

Honeywell

HF81x Series

Fixed-Mount Industrial Scanners



User Guide

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Customer Support

Technical Assistance

Go to honeywell.com/PSStechnicalsupport to search our knowledge base for a solution or to log into the Technical Support portal.

Product Service and Repair

Honeywell International Inc. provides service for all of its products through service centers throughout the world. Go to sps.honeywell.com and select **Support > Productivity** to find a service center near you or to get a Return Material Authorization number (RMA #) before returning a product.

Limited Warranty

For warranty information, go to sps.honeywell.com and select **Support > Productivity > Warranties**.

INTRODUCTION

About This Manual

This user guide provides installation and programming instructions for the HF81x series of fixed-mount industrial scanners. Product specifications, dimensions and customer support information are also included.

Honeywell recommends using the DataMax® Plus Configuration Tool with HF810 and HF811 scanners (see page 9).

Model Description

HF81x scanners are available in a variety of camera and field of view options.

HF810 Models

SKU	Description
HF810-01BT00004K	500,000-pixel host kit, narrow field of view, blue light source
HF810-01RT00004K	500,000-pixel host kit, narrow field of view, red light source
HF810-01WT00004K	500,000-pixel host kit, narrow field of view, white light source
HF810-11BT00004K	500,000-pixel host kit, wide field of view, blue light source
HF810-11RT00004K	500,000-pixel host kit, wide field of view, red light source
HF810-11WT00004K	500,000-pixel host kit, wide field of view, white light source

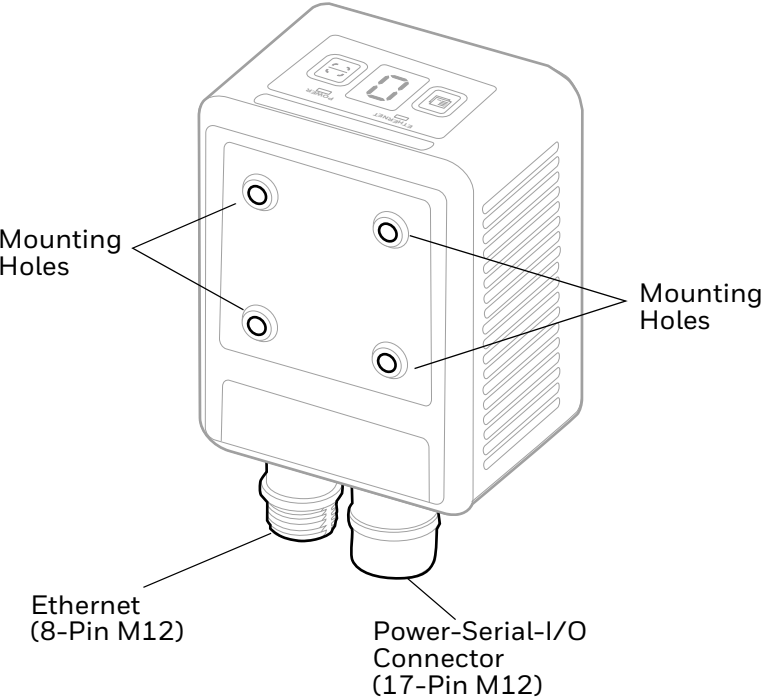
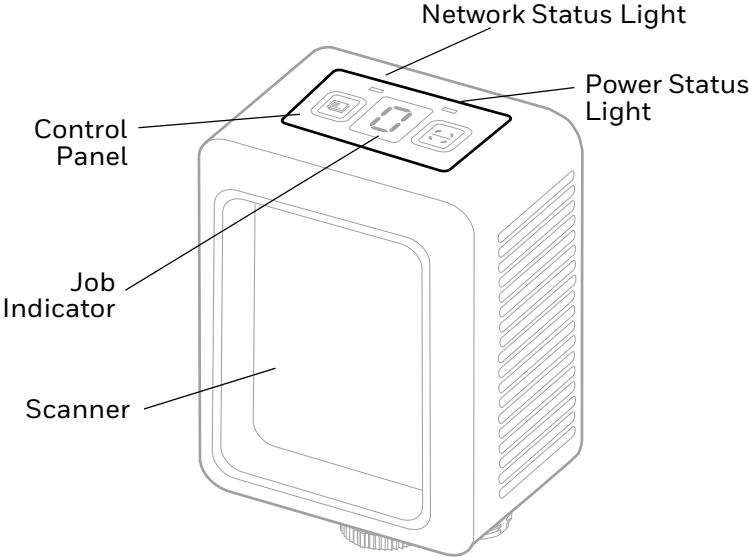
HF811 Models

SKU	Description
HF811-01BT00004K	2 megapixel host kit, narrow field of view, blue light source
HF811-01RT00004K	2 megapixel host kit, narrow field of view, red light source
HF811-01WT00004K	2 megapixel host kit, narrow field of view, white light source
HF811-11BT00004K	2 megapixel host kit, wide field of view, blue light source
HF811-11RT00004K	2 megapixel host kit, wide field of view, red light source
HF811-11WT00004K	2 megapixel host kit, wide field of view, white light source

Package Contents

- HF810 or HF811 scanner
- I/O connector covers (Qty 2)

Scanner Features



Accessories

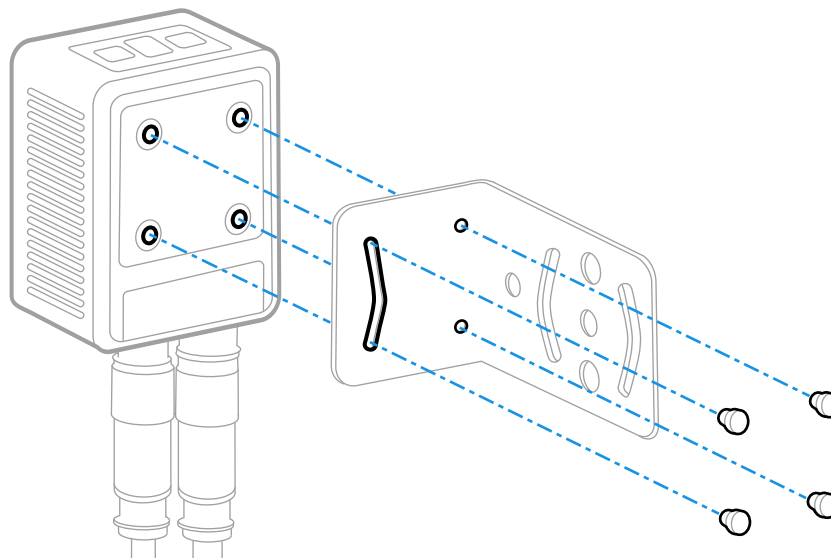
For a complete list of accessories, see the scanner's product page at sps.honeywell.com. Contact your local sales representative for ordering information.

Model	Description
HF8TCB-Ether-005	Original 5m network cable
HF8TCB-Ether-010	Original 10 meters network cable
HF8TCB-IOB-005	Original 5 meters high-speed serial port line
HF8TCB-IOB-010	Original 10 meters high-speed serial port line
HF8TCB-Serial-005	Original 5m serial port cable
HF8TCB-Serial-010	Original 10 meters serial port line
HF8OPT-PRF-00	Optical polarizer
HF8ACC-Bracket-01	Main unit mounting bracket, type 01
HCB-PWR-02	Industry standard 24V power box
HF8OPT-DFU-00	Optical diffuser

Mounting

Mounting Bracket (sold separately)

Use an optional mounting bracket to obtain the optimal position for your scanner. The mounting bracket can be rotated and adjusted along different axes of the reader.



- Mounting screw size: M3x5 (Quantity 4)

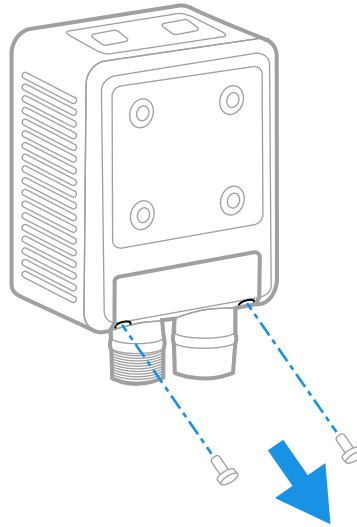
Change Port Orientation

For ease of use, the interface port connectors can be re-oriented from the bottom to the back of the scanner:

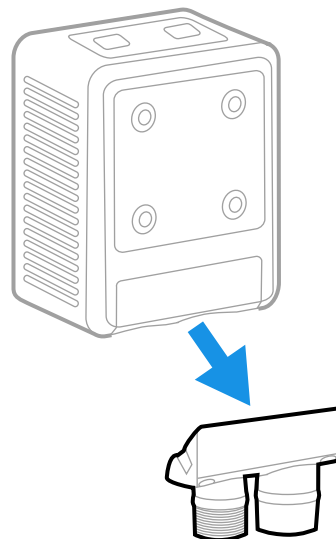


Caution: Use care when removing the port plate from the scanner to avoid damaging the ports.

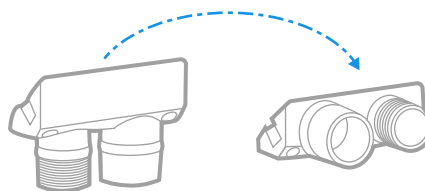
1.



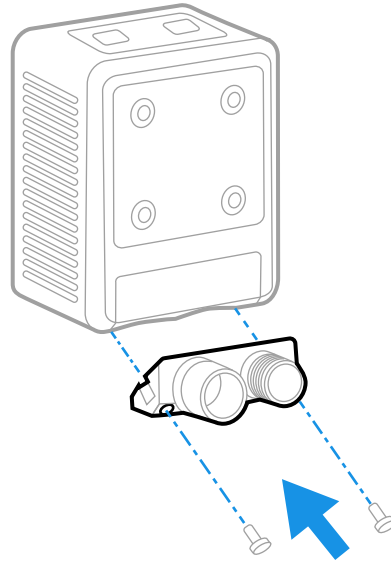
2.



3. \



4.

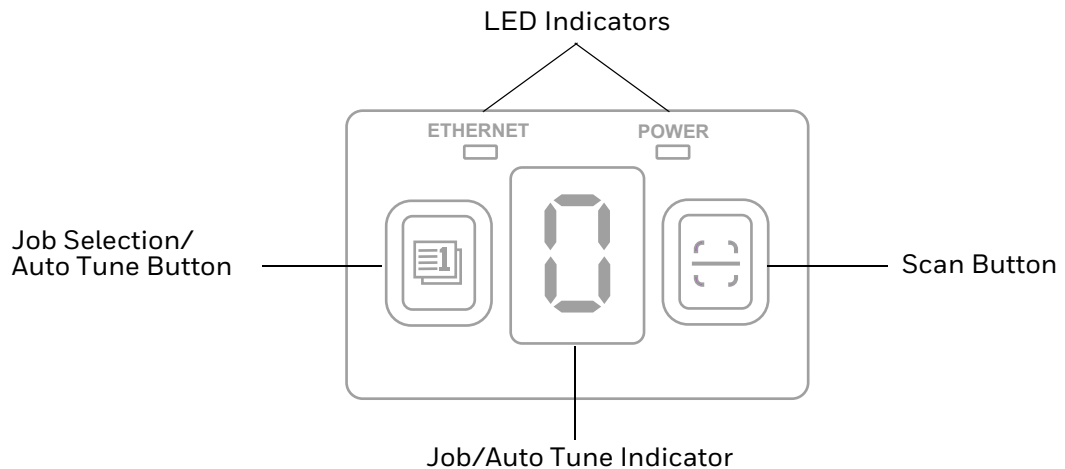


Power Supply

The recommended power supply for use with HF810 and HF811 scanners is an NDR-120-24 power supply, which outputs 24VDC/5A. (See [page 78](#) for terminal pinouts.)

Note: If you choose to use a different power supply, the recommended output voltage range is 21.6 to 26.4VDC, and the output current should be greater than 500mA.

Control Panel



LED Indicator Status

LED/Button	Status	Description
Ethernet	White	Scanner is connected to a network.
	Red	Scanner is not connected.
Power	White	Scanner is powered correctly.
	Red	Indicates an error.

Configuration/Auto Tune Button

Action	Function	Description
Short Press	Change Job	Press to switch the number of the current job (see page 17).
Long Press (more than 3 seconds)	Auto Tune	Auto-tuning helps to tune imaging parameters and identify barcodes in front of the scanner's field of view automatically. If the auto tuning is successful, the character in the Mode window will flash and the scanner will beep. If the auto tuning fails, an "E" will display. You can also use DataMax Plus to perform auto-tuning (see page 21).

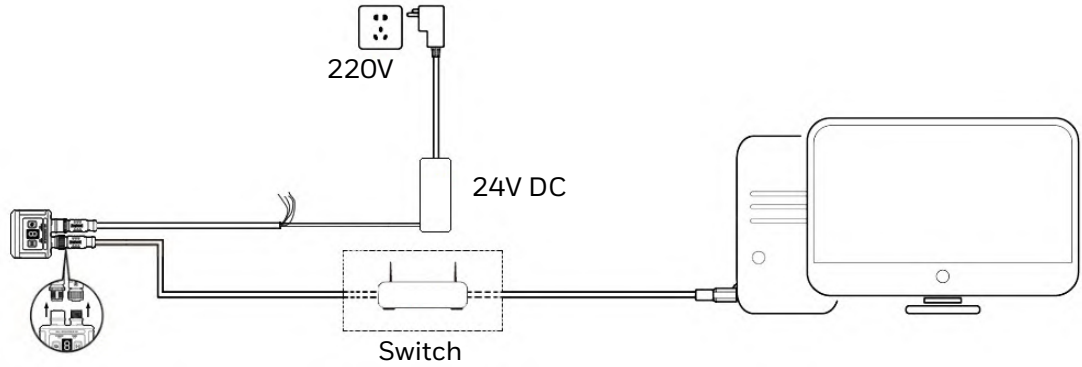
Scan Button

Action	Function	Description
Short Press	Single Trigger	Initiates one scan.
Long Press (more than 3 seconds)	Continuous Trigger	Turns on continuous scanning.

Connections

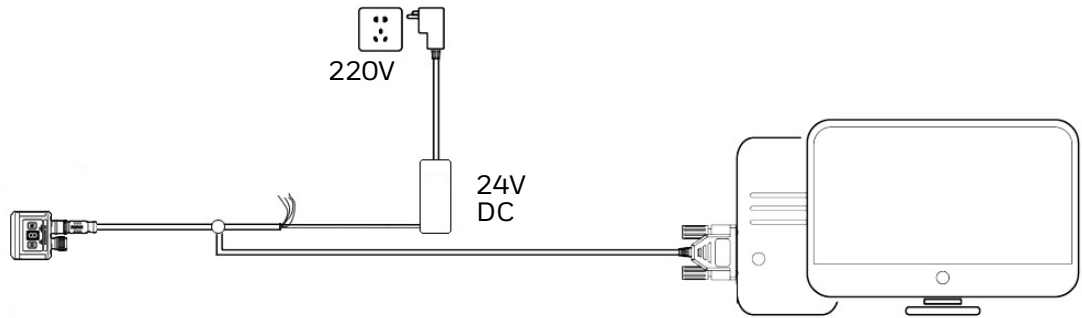
Connecting with Ethernet

Data is received from the scanner's Ethernet interface via a network cable or through a switch to the host, with 232/485 and input/provided externally. The 232/485 cable of the output interface is powered.



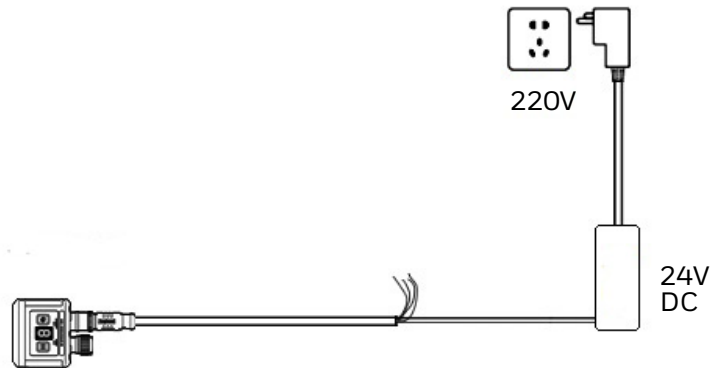
Connecting with RS232

System is connected point-to-point serially, with data and power using the RS232 interface at the same time:



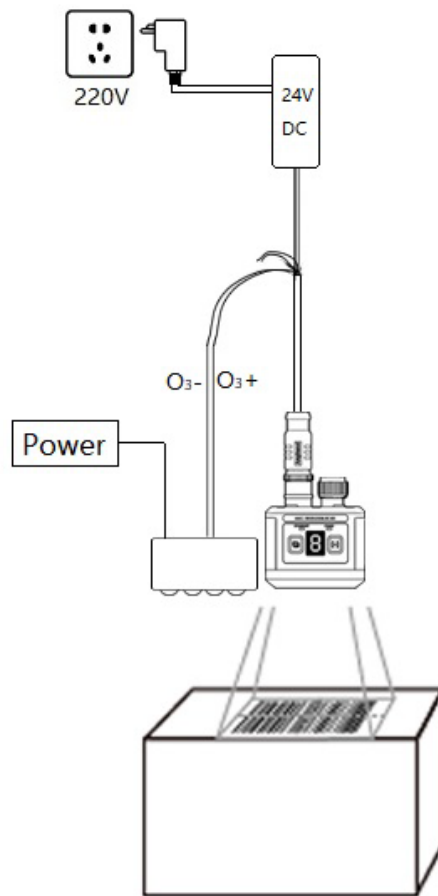
Connecting with RS485/RS422

System is connected point-to-point serially, with data and power using the RS485/422 interface combination at the same time.



External Lighting

The third output channel can be used to control an external lighting system. The O₃+ and O₃- can be used as 10mA @24V relays to control the external lighting system.



Use the DataMax Plus Configuration tool with HF81x series scanners.

Hardware Requirements

Typical hardware requirements for a client PC to run DataMax Plus are:

- 2.00GHz or faster microprocessor
- 1GB RAM
- 2GB hard disk for 64-bit machines, 1GB hard disk for 32-bit machines
- 19" or larger monitor (optimized for 1280x1024 resolution)

Software Requirements

Windows® 10 Operating System (32 or 64 bit)

How to Install

1. Download the zip file from the Honeywell Downloads Portal to a PC and extract the files (see page [65](#)).
2. Navigate to the location where you extracted the files, then double-click on the setup file.
3. Follow the on-screen prompts to install the program.
4. Once the installation wizard completes, click **Finish**.

When the installation is finished, DataMax Plus is added to the Start menu and a desktop shortcut is created.

5. Double-click the DataMax Plus desktop shortcut to run the program.

Note: You must connect to a device before being able to use DataMax Plus features.

Device Discovery

When you first open DataMax Plus, the Search and Settings features are available.

1. Click **Search**.
2. Choose from the following:
 - **Network**
 - **Serial Port**
 - **All** - search for all connected scanners

Found scanners display in the **Online Devices** column on the left.

A flag next to a device indicates it is the parent device of a group (see page [57](#)).

Filter Search Results

To find a single scanner in your search results, enter the IP address or serial number of the device in the search bar beneath **Online Devices**.

Search for Different Network Segments

If the device IP address block and the host IP address are not in the same network segment, double-click the device in the left list to enter the network environment settings page to modify.

Connect to a Device

Double-click on a device name in the Online Devices list or right-click on a device and select **Connect**.

DataMax Plus User Interface

The DataMax Plus user interface is divided into three sections:

- A toolbar on top (see next section).
- An Online Devices column where available scanners are listed (see [Device Discovery](#)).
- A central window where device settings and images are displayed.

Toolbar

The DataMax Plus toolbar allows you to change language settings, import and export configurations, view information about DataMax Plus and access device configuration options.


- Settings, used to change language options
- Import configurations
- Export configurations
- About, which displays information about DataMax Plus
- Device configuration buttons (on the far right) for accessing the Device Info, Device Settings, and Interface pages (see below).

The Device Configuration buttons access a series of pages for setting up a scanner. These pages are only accessible when a connected scanner is selected in the Online Devices panel.

- Device Info (see page [13](#))
- Device Settings:
 - Image Setting (see page [21](#))
 - Decode (see page [37](#))
 - Trigger Mode (see page [41](#))
 - I/O (see page [45](#))
 - Output Data (see page [49](#))
- Interface (see page [53](#))

Note: See the product page at sps.honeywell.com for the most up-to-date user documentation.

Change Language

1. Click  in the toolbar to access the Settings page. The current language settings and the DataMax Plus version will display
2. Choose a language.
3. Click **OK** (the blue button, which depending on your language choice, may not be translated).
4. Restart DataMax Plus.

Import and Export Configurations

DataMax Plus allows you to download configuration (.config) files to or from a PC.

Import

1. Click **Import** in the DataMax Plus toolbar.
2. Navigate to the desired .config file and click on it to select it.
3. Click **Open**.

Export

To a PC

1. Click **Export** in the DataMax Plus toolbar.
2. Click **Save to PC**.
3. Select a file path and a file name.
4. Click **Save**.

To a Device

1. Click **Export** in the DataMax Plus toolbar.
2. Click **Save to Device**.

About DataMax Plus

To view the version number and release date of DataMax Plus, click **About** in the toolbar.

DEVICE INFORMATION


Click the **Device Info** button in the upper right corner of DataMax Plus or right-click the device listed under **Online Devices** and select **View Device Info**.

The Device Info page displays general information such as device name, type, MAC address, IP address, and device serial numbers. You can also edit the device name.

In addition, the Device Info page has the following tabs:

- **Generic** - use for maintaining firmware, allowing configuration barcodes, rebooting, and resetting factory defaults.
- **Store Image** - use for specifying where images are stored and setting up FTP options for images.
- **Group** - displays group information about the device and any parent-child relationships with other devices.
- **Button** - displays how the buttons on the device are configured.

Rename a Device

1. Connect to a device.
2. Click **Device Info** (or right-click on the device listed under **Online Devices** and select **View Device Info**).
3. Click  beside the device's current name.
4. Type a new name.
5. Click **Save**.

Generic

The Generic tab is the default when the Device Info page is accessed.

Upgrade Firmware

Refer to [Firmware Upgrades](#) (see page 65).

Enable/Disable Configuration Barcodes

You can configure whether the scanner will read configuration codes:

1. Connect to a device.
2. Click **Device Info** (or right-click on the device listed under **Online Devices** and select **View Device Info**).
3. On the Generic tab, turn **Reading Configure Barcode** to On to enable or Off to disable.

Reboot a Scanner

1. Connect to a device.
2. Click **Device Info** (or right-click on the device listed under **Online Devices** and select **View Device Info**).
3. On the Generic tab, click **Reboot the device**.
4. Click **Reboot**.
5. Click **OK**.

Note: *The device will disconnect after rebooting.*

Factory Reset

Refer to [Restore Factory Defaults](#) (see page 66).

Store Image

The Store Image tab displays storage and image name settings.

Set Up Image Storage

1. Connect to a device.
2. Click **Device Info** (or right-click on the device listed under **Online Devices** and select **View Device Info**).
3. Click the **Store Image** tab.

4. Configure the following settings:

Setting	Description	Default
Image Process	Add a highlighted bounding box around scanned barcodes. Click Effect example to display a sample image with the bounding box.	Off
PC storage path		
Decoded image	Save copies of decoded images when the device is connected and real-time display is turned on. Click Settings to specify a location.	Off
NG Images	Save copies of un-decoded images when the device is connected and real-time display is turned on. Click Settings to specify a location.	Off
PC storage picture naming	A description of how image files are named.	
FTP setting	Allow images to be saved via FTP. Click Other setting to configure general FTP options (see page 54).	Off
FTP image naming	Click Edit JavaScript to open the JavaScript Editor and upload a custom script for naming images in FTP mode. (For more information about the JavaScript Editor, refer to Custom Scripts , beginning on page 51.)	

Group

Network grouping allows users to connect multiple scanner to perform a full range of read operations on target objects from multiple angles. From the **Group** tab of Device Info, you can see whether the device is grouped, its relationship within the group, and the trigger mode. For more information, refer to [Network Grouping](#), beginning on page 57.

Button

On the **Button** tab, you can view the action triggered by long and short presses of the buttons on the scanner.

DEVICE SETTING

Use the Device Setting pages of DataMax Plus to set imaging options, establish decoding rules, choose trigger modes, configure input and output settings, and edit output data.

To access the Device Setting pages, open DataMax Plus and connect a device (see page 10). The Image Setting tab of the Device Setting window is the default display when you first connect to a device.

The Device Settings window has five tabs:


- Image Setting (see page 21)
- Decode (see page 37)
- Trigger Mode (see page 41)
- I/O (see page 45)
- Output Data (see page 49)

This chapter explains the common features of the Device Settings pages. For specific imaging, decoding, trigger, I/O or Output options, refer to the specific chapter for each tab.



Jobs

Jobs are sets of configuration parameters. DataMax Plus allows you to save up to 10 jobs. For example, you might use different jobs for switching between types of barcodes. Jobs can be saved in the scanner or saved as configuration files to be uploaded to other scanners. Jobs are numbered sequentially, from 0 to 9.

On all Device Setting pages, the current job is displayed in the upper left, with the job name listed below. The current job number also displays on the scanner's control panel (see page 5).


To switch between jobs, click  beside the current job number on the Device Setting page, then select from the list of available jobs.

Add a Job

1. Click  beside the current Job name.
2. Click .
3. Enter a name for the new job.
4. Click **Create**.



The job will be created and made active.

Rename a Job

1. Load the current job to be renamed by selecting it from the list of available jobs.
2. Click  beside the job name.
3. Enter the new name.
4. Click **Save**.

Delete a Job

Note: *The current job cannot be deleted. You must select another job first.*

1. Click  beside the current Job name.
2. Hover the mouse cursor above the job you want to delete, then click .
3. Click **Delete**.

Trigger On/ Trigger Off

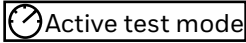
Use the **Trigger On** button to activate the scanner's trigger from within the DataMax Plus interface.

Use the **Trigger Off** button to turn the trigger off.

Active Test Mode

The Active Test Mode option becomes available when the scanner is in One Shot External Trigger mode (see page [41](#)). Use this option to test how well the external trigger is performing or to export the results of the last test.

Initiate Test Mode

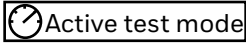
1. Click  to display the test mode interface.
2. Set the duration of the test (in hours).
3. Click **Turn on test mode**.

To exit the dialogue and connect to a different scanner, click **Disconnect**. Test mode will continue to run on the first device until completion. If you re-connect that first device in DataMax Plus, the Test Mode dialogue will display again.

To stop the test process before it completes, click **Stop test mode** in the Test Mode dialogue.

Export Last Test Data


To export the logs and images from the last test run:


1. Click .
The date and time when the data was last exported are displayed.
2. Click **Export Last Data**.
3. Select **Log Export** and/or **Image Export**. For image exports, specify whether the images should be in .jpg or .bmp format.
4. Click **Export**.
5. Navigate to the location where you want to save the exported test data.
6. Click **Select Folder**.




Note: *If there are no images in the latest test data, the Image Export option will not be available.*

Live View

On the Image Setting and Decode pages, Live View displays images captured by a connected device. Live View is turned off by default, and the window will be blank.



Click  to enable Live View and images captured by the device display in the window.

While Live View is enabled, the button will change to . Click the button again to turn Live View off.

Click  to zoom in to the image display. Click  to zoom out. Or click  to return to the default view size.

ROI settings

By default, HF811 and HF810 scanners read all the barcodes in the current field of view. However, you can define a specific region of interest (ROI) to scan only those barcodes in a specified area or areas.

1. Click  to turn Live View on.
2. Click  at the top left of the main view.
3. Press and hold the left mouse button to set the top left position then drag the cursor to draw a rectangle.
4. Repeat to add more rectangles if desired.

The scanner will read all barcodes within the ROI rectangle(s) only.

If you turn off Live View, the defined ROIs will persist until you remove them.

To remove a region of interest, right-click on the rectangle and select **Remove ROI** to remove a single region of interest, or **Remove All ROIs** to return the field of view to the full area.

You can also save the current view within an ROI by right-clicking on the rectangle and selecting **Save Image**.

Decoding Logs


The decoding and output information of the current device are displayed at the bottom of the Image Setting, Decode, I/O and Output Data pages. The Decoding Log displays by default and shows the time, code content, symbology, code length and decoding time. Click the **Output** tab to display the data that was output.

Use the Image Setting page of DataMax Plus to monitor the images captured by a connected scanner and to tune the scanner to acquire better images with proper exposure and gain parameters. You can also use the Image Setting page to monitor decoded and output results. In addition, you can use the Auto Tune function to automatically train parameters of the scanner.

To access the Image Setting page, open DataMax Plus and connect a scanner (see page 10). The Image Setting window is the default page displayed. From the Device Info or Interface pages, click the **Device Setting** button in the upper right-corner to return to Image Setting.

Auto Tune

Auto Tune allows the scanner to automatically configure optimal parameters according to environmental conditions. Before enabling Auto Tune, select at least one barcode symbology to identify (linear, 2D or stacked).

1. On the Image Setting page, click  Auto Tune .
2. If the barcodes are moving (such as on a conveyor belt), select **Motion** then specify a **Speed** and **Resolution**. (Speed must be greater than zero.).
3. Click **Start auto-tune**.

Note: Please note that other operations cannot be performed during auto tuning.

After auto tuning is complete, three groups of learning results can be configured to different banks.

4. Click **Select**.
5. Click **OK**.

Symbology

Use the **Symbologies** button on the Image Setting page to enable or disable symbologies and set associated parameter. For more information, see [Symbologies](#), beginning on page 25.

Bank Setting

DataMax Plus supports up to ten banks of configuration settings (0-9). You can specify exposure time and gain for each bank and choose whether to enable or disable it.

At least one bank should be enabled (Bank 0 is enabled by default). If more than one bank is enabled, the scanner will switch between different bank settings while reading until a barcode is scanned successfully or a timeout occurs.

To select the current bank, use the **Bank** pull-down list on the Image Setting page.

To set up multiple banks:

1. Click **Bank Overview** on the Image Setting page.
2. Enter the desired bank settings.
3. Click **Enable**.

When each specific bank is enabled, the related parameters will take effect immediately.

4. Click **Back**.

Focus

After you have mounted the scanner into position, select the best focus position between the fixed code reader and the scanned object by selecting one of three focus methods: Auto Focus, Draw Focus Rectangle, and Specify Distance.

Auto Focus is the most commonly used focusing method. Click **Start Focus** and the scanner automatically determines the position of the object to be scanned based on environmental factors.


For larger items, select **Draw Focus Rectangle** then click **Draw Focus Rectangle** to specify an area on which the scanner should focus.

Select **Specify Distance** to speed up decoding by setting a manual focal length. The scanner will then only read barcode information within the specified focal length (0-2000mm).

Illumination

Interior Lighting

Insufficient lighting can affect the scanner's reading efficiency. For this purpose, HF81x scanners are equipped internally with adjustable LED lights.

To access the internal light controls, click the  next to **Illumination**.

Click on the photo of the scanner to control whether the upper and lower interior lights are used. To disable the lights completely, turn **Internal Illumination** off.

Note: *Honeywell recommends using the scanner's interior lighting as the first solution when ambient brightness is insufficient.*

Exterior Lighting

If the environment is still too dark even with the scanner's internal lights, you can connect an external light source.

After completing the hardware connection of the external lighting to the scanner (see page 8), enable **External Illumination** on the Image Setting page.

Exposure Mode and Gain

The scanner adjusts exposure time according to the speed of the scanned object's movement. However, if the exposure time setting is too short, darkening of the field of view caused by underexposure will make it difficult to successfully decode, even if the faster moving object can be read. Conversely, if the exposure time is too long, the captured barcode image may be smeared and blurred. In either case, you can adjust exposure time to meet the needs of your production line speed.

When adjusting exposure is not enough to meet production line speed, you can also adjust the gain. 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.

Setting	Description	Default
Exposure Mode	Select whether the scanner's Exposure Mode is automatic or manually configured. In Auto mode, the scanner will adjust the exposure time and the gain automatically for the images it captures from the sensor. To use specific exposure time and gain settings, select Fixed .	Fixed
Exposure Time	Manually enter the desired exposure time in milliseconds when the Exposure Mode is set to Fixed .	200

Setting	Description	Default
Gain	Manually enter the desired gain when the Exposure Mode is set to Fixed .	4

Note: *When Auto exposure mode is selected, changes to exposure time or gain will have no effect.*

Aimer

Turning on the aimer will bring up a line of sight guide, which ensures that the scanned object appears in the field of view of the scanner. By default the aimer is enabled.

SYMBOLOLOGIES

Using DataMax Plus, you can enable or disable symbologies for the individually or by group, as well as control features specific to each barcode type.

HF81x scanners support the following symbologies:

- [Australian Post](#)
- [Aztec](#)
- [Codabar](#)
- [Codablock A](#)
- [Codablock F](#)
- [Code 11](#)
- [Code 39](#)
- [Code 93](#)
- [Code 128](#)
- [DataMatrix](#)
- [DotCode](#)
- [EAN-8](#)
- [EAN-13](#)
- [GS1-128](#)
- [GS1 DataBar](#)
- [GS1 DataBar Limited](#)
- [GS1 DataBar Expanded](#)
- [HanXin \(Chinese Sensible\)](#)
- [Intelligent Mail/UPU](#)
- [Interleaved 2 of 5](#)
- [Japanese Post](#)
- [KIX Post](#)
- [Maxicode](#)
- [MicroPDF](#)
- [MSI](#)
- [PDF417](#)
- [Planet Code](#)
- [Net \(Postnet\)](#)
- [US Post](#)
- [QR Code](#)
- [UPC-A](#)
- [UPC-E](#)

Message Length Description

Some barcode symbologies require valid reading lengths. If the data length of the scanned barcode doesn't match the valid reading length, the scanner will issue an error tone. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed-length barcode data in order to reduce the chances of a misread.

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

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

The minimum and maximum lengths and the defaults are included in this chapter with the respective symbologies and can be configured through DataMax Plus separately.


Symbologies Button

In DataMax Plus, use the **Symbology** button on the Image Setting page to enable or disable symbologies and set associated parameters. Symbologies are grouped into the following categories:


- 2-D Symbologies (see page [27](#))
- Linear Symbologies (see page [28](#))
- Stacked Symbologies (see page [35](#))
- 2D Postal Codes (see page [36](#))

Enable Symbologies

Note: For optimum reading efficiency, enable only those symbologies that are needed.

1. On the Image Setting page, click  Symbology .
2. Choose a category: **2D Code**, **Linear Code**, **Stack Code** or **2D Postal Code**.
3. Click **Check All** at the top of the list to enable all symbologies within that group, or enable individual symbologies by clicking the checkbox next to the symbology name (s).
4. Select a symbology to set parameters.

Disable Symbologies

1. On the Image Setting page, click  Symbology .
2. Choose a category: **2D Code**, **Linear Code**, **Stack Code** or **2D Postal Code**.
3. If **Check All** is enabled at the top of the list, click on it again to disable all symbologies within that category.
Or click the checkbox next to an enabled symbology to disable it.

2-D Symbologies

Aztec

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	3832
Append Mode	Allows the scanner to append the data from several scanner barcodes together before transmitting them to the host computer. When the scanner encounters an Aztec barcode with the append trigger character(s), it buffers the number of Aztec barcodes determined by information encoded in those barcodes. Once the proper number of codes is reached, the data is output in the order specified in the barcodes.	1
Strip Append Information	When enabled, this mode strips off the append information from the barcode. Details about append information can be found in the Aztec ISO specification. For debug purposes, this mode allows the append information to be output with the data.	Enabled

QR Code

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	7089
Append Mode	Allows the scanner to append the data from several QR scanner barcodes together before transmitting them to the host computer. When the scanner encounters a QR Code barcode with the append trigger character(s), it buffers the number of QR Code barcodes determined by information encoded in those barcodes. Once the proper number of codes is reached, the data is output in the order specified in the barcodes.	1

DataMatrix

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	3116

HanXin

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	7833

DotCode

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	2400

Maxicode

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	150

Linear Codes

Codabar

Setting	Description	Default
Redundancy	Output decoding results only when identical barcode information is obtained within the specified time.	0
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	4

Setting	Description	Default
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	60
Check Character	<p>Codabar check characters are created using different “modulos.” You can program the scanner to read only Codabar barcodes with Modulo 16 check characters.</p> <ul style="list-style-type: none"> • No check The scanner reads and transmits barcode data with or without a check character. • Validate not transmit The scanner only reads Codabar barcodes printed with a check character but does not transmit the check character with the scanned data. • Validate & Transmit The scanner only reads Codabar barcodes printed with a check character and transmits this character at the end of the scanned data. 	No check

Code 11

Setting	Description	Default
Redundancy	Output decoding results only when identical barcode information is obtained within the specified time.	0
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	4
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	80
Check Digits	Determines whether 1 or 2 check digits are required with Code 11 barcodes.	1

Code 39

Setting	Description	Default
Redundancy	Output decoding results only when identical barcode information is obtained within the specified time.	0
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	0
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	48

Setting	Description	Default
Check Character	<ul style="list-style-type: none"> No check The scanner reads and transmits barcode data with or without a check character. Validate not transmit The scanner only reads Code 39 barcodes printed with a check character but does not transmit the check character with the scanned data. Validate & Transmit The scanner only reads Code 39 barcodes printed with a check character and transmits this character at the end of the scanned data. 	No check
Transmit Start/Stop Characters	Start/Stop characters identify the leading and trailing ends of the barcode.	Disabled
Append Mode	Allows the scanner to append the data from several Code 39 barcodes together before transmitting them to the host computer. When the scanner encounters a Code 39 barcode with the append trigger character(s), it buffers Code 39 barcodes until it reads a Code 39 barcode that does not have the append trigger. The data is then transmitted in the order in which the barcodes were read (FIFO).	Disabled
Full ASCII Mode	When enabled, certain character pairs within the barcode symbol are interpreted as a single character. For example: \$V is decoded as the ASCII character SYN, and /C is decoded as the ASCII character #. (See ASCII table below.)	Disabled
Code 32 (PARAF) Decoding	Code 32 Pharmaceutical is a form of the Code 39 symbology used by Italian pharmacies. This symbology is also known as PARAF.	Disabled

ASCII Table

Full ASCII Table							
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

Code 93

Setting	Description	Default
Redundancy	Output decoding results only when identical barcode information is obtained within the specified time.	0
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	0
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	80
Append Mode	Allows the scanner to append the data from several Code 93 barcodes together before transmitting them to the host computer. When this function is enabled, the scanner stores those Code 93 barcodes 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 barcodes are read, deleting the first space from each. The scanner transmits the appended data when it reads a Code 93 barcode that starts with a character other than a space.	Disabled

Code 128

Setting	Description	Default
Redundancy	Output decoding results only when identical barcode information is obtained within the specified time.	0
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	0
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	80
Append Mode	Allows the scanner to append the data from several Code 128 barcodes together before transmitting them to the host computer. When the scanner encounters a Code 128 barcode with the append trigger character(s), it buffers Code 128 barcodes until it reads a Code 128 barcode that does not have the append trigger. The data is then transmitted in the order in which the barcodes were read (FIFO).	Enabled
Function Code Transmit	If enabled, the hex value for the function character will be sent out in the data stream. For 128 Function 1, Function 2, Function 3, Function 4 all cause special events to happen per the ISO Specification. If enabled, this setting causes Function 1, 2 and 4 to be ignored and the raw data output. This does not apply to function 3 as that signifies a menu command in code 128.	Disabled
ISBT Decoding	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 barcodes on a blood product label.	Disabled

MSI

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	4
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	48
Check Character	<p>Different types of check characters are used with MSI barcodes. You can program the scanner to read MSI barcodes with Type 10 check characters.</p> <ul style="list-style-type: none"> • Validate Type 10/11 and Transmit The scanner only reads MSI barcodes printed with the specified type of check character(s) and transmits the character(s) at the end of the scanned data. • Validate Type 10/11, but Don't Transmit The scanner only reads MSI barcodes printed with the specified type of check character(s) but does not transmit the check character(s) with the scanned data. • Disabled 	Validate Type 10 but Don't Transmit

EAN-8

Setting	Description	Default
Redundancy	Output decoding results only when identical barcode information is obtained within the specified time.	0
Check Digit Transmit	Specifies whether the check digit should be transmitted at the end of the scanned data.	Enabled
2 Digit Addenda	Adds 2 digits to the end of all scanned EAN-8 data.	Disabled
5 Digit Addenda	Adds 5 digits to the end of all scanned EAN-8 data.	Disabled
Addenda Required	When Addenda Required is enabled, the scanner only reads EAN-8 barcodes that have addenda	Disabled
Addenda Separator	When this feature is enabled, there will be a space between the data from the barcode and the data from the addenda. When it is disabled, there is no space.	Enabled

EAN-13

Setting	Description	Default
Redundancy	Output decoding results only when identical barcode information is obtained within the specified time.	0
Check Digit Transmit	Specifies whether the check digit should be transmitted at the end of the scanned data.	Enabled
2 Digit Addenda	Adds 2 digits to the end of all scanned EAN-13 data.	Disabled
5 Digit Addenda	Adds 5 digits to the end of all scanned EAN-13 data.	Disabled
Addenda Required	When Addenda Required is enabled, the scanner only reads EAN-13 barcodes that have addenda	Disabled

Setting	Description	Default
Addenda Separator	When this feature is enabled, there will be a space between the data from the barcode and the data from the addenda. When it is disabled, there is no space.	Enabled
ISBN on	When ISBN On is enabled, EAN-13 Bookland symbols are translated into their equivalent ISBN number format.	Disabled

UPC-A

Setting	Description	Default
Redundancy	Output decoding results only when identical barcode information is obtained within the specified time.	0
Check Digit Transmit	Specifies whether the check digit should be transmitted at the end of the scanned data.	Enabled
Number System Digit Transmit	The numeric system digit of a UPC symbol is normally transmitted at the beginning of the scanned data. Disabling this function prevents the digit being transmitted.	Enabled
2 Digit Addenda	Adds 2 digits to the end of all scanned UPC-A data.	Disabled
5 Digit Addenda	Adds 5 digits to the end of all scanned UPC-A data.	Disabled
Addenda Required	When Addenda Required is enabled, the scanner only reads UPC-A barcodes that have addenda	Disabled
Addenda Separator	When this feature is enabled, there will be a space between the data from the barcode and the data from the addenda. When it is disabled, there is no space.	Enabled

UPC-E

Setting	Description	Default
Redundancy	Output decoding results only when identical barcode information is obtained within the specified time.	0
E0 Decoding	Most UPC barcodes have a leading 0 digit system. For these codes, use UPC-E0.	Disabled
E1 Decoding	Enable this feature if you need to read codes with a leading 1 digit system.	Disabled
E Expand	UPC-E Expand expands the UPC-E code to the 12 digit, UPC-A format.	Disabled
E Check Digit Transmit	Specifies whether the check digit should be transmitted at the end of the scanned data.	Enabled
UPC-E0 Leading Zero	Allows the transmission of a leading zero (0) at the beginning of scanned data.	Enabled
2 Digit Addenda	Adds 2 digits to the end of all scanned UPC-E data.	Disabled
5 Digit Addenda	Adds 5 digits to the end of all scanned UPC-E data.	Disabled
Addenda Required	When Addenda Required is enabled, the scanner only reads UPC-E barcodes that have addenda.	Disabled

Setting	Description	Default
Addenda Separator	When this feature is enabled, there will be a space between the data from the barcode and the data from the addenda. When it is disabled, there is no space.	Enabled

Interleaved 2 of 5

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	4
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	80
Check Digit	<ul style="list-style-type: none"> No check The scanner reads and transmits barcode data with or without a check digit. Validate, but Don't Transmit The scanner only reads Interleaved 2 of 5 barcodes printed with a check digit but does not transmit the check digit with the scanned data. Validate & Transmit The scanner only reads Interleaved 2 of 5 barcodes printed with a check digit and transmits this digit at the end of the scanned data. 	No check

GS1-128

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	0
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	80

GS1 DataBar

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	4
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	74

GS1 DataBar Limited

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	4
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	74

GS1 DataBar Expanded

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	4
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	74

Stacked Symbologies

Codablock A

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	600

Codablock F

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	2048

PDF417

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	2750
Macro PDF417	MacroPDF417 is an implementation of PDF417 capable of encoding very large amounts of data into multiple PDF417 barcodes. When this selection is enabled, these multiple barcodes are assembled into a single data string.	Enabled

MicroPDF

Setting	Description	Default
Minimum Length	Output the decode result when the symbology length is equal to or larger than the minimum length.	1
Maximum Length	Output the decode result when the symbology length is equal to or shorter than the maximum length.	366

2D Postal Codes

DataMax supports the following 2D postal codes:

- Australian Post
- Intelligent Mail/UPU
- Japanese Post
- KIX Post
- Planet Code
- Postnet
- US Post

Australia Post, Planet Code, and Postnet have optional parameters. By default, Postal Codes are turned off.

Australian Post

Setting	Description	Default
Interpret Mode	Controls what interpretation is applied to customer fields in Australian 4-State symbols. (Refer to the Australian Post Specification Tables.) <ul style="list-style-type: none">• Bar Output Lists output in "0123" format.• Numeric N Table The field is interpreted as numeric data using the N Table.• Alphanumeric C Table The field is interpreted as alphanumeric data using the C Table.• Combination C and N Tables The field is interpreted using either the C or N Tables.	Bar Output

Planet Code

Setting	Description	Default
Check Digit Transmit	Specifies whether the check digit should be transmitted at the end of the scanned data.	Disabled

Net (Postnet)

Setting	Description	Default
Check Digit Transmit	Specifies whether the check digit should be transmitted at the end of the scanned data.	Disabled

Use the Decode page to configure decoding rules for a connected scanner.

To access the Decode page, click the **Decode** tab on the Device Settings window.

There are two sets of option on the Decode page:

- Generic - use for setting general decoding rules
- MultiCode - use for establishing the output sequence of multiple barcodes read at the same time

Decoding Rules

Generic

Setting	Description	Default
Re-Read Delay	In Presentation and Streaming Presentation mode, the time period (in milliseconds) before the scanner can read the same barcode a second time. Setting a reread delay protects against accidental rereads of the same barcode. Longer delays are effective in minimizing accidental rereads. Use shorter delays in applications where repetitive barcode scanning is required.	750ms
Trigger Timeout	In Internal and External Trigger modes, the time limit for the scanner's trigger when using internal or external signal or commands to trigger the scanner.	30,000ms
Good Read Delay	In Internal and External Trigger modes, the minimum amount of the time before the scanner can read another barcode.	0ms
Decoding Timeout	The maximum time duration that the scanner uses to decode each image.	250ms
Reread Depth	When this function is on, the scanner will cache the specified amount of scanned barcode contents (1-16). If the decoded content of a new scan matches a piece of cached data, the decoded content of the new scan will not be output.	Off

Setting	Description	Default
DPM Decoding	Use this setting when scanning Direct Part Marking (DPM) barcodes that are etched or imprinted directly into the surfaces of materials including metal and plastic. Options include: <ul style="list-style-type: none"> Off Dot Peen Reflective Optimizes the scanner to read DPM codes printed on objects with reflective surfaces. Since this option is also effective when reading dotted DPM codes, this option is recommended for DPM.	Off
ROI Mode	Set the Region of Interest (ROI) for decoding. Options include: <ul style="list-style-type: none"> Off ROI is disabled and the entire original image is sent to the decoder. Standard ROI Use the aimer position to weight activity Activity calculated on the row and the column in the middle of each cell. The ROI window may not include the aimer. Standard ROI-Aimer centered Activity calculated on the row and the column in the middle of each cell. The ROI window will always include the aimer. DPM Aimer centered Activity calculated on 4 rows and 2 columns in each cell. The ROI window will always include the aimer. Presentation ROI Ignore aimer position, no weight activity. Activity is calculated on the row and the column in the middle of each cell. The ROI window may not include the aimer. 	Off
Multicode		
MultiCode Mode	<ul style="list-style-type: none"> Off The barcode data is output to the host as the scanner decodes it (no sequence matching). Not Required The scanner will attempt to get output data to conform to an edited sequence but, if it cannot, the scanner transmits all output data to the host device as is. Required All output data must conform to an edited sequence, or the scanner will not transmit the output data to the host device. No Rule The output data will not conform to the edited sequence, it will buffer all the decoded data and output it when the timeout occurs or the data numbers meet the scan count. The scan count can also be set using the No Rule Code Count field. See next section for how to define sequence rules for multicolors. 	Off
No Rule Code Count	When MultiCode Mode is Off or set to No Rule,	1
Separator	Specify a separator to add between output sequences.	
Prefix	Specify a prefix to add at the beginning of an output sequence.	
Suffix	Specify a suffix to add to the end of an output sequence.	


Setting	Description	Default
Partial Read Output	If an output sequence operation is terminated before all output sequence criteria are met, the barcode data acquired to that point is a “partial sequence”. Disabling this function will discard partial sequences when the output sequence operation is terminated before completion. Enabling this function will transmit the partial sequences. (Any fields in the sequence where no data match occurred will be skipped in the output.)	Disabled
Partial Read As	If Partial Read Output is enabled, use this setting to define whether a partial sequence is output as Success or Failed.	Failed
Interval Message	Enables or disables a No Read message string in the corresponding output position if you have set a matching rule to read multiple barcodes and no barcodes that match the rules are read at the corresponding rule position. <i>Note: If you turn this setting on, verify that No Read Message is enabled on the Output Data page and that a No Read Message is defined (see page 50).</i>	Disabled

MultiCode

The MultiCode option on the Decode page allows you to program the scanner to output data (when scanning more than one barcode at the same time) in whatever order your application requires. Up to 128 output sequences can be defined.

1. Choose a **MultiCode Mode** in the Generic options of the Decode page (see previous section).
2. Click **MultiCode** at the top of the options list.
3. Click **Add**.
4. Define an output sequence by selecting a symbology, code length and start string.
5. Repeat to add additional rules.
6. Click **Save**.

The following items can be set for the matching sequence:

Rule	Description
Output	The order that the barcode will be read in. To change the sequence order, click and drag on  beside an Output.
Symbology	Designates the specific symbology type that you want to apply to the output sequence.
Length	Specifies what length (up to 9999 characters) of data output will be acceptable for this symbology. 9999 is a universal number, indicating all lengths. When calculating the length, you must count any programmed prefixes, suffixes, or formatted characters as part of the length (unless using 9999).
Start String	Specifies the first character(s) you want to match.

DataMax Plus provides four trigger operation modes:

- External Trigger
- Presentation
- Internal Trigger
- Streaming Presentation (default)

To set a trigger mode for a connected scanner:

1. Click **Device Settings**.
2. Click the **Trigger Mode** tab.
3. Select a trigger mode.

The scanner will enter that mode immediately. Available options will differ based on the mode selected (see below).

External Trigger Mode

In External Trigger Mode, the scanner will wait for an external trigger signal. This signal can be a pulse or a latched electrical level. When the scanner detects this signal, it will try to search for barcodes immediately.

The scanner can also be triggered by receiving the command from the host through serial or network interface. To trigger the scanner from DataMax Plus, click **Trigger On** (see page [18](#)).

External Trigger Mode Options

Setting	Description	Default
Trigger Mode	<ul style="list-style-type: none"> • OneShot The scanner will only capture one image and try to decode this image when it detects an external trigger signal. • Burst Mode The scanner will start to search for barcodes when it detects an external trigger signal and will remain in this state no matter whether or not the external trigger signal is removed until a barcode is decoded or the timeout occurs. • Synchronize When the scanner is in Continuous-Sync Mode, keep the external trigger signal pulled once triggered. If the user stops the external trigger signal after being triggered, the scanner will cancel reading immediately. If the scanner has read the barcodes or the timeout occurs, the scanner will also trigger off although the trigger signal is still on. • Un synchronize The scanner will be triggered when it detects an external electrical impulse or level. The scanner will keep the trigger state even if the external signal is pulled out. The scanner will trigger off until it decodes a barcodes or the timeout occurs. 	Unsynchro- nize
Quick Trigger Mode (One Shot mode only)	Recommended for applications that require high-speed trigger signals.	Disabled
Trigger Times (Burst Mode only)	Set a Trigger Time. When this value is larger than 1, the scanner will repeat the barcode reading activity for the specific time. In each reading cycle, the scanner will acquire one image and try to search the barcodes contained in it. You can also set the duration for each reading cycle using the Read Timeout parameter (see page 41).	1
External Trigger Delay	Set a trigger delay in milliseconds from zero to 10,000. If the delay duration is larger than zero, the scanner will delay for the user-specified time value (in milliseconds) then trigger the scanner. If the delay duration is equal to zero, the scanner will be triggered immediately.	0
Trigger On Command String	Customize the trigger string.	TRIGGER
Trigger Off Command	Customize the untrigger string.	UNTRIG

Note: You can use custom Trigger and Untrigger strings. However, do not use the same string in both fields.

Presentation Mode

Presentation Mode uses ambient light and scanner illumination to detect barcodes. When in Presentation Mode, the LEDs remains dim until a barcode is presented to the scanner, then the LEDs light up and the aimer turns on so that the scanner can read the code.

Note: *If the light level in the room is not high enough, Presentation Mode may not work properly. If room lighting is not sufficient, auxiliary lighting may be used to improve scanning performance.*

Presentation Mode Options

Setting	Description	Default
Idle Illumination Level	Sets the brightness of the scanner's internal illumination when the scanner is not actively reading.	Low
Exposure Time	The sensitivity used by the scanner to detect whether it has entered an idle state.	1
Idle Duration	The minimum duration in milliseconds that the scanner will stay in an idle state.	1000
Illumination Status After Decode	The LED remains on 30 seconds after a barcode is decoded.	Disabled

Internal Trigger Mode

When set to Internal Trigger Mode, the scanner will trigger itself for user-specified time intervals. (For instructions on setting the time interval, see [Trigger Timeout](#) on page 37.)

Streaming Presentation Mode

In Streaming Presentation Mode, the scanner remains on all the time to continuously search for barcodes.

To configure the scanner's illumination and aimer to be on or off, use the Image Setting tab (see page [23](#)).

The scanner can receive certain settings or actions through input pin signals. HF81x series scanners have 2 input pins. The user can trigger the corresponding operation according to the different polarity of each input pin. For example, the scan parameters can be switched according to the signal from the external input pin, so that the corresponding parameter settings can be adjusted for different scan objects.

To access the Input/Output page, click the **I/O** tab on the Device Settings page.

Input Settings

You can use DataMax Plus to control the scanner based on the number of external signals on the input pins.

1. Click the **I/O** tab on the Device Settings page.
2. Click **Input Pin**.
3. Select an **Input Event**: Trigger On, Trigger Off, Test Mode, Tune Illumination, Tune Focus, Auto Tune, Pulse Count, or Encoder Settings.

Note: *The available settings will depend on the Input Event selected.*

Input Event: Trigger On, Trigger Off, Test Mode, Tune Illumination, Tune Focus, or Auto Tune

Setting	Description	Default
Debounce Time	Adjust the scanner's noise sensitivity. When a small value is set, signal noise in the system can falsely trigger the relevant operation.	2
Polarity	External signals from the input pins can determine whether the reader is valid based on different polarities: Rising Edge, Falling Edge, High, or Low.	Low

Input Event: Pulse Count

Setting	Description	Default
Job Switch Pulse Number	Switch jobs after the specified number of pulses. When the pulse count is reached, the device will switch to the next available job. If the next job does not have a pulse count specified, the device will stop scanning.	1

Input Event: Encoder Settings

Setting	Description	Default
Coder	There are seven modes of encoder function: Start, End, Output, Start & End, Start & Output, End & Output, and Start & End & Output.	
Start Pulse Number	Begin scanning after the designated number of pulses.	1
End Pulse Number	Stop scanning after the designated number of pulses.	1
Output Pulse Number	Output data after the designated number of pulses.	0

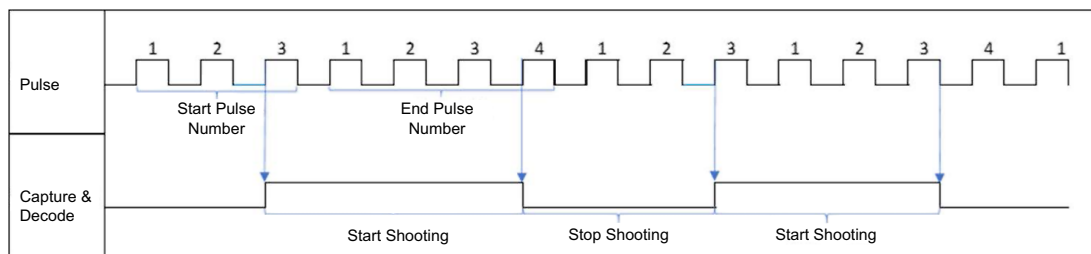
Encoder Input

Input pin 1 can be set as the encoder input to detect the encoder signal, and can be used in external trigger asynchronous operation mode with a maximum frequency of 500Hz.

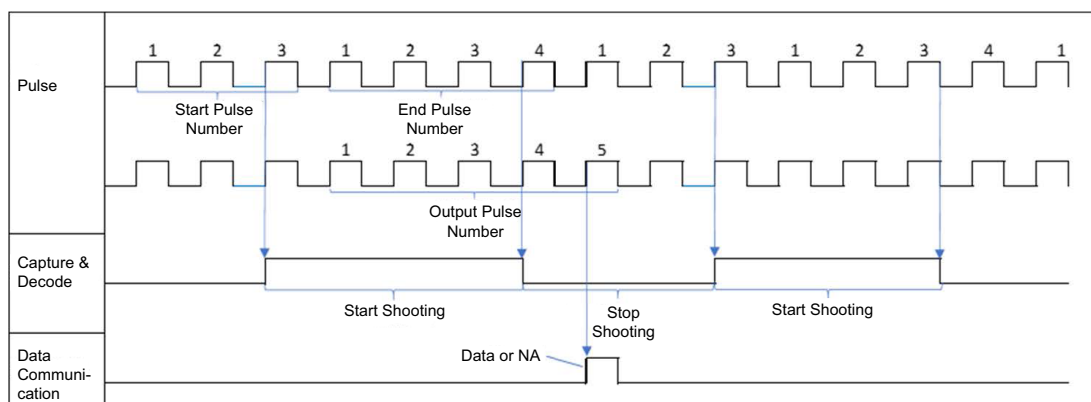
Input pin 2 can be connected to IR sensor can be connected to IN2 or multiplexed with IN1 and does not support opening multi-barcode output mode.

Timing Diagrams

When the encoder is set to Start & End:



When the encoder is set to Start & End & Output:



Output Settings

HF81x series scanners have three general-purpose outputs. They can be user-defined and are typically used to signal data acquisition results or other event alerts.

Setting	Description	Default
Output Type	High, Low, PWM (pulse-width modification)	Off
Output Delay	The signal will be delayed for the specified time (in ms), then asserted after the specific event occurs.	0
Output Duration	The length of time (in ms) that the signal will be asserted.	1000

Setting	Description	Default
Output Event	<p>The signal will be asserted/de-asserted if the selected event occurs. Up to two non-mutually exclusive events can be selected at the same time. Examples of output events include:</p> <ul style="list-style-type: none"> • External Illumination: When the scanner is triggered, the output signal is used by the external lighting system. • Good Read: The scanner successfully reads the signal. Mutually exclusive with No Read. • No Read: The scanner outputs a signal after not reading a qualified barcode. Mutually exclusive with Good Read. • Job Switching Failure: When the scanner does not successfully switch to the specified configuration parameters. Mutually exclusive with Job Switching Success. • Job Switching Success: When the scanner successfully switches to the specified configuration parameters, a signal is output. Mutually exclusive with Job Switching Failed. • Trigger Busy: Output signal when the scanner is in the triggered state and receives a trigger signal or command again. • Custom User Event 1: Used with JavaScript to allow users to customize different combinations of data formats. • Custom User Event 2: Used with JavaScript to allow users to customize different combinations of data formats. • Auto Tune Success: When the scanner completes the self-learning process and learns successfully, it outputs a signal. Mutually exclusive with Auto Tune Failure. • Auto Tune Failure: The scanner outputs a signal when it does not complete the self-learning process or fails to learn, which is mutually exclusive with Auto Tune Success. 	

Pulse-Width Modification (PMW) Options

The PMW Output Type requires two input pins to be used together. If the conditions are met, it will switch to the next available job. If the job does not have the pulse counting function set, it will stop at this job

Setting	Description	Default
PWM Frequency	Pulse-width modification frequency.	100 Hz
PWM Duty Cycle	Pulse-width modification duty cycle.	50%


This chapter explains how to edit and format data using DataMax Plus. For example, you can insert characters at certain points in the barcode data as it is scanned. Changing the data format is optional. The default is to output the original data content as is.

To access the Output Data page, click the **Output Data** tab on the Device Settings page.

Add a Data Format

1. Click the **Output Data** tab on the Device Settings page.
2. Click the plus sign (+) at the bottom of the symbologies column.
3. Select a symbology from the symbologies list and click **Add**.
4. Choose from the following data formats:

String	Description
Full Code String	Include in the output message all of the characters from the input message, starting from the current cursor position, followed by an insert character. (Mutually exclusive with Sub Code String.)
Sub Code String	Include in the output message a number of characters followed by an insert character. Start from the "Start position" input by the user and continue for "Length" characters or as determined by the truncation parameters. (Mutually exclusive with Full Code String.)
Code Type	Insert the name of the barcode's symbology in the output message, without moving the cursor.
Code Length	Insert the barcode's length in the output message, without moving the cursor. The length is expressed as a numeric string and does not include leading zeros.
Insert String	Insert a string into the output message. (See next step.)
Decoding Time	Insert the decoding time into the output message.
SN	Insert the scanner's serial number into the output message.

5. For Insert String, once the format has been added, click **Edit** in the Data format setting column to add the specific string.
6. To change the order, click and drag on  beside a data format setting.

When working with the Data Format Editor, a virtual cursor is moved along your input data string. The commands in the table above are used to both move this cursor to different positions and to select, replace, and insert data into the final output. The data will be added after the prefix and before the suffix (if used) in the order listed in the data panel.

Delete a Data Format

To clear a data format, click on the format then click the minus key at the bottom of the column (-).

Global Data Output Settings

Setting	Description	Default
Add Prefix	Add a prefix to the beginning of the output message (see next section).	(none)
Add Suffix	Add a suffix to the end of the output message (see next section).	(none)
Combine Output	When off, if the scanner reads multiple barcodes at the same time, the scanner sends them one by one. When on, if the scanner reads multiple barcodes at the same time, the scanner will merge all the barcodes and send them together. <i>Note: If Parallel Output is enabled but the barcode content is too long, the host may still need to receive the data multiple times.</i>	Disabled
Enable No Read Message	Specifies whether a message is sent when a code is not read successfully.	Disabled
No Read Message	When Enable No Read Message is on, sends the specified text string if a code is not read successfully.	(none)

Prefix/Suffix Overview

When a barcode is scanned, additional information is sent to the host computer along with the barcode data. This group of barcode data and additional, user-defined data is called a “message string”. Use the **Data** tab to build user-defined data into the message string.

Prefix and suffix characters are data characters that can be sent before and after scanned data.

Prefix	Scanned Data	Suffix
---------------	---------------------	---------------

Add a Prefix/Suffix

1. Connect to a scanner (see page 10).
2. Click the **Output Data** tab on the Device Settings page.
3. Enter characters in the prefixes/suffixes fields. You can also select from the displayed keyboard of common prefixes or suffixes.

The default is no prefix or suffix.

EXAMPLE:

1. Enter a prefix and suffix.

Global setting of data output	
Add Prefix	ABC
Add Suffix	ED33

2. When the following barcode is input, the data is output as:
ABC1234567890ABCDEFGHIJED33



Remove a Prefix/Suffix

To clear a prefix or suffix, delete the text in the corresponding field.

Custom Scripts

HF81x scanners support reading and running user-defined JavaScript files, allowing you to use different combinations of data formats and having the scanner perform different operations on the output channel.

1. Select the **Output Data** tab.
2. Enable **Customize JavaScript**.
3. Click **View and Edit**.
4. Use the JavaScript Editor to create a custom script.
5. Click **Upload script to device** to save the script to the scanner.

This chapter explains how to set up network or serial communications. For instructions on how to connect scanner cables correctly, see page 7.

Serial Port Settings

The Serial interface is used when connecting to the serial port of a PC or terminal.

1. Click the **Interface** button.
2. Click **Serial Port**.

Setting	Description	Default
Port Number	Type of serial port: RS232, RS422 or RS485	RS232
Baudrate	Sends the data from the scanner to the terminal at the specified rate. The host terminal must be set to the same baud rate as the scanner.	115200
Format	Data Bits are the word length of 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. Stop Bits sets the stop bits at 1 or 2. Check Digits determines whether no (None), 1 (Odd) or 2 (Even) check digits are required.	Data Bits 8 Stop Bits 1 None

Network Settings

1. Click the **Interface** button.
2. Click **Network**.
3. Enable **DHCP** if you want DataMax plus to automatically retrieve the IP address subnet address and gateway from the DHCP server. (When DHCP is enabled, the other fields will be unavailable.)

To manually set up static IP address, subnet and gateway, disable DHCP.

4. Click **Save**.
5. Click **OK**.
6. Reboot the scanner to complete the network setup.

Note: *The scanner will disconnect after rebooting.*

TCP Settings

1. Click the **Interface** button.
2. Click **TCP**.

Setting	Description	Default
TCP Server	Network connection to receive barcode data.	55256
TCP Client		
Enable TCP Client	Enable or disable the TCP client.	Disabled
Server IP Address	Remote server IP address.	192.168.1.110
Server Port	Remote server port.	55256
Retry Interval	Retry interval time (in s)	0

3. Reboot your scanner to complete the TCP setup.

Note: *The scanner will disconnect after rebooting.*

FTP Settings

HF81x scanners support uploading no-read images to an FTP server in single frame mode.

1. Click the **Interface** button.
2. Click **FTP**.

Setting	Description	Default
Enable FTP	Enable or Disable file transfer via FTP.	Disabled
Server IP Address	The remote server IP address.	192.168.1.110
FTP Port	The FTP port of the remote server.	7002
Username	The username for the remote server.	hf810
Password	The password for the remote server.	hf810

Timesharing

Use the timesharing setting to add a delay between each barcode when outputting multiple barcode results.

1. Click the **Interface** button.
2. Click **Time-sharing**.
3. Enter a data sending delay.

Note: Due to real-time operating conditions, the actual barcode output interval delay may deviate.

Industrial Protocol Settings

1. Set the scanner to External Trigger mode (see page 41).
2. Click the **Interface** button.
3. Click **Industrial Protocol**.

Setting	Description	Default
EtherNet/IP	An application layer protocol based on the Common Industrial Protocol (CIP). Ethernet/IP provides a wide range of messaging options and services for transferring data and I/O over Ethernet. All devices on an Ethernet/IP network present their data to the network in the form of a series of data values called attributes. Properties can be combined with other related data values into collections, which are called assemblies.	Off
PROFINET	An application-level protocol for industrial automation applications. This protocol uses standard Ethernet hardware and software to exchange I/O data, alarms, and diagnostics.	
MODBUS	An application layer protocol that provides the type of client/server communication bus or network connected to different devices. Modbus is a request/response protocol whose services are code specified through functions. Modbus TCP provides the Modbus protocol via TCP/IP. The system 502 interface is reserved for Modbus communication. It uses standard Ethernet hardware and software to exchange I/O data and diagnostics.	

4. Reboot your scanner to complete the industrial protocol setup.

Note: The scanner will disconnect after rebooting.

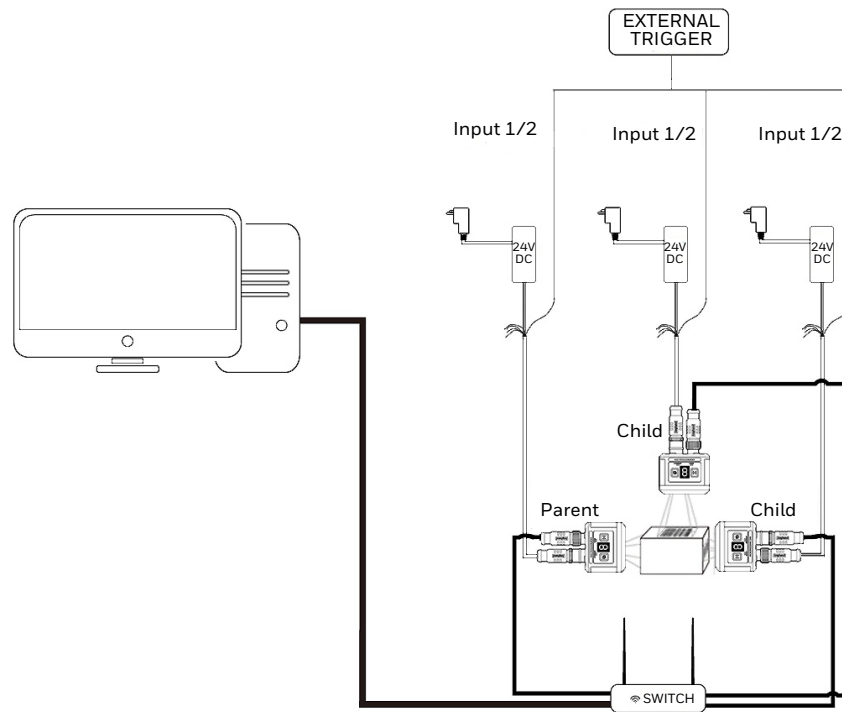
Network grouping allows users to connect multiple scanner to perform a full range of read operations on target objects from multiple angles.

Connecting Network Groups

Sync Mode

In Synch mode, the host receives the data from the scanner and process all the data (data format, sequence) and then sends the overall data through the host interface.

Note: *Make sure that the host and the scanner use the same code settings. If you decode from the scanner and send the host a code system it does not support, the host will ignore the code system and will not send any data.*



Managing Network Groups

Set Up a Group

1. In the list of devices on the left of the DataMax Plus interface, right-click on an un-grouped scanner and select **Create Group**.
2. Enter a name for the group.
3. Click **Create**.

The currently selected scanner defaults to the parent device.

Edit a Group

If you have just created a group (see previous section), the Device Group page will open. If not, right click on a grouped device and select **Edit Group**.

Add a Device

1. Right click on a grouped device and select **Edit Group**.
2. Click **Add Device**.
3. Select an individual device on the Device Group page or click **Check All**.
4. Click **Add**.

Change Parent Device

1. Right click on a grouped device and select **Edit Group**.
2. Right-click on a device on the Device Group page and select **Set as Parent**.
3. Click **Save**.

Remove a Device from a Group

1. Right click on a grouped device and select **Edit Group**.
2. Right-click on a device on the Device Group page and select **Remove Device**.
3. Click **Save**.

Note: *If a parent device is removed from the group, the group will be dissolved.*

Dissolve a Group

To remove a grouping, you can either remove the parent device (see previous section), or:

1. Click the **Device Info** button (or right-click on a device in the list of connected devices and select **View Device Info**).
2. Click the **Group** tab.
3. Click **Dissolve Group**.
4. Click **Dissolve** to confirm.

Group Settings

1. Click on **Device Info** (or right-click on a device in the list of connected devices and select **View Device Info**).
2. Click the **Group** tab.
3. Set the **Group Mode**.
4. Select whether or not the parent device can trigger child devices.

Note: *After completing the group settings, restart all devices in the current network group.*

The DataMax SDK is a dynamic link library for developing DataMax control software for Microsoft Windows.

DataMax SDK file composition

To develop software using the DataMaxSDK, copy the following files to the project directory of the user software:

1. Header file:
 - constdef.h
 - datamaxsdk.h
 - sdk_v2.h
2. Dynamic Link Library File:
 - platforms
 - datamaxsdk.dll
 - datamazsdk.lib
 - Qt5Core.dll
 - Qt5Gui.dll
 - Qt5Network.dll
 - Qt5SerialPort.dll
 - Qt5Widgets.dll

Usage Examples

Module Initialization

Initialize the SDK module with the following code:

```
SDK_initialize();
```

Search for Devices

1. Before searching for a device, register the callback function after device discovery:

```
auto callbackfoundDev = [] (NwkDeviceParam param) {  
    printf("Found Device");  
    param.mStrSN; Discover the SN number of the device  
    param.mIP;    Discover the IP address of the device  
};  
SDK_registerCbFoundDeviceNwk(callbackfoundDev);
```

2. Search for a device:

```
SDK_searchDevices();
```

Connect the Device to Obtain Device Connection Status

Before communicating with the device, connect the device using the following code:

1. Before connecting a device, register the connection status callback function

```
auto callbackConnected = [] (bool bConn, char* sn) {  
    printf (bConn ? L"Connected" : L"DisConnected");  
};  
SDK_registerCbConnectStatusChange(callbackConnected, czSn,  
strlen(czSn));
```

2. Start connecting. czSn is obtained by the search device, as described in [Search for Devices](#) above.

```
SDK_connectAsync(czSn, strlen(czSn));
```

Obtain Device Information

Once the device is successfully connected, the SDK can communicate with the device.

Example 1 - Retrieve the total number of banks for the specified job 0:

```
int nBankCount = 0;
If (SDK_RET_E::SDK_RET_OK == SDK_getBankCount(0, &nBankCount,
czSn, strlen(czSn))
{
    printf("bank count: %d", nBankCount);
}
```

Example 2 - Retrieve the exposure time of job 0, bank 0:

```
unsigned int time = 0 ;
if (SDK_RET_E::SDK_RET_OK == SDK_IMG_getExposureTime(0, 0, &time,
czSn, strlen(czSn)))
{
    printf ("SDK_IMG_getExposureTime: %d", time);
}
```

Set Device Information

After the device is successfully connected, you can set the device information.

Example - Set the exposure time of job 0 and bank 0 to 2000ms:

```
If (SDK_RET_E::SDK_RET_OK != SDK_IMG_setExposureTime (0, 0, 2000,
czSn, strlen(czSn)))
{
    printf("set exposure time failed");
}
```

Acquiring Device Images

After the device is successfully connected, you can obtain the device image:

1. Register the graph callback function:

```
auto callbackReceiveImage = [](Image img, czSn) {
Save the image to your local computer
    CFile file;
    CString filename = GetCurrentTimeInfo() + czSn + ".jpg";
    if (file. Open(filename, CFile::modeCreate |
CFile::modeWrite)) {
        file. Write(img.image, img.imageSize);
        file. Close();
    }
};
SDK_registerCbReceiveImage(callbackReceiveImage, czSn,
strlen(czSn));
```

2. Open the real-time upload:

```
SDK_setLiveViewOn(true, czSn, strlen(czSn));
```

Triggers

After the device is successfully connected, the trigger can be controlled with the following code:

- Trigger on:
`SDK_ctlTrigger(true, czSn, strlen(czSn));`
- Trigger off:
`SDK_ctlTrigger(false, czSn, strlen(czSn));`

Disconnect

After the device is successfully connected, to disconnect the code is as follows:

```
SDK_disconnect (czSn, strlen(czSn));
```

Release SDK resources

After you have finished using the DataMax SDK, release the SDK resources with the following code:

```
SDK_deInitialize();
```

About Software Updates and Cyber Security

Cyber security best practices include keeping your software and firmware up to date.



Honeywell recommends routinely checking www.honeywell.com/SPScyber-security for critical Cyber Security Notifications and to download the latest Network and Security Guides.

Software Downloads

Product support is available online through the [Technical Support Portal](#). Software and firmware can be accessed through the [Software Downloads](#) portal. You will need to create a login account for portal access. Additional information such as purchased date, service agreement number, maintenance plan number, or software license number may be required for downloads.

1. Go to honeywell.com/PSSsoftware-downloads.
2. Create a login account if you have not already created one.
3. Install the Honeywell Download Manager tool. See “Note” on the portal page. This tool is required for downloads.
4. Locate the app or firmware update you want to download in the Software directory.
For example: **Software > Barcode Scanners > Industrial > HF810 & HF811 Fixed-mount 2D Industrial Scanners > Configuration Software > DataMaxPlus.zip** (actual path may vary).
5. Select **Download**. Follow the prompts to download the file.

Firmware Upgrades

You can use DataMax Plus to upgrade the scanner’s firmware.

1. Download updated firmware (see previous section).
2. Open DataMax Plus and connect a scanner (see page 10).
3. Click **Device Info**.
4. On the Generic tab, click **Upgrade**.
5. Click **Choose file** and select the .smoc file.
6. Click **Open**. The scanner will restart automatically after the file transfer is completed. Do not turn off device power during the upgrade.

When the firmware update finishes, the scanner will reboot.

Note: *The scanner will disconnect after reboot.*

Restore Factory Defaults

You can reset the scanner to factory defaults through DataMax Plus.

All environment parameters will be restored to factory default values and any existing configurations stored on the scanner will be erased. The scanner will be reset and will restart with the factory default configuration.

1. Open DataMax Plus and connect a scanner (see page 10).
2. Click **Device Info** (or right-click on the scanner listed under **Online Devices** and select **View Device Info**).
3. On the Generic tab, click **Factory Setting**.
4. Click **Coverage**.

Note: *After factory settings are restored, the scanner will reboot and disconnect.*

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).

Maintenance

Your device provides reliable and efficient operation with a minimum of care. Although specific maintenance is not required, the following sections describe periodic checks to ensure dependable operation.

Clean the Scanner

The scanner housing and scanner window may be cleaned with a soft cloth dampened with water or a mild detergent-water solution. If a mild detergent solution is used, wipe the scanner or base with a clean cloth dampened only with water to remove any detergent residue.

Note: Reading performance may degrade if the scanner's window is not clean. If the window is visibly dirty, or if the scanner isn't operating well, clean the window.



Caution: Do not submerge the scanner in water or cleaning solution. Do not use abrasive wipes or cloths on the scanner's window. Abrasive wipes may scratch the window. Never use solvents (e.g., acetone) on the housing or window. Solvents may damage the finish or the window.

Caution: Ensure all components are dry prior to mating the scanner with charging accessories or other peripheral devices. Mating wet components may cause damage not covered by the warranty.

Inspect Cords and Connectors

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

Troubleshooting

Issue	Suggestion
DataMax Plus installation does not complete	Check the following points, and then install the software again. <ul style="list-style-type: none">To install the software, log on as a user with Administrator rights.The installation may be impeded by security software. Temporarily disable the security software.
DataMax Plus will not run	When DataMax Plus runs for the first time after installation, it may be blocked by a firewall. If the system may ask you to confirm DataMax Plus's access to the network, be sure to click the allow option.
Power is on but the scanner's power LED is not lit	Verify power is connected. If using a power adapter, please make sure to use the Honeywell recommend power adapter. If using custom power, please make sure it is properly wired with Vin and GND on the connector. See Terminal Pinouts on page 78.
Unable to connect to DataMax Plus	Check the following: <ul style="list-style-type: none">RS232/RS485 connection (page 7/page 8)Ethernet connection (page 6)Make sure the unit is properly configured to the related working mode.

Issue	Suggestion
Scanner is not displayed in the list of available devices	To be discoverable by DataMax Plus, scanners must be powered on and connected to the Local Area Network. If you do not see the desired scanner listed, please verify its connection to the LAN and ensure it is powered on; then run a new device search.
Barcode reading fails	<ul style="list-style-type: none"> • Ensure the symbology is enabled (see page 26). • Tune the Acquisition Delay on Trigger if the moving code is out of the scanner field of view. • Set the streaming presentation/presentation Operating Mode if no external trigger source is available. • Fine tune the Image Setup to improve the code image quality. • Check the code parameter settings in the Symbology Setup step: 2D, Linear, and Stacked Linear. • View the full resolution code image to check the printing or marking quality.
Unable to trigger the scanner with external trigger source or soft trigger	Ensure the external sensor wiring is correct. Check the I/O input according to external sensor parameter.
Device is not transmitting anything to the host	<ul style="list-style-type: none"> • Ensure the cable is properly connected. • Ensure the configuration is related to the actual working mode. • Verify that the host serial port settings are the same as the scanner serial port settings.
Data transferred to the host is incorrect	In DataMax Plus check the Prefix and Suffix String settings and other parameters.

PRODUCT SPECIFICATIONS

HF810/HF811 Product Specifications

Parameter	
Mechanical	
Length	70 mm
Width	55 mm
Height	45 mm
Weight	180g
Electrical	
Voltage Requirements	24VDC +/- 10%
Current Draw	350mA typical
Environmental	
Temperature Ranges:	
Operating	0°C to 50°C
Storage	-20°C to 70°C
Humidity	5% to 95% relative humidity, non-condensing
Sealant Range	IP65
Image	
Image Size	HF810: 960 x 540 HF811: 1920 x 1080

Depth of Field (DOF)

Refer to the following tables to adjust installation distance.

Note: The following depth of field parameters will be affected by the quality of barcode/QR code printing.

HF810-01BT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	3	2
100-120	4	3
100-180	6	4
100-230	8	5
100-450	15	12
100-650	20	16
100-1000	55	30

HF810-01RT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	3	2
100-120	4	3
100-180	6	4
100-230	8	5
100-450	15	12
100-650	20	16
100-1000	55	30

HF810-01WT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	3	2
100-120	4	3
100-180	6	4
100-230	8	5
100-450	15	12
100-650	20	16
100-1000	55	30

HF810-11BT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	5	4
100-120	6	5
100-250	15	8

Distance (mm)	QR code size (mil)	Barcode size (mil)
100-300	20	12
100-600	40	20

HF810-11RT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	5	4
100-120	6	5
100-250	15	8
100-300	20	12
100-600	40	20

HF810-11WT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	5	4
100-120	6	5
100-250	15	8
100-300	20	12
100-600	40	20

HF811-01BT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	1.5	1
100-120	2	1.3
100-180	3	2.5
100-230	4	3
100-300	6	4
100-400	8	6
100-650	10	8
100-750	15	10
100-1000	20	15

HF811-01RT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	1.3	1
100-120	2	1.3
100-180	3	2
100-230	4	2.5
100-300	6	4
100-400	8	6
100-650	10	8
100-750	15	10
100-1000	20	15

HF811-01WT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	1.5	1
100-120	2	1.3
100-180	3	2.5
100-230	4	3
100-300	6	4
100-400	8	6
100-650	10	8
100-750	15	10
100-1000	20	15

HF811-11BT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	3	2.5
100-120	4	3
100-230	6	4
100-300	10	6
100-500	15	10

HF811-11RT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	2.5	2
100-120	3	2.5
100-230	6	4
100-300	10	6
100-500	15	10

HF811-11WT00004K

Depth of Field

Distance (mm)	QR code size (mil)	Barcode size (mil)
100	3	2.5
100-120	4	3
100-230	6	4
100-300	10	6
100-500	15	10

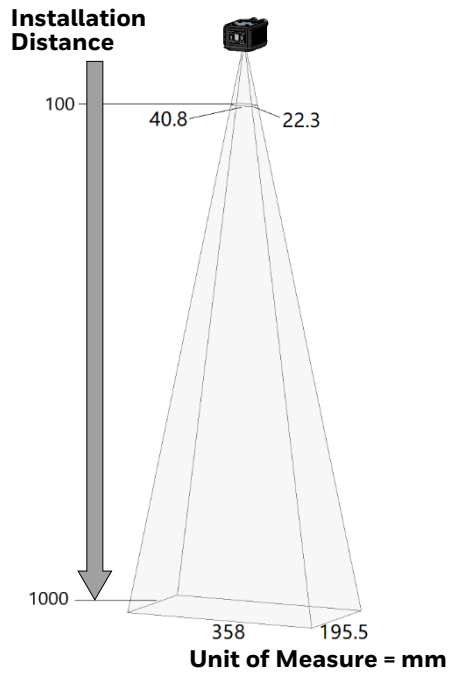
Field of View (FOV)

Use the data in the following table and the formula below to calculate Field of View.

$$FOV_{\text{range}} = 2[(L_0 + L) * \tan(\theta/2)]$$

Models with Narrow Field of View

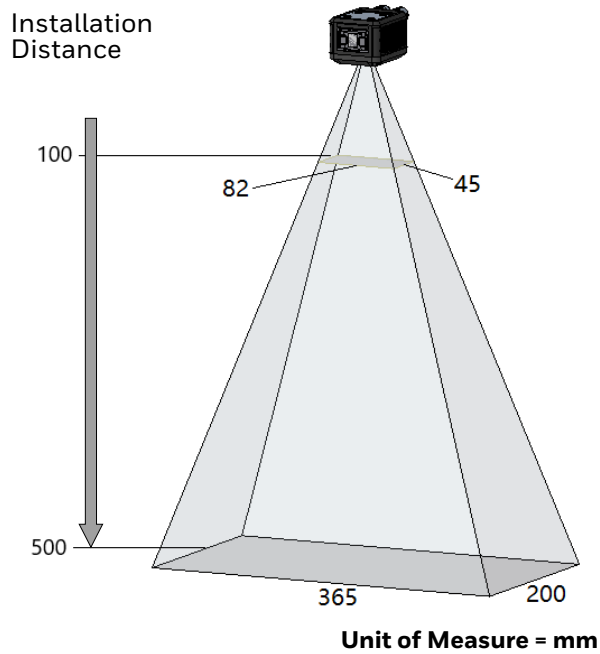
Models	L_0 (Internal Distance/mm)	θ_H (Horizontal angle)	θ_V (Vertical angle)
HF810-01BT00004K HF810-01RT00004K HF810-01WT00004K HF811-01BT00004K HF811-01RT00004K HF811-01WT00004K	12.2	20.0°	11.0°



Distance	Horizontal	Vertical
100 mm	40 mm	22 mm
120 mm	47 mm	25 mm
180 mm	68 mm	37 mm
230 mm	85 mm	47 mm
300 mm	110 mm	60 mm
400 mm	145 mm	79 mm
650 mm	234 mm	128 mm
750 mm	269 mm	147 mm
1000 mm	357 mm	195 mm

Models with Wide Field of View

Models	L_0 (Internal Distance/mm)	θ_H (Horizontal angle)	θ_V (Vertical angle)
HF810-11BT00004K HF810-11RT00004K HF810-11WT00004k HF811-11BT00004K HF811-11RT00004K HF811-11WT00004k	14.7	39.0°	22.0°

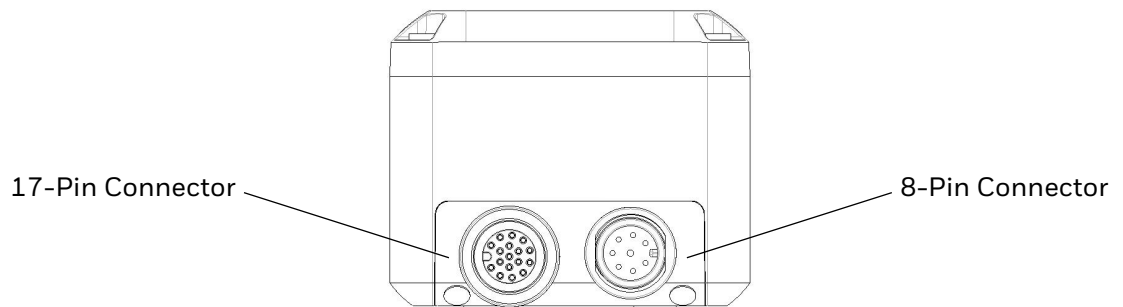


Distance	Horizontal	Vertical
100 mm	81 mm	45 mm
120 mm	95 mm	52 mm
230 mm	173 mm	95 mm
300 mm	223 mm	122 mm
500 mm	365 mm	200 mm

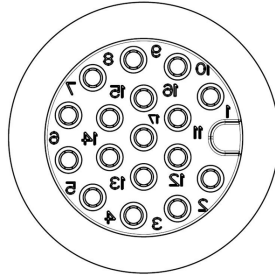
Connector Pinouts

Note: The following pin assignments are not compatible with all Honeywell products. Use of a cable with improper pin assignments may lead to damage to the product. Use of any cables not provided by the manufacturer may result in damage not covered by your warranty.

M12 Connector Pinouts

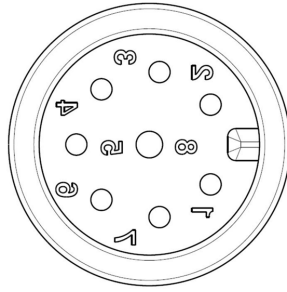


M12 17-Pin Connector



Power, COM and I/O Connector Pinouts		
Pin Number	Name	Description
1	+24V	Power 24V input positive
2	GROUND	Power 24V input negative, signal ground
3	GROUND	Power 24V input negative, signal ground
4	OUTPUT1+	Signal output 1 positive
5	OUTPUT1-	Signal output 1 negative
6	OUTPUT2+	Signal output 2 positive
7	OUTPUT2-	Signal output 2 negative
8	OUTPUT3+	Signal output 3 positive
9	OUTPUT3-	Signal output 3 negative
10	+24V	Power 24V input positive
11	INPUT1	External signal input 1
12	INPUT2	External signal input 2
13	RS232_TXD_485Z	RS232 Output TXD/RS485 Half Duplex Reverse Input B Output Z/RS422 Full Duplex Reverse Output Z
14	RS232_RTS_485Y	RS232 Output RTS/RS485 Half Duplex Forward Input A Output Y/RS422 Full Duplex Forward Output Y
15	RS232_CTS_485B	RS232 Enter CTS /RS422 Full Duplex Reverse Input B
16	RS232_RXD_485A	RS232 Enter RXD /RS422 Full Duplex Forward Input A
17	INPUT_COMMON	The external signal is entered into the public end
SHELL	SHIELD	Shielding line

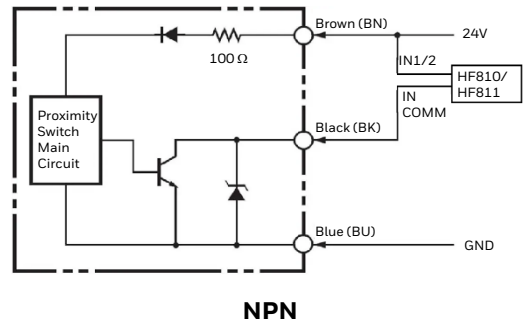
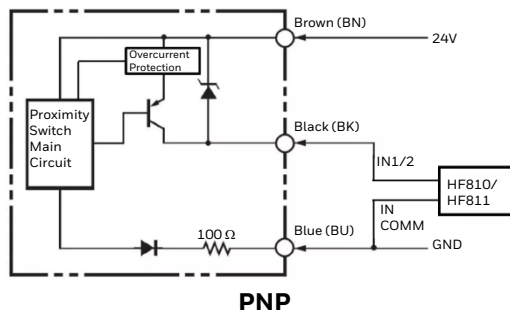
M12 8-Pin Connector



Power, COM and I/O Connector Pinouts		
Pin Number	Name	Description
1	TX+	Output positive
2	TX-	Output negative
3	RX+	Input positive
6	RX-	Input negative
4, 5, 7, 8	ON	There is no connection

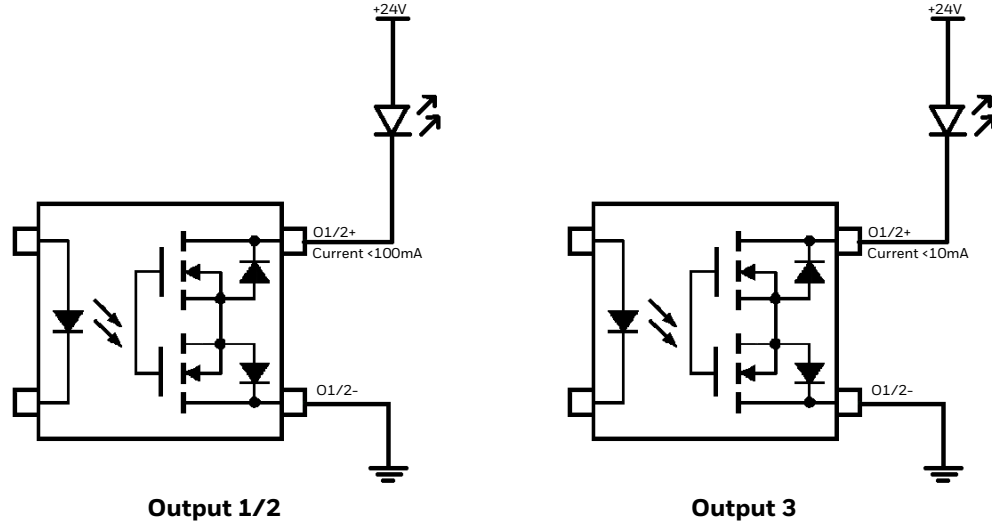
Input

HF81x series scanners have two digital signal inputs that can be used as external trigger decoding signals. Input voltage 10 to 26.4V, the general external infrared proximity sensor has NPN and PNP two output modes, the specific wiring method please refer to the diagrams below.



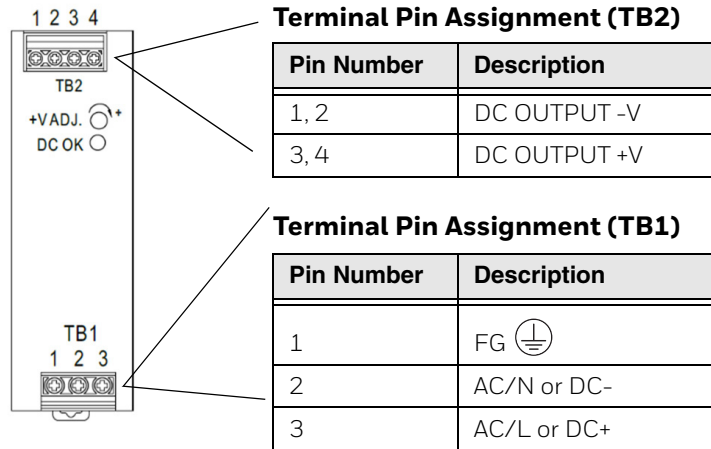
Output

HF81x series scanners have three output switching signals, where the OUTPUT1/2 external access voltage does not exceed 30V and the current is not more than 100mA. Output3 external access voltage does not exceed 30V and the current is not more than 10mA. Refer to the diagram below for external connections.



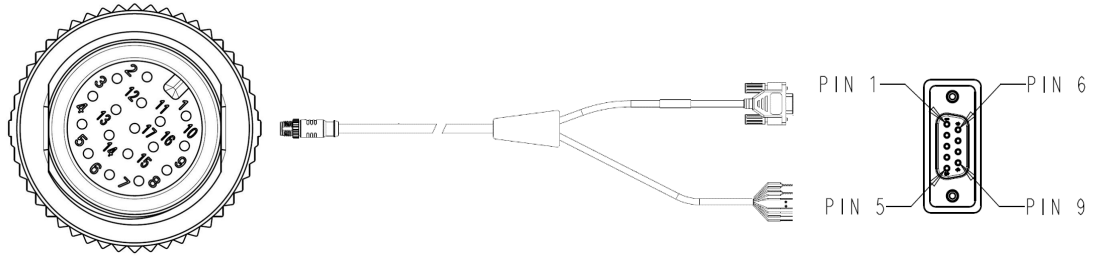
Terminal Pinouts

NDR-120-24 Power Supply



RS232 Cable

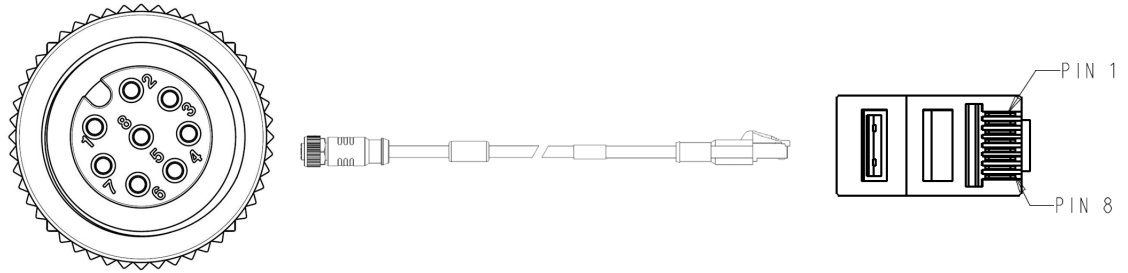
5m/10m cable (HF8TCB-Serial-005 and HF8TCB-Serial-010):



17-Pin M12 Connector Pin Number	Wire Color	DB9 Connector Pin Number	Description
13		2	RS232 output TXD
16		3	RS232 input RXD
14		8	RS232output RTS
15		7	RS232 input CTS
2		5	Signal GND
SHELL	Black braid	SHELL	Shielded wire
1	Red		Positive power supply 24 V input
10	Red		
2	Black		Negative power supply 24 V input, signal GND
3	Black		
4	Blue		Positive signal output 1
5	Green		Negative signal output 1
6	White		Positive signal output 2
7	Brown		Negative signal output 2
8	Yellow		Positive signal output 3
9	Pink		Negative signal output 3
11	Orange		External signal input 1
12	Purple		External signal input 2
17	Gray		External signal input common terminal

Ethernet Cable

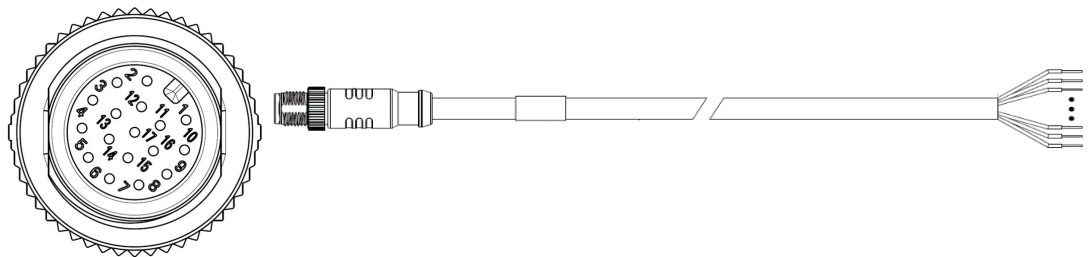
5m/10m cable type (HF8TCB-Ether-005 and HF8TCB-Ether-010):



8-Pin M12 Connector Pin Number	RJ45 Network Interface Pin Number	Description
1	1	Positive output TX+
2	2	Negative output TX-
3	3	Positive input RX+
6	6	Negative input RX-

Serial I/O Cable

5m/10m cable models (HF8TCB-IOB-005 and HF8TCB-IOB-010).

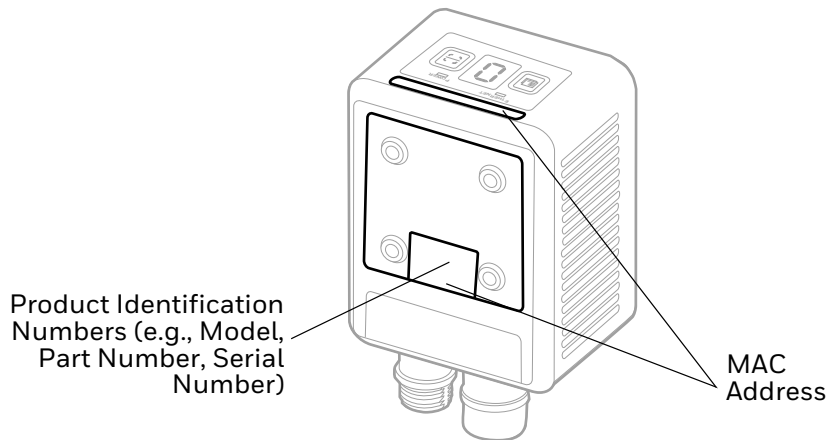


17-Pin M12 Connector Pin Number	Wire Color	Description
1	red	Power 24V input positive
2	black	Power 24C input negative, signal ground
3	black	
4	yellow-blue	Signal output 1 positive
5	blue	Signal output 1 negative
6	yellow-orange	Signal output 2 positive
7	orange	Signal output 2 negative
8	yellow-brown	Signal output 3 positive
9	brown	Signal output 3 negative
10	red	Power 24V input positive
11	yellow	External signal input 1

17-Pin M12 Connector Pin Number	Wire Color	Description
12	yellow-red	External signal input 2
13	pink	RS232 output TXD/RS485 half duplex reverse input B output Z/RS422 full duplex reverse output Z
14	green	RS232 output RTS/RS485 half duplex forward input A output Y/RS422 full duplex forward output Y
15	white	RS232 input CTS /RS422 full duplex reverse input B
16	purple	RS232 input RXD /RS422 full duplex forward input A
17	gray	Common external signal input
SHELL	black braided cord	Shielding line

Label Locations

Labels on the back and top of the device contain information about the scanner including compliance information, model number, serial number and MAC address.



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