Stationary Optical Readers

High Performance in Downtime and at High Speed

Whether stationary or moving, printed or directly marked, stationary readers from Pepperl+Fuchs meet all the requirements for a cost-effective identification solution: Simple intuitive operation combined with a host of powerful functions.

Camera-Based Code Readers

The camera-based code readers are easy to operate and are equipped with countless functions for incredible versatility. The exceptionally powerful devices provide reliable reading results even under the harshest ambient conditions. They boast fast code reading, an ability to read codes even on highly reflective surfaces, and intuitive operating software.

Typical Applications

- Print and paper industry: print presence detection, logo comparison, and code reading in enveloping machines
- Automotive industry: track and trace applications for components, including those with direct markings
- Semiconductor industry: control of SMD placement
- Warehousing and material handling: code reading on boxes and trays

Your Benefits at a Glance

- Reliable 1-D/2-D code reading even on highly reflective surfaces such as film, plastic, and metal
- High-speed code reading of up to 10 m/s at 100 reads/s
- High depth of focus for code reading at various distances and in various sizes, using just one setting
- Simple handling and configuration thanks to the intuitive Vision Configurator operating software
- Automatic storage of error images for quick and easy fault repair

Technical Features

- Reading of all standard code symbologies, including DPM codes
- Powerful functions such as presence detection, logo comparison, and multi-window function, which enables the simultaneous application of all functions on up to four read fields
- Interfaces such as Ethernet TCP/IP, RS232, and I/Os for easy system integration

Barcode Scanners

Different code sizes, long distances, code corruption, and high speeds. When it comes to reading barcodes, each application has its own special requirements. With a portfolio of four series, Pepperl+Fuchs offers the optimal barcode scanner for every requirement profile—even for more challenging applications such as low-temperature environments.

Typical Applications

- Warehousing and material handling: code reading on boxes, pallets, and trays
- Print and paper industry: code reading in enveloping machines
- Packaging industry: verification and assignment of products to outer packaging
- Automotive industry: Odette label reading

Your Benefits at a Glance

- Optimized portfolio with especially compact designs for confined space conditions, e.g., in packaging machines
- High scan rates of up to 1200 scans per second for the fastest processing speeds
- Automatic and programmable focus setting for continuous process flows
- Reliable code reconstruction for reading damaged or rotated barcodes
- Wide range of applications through an extended temperature range down to -35 °C

Technical Features

- Large read distances of up to 2000 mm
- High scan rates of up to 1200 scans per second
- Reading of especially small codes down to 0.15 mm
- Networking of up to 32 scanners to form an integrated complete solution
- Rugged aluminum housing versions available

Stationary Optical Readers

Contents

OPC Series

Standard Technical Data	
Light type	White LED
Output type	PNP
Voltage type	DC
Operating voltage (min)	24 V
Operating voltage (max)	24 V
Connection type	M12 connector plug
Housing width W	70 mm
Housing height H	70 mm

For detailed data and description, see the datasheet. Further products can be found online at www.pepperl-fuchs.com.

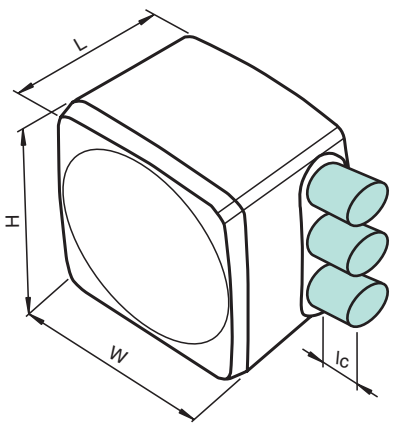
Model number	Detection range [mm]	Interface	Length L
OPC70P-F201-R2-45	90	Ethernet, RS-232	53
OPC120P-F201-B17	180	Ethernet, PROFINET	53
OPC120P-F201-R2	180	Ethernet, RS-232	53
OPC120W-F200-R2	180	Ethernet, RS-232	50

Highlights

- Reliable 1-D/2-D code reading on highly reflective surfaces
- High-speed code reading of up to 10 m/s at 100 readings/s
- Intelligent functions such as print presence detection, logo comparison, and multi-window

Brief Description

Whether reading standard 1-D and 2-D codes or reading at high speeds, the stationary readers in the OPC120 series are true performance artists, covering the entire bandwidth of demanding applications perfectly. Even under the most challenging conditions, these readers deliver a top performance both when stationary and at high speed. Features such as print presence detection, logo comparison, and multi-window with up to four windows ensure optimal efficiency and reliability in the reading process. In addition, the devices are incredibly user-friendly, offer an automatic fault pattern memory, and are capable of reading codes on reflective surfaces.



Accessories	
PCV-MB1	Mounting bracket for PCV* read head
V15S-G-5M-PUR-ABG	Single-ended male cordset, M12, 5-pin, shielded, PUR cable
V19-G-0,2M-YOPC-0,2M-V1S/V31-G	Y-splitter cordset
V19-G-2M-PUR-ABG	Single-ended female cordset, M12, 8-pin, shielded, PUR cable
V19-G-ABG-PG9	Single-ended female cordset, M12, 8-pin, shielded, field-attachable
V1SD-G-2M-PUR-ABG-V45-G	Cordset, M12 to RJ-45, PUR cable, 4-pin, CAT5e
V1SD-G-2M-PUR-ABG-V45X-G	Cordset, M12 to RJ-45, PUR cable, 4-pin, CAT5e

VB14/VB34 Series

Standard Technical Data	
Light type	Red laser diode
Interface	RS-232, RS-485
Voltage type	DC
Operating voltage (max)	30 V
Connection type	Sub-D connector plug

For detailed data and description, see the datasheet. Further products can be found online at www.pepperl-fuchs.com.

Model number	Detection range [mm]	UB (min)	Length L	Width W	Height H
VB14N-300	300	10	84	68	34
VB14N-300-R	300	10	84	68	34
VB14N-400-T	400	10	84	68	34
VB14N-400-T-R	400	10	84	68	34
VB14N-600	600	10	84	68	34
VB14N-600-R	600	10	84	68	34
VB14N-600-T	600	10	84	68	34
VB14N-600-T-R	600	10	84	68	34
VB34-2500	2500	15	110	113	99
VB34-2500-OM	2000	15	180	113	99
VB34-2500-OM-P	2000	15	180	113	99
VB34-2500-P	2500	15	110	113	99

Highlights

- Networking of up to 32 scanners for high-speed applications
- High scan rates of up to 1200 scans per second for the fastest processing speeds
- Automatic and programmable focus setting for continuous process flows
- Reliable code reconstruction for reading damaged or rotated barcodes
- Wide range of applications through an extended temperature range of up to -35 °C

Brief Description

Barcodes are now ubiquitous in industry and trade—but when it comes to reading barcodes, every application has its own special requirements. Different sizes and distances, variable speeds and varying levels of damage: Pepperl+Fuchs has got this vast spectrum of requirements covered through its two extremely powerful series. Read distances of up to 2.5 meters, scan rates of up to 1200 scans per second, and code sizes of just 0.2 millimeters are processed with complete accuracy and the highest level of efficiency. For high-speed applications, up to 32 scanners can be networked to form an integrated overall solution. A reliable process flow and optimal read performance is guaranteed at all times, even at temperatures as low as -35 °C.

Accessories	
CBX100	Connection box for barcode scanners
CBX500-KIT-B17	PROFINET connection box for barcode scanners
CBX500-KIT-B19-IP65	EtherNet/IP connection box for barcode scanners
CBX500-KIT-B6	PROFIBUS connection box for barcode scanners
DM-VB14N-102	Deviation mirror for VB14 series barcode scanners
DM-VB14N-90	Deviation mirror for VB14 series barcode scanners
OM-VB14N	Oscillating mirror for VB14N series barcode scanners

OHV Series

Standard Technical Data	
Light type	Red LED
Voltage type	DC

For detailed data and description, see the datasheet. Further products can be found online at www.pepperl-fuchs.com.

Model number	Detection range [mm]	Interface	Connection type	Length L	Width W	Height H
OHV1000-F223-R2	200	RS-232	Fixed cable	93	53	151
OHV100-F222-R2	310	RS-232	Fixed cable	70	50	140
OHV200-F220-B15	310	Bluetooth		130	51	28
OHV200-F221-B15	310	Bluetooth		130	51	135

Highlights

- Excellent read quality, reliable 1-D/2-D code reading on reflective surfaces
- Versatile applications thanks to a sturdy housing and high degree of protection (IP65)
- Highest level of process reliability through user feedback (acoustic, tactile, and visual signals)
- Can be programmed individually for specific application requirements

Brief Description

OHV series handheld readers offer outstanding reading performance, simple operation and perfect adaptation to customer-specific requirements. The devices read 1-D and 2-D codes reliably even on reflective surfaces, covering all common code symbologies. A patented dual lens allows codes of various sizes to be read using just one setting. To ensure optimal process reliability, each read operation is confirmed by acoustic, tactile, and visual feedback. Various programming options allow the device to be effectively adapted to the individual application, either via control codes on the device itself, via the Vision Configurator graphical user interface, or via JavaScript. This means that the manual handheld readers from Pepperl+Fuchs offer perfect solutions for any application requirements in the field of mobile identification.

Accessories	
OHV-BAT	Lithium ion battery, 1300 mAh
OHV-BRACKET	Bracket for OHV100-F222-R2
OHV-CHARGER-B15	Charger for OHV200 with built-in Bluetooth modem
OHV-F230-B17	PROFINET gateway for OHV handheld
OHV1000-BRACKET	Bracket for OHV1000-F223-R2
V19S-G-1,7/3M-PVC-V50	Adapter cable, M12 8-pin to RS 232
V45-G-2M-PVC-ABG-USB-G	Adapter cable, RJ50 to USB
V45-G-2M-PVC-SUBD9	Adapter cable, RJ45 to RS 232

Optical High-Temperature Identification

High Performance under Extreme Conditions

Cyclic changes in temperature, continuous high temperatures, and the effects of dust and paint place high demands on materials and technology. The durable OIT high-temperature identification system was developed with these demands in mind. The system ensures a reliable read performance and therefore smooth process flows, even at temperatures of up to 500 °C.

Typical Applications

- Automotive industry: identification in bodyshell production, painting lines, electroplating plants, and drying systems
- Identification in pigment and paint processing industries
- Baking pan identification in bakeries

Your Benefits at a Glance

- Rugged, durable solution with heat-resistant code sheets for temperatures of up to 500 °C
- Reliable identification, even on contaminated code sheets
- Integrated diagnostic function for reliable process flows
- Maintenance-free with one-piece housing concept and no additional components
- Simple connection to all standard controllers

Technical Features

- Identification of up to 1 million objects via robust code sheets
- Easy system integration via Ethernet interface
- Long read distances of up to 1700 mm
- Rugged powder-coated aluminum die-cast housing

OIT Series

Standard Technical Data	
Light type	Infrared LED
Interface	Ethernet
Output type	PNP
Voltage type	DC
Operating voltage (min)	24 V
Operating voltage (max)	24 V
Connection type	Harting connector plug
Degree of protection	IP64
EAC	■

For detailed data and description, see the datasheet. Further products can be found online at www.pepperl-fuchs.com.

Model number	Detection range [mm]	Length L	Width W	Height H
OIT200-F113-B12-CB	200	297	188	116
OIT300-F113-B12-CB2	270	171	261	101
OIT500-F113-B12-CB	450	171	261	101
OIT500-F113-B12-CB3	450	171	261	101
OIT1500-F113-B12-CB	1700	171	261	101

Highlights

- Heat-resistant code sheets for temperatures up to 500 °C
- Reliable identification, even on contaminated code sheets
- Integrated diagnostic function for reliable process flows
- Maintenance-free with one-piece housing, no additional components
- Simple connection to all standard controllers

Brief Description

Drying systems, painting lines, electroplating plants, and bakeries operate under special production conditions in terms of temperature and contamination. Cyclical temperature changes, continuous temperatures, and the effects of dust and paint place high demands on materials and technology. Specifically designed to withstand these extreme conditions, the robust OIT high-temperature identification system from Pepperl+Fuchs ensures smooth process sequences under the toughest conditions. Highly reliable read performance is guaranteed, even at temperatures up to 500 °C.

Accessories	
OIC-C10V2A-CB1	Read-only tag for optical high-temperature identification system, stainless steel
OIC-C11V4A-CB2	Read-only tag for optical high-temperature identification system, stainless steel
OIZ-FG500	Replacement glass for OIT300, OIT500, and OIT1500
V1S-G-10M-PVC	Single-ended male cordset, M12, 4-pin, PVC cable
V45-G	Single-ended male cordset, field-attachable
V45-GP	Push-pull single-ended male cordset, field-attachable
V45-GP-10M-PUR-ABG-V45-G	Cordset, RJ-45 to RJ-45, PUR cable
V8HAN-G	Single-ended female cordset, Harting, 8-pin, field-attachable

Image Processing

Sensor and System Solutions from a Single Source

Sheet verification, profile comparison, range monitoring, and high-precision measurement—these are just a few of the applications that can be implemented with image processing. From easy-to-integrate vision sensors to high-performance vision systems, Pepperl+Fuchs offers all of the solutions required in an industrial environment.

Light Section Sensors from Pepperl+Fuchs

The light section process uses the triangulation principle to detect and measure surface profiles. Pepperl+Fuchs offers light section sensors for a range of applications, including profile detection, profile calibration, and field monitoring.

Vision Sensors from Pepperl+Fuchs

Our vision sensors are specifically designed for easy installation and operation and can be easily integrated into new and existing systems. The use of switching outputs and teach-in mean no additional programming or software is required in most cases.

Vision Systems from VMT

Our subsidiary VMT Vision Machine Technic Bildverarbeitungssysteme GmbH supplies individual turnkey image processing and laser sensor systems for all industrial sectors. As part of the powerful Pepperl+Fuchs Group, VMT offers top-of-the-range technology combined with the highest level of investment security.

More information is available at
www.pepperl-fuchs.com/fa-vision

Image Processing
Complex Technology Made Simple

At Pepperl+Fuchs, our goal is to make image evaluation technology as easy to use and integrate as a sensor. Vision sensors with switching outputs and teach-in make it easier than ever before to benefit from this complex technology.

Light Section Sensors with SmartRunner Technology

By combining the reliable light section method for height profile detection with a 2-D vision sensor, Pepperl+Fuchs has produced highly specialized sensors tailored to specific applications. Our SmartRunner technology transforms complex profile data into easy-to-process switching signals—making these sensors exceptionally simple to integrate and use.

Your Benefits at a Glance

- A unique combination of the light section process and 2-D vision sensors with integrated LED lighting opens up many new fields of application
- Application-specific sensors—for direct and optimal use in the application
- Quick integration into the overall process by transforming complex measurement data into easy-to-process switching signals
- Simple commissioning through parameterization via Data Matrix control codes or teach-in

Typical Applications

SmartRunner Matcher—the specialist for profile comparisons:

- Presence and completeness checking on one or multiple components
- Quality control in packaging technology
- Correctness and position checking on components

SmartRunner Detector—the specialist for high-precision monitoring

- Protection of sensitive components in machines
- Checking for overlapping of components
- Overhang monitoring even when stationary

Vision Sensors for Misfed Sheet Detection

The sheet identification sensor allows quick and easy monitoring of the correct sheet sequence, e.g., in collating, folding, and binding machines. For the first time, the BIS510 combines code recognition and image comparison in a single sensor, promising outstanding flexibility and cost efficiency.

Your Benefits at a Glance

- Fully automated teach-in of reference sheets for exceptional ease of use and shorter changeover times
- Flexibility and cost efficiency through the combination of image comparison and code recognition in a single sensor
- Increased efficiency with reading speeds of 4 m/s at 10 sheets/s
- Outstanding process reliability even on reflective surfaces through innovative polarization filter technology

Typical Applications

- Misfed sheet detection in collating, folding, and binding machines

Other Application-Specific Vision Sensors

Image processing is used in a wide range of fields. In addition to the sensors described above, further application-specific versions can be found in the Identification (page 44) and Positioning Systems (page 66) sections.

Image Processing

Contents

Vision Sensor for Sheet Verification

Standard Technical Data	
Detection range	52 mm
Light type	White LED
Interface	Ethernet
Output type	PNP
Operating elements	Push-button
Voltage type	DC
Operating voltage (min)	24 V
Operating voltage (max)	24 V
Connection type	M12 connector plug
Degree of protection	IP67
Housing length L	53.3 mm
Housing width W	70 mm
Housing height H	70 mm

For detailed data and description, see the datasheet. Further products can be found online at www.pepperl-fuchs.com.

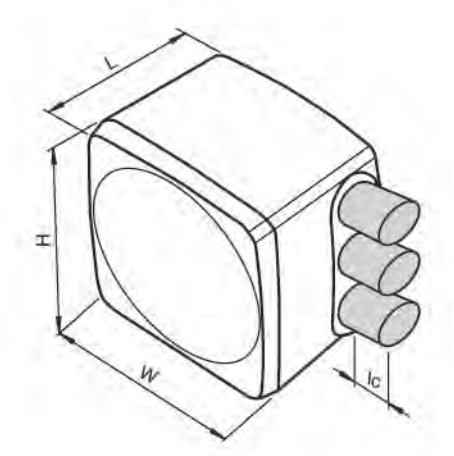
Model number
BIS510P-F201A-60

Highlights

- Monitoring correctness of sheet sequences, e.g., in collating and folding machines, based on image comparison or barcode/data matrix code reading
- Automatic teach-in of reference image
- Permanent storage of the reference image
- Connection of a trigger sensor (ML4.2)
- Error image memory facilitates troubleshooting
- Ethernet interface for fast image and data communication
- Simple integration into graphic user interfaces
- Free PC software simplifies commissioning

Brief Description

An unprinted page in a book is irritating. If the reader finds that important information is missing, they will stop reading the book. A distorted page in an illustrated book will also devalue the copy. But while these kinds of incidents are annoying, they are not as serious as the incorrect insert being placed inside a package of medicine. In all these scenarios, the root cause of the issue is that the bookbinding company has folded, collated, or bound the wrong sheet. For this reason, sheet errors must be reliably detected and rectified as early as possible. Powerful image processing technology can handle this task reliably and with minimum effort from the user. With their many years of experience, solutions from Pepperl+Fuchs and Optigraf are designed for outstanding reliability and simple operation.



Accessories	
PCV-MB1	Mounting bracket for PCV* read head
V15-G-2M-PUR	Single-ended female cordset, M12, 5-pin, PUR cable
V15-G-2M-PUR-V15-G	Cordset, M12 to M12, PUR cable, 5-pin
V15-G-5M-PUR	Single-ended female cordset, M12, 5-pin, PUR cable
V15S-G-5M-PUR-ABG	Single-ended male cordset, M12, 5-pin, shielded, PUR cable
V19-G-2M-PUR-ABG	Single-ended female cordset, M12, 8-pin, shielded, PUR cable
V19-G-5M-PUR-ABG	Single-ended female cordset, M12, 8-pin, shielded, PUR cable
V19-G-ABG-PG9	Single-ended female cordset, M12, 8-pin, shielded, field-attachable

SmartRunner Matcher

Standard Technical Data	
Light type	Red laser diode
Interface	RS-485
Output type	PNP
Operating elements	Push-button
Operating voltage (min)	19.2 V
Operating voltage (max)	28.8 V
Connection type	M12 connector plug
Degree of protection	IP67
Housing length L	55 mm
Housing width W	38 mm
Housing height H	85 mm

For detailed data and description, see the datasheet. Further products can be found online at www.pepperl-fuchs.com.

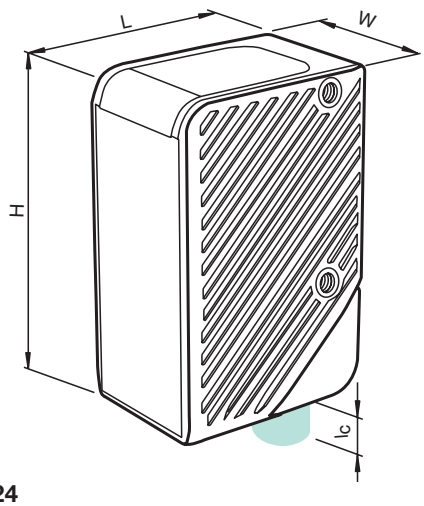
Model number	Measuring range	Resolution
VLM350-F280-2E2-1000	X = 40 mm …160 mm; Z = 60 mm …350 mm	X > 0.44 mm; Z > 0.4 mm at 60 mm read distance
VLM350-F280-R4-1001	X = 40 mm …160 mm; Z = 60 mm …350 mm	X > 0.44 mm; Z > 0.4 mm at 60 mm read distance
VLM350-F280-R4-1002	X = 40 mm …160 mm; Z = 60 mm …350 mm	X > 0.44 mm; Z > 0.4 mm at 60 mm read distance
VLM350-F280-R4-1101	X = 40 mm …160 mm; Z = 60 mm …350 mm	X > 0.25 mm; Z > 0.2 mm at 60 mm read distance
VLM700-F280-R4-1102	X = 60 mm … 300 mm; Z = 100 mm … 700 mm	X > 0.44 mm; Z > 0.4 mm at minimum read distance

Highlights

- Presence and completeness checking on one or multiple components
- Quality control in packaging technology
- Correctness and position checking on components

Brief Description

By combining the reliable light section method for height profile detection with a 2-D vision sensor, Pepperl+Fuchs has produced highly specialized sensors tailored to specific applications. Our SmartRunner technology transforms complex profile data into easy-to-process switching signals—making these sensors exceptionally simple to integrate and use.



Accessories	
PCV-USB-RS485-Converter Set	USB to RS 485 interface converter
V19-G-5M-PUR-ABG	Single-ended female cordset, M12, 8-pin, shielded, PUR cable
V19-G-BK0,6M-PUR-U-V1-G-SRMAT	Cordset for SmartRunner Matcher, M12 to M12, 8/4-pin, PUR cable
VLX-F231-B17	Interface module with PROFINET interface for SmartRunner
VLX-F231-B25	Interface module with EtherNet/IP interface for SmartRunner
VLX-F231-B6	Interface module with PROFIBUS interface for SmartRunner

SmartRunner Detector

Standard Technical Data	
Light type	Red laser diode
Interface	RS-485
Output type	PNP
Operating elements	Push-button
Operating voltage (min)	19.2 V
Operating voltage (max)	28.8 V
Connection type	M12 connector plug
Degree of protection	IP67
Housing length L	55 mm
Housing width W	38 mm
Housing height H	85 mm

For detailed data and description, see the datasheet. Further products can be found online at www.pepperl-fuchs.com.

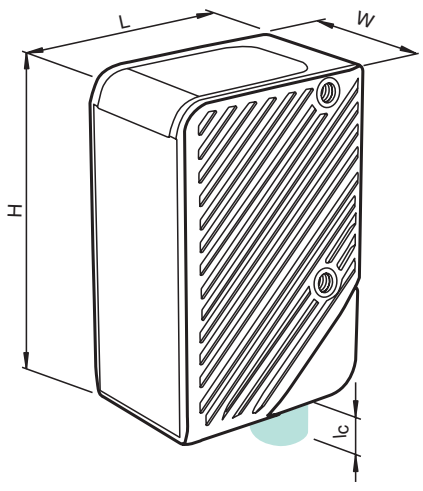
Model number	Object size
VLD700-F280-2E2-1000	> 0.1 mm at minimum read distance

Highlights

- Protection of sensitive components in machines
- Checking for overlapping of components
- Overhang monitoring even when stationary

Brief Description

By combining the reliable light section method for height profile detection with a 2-D vision sensor, Pepperl+Fuchs has produced highly specialized sensors tailored to specific applications. Our SmartRunner technology transforms complex profile data into easy-to-process switching signals—making these sensors exceptionally simple to integrate and use.



Accessories	
PCV-USB-RS485-Converter Set	USB to RS 485 interface converter
V19-G-5M-PUR-ABG	Single-ended female cordset, M12, 8-pin, shielded, PUR cable
V19-G-BK0,6M-PUR-U-V1-G-SRDET	Cordset for SmartRunner Detector, M12 socket 8-pin to M12 plug 4-pin, PUR cable, black
VLX-F231-B17	Interface module with PROFINET interface for SmartRunner
VLX-F231-B25	Interface module with EtherNet/IP interface for SmartRunner
VLX-F231-B6	Interface module with PROFIBUS interface for SmartRunner