.

Function	Class	Assembly
Barcode reading	Scanner	DNWA.BHT400CL.dll
Wireless communication	RF	
Backlight	Backlight	
Beeper, vibrator	Beep	
Battery information	Battery	
Keyboard	Keys	
LED	LED	
Power management	PwrMng	
OS update	SysModification	
Status display	Icon	
Screen control	Display	
System information	SysInfo	
Serial communication	COM	DNWA.Tools.BHT.Communication400.dll
File transfer	FileTransfer	

4. Barcode Reading

The barcode reading function has the following features.

- Specification of barcode types for which reading is permitted

- Specification of the trigger switch operation mode

- Specification of the method used to notify the operator that reading is complete

- Acquisition of the read barcode data, number of code digits, and code type

- Calculation of check digits

4.1. Readable Codes

The BHT unit can read the following codes. Codes for which reading is permitted are specified at the Scanner.RdType property.

EAN-13 (JAN-13)	EAN-8 (JAN-8)	UPC-A, UPC-E
Interleaved 2of5 (ITF)	Standard 2of5 (STF)	Codabar (NW-7)
Code-39	Code-93	Code-128 (EAN-128) (*1)
MSI		

(*1) Both Code-128 and EAN-128 can be read by specifying Code-128.

The following options can be specified for the above code types.

Code Type	Option
EAN-13 (JAN-13) EAN-8 (JAN-8) UPC-A, UPC-E	1st character (country flag) Codes with add-on
Interleaved 2of5 (ITF)	No. of read digits Check digits
Codabar (NW-7)	No. of read digits Start/stop characters Check digits
Code-39	No. of read digits Check digits
Code-93	No. of read digits
Code-128	No. of read digits
Standard 2of5 (STF)	No. of read digits Start/stop characters Check digits
MSI	Single-digit check digits

4.2. Trigger Switch Operation Mode

The following four modes exist based on differences in the illumination timing and duration of the illumination LED. These modes are specified at the Scanner.RdMode property.

➢ Auto-off mode (default)

The illumination LED turns ON when the trigger switch is pressed, and turns OFF again when the trigger switch is released or a barcode is read. The illumination LED remains ON for a maximum of five seconds if the trigger switch is held down continuously.

A barcode can be read while the illumination LED is ON. Barcode reading will no longer be possible, however, after reading of a barcode is complete or a barcode device file is closed.

If the illumination LED turns OFF after five seconds has elapsed since the trigger switch is pressed, the trigger switch must be pressed again before barcode reading is possible.

Provided the read data is not read out from the barcode buffer, the illumination LED will not turn ON, and it will not be possible to read the next barcode, even if the trigger switch is pressed.

➢ Momentary switch mode

The illumination LED turns ON and a barcode can be read only when the trigger switch is held down.

Provided the read data is not read out from the barcode buffer, the illumination LED will not turn ON, and it will not be possible to read the next barcode, even if the trigger switch is pressed.

➢ Alternate switch mode

The illumination LED turns ON when the trigger switch is pressed, and remains ON even after the trigger switch is released. The illumination LED turns OFF when the barcode device file is closed or when the trigger switch is pressed again. A barcode can be read while the illumination LED is ON.

The illumination LED turns ON and OFF alternately each time the trigger switch is pressed. Even if a barcode is read normally, provided the read data is not read out from the barcode buffer, the illumination LED turns ON, however, the next barcode cannot be read, even if the trigger switch is pressed.

➢ Continuous read mode

By specifying this read mode, the illumination LED remains ON until the barcode device file is closed, regardless of whether the trigger switch is pressed. A barcode can be read while the illumination LED is ON.

Even if a barcode is read normally, provided the read data is not read out from the barcode buffer, the next barcode cannot be read.

4.3. Display LEDs and Beeper Control

A notification given to inform the operator that barcode reading has been performed successfully can be controlled as follows. This is specified at the Scanner.RdMode property.

- Turn ON/do not turn ON display LEDs. (Default: Turn ON display LEDs.)

- Sound/do not sound beeper. (Default: Do not sound beeper.)

If set to "Turn ON display LEDs.", it will not be not possible to control the LEDs from the application while barcode reading is enabled.

If set to "Do not turn ON display LEDs.", the LEDs can be controlled from the application, even while barcode reading is enabled. As a result, actions such as the following are possible.

- The read barcode value is checked at the user program, and the blue LED is turned ON only when the barcode is read correctly.

- The red LED is turned ON when a barcode is read etc.

If set to "Sound beeper.", the beeper is sounded when the barcode is read correctly.
By changing the Beep.Settings.Device value, it is possible to specify "Beeper only", "Vibrator" only, or "Beeper and vibrator".

4.4. Barcode Data

Read barcode data is stored in the barcode buffer. The buffer is 99 characters in size and can store data for a single input operation. Use the Scanner.Input method to read data from the barcode buffer.

The read barcode type and number of digits can be acquired. By checking the number of digits, it is possible to check whether the read barcode data has been stored in the barcode buffer.

4.5. Check Digit Calculation

It is possible to calculate the barcode check digits. This function is used when adding check digits to a barcode with no check digits.

Check digits in barcode data currently being read are automatically checked by specifying "With check digit" at the Scanner.RdType property and enabling barcode reading.

5. Wireless Communication

5.1. Wireless Communication System Configuration

SS method data communication is performed using a wireless card.

Wireless communication between the host computer and BHT is performed via an access point. Please refer to the "BHT-400B-CE/400BW-CE User's Manual" for further details.
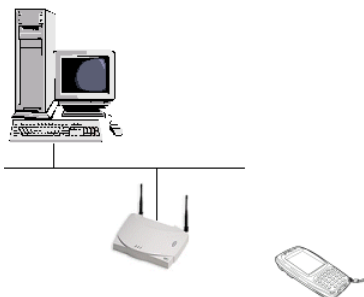
The table below shows the wireless communication devices on the BHT-400 and communication state transition for the above system configuration.

Wireless Communication Device Status	Communication
Open (power on)	Impossible
Checking synchronization with access point	Impossible
Synchronization complete	Possible
Roaming	Impossible: If the BHT is not synchronized with an access point. Possible: If synchronization with an access point is maintained.
Roaming complete	Possible
Close (power off)	Impossible

The wireless communication device will consume a significant amount of power if always open. The device should therefore be closed as much as possible when not in use.

It will, however, take several seconds until the wireless communication device is ready to perform communication after being opened. Frequent opening and closing of the device will require much time, resulting in poor responsiveness. The application purposes of user programs should be taken into account when programming.

When the wireless communication device is synchronized with the access point, the BHT displays a synchronization icon at the LCD screen.

5.2. Wireless Communication Parameters

Make the following system settings in order to establish the wireless communication pathway.

- ESSID (Extended Service Set ID)
  Can be set from the ZeroConfig menu or in the user program.

- POWER
  Can be set from the System menu or in the user program.

When making the settings in the System menu, please refer to the "BHT-400B-CE/400BW-CE User's Manual" for further details.

When no settings are made at the user program, the system settings set at the ZeroConfig menu or in the System menu are used as is.

➢ ESSID

Specify a character string for the ID used over the wireless network. Set the same ID as the SSIS for the access point used for communication. Communication will not be possible if set incorrectly.

> [Ex.] "BHT400" is set for the ESSID.
>
> **MyProfile. SSID** = "BHT400"

➢ POWER

It is possible to set the power mode for the BHT wireless module. The following two power modes are available. The default is EN_POWERSAVE.CAM.

Power Mode	Power Consumption Status
CAM(Continuously Access Mode)	Max. power consumption
PSP(Power Saving Polling)	Min. power consumption

> [Ex.] Set the power mode to "Consumes much power".
>
> **RF.Settings.PowerSave** = **RF.Settings.EN_POWERSAVE.CAM**

5.3. Security

The BHT can be used with following security configurations.

- PEAP (802.1x)

- EAP-TLS (802.1x)

- PEAP (WPA)

- EAP-TLS (WPA)

- PSK (WPA)

Details of the parameters used with the above security configurations are outlined in the table below.

(●: Setting enabled, –: Setting disabled)

Parameter	Security					
	None	PEAP (802.1x)	EAP-TLS (802.1x)	PEAP (WPA)	EAP-TLS (WPA)	PSK (WPA)
Authentication	Open	Open	Open	WPA	WPA	WPA-PSK
Encryption	Disable WEP(static)	WEP (auto distribution)	WEP (auto distribution)	TKIP	TKIP	TKIP
802.1x	Disable	PEAP	EAP-TLS	PEAP	EAP-TLS	Disable
ESSID	●	●	●	●	●	●
Profile Priority	●	●	●	●	●	●
Pre-shared Key	–	–	–	–	–	–
WEP Key	●	–	–	–	–	–

> [Ex.] Settings required to connect to network using PEAP(802.1x):
>
> **MyProfile.Authentication = RF.Profile.EN_AUTHENTICATION.OPEN**
>
> **MyProfile.Encryption = RF.Profile.EN_ENCRYPTION.WEP**
>
> **MyProfile.EAP8021x = RF.Profile.EN_EAP8021X.PEAP**

5.4. Programming

The programming procedure required to connect to the network is as follows.

1. Select the profile to be edited.

   Use ESSID and Infrastructure to specify the profile.

   A new profile is created if no profile applicable to the specified ESSID and Infrastructure combination exists.

2. Change parameter 1, parameter 2, ……parameter N for the selected profile.

3. Reflect the set parameters to the driver.

4. Open the wireless device.

5. Check synchronization with the AP (*1).

   (*1) The following is a list of possible reasons why it may not be possible to obtain synchronization with the AP.

   - The wireless communication device is preparing to open.

     Several seconds are required to open the wireless communication device and obtain synchronization with the access point. Furthermore, there are times when several tens of seconds are required to connect to the network and acquire the IP when using DHCP.

   - The BHT is moving from the current access point to the next access point by roaming.

   - The BHT has been moved to a location outside the range of the AP.

   - The BHT has been moved to a location where an obstacle exists that prevents wireless communication with the AP.

6. Backlight

The backlight function has the following features.

- Backlight control

- Backlight control key specification

- Backlight illumination duration specification

- Brightness adjustment

- Backlight OFF/DIM toggle

6.1. Backlight Control

The backlight can be controlled using the following methods.

- Control by pressing the backlight function control key

- Control using the backlight control property

The backlight function can be enabled/disabled by pressing the backlight function control key (Default: Hold down [SF] key and press [M4].).

With the backlight function enabled, press any key or tap the touch panel to turn the backlight ON.

If a key is not pressed or the touch panel is not tapped within the backlight illumination duration, the backlight function remains enabled, however the backlight itself will turn OFF or dim.

The backlight illumination status can be controlled by entering a value at the Backlight.Status property, regardless of whether it is currently disabled or disabled. Furthermore, the illumination status can be acquired by reading the property value.

```
                          ┌─────────────────┐
                          │    Disabled     │
                          └─────────────────┘

Press backlight function control key,
         or
   Status = ENABLE_ON

                                    Press backlight function control key,
              Status = ENABLE_OFF                    or
                                           Status = DISABLE_OFF

                          ┌─────────────────┐
                          │ Enabled, OFF/DIM │
                          │ [Default Status] │
                          └─────────────────┘

                                    Illumination duration elapses
 Press key other than backlight     since key last pressed or touch
 function control key or tap                panel tapped,
      touch panel,                              or
          or                          Status = ENABLE_OFF
   Status = ENABLE_ON
                                    Press backlight function control key,
                                                    or
                                           Status = DISABLE_OFF

                          ┌─────────────────┐
                          │   Enabled, ON   │
                          └─────────────────┘
```

6.2. Backlight Control Key

The backlight function control key can be specified with the Backlight.Settings.CtrlKey property. The backlight is controlled by holding down the [SF] key and pressing [M4] by default. Furthermore, the current backlight control key can be acquired by reading the property value.

Backlight Control Key	Setting	Backlight Control Key	Setting
		[SF] + [.]	0x0001000A
		[SF] + [BS]	0x0001000B
		[SF] + [C]	0x0001000C
[F1]	0x00000101		
[F2]	0x00000102		
[F3]	0x00000103		
[F4]	0x00000104		
[F5]	0x00000105		
[F6]	0x00000106		
[F7]	0x00000107		
[F8]	0x00000108		
[F9]	0x00000109		
[F10]	0x0000010A		
[F11]	0x0000010B		
[F12]	0x0000010C		
[SCAN]	0x00000200	[SF] + [SCAN]	0x00010200
[M1]	0x00000201	[SF] + [M1]	0x00010201
[M2]	0x00000202	[SF] + [M2]	0x00010202
[M3H] (half-press)	0x00000243	[SF] + [M3H] (half-press)	0x00010243
[M3]	0x00000203	[SF] + [M3]	0x00010203
[M4H] (half-press)	0x00000244	[SF] + [M4H] (half-press)	0x00010244
[M4]	0x00000204	[SF] + [M4]	0x00010204

6.3. Backlight Illumination Duration

The backlight illumination duration time can be set at or acquired from the Backlight.Settings.OnTimeBattery /OnTimeACTime property when the backlight is powered by the battery or when the BHT is installed on the CU.

The illumination duration default value is 3 seconds when powered by the battery, and 60 seconds when installed on the CU.

The illumination duration begins from the moment all keys or the touch panel is released.

6.4. Brightness

The brightness when the backlight turns ON can be set at or acquired from the Backlight.Settings.Brightness property.

The backlight brightness can be selected from the following four levels:

0 (OFF), 1 (dark) to 3 (bright)   (Default: 3)

6.5. OFF/DIM Toggle

It is possible to set or acquire whether the backlight turns OFF completely or dims when not lit at the Backlight.Settings.PowerSave property.

Default: DIM

The Backlight.Status property should be ENABLE_OFF (OFF/dimmer) or DISABLE (disabled) in either case.

7. Beeper, Vibrator

The beeper and vibrator function is equipped with the following features.

- The beeper or vibrator is selected and the beeper volume setting made at the system settings.

- Sound pattern specification

7.1. Beeper/Vibrator Selection

It is possible to select from "Beeper only", "Vibrator only", and "Beeper and vibrator".

Sounding of the beeper or activation of the vibrator from the application is controlled using an indexer. The beeper or vibrator is specified for the index.

> [Ex.] Sound beeper only.
>
> [VB] MyBeep.Item(Beep.Settings.EN_DEVICE.BEEP) = Beep.EN_CTRL.ON
>
> [C#] MyBeep[Beep.Settings.EN_DEVICE.BEEP] = Beep.EN_CTRL.ON

> 例) Sound beeper and vibrator.
>
> [VB] MyBeep.Item(Beep.Settings.EN_DEVICE.BEEP Or _
>
> Beep.Settings.EN_DEVICE.VIBRATOR) = Beep.EN_CTRL.ON
>
> [C#] MyBeep[Beep.Settings.EN_DEVICE.BEEP
>
> | Beep.Settings.EN_DEVICE.VIBRATOR] = Beep.EN_CTRL.ON

Specify whether to sound the beeper or activate the vibrator when displaying a warning message and so forth upon the completion of barcode reading at the Beep.Settings.Device property.

7.2. Beeper, Vibrator Parameters

The beeper and vibrator parameters are listed in the following table.

Parameter	Setting	Default
ON duration (/100 msec)	0 to 255	5
OFF duration (/100 msec)	0 to 255	5
Frequency (beeper only)	39 to 32767Hz, 0:698Hz, 1:1396 Hz, 2:2793Hz	2
Repeat count (times)	0 to 255	1

The beeper or vibrator will remain ON continuously if the ON duration is set to a value other than "0" and the OFF duration is set to "0".

7.3. Beeper Volume

The beeper volume level can be selected from the six levels shown in the table below, however, there are in fact only four levels; OFF, Low, Medium and High.

Setting	Volume Level
0	OFF
1	Low
2	
3	Medium
4	
5	High

When sounding the beeper from the application, the volume setting is valid only when the frequency is set to "0", "1", or "2".
The beeper will sound at maximum volume at all other frequency settings.

The key click sound, half-press key click sound, and touch panel tap sound volume can also be controlled from the application. The volume for each of these sounds is set at the Beep.Settings.VolumeKey, Beep.Settings.VolumeHalfKey, and Beep.Settings.VolumeTap property items, respectively, and can be set to "OFF", "Low", or "High".

Furthermore, it is possible to turn the click sound ON or OFF for individual magic keys (full or half-press) set for trigger keys and marker keys. The value set at the Beep.Settings.VolumeKey/VolumeHalfKey properties is used only when set to "ON". The default click sound for magic keys (full or half-press) set for trigger keys and marker keys is "OFF".

7.4. Beeper and Vibrator Control

The beeper sounding or vibrator activation is called up asynchronously, the process is returned to the application immediately after the setting is made, and the beeper or vibrator operates in the background.

7.5. Priority Order

The priority order for sounding the beeper or activating the vibrator is set for each event.

If an activation request is received when a high-priority event occurs while the beeper/vibrator is currently activated due to a low-priority event, the beeper/vibrator for the low-priority event is stopped, and the beeper/vibrator is activated for the high-priority event.

If an activation request is received when a low-priority event occurs while the beeper/vibrator is currently activated due to a high-priority event, the beeper/vibrator for the low-priority event is ignored, and the process is returned.

Priority	Events That Activate Beeper/Vibrator
High	System error
	Completion of barcode reading
	Setting in applications
Low	Key clicks or screen taps

8. Battery Information

The battery information function provides the following information.

- Battery voltage (mV)

- CU installation status (charge status)

- Battery level

- Battery type

There are six battery levels.

The battery level is "HIGH" when fully charged and continues to drop to "MID" and then "LOW" and so on as the BHT is used.

If a key is pressed or the touch panel is tapped when the battery level is "LOW", the beeper will sound three times and a "Battery voltage low" message displays. This message will not display again until the BHT is next suspended or resumed.

If use of the BHT is continued even when the battery voltage is low, the beeper will sound five times, a "Please recharge battery." message displays, and the BHT automatically goes into suspend mode. It will then not be possible to resume the BHT until the battery has been sufficiently charged.

Level	Voltage
HIGH	3.9 V or above
MID	Less than 3.9 V
LOW	Less than 3.7 V (Beeper sounds once and message displays.)
WARNING	Less than 3.6 V (Beeper sounds three times, message displays, and BHT suspended automatically.)
CRITICAL	Less than 3.4 V (BHT does not operate.)
NO_BATTERY	No battery installed (BHT does not operate.)

The actual battery voltage may differ depending on how the BHT is used. Barcode reading and wireless communication and so forth exert a large load on the battery and therefore the voltage level may display lower than the actual level at such times. A message displays and the BHT switches to suspend mode at such times also.

Ensure to always use a lithium-ion battery.

9. Keyboard

The following key functions exist in addition to the standard press/release functions.

- Input mode change

- Magic key function assignment

- [SF] key operation mode change

9.1. Input Mode Change

The following input modes are available.

- Numeric entry mode (default), function mode (*1)
  By pressing the [FUNC] key, an icon displays and the mode changes to Function mode, however, the operation for the returned virtual key codes and display characters does not change.

- Alphabet entry mode

Change to alphabet entry mode by pressing the [ALP] key or by enabling the Keys.Settings.InputMethod property.

Changing the input mode using the [ALP] key can be prohibited using the Keys.Settings.AllowChangeIM property.
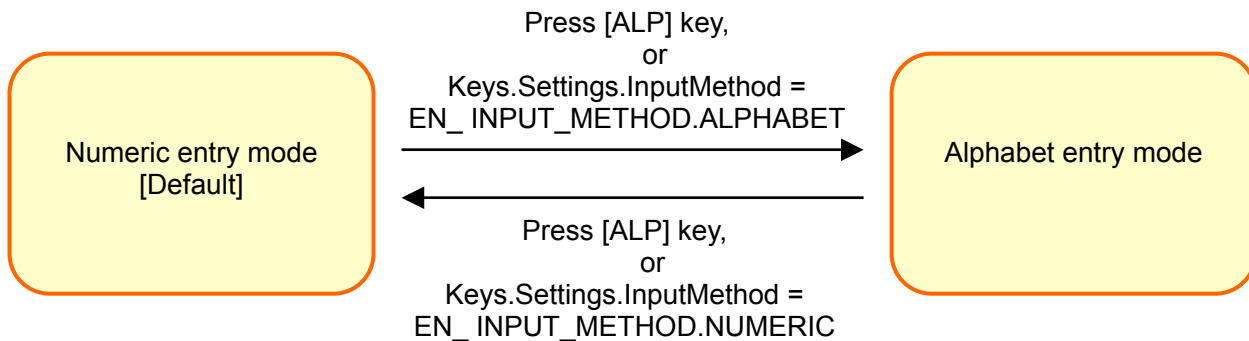
9.2. Function Mode

The function mode can be changed by pressing the [FUNC] key or enabling the Keys.Settings.FuncMode property. The virtual key codes and display characters returned when keys are pressed in function mode are shown in "Appendix 2. Virtual Keyboard and Display Characters".
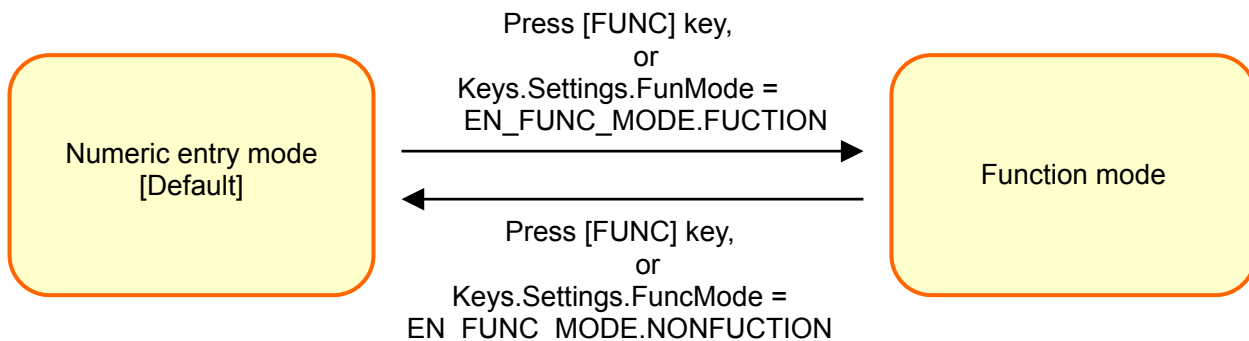
9.3. Numeric Entry Mode

The virtual key codes and display characters returned when keys are pressed in numeric entry mode are shown in "Appendix 2. Virtual Keyboard and Display Characters".

9.4. Alphabet Entry Mode

With the 31-key type BHT-400, it is only possible to use the keys to enter alphabet characters when in this input mode.

The virtual key codes and display characters returned when keys are pressed in alphabet entry mode are shown in "Appendix 2. Virtual Keyboard and Display Characters".

➢ Entry Method

Alphabet characters are entered in a way similar to that on mobile phones. When changing to alphabet entry mode, an unestablished character display window similar to that shown below displays. When the key for the alphabet character to be entered is pressed, the character displays in this window as an unestablished character. When the alphabet character to be entered displays in this window, it is established, and the alphabet character is actually entered.

	▪ The focus is not transferred.
ALP	▪ The window always displays in the foreground.
	▪ The window can be moved by using the stylus.
	▪ "SP" displays when the unestablished character is a space.

➢ Unestablished character establishment method

Press any of the following keys to establish unestablished characters.

- [0] to [9], [.] keys that differ from key pressed at unestablished character

- [ENT] key

- [MAGIC_FUNC_ENTER] assigned to [M1], [M2], [M3], [M3H], [M4], [M4H], [M5], [M5H], and [SCAN] keys

- [F1] to [F12] keys

➢ Keys used for alphabet entry mode

The table below lists keys whose operations are different from those in the numeric entry mode.

Key	Description
[0] to [9] and period [.] keys	Used to enter alphabet characters. The alphabet characters assigned to each key are based on the character codes in "Appendix 2. Virtual Keyboard and Display Characters".
[ENT] key	Establishes unestablished keys if any exist. If there are no unestablished keys, the same character code as that for the numeric entry mode is returned.
[BS] key	Clears unestablished keys if any exist. If there are no unestablished keys, the same character code as that for the numeric entry mode is returned.
[C] key	Clears unestablished keys if any exist. If there are no unestablished keys, the same character code as that for the numeric entry mode is returned.
[F1] to [F12] keys	Establishes unestablished keys if any exist. If there are no unestablished keys, the same character code as that for the numeric entry mode is returned.
M1, M2, M3H, M3, M4H, M4, M5H, M5, and [SCAN] keys	Establishes unestablished keys if any exist when MAGIC_FUNC_ENTER is assigned to these keys. If there are no unestablished keys, the same character code as that for the numeric entry mode is returned.
[ALP] key	Clears unestablished keys if any exist and switches to numeric entry mode.

9.5. Magic Key Operation

➢ Magic key function assignment

The following functions are assigned to magic keys.

None	[ENT] key	Trigger key	[SF] key	Backlight control
Marker light	[CTL] key	[ALT] key	[TAB] key	CLEAR key

The default functions for each magic key are as follows.

Key	Default Function	Key	Default Function
[M1]	[TAB]		
[M2]	None		
[M3]	Trigger	[M3H]	Marker light
[M4]	Trigger	[M4H]	Marker light
[M5]	Trigger	[M5H]	Marker light
[SCAN]	Trigger		

The virtual key codes and display characters returned when functions are assigned to magic keys are as follows.

Parameter	Function	Virtual Key Code	Character Code
MAGIC_FUNC_NONE	None	Keys.M1 to Keys.M5, Keys.M3H to Keys.M5H Keys.Scan	–
MAGIC_FUNC_ENTER	[ENT]	Keys.Return	0D(H)
MAGIC_FUNC_TRG	Trigger	Keys.M1 to Keys.M5, Keys.M3H to Keys.M5H Keys.Scan	
MAGIC_FUNC_SHIFT	[SF]	Keys.Shift	–
MAGIC_FUNC_BLT	Backlight control	Keys.M1 to Keys.M5, Keys.M3H to Keys.M5H Keys.Scan	–
MAGIC_FUNC_TAB	[TAB]	Keys.Tab	09(H)
MAGIC_FUNC_LASER	Marker light	Keys.M1 to Keys.M5, Keys.M3H to Keys.M5H Keys.Scan	–
MAGIC_FUNC_CTRL	[CTRL]	Keys.Control	–
MAGIC_FUNC_ALT	[ALT]	Keys.Menu	–
MAGIC_FUNC_CLEAR	CLEAR	Keys.Clear	–

9.6. Shift Key Operation

The following two shift key ([SF]) operation modes are available.

Operation Mode	Description
Normal	• Shift status when [SF] key pressed
Onetime lock	• Shift status not only when the [SF] key is held down but also while the next key (except the trigger switch) is pressed and released after the [SF] key is released. • The trigger switch does not act as a [SF] key.

9.7. Auto Repeat Function

The key auto repeat function is activated when a single key is held down continuously. The following table shows the list of valid keys and invalid keys for the auto repeat function.

Key	31-key Type	50-key Type
[0] to [9] and period [.] keys	• In numeric entry mode: ● • In alphabet entry mode: –	●
[A] to [Z] keys	–	●
[SP] key ([SF] + [BS])	●	●
[BS] key	●	●
[C] key	●	●
Arrow keys	●	●
[F1] to [F12] keys	●	●
[SF] key	–	–
[Func] key	–	–
[ENT] key	–	–
[TAB] key	●	●
[SEND] key	–	–
[ALP] key	–	–
[SCAN] key	Same as magic key	Same as magic key
Magic keys	• No key assignment. : – • [ENT] key : – • Trigger key : – • [SF] key : – • Backlight ctl key : – • [TAB] key : ● • Laser light key : – • [CTRL] key : – • [ALT] key : – • CLEAR key : –	• No key assignment. : – • [ENT] key : – • Trigger key : – • [SF] key : – • Backlight ctl key : – • [TAB] key : ● • Laser light key : – • [CTRL] key : – • [ALT] key : – • CLEAR key : –
[PW] key	–	–

●: Auto repeat, –: No auto repeat

9.8. Keyboard Type

There are two types of keyboard; a 31-key type and a 50-key type. The keyboard type can be acquired from the application.

10. LED

The BHT has two LEDs, a display LED (red/blue) to notify the operator that barcode reading is complete, and a charge LED (red/green) to notify the operator of the charge status.

The illumination status for the display LED can be controlled from the application.

The illumination status is set and acquired using a 2D indexer. The illumination device (display (barcode) LED only on BHT-400) is specified for the first index, and the illumination color (red or green) is specified for the second index.

> [Ex.] Turn ON the red display LED.
>
> [VB] MyLED. (LED.EN_DEVICE.BAR,LED.EN_COLOR.RED) _
>
> = LED.EN_CTRL.ON
>
> [C#] MyLED[LED.EN_DEVICE.BAR,LED.EN_COLOR.RED]
>
> = LED.EN_CTRL.ON

The priority order relationship is as follows:

(Barcode read based control) > (application based control)

If "Turn ON LED when barcode reading complete." is specified and barcode reading is enabled, the display LED illumination status cannot be controlled from the application until barcode reading is next disabled.

The illumination request from the application, however, is retained in the variable flag (RAM) inside the LED driver. Illumination requests are also set and cleared while barcode reading is enabled. When barcode reading is disabled, the flag is checked and the LED color for which an illumination request exists is turned ON automatically.

[Ex.]

[Default status]

	Red	Green
Status	OFF	OFF
Rqst.	No	No

Red LED ON specified from application. →

	Red	Green
Status	ON	OFF
Rqst.	Yes	No

Reading enabled →

	Red	Green
Status	OFF	OFF
Rqst.	Yes	No

Reading disabled →

	Red	Green
Status	ON	OFF
Rqst.	Yes	No

Red LED ON

Blue LED ON specified from application. →

	Red	Green
Status	ON	ON
Rqst.	Yes	Yes

Reading enabled →

	Red	Green
Status	OFF	OFF
Rqst.	Yes	Yes

Red LED OFF specified from application. →

	Red	Green
Status	OFF	OFF
Rqst.	No	Yes

Reading disabled →

	Red	Green
Status	OFF	ON
Rqst.	No	Yes

Blue LED ON

The red LED is shared with the charge LED and turns ON in either of the following situations.

1. The red LED is turned ON from the application.
2. While the BHT is charging

If, therefore, an attempt is made to turn OFF the red LED from the application while charging, the LED will remain ON.

11. Power Management

The four power statuses are listed in the table below.

	Power ON	Standby (*1)	Suspend (*2)	Critical OFF(*2)
CPU	TURBO RUN / RUN / IDLE	DEEP IDLE	SLEEP	SLEEP
LCD	ON	ON	OFF	OFF

(*1) No processing is performed when the BHT is on standby. Furthermore, ensure to disable standby before accessing the card.

(*2) The events that cause the BHT to switch to the suspend and critical OFF statuses differ. The BHT status when the power is turned OFF by pressing the power key or when using the auto OFF function is referred to as "Suspend", and the status when the power turns OFF due to low battery voltage or when the battery cover lock is released is referred to as "Critical OFF".

The power status and power consumption relationship is as follows.

(Power ON) > (Standby) > (Suspend) = (Critical OFF)

11.1. Standby Transition Conditions

The BHT switches to standby when the event that prohibits standby has been completed, and the standby transition time has elapsed.

➢ Events that prohibit standby

- Keyboard being used
- Touch panel being tapped
- Screen display being refreshed
- Beeper/vibrator activated
- Click sound activated
- Backlight ON
- Barcode being read
- Wireless communication open
- IrDA connection open
- USB connection open
- Data being deleted from or written to flash memory
- RTC being accessed
- Display LED ON
- A system message is displayed

The standby transition time can be set or acquired using the PwrMng.Settings.StandbyTime property. Transition to standby can be prohibited by setting this property to "0".

11.2. Suspend Transition Conditions

The BHT switches to suspend when the power key is pressed, when the event that prohibits suspend has been completed and the auto power OFF time has elapsed, and when the method used to switch to suspend is called from the application.

➢ Events that prohibit suspend

 - Wireless connection open (Excludes BHT-400 models used in USA and Canada.)

 - IrDA connection open

 - Connector communication being performed

 - Key being pressed

 - Touch panel being tapped

The auto power OFF time when the BHT is powered by the battery and when it is installed on the CU can be set or acquired at the PwrMng.Settings.AutoPowerOffBattery and AutoPowerOffExt properties, respectively. Auto power OFF can be disabled by setting this property to "0".

It is also possible to switch to suspend from the application by calling up the PwrMng.Shutdown method. Furthermore, operation after the transition to suspend can be specified by setting the parameters for the methods.

Parameter	Description
WARM	Warm boot is performed after power OFF. There is no need to turn the power ON, the contents of the RAM are retained.
SUSPEND	The BHT switches to suspend. Press the power key to turn ON the power. The contents of the RAM are retained provided that the sub-battery does not become fully discharged.
COLD_BOOT_REGINIT	The BHT cold boots automatically after power OFF. The contents of the RAM are deleted, and the registry is reinitialized.
COLD_BOOT_REGREMAIN	The BHT cold boots automatically after power OFF. The contents of the registry at this time are saved, and then restored when the BHT is started up.
SYSMODIFY	The BHT cold boots automatically after power OFF, and the consecutive RAM allocation is maintained.
COLD	The BHT cold boots automatically after power OFF,. If the registry has been saved, the BHT is booted based on the values for that registry, however, if it has not been saved, the BHT is booted based on the values for the default registry value.

➢ Warm boot and cold boot

The memory contents retention status differs between warm boot and cold boot.

	Warm Boot	Cold Boot
Files in flash memory	●	●
Files in RAM	●	–
Data being edited	–	–
Registry information	●	– (*1)

(*1) If the registry is saved, the information is restored to the values at the point it is saved.

12. Updating the OS

The system can be updated (version update) by creating and executing the update applications discussed in the procedure below while Windows CE is running.

➢ Update method using RAM

(1) Call up the PwrMng.Shutdown(PwrMng.EN_SHUTDOWN_MODE.SYSMODIFY) method and reboot the BHT (*1).
(2) After rebooting, a "SysModify" directory (RAM disk) is created. Copy the OS file to this directory.
(3) Specify the update filename in the SysModification.FileName property.
(4) Call up the SysModification.Execute method to update the OS.
(5) The power turns OFF automatically after the update procedure is complete (The BHT cold boots and the registry is initialized the next time the power is turned ON.)

➢ Update method using CF memory card

(1) Call up the PwrMng.Shutdown(PwrMng.EN_SHUTDOWN_MODE.SYSMODIFY) method and reboot the BHT (*1).
(2) Save the OS file to the CF memory card and insert the card in the BHT-400 CF slot.
(3) Perform steps (3) to (5) above for the "Update method using RAM".

(*1) After rebooting, the RAM usage allocation is decreased by approximately 32 MB in order to ensure that the system secures approximately 32 MB for updating the OS.

13. Status Display

Enabling and disabling of the following status display icons can be controlled from the application.

	Property	Icon	Meaning
Residual battery voltage	Battery	▥	High　　　　3.9 V or more
		▤	Medium　　Less than 3.9 V
		▢	Low　　　　Less than 3.7 V
		▭	Warning　　Less than 3.6 V
[SF] key	Shift Key	SF	[SF] key pressed
Standby transition	Standby	z^z^z	Switching to standby
Wireless communication	Wireless	T	Wireless connection open
		Tı	Radio field intensity: Low Synchronous connection
		Tıı	Radio field intensity: Medium Synchronous connection
		Tııl	Radio field intensity: High Synchronous connection
SIP	SIP	A	Starting up SIP input.
		A	Awaiting SIP input.
Alphabet entry	Alphabet	Alp	Currently in alphabet entry mode
Function mode	Func	F	Currently in function mode

14. System Information

The following system information can be acquired from the BHT.

- System version

- Machine name

- Machine No.

- Serial No.

- RAM size

- ROM size

The RAM and ROM size constitute the size of the BHT memory. This does not refer to the amount of available space or user space.

15. Data Communication

The following communication interfaces can be used for communication with the host computer. Of the three listed below, the IrDA interface and connector interface can be used with the CommSerial class and FileTransfer class in order to create applications.

- IrDA interface (IrDA-SIR1.2)

- Connector interface

- USB interface

15.1. IrDA Interface

The IrDA interface is assigned to port no. 4.

Communication Parameter	Setting	Default
Transmission speed (bps)	115200, 57600, 38400, 19200, 9600	9600

The IrDA interface conforms to an IrDA physical layer (IrDA-SIR1.2), and therefore parameters other than transmission speed are all fixed (vertical parity = none, character length = 8 bits, stop bit length = 1 bit).

15.2. Connector Interface

The connector interface is assigned to port no. 1.

Communication Parameter	Setting	Default
Transmission speed (bps)	115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200, 600, 300	9600
Vertical parity	None, even number, odd number	None
Data length	7 bits, 8 bits	8
Stop bit length	1 bit, 2 bits	1

15.3. File Transfer

The FileTransfer class can be used to create a file transfer application using Y-modem communication.

In addition to the file itself, the "filename" and "file update date" are also transferred. If, however, the application at the computer side is not compatible with the file update date, the transfer time will be set for both uploading and downloading.

15.4. ActiveSync Auto Connection

The ActiveSync auto connection function can be enabled or disabled from the application.

This can be set for each communication interface.

The default value for all communication interfaces is "Disabled".

The CU-421 is required for ActiveSync auto connection using IrDA.

16. Namespaces

The following three namespaces exist in the BHT-400 class library.

Namespace Name	Description
DNWA.BHTCL	Class group used to realize functions unique to the BHT-400.
DNWA.Exception	Thrown exception class group.
DNWA.Tools.BHT.Communication	File Transfer, Serial Communication

17. Class

DNWA.BHTCL Namespace

The DNWA.BHTCL namespace includes the following classes.

Class Name	Description
17.1. Scanner	Barcode read control, read results acquisition
17.2. Scanner.CodeInfo	Code information
17.3. Scanner.Settings	Barcode related system settings
17.4. BatteryCollection	Battery collection
17.5. BatteryCollection.Battery	Battery information acquisition
17.6. Backlight	Backlight illumination control
17.7. Backlight.Settings	Backlight related system settings
17.8. LED	LED illumination control
17.10. Beep	Beeper/vibrator control
17.11. Beep.Settings	Beeper/vibrator related system settings
17.12. RF	Wireless connection open/close
17.13. RF.Profile	Wireless communication profile properties
17.14. RF.Settings	Wireless communication related settings
17.15. RF.WepKeyCollection	Wep key
17.16. RF.SiteSurvey	SiteSurvey information
17.17. RF.Info	Wireless device information
17.18. Keys	Keyboard related definitions
17.19. Keys.Settings	Keyboard related settings
17.22. PwrMng	Power management control
17.23. PwrMng.Settings	Power management related settings
17.20. SysInfo	System information
17.21. SysInfo.Settings	System information related system settings
17.24. Icon	Dedicated BHT icons
17.25. Icon.Settings	Icon display enabled/disabled
17.26. Display	Screen control
17.27. Display.Settings	Screen control settings
17.28. SysModification	OS update

DNWA.Exception Namepsace

The DNWA.Exception namespace includes the following classes.

Class Name	Description
17.29. ArgumentException	An exception thrown when a specified parameter is invalid.
17.30. ObjectDisposedException	An exception thrown when an operation request is issued to a device whose file has not been opened.
17.31. SecurityException	An exception thrown when an open request is issued to a device file for which authorization for opening cannot be obtained (e.g., when the file is already opened).
17.32. DeviceNotFoundException	An exception thrown when an operation request is issued to a device that is not installed on the BHT.
17.33. DeviceLoadException	An exception that is thrown when an operation request is issued to a device that is not ready to process it.
17.34. NotSupportedException	An exception that is thrown when an attempt is made to carry out a function that is not supported.

DNWA.Tools.BHT.Communication Namespace

The DNWA.Tools.BHT.Communication namespace includes the following classes.

Class Name	Description
17.35. CommSerial	Serial communication
17.36. FileTransfer	File transfer using Y-modem protocol

17.1. Scanner

Controls barcode reading and acquires the read data.

For a description of all members of this class, refer to section "18.1. Scanner".

➢   Syntax

```
[VB]
Public Class Scanner
```

```
[C#]
public class Scanner
```

➢   Namespace

DNWA.BHTCL

➢   Assembly

DNWA.BHT400CL.dll

17.2. Scanner.CodeInfo

Acquires the code information read by the scanner.

This class exists within the Scanner class.

For a description of all members of this class, refer to section "18.2. Scanner.CodeInfo".

➢ Syntax

```
[VB]
Public Class Scanner.CodeInfo
```

```
[C#]
public class Scanner.CodeInfo
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.3. Scanner.Settings

Sets or acquires barcode related parameters.

This class exists within the Scanner class.

For a description of all members of this class, refer to section "18.3. Scanner.Settings".

➢ Syntax

```
[VB]
Public Class Scanner.Settings
```

```
[C#]
public class Scanner.Settings
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.4. BatteryCollection

Acquires information on the battery such as the charge status and output voltage.

For a description of all members of this class, refer to section "18.4. BatteryCollection".

➤ Syntax

```
[VB]
Public Class BatteryCollection
```

```
[C#]
public class BatteryCollection
```

➤ Namespace

DNWA.BHTCL

➤ Assembly

DNWA.BHT400CL.dll

17.5. BatteryCollection.Battery

Acquires information on the battery such as the charge status and output voltage.

For a description of all members of this class, refer to section "18.5. BatteryCollection.Battery".

➢ Syntax

```
[VB]
Public Class BatteryCollection.Battery
```

```
[C#]
public class BatteryCollection.Battery
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.6. Backlight

Sets or acquires the ON/OFF status of the backlight.

For a description of all members of this class, refer to section "18.6. Backlight".

➢ Syntax

```
[VB]
Public Class Backlight
```

```
[C#]
public class Backlight
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.7. Backlight.Settings

Sets or acquires backlight related parameters.

This class exists within the Backlight class.

For a description of all members of this class, refer to section "18.7. Backlight.Settings".

➢ Syntax

```
[VB]
Public Class Backlight.Settings
```

```
[C#]
public class Backlight.Settings
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.8. LED

Sets or acquires the LED ON/OFF status.

For a description of all members of this class, refer to section "18.8. LED".

➢ Syntax

```
[VB]
Public Class LED
```

```
[C#]
public class LED
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.9. LED.UsageCollection

This class is invalid at the BHT-400.

17.10. Beep

Controls the beeping of the beeper and vibration of the vibrator.

For a description of all members of this class, refer to section "18.10. Beep".

➢ Syntax

```
[VB]
Public Class Beep
```

```
[C#]
public class Beep
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.11. Beep.Settings

Sets or acquires the beeper and vibrator related parameters.

This class exists within the Beep class.

For a description of all members of this class, refer to section "18.11. Beep.Settings".

➢ Syntax

```
[VB]
Public Class Beep.Settings
```

```
[C#]
public class Beep.Settings
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.12. RF

Opens and closes wireless communication, and sets or acquires the parameters for wireless communication.

For a description of all members of this class, refer to section "18.12. RF".

➢ Syntax

```
[VB]
Public Class RF
```

```
[C#]
public class RF
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.13. RF.Profile

Sets or acquires properties for the wireless communication profile.

This class exists within the RF class.

For a description of all members of this class, refer to section "18.13. RF.Profile".

➢ Syntax

```
[VB]
Public Class RF.Profile
```

```
[C#]
public class RF.Profile
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.14. RF.Settings

Sets or acquires the parameters for wireless communication.

This class exists within the RF class.

For a description of all members of this class, refer to section "18.14. RF.Settings".

➢ Syntax

```
[VB]
Public Class RF.Settings
```

```
[C#]
public class RF.Settings
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.15. RF.WepKeyCollection

Specifies the Wep key.

This class exists within the RF class.

For a description of all members of this class, refer to section "18.15. RF.WepKeyCollection".

➢ Syntax

```
[VB]
Public Class RF.WepKeyCollection
```

```
[C#]
public class RF.WepKeyCollection
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.16. RF.SiteSurvey

Acquires SiteSurvey data.

This class exists within the RF class.

For a description of all members of this class, refer to section "18.16. RF.SiteSurvey".

➢ Syntax

```
[VB]
Public Class RF.SiteSurvey
```

```
[C#]
public class RF.SiteSurvey
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.17. RF.Info

Acquires information on wireless communication.

This class exists within the RF class.

For a description of all members of this class, refer to section "18.17. RF.Info".

➤ Syntax

```
[VB]
Public Class RF.Info
```

```
[C#]
public class RF.Info
```

➤ Namespace

DNWA.BHTCL

➤ Assembly

DNWA.BHT400CL.dll

17.18. Keys

Sets or acquires keyboard related parameters and defines the magic key.

For a description of all members of this class, refer to section "18.18. Keys".

➢ Syntax

```
[VB]
Public Class Keys
```

```
[C#]
public class Keys
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.19. Keys.Settings

Sets or acquires keyboard related parameters.

This class exists within the Keys class.

For a description of all members of this class, refer to section "18.19. Keys.Settings".

➢ Syntax

```
[VB]
Public Class Keys.Settings
```

```
[C#]
public class Keys.Settings
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.20. SysInfo

Sets or acquires system information.

For a description of all members of this class, refer to section "18.20. SysInfo".

➢ Syntax

```
[VB]
Public Class SysInfo
```

```
[C#]
public class SysInfo
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.21. SysInfo.Settings

Sets or acquires parameters related to the system information.

This class exists within the SysInfo class.

For a description of all members of this class, refer to section "18.21. SysInfo.Settings".

➢ Syntax

```
[VB]
Public Class SysInfo.Settings
```

```
[C#]
public class SysInfo.Settings
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.22. PwrMng

Sets or acquires power management related parameters for the BHT and controls the shut down process.

For a description of all members of this class, refer to section "18.22. PwrMng".

➢ Syntax

```
[VB]
Public Class PwrMng
```

```
[C#]
public class PwrMng
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.23. PwrMng.Settings

Sets or acquires the parameters for power management.

This class exists within the PwrMng class.

For a description of all members of this class, refer to section "18.23. PwrMng.Settings".

➢ Syntax

```
[VB]
Public Class PwrMng.Settings
```

```
[C#]
public class PwrMng.Settings
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.24. Icon

Sets or acquires the icon display status (enabled/disabled).

For a description of all members of this class, refer to section "18.24. Icon".

➢ Syntax

```
[VB]
Public Class Icon
```

```
[C#]
public class Icon
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.25. Icon.Settings

Enables or disables the display of icons.

This class exists within the Icon class.

For a description of all members of this class, refer to section "18.25. Icon.Settings".

➢ Syntax

```
[VB]
Public Class Icon.Settings
```

```
[C#]
public class Icon.Settings
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.26. Display

This function is not supported.

17.27. Display.Settings

This function is not supported.

17.28. SysModification

Updates the BHT system program.

For a description of all members of this class, refer to section "18.28. SysModification".

➢ Syntax

```
[VB]
Public Class SysModification
```

```
[C#]
public class SysModification
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.BHT400CL.dll

17.29. ArgumentException

An exception that is thrown when the value set in the property or the value of one of the parameters specified in the method is invalid.

➢ Syntax

```
[VB]
Public Class ArgumentException
    Inherits System.ArgumentException
```

```
[C#]
public class ArgumentException : System.ArgumentException
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.Exception.dll

17.30. ObjectDisposedException

An exception that is thrown when an operation request is issued to a device whose file has not been opened.

➢ Syntax

```
[VB]
Public Class ObjectDisposedException
    Inherits System.ObjectDisposedException
```

```
[C#]
public class ObjectDisposedException
    : System.ObjectDisposedException
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.Exception.dll

17.31. SecurityException

An exception that is thrown when an open request is issued to a device file for which authorization for opening cannot be obtained (e.g., when the file is already opened).

➢ Syntax

```
[VB]
Public Class SecurityException
    Inherits System.SecurityException
```

```
[C#]
public class SecurityException : System.SecurityException
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.Exception.dll

17.32. DeviceNotFoundException

An exception that is thrown when an operation request is issued to a device that is not installed on the BHT.

➢ Syntax

```
[VB]
Public Class DeviceNotFoundException
    Inherits System.IO.FileNotFoundException
```

```
[C#]
public class DeviceNotFoundException
    : System.IO.FileNotFoundException
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.Exception.dll

17.33. DeviceLoadException

An exception that is thrown when an operation request is issued to a device that is not ready to process it.

➢ Syntax

```
[VB]
Public Class DeviceLoadException
    Inherits System.IO.FileLoadException
```

```
[C#]
public class DeviceLoadException : System.IO.FileLoadException
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.Exception.dll

17.34. NotSupportedException

An exception that is thrown when an attempt is made to carry out a function that is not supported.

➢ Syntax

```
[VB]
Public Class NotSupportedException
    Inherits System.IO.PlatformNotSupportedException
```

```
[C#]
public class NotSupportedException
    : System.IO.PlatformNotSupportedException
```

➢ Namespace

DNWA.BHTCL

➢ Assembly

DNWA.Exception.dll

17.35. CommSerial

Sets or acquires the parameters for serial communication and performs data communication.

For a description of all members of this class, refer to section "18.29. CommSerial".

➢ Syntax

```
[VB]
Public Class CommSerial
```

```
[C#]
public class CommSerial
```

➢ Namespace

DNWA.Tools.BHT.Communication

➢ Assembly

DNWA.Tools.BHT.Communication400.dll

17.36. FileTransfer

Controls the uploading and downloading of files using the Y-modem protocol.

For a description of all members of this class, refer to section "18.30. FileTransfer"

➢ Syntax

```
[VB]
Public Class FileTransfer
```

```
[C#]
public class FileTransfer
```

➢ Namespace

DNWA.Tools.BHT.Communication

➢ Assembly

DNWA.Tools.BHT.Communication400.dll

18. Members

18.1. Scanner

➢ Constructor

Constructor Name	Description
Scanner	Creates a new instance of the Scanner class.

➢ Fields

Field Name	Description
MAX_BAR_LEN	Maximum number of digits in barcode
MAX_2DCODE_LEN	Maximum number of digits in 2D code
ALL_BUFFER	Used to acquire the contents of the entire buffer by the Input method

➢ Properties

Property Name	Description
RdMode	Read mode
RdType	Read-enabled codes
PortOpen	Read-enabled/read-disabled
InBufferCount	Number of code digits in the barcode in the buffer
InBufferType	Type of the barcode in the buffer
LastCount	Number of code digits in the barcode last read
LastCodeNum	Number of barcodes last read
LastType	Type of the barcode last read
LastCodeInfo	Information of barcodes last read

➢ Methods

Method Name	Description
Input Input Input	Reads the contents of the barcode buffer.
GetChkDigit	Calculates the check digit.
Dispose	Frees up all unmanaged resources.

➢ Events

Event Name	Description
OnDone	Occurs when decoding is complete.

➢ Enumeration

None

Scanner

Initializes a new instance of the Scanner class.

- Syntax

```
[VB]
Public Sub New( )
```

```
[C#]
public Scanner( )
```

- Parameters

None

- Exceptions

None

[Ex.] Create a MyScanner Scanner instance.

    [VB] Dim MyScanner As Scanner = New Scanner

    [C#] Scanner MyScanner = new Scanner();

MAX_BAR_LEN

The maximum number of digits in the barcode. This value is fixed (not variable).

- Syntax

```
[VB]
Public Const MAX_BAR_LEN As Integer
```

```
[C#]
public const int MAX_BAR_LEN;
```

[Ex.] Declare a buffer containing a barcode with the maximum number of elements.

    [VB] Dim ReadBuf(Scanner.MAX_BAR_LEN) As Byte

    [C#] Byte[] ReadBuf = new byte[Scanner.MAX_BAR_LEN];

MAX_2DCODE_LEN

The maximum number of digits in the 2D code. This value is fixed (not variable).

- Syntax

```
[VB]
Public Const MAX_2DCODE_LEN As Integer
```

```
[C#]
public const int MAX_2DCODE _LEN;
```

[Ex.] Declare a buffer containing a 2D code with the maximum number of elements.

    [VB] Dim ReadBuf(Scanner.MAX_2DCODE_LEN) As Byte

    [C#] Byte[] ReadBuf = new byte[Scanner. MAX_2DCODE_LEN];

ALL_BUFFER

Specify this parameter during a read operation using the Input method to read the contents of the entire barcode buffer. This value is fixed (not variable).

- Syntax

> [VB]
> **Public Const ALL_BUFFER As Integer**

> [C#]
> **public const int ALL_BUFFER;**

> [Ex.] Read all remaining data in the barcode buffer.
>
> [VB] MyScanner.Input(ReadBuf, 0, Scanner.ALL_BUFFER)
>
> [C#] MyScanner.Input(ReadBuf, 0, Scanner.ALL_BUFFER);

RdMode

Sets or acquires Read mode.

- Syntax

> [VB]
> **Public Property RdMode As String**

> [C#]
> **public string RdMode {get; set}**

- Property

Character string used to specify read mode

Default value: "FB"

- Exceptions

None

- Note

The setting for this property will be valid the next time the read operation is enabled.

If an invalid character string is specified, no exceptions are thrown immediately, however, an exception is thrown the next time the read operation is enabled.

The BHT supports four read modes: momentary switching mode (M), auto-off mode (F), alternate switching mode (A), and continuous reading mode (C). Select a read mode by specifying the appropriate code (M, F, A, or C).

Momentary switching mode (M)
The illumination LED lights up and barcodes can be read only when the trigger switch is held down.

Provided the barcode data that has been read remains inside (i.e., not sent out of) the barcode buffer, the BHT cannot read new barcodes even if the trigger switch is pressed (the LED will not light up).

> [Ex.] Set the read mode to momentary, turn the beeper notification OFF, and turn the LED notification ON.
>
> [VB] MyScanner.RdMode = "M"
>
> [C#] MyScanner.RdMode = "M";

Auto-off mode (F)

Press the trigger switch to turn ON the illumination LED. The LED turns OFF when the switch is released or when the BHT completes barcode reading. The LED remains illuminated for a maximum of 5 seconds when the trigger switch is held down.

The BHT can read barcodes while the illumination LED is ON. The BHT is no longer able to read barcodes after a barcode has been read or the barcode device file is closed.

When the illumination LED turns OFF 5 seconds after pressing the trigger switch, the switch must be pressed again to read a barcode.

Provided the barcode data that has been read remains inside (i.e., not sent out of) the barcode buffer, the BHT cannot read new barcodes even if the trigger switch is pressed (the LED will not light up).

```
[Ex.] Set the read mode to auto-off, turn the beeper notification OFF, and turn the LED
notification ON.

     [VB]  MyScanner.RdMode = "F"

     [C#]  MyScanner.RdMode = "F";
```

Alternate switching mode (A)

Press the trigger switch to turn ON the illumination LED. Even after releasing the switch, the illumination LED remains on until the barcode device file is closed or the trigger switch is pressed again. The BHT can read barcodes while the illumination LED is ON.

Pressing the trigger switch toggles the illumination LED ON and OFF.

After a barcode has been read successfully, provided the barcode data that has been read remains inside (i.e., not sent out of) the barcode buffer, the BHT cannot read new barcodes even if the trigger switch is pressed. The LED, however, will turn ON.

```
[Ex.] Set the read mode to alternate, turn the beeper notification OFF, and turn the LED
notification ON.

     [VB]  MyScanner.RdMode = "A"

     [C#]  MyScanner.RdMode = "A"
```

Continuous reading mode (C)

If this mode is specified, the illumination LED turns ON and remains ON until the barcode device file is closed, regardless of the position of the trigger switch.

The BHT can read barcodes while the illumination LED is ON.

After a barcode has been read successfully, provided the barcode data that has been read remains inside (i.e., not sent out of) the barcode buffer, the BHT cannot read new barcodes.

```
[Ex.] Set the read mode to continuous reading, turn the beeper notification OFF, and turn
the LED notification ON.

     [VB]  MyScanner.RdMode = "C"

     [C#]  MyScanner.RdMode = "C";
```

Notes:

If no choice is specified for the read mode, the auto-off mode is selected by default.

In momentary switching mode, alternate switching mode, or continuous reading mode, if, after reading a low-quality barcode requiring more than one second to read, the barcode read head remains in close proximity to that barcode, the BHT may re-read the same barcode again at intervals of one second (or longer).

<u>Beeper control and LED control</u>

This property is used to control the action of the beeper and indicator LED when a barcode has been read successfully. This property also allows the vibrator to be controlled with beeper control.

Specify the parameters for read mode, beeper control, and LED control with no spaces in between.

Specify the parameters for read mode, beeper control, and LED control in this order.

Specify B for beeper control to select beeping only, vibrating only, or beeping & vibrating, based on the setting specified at the BEEP/VIBRATOR menu in the System menu or the setting specified at the Beep.Settings.Device system function.

Specifying L for indicator LED control will not turn on the indicator LED. Specify B to activate the beeper (vibrator) when a barcode is successfully read.

[Ex.] Set the read mode to auto-off, turn the beeper notification ON, and turn the LED notification ON.

    [VB] MyScanner.RdMode = "FB"

    [C#] MyScanner.RdMode = "FB";

Specify L to prevent the blue LED from turning ON when a barcode is successfully read.

[Ex.] Set the read mode to auto-off, turn the beeper notification ON, and turn the LED notification OFF.

    [VB] MyScanner.RdMode = "FL"

    [C#] MyScanner.RdMode = "FL";

RdType

Sets or acquires the codes that are to be read-enabled.

- Syntax

```
[VB]
Public Property RdType As String
```

```
[C#]
public string RdType {get; set}
```

- Property

Character string used to specify read-enabled codes

Default value: "A,I:4-99,M:1-99,N:3-99,L:1-99,K:1-99,H:3-99,P:1-99"

- Exceptions

None

- Note

The setting for this property will be valid the next time the read operation is enabled.

If an invalid character string is specified, no exceptions are thrown immediately, however, an exception is thrown the next time the read operation is enabled.

A maximum of twenty four codes can be specified.

The BHT-400B supports universal product codes, Interleaved 2of5 (ITF), Codabar (NW-7), Code-39, Code-93, Code-128, Standard 2of5 (STF), and MSI. It can also read EAN-128 if Code-128 is specified.

- Universal product codes (A)

[Syntax]

A [:[code] [1st character [2nd character]][supplemental]]

Specify a code from one of the following.

Code	Barcode Type
A	EAN-13 (JAN-13), UPC-A
B	EAN-8 (JAN-8)
C	UPC-E

If the code is omitted, it will be possible to read any of the above universal product codes.

The 1st character and 2nd character are flag characters representing the country code, and each must be a numeral between 0 and 9 (inclusive). If a question mark (?) is specified for the 1st character or 2nd character, it is treated as a wild card.

"supplemental" refers to the reading of an add-on code. Specifying an S for add-on enables the BHT to read barcodes with an add-on code also.

[Ex.]) To enable the BHT to scan EAN-13 with 1st character "4", 2nd character "9", and add-on code:

    [VB] MyScanner.RdType = "A:49S"

    [C#] MyScanner.RdType = "A49S";

[Ex.] To enable the BHT to scan EAN-13 and EAN-8 only:

    [VB] MyScanner.RdType = "A:A,A:B"

    [C#] MyScanner.RdType = "A:A,A:B";

- Interleaved 2 of 5 (ITF) (I)

[Syntax]

   I [:[mini.no.digits[-max.no.digits]][CD]]

The mini.no.digits and max.no.digits are the minimum and maximum numbers of barcode digits to be read by the BHT, respectively.

These numbers must both be between 2 and 99 (inclusive) and satisfy the following condition:

      mini.no.digits ≤ max.no.digits

If both mini.no.digits and max.no.digits are omitted, the default reading range will be from the minimum number of digits specified at system mode up to 99 digits.

If only max.no.digits is omitted, the BHT will only be able to read as many digits as specified by mini.no.digits.

CD is used to specify a check digit(s). If C is specified, barcodes are checked based on MOD-10. The number of check digits is included in the number of digits to be read.

[Ex.] To enable the BHT to scan ITF with mini.no.digits 6, max.no.digits 10, and MOD-10:
    [VB] MyScanner.RdType = "I:6-10C"
    [C#] MyScanner.RdType = "I:6-10C";

[Ex.] To enable the BHT to scan ITF with mini.no.digits 6 and max.no.digits 10 or with mini.no.digits 20 and max.no.digits 40:
    [VB] MyScanner.RdType = "I:6-10,I:20-40"
    [C#] MyScanner.RdType = "I:6-10,I:20-40";

- CODABAR (NW-7) (N)

[Syntax]

   N [:[mini.no.digits[-max.no.digits]][startstop][CD]]

The mini.no.digits and max.no.digits are the minimum and maximum numbers of barcode digits to be read by the BHT, respectively.

These numbers must both be between 3 and 99 (inclusive) and satisfy the following condition:

   mini.no.digits ≤ max.no.digits

If both mini.no.digits and max.no.digits are omitted, the default reading range will be from the minimum number of digits specified at system mode up to 99 digits.

If only max.no.digits is omitted, the BHT will only be able to read as many digits as specified by mini.no.digits.

Start and stop are the start and stop characters, respectively. Specify each of these as A, B, C, or D. If a question mark (?) is specified, it is treated as a wild card. The start and stop characters are included in the number of digits. A to D are stored in the barcode buffer as a to d.

CD is used to specify a check digit(s). If C is specified, barcodes are checked based on MOD-16. The number of check digits is included in the number of digits to be read.

> [Ex.] To enable the BHT to scan CODABAR with mini.no.digits 8, start character A, stop character A, and MOD-16:
>
>   [VB] MyScanner.RdType = "N:8AAC"
>
>   [C#] MyScanner.RdType = "N:8AAC";

> [Ex.] To enable the BHT to scan CODABAR with mini.no.digits 6 and max.no.digits 10 or with mini.no.digits 20 and max.no.digits 40:
>
>   [VB] MyScanner.RdType = "N:6-10,N:20-40"
>
>   [C#] MyScanner.RdType = "N:6-10,N:20-40";

- CODE-39 (M)

[Syntax]

   M [:[mini.no.digits[-max.no.digits]][CD]]

The mini.no.digits and max.no.digits are the minimum and maximum numbers of barcode digits to be read by the BHT, respectively. These do not include the start and stop characters.

These numbers must both be between 1 and 99 (inclusive) and satisfy the following condition:

      mini.no.digits ≤ max.no.digits

If both mini.no.digits and max.no.digits are omitted, the default reading range will be from 1 to 99 digits. If only max.no.digits is omitted, the BHT will only be able to read as many digits as specified by mini.no.digits.

CD is used to specify a check digit(s). If C is specified, barcodes are checked based on MOD-43. The number of check digits is included in the number of digits to be read.

[Ex.] To enable the BHT to scan Code 39 with mini.no.digits 8, max.no.digits 12, and MOD-43:

    [VB] MyScanner.RdType = "M:8-12C"

    [C#] MyScanner.RdType = "M:8-12C";

[Ex.] To enable the BHT to scan Code 39 with mini.no.digits 6 and max.no.digits 10 or with mini.no.digits 20 and max.no.digits 40:

    [VB] MyScanner.RdType = "M:6-10,M:20-40"

    [C#] MyScanner.RdType = "M:6-10,M:20-40";

- CODE-93 (L)

[Syntax]

   L [:[mini.no.digits[-max.no.digits]]]

The mini.no.digits and max.no.digits are the minimum and maximum numbers of barcode digits to be read by the BHT, respectively. These do not include the start and stop characters or check digits.

These numbers must both be between 1 and 99 (inclusive) and satisfy the following condition:

     mini.no.digits ≤ max.no.digits

If both mini.no.digits and max.no.digits are omitted, the default reading range will be from 1 to 99 digits. If only max.no.digits is omitted, the BHT will only be able to read as many digits as specified by mini.no.digits.

[Ex.] To enable the BHT to scan Code 93 with mini.no.digits 6 and max.no.digits 12:

   [VB] MyScanner.RdType = "L:6-12"

   [C#] MyScanner.RdType = "L:6-12";

[Ex.] To enable the BHT to scan Code 93 with mini.no.digits 6 and max.no.digits 10 or with mini.no.digits 20 and max.no.digits 40:

   [VB] MyScanner.RdType = "L:6-10,L:20-40"

   [C#] MyScanner.RdType = "L:6-10,L:20-40";

Note:

Neither the start/stop characters nor check digit(s) are transferred to the barcode buffer.

- CODE-128 (K)

[Syntax]

   K [:[mini.no.digits[-max.no.digits]]]

The mini.no.digits and max.no.digits are the minimum and maximum numbers of barcode digits to be read by the BHT, respectively. These do not include the start and stop characters or check digits.

These numbers must both be between 1 and 99 (inclusive) and satisfy the following condition:

      mini.no.digits ≤ max.no.digits

If both mini.no.digits and max.no.digits are omitted, the default reading range will be from 1 to 99 digits. If only max.no.digits is omitted, the BHT will only be able to read as many digits as specified by mini.no.digits.

[Ex.] To enable the BHT to scan Code-128 with mini.no.digits 6 and max.no.digits 12:

    [VB] MyScanner.RdType = "K:6-12"

    [C#] MyScanner.RdType = "K:6-12";

[Ex.] To enable the BHT to scan Code-128 with mini.no.digits 6 and max.no.digits 10 or with mini.no.digits 20 and max.no.digits 40:

    [VB] MyScanner.RdType = "K:6-10,K:20-40"

    [C#] MyScanner.RdType = "K:6-10,K:20-40";

Note:

Neither the start/stop characters nor check digit(s) are transferred to the barcode buffer.

<u>Handling of special characters</u>

If the BHT reads a barcode made up of special characters only (such as FNC, CODE-A, CODE-B, CODE-C and SHIFT characters), it will not transfer the data to the barcode buffer. If the beeper is enabled, only the beeper sounds.

- FNC1

FNC1 characters placed within two character positions after the start character are not transferred to the barcode buffer. FNC1 characters in any other positions are converted to GS characters (1Dh) and then transferred to the barcode buffer.

If an FNC1 character immediately follows the start character, the barcode will be recognized as EAN-128 and marked with W instead of K.

- FNC2

If the BHT reads a barcode containing any FNC2 characters, the data is transferred directly to the barcode buffer with the FNC2 character(s) discarded, without being temporarily buffered.

- FNC3

If the BHT reads a barcode containing any FNC3 character(s), it will regard the data as invalid, and no data transfer will take place. If enabled by the **RdMode** property, the indicator LED will light up and the beeper (vibrator) will sound (vibrate).

- FNC4

The FNC4 character converts data in code set A or B into extended ASCII (basic ASCII code value + 128).

A standalone (single) FNC4 character converts only the subsequent data character into extended ASCII.

A pair of continuous FNC4 characters converts all subsequent data characters preceding another pair of continuous FNC4 characters or the stop character into extended ASCII. If, however, a standalone (single) FNC4 character is inserted in between, one data character immediately after this standalone FNC4 character is left as it is (not converted).

An FNC4 character does not convert any of GS characters converted by an FNC1 character into extended ASCII.

- Standard 2 of 5 (STF) (H)

[Syntax]

H [:[mini.no.digits[-max.no.digits]][CD][startstop]]

The mini.no.digits and max.no.digits are the minimum and maximum numbers of barcode digits to be read by the BHT, respectively. These do not include the start and stop characters.

These numbers must both be between 1 and 99 (inclusive) and satisfy the following condition:

mini.no.digits ≤ max.no.digits

If both mini.no.digits and max.no.digits are omitted, the default reading range will be from the minimum number of digits specified at system mode up to 99 digits.

If only max.no.digits is omitted, the BHT will only be able to read as many digits as specified by mini.no.digits.

CD is used to specify a check digit(s). If C is specified, barcodes are checked based on MOD-10. The number of check digits is included in the number of digits to be read.

Startstop specifies whether the normal or short format of the start/stop characters is to be used.

Specify N for the normal format or S for the short format. If startstop is omitted, start/stop characters can be read in either format.

[Ex.] To enable the BHT to scan STF with mini.no.digits 6 and max.no.digits 12:

    [VB] MyScanner.RdType = "H:6-12"

    [C#] MyScanner.RdType = "H:6-12";

[Ex.] To enable the BHT to scan STF with mini.no.digits 6 and max.no.digits 10 or with mini.no.digits 20 and max.no.digits 40:

    [VB] MyScanner.RdType = "H:6-10,H:20-40"

    [C#] MyScanner.RdType = "H:6-10,H:20-40";

- MSI (P)

[Syntax]

    P [:[mini.no.digits[-max.no.digits]][CD]]

The mini.no.digits and max.no.digits are the minimum and maximum numbers of barcode digits to be read by the BHT, respectively. These do not include the start and stop characters.

These numbers must both be between 1 and 99 (inclusive) and satisfy the following condition:

        mini.no.digits ≤ max.no.digits

If both mini.no.digits and max.no.digits are omitted, the default reading range will be from 1 to 99 digits. If only max.no.digits is omitted, the BHT will only be able to read as many digits as specified by mini.no.digits.

CD is used to specify a check digit(s). If C1 or C2 is specified for the CD, the Interpreter will check barcodes with a single-digit CD or double-digit CD, respectively. If no CD is specified, the Interpreter checks barcodes with a single-digit CD. The number of check digits is included in the number of digits to be read.

[Ex.] To enable the BHT to scan MSI with mini.no.digits 6, max.no.digits 12, and a single-digit CD check:

    [VB] MyScanner.RdType = "P:6-12C1"

    [C#] MyScanner.RdType = "P:6-12C1";

[Ex.] To enable the BHT to scan MSI with mini.no.digits 6, max.no.digits 10 and a single-digit CD check or with mini.no.digits 20, max.no.digits 40 and a double-digit CD check:

    [VB] MyScanner.RdType = " P:6-10,P:20-40C2"

    [C#] MyScanner.RdType = " P:6-10,P:20-40C2";

PortOpen

Enables or disables barcode reading.

- Syntax

```
[VB]
Public WriteOnly Property PortOpen As Boolean
```

```
[C#]
public bool PortOpen {set}
```

- Property

Read-enabled (= True), Read-disabled (= False)

Default value: False

- Exceptions

Name of Exception	Meaning
SecurityException	Barcode device file already opened
ArgumentException	The specified read mode was invalid. The specified read-enabled code(s) was/were invalid.

[Ex.] Enable barcode reading.

    [VB] MyScanner.PortOpen = True

    [C#] MyScanner.PortOpen = true;

InBufferCount

Acquires the number of digits in the barcode remaining in the barcode buffer.

- Syntax

```
[VB]
Public Property ReadOnly InBufferCount As Integer
```

```
[C#]
public int InBufferCount {get}
```

- Property

Number of digits in the barcode in the barcode buffer

Default value: 0

- Exceptions

None

- Note

Once data has been read from the barcode buffer using the Input method, this count is reduced by the number of digits that have been read.

This count is reset to zero (0) the moment barcode reading is disabled.

[Ex.] Acquire the number of code digits for data remaining in the barcode buffer.

    [VB] Dim len As Integer = MyScanner.InBufferCount

    [C#] int len = MyScanner.InBufferCount;

InBufferType

Acquires the type of barcode remaining in the barcode buffer.

- Syntax

```
[VB]
Public Property ReadOnly InBufferType As Char
```

```
[C#]
public char InBufferType {get}
```

- Property

Type of barcode in the barcode buffer

The correlation between code type and InBufferType values is shown below.

Code Type	InBufferType
None (No code read)	0
EAN-13 (JAN-13), UPC-A	'A'
EAN-8 (JAN-8)	'B'
UPC-E	'C'
ITF	'I'
STF	'H'
CODABAR (NW-7)	'N'
CODE-39	'M'
CODE-93	'L'
CODE-128	'K'
EAN-128	'W'
MSI	'P'

Default value: 0 (Nothing in VB.NET)

- Exceptions

None

- Note

The value is reset to zero (0) when all data is read from the barcode buffer using the Input method and the barcode buffer is empty.

The value is reset to zero (0) the moment barcode reading is disabled.

[Ex.] Acquire the code type for data remaining in the barcode buffer.

    [VB] Dim type As Char = MyScanner.InBufferType

    [C#] char type = MyScanner.InBufferType;

LastCount

Acquires the number of digits in the barcode that was read last.

"0" is stored if no barcodes are read since the BHT was last started up.

- Syntax

```
[VB]
Public Property ReadOnly LastCount As Integer
```

```
[C#]
public int LastCount {get}
```

- Property

Number of digits in the barcode that was read last

Default value: 0

- Exceptions

None

- Note

The value is "0" if no barcode is read after an instance of the Scanner class was created.

The value remains unchanged even if barcode reading is disabled.

```
[Ex.] Acquire the number of code digits for the data last read.
     [VB]  Dim count As Integer = MyScanner.LastCount
     [C#]  int count = MyScanner.LastCount;
```

LastType

Acquires the type of code that was read last.

"0" is stored if no barcodes are read since the BHT was last started up.

■ Syntax

```
[VB]
Public Property ReadOnly LastType As Integer
```

```
[C#]
public int LastType {get}
```

■ Property

Type of barcode that was read last

The correlation between the barcode type and values is the same as that for the InBufferType.

Default value: 0 (Nothing in VB.NET)

■ Exceptions

None

■ Note

The value is "0" if no barcode is read after an instance of the Scanner class was created.

The value remains unchanged even if barcode reading is disabled.

```
[Ex.] Acquire the code type for the data last read.
    [VB] Dim count As Integer = MyScanner.LastCount
    [C#] int count = MyScanner.LastCount;
```

LastCodeInfo

Acquires information on the code that was read last.

- Syntax

```
[VB]
Public Property ReadOnly LastCodeInfo As Scanner.CodeInfo
```

```
[C#]
public Scanner.CodeInfo LastCodeInfo {get}
```

- Property

Information on the barcode that was read last

The correlation between the barcode type and values is the same as that for the InBufferType.

Default value: null (Nothing in VB.NET)

- Exceptions

None

```
[Ex.] Acquire the code type and number of digits in all rows for the data last read.
    [VB]
    For i = 0 To MyScanner.LastCodeNum
        len(i) = MyScanner.LastCodeInfo(i).Len
        type(i) = MyScanner.LastCodeInfo(i).Type
    Next
    [C#]
    for (i = 0; i < MyScanner.LastCodeNum; i++) {
        len[i] = MyScanner.LastCodeInfo[i].Len
        type[i] = MyScanner.LastCodeInfo[i].Type
    }
```

LastCodeNum

Acquires the number of codes (rows) that were read last.

- Syntax

```
[VB]
Public Property ReadOnly LastCodeNum As Integer
```

```
[C#]
public int LastCodeNum {get}
```

- Property

Number of barcodes that were read last.

If the code that was read last is a multi-line code, the number of rows is returned.

If the code that was read last is a composite code, the number of codes constituting the composite code (which is "2") is returned.

If the code that was read last is other than the above, "1" is returned.

Default value: 0

- Exceptions

None

```
[Ex.] Acquire the code type and number of digits in all rows for the data last read.
    [VB]
    For i = 0 To MyScanner.LastCodeNum
        len(i) = MyScanner.LastCodeInfo(i).Len
        type(i) = MyScanner.LastCodeInfo(i).Type
    Next
    [C#]
    for (i = 0; i < MyScanner.LastCodeNum; i++) {
        len[i] = MyScanner.LastCodeInfo[i].Len
        type[i] = MyScanner.LastCodeInfo[i].Type
    }
```

Input

Reads unicoded data from the barcode buffer.

- Syntax

```
[VB]
Public Function Input(ByVal len As Integer) As String
```

```
[C#]
public string Input(int len)
```

- Parameters

len

[in] Maximum number of digits in the barcode to be read

Specifying **Scanner.ALL_BUFFER** causes the entire contents of the barcode buffer to be read.

- Return value

Barcode data that has been read

- Exceptions

Name of Exception	Meaning
ObjectDisposedException	Barcode reading is disabled

- Note

Calling this method while barcode reading is disabled will cause an exception to be thrown.

```
[Ex.] Display the data last read.
    [VB] TextBoxData.Text = MyScanner.Input(Scanner.ALL_BUFFER)
    [C#] TextBoxData.Text = MyScanner.Input(Scanner.ALL_BUFFER);
```

Input

Reads unicoded data from the barcode buffer.

- Syntax

```
[VB]
Public Function Input(ByVal buffer() As Char,ByVal offset As Integer, _
      len As Integer) As Integer
```

```
[C#]
public int Input(char[] buffer, int offset, int len)
```

- Parameters

buffer

[out] Destination buffer

offset

[in] Offset value within buffer indicating the start point of reading

Specifying **Scanner.ALL_BUFFER** causes the entire contents of the barcode buffer to be read.

len

[in] Maximum number of digits in the barcode to be read

Specifying **Scanner.ALL_BUFFER** causes the entire contents of the barcode buffer to be read.

- Return value

Actual number of digits that have been read

- Exceptions

Name of Exception	Meaning
ObjectDisposedException	Barcode reading is disabled.

- Note

  Calling this method while barcode reading is disabled will cause an exception to be thrown.

[Ex.] Read out the last read data converted to Unicode.

    [VB] len = MyScanner.Input(buffer, 0, Scanner.ALL_BUFFER)

    [C#] len = MyScanner.Input(buffer, 0, Scanner.ALL_BUFFER);

Input

Reads binary data from the barcode buffer.

- Syntax

```
[VB]
Public Function Input(ByVal buffer() As Byte, ByVal offset As Integer, _
    len As Integer) As Integer
```

```
[C#]
public int Input(byte[] buffer, int offset, int len)
```

- Parameters

buffer

[out] Destination buffer

offset

[in] Offset value within buffer indicating the start point of reading

len

[in] Maximum number of barcode digits to be read out

Specifying **Scanner.ALL_BUFFER** causes the entire contents of the barcode buffer to be read.

- Return value

Actual number of digits that have been read

- Exceptions

Name of Exception	Meaning
ObjectDisposedException	Barcode reading is disabled.

- Note

Calling this method while barcode reading is disabled will cause an exception to be thrown.

When displaying the read data, it is necessary to use the encoding class and convert to Unicode.

[Ex.] Use the ANSI code page encoding currently set in the system and convert to Unicode.

[VB]

```
Dim buffer(MAX_2DCODE_LEN) As Byte

Input(buffer, 0, ALL_BUFFER)

Dim strDisplayData As String = System.Text.Encoding.Default.GetString(buffer)
```

[C#]

```
byte[] buffer = new byte[MAX_2DCODE_LEN];

Input(buffer, 0, ALL_BUFFER);

string strDisplayData = System.Text.Encoding.Default.GetString(buffer);
```

GetChkDigit

Calculates the check digit for the barcode data based on the specified calculation algorithm.

■ Syntax

```
[VB]
Public Shared Function GetChkDigit(ByVal bardata As String, _
ByVal type As Char) As Integer
```

```
[C#]
public static int GetChkDigit(string bardata, char type)
```

■ Parameters

bardata

[in] Barcode data

type

[in] Check digit type

Code Type	Type	Calculation Method
EAN(JAN), UPC	'A'	MOD10
ITF	'I'	MOD10
STF	'H'	MOD10
CODABAR (NW-7)	'N'	MOD16
CODE-39	'M'	MOD43
MSI	'P'	MOD10

■ Return value

Calculated check digit

■ Exceptions

Name of Exception	Meaning
ArgumentException	The barcode data is invalid, or the specified check digit type is invalid.

- Note

If the barcode data within the code (excluding the check digit positions) contains any characters outside the character set corresponding to the barcode type specified by the check digit type, this function returns "0" and throws an exception. However, if only the check digit positions contain a character outside the valid character set, then this function calculates the correct check digit and returns it as a single-character string.

```
[VB] Scanner.GetChkDigit("494AB4458", "A")
[C#] Scanner.GetChkDigit("494AB4458", "A")
```

Since "A" and "B" lie outside the valid character set for EAN (JAN) or UPC, "0" is returned and an exception is thrown.

```
[VB] Scanner.GetChkDigit("4940045X", "A")
[C#] Scanner.GetChkDigit("4940045X", "A");
```

"X" lies outside the valid character set but is in the CD position, and therefore the correct CD (ASCII "8") is calculated and returned.

```
[VB] Scanner.GetChkDigit("a0ef3-a", "N")
[C#] Scanner.GetChkDigit("a0ef3-a", "N");
```

Since "e" and "f" lie outside the valid character set for Codabar (NW-7), "0" is returned and an exception is thrown.

```
[VB] Scanner.GetChkDigit("a123Qa", "N")
[C#] Scanner.GetChkDigit("a123Qa", "N");
```

"Q" lies outside the valid character set but is in the CD position, and therefore the correct CD (ASCII "-") is calculated and returned.

<u>When CD type is A(EAN (JAN) or UPC):</u>

This function identifies the code type (EAN or UPC) based upon the data length (number of digits) as shown below.

If the data length is other than 13, 8, or 7, this function returns "0" and throws an exception.

No. of Digits in Barcode Data	Barcode type
13	EAN-13 (JAN-13), UPC-A
8	EAN-8 (JAN-8)
7	UPC-E

To check whether the CD type is correct, pass a piece of barcode data with a CD to the **Scanner.GetChkDigit** method as shown below. If the returned value is equal to the CD, then the CD is correct.

```
[VB]
If (Scanner.GetChkDigit("49400458", "A") = Asc("8")) Then

      Console.WriteLine ("CD OK")

End If
```

```
[C#]
UnicodeEncoding encode = new UnicodeEncoding();

if (Scanner.GetChkDigit("49400458", 'A') == (int)encode.GetBytes("8")[0]) {

      Console.WriteLine ("CD OK");

}
```

To append a CD to the barcode data, pass a piece of barcode data with a dummy character appended to the **Scanner.GetChkDigit** method as shown below. The returned value will be the CD. Replace the dummy character with the returned value.

```
[VB]
Dim origData As String = "4940045"

Dim digit As Integer = Scanner.GetChkDigit(origData+"0", "A")

Console.WriteLine("CD = {0}", origData + New String(Chr(digit), 1))
```

```
[C#]
string origData = "4940045";

int digit = Scanner.GetChkDigit(origData+"0", 'A');

byte[] digitByteArray = {(byte)digit};

ASCIIEncoding encode = new ASCIIEncoding();

Console.WriteLine("CD = {0}", origData + encode.GetString(digitByteArray, 0, 1));
```

```
Result
> CD = 49400458
```

<u>When CD type is I (ITF):</u>

The barcode data must be an even number with two or more digits. Otherwise, this function returns "0" and throws an exception.

To check whether the CD is correct, pass a piece of barcode data with a CD to the **Scanner.GetChkDigit** method as shown below. If the returned value is equal to the CD, then the CD is correct.

```
[VB]
If (Scanner.GetChkDigit("123457", "I") = Asc("7")) Then

    Console.WriteLine ("CD OK")

End If
```

```
[C#]
UnicodeEncoding encode = new UnicodeEncoding();

if (Scanner.GetChkDigit("123457", 'I') == (int)encode.GetBytes("7")[0]) {

    Console.WriteLine ("CD OK");

}
```

To append a CD to barcode data, pass a piece of barcode data with a dummy character appended to the **Scanner.GetChkDigit** method as shown below. The returned value will be the CD. Replace the dummy character with the returned value.

```
[VB]
Dim origData As String = "12345"

Dim digit As Integer = Scanner.GetChkDigit(origData+"0", "I")

Console.WriteLine("CD = {0}", origData + New String(Chr(digit), 1))
```

```
[C#]
string origData = "12345";

int digit = Scanner.GetChkDigit(origData+"0", 'I');

byte[] digitByteArray = {(byte)digit};

ASCIIEncoding encode = new ASCIIEncoding();

Console.WriteLine("CD = {0}", origData + encode.GetString(digitByteArray, 0, 1));
```

```
Result
> CD = 123457
```

<u>When CD type is H (STF):</u>

The barcode data must be two or more digits in length. Otherwise, this function returns "0" and throws an exception.

To check whether the CD is correct, pass a piece of barcode data with a CD to the **Scanner.GetChkDigit** method as shown below. If the returned value is equal to the CD, then the CD is correct.

```
[VB]
If (Scanner.GetChkDigit("12345678905", "H") = Asc("5")) Then
      Console.WriteLine ("CD OK")
End If
```

```
[C#]
UnicodeEncoding encode = new UnicodeEncoding();
if (Scanner.GetChkDigit("12345678905", 'H') == (int)encode.GetBytes("5")[0]) {
      Console.WriteLine ("CD OK");
}
```

To append a CD to barcode data, pass a piece of barcode data with a dummy character appended to the **Scanner.GetChkDigit** method as shown below. The returned value will be the CD. Replace the dummy character with the returned value.

```
[VB]
Dim origData As String = "1234567890"
Dim digit As Integer = Scanner.GetChkDigit(origData+"0", "H")
Console.WriteLine("CD = {0}", origData + New String(Chr(digit), 1))
```

```
[C#]
string origData = "1234567890";
int digit = Scanner.GetChkDigit(origData+"0", 'H');
byte[] digitByteArray = {(byte)digit};
ASCIIEncoding encode = new ASCIIEncoding();
Console.WriteLine("CD = {0}", origData + encode.GetString(digitByteArray, 0, 1));
```

```
Result
> CD = 12345678905
```

<u>When CD type is N (Codabar):</u>

The barcode data must be three or more digits in length, including the start and stop characters. Otherwise, this function returns "0" and throws an exception.

To check whether the CD is correct, pass a piece of barcode data with a CD to the **Scanner.GetChkDigit** method as shown below. If the returned value is equal to the CD, then the CD is correct.

```
[VB]
If (Scanner.GetChkDigit("a0123-a", "N") = Asc("-")) Then

      Console.WriteLine ("CD OK")

End If
```

```
[C#]
UnicodeEncoding encode = new UnicodeEncoding();

if (Scanner.GetChkDigit("a0123-a", 'N') == (int)encode.GetBytes("-")[0]) {

      Console.WriteLine ("CD OK");

}
```

To append a CD to barcode data, pass a piece of barcode data with a dummy character appended to the **Scanner.GetChkDigit** method as shown below. The returned value will be the CD. Replace the dummy character with the returned value.

```
[VB]
Dim origDataF As String = "a0123"

Dim origDataR As String = "a"

Dim digit As Integer = Scanner.GetChkDigit(origDataF+"0"+ origDataR, "N")

Console.WriteLine("CD = {0}", origDataF + New String(Chr(digit), 1) + origDataR)
```

```
[C#]
string origDataF = "a0123";

string origDataR = "a";

int digit = Scanner.GetChkDigit(origDataF+"0"+ origDataR, 'N');

byte[] digitByteArray = {(byte)digit};

ASCIIEncoding encode = new ASCIIEncoding();

Console.WriteLine("CD    =    {0}",    origDataF+encode.GetString(digitByteArray,    0,
1)+origDataR);
```

```
Result
> CD = a0123-a
```

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<u>When CD type is M (Code 39):</u>

The barcode data must be two or more digits in length, excluding the start and stop characters. Otherwise, this function returns "0" and throws an exception.

To check whether the CD is correct, pass a piece of barcode data with a CD to the **Scanner.GetChkDigit** method as shown below. If the returned value is equal to the CD, then the CD is correct.

```
[VB]
If (Scanner.GetChkDigit("CODE39W", "M") = Asc("W")) Then
      Console.WriteLine ("CD OK")
End If
```

```
[C#]
UnicodeEncoding encode = new UnicodeEncoding();
if (Scanner.GetChkDigit("CODE39W", 'M') == (int)encode.GetBytes("W")[0]) {
      Console.WriteLine ("CD OK");
}
```

To append a CD to barcode data, pass a piece of barcode data with a dummy character appended to the **Scanner.GetChkDigit** method as shown below. The returned value will be the CD. Replace the dummy character with the returned value.

```
[VB]
Dim origData As String = "CODE39"
Dim digit As Integer = Scanner.GetChkDigit(origData+"0", "M")
Console.WriteLine("CD = {0}", origData + New String(Chr(digit), 1))
```

```
[C#]
string origData = "CODE39";
int digit = Scanner.GetChkDigit(origData+"0", 'M');
byte[] digitByteArray = {(byte)digit};
ASCIIEncoding encode = new ASCIIEncoding();
Console.WriteLine("CD = {0}", origData + encode.GetString(digitByteArray, 0, 1));
```

```
Result
> CD = CODE39W
```

The barcode data must be two or more digits in length. Otherwise, this function returns "0" and throws an exception. To calculate a two-digit CD, call this function twice.

To check whether the CD is correct, pass a piece of barcode data with a CD to the **Scanner.GetChkDigit** method as shown below. If the returned value is equal to the CD, then the CD is correct.

```
[VB]
If (Scanner.GetChkDigit("123456782", "P") = Asc("2")) Then
      Console.WriteLine ("CD OK")
End If
```

```
[C#]
UnicodeEncoding encode = new UnicodeEncoding();
if (Scanner.GetChkDigit("123456782", 'P') == (int)encode.GetBytes("2")[0]) {
      Console.WriteLine ("CD OK");
}
```

To append a CD to barcode data, pass a piece of barcode data with a dummy character appended to the **Scanner.GetChkDigit** method as shown below. The returned value will be the CD. Replace the dummy character with the returned value.

```
[VB]
Dim origData As String = "12345678"
Dim digit As Integer = Scanner.GetChkDigit(origData+"0", "P")
Console.WriteLine("CD = {0}", origData + New String(Chr(digit), 1))
```

```
[C#]
string origData = "12345678";
int digit = Scanner.GetChkDigit(origData+"0", 'P');
byte[] digitByteArray = {(byte)digit};
ASCIIEncoding encode = new ASCIIEncoding();
Console.WriteLine("CD = {0}", origData + encode.GetString(digitByteArray, 0, 1));
```

```
Result
> CD = 123456782
```

Dispose

Frees up all the unmanaged resources.

This function must be called before instances of the Scanner class are no longer referenced.

- ■ Syntax

```
[VB]
Public Sub Dispose()
```

```
[C#]
public void Dispose()
```

- ■ Parameters

None

- ■ Return value

None

- ■ Exceptions

None

- ■ Note

This function must be called before instances of the Scanner class are no longer referenced.

```
[VB]
Private Sub Form1_Closed(ByVal sender As Object, ByVal e As System.EventArgs)
Handles MyBase.Closed
    MyScanner.Dispose()
End Sub
[C#]
private void Form1_Closed(object sender, EventArgs e)
{
    MyScanner.Dispose();
}
```

OnDone

This event occurs when decoding is complete.

- Syntax

```
[VB]
Public Event OnDone As EventHandler
```

```
[C#]
public event EventHandler OnDone
```

- Event data

The Event Handler has received EventArgs type parameters.

The second parameter EventArgs e is always System.EventArgs.Empty.

```
[Ex.] Read data when decoding complete.
[VB]
Private Sub MyScanner_OnDone(ByVal sender As Object, ByVal e As System.EventArgs)
Handles MyScanner.OnDone
      Dim ReadBuf(Scanner.MAX_BAR_LEN) As Byte
      MyScanner.Input(ReadBuf, 0, Scanner.ALL_BUFFER)
End Sub
[C#]
private void MyScanner_OnDone(object sender, EventArgs e)
{
      byte[] ReadBuf = new byte[Scanner.MAX_BAR_LEN];
      MyScanner.Input(ReadBuf, 0, Scanner.ALL_BUFFER);
}
```

18.2. Scanner.CodeInfo

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
Type	Code Type
Len	Number of digits in code (code length)

➢ Methods

None

➢ Events

None

➢ Enumeration

None

Type

Acquires the code type.

- Syntax

```
[VB]
Public ReadOnly Property Type As Char
```

```
[C#]
public char Type {get;}
```

- Property

Code type. Refer to InBufferType for the relationship between code types and properties.

Default value: 0

- Exceptions

None

```
[Ex.] Acquire the code type and number of digits in all rows for the data last read.
    [VB]
    For i = 0 To MyScanner.LastCodeNum
        len(i) = MyScanner.LastCodeInfo(i).Len
        type(i) = MyScanner.LastCodeInfo(i).Type
    Next
    [C#]
    for (i = 0; i < MyScanner.LastCodeNum; i++) {
        len[i] = MyScanner.LastCodeInfo[i].Len
        type[i] = MyScanner.LastCodeInfo[i].Type
    }
```

Len

Acquires the number of digits in the code (code length).

- Syntax

```
[VB]
Public ReadOnly Property Len As Integer
```

```
[C#]
public int Len {get;}
```

- Property

Number of digits in the code

Default value: 0

- Exceptions

None

```
[Ex.] Acquire the code type and number of digits in all rows for the data last read.
[VB]
For i = 0 To MyScanner.LastCodeNum
      len(i) = MyScanner.LastCodeInfo(i).Len
      type(i) = MyScanner.LastCodeInfo(i).Type
Next
[C#]
for (i = 0; i < MyScanner.LastCodeNum; i++) {
      len[i] = MyScanner.LastCodeInfo[i].Len
      type[i] = MyScanner.LastCodeInfo[i].Type
}
```

18.3. Scanner.Settings

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
CRTime	Re-read prevention time
Invert	Enabling/disabling of black-and-white inverted label reading function
DecodeLevel	Decoding level
MinDigitITF	Marker mode
MinDigitSTF	Minimum number of digits in ITF (Interleaved 2of5)
MinDigitNW7	Minimum number of digits in STF (Standard 2of5)
Marker	Minimum number of digits in NW7 (CODABAR)
Reverse	Front-back inverted reading
ScanMode	Scan mode
OptionData	Option data

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_MARKER	Marker mode
EN_SCAN_MODE	Scan mode

CRTime

Sets or acquires re-read prevention time.

- Syntax

```
[VB]
Public Shared Property CRTime As Integer
```

```
[C#]
public static int CRTime {get; set;}
```

- Property

Re-read prevention time (in units of 100 msec)

Parameter values: 0 to 255

Default value: 10

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

If "0" is specified, the same code will not be read twice in a row.

```
[Ex.] Set the 2nd read prevention time to 2 seconds.
     [VB]  Scanner.Settings.CRTime = 10
     [C#]  Scanner.Settings.CRTime = 10;
```

Invert

Sets or acquires the enabling and disabling of the black-and-white inverted label reading function.

- Syntax

```
[VB]
Public Shared Property Invert As Integer
```

```
[C#]
public static int Invert {get; set;}
```

- Property

Parameter values: 0: disabled, 1: enabled

Default value: 0

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Disable black-and-white inversion reading.

    [VB] Scanner.Settings.Invert = 0

    [C#] Scanner.Settings.Invert = 0;

DecodeLevel

Sets or acquires the decoding level.

- Syntax

```
[VB]
Public Shared Property DecodeLevel As Integer
```

```
[C#]
public static int DecodeLevel {get; set;}
```

- Property

Decoding level

Parameter values: 1 to 9

Default value: 4

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

The setting for this property will be valid the next time read operation is enabled.

```
[Ex.]   Set the decode level to 7.
    [VB]  Scanner.Settings.DecodeLevel = 7
    [C#]  Scanner.Settings.DecodeLevel = 7;
```

MinDigitITF

Sets or acquires the minimum number of digits in ITF code.

- Syntax

```
[VB]
Public Shared Property MinDigitITF As Integer
```

```
[C#]
public static int MinDigitITF {get; set;}
```

- Property

Minimum number of digits

Parameter values: 2 to 20

Default value: 4

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

The setting for this property will be valid the next time read operation is enabled.

If the minimum number of ITF digits is specified at the read enable code RdType property, the value set for the RdType property will be given priority.

[Ex.] Set the default value for the minimum number of digits for ITF code reading to 8.

    [VB] Scanner.Settings.MinDigitITF = 8

    [C#] Scanner.Settings.MinDigitITF = 8;

MinDigitSTF

Sets or acquires the minimum number of digits in STF code.

- Syntax

```
[VB]
Public Shared Property MinDigitSTF As Integer
```

```
[C#]
public static int MinDigitSTF {get; set;}
```

- Property

Minimum number of digits

Parameter values: 1 to 20

Default value: 3

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

The setting for this property will be valid the next time read operation is enabled.

If the minimum number of STF digits is specified at the read enable code RdType property, the value set for the RdType property will be given priority.

```
[Ex.] Set the default value for the minimum number of digits for STF code reading to 20.
    [VB]  Scanner.Settings.MinDigitSTF = 20
    [C#]  Scanner.Settings.MinDigitSTF = 20;
```

MinDigitNW7

Sets or acquires the minimum number of digits in NW7 code (CODABAR).

■ Syntax

```
[VB]
Public Shared Property MinDigitNW7 As Integer
```

```
[C#]
public static int MinDigitNW7 {get; set;}
```

■ Property

Minimum number of digits

Parameter values: 3 to 20

Default value: 4

■ Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

■ Note

The setting for this property will be valid the next time read operation is enabled.

If the minimum number of NW7 digits is specified at the read enable code RdType property, the value set for the RdType property will be given priority.

```
[Ex.] Set the default value for the minimum number of digits for NW7 code reading to 4.
    [VB]  Scanner.Settings.MinDigitNW7 = 4
    [C#]  Scanner.Settings.MinDigitNW7 = 4;
```

Marker

Sets or acquires the marker mode.

- Syntax

```
[VB]
Public Shared Property Marker As EN_MARKER
```

```
[C#]
public static EN_MARKER Marker {get; set;}
```

- Property

Marker mode

Parameter values: As listed in EN_MARKER

Default value: EN_MARKER.NORMAL

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

Marker ahead mode (EN_MARKER.AHEAD) is supported only on BHT-400B models used in Japan.

[Ex.] Setting to ensure that the marker is not lit when performing barcode reading.
[VB] Scanner.Settings.Marker = Scanner.Settings.Marker.EN_MARKER
[C#] Scanner.Settings.Marker = Scanner.Settings.Marker.EN_MARKER;

Reverse

Sets or acquires the front-back inverted reading enabled/disabled status.

- Syntax

```
[VB]
Public Shared Property Reverse As Integer
```

```
[C#]
public static int Reverse {get; set;}
```

- Property

Front-back inverted reading enabled/disabled status

Parameter values: 0: Disabled, 1: Enabled

Default value: 0

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

The BHT-400B does not support this property. An exception will be thrown if an attempt is made to specify or read this property using the BHT-400B.

ScanMode

Sets or acquires the scan mode.

- Syntax

```
[VB]
Public Shared Property ScanMode As EN_SCAN_MODE
```

```
[C#]
public static EN_SCAN_MODE ScanMode {get; set;}
```

- Property

Scan mode

Parameter values: As listed in EN_SCAN_MODE

Default value: EN_SCAN_MODE.NORMAL

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

The BHT-400B does not support this property. An exception will be thrown if an attempt is made to specify or read this property using the BHT-400B.

OptionData

Sets or acquires the status of the option data.

- Syntax

```
[VB]
Public Shared Property OptionData As Integer
```

```
[C#]
public static int OptionData {get; set;}
```

- Property

Option data status

Parameter values: 0: Do not append option data   1: Append option data

Default value: 0

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

The BHT-400B does not support this property. An exception will be thrown if an attempt is made to specify or read this property using the BHT-400B.

EN_MARKER

Specifies the marker mode.

- Syntax

```
[VB]
Public Enum EN_MARKER
```

```
[C#]
public enum EN_MARKER
```

- Members

Member Name	Description
NORMAL	Normal mode
AHEAD	Ahead mode
DISABLE	Lighting is disabled

- Class

BHTCL.Scanner.Settings

EN_SCAN_MODE

Specifies the scan mode.

- Syntax

```
[VB]
Public Enum EN_SCAN_MODE
```

```
[C#]
public enum EN_SCAN_MODE
```

- Members

Member Name	Description
NORMAL	Normal mode
POINT	Point scan mode
D1	Barcode reader mode

- Class

BHTCL.Scanner.Settings

18.4. BatteryCollection

➢ Constructor

None

Acquire battery information by first obtaining an instance of the battery using the "ExistingBatteries" property and then locating it in the corresponding property.

➢ Fields

Field Name	Description
COUNT	Maximum number of batteries

➢ Properties

Property Name	Description
ExistingBatteries	Instances of existing batteries

➢ Methods

None

➢ Events

None

➢ Enumeration

None

COUNT

Number of batteries. This value is fixed (not variable).

- Syntax

```
[VB]
Public Const COUNT As Integer
```

```
[C#]
public const int COUNT;
```

[Ex.] Acquire the maximum number of batteries that can be inserted in the BHT-400.

    [VB] Count = BatteryCollection.COUNT

    [C#] Count = BatteryCollection.COUNT;

ExistingBatteries

Acquires instances of existing batteries.

- Syntax

```
[VB]
Public Shared ReadOnly Property ExistingBatteries As Battery()
```

```
[C#]
public static Battery[] ExistingBatteries {get;}
```

- Property

Battery instances arrangement

- Exceptions

None

- Note

Even if there is no battery in either the grip or BHT body, an arrangement with two elements is created.

```
[Ex.] Acquire the battery instance.

    [VB]  MyBattery = BatteryCollection.ExistingBatteries

    [C#]  MyBattery = BatteryCollection.ExistingBatteries;
```

18.5. BatteryCollection.Battery

➢ Constructor

Constructor Name	Description
Battery	Creates a new instance of the Battery class.

➢ Fields

None

➢ Properties

Property Name	Description
ID	Battery ID
OnCU	CU installation status
Voltage	Battery voltage
Level	Battery voltage level
Chemistry	Battery type

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_CHARGE	Battery charge status
EN_LEVEL	Battery voltage level
EN_CHEMISTRY	Battery type

Battery

Initializes a new instance of the Battery class.

- Syntax

```
[VB]
Public Sub New(ByVal BatteryID As Integer)
```

```
[C#]
public Battery(int BatteryID)
```

- Parameters

BatteryID: Battery ID

Parameter values: 0: Battery in BHT body, 1: Battery in grip

- Exceptions

None

ID

Acquires the battery ID.

- Syntax

```
[VB]
Public ReadOnly Property ID As Integer
```

```
[C#]
public int ID {get;}
```

- Property

ID

Parameter values: 0: Battery in BHT body, 1: Battery in grip

- Exceptions

None

OnCU

Acquires the CU installation status for the BHT.

- Syntax

```
[VB]
Public ReadOnly Property OnCU As EN_CHARGE
```

```
[C#]
public EN_CHARGE OnCU {get;}
```

- Property

CU installation status

Default value: Installation status at the time of initialization

- Exceptions

None

- Note

The value is the same for batteries in the BHT body and grip.

```
[Ex.] Acquire the battery charge status.
[VB]
For Each MyBattery In BatteryCollection.ExistingBatteries
    Dim OnCU As BatteryCollection.Battery.EN_CHARGE = MyBattery.OnCU
Next
[C#]
foreach (BatteryCollection.Battery MyBattery in BatteryCollection.ExistingBatteries)
{
    BatteryCollection.Battery.EN_CHARGE Charge = MyBattery.OnCU;
}
```

Voltage

Acquires the battery voltage.

- Syntax

```
[VB]
Public ReadOnly Property Voltage As Integer
```

```
[C#]
public int Voltage {get;}
```

- Property

Battery voltage (mV)

Default value: Battery voltage at the time of initialization

- Exceptions

None

- Note

If the BHT has a battery in the grip only, the battery voltage for the BHT body will be 0 (mV). Similarly, if there is a battery in the BHT body only, the battery voltage for the grip will be 0 (mV).

```
[Ex.] Acquire the battery voltage at the BHT body and grip.
[VB]
For Each MyBattery In BatteryCollection.ExistingBatteries
      Dim Volt As Short = MyBattery.Voltage
Next
[C#]
foreach (BatteryCollection.Battery MyBattery in BatteryCollection.ExistingBatteries)
{
      short volt = MyBattery.Voltage;
}
```

Level

Acquires the battery voltage level.

- Syntax

```
[VB]
Public ReadOnly Property Level As EN_LEVEL
```

```
[C#]
public EN_LEVEL Level {get;}
```

- Property

Battery voltage level

Default value: Battery voltage level at the time of initialization

- Exceptions

None

- Note

If the BHT has a battery in the grip only, the battery voltage level for the BHT body will be EN_LEVEL.NO_BATTERY. Similarly, if there is a battery in the BHT body only, the battery voltage level for the grip will be EN_LEVEL.NO_BATTERY.

```
[Ex.] Acquire the battery level at the BHT body and grip.
[VB]
For Each MyBattery In BatteryCollection.ExistingBatteries
      Dim Level As BatteryCollection.Battery.EN_LEVEL = MyBattery.Level
Next
[C#]
foreach (BatteryCollection.Battery MyBattery in BatteryCollection.ExistingBatteries)
{
      BatteryCollection.Battery.EN_LEVEL Level = MyBattery.Level;
}
```

Chemistry

Acquires the battery type.

- Syntax

```
[VB]
Public ReadOnly Property Chemistry As EN_CHEMISTRY
```

```
[C#]
public EN_CHEMISTRY Chemistry {get;}
```

- Property

Battery type

Default value: Type of battery installed

- Exceptions

None

- Note

If the BHT has a battery in the grip only, the battery type for the BHT body will be EN_CHEMISTRY.UNKNOWN. Similarly, if there is a battery in the BHT body only, the battery type for the grip will be EN_CHEMISTRY.UNKNOWN.

```
[Ex.] Acquire the battery type at the BHT body and grip.
[VB]
For Each MyBattery In BatteryCollection.ExistingBatteries
      Dim Chemistry As BatteryCollection.Battery.EN_CHARGE = MyBattery.Chemistry
Next
[C#]
foreach (BatteryCollection.Battery MyBattery in BatteryCollection.ExistingBatteries)
{
      BatteryCollection.Battery.EN_CHEMISTRY Chemistry = MyBattery.Chemistry;
}
```

EN_CHARGE

Specifies whether the battery is charged or not.

- Syntax

```
[VB]
Public Enum EN_CHARGE
```

```
[C#]
public enum EN_CHARGE
```

- Members

Member Name	Description
OFFLINE	Not charged
ONLINE	Charged
UNKNOWN	Charge status unknown

- Class

Within BHTCL.BatteryCollection.Battery class

EN_LEVEL

Specifies the battery voltage level.

- Syntax

```
[VB]
Public Enum EN_LEVEL
```

```
[C#]
public enum EN_LEVEL
```

- Members

Member Name	Description
HIGH	3.9 V or above
MID	3.7 V or above but less than 3.9 V
LOW	3.6 V or above but less than 3.7 V
WARNING	Less than 3.6 V
CRITICAL	Less than 3.4 V
NO_BATTERY	No battery installed

- Class

Within BHTCL.BatteryCollection.Battery class

EN_CHEMISTRY

Specifies the battery type.

- Syntax

```
[VB]
Public Enum EN_CHEMISTRY
```

```
[C#]
public enum EN_CHEMISTRY
```

- Members

Member Name	Description
ALKALINE	Alkaline battery
NICD	Nickel-Cadmium battery
NIMH	Nickel Metal Hydride battery
LION	Lithium Ion battery
LIPOLY	Lithium Polymer battery
UNKNOWN	Unknown, missing

- Class

Within BHTCL.BatteryCollection.Battery class

18.6. Backlight

➢ Constructor

Constructor Name	Description
Backlight	Creates a new instance of the Backlight class.

➢ Fields

None

➢ Properties

Property Name	Description
Status	Backlight is lit.

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_STATUS	Backlight is lit.

Backlight

Initializes a new instance of the Backlight class.

- Syntax

```
[VB]
Public Sub New()
```

```
[C#]
public Backlight()
```

- Parameters

None

- Exceptions

None

[Ex.] Create a MyBacklight Backlight instance.

    [VB] Dim MyBacklight As Backlight = New Backlight

    [C#] Backlight MyBacklight = new Backlight();

Status

Sets or acquires the backlight status (whether the backlight is lit).

- Syntax

```
[VB]
Public Shared Property Status As EN_STATUS
```

```
[C#]
public static EN_STATUS Status {get; set;}
```

- Property

Backlight status (whether the backlight is lit)

Parameter values: As listed in **EN_STATUS**

Default value: Backlight status at the time of initialization

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Turn ON the backlight.

    [VB] Backlight.Status = Backlight.EN_STATUS.ENABLE_ON

    [C#] Backlight.Status = Backlight.EN_STATUS.ENABLE_ON;
```

EN_STATUS

Specifies the backlight status (whether the backlight is lit).

- Syntax

```
[VB]
Public Enum EN_STATUS
```

```
[C#]
public enum EN_STATUS
```

- Members

Member Name	Description
ENABLE_ON	ON
ENABLE_OFF	OFF
DISABLE_OFF	Disabled

- Class

Within BHTCL.Backlight class

18.7. Backlight.Settings

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
OnTimeBattery	"ON" time (when powered by battery)
OnTimeAC	" ON " time (when installed on CU)
CtrlKey	Control key
Brightness	Brightness level
PowerSave	Brightness when OFF

➢ Methods

None

➢ Events

None

➢ Enumeration

None

OnTimeBattery

Sets or acquires the ON time when the backlight is powered by the battery.

- Syntax

```
[VB]
Public Shared Property OnTimeBattery As Integer
```

```
[C#]
public static int OnTimeBattery {get; set;}
```

- Property

ON time (in units of 1 sec)

Parameter values: 0 to 255

Default value: 3

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

When "0" is specified, the backlight does not turn ON.

When "255" is specified, the backlight remains ON constantly.

[Ex.] Set the backlight ON time to 10 seconds when the BHT is powered by the battery.

    [VB] Backlight.Settings.OnTimeBattery = 10

    [C#] Backlight.Settings.OnTimeBattery = 10;

OnTimeAC

Sets or acquires the backlight ON time when installed on the CU.

- Syntax

```
[VB]
Public Shared Property OnTimeAC As Integer
```

```
[C#]
public static int OnTimeAC {get; set;}
```

- Property

ON time (in units of 1 sec)

Parameter values: 0 to 255

Default value: 60

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

When "0" is specified, the backlight does not turn ON.

When "255" is specified, the backlight remains ON constantly.

```
[Ex.] Set the backlight ON time to 10 seconds when the BHT is installed on the CU.
    [VB] Backlight.Settings.OnTimeAC = 10
    [C#] Backlight.Settings.OnTimeAC = 10;
```

CtrlKey

Sets or acquires the control key for turning ON and OFF the backlight.

- Syntax

```
[VB]
Public Shared Property CtrlKey As Integer
```

```
[C#]
public static int CtrlKey {get; set;}
```

- Property

Backlight ON/OFF control key

Parameter values: See table below.

Default value: 0x00010204([SF] + [M4])

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

The relationship between the control keys and settings is shown in table below.

Backlight Control Key	Setting	Backlight Control Key	Setting
	0x00000201	[SF] + [.] (Period)	0x0001000A
	0x00000202	[SF] + [BS] (BackSpace)	0x0001000B
	0x00000243	[SF] + [C] (Clear)	0x0001000C
[F1]	0x00000101		
[F2]	0x00000102		
[F3]	0x00000103		
[F4]	0x00000104		
[F5]	0x00000105		
[F6]	0x00000106		
[F7]	0x00000107		
[F8]	0x00000108		
[F9]	0x00000109		
[F10]	0x0000010A		
[F11]	0x0000010B		
[F12]	0x0000010C		
[SCAN]	0x00000200	[SF] + [SCAN]	0x00010200
[M1]	0x00000201	[SF] + [M1]	0x00010201
[M2]	0x00000202	[SF] + [M2]	0x00010202
[M3H] (half-press)	0x00000243	[SF] + [M3H] (half-press)	0x00010243
[M3]	0x00000203	[SF] + [M3]	0x00010203
[M4H] (half-press)	0x00000244	[SF] + [M4H] (half-press)	0x00010244
[M4]	0x00000204	[SF] + [M4]	0x00010204

[Ex.] Set the backlight control key to the [M1] key.

    [VB] Backlight.Settings.CtrlKey = 0x00000201

    [C#] Backlight.Settings.CtrlKey = 0x00000201;

Brightness

Sets or acquires the backlight brightness level.

- Syntax

```
[VB]
Public Shared Property Brightness As Integer
```

```
[C#]
public static int Brightness {get; set;}
```

- Property

Brightness level

Parameter values: 0 (OFF), 1 (dark) to 3 (bright)

Default value: 3

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Set the brightness to maximum when turning ON the backlight.

    [VB] Backlight.Settings.Brightness = 3

    [C#] Backlight.Settings.Brightness = 3;

PowerSave

Sets or acquires the backlight brightness when OFF.

- Syntax

```
[VB]
Public Shared Property PowerSave As Integer
```

```
[C#]
public static int PowerSave {get; set;}
```

- Property

Brightness when OFF

Parameter values: 0 (OFF), 1 (Dimly)

Default value: 0

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Set the backlight status to OFF when not lit.

    [VB] Backlight.Settings.PowerSave = 0

    [C#] Backlight.Settings.PowerSave = 0;
```

18.8. LED

➢ Constructor

Constructor Name	Description
LED	Creates a new instance of the LED class.

➢ Fields

Field Name	Description
Usage	Restrictions on LED usage (invalid on BHT-400)

➢ Properties

Property Name	Description
Item	LED ON/OFF status

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_DEVICE	LED device
EN_COLOR	LED color
EN_CTRL	LED ON/OFF status

LED

Initializes a new instance of the LED class.

- Syntax

```
[VB]
Public Sub New( )
```

```
[C#]
public LED( )
```

- Parameters

None

- Exceptions

None

[Ex.] Create a MyLED LED instance.

    [VB] Dim MyLED As LED = New LED

    [C#] LED MyLED = new LED();

Item

Sets or aquires the LED status (ON/OFF) specified by the index.

In C#, this property is used as the indexer for the LED class.

- Syntax

```
[VB]
Public Property Item(ByVal device As LED.EN_DEVICE, _
    ByVal color As LED.EN_COLOR) As LED.EN_CTRL
```

```
[C#]
public LED.EN_CTRL this[LED.EN_DEVICE device][LED.EN_COLOR
color] {get; set;}
```

- Parameters

device

LED device

Parameter values: As listed in LED.EN_DEVICE.BAR

color

LED color

Parameter values: Red (=LED.EN_COLOR.RED) or blue (=LED.EN_COLOR.BLUE)

- Property

LED ON/OFF status

Parameter values: As listed in EN_CTRL

Default value: ON/OFF status at the time of initialization

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

When an indicator LED (=BAR) is specified as "device," selection of the color yellow (=YELLOW) is ignored.

In general, indicator LEDs cannot be controlled from the application while barcode reading is enabled. However, if prohibition of operation for a particular indicator LED is specified, it can be controlled from the application.

Once an LED is turned on from the application, it will remain lit, even after the application is finished, until it is deliberately turned off.

[Ex.] Turn ON the blue LED.

    [VB] MyLED(LED.EN_DEVICE.BAR, LED.EN_COLOR.BLUE) = LED.EN_CTRL.ON

    [C#] MyLED[LED.EN_DEVICE.BAR, LED.EN_COLOR.BLUE] = LED.EN_CTRL.ON;

EN_DEVICE

Specifies the LED device.

- Syntax

```
[VB]
Public Enum EN_DEVICE
```

```
[C#]
public enum EN_DEVICE
```

- Members

Member Name	Description
BAR	Indicator LED
RF	Wireless LED (disabled on BHT-400)

- Class

Within BHTCL.LED class

EN_COLOR

Specifies the LED color.

- Syntax

```
[VB]
Public Enum EN_COLOR
```

```
[C#]
public enum EN_COLOR
```

- Members

Member Name	Description
RED	Red
BLUE	Blue(=GREEN)
GREEN	Green
YELLOW	Yellow (disabled on BHT-400)

- Class

Within BHTCL.LED class

EN_CTRL

Specifies the LED ON/OFF status.

- Syntax

```
[VB]
Public Enum EN_CTRL
```

```
[C#]
public enum EN_CTRL
```

- Members

Member Name	Description
OFF	LED OFF
ON	LED ON

- Class

Within BHTCL.LED class

18.9. LED.UsageCollection

This class is invalid on the BHT400.

18.10. Beep

➢ Constructor

Constructor Name	Description
Beep	Creates a new instance of the Beep class.

➢ Fields

None

➢ Properties

Property Name	Description
Item	Beep control
OnTime	ON duration
OffTime	OFF duration
Frequency	Beep frequency
Count	Number of beeps

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_CTRL	Beep status

Beep

Initializes a new instance of the Beep class.

- Syntax

```
[VB]
Public Sub New( )
```

```
[C#]
public Beep( )
```

- Parameters

None

- Exceptions

None

```
[Ex.] Create a MyBeep beeper/vibrator instance.
      [VB]  Dim MyBeep As LED = New Beep
      [C#]  LED MyBeep = new Beep();
```

Item

Starts or stops the beeping or vibrating of the device specified by the index.

In C#, this property is used as the indexer for the Beep class.

- Syntax

```
[VB]
Public WriteOnly Property Item(ByVal device As Beep.EN_DEVICE) _
As Beep.EN_CTRL
```

```
[C#]
public Beep.EN_CTRL this[Beep.EN_DEVICE device]{set;}
```

- Parameters

   device

   Beep device

   Parameter values: As listed in **EN_DEVICE** (one of the values or a combination of the values)

- Property

   Status of the beeper or vibrator

   Parameter values: As listed in EN_CTRL

   Default value: EN_CTRL.OFF

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) lies outside the permissible range. Specification of the beep device is invalid.

```
[Ex.] Activate the beeper and vibrator.

    [VB] MyBeep(Beep.Settings.EN_DEVICE.BUZZER _

    Or Beep.Settings.EN_DEVICE.VIBRATOR) = Beep.EN_CTRL.ON

    [C#] MyBeep[Beep.Settings.EN_DEVICE.BUZZER |

    Beep.Settings.EN_DEVICE.VIBRATOR] = Beep.EN_CTRL.ON;
```

OnTime

Sets or acquires the ON/OFF duration of the beeper or vibrator.

- Syntax

```
[VB]
Public Property OnTime As Integer
```

```
[C#]
public int OnTime{get; set;}
```

- Property

ON duration of the beeper or vibrator (in units of 100 msec)

Parameter values: 0 to 255

Default value: 5

- Exceptions

None

- Note

If a value outside the permissible range is specified, no exceptions will be thrown immediately, however, an exception will be thrown later when the start of beeping or vibrating is specified with an Item property.

If this property is set to "0," the beeper or the vibrator will not sound or vibrate.

```
[Ex.] Set the ON time to 1 second.
     [VB]  MyBeep.OnTime = 10
     [C#]  MyBeep.OnTime = 10;
```

OffTime

Sets or acquires the OFF duration of the beeper or vibrator.

- Syntax

```
[VB]
Public Property OffTime As Integer
```

```
[C#]
public int OffTime{get; set;}
```

- Property

OFF duration of the beeper or vibrator (in units of 100 msec)

Parameter values: 0 to 255

Default value: 5

- Exceptions

None

- Note

If a value outside the permissible range is specified, no exceptions will be thrown immediately, however, an exception will be thrown later when the start of beeping or vibrating is specified with an Item property.

If a value other than zero is specified for the ON duration while 0 is specified for the OFF duration, the beeper or the vibrator will continue to sound or vibrate.

[Ex.] Set the downtime to 1 second.

　　[VB] MyBeep.OffTime = 10

　　[C#] MyBeep.OffTime = 10;

Frequency

Sets or acquires the beeping frequency of the beeper.

- Syntax

```
[VB]
Public Property Frequency As Integer
```

```
[C#]
public int Frequency {get; set;}
```

- Property

Beeping frequency of the beeper (Hz)

Parameter values: 0 (698 Hz), 1 (1396 Hz), 2 (2793 Hz), and 39 to 32767 (inclusive)

Default value: 2

- Exceptions

None

- Note

If a value outside the permissible range is specified, no exceptions will be thrown immediately, however, an exception will be thrown later when the start of beeping or vibrating is specified with an Item property.

If a value between 3 and 39 (inclusive) is specified, no exceptions will be thrown, however, the beeper will not sound.

```
[Ex.] Set the beep frequency to 698Hz.
    [VB] MyBeep.Frequency = 0
    [C#] MyBeep.Frequency = 0;
```

Count

Sets or acquires the number of beeps or vibrations of the beeper or vibrator.

- Syntax

```
[VB]
Public Property Count As Integer
```

```
[C#]
public int Count {get; set;}
```

- Property

Number of beeps or vibrations of the beeper or vibrator

Parameter values: 0 to 255. The beeper will not sound if "0" is specified.

Default value: 1

- Exceptions

None

- Note

If a value outside the permissible range is specified, no exceptions will be thrown immediately, however, an exception will be thrown later when the start of beeping or vibrating is specified with an Item property.

```
[Ex.] Set the beep count to 5.
    [VB] MyBeep.Count = 5
    [C#] MyBeep.Count = 5;
```

EN_CTRL

Starts or stops the beeping or vibration.

- Syntax

```
[VB]
Public Enum EN_CTRL
```

```
[C#]
public enum EN_CTRL
```

- Members

Member Name	Description
OFF	Stop the beeping or vibration.
ON	Start the beeping or vibration.

- Class

Within BHTCL.BEEP class

18.11. Beep.Settings

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
Device	Beeper or vibrator
Volume	Beeper volume
VolumeKey	Key click sound volume
VolumeTap	Tap sound volume
VolumeHalfKey	Half-pressed key click sound volume
OnOffLaserKey	Trigger switch ON/OFF sound
OnOffTrgKey	Laser key click ON/OFF sound

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_DEVICE	Beeper or vibrator.
EN_VOLUME	Sound volume.
EN_ON_OFF	Click sound ON/OFF

Device

Sets or acquires the beeper or vibrator.

- Syntax

```
[VB]
Public Shared Property Device As EN_DEVICE
```

```
[C#]
public static EN_DEVICE Device {get; set;}
```

- Property

Beeper or vibrator

Parameter values: As listed in EN_DEVICE (one of the values or a combination of the values)

Default value: EN_DEVICE.BEEP

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Set the sound device (barcode reading, warning sound etc.) for the entire system to vibrator only.

[VB] Beep.Settings.Device = Beep.Settings.EN_DEVICE.VIBRATOR

[C#] Beep.Settings.Device = Beep.Settings.EN_DEVICE.VIBRATOR;

Volume

Sets or acquires the beeper volume.

- Syntax

```
[VB]
Public Shared Property Volume As EN_VOLUME
```

```
[C#]
public static EN_VOLUME Volume {get; set;}
```

- Property

Beeper volume

Parameter values: As listed in EN_VOLUME

Default value: EN_VOLUME.LEVEL5

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Set the beeper volume to maximum.

  [VB] Beep.Settings.Volume = Beep.Settings.EN_VOLUME.LEVEL5

  [C#] Beep.Settings.Volume = Beep.Settings.EN_VOLUME.LEVEL5;

VolumeKey

Sets or acquires the volume of a key click.

■　Syntax

```
[VB]
Public Shared Property VolumeKey As EN_VOLUME
```

```
[C#]
public static EN_VOLUME VolumeKey {get; set;}
```

■　Property

Sound volume

Parameter values: EN_VOLUME values LEVEL_OFF to LEVEL2

Default value: EN_VOLUME.LEVEL2

■　Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Set the key click sound volume to maximum.

　　[VB] Beep.Settings.VolumeKey = Beep.Settings.EN_VOLUME.LEVEL2

　　[C#] Beep.Settings.VolumeKey = Beep.Settings.EN_VOLUME.LEVEL2;

VolumeTap

Sets or acquires the sound volume of the screen taps.

- Syntax

```
[VB]
Public Shared Property VolumeTap As EN_VOLUME
```

```
[C#]
public static EN_VOLUME VolumeTap {get; set;}
```

- Property

Sound volume

Parameter values: EN_VOLUME values LEVEL_OFF to LEVEL2

Default value: EN_VOLUME.LEVEL2

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Set the screen tap sound volume to maximum.

    [VB] Beep.Settings.VolumeTap = Beep.Settings.EN_VOLUME.LEVEL2

    [C#] Beep.Settings.VolumeTap = Beep.Settings.EN_VOLUME.LEVEL2;
```

VolumeHalfKey

Sets or acquires the sound volume of a half-pressed key click.

- Syntax

```
[VB]
Public Shared Property VolumeHalfKey As EN_VOLUME
```

```
[C#]
public static EN_VOLUME VolumeHalfKey {get; set;}
```

- Property

Sound volume

Parameter values: EN_VOLUME values LEVEL_OFF to LEVEL2

Default value: EN_VOLUME.LEVEL_OFF

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Set the half-press key click sound volume to maximum.

    [VB] Beep.Settings.VolumeHalfKey = Beep.Settings.EN_VOLUME.LEVEL2

    [C#] Beep.Settings.VolumeHalfKey = Beep.Settings.EN_VOLUME.LEVEL2;

OnOffLaserKey

Sets or acquires the ON/OFF for the sound of the clicking of the laser marker key.

■ Syntax

```
[VB]
Public Shared Property OnOffLaserKey As EN_ON_OFF
```

```
[C#]
public static EN_VOLUME OnOffLaserKey {get; set;}
```

■ Property

Clicking sound ON/OFF

Parameter values: As listed in EN_ON_OFF

Default value: EN_ON_OFF.OFF

■ Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Turn OFF the laser marker key click sound.

     [VB]  Beep.Settings.OnOffLaserKey = Beep.Settings.EN_ON_OFF.OFF

     [C#]  Beep.Settings.OnOffLaserKey = Beep.Settings.EN_ON_OFF.OFF;
```

OnOffTrgKey

Sets or acquires the ON/OFF for the sound of the clicking of the trigger switch.

- Syntax

[VB]
Public Shared Property OnOffTrgKey As EN_ON_OFF

[C#]
public static EN_VOLUME OnOffTrgKey {get; set;}

- Property

Clicking sound ON/OFF

Parameter values: As listed in EN_ON_OFF

Default value: EN_ON_OFF.OFF

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Turn OFF the trigger key click sound.

[VB] Beep.Settings.OnOffTrgKey = Beep.Settings.EN_ON_OFF.OFF

[C#] Beep.Settings.OnOffTrgKey = Beep.Settings.EN_ON_OFF.OFF;

EN_DEVICE

Specifies the beeper or vibrator.

- Syntax

```
[VB]
Public [Flags] Enum EN_DEVICE
```

```
[C#]
public [Flags] enum EN_DEVICE
```

- Members

Member Name	Description
BEEP	Beeper
VIB	Vibrator

- Class

Within BHTCL.Beep.Settings class

EN_VOLUME

Specifies the beeper volume level.

- Syntax

```
[VB]
Public Enum EN_VOLUME
```

```
[C#]
public enum EN_VOLUME
```

- Members

Member Name	Description
LEVEL_OFF	OFF
LEVEL1	Low
LEVEL2	
LEVEL3	
LEVEL4	
LEVEL5	High

- Class

BHTCL.Beep.Settings

EN_ON_OFF

Specifies the ON/OFF for the clicking sound.

- Syntax

```
[VB]
Public Enum EN_ON_OFF
```

```
[C#]
public enum EN_ON_OFF
```

- Members

Member Name	Description
OFF	OFF
ON	ON

- Class

BHTCL.Beep.Settings

18.12. RF

➢ Constructor

Constructor Name	Description
RF	Creates a new instance of the RF class.

➢ Fields

None

➢ Properties

Property Name	Description
OpenMode	Wireless communication open mode
Open	Wireless communication open state
WepKey	Wep key

➢ Methods

Method Name	Description
Synchronize	Checks the status of synchronization with AP.

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_OPEN_MODE	Wireless device open mode

RF

Initializes a new instance of the RF class.

- Syntax

```
[VB]
Public Sub New( )
```

```
[C#]
public RF( )
```

- Parameters

None

- Exceptions

None

```
[Ex.] Create a MyRf RF interface.

     [VB]  Dim MyRf As RF = New RF

     [C#]  RF MyRf = new RF();
```

OpenMode

Sets or acquires the wireless open mode.

- Syntax

  [VB]
  Public Property OpenMode As EN_OPEN_MODE

  [C#]
  public EN_OPEN_MODE OpenMode{get; set;}

- Property

  Wireless communication open mode

  Parameter values: As listed in EN_OPEN_MODE

  Default value: EN_OPEN_MODE.NORMAL

- Exceptions

  None

- Note

  If an invalid value is specified for this property, no exceptions will be thrown immediately; however, an exception will be thrown later when an attempt is made to open or close the wireless device.

  When the property is set to EN_OPENMODE.NORMAL and the wireless device is opened:

  When closing the wireless device, set the property to EN_OPEN_MODE.NORMAL and then close the device.

  The wireless device will remain open provided that neither of the above two operations are performed (including when closing the wireless device from another application).

  Application: This applies to connections made to the network from a single application and applications used to perform communication using FTP and so forth.

<u>When the property is set to EN_OPENMODE.CONTINUOUSLY and the wireless device is</u> opened:

When closing the wireless device, set the property to EN_OPEN_MODE.CONTINUOUSLY and then close the device.

The wireless device is not closed even when exiting the application.

The wireless device is closed when the EN_OPEN_MODE.CONTINUOUSLY property is specified at another application and the wireless device is closed.

Application: This applies to applications used only to perform settings in order to establish a connection to the network.

```
[Ex.] Open a wireless connection to ensure that it is closed automatically when exiting the application.
[VB]
     MyRf.OpenMode = RF.EN_OPEN_MODE.NORMAL

     MyRf.Open = True
[C#]
     MyRf.OpenMode = RF.EN_OPEN_MODE.NORMAL;

     MyRf.Open = true;
```

```
[Ex.] Close the wireless connection opened from the current application.
[VB]
     MyRf.OpenMode = RF.EN_OPEN_MODE.NORMAL

     MyRf.Open = True

     ………
     MyRf.Open = False
[C#]
     MyRf.OpenMode = RF.EN_OPEN_MODE.NORMAL;

     MyRf.Open = true;

     ………
     MyRf.Open = false;
```

[Ex.] Close the wireless connection opened from any application (including the current application).

[VB]

```
    MyRf.Open = True

    ………

    MyRf.OpenMode = RF.EN_OPEN_MODE.CONTINUOUSLY

    MyRf.Open = False
```

[C#]

```
    MyRf.Open = true;

    ………

    MyRf.OpenMode = RF.EN_OPEN_MODE.CONTINUOUSLY;

    MyRf.Open = false;
```

Open

Opens or closes wireless communication.

- Syntax

```
[VB]
Public Property Open As Boolean
```

```
[C#]
public bool Open{get; set;}
```

- Property

Wireless communication open (= True), close (= False)

If wireless communication is achieved by setting OpenMode to EN_OPEN_MODE.NORMAL, the status achieved by setting OpenMode to EN_OPEN_MODE.NORMAL will be returned.

If wireless communication is achieved by setting OpenMode to EN_OPEN_MODE.CONTINUOUSLY, the status achieved by setting OpenMode to EN_OPEN_MODE.CONTINUOUSLY will be returned.

Default value: False

- Exceptions

Name of Exception	Meaning
DeviceNotFoundException	The specified device does not exist.
ArgumentException	The value specified for OpenMode is abnormal.

```
[Ex.] Open a wireless connection.
     [VB] MyRf.Open = True
     [C#] MyRf.Open = true;
```

WepKey

Generates an instance of the WepKeyCollection.

- Syntax

  [VB]
  Public Shared ReadOnly Property WepKey As WepKeyCollection

  [C#]
  public static WepKeyCollection WepKey{get;}

- Property

  WepKey instance

  Default value: null (Nothing at VB.NET)

- Exceptions

  None

- Note

  An instance cannot be generated directly from WepKeyCollection and therefore WepKey should be obtained with this property.

  This property has been retained to provide compatibility with the BHT-200. Ensure to use the Profile class WepKey property for the Wep key setting.

Synchronize

Checks the status of synchronization with AP.

- Syntax

```
[VB]
Public Shared Function Synchronize(ByVal TimeOut As Integer) _
As Integer
```

```
[C#]
public static int Synchronize(int TimeOut)
```

- Parameters

TimeOut

[in] time-out value until synchronization is established.

If **RF.SYNC_CHECK** is specified, the synchronization status is immediately checked and a result returned.

If **RF.SYNC_INFINITE** is specified, processing continues until synchronization is established.

Parameter values: RF.SYNC_CHECK, RF.SYNC_INFINITE, 1～Int32.MaxValue

- Return value

0: Synchronization has been established.

-1: Synchronization has not been established (time-out).

- Exceptions

Name of Exception	Meaning
DeviceNotFoundException	There is no NIC (Network Interface Card).
DeviceLoadException	The NIC device is not ready.
ArgumentException	The specified time-out value is invalid.

- Note

Before calling this method, ensure that wireless communication has been established using the Open property. If this method is called before establishing wireless communication, DeviceLoadException will be thrown.

[Ex.] Check the synchronization with the AP every second until synchronization is established.

[VB]

```
While Not 0 = RF.Synchronize(RF.SYNC_CHECK)
      Threading.Thread.Sleep(1000)
End While
```

[C#]

```
while (0 != RF.Synchronize(RF.SYNC_CHECK))
{
      System.Threading.Thread.Sleep(1000);
}
```

EN_OPEN_MODE

Specifies the wireless connection open mode.

- Syntax

```
[VB]
Public Enum EN_OPEN_MODE
```

```
[C#]
public enum EN_OPEN_MODE
```

- Members

Member Name	Description
NORMAL	Normal mode (*1)
CONTINUOUSLY	Continuously open mode (*1)

(*1) Please refer to the notes for the OpenMode property for further details.

18.13. RF.Profile

➢ Constructor

Constructor Name	Description
Profile	Specifies ESSID and infrastructure mode, and generates a profile instance.

➢ Fields

None

➢ Properties

Property Name	Description
SSID	ESSID
InfraMode	Infrastructure mode
Priority	Priority
Authentication	Authentication method
Encryption	Encryption method
EAP8021x	EAP type
WepKey	WEP key
PreSharedKey	PreSharedKey
Count	No. of registered profiles.

➢ Methods

Method Name	Description
Update	Update
Commit	Commit
Remove	Remove

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_AUTHENTICATION	Authentication method
EN_EAP8021X	EAP type
EN_ENCRYPTION	Encryption method
EN_INFRA_MODE	Infrastructure

Profile

Specifies ESSID and infrastructure mode, and initializes a new instance.

- Syntax

```
[VB]
Public Sub New(ByVal SSID As Integer, _
    ByVal infra As EN_INFRA_MODE)
```

```
[C#]
public Profile(string SSID, EN_INFRA_MODE infra)
```

- Parameters

SSID: ESSID

Parameter values: Alphanumeric character string of 32 characters or less

infra: Infrastructure mode

Parameter values: As listed in EN_INFRA_MODE

- Exceptions

Name of Exception	Meaning
ArgumentException	The values specified for SSID and infra are abnormal.

- Note

Select a profile matching the specified ESSID and infrastructure mode combination. If none exists, create a new profile and select that one.

If multiple profiles are created, the priority order for the profiles used for connection is highest for the profile created last.

SSID

Acquires the profile ESSID.

- Syntax

```
[VB]
Public ReadOnly Property SSID As String
```

```
[C#]
public string SSID {get;}
```

- Property

ESSID

- Exceptions

InfraMode

Acquires the profile infrastructure.

- Syntax

  [VB]
  Public ReadOnly Property InfraMode As EN_INFRA_MODE

  [C#]
  public EN_INFRA_MODE InfraMode {get;}

- Property

  Infrastructure mode

- Exceptions

  None

Priority

Sets or acquires the profile priority.

- Syntax

```
[VB]
Public Property Priority As Integer
```

```
[C#]
public int Priority {get; set;}
```

- Property

Profile priority

Parameter values: 1 (high) to 16 (low)

Default value: 1

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) lies outside the permissible range.

- Note

When a profile is created, the priority order for each of the existing profiles drops by one.

When a profile is deleted, the priority order for the existing profiles previously below the deleted profile increases by one.

If the same priority order is set for different profiles, the priority order of the profile set first will drop by one. Profiles for which an even lower priority order is set will also drop by one.

[Ex.] Use a MyProf profile setting and make that profile the highest priority in order to connect to the network.

    [VB] MyProf.Priority = 1

    [C#] MyProf.Priority = 1;

Authentication

Sets or acquires the profile authentication method.

- Syntax

```
[VB]
Public Property Authentication As EN_AUTHENTICATION
```

```
[C#]
public EN_AUTHENTICATION Authentication {get; set;}
```

- Property

Profile authentication method

Parameter values: As listed in EN_AUTHENTICATION

Default value: EN_AUTHENTICATION.OPEN

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) lies outside the permissible range.

[Ex.] Set the MyProf profile authentication method to Open.

　　[VB] MyProf.Authentication = RF.Profile.EN_AUTHENTICATION.OPEN

　　[C#] MyProf.Authentication = RF.Profile.EN_AUTHENTICATION.OPEN;

Encryption

Sets or acquires the profile encryption method.

- Syntax

```
[VB]
Public Property Encryption As EN_ENCRYPTION
```

```
[C#]
public EN_ENCRYPTION Encryption {get; set;}
```

- Property

Profile encryption method

Parameter values: As listed in EN_ENCRYPTION

Default value: EN_ENCRYPTION.DISABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) lies outside the permissible range.

```
[Ex.] Set the MyProf profile encryption method to Wep.

    [VB] MyProf.Encryption = RF.Profile.EN_ENCRYPTION.WEP

    [C#] MyProf.Encryption = RF.Profile.EN_ENCRYPTION.WEP;
```

EAP8021x

Sets or acquires the profile EAP (802.1x) type.

- Syntax

  ```
  [VB]
  Public Property EAP8021x As EN_EAP8021X
  ```

  ```
  [C#]
  public EN_EAP8021X EAP8021x {get; set;}
  ```

- Property

  Profile EAP type

  Parameter values: As listed in EN_EAP8021X

  Default value: EN_EAP8021X.DISABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) lies outside the permissible range.

```
[Ex.] Set the MyProf profile EAP type to Tkip.

    [VB] MyProf.EAP8021x = RF.Profile.EN_EAP8021X.TKIP

    [C#] MyProf.EAP8021x = RF.Profile.EN_EAP8021X.TKIP;
```

WepKey

Sets the profile WepKey.

- Syntax

```
[VB]
Public WriteOnly Property WepKey As String
```

```
[C#]
public string WepKey {set;}
```

- Property

Profile WEP key.

Parameter values: 10-character alphanumeric character string (40-bit)

26-character alphanumeric character string (128-bit)

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) lies outside the permissible range.

[Ex.] Set the MyProf profile Wep key to "12345123451234123412341234".

   [VB] MyProf.WepKey = "12345123451234123412341234"

   [C#] MyProf.WepKey = "12345123451234123412341234";

PreSharedKey

Specifies the profile PreSharedKey.

- Syntax

```
[VB]
Public WriteOnly Property PreSharedKey As String
```

```
[C#]
public string PreSharedKey {set;}
```

- Property

Profile PreSharedKey

Parameter values: 64-characters alphanumeric character string in hexadecimal notation, or ASCII character string with 8 characters or more and 63 characters or less

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) lies outside the permissible range.

```
[Ex.] Set the MyProf profile PreSharedKey to "1234512345123412341234".

    [VB] MyProf.WepKey = "1234512345123412341234"

    [C#] MyProf.WepKey = "1234512345123412341234";
```

Count

Acquires the number of registered profiles.

- Syntax

  ```
  [VB]
  Public Shared ReadOnly Property Count As Integer
  ```

  ```
  [C#]
  public static int Count {get;}
  ```

- Property

  Registered profile count

- Exceptions

  None

Registered

Acquires all registered profiles.

- Syntax

```
[VB]
Public Shared ReadOnly Property Registered As RF.Profile[]
```

```
[C#]
public static RF.Profile[] Registered {get;}
```

- Property

All registered profile instances.

- Exceptions

- Note

It is necessary to call the RF.Profile.Update method and copy the Zero Config GUI settings to the BHT wireless registry prior to acquiring all registered profiles.

```
[Ex.] Delete all registered profiles.

[VB]

RF.Profile.Update()        ' Copies settings from the Zero Config GUI to the BHT wireless registry.

Dim regProfiles() As RF.Profile = RF.Profile.Registered

For Each prof As RF.Profile In regProfiles

    RF.Profile.Remove(prof.SSID, prof.InfraMode)

Next

RF.Profile.Commit()        ' Updates to the Zero Config GUI.

[C#]

RF.Profile.Update()        ' Copies settings from the Zero Config GUI to the BHT wireless registry.Zero Config GUI.

RF.Profile[] regProfiles = RF.Profile.Registered

foreach (RF.Profile prof In regProfiles)

    RF.Profile.Remove(prof.SSID, prof.InfraMode)

Next

RF.Profile.Commit()        ' Updates to the Zero Config GUI.
```

Update

Copies the value set at the Zero Config GUI to the BHT wireless registry referenced by the wireless driver.

- Syntax

```
[VB]
Public Shared Sub Update()
```

```
[C#]
public static void Update()
```

- Parameters

None

- Exceptions

None

- Note

Call this method first if the value set at the Zero Config GUI is acquired from the class library.

```
[Ex.] Changing the profile (ESSID:BHT, Infra: Infrastructure) Wep key created at Zero Config to "1234567890".

[VB]
RF.Profile.Update();
Dim prof As RF.Profile = New Profile("BHT", EN_INFRA_MODE.INFRASTRUCTURE)
prof.WepKey = "1234567890"
RF.Profile.Commit();
[C#]
RF.Profile.Update();
RF.Profile prof = new Profile("BHT", EN_INFRA_MODE.INFRASTRUCTURE);
prof.WepKey = "1234567890"
RF.Profile.Commit();
```

Commit

Reflects the value set from application to the Zero Config GUI.

- Syntax

```
[VB]
Public Shared Sub Commit()
```

```
[C#]
public static void Commit()
```

- Parameters

None

- Exceptions

None

- Note

Call this method prior to opening the wireless device if the value set from the library is used and a connection is established with the network.

```
[Ex.] Changing the profile (ESSID:BHT, Infra: Infrastructure) Wep key created at Zero
Config to "1234567890".
[VB]
RF.Profile.Update();
Dim prof As RF.Profile = New Profile("BHT", EN_INFRA_MODE.INFRASTRUCTURE)
prof.WepKey = "1234567890"
RF.Profile.Commit();
[C#]
RF.Profile.Update();
RF.Profile prof = new Profile("BHT", EN_INFRA_MODE.INFRASTRUCTURE);
prof.WepKey = "1234567890"
RF.Profile.Commit();
```

Remove

Deletes registered profiles.

- Syntax

```
[VB]
Public Shared Sub Remove(ByVal ssid As String, ByVal infra As
EN_INFRA_MODE)
```

```
[C#]
public static void Remove(string ssid, EN_INFRA_MODE infra)
```

- Parameters

ssid: Deleted profile ESSID

infra: Deleted profile infrastructure mode

- Exceptions

```
[Ex.] Delete a profile (ESSID:BHT, infra: infrastructure).
    [VB] RF.Profile.Remove("BHT", EN_INFRA_MODE.INFRASTRUCTURE)
    [C#] RF.Profile.Remove("BHT", EN_INFRA_MODE.INFRASTRUCTURE);
```

EN_AUTHENTICATION

Specifies the authentication method.

- Syntax

```
[VB]
Public Enum EN_AUTHENTICATION
```

```
[C#]
public enum EN_AUTHENTICATION
```

- Members

Member Name	Description
OPEN	Open
SHARED	Shared
WPA	WPA
WPAPSK	WPA-PSK

EN_EAP8021X

Specifies the EAP type.

- Syntax

```
[VB]
Public Enum EN_EAP8021X
```

```
[C#]
public enum EN_EAP8021X
```

- Members

Member Name	Description
DISABLE	Disable
MD5CHALLENGE	MD5-Challenge
PEAP	PEAP
TLS	TLS

EN_ENCRYPTION

Specifies the encryption method.

- Syntax

```
[VB]
Public Enum EN_ENCRYPTION
```

```
[C#]
public enum EN_ENCRYPTION
```

- Members

Member Name	Description
DISABLE	Disable
WEP	Wep
AES	AES (Not Supported)
TKIP	Tkip

EN_INFRA_MODE

Specifies infrastructure.

- Syntax

```
[VB]
Public Enum EN_INFRA_MODE
```

```
[C#]
public enum EN_INFRA_MODE
```

- Members

Member Name	Description
INFRASTRUCTURE	Infrastructure
ADHOC	ad hoc

18.14. RF.Settings

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
PowerSave	Power save mode
Authentication	Authentication method
DestMACAddress	Destination's MAC address
Version	Driver version
FWVersion	Firmware version
HWVersion	Hardware version
MACAddress	MAC address
SSID1	ESSID1

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_AUTHENTICATION	Authentication method
EN_POWERSAVE	Power save mode

PowerSave

Sets or acquires power save mode.

- Syntax

[VB]
Public Shared Property PowerSave As EN_POWERSAVE

[C#]
public static EN_POWERSAVE PowerSave {get; set;}

- Property

Power save mode

Parameter values: As listed in EN_POWERSAVE

Default value: EN_POWERSAVE.CAM

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Set the wireless power consumption to PSP.

[VB] RF.Settings.PowerSave = RF.Settings.EN_POWERSAVE.PSP

[C#] RF.Settings.PowerSave = RF.Settings.EN_POWERSAVE.PSP;

Authentication

Sets or acquires the authentication method.

■   Syntax

```
[VB]
Public Shared Property Authentication As EN_AUTHENTICATION
```

```
[C#]
public static EN_AUTHENTICATION Authentication {get; set;}
```

■   Property

Authentication method

Parameter values: As listed in EN_AUTHENTICATION

■   Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

■   Note

This property has been retained to provide compatibility with the BHT-200. Ensure to use the Profile class Authentication property for the authentication method setting.

If EN_AUTHENTICATION.SHARED40 or EN_AUTHENTICATION.SHARED128 is set for this property, the BHT class library internal authentication method value is changed to Open, and the encryption method value is changed to WEP.

DestMACAddress

Sets or acquires the MAC address of the destination AP.

- Syntax

```
[VB]
Public Shared Property DestMACAddress As String
```

```
[C#]
public static string DestMACAddress {get; set;}
```

- Property

MAC address of AP

Default value: null

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

An exception will be thrown only when the length of the string exceeds 12 characters.

[Ex.] Specify the connection destination AP as "001122334455".

    [VB] RF.Settings.DestMACAddress = "001122334455"

    [C#] RF.Settings.DestMACAddress = "001122334455";

Version

Acquires the driver version.

- Syntax

  ```
  [VB]
  Public Shared ReadOnly Property Version As String
  ```

  ```
  [C#]
  public static string Version {get;}
  ```

- Property

  Driver version

  Default value: null

- Exceptions

Name of Exception	Meaning
DeviceLoadException	The NIC device is not ready.

[Ex.] Acquire the wireless driver version.

    [VB] Dim VerDriver As String = RF.Settings.Version

    [C#] string VerDriver = RF.Settings.Version;

FWVersion

Acquires the firmware version.

- Syntax

```
[VB]
Public Shared ReadOnly Property FWVersion As String
```

```
[C#]
public static string FWVersion {get;}
```

- Property

Firmware version

Default value: null

- Exceptions

Name of Exception	Meaning
DeviceLoadException	The NIC device is not ready.

```
[Ex.] Acquire the wireless F/W version.

    [VB]  Dim VerFW As String = RF.Settings.FWVersion

    [C#]  string VerFW = RF.Settings.FWVersion;
```

HWVersion

Acquires the hardware version.

- Syntax

```
[VB]
Public Shared ReadOnly Property HWVersion As String
```

```
[C#]
public static string HWVersion {get;}
```

- Property

Hardware version

Default value: null

- Exceptions

Name of Exception	Meaning
DeviceLoadException	The NIC device is not ready.

[Ex.] Acquire the wireless H/W version.

[VB] Dim VerHW As String = RF.Settings.HWVersion

[C#] string VerHW = RF.Settings.HWVersion;

MACAddress

Acquires the MAC address.

- Syntax

```
[VB]
Public Shared ReadOnly Property MACAddress As String
```

```
[C#]
public static string MACAddress {get;}
```

- Property

MAC address

Default value: null

- Exceptions

Name of Exception	Meaning
DeviceLoadException	The NIC device is not ready.

[Ex.] Acquire the MAC address.

[VB] Dim MacAddr As String = RF.Settings.MACAddress

[C#] string MacAddr = RF.Settings.MACAddress;

SSID1

Sets or acquires the ESSID.

- Syntax

```
[VB]
Public Shared Property SSID1 As String
```

```
[C#]
public static string SSID1 {get; set;}
```

- Property

ESSID

Default value: "101"

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

This property has been retained to provide compatibility with the BHT-200. Ensure to use the Profile class SSID property for the Wep key setting.

EN_AUTHENTICATION

Specifies the authentication method.

- Syntax

```
[VB]
Public Enum EN_AUTHENTICATION
```

```
[C#]
public enum EN_AUTHENTICATION
```

- Members

Member Name	Description
OPEN	Open

- Class

BHTCL.RF.Settings

EN_POWERSAVE

Specifies power save mode.

- Syntax

```
[VB]
Public Enum EN_POWERSAVE
```

```
[C#]
public enum EN_POWERSAVE
```

- Members

Member Name	Description
CAM	Continuously Access Mode Max. power consumption
PSP	Power Save Polling Min. power consumption
FULL	= CAM
MOST	= PSP
MORE	= PSP
MID	= PSP
LESS	= PSP
LEAST	= PSP

- Class

BHTCL.RF.Settings

18.15. RF.WepKeyCollection

➢ Constructor

None

Instances cannot be created directly form this class.

➢ Fields

None

➢ Properties

Property Name	Description
Item	Wep key value
TransmitKey	Wep transmission key

➢ Methods

None

➢ Events

None

➢ Enumeration

None

Item

Sets the value of the Wep key specified by the index.

In C#, this property is used as the indexer for the WepKeyCollection class.

- Syntax

> [VB]
> **Public WriteOnly Property Item**(**ByVal** KeyNo **As Integer) As String**

> [C#]
> **public string this**[**int** KeyNo] {**set**;}

- Parameters

KeyNo

Wep key index

Values for 1 to 4

- Property

Wep key

Default value: Wep key value at the time of initialization.

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

This property has been retained to provide compatibility with the BHT-200. Ensure to use the Profile class WepKey property for the Wep key setting.

TransmitKey

Sets or acquires the Wep transmission key [to be] used.

- Syntax

```
[VB]
Public Default Property TransmitKey As Integer
```

```
[C#]
public static int TransmitKey {get; set;}
```

- Property

Wep transmission key

Default value: Wep transmission key value at the time of initialization.

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

18.16. RF.SiteSurvey

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
Strength	Strength
Beacon	Beacon
Link	Communication quality

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_LINE_QUALITY	Communication quality

Strength

Acquires the radio field strength.

- Syntax

```
[VB]
Public Shared ReadOnly Property Strength As Integer
```

```
[C#]
public static int Strength {get;}
```

- Property

Radio field strength (%)

Default value: Radio field strength at the time of initialization.

- Exceptions

Name of Exception	Meaning
DeviceNotFoundException	No NIC device was found.
DeviceLoadException	The NIC device is not ready.

[Ex.] Acquire the radio field strength.

[VB] Dim Strength As Integer = RF.SiteSurvey.Strength

[C#] int Strength = RF.SiteSurvey.Strength;

Beacon

Acquires the beacon quality.

- Syntax

```
[VB]
Public Shared ReadOnly Property Beacon As Integer
```

```
[C#]
public static int Beacon {get;}
```

- Property

Beacon quality (%)

Default value: Beacon quality at the time of initialization.

- Exceptions

Name of Exception	Meaning
DeviceNotFoundException	No NIC device was found.
DeviceLoadException	The NIC device is not ready.

```
[Ex.] Acquire the beacon.

    [VB] Dim Beacon As Integer = RF.SiteSurvey.Beacon

    [C#] int Beacon = RF.SiteSurvey.Beacon;
```

Link

Acquires the communication quality.

- Syntax

```
[VB]
Public Shared ReadOnly Property Link As EN_LINE_QUALITY
```

```
[C#]
public static EN_LINE_QUALITY Link {get;}
```

- Property

Communication quality

Default value: Communication quality at the time of initialization.

- Exceptions

Name of Exception	Meaning
DeviceNotFoundException	No NIC device was found.
DeviceLoadException	The NIC device is not ready.

[Ex.] Acquire the communication quality.

[VB] Dim LineQuality As RF.SiteSurvey.EN_LINE_QUALITY = RF.SiteSurvey.Link

[C#] RF.SiteSurvey.EN_LINE_QUALITY LineQuality = RF.SiteSurvey.Link;

EN_LINE_QUALITY

Specifies the communication quality.

- Syntax

```
[VB]
Public Enum EN_LINE_QUALITY
```

```
[C#]
public enum EN_LINE_QUALITY
```

- Members

Member Name	Description
UNSYNC	Not connected (not synchronized)
POOR	Less than 20%
FAIR	20% to 40%
GOOD	40% to 75%
EXCELLENT	75% or greater

- Class

Within BHTCL.RF.SiteSurvey class

18.17. RF.Info

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
Rate	Communication speed
Channel	Communication channel
APMAC	MAC address of destination AP

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_RATE	Communication speed

Rate

Acquires the communication speed.

- Syntax

```
[VB]
Public Shared ReadOnly Property Rate As EN_RATE
```

```
[C#]
public static EN_RATE Rate {get;}
```

- Property

Communication speed

Default value: NOT_LINK

- Exceptions

Name of Exception	Meaning
DeviceNotFoundException	No NIC device was found.
DeviceLoadException	The NIC device is not ready.

[Ex.] Acquire the current communication speed.

    [VB] Dim Rate As RF.Info.EN_RATE = RF.Info.Rate

    [C#] RF.Info.EN_RATE Rate = RF.Info.Rate;

Channel

Acquires the communication channel.

- Syntax

```
[VB]
Public Shared ReadOnly Property Channel As Integer
```

```
[C#]
public static int Channel {get;}
```

- Property

Communication channel

Default value: 0

- Exceptions

Name of Exception	Meaning
DeviceNotFoundException	No NIC device was found.
DeviceLoadException	The NIC device is not ready.

[Ex.] Acquire the current communication channel.

    [VB] Dim Channel As Integer = RF.Info.Channel

    [C#] int Channel = RF.Info.Channel;

APMAC

Acquires the MAC address of the currently linked AP.

- Syntax

```
[VB]
Public Shared ReadOnly Property APMAC As String
```

```
[C#]
public static string APMAC {get;}
```

- Property

MAC address

Default value: null

- Exceptions

Name of Exception	Meaning
DeviceNotFoundException	No NIC device was found.
DeviceLoadException	The NIC device is not ready.

[Ex.] Acquire the MAC address of the currently linked AP.

[VB] Dim CurAPMacAddr As String = RF.Info.APMAC

[C#] int Channel = RF.Info.Channel;

EN_RATE

Specifies the communication speed.

- Syntax

```
[VB]
Public Enum EN_RATE
```

```
[C#]
public enum EN_RATE
```

- Members

Member Name	Description
AUTO	Auto
MBPS1	1 Mbps
MBPS2	2 Mbps
MBPS5_5	5.5 Mbps
MBPS11	11 Mbps
MBPS11Over	11 Mbps and over

- Class

Within BHTCL.RF.Info class

18.18. Keys

➢ Constructor

None

There is no need to create an instance because all the members are static members.

➢ Fields

Field Name	Description
Mx, MxH (Mx:M1 to M5, MxH:M3H to M5H)	Key code for MagicKey: Mx (M1 to M5), MxH (M3H to M5H)
ALP	Alphabetic key
SCAN	[SCAN] key
FUNC	[FUNC] key
SEND	[SEND] key

➢ Properties

None

➢ Methods

None

➢ Events

None

➢ Enumeration

None

Mx, MxH (Mx:M1 to M5, MxH:M3H to M5H)

Key code of the magic key and the half-pressed magic key

If the [ENTER], [Shift], [TAB], [CTRL], and [Alt] key functions are assigned to these keys, the assigned key code is returned.

- Syntax

```
[VB]
Public Const Mx As Windows.Forms.Keys
```

```
[C#]
public const Windows.Forms.Keys Mx;
```

ALP

Key code for [ALP] key

- Syntax

```
[VB]
Public Const ALPKey As System.Windows.Forms.Keys
```

```
[C#]
public const System.Windows.Forms.Keys ALPKey;
```

SCAN

Key code for [SCAN] key

- Syntax

```
[VB]
Public Const SCAN As Windows.Forms.Keys
```

```
[C#]
public const SCAN Windows.Forms.Keys SCAN;
```

FUNC

Key code for [FUNC] key

- Syntax

```
[VB]
Public Const FUNC As System.Windows.Forms.Keys
```

```
[C#]
public const System.Windows.Forms.Keys FUNC;
```

SEND

Key code for [SEND] key

- Syntax

```
[VB]
Public Const SEND As System.Windows.Forms.Keys
```

```
[C#]
public const System.Windows.Forms.Keys SEND;
```

```
[Ex.] Display the pressed key.
[VB]
Private Sub Form1_KeyDown(ByVal sender As Object, ByVal e As
System.Windows.Forms.KeyEventArgs) Handles MyBase.KeyDown
    Select Case e.KeyCode
        Case DNWA.BHTCL.Keys.M1
            Console.WriteLine("[M1] key is down")
        Case DNWA.BHTCL.Keys.ALP
            Console.WriteLine("[ALP] key is down")
        Case DNWA.BHTCL.Keys.SCAN
            Console.WriteLine("[ALP] key is down")
        Case DNWA.BHTCL.Keys.FUNC
            Console.WriteLine("[ALP] key is down")
        Case DNWA.BHTCL.Keys.SEND
            Console.WriteLine("[ALP] key is down")
    End Select
End Sub
```

```csharp
[C#]
private void Form1_KeyDown(object sender, KeyEventArgs e)
{
    switch(e.KeyCode)
    {
        case DNWA.BHTCL.Keys.M1:
            Console.WriteLine("[M1] key is down");
            break;
        case DNWA.BHTCL.Keys.ALP:
            Console.WriteLine("[ALP] key is down");
            break;
        case DNWA.BHTCL.Keys.SCAN:
            Console.WriteLine("[SCAN] key is down");
            break;
        case DNWA.BHTCL.Keys.FUNC:
            Console.WriteLine("[FUNC] key is down");
            break;
        case DNWA.BHTCL.Keys.SEND:
            Console.WriteLine("[SEND] key is down");
            break;
    }
}
```

18.19. Keys.Settings

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
ShiftMode	[SF] key operation mode
MxMode(Mx : M1 to M5, M3H,M4H,M5H)	Magic key function Mx: M1 to M5 keys, MxH: M3H to M5H keys
ScanMode	SCAN key method
InputMethod	Input method
FuncMode	Function mode
PwrDownTime	Length of time PWR key pressed down until power OFF (in units of 100 msec)
AllowChangeIM	Input method switching enabled/disabled
KeyboardType	Keyboard type
HandleStatus	Grip handle status (connected or not connected)

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_SHIFT_MODE	[SF] key operation mode
EN_MX_MODE	Magic key function
EN_INPUT_METHOD	Input method
EN_FUNC_MODE	Function mode
EN_CHANGE_IM	Input method switching enabled/disabled
EN_KEYBOARD_TYPE	Keyboard type

ShiftMode

Sets or acquires the operation mode for the [SF] key.

- Syntax

```
[VB]
Public Shared Property ShiftMode As EN_SHIFT_MODE
```

```
[C#]
public static EN_SHIFT_MODE ShiftMode {get; set;}
```

- Property

Operation mode

Parameter values: As listed in EN_SHIFT_MODE

Default value: EN_SHIFT_MODE.NON_LOCK

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Set the [SF] key operation mode to onetime lock.

    [VB]  Keys.Settings.ShiftMode = Keys.Settings.EN_SHIFT_MODE.ONE_LOCK

    [C#]  Keys.Settings.ShiftMode = Keys.Settings.EN_SHIFT_MODE.ONE_LOCK;
```

MxMode(Mx : M1 to M5, M3H,M4H,M5H)

Sets or acquires the operation mode for the magic key, including that when the key is half-pressed.

- Syntax

```
[VB]
Public Shared Property MxMode As EN_MX_MODE
```

```
[C#]
public static EN_MX_MODE MxMode {get; set;}
```

- Property

Operation mode

Parameter values: As listed in EN_MX_MODE with the exception of EN_MX.MODE.IM

Default value: M1 EN_MX_MODE.TAB

M2 EN_MX_MODE.NONE

M3 EN_MX_MODE.TRG

M4 EN_MX_MODE.TRG

M5 EN_MX_MODE.TRG

M3H EN_MX_MODE.LASER

M4H EN_MX_MODE.LASER

M5H EN_MX_MODE.LASER

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Set the [M2] key function to the [CTRL] key.

    [VB]  Keys.Settings.M2Mode = Keys.EN_MX_MODE.CTRL

    [C#]  Keys.Settings.M2Mode = Keys.EN_MX_MODE.CTRL;
```

ScanMode

Sets or acquires the operation mode for the [SCAN] key.

- Syntax

```
[VB]
Public Shared Property ScanMode As EN_MX_MODE
```

```
[C#]
public static EN_MX_MODE ScanMode {get; set;}
```

- Property

Operation mode

Parameter values: As listed in EN_MX_MODE with the exception of EN_MX.MODE.IM

Default value: EN_MX_MODE.TRG

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Set the [SCAN] key function to the [CTRL] key.

     [VB]  Keys.Settings.ScanMode = Keys.Settings.EN_MX_MODE.CTRL

     [C#]  Keys.Settings.ScanMode = Keys.Settings.EN_MX_MODE.CTRL;
```

InputMethod

Sets or acquires the input method.

- Syntax

```
[VB]
Public Shared Property InputMethod As EN_INPUT_METHOD
```

```
[C#]
public static EN_INPUT_METHOD InputMethod {get; set;}
```

- Property

  Input method

  Parameter values: As listed in EN_INPUT_METHOD (one of the values or a combination of the values)

  Default value: EN_ INPUT_METHOD.NUMERIC

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Set the input method to alphabet entry mode.

    [VB] Keys.Settings.InputMethod = Keys.Settings.EN_INPUT_METHOD.ALPHABET

    [C#] Keys.Settings.InputMethod = Keys.Settings.EN_INPUT_METHOD.ALPHABET;

FuncMode

Sets or acquires function mode.

- Syntax

```
[VB]
Public Shared Property FuncMode As EN_FUNC_MODE
```

```
[C#]
public static EN_FUNC_MODE FuncMode {get; set;}
```

- Property

Input method

Parameter values: As listed in EN_FUNC_MODE (one of the values or a combination of the values)

Default value: EN_FUNC_MODE.NON_FUNCTION

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Disable function mode.

     [VB] Keys.Settings.FuncMode = Keys.Settings.EN_FUNC_MODE.NON_FUNCTION

     [C#] Keys.Settings.FuncMode

     = Keys.Settings.EN_FUNC_MODE.NON_FUNCTION;
```

PwrDownTime

Sets or acquires the length of time the PWR key is pressed down until the power turns OFF.

- Syntax

```
[VB]
Public Shared Property PwrDownTime As Integer
```

```
[C#]
public static int PwrDownTime {get; set;}
```

- Property

Length of time key pressed down (in units of 100msec)

Parameter values: 1 to 255

Default value: 5

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Make setting to ensure the power does not turn OFF unless the [PWR] key is held down for 10 seconds.

    [VB] Keys.Settings.PwrDownTime = 100

    [C#] Keys.Settings.PwrDownTime = 100;

AllowChangeIM

Sets or acquires the enabling/disabling of the transition to the alphabet entry mode.

- Syntax

```
[VB]
Public Shared Property AllowChangeIM As EN_CHANGE_IM
```

```
[C#]
public static EN_CHANGE_IM AllowChangeIM {get; set;}
```

- Property

Enable/disable

Parameter values: As listed in EN_CHANGE_IM

Default value: EN_CHANGE_IM.ENABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Disable transition to alphabet entry mode.

   [VB] Keys.Settings.AllowChangeIM = Keys.Settings.EN_CHANGE_IM.DISABLE

   [C#] Keys.Settings.AllowChangeIM = Keys.Settings.EN_CHANGE_IM.DISABLE;

KeyboardType

Acquires the keyboard type.

- Syntax

```
[VB]
Public Shared ReadOnly Property KeyboardType
    As EN_KEYBOARD_TYPE
```

```
[C#]
public static EN_KEYBOARD_TYPE KeyboardType {get;}
```

- Property

Keyboard type

- Exceptions

None

```
[Ex.] Check the key type.
[VB]
If DNWA.BHTCL.Keys.Settings.KeyboardType = _
Keys.Settings.EN_KEYBOARD_TYPE.TYPE1 Then
     Console.WriteLine("31 keys")
Else
     Console.WriteLine("50 keys")
End If
[C#]
if (DNWA.BHTCL.Keys.Settings.EN_KEYBOARD_TYPE.TYPE1
 == DNWA.BHTCL.Keys.Settings.KeyboardType)
{
     Console.WriteLine("31 keys");
}
else
{
     Console.WriteLine("50 keys");
}
```

HandleStatus

Acquires the grip handle status (connected/not connected).

- Syntax

```
[VB]
Public Shared ReadOnly Property HandleStatus
      As EN_HANDLE_STATUS
```

```
 [C#]
public static EN_HANDLE_STATUS HandleStatus {get;}
```

- Property

Grip handle status

- Exceptions

None

```
[Ex.] Check the grip handle connection status
[VB]
If DNWA.BHTCL.Keys.Settings.HandleStatus = _
Keys.Settings.EN_HANDLE_STATUS.LOADED Then
      Console.WriteLine("Grip handle is loaded.")
Else
      Console.WriteLine("Grip handle is not loaded.")
End If
[C#]
if (DNWA.BHTCL.Keys.Settings.EN_KEYBOARD_TYPE.TYPE1
 == DNWA.BHTCL.Keys.Settings.KeyboardType)
{
      Console.WriteLine("Grip handle is loaded.");
}
else
{
      Console.WriteLine("Grip handle is not loaded.");
}
```

EN_SHIFT_MODE

Specifies the operation mode for the Shift (SF) key.

- Syntax

```
[VB]
Public Enum EN_SHIFT_MODE
```

```
[C#]
public enum EN_SHIFT_MODE
```

- Members

Member Name	Description
NON_LOCK	Normal
ONE_LOCK	Onetime lock mode

- Class

BHTCL.Keys.Settings

EN_MX_MODE

Specifies the key function.

- Syntax

```
[VB]
Public Enum EN_MX_MODE
```

```
[C#]
public enum EN_MX_MODE
```

- Members

Member Name	Description
NONE	None
ENTER	Enter key
TRG	Trigger key
SHIFT	Shift key
BACKLIGHT	Backlight control key
TAB	Tab key
IM	Input method switching key
LASER	Laser ON/OFF key
CTRL	Ctrl key
ALT	Alt key
USER_DEF_CODE	User definition code

- Class

  BHTCL.Keys.Settings

EN_INPUT_METHOD

Specifies the input method.

- Syntax

```
[VB]
Public Enum EN_INPUT_METHOD
```

```
[C#]
public enum EN_INPUT_METHOD
```

- Members

Member Name	Description
NUMERIC	Numeric entry mode
ALPHABET	Alphabet entry mode

- Class

BHTCL.Keys.Settings

EN_FUNC_MODE

Specifies function mode/non-function mode.

- Syntax

```
[VB]
Public Enum EN_ FUNC_METHOD
```

```
[C#]
public enum EN_FUNC_METHOD
```

- Members

Member Name	Description
FUNCTION	Function mode
NON_FUNCTION	Non-function mode

- Class

BHTCL.Keys.Settings

EN_CHANGE_IM

Specifies whether to enable or disable input method switching.

- Syntax

```
[VB]
Public Enum EN_CHANGE_IM
```

```
[C#]
public enum EN_CHANGE_IM
```

- Members

Member Name	Description
ENABLE	Enable
DISABLE	Disable

- Class

BHTCL.Keys.Settings

EN_KEYBOARD_TYPE

Specifies the keyboard type.

- Syntax

```
[VB]
Public Enum EN_KEYBOARD_TYPE
```

```
[C#]
public enum EN_KEYBOARD_TYPE
```

- Members

Member Name	Description
TYPE1	31-key
TYPE2	50-key

- Class

BHTCL.Keys.Settings

18.20. SysInfo

➤ Constructor

None

There is no need to create an instance because all the members are static members.

➤ Fields

None

➤ Properties

None

➤ Methods

None

➤ Events

None

➤ Enumeration

None

18.21. SysInfo.Settings

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
OSVersion	System version
MachineName	Machine name
MachineNumber	Product number
SerialNumber	Serial number
RAMSize	RAM size
ROMSize	ROM size

➢ Methods

None

➢ Events

None

➢ Enumeration

None

OSVersion

Acquires the operating system (OS) version.

- Syntax

[VB]
Public Shared ReadOnly Property OSVersion As String

[C#]
public static string OSVersion {get;}

- Property

System version (4 digits)

- Exceptions

None

[Ex.] Acquire the system version.

    [VB] Dim OSVer As String = SysInfo.Settings.OSVersion

    [C#] string OSVer = SysInfo.Settings.OSVersion;

MachineName

Acquires the machine name.

- Syntax

```
[VB]
Public Shared ReadOnly Property MachineName As String
```

```
[C#]
public static string MachineName {get;}
```

- Property

Machine name

- Exceptions

None

[Ex.] Acquire the machine name.

    [VB] Dim MachineName As String = SysInfo.Settings.MachineName

    [C#] string MachineName = SysInfo.Settings.MachineName;

MachineNumber

Acquires the machine number.

- Syntax

```
[VB]
Public Shared ReadOnly Property MachineNumber As String
```

```
[C#]
public static string MachineNumber {get;}
```

- Property

Machine number

- Exceptions

None

[Ex.] Acquire the machine number.

    [VB] Dim MachineNumber As String = SysInfo.Settings.MachineNumber

    [C#] string MachineNumber = SysInfo.Settings.MachineNumber;

SerialNumber

Sets or acquires the serial number.

- Syntax

```
[VB]
Public Shared Property SerialNumber As String
```

```
[C#]
public static string SerialNumber {get;set;}
```

- Property

Serial number

Parameter values: 6-digit character string

Default value: Last 6 digits of serial number (S/N) on the back of the BHT.

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Acquire the serial number.
    [VB]  Dim SerialNumber As String = SysInfo.Settings.SerialNumber
    [C#]  string SerialNumber = SysInfo.Settings.SerialNumber;
```

RAMSize

Acquires the size (capacity) of the BHT RAM.

- Syntax

```
[VB]
Public Shared ReadOnly Property RAMSize As Integer
```

```
[C#]
public static int RAMSize {get;}
```

- Property

Capacity (Byte)

- Exceptions

None

[Ex.] Acquire the capacity of the BHT RAM.

    [VB] Dim RAMSize As Integer = SysInfo.Settings.RAMSize

    [C#] string RAMSize = SysInfo.Settings.RAMSize;

ROMSize

Acquires the size (capacity) of the BHT ROM.

- Syntax

```
[VB]
Public Shared ReadOnly Property ROMSize As Integer
```

```
[C#]
public static int ROMSize {get;}
```

- Property

Capacity (Byte)

- Exceptions

None

[Ex.] Acquire the capacity of the BHT ROM.

    [VB] Dim ROMSize As Integer = SysInfo.Settings.ROMSize

    [C#] string ROMSize = SysInfo.Settings.ROMSize;

18.22. PwrMng

➢ Constructor

None

There is no need to create an instance because all the members are static members.

➢ Fields

None

➢ Properties

None

➢ Methods

Method Name	Description
Shutdown	Shuts down the power in such a way that the system will be started in the specified mode next time it is turned ON.

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_SHUTDOWN_MODE	Shutdown mode

Shutdown

Shuts down the power in such a way that the next time the system is turned ON, it will start up in the mode specified by the parameter.

- Syntax

```
[VB]
Public Shared Sub Shutdown _
    (ByVal mode As EN_SHUTDOWN_MODE)
```

```
[C#]
public static void Shutdown(EN_SHUTDOWN_MODE mode)
```

- Parameters

mode

[in] Mode to be entered at the time of start-up

Parameter values: As listed in EN_SHUTDOWN_MODE

- Return value

None

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified mode is invalid.

- Note

	After warm booting	After cold booting
Files in the FLASH folder	Retained	Retained
Files in the RAM	Retained	Lost
Contents of the Registry	Retained	Lost (*)
Data being edited	Lost	Lost

(*) If the Registry has been backed up, the backup copy will be used.

[Ex.] Switch to suspend.

    [VB] PwrMng.Shutdown(PwrMng.EN_SHUTDOWN_MODE.SUSPEND)

    [C#] PwrMng.Shutdown(PwrMng.EN_SHUTDOWN_MODE.SUSPEND);

EN_SHUTDOWN_MODE

Specifies the operation mode to be entered at the next start-up after shutdown.

- Syntax

```
[VB]
Public Enum EN_SHUTDOWN_MODE
```

```
[C#]
public enum EN_SHUTDOWN_MODE
```

- Members

Member Name	Description
WARM	Warm-boot
SUSPEND	Suspend
COLD_BOOT_REGINIT	Cold-boot, with registry initialized
COLD_BOOT_REGREMAIN	Cold-boot, with registry saved
SYSMODIFY	Update OS
COLD	Cold-boot

- Class

Within BHTCL.PwrMng class

18.23. PwrMng.Settings

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
StandbyTime	Standby transition time
AutoPowerOffBattery	Auto-power-OFF time (battery-powered)
AutoPowerOffExt	Auto-power-OFF time (installed on CU)
CPUClock	CPU clock

➢ Methods

None

➢ Events

None

➢ Enumeration

None

StandbyTime

Sets or Acquires the standby transition time.

- Syntax

```
[VB]
Public Shared Property StandbyTime As Integer
```

```
[C#]
public static int StandbyTime {get; set;}
```

- Property

Transition time (in units of 100 msec)

Parameter values: 0 to 255

Default value: 10

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

If "0" is specified, transition to the standby state will not take place.

```
[Ex.] Prohibits transition to standby.
    [VB] PwrMng.Settings.StandbyTime = 0
    [C#] PwrMng.Settings.StandbyTime = 0;
```

AutoPowerOffBattery

Sets or acquires the automatic power-OFF time when powered by the battery.

- Syntax

```
[VB]
Public Shared Property AutoPowerOffBattery As Integer
```

```
[C#]
public static int AutoPowerOffBattery {get; set;}
```

- Property

Auto-power-off time (in units of 1 sec)

Parameter values: 0 to System.Int32.MaxValue

Default value: 180

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

If "0" is specified, the system will not be turned OFF while powered by the battery.

```
[Ex.] Prohibits transition to auto power off when powered by the battery.
    [VB] PwrMng.Settings.AutoPowerOffBattery = 0
    [C#] PwrMng.Settings.AutoPowerOffBattery = 0;
```

AutoPowerOffExt

Sets or acquires the automatic power-OFF time when the BHT is installed on the CU.

- Syntax

```
[VB]
Public Shared Property AutoPowerOffExt As Integer
```

```
[C#]
public static int AutoPowerOffExt {get; set;}
```

- Property

Automatic power-off time (in units of 1 sec)

Parameter values: 0 to System.Int32.MaxValue

Default value: 0 (The system will not be turned OFF automatically.)

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

If "0" is specified, the system will not be turned OFF while charging.

[Ex.] Prohibits transition to auto power off when the BHT is installed on the CU.

    [VB] PwrMng.Settings.AutoPowerOffExt = 0

    [C#] PwrMng.Settings.AutoPowerOffExt = 0;

CPUClock

Sets or acquires the CPU clock speed.

- Syntax

```
[VB]
Public Shared Property CPUClock As EN_CPU_CLOCK
```

```
[C#]
public static EN_CPU_CLOCK CPUClock {get; set;}
```

- Property

CPU clock

Parameter values: As listed in EN_CPU_CLOCK

Default value: EN_CPU_CLOCK.NORMAL

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Up to the CPU clock speed.

     [VB] PwrMng.Settings.Clock = PwrMng.Settings.EN_CPU_CLOCK.FAST

     [C#] PwrMng.Settings.Clock = PwrMng.Settings.EN_CPU_CLOCK.FAST;
```

EN_CPU_CLOCK

Specifies the CPU clock.

- Syntax

```
[VB]
Public Enum EN_CPU_CLOCK
```

```
[C#]
public enum EN_CPU_CLOCK
```

- Members

Member Name	Description
NORMAL	Normal
FAST	Fast

- Class

BHTCL.Pwrmng.Settings

18.24. Icon

➢ Constructor

None

There is no need to create an instance because all the members are static members.

➢ Fields

None

➢ Properties

None

➢ Methods

None

➢ Events

None

➢ Enumeration

None

18.25. Icon.Settings

➢ Constructor

None

Instances cannot be created directly from this class.

➢ Fields

None

➢ Properties

Property Name	Description
ShiftKey	Enables/disables display of the battery icon.
Battery	Enables/disables display of the icon indicating that the SF key is pressed down.
Standby	Enables/disables display of the icon indicating standby transition state.
Wireless	Enables/disables display of the icon indicating that the BHT is in wireless communication mode.
SIP	Enables/disables display of the icon indicating that the system is in SIP input mode.
Alphabet	Enables/disables display of the icon indicating that the BHT is in alphabet entry mode.
Func	Enables/disables display of the icon indicating that the BHT is switching to function mode.

➢ Methods

None

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_STATUS	Disables icon display.

ShiftKey

Sets or acquires the display status (enabled/disabled) of the icon indicating that key input is in shift mode.

- Syntax

```
[VB]
Public Shared Property ShiftKey As EN_STATUS
```

```
[C#]
public static EN_STATUS ShiftKey {get; set;}
```

- Property

Display enabled/disabled

Parameter values: As listed in EN_STATUS

Default value: EN_STATUS.ENABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

When enabled, the icon will appear next time the keypad is put in shift mode (or immediately if it is already in shift mode).

When disabled, the icon will disappear immediately.

```
[Ex.] Disables display of the shift status icon.
    [VB]  Icon.Settings.ShiftKey = Icon.Settings.EN_STATUS.DISABLE
    [C#]  Icon.Settings.ShiftKey = Icon.Settings.EN_STATUS.DISABLE;
```

Battery

Sets or acquires the display status (enabled/disabled) of the icon indicating the residual charge of the battery.

- Syntax

```
[VB]
Public Shared Property Battery As EN_STATUS
```

```
[C#]
public static EN_STATUS Battery {get; set;}
```

- Property

Display enabled/disabled

Parameter values: As listed in EN_STATUS

Default value: EN_STATUS.ENABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

[Ex.] Disables display of the battery status icon.

    [VB] Icon.Settings.Battery = Icon.Settings.EN_STATUS.DISABLE

    [C#] Icon.Settings.Battery = Icon.Settings.EN_STATUS.DISABLE;

Standby

Sets or acquires the display status (enabled/disabled) of the icon indicating the standby transition state.

- Syntax

```
[VB]
Public Shared Property Standby As EN_STATUS
```

```
[C#]
public static EN_STATUS Standby {get; set;}
```

- Property

Display enabled/disabled

Parameter values: As listed in EN_STATUS

Default value: EN_STATUS.ENABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

When enabled, the icon will appear the next time the CPU is put in standby state.

When disabled, the icon will disappear immediately.

[Ex.] Disables display of the standby transition status icon.

    [VB] Icon.Settings.Standby = Icon.Settings.EN_STATUS.ENABLE

    [C#] Icon.Settings.Standby = Icon.Settings.EN_STATUS.ENABLE;

Wireless

Sets or acquires the display status (enabled/disabled) of the icon indicating that the BHT is in wireless communication mode.

- Syntax

```
[VB]
Public Shared Property Wireless As EN_STATUS
```

```
[C#]
public static EN_STATUS Wireless {get; set;}
```

- Property

Display enabled/disabled

Parameter values: As listed in EN_STATUS

Default value: EN_STATUS.ENABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

When enabled, the icon will appear the next time the wireless device is opened (or immediately if it is already open).

When disabled, the icon will disappear immediately.

[Ex.] Disables display of the wireless communication status icon.

    [VB] Icon.Settings.Wireless = Icon.Settings.EN_STATUS.DISABLE

    [C#] Icon.Settings.Wireless = Icon.Settings.EN_STATUS.DISABLE;

SIP

Sets or acquires the display status (enabled/disabled) of the Software Input Panel (SIP) icon.

- Syntax

```
[VB]
Public Shared Property SIP As EN_STATUS
```

```
[C#]
public static EN_STATUS SIP {get; set;}
```

- Property

Display enabled/disabled

Parameter values: As listed in EN_STATUS

Default value: EN_STATUS.DISABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

```
[Ex.] Disables display of the Software Input Panel icon.

    [VB]  Icon.Settings.SIP = Icon.Settings.EN_STATUS.DISABLE

    [C#]  Icon.Settings.SIP = Icon.Settings.EN_STATUS.DISABLE;
```

Alphabet

Sets or acquires the display status (enabled/disabled) of the icon indicating the alphabet entry mode.

- Syntax

```
[VB]
Public Shared Property Alphabet As EN_STATUS
```

```
[C#]
public static EN_STATUS Alphabet {get; set;}
```

- Property

Display enabled/disabled

Parameter values: As listed in EN_STATUS

Default value: EN_STATUS.ENABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

When enabled, the icon will appear the next time the keypad is put in alphabet entry mode (or immediately if it is already in alphabet entry mode).

When disabled, the icon will disappear immediately.

[Ex.] Disables display of the alphabet entry mode icon.

    [VB] Icon.Settings.Alphabet = Icon.Settings.EN_STATUS.DISABLE

    [C#] Icon.Settings.Alphabet = Icon.Settings.EN_STATUS.DISABLE;

Func

Sets or acquires the display status (enabled/disabled) of the icon indicating the function mode.

- Syntax

```
[VB]
Public Shared Property Func As EN_STATUS
```

```
[C#]
public static EN_STATUS Func {get; set;}
```

- Property

Display enabled/disabled

Parameter values: As listed in EN_STATUS

Default value: EN_STATUS.ENABLE

- Exceptions

Name of Exception	Meaning
ArgumentException	The specified parameter value(s) is invalid.

- Note

When enabled, the icon will appear the next time the keypad is put in function mode (or immediately if it is already in function mode).

When disabled, the icon will disappear immediately.

```
[Ex.] Disables display of the function mode icon.

    [VB]  Icon.Settings.Func = Icon.Settings.EN_STATUS.DISABLE

    [C#]  Icon.Settings.Func = Icon.Settings.EN_STATUS.DISABLE;
```

EN_STATUS

Enables/disables icon display.

- Syntax

```
[VB]
Public Enum EN_STATUS
```

```
[C#]
public enum EN_STATUS
```

- Members

Member Name	Description
DISABLE	Display is disabled.
ENABLE	Display is enabled.

- Class

BHTCL.Icon.Settings

18.26. Display

This function is not supported.

18.27. Display.Settings

This function is not supported.

18.28. SysModification

➢ Constructor

Constructor Name	Description
SysModification	Creates a new instance of the SysModification class.

➢ Fields

None

➢ Properties

Property Name	Description
FileName	OS reconfiguration filename
Mode	Reboot mode after turning the power OFF

➢ Methods

Method Name	Description
Execute	Execute OS updating

➢ Events

None

➢ Enumeration

Enumeration Name	Description
EN_MODE	Reboot mode after turning the power OFF

SysModification

Initializes a new instance of the SysModificaiton class.

- Syntax

```
[VB]
Public Sub New( )
```

```
[C#]
public SysModification( )
```

- Parameters

None

- Exceptions

None

[Ex.] Create the OS update instance.

[VB] Dim MySysMod As SysModification = New SysModification

[C#] SysModification MySysMod = new SysModification();

FileName

Specifies the OS update filename.

- Syntax

```
[VB]
Public Property FileName As String
```

```
[C#]
public string FileName{get; set;}
```

- Property

Filename

Default value: ""

The file name must contain the absolute path of the file.

Set the path name to "\SysModify\".

Ensure that the file extension is ".zl".

- Exceptions

None

- Note

Even if an invalid filename or a non-existent file is specified, no exceptions are immediately thrown. An exception is thrown when the Execute method attempts to update (modify) the OS.

```
[Ex.] Update the BHT400 system to the system with filename "BHT400New.zl".
[VB]
MySysMod.FileName = "\SysModification\BHT400New.zl"
MySysMod.Mode = SysModification.EN_MODE.POWEROFF
MySysMod.Execute
[C#]
MySysMod.FileName = @"\SysModification\BHT400New.zl";
MySysMod.Mode = SysModification.EN_MODE.POWEROFF;
MySysMod.Execute();
```

Mode

Specifies the operation mode after updating the OS.

- Syntax

```
[VB]
Public Property Mode As EN_MODE
```

```
[C#]
public EN_MODE Mode{get; set;}
```

- Property

Operation mode

Parameter values: As listed in EN_MODE

Default value: EN_MODE.POWEROFF

- Exceptions

None

- Note

Even if you specify an invalid file name or a non-existent file, no exceptions will be thrown immediately. An exception will be thrown when the Execute method attempts to update (modify) the OS.

```
[Ex.] Update the BHT400 system to the system with filename "BHT400New.zl".
[VB]
MySysMod.FileName = "\SysModification\BHT400New.zl"
MySysMod.Mode = SysModification.EN_MODE.POWEROFF
MySysMod.Execute
[C#]
MySysMod.FileName = @"\SysModification\BHT400New.zl";
MySysMod.Mode = SysModification.EN_MODE.POWEROFF;
MySysMod.Execute();
```

Execute

Executes the OS update.

- Syntax

```
[VB]
Public Sub Execute()
```

```
[C#]
public void Execute()
```

- Parameters

None

- Return value

None

- Exceptions

Name of Exception	Meaning
FileNotFoundException	The file specified by FileName does not exist.
ArgumentException	The specified file name is invalid. The specified mode is invalid.

- Note

Before calling this method to update the OS, it is necessary to restart the BHT using the PwrMng.Shutdown (EN_SHUTDOWN_MODE.SYSMODIFY) method.

```
[Ex.] Update the BHT400 system to the system with filename "BHT400New.zl".

[VB]

MySysMod.FileName = "\SysModification\BHT400New.zl"

MySysMod.Mode = SysModification.EN_MODE.POWEROFF

MySysMod.Execute
```

```
[C#]
MySysMod.FileName = @"\SysModification\BHT400New.zl";
MySysMod.Mode = SysModification.EN_MODE.POWEROFF;
MySysMod.Execute();
```

EN_MODE

Specifies the operation mode to be entered after updating the OS.

- Syntax

```
[VB]
Public Enum EN_MODE
```

```
[C#]
public enum EN_MODE
```

- Members

Member Name	Description
POWEROFF	Power OFF (The system will be cold-booted next time it is turned ON.)

- Class

Within BHTCL.SysModification class

18.29. CommSerial

➢ Constructor

Constructor Name	Description
CommSerial	Creates a new instance of the CommSerial class.

➢ Fields

Field Name	Description
DEFAULT_PORT	Default value for the COM port to be used

➢ Properties

Property Name	Description
WaitEvent	Specifies a wait event.
SignaledEvent	Acquires the event that has occurred.
InBufferCount	Size of data in the receive buffer
OutBufferCount	Size of data in the send buffer
PortOpen	Port number of the COM port to be used
Port	Open/close of a COM port
Params	Communication parameter

➢ Methods

Method Name	Description
Input	Reads the contents of the receive buffer.
Output	Writes into the send buffer.
Dispose	Frees up all unmanaged resources.

➢ Events

Event Name	Description
OnDone	Occurs when a communication event has occurred.

➢ Enumeration

Enumeration Name	Description
EN_EVENT	Event type

CommSerial

Initializes a new instance of the CommSerial class.

- Syntax

```
[VB]
Public Sub New( )
```

```
[C#]
public CommSerial( )
```

- Parameters

None

- Exceptions

None

[Ex.] Create a MyComm CommSerial instance.

    [VB] Dim MyComm As CommSerial = New CommSerial

    [C#] CommSerial MyComm = new CommSerial();

DEFAULT_PORT

Default value of the port number. This value is read-only.

- Syntax

```
[VB]
Public ReadOnly DEFAULT_PORT As Integer
```

```
[C#]
public readonly int DEFAULT_PORT;
```

WaitEvent

Sets or acquires the event to wait for.

- Syntax

```
[VB]
Public Property WaitEvent As EN_EVENT
```

```
[C#]
public EN_EVENT WaitEvent {get; set;}
```

- Property

Event to wait for

Parameter values: As listed in EN_EVENT

Default value: EN_EVENT.NONE

- Exceptions

Name of Exception	Meaning
ObjectDisposedException	COM has not been opened yet.
ArgumentException	The specified parameter value(s) lies outside the permissible range.

- Note

The parameter value will always be EN_EVENT.NONE while the port is closed.

```
[Ex.] Set the BHT to wait for a receive event.
    [VB] MyComm.WaitEvent = CommSerial.EN_EVENT.RECEIVE
    [C#] MyComm.WaitEvent = CommSerial.EN_EVENT.RECEIVE;
```

SignaledEvent

Acquires the last serial communication event that occurred.

- Syntax

```
[VB]
Public ReadOnly Property SignaledEvent As EN_EVENT
```

```
[C#]
public EN_EVENT SignaledEvent {get}
```

- Property

Event to wait for

Parameter values: As listed in EN_EVENT

Default value: EN_EVENT.NONE

- Exceptions

None

- Note

The parameter value will always be EN_EVENT.NONE while the port is closed.

```
[Ex.] Acquire the last event that occurred.
     [VB] Dim CommSerial.EN_EVENT CommEvent = MyComm.SignaledEvent
     [C#] EN_EVENT CommEvent = MyComm.SignaledEvent;
```

InBufferCount

Acquires the size of meaningful data in the receive buffer (in buffer).

- Syntax

```
[VB]
Public Property ReadOnly InBufferCount As Integer
```

```
[C#]
public int InBufferCount {get}
```

- Property

Size of meaningful data in the receive buffer (in buffer) (bytes)

- Exceptions

Name of Exception	Meaning
ObjectDisposedException	The COM port has not been opened yet.

- Note

Each time a piece of data is read from the receive buffer using the Input method, the size of meaningful data in the receive buffer decreases by the amount of the data just read out.

If the port is closed by specifying "false" for the PortOpen property, the size of meaningful data is reset to "0".

```
[Ex.] Read out all data remaining in the receive buffer.
[VB]
While MyComm.InBufferCount > 0
      len = MyComm.Input(buffer, 0, buffer.Length)
End While
[C#]
while (MyComm.InBufferCount > 0)
{
      len = MyComm.Input(buffer, 0, buffer.Length);
}
```

OutBufferCount

Acquires the size of meaningful data in the send buffer (out buffer).

- Syntax

```
[VB]
Public Property ReadOnly OutBufferCount As Integer
```

```
[C#]
public int OutBufferCount {get}
```

- Property

    Size of meaningful data in the send buffer (out buffer) (bytes)

- Exceptions

Name of Exception	Meaning
ObjectDisposedException	The COM port has not been opened yet.

- Note

    Data can be stored in the send buffer (out buffer) using the Output method.

    If the port is closed by specifying "false" for the PortOpen property, the size of meaningful data is reset to "0".

```
[Ex.] Send the len(byte) data when there is no longer any data in the send buffer.
[VB]
If MyComm.OutBufferCount = 0 Then
     MyComm.Output(buffer, 0, len)
End If
[C#]
if (MyComm.OutBufferCount == 0)
{
     MyComm.Output(buffer, 0, len);
}
```

PortOpen

Opens/closes the COM port.

- Syntax

```
[VB]
Public Property PortOpen As Boolean
```

```
[C#]
public bool PortOpen {get;set}
```

- Property

COM port status: Open (=True), Disabled (=False)

Default value: False

- Exceptions

Name of Exception	Meaning
DevNotFoundException	No COM port exists.
ObjectDisposedException	The COM port has not been opened (i.e., The COM port is closed).
SecurityException	The COM port has already been opened.

```
[Ex.] Open the COM port.
    [VB] MyComm.PortOpen = True
    [C#] MyComm.PortOpen = true;
```

Port

Specifies the COM port number.

- Syntax

```
[VB]
Public Property Port As Integer
```

```
[C#]
public bool Port {get; set}
```

- Property

An integer indicating the port number

Parameter value(s): 1: Connector interface, 4: IrDA

Default value: 4

- Exceptions

Name of Exception	Meaning
InvalidOperationException	The COM port is already open.

- Note

If the value of this property is changed while COM port is open, an exception will be thrown.

If a port number that does not exist is specified at in this property, no exceptions will be thrown immediately; however, an exception will be thrown later when an attempt is made to open the specified port.

```
[Ex.] Specify the connector interface.
    [VB] MyComm.Port = 1
    [C#] MyComm.Port = 1;
```

Params

Sets the following communication parameters in alphabetic characters:

Baud rate, parity bit, data size, and stop bit

- Syntax

```
[VB]
Public Property Params As String
```

```
[C#]
public string Params {get; set}
```

- Property

Character string representing the communication parameters

Syntax : "BBBB,P,D,S"

BBBB : BaudRate(bps)

"115200","57600","38400","19200","9600","4800","2400","1200","600"

(Connector interface)

"115200","57600","38400","19200","9600"

(IrDA)

P : Parity

"N": no parity bit

D : Data size (bits)

"8" or "7"

S : Stop bit (bit)

"1" or "2"

Default value: "9600,N,8,1" (Connector interface)

"9600,N,8,1" (IrDA)

■ Exceptions

Name of Exception	Meaning
ObjectDisposedException	The COM port has not been opened yet.
ArgumentException	The specified parameter value(s) lies outside the permissible range.

[Ex.] Specify a baud rate of 115200 bps, set the parity to none, the data length to 8 bits, and the stop bit to 1 bit.

[VB] MyComm.Params = "115200,N,8,1"

[C#] MyComm.Params = "115200,N,8,1";

Input

Reads data from the receive buffer.

- Syntax

```
[VB]
Public Function Input(ByVal buffer() As Byte, ByVal offset As Integer, _
ByVal len As Integer) As Integer
```

```
[C#]
public int Input(byte[] buffer, int offset, int len)
```

- Parameters

buffer

[out] Destination buffer

offset

[in] Offset from the beginning of the destination buffer indicating the start point of the read data

len

[in] Maximum length of the buffer to be read

- Return value

Length (size) of the data that has been actually read out

- Exceptions

Name of Exception	Meaning
ObjectDisposedException	The COM port has not been opened yet.

[Ex.] Read out all data remaining in the receive buffer.

[VB]

```
While MyComm.InBufferCount > 0
     len = MyComm.Input(buffer, 0, buffer.Length)
End While
```

[C#]

```
while (MyComm.InBufferCount > 0)
{
     len = MyComm.Input(buffer, 0, buffer.Length);
}
```

Output

Writes data into the send buffer.

- Syntax

```
[VB]
Public Sub Output(ByVal buffer() As Byte, ByVal offset As Integer, _
ByVal len As Integer)
```

```
[C#]
public void Output(byte[] buffer, int offset, int len)
```

- Parameters

buffer

[in] Source buffer

offset

[in] Offset from the beginning of the source buffer indicating the start point of the data

len

[in] Maximum length of the buffer into which data is to be written

- Return value

None

- Exceptions

Name of Exception	Meaning
ObjectDisposedException	The COM port has not been opened yet.

[Ex.] Send the len(byte) data when there is no longer any data in the send buffer.

[VB]

```
If MyComm.OutBufferCount = 0 Then
     MyComm.Output(buffer, 0, len)
End If
```

[C#]

```
if (MyComm.OutBufferCount == 0)
{
     MyComm.Output(buffer, 0, len);
}
```

Dispose

Frees up all unmanaged resources.

This function must be called before instances of the CommSerial class are no longer referenced.

- Syntax

```
[VB]
Public Sub Dispose()
```

```
[C#]
public void Dispose()
```

- Parameters

None

- Return value

None

- Exceptions

None

- Note

This function must be called before instances of the CommSerial class are no longer referenced.

```
[VB]
Private Sub Form1_Closed(ByVal sender As Object, ByVal e As System.EventArgs)
Handles MyBase.Closed

     MyComm.Dispose()
End Sub
[C#]
private void Form1_Closed(object sender, EventArgs e)
{
     MyComm.Dispose();
}
```

OnDone

Occurs when a COM event has occurred.

- Syntax

```
[VB]
Public Event OnDone As EventHandler
```

```
[C#]
public event EventHandler OnDone
```

- Event data

The Event Handler has received EventArgs type parameters.

The second parameter EventArgs e is always System.EventArgs.Empty.

To identify the type of the event that has occurred, retrieve SignaledEvent.

```
[Ex.] Read out the data when a receive event occurs.
[VB]
Private Sub MyComm_OnDone(ByVal sender As Object, ByVal e As System.EventArgs)
Handles MyComm.OnDone
      MyComm.Input(ReadBuf, 0, ReadBuf.Length)
End Sub
[C#]
private void MyComm_OnDone(object sender, EventArgs e)
{
      MyComm.Input(ReadBuf, 0, ReadBuf.Length);
}
```

EN_EVENT

Specifies the event type.

- Syntax

```
[VB]
[Flags]Public Enum EN_EVENT
```

```
[C#]
[Flags]public enum EN_EVENT
```

- Members

Member Name	Description
NONE	None
RECEIVE	Receive

- Class

Within CommSerial class

18.30. FileTransfer

➢ Constructor

Constructor Name	Description
FileTransfer	Creates a new instance of the FileTransfer class.

➢ Fields

Field Name	Description
DEFAULT_PORT	Default COM port number to be used

➢ Properties

Property Name	Description
Port	Number of the COM port to be used
Baud	Communication rate
Parity	Parity scheme
StopBits	Stop bits
Path	Folder in which the send/receive file is located
TransferringEventInterval	Event occurrence interval during transfer
Status	File transfer status
FileCount	File number of the file being transferred

➢ Methods

Method Name	Description
AddFile	Adds a file to be transferred.
ClearFile	Clears the contents of the file that was added by AddFile.
Input	Receives a file.
Output	Sends a file.
Abort	Aborts processing.
Dispose	Frees up all unmanaged resources.

➢ Events

Event Name	Description
OnDone	Occurs when transfer processing has been completed.
OnTransferring	Information on the file is stored during the transfer.

➢ Enumeration

Enumeration Name	Description
EN_BAUD	Communication baud rate
EN_PARITY	Parity bit
EN_STOPBITS	Stop bit
EN_STATUS	File transfer status
EN_RESULT	Transfer processing result

FileTransfer

Initializes a new instance of the FileTransfer class.

- Syntax

```
[VB]
Public Sub New( )
```

```
[C#]
public FileTransfer( )
```

- Parameters

  None

- Exceptions

  None

```
[Ex.] Create a FileTransfer class instance.

    [VB]  Dim MyFileTransfer As FileTransfer = New FileTransfer

    [C#]  FileTransfer MyFileTransfer = new FileTransfer();
```

DEFAULT_PORT

Default value of the port number. This value is read-only.

- Syntax

```
[VB]
Public ReadOnly DEFAULT_PORT As Integer
```

```
[C#]
public readonly int DEFAULT_PORT;
```

Port

Sets the COM port number.

- Syntax

```
[VB]
Public Property Port As Integer
```

```
[C#]
public int Port {get; set}
```

- Property

COM port number

Parameter value(s): 1: Connector interface, 4: IrDA

Default value: 4

- Exceptions

Name of Exception	Meaning
InvalidOperationException	The COM port is already open.

- Note

If the value of this property is changed while COM port is open, an exception will be thrown.

The value specified for this property will be valid the next time a send or receive operation is performed.

If an invalid value is specified for this property, no exceptions will be thrown immediately; however, an exception will be thrown later when an attempt is made to send or receive data.

```
[Ex.] Create a FileTransfer class instance.
    [VB]  Dim Port As Integer = MyFileTransfer.Port
    [C#]  int Port = MyFileTransfer.Port;
```

Baud

Sets the communication rate.

- Syntax

```
[VB]
Public Property Baud As EN_BAUD
```

```
[C#]
public EN_BAUD Baud {get; set}
```

- Property

Communication rate.

Parameter values: As listed in EN_BAUD

BPS300, BPS600, BPS1200, BPS2400, BPS4800, BPS9600, BPS19200,

BPS38400, BPS57600, BPS115200 (connector interface communication)

BPS9600, BPS19200, BPS38400, BPS57600,

BPS115200 (IrDA communication)

Default value: EN_BAUD.RATE115200

- Exceptions

None

- Note

The value specified for this property will be valid the next time a send or receive operation is performed.

If an invalid value is specified for this property, no exceptions will be thrown immediately; however, an exception will be thrown later when an attempt is made to send or receive data.

```
[Ex.] Set the transfer baud rate to 115200 bps.

    [VB]  MyFileTransfer.Baud = FileTransfer.EN_BAUD.115200

    [C#]  MyFileTransfer.Baud = FileTransfer.EN_BAUD.115200;
```

Parity

Specifies the parity scheme to be used.

- Syntax

```
[VB]
Public Property Parity As EN_PARITY
```

```
[C#]
public EN_PARITY Parity {get; set}
```

- Property

Parity

Parameter values: As listed in EN_PARITY

NOPARITY, ODDPARITY, EVENPARITY (connector interface communication)

NOPARITY (IrDA communication)

Default value: EN_PARITY.NOPARITY

- Exceptions

None

- Note

The value specified for this property will be valid the next time a send or receive operation is performed.

If an invalid value is specified for this property, no exceptions will be thrown immediately; however, an exception will be thrown later when an attempt is made to send or receive data.

```
[Ex.] Set the parity bit to none.
    [VB]  MyFileTransfer.Parity = FileTransfer.EN_PARITY.NOPARITY
    [C#]  MyFileTransfer.Parity = FileTransfer.EN_PARITY.NOPARITY;
```

StopBits

Specifies the number of stop bits to be used.

- Syntax

```
[VB]
Public Property StopBits As EN_STOPBITS
```

```
[C#]
public EN_STOPBITS StopBits {get; set}
```

- Property

Stop bits

Parameter values: As listed in EN_STOPBITS

ONEBIT, TWOBITS (connector interface communication)

ONEBIT (IrDA communication)

Default value: EN_STOPBITS. ONEBIT

- Exceptions

None

- Note

The value specified for this property will be valid the next time a send or receive operation is performed.

If an invalid value is specified for this property, no exceptions will be thrown immediately; however, an exception will be thrown later when an attempt is made to send or receive data.

```
[Ex.] Set the stop bit to 1 bit.
     [VB]  MyFileTransfer.StopBits = FileTransfer.EN_STOPBITS.ONEBIT
     [C#]  MyFileTransfer.StopBits = FileTransfer.EN_STOPBITS.ONEBIT;
```

Path

Specifies the folder in which the send file or receive file is [to be] located.

- Syntax

```
[VB]
Public Property Path As String
```

```
[C#]
public string Path {get; set}
```

- Property

Absolute path

Default value: @"\"

Maximum length: 259 characters (including the path name and the file name)

- Exceptions

Name of Exception	Meaning
PathTooLongException	The path name is too long.

- Note

The value specified for this property will be valid the next time a send or receive operation is performed.

If an invalid value is specified for this property, no exceptions will be thrown immediately; however, an exception will be thrown later when an attempt is made to send or receive data.

```
[Ex.] Set the file receipt destination folder to FLASH\.

    [VB]  MyFileTransfer.Path = "\FLASH\"

    [C#]  MyFileTransfer.Path = @"FLASH";
```

TransferringEventInterval

Sets the interval for creating transferring events (OnTransferring).

- Syntax

```
[VB]
Public Property TransferringEventInterval As Integer
```

```
[C#]
public int TransferringEventInterval {get; set}
```

- Property

Event interval (in units of 100 msec)

Parameter values: 0 and above, but less than System.Int32.MaxValue

Default value: 0

0: No event will occur.

- Exceptions

None

- Note

The value specified for this property will be valid the next time a send or receive operation is performed.

```
[Ex.] Set the event occurrence interval to ensure that file transfer information can be acquired every second.

     [VB] MyFileTransfer.TransferringEventInterval = 10

     [C#] MyFileTransfer.TransferringEventInterval = 10;
```

Status

Acquires the file transfer status.

- Syntax

```
[VB]
Public ReadOnly Property Status As EN_STATUS
```

```
[C#]
public EN_STATUS Status {get; }
```

- Property

File transfer status

Parameter values: as listed in EN_STATUS

Default value: EN_STATUS.READY

- Exceptions

None

```
[Ex.] Acquire the file transfer status.

     [VB]  Dim Status As FileTransfer.EN_STATUS = MyFileTransfer.Status

     [C#]  FileTransfer.EN_STATUS Status = MyFileTransfer.Status;
```

FileCount

Acquires the file number of the file being transferred.

- Syntax

```
[VB]
Public ReadOnly Property FileCount As Integer
```

```
[C#]
public int FileCount {get; }
```

- Property

File number. (A serial number starting with the first file transferred as file number 1.)

Default value: 0

- Exceptions

None

[Ex.] Acquire the number of the file currently being sent.

    [VB] Dim Number As Integer = MyFileTransfer.FileCount

    [C#] int Number = MyFileTransfer.FileCount;

AddFile

Adds a file to be transferred.

- Syntax

```
[VB]
Public Sub AddFile(ByVal fileName As String)
```

```
[C#]
public void AddFile(string fileName);
```

- Parameters

fileName

[in] Name of the file to be added

(This should not include the path.)

Maximum length: 90 characters

- Return value

None

- Exceptions

Name of Exception	Meaning
ArgumentException	The length of the specified file name was zero (0).
PathTooLongException	The specified file name is too long.

[Ex.] Add "Mydoc.txt" to the file to be sent.

　　　[VB] MyFileTransfer.AddFile("Mydoc.txt")

　　　[C#] MyFileTransfer.AddFile("Mydoc.txt");

ClearFile

Clears the contents of the file that was added by AddFile.

- ■ Syntax

  ```
  [VB]
  Public Sub ClearFile()
  ```

  ```
  [C#]
  public void ClearFile();
  ```

- ■ Parameters

  None

- ■ Return value

  None

- ■ Exceptions

  None

  [Ex.] Clear the file to be sent.

      [VB] MyFileTransfer.ClearFile()

      [C#] MyFileTransfer.ClearFile();

Input

Receives a file.

- Syntax

```
[VB]
Public Sub Input()
```

```
[C#]
public void Input();
```

- Parameters

None

- Return value

None

- Exceptions

Name of Exception	Meaning
SecurityException	The port has already opened by another application.
DeviceNotFoundException	The COM port specified at Port does not exist.

```
[Ex.] Receive a file.

    [VB]  MyFileTransfer.Input()

    [C#]  MyFileTransfer.Input ();
```

Output

Sends the contents of the file that was specified by AddFile.

- ■ Syntax

```
[VB]
Public Sub Output()
```

```
[C#]
public void Output();
```

- ■ Parameters

None

- ■ Return value

None

- ■ Exceptions

Name of Exception	Meaning
SecurityException	The port has already opened by another application.
DeviceNotFoundException	The COM port specified at Port does not exist.
ArgumentNullException	The file has not been added by AddFile.
PathTooLongException	The path specified by Path is too long, or the file name specified by AddFile is too long.

```
[Ex.] Send a file.

     [VB] MyFileTransfer.Output()

     [C#] MyFileTransfer.Output ();
```

Abort

Aborts the file transfer that is already in progress.

- Syntax

```
[VB]
Public Sub Abort()
```

```
[C#]
public void Abort();
```

- Parameters

None

- Return value

None

- Exceptions

None

- Note

Execution of this method will result in an OnDone event after file transfer has been aborted.

```
[Ex.] Interrupt file transfer.
    [VB] MyFileTransfer.Abort()
    [C#] MyFileTransfer.Abort ();
```

Dispose

Frees up all unmanaged resources.

This function must be called before instances of the FileTransfer class are no longer referenced.

- Syntax

```
[VB]
Public Sub Dispose()
[C#]
public void Dispose()
```

- Parameters

None

- Return value

None

- Exceptions

None

- Note

This function must be called before instances of the FileTransfer class are no longer referenced.

```
[VB]
Private Sub Form1_Closed(ByVal sender As Object, ByVal e As System.EventArgs)
Handles MyBase.Closed
      MyTransfer.Dispose()
End Sub
[C#]
private void Form1_Closed(object sender, EventArgs e) {
      MyTransfer.Dispose();
}
```

OnDone

Occurs when a transfer operation is complete.

- Syntax

```
[VB]
Public Event OnDone As TransferredHandler
```

```
 [C#]
public event TransferredHandler OnDone
```

- Event data

The Event Handler has received TransferredEventArgs type parameters.

One of the values listed in EN_Result will be stored in Result, the member of the second parameter TransferredEventArgs e.

```
[Ex.] Display the event type that occurred each time a transfer event occurs.
[VB]
Private Sub MyFileTransfer_OnDone(ByVal sender As Object, _
     ByVal e As FileTransfer.TransferredEventArgs) _
    Handles MyFileTransfer.OnDone
     MessageBox.Show(e.Result.ToString())
End Sub
[C#]
private void MyTransfer_OnDone(object sender, FileTransfer.TransferredEventArgs e)
{
     MessageBox.Show(e.Result.ToString());
}
```

OnTransferring

Information on the file being transferred will be entered.

- Syntax

```
[VB]
Public Event OnTransferring As TransferringHandler
```

```
[C#]
public event TransferringHandler OnTransferring
```

- Event data

The Event Handler has received TransferringEventArgs type parameters.

The name and size of the file being transferred and the amount of the data that has already been transferred will be stored in TransferringFileInfo, the member of the second parameter TransferringEventArgs e.

```
[Ex.] Acquire transfer data each time a transfer event occurs.
[VB]
Private Sub MyFileTransfer_OnTransferring(ByVal sender As Object, _
     ByVal e As FileTransfer.TransferringEventArgs) _
     Handles MyFileTransfer.OnTransferring
     Dim Name As String = e.FileName
     Dim Percent As Integer = Convert.ToInt32(((e.TransferredSize * 100) / e.TotalSize))
End Sub
[C#]
private void MyTransfer_OnTransferring(object sender,
     FileTransfer.TransferringEventArgs e)
{
     string Name = e.FileName;
     int Percent = Convert.ToInt32(((e.TransferredSize * 100) / e.TotalSize));
}
```

EN_BAUD

Specifies the communication rate.

- Syntax

```
[VB]
Public Enum EN_BAUD
[C#]
public enum EN_BAUD
```

- Members

Member Name	Description
BPS110	110 bps
BPS300	300 bps
BPS600	600 bps
BPS1200	1200 bps
BPS2400	2400 bps
BPS4800	4800 bps
BPS9600	9600 bps
BPS14400	14400 bps
BPS19200	19200 bps
BPS38400	38400 bps
BPS56000	56000 bps
BPS57600	57600 bps
BPS115200	115200 bps
BPS128000	128000 bps
BPS256000	256000 bps

- Class

Within FileTransfer class

EN_PARITY

Specifies the parity scheme.

- Syntax

```
[VB]
Public Enum EN_PARITY
```

```
[C#]
public enum EN_PARITY
```

- Members

Member Name	Description
NOPARITY	No parity
ODDPARITY	Odd
EVENPARITY	Even

- Class

Within FileTransfer class

EN_STOPBITS

Specifies the stop bits.

- Syntax

```
[VB]
Public Enum EN_STOPBITS
```

```
[C#]
public enum EN_STOPBITS
```

- Members

Member Name	Description
ONEBIT	1 bit
TWOBITS	2 bit

- Class

Within FileTransfer class

EN_STATUS

Specifies the file transfer status.

- Syntax

```
[VB]
Public Enum EN_STATUS
```

```
[C#]
public enum EN_STATUS
```

- Members

Member Name	Description
READY	Ready
RECEIVE	Receiving
SEND	Sending

- Class

Within FileTransfer

EN_RESULT

Specifies the results of the file transfer.

- Syntax

```
[VB]
Public Enum EN_RESULT
```

```
[C#]
public enum EN_RESULT
```

- Members

| Member Name	Description
SUCCESS	The file transfer was successfully completed
TIMEOUT	Timeout
OPERATION_ ABORTED	The operation was aborted
OPEN_FAILED	The file could not be opened.
INVALID_DATA	Invalid data has been received.
DISK_FULL	The disk storage was full and did not have enough space.
PATH_TOO_LONG	The path length was too long.

- Class

Within FileTransfer class

Appendix 1. Key Arrangements

<u>31-key arrangement</u>

(1) Numeric entry

| F1 | F2 | F3 | F4 |

M3(H) | M1 | SCAN | M2 | M4(H)

◄ | ▲ | ▼ | ►

M5

1	2	3
4	5	6
7	8	9
.	0	ENT
TAB	SEND	
C	BS	ALP
PW	FUNC	

Normal status

| F5 | F6 | F7 | F8 |

M3(H) | M1 | SCAN | M2 | M4(H)

F9 | F12 | F1

M5

+	-	=
/	*	%
$	&	#
,	:	ENT
TAB	SEND	
C	SP	ALP
PW	FUNC	
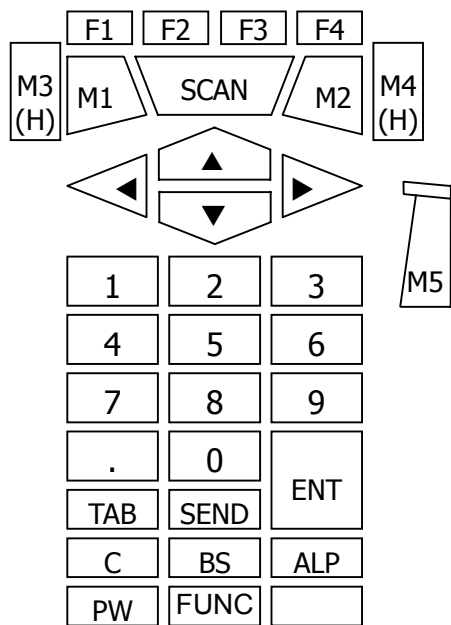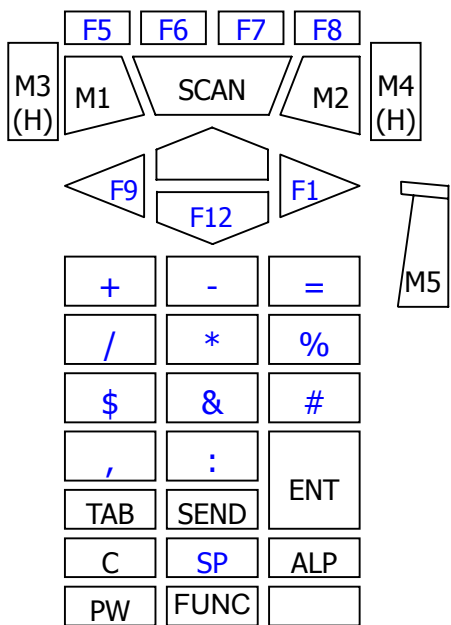
Status with [SF] pressed

(2) Alphabet entry

| F1 | F2 | F3 | F4 |

M3(H) | M1 | SCAN | M2 | M4(H)

◄ | ▲ | ▼ | ►

M5(H)

*	A B C / a b c	D E F / d e f
G H I / g h i	J K L / j k l	M N O / m n o
P Q R S / p q r s	T U V / t u v	W X Y Z / w x y z
, / SP	- % $ ¥	ENT
TAB	SEND	
C	BS	ALP
PW	FUNC	SF
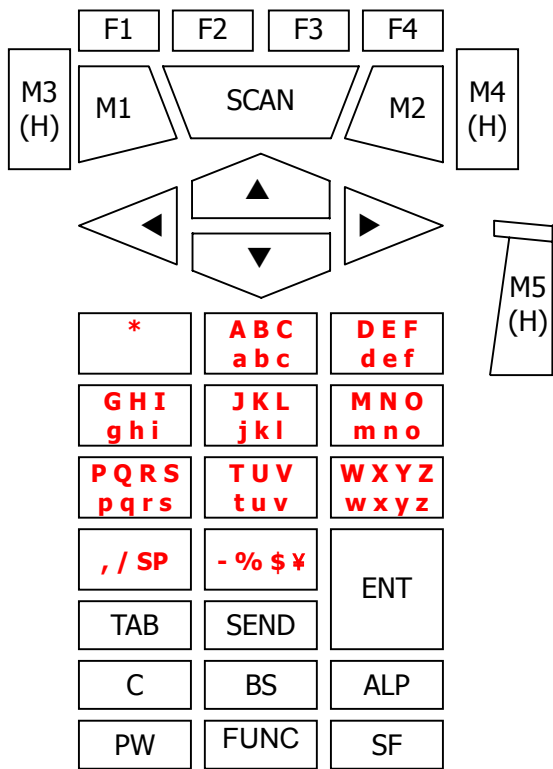
50-key arrangement

(1) Non-function mode

| M3 (H) | M1 | SCAN | M2 | M4 (H) |

| C | ▲ | BS |
| ◄ | ▼ | ► |

7	8	9
4	5	6
1	2	3
0	.	ENT

M5 (H)

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y
PW	Z	Func	SF

Normal status

| M3 (H) | M1 | SCAN | M2 | M4 (H) |

| C | ▲ | SP |
| ◄ | ▼ | ► |

+	-	=
/	*	%
$	&	#
:	,	ENT

M5 (H)

a	b	c	d	e
f	g	h	i	j
k	l	m	n	o
p	q	r	s	t
u	v	w	x	y
PW	z	Func	SF
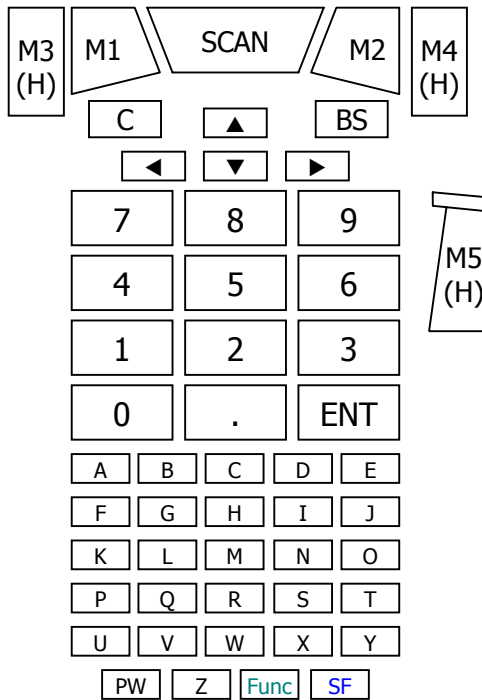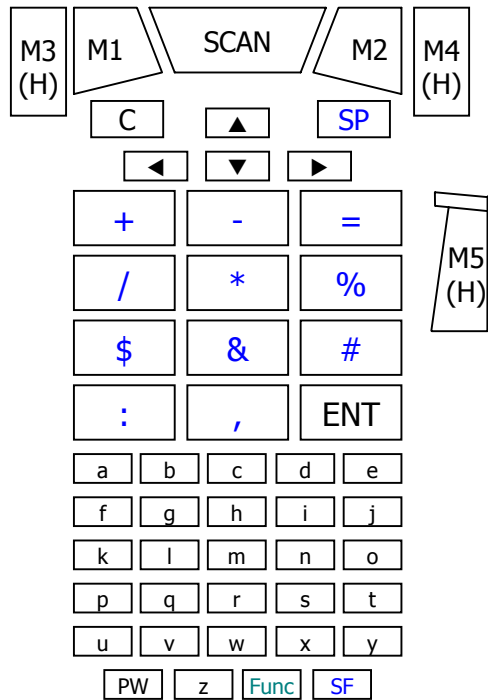
Status with [SF] pressed

(2) Function mode

| M3 (H) | M1 | SCAN | M2 | M4 (H) |

| C | ▲ | BS |
| ◄ | ▼ | ► |

7	8	9
4	5	6
1	2	3
0	.	ENT

M5

F1	F2	F3	F4	F5
F6	F7	F8	F9	F10
F11	F12	TAB	SEN	
PW		Func	SF

| M3 (H) | M1 | SCAN | M2 | M4 (H) |

| C | ▲ | SP |
| ◄ | ▼ | ► |

+	-	=
/	*	%
$	&	#
:	,	ENT

M5

F1	F2	F3	F4	F5
F6	F7	F8	F9	F10
F11	F12	TAB	SEN	
PW		Func	SF
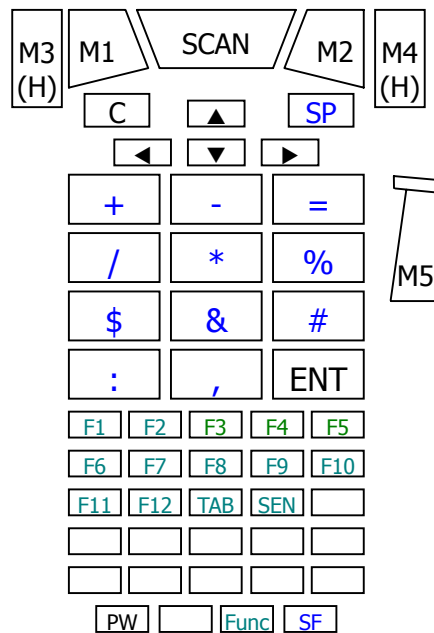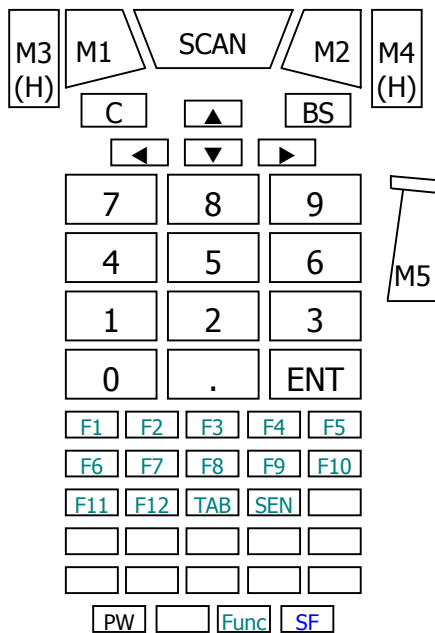
Appendix 2. Virtual Keyboard and Display Characters

31-key

(1) Numeric entry

Table 2.1.   Virtual key codes and character codes when in 31-key type numeric entry mode

Key Location	Normal Status			With [SF] Key Pressed		
	Virtual Key Code		Character Code	Virtual Key Code		Character Code
	Constant	Value		Constant	Value	
[F1]	F1	70	–	VK_F5	74	–
[F2]	F2	71	–	VK_F6	75	–
[F3]	F3	72	–	VK_F7	76	–
[F4]	F4	73	–	VK_F8	77	–
[▲]	Up	26	–	VK_F9	78	–
[▼]	Down	28	–	VK_F10	79	–
[◄]	Left	25	–	VK_F11	7A	–
[►]	Right	27	–	VK_F12	7B	–
[9]	D9	39	39 (9)	←	←	3D (=)
[8]	D8	38	38 (8)	←	←	2D (-)
[7]	D7	37	37 (7)	←	←	2B (+)
[6]	D6	36	36 (6)	←	←	25 (%)
[5]	D5	35	35 (5)	←	←	2A (∗)
[4]	D4	34	34 (4)	←	←	2F (/)
[3]	D3	33	33 (3)	←	←	23 (#)
[2]	D2	32	32 (2)	←	←	26 (&)
[1]	D1	31	31 (1)	←	←	24 ($)
[0]	D0	30	30 (0)	←	←	3A (:)
[.]	OemPeriod	BE	2E (.)	←	←	2C (,)
[ENT]	Return	0D	0D	←	←	0D
[TAB]	Tab	09	09	←	←	09
[SEND]	Send	D3	D3	←	←	D3
[C]	Clear	0C	–	←	←	–
[BS]	Back	08	08	←	←	20 ( )
[ALP]	ALP	D0	–	←	←	–
[Func]	Func	D2	–	←	←	–
[SF]	ShiftKey	10	–	←	←	–
[SCAN]	Scan (*1)	D1 (*1)	– (*1)	←	←	– (*1)
[M1]	M1 (*1)	C1 (*1)	– (*1)	←	←	– (*1)
[M2]	M2 (*1)	C2 (*1)	– (*1)	←	←	– (*1)
[M3]	M3 (*1)	C3 (*1)	– (*1)	←	←	– (*1)
[M3H]	M3H (*1)	C8 (*1)	– (*1)	←	←	– (*1)
[M4]	M4 (*1)	C4 (*1)	– (*1)	←	←	– (*1)
[M4H]	M4H (*1)	C9 (*1)	– (*1)	←	←	– (*1)
[M5]	M5 (*1)	C5 (*1)	– (*1)	←	←	– (*1)
[M5H]	M5H (*1)	CA (*1)	– (*1)	←	←	– (*1)

(*1) Virtual key codes and character codes will differ based on the key settings.
Please refer to "A-3 Magic Keys, Scan Key Virtual Key Codes, Character Codes" for further details.

(2) Alphabet entry

Table 2.2. Virtual key codes and character codes when in 31-key type alphabet entry mode

Key Location	Virtual Key Code		Character Code						
	Constant	Value	1st Time	2nd Time	3rd Time	4th Time	5th Time	6th Time	7th Time
[9]	D9	39	Y	Z	+	y	z	(*1)	(*1)
[8]	D8	38	V	W	X	v	w	x	(*1)
[7]	D7	37	S	T	U	s	t	u	(*1)
[6]	D6	36	P	Q	R	p	q	r	(*1)
[5]	D5	35	M	N	O	m	n	o	(*1)
[4]	D4	34	J	K	L	j	k	l	(*1)
[3]	D3	33	G	H	I	g	h	i	
[2]	D2	32	D	E	F	d	e	f	(*1)
[1]	D1	31	A	B	C	a	b	c	(*1)
[0]	D0	30	–	%	$	\	(*1)		
[.]	OemPeriod	BE	,	/	SP	(*1)			
[ENT]	Return (*2)	0D	0D						
	PseudoReturn (*3)	87	87						

Keys not listed in the above table are the same as when in numeric entry mode.

(*1)   Returns to 1st time.
(*2)   Where there are no unestablished characters in the unestablished character display window.
(*3)   Where there are unestablished characters in the unestablished character display window.

50-key

(1) Non-function mode

Table 2.3.   50-key type virtual key codes and character codes (non-function mode)

Key Location	Normal Status		Character Code	With [SF] Key Pressed		Character Code
	Virtual Key Code			Virtual Key Code		
	Constant	Value		Constant	Value	
[▲]	Up	26	–	←	←	–
[▲]	Down	28	–	←	←	–
[◄]	Left	25	–	←	←	–
[►]	Right	27	–	←	←	–
[9]	D9	39	39 (9)	←	←	3D (=)
[8]	D8	38	38 (8)	←	←	2D (-)
[7]	D7	37	37 (7)	←	←	2B (+)
[6]	D6	36	36 (6)	←	←	25 (%)
[5]	D5	35	35 (5)	←	←	2A (∗)
[4]	D4	34	34 (4)	←	←	2F (/)
[3]	D3	33	33 (3)	←	←	23 (#)
[2]	D2	32	32 (2)	←	←	26 (&)
[1]	D1	31	31 (1)	←	←	24 ($)
[0]	D0	30	30 (0)	←	←	3A (:)
[.]	OemPeriod	BE	2E (.)	←	←	2C (,)
[A]	A	41	41 (A)	←	←	61 (a)
[B]	B	42	42 (B)	←	←	62 (b)
[C]	C	43	43 (C)	←	←	63 (c)
[D]	D	44	44 (D)	←	←	64 (d)
[E]	E	45	45 (E)	←	←	65 (e)
[F]	F	46	46 (F)	←	←	66 (f)
[G]	G	47	47 (G)	←	←	67 (g)
[H]	H	48	48 (H)	←	←	68 (h)
[I]	I	49	49 (I)	←	←	69 (i)
[J]	J	4A	4A (J)	←	←	6A (j)
[K]	K	4B	4B (K)	←	←	6B (k)
[L]	L	4C	4C (L)	←	←	6C (l)
[M]	M	4D	4D (M)	←	←	6D (m)
[N]	N	4E	4E (N)	←	←	6E (n)
[O]	O	4F	4F (O)	←	←	6F (o)
[P]	P	50	50 (P)	←	←	70 (p)
[Q]	Q	51	51 (Q)	←	←	71 (q)
[R]	R	52	52 (R)	←	←	72 (r)
[S]	S	53	53 (S)	←	←	73 (s)
[T]	T	54	54 (T)	←	←	74 (t)
[U]	U	55	55 (U)	←	←	75 (u)
[V]	V	56	56 (V)	←	←	76 (v)
[W]	W	57	57 (W)	←	←	77 (w)

Table 2.3. (cont.) 50-key type virtual key codes and character codes (non-function mode)

Key Location	Normal Status			With [SF] Key Pressed		
	Virtual Key Code		Character Code	Virtual Key Code		Character Code
	Constant	Value		Constant	Value	
[X]	X	58	58 (X)	←	←	78 (x)
[Y]	Y	59	59 (Y)	←	←	79 (y)
[Z]	Z	5A	5A (Z)	←	←	7A (z)
[ENT]	Return	0D	0D	←	←	0D
[C]	Clear	0C	0C	←	←	0C
[BS]	Back	08	08	←	←	20 ( )
[Func]	Func	D2	–	←	←	–
[SF]	ShiftKey	10	–	←	←	–
[SCAN]	Scan (*1)	D1 (*1)	– (*1)	←	←	– (*1)
[M1]	M1 (*1)	C1 (*1)	– (*1)	←	←	– (*1)
[M2]	M2 (*1)	C2 (*1)	– (*1)	←	←	– (*1)
[M3]	M3 (*1)	C3 (*1)	– (*1)	←	←	– (*1)
[M3H]	M3H (*1)	C8 (*1)	– (*1)	←	←	– (*1)
[M4]	M4 (*1)	C4 (*1)	– (*1)	←	←	– (*1)
[M4H]	M4H (*1)	C9 (*1)	– (*1)	←	←	– (*1)
[M5]	M5 (*1)	C5 (*1)	– (*1)	←	←	– (*1)
[M5H]	M5H (*1)	CA (*1)	– (*1)	←	←	– (*1)

(*1) Virtual key codes and character codes will differ based on the key settings.
Please refer to "B-3 Magic Keys, Scan Key Virtual Key Codes and Character Codes" for further details.

(2) Function mode

Table 2.4. 50-key type virtual key codes and character codes (function mode)

Key Location	Normal Status			With [SF] Key Pressed		
	Virtual Key Code		Character Code	Virtual Key Code		Character Code
	Constant	Value		Constant	Value	
[▲]	Up	26	–	←	←	–
[▲]	Down	28	–	←	←	–
[◄]	Left	25	–	←	←	–
[►]	Right	27	–	←	←	–
[9]	D9	39	39 (9)	←	←	3D (=)
[8]	D8	38	38 (8)	←	←	2D (-)
[7]	D7	37	37 (7)	←	←	2B (+)
[6]	D6	36	36 (6)	←	←	25 (%)
[5]	D5	35	35 (5)	←	←	2A (∗)
[4]	D4	34	34 (4)	←	←	2F (/)
[3]	D3	33	33 (3)	←	←	23 (#)
[2]	D2	32	32 (2)	←	←	26 (&)
[1]	D1	31	31 (1)	←	←	24 ($)
[0]	D0	30	30 (0)	←	←	3A (:)
[.]	OemPeriod	BE	2E (.)	←	←	2C (,)

Table 2.4. (cont.) 50-key type virtual key codes and character codes (non-function mode)

Key Location	Normal Status			With [SHIFT] Key Pressed		
	Virtual Key Code		Character Code	Virtual Key Code		Character Code
	Constant	Value		Constant	Value	
[A]	F1	70	–	←	←	–
[B]	F2	71	–	←	←	–
[C]	F3	72	–	←	←	–
[D]	F4	73	–	←	←	–
[E]	F5	74	–	←	←	–
[F]	F6	75	–	←	←	–
[G]	F7	76	–	←	←	–
[H]	F8	77	–	←	←	–
[I]	F9	78	–	←	←	–
[J]	F10	79	–	←	←	–
[K]	F11	7A	–	←	←	–
[L]	F12	7B	–	←	←	–
[M]	Tab	09	09	←	←	09
[N]	Send	D2	D2	←	←	D2
[O]	O	4F	4F (O)	←	←	6F (o)
[P]	P	50	50 (P)	←	←	70 (p)
[Q]	Q	51	51 (Q)	←	←	71 (q)
[R]	R	52	52 (R)	←	←	72 (r)
[S]	S	53	53 (S)	←	←	73 (s)
[T]	T	54	54 (T)	←	←	74 (t)
[U]	U	55	55 (U)	←	←	75 (u)
[V]	V	56	56 (V)	←	←	76 (v)
[W]	W	57	57 (W)	←	←	77 (w)
[X]	X	58	58 (X)	←	←	78 (x)
[Y]	Y	59	59 (Y)	←	←	79 (y)
[Z]	Z	5A	5A (Z)	←	←	7A (z)
[ENT]	Return	0D	0D	←	←	0D
[C]	Clear	0C	0C	←	←	0C
[BS]	Back	08	08	Space	20	20 ( )
[Func]	Func	D2	–	←	←	–
[SF]	ShiftKey	10	–	←	←	–
[SCAN]	Scan (*1)	D1 (*1)	– (*1)	←	←	– (*1)
[M1]	M1 (*1)	C1 (*1)	– (*1)	←	←	– (*1)
[M2]	M2 (*1)	C2 (*1)	– (*1)	←	←	– (*1)
[M3]	M3 (*1)	C3 (*1)	– (*1)	←	←	– (*1)
[M3H]	M3H (*1)	C8 (*1)	– (*1)	←	←	– (*1)
[M4]	M4 (*1)	C4 (*1)	– (*1)	←	←	– (*1)
[M4H]	M4H (*1)	C9 (*1)	– (*1)	←	←	– (*1)
[M5]	M5 (*1)	C5 (*1)	– (*1)	←	←	– (*1)
[M5H]	M5H (*1)	CA (*1)	– (*1)	←	←	– (*1)

(*1) Virtual key codes and character codes will differ based on the key settings.
Please refer to "B-3 Magic Keys, Scan Key Virtual Key Codes and Character Codes" for further details.

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