## Plessey Minimum And Plessey Maximum Length

These parameters apply to *Plessey* bar codes.The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *4 to 48*.

## Field Size/Char

Refer to page 143 for details.

# 5.10.3.14  Code 11

## Enabled

Set this parameter to *on* to enable "Code 11".

## Check Digits

Double-tapping on this parameter displays a dialog box in which you can choose *One Check Digit* or *Two check digits*.

If this parameter is set to *One Check Digit*, it is assumed that the last digit is a check digit. If it is set to *Two Check Digits*, it is assumed that the last two digits are check digits.

## Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 80*.

## Field Size/Char

Refer to page 143 for details.

# 5.10.3.15  Interleaved 2 of 5

## Enabled

Set this parameter to *on* to enable "Interleaved 2 of 5".

### Check Digit

When this parameter is set to *Validate only*, the integrity of a symbol is checked to ensure that it complies with specified algorithms.

If "Check Digit" is set to *Validate and Transmit*, the check digit is validated and transmitted with the data.

Setting this parameter to *None* disables this function.

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 80*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.16 Matrix 2 of 5

### Enabled

Set this parameter to *on* to enable "Matrix 2 of 5".

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 80*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.17 IATA 2 of 5

### Enabled

Set this parameter to *on* to enable "IATA 2 of 5".

## Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 48*.

## Field Size/Char

Refer to page 143 for details.

# 5.10.3.18  Discrete 2 of 5

## Enabled

Set this parameter to *on* to enable "Discrete 2 of 5".

## Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 48*.

## Field Size/Char

Refer to page 143 for details.

# 5.10.3.19  Telepen

## Enabled

Set this parameter to *on* to enable "Telepen".

## Output

If you choose *AIM* Output, the imager reads symbols with start/stop pattern 1 and decodes them as standard full ASCII (start/stop pattern 1). If you choose *Original* Output, the imager reads symbols with start/stop pattern 1 and decodes them as compressed numeric with optional full ASCII (start/stop pattern 2).

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 60*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.20  RSS Code (Reduced Space Symbology)

### Enable

Setting this parameter to *on* enables "RSS Code" scanning capability.

### Enable RSS Limited

'RSS-Limited" is restricted, in that it can only encode 14 digit GTINs (global trade item number) that begin with either a 0 or a 1. It is not stackable and is not designed to be read omni-directionally.

### Enable RSS Expanded

"RSS Expanded" uses the same application identifiers as UCC/EAN-128 codes but they can be split into sections and stacked several rows high, reducing the length of the symbol, while increasing the capacity of data that can be stored. "RSS Expanded" code can be omni-directionally scanned.

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 74*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.21 PosiCode (Reduced Space Symbology)

### Enable

Setting this parameter to *on* enables "PosiCode" scanning capability.

### PosiCode

"PosiCode" is a "position" based symbology. A position based symbology de-couples the widths of the bars from their positions. The centers of the bars are specified to be laid out on a grid of equally spaced parallel lines. The distance between these grid lines is called the G-dimension and is analogous to the X-dimension of conventional bar codes.

There are two variations of this code: PosiCode A, and PosiCode B. The options available with this parameter allow to choose *A and B*, *A and B and Limited A* or *A and B and Limited B*.

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 80*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.22 Composite

⚠ *Important:* ***To successfully read this type of bar code, the two types of symbologies included in a composite bar code must be enabled.***

A composite symbol includes multi-row 2D components making it compatible with linear and area CCD scanners along with linear and rastering laser scanners.

The options available for this parameter represent multi-level components of a composite symbol.

### GS1 128

"GS1 128" is the GS1 implementation of the Code 128 barcode specification. The former correct name was UCC/EAN-128.

"GS1-128" uses a series of *Application Identifiers* to include additional data such as best before dates, batch numbers, quantities, weights and many other attributes needed by the user.

## EAN/UCC 128 Emulation

The options in this parameter allow you to turn this emulation *on* or *off*, or to enable *RSS Emulation*.

## Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 2435*.

# 5.10.3.23  TLC-39

This composite component integrates MicroPDF417 with the linear code.

## Enabled

Setting this parameter to *on* enables this parameter.

## Field Size/Char

Refer to page 143 for details.

# 5.10.3.24  PDF-417

## Enabled

Set this parameter to *on* to enable "PDF-417".

## Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 2750*.

## Field Size/Char

Refer to page 143 for details.

## 5.10.3.25  Micro PDF-417

### Enabled

Set this parameter to *on* to enable "Micro PDF-417".

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 366*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.26  Code 16K

The "Code 16K" bar code is a multiple-row bar code that can encode the full ASCII character set below ASCII 128. It uses existing UPC and Code 128 character set patterns. Up to 77 full ASCII characters or 154 numeric characters can be encoded into 2 to 16 rows. Each row is divided by a separator bar. The top and bottom of the symbol also have separator bars that extend to the ends of the minimum quiet zones.

### Enabled

Set this parameter to *on* to enable "Code 16K".

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 160*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.27 Code 49

The "Code 49" bar code is a multiple-row bar code that can encode the full ASCII character set below ASCII 128. Up to 49 alphanumeric characters or 81 numeric characters can be encoded into two to eight rows. Each row is divided by a separator bar. The top and bottom of the symbol also have separator bars that extend to the ends of the minimum quiet zones.

### Enabled

Set this parameter to *on* to enable "Code 49".

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 81*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.28 Codablock

### Enable

Set this parameter to *on* to enable "Codablock".

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 2048*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.29 2D Data Matrix

### Enable

Set this parameter to *on* to enable "2D Data Matrix".

## Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 1500.*

## Field Size/Char

Refer to page 143 for details.

# 5.10.3.30 2D QR Code

## Enabled

Set this parameter to *on* to enable "2D QR Code".

## Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 3500.*

## Field Size/Char

Refer to page 143 for details.

# 5.10.3.31 2D Maxicode

## Enabled

Set this parameter to *on* to enable "2D Maxicode".

## Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 150.*

## Field Size/Char

Refer to page 143 for details.

## 5.10.3.32  2D Aztec

### Enabled

Set this parameter to *on* to enable "2D Aztec".

### Aztec Runes

*Aztec Runes*, the smallest type of Aztec Code symbol, has the ability to encode a very short license plate message.

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *1 to 3750.*

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.33  Postal: PlaNET

### Enabled

Set this parameter to *on* to enable "Postal: PlaNET".

### Check Digit

If enabled, the check digit will be transmitted at the end of the scanned data.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.34  Postal: PostNET

### Enabled

Set this parameter to *on* to enable "Postal: PostNET".

### Check Digit

If enabled, the check digit will be transmitted at the end of the scanned data.

## Field Size/Char

Refer to page 143 for details.

## 5.10.3.35 Postal: Australian

### Enabled

Set this parameter to *on* to enable "Postal: Australian".

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.36 Postal: Canadian

### Enabled

Set this parameter to *on* to enable "Postal: Canadian".

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.37 Postal: China

### Enabled

Set this parameter to *on* to enable "Postal: China".

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *2 to 80.*

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.38 Postal: Japanese

### Enabled

Set this parameter to *on* to enable "Postal: Japanese".

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.39  Postal: Kix

### Enabled

Set this parameter to *on* to enable "Postal: Kix".

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.40  Postal: Korean

### Enabled

Set this parameter to *on* to enable "Postal: Korean".

### Minimum And Maximum Length

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s). Double-tapping on these parameters displays a screen in which you can set the minimum and maximum allowable code lengths – *2 to 48*.

### Field Size/Char

Refer to page 143 for details.

## 5.10.3.41  Postal: Royal

### Enabled

Set this parameter to *on* to enable "Postal: Royal".

### Field Size/Char

Refer to page 143 for details.

## 5.10.4  Decoded (Intermec ISCP)
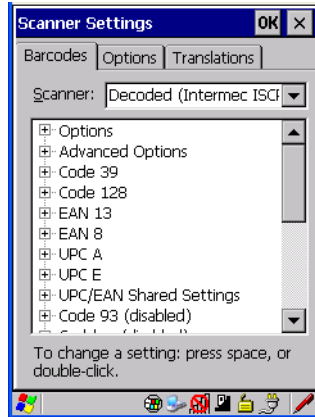


• Tap on the **Scanner** drop-down menu, and choose **Decoded (Intermec ISCP).**

### 5.10.4.1  Decoded (Intermec ISCP) Options

#### Laser On Time

The value assigned to this parameter determines how long the laser will remain on when the scan button or trigger is pressed.

Double-tapping on this parameter displays a dialog box in which you can enter a value between 1 and 10 seconds.

### 5.10.4.2  Decoded (Intermec ISCP) Advanced Options

#### Continuous Scan Mode

Setting this parameter to 'on' keeps the laser on and continuously decoding as long as the scanner button is pressed and held down.

#### Minimum Cancel Time

The value assigned to this parameter determines the time delay before the scanner is turned off, once the scanner trigger or button is released. This gives the scanner a minimum amount of time to complete its current decode before the scan is cancelled when the user quickly triggers on/off.

### Low Power Timeout

To extend laser life, you can select the length of time the scanner remains active following a successful decode. The scanner wakes from low power mode when a bar code is scanned – a successful decode restores normal blinking.

When you double-tap on this parameter, a dialog box is displayed in which you can choose a value of 30 sec, 1 min, 2 min or 3 min.

*Note:* *This parameter is only used if the Trigger Mode has been set to Continuous On and the hand-held is mounted in a fixed position; otherwise, 'Low Power Timeout' is not used.*

### Parameter Scanning

Setting this parameter to *Enabled* allows decoding of parameter bar codes.

### Same Read Validate

The data is only transmitted after repeated reads give the same result. The value assigned at this parameter determines the number of reads required, from 0 to 10 times.

### Same Read Timeout

Prevents the same bar code from being read more than once. The value assigned determines after what time period the scanner will timeout, from 0 to 2550 msec.

### Diff Read Timeout

Prevents unwanted reading of other bar codes on the same label. The value assigned determines after what time period the scanner will timeout, from 0 to 2550 msec.

## 5.10.4.3   Code 39

### Enable

Setting this parameter to *on* enables "Code 39".

### Full ASCII

If this parameter is enabled, the characters +, %, and / are used as escape characters. The combination of an escape character and the next character is converted to an equivalent ASCII character.

## Reading Range

Determines the reading distance from which a bar code can be successfully scanned. The default setting, *Extended*, allows for increased reading distance.

## Start/Stop Transmit

Setting this parameter to *on* enables the transmission of start and stop characters, which are usually not transmitted. Code 39 can start and end with either a **\*** or a **$** character (see also next parameter *Accepted Start Char*).

## Accepted Start Char

This parameter allows the user the option of using one of the two start/stop characters or both ($ char, * char, $ and * char).

## Check Digit Verification

Uses the specified algorithm of the option you've chosen to ensure the integrity of the symbol data before transmitting. If the data does not contain that algorithm, the data is not transmitted. The available options are: Disabled, MOD 43 Check, French CIP, or Italian CIP.

*Notes: French CIP (French pharmaceutical) is only used with bar codes containing 7 characters.*

*Italian CIP (Italian pharmaceutical) is also known as Code 32. It is transmitted as a standard Code 39 if checksum is not validated.*

## Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

## Minimum Length

Minimum lengths for the bar code can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

## Field Size/Char

Refer to page 143 for details.

### 5.10.4.4   Code 128

#### Enable

Setting this parameter to *on* enables "Code 128".

#### GS1-128

"GS1-128" is the GS1 implementation of the Code 128 barcode specification. The former correct name was UCC/EAN-128.

#### GS1-128 Identifier

"GS1-128 Identifier" allows the AIM ID " ]C1" for EAN 128 to be transmitted or removed. By default, this identifier is transmitted if EAN 128 is enabled.

#### GTIN Compliant

GTIN (global trade item number) processing transmits EAN 128 as the 14-character EAN/UCC GTIN. To use GTIN processing, you must activate the EAN 128 symbology.

*Important:*   ***When EAN 128 and GTIN processing are both activated, it is not possible to read normal EAN 128 Codes.***

#### FNC1 Conversion

"FNC1 Conversion" allows the FNC1 character to be converted to another character for applications that cannot use the default <GS> Group Separator or hex (1d).

Double-tapping on this option displays a dialog box listing the allowable range – 0 to 255.

#### Enable ISBT 128

To successfully scan this type of bar code (International Society of Blood Transfusion), this option must be set to *on*. If you enable this type of bar code, Code 128/EAN 128 is deactivated to avoid any confusion.

#### ISBT Concat Transmit

The codes are not concatenated by default. You need to choose one of the options provided for this parameter to send concatenated code. Choosing *Only Concatenated Codes* transmits only concatenated codes—single codes will not be transmitted. Choosing *Concatenated or Single* transmits single codes or

concatenated codes. If only one code of a pair is read, that code will be transmitted as a single code. If both codes in a pair are detected, they will be concatenated provided that *ISBT Concat Any Pair* (see below) is enabled.

## ISBT Concat Any Pair

Enabling this parameter causes all code pairs that can be, to be concatenated even if they do not comply with Section 4.1 of the "ISBT 128 Bar Code Symbology and Application Specification for Labeling of Whole Blood and Blood Components" (June 2000, Version 1.2.1).

## Reading Range

Determines the reading distance from which a bar code can be successfully scanned. The default setting *Extended*, allows for increased reading distance.

## Check Digit Verification

The available options for this parameter are Disabled or French CIP. This parameter uses the specified algorithm of the option you've chosen to ensure the integrity of the symbol data before transmitting. If the data does not contain that algorithm, the data is not transmitted.

*Note: French CIP (French pharmaceutical) is only used with bar codes containing 7 characters.*

## Minimum Length

Minimum lengths for the bar code can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

## Field Size/Char

Refer to page 143 for details.

## 5.10.4.5  EAN 13 Settings

## Enabled

Set this parameter to *on* to enable "EAN 13".

### ISBN Conversion

When this parameter (International Standard Book Number) is enabled, the first 3 characters ('978') are ignored and the checksum (0.9, 'X') is calculated on the remaining characters.

### Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

### Prefix/Suffix

Refer to "Prefix/Suffix" beginning on page 144.

## 5.10.4.6   EAN 8

### Enabled

Set this parameter to *on* to enable "EAN 8".

### Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

### Convert To EAN 13

If this parameter is enabled, an EAN 8 bar code is converted to EAN 13.

### Prefix/Suffix

Refer to "Prefix/Suffix" beginning on page 144.

## 5.10.4.7   UPC A Settings

### Enabled

Set this parameter to *on* to enable "UPC A" bar code scanning recognition.

### Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

### Transmit Number System

If this parameter is enabled, the number system digit is transmitted with the decoded bar code data.

## Convert To EAN 13

If this parameter is enabled, a UPC A bar code is converted to EAN 13.

## Prefix/Suffix

Refer to "Prefix/Suffix" beginning on page 144.

# 5.10.4.8   UPC E Settings

## Enabled

Set this parameter to *on* to enable "UPC E".

## Enable UPC-E1

Set this parameter to *on* to allow "UPC-E1" (zero suppressed) bar code scans.

## Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

## Transmit Number System

If this parameter is enabled, the number system digit is transmitted with the decoded bar code data.

## Convert To UPC-A

This parameter converts UPC E (zero suppressed) decoded data to UPC A format before transmission. After conversion, data follows UPC A format and is affected by UPC A programming selections (e.g. Check Digit).

## Prefix/Suffix

Refer to "Prefix/Suffix" beginning on page 144.

# 5.10.4.9   UPC/EAN Shared Settings

The setting assigned to the "Addendum" parameter associated with this option is shared across all UPC and EAN bar codes.

## Addendum

An addendum is a separate bar code, supplementary to the main bar code.
This parameter provides two options: *Not Required but Transmitted if Read* or *Required and Transmitted*.

- Double-tap on **Addendum** to display a dialog box listing your options.
- Highlight an item, and tap on **OK**.

When "Addendum" is set to *Not Required but Transmitted if Read*, the scanner searches for an addendum and if one exists, appends it to the main bar code. When the parameter is set to *Required and Transmitted*, the scanner does not accept the main bar code without an addendum.

### Addendum Add-on 2 And Addendum Add-on 5

Enabling these parameters sets the length of the addendum bar code to either *2* or *5* characters.

### GTIN Compliant

GTIN (global trade item number) processing transmits EAN 128 as the 14-character EAN/UCC GTIN. To use GTIN processing, you must activate the EAN 128 symbology.

⚠️ *Important:* ***When EAN 128 and GTIN processing are both activated, it is not possible to read normal EAN 128 Codes.***

### Reading Range

This parameter determines the reading distance from which a bar code can be successfully scanned. The default setting, *Extended*, allows for increased reading distance.

## 5.10.4.10  Code 93

### Enabled

Set this parameter to *on* to enable "Code 93".

### Minimum Length

Minimum lengths for the bar code can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

### Field Size/Char

Refer to page 143 for details.

## 5.10.4.11 Codabar

### Enabled

Set this parameter to *on* to enable "Codabar".

### Start/Stop Transmit

Codabar can use the following sets of characters as start and stop characters:

> a, b, c, d
>
> A, B, C, D
>
> a, b, c, d, /, t, n, *, e
>
> DC1, DC2, DC3, DC4

Thus, when a set is chosen, the first and last digits of a Codabar message must be one of those characters and the body of the message should not contain these characters. Setting this parameter to *Not Transmitted* strips the start and stop characters from this bar code.

### CLSI Library System

When enabled, spaces are inserted after characters 1, 5, 10 in the 14-character label (used in the USA by libraries using the CLSI system).

### Check Digit Verification

When enabled, this parameter checks the integrity of a symbol to ensure it complies with a specified algorithm – either *USS* (Uniform Symbology Specification) or *OPCC* (Optical Product Code Council).

### Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

### Set Length L1, Set Length L2, And Set Length L3

Lengths for "Codabar" can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

Double-tapping on these parameters displays dialog boxes where you can define the code length that will be recognized by your scanner.

### Length Mode

You can choose to set L1 as Minimum Length or L1,L2,L3 as Fixed Length.

### Field Size/Char

Refer to page 143 for details.

## 5.10.4.12  MSI Plessey

### Enabled

Set this parameter to *on* to enable "MSI".

### Enable Plessy

Set this parameter to *on* to enable "Plessy".

### Check Digit Verification

The available options for this parameter are *MOD 10 Check* and *Double MOD 10 Check*. This parameter uses the specified algorithm of the option you've chosen to ensure the integrity of the symbol data before transmitting. If the data does not contain that algorithm, the data is not transmitted.

### Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

### Plessy Transmit Check Digit

If the check digit is to be transmitted with the Plessy data, this parameter must be enabled.

### Minimum Length

Minimum lengths for the bar code can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

### Plessy Minimum Length

Minimum lengths for the Plessy bar code can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

### Field Size/Char

Refer to page 143 for details.

## 5.10.4.13  Code 11

### Enabled

Set this parameter to *on* to enable "Code 11".

### Check Digit Verification

The available options for this parameter are *MOD 10 Check* and *Double MOD 10 Check*. This parameter uses the specified algorithm of the option you've chosen to ensure the integrity of the symbol data before transmitting. If the data does not contain that algorithm, the data is not transmitted.

### Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

### Minimum Length

Minimum lengths for the bar code can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

### Field Size/Char

Refer to page 143 for details.

## 5.10.4.14  Interleaved 2 of 5

### Enabled

Set this parameter to *on* to enable "Interleaved 2 of 5".

### Reading Range

This parameter determines the reading distance from which a bar code can be successfully scanned. The default setting, *Extended*, allows for increased reading distance.

### Check Digit Verification

The available options for this parameter are *Disabled*, *MOD 10 Check* and *French CIP*. "Check Digit Verification" uses the specified algorithm of the option you've chosen to ensure the integrity of the symbol data before transmitting. If the data does not contain that algorithm, the data is not transmitted.

> *Note:* *French CIP (French pharmaceutical) is only used with bar codes containing 7 characters.*

### Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

### Set Length L1, Set Length L2, And Set Length L3

Lengths for "Interleaved 2 of 5" can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

Double-tapping on these parameters displays dialog boxes where you can define the code length that will be recognized by your scanner.

### Length Mode

You can chose to set L1 as Minimum Length or L1,L2,L3 as Fixed Length.

### Field Size/Char

Refer to page 143 for details.

## 5.10.4.15  Matrix 2 of 5

### Enabled

Set this parameter to *on* to enable "Matrix 2 of 5".

### Minimum Length

Minimum lengths for the bar code can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

### Field Size/Char

Refer to page 143 for details.

## 5.10.4.16  Discrete 2 of 5

### Enabled

Set this parameter to *on* to enable "Discrete 2 of 5".

## Standard 2 of 5 Format

This parameter allows you to choose a standard format – either *Identicon (6 start/stop bars) or Computer Identics (4 start/stop bars)*.

## Check Digit Verification

The available options for this parameter are *Disabled* and *MOD 10 Check*. "Check Digit Verification" uses the specified algorithm of the option you've chosen to ensure the integrity of the symbol data before transmitting. If the data does not contain that algorithm, the data is not transmitted.

## Transmit Check Digit

If the check digit is to be transmitted with the data, this parameter must be enabled.

## Set Length L1, Set Length L2, And Set Length L3

Lengths for "Discrete 2 of 5" can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

Double-tapping on these parameters displays dialog boxes where you can define the code length that will be recognized by your scanner.

## Length Mode

You can chose to set *L1 as Minimum Length* or *L1,L2,L3 as Fixed Length*.

## Field Size/Char

Refer to page 143 for details.

## 5.10.4.17 Telepen

### Enabled

Set this parameter to *on* to enable "Telepen".

### Format

This parameter allows you to set the bar code character format to *either ASCII or Numeric*.

### Minimum Length

Minimum lengths for the bar code can be set from *0 to 255*. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s).

### Field Size/Char

Refer to page 143 for details.

## 5.10.4.18 RSS Code (Reduced Space Symbology)

### Enable

Setting this parameter to *on* enables "RSS Code" scanning capability.

### Enable RSS-14

RSS-14 code can be either purely linear or split in half with one half stacked on top of the other half. Stacking the code reduces the bar code length, and providing the nominal height of the code is maintained, it can be omni-directionally scanned.

### Enable RSS Limited

"RSS-Limited" is restricted, in that it can only encode 14 digit GTINs (global trade item number) that begin with either a 0 or a 1. It is not stackable and is not designed to be read omni-directionally.

### Enable RSS Expanded

"RSS Expanded" uses the same application identifiers as UCC/EAN-128 codes but they can be split into sections and stacked several rows high, reducing the length of the symbol, while increasing the capacity of data that can be stored. "RSS Expanded" code can be omni-directionally scanned.

### Field Size/Char

Refer to page 143 for details.

## 5.10.4.19 PDF-417

### Enabled

Set this parameter to *on* to enable "PDF-417".

## Field Size/Char

Refer to page 143 for details.

# 5.10.4.20  Micro PDF-417

## Enabled

Set this parameter to *on* to enable "Micro PDF-417".

## Code 128 Emulation

When this parameter is enabled, the scanner transmits data from certain Micro PDF-417 symbols as if it was encoded in Code 128 symbols.

If Code 128 Emulation is enabled, the following Micro PDF-417 symbols are transmitted with one of the following prefixes:

> ]C1if the first codeword is 903-907, 912, 914, 915
>
> ]C2if the first codeword is 908 or 909
>
> ]C0if the first codeword is 910 or 911

If Code 128 Emulation is set to *off*, the Micro PDF-417 symbols are transmitted with one of the following prefixes:

> ]L3if the first codeword is 903-907, 912, 914, 915
>
> ]L4if the first codeword is 908 or 909
>
> ]L5if the first codeword is 910 or 911

## Field Size/Char

Refer to page 143 for details.

# 5.10.4.21  Codablock

## Enable Codablock A

Set this parameter to *on* to enable "Codablock type A".

## Enable Codablock F

Set this parameter to *on* to enable "Codablock type F".

## Field Size/Char

Refer to page 143 for details.

# 5.10.5  Imager
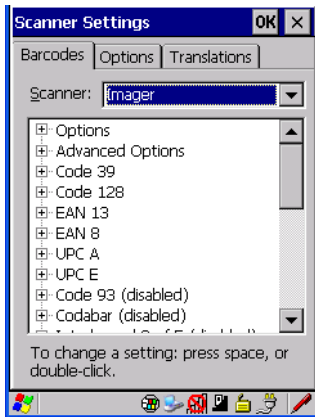


• Tap on the **Scanner** drop-down menu, and choose **Imager**.

## 5.10.5.1  Imager Options

### TekImager Enabled

Setting this option to *on* enables the imager installed in your hand-held.

### Continuous Scan Mode

Setting this parameter to *on* keeps image capture active and continuously decoding as long as the scanner button is pressed and held down.

### Center Bar Code Only

*Note:  This parameter must be disabled when reading Composite bar codes.*

When more than one bar code is visible in a single snap shot, this parameter allows you to specify that only the centre image within the imager framing marker be read. When this parameter is set to *on*, the target dot is pointed at the centre image and only that image is returned.

### Max Number Barcodes

This parameter specifies the maximum number of bar codes the imager will attempt to decode in an image. A maximum of 6 bar codes can be decoded at one time.

## Barcodes Must Decode

This parameter specifies the minimum number of bar codes that the imager must decode in order to report success.

*Note: This number must be less than the number of bar codes assigned to "Max Number Barcodes". The driver validates and reassigns the value if necessary.*

## Window Width

"Window Width" determines the width of the captured image in pixels.

*Note: The driver will validate and reassign the value assigned to this parameter, if necessary; the driver will also use the Window Width value to horizontally center the image in the field of view.*

## Window Height

This parameter determines the height of the captured image in pixels.

*Note: The driver will validate and reassign the value assigned to this parameter, if necessary; the driver will also use "Window Height" value to vertically center the image in the field of view.*

## Dot Time (msec)

The value selected for "Dot Time (msec)" determines (in milliseconds) how long the targeting dot remains on before the scanner begins capturing images. When you double-tap on this parameter, a dialog box is displayed in which you can enter a value of between 0 and 3000. A value of 0 disables the target dot.

## 5.10.5.2   Imager Advanced Options

***Important:    Do not adjust the advanced options without first consulting Psion Teklogix technical support.***

## Factory Defaults On Reboot

The value assigned to this parameter determines whether or not the driver will restore the factory defaults to the imager device on the next reboot.

*Note: The driver will default the imager device on a 'clean' reset, regardless of the value of this parameter.*

### Min Scan Duration

This parameter defines the minimum amount of time in seconds that the imager will scan when the trigger is pressed and held down without successful decode.

*Note: The actual scan duration when the trigger is pressed relies on the value assigned to* Captures Per HW Trigger, *below.*

### Captures Per HW Trigger

The value assigned to this parameter determines the number of captures the imager device will take while the imager's internal hardware trigger is held down.

*Note: This parameter, together with "Min Scan Duration", determines the actual scan duration. When the scan trigger is pressed and held down, the driver starts a timer based on the value of "Min Scan Duration" and also sends a command to emulate the hardware trigger. When completed, if the time has not yet expired, it will send another command to the imager device, forcing the imager to flash again using the value assigned to "Captures Per HW Trigger".*

### Auto Exposure

*Important: **This parameter value should only be changed by qualified Psion Teklogix personnel. It should be left at the default value – 'on'.***

Setting this parameter to *on* allows the imager to make automatic gain, integration and illumination adjustments based on ambient light before capturing the bar code. If the adjustment is insufficient, further adjustments are made automatically before another image is captured.

### Fast Converge

*Note: "Auto Exposure" must be set to 'on' in order for this parameter to function.*

*Keep in mind that while this parameter can improve imager performance, "Fast Converge" increases battery power consumption.*

Setting this parameter to *on* speeds the "Auto Exposure" process. It allows the imager to rapidly snap a number of bar code capture attempts while finding ideal values for gain, integration and illumination.

## Max Gain, Max Integration And Max Illumination

⚠️ ***Important:*** ***These parameter values should only be changed by qualified Psion Teklogix personnel.***

These parameters represent internal values used by the 2D imager. The "Auto Exposure" parameter automatically adjusts the "Max Gain", "Max Integration" and "Max Illumination" parameters to produce the best bar code read. Keep in mind that "Auto Exposure" must be set to *on* in order for these parameter values to be automatically adjusted.

Double-tapping on any of these parameters displays an associated dialog box in which an allowable range is displayed: Max Gain – 357 to 7920, Max Integration – 0 to 65535, Max Illumination – 0 to 7.

## Decoder Timeout

The decoder is a set of algorithms that examine the image and attempt to find the bar codes, and then turn the pixels into data that the computer can use—this process takes time. "Decoder Timeout" limits the amount of time the decoder will spend attempting to decode an image, and forces it to stop and grab a new image, which will probably be easier to decode.

📖 *Note: When decoding multiple bar codes in one image, the value assigned to 'Decoder Timeout' should be increased to 200ms/extra bar code after the first.*

## Adaptive Windowing

"Adaptive Windowing" is an advanced technique used to speed up bar code recognition in certain applications. This parameter automatically reduces the size of the window to the user-programmed window size when it successfully decodes (which reduces decode time the next time it is used), but increases it to the full size window (1280x1024 for SX5303) on a failed decode.

📖 *Note: This feature assumes that you have reached an understanding about how the device operates in your application, and that, after a learning period, operators will get used to using the imager in one particular way. It also assumes that a trained operator will usually only have near miss scenarios.*

### Constant Illumination

"Constant Illumination" is used to reduce the intrusiveness of the device's illumination on the observer. Instead of the illumination turning on and off every time the device attempts a decode (2-4 times per second), the illumination stays on from the time the trigger is pulled until a decode is successful. This feature is useful in low light environments, since it will also reduce the distraction that the illumination can have on nearby co-workers.

## 5.10.5.3   Code 39 Settings

### Enabled

Set this parameter to *on* to enable "Code 39".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.4   Code 128 Settings

### Enabled

Set this parameter to *on* to enable "Code 128".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.5   EAN 13

### Enabled

Set this parameter to *on* to enable "EAN 13".

### Addendum

An addendum is a separate bar code, supplementary to the main bar code. This parameter provides three options: Disabled, Optional and Required. Depending on the value chosen for this parameter, an addendum is recognized or ignored.

- Double-tap on **Addendum** to display a dialog box listing your options.
- Highlight an item, and tap on **OK**.

When "Addendum" is set to *Disabled*, the scanner does not recognize an addendum. If this parameter is set to *Optional*, the scanner searches for an addendum and if one exists, appends it to the main bar code. When the parameter is set to *Required*, the scanner does not accept the main bar code without an addendum.

*Note: Setting "Addendum" to 'Optional' reduces performance. It should only be chosen if at least some of the bar codes being read have addendums.*

## Prefix/Suffix

Refer to "Prefix/Suffix" beginning on page 144.

## 5.10.5.6   EAN 8

### Enabled

Set this parameter to *on* to enable "EAN 8".

### Addendum

Refer to "Addendum" on page 194.

### Prefix/Suffix

Refer to "Prefix/Suffix" beginning on page 144.

## 5.10.5.7   UPC A

### Enabled

Set this parameter to *on* to enable "UPC A".

### Addendum

Refer to "Addendum" on page 194.

### Prefix/Suffix

Refer to "Prefix/Suffix" beginning on page 144.

## 5.10.5.8   UPC E

### Enabled

Set this parameter to *on* to enable "UPC E".

### Addendum

Refer to "Addendum" on page 194.

### Prefix/Suffix

Refer to "Prefix/Suffix" beginning on page 144.

## 5.10.5.9 Code 93

### Enabled

Set this parameter to *on* to enable "Code 93".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.10 Codabar

### Enabled

Set this parameter to *on* to enable "Codabar".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.11 Interleaved 2 of 5

### Enabled

Set this parameter to *on* to enable "Interleaved 2 of 5".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.12 RSS Code (Reduced Space Symbology)

### Enable

Setting this parameter to *on* enables "RSS Code" scanning capability.

### Field Size/Char

Refer to page 143 for details.

### 5.10.5.13  Composite

*Important:* ***To successfully read this type of bar code, the two types of symbologies included in a composite bar code must be enabled.***

### Enabled

Set this parameter to *on* to enable "Composite" bar codes.

## 5.10.5.14  PDF-417

### Enable

Setting this parameter to *on* enables PDF-417 two dimensional (2D) coding.

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.15  Micro PDF-417

### Enable

Setting this parameter to *on* enables "Micro PDF-417" bar code scanning. Micro PDF-417 is a multi-row symbology that is useful for applications requiring greater area efficiency but lower data capacity than PDF-417.

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.16  2D Data Matrix

### Enable

Set this parameter to *on* to enable "Data Matrix".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.17  2D QR Code

### Enabled

Set this parameter to *on* to enable "2D QR Code".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.18  2D Maxicode

### Enabled

Set this parameter to *on* to enable "2D Maxicode".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.19  2D Aztec

### Enabled

Set this parameter to *on* to enable "Aztec".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.20  Postal: PlaNET

### Enabled

Set this parameter to *on* to enable "Postal: PlaNET".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.21  Postal: PostNET

### Enabled

Set this parameter to *on* to enable "Postal: PostNET".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.22  Postal: Australian

### Enabled

Set this parameter to *on* to enable "Postal: Australian".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.23  Postal: Japanese

### Enabled

Set this parameter to *on* to enable "Postal: Japanese".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.24  Postal: Korean

### Enabled

Set this parameter to *on* to enable "Postal: Korean".

### Field Size/Char

Refer to page 143 for details.

## 5.10.5.25  Postal: Royal

### Enabled

Set this parameter to *on* to enable "Postal: Royal".

### Field Size/Char

Refer to page 143 for details.

# 5.10.6  Options

This tab allows you to tailor the double-click parameters and the display options associated with your scanner.
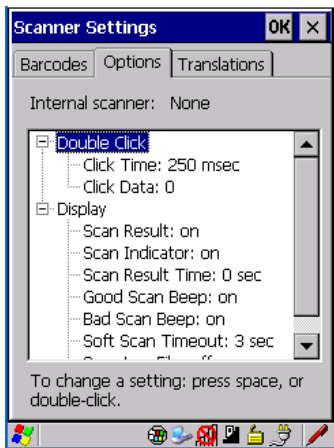


## 5.10.6.1  Double Click Parameters

### Click Time (msec)

This parameter controls the maximum gap time (in milliseconds) for a double-click. If the time between the first and second clicks of the scanner trigger is within this time, it is considered a double-click. The allowable range is 0 to 1000. A value of zero disables this feature.

A double-click produces different results depending on whether or not a value is assigned in the "Click Data" parameter. When a value is not assigned for the "Click Data", double-clicking the scanner trigger overrides the target dot delay set in the "Dot Time" parameter and initiates a normal scan sweep. If a value is assigned for the "Click Data" parameter, double-clicking the scanner trigger inserts the "Click Data" value rather than initiating a scan.

### Click Data

For both integrated and external scanners, this parameter determines which character is sent to the application installed in your hand-held following a double-click. A dialog box appears, asking that you press the key you want to insert. The ASCII/Unicode key value of the keypress is displayed.

## 5.10.6.2 Display Parameters

### Scan Result

When this parameter is enabled, the type of bar code and the result of the scan appear on the screen. Note that this information is only displayed after a successful decode and is visible only while the scanner trigger is pressed. When the trigger is released, this information is cleared from the screen.

### Scan Indicator

When this parameter is enabled, the laser warning logo appears on the display whenever the scanner is activated.

### Scan Result Time (sec)

The value assigned to the "Scan Result Time (sec)" parameter determines how long the scan results of a successful scan are displayed on the screen. Time is measured in seconds, and a value of "0" (zero) disables the parameter. When you choose this option, a dialog box appears where you can enter a value.

*Note: To remove the scan result from the screen before the "Result Time" has expired, point the scanner away from the bar code and press the trigger.*

### Good Scan Beep And Bad Scan Beep

These parameters determine whether or not the hand-held emits an audible scanner 'beep' when a good (successful) scan or a bad (unsuccessful) scan is performed. Set these parameters to either *on* to enable the beeper or *off* to disable it.

### Soft Scan Timeout

This parameter is used by the SDK "Scan" function (soft-scan: starting a scan session via the SDK function, instead of a physical user trigger press). The value assigned to this parameter determines the soft-scan timeout from 1 to 10 sec. (default is 3 sec.).

### Scan Log File

If this parameter is enabled, the input barcode and the modified/translated output bar code are logged in the file \Flash Disk\ScanLog.txt. Keep in mind that if the "Scan Log File" is enabled, there is a slight performance effect when performing multiple scans since the log file is written to persistent storage.

## 5.10.7  Translations Tab

The *Translations* tab allows you to define up to 10 *cases*, each consisting of up to 10 *rules* in sequential order. Only one *case* will be applied to a bar code and a case will only be applied if all *rules* specified in the case are successful – if a *rule* within a *case* fails, the entire *case* fails.
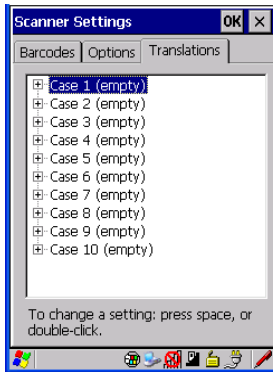


• In the *Translation* tab, tap on the **Case #** to create rules.
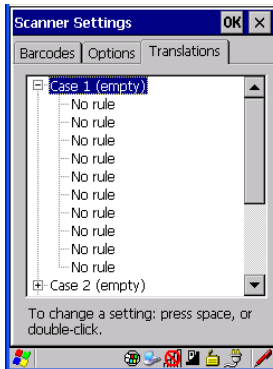
• Tap on the **No rule** dropdown menu to display the rules.
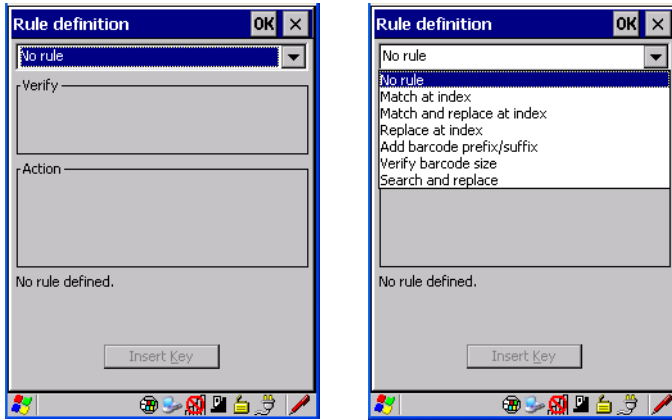


When you choose a rule, an associated screen is displayed in which you can define the rule.
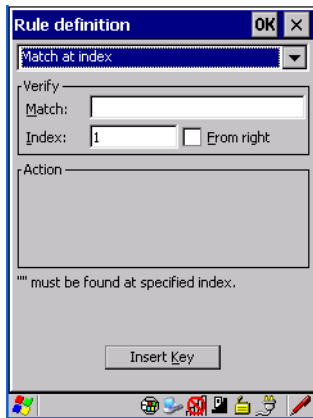


## 5.10.7.1  Case Rules

The case rules are defined as follows:

• No rule – ignored.

• Search and replace – replaces *all* instances of the match string. (Note that this rule cannot fail.)

• Match at index – matches the match string at a specified index.

- Match and replace at index – matches the match string at a specified index and replaces/changes it.
- Replace at index – replaces/changes unspecified data in a given range.
- Add barcode prefix/suffix – adds a global prefix or suffix.
- Verify barcode size – verifies the bar code size. This rule should generally be assigned first, before creating subsequent rules.

*Note: Keep in mind that the effects of previously applied rules must be taken into account when creating subsequent rules. For example, if the bar code size is important, it should be checked before any rules that might change the size are applied.*

Translation information about the status of each case/rule is displayed in the scan log file (see "Scan Log File" on page 201) when enabled. This is useful if a case fails, and you are trying to determine why a rule is failing.

# PERIPHERAL DEVICES & ACCESSORIES **6**

- Fasten the belt comfortably around your waist. Slide the adjustable ring on the belt to tighten the holster in place.
- Connect the safety tether to one of the clips on the bottom of the soft shell holster. Connect the other end to the hole in the end of the WORKABOUT PRO pistol grip. This tether will catch the unit in case of a drop. The tether can be adjusted to the operator's height. The clips will break away in case of a severe force.

# 6.2  The Batteries

The WORKABOUT PRO will operate with any of the following Lithium-Ion battery packs:

- High-Capacity – Model WA3006
- Super High-Capacity – Model WA3010

In addition to the main battery, the hand-held is equipped with a replaceable, rechargeable Lithium-Ion backup battery.

# 6.3  Adaptor Cable Options

The following are adaptors can be ordered for your WORKABOUT G2:

| Model Number | Adaptor Cable Description |
|---|---|
| WA1002 | Tether to USB device. This cable is used to connect USB devices such as USB Flash memory devices. |
| WA4020-G2 | Tether to RS232. This is a full RS232 port on COM2. |
| WA4001-G2 | Tether to USB Client. (For ActiveSync) |
| WA4010-G1 | USB to Ethernet adaptor. |
| WA4015 | USB/RS232 adaptor. This cable is used with docking station WA4003-G2. |

# 6.4  Chargers And Docking Stations

⚠ *Important:* ***Keep in mind when ordering a charger or docking station, you must also order the appropriate power cord separately.***

Psion Teklogix offers a variety of chargers and docking stations for the WORKABOUT PRO. These include:

- AC Adaptor–Model No. PS1050-G1

- Cigarette Lighter Adaptor–Model No. WA3113-G2
- Single Battery Charger–Model No. WA3001-G1
- Quad Battery Charger–Model No. WA3004-G1
- Desktop Docking Station–Model No. WA4003-G2
- Quad Docking Station For 7527 C G2–Model No. WA4204-G2
- Quad Docking Station For 7527 S G2–Model No. WA4304-G2

# 6.4.1 Installation–Chargers And Docking Stations

When installing a charger or docking station, consider the following guidelines.

- Keep chargers and docking stations away from excessive dirt, dust and contaminants.
- Chargers will not charge batteries outside an ambient temperature range of 0° C to 45 °C (32° F to 113° F). It is recommended that the charger or docking station be operated at room temperature–between 18° C and 25° C (64° F to 77° F) for maximum performance.

After unpacking your unit:

- Visually inspect the charger for possible damage.
- Install the IEC power cord and apply power.

# 6.4.2 Power Consumption Considerations

Check to ensure the mains circuit supplying chargers and/or docking stations is adequate for the load, especially if several chargers and docking stations are being powered from the same circuit.

- Quad charger–can consume up to 2A @ 120VAC or 1A @ 240VAC.
- Quad docking station–can consume up to 3A @ 120VAC or 1.5A @ 240VAC.

# 6.4.3 Operator Controls

WORKABOUT PRO docking stations and chargers have no operator controls or power switches.

# 6.4.4 Important Charger Safety Instructions

- **SAVE THESE INSTRUCTIONS**–This manual contains important safety and operating instructions for battery charger s.

- Before using the battery charger, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
- The mains power cord shall comply with national safety regulations of the country where the equipment is to be sold.
- Use of an attachment not recommended or sold by the battery charger manufacturer may result in fire, electric shock, or personal injury.
- To reduce risk of damage to the electric plug and cord when unplugging the charger, pull the plug rather than the cord.
- Make sure the cord is positioned so that it is not stepped on, tripped over, or otherwise subjected to damage or stress.
- Do not operate the charger with a damaged cord or plug. Replace immediately.
- Do not operate the charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; it should be inspected by qualified service personnel.
- Do not disassemble the charger; it should be repaired by qualified service personnel. Incorrect reassembly may result in electric shock or fire.
- To reduce risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning.
- An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in fire or electric shock. If an extension cord must be used, make sure:
    - The plug pins on the extension cord are the same number, size, and shape as those on the charger.
    - The extension cord is properly wired and in good electrical condition and that the wire size is larger than 16 AWG.
- Do not expose the charger to rain or snow.
- Do not place batteries in the charger if they are cold from extended exposure to a freezer or outside temperatures below 10°C (50°F). Allow them to warm up to room temperature for at least two hours.
- Do not use the charger if, after an overnight charge, any of the batteries feel warmer than the charger housing. The charger should be inspected by qualified service personnel.
- Do not use the charger if any of the batteries or the charger get more than lukewarm. The equipment should be inspected by qualified personnel.

## 6.5.2  Charging A Spare Battery

• Insert the battery in the spare battery charge well at the back of the docking station, aligning the contacts on the battery with the contacts in the spare battery charge well.

## 6.5.3  Battery Charge Duration

A fully discharged battery can take up to 5 hours to charge. The desktop docking station stops applying power to the battery when it is fully charged—there is no risk of overcharge if the battery remains in the charge well.

## 6.5.4  Charger LED Indicators

The desktop docking station is equipped with a single dual-coloured LED indicator in the lower-right corner of the front panel.

| LED Behaviour | Charge Status |
|---|---|
| Off | No battery detected in the slot. |
| Solid Green | Charge complete. |
| Fast Flashing Green | Battery charged to less than 80% of capacity. |
| Slow Flashing Green | Battery charged to greater than 80% of capacity. |
| Solid Red | Battery temperature outside of charge range– 0° C to 50 °C. |
| Flashing Red | Battery is not charging. Battery fault. |

**Table 6.2  Desktop Battery Charger LED Behaviour**

*Note:*    *Battery charging continues whether the hand-held is switched on or off.*

## 6.5.5  Troubleshooting The Charging Operation Of The Dock

The quad battery charger troubleshooting section beginning on page 224 also applies to the charging behaviour of the desktop docking station.

## 6.5.6  Linking A WORKABOUT PRO To A PC

The desktop docking station can be connected to a PC so that you can exchange files in the same way that you would between PC drives. A USB cable is included with your docking station.

*Note:*    *For information about data transfer with the Windows XP operating system and ActiveSync and with the Vista operating system, refer to "Data*

*Transfer Between The PC & The Hand-Held" on page 20.*

To link the WORKABOUT PRO to a PC:

- Insert the hand-held in the desktop docking station.
- Insert the USB cable into the docking station Client USB connector. Attach the other end of the cable to a USB port on the PC.

## 6.5.7 Linking A WORKABOUT PRO To An Ethernet Network

An USB-Ethernet adaptor cable ─ model number WA4010-G1 ─ is used to connect the WORKABOUT PRO to an Ethernet network through a desktop docking station.

- Insert the adaptor's USB connector into the Host USB port on the desktop docking station.
- Connect your network Ethernet cable to the Ethernet port on the adaptor cable.

### 6.5.7.1 Network Access

The hand-held unit automatically detects insertion into the desktop dock and loads the appropriate drivers to communicate with the USB-Ethernet converters.

### Network Addressing

The host application uses standard TCP/IP protocol to name, locate and communicate with a specific WORKABOUT PRO on the network.

If a link is established between a WORKABOUT PRO and a host, the application on the host and on the hand-held must have a recovery mechanism in the event that the WORKABOUT PRO is removed from the dock, interrupting the link.

## 6.5.8 Troubleshooting The Docking Station Operations

The indicators, applications and drivers required to use and monitor the desktop docking station as a *dock* (as opposed to a charger) are installed on the WORKABOUT PRO—no applications are present on the docking station itself.

## 6.6 AC Wall Adaptor— Model #PS1050-GI

The AC wall adaptor available for your WORKABOUT PRO allows you to operate your hand-held using AC power while charging the battery inserted in the unit.

Adaptor plugs suitable for use in the following countries are shipped with the AC wall adaptor: United Kingdom, Australia, Europe and North America.
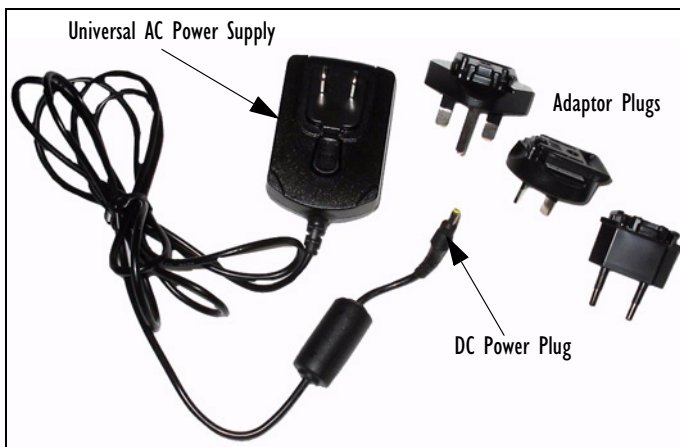


- Choose the adaptor plug that is suitable for use in your country. Slide the adaptor plug into the Universal AC power supply, snapping it into place. These two pieces, coupled together, are referred to as an AC wall adaptor.
- Insert the DC power plug into the DC IN socket at the base of WORK-ABOUT PRO, located between the tether and LIF ports.
- Plug the pronged end into an AC outlet.

# 6.7  Cigarette Lighter Adaptor–Model #WA3113-G2

*Important:* ***It is critical that you review the safety instructions outlined in the quick start guide enclosed with your cigarette lighter adaptor before using the accessory.***

The cigarette lighter adaptor allows you to power your hand-held and recharge your battery using power drawn from your vehicle's cigarette lighter outlet.



Adaptor End-Cap

DC Power Plug

Cigarette Lighter Adaptor Plug
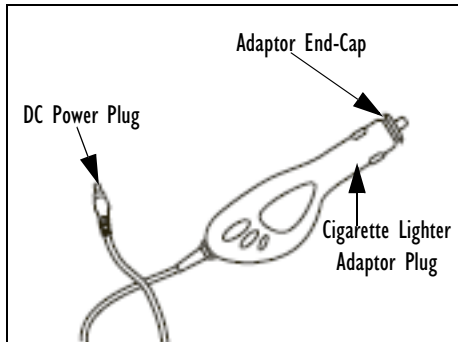
Figure 6.4 Cigarette Lighter Adaptor

- Unscrew the adaptor end-cap, and remove the fuse inside the adaptor.
- Replace it with the fuse provided with your kit, and screw the adaptor end-cap back into position.
- Insert the DC power plug into the DC IN socket at the base of the WORK-ABOUT PRO.
- Insert the cigarette lighter adaptor plug into cigarette lighter outlet in your vehicle.

# 6.8  Single Battery Charger–Model #WA3001-G1



The single battery charger is designed to charge a single battery. It has a DC IN socket and is equipped with one LED that indicates the status of the charge process.

## 6.8.1  Inserting A Battery In The Single Battery Charger

- Insert the DC power plug into the charger. Plug the pronged end of the power cable into an AC outlet.
- Install the battery, aligning the contacts on the battery with the contacts in the battery charge well.

## 6.8.2  Battery Charge Duration

It can take up to 4 hours to fully charge a battery. The single battery charger stops applying power to the battery when it is fully charged—there is no risk of overcharge if the battery remains in the charge well. The 75% charge indicator is handy if you need a quick recharge—a quick charge often takes less than one hour.

## 6.8.3  Charge Indicators—The LED

The LED on the top of the charger indicates battery charge progress.

| LED Behaviour | Charge Status |
|---|---|
| Off | No battery detected in the charge well. |
| Solid green | Battery is fully charged. |
| Fast flashing green | Battery is charged to 75% of capacity. |
| Slow flashing green | Charge in progress. |
| Solid red | Battery is outside ambient temperature range of 0° C to 45 °C (32° F to 113° F). |
| Flashing red | Charge alarm indicating a charging circuit problem. Refer to "Troubleshooting" on page 224 for details. |
| Flashing red then green in a 3 second cycle | Power up test sequence. |

**Table 6.3  Single Battery LED Behaviour**

*Note:    Battery charging continues whether the hand-held is switched on or off.*

# 6.9 Quad Battery Charger—Model #WA3004-G1
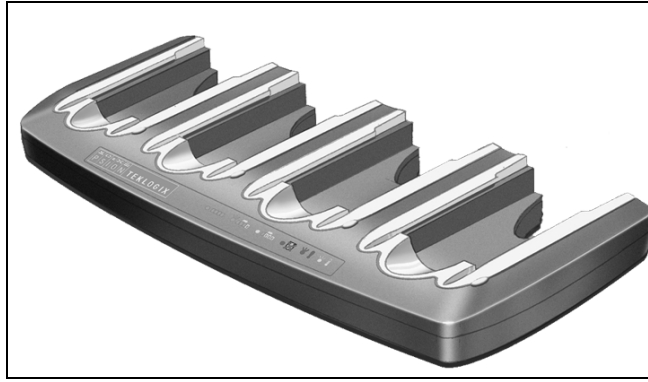


The quad battery charger is designed to charge up to four Lithium Ion batteries at one time.

*Note: The gang charger is shipped with a user manual. It is critical that this manual be reviewed for additional information and updates.*

## 6.9.1 Charging Batteries

• Slide the battery into a charge well, aligning the contacts on the battery with the contacts in the charge well.

## 6.9.2 Battery Charge Duration

A fully discharged battery can take up to 4 hours to charge. The quad battery charger stops applying power to the battery when it is fully charged—there is no risk of overcharge if the battery remains in the charge well. The 75% charge indicator is handy if you need a quick recharge—a quick charge often takes less than one hour.

## 6.9.3 Charge Indicators—The LEDs

Each battery charge well is equipped with an LED to indicate the charge status of the battery. When a battery is inserted in the charger, the colour and behaviour of the LED associated with the charge well in use indicates the status of the charge. Refer to Table 6.3 on page 222 for details.

## 6.9.4　Troubleshooting

### 6.9.4.1　Excessive Charge Duration

The charger is equipped with a recalibration function—a function that fully discharges and then fully recharges the battery. This process is necessary to recalibrate the battery capacity gauge internal to the battery. The charger attempts recalibration when:

- the battery capacity is at less than 30%, and
- the battery has undergone more than 40 partial charge cycles since the last full discharge.

The recalibration function extends the charge time by up to 2 hours.

### 6.9.4.2　Indicator Flashing Red

If the indicator flashes red:

- Remove all batteries and disconnect the mains power cable.
- Wait at least 20 seconds, and then plug the cable in again.

If any of the charge well LEDs continue to flash red, the charger is defective and requires service. If all indicators are flashing red, there is a power supply problem and the charger requires service.

### 6.9.4.3　Power LED Does Not Light Up

- Remove all batteries, and unplug the charger.
- Connect another device to the mains outlet to ensure there is power.
- Remove the IEC mains power cable from the charger, and check it for damage.
- Reconnect the mains cable in the charger and mains outlet.

If the power LED still does not light up:

- Unplug the mains cable, and check the fuse at the rear of the charger.

If the fuse appears to be intact, the charger requires service.

### 6.9.4.4　Indicator Does Not Light When Battery Installed

- Remove the battery, and clean the contacts on the battery and the charge well.
- Reinstall the battery, and check that it is fully seated in the charger well.
- Inspect the charge well contacts for damage (are they bent, flattened, twisted or broken).

- Try inserting a battery that you know to be working in the charger well.
- Reconnect the mains power cable, and check that the charger well indicator flashes at powerup.

## 6.10  Quad Docking Station—WA4204-G2 & WA4304-G2



📖*Note:    WA4204-G2 is designed for WORKABOUT PRO C models; WA4304-G2 is designed for WORKABOUT PRO S models.*

*The quad docking station is shipped with a docking manual. It is critical that this manual be reviewed for additional information and updates.*

The quad docking station permits each of four docked WORKABOUT PROs to communicate with a 10/100 BaseT Ethernet network at greater than 2Mbps. It also provides sufficient power to operate and fast charge the batteries in the units.

## 6.10.1  Quad Docking Station Setup

After unpacking the unit:

- Visually inspect the unit for any damage.
- Install the IEC power cord and apply power.

A green indicator in the lower-right corner of the front panel lights up to indicate that power is present.

- Attach a CAT5 RJ45 network patch cable (supplied) between your network and the RJ45 jack on the rear of the dock.

A green LED is illuminated next to the RJ45 connector when a valid network link is established.

A user application must be loaded onto each WORKABOUT PRO that utilizes the quad dock for communication. When the network is connected and this application is loaded, the quad dock is ready for use.

## 6.10.2   Quad Indicators

The quad dock is equipped with a power indicator LED and RJ45 link and traffic indicator LEDs. When a valid network link is established, a green LED is illuminated next to the RJ45 connector.

## 6.10.3   Inserting A WORKABOUT In The Quad Docking Station

*   Slide the WORKABOUT PRO into the cradle portion of the quad dock until lightly latched.

The hand-held detects that it is in a quad dock and momentarily displays the appropriate icon in the navigation bar at the top of the screen—    . The LED on the hand-held unit lights up to show it has external power and may start charging the battery.

Interaction with the WORKABOUT PRO while in the quad dock is a function of the user application software used to communicate with the host network.

## 6.10.4   Network Access

The quad docking station has one 10/100 Ethernet port. You can insert up to four hand-held units. The hand-helds are connected to an internal USB hub. The hand-held unit automatically detects insertion into a quad docking station and loads the appropriate drivers to communicate with the USB/Ethernet converters.

## 6.10.4.1   Network Addressing

Although the USB converters have fixed Ethernet MAC addresses, there is generally no correlation between these addresses and a specific hand-held. The host application uses standard TCP/IP protocol to name, locate and communicate with a specific WORKABOUT PRO on the network.

If a link is established between a WORKABOUT PRO and a host, the application on the host and on the hand-held must have a recovery mechanism in the event that the WORKABOUT PRO is removed from the dock and the link is interrupted.

## 6.10.5  Battery Charging—LED Behaviour

The quad docking station supplies DC power to enable the WORKABOUT PRO internal fast charger. Charge status is displayed on the hand-held LED—the LED turns red while the battery is being charged and turns green once the charge is complete. If the battery is fully charged when the unit is inserted in the docking station, the LED flashes red for less than a second and then turns green. Battery charging continues whether the WORKABOUT PRO is switched on or off.

It can take up to 4 hours to fully charge the internal battery.

## 6.10.6  Troubleshooting

The indicators, applications and drivers required to use and monitor the docking station are installed on the WORKABOUT PRO—no indicators or applications are present on the docking station itself.

### 6.10.6.1   Network Link Unsuccessful

If a network link fails, the WORKABOUT PRO application alerts the operator that the link was unsuccessful.

### 6.10.6.2   Hand-Held LED Does Not Light When Docked

- Check that the quad docking station has power—is the Power LED on the docking station illuminated?
- Try inserting the WORKABOUT PRO in another well in the quad dock.
- Check for dirt or contamination on the docking contacts at the bottom of the WORKABOUT PRO. Wipe the contacts with a damp cloth if necessary.
- Check the pogo pins inside the dock cradle for dirt. Gently wipe with a damp cloth if they appear to be dirty or discoloured.
- Check that the pogo pins are not bent or damaged.
- Remove and reinsert the WORKABOUT PRO in the cradle, and check that the latch is holding the unit in place (the pogo pins must be compressed for proper contact).
- Make certain that the battery installed in the WORKABOUT PRO is not defective.

⚠ ***Important:*** ***If an aiming dot is available on the installed scanner, the dot will be enabled for a configurable time period (including off), after which normal scanning begins. Refer to "Dot Time (msec)" on page 137 for details.***

***Double-clicking the trigger will override the aiming delay and initiate an immediate scan. Note that the aiming dot is standard on long-range and high visibility internal scanners.***

• Aim at the bar code and press the scan key or the trigger. A scan beam and a warning indicator appear until a successful decode is achieved or six seconds have elapsed.

## 6.12.4  Operating Internal PDF Laser Scanners

This scanner decodes PDF417 two-dimensional bar codes.

• Turn the hand-held on. Wait until the unit has booted up completely.

• Aim at the bar code and press the scan key or the trigger. The beam expands into a rectangle covering the bar code to properly scan it. The scan beam and a warning indicator are visible until a successful decode is achieved or three seconds have elapsed.

## 6.12.5  Operating Two Dimensional (2D) Imagers

An imager takes a snap shot of a single bar code or multiple bar codes (at one time). It can find a bar code regardless of its orientation—that is, even a bar code printed at a 45 degree angle to the hand-held will be decoded successfully.

📖 *Note:* *When scanning **multiple** bar codes, ensure that all of the desired bar codes are within the field of view of the scanner. It is possible that even when all bar codes are within the field of view, not all of them will be decoded. Only successfully decoded bar codes are passed to the application program. The application program then issues a warning, asking that you scan the missing bar codes.*

*When scanning a **single** bar code, ensure that only the desired bar code is within the field of view of the scanner.*

Because imagers generally have a shorter depth of field than laser scanners, some practise may be required to find the optimal distance from the types of bar codes being scanned. Although the imager includes illumination LEDs, ambient light will help the imager decode the bar codes, especially if the bar code is far from the hand-held.

*Important:* *Keep in mind that the imager scanner is a camera, and the LED illumination is a flash. Glare can be an issue on reflective media such as plastic coated bar codes, just as glare is an issue for photographers. When pointing at a shiny surface, either shift the bar code to the side or top, or angle the bar code so that the glare reflects away from the imager scanner.*

*Most imagers take several 'snap shots' of the bar code in order to decode it. It is normal for the LEDs to flash two or three times. Hold the unit steady between flashes to improve decode performance.*

- Turn the hand-held computer on. Wait until the unit has booted up completely.
- Aim at the bar code and press the scan key or the trigger. Hold the trigger until a successful or failed scan result is obtained.
- When the scan button or trigger is pressed, a red, oval shaped light (the framing marker) is displayed. Centre the framing marker in the field— either in the centre of the bar code you want to scan or in the centre of the area in which multiple bar codes are to be scanned.

The illumination LEDs will flash (typically several times) and a picture of the bar code(s) is taken.

# 6.13 Bluetooth Peripherals

The WORKABOUT PRO is equipped with a *Bluetooth* radio, making it is possible to communicate with a variety of *Bluetooth* peripherals, including GSM/GPRS handsets, scanners, printers, and so on.

The range of the *Bluetooth* radio is limited to approximately 5 meters.

Psion Teklogix provides built-in support for the *Bluetooth* peripherals listed below.

- GSM/GPRS universal handset
- *Bluetooth* printer
- *Bluetooth* headset

Keep in mind that *Bluetooth* and IEEE 802.11b/g radios both operate in the 2.4GHz band. Although the WORKABOUT PRO includes features to minimize interference, performance of the system will not be optimal if you use both radios simultaneously. Typically, when both radios operate in the hand-held at the same time, they cannot transmit simultaneously—this has a negative impact on overall system throughput. To minimize the impact on the backbone 802.11g network, Psion Teklogix recommends using Bluetooth peripherals that have low transaction rates (such as printers and scanners).

Refer to "Bluetooth Setup" on page 109 for information about setting up your *Bluetooth* devices for communication. In addition, review the manual shipped with your *Bluetooth* device to determine the method used to pair with the WORKABOUT PRO host.

# SPECIFICATIONS 7

*Note:* ***Performance specifications are nominal & subject to change without notice.***

# 7.1   WORKABOUT PRO Specifications

## Model Variants
- WORKABOUT PRO C – Model 7527C-G2
- WORKABOUT PRO S – Model 7527S-G2

## Platform
- PXA270 @ 520 MHz, 32 bit RISC CPU
- 128 MB flash, 128 MB RAM

## Operating System
- Microsoft® Windows® CE 5.0

## Wireless Communication

Optional expansion modules for:

- 802.11b/g (via Compact Flash) operating in the 2.4GHz band:
    - Supports IEEE 802.11b data rates of 1,2,5.5 and 11Mbps using Direct Sequence Spread Spectrum (DSSS).
    - Supports IEEE 802.11g data rates of 6,9,12,24,36,48 and 54Mbps,using Orthagonal Frequency Division Multiplexing (OFDM) base band modulation

## Bar Code Applications

- Optional 1D imager expansion module
- Optional 2D imager expansion module
- Optional 1D SE955 laser scanner expansion module
- Optional 1D SE1223 High Performance laser scanner expansion module
- Optional bolt-on pistol grip

*Note: All are user upgradeable*

## RFID Modules

- UHF module
  - Frequency: 902 MHz or 928 MHz
  - Read range: up to 4.92 ft.(150 cm) [915MHz] and up to 2.62 ft.(80 cm) [868 MHz]
  - Tag supported: EPC Class 1 Gen 2, other protocols depending on regions

## User Interface

- Color Touch Screen Display 3.6 in.(9.144 cm) diagonal
  - Full VGA 480x640 resolution
  - Transflective, portrait mode TFT
  - Adjustable Backlight

- Sunlight readable (for outdoor use)
        - High reliability LED backlight
        - Easily replaceable and customizable bezel
- Touchscreen
        - Passive stylus or finger operation
        - Signature capture
- Keyboards
        - Full Alpha-Numeric (C model)
        - Numeric (S model)
        - Ergonomically enhanced for ambidextrous, one-hand operation
        - Backlit, high durability hard-capped keys
- Indicators And Controls
        - LED indicates battery charge status

## Programming Environment

- Psion Teklogix Mobile Devices SDK
- Hardware Development Kit (HDK)
- .NET and C++ programming using Microsoft® Visual Studio® 2005
- Java programming supporting JDK 1.2.2 or higher
- Standard Protocol APIs
        - Windows sockets (CE .net)

## Application Software

- Internet Explorer 6.0 incl.with Windows CE 5.0
- Unique Psion Teklogix Voice Dialer and Contacts Manager incl.Windows CE 5.0
- PTX Connect VoIP
- Optional Open TekTerm terminal emulation software, supports IBM 5250,IBM 3270, HP2392, ANSI and TESS
- Mobile Control Center (MCC) device management

## Expansion Slots

- One SD/MMC memory card slot – user accessible
- End-cap USB Interface supports GPS expansion module
- 100-PIN expansion interface: supports PCMCIA (type II),GSM/GPRS EDGE and other third-party expansion modules developed using Psion Teklogix WORKABOUT PRO Hardware Developer's Kit
- Flex cable interface with robust connector: supports scanner (serial) and imager (USB) modules
- One Type II CF Card Slot

## External Connectors

- One Tether connection with full RS232 and USB 1.1 functionality
- One Low-Insertion Force (LIF) docking connector
- DC Power Jack

## Power Management

- Optional 3.7V, 3000 mAh High Capacity Battery Pack
- Optional 3.7V, 4000 mAh Super High Capacity Battery Pack
- Advanced Smart Battery with gas gauge
- 3 power source options: Runs off battery, AC power, or automotive power supplies
- Built-in charger
- Rechargeable, user replaceable backup battery pack

## Environmental

- Withstands 26 drops (on 12 edges,8 corners, 6 faces) at 5 ft.(1.5 meters) to polished concrete while powered on and configured with accessories such as CF radio, scanner/imager, and pistol grip
- Rain/Dust: IP65,IEC 60529
- Operating Temperature: 14°F to 122°F (-10°C to +50°C)
- 5%-95% RH non-condensing
- Storage Temperature: -40°F to 140°F (-40°C to +60°C)

## Physical Dimensions And Weight

- WORKABOUT PRO C:
    - 8.775 in. x 2.95/3.94 in. x 1.22/1.65 in. (223 mm x 75/100 mm x 31/42 mm)
- WORKABOUT PRO S:
    - 7.87 in. x 2.95/3.94 in. x 1.22/1.65 in. (200 mm x 75/100 mm x 31/42 mm)
- Weight (w/o battery pack):
    - WORKABOUT PRO C:1 lbs (455 g)
    - WORKABOUT PRO S:.859 lbs (390 g)

## Power Accessories

- AC power supply (charge & operate hand-held)
- Automotive power supply (charge & operate hand-held)
- Single and Quad slot battery pack chargers
- Powered cradle for vehicle mount applications

## Communication Accessories

- Quad Dock (4-site) with 10/100 BaseT Ethernet and charge functions
- Desktop Docking Station (charges hand-held & spare battery) provides USB1.1 host and device ports and supports optional plug-on expansion modules supporting 10/100 BaseT Ethernet or RS232 connections
- USB cable supports Active Sync without requiring a docking station
- Optional End-Caps supporting RS232, TTL, and IrDA

## Carrying Accessories

- Hand-strap, pistol grip with trigger, holster and various protective carrying cases and pouches

## Approvals

- Safety:
    - CSA/UL60950-1, IEC 60950-1, EN60950-1
- EMC:
    - FCC Part 15 Class B
    - EN 55022
    - EN 55024

-

### *Bluetooth* Radio

Embedded (920 kbps serial interface)

| | |
|---|---|
| *Bluetooth* Version | 1.2 compliant (features Adaptive Frequency Hopping for better co-existence with 802.11 radio) |
| Chip Antenna | 2dBi peak |
| Transmit Power | -3dBm (0.5mW) minimum, +4dBm (2.5mW) max |
| Frequency Range | 2.400 - 2.4835 GHz |
| RX Sensitivity (BER<=0.1%) | -80dBm max |
| Data Rate | 732.2 kbps and 57.6 kbps asymmetric, 433.9 kbps symmetric |

# 7.3  Battery Specifications

## 7.3.1  High-Capacity (Model WA3006)

### 7.3.1.1  Electrical Specifications

*Note:*  *The electrical specifications apply for ambient temperature TAMB of 0° to +40°C unless otherwise stated.*

| Item | Description | Specification | Remark |
|---|---|---|---|
| 1 | Interface Chipset | Maxim DS2762 | - |
| 2 | Rated Voltage | 3.7V | Typical |
| 3 | Rated Capacity | 3000mAh | Typical |
| 4 | Rated Charge Current | 1.5A | Maximum |
| 5 | Charge Voltage | 4.2 +/- 0.05V | Maximum |
| 6 | Discharge Cut-off voltage | 2.6V | Typical |
| 7 | ~~Discharge Current~~ | Constant voltage Current limited | - |
| 8 | Discharge Current | 0.5C (-20°C to 60°C) | Typical |
| 9 | Internal Resistance | 200 m | Maximum |
| | | | |
| | | Ω | |

## Battery Pack Electrical Specifications

| Description | Specification | | |
|---|---|---|---|
| | Minimum | Typical | Maximum |
| Over voltage detection voltage | 4.325V | 4.350V | 4.375V |
| Charge enable | 4.10V | 4.15V | 4.20V |
| Under voltage detection voltage | 2.5V | 2.6V | 2.7V |
| Over current detection current | - | 3.5A | - |
| Short-circuit detection current | 5.0A | 8.0A | 11.0A |
| Short-circuit detection voltage | 150mV | 200mV | 250mV |
| Over voltage delay time | 0.8s | 1s | 1.2s |
| Under voltage delay time | 90ms | 100ms | 110ms |
| Over current delay time | 5ms | 10ms | 20ms |
| Short-circuit delay time | 160μs | 200μs | 240μs |
| Recovery charge current | 0.5mA | 1mA | 2mA |

## 7.3.1.2    Standard Discharge

*Note:*    *Standard charge is defined as charging with constant voltage limit of 4.2V and constant current limit of 0.9A; the termination charge occurs when the current drops to 45mA.*

*Standard discharge is defined as discharging at a constant current of 350mA until the battery protection circuit switches the battery output off in over-discharge mode.*

## Acceptance Test Specifications

| Description | Condition | Standard |
|---|---|---|
| Open circuit voltage | After standard charge, measure within 24 hours. | 4.15V or more |
| Internal Resistance | After standard charge, measure within 24 hours. | 200 mΩ max. |
| Capacity_1 | After standard charge, measure time taken for a fast discharge. | 110 minutes or more |
| Charge/Discharge Cycle | After repeating standard charge and fast discharge, measure the fast discharge time after 300 discharge cycles. | 90 minutes or more |
| Capacity_2 | After standard charge, measure the time taken for a standard discharge. | 500 minutes or more |

| Description | Condition | Standard |
|---|---|---|
| Over Discharge | After standard charge, apply a standard discharge followed by a standby discharge. Then measure capacity after carrying out standard charge and then a fast discharge. | 110 minutes or more |
| Self discharge | After a standard charge, keep battery at 25°C for 30 days. Measure the time taken for a fast discharge. | 100 mins or more |
| Temperature | Perform a standard charge and fast discharge at 0°C, 25°C and 40°C and measured the time taken for a fast discharge at 25°C. | 100 mins. @ 0°C 110 mins. @ 23°C 105 mins. @ 40°C |
| Temp./Humidity Cycle | After standard charge, carry out 5 cycles of the following: 65°C and 90% humidity for 8 hrs. 25°C and 65% humidity for 4 hrs. -20°C for 8 hrs. 25°C and 65% humidity for 4 hrs. Following that, perform a fast discharge, standard charge and then a fast discharge. Measure the time taken for the second discharge. | 100 minutes or more |
| Dry heat | After standard charge, keep the battery at 60°C for 8 hrs. Carry out a fast discharge, standard charge and then a fast discharge, measured the time taken for the second discharge. | 100 minutes or more |
| EMC/CE Testing | The battery will need to pass the requirements of the EMC directive 89/336/EEC (and amendments) when fitted into the product: Emissions to EN55022 Class B (1998) Immunity to EN55024 (1998) | Test to be performed by manufacturer. |
| Electro-Static Discharge Test | EN61000-4-8: A. Contact Discharge: +/-8kV for each contact pad by 10 times. B. Air Discharge: +/-15kV for 10 times (the discharge test point is for around battery casing.) | No damage |

## 7.3.1.3    Safety Data

| Description | Condition | Test Condition/Result |
|---|---|---|
| Short Circuit Test | After a standard charge, short terminals and discharge for 1 hr. | Protection circuit board to operate. No explosion, fire, smoke, or leakage. |
| Over Charging Test | After a standard charge, charge continuously at 4.2V and 4A for 8 hrs. | Protection circuit board to operate. No explosion, fire, smoke, or leakage. |

| Description | Condition | Test Condition/Result |
|---|---|---|
| Reverse Charging Test | After a standard discharge, reverse-charge continuously at 4.2V and 4A for 8hrs. | Protection circuit board to operate. No explosion, fire, smoke, or leakage. |

## 7.3.1.4 Safety License

| Item | License | Standard |
|---|---|---|
| 1 | UL 1642 | The lithium-ion cell has been listed and pass the UL1642 standard by UL Lab. |
| 2 | UL 2054 | The battery pack is in the process to apply the UL 2054 battery standard. |
| 3 | 89/336 EEC-EMC directive. | The battery pack is in the process to apply the below standard: -EN55022 -LVD 72/23 EEC -EN55024 -EN61326 |
| 4 | RoHS Directive | The battery pack is in the process to apply the RoHS directive applicable report by SGS Lab. |

## 7.3.1.5 Environmental Test

| Description | Test Reference | Test Condition/Result |
|---|---|---|
| Drop | (mechanical) | Drop sample battery on all faces from height of 1.2 meters onto concrete floor. No explosion, fire, vent, leakage and the open circuit voltage higher than 3.7V. |
| Storage at high temp. | EN60068-2-2 Test | +60°C dry for 240 hours No explosion, fire, vent or leakage. |
| Storage at low temp. | EN60068-2-1 Test | -20°C dry for 240 hours No explosion, fire, vent or leakage. |
| Storage at high temp. and high humidity | IEC68-2-3 Test | +40°C at 90%RH for 240 hours. No explosion, fire, vent or leakage. |
| Storage temp. cycling | IEC68-2-14 Test | +60oC (2C) for 1 hour (T1), -20oC (2C) for 1 hour. 3 minutes Max allowed for change between T1 and T2. Cycle 10 times No explosion, no fire, no vent, and no leakage. |
| Vibration resistance | BS2011 Part 2.1 FDC (IEC68-2-37) | After standard charge, tested under the following conditions: Random vibration 5Hz-500Hz ASD 0.02g2/Hz in 3 axis for 15 mins. After which, carry out a standard discharge, charge, discharge. No parting joints/cracks or damage to connectors. No leakage or critical damage. |

| Item | Description | Specification | | |
|------|-------------|------|------|------|
| 10 | Short-circuit delay time | 160μs | 200μs | 240μs |
| 11 | Recovery charge current | 0.5mA | 1mA | 2mA |

## 7.3.2.2   Standard Discharge

*Note:*   *Standard charge is defined as charging with constant voltage limit of 4.2V and constant current limit of 0.9A; the termination charge occurs when the current drops to 45mA.*

*Standard discharge is defined as discharging at a constant current of 350mA until the battery protection circuit switches the battery output off in over-discharge mode.*

## Acceptance Test Specifications

| Description | Condition | Standard |
|-------------|-----------|----------|
| Open circuit voltage | After standard charge, measure within 24 hours. | 4.15V or more |
| Internal Resistance | After standard charge, measure within 24 hours. | 150 mΩ  max. |
| Capacity_1 | After standard charge, measure time taken for a fast discharge. | 110 minutes or more |
| Charge/Discharge Cycle | After repeating standard charge and fast discharge, measure the fast discharge time after 300 discharge cycles. | 90 minutes or more |
| Capacity_2 | After standard charge, measure the time taken for a standard discharge. | 500 minutes or more |
| Over Discharge | After standard charge, apply a standard discharge followed by a standby discharge. Then measure capacity after carrying out standard charge and then a fast discharge. | 110 minutes or more |
| Self discharge | After a standard charge, keep battery at 25°C for 30 days. Measure the time taken for a fast discharge. | 100 mins or more |
| Temperature | Perform a standard charge and fast discharge at 0°C, 25°C and 40°C and measured the time taken for a fast discharge at 25°C. | 100 mins. @ 0°C<br>110 mins. @ 23°C<br>105 mins. @ 40°C |

| Description | Condition | Standard |
|---|---|---|
| Temp./Humidity Cycle | After standard charge, carry out 5 cycles of the following: 65°C and 90% humidity for 8 hrs. 25°C and 65% humidity for 4 hrs. -20°C for 8 hrs. 25°C and 65% humidity for 4 hrs. Following that, perform a fast discharge, standard charge and then a fast discharge. Measure the time taken for the second discharge. | 100 minutes or more |
| Dry heat | After standard charge, keep the battery at 60°C for 8 hrs. Carry out a fast discharge, standard charge and then a fast discharge. Measure the time taken for the second discharge. | 100 minutes or more |
| EMC/CE Testing | The battery will need to pass the requirements of the EMC directive 89/336/EEC (and amendments) when fitted into the product: Emissions to EN55022 Class B (1998) Immunity to EN55024 (1998) | Test to be performed by manufacturer. |
| Electro-Static Discharge Test | EN61000-4-8: A. Contact Discharge: +/-8kV for each contact pad by 10 times. B. Air Discharge: +/-15kV for 10 times (the discharge test point is for around battery casing.) | No damage |

## 7.3.2.3   Safety Data

| Description | Condition | Test Condition/Result |
|---|---|---|
| Short Circuit Test | After a standard charge, short terminals and discharge for 1 hr. | Protection circuit board to operate. No explosion, fire, smoke, or leakage. |
| Over Charging Test | After a standard charge, charge continuously at 4.2V and 4A for 8 hrs. | Protection circuit board to operate. No explosion, fire, smoke, or leakage. |
| Reverse Charging Test | After a standard discharge, reverse-charge continuously at 4.2V and 4A for 8hrs. | Protection circuit board to operate. No explosion, fire, smoke, or leakage. |

## 7.3.2.4   Safety License

| Item | License | Standard |
|---|---|---|
| 1 | UL 1642 | The lithium-ion cell has been listed and pass the UL1642 standard by UL Lab. File No. MH12383 |

| Item | License | Standard |
|------|---------|----------|
| 2 | UL 2054 | The battery pack is in the process to apply the UL 2054 battery standard. File No. MH29921. |
| 3 | 89/336 EEC-EMC directive | The battery pack is in the process to apply the below standard: -EN55022 -LVD 72/23 EEC -EN55024 -EN61326 |
| 4 | RoHS Directive | The materials of battery pack are used in accordance with the European RoHS directive. |

## 7.3.2.5 Environmental Test

| Description | Test Reference | Test Condition/Result |
|-------------|----------------|------------------------|
| Drop | (mechanical) | Drop sample battery on all faces from height of 1.2 meters onto concrete floor. No explosion, fire, vent, leakage and the open circuit voltage higher than 3.7V. |
| Storage at high temp. | EN60068-2-2 Test | +60°C dry for 240 hours No explosion, fire, vent or leakage. |
| Storage at low temp. | EN60068-2-1 Test | -20°C dry for 240 hours No explosion, fire, vent or leakage. |
| Storage at high temp. and high humidity | IEC68-2-3 Test | +40°C at 90%RH for 240 hours. No explosion, fire, vent or leakage. |
| Storage temp. cycling | IEC68-2-14 Test | +60°C (2C) for 1 hour (T1), -20oC (2C) for 1 hour. 3 minutes Max allowed for change between T1 and T2. Cycle 10 times No explosion, no fire, no vent, and no leakage. |
| Vibration resistance | BS2011 Part 2.1 FDC (IEC68-2-37) | After standard charge, tested under the following conditions: Random vibration 5Hz-500Hz ASD 0.02g2/Hz in 3 axis for 15 mins. After which, carry out a standard discharge, charge, discharge. No parting joints/cracks or damage to connectors. No leakage or critical damage. |
| Impact shock resistance | - | 3 cycles of 50G 11ms, 1/2 sine pulse acceleration applied in 6 directions. 18 shocks total. |
| ESD protection | - | Accordance with EN61000-4-8 |

# APPENDIX A

# PORT PINOUTS

## A.1 LIF (Low Insertion Force) Port Pinout

| PIN # | Signal Name |
|-------|-------------|
| 1 | Ground |
| 2 | Ground |
| 3 | USB Host Data Plus, For connecting USB devices |
| 4 | USB Host Data Minus, For connecting USB Devices |
| 5 | USB Host Power, for powering USB devices (5V, 100mA Max) |
| 6 | DC Power in, for supplying power to WORKABOUT PRO / charging battery (5V, 3A) |
| 7 | DC Power in, for supplying power to WORKABOUT PRO / charging battery (5V, 3A) |
| 8 | LIF Detect, determines if a device is attached to the LIF |
| 9 | USB Device Data Minus, for operating the WORKABOUT PRO as a USB device |
| 10 | USB Device Data Plus, for operating the WORKABOUT PRO as a USB device |
| 11 | Ground |
| 12 | Ground |

## A.2 Tether Port Pinout

| PIN # | Signal Name |
|-------|-------------|
| 1 | Ground |
| 2 | USB Data Plus (can be configured as Host or Device) |
| 3 | USB Data Minus (can be configured as Host or Device) |

# A.4 Positive Female Battery Connector
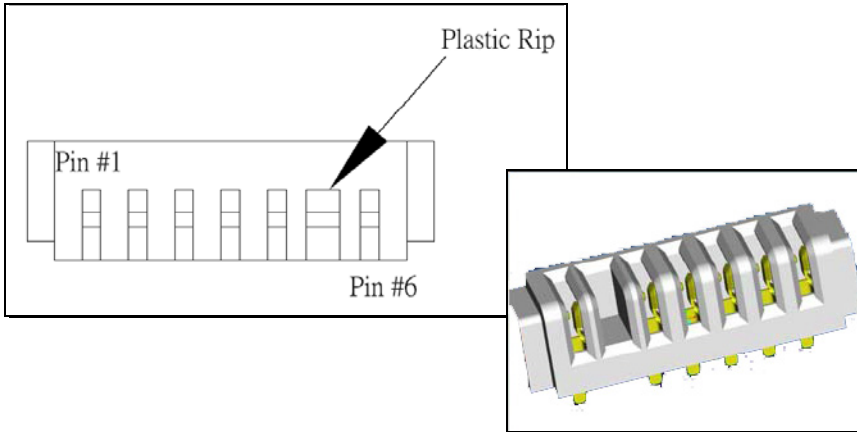
# SUMMIT CLIENT UTILITY (SCU) FOR MODEL RA2041

This appendix provides details about each tab in the Summit Client Utility (SCU). For quick, step-by-step setup instructions, refer to "Configuring The Summit RA2041 802.11b/g" on page 13.

## C.1 SCU Tabs

This section provides a detailed description of each of the tabs available in the SCU—*Main* (below), *Config (*page 2*)*, *Global Settings (*page 7*), Status (*page 9*)*, and *Diags (*page 10*)*.

## C.1.1 Main Tab

The *Main* tab is displayed when you tap on the *Start>Programs>**SCU*** icon.
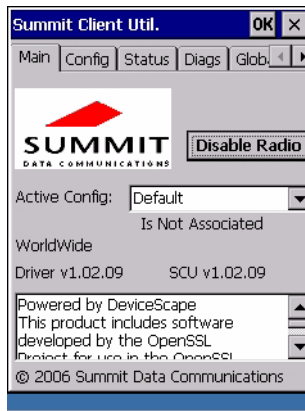


- **Enable/Disable Radio:** Enables or disables the radio. This is a toggle button; when the radio is enabled, this button reads *Disable Radio*, and when the radio is disabled, the button reads *Enable Radio*.
- **Active Config:** Lists the name(s) of the active configuration profile(s) which are referred to as "configs". When a *config* is chosen from the *Active Config* drop-down menu, the settings for that config become active.

If *ThirdPartyConfig* is selected, after the WORKABOUT PRO goes through a power cycle, WZC is used for configuration of the radio. See "ThirdPartyConfig" on page 6 for details.

• **Association Status:** Indicates if the radio is associated to an access point. If this is not the case, *Association Status* indicates the radio status.

• **Software Version:** This field displays the version of the device driver and the *SCU* that are running on the WORKABOUT PRO.

• **About Box:** This box provides information about the *SCU*.

## C.1.2  Config Tab

The *Config* tab allows you to define radio and security settings that are stored in the registry as part of the configuration profile or *config*.

The *config* you create and save is listed in the *Active Config* drop-down menu in the *Main* tab You can define up to 20 *configs*.

Radio Attributes ⟶
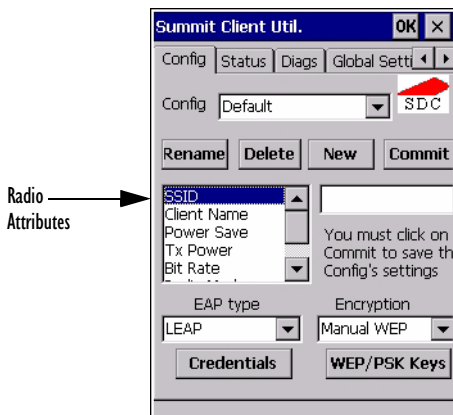


• **Config:** Used to choose the *config* to be viewed or edited. If *ThirdParty-Config* is chosen, after the WORKABOUT PRO goes through a power cycle, WZC is used for configuration of the radio.

• **Rename:** Allows you to assign a *config* name.

• **Delete:** Deletes the *config* unless it is currently active.

• **New:** Allows you to create a new *config* with default settings and assign it a name.

• **Commit:** Saves all changes.

- **Radio Attributes:** Lists radio attributes. These attributes can be individually chosen from this menu. When an attribute is chosen, an associated list of options is displayed where you can assign new settings or view existing settings.

The following table describes the options in the *Radio Attributes* drop-down menu:

| Radio Attribute | Description | Value | Default |
|---|---|---|---|
| Config | Name of config (configuration profile). Use Rename button to change name. | Maximum of 32 characters. | None |
| SSID | Service set identifier (SSID) for WLAN to which the radio connects. | Maximum of 32 characters. | None |
| Client Name | Name assigned to radio & WORKABOUT PRO into which it is installed. | Maximum of 16 characters. | None |
| Power Save | Power save mode for radio. | CAM: Constantly awake. Maximum: Maximum power savings. Fast: Fast power save mode. | Fast |
| Tx Power | Maximum transmit power. | Max: Maximum defined for current regulatory domain. Measured in mW: 50,30,10, 1. | Max |
| Bit Rate | Used by radio when interacting with WLAN access point. | Auto: Rate automatically negotiated with access point. Rates in Mbps: 1, 2, 5.5, 6.9 11, 12, 18, 24, 36, 48, 54. | Auto |
| Radio Mode | Used by 802.11g when interacting with access point. | B rates only: 1, 2, 5.5, & 11 Mbps. G rates only: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps. BG rates full: All B and G rates. BG rates optimized: 1, 2, 5.5, 6, 11, 24, 36 & 54 Mbps. | BG rates optimized |
| Auth Type | 802.11 authentication type used when associating with access point. | Open, shared-key, or LEAP (Network-EAP). | Open |

| Radio Attribute | Description | Value | Default |
|---|---|---|---|
| EAP Type | Extensible Authentication Protocol type used for 802.1X authentication to access point. | None, LEAP, EAP-FAST, PEAP-MSCHAP – To use EAP-TLS, you must use WZC. | None |
| Credentials | Authentication credentials for the selected EAP type. Refer to "EAP Credentials" on page 6. | User: Username or Domain/Username (up to 64 characters). Password: up to 64 characters. For PEAP: CA Cert–CA server certificate filename. | None |
| Encryption | Type of encryption used to protect transmitted data. | None, Manual WEP, Auto WEP (generated during EAP authentication), WPA PSK, WPA TKIP, WPA2 PSK, WPA2 TKIP, WPA2 AES, CCKM TKIP. For Manual WEP: Up to four static WEP keys. For PSK: ASCII passphrase or hex PSK. | None |

- **EAP-Type & Encryption:** Security settings. These settings allow you to enhance the security of data across the wireless LAN. Refer to "EAP Credentials" on page 6 and Section  below, for details about these settings.

## SCU Security Capabilities

The *SCU* provides integrated security to protect transmitted data as well as the hand-held and wireless WAN infrastructure that transmit and receive data.

A foundational element of the IEEE 802.11i WLAN security standard is IEEE 802.1X and a critical application on a mobile device is an 802.1X supplicant. This supplicant provides an interface between the radio and the operating system and supports the authentication and encryption elements required for 802.11i, also known as Wi-Fi Protected Access 2 (WPA2), as well as predecessors such as WPA and WEP. Summit software includes an integrated supplicant that supports a broad range of security capabilities, including:

- 802.1X authentication using pre-shared keys or an EAP type, required for WPA2 and WPA.

- Data encryption and decryption using WPA2 AES, WPA TKIP or WEP.

Common EAP types include:

- **EAP-TLS:** Uses the same technology as a follow-on to Secure Socket Layer (SSL). It provides strong security, but relies on client certificates for user authentication.

- **PEAP:** Provides secure user authentication by using a TLS tunnel to encrypt EAP traffic. Two different inner methods are used with PEAP:
  - EAP-MSCHAPV2, resulting in PEAP-MSCHAP: This is appropriate for use against Windows Active Directory and domains.
  - EAP-GTC, resulting in PEAP-GTC: This is for authentication with one-time passwords (OTPs) against OTP databases such as SecureID.

- **LEAP:** Is an authentication method for use with Cisco WLAN access points. LEAP does not require the use of server or client certificates. LEAP supports Windows Active Directory and domains but requires the use of strong passwords to avoid vulnerability to offline dictionary attacks.

- **EAP-FAST:** Is a successor to LEAP and does not require strong passwords to protect against offline dictionary attacks. Like LEAP, EAP-FAST does not require the use of server or client certificates and supports Windows Active Directory and domains.

*Note:* *PEAP and EAP-TLS require the use of Windows facilities for the configuration of digital certificates.*

## SCU EAP Types

The following EAP types are supported by the integrated supplicant and can be configured in SCU: PEAP-MSCHAP, PEAP-GTC, LEAP and EAP-FAST. With each of these four types, if authentication credentials are not stored in the *config*, you will be prompted to enter credentials the first time the radio attempts to associate to an access point that supports 802.1X (EAP).

Consider the following when configuring one of the EAP types:

- PEAP-GTC: SCU supports static (login) passwords only.

- LEAP: Strong passwords are recommended.

- EAP-FAST: SCU supports automatic, not manual, PAC provisioning.

EAP-TLS will work with a RA2041 radio module when *Windows Zero Config* (WZC) rather than the *SCU* is used to configure the type. With WZC, *the native Windows supplicant* instead of the *SCU* integrated supplicant is used.

## EAP Credentials

Keep the following in mind when defining security settings:

- If the credentials specified in the *config* are incorrect and that *config* is used, the authentication fails without an error message; you will not be prompted to enter correct credentials.

- If the credentials are not specified in the *config*, when the radio tries to associate using that config, you will be prompted to enter the credentials.

- When prompted, you can enter valid credentials, enter invalid credentials, or cancel the operation.

  - If you enter valid credentials and tap **OK**, the radio will associate and authenticate.
  - If you enter invalid credentials and tap on **OK**, the radio will associate but will not authenticate; you will be prompted again to enter credentials.
  - If you tap on **Cancel** or clear the credentials fields and tap on **OK**, the radio will not attempt to associate with that *config* until you perform one of the following actions (while the *config* is the *active config*):
  - Cause the WORKABOUT PRO to go through a power cycle or suspend/resume.
  - Disable and enable the radio, or tap the **Reconnect** button on the *Diags* windows.
  - Modify the *config,* and tap on **Commit**.

Alternatively, you can choose another *config* as the active *config* and then switch back to the *config* for which EAP authentication was cancelled.

## ThirdPartyConfig

If you choose to configure *ThirdPartyConfig*, the *SCU* will work with the operating system's *Windows Zero Config* (WZC) to configure radio and security settings for the CF radio installed in the unit.

Choosing this *config* means that *WZC* must be used to define the following radio and security options: SSID, Auth Type, EAP Type and Encryption. The *SCU* settings for *ThirdPartyConfig* include: Client Name, Power Save, Tx Power, Bit Rate and Radio Mode. These *SCU* settings along with SCU global settings and the WZC settings will be applied to the radio module.

# C.1.3  Global Settings Tab
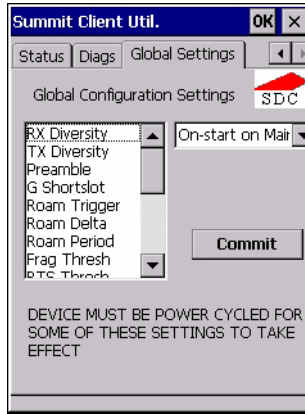


The *Global Settings* tab allows you to define radio and security settings that apply to all *configs* (profiles), along with settings that apply specifically to the *SCU*.

The *Global Settings* in the table below can be edited in the SCU:

| Global Setting | Description | Value | Default |
|---|---|---|---|
| CCX features | Activates three CCX features: AP-assisted roaming, AP-specified maximum transmit power & radio management. | On, Off | Off |
| Certs Path | Directory where certificates for EAP authentication are stored. | Valid directory path up to 64 characters. | Dependent on device. |
| Frag Thresh | Packet is fragmented when packet size (in bytes) exceeds threshold. | Integer from 256 to 2346. | 2346 |
| G Shortslot | 802.11g short slot timing mode. | Auto, Off, On | Auto |
| Admin Password | Password that must be specified when Admin Login button is pressed. | A string of up to 64 characters. | SUMMIT |
| Hide Passwords | On - SCU as well as EAP authentication dialog boxes hide passwords, WEP keys and other sensitive information. | On, Off | Off |
| LED | Available only with MCF10G. | On, Off | Off |

| Global Setting | Description | Value | Default |
|---|---|---|---|
| Preamble | Type of radio preamble or headers. | Auto, Short, Long | Auto |
| Ping Payload | Amount of data to be transmitted on a ping. | Bytes: 32, 64, 128, 256, 512 & 1024 | 32 |
| Ping Timeout ms | Amount of time in milliseconds that passes without a response before ping request is considered a failure. | Integer from 0 to 30000. | 5000 |
| Ping Delay ms | Amount of time in milliseconds between successive ping requests. | Integer from 0 to 7200000. | 1000 |
| Roam Delta | Amount by which second AP's RSSI must exceed the moving average RSSI for the current AP before the radio will attempt to roam to a second AP. | dBm: 5, 10, 15, 20, 25, 30, 35 | 15 |
| Roam Period | Following an association or roam scan (with no roam), the number of seconds the radio collects RSSI scan data before considering roaming. | Seconds: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 | 10 |
| Roam Trigger | If RSSI from AP is less than roam trigger value, radio performs roam scan or probes for an AP with stronger signal. | dBm: -50, -55, -60, -65, -70, -75 | -70 |
| RTS Thresh | Packet size above which RTS/CTS is required on link. | An integer from 0 to 2347. | 2347 |
| RX Diversity | Defines how to handle antenna diversity when receiving data from AP. | -On-Start on Main: On startup, use main antenna. -On-Start on Aux: On startup, use auxiliary antenna. -Main only: Use main antenna only. -Aux only: Use auxiliary antenna only. | On-Start on Main |

| Global Setting | Description | Value | Default |
|---|---|---|---|
| TX Diversity | Defines how to handle antenna diversity when transmitting data to AP. | -Main only: Use main antenna only. -Aux only: Use auxiliary antenna only. -On: Use diversity. | On |
| WMM | Use Wi-Fi Multimedia Extensions, also know as WMM. | On, Off | Off |

## C.1.4  Status Tab
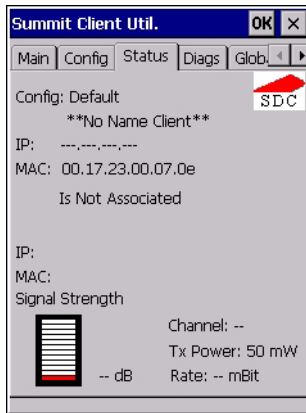


The *Status* tab provides status information including IP address and MAC address for the client radio, IP address and MAC address for the AP, signal strength, channel, transmit power and data rate.

## C.1.5  Diags Tab
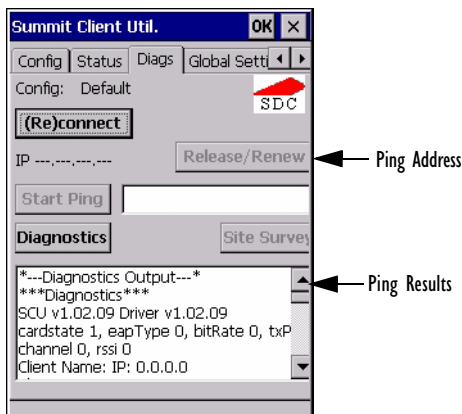


Use the *Diags* tab as a troubleshooting tool. The functions are as follows:

- **(Re)Connect:** Enables/Disables the radio, applies/reapplies current *config* and tries to associate and authenticate to the wireless LAN, logging all activity in the output area at bottom of the dialog box.

- **Release/Renew**: Obtains a new IP address through DHCP and logs all activity in the output area.

- **Start Ping**: Starts a continuous ping to the address in the text box next to this button. This is a toggle button so when you tap on it, it changes to *Stop Ping*. Closing this window or tapping on another button also stops the ping.

- **Diagnostics:** Attempts to connect or reconnect to an AP, and provides a more detailed dump of data than if you used *(Re)connect*. The dump includes the radio state, config settings, global settings and BSSID list of APs. The SCU is saved to a file called *_sdc_diag.txt* in the Windows directory.

# INDEX