- **ITC_NVPARM_SERVICE_DATE**
  This IOCTL returns the device's date of last service in BCD YYYY/MM/DD format. Four bytes are returned in the buffer pointed to by the *lpOutBuffer* parameter.
- **ITC_NVPARM_DISPLAY_TYPE**
  This IOCTL returns the device's display type. One byte is returned in the buffer pointed to by the *lpOutBuffer* parameter.
- **ITC_NVPARM_EDG_IP**
  This IOCTL returns the device Ethernet debug IP address. Four bytes are returned in the buffer pointed to by the *lpOutBuffer* parameter.
- **ITC_NVPARM_EDBG_SUBNET**
  This IOCTL returns the device Ethernet debug subnet mask. Four bytes are returned in the buffer pointed to by the *lpOutBuffer* parameter.
- **ITC_NVPARM_ECN**
  This IOCTL returns ECNs applied to the device in a bit array format. Four bytes are returned in the buffer pointed to by the *lpOutBuffer* parameter.
- **ITC_NVPARM_CONTRAST**
  This IOCTL returns the device default contrast setting. Two bytes are returned in the buffer pointed to by the *lpOutBuffer* parameter.
- **ITC_NVPARM_MCODE**
  This IOCTL returns the manufacturing configuration code for the device. Sixteen bytes are returned in the buffer pointed to by the *lpOutBuffer* parameter.
- **ITC_NVPARM_VERSION_NUMBER**
  This IOCTL returns the firmware version for various system components. These values for the *ClassId* field of the PARMS structure are allowed when ITC_NVPARM_VERSION_NUMBER is used in the *id* field:
  - **VN_CLASS_KBD**
    Returns a five-byte string, including null terminator, that contains an ASCII value which represents the keyboard microprocessor version in the system. The format of the string is *x.xx* with a terminating null character.
  - **VN_CLASS_ASIC**
    Returns a five-byte string, including null terminator, that contains an ASCII value which represents the version of the FPGA firmware in the system. The format of the string is *x.xx* with a terminating null character.
  - **VN_CLASS_BOOTSTRAP**
    Returns a five-byte string, including null terminator, that contains an ASCII value which represents the version of the Bootstrap Loader firmware in the system. The format of the string is *x.xx* with a terminating null character.

- **ITC_NVPARM_INTERMEC_SOFTWARE_CONTENT**
  This IOCTL reads the manufacturing flag bits from the non-volatile data store that dictates certain software parameters. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer* that indicates if Intermec Content is enabled in the XIP regions. TRUE indicates that it is enabled. FALSE indicates that it is not enabled.
- **ITC_NVPARM_ANTENNA_DIVERSITY**
  This IOCTL reads the state of the antenna diversity flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer* that indicates if there is a diversity antenna installed. TRUE indicates that it is installed. FALSE indicates that it is not installed.
- **ITC_NVPARM_WAN_RI**
  This IOCTL reads the state of the WAN ring indicator flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer* that indicates the polarity of the WAN RI signal. TRUE indicates active high. FALSE indicates active low.
- **ITC_NVPARM_RTC_RESTORE**
  This IOCTL reads the state of the real-time clock restore flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the RTC will be restored upon a cold boot. FALSE indicates that the RTC will not be restored.
- **ITC_NVPARM_INTERMEC_DATACOLLECTION_SW**
  This IOCTL reads the state of the data collection software enabled flag. A BOOLEAN DWORD is returned in the buffer pointer to by *lpOutBuffer* that indicates the data collection software is to be installed at boot time. FALSE indicates the data collection software should not be installed.
- **ITC_NVPARM_INTERMEC_DATACOLLECTION_HW**
  This IOCTL reads the data collection hardware flags. A BYTE is returned in the buffer pointer to by *lpOutBuffer* that indicates the type of data collection hardware installed. The maximum possible value returned is ITC_DEVID_SCANHW_MAX.
  - **ITC_DEVID_SCANHW_NONE**
    No scanner hardware is installed.
  - **ITC_DEVID_OEM2D_IMAGER**
    OEM 2D imager is installed.
  - **ITC_DEVID_INTERMEC2D_IMAGER**
    Intermec 2D imager is installed.
  - **ITC_DEVID_SE900_LASER**
    SE900 laser is installed.
  - **ITC_DEVID_SE900HS_LASER**
    SE900HS laser is installed.

  The high bit indicates whether the S6 scanning engine is installed. The bit mask for this is ITC_DEVID_S6ENGINE_MASK. A non-zero value indicates that the S6 scanning engine is installed.

- **ITC_NVPARM_WAN_INSTALLED**
  This IOCTL reads the state of the WAN radio installed flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the WAN radio is installed. FALSE indicates that no WAN radio is installed.
- **ITC_NVPARM_WAN_FREQUENCY**
  This IOCTL reads the state of the WAN radio frequency flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the WAN radio frequency is United States. FALSE indicates that the WAN radio frequency is European.
- **ITC_NVPARM_WAN_RADIOTYPE**
  This IOCTL reads the WAN radio ID installed by manufacturing. A BYTE is returned in the buffer pointer to by *lpOutBuffer* which indicates the type of WAN radio hardware installed. The maximum possible value returned is ITC_DEVID_WANRADIO_MAX. The current definitions are:
  - **ITC_DEVID_WANRADIO_NONE**
    No WAN radio installed.
  - **ITC_DEVID_WANRADIO_SIERRA_SB555**
    CDMA Sierra Wireless radio.
  - **ITC_DEVID_WANRADIO_XIRCOM_GEM3503**
    GSM/GPRS Intel (Xircom) radio.
  - **ITC_DEVID_WANRADIO_SIEMENS_MC45**
    GSM/GPRS Siemens radio.
- **ITC_NVPARM_80211_INSTALLED**
  This IOCTL reads the state of the 802.11b radio installed flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the 802.11b radio is installed. FALSE indicates that no 802.11b radio is installed.
- **ITC_NVPARM_80211_RADIOTYPE**
  This IOCTL reads the 802.11b radio ID installed by manufacturing. A BYTE is returned in the buffer pointer to by *lpOutBuffer* that indicates the type of 802.11b radio hardware installed. The maximum possible value returned is ITC_DEVID_80211RADIO_MAX. The current definitions are:
  - **ITC_DEVID_80211RADIO_NONE**
    No 802.11b radio installed.
  - **ITC_DEVID_80211RADIO_INTEL_2011B**
    Intel 2011B radio installed.
- **ITC_NVPARM_BLUETOOTH_INSTALLED**
  This IOCTL reads the state of the Bluetooth radio installed flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the Bluetooth radio is installed. FALSE indicates that no Bluetooth radio is installed.

- **ITC_NVPARM_SERIAL2_INSTALLED**
  This IOCTL reads the state of the serial 2 (COM2) device installed flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the serial 2 device is installed. FALSE indicates that no serial 2 device is installed.
- **ITC_NVPARM_VIBRATE_INSTALLED**
  This IOCTL reads the state of the vibrate device installed flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the vibrate device is installed. FALSE indicates that no vibrate device is installed.
- **ITC_NVPARM_LAN9000_INSTALLED**
  This IOCTL reads the state of the Ethernet device installed flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the Ethernet device is installed. FALSE indicates that no Ethernet device is installed.
- **ITC_NVPARM_SIM_PROTECT_HW_INSTALLED**
  This IOCTL reads the state of the SIM card protection hardware installed flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the SIM card protection hardware is installed. FALSE indicates that no SIM card protection hardware is installed.
- **ITC_NVPARM_SIM_PROTECT_SW_INSTALLED**
  This IOCTL reads the state of the SIM card protection software installed flag. A BOOLEAN DWORD is returned in the buffer pointed to by *lpOutBuffer*. TRUE indicates that the SIM card protection software is installed. FALSE indicates that no SIM card protection software is installed.

IOCTL_HAL_ITC_WRITE_SYSPARM

Describes and enables the registry save location.

Usage

#include “oemioctl.h”

Syntax

```
BOOL KernelIoControl( IOCTL_HAL_ITC_WRITE_SYSPARM,LPVOID
lpInBuf,DWORD nInBufSize, LPVOID lpOutBuf, DWORD
nOutBufSize, LPDWORD lpBytesReturned );
```

Parameters

lpInBuf	A single byte that may be one of the *id* values. See “*ID Field Values*” below.
nInBufSize	Must be set to the size of the *lpInBuf* in bytes.
lpOutBuf	Must point to a buffer large enough to hold the data to be written to the non-volatile data store.
nOutBufSize	The size of *lpOutBuf* in bytes.
lpBytesReturned	The number of bytes returned by the function.

Return Values

Returns TRUE if function succeeds. Returns FALSE if the function fails. GetLastError() may be used to get the error value. Either ERROR_INVALID_PARAMETER or ERROR_INSUFFICIENT_BUFFER may be returned when this function is used to get the error.

ID Field Values

The *id* field of *lpInBuf* may be one of the following values:

- **ITC_REGISTRY_LOCATION**
  This IOCTL sets the default location for where to write the registry when RegFlushKey() is called by an application. The registry may be saved to Flash, a CompactFlash storage card or a SecureDigital storage card. *lpOutBuf* must point to a buffer that contains a byte value of “1” for the CompactFlash card or “2” for the SecureDigital card to specify the location.
- **ITC_REGISTRY_SAVE_ENABLE**
  This function enables or disables the save registry to non-volatile media feature of the RegFlushKey() function. *lpOutBuf* must be set to zero (FALSE) if the feature is to be disabled or one (TRUE) if the feature is to be enabled.
- **ITC_ DOCK_SWITCH**
  This IOCTL sets a position of the dock switch. The dock switch may be set to either “modem” or “serial” positions. *lpOutBuf* must point to a buffer that contains a byte value of either DOCK_MODEM or DOCK_SERIAL as defined in OEMIOCTL.H; the value specifies the position the switch is to be set.

- **ITC_ WAKEUP_MASK**
  This IOCTL sets a bit mask that represents the mask for the five programmable wakeup keys. The I/O key is not a programmable wakeup key. By default it is always the system resume key and all other keys are set to disable key wakeup. A zero in a bit position masks the wakeup for that key. A one in a bit position enables wakeup for that key. *lpOutBuf* must point to a buffer that contains a byte value of a wakeup mask consisting of the OR'ed constants as defined in OEMIOCTL.H. Only the following keys are programmable as wakeup events.

```
#define   SCANNER_TRIGGER 1
#define   SCANNER_LEFT    2
#define   SCANNER_RIGHT   4
#define   GOLD_A1         8
#define   GOLD_A2         0x10
```

- **ITC_AMBIENT_KEYBOARD**
  This IOCTL sets the threshold for the keyboard ambient sensor. This can be a value from 0 (always off) to 255 (always on). *lpOutBuf* must point to a buffer that contains a byte value of the desired setting.
- **ITC_AMBIENT_FRONTLIGHT**
  This IOCTL sets the threshold for the frontlight ambient sensor. This can be a value from 0 (always off) to 255. *lpOutBuf* must point to a buffer that contains a byte value of the desired setting.

IOCTL_HAL_GET_DEVICEID

This IOCTL returns the device ID. There are two types of device IDs supported, which are differentiated based on the size of the *output* buffer. The UUID is returned if the buffer size is set to *sizeof(UNIQUE_DEVICEID)*, otherwise the oldstyle device ID is returned.

Usage

#include “pkfuncs.h”
#include “deviceid.h”

Syntax

```
BOOL KernelIoControl( IOCTL_HAL_GET_DEVICEID,LPVOID
lpInBuf,DWORD nInBufSize,LPVOID lpOutBuf,DWORD
nOutBufSize,LPDWORD lpBytesReturned );
```

Parameters

lpInBuf	Should be set to NULL. STRICT_ID settings are not supported.
lpInBufSize	Should be set to zero.
lpOutBuf	Must point to a UNIQUE_DEVICEID structure as defined by DEVICEID.H if the UUID is to be returned.
nOutBufSize	The size of the UNIQUE_DEVICEID in bytes if the UUID is to be returned. A DEVICE_ID as defined by PKFUNCS.H is returned if the size in bytes is greater than or equal to *sizeof(DEVICE_ID)*.
lpBytesReturned	The number of bytes returned by the function.

Return Values

Returns TRUE if function succeeds. Returns FALSE if the function fails. GetLastError() may be used to get the extended error value.

IOCTL_HAL_GET_OAL_VERINFO

Returns the HAL version information of the Pocket PC image.

Usage

#include “oemioctl.h”

Syntax

```
BOOL KernelIoControl( IOCTL_HAL_GET_OAL_VERINFO,LPVOID
lpInBuf,DWORD nInBufSize,LPVOID lpOutBuf,DWORD
nOutBufSize,LPDWORD lpBytesReturned );
```

Parameters

lpInBuf Should be set to NULL.

lpInBufSize Should be set to zero.

lpOutBuf Must point to a VERSIONINFO structure as defined by OEMIOCTL.H. The fields should have these values:

- `cboemverinfo` sizeof (tagOemVerInfo);
- `verinfover` 1
- `sig;` “ITC\0”
- `id;` ‘N’
- `tgtcustomer` “”
- `tgtplat` SeaRay
- `tgtplatversion` Current build version number
- `tgtcputype[8];` “Intel\0”
- `tgtcpu` “PXA250\0”;
- `tgtcoreversion` “”
- `date` Build time
- `time` Build date

nOutBufSize The size of VERSIONINFO in bytes.

lpBytesReturned Returns *sizeof(PVERSIONINFO)*.

Return Values

Returns TRUE if function succeeds. Returns FALSE if the function fails. GetLastError() may be used to get the extended error value.

IOCTL_HAL_GET_BOOTLOADER_VERINFO

Returns the HAL version information of the Pocket PC image.

Usage

#include “oemioctl.h”

Syntax

```
BOOL KernelIoControl( IOCTL_HAL_GET_OAL_VERINFO,LPVOID
lpInBuf, DWORD nInBufSize,LPVOID lpOutBuf,DWORD
nOutBufSize,LPDWORD lpBytesReturned );
```

Parameters

lpInBuf Should be set to NULL.

lpInBufSize Should be set to zero.

lpOutBuf Must point to a VERSIONINFO structure as defined by OEMIOCTL.H. The fields should have these values:

- `cboemverinfo` Sizeof (tagOemVerInfo);
- `verinfover` 1
- `sig;` “ITC\0”
- `id;` ‘B’
- `tgtcustomer` “”
- `tgtplat` SeaRay
- `tgtplatversion` Current build version number of the bootstrap loader
- `tgtcputype[8];` “Intel\0”;
- `tgtcpu` “PXA250\0”
- `tgtcoreversion` “”
- `date` Build time
- `time` Build date

nOutBufSize The size of VERSIONINFO in bytes.

lpBytesReturned The number of bytes returned to *lpOutBuf*.

Return Values

Returns TRUE if function succeeds. Returns FALSE if the function fails. GetLastError() may be used to get the extended error value.

IOCTL_HAL_WARMBOOT

Causes the system to perform a warm-boot. The object store is retained.

Usage
#include “oemioctl.h”

Syntax
```
BOOL KernelIoControl( IOCTL_HAL_WARMBOOT,LPVOID
lpInBuf,DWORD nInBufSize,LPVOID lpOutBuf,DWORD
nOutBufSize,LPDWORD lpBytesReturned );
```

Parameters
lpInBuf Should be set to NULL.

lpInBufSize Should be set to zero.

lpOutBuf Should be NULL.

nOutBufSize Should be zero.

Return Values
None.

IOCTL_HAL_COLDBOOT

Causes the system to perform a cold-boot. The object store is cleared.

Usage
#include “oemioctl.h”

Syntax
```
BOOL KernelIoControl( IOCTL_HAL_COLDBOOT,LPVOID
lpInBuf,DWORD nInBufSize,LPVOID lpOutBuf,DWORD
nOutBufSize,LPDWORD lpBytesReturned );
```

Parameters
lpInBuf Should be set to NULL.

lpInBufSize Should be set to zero.

lpOutBuf Should be NULL.

nOutBufSize Should be zero.

Return Values
None.

IOCTL_HAL_GET_RESET_INFO

This IOCTL code allows software to check the type of the most recent reset.

Usage

#include “oemioctl.h”

Syntax

```
BOOL KernelIoControl( IOCTL_HAL_GET_RESET_INFO,LPVOID
lpInBuf,DWORD nInBufSize,LPVOID lpOutBuf,DWORD
nOutBufSize,LPDWORD lpBytesReturned );
```

Parameters

lpInBuf Should be set to NULL.

lpInBufSize Should be set to zero.

lpOutBuf Must point to a HAL_RESET_INFO structure:

```
typedef struct {
   DWORD ResetReason;                       // most recent reset type
   DWORD ObjectStoreState;                  // state of object store
} HAL_RESET_INFO, * PHAL_RESET_INFO;

// Reset reason types
#define HAL_RESET_TYPE_UNKNOWN          0
#define HAL_RESET_REASON_HARDWARE       1  // cold
#define HAL_RESET_REASON_SOFTWARE       2  // suspend
#define HAL_RESET_REASON_WATCHDOG       4
#define HAL_RESET_BATT_FAULT            8  // power fail
#define HAL_RESET_VDD_FAULT             16 // warm boot

// Object store state flags
#define HAL_OBJECT_STORE_STATE_UNKNOWN  0
#define HAL_OBJECT_STORE_STATE_CLEAR    1
```

nOutBufSize The size of HAL_RESET_INFO in bytes.

lpBytesReturned The number of bytes returned by the function.

Return Values

Returns TRUE if function succeeds. Returns FALSE if the function fails. GetLastError() may be used to get the extended error value.

IOCTL_HAL_GET_BOOT_DEVICE

This IOCTL code allows software to check which device CE booted from.

Usage

#include “oemioctl.h”

Syntax

```
BOOL KernelIoControl( IOCTL_HAL_GET_BOOT_DEVICE,LPVOID
lpInBuf,DWORD nInBufSize,LPVOID lpOutBuf,DWORD
nOutBufSize,LPDWORD lpBytesReturned );
```

Parameters

lpInBuf Should be set to NULL.

lpInBufSize Should be set to zero.

lpOutBuf Must point to a buffer large enough to hold a DWORD (4 bytes) that contains the boot device. The following boot devices are supported:

```
#define HAL_BOOT_DEVICE_UNKNOWN        0
#define HAL_BOOT_DEVICE_ROM_XIP        1
#define HAL_BOOT_DEVICE_ROM            2
#define HAL_BOOT_DEVICE_PCMCIA_ATA     3
#define HAL_BOOT_DEVICE_PCMCIA_LINEAR  4
#define HAL_BOOT_DEVICE_IDE_ATA        5
#define HAL_BOOT_DEVICE_IDE_ATAPI      6
```

nOutBufSize The size of lpOutBuf in bytes (4).

lpBytesReturned The number of bytes returned by the function.

Return Values

Returns TRUE if function succeeds. Returns FALSE if the function fails. GetLastError() may be used to get the extended error value.

IOCTL_HAL_REBOOT

Causes the system to perform a warm-boot. The object store is retained.

Usage

#include “oemioctl.h”

Syntax

```
BOOL KernelIoControl( IOCTL_HAL_REBOOT,LPVOID lpInBuf,DWORD
nInBufSize,LPVOID lpOutBuf,DWORD nOutBufSize,LPDWORD
lpBytesReturned );
```

Parameters

lpInBuf	Should be set to NULL.
lpInBufSize	Should be set to zero.
lpOutBuf	Should be NULL.
nOutBufSize	Should be zero.

Return Values

None.

IOCTL_PROCESSOR_INFORMATION

Returns processor information.

Usage

#include “pkfuncs.h”

Syntax

```
BOOL KernelIoControl( IOCTL_PROCESSOR_INFORMATION,LPVOID
lpInBuf,DWORD nInBufSize,LPVOID lpOutBuf,DWORD
nOutBufSize,LPDWORD lpBytesReturned );
```

Parameters

Parameters:

lpInBuf Should be set to NULL.

lpInBufSize Should be set to zero.

lpOutBuf Should be a pointer to the PROCESSOR_INFO structure. The PROCESSOR_INFO structure stores information that describes the CPU more descriptively.

```
typedef __PROCESSOR_INFO {
WORD    wVersion;              // Set to value 1
WCHAR   szProcessorCore[40];   // “ARM\0”
WORD    wCoreRevision;         // 4
WCHAR   szProcessorName[40];   // “PXA250\0”
WORD    wProcessorRevision;    // 0
WCAHR   szCatalogNumber[100];  // 0
WCHAR   szVendor[100];         // “Intel Corporation\0”
DWORD   dwInstructionSet;      // 0
DWORD   dwClockSpeed;          // 400
}
```

nOutBufSize Should be set to sizeof(PROCESSOR_INFO) in bytes.

lpBytesReturned Returns sizeof(PROCESSOR_INFO);

Return Values

Returns TRUE if function succeeds. Returns FALSE if the function fails. GetLastError() may be used to get the extended error value.

IOCTL_GET_CPU_ID

Returns Xscale processor ID.

Usage
#include “oemioctl.h”

Syntax
```
BOOL KernelIoControl( IOCTL_GET_CPU_ID,LPVOID lpInBuf, DWORD
nInBufSize,LPVOID lpOutBuf,DWORD nOutBufSize,LPDWORD
lpBytesReturned );
```

Parameters

lpInBuf	Should point to a CPUIdInfo structure defined in OEMIOCTL.H.
lpInBufSize	Should be sizeof(CPUIdInfo).
lpOutBuf	Should be NULL.
nOutBufSize	Should be set to 0.
lpBytesReturned	Returns sizeof(PROCESSOR_INFO);

Return Values
Returns TRUE if function succeeds. Returns FALSE if the function fails. GetLastError() may be used to get the extended error value.

Reboot Functions

There are several methods, via Kernel I/O Control functions, that an application program can use to force the 700 Series Computer to reboot.

IOCTL_HAL_REBOOT

IOCTL_HAL_REBOOT performs a warm-boot. See page 278.

IOCTL_HAL_COLDBOOT

Invoking the KernelIOControl function with IOCTL_HAL_COLDBOOT forces a cold reboot. This resets the 700 Series Computer and reloads Windows CE as if a power-up had been performed. The contents of the Windows CE RAM-based object store are discarded. See page 275.

IOCTL_HAL_WARMBOOT

This function is supported on the 700 Series Computers. It performs a warm boot of the system, preserving the object store. See page 275.

Remapping the Keypad

Note; Use caution when remapping the keypad. Improper remapping may render the keypad unusable. Data within the 700 Series Computer could also be lost, should any problems occur.

Applications have the ability to remap keys on the 700 Color Keypad. This will allow applications to enable keys that would otherwise not be available, such as the [F1] function key. Also, to disable keys that should not be available, such as the alpha key because no alpha entry is required. Care should be exercised when attempting to remap the keypad because improper remapping may cause the keypad to become unusable. This can be corrected by cold booting the device which will cause the default keymap to be loaded again.

Note that remapping the keys in this way affects the key mapping for the entire system, not just for the application that does the remapping.

There are three "planes" supported for the 740 Keypad. Keys that are to be used in more than one shift plane must be described in each plane.

Unshifted Plane

The unshifted plane contains values from the keypad when not pressed with other keys, such as the following:

- [**1**] 1
- [5] 5
- [**9**] 9

Gold Plane

The gold plane contains values from the keypad when a key is simultaneously pressed with the [**Gold**] key, such as the following:

- [**Gold**] + [**1**] Send
- [**Gold**] + [5] A3
- [**Gold**] + [**9**] PageDown

Alpha Plane

The alpha plane contains values from the keypad when the keypad has been placed in alpha mode by pressing the blue alpha key, such as the following:

- [**Alpha**] + [**1**] Caps
- [**Alpha**] + [5] JKL
- [**Alpha**] + [**9**] WXYZ

Key Values

Key values for each plane are stored in the registry. All units ship with a default key mapping already loaded in the registry. Applications that wish to change the default mapping need to read the appropriate key from the registry into an array of Words, modify the values required and then write the updated values back into the registry. The registry access can be done with standard Microsoft API calls, such as RegOpenKeyEx(), RegQueryValueEx(), and RegSetValueEx().

- The unshifted plane mapping can be found in the registry at:
  `HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD\Vkey`
- The gold plane mapping can be found in the registry at:
  `HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD\VkeyGold`
- The alpha plane mapping can be found in the registry at:
  `HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD\VkeyAlpha`

How Key Values Are Stored in Registry

To know which fields to update in the registry, you must know what Scan Codes are assigned to each physical key (see the table below). The Scan Code is used at the lowest level of the system to let the keypad driver know which physical key has been pressed. The keypad driver takes that scan code and looks it up in a table (a copy of the one stored in the registry) to determine which values to pass on to the operating system.

Each registry key is just an array that describes to the keypad driver what value needs to be passed for each physical key. The key values are indexed by the scan code, this is a zero-based index. For example in the unshifted plane, the [**4**] key has a scan code of 0x06. This means that the seventh word under the "Vkey" registry key will have the value for the [**4**] key. Taking a sample of the "Vkey" registry key shows the following values:

```
00,00,0B,05,02,03,C1,07,04,03,BE,00,34,00,00,00,. . .
```

The value is 34,00. The values are in reverse byte order because that is the way the processor handles data. When writing an application, nothing needs to be done to swap the bytes, as this will happen automatically when the data is read into a byte value. This is something you just need to be aware of this when looking at the registry. Knowing this, we can see that the value that the keypad driver will pass to the system is a hex 34. Looking that up on an UNICODE character chart, we see that it maps to a "4". If you wanted the key, labeled "4", to output the letter "A" instead, you would need to change the seventh word to "41" (the hexadecimal representation of "A" from the UNICODE chart), then put the key back into the registry.

Note: Do not remap scan codes 0x01, 0x41, 0x42, 0x43, 0x44. Remapping these scan codes could render your 700 Series Computer unusable until a cold-boot is performed.

If you wish to disable a certain key, remap its scan code to 0x00.

Change Notification

Just changing the registry keys will not immediately change the key mappings. To notify the keypad driver that the registry has been updated, signal the "ITC_KEYBOARD_CHANGE" named event using the CreateEvent() API.

Advanced Keypad Remapping

It is also possible to map multiple key presses to one button and to map named system events to a button. The multiple key press option could be useful to cut down on the number of keys needed to press in a given situation or to remap which key behaves like the action key. Mapping events to a button could be useful to change which buttons will fire the scanner, control volume, and allow for suspending and resuming the device. If you need help performing one of these advanced topics please contact Intermec Technical Support.

Scan Codes

At the lowest driver level, the 740 Keypad identifies keys as scan codes. These scan codes are sent via the keypad microcontroller, and cannot be changed without modifying the keypad firmware.

Key/Meaning	Scancode
Reserved	0x00
I/O Button	0x01
Scanner Trigger	0x02
Scanner Left	0x03
Scanner Right	0x04
.	0x05
4	0x06
None	0x07
Left Arrow	0x08
None	0x09
Backspace	0x0A
Gold Key	0x0B
None	0x0C
ESC	0x0D
Down Arrow	0x0E
1	0x0F
7	0x10
Alpha Key	0x11
None	0x12
Up Arrow	0x13
Right Arrow	0x14
2	0x15
8	0x16
0	0x17
5	0x18
None	0x19

Key/Meaning	Scancode
Action Key	0x1A
3	0x1B
9	0x1C
ENTER	0x1D
6	0x1E
None	0x1F-0x40
Charge Detect	0x41
LCD Frontlight	0x42
Ambient Light	0x42
Threshold Crossed	0x42
Headset Detected	0x43
Keypad Backlight	0x44
Ambient Light	0x44
Threshold Crossed	0x44

Sample View of Registry Keys

The following is a sample view of the current default key mapping. See the registry on your device for the latest key mappings.

```
[HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD]
"ResumeMask"=dword:7
"Vkey"=hex: 00,00,0B,05,02,03,C1,07,04,03,BE,00,34,00,00,00,\
  25,00,00,00,08,00,03,02,00,00,1B,00,28,00,31,00,\
  37,00,01,02,00,00,26,00,27,00,32,00,38,00,30,00,\
  35,00,00,00,01,03,33,00,39,00,0D,00,36,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,07,05,01,05,03,05,02,05

"VkeyGold"=hex:  00,00,0B,05,02,03,C1,07,04,03,BE,00,34,00,00,00,\
  09,01,00,00,BF,00,03,02,00,00,BD,00,75,00,72,00,\
  21,00,01,02,00,00,76,00,09,00,73,00,38,01,5B,00,\
  35,00,00,00,BB,01,09,05,22,00,32,01,36,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,07,05,01,05,03,05,02,05

"VkeyAlpha"=hex: 00,00,0B,05,02,03,C1,07,04,03,BE,00,47,00,00,00,\
  25,00,00,00,08,00,03,02,00,00,1B,00,28,00,02,02,\
  50,00,01,02,00,00,26,00,27,00,41,00,54,00,20,00,\
  4A,00,00,00,01,03,44,00,57,00,0D,00,4D,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,\
  00,00,07,05,01,05,03,05,02,05
```

A Control Panel Applets

This appendix contains information about the Data Collection, SNMP, and User Information Control Panel applets that may be on your 700 Series Color Mobile Computer.

SNMP and Data Collection settings that can appear under **Settings** are dependent on what hardware configuration is done for each 700 Series Computer at the time of shipment. These settings will currently only appear if a scanner or an imager option is present.

Likewise, other control panel applets that are specifically related to the 802.11b radio module will appear when a 802.11b radio module is installed in a 700 Series Computer. Control panel applets that are specific for Wireless Printing, CDMA/1xRTT, and GSM/GPRS radio modules will only appear when each respective hardware configuration is done on the 700 Series Computer. *See Chapter 4, "Network Support," for more information about the radio modules or the wireless printing.*

Configuration Parameters

A configuration parameter changes the way the 700 Series Color (700C) Mobile Computer operates, such as configuring a parameter to have the 700 Series Computer emit a very loud beep in a noisy environment. Use any of the following methods to execute configuration parameters:

- Change Data Collection and SNMP parameters via control panel applets later in this appendix.
- Access the 700 Series Computer via the Unit Manager through a web browser on your desktop PC via the SRDEVMGMT.CAB file. To use the Unit Manager, install this CAB file from the 700 Color Software Tools CD-ROM. Unit Manager applications are available on the *700 Series Color Unit Manager CD-ROM*. For more information, consult your Intermec sales representative.
- Send parameters from an SNMP management station. See "*SNMP Configuration*" starting on page 123.
- Scan EasySet bar codes. You can use the EasySet bar code creation software from Intermec Technologies Corporation to print configuration labels. Scan the labels to change the scanner configuration and data transfer settings.

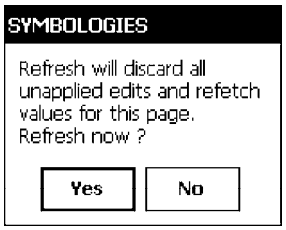
Changing a Parameter Setting

Menus of available parameters for each group are listed. Use the scroll bars to go through the list. Expand each menu (+) to view its parameter settings. Tap a parameter to select, or expand a parameter (+) to view its subparameters.

Note that each parameter or subparameter is shown with its default setting or current setting in (< >) brackets. Tap a parameter or subparameter to select that parameter, then do any of the following to change its setting: Tap **Apply** to apply any changes. *Note that these illustrations are from a Symbologies parameter.*

- Typing a new value in an entry field.
- Choosing a new value from the drop-down list.
- Selecting a different option. The selected option contains a bullet.
- Tap **Defaults**, then **Apply** to restore factory-default settings. Tap **Yes** when you are prompted to verify this action.

- Tap **Refresh** to discard changes and start again. Tap **Yes** when you are prompted to verify this action.



About Configuration Parameters

You can find the following information about each configuration parameter:

- **Name and Purpose**:
  Describes the parameter and its function.
- **Action**:
  Describes what to do with a parameter once that parameter is selected.
- **SNMP OID**:
  Lists the SNMP OID for the parameter.
- **Syntax** or **Options**:
  Syntax lists the two-character code for the parameter, if the parameter is configurable by scanning a bar code or by sending parameters through a network. Both **Syntax** and **Options** list acceptable values for the parameter. *Default settings are noted in italic.*

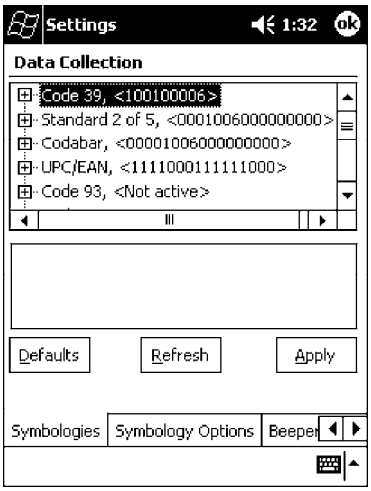
Data Collection Control Panel Applet

See "*Scanner Control and Data Transfer*" in the *Intermec Windows CE/Pocket PC Software Developer's Kit (SDK) User's Manual* shipped with the Software Developer's Kit (SDK) for information about data collection functions.

Note: Icons are shown to the left.

Data Collection

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **Data Collection** icon to access its control panel applet.



Use the left and right arrows to scroll through the tabs along the bottom of the control panel applet, then tap a tab to access its menus. These tabs represent the following groups of settings or parameters:

- **Symbologies**
- **Symbology Options** *(starting on page 309)*
- **Beeper/LED** *(starting on page 317)*
- **Imager** *(starting on page 323)*
- **Virtual Wedge** *(starting on page 325)*

Symbologies

You can change bar code symbology parameter settings in your 700 Series Computer via the **Data Collection** control panel applet. The following parameters are for bar code symbologies. Additional information about the more common bar code symbologies are in Appendix C, "*Bar Code Symbologies*." *Note that these parameters are listed in the order of their appearance within this tab.*

Most of these symbologies apply to both the imager and the laser scanner tools. However, when using an imager, the Macro PDF *(page 300)*, Micro PDF 417 *(page 302)*, Matrix 2 of 5 *(page 304)*, Telepen *(page 305)*, and Code 11 *(page 306)* symbologies are not supported. Likewise, when using a laser scanner, the QR Code *(page 307)* and Data Matrix *(page 308)* symbologies are not supported.

The following table shows which bar code symbologies are supported either by an imager or by a laser scanner.

Bar Code Symbology	Imager	Laser Scanner
Code 39	X	X
Interleaved 2 of 5	X	X
Standard 2 of 5	X	X
Matrix 2 of 5		X
Code 128	X	X
Code 93	X	X
Codabar	X	X
MSI		X
Plessey		X
UPC	X	X
EAN/EAN 128	X	X
Code 11		X
PDF 417	X	X
Micro PDF 417		X
Telepen		X
Data Matrix	X	
QR Code	X	

Code 39

Code 39 is a discrete, self-checking, variable length symbology. The character set is uppercase A-Z, 0-9, dollar sign ($), period (.), slash (/), percent (%), space ( ), plus (+), and minus (-).

Action

Tap (+) to expand the **Code 39** parameter, select the setting to be changed, then tap an option to change this setting or select an option from the drop-down list.

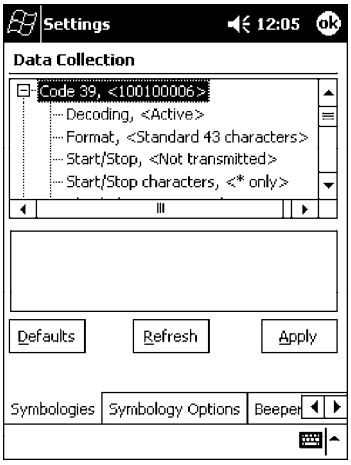
SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.3.1

Options

Decoding	0	Not active
	1	Active *(default)*
Format	0	Standard 43 characters *(default)*
	1	Full ASCII
Start/Stop	0	Not transmitted *(default)*
	1	Transmitted
Start/Stop characters *(Not supported when using an imager)*:		
	0	$ (dollar sign) only
	1	* (asterisk) only *(default)*
	2	& and * (dollar sign and asterisk)
Check digit	0	Not used *(default)*
	1	Mod 43 transmitted
	2	Mod 43 not transmitted
	3	French CIP transmitted
	4	French CIP not transmitted
	5	Italian CPI transmitted
	6	Italian CPI not transmitted
Bar code length	0	Any length *(default)*
	1	Minimum length
Minimum length	000-254	Minimum length 1-254 *(6)*

Note: If **Bar code length** = "1" then **Minimum length** is entered.



Standard 2 of 5

Standard 2 of 5 is a discrete and self-checking symbology that uses the bars to encode information and the spaces to separate the individual bars.

Action

Tap (+) to expand the **Standard 2 of 5** parameter, select the setting to be changed, then tap an option to change this setting or select an option from the drop-down list.

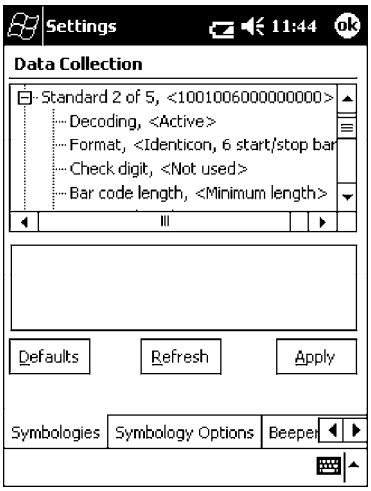
SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.4.1

Options

Decoding	0	Not active *(default)*
	1	Active
Format	0	Identicon, 6 start/stop bars *(default)*
	1	Computer Identics, 4 start/stop
Check digit	0	Not used *(default)*
	1	Mod 10 transmitted
	2	Mod 10 not transmitted
Bar code length	0	Any length
	1	Minimum length *(default)*
	2	Fixed lengths
Minimum length	001-254	Minimum length 1-254 *(6)*
Fixed length 1	000-254	Fixed bar code length 0-254 *(0)*
Fixed length 2	000-254	Fixed bar code length 0-254 *(0)*
Fixed length 3	000-254	Fixed bar code length 0-254 *(0)*

Note: If **Bar code length** = "1" then **Minimum length** is entered. If **Bar code length** = "2" then **Fixed length 1**, **Fixed length 2**, or **Fixed length 3** is entered.



Codabar

Codabar is a self-checking, discrete symbology.

Action

Tap (+) to expand the **Codabar** parameter, select a setting to be changed, then select an option from the drop-down list to change this setting.

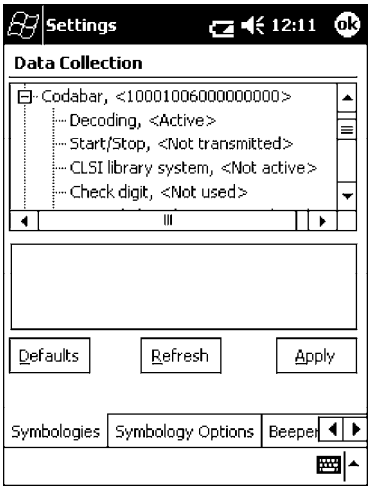
SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.5.1

Options

Decoding	0	Not active *(default)*
	1	Active
Start/Stop	0	Not transmitted *(default)*
	1	abcd transmitted
	2	ABCD transmitted
	3	abcd/tn*e transmitted
	4	DC1`DC4 transmitted
CLSI library system *(Not supported when using an imager)*:		
	0	Not active *(default)*
	1	Active
Check digit	0	Not used *(default)*
	1	Transmitted
	2	Not transmitted
Bar code length	0	Any length
	1	Minimum length *(default)*
	2	Fixed lengths
Minimum length	003-254	Minimum length 3-254 *(6)*
Fixed length 1	000-254	Fixed length 0-254 *(0)*
Fixed length 2	000-254	Fixed length 0-254 *(0)*
Fixed length 3	000-254	Fixed length 0-254 *(0)*

Note: If **Bar code length** = "1" then **Minimum length** is entered. If **Bar code length** = "2" then **Fixed length 1**, **Fixed length 2**, or **Fixed length 3** is entered.



UPC/EAN

UPC/EAN are fixed-length, numeric, continuous symbologies that use four element widths.

Action

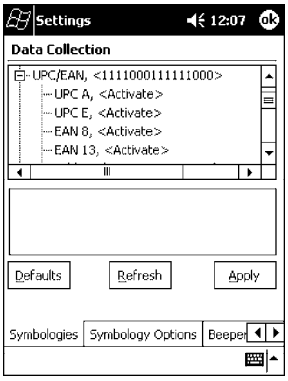
Tap (+) to expand the **UPC/EAN** parameter, select the setting to be changed, then select an option to change this setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.6.1

Options

UPC A	0	Not active
	1	Active *(default)*
UPC E	0	Not active
	1	Active *(default)*
EAN 8	0	Not active
	1	Active *(default)*
EAN 13	0	Not active
	1	Active *(default)*
Add-on digits	0	Not required *(default)*
	1	Required
Add-on 2 digits	0	Not active *(default)*
	1	Active
Add-on 5 digits *(Not supported when using an imager)*:		
	0	Not active *(default)*
	1	Active
UPC A check digit	0	Not transmitted
	1	Transmitted *(default)*
UPC E check digit	0	Not transmitted
	1	Transmitted *(default)*
EAN 8 check digit	0	Not transmitted
	1	Transmitted *(default)*
EAN 13 check digit	0	Not transmitted
	1	Transmitted *(default)*
UPC A number system	0	Not transmitted
	1	Transmitted *(default)*
UPC E number system	0	Not transmitted
	1	Transmitted *(default)*
UPC A re-encoding	0	UPC A transmitted as EAN 13 *(default)*
	1	UPC A transmitted as UPC A
UPC E re-encoding	0	UPC E transmitted as UPC E *(default)*
	1	UPC E transmitted as UPC A
EAN 8 re-encoding	0	EAN 8 transmitted as EAN 8 *(default)*
	1	EAN 8 transmitted as EAN 13



Code 93
Code 93 is a variable length, continuous symbology that uses four element widths.

Action
Tap the **Code 93** parameter, then select an option to change this parameter setting. Tap (+) to access the **Code 93 Lengths** parameter.

SNMP OID
1.3.6.1.4.1.1963.15.3.3.1.1.7.1

Options
0 Not active *(default)*
1 Active

Code 93 Length
Sets the Code 93 bar code length.

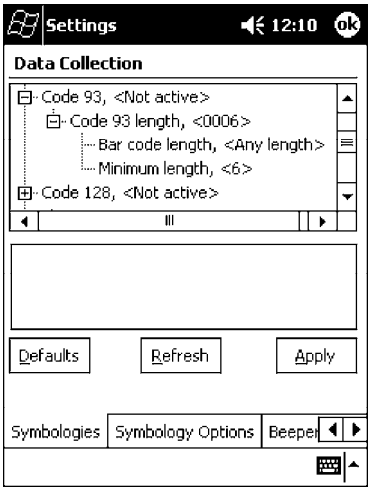
Action
Tap (+) to expand the **Code 93** parameter, then tap (+) to expand the **Code 93 Lengths** parameter. Tap the setting to be changed, then tap an option to change this setting.

SNMP OID
1.3.6.1.4.1.1963.15.3.3.1.1.19.1

Options

Bar code length	0	Any length *(default)*
	1	Minimum length
Minimum length	001-254	Minimum length 1-254 *(6)*

Note: If **Bar code length** = "1" then **Minimum length** is entered.



Code 128

Code 128 is a variable-length, continuous, high-density, alphanumeric symbology that uses multiple element widths and supports the extended ASCII character set.

Action

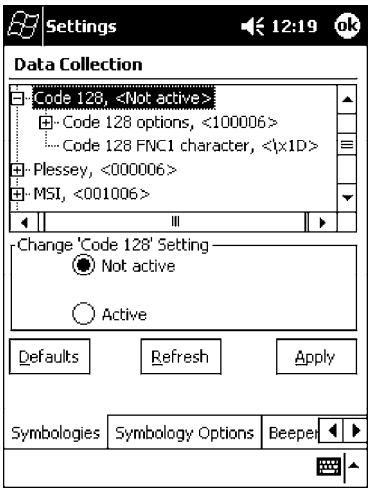
Tap the **Code 128** parameter, then select an option to change this parameter setting. *The following illustration is for a 700 Series Computer using a laser scanner.*

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.9.1

Options

0 Not active *(default)*
1 Active



Code 128 Options

Set the following for the Code 128 parameter. *Note that the **EAN 128]C1** and **CIP 128 French Pharmaceutical** options are not available when you use an imager with your 700 Series Computer.*

Action

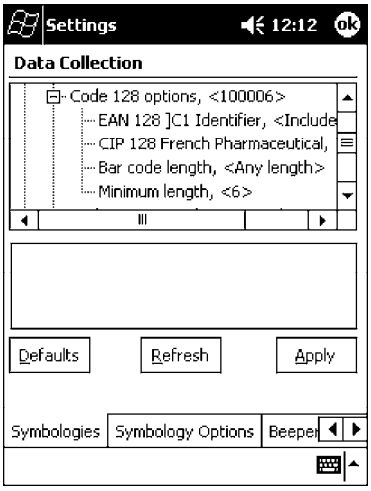
Tap (+) to expand the **Code 128 Options** parameter, select a setting, then select an option to change this setting.

SNMP OID

None.

Options

EAN 128]C1 Identifier *(disabled when using an imager)*		
	0	Remove
	1	Include *(default)*
CIP 128 French Pharmaceutical *(disabled when using an imager)*		
	0	Not active *(default)*
	1	Active
Bar code length	0	Any length *(default)*
	1	Minimum length
Minimum length	001-254	Minimum length 1-254 *(6)*



Code 128 FNC1 Character

The Code 128 FNC1 character (EAN 128 norms) can be any ASCII character and is used as a separator when multiple identifiers and their fields are concatenated. *Note that this is not available when you use an imager with your 700 Series Computer.*

Non-printable ASCII characters can be entered using the following syntax where *HH* is the hexadecimal value of the character.

```
\xHH
```

For example, the GS character, whose hexadecimal value is 1D, would be entered as `\x1D`. In addition,the following characters have their own identifiers:

- BEL \a
- BS \b
- FF \f
- LF \n
- CR \r
- HT \t
- VT \v

Action

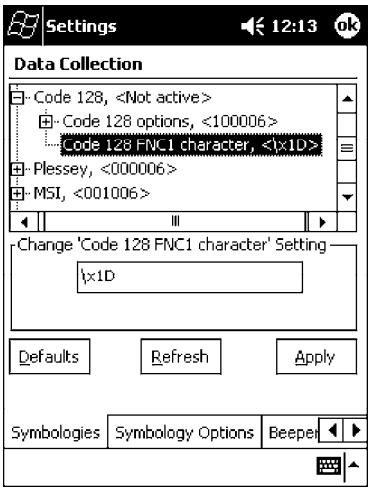
Tap (+) to expand the **Code 128** parameter, then type the ASCII characters to be set for the **Code 128 FNC1 character** parameter.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.21.1

Options

Any ASCII character *(default is the GS function character - ID hex)*



Plessey

Plessey is a pulse-width modulated symbology like most other bar codes. It includes a start character, data characters, an eight-bit cyclic check digit, and a termination bar. The code is continuous and not self-checking. You need to configure two parameters for Plessey code: Start Code and Check Digit. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action

Tap (+) to expand the **Plessey** parameter, select the setting to be changed, then select an option to change this setting or select an option from the drop-down list.

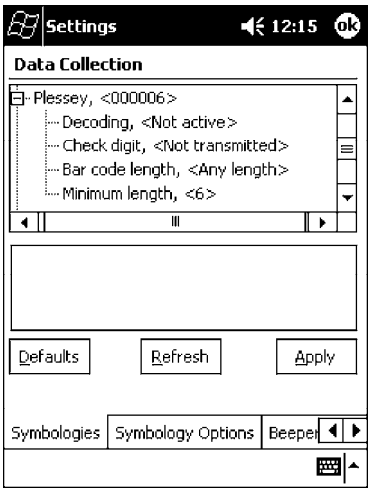
SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.10.1

Options

Decoding	0	Not active *(default)*
	1	Active
Check digit	0	Not transmitted *(default)*
	1	Transmitted
Bar code length	0	Any length *(default)*
	1	Minimum length
Minimum length	001-254	Minimum bar code length 1-254 *(6)*

Note: If **Bar code length** = "1" then **Minimum length** is entered.



MSI

MSI is a symbology similar to Plessey code (page 298) that includes a start pattern, data characters, one or two check digits, and a stop pattern. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action

Tap (+) to expand the **MSI** parameter, select the setting to be changed, then select an option to change this setting or select an option from the drop-down list.

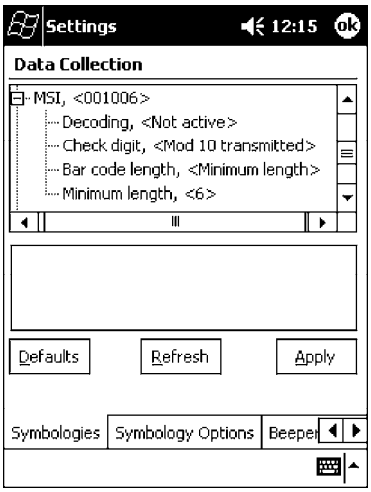
SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.15.1

Options

Decoding	0	Not active *(default)*
	1	Active
Check digit	0	Mod 10 transmitted *(default)*
	1	Mod 10 Not transmitted
	2	Double Mod 10 transmitted
	3	Double Mod 10 not transmitted
Bar code length	0	Any length
	1	Minimum length *(default)*
Minimum length	001-254	Minimum length 1-254 *(6)*

Note: If **Bar code length** = "1" then **Minimum length** is entered.



PDF 417

PDF 417 is a stacked two-dimensional symbology that provides the ability to scan across rows of code. Each row consists of start/stop characters, row identifiers, and symbol characters, which consist of four bars and four spaces each and contain the actual data. This symbology uses error correction symbol characters appended at the end to recover loss of data.

Because the virtual wedge translates incoming data into keypad input, the size of the keypad buffer limits the effective length of the label to 128 characters. Longer labels may be truncated. For PDF 417 labels of more than 128 characters, you can develop an application that bypasses the keypad buffer.

Action

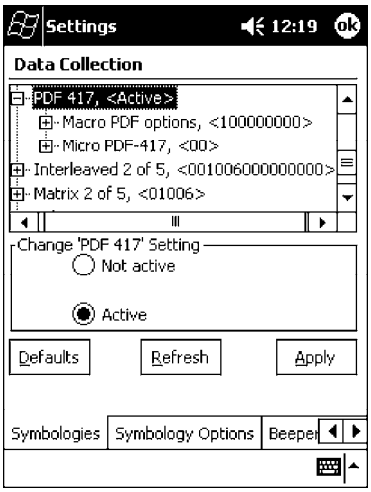
Tap the **PDF 417** parameter, then select an option to change this parameter setting. Tap (+) to access either the **Macro PDF options** parameter or the **Micro PDF 417** parameter.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.17.1

Options

0 Not active
1 Active *(default)*



Macro PDF options

Macro PDF is used when a long message requires more than one PDF 417 label. *Note that this is not available when you use an imager with your 700 Series Computer.*

- Select **Buffered** to store a multi-label PDF 417 message in the Sabre buffer, thus transmitting the entire message when all labels have been read.

- Select **Unbuffered** for multi-label PDF 417 messages that are too long for the Sabre buffer (memory overflow). Each part of the PDF 417 label is transmitted separately, and the host application must then assemble the message using the macro PDF control header transmitted with each label. *Control Header is only present in macro PDF codes and is always transmitted with unbuffered option.*

Action

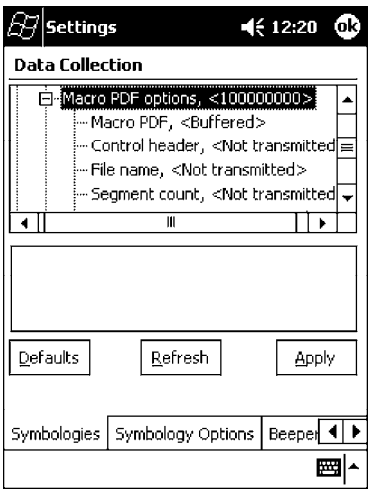
Tap (+) to expand the **PDF 417** parameter, tap (+) to expand the **Macro PDF** parameter, select a setting to be changed, then select an option to change this setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.22.1

Options

Macro PDF	0	Unbuffered
	1	Buffered *(default)*
Control header	0	Not transmitted *(default)*
	1	Transmitted
File name	0	Not transmitted *(default)*
	1	Transmitted
Segment count	0	Not transmitted *(default)*
	1	Transmitted
Time stamp	0	Not transmitted *(default)*
	1	Transmitted
Sender	0	Not transmitted *(default)*
	1	Transmitted
Addressee	0	Not transmitted *(default)*
	1	Transmitted
File size	0	Not transmitted *(default)*
	1	Transmitted
Checksum	0	Not transmitted *(default)*
	1	Transmitted



Micro PDF 417

Micro PDF 417 is a multi-row symbology derived from and closely based on PDF 417 *(page 300)*. A limited set of symbology sizes is available, together with a fixed level of error correction for each symbology size. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action

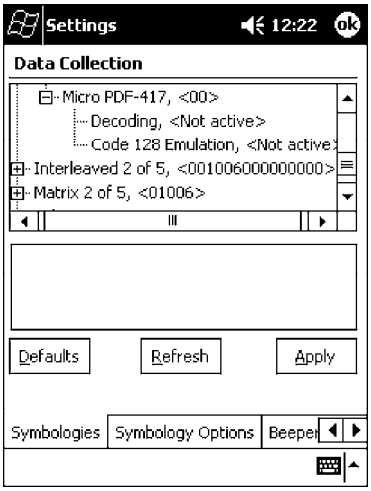
Tap (+) to expand the **PDF 417** parameter, tap (+) to expand the **Micro PDF 417** parameter, select a setting to be changed, then select an option to change this setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.27.1

Options

Decoding	0	Not active *(default)*
	1	Active
Code 128 Emulation	0	Not active *(default)*
	1	Active



Interleaved 2 of 5

Interleaved 2 of 5 (I 2 of 5) is a high-density, self-checking, continuous, numeric symbology used mainly in inventory distribution and the automobile industry.

Note: An Interleaved 2 of 5 bar code label must be at least three characters long for the 700 Series Computer to scan and decode correctly.

Action

Tap (+) to expand the **Interleaved 2 of 5** parameter, select the setting to be changed, then tap an option to change this setting or select an option from the drop-down list.

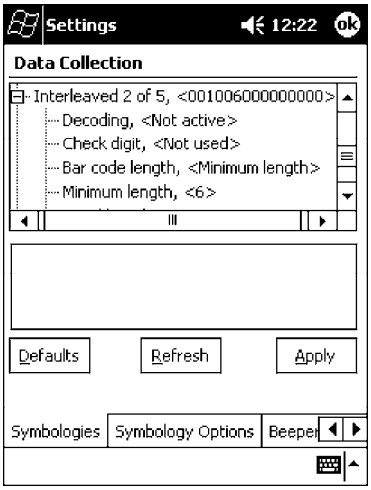
SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.23.1

Options

Decoding	0	Not active *(default)*
	1	Active
Check digit	0	Not used *(default)*
	1	Mod 10 transmitted
	2	Mod 10 not transmitted
	3	French CIP transmitted
	4	French CIP not transmitted
Bar code length	0	Any length
	1	Minimum length *(default)*
	2	Fixed lengths
Minimum length	003-254	Minimum length 3-254 *(6)*
Fixed length 1	003-254	Fixed length 3-254 *(0)*
Fixed length 2	003-254	Fixed length 3-254 *(0)*
Fixed length 3	003-254	Fixed length 3-254 *(0)*

Note: If **Bar code length** = "1" then **Minimum length** is entered. If **Bar code length** ="2" then **Fixed length 1**, **Fixed length 2**, or **Fixed length 3** is entered.



Matrix 2 of 5

Matrix 2 of 5 is a numerical symbology. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action

Tap (+) to expand the **Matrix 2 of 5** parameter, select the setting to be changed, then tap an option to change this setting or select an option from the drop-down list.

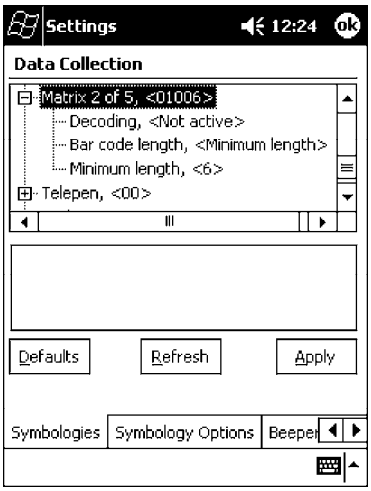
SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.24.1

Options

Decoding	0	Not active *(default)*
	1	Active
Bar code length	0	Any length
	1	Minimum length *(default)*
Minimum length	001-254	Minimum length 1-254 *(6)*

Note: If **Bar code length** = "1" then **Minimum length** is entered.



Telepen

Telepen is an alphanumeric, case-sensitive, full ASCII symbology. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action

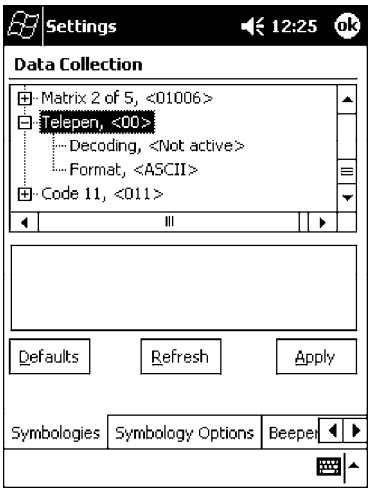
Tap (+) to expand the **Telepen** parameter, select the setting to be changed, then tap an option to change this setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.25.1

Options

Decoding	0	Not active *(default)*
	1	Active
Format	0	ASCII *(default)*
	1	Numeric



Code 11

Code 11 is a high density, discrete numeric symbology that is extensively used in labeling telecommunications components and equipment. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action

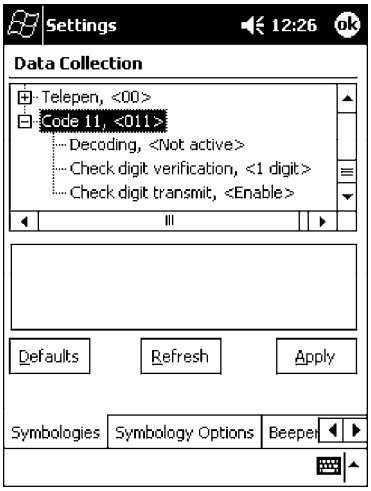
Tap (+) to expand the **Code 11** parameter, select the setting to be changed, then tap an option to change this setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.26.1

Options

Decoding	0	Not active *(default)*
	1	Active
Check digit verification	1	1 digit *(default)*
	2	2 digits
Check digit transmit	0	Disable *(default)*
	1	Enable



QR Code

QR Code (Quick Response Code) is a two-dimensional matrix symbology containing dark and light square data modules. It has position detection patterns on three of its four corners and features direct encodation of the Japanese Kana-Kanji character set. It can encode up to 2509 numeric or 1520 alphanumeric characters and offers three levels of error detection. *Note that this is not available when you use a laser scanner with your 700 Series Computer.*

Action

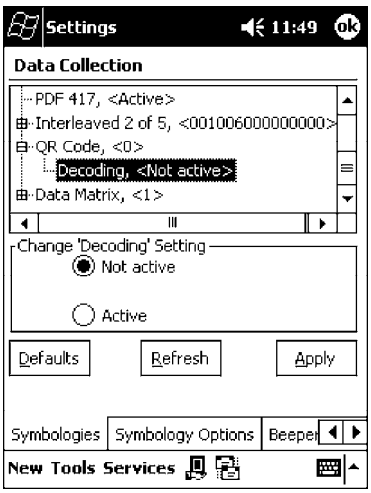
Tap (+) to expand the **QR Code** parameter, select the setting to be changed, then tap an option to change this setting or select an option from the drop-down list.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.35.1

Options

Decoding 0 Not active
1 Active *(default)*



Data Matrix

A two-dimensional matrix symbology, which is made of square modules arranged within a perimeter finder pattern. The symbology utilizes Error Checking and Correcting (ECC) algorithm with selectable levels for data error recovery and Cyclic Redundancy Check algorithm to validate the data. The character set includes either 128 characters conforming to ISO 646 (ANSI X3.4 - 1986) or 256 extended character set. Maximum capacity of a symbol is 2335 alphanumeric characters, 1556 8-bit byte characters or 3116 numeric digits. *Note that this is not available when you use a laser scanner with your 700 Series Computer.*

Action

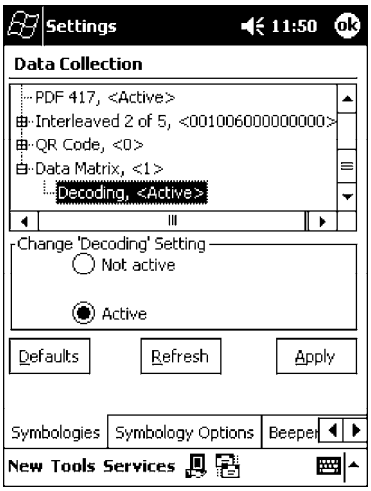
Tap (+) to expand the **Data Matrix** parameter, select the setting to be changed, then tap an option to change this setting or select an option from the drop-down list.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.1.1.34.1

Options

Decoding 0 Not active
1 Active *(default)*



Symbology Options

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **Data Collection** icon to access its control panel applet.

Use the right and left arrows to scroll to the **Symbology Options** tab, then tap this tab to access its parameters. The following are parameters for bar code symbology options. *Note that these are listed in the order of their appearance within the Symbology Options tab.*

Symbology ID

Identifies the bar code symbology in which data has been encoded by prepending a user-specified symbology identifier to the data. You can prepend one of these types of character strings to identify the symbology:

- **User-defined ASCII Character** *(Option 1)*:
  A user-defined symbology identifier is a single ASCII character. You can assign a custom identifier character to each bar code symbology. *Note that this is not available when you use an imager with your 700 Series Computer.*
- **AIM ISO/IEC Standard** *(Option 2 - Required to define symbology IDs)*:
  The AIM Standard has a three-character structure which indicates the symbology and optional features. See the *AIM ISO/IEC Standard* for more information.

Action

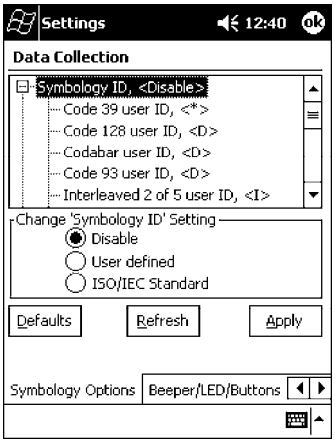
Select **Symbology ID**, then select an option to change this parameter setting. Tap (+) to expand the **Symbology ID** parameter, then select any of the user ID parameters listed. *See the top of the next page for a sample screen of the Code 39 user ID.*

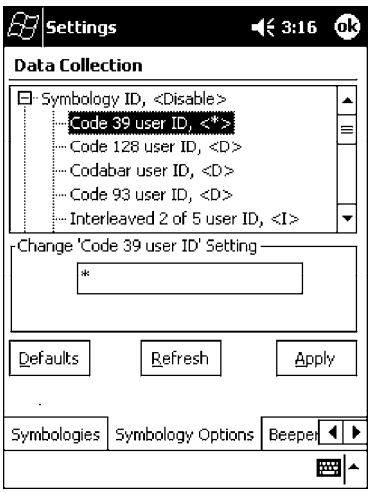
SNMP OID

1.3.6.1.4.1.1963.15.3.3.4.1.22.1

Options

0 Disable *(default)*
1 User defined *(disabled when using an imager)*
2 ISO/IEC Standard





Code 39 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Code 39 bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Code 39 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.3.1

Options: *x* where *x* is a single ASCII character. *Default is asterisk (*).*

Code 128 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Code 128 bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Code 128 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.5.1

Options: *x* where *x* is a single ASCII character. *Default is asterisk (*).*

Codabar User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Codabar bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Codabar user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.2.1

Options: *x* where *x* is a single ASCII character. *Default is D.*

Code 93 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Code 93 bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Code 93 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.4.1

Options: *x* where *x* is a single ASCII character. *Default is asterisk (*).*

Interleaved 2 of 5 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Interleaved 2 of 5 bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Interleaved 2 of 5 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.10.1

Options: *x* where *x* is a single ASCII character. *Default is I (not lowercase L).*

PDF-417 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify PDF 417 bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **PDF 417 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.12.1

Options: *x* where *x* is a single ASCII character. *Default is an asterisk (*).*

MSI User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify MSI bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **MSI user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.11.1

Options: *x* where *x* is a single ASCII character. *Default is D.*

Plessey User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Plessey bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Plessey user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.13.1

Options: *x* where *x* is a single ASCII character. *Default is D.*

Standard 2 of 5 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Standard 2 of 5 bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Standard 2 of 5 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.23.1

Options: *x* where *x* is a single ASCII character. *Default is D.*

UPC A User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify UPC-A (Universal Product Code) bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **UPC A user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.6.1

Options: *x* where *x* is a single ASCII character. *Default is A.*

UPC E User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify UPC-E bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **UPC E user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.7.1

Options: *x* where *x* is a single ASCII character. *Default is E.*

EAN 8 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify EAN-8 bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **EAN 8 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.8.1

Options: *x* where *x* is a single ASCII character. *Default is \xFF.*

EAN 13 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify EAN-13 (European Article Numbering) bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **EAN 13 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.9.1

Options: *x* where *x* is a single ASCII character. *Default is F.*

Matrix 2 of 5 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Matrix 2 of 5 bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Matrix 2 of 5 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.24.1

Options: *x* where *x* is a single ASCII character. *Default is D.*

Telepen User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Telepen bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Telepen user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.25.1

Options: *x* where *x* is a single ASCII character. *Default is an asterisk (*).*

Code 11 User ID

If "1" was selected in the **Symbology ID** parameter, you can set your own ASCII character to identify Code 11 bar code data. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action: Tap (+) to expand the **Symbology ID** parameter, select the **Code 11 user ID** parameter, then enter a user ID value to change this parameter setting.

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.4.1.16.1

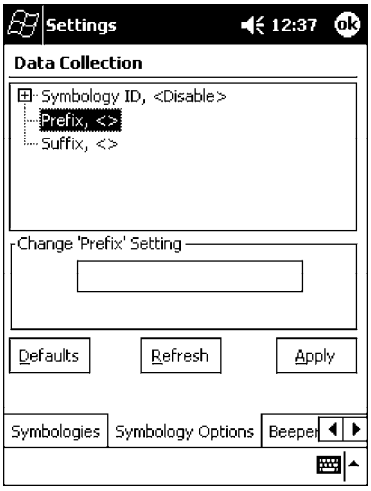
Options: *x* where *x* is a single ASCII character. *Default is asterisk (*).*

Prefix
Prepends a string of up to 20 ASCII characters to all scanned data.

Action
Tap the **Prefix** parameter, then enter a prefix value to change this parameter setting.

SNMP OID
1.3.6.1.4.1.1963.15.3.3.4.1.29.1

Options
Acceptable values are up to 20 ASCII characters.
Embedded null (<NUL >) characters are not allowed.
Default is no characters (disabled).

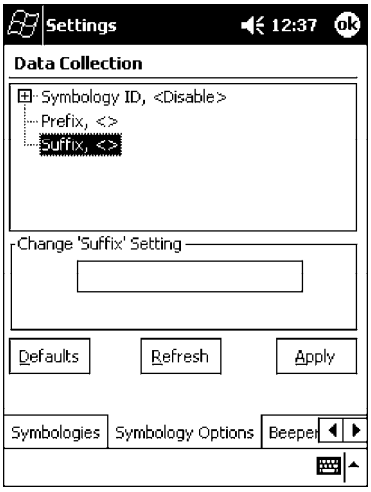


Suffix
Appends a string of up to 20 ASCII characters to all scanned data.

Action
Tap the **Suffix** parameter, then enter a suffix value to change this parameter setting.

SNMP OID
1.3.6.1.4.1.1963.15.3.3.4.1.30.1

Options
Acceptable values are up to 20 ASCII characters. Embedded null (<NUL >) characters are not allowed. *Default is no characters (disabled).*



Beeper/LED

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **Data Collection** icon to access its control panel applet.

Use the right and left arrows to scroll to the **Beeper/LED** tab, then tap this tab to access its parameters.

Most of these functions are not available when using an imager. The following table shows which functions are supported either by an imager or by a laser scanner.

Beeper Function	Imager	Laser Scanner
Beeper Volume	X	X
Beeper Frequency		X
Good Read Beeps		X
Good Read Beep Duration		X

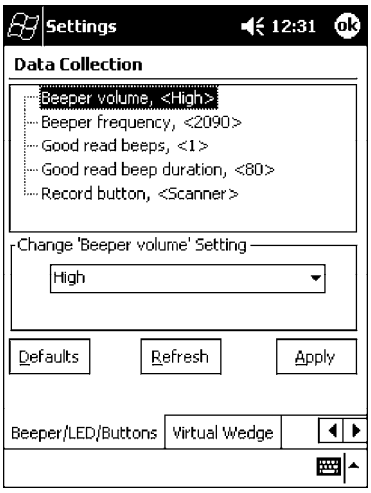
The following are parameters for features on the 700 Series Computer. *Note that these are listed in the order of their appearance.*

Beeper Volume
Sets the volume for the good read beep.

Action
Tap the **Beeper volume** parameter, then select an option to change this parameter setting.

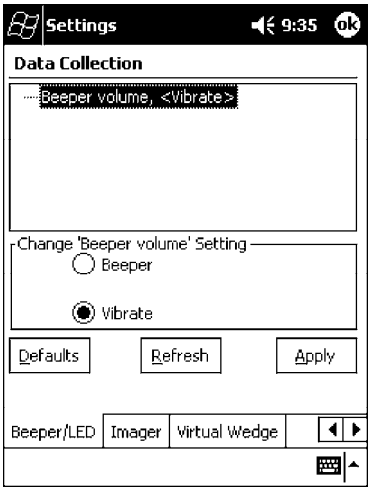
SNMP OID
1.3.6.1.4.1.1963.15.3.1.4.1.6.1

Laser Scanner Options
0 Low
1 High *(default)*
2 Medium
3 Off
4 Vibrate



Imager Options

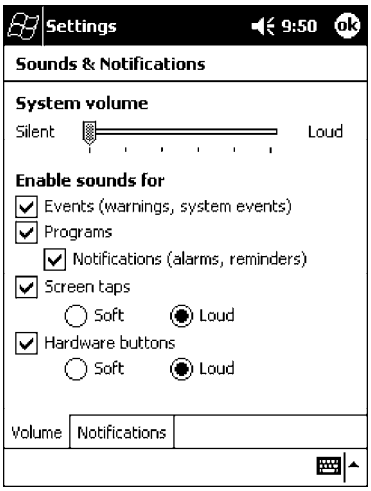
1 Beeper *(default)*
4 Vibrate



Silencing the Beeper Volume

Sounds & Notifications

To turn the beeper off, tap **Start** → **Settings** → the **Personal** tab → **Sounds and Notifications** → the **Volume** tab, drag the **System volume** slider bar to the left "Silent" position, then tap **ok** to exit this applet.



Beeper Frequency

Sets the frequency for the good read beep. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action

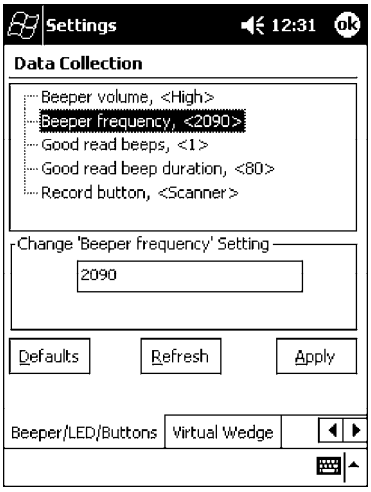
Tap the **Beeper frequency** parameter, then enter a frequency value to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.1.4.1.7.1

Options

1000-4095 *(default is 2090)*



Good Read Beeps

Sets the number of good read beeps. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action

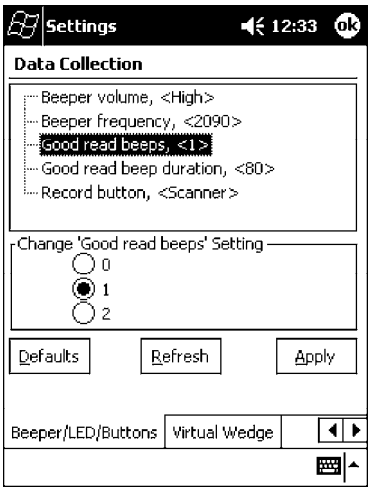
Tap the **Good read beeps** parameter, then select an option to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.1.4.1.8.1

Options

0 No beeps
1 One beep *(default)*
2 Two beeps



Good Read Beep Duration

Sets the duration of the good read beep. *Note that this is not available when you use an imager with your 700 Series Computer.*

Action

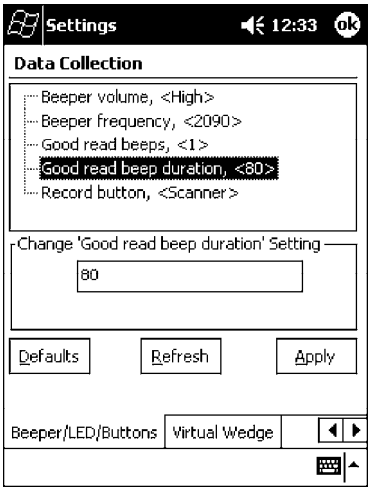
Tap the **Good read beep duration** parameter, then enter a duration value to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.1.4.1.9.1

Options

0`2550 Beep duration in milliseconds. *(default is 80)*



Imager

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **Data Collection** icon to access its control panel applet.

Use the right and left arrows to scroll to the **Imager** tab, then tap this tab to access its parameters.

The following are parameters for the imager. Note that these are listed in the order of their appearance within the Imager tab.

Aimer LED duration

The Aimer LED duration controls the time the Aimer LED is turned on when the scan button is pressed. After this time, images are captured for decoding. The purpose is to position the Aimer LED on the bar code symbol before attempting to decode the bar code. *Note that this is not available when you use a laser scanner with your 700 Series Computer.*

Action

Tap the **Aimer LED duration** parameter, then enter a value to change this setting. Note that values must be in 50 ms increments, such as 500, 650, or 32500. Values not entered in 50 ms increments will be rounded down. For example, 2489 ms would be rounded down to 2450 ms, 149 ms would be rounded down to 100 ms, etc..

SNMP OID

1.3.6.1.4.1.1963.15.3.3.3.1.1.21.1

Options

0-65500 ms *(Default is 0)*

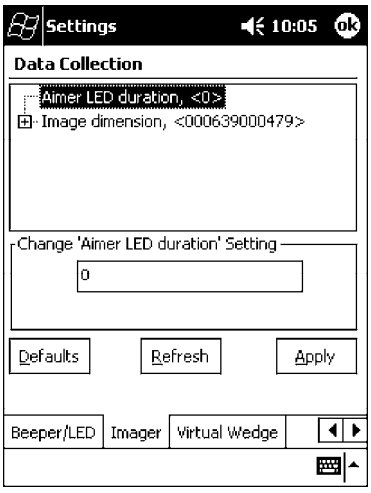


Image Dimension

The image dimensions control the horizontal size of the image for decoding. This can restrict the image to one bar code when otherwise, there might be more than one bar code in the image to be decoded. *Note that this is not available when you use a laser scanner with your 700 Series Computer.*

Action

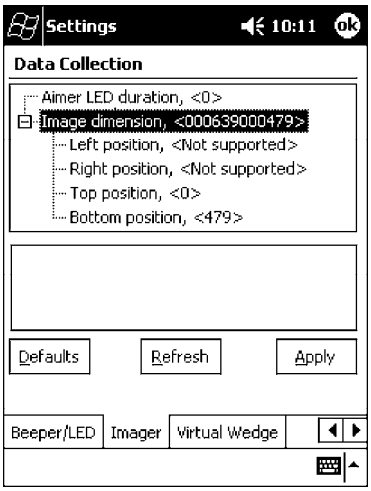
Tap the **Image dimension** parameter, select the position to be changed, then tap an option or enter a value to change this position.

SNMP OID

1.3.6.1.4.1.1963.15.3.3.3.1.1.22.1

Options

Left position	0	Not supported
Right position	0	Not supported
Top position	0-478	Position in pixels *(0)*
Bottom position	0-479	Position in pixels *(479)*



Virtual Wedge

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **Data Collection** icon to access its control panel applet.

Use the right and left arrows to scroll to the **Virtual Wedge** tab, then tap this tab to access its parameters.

The following are parameters for the virtual wedge scanner. *Note that these are listed in the order of their appearance within the Virtual Wedge tab.*

Virtual Wedge

Enables or disables the virtual wedge for the internal scanner. The virtual wedge retrieves scanned Automatic Data Collection (ADC) data and sends it to the keypad driver so that the 700 Series Computer can receive and interpret the data as keypad input.

Because the virtual wedge translates incoming data into keypad input, the size of the keypad buffer limits the effective length of the label to 128 characters. Longer labels may be truncated. For labels of more than 128 characters, you need to develop an application that bypasses the keypad buffer.

Action

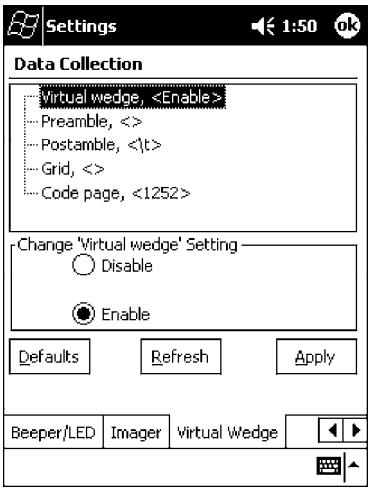
Tap the **Virtual Wedge** parameter, then tap an option to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.2.1.1.2.1

Options

0 Disable
1 Enable *(default)*

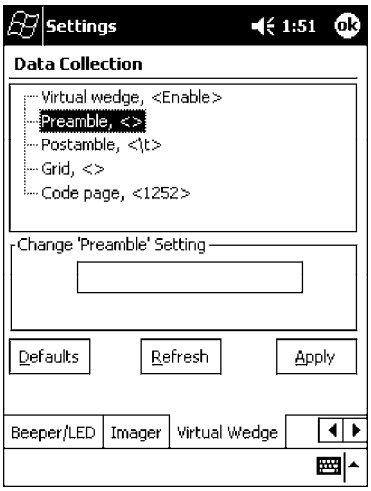


Preamble
Sets the preamble that precedes any data you scan with the 700 Series Computer. Common preambles include a data location number or an operator number.

Action
Tap the **Preamble** parameter, then enter a preamble value to change this parameter setting.

SNMP OID
1.3.6.1.4.1.1963.15.3.2.1.1.3.1

Syntax
`ADdata`
where *data* is acceptable values up to 31 ASCII characters. Embedded null (<NUL >) characters are not allowed. *Default is no characters (disabled).*



Note: When you enter the AD command without data, the preamble is disabled. If you want to use quotation marks or the following combinations of characters as part of the appended data, separate those characters from the AD command with quotes. If you do not use quotes as described here, the 700 Series Computer will interpret the characters as another configuration command:
AD
AE
AF
KC
BV
EX
DF

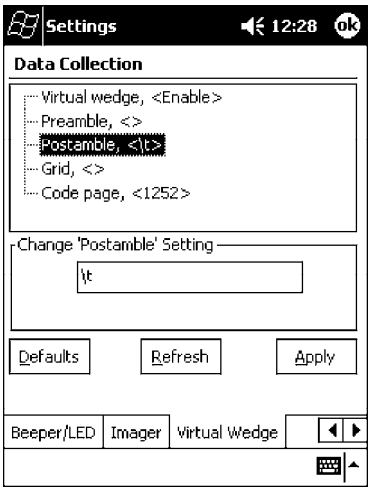
EXAMPLE:
To use the two-character string BV as a preamble, scan this command (as a Code 39 label) or send this command through the network: `$+AD"BV"`

Postamble
Sets the postamble that is appended to any data you scan with the 700 Series Computer. Common postambles include cursor controls, such as tabs or carriage return line feeds.

Action
Tap the **Postamble** parameter, then enter a postamble value to change this parameter setting.

SNMP OID
1.3.6.1.4.1.1963.15.3.2.1.1.4.1

Syntax
`AEdata`
where *data* is any acceptable values up to 31 ASCII characters. Embedded null (<NUL >) characters are not allowed. *Default is the tab character (\t).*



Note: When you enter the AE command without data, the postamble is disabled. If you want to use quotation marks or the following combinations of characters as part of the appended data, separate those characters from the AE command with quotes. If you do not use quotes as described here, the 700 Series Computer will interpret the characters as another configuration command.
AD
AE
AF
KC
BV
EX
DF

EXAMPLE:
To use the two-character string BV as a postamble, scan this command (as a Code 39 label) or send this command through the network: `$+AE"BV"`

Grid

Sets the virtual wedge grid, which filters the data coming from this 700 Series Computer. The data server supports data filtering, which allows you to selectively send scanned data. The virtual wedge grid is similar to the "format" argument of the C Runtime Library scan function.

Action

Tap the **Grid** parameter, then enter a grid value to change this parameter setting.

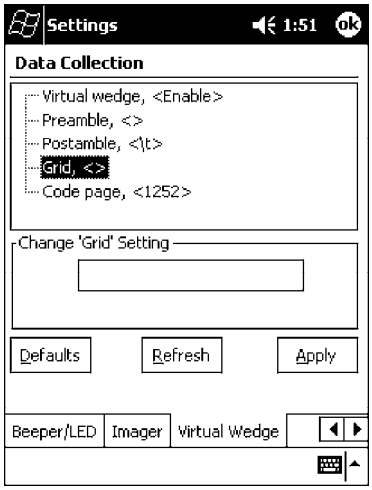
SNMP OID

1.3.6.1.4.1.1963.15.3.2.1.1.5.1

Syntax

`AF<symID> filter-expression= > editing-expression`
where:

- *<symID>*
  The AIM symbology ID.
- *filter-expression*
  Any character string that includes valid filter expression values, and editing-expression is any character string that includes valid editing expression values.
- *<width>*
  Any positive integer or NULL. A NULL width means that the field type (defined next) applies all the way to the end of the data string. A non-NULL width means that the field applies to that many characters of data. The grid can be up to 240 characters in length. *Default is NULL.*



Code Page

Sets the virtual wedge code page. The code page controls the translation from the character set of the raw collected data to Unicode, which is the character set expected by Windows CE applications. The default code page is 1252, which is the Windows Latin 1 (ANSI) character set.

Action

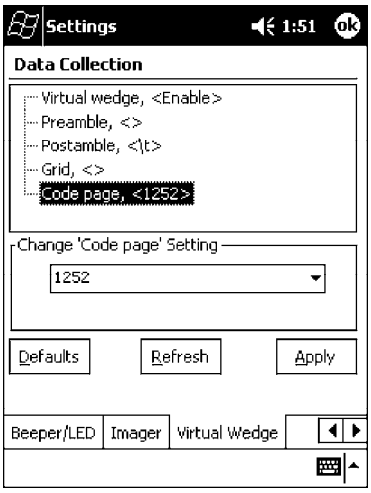
Tap the **Code Page** parameter, then select an option to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.15.3.2.1.1.6.1

Options

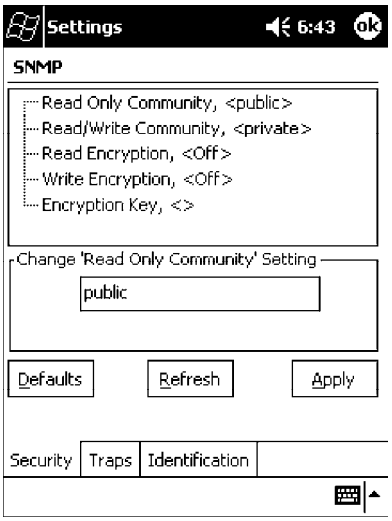
The only acceptable value for the code page parameter is "*1252*," which is the default.



SNMP Control Panel Applet

Simple Network Management Protocol (SNMP) parameters include identification information, security encryption, security community strings, and traps.

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **SNMP** icon to access its control panel applet.



Tap a tab to access its menus. These tabs represent three groups of settings or parameters:

- **Security** *(starting on the next page)*
- **Traps** *(starting on page 336)*
- **Identification** *(starting on page 338)*

Security

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **SNMP** icon → the **Security** tab to access its parameters.

The following are parameters that affect encryption and community strings. *Note that these are listed in the order of their appearance within the Security tab.*

Read Only Community

Sets the read-only community string for this 700 Series Computer, which is required for processing of SNMP get and get next requests.

Action

Tap the **Read Only Community** parameter, then enter a community string to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.10.5.1.2.0

Options

The read-only community string can be up to 128 ASCII characters. *Default is Public.*

Read/Write Community

Sets the read/write community string, which is required for processing of SNMP set requests by this 700 Series Computer. An SNMP packet with this name as the community string will also process SNMP get and next requests.

Action

Tap the **Read/Write Community** parameter, then enter a community string to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.10.5.1.3.0

Options

The read/write community string can be up to 128 ASCII characters. *Default is Private.*

Read Encryption

Sets the packet-level mode of security for SNMP read-only requests. If you enable read encryption, all received SNMP get and get next packets have to be encrypted or the packet will not be authorized. If encryption is enabled, you can only use software provided by Intermec Technologies.

Note: To enable security encryption, you also need to set the Security Encryption Key (page 335).

Action

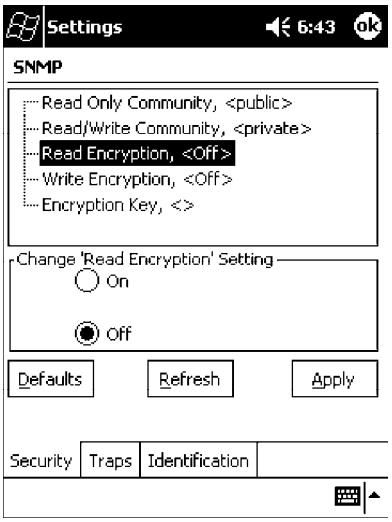
Tap the **Read Encryption** parameter, then select an option to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.10.5.1.4.0

Options

1 On SNMP get and get next packets must be encrypted
2 Off SNMP packets do not have to be encrypted *(default)*



Write Encryption

Sets the packet-level mode of security for SNMP read/write requests. If you enable write encryption, all SNMP packets that are received with the read/write community string have to be encrypted or the packet will not be authorized. You need to use software from Intermec Technologies that supports encryption.

Note: To enable security encryption, you also need to set the Security Encryption Key (page 335).

Action

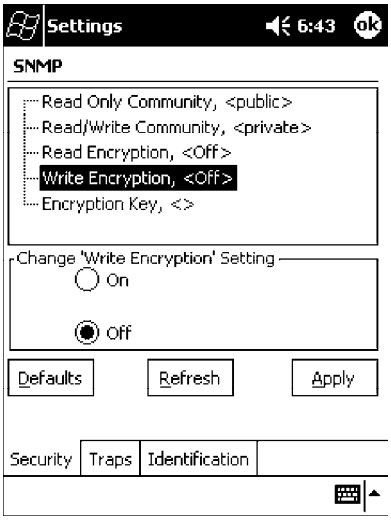
Tap the **Write Encryption** parameter, then select an option to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.10.5.1.5.0

Options

1 On SNMP packets must be encrypted
2 Off SNMP packets do not have to be encrypted *(default)*



Encryption Key

Identifies the key that this 700 Series Computer uses to encrypt or decipher SNMP packets. Encryption is used only by software provided by Intermec Technologies. If encryption is enabled, SNMP management platforms will not be able to communicate with the 700 Series Computer. The encryption key is returned encrypted.

Action

Tap the **Encryption Key** parameter, then enter a security encryption key value to change this parameter setting.

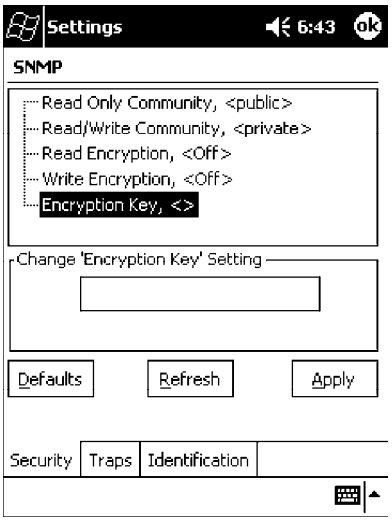
Note: You also need to set either **Read Encryption** (page 333) or **Write Encryption** (page 334) or both.

SNMP OID

1.3.6.1.4.1.1963.10.5.1.6.0

Options

The encryption key can be from 4 to 20 ASCII characters. *Default is NULL.*



Traps

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **SNMP** icon → the **Traps** tab to access its parameters.

The following are authentication and threshold parameters for traps. *Note that these are listed in the order of their appearance within the Traps tab.*

Authentication

Determines whether to send authentication traps. When trap authentication is enabled, an authentication trap is sent if an SNMP packet is received by the master agent with an invalid community string.

Action

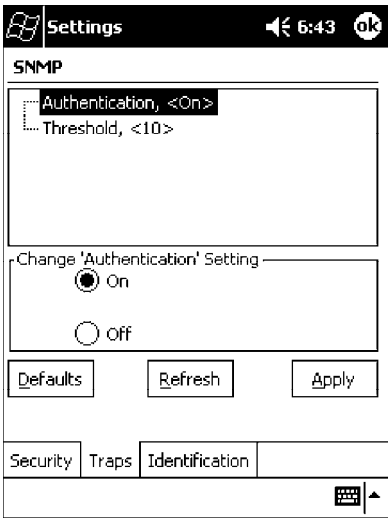
Tap the **Authentication** parameter, then select an option to change this parameter setting.

SNMP OID

1.3.6.1.4.1.1963.10.5.2.2.0

Options

1 On *(default)*
2 Off

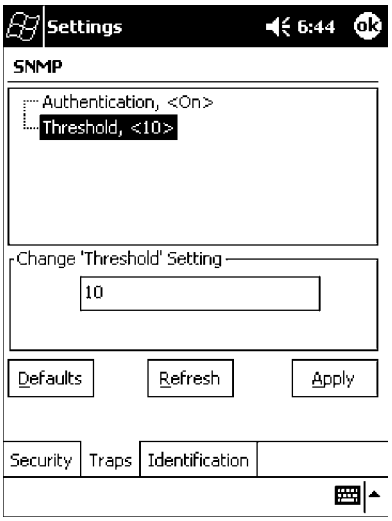


Threshold
Determines the maximum number of traps per second that the master agent generates. If the threshold is reached, the trap will not be sent.

Action
Tap the **Threshold** parameter, then enter a threshold value to change this parameter setting.

SNMP OID
1.3.6.1.4.1.1963.10.5.2.3.0

Options
Any positive integer value. *Default is 10.*



Identification

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **SNMP** icon → the **Identification** tab to access its parameters.

The following are parameters for contact, location, and name information for support purposes. *Note that these are listed in the order of their appearance within the Identification tab.*

Contact

Sets the contact information for the person responsible for this 700 Series Computer.

Action

Tap the **Contact** parameter, then enter the name of your contact representative to change this parameter setting.

SNMP OID

1.3.6.1.2.1.1.4.0

Options

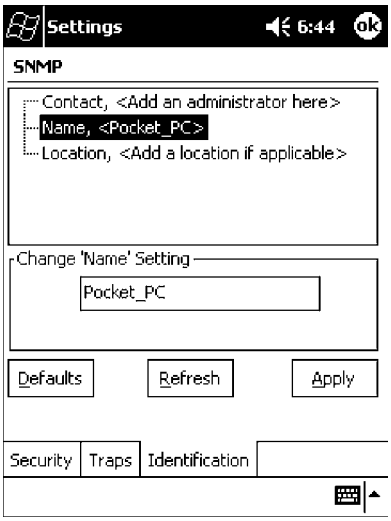
The identification contact may be up to 255 ASCII characters. *Default is no characters or blank.*

Name
Sets the assigned name for this 700 Series Computer.

Action
Tap the **Name** parameter, then enter the name of your 700 Series Computer to change this parameter setting.

SNMP OID
1.3.6.1.2.1.1.5.0

Options
The identification name may be up to 255 ASCII characters. *Default is no characters or blank.*

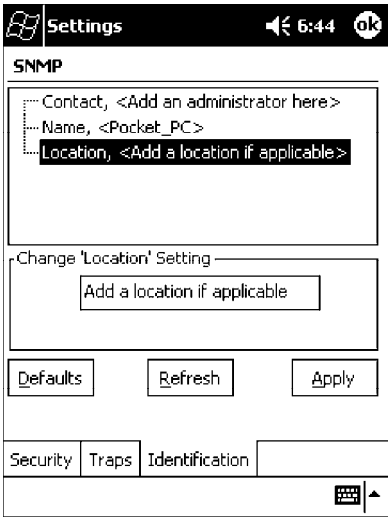


Location
Sets the identification location for this 700 Series Computer, such as "Shipping."

Action
Tap the **Location** parameter, then enter the location of where your 700 Series Computer to change this parameter setting.

SNMP OID
1.3.6.1.2.1.1.6.0

Options
The identification location may be up to 255 ASCII characters. *Default is no characters or blank.*

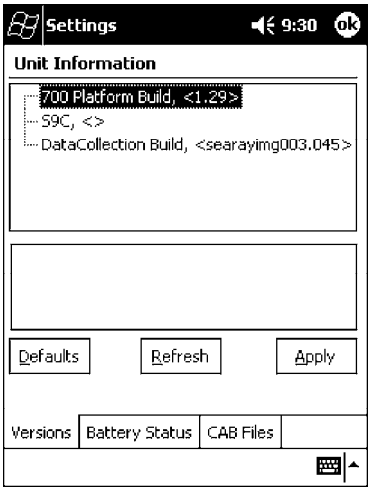


Unit Information Control Panel Applet

Unit Information is a read-only control panel applet that provides information about your 700 Series Computer, such as software version builds, available CAB files, and the internal battery status.

This control panel applet is only available in the 700 Series Computer if Intermec Content is enabled, the Plus region is enabled and installed, and a laser scanner is installed.

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **Unit Information** icon to access its control panel applet.



Tap a tab to access its menus. These tabs represent three groups of settings or parameters:

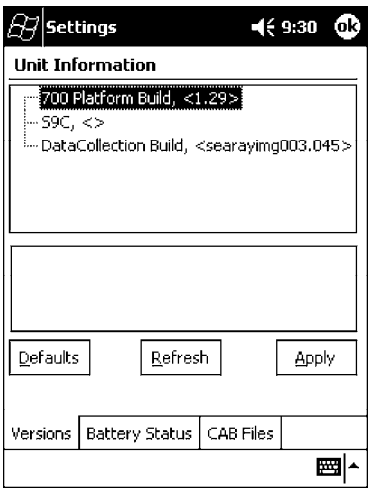
- **Versions** *(starting on the next page)*
- **Battery Status** *(starting on page 343)*
- **CAB Files** *(starting on page 344)*

Versions


Unit Information

You can view the latest software build version on your 700 Series Computer by accessing the **Unit Information** control panel applet.

To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **Unit Information** icon → the **Versions** tab to view the latest software build version. Tap **ok** to exit this information.



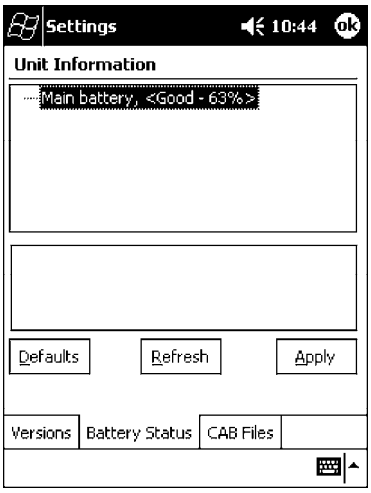
Below are some of the software applications you may find on this screen:

- **700 Platform Build**:
  Shows the latest development or released version of the software build for the 700 Series Computer.
- **S9C**:
  Provides the name and version of the scanner file built into this 700 Series Computer, along with the current CPU version.
- **DataCollection Build**:
  Shows the latest development or released version of the software build for the Data Collection control panel applet.

Battery Status

You can view the battery status for your 700 Series Computer by accessing the **Unit Information** control panel applet. Unit Manager applications are available on the *700 Series Color Unit Manager CD-ROM*. For more information, consult your Intermec sales representative.

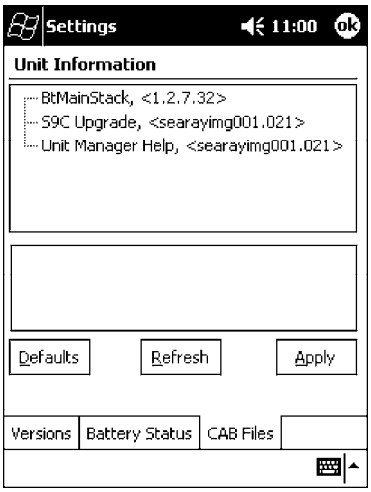
To access the settings from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **Unit Information** icon → the **Battery Status** tab to view the current status. Tap **ok** to exit this information.



CAB Files

You can view the latest developer or released version of each CAB file from Intermec Technologies Corporation that are installed in your 700 Series Computer via the **Unit Information** control panel applet. *Custom CAB files are not displayed in this applet.* See the *Software Tools User's Manual* for more information about these files.

To access the information from the 700 Series Computer, tap **Start** → **Settings** → the **System** tab → the **Unit Information** icon → the **CAB Files** tab to view the current CAB file versions. Tap **ok** to exit this information.



When a CAB file is built, a registry entry is created with a build number for that file. This CAB Files control panel applet looks for a registry key for each CAB file installed. When the registry entry is found, the CAB file name and version number information are displayed. If a CAB file has not been installed, then its information is not displayed.

Below is a list of CAB files from Intermec Technologies that are available for your 700 Series Computer with their latest developer or released version of the software build. Should you need to add any of these to your 700 Series Computer, contact an Intermec representative.

- **BtMainStack**:
  Installation of the Main Bluetooth Stack is handled automatically as part of the operating system boot-up procedure. *See Chapter 4, "Network Support," for more information about Bluetooth wireless printing.*
- **Comm Port Wedge**:
  The software build for the Comm Port Wedge. *Note that the Comm Port Wedge CAB file is available on the 700C Tools CD.*
- **NPCPTest**:
  This installs a Norand® Portable Communications Protocol (NPCP) Printing test application which will print to an Intermec® 4815, 4820, or 6820 Printer. *See Chapter 5, "Printer Support," for more information.*

- **PDWPM0C**:
  This is the installer for the Wireless Printing Demo application. To run this demonstration, tap **Start → Programs →** the **Wireless Printing Demo** icon. *Press Help in the demo application for more information.*
- **S9C Upgrade**:
  Installs the files needed to upgrade the S9C scanner firmware. *See the Recovery CD Help for more information about upgrading the firmware.*
- **SDK**:
  Installs the Intermec Software Developer's Kit (SDK). *See the SDK User's Manual for more information.*
- **Unit Manager**:
  Installs the Unit Manager application which provides tools for remotely managing the 700 Series Computer. Unit Manager applications are available on the *700 Series Color Unit Manager CD-ROM*. For more information, consult your Intermec sales representative.
- **Unit Manager Help**:
  Installs the online help for the Unit Manager application.
- **WinCfg**:
  Configures the NRINET.INI file, launches the NRINet client, and loads and unloads the LAN and WLAN device drivers. *See the Windows 95 and Windows CE Configuration Utilities Reference Manual (P/N: 978-054-010) for more information.*
- **Wireless Printing Sample**:
  Installs a sample application that developers can use for reference when they are developing their own Wireless Printing applications. The source code for this application is included as part of the Wireless Printing SDK on the 700C Tools CD. *See the SDK User's Manual for more information.*
- **ActiveX Control Tools**:
  This lists some of the CAB files that may be available with which to install ActiveX Control Tools. *See the SDK Online Help for more information.*
  - **AXCommunication**:
    Communication controls that transmit or receive messages from input connections.
  - **AXFileTransfer**:
    File transfer controls that transmit and receive files using the Trivial File Transfer Protocol (TFTP).
  - **AXReaderCommand**:
    Reader command functions that modify and retrieve configuration information from your 700 Series Computer.
  - **AXVWedge**:
    The virtual wedge control that retrieves scanned ADC data and sends it to the keyboard driver to interpret data as keyboard input.

B Unit Manager

Configuration parameters are also configurable using a Unit Manager application which accesses the 700 Series Computer through a web browser on your desktop PC via the SRDEVMGMT.CAB file.

Unit Manager applications are available on the *700 Series Color Unit Manager CD-ROM*. For more information, consult your Intermec sales representative.

Note: Parameter information, such as SNMP OID and options, is detailed in Appendix A, "*Control Panel Applets*."

Data Collection


Data Collection

Within the Unit Manager, click **Configuration** from the left navigation bar, then click the **Data Collection** icon to access any of these tabs: Symbologies, Symbology ID, Beeper/LED, or Virtual Wedge.

Symbologies

Within the Unit Manager, select **Configuration Management → Data Collection**, then click the **Symbologies** tab to access the following parameters. Options for these parameters are listed on the page provided. *These are listed in alphabetical order.*

- Codabar *(page 292)*
- Code 11 *(page 306)*
- Code 128 *(page 295)*
  - Code 128 Options *(page 296)*
  - Code 128 FNC1 Character *(page 297)*
- Code 39 *(page 290)*
- Code 93 *(page 294)*
  - Code 93 Length *(page 294)*
- Data Matrix *(page 308)*
- Interleaved 2 of 5 *(page 303)*
- Matrix 2 of 5 *(page 304)*
- MSI *(page 299)*
- PDF 417 *(page 300)*
  - Macro PDF *(page 300)*
  - Micro PDF 417 *(page 302)*
- Plessey *(page 298)*
- QR Code *(page 307)*
- Standard 2 of 5 *(page 291)*
- Telepen *(page 305)*
- UPC/EAN *(page 293)*

Symbology ID

Within the Unit Manager, select **Configuration Management → Data Collection**, then click the **Symbology ID** tab to access the following parameters. Options for these parameters are listed on the page provided. *These are listed in alphabetical order.*

- Prefix *(page 315)*
- Suffix *(page 316)*
- Symbology ID *(page 309)*
  - Codabar user ID *(page 310)*
  - Code 11 user ID *(page 314)*
  - Code 128 user ID *(page 310)*
  - Code 39 user ID *(page 310)*
  - Code 93 user ID *(page 311)*
  - EAN-13 user ID *(page 313)*
  - EAN-8 user ID *(page 313)*
  - Interleaved 2 of 5 user ID *(page 311)*
  - Matrix 2 of 5 user ID *(page 313)*
  - MSI user ID *(page 311)*
  - PDF 417 user ID *(page 311)*
  - Plessey user ID *(page 312)*
  - Standard 2 of 5 user ID *(page 312)*
  - Telepen user ID *(page 313)*
  - UPC-A user ID *(page 312)*
  - UPC-E user ID *(page 312)*

Beeper/LED

Within the Unit Manager, select **Configuration Management → Data Collection**, then click the **Beeper/LED** tab to access the following parameters. Options for these parameters are listed on the page provided. *These are listed in alphabetical order.*

- Beeper Frequency *(page 320)*
- Beeper Volume *(page 318)*
- Good Read Beep Duration *(page 322)*
- Good Read Beeps *(page 321)*

Imager

Within the Unit Manager, select **Configuration Management → Data Collection**, then click the **Imager** tab to access the following parameters. Options for these parameters are listed on the page provided. *These are listed in alphabetical order.*

- Aimer LED Duration *(page 323)*
- Image Dimension *(page 324)*

Virtual Wedge

Within the Unit Manager, select **Configuration Management → Data Collection**, then click the **Virtual Wedge** tab to access the following parameters. Options for these parameters are listed on the page provided. *These are listed in alphabetical order.*

- Code Page *(page 329)*
- Grid *(page 328)*
- Postamble *(page 327)*
- Preamble *(page 326)*
- Virtual Wedge *(page 325)*

SNMP

Within the Unit Manager, click **Configuration** from the left navigation bar, then click the **SNMP** icon to access any of these tabs: Security, Traps, or Identification.

Security

Within the Unit Manager, select **Configuration Management → SNMP**, then click the **Security** tab to access the following parameters. Options for these parameters are listed on the page provided. *These are listed in alphabetical order.*

- Encryption Key *(page 335)*
- Read Encryption *(page 333)*
- Read Only Community *(page 331)*
- Read/Write Community *(page 332)*
- Write Encryption *(page 334)*

Traps

Within the Unit Manager, select **Configuration Management → SNMP**, then click the **Traps** tab to access the following parameters. Options for these parameters are listed on the page provided. *These are listed in alphabetical order.*

- Authentication *(page 336)*
- Threshold *(page 337)*

Identification

Within the Unit Manager, select **Configuration Management → SNMP**, then click the **Identification** tab to access the following parameters. Options for these parameters are listed on the page provided. *These are listed in alphabetical order.*

- Contact *(page 338)*
- Location *(page 340)*
- Name *(page 339)*

Unit

Within the Unit Manager, click **Configuration** from the left navigation bar, then click the **Unit** icon to access any of these tabs: Date/Time, Display, Keypad, Power Management, or Speaker.

Date/Time

Sets the current date and time.

Action

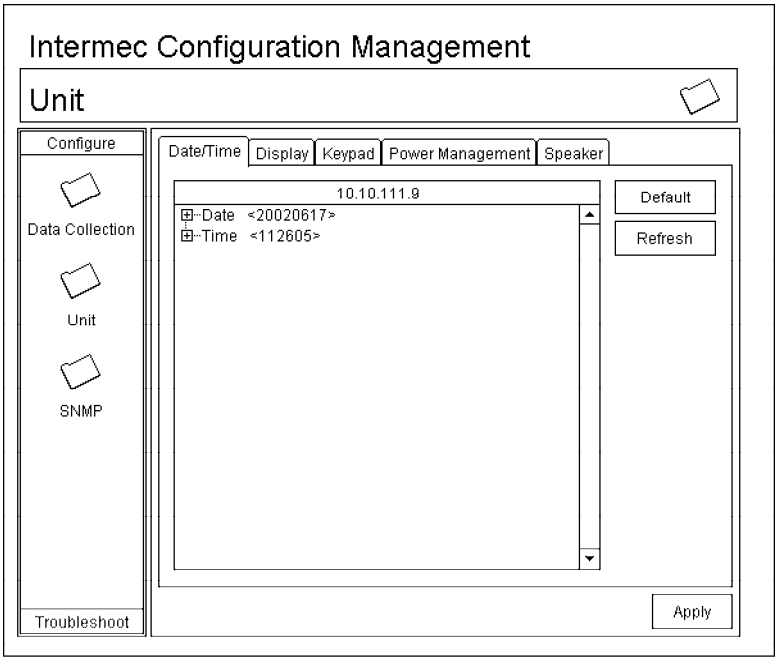
Click the **Date/Time** tab, then select **Date** or **Time** and make changes in the entry field, or tap (+) to expand either the Date or Time parameter, select the setting to be changed, then select a value from the drop-down list or enter a new value to change this setting.

SNMP OID

Date: 1.3.6.1.4.1.1963.15.501.2.1.0
Time: 1.3.6.1.4.1.1963.15.501.2.2.0

Options

Date	Year	0000`999	*(1999)*
	Month	1-12 *(6)*	
	Day	1-31 *(1)*	
Time	Hour	0-23 *(0)*	
	Minute	0-59 *(00)*	
	Second	0-59 *(00)*	



Backlight Timeout

Sets the length of time that the display backlight remains on. If you set a longer timeout value, you use the battery power at a faster rate.

Action

Click the **Display** tab, then select an option from the **Backlight timeout** drop-down list.

SNMP OID

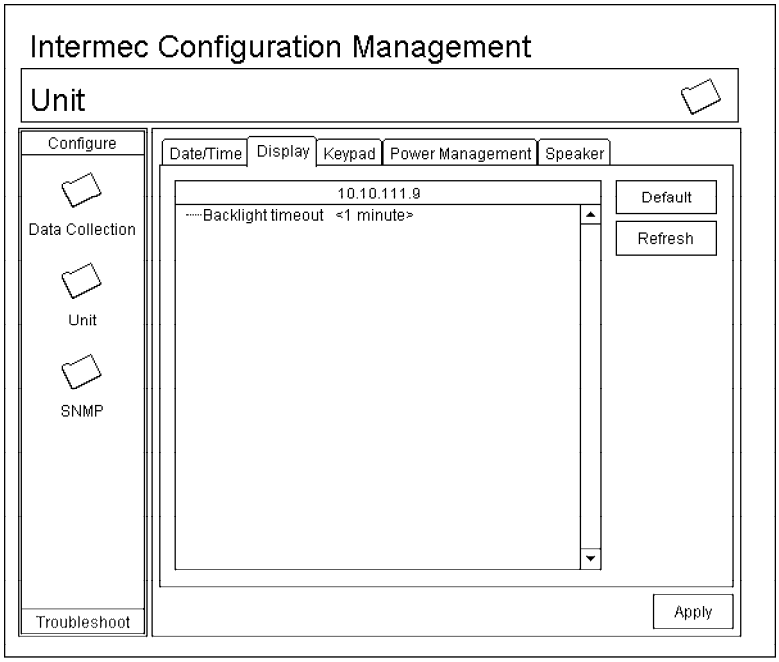
1.3.6.1.4.1.1963.15.13.1.0

Syntax

`DFdata`

where *data* is any of the following:

10	10 seconds
30	30 seconds
60	1 minute *(default)*
120	2 minutes
180	3 minutes
240	4 minutes
300	5 minutes



Key Clicks

Enables or disables the keypad clicks. The 700 Series Computer emits a click each time you press a key or decode a row of a two-dimensional symbology.

Action

Click the **Keypad** tab, then select an option from the **Key clicks** drop-down list.

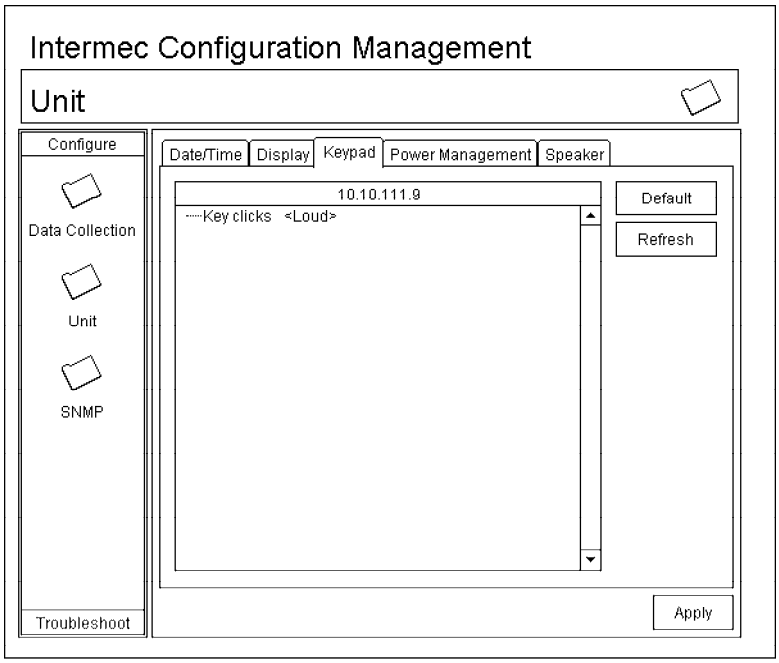
SNMP OID

1.3.6.1.4.1.1963.15.12.1.0

Syntax

`KCdata`
where *data* is any of the following:

0 Disable clicks
1 Enable soft key clicks
2 Enable loud key clicks *(default)*



Automatic Shutoff

Sets the length of time the 700 Series Computer remains on when there is no activity. When you turn on the 700 Computer, it either resumes exactly where it was when you turned it off or boots and restarts your application.

Action

Click the **Power Management** tab, then select an option from the **Automatic shutoff** drop-down list.

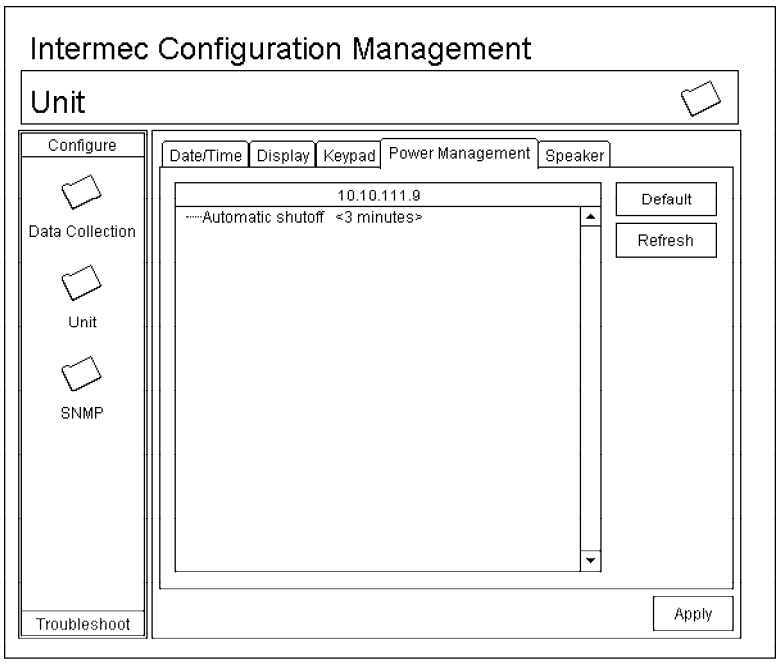
SNMP OID

1.3.6.1.4.1.1963.15.11.3.0

Syntax

`EZdata`
where *data* is any of the following:

1	1 minute
2	2 minutes
3	3 minutes *(default)*
4	4 minutes
5	5 minutes



Volume

Changes the volume of all audio signals.

Action

Click the **Speaker** tab, then select an option from the **Volume** drop-down list.

SNMP OID

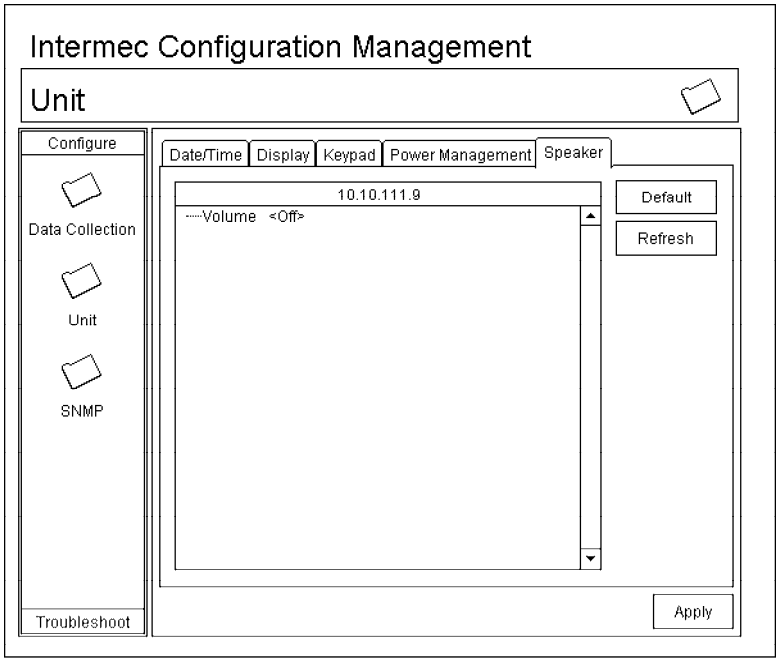
1.3.6.1.4.1.1963.15.3.1.3.0

Syntax

`BVdata`

where *data* is any of the following:

0 Off
1 Very quiet
2 Quiet
3 Normal *(default)*
4 Loud
5 Very loud



Using Reader Commands

After the 700 Series Computer is connected to your network, you can send the 700 Series Computer a reader command from an application to perform a task, such as changing the time and date. Some reader commands temporarily override the configuration settings and some change the configuration settings.

Change Configuration

The Change Configuration command must precede any configuration command. If you enter a valid string, the 700 Series Computer configuration is modified and the computer emits a high beep. To send the Change Configuration command through the network, use the `$+ [command]` syntax where *command* is the two-letter command syntax for the configuration command followed by the value to be set for that command.

You can also make changes to several different commands by using the `$+ [command]...[command n]` syntax. There are seven configuration command settings that can be changed in this way. *See each command for information on respective acceptable "data" values.*

Command	Syntax
Audio Volume	BV*data*
Automatic Shutoff	EZ*data*
Backlight Timeout	DF*data*
Key Clicks	KC*data*
Virtual Wedge Grid	AF*data*
Virtual Wedge Postamble	AE*data*
Virtual Wedge Preamble	AD*data*

Note: See Appendix A, "*Control Panel Applets*" for more information about the **Virtual Wedge Postamble** and **Virtual Wedge Preamble** commands.

Example 1

To change the Beep Volume to Off, you can send this string to the 700 Series Computer through the network: `$+BV0`

where:

`$+`	Indicates Change Configuration.
`BV`	Specifies the Audio Volume parameter.
`0`	Specifies a value of Off.

Example 2

To change the Beep Volume to Very Quiet and the Virtual Wedge Grid to 123: `$+BV1AF123`

where:

`$+`	Indicates Change Configuration
`BV1`	Specifies Audio Volume, set to Very Quiet (1)
`AF123`	Specifies Virtual Wedge Grid, set to a value of 123.

Set Time and Date

This command sets the date and time on the 700 Series Computer. The default date and time is *June 1, 1999 at 12:00 AM*.

From the network, send the following:

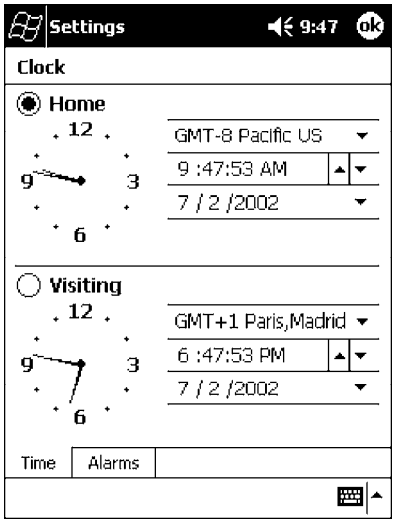
```
/+ yyyymmddhhmmss
```

where acceptable values for the date are:

`yyyy`	0000-9999	Year
`mm`	01-12	Month of the year
`dd`	01-31	Day of the month
`hh`	00-23	Hour
`mm`	00-59	Minutes
`ss`	00-59	Seconds


Clock

You can also set the time and date by using Configuration Management in Unit Manager, or by using the **Clock** control panel applet in the Settings menu. To access this control panel applet, tap **Start** → **Settings** → the **System** tab → the **Clock** icon to access its control panel applet.



C Bar Codes

This appendix contains a brief explanation of some of the bar code symbologies that the 700 Series Color (700C) Mobile Computer decodes and explains some of the general characteristics and uses of these bar code types. It also includes several bar code labels that can be scanned into your 700 Series Computer.

Bar Code Symbologies

Specific bar code algorithms can be enabled using the setup menus or the host computer. Once the computer correctly decodes a bar code, the computer encodes data with descriptive information about the symbol. Response time is improved by limiting the computer to the bar codes being used.

Bar Code Data String Formats

Data Bar Code Type	Data Format	Data Length
UPC short (UPC-E)	ndddddc	8
EAN short (EAN-8)	fnddddc	8
UPC long (UPC-A)	nddddddddddc	12
EAN long (EAN-13)	fnddddddddddc	13
UPC short add-on 2	ndddddcaa	10
EAN short add-on 2	fnddddcaa	10
UPC long add-on 2	nddddddddddcaa	14
EAN long add-on 2	fnddddddddddcaa	15
UPC short add-on 5	ndddddcaaaaa	13
EAN short add-on 5	fnddddcaaaaa	13
UPC long add-on 5	nddddddddddcaaaaa	17
EAN long add-on 5	fnddddddddddcaaaaa	18
Interleaved 2 of 5	d.....d	Scan device dependent
Standard 2 of 5	d.....d	Scan device dependent
Plessey	d.....dc	Scan device dependent
Codabar	sd....ds	Scan device dependent
Code 11	d.....d	Scan device dependent
Code 39	d.....d	Scan device dependent
Extended Code 39	d.....d	Scan device dependent
Code 93	d.....d	Scan device dependent
Code 128	d.....d	Scan device dependent

Note: These bar code data definitions apply to the Data Format column in the previous table

- a Add-on code digits
- c Check digits
- d Bar code digits
- f EAN flag 1 characters
- n Number system digits
- s Start and stop digits

If MOD 10 or MOD 11 check digits are enabled, the digit falls at the end of a bar code data string. Each check digit enabled extends the bar code data string length by one character.

The 700 Series Computer recognizes eleven of the most widely used bar code symbologies. With bar code symbologies, like languages, there are many different types. A bar code symbology provides the required flexibility for a particular inventory tracking system.

A symbology may be for particular industries, such as food and beverage, automotive, railroad, or aircraft. Some of these industries have established their own bar code symbology because other symbologies did not meet their needs.

Without going into great detail on the bar code structure, note that no two products use the same bar code. Each product gets a unique bar code.

Industries that use a particular type of bar code symbology have formed regulating committees or are members of national institutes that issue and keep track of bar codes. This ensures that each organization that contributes to a particular industry conforms to its standard. Without some form of governing body, bar coding would not work.

- UPC (Universal Product Code) with/without add-ons
- EAN (European Article Numbering Code) with/without add-ons
- Codabar
- C11 (Code 11)
- C39 (Code 39)
- C93 (Code 93)
- C128 (Code 128)
- I 2 of 5 (Interleaved 2 of 5 Code)
- S 2 of 5 (Standard 2 of 5)
- Plessey
- MSI (a variant of Plessey)

UPC

The UPC (Universal Product Code) is the symbology used throughout the grocery and retail industries. This bar code symbology contains two pieces of numerical information encoded on the bar code, producer identification, and product identification information.

The UPC symbol is 12 characters long. The first character of the UPC symbol is a number system character, such as "0" for grocery items and "3" for drug- and health-related items.

The UPC symbology is for retail environments such as grocery stores, convenience stores, and general merchandise stores.

Some retail items are so small that a standard UPC bar code cannot fit on the packaging. When this occurs there is a permitted shorter version of the UPC symbology, referred to as UPC-E. UPC-E is six characters long (eight including number system and check digit), approximately half the size of a standard UPC bar code.

EAN

EAN (European Article Numbering) symbology is similar to UPC symbology, except that it contains 13 characters and uses the first two to identify countries.

The EAN symbology is used in the retail environment throughout most of Europe. Though similar to UPC symbology, these are not interchangeable.

Codabar

Codabar was for retail price-labeling systems. Today it is widely accepted by libraries, medical industries, and photo finishing services.

Codabar is a discrete, self-checking code with each character represented by a stand-alone group of four bars and three intervening spaces.

Four different start or stop characters get defined and designated "a", "b", "c", and "d". These start and stop characters are constructed using one wide bar and two wide spaces. A complete Codabar symbol begins with one of the start or stop characters followed by some number of data characters and ending in one of the start or stop characters.

Any of the start or stop characters may be used on either end of the symbol. It is possible to use the 16 unique start or stop combinations to identify label type or other information.

Since Codabar is variable-length, discrete, and self-checking, it is a versatile symbology. The width of space between characters is not critical and may vary significantly within the same symbol. The character set consists of "0" through "9", "-", "$", ":", "/", ".", and "+".

The specific dimensions for bars and spaces in Codabar optimize performance of certain early printing and reading equipment. Codabar has 18 different dimensions for bar and space widths. So many different dimensions often result in labels printed out of specification and cause Codabar printing equipment to be more expensive.

Code 11

Code 11 satisfies the requirements for a very high density, discrete numeric bar code. The name Code 11 derives from 11 different data characters that can be represented, in addition to a start or stop character.

The character set includes the 10 digits and the dash symbol. Each character is represented by a stand-alone group of three bars and two intervening spaces. Although Code 11 is discrete, it is not self-checking. A single printing defect can transpose one character into another valid character. One or two check digits obtain data security.

The specifications for Code 11 suggest that this code should have a narrow element width of 7.5 mils. This results in an information density of 15 characters per inch.

Code 39

Code 39 (C39) is the most widely used symbology among the industrial bar codes. Most major companies, trade associations, and the federal government find this code to fit their needs. The main feature of this symbology is the ability to encode messages using the full alphanumeric character set, seven special characters, and ASCII characters.

Programming for this symbology can be for any length that the application requires. The application program for the 700 Series Computer handles symbology at least one character but no more than 32 characters in length.

When programming the computer for Code 39, it is important to set the symbology limit as close as possible (minimum and maximum bar code lengths being scanned). Doing so keeps the computer bar code processing time to a minimum and conserves battery power.

Bar code readers can respond to Uniform Symbology Specification symbols in non-standard ways for particular applications. These methods are not for general applications, because of the extra programming required. Code 39 Full ASCII is one example of non-standard code.

Note: See page 368 to scan several Code 39 bar code labels available to change settings on your 700 Series Computer.

Encoded Code 39 (Concatenation)

If the first data character of a symbol is a space, the reader may be programmed to append the information contained in the remainder of the symbol to a storage buffer. This operation continues for all successive symbols that contain a leading space, with messages being added to the end of previously stored ones. When a message is read which does not contain a leading space, the contents are appended to the buffer, the entire buffer is transmitted, and the buffer is cleared.

Encoded Code 39 (Full ASCII)

If the bar code reader is programmed for the task, the entire ASCII character set (128 characters) could be coded using two character sequences: a symbol (“$”,“.”,“%”,“/”) followed by a letter of the alphabet.

Code 93

The introduction of Code 93 provided a higher density alphanumeric symbology designed to supplement Code 39. The set of data characters in Code 93 is identical with that offered with Code 39. Each character consists of nine modules arranged into three bars and three spaces.

Code 93 uses 48 of the 56 possible combinations. One of these characters, represented by a square, is reserved for a start or stop character, four are used for control characters, and the remaining 43 data characters coincide with the Code 39 character set. An additional single module termination bar after the stop character concludes the final space.

Code 93 is a variable length, continuous code that is not self-checking. Bar and spaces widths may be one, two, three, or four modules wide. Its structure uses edge-to-similar-edge decoding. This makes the bar code immune to uniform ink spread, which allows liberal bar width tolerances.

Code 93 uses two check characters. Its supporters believes this makes it the highest density alphanumeric bar code. The dual check digit scheme provides for high data integrity. All substitution errors in a single character are detected for any message length.

Code 128

Code 128 (C128) is one of the newest symbologies used by the retail and manufacturing industries. It responds to the need for a compact alphanumeric bar code symbol that could encode complex product identification.

The fundamental requirement called for a symbology capable of being printed by existing data processing printers (primarily dot-matrix printers) that produce daily, work-in-progress, job, and product traceability documents. The ability to print identification messages between 10 and 32 characters long, on existing forms and labels deemed an important requirement.

Code 128 uniquely addresses this need as the most compact, complete, alphanumeric symbology available.

Additionally, the Code 128 design with geometric features, improves scanner read performance, does self-checking, and provides data message management function codes.

Code 128 encodes the complete set of 128 ASCII characters without adding extra symbol elements. Code 128 contains a variable-length symbology and the ability to link one message to another for composite message transmission. Code 128, being a double-density field, provides two numeric values in a single character.

Code 128 follows the general bar code format of start zone, data, check digit, stop code, and quiet zone. An absolute minimum bar or space dimension of nine mils (0.010 inch minimum nominal ± 0.001 inch tolerance) must be maintained.

Characters in Code 128 consist of three bars and three spaces so that the total character set includes three different start characters and a stop character.

UCC/EAN-128 Shipping Container Labeling is a versatile tool that can ease movement of products and information. The Shipping Container Labeling bar code can take any form and usually has meaning only within the company or facility where applied.

Because this *random* data can get mistaken later for an industry standard code format, the UCC and EAN chose a symbology uniquely identified from these other bar codes. This standard is for maximum flexibility, to handle the diversity of distribution in global markets by cost efficiency.

The UCC/EAN-128 Container Labeling specification calls for a FUNC1 to immediately follow the bar code's start character. FUNC1 also follows any variable-length application field. The specification also calls for the computer to send "]C1" for the first FUNC1. The specification requires that the computer send a "<GS>" (hex 1D) for subsequent FUNC1 codes in the bar code.

Because "<GS>" is not compatible with computer emulation data streams, the Uniform Code Council has been asked to change the specification. This change is made to send the same three character sequence "]C1" to identify the embedded FUNC1 codes.

This implementation should provide for clean application coding by identifying the same sequences for the same scanned codes. If the communication of Norand bar code types is enabled, the Shipping Container Label codes precede with a "J". These strings will appear on the computer display. The application may have to allow for strings longer than 48 characters (maximum length indicated in the specification). Actual length variance depends on the number of variable-length data fields. Allowing for 60 characters should be sufficient. Within the Code 128 specification, the computer can link bar codes together. If this is to happen, allow for more characters (computer limit is 100 characters).

The Application Identifier Standard, that is part of the UCC/EAN Shipping Label concept, complements, rather than replaces, other UCC/EAN standards. Most UCC/EAN standards primarily identify products.

Several industries expressed the need to standardize more than product identification. The UCC/EAN Code 128 Application Identifier Standard supplies this tool. The standard adds versatility for inter-enterprise exchanges of perishability dating, lot and batch identification, units of use measure, location codes, and several other information attributes.

For more detailed information on Code 128 UCC/EAN Shipping Label bar code and Application Identifier Standard, refer to the UCC/EAN-128 Application Identifier Standard specification.

I 2 of 5 (Interleaved)

I 2 of 5 (Interleaved 2 of 5 Code) is an all-numeric symbology, widely used for warehouse and heavy industrial applications. Its use has been particularly prevalent in the automobile industry. The I 2 of 5 symbology can be placed on smaller labels than what the standard UPC symbology requires.

I 2 of 5 also provides a little more flexibility on the type of material it can print on. Interleaved 2 of 5 Code has its name because of the way the bar code is configured.

I 2 of 5 bars and spaces both carry information. The bars represent the odd number position digits, while spaces represent the even number position digits. The two characters are interleaved as one. Messages encoded with this symbology have to use an even number of characters since two numeric characters always get interleaved together.

S 2 of 5 (Standard 2 of 5)

The code S 2 of 5 (Standard 2 of 5 Code) is designed primarily for:

- Warehouse inventory handling
- Identification of photo finishing envelopes
- Airline tickets
- Baggage and cargo handling

The code S 2 of 5 is simple and straightforward. All information is contained in the widths of the bars, with the spaces serving only to separate the individual bars.

Bars can either be wide or narrow, and the wide bars are usually three times the widths of the narrow bars. Spaces may be any reasonable width but are typically equal to the narrow bars. Narrow bars are identified as zero bits and wide bars as one bits.

Remember the code structure by associating the bar positions from left to right with weighting factors 1, 2, 4, 7, and parity. Exceptions to this rule are zero, start, and stop. This code is a discrete code, since the white spaces between the characters are not part of the code. Because the white spaces carry no information, their dimensions are not critical.

The S 2 of 5 code is self-checking, meaning a scanner passing through a printing void would detect the proper ratio of wide bars to total bars. When the scanner spots an error, a non-read will occur.

Plessey

Plessey finds its origin in the pulse width modulated (PWM) code developed in England. It is widely used for shelf markings in grocery stores. Pulse width modulated codes represent each bit of information by a bar and space pair. A zero bit consists of a narrow bar followed by a wide space, while a one bit consists of a wide bar followed by a narrow space. It is mainly a numeric symbology (0-9) with six extra characters available for assigning any symbol or letter desired.

Plessey codes are not self-checking and employ a variety of check characters. Plessey employs a polynomial-based Cyclic Redundancy Check (CRC). For start and stop characters, Plessey employs a 1101 and previously used a 0101.

This symbology is very limited about what information can be encoded. It is not considered for new applications.

MSI Code (Variant of Plessey)

In addition to Plessey characteristics, the MSI Code employs a Modulus 10 Check. For start and stop checks, MSI employs a single bit pair of 1 as a start symbol and a single bit pair of 0 as a stop symbol. MSI reverses the 1-2-4-8 BCD pattern for bit pair weighting to 8-6-2-1.

Bar Code Labels

You can change some settings on your 700 Series Computer by scanning the following Code 39 bar code labels.

- You can use the Unit Manager application to set the Automatic Shutoff, Volume, Backlight Timer, or Key Clicks parameters *(starting on page 352).*
- You can use the Unit Manager application or the Data Collection control panel to set the three Virtual Wedge parameters *(starting on page 325).*

Note: When you use a bar code creation utility to make a scannable bar code label, the utility probably adds opening and closing asterisks automatically. Asterisks are included here for translation purposes.

Audio Volume

Note: The Audio Volume parameter information is on page 356.

Turn Audio Off

$+BV0

Set Audio Volume to very quiet

$+VB1

Set Audio Volume to quiet

$+BV2

Set Audio Volume to normal *(default)*

$+BV3

Set Audio Volume to loud

$+BV4

Set Audio Volume to very loud

$+BV5

Automatic Shutoff

Note: The Automatic Shutoff parameter information is on page 355.

Set Automatic Shutoff to 1 minute

$+EZ1

Set Automatic Shutoff to 2 minutes

$+EZ2

Set Automatic Shutoff to 3 minutes *(default)*

$+EZ3

Set Automatic Shutoff to 4 minutes

$+EZ4

Set Automatic Shutoff to 5 minutes

$+EZ5

Backlight Timeout

Note: The Backlight Timeout parameter information is on page 353.

Backlight Timeout 10 seconds

$+DF10

Backlight Timeout 30 seconds

$+DF30

Backlight Timeout 1 minute *(default)*

$+DF60

Backlight Timeout 2 minutes

$+DF120

Backlight Timeout 3 minutes

$+DF180

Backlight Timeout 4 minutes

$+DF240

Backlight Timeout 5 minutes

$+DF300

Key Clicks

Note: The Key Clicks parameter information is on page 354.

Disable key clicks

$+KC0

Enable soft key clicks

$+KC1

Enable loud key clicks *(default)*

$+KC2

Virtual Wedge Grid, Preamble, Postamble

The following parameters are user-configurable strings. Refer to a full ASCII chart for more information.

Grid

For Virtual Wedge Grid, the first part of the bar code would be the following, which can include a string of up to 240 characters. *Parameter information starts on page 328.*

*$+AF

Preamble

For Virtual Wedge Preamble, the first part of the bar code would be below, followed by a string of up to 31 characters *(no <NUL>)* and an asterisk. *Default is no characters.* *Parameter information is on page 326.*

*$+AD

Postamble

For Virtual Wedge Postamble, the first part of the bar code would be below, followed by a string of up to 31 characters *(no <NUL>)* and an asterisk. *Default is no characters.* *Parameter information is on page 327.*

*$+AE

Index

The Classes and Functions Index covers classes and functions for the 700 Series Color Mobile Computer.

The General Index covers all topics. Those in italics are figures, those in bold are tables.

The Files Index is to assist you in locating descriptions for device drivers, applications, utilities, batch files, or other files within this publication.

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