

VOI1*00-F330-4MM-R2

Stationary Code Readers

Manual



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1 Introduction

1.1 Content of this Document

This document contains information required to use the product in the relevant phases of the product life cycle. This may include information on the following:

- Product identification
- Delivery, transport, and storage
- Mounting and installation
- Commissioning and operation
- Maintenance and repair
- Troubleshooting
- Dismounting
- Disposal



Note

For full information on the product, refer to the further documentation on the Internet at www.pepperl-fuchs.com.



Note

For specific device information such as the year of construction, scan the QR code on the device. As an alternative, enter the serial number in the serial number search at www.pepperl-fuchs.com/device-information.

The documentation comprises the following parts:

- This document
- Datasheet

In addition, the documentation may comprise the following parts, if applicable:

- EU-type examination certificate
- EU declaration of conformity
- Attestation of conformity
- Certificates
- Control drawings
- Instruction manual
- Functional safety manual
- Other documents

1.2 Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

Only appropriately trained and qualified personnel may carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the product. The personnel must have read and understood the instruction manual and the further documentation.

Prior to using the product make yourself familiar with it. Read the document carefully.

1.3 Symbols Used

This document contains symbols for the identification of warning messages and of informative messages.

Warning Messages

You will find warning messages, whenever dangers may arise from your actions. It is mandatory that you observe these warning messages for your personal safety and in order to avoid property damage.

Depending on the risk level, the warning messages are displayed in descending order as follows:



Danger!

This symbol indicates an imminent danger.

Non-observance will result in personal injury or death.



Warning!

This symbol indicates a possible fault or danger.

Non-observance may cause personal injury or serious property damage.



Caution!

This symbol indicates a possible fault.

Non-observance could interrupt the device and any connected systems and plants, or result in their complete failure.

Informative Symbols



Note

This symbol brings important information to your attention.



Tip

This symbol brings an useful tip to your attention.



Example

This symbol provides an example of the issue described.



Action

1. This symbol indicates a paragraph with instructions. You are prompted to perform an action or a sequence of actions.

2 Product Description

2.1 Overview of Versions

This manual describes two versions of the stationary code readers.

- **VOI1000-F330-6MM-R2**—suitable for standard applications
- **VOI1100-F330-6MM-R2**—optimized for reading at high object speeds and for the reliable detection of DPM codes

Both versions are equipped with an M12 connector and come with a standard cable length of 2 m.



Note

Terminology

The term "code reader" is used generally throughout this manual. Unless expressly stated otherwise, the descriptions refer to both versions. Where content refers solely to a specific version, this is clearly indicated by the respective type designation.

2.2 Use and Application

The CleverReader VOI1000/VOI1100 is a stationary code reader with an RS232 interface. It supports the detection of all common 1-D and 2-D codes.

The **VOI1000** is intended for standard applications. The **VOI1100** is designed for applications with high object speeds of up to 3.5 m/s and for the detection of direct part marking codes (DPM codes).

The devices offer various read modes, including triggering by motion detection. The reading range can be easily aligned using a rectangular LED sighting mechanism. Feedback is provided via digital outputs, acoustic signals, and the LED display.

Parameterization can be carried out either via the configuration software or via control codes.

2.3 Function Range

Core Functions

- 1-D and 2-D code detection: Reads all common 1-D and 2-D codes.
- Special reading: Also reads laser-inscribed and needle-punched codes (VOI1100).
- High speed: Processes codes at speeds up to 3.5 m/s (VOI1100).
- OCR reading: Detects fixed character sets such as OCR-B.
- Output formatting: Allows adjustment of the data output.

Integration

- Intuitive operation: The device is easy and intuitive to use.
- Versatile read modes: Easy to use due to various modes, including reading via motion detection.
- RS232 interface: Enable quick and reliable data transfer.
- Compact design: The small housing size allows easy mechanical integration.

2.4 Layout



Figure 2.1 Detailed view

No.	Designation	Description
1	POWER	Power LED
2	SCAN	Status LED
3	SCAN	By pressing this button, the code reader captures an image and activates the LED lighting for reading 1-D and 2-D codes.
4	-	2 m fixed cable with M12 plug, 8-pin
5	-	Four integrated LEDs for lighting
6	-	Green LED sighting mechanism in the form of a bar for positioning the reading field.
7	-	Image capture center, center of the optical axis
8	-	Infrared sensor

POWER-LED on VOI1000

LED status	Description
Leuchtet rot	Code reader is switched on
Off	Code reader is turned off

POWER-LED on VOI1100

LED status	Description
Lights up green	Code reader is switched on
Off	Code reader is turned off

SCAN-LED on VOI1000 and VOI1100

LED status	Description
Lights up blue	Start and configuration process
Lights up green	Successful read operation ("Good Read")
Lights up cyan	Configuration is successful
Lights up purple	Configuration error
Lights up yellow	Decoding was successful, but an error is displayed because the data transfer failed. Check if the data cable is loose.
Lights up red	An error has occurred due to a problem in the scanning module. Please restart the code reader and contact technical support if the error persists.

2.5 Reading Window

The reading window describes the area that the code reader can detect at a certain distance. This is the area that is perpendicular to the optical axis and within which codes can be read reliably.

The size of the reading window depends directly on the opening angle (see chapter 2.6).

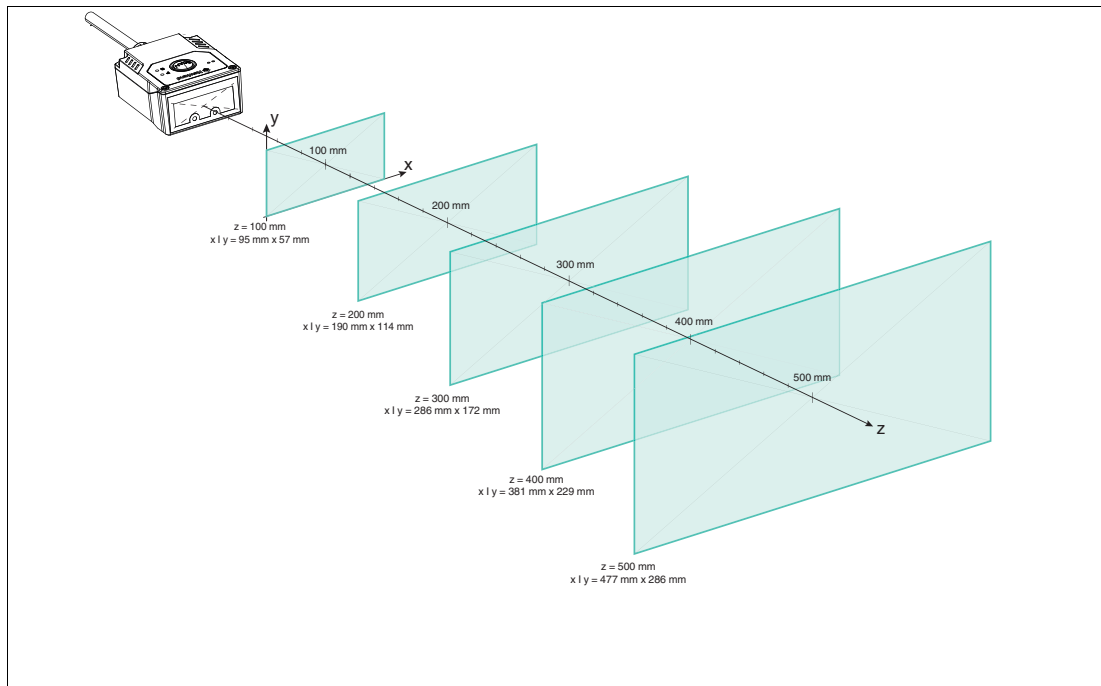


Figure 2.2 Reading Window

2.6 Opening Angle of the Field of View

The illustration shows the opening angle of the code reader's field of view. It helps to visualize the optimal range for placing codes and to ensure that the symbols to be read are always within the captured range.

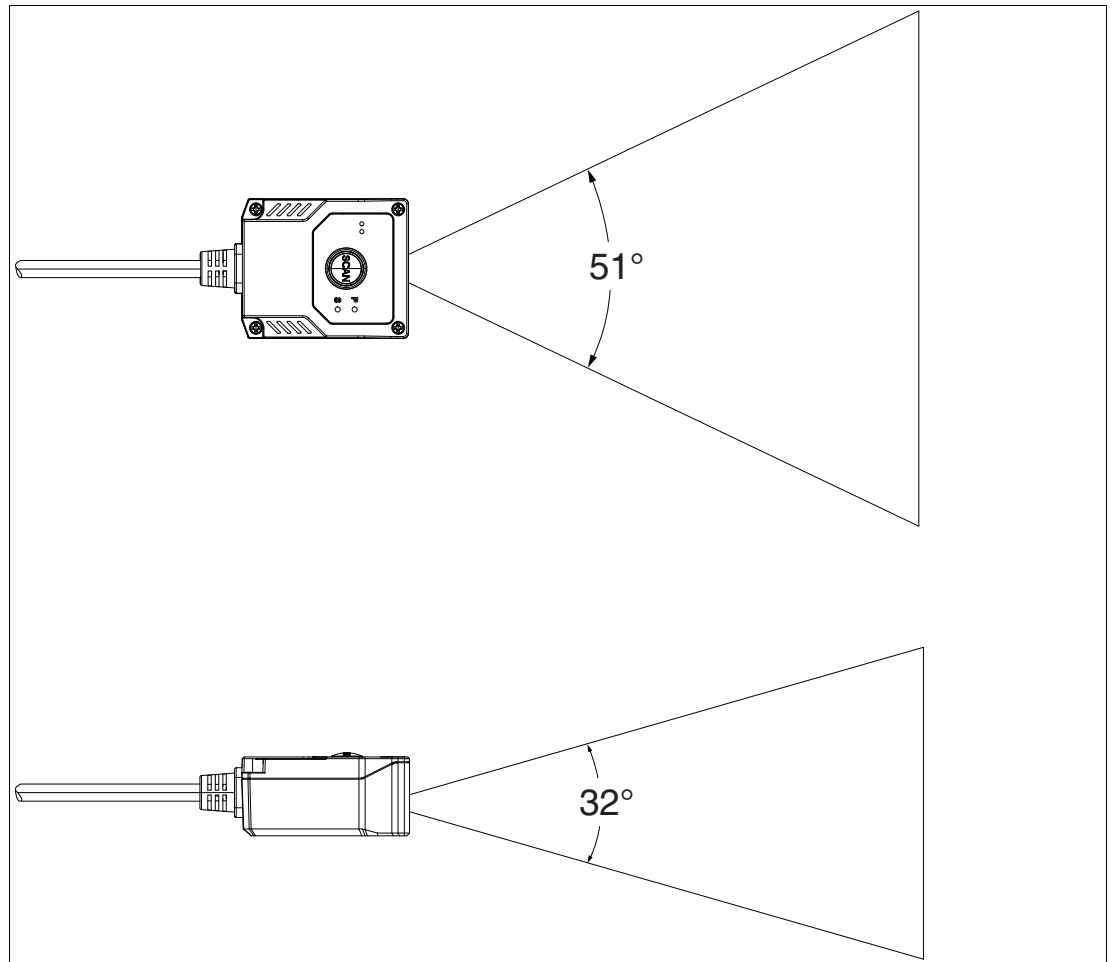


Figure 2.3 Opening angle

2.7 Reading Range Depending on the Code Type

The reading range is the area before and after the focus point in which a code can be read reliably. It primarily depends on the symbol size of the code. Smaller symbols typically have a smaller reading range, while larger symbols enable a larger reading range.

The following table shows the values for the VOI1000 and VOI1100, respectively, under standard conditions. It specifies the near range (minimum read distance) and the long range (maximum read distance) for various code types and symbol sizes.

VOI1000 Reading Range

Code type	Symbol size	Near range	Long range
EAN-13	0.33 mm	55 mm	360 mm
PDF417	0.17 mm	55 mm	160 mm
Code 39	0.13 mm	70 mm	180 mm
Data Matrix	0.25 mm	50 mm	170 mm
QR code	0.38 mm	40 mm	210 mm

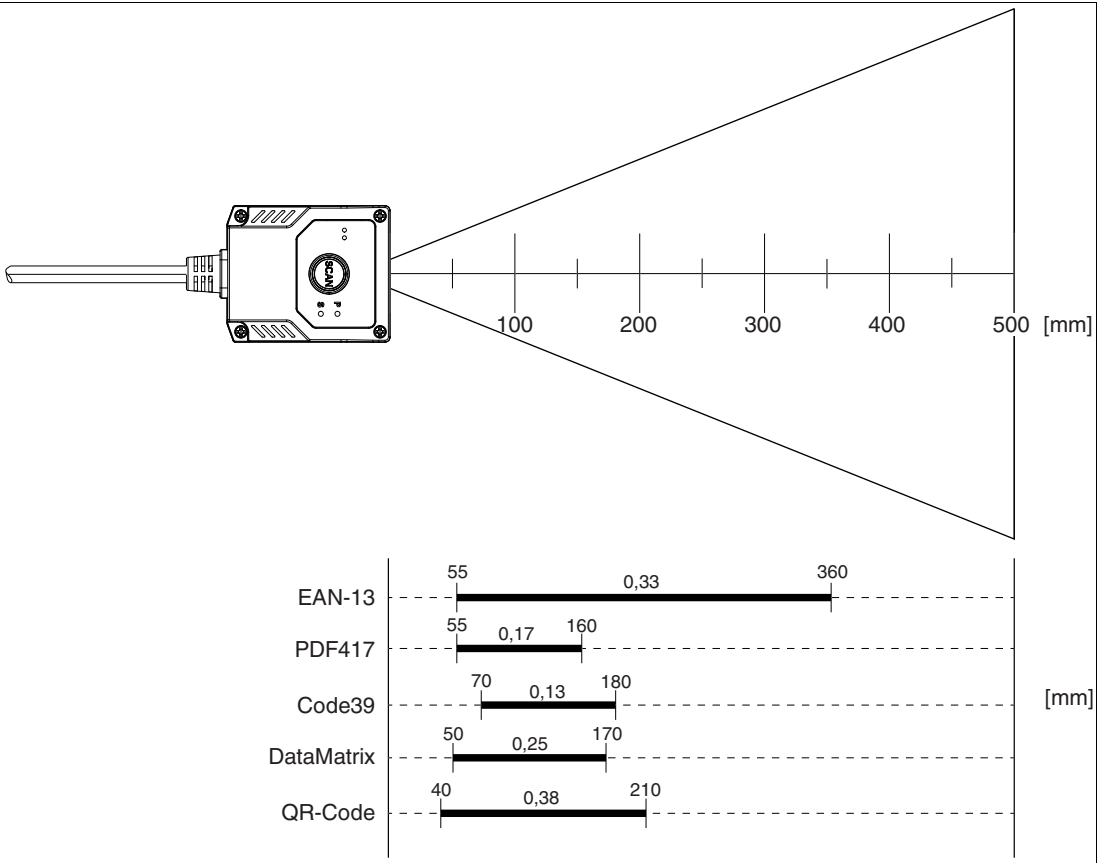


Figure 2.4

VOI1100 Reading Range

Code type	Symbol size	Near range	Long range
EAN-13	0.33 mm	55 mm	460 mm
PDF417	0.17 mm	55 mm	190 mm
Code 39	0.13 mm	65 mm	230 mm
Data Matrix	0.25 mm	50 mm	230 mm
QR code	0.38 mm	40 mm	310 mm

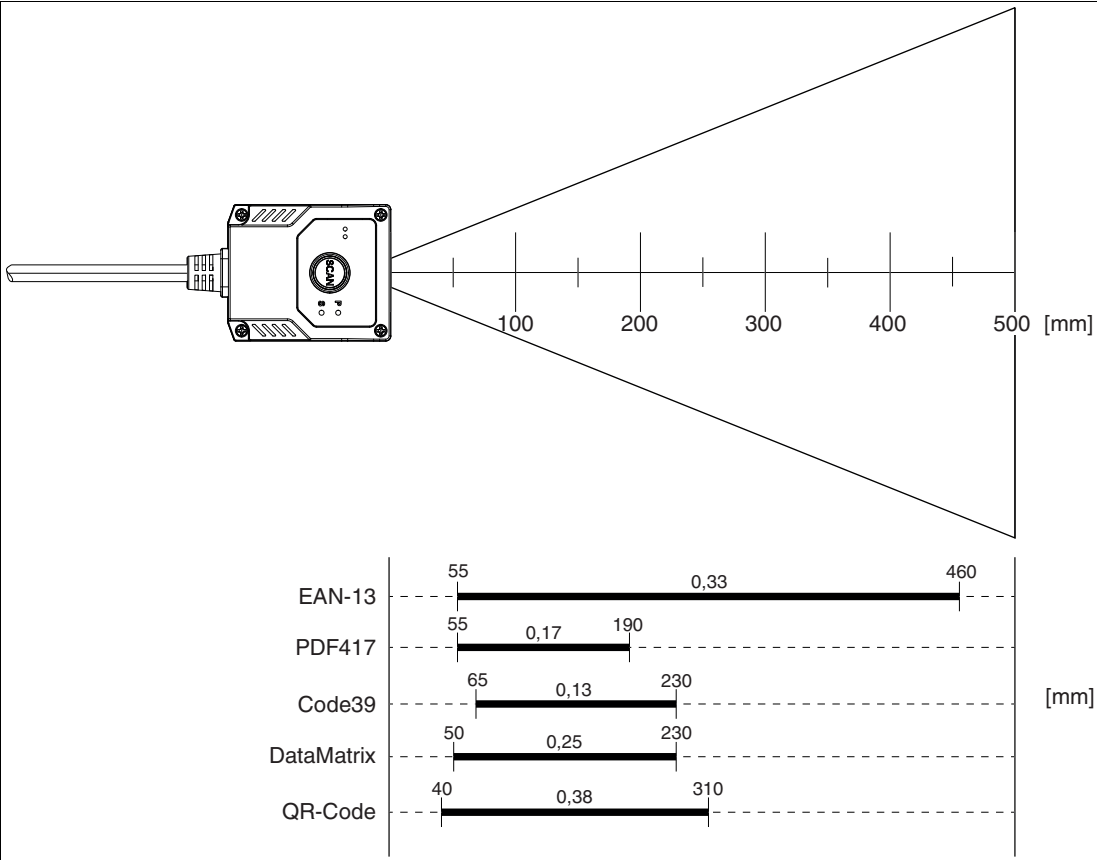


Figure 2.5

2.8 LED Aimer

The code reader is equipped with a green LED aimer that generates a bar-shaped target pattern. This target pattern helps you to position the code correctly in the code reader's field of view, thereby increasing the detection accuracy.

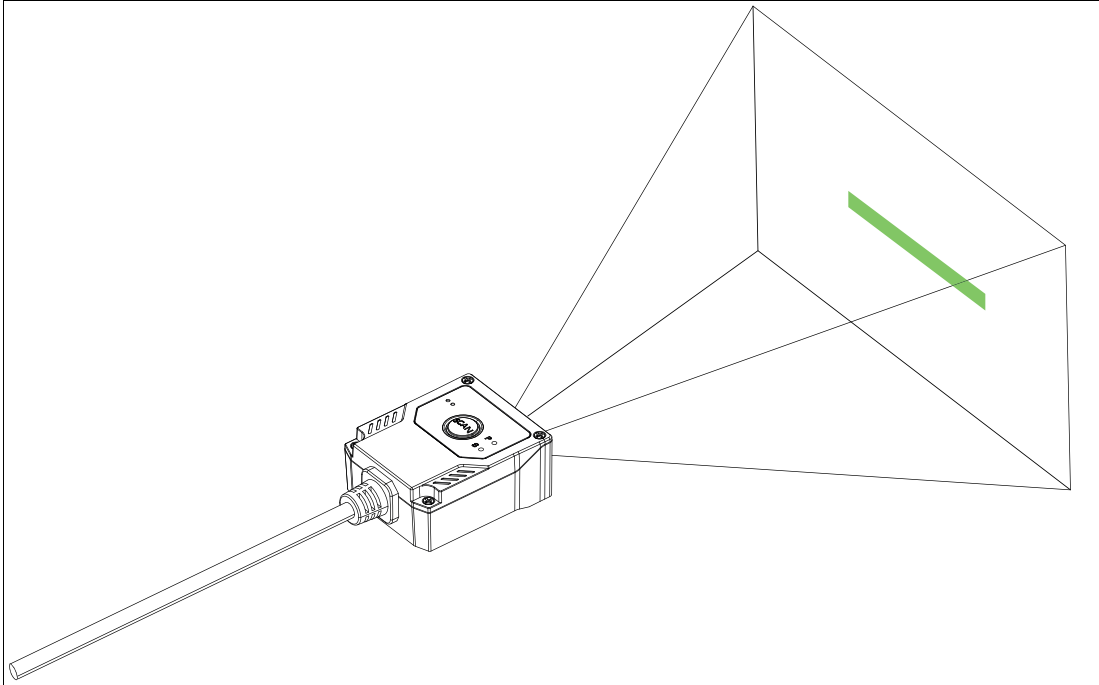


Figure 2.6 LED aimer with bar-shaped target pattern

- The target pattern can be switched on or off.
- It is recommended to switch on the target pattern under typical operational conditions.
- For special applications (e.g., different materials, backgrounds, or strong light exposure), you can turn the target pattern on or off depending on the actual conditions.

Note

As the code reader approaches the code, the target center (target pattern) and the image center (captured image) may differ.

2.9 Accessories

Suitable accessories for your read head can be found on the "Related products" tab of our website www.pepperl-fuchs.com.

2.10 Storage and Disposal

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.

3 Installation

3.1 Mechanical Connection

Attach the code reader to the rear of the housing using the two M3 tapped holes (5 mm depth). Use suitable screws to ensure safe and de-energized installation.



Figure 3.1



Note

Orientation of the Code Reader

- Align the code reader so that the field of view completely covers the defined reading range. Use the target pattern (see chapter 2.8) to accurately position the code reader relative to the code to maximize reading performance and detection accuracy.
 - When positioning the code reader, ensure that the camera's field of vision is not obscured by other objects.
 - For highly reflective surfaces, the code reader should be mounted at a perpendicular angle to avoid disruptive reflections and ensure reliable code detection.
-

3.2 Electrical Connection

The code reader has a 2 m fixed cable with an 8-pin M12 connector plug.

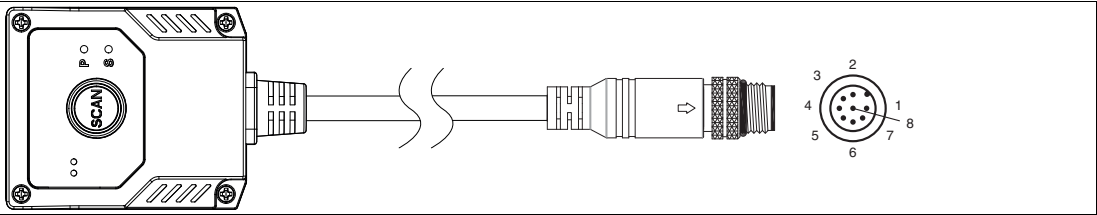


Figure 3.2

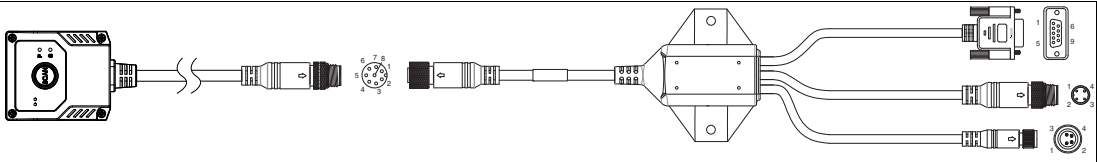
M12 plug, 8-pin

PIN	Signal	Description
1	RX	Serial interface, receive data
2	Good	Output signal "Reading successful"
3	Bad/(match)	Output signal "Reading error"
4	TX	Serial interface, send data
5	n.c.	Not connected
6	Trigger	Input signal for starting the read operation
7	GND	Operating voltage, 0 V/device ground
8	+UB	Operating voltage, +5 V
GND_Earth	Shield	Shielding, ground connection

Converter cable (optional)

The code reader is designed for a supply voltage of 5 V. With an optional converter cable from our range, the code reader can also be operated on a 24 V voltage source.

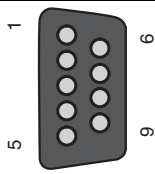
VOI-F331-24V-DB9



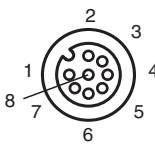
M12 socket, 8-pin, A-coded

	PIN	Signal	Description
	1	RX	Serial interface, receive data
	2	Good (IN)	Rated voltage 5 V, TTL-compatible threshold; surge protection up to 33 V
	3	Bad/(match) (IN)	Rated voltage 5 V, TTL-compatible threshold; surge protection up to 33 V
	4	TX	Serial interface, send data
	5	n.c.	Not connected
	6	Trigger	Trigger (output)—current limitation 100 mA; surge protection up to 33 V
	7	GND	Operating voltage, 0 V/device ground
	8	+UB	Operating voltage, +5 V

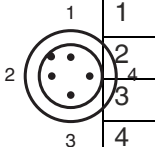
DB9 socket, 9-pin, socket, screw-in

	PIN	Signal
	1	n.c.
	2	TX
	3	RX
	4	n.c.
	5	n.c.
	6	GND
	7	n.c.
	8	n.c.

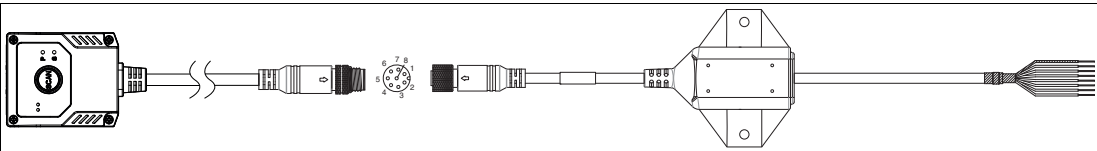
M8 socket, 4-pin, A-coded

	PIN	Signal	Description
	1	+UB	Operating voltage, +24 V
	2	GND	Operating voltage, 0 V/device ground
	3	n.c.	Not connected
	4	Trigger (IN)	Trigger (input)—nominal voltage 24 V, low/high threshold 8 V (low < 4 V, high > 8 V)

M12 plug, 4-pin, A-coded

	PIN	Signal
	1	+UB (+24 V)
	2	Good
	3	GND
	4	Bad/(match)

VOI-F331-24V



Open cable end

Signal	Color coding
RX	GN (green)
Good	BU (blue)
Bad/(match)	VT (violet)
TX	WH (white)
n.c.	-
Trigger	BN (brown)
GND	BK (black)
+UB (+5 V)	-
+UB (+24 V)	RT (red)
GND_Earth	Shielding, ground connection

4 Operation

4.1 Operation and Use

This chapter describes the regular operation, alignment, and advanced functions of the code reader. The code reader offers a wide range of triggering, parameterization, and feedback options to ensure intuitive and reliable operation.

Triggering the read operation

The read operation can be started in different ways:

- Manual trigger: Actuation of the trigger button directly on the housing (ideal for test purposes or manual operation).
- External trigger: Activation via an electrical signal, e.g., by a light barrier or a higher-level control system.
- Automatic mode: The code reader supports various operating modes (see chapter 4.2), depending on the application scenario.

Signaling and Feedback

The code reader gives the user immediate feedback on the status of the reading:

- Audible: A signal tone confirms the read operation.
- Optical (on the device): The LED indicator shows the operating status.
- Electrical (outputs): Digital switching outputs signal the result to the control system:
 - Good signal: Code read successfully
 - Bad signal: Code not read

Automatic storage of error images

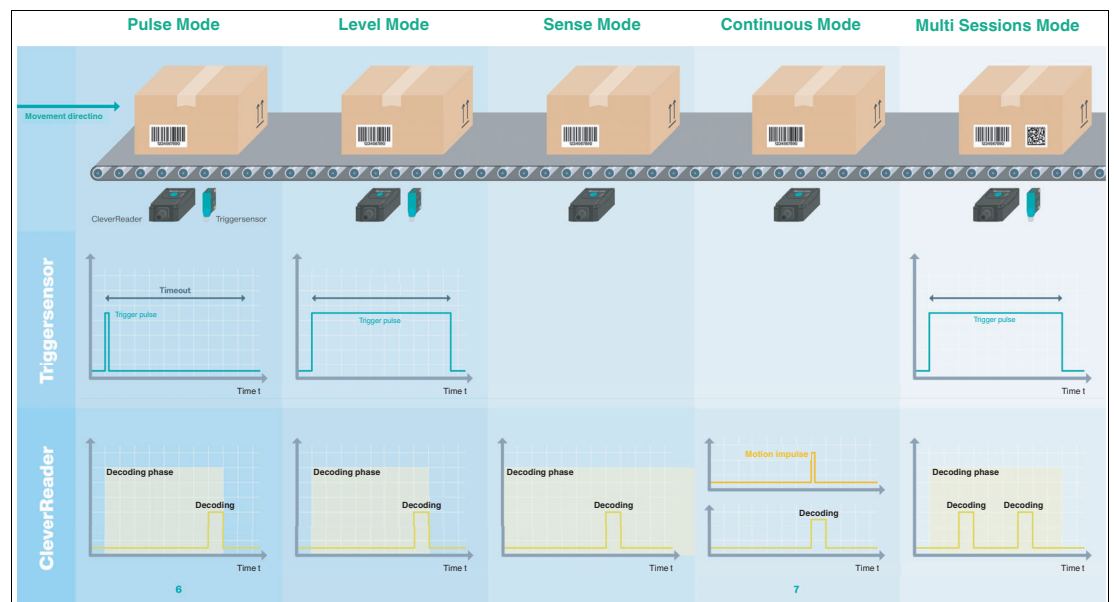
To support error analysis, the code reader automatically saves error images:

- If a trigger is triggered but no valid code can be read within the defined time, the code reader saves the current camera image.
- These images can be used later for root cause analysis, e.g., in case of hidden or damaged codes.

4.2 Operating Modes

The code reader supports various operating modes that enable optimal detection of codes depending on the application scenario:

Mode	Description
Level Mode	The code reader remains in the read operation for as long as a trigger signal is present or triggered.
Sense Mode	Code reading via motion-controlled detection with adjustable sensitivity
Continuous Mode	Continuously activated trigger
Pulse Mode	Decoding is started by a one-time, short trigger event and remains active for a defined period of time until a timeout is reached (quick one-time scans without continuous activation).
Multi-Session Mode	Decoding several different codes as long as the trigger is active.



Level Mode is the only operating mode that can be used with both a hardware and a software trigger. If a software trigger is to be used, Level Mode must be activated.

The Pulse Mode and Multi Session Mode, however, strictly require an external trigger.

4.2.1 Level Mode

Level mode is ideal for reading codes that are located in different positions. Applying the trigger signal starts a decoding process that remains active until a code has been successfully read or the trigger signal is set to "Low".

Level mode can be operated using either a hardware trigger or a software trigger. When using a software trigger, the [Decode Session Timeout] must be configured. This parameter defines the maximum duration during which the software trigger remains active while attempting to read a code.

If this parameter is set to 0, the timeout is unlimited and the software trigger remains active until a successful read occurs.

The parameter must be saved on the code reader before activation.

4.2.2 Sense Mode

In sense mode, the code reader has various trigger types that can be used to trigger a scan automatically. The process remains active until a code is successfully scanned or the set **time limit (Decode Session Timeout)** is reached.

Trigger Types

- One option is the **Image-Change-Trigger**: In this case, the code reader starts automatically as soon as the captured image changes.
- Another type of trigger is the **IR-Proximity-Trigger**. The code reader triggers as soon as a code reaches the sensing range of the built-in IR sensor (see Figure 4.1 below).

Fine-tuning the Code Reader

- **Image Change Trigger Sensitivity**: This parameter determines how sensitively the code reader reacts to changes in the captured images. A choice of 20 sensitivity levels is available. The smaller the value the higher the sensitivity, so even small image changes are sufficient to trigger the code reader. A larger value reduces the sensitivity accordingly.
- **Sensitivity of the IR Sensor**: This parameter determines the sensitivity of the code reader when codes are detected. There are ten setting levels available. A smaller value increases the sensitivity, while a larger value reduces the sensitivity.
- **Reread Timeout**: The reread timeout prevents the same code from being read more than once within a defined period of time. The interval between two readings of the same code can be set flexibly in 1 ms increments from 0 to 3,600,000 ms.
- **Image Stabilization Timeout**: This parameter defines the time that the code reader takes after decoding a code to adapt to the ambient conditions before it starts searching for the next code. The setting can be programmed in 1 ms increments and within a value range of 0 ms to 3000 ms.

Trigger range of the IR Sensor

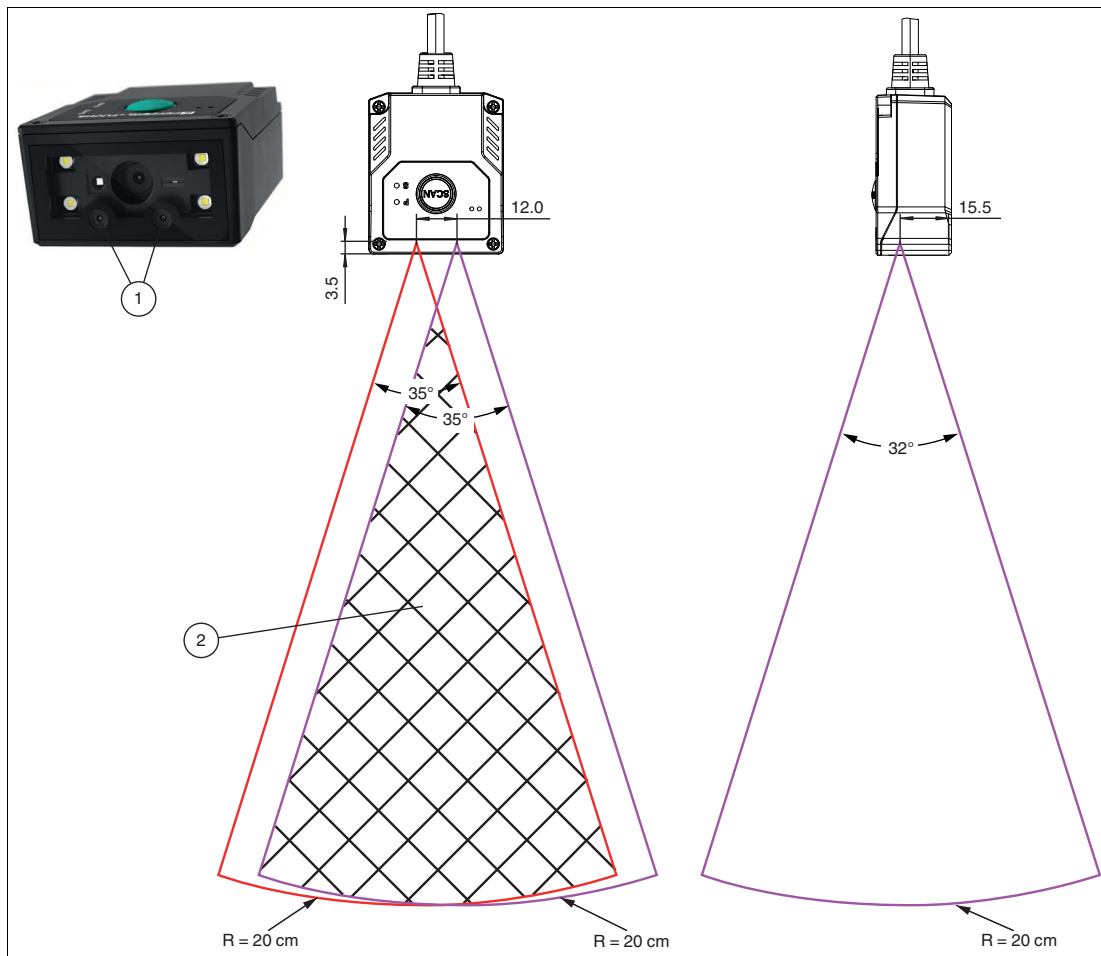


Figure 4.1

2026-02

1. IR sensor
2. Trigger range

The trigger range of the IR sensor defines the range in which the code reader can detect a code and automatically trigger the scan. If the code reader is in sense mode, the IR sensor activates the scanning process within this range as soon as a code is detected.



Note

If the code reader's IR sensors are blocked or covered, sense mode may not function properly.

4.2.3 Continuous Mode

Continuous mode is designed for continuous scanning. The code reader automatically starts one decoding process after the other. Code detection can be interrupted or resumed by briefly pressing the trigger. Even in this mode, the **reread-timeout function** prevents the same code from being read repeatedly within a certain period of time.

4.2.4 Pulse Mode

Pulse mode is activated by briefly actuating the trigger (or trigger signal) and then releasing it again. The scanning process starts after release and continues until a code is decoded or the configured **time limit (Decode Session Timeout)** is reached.

4.2.5 Multi-Session Mode

In multi-session mode, several different codes can be read within a single detection process. Decoding processes are started continuously as long as the trigger signal is present. The process ends automatically as soon as the trigger signal is reset to "Low". Within a run, the same code is not redetected.

5 Configuration

5.1 Overview

Three configuration methods are available for the code reader: configuration via control codes, command-controlled programming, and programming using the configuration software.

Control Codes

The code reader can be configured using control codes. Control codes allow direct configuration without using a PC.

All user-programmable functions and options are described in the following sections along with the corresponding control codes or commands.

Programming commands

Another option is to configure the code reader via serial commands sent by the host.

For this purpose, users can develop a program that transmits the corresponding command character strings to the code reader in order to set the desired device settings.

Configuration Software

In addition to the two methods mentioned above, the CleverReader Configurator configuration software offers a convenient way to configure the code reader.

The configuration software is a Windows-based application. It enables the following:

- access to decoded data,
- the display and management of captured images, and
- the comprehensive configuration of the code reader.

5.2 CleverReader Configuration

The configuration interface is used to set up, adapt, and monitor the code reader. It provides access to centralized device settings, management features, and system information. The interface is divided into several menus that can be accessed via a clear navigation structure.

The software is compatible with current operating systems.



Downloading and Starting the Configuration Software

You can download the configuration software free of charge from the respective product detail page on the internet.

1. Go to the Pepperl+Fuchs homepage at www.pepperl-fuchs.com.
2. Enter the type designation or item number of the code reader in the search field.
3. The configuration software can be found on the code reader's product detail page on the "Software" tab.
4. Unzip the downloaded installation package on your PC.
5. Start the installation program found there and follow the instructions.
6. Connect the code reader to the PC and follow the instructions on the screen.



Note

The modular converter cable, which includes a 9-pin SUB-D socket for connection to an RS-232 connection, is available as an accessory (see chapter 3.2).

5.2.1 Home Page

The currently connected code reader (1) is automatically displayed on the home page of the user interface. Clicking on the relevant tile takes you directly to the submenus.

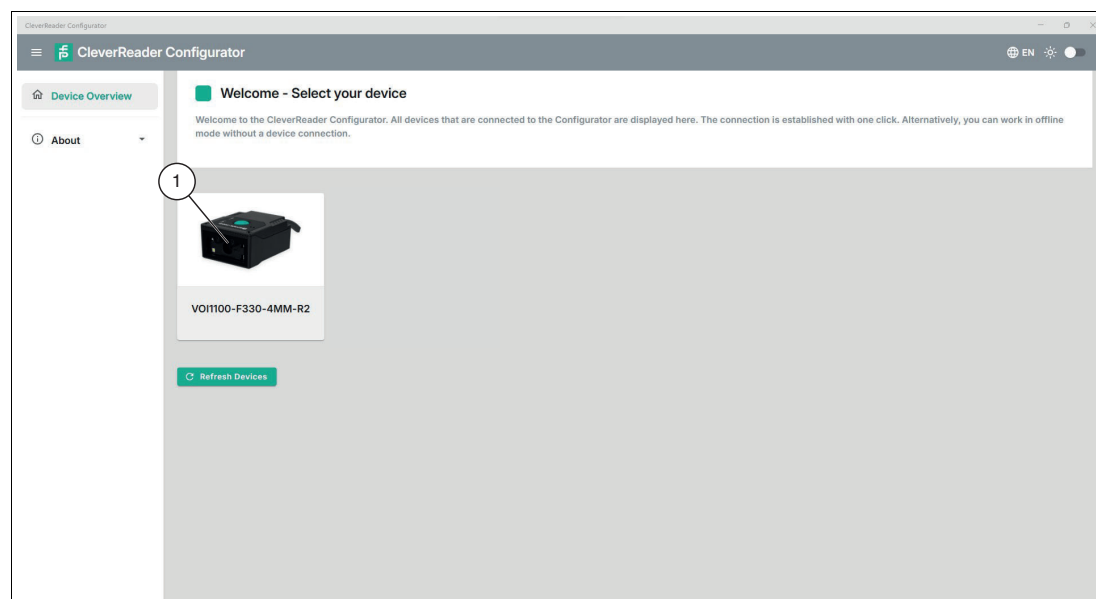


Figure 5.1 Home Page

5.2.2 Home

As soon as you have established the connection to the code reader, the Home area appears. The Home area provides a complete overview of the most important configuration functions. From here, you can access central subsections such as Setup, Action, and Maintain. The view serves as an entry point for orientation within the user interface.

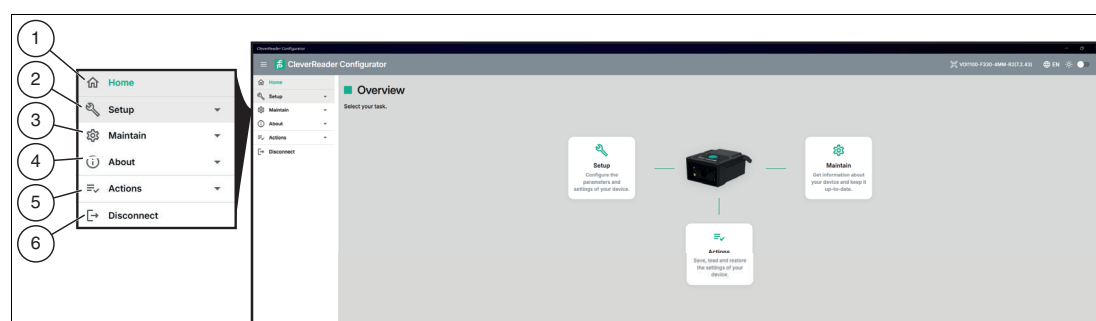


Figure 5.2

The interface is divided into six main areas, which can be accessed via a navigation bar on the side:

- Home (1)
- Setup (2)
- Maintain (3)
- About (4)
- Actions (5)
- Disconnect (6)



Note

The Disconnect menu item can be used to disconnect the connection between the configuration interface and the code reader. This area closes the active session and terminates access to the device configuration.

5.2.3 Setup

The basic operating parameters of the code reader are configured in the **Setup** menu (1). This includes options to enable various code symbologies, data formatting, and system configuration settings. There are also areas for adjusting trigger modes, communication parameters, lighting, beeps, and general system settings. A captured image can be displayed for visual inspection using the Check Result testing function.

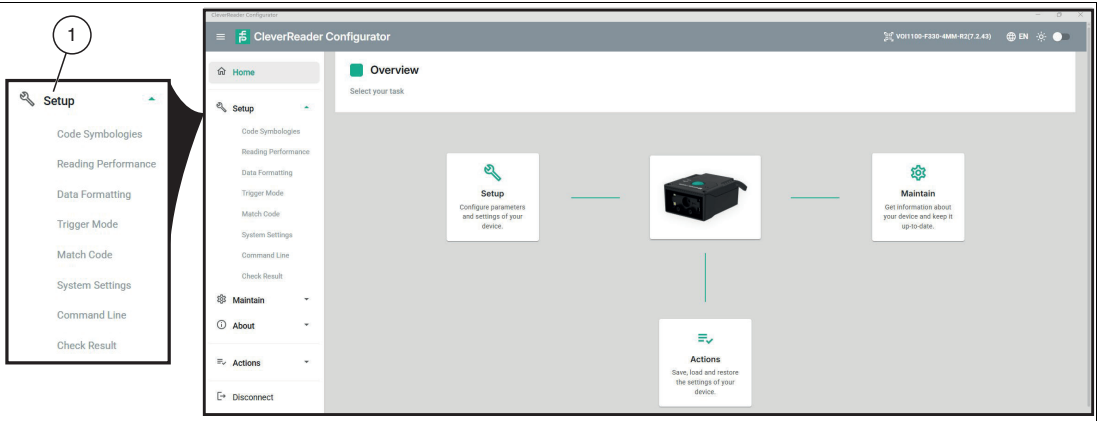


Figure 5.3

5.2.4 Maintain

The **Maintain** menu (1) is used to monitor and maintain the device. Saved image data, such as error images and most recently captured images, can be viewed in this section.

Under "Read results" the code contents that have been read are displayed with the respective read time.

In addition, features are available to perform firmware updates and view product-specific information.

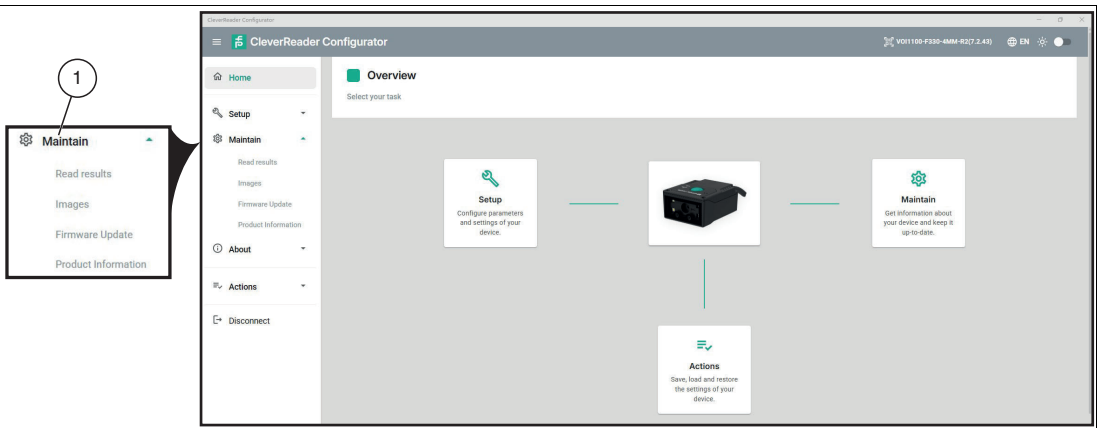


Figure 5.4

5.2.5 About

The **About** menu (1) displays basic system information, including the installed software version.



Figure 5.5 About menu

5.2.6 Actions

The **Actions** section (1) contains functions for managing and backing up device settings. Current configurations can be saved in the device or in external files and previously saved settings can be loaded here.

It is also possible to reset the device to the factory default settings.



Figure 5.6 Actions menu

5.3 Control Codes

5.3.1 General Codes

This chapter describes codes that are used for the basic control and configuration of the code reader, regardless of the specific code symbology. These codes are universal for operating the device.

5.3.1.1 Enter Setup

This puts the code reader in configuration mode, in which settings can be changed.



Figure 5.7 Control code to activate configuration mode

After successful activation, the desired control codes can be read in for configuration.

5.3.1.2 Exit Setup

Once the configuration is complete, configuration mode is terminated by reading in the following control code:



Figure 5.8 Control code to exit configuration mode

5.3.1.3 Factory Settings

By scanning the following code, the code reader can be reset to the factory default settings.

A factory reset may be necessary if:

- the code reader can no longer decode codes due to an incorrect configuration, or
- the previous settings are unknown and you want to prevent their application.



Figure 5.9 Restore all factory settings

5.3.1.4 Save/Cancel Barcodes

After scanning the numerical barcodes, you must scan the Save Barcode code to save the entry.

If you have scanned an incorrect digit, you can correct it in the following ways:

- **Cancel:** Cancels the current entry and resets the configuration to the previous state. You can then start again.
- **Delete the Last Digit:** Deletes only the last scanned digit so that you can then scan the correct digit.
- **Delete All Digits:** Deletes the entire string of digits entered so that you can re-enter the digits you want.



Figure 5.10 Save



Figure 5.11 Cancel

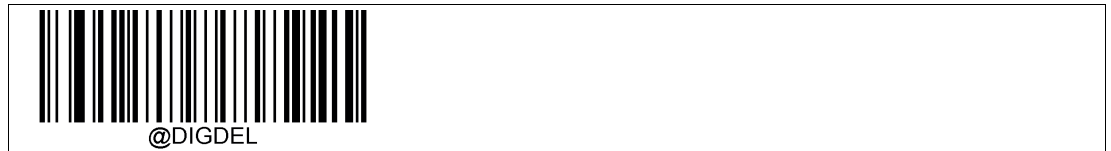


Figure 5.12 Delete the Last Digit

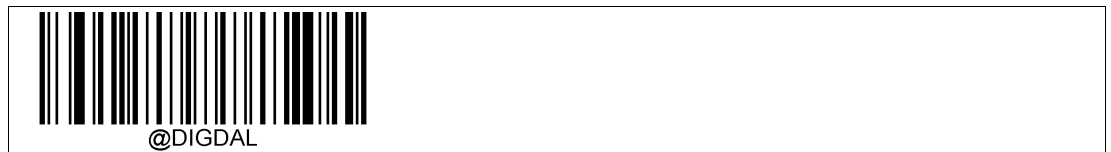


Figure 5.13 Delete All Digits

5.3.1.5

Display Mode

Normal mode: For reading codes on printed materials (e.g., paper).

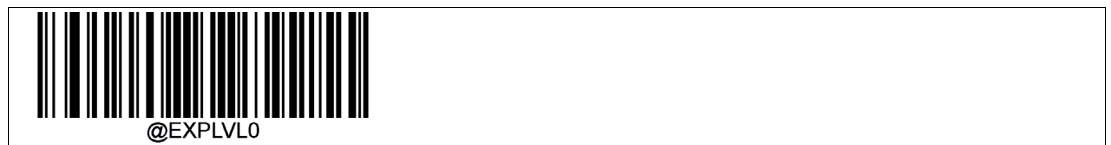


Figure 5.14 Normal mode

Screen mode: For reading codes on displays (e.g., smartphone or monitor displays).

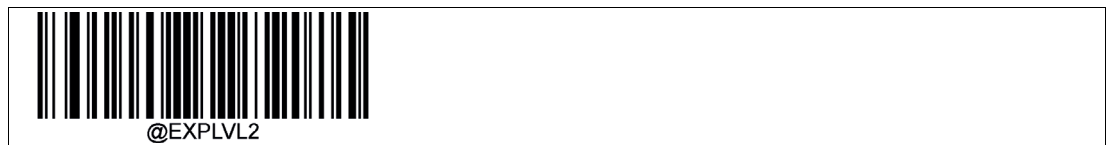


Figure 5.15 Screen mode

5.3.2

Prefix and Suffix

A one-dimensional (1-D) code can contain numbers, letters, and symbols. A two-dimensional (2-D) code can contain much more information, such as Chinese characters and other multi-byte characters. However, in real-world applications, codes do not contain all the additional information that is required, such as the code type, the detection time, and the separator. This is important in order to keep codes as short and flexible as possible.

Prefixes and suffixes are used to provide this additional information. They can be added, removed, or customized without changing the actual code data.

Enabling/Disabling All Prefixes/Suffixes

Disable all prefixes/suffixes

- Transmits the code data without any prefixes or suffixes

Enable all prefixes/suffixes

- Allows you to add a code ID prefix, AIM ID prefix, custom prefixes/suffixes, and an end character to the code data before transfer.

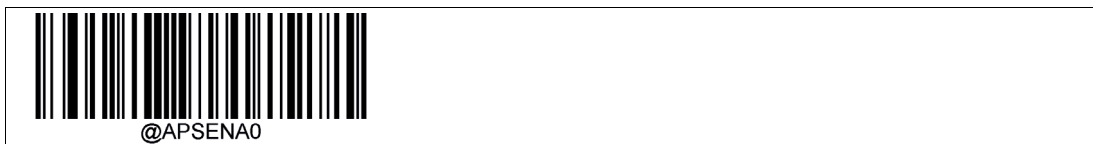


Figure 5.16 Disable all prefixes/suffixes

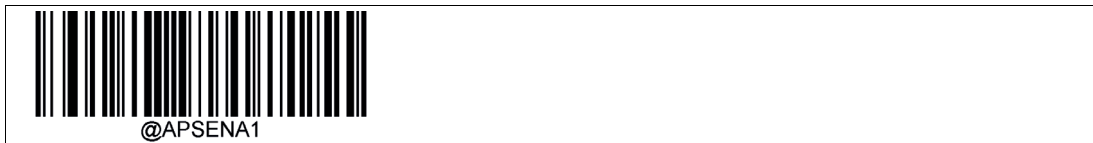


Figure 5.17 Enable all prefixes/suffixes



Figure 5.18 Code ID + custom + AIM ID



Figure 5.19 Custom + code ID + AIM ID

Custom Prefix

Enabling/Disabling Custom Prefixes

If custom prefixes are enabled, a custom prefix value can be appended to the transmitted code data. This prefix must not exceed 10 characters.

For example: If the custom prefix is "AB" and the detected code is "123", the host system receives "AB123".



Figure 5.20 Disable custom prefixes



Figure 5.21 Enable custom prefixes

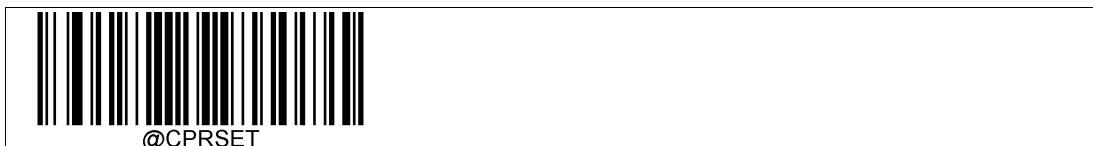


Figure 5.22 Set a custom prefix



Setting a Custom Prefix

To configure a custom prefix, scan the following in succession:

1. Scan the Enter Setup code (see chapter 5.3.1.1).

2. Scan the "Set Custom Prefix" barcode.
3. Scan the alphanumeric barcodes (see chapter 8.1) that correspond to the hexadecimal values of the desired prefix
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Enable Custom Prefix" barcode.
6. Scan the Exit Setup code (see chapter 5.3.1.2).

**Note**

A custom prefix cannot exceed 10 characters.

Custom Suffix

Enabling/Disabling Custom Suffixes

If custom suffixes are enabled, a custom suffix value can be appended to the transmitted code data. This suffix must not exceed 10 characters.

For example: If the user-defined suffix is "AB" and the detected code is "123", the host system receives "123AB".



Figure 5.23 Disable custom suffixes



Figure 5.24 Enable custom suffixes

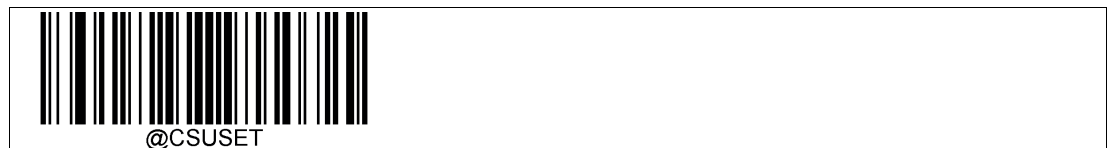


Figure 5.25 Set a custom suffix



Setting a Custom Suffix

To configure a custom suffix, scan the following in succession:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set Custom Suffix" barcode.
3. Scan the alphanumeric barcodes (see chapter 8.1) that correspond to the hexadecimal values of the desired prefix
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Enable Custom Suffix" barcode.
6. Scan the Exit Setup code (see chapter 5.3.1.2).

**Note**

A custom suffix cannot exceed 10 characters.

5.3.3 Symbology

Each symbology (code type) has specific properties. In this chapter you will find control codes for configuring the code reader so that it can recognize the various symbologies. We recommend disabling rarely used symbologies to improve the performance and efficiency of the code reader.

5.3.4 Global Settings

Enabling/Disabling All Symbologies

If the "Disable all symbologies" function is enabled, the code reader will no longer be able to read normal codes except for control codes.



Figure 5.26 Enable all symbologies



Figure 5.27 Disable all symbologies

Enabling/Disabling 1-D Symbologies



Figure 5.28 Enable 1-D symbologies



Figure 5.29 Disable 1-D symbologies

Enabling/Disabling 2-D Symbologies



Figure 5.30 Enable 2-D symbologies

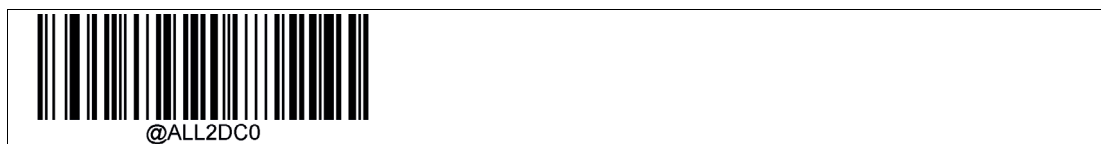


Figure 5.31 Disable 2-D symbologies

Enabling/Disabling Postal Symbolologies



Figure 5.32 Enable all postal symbolologies



Figure 5.33 Disable all postal symbolologies

5.3.5 1-D Symbolologies

5.3.5.1 Security Level

This parameter defines the decoding time required for the correct detection of a barcode.

Setting the security level has a direct effect on the read speed and error rate:

Higher security level: The rate of decoding errors is reduced, resulting in higher reliability. The reading speed is slower, however.



Figure 5.34 Security Level 1



Figure 5.35 Security Level 2



Figure 5.36 Security Level 3



Figure 5.37 Security Level 4

5.3.5.2 Code 128

Restoring Factory Settings



Figure 5.38 Restore the factory settings of Code 128

Enabling/Disabling Code 128



Figure 5.39 Enable Code 128



Figure 5.40 Disable Code 128

Setting the Length Range for Code 128

The code reader can be configured to decode only Code 128 barcodes whose length is within the defined minimum and maximum lengths (including both limits). To enable this restriction, you must set both the minimum and maximum length.



Figure 5.41 Set the minimum length (default: 1)



Figure 5.42 Set the maximum length (default: 48)

Tip

If the set minimum length is greater than the maximum length, the code reader decodes only Code 128 barcodes whose length corresponds to either the minimum or maximum length. If the minimum length and maximum length are identical, the code reader decodes only Code 128 barcodes of exactly this length.

Configuring the code reader for Code 128 barcodes with 8 ... 12 characters

For example, to ensure that the code reader only recognizes Code 128 barcodes with 8 to 12 characters, you must set the corresponding parameters for the minimum and maximum length. To do so, proceed as follows:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).

8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.3

EAN-8

Restoring Factory Settings



Figure 5.43 Restore the factory settings of EAN-8

Enabling/Disabling EAN-8



Figure 5.44 Enable EAN-8



Figure 5.45 Disable EAN-8

Transmitting the Check Digit

EAN-8 consists of eight digits, with the last digit being a check digit to verify data integrity.



Figure 5.46 Transmit EAN-8 check digit



Figure 5.47 Do not transmit EAN-8 check digit

5.3.5.4

EAN-13

Restoring Factory Settings



Figure 5.48 Restore the factory settings of EAN-13

Enabling/Disabling EAN-13



Figure 5.49 Enable EAN-13



Figure 5.50 Disable EAN-13

Transmitting the Check Digit

EAN-13 consists of eight digits, with the last digit being a check digit to verify data integrity.

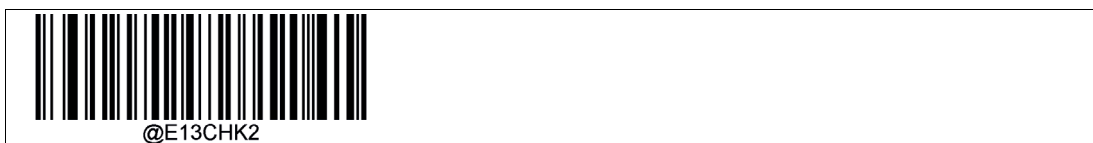


Figure 5.51 Transmit EAN-13 check digits



Figure 5.52 Do not transmit the EAN-13 check digit

5.3.5.5

UPC-E0

Restoring Factory Settings



Figure 5.53 Restore the factory settings of UPC-E

Enabling/Disabling UPC-E0



Figure 5.54 Enable UPC-E0



Figure 5.55 Disable UPC-E0

Transmitting the Check Digit

UPC-E consists of eight digits, with the last digit being a check digit to verify data integrity.



Figure 5.56 Transmit UPC-E check digit



Figure 5.57 Do not transmit UPC-E check digit

5.3.5.6

UPC-A

Restoring Factory Settings

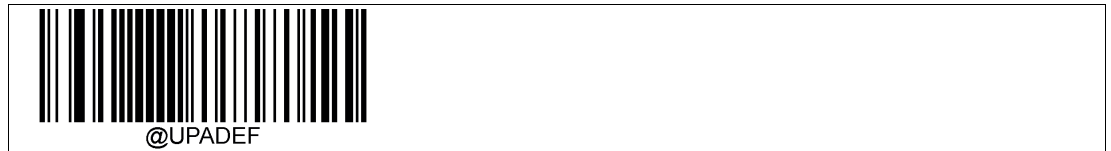


Figure 5.58 Restore the factory settings of UPC-A

Enabling/Disabling UPC-A



Figure 5.59 Enable UPC-A



Figure 5.60 Disable UPC-A

Transmitting the Check Digit

UPC-A consists of 13 digits, with the last digit being a check digit to verify data integrity.



Figure 5.61 Transmit UPC-A check digit

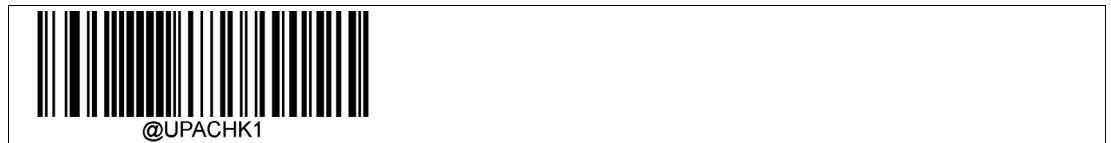


Figure 5.62 Do not transmit UPC-A check digit

5.3.5.7

Coupon

UPC-A/EAN-13 with Extended Coupon Code

The code reader supports the following combinations of coupon code and extended coupon code:

- UPC-A (starting with "5") + GS1-128
- UPC-A (starting with "5") + GS1 DataBar
- EAN-13 (beginning with "99") + GS1-128

Use the appropriate barcode below to enable or disable UPC-A/EAN-13 with an extended coupon code. In the default state (off), the code reader treats coupon codes and extended coupon codes as individual barcodes

Option: Allow Linking

When you scan the "Allow linking" barcode, the code reader transfers both the coupon code and the extended coupon code as separate symbologies in a single scan. If only one code is detected, the scanner transfers the coupon code read first.

Option: Linking Required

If you scan the "Linking Required" barcode, the code reader must detect both codes in a single read operation. No data is transferred if both codes have not been read successfully.

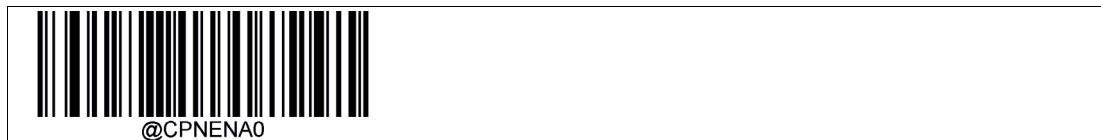


Figure 5.63 Coupon off



Figure 5.64 Allow linking



Figure 5.65 Linking required

Note**Use of UPC-A Coupon Function**

When using the UPC-A Coupon function, ensure that the "system characters" or "system characters and country code" option is selected for the "Transmit UPC-A preamble characters" function.

Output of GS1 DataBar Coupon Codes

If a coupon contains both UPC and GS1 DataBar codes, you can specify that only the data of the GS1 DataBar code is read and transferred. To do this, scan the "GS1 output on" barcode to record and output only the GS1 data bar.

If "GS1 output off" is enabled, coupons with UPC and GS1 DataBar codes are transferred according to the "UPC-A/EAN-13 with extended coupon code" function setting.



Figure 5.66 GS1 output off



Figure 5.67 GS1 output on





Note

Use of UPC-A Coupon Function

When using the UPC-A Coupon function, ensure that the "system characters" or "system characters and country code" option is selected for the "Transmit UPC-A preamble characters" function.

5.3.5.8

Interleaved 2 of 5

Restoring Factory Settings



Figure 5.68 Restore the factory settings of Interleaved 2 of 5

Enabling/Disabling Interleaved 2 of 5

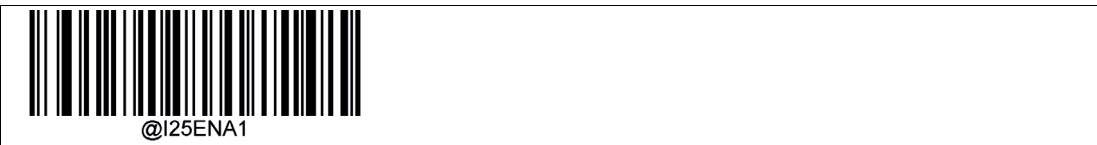


Figure 5.69 Enable Interleaved 2 of 5



Figure 5.70 Disable Interleaved 2 of 5

Setting the Length Range for Interleaved 2 of 5

The code reader can be configured to decode Interleaved 2 of 5 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.

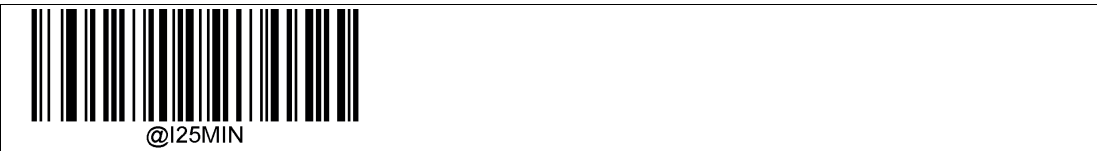


Figure 5.71 Set the minimum length (default: 6)



Figure 5.72 Set the maximum length (default: 80)



Note

If the minimum length is greater than the maximum length, the code reader decodes only Interleaved 2 of 5 barcodes whose length is equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only barcodes with exactly this length are decoded.



Set the code reader to 8 to 12 characters

To configure the code reader to decode Interleaved 2 of 5 barcodes between 8 and 12 characters:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.9

ITF-14

ITF-14 is a special form of the ITF-14 barcode with a total length of 14 characters, with the last character being the check digit.

Priority rule for ITF-14: For ITF-14 barcodes with 14 characters and a check digit as the last character, the ITF-14 settings have a higher priority than the general ITF-14 configurations.

Restoring Factory Settings



Figure 5.73 Restore the factory settings of ITF-14

Enabling/Disabling ITF-14

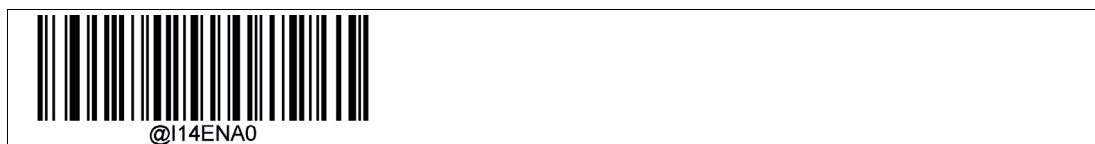


Figure 5.74 Disable ITF-14



Figure 5.75 Enable ITF-14, but do not transfer check digits



Figure 5.76 Enable ITF-14 and transfer check digits

Note

If ITF-14 is enabled and Interleaved 2 of 5 is disabled, the scanner decodes only Interleaved 2 of 5 barcodes that are 14 characters long and whose last character is the check digit.

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5.3.5.10 ITF-6

ITF-6 is a special version of the Interleaved 2 of 5 barcode with a total length of 6 characters, with the last character being the check digit.

Priority rule for ITF-6: For Interleaved 2 of 5 barcodes with 6 characters and one check digit as the last character, the ITF-6 settings take precedence over the general Interleaved 2 of 5 configurations.

Restoring Factory Settings

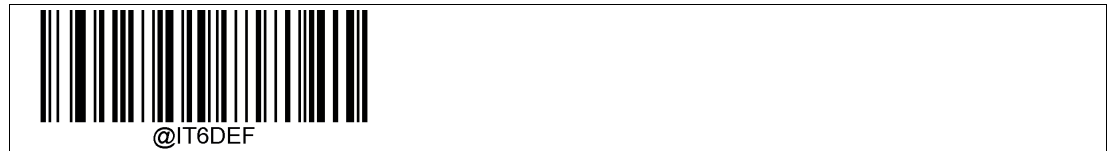


Figure 5.77 Restore the factory settings of ITF-6

Enabling/Disabling ITF-6



Figure 5.78 Disable ITF-6

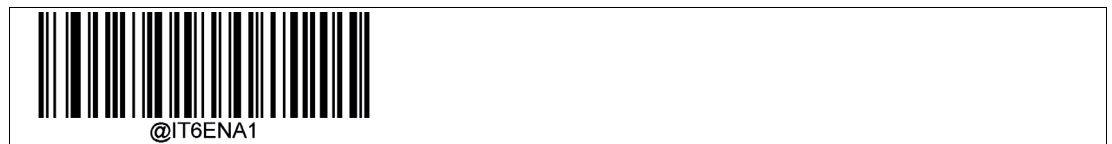


Figure 5.79 Enable ITF-6, but do not transfer check digits



Figure 5.80 Enable ITF-6 and transfer check digits



Note

If ITF-6 is enabled and Interleaved 2 of 5 is disabled, the scanner decodes only Interleaved 2 of 5 barcodes that are 6 characters long and whose last character is the check digit.

5.3.5.11 Matrix 2 of 5

Matrix 2 of 5 is a special version of the Interleaved 2 of 5 barcode with a total length of 6 characters, with the last character being the check digit.

Priority rule for Matrix 2 of 5: For Interleaved 2 of 5 barcodes with 6 characters and one check digit as the last character, the Matrix 2 of 5 settings take precedence over the general Interleaved 2 of 5 configurations.

Restoring Factory Settings



Figure 5.81 Restore the factory settings of Matrix 2 of 5

Enabling/Disabling Matrix 2 of 5



Figure 5.82 Enable Matrix 2 of 5



Figure 5.83 Disable Matrix 2 of 5

Note

If the code reader does not recognize Matrix 2 of 5 barcodes, scan the "Enter Setup" barcode and then the "Enable Matrix 2 of 5" barcode to enable this symbology.

Setting the Length Range for Matrix 2 of 5

The code reader can be configured to decode Matrix 2 of 5 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.84 Set the minimum length (default: 4)

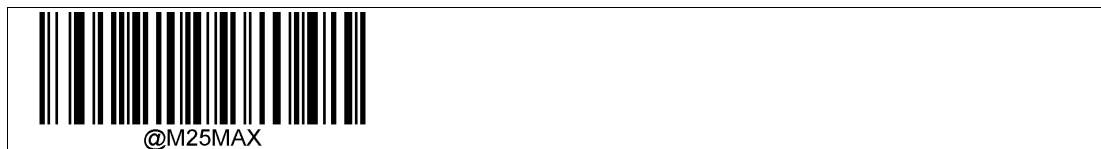


Figure 5.85 Set the maximum length (default: 8)

Note

If the minimum length is greater than the maximum length, the scanner decodes only Matrix 2 of 5 barcodes whose length is equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Matrix 2 of 5 barcodes with exactly this length are decoded.

Configuring the Scanner for Matrix 2 of 5 Barcodes with 8 to 12 Characters

To set the scanner to decode Matrix 2 of 5 barcodes with a length between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.

6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.12 Code 39

Restoring Factory Settings

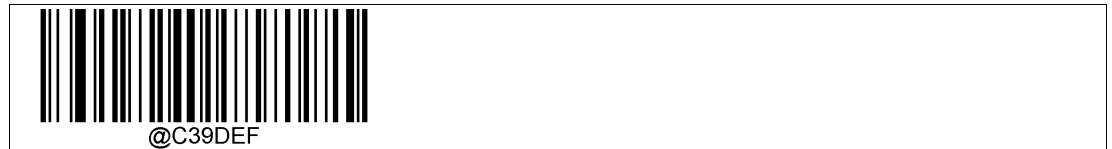


Figure 5.86 Restore the factory settings of Code 39

Enabling/Disabling Code 39



Figure 5.87 Enable Code 39



Figure 5.88 Disable Code 39



Note

If the code reader does not recognize Code 39 barcodes, scan the "Enter Setup" barcode and then the "Enable Code 39" barcode to enable this symbology.

Setting the Length Range for Code 39

The code reader can be configured to decode Code 39 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.89 Set the minimum length (default: 1)

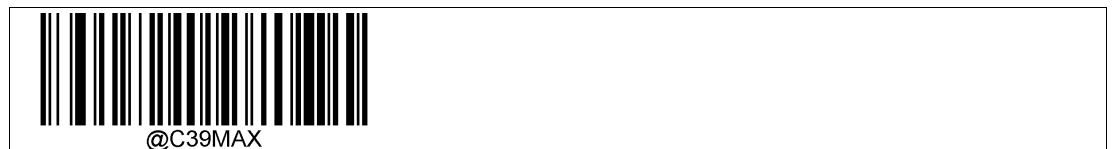


Figure 5.90 Set the maximum length (default: 48)



Note

If the minimum length is greater than the maximum length, the scanner decodes only Code 39 barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Code 39 barcodes with exactly this length are decoded.



Configuring the Scanner for Code 39 Barcodes with 8 to 12 Characters

To set the scanner to decode Code 39 barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.13

Codabar

Restoring Factory Settings

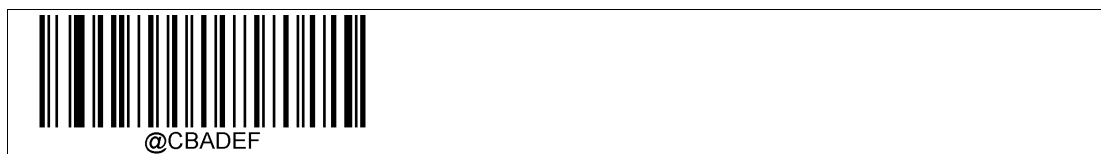


Figure 5.91 Restore the factory settings of Codabar

Enabling/Disabling Codabar



Figure 5.92 Enable Codabar



Figure 5.93 Disable Codabar



Note

If the code reader does not recognize Codabar barcodes, scan the "Enter Setup" barcode and then the "Enable Codabar" barcode to activate this symbology.

Setting the Length Range for Codabar

The code reader can be configured to decode Codabar barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.94 Set the minimum length (default: 2)

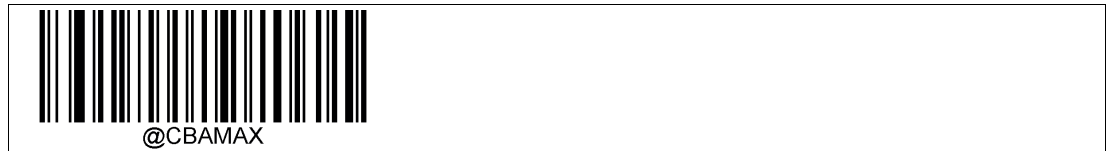


Figure 5.95 Set the maximum length (default: 60)



Note

If the minimum length is greater than the maximum length, the scanner decodes only Codabar barcodes whose length is equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Codabar barcodes with exactly this length are decoded.



Configuring Scanners for Codabar Barcodes with 8 to 12 Characters

To set the scanner to decode Codabar barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.14 Code 93

Restoring Factory Settings



Figure 5.96 Restore the factory settings of Code 93

Enabling/Disabling Code 93



Figure 5.97 Enable Code 93



Figure 5.98 Disable Code 93

Note

If the code reader does not recognize Code 93 barcodes, scan the "Enter Setup" barcode and then the "Enable Code 93" barcode to activate this symbology.

Setting the Length Range for Code 93

The code reader can be configured to decode Code 93 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.99 Set the minimum length (default: 1)

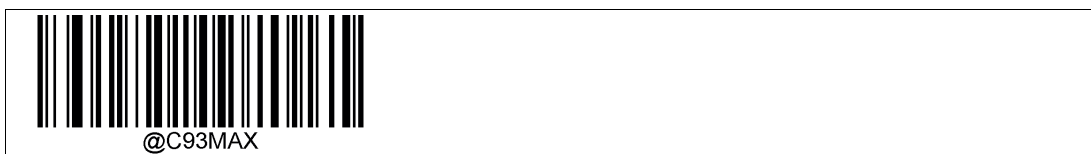


Figure 5.100 Set the maximum length (default: 48)

Note

If the minimum length is greater than the maximum length, the scanner decodes only Code 93 barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Code 93 barcodes with exactly this length are decoded.

Configuring the Scanner for Code 93 Barcodes with 8 to 12 Characters

To set the scanner to decode Code 93 barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.15 China Post 25

Restoring Factory Settings

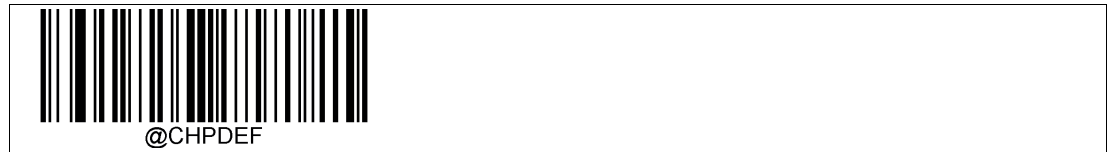


Figure 5.101 Restore the factory settings of China Post 25

Enabling/Disabling China Post 25

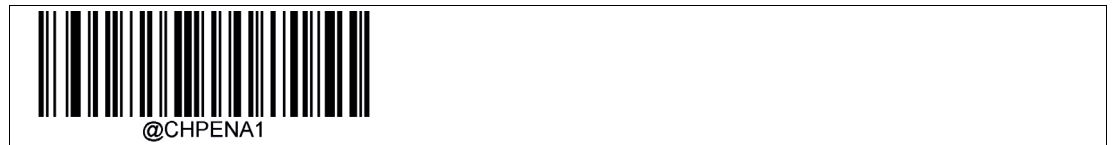


Figure 5.102 Enable China Post 25



Figure 5.103 Disable China Post 25



Note

If the code reader does not recognize China Post 25 barcodes, scan the "Enter Setup" barcode and then the "Enable China Post 25" barcode to enable this symbology.

Setting the Length Range for China Post 25

The code reader can be configured to decode China Post 25 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.104 Set the minimum length (default: 1)



Figure 5.105 Set the maximum length (default: 48)



Note

If the minimum length is greater than the maximum length, the scanner decodes only China Post 25 barcodes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only China Post 25 barcodes with exactly this length are decoded.



Configuring the Scanner for China Post 25 Barcodes with 8 to 12 Characters

To set the scanner to decode China Post 25 barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.16 GS1-128 (UCC/EAN-128)

Restoring Factory Settings



Figure 5.106 Restore the factory settings of GS1-128

Enabling/Disabling GS1-128



Figure 5.107 Enable GS1-128

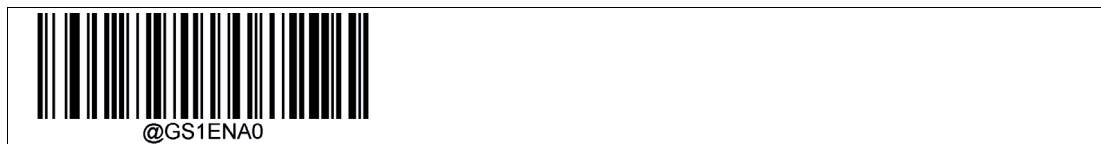


Figure 5.108 Disable GS1-128

Note

If the code reader does not recognize GS1-128 barcodes, scan the "Enter Setup" barcode and then the "Enable GS1-128" barcode to enable this symbology.

Setting the Length Range for GS1-128

The code reader can be configured to decode GS1-128 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.109 Set the minimum length (default: 1)





Figure 5.110 Set the maximum length (default: 48)



Note

If the minimum length is greater than the maximum length, the scanner decodes only GS1-128 barcodes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only GS1-128 barcodes with exactly this length are decoded.



Configuring the Scanner for GS1-128 Barcodes with 8 to 12 Characters

To set the scanner to decode GS1-128 barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.17 GS1 DataBar (RSS)

Restoring Factory Settings



Figure 5.111 Restore the factory settings of GS1 DataBar

Enabling/Disabling GS1 DataBar

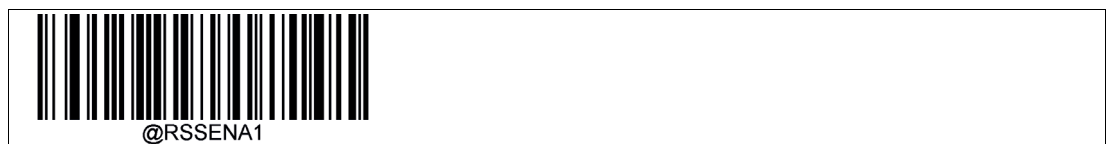


Figure 5.112 Enable GS1 DataBar



Figure 5.113 Disable GS1 DataBar

**Note**

If the code reader does not recognize GS1 DataBar code barcodes, scan the "Enter Setup" barcode and then the "Enable GS1 DataBar" barcode to activate this symbology.

Transmitting application identifier "01"

Figure 5.114 Transmit application identifier 01



Figure 5.115 Application identifier 01 not transmitted

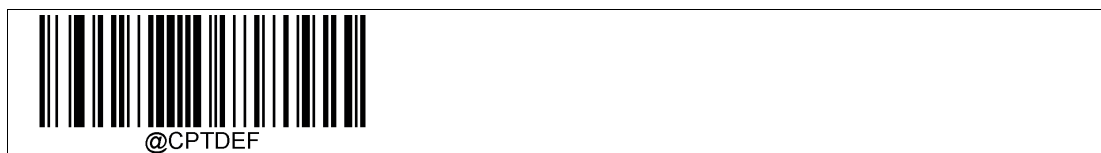
5.3.5.18**GS1 Composite (EAN·UCC Composite)****Restoring Factory Settings**

Figure 5.116 Restore the factory settings of GS1 Composite

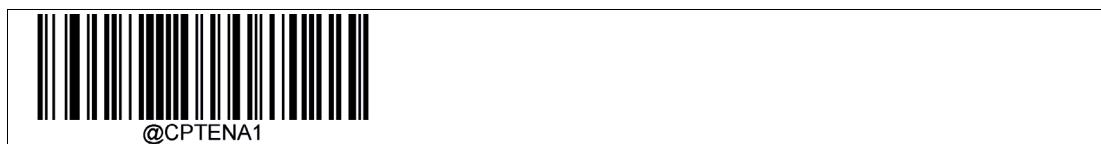
Enabling/Disabling GS1 Composite

Figure 5.117 Enable GS1 Composite



Figure 5.118 Disable GS1 Composite

**Note**

If the code reader does not recognize GS1-composite barcodes, scan the "Enter Setup" barcode and then the "Enable GS1 Composite" barcode to enable this symbology.

Enabling/Disabling UPC/EAN composite

Figure 5.119 Enable UPC/EAN composite



Figure 5.120 Disable UPC/EAN composite

5.3.5.19 **Code 11**
Restoring Factory Settings



Figure 5.121 Restore the factory settings of Code 11

Enabling/Disabling Code 11



Figure 5.122 Enable Code 11



Figure 5.123 Disable Code 11



Note

If the code reader does not recognize Code 11 barcodes, scan the "Enter Setup" barcode and then the "Enable Code 11" barcode to activate this symbology.

Setting the Length Range for Code 11

The code reader can be configured to decode Code 11 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.

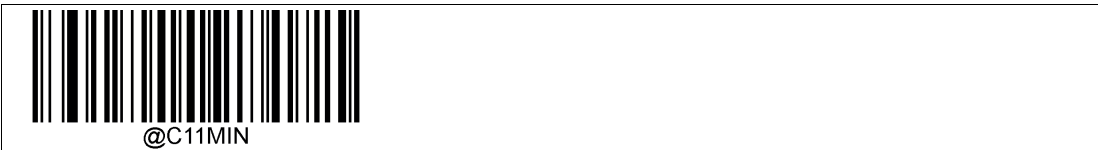


Figure 5.124 Set the minimum length (default: 4)



Figure 5.125 Set the maximum length (default: 48)



Note

If the minimum length is greater than the maximum length, the scanner decodes only Code 11 barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Code 11 barcodes with exactly this length are decoded.



Configuring the Scanner for Code 11 Barcodes with 8 to 12 Characters

To set the scanner to decode Code 11 barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.20

ISBN

Restoring Factory Settings



Figure 5.126 Restore the factory settings of ISBN

Enabling/Disabling ISBN



Figure 5.127 Enable ISBN



Figure 5.128 Disable ISBN



Note

If the code reader does not recognize ISBN barcodes, scan the "Enter Setup" barcode and then the "Enable ISBN" barcode to enable this symbology.

Setting ISBN format



Figure 5.129 ISBN-10



Figure 5.130 ISBN-13

5.3.5.21 **ISSN**
Restoring Factory Settings



Figure 5.131 Restore the factory settings of ISSN

Enabling/Disabling ISSN

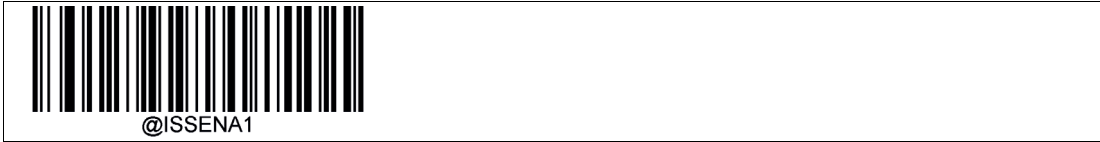


Figure 5.132 Enable ISSN



Figure 5.133 Disable ISSN



Note
If the code reader does not recognize ISSN barcodes, scan the "Enter Setup" barcode and then the "Enable ISSN" barcode to enable this symbology.

5.3.5.22 **Industrial 25**
Restoring Factory Settings



Figure 5.134 Restore the factory settings of Industrial 25

Enabling/Disabling Industrial 25



Figure 5.135 Enable Industrial 25



Figure 5.136 Disable Industrial 25

2026-02

**Note**

If the code reader does not recognize Industrial 25 barcodes, scan the "Enter Setup" barcode and then the "Enable Industrial 25" barcode to activate this symbology.

Setting the Length Range for Industrial 25

The code reader can be configured to decode Industrial 25 barcodes only if their length is within the specified minimum and maximum values (including the limit values). To do this, specify the desired minimum and maximum lengths.



Figure 5.137 Set the minimum length (default: 6)



Figure 5.138 Set the maximum length (default: 48)

**Note**

If the minimum length is greater than the maximum length, the scanner decodes only Industrial 25 barcodes whose length corresponds to the minimum or maximum length. If the minimum and maximum lengths are identical, only Industrial 25 barcodes with exactly this length are decoded.



Configuring the Scanner for Industrial 25 Barcodes with 8 to 12 Characters

To set the scanner to decode Industrial 25 barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.23 Standard 25

Restoring Factory Settings

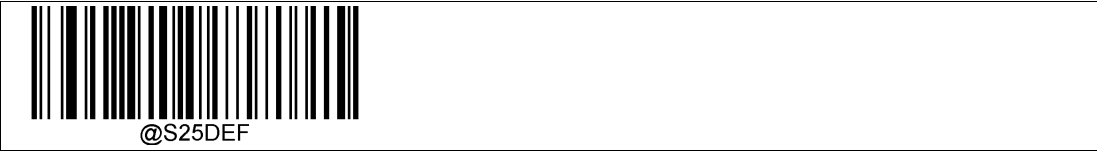


Figure 5.139 Restore the factory settings of Standard 25

Enabling/Disabling Standard 25



Figure 5.140 Enable Standard 25

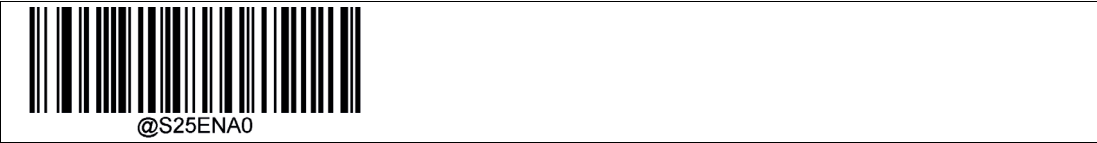


Figure 5.141 Disable Standard 25



Note

If the code reader does not recognize Standard 25 barcodes, scan the "Enter Setup" barcode and then the "Enable Standard 25" barcode to activate this symbology.

Setting the Length Range for Standard 25

The code reader can be configured to decode Standard 25 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.142 Set the minimum length (default: 6)



Figure 5.143 Set the maximum length (default: 48)



Note

If the minimum length is greater than the maximum length, the scanner decodes only Standard 25 barcodes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Standard 25 barcodes with exactly this length are decoded.



Configuring the Scanner for Standard 25 Barcodes with 8 to 12 Characters

To set the scanner to decode Standard 25 barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.24

Plessey**Restoring Factory Settings**

Figure 5.144 Restore the factory settings of Plessey

Enabling/Disabling Plessey

Figure 5.145 Enable Plessey

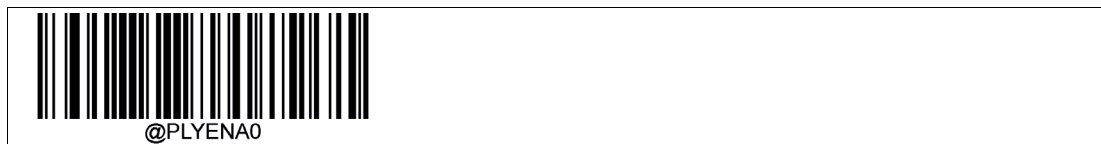


Figure 5.146 Disable Plessey

Note

If the code reader does not recognize Plessey barcodes, scan the "Enter Setup" barcode and then the "Enable Plessey" barcode to enable this symbology.

Setting the Length Range for Plessey

The code reader can be configured to decode Plessey barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.147 Set the minimum length (default: 4)





Figure 5.148 Set the maximum length (default: 48)



Note

If the minimum length is greater than the maximum length, the scanner decodes only Plessey barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Plessey barcodes of exactly this length are decoded.



Configuring the Scanner for Plessey Barcodes with 8 to 12 Characters

To set the scanner to decode Plessey barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.25 MSI Plessey

Restoring Factory Settings



Figure 5.149 Restore the factory settings of MSI-Plessey

Enabling/Disabling MSI-Plessey



Figure 5.150 Enable MSI Plessey

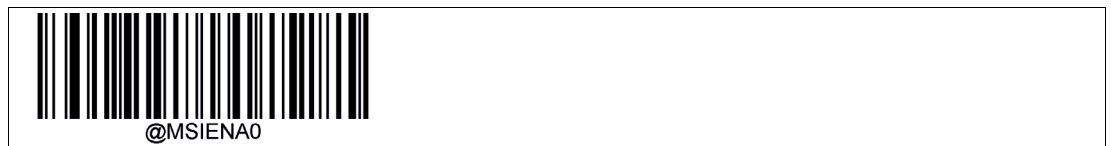


Figure 5.151 Disable MSI Plessey

**Note**

If the code reader does not recognize MSI-Plessey barcodes, scan the "Enter Setup" barcode and then the "Enable MSI Plessey" barcode to enable this symbology.

Setting the Length Range for MSI Plessey

The code reader can be configured to decode MSI Plessey barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.152 Set the minimum length (default: 4)

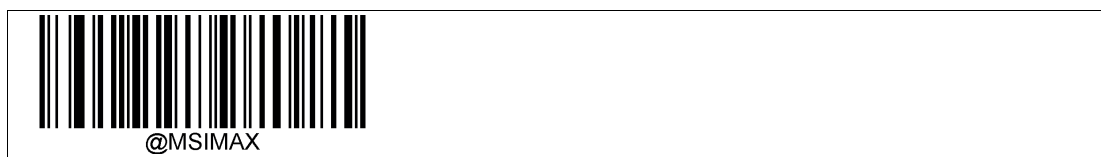


Figure 5.153 Set the maximum length (default: 48)

**Note**

If the minimum length is greater than the maximum length, the scanner decodes only MSI-Plessey barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are the same, only MSI-Plessey barcodes of exactly this length are decoded.



Configuring the Scanner for MSI-Plessey Barcodes with 8 to 12 Characters

To set the scanner to decode MSI-Plessey barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.26 AIM 128

Restoring Factory Settings

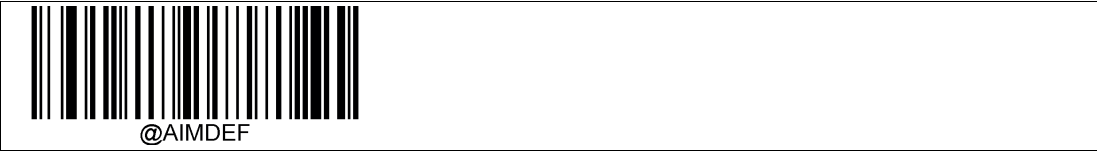


Figure 5.154 Restore the factory settings of AIM 128

Enabling/Disabling AIM 128



Figure 5.155 Enable AIM 128

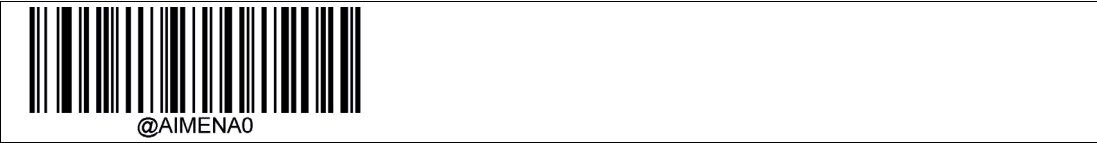


Figure 5.156 Disable AIM 128



Note

If the code reader does not recognize AIM 128 barcodes, scan the "Enter Setup" barcode and then the "Enable AIM 128" barcode to enable this symbology.

Setting the Length Range for AIM 128

The code reader can be configured to decode AIM 128 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.157 Set the minimum length (default: 1)



Figure 5.158 Set the maximum length (default: 48)



Note

If the minimum length is greater than the maximum length, the scanner decodes only AIM 128 barcodes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only AIM 128 barcodes with exactly this length are decoded.



Configuring the Scanner for AIM 128 Barcodes with 8 to 12 Characters

To set the scanner to decode AIM 128 barcodes between 8 and 12 characters in length, perform the following steps:

- 1. Scan the Enter Setup code (see chapter 5.3.1.1).

2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.27

ISBT 128**Restoring Factory Settings**

Figure 5.159 Restore the factory settings of ISBT 128

Enabling/Disabling ISBT 128

Figure 5.160 Enable ISBT 128

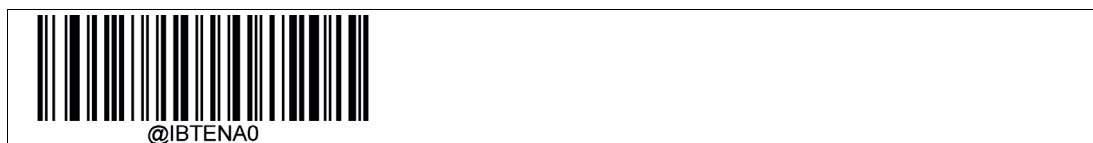


Figure 5.161 Disable ISBT 128

Note

If the code reader does not recognize ISBT 128 barcodes, scan the "Enter Setup" barcode and then the "Enable ISBT 128" barcode to enable this symbology.

5.3.5.28

Code 49**Restoring Factory Settings**

Figure 5.162 Restore the factory settings of Code 49

Enabling/Disabling Code 49

Figure 5.163 Enable Code 49



Figure 5.164 Disable Code 49

**Note**

If the code reader does not recognize Code 49 barcodes, scan the "Enter Setup" barcode and then the "Enable Code 49" barcode to activate this symbology.

Setting the Length Range for Code 49

The code reader can be configured to decode Code 49 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.165 Set the minimum length (default: 1)



Figure 5.166 Set the maximum length (default: 80)

**Note**

If the minimum length is greater than the maximum length, the scanner decodes only Code 49 barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Code 49 barcodes with exactly this length are decoded.

**Configuring the Scanner for Code 49 Barcodes with 8 to 12 Characters**

To set the scanner to decode Code 49 barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.5.29 Code 16K

Restoring Factory Settings



Figure 5.167 Restore the factory settings of Code 16K

Enabling/Disabling Code 16K



Figure 5.168 Enable Code 16K



Figure 5.169 Disable Code 16K

Note

If the code reader does not recognize 16K barcodes, scan the "Enter Setup" barcode and then the "Enable Code 16K" barcode to enable this symbology.

Setting the Length Range for Code 16K

The code reader can be configured to decode 16K barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.170 Set the minimum length (default: 1)



Figure 5.171 Set the maximum length (default: 80)

Note

If the minimum length is greater than the maximum length, the scanner decodes only Code 16K barcodes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only 16K barcodes with exactly this length are decoded.

Configuring the Scanner for 16K Barcodes with 8 to 12 Characters

To set the scanner to decode 16K barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).

2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.6 2-D Symbologies

5.3.6.1 PDF417

Restoring Factory Settings

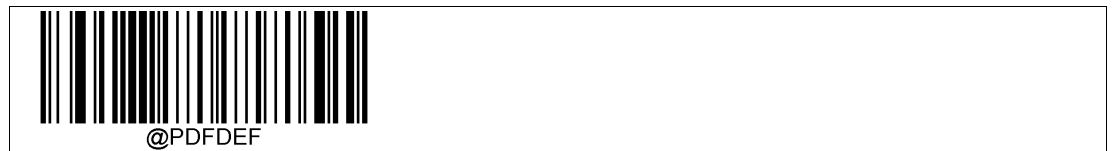


Figure 5.172 Restore the factory settings of PDF417

Enabling/Disabling PDF417



Figure 5.173 Enable PDF417

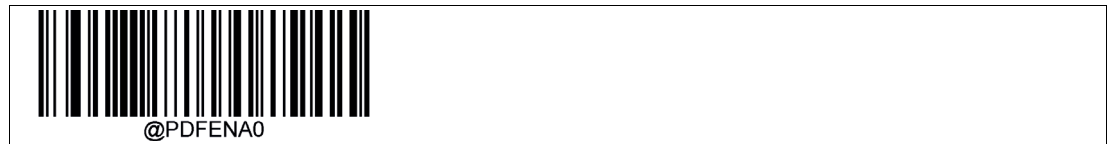


Figure 5.174 Disable PDF417



Note

If the code reader does not recognize PDF417 barcodes, scan the "Enter Setup" barcode and then the "Enable PDF417" barcode to activate this symbology.

Setting the Length Range for PDF417

The code reader can be configured to decode PDF417 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.175 Set the minimum length (default: 1)



Figure 5.176 Set the maximum length (default: 2710)

**Note**

If the minimum length is greater than the maximum length, the scanner decodes only PDF417 barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only PDF417 barcodes with exactly this length are decoded.

**Configuring the Scanner for PDF417 Barcodes with 8 to 12 Characters**

To set the scanner to decode PDF417 barcodes between 8 and 12 characters in length:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.6.2**Micro PDF417****Restoring Factory Settings**

Figure 5.177 Restore the factory settings of Micro PDF417

Enabling/Disabling Micro PDF417

Figure 5.178 Enable Micro PDF417



Figure 5.179 Disable Micro PDF417

**Note**

If the code reader does not recognize Micro PDF417 barcodes, scan the "Enter Setup" barcode and then the "Enable Micro PDF417" barcode to activate this symbology.

Setting the Length Range for Micro PDF417

The code reader can be configured to decode Micro PDF417 barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.180 Set the minimum length (default: 1)



Figure 5.181 Set the maximum length (default: 366)



Note

If the minimum length is greater than the maximum length, the scanner decodes only Micro PDF417 barcodes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Micro-PDF417 barcodes with exactly this length are decoded.



Configuring the Scanner for Micro PDF417 Barcodes with 8 to 12 Characters

To set the scanner to decode Micro PDF417 barcodes between 8 and 12 characters in length, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.6.3

QR Code

Restoring Factory Settings



Figure 5.182 Restore the factory settings of QR Code

Enabling/Disabling QR Code



Figure 5.183 Enable QR code



Figure 5.184 Disable QR code

Note

If the code reader does not recognize the QR code, first scan the "Enter Setup" barcode and then the "Enable QR Code" barcode to activate this symbology.

Setting the Length Range for QR Code

The code reader can be configured to decode the QR code only if its length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.185 Set the minimum length (default: 1)



Figure 5.186 Set the maximum length (default: 7089)

Note

If the minimum length is greater than the maximum length, the scanner decodes only QR codes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only QR codes with exactly this length are decoded.

Configuring the Scanner for QR Codes with 8 to 12 Characters

To set the scanner to decode QR codes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).

7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

QR Inverse

Normal barcode: Dark bars on a light background.

Inverse barcode: Light bars on a dark background.

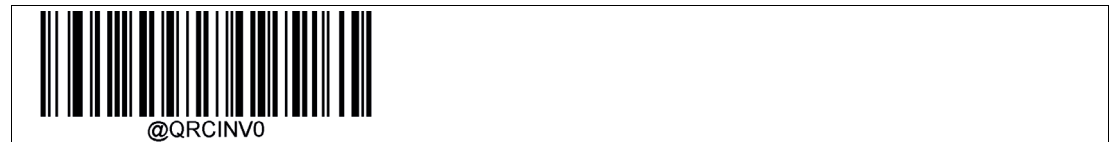


Figure 5.187 Decode only normal QR barcodes



Figure 5.188 Decode only inverse QR barcodes



Figure 5.189 Decode both

5.3.6.4

Micro QR Code

Restoring Factory Settings



Figure 5.190 Restore the factory settings of Micro QR code

Enabling/Disabling Micro QR Code



Figure 5.191 Enable Micro QR code



Figure 5.192 Disable Micro QR code



Note

If the code reader does not recognize Micro QR code barcodes, scan the "Enter Setup" barcode and then the "Enable Micro QR Code" barcode to activate this symbology.

Setting the Length Range for Micro QR Code

The code reader can be configured to decode Micro QR code barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.193 Set the minimum length (default: 1)

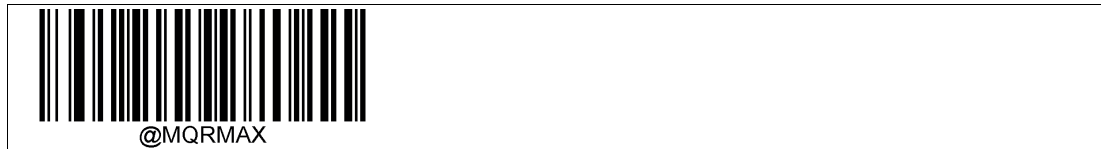


Figure 5.194 Set the maximum length (default: 35)

Note

If the minimum length is greater than the maximum length, the scanner decodes only Micro QR code barcodes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Micro QR code barcodes with exactly this length are decoded.

Configuring the Scanner for Micro QR Code Barcodes with 8 to 12 Characters

To set the scanner to decode Micro QR code barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.6.5

Aztec

Restoring Factory Settings



Figure 5.195 Restore the factory settings of Aztec

Enabling/Disabling Aztec



Figure 5.196 Enable Aztec

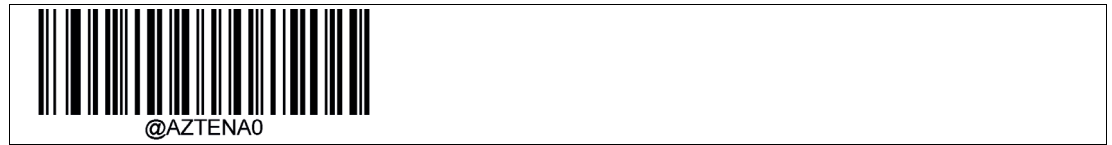


Figure 5.197 Disable Aztec



Note

If the code reader does not recognize Aztec barcodes, first scan the "Enter Setup" barcode and then the "Enable Aztec Code" barcode to activate this symbology.

Setting the Length Range for Aztec Code

The code reader can be configured to decode Aztec barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.

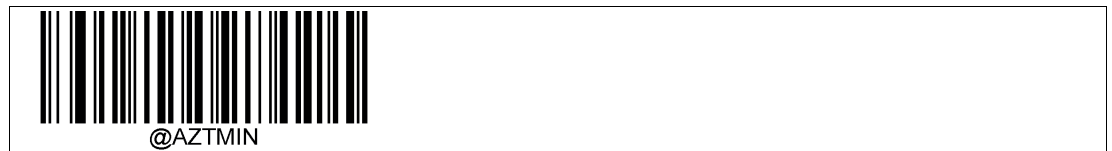


Figure 5.198 Set the minimum length (default: 1)



Figure 5.199 Set the maximum length (default: 3832)



Note

If the minimum length is greater than the maximum length, the scanner decodes only Aztec barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Aztec barcodes with exactly this length are decoded.



Configuring the Scanner for Aztec Barcodes with 8 to 12 Characters

To set the scanner to decode Aztec barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).

7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.6.6

Data Matrix

Restoring Factory Settings



Figure 5.200 Restore the factory settings of Data Matrix

Enabling/Disabling Data Matrix



Figure 5.201 Enable Data Matrix



Figure 5.202 Disable Data Matrix

Note

If the code reader does not recognize Data Matrix barcodes, scan the "Enter Setup" barcode and then the "Enable Data Matrix Code" barcode to activate this symbology.

Rectangular barcode

Data Matrix has two formats:

1. **Square codes:** Same number of modules in horizontal and vertical direction, e.g., 10x10, 12x12 ... 144x144.
2. **Rectangular codes:** Different number of modules in length and width, e.g., 6x16, 6x14 ... 14x22.



Figure 5.203 Enable rectangular barcode



Figure 5.204 Disable rectangular barcode

Data Matrix Inverse

- **Regular code:** Dark elements on a light background.
- **Inverse code:** Light elements on a dark background.





Figure 5.205 Decode only regular Data Matrix codes



Figure 5.206 Decode only inverse Data Matrix codes



Figure 5.207 Decode both

Setting the Length Range for Data Matrix Code

The code reader can be configured to decode Data Matrix barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.208 Set the minimum length (default: 1)

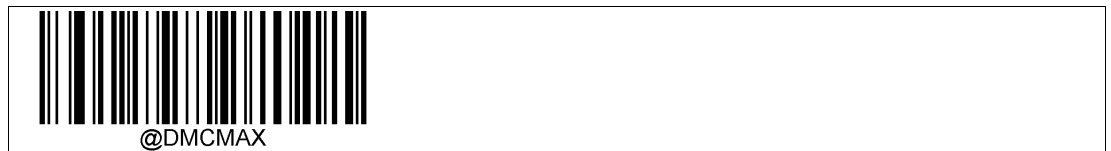


Figure 5.209 Set the maximum length (default: 3116)



Note

If the minimum length is greater than the maximum length, the scanner decodes only Data Matrix barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Data Matrix barcodes with exactly this length are decoded.



Configuring Scanners for Data Matrix Barcodes with 8 to 12 Characters

To set the scanner to decode Data Matrix barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.

6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.6.7

Maxicode**Restoring Factory Settings**

Figure 5.210 Restore the factory settings of Maxicode

Enabling/Disabling Maxicode

Figure 5.211 Enable Maxicode



Figure 5.212 Disable Maxicode

Note

If the code reader does not recognize Maxicode barcodes, scan the "Enter Setup" barcode and then the "Enable Maxicode Code" barcode to activate this symbology.

Setting the Length Range for Maxicode Code

The code reader can be configured to decode Maxicode barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.213 Set the minimum length (default: 1)

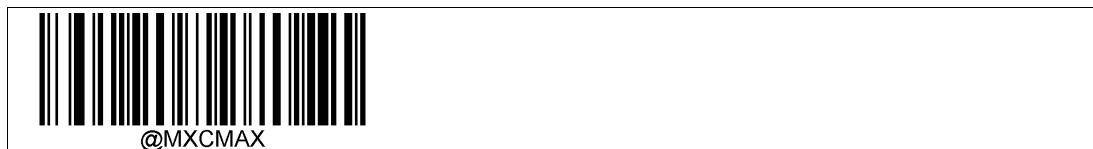


Figure 5.214 Set the maximum length (default: 150)

Note

If the minimum length is greater than the maximum length, the scanner decodes only Maxicode barcodes whose length is equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Maxicode barcodes with exactly this length are decoded.



Configuring the Scanner for Maxicode Barcodes with 8 to 12 Characters

To set the scanner to decode Maxicode barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.6.8

Chinese-Sensible Code

Restoring Factory Settings



Figure 5.215 Restore the factory settings of Chinese-sensible code

Enabling/Disabling Chinese-Sensible Code



Figure 5.216 Enable Chinese-sensible code



Figure 5.217 Disable Chinese-sensible code



Note

If the code reader does not recognize Chinese-sensible code barcodes, scan the "Enter Setup" barcode and then the "Enable Chinese-sensible code" barcode to activate this symbology.

Setting the Length Range for Chinese-Sensible Code

The code reader can be configured to decode Chinese-sensible code barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.218 Set the minimum length (default: 1)

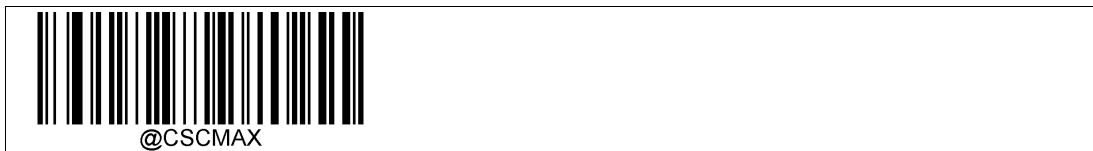


Figure 5.219 Set the maximum length (default: 7827)

**Note**

If the minimum length is greater than the maximum length, the scanner decodes only Chinese-sensible code barcodes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Chinese-sensible code barcodes of exactly this length are decoded.



Configuring the Scanner for Chinese-Sensible Code Barcodes with 8 to 12 Characters

To set the scanner to decode Chinese-sensible-code barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.6.9

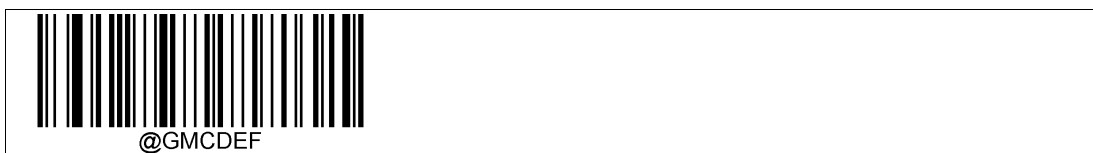
Code GM**Restoring Factory Settings**

Figure 5.220 Restore the factory settings of Code GM

Enabling/Disabling Code GM

Figure 5.221 Enable Code GM

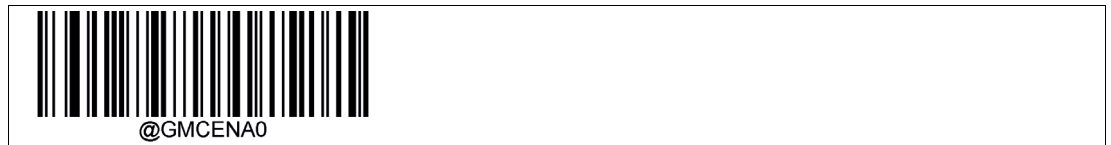


Figure 5.222 Disable Code GM



Note

If the code reader does not recognize GM barcodes, scan the "Enter Setup" barcode and then the "Enable Code GM Code" barcode to enable this symbology.

Setting the Length Range for Code GM Code

The code reader can be configured to decode Code GM barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.223 Set the minimum length (default: 1)

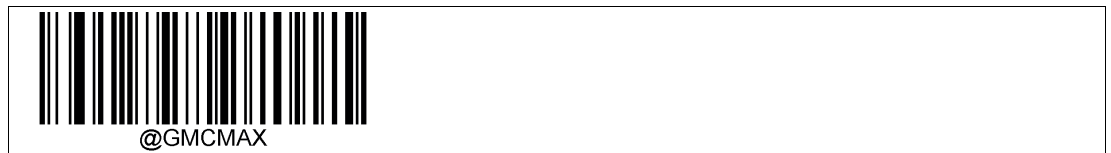


Figure 5.224 Set the maximum length (default: 2751)



Note

If the minimum length is greater than the maximum length, the scanner decodes only GM barcodes with a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Code GM barcodes with exactly this length are decoded.



Configuring the Scanner for Code GM Barcodes with 8 to 12 Characters

To set the scanner to decode GM barcodes between 8 and 12 characters, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.6.10 Code One

Restoring Factory Settings



Figure 5.225 Restore the factory settings of Code One

Enabling/Disabling Code One



Figure 5.226 Enable Code One



Figure 5.227 Disable Code One

Note

If the code reader does not recognize Code One barcodes, scan the "Enter Setup" barcode and then the "Enable Code One Code" barcode to enable this symbology.

Setting the Length Range for Code One Code

The code reader can be configured to decode Code One barcodes only if their length is within the specified minimum and maximum values (including limits). To do this, specify the desired minimum and maximum lengths.



Figure 5.228 Set the minimum length (default: 1)



Figure 5.229 Set the maximum length (default: 3550)

Note

If the minimum length is greater than the maximum length, the scanner decodes only Code One barcodes that have a length equal to the minimum or maximum length. If the minimum and maximum lengths are identical, only Code One barcodes with exactly this length are decoded.

Configuring the Scanner for Code One Barcodes with 8 to 12 Characters

To set the scanner to decode Code One barcodes between 8 and 12 characters in length, perform the following steps:

1. Scan the Enter Setup code (see chapter 5.3.1.1).

2. Scan the "Set minimum length" barcode.
3. Scan the numeric barcode "8" from the alphanumeric barcodes section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the "Set maximum length" barcode.
6. Scan the numeric barcodes "1" and "2" from the "alphanumeric barcodes" section (see chapter 8.1).
7. Scan the Save code [Save] (see chapter 5.3.1.4).
8. Scan the Exit Setup code (see chapter 5.3.1.2).

5.3.7 Postal Codes

5.3.7.1 USPS Postnet

Restoring Factory Settings



Figure 5.230 Restore the factory settings of USPS Postnet

Enabling/Disabling USPS Postnet



Figure 5.231 Enable USPS Postnet

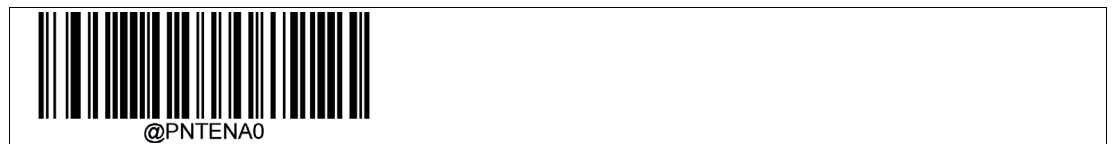


Figure 5.232 Disable USPS Postnet



Note

If the USPS Code Reader does not recognize Postnet barcodes, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "Enable USPS Postnet" barcode to enable this symbology.

5.3.7.2 USPS Intelligent Mail

Restoring Factory Settings



Figure 5.233 Restore the factory settings of USPS Intelligent Mail

Enabling/Disabling USPS Intelligent Mail

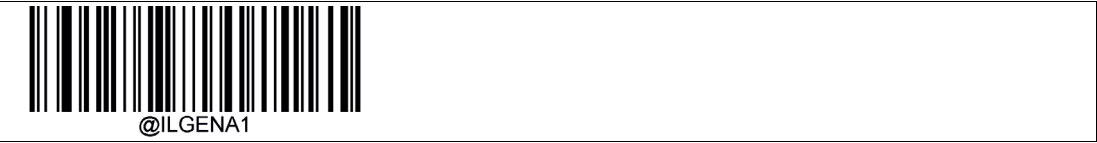


Figure 5.234 Enable USPS Intelligent Mail



Figure 5.235 Disable USPS Intelligent Mail



Note

If the code reader does not recognize USPS Intelligent Mail, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "USPS Intelligent Mail" barcode to enable this symbology.

5.3.7.3

Royal Mail
Restoring Factory Settings

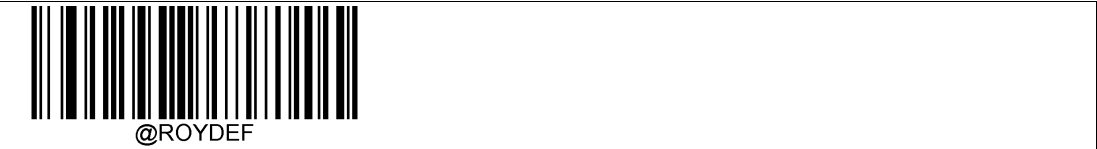


Figure 5.236 Restore the factory settings of Royal Mail

Enabling/Disabling Royal Mail



Figure 5.237 Enable Royal Mail



Figure 5.238 Disable Royal Mail



Note

If the code reader does not recognize Royal Mail barcodes, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "Enable Royal Mail" barcode to enable this symbology.

5.3.7.4

USPS Planet
Restoring Factory Settings



Figure 5.239 Restore the factory settings of USPS Planet

Enabling/Disabling USPS Planet

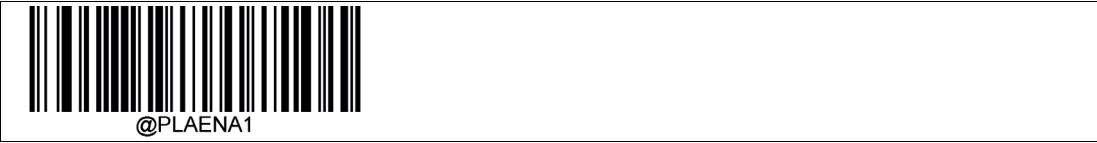


Figure 5.240 Enable USPS Planet



Figure 5.241 Disable USPS Planet



Note

If the code reader does not recognize USPS Planet barcodes, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "Enable USPS Planet" barcode to enable this symbology.

5.3.7.5

KIX Post
Restoring Factory Settings

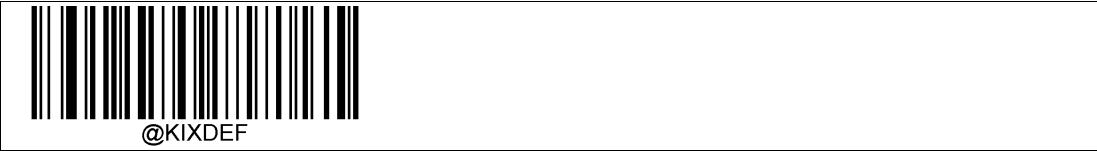


Figure 5.242 Restore the factory settings of KIX Post

Enabling/Disabling KIX Post



Figure 5.243 Enable KIX Post



Figure 5.244 Disable KIX Post



Note

If the KIX code reader does not recognize postal barcodes, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "Enable KIX Post" barcode to enable this symbology.

5.3.7.6

Australian Postal
Restoring Factory Settings

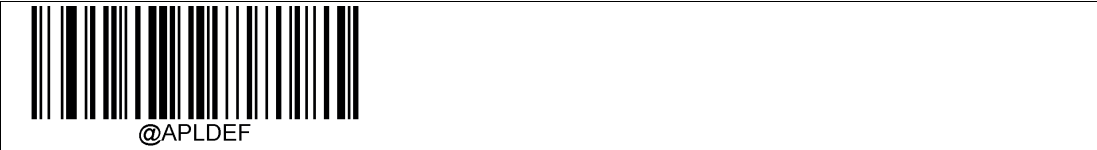


Figure 5.245 Restore the factory settings of Australian Postal

Enabling/Disabling Australian Postal



Figure 5.246 Enable Australian Postal



Figure 5.247 Disable Australian Postal

Note

If the code reader does not recognize Australian Postal barcodes, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "Enable Australian Postal" barcode to enable this symbology.

5.3.7.7

Japan Post

Restoring Factory Settings



Figure 5.248 Restore the factory settings of Japan Post

Enabling/Disabling Japan Post

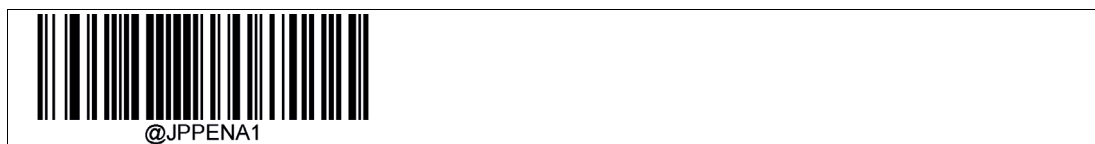


Figure 5.249 Enable Japan Post



Figure 5.250 Disable Japan Post

Note

If the code reader does not recognize Japan Post barcodes, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "Enable Japan Post" barcode to enable this symbology.

5.3.8

OCR Code

5.3.8.1

Chinese ID Card OCR

Restoring Factory Settings

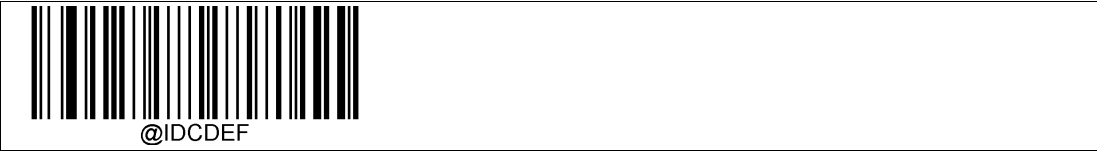


Figure 5.251 Restoring the factory settings of the Chinese ID card OCR

Enabling/Disabling Chinese ID Card OCR



Figure 5.252 Enable Chinese ID card OCR

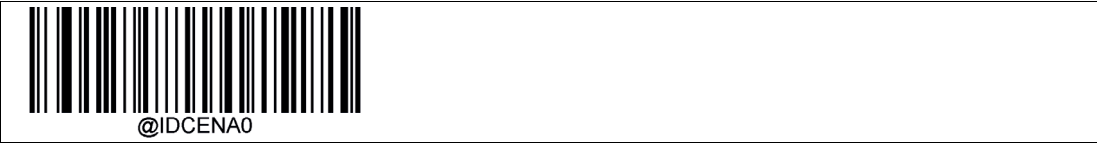


Figure 5.253 Disable Chinese ID card OCR



Note

If the code reader does not recognize Chinese ID card OCR barcodes, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "Enable Chinese ID card OCR" barcode to enable this symbology.

5.3.8.2

Passport OCR

Restoring Factory Settings



Figure 5.254 Restoring the passport OCR factory settings

Enabling/Disabling Password OCR

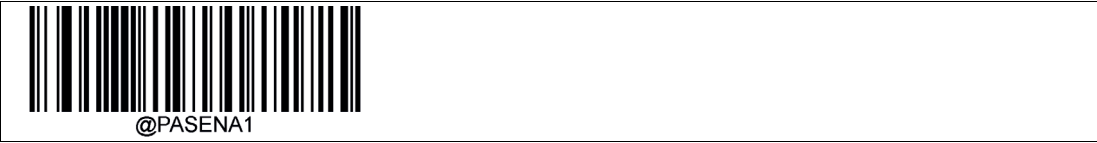


Figure 5.255 Enable passport OCR



Figure 5.256 Disable passport OCR



Note

If the code reader does not recognize passport OCR barcodes, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "Enable passport OCR" barcode to enable this symbology.

5.3.8.3

China Travel Permit OCR

Restoring Factory Settings



Figure 5.257 Restoring the factory settings of the China travel permit OCR

Enabling/Disabling China Travel Permit OCR



Figure 5.258 Enable China travel permit OCR



Figure 5.259 Disable China travel permit OCR

Note

If the China travel permit code reader does not recognize OCR barcodes, scan the "Enter Setup" code (see chapter 5.3.1.1) and then scan the "Enable China travel permit OCR" barcode to enable this symbology.

5.3.9

Operating Modes

Level Mode



Figure 5.260 Level Mode

Level mode is ideal for reading codes that are located in different positions. Applying the trigger signal starts a decoding process that remains active until a code has been successfully read or the trigger signal is set to "Low".

Sense Mode



Figure 5.261 Sense Mode

In sense mode, the code reader has various trigger types that can be used to trigger a scan automatically. The process remains active until a code is successfully scanned or the set time limit (Decode Session Timeout) is reached.

Trigger Types

One option is the **Image Change Trigger**: In this case, the code reader starts automatically as soon as the captured image changes.



Figure 5.262 Image Change Trigger

Another type of trigger is the **IR-Proximity-Trigger**. The code reader triggers as soon as a code reaches the sensing range of the built-in IR sensor.



Figure 5.263 IR-Proximity Trigger

Fine-tuning the Code Reader

Image Stabilization Timeout

This parameter defines the time that the code reader takes after decoding a code to adapt to the ambient conditions before it starts searching for the next code. The setting can be programmed in 1 ms increments and within a value range of 0 ms to 3000 ms.



Figure 5.264 Image Stabilization Timeout [Image Stabilization Timeout]



For example: Set the Image Stabilization Timeout to 800 ms

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the "Image Stabilization Timeout" barcode.
3. Scan the numeric barcodes "8", "0", and "0" from the "alphanumeric barcodes" section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the Exit Setup code (see chapter 5.3.1.2).

Image Change Trigger Sensitivity

This parameter determines how sensitively the code reader reacts to changes in the captured images. A choice of 20 sensitivity levels is available. The smaller the value the higher the sensitivity, so even small image changes are sufficient to trigger the code reader. A larger value reduces the sensitivity accordingly.



Figure 5.265 Low Sensitivity



Figure 5.266 Medium Sensitivity

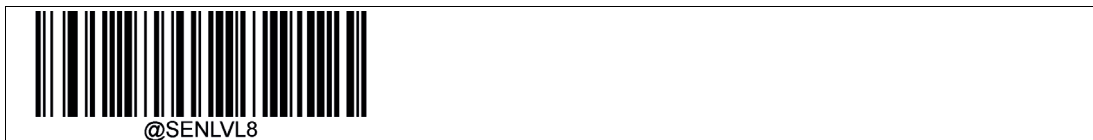


Figure 5.267 High Sensitivity

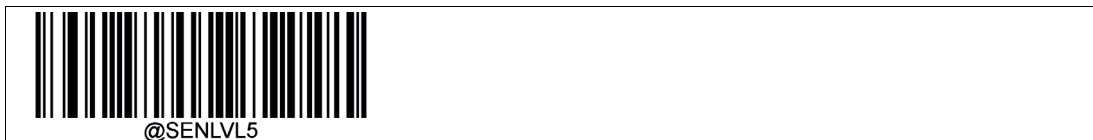


Figure 5.268 Enhanced Sensitivity



Figure 5.269 Custom Sensitivity (Level 1 ... 20)



For example: Set Sensitivity to Level 10

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the barcode "Custom Sensitivity (Level 1 ... 20)".
3. Scan the numeric barcodes "1" and "0" from the "alphanumeric barcodes" section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the Exit Setup code (see chapter 5.3.1.2).

Sensitivity of the IR Sensor

This parameter determines the sensitivity of the code reader when codes are detected. There are ten setting levels available. A smaller value increases the sensitivity, while a larger value reduces the sensitivity.

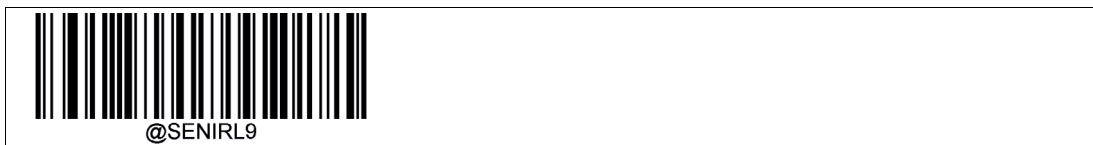


Figure 5.270 Low Sensitivity



Figure 5.271 Medium Sensitivity



Figure 5.272 High Sensitivity



Figure 5.273 Custom Sensitivity (Level 1 ... 20)



For example: Set IR-Proximity Trigger to Level 10

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the barcode "Custom Sensitivity (Level 1 ... 20)".
3. Scan the numeric barcodes "1" and "0" from the "alphanumeric barcodes" section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the Exit Setup code (see chapter 5.3.1.2).

Reread Timeout

The reread timeout prevents the same code from being read more than once within a defined period of time.

- **Enable Reread Timeout:** The same barcode can only be read again after the time interval has elapsed.

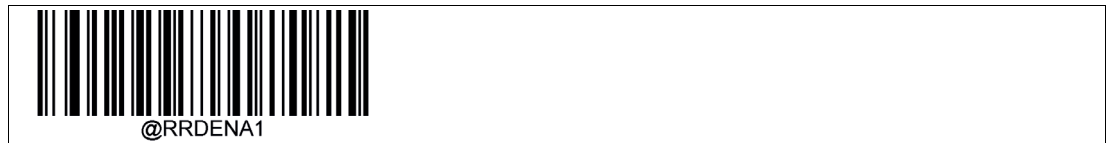


Figure 5.274 Enable Reread Timeout

- **Disable Reread Timeout:** The same barcode can be read again without restriction.



Figure 5.275 Disable Reread Timeout

The interval between two readings of the same code can be set flexibly in 1 ms increments from 0 to 3,600,000 ms.



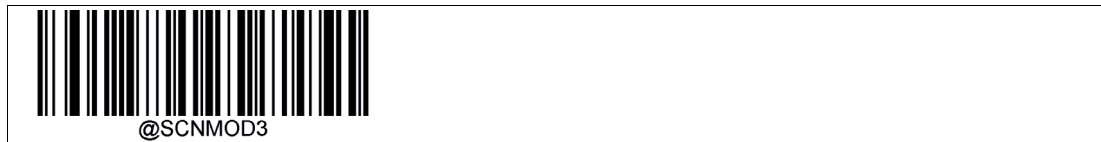
Figure 5.276 Reread Timeout



For example: Set Reread Timeout to 1000 ms

1. Scan the Enter Setup code (see chapter 5.3.1.1).
2. Scan the barcode "Custom Sensitivity (Level 1 ... 20)".
3. Scan the numeric barcodes "1", "0", "0", "0" from the "alphanumeric barcodes" section (see chapter 8.1).
4. Scan the Save code [Save] (see chapter 5.3.1.4).
5. Scan the Exit Setup code (see chapter 5.3.1.2).

Continuous Mode



Continuous mode is designed for continuous scanning. The code reader automatically starts one decoding process after the other. Code detection can be interrupted or resumed by briefly pressing the trigger. Even in this mode, the **reread-timeout function** prevents the same code from being read repeatedly within a certain period of time.

Pulse Mode



Pulse mode is activated by briefly pressing and releasing the trigger. The scanning process starts after release and continues until a code is decoded or the configured time limit (Decode Session Timeout) is reached.

Multi-Session Mode



In multi-session mode, several different codes can be read within a single detection process. Decoding processes are started continuously as long as the trigger signal is present. The process ends automatically as soon as the trigger signal is reset to "Low". Within a run, the same code is not redetected.

5.3.10

RS-232 Interface

The serial communication interface is usually used to connect the code reader to a host device (e.g., PC or POS system). To ensure reliable and error-free data transmission, the communication parameters such as baud rate, parity, data bits, and stop bits must be configured according to the settings of the host device.

Default Settings

- Baud rate: 9600
- Parity: none
- Data bits: 8
- Stop bits: 1

Baud Rate

The baud rate specifies the number of data bits transmitted per second. Set the baud rate to meet the requirements of the connected host system.



Figure 5.277 Baud rate 115,200



Figure 5.278 Baud rate 57,600

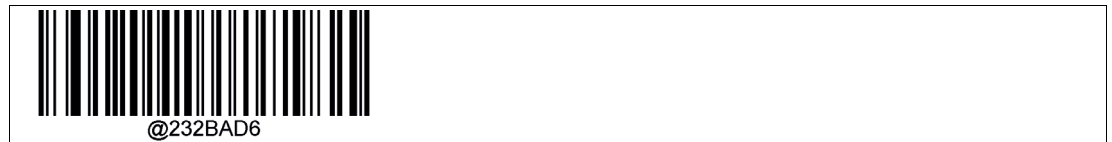


Figure 5.279 Baud rate 38,400

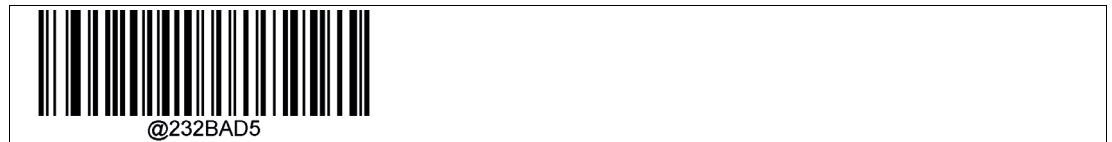


Figure 5.280 Baud rate 19,200

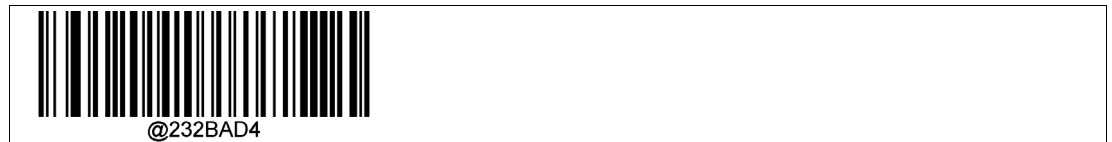


Figure 5.281 Baud rate 14,400

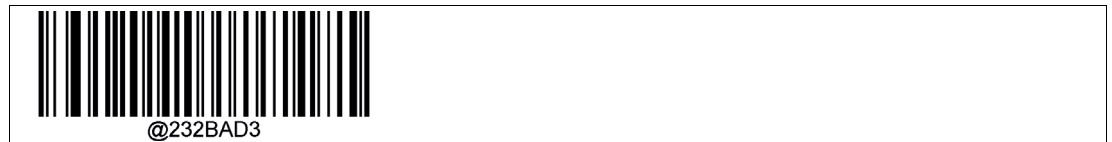


Figure 5.282 Baud rate 9600



Figure 5.283 Baud rate 4800



Figure 5.284 Baud rate 2400



Figure 5.285 Baud rate 1200

Parity Check

Set the parity type according to the requirements of the host system.

No parity (none): Select this option if no parity bit will be used.

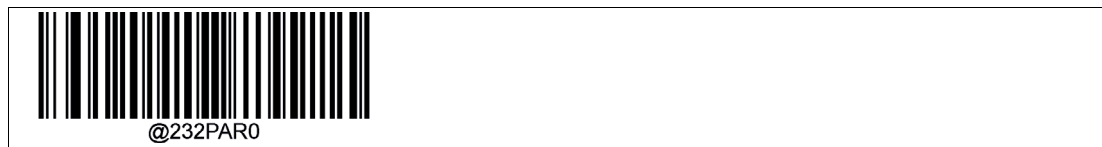


Figure 5.286 None

Even parity: If the data byte contains an even number of "1" bits, the parity bit is set to 0.

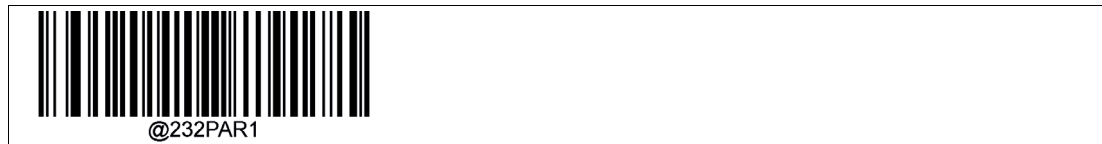


Figure 5.287 Even parity

Odd parity: If the data byte contains an odd number of "1" bits, the parity bit is set to 0.



Figure 5.288 Odd parity

Data Bits

Set the number of data bits according to the requirements of the host system.



Figure 5.289 Seven data bits



Figure 5.290 Eight data bits

Stop Bits

The stop bits at the end of each transmitted character identify the end of the character transmission and prepare the receiving device for the next character in the serial data stream.

Set the number of stop bits according to the requirements of the host system.



Figure 5.291 One stop bit



Figure 5.292 Two stop bits

5.3.11 Function Settings

This chapter describes the control codes for configuring basic device functions.

Illumination

This function is used to switch the illumination of the reading field on or off.

Illumination on: Enables illumination during the read operation.



Figure 5.293 Illumination on

Illumination off: Disables illumination during the read operation.

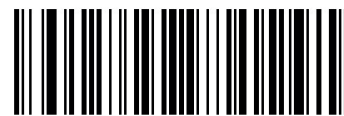


Figure 5.294 Illumination off

LED Aiming

The LED aiming function supports the alignment of the scanner to the barcode.

LED aiming on: Enables the LED aiming function.



Figure 5.295 LED aiming on

LED aiming off: Disables LED aiming.



Figure 5.296 LED aiming off

Trigger Button

This setting determines whether the scan operation can be triggered by the trigger button.

Trigger button on: The scan operation can be started using the trigger button.



Figure 5.297 Trigger button on

Trigger button off: The scan operation cannot be triggered using the trigger button.

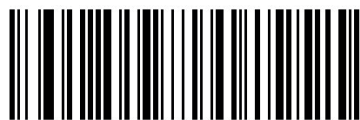


Figure 5.298 Trigger button off

Good-Read Beep

This function controls the audible signal after a successful read operation.

Good-read beep on: The scanner emits an audible signal after a successful read.



Figure 5.299 Good-read beep on

Good-read beep off: There is no audible signal after reading.



Figure 5.300 Good-read beep off

Start-Up Beep

This setting determines whether an audible signal is emitted when the device is switched on.

Start-up beep on: An audible signal is emitted when the device is switched on.



Figure 5.301 Start-up beep on

Start-up beep off: No audible signal is emitted when the device is switched on.



Figure 5.302 Start-up beep off

6 Programming commands

Introduction

The code reader can be configured using serial commands (HEX) sent by the host. All commands must be entered in capital letters.

Command Syntax and Structure

A command consists of the following components:

```
Prefix StorageType Tag SubTag {Data} [,SubTag {Data}] [;Tag SubTag {Data}] [...] Suffix
```

- **Prefix:**
 - @ (HEX: 40): For permanent settings that are retained even after a restart or in the event of a power failure.
 - # (HEX: 23): For temporary settings that will be lost in the event of a restart or loss of power.
- **StorageType:** "@" (HEX: 40) = permanent setting; "#" (HEX: 23) = temporary setting.
- **Tag:** A three-digit, case-sensitive identifier for a command group (e.g., KBW for USB HID keyboard).
- **SubTag:** EA three-digit, case-sensitive identifier for a specific parameter within a command group (for example, CTY for the keyboard layout).
- **Data:** The value for a function or parameter defined by Tag and SubTag.
- **Suffix:** A fixed two-digit string: ; <ETX> (HEX: 3B 03).

Multiple Commands

Multiple commands can be combined within a single prefix/suffix sequence to increase efficiency:

- If you want to specify multiple commands for the same Tag separate the additional SubTag- and Data-Felder fields with a **comma** (,).
- If the subsequent command requires a different Tag separate the command with a **semicolon** (;).

Query Commands

To query the status of settings, the Data field is replaced by special characters:

- * (HEX: 2A) = query of the current value.
- & (HEX: 26) = query of the factory setting value.
- ^ (HEX: 5E) = query of the value range.



Note

If the SubTag is omitted, the command queries all the settings of the corresponding Tag-group.



Example

Query all current settings for Code 11:

```
~<SOH>0000@C11*; <ETX> (HEX: 7E 01 30 30 30 30 40 43 31 31 2A 3B 03).
```

Responses from the Code Reader

The code reader responses begin with a fixed prefix: <STX><SOH>0000 (HEX: 02 01 30 30 30 30).

The code reader responds with one of the following status characters, which is inserted immediately before each comma or semicolon in the command sequence:

- <ACK> (HEX: 06) = the command has been processed successfully.
- <NAK> (HEX: 15) = the Data value is out of range or the query was invalid.
- <ENQ> (HEX: 05) = the specified Tag or SubTag is invalid.

**Example****Example 1: Enabling Code 11 and Specifying Lengths**

- **Task:** Enable Code 11 and set the minimum and maximum length to 12 and 22 characters respectively.
- **Input:** ~<SOH>0000@C11ENA1,MIN12,MAX22;<ETX>
 - **HEX:** 7E 01 30 30 30 30 40 43 31 31 45 4E 41 31 2C 4D 49 4E 31 32 2C 4D 41 58 32 32 3B 03
- **Response:** <STX><SOH>0000@C11ENA1<ACK>,MIN12<ACK>,MAX22<ACK>;<ETX>
 - **HEX:** 02 01 30 30 30 30 40 43 31 31 45 4E 41 31 06 2C 4D 49 4E 31 32 06 2C 4D 41 58 32 32 06 3B 03

**Example****Example 2: Querying Current Lengths of Code 11**

- **Task:** Query the current minimum and maximum length for Code 11.
- **Input:** ~<SOH>0000@C11MIN*,MAX*<ETX>
 - **HEX:** 7E 01 30 30 30 30 40 43 31 31 4D 49 4E 2A 2C 4D 41 58 2A 3B 03
- **Response:** <STX><SOH>0000@C11MIN12<ACK>,MAX22<ACK>;<ETX>
 - **HEX:** 02 01 30 30 30 30 40 43 31 31 4D 49 4E 31 32 06 2C 4D 41 58 32 32 06 3B 03

**Example****Example 3: Start/Stop Control of the Read Operation**

The following commands can be used to start and stop the read operation.

1. Set the code reader to level trigger mode

Send:

- **HEX:** 7E 01 30 30 30 30 40 53 43 4E 4D 4F 44 30 3B 03
- **ASCII:** ~<SOH>0000@SCNMOD0;<ETX>

Response:

- **HEX:** 02 01 30 30 30 30 40 53 43 4E 4D 4F 44 30 06 3B 03
- **ASCII:** <STX><SOH>0000@SCNMOD0<ACK>;<ETX>

2. Start scanning

Send:

- **HEX:** 7E 01 30 30 30 30 23 53 43 4E 54 52 47 31 3B 03
- **ASCII:** ~<SOH>0000#SCNTRG1;<ETX>

Response:

- **HEX:** 02 01 30 30 30 30 23 53 43 4E 54 52 47 31 06 3B 03
- **ASCII:** <STX><SOH>0000#SCNTRG1<ACK>;<ETX>

3. Stop scanning

Send:

- **HEX:** 7E 01 30 30 30 30 23 53 43 4E 54 52 47 30 3B 03
- **ASCII:** ~<SOH>0000#SCNTRG0;<ETX>

Response:

- **HEX:** 02 01 30 30 30 30 23 53 43 4E 54 52 47 30 06 3B 03
- **ASCII:** <STX><SOH>0000#SCNTRG0<ACK>;<ETX>



Note

Monitor Program

You can enter commands and display the results using monitor programs. These allow you to send data to the interface and receive and view the data returned by the device.

A proven example of such a program is the freeware Hercules from HW-group.

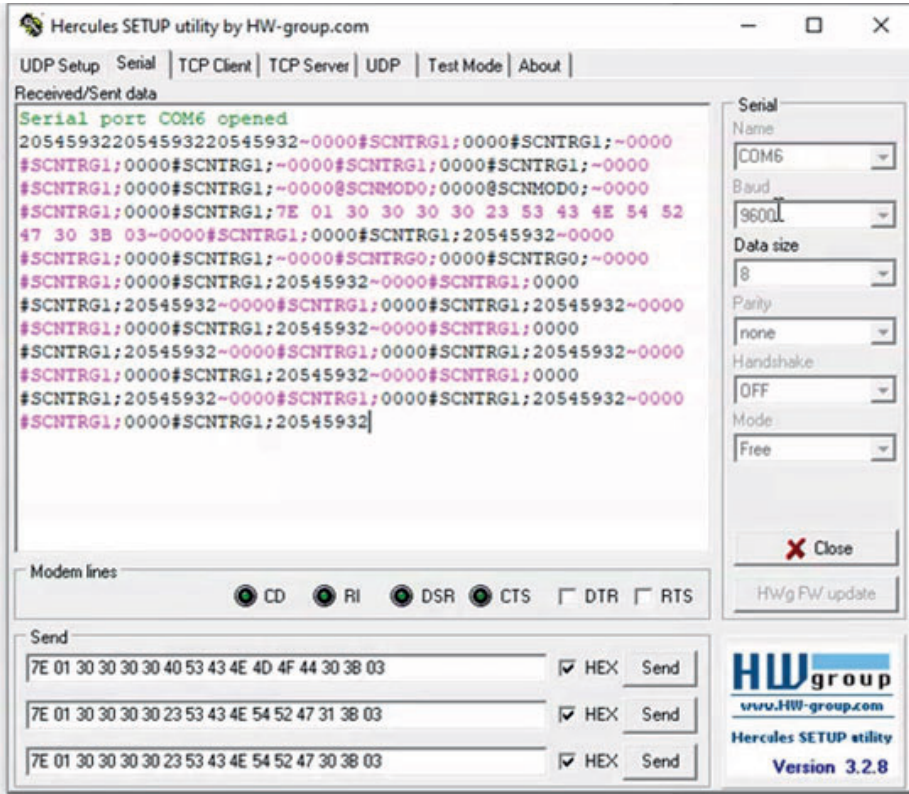


Figure 6.1 Hercules software user interface

7 Maintenance

To get the best possible performance out of your device, clean the optical unit on the device when necessary and always keep it clean.

When cleaning the optical unit you should note the following:

- Do not touch the optical unit with your fingers.
- Do not immerse the device in water. Do not spray the device with water or other liquids.
- Do not use a scouring agent to clean the surface of the device.
- Use a cotton or paper cloth moistened with water or isopropyl alcohol. The cloth must not be soaked!
- Remove any residual alcohol using a cotton or paper cloth moistened with distilled water. The cloth must not be soaked!
- Wipe the device surfaces dry using a lint-free cloth.

8 Appendix

8.1 Digit Barcodes

0 ... 9

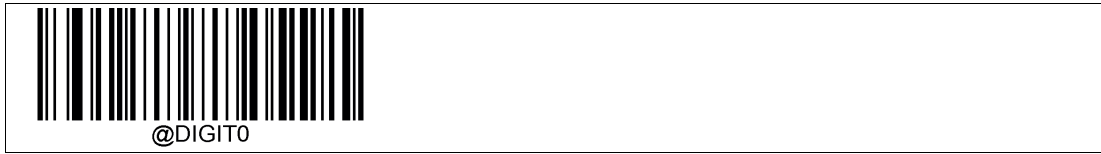


Figure 8.1 0



Figure 8.2 1

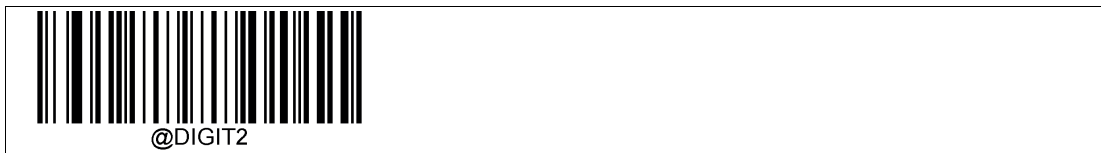


Figure 8.3 2

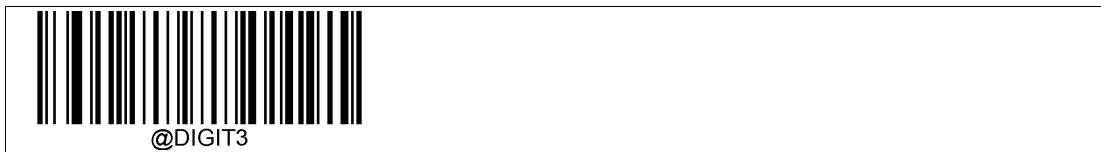


Figure 8.4 3



Figure 8.5 4



Figure 8.6 5

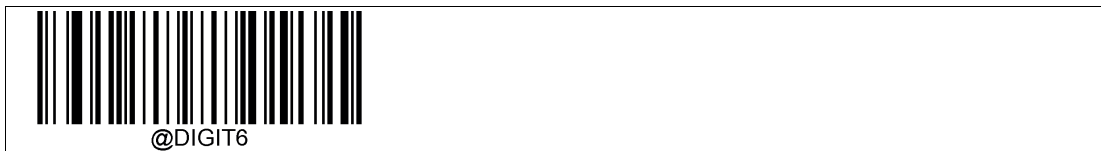


Figure 8.7 6



Figure 8.8 7



Figure 8.9 8

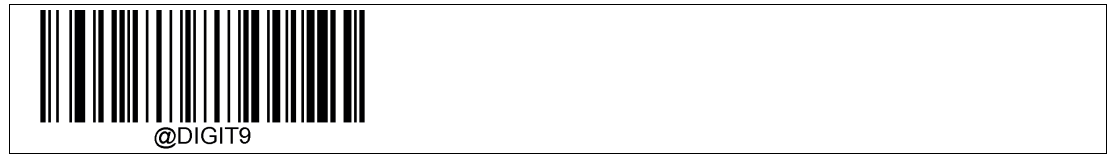


Figure 8.10 9

A ... F



Figure 8.11 A



Figure 8.12 B



Figure 8.13 C

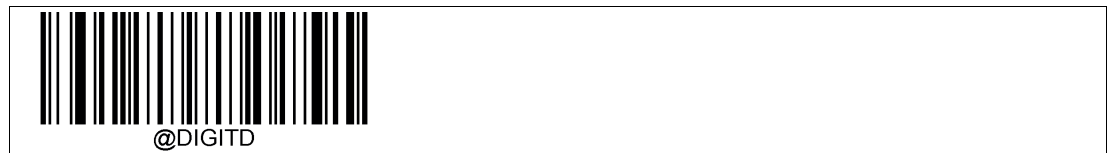


Figure 8.14 D



Figure 8.15 E



Figure 8.16 F

8.2 ASCII table

hex	dec	ASCII	hex	dec	ASCII	hex	dec	ASCII	hex	dec	ASCII
00	0	NUL	20	32	Space	40	64	@	60	96	'
01	1	SOH	21	33	!	41	65	A	61	97	a
02	2	STX	22	34	"	42	66	B	62	98	b
03	3	ETX	23	35	#	43	67	C	63	99	c
04	4	EOT	24	36	\$	44	68	D	64	100	d
05	5	ENQ	25	37	%	45	69	E	65	101	e
06	6	ACK	26	38	&	46	70	F	66	102	f
07	7	BEL	27	39	'	47	71	G	67	103	g
08	8	BS	28	40	(	48	72	H	68	104	h
09	9	HT	29	41	)	49	73	I	69	105	i
0A	10	LF	2A	42	*	4A	74	J	6A	106	j
0B	11	VT	2B	43	+	4B	75	K	6B	107	k
0C	12	FF	2C	44	,	4C	76	L	6C	108	l
0D	13	CR	2D	45	-	4D	77	M	6D	109	m
0E	14	SO	2E	46	.	4E	78	N	6E	110	n
0F	15	SI	2F	47	/	4F	79	O	6F	111	o
10	16	DLE	30	48	0	50	80	P	70	112	p
11	17	DC1	31	49	1	51	81	Q	71	113	q
12	18	DC2	32	50	2	52	82	R	72	114	r
13	19	DC3	33	51	3	53	83	S	73	115	s
14	20	DC4	34	52	4	54	84	T	74	116	t
15	21	NAK	35	53	5	55	85	U	75	117	u
16	22	SYN	36	54	6	56	86	V	76	118	v
17	23	ETB	37	55	7	57	87	W	77	119	w
18	24	CAN	38	56	8	58	88	X	78	120	x
19	25	EM	39	57	9	59	89	Y	79	121	y
1A	26	SUB	3A	58	:	5A	90	Z	7A	122	z
1B	27	ESC	3B	59	;	5B	91	[	7B	123	{
1C	28	FS	3C	60	<	5C	92	\	7C	124	
1D	29	GS	3D	61	=	5D	93	]	7D	125	}
1E	30	RS	3E	62	>	5E	94	^	7E	126	~
1F	31	US	3F	63	?	5F	95	_	7F	127	DEL

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