Installation &
User's Manual

SCANTECH ID

Scantech ID MICA M-9030
Laser Barcode Scanner

Installation & User's Manual

Scantech-ID MICA M-9030

Limited Warranty
Under all circumstances this manual should be read attentively, before installing and/or using the product. In no event shall Scantech-ID BV be liable for any direct, indirect, special, consequential or incidental damages arising out of the use or inability to use this documentation or product, even if advised of the possibility of such damages. In particular, Scantech-ID BV shall not be liable for any hardware, software, or data that is stored or used with the product, including the cost of repairing, replacing or recovering the above. Scantech-ID BV reserves the right to change parts of the device at any time without preceding or direct announcement to the client.
Scantech-ID BV reserves the right to revise this manual, and to make changes in the contents without obligation to notify any person or entity of the revision or change. A serial number appears on the product. Make sure that this official registration number has not been removed. It should be used whenever servicing by Scantech-ID BV or an authorized Scantech dealer is necessary.

Important
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to EN55022, and with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user's manual, may cause harmful interference to radio communications. Operation of the equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Any unauthorized changes or modifications to this equipment could void the user's authority to operate this equipment.

For CE-countries:
- MICA is in conformity with the CE standards. Please note that a Scantech CE-marked power supply unit should be used to conform to these standards.

For USA & Canada:
- To be used with UL listed and CSA certified computers/POS systems.
- A utiliser avec des ordinateurs/systèmes POS registrés UL/certifiés CSA.

This scanner should only be powered by a UL listed or CUL Certified Power Supply having limited power source of Class 2 outputs, rated +5.2 VDU / minimum 0,64 A, minimum 40 °C or the scanner should be directly powered by a UL listed and CSA certified computer/POS system, having limited power source of Class 2 outputs, rated 8 Vdc to 16 Vdc / minimum 0,55 A, minimum 40 °C.

Radio and television interference
Operation of this equipment in a residential area can cause interference with radio or television reception. This can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:
- □ Re-orientate the receiving antenna
- □ Relocate the devices with respect to the receiver
- □ Move the device away from the receiver
- □ Plug the device into a different outlet in order to have the device and receiver on different branch circuits

If necessary, the user should consult the manufacturer, an authorized Scantech dealer or experienced radio/television technician for additional suggestions. The booklet "How to Identify and Resolve Radio-TV Interference Problems", prepared by the Federal Communications Commission, can be of help. It can be obtained from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004000003454.

Table of contents

Preface

The Scantech-ID Mica is a high performance, omni-directional, and the smallest laser barcode scanner in the world. It is based on proven Scantech-ID technology and is designed for various built-in and OEM solutions, such as self-service kiosks, POS (Point-of-Sales) terminals, price checkers, healthcare solutions, mobile computers, hand-held scanners, etc.

Features

Integrability
The compact design allows the unit to be mounted with ease on a host system with minimum space requirement.
Quality and Durability
The components are of top quality and the case is solid, moist and dust resistant. All of these secure a long and service free operation time.
Flexibility and Connectivity
The multiple connection interface (RS232, Keyboard Wedge, USB, and Powered USB) allows the unit to communicate with the host system with considerable flexibility.
Scanning Capability
The unique design of scan pattern provides an ideal scan performance in the retail environment.
Decoding Capability
- The barcode decoding capability is up-to-date, including GS1 DataBar and all major 1D barcode symbologies.
- The Scantech-ID STAR reconstruction software enables the reading of fragmented and damaged barcodes.

Upgradability
The user-friendly feature of firmware upgrade significantly saves cost and time.

About this manual

This manual contains four chapters and three appendices:
- The first chapter provides the product safety information. The second chapter describes Mica's general features and installation. The third and forth chapter accounts for the use of Mica.
- The connector types and pin definitions, technical specifications, and troubleshooting can be found in the appendices.

Chapter 1

Product Safety

1.1 LASER SAFETY

English:
Mica scanner complies with safety standard IEC 825-1 (1993) for a Class I laser product. It also complies with U.S. 21CFR1040 as applicable to a Class IIa laser product. Avoid long term viewing of direct laser light.

Optical:
The use of optical instruments with this product will increase eye hazard. Optical instruments include binoculars, microscopes and magnifying glasses but do not include eye glasses worn by the user.

Radiant Energy:
Mica uses a low-power laser diode operating at 630~670 nm in an opto-mechanical scanner resulting in less than 0.6 mW peak output power. Laser light observed at 13 cm (5.1 in.) above the window through a 7 mm (0.28 in.) aperture and averaged over 1000 seconds is less than 3.9 µW per CDRH Class IIa specification. Do not attempt to remove the protective housing of the scanner, as unscanned laser light with a peak output up to 0.8 mW could be accessible inside.

Laser Light Viewer:
The scanner window is the only aperture through which laser light may be observed on this product. A failure of the scanner motor, while the laser diode continues to emit a laser beam, may cause emission levels to exceed those for safe operation. The scanner has safeguards to prevent this occurrence. If, however, a stationary laser beam is emitted, the failing scanner should be disconnected from its power source immediately.

Adjustments:
Do not attempt any adjustments to or alteration of this product. Do not remove the scanner's protective housing. There are no user-serviceable parts inside.

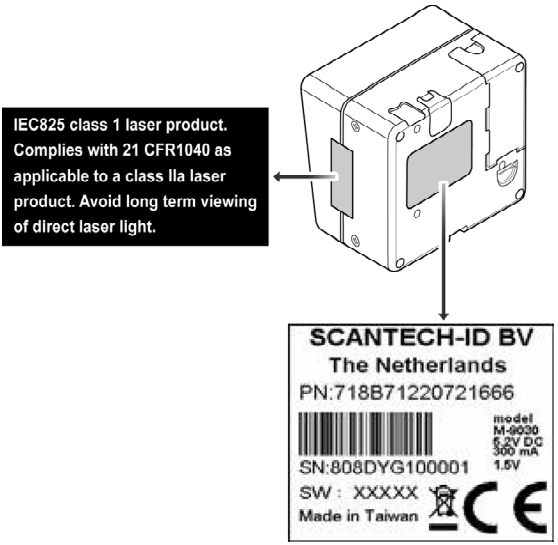
WARNING!

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

1.2 DECLARATION OF CONFORMITY

1.3 SCANNER LABELING

The product label and the laser safety label are on the back and the side of Mica as indicated in the illustration below. All labels are attached by the manufacturer and should not be removed.



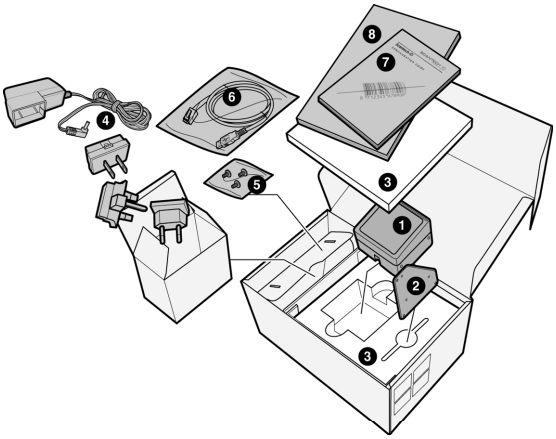
The information about the serial and part numbers can be found on the product label. These official registration numbers are strictly related to the device. The supplier may ask for these numbers when the scanner needs servicing.

Chapter 2

Installation

2.1 UNPACKING

Your package comes with the following items:

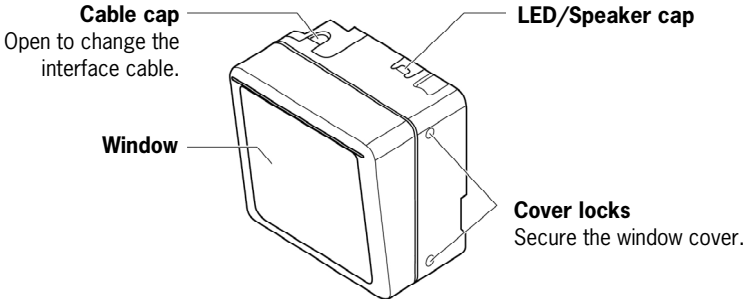


Item	Name	Description
1	Scanning unit	The main unit of the scanner
2	Fit plate (optional)	Use to mount Mica on your host system.
3	EPE packing foam	Use to protect package items.
4	AC adapter set	Required if Mica cannot be directly powered See 2.4 Powering on page 11.
5	Screws	Use to fix Mica on your host system.
6	USB cable	Use to connect the scanner with your host system. See page 9 for other optional cables.
7	Configuration Guide	Use to configure Mica with barcodes.
8	User's Manual	Provides installation and use instructions.

NOTE

- If anything is missing or appears to be damaged, immediately contact your dealer.
- You can mount Mica without the fit plate, but the plate may be suitable for your special mounting requirements. Contact your dealer for more information.
- Store the original packaging box. Use it to transport Mica for future servicing.

Exterior View



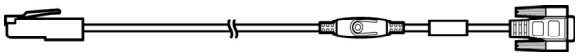
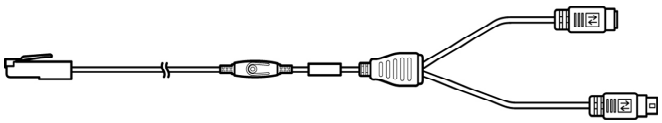
NOTE

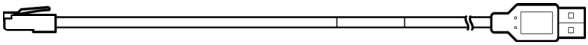
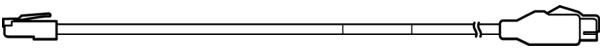
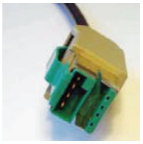
Mica beeps whenever data has been read correctly. Both frequency and volume can be adjusted (see section 2.1.1 Speaker frequency and 2.1.2 Speaker volume on the Configuration Guide).

2.2 CONNECTING

Interface Selection

Mica allows you to connect your host system using four different interface cables: RS232, Keyboard Wedge, USB, and Powered USB. On powering up, the scanner senses the type of the interface used and switches to the appropriate protocol.

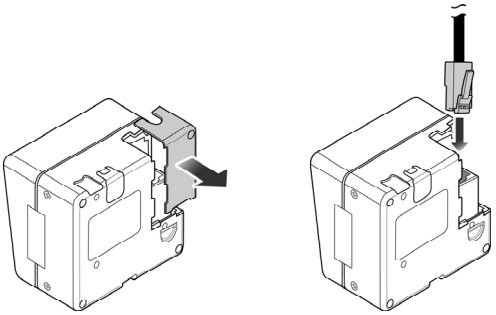
Interface Cable	Connector type
RS232 (Product Number: 0114-SM01121)	Sub-D 9-pin
	
Keyboard Wedge (Product Number: 0114-SM02121)	Standard PS2
	

USB (Product Number: 0114-SM04121)	USB connector
	
Powered USB (Product Number: 0114-S804121)	Powered USB connector
	

Getting connected

To connect Mica to your host system, follow the steps below:

1. Open the cable cap of Mica.
2. Connect the desired interface cable to Mica.



3. Close the cable cap.
4. Connect the interface cable to your host system.

2.3 MOUNTING

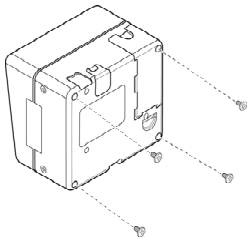
To mount Mica, follow the steps below:

NOTE

Before fixing Mica to your host system, connect the desired interface cable to Mica first (See section 2.2 Connecting).

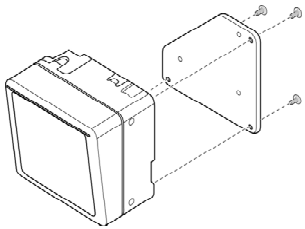
Standard package

1. Place Mica on the inside of your host system and mark the places for the mounting holes. See Appendix for Mica's dimensions.
2. Drill the mounting holes in your host system.
3. Fix Mica on the inside of your host system with screws.



Special package (with the fit plate)

1. Fix the fit plate to Mica with screws.



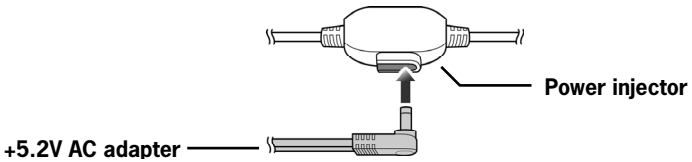
2. Attach Mica to the scanner stand of your host system.

2.4 POWERING

Mica is designed to use a single cable for both data transmission and power supply. This requires that your host system can provide sufficient power on its data port (RS232, KBW, or USB).

Power injector

Some applicable Mica interface cables have a power injector to connect an external power supply in case the host system cannot supply sufficient power for the scanner.



Cable	Power injector
RS232, Keyboard Wedge	√
Powered USB, USB	×

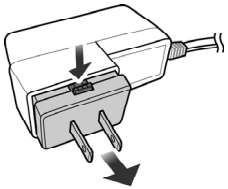
NOTE

- Though some cables have a power injector, this does not mean that you must use a power supply.
- For safety reasons, an automatic switch will disconnect the power provided by the host system, as soon as a separate power adapter is connected to the power injector.

Changeable power plugs

To change the power plug suited to your area, follow the steps below:

1. Press and hold the tab on the AC power adapter.
2. Remove the changeable plug outwards.



3. Replace with the desired power plug.

2.5 INITIALIZING

When using Mica for the first time, you need to initialize the communication parameters first. Follow the steps below to initialize:

1. Ensure that the desired interface cable is connected to Mica and your host system.
2. Power up Mica.
3. Initialize the communication parameters by scanning the programming barcode 1.1 and 1.3 on the Configuration Guide.

NOTE

The procedure is required only once. However, when changing the cable from one type to another, you need to perform the procedure again.

KBW mode
In KBW (Keyboard Wedge) mode, the scanner defaults to the International Keyboard layout (ALT-method) for communication.

NOTE

To change the settings to national keyboards in KBW mode, refer to section 3.4 on the Configuration Guide.

RS232 mode
In RS232 mode, the default communication parameters are 9600,N,8,2. Using the Scantech-ID Configuration Guide, you may select one of the various presets, or set each parameter by hand.

USB mode
In USB mode, the scanner defaults to Keyboard Emulation Mode. Mica transmits the data in International Keyboard layout (ALT-method) for communication.

NOTE

The Mica-USB must be directly connected to the host-USB port and not through an (un-powered) USB hub.

Other available USB communication selections are:
- USB IBM fixed POS scanner
- USB IBM handheld scanner emulation
- USB COM port emulation

NOTE

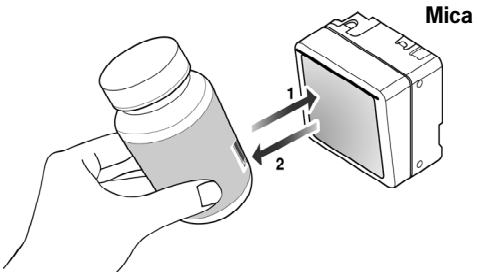
See section 3.5 USB communication on the Configuration Guide for more information.

Chapter 3

Using Mica

3.1 SCANNING BARCODES

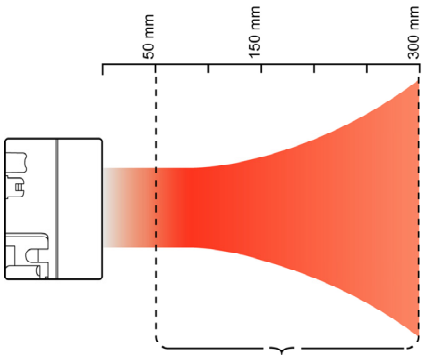
Mica is an omni-directional presentation scanner featuring a 6 directional scan field with a 24-line scan pattern. Barcode labels can easily be read by presenting them to the scanner.



NOTE

Since Mica is a **presentation** scanner, best results are obtained if the barcode is moved **towards** the scanner.

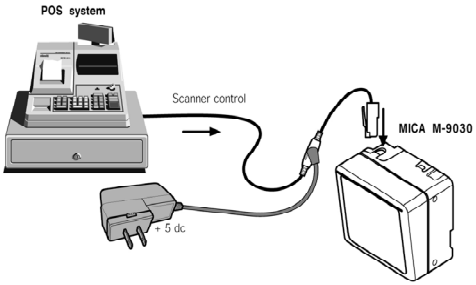
Mica's scan volume is illustrated in the figure below. The optimal reading zone lies between 5 and 30 cm from the scanner window. The scan depth varies depending on the size of the barcode.



3.2 CONTROLLING

Mica can be controlled from the POS/PC system via the RS232 interface or via USB while using comport emulation. Control is achieved by transmitting single byte commands to the scanner. The following commands are available:

ASCII code	Function	Byte is also called
05 Hex	Power-up re-initialization	ENQ or <Ctrl-E>
0E Hex	Enable (cancels disable)	Shift Out or <Ctrl-N>
0F Hex	Disable	Shift In or <Ctrl-O>
12 Hex	Sleep	DC2 or <Ctrl-R>
14 Hex	Wake (cancels sleep)	DC4 or <Ctrl-T>



NOTE

More commands are available upon request. Please contact your dealer for more information.

3.3 MAINTAINING

Mica requires little maintenance. Only occasional cleaning of the scanner window is necessary to remove dirt and fingerprints. Cleaning can be performed during operation with a non-abrasive glass spray cleaner and a soft lint-free cloth.

NOTE

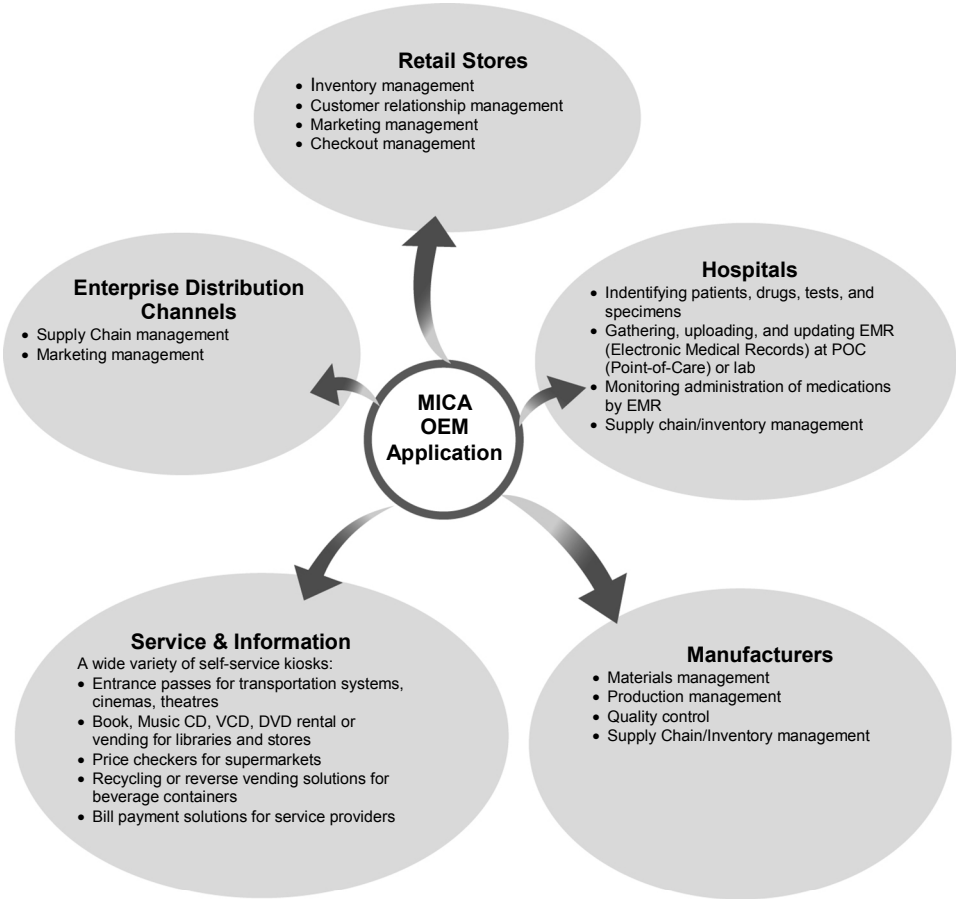
Please contact your dealer for specific cleaning material.

Chapter 4

Applications

MICA as a Core Module of your Application Solutions

Barcodes have become a distinguishing mark of modern civilization. The familiar stripes are popping up almost everywhere in everyday life: libraries, retail stores, supermarkets, post offices, bill payment for services, law firms, shipping companies, enterprises, distributors, manufacturers, hospitals, etc.



The benefits of bar coding are obvious: improved data accuracy and accessibility enable a company to make correct decisions about future needs and actions. Consequently, profits are up.

Case: Benefits of Bar Coding for Retail Stores

- Building a competitive infrastructure
- Synchronizing supply with demand
- Creating high profitability
- Trimming operational costs

Although the applicable areas of barcode are extremely varied, the purpose is the same: improving data/materials management and reducing operation costs. All of these require a high performance barcode scanning solution.
In all barcode-based solutions, the core unit is the barcode scanning module. Mica features high integrability, flexibility, scanning, and decoding capability. The compact design allows it to be integrated easily into almost any host system with minimum space requirement. Possible applications are:

- POS terminals
- Mobile computers
- Hand-held scanners
- Healthcare solutions
- Price checkers
- Self-service kiosks, etc.

Price checker

Retail Solution

Kiosk Solution

Industrial Solution

Appendices

A. Connection Types and Pin Definitions
B. Technical Specifications
C. Troubleshooting

A. CONNECTOR TYPES AND PIN DEFINITIONS

Mica supports multiple interface: RS232, KBW (Keyboard Wedge), USB, and Powered USB. The various pin definitions for each type of interface are given below.

IMPORTANT

Various interface cables are available depending on the kind of host system you are using. Contact your supplier for availability. In case you need a special purpose cable, you can refer to the information below.

The Connector type of Mica: RJ-48, 10 pins.

Pin Definition for multiple interface

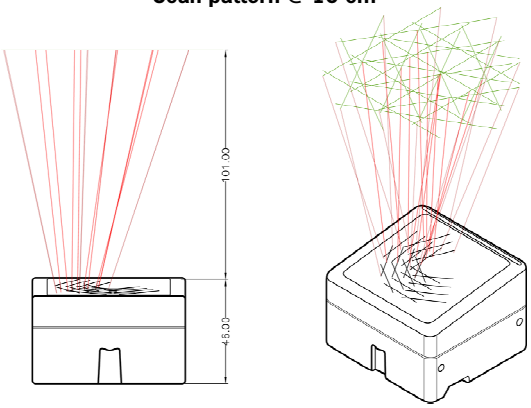
	Multiple Interface			
	RS-232	**KBW**	**USB/ Powered USB**	
Pin	**Description**	**Description**	**Description**	**Remark**
1	-	-	IFID	IFID=Interface ID
2	CTS	PC-Clock	-	
3	RxD	PC-Data	-	
4	TxD			IFID=Interface ID
5	RTS	KB-Clock	-	
6	Ground	Ground	Ground	Ground
7	+5.2V	+5.2V	+5.2V	5.2V, may be used to power scanner
8	D-Power	D-Power	D-Power	8-16V DC input to power scanner*
9	-	IFID: connect to '6'	D +	IFID=Interface ID D + = USB data
10	-		D -	D - = USB data

*Mica only requires one single DC input.

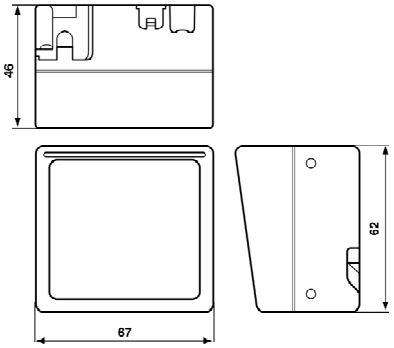
B. TECHNICAL SPECIFICATIONS

Electrical	
DC input to scanner	+5 V DC, 250 mA
Power output	1.25 Watt @ +5 V DC
Scanner Characteristics	
Light source	650 nm visible laser diode
Depth of field	Up to 300 mm @ 13 mill .33 PCS 90%
Scan pattern	6 direction scan field, 24 lines scan pattern
Scan rate	2000 scans/sec
Light level	Max 4800 LUX
Barcode types	EAN/UPC/JAN + Add-on, ISBN, Code 128, EAN 128, Code 93, Code 39, Code 32, Codabar, Interleaved 2 of 5, MSI-Plessey, GS1 DataBar compliance (symbol 1-9)

Scan pattern @ 10 cm



Physical Characteristics	
Depth	46 mm / 1.81 inch
Width	62 mm / 2.44 inch
Height	67 mm / 2.63 inch
Weight	130 g
Color	Black / Silver (optional)



Environmental	
Operating Temperature	0°C ~ 40°C
Storage Temperature	-10°C ~ 60°C
Humidity	20% ~ 95% RH (non-condensing dew)

Safety	
Laser Safety	IEC 825-1 (1993) Class I, U.S. 21CFR1040 Class IIa
Electrical Safety	EN 60950

EM Compatibility	
Radio and TV Interference	EN 55024/22, FCC Part 15 class B, CNS 13438
Electro Static Discharge (ESD)	IEC 801-2 (1991)

C. TROUBLESHOOTING

This section contains information on solving problems you may encounter when using the scanner. If troubles occur, take a moment to read the information in this section. However, before referring to the diagnostic tips ensure that the scanner is installed as described in Chapter 2 and that all cables are properly connected.

Problem	Diagnostic Tips
The scanner is on but a barcode cannot be read.	• The scanner window is dirty. Clean the scanner window as described in section 3.3. • The presented barcode type is not enabled. Select the barcode type with the Configuration Guide. • The scanner is disabled by the host. Refer to section 3.2. • The barcode type you presented to the scanner is not supported by Mica.
The scanner does not accept more than two or three barcodes.	• There is no proper handshaking with the host system. Switch the host system on and check connection and communication settings.
A barcode is read by the scanner but not accepted by the host system.	• The communication cable is not connected to the serial port of your host system. Refer to the manual of your host system to locate the serial port. • The communication settings of the host and scanner do not match. Ensure that the setting values for both devices are the same. For proper adjustment values, refer to the Configuration Guide. • The communication cable does not suit your host system. Contact your supplier for the correct communication cable. • The data format is not supported by the software running on the host system.

USB communication is not working.	• In case of KB emulation you can select various 'keyboard languages' or the universal 'Alt-input-method' (default). You may want to try programming barcodes from section 3.4 on the Configuration Guide. • In case of KB emulation in combination with the Alt-input method, check that Num-Lock of your keyboard is on. • In MS-windows environment, verify with the device manager that the HID (Human Interface Device) is installed for the scanner. • Check that the scanner and the host system both expect the same USB protocol (KB emulation, RS232 emulation or IBM POS protocol). See the Configuration Guide for setup codes and reset the scanner after making any changes. When using a standard-USB cable, the scanner defaults to the USB KB emulation protocol with ALT-method character transmission. When using USB plus power cable (with the green connector), the scanner defaults to USB-IBM-POS protocol for tabletop scanners. These settings are restored after programming "back to default" using the Configuration Guide.

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