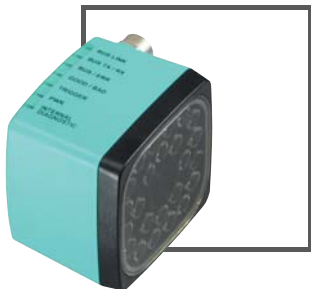


QUICK START GUIDE

OPC120P-F201-B17

EN

Optical Print Inspector with
PROFINET interface



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SENSING YOUR NEEDS

EN

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 Introduction

1.1 Purpose of this quick start guide

This quick start guide contains basic instructions for operating the device. However, the manual takes priority over the quick start guide.

1.2 Intended Use

The stationary read devices OPC-*, OPD-*, and OPE-* are used to decode 1-D and 2-D codes.

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Protection of the personnel and the plant is not ensured if the device is not being used according to its intended use.

1.3 Operation, Maintenance, Repair

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.

The device must not be repaired, changed or manipulated.

If there is a defect, always send back the device to Pepperl+Fuchs.

1.4 Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

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 (see datasheet) must be considered.

Disposing of device, packaging, and possibly contained batteries must be in compliance with the applicable laws and guidelines of the respective country.

2 Product Description

2.1 Indicators and Operating Controls

The illumination unit contains 7 LED indicators that provide information on the status of the device.



Figure 2.1 Indicators

- 1 BUS LINK**
Green LED: PROFINET connection active
- 2 BUS TX / RX**
Yellow LED: PROFINET data transfer
- 3 BUS / ERR**
Red LED: PROFINET communication error
- 4 GOOD / BAD**
Green/red LED: reading successful (green) or failed (red)

5 TRIGGER

Yellow LED: trigger pulse triggered

6 RUN

Yellow LED: sensor ready for operation

7 INTERNAL DIAGNOSTICS

Red/yellow/green LED: diagnostic message, no function

2.2 Interfaces and Connections

The following device connections are located on the device:

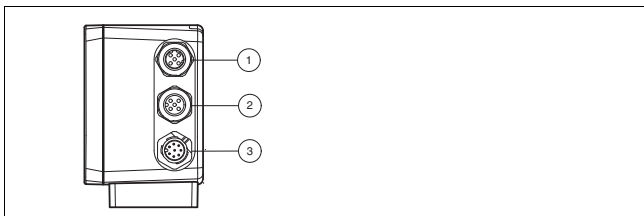


Figure 2.2 Device Connections

- 1 PROFINET 1 (4-pin M12 socket)
- 2 PROFINET 2 (4-pin M12 socket)
- 3 Main (8-pin M12 plug)



Caution!

Damage to the device

Connecting an alternating current or excessive supply voltage can damage the device or cause the device to malfunction.

Electrical connections with reversed polarity can damage the device or cause the device to malfunction.

Connect the device to direct current (DC). Ensure that the supply voltage rating is within the specified device range. Ensure that the connecting wires on the female cordset are connected correctly.

Power supply (main)

There is an 8-pin M12 connector on the side of the housing to connect the power supply and the inputs and outputs. The following diagram shows the pinning.

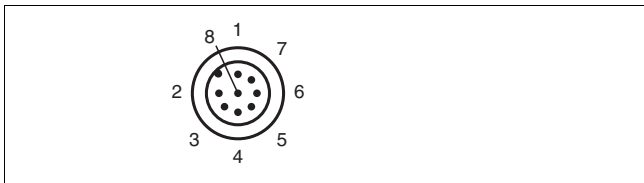


Figure 2.3 Connection Layout (main)

- 1 Trigger IN
- 2 + UB
- 3 USB_DM
- 4 USB_DP
- 5 n.c.
- 6 n.c.
- 7 GND
- 8 n.c.

PROFINET Interface

There are two 4-pin M12 sockets on the side of the housing. The following diagram shows the pinning.

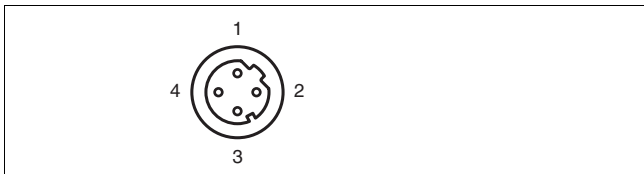


Figure 2.4 PROFINET Connection Layout

- 1 TX+
- 2 RX+
- 3 TX-
- 4 RX-

Shielding Cables

The shielding of cables is required to suppress electromagnetic interference. Establishing a low resistance or low impedance connection with the conductor or equipotential bonding circuit is a particularly important factor in ensuring that these interference currents do not become a source of interference themselves.

Always use cables with braided shield, never use cables with a film shield. The shield is integrated at both ends, i.e., in the switch cabinet, on the controller, **and** on the reader. The grounding terminal available as an accessory allows easy integration in the equipotential bonding circuit.

In exceptional cases, the shielding of a connection at one end may be more favorable if

- An equipotential bonding cable is not laid or cannot be laid.
- A film shield is used.

The following points relating to shielding must also be noted:

- Use metal cable clips that cover large areas of the shield.
- After installing the cable shield in the control cabinet, place it directly on the equipotential bonding rail.
- Direct the protective grounding connections to a common point in a star configuration.
- The cross-section of the cables used for grounding should be as large as possible.

3 Installation

3.1 Mounting the Device



Note!

Mounting an optical device

- Do not aim the sensor at the sun.
- Protect the sensor from direct long-term exposure to sun.
- Prevent condensation from forming by not exposing the sensor to any major fluctuations in temperature.
- Do not expose the sensor to the effects of any aggressive chemicals.
- Keep the lenses and reflector of the device clean. Clean with a soft cloth, using standard commercial glass cleaner if necessary.

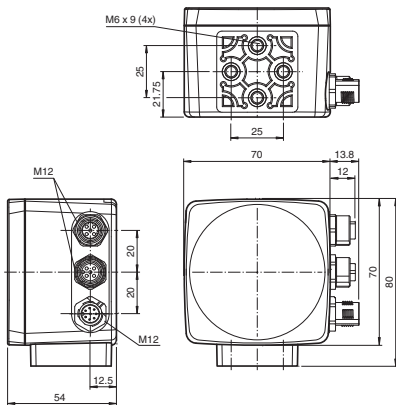
We recommend to clean the optical surface and to check screw fittings and electrical connections at regular intervals.

The surface must be level to prevent the housing from becoming distorted when the fittings are tightened. After mounting the sensor, ensure that there is still enough space to connect the connection cable to the sensor.

The reader has four symmetrically positioned M6 threads on the base of the housing to allow easy mounting of the reader in your plant.

The read distance differs according to the reader. You can find the correct read distance in the technical data for reader installation.

The following illustration shows all the relevant housing dimensions in mm:



Note!

Connection to ground

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

4 Commissioning

4.1 Connecting the Stationary Read Device

Supply power to the reader via the main connection on the device.
See chapter 2.2

The sensor is usually configured exclusively using the machine control system. For test purposes and to work out the optimum settings, the sensor can be configured using Vision Configurator. See chapter 5.3

5 Operation

5.1 Communication via PROFINET

5.1.1 Project Planning Using Device Description

As with PROFIBUS DP, a field device is integrated into the project planning tool by way of a device description. The field device properties are described in the GSD file. The GSD file contains the field device data (technical features and information for communication) that you need to operate the device in a PROFINET network.

Import the GSD file into a project planning tool. Peripheral addresses are assigned to the individual channels of the field devices. The peripheral input addresses incorporate the received data. The user program evaluates and processes this data. The user program generates the peripheral output values and sends them to the control interface.

Once project planning is complete, the I/O controller receives the planning and configuration data. The I/O controller parameterizes and configures the field devices automatically.

Downloading the GSD File

You can find the relevant GSD file in the **Software** section of the product detail page for the device.

To access the product detail page for the device, go to <http://www.pepperl-fuchs.com> and type information about the device (e.g., the product description or the item number) into the search function.

Configuration Process Using the GSD File

Import the GSD file into your control system.

The reader appears in the control system module view in the **OPC code reader**.

5.1.2 PROFINET Address and Identifying a Device

Every field device has a unique device identification. This device identification consists of the following:

- A **device name**. The default device name is `opc-f201`.
- An **IP address**. The default IP address is `192.168.2.3`.

5.2 Establishing a Connection to the PC



Configuring the IP Address of the PC (Windows 7)

1. Select **Start > Control Panel**.
2. Select **Network and Sharing Center**.
3. Select **Change adapter settings** in the Network and Sharing Center view.
4. Double-click on the required connection.
 - ↳ The properties window for the selected connection appears.
5. Double-click on **Internet Protocol version 4 (TCP/IPv4)**.
 - ↳ The properties window for the TCP/IP protocol appears.
6. Select **Use the following IP address**.
7. Enter an IP address with a network portion (the first three segments) that is identical to that of the sensor, e.g., 192.168.002.090. The device portion (the last segment) must be different to the IP address of the sensor. In the event that you do not know the IP address of the sensor, you can assign a new IP address to the sensor using a control code. See chapter 5.3.4
8. Enter 255.255.255.0 as the network mask.
9. Click **OK** and **Close**.
 - ↳ This completes the network configuration and the sensor can be used.

5.3 Configuration Process Using Vision Configurator

The sensor is usually configured exclusively using the machine control system. For test purposes and to work out the optimum settings, the sensor can be configured using Vision Configurator.



Note!

As soon as the sensor has established a PROFINET connection to the machine control system, the settings that were made using Vision Configurator, including the network configuration, are overwritten by the machine control system settings.

The Vision Configurator software makes it easy to operate the sensor with its user-friendly interface. Standard functions include making connections to the sensor, specifying the operating parameters, saving data sets, and displaying data and error diagnostics.

Downloading Vision Configurator

You can find the current version of Vision Configurator in the **Software** section of the product detail page for the sensor.

To access the product detail page for the sensor, go to <http://www.pepperl-fuchs.com> and type information about the device (e.g., the product description or the item number) into the search function.

The following user roles are predefined in Vision Configurator.

User	Description	Password
Default	View all information Create users at same or lower level	A password is not required
User	View all information Sensor configuration Create users at same or lower level	User
Admin PFAdmin	View all information Sensor configuration Create and delete users	Request the Admin password from Pepperl+Fuchs

The application screen opens after the log-in process. Certain functions are not available depending on which user is selected during the log-in process.

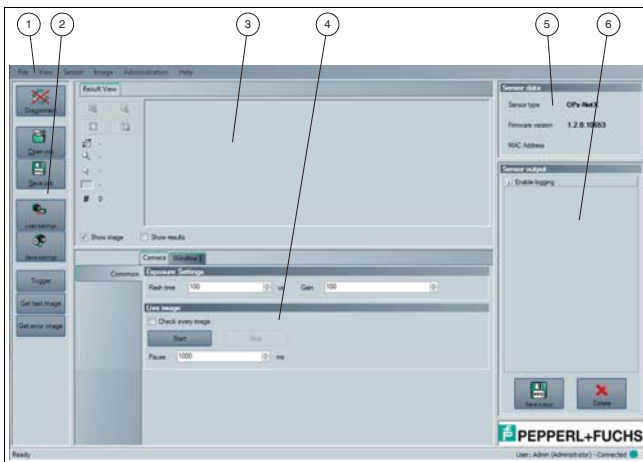


Figure 5.1 Application screen

1	Menu bar	The menu bar contains all program options.
2	Toolbar	The toolbar contains buttons for all standard functions.
3	Image display	The image display shows images that have been captured and result information.

4	Configuration window	The configuration window contains sensor-specific parameters that can be set.
5	Sensor data window	The Sensor data section contains information about the connected sensor.
6	Sensor output window	The Sensor output section contains a protocol about the most recently performed actions.

5.3.1 Image Display

In the image display, there are different options for displaying the captured data. You can show and hide the image display in the left-hand section and the results display in the right-hand section using the checkboxes **Show image** and **Show results**.

The image display shows the image captured by the sensor. If a code can be read from the image inside the read range, the results display shows the reading result, the code type, and the required decoding time.

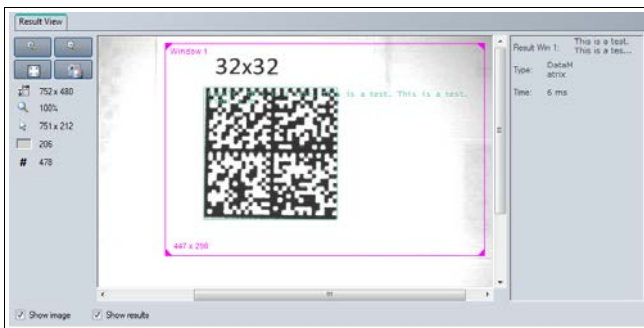


Figure 5.2 Image and results display

5.3.2 Configuration Window

Various parameters are specified in the configuration window. The individual parameters depend on the type of sensor connected and the permissions of the user logged in. Depending on the parameters set and the firmware, some fields will be grayed out.

Camera – Common Configuration Window



Figure 5.3 Camera – Common configuration window

Exposure Settings

Flash time	Increases or decreases brightness by changing the exposure time. A longer exposure time can increase brightness while also reducing the amount of image noise. However, very long exposure times are not suitable for moving objects. The length of exposure can be set from 1 to 255 μ s.
Gain	Increases or reduces brightness by amplifying the image signal. Amplifying the image signal allows the brightness to be increased while keeping the exposure time constant. However, image noise is also increased as a result of amplifying the image signal. The amplification can be between 1 and 255.

Live Image

Check every image	If continuous capture mode is activated, every time an image is captured, a check will be performed to see if a code can be read inside the read range. Please note that the read range Window active in the Window 1 – Window Setup tab must be activated for this process. Otherwise no codes will be read. In the Sensor output area, you can check if a code has been recognized or not.
Start	Activates continuous capture mode. A preview is shown in the image display for every image that is captured. If you wish to view the last image in full resolution, click Get last Image in the toolbar.
Stop	Stops continuous capture mode.
Pause	Defines the interval in ms between two sequential images.

Window 1 – Window Setup Configuration Window



Figure 5.4 Window 1 – Window Setup configuration window

Inspection Task

Window active	Activates or deactivates the read range in which codes are read. The read range is shown as a pink frame in the display area. Usually, the read range covers the entire detection range of the sensor. Codes located outside of the read range are not read. If the read range is deactivated, no codes are read.
X	Enables the read range to be moved along the X axis.
Y	Enables the read range to be moved along the Y axis.
width	Enables the width of the read range to be entered. The width can be between 64 and 752 pixels.
height	Enables the height of the read range to be entered. The height can be between 64 and 480 pixels.

5.3.3 Generating Control Codes

Using the Vision Configurator software, you can create control codes that can assign a device name and an IP address to the sensor.



Tip

It is also possible to generate control codes when no sensor is connected to Vision Configurator. In this case, you can generate a control code to assign a particular IP address to a sensor and then establish a connection with a PC. See chapter 5.2

▶ Generating an AENABLE Control Code

This control code activates parameterization using control codes.

1. In the menu bar, select **Administration > Create reader programming code**.
2. Choose **AENABLE** in the **Select function** section.

↳ The control code is displayed in different sizes in the **Control Code** section.

3. To print out the control code, click **Print** or **Print preview**.
To save the control code, click **Save image**.

▶ Generating a Control Code for an IP Address

This control code assigns an IP address to the sensor.

1. In the menu bar, select **Administration > Create reader programming code**.
2. Select **Input IP** in the **Select function** section and enter the required IP address into the text box. Enter the network mask as a CIDR notation into the **Network mask** section, e.g., if the CIDR notation is 24, enter the network mask 255 . 255 . 255 . 0.

↳ The control code is displayed in different sizes in the **Control Code** section.

3. To print out the control code, click **Print** or **Print preview**.
To save the control code, click **Save image**.



Generating a Control Code for Device Names

This control code assigns a device name to the sensor.

1. In the menu bar, select **Administration > Create reader programming code**.
2. Select **Input device name** in the **Select function** section and enter the device name for the sensor into the text box.

↳ The control code is displayed in different sizes in the **Control Code** section.

3. To print out the control code, click **Print** or **Print preview**.
To save the control code, click **Save image**.

5.3.4 Setting Device Parameters via Control Code

You can assign the device name and IP address via a control code. Use Vision Configurator to generate control codes. See chapter 5.3.3



Note!

Parameterization mode can be activated only within ten minutes of the sensor being switched on.

▶ Activating Parameterization Mode

1. Hold down the **2** button on the back of the sensor for more than two seconds.
 - ↳ The trigger LED flashes yellow and the sensor's camera system begins to flash.
2. Position the **AENABLE** control code in the sensor's field of view.
 - ↳ A red light in the sensor's field of view confirms that the control code was correctly detected. Parameterization mode is activated.

▶ Setting Parameters

To assign a parameter, position the relevant control code in the sensor's field of view.

↳ A red light in the sensor's field of view confirms that the control code was detected and the parameter has been set.

▶ Deactivating Parameterization Mode

Press the **2** button on the back of the sensor.

↳ The trigger LED goes out and the camera system stops flashing.

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