QUICK START GUIDE

ODT-MAC4**-ND-RD
Stationary reading device
for Data Matrix codes

$C\!E$

Laser Class 2M
EN 60825-1

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1 Introduction

1.1 Purpose of this Quick Start Guide

This Quick Start Guide is designed to help you learn the basic functions for operating the device. The guide also contains brief instructions for using the device again at a later stage. However, this Quick Start Guide does not replace the manual.

The Quick Start Guide does not explain complex scenarios or offer detailed information. If you wish to use the full range of device functions, refer to the manual. We also recommend reading the manual if you are unsure about handling the device or experience device malfunctions.

1.2 General safety instructions

Laser class 2M product

This stationary reading device is a laser class 2M product.

Laser Class 2M
EN 60825-1

> *Warning!*
> Class 2M laser radiation
>
> The laser beams from the laser pointer may damage your eyes.
>
> Do not look directly into the laser beam. Do not look directly at the laser beam using optical instruments.

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> ⚠️ ***Warning!***
> Class 3R laser radiation
>
> Emitted laser beams may damage your eyes when the housing is opened.
>
> Do not open the housing of the stationary reading device. In the event of faults, please contact Pepperl+Fuchs.

Only use recommended original accessories.

The operating company bears responsibility for observing locally applicable safety regulations.

Installation and commissioning of all devices must be performed by a trained professional only.

Independent interventions and separate modifications are dangerous and will void the warranty and exclude the manufacturer from any liability. If serious faults occur, stop using the device. Secure the device against inadvertent operation. In the event of repairs, send the device to Pepperl+Fuchs.

1.3 Intended use

The ODT-MAC4**-ND-RD stationary reading device is intended to be used only for the identification of objects by means of Data Matrix codes.

Always operate the device as described in these instructions to ensure that the device and connected systems function correctly. The protection of operating personnel and plant is only guaranteed if the device is operated in accordance with its intended use.

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2 Product description

2.1 Displays and controls

1. Lighting unit
2. Laser diodes
3. CMOS camera
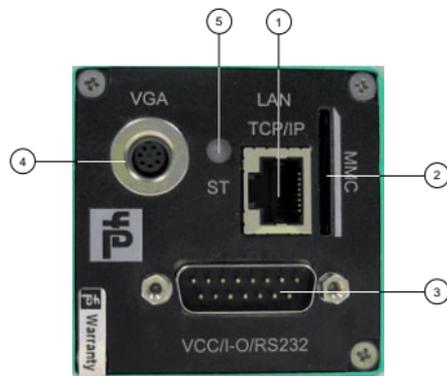
1. RJ45 Ethernet network socket
2. Position for MMC memory card
3. 15-pin D-Sub connector
4. Video output VGA 640x480
5. Status LED

Status LED

LED color	Description
Yellow	The LED turns to yellow for a short time after switching on.
Green	The LED flashes green after a successful read (good read).
Red	The LED flashes red after an unsuccessful read (bad read).

2.2 Interfaces and connections

15-pin D-sub connector

PIN	Signal	Description
1, 2	GND	GND for device
3	IO GND	GND for inputs/ outputs
4, 5	+24 V	Supply for device, 24 V DC PELV ±15%
6	IO +24 V	Supply for inputs/ outputs, 24 V DC PELV ±15%
7	RTS	Handshake signal, RS 232
8	IN1	24 V DC input
9	IO-OUT0	24 V DC "good read" output
10	IO-OUT1	24 V DC "bad read" output
11	IO-IN0	24 V DC "trigger" input
12	CTS	Handshake signal, RS 232
13	TXD	Transmission line, RS 232
14	RXD	Receive line, RS 232
15	IN2	24 V DC input

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Video output, VGA 640x480 (7-pin cylindrical connector)

PIN	Signal	Description
1	V_{sync} OUT	Vertical synchronization output
2	R GND	Red signal ground
3	R Out	Red signal output
4	G Out / BAS Out	Green signal output
5	V_{sync}GND	Vertical synchronization ground
6	B Out	Blue signal output
7	H_{sync} Out	Horizontal synchronization output

Network connection

1   Transmit data (+)

2   Transmit data (-)

3   Receive data (+)

4   Not assigned

5   Not assigned

6   Receive data (-)

7   Not assigned

8   Not assigned

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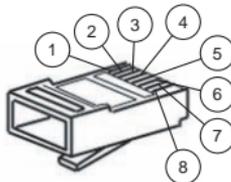
2.3 Accessories

Various accessories are available.

2.3.1 Cables

The following cables are available as accessories.

Model number	Description
ODZ-MAC-CAB-VIDEO	Video connection cable, cylindrical connector, 7-pin on SUB-D socket, 15-pin VGA, 2 meters
ODZ-MAC-CAB-15POL-2,5M-FEMALE	Connection cable, Sub-D socket, 15-pin, 2.5 meters, can be pre-assembled
ODZ-MAC-CAB-15POL-5M-FEMALE	Connection cable, Sub-D socket, 15-pin, 5 meters, can be pre-assembled
ODZ-MAC-CAB-24V-R2-2M	Connection cable for power supply, RS 232
V45-G-10M-V45-G	Network cable RJ45, category 5, up to 100 MHz, 10 m

2.3.2 Other accessories

Other products are available as accessories.

Model number	Description
ODZ-TRIGGERBOX-SK	Trigger box set for stationary reading devices, comprising: ODZ-TRIGGERBOX ODZ-MAC-CAB-15POL-2,5M ODZ-MAC-CAB-9POL-1,8M ODZ-MAC-PWR-24V
ODZ-MAC-PWR-24V	Desk top power supply 24 V DC, 1.88 A

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3 Installation

3.1 Installation

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Note!

Preventing reflection and glare

Reflection and glare from reflective surfaces can impair the captured image and therefore lead to incorrect readings. To prevent reflection and glare, install the stationary reading device at a slight angle.

The read distance for both models is **60 mm**.
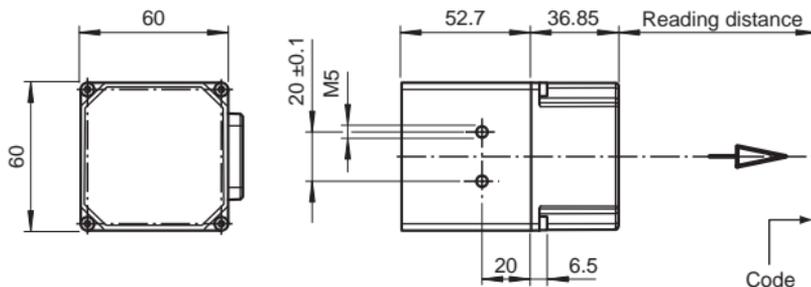
Figure 3.1: Dimensions of the **ODT-MAC400-ND-RD**

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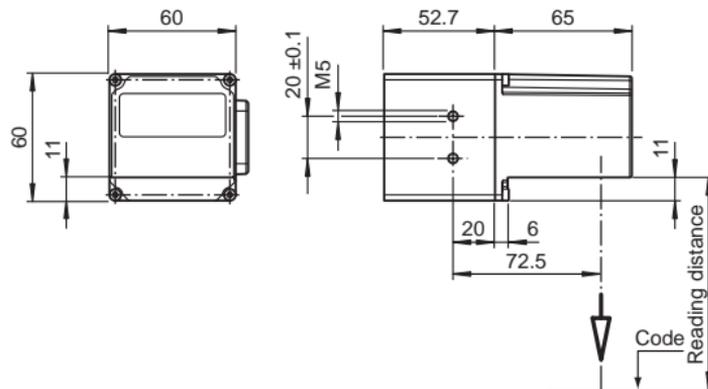
Figure 3.2: Dimensions of the **ODT-MAC401-ND-RD**

Note!

Connection to ground

When installing the device, ensure that it is has a ground connection.

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3.2 Connecting the device

Connecting the power supply

To connect a power supply to the ODT-MAC4**-ND-RD system, proceed as follows.

1. Plug the 15-pin Sub-D socket into the connector provided for this purpose on the back of the housing.

2. Screw in the two mounting screws as far as possible.

   This ensures that the cable cannot be inadvertently pulled out.

3. Next connect the power supply to the appropriate pins on the Sub-D socket.

   The power supply has now been connected.

To connect the power supply to the ODT-MAC4**-ND-RD system quicker, the pre-configured connection cable can also be used. Information can be found in the Accessories section.

Note!

Record the network configuration

The ODT-MAC4**-ND-RD system communicates with the connected machine control system using the TCP/IP protocol. To ensure communication works correctly, you must note down all the changes you make to the network configuration.

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Note!

Network cabling

Use a crossover network cable to connect the ODT-MAC4**-ND-RD system directly to a PC. If the ODT-MAC4**-ND-RD system is being operated within a network, use a twisted-pair network cable to connect it to the network.

Establishing a network connection

In order to establish a network connection, proceed as follows.

When delivered, the ODT-MAC4**-ND-RD system has a fixed IP address (192.168.2.2). To facilitate communication within the network, you must configure your network. The configuration data can be found in the network configuration overview.

Connecting a trigger sensor

To connect a trigger sensor, proceed as follows.

Connect the trigger sensor to the cable previously connected for the power supply.

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4 Commissioning

4.1 Connecting the stationary reading device

The ODT-MAC4**-ND-RD has its own web server. You have the option of making settings on the stationary reading device using a standard web browser.

Aligning the stationary reading device

To find the ideal alignment for the device, use the two laser diodes in the stationary reading device.

1. Supply power to the ODT-MAC4**-ND-RD via the D-Sub connector.
2. Adjust the stationary reading device so that both points generated by the laser diodes are positioned on top of each other on the code to be read.

   This sets the ideal reading distance between the stationary reading device and the code to be read.

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5 Operation

5.1 Web-based operator interface

You have the option of configuring and operating the ODT-MAC4**-ND-RD via a web-based operator interface, and using it to display information.

Starting the operator interface

Note!

To start the operator interface of the ODT-MAC4**-ND-RD, you need a standard web browser (e.g. Windows Internet Explorer or Mozilla Firefox) and Java, version 1.6 or later.

To start the operator interface, proceed as follows.

In the input field of a standard web browser, enter the IP address of the stationary reading device (**192.168.2.2**) and confirm this using Return.

The **Settings** tab opens as the start page.

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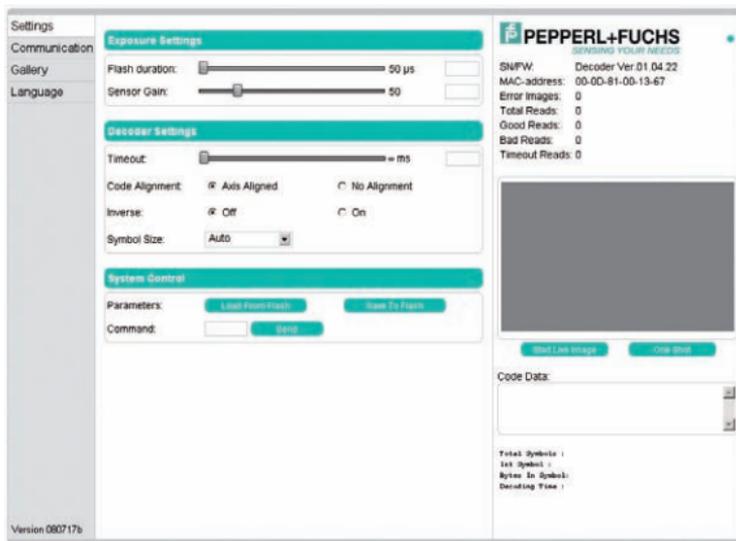
The following four tabs can be found on the left-hand side of the display:

- Settings
- Communication
- Gallery
- Language

Various different information is displayed in the central section - depending on which tab is active.

On the right-hand side, various status information (such as the software/ firmware version, the MAC address, the number of reads, etc.) is displayed, as well as the last image captured and the decoded information. On the right of the Pepperl+Fuchs company logo there is a pictorial representation of a status LED. This status LED lights up green when a device is connected. Otherwise it is red.

Activating live image capture

Note!

By viewing the captured images on the operator interface during operation, the image refresh rate reduces significantly.

To activate live image capture, click on the **Start Live Image** button on the right-hand side of the display screen.

The stationary reading device starts to capture images. The captured images are displayed in the results window. The decoded information is displayed beneath it in a separate window.

Starting single image capture

Click on the **One Shot** button on the right-hand side of the display screen.

Clicking the button triggers a single image capture.

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5.1.1 **Settings** tab

The **Settings** tab enables you to configure various parameters and to send individual commands to the ODT-MAC4**-ND-RD. Using the buttons on the left-hand section of the display you can navigate to the other tabs, **Communication**, **Gallery** and **Language**.
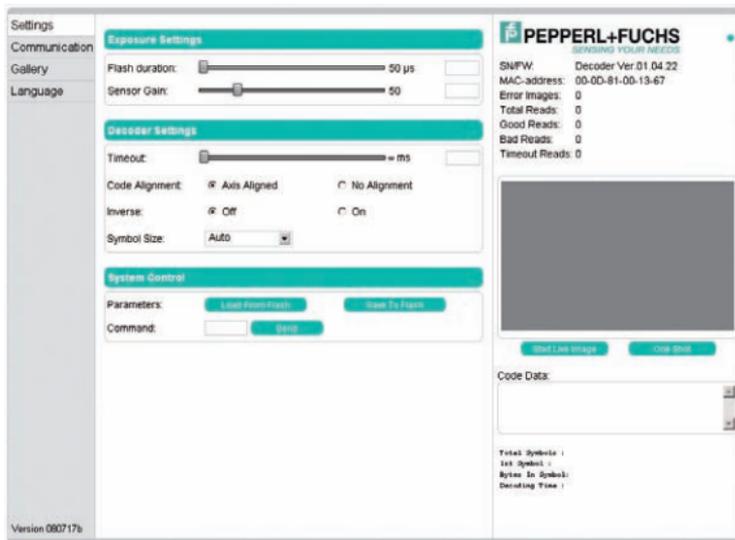
In the center of the screen, the following functions are available in different sections.

Sensor parameters & system settings

Parameter	Explanation
Flash duration	This parameter is used to set the duration of the flash at intervals of 10 µs.
Gain	This parameter is used to set the electronic gain. A high value electronically increases the brightness of the captured image and can improve the readability of the code considerably in the event of poor ambient conditions.

Decoder parameters

Parameter	Explanation
Timeout	This parameter is used to set the time limit after which the read operation is terminated.
Code Aligned	Axis alignment: Select this option if the codes are affixed to the object in the axial direction. This improves the decoding results. No Alignment: Select this option if the codes are not affixed to the object in the axial direction.
Inverse	Off: Select this option if you are using Data Matrix codes on a white background. On: Select this option if you are using inverse Data Matrix codes on a black background.
Symbol size	This parameter is used to set the symbol size of the Data Matrix codes used. Using constant symbol sizes improves decoding results.

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System settings

Setting	Explanation
Parameter set	Load From Flash: Use this button to load parameter settings from the internal memory (flash EEPROM). Save To Flash: Use this button to save your current parameter settings in the internal memory (flash EEPROM).
Command	Send individual commands to the ODT-MAC4**-ND-RD

Sending a command

You have the option of sending individual commands to the ODT-MAC4**-ND-RD. The commands are made up of 4-digit hexadecimal numbers (0 ... F). An overview of the available commands can be found in the appendix ().

1. If you are not already on the **Settings** tab, navigate to it.

2. Enter a valid, 4-digit hexadecimal number for the required command in the **Command** field.

Command: [   ] (send)

3. Click on **Send**.

   The relevant command will be sent to the ODT-MAC4**-ND-RD, where it will be executed.

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