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VESPUCCI
Special - The Home Depot

Document closed on:

Behavioral description

Cradle interface

USB_COM and USB_KBD

Use cases

THD product will be used in two main different configurations:

- USB_COM, 2-way with special data format, display and keyboard features.
- USB_KBD, (1-way) with standard data format, display and keyboard configurability .

The system can switch between the two configurations by using classical configuration items and the following new special configuration item:

CI_HOMEDEPOT_ENABLE – THDE

00 – Disabled

01 – Enabled (Default)

Once a restore default is performed and CI_HOMEDEPOT_ENABLE is disabled, display, keypad and data format are configurable as if the system were a classical Vespucci STAR, except for the predefined actions associated to the function keys F1,.., F4, which are not configured.

If CI_HOMEDEPOT_ENABLE is enabled (restore default condition), no action are associated to F1, .. , F4 (F5 still works as SHIFT) and partial THD format is applied to decoded labels (except for special global suffix).

When CI_HOMEDEPOT_ENABLE is enabled, some configuration items are ineffective. The list of these items is available in appendix A.

A new configuration item is available since merge 7, it controls the Radio Star sleep mode: CI_RADIO_SLEEP_ENABLE (RSLE). This item is disabled by default and when enabled it allow the radio sleep mode. If this mode is active, asynchronous commands like: Find Me; Exchange configuration or Host messages are no longer operating if the radio protocol timeout is expired.

Radio is woken up whenever a transmission must be performed or the gun is physically moved (accelerometer wake up).

Another configuration item is available since merge 7: CI_HOMEDEPOT_ALT_DISP_LEGEND (DALS). This item accepts an hex string up to 16 chars to replace the standard display legend. The replacement occurs whenever this string is not null. Action associated to the function keys are not tampered by this configuration item.

Display and Keyboard operation

Function key description

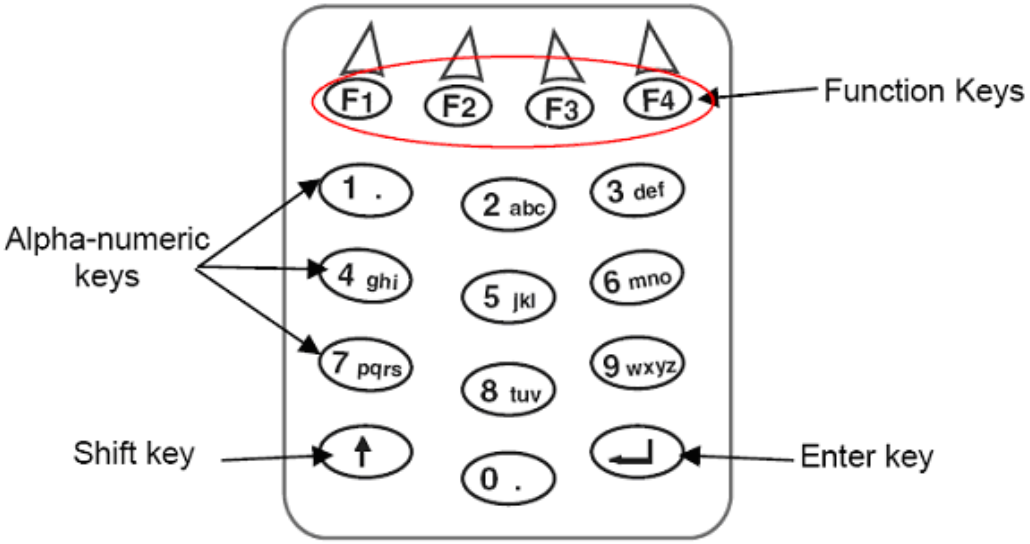


Figure 1 – Keyboard layout and functionality.

The following table gives a quick explanation of the function keys when THDE = 01 (USB_COM, 2-ways,…).

F1	Price Inquiry / Sync	It is used for determine the price of an article. It sends a predefined message to the POS. If this key is pressed while the main trigger is pressed it assumes the function of the sync.
F2	Shift	Shift is used to temporarily switch the keyboard from numeric to alphabetic mode. Once the shift key and one or more alphabetic keys are pressed, the keyboard spontaneously returns to numeric mode after a configurable timeout. The current keyboard mode (numeric or alphabetic) is visible on the upper right corner of the display (clock icon: “1234” means default numeric mode; “abcd” means alphabetic mode).
F3	Back Space	When pressed, it deletes the last character entered.
F4	ESC	When pressed, it sends a predefined message directly to the POS. It is used to abort some transactions.
1 to 9		Numeric Keys (Alphabetic when shift is pressed. They return numeric automatically when alphabetic mode timeout expires).
↑	Enter quantity	This key doesn’t work as shift, but is used to enter quantity. It behaves in this way: user has to enter a quantity on the screen; quantity can be 8 character long and must be composed by numbers and/or one decimal point. Everything else is refused and an error Message appears on the display.
↵	Enter	When it is pressed, the collected data is sent to the POS.

If THDE = 00, the special actions associated to the function keys are no more available and configurability will be the same as standard 16k products.

Message format

The Home Depot special product has a configuration item to enable/disable a special data format. When CI_HOMEDEPOT_ENABLE is enabled and the following configuration is applied:

- CI_KEYBOARD_DATA_FORMAT – $CPWDF01
- CI_GLOBAL_SUFFIX – $CLFSU0D0A
- CI_KEYB_KEYSEQ_TERM – $CPWE22550312E322556254B00000000000000
- CI_KEYB_STRING_HEAD – $CPWED2550312E32255625000000000000000

messages are formatted according to the following table:

A label read by the scanner has to be formatted in this way:	**<Label>%P1.2%V[CR][LF]**
When a label or a generic value is entered by the keyboard it is formatted in this way:	**<Label>%P1.2%V%K[CR][LF]**
Code Quantity: A code can be sent with information about quantity. Here follows the sequence. Enter a number with the keyboard that has to be a quantity. Press Up Arrow: the number is confirmed as a Quantity. Then enter the code (by a label or by keyboard). The message is so formatted: There are three different format cases: 1. No quantity inserted 2. Quantity is 1 3. Quantity > 1 There are also three sub-cases: a. Data is scanned b. Data is entered with the keyboard c. No data is entered (only the enter key is pressed)	**1 – No Quantity** **a. <Label>%P%Q1.2%V[CR][LF]** **b. <Label>%P%Q1.2%V%K[CR][LF]** **c. %Q1.2%V%K[CR][LF]** **2 – Quantity is 1** **a. <Label>%P1.2%V[CR][LF]** **b. <Label>%P1.2%V%K[CR][LF]** **c. %P1.2%V%O[CR][LF]** **3 – Quantity > 1** **a. <Label>%P<Qty>%Q1.2%V[CR][LF]** **b. <Label>%P<Qty>%Q1.2%V%K[CR][LF]** **c. <Qty>%Q1.2%V%K[CR][LF]**
A void message is formatted like this [1]:	**%P1.2%V%O[CR][LF]**
ESC (mapped on F4): When pressed sends this message:	**%P1.2%V%E[CR][LF]**
Inq (Inquiring mapped on F1): When pressed sends this message:	**%P1.2%V%I[CR][LF]**
Sync: (mapped on Inq when trigger pressed): When pressed sends this message:	**%P1.2%V%S[CR][LF]**

Once a restore default is performed and CI_HOMEDEPOT_ENABLE is disabled, data format is configurable in the same way as for standard products.

Received messages and display format

While the scanner is configured in 2-way and set to ignore host commands, each time a data is transmitted to the host, the host can acknowledge by sending to the gun a message structured in one of the following ways:

- <THD String>
- <Escape sequence>
- <THD String><Escape sequence>

All these messages must end with CR (0x0D in ASCII) and CR cannot be contained in the middle. These messages cannot start with $ or # because these characters are reserved for service mode

[1] Empty messages are transmitted whenever the enter key is pressed without any characters entered before.

commands, moreover they cannot start with ‘i’, ‘h’, ‘s’, ‘D’, or ‘E’ as they are reserved as host commands. In order to receive the message, the radio protocol timeout must not be expired.

THD Strings

THD strings were formerly used by a different scanner with 20 chars by 2 lines display size.
The parser can split these messages in two lines and introduce a CR by itself (if required). When a THD string starts with ‘%’ or ‘@’, the first character is deleted from the showed string. A special message conversion is working for this kind of strings: “OK pressed” is normally converted in a completely different message. It is done to try to give better information to the cashier in place of the POS applications. When “OK Pressed” is received, it is converted in something related to the last received exception (intended as last received THD string):

- “Ok Pressed” is transformed in “Please See Register” if the previous exceptions were “Warranty…”.
- “Ok Pressed” is maintained as it is if the previous exceptions was “Charge ECO…”.
- “Ok Pressed” is converted in "Assembled? 1Yes,9No" if “Assembled..” and “Register..” is previously received in this sequence.
- “Ok Pressed” is converted in the previous exceptions message for all the other case.
- “Invalid UPC” is converted in “Invalid Quantity” if previous exceptions are “Enter Item Quantity”.

One single beep is executed for all the received messages; except for the ones included in the following table:

Message	Number of beeps
"Enter Total Feet"	2
"Enter Square Feet"	2
"Enter Square Yards"	2
"Assembled? 1Yes,9No"	2
"Warranty Info - OK"	4
"Charge ECO Fee - OK"	4
"Enter DOB: MMDDYYYY"	2
"Enter Item Quantity"	2
"Please See Register"	4
"Price Inquiry"	2
"OK Pressed"	1
"Invalid UPC "	1

Escape sequences

Escape sequence are sequence of commands and plain text: the commands control the display, the lights and the beeper according to Powerscan 9500 Family PRG.

Mixed mode: THD strings and Escape sequence

Whenever a mixed mode message is received, the parser always starts its operation from the THD string, then execute the Escape sequence.
When small chars are in use, Vespucci has a 22 chars by 6 lines display size, so there is plenty of space for incoming messages. For this reason, while the THDE mode is enabled, the first two lines are reserved for the predefined incoming messages; the user can always type data starting from the

third line of the display. A message has to be maintained until another message has to be show. Screen doesn't have to return to the originally message by itself. 2 ways host messages longer than 2 lines are truncated.
When THDE is disabled, message persistence and cursor position are handled in the standard way.

Reading modes

Whenever the gun is placed on its special vertical cradle, and independently from the THDE status, it shall always switch its current (configured) reading mode to object detection mode. To ease the charge of the battery, display and keyboard are kept disabled when the gun is on its cradle.
The gun shall deactivate the current reading mode when it's inserted in a standard (horizontal) cradle.

Host Commands

This special software implements five host commands which work even if the host commands are disabled (despite the standard 2-way requirements).

i – Basic information about model.
h – Radio health status.
s – Custom statistics.
D – Disable.
E – Enable.

Basic information about model

Now the information command is like the other DL products to support JavaPOS Remote Management[1].

Frame ID Character	Content of Frame
A	Primary Scanner[2] application ROM ID (e.g. 'R96-1234')
R	Primary Scanner application revision level
C	Primary Scanner configuration file ID
B	Primary Scanner boot loader ROM ID
M	Primary Scanner top model number
m	Primary Scanner main board serial number
S	Primary Scanner serial number
I	Primary Scanner interface (as per interface config item)

Example:
{SOH}{STX}A610060101{ETX}{STX}R0004{ETX}{STX}C{ETX}{STX}B610037701{ETX}{STX}S{ETX}{STX}M{ETX}{STX}m{ETX}{STX}I47{ETX}{EOT}

Radio health status

Frame ID Character	Content of Frame
r	'OK' – radio is working 'NA' – health status not available

Example: {SOH}{STX}rOK{ETX}{EOT}

Custom statistics

Frame ID Character	Content of Frame

[1] For more information about fields, please refer to Datalogic Value-Added Features Interface Specification (DR9000060_revK1.doc).
[2] Primary Scanner means the unit physically connected by cable to the host (e.g. the cradle).

B	Number of battery charge cycles
T	Number of trigger pulls
K	Number of key presses; 16 numbered slots as described below*
l	Laser On time in Minutes
L	Base Number of Labels.
P	Base Total Hours

Example:
{SOH}{STX}B5{ETX}{STX}T216{ETX}{STX}l1{ETX}{STX}L351{ETX}{STX}KF1-5;F2-2;F3-1;F4-1;0-2;1-11;2-6;3-5;4-3;5-7;6-3;7-4;8-2;9-10;SH-26;EN-12;{ETX}{EOT}

Disable

Whenever the gun receives a disable command, it goes to a disabled state and the green lights start to flash. In this state, trigger and keypad are disabled.
If a disable command is received in the middle of a 2-ways transaction, the gun wait for the 2-way reply or the radio protocol timeout. Whichever of these two events occur first, the gun goes in disabled state.

Enable

This command enable again a disabled gun. If it's received after a disable command in the middle of a 2-way sequence, it will cancel the disable request at the end of the transaction.

THD special advanced data format without ULE

THD application needs some special data format features. At the moment, the known required data format are the following:

- Remove any CR and LF character from any label type
- Look for a Code 128 of any length and starting with a known string (e.g. 9805). In this code, remove the starting string and insert two predefined strings ([TAB]) in their predefined position.

  Example:
  Code 128 = 9805AABBBCCCC
  String 1 insert after second char = [TAB]
  String 2 insert after fifth char = [TAB]

  Result: AA[TAB]BBB[TAB]CCCC

Because of these requirements, THD has five more configuration items that can be used to achieve the desired string insertion/deletion. These items are:

- CI_HOMEDEPOT_POSTFMT_DELETE1:
  16byte argument, default "\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0";
  Syntax: $C**PFD1**<code_type(2chars)><pos(2chars)><string(28chars)>

- CI_HOMEDEPOT_POSTFMT_DELETE2:
  16byte argument, default "\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0";
  Syntax: $C**PFD2**<code_type(2chars)><pos(2chars)><string(28chars)>

- CI_HOMEDEPOT_POSTFMT_DELETE3:
  16byte argument, default "\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0";
  Syntax: $C**PFD3**<code_type(2chars)><pos(2chars)><string(28chars)>

- CI_HOMEDEPOT_POSTFMT_INSERT1:
  16byte argument, default "\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0";
  Syntax: $C**PFI1**<code_type(2chars)><pos(2chars)><mask(2chars)><string(26chars)>

- CI_HOMEDEPOT_POSTFMT_INSERT2:
  16byte argument, default "\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0";
  Syntax: $C**PFI2**<code_type(2chars)><pos(2chars)><mask(2chars)><string(26chars)>

Item execution order

These items are executed in a predefined sequence, just before the sw applies the special THD data format. The execution sequence is the following:

1. Delete1: this command works on the decoded label before this one is post-processed.
2. Delete2: this command works on the string manipulated by Delete1
3. Delete3: this command works on the string manipulated by Delete2
4. Insert1: this command works on the string returned by Delete3, according to the mask field.
5. Insert2: this command works on the string returned by Insert1, according to the mask field.

Syntax description

Delete item syntax:

$C**PFDx**<code_type(2chars)><pos(2chars)><string(28chars)>

Delete item description:

Delete a specified string from the label being processed. The string must be null terminated and can be up to 14 chars long. The string recognition depends on code type and position.

Insert item syntax:

$C**PFIx**<code_type(2char)><pos(2char)><mask(2char)><string(26char)>

Insert item description:

Insert a string into a specified position of the label being processed. The string must be null terminated and can be up to 13 chars long. The string insertion position depends on code type, specified position and even if one or more delete items already worked on the same label.

- **<code_type>**: 1 byte, hex format. Specifies which kind of label will be processed by the item, according to the following list. Refer to Appendix B for a full list of available code types.
- **<pos>**: 1 byte, hex format. Specifies the position where the string must be deleted or inserted, with a distinction: in deletion '00' means the string is searched in the whole label; in insertion '00' means the string must be inserted at the start of the label.
- **<mask>**: 1 byte, hex format. Used only in insert commands, makes the current insertion operation dependent by the execution of selected delete commands. Each bit of this field corresponds to a specific formatting item and works in logical OR with each other: the insert operation will be done if at least one operation correspondent to the bits have worked (changed) the original label. Every other bit is ignored.
  - Bit0: condition to DELETE1 command
  - Bit1: condition to DELETE2 command
  - Bit2: condition to DELETE3 command
- **<string>**: 13 byte (14 for delete commands), hex format. ASCII field, containing the string to be inserted. If all 13 (14) bytes are different from '\0' (0x00), this string's length will be 13 (14) characters. If a '\0' is present, this is used as string terminator.

Examples

`$CPFD10C000D00000000000000000000000000`:
remove from Code128 (0x0C) any occurrence (0x00) of carriage return CR (0x0D). All other string bytes are 0, so a single char is searched inside the decoded string.

`$CPFD30C013938303500000000000000000000`:
remove from Code128 (0x0C) the string "9805" (0x3938303500), only if it is found at the beginning of the decoded string (pos=0x01).

`$CPFI10C06040900000000000000000000000`:
insert into Code128 (0x0C) a TAB (0x090x00) at the 6th position (0x06), only if Delete3 command changes the string (mask=0x04).

Home Depot Use Case

`$CPFD100000D00000000000000000000000000`:
Remove any CR (0x0D) from any decoded string.

`$CPFD200000A00000000000000000000000000`:
Remove any LF (0x0A) from any decoded string

`$CPFD30C013938303500000000000000000000`:
If a Code128 is decoded (code type 0x0C), remove "9805" (0x3938303500) at the beginning of the string (pos.=0x01)

`$CPFI10C060409000000000000000000000000`:
insert into Code128 (0x0C) a TAB (0x090x00) at the 6th position (0x06), only if Delete3 command changes the string

`$CPFI20C030409000000000000000000000000`:
insert into Code128 (0x0C) a TAB (0x090x00) at the 4th position (0x06), only if Delete3 command changes the string

Resuming: Any LF and CR are removed from any string. If a code128 starts with "9805", this header is removed and two tabs are inserted in the proper position; otherwise, code128 that begin with a different string are transmitted without any change.

Another Simple Use Case

This use case is explained to describe which flexibility is added with special advanced data format; this feature was not directly required by the customer, but was added during the implementation of the feature.
Suppose to have the following barcodes:

1. A datamatrix whose string is "123456"
2. A datamatrix whose string is "DMxxxx"
3. A code 128 whose string is "abcde".
4. A code 128 whose string is "C128Hello".

Expected results are the following:

- A datamatrix starting with header "DM" will be transmitted after changing its header with "MY" string; other datamatrix will be transmitted without any change.
- A code 128 starting with header "C128" will be transmitted after changing its header with "MY" string; other datamatrix will be transmitted without any change.

So

1. DM "123456" will be transmitted as "123456";
2. DM "DMxxxx" will be transmitted as "MYxxxx";
3. C128 "abcde" will be transmitted as "abcde";
4. C128 "C128Hello" will be transmitted as "MYHello".

A possible configuration to do it is the following:

`$CPFD10C014331323800000000000000000000`:
Remove from Code128 (code type = 0x0C) a header equal to "C128" (0x4331323800). A header is a string found at the 1st position (pos.=0x01).

`$CPFD20E01444D00000000000000000000000`:
Remove from Datamatrix (code type = 0x0D) a header equal to "DM" (0x444D00). A header is a string found at the 1st position (pos.=0x01).

`$CPFI10001034D59000000000000000000000`:
If Delete1 or Delete2 changed the string (mask = 0x03), insert "MY" (0x4D5900) string at the 1st position (pos = 0x01). Code field is kept to 00 (all codes) to work both on code128 and on datamatrix.

Gun Configuration Barcodes

POS mode

Restore default:

Communication settings:

- USB_COM
  $HA47

- 2-way host
  $CSTTX02
- 7 sec radio protocol timeout
  $CSTPT07
- Host command ignore
  $CIFIH01
- Direct link enable
  $CBTDL01

Data format settings:

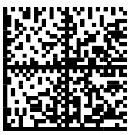
- Global suffix
  $CLFSU0D0A00000000000000000000000000000000000000

- Special keyseq terminator
  $CPWE22550312E322556254B00000000000000

- Special string head
  $CPWED2550312E3225562500000000000000000

Advanced data format:

- Delete CR from every label
  $CPFD100000D00000000000000000000000000
- Delete LF from every label
  $CPFD200000A00000000000000000000000000



User interface settings:

- Actions for function keys
- Display backlight
- Display mode
- Shift as F2
- Interleaved 2 of 5 enable
- Keyboard data format enable

ProDesk and Tool Rental mode / Store PC mode

Restore default:

Communication settings:

- USB_KBD
  $HA35
- The Home Depot mode disabled
  $CTHDE00
- Direct Link Enable
  $CBTDL01

Data format settings:

- Global suffix
  CLFSU0D000000000000000000000000000000000000000

Advanced data format settings:

- Delete CR from every label
  $CPFD100000D00000000000000000000000000
- Delete LF from every label
  $CPFD200000A00000000000000000000000000

Label specific data format:

- Code 128: delete “9805” as header
  $CPFD30C013938303500000000000000000000
- Code 128: if header “9805”detected, insert TAB at fourth position
  $CPFI20C03040900000000000000000000000
- Code 128: if header “9805”detected, insert TAB at sixth position
  $CPFI10C06040900000000000000000000000

Alternate legends for ProDesk or Store PC (scan the right one):

- Tool and Pro Desk
  $CDALS546F6F6C20262050726F204465736B00
- Store PC
  $CDALS53746F726520504300000000000000000

Single configuration barcodes

Enter/Exit configuration

Interface Selection $HA47	47	USB_COM	
Interface Selection $HA35	35	USB_KBD	
CI_GLOBAL_SUFFIX[1] $CLFSU0D0A00000000000000000000000000000000000000	0x0D0A…	Terminator	
CI_GLOBAL_SUFFIX[2] $CLFSU0D00000000000000000000000000000000000000	0x0D00…	Terminator	
CI_KEYBOARD_SET_ACTION_FOR_F1 $CPWEV0DDD	0x0DDD	Inquiry	
CI_KEYBOARD_SET_ACTION_FOR_F2 $CPWET0CCC	0x0CCC	Dynamic Qty	
CI_KEYBOARD_SET_ACTION_FOR_F3 $CPWEU0999	0x0999	Backspace	
CI_KEYBOARD_SET_ACTION_FOR_F4 $CPWES0EEE	0x0EEE	Escape	
CI_DISPLAY_BACKLIGHT $CDIBL03	0x03	Lcd +key	
CI_DISPLAY_MODE $CDIMD00	0x00	Normal	
CI_KEYBOARD_SET_SHIFT_BUTTON $CPWEY02	0x02	F2	
CI_KEYBOARD_SET_SHIFT_FOR_MENU $CPWER01 (default)	0x01	True	

[1] POS mode global terminator

[2] ProDesk and Store PC mode global terminator

CI_KEYB_KEYSEQ_TERM $CPWE22550312E322556254B00000000000000	0x25…	Special Term	
CI_KEYB_STRING_HEAD $CPWED2550312E32255625000000000000000	0x25…	Special Head	
CI_STAR_TX_MODE $CSTTX02	0x02	2-Way Host	
CI_STAR_RADIO_PROTOCOL_TIMEOUT $CSTPT07	0x07	7 sec	
CI_IGNORE_HOST_COMMANDS $CIFIH01	0x01	Ignore	
CI_I2OF5_ENABLE $CI2EN01	0x01	Enabled	
CI_KEYBOARD_DATA_FORMAT $CPWDF01	0x01	Enabled	
CI_RADIO_SLEEP_ENABLE $CRSLE01	0x01	Enabled	
CI_RADIO_SLEEP_ENABLE $CRSLE00	0x00	Disabled	
CI_RF_DIRECT_LINK_ENABLE $CBTDL01	0x01	Enabled	

Release History

Jan 10th, 2014

- 610048500 APP.CODE PM9500 SS5089
  First implementation of basic functionality. It is designed for demo purposes with the only aim to be connected to a THD POS. No radio compatible mode; no special radio protocol. Operates only with its cradle software 610048600.
- 610048600 APP. CODE BC90x0 SS5089
  See Gun 610048500 for details.

To be done for future releases

- Special THD radio protocol porting (Radio team).
- Host download (refer to Luca Montanari).

Feb 2014

- 610050800 APP.CODE PM9500 SS5089
  Porting of the special radio protocol. It is designed to be connected to the old THD cradles for demo purposes. Operates only with old THD cradles; with the new Vespucci cradles works only if STCP is greater than 00.

Aug 2014

- 610059900 APP.CODE PM9500 SS5533 – Release date Aug 26th, 2014.
  Gun software based on latest available merge (50) and implementing more functionalities than former versions:
  - Special stand (vertical) cradle and standard (horizontal) cradle recognition.
  - Stand mode (object detection) when placed into its special vertical cradle, with special tuning regarding gun power consumption (to ease the charge of the battery when in stand mode).
  - Keypad and display kept disabled when in cradle (to lower power consumption when on cradle).
  - Power management changes to lower power consumption during object detection.
  - Strong point to point communication (formerly linked gun must be excluded by a new gun).
  - Special THD compatible radio protocol not required. Will be used the new STAR protocol.

  TODO List (2014-08-21)
  - Cradle recognition.
  - Strong point to point communication.
  - Power off timeout disable when the gun is inserted into its vertical cradle.

  Known bugs (2014-08-21)
  - Works properly only with cradle software merge 46 or higher due to some changes in configuration items.
  - HAS_VESPUCCI_STANDARD macro can misalign the configuration item list. To review.

- 610060100 APP. CODE BCxxxx SS5533 – Currently under development (release by Sept 12th)
  Based on Vespucci base merge 46. New cradle software designed to work with the above gun software and the special vertical cradle. It'll be running in the new special THD vertical cradles and has to implement a "strong point to point communication" (see gun sw description).

  TODO List (2014-08-21)
  - Cradle recognition.
  - Strong point to point communication.
  - Firmware upgrade via simplified Aladdin interface.

  Known bugs (2014-08-21)

- HAS_VESPUCCI_STANDARD macro can misalign the configuration item list. To review.

Oct 2014

– 610059901 APP.CODE PM9500 SS5533 – Release date Oct 15h, 2014.
Gun software based on latest available merge (51) and implementing more functionalities than former versions:
- Vertical cradle recognition..
- Power off timeout disable when the gun is inserted into its vertical cradle.
- Special data format disable (via configuration item THDE).
- A build 1.0.0.0051 has been released to VN for testing. The official build with the fixed number 1.0.0.0004 (for production) will have also USB_COM as default.
- MotionX disabled as default.

TODO List (2014-10-15)
- Strong point to point communication.
- Restore normal display and keyboard behavior when THDE = 00.
- THD special advanced data format without ULE:
  - Character deletion from any code;
  - Advanced data format on specific code.

Known bugs (2014-10-06)

ID	Title
VESPUCCI_SWCR_1280	[THD]Gun doesn't switch to object detection when in compatible mode
VESPUCCI_SWCR_1250	[THD]2HHs can link to Base successfully
VESPUCCI_SWCR_1251	[THD]Should be supported Beep on Cradle for THD project
VESPUCCI_SWCR_1249	[THD]USB-COM: when COM port is disable, HH does not emits chirp beep after scanning barcode
VESPUCCI_SWCR_1241	[THD]HH enters label programming mode when it is on Base, HH should be kept Object Detection mode
VESPUCCI_SWCR_1239	[THD]Led on HH is not flashing when user enabled Stand mode Flash

– 610060101 APP. CODE BC90xx SS5533 – Release date Oct 15th, 2014.
Cradle software based on latest available merge and implementing more functionalities than former versions:
- Configuration items aligned with gun sw 610059901.
- Special data format disable (via configuration item THDE).
- A build 1.0.0.00xx has been released to VN for testing. The official build with the fixed number 1.0.0.0004 (for production) will have also USB_COM as default and SWCR_1258.
- MotionX disabled as default.

TODO List (2014-10-15)
- Strong point to point communication.
- THD special advanced data format without ULE:
  - Character deletion from any code;
  - Advanced data format on specific code.

Known bugs (2014-10-15)

ID	Title
VESPUCCI_SWCR_1281	[THD]In Compatible mode on the first reading after a bind, the cradle transmits to the host the same barcode 2 or three times
VESPUCCI_SWCR_1280	[THD]Gun doesn't switch to object detection when in compatible mode
VESPUCCI_SWCR_1262	[THD]Please update information about USB Descriptor for THD product

VESPUCCI_SWCR_1258	[THD][Host Command]Data is transmitted incorrectly when user sends host command
VESPUCCI_SWCR_1250	[THD]2HHs can link to Base successfully
VESPUCCI_SWCR_1249	[THD]USB-COM: when COM port is disable, HH does not emits chirp beep after scanning barcode

Nov 6th 2014

– 610059902 APP.CODE PM9500 SS5533 Merge 5 – Official release date Nov 12th, 2014
Gun software implementing the following features with respect the previous version (610059901):
- THD special advanced data format without ULE:
  Character deletion from any code;
  Advanced data format on specific code.
- Strong point to point communication
- Restore normal display and keyboard behavior when THDE = 00.
- Gun stops boot and charge the battery when is placed on cradle and the battery is very low.

TODO List
- Ultra low power consumption (special Star stack management and special appl power management). Will be available on upcoming build 6.

Known bugs

ID	Title	Assigned	SEVERITY	Target Factory
VESPUCCI_SWCR_1301	[THD]After setting string for function key which having Shift function, the others function keys would be lost the functions	DL\ARONZONI	2-Medium	THD /The Home Depot) GA
VESPUCCI_SWCR_1300	[THD]HH emits accept beep when user scans incorrect format label programming	DL\ARONZONI	3-Low	THD /The Home Depot) GA
VESPUCCI_SWCR_1294	[THD]Full message script: After scanning some databarcode, the quantity of beeps does not same as design	DL\ARONZONI	3-Low	THD /The Home Depot) GA
VESPUCCI_SWCR_1283	[STAR][Display & KBD 16K][THD] A configuration item tampers the actions associated to function keys in batch mode.	DL\ARONZONI	2-Medium	THD /The Home Depot) GA
VESPUCCI_SWCR_1265	[THD]HH can't link to Base in Compatible mode	DL\ARONZONI	3-Low	THD /The Home Depot) GA
VESPUCCI_SWCR_1264	[THD]After placing HH on Base, Display Screen is still shown buffers of Batch mode when user stored label into memory	DL\ARONZONI	3-Low	THD /The Home Depot) GA
VESPUCCI_SWCR_1263	[THD]After disabling Datamatrix decoding: DMEN = 00, scanner can still read DataMatrix barcode successfully	DL\ARONZONI	2-Medium	THD /The Home Depot) GA
VESPUCCI_SWCR_1241	[THD]HH enters label programming mode when it is on Base, HH should be kept Object Detection mode	DL\ARONZONI	3-Low	THD /The Home Depot) GA

– 610060102 APP. CODE BC90xx SS5533 – Official release date Nov 12th, 2014
Cradle software implementing the following features with respect the previous version (610060101):
- THD special advanced data format without ULE:
  Character deletion from any code;
  Advanced data format on specific code
- Strong point to point communication

TODO List
-

Known bugs

ID	Title	Assigned	SEVERITY	Target Factory
VESPUCCI_SWCR_1281	[THD]In Compatible mode on the first reading after a bind, the cradle transmits to the host the same barcode 2 or three times	DL\ASOVERINI	3-Low	THD /The Home Depot) GA
VESPUCCI_SWCR_1280	[THD]Gun doesn't switch to object detection when in compatible	DL\ASOVERINI	3-Low	THD /The Home

	mode			Depot) GA
VESPUCCI_SWCR_1262	[THD]Please update information about USB Desciptor for THD product	DL\ASOVERINI	2-Medium	THD /The Home Depot) GA
VESPUCCI_SWCR_1258	[THD][Host Command]Data is transmitted incorrectly when user sends host command	DL\ASOVERINI	2-Medium	THD /The Home Depot) GA

Nov 7th 2014

– 610059902 APP.CODE PM9500 SS5533 Merge 6 – Official release date Nov 12th, 2014
Gun software implementing the following features with respect the previous version (610059902 Merge 5):
- Ultra low power consumption (special Star stack management and special appl power management).
- For test purposes only, this version will be identified as 6100599xx build 6.
- Works with cradle 610060102.
- Mandatory: update radio firmware before use (command $EU10 in service mod on gun).

TODO List
-

Known bugs

Nov 10th 2014

Released Base Merge 006 with the same code (610060102) used in the previous Merge 005.
We change SW rel. string (the answer to $! command) to:

BC90x0-BASE-CHARGER SOFTWARE RELEASE 610060101 BUILD 1.0.0.0006 SS5533 (THD) Nov 10 2014

This release fix a bug related to Host Download (Gun upgrade does not start automatically).

Known bugs
The upgrade via host download starting from Merge 004 to an higher revision, must follow the next steps:
-First upgrade the GUN,
-then upgrade the base.

Dec 17th 2014

– 610059903 APP.CODE PM9500 SS5533 Merge 7 – Official release date: Dec 23rd 2014
Gun software implementing the following features with respect the previous version (610059902 Merge 6):
- Star stack sleep mode can be configured by a configuration item (CI_RADIO_SLEEP_ENABLE – RSLE)
- Revise display legend management: a full string can be accepted; not only action tags. See CI_HOMEDEPOT_ALT_DISP_LEGEND.
- Direct link available (disabled by default).
- Disable/Enable commands are operational even if host commands are ignored.
- Special 2-way message parsing (THD + escape).
- Radio firmware auto update.

TODO List
- None known

Known bugs

Dec 17th 2014

- 610060103 APP.CODE BC90xx SS5533 Merge 7 – Official release date: Dec 23rd 2014
  Cradle software implementing the following features with respect the previous version (610060102 Merge 6):
  - Revise display legend management: a full string can be accepted; not only action tags. See CI_HOMEDEPOT_ALT_DISP_LEGEND.
  - Direct link available (disabled by default).
  - Disable/Enable commands are operational even if host commands are ignored.
  - Radio firmware auto update.

  TODO List
  - None known

  Known bugs

Mar 18th 2015

- 610060104 APP.CODE BC90xx SS5533 Merge 8 – Official release date: Mar 18th 2015
  Cradle software implementing the following features with respect the previous version (610060102 Merge 7):
  - Horizontal and vertical cradle share the same battery charger led management..

  TODO List
  - None known

  Known bugs
  - None known

May 31st 2016

- 610059904 APP.CODE PM9500 SS5533 Merge 8 – Official release date: May 31st 2016
  Gun software implementing the following features with respect the previous version (610059903 Merge 7):
  - Porting of ULE fix from Jennifer to allow US driver license parsing by ULE scripting.
  - Fixed label ID for GS1 Datamatrix and GS1 QR.
  - Object detection improvements (Jennifer like).
  - Power management improvements (Jennifer like).
  - Fixed severe bug on flash writes.

  TODO List
  - None known.

  Known bugs
  - Limitations in using ULE still exist.
  - Batch mode and ULE are not fully compatible.

June 20th 2016

- 610059905 APP.CODE PM9500 SS5533 Merge 9 – Official release date: June 20th 2016
  Gun software implementing the following improvements with respect the previous version (610059904 Merge 8):
  - Quantity code mode (DISM01) is ignored when THDE = 01 (see SWCR_1819 and Appendix A).
  - Fixed the host download issue with JavaPOS.
  - Fixed the randomic resets when on cradle.
  - Fixed some display issues.

TODO List
- None known.

Known bugs/ Limitations
- Always On and keyboard operation.
- ULE code conversion (C128 – C39).
- ULE check chars issue (Code93).
- ULE and batch mode issues.
- Star compatible mode issues.

August 4th 2016
- 610059906 APP.CODE PM9500 SS5533 Merge 10 – Official release date: August 4th 2016
  - Official release candidate to fix the ULE issue found by Scott Roberts while upgrading configuration on this special product.
  - Battery recovery config items added.

Known bugs/ Limitations
- Recommended operation only with cradle software 610060107 Merge 10.
- Batch mode and ULE with multiple outputs can conflicts
- Same ULE defect as Jennifer.

Note
Luckily this sw never reached the end user: it can show issues on configuration manager. This bug can lead to repeated resets during startup because of a failure of the Access_Item function (discovered later on 2017).

June 20th 2017
- 610059907 APP.CODE PM9500 SS5533 Merge 11 – Official release date: June 20th 2016
  - Battery recovery config items officially available

Known bugs/ Limitations
- Never use Merge 10 (merge 10 never released to THD!) to upgrade/downgrade with merge 11 because of unrecoverable issues.
- Fixed issue regarding Access_Item failure of merge 10.
- Recommended operation only with cradle software 610060108 Merge 11.
- Batch mode and ULE with multiple outputs can conflicts
- Same ULE defect as previous version.

July 20th 2017
- 610059908 APP.CODE PM9500 SS5533 Merge 12 – Official release date: July 20th 2017
- 610060109 APP.CODE BASE SS5533 STAR Merge 12 – Official release date July 20th 2017
  - Battery recovery config items officially available.
  - Fix battery check when gun starts disconnected from its cradle.
  - USB interface on fast IRQ (FIQ) to prevent errors when connected to USB 3.0 ports of new DELL All In One models:
    Dell 9030 AIO, i5 Win10
    Dell 7440 AIO, i5 Win10
  - Aligned USB code to the last standard release.
  - Aligned configuration exchange to the last standard release. This means that we add the fix for jazz defect 41266, 40931, 40738, 41803, 40925.

Known bugs/ Limitations

- Batch mode and ULE with multiple outputs can conflicts.
- Same ULE defect as previous version.
- Use with USB interface only.

Appendix A

Configuration items ineffective when THDE = 01

CI_KEYBOARD_SET_LABEL_FOR_F1 – PWSB
CI_KEYBOARD_SET_LABEL_FOR_F2 - PWSC
CI_KEYBOARD_SET_LABEL_FOR_F3 - PWSD
CI_KEYBOARD_SET_LABEL_FOR_F4 – PWSE
CI_DISPLAY_SUBMODE – DISM01[1]

Configuration which change meaning between THDE = 01 and THDE = 0

CI_KEYBOARD_SET_ACTION_FOR_Fx:

Value	THDE = 1	THDE = 0
0xC	ACTION_DYN_QTY_CODE	ACTION_SCROLLUP
0xD	ACTION_INQUIRY	ACTION_SCROLLDWN
0xE	ACTION_ESCAPE	ACTION_DISPLAY_DOT
0xF	ACTION_DISPLAY_DOT	ACTION_DYN_QTY_CODE

Appendix B

Label ID table for THD for special advanced data format without ULE.

Values in the following table should be used in code type field for insert commands ($CPFIx) and for delete commands ($CPFDx).

CodeType	Label	CodeType	Label	CodeType	Label	CodeType	Label
0x00	Every label	0x1B	EAN85	0x34	RSS_LIM_COMP	0x4D	IND2OF5
0x01	UPCA	0x1C	EAN88	0x35	RSS_14_COMP	0x4E	AZTEC
0x02	UPCE	0x1D	EAN132	0x36	RSS_EXP_COMP	0x4F	UPCE_COMP
0x03	EAN8	0x1E	EAN135	0x37	GENERIC_DATA	0x50	UPCA_COMP
0x04	EAN13	0x1F	EAN138	0x38	CC_A	0x51	EAN8_COMP
0x05	UPC2	0x20	ISBN_ID	0x39	CC_B	0x52	EAN13_COMP
0x06	UPC5	0x21	TWO_LABEL_PAIR	0x3A	CC_C	0x53	EAN128_COMP
0x07	C128_ADDON	0x22	I20F5	0x3B	LABEL_IMAGE	0x54	DM PROG.LBL.
0x0A	EAN128	0x23	CODABAR	0x3C	CAPT.IMAGE.LBL	0x55	CHINA SENSIBLE
0x0B	C128 PROG.LBL	0x24	CODE39	0x3D	CODE16K	0x56	POSTAL AUSTRALIAN
0x0C	CODE128	0x25	PHARMAC39	0x3E	M20F5	0x57	POSTAL KIX
0x0D	FNC3 C128 LBL	0x26	MSI_PLESSEY	0x3F	D20F5	0x58	POSTAL JAPANESE
0x0E	DATAMATRIX	0x27	CODE93	0x40	PLESSEY	0x59	POSTAL RM
0x0F	MAXICODE	0x28	RSS_EXP_ID	0x41	ANKER	0x5A	POSTAL POSTNET
0x10	QRCODE	0x29	RSS_14_ID	0x42	ISSN	0x5B	POSTAL PLANET
0x11	CODABLOCK_A	0x2A	GTIN	0x43	ISBT	0x5C	POSTAL IM
0x12	CODABLOCK_F	0x2B	GTIN2	0x44	BC412	0x5D	POSTAL SWEDISH
0x13	CODE49	0x2C	GTIN5	0x45	TIMER EXPIRED	0x5E	POSTAL PORTUGAL
0x14	UPCE2	0x2D	GTIN8	0x46	FOLLET_2OF5	0x5F	TRIOPTICS
0x15	UPCE5	0x2E	S2OF5	0x47	CODE4	0x60	MICROQR
0x16	UPCE8	0x2F	PDF417	0x48	CODE5	0x61	GS1_DATAMATRIX
0x17	UPCA2	0x30	CODE11	0x49	CODE39_CIP	0x62	GS1_QRCODE
0x18	UPCA5	0x31	IATA	0x4A	ABC_CODABAR		
0x19	UPCA8	0x32	MICRO_PDF	0x4B	I2OF5_CIP		
0x1A	EAN82	0x33	RSS_LIM_ID	0x4C	C2OF5		

[1] If THDE = 01, the risk to have a conflict with the Dynamic Qty mode is too high to have the Qty/Code mode still configurable. To avoid the conflict, since merge 9 this mode is ignored and the reader is forced to operate in normal mode regardless the value of this configuration item (see SWCR_1819).