Approval Sheet

Honeywell Product Name : Honeywell N3600 Series Area Image Engine

Honeywell Part No. : N3680SR-W1-19861

Customer : Firich Enterprises Co., Ltd.

Customer Part No. : RD9000PH09CJ

Customer Product Name : Honeywell N3680 Scanner

Honeywell Scanning and Mobility
9680 Old Bailes Road
Fort Mill, SC 29707
United States

Revision Control Sheet

Revision	Part Number	Documentation	Memo	Date
Ver. 1.0	N3680SR-W1-19861	N36xx-IM Rev.A N36xx-UG Rev.A	Custom Firmware: CZ000044BBA	12/13/2016

Honeywell Scanning and Mobility
9680 Old Bailes Road
Fort Mill, SC 29707
United States

Honeywell

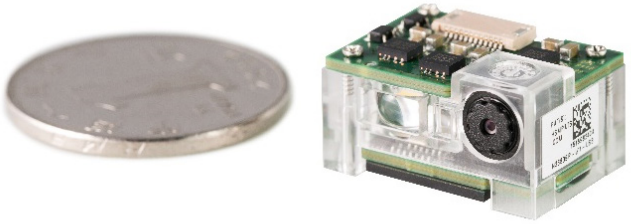
N3680 Series

Compact Decoded 2D Barcode Engine

The N3680 barcode scan engine is a revolutionary, fully decoded, compact 2D engine from Honeywell. It inherits the legendary Adaptus 6.0 decoding performance in our most compact design. The N3680 represents a fine balance between size, performance, and ease of integration – ensuring an excellent end user experience.

Not only does the N3680 series support a wide variety of symbologies – including 1D, 2D and PDF417 barcodes – it also includes advanced features that support reading poorly printed bar codes and can even read barcodes directly from smartphone screens. This makes the N3680 a perfect choice for reading mobile coupons and loyalty cards, mobile ticketing, paperless boarding passes and barcode payment systems for mobile wallet applications.

Integration is simplified, with the N3680 available in either TTL serial or USB versions, both with an industry standard 12-pin ZIF connector. To provide an easy upgrade path for customers desiring a 1D laser with a 2D imaging option, the N3680 is the same size as our N4315, and even features the same mounting holes and electrical pin-out. This gives you the greatest flexibility to quickly provide barcode reading solutions with the lowest design cost, in the most compact designs.



With its compact dimensions and integrated decoder, the N3680 makes it easy to incorporate high performance scanning into your designs.

Super-compact and ready to power the next generation of intelligent data collection devices, the N3680 weighs in at just 3.6 grams and fits easily into a wide range of small devices. Thanks to its small form factor and fully integrated design, there is no need for extra decoder board, and no need for extra host decoder programming and debugging. In fact, the N3680 does not require a separate CPU or OS for integration into your device.

The N3680 offers high reliability and performance, enabling more design freedom inside virtually any kind of device across all market segments, especially for retail, healthcare, point-of-sale, kiosks and ATMs, wearables and the IOT.

FEATURES & BENEFITS

Integrated decode eliminates the need for a separate decoder board and extra programming and integration work. The N3680 can even work without an OS and host CPU.

Multiple interface support – either TTL serial or USB for easy integration into the most popular devices and applications.

Compact size and fully compatible with the N4315 1D laser engine for maximum design flexibility and design reuse.

Based on Honeywell's advanced Adaptus technology, users will experience high performance scanning and support for a wide set of 1D and 2D barcode symbologies, along with advanced imaging capabilities.

Uncanny ability to scan hard-to-read codes, as well as those displayed on mobile phone screens.

N3680 Series Technical Specifications

PERFORMANCE

Sensor: CMOS sensor with 640 x 480 pixel resolution
Illumination & Aiming: White LED illumination; Red LED dot aimer
Typical frame rate: 30 frames per second
Motion Tolerance: Up to 100 cm/s (4 in/s) for 13 mil UPC at optimal focus
Field of View: Horizontal: 37.8°, Vertical: 28.8°
Scan Angles: Tilt: 360°, Pitch: ± 45°, Skew: ± 45°
Symbol Contrast: 35% minimum print contrast ratio
Symbologies:
Linear: Codabar, Code 11, Code 128, Code 2 of 5, Code 39, Code 93 and 93i, EAN/JAN-13, EAN/JAN 8, IATA Code 2 of 5, Interleaved 2 of 5, Matrix 2 of 5, MSI, GS1 Databar, UPC-A, UPC E, UPC-A/EAN-13 with Extended coupon Code, Coupon GS1 Code 32(PARAF), EAN-UCC Emulation, PosiCode, RSS Expanded, RSS Limited,RSS-14
2D Stacked: PDF417, MicroPDF417
2D Matrix: Aztec Code, Codablock F, Data Matrix, MaxiCode, QR Code, TCIF Linked Code 39, Chinese Sensible(Han Xin) code, Codablock A
Postal Codes: Australian Post, British Post, Canadian Post, China Post, Japanese Post, Korea Post, Netherlands Post, Planet Code, Postnet

MECHANICAL / ELECTRICAL

Dimensions:
Typical (WxDxH): 21.17 x 14.6 x 11.52 mm
Maximum (WxDxH): 21.57 x 14.95 x 11.73 mm
Weight: 3.6 g
Interface: 12-pin ZIF connector, with both TTL serial and USB 2.0 configurations
Input Voltage:
TTL Serial: 3.3 VDC ± 5%
USB: 5.0 VDC ± 5%
Typical Current Draw:
TTL Serial: 3.3 V input – 310 mA RMS while scanning, 65 mA RMS at idle, 3.5mA while on standby
USB: 5 V input – 220 mA RMS while scanning, 60 mA RMS at idle, 2.5 mA while on standby

ENVIRONMENTAL / OTHER

Temperature:
Operating: -10°C to 40°C
Storage: -40°C to 60°C
Humidity: to 95% relative humidity, non-condensing, at 40°C
Ambient Light: 0–100,000 lux (total darkness to bright sunlight)
Shock Rating: 2500 G for 0.4 ms at 23°C
Vibration: 3 axes, 1 hour per axis: 2.54 cm (1″) peak-to-peak displacement (5 Hz to 13 Hz), 10 G acceleration (13 Hz to 500 Hz), 1 G acceleration (500 Hz to 2,000 Hz)
MTBF: 70,000 hrs
Warranty: 15 month limited warranty

STANDARD RANGE (SR) OPTICS

SYMBOLOGY / X-DIM	TYPICAL RANGE*
100% U.P.C.	55 to 280 mm (2.1 in to 11.0 in)
5 mil Code 39	61 to 130 mm (2.4 in to 5.1 in)
20 mil Code 39	60 to 380 mm (2.4 in to 15.0 in)
6.7 mil PDF4117	60 to 125 mm (2.4 in to 4.9 in)
10 mil Data Matrix	60 to 130 mm (2.4 in to 5.1 in)
20 mil QR	50 to 230 mm (2.0 in to 9.0 in)

* Typical Performance may be impacted by bar code quality and environmental conditions.

Refer to the Honeywell Scanning & Mobility Compliance Center at **www.honeywellaidc.com/compliance** to review and download any publicly available documentation pertaining to the certification of this product in a given country.

Refer to the Honeywell Scanning & Mobility Supported Symbologies Datasheet at **www.honeywellaidc.com/symbologies** for a complete listing of all supported barcode symbologies.

Honeywell Scanning & Mobility
9680 Old Bailes Road
Fort Mill, SC 29707
800-582-4263
www.honeywell.com

N3680-DS Rev A 08/15

Honeywell

Honeywell

N36XX Decoded

Image Engine

Integration Manual

Disclaimer

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Web Address: www.honeywellaidc.com

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Customer Support

Technical Assistance

To search our knowledge base for a solution or to log in to the Technical Support portal and report a problem, go to www.hsmcontactsupport.com.

For our latest contact information, see www.honeywellaidc.com/locations.

Limited Warranty

Refer to www.honeywellaidc.com/warranty_information for your product's warranty information.

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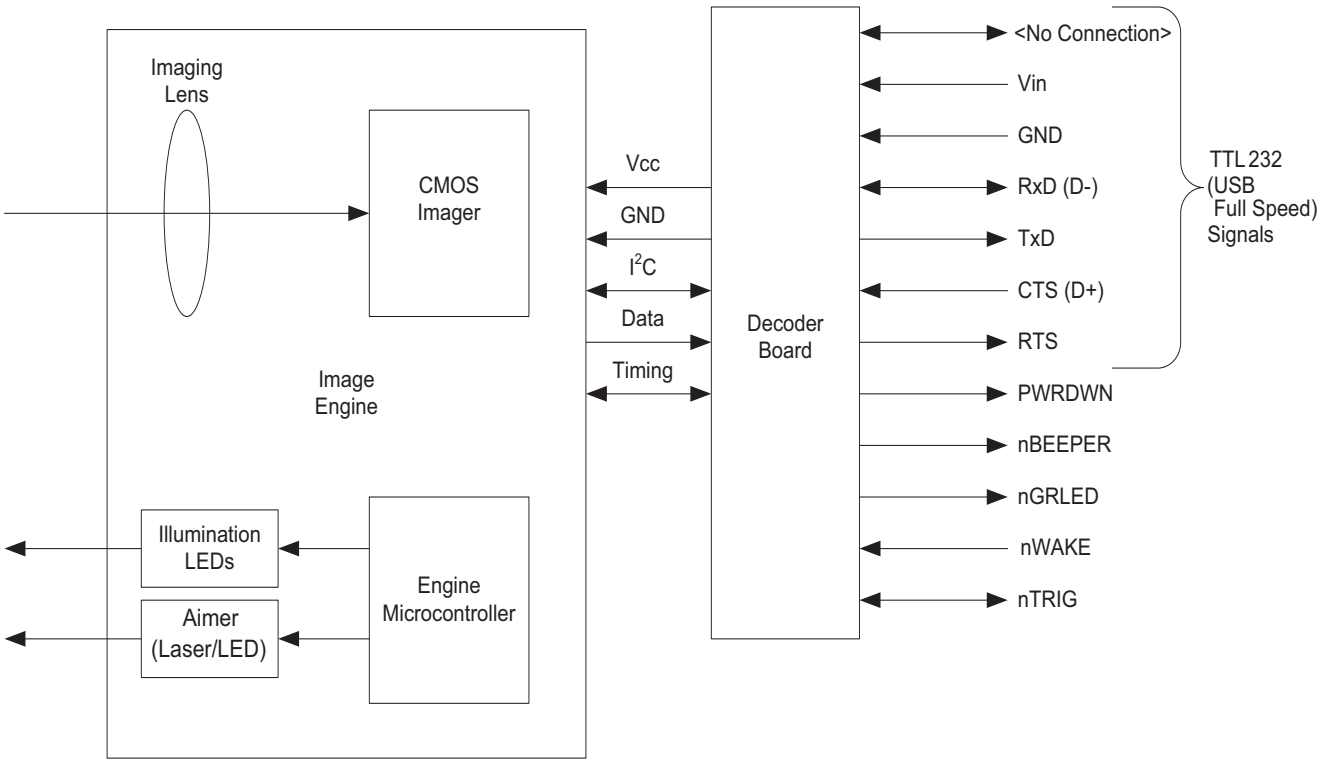
1 Introduction and Installation

About the N36XX Decoded Out Image Engines

The N36XX decoded out engine is a miniature, CMOS imager-based image capture and bar code imaging module device. It is configured to be sold as a bracketed module. The modules are designed for easy integration into an OEM portable device.

The firmware implements an automatic shutter control to provide operation over a wide range of ambient light conditions. The decoder board uses a high-speed microprocessor and memory system to support reading of 1D bar codes, 2D bar codes, and OCR as well as image capture and transfer.

All models are of a modular design consisting of an optics module and a decoder board. The optics module consists of an array sensor, imaging optics, and A/D converter to create a digital representation of the optical signal to be stored in RAM.



The systems may be ordered assembled with a mounting bracket. The following information is presented to assist you in integrating the N36XX module into an OEM application.

12-pinM FPC Connector (Gold)

The product is fitted with a 12-pin FPC connector located on the back of the unit for TTL232 or USB (full speed) communication, optional power, and signaling.

Pin Number	TTL level 232	Input/Output	USB (full speed)	Input/Output
1	<no connection>	-	<no connection>	-
2	Vin	Power	Vin	Power
3	GND	Power	GND	Power
4	RXD	Input	D-	Input/Output
5	TxD	Output	<reserved>	Output
6	CTS[1,2]	Input	D+	Input/Output
7	RTS	Output	<reserved>	Output
8	PWRDWN	Output	PWRDWN	Output
9	nBEEPER	Output	nBEEPER	Output
10	nGoodRead	Output	nGoodRead	Output
11	nWAKE	Input	nWAKE	Input
12	nTrig	Input/Output	nTrig	Input/Output

1. Signal operation is determined by software configuration.

2. For N36XX-XX-XXX (TTL232): 100K ohm pull-up resistor populated in this configuration.

Host Interface Signal Descriptions

Warning! Do not connect a flex strip to or disconnect a flex strip from the host interface connector when power is present on the flex strip. This could damage the image engine.

TTL Level 232 (12-pin Connector)

Signal	Description
<no connection>	-.
Vin	Power – Supply voltage input. Refer to specified input values on page 3-1.
GND	Power – Supply and signal ground.
RxD	Input – TTL level 232 receive data.
TxD	Output – TTL level 232 transmit data.
CTS[1]	Input – TTL level 232 Clear to Send signal.
RTS	Output – TTL level 232 Request to Send.
PWRDWN	Output – Open drain, 100K pull up on engine; PWRDWN (active high) indication that the N36XX is in power off mode.
nBEEPER	Output – Open drain, 100K pull up on engine; idle high signal that can be an active low DC or PWM controlled AC signal used to drive an external beeper.
nGoodRead	Output – Open drain, 100K pull up on engine; active low signal for driving a low current Good Read LED circuit.
nWAKE	Input – 100K pull up on engine; when in power off mode active low wake up signal to the N36XX.
nTrig	Input, Open drain, weak pull up on engine; Trigger line is an active low signal to trigger the unit. Leave the signal floating for inactive state and connected to ground for active state.

1. For N36XX-XX-XXX (TTL232): 100k ohm pull-up resistor populated in this configuration.

USB Interface

The N36XX supports the following USB Low-Speed client interfaces:

Keyboard

The bar code data is sent as it would be typed. The scanner can be configured to send certain keystrokes before and after the bar code. Typical speed is 10-15ms per character. This interface cannot be used to transfer images to the host.

COM Port Emulation

The COM port emulation performs as if the scanner was connected to a typical COM port. A custom driver is provided by Honeywell.

HIDPOS

The N36XX conforms to the USB Bar Code Reader Interface definition.

IBM SurePOS

This interface is used if you want to connect via USB with IBM SurePOS capabilities. (This is the best choice when connecting to the USB port of an IBM POS terminal).

Note: For additional USB programming and technical information, refer to Honeywell's "USB Application Note," available at www.honeywellaidc.com.

Trigger Modes

The N36XX supports three basic trigger modes: Manual/Serial, Low Power Manual Trigger, and Presentation Mode. See the User's Guide for additional trigger mode information.

Manual/Serial Trigger

Manual and serial trigger modes are used to initiate a scanning session. The N36XX waits in a reduced power state for a trigger indication in the form of a command from the TTL Serial or USB interface, or an active low signal from the nTRIG pin of the host interface connector.

The serial command strings that activate and deactivate the trigger function are:

Serial Trigger

Activate: [SYN]T[CR] or [SYN]t[CR]
Deactivate: [SYN]U[CR] or [SYN]u[CR]
where [SYN] = 0x16 and [CR] = 0x0d

Low Power Manual Trigger (Power Off Mode)

Note: This selection is only valid in the TTL-232 Configuration.

Lower power trigger mode causes the N36XX to power off between scans. A manual trigger activation causes the power to be turned on. The trigger line is controlled on the N36XX with a pullup so the line must be left floating to successfully enter the low power modes. The Aim/nWake line must be idle high at the time of power down, otherwise the unit will not go into stop mode. The scanner scans until a timeout or a decode, indicating the appropriate status (beeper and good read LED), outputs the data, and, if the trigger has been released, turns off the power. See Thermal Considerations on page 2-1.

Presentation Mode

Presentation Mode uses ambient light to detect bar codes. The LEDs are dimmed for ambient conditions until a change occurs in the imager's field of view. Then the LEDs become brighter automatically to read the code. If the light level in the room is not high enough, Presentation Mode may not work properly. See Thermal Considerations on page 2-1.

Status Indicators

Good Read LED (Pin 10)

The N36XX provides a pin on the host interface connector (nGRLED) that can be used to drive an LED to indicate a Good Read status. This signal is driven by an Open Drain NC7WZ07 device with a V_{Omax} = 5.5V through the 100K pull up resistor on the engine. It is capable of sinking 32mA at Vin = 4.5V (N36XX supply voltage) or 24mA at Vin = 3.3V.

Beeper (Pin 9)

The N36XX provides a pin on the host interface connector (nBEEPER) that provides a PWM output for generating audible feedback to the user. This signal is used to indicate the status of the device using a variety of patterns and frequencies.

This signal is driven by an Open Drain NC7WZ07 device with a V_{Omax} = 5.5V through the 100K pull up resistor on the engine. It is capable of sinking 32mA at Vin = 4.5V (N36XX supply voltage) or 24mA at Vin = 3.3V.

Power Down (Pin 8)

The N36XX provides a pin on the host interface connector (PWRDWN) that provides an indication when the device is powered down (active high).

When configured for PWRDWN (GPIOFO0), the signal is designed to be used as an indication to the host that the engine is currently powered down. The ability to power down the unit is limited to TTL232 Low Power Mode (TERMID0;TRGMOD2).

This signal is driven by an Open Drain NC7WZ07 device with a V_{Omax} = 5.5V through the 100K pull up resistor on the engine. It is capable of sinking 32mA at Vin = 4.5V (N36XX supply voltage) or 24mA at Vin = 3.3V. It is not advised nor conceivable to allow this signal to act as the drive source for external illumination.

2 Power Control

Illumination/Aimer Control

The image engine illumination and aimer are controlled directly by the device. Management of these features, other than enabling or disabling them, is not exposed to the end user.

Thermal Considerations

⚠ ***When selecting any continuous trigger mode, the ambient temperature should not exceed the maximum operating temperature of the device. If the temperature exceeds the maximum operating temperature, the performance of the device may be reduced, the life of the product may be shortened, and permanent damage may occur to the device.***

Care must be taken when designing the image engines into high ambient temperature applications where high duty cycle or auto-trigger scanning is required. Such conditions can induce self heating of the image engine that can increase image noise. This can result in degraded bar code reading performance and a reduction in image quality. The following precautions should be taken when integrating the image engine.

- Turn off the aiming and illumination LEDs whenever possible.
- Applications where the illumination is not needed use the menu command SCNLED0. application where the aimer is not needed use the menu command SCNAIM0.
- When auto-trigger operation is required, use presentation mode since this mode has “built-in” thermal management features.
- Set the SDRTIM menu command to allow the processor to enter its power saving mode quickly after a bar code decode. (See the SDRTIM description below.)
- Provide air flow to the image engine, when possible.
- Allow ambient light to assist the image engine in bar code decoding, thereby reducing the on-time of the illumination LEDs.

Honeywell engineers have successfully designed the image engine into many applications as described above. Please contact your Honeywell sales manager or solutions architect for detailed design assistance.

SDRTIMxxx Menu Settings

The menu setting SDRTIMxxx can be used to improve the trigger to decode time of the N36XX image engine in certain use cases. However, in other use cases, the performance of the imager can be degraded substantially if this parameter is incorrectly set. This section defines the SDRTIMxxx setting and discusses when it should be changed from its default configuration.

Definition of SDRTIMxxx

SDRTIM is an abbreviation for "Scan Driver Timeout". The setting is used to configure the length of time that the imager is allowed to keep running after it is untriggered (either by a removal of the trigger signal, or by the successful decoding of a bar code). The parameter xxx is the time, in milliseconds, that the imager continues to run. For example, if the parameter SDRTIM200 is sent to the image engine, the imager continues to gather images with the illumination LEDs off, and the decoder board will continue to store those images into memory for 200 ms after the imager is untriggered. When the SDRTIM setting expires, the image engine transitions to standby mode to conserve power until it is triggered once again.

Negative Ramifications of Long SDRTIM Settings

Caution must be used when setting SDRTIM to a very long time period. Since the image engine never enters the power saving standby mode, significant internal heating of the image engine can occur. In high ambient temperature situations, this can result in elevated N36XX internal temperatures that can cause signal to noise degradation of the images. Consequently, the images from the image engine can be unacceptable for human viewing, and bar code reading may no longer be possible. Additionally, since the imager never enters standby mode, the battery life of battery operated systems will be reduced.

Recommendations

It is not advisable to change the SDRTIM command from its default configuration, which is 1 ms (SDRTIM1). Please do not change this setting from its default conditions without consulting a Honeywell Solutions Architect.

3 Electrical

DC Characteristics

Operating Voltage

Configuration	Configuration	Min	Nominal	Max	Unit
TTL232 Only[1]	N36XX-XX-XXX	3.14	3.3	3.47	V
USB (Full Speed) Only[2.3]	N36XX-XX-XXX	4.75	5.0	5.25	V

1. *At least 3.14V must be maintained at the N36XX input connector during scanning.*
2. *At least 4.75V must be maintained at the N36XX input connector during scanning.*
3. *No TTL232 option available.*

Warning! Do not connect a flex strip to or disconnect a flex strip from the host interface connector when power is present on the flex strip. This could damage the image engine.

Absolute Maximum Ratings (T=23°C)

Parameter	Min	Typ	Max	Unit
V_{Input}	-0.5		5.5 (USB) 3.6 (TTL232)	V
V_{Output}	-0.5		Vcc +0.5	V

DC Operating

(Vcc +3.3V, T= 23◦ C)

Parameter	Signals	Min	Typ	Max	Unit
V_{IL}	nRXD, nCTS			0.84	V
V_{IH}		2.31			V
V_{IL}	nWAKE			0.84	V
V_{IH}		2.31			V
V_{OL}	PWRDWN, nBEEPER, nGRLED			0.55	V
V_{OH}		100K to VCC			V
V_{OL}	nTXD, nRTS (I_O = 16mA)			0.55	V
V_{OH}		2.31			V

(Vcc +5V, T= 23◦ C)

Parameter	Signals	Min	Typ	Max	Unit
V_{IL}	nWAKE			1.0	V
V_{IH}		3.35			V
V_{OL}	PWRDWN, nBEEPER, nGRLED			0.55	V
V_{OH}		100K to VCC			V

1. *For N36XX-XX-XXX (USB Full-Speed): No additional pull-ups are populated in this configuration. For N36XX-XX-XXX (TTL232): Termination of these signals are required in this configuration. Need to terminate Pin 6 (CTS) if flow control is not used.*

Current Draw

For TTL232: Idle, Standby and Power Off power modes are controlled by the SDRTIM, 232LPT, TRGLPT, and TRGMOD settings. Idle mode is entered when the SDRTIM time-out expires. Standby mode is entered when the SDRTIM and 232LPT time-outs expire. Power Off mode is entered when the SDRTIM, 232LPT and TRGLPT time-outs expire. Use TRGMOD2 to enable Power Off mode.

For USB: Standby mode is entered when USB suspends.

(T_A= 23◦ C)

Power Mode	Description	3.3V (RS232 w/ Interface Board)	5V (USB) No interface board connected
I_{Peak} *1,2*	Peak current draw when the engine is scanning (Manual Trigger)	345mA	245mA
$I_{OperatingAverage}$ *1,2*	Average current draw when the engine is scanning (Manual Trigger)	310mA	220mA
I_{Idle} (imager powered on) *1,2*	Typical current draw while not scanning or decoding, but power is applied to the imager. Controlled by the menu commands SDRTIM and IMGPWR.	110mA	78mA
I_{Idle} (imager powered off) *1,2*	Typical current draw while power is not applied to the imager. Controlled by the menu command IMGPWR.	65mA	60mA
$I_{Standby}$ *1,2*	Typical current draw while in standby mode. For RS232, Standby mode is entered when the menu command 232LPT expires while in Idle mode. (This mode is only available in a 232 configuration). For USB, Standby mode is entered when USB suspends.	3.5mA	2.5mA
$I_{Power\ Off}$ *1,2*	Current draw while in Power Off mode (PWRDWN signal is high). Mode is entered when the menu command TRGLPT expires while in both Standby and Manual Low Power (TRGMOD2) modes. (This mode is only available in a 232 configuration).	.03mA	n/a

1. Average Value
2. Modified interface board with beeper/LED removed used for this measurement, also disconnect 232 cable while measuring

Power Conditioning and Interruptions

Always apply power to the imager *after* connecting to the interface device.

Warning! Connecting the imager to live power ("hot plugging") may damage the electronic components of the imager.

A clean and stable power source is required for the imager. Momentary power interruptions or fluctuations put the imager into Power Off mode.

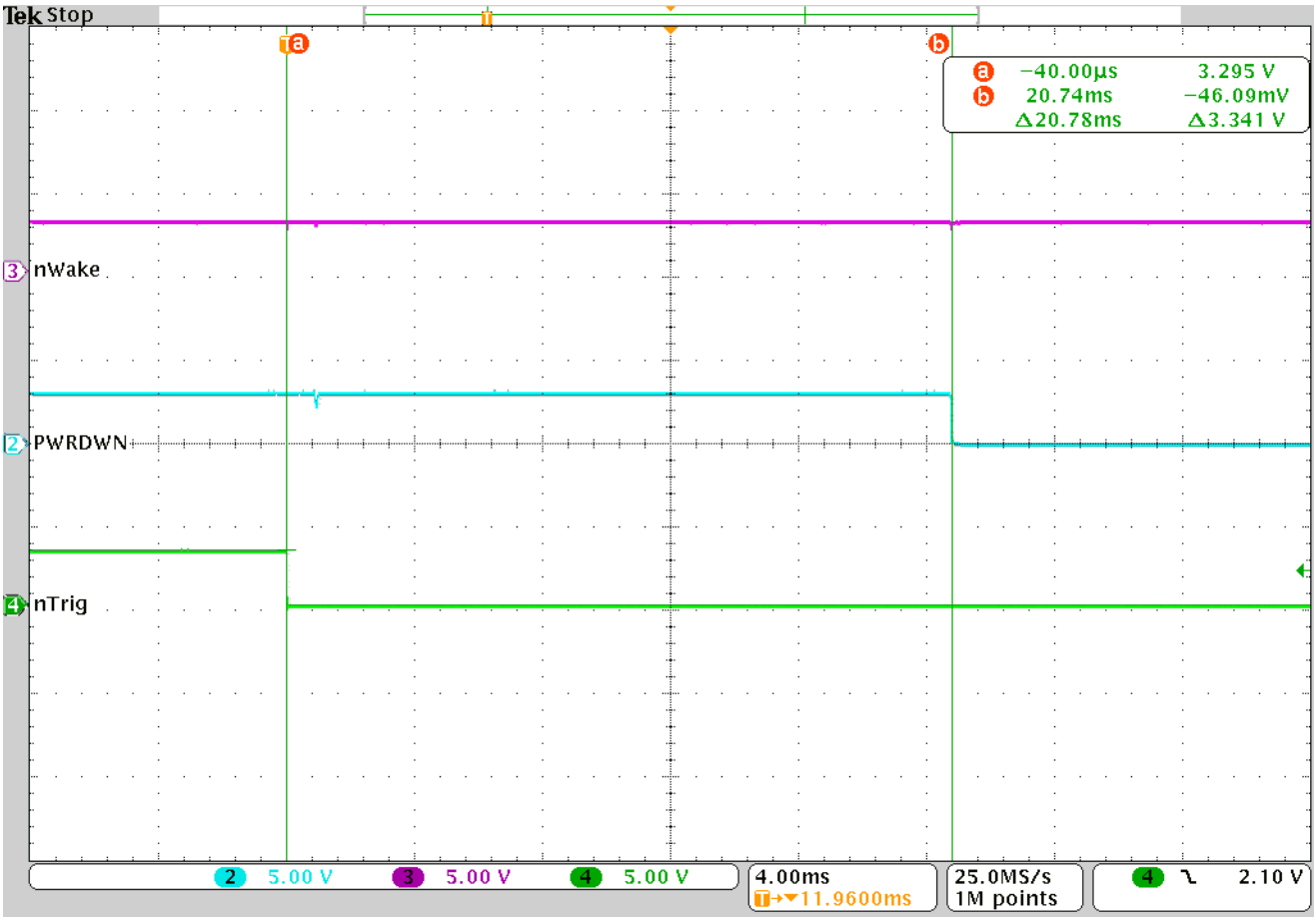
AC Characteristics

The following diagrams indicate the typical timing for the Power-up and Power-off.

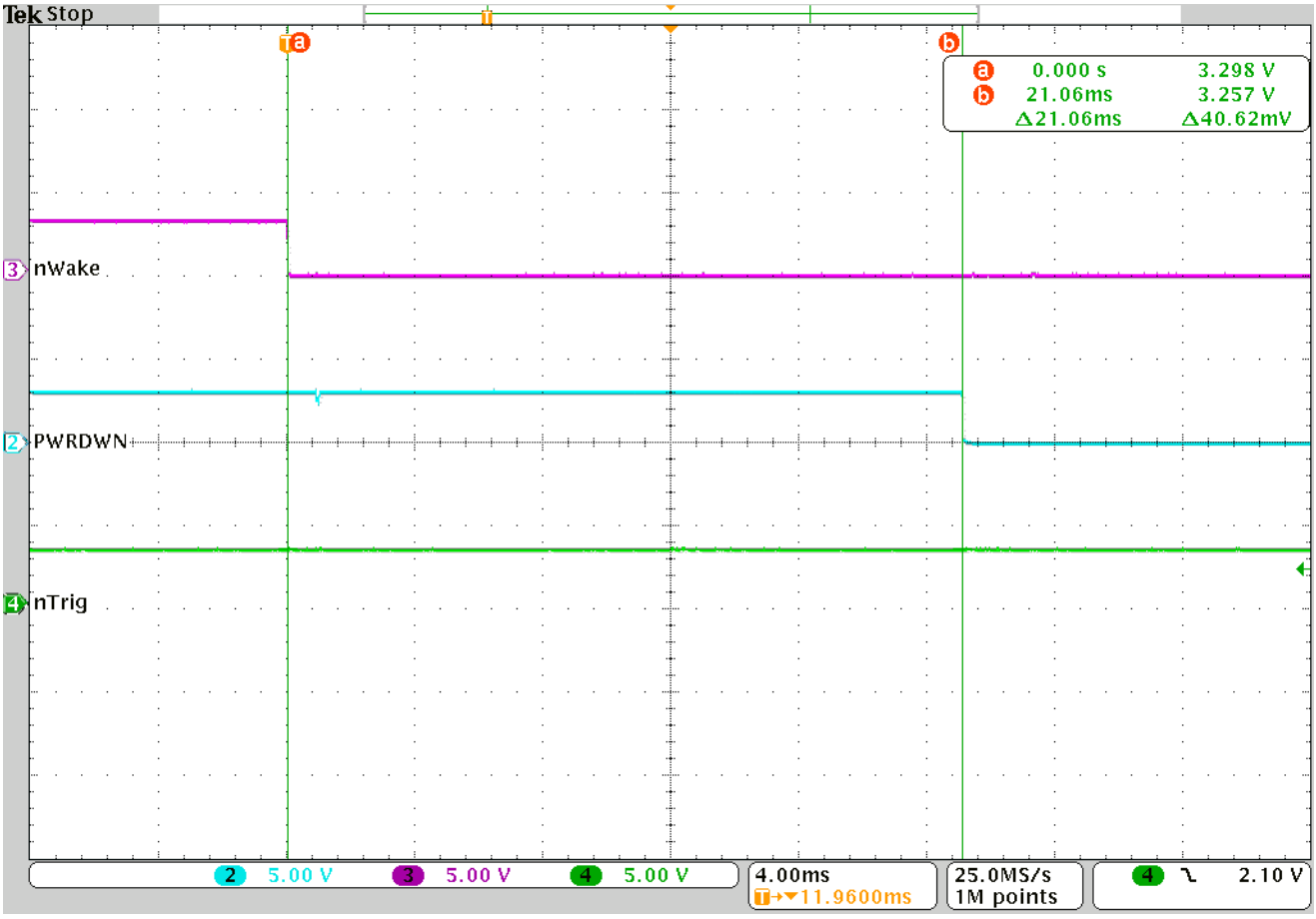
*Power Up From Power Off State (Low Power Mode)**

The PWRDWN signal goes low ~21ms after the wake up event occurs, indicating that the device is powered up and ready to start scanning.

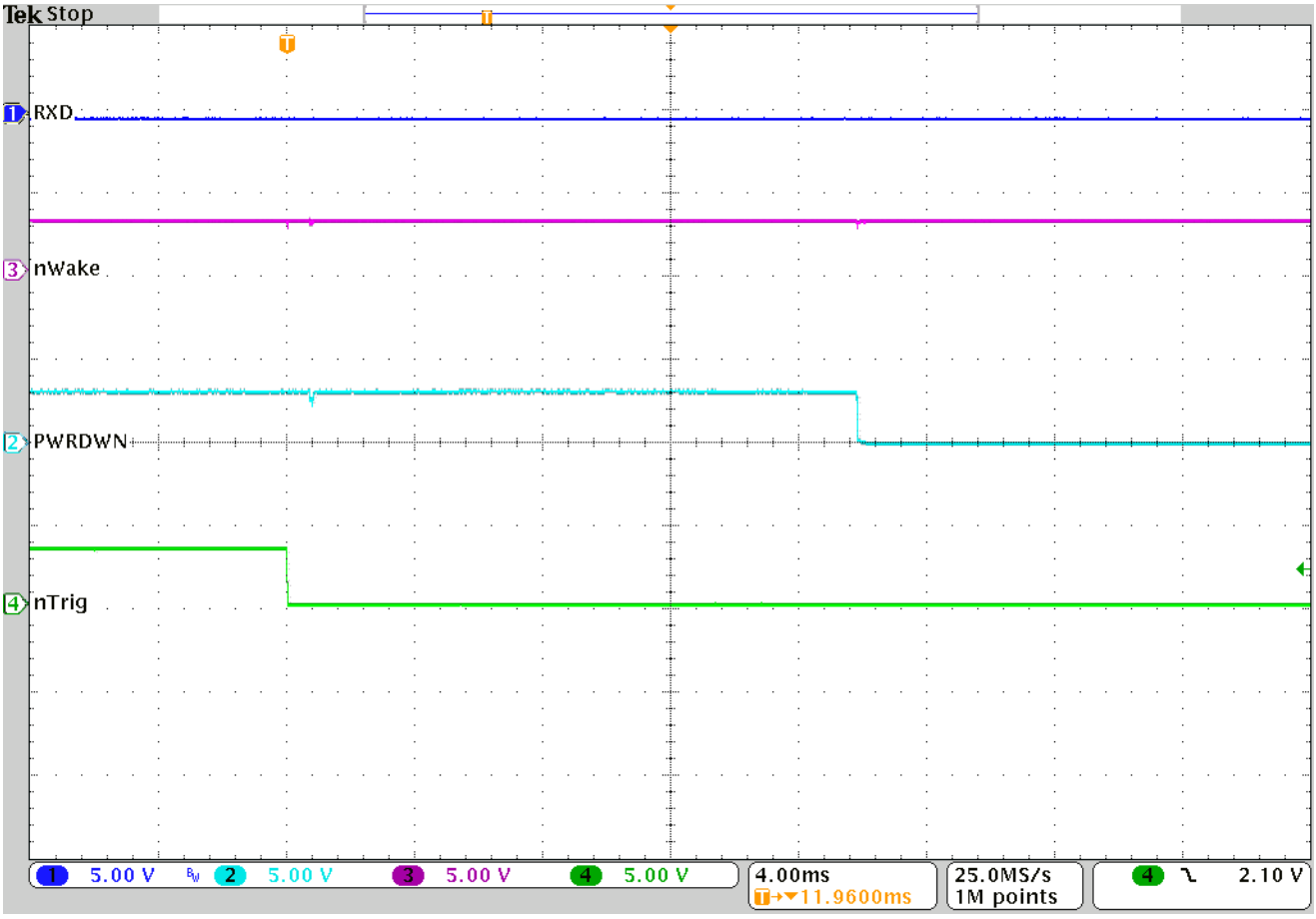
nTrig - Activating the trigger*



nWake - Toggling nWake*



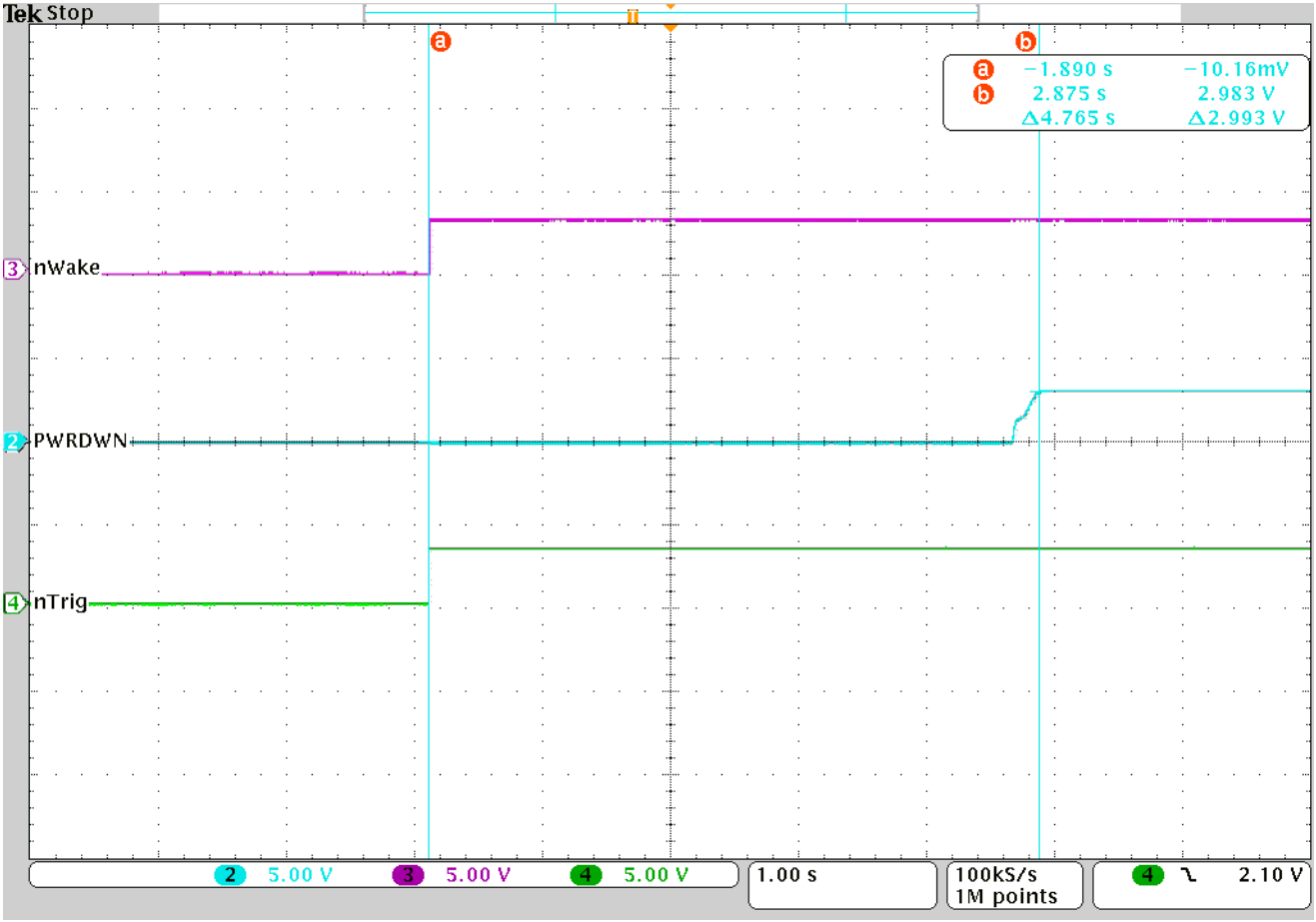
Tx - Sending data from the host*



*Note: * The following settings were used to capture the above plots: DEFALT;TERMID0;TRGLPT2;232LPT2;TRGMOD2.*

*Power Off Timing (Low Power Mode)**

After nWAKE and nTRIG are released it takes about 5 seconds for the PWRDWN signal to go high (hardware time-out) with the lowest setting for TRGLPT (TRGLPT1 - low power time-out of 1 second). Below is a representation of the power off sequence.

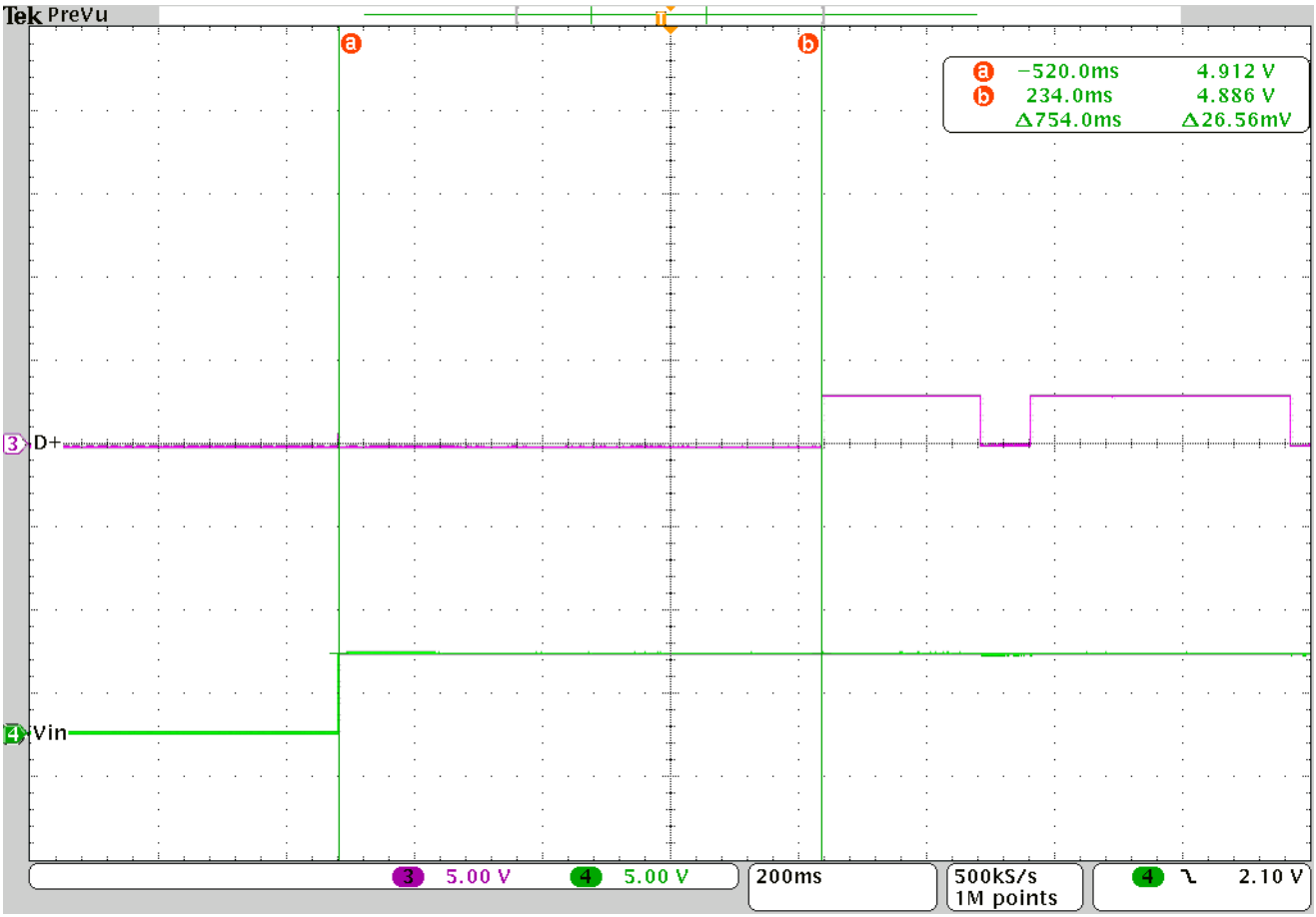


* The following settings were used to capture the above plots: DEFALT;TERMID0;TRGLPT1;TRG-MOD2.

USB Enumeration Timing

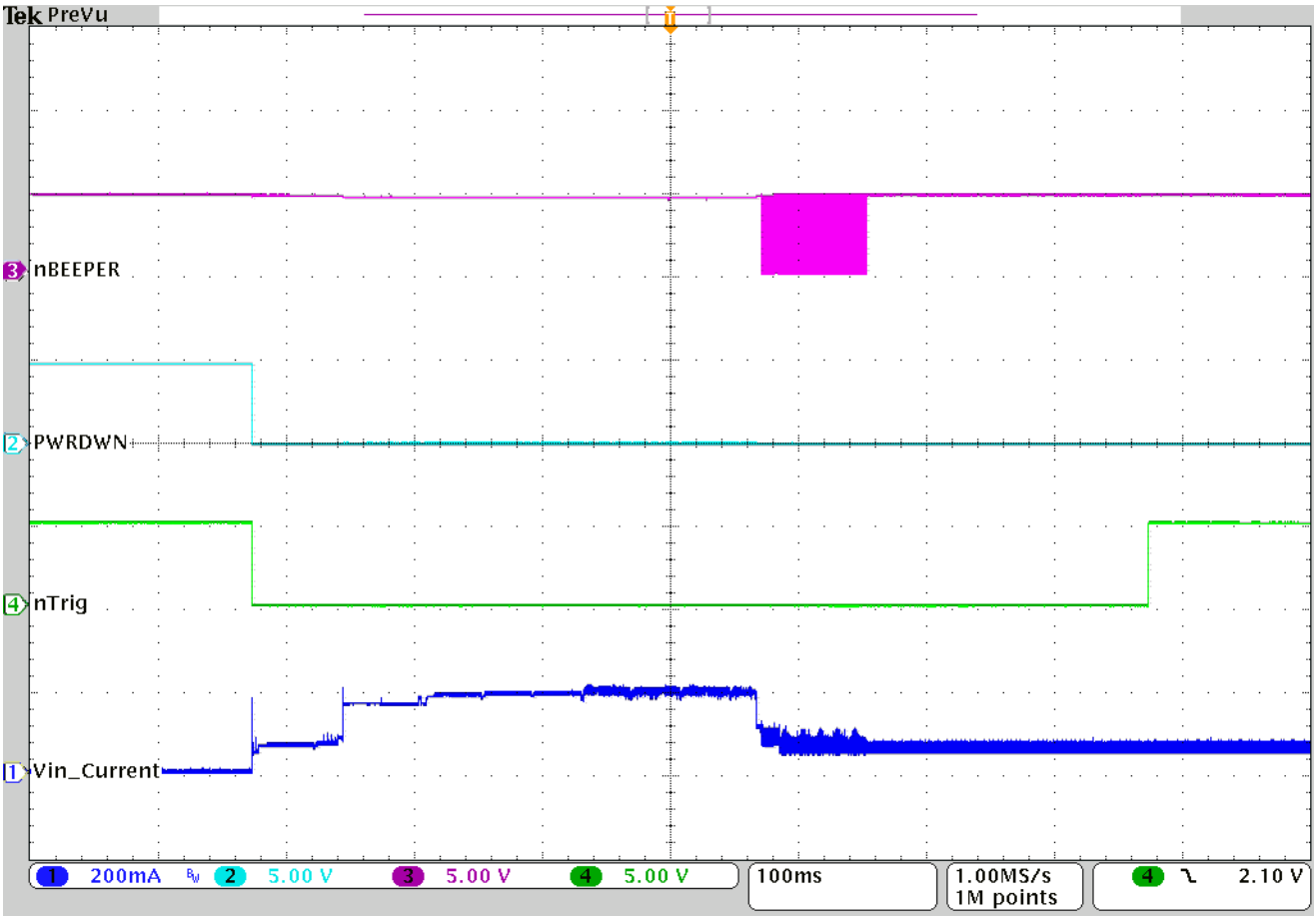
USBSPD0 -- Full Speed

Showing Vin, nRESET and D+.



Interleaved Mode

Typical current profile from power up to power off - showing Vin current, nTRIG, nGOODREAD, PWRDWN.



Environmental Specifications

Parameter	Specification
Temperature Ranges (non-condensing):	
Operating	14° F to 104° F (-10° C to 40° C)
Storage	-40° F to 140° F (-40° C to 60° C)
Humidity (Operating and Storage)	Up to 95% RH, non-condensing at 104° F (40° C)
Shock	The engine functions properly after being subjected to 18 shocks of 2,500 Gs for 0.4 msec at 73.4° F (23° C) applied via the mounting surface.
Vibration	The engine will function properly after the following vibration test. The imaging module will be vibrated with a displacement of 1" (25.4mm) p-p from 5Hz to 13Hz and with an acceleration of 10G's peak from 13Hz to 500Hz, 1 G acceleration (500 Hz to 2,000 Hz). The frequency sweep will be linear in one direction and will be 15 minutes in duration. The test will continue for one hour along each of three perpendicular axes.
MTBF	The engines have a calculated MTBF of greater than 70,000 hours based upon MIL-HDBK-217F (release December 1, 1991). The calculation is based on the part count method for the Ground Benign (GB) environmental conditions.

4 Optics and Illumination

Sensor

CMOS sensor with rolling shutter and 640 x 480 pixel resolution; 30 frames per second.

Illumination Wavelength

White LED with CCT 5000K

Aiming Wavelength

640nm visible Hyper Red LED.

Window Placement

Distance from Window

The window should be mounted as close as possible to the front of the Image Engine (parallel, no tilt). The distance measured from the front of the engine to the closest surface of the window should not exceed 0.8mm. Since unwanted reflections can occur at either surface and the window thickness can vary, the distance from the front of the imager light gasket to the far side of the glass should not exceed 2.4mm. For windows thicker than 1.5mm, the distance should be decreased so that the far side of the window does not exceed 2.4mm from the front surface of the engine. If the glass thickness is increased from 1.5mm to 2mm, the distance from the front of the engine to the near surface of the window needs to be decreased by 0.4mm to maintain the maximum distance of 2.4mm from the front of the engine to the far side of the window.

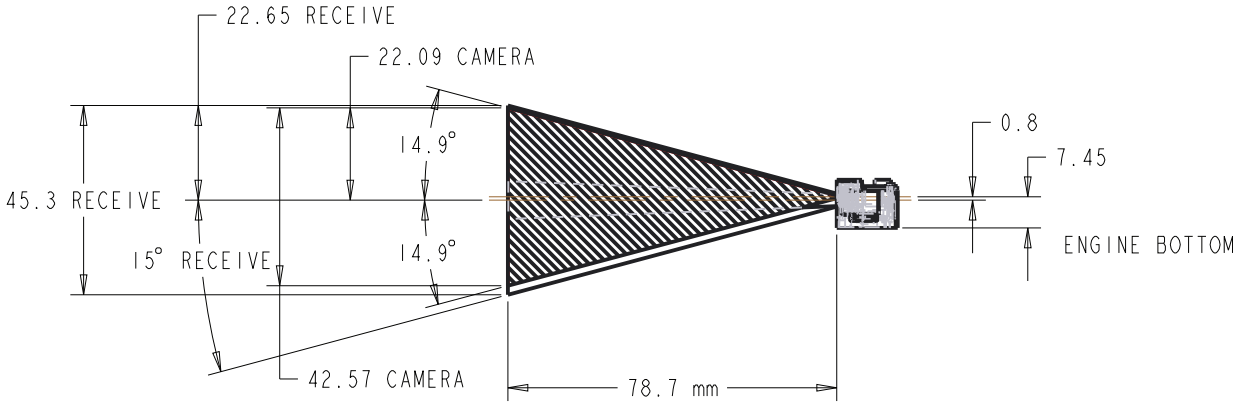
Reflective Materials in the Imager's Field of View

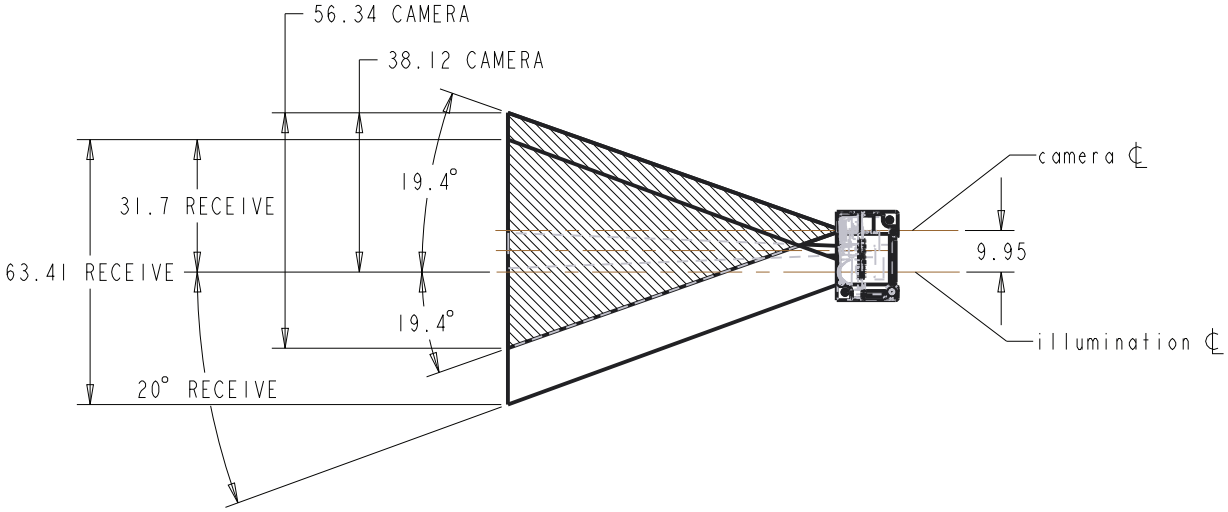
Highly reflective objects in the imager's field of view can cause bright spots to appear in the image and can increase the amount of time needed to read the image. These bright spots are analogous to the reflections seen when taking a snapshot of a mirror with a flash camera. When designing the imager into fixed mount applications, keep highly reflective machine components out of the imager's field of view. If such components must be within the imager's field of view, blacken or shield them to prevent this problem from occurring.

Window Size and Material Requirements

1. Window material must be clear. Clarex (cast acrylic) is preferred. Polycarbonate and CR39 are also acceptable. The window material should have a hard coating over it to protect it from scratches.
2. A minimum thickness of .03 inches (.762 mm) is recommended for this window, with a maximum allowable thickness of .062 inches (1.57mm). These dimensions prevent reflections from the window that can be seen by the camera.
3. Window clear aperture shown in the following Window Size Diagram is for the location shown. The window size must increase as it is moved away from the optics module to accommodate the aiming and illumination envelopes shown.

Window Size Diagram





Bar Code Presentation Angle

Bar codes printed on glossy or laminated paper are best read at angles greater than 5° in relation to the Image Engine. This prevents bright illumination reflections from being returned to the Image Engine.

Depth of Field–Guaranteed Specifications

The guaranteed depth of field measurements used the following parameters:

- Distances are measured from the front of the engine.
- +23°C (+73°F), 0 lux
- Photographic quality codes

Symbology	Near Distance (mm)	Far Distance (mm)	Depth of Field (mm)
5 mil Code 39	75	120	45
13 mil UPC (100% UPC)	59	225	166

Depth of Field–Typical Specifications

The guaranteed depth of field measurements used the following parameters:

- Distances are measured from the front of the engine.
- +23°C (+73°F), 535 lux
- Photographic quality codes

Symbology	Near Distance (mm)	Far Distance (mm)	Depth of Field (mm)
5 mil Code 39	61	130	69
20 mil Code 39	60	380	320
13 mil UPC (100% UPC)	55	280	225
6.7 mil PDF417	60	125	65
10 mil Data Matrix	60	130	70
20 mil QR	50	230	180

Field of View/Resolution

Focus	N36XX
Horizontal Field Angle (degrees)	±18.9
Vertical Field Angle (degrees)	±14.4

Note: DPI can be calculated based on the following formula:
Horizontal DPI = 640 pixels/width of horizontal field of view (inches)
Vertical DPI = 480 pixels/width of vertical field of view (inches)

Bar Code Reading Angles

Note: The following angles are not cumulative.

Specular Reflection Angle: ±5°

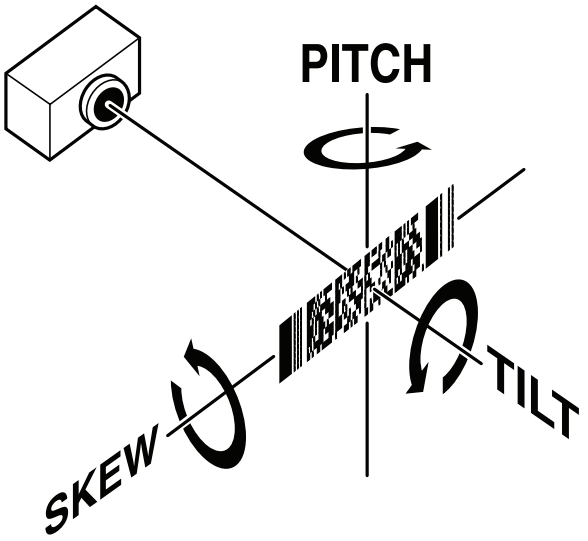
Pitch: ±45 degrees typical for 13 mil UPC, ±45 degrees typical for 20 mil Data Matrix

Skew: ±65 degrees typical for 13 mil UPC, ±45 degrees typical for 20 mil Data Matrix

Tilt: 360°

1D code also depends on length of code - up to 360°

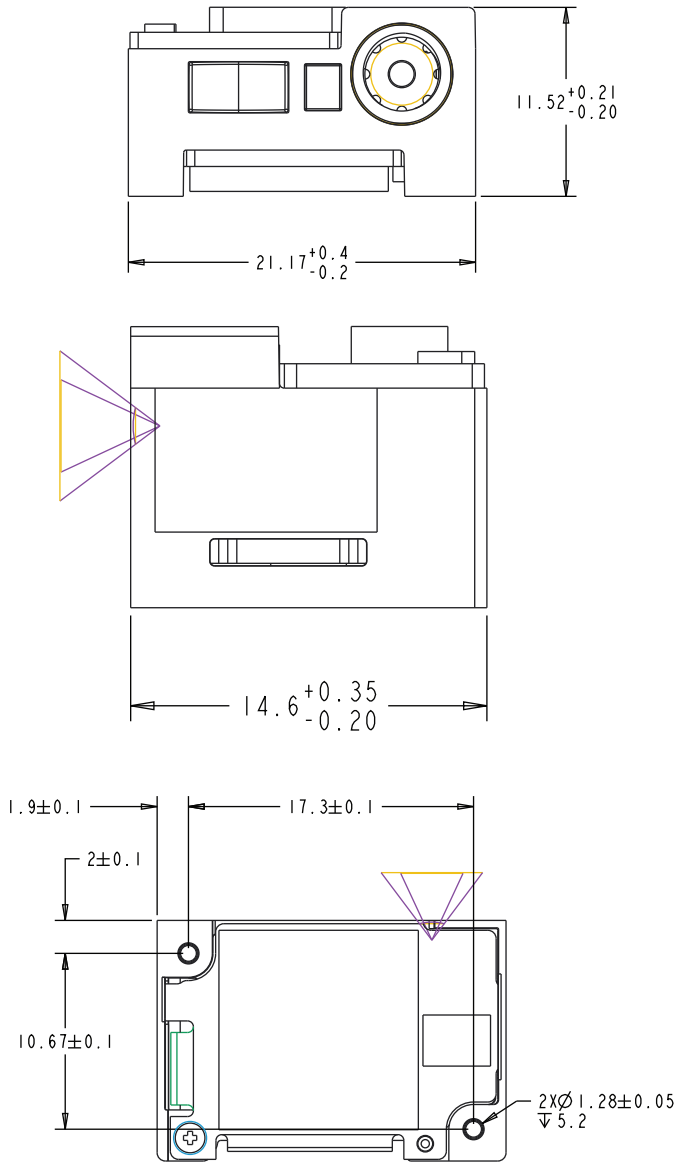
2D code 360°



5 Mechanical Specifications

N36XX Engine Bracketed Mounting

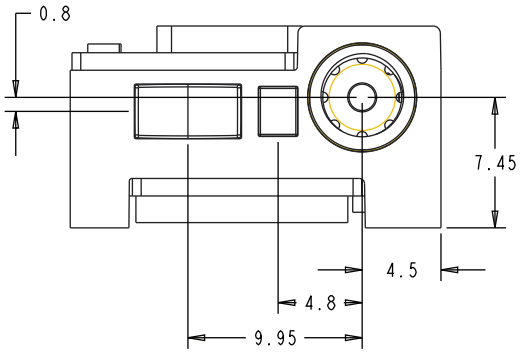
The illustrations below show the mechanical mounting dimensions for the N36XX:



Units = mm

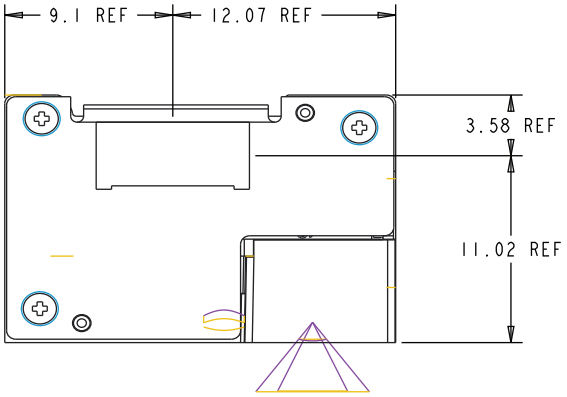
Note: 2 piece #1.6 self tapping screws are used to mount the engine. The recommended torque is 1.25(+/-0.1)Kgf.cm. The screw length is decided by the integrator's configuration and the recommended lock depth is 4(+/-0.5)mm. Any screw should be tested to verify proper fit and performance with the module.

The illustration below shows the lens center dimensions for the N36XX:



Units = mm

N36XX Connector Position



Units = mm

Host Interface Connector

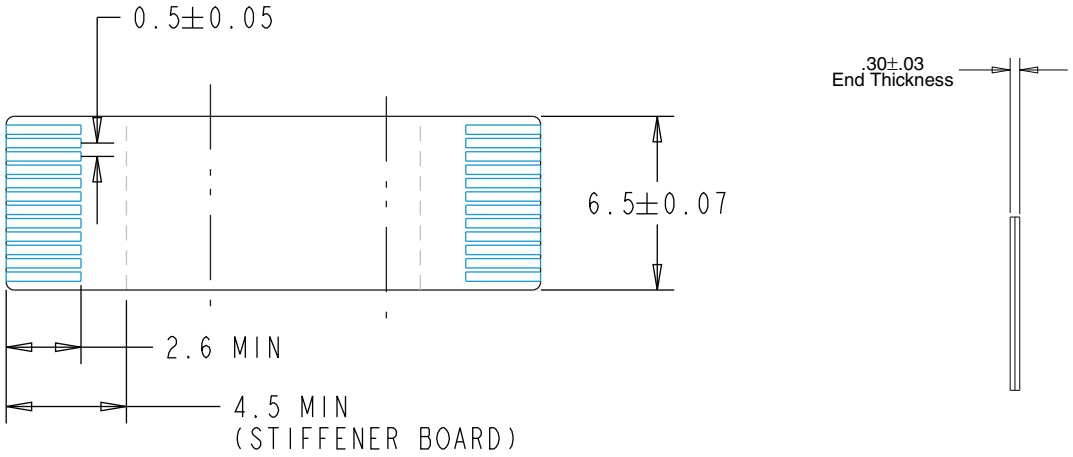
The host interface connector is a Molex 51281-1230, 12 pin, 0.5mm pitch, non-ZIF horizontal surface mount FPC connector. See Molex catalog for details.

The N36XX uses a flex-rigid board, which includes an illumination board, a decode board and an interface board. The flex board connects the illumination board and the decode board. No connector is needed.

The N36XX uses a flex-rigid board, which includes an illumination board, a decode board and an interface board. A board-to-board connector is used to connect the optics module onto the illumination board. No flex circuit is needed.

Host Flex Circuit/Strip

The host interface flex should be compatible with a 50109124-001 (gold plated, lead free) style connector. The following is an example of a flex circuit:



Units = mm

Recommended characteristics:

Trace Width .35 mm
Consult the connector manufacturer for the required thickness of the flex and flex cable recommended dimension.

Also see Design Considerations / Test Results on page A-1.

6 Product Agency Compliance

Product Agency Compliance

Note: It is the OEM manufacturer's responsibility to comply with applicable regulation(s) in regard to standards for specific equipment combinations.

ESD Precautions

The engine is shipped in ESD safe packaging. Use care when handling the scan engine outside its packaging. Be sure grounding wrist straps and properly grounded work areas are used.

Dust and Dirt

The engine must be sufficiently enclosed to prevent dust particles from gathering on the imager and lens. When stocking the unit, keep it in its protective packaging. Dust and other external contaminants will eventually degrade unit performance.

RoHS

The engine is in compliance with Directive 2011/65/EU, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS), dated January, 2003.

A

Design Considerations / Test Results

EMI Considerations

Electro-magnetic interference is a concern in all electronic designs. The effects of EMI are enhanced as designs become more digital and the digital circuits' speed increases. The N36XX is no exception.

The N36XX does not preclude end product integrations from obtaining regulatory and safety standards. The OEM integrator will need to verify compliance as implemented in their host system.

The Main Board

The Main board is based on a 24KHz crystal in the decoder board section that is used to generate a 400MHz clock for the core and a 133MHz clock for the memory interface. There are a number of other frequencies that may be generated at any given time depending on what interface the decoder board is set up to use or various intermittent signatures that occur in a typical image capture and decode process. There are three switching power supplies on the decoder boards that operate between 1MHz and 2MHz.

The Imager

The imager runs based on a 24MHz pixel clock frequency.

Design Considerations

There are several considerations that must be made when designing a system to utilize the N36XX. When integrating the N36XX to other components in the system, ensure that a clean power supply is being used and that there is good signal ground integrity (the quieter the better). The other major consideration in any system is interconnects. The N36XX uses flex circuits for its interconnect to the host system and between the decoder board and image engine. Proper flex strip design is critical to achieving adequate EMI results. The length, impedance, shape, and routing path of the flex can play big roles in the EMI signature of a product. A short list of considerations when designing with flexes follows:

Test Results

The N36XX is designed to meet EN55022 B emission levels. The N36XX has been tested for compliance using representative models.

Model 1 (page A-2) is based on a cabled platform (RS232):

- The N36XX is mounted on the Honeywell demo board.
- The demo board is connected to the host via an 8 foot long, coiled, TTL level 232 cable (CBL-020-300-C00).
- The N36XX is operating in TTL serial-232 mode.

Model 2 (page A-5) is an alternate cabled platform (USB Full Speed):

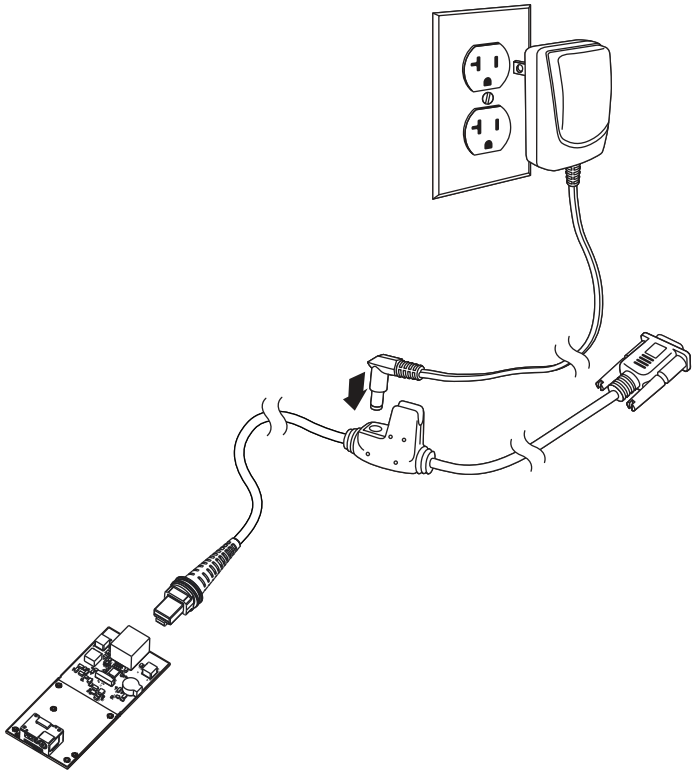
- The N36XX is mounted on the Honeywell demo board
- The demo board is connected to the host via a Honeywell 8 foot long, straight, USB cable (CBL-500-300-S00).
- The N36XX is operating in USB mode (USBSPD0).

The following pages document the test results.

Note: The charts show the quasi-peak values, which are used to determine pass/fail, while the graphs show maximum hold values.

Model 1: N36XX TTL232 Unit

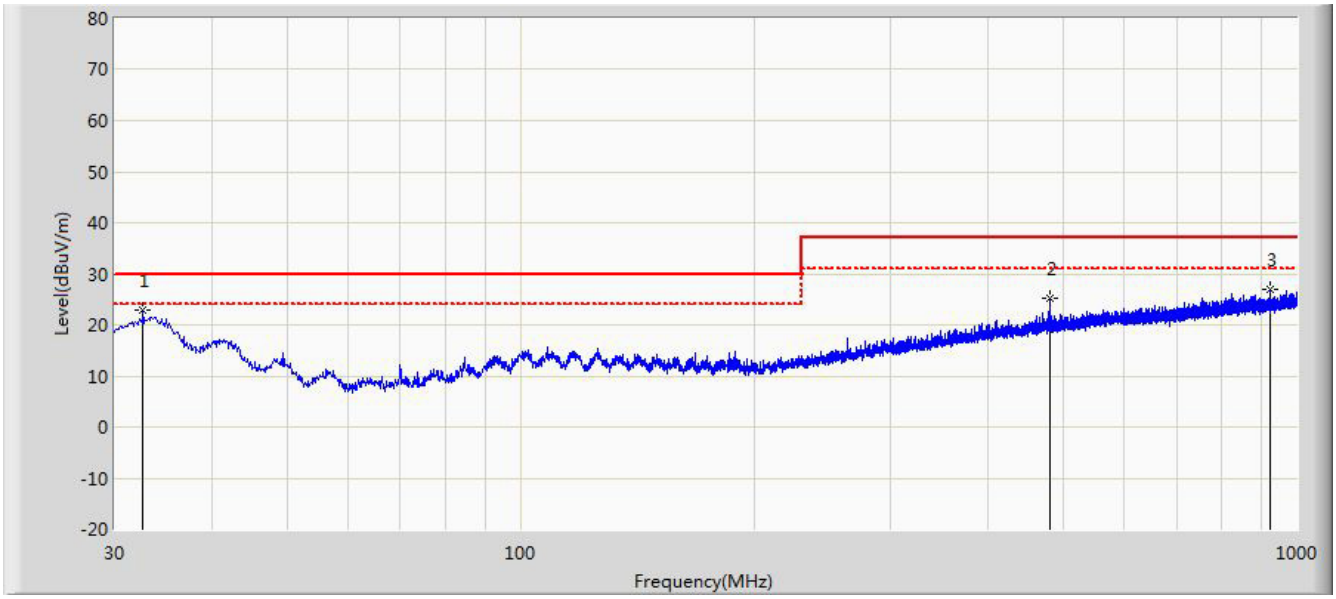
The illustration below shows a unit similar to the unit tested:



This system passed FCC class B limits at all tested frequencies. The test results are shown in the following charts.

Model 1 - Radiated Emissions Measurements 30-1000 MHz (Horizontal)

Limit	EN55022_RE(10m)_Class B
Probe	CBL6112B_2931 (30-1000MHz)
EUT	N36XX TTL232
Margin	6
Polarity	Horizontal
Power	AC 230V/50Hz



No	Mark	Frequency MHz)	Measure Level	Reading Level	Over Limit	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant (POS (cm)	Table Pos (deg)	Type
1	*	32.667	22.801	27.615	-7.199	30.000	16.426	1.003	22.243	0	0	PK
2		479.959	25.328	25.487	-11.672	37.000	16.944	4.607	21.711	0	0	PK
3		924.825	26.814	20.035	-10.186	37.000	20.813	6.909	20.943	0	0	PK

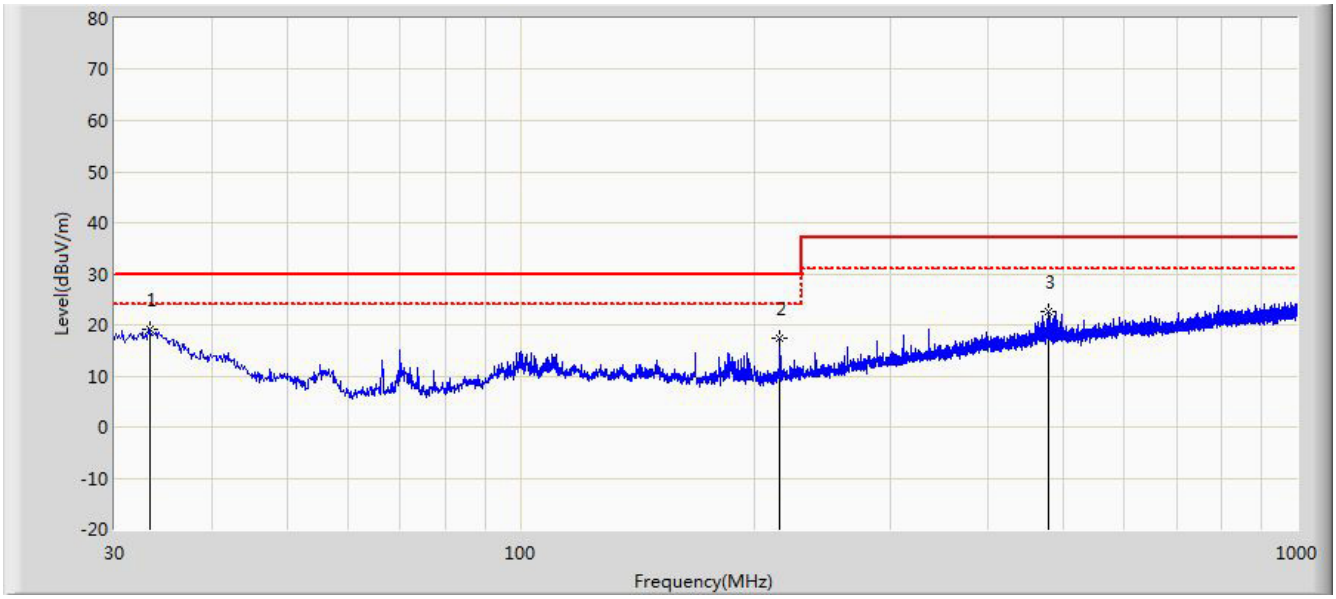
Note: All readings below 1GHz are quasi-peak. Readings below 1GHz are performed with peak and/or average measurements as necessary.

Note: "" means this data is the worst emission level.*

Note: Measurement Level = Reading Level + Factor (Probe+Cable+Amp).

Model 1 - Radiated Emissions Measurements 30-1000 MHz (Vertical)

Limit	EN55022_RE(10m)_Class B
Probe	CBL6112B_2933 (30-1000MHz)
EUT	N36XX TTL232
Margin	6
Polarity	Vertical
Power	AC 230V/50Hz



No	Mark	Frequency MHz)	Measure Level	Reading Level	Over Limit	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant (POS (cm)	Table Pos (deg)	Type
1	*	33.395	19.103	25.205	-10.897	30.000	16.103	1.143	23.348	0	0	PK
2		215.997	17.518	28.304	-12.482	30.000	9.340	3.208	23.334	0	0	PK
3		479.110	22.573	23.538	-14.427	37.000	16.917	5.174	23.056	0	0	PK

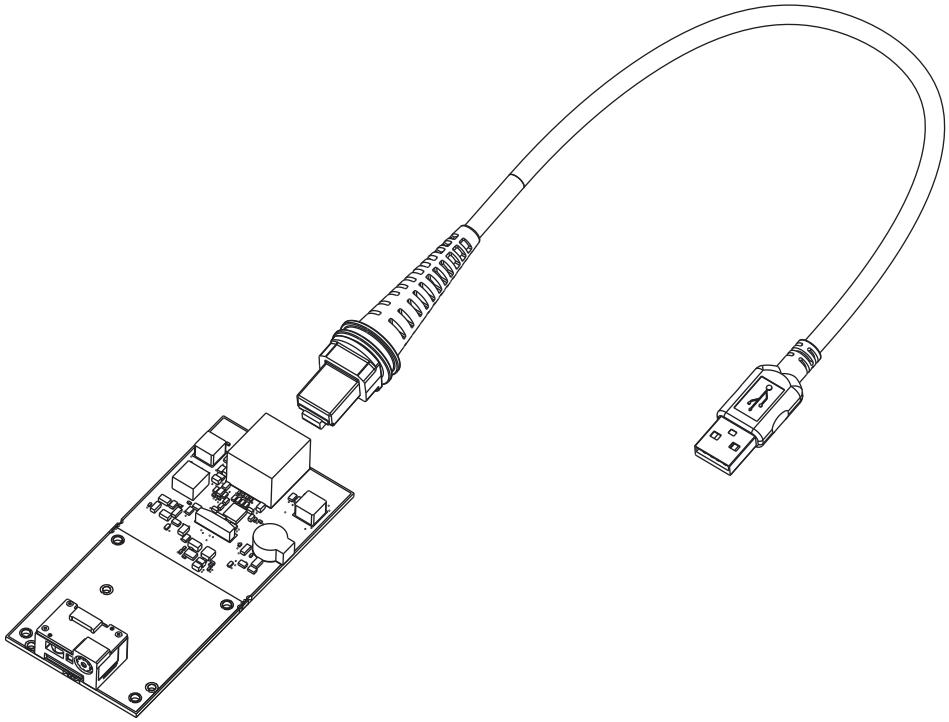
Note: All readings below 1GHz are quasi-peak. Readings below 1GHz are performed with peak and/or average measurements as necessary.

Note: "" means this data is the worst emission level.*

Note: Measurement Level = Reading Level + Factor (Probe+Cable+Amp).

Model 2: N36XX USB Unit

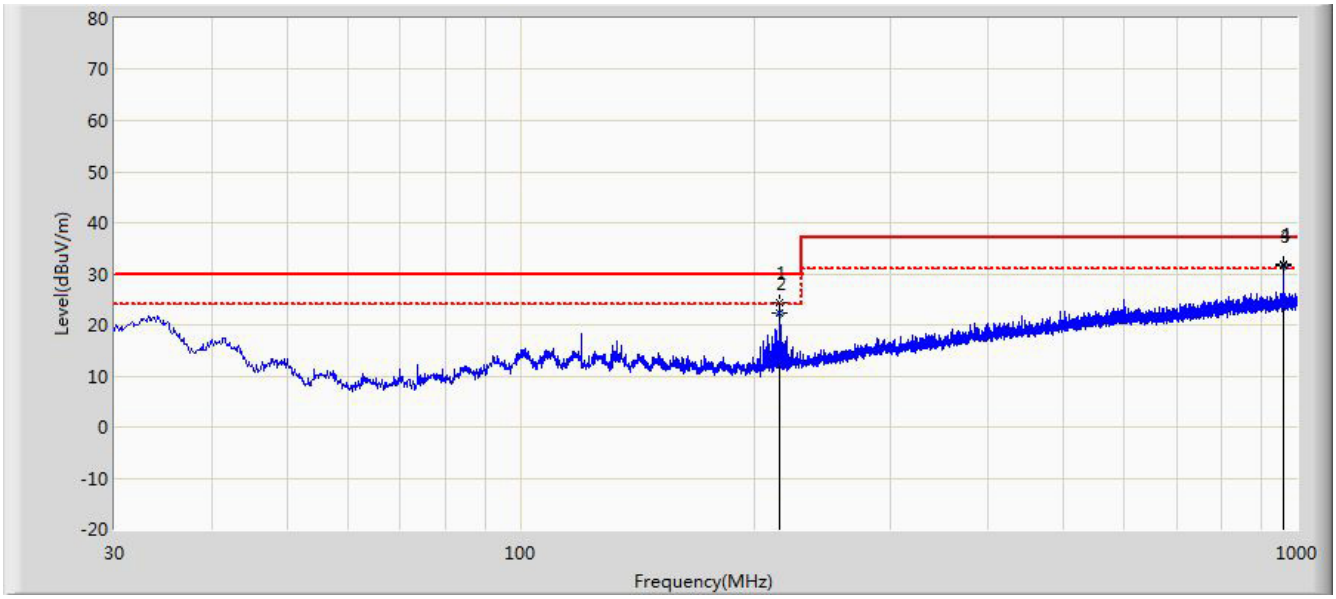
The illustration below shows a unit similar to the unit tested.



This system passed FCC Class B limits at all tested frequencies. The test results are shown in the following charts.

Model 2 - Radiated Emissions Measurements 30-1000 MHz (Horizontal)

Limit	EN55022_RE(10m)_Class B
Probe	CBL6112B_2931 (30-1000MHz)
EUT	N36XX USB
Margin	6
Polarity	Horizontal
Power	AC 230V/50Hz



No	Mark	Frequency MHz)	Measure Level	Reading Level	Over Limit	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant (POS (cm)	Table Pos (deg)	Type
1		215.997	24.364	34.199	-5.636	30.000	9.499	2.878	22.213	0	0	PK
2		216.002	22.366	32.200	-7.634	30.000	9.499	2.879	22.212	400	67	QP
3		960.015	31.737	24.600	-5.263	37.000	20.977	7.069	20.910	100	308	QP
4	*	960.109	31.912	24.776	-5.088	37.000	20.975	7.070	20.909	0	0	PK

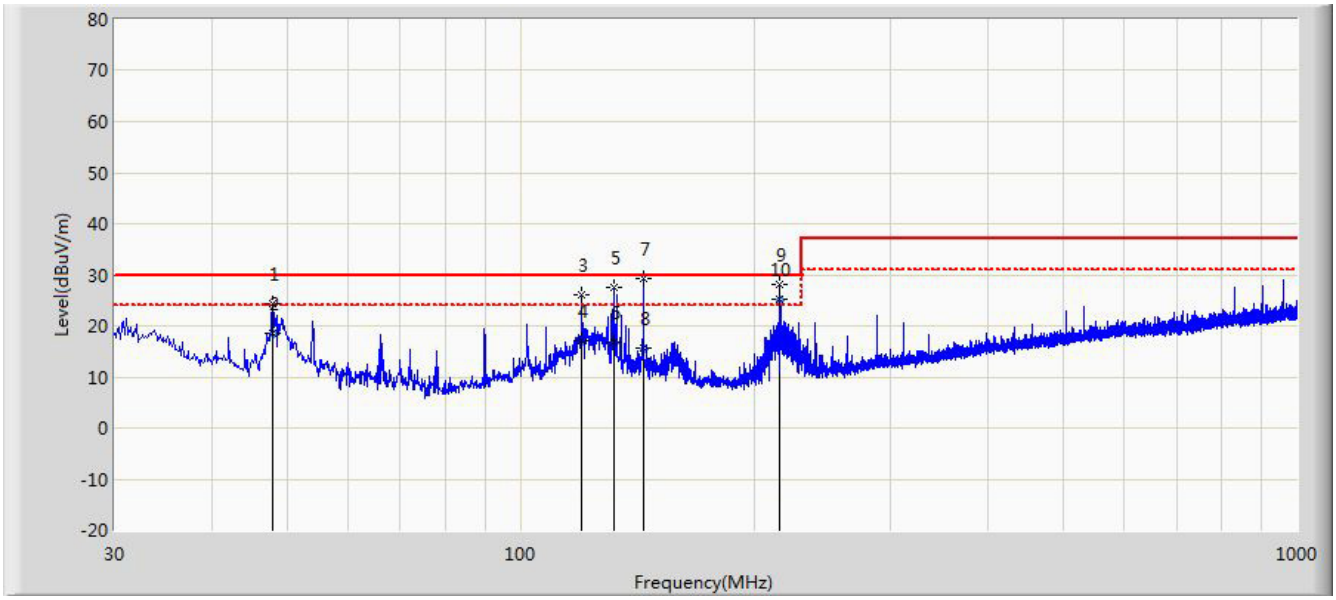
Note: All readings below 1GHz are quasi-peak. Readings below 1GHz are performed with peak and/or average measurements as necessary.

Note: "" means this data is the worst emission level.*

Note: Measurement Level = Reading Level + Factor (Probe+Cable+Amp).

Model 2 - Radiated Emissions Measurements 30-1000 MHz (Vertical)

Limit	EN55022_RE(10m)_Class B
Probe	CBL6112B_2933 (30-1000MHz)
EUT	N36XX USB
Margin	6
Polarity	Vertical
Power	AC 230V/50Hz



No	Mark	Fre-quency MHz)	Measure Level	Read-ing Level	Over Limit	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant (POS (cm)	Table Pos (deg)	Type
1		47.945	24.238	37.676	-5.762	30.000	8.537	1.388	23.363	0	0	PK
2		47.998	18.535	32.000	-11.465	30.000	8.509	1.388	23.362	200	323	QP
3		119.967	26.001	37.020	-3.999	30.000	10.073	2.295	23.387	0	0	PK
4		119.997	16.981	28.000	-13.019	30.000	10.073	2.296	23.388	300	360	QP
5		131.850	27.474	38.500	-2.526	30.000	9.917	2.422	23.365	0	0	PK
6		132.021	16.767	27.800	-13.233	30.000	9.912	2.423	23.368	400	246	QP
7	*	143.975	29.325	40.521	-0.675	30.000	9.634	2.544	23.374	0	0	PK
8		143.995	15.704	26.900	-14.296	30.000	9.634	2.544	23.374	200	277	QP
9		215.997	28.099	38.885	-1.901	30.000	9.340	3.208	23.334	0	0	PK
10		216.001	25.215	36.000	-4.785	30.000	9.341	3.208	23.334	100	51	QP

Note: All readings below 1GHz are quasi-peak. Readings below 1GHz are performed with peak and/or average measurements as necessary.

Note: "" means this data is the worst emission level.*

Note: Measurement Level = Reading Level + Factor (Probe+Cable+Amp).

B Customer Validation Testing

Temperature Test

To insure that the image engine stays within the operating limits of the specification, the following test must be done with the engine integrated into the designated enclosure.

1. Attach the thermocouple for each engine model as shown below.
2. Configure the scan engine in the desired triggering mode and scan per use case.

Note: Continuous scanning (with no downtime) can produce undesired results.

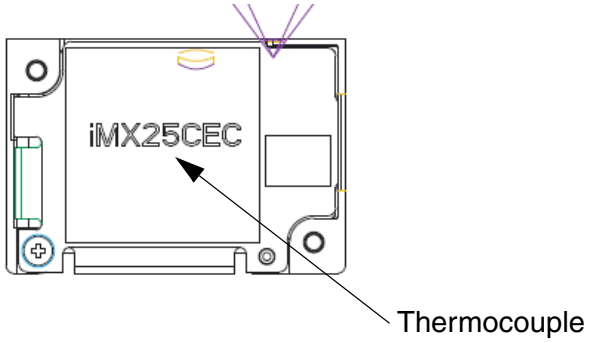
3. Place the integrated engine into the chamber at the maximum operating temperature (40°C).
4. Record the temperature at various intervals or after the temperature has stabilized.
5. Compare the results with the operating limits.

Note: Testing needs to be performed for each enclosure in which an engine will be used.

Operating Voltage

The operating voltage must be maintained within the engine's specified limits (see "Operating Voltage" on page 3-1).

Engine Bottom View



Honeywell Scanning & Mobility
9680 Old Bailes Road
Fort Mill, SC 29707

www.honeywellaidc.com

Honeywell

N36XX Decoded Engine

User's Guide

Disclaimer

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Web Address: www.honeywellaidc.com

For patent information, refer to www.hsmpats.com.

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Chapter 9 - Utilities

Chapter 10 - Serial Programming Commands

Chapter 11 - Maintenance and Troubleshooting

Appendix A - Reference Charts

Sample Symbols

Programming Chart

Customer Support

Technical Assistance

If you need assistance installing or troubleshooting your device, please contact us by using one of the methods below:

Knowledge Base: www.hsmknowledgebase.com

Our Knowledge Base provides thousands of immediate solutions. If the Knowledge Base cannot help, our Technical Support Portal (see below) provides an easy way to report your problem or ask your question.

Technical Support Portal: www.hsmsupportportal.com

The Technical Support Portal not only allows you to report your problem, but it also provides immediate solutions to your technical issues by searching our Knowledge Base. With the Portal, you can submit and track your questions online and send and receive attachments.

Web form: www.hsmcontactsupport.com

You can contact our technical support team directly by filling out our online support form. Enter your contact details and the description of the question/problem.

Telephone: www.honeywellaidc.com/locations

For our latest contact information, please check our website at the link above.

Product Service and Repair

Honeywell International Inc. provides service for all of its products through service centers throughout the world. To obtain warranty or non-warranty service, please visit www.honeywellaidc.com and select **Support > Contact Service and Repair** to see your region's instructions on how to obtain a Return Material Authorization number (RMA #). You should do this prior to returning the product.

Limited Warranty

Refer to www.honeywellaidc.com/warranty_information for your product's warranty information.

Send Feedback

Your feedback is crucial to the continual improvement of our documentation. To provide feedback about this manual, contact the Honeywell Technical Communications department at ACSHSMTechnicalCommunications@honeywell.com.

1 Getting Started

Introduction

The N36XX scan engine is designed for integration into a wide range of OEM devices. The scan engine's compact mechanical design can drop into many existing applications, allowing OEMs and third-party manufacturers to integrate the benefits of image-based scanning into a variety of devices, including hand held computers (PDTs, medical instrumentation, kiosks, diagnostic equipment, and robotics. The N36XX unit decodes linear, 2D, postal codes, and OCR features.

About This Manual

This User's Guide provides demonstration, installation, and programming instructions for the N36XX scan engine.

Honeywell's bar code scan engines are factory programmed for the most common terminal and communications settings. If you need to change these setting, programming is accomplished by scanning the bar codes in this guide.

An asterisk (*) next to an option indicates the default setting.

Unpacking Your Device

After you open the shipping carton containing the OEM scan engine(s), take the following steps:

- Check for damage during shipment. Report damage immediately to the carrier who delivered the carton.
- Make sure the items in the carton match your order.
- Save the shipping container for later storage or shipping.

OEM Scan Engine Models

There are two models of the OEM scan engine, which may be used with the interfaces described in this manual. Refer to the chart below to determine the models that can be used with your interface.

Models	Interface	Decoding Capability
N3680X-XX-TTL	TTL Level 232	Linear, 2D, postal, OCR
N3680X-XX-USB	Full-Speed USB	Linear, 2D, postal, OCR

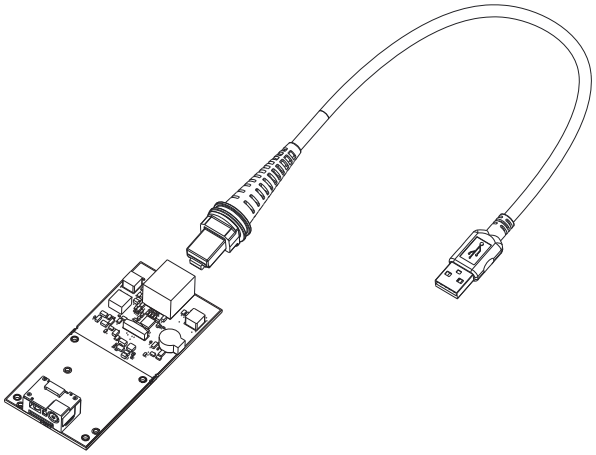
Connecting the Development Scan Engine to the PC

The development OEM scan engine can connect to a PC for evaluation.

Connecting with USB

Note: The N3680XX-XX-USB scan engine will only communicate USB through the 10 pin modular connector.

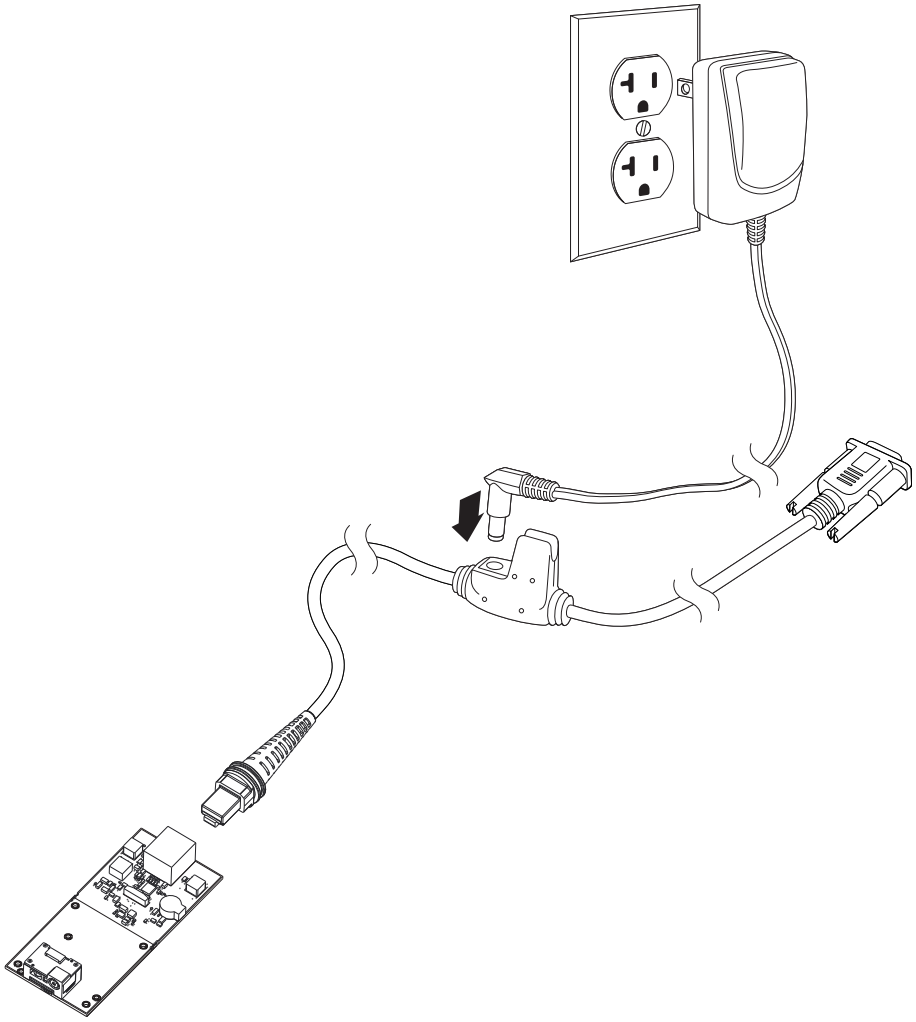
1. Turn off power to the terminal/computer.
2. If using full-speed USB, connect the USB interface cable to the interface board and to the matching USB port on the computer.



3. Verify the scan engine operation by scanning a bar code from the Sample Symbols in the back of this manual. The scan engine beeps once when a bar code is successfully decoded.

Connecting with RS232 Serial Port

1. If using an RS-232 connection, connect the serial interface cable to the interface board and to the matching port on the back of the computer.



2. Connect the power supply connector to the serial interface cable. Plug in the power supply.
3. Turn the terminal/computer power back on. The scan engine beeps.
4. If connecting the scan engine using an RS-232 interface, all communication parameters between the scan engine and terminal must match for correct data transfer through the serial port using RS-232 protocol. Scan the RS-232 interface bar code below. This programs the scan engine for an RS-232 interface at 115,200 baud, parity–none, 8 data bits, 1 stop bit, and adds a suffix of a CR LF.

PAP232.

RS-232 Interface

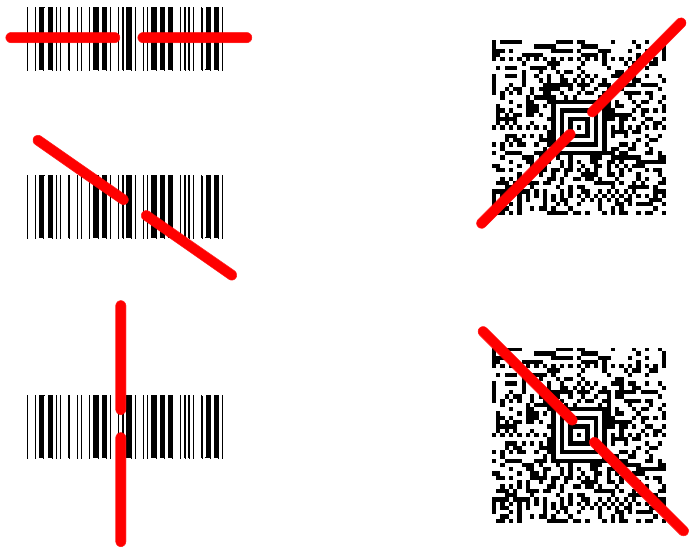
5. Verify the scan engine operation by scanning a bar code from the Sample Symbols in the back of this manual. The scan engine beeps once when a bar code is successfully decoded.

To connect an scan engine to your host system, refer to the N36XX Integration Manual.

Reading Techniques

The scan engine has a view finder that projects a bright red aiming beam that corresponds to the scan engine's horizontal field of view. The aiming beam should be centered over the bar code, but it can be positioned in any direction for a good read.

Linear bar code **2D Matrix symbol**



The aiming beam is smaller when the scan engine is closer to the code and larger when it is farther from the code. Symbologies with smaller bars or elements (mil size) should be read closer to the unit. Symbologies with larger bars or elements (mil size) should be read farther from the unit. To read single or multiple symbols (on a page or on an object), hold the scan engine at an appropriate distance from the target, pull the trigger, and center the aiming beam on the symbol. If the code being scanned is highly reflective (e.g., laminated), it may be necessary to tilt the code up 15° to 18° to prevent unwanted reflection.

Menu Bar Code Security Settings

Honeywell scan engines are programmed by scanning menu bar codes or by sending serial commands to the scan engine. If you want to restrict the ability to scan menu codes, you can use the Menu Bar Code Security settings. Contact the nearest technical support office Technical Assistance on page vii for further information.

Setting Custom Defaults

You have the ability to create a set of menu commands as your own, custom defaults. To do so, scan the **Set Custom Defaults** bar code below before scanning the menu commands for your custom defaults. If a menu command requires scanning numeric codes from the back cover, then a **Save** code, that entire sequence will be saved to your custom defaults. When you have entered all the commands you want to save for your custom defaults, scan the **Save Custom Defaults** bar code.

MNUCDP.
Set Custom Defaults

MNUCDS.
Save Custom Defaults

You may have a series of custom settings and want to correct a single setting. To do so, just scan the new setting to overwrite the old one. For example, if you had previously saved the setting for Beeper Volume at Low to your custom defaults, and decide

you want the beeper volume set to High, just scan the **Set Custom Defaults** bar code, then scan the Beeper Volume High menu code, and then **Save Custom Defaults**. The rest of the custom defaults will remain, but the beeper volume setting will be updated.

Resetting the Custom Defaults

If you want the custom default settings restored to your scan engine, scan the **Activate Custom Defaults** bar code below. This is the recommended default bar code for most users. It resets the scan engine to the custom default settings. If there are no custom defaults, it will reset the scan engine to the factory default settings. Any settings that have not been specified through the custom defaults will be defaulted to the factory default settings.

Activate Custom Defaults

2 Programming the Interface

Introduction

This chapter describes how to program your system for the desired interface.

Programming the Interface - Plug and Play

Plug and Play bar codes provide instant scan engine set up for commonly used interfaces.

Note: After you scan one of the codes, power cycle the host terminal to have the interface in effect.

Keyboard Wedge

If you want your system programmed for an IBM PC AT and compatibles keyboard wedge interface with a USA keyboard, scan the bar code below. Keyboard wedge is the default interface.

Note: The following bar code also programs a carriage return (CR) suffix.

IBM PC AT and Compatibles with CR suffix

Laptop Direct Connect

For most laptops, scanning the **Laptop Direct Connect** bar code allows operation of the scan engine in parallel with the integral keyboard. The following **Laptop Direct Connect** bar code also programs a carriage return (CR) suffix and turns on Emulate External Keyboard (page 2-15).

Laptop Direct Connect with CR suffix

RS232 Serial Port

The **RS232 Interface** bar code is used when connecting to the serial port of a PC or terminal. The following **RS232 Interface** bar code also programs a carriage return (CR) and a line feed (LF) suffix, baud rate, and data format as indicated below. It also changes the trigger mode to manual.

Option	Setting
Baud Rate	115,200 bps
Data Format	8 data bits, no parity bit, 1 stop bit

RS232 Interface

USB IBM SurePos

Scan one of the following “Plug and Play” codes to program the scan engine for an IBM SurePos (USB handheld scanner) or IBM SurePos (USB tabletop scanner) interface.

Note: After scanning one of these codes, you must power cycle the cash register.

USB IBM SurePos (USB Handheld Scanner) Interface

USB IBM SurePos (USB Tabletop Scanner) Interface

Each bar code above also programs the following suffixes for each symbology:

Symbology	Suffix	Symbology	Suffix
EAN 8	0C	Code 39	00 0A 0B
EAN 13	16	Interleaved 2 of 5	00 0D 0B
UPC A	0D	Code 128	00 18 0B
UPC E	0A	Code 39	00 0A 0B

USB PC or Macintosh Keyboard

Scan one of the following codes to program the scan engine for USB PC Keyboard or USB Macintosh Keyboard. Scanning these codes also adds a CR suffix.

USB Keyboard (PC)

USB Keyboard (Mac)

USB Japanese Keyboard (PC)

USB HID

Scan the following code to program the scan engine for USB HID bar code scanners.

USB HID Bar Code Scanner

USB Serial

Scan the following code to program the scan engine to emulate a regular RS232-based COM Port. If you are using a Microsoft® Windows® PC, you will need to download a driver from the Honeywell website (www.honeywellaidc.com). The driver will use the next available COM Port number. Apple® Macintosh computers recognize the scan engine as a USB CDC class device and automatically use a class driver.

USB Serial

Note: No extra configuration (e.g., baud rate) is necessary.

ACK/NAK Mode

ACK/NAK Mode On

*** ACK/NAK Mode Off**

Verifone® Ruby Terminal Default Settings

Scan the following Plug and Play code to program the scan engine for a Verifone Ruby terminal. This bar code sets the baud rate to 1200 bps and the data format to 8 data bits, no parity bit, 1 stop bit. It also adds a line feed (LF) suffix and programs the following prefixes for each symbology:

Symbology	Prefix
UPC-A	A
UPC-E	A
EAN-8	FF
EAN-13	F

Verifone Ruby Settings

Gilbarco® Terminal Default Settings

Scan the following Plug and Play code to program the scan engine for a Gilbarco terminal. This bar code sets the baud rate to 2400 bps and the data format to 7 data bits, even parity, 2 stop bits. It also adds a carriage return (CR) suffix and programs the following prefixes for each symbology:

Symbology	Prefix
UPC-A	A
UPC-E	E0
EAN-8	FF
EAN-13	F

Gilbarco Settings

Honeywell Bioptic Aux Port Configuration

Scan the following Plug and Play code to program the scan engine for a Honeywell bioptic scanner auxiliary port configuration. This bar code sets the baud rate to 38400 bps and the data format to 8 data bits, no parity, 1 stop bit.

Honeywell Bioptic Settings

Datalogic™ Magellan© Aux Port Configuration

Scan the following Plug and Play code to program the scan engine for a Datalogic Magellan auxiliary port configuration. This bar code sets the baud rate to 9600 bps and the data format to 8 data bits, no parity, 1 stop bit.

Datalogic Magellan Bioptic Settings

NCR Bioptic Aux Port Configuration

Scan the following Plug and Play code to program the scan engine for an NCR bioptic scanner auxiliary port configuration. The following prefixes are programmed for each symbology:

Symbology	Prefix	Symbology	Prefix
UPC-A	A	Interleaved 2 of 5	b
UPC-E	E0	Code 128	f
EAN-8	FF	GS1 DataBar Omnidirectional	r
EAN-13	F	GS1 DataBar Expanded	r
Code 39	a	Codabar	N
		Code 32 Pharmaceutical (PARAF)	a

NCR Bioptic Settings

Wincor Nixdorf Terminal Default Settings

Scan the following Plug and Play code to program the scan engine for a Wincor Nixdorf terminal. This bar code sets the baud rate to 9600 bps and the data format to 8 data bits, no parity, 1 stop bit.

Wincor Nixdorf Terminal Settings

Wincor Nixdorf Beetle™ Terminal Default Settings

Scan the following Plug and Play code to program the scanner for a Wincor Nixdorf Beetle terminal. The following prefixes are programmed for each symbology:

Symbology	Prefix	Symbology	Prefix
Aztec Code	V	Interleaved 2 of 5	I
Codabar	N	MaxiCode	T
Code 93	L	MicroPDF417	S
Code 128	K	PDF417	Q
Data Matrix	R	QR Code	U
EAN-8	B	Straight 2 of 5 IATA	H
EAN-13	A	UPC-A	A0
GS1 DataBar	E	UPC-E	C
GS1-128	P	All other bar codes	M

Wincor Nixdorf Beetle Settings

Wincor Nixdorf RS232 Mode A

Scan the following Plug and Play code to program the scanner for a Wincor Nixdorf RS232 Mode A terminal. This bar code sets the baud rate to 9600 bps and the data format to 8 data bits, odd parity, 1 stop bit. The following prefixes are programmed for each symbology:

Symbology	Prefix	Symbology	Prefix
Code 128	K	EAN-13	A
Code 93	L	GS1-128	K
Codabar	N	Interleaved 2 of 5	I
UPC-A	A0	Plessey	O
UPC-E	C	Straight 2 of 5 IATA	H
EAN-8	B	GS1 DataBar	E
All other bar codes	M		

Wincor Nixdorf RS232 Mode A Settings

Keyboard Country Layout

Scan the appropriate country code below to program the keyboard layout for your country or language. As a general rule, the following characters are supported, but need special care for countries other than the United States:
@ | $ # { } [ ] = / ‘ \ < > ~

Keyboard Countries


KBDCTY0.
*** United States**


KBDCTY35.
Albania


KBDCTY81.
Azeri (Cyrillic)


KBDCTY80.
Azeri (Latin)


KBDCTY82.
Belarus


KBDCTY1.
Belgium


KBDCTY33.
Bosnia


KBDCTY16.
Brazil


KBDCTY59.
Brazil (MS)


KBDCTY52.
Bulgaria (Cyrillic)

Keyboard Countries (Continued)


KBDCTY53.
Bulgaria (Latin)


KBDCTY54.
Canada (French legacy)


KBDCTY18.
Canada (French)


KBDCTY55.
Canada (Multilingual)


KBDCTY32.
Croatia


KBDCTY15.
Czech


KBDCTY40.
Czech (Programmers)


KBDCTY39.
Czech (QWERTY)


KBDCTY38.
Czech (QWERTZ)


KBDCTY8.
Denmark


KBDCTY11.
Dutch (Netherlands)

Keyboard Countries (Continued)


KBDCTY41.
Estonia


KBDCTY83.
Faroese


KBDCTY2.
Finland


KBDCTY3.
France


KBDCTY84.
Gaelic


KBDCTY4.
Germany


KBDCTY17.
Greek


KBDCTY64.
Greek (220 Latin)


KBDCTY61.
Greek (220)


KBDCTY65.
Greek (319 Latin)


KBDCTY62.
Greek (319)

Keyboard Countries (Continued)


KBDCTY63.
Greek (Latin)


KBDCTY66.
Greek (MS)


KBDCTY60.
Greek (Polytonic)


KBDCTY12.
Hebrew


KBDCTY50.
Hungarian (101 key)


KBDCTY19.
Hungary


KBDCTY75.
Iceland


KBDCTY73.
Irish


KBDCTY56.
Italian (142)


KBDCTY5.
Italy


KBDCTY28.
Japan ASCII

Keyboard Countries (Continued)


KBDCTY78.
Kazakh


KBDCTY79.
Kyrgyz (Cyrillic)


KBDCTY14.
Latin America


KBDCTY42.
Latvia


KBDCTY43.
Latvia (QWERTY)


KBDCTY44.
Lithuania


KBDCTY45.
Lithuania (IBM)


KBDCTY34.
Macedonia


KBDCTY74.
Malta


KBDCTY86.
Mongolian (Cyrillic)


KBDCTY9.
Norway

Keyboard Countries (Continued)


KBDCTY20.
Poland


KBDCTY57.
Polish (214)


KBDCTY58.
Polish (Programmers)


KBDCTY13.
Portugal


KBDCTY25.
Romania


KBDCTY26.
Russia


KBDCTY67.
Russian (MS)


KBDCTY68.
Russian (Typewriter)


KBDCTY21.
SCS


KBDCTY37.
Serbia (Cyrillic)


KBDCTY36.
Serbia (Latin)

Keyboard Countries (Continued)


KBDCTY22.
Slovakia


KBDCTY49.
Slovakia (QWERTY)


KBDCTY48.
Slovakia (QWERTZ)


KBDCTY31.
Slovenia


KBDCTY10.
Spain


KBDCTY51.
Spanish variation


KBDCTY23.
Sweden


KBDCTY29.
Switzerland (French)


KBDCTY6.
Switzerland (German)


KBDCTY85.
Tatar


KBDCTY27.
Turkey F

Keyboard Countries (Continued)

KBDCTY24.
Turkey Q

KBDCTY76.
Ukrainian

KBDCTY7.
United Kingdom

KBDCTY87.
United States (Dvorak)

KBDCTY88.
United States (Dvorak left)

KBDCTY89.
United Stated (Dvorak right)

KBDCTY30.
United States (International)

KBDCTY77.
Uzbek (Cyrillic)

Keyboard Style

This programs keyboard styles, such as Caps Lock and Shift Lock. If you have used Keyboard Conversion settings, they will override any of the following Keyboard Style settings. *Default = Regular.*

Regular is used when you normally have the Caps Lock key off.

KBDSTY0.
*** Regular**

Caps Lock is used when you normally have the Caps Lock key on.

KBDSTY1.
Caps Lock

Shift Lock is used when you normally have the Shift Lock key on (not common to U.S. keyboards).

Shift Lock

Automatic Caps Lock is used if you change the Caps Lock key on and off. The software tracks and reflects if you have Caps Lock on or off. This selection can only be used with systems that have an LED that notes the Caps Lock status (AT keyboards).

Automatic Caps Lock

Autocaps via NumLock bar code should be scanned in countries (e.g., Germany, France) where the Caps Lock key cannot be used to toggle Caps Lock. The NumLock option works similarly to the regular Autocaps, but uses the NumLock key to retrieve the current state of the Caps Lock.

Autocaps via NumLock

Emulate External Keyboard should be scanned if you do not have an external keyboard (IBM AT or equivalent).

Emulate External Keyboard

Note: After scanning the Emulate External Keyboard bar code, you must power cycle your computer.

Keyboard Conversion

Alphabetic keyboard characters can be forced to be all upper case or all lowercase. So if you have the following bar code: “abc569GK,” you can make the output “ABC569GK” by scanning **Convert All Characters to Upper Case**, or to “abc569gk” by scanning **Convert All Characters to Lower Case**.

These settings override Keyboard Style selections.

Note: If your interface is a keyboard wedge, first scan the menu code for Automatic Caps Lock (page 2-15). Otherwise, your output may not be as expected.

Default = Keyboard Conversion Off.

*** Keyboard Conversion Off**

Convert All Characters to Upper Case

Convert All Characters to Lower Case

Control Character Output

This selection sends a text string instead of a control character. For example, when the control character for a carriage return is expected, the output would display [CR] instead of the ASCII code of 0D. Refer to ASCII Conversion Chart (Code Page 1252) on page A-3. Only codes 00 through 1F are converted (the first column of the chart).

Note: Control + X (Control + ASCII) Mode overrides this mode.

Default = Off.

KBDNPE1.
Control Character Output On

KBDNPE0.
*** Control Character Output Off**

Keyboard Modifiers

This modifies special keyboard features, such as CTRL+ ASCII codes and Turbo Mode.

Control + X (Control + ASCII) Mode On: The scan engine sends key combinations for ASCII control characters for values 00-1F. Windows is the preferred mode. All keyboard country codes are supported. DOS mode is a legacy mode, and it does not support all keyboard country codes. New users should use the Windows mode. Refer to Keyboard Function Relationships, page 8-1 for CTRL+ X Values.

Windows Mode Prefix/Suffix Off: The scan engine sends key combinations for ASCII control characters for values 00-1F, but it does not translate any prefix or suffix information.

Default = Control + X Mode Off.

KBDCAS2.
Windows Mode Control + X Mode On

KBDCAS0.
*** Control + X Mode Off**

KBDCAS1.
DOS Mode Control + X Mode On

KBDCAS3.
Windows Mode Prefix/Suffix Off

Turbo Mode: The scan engine sends characters to a terminal faster. If the terminal drops characters, do not use Turbo Mode.
Default = Off

KBDTMD1.
Turbo Mode On


KBDTMD0.
*** Turbo Mode Off**

Numeric Keypad Mode: Sends numeric characters as if entered from a numeric keypad. *Default = Off*


KBDNPS1.
Numeric Keypad Mode On


KBDNPS0.
*** Numeric Keypad Mode Off**

Automatic Direct Connect Mode: This selection can be used if you have an IBM AT style terminal and the system is dropping characters. *Default = Off*


KBDADC1.
Automatic Direct Connect Mode On


KBDADC0.
*** Automatic Direct Connect Mode Off**

RS232 Modifiers

RS232 Baud Rate

Baud Rate sends the data from the scan engine to the terminal at the specified rate. The host terminal must be set for the same baud rate as the scan engine. *Default = 115200.*


232BAD0.
300


232BAD1.
600


232BAD2.
1200


232BAD3.
2400


232BAD4.
4800


232BAD5.
9600


232BAD6.
19200


232BAD7.
38400


232BAD8.
57,600


232BAD9.
*** 115,200**

RS232 Word Length: Data Bits, Stop Bits, and Parity

Data Bits sets the word length at 7 or 8 bits of data per character. If an application requires only ASCII Hex characters 0 through 7F decimal (text, digits, and punctuation), select 7 data bits. For applications that require use of the full ASCII set, select 8 data bits per character. *Default = 8.*

Stop Bits sets the stop bits at 1 or 2. *Default = 1.*

Parity provides a means of checking character bit patterns for validity.
Default = None.


232WRD3.
7 Data, 1 Stop, Parity Even


232WRD0.
7 Data, 1 Stop, Parity None


232WRD6.
7 Data, 1 Stop, Parity Odd


232WRD4.
7 Data, 2 Stop, Parity Even


232WRD1.
7 Data, 2 Stop Parity None


232WRD7.
7 Data, 2 Stop, Parity Odd


232WRD5.
8 Data, 1 Stop, Parity Even


232WRD2.
*** 8 Data, 1 Stop, Parity None**


232WRD8.
8 Data, 1 Stop, Parity Odd


232WRD14.
8 Data, 1 Stop, Parity Mark

RS232 Receiver Time-Out

The unit stays awake to receive data until the RS232 Receiver Time-Out expires. A manual or serial trigger resets the time-out. When an RS232 receiver is sleeping, a character may be sent to wake up the receiver and reset the time-out. A transaction on the CTS line will also wake up the receiver. The receiver takes 300 milliseconds to completely come up. Change the RS232 receiver time-out by scanning the bar code below, then scanning digits from the inside back cover of this manual, then scanning **Save**. The range is 0 to 300 seconds. *Default = 0 seconds (no time-out - always on).*


232LPT.
RS232 Receiver Time-Out

RS232 Handshaking

RS232 Handshaking allows control of data transmission from the scan engine using software commands from the host device. When RTS/CTS is turned **Off**, no data flow control is used.

Flow Control, No Timeout: The scan engine asserts RTS when it has data to send, and will wait indefinitely for CTS to be asserted by the host.

Two-Direction Flow Control: The scan engine asserts RTS when it is OK for the host to transmit. The host asserts CTS when it is OK for the device to transmit.

Flow Control with Timeout: The scan engine asserts RTS when it has data to send and waits for a delay (see RS232 Timeout on page 2-20) for CTS to be asserted by the host. If the delay time expires and CTS is not asserted, the device transmit buffer is cleared and scanning may resume.
Default = RTS/CTS Off.

232CTS1.
Flow Control, No Timeout

232CTS2.
Two-Direction Flow Control

232CTS3.
Flow Control with Timeout

232CTS0.
*** RTS/CTS Off**

RS232 Timeout

When using Flow Control with Timeout, you must program the length of the delay you want to wait for CTS from the host. Set the length (in milliseconds) for a timeout by scanning the bar code below, then setting the timeout (from 1-5100 milliseconds) by scanning digits from the inside back cover, then scanning **Save**.

232DEL.
RS232 Timeout

XON/XOFF

Standard ASCII control characters can be used to tell the scan engine to start sending data (**XON/XOFF On**) or to stop sending data (**XON/XOFF Off**). When the host sends the XOFF character (DC3, hex 13) to the scan engine, data transmission stops. To resume transmission, the host sends the XON character (DC1, hex 11). Data transmission continues where it left off when XOFF was sent. *Default = XON/XOFF Off.*

232XON1.
XON/XOFF On

232XON0.
*** XON/XOFF Off**

ACK/NAK

After transmitting data, the scan engine waits for an ACK character (hex 06) or a NAK character (hex 15) response from the host. If ACK is received, the communications cycle is completed and the scan engine looks for more bar codes. If NAK is received, the last set of bar code data is retransmitted and the scan engine waits for ACK/NAK again. Turn on the ACK/NAK protocol by scanning the **ACK/NAK On** bar code below. To turn off the protocol, scan **ACK/NAK Off**. *Default = ACK/NAK Off.*

ACK/NAK On

*** ACK/NAK Off**

RS232 Stop Mode

Scan the following bar code to force the engine into a stop mode. Restart the engine by using a trigger pull, nWake, or RxD toggle.

RS232 Stop Mode On

Scanner to Bioptic Communication

The following settings are used to set up communication between Honeywell scan engines and bioptic scanners.

Note: The scan engine's baud rate must be set to 38400 and the RS232 timeout must be set to 3000 in order to communicate with a bioptic scanner. See "RS232 Baud Rate" on page 2-17, and RS232 Timeout on page 2-20 for further information.

Scanner-Bioptic Packet Mode

Packet Mode On must be scanned to set the scan engine's format so it is compatible with a bioptic scanner. *Default = Packet Mode Off.*

*** Packet Mode Off**

Packet Mode On

Scanner-Bioptic ACK/NAK Mode

Bioptic ACK/Nak On must be scanned so the scan engine will wait for an ACK or NAK from a bioptic scanner after each packet is sent. The Scanner-Bioptic ACK/NAK Timeout (below) controls how long the scanner will wait for a response. *Default = Bioptic ACK/NAK Off.*

*** Bioptic ACK/NAK Off**

Bioptic ACK/NAK On

Scanner-Bioptic ACK/NAK Timeout

This allows you to set the length (in milliseconds) for a timeout for a bioptic scanner's ACK/NAK response. Scan the bar code below, then set the timeout (from 1-30,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**. *Default = 5100.*

ACK/NAK Timeout

3

Input/Output Settings

Power Up Beeper

The scan engine can be programmed to beep when it's powered up. Scan the **Off** bar code(s) if you don't want a power up beep. *Default = Power Up Beeper On - Scanner.*

Power Up Beeper Off - Scanner

*** Power Up Beeper On - Scanner**

Beep on BEL Character

You may wish to force the scan engine to beep upon a command sent from the host. If you scan the **Beep on BEL On** bar code below, the scan engine will beep every time a BEL character is received from the host. *Default = Beep on BEL Off.*

***Beep on BEL Off**

Beep on BEL On

Trigger Click

To hear an audible click every time the scanner trigger is pressed, scan the **Trigger Click On** bar code below. Scan the **Trigger Click Off** code if you don't wish to hear the click. (This feature has no effect on serial or automatic triggering.) *Default = Trigger Click Off.*

***Trigger Click Off**

Trigger Click On

Good Read and Error Indicators

Beeper – Good Read

The beeper may be programmed **On** or **Off** in response to a good read. Turning this option off only turns off the beeper response to a good read indication. All error and menu beeps are still audible. *Default = Beeper - Good Read On.*


BEPBEP0.
Beeper - Good Read Off


BEPBEP1.
*** Beeper - Good Read On**

Beeper Volume – Good Read

The beeper volume codes modify the volume of the beep the scan engine emits on a good read. *Default = High.*


BEPLVL1.
Low


BEPLVL2.
Medium


BEPLVL3.
*** High**


BEPLVL0.
Off

Beeper Pitch – Good Read

The beeper pitch codes modify the pitch (frequency) of the beep the scan engine emits on a good read. *Default = Medium.*


BEPFQ11600.
Low (1600 Hz)


BEPFQ12700.
*** Medium (2700 Hz)**

High (4200 Hz)

Beeper Pitch – Error

The beeper pitch codes modify the pitch (frequency) of the sound the scan engine emits when there is a bad read or error. *Default = Razz.*

*** Razz (250 Hz)**

Medium (3250 Hz)

High (4200 Hz)

Beeper Duration – Good Read

The beeper duration codes modify the length of the beep the scan engine emits on a good read. *Default = Normal.*

*** Normal Beep**

Short Beep

LED – Good Read

The LED indicator can be programmed **On** or **Off** in response to a good read. *Default = On.*

*** LED - Good Read On**

LED - Good Read Off

Number of Beeps – Good Read

The number of beeps of a good read can be programmed from 1 - 9. The same number of beeps will be applied to the beeper and LED in response to a good read. For example, if you program this option to have five beeps, there will be five beeps and five LED flashes in response to a good read. The beeps and LED flashes are in sync with one another. To change the number of beeps, scan the bar code below and then scan a digit (1-9) bar code and the **Save** bar code on the Programming Chart inside the back cover of this manual. *Default = 1.*

BEPRPT.

Number of Good Read Beeps/LED Flashes

Number of Beeps – Error

The number of beeps and LED flashes emitted by the scan engine for a bad read or error can be programmed from 1 - 9. For example, if you program this option to have five error beeps, there will be five error beeps and five LED flashes in response to an error. To change the number of error beeps, scan the bar code below and then scan a digit (1-9) bar code and the **Save** bar code on the Programming Chart inside the back cover of this manual. *Default = 1.*

BEPERR.

Number of Error Beeps/LED Flashes

Good Read Delay

This sets the minimum amount of time before the scan engine can read another bar code. *Default = 0 ms (No Delay).*

DLYGRD0.

*** No Delay**

DLYGRD500.

Short Delay (500 ms)

DLYGRD1000.

Medium Delay (1,000 ms)

DLYGRD1500.

Long Delay (1,500 ms)

User-Specified Good Read Delay

If you want to set your own length for the good read delay, scan the bar code below, then set the delay (from 0-30,000 milli-seconds) by scanning digits from the inside back cover, then scanning **Save**.

DLYGRD.

User-Specified Good Read Delay

Manual Trigger Mode

When in manual trigger mode, the scanner scans until a bar code is read, or until the trigger is released.

PAPHHF.

Manual Trigger - Normal

LED Illumination - Manual Trigger

If you wish to set the illumination LED brightness, scan one of the bar codes below. This sets the LED illumination for the scan engine when the trigger is pressed. *Default = High.*

Note: The LEDs are like a flash on a camera. The lower the ambient light in the room, the brighter the LEDs need to be so the scan engine can "see" the bar codes.

PWRNOL15.

Low

PWRNOL50.

Medium

PWRNOL150.

*** High**

Serial Trigger Mode

You can activate the scan engine either by pressing the trigger, or using a serial trigger command (see Trigger Commands on page 10-3). When in serial mode, the scan engine scans until a bar code has been read or until the deactivate command is sent. The scan engine can also be set to turn itself off after a specified time has elapsed (see Read Time-Out, which follows).

Read Time-Out

Use this selection to set a time-out (in milliseconds) of the scan engine's trigger when using serial commands to trigger the scan engine. Once the scan engine has timed out, you can activate the scan engine either by pressing the trigger or using a serial trigger command. After scanning the **Read Time-Out** bar code, set the time-out duration (from 0-300,000 milliseconds) by scanning digits on the Programming Chart inside the back cover, then scanning **Save**. *Default = 30,000 ms.*

TRGSTO.

Read Time-Out

Presentation Mode

Presentation Mode uses ambient light to detect bar codes. The LED dims until a bar code is presented to the scanner, then the LED brightens to read the code. If the light level in the room is not high enough, Presentation Mode may not work properly.

Scan the following bar code to program your scanner for Presentation Mode.

Presentation Mode

Idle Illumination - Presentation Mode

Scan one of the bar codes below to set the LED illumination for the scanner when it is in an idle state in Presentation Mode. *Default = High.*

Note: If you use one of the lower Idle Illumination settings, and there is not enough ambient light, the scanner may have difficulty detecting when a bar code is presented to it. If the scanner has difficulty "waking up" to read bar codes, you may need to set the Idle Illumination to a brighter setting.

Low

Medium

*** High**

Note: LED Illumination - Presentation Mode does not apply to Poor Quality PDF Codes or Mobile Phone Read Mode.

Presentation Sensitivity

Presentation Sensitivity is a numeric range that increases or decreases the scan engine's reaction time to bar code presentation. To set the sensitivity, scan the **Sensitivity** bar code, then scan the degree of sensitivity (from 0-20) from the inside back cover, and **Save**. 0 is the most sensitive setting, and 20 is the least sensitive. *Default = 1.*

Sensitivity

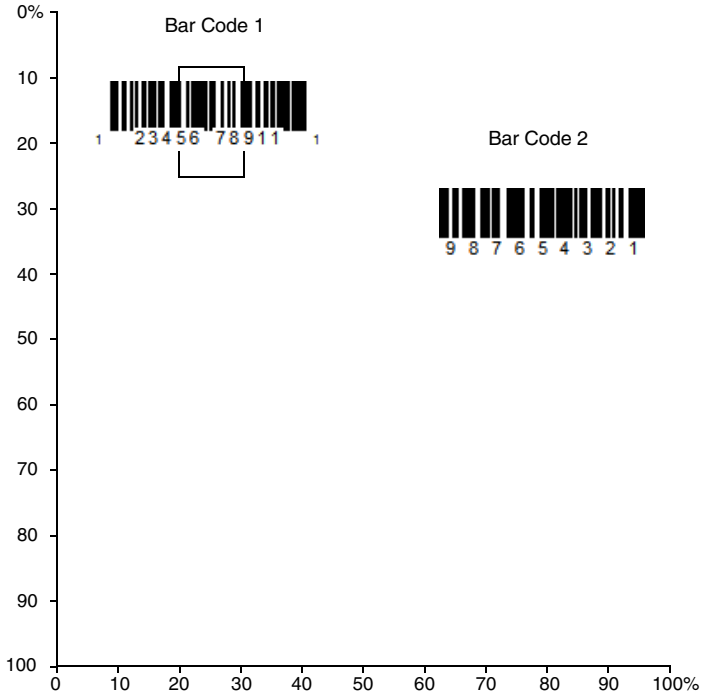
Presentation Centering

Use Presentation Centering to narrow the scanner's field of view when it is in the stand to make sure the scanner reads only those bar codes intended by the user. For instance, if multiple codes are placed closely together, Presentation Centering will insure that only the desired codes are read.

Note: To adjust centering when the scanner is hand-held, see Centering (page 3-14).

If a bar code is not touched by a predefined window, it will not be decoded or output by the scanner. If Presentation Centering is turned on by scanning **Presentation Centering On**, the scanner only reads codes that pass through the centering window you specify using the **Top of Presentation Centering Window, Bottom of Presentation Centering Window, Left**, and **Right of Presentation Centering Window** bar codes.

In the example below, the white box is the centering window. The centering window has been set to 20% left, 30% right, 8% top, and 25% bottom. Since Bar Code 1 passes through the centering window, it will be read. Bar Code 2 does not pass through the centering window, so it will not be read.



Note: A bar code needs only to be touched by the centering window in order to be read. It does not need to pass completely through the centering window.

Scan **Presentation Centering On**, then scan one of the following bar codes to change the top, bottom, left, or right of the centering window. Then scan the percent you want to shift the centering window using digits on the inside back cover of this manual. Scan **Save**. *Default Presentation Centering = 40% for Top and Left, 60% for Bottom and Right.*

Presentation Centering On

*** Presentation Centering Off**

Top of Presentation Centering Window

Bottom of Presentation Centering Window

Left of Presentation Centering Window

Right of Presentation Centering Window

*Note: IIf you are taking images (see Imaging Commands beginning on page 7-1), you must set the In-Stand Sensor to **Off**.*

You may program a Streaming Presentation Mode (Normal, Enhanced, or Mobile Phone) you wish to use for in-stand scanning, and a Manual Trigger mode (Normal, Enhanced, or Mobile Phone) you wish to use for out-of-stand scanning. To do this, you must first scan the preferred Streaming Presentation mode (see below), then scan the Manual Trigger mode (see page 3-5 and page 3-10) you want to use.

Poor Quality Codes

Poor Quality 1D Codes

This setting improves the scanner's ability to read damaged or badly printed linear bar codes. When **Poor Quality 1D Reading On** is scanned, poor quality linear bar code reading is improved, but the scanner's snappiness is decreased, making it less aggressive when reading good quality bar codes. This setting does not affect 2D bar code reading. *Default = Poor Quality 1D Reading Off.*

Poor Quality 1D Reading On

*** Poor Quality 1D Reading Off**

Poor Quality PDF Codes

This setting improves the scanner's ability to read damaged or badly printed PDF codes by combining information from multiple images. When **Poor Quality PDF On** is scanned, poor quality PDF code reading is improved, but the scanner's snappiness is decreased, making it less aggressive when reading good quality bar codes. This setting does not affect 1D bar code reading. *Default = Poor Quality PDF Reading Off.*

Poor Quality PDF Reading On

*** Poor Quality PDF Reading Off**

CodeGate®

When CodeGate is **On**, the trigger is used to allow decoded data to be transmitted to the host system. The scanner remains on, scanning and decoding bar codes, but the bar code data is not transmitted until the trigger is pressed. When CodeGate is **Off**, bar code data is transmitted when it is decoded. *Default = CodeGate Off Out-of-Stand.*

*** CodeGate Off Out-of-Stand**

CodeGate On Out-of-Stand

Mobile Phone Read Mode

When this mode is selected, your scanner is optimized to read bar codes from mobile phone or other LED displays. However, the speed of scanning printed bar codes may be slightly lower when this mode is enabled.

Hand Held Scanning - Mobile Phone

Presentation Scanning - Mobile Phone

Note: To turn off Mobile Phone Read Mode, scan a Manual or Serial Trigger Mode bar code (see page 3-5).

Hands Free Time-Out

The Scan Stand and Presentation Modes are referred to as “hands free” modes. If the scanner’s trigger is pulled when using a hands free mode, the scanner changes to manual trigger mode. You can set the time the scanner should remain in manual trigger mode by setting the Hands Free Time-Out. Once the time-out value is reached, (if there have been no further trigger pulls) the scanner reverts to the original hands free mode.

Scan the **Hands Free Time-Out** bar code, then scan the time-out duration (from 0-300,000 milliseconds) from the inside back cover, and **Save**. *Default = 5,000 ms.*

Hands Free Time-Out

Reread Delay

This sets the time period before the scan engine can read the *same* bar code a second time. Setting a reread delay protects against accidental rereads of the same bar code. Longer delays are effective in minimizing accidental rereads. Use shorter delays in applications where repetitive bar code scanning is required. Reread Delay only works when in a Presentation Mode (see page 3-5). *Default = Medium.*

Short (500 ms)

*** Medium (750 ms)**

Long (1000 ms)

Extra Long (2000 ms)

User-Specified Reread Delay

If you want to set your own length for the reread delay, scan the bar code below, then set the delay (from 0-30,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**.

DLYRRD.

User-Specified Reread Delay

2D Reread Delay

Sometimes 2D bar codes can take longer to read than other bar codes. If you wish to set a separate Reread Delay for 2D bar codes, scan one of the programming codes that follows. **2D Reread Delay Off** indicates that the time set for Reread Delay is used for both 1D and 2D bar codes. *Default = 2D Reread Delay Off.*

DLY2RR0.

*** 2D Reread Delay Off**

DLY2RR1000.

Short (1000ms)

DLY2RR2000.

Medium (2000ms)

DLY2RR3000.

Long (3000ms)

DLY2RR4000.

Extra Long (4000ms)

Character Activation Mode

You may use a character sent from the host to trigger the scanner to begin scanning. When the activation character is received, the scanner continues scanning until either the Character Activation Timeout (page 3-12), the deactivation character is received (see Deactivation Character on page 3-13), or a bar code is transmitted. Scan the following **On** bar code to use character activation, then use Activation Character (following) to select the character you will send from the host to start scanning. *Default = Off.*

HSTCEN0.

*** Off**

On

Activation Character

This sets the character used to trigger scanning when using Character Activation Mode. On the ASCII Conversion Chart (Code Page 1252), page A-3, find the hex value that represents the character you want to use to trigger scanning. Scan the following bar code, then use the Programming Chart to read the alphanumeric combination that represents that ASCII character. Scan **Save** to finish**.** *Default = 12 [DC2].*

Activation Character

End Character Activation After Good Read

After a bar code is successfully detected and read from the scanner, the illumination can be programmed either to remain on and scanning, or to turn off. When **End Character Activation After Good Read** is enabled, the illumination turns off and stops scanning after a good read. If you scan **Do Not End Character Activation After Good Read**, the illumination remains on after a good read. *Default = Do Not End Character Activation After Good Read.*

*** Do Not End Character Activation After Good Read**

End Character Activation After Good Read

Character Activation Timeout

You can set a timeout for the length of time the illumination remains on and attempting to decode bar codes when using Character Activation Mode. Set the length (in milliseconds) for a timeout by scanning the following bar code, then setting the timeout (from 1-300,000 milliseconds) by scanning digits from the Programming Chart inside the back cover of this manual, then scanning **Save**. *Default = 30,000 ms.*

Character Activation Timeout

Character Deactivation Mode

If you have sent a character from the host to trigger the scanner to begin scanning, you can also send a deactivation character to stop scanning. Scan the following **On** bar code to use character deactivation, then use Deactivation Character (following) to select the character you will send from the host to terminate scanning. *Default = Off.*

*** Off**

On

Deactivation Character

This sets the character used to terminate scanning when using Character Deactivation Mode. On the ASCII Conversion Chart (Code Page 1252), page A-3, find the hex value that represents the character you want to use to terminate scanning. Scan the following bar code, then use the Programming Chart inside the back cover of this manual to read the alphanumeric combination that represents that ASCII character. Scan **Save** to finish**.** *Default = 14 [DC4].*

Deactivation Character

Illumination Lights

If you want the illumination lights on while reading a bar code, scan the **Lights On** bar code, below. However, if you want to turn just the lights off, scan the **Lights Off** bar code. *Default = Lights On.*

Note: This setting does not affect the aimer light. The aiming light can be set using Aimer Mode (page 3-14).

*** Lights On**

Lights Off

Aimer Delay

The aimer delay allows a delay time for the operator to aim the scan engine before the picture is taken. Use these codes to set the time between when the trigger is pulled and when the picture is taken. During the delay time, the aiming light will appear, but the LEDs won't turn on until the delay time is over. *Default = Off.*

200 milliseconds

SCNDLY400.
400 milliseconds

SCNDLY0.
*** Off *(no delay)***

User-Specified Aimer Delay

If you want to set your own length for the duration of the delay, scan the bar code below, then set the time-out by scanning digits (0 - 4,000 ms) from the Programming Chart inside the back cover of this manual, then scan **Save**.

SCNDLY.
Delay Duration

Aimer Mode

This feature allows you to turn the aimer on and off. When the Interlaced bar code is scanned, the aimer is interlaced with the illumination LEDs. *Default = Interlaced.*

SCNAIM0.
Off

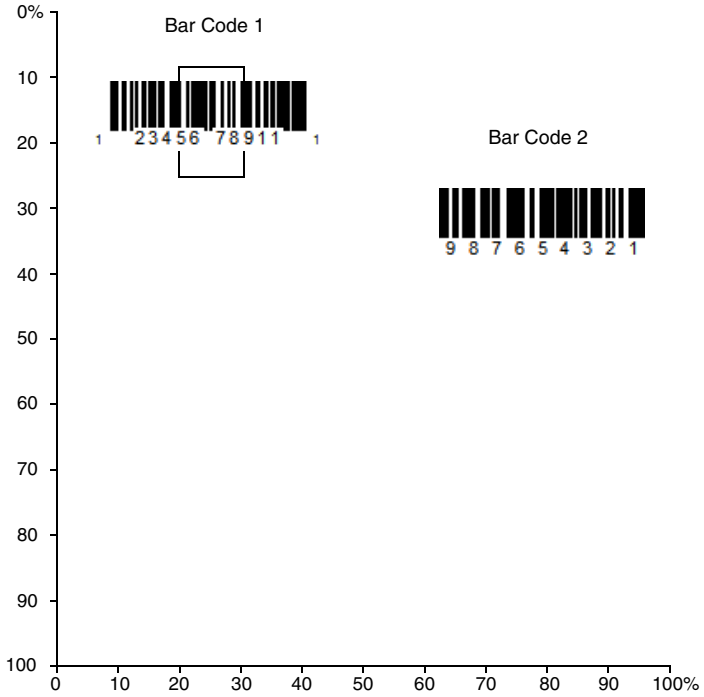
SCNAIM2.
*** Interlaced**

Centering

Use Centering to narrow the scan engine's field of view to make sure that when the scanner is hand-held, it reads only those bar codes intended by the user. For instance, if multiple codes are placed closely together, centering will insure that only the desired codes are read. (Centering can be used in conjunction with Aimer Delay, page 3-13, for the most error-free operation in applications where multiple codes are spaced closely together. Using the Aimer Delay and Centering features, the scanner can emulate the operation of older systems, such as linear laser bar code scanners.)

If a bar code is not touched by a predefined window, it will not be decoded or output by the scan engine. If centering is turned on by scanning **Centering On**, the scan engine only reads codes that pass through the centering window you specify using the **Top of Centering Window** and **Bottom of Centering Window** bar codes.

In the example below, the white box is the centering window. The centering window has been set to 8% top and 25% bottom. Since Bar Code 1 passes through the centering window, it will be read. Bar Code 2 does not pass through the centering window, so it will not be read.



A bar code needs only to be touched by the centering window in order to be read. It does not need to pass completely through the centering window.

Scan **Centering On**, then scan one of the following bar codes to change the top and bottom of the centering window. Then scan the percent you want to shift the centering window using digits on the inside back cover of this manual. Scan **Save**.

Default Centering = 40% for Top, 60% for Bottom.

DECWIN1.
Centering On

DECWIN0.
*** Centering Off**

DECTOP.
Top of Centering Window

DECBOT.
Bottom of Centering Window

No Read

With No Read turned **On**, the scan engine notifies you if a code cannot be read. If using an EZConfig-Scanning Tool Scan Data Window (see page 9-3), an “NR” appears when a code cannot be read. If No Read is turned **Off**, the “NR” will not appear.

Default = Off.

On

*** Off**

If you want a different notation than “NR,” for example, “Error,” or “Bad Code,” you can edit the output message (see Data Formatting beginning on page 5-1). The hex code for the No Read symbol is 9C.

Video Reverse

Video Reverse is used to allow the scan engine to read bar codes that are inverted. The **Video Reverse Off** bar code below is an example of this type of bar code. Scan **Video Reverse Only** to read *only* inverted bar codes. Scan **Video Reverse and Standard Bar Codes** to read both types of codes.

*Note: After scanning **Video Reverse Only**, menu bar codes cannot be read. You must scan **Video Reverse Off** or **Video Reverse and Standard Bar Codes** in order to read menu bar codes.*

Note: Images downloaded from the unit are not reversed. This is a setting for decoding only.

Video Reverse Only

Video Reverse and Standard Bar Codes

*** Video Reverse Off**

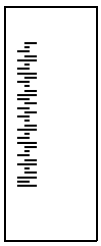
Working Orientation

Some bar codes are direction-sensitive. For example, KIX codes and OCR can misread when scanned sideways or upside down. Use the working orientation settings if your direction-sensitive codes will not usually be presented upright to the scanner. *Default = Upright.*

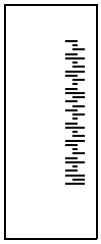
Upright:

Upside Down:

Vertical, Top to Bottom:
(Rotate CW 90°)



Vertical, Bottom to Top:
(Rotate CCW 90°)



ROTATN0.
*** Upright**

ROTATN1.
Vertical, Bottom to Top

ROTATN2.
Upside Down

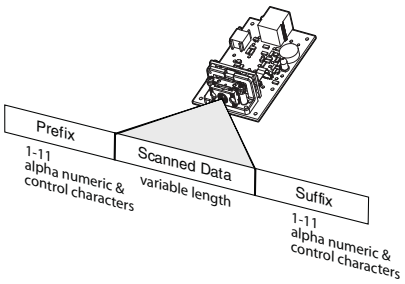
ROTATN3.
Vertical, Top to Bottom

4 Data Editing

Prefix/Suffix Overview

When a bar code is scanned, additional information is sent to the host computer along with the bar code data. This group of bar code data and additional, user-defined data is called a “message string.” The selections in this section are used to build the user-defined data into the message string.

Prefix and Suffix characters are data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. The following illustration shows the breakdown of a message string:



Points to Keep In Mind

- It is not necessary to build a message string. The selections in this chapter are only used if you wish to alter the default settings. *Default prefix = None. Default suffix = None*.
- A prefix or suffix may be added or cleared from one symbology or all symbologies.
- You can add any prefix or suffix from the ASCII Conversion Chart (Code Page 1252), beginning on page A-3, plus Code I.D. and AIM I.D.
- You can string together several entries for several symbologies at one time.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.
- When setting up for specific symbologies (as opposed to all symbologies), the specific symbology ID value counts as an added prefix or suffix character.
- The maximum size of a prefix or suffix configuration is 200 characters, which includes header information.

To Add a Prefix or Suffix:

Step 1. Scan the **Add Prefix** or **Add Suffix** symbol (page 4-2).

Step 2. Determine the 2 digit Hex value from the Symbology Chart (included in the Symbology Charts, beginning on page A-1) for the symbology to which you want to apply the prefix or suffix. For example, for Code 128, Code ID is “j” and Hex ID is “6A”.

Step 3. Scan the 2 hex digits from the Programming Chart inside the back cover of this manual or scan **9**, **9** for all symbologies.

Step 4. Determine the hex value from the ASCII Conversion Chart (Code Page 1252), beginning on page A-3, for the prefix or suffix you wish to enter.

Note: To add the Code I.D., scan **5**, **C**, **8**, **0**.
To add AIM I.D., scan **5**, **C**, **8**, **1**.
To add a backslash (\), scan **5**, **C**, **5**, **C**.
To add a backslash (\) as in Step 7, you must scan 5C twice – once to create the leading backslash and then to create the backslash itself.

Step 5. Scan the 2 digit hex value from the Programming Chart inside the back cover of this manual.

Step 6. Repeat Steps 4 and 5 for every prefix or suffix character.

Step 7. Scan **Save** to exit and save, or scan **Discard** to exit without saving.

Repeat Steps 1-6 to add a prefix or suffix for another symbology.

Example: Add a Tab Suffix to All Symbologies

Step 1. Scan **Add Suffix**.

Step 2. Scan **9**, **9** from the Programming Chart inside the back cover of this manual to apply this suffix to all symbologies.

Step 3. Scan **0**, **9** from the Programming Chart inside the back cover of this manual. This corresponds with the hex value for a horizontal tab, shown in the ASCII Conversion Chart (Code Page 1252), beginning on page A-3.

Scan **Save**, or scan **Discard** to exit without saving.

To Clear One or All Prefixes or Suffixes

You can clear a single prefix or suffix, or clear all prefixes/suffixes for a symbology. If you have been entering prefixes and suffixes for single symbologies, you can use **Clear One Prefix (Suffix)** to delete a specific character from a symbology. When you **Clear All Prefixes (Suffixes)**, all the prefixes or suffixes for a symbology are deleted.

Step 1. Scan the **Clear One Prefix** or **Clear One Suffix** symbol.

Step 2. Determine the 2 digit Hex value from the Symbology Chart (included in the Symbology Charts, beginning on page A-1) for the symbology from which you want to clear the prefix or suffix.

Step 3. Scan the 2 digit hex value from the Programming Chart inside the back cover of this manual or scan **9**, **9** for all symbologies.

Your change is automatically saved.

To Add a Carriage Return Suffix to All Symbologies

Scan the following bar code if you wish to add a carriage return suffix to all symbologies at once. This action first clears all current suffixes, then programs a carriage return suffix for all symbologies.

VSUFCR.
Add CR Suffix
All Symbologies

Prefix Selections

PREBK2.
Add Prefix

PRECL2.
Clear One Prefix

PRECA2.
Clear All Prefixes

Suffix Selections

SUFBK2.
Add Suffix

SUFCL2.
Clear One Suffix

SUFCA2.
Clear All Suffixes

Function Code Transmit

When this selection is enabled and function codes are contained within the scanned data, the scan engine transmits the function code to the terminal. Charts of these function codes are provided in Supported Interface Keys starting on page 8-3. When the scanner is in keyboard wedge mode, the scan code is converted to a key code before it is transmitted. *Default = Enable.*

RMVFNC0.
*** Enable**

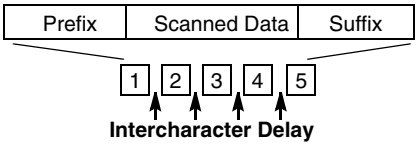
RMVFNC1.
Disable

Intercharacter, Interfunction, and Intermessage Delays

Some terminals drop information (characters) if data comes through too quickly. Intercharacter, interfunction, and intermessage delays slow the transmission of data, increasing data integrity.

Intercharacter Delay

An intercharacter delay of up to 5000 milliseconds (in 5ms increments) may be placed between the transmission of each character of scanned data. Scan the **Intercharacter Delay** bar code below, then scan the number of 5ms delays, and the **Save** bar code using the Programming Chart inside the back cover of this manual.



Intercharacter Delay

DLYCHR.
Intercharacter Delay

To remove this delay, scan the **Intercharacter Delay** bar code, then set the number of delays to 0. Scan the **Save** bar code using the Programming Chart inside the back cover of this manual.

Note: Intercharacter delays are not supported in USB serial emulation.

User Specified Intercharacter Delay

An intercharacter delay of up to 5000 milliseconds (in 5ms increments) may be placed after the transmission of a particular character of scanned data. Scan the **Delay Length** bar code below, then scan the number of 5ms delays, and the **Save** bar code using the Programming Chart inside the back cover of this manual.

Next, scan the **Character to Trigger Delay** bar code, then the 2-digit hex value for the ASCII character that will trigger the delay ASCII Conversion Chart (Code Page 1252), beginning on page A-3.

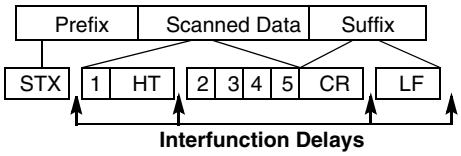
DLYCRX.
Delay Length

DLY_XX.
Character to Trigger Delay

To remove this delay, scan the **Delay Length** bar code, and set the number of delays to 0. Scan the **Save** bar code using the Programming Chart inside the back cover of this manual.

Interfunction Delay

An interfunction delay of up to 5000 milliseconds (in 5ms increments) may be placed between the transmission of each control character in the message string. Scan the **Interfunction Delay** bar code below, then scan the number of 5ms delays, and the **Save** bar code using the Programming Chart inside the back cover of this manual.



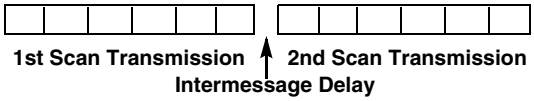
Interfunction Delays

DLYFNC.
Interfunction Delay

To remove this delay, scan the **Interfunction Delay** bar code, then set the number of delays to 0. Scan the **Save** bar code using the Programming Chart inside the back cover of this manual.

Intermessage Delay

An intermessage delay of up to 5000 milliseconds (in 5ms increments) may be placed between each scan transmission. Scan the **Intermessage Delay** bar code below, then scan the number of 5ms delays, and the **Save** bar code using the Programming Chart inside the back cover of this manual.


1st Scan Transmission **2nd Scan Transmission**
Intermessage Delay

DLYMSG.
Intermessage Delay

To remove this delay, scan the **Intermessage Delay** bar code, then set the number of delays to 0. Scan the **Save** bar code using the Programming Chart inside the back cover of this manual.

5 Data Formatting

Data Format Editor Introduction

You may use the Data Format Editor to change the scan engine's output. For example, you can use the Data Format Editor to insert characters at certain points in bar code data as it is scanned. The selections in the following pages are used only if you wish to alter the output. *Default Data Format setting = None.*

Normally, when you scan a bar code, it is output automatically. However, when you create a format, you must use a "send" command (see Send Commands on page 5-3) within the format program to output data.

Multiple formats may be programmed into the scan engine. They are stacked in the order in which they are entered. However, the following list presents the order in which formats are applied:

1. Specific Terminal ID, Actual Code ID, Actual Length
2. Specific Terminal ID, Actual Code ID, Universal Length
3. Specific Terminal ID, Universal Code ID, Actual Length
4. Specific Terminal ID, Universal Code ID, Universal Length
5. Universal Terminal ID, Actual Code ID, Actual Length
6. Universal Terminal ID, Actual Code ID, Universal Length
7. Universal Terminal ID, Universal Code ID, Actual Length
8. Universal Terminal ID, Universal Code ID, Universal Length

The maximum size of a data format configuration is 2000 bytes, which includes header information.

If a bar code is read that fails the first data format, the next data format, if there is one, will be used on the bar code data. If there is no other data format, the raw data is output.

If you have changed data format settings, and wish to clear all formats and return to the factory defaults, scan the **Default Data Format** code below.

*** Default Data Format**

Add a Data Format

Step 1. Scan the **Enter Data Format** symbol (page 5-2).

Step 2. Select **Primary/Alternate Format**

Determine if this will be your primary data format, or one of 3 alternate formats. This allows you to save a total of 4 different data formats. To program your primary format, scan **0** using the Programming Chart inside the back cover of this manual. If you are programming an alternate format, scan **1**, **2**, or **3**, depending on which alternate format you are programming. (See "Primary/Alternate Data Formats" on page 5-13 for further information.)

Step 3. Terminal Type

Refer to Terminal ID Table (page 5-3) and locate the Terminal ID number for your PC. Scan three numeric bar codes on the inside back cover to program the scan engine for your terminal ID (you must enter 3 digits). For example, scan **0 0 3** for an AT wedge.

Note: 099 indicates all terminal types.

Step 4. Code I.D.

In the Symbology Charts, beginning on page A-1, find the symbology to which you want to apply the data format. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart inside the back cover of this manual.

If you wish to create a data format for all symbologies, with the exception of some specific symbologies, refer to B8 (page 5-11).

If you are creating a data format for Batch Mode Quantity, use 35 for the Code I.D.

Note: 99 indicates all symbologies.

Step 5. Length

Specify what length (up to 9999 characters) of data will be acceptable for this symbology. Scan the four digit data length from the Programming Chart inside the back cover of this manual. For example, 50 characters is entered as 0050.

Note: 9999 indicates all lengths.

Step 6. Editor Commands

Refer to Data Format Editor Commands (page 5-3). Scan the symbols that represent the command you want to enter.

Step 7. Scan **Save** to save your data format, or **Discard** to exit without saving your changes.


DFMBK3.
Enter Data Format


MNUSAV.
Save


MNUABT.
Discard

Other Programming Selections

Clear One Data Format

This deletes one data format for one symbology. If you are clearing the primary format, scan **0** from the Programming Chart inside the back cover of this manual. If you are clearing an alternate format, scan **1**, **2**, or **3**, depending on the format you are clearing. Scan the Terminal Type and Code I.D. (see Symbology Charts on page A-1), and the bar code data length for the specific data format that you want to delete. All other formats remain unaffected.

Clear all Data Formats

This clears all data formats.

Save to exit and save your data format changes.

Discard to exit without saving any data format changes.


DFMCL3.
Clear One Data Format


DFMCA3.
Clear All Data Formats


MNUSAV.
Save


MNUABT.
Discard

Terminal ID Table

Terminal	Model(s)	Terminal ID
USB	PC keyboard (HID)	124
	Mac Keyboard	125
	PC Keyboard (Japanese)	134
	Serial (COM driver required)	130
	HID POS	131
	USB SurePOS Handheld	128
	USB SurePOS Tabletop	129
Serial	RS232 TTL	000
	RS232 True	000
	RS485 (IBM-HHBCR 1+2, 46xx)	051
Keyboard	PS2 compatibles	003
	AT compatibles	002

Data Format Editor Commands

When working with the Data Format Editor, a virtual cursor is moved along your input data string. The following commands are used to both move this cursor to different positions, and to select, replace, and insert data into the final output.

Send Commands

Send all characters

F1 Include in the output message all of the characters from the input message, starting from current cursor position, followed by an insert character. *Syntax = F1xx* where xx stands for the insert character's hex value for its ASCII code. Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

Send a number of characters

F2 Include in the output message a number of characters followed by an insert character. Start from the current cursor position and continue for "nn" characters or through the last character in the input message, followed by character "xx." *Syntax = F2nnxx* where nn stands for the numeric value (00-99) for the number of characters, and xx stands for the insert character's hex value for its ASCII code. Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

F2 Example: Send a number of characters

Send the first 10 characters from the bar code above, followed by a carriage return. Command string: **F2100D**

F2 is the "Send a number of characters" command

10 is the number of characters to send

0D is the hex value for a CR

The data is output as: **1234567890**

F2 and F1 Example: Split characters into 2 lines

Send the first 10 characters from the bar code above, followed by a carriage return, followed by the rest of the characters.

Command string: **F2100DF10D**

F2 is the "Send a number of characters" command

10 is the number of characters to send for the first line

0D is the hex value for a CR

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:
1234567890
ABCDEFGHIJ
<CR>

Send all characters up to a particular character

F3 Include in the output message all characters from the input message, starting with the character at the current cursor position and continuing to, but not including, the search character “ss,” followed by an insert character. The cursor is moved forward to the “ss” character. *Syntax = F3ssxx* where ss stands for the search character’s hex value for its ASCII code, and xx stands for the insert character’s hex value for its ASCII code.
Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

F3 Example: Send all characters up to a particular character

Using the bar code above, send all characters up to but not including “D,” followed by a carriage return.

Command string: **F3440D**

F3 is the “Send all characters up to a particular character” command

44 is the hex value for a 'D”

0D is the hex value for a CR

The data is output as:
1234567890ABC
<CR>

Send all characters up to a string

B9 Include in the output message all characters from the input message, starting with the character at the current cursor position and continuing to, but not including, the search string “s...s.” The cursor is moved forward to the beginning of the “s...s” string. *Syntax = B9nnnns...s* where nnnn stands for the length of the string, and s...s stands for the string to be matched. The string is made up of hex values for the characters in the string. Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

B9 Example: Send all characters up to a defined string

Using the bar code above, send all characters up to but not including “AB.”

Command string: **B900024142**

B9 is the “Send all characters up to a string” command

0002 is the length of the string (2 characters)

41 is the hex value for A

42 is the hex value for B

The data is output as: **1234567890**

Send all but the last characters

E9 Include in the output message all but the last “nn” characters, starting from the current cursor position. The cursor is moved forward to one position past the last input message character included. *Syntax = E9nn* where nn stands for the numeric value (00-99) for the number of characters that will not be sent at the end of the message.

Insert a character multiple times

F4 Send "xx" character "nn" times in the output message, leaving the cursor in the current position. *Syntax = F4xxnn* where xx stands for the insert character's hex value for its ASCII code, and nn is the numeric value (00-99) for the number of times it should be sent. Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

E9 and F4 Example: Send all but the last characters, followed by 2 tabs

Send all characters except for the last 8 from the bar code above, followed by 2 tabs.

Command string: **E908F40902**

E9 is the "Send all but the last characters" command

08 is the number of characters at the end to ignore

F4 is the "Insert a character multiple times" command

09 is the hex value for a horizontal tab

02 is the number of times the tab character is sent

The data is output as: **1234567890AB <tab><tab>**

Insert a string

BA Send "ss" string of "nn" length in the output message, leaving the cursor in the current position. *Syntax = BAnnnns...s* where nnnn stands for the length of the string, and s...s stands for the string. The string is made up of hex values for the characters in the string. Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

B9 and BA Example: Look for the string "AB" and insert 2 asterisks (**)

Using the bar code above, send all characters up to but not including "AB." Insert 2 asterisks at that point, and send the rest of the data with a carriage return after.

Command string: **B900024142BA00022A2AF10D**

B9 is the "Send all characters up to a string" command

0002 is the length of the string (2 characters)

41 is the hex value for A

42 is the hex value for B

BA is the "Insert a string" command

0002 is the length of the string to be added (2 characters)

2A is the hex value for an asterisk (*)

2A is the hex value for an asterisk (*)

F1 is the "Send all characters" command

0D is the hex value for a CR

The data is output as:
1234567890ABCDEFGHIJ**
<CR>

Insert symbology name

B3 Insert the name of the bar code's symbology in the output message, without moving the cursor. Only symbologies with a Honeywell ID are included (see Symbology Charts on page A-1). Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

Insert bar code length

B4 Insert the bar code's length in the output message, without moving the cursor. The length is expressed as a numeric string and does not include leading zeroes.

B3 and B4 Example: Insert the symbology name and length

Send the symbology name and length before the bar code data from the bar code above. Break up these insertions with spaces. End with a carriage return.

Command string: **B3F42001B4F42001F10D**

B3 is the "Insert symbology name" command

F4 is the "Insert a character multiple times" command

20 is the hex value for a space

01 is the number of times the space character is sent

B4 is the "Insert bar code length" command

F4 is the "Insert a character multiple times" command

20 is the hex value for a space

01 is the number of times the space character is sent

F1 is the "Send all characters" command

0D is the hex value for a CR

The data is output as:
Code128 20 1234567890ABCDEFGHIJ
<CR>

Insert key strokes

B5 Insert a key stroke or combination of key strokes. Key strokes are dependent on your keyboard (see Keyboard Key References on page A-10). Any key can be inserted, including arrows and functions. *Syntax = B5xxssnn* where xx is the number of keys pressed (without key modifiers), ss is the key modifier from the table below, and nn is the key number from the Keyboard Key References, page A-10.

Key Modifiers	
No Key Modifier	00
Shift Left	01
Shift Right	02
Alt Left	04
Alt Right	08
Control Left	10
Control Right	20

For example, B501021F inserts an "A" on a 104 key, U.S. style keyboard. B5 = the command, 01 = number of keys pressed (without the key modifier), 02 is the key modifier for Shift Right, and 1F is the "a" key. If a lower case "a" were to be inserted, B501001F would be entered.

If there are three keystrokes, the syntax would change from B5xxssnn for one keystroke to B5xxssnnssnnssnn. An example that would insert "abc" is as follows: B503001F00320030F833.

Note: Key modifiers can be added together when needed. Example: Control Left+Shift Left = 11.

Move Commands

Move the cursor forward a number of characters

F5 Move the cursor ahead "nn" characters from current cursor position.
Syntax = F5nn where nn is the numeric value (00-99) for the number of characters the cursor should be moved ahead.

F5 Example: Move the cursor forward and send the data

Move the cursor forward 3 characters, then send the rest of the bar code data from the bar code above. End with a carriage return.

Command string: **F503F10D**

F5 is the "Move the cursor forward a number of characters" command

03 is the number of characters to move the cursor

F1 is the "Send all characters" command

0D is the hex value for a CR

The data is output as:
4567890ABCDEFGHIJ
<CR>

Move the cursor backward a number of characters

F6 Move the cursor back "nn" characters from current cursor position.
Syntax = F6nn where nn is the numeric value (00-99) for the number of characters the cursor should be moved back.

Move the cursor to the beginning

F7 Move the cursor to the first character in the input message. *Syntax = F7.*

FE and F7 Example: Manipulate bar codes that begin with a 1

Search for bar codes that begin with a 1. If a bar code matches, move the cursor back to the beginning of the data and send 6 characters followed by a carriage return. Using the bar code above:

Command string: **FE31F7F2060D**

FE is the "Compare characters" command

31 is the hex value for 1

F7 is the "Move the cursor to the beginning" command

F2 is the "Send a number of characters" command

06 is the number of characters to send

0D is the hex value for a CR

The data is output as:
123456
<CR>

Move the cursor to the end

EA Move the cursor to the last character in the input message. *Syntax = EA.*

Search Commands

Search forward for a character

F8 Search the input message forward for "xx" character from the current cursor position, leaving the cursor pointing to the "xx" character. *Syntax = F8xx* where xx stands for the search character's hex value for its ASCII code.
Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

F8 Example: Send bar code data that starts after a particular character

Search for the letter “D” in bar codes and send all the data that follows, including the “D.” Using the bar code above:

Command string: **F844F10D**

F8 is the “Search forward for a character” command

44 is the hex value for “D”

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:
DEFGHIJ
<CR>

Search backward for a character

F9 Search the input message backward for “xx” character from the current cursor position, leaving the cursor pointing to the “xx” character. *Syntax = F9xx* where xx stands for the search character’s hex value for its ASCII code.
Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

Search forward for a string

B0 Search forward for “s” string from the current cursor position, leaving cursor pointing to “s” string. Syntax = B0nnnnS where nnnn is the string length (up to 9999), and S consists of the ASCII hex value of each character in the match string. For example, B0000454657374 will search forward for the first occurrence of the 4 character string “Test.”
Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

B0 Example: Send bar code data that starts after a string of characters

Search for the letters “FGH” in bar codes and send all the data that follows, including “FGH.” Using the bar code above:

Command string: **B00003464748F10D**

B0 is the “Search forward for a string” command

0003 is the string length (3 characters)

46 is the hex value for “F”

47 is the hex value for “G”

48 is the hex value for “H”

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:
FGHIJ
<CR>

Search backward for a string

B1 Search backward for “s” string from the current cursor position, leaving cursor pointing to “s” string. Syntax = B1nnnnS where nnnn is the string length (up to 9999), and S consists of the ASCII hex value of each character in the match string. For example, B1000454657374 will search backward for the first occurrence of the 4 character string “Test.”
Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

Search forward for a non-matching character

E6 Search the input message forward for the first non-“xx” character from the current cursor position, leaving the cursor pointing to the non-“xx” character. *Syntax = E6xx* where xx stands for the search character’s hex value for its ASCII code. Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

E6 Example: Remove zeroes at the beginning of bar code data

This example shows a bar code that has been zero filled. You may want to ignore the zeroes and send all the data that follows. E6 searches forward for the first character that is not zero, then sends all the data after, followed by a carriage return. Using the bar code above:

Command string: **E630F10D**

E6 is the “Search forward for a non-matching character” command

30 is the hex value for 0

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:
37692
<CR>

Search backward for a non-matching character

E7 Search the input message backward for the first non-“xx” character from the current cursor position, leaving the cursor pointing to the non-“xx” character. *Syntax = E7xx* where xx stands for the search character’s hex value for its ASCII code. Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

Miscellaneous Commands

Suppress characters

FB Suppress all occurrences of up to 15 different characters, starting at the current cursor position, as the cursor is advanced by other commands. When the FC command is encountered, the suppress function is terminated. The cursor is not moved by the FB command.
Syntax = FBnnxxyy . .zz where nn is a count of the number of suppressed characters in the list, and xxyy .. zz is the list of characters to be suppressed.

FB Example: Remove spaces in bar code data

This example shows a bar code that has spaces in the data. You may want to remove the spaces before sending the data. Using the bar code above:

Command string: **FB0120F10D**

FB is the “Suppress characters” command

01 is the number of character types to be suppressed

20 is the hex value for a space

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:
34567890
<CR>

Stop suppressing characters

FC Disables suppress filter and clear all suppressed characters. *Syntax = FC.*

Replace characters

E4 Replaces up to 15 characters in the output message, without moving the cursor. Replacement continues until the E5 command is encountered. *Syntax = E4nnxx$_1$xx$_2$yy$_1$yy$_2$...zz$_1$zz$_2$* where nn is the total count of the number of characters in the list (characters to be replaced plus replacement characters); xx$_1$ defines characters to be replaced and xx$_2$ defines replacement characters, continuing through zz$_1$ and zz$_2$.

E4 Example: Replace zeroes with CRs in bar code data

If the bar code has characters that the host application does not want included, you can use the E4 command to replace those characters with something else. In this example, you will replace the zeroes in the bar code above with carriage returns.

Command string: **E402300DF10D**

E4 is the “Replace characters” command

02 is the total count of characters to be replaced, plus the replacement characters (0 is replaced by CR, so total characters = 2)

30 is the hex value for 0

0D is the hex value for a CR (the character that will replace the 0)

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:
1234
5678
ABC
<CR>

Stop replacing characters

E5 Terminates character replacement. *Syntax = E5.*

Compare characters

FE Compare the character in the current cursor position to the character “xx.” If characters are equal, move the cursor forward one position. *Syntax = FExx* where xx stands for the comparison character’s hex value for its ASCII code. Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

Compare string

B2 Compare the string in the input message to the string “s.” If the strings are equal, move the cursor forward past the end of the string. Syntax = B2nnnnS where nnnn is the string length (up to 9999), and S consists of the ASCII hex value of each character in the match string. For example, B2000454657374 will compare the string at the current cursor position with the 4 character string “Test.”
Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

Check for a number

EC Check to make sure there is an ASCII number at the current cursor position. The format is aborted if the character is not numeric.

EC Example: Only output the data if the bar code begins with a number

If you want only data from bar codes that begin with a number, you can use EC to check for the number.

Command string: **ECF10D**

EC is the “Check for a number” command

F1 is the “Send all characters” command

0D is the hex value for a CR

If this bar code is read, 

the next data format, if there is one, will be used on the data. If there is no other format, the format fails and the raw data is output as **AB1234**.

If this bar code is read: 

the data is output as:

1234AB
<CR>

Check for non-numeric character

ED Check to make sure there is a non-numeric ASCII character at the current cursor position. The format is aborted if the character is numeric.

ED Example: Only output the data if the bar code begins with a letter

If you want only data from bar codes that begin with a letter, you can use ED to check for the letter.

Command string: **EDF10D**

ED is the "Check for a non-numeric character" command

F1 is the "Send all characters" command

0D is the hex value for a CR

If this bar code is read, 

the next data format, if there is one, will be used on this data. If there is no other format, the format fails and the raw data is output as **1234AB**.

If this bar code is read: 

the data is output as:

AB1234
<CR>

Insert a delay

EF Inserts a delay of up to 49,995 milliseconds (in multiples of 5), starting from the current cursor position. Syntax = EFnnnn where nnnn stands for the delay in 5ms increments, up to 9999. This command can only be used with keyboard emulation.a

Discard Data

B8 Discards types of data. For example, you may want to discard Code 128 bar codes that begin with the letter A. In step 4 (page 5-1), select 6A (for Code 128), and in step 5, select 9999 (for all lengths). Enter FE41B8 to compare and discard Code 128 bar codes that begin with the letter A. *Syntax = B8.*

Note: The B8 command must be entered after all other commands.
*The Data Format must be **Required** (see page 5-12) in order for the B8 command to work.*
*If Data Format is **On, but Not Required** (page 5-12), bar code data that meets the B8 format is scanned and output as usual.*
*Because the data format needs to be **On** and **Required** (page 5-12) for the B8 command, you must input data formats for all bar codes you wish to discard as well as all bar codes you wish to output.*
*Other data format settings impact the B8 command. If Data Format Non-Match Error Tone is **On** (page 5-13), the scan engine emits an error tone. If Data format Non-Match Error Tone is **Off**, the code is disabled for reading and no tone is sounded.*

Data Formatter

When Data Formatter is turned Off, the bar code data is output to the host as read, including prefixes and suffixes.

Data Formatter Off

You may wish to require the data to conform to a data format you have created and saved. The following settings can be applied to your data format:

Data Formatter On, Not Required, Keep Prefix/Suffix
Scanned data is modified according to your data format, and prefixes and suffixes are transmitted.

Data Formatter On, Not Required, Drop Prefix/Suffix
Scanned data is modified according to your data format. If a data format is found for a particular symbol, those prefixes and suffixes are not transmitted. If a data format is *not* found for that symbol, the prefixes and suffixes *are* transmitted.

Data Format Required, Keep Prefix/Suffix
Scanned data is modified according to your data format, and prefixes and suffixes are transmitted. Any data that does not match your data format requirements generates an error tone and the data in that bar code is not transmitted. If you wish to process this type of bar code without generating an error tone, see Primary/Alternate Data Formats.

Data Format Required, Drop Prefix/Suffix
Scanned data is modified according to your data format. If a data format is found for a particular symbol, those prefixes and suffixes are not transmitted. Any data that does not match your data format requirements generates an error tone. If you wish to process this type of bar code without generating an error tone, see Primary/Alternate Data Formats.

Choose one of the following options. *Default = Data Formatter On, Not Required, Keep Prefix/Suffix.*

*** Data Formatter On, Not Required, Keep Prefix/Suffix**

Data Formatter On, Not Required, Drop Prefix/Suffix

Data Format Required, Keep Prefix/Suffix

Data Format Required, Drop Prefix/Suffix

Primary/Alternate Data Formats

You can save up to four data formats, and switch between these formats. Your primary data format is saved under **0**. Your other three formats are saved under **1**, **2**, and **3**. To set your device to use one of these formats, scan one of the bar codes below.

Primary Data Format

Data Format 1

Data Format 2

Data Format 3

6 Symbologies

This programming section contains the following menu selections. Refer to Chapter 10 for settings and defaults.

- All Symbologies
- Aztec Code
- China Post (Hong Kong 2 of 5)
- Chinese Sensible (Han Xin) Code
- Codabar
- Codablock A
- Codablock F
- Code 11
- Code 128
- Code 32 Pharmaceutical (PARAF)
- Code 39
- Code 93
- Data Matrix
- EAN/JAN-13
- EAN/JAN-8
- GS1 Composite Codes
- GS1 DataBar Expanded
- GS1 DataBar Limited
- GS1 DataBar Omnidirectional
- GS1 Emulation
- GS1-128
- Interleaved 2 of 5
- Korea Post
- Matrix 2 of 5
- MaxiCode
- MicroPDF417
- MSI
- NEC 2 of 5
- Postal Codes - 2D
- Postal Codes - Linear
- PDF417
- GS1 DataBar Omnidirectional
- QR Code
- Straight 2 of 5 IATA (two-bar start/stop)
- Straight 2 of 5 Industrial (three-bar start/stop)
- TCIF Linked Code 39 (TLC39)
- UPC-A
- UPC-A
- UPC-A/EAN-13 with Extended Coupon Code
- UPC-E0
- UPC-E1

All Symbologies

If you want to decode all the symbologies allowable for your scanner, scan the ***All Symbologies On*** code. If on the other hand, you want to decode only a particular symbology, scan **All Symbologies Off** followed by the On symbol for that particular symbology.

*Note: Scanner performance may reduce by scanning **All Symobologies On**. Only scan **All Symbologies On** when needed.*

ALLENA1.
All Symbologies On

ALLENA0.
All Symbologies Off

Note: When All Symbologies On is scanned, 2D Postal Codes are not enabled. 2D Postal Codes must be enabled separately.

Message Length Description

You are able to set the valid reading length of some of the bar code symbologies. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

EXAMPLE: Decode only those bar codes with a count of 9-20 characters.
Min. length = 09Max. length = 20

EXAMPLE: Decode only those bar codes with a count of 15 characters.
Min. length = 15Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes included in the explanation of the symbology, then scan the digit value of the message length and **Save** bar codes on the Programming Chart inside the back cover of this manual. The minimum and maximum lengths and the defaults are included with the respective symbologies.

Codabar

<Default All Codabar Settings>


CBRDFT.

Codabar On/Off


CBRENA1.
*** On**


CBRENA0.
Off

Codabar Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters. *Default = Don't Transmit.*


CBRSSX1.
Transmit


CBRSSX0.
*** Don't Transmit**

Codabar Check Character

Codabar check characters are created using different "modulos." You can program the scanner to read only Codabar bar codes with Modulo 16 check characters. *Default = No Check Character.*

No Check Character indicates that the scanner reads and transmits bar code data with or without a check character.

When Check Character is set to ***Validate and Transmit***, the scanner will only read Codabar bar codes printed with a check character, and will transmit this character at the end of the scanned data.

When Check Character is set to ***Validate, but Don't Transmit***, the unit will only read Codabar bar codes printed ***with*** a check character, but will not transmit the check character with the scanned data.


CBRCK20.
*** No Check Character**

CBRCK21.
Validate Modulo 16, but Don't Transmit

CBRCK22.
Validate Modulo 16 and Transmit

Codabar Concatenation

Codabar supports symbol concatenation. When you enable concatenation, the scanner looks for a Codabar symbol having a "D" start character, adjacent to a symbol having a "D" stop character. In this case the two messages are concatenated into one with the "D" characters omitted.

Select Require to prevent the scanner from decoding a single "D" Codabar symbol without its companion. This selection has no effect on Codabar symbols without Stop/Start D characters.

CBRCCT1.
On

CBRCCT0.
*** Off**

CBRCCT2.
Require

Codabar Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 2-60. Minimum Default = 4, Maximum Default = 60.

CBRMIN.
Minimum Message Length

CBRMAX.
Maximum Message Length

Code 39

< Default All Code 39 Settings >


C39DFT.

Code 39 On/Off


C39ENA1.
*** On**


C39ENA0.
Off

Code 39 Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters. *Default = Don't Transmit.*


C39SSX1.
Transmit


C39SSX0.
*** Don't Transmit**

Code 39 Check Character

No Check Character indicates that the scanner reads and transmits bar code data with or without a check character.

When Check Character is set to **Validate, but Don't Transmit**, the unit only reads Code 39 bar codes printed with a check character, but will not transmit the check character with the scanned data.

When Check Character is set to **Validate and Transmit**, the scanner only reads Code 39 bar codes printed with a check character, and will transmit this character at the end of the scanned data. *Default = No Check Character.*


C39CK20.
*** No Check Character**


C39CK21.
Validate, but Don't Transmit


C39CK22.
Validate and Transmit

Code 39 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 0-48. Minimum Default = 0, Maximum Default = 48.

Minimum Message Length

Maximum Message Length

Code 39 Append

This function allows the scanner to append the data from several Code 39 bar codes together before transmitting them to the host computer. When the scanner encounters a Code 39 bar code with the append trigger character(s), it buffers Code 39 bar codes until it reads a Code 39 bar code that does not have the append trigger. The data is then transmitted in the order in which the bar codes were read (FIFO). *Default = Off.*

On

*** Off**

Code 32 Pharmaceutical (PARAF)

Code 32 Pharmaceutical is a form of the Code 39 symbology used by Italian pharmacies. This symbology is also known as PARAF.

Note: Trioptic Code (page 6-30) must be turned off while scanning Code 32 Pharmaceutical codes.

On

*** Off**

Full ASCII

If Full ASCII Code 39 decoding is enabled, certain character pairs within the bar code symbol will be interpreted as a single character. For example: $V will be decoded as the ASCII character SYN, and /C will be decoded as the ASCII character #. *Default = Off.*

NUL	%U	DLE	$P	SP	SPACE	0	0	@	%V	P	P	‘	%W	p	+P
SOH	$A	DC1	$Q	!	/A	1	1	A	A	Q	Q	a	+A	q	+Q
STX	$B	DC2	$R	“	/B	2	2	B	B	R	R	b	+B	r	+R
ETX	$C	DC3	$S	#	/C	3	3	C	C	S	S	c	+C	s	+S
EOT	$D	DC4	$T	$	/D	4	4	D	D	T	T	d	+D	t	+T
ENQ	$E	NAK	$U	%	/E	5	5	E	E	U	U	e	+E	u	+U
ACK	$F	SYN	$V	&	/F	6	6	F	F	V	V	f	+F	v	+V
BEL	$G	ETB	$W	‘	/G	7	7	G	G	W	W	g	+G	w	+W
BS	$H	CAN	$X	(	/H	8	8	H	H	X	X	h	+H	x	+X
HT	$I	EM	$Y	)	/I	9	9	I	I	Y	Y	i	+I	y	+Y
LF	$J	SUB	$Z	*	/J	:	/Z	J	J	Z	Z	j	+J	z	+Z
VT	$K	ESC	%A	+	/K	;	%F	K	K	[	%K	k	+K	{	%P
FF	$L	FS	%B	,	/L	<	%G	L	L	\	%L	l	+L	|	%Q
CR	$M	GS	%C	-	-	=	%H	M	M	]	%M	m	+M	}	%R
SO	$N	RS	%D	.	.	>	%I	N	N	^	%N	n	+N	~	%S
SI	$O	US	%E	/	/O	?	%J	O	O	_	%O	o	+O	DEL	%T

Character pairs /M and /N decode as a minus sign and period respectively.

Character pairs /P through /Y decode as 0 through 9.

Full ASCII On

*** Full ASCII Off**

Code 39 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see ISO 2022/ISO 646 Character Replacements on page A-8), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

Code 39 Code Page

Interleaved 2 of 5

< Default All Interleaved 2 of 5 Settings >


I25DFT.

Interleaved 2 of 5 On/Off


I25ENA1.

*** On**


I25ENA0.

Off

Check Digit

No Check Digit indicates that the scanner reads and transmits bar code data with or without a check digit.

When Check Digit is set to **Validate, but Don't Transmit**, the unit only reads Interleaved 2 of 5 bar codes printed with a check digit, but will not transmit the check digit with the scanned data.

When Check Digit is set to **Validate and Transmit**, the scanner only reads Interleaved 2 of 5 bar codes printed with a check digit, and will transmit this digit at the end of the scanned data. *Default = No Check Digit.*


I25CK20.

*** No Check Digit**


I25CK21.

Validate, but Don't Transmit


I25CK22.

Validate and Transmit

Interleaved 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.


I25MIN.

Minimum Message Length

I25MAX.
Maximum Message Length

NEC 2 of 5

< Default All NEC 2 of 5 Settings >

N25DFT.

NEC 2 of 5 On/Off

N25ENA1.
*** On**

N25ENA0.
Off

Check Digit

No Check Digit indicates that the scanner reads and transmits bar code data with or without a check digit.

When Check Digit is set to **Validate, but Don't Transmit**, the unit only reads NEC 2 of 5 bar codes printed with a check digit, but will not transmit the check digit with the scanned data.

When Check Digit is set to **Validate and Transmit**, the scanner only reads NEC 2 of 5 bar codes printed with a check digit, and will transmit this digit at the end of the scanned data. *Default = No Check Digit.*

N25CK20.
*** No Check Digit**

N25CK21.
Validate, but Don't Transmit

N25CK22.
Validate and Transmit

NEC 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.

N25MIN.
Minimum Message Length

N25MAX.
Maximum Message Length

Code 93

< Default All Code 93 Settings >

C93DFT.

Code 93 On/Off

C93ENA1.
*** On**

C93ENA0.
Off

Code 93 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.

C93MIN.
Minimum Message Length

C93MAX.
Maximum Message Length

Code 93 Append

This function allows the scanner to append the data from several Code 93 bar codes together before transmitting them to the host computer. When this function is enabled, the scanner stores those Code 93 bar codes that start with a space (excluding the start and stop symbols), and does not immediately transmit the data. The scanner stores the data in the order in which the bar codes are read, deleting the first space from each. The scanner transmits the appended data when it reads a Code 93 bar code that starts with a character other than a space. *Default = Off.*

C93APP1.
On

C93APP0.
*** Off**

Code 93 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see ISO 2022/ISO 646 Character Replacements on page A-8), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

C93DCP.
Code 93 Code Page

Straight 2 of 5 Industrial (three-bar start/stop)

<Default All Straight 2 of 5 Industrial Settings>

R25DFT.

Straight 2 of 5 Industrial On/Off

R25ENA1.
On

R25ENA0.
*** Off**

Straight 2 of 5 Industrial Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.

R25MIN.
Minimum Message Length

R25MAX.
Maximum Message Length

Straight 2 of 5 IATA (two-bar start/stop)

<Default All Straight 2 of 5 IATA Settings>

A25DFT.

Straight 2 of 5 IATA On/Off

A25ENA1.
On

A25ENA0.
*** Off**

Straight 2 of 5 IATA Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.

A25MIN.
Minimum Message Length

A25MAX.
Maximum Message Length

Matrix 2 of 5

<Default All Matrix 2 of 5 Settings>

X25DFT.

Matrix 2 of 5 On/Off

X25ENA1.
On

X25ENA0.
*** Off**

Matrix 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.

X25MIN.
Minimum Message Length

X25MAX.
Maximum Message Length

Code 11

<Default All Code 11 Settings>

C11DFT.

Code 11 On/Off

C11ENA1.
On

C11ENA0.
*** Off**

Check Digits Required

This option sets whether 1 or 2 check digits are required with Code 11 bar codes. *Default = Two Check Digits.*

C11CK20.
One Check Digit

C11CK21.
*** Two Check Digits**

Code 11 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.

C11MIN.
Minimum Message Length

C11MAX.
Maximum Message Length

Code 128

<Default All Code 128 Settings>

128DFT.

Code 128 On/Off

128ENA1.

*** On**

128ENA0.

Off

ISBT 128 Concatenation

In 1994 the International Society of Blood Transfusion (ISBT) ratified a standard for communicating critical blood information in a uniform manner. The use of ISBT formats requires a paid license. The ISBT 128 Application Specification describes 1) the critical data elements for labeling blood products, 2) the current recommendation to use Code 128 due to its high degree of security and its space-efficient design, 3) a variation of Code 128 that supports concatenation of neighboring symbols, and 4) the standard layout for bar codes on a blood product label. Use the bar codes below to turn concatenation on or off. *Default =Off.*

ISBENA1.

On

ISBENA0.

*** Off**

Code 128 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.

128MIN.

Minimum Message Length

128MAX.

Maximum Message Length

Code 128 Append

This function allows the scanner to append the data from several Code 128 bar codes together before transmitting them to the host computer. When the scanner encounters a Code 128 bar code with the append trigger character(s), it buffers Code 128 bar codes until it reads a Code 128 bar code that does not have the append trigger. The data is then transmitted in the order in which the bar codes were read (FIFO). *Default = On.*

*** On**

Off

Code 128 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see ISO 2022/ISO 646 Character Replacements on page A-8), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

Code 128 Code Page

GS1-128

<Default All GS1-128 Settings>


GS1DFT.

GS1-128 On/Off


GS1ENA1.
*** On**


GS1ENA0.
Off

GS1-128 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 1, Maximum Default = 80.


GS1MIN.
Minimum Message Length


GS1MAX.
Maximum Message Length

UPC-A

<Default All UPC-A Settings>


UPADFT.

UPC-A On/Off


UPBENA1.
*** On**


UPBENA0.
Off

Note: To convert UPC-A bar codes to EAN-13, see Convert UPC-A to EAN-13 on page 6-23.

UPC-A Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On*.


UPACKX1.
*** On**


UPACKX0.
Off

UPC-A Number System

The numeric system digit of a U.P.C. symbol is normally transmitted at the beginning of the scanned data, but the unit can be programmed so it will not transmit it. *Default = On.*


UPANSX1.
*** On**


UPANSX0.
Off

UPC-A Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC-A data.
Default = Off for both 2 Digit and 5 Digit Addenda.


UPAAD21.
2 Digit Addenda On


UPAAD20.
*** 2 Digit Addenda Off**


UPAAD51.
5 Digit Addenda On


UPAAD50.
*** 5 Digit Addenda Off**

UPC-A Addenda Required

When ***Required*** is scanned, the scanner will only read UPC-A bar codes that have addenda. You must then turn on a 2 or 5 digit addenda listed on page 6-18. *Default = Not Required.*

Required

*** Not Required**

UPC-A Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space. *Default = On.*

*** On**

Off

UPC-A/EAN-13 with Extended Coupon Code

Use the following codes to enable or disable UPC-A **and** EAN-13 with Extended Coupon Code. When left on the default setting (**Off**), the scanner treats Coupon Codes and Extended Coupon Codes as single bar codes.

If you scan the **Allow Concatenation** code, when the scanner sees the coupon code and the extended coupon code in a single scan, it transmits both as one symbology. Otherwise, it transmits the first coupon code it reads.

If you scan the **Require Concatenation** code, the scanner must see and read the coupon code and extended coupon code in a single read to transmit the data. No data is output unless both codes are read. *Default = Off.*

*** Off**

Allow Concatenation

Require Concatenation

Coupon GS1 DataBar Output

If you scan coupons that have both UPC and GS1 DataBar codes, you may wish to scan and output only the data from the GS1 DataBar code. Scan the **GS1 Output On** code below to scan and output only the GS1 DataBar code data. *Default = GS1 Output Off.*


CPNGS10.
*** GS1 Output Off**


CPNGS11.
GS1 Output On

UPC-E0

<Default All UPC-E Settings>


UPEDFT.

UPC-E0 On/Off

Most U.P.C. bar codes lead with the 0 number system. To read these codes, use the **UPC-E0 On** selection. If you need to read codes that lead with the 1 number system, use UPC-E1 (page 6-22). *Default = On.*


UPEEN01.
*** UPC-E0 On**


UPEEN00.
UPC-E0 Off

UPC-E0 Expand

UPC-E Expand expands the UPC-E code to the 12 digit, UPC-A format. *Default = Off.*


UPEEXP1.
On


UPEEXP0.
*** Off**

UPC-E0 Addenda Required

When **Required** is scanned, the scanner will only read UPC-E bar codes that have addenda. *Default = Not Required.*

Required

*** Not Required**

UPC-E0 Addenda Separator

When this feature is **On**, there is a space between the data from the bar code and the data from the addenda. When turned **Off**, there is no space. *Default = On.*

*** On**

Off

UPC-E0 Check Digit

Check Digit specifies whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*

*** On**

Off

UPC-E0 Leading Zero

This feature allows the transmission of a leading zero (0) at the beginning of scanned data. To prevent transmission, scan **Off**. *Default = On.*

*** On**

Off

UPC-E0 Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC-E data. *Default = Off for both 2 Digit and 5 Digit Addenda.*

2 Digit Addenda On

*** 2 Digit Addenda Off**

5 Digit Addenda On

*** 5 Digit Addenda Off**

UPC-E1

Most U.P.C. bar codes lead with the 0 number system. For these codes, use UPC-E0 (page 6-20). If you need to read codes that lead with the 1 number system, use the **UPC-E1 On** selection. *Default = Off.*

UPC-E1 On

*** UPC-E1 Off**

EAN/JAN-13

<Default All EAN/JAN Settings>


E13DFT.

EAN/JAN-13 On/Off


E13ENA1.

*** On**


E13ENA0.

Off

Convert UPC-A to EAN-13

When **UPC-A Converted to EAN-13** is selected, UPC-A bar codes are converted to 13 digit EAN-13 codes by adding a zero to the front. When **Do not Convert UPC-A** is selected, UPC-A codes are read as UPC-A.


UPAENA0.

UPC-A Converted to EAN-13


UPAENA1.

*** Do not Convert UPC-A**

EAN/JAN-13 Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*


E13CKX1.

*** On**


E13CKX0.

Off

EAN/JAN-13 Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN-13 data. *Default = Off for both 2 Digit and 5 Digit Addenda.*

2 Digit Addenda On

*** 2 Digit Addenda Off**

5 Digit Addenda On

*** 5 Digit Addenda Off**

EAN/JAN-13 Addenda Required

When **Required** is scanned, the scanner will only read EAN/JAN-13 bar codes that have addenda. *Default = Not Required.*

Required

*** Not Required**

EAN/JAN-13 Addenda Separator

When this feature is **On**, there is a space between the data from the bar code and the data from the addenda. When turned **Off**, there is no space. *Default = On.*

*** On**

Off

Note: If you want to enable or disable EAN13 with Extended Coupon Code, refer to UPC-A/EAN-13 with Extended Coupon Code (page 6-19).

ISBN Translate

When **On** is scanned, EAN-13 Bookland symbols are translated into their equivalent ISBN number format. *Default = Off.*


E13ISB1.
On


E13ISB0.
*** Off**

EAN/JAN-8

<Default All EAN/JAN-8 Settings>


EA8DFT.

EAN/JAN-8 On/Off


EA8ENA1.
*** On**


EA8ENA0.
Off

EAN/JAN-8 Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*


EA8CKX1.
*** On**


EA8CKX0.
Off

EAN/JAN-8 Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN-8 data. *Default = Off for both 2 Digit and 5 Digit Addenda.*


EA8AD21.
2 Digit Addenda On


EA8AD20.
*** 2 Digit Addenda Off**


EA8AD51.
5 Digit Addenda On


EA8AD50.
*** 5 Digit Addenda Off**

EAN/JAN-8 Addenda Required

When **Required** is scanned, the scanner will only read EAN/JAN-8 bar codes that have addenda. *Default = Not Required.*


EA8ARQ1.
Required


EA8ARQ0.
*** Not Required**

EAN/JAN-8 Addenda Separator

When this feature is **On**, there is a space between the data from the bar code and the data from the addenda. When turned **Off**, there is no space. *Default = On.*


EA8ADS1.
*** On**


EA8ADS0.
Off

MSI

<Default All MSI Settings>


MSIDFT.

MSI On/Off


MSIENA1.
On


MSIENA0.
*** Off**

MSI Check Character

Different types of check characters are used with MSI bar codes. You can program the scanner to read MSI bar codes with Type 10 check characters. *Default = Validate Type 10, but Don't Transmit.*

When Check Character is set to **Validate Type 10/11 and Transmit**, the scanner will only read MSI bar codes printed with the specified type check character(s), and will transmit the character(s) at the end of the scanned data.

When Check Character is set to **Validate Type 10/11, but Don't Transmit**, the unit will only read MSI bar codes printed with the specified type check character(s), but will not transmit the check character(s) with the scanned data.


MSICHK0.
*** Validate Type 10, but Don't Transmit**


MSICHK1.
Validate Type 10 and Transmit


MSICHK2.
Validate 2 Type 10 Characters, but Don't Transmit


MSICHK3.
Validate 2 Type 10 Characters and Transmit


MSICHK4.
Validate Type 11 then Type 10 Character, but Don't Transmit

Validate Type 11 then Type 10 Character and Transmit

Disable MSI Check Characters

MSI Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 4-48. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length

Maximum Message Length

GS1 DataBar Omnidirectional

< Default All GS1 DataBar Omnidirectional Settings >

RSSDFT.

GS1 DataBar Omnidirectional On/Off

RSSENA1.
*** On**

RSSENA0.
Off

GS1 DataBar Limited

< Default All GS1 DataBar Limited Settings >

RSLDFT.

GS1 DataBar Limited On/Off

RSLENA1.
*** On**

RSLENA0.
Off

GS1 DataBar Expanded

< Default All GS1 DataBar Expanded Settings >

RSEDFT.

GS1 DataBar Expanded On/Off

RSEENA1.
*** On**

RSEENA0.
Off

GS1 DataBar Expanded Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 4-74. Minimum Default = 4, Maximum Default = 74.

RSEMIN.
Minimum Message Length

RSEMAX.
Maximum Message Length

Codablock A

<Default All Codablock A Settings>

CBADFT.

Codablock A On/Off

CBAENA1.
On

CBAENA0.
*** Off**

Codablock A Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-600. Minimum Default = 1, Maximum Default = 600.

CBAMIN.
Minimum Message Length

CBAMAX.
Maximum Message Length

Codablock F

<Default All Codablock F Settings>

CBFDFT.

Codablock F On/Off

CBFENA1.
On

CBFENA0.
*** Off**

Codablock F Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-2048. Minimum Default = 1, Maximum Default = 2048.

CBFMIN.
Minimum Message Length

CBFMAX.
Maximum Message Length

PDF417

< Default All PDF417 Settings >


PDFDFT.

PDF417 On/Off


PDFENA1.

*** On**


PDFENA0.

Off

PDF417 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-2750. Minimum Default = 1, Maximum Default = 2750.


PDFMIN.

Minimum Message Length


PDFMAX.

Maximum Message Length

MacroPDF417

MacroPDF417 is an implementation of PDF417 capable of encoding very large amounts of data into multiple PDF417 bar codes. When this selection is enabled, these multiple bar codes are assembled into a single data string. *Default = On.*


PDFMAC1.

*** On**


PDFMAC0.

Off

MicroPDF417

< Default All MicroPDF417 Settings >

MPDDFT.

MicroPDF417 On/Off

MPDENA1.
On

MPDENA0.
*** Off**

MicroPDF417 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-366. Minimum Default = 1, Maximum Default = 366.

MPDMIN.
Minimum Message Length

MPDMAX.
Maximum Message Length

GS1 Composite Codes

Linear codes are combined with a unique 2D composite component to form a new class called GS1 Composite symbology. GS1 Composite symbologies allow for the co-existence of symbologies already in use. *Default = Off.*

COMENA1.
On

COMENA0.
*** Off**

UPC/EAN Version

Scan the ***UPC/EAN Version On*** bar code to decode GS1 Composite symbols that have a U.P.C. or an EAN linear component. (This does not affect GS1 Composite symbols with a GS1-128 or GS1 linear component.) *Default = UPC/EAN Version Off.*

UPC/EAN Version On

*** UPC/EAN Version Off**

Note: If you scan coupons that have both UPC and GS1 DataBar codes, you may wish to scan and output only the data from the GS1 DataBar code. See Coupon GS1 DataBar Output (page 6-20) for further information.

GS1 Composite Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-2435. Minimum Default = 1, Maximum Default = 2435.

Minimum Message Length

Maximum Message Length

GS1 Emulation

The scanner can automatically format the output from any GS1 data carrier to emulate what would be encoded in an equivalent GS1-128 or GS1 DataBar symbol. GS1 data carriers include UPC-A and UPC-E, EAN-13 and EAN-8, ITF-14, GS1-128, and GS1-128 DataBar and GS1 Composites. (Any application that accepts GS1 data can be simplified since it only needs to recognize one data carrier type.)

If **GS1-128 Emulation** is scanned, all retail codes (U.P.C., UPC-E, EAN8, EAN13) are expanded out to 16 digits. If the AIM ID is enabled, the value will be the GS1-128 AIM ID,]C1 (see Symbology Charts on page A-1).

If **GS1 DataBar Emulation** is scanned, all retail codes (U.P.C., UPC-E, EAN8, EAN13) are expanded out to 16 digits. If the AIM ID is enabled, the value will be the GS1-DataBar AIM ID,]e*m* (see Symbology Charts on page A-1).

If **GS1 Code Expansion Off** is scanned, retail code expansion is disabled, and UPC-E expansion is controlled by the UPC-E0 Expand (page 6-20) setting. If the AIM ID is enabled, the value will be the GS1-128 AIM ID,]C1 (see Symbology Charts on page A-1).

If **EAN8 to EAN13 Conversion** is scanned, all EAN8 bar codes are converted to EAN13 format.

Default = GS1 Emulation Off.

GS1-128 Emulation


EANEMU2.
GS1 DataBar Emulation


EANEMU3.
GS1 Code Expansion Off


EANEMU4.
EAN8 to EAN13 Conversion


EANEMU0.
*** GS1 Emulation Off**

TCIF Linked Code 39 (TLC39)

This code is a composite code since it has a Code 39 linear component and a MicroPDF417 stacked code component. All bar code readers are capable of reading the Code 39 linear component. The MicroPDF417 component can only be decoded if **TLC39 On** is selected. The linear component may be decoded as Code 39 even if TLC39 is off. *Default = Off.*


T39ENA1.
On


T39ENA0.
*** Off**

QR Code

< Default All QR Code Settings >


QRCDFT.

QR Code On/Off

This selection applies to both QR Code and Micro QR Code.


QRCENA1.
*** On**


QRCENA0.
Off

QR Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-7089. Minimum Default = 1, Maximum Default = 7089.

QRCMIN.
Minimum Message Length

QRCMAX.
Maximum Message Length

QR Code Append

This function allows the scanner to append the data from several QR Code bar codes together before transmitting them to the host computer. When the scanner encounters an QR Code bar code with the append trigger character(s), it buffers the number of QR Code bar codes determined by information encoded in those bar codes. Once the proper number of codes is reached, the data is output in the order specified in the bar codes. *Default = On.*

QRCAPP1.
*** On**

QRCAPP0.
Off

QR Code Page

QR Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see ISO 2022/ISO 646 Character Replacements on page A-8), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

QRCDCP.
QR Code Page

Data Matrix

< Default All Data Matrix Settings >


IDMDFT.

Data Matrix On/Off


IDMENA1.
*** On**


IDMENA0.
Off

Data Matrix Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-3116. Minimum Default = 1, Maximum Default = 3116.


IDMMIN.
Minimum Message Length


IDMMAX.
Maximum Message Length

Data Matrix Append

This function allows the scanner to append the data from several Data Matrix bar codes together before transmitting them to the host computer. When the scanner encounters an Data Matrix bar code with the append trigger character(s), it buffers the number of Data Matrix bar codes determined by information encoded in those bar codes. Once the proper number of codes is reached, the data is output in the order specified in the bar codes. *Default = On.*


IDMAPP1.
*** On**


IDMAPP0.
Off

Data Matrix Code Page

Data Matrix Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar

codes were created (see ISO 2022/ISO 646 Character Replacements on page A-8), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

IDMDCP.
Data Matrix Code Page

MaxiCode

< Default All MaxiCode Settings >

MAXDFT.

MaxiCode On/Off

MAXENA1.
On

MAXENA0.
*** Off**

MaxiCode Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-150. Minimum Default = 1, Maximum Default = 150.

MAXMIN.
Minimum Message Length

MAXMAX.
Maximum Message Length

Aztec Code

< Default All Aztec Code Settings >


AZTDFT.

Aztec Code On/Off


AZTENA1.
*** On**


AZTENA0.
Off

Aztec Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-3832. Minimum Default = 1, Maximum Default = 3832.


AZTMIN.
Minimum Message Length


AZTMAX.
Maximum Message Length

Aztec Append

This function allows the scanner to append the data from several Aztec bar codes together before transmitting them to the host computer. When the scanner encounters an Aztec bar code with the append trigger character(s), it buffers the number of Aztec bar codes determined by information encoded in those bar codes. Once the proper number of codes is reached, the data is output in the order specified in the bar codes. *Default = On.*


AZTAPP1.
*** On**


AZTAPP0.
Off

Aztec Code Page

Aztec Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar

codes were created (see ISO 2022/ISO 646 Character Replacements on page A-8), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

AZTDCP.
Aztec Code Page

Chinese Sensible (Han Xin) Code

< Default All Han Xin Settings >

HX_DFT.

Han Xin Code On/Off

HX_ENA1.
On

HX_ENA0.
*** Off**

Han Xin Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 1-7833. Minimum Default = 1, Maximum Default = 7833.

HX_MIN.
Minimum Message Length

HX_MAX.
Maximum Message Length

Postal Codes - 2D

The following lists the possible 2D postal codes, and 2D postal code combinations that are allowed. Only one 2D postal code selection can be active at a time. If you scan a second 2D postal code selection, the first selection is overwritten. *Default = 2D Postal Codes Off.*

*** 2D Postal Codes Off**

Single 2D Postal Codes:

Australian Post On

British Post On

Canadian Post On

Intelligent Mail Bar Code On

Japanese Post On

KIX Post On

Planet Code On

Also see Planet Code Check Digit, page 6-44.

Postal-4i On

Postnet On

Also see Postnet Check Digit, page 6-44.

Postnet with B and B' Fields On

InfoMail On

Combination 2D Postal Codes:

InfoMail and British Post On

Intelligent Mail Bar Code and Postnet with B and B' Fields On

Postnet and Postal-4i On

Postnet and Intelligent Mail Bar Code On

Postal-4i and Intelligent Mail Bar Code On

Postal-4i and Postnet with B and B' Fields On

Planet Code and Postnet On

POSTAL18.

Planet Code and Postnet with B and B' Fields On

POSTAL13.

Planet Code and Postal-4i On

POSTAL15.

Planet Code and Intelligent Mail Bar Code On

POSTAL21.

Planet Code, Postnet, and Postal-4i On

POSTAL22.

Planet Code, Postnet, and Intelligent Mail Bar Code On

POSTAL23.

Planet Code, Postal-4i, and Intelligent Mail Bar Code On

POSTAL24.

Postnet, Postal-4i, and Intelligent Mail Bar Code On

POSTAL25.

Planet Code, Postal-4i, and Postnet with B and B' Fields On

POSTAL26.

Planet Code, Intelligent Mail Bar Code, and Postnet with B and B' Fields On

POSTAL27.

Postal-4i, Intelligent Mail Bar Code, and Postnet with B and B' Fields On


POSTAL28.

**Planet Code,
Postal-4i,
Intelligent Mail Bar Code, and
Postnet On**


POSTAL29.

**Planet Code,
Postal-4i,
Intelligent Mail Bar Code, and
Postnet with B and B' Fields On**

Planet Code Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of Planet Code data. *Default = Don't Transmit.*


PLNCKX1.

Transmit Check Digit


PLNCKX0.

*** Don't Transmit Check Digit**

Postnet Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of Postnet data. *Default = Don't Transmit.*


NETCKX1.

Transmit Check Digit


NETCKX0.

*** Don't Transmit Check Digit**

Australian Post Interpretation

This option controls what interpretation is applied to customer fields in Australian 4-State symbols.

Bar Output lists the bar patterns in "0123" format.

Numeric N Table causes that field to be interpreted as numeric data using the N Table.

Alphanumeric C Table causes the field to be interpreted as alphanumeric data using the C Table. Refer to the Australian Post Specification Tables.

Combination C and N Tables causes the field to be interpreted using either the C or N Tables.


AUSINT0.
*** Bar Output**


AUSINT1.
Numeric N Table


AUSINT2.
Alphanumeric C Table


AUSINT3.
Combination C and N Tables

Postal Codes - Linear

The following lists linear postal codes. Any combination of linear postal code selections can be active at a time.

China Post (Hong Kong 2 of 5)

<Default All China Post (Hong Kong 2 of 5) Settings>


CPCDFT.

China Post (Hong Kong 2 of 5) On/Off


CPCENA1.
On


CPCENA0.
*** Off**

China Post (Hong Kong 2 of 5) Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.


CPCMIN.
Minimum Message Length

CPCMAX.
Maximum Message Length

Korea Post

<Default All Korea Post Settings>

KPCDFT.

Korea Post

KPCENA1.
On

KPCENA0.
*** Off**

Korea Post Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 6-1) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.

KPCMIN.
Minimum Message Length

KPCMAX.
Maximum Message Length

Korea Post Check Digit

This selection allows you to specify whether the check digit should be transmitted. *Default = Don't Transmit.*

KPCCHK1.
Transmit Check Digit

KPCCHK0.
*** Don't Transmit Check Digit**

7 Imaging Commands

The scan engine is like a digital camera in the way it captures, manipulates, and transfers images. The following commands allow you to alter the way the scan engine performs these functions.

Note: If you are using the scan engine in a stand, you must set the In-Stand Sensor Mode to Off in order to take images (see Presentation Centering on page 3-6).

Single-Use Basis

Imaging Commands with their modifiers send instructions to the scan engine on a single-use basis, and take effect for a single image capture. Once that capture is complete, the scan engine reverts to its imaging default settings. If you want to permanently change a setting, you must use the serial default commands (see Chapter 10). When the serial default command is used, that selection becomes the new, permanent setting for the scan engine.

Command Syntax

Multiple modifiers and commands can be issued within one sequence. If additional modifiers are to be applied to the same command, just add the modifiers to that command. For example, to add 2 modifiers to the Image Snap command, such as setting the Imaging Style to 1P and the Wait for Trigger to 1T, you would enter **IMGSNP1P1T.**

Note: After processing an image capture command (IMGSNP), you must follow it with an IMGSHP command if you want to see it on your terminal.

To add a command to a sequence, each new command is separated with a semicolon. For example, to add the Image Ship command to the above sequence, you would enter **IMGSNP1P1T;IMGSHP.**

The imaging commands are:

The modifiers for each of these commands follow the command description.

Note: The images included with each command description are examples only. The results you achieve may be different from those included in this manual. The quality of the output you receive will vary depending on lighting, quality of the initial image/object being captured, and distance of the scan engine from the image/object. To achieve a high quality image, it is recommended that you position your scan engine 4-6" (10.2-15.2 cm) away from the image/object you are capturing.

Step 1 - Take a Picture Using IMGSNP

Image Snap - IMGSNP

An image is taken whenever the hardware button is pressed, or when the Image Snap (IMGSNP) command is processed.

The image snap command has many different modifiers that can be used to change the look of the image in memory. Any number of modifiers may be appended to the IMGSNP command. For example, you can use the following command to snap an image, increase the gain, and have the beeper sound once the snap is complete: **IMGSNP2G1B**

IMGSNP Modifiers

P - Imaging Style

This sets the Image Snap style.

0P **Decoding Style**. This processing allows a few frames to be taken until the exposure parameters are met. The last frame is then available for further use.

1P **Photo Style *(default)***. This mimics a simple digital camera, and results in a visually optimized image.

2P **Manual Style**. This is an advanced style that should only be used by an experienced user. It allows you the most freedom to set up the scan engine, and has no auto-exposure.

B - Beeper

Causes a beep to sound after an image is snapped.

0B No beep *(default)*

1B Sounds a beep when the image is captured.

T - Wait for Trigger

Waits for a hardware button push before taking the image. This is only available when using Photo Style (1P).

0T Takes image immediately *(default)*

1T Waits for a button push, then takes the image

L - LED State

Determines if the LEDs should be on or off, and when. Ambient illumination (0L) is preferred for taking pictures of color documents, such as ID cards, especially when the scan engine is in a stand. LED illumination (1L) is preferred when the scanner is handheld. LED State is not available when using Decoding Style (0P).

0L LEDs off *(default)*

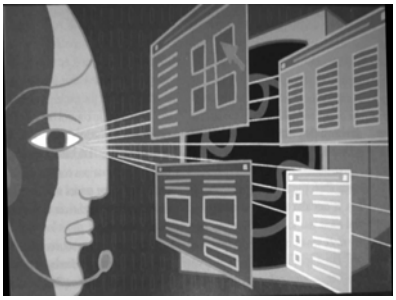
1L LEDs on

E - Exposure

Exposure is used in Manual Style only (2P), and allows you to set the exposure time. This is similar to setting a shutter speed on a camera. The exposure time determines how long the scanner takes to record an image. On a bright day, exposure times can be very short because plenty of light is available to help record an image. At nighttime, exposure time can increase dramatically due to the near absence of light. Units are 127 microseconds. *(Default = 7874)*

*n*E Range: 1 - 7874

Example of Exposure at 7874E with fluorescent lighting:



Example of Exposure at 100E with fluorescent lighting:

G - Gain

Gain is used in Manual Style only (2P). Like a volume control, the gain modifier boosts the signal and multiplies the pixel value. As you increase the gain, the noise in an image is also amplified.

40G Medium gain

64G Heavy gain *(default)*

96G Maximum gain

Example of Gain at 40G:

Example of Gain at 64G:

Example of Gain at 96G:

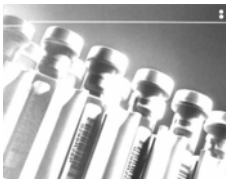
W - Target White Value

Sets the target for the median grayscale value in the captured image. For capturing close-up images of high contrast documents, a lower setting, such as 75, is recommended. Higher settings result in longer exposure times and brighter images, but if the setting is too high, the image may be overexposed. Target White Value is only available when using Photo Style (1P). *(Default = 90)*

*n*W Range: 0 - 255

Example of White Value at 75W:

Example of White Value at 125W:



Example of White Value at 200W:

D - Delta for Acceptance

This sets the allowable range for the white value setting (see W - Target White Value). Delta is only available when using Photo Style (1P). *(Default = 25)*

*n*D Range: 0 - 255

U - Update Tries

This sets the maximum number of frames the scan engine should take to reach the D - Delta for Acceptance. Update Tries is only available when using Photo Style (1P). *(Default = 6)*

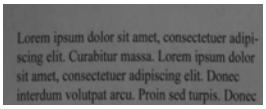
*n*U Range: 0 - 10

% - Target Set Point Percentage

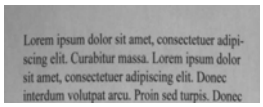
Sets the target point for the light and dark values in the captured image. A setting of 75% means 75% of the pixels are at or below the target white value, and 25% of the pixels are above the target white value. Altering this setting from the default is not recommended under normal circumstances. To alter grayscale values, W - Target White Value should be used. *(Default = 50)*

n% Range: 1 - 99

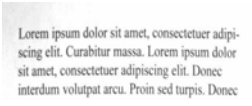
Example of Target Set Point Percentage at 97%:



Example of Target Set Point Percentage at 50%:



Example of Target Set Point Percentage at 40%:



Step 2 - Ship a Picture Using IMGSHP

Image Ship - IMGSHP

An image is taken whenever the button is pressed, or when the Image Snap (IMGSNP) command is processed. The last image is always stored in memory. You can “ship” the image by using the IMGSHP command.

The image ship commands have many different modifiers that can be used to change the look of the image output. Modifiers affect the image that is transmitted, but do not affect the image in memory. Any number of modifiers may be appended to the IMGSHP command. For example, you can use the following command to snap and ship a bitmap image with gamma correction and document image filtering: **IMGSNP;IMGSHP8F75K26U**

IMGSHP Modifiers

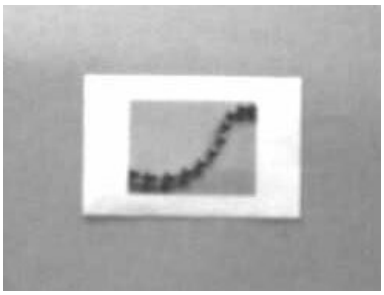
A - Infinity Filter

Enhances pictures taken from very long distances (greater than 10 feet or 3m). The Infinity Filter should not be used with IMGSNP Modifiers (page 7-1).

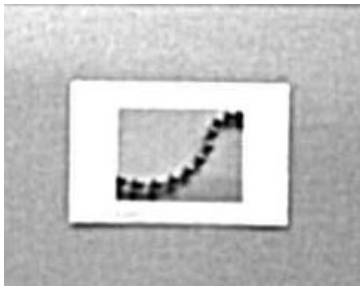
0A Infinity filter off *(default)*

1A Infinity filter on

Example of Infinity Filter off (0A) from approximately 12 feet (3.66m) away:



Example of Infinity Filter on (1A) from approximately 12 feet (3.66m) away:



C - Compensation

Flattens the image to account for variations in illumination across the image.

0C Compensation disabled *(default)*

1C Compensation enabled

Example of Compensation at 0C:

Example of Compensation at 1C:

D - Pixel Depth

Indicates the number of bits per pixel in the transmitted image (KIM or BMP format only).

8D 8 bits per pixel, grayscale image *(default)*

1D 1 bit per pixel, black and white image

E - Edge Sharpen

An edge sharpen filter cleans up the edges of an image, making it look cleaner and sharper. While edge sharpening does make the image look cleaner, it also removes some fine detail from the original image. The strength of the edge sharpen filter can be entered from 1 to 24. Entering a 23E gives the sharpest edges, but also increases noise in the image.

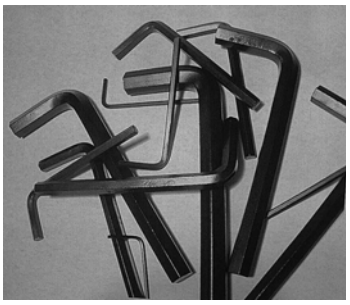
0E Don't sharpen image *(default)*

14E Apply edge sharpen for typical image

*n*e Apply edge sharpen using strength *n* (*n* = 1-24)

Example of Edge Sharpen at 0E:

Example of Edge Sharpen at 24E:



F - File Format

Indicates the desired format for the image.

0F KIM format

1F TIFF binary

2F TIFF binary group 4, compressed

3F TIFF grayscale

4F Uncompressed binary (upper left to lower right, 1 pixel/bit, 0 padded end of line)

5F Uncompressed grayscale (upper left to lower right, bitmap format)

6F JPEG image *(default)*

8F BMP format (lower right to upper left, uncompressed)

15F BMP Uncompressed raw image

H - Histogram Stretch

Increases the contrast of the transmitted image. Not available with some image formats.

0H No stretch *(default)*

1H Histogram stretch

Example of Histogram Stretch at 0H:

Example of Histogram Stretch at 1H:

I - Invert Image

Invert image is used to rotate the image around the X or Y axis.

1ix Invert around the X axis (flips picture upside down)

1iy Invert around the Y axis (flips picture left to right)

Example of image not inverted:

Example of image with Invert Image set to 1ix:

Example of image with Invert Image set to 1iy:

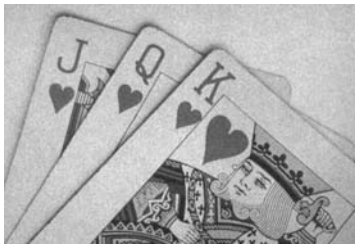
IF- Noise Reduction

Used to reduce the salt and pepper noise in an image.

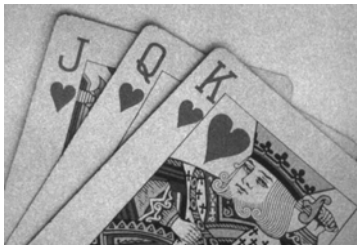
0if No salt and pepper noise reduction (default)

1if Salt and pepper noise reduction

Example of Noise Reduction Off (0if):



Example of Noise Reduction On (1if):



IR - Image Rotate

0ir Image as snapped (rightside up) (default)

1ir Rotate image 90 degrees to the right

2ir Rotate image 180 degrees (upside down)

3ir Rotate image 90 degrees to the left

Example of Image Rotate set to 0ir:

Example of Image Rotate set to 2ir:

Example of Image Rotate set to 1ir:

Example of Image Rotate set to 3ir:

J - JPEG Image Quality

Sets the desired quality when the JPEG image format is selected. Higher numbers result in higher quality, but larger files. Smaller numbers result in greater amounts of lossy compression, faster transmission times, lower quality, but smaller files. *(Default = 50)*

*n*J Image is compressed as much as possible while preserving quality factor of *n* (*n* = 0 - 100)

0J worst quality (smallest file)

100Jbest quality (largest file)

K - Gamma Correction

Gamma measures the brightness of midtone values produced by the image. You can brighten or darken an image using gamma correction. A higher gamma correction yields an overall brighter image. The lower the setting, the darker the image. The optimal setting for text images is 50K.

0K Gamma correction off *(default)*

50K Apply gamma correction for brightening typical document image

*n*K Apply gamma correction factor *n* (*n* = 0-1,000)

Example of Gamma Correction set to 0K:

Example of Gamma Correction set to 50K:

Example of Gamma Correction set to 255K:

L, R, T, B, M - Image Cropping

Ships a window of the image by specifying the left, right, top, and bottom pixel coordinates. Device columns are numbered 0 through 1279, and device rows are numbered 0 through 959.

*n*L The left edge of the shipped image corresponds to column *n* of the image in memory. Range: 000 - 843. *(Default = 0)*

*n*R The right edge of the shipped image corresponds to column *n* - 1 of the image in memory. Range: 000 - 843. *(Default = all columns)*

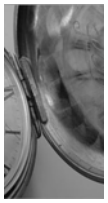
*n*T The top edge of the shipped image corresponds to row *n* of the image in memory. Range: 000 - 639. *(Default = 0)*

*n*B The bottom edge of the shipped image corresponds to row *n* - 1 of the image in memory. Range: 000 - 639. *(Default = all rows)*

Uncropped Image:

Example of Image Crop set to 300R:

Example of Image Crop set to 300L:



Example of Image Crop set to 200B:

Example of Image Crop set to 200T:

Alternately, specify the number of pixels to cut from the outside margin of the image; thus only the center pixels are transmitted.

*n*M Margin: cut *n* columns from the left, *n* + 1 columns from the right, *n* rows from the top, and *n* + 1 rows from the bottom of the image. Ship the remaining center pixels. Range: 0 - 238. *(Default = 0, or full image)*

Example of Image Crop set to 238M:

P - Protocol

Used for shipping an image. Protocol covers two features of the image data being sent to the host. It addresses the protocol used to send the data (Hmodem, which is an Xmodem 1K variant that has additional header information), and the format of the image data that is sent.

0P None (raw data)

2P None *(default for USB)*

3P Hmodem compressed *(default for RS232)*

4P Hmodem

S - Pixel Ship

Pixel Ship sizes an image in proportion to its original size. It decimates the image by shipping only certain, regularly spaced pixels. For example, **4S** would transmit every fourth pixel from every fourth line. The smaller number of pixels shipped, the smaller the image, however, after a certain point the image becomes unusable.

1S ship every pixel *(default)*

2S ship every 2nd pixel, both horizontally and vertically

3S ship every 3rd pixel, both horizontally and vertically

Example of Pixel Ship set to 1S:

Example of Pixel Ship set to 2S:

Example of Pixel Ship set to 3S:

U - Document Image Filter

Allows you to input parameters to sharpen the edges and smooth the area between the edges of text in an image. This filter should be used with gamma correction (see page 7-7), with the scan engine in a stand, and the image captured using the command:

IMGSNP1P0L168W90%32D

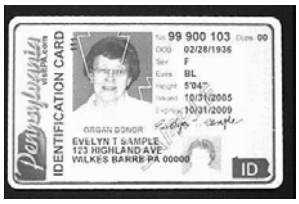
This filter typically provides better JPEG compression than the standard E - Edge Sharpen command (see page 7-9). This filter also works well when shipping pure black and white images (1 bit per pixel). The optimal setting is 26U.

0U Document image filter off *(default)*

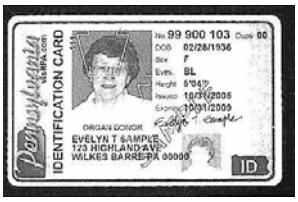
26U Apply document image filter for typical document image

*n*U Apply document image filter using grayscale threshold n. Use lower numbers when the image contrast is lower. 1U will have a similar effect to setting E - Edge Sharpen (page 7-5) to 22e. Range: 0-255.

Example of Document Image Filter set to 0U:



Example of Document Image Filter set to 26U:



V - Blur Image

Smooths transitions by averaging the pixels next to the hard edges of defined lines and shaded areas in an image.

0V Don't blur *(default)*

1V Blur

Example of Blur Image Off (0V):

Example of Blur Image On (1V):

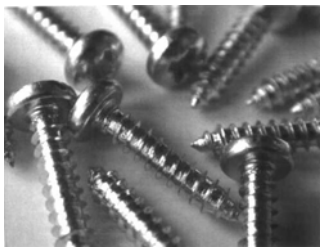
W - Histogram Ship

A histogram gives a quick picture of the tonal range of an image, or key type. A low-key image has detail concentrated in the shadows; a high-key image has detail concentrated in the highlights; and an average-key image has detail concentrated in the midtones. This modifier ships the histogram for an image.

0W Don't ship histogram *(default)*

1W Ship histogram

Image used for histogram:



Histogram of image at left:

Image Size Compatibility

If you have applications that expect an image ship to return exactly 640x480 pixels, scan the Force VGA Resolution bar codeorts imaging command processing (IMGSHP, IMGSNP) so that EZConfig-Scanning (see page 9-3) and other applications are . *Default = Native Resolution.*

IMGVGA1.

Force VGA Resolution

IMGVGA0.

*** Native Resolution**

8

Interface Keys

Keyboard Function Relationships

The following Keyboard Function Code, Hex/ASCII Value, and Full ASCII “CTRL”+ relationships apply to all terminals that can be used with the scanner. Refer to page 2-16 enable Control + X (Control + ASCII) Mode.

Function Code	HEX/ASCII Value	Full ASCII (CTRL + X Mode)
NUL	00	@
SOH	01	A
STX	02	B
ETX	03	C
EOT	04	D
ENQ	05	E
ACK	06	F
BEL	07	G
BS	08	H
HT	09	I
LF	0A	J
VT	0B	K
FF	0C	L
CR	0D	M
SO	0E	N
SI	0F	O
DLE	10	P
DC1	11	Q
DC2	12	R
DC3	13	S
DC4	14	T
NAK	15	U
SYN	16	V
ETB	17	W
CAN	18	X
EM	19	Y
SUB	1A	Z
ESC	1B	[
FS	1C	\
GS	1D	]
RS	1E	^
US	1F	_

The last five characters in the Full ASCII “CTRL”+ column ([\ ] 6 -), apply to US only. The following chart indicates the equivalents of these five characters for different countries.

Country	Codes				
United States	[	\	]	6	-
Belgium	[	<	]	6	-
Scandinavia	8	<	9	6	-
France	^	8	$	6	=
Germany		Ã	+	6	-
Italy		\	+	6	-
Switzerland		<	. .	6	-
United Kingdom	[	¢	]	6	-

Country			Codes		
Denmark	8	\	9	6	-
Norway	8	\	9	6	-
Spain	[	\	]	6	-

Supported Interface Keys

ASCII	HEX	IBM PC/AT and Compatibles, USB PC Keyboard	Apple Mac/iMac Supported Keys
NUL	00	Reserved	Reserved
SOH	01	Enter (KP)	Enter/Numpad Enter
STX	02	Cap Lock	CAPS
ETX	03	ALT make	ALT make
EOT	04	ALT break	ALT break
ENQ	05	CTRL make	CNTRL make
ACK	06	CTRL break	CNTRL break
BEL	07	CR/Enter	RETURN
BS	08	Reserved	APPLE make
HT	09	Tab	TAB
LF	0A	Reserved	APPLE break
VT	0B	Tab	TAB
FF	0C	Delete	Del
CR	0D	CR/Enter	RETURN
SO	0E	Insert	Ins Help
SI	0F	Escape	ESC
DLE	10	F11	F11
DC1	11	Home	Home
DC2	12	Print	Prnt Scrn
DC3	13	Back Space	BACKSPACE
DC4	14	Back Tab	LSHIFT TAB
NAK	15	F12	F12
SYN	16	F1	F1
ETB	17	F2	F2
CAN	18	F3	F3
EM	19	F4	F4
SUB	1A	F5	F5
ESC	1B	F6	F6
FS	1C	F7	F7
GS	1D	F8	F8
RS	1E	F9	F9
US	1F	F10	F10
DEL	7F		BACKSPACE

9 Utilities

To Add a Test Code I.D. Prefix to All Symbologies

This selection allows you to turn on transmission of a Code I.D. before the decoded symbology. (See the Symbology Charts, beginning on page A-1) for the single character code that identifies each symbology.) This action first clears all current prefixes, then programs a Code I.D. prefix for all symbologies. This is a temporary setting that will be removed when the unit is power cycled.

PRECA2,BK2995C80!

Add Code I.D. Prefix to All Symbologies (Temporary)

Show Decoder Revision

Scan the bar code below to output the decoder revision.

REV_DR.

Show Decoder Revision

Show Scan Driver Revision

Scan the bar code below to output the scan driver revision. The scan driver controls image capture.

REV_SD.

Show Scan Driver Revision

Show Software Revision

Scan the bar code below to output the current software revision, unit serial number, and other product information for both the scan engine and base.

REVINF.

Show Software Revision

Show Data Format

Scan the bar code below to show current data format settings.

DFMBK3?.

Data Format Settings

Test Menu

When you scan the Test Menu **On** code, then scan a programming code in this manual, the scan engine displays the content of a programming code. The programming function will still occur, but in addition, the content of that programming code is output to the terminal.

Note: This feature should not be used during normal scan engine operation.


TSTMNU1.
On


TSTMNU0.
*** Off**

TotalFreedom

TotalFreedom is an open system architecture that makes it possible for you create applications that reside on your scan engine. Decoding apps and Data Formatting apps can be created using TotalFreedom. For further information about TotalFreedom, go to our website at www.honeywellaidc.com.

Application Plug-Ins (Apps)

Any apps that you are using can be turned off or on by scanning the following bar codes. Apps are stored in groups: Decoding, and Formatting. You can enable and disable these groups of apps by scanning that group's **On** or **Off** bar code below. You can also scan the **List Apps** bar code to output a list of all your apps.


PLGDCE1.
*** Decoding Apps On**


PLGDCE0.
Decoding Apps Off


PLGFOE1.
*** Formatting Apps On**


PLGFOE0.
Formatting Apps Off


PLGINF.
List Apps

Note: You must reset your device in order for the apps setting to take effect.

EZConfig-Scanning Introduction

EZConfig-Scanning provides a wide range of PC-based programming functions that can be performed on a scan engine connected to your PC's COM port. EZConfig-Scanning allows you to download upgrades to the scan engine's firmware, change programmed parameters, and create and print programming bar codes. Using EZConfig-Scanning, you can even save/open the programming parameters for a scan engine. This saved file can be e-mailed or, if required, you can create a single bar code that contains all the customized programming parameters and mail or fax that bar code to any location. Users in other locations can scan the bar code to load in the customized programming.

EZConfig-Scanning Operations

The EZConfig-Scanning software performs the following operations:

Scan Data

Scan Data allows you to scan bar codes and display the bar code data in a window. Scan Data lets you send serial commands to the scan engine and receive a scan engine response that can be seen in the Scan Data window. The data displayed in the Scan Data window can either be saved in a file or printed.

Configure

Configure displays the programming and configuration data of the scan engine. The scan engine's programming and configuration data is grouped into different categories. Each category is displayed as a tree item under the "Configure" tree node in the application explorer. When one of these tree nodes is clicked, the right-hand side is loaded with the parameters' form belonging to that particular category. The "Configure" tree option has all the programming and configuration parameters specified for a scan engine. You can set or modify these parameters as required. You can later write the modified settings to the scan engine, or save them to a dcf file.

Imaging

Imaging provides all the image-related functions that a 2D scan engine can perform. You can capture an image using the current settings, and the image will be displayed in an image window. Images captured from the scan engine can be saved to files in different image formats. You can modify the image settings and save the image settings to an INI file, which can be loaded later to capture new images. Imaging also lets you preview the images continuously captured by the scan engine.

Installing EZConfig-Scanning from the Web

Note: EZConfig-Scanning requires .NET software. If .NET is not installed on your PC, you will be prompted to install it during the EZConfig-Scanning installation.

1. Access the Honeywell web site at www.honeywellaidc.com
2. Click on the **Resources** tab. Select **Download**.
3. Click on the dropdown for **Select Product Number**. Click on your product number.
4. Click on the listing for **EZConfig-Scanning**.
5. When prompted, select **Save File**, and save the files to the **c:\windows\temp** directory.
6. Once you have finished downloading the file, exit the web site.
7. Using Explorer, go to the **c:\windows\temp** file.
8. Double click on the **Setup.exe** file. Follow the screen prompts to install the EZConfig-Scanning program.
9. If you've selected the defaults during installation, you can click on **Start Menu-All Programs-Honeywell-EZConfig-Scanning.**

Resetting the Factory Defaults

This selection erases all your settings and resets the scan engine to the original factory defaults. It also disables all plugins.

If you aren't sure what programming options are in your scan engine, or you've changed some options and want to restore the scan engine to factory default settings, first scan the **Remove Custom Defaults** bar code, then scan **Activate Defaults**. This resets the scan engine to the factory default settings.

Remove Custom Defaults

Activate Defaults

The Menu Commands, beginning on page 10-3 list the factory default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

10 Serial Programming Commands

The serial programming commands can be used in place of the programming bar codes. Both the serial commands and the programming bar codes will program the scan engine. For complete descriptions and examples of each serial programming command, refer to the corresponding programming bar code in this manual.

The device must be set to an RS232 interface (see page 2-1). The following commands can be sent via a PC COM port using terminal emulation software.

Conventions

The following conventions are used for menu and query command descriptions:

parameter A label representing the actual value you should send as part of a command.

[*option*] An optional part of a command.

{Data} Alternatives in a command.

bold Names of menus, menu commands, buttons, dialog boxes, and windows that appear on the screen.

Menu Command Syntax

Menu commands have the following syntax (spaces have been used for clarity only):

Prefix Tag SubTag {Data} [, SubTag {Data}] [; Tag SubTag {Data}] […] Storage

Prefix	Three ASCII characters: **SYN M CR** (ASCII 22,77,13).
Tag	A 3 character case-insensitive field that identifies the desired menu command group. For example, all RS-232 configuration settings are identified with a Tag of **232**.
SubTag	A 3 character case-insensitive field that identifies the desired menu command within the tag group. For example, the SubTag for the RS-232 baud rate is **BAD**.
Data	The new value for a menu setting, identified by the Tag and SubTag.
Storage	A single character that specifies the storage table to which the command is applied. An exclamation point (**!**) performs the command's operation on the device's volatile menu configuration table. A period (**.**) performs the command's operation on the device's non-volatile menu configuration table. Use the non-volatile table only for semi-permanent changes you want saved through a power cycle.

Query Commands

Several special characters can be used to query the device about its settings.

^ What is the default value for the setting(s).

? What is the device's current value for the setting(s).

***** What is the range of possible values for the setting(s). (The device's response uses a dash (**-**) to indicate a continuous range of values. A pipe (**|**) separates items in a list of non-continuous values.)

:Name: Field Usage (Optional)

This command returns the query information from the scan engine.

Tag Field Usage

When a query is used in place of a Tag field, the query applies to the *entire* set of commands available for the particular storage table indicated by the Storage field of the command. In this case, the SubTag and Data fields should not be used because they are ignored by the device.

SubTag Field Usage

When a query is used in place of a SubTag field, the query applies only to the subset of commands available that match the Tag field. In this case, the Data field should not be used because it is ignored by the device.

Data Field Usage

When a query is used in place of the Data field, the query applies only to the specific command identified by the Tag and SubTag fields.

Concatenation of Multiple Commands

Multiple commands can be issued within one Prefix/Storage sequence. Only the Tag, SubTag, and Data fields must be repeated for each command in the sequence. If additional commands are to be applied to the same Tag, then the new command sequence is separated with a comma (**,**) and only the SubTag and Data fields of the additional command are issued. If the additional command requires a different Tag field, the command is separated from previous commands by a semicolon (**;**).

Responses

The device responds to serial commands with one of three responses:

ACK Indicates a good command which has been processed.

ENQ Indicates an invalid Tag or SubTag command.

NAK Indicates the command was good, but the Data field entry was out of the allowable range for this Tag and SubTag combination, e.g., an entry for a minimum message length of 100 when the field will only accept 2 characters.

When responding, the device echoes back the command sequence with the status character inserted directly before each of the punctuation marks (the period, exclamation point, comma, or semicolon) in the command.

Examples of Query Commands

In the following examples, a bracketed notation [ ] depicts a non-displayable response.

Example: What is the range of possible values for Codabar Coding Enable?

Enter: **cbrena*.**

Response: **CBRENA0-1[ACK]**

This response indicates that Codabar Coding Enable (CBRENA) has a range of values from 0 to 1 (off and on).

Example: What is the default value for Codabar Coding Enable?

Enter: **cbrena^.**

Response: **CBRENA1[ACK]**

This response indicates that the default setting for Codabar Coding Enable (CBRENA) is 1, or on.

Example: What is the device's current setting for Codabar Coding Enable?

Enter: **cbrena?.**

Response: **CBRENA1[ACK]**

This response indicates that the device's Codabar Coding Enable (CBRENA) is set to 1, or on.

Example: What are the device's settings for all Codabar selections?

Enter: **cbr?.**

Response: **CBRENA1[ACK],**
SSX0[ACK],
CK20[ACK],
CCT1[ACK],
MIN2[ACK],
MAX60[ACK],
DFT[ACK].

This response indicates that the device's Codabar Coding Enable (CBRENA) is set to 1, or on;
the Start/Stop Character (SSX) is set to 0, or Don't Transmit;
the Check Character (CK2) is set to 0, or Not Required;
concatenation (CCT) is set to 1, or Enabled;
the Minimum Message Length (MIN) is set to 2 characters;
the Maximum Message Length (MAX) is set to 60 characters;
and the Default setting (DFT) has no value.

Trigger Commands

You can activate and deactivate the scan engine with serial trigger commands. First, the scan engine must be put in Manual Trigger Mode by scanning a Manual Trigger Mode bar code (page 3-5), or by sending a serial menu command for triggering (page 10-8). Once the scan engine is in serial trigger mode, the trigger is activated and deactivated by sending the following commands:

Activate: **SYN T CR**

Deactivate: **SYN U CR**

The scan engine scans until a bar code has been read, until the deactivate command is sent, or until the serial time-out has been reached (see "Read Time-Out" on page 3-5 for a description, and the serial command on page 10-8).

Resetting the Custom Defaults

If you want the custom default settings restored to your scan engine, scan the **Activate Custom Defaults** bar code below. This resets the scan engine to the custom default settings. If there are no custom defaults, it will reset the scan engine to the factory default settings. Any settings that have not been specified through the custom defaults will be defaulted to the factory default settings.

Activate Custom Defaults

The charts on the following pages list the factory default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Menu Commands

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Product Default Settings			
Setting Custom Defaults	Set Custom Defaults	MNUCDF	1-4
	Save Custom Defaults	MNUCDS	1-4
Resetting the Custom Defaults	Activate Custom Defaults	DEFALT	1-5
Programming the Interface			
Plug and Play Codes	Keyboard Wedge: IBM PC AT and Compatibles with CR suffix	PAP_AT	2-1
	Laptop Direct Connect with CR suffix	PAPLTD	2-1
	RS232 Serial Port	PAP232	2-1
Plug and Play Codes: IBM SurePos	USB IBM SurePos Handheld	PAPSPH	2-2
	USB IBM SurePos Tabletop	PAPSPT	2-2
Plug and Play Codes: USB	USB Keyboard (PC)	PAP124	2-2
	USB Keyboard (Mac)	PAP125	2-2
	USB Japanese Keyboard (PC)	TRMUSB134	2-2
	USB HID	PAP131	2-2
	USB Serial	TERMID130	2-3
	ACK/NAK Mode On	USBACK1	2-3
	ACK/NAK Mode Off*	USBACK0	2-3

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Plug and Play Codes	Verifone Ruby Terminal	PAPRBY	2-3
	Gilbarco Terminal	PAPGLB	2-4
	Honeywell Bioptic Aux Port	PAPBIO	2-4
	Datalogic Magellan Bioptic Aux Port	PAPMAG	2-4
	NCR Bioptic Aux Port	PAPNCR	2-4
	Wincor Nixdorf Terminal	PAPWNX	2-5
	Wincor Nixdorf Beetle	PAPBTL	2-5
	Wincor Nixdork RS232 Mode A	PAPWMA	2-6
Program Keyboard Country	*U.S.A.	KBDCTY0	2-7
	Albania	KBDCTY35	2-7
	Azeri (Cyrillic)	KBDCTY81	2-7
	Azeri (Latin)	KBDCTY80	2-7
	Belarus	KBDCTY82	2-7
	Belgium	KBDCTY1	2-7
	Bosnia	KBDCTY33	2-7
	Brazil	KBDCTY16	2-7
	Brazil (MS)	KBDCTY59	2-7
	Bulgaria (Cyrillic)	KBDCTY52	2-7
	Bulgaria (Latin)	KBDCTY53	2-8
	Canada (French legacy)	KBDCTY54	2-8
	Canada (French)	KBDCTY18	2-8
	Canada (Multilingual)	KBDCTY55	2-8
	Croatia	KBDCTY32	2-8
	Czech	KBDCTY15	2-8
	Czech (Programmers)	KBDCTY40	2-8
	Czech (QWERTY)	KBDCTY39	2-8
	Czech (QWERTZ)	KBDCTY38	2-8
	Denmark	KBDCTY8	2-8
	Dutch (Netherlands)	KBDCTY11	2-8
	Estonia	KBDCTY41	2-9
	Faeroese	KBDCTY83	2-9
	Finland	KBDCTY2	2-9
	France	KBDCTY3	2-9
	Gaelic	KBDCTY84	2-9
	Germany	KBDCTY4	2-9
	Greek	KBDCTY17	2-9
	Greek (220 Latin)	KBDCTY64	2-9
	Greek (220)	KBDCTY61	2-9
	Greek (319 Latin)	KBDCTY65	2-9
	Greek (319)	KBDCTY62	2-9
	Greek (Latin)	KBDCTY63	2-10
	Greek (MS)	KBDCTY66	2-10

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
	Greek (Polytonic)	KBDCTY60	2-10
	Hebrew	KBDCTY12	2-10
	Hungarian (101 key)	KBDCTY50	2-10
	Hungary	KBDCTY19	2-10
	Iceland	KBDCTY75	2-10
	Irish	KBDCTY73	2-10
	Italian (142)	KBDCTY56	2-10
	Italy	KBDCTY5	2-10
	Japan ASCII	KBDCTY28	2-10
	Kazakh	KBDCTY78	2-11
	Kyrgyz (Cyrillic)	KBDCTY79	2-11
	Latin America	KBDCTY14	2-11
	Latvia	KBDCTY42	2-11
	Latvia (QWERTY)	KBDCTY43	2-11
	Lithuania	KBDCTY44	2-11
	Lithuania (IBM)	KBDCTY45	2-11
	Macedonia	KBDCTY34	2-11
	Malta	KBDCTY74	2-11
	Mongolian (Cyrillic)	KBDCTY86	2-11
	Norway	KBDCTY9	2-11
	Poland	KBDCTY20	2-12
	Polish (214)	KBDCTY57	2-12
	Polish (Programmers)	KBDCTY58	2-12
	Portugal	KBDCTY13	2-12
	Romania	KBDCTY25	2-12
	Russia	KBDCTY26	2-12
	Russian (MS)	KBDCTY67	2-12
	Russian (Typewriter)	KBDCTY68	2-12
	SCS	KBDCTY21	2-12
	Serbia (Cyrillic)	KBDCTY37	2-12
	Serbia (Latin)	KBDCTY36	2-12
	Slovakia	KBDCTY22	2-13
	Slovakia (QWERTY)	KBDCTY49	2-13
	Slovakia (QWERTZ)	KBDCTY48	2-13
	Slovenia	KBDCTY31	2-13
	Spain	KBDCTY10	2-13
	Spanish variation	KBDCTY51	2-13
	Sweden	KBDCTY23	2-13
	Switzerland (French)	KBDCTY29	2-13
	Switzerland (German)	KBDCTY6	2-13
	Tatar	KBDCTY85	2-13
	Turkey F	KBDCTY27	2-13
	Turkey Q	KBDCTY24	2-14

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
	Ukrainian	KBDCTY76	2-14
	United Kingdom	KBDCTY7	2-14
	United Stated (Dvorak right)	KBDCTY89	2-14
	United States (Dvorak left)	KBDCTY88	2-14
	United States (Dvorak)	KBDCTY87	2-14
	United States (International)	KBDCTY30	2-14
	Uzbek (Cyrillic)	KBDCTY77	2-14
Keyboard Conversion	*Keyboard Conversion Off	KBDCNV0	2-15
	Convert all Characters to Upper Case	KBDCNV1	2-15
	Convert all Characters to Lower Case	KBDCNV1	2-15
Keyboard Style	*Regular	KBDSTY0	2-14
	Caps Lock	KBDSTY1	2-14
	Shift Lock	KBDSTY2	2-15
	Automatic Caps Lock	KBDSTY6	2-15
	Emulate External Keyboard	KBDSTY5	2-15
Control Character Output	*Control Character Output Off	KBDNPE0	2-16
	*Control Character Output On	KBDNPE1	2-16
Keyboard Modifiers	*Control + X Off	KBDCAS0	2-16
	DOS Mode Control + X	KBDCAS1	2-16
	Windows Mode Control + X	KBDCAS2	2-16
	Windows Mode Prefix/Suffix Off	KBDCAS3	2-16
	*Turbo Mode Off	KBDTMD0	2-17
	Turbo Mode On	KBDTMD1	2-16
	*Numeric Keypad Off	KBDNPS0	2-17
	Numeric Keypad On	KBDNPS1	2-17
	*Auto Direct Connect Off	KBDADC0	2-17
	Auto Direct Connect On	KBDADC1	2-17
Baud Rate	300 BPS	232BAD0	2-17
	600 BPS	232BAD1	2-17
	1200 BPS	232BAD2	2-17
	2400 BPS	232BAD3	2-18
	4800 BPS	232BAD4	2-18
	9600 BPS	232BAD5	2-18
	19200 BPS	232BAD6	2-18
	38400 BPS	232BAD7	2-18
	57600 BPS	232BAD8	2-18
	*115200 BPS	232BAD9	2-18
Word Length: Data Bits, Stop Bits, and Parity	7 Data, 1 Stop, Parity Even	232WRD3	2-18
	7 Data, 1 Stop, Parity None	232WRD0	2-18
	7 Data, 1 Stop, Parity Odd	232WRD6	2-18
	7 Data, 2 Stop, Parity Even	232WRD4	2-19

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
	7 Data, 2 Stop, Parity None	232WRD1	2-19
	7 Data, 2 Stop, Parity Odd	232WRD7	2-19
	8 Data, 1 Stop, Parity Even	232WRD5	2-19
	*8 Data, 1 Stop, Parity None	232WRD2	2-19
	8 Data, 1 Stop, Parity Odd	232WRD8	2-19
	8 Data, 1 Stop, Parity Mark		2-19
RS232 Receiver Time-out	Range 0 - 300 seconds	232LPT###	2-19
RS232 Handshaking	*RTS/CTS Off	232CTS0	2-20
	Flow Control, No Timeout	232CTS1	2-20
	Two-Direction Flow Control	232CTS2	2-20
	Flow Control with Timeout	232CTS3	2-20
	RS232 Timeout	232DEL####	2-20
	*XON/XOFF Off	232XON0	2-20
	XON/XOFF On	232XON1	2-20
	*ACK/NAK Off	232ACK0	2-21
	ACK/NAK On	232ACK1	2-21
RS232 Stop Mode	RS232 Stop Mode On	232SDY	2-21
Scanner-Bioptic Packet Mode	*Packet Mode Off	232PKT0	2-21
	Packet Mode On	232PKT2	2-21
Scanner-Bioptic ACK/NAK Mode	*Bioptic ACK/NAK Off	232NAK0	2-22
	Bioptic ACK/NAK On	232NAK1	2-22
Scanner-Bioptic ACK/NAK Timeout	ACK/NAK Timeout *5100	232DLK#####	2-22
Input/Output Selections			
Power Up Beeper	Power Up Beeper Off - Scanner	BEPPWR0	3-1
	*Power Up Beeper On - Scanner	BEPPWR1	3-1
Beep on BEL Character	Beep on BEL On	BELBEP1	3-1
	*Beep on BEL Off	BELBEP0	3-1
Trigger Click	On	BEPTRG1	3-1
	*Off	BEPTRG0	3-1
Beeper - Good Read	Off	BEPBEP0	3-2
	*On	BEPBEP1	3-2
Beeper Volume - Good Read	Off	BEPLVL0	3-2
	Low	BEPLVL1	3-2
	Medium	BEPLVL2	3-2
	*High	BEPLVL3	3-2
Beeper Pitch - Good Read (Frequency)	Low (1600) (min 400Hz)	BEPFQ11600	3-2
	*Medium 2700)	BEPFQ12700	3-2
	High (4200) (max 9000Hz)	BEPFQ14200	3-3
Beeper Pitch - Error (Frequency)	*Razz (250) (min 200Hz)	BEPFQ2800	3-3
	Medium (3250)	BEPFQ23250	3-3
	High (4200) (max 9000Hz)	BEPFQ24200	3-3

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Beeper Duration - Good Read	*Normal Beep	BEPBIP0	3-3
	Short Beep	BEPBIP1	3-3
LED - Good Read	Off	BEPLED0	3-3
	*On	BEPLED1	3-3
Number of Beeps - Error	*1	BEPERR3	3-4
	Range 1 - 9	BEPERR#	3-4
Number of Beeps - Good Read	*1	BEPRPT1	3-4
	Range 1 - 9	BEPRPT#	3-4
Good Read Delay	*No Delay	DLYGRD0	3-4
	Short Delay (500 ms)	DLYGRD500	3-4
	Medium Delay (1000 ms)	DLYGRD1000	3-4
	Long Delay (1500 ms)	DLYGRD1500	3-4
User-Specified Good Read Delay	Range 0 - 30,000 ms	DLYGRD#####	3-4
Manual Trigger Mode	Manual Trigger - Normal	PAPHHF	3-5
LED Illumination - Manual Trigger	Low	PWRNOL15	3-5
	Medium	PWRNOL50	3-5
	*High	PWRNOL150	3-5
Serial Trigger Mode	Read Time-Out (0 - 300,000 ms) *30,000	TRGSTO####	3-5
Presentation Mode	Presentation Mode	PAPPST	3-5
Idle Illumination	Low	PWRIDL7	3-6
	Medium	PWRIDL15	3-6
	*High	PWRIDL50	3-6
Presentation Sensitivity	Range 0-20 (*1)	TRGPMS	3-6
Presentation Centering	On	PDCWIN1	3-8
	*Off	PDCWIN0	3-8
	Top	PDCTOP	3-8
	Bottom	PDCBOT	3-8
	Left	PDCLFT	3-8
	Right	PDCRGT	3-8
Poor Quality 1D Codes	On	DECLDI1	3-8
	*Off	DECLDI0	3-9
Poor Quality PDF Codes	On	PDFPR1	3-9
	*Off	PDFXPR0	3-9
CodeGate	*Off	AOSCGD0	3-9
	On	AOSCGD1	3-9
Mobile Phone Read Mode	Hand Held Scanning - Mobile Phone	PAPHHC	3-10
	Presentation Scanning - Mobile Phone	PAPPSC	3-10
Image Snap and Ship	Image Snap and Ship	TRGMOD6	3-10
Hands Free Time-Out	Range 0 - 300,000 ms	TRGPTO######	3-10

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Reread Delay	Short (500 ms)	DLYRRD500	3-10
	*Medium (750 ms)	DLYRRD750	3-10
	Long (1000 ms)	DLYRRD1000	3-10
	Extra Long (2000 ms)	DLYRRD2000	3-10
User-Specified Reread Delay	Range 0 - 30,000 ms	DLYRRD#####	3-11
2D Reread Delay	*2D Reread Delay Off	DLY2RR0	3-11
	Short (1000ms)	DLY2RR1000	3-11
	Medium (2000ms)	DLY2RR2000	3-11
	Long (3000ms)	DLY2RR3000	3-11
	Extra Long (4000ms)	DLY2RR4000	3-11
Character Activation Mode	*Off	HSTCEN0	3-11
	On	HSTCEN1	3-12
Activation Character	*12 [DC2]	HSTACH	3-12
End Character Activation After Good Read	*Do Not End	HSTCGD0	3-12
	End	HSTCGD1	3-12
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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GS1 DataBar Expanded	Default All GS1 DataBar Expanded Settings	RSEDFT	6-30
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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11 Maintenance and Troubleshooting

Repairs

Repairs and/or upgrades are not to be performed on this product. These services are to be performed only by an authorized service center. See "Customer Support" on page vii for further information.

Inspecting Cords and Connectors

Inspect the scan engine's interface cable and connector for wear or other signs of damage. A badly worn cable or damaged connector may interfere with scan engine operation. Contact your Honeywell distributor for information about cable replacement.

Troubleshooting

The scan engine automatically performs self-tests whenever you turn it on. If your scan engine is not functioning properly, review the following Troubleshooting Guide to try to isolate the problem.

Is the power on? Is the red or green aiming illumination line on?

If the aiming line doesn't appear, check that:

- The cable is connected properly.
- The host system power is on (if external power isn't used).

Is the scan engine having trouble reading your symbols?

If the scan engine isn't reading symbols well, check that the symbols:

- Aren't smeared, rough, scratched, or exhibiting voids.
- Aren't coated with frost or water droplets on the surface.
- Are enabled in the scan engine or in the decoder to which the scan engine connects.

Is the bar code displayed but not entered?

The bar code is displayed on the host device correctly, but you still have to press a key to enter it (the Enter/Return key or the Tab key, for example).

You need to program a suffix. Programming a suffix enables the scan engine to output the bar code data plus the key you need (such as "CR") to enter the data into your application. Refer to "Prefix/Suffix Overview" on page 4-1 for further information.

Does the scan engine read the bar code incorrectly?

If the scan engine reads a bar code, but the data is not displayed correctly on the host screen:

- The scan engine may not be programmed for the appropriate terminal interface.
  For example, you scan "12345" and the host displays "@es%."

  Reprogram the scan engine with the correct Plug and Play or Terminal selection bar code. See Chapter 2 and Chapter 3.

The scan engine may not be programmed to output your bar code data properly.
For example, you scan "12345" and the host displays "A12345B."

Reprogram the scan engine with the proper symbology selections. See Chapter 6.

The scan engine won't read your bar code at all.

1. Scan the sample bar codes in the back of this manual. If the scan engine reads the sample bar codes, check that your bar code is readable.
   Verify that your bar code symbology is enabled (see Chapter 6).
2. If the scan engine still can't read the sample bar codes, scan "All Symbologies" on page 6-1.

If you aren't sure what programming options have been set in the scan engine, or if you want the factory default settings restored, scan Resetting the Factory Defaults on page 9-4.

A

Reference Charts

Symbology Charts

Note: "m" represents the AIM modifier character. Refer to International Technical Specification, Symbology Identifiers, for AIM modifier character details.

Prefix/Suffix entries for specific symbologies override the universal (All Symbologies, 99) entry.

Refer to Data Editing beginning on page 4-1 and Data Formatting beginning on page 5-1 for information about using Code ID and AIM ID.

Linear Symbologies

	AIM		Honeywell	
Symbology	**ID**	**Possible modifiers (*m*)**	**ID**	**Hex**
All Symbologies				99
Codabar	]F*m*	0-1	a	61
Code 11	]H3		h	68
Code 128	]C*m*	0, 1, 2, 4	j	6A
Code 32 Pharmaceutical (PARAF)	]X0		<	3C
Code 39 (supports Full ASCII mode)	]A*m*	0, 1, 3, 4, 5, 7	b	62
TCIF Linked Code 39 (TLC39)	]L2		T	54
Code 93 and 93i	]G*m*	0-9, A-Z, a-m	i	69
EAN	]E*m*	0, 1, 3, 4	d	64
EAN-13 (including Bookland EAN)	]E0		d	64
EAN-13 with Add-On	]E3		d	64
EAN-13 with Extended Coupon Code	]E3		d	64
EAN-8	]E4		D	44
EAN-8 with Add-On	]E3		D	44
GS1				
GS1 DataBar	]e*m*	0	y	79
GS1 DataBar Limited	]e*m*		{	7B
GS1 DataBar Expanded	]e*m*		}	7D
GS1-128	]C1		I	49
2 of 5				
China Post (Hong Kong 2 of 5)	]X0		Q	51
Interleaved 2 of 5	]I*m*	0, 1, 3	e	65
Matrix 2 of 5	]X0		m	6D
NEC 2 of 5	]X0		Y	59
Straight 2 of 5 IATA	]R*m*	0, 1, 3	f	66
Straight 2 of 5 Industrial	]S0		f	66
MSI	]M*m*	0, 1	g	67
Telepen	]B*m*		t	74
UPC		0, 1, 2, 3, 8, 9, A, B, C		

Symbology	AIM		Honeywell	
	ID	Possible modifiers (*m*)	ID	Hex
UPC-A	]E0		c	63
UPC-A with Add-On	]E3		c	63
UPC-A with Extended Coupon Code	]E3		c	63
UPC-E	]E0		E	45
UPC-E with Add-On	]E3		E	45
UPC-E1	]X0		E	45

Add Honeywell Code ID				5C80
Add AIM Code ID				5C81
Add Backslash				5C5C
Batch mode quantity			5	35

2D Symbologies

Symbology	AIM		Honeywell	
	ID	Possible modifiers (*m*)	ID	Hex
All Symbologies				99
Aztec Code	]z*m*	0-9, A-C	z	7A
Chinese Sensible Code (Han Xin Code)	]X0		H	48
Codablock A	]O6	0, 1, 4, 5, 6	V	56
Codablock F	]O*m*	0, 1, 4, 5, 6	q	71
Code 49	]T*m*	0, 1, 2, 4	l	6C
Data Matrix	]d*m*	0-6	w	77
GS1	]e*m*	0-3	y	79
GS1 Composite	]e*m*	0-3	y	79
GS1 DataBar Omnidirectional	]e*m*		y	79
MaxiCode	]U*m*	0-3	x	78
PDF417	]L*m*	0-2	r	72
MicroPDF417	]L*m*	0-5	R	52
QR Code	]Q*m*	0-6	s	73
Micro QR Code	]Q*m*		s	73

Postal Symbologies

Symbology	AIM		Honeywell	
	ID	Possible modifiers (*m*)	ID	Hex
All Symbologies				99
Australian Post	]X0		A	41
British Post	]X0		B	42
Canadian Post	]X0		C	43
China Post	]X0		Q	51
InfoMail	]X0		,	2c
Intelligent Mail Bar Code	]X0		M	4D
Japanese Post	]X0		J	4A
KIX (Netherlands) Post	]X0		K	4B
Korea Post	]X0		?	3F
Planet Code	]X0		L	4C
Postal-4i	]X0		N	4E
Postnet	]X0		P	50

ASCII Conversion Chart (Code Page 1252)

In keyboard applications, ASCII Control Characters can be represented in 3 different ways, as shown below. The CTRL+X function is OS and application dependent. The following table lists some commonly used Microsoft functionality. This table applies

to U.S. style keyboards. Certain characters may differ depending on your Country Code/PC regional settings.

Non-printable characters ASCII control			Keyboard Control + ASCII (CTRL+X) Mode		
				Windows Mode Control + X Mode On (KBDCAS2)	
DEC	HEX	Char	Control + X Mode Off (KBDCAS0)	CTRL + X	CTRL + X function
0	00	NUL	Reserved	CTRL+ @	
1	01	SOH	NP Enter	CTRL+ A	Select all
2	02	STX	Caps Lock	CTRL+ B	Bold
3	03	ETX	ALT Make	CTRL+ C	Copy
4	04	EOT	ALT Break	CTRL+ D	Bookmark
5	05	ENQ	CTRL Make	CTRL+ E	Center
6	06	ACK	CTRL Break	CTRL+ F	Find
7	07	BEL	Enter / Ret	CTRL+ G	
8	08	BS	*(Apple Make)*	CTRL+ H	History
9	09	HT	Tab	CTRL+ I	Italic
10	0A	LF	*(Apple Break)*	CTRL+ J	Justify
11	0B	VT	Tab	CTRL+ K	hyperlink
12	0C	FF	Delete	CTRL+ L	list, left align
13	0D	CR	Enter / Ret	CTRL+ M	
14	0E	SO	Insert	CTRL+ N	New
15	0F	SI	ESC	CTRL+ O	Open
16	10	DLE	F11	CTRL+ P	Print
17	11	DC1	Home	CTRL+ Q	Quit
18	12	DC2	PrtScn	CTRL+ R	
19	13	DC3	Backspace	CTRL+ S	Save
20	14	DC4	Back Tab	CTRL+ T	
21	15	NAK	F12	CTRL+ U	
22	16	SYN	F1	CTRL+ V	Paste
23	17	ETB	F2	CTRL+ W	
24	18	CAN	F3	CTRL+ X	
25	19	EM	F4	CTRL+ Y	
26	1A	SUB	F5	CTRL+ Z	
27	1B	ESC	F6	CTRL+ [	
28	1C	FS	F7	CTRL+ \	
29	1D	GS	F8	CTRL+]	
30	1E	RS	F9	CTRL+ ^	
31	1F	US	F10	CTRL+ -	
127	7F	⌂	NP Enter		

Lower ASCII Reference Table

Note: Windows Code page 1252 and lower ASCII use the same characters.

Printable Characters								
DEC	HEX	Character	DEC	HEX	Character	DEC	HEX	Character
32	20	<SPACE>	64	40	@	96	60	`
33	21	!	65	41	A	97	61	a
34	22	"	66	42	B	98	62	b
35	23	#	67	43	C	99	63	c

Printable Characters (Continued)								
DEC	HEX	Character	DEC	HEX	Character	DEC	HEX	Character
36	24	$	68	44	D	100	64	d
37	25	%	69	45	E	101	65	e
38	26	&	70	46	F	102	66	f
39	27	'	71	47	G	103	67	g
40	28	(	72	48	H	104	68	h
41	29	)	73	49	I	105	69	i
42	2A	*	74	4A	J	106	6A	j
43	2B	+	75	4B	K	107	6B	k
44	2C	,	76	4C	L	108	6C	l
45	2D	-	77	4D	M	109	6D	m
46	2E	.	78	4E	N	110	6E	n
47	2F	/	79	4F	O	111	6F	o
48	30	0	80	50	P	112	70	p
49	31	1	81	51	Q	113	71	q
50	32	2	82	52	R	114	72	r
51	33	3	83	53	S	115	73	s
52	34	4	84	54	T	116	74	t
53	35	5	85	55	U	117	75	u
54	36	6	86	56	V	118	76	v
55	37	7	87	57	W	119	77	w
56	38	8	88	58	X	120	78	x
57	39	9	89	59	Y	121	79	y
58	3A	:	90	5A	Z	122	7A	z
59	3B	;	91	5B	[	123	7B	{
60	3C	<	92	5C	\	124	7C	|
61	3D	=	93	5D	]	125	7D	}
62	3E	>	94	5E	^	126	7E	~
63	3F	?	95	5F	_	127	7F	⌂

Extended ASCII Characters					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
128	80	€	Ç	up arrow ↑	0x48
129	81		ü	down arrow ↓	0x50
130	82	‚	é	right arrow →	0x4B
131	83	ƒ	â	left arrow ←	0x4D
132	84	„	ä	Insert	0x52
133	85	…	à	Delete	0x53
134	86	†	å	Home	0x47
135	87	‡	ç	End	0x4F
136	88	ˆ	ê	Page Up	0x49
137	89	‰	ë	Page Down	0x51
138	8A	Š	è	Right ALT	0x38
139	8B	‹	ï	Right CTRL	0x1D
140	8C	Œ	î	Reserved	n/a
141	8D		ì	Reserved	n/a
142	8E	Ž	Ä	Numeric Keypad Enter	0x1C
143	8F		Å	Numeric Keypad /	0x35
144	90		É	F1	0x3B
145	91	‘	æ	F2	0x3C
146	92	’	Æ	F3	0x3D
147	93	“	ô	F4	0x3E

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
148	94	”	ö	F5	0x3F
149	95	•	ò	F6	0x40
150	96	–	û	F7	0x41
151	97	—	ù	F8	0x42
152	98	˜	ÿ	F9	0x43
153	99	™	Ö	F10	0x44
154	9A	š	Ü	F11	0x57
155	9B	›	¢	F12	0x58
156	9C	œ	£	Numeric Keypad +	0x4E
157	9D		¥	Numeric Keypad -	0x4A
158	9E	ž	Pts	Numeric Keypad *	0x37
159	9F	Ÿ	ƒ	Caps Lock	0x3A
160	A0		á	Num Lock	0x45
161	A1	¡	í	Left Alt	0x38
162	A2	¢	ó	Left Ctrl	0x1D
163	A3	£	ú	Left Shift	0x2A
164	A4	¤	ñ	Right Shift	0x36
165	A5	¥	Ñ	Print Screen	n/a
166	A6	¦	ª	Tab	0x0F
167	A7	§	º	Shift Tab	0x8F
168	A8	¨	¿	Enter	0x1C
169	A9	©	⌐	Esc	0x01
170	AA	ª	¬	Alt Make	0x36
171	AB	«	½	Alt Break	0xB6
172	AC	¬	¼	Control Make	0x1D
173	AD		¡	Control Break	0x9D
174	AE	®	«	Alt Sequence with 1 Character	0x36
175	AF	¯	»	Ctrl Sequence with 1 Character	0x1D
176	B0	°	░		
177	B1	±	▒		
178	B2	²	▓		
179	B3	³	│		
180	B4	´	┤		
181	B5	µ	╡		
182	B6	¶	╢		
183	B7	·	╖		
184	B8	¸	╕		
185	B9	¹	╣		
186	BA	º	║		
187	BB	»	╗		
188	BC	¼	╝		
189	BD	½	╜		
190	BE	¾	╛		
191	BF	¿	┐		
192	C0	À	└		
193	C1	Á	┴		
194	C2	Â	┬		
195	C3	Ã	├		
196	C4	Ä	─		
197	C5	Å	í		
198	C6	Æ	╞		
199	C7	Ç	╟		

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
200	C8	È	╚		
201	C9	É	╔		
202	CA	Ê	╩		
203	CB	Ë	╦		
204	CC	Ì	╠		
205	CD	Í	═		
206	CE	Î	╬		
207	CF	Ï	╧		
208	D0	Ð	╨		
209	D1	Ñ	╤		
210	D2	Ò	╥		
211	D3	Ó	╙		
212	D4	Ô	╘		
213	D5	Õ	╒		
214	D6	Ö	╓		
215	D7	×	╫		
216	D8	Ø	╪		
217	D9	Ù	┘		
218	DA	Ú	┌		
219	DB	Û	█		
220	DC	Ü	▄		
221	DD	Ý	▌		
222	DE	Þ	▐		
223	DF	ß	▀		
224	E0	à	α		
225	E1	á	ß		
226	E2	â	Γ		
227	E3	ã	π		
228	E4	ä	Σ		
229	E5	å	σ		
230	E6	æ	µ		
231	E7	ç	τ		
232	E8	è	Φ		
233	E9	é	Θ		
234	EA	ê	Ω		
235	EB	ë	δ		
236	EC	ì	∞		
237	ED	í	φ		
238	EE	î	ε		
239	EF	ï	∩		
240	F0	ð	≡		
241	F1	ñ	±		
242	F2	ò	≥		
243	F3	ó	≤		
244	F4	ô	⌠		
245	F5	õ	⌡		
246	F6	ö	÷		
247	F7	÷	≈		
248	F8	ø	°		
249	F9	ù	∙		
250	FA	ú	·		
251	FB	û	√		

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
252	FC	ü	ⁿ		
253	FD	ý	²		
254	FE	þ	■		
255	FF	ÿ			

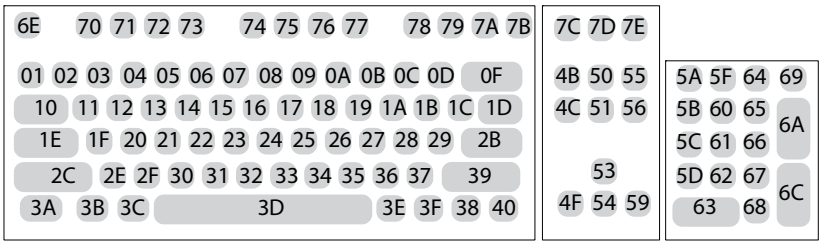
ISO 2022/ISO 646 Character Replacements

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, select the code page with which the bar codes were created. The data characters should then appear properly.

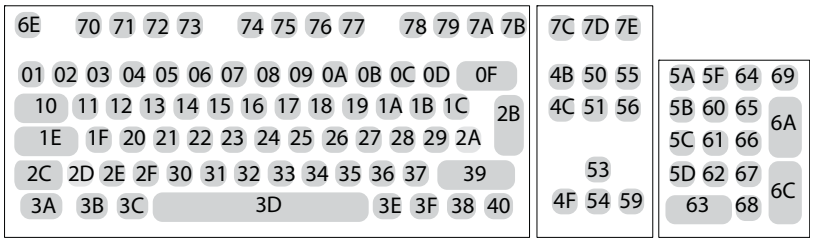
Code Page Selection Method/Country	Standard	Keyboard Country	Honeywell Code Page Option
United States (standard ASCII)	ISO/IEC 646-IRV	n/a	1
Automatic National Character Replacement	ISO/IEC 2022	n/a	2 (default)
Binary Code page	n/a	n/a	3
Default "Automatic National Character replacement" will select the below Honeywell Code Page options for Code128, Code 39 and Code 93.			
United States	ISO/IEC 646-06	0	1
Canada	ISO /IEC 646-121	54	95
Canada	ISO /IEC 646-122	18	96
Japan	ISO/IEC 646-14	28	98
China	ISO/IEC 646-57	92	99
Great Britain (UK)	ISO /IEC 646-04	7	87
France	ISO /IEC 646-69	3	83
Germany	ISO/IEC646-21	4	84
Switzerland	ISO /IEC 646-CH	6	86
Sweden / Finland (extended Annex C)	ISO/IEC 646-11	2	82
Ireland	ISO /IEC 646-207	73	97
Denmark	ISO/IEC 646-08	8	88
Norway	ISO/IEC 646-60	9	94
Italy	ISO/IEC 646-15	5	85
Portugal	ISO/IEC 646-16	13	92
Spain	ISO/IEC 646-17	10	90
Spain	ISO/IEC 646-85	51	91

Dec			35	36	64	91	92	93	94	96	123	124	125	126
Hex			23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
US	**0**	**1**	**#**	**$**	**@**	**[**	****	**]**	**^**	**`**	**{**	**|**	**}**	**~**
CA	**54**	**95**	#	$	à	â	ç	ê	î	ô	é	ù	è	û
CA	**18**	**96**	#	$	à	â	ç	ê	É	ô	é	ù	è	û
JP	**28**	**98**	#	$	@	[	¥	]	^	`	{	|	}	¯
CN	**92**	**99**	#	¥	@	[	\	]	^	`	{	|	}	¯
GB	**7**	**87**	£	$	@	[	\	]	^	`	{	|	}	~
FR	**3**	**83**	£	$	à	°	ç	§	^	µ	é	ù	è	¨
DE	**4**	**84**	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
CH	**6**	**86**	ù	$	à	é	ç	ê	î	ô	ä	ö	ü	û
SE/FI	**2**	**82**	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
DK	**8**	**88**	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
NO	**9**	**94**	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	¯
IE	**73**	**97**	£	$	Ó	É	Í	Ú	Á	ó	é	í	ú	á
IT	**5**	**85**	£	$	§	°	ç	é	^	ù	à	ò	è	ì
PT	**13**	**92**	#	$	§	Ã	Ç	Õ	^	`	ã	ç	õ	°
ES	**10**	**90**	#	$	§	¡	Ñ	¿	^	`	°	ñ	ç	~
ES	**51**	**91**	#	$	·	¡	Ñ	Ç	¿	`	´	ñ	ç	¨
COUNTRY	**Country Keyboard**	**Honeywell CodePage**	**ISO / IEC 646 National Character Replacements**											

Keyboard Key References



104 Key U.S. Style Keyboard



105 Key European Style Keyboard

Required Safety Label

ESD Precautions

The scan engine is shipped in ESD safe packaging. Use care when handling the scan engine outside its packaging. Be sure grounding wrist straps and properly grounded work areas are used.

Dust and Dirt

The scan engine must be sufficiently enclosed to prevent dust particles from gathering on the scan engine and lens. When stocking the unit, keep it in its protective packaging. Dust and other external contaminants will eventually degrade unit performance.

Product Environmental Information

Refer to www.honeywellaidc.com/environmental for the RoHS / REACH / WEEE information.

有毒有害物质名称及含量的标识格式 **(Names and Content of Hazardous Substances or Elements)**

部件名称 (**Parts Name**)	有毒有害物质或元素 **(Toxic and Hazardous Substances or Elements)**					
	铅 **(Pb)**	汞 **(Hg)**	镉 **(Cd)**	六价铬 **(Cr6+)**	多溴联苯 **(PBB)**	多溴二苯醚 **(PBDE)**
成像式二维条码阅读器 **(2D Imager)**	X	O	O	O	O	O
印刷电路板 **(PCB)**	X	O	O	O	O	O
外壳 (**Housing)**	O	O	O	O	O	O

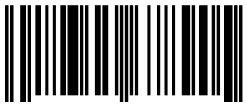
本表格依据 SJ/T11364-2014 的规定编制。(The table is created by SJ/T11364-2014 requirement.)

o: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T26572-2011 标准规定的限量要求以下 (Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in China's GB/T26572-2011.)

x: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572-2011 标准规定的限量要求 (Indicates that this hazardous substance contained in at least one of the homogeneous materials for this part is above the limit requirement in China's GB/T26572-2011.)

Sample Symbols

UPC-A



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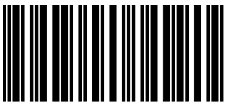

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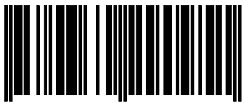

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Code 128

Code 128

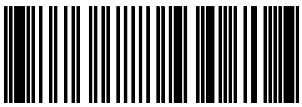
Code 39

BC321

Codabar

A13579B

Code 93



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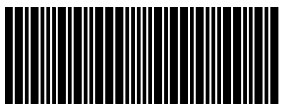
Code 2 of 5



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Matrix 2 of 5

6543210

RSS-14

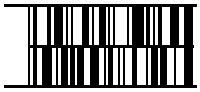
(01)00123456789012

Sample Symbols

PDF417

Car Registration

Code 49



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Postnet

Zip Code

Data Matrix

Test Symbol

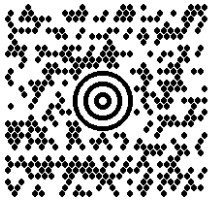
QR Code

Numbers

Aztec

Package Label

MaxiCode



Test Message

Micro PDF417

Test Message

Programming Chart

0

1

2

3

4

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6

7

8

9

Honeywell Scanning & Mobility
9680 Old Bailes Road
Fort Mill, SC 29707

Ref. Certif. No.

US-26192-UL

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Scanning Engine
Name and address of the applicant Nom et adresse du demandeur	Honeywell International Inc Honeywell Scanning and Mobility 9680 Old Bailes Rd Fort Mill, SC 29707, United States
Name and address of the manufacturer Nom et adresse du fabricant	Honeywell International Inc Honeywell Scanning and Mobility 9680 Old Bailes Rd Fort Mill, SC 29707, United States
Name and address of the factory Nom et adresse de l'usine Note: *When more than one factory, please report on page 2* Note: *Lorsque il y plus d'une usine, veuillez utiliser la 2ème page*	Metro (Suzhou) Technologies Co LTD China-Singapore Suzhou Industrial Park 221 Xinghai St, Suzhou Jiangsu, 215021 China ☐ Additional Information on page 2
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Not Required – No direct connection to mains IEC 62471 LOW RISK GROUP
Trademark (if any) Marque de fabrique (si elle existe)	Honeywell Trademark is optional.
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	
Model / Type Ref. Ref. De type	N3680
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire,, peuvent être indiqués sur la 2ème page	Additionally evaluated to EN 62471:2008; National Differences specified in the CB Test Report. Only photobiological hazards resulting from electrically powered incoherent broadband sources of optical radiation have been addressed in the Report. ☐ Additional Information on page 2
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 62471(ed.1)
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	4787089997 issued on 2015-10-12

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme **National de Certification**

☒ UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☐ UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2015-10-15

Signature:

Jolanta M. Wroblewska

Ref. Certif. No.

US-26313-UL

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Scanning Engine
Name and address of the applicant Nom et adresse du demandeur	HONEYWELL INTERNATIONAL INC HONEYWELL SCANNING AND MOBILITY 9680 OLD BAILES RD FORT MILL SC 29707-7539 UNITED STATES
Name and address of the manufacturer Nom et adresse du fabricant	HONEYWELL INTERNATIONAL INC HONEYWELL SCANNING AND MOBILITY 9680 OLD BAILES RD FORT MILL SC 29707-7539 UNITED STATES
Name and address of the factory Nom et adresse de l'usine Note: *When more than one factory, please report on page 2* Note: *Lorsque il y plus d'une usine, veuillez utiliser la 2ème page*	METRO (SUZHOU) TECHNOLOGIES CO LTD CHINA-SINGAPORE SUZHOU INDUSTRIAL PARK 221 XINGHAI ST SUZHOU JIANGSU 215021 CHINA ☐ Additional Information on page 2
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	See Page 2.
Trademark (if any) Marque de fabrique (si elle existe)	(Optional) Honeywell
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	
Model / Type Ref. Ref. De type	N3680
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire,, peuvent être indiqués sur la 2ème page	☐ Additional Information on page 2
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 60950-1(ed.2), IEC 60950-1(ed.2);am1, IEC 60950-1(ed.2);am2
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	E89891-A84-CB-1 issued on 2015-11-03

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme **National de Certification**

☒ UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☐ UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2015-11-03

Signature:

Jolanta M. Wroblewska

Ratings:
(Not Required):
TTL Serial: 3.3 VDC, 310 mA
USB: 5.0 VDC, 220 mA

Additional Information:
Additionally evaluated to EN 60950-1:2006 / A11:2009 / A1:2010 / A12:2011 / A2:2013;
National Differences specified in the CB Test Report.

Additional information (if necessary)
Information complémentaire (si nécessaire)

☒ UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☐ UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2015-11-03

Signature:
Jolanta M. Wroblewska

CERTIFICATE OF COMPLIANCE

Certificate Number	20151106-E89891
Report Reference	E89891-A84-UL
Issue Date	2015-NOVEMBER-06
Issued to:	HONEYWELL INTERNATIONAL INC Honeywell Sensing & Productivity Solutions 9680 OLD BAILES RD FORT MILL SC 29707-7539
This is to certify that representative samples of	INFORMATION TECHNOLOGY EQUIPMENT INCLUDING ELECTRICAL BUSINESS EQUIPMENT Scanning Engine - N3680 Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 60950-1 & CAN/CSA C22.2 No. 60950-1-07 - Information Technology Equipment - Safety - Part 1: General Requirements
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

DEMKO CERTIFICATE

Certificate No.	D-04650
Page	1/3
Date of Issue	2015-11-04
Certificate Holder	HONEYWELL INTERNATIONAL INC HONEYWELL SCANNING AND MOBILITY 9680 OLD BAILES RD FORT MILL, SC 29707-7539 USA
Manufacturer	HONEYWELL INTERNATIONAL INC HONEYWELL SCANNING AND MOBILITY 9680 OLD BAILES RD FORT MILL, SC 29707-7539 USA
Production site	METRO (SUZHOU) TECHNOLOGIES CO LTD CHINA-SINGAPORE SUZHOU INDUSTRIAL PARK 221 XINGHAI ST SUZHOU, 215021 JIANGSU China
Certified Product	Scanning Engine
Model	N3680
Trademark	(Optional) Honeywell
Rated Voltage / Frequency	See Page 2
Rated Current / Power	See Page 2
Insulation Class	III
Degree of protection (IP)	-
Tested acc. to	EN 60950-1:2006/A11:2009, EN 60950-1:2006/A12:2011, EN 60950-1:2006/A1:2010, EN 60950-1:2006/A2:2013, EN 60950-1:2006
Test Report No.	E89891-A84-CB-1 issued on 2015-11-03
Additional	
Expire date	2025-11-03

Certification Manager
Jan-Erik Storgaard

This is to certify that representative sample(s) of the Product described herein ("Certified Product") have been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the D Mark Requirements. The Designated Certificate holder is entitled to use the d or for cables <DEMKO> for the Certified Product manufactured at the production site(s) identified above, in accordance with the D Mark Service Agreement, including without limitation the D Mark Testing and Certification Services Service Terms. Only those Products bearing the D Mark should be considered as being covered by UL's D Mark Service. This Certificate shall remain valid through the expiration date, unless terminated earlier in accordance with the Service Agreement including without limitation if the Standard identified on this Certificate is amended or withdrawn prior the expiration date.

Certification Body

UL International Demko A/S, Borupvang 5A, DK-2750 Ballerup, Denmark, Tel. +45 44 85 65 65, info.dk@ul.com www.ul-europe.com

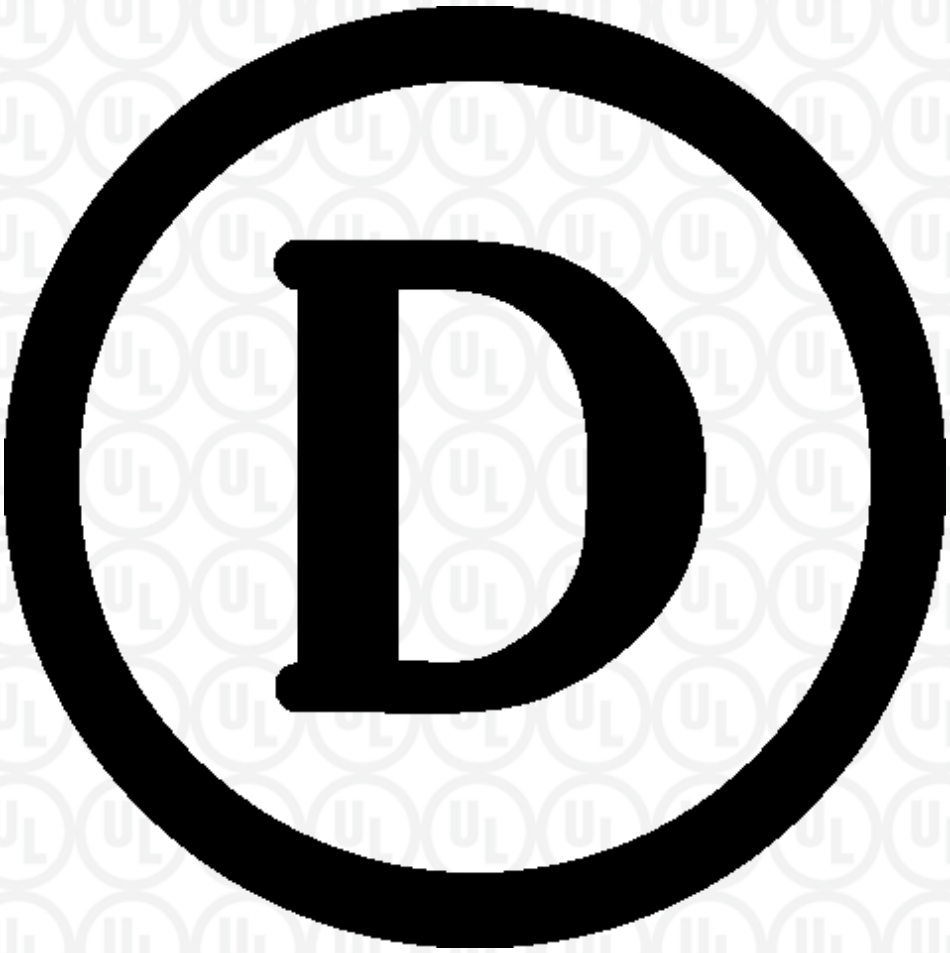
Appendix DEMKO CERTIFICATE

Certificate No. D-04650
Page 2/3
Date of Issue 2015-11-04

Ratings:
(Not Required):;TTL Serial: 3.3 VDC; 310 mA;USB: 5.0 VDC; 220 mA

Appendix DEMKO CERTIFICATE

Certificate No. D-04650
Page 3/3
Date of Issue 2015-11-04



Certification Body

UL International Demko A/S, Borupvang 5A, DK-2750 Ballerup, Denmark, Tel. +45 44 85 65 65, info.dk@ul.com www.ul-europe.com