

IT-600 Series

Software Manual

(Version 1.04)

CASIO Computer Co., Ltd.

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1. Overview

The features and specifications described in this reference manual give an overview of the functional detailed specifications of the IT-600 series handheld terminal.

1.1. Model by Feature

The features integrated in each model of the IT-600 series are shown below.

Table 1.1

| Model | Laser scanner | Wireless Communication | | Digital Camera |
|-------------|---------------|------------------------|---------------------|----------------|
| | | Bluetooth | IEEE802.11b/802.11g | |
| IT-600M30 | Yes | Yes | No | No |
| IT-600M30C | Yes | Yes | No | Yes |
| IT-600M30R | Yes | Yes | Yes (see note 1.) | No |
| IT-600M30CR | Yes | Yes | Yes (see note 1.) | Yes |

Notes:

1. The CF slot on the model comes with WLAN card integrated in the factory.
2. IT-600 series including the four models listed in the table is not available in the USA and Canada.

1.2. Available Options

The following dedicated options are available for IT-600 series.

Table 1.2

| Option | Product | Model no. | Remark |
|-----------------|------------------------------|-------------|---|
| Cradle | USB Cradle | HA-D60IO | With USB interface and the power supply terminals |
| | | HA-D62IO | With LAN and USB interface and the power supply terminals |
| Battery | Battery pack (Standard) | HA-D20BAT | |
| | Large-capacity battery pack | HA-D21LBAT | |
| Battery charger | Dual battery charger | HA-D32DCHG | Maximum 3 chargers can be connected. |
| | Cradle-type battery charger | HA-D30CHG | |
| AC adaptor | AC adaptor | AD-S15050AE | For HA-D30CHG |
| | | AD-S42120AE | For HA-D32DCHG |
| Others | CF Card Extension Unit | HA-D94CFU | |
| | Trigger Grip | HA-D51TG | See note on page 8. |
| | Laser redirection attachment | HA-D50BN | See note on page 8. |
| | Hand Belt | HA-D95HB | |

As shown in Chapter 1.2 “Available Options”, the listed optional devices on this page can be connected to the terminal.

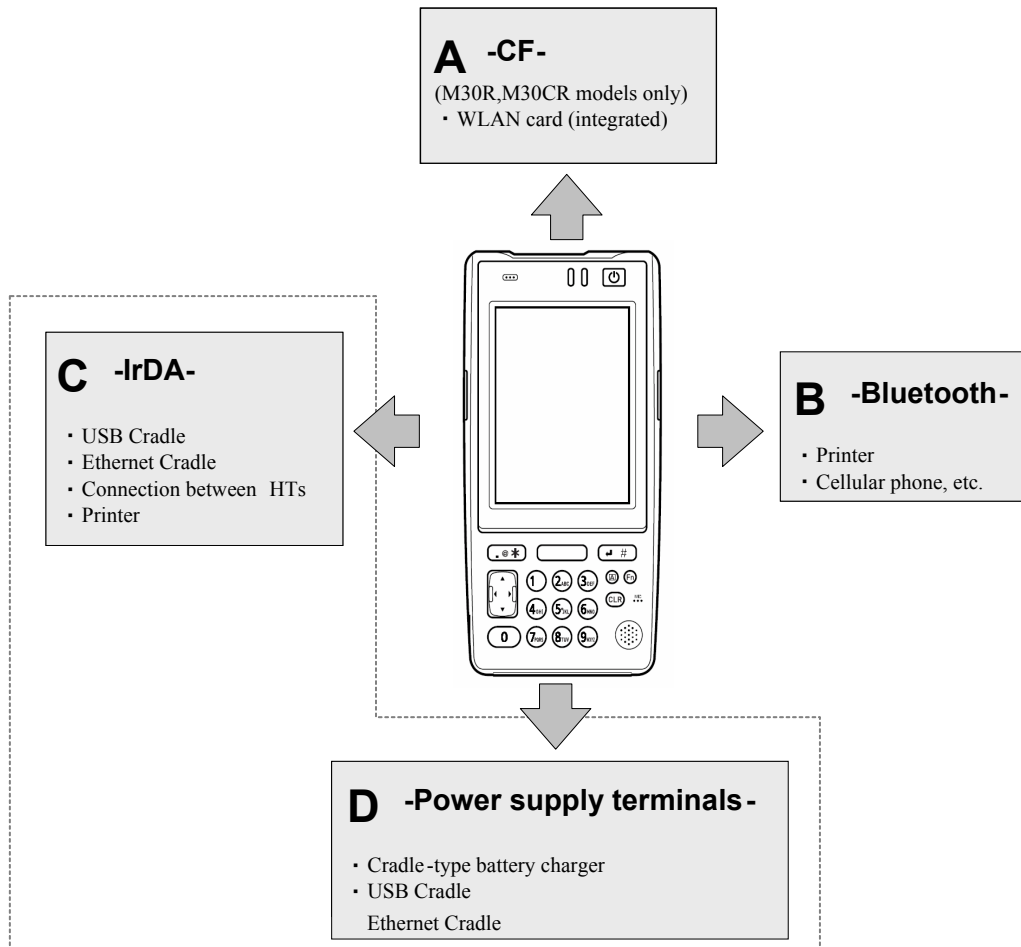


Fig 1.1

Peripherals in boxes A, B, C, and D corners can all be physically connected simultaneously, since their interface ports are different. Options included in each box area cannot be used simultaneously.

Chapter 3.4 will provide the conditions specifying how multiple options are used concurrently.

Note:

The HA-D51TG Trigger Grip being installed on the terminal does not allow the following dedicated options to be in service. The Trigger Grip either hides the camera’s window or disables the Laser Redirection Attachment to be attached on the terminal.

- Digital camera (for IT-600M30C and IT-600M30CR)
- HA-D50BN Laser Redirection Attachment

1.3. Application Development Environment

Development platform

- Microsoft Windows 2000 (SP2 or later release)
- Microsoft Windows XP

Development environment

- Visual Studio .NET 2003+WindowsCE Utilities for Visual Studio .NET 2003 Add-on Pack 1
- eMbedded Visual C++ 4.0 +SP4

Development environment

- IT-600 Export SDK

2. Functions

This chapter describes about detailed specifications of the functions implemented in the terminal and the options.

2.1. Basic Functions

2.1.1. WindowsCE Version 5.0

The terminal integrates Microsoft WindowsCE Version 5.0 as its operating system.

Features at a glance

- Easy-to-use user interface
- .NET CompactFrameWork is supported
- High-speed multitask processing
- Large capacity memory support
- Abundant peripheral equipment
- Easy development thanks to open environment
- PPC application operation with AYGShell

Note:

Microsoft applications such as PocketWord and PocketExcel are not integrated.

Core Modules

Microsoft core modules integrated in the terminal are as follows.

Table 2.1

| Core OS Modules | | | | | | |
|--|---|---|--|----------------------------|-----|-----|
| Applications and Services Development | .NET Compact Framework | .NET Compact Framework 1.0 | SQL Server 2000 .NET Data Provider | | – | |
| | | | SQL Server CE 2.0 .NET Data Provider | | – | |
| | | | .NET Compact Framework 1.0 Related Matters | | Yes | |
| | | Smart Device Authentication Utility | | | | Yes |
| | | String Safe Utility Function | | | | Yes |
| | C library and Runtime | Complete C runtime | | | | Yes |
| | | Standard Input/Output (STDIO) | | | | Yes |
| | | Standard Input/Output ASCII (STDIOA) | | | | Yes |
| | | Standard Character String Function - ASCII (corestra) | | | | Yes |
| | | C++ Runtime Support for Exception Processing and Runtime Type Information | | | | Yes |
| | Exchange Client | | | | | – |
| | LDAP (Lightweight Directory Access Protocol) Client | | | | | Yes |
| | Microsoft Foundation Classes (MFC) | | | | | Yes |
| | Pocket Outlook Object Module (POOM) API | | | | | Yes |
| | SOAP Toolkit | Client | | | | Yes |
| | | Server | | | | – |
| | SQL Server CE 2.0 | | | | | – |
| | Standard SDK for WindowsCE | | | | | Yes |
| | XML | MSXML 3.0 | XML Core Service and Document Object Model (DOM) | | | Yes |
| | | | | XML HTTP | | Yes |
| | | | | XML SAX | | Yes |
| | | | | XML Error Character String | | Yes |
| | | | | XML Query Language (XQL) | | Yes |
| XML Style Sheet Language Transformation (XSLT) | | | | Yes | | |
| XML Minimum Passer | | | | Yes | | |
| Active Template Library (ATL) | | | | | Yes | |

Continue.

| | | | | | |
|---------------------------------------|----------------------------------|---------------------------------------|---------------------------------|---------------------------------|-----|
| Applications and Services Development | Object Exchange Protocol (OBEX) | OBEX Client | | Yes | |
| | | OBEX Server | | Yes | |
| | | | OBEX File Browser | Yes | |
| | | | OBEX Receive Tray | Yes | |
| | Message Queue (MSMQ) | | | | Yes |
| | | MSMQ ActiveX Wrapper | | | Yes |
| | | SOAP Reliable Message Protocol (SRMP) | | | Yes |
| | Component Service (COM and DCOM) | Component Object Model | COM | | Yes |
| | | | | COM Storage Area | Yes |
| | | | | CoCreateGuid Function for OLE32 | Yes |
| | | | DCOM | | Yes |
| | | | | COM Storage Area | -- |
| | | | | DCOM Remote Access | -- |
| Minimum COM (OLE unsupported) | | | | -- | |
| | | | COM Storage Area | -- | |
| | | | CoCreateGuid Function For OLE32 | -- | |
| Voice Interface | Speech API (SAPI) 5.0 | | -- | | |
| Applications - End User | ActiveSync | | | Yes | |
| | | Pocket Outlook Database Sync | | -- | |
| | | File Sync | | Yes | |
| | | Receive Tray Sync | | Yes | |
| | CAB File Installer/Uninstaller | | | Yes | |
| | FLASH Update Sample Application | | | -- | |
| | Windows Messenger | | | -- | |
| | Game | Freecell | | -- | |
| | | Solitaire | | -- | |
| | Terminal Emulator | | | Yes | |
| | File Viewer | Microsoft Excel Viewer | | | -- |
| | | Microsoft Image Viewer | | | -- |
| | | Microsoft PDF Viewer | | | -- |
| | | Microsoft PowerPoint Viewer | | | -- |
| Microsoft Word Viewer | | | -- | | |
| Help | | | Yes | | |

Continue.

| | | | | |
|-------------------------|---------------------------|---|--|-----|
| Applications - End User | Remote Desktop Connection | Remote Desktop Protocol (RDP) | | Yes |
| | | | Audio Playback Redirect | -- |
| | | | Serial and Parallel Port Redirect | -- |
| | | | Smart Card Redirect | -- |
| | | | Printer Redirect | -- |
| | | | User Interface Dialog Box | Yes |
| | | | Cut/Copy/Paste Clipboard Redirect | Yes |
| | | | File Storage Area Redirect | Yes |
| | | Filtered File Storage Area Redirect | Yes | |
| | Word Pad | | Yes | |
| Receive Tray | | Yes | | |
| Core OS Services | PNP Notification | | | Yes |
| | USB Host Support | USB Human Input Device (HID) Class Driver | | Yes |
| | | | USB HID Keyboard and Mouse | -- |
| | | | USB HID Keyboard Only | -- |
| | | | USB HID Mouse Only | -- |
| | | USB Printer Class Driver | -- | |
| | | USB Remote NDIS Class Driver | -- | |
| | | USB Memory Location Class Driver | -- | |
| | | Internet Function (IABASE) Support | | |
| | Kernel Functions | FormatMessage API | | Yes |
| | | | FormatMessage API - System Error Message | Yes |
| | | Target Control Support (Shell.exe) | Yes | |
| | | Fiber API | Yes | |
| | | Message Queue - Point-To-Point | Yes | |
| | Memory Map File | Yes | | |
| | Serial Port Support | | | Yes |
| | Display Support | | | Yes |
| | Device Manager | | | Yes |

Continue.

| | | | | | | |
|---------------------------------------|----------------------------|--------------------------------------|-----------------------------------|--------------|-----|----|
| Core OS Services | Debug tool | LMemDebug Memory Device Hook | | -- | | |
| | | Keyboard Test Application | | -- | | |
| | | Touch Driver Test Application | | -- | | |
| | | Tool Hint API | | Yes | | |
| | | Remote Display Application | | -- | | |
| | | Small Kernel Test Sample Application | | -- | | |
| | Battery Driver | | | Yes | | |
| | Parallel Port Support | | | -- | | |
| | Notification (select one) | UI Base Notification | | Yes | | |
| | | Non-UI Base Notification | | -- | | |
| | Notification LED Support | | | Yes | | |
| | Power Control (select one) | Power Control (full) | | Yes | | |
| Power Control (minimum) | | -- | | | | |
| Communication Services and Networking | Server | FTP Server | | -- | | |
| | | RAS Server/PPTP Server (receive) | | -- | | |
| | | Simple Network | SNTP Client With DST | | Yes | |
| | | | Time Protocol (SNTP) | SNTP Server | | -- |
| | | SNTP Auto Update and Server Sync | | -- | | |
| | | Telnet Server | | | -- | |
| | | | | | Yes | |
| | | Web Server (HTTPD) | Web Server Control ISAPI | | -- | |
| | | | WebDAV Support | | -- | |
| | | | Active Server Page (ASP) Support | JScript 5.6 | | -- |
| | | | | VBScript 5.6 | | -- |
| | | Device Control ISAPI Extension | | | -- | |
| | | Web Proxy | | | -- | |
| | | Windows | Peer Name Resolve Protocol (PNRP) | | -- | |
| | | Peer-To-Peer Network | Personal Information Control | | -- | |
| | | Core Server Support | | | Yes | |
| | | File Server | | | -- | |
| | | | File Server Customizable UI | | -- | |
| | | Print Server | | | -- | |
| | | Guardian Implemented Restrictions | | | -- | |

Continue.

| | | | | | |
|---------------------------------------|---------------------------------------|---|---|--|-----|
| Communication Services and Networking | Network - Local Area Network (LAN) | Native Wi-Fi WLAN Access Point Component | | -- | |
| | | Native Wi-Fi WLAN STA | | Yes | |
| | | Wired Local Area Network (802.3, 802.5) | | Yes | |
| | | Wireless LAN (802.11) STA - Auto Configuration and 802.1x | | Yes | |
| | Network - Personal Area Network (PAN) | Bluetooth | Bluetooth HID Device Support | Bluetooth HID - Keyboard | -- |
| | | | | Bluetooth HID - Mouse | -- |
| | | | Bluetooth Profile Support | Bluetooth DUN - Gateway | -- |
| | | | | Bluetooth HS/HF and Audio Gateway Service | -- |
| | | | | Bluetooth LAP and Configuration Utility | -- |
| | | | | Bluetooth PAN | -- |
| | | Bluetooth Protocol Stack With Transport Driver Support | Bluetooth Stack With Universal Writable Driver | -- | |
| | | | Bluetooth Stack With Integrated CSR Chip Set Driver | -- | |
| | | | Bluetooth Stack With Integrated SDIO Driver | -- | |
| | | | Bluetooth Stack With Integrated UART Driver | -- | |
| | | | | Bluetooth Stack With Integrated USB Driver | -- |
| | | IrDA | | | Yes |
| | Network - Wide Area Network (WAN) | Telephony API (TAPI 2.0) | | Yes | |
| | | | Unimodem Support | Yes | |
| | | Ethernet Point-To-Point Protocol (PPPoE) | | Yes | |
| | | Dial Up Network (RAS/PPP) | | Yes | |
| | | | Standard Modem Support for Dial Up Network | Yes | |
| | | | Auto Dial | Yes | |
| | | Virtual Private Network | L2TP/IPSec | Yes | |
| PPTP | Yes | | | | |

Continue.

| | | | | | |
|---------------------------------------|-------------------|---|----------------------------------|----------------------|-----|
| Communication Services and Networking | Network Functions | IPSec v4 | | Yes | |
| | | NDIS Packet Capture DLL | | Yes | |
| | | NDIS User Mode I/O Driver | | Yes | |
| | | TCP/IP | | | Yes |
| | | | IP Help API | | Yes |
| | | TCP/IPv6 Support | | Yes | |
| | | USB Flash Configuration Tool | | -- | |
| | | Windows Network API/Redirect (SMB/CIFS) | | Yes | |
| | | Winsock Support | | Yes | |
| | | Internet | | | Yes |
| | | Connection Share (ICS) | | | Yes |
| | | | Gateway Log | | -- |
| | | Gateway User Interface Reference | | -- | |
| | | Domain Search | | Yes | |
| | | Network Driver Configuration (NDIS) | | Yes | |
| | | Network Bridge Function | | Yes | |
| | | Network Utility (IpConfig, Ping, Route) | | Yes | |
| | | Firewall | | -- | |
| | | Universal Plug and Play (UPnP) | UPnP Audio -Video DCP | AV Control Point API | -- |
| | | | | AV Device (API) | -- |
| | | | | AV Renderer Sample | -- |
| | | | UPnP Tool | | -- |
| | | | Control Point API | | -- |
| | | | Sample UPnP IGD Schemer Mounting | | -- |
| | | | Device Host API | | -- |
| | | Device Host API (minimum subset) | | -- | |
| | | Remote Configuration Framework | | -- | |
| | | Expansion DNS | | | Yes |
| | | Query and Update (DNSAPI) | | | Yes |
| | | | Security Protected DDNS | | -- |
| | | Expandable Authentication Protocol | | Yes | |

Continue.

| | | | | |
|-----------------------------|---|---|---|-----|
| File Systems and Data Store | System Password | | Yes | |
| | Database Support | | Yes | |
| | File system - Internal (select one) | File System Applicable for RAM and ROM | Yes | |
| | | File System Only Applicable for ROM | -- | |
| | Duplication of File and Database (select one) | Count Base | -- | |
| | | Bit Base | Yes | |
| | Registry Storage Area (select one) | Hive Base Registry | Yes | |
| | | RAM Base Registry | -- | |
| | Compression | | Yes | |
| | Storage Area Manager | | Yes | |
| | | | CD/UDFS File System | -- |
| | | | EDB Database Engine | Yes |
| | | | FAT File System | Yes |
| | | | Transaction Safe FAT File System (TFAT) | -- |
| | | Binary ROM Image File System | Yes | |
| | | Partition Driver | Yes | |
| | | Storage Area Manager Control Panel Applet | Yes | |
| Fonts | Arial | Arial (Subset 1_30) | -- | |
| | | Arial Black | -- | |
| | | Arial Bold | -- | |
| | | Arial Bold Italic | -- | |
| | | Arial Italic | -- | |
| | Comic Sans MS | Comic Sans MS | -- | |
| | | Comic Sans MS Bold | -- | |
| | Courier New | Courier New (Subset 1_30) | Yes | |
| | | Courier New Bold | -- | |
| | | Courier New Bold Italic | -- | |
| | | Courier New Italic | -- | |
| | Georgia | Georgia | -- | |
| | | Georgia Bold | -- | |
| | | Georgia Bold Italic | -- | |
| | | Georgia Italic | -- | |
| | Impact | | -- | |
| | Kino | | -- | |
| MSLogo | | -- | | |

Continue.

| | | | | | | |
|----------------|---|--------|---|-----------------------|---------------------|----|
| Fonts | Tahoma | | Tahoma (Subset 1_07) | Yes | | |
| | | | Tahoma Bold | -- | | |
| | Times New Roman | | Times New Roman (Subset 1_30) | Yes | | |
| | | | Times New Roman Bold | -- | | |
| | | | Times New Roman Bold Italic | -- | | |
| | | | Times New Roman Italic | -- | | |
| | Trebuchet MS | | Trebuchet MS | -- | | |
| | | | Trebuchet MS Bold | -- | | |
| | | | Trebuchet MS Bold Italic | -- | | |
| | | | Trebuchet MS Italic | -- | | |
| | Verdana | | Verdana | -- | | |
| | | | Verdana Bold | -- | | |
| | | | Verdana Bold Italic | -- | | |
| Verdana Italic | | | -- | | | |
| Webdings | | | -- | | | |
| Wingding | | | Yes | | | |
| Symbol | | | Yes | | | |
| International | Unicode Script Processor Supporting Complex Scripts | | | -- | | |
| | Local Service (select one) | | English (American) Only Support for Languages | -- | | |
| | | | Support for Languages (NLS) | Yes | | |
| | Local Specific Support | Arabic | Keyboard | Arabic Keyboard (101) | -- | |
| | | | | Font | Arial (Subset 1_08) | -- |
| | | | Arial Bold (Subset 1_08) | | -- | |
| | | | Courier New (Subset 1_08) | | -- | |
| | | | Tahoma (Subset 1_08) | | -- | |
| | | | Tahoma Bold (Subset 1_08) | | -- | |
| | | India | Kanarese | Keyboard | Kanarese Keyboard | -- |
| | | | | Font | Tunga | -- |
| | | | Gujarati | Keyboard | Gujarati Keyboard | -- |
| | | | | Font | Shruti | -- |
| | | | Tamil | Keyboard | Tamil Keyboard | -- |
| | | | | Font | Latha | -- |
| Telugu | | | Keyboard | Telugu Keyboard | -- | |
| | Font | | Gautami | -- | | |

Continue.

| | | | | | | |
|---------------|------------------------|--------------------|--------------|---|----------------------------|-----|
| International | Local Specific Support | India | Punjabi | Keyboard | Punjabi Keyboard | -- |
| | | | | Font | Raavi | -- |
| | | | Hindi | Keyboard | Hindi Traditional Keyboard | -- |
| | | | | Font | Mangal | -- |
| | | | Marathi | Keyboard | Marathi Keyboard | -- |
| | | | | Font | Mangal | -- |
| | | Thai | | Keyboard | Thai Kedmanee Keyboard | -- |
| | | | | Font | Tahoma (Subset 1_08) | -- |
| | | German | Input System | Transcriber Handwriting Recognition Application | | -- |
| | | French | Input System | Transcriber Handwriting Recognition Application | | -- |
| | | Hebrew | | Keyboard | Hebrew Keyboard | -- |
| | | | | Font | Arial (Subset 1_08) | -- |
| | | | | | Arial Bold (Subset 1_08) | -- |
| | | | | | Courier New (Subset 1_08) | -- |
| | | | | | Tahoma (Subset 1_08) | -- |
| | | | | Tahoma Bold (Subset 1_08) | -- | |
| | | English (Global) | Input System | Handwriting Recognition Engine (HWX) | | Yes |
| | | English (American) | Input System | Transcriber Handwriting Recognition Application | | Yes |

Continue.

| | | | | | | | |
|---|------------------------|--------------------|----------------------------------|---------------------------------|---|---------------------------|-----|
| International | Local Specific Support | Simplified Chinese | Agfa AC3 Font Compression | | -- | | |
| | | | GB18030 Data Conversion | | -- | | |
| | | | Font | SC_Song | | | -- |
| | | | | SimSun and NSimSun (select one) | SimSun and NSimSun | | -- |
| | | | | | SimSun and NSimSun (Subset 2_20) | | -- |
| | | | | | SimSun and NSimSun (Subset 2_50) | | -- |
| | | | | | SimSun and NSimSun (Subset 2_60) | | Yes |
| | | | | | SimSun and NSimSun (Subset 2_70) | | -- |
| | | | | | SimSun and NSimSun (Subset 2_80) | | -- |
| | | | | | SimSun and NSimSun (Subset 2_90) | | -- |
| | | | Input System Editor (select one) | Pocket IME | | | -- |
| | | | | | Double Spell Software Keyboard - Small | | -- |
| | | | | MSPY 3.0 for Windows CE | | | -- |
| | | | | | MSPY 3.0 Database for WindowsCE (select one) | 1.1MB - Minimum Database | -- |
| | | | | | | 1.3MB - Compact Database | -- |
| | | | | | | 1.7MB - Standard Database | -- |
| | | | | | Double Spell (Shuang Pin) Software Keyboard - Large | | -- |
| Double Spell (Shuang Pin) Software Keyboard - Small | | -- | | | | | |

Continue.

| | | | | | | |
|---------------|------------------------|----------|---------------------------|--------------------------------------|---|-----|
| International | Local Specific Support | Korean | Agfa AC3 font compression | | -- | |
| | | | Font | Gulim (GL_CE) | -- | |
| | | | | Gulim and GulimChe (select one) | Gulim and GulimChe (Subset 1_30) | -- |
| | | | | | Gulim and GulimChe (Subset 1_40) | Yes |
| | | | | | Gulim and GulimChe (Subset 1_50) | -- |
| | | | | | Gulim and GulimChe (Subset 1_60) | -- |
| | | | Input System | Korean Software Keyboard Sample | | -- |
| | | | | Handwriting Recognition Engine (HWX) | | -- |
| | | | | | MboxKOR HWX Sample UI | -- |
| | | | Input System Editor | IME 97 | | -- |
| | | Japanese | Agfa AC3 Font Compression | | -- | |
| | | | Font | MS Gothic (select one) | MS Gothic, MS P Gothic and MS UI Gothic | Yes |
| | | | | | MS Gothic, MS P Gothic and MS UI Gothic (Subset 1_50) | -- |
| | | | | | MS Gothic, MS P Gothic and MS UI Gothic (Subset 1_60) | -- |
| | | | | | MS Gothic, MS P Gothic and MS UI Gothic (Subset 1_70) | -- |
| | | | | | MS Gothic, MS P Gothic and MS UI Gothic (Subset 1_80) | -- |
| | | | | | MS Gothic, MS P Gothic and MS UI Gothic (Subset 1_90) | -- |
| | | | | | MS Gothic and MS P Gothic (Subset 30) | -- |
| | | | | | MS Gothic and MS P Gothic (Subset 30_1_19) | -- |
| | | | MS Mincho and MS P Mincho | | -- | |

Continue.

| | | | | | | | |
|------------------------------------|------------------------|---|----------------------------------|---|---|------------------|-----|
| International | Local Specific Support | Japanese | Input System | Kana Keyboard | | Yes | |
| | | | | View of All Characters | | -- | |
| | | | | Alphanumeric/English Software Keyboard | | Yes | |
| | | | | Stroke Count Search | | -- | |
| | | | | Handwriting Recognition Engine (HWX) | | | Yes |
| | | | | | Multibox HWX Sample UI | | Yes |
| | | | | | Character Auto Complete - HWX Sample UI | | Yes |
| | | | | Radical Search | | -- | |
| | | | Input System Editor (select one) | IME 3.1 | | | -- |
| | | | | | IME 3.1 Database (select one) | Compact Database | -- |
| | | Standard Database | | | | -- | |
| | | Optional UI Component | | System Tray Icon Manager | | -- | |
| | | | | Property Dialog Box | | -- | |
| | | | | [Detail Settings] Dialog Box (transverse mode only) | | -- | |
| | | | | Dictionary Tool | | -- | |
| | | Pocket IME (select additional database) | | Yes | | | |
| | | Personal-Local Name Dictionary | | Yes | | | |
| | | Appended Dictionary | | Yes | | | |
| | | Test IME | | -- | | | |
| | | Traditional Chinese | Agfa AC3 Font Compression | | -- | | |
| | | | Font | MingLiU and PMingLiU (select one) | MingLiU and PMingLiU | -- | |
| | | | | | MingLiU and PMingLiU (Subset 2_70) | -- | |
| | | | | | MingLiU and PMingLiU (Subset 2_80) | Yes | |
| MingLiU and PMingLiU (Subset 2_90) | -- | | | | | | |
| MS Ming | | | -- | | | | |

Continue.

| | | | | | | | |
|-----------------------------------|---|---------------------|---------------------|--------------------------------------|-----------------------|----|-----|
| International | Local Specific Support | Traditional Chinese | Input System | Handwriting Recognition Engine (HWX) | MboxCHT HWX Sample UI | -- | |
| | | | | Phonogramic Input (Bopomofo) | | -- | |
| | | | | Radical Input (Chang Jei) | | -- | |
| | | | Input System Editor | Pocket IME | -- | | |
| | Input System Manager (IMM) | | | | | | Yes |
| Multilingual User Interface (MUI) | | | | | | -- | |
| Internet Client Services | Pocket Internet Explorer HTML View (WEBVIEW) | | | | | | Yes |
| | | | | | | | Yes |
| | Internet Explorer HTML Application | | | | | | Yes |
| | Internet Explorer Theme Library | | | | | | Yes |
| | Internet Explorer Plug In Image Decoder API | | | | | | Yes |
| | Internet Explorer PNG Image Decoder | | | | | | Yes |
| | Filter and Translation | | | | | | Yes |
| | Internet Explorer RPC Support | | | | | | Yes |
| | | | | | | | Yes |
| | Internet Explorer TV Style | | | | | | Yes |
| | Customizable Font Range | | | | | | Yes |
| | Fixed Width Layout | | | | | | Yes |
| | Disable Vertical Scroll Bar and Event | | | | | | Yes |
| | Direction Tab | | | | | | Yes |
| | Internet Explorer Browser Control Host | | | | | | Yes |
| | Basic API Supporting Multilingual Internet Explorer | | | | | | Yes |
| | Full API Support for Multilingual Internet Explorer | | | | | | Yes |
| | Character Set/Encode of Options in Registry | | | | | | Yes |
| | URL Moniker Service | | | | | | Yes |
| | | | | | | | Yes |
| | Windows Internet Service | | | | | | Yes |
| | P3P (Platform for Privacy Preferences) | | | | | | Yes |
| | Passport SSI 1.4 Authentication | | | | | | Yes |
| | XML MIME Viewer | | | | | | -- |
| | XML Data Island | | | | | | -- |
| | Control Panel's [Internet Option] | | | | | | Yes |

Continue.

| | | | | | |
|-------------------------------|---------------------------|--|--|-------------|-----|
| Internet Client Services | Script | JScript 5.6 | | Yes | |
| | | | Script Encode (Jscript) | Yes | |
| | | | Script Authoring (Jscript) | Yes | |
| | | VBScript 5.6 | | Yes | |
| | | | MagBox and InputBox Support | Yes | |
| | | | Script Encode (VBScript) | Yes | |
| | | Script Authoring (VBScript) | Yes | | |
| | Browser Application | Pocket Internet Explorer | | -- | |
| | | Internet Explorer 6.0 for WindowsCE - Standard Component | | Yes | |
| | | | Internet Explorer 6.0 Sample Browser | Yes | |
| TV Style Navigation Component | | | Yes | | |
| Multimedia Technologies | Audio | Waveform Audio | | Yes | |
| | | Audio Compression Manager | | Yes | |
| | | | GSM 6.10 Codec | Yes | |
| | | | MSFilter Codec | Yes | |
| | Graphics | AlphaBlend API (GDI Version) | | -- | |
| | | Direct3D Mobile | | -- | |
| | | DirectDraw | | Yes | |
| | | V1 Font Compatibility | | -- | |
| | | Imaging | Static Image Codec Support (Encode and Decode) | | Yes |
| | | | Static Image Encoder | BMP Encoder | Yes |
| | | | | GIF Encoder | Yes |
| | | | | JPG Encoder | Yes |
| | | | | PNG Encoder | Yes |
| | | | Static Image Decoder | BMP Decoder | Yes |
| | | | | GIF Decoder | Yes |
| | | | | ICO Decoder | Yes |
| | | | | JPG Decoder | Yes |
| | | | | PNG Decoder | Yes |
| | Gradation Support | | Yes | | |
| | Rasta Font Support | | -- | | |
| | Multiple Monitors Support | | -- | | |

Continue.

| | | | | | |
|-------------------------|-------|------------------------------|----------------------------------|---|-----|
| Multimedia Technologies | Media | DirectShow | ACM Wrapper Filter | Yes | |
| | | | DirectShow Error Message | -- | |
| | | | DirectShow Core | Yes | |
| | | | DirectShow Display | Yes | |
| | | | DMO Wrapper Filter | Yes | |
| | | DVD - Video | DVD - Video | -- | |
| | | | DVD - Video Sample | -- | |
| | | Windows Media Player | Windows Media Technology | Windows Media Player | Yes |
| | | | | Windows Media Player OCX | Yes |
| | | | | | Yes |
| | | | | ASX v1 and M3U File Support | Yes |
| | | | | ASX v2 File Support | Yes |
| | | | | ASX v3 File Support | Yes |
| | | | | HTTP Windows Media Streaming | Yes |
| | | | | MMS Windows Media Streaming | Yes |
| | | | | NSC File Support | Yes |
| | | | | Windows Media Multi Cast and Multi Bit Rate | Yes |
| | | | | Windows Media Streaming From Local Storage Area | Yes |
| | | WMA and MP3 Streaming | | | Yes |
| | | WMA and MP3 Local Playback | | | Yes |
| | | Audio Codec and Renderer | G711 Audio Codec | Yes | |
| | | | GSM.6.10 Audio Codec | Yes | |
| | | | IMA ADPCM Audio Codec | Yes | |
| | | | MP3 Codec | Yes | |
| | | | MPEG-1 layer 1 and 2 Audio Codec | Yes | |
| | | | MS ADPCM Audio Codec | Yes | |
| | | | Wave/AIFF/au/snd File Parser | Yes | |
| | | | Waveform Audio Renderer | Yes | |
| | | | WMA Codec | Yes | |
| | | WMA Voice Codec | Yes | | |
| | | Streaming Media Playback | | | -- |
| | | Digital Copyright Management | Digital Rights Management (DRM) | -- | |
| | | | DRM License Acquisition OCX | -- | |
| Portable Device DRM | -- | | | | |

Continue.

| | | | | | |
|--------------------------|---|---------------------------------------|---|-----|-----|
| Multimedia Technologies | Media | Video Codec and Renderer | DirectShow Video Renderer | Yes | |
| | | | MPEG-1 Video Codec | Yes | |
| | | | MS RLE Video Codec | Yes | |
| | | | WMV/MPEG-4 Video Codec | Yes | |
| | | | Overlay Mixer | -- | |
| | | | Video/Image Compression Manager | Yes | |
| | | Media Format | AVI Filter | Yes | |
| | | | MPEG-1 Passer/Splitter | Yes | |
| Security | Microsoft Certificate Registration Tool Sample | | | Yes | |
| | Local Authentication Subsystem | | | Yes | |
| | | Password Local Authentication Plug in | | Yes | |
| | Powerful Encrypting Provider's Encrypting Service (CryptoAPI 1.0) | | | Yes | |
| | | Diffie-Hellman/DSS Provider | | Yes | |
| | | Smart Card Encryption Provider | | -- | |
| | | Certificate (CryptoAPI 2.0) | | | Yes |
| | | | Personal Information Exchange Standard (PKCS #12) | | Yes |
| | Encryption Messaging (PKCS #7) | | Yes | | |
| | Capability Information Manager | | | Yes | |
| | Authentication Service (SSPI) | | | Yes | |
| Kerberos | | Yes | | | |
| NTLM | | Yes | | | |
| Schannel (SSL/TLS) | | Yes | | | |
| Shell and User Interface | Graphics, Windowing and Event | Minimum GDI Configuration | | Yes | |
| | | Minimum GWES Configuration | | Yes | |
| | | Minimum Window Manager Configuration | | Yes | |
| | | Minimum Input Configuration | | Yes | |
| | Shell | AYGShell API Set | | Yes | |
| | | Graphic Shell (select one) | Windows Thin Client Shell | -- | |
| | | | Standard Shell | Yes | |
| | | Command Shell | Command Processor | Yes | |
| | | | Console Window | Yes | |

Continue.

| | | | | | |
|--------------------------|---|--|--|----------------------|-----|
| Shell and User Interface | User interface | Quarter VGA Resource Longitudinal Mode | | Yes | |
| | | Overlap Menu | | -- | |
| | | Controls Option B | | -- | |
| | | Customizable UI | Sample Skin Resembling Windows XP screen | | -- |
| | | Control Panel Applet | | Yes | |
| | | Software Input Panel | Software Base Input Panel (SIP) (select one or more) | SIP for Small Screen | Yes |
| | | | | SIP for Big Screen | -- |
| | | Software Base Input Panel Driver | | Yes | |
| | | Touch Screen (stylus) | | Yes | |
| | | Network User Interface | | Yes | |
| | | Mouse | | -- | |
| | | Menu Hint | | Yes | |
| | | User Aid | | -- | |
| | | Shared Control | Animation Control | -- | |
| | | | Shared Control | Yes | |
| Shared Dialog Support | | Yes | | | |
| Voip Service | PC Authentication | | -- | | |
| | VoIP Application Interface Layer (VAIL) | | -- | | |
| | | Phone Provisioner | -- | | |
| | | VAIL Database Store | -- | | |
| | | Reference Media Manager | -- | | |
| | Telephony User Interface | | -- | | |
| | Real Time Communication (RTC) Client API | SIREN/G.722.1 Codec | -- | | |
| Phone IME | | -- | | | |
| Device Manager | Device Management Client | | -- | | |
| | Simple Network Management Protocol (SNMP) | | -- | | |
| WCE Error Report | Error Report Control Panel | | Yes | | |
| | Error Report Formation Program | | Yes | | |
| | Error Report Transfer Driver | | Yes | | |
| | Report Upload Client | | -- | | |
| | Report Upload Client User Interface | | -- | | |

2.1.2. Displays

Basic Specifications

The QVGA (320 x 240 dots) mode and the VGA (480 x 640 dots) mode are supported for the terminal. The control panel can be used to switch between the VGA and QVGA modes, and the switching the display mode is initiated when a reset is performed.

Table 2.2

| | | |
|-----------------------|-------------|---|
| Display specification | | 65,536 colors 2-way TFT (16 bpp, Red: 5 bits, Green: 6 bits, Blue: 5 bits) |
| Display size | X direction | 480 dots |
| | Y direction | 640 dots |

Switching between VGA and QVGA display modes

The control panel can be used to switch between the VGA and QVGA modes. Switching the display mode is initiated after performing a reset.

Changing the value in the following registry can also switch the display mode to either mode. See the table below for the value to change in the registry.

[HKEY_LOCAL_MACHINE\Drivers\Display\Intel]

Table 2.3

| Key | Setting Value | |
|----------|---------------|-------------|
| | VGA | QVGA |
| CXSCREEN | DWORD : 480 | DWORD : 240 |
| CYSCREEN | DWORD : 640 | DWORD : 320 |

Backlight brightness

A brightness of the backlight can be changed in the control panel.

- Setting can be made in one of nine grades for power source either when the power is provided by an external power supply (via cradle with AC adaptor connected) or when the power is provided by the installed lithium-ion battery pack.
- Setting can be made in application by using **ExtEscape()API** function.
- If the brightness is set to 1 (minimum), the backlight is turned off.
- The default is 9 (maximum) when an external power source is used or 7 when lithium-ion battery pack is used.

Backlight Auto Dimming

The control panel can be used to set up whether or not the auto dimming function will be used and the waiting time until when dimming begins. Auto dimming is enabled only when the power is provided by the lithium-ion battery pack. It will not function when an external power supply is used.

- If the terminal is left over in idle state - absolutely no key input or touching on the touch panel - while the power is turned on, the backlight will be automatically dimmed to save the power after a given period of time has been elapsed.
- When the terminal is in the auto dimmed state, a press of key or a touching on the touch panel will disable the auto dimming function to resume the brightness.
- While the auto dimming function has been set enabled, a brightness can be set in one of eight grades. The default is 3.

During the auto dimming function being set enabled, brightness cannot be set any brighter than the brightness illuminated by the backlight. The defaults are “Enable the auto dimming function” and “1 minute” for waiting time period until when the auto dimming function activates.

Auto Backlight OFF

The control panel can be used to set up whether or not the auto backlight off function will be used and the waiting time until when the auto backlight off function activates. The auto backlight off function is operable for both when the power is provided by an external power source and when it is provided by lithium-ion battery pack.

- If the terminal is left over in idle state - absolutely no key or touch panel inputting - with the power being turned on, the backlight will be automatically turned off to save energy.
- When the terminal is in the auto backlight off state, a press of key or a touching on the touch panel will disable the auto backlight off function to resume the brightness.
- While the power is being provided by lithium-ion battery pack and both the auto dimming function and the auto backlight off function have been set enabled, either one of the functions with preset time period shorter than the other will have the priority. The default is “Enable the auto backlight off function” and “5 minutes for the waiting time” until when the auto backlight off function activates.

Rotating Display

The rotate display function for rotating the screen at 90, 180 or 270 degree is supported. When the screen is rotated, the touch panel coordinates system rotates in unison.

- The device control library can be used to set up this display rotation feature in the application.
- **ChangeDisplaySettingEx() API** function can be used to set up this display rotation feature in application.

See Microsoft Help for details about **ExtEscape()** and **ChangeDisplaySettingEx() API** functions.

2.1.3. Keys

Keyboard Layout

The following is the keyboard layout employed in the IT-600.



Fig. 2.1

Key Assignments

The following are the key codes and functions assignments.

Table 2.4 Control keys

| KEY | Input mode | Operation | Remarks |
|-----|-----------------------------|--|---|
| Fn | ---- | Specialized key operation (toggle) | Fn mode is released when a key input is made. |
| A | Character input mode | Input mode switchover Numeric → Alphabet (U) → Alphabet (L) → Phone | |
| | Function key mode | Input mode switchover Numeric → Phone → Alphabet (L) → Alphabet (U) | |
| CLR | Character input mode | l | Deletes 1 character to the left. |
| | | A | Deletes 1 character to the left. |
| | | a | Deletes 1 character to the left. |
| | | P | Deletes 1 character to the left. |
| | Function mode | F | Perform as “ESC operation”. |
| ↵ # | Character input mode | l | Perform as “Enter key”. |
| | | A | Perform as “Enter key”. |
| | | a | Perform as “Enter key”. |
| | | P | Perform as “#”. |
| | Function mode | F | Perform as “Shift and Enter keys”. |
| ↑ | Character input mode | l | Perform as “Cursor up key”. |
| | | A | Perform as “Cursor up key”. |
| | | a | Perform as “Cursor up key”. |
| | | P | Perform as “Cursor up key”. |
| | Function mode | F | Perform as “Shift and TAB keys”. |
| ← | During character input mode | l | Perform as “Cursor left key”. |
| | | A | Perform as “Cursor left key”. |
| | | a | Perform as “Cursor left key”. |
| | | P | Perform as “Cursor left key”. |
| | Function mode | F | Perform as “Cursor left key”. |
| → | Character input mode | l | Perform as “Cursor right key”. |
| | | A | Perform as “Cursor right key”. |
| | | a | Perform as “Cursor right key”. |
| | | P | Perform as “Cursor right key”. |
| | During Function mode | F | Perform as “Cursor right key”. |
| ↓ | Character input mode | l | Perform as “Cursor down key”. |
| | | A | Perform as “Cursor down key”. |
| | | a | Perform as “Cursor down key”. |
| | | P | Perform as “Cursor down key”. |
| | Function mode | F | Perform as “TAB key”. |

Table 2.5 Trigger key

| | | | | |
|----------------|----------------------|---|---------------------------|--|
| Center trigger | Character input mode | 1 | Perform as “Trigger key”. | |
| | | A | Perform as “Trigger key”. | |
| | | a | Perform as “Trigger key”. | |
| | | P | Perform as “Enter key”. | |
| | Function mode | F | Perform as “Trigger key”. | |

Table 2.6 Ten key

| KEY | Input mode | | Operation | Remarks |
|-----|----------------------|---|-----------------------------------|------------|
| 0 | Character input mode | 1 | Perform as “0”. | |
| | | A | Perform as “- /^\&=+\$%#* space”. | |
| | | a | Perform as “- /^\&=+\$%#* space”. | |
| | | P | Perform as “0”. | |
| | Function mode | F | Display or not display SIP. | |
| 1 | Character input mode | 1 | Perform as “1”. | |
| | | A | Perform as “?!()<[]{}”. | |
| | | a | Perform as “?!()<[]{}”. | |
| | | P | Perform as “1”. | |
| | Function mode | F | Turn on or off the backlight. | |
| 2 | Character input mode | 1 | Perform as “2”. | |
| | | A | Perform as “ABC”. | |
| | | a | Perform as “abc”. | |
| | | P | Perform as “2”. | |
| | Function mode | F | | No effect. |
| 3 | Character input mode | 1 | Perform as “3”. | |
| | | A | Perform as “DEF”. | |
| | | a | Perform as “def”. | |
| | | P | Perform as “3”. | |
| | Function mode | F | | No effect. |
| 4 | Character input mode | 1 | Perform as “4”. | |
| | | A | Perform as “GHI”. | |
| | | a | Perform as “ghi”. | |
| | | P | Perform as “4”. | |
| | Function mode | F | Initiate the calibration. | |
| 5 | Character input mode | 1 | Perform as “5”. | |
| | | A | Perform as “JKL”. | |
| | | a | Perform as “jkl”. | |
| | | P | Perform as “5”. | |
| | | F | Darken the backlight. | |
| 6 | Character input mode | 1 | Perform as “6”. | |
| | | A | Perform as “MNO”. | |
| | | a | Perform as “mno”. | |
| | | P | Perform as “6”. | |
| | Function mode | F | Brighten the backlight. | |

Continue.

| | | | | |
|---|----------------------|---|---|--|
| 7 | Character input mode | 1 | Perform as “7”. | |
| | | A | Perform as “PQRS”. | |
| | | a | Perform as “pqrs”. | |
| | | P | Perform as “7”. | |
| | Function mode | F | Initiate application registered in the registry below. [HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD] Fn7LaunchPaht:sz (path of the application to be initiated) | |
| 8 | Character input mode | 1 | Perform as “8”. | |
| | | A | Perform as “TUV”. | |
| | | a | Perform as “tuv”. | |
| | | P | Perform as “8”. | |
| | Function mode | F | Initiate application registered in the registry below. [HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD] Fn8LaunchPaht:sz (path of the application to be initiated) | |
| 9 | Character input mode | 1 | Perform as “9”. | |
| | | A | Perform as “WXYZ”. | |
| | | a | Perform as “wxyz”. | |
| | | P | Perform as “9”. | |
| | Function mode | F | Initiate application registered in the registry below [HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD] Fn9LaunchPaht:sz (path of the application to be initiated) | |
| . | Character input mode | 1 | Perform as “.”. | |
| | | A | Perform as “@, ””” ;~ ”. | |
| | | a | Perform as “@, ””” ;~ ”. | |
| | | P | Perform as “*”. | |
| | Function mode | F | Perform as “-”. | |

Key Input Mode Switchover

The **A** key on the keyboard can be used to change the key input mode.

Indication of Key Input Mode

Key input mode currently specified appears in the task tray. The modes that can be displayed are “L” as Lock, “F” as function, “1” as numeral, “A” as alphabets in uppercase, “a” as alphabets in lowercase, and “P” as telephone.

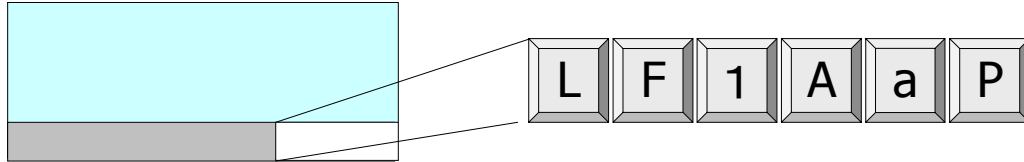


Fig. 2.2

Turnover Key Auto Confirmation

After inputting a turnover key, if the preset time period has been elapsed from the time when the turnover key is released, the turnover character input will be automatically made. The control panel can be used to set up “enable” or “disable” for the auto confirmation on the turnover character input and to set up the time period until when its confirmation is made.

Key Repeat

Continued pressing of any of “0” to “9”, “↑”, “←”, “→”, and “↓” keys will repeat the key input.

Key Click Sound

The key click sound is generated when a key is pressed. However, it is not generated when the key is released or in mid-course of repeating the key input. The control panel can be used to set up the sound to mute, low or loud.

Enabling/Disabling Fn Key

For keys that perform specialized operations while the key input mode has been set to Function mode, “Enable” or “Disable” can be set on each individual key in the registry below to control the operations.

[HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD]

Table 2.7

| Key | Setting Value | Meaning |
|------------|---------------|----------------|
| DisableFn9 | dword: 0/1 | Enable/Disable |
| DisableFn8 | dword: 0/1 | Enable/Disable |
| DisableFn7 | dword: 0/1 | Enable/Disable |
| DisableFn6 | dword: 0/1 | Enable/Disable |
| DisableFn5 | dword: 0/1 | Enable/Disable |
| DisableFn4 | dword: 0/1 | Enable/Disable |
| DisableFn3 | dword: 0/1 | Enable/Disable |
| DisableFn2 | dword: 0/1 | Enable/Disable |
| DisableFn1 | dword: 0/1 | Enable/Disable |
| DisableFn0 | dword: 0/1 | Enable/Disable |

Note:

Perform a reset on the terminal to make the changes in the registry to be reflected in the actual operations.

Function Mode Notification

When the Fn key is pressed, the WM_USER+0x502 message is issued to the application. This enables the application to detect whether the Function mode has been set up enabled or disabled.

Enable/Disable the **A** Key

The device library can be used to make the setting on “Enable” or “Disable” for switching over the key input mode in application.

A Key Notification

When the **A** key is pressed, the WM_USER+0x506 message is issued to the application. Using this notification, the application can detect whether the key input mode has been changed.

Permit/Prohibit Key Locks

The device library can be used to permit or prohibit the operations of keys except for the Power and Trigger keys.

User Settable Keys

- Initiating application

The following registry can be used to assign any application to the Fn+7, Fn+8 and Fn+9 keys.

[HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD]

Table 2.8

| Key | Setting Value |
|---------------|---|
| Fn7LaunchPath | sz: Target application in full path to initiate |
| Fn8LaunchPath | sz: Target application in full path to initiate |
| Fn9LaunchPath | sz: Target application in full path to initiate |

- Setting key codes

The device control library can be used to assign any key code to all the keys except the Fn key.

Setting on “Enable” or “Disable” for assigning key code is possible either using the device control library or at the control panel.

The key codes after setting are valid only when the numeral input mode is set enabled.

2.1.4. Touch Panel

An input can be made into any portion of the screen on the touch panel. The touch panel has the following resolutions.

Table 2.9

| | | |
|------------|-------------|----------|
| Resolution | X direction | 480 dots |
| | Y direction | 640 dots |

- Capturing touch coordinates, X and Y directions, and controlling the pointing are possible by application.
- Prior to using the touch panel for the first time, calibrating the touch panel is required.

Tap Sound

The control panel can be used to set up the tap sound to mute, low or loud.

Tap and Hold

By tapping and holding onto a specific object on the screen, the related pop-up menu will appear.

Rotating Touch Panel Coordinates

When the screen is rotated, the coordinates of the touch panel will also rotate in unison.

Enable/Disable Touch Panel

The touch panel control library can be used to set up “Enable” or “Disable” for operating the touch panel.

Touch Panel Calibration

Calibration on the touch panel can be initiated either using the Welcome wizard appeared after full reset or by pressing simultaneously Fn and 4 keys.

The touch panel may require periodical calibration if it slipped off due to aged deterioration, voltage fluctuation and/or temperature change, etc. If it does, adjust the calibration using one of the methods.

2.1.5. Audio

Basic Specifications

WAV playback, voice recording and shutter sound playback are supported.

When headphones are being used, playback from the speaker is halted. Stereo data is converted into mono data and then output. By using the Microsoft **SoftwareMixer** function, output sounds from multiple applications can be mixed and output (in 44.1 KHz, 16-bit stereo mixing).

Voice Recorder and Media Player are integrated in the terminal as the sound system application to make it possible to perform audio and video file streaming playback and local file playback in HTTP. The terminal supports WAV, MP3, WMA, WMV and MPEG4 (including MPEG2) standards.

Playback

Table 2.10

| | | | | | | | | | | |
|--|---|-----|--------|-----|-----|-------|-----|-----|------|-----|
| Sampling frequencies | KHz | 8 | 11.025 | 12 | 16 | 22.05 | 24 | 32 | 44.1 | 48 |
| | Mono | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | Stereo | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Sampling frequencies other than those above are not supported. | | | | | | | | | | |
| Stereo/Mono | 8-bit or 16-bit In reality, mono speakers do not playback in stereo. | | | | | | | | | |

Recording

Table 2.11

| | | | | | | | | | | |
|----------------------|--|-----|--------|-----|-----|-------|-----|-----|------|-----|
| Sampling frequencies | KHz | 8 | 11.025 | 12 | 16 | 22.05 | 24 | 32 | 44.1 | 48 |
| | Mono | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | Sampling frequencies other than those above are not supported. | | | | | | | | | |
| Stereo/Mono | 8-bit or 16-bit Mono input only via microphone | | | | | | | | | |

Shutter Sound Output

Shutter sound is forced to output from the speaker to prevent video voyeurism when the camera is used. The sound cannot be disabled and is output at a fixed volume range. Adjusting the sound volume is not possible.

The sound will be output from the speaker even if headphones are connected, and forced to output even if other sound is being played (the other sound is disabled).

Setting Sound Volume

The control panel can be used to set up sound volume in six grades from loud to low and ON/OFF of mute. Note, however, that the shutter sound setting is not allowed to change. A sound volume also can be set up using **Win32 API** function in application.

Audio ON/OFF

The audio system can be disabled to save the power. Enable/Disable for the audio system in the terminal is controlled using the device control library in application.

2.1.6. Buzzer

Basic Specifications

The buzzer can be used to output various sounds such as scanning confirmation, key click, tapping, alarm, warning and any other available sounds.

The buzzer sounds are not output to the headphones. To output them to the headphones, instead of the buzzer sound, use **PlaySound() API** function which uses the audio driver. The sounds have the following six attributes and default values.

Table 2.12

| | Frequency (Hz) | Time (ms) | Individual Mute | Attribute |
|-----------------------|----------------|-----------|-----------------|-----------|
| Tap sound | 2600 | 25 | ON/OFF | B_TAP |
| Key click sound | 2800 | 50 | ON/OFF | B_CLICK |
| Alarm sound | 3500 | 150 | ON/OFF | B_ALARM |
| Warning sound | 3000 | 100 | ON/OFF | B_WARNING |
| Scan end sound | 3300 | 75 | ON/OFF | B_SCANEND |
| User designated sound | — | — | ON/OFF | B_USERDEF |

Setting Volume

The control panel can be used to set up volume in three grades from loud, medium and low and ON/OFF of mute. Setting the volume is also possible using the device control library in application.

2.1.7. Memory Management

RAM

The integrated RAM has a total capacity of 64 Mbytes and is used for the following purposes.

- Program memory to be used by the OS and programs.
- Object store used for temporary file saving, etc.
- Other program and OS resident areas beyond the control by the OS
- Buffers for display and camera
- Driver work area

The OS runs after it is loaded in the RAM. For this reason, in comparison to other systems, it takes time to load the OS into the RAM area when a full reset on the terminal is performed.

The user can make unrestricted use with the object store, but data stored in it may be lost due to battery exhaustion, etc. To avoid such incident it should be used just as a temporary storage area, and use FlashDisk to store important data files.

Table 2.13 Initial memory status

| Memory | Initial Status | |
|-------------------------|-------------------------|--------------|
| Program memory capacity | Total capacity; 31.1 MB | 15.5 MB used |
| Object store capacity | Total capacity; 15.4 MB | 0.3 MB used |

- Of the 64Mbytes of RAM, apart from the above, it is used for OS resident area, buffers for display and camera and driver work.
- In the initial status, some part of the OS is loaded in the RAM. And when Internet Explorer, etc., is initiated, the used capacity increases.
- In a situation where there is a small open area in the program memory capacity, but a large user application, the control panel can be used to reallocate the memory capacity. However, in this case, back up for the setting after the change made for allocating the memory capacity is not possible. If backup for the setting made on the control panel is required, use a tool released by CASIO.

FlashDisk

The Flash Disk has 128MB as its total capacity which includes for the controller. 64MB of the 128MB are used as the OS binary area, and the rest are kept free as user area and can be accessed as FlashDisk folder. The user area can be freely used to read and write data such as applications, master data and transaction data.

The Flash Disk different from RAM does not require a power to back up data in the disk, so data is not lost even if the terminal's memory backup battery is exhausted. Be sure to back up important data files in the RAM to the Flash Disk.

The storage manager in the control panel is used for formatting and its management for the Flash Disk. It is approximately 29.50MB when the default settings are used to format on the disk. (The size may alter depending on the Flash Disk conditions.)

If the disk cannot be recognized, it is automatically formatted. This failure to recognize the disk may not mount the disk itself. The failure does not allow the storage manager in the control panel to perform formatting, and consequently there is no way of mounting the disk again.

To avoid this difficulty, the disk is automatically formatted if it cannot be recognized at time of resetting. Prior to starting the formatting, a message will appear to ask the user "Yes" or "No" to continue.

BootROM

The BootROM is to store the boot loader and check program. A part of the area is used to store security information (ex. a device ID) and battery voltage detection data, not for writing data.

2.1.8. LED

Basic Specifications

There are two LEDs integrated in the terminal, one for the user notification on the right and the other for charging the battery complete on the left.

Table 2.14

| LED | Color | Description |
|----------------|----------|---|
| Right-side LED | Red | User notification (alarm)/Scanning a bar code |
| | Green | Scanning a bar code |
| | Blue | Connection established via Bluetooth |
| | Orange | Connection established via WLAN |
| | Purple | None |
| | Sky blue | None |
| Left-side LED | Red | Charging battery pack |
| | Green | Charging battery pack complete |

Notes:

- The user notification LED can be used to indicate various notifications by the OS and other notifications defined by the user.
- All colors available in the LEDs are indicated by using the device control library.
- The charging battery complete LED cannot be controlled for its ON/OFF state with software.

User Notification (Alarm)

This indication mode is used for alarm notification, etc. The LED can be lit for a specific time using **CeSetUserNotification(API)** function.

Table 2.15 Specifications

| Operating mode | Specification |
|--------------------|--|
| Blink interval | ON for 1 second in red, OFF for 2 seconds |
| Continuous ON time | ON for 30 minutes (OFF when VDET is detected.) |

Note:

Indication for scanning a bar code has the priority over other indications.

Scanning

This is used for notification of a scanning result which is controlled by use of the device control library.

Table 2.16 Specifications

| Operating mode | Specification | Attribute |
|-------------------|---|-----------|
| Scanning complete | ON in green for a specified period of time, then OFF. | L_SCANOK |
| Scanning in error | ON in red for a specified period of time, then OFF. | L_SCANERR |

Bluetooth Connection Status

This is used for notification of Bluetooth connection establishment status which is controlled by use of the device control library.

Table 2.17 Specifications

| Operation mode | Specification | Attribute |
|-----------------------|--|-----------|
| Bluetooth established | ON in blue for 1 second, OFF for 2 seconds | L_BT |

Note:

Indication for scanning a bar code has the priority over other indications.

WLAN Connection Status

This is used for notification of WLAN connection establishment status which is controlled by use of the device control library.

Table 2.18 Light up specifications

| Operation mode | Specification | Attribute |
|------------------|--|-----------|
| WLAN established | ON in orange for 1 second, OFF for 2 seconds | L_WLAN |

Note:

Indication for scanning a bar code has the priority over other indications.

User Definition

This indication mode is used for other notifications freely defined by the user. The ON/OFF state can be controlled by use of the device control library.

Table 2.19 Specifications

| Operation mode | Specification |
|---------------------------|---|
| User definition | Color selection from green, blue, orange, purple or sky blue. |
| | Programmable for ON and OFF time periods |
| Continuous ON time period | 30 minutes (OFF when VDET is detected) |

Note:

Indication for scanning a bar code has the priority over other indications.

2.1.9. Vibrator

Basic Specifications

The vibrator can be set up for five different occasions.

Table 2.20

| Occasion | Vibration Pattern | Setting | Default |
|--------------------------|-------------------|---------|---------|
| Alarm | Default | ON/OFF | OFF |
| Warning | Default | ON/OFF | OFF |
| Barcode scan complete | Default | ON/OFF | OFF |
| Wireless incoming signal | Default | ON/OFF | OFF |
| User definition | User | ON/OFF | OFF |

Vibration Interval

The vibration interval can be set in two different patterns, the default setting and a user defined setting.

Table 2.21

| Pattern | Vibration Interval | Remarks |
|-----------------|---|--------------------------|
| Default | “ON for 1 second, OFF for 1 second” x [times] | Maximum no. of times; 20 |
| User definition | “Specified ON period, Specified OFF period” x [times] Setting range; 1/16 seconds to 16 seconds for ON period, 1/16 seconds to 1 second for OFF period | Maximum no. of times; 20 |

The device control library can be used to control ON/OFF state for each occasion of the vibration and the vibration interval in user definition.

2.2. Scanner

2.2.1. Basic Specifications

The following industrial standard bar code symbologies are supported by the laser scanner.

Table 2.22 Supported symbologies

| Symbology | Check Digit Sum | Min Digits | Max Digits |
|-------------------------------|-------------------------|------------|-------------|
| EAN, JAN,UPC-A/B | Enable/Disable | 8 (fixed) | 13 (fixed) |
| EAN, JAN,UPC-A/B Addon | Enable/Disable | 10 (fixed) | 18 (fixed) |
| UPC-E | Enable/Disable | 7 (fixed) | 7 (fixed) |
| UPC-E Addon | Enable/Disable | 9 (fixed) | 12 (fixed) |
| Code39 | Enable/Disable | 2 (note 3) | 52 |
| NW-7 | - | 2 (note 4) | 63 |
| Interleaved 2 of 5 | Enable/Disable | 4 (note 5) | 94 |
| Industrial 2 of 5 | Enable/Disable | 2 | 67 |
| Code93 | Enable/Disable | 1 | 70 |
| Code128 | Enable/Disable | 1 | 98 |
| MSI | Enable/Disable (note 1) | 1 | 57 |
| IATA | Enable/Disable (note 2) | 1 (note 6) | 65 (note 6) |
| RSS-14 | Enable | 14 (fixed) | 14 (fixed) |
| RSS Limited | Enable | 14 (fixed) | 14 (fixed) |
| RSS Expanded | Enable | 1 | 74 (note 7) |
| RSS-14 Stacked (note 8) | Enable | 14 (fixed) | 14 (fixed) |
| RSS Expanded Stacked (note 8) | Enable | 1 | 74 (note 7) |

Notes:

1. MSI check digit

One of the three following MSI check digit calculation methods can be selected.

- 1 digit, mod10
- 2 digit, mod10 and mode10
- 2 digit, mod10 and mod10

2. IATA check digit

One of the three following IATA check digit calculation methods can be selected.

- Calculate number other than end 1 digit
- Calculate coupon number and numeric value segment
- Calculate numeric value segment

3. Minimum digit on Code39 symbology

The no. of minimum digits can be set to one digit only when scanning on Code39 symbology is enabled.

4. Minimum digit on NW-7 symbology

The no. of minimum digits can be set to one digit only when scanning on NW-7 symbology is enabled.

5. Minimum digit on Interleaved 2of5

The no. of minimum digits can be set to two digits only when scanning on Interleaved 2of5 symbology is enabled.

6. Minimum and maximum digits on IATA symbology

The no. of minimum digits can be set to 15 digits or 17 digits for the maximum only when the IATA check digit calculation is set to “Coupon number and Calculate data segment” or “Calculate just data segment”.

7. Maximum digit on RSS Expanded and RSS Expanded Stacked symbologies

The maximum digit count for just numeric data is 74 digits. The maximum digit count for just alphabet data is 41 digits.

8. RSS-14 Stacked and RSS Expanded Stacked symbologies

Need to install Patches “MoDevIT600.103.CAB , LaserIT600.102.CAB and OBRSetDT5200.102.CAB”.

- The maximum digits for each symbology in Table 2.22 are based on the optimum conditions of each element such as the bar code print quality, resolution, PCS, brightness surrounded, and distance between the terminal and the bar code. Depending on these conditions, even if one of the maximum digits in the table is set to a bar code symbology, an individual bar code of that symbology may not be scanned.
- If IATA symbology valid minimum digit is set to one digit, the chance of misreading will increase. The default is set to 4. If there is no need to scan a bar code of the symbology with its minimum digit one, do not change the default setting.

Check Digit Calculation

A bar code value is calculated in accordance with method, and then the calculation result and the check character at a specific position are compared. If they match, the scanning data is deemed correct. The calculation method differs according to each symbology.

Readable Digits

The actual readable digit on a bar code differs depending on the resolution and the scanning distance between the terminal and the bar code.

2.2.2. Scanning Method

The laser scanner has “scanning state” (emits laser beam to read a bar code) and “standby state” (scanning is halted and in standby state). These two states are controlled to start scanning bar code and stop the scanning.

Table 2.23 Scanning methods

| Scan method | Description | Conditions for scanning to end | Timeout Yes/No |
|---|--|--|----------------|
| Single scan | Press the trigger key to start scanning. Scanning is stopped when either scanning is succeeded or one of the scan end conditions is met. | <ul style="list-style-type: none"> - Timeout time has elapsed. - OBRClose function is called. | Yes |
| Continuous scan (controlled with trigger key) | Press the trigger key to start scanning, and scanning will continue as long as the trigger key is pressed down. Scanning will stop when either scanning is completed for just preset no. of times for scanning or one of the scan end conditions is met. | <ul style="list-style-type: none"> - Timeout time has elapsed after scanning a bar code. - Scanning for the number of preset times is complete. - The trigger key is released. - OBRClose function is called. | Yes |
| Continuous scanning (controlled by program) | Scanner library functions are used to start and stop scanning. The previous scanning data and scanning data overlapped with other scanning data will be disregarded. Also, to save the power during scanning, emitting laser beam will be turned off between laser emissions. (see note) | <ul style="list-style-type: none"> - Timeout time has elapsed after scanning the precious scanning. - Scanning end function is called while scanning continues. - OBRClose function is called. | Yes |

Note:

The scanning method set as default is with “Continuous scanning (controlled with trigger key)” and “No. of preset times for continuous scanning = 1”.

Step Scan

This method is for scanning a designated number of bar codes. Once scanning for the designated number of bar codes has been completed, the scanner will close and not scan again until reopened. Also, the same bar codes that have been scanned previously cannot be scanned again.

2.2.3. Scanning Parameters

Conditions that allow scanning a symbology in specific modes can be set for each readable symbology.

Readable Symbology

Bar code symbologies that are enabled or disabled for scanning can be specified.

If only specific symbologies are to be scanned, set “Enable” for scanning on these symbologies only and “Disable” on the other symbologies. This will reduce decode processing time and lower the error rate. The default is “Enable scanning on all the symbologies”.

Readable Digits

The no. of readable digits can be set for each symbology.

If only specific no. of digits is to be scanned, specify it for each readable symbology. This will reduce decode processing time and lower the error rate.

Enable/Disable Check Digit

Check digit can be set to “Enable” or “Disable” for each readable symbology. Setting the check digit will lower the error rate.

Table 2.24

| Symbology | Check Digit Calculation | Default |
|----------------------------------|-------------------------|---------|
| EAN, JAN,UPC-A/B | Enable/Disable | Enable |
| EAN, JAN,UPC-A/B Addon | Enable/Disable | Enable |
| UPC-E | Enable/Disable | Enable |
| UPC-E Addon | Enable/Disable | Enable |
| Code39 | Enable/Disable | Disable |
| NW-7 | - | - |
| Interleaved 2of5 | Enable/Disable | Enable |
| Industrial 2of5 | Enable/Disable | Enable |
| Code93 | Enable/Disable | Enable |
| Code128 | Enable/Disable | Enable |
| MSI | Enable/Disable | Enable |
| IATA | Enable/Disable | Disable |
| RSS-14 | Enable | Enable |
| RSS Limited | Enable | Enable |
| RSS Expanded | Enable | Enable |
| RSS-14 Stacked (see note.) | Enable | Enable |
| RSS Expanded Stacked (see note.) | Enable | Enable |

Note:

To support these symbologies, the patch files, **MoDevIT600.103.CAB**, **LaserIT600.102.CAB** and **OBRSetDT5200.102.CAB** must be installed in the terminal.

Validation

Validation is carried out for a specified number of times in the range of 1 to 9 to check if scanned data is valid, and then the data is output only if it is valid. The number of validations can be set either at the control panel or using the device control library. The default is 3.

No. of Scanning Times

In “Continuous Scanning” mode, scanning continues for the preset number of scanning times in the range of 1 to 9 and then it will stop in waiting mode. The number of times for scanning can be set either at the control panel or using the device control library. The default is 1.

Scanning Period

Valid time period of scanning in the range of 1 to 9 seconds after the trigger key was pressed down can be set either at the control panel or using the device control library. After the preset time has elapsed, the scanner will go into standby mode waiting for the trigger key to be pressed down again. The default is 3 seconds.

Double Scanning Prevention

This is used to prevent double scanning of the same bar code during the “Continuous Scanning” mode is being set. Scanning the same bar code again will be prohibited as long as the scanning continues for the preset number of times. However, it can be scanned when a new “Continuous Scanning” starts.

2.2.4. Scanning Output Format

Formats for outputting results of scanned bar codes can be set.

Table 2.25 Output Formats

| Symbology | Standard | No. of digits | Output Format | Remark |
|-----------|-------------------|----------------|----------------------|---|
| WPC | JAN-13 | 13 | FFMMMMMNNNNNCT | T : Termination code |
| | EAN-13 | 13 | FFMMMMMNNNNNCT | |
| | JAN-8 | 8 | FFMMMNCT | |
| | EAN-8 | 8 | FFMMMNCT | |
| | JAN-13 addon+2 | 15 | FFMMMMMNNNNNCAAT | See Table 2.26 for meaning of the notations. |
| | EAN-13 addon+2 | 15 | FFMMMMMNNNNNCAAT | |
| | JAN-13 addon+5 | 18 | FFMMMMMNNNNNCAAAAAT | Excluding UPC-B, check digit (mod 10) calculation is always performed |
| | EAN-13 addon+5 | 18 | FFMMMMMNNNNNCAAAAAT | |
| | JAN-8 addon+2 | 10 | FFMMMMNCAAT | |
| | EAN-8 addon+2 | 10 | FFMMMMNCAAT | |
| | JAN-8 addon+5 | 13 | FFMMMMNCAAAAAT | |
| | EAN-8 addon+5 | 13 | FFMMMMNCAAAAAT | |
| | UPC-A | 12 | 0SM MMMMNNNNNCT | |
| | UPC-B | 12 | 0SM MMMMNNNNNNT | |
| | UPC-A addon+2 | 14 | 0SM MMMMNNNNNCAAT | |
| | UPC-B addon+2 | 14 | 0SM MMMMNNNNNNAAT | |
| | UPC-A addon+5 | 17 | 0SM MMMMNNNNNCAAAAAT | |
| | UPC-B addon+5 | 17 | 0SM MMMMNNNNNNAAAAAT | |
| | UPC-A | 12 | SMMMMMNNNNNCT | |
| | UPC-A addon+2 | 14 | SMMMMMNNNNNCAAT | |
| | UPC-A addon+5 | 17 | SMMMMMNNNNNCAAAAAT | |
| | JAN-13 | 14 | 0FFMMMMMNNNNNCT | GTIN |
| | EAN-13 | 14 | 0FFMMMMMNNNNNCT | GTIN |
| | JAN-8 | 14 | 000000FFMMMNCT | GTIN |
| EAN-8 | 14 | 000000FFMMMNCT | GTIN | |

Continue.

| | | | | |
|---------------------|------------------|---------------|------------------|---|
| UPC-E (note 1) | UPC-A | 14 | 00SM MMMMNNNNNCT | GTIN |
| | UPC-E | (7),8 | 0MMNNNMCT | Last M: 0 to 2 |
| | | (7),8 | 0MMMNN3CT | |
| | | (7),8 | 0MMMMN4CT | |
| | | (7),8 | 0MMMMMNCT | Last N: 5 to 9 |
| | | (6),7 | MMNNNMCT | Last M: 0 to 2 |
| | | (6),7 | MMMNN3CT | |
| | | (6),7 | MMMMN4CT | |
| | | (6),7 | MMMMMNCT | Last N: 5 to 9 |
| | UPC-E | 14 | 000000MMNNNMCT | GTIN Last M: 0 to 2 |
| | | 14 | 000000MMMNN3CT | GTIN |
| | | 14 | 000000MMMMN4CT | GTIN |
| | | 14 | 000000MMMMMNCT | GTIN Last N: 5 to 9 |
| | UPC-E addon+2 | (9),10 | 0MMNNNMCAAT | Last M: 0 to 2 |
| | | (9),10 | 0MMMNN3CAAT | |
| | | (9),10 | 0MMMMN4CAAT | |
| | | (9),10 | 0MMMMMNCAAT | Last N: 5 to 9 |
| | | (8),9 | MMNNNMCAAT | Last M: 0 to 2 |
| | | (8),9 | MMMNN3CAAT | |
| | | (8),9 | MMMMN4CAAT | |
| | | (8),9 | MMMMMNCAAT | Last N: 5 to 9 |
| | UPC-E addon+5 | (12),13 | 0MMNNMCAAAAAT | Last M: 0 to 2 |
| | | (12),13 | 0MMMNN3CAAAAAT | |
| | | (12),13 | 0MMMMN4CAAAAAT | |
| | | (12),13 | 0MMMMMNCAAAAAT | Last N: 5 to 9 |
| | | (11),12 | MMNNMCAAAAAT | Last M: 0 to 2 |
| | | (11),12 | MMMNN3CAAAAAT | |
| | | (11),12 | MMMMN4CAAAAAT | |
| (11),12 | | MMMMMNCAAAAAT | Last N: 5 to 9 | |
| Code39 | | 3 to Max | SBBB ----- BBCST | See Table 2.27 for meaning of the notations |
| | | 3 to Max | SAAA ----- AACST | |
| | | 1 to Max | BBB ----- BBCT | |
| | | 1 to Max | AAA ----- AACT | |
| NW-7 | | 3 to Max | SDDD ----- DDDST | See Table 2.28 for meaning of the notations |
| | | 1 to Max | DDD ----- DDDT | |
| Interleaved 2of5 | | 2 to Max | DDD ----- DDDCT | See Table 2.29 for meaning of the notations Only even number digits used for scanning readable digits. |
| Industrial 2of5 | | 2 to Max | DDD ----- DDDCT | See Table 2.30 for meaning of the notations Only even number digits used for scanning readable digits. |
| Code93 | | 1 to Max | AAA ----- AAAT | See Table 2.31 for meaning of the notations |

Continue.

| | | | | |
|----------------------|-----------------|----------|---------------------|---|
| Code128 | Code128 | 1 to Max | AAA ----- AAAT | See Table 2.32 for meaning of the notations See Table 2.33 for meaning of the notations. |
| | | 1 to Max | SBBB ----- BBCST | |
| | EAN-128 | 1 to Max | AAA ----- AAAT | |
| | | 1 to Max | SBBB ----- BBCST | |
| | | 1 to Max | FAAA ----- AAAT | |
| 1to Max | GAAA ----- AAAT | | | |
| MSI | | 1 to Max | DDD ----- DDCCT | See Table 2.34 for meaning of the notations. |
| IATA | | 1 to Max | DDDDDDDDDD ----- CT | See Table 2.35 for meaning of the notations |
| | | | PADDDDDDDDDDDDDDDCT | |
| RSS-14 | | 16 | 01DDDDDDDDDDDDDDCT | See Table 2.36 for meaning of the notations. |
| | | 14 | DDDDDDDDDDDDDDCT | |
| RSS Limited | | 16 | 01DDDDDDDDDDDDDDCT | See Table 2.37 for meaning of the notations. |
| | | 14 | DDDDDDDDDDDDDDCT | |
| RSS Expanded | | 1 to74 | DD ---- DDDT | See Table 2.38 for meaning of the notations. |
| | | 1 to 41 | AA ---- AAAT | |
| RSS-14 Stacked | (note 2) | 16 | 01DDDDDDDDDDDDDDCT | See Table 2.36 for meaning of the notations. |
| | | 14 | DDDDDDDDDDDDDDCT | |
| RSS Expanded Stacked | (note 2) | 1 to74 | DD ---- DDDT | See Table 2.38 for meaning of the notations. |
| | | 1 to 41 | AA ---- AAAT | |

Notes:

1. If the no. of scanning digits described in parentheses, “C” will not be appended to the output.
2. To support these symbologies, the patch files, **MoDevIT600.103.CAB**, **LaserIT600.102.CAB** and **OBRSetDT5200.102.CAB** must be installed in the terminal.

Table 2.26 WPC symbology

| | |
|---|-------------------------|
| F | Country flag |
| M | Manufacturer code |
| N | Product code |
| S | Number system character |
| A | Addon data |
| T | Termination code |
| C | Check digit (mod 10) |

Table 2.27 Code39 symbology

| | |
|---|---|
| A | ASCII conversion post data |
| B | ASCII conversion pre data |
| C | Check digit (mod 43) Becomes data if there is no check digit |
| S | Start/Stop character |

Table 2.28 NW7 symbology

| | |
|---|--|
| S | Start/Stop character (any of a, b, c, d) |
| D | Data |

Table 2.29 Interleaved 2of5 symbology

| | |
|---|---|
| D | Data |
| C | Check digit (mod 10) Becomes data if there is no check digit |

Table 2.30 Industrial 2of5 symbology

| | |
|---|---|
| D | Data |
| C | Check digit (mod 10) Becomes data if there is no check digit |

Table 2.31 Code39 symbology

| | |
|---|---|
| A | ASCII conversion post data |
| B | ASCII conversion pre data |
| C | Check digit (mod 47) Becomes data if there is no check digit |
| S | Start/Stop character |

Table 2.32 Code128 symbology

| | |
|---|----------------------------|
| A | ASCII conversion post data |
| B | ASCII conversion pre data |

Table 2.33 EAN128 symbology

| | |
|---|------------------------------|
| C | Check digit (mod 47) |
| S | Start/Stop character |
| F | Code ID (only “]C1”, EAN128) |
| G | GS (only 1Dh, EAN128) |

Table 2.34 MSI symbology

| | |
|---|---|
| D | Data |
| C | Check digit (mod 10, mod 11) Becomes data when there is no check digit |

Table 2.35 IATA symbology

| | |
|---|---|
| D | Data |
| C | Check digit (IATA) Becomes data when there is no check digit |
| P | Coupon No |
| A | Airline No |

Table 2.36 RSS-14 symbology

| | |
|---|----------------------|
| D | Numeric data |
| C | Check digit (mod 10) |

Table 2.37 RSS Limited symbology

| | |
|---|----------------------|
| D | Numeric data |
| C | Check digit (mod 10) |

Table 2.38 RSS Expanded symbology

| | |
|---|---------------|
| D | Numeric data |
| A | Alphabet data |

Termination Codes

Select one of the following five termination codes to attach to the end of decoded data.

- CR
- LF
- CR+LF
- TAB
- No termination code

The default is “No termination code”.

Output Buffer

The scanner scans a bar code and outputs the scanned data using one of the following methods described in the table below.

Table 2.39

| Output Method | Description |
|---------------------------------|---|
| OBR buffer output (see note) | <ul style="list-style-type: none">- Scanned data is output to memory in the laser scanner driver.- Scanned data already output to the memory can be captured using the device control library. |
| Key message output | <ul style="list-style-type: none">- Scanned data can be output with the window message to the specified window handle.- The window handle is specified using the device control library. |
| Clipboard output | <ul style="list-style-type: none">- Scanned result is copied to the clipboard and then output to the edit control focused by caret. |
| Keyboard output | <ul style="list-style-type: none">- Scanned result is output as a keyboard event to the edit control focused by caret. |

Note:

OBR buffer Output

When a barcode is scanned, the decoded data including the symbology and data size are stored to the memory in the laser scanner driver. This output method has the following features.

- Can capture the bar code symbology and data size.
- Can capture the data at any timing the user prefers.
- One piece of data can be a maximum of 98 characters long and up to nine labels can be stored in the memory. If any new data scanned after exceeding over nine labels stored already in the memory will be disregarded.

Conditions for Terminating Scanning

Scanning will be terminated when any of the following conditions is met.

- Scanning is succeeded.
- Preset timeout period has elapsed.
- OBR buffer becomes a full.
- An abnormal condition is detected in the scan module.

Scan Completion Notification

When scanning is completed, a notification is issued to the application using one of the methods described in the table below. Each notification method can be set to “Enable” or “Disable”. The default is “Notification with window message”.

Table 2.40

| Method | Description |
|----------------|--|
| Window message | A window message is issued to the specified window handle. Also, the conditions for scanning completion can be fetched by referring to wParam parameter of the window message. |
| Event | A predefined event in the registry is issued. The conditions of scanning completion can be fetched using the device control library. |
| None | No message or event is issued when scanning is complete. |

Event Name

The predefined event name which is issued for event notification can be changed in the registry described below. If there is no value set in the registry, the default event name, **OBRScanningEvent**, will be used.

[HKEY_LOCAL_MACHINE\Drivers\CASIO\Laser]

Table 2.41

| Key Name | Setting Value |
|-----------|---------------|
| EventName | sz: Any name |

Capturing Event Factors

When a notification for scanning completion is issued with “Event”, factors which made the scanning succeeded are automatically recorded. The recorded factors are also fetched using the device control library.

Setting Specific Operation Unique to Code128 Symbology

The terminal supports specific operations unique to Code128 symbology that are initiated when certain conditions are met at a time of scanning a symbol of Code128 symbology. The setting requires the patch files, **MoDevIT600.101.CAB**, **LaserIT600.101.CAB** and **OBRSetIT600.101.CAB**, all to be installed in the terminal prior to scanning the symbology.

Table 2.42

| Symbology | Condition | Performance |
|-----------|---|---|
| Code128 | At time of scanning a symbol of Code128 that includes the FNC2 function character. | Scanned symbol data including the FNC2 function character is temporarily stored in the scanner until when a next symbol is scanned. The stored data is automatically added at the forefront of the subsequent scanned symbol data to be output. (See note below.) |
| | At time of scanning a symbol of Code128 symbology that includes the FNC4 function character(s). | The value "128" is added automatically to a data character in ASCII of scanned symbol located next to the FNC4 function character. If two sequentially laid FNC4 function characters in a symbol are scanned, either other group of two sequentially laid FNC4 function characters within the same symbol are read, or "128" is added automatically to each subsequent ASCII character data laid next to the two FNC4 function characters until the last. |

Note:

The size of combined symbol data including the FNC2 function character is limited to 98 characters (maximum). If the size of any combined symbol data exceeds the maximum number of characters, the previous combined symbol data that have been scanned right before the exceeded combined symbol data are output.

2.2.5. Scan Result Notification

When scanning a bar code is completed, a notification about the scanning result can be indicated to the user with either LED or buzzer or vibration. Each indication method can be set to “Enable” or “Disable”.

Table 2.42

| Indication method | Setting | When succeeded | When failed (see note 1) | Scanning interrupted (Trigger key released) | OBR buffer full (see note 2) | Default |
|-------------------|------------------|-----------------------|--------------------------|---|------------------------------|---------|
| LED | Mode 1 | ON in green | None | None | ON in green | Mode 1 |
| | Mode 2 | ON in green | ON in red | None | ON in green | |
| | Mode 3 (disable) | None | None | None | None | |
| Buzzer | Enable | Scan completion sound | None | None | Warning sound | Enable |
| | Disable | None | None | None | None | |
| Vibrator | Enable | Vibrates | None | None | None | Disable |
| | Disable | None | None | None | None | |

Notes:

- Scanning will fail when one of the following errors occurs.
 - A bar code with the number of digits which exceeds over the specified range is scanned.
 - Check digit calculation error occurs.
 - Full ASCII conversion error occurs in scanning bar code of Code39 symbology or Code128 symbology.
- During the “OBR buffer output” method has been set as scanned data output method, this condition occurs if scanning takes place while nine labels worth of data are stored already in the memory buffer.

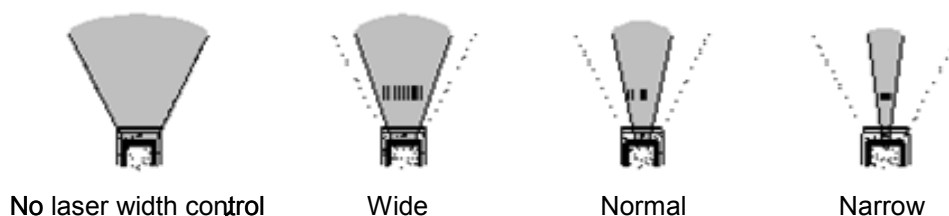
2.2.6. Expanded Features

Control on Laser Emission Width

If the laser emits on bar codes located near each other, scanning may fail.

By narrowing the laser beam emission width, scanning can be focused onto only one bar code, not onto the other one located near by. The laser beam emission width can be set to one of the following four modes. The device control library can be used to set it. The default is “No control on laser beam emission width”.

- No control on laser beam emission width
- Wide
- Normal
- Narrow



The setting values are stored in EEPROM, and read out at time of resetting. Laser calibration (see note below) can be used to adjust each setting value for the laser beam emission width. The setting values adjusted must be registered in the registry. The values in the registry will have the priority.

Note:

Each scanner module integrated in the terminal has an individual performance difference from others. To minimize this difference, the laser calibration must be executed on each terminal using a dedicated reference bar code.

Laser Focus

If scanning takes place with the laser beam emitted onto multiple bar codes located near each other, it is difficult to distinguish by the user which bar code was scanned. In such the condition, if a laser beam can be emitted focusing only one the user wishes to scan and a notification about which bar code is scanned is issued to the user, the scanning can be succeeded without having any difficulty. The device control library can be used to set “Enable” or “Disable” for this laser focus function. The default is “Disable the laser focus function”.

Power ON with Trigger Key

If the Trigger key has been set to “Enable turning on the power with Trigger key”, the power can be turned on (while the power was being turned off) when it is pressed. This function allows the user to achieve multiple operations with only one action, turn on the power → press the Trigger key → scan a bar code. This feature is a perfect idea when the user wishes to resume scanning after the power has been turned off. The default is “Disable turning on the power with Trigger key”.

Setting Trigger Key

Enter key, 4-way cursor key, side trigger key, grip trigger key (option) and center trigger key on the front of the terminal can be set as the Trigger key. The default is only both left and right side keys are set as the Trigger key.

Noise Filter

If the background of a bar code is white color, a noise tends to be generated easily during scanning causing the error rate to increase. To reduce such the noise, the noise filter function is available with the terminal. Two methods are available to set the function operable.

Table 2.43

| Filter | Description | Merit | Demerit |
|-----------------------|---|--|--|
| Software noise filter | A software process removes noise. In determining the blank at the leading edge of the barcode, if there is a bar width smaller than a certain value, it will be bonded to the fore and aft data, the noise eliminated and the determination made. Also, the time from scan start to “enable” of software filter can be set. | Effective when scanning leading edge blank of bar code using laser module noted for easily picking up noise. | If initial bar is extremely thin, it will be determined as noise and eliminated, which may mean that the bar code cannot be scanned. |
| | Setting range: 1 to 8 seconds, Default : 3 seconds | | |
| ASIC noise filter | Removes noise using the ASIC process. If there is a bar width smaller than a certain value, it will be bonded to the fore and aft data, and the noise eliminated. This is normally effective in preventing DMA overrun. | — | — |

Notes:

- Only the ASIC noise filter has been set enabled as default.
- The software noise filter is not required by the IT-600 series.

Setting Gain

The laser module gain setting can be switched. Switching this setting enhances scanning performance particularly for a bar code located far away from the terminal and a bar code printed in high-resolution.

Operation Setting Information File

The various setting values can be stored in a file and resumed. The setting file storage location and name are “\FlashDisk\System Settings\OBRDRV.ini”. If there is no such the setting file, the default values are used to initiate the scanning.

Dual Decoder System

The dual decoder system initially decodes a scanned bar code data using the standard decoder, but if decoding fails, it will use the following additional decoder to scan the same bar code. This dual decoders system supports the bar code symbologies listed below.

- Code39
- Code128
- EAN

With the decoding system used for the previous CASIO handheld terminals, decoding is processed with a mean value of one module adding bar thickness of each black bar and white bar for one character when performing binaryzation or quardruplzation of bar thickness. However, this method does not accurately decode a bar code if it is formed with unbalanced bar thickness between white bars and black bars.

The dual decoder system can solve it by calculating separately each mean value of black bars and white bars for such a bar code with unbalanced thickness of white and black bars by changing the threshold level of decoding.

Customizing the Decoder

According to the scan environment and the bar code printed material's quality, the decoder can be customized to efficiently improve scanning performance. First, to maintain scanning performance with the normal decoding logic, perform decoding using with the decoder and if it does not succeed the decoding, customize it so that the decoding can be performed for a better scanning performance.




Table 2.44 Customizing the elements

| Element | Description |
|---|--|
| Change margin of the right/left threshold values | Used to change the threshold values of right and left side marginal spaces which are allocated for areas colored in white on the left and right sides of a bar code. |
| Change of compensation values of the thickness/thinness of a bar. | Used to thicken or thin each bar of bar code for a specified value and then decode it. |
| | Value for thickening or thinning each bar can be changed. |

Changing the threshold values for Right and Left margins

When a bar code is printed inside of quadrangle, scanning may not be possible because there is not enough left and/or right marginal space. By making change on the right/left marginal threshold values, scanning a bar code becomes possible. See the table below.

Table 2.45

| | |
|--|--|
| When the left marginal space is narrow. |  |
| When the right marginal space is narrow. |  |
| When both right and left marginal spaces are narrow. |  |

Changing the thickness of bars

If bars of a bar code are printed thick because blurring or scratchy white bars (spaces between two bars) are printed thinly, the bar ratio will not be correct causing scanning incorrectly. By adjusting the thickness of these bars makes scanning the bar code possible. This method is applicable if all bars of a bar code are either too thick or too thin because the method is applied to the whole of a bar code.

2.2.7. Power Control

In order to save the power, the power will not be supplied to the laser scan module and the ASIC module for laser beam control during the laser beam is not irradiating. It will be supplied to these modules when the laser beam is to be irradiated, and turned off again when the laser beam is not irradiated.

2.2.8. Device Exclusion Control

This is for executing the exclusion process for the following device that is prohibited from being used simultaneously with the laser scanner.

Table 2.46

| Device | Operation | Remarks |
|--------|--|---|
| Camera | If the laser scanner begins to operate while camera preview is being used, the laser scanner will generate an error. It can be operated once preview has been stopped. | Magnetic noise is generated when the camera shutter is operated. This affects the laser scan module, so to prevent the circuit from falsely suspecting breakdown of the module, simultaneous use of the camera and laser scanner is prohibited. |
| | If the camera preview begins to operate while laser scanner is being used, the camera will generate an error. It can be operated once laser scanner has been closed. | |

2.3. Camera

The camera features come with two functions; capturing images and the image process.

2.3.1. Capturing Images

Static Image Capture and File Save

This function captures single static image and then outputs it in BMP or JPEG format file.

Table 2.47

| | Setting Parameter | |
|-------------|-------------------|--|
| Image size | 1M | 1160 x 860 |
| | XGA | 1024 x 768 |
| | SVGA | 800 x 600 |
| | VGA | 640 x 480 |
| | 4/9VGA | 426 x 320 |
| | 1/4VGA | 320 x 240 |
| | 1/9VGA | 213 x 160 |
| File format | BMP | 24bit |
| | JPEG | See “JPEG File Option” on the next page. |

Notes:

- There is approximately 150 milliseconds time lag from a time when shooting an image until when actually capturing it.
- Notification with shutter sound and LED lighting up is made for the user when capturing an image.

JPEG File Option

The following options can be set if JPEG format is specified as the output method.

Table 2.48

| Item | Setting | Remarks |
|-----------------------------------|---|---|
| Image quality (compression ratio) | Image quality = Low (compression ratio = High) | |
| | Image quality = Normal (compression ratio = Normal) | Default |
| | Image quality = High (compression ratio = Low) | |
| | Image quality = Highest (compression ratio = Lowest) | |
| Baseline/Progressive | Baseline | File format displaying image from upper line. (Default) |
| | Progressive | File format where, first, a course image is displayed overall, and then this becomes progressively more detailed. |
| Thumbnail embedding | No thumbnail | Default |
| | QQVGA (160 x 120) | Each size of thumbnail is embedded in JPEG file. |
| | QVGA (320 x 240) | |

Note:

If “embedding thumbnail” is specified in the JPEG option, the JPEG format will be fixed to the baseline.

Preview Display

This is for displaying an image in real time being shot by the camera. The following are image sizes and frame rates for the preview display.

Table 2.50

| | | |
|------------|--|------------------------|
| Image size | 4/9VGA (426 x 320) 1/4VGA (320 x 240) 1/9VGA (213 x 160) Each image size above can be magnified by “x1.0”, “x1.5”, “x2.0” and “x3.0”. | |
| Frame rate | When normal/When flickering in 50 Hz | 14.3 frames per second |
| | When flickering in 60 Hz | 13.3 frames per second |

Digital Zoom

Digital zoom is a function used to cut out a part of image from the high-resolution image. The following image sizes and magnifications can be used for digital zoom shooting.

Table 2.49 Digital Zoom

| Magnification | 1/9VGA | 1/4VGA | 4/9VGA | VGA | SVGA | XGA |
|---------------|--------|--------|--------|-----|------|-----|
| x1.5 | Yes | Yes | Yes | Yes | No | No |
| x2.0 | Yes | Yes | Yes | No | No | No |
| x3.0 | Yes | Yes | Yes | No | No | No |

Note:

If shooting is performed with one of the settings marked as “No” in the table, shooting is made without digital zoom (“x 1.0”) effect.

White Balance

The following four modes of the white balance can be set.

Table 2.50 White balance

| |
|---|
| Auto |
| Shooting at outdoor in cloudy sky (color temperature = 6500K) |
| Shooting under fluorescent lamp (color temperature = 5000K) |
| Shooting under incandescent lamp (color temperature = 2850K) |

Note:

If the desired image could not be captured with “Auto” white balance mode, specify an optimum white balance mode consistent with the light source. Even if such the white balance mode is set, other light sources and reflected light from walls, etc., may affect color temperature causing the image to be displayed in incorrect color tones.

Brightness Correction

This is for correcting the brightness. “Brightness” referred to in this explanation is the target value for automatic exposure. Exposure is determined automatically in accordance with the brightness of the object, but a target value if you wish to set also can be set in the range of 0 (dark) to 24 (bright). The default is 12.

Illumination LED

Either turning ON the illumination LED or turning OFF it or changing its intensity (brightness) can be switched. The illumination LED is used for shooting an object in dark location (close up only). The intensity of the LED can be set in the range of 0 (dark) to 100 % (bright). The default is “Slightly bright”.

Compulsory Shutter Sounding

The shutter sound is generated by the audio function during photo shooting. To prevent video voyeurism, whatever the case, it (including when audio is set to mute and when earphones are being used) will be forced to sound.

Changing Shutter Stop

The camera's shutter stop can be changed. Normally it is set to "F = 3.5 (open)", specify F = 7.0 (stop) for close-up shooting at 20cm or closer.

Flickerless

The CCD camera is susceptible to the flicker of fluorescent light, etc., which makes the preview screen flicker. Synchronize the preview frame rate with the flicker frequency to reduce flicker. When using the camera in flicker-less locations, or under fluorescent lighting in the region of 50Hz frequency, specify the 50Hz flicker mode (14.3fps: Default). And when using the camera under fluorescent lighting in the region of 60Hz frequency, specify the 60Hz flicker mode (13.3fps: Default).

Power and CPU Clock Control

To increase access speed during shooting, the CPU clock is set to the maximum speed while the camera is being operated (mid preview, mid photo shooting). Normally the CPU clock remains in the maximum speed status until preview is ended.

In order to save the power, the power will not be supplied to the camera module and the ASIC module for controlling the camera when the camera is not in operation. It will be supplied to the necessary modules only when the camera is used.

Device Exclusion Control

This is for executing the exclusion process for the following devices that are prohibited from being used simultaneously with the camera.

Table 2.51

| Device | Operation | Remarks |
|---------|---|--|
| Scanner | If the laser scanner is executed while camera preview is being used, the laser scanner will generate an error. Laser scanner can be opened for use once preview has been stopped. | Magnetic noise is generated when the camera shutter is operating. This affects laser scan module, so to prevent the circuit from falsely suspecting breakdown of the module, |
| | If the camera preview is executed while the laser scanner is open, the camera will generate an error. The camera preview can be executed once the laser scanner has been closed. | simultaneous use of the camera and the laser scanner is prohibited. |

2.3.2. Image Processing

Decoding and Encoding Bit Map and JPEG

JPEG file can be created (encoded) from bitmap data, and bitmap data can be converted (decoded) from JPEG file.

Table 2.52

| Function | Description | | Remarks |
|--|---|---|----------------------------|
| Encode | RGB888 (24bits color) → JPEG conversion | | |
| | YUV422 → JPEG conversion | | |
| Decode | JPEG → RGB888 (24bits color) conversion | | |
| | JPEG → YUV422 conversion | | |
| Image quality and compression ratio settings (when encoding) | 0 | (High compression ratio, low image quality) | When specifying 100-grade. |
| | to 100 | (Low compression ratio, high image quality) | |

Embedding Thumbnail

A thumbnail (reduced image) is embedded in the image file when the image is saved (JPEG only). If only the thumbnail is read when displaying, time required for loading file and decoding will be curtailed.

2.4. USB

2.4.1. Basic Specifications

Switching USB

- Switches between USB Client (USB Function) and USB Host.
- Switching between USB Client (USB Function) and USB Host is executed by a signal from the cradle. This cannot be performed in application.
- Switching is not possible while a USB device is connected to the cradle and the terminal is recognizing the USB device. Switching can be performed once the USB device is disconnected.
- **USBIsHost API** function can be used to capture the current USB Client (USB Function)/Host status.

USB Client (USB Function)

- Supports the USB 1.1 full speed.
- Communicates with “wceusbsh.dll” on PC side.
- Communication with PC can be established using ActiveSync.
- Communication with PC can be established using **FLCE/LMWIN** (ActiveSync must be disabled.)

USB Host

- Supports the USB 1.1 full speed.
- Supports USB-MODEM/USB-LAN.
- USB device is disconnected when the terminal is suspended.
- Does not support WakeOn Ring/WakeOn LAN.
- Does not support communication via USB HUB.

USB-MODEM

- Supports the USB Communication Class (CDC: ACM).
- Communication with modem via virtual COM port can be established.
- Dial up via USB modem can be possible by selecting USB modem at the setting of connection under WindowsCE.

USB-LAN

- Supports “SOHO-USBNET/100+”.
- Can be connected to network via the TCP/IP protocol.

2.4.2. COM Port

COM ports used with USB are as follows.

Table 2.53

| | |
|--------------|------|
| USB Function | COM2 |
| USB-MODEM | COM5 |

2.4.3. Product ID

USB product ID is as follows.

Table 2.54

| | |
|------------|--------|
| USB Client | 0x3303 |
|------------|--------|

2.5. IrDA

2.5.1. Communication Speeds

The IrDA supports the following physical communication speeds.

Table 2.55

| Via | SIR | FIR |
|---------------|---------------------------------------|--------|
| IrDA protocol | 9600, 19.2K, 38.4K, 57.6K, 115.2K bps | 4M bps |
| RAW IR | 9600, 19.2K, 38.4K, 57.6K, 115.2K bps | - |

Notes:

- A speed of communication via IrDA protocol is automatically determined by negotiation with the partner device.
- The maximum communication speed supported commonly by both parties (the terminal and the partner device) will be determined as communication speed.
- Communication speed cannot be set in application.

2.5.2. COM Port

COM ports used with IrDA are as follows.

Table 2.568

| | |
|---------------|------|
| IrDA protocol | COM3 |
| RAW IR | COM4 |

2.6. Bluetooth

2.6.1. Basic Functions

Master

Establishes a connection with Bluetooth equipment in slave mode waiting for connection with the master.

Slave

Becomes in waiting mode for communication initiated by the master.

Security, Encryption

Performs security (PassKey exchange) and encryption as laid down in the Bluetooth standard.

AFH

Automatically or manually limits and controls radio wave frequency band to be employed in Bluetooth communication.

Fast Connection

This is to convert radio frequency for Bluetooth communication into transmission pattern which allows connection establishment quickly.

WakeOn Bluetooth

This function establishes communication with a Bluetooth equipment that is being in suspended mode and resumes the communication operation with that partner Bluetooth equipment.

2.6.2. Communication Profiles

The following are supported Bluetooth profiles.

Table 2.57

| Function | Purpose |
|----------------------------------|---|
| GAP (General Accessible Profile) | Used in the substructure segment of Bluetooth communications such as device discovery, link establishment and security. |
| SDP (Service Discovery Profile) | Used to search for currently usable services provided by the partner Bluetooth equipment. |
| Serial Profile (Client) | In Bluetooth serial communication, this is used for connection to other Bluetooth equipment. |
| Serial Profile (Server) | In Bluetooth serial communication, this is used for acceptance of connection request from other Bluetooth equipment. |
| DUN (Dial-Up Network) | This is used in dial up communication via Bluetooth mobile phone. |
| PAN (Personal Area Network) | This is used in network communication via Bluetooth PAN Access-Point. |
| OBEX Object Push Profile | This is used as easy file send/receive. |
| File Transfer Profile | This is used as file send/receive regulated by the Bluetooth standard. |

Bluetooth communication application and communication method as well as profile relationships are as follows.

Table 2.60

| Partner Bluetooth Equipment | Communication Application | Profile |
|---|---|-----------------------------------|
| Bluetooth mobile phone, Bluetooth modem, etc. | Dial up | DUN |
| Bluetooth access point (PAN Profile support) | LAN connection | PAN |
| Bluetooth printer | Printing to printer | Serial Profile |
| PC for Bluetooth + Active Sync | Connection with host PC | Serial Profile |
| Between handheld terminals, PDA that supports Bluetooth, PC that supports Bluetooth, etc. | File transfer between Bluetooth equipment | OBEX Object Push File Transfer |

2.6.3. Security

This feature supports security functions laid down in the Bluetooth standard.

The Bluetooth security is divided into authentication and encryption. These are realized by the use of PassKey (otherwise known as PIN code).

PassKey is a shared (common) authentication key used when forming a connection and trust relationship (bonding) with Bluetooth equipment.

A maximum of 16 characters (in ASCII code) can be used, but there may be limitations on the no. of digits and usable characters due to the specifications of partner Bluetooth equipment. Also PassKey input must be done within 30 seconds from a time when PassKey input request is generated. Note that PassKey input is not required once “device trust” has been established with Bluetooth equipment in previous connection. However, the partner Bluetooth equipment must have also the trust relationship in memory.

Encryption is executed using a link key generated after PassKey exchange and a cipher key generated from a 128-bit random number. Here, the partner Bluetooth equipment also must support the encryption. PassKey exchange is required for Bluetooth connection when encryption is set enabled.

2.6.4. COM Port

The following are the COM ports used with Bluetooth.

Table 2.58

| | |
|-------------------------|------|
| Serial Profile (Client) | COM6 |
| Serial Profile (Server) | COM7 |
| DUN (Dial-Up Network) | BTP1 |

Simultaneous Use of multiple Bluetooth COM Ports

Multiple Bluetooth COM ports cannot be opened simultaneously and used.

2.6.5. Communication Procedures

The following are the basic procedures for using Bluetooth to communicate.

Initializing Bluetooth

This function initializes the Bluetooth using either the Bluetooth tool or the device control library. It will turn ON the power to the Bluetooth module integrated in the terminal and initialize the Bluetooth protocol stack.

1. Searching a Bluetooth equipment

Searches a Bluetooth equipment using the Bluetooth tool or the device control library. This sends out an equipment search radio wave and captures information from Bluetooth equipment operable in the vicinity.

2. Capturing service information

Captures service information using either the Bluetooth tool or the device control library. This captures the current usable service (profile) information of the partner Bluetooth equipment.

3. Security authentication with PassKey exchange

The partner Bluetooth equipment may request a PassKey at a time of capturing service information and establishing Bluetooth connection.

In case the Bluetooth tool is used, the same PassKey is input for both Bluetooth equipments (the terminal and the partner Bluetooth equipment) when a dialogue window appears requesting PassKey input.

In case the device control library is used, the PassKey must be set in advance by executing the relative functions for setting PassKey.

4. Establishing the connection

Establishes a Bluetooth connection using either the Bluetooth tool or the device control library. After the connection has been established, communication in Bluetooth can be continued using the selected profile until the connection is terminated.

5. Terminating the connection

Terminates the connection using either the Bluetooth tool or the device control library.

6. Closing the Bluetooth

Closes the communication via Bluetooth either by ending use of the Bluetooth tool or by executing relative functions of the device control library for closing the communication, and then turns off the power to the integrated Bluetooth module.

2.6.6. Communication Procedures by Profile

While Bluetooth communication takes place, there is a chance that the communication link may be interrupted due to the air condition, so the retry process is always recommended in application to verify the communication. In general, it is recommended also that the retry process should be carried out in any wireless communication including WLAN if it takes place within the vicinity by other equipment using the same frequency band (“ISM” band) such as microwave oven.

Serial Profile

Bluetooth connection can be managed using either the Bluetooth tool or the device control library.

DUN (Dial-Up Network)

Bluetooth connection can be managed using either the Bluetooth tool or the device control library. The communication will take place with RAS setting using “BTP1”. After the connection has been established, communication via the TCP/IP protocol is possible.

PAN (Personal Area Network)

Once connection to Access-Point has been established using the Bluetooth tool, communication via the TCP/IP protocol is possible.

OBEX (Object Push Profile)

File transmission or reception using the Bluetooth tool is possible.

FTP (File Transfer Profile)

File transmission or reception using the Bluetooth tool is possible.

2.6.7. Process after Communication Interruption

With Bluetooth communication, there is a chance that the communication link may be interrupted due to the radio wave condition in air. An error occurred during the communication is detected by executing **WriteFile API** function or **ReadFile API** function, etc.

In case where the communication is interrupted, carry out the normal Bluetooth interruption process using the Bluetooth tool or in application and then retry to establish the same connection for communication.

If the normal Bluetooth interruption process is not made, unconformity in the Bluetooth stack will occur so that the lower layer is disconnected whereas the upper layer is still being connected causing the retry of establishing the connection is not possible.

2.6.8. Processing During Suspend and Resume

When the terminal goes into suspend mode while Bluetooth is being used, the power to the Bluetooth module integrated in the terminal will be automatically turned off. After that, when the terminal resumes operation mode, the power to the Bluetooth module also will be turned on automatically. Once the power is turned off, all the parameters related to Bluetooth communication return to their initial states. These parameters must be set again in the Bluetooth module by initializing the Bluetooth stack.

If the Bluetooth tool is used, it will automatically detect “suspend” and “resume” modes, and automatically initialize the Bluetooth stack. Note, however, that if WakeOn Bluetooth function has been set enabled, the power to the Bluetooth module will remain ON even if suspend is executed. This will not initialize the Bluetooth stack.

2.6.9. Setting SR Mode Parameter

When executing Bluetooth communication, the connection will be established by transmitting radio waves by master Bluetooth equipment to slave Bluetooth equipment. Note that it may take time sometime to make the establishment depending on a type of the partner Bluetooth equipment. Here, by altering the SR mode parameter (used in Bluetooth connection), radio waves sent out when the master Bluetooth equipment makes the establishment will change, and may reduce the time required to establish the communication. The SR mode parameter can be set in the following registry.

[HKEY_CURRENT_USER\SOFTWARE\RXBT\HCI]

Table 2.59

| Key | Setting Value | Meaning |
|----------------------------|---------------|------------------|
| DEFAULT_PAGE_SCAN_REP_MODE | dword:0/1/2 | 0:R0, 1:R1, 2:R2 |

Notes:

- Change the SR mode parameter prior to Bluetooth connection.
- Even if the SR mode parameter is changed, the time required to establish connection with the partner Bluetooth equipment may not be reduced.

2.6.10. WakeOn Bluetooth Function

The terminal in suspend mode can be put into resume mode by communication initiated by the partner Bluetooth equipment. The following is an example of putting the terminal into resume mode by Bluetooth dial up communication using a Bluetooth mobile phone.

1. Set the information for connecting with other party's Bluetooth equipment in advance in the terminal (IT-600) and Bluetooth mobile phone.
2. Set respectively the terminal in suspend mode and Bluetooth mobile phone in waiting mode to receive a mail from server.
3. Bluetooth mobile phone receives task mail from the server. The server disconnects after sending out the mail.
4. Bluetooth mobile phone activates as master and makes a connection with the terminal.
5. The terminal resumes operation mode and completes Bluetooth connection, and then receives the task mail from the Bluetooth mobile phone.
6. After receiving the task mail, the terminal disconnects the Bluetooth connection.
7. Application in the terminal will execute Bluetooth connection to the Bluetooth mobile phone using Dial Up Profile.
8. The terminal will execute dial up to the server via the Bluetooth mobile phone.
9. The application in the terminal will execute sending/receiving data to/from the server after dial up completes.
10. After sending/receiving data completes, dial up connection will be disconnected by the terminal. The Bluetooth connection will be disconnected as well.

2.7. WLAN

The IEEE802.11b and IEEE802.11g WLAN is operable on the models, IT-600M30R and IT-600M30CR. The IEEE802.11b and IEEE802.11g standards utilize unlicensed 2.4 GHz ISM (Industry, Science, and Medical) frequency band, which is used for close range wireless communication.

Device Name

With terminal, the device name used to capture data about the WLAN driver with **DeviceloControl** function is “PY21BG1”.

2.7.1. Basic Specifications

Roaming

This function automatically switches Access-Point in environment where two or more Access-Points with identical SSID code exist.

Power Saving

This saves the power by automatically turning off the power to the integrated WLAN module in the terminal when communicating does not take place.

AdHoc

This operation mode provides a direct communication between wireless equipments without the use of Access-Point. Note, however, that the AdHoc mode is not recommended because connection problem may occur.

WEP

This is an encryption function that uses RC4 method for safe communication. It supports 40-bit (64-bit)/104-bit (128-bit).

TKIP

TKIP is supported to combat the weakness with WEP encryption.

802.1x Security

This can strengthen authentication and establish a safer WLAN. Usually, this is interlinked with TKIP. It supports PEAP-EA, P-MS-CHAP-V2, and EAP-TLS.

2.7.2. Expanded Features

Power ON/OFF Control

The power to the integrated WLAN module can be controlled in application. Turning off the power when the WLAN module is not in use can save power, prevent line congestion and allow the on-board use in aircraft.

Operation Configuration File

The operation configuration file can be used to set each default value of the WLAN settings. However, if IEEE802.1x is set enabled, the configuration file cannot be used to set the default values.

Resume Operation

After the terminal went into suspend mode and then returned in resume mode during wireless operation, this will automatically establish connection again with the Access-Point to enable continuous wireless communication.

Out of Range/In Range

This will automatically establish connection again with the Access-Point to enable continuous wireless communication when the terminal returns within the range from out side of the range of the Access-Point during wireless operation.

This will automatically reconnect to the Access-Point if connection establishment with the Access-Point cannot be maintained due to noise or interference, or roaming is not possible for some reason.

No. of Channels

Either 11 channels or 13 channels of the WLAN standard can be selected without removing the integrated WLAN module from the terminal. The factory setting is set to “1CH-13CH” (for 13 channels) as default.

2.7.3. Roaming

This feature automatically switches the Access-Point located in environment where multiple Access-Points with the identical SSID code exist.

1. Searches for Access-Points that can be communicated with the terminal, and lists up radio wave status of each Access-Point.
2. Compares radio wave status of the currently connected Access-Point with those for the listed Access-Points.
3. If the comparison proves that one of the listed Access-Points has a better radio wave status than the one currently being connected with the terminal, the terminal will make a request of roaming to that Access-Point.
4. If roaming permission comes from the Access-Point to the terminal, the roaming will complete. Note that if the roaming fails, the connection establishment will be disconnected and then connected again.

Notes:

- In some cases, the Access-Point may request the terminal for forcible roaming or reconnection with other Access-Point.
- If connection establishment of the Access-Point being connected with the terminal is terminated due to some reasons such as turning off the power on the Access-Point, the terminal may be forced to make a connection with other Access-Point.
- If it takes time for Access-Point to correspond for roaming request made by the terminal, the reconnection process may be initiated.
- If **DeAuthentication** or **DisAssociation** message issued by the Access-Point that is being connected with the terminal after roaming, the connection establishment between the Access-Point and the terminal may be interrupted temporarily and then connected again.

2.7.4. Zeroconfig

This feature coordinates with the module firmware and the WLAN driver to perform some of the WLAN link management and the Network management.

1. If multiple SSIDs are registered as prioritized connections, attempt to establish connection will be performed to each registered SSID. In this case, the interval of time period for reconnecting will become prolonged. If the reconnection time is considered to be as importance, register one SSID only as prioritized connection.
2. Reconnection loop process will initiate when a disconnection notification is issued by the module, or when Association fails.
3. The reconnection loop process will end when the terminal succeeds connection establishment with one of the multiple SSIDs registered as prioritized connections.

Connection Process

Zeroconfig will instruct the WLAN driver and the WLAN module to make connection when finding an Access-Point registered in the prioritized SSID list. Each firmware of the driver and the module both instructed initiates necessary process following the rules of IEEE802.11b and IEEE802.11g standards to make connection with the Access-Point. If multiple SSIDs are registered as prioritized connections in the prioritized SSID list, attempt to establish connection with each SSID will be made.

Disconnection Process

In the following cases, the connection establishment with Access-Point will be disconnected. Firmware in the WLAN module judges on the disconnection and the roaming process.

1. When the quality of radio wave in air deteriorates because of interference from other WLAN equipment, noise, similar causes, or on-air communication by other WLN devices.
2. When the Access-Point locates far from the terminal, or when radio waves are weakened by obstacles
3. When other Access-Point that can allow roaming to avoid the poor environment described in the situations 1 and 2 above cannot be found.

Resume Process

The following processes are performed when the terminal goes into resume mode.

1. Unloading the driver
2. Loading the driver
3. Initializing
4. Scanning Access-Point
5. Creating the Access-Point list
6. Establishing connection with Access-Point
7. Changing the Task tray icon

2.7.5. Channels

The factory set default channels is set to “1CH-13CH” (13 channels).

2.7.6. WLAN Setting with Configuration File

The configuration file can be used to set the default values for the WLAN settings. By loading the configuration file into the terminal, settings required for WLAN operation can be easy.

- The configuration file is “\FlashDisk\System Settings\WLANCFG.ini”.
- If no configuration file is available, WLAN operation is initiated with the default settings.
- When the IEEE802.1x standard is set enabled, the default values cannot be changed using the configuration file.

Timing to Load the File

The timing for incorporating the configuration file is when a reset or a full reset is performed on the terminal. When loading the configuration, if the file itself does not exist, its format is wrong, or the file has been specified as “Disable configuration file”, the default settings will not be made using the configuration file.

Creation Method

The net search utility can be used to set and change the default settings. Editor available generally also can be used to set the default settings. Note, however, that the WEP key has to be described as being in encryption status, so use the net search utility to create an encrypted character string in advance and copy it. The WLAN settings made using Microsoft’s “WLAN setting” will not be reflected in the configuration file.

File Format

File format of the configuration file is INI format with the specifications described below.

- The maximum size of the configuration file is 60Kbytes.
- A line starting with “;” is regarded as a comment. It is not regarded as a comment if it locates in the middle of a line.
- The separator for KEY and VALUE is “=”. Space and tab, etc., also are included in KEY and VALUE. If a space is inserted after “=” in “SSID=□tunami”, the SSID value is space + tunami.
- The end of a line is CR or CR/LF.
- The maximum length of a line is 256bytes.
- Section name, KEY, and VALUE are case sensitive.

WLAN section

All WLAN settings are made here.

Table 2.60

| Key | Setting Value |
|----------------------|---|
| WLANPOWER | Specify turning on or off the power to the WLAN module. 1: Power ON 0: Power OFF |
| POWERSAVE | Specify the WLAN power save setting. 1: Enable power save. 0: Disable the power save. |
| WLANCFG | Specify “Enable/Disable” on the configuration file itself. 1: Enable the file. 0: Disable the file. |
| RoamingRSSIlevel | Specify the roaming threshold value in dBm. |
| RoamingAvailableTime | Specify time period in second for starting roaming again. |
| RoamingRSSISpan | Specify intensity difference in dBm for radio wave during roaming. |
| BandConfig | Specify communication speed 0: Only IEEE802.11b 1: Both IEEE802.11b and IEEE802.11g |
| INTERFACE | Specify additional specified device names. |

The following are the default values and operations outside of the range.

Table 2.61

| Key | Default Value | Operation Outside of Range |
|----------------------|----------------------|--|
| WLANPOWER | Not set | Not set |
| POWERSAVE | Not set | Sets just as it is Operation relies on the WLAN driver. |
| WLANCFG | “1”: Enable | “1”: Enable |
| RoamingRSSILevel | Not set | - |
| RoamingAvailableTime | Not set | - |
| RoamingRSSISpan | Not set | - |
| BandConfig | Not set | Sets just as it is Operation relies on the WLAN driver. |
| INTERFACE | No additional device | - |

STATIC section

This is for specifying an Access-Point that the integrated WLAN module establishes the connection.

Table 2.62

| Key | Setting Value |
|----------|--|
| SSID | Specify SSID. |
| ADHOC | Specify Infrastructure mode or AdHoc mode. 1: Infrastructure 0: AdHoc |
| WEP | Specify With/Without of WEP. 1: Without WEP 0: With WEP |
| KEYINDEX | Specify WEP key INDEX in the range of 0 to 3. |
| KEYDATA | Specify encrypted WEP key data. - 20bytes for 40-bit WEP - 52bytes for 108-bit WEP - Create using the Net Search utility. |

The following are the default values and operations outside of the range.

Table 2.63

| Key | Default Value | Operation Outside of Range |
|----------|-----------------------------------|-----------------------------------|
| SSID | Ignore all of the STATIC section. | Ignore all of the STATIC section. |
| ADHOC | “1”: Infrastructure mode | “1”: Infrastructure mode |
| WEP | “1”: Without WEP | “1”: Without WEP |
| KEYINDEX | Ignore all of the STATIC section. | Ignore all of the STATIC section. |
| KEYDATA | Ignore all of the STATIC section. | Ignore all of the STATIC section. |

TCIP section

This is for setting the integrated WLAN module's IP address.

Table 2.64

| Key | Setting Value |
|----------------|---|
| DHCP | Specify "Enable/Disable" on the DHCP. 1: Enable DHCP. 0: Disable DHCP. The following settings are disabled if "Enable" is specified. |
| IPADDRESS | Specify IP address. |
| SUBNETMASK | Specify subnet mask. |
| DEFAULTGATEWAY | Specify default gateway. |
| DNS1 | Specify primary DNS server address. |
| DNS2 | Specify secondary DNS server address. |
| WINS1 | Specify primary WINS server address. |
| WINS2 | Specify secondary WINS server address. |

The following are the default values and operations outside of the range.

Table 2.65

| Key | Default Value | Operation Outside of Range |
|----------------|-------------------|----------------------------|
| DHCP | "1": DHCP enabled | "1": DHCP enabled |
| IPADDRESS | Not set. | Set as it is. |
| SUBNETMASK | Not set. | Set as it is. |
| DEFAULTGATEWAY | Not set. | Set as it is. |
| DNS1 | Not set. | Set as it is. |
| DNS2 | Not set. | Set as it is. |
| WINS1 | Not set. | Set as it is. |
| WINS2 | Not set. | Set as it is. |

Note:

IP address is set as it is without validity check carried out on it.

Example of Configuration File

The following is an example of what is described generally in configuration file.

```
[WLAN]
WLANPOWER=1
POWERSAVE=1
WLANCFG=1
RoamingRSSIlevel=-78
RoamingRSSISpan=1
RoamingAvailableTime=60
BandConfig=1

[STATIC]
SSID=tunami
ADHOC=0
WEP=1
KEYINDEX=0
KEYDATA= 5C1E1455A2D504920483C59EA19AC2AB3F12821273BD2A17A9BE

[TCPIP]
DHCP=0
IPADDRESS=192.168.1.100
DEFAULTGATEWAY=192.168.1.100
SUBNETMASK=255.255.255.0
DNS1=192.168.1.101
DNS2=192.168.1.102
WINS1=192.168.1.103
WINS2=192.168.1.104
```

2.8. Power Control

2.8.1. Reset Controls

Power ON Reset

In the condition that the power on the terminal is not supplied by AC adaptor and the battery pack and the memory backup battery are not being installed (including the state that the capacity of the battery pack has been discharged), this occurs if the battery pack is installed and then the power is turned on. All of memory - DRAM data storage memory (data saved by the user, database, applications installed in the DRAM, etc.), program execution memory and memory used by drivers - will be initialized (cleared). Data in the FROM will be maintained.

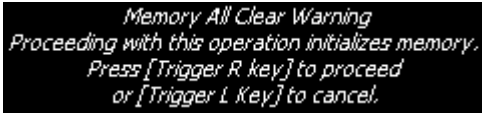
Reset

This occurs when the Reset switch is pressed while the terminal is operating (power ON status). Care must be taken before performing the reset because if it takes place while operation continues on the terminal, in-progress data and files being accessed may be corrupted.

If the Reset switch is pressed when the power is turned off, the power will be turned on and the terminal starts up. Memory for executing DRAM programs and unsaved in-progress data will be cleared, but data storage memory and data in the FROM will be maintained.

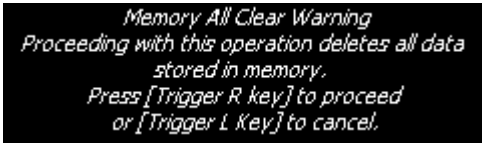
Full Reset

This occurs if both the power key and CLR key are held down at the same time and the Reset switch is pressed for a period of one second or more while the terminal is in operation. For the full reset, the following message will be displayed two times to confirm whether or not it is okay to continue the reset of operations.



```
Memory All Clear Warning
Proceeding with this operation initializes memory.
Press [Trigger R key] to proceed
or [Trigger L Key] to cancel.
```

Fig. 2.3



```
Memory All Clear Warning
Proceeding with this operation deletes all data
stored in memory.
Press [Trigger R key] to proceed
or [Trigger L Key] to cancel.
```

Fig. 2.4

The trigger key and clear key are used to confirm the full reset. When the trigger key is pressed each time (two times) the confirmation message appears, the user memory (data storage memory and program execution memory) is initialized.

2.8.2. Memory Corruption Check

At a time of reset under WindowsCE OS, RAM data corruption is detected if any. If a RAM data corruption is detected, the memory will be unconditionally initialized without issuing a warning message to the user.

To prevent this memory initialization without issuing a message, check the status of data used for memory check in the driver before the process for OS booting up starts up. If a memory corruption is detected, the following message, asking for confirmation of whether it is okay to implement recovery (reset), will appear.

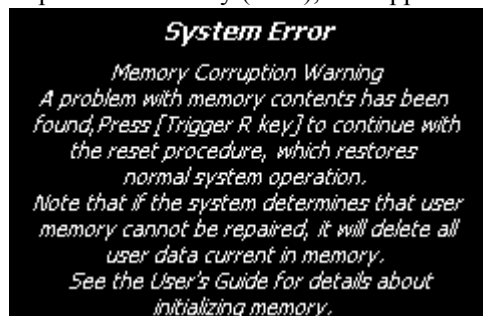


Fig. 2.5

The trigger R key is pressed to continue the reset of operations (reset). Once the trigger R key is pressed while the confirmation message is on the screen, the reset process will be executed and the recovery process is attempted.

2.8.3. Low Voltage Monitoring

Four levels of the low voltage monitor control are provided for the terminal.

Table 2.66

| Level | Description | Action | Next Startup |
|--------|--|--|---|
| VDET1 | Warning against low voltage of the battery pack | Issues warning message for low voltage of the battery pack | - |
| VDET2 | Turning off the power due to low voltage of the battery pack | Turns off the power. | Resume (with warning at time of startup) |
| VDET3 | Emergency turning off the power due to low voltage of the battery pack | Forces the terminal to turn off the power. | Warm boot (with warning at time of startup) |
| VDETCF | Turning off the power due to low voltage of card | Turns off the power. | Resume (with warning at time of startup) |

Battery Pack

The following shows statuses and levels available for the battery pack.

Normally the battery status is checked once every five seconds. However, it will be performed every second when the power management property is displayed. Taking last immediate ten data of the power voltage from AD converter, its average is calculated to classify the status in three levels, either “Almost exhausted (10 % of the capacity or less)”, or “Low (30 % of the capacity or less)”, or “O.K. (30 % of the capacity or more)”. The level is 10 % of the capacity when VDET1 occurs.

Table 2.70

| Status/Level | | Notation | Description |
|--------------|----------|------------------|---|
| Status | External | External power | Power by AC adaptor is being supplied, and charging the battery pack is complete. |
| | Recharge | Recharging | Power by AC adaptor is being supplied, and charging the battery pack continues. |
| | Normal | Main battery | Power by the battery pack is being supplied. |
| Level | 1 | O.K. | The battery pack has been fully charged or has a sufficient capacity. |
| | 2 | Low | The battery voltage level is half or less. |
| | 3 | Almost exhausted | “VDET1” has been detected. |

Memory Backup Battery

The following shows status and levels available for the memory backup battery.

The memory backup battery status is detected within ten seconds after turning on the power.

Taking 50 data output from the AD converter, a judgment on whether the memory backup battery is in normal state or not is made.

Table 2.67

| Status/Level | | Notation | Description |
|--------------|--------|------------------|--|
| Status | Normal | Backup battery | Power for memory backup is supplied by the memory backup battery. |
| Level | 1 | O.K. | The memory backup battery has been fully charged or has a sufficient capacity. |
| | 3 | Almost exhausted | The memory backup battery is in abnormal state. |

User Notification Methods

When VDET1 status occurs, the PBT_APMBATTERYLOW is issued periodically by WM_POWERBROADCAST message to the application.

GetSystemPowerStatusEx2() API function is used to monitor voltage in application capturing values listed below. Detailed values can be fetched using the **WIN32 API**.

- ACLineStatus
- BatteryFlag
- BatteryLifePercent
- BackupBatteryFlag
- BatteryChemistry

2.8.4. Power ON Factors

The followings are the power ON factors. These factors can be set enabled or disabled using the device control library.

- The Power key is pressed while the power is off.
- A time period set for the Alarm function has been elapsed.
- The terminal is mounted on the cradle while the power is being supplied by AC adaptor via the cradle.
- Trigger key has been pressed.
- WakeOn call has been issued by the Bluetooth module.
- VDETI has occurred while the WakeOn function has been set enabled.

Power ON Disable Factors

Factors that do not allow turning on the power are as follows.

- When the battery pack's voltage level is not sufficient enough to start up the terminal (VDET2 level or lower).
- The battery cover lock is open.

2.8.5. Power OFF Factors

The following are the power OFF factors.

- The Power key is pressed while the power is on.
- Neither key input, touching on the touch panel, disk access, card access, nor communication is performed within a preset time period.
- Output voltage from the battery pack is low (VDET2, VDET3) (see note).
- The battery cover lock is open.
- An excess of load on the CF card lowers voltage (VDETCF) (see note).
- Internal temperature in the terminal exceeds over 70°C.

Note:

Warning message will appear a next time when the power is turned on.

Power OFF Time

When either VDET2, BCVR, VDETCF or VDET3 occurs, the power will be turned off after the respective time periods elapse.

Table 2.68

| | |
|--------|--|
| VDET2 | Turning off (resume OFF) the power after 200 milliseconds. |
| BCVR | |
| VDETCF | |
| VDET3 | Forced to turn off the power after 500 milliseconds. |

2.8.6. Power Saving

Idle

The power will be saved by putting the CPU into **idle state** when event standby status is detected by either the terminal or an application running on the terminal. The peripheral devices are running while the CPU is in the idle state.

APO (Auto Power OFF)

The power is automatically turned off when the state of no key input, no touching on the touch panel, no disk access, no card access, or no communication, etc., is detected within a preset time period. Setting the **APO** function enabled or disabled, or a time period to activate the function can be performed using the device control library.

Dimming and ABO (Auto Backlight OFF)

The backlight is automatically dimmed or turned off when a preset time period has elapsed if the state of no key input, no touching on the touch panel, no disk access, no card access, or no communication, etc., is detected within the period. Setting a time period before starting dimming and a time period before turning off the backlight (Auto Backlight OFF), and setting “Enable/Disable” on the dimming and auto backlight OFF functions can be set using the device control library.

CPU Clock Frequency Control

The CPU clock frequency is changed to one of the frequencies described in the following table depending on the CPU load or user designation. It can be changed at the control panel or using the device control library. The default is “AUTO”.

Table 2.69

| | |
|-----------|---|
| POWERSAVE | 104 MHz |
| NORMAL | 208 MHz |
| TURBO | 520 MHz |
| AUTO | Automatically changes frequency to 104, 208, 520 or 13 MHz depending on CPU load. |

Virtual Power OFF/WLAN Standby

This is standby mode for WLAN operation. The device control library is used in application to turn off the LCD, keys and touch panel, and set the CPU frequency to “POWERSAVE” mode to save the power. Other peripheral devices are running.

Table 2.70

| | |
|--------------------------------------|-----------|
| Touch panel | OFF |
| Display | OFF |
| KEY | Lock |
| APO | Prohibit |
| Turning OFF the power with Power key | Prohibit |
| CPU clock frequency | POWERSAVE |

2.8.7. CPU Power State Control

The following shows the power states operable on the terminal.

Table 2.71

| State | Contents |
|------------|---|
| Discharge | State in that the battery pack has been discharged, and the super capacity has been also discharged. Neither RAM nor RTC will be backed up. |
| RTC backup | State in that only the RTC is being backed up. RAM is not backed up. |
| SLEEP mode | State in that the power on the terminal is turned off, and peripheral devices are also turned off. RTC and RAM are backed up. |
| RUN mode | State in that the terminal is running or application is running on the terminal. |
| POWERSAVE | The CPU is running at 104MHz. |
| NORMAL | The CPU is running at 208MHz. |
| TURBO | The CPU is running at 520MHz. |
| AUTO | The CPU is running at either 104, 208, 520, or 13MHz depending on the CPU load. |
| IDLE mode | State in that the terminal or application is waiting for an event to occur. |
| DeepIdle | If the CPU clock frequency has been set to “AUTO” mode, and the backlight is turned off, the CPU runs at 13MHz (“DeepIdle” mode). Note however that the CPU will be in ordinary “Idle” state, not DeepIdle mode, if periodical accesses are made to the integrated WLAN card or to a CF card inserted in the CF slot. |

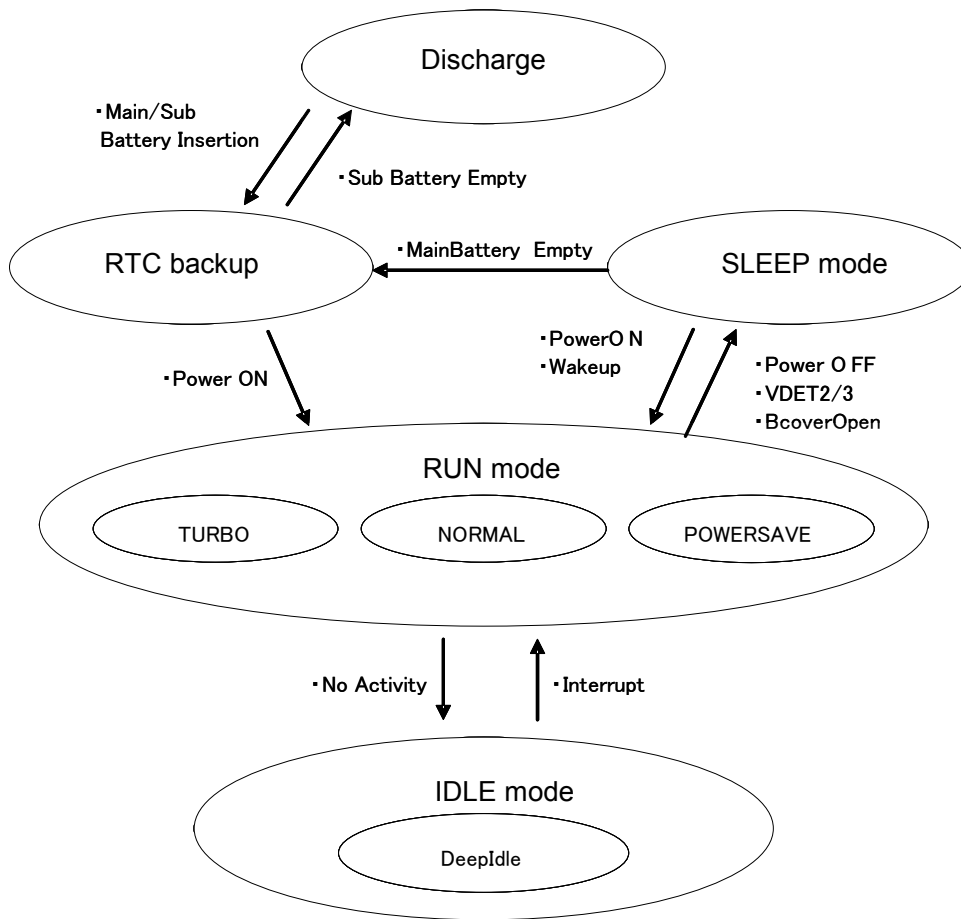


Fig. 2.6

2.8.8. Charging/Supplying the Power

The optional Dual Battery Charger (HA-D32DCHG) can be used to charge battery packs (two at a time). Mounting the terminal on the USB Cradle (HA-D60IO) or on the Cradle-type Charger (HA-D30CHG) or on the Ethernet Cradle (HA-D62IO) allows charging the battery pack installed in the terminal and supplying the power to the terminal.

2.8.9. Temperature Control

If temperature rise is detected in the terminal when running at the highest clock frequency (under such the condition that the CPU speed at “TURBO”, the digital camera in stream shooting, the integrated WLAN module in active mode, etc.), a warning message stating that “An error occurs !! Original reference cannot be found” appears and the power is turned off to protect the integrated devices in the terminal.

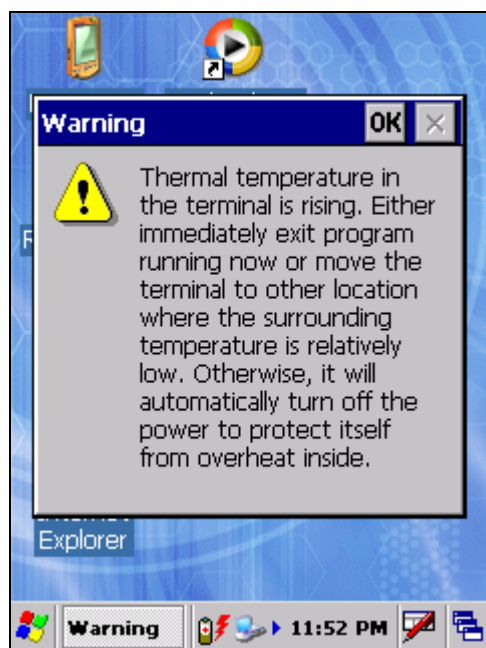


Fig. 2.7

Either turn off the power and leave the terminal unused for a while move it to a location where the surrounding air temperature is cooler.

If power is turned off due to the temperature limit, a warning message stating “An error occurs !! Original reference cannot be found” will appear when the power is turned on a next time.

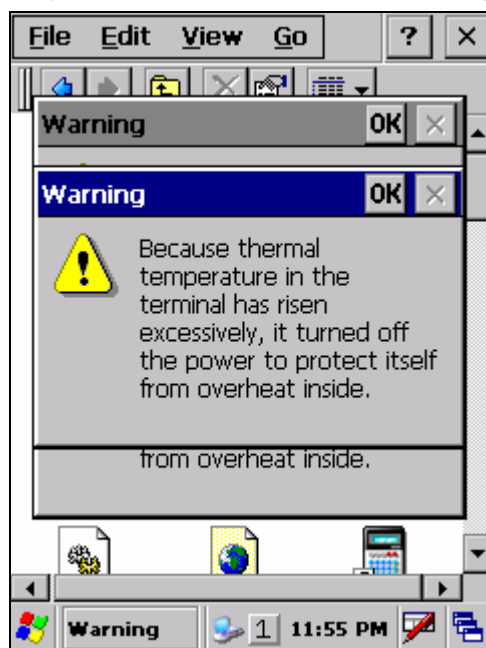


Fig. 2.8

2.9. Security

2.9.1. Setting Password for Terminal

This is the password setting implemented in the WindowsCE OS. A password can be set at the control panel.

2.9.2. Setting Password for Date and Time Properties

This is to enable setting a password for accessing the date and time setting in order to prevent the user from changing the settings of the terminal. Use **PASSTOOL** located under Windows folder to make the setting. Password registered will be saved in the FlashROM along with individual ID setting, etc.

2.9.3. Setting Individual ID

Individual ID is written into a predetermined area in the FlashROM at time of shipping from the factory. Distributor code (a code used to protect distributor developed software from illegal copying by unauthorized party) is saved in other area different from the individual ID. The individual ID incorporates the product code and serial number etc. and always becomes a unique code different from other units. The device control library can be used to read the individual ID set on each unit of the terminal.

2.9.4. Setting Distributor ID

The individual ID and distributor ID can be used by the distributor and user to prevent illegal use of application by unauthorized party at a time of installing or executing the illegally copied application by checking these preset codes. The distributor code is saved in the FlashROM area, and read using the device control library.

3. Application

This chapter explains about applications available in the terminal. They are classified into several groups described in the table below.

Table 3.1

| Classification | Description |
|-----------------------|--|
| Control Panel Applets | Start up the applets at the control panel. The applets are used to set the parameters required for the terminal and integrated devices. |
| Application programs | Start up applications by accessing the menus in order of Start → Program . Operational screens of each application appear and then the related processes are executed. |
| Utilities | The utilities are executed as co-process or auxiliary program in user applications. |
| Host applications | Application programs used by host PC. |

3.1. Control Panel Applets

The control panel applets are programs that display each content of the various parameters for the terminal itself and change the settings. The control panel applets are as follows.

Table 3.2

| Applet | Description | CASIO | MS |
|---------------------------------|---|-------|-----|
| Bluetooth Connection | Executes connection establishment with Bluetooth device. | Yes | -- |
| CF/WLAN Power (note) | Sets up the powers for CF card and WLAN. | Yes | -- |
| CPU Speed | Sets up the CPU's clock frequency. | Yes | -- |
| Error Reporting | Sets up error report. | -- | Yes |
| PC Connection | Changes the desktop settings of connection with PC. | -- | Yes |
| USB connection enabled | Checks USB connection status. | Yes | -- |
| Remove Programs | Deletes application program installed in the terminal. | -- | Yes |
| Internet Options | Changes internet settings. | -- | Yes |
| Keyboard | Changes the speed of key repeat input and the maximum waiting time. | -- | Yes |
| System | Displays system information and changes memory settings. | -- | Yes |
| Stylus | Calibrates the touch screen and adjusts double taps speed. | -- | Yes |
| Terminal Server Client Licenses | Displays authentication license for registered terminal service client. | -- | Yes |
| Dialing | Changes telephony settings. | -- | Yes |
| Network and Dial-up Connections | Connects the terminal to other PC, network or internet. | -- | Yes |
| Version Info | Displays the terminal version information. | -- | Yes |
| Vibrator | Sets up the vibrator's operation. | Yes | -- |
| Password | Changes owner password and security options. | -- | Yes |
| Power | Changes the power management options. | -- | Yes |
| Buzzer | Sets up buzzer sound volume. | Yes | -- |
| Volume & Sounds | Sets up type and its sound volume. | -- | Yes |
| Mouse | Adjusts double click speed. | -- | Yes |
| Laser Setting | Changes the scanner settings. | Yes | -- |
| Display | Changes the desktop background. | -- | Yes |
| Screen Resolution | Sets up the resolution setting. | Yes | -- |
| Storage Manager | Manages storage location and its disk partition. | -- | Yes |
| Owner | Changes owner's personal profile. | -- | Yes |
| Certificates | Displays and changes the terminal's system and its digital certificate. | -- | Yes |
| Regional Settings | Changes display methods of numeric value, currency, date and time. | -- | Yes |
| Date/Time | Changes settings for data, time and time zone. | -- | Yes |
| Input Panel | Changes the current input method and options. | -- | Yes |
| Brightness | Changes the backlight brightness. | Yes | -- |

Note:

The applet is available on the models, IT-600M30R and IT-600M30CR only.

3.1.1. Bluetooth Connection

This applet executes connection establishment with other Bluetooth device. For detailed explanation on the Bluetooth settings, refer to the IT-600 Series Bluetooth Setting Manual separately available.

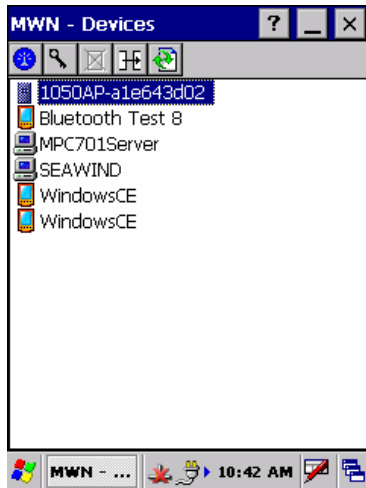


Fig. 3.1

3.1.2. CF and WLAN Power

This applet is to set up the settings for power to a CF card and the integrated WLAN module and to display the detected status on the power.

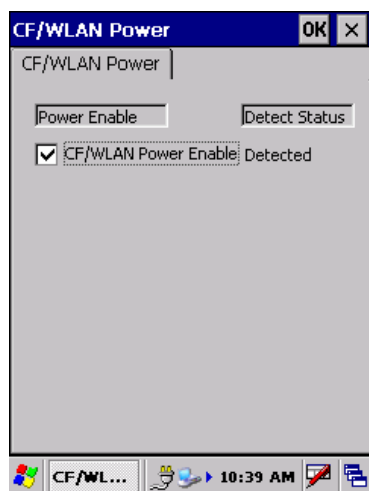


Fig. 3.2

CF/WLAN Power Enable Detected

Set up the checkbox enabled (see Fig. 3.2) to supply the power to a CF card and the integrated WLAN module. And then, the WLAN setting screen will appear on the models, IT-600M30R and IT-600M30CR.

3.1.3. WLAN Settings

This applet is to set up the settings for WLAN connection.

Wireless Information Tab

This tab displays a list of networks (SSID codes) connectable to the terminal and the current network being connected and the radio wave signal strength. See Fig. 3.3.

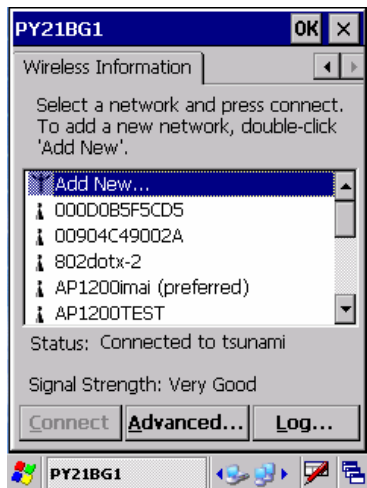


Fig. 3.3

Double tap a network on the screen you wish to display the Wireless Property screen.

Connect Button

This button displays the Connection Setting screen to set up the parameters required to connect the terminal with the Access-Point.

Advanced... Button

This button displays Advanced Setting screen to set up the detailed settings for WLAN connection.

Log... Button

This button displays operation logs for the WLAN operation.

Wireless Properties Screen



Fig. 3.4

Network name (SSID)

This field is to specify a network (SSID) name.

This is an ad hoc network

Set the checkbox enabled to communicate in AdHoc mode. Note, however, that the AdHoc mode is not recommended because a communication difficulty may occur.

Encryption

Using the pull-down menu, set **Encryption** to either “Disabled” or “WEP”. When “WEP” is selected, specify the appropriate items in the fields listed below and set the checkboxes enabled or disabled as needed. See Fig. 3.4.

- Authentication
- Network key
- Key index
- The key is provided automatically
- Enable 802.1x authentication
- EAP type

Connection Setting Screen

IP Address Tab

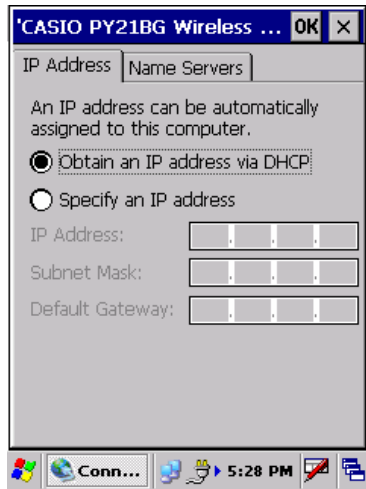


Fig. 3.5

Obtain an IP address via DHCP

Set this radio button enabled if the DHCP server is used.

Specify an IP address

Set this radio button if an IP address is specified directly without using the DHCP server. In this case, enter codes in each field of **IP Address**, **Sub Net Mask** and **Default Gateway**.

Name Servers Tab

This tab is to specify **Primary DNS**, **Secondary DNS**, **Primary WINS** and **Secondary WINS** as required.

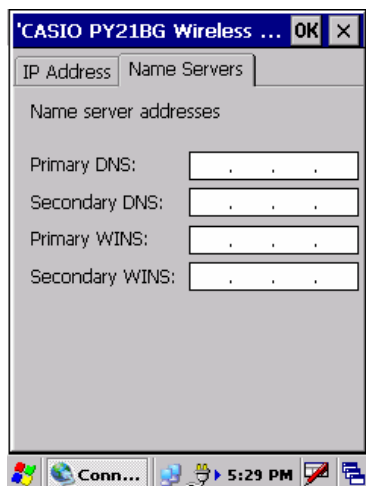


Fig. 3.6

Advanced Wireless Settings Screen

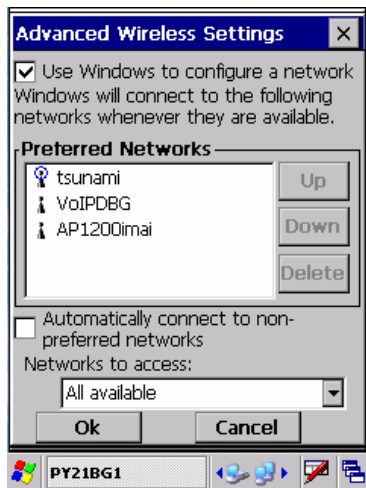


Fig. 3.7

Use Windows to configure a network

Enable (set to ON) this checkbox if Windows is used to configure the network settings. In this case, specify the appropriate items in the fields listed below and set the checkbox enabled or disabled as needed. See Fig. 3.7.

- Preferred Networks
- Automatically connect to non-preferred networks
- Networks to access

3.1.4. CPU Speed

This applet is for setting the CPU operating mode.

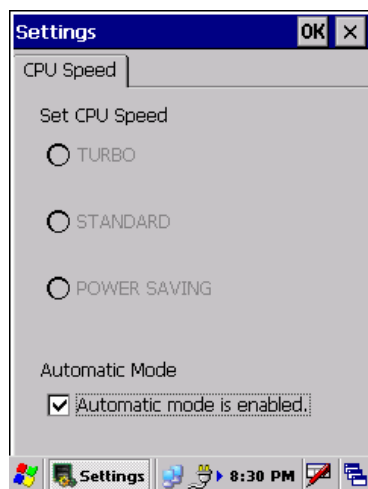


Fig. 3.8

TURBO

This mode sets the CPU frequency to 520MHz.

Note:

This mode is disabled when the automatic power save mode has been set enabled.

STANDARD

This mode sets the CPU frequency to 208MHz.

Note:

This mode is disabled when the automatic power save mode has been set enabled.

POWER SAVING

This mode sets the CPU frequency to 104MHz.

Note:

This mode is disabled when the automatic power save mode has been set enabled.

Automatic Mode

This mode will automatically switch the CPU frequency to either **TURBO**, **STANDARD** or **POWER SAVING** mode according to the load of the CPU. Enable the checkbox to set the mode enabled. See Fig. 3.8.

3.1.5. Error Reporting

Error information is recorded in the log file when an error occurs in the terminal or when an application is running.

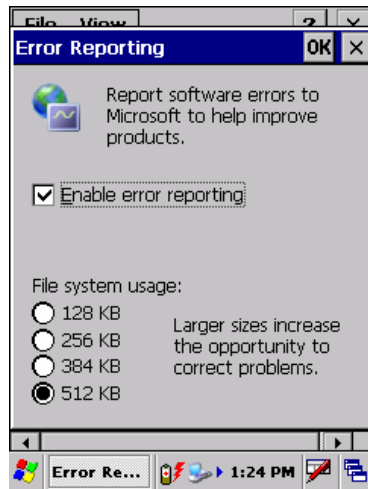


Fig. 3.9

Enable error reporting

Set the checkbox enabled to create an error log file.

File system usage

This parameter is to specify the maximum size of an error log file selecting one of the values listed in Fig. 3.9 by setting its radio button enabled.

3.1.6. PC Connection

This tab is to set connecting method with PC.

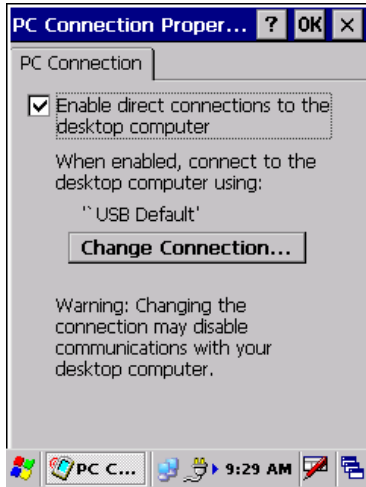


Fig. 3.10

Enable direct connections to the desktop computer

Set the checkbox enabled to establish a connection in **ActiveSync** with PC via USB Cradle.

Change Connection ... Button

This button displays a window (Change Connection) to change the method of connection method with PC. To set the connection establishment with PC in **ActiveSync** via USB Cradle, select **USB Default** in the pull-down menu.

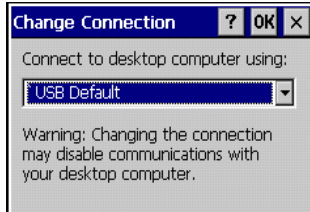


Fig. 3.11

3.1.7. USB Connections Enabled

This applet displays connection establishment of the terminal with PC or other device in USB mode.



Fig. 3.12

Can be connected to PC message will appear in the tab (see Fig. 3.12) when the terminal is connected to PC in USB Client mode (USB Function mode). Or, **Can be connected to LAN or modem** message will appear when the terminal is connected in USB Host mode.

3.1.8. Remove Programs

This applet is used to delete installed programs in the terminal.

Select an application to be deleted in the list appeared in the tab and then press **Remove.** button to delete it. Programs burnt in the ROM in the terminal cannot be deleted.



Fig. 3.13

3.1.9. Internet Options

This applet is to set up Internet Explorer options. Refer to the descriptions below about the fields and the buttons in the tab.

General Tab



Fig. 3.14

Start Page

This field is to specify the start page of URL.

Search Page

This field is to specify URL used with search page.

User Agent

This field is for selecting user agent.

Start in full screen mode

Set the checkbox enabled to display the full screen when the Internet is initiated a next time.

Cache Size (in KB)

This field is to specify the cache size in Kbytes.

Clear Cache Button

Press this button to clear the cache memory.

Clear History Button

Press this button to clear the history.

Connection Tab

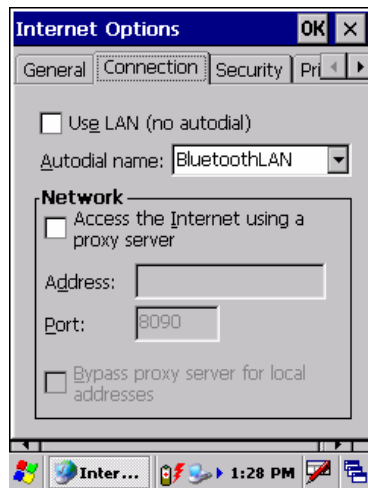


Fig. 3.15

Use LAN (no autodial)

Set the checkbox enabled to connect the terminal in LAN mode.

Autodial name

Select an autodial name in the pull-down menu when communication is made without the use of LAN.

Access the Internet using a proxy server

Set the checkbox enabled when a proxy server is used for accessing to Internet. In this case, specify the appropriate items and value in the fields below as needed.

- Address
- Port
- Bypass proxy server for local address

Security Tab

This tab is to set up security by zone for **Internet**, **Local intranet**, **Trusted sites** and **Restricted sites**. See Fig. 3.16.



Fig. 3.16

Sites... Button

This button displays the site adding screen to enable adding the specified site specified in **Add this web to the zone** field to the selected zone.

Settings... Button

This button displays advanced setting screen for detail security setting by zone.

Privacy Tab



Fig. 3.17

Privacy level

This pull-down menu is to select a privacy level.

Default Button

This button returns the setting contents to the default values.

Advanced Button

This button displays the advanced privacy settings screen to set advanced settings of the privacy.

Sites Button

This button displays the per site privacy actions screen to set privacy by site.

Advanced Tab

This tab is for setting “Enabled” or “Disable” for each parameter of the Internet Options as required.

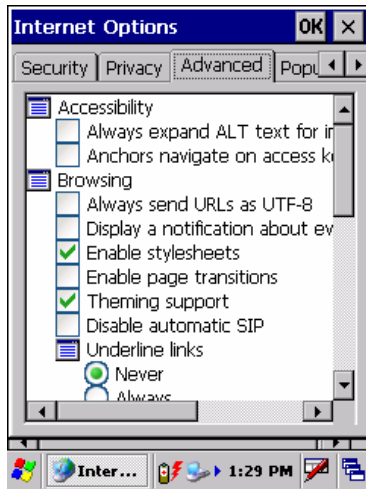


Fig. 3.18

Popups Tab

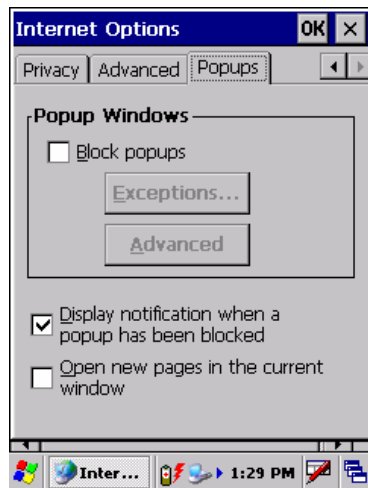


Fig. 3.19

Block popups

Set the checkbox enabled to disable popup windows.

Exceptions... Button

This button displays the popup exceptions screen to set up sites to be exempted from blocking popup windows.

Advanced Button

This button displays the popup filter screen to set up advanced settings of the popup block.

Display notification when a popup has been blocked

Set the checkbox enabled to display a notification when the popup has been blocked.

Open new pages in the current window

Set the checkbox enabled to display new pages in the current window.

3.1.10. Keyboard

This applet is for setting parameters concerned with operations by the keyboard.

Repeat Tab

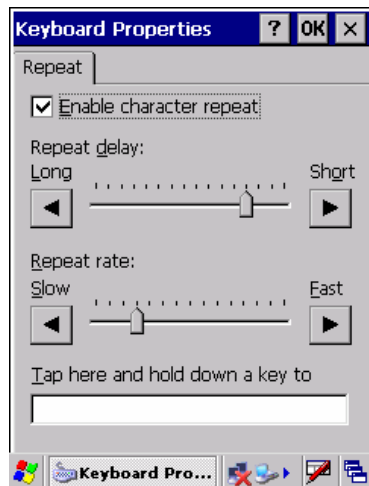


Fig. 3.20

Enable character repeat

Set the checkbox enabled to set repeating key entry.

Repeat delay

This adjustable slide is to set a waiting time period until when repeating key entry starts.

Repeat rate

This adjustable slide is to set an interval between repeating key entries.

Tap here and hold down a key to

The adjustments made in two parameters above with the adjustable slides can be checked by entering an actual key. First, tap any where in the field (the box) and then enter a key and hold it down to make entering the key repeated.

3.1.11. System

This applet is used for displaying and setting parameters concerned with the internal system of the terminal.

General Tab

This tab displays OS version, integrated CPU name and available RAM size.



Fig. 3.21

Memory Tab

This tab is for setting proportional memory allocation between “Storage memory” and “Program memory”.

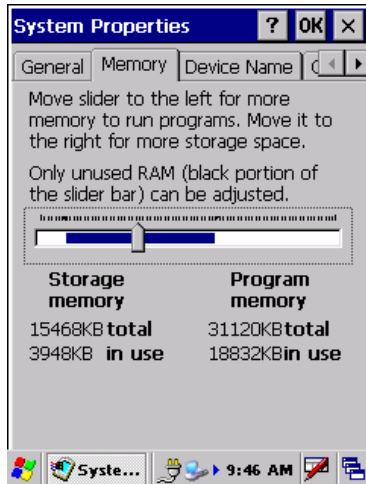


Fig. 3.22

Device Name Tab



Fig. 3.23

Device name (without spaces)

This field is for setting device name for the terminal itself. Spaces within the device name entered in the field are not allowed.

Device description

This field is to enter text string for the device description.

Copyrights Tab

This tab is for displaying the OS copyright information.

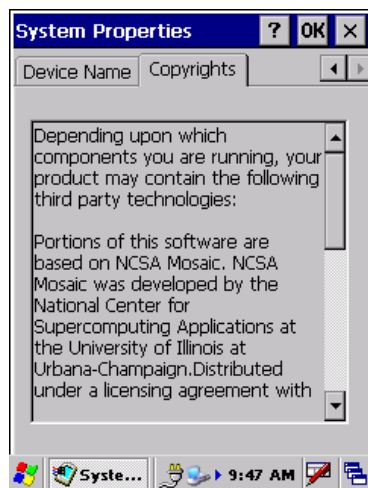


Fig. 3.24

3.1.12. Stylus

This applet is used to calibrate double tapping and touching on the screen.

Double-Tap Tab

This tab is used to adjust the speed of double tapping and distance between points. Adjustment can be checked by tapping the icon at the lower half of the screen.

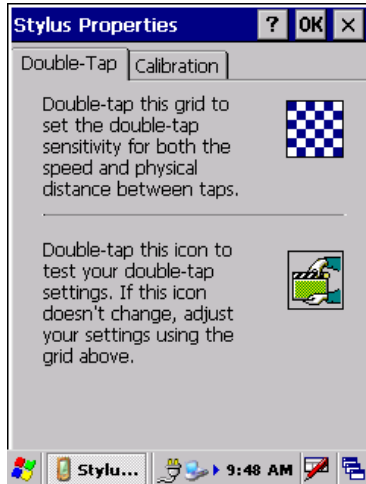


Fig. 3.25

Calibration Tab

Press **Recalibrate** button (see Fig. 3.26) to calibrate the touch screen and then follow the operating guide appeared on the screen to complete the whole process.



Fig. 3.26

3.1.13. Terminal Server Client Licenses

This applet is used to display Terminal Server authentication licenses for client.

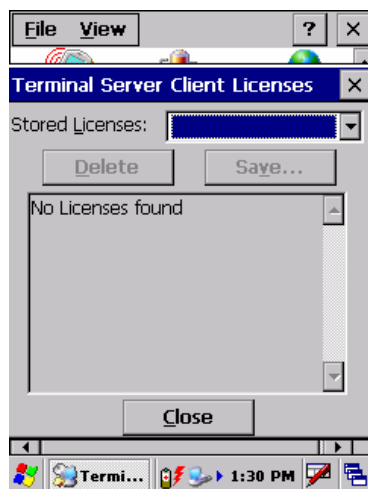


Fig. 3.27

Stored Licenses

This field is for specifying Terminal Server authentication licenses for client.

Delete Button

This button deletes a specified Terminal Server license.

Save... Button

This button saves a specified Terminal Server license.

3.1.14. Dialing

This applet is for setting telephony.

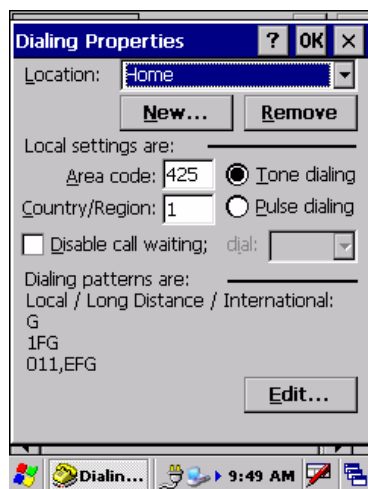


Fig. 3.28

Location

This pull-down menu is to select telephony information to be set.

New... Button

This button creates a new call location.

Remove Button

This button removes a call location.

Area code

This field is to specify an area code.

Country/Region

This field is to specify a country or regional code.

Tone dialing/Pulse dialing

These radio buttons are to select a line type.

Disable call waiting

Set the checkbox enabled to disable the call waiting function.

dial

This pull-down menu is for specifying dial that disables the call waiting function.

Edit... Button

This button displays the edit dialing patterns window to set up the following dialing patterns.

- For Local calls
- For Long distance calls
- For International calls

3.1.15. Network and Dial-up Connections

This applet is for setting connections used by dial up and LAN. The following connection types can be created.

Table 3.3

| Type | Description |
|--------------------------------|---|
| Dial up connection | Establishes network connection via phone line or ISDN line. |
| Cable connection | Establishes network connection with the terminal via cable (IrDA, Bluetooth included). |
| Virtual private network (PPTP) | This is a protocol provided by Microsoft for cipher communications. Information can be passed safely via the Internet because information is encrypted and sent/received between two PCs. |
| Virtual private network (L2TP) | This is a protocol that forms a virtual tunnel in the public line network (Internet, etc.), and establishes a PPP connection via the network to configure VPN. This protocol is the second layer (data link layer) of OSI basic reference model, and it can be used not only via IP network but also via various paths such as frame relay and ATM. |
| PPPoE (PPP over Ethernet) | This enables the use of PPP (needed for calls for phone and ISDN lines) in “constant connection” environment such as LAN. |

A new connection is established using the following procedures.

Establishing a new connection

1. Double tap **Make New Connection** icon shown in Fig. 3.29 to establish a new connection.

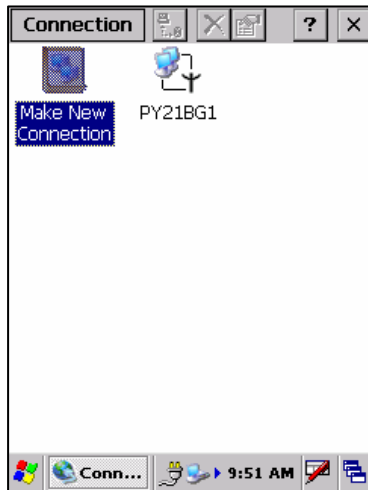


Fig. 3.29

Setting various connection information

1. Specify name in **Type a name for the connection** field and select a type of connection and then tap **Next >** button. See Fig. 3.30.

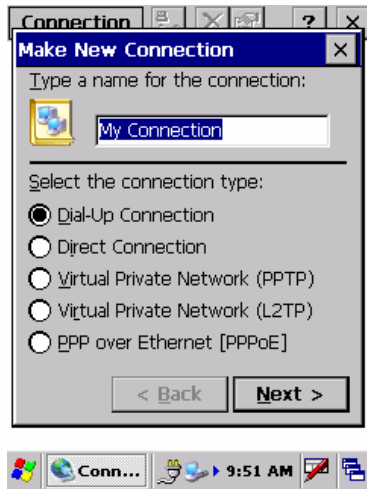


Fig. 3.30

Setting modem information

1. Set the modem information in the modem screen and then tap **Next >** button.

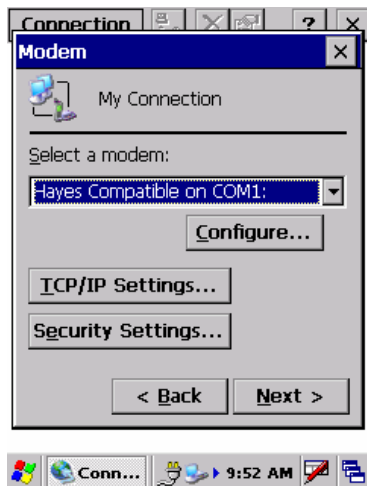


Fig. 3.31

Setting phone number

1. Set all information about a phone number and then tap **Finish** button.



Fig. 3.32

3.1.16. Version Info

This applet is used to display each version number of the OS, boot section, loader and service pack.



Fig. 3.33

3.1.17. Vibrator

This applet is to set up vibrator settings.

Enable each checkbox in Fig. 3.34 (**Alarm, Warning, Scan, Wake on LAN, User**) to set up the vibrator function enabled for the selected events.

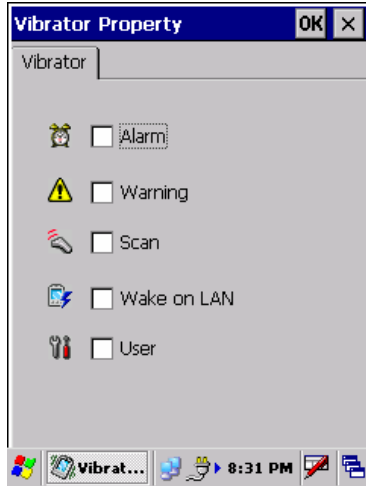


Fig. 3.34

3.1.18. Password

This applet is to set up a password that is used when the terminal starts up.



Fig. 3.35

Password

This field is for entering the password. Only numerals can be used for the password.

Confirm password

This field is for entering the same password again specified in **Password** field for confirmation purposes.

Enable password protection at power-on

Enable the checkbox if password input is required when the terminal starts up. The box and the parameter's name are grayed unless a password is entered in both **Password** and **Confirm password** fields.

3.1.19. Power

This applet is for setting the power management options.

Battery Tab

This tab displays the current status of battery pack (Main batteries) and memory backup battery (Backup battery).

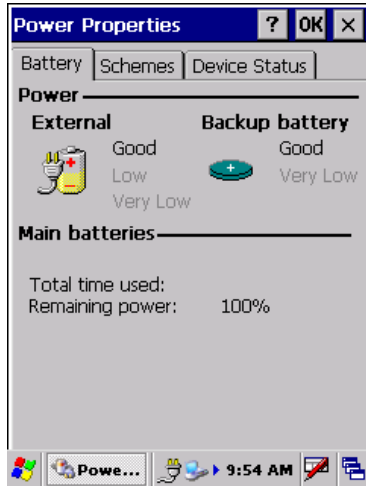


Fig. 3.36

Schemes Tab

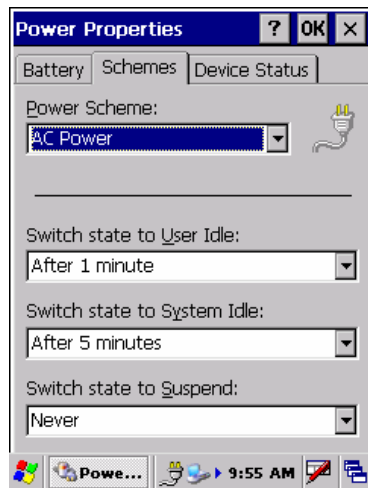


Fig. 3.37

Power Schemes

This pull-down menu is to select the power source from either “Battery Power” or “AC Power”.

Switch state to User Idle

This pull-down menu is to set up a time period until when the terminal changes its state to User idle.

Switch state to System idle

This pull-down menu is to set up a time period until when the terminal changes its state to System idle.

Switch state to Suspend

This pull-down menu is to set up a time period until when the terminal changes its state to Suspend. The selection will be disabled if the power source is set to “AC Power”.

A time period until when the auto power OFF function is performed will be a sum of adding time periods of **Switch state to User Idle**, **Switch state to System idle** and **Switch state to Suspend**. The minimum time period is 3 minutes.

Device Status Tab

This tab displays device power levels for the integrated devices.

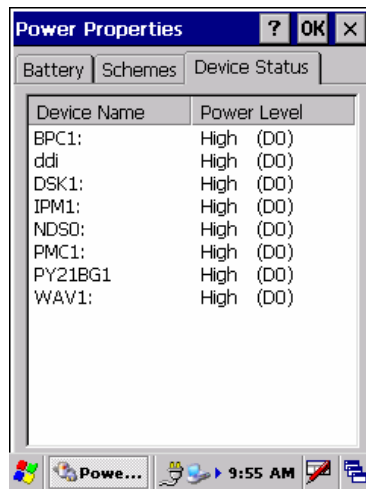


Fig. 3.38

3.1.20. Buzzer

This applet is to set up “Enable/Disable” for buzzer sound and its sound volume in one of the three grades (minimum, medium, or maximum) for each event listed in Fig. 3.39. Setting on the sound volume can be checked by tapping the triangle button for each event.

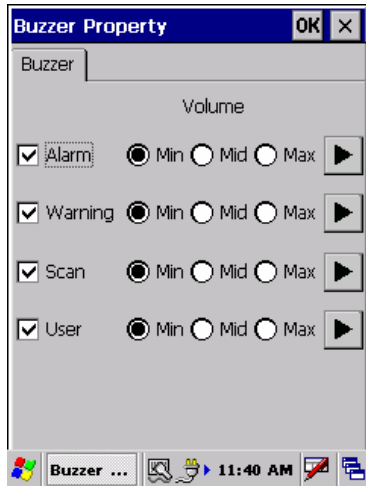


Fig. 3.39

3.1.21. Volume & Sounds

This applet is to set up “Enable/Disable” for sound types for each event listed in Fig. 3.40. Use the slide to adjust the sound volume for all the events.

Enable the checkbox of event you wish to set up the sound enabled. The radio buttons are to set up either “Soft” or “Loud” for the event sounds.

Volume Tab

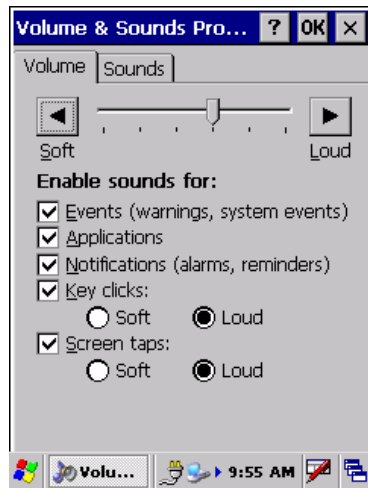


Fig. 3.40

Sounds Tab

This tab is for setting the sound file that the terminal uses.

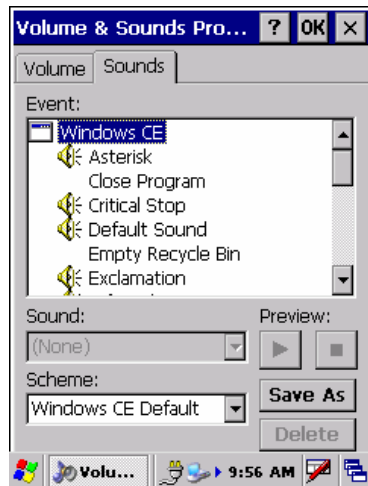


Fig. 3.41

3.1.22. Mouse

This applet is for calibrating the interval of double-tap on the screen with stylus. Double tap the grid in the right side of the upper screen to calibrate the double tap speed and its interval. The set value can be checked by double tapping the icon in the right side of the lower screen. See Fig. 3.42.

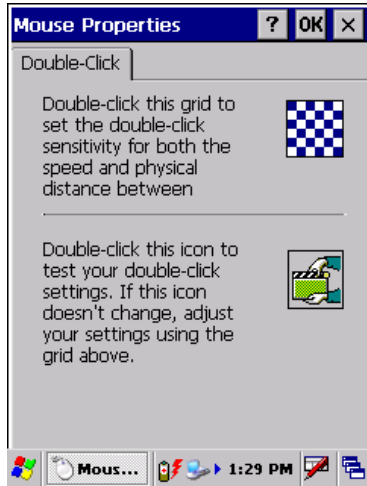


Fig. 3.42

3.1.23. Laser Setting

This applet is to change the settings for the integrated laser scanner. For detail about each parameter, refer to Chapter 2.2 “Scanner”.

Read barcode Tab

This tab is for specifying bar code symbologies to scan. Multiple symbologies can be specified.



Fig. 3.43

Note:

To support the RSS-14 Stacked and RSS Expanded Stacked symbologies, the patch files, **MoDevIT600.103.CAB**, **LaserIT600.102.CAB** and **OBRSetDT5200.102.CAB** must be installed in the terminal.

Driver Mode Tab

This tab is to set up “Enable/Disable” for scanning each symbology of the symbologies listed in **Laser Setting** tab and its parameters listed below.

- Min (No. of read digits)
- Max (No. of read digits)
- Output format
- Check-digit
- Check-digit output

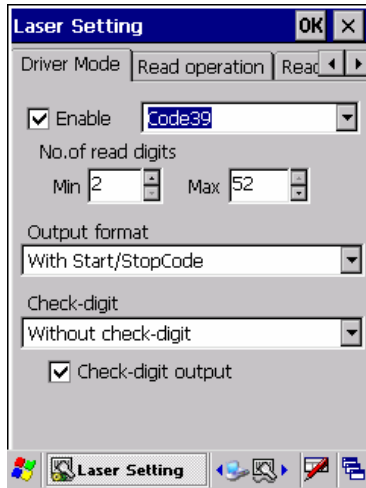


Fig. 3.44

Read operation, Read operation 2 Tabs

These tabs are to set up the following parameters related to scanning the bar code symbologies. Select a mode you wish to set up in each pull-down menu.

- Scanning mode
- Laser beam swing angle mode
- Laser focus
- Output buffer
- Termination code
- Decode level
- Scanning method
- Filter
- Verification
- Scanning
- Timeout
- Filter start time
- Gain
- Learning Decode (This function requires the patch files, **MoDevIT600.101.CAB**, **LaserIT600.101.CAB** and **OBRSetIT600.101.CAB** all to be installed in the terminal.)

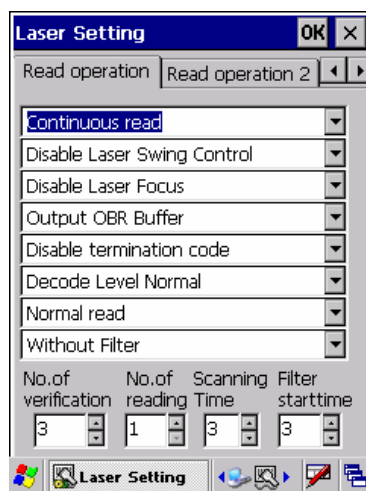


Fig. 3.45

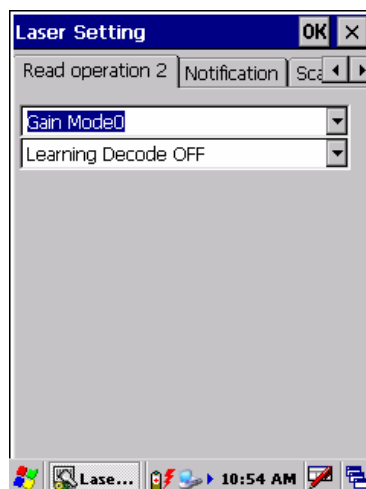


Fig. 3.46

Notification Tab

This tab is to set up notification methods selecting from the listed methods below. The notification is issued when scanning a bar code is complete.

- LED light up
- Buzzer sound
- Vibration

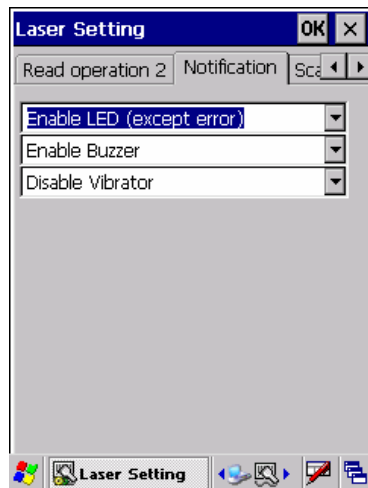


Fig. 3.47

Scanning Key Tab

This tab is to set up "Enable/Disable" for each key of the keys listed below as the scan trigger key.

- Left Trigger
- Right Trigger
- [L] Key
- [R] Key
- [U] Key
- [D] Key
- Center Trigger
- Gun Grip Key (Trigger Grip's lever)

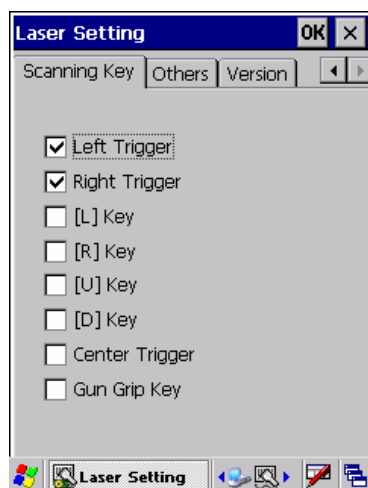


Fig. 3.48

Others Tab



Fig. 3.49

Calibration Button

This button displays the OBR calibration screen to set up the calibration of laser beam swing angle. Follow the guidance appeared on the screen to complete the calibration.

Restore default setting Button

This button resets setting contents and restores all the settings to the default settings.

Get logdata Button

This button captures log information for both the scanner and decoder units. The following are the log file names.

Scanner unit: "\ObrLog.dat"

Decoder unit: "\DecodeLog.dat"

Version Tab

This tab displays version information for the laser scanner setting tool.

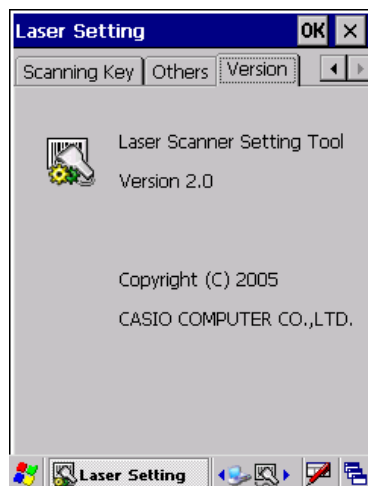


Fig. 3.50

3.1.24. Display

This applet is for setting color scheme for the background and desktop (appearance).

Background Tab

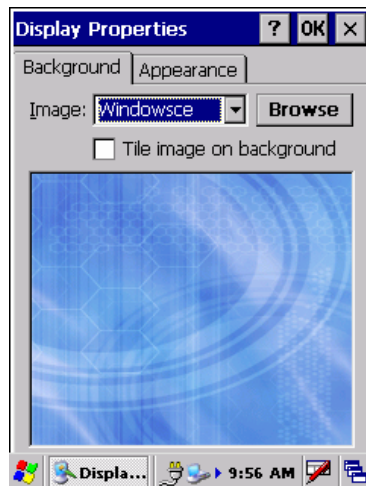


Fig. 3.51

Image

Select an image to be displayed in the ground in this pull-down menu.

Browse Button

This button displays the file reference dialog screen to specify an image to be displayed in the background. In the dialog screen, specify a file name in **Name** field and its file format in **Type** field.

Tile image on background

Set the checkbox enabled to display the specified tile image in **Image** field on the background.

Appearance Tab

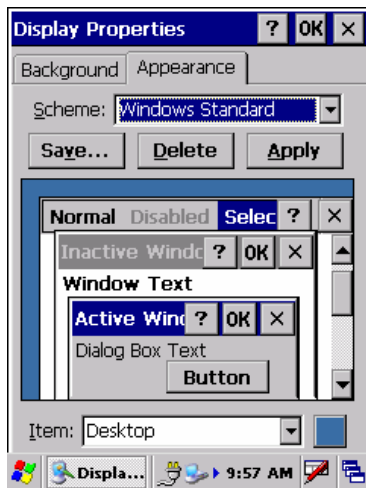


Fig. 3.52

Scheme

This pull-down menu is for selecting a color scheme of the desktop.

Save.... Button

This button saves the specified color scheme. After pressing the button, a dialogue window to confirm the specified color scheme appears. Press **OK** button to save it.

Delete Button

This button deletes the specified color scheme in Scheme field.

Apply Button

This button applies the specified color scheme immediately.

3.1.25. Screen Resolution

This applet is for switching the display screen's resolution, either QVGA or VGA.

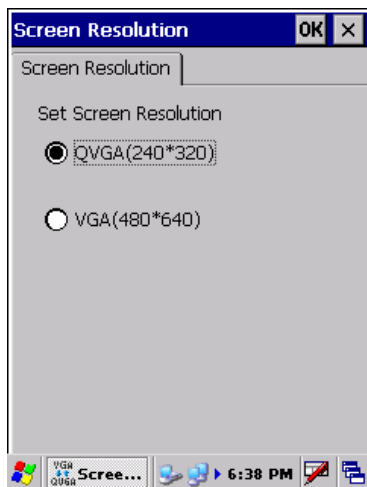


Fig. 3.53

QVGA(240*320)

Selecting this radio button switches the screen resolution to QVGA (240 x 320 dots).

VGA(480*640)

Selecting this radio button switches the screen resolution to VGA (480 x 640 dots).

Tapping **OK** button automatically resets the terminal so that the screen will change to the selected screen resolution mode.

3.1.26. Storage Manager

This applet displays the FlashDisk information.



Fig. 3.54

Properties Button

This button displays the Partition properties screen (see Fig. 3.55) to enable formatting and management with the FlashDisk.

Partition Properties Screen

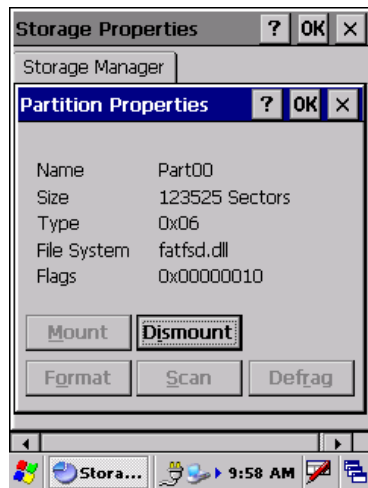


Fig. 3.55

Mount Button

This button mounts the partition.

Dismount Button

This button dismounts the partition.

Format Button

This button displays the Format window to enable formatting on the partition. It is not possible if the partition is mounted. See also Fig. 3.56.

Scan Button

This button displays the Scan window to enable verification check for the partition.

Defrag Button

This button displays the Defrag window to enable defrag for the partition.

Format Screen

This screen is for specifying format parameters for the partition.

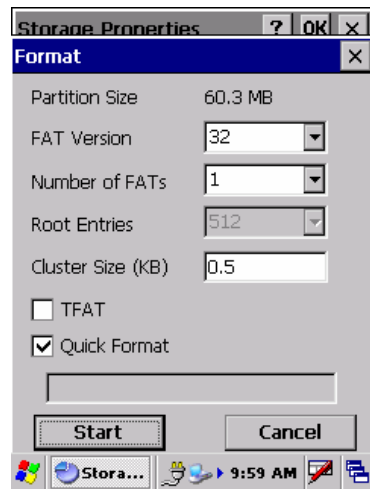


Fig. 3.56

Start Button

This button displays confirmation dialog to enable start of formatting on the partition.

Cancel Button

This button displays a confirmation dialog to cancel the formatting.

Scan Screen

This screen is for specifying scan parameters for the partitions.



Fig. 3.57

Start Button

This button displays a confirmation dialog window to enable scanning the partition.

Cancel Button

This button displays a confirmation dialog window to cancel the scanning.

Defrag Screen

This screen is for specifying defrag parameters for the partition.

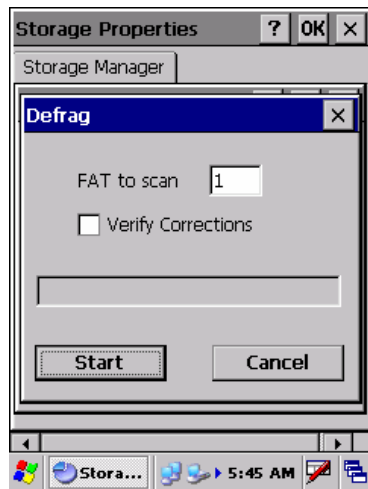


Fig. 3.58

Start Button

This button displays a confirmation dialog window to enable defrag for the partition.

Cancel Button

This button displays a confirmation dialog window to cancel the defrag.

3.1.27. Owner

This applet is for setting information related to the owner.

Identification Tab



The screenshot shows a dialog box titled "Owner Properties" with three tabs: "Identification", "Notes", and "Network ID". The "Identification" tab is active. It contains several input fields: "Name:" (a single-line text box), "Company:" (a single-line text box), "Address:" (a multi-line text box), "Work phone:" (a single-line text box), "Home phone:" (a single-line text box), and "At power-on" (a single-line text box). At the bottom, there is a checkbox labeled "Display owner identification" which is currently unchecked. The dialog box has standard window controls (minimize, maximize, close) and a help icon. The taskbar at the bottom shows the time as 10:03 AM.

Fig. 3.59

Name

This field is for specifying the owner's name inputting alphabets from the Input Panel appeared at the lower part on the screen.

Company

This field is for specifying company name of the owner.

Address

This field is for specifying address.

Work phone

This field is for specifying a phone number at work.

Home phone

This field is for specifying a phone number at home.

Display owner identification

Set the checkbox enabled to display the owner information when the terminal starts up.

Notes Tab

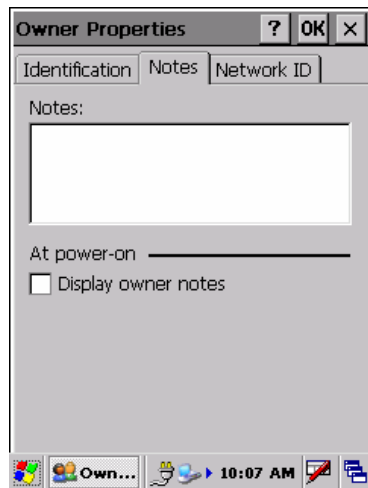


Fig. 3.60

Notes

Using this field, a memo can be freely written.

Display owner notes

Set the checkbox enabled to display the note written in **Notes** field when the terminal starts up.

Network ID Tab

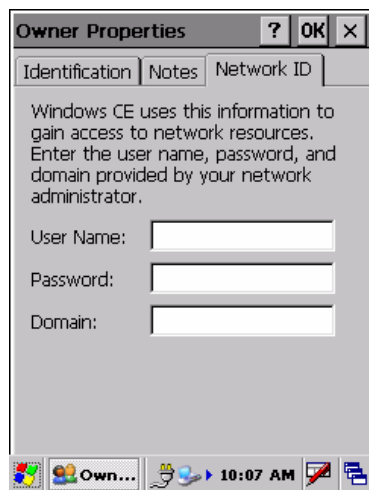


Fig. 3.61

User Name

This field is for specifying a user name to be used when accessing to network source.

Password

This field is for specifying a password to be used when accessing to network source.

Domain

This field is for specifying a domain to be used when accessing to network source.

3.1.28. Certificates

This applet is used for editing certificates trusted by the user.

Select certificate type from either **Trusted Authorities**, **My Certificates**, or **Other Authorities** in the pull-down menu.

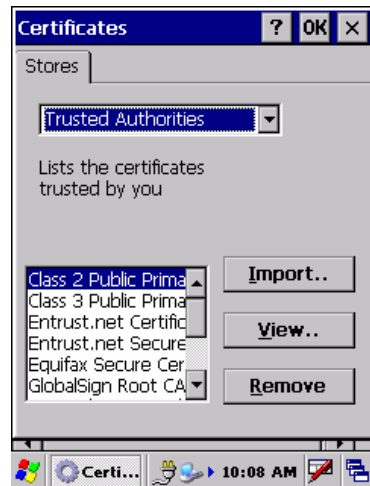


Fig. 3.62

Import... Button

This button displays the import certificate or key screen to enable import of certificate or key.

View... Button

This button displays the properties of certificate or key.

Remove Button

This button removes certificate or key.

3.1.29. Regional Settings

This applet is for setting display method and format of region, numeric value, currency, date, and time.

Region Tab

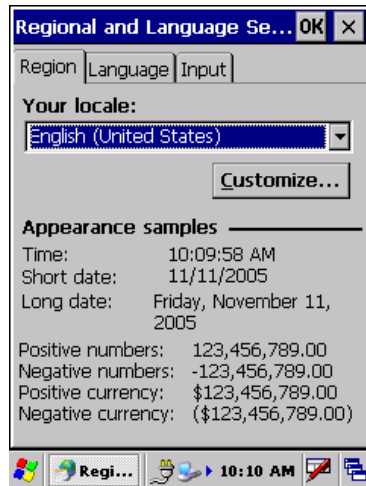


Fig. 3.63

Your local

This pull-down menu is to select your local region.

Customize... Button

This button displays the number tab to enable various regional settings such as number, currency, date and time.

Language Tab

This tab displays language for locale selected in **Region** tab. The language field in this tab is grayed.



Fig. 3.64

Input Tab

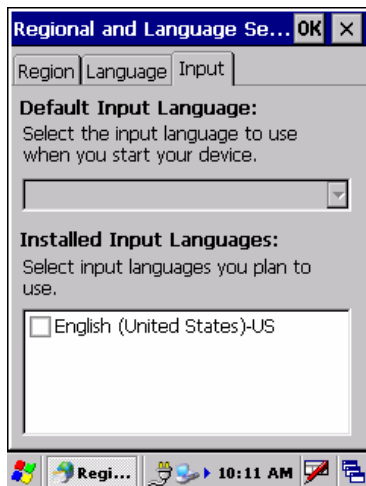


Fig. 3.65

Set the checkbox enabled in **Installed Input Languages** field for prescribed language to make selection.

3.1.30. Date and Time

This applet is for setting date, time and time zone. Input of password may be requested if it has been set with the password tool.

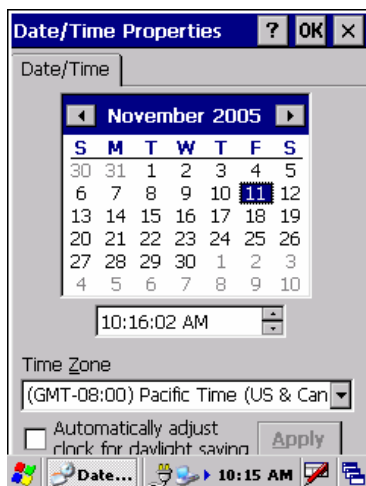


Fig. 3.66

Apply Button

This button applies all the settings made in this tab.

3.1.31. Input Panel

This applet is for changing the current input method and options.

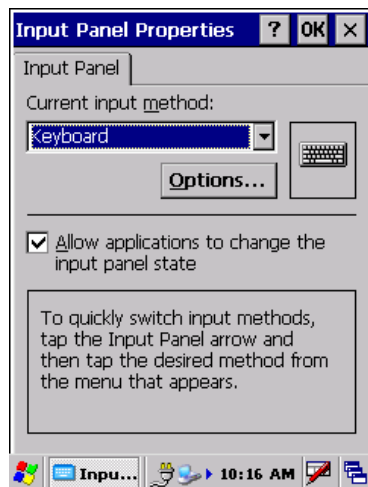


Fig. 3.67

Current input method

This pull-down menu is to select an input method.

The input method selected in this pull-down menu will become the default for the input panel.

Options... Button

This button displays the soft keyboard options screen for the input method selected in **Current input method** pull-down menu.

Allow applications to change the input panel state

Set the checkbox enabled to allow changes of input panel state in applications.

3.1.32. Brightness

This applet is for setting brightness for the power source provided by either battery or external power source, the backlight auto dimming, and the backlight auto off.

Brightness (Battery) Tab

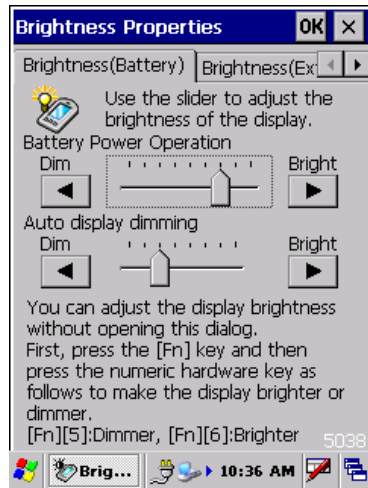


Fig. 3.68

Battery Power Operation

This slide is for specifying brightness in one of nine grades while battery pack is being used as the power source.

Auto display dimming

This slide is for specifying brightness in one of eight grades when the auto brightness dimming mode starts up. This auto brightness dimming mode is operable only during battery pack is used as the power source.

Brightness (External) Tab

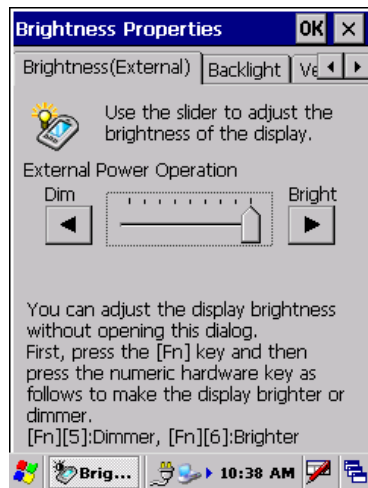


Fig. 3.69

External Power Operation

This slide is for specifying brightness in one of nine grades while an external power supply is used as the power source.

Backlight Tab

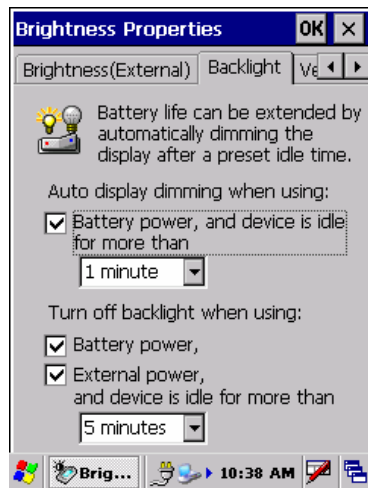


Fig. 3.70

Auto display dimming when using

This parameter is for specifying “Enable/Disable” for the backlight auto dimming mode as well as a time period until when the auto dimming mode starts up. This setting is valid only when the power source is provided by battery pack.

Turn off backlight when using

The parameters are for specifying “Enable/Disable” for backlight auto off as well as a time period until when the backlight auto off mode starts up.

Note:

When both backlight auto dimming and the backlight auto off modes are set enabled, either one with shorter time period specified than the other will have the priority.

Version Tab

This tab displays the information about the Brightness Properties.



Fig. 3.71

3.2. Application Programs

Once application program is launched by accessing **Start** → **Programs** menus, the application's operation menu is displayed to enable the processing.

The following are the application programs implemented in the terminal

Table 3.4

| Application | Description | CASIO | MS |
|---------------------------|---|-------|-----|
| Internet Explorer | Displays Web pages for Internet and Intranet. | Yes | -- |
| Media Player | Media player based on MediaPlayer9. | -- | Yes |
| Microsoft WordPad | Rich text editor | -- | Yes |
| Voice Recorder | Lists up and creates sound/hand writing note/static image. | Yes | -- |
| Windows Explorer | File management program | -- | Yes |
| Command Prompt | Operates the system with the DOS commands. | -- | Yes |
| Remote Desktop Connection | Remote desktop client | -- | Yes |
| Inbox | Sends out and receives e-mails. POP3/IMAP4 are supported. | Yes | -- |
| Calculator | Performs four arithmetical calculations in 12 digits maximum. | Yes | -- |
| Viewer | Displays Word, Excel, PowerPoint, PDF and image files | -- | -- |
| ClearVue Document | Displays Word files. | Yes | -- |
| ClearVue Image | Displays image files. | Yes | -- |
| ClearVue PDF | Displays PDF files. | Yes | -- |
| ClearVue Presentation | Displays PowerPoint files. | Yes | -- |
| ClearVue WorkSheet | Displays Excel files. | Yes | -- |
| Image Recorder | Records and playbacks voice sound. | Yes | -- |
| Notes | Creates and displays hand writing notes. | Yes | -- |
| Mobile Camera (see note) | Captures and displays static images. | Yes | -- |
| Image Recorder | Demonstrates the features of capturing images. | Yes | -- |
| Backup Tool | Backs up and restores user data to/from FlashDisk. | Yes | -- |
| Laser Scanner Demo | Demonstrates the features of scanning bar codes. | Yes | -- |
| Laser Scanner Read | Scans bar codes. | Yes | -- |
| Copy Devices | Copies user data between two terminals. | Yes | -- |
| FLCE | Client for data upload/download | Yes | -- |
| ActiveSync | ActiveSync client | -- | Yes |
| LAN ActiveSync | ActiveSync client via WLAN | -- | Yes |
| Terminal | TTY/VT-100 emulator | -- | Yes |
| NetSearch | Displays a list of partners via WLAN. | Yes | -- |

Note:

Operable with IT-600M30C and IT-600M30CR.

3.2.1. Internet Explorer

This application displays Web pages on the Internet and Intranet.

- The IE 6.0 module is integrated in the terminal.
- Kerberos, TLS Version 1.0, SSL Versions 2.0 and 3.0, and SGC are supported.
- JScript 5.5 conforms to ECMA 262 language specification (ECMAScript Edition 3).

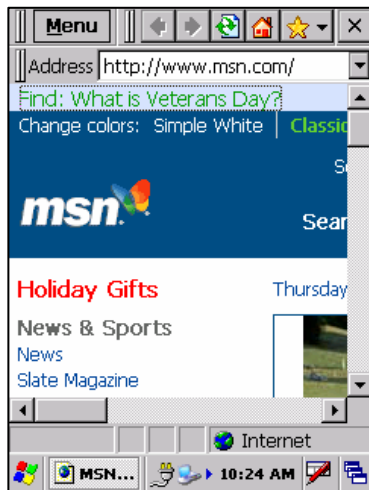







Fig. 3.72

Table 3.5 Menus in the application

| Menu | Description |
|---------------|--|
| Open | Display of HTML and JPEG files. |
| Save As ... | Saves data in HTML, TEXT, GIF and BMP formats. |
| Edit | Edits text in a page. |
| Full Screen | Hides the main menu, toolbar, etc. |
| Fit to Screen | Changes the displayed page size to reduction mode. |
| Address Bar | Changes the address bar. |
| Text size | Specifies the displayed font size. |
| Encoding | Specifies the displayed font. |
| History ... | Changes the display to a page listed in the history. |
| Find ... | Searches text within page. |
| Options ... | Sets up options for security, etc. |
| Properties | Displays the property of page. |
| Exit | Exits the browser. |

Table 3.6 Toolbar Configuration

| Function | | Description |
|---|-----------|--|
|  | Return | Returns to the previous. |
|  | Advance | Changes the display to the previous page displayed prior to returning. |
|  | Update | Updates the current page to the latest information. |
|  | Homepage | Returns to the homepage. |
|  | Favorites | Displays the Favorites menu. |

3.2.2. Media Player

This application is the media player based on the WindowMedia9 which supports the following audio decoders and video decoders.

- WAV
- MP3
- WMA
- WMV
- MPEG4 (including MPEG2)



Fig. 3.73

Table 3.7 Menus in the application

| Menu | Description |
|----------------|---|
| File | |
| Open ... | Opens a file to playback. |
| Close | Cancels the playback. |
| Playlists | Displays the playback list. |
| Favorites | Adds to the Favorites and organizes it. |
| Exit | Ends the application. |
| View | |
| Zoom | Selects the video display size from either 50 %, 100 %, or 200 %. |
| Full Screen | Displays the screen in full screen mode. |
| Statistics ... | Displays the network status during playback. |
| Properties ... | Displays the file properties. |
| Options ... | Displays the playback options. |
| Playback | |
| Play | Starts playback of a file. |
| Pause | Pauses playback of a file. |
| Stop | Ends playback of a file. |
| Mute | Sets up the minimum sound during file playback. |
| Repeat | Repeats playback. |
| Shuffle | Playbacks files in random selecting from the playback list. |

3.2.3. Microsoft WordPad

This application is the Microsoft Word for WindowsCE edition. It displays and creates files in Word, WordPad and rich text, and text formats.

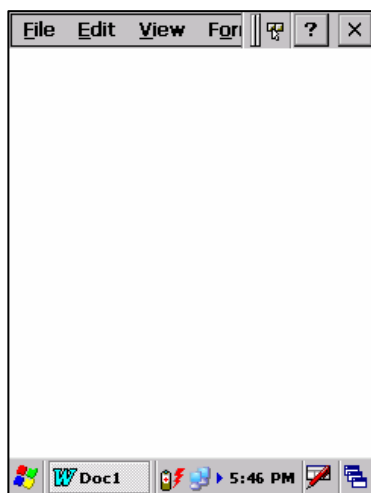


Fig. 3.74

Table 3.8 Menus in the application

| Menu | Description |
|--------------|--|
| File | |
| New | Creates new text. |
| Open ... | Displays existing document file. |
| Save | Saves document file by overwritten. |
| Save As ... | Saves document file with a specified name. |
| Password ... | Attaches password to document. |
| Print ... | Prints document. |
| Recent Files | Displays recently displayed document file names. |
| Close | Ends the application. |
| Edit | |
| Undo | Restores the previous operation. |
| Redo | Repeats the operation. |
| Cut | Cuts document in the selected range. |
| Copy | Copies document in the selected range. |
| Paste | Pastes document specified for cut or copy. |
| Clear | Deletes document in the selected range. |
| Select All | Selects the entire document. |
| Find ... | Displays search dialog. |
| Find Next | Searches for a next item. |
| Replace ... | Displays character replacement dialog. |

Continue.

| | |
|----------------|---|
| View | |
| Normal | Displays in standard mode. |
| Outline | Displays outline. |
| Wrap to Window | Displays document aligning its width with window's width. |
| Full Screen | Displays document in full screen. |
| Zoom | Displays document in a size of either 50 %, 75 %, 100 %, 125 %, 150 % or custom (50 to 200 %). |
| Format | |
| Font ... | Sets font type, font size, font style and color. |
| Paragraph ... | Sets alignment (left, Right, center), alignment style (none, bulleted, numbered) and indentation. |
| Tabs ... | Sets tab stop position (0 to 5.50"). |

3.2.4. Image Recorder

This application displays files in the list format created using the mobile camera, voice recorder and hand writing memo tools.

- Target list to be displayed (default) is the “My Documents” folder.
- Tapping and holding a file listed in the list pops up the context menu.

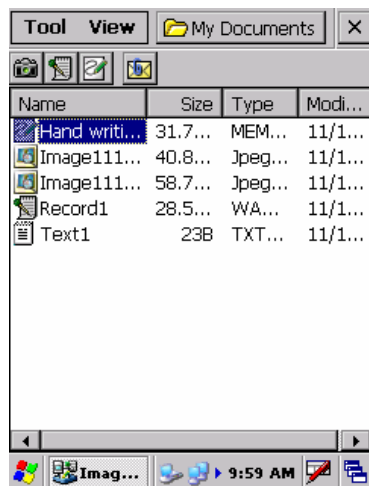






Fig. 3.75

Table 3.9 Menus in the application

| Menu | Description |
|--------------------|--|
| Tool | |
| Option | |
| Camera | Displays the mobile camera setting screen. |
| Voice Recorder | Displays the voice recorder setting screen. |
| Notes | Displays the hand writing memo setting screen. |
| Other | Displays the others setting screen. |
| View | |
| Slide show display | Performs slide show. |
| About | Displays version information. |

Table 3.10 Toolbar Configuration

| Function | Description |
|---|---|
|  Mobile Camera | Starts up the mobile camera. |
|  Voice Recorder | Starts up the voice recorder. |
|  Hand writing note | Starts up the hand writing memo. |
|  New Mail | Creates new mail with selected file to be attached. |

Mobile Camera Setting Screen

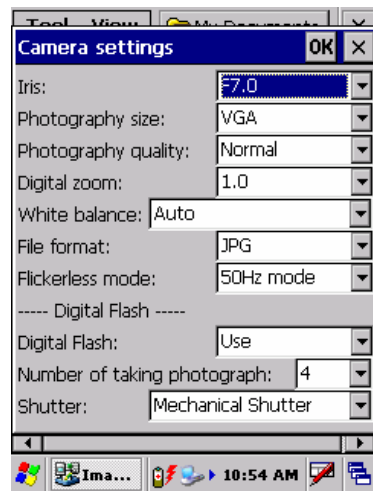


Fig. 3.76

Iris

Select either F3.5 or F7.0 in this pull-down menu.

Photography size

Select either 1M, XGA, SXGA, VGA, 4/9VGA or 1/9VGA in this pull-down menu.

Photography quality

Select either Fine, Normal or Economy in this pull-down menu.

Digital zoom

Select either 1.0, 1.5, 2.0 or 3.0 in this pull-down menu. A digital zoom that is selected differs depending on the captured size of an image.

White balance

Select either Auto, Outdoor, Fluorescent or Incandescent in this pull-down menu.

File format

Select either BMP or JPG in this pull-down menu.

Flickerless mode

Select either 50Hz or 60Hz in this pull-down menu.

Note:

This mode requires the patch files, **MoDevIT600.101.CAB**, **CAMIT600.100.CAB** and **CAMAPPIT600.101.CAB** all to be instated in the terminal.

Digital Flash

Select either Use or Not Use in this pull-down menu.

Number of taking photograph

Select either 1 or 2 or 4 or 8 in this pull-down menu.

Shutter

Select either Mechanical Shutter or Electronic Shutter in this pull-down menu. With the Electric Shutter set effect, a time required to capture image shortens, but the “1/4VGA” image size is only available. Or with the Mechanical Shutter set effect, “VGA” and “1/4VGA” image sizes are available. However, this shutter mode requires a long time to capture image.

Voice Recorder Setting Screen

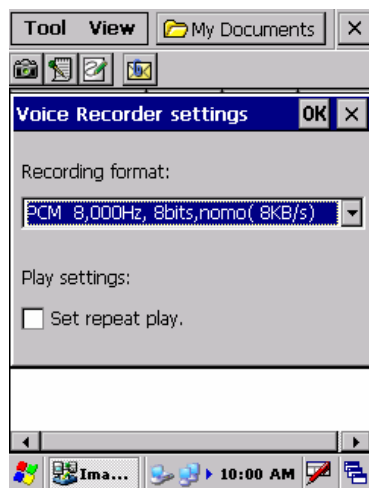


Fig. 3.77

Recording format

Select a recording format in this pull-down menu. See Chapter 2.1.5 “Audio” for the list of selectable formats.

Play settings

Enable the checkbox to repeat playbacks.

Hand Writing Memo Setting Screen

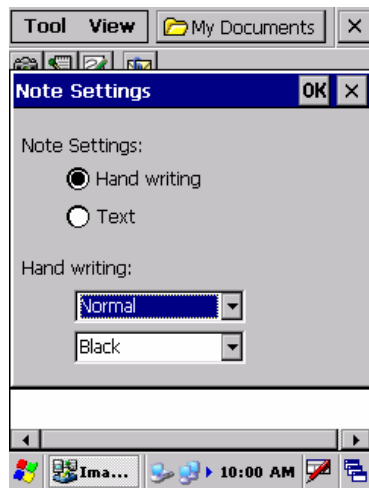


Fig. 3.78

Note Settings

Select either one of them, “Hand writing” or “Text” for a type of memo to create.

Hand writing

Sets up line thickness and color for hand writing memo to create. Select ones in these pull-down menus. See “Memo” for details about the parameters.

Others Settings Screen

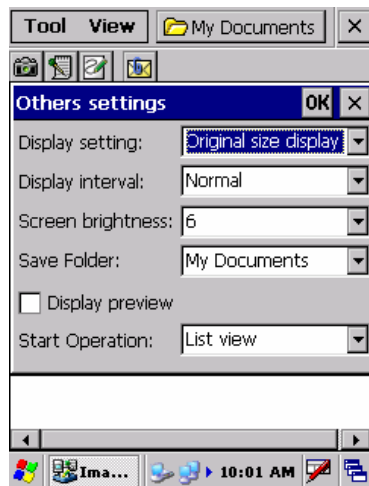


Fig. 3.79

Display setting

Select either “Original size display” or “Full screen” in this pull-down menu.

Display interval

Select either “Short”, “Normal” or “Long” in this pull-down menu for the interval of slide show.

Screen brightness

Select the brightness for the slide show in this pull-down menu.

Save Folder

Select storage area from either “My Documents”, “FlashDisk”, or “SD Card” in this pull-down menu.

3.2.5. Explorer

This application is a file management program. It can copy, transfer and delete files, create folders and delete folders.

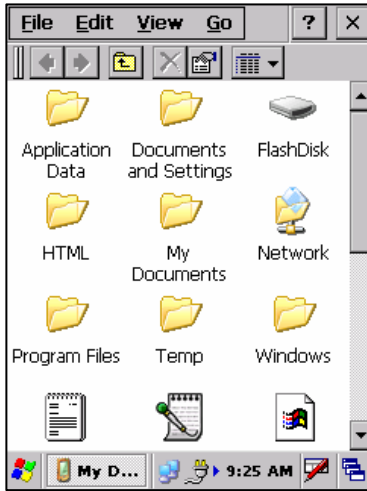


Fig. 3.80

Table 3.11 Menu in the application

| Menu | Description |
|----------------------|--|
| File | |
| Open | Opens files and folders. |
| New Folder | Creates new folders. |
| Delete | Deletes specified file and folder. |
| Rename | Changes specified file and folder names. |
| Properties | Displays properties of specified file and folder. |
| Send To | |
| Desktop as Shortcut | Creates shortcut for specified file and folder on the desktop. |
| My Documents | Copies selected file and folder to "My Documents". |
| Close | |
| Edit | |
| Undo | Returns to the previous operation. |
| Cut | Cuts selected file and folder. |
| Copy | Copies selected file and folder. |
| Paste | Pastes file and folder that are cut or copied. |
| Paste Shortcut | Creates shortcuts for file and folder that are cut or copied. |
| Select All | Selects all the files and folders that are displayed. |
| View | |
| Large Icon | Displays with a large icon. |
| Small Icon | Displays with a small icon. |
| Details | Displays name, size, type and updated date/time. |
| Arrange Icons | |
| Name | Lines up icons in order of name. |
| Type | Lines up icons in order of category. |
| Size | Lines up icons in order of size. |

Continue.

| | | |
|----|------------------------|---|
| | Date | Lines up icons in order of date. |
| | Auto Arrange | Lines up icons in order of the method specified in “Arrange Icons”. |
| | Refresh | Updates the list with latest information. |
| | Option ... | Displays folder options screen. |
| | Address Bar | Switches between “Display” and “Hide” for the address bar, |
| | Status Bar | Switches between “Display” and “Hide” for the status bar. |
| Go | | |
| | Favorites | |
| | Add To Favorites ... | Registers URLs in Favorites folder. |
| | Organize Favorites ... | Organizes files in Favorites folder. |
| | Back | Goes back to the previous screen. |
| | Forward | Goes to a next screen. |
| | My Documents | Opens My Documents folder. |

3.2.6. Command Prompt

This application starts up the Pocket CMD to enable operating the terminal with the DOS commands.

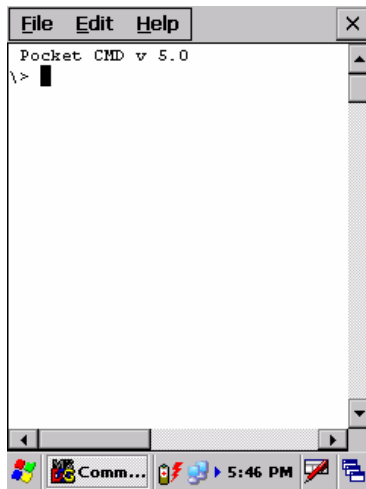


Fig. 3.81

Table 3.12 Menus in the application

| Menu | Description |
|-----------------------|---|
| File | |
| Close | Ends the application. |
| Edit | |
| Copy | Copies text in selected range. |
| Paste | Pastes text cut or copied. |
| Clear Screen | Clears the screen. |
| Set Screen Buffer ... | Displays screen for setting the screen's buffer size. |
| Help | |
| About Console ... | Displays version information. |

3.2.7. Remote Desktop Connection

This application is the RDP5.5 based remote desktop client. It can control a Windows PC remote from the terminal that is executing terminal service using the Microsoft remote desktop function. The following are the procedures.

1. Specify a Windows based PC remote from the terminal by inputting its computer name and IP address.

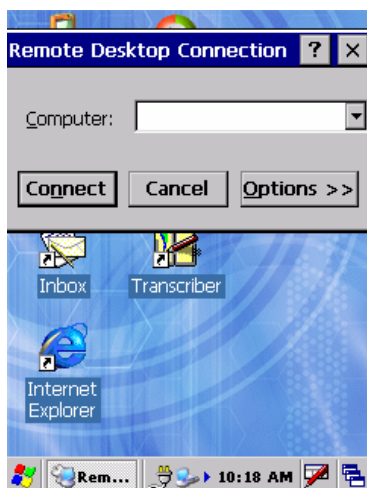


Fig. 3.82

2. Log in with the remote PC by inputting the remote user name and password. See Fig. 3.83.



Fig. 3.83

3. If the log in is complete successfully, the terminal's display shows the desktop of the remote PC.

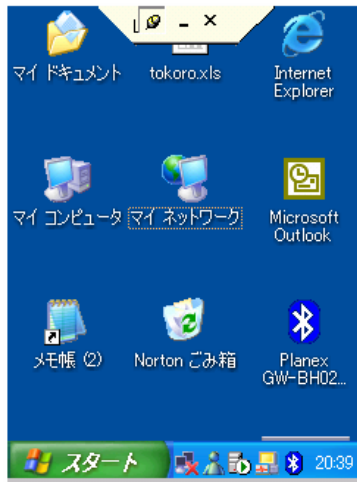


Fig. 3.84

3.2.8. Inbox

This application sends and receives emails. It can support the POP3/IMAP4 protocols.

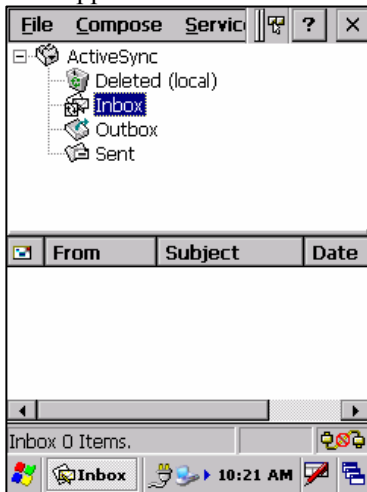


Fig. 3.85

Table 3.13 Menus in the application

| Menu | Description |
|-----------------------|--|
| File | |
| Open | Displays mail files. |
| Move to ... | Moves mail file. |
| Copy to ... | Copies mail file. |
| Delete | Deletes mail file. |
| Folder | |
| New Folder ... | Creates new folder. |
| Rename Folder | Changes folder name. |
| Empty Deleted (local) | Empties deleted items. |
| Address Book | Displays the address book. |
| Exit | Ends the application. |
| Compose | |
| New Message | Displays the compose screen to create a new message. |
| Reply to Sender | Displays the compose screen to return mail to its sender. |
| Reply to All | Displays the compose screen to return received mail to all initial receivers. |
| Forward | Displays the compose screen to transfer received mail to other person(s). |
| Status ... | Displays the list of message statuses. |
| Services | |
| Connect | Connects to specified server. |
| No installed service. | Performs no service operation. |
| Offline Folder | Disconnects from server and goes into offline mode. |
| Send/Receive Mail | Sends and receives mail to/from server. |
| Synchronize Folders | Synchronizes with specified Outlook folder. |
| Clear All | Clears inside of specified folder. |
| Get Full Copy | Copies all mails in server. |
| Options ... | Displays the options screen for setting connections and other various processes. |

Compose Screen

This screen is for editing mail text.

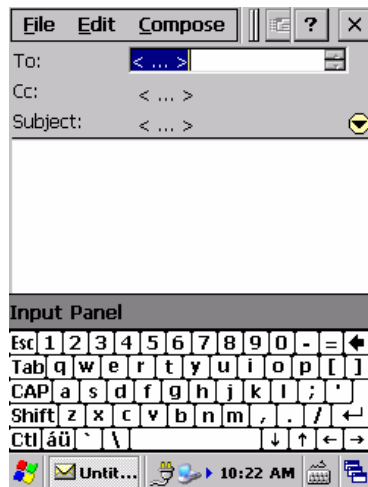


Fig. 3.86

Table 3.14 Menus in the Compose screen

| Menu | Description |
|--------------------|--|
| File | |
| Send | Sends emails. |
| Save | Saves email as file. |
| Attachments | |
| Open attachment | Opens attachment file. |
| Add Attachment ... | Adds attachment file to email. |
| Show Attachments | Displays attachment file. |
| Large Font | Enlarges font size. |
| Close | Returns to the main menu screen. |
| Edit | |
| Undo | Restores changes and corrections to their original states. |
| Cut | Cuts selected character string. |
| Copy | Copies selected character string. |
| Paste | Pastes character strings that have been cut or copied. |
| Select All | Selects all the displayed characters. |
| Clear | Deletes selected character string. |
| Language | Selects character codes. |
| Compose | |
| Check Names | Moves focus to partner address input area. |
| Address Book | Displays new address book. |
| Show Full Header | Displays email header. |
| Options ... | Displays options screen. |

3.2.9. Calculator

This application performs four arithmetic calculations in a maximum of 12 digits. It supports arithmetical calculation, constant calculation, inverse calculation, square root extraction calculation, percentage calculation and memory calculation which conform to the Casio’s calculator specifications.

The upper zone of the display area (see Fig. 3.87) displays the memory content, and the lower zone displays calculation values including arithmetical operation signs and constant [K] when calculating.

Tap **COPY** button to copy calculation values into clipboard.

Tap **X** button at the top right corner of the screen to close the application.

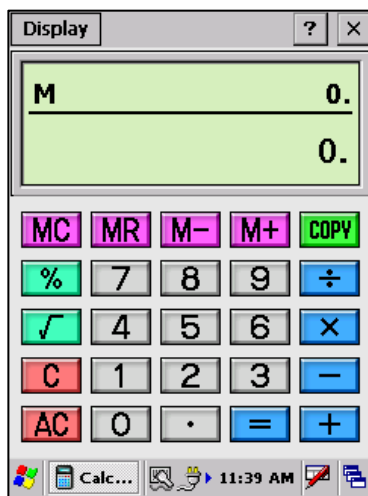


Fig. 3.87

Key Input

The number keys, decimal point “.”, operator and all clear (AC) can be input using the terminal keys.

Table 3.15

| Keys on the calculator | Keys on the terminal |
|------------------------|-----------------------|
| 0 to 9 | 0 to 9 |
| Operator “=×+÷-“ | Up, down, left, right |
| = | Enter |
| .(decimal point) | * |
| AC | CLR |

Basic Calculations

Table 3.16

| Calculation example | Operation | On the window |
|--|------------------------------------|-------------------------|
| $52+123-63=113$ | 53+ 123- 63= | + 53. - 176. 113. |
| $2.3 \times 6 \times 5.2 = 71.76$ | $2.3 \times 6 \times 5.2 =$ | 71.76 |
| $(56 \times 3 - 89) \div 5.2 + 63 = 78.1923076923$ | $56 \times 3 - 89 \div 5.2 + 63 =$ | 78.1923076923 |
| $1234567890 \times 741852 = 915867892900170$ | $1234567890 \times 741853 =$ | E 915.867892900 |

Constant Calculation

Table 3.17

| Calculation example | Operation | On the window |
|------------------------|--------------------------|--------------------|
| $12+23=35$ | $23++12=$ | K+ 35. |
| $45+23=68$ | $45=$ | K+ 68. |
| $7-5.6=1.4$ | $5.6--7=$ | K- 1.4 |
| $2-5.6=3.6$ | $2=$ | K- -3.6 |
| $2.3 \times 12 =$ | $12 \times \times 2.3 =$ | K \times 27.6 |
| $4.5 \times 12 = 54$ | $4.5 =$ | K \times 54. |
| $45 \div 9.6 = 4.6875$ | $9.6 \div \div 45 =$ | K \div 4.6875 |
| $78 \div 9.6 = 8.125$ | $78 =$ | K \div 8.125 |
| $17+17+17+17=68$ | $17++==$ | K+ 68. |
| $(2.3)4 = 27.9841$ | $2.3 \times \times ==$ | K \times 27.9841 |

Inverse Calculation

Table 3.18

| Calculation example | Operation | On the window |
|------------------------|----------------------|-----------------|
| $45 \div 9.6 = 4.6875$ | $9.6 \div \div 45 =$ | K \div 4.6875 |

Square Root Calculation

Table 3.19

| Calculation example | Operation | On the window |
|------------------------------------|--|---------------|
| $\sqrt{5} = 2.23606797749$ | $5 \sqrt{}$ | 2.23606797749 |
| $\sqrt[3]{81} = 3$ | $81 \sqrt{} \sqrt{}$ | 3. |
| $(\sqrt{2} + \sqrt{3}) \times 3 =$ | $2 \sqrt{} + 3 \sqrt{} \times 3 =$ | 9.43879310979 |

Percentage Calculation

Table 3.20

| Calculation example | | Operation | On the window |
|---------------------------------------|---|-------------------------------|---------------|
| Percentage | 26% of ¥1500 is ... | $1500 \times 26\%$ | 390. |
| Increase | 15% increase of ¥3620 is ... | $3620 \times 15\%+$ | 4163. |
| Decrease | 4% decrease of ¥4750 is ... | $4750 \times 4\% -$ | 4560. |
| Proportion | What percentage is 75 items of 250 items ? | $75 \div 250\%$ | 30. |
| Ratio (Ratio of increase or decrease) | What is the increased percentage from ¥120,000 to ¥141,000 ? | $141 - 120\%$ | 17.5 |
| | What is the decreased percentage from ¥300 to ¥240 ? | $240 - 300\%$ | -20. |
| Setting selling price | When a 25% profit is expected from an article with a purchase price at ¥3540, what are the selling price and the profit ? | $3540 + 25\%$ | 4720. |
| | | (Continue by subtracting) “-“ | 1180. |

Memory Calculation

Table 3.21

| Calculation example | Operation | On the window | |
|--|--|---------------|-------|
| $80 \times 9 = 720$ | AC MC 80×9 M+ | M | 720. |
| $-) 50 \times 6 = 300$ | 50×6 M- | M | 300. |
| $20 \times 3 = 60$ | 20×3 M+ | M | 60. |
| (Total) 480 | MR | M | 480. |
| $(2 \times 3) + (2 \times 3) + 4.5 + 4.5 - 4.5 = 16.5$ | AC MC 2×3 M+ M+ 4.5 M+ M+ M- MR | M | 16.5 |
| $193.2 \div 23 = 8.4$ | AC MC 193.2 M+ $\div 23 =$ | M | 8.4 |
| $193.2 \div 28 = 6.9$ | MR $\div 28 =$ | M | 6.9 |
| $123 - 193.2 = -70.2$ | $123 - MR =$ | M | -70.2 |
| $9 \times 6 + 3$ $8 \times (7 - 2)$ | AC MC $7 - 2 \times 8$ M+ $9 \times 6 + 3 \div MR =$ | M | 1425. |

Error Calculation

Table 3.22

| Calculation Example | Operation | On the window |
|---|------------------------------|-----------------|
| $1234567890 \times 741852 =$ 915867892900170 | $1234567890 \times 741853 =$ | E 915.867892900 |

Note:

“E” will appear on the window if an overflow occurs. The decimal point indicates 100 millionth digit. After “E” is displayed, press either **C** button to continue the calculation, or **AC** button to commence a new calculation.

3.2.10. File Viewer

This application displays Word, Excel, PowerPoint, PDF and image files created on PC.

ClearVue Document

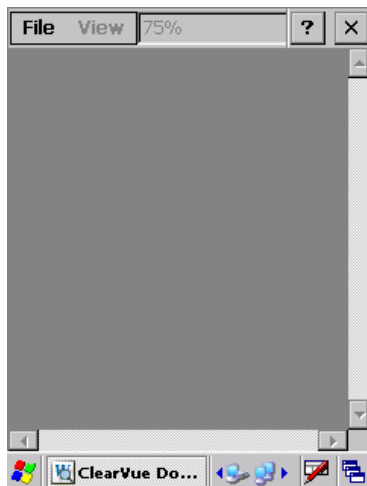


Fig. 3.88

Table 3.23 Menus in the “ClearVue Document”

| Menu | Description |
|--------------|--------------------------------------|
| File | |
| Open | Opens specified file. |
| Recent Files | Displays most recently opened files. |
| About ... | Displays version information. |
| Close | Ends the application. |
| View | Specifies screen magnification. |

Notes:

- The application supports files created in Microsoft Word 97, Word 2000 and Word XP.
- The application does not support editing of files.

ClearVue Image

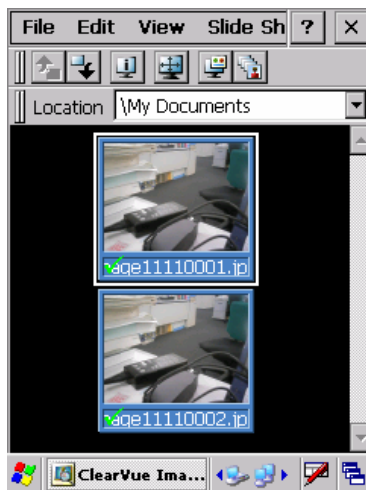


Fig. 3.89

Table 3.24 Menus in “ClearVue Image”

| Menu | Description |
|------------------------|--|
| File | |
| Browse ... | Browses specified folder. |
| Edit Image ... | Displays the edit screen. |
| Open Show Settings ... | Opens slideshow setting file. |
| Save Show Settings | Saves slideshow setting file by overwritten. |
| Save Show Settings As | Saves slideshow setting file by specifying name. |
| About ... | Displays version information. |
| Close | Ends the application. |
| Edit | |
| Image Sort | Sorts images by name, file type, size or date. |
| View | |
| Information Window | Displays image information. |
| Full Screen | Displays image in full screen. |
| Slide Show | |
| View Show | Starts slideshow. |
| Set Up Show ... | Sets up slideshow. |
| Hide Image | Specifies images to be hidden in slideshow. |

Notes:

- The application supports files in the formats of BMP, JPEG, and PNG.
- The application does not support editing of files.

ClearVue PDF

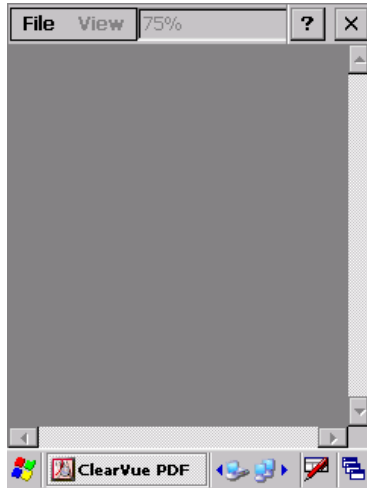


Fig. 3.90

Table 3.25 Menus in “ClearVue PDF”

| Menu | Description |
|--------------|---|
| File | |
| Open ... | Opens specified file. |
| Recent Files | Displays most recently displayed files. |
| About ... | Displays version information. |
| Close | Ends the application. |
| View | Specifies display magnification. |

Note:

The application does not support editing of files.

ClearVue Presentation

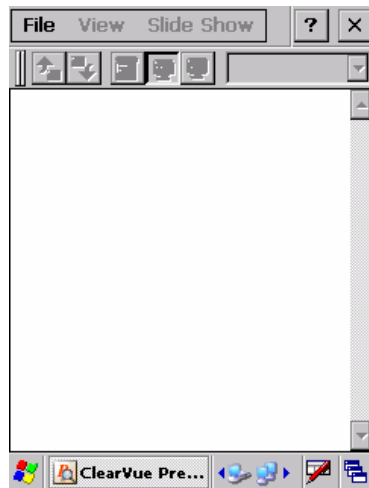


Fig. 3.91

Table 3.26 Menus in “ClearVue Presentation”

| Menu | Description |
|------------------|---|
| File | |
| Open ... | Browses folders to be opened. |
| Recent Files | Displays most recently displayed files. |
| Save Settings | Saves slideshow settings. |
| Default Settings | Displays slideshow settings. |
| About ... | Displays version information. |
| Close | Ends the application. |
| View | |
| Normal | Displays pages one by one. |
| Slide Sorter | Displays all the pages. |
| Slide Show | Displays pages one by one in full screen. |
| Note | Displays note segment of a page. |
| Slide Show | |
| View Show | Executes slideshow. |
| Set Up Show ... | Sets up slideshow. |
| Select Slide | Sets up the opening slide. |

Notes:

- The application supports files created in Microsoft’s PowerPoint 97, PowerPoint 2000 and PowerPoint XP.
- The application does not support editing of files.

ClearVue WorkSheet



Fig. 3.92

Table 3.27 Menus in “ClearVue WorkSheet”

| Menu | Description |
|--------------|---|
| File | |
| Open ... | Opens specified file. |
| Recent Files | Displays most recently displayed files. |
| About ... | Displays version information. |
| Close | Ends the application. |
| View | Specifies display magnifications. |

Notes:

- The application supports files created in Microsoft’s Excel 97, Excel 2000 and Excel XP.
- The application does not support editing of files.

3.2.11. Voice Recorder

This application records and playbacks voice sound.

Move the slide bar located lower portion in the screen (see Fig. 3.93) to any position to define a playback start up position.



Fig. 3.93

Table 3.28 Menus in the application

| Menu | Description |
|--------------------|-------------------------------------|
| Tool | |
| Option | Sets recording/playing formats |
| Voice Recorder | Sets up voice recorder settings. |
| Other | Sets up display and other settings. |
| View | |
| Slide Show display | |
| About | Displays version information. |

Table 3.29 Toolbar Configuration

| Button | Description |
|--------|--|
| | Record Records voice sound. |
| | Stop Stops recording/playback. |
| | Play Playbacks recorded voice sound. |
| | Rewind/Fast Forward Rewinds or forward the playback position. |
| | Volume Changes playback sound volume. |

3.2.12. Notes

This application creates a note file using the methods of either handwriting or inputting text. Observe the following the restrictions.

- Text file size is up to 64KB.
- If a text file larger than 64KB is open, the character strings in that file exceeding over 64KB will not be displayed.
- If a text larger than 64KB is saved by overwritten, the character strings in that file exceeding over 64KB will be nullified.

Handwritten Input Screen

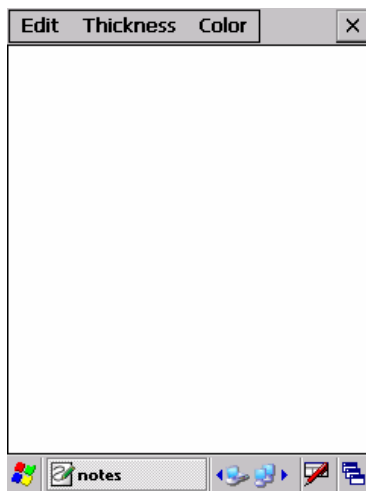


Fig. 3.94

Table 3.30 Menus in the application

| Menu | Description |
|------------------|--|
| Edit | |
| Undo | Restores correction to its original state. |
| Cut | Cuts selected portion. |
| Copy | Copies selected portion. |
| Paste | Pastes portion cut or copied. |
| All Clear | Clears the entire screen. |
| Cancel | Cancel creating a note. |
| Thickness | |
| Thin | Changes the line thickness to narrow size. |
| Normal | Changes the line thickness to normal size. |
| Bold | Changes the line thickness to thick size. |
| Color | |
| Black | Changes the line color to black. |
| Red | Changes the line color to red. |
| Green | Changes the line color to green. |
| Yellow | Changes the line color to yellow. |
| Blue | Changes the line color to blue. |
| Pink | Changes the line color to pink. |
| LightBlue | Changes the line color to sky blue. |
| White | Changes the line color to white. |

Text Input Screen

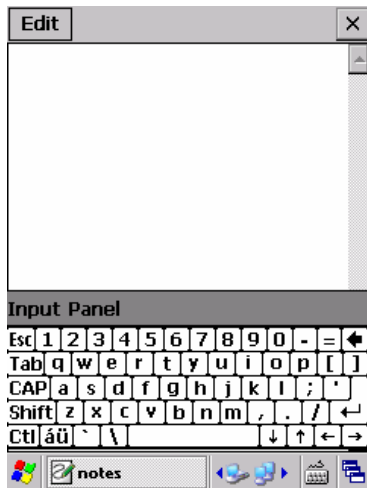


Fig. 3.95

Table 3.31 Menus in the Edit mode

| Menu | Description |
|------------|--|
| Edit | |
| Undo | Restores corrections to the original states. |
| Cut | Cuts selected portion. |
| Copy | Copies selected portion. |
| Paste | Pastes portion cut or copied. |
| Clear | Clears all characters selected in “All select” menu. |
| All select | Selects all characters. |
| Cancel | Cancel creating a note. |

3.2.13. Mobile Camera








This application captures static images and playbacks image files on the screen.

Camera Screen



Fig. 3.96






Table 3.32 Buttons in the upper Toolbar

| Button | | Description |
|---|---------------------------|--|
|  | Iris open | These buttons select aperture from “Open” or “F7.0”. |
|  | Iris F7.0 | |
|  | Digital Flash | Switches ON/OFF the digital flash function. The function is to enable a captured object image in darker surrounding to be visible in the screen by composing the image. (See note below.) |
|  | LED illumination | Switches ON/OFF the LED illumination. |
|  | Exposure compensation (+) | Brightens the exposure. |
|  | Exposure compensation (-) | Darkens the exposure. |
|  | White balance | Selects a white balance from “Automatic”, “Outdoor”, “Under fluorescent lamp” or “Under light bulb”. |

Note:

The function requires the patch files, **MoDevIT600.101.CAB**, **CAMIT600.100.CAB** and **CAMAPPIT600.101.CAB** all to be installed in the terminal.

Table 3.33 Buttons in the lower Toolbar

| Button | Description | |
|---|---------------|---|
|  | Size | Selects a capture size from “IM”, “XGA”, “SVGA”, “VGA”, “4/9VGA”, 1/4VGA or “1/9VGA”. |
|  | Magnification | Selects a magnification from “1.0”, “1.5”, “2.0” or “3.0”. |
|  | Image quality | Selects an image quality from “Bitmap”, “Fine”, “Normal” or “Economy”. |
|  | Self timer | Switches ON/OFF the self timer. |
|  | Shutter | Starts capturing an image. |

Full Size Screen

This mode displays a selected image from the list in full size screen. The contours of the captured image can be compensated at the full size screen. Note that scroll bars will appear at the right and lower sides on the screen (see Fig. 3.97) if the image does not fit in the screen.



Fig. 3.97

Slide show display

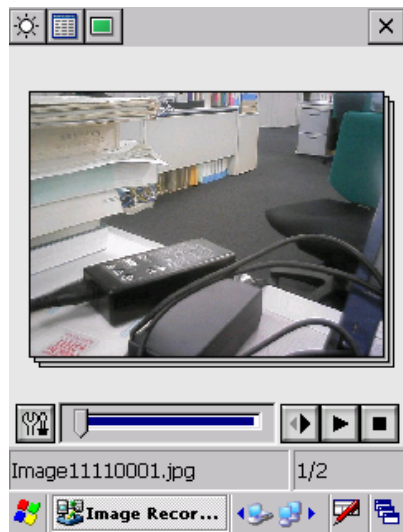






Fig. 3.98

Table 3.34 Buttons in the Slide show display

| Button | Description |
|---|--|
|  | Slide show setup Specifies “Replay interval time” and “Repeat replay”. |
|  | Playback direction switcher Switches the direction for playing the slideshow. |
|  | Playback Starts slideshow. |
|  | Stop Stops slideshow. |

3.2.14. Backup Tool

This application backs up and restores user data to/from the FlashDisk.

Backup/Restore Objects

- Files in the RAM
- Registry (password, and information about stylus correction excluded)
- Received mails
- Browser's cookies and temporary files
- Certificates

Data Storage Destinations

FlashDisk or memory card

Backup Password

In order to ensure the security, a password must be input when start to backup data.
Data cannot be recovered at a time of its restoration unless the correct password is input.

Backup Procedures

The backup procedures are as follows.

1. Start up backup of data.
2. Select backup destination in **Location** pull-down menu and then tap **Backup now** button.



Fig. 3.99

3. Specify a password in **Password** field if necessary and then tap **Yes** button.

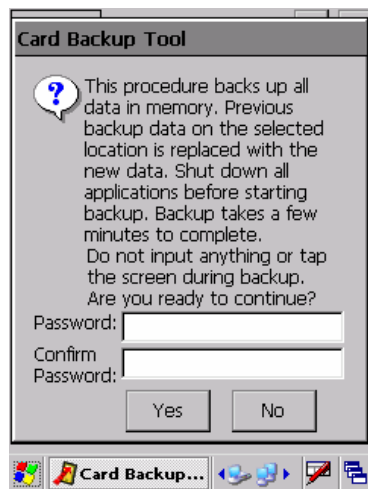


Fig. 3.100

4. As soon as **Yes** button is pressed, the progress window appears (see Fig. 3.101) and the backup will be executed.



Fig. 3.101

5. The backup is complete when the window in Fig. 3.102 appears. Tap **OK** button to close the window.

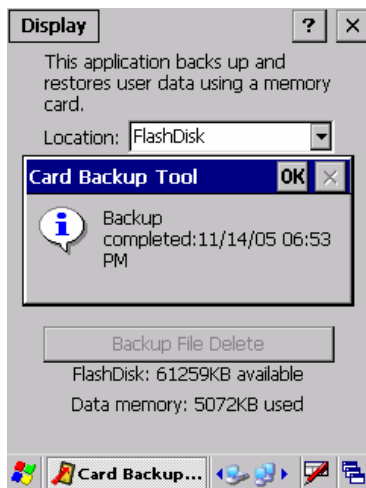


Fig. 3.102

Restore Procedures

The following are the restore procedures.

1. Specify the backup destination in **Location** field (see Fig. 3.103) and tap **Restore now** button.

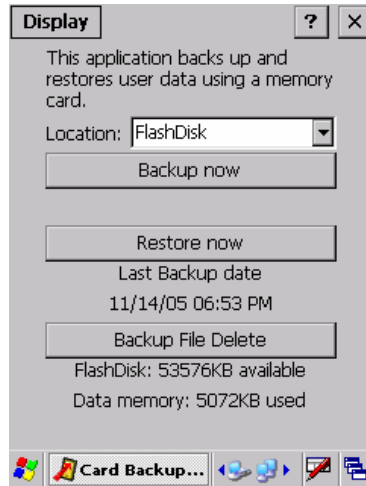


Fig. 3.103

2. Input the password in **Password** field if it has been specified, and then tap **Yes** button.

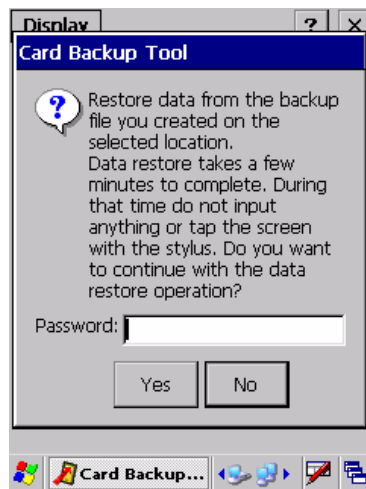


Fig. 3.104

3. As soon as **Yes** button is tapped, the restoration will take place with the progress window (see Fig. 3.105) shown.



Fig. 3.105

4. When the restoration is complete, a confirmation window will appear. Tap **OK** button to close the window.



Fig. 3.106

Starting up Backup Tool as Command Line

The following shows a method to start up the backup tool as command line.

Calling Sequence

```
CF_Backup.exe <option> <target> [<password>]
```

Parameters

option

- B: Specifies the Backup.
- R: Specifies the Restoration.
Set up either “B” or “R”. It is not case-sensitive.

target

Directory that saves the backup file.

password

Password that has been specified. Specify it if necessary.

Notes

- Depending on the amount of data, operations of the backup and restoration may take several tens of seconds to several minutes.
- Use external power supply via cradle when performing the backup.

3.2.15. Laser Scanner Demo

This application demonstrates the following scanning functions.

- Automatic permission of setting readable bar code symbologies
- Scanning bar codes using the Trigger key.
- Displaying scanning results.

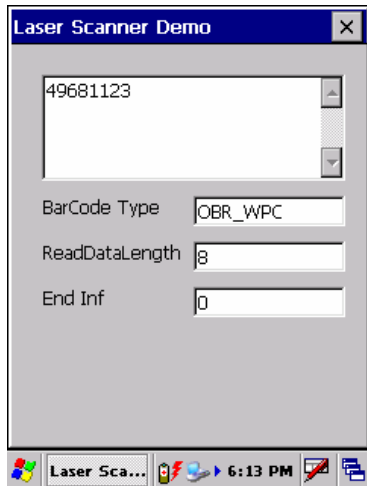



Fig. 3.107

3.2.16. Laser Scanner Read

After scanning a bar code by the integrated laser scanner, a result of the scanning is output. The output method for the scanning result will be defined by the settings made in “Laser Setting”.

Operation Procedures

1. Start up laser scanning. The () icon appeared in the taskbar indicates that the scanning application is being started up.
2. Start up an application that receives a result of scanning bar code.
3. Scanning a bar code will take place when the Trigger key is pressed.
4. The scanning will end when the Trigger key is released or when the preset time elapses. The scanning result will be output to the application.

Notes:

- To exit the laser scanning application, tap the icon in the taskbar and then select Exit menu.
- The clipboard output method copies data of scanning bar code into the clipboard by pasting it (by executing the keyboard event (Ctrl and v keys)). Therefore, data of scanning cannot be output to application that does not support the past operation (the keyboard event (Ctrl and v keys)).
- The laser scanning application cannot run simultaneously with other application that occupies the integrated laser scanner.

3.2.17. Copy Devices

This application copies various settings and applications installed in one terminal (master terminal) to other multiple terminals (child terminals).

Contents to be copied

Table 3.35

| Target | Contents | Remarks |
|-----------|--|--|
| RAM Disk | All files in the RAM. | |
| FlashDisk | All files in the FlashDisk. | |
| Registry | Select from “All”, “User” and “Display”. | Calibration data and OS build information are excluded. |
| Database | Inbox mail info, etc. | |
| Date/Time | Date/time set on the master terminal. | Time difference of a several seconds may occur depending on the surrounding communication condition. |

Note:

Each target (in the table above) can also be specified for copying its content to other terminals.

Procedures for copying between terminals

The following is the procedure for copying data between terminals.

On the mater terminal

1. Enable each checkbox in Fig. 3.108 you wish to copy its content to other terminals, and then tap **Send Start** button.

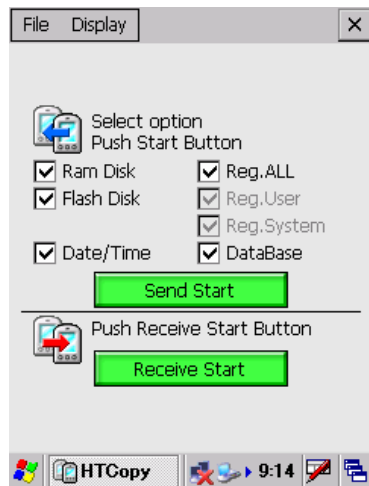


Fig. 3.108

2. The following screen will appear.

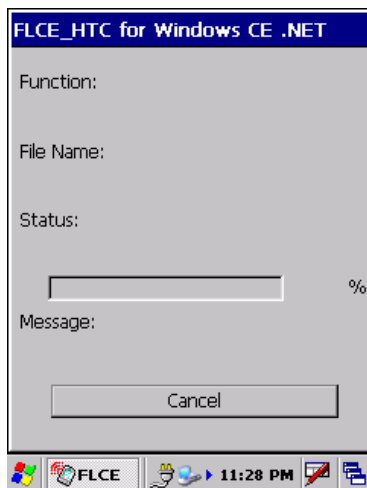


Fig. 3.109

On child terminals

1. Tap **Receive Start** button on each child terminal (if multiple terminals exist). See Fig. 3.110.

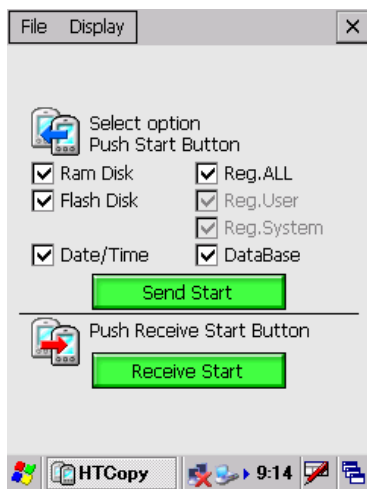


Fig. 3.110

2. On the child terminal side, the following screen will appear indicating the reception of data.

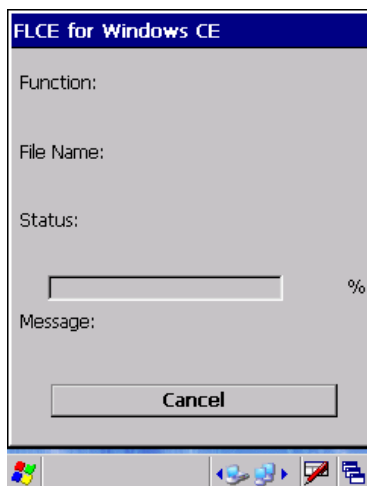


Fig. 3.111

3.2.18. FLCE

This application enables the terminal to communicate with a PC with the Upload/Download utility being running. The communication is established via cradle.

Input Command Line Screen

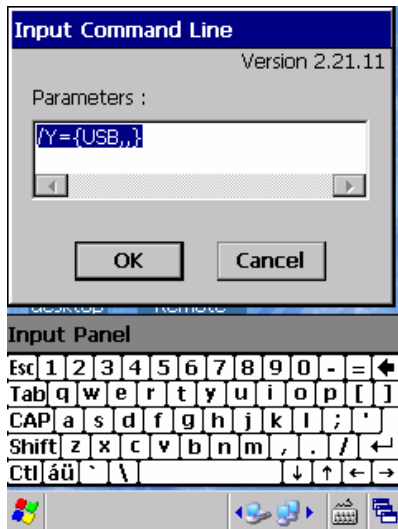


Fig. 3.112

Screen During Transfer

While the communication continues, the following screen will appear. Refer to Upload/Download Manual available separately for detail of the operations.

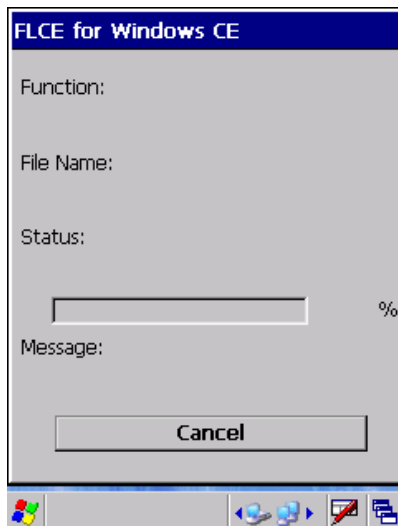


Fig. 3.113

3.2.19. ActiveSync

This application is ActiveSync client program for communicating with a PC.

3.2.20. LAN ActiveSync

This application is ActiveSync client program that uses WLAN.

3.2.21. Terminal

This application is TTY and VT-100 terminal emulator. It is used for on-line service or communication with business server that requires the TTY terminal emulation or the VT-100 terminal simulation.

Double tap **Make New Session** icon to create new session. See Fig. 3.114.

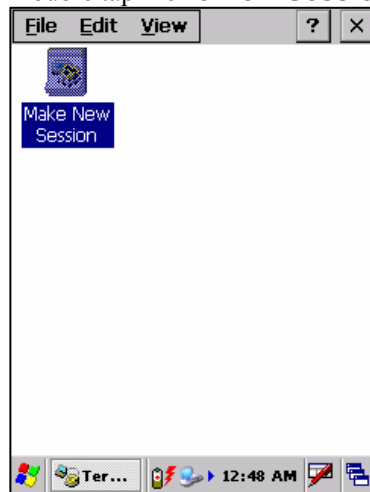


Fig. 3.114

Communications Tab

Set session name, modem and phone number in each field in Fig. 3.115.

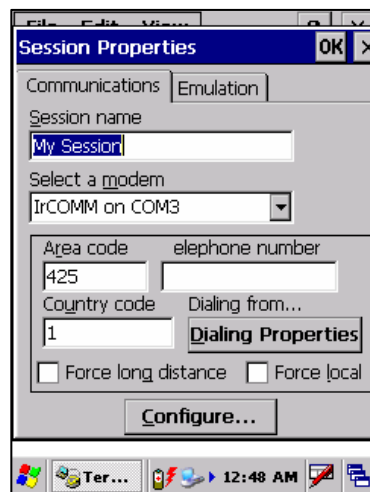


Fig. 3.115

Emulation Tab

Set emulation type, code page and display settings in each field and checkbox in Fig. 3.116.

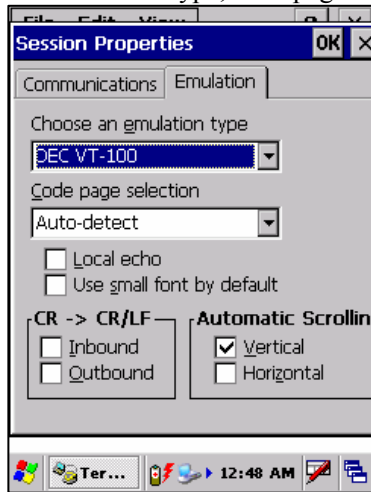


Fig. 3.116

3.2.22. NetSearch

This application displays a list of partner stations communicable with the terminal via WLAN.

- Partner stations on the list can be sorted in the order of field intensity, station name and channel.
- Field intensity for the partner station currently being established with the terminal will be displayed in green.
- The information appeared in the screen is updated every five seconds.
- The remote station’s WLAN standard IEEE802.11b or IEEE802.11g icon is displayed at the head of the station name.
- A key symbol icon is displayed for stations that use encrypted communication.

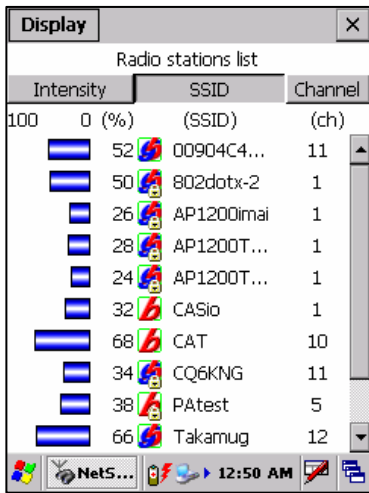


Fig. 3.117

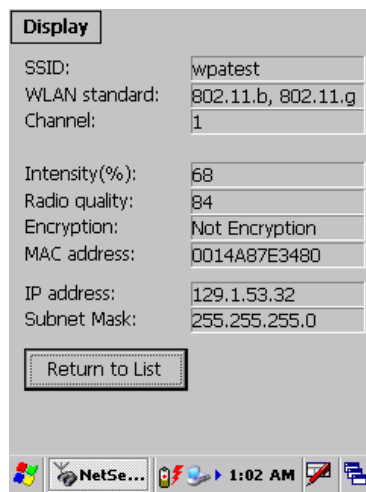
Table 3.36 Menus in the application

| Menu | Description |
|----------------|---|
| Display | |
| List | Displays a list of partner stations. |
| Detail | Displays screen showing information in detail about the partner station. |
| New Connection | Displays the new connection screen and sets up the connection related parameters. |
| Options | Displays a screen for setting partner station parameters for searching. |
| About | Displays version information. |

Detail Information About Partner Station

The screen displays following details about the partner station.

- SSID
- WLAN standard
- No. of channels
- RF intensity
- Radio quality
- Encryption
- MAC address
- IP address
- Subnet Mask



The screenshot shows a window titled "Display" with the following information:

| | |
|----------------|--------------------|
| SSID: | wpatest |
| WLAN standard: | 802.11.b, 802.11.g |
| Channel: | 1 |
| Intensity(%): | 68 |
| Radio quality: | 84 |
| Encryption: | Not Encryption |
| MAC address: | 0014A87E3480 |
| IP address: | 129.1.53.32 |
| Subnet Mask: | 255.255.255.0 |

Below the table is a button labeled "Return to List". At the bottom of the window, the taskbar shows the Windows logo, a "NetSe..." icon, a clock showing "1:02 AM", and other system icons.

Fig. 3.118

New Connection Screen

This screen is for setting connection parameters and for creating configuration file.
See Chapter 2.7.6 “WLAN Setting with Configuration File” for details concerning the parameters.

Basic Tab

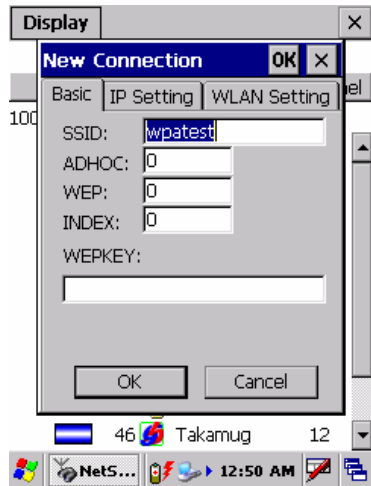


Fig. 3.119

IP Setting Tab

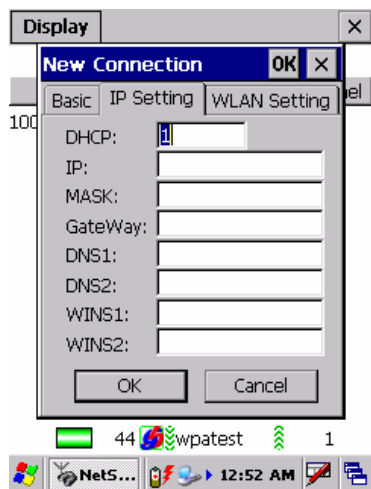


Fig. 3.120

WLAN Setting Tab

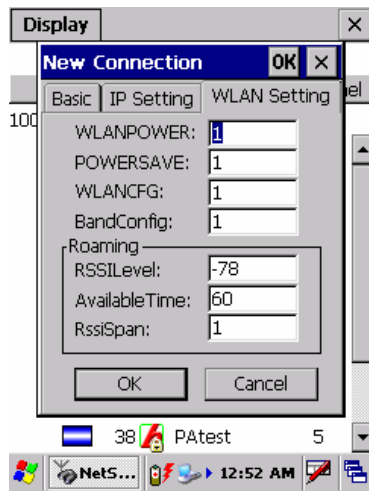


Fig. 3.121

Partner Station Search Conditions Setting Screen

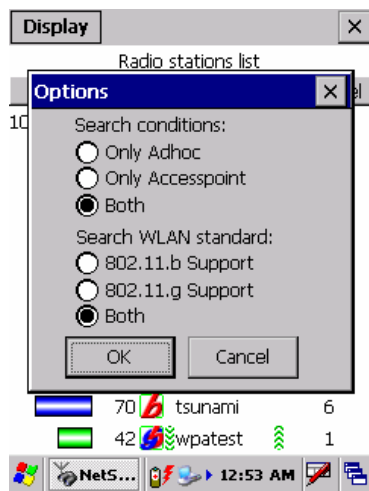


Fig. 3.122

Search Conditions

Select a partner station to be searched via a way of either **Only Adhoc**, **Only Accesspoint** or **Both**.

Search WLAN Standard

Select a partner station to be searched via a WLAN standard either **802.11.b Support**, **802.11.g Support** or **Both**.

3.3. Utilities

The utilities listed in the table below are mainly used as a co-process or auxiliary program in user applications.

Table 3.37

| Utility | Description | CASIO | MS |
|--------------------|--|-------|-----|
| FCHKCE | Confirms a result of data upload/download. | Yes | -- |
| Auto Setup | Executes automatically application at time of reset on the terminal. | Yes | -- |
| Auto Recovery Tool | Performs automatic recovery at a time of full reset on the terminal. | Yes | -- |
| Welcome Wizard | Calibrates the touch panel, sets up date/time and owner information. | Yes | -- |
| HandWriting | Performs hand writing on the touch panel. | -- | Yes |
| Input Panel (SIP) | Software keyboard. | -- | Yes |

MS; Microsoft

3.3.1. FCHKCE

This utility checks a result of data upload/download. See “Upload/Download Manual” for its details.

3.3.2. Auto Setup

This utility automatically sets up a specified application.

Execution Timing

The timing for executing “Auto Setup” is as follows.

- When the terminal is reset;
The utility executes **Setup.exe**, **Restore.exe** in FlashDisk or in the card directory.
- When SD card or CF card is loaded;
The utility executes **AutoRun.exe** in the card directory.

Location of Application for Auto Setup

Locations of applications to be automatically set up by this utility are as follows.

- FlashDisk
- SD card
- CF card

The locations are in each **CEIARM** folder of the locations.

Customizing in the Registry

Performances of the “Auto Setup” can be automatically customized by changing the parameters in the following registry.

[HKEY_LOCAL_MACHINE\Drivers\CASIO\UTIL]

Table 3.38

| Key | Setting Value | Description |
|---------|---------------|---|
| AUTORUN | sz:"1" | Executes AutoRun.exe when an SD card is loaded. |
| | sz:"2" | Executes AutoRun.exe when a memory card is loaded |
| SETUP | sz:"1" | Executes Setup.exe for the memory card at a time of reset on the terminal. |
| | sz:"2" | Executes Restore.exe for the memory card at a time of reset on the terminal. |
| | sz:"3" | Executes Restore.exe for the SD card at a time of reset on the terminal. |
| | sz:"4" | Executes Setup.exe for the SD card at a time of reset on the terminal. |
| FLSETUP | sz:"1" | Executes Setup.exe for the FlashDisk at a time of reset on the terminal. |
| | sz:"2" | Executes Restore.exe for the FlashDisk at a time of reset on the terminal. |

Notes:

- Once the registry is deleted, the applicable application will not be automatically started up.
- The registry will be initialized to its factory setting by performing a full reset on the terminal.
- Since automatic startup of applications by the utility will be performed every time when a reset is performed on the terminal and when a card is loaded, it should be avoided by controlling the automatic startup for each applicable application.

3.3.3. Auto Recovery Tool

This utility uses the backup tool to back up system data, restore system data and automatically execute user designated applications.

For data backup, data will be backed up by the backup tool. For data restoration, data will be restored by automatically executing the backup tool at a time of the terminal's start up after a full reset has been performed.

Backup

The following is the backup procedure.

1. Starts up `\Windows\Restore.exe`.
2. When the program is complete, an end message appears. Tap **OK** button to close the program.

Restore

The following is the restore procedure.

1. `\FlashDisk\CE\ARM\restore.exe` will be started up after about 10 seconds when the welcome screen appeared by a full reset on the terminal. The screen will automatically close.
2. If `\FlashDisk\Calibrate.dat` does not exist, a screen for setting the calibration's parameters will appear.
3. A screen for setting date and time will automatically appear. Set the correct date and time.
4. Data will be automatically restored from the backup data.
5. The terminal will be automatically reset after about 5 seconds when the restoration of data in the step 4 is complete.

Execution Log

Execution log of the Auto recovery is stored in `\FlashDisk\CE\ARM\Restore.log`.

Notes:

- The execution log file can maintain a maximum of 30 logs combined for the backup and restore operations.
- If the log file exceeds over 30 logs, records older than others in the file will be deleted.

Skipping Restore

When the auto restoration about takes place, pressing 5 key on the terminal will output a warning sound and skips the imminent restoration process.

Error Conditions

The following are the conditions under which an error occurs when the auto restore is taking place.

- The backup or restore operation is executed when the battery capacity is low.
- The backup operation is executed when the FlashDisk has insufficient capacity.
- The backup or restore operation is executed when the memory has insufficient capacity.

3.3.4. Welcome Wizard

The Welcome Wizard sets up the following. However, each of the settings can be skipped if necessary.

- Touch panel calibration
- Owner information
- Date and time

Notes:

- Setting date and time can be avoided by setting a password even if a full reset takes place on the terminal.
- Setting date and time must be performed when the RTC is cleared by a full reset on the terminal.

Customizing Startup Screen

An optional bitmap can be displayed as the Welcome Wizard startup screen. Save an optional bitmap file as **FirstDisp.bmp** in the “FlashDisk” folder. The screen size of the file must be set in 240 x 320 dots.

3.3.5. HandWriting

This utility recognizes characters that have been directly handwritten by stylus onto the touch panel. The recognized characters are sent to an active input area.

3.3.6. Input Panel (SIP)

This utility is a software keyboard. It supports VGA and QVGA display modes.

3.4. Application

The following are applications used by host PC linked with the terminal.

Table 3.39

| Application | Description | CASIO | MS |
|-------------|--|-------|-----|
| ActiveSync | Executes data link with the terminal. | -- | Yes |
| LMWIN | Executes data upload/download. | Yes | -- |
| FCHK | Checks and confirms a result data upload/download. | Yes | -- |

MS; Microsoft

3.4.1. ActiveSync

By linking with the ActiveSync client installed in the terminal, this utility makes communication with the terminal possible. It is available from the following site.

<http://www.Microsoft.com/windowsmobile/downloads/activesync38.mspx>

3.4.2. LMWIN

This utility links with the FLCE tool installed in the terminal to perform data upload and download. It is an option available separately. See “Upload/Download Manual” for its details.

3.4.3. FCHK

This utility checks and confirms results of data upload/download. See “Upload/Download Manual” for its details.