MANUAL

Device Type Manager 2D Laser Scanner OBD10M-R2000-4EP-V1V17





With regard to the supply of products, the current issue of the following document is applicable: The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"



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1 Software Installation

1.1 Downloading required software/software components from the Internet

To parameterize the 2D laser scanner conveniently via a software interface, you need the corresponding Device Type Manager (DTM) in addition to the FDT framework program (PACTware 4.x). Both PACTware and the DTM are available at www.pepperl-fuchs.com.



- Downloading the FDT framework program PACTwareTM 4.X from the Internet
- 1. In the Internet browser, enter www.pepperl-fuchs.de.
- In the search field, enter the product name of the software component: PACTware 4.X.
 → The results list is displayed.
- 3. In the results list, find the **PACTware 4.x** entry and click the **Software** button.

 \rightarrow The zip file containing the **PACTware 4.x** software is saved.

- 4. Unzip the zip file.
- 5. Save the data to a temporary folder of your choice on your PC.

Downloading the DTM for the 2D laser scanner from the Internet

- 1. In the Internet browser, enter www.pepperl-fuchs.de.
- 2. In the search box, enter the product name of the 2D laser scanner, e.g.: **OBD10M-R2000-4EP-V1V17**.

 \mapsto The results list is displayed.

- 3. In the Product section, click the OBD10M-R2000-4EP-V1V17 link.
 - \mapsto The Internet browser displays the product page.
- 4. In the Software section, click the Device Type Manager (DTM) for R2000 laser scanner link.
- 5. The zip file with the DTM is saved.
- 6. Unzip the zip file.
- 7. Save the data to a temporary folder of your choice on your PC.



1.2

Installing required software/software components

Installing the FDT framework program PACTwareTM

- 1. Load the FDT framework program PACTwareTM to your PC. See "Downloading the FDT framework program PACTwareTM 4.X from the Internet" on page 4
- 2. Unzip the zip file.
- 3. Save the data to a temporary folder of your choice on your PC.
- 4. Start the installation by double-clicking the Setup.exe file.
 - \mapsto The Select Language window is displayed.

Select Langua	ge	×
English		•
	OK	Cancel

5. In the drop-down list, select the installation language and confirm your selection with OK.

 \mapsto The list of available software is displayed.

🐞 PACTware 4.1 SP2	Installer	
	Select the components that should be installed with PACTware 4.1 SP2 Microsoft Data Access Components 2.8 (Installed) PACTware 4.1 SP2	
Windows XP Sp3 (x86)	Install Close	



- 6. Select PACTware 4.X and confirm your selection with Install.
 - \mapsto The Installation Wizard is displayed.

🔂 PACTware 4.1 SP2 Setup	
	Welcome to the PACTware 4.1 SP2 Setup Wizard
	The Setup Wizard will install PACTware 4.1 SP2 on your computer. Click Next to continue or Cancel to exit the Setup Wizard.
	Back Next Cancel

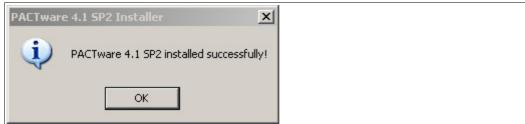
7. Follow the installation instructions and confirm the installation steps.

 \mapsto The window with the license terms is displayed.

nd-User License Agree			12
Please read the following li	cense agreement carefully		
END-USER SOFTWAR	E LICENSE AGREEMEN	T ("EULA")	
IMPORTANT NOTE -	READ CAREFULLY:		
THIS END-USER SO	FTWARE LICENSE AGR	EEMENT IS A LEG	AL
	N YOU, AS A DESIGN TATIVE IN THE NAME		
	CALLED IN THE FOL		
	PEPPERL+FUCHS GMB		1
	B-LICENSER. BY INS RE, YOU INDICATE Y		то
			1.85.1
I accept the terms in the	License Agreement		
	(14) (1)		
	Print Back	Next	Cancel

8. Agree to the End User License Agreement and confirm your entry with Next.

- 9. Follow the installation instructions and confirm the installation steps.
 - \mapsto The installation complete window is displayed.



- 10.Confirm the end of the installation with **OK**.
 - \mapsto The FDT framework program PACTwareTM software is installed.

Installing DTM for 2D laser scanner

- 1. Load the DTM for the 2D laser scanner onto your PC. See chapter 1.1
- 2. Unzip the zip file.
- 3. Save the data to a temporary folder of your choice on your PC.
- 4. Start the installation by double-clicking the Setup.exe file.

 \mapsto The Installation Wizard window appears.

Pepperl+Fuchs R2000 DTM Collection Setup						
	Welcome to the Pepperl+Fuchs R2000 DTM Collection Setup Wizard The Setup Wizard will install Pepperl+Fuchs R2000 DTM Collection on your computer. Click Next to continue or Cancel to exit the Setup Wizard.					
	Back Next Cancel					



5. Click Next.

 ${}\rightarrowtail$ The window with the license terms is displayed.

Pepperl+Fuchs R2000 DTM Collection Setup	x
End-User License Agreement	
Please read the following license agreement carefully	
END LICED COFTWARE LICENCE	
END-USER SOFTWARE LICENSE AGREEMENT ("EULA")	
IMPORTANT NOTE - READ CAREFULLY:	
THIS END-USER SOFTWARE LICENSE AGREEMENT IS A	
LEGAL AGREEMENT BETWEEN YOU, AS A DESIGNATED SINGLE USER OR AS A REPRESENTATIVE IN THE NAME	
OF A COMPANY OR AN ORGANIZATION, CALLED IN	Ŧ
I accept the terms in the License Agreement	
Print Back Next Can	cel

6. Agree to the license terms and conditions and confirm your entry with Next.

 \mapsto The window for selecting the installation path is displayed.

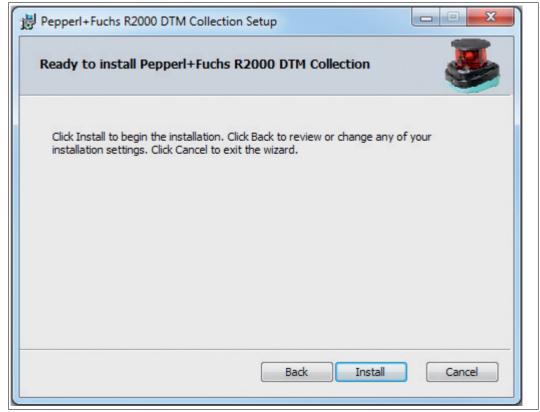
Pepperl+Fuchs R2000 DTM Collection Setup
Destination Folder Click Next to install to the default folder or click Browse to choose another.
Install Pepperl +Fuchs R2000 DTM Collection to:
C:\Program Files\Pepperl+Fuchs\DTM\R2000\ Browse
Back Next Cancel

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7. Select the installation path for the DTM by clicking Browse... and selecting a directory.

8. Confirm with Next.

 \mapsto The Installation Wizard is ready for installation.

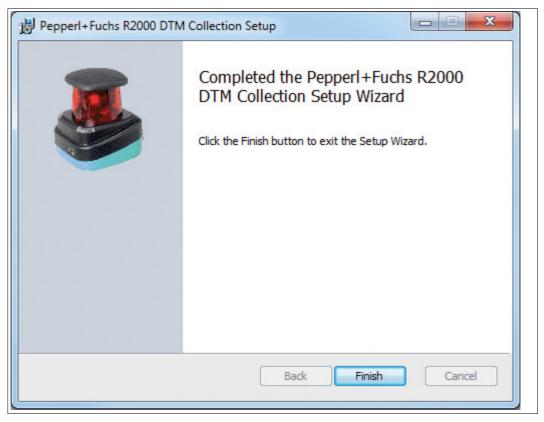


9. To begin the installation, click Install.

 \mapsto A window indicating the installation progress is displayed.

Pepperl+Fuchs R2000 DTM Collection Setup							
Installing Pepperl+Fuchs R2000 DTM Collection							
Please wait while the Setup Wizard installs Pepperl+Fuchs R2000 DTM Collection.							
Status:							
Back Next	Cancel						
Back Next	Cancel						

10. To close the Installation Wizard after successfully installing the DTM, click Finish.



2

Commissioning

1. Connect the device to the power supply.

 \rightarrow The initialization phase lasts approx. 15 seconds. This phase is shown by circles moving down the display.

- 2. After the initialization phase, the Pepperl+Fuchs logo will appear.
 - \mapsto The device is now ready for operation.

To achieve the best measurement accuracy, allow the device to warm up for 30 minutes.

The sensor has been tested and calibrated before delivery. It can be put into operation immediately.

In general, it is recommended to use a dedicated network card for the connection to the device.

2.1 Ethernet Configuration

The device has three different address modes. Select your preferred mode from the modes described below. The setting is configured directly on the device using the menu interface.

Auto IP

In this mode, the device independently selects a "Link-Local" IP address in the 169.254.0.0/16 range. It is ensured that the selected address is not already being used by another device.

The device is configured to Auto IP by default. The Auto IP setting is the ideal way to establish a direct connection to a PC. Set the DHCP mode (Dynamic Host Configuration Protocol) on the PC. To do this, select the TCP/IP protocol in the network card properties and select the "Obtain an IP address automatically" setting there. After approx. 30 seconds, Windows assigns an Auto IP for the PC.

eneral	Alternate Configuration						
this cap	get IP settings assigned aut ability. Otherwise, you need appropriate IP settings.						
Ob	tain an IP address automatic	ally					
-O Us	e the following IP address: -						
IP ad	dress:						
Subn	et mask:						
Defa	ult gateway:			1.1			
) Ob	tain DNS server address aut	omatically					
- Us	e the following DNS server a	ddresses:					
Prefe	rred DNS server:						
Alteri	nate DNS server:		•				
Va	alidate settings upon exit			Adv	/anced		
			OK		Cancel	5	

DHCP

Set the device to DHCP under the "Address mode" menu item. The DHCP configuration requires a DHCP server in the local network, e.g., a router. See the "Auto IP" item for information on this.

Manual IP

Set the device to manual under the "Address mode" menu item. The IP address is set to 10.0.10.9 and the subnet mask to 255.0.0.0 by default. To connect the device to the PC, the network card must be configured as follows. Set the required IP address in the network card menu. Select the TCP/IP protocol in the network card properties and select the "Use the following IP address" setting there. Enter the required IP address and subnet mask in these fields. Make sure that the "Disable NetBIOS over TCP/IP" menu item has been selected in the network menu under Advanced -> WINS ->.

nternet Protocol Version 4 (TCP/IF	Pv4) Properties						
General							
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.							
Obtain an IP address automa	atically						
• Use the following IP address:	:						
IP address:	10 . 0 . 10 . 10						
Subnet mask:	255.0.0.0						
Default gateway:	10 . 0 . 10 . 9						
Obtain DNS server address a	automatically						
Ose the following DNS server	addresses:						
Preferred DNS server:	· · ·						
Alternate DNS server:							
Validate settings upon exit	Advanced						
	OK Cancel						

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Note!

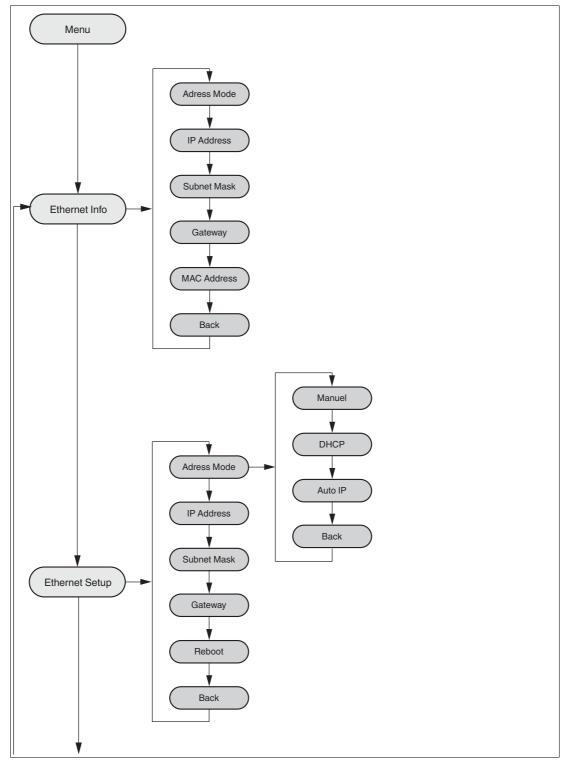
Device Restart

You must restart the device after changing the Ethernet configuration.

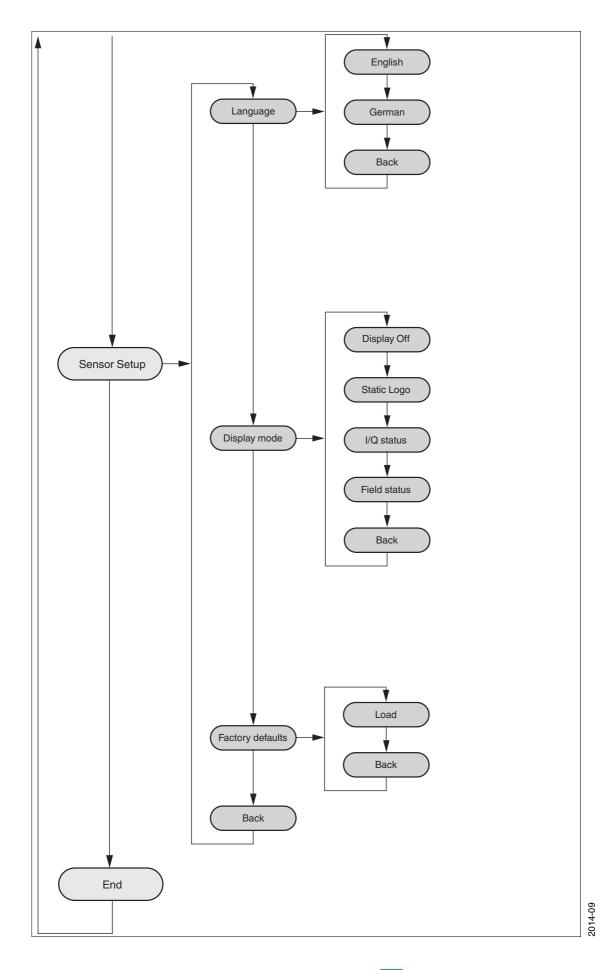


3 Operation





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3.2 Operation

The sensor is operated using two buttons, located on the front of the sensor, with which you can navigate in the menu structure. You can change the parameters or enter values using these buttons.



Meaning of Buttons

	This button is used as the "Next" button. Pressing this button takes you to the next menu item. You can change a value with this button. This button has a similar function to the ARROW button on the computer keyboard.
↓	Pressing this button selects the displayed menu item. This button has a similar function to the ENTER button on the computer keyboard.

In each menu item, the values already set are displayed with an underscore. These values can be changed. However, please note that these values should only be changed by personnel with the necessary expertise on the impact of the change.

If no other button is pressed within 60 seconds in the menu levels, the menu is ended automatically.

Navigation in the Menu

Menu display				
Top row	The current menu level is shown in the top row.			
Bottom row	The currently selected element is shown in the bottom row.			
Dash	One dash means that you are in the main menu.			
	Two dashes mean that you are in the submenu.			
Operation				
Pressing the ENT	ER button takes you into the menu structure.			
	You change to the next menu element.			
	If you hold down (> 1 second) the "Next" button or "ENTER" button, you will change to the next higher menu element.			
	You change to the selected menu element			
	If you hold down (> 1 second) the "Next" button or "ENTER" button, you will change to the next higher menu element.			

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Menu entry	
End	This menu entry ends the main menu.
Back	This menu entry changes to the next higher menu element

Change count parameters

Menu display		
Top row	This shows the current parameter.	
Bottom row	This shows the currently selected parameter value.	
Underlined parameter value	This is the currently activated value.	
Operation		
	You change to the next available parameter value.	
	If you hold down the button (> 1 second), you will change to the next higher menu element without changing the parameter.	
	You activate the parameter value currently displayed.	
7	If you hold down the button (> 1 second), the displayed parameter is activated and the display returns to the higher-level menu element.	

Changing Numerical Parameters

Menu display				
Top row	This shows the name of the displayed parameter.			
Bottom row	This shows the current value of the parameter.			
Underlined parameter value	This is the parameter value currently being edited.			
Operation				
	You increase the currently selected digit.			
	If you hold down the button (> 1 second), you increase the selected digit at a faster rate			
	You change to the next editable digit.			
	If you hold down the button (> 1 second), you change to the confirm menu.			
Confirm menu				
Top row	This shows the changed number.			
Bottom row	This shows the actions that can be carried out (Save, Edit, Cancel).			
"Save" action	The changed value is accepted and saved.			
"Edit" action	You change back to the edit display.			
"Cancel" action	The changes are rejected and you change to the higher-level menu.			

IP Configuration Display

Menu display				
Top row	Name of the displayed parameter.			
Bottom row	This shows the current value of the parameter.			
Operation				
	You change to the next menu element.			
	If you hold down (> 1 second) the "Next" button or "ENTER" button, you will change to the next higher menu element.			
	no function			
	If you hold down (> 1 second) the "Next" button or "ENTER" button, you will change to the next higher menu element.			

Back Menu Item

You return to the higher-level menu via the "Back" menu item

3.3 Description of Menu Items

3.3.1 Ethernet Info Menu Item

This menu item provides fast access to the IP configuration currently in use. The data can be read only in this menu item.

Address Mode

The address mode currently being used is displayed in this subitem.

IP Address

The IP address currently being used is displayed in this subitem.

Subnet Mask

The subnet mask currently being used is displayed in this subitem.

Gateway

The gateway currently being used is displayed in this subitem.

MAC Address

The MAC address currently being used is displayed in this subitem.

Note!

О П

Changing the IP Configuration

Changes to the IP configuration take effect only after a restart! The IP configuration currently used by the device is displayed in the "Ethernet Info" menu item. If these settings differ from the settings made under the "Ethernet Setup" menu item, the device must be restarted.

3.3.2 Ethernet Setup Menu Item

Change the IP configuration data in this menu item.

Address Mode

- "Manuel": Here an IP address, the subnet mask, and the gateway can be assigned manually to the device
- "DHCP": The device is assigned an IP address by a DHCP server (e.g., Windows PC)
- "AutoIP": The device can be detected automatically by the PC

IP Address

The IP address to be used in the address mode: "Manual" can be set in this menu item.

Subnet Mask

The subnet mask to be used in the address mode: "Manual" can be set in this menu item.

Gateway

The Gateway can be set in this menu item.

Reboot

Note!

The device can be restarted in this menu item.

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Changing the IP Configuration

Changes to the IP configuration take effect only after a restart! The IP configuration currently used by the device is displayed in the "Ethernet Info" menu item. If these settings differ from the settings made under the "Ethernet Setup" menu item, the device must be restarted.

3.3.3 Sensor Setup Menu Item

Language

The language can be set to German or English using this menu item.

Display Mode

The display mode defines the display in normal mode when the menu is not active. The display mode is set on a permanent basis. It is active following a restart.

- **Display off**: The display goes dark as soon as the menu is exited.
- Static logo: The Pepperl+Fuchs logo is displayed.



■ I/Q Status: The four inputs/outputs are displayed at the same time in rings. The respective input/output is indicated every 90° via points (1 – 4). The respective input/output is displayed even when it is not active.



■ Field Status: The four fields are displayed at the same time in rings. The respective field is indicated every 90° via points (1 – 4). The respective field is displayed even when it is not active.

Default Settings

The default settings for the sensor can be loaded in this menu item. To do this, you must select "Load" in the submenu and confirm by pressing the "Enter" button. You must restart the device to accept all the changes.

3.3.4 End Menu Item

End

Pressing the "Enter" button to confirm ends the menu and the display mode set is displayed.



4 Overview of the DTM menus

4.1 Establishing a connection

Once you have successfully installed the software (PACTware^{TM/}DTM for R2000 laser scanner) and have commissioned the 2D laser scanner hardware, set up the connection between the device and the DTM.



Connecting the 2D laser scanner to the DTM

1. Start PACTwareTM.



2. Open the device catalog by pressing F3.

□ 22 24 25 - 00 20 10 10 10 10 10 10 10 10 10 10 10 10 10	Device catalog		•× •0	
Device tag	E- All Devices	All Devices	09	
B HOST PC	- Pepperl+Fuchs	Device + Protocol	Vendor Central of Pepperl+Fuchs Pepperl+Fuchs	
¥ R2000 IP Comm		C6Dxxx-R2000 R20000P	Pepperl+Fuchs	
		CMDxxx-R2000 R20000P	Pepperl+Fuchs	
		# 82000 IP Comm 82000IP	Pepperl+Fuchs	
	Vendor Group Type Protocol			
Province	Show unselected devices too			
Error monitor			10	
4		Update device catalog Info	Add	

- 3. In the device catalog, double-click the entry **R2000 IP Comm**.
 - \mapsto The entry is included in the device tag tree structure.
- 4. Double-click the entry R2000 IP Comm in the device tag tree structure.

 \mapsto The R2000 IP Comm parameters window opens.

	R2000 IP Comm
	R2000 IP Communication DTM
Configuration About	Configuration Tag R2000 IP Comm
	Device Selection Manual IP Address 10 0 10 9 Automatic device detection 169.254.24.13 Update Show locator indication on selected device
Default	Close

5. To find a connected 2D laser scanner, click Update.

 \rightarrow As soon as the IP address of the 2D laser scanner is identified, click **Close**. If no IP address is displayed, check your network.

- 6. Highlight the entry R2000 IP Comm in the device tag tree structure. Click ³√₂.
 →R2000 IP Comm is connected.
- 7. Double-click the entry OBD-xxx-R2000 in the device catalog.

 \mapsto The entry is included in the device tag tree structure.

- 8. Highlight the entry OBD-xxx-R2000 in the device tag tree structure. Click
 ↓→OBD-xxx-R2000 is connected.
- 9. Double-click the entry OBD-xxx-R2000 in the device tag tree structure.
 - → The DTM for 2D laser scanner opens with the **Sensor Information** window.

PEPPERL+FUCHS

Data management

Changes made in the DTM interface do not become active in the 2D laser scanner until they have been transferred to the device.

Note!

We recommend first configuring all settings in all DTM interface windows. Then transfer all data to the 2D laser scanner. It is not necessary to transfer the data before switching between the individual DTM windows.



Reading data from the 2D laser scanner

Click 🚇.

 \mapsto The data saved on the 2D laser scanner is read. The data in the DTM interface is overwritten by the data from the 2D laser scanner.

Transferring data to the 2D laser scanner

Click 🖳

 \rightarrow The data from the DTM interface is transferred to the 2D laser scanner. The data on the 2D laser scanner is overwritten with the data from the DTM interface.

Sensor Information

OBDxxx-R2000 # Parameter			4 b x
I OI	BDxxx-R2000		E PEPPERL+FUCHS
2D	Laser Scanner		
	Sensor Informatio	n	
Sensor Information Ethernet Setup Measurement Setup Display / HNI Setup — Detection Field Setup — Overview — Outline Editor — Evaluation Configuration — UI Setup — Overview — Seturical Function — Logical Function — Logical Function — Live View — Senvice / Dagnosis — About	Product Name Part Number Serial Number MaC Address Current IP Address User Tag User Notes	Pepperi - Fuchs OBD10M - R2000 - 4EP - 11 / 12 253403 0000028840317 00-0D-81-02-37-D2 169-25424343 (Autolp) OBDxxx-R2000 (500 chars left)	

In the Sensor Information window, various information on the 2D laser scanner is displayed.

Once a connection has been established, only the sensor information is automatically updated and displayed. All other data must first be read from the 2D laser scanner. To read additional data from the 2D laser scanner, see "Reading data from the 2D laser scanner" on page 22.



4.2

4.3 Ethernet Setup

OBDxxx-R2000 # Parameter						
	OBDxxx-R2000					
	2D Laser Scanner					
	Ethernet Setup					
Sensor Information	Current Settings					
Ethernet Setup	O Static IP	IP Address	169	254	. 24	.13
Measurement Setup	ODHCP	Subnet Mask	255	. 255	. 0	.0
Display / HMI Setup — Detection Field Setup	Auto-IP	Gateway	0	. 0	. 0	.0
Overview						
- Outline Editor	Enable update of IP cont	iguration				
Evaluation Configuration	New Settings					
- I/Q Setup	 Static IP 	IP Address	10	. 0	. 10	. 9
Overview	O DHCP	Subnet Mask	255	255	. 255	. 0
Electrical Function	O Auto-IP	Gateway	0	. 0	. 0	. 0
- Logical Function						
Live View Service / Diagnosis	Attention:					
About	Changes to Ethernet setting r	equire a device reboot	to take	effect		
	Reboot Device					
🍄 Connected 🛛 🖸 Datab	ise					

In the **Ethernet Setup** window, information on the current network settings of the 2D laser scanner is displayed in the **Current Settings** section.

In the **New Settings** section, you can change the network settings.

Changing network settings

- 1. Activate the Enable update of IP configuration check box.
 - \mapsto The **New Settings** section is activated.
- 2. In the **New Settings** section, activate the desired option and, if necessary, enter a static IP address and/or the subnet mask.
- 3. Click 🖳

 \mapsto The data is transferred to the 2D laser scanner.

4. Click Reboot Device.

 \mapsto The 2D laser scanner is restarted. The new network settings are then enabled.

4.4 Measurement Setup

S OBDxxx-R2000 # Parameter		¢ b 🗙
3	OBDxxx-R2000 2D Laser Scanner	E PEPPERL+FUCHS
	2D Laser Scanner	
Sensor Information Ethernet Seup Display (HMI Setup Display (HMI Setup Orthriew Outline Etitor Evaluation Configuration UV2 Setup Overniew Electrical Function Live View Service / Displayois About	Measurement Setup Scan Frequency / Resolution 10 Hz / 007* 20 Hz / 0.15* 30 Hz / 0.20* Scan Direction Clockwise © Counter Clockwise	
😵 Connected 🛛 🕄 🛈 Datab	se	

In the **Measurement Setup** window, define the rotational speed, angular resolution, and physical direction of rotation of the 2D laser scanner.

The maximum response time is derived from the rotational speed setting and the **Multiple Evaluation** (see chapter 4.6.2) setting according to the following table:

Rotational speed	Reaction time				
10 Hz	ms + 100 ms * scans				
20 Hz	30 ms + 50 ms * scans				
30 Hz	30 ms + 33 ms * scans				

4.5

Display/HMI Setup

B OBDxxx-R2000 # Parameter		() x
	OBDxxx-R2000	E PEPPERL+FUCHS
	2D Laser Scanner	
	Display / HMI Setup	
Sensor Information	HMI Display Mode	
Ethernet Setup Measurement Setup	Rings I/Q Status	
Display / HMI Setup	Display Language	
Detection Field Setup Overview	English	
Outline Editor Evaluation Configuration	HMI Button Lock	
I/Q Setup Overview	Disabled Enabled	
Electrical Function	HMI Parameter Lock	
Logical Function	Disabled C O	
Live View Service / Diagnosis	Enabled	
Service / Diagnosis About		

In the **Display/HMI Setup** window, you can define the visual feedback for the laser scanner display and manage the release/locking functions of control buttons and functions.

HMI Display Mode

In the **HMI Display Mode** section, you can define the visual feedback for the laser scanner display.

The following options are available:

Option	Description
Display off	The display is switched off
Static logo	The Pepperl+Fuchs logo appears
Rings I/Q Status	Each active input/output is shown by a red ring
Rings Field Status	Each active field is shown by a red ring

Display Language

In the **Display Language** section, you can select the language of the 2D laser scanner display.

German and English can be selected.

HMI Button Lock

This function locks the control buttons on the 2D laser scanner. Operation is no longer possible.

Function	Description	DTM icon
Disabled	The control buttons are not locked.	
Enabled	The control buttons are locked.	P

HMI Parameter Lock

This function locks the setup menus of the 2D laser scanner (Ethernet Setup, Sensor Setup). It is no longer possible to make parameter changes on the device via the display. The information menus (Ethernet Info) remain available.

Function	Description	DTM icon
Disabled	The menus are not locked.	-
Enabled	The Ethernet Setup and Sensor Setup setup menus are locked. The Ethernet Info info menu is not locked.	Ģ



4.6 Detection Field Setup

OBDxxx-R2000 # Parameter	_					_	4
	OBDxxx-R2	000					PEPPERL+FUCH
	D Laser Scanne						
	D Laser Scanne	r					
2	Detection	Field Setu	p				
Sensor Information Ethernet Setup	Overview Ou	utline Editor Evalua	tion Configuration				
Measurement Setup Display / HMI Setup	Field	Field Name	Field Outline	Evaluation Configuration	Enabled		
Netection Field Setup Overview	1	Feld 1	4.points	Object in Field Ontection	(2)		
Outline Editor	2	Feld 2	Zpointa		(V)		
Evaluation Configuration Q Setup	3	Feld 3	10.points	Object in Field Detection	2		
Overview Electrical Function	4	Feld 4	4.pointa	Obmit in Field Detection			
Logical Function							
ive View ervice / Diagnosis							
bout							

The Detection Field Setup window contains three tab pages:

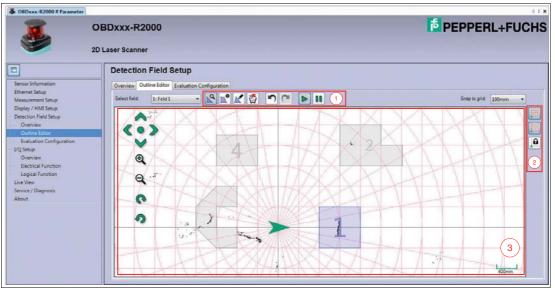
- Overview
- Outline Editor
- Evaluation Configuration

The **Overview** tab page appears by default.

Function	Description
Field Name	Name of the respective field. To define a name for the field, click in the appropriate box.
Field Outline	Indicates how many corner points the respective field consists of. Clicking on the link takes you to the Outline Editor tab.
Evaluation Configuration	Displays the currently defined detection algorithm. Clicking on the link takes you to the Evaluation Configuration tab.
Enabled	Enables/disables the respective field.



4.6.1 Outline Editor



On the **Outline Editor** tab page, you can create up to four fields for the detection of objects. The tools required to do so are provided in a horizontal toolbar (1), and the vertical bar (2) allows you to switch between different visualization options. There is also a character editor (3).

Button	Description	Keyboard shortcuts
2	Zoom in and zoom out functions, move view, rotate	Q
	Add points tool	W
	Move points tool	E
	Tool to clear the active field. Use the "Undo" function to reverse unintentional deletion.	
5	Undo function. Undo the last operation.	
2	Redo function. Redo the previously undone operation.	
	Start LiveView	
	Pause LiveView	
A	Show/hide rectangular coordinate system	
5	Show/hide circular coordinate system	
	Fixes the respective coordinate system	

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Button	Description	Keyboard shortcuts
	Arrows: Move view Circle: Center view	Arrow keys Pos1
۹	Zoom in	Mouse wheel +
Q	Zoom out	Mouse wheel -
0	Turn view to the right	/
9	Turn view to the left	*



Create fields

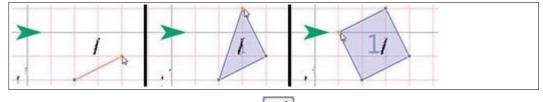
- 1. In the **Select Field** section, select the field to be created. You have four fields to choose from.
- 2. Select the Add points tool



0

3. A field is defined by corner points to which lines are added to automatically create a defined area. To set corner points, click in the character editor.

 \mapsto The field area is automatically created.



- 4. To move points, select the Move points tool
- 5. Select the corner point that you wish to move or, with the left mouse button held down, drag a box over several corner points.

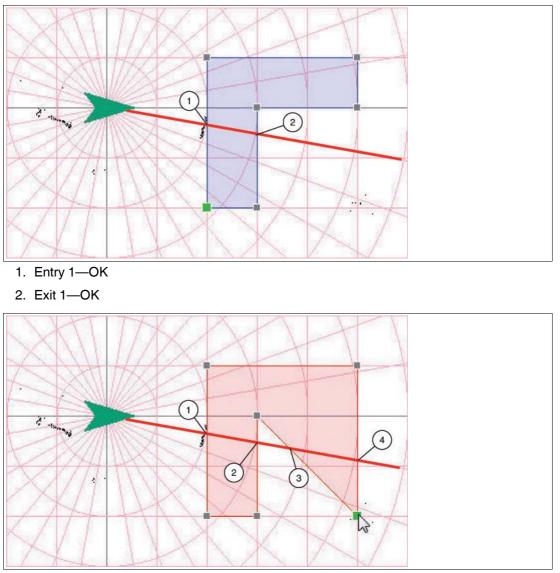
 \mapsto The highlighted corner points are selected and turn green.

- 6. Move corner points by clicking on the highlighted corner point and moving it with the left mouse button held down. If you have selected several corner points, click on one of the highlighted corner points and move the group of selected corner points with the left mouse button held down.
- 7. Exit field creation by pressing the Esc key or by clicking

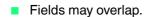


Information on Creating Fields

Each laser beam may enter and exit a field only once. The Add points tool helps you create valid fields. Valid fields are displayed in blue, while invalid fields are in red.



- 1. Entry 1—OK
- 2. Exit 1—OK
- 3. Entry 2-not OK
- 4. Exit 2-not OK



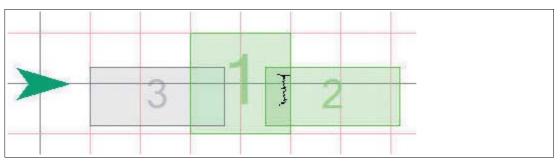


Figure 4.1 The fields 1, 2, and 3 overlap. 1 and 2 are active, as the object is detected in the overlap of field 1 and 2.

4.6.2 Evaluation Configuration

OBDxxx-R2000 # Parameter		4	
OBDxxx-R2000		E PEPPERL+FUCHS	
1	2D Laser Scanner		
]	Detection Field Setup		
ensor Information	Overview Outline Editor Evaluation Configuration		
hernet Setup	1. Select Field		
leasurement Setup (splay / HMI Setup	1: Feld 1 *		
etection Field Setup			
Overview	2. Select Detection Algorithm		
Outline Editor	Object in Field Detection •		
Evaluation Configuration	Enable evaluation		
Q Setup	3. Adjust Algorithm Settings		
Overview Electrical Function Logical Function	Detect objects wider than 1(+) cm		
ve View	4. Multiple Evaluation		
ervice / Diagnosis	🖌 Enable		
bout	Detection algorithm uses 2 2 - scans		
	5. Shadowing Detection		
	Enable		
	Shadowing detection uses 20 + scans		

On the **Evaluation Configuration** tab page, define the detection algorithm. Further settings can be adjusted in each field.

Area	Description
1. Select Field	Selection of the field for which you wish to define parameters
2. Select Detection Algorithm	Selection of the detection algorithm: None: Detection disabled
	 Object in Field Detection: as soon as an object is detected within the field, the field becomes active.
	 Reference Region Monitoring: as soon as a gap is detected in a defined reference region, the field becomes active.
3. Adjust Algorithm Settings	
Detect objects wider than (on selecting "Object in Field Detection")	Minimum object size that is necessary to detect an object. Objects that are smaller than the set value are not detected. If the set value is 0 cm, measurement on a single measurement beam is sufficient for object detection. The actual resolution is dependent on the set angular resolution and object distance.

Area	Description
Detect gaps larger than (on selecting "Reference Region Monitoring")	Minimum size of the gap that is necessary to enable a field whose detection algorithm is "Reference Region Monitoring".
4. Multiple Evaluation	Minimum number of consecutive scans required for field activation, during which the object must be in the field. Use this setting to prevent accidental activation by objects that remain in the field only briefly (e.g., insects flying through).
5. Shadowing Detection	Number of consecutive scans required to enable a field that is (partly) shadowed by another object outside of the field.

4.7 I/Q Setup

7	DBDxxx-R20	00			E PEPPERL+FU
2	D Laser Scanner				
	I/Q Setup				
sor Information met Setup	Overview Elect	ical Function Logical	Function		
asurement Setup blay / HMI Setup	Channel	User Tag	Electrical Function	Logical Function	
ection Field Setup Detroiew	IQ1	Out Push-Pull 1	Dutest	1.input.firmel	
Outline Editor	1/92	Out Push-Pull 2	Quant	2. Inout Giomatia	
valuation Configuration Setup	1/23	no name	Disabled (Hi-Z)	1. Input Granat	
Verview lectrical Function	1Q4	no name	Daubled (He2)	Liness Statel	
ogical Function					
View ice / Diagnosis					
ut					

The I/Q Setup window contains three tab pages:

- Overview
- Electrical Function
- Logical Function

The **Overview** tab page appears by default.

Function	Description
User Tag	Name of the corresponding input/output. To create a name for the input/output, click in the appropriate box.
Electrical Function	Indicates the electrical function. Clicking on the link takes you to the Electrical Function tab.
Logical Function	Indicates the logical condition that activates a trigger. Clicking on the link takes you to the Logical Function tab.



4.7.1 Electrical Function

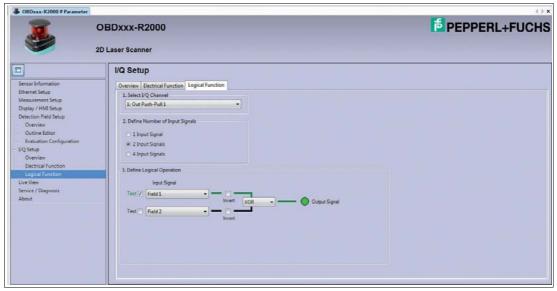
SOBDxxx-R2000 # Parameter		4.5 x		
	OBDxxx-R2000	PEPPERL+FUCHS		
S	2D Laser Scanner			
	I/Q Setup			
Sensor Information Ethermet Setup Measurement Setup Display / HAI Setup Detection Field Setup Overview Outline Editor Evaluation Configuration UQ Setup Overview	Overview Bectrical Function Logical Function 1. Select UQ Channel			
Decrocal Function Logical Function Logical Function Live Vew Service / Diagnosis About	Output Functionality Puth-Pull Pute Extension N-Switching P-Switching P-Switching Insectionality Insectionality<td></td>			

On the **Electrical Function** tab page, you can define input and output signals. Further settings can be adjusted for each input/output signal.

Area	Description			
Select I/Q Channel	Selection of the I/Q channel for which you wish to define parameters			
I/Q Mode	Determines whether the electrical connection is operated as input, output, or high resistance (disabled).			
I/Q Polarity				
	 Active-High: positive logic 			
	 Active-Low: negative logic 			
Output Functionality (on selecting "Output" in the "I/Q Mode" section)	Defines the type of electrical circuit of an output and the pulse extension:			
	Push-Pull: push-pull circuit			
	N-Switching: negative switching (NPN)			
	P-Switching: positive switching (PNP)			
	Pulse Extension: sets the time by which the corresponding output signal is extended. Shorter output pulses are extended accordingly. An output remains active for longer in line with this setting.			

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4.7.2 Logical Function



On the **Logical Function** tab page, you can create logical operations for one, two, or four input signals for each I/Q channel defined as an output.

Area	Description
1. Select I/Q Channel	Selection of the I/Q channel for which a logical link is to be defined
2. Define Number of Input Signals	Selection of how many input signals are processed in the logical link
3. Define Logical Operation	 Definition of the actual logical link. The Test check box is used for simulation purposes to test the set logical link without activating the input signal.
	 Under Input Signal, select a field, an input, or the "System Error Flag"
	The Invert check box inverts the logical state of the input signal.
	If two or four input signals are processed for one output signal, the following three logical operators are available: AND: logical "and"
	OR: logical "or"
	XOR: exclusive "or"



Note!

Once all the settings in the DTM interface have been configured, transfer the data to the 2D laser scanner.



Transferring data to the 2D laser scanner

Click 🖳

 \mapsto The data from the DTM interface is transferred to the 2D laser scanner. The data on the 2D laser scanner is overwritten with the data from the DTM interface.

4.8

Live View

	OBDxxx-R2000 2D Laser Scanner						PEPPER	L+FUCH
	Live View	> 11 7.9	ow Fields	_			Scan refresh rate	50ms 💌
Sensor Information Ethernet Setup								
isnemet setup Measurement Setup Display / HMI Setup Detection Field Setup	<0>		; .	1 ·				
Overview Outline Editor Evaluation Configuration	Q		1			-		
/Q Setup Overview	Q		e -				, ,	
Electrical Function Logical Function	0				•	÷		
ve View ervice / Diagnosis ibout	9					• •		
			7				 1	
		E Field () (2 (1	1	<u>ک</u>	-	

In the Live View window, the live image of the 2D laser scanner is shown in real time.

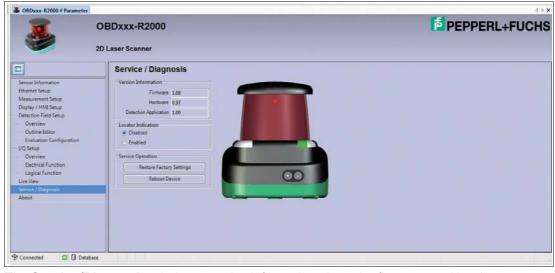
Different buttons in the vertical toolbar on the right-hand side (1) allow you to adjust the Live View display.

Button	Description
	Shows the individual scan points
	Connects scan points that are close to one another with lines
	Connects all scan points with lines
	Indicates invalid scan points
	Indicates the size of the echo amplitude using color coding
	Indicates measurements on reflectors or highly reflective objects using red color coding.

The statuses of the inputs/outputs and of the active fields are displayed at the bottom of the screen (2):

- Gray: inactive
- Green: active

4.9 Service/Diagnosis



The **Service/Diagnosis** window contains information about the firmware and hardware version.



Enabling/disabling the locator indication on the laser scanner

To make it easier to locate the laser scanner in the system, you can choose to activate the locator indication.

1. In the Locator Indication section, activate the Enabled option.

→ The two LEDs **PWR** and **Q2** on the laser scanner will flash.

- 2. In the Locator Indication section, activate the Disabled option.
 - \mapsto The locator indication is disabled.



Resetting the 2D laser scanner to factory settings

1. In the Service Operation section, click the Restore Factory Settings button.

 \hookrightarrow A dialog box opens.

?	A factory reset involves a sensor reboot and might change the Ethernet						
	settings.						
	Please disconnect both Device DTM and Gateway DTM and re-connect when the reboot has finished.						
	when the reboot has ministed.						
	Do you want to reset the sensor to factory settings now?						

2. Confirm with Yes to continue.

 \mapsto The 2D laser scanner reverts to its factory settings.





Restarting 2D laser scanner

1. In the **Service Operation** section, click on the **Reboot Device** button.

 \mapsto A dialog box opens.

?	After reboot the device is accessible via the changed Ethernet settings only. Please disconnect both Device DTM and Gateway DTM and re-connect using the new Ethernet settings. Do you want to reboot now?
	bo you want to reboot now?

2. Confirm with Yes to continue.

 \mapsto The 2D laser scanner is restarted.

4.10 About

OBDxxx:R2000 # Parameter			4 6 3		
2D Laser Scanner			PEPPERL+FUCHS		
	About				
Sensor Information Ethernet Setup Measurement Setup Display / HMI Setup – Detection Field Setup – Outriee – Outriee – Setuation Configuration – UQ Setup – Overview – Detection Function – Legical Function – Legical Function – Live View Senvice / Displaysies About	DTM Version DTM Build Dete				

The About window displays information about the DTM version.



FACTORY AUTOMATION – SENSING YOUR NEEDS



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/ DOCT-3832 09/2014