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Barten

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(54) **METHOD OF PROGRAMMING THE DEFAULT CABLE INTERFACE SOFTWARE IN AN INDICIA READING DEVICE**

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G06K 7/10 (2006.01)
G06K 7/00 (2006.01)

(52) **U.S. Cl.**
CPC ***G06K 7/0004*** (2013.01); ***G06K 7/10881*** (2013.01); *G06K 2207/1017* (2013.01)
USPC **710/62**; 236/462.14

(58) **Field of Classification Search**
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USPC 710/62; 235/462.14
See application file for complete search history.

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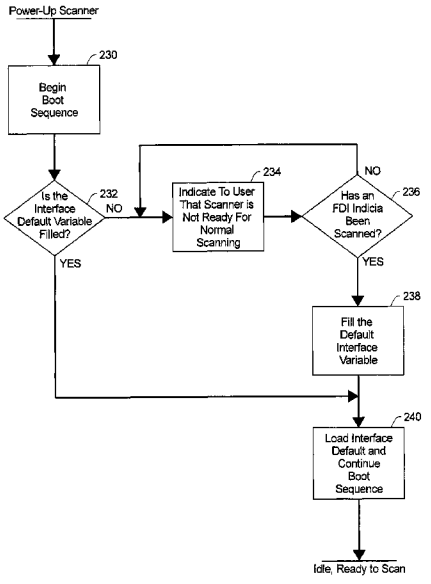
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(57) **ABSTRACT**

An indicia reading apparatus includes an interconnect cable and an indicia reading device. The indicia reading device is configured so that, if the indicia reader device is not configured to any interconnect cable and detects an indicia which does not contain one of a plurality of specified sequences of data elements that the indicia reading device will recognize and use to configure itself to operate with the interconnect cable, the indicia reading device will indicate to the user of the indicia reading device that the indicia reading device needs to be configured to operate with the interconnect cable.

17 Claims, 12 Drawing Sheets



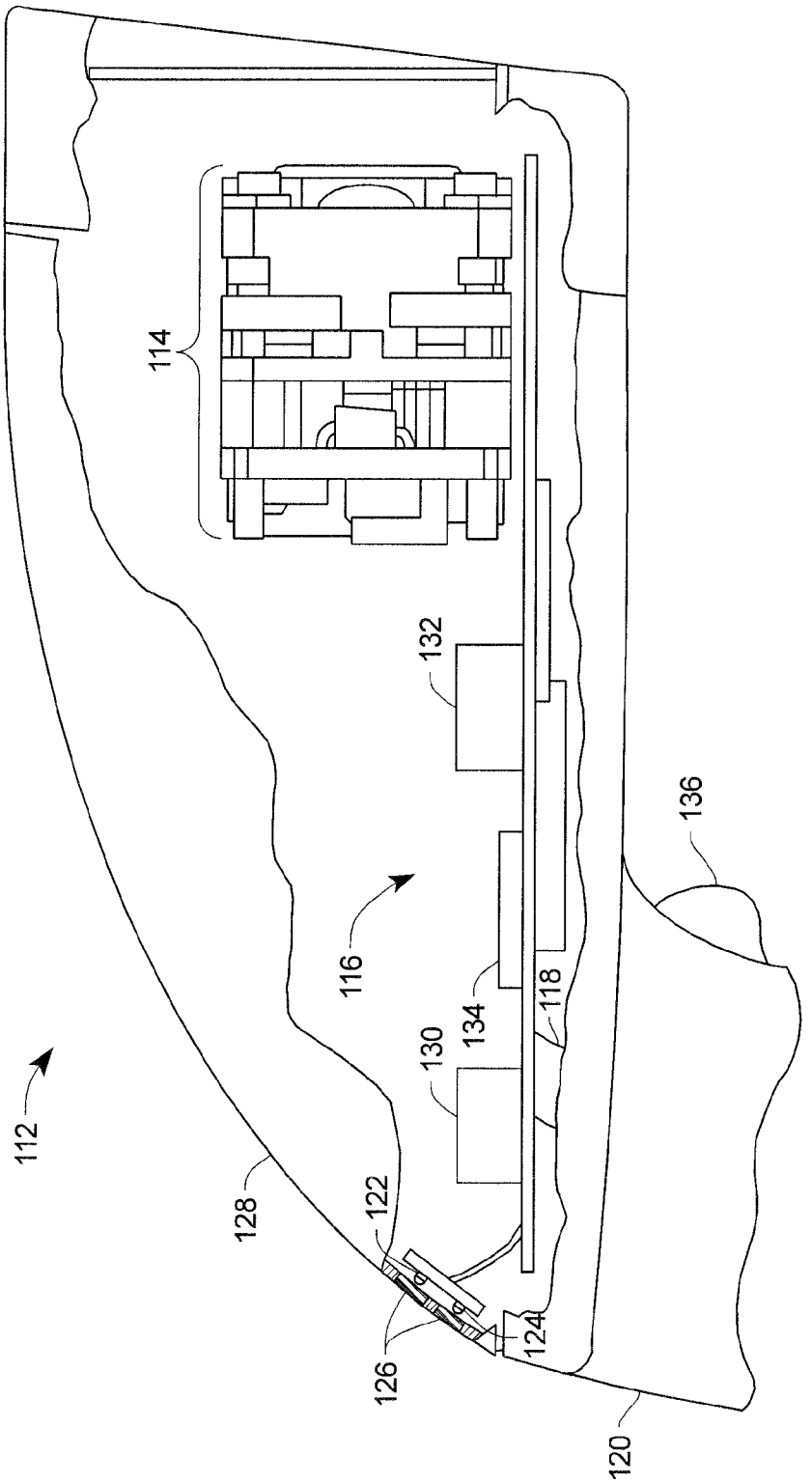


FIG. 1

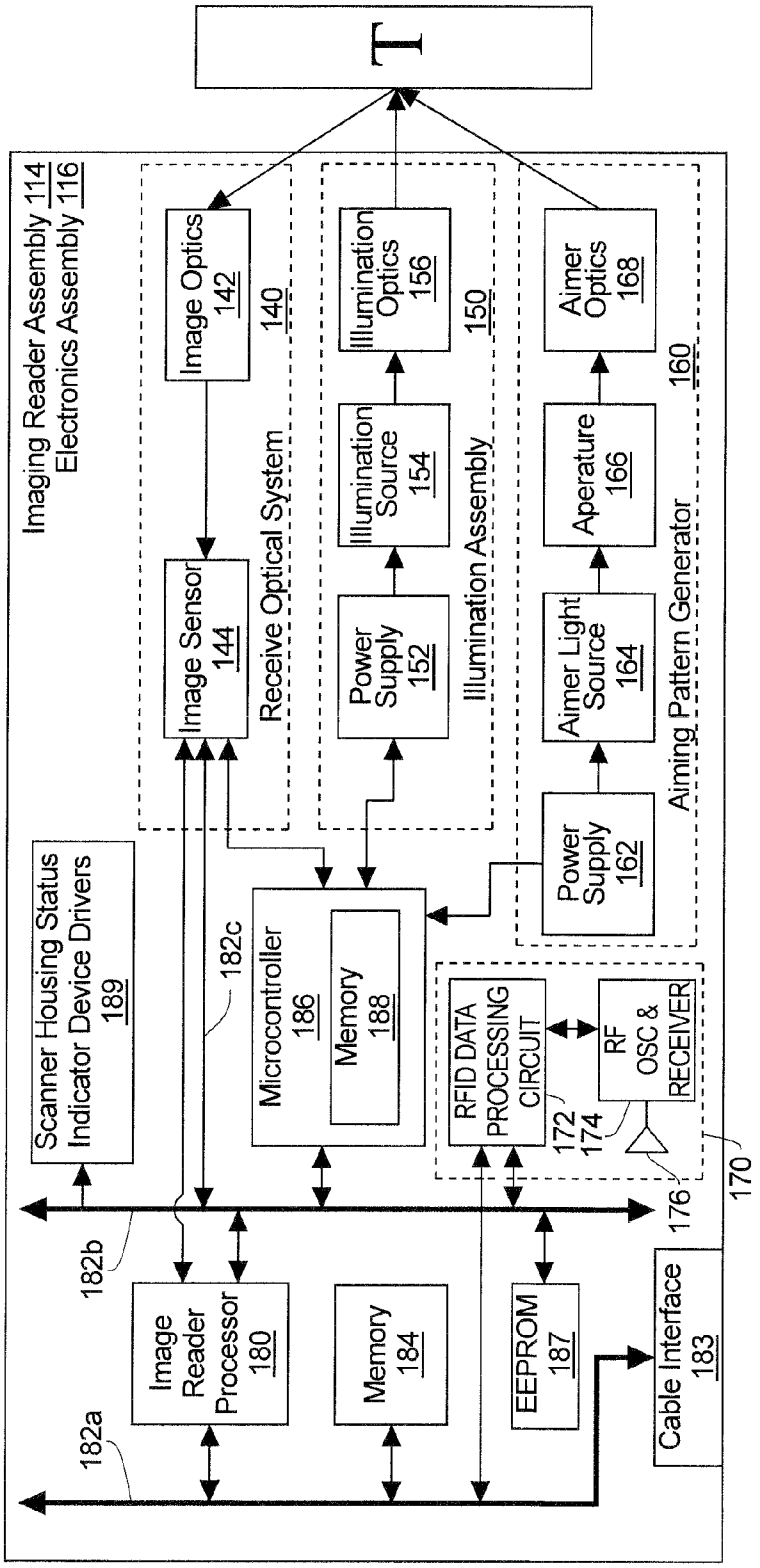

T
Imaging Reader Assembly 114
Electronics Assembly 116
Image Optics 142
140
Receive Optical System
Image Sensor 144
Illumination Optics 156
150
Illumination Assembly
Illumination Source 154
Power Supply 152
Aimer Optics 168
160
Aiming Pattern Generator
Aperature 166
Aimer Light Source 164
Power Supply 162
Scanner Housing Status Indicator Device Drivers 189
182c
Microcontroller 186
Memory 188
RFID DATA PROCESSING CIRCUIT
RF OSC & RECEIVER
172
174
170
176
182b
Image Reader Processor 180
Memory 184
EEPROM 187
Cable Interface 183
182a

FIG. 2

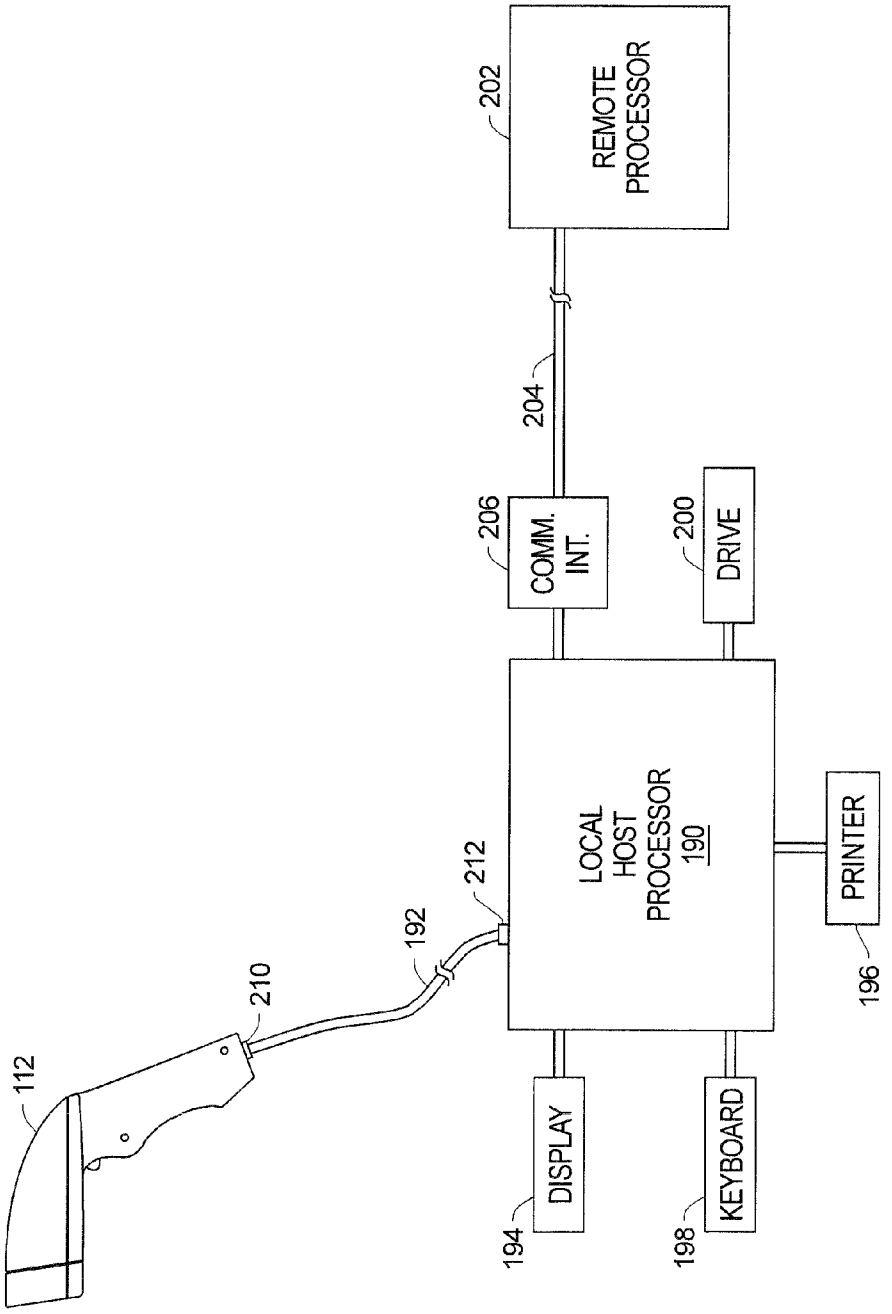

REMOTE PROCESSOR
202
204
COMM. INT.
206
DRIVE
200
LOCAL HOST PROCESSOR 190
212
192
210
112
PRINTER
196
DISPLAY
194
KEYBOARD
198

FIG. 3A

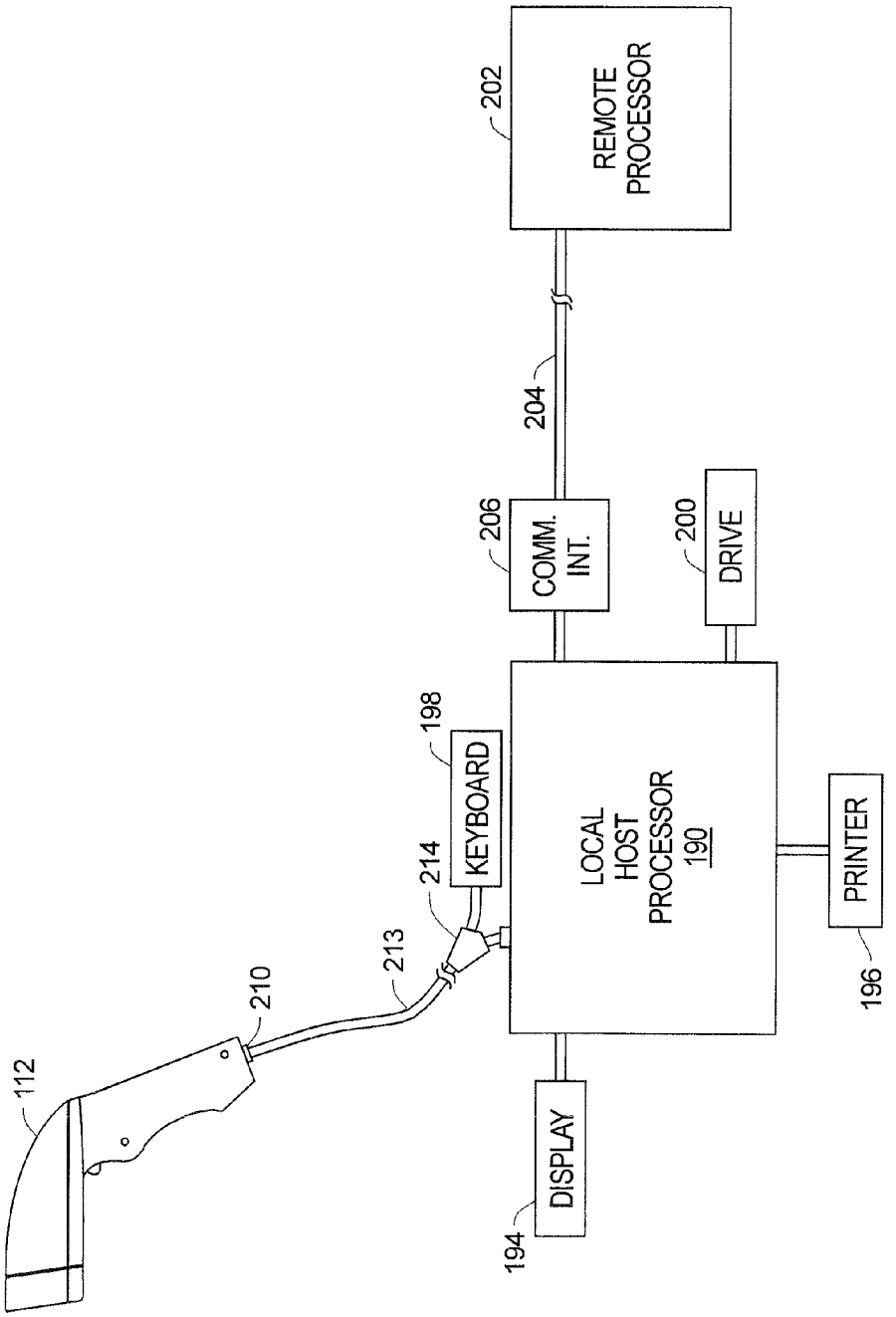

REMOTE PROCESSOR
202
204
COMM. INT.
206
DRIVE
200
LOCAL HOST PROCESSOR 190
KEYBOARD
198
214
213
210
112
DISPLAY
194
PRINTER
196

FIG. 3B

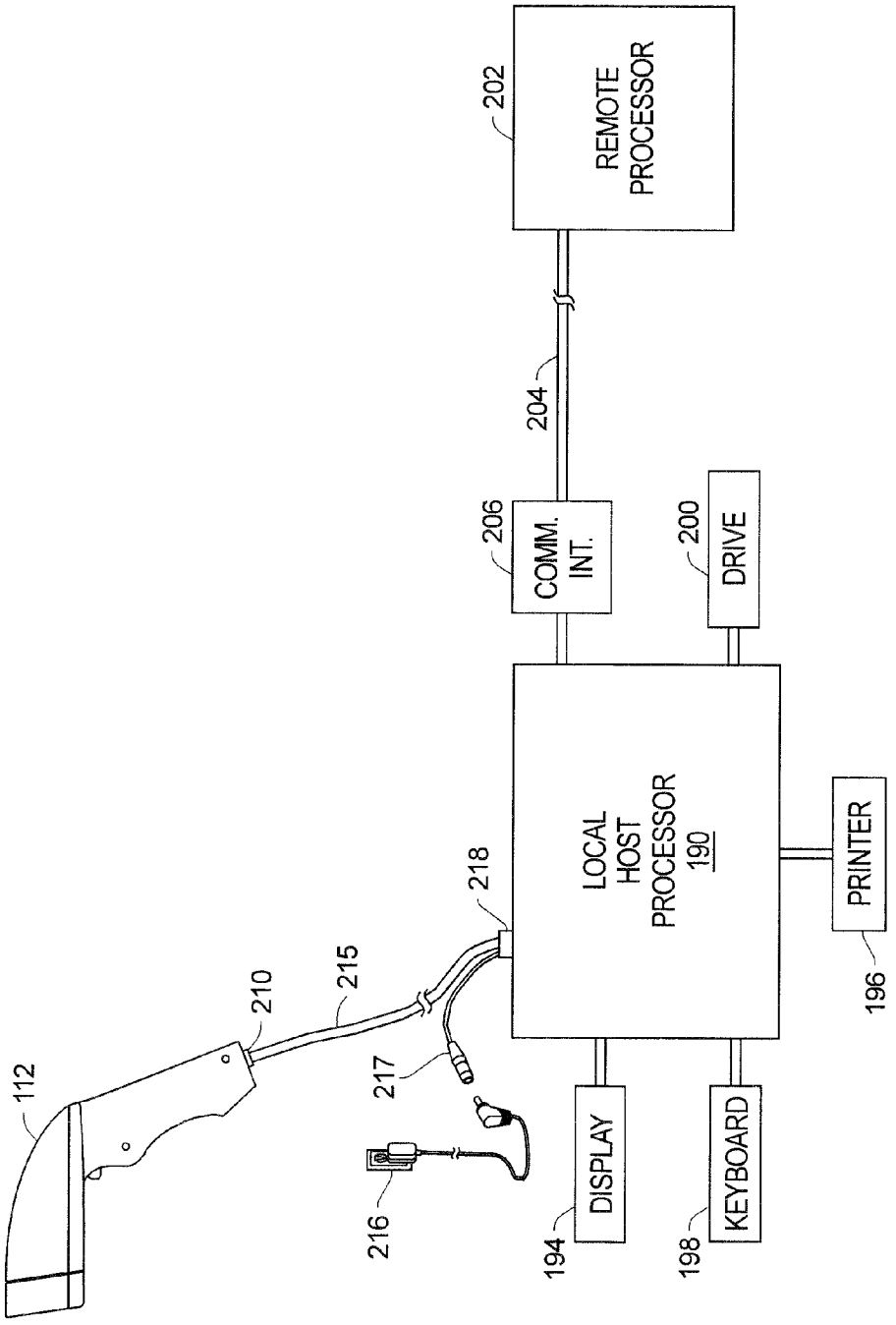

REMOTE PROCESSOR
202
204
COMM. INT.
206
DRIVE
200
LOCAL HOST PROCESSOR 190
PRINTER
196
218
215
210
112
217
216
DISPLAY
194
KEYBOARD
198

FIG. 3C

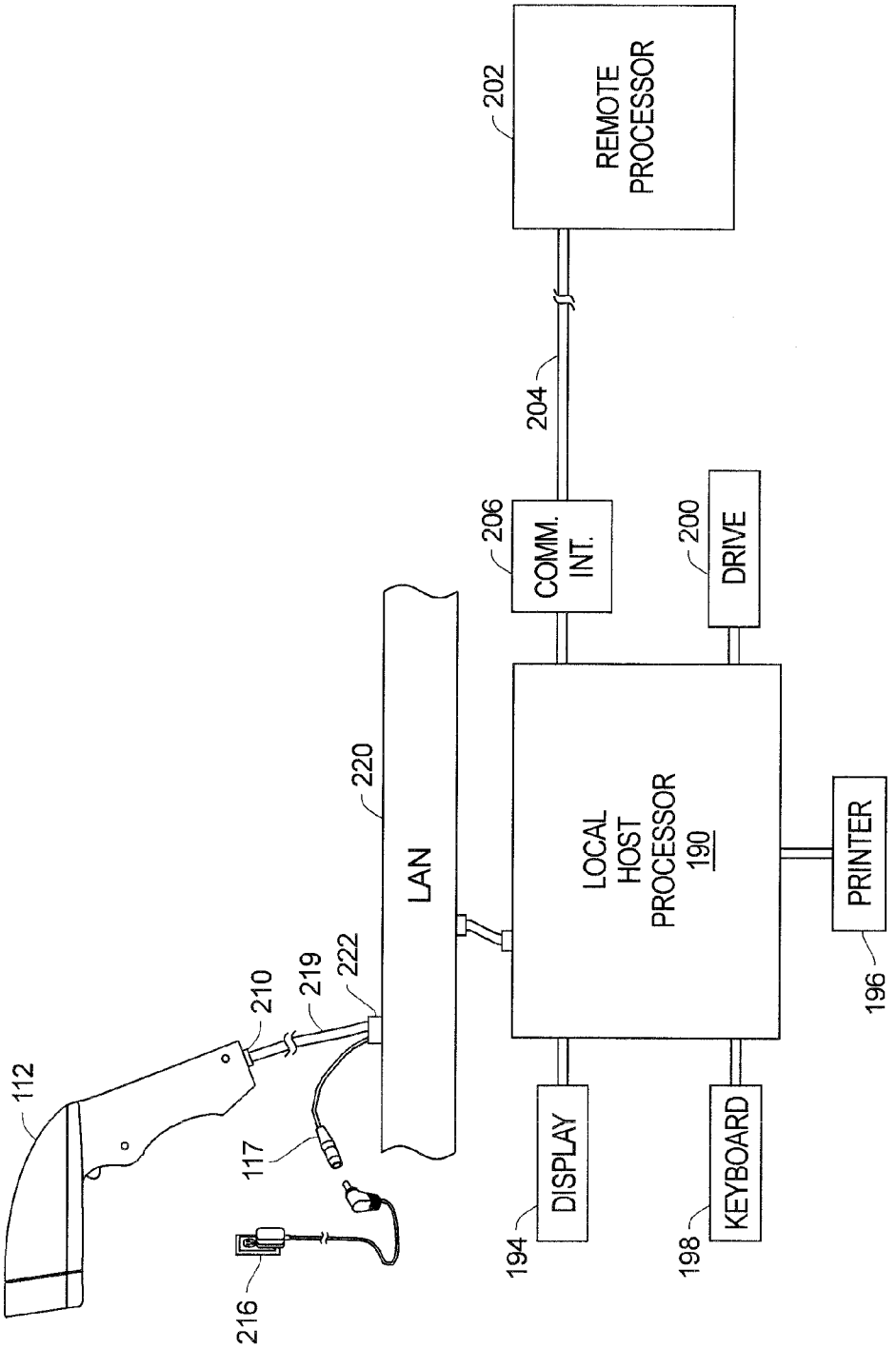

REMOTE PROCESSOR
202
204
COMM. INT.
206
DRIVE
200
LOCAL HOST PROCESSOR 190
PRINTER
196
DISPLAY
194
KEYBOARD
198
LAN
220
112
210
219
222
117
216

FIG. 3D

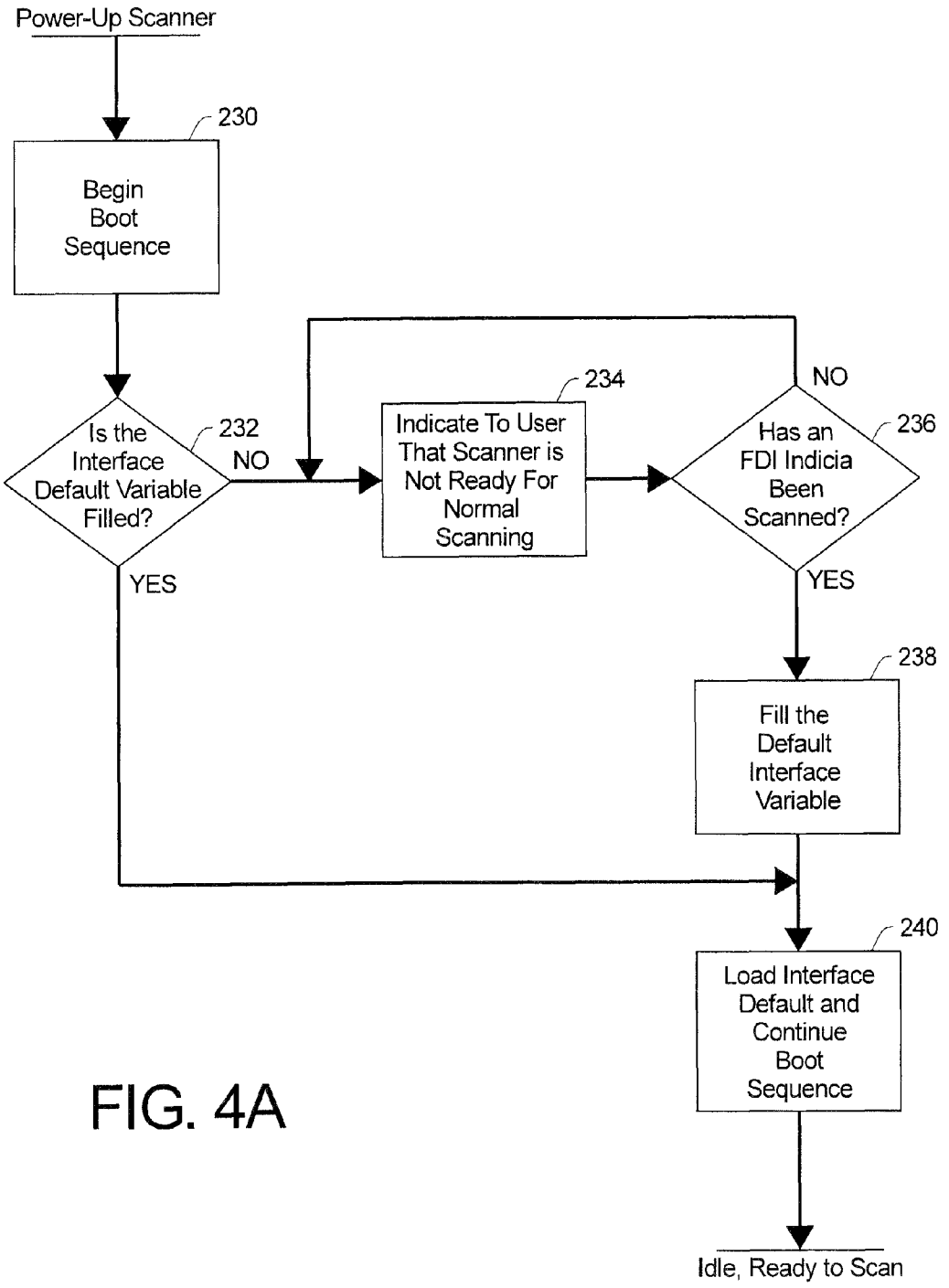

Power-Up Scanner
230
Begin Boot Sequence
232
Is the Interface Default Variable Filled?
NO
YES
234
Indicate To User That Scanner is Not Ready For Normal Scanning
236
Has an FDI Indicia Been Scanned?
NO
YES
238
Fill the Default Interface Variable
240
Load Interface Default and Continue Boot Sequence
Idle, Ready to Scan

FIG. 4A

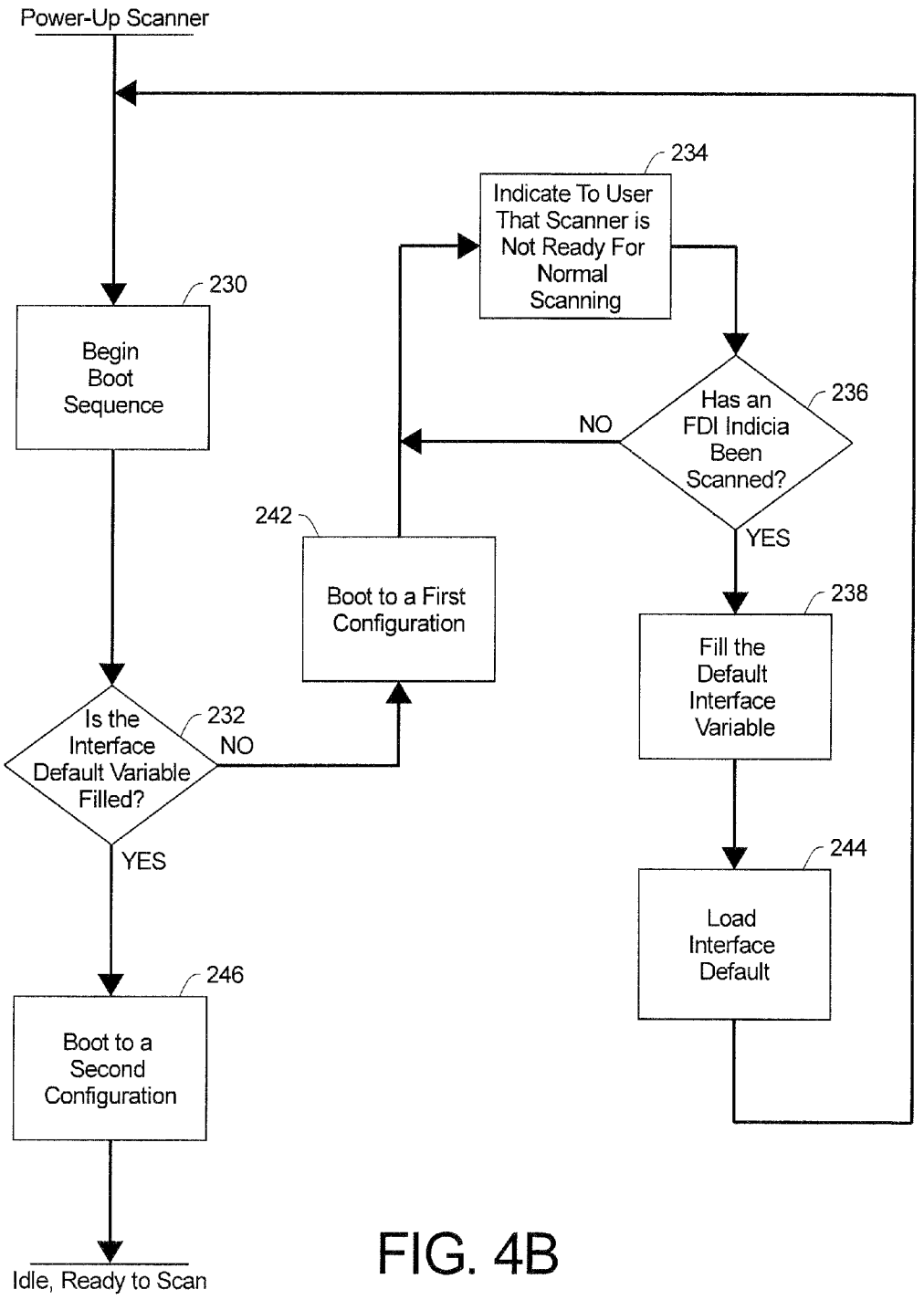

Power-Up Scanner
230
Begin Boot Sequence
234
Indicate To User That Scanner is Not Ready For Normal Scanning
236
Has an FDI Indicia Been Scanned?
NO
YES
242
Boot to a First Configuration
238
Fill the Default Interface Variable
232
Is the Interface Default Variable Filled?
NO
YES
244
Load Interface Default
246
Boot to a Second Configuration
Idle, Ready to Scan

FIG. 4B

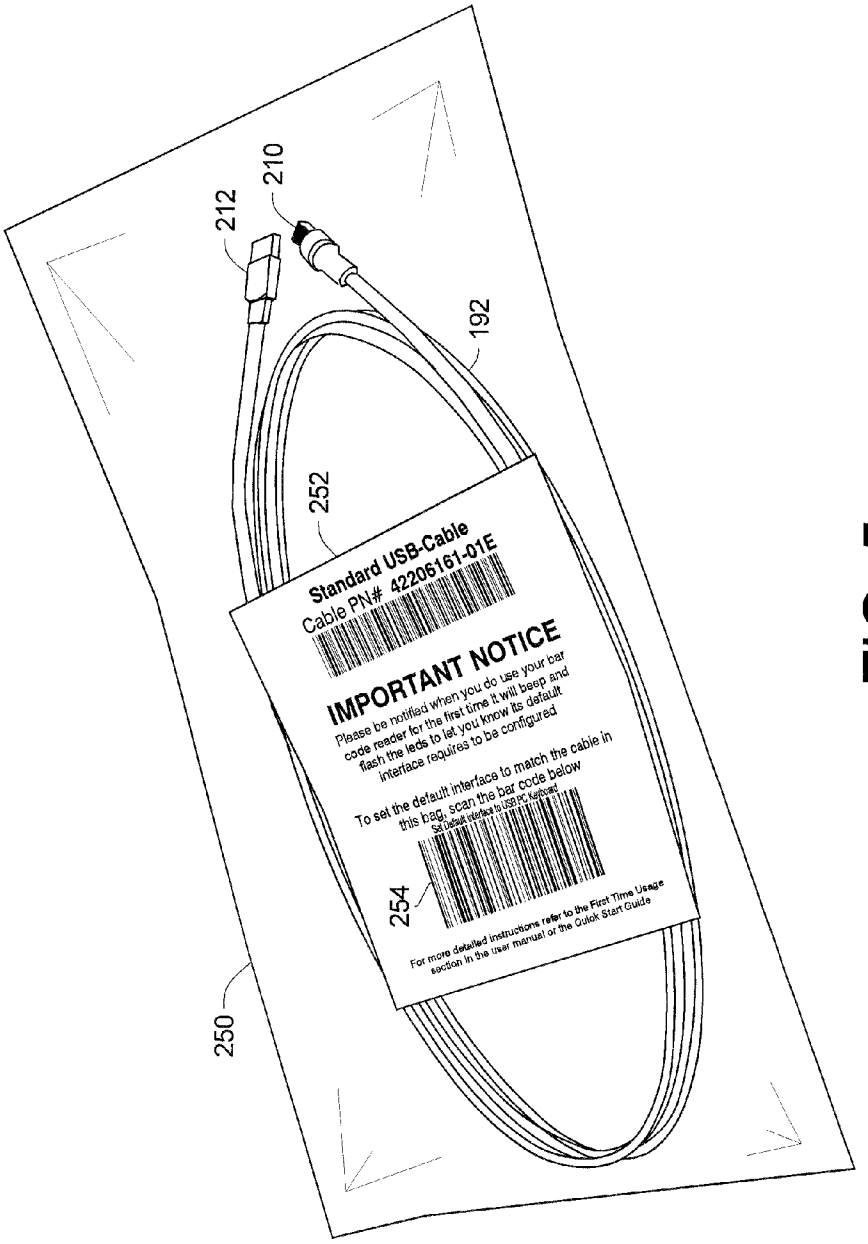

212
210
192
252
Standard USB-Cable
Cable PN# 42206161-01E
IMPORTANT NOTICE
Please be notified when you do use your bar code reader for the first time it will beep and flash the leds to let you know its default interface requires to be configured
To set the default interface to match the cable in this bag, scan the bar code below
Set default interface to USB PC Keyboard
254
For more detailed instructions refer to the First Time Usage section in the user manual or the Quick Start Guide
250

FIG. 5

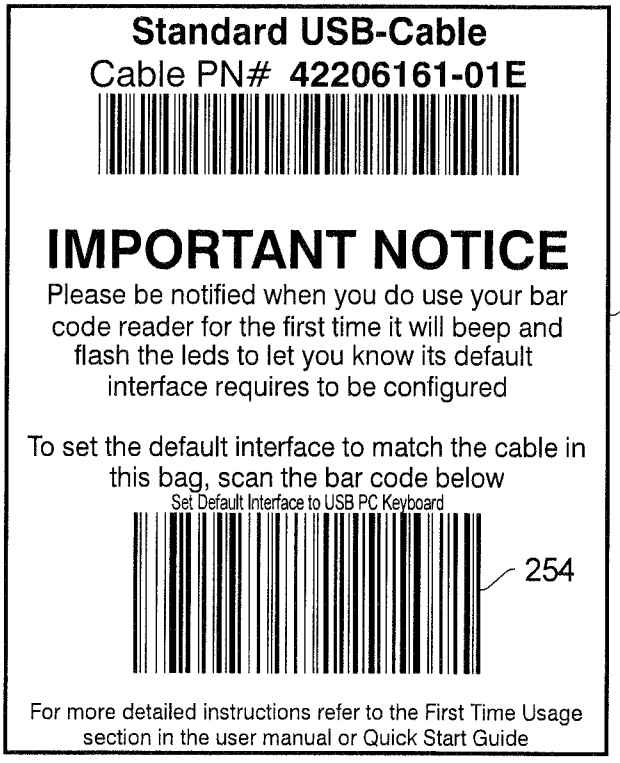

Standard USB-Cable
Cable PN# 42206161-01E
IMPORTANT NOTICE
Please be notified when you do use your bar code reader for the first time it will beep and flash the leds to let you know its default interface requires to be configured
252
To set the default interface to match the cable in this bag, scan the bar code below
Set Default Interface to USB PC Keyboard
254
For more detailed instructions refer to the First Time Usage section in the user manual or Quick Start Guide

FIG. 6

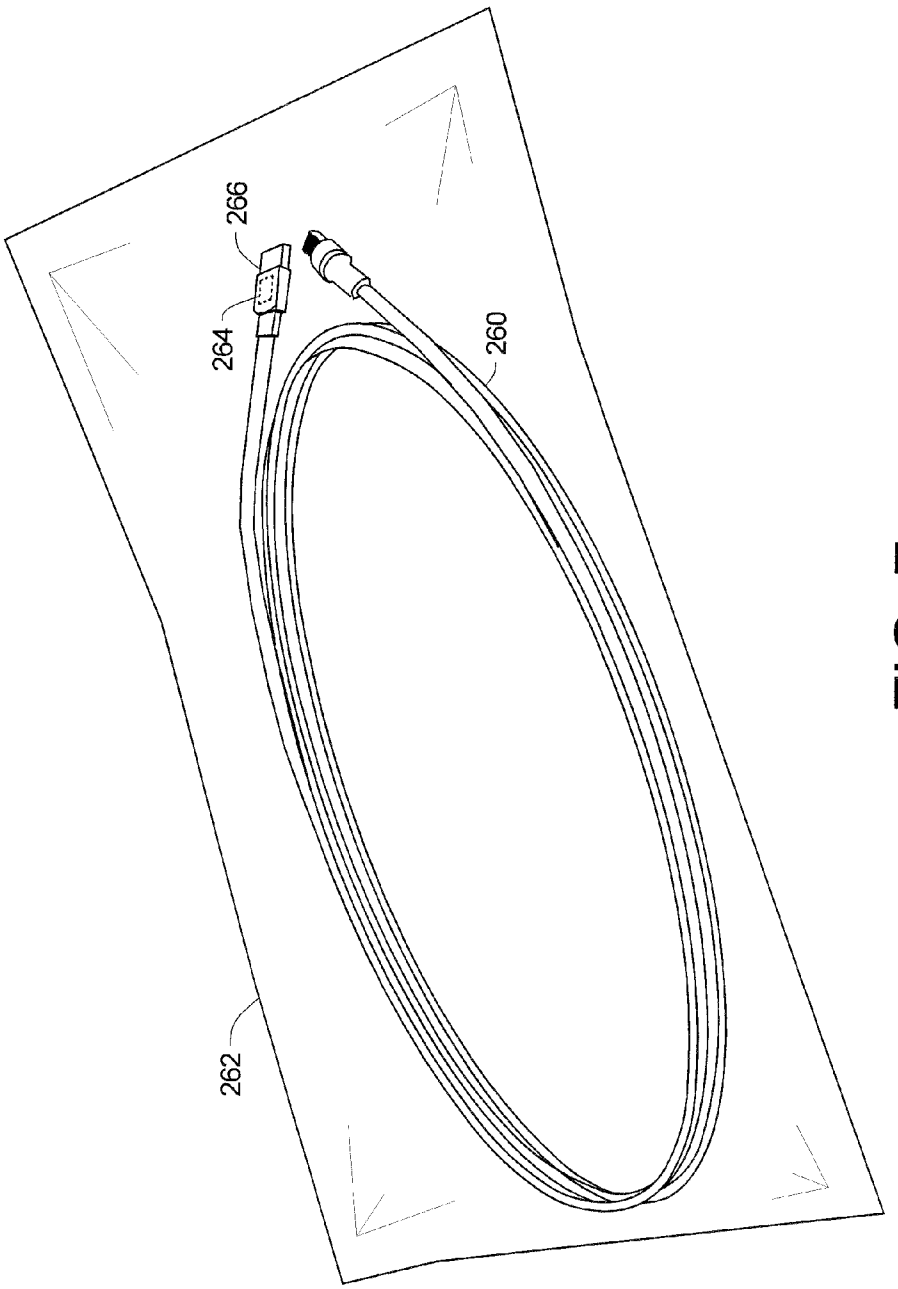


FIG. 7

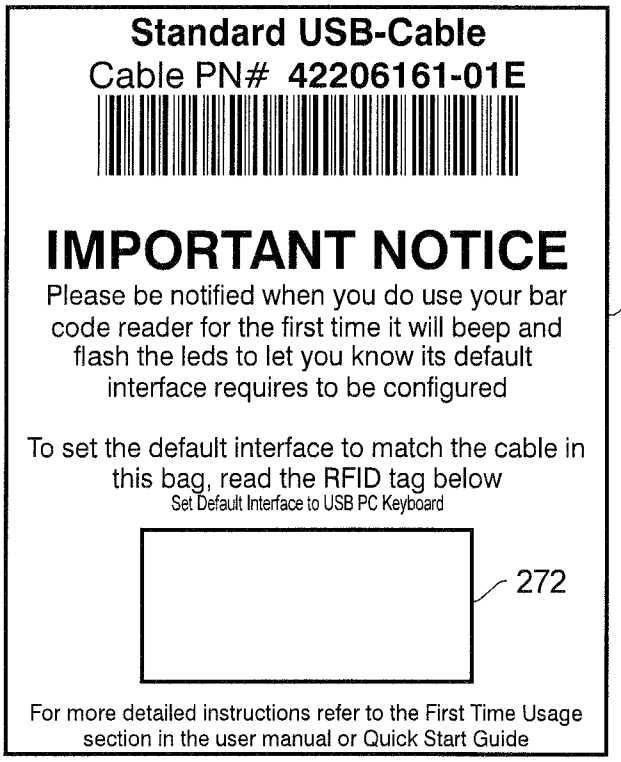

Standard USB-Cable
Cable PN# 42206161-01E
IMPORTANT NOTICE
Please be notified when you do use your bar code reader for the first time it will beep and flash the leds to let you know its default interface requires to be configured
To set the default interface to match the cable in this bag, read the RFID tag below
Set Default Interface to USB PC Keyboard
For more detailed instructions refer to the First Time Usage section in the user manual or Quick Start Guide
270
272

FIG. 8

METHOD OF PROGRAMMING THE DEFAULT CABLE INTERFACE SOFTWARE IN AN INDICIA READING DEVICE

FIELD OF THE INVENTION

This invention relates to indicia reading devices, and more particularly to a method of programming the default cable interface software in an indicia reading device.

BACKGROUND OF THE INVENTION

Indicia reading devices (also referred to as optical indicia readers, scanners, RFID readers, etc.) typically read indicia data represented by printed indicia or data carrier indicia, (also referred to as symbols, symbology, bar codes, RFID tags, etc.) For instance one type of a symbol is an array of rectangular bars and spaces that are arranged in a specific way to represent elements of data in machine readable form. Another type of symbol is encoded as data in an RFID tag. Optical indicia reading devices typically transmit light onto a symbol and receive light scattered and/or reflected back from a bar code symbol. The received light is interpreted by an image processor to extract the data represented by the symbol. Laser indicia reading devices typically utilize transmitted laser light. RFID readers typically activate RFID tags which transmit data symbols to the RFID readers.

One-dimensional (1D) optical bar code readers are characterized by reading data that is encoded along a single axis, in the widths of bars and spaces, so that such symbols can be read from a single scan along that axis, provided that the symbol is imaged with a sufficiently high resolution along that axis.

In order to allow the encoding of larger amounts of data in a single bar code symbol, a number of 1D stacked bar code symbologies have been developed which partition encoded data into multiple rows, each including a respective 1D bar code pattern, all or most all of which must be scanned and decoded, then linked together to form a complete message. Scanning still requires relatively higher resolution in one dimension only, but multiple linear scans are needed to read the whole symbol.

A class of bar code symbologies known as two dimensional (2D) matrix symbologies have been developed which offer orientation-free scanning and greater data densities and capacities than 1D symbologies. 2D matrix codes encode data as dark or light data elements within a regular polygonal matrix, accompanied by graphical finder, orientation and reference structures.

Conventionally, an indicia reader, whether portable or otherwise, optical or wireless, may include a central processor which directly controls the operations of the various electrical components housed within the indicia reader. For example, the central processor controls detection of keyboard entries, display features, trigger detection, and indicia read and decode functionality.

Efforts regarding such systems have led to continuing developments to improve their versatility, practicality and efficiency.

SUMMARY OF THE INVENTION

The invention comprises, in one form thereof, an indicia scanning apparatus including an interconnect cable, an indicia reading device configured to provide an indication to a user of the indicia reading device that the indicia reading device needs to be configured to operate with an interconnect cable if the indicia reader device detects an indicia which does not contain a specified sequence of data elements that the indicia reading device will recognize and configure itself to operate with the interconnect cable, and an indicia with, on or in the interconnect cable with the specified sequence of bar data elements.

In still another form, the invention includes a method for requiring a user of an indicia reader device to initially configure the indicia reader device for operating with an interconnect cable. The method comprises the steps of configuring the indicia reader device so that if the indicia reader device detects an indicia which does not contain one of a plurality of specified sequences of data elements that the indicia reading device will recognize and use to configure itself to operate with the interconnect cable, the indicia reading device will indicate to the user of the indicia reading device that the indicia reading device needs to be configured to operate with the interconnect cable, and providing an indicia with an interconnect cable which includes one of the plurality of specified sequences of data elements which is applicable to the interconnect cable.

BRIEF DESCRIPTION OF THE DRAWINGS

The aforementioned and other features, characteristics, advantages, and the invention in general will be better understood from the following more detailed description taken in conjunction with the accompanying drawings, in which:

FIG. **1** is a partial cutaway view of an optical indicia reader in accordance with at least one embodiment of the present invention;

FIG. **2** is a block diagram of the optical indicia reader of FIG. **1**;

FIGS. **3**A, **3**B, **3**C, and **3**D are block diagrams of typical data processing systems with which the reading device shown in FIG. **1** may be used;

FIGS. **4**A and **4**B are flow charts of alternate procedures for initially configuring the reading device shown in FIG. **1**;

FIG. **5** is a perspective view on an interconnect cable in a plastic bag with a label for initially configuring the reading device shown in FIG. **1**;

FIG. **6** is an enlarged view of the label shown in FIG. **5**;

FIG. **7** is a perspective view on an interconnect cable in a plastic bag with an embedded RFID tag for initially configuring the reading device shown in FIG. **1**; and

FIG. **8** is an enlarged view of a label for a bag containing an interconnect cable which includes a RFID tag in the label.

It will be appreciated that for purposes of clarity and where deemed appropriate, reference numerals have been repeated in the figures to indicate corresponding features. Also, the relative size of various objects in the drawings has in some cases been distorted to more clearly show the invention.

DETAILED DESCRIPTION

Reference will now be made to exemplary embodiments of the invention which are illustrated in the accompanying drawings. This invention, however, may be embodied in various forms and should not be construed as limited to the embodiments set forth herein. Rather, these representative embodiments are described in detail so that this disclosure will be thorough and complete, and will fully convey the scope, structure, operation, functionality, and potential of applicability of the invention to those skilled in the art.

Referring to FIG. **1**, an exemplary hand held indicia reading device or scanner **112** (referred to as "scanner **112**") has a number of subsystems for capturing images, interrogating

RFID tags, and decoding dataforms within such images and tags. The scanner **112** has an imaging reader assembly **114**, an electronics assembly **116**, an inner cable **118** from the electronics assembly **116** to a connector (not shown) at the end of a handle **120**, and two LEDs, **122** and **124**, positioned behind translucent windows **126**, and a housing **128** which encloses the electrical parts and is connected to the handle **120**. The electronics assembly includes an RFID assembly **130**, a vibrator **132**, and a sound generator **134**. A trigger **136** is used to activate and deactivate the scanner **112**.

Referring to FIG. **2**, the image reader assembly **114** and electronics assembly **116** generally comprises a receive optical system **140**, an illumination assembly **150**, an aiming pattern generator **160**, an RFID reader unit **170**, and a variety of control and communication modules. The receive optical system **140** generates frames of data containing indications of the intensity of light received by the read optical system **140**. The illumination assembly **150** illuminates a target T creating reflections that are received by the receive optical system **140**. The aiming pattern generator **160** projects an aiming light pattern to assist with aiming the scanner **112**. While the present description employs an imager based data collection subsystem (the image reader assembly **114** and electronics assembly **116**), it is to be recognized that the data collection subsystem may take other forms such as a laser scanner.

The receive optical system **140** generally comprises image receive optics **142** and an image sensor **144**. The image optics **142** receives light reflected from a target T and projects the reflected light on to the image sensor **144**. The image sensor **144** may comprise any one of a number of two-dimensional, color or monochrome solid state image sensors using such technologies as CCD. CMOS, NMOS, PMOS, CD, CMD, etc. One possible sensor is the MT9V022 sensor from Micron Technology Inc. Such sensors contain an array of light sensitive photodiodes (or pixels) that convert incident light energy into electric charges.

Many image sensors are employed in a full frame (or global) shutter operating mode, wherein the entire imager is reset prior to an image capture operation to remove any residual signal in the photodiodes. The photodiodes (pixels) then accumulate charge for some period of time (exposure period), with the light collection starting and ending at about the same time for all pixels. At the end of the integration period (time during which light is collected), all charges are simultaneously transferred to light shielded areas of the sensor. The light shield prevents further accumulation of charge during the readout process. The signals are then shifted out of the light shielded areas of the sensor and read out. Image sensor **144** may also employ a rolling shutter.

The illumination assembly **150** generally comprises a power supply **152**, an illumination source **154** and illumination optics **156**. The illumination optics **156** directs the output of the illumination source **154** (generally comprising LEDs or the like) onto the target T. The light is reflected off the target T and received by the receive optical system **140**. It is to be noted that the illumination provided by the illumination assembly **150** may be combined with (or replaced by) other sources of illumination, including ambient light from sources outside of the scanner **112**.

The aiming pattern generator **160** generally comprises a power supply **162**, an aimer light source **164**, an aperture **166**, and aimer optics **168**. The aiming pattern generator **160** creates an aiming light pattern projected on or near the target which spans a portion of the receive optical system's **140** operational field of view with the intent of assisting the operator to properly aim the scanner at the bar code pattern that is to be read. A number of representative generated aiming patterns are possible and not limited to any particular pattern or type of pattern, such as any combination of rectilinear, linear, circular, elliptical, etc., figures, whether continuous or discontinuous, i.e., defined by sets of discrete dots, dashes, and the like. Alternately, the aimer pattern generator may be a laser pattern generator.

Generally, the aimer light source **164** may comprise any light source which is sufficiently small or concise and bright to provide a desired illumination pattern at the target. For example, the aimer light source **164** may comprise one or more LEDs, such as part number NSPG300A made by Nichia Corporation. Illumination and aiming light sources with different colors and combination of colors may be employed, for example white, green and red LEDs. The colors may chosen based on the color of the symbols most commonly imaged by the image reader. Different colored LEDs may be each alternatively pulsed at a level in accordance with an overall power budget.

The aimer light sources **164** may also be comprised of one or more laser diodes such as those available from Rohm. In this case a laser collimation lens (not shown in these drawings) will focus the laser light to a spot generally forward of the scanning head and approximately at the plane of the target T. This beam may then be imaged through a diffractive interference pattern generating element, such as a holographic element fabricated with a desired pattern in mind. Examples of these types of elements are known, commercially available items and may be purchased, for example, from Digital Optics Corp. of Charlotte, N.C. among others.

The RFID reader unit **170** generally comprises an RFID data processing circuit **172**, an RF oscillator and receiver **174**, and an RFID antenna **176**. The RFID reader unit **170** may be configured to read RF encoded data from a passive RFID tag, such as tag **262** (FIG. **7**). Where RFID reader unit **170** is configured to read RF encoded data from a passive RFID tag **262**, RF oscillator and receiver circuit **174** transmits a carrier signal from antenna **176** to passive tag **262**. Passive RFID tag **262** converts the carrier energy to voltage form and a transponder of tag **262** is actuated to transmit a radio signal representing the encoded tag data. RF oscillator and receiver circuit **174**, in turn, receives the radio signal from the tag and converts the data into a digital format. RFID data processing circuit **172**, typically including a low cost microcontroller IC chip, decodes the received radio signal information received by RF oscillator and receiver circuit **147** to decode the encoded identification data originally encoded into RFID tag **262**. The decoded digital data is passed to bus **182***a*.

A scanner processor **180** provides overall control of the image reader assembly **114** and electronics assembly **116**. The scanner processor **180** and other components of the image reader assembly are generally connected by one or more buses **182***n* and/or dedicated communication lines. In the illustrated example a parallel bus **182***a* connects the scanner processor **180** to a cable interface circuit **183** which includes a cable connector and to a main system memory **184** used to store processed (and unprocessed) image data from the image sensor **144**. The scanner processor **180** utilizes an I^2C bus **182***b* to communicate exposure settings to the image sensor **144** and illumination parameters to a microcontroller **186**. A dedicated 8 to 10 bit parallel bus **182***c* is used to transfer image data from the image sensor **144** to the scanner processor **180**. The width of the bus **182***c* may be dependant on the bit size recorded by each pixel in the image sensor **144**. The output of the image sensor **144** is processed by the scanner processor **180** utilizing one or more functions or algorithms, which may be stored in an EEPROM **187**, to condition

the signal appropriately for use in further processing downstream, including being digitized to provide a digitized image of target T.

Another function of the scanner processor **180** is to decode machine readable symbology represented within an image captured by the image sensor **144**. Information respecting various reference decode algorithms is available from various published standards, such as by the International Standards Organization ("ISO"). The scanner processor **180** also controls the scanner housing status indicator device drivers **189** which drives the LEDs **122** and **124**, the vibrator **132**, and the sound generator **134**.

The microcontroller **186** maintains illumination parameters, used to control operation of the illumination assembly **150** and the aiming pattern generator **160**, in a memory **188**. For example, the memory **188** may contains tables indicative of power settings for the power supplies **152** and **162** corresponding to various states of the signal from the image sensor **144**. Based upon signals from the scanner processor **180** and/or the image sensor **144**, the microcontroller **186** sends signals to the power supplies **152** and **162** based on values stored in the table in memory **188**. An exemplary microcontroller **150** is the CY8C24223A made by Cypress Semiconductor Corporation.

FIGS. **3**A, **3**B, **3**C, and **3**D are four block diagrams of exemplary systems with which the scanner **112** may be used. Although the optical scanner **112** is used in the drawings, a wireless or RFID scanner may also be used with the present invention. In FIG. **3**A the scanner **112** is coupled to a local host processor **190** by means an interconnect cable **192**, which in FIG. **3**A may have a USB connection to the host processor **190**. Host processor **190** may be connected to a display **194**, to a printer **196**, and a keyboard **198**. As used herein, the term "local host processor" will be understood to include both stand alone host processors and host processors which comprise only one part of a local computer system.

If the software for the scanner **112** is available locally as, for example, on a diskette or CD-ROM, it may be loaded using a suitable drive unit **200**. The local host processor **190** may be in communication with a remotely located processor **202** through a suitable transmission link **204**, such as an electrical conductor link, a fiber optic link, or a wireless transmission link through a suitable communication interface **206**, such as a modem. As used herein, the term "transmission link" will be understood to refer broadly to any type of transmission facility, including an RS-232 capable telephone line, an RF link, or a computer network, e.g., ETHERNET although other types of transmission links or networks may also be used. For example, transmission link **204** could be provided by a coaxial cable or any other non-RF electromagnetic energy communication link including a light energy infrared or microwave communication link. Link **204** could also be an acoustic communications link.

The connection to the host processor **190** must be of a type to provide electrical data between the scanner **112** and the host process **190**, and provide power to the scanner **112**. A USB connection can perform these functions, as can a keyboard connection. FIG. **3**B shows the scanner **112** connected to the host processor **190** by an interconnection cable **213** with a keyboard wedge **214** at one end to permit the use of a keyboard with the scanner **112**. In FIG. **3**C the scanner **112** is connected to the host processor **190** by an interconnect cable **215** at a connection **218** to the host processor **190** which cannot provide the power needed by the scanner **112**. For example, a serial port on the host processor **190** is a connection which cannot power the scanner **112**. In FIG. **3**C a separate power supply **216** is needed for the scanner **112**. The power supply **216** is connected to a power connector **217** which, in turn, is connected to the connector **218** which replaces the connector **212** in FIG. **3**A. In FIG. **3**D the scanner **112** is connected by an interconnect cable **219** directly to a local area network (LAN) **220**, such as an ETHERNET LAN, which is also connected to the local host processor **190**. The interconnect cable **219** couples the scanner **112** to the LAN **220** at a LAN connector **222**. Power supply **216** connected to a power connector **217** which, in turn, is connected to the LAN connector **222** to provide power to the scanner **112**.

In the past scanners may have been preprogrammed to operate with a specific interface cable which may be part of a scanner kit. However, in some cases the preprogrammed scanner does not match the interconnect cable in the kit. For example, a customer may buy a USB kit, but the scanner is programmed for a keyboard wedge, and consequently the scanner does not work "out of the box." Once connected, the scanner seems to be ready and there is no indication that further setup is required. The problem is that in mass production the manufacturer sometimes does not know in what kit a scanner will end up. Another downside of the preprogrammed scanners is that if the "factory defaults" indicia is scanned, the scanner defaults to the device's default interface, which isn't necessarily the interface the user requires or expects.

FIGS. **4**A and **4**B are flow diagrams showing alternate embodiments of the steps used to initially configure the scanner **112** by an end user for a particular type of interconnect cable when the scanner **112** is in a "boot mode new" (BMN) mode meaning that an interface default variable has not been set, and there is no interconnection cable configuration set in the scanner **112**. Turning to FIG. **4**A, whenever the scanner **112** is powered up while in the BMN mode, an initial boot sequence is performed as indicated in box **230**. The boot sequence includes a test of the interface default variable to determine if it is filled as shown in box **232**. If the interface default variable has not been filled, the scanner **112** indicates to the user that the variable has not been filled as shown in box **234**. The indication may be illumination of one or both of the LEDs **122**, **124** shown in FIG. **1**, either constantly or intermittently. The indication may also be a sequence of prerecorded sounds generated by the sound generator **134** and/or a movement in the scanner **112** by the vibrator **132**. In addition, since the scanner **112** has not completed the boot sequence in the embodiment shown in FIG. **4**, the scanner **112** will not be configured to read and interpret product indicia, such as bar codes and RFID tags, or perform any other functions that the scanner is capable of when it has completed the boot sequence. The scanner **112** than waits until a flash default interface (FDI) indicia is received as indicated in box **236**. The FDI indicia provides software commands which the scanner **112** uses to configure itself to an interconnect cable associated with the FDI indicia. After the FDI indicia is detected, the scanner fills the interface default variable as shown in box **238**, and resumes the boot sequence including loading the interface default programmed in the FDI indicia as shown in box **240**.

In FIG. **4**B the scanner **112** begins a boot sequence as indicated by box **230** and then checks to see if the interface default variable is set in box **232**. If the interface default variable has not been set, then the scanner **112** continues booting up to a first configuration indicated by box **242** and then signals an operator, either continuously or intermittently, in the manner described above, to scan a FDI indicia as indicated by box **234**. While the scanner **112** is signaling the user to scan a FDI indicia, the scanner **112** tests whether a FDI indicia has been scanned in box **236**. Once a FDI indicia has been scanned, the interface default variable is filled as indi-

cated in box **238** and the interface default is loaded into the memory of the scanner **112** as indicated in box **244**. Then the boot sequence is restarted as indicated in box **230**, and whether or not the interface default variable has been set is once more been tested as indicated in box **232**. Since the interface default variable has been set, the scanner **112** continues booting up to a second configuration as indicated in box **246**. At this time the scanner **112** goes into an idle state waiting to scan and attempt to interpret any indicia.

After the initial interconnection cable configuration has been set, the interconnect cable interface may be changed to allow the scanner **112** to operate with other interface cables using programming indicia listed in a user's instruction manual. However, changing the interconnect interface in this manner may not change the interface default variable, and if a master reset indicia is scanned, the interconnect cable interface may revert to the initial interconnection cable configuration. Thus, if a user sets the default interface variable with a FDI indicia for a USB cable, later changes to an interconnect cable configuration for a keyboard wedge by scanning the indicia for a keyboard wedge interconnect cable in the user's manual, and then later scans a master reset indicia, the scanner **112** may revert back to the USB interconnect cable configuration.

However, the manufacturer may provide a hidden command available to the manufacturer's support personnel to erase the interconnection cable configuration putting the scanner back into the BMN mode. The user would then have to set the default interface variable using a process such as those shown in FIG. **4**A or **4**B. By resetting the FDI variable, the scanner **112** would then be ready for sale to anew user or for use in a different location in a company, and the master reset command would not cause an unwanted change in the interface cable configuration.

The FDI indicia on the cable-bag may be a linear (1D) bar code in order to work with a basic scanner **112** which can only read linear (1D) bar codes.

FIG. **5** is a perspective view of the interconnect cable **192** in a plastic bag **250** with a label **252** with a FDI bar code **254** to be used for initially configuring the scanner **112** so that it is compatible with the cable **192**. The label **252** that instructs the user to scan the indicated bar code **254** on the label before trying to use the scanner **112** is shown in FIG. **6**.

FIG. **7** is a perspective view of the interconnect cable **260** in aplastic bag **262**, similar to that shown in FIG. **5**, with a RFID tag **264** embedded in a connector **266** of the cable **260** which can be used for initially configuring the scanner **112** so that it is compatible with the cable **260**.

FIG. **8** shows a label **270** which includes a RFID tag **272** and can be placed on the plastic bag **262** for an interconnect cable which may not have an imbedded RFID tag in the interconnect cable. The label **270** may be used with interconnect cables, such as an USB interconnect cable, which is used with scanners **112** which have different interface configurations. However, there may be some cables which are used only with scanners with the same designated cable interface, and the embedded RFID tag could be used.

The RFID tags **264** and **272** are FDI RFID tags in that they are used to initially configure the interconnect cables **260** and **272**. Because the RFID tag **264** embedded in the cable connector **266** may respond to the RFID reader in the scanner **112** after it has been configured and will therefore broadcast its data, the FDI RFID tags **264**, **272** may be encoded to transmit an Application Family Identifier (AFI) which is different from the AFI of other RFID tags that are not used to configure the cable interface of the scanner **112**. The RFID reader in the scanner **112** would therefore recognize the AFI of transmitted signal from each RFID tag responding to the RFID reader, and ignore FDI RFID tags unless the scanner **112** does not have a configured cable interface or the scanner **112** has been programmed to receive a new default cable interface from an FDI RFID tag.

While the invention has been described with reference to particular embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the scope of the invention.

Therefore, it is intended that the invention not be limited to the particular embodiments disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope and spirit of the appended claims.

The invention claimed is:

1. A method for requiring a user of an indicia reader device to initially configure the indicia reader device for operating with an interconnect cable comprising the steps of:

configuring the indicia reader device with factory defaults;

executing an initial boot sequence that includes a test for the presence of an interface default variable so that if the indicia reader device does not contain one of a plurality of specified sequences of data elements that the indicia reading device will recognize a factory default interconnect cable;

responsive to the boot sequence executing and determining that the interface default variable is not set, the indicia reading device electronically indicating to the user that the indicia reading device needs to be configured to operate with the recognized interconnect cable;

disabling functionality of the indicia reader device that is not the reading functionality of the indicia reader device until the indicia reader device receives a specified sequence of data elements which is applicable to the factory default interconnect cable;

receiving a specified sequence of data elements; and

restoring the disabled functionality.

2. The method set forth in claim **1**, further including the steps of resetting the interface variable when the indicia reader device reads indicia that contains a reset interface variable program or receives a reset interface command via an already established interface connection.

3. The method set forth in claim **2** wherein the reset interface variable program data elements are not made generally available to users of the indicia reader device.

4. The method set forth in claim **1** wherein a reset to factory defaults program causes the indicia reader device to configure itself to operate with the interconnect cable associated with the indicia previously read or received which last set the interface variable to the second state.

5. The method set forth in claim **1** wherein the indicia reader device boots to a first configuration when the interface variable is in the first state, and boots to a second configuration when the interface variable is in the second state.

6. A method for configuring an indicia reader for operating with a factory default interconnect cable comprising the steps of:

setting an interface variable to a first status prior to shipping the indicia reader to a user such that the indicia reader is not operable to read indicia that is not one of a plurality of interface configuration indicia;

providing the interface factory default interconnect cable with an indicia which contains one of the plurality of

interface configuration data elements prior to shipping the factory default interconnect cable to the user;

executing an initial boot sequence that includes a test of the interface variable; and

setting the interface variable to a second status upon reading one of the plurality of interface configuration data elements if the indicia reader needs to be configured to operate with the interconnect cable based on the test,

wherein the functionality of the indicia reader is limited when the interface variable is in the second status, and

wherein during the initial boot sequence the indicia reader will electronically indicate to the user of the indicia reader that the indicia reader needs to be configured to operate with the interconnect cable.

7. The method set forth in claim **6** further including the step of resetting the interface variable to the first status after the interface variable has been set to the second status.

8. An indicia reader device configured to perform a method comprising:

executing an initial boot sequence that includes a test of the indicia reader device configuration wherein the initial boot sequence comprising a detecting the presence or absence of an interface default variable;

providing an indication to a user of the indicia reading device that if the indicia reading device is not configured to operate with any interconnect cable responsive to detecting that the initial interface default variable is absent;

shifting the indicia reader device to a lower functional state, responsive to detecting that the initial interface default variable is absent;

self-configuring to operate with an interconnect cable wherein the interconnect cable includes a specified sequence of data elements and wherein the self-configuring comprises reading the specified sequence of data elements on the interconnect cable and populating the interface default variable; and,

restoring the indicia reading device to a normal functional state, responsive to populating the interface default variable.

9. The indicia reader device set forth in claim **8**, wherein the indicia reader device is configured to read a linear bar code when the indicia reader device is in a lower functional state.

10. The indicia reader device set forth in claim **8**, wherein the interface variable can be reset by reading a reset interface variable program data carrier after the interface variable has been set.

11. The indicia reader device set forth in claim **8** wherein a reset to factory defaults program causes the indicia reader device to configure itself to operate with the interconnect cable associated with the indicia previously read which last set the interface variable to the second state.

12. The indicia reader device set forth in claim **8** wherein the indicia reader device is configured to boot to a first configuration when the interface variable is absent, and to boot to a second configuration when the interface variable is present.

13. The method set forth in claim **1**, wherein the indication is at least one of the following: illumination of one or more light emitting diodes(s); a sequence of prerecorded sounds generated by a sound generator and movement of the indicia device by a vibrator.

14. The method set forth in claim **6**, wherein the indication is at least one of the following: illumination of one or more light emitting diodes(s); a sequence of prerecorded sounds generated by a sound generator and movement of the indicia device by a vibrator.

15. The indicia reader device set forth in claim **8**, wherein the indication is at least one of the following: illumination of one or more light emitting diodes(s); a sequence of prerecorded sounds generated by a sound generator and movement of the indicia device by a vibrator.

16. The method of claim **1**, wherein the indicia reader device is not configured to read and interpret product indicia until the indicia reader device receives the specified sequence of data elements.

17. The indicia reader device of claim **8**, wherein the restoring comprises configuring the indicia reader device to read and interpret product indicia.

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