**Model number**

**PXV100-F200-R4-V19**

Read head for incident light positioning system

### Features
- RS-485 interface
- Non-contact positioning on Data Matrix code tape
- Mechanically rugged: no wearing parts, long operating life, maintenance-free
- High resolution and precise positioning, especially for facilities with curves and switch points as well as inclines and declines.
- Travel ranges up to 10 km

### Diagrams

#### Position Data

![Position Data Diagram](image)

### System components

**PXV*-CA25-*

Data Matrix code tape

### Technical data

#### General specifications
- Passage speed $v$ ≤ 8 m/s
- Measuring range max. 10000 m
- Light type Integrated LED lightning (red)
- Scan rate 40 s⁻¹
- Read distance 100 mm
- Depth of focus ± 50 mm
- Reading field 115 mm x 73 mm
- Ambient light limit 100000 Lux
- Accuracy ± 0.2 mm

#### Nominal ratings
- Camera
  - Type CMOS, Global shutter
- Processor
  - Clock pulse frequency 600 MHz
  - Speed of computation 4800 MIPS

#### Functional safety related parameters
- MTTFd 100 a
- Mission Time ($T_M$) 20 a
- Diagnostic Coverage (DC) 0 %

#### Indicators/operating means
- LED indication 7 LEDs (communication, alignment aid, status information)

#### Electrical specifications
- Operating voltage $U_{op}$ 15 ... 30 V DC, PELV
- No-load supply current $I_0$ max. 200 mA
- Power consumption $P_0$ 3 W

#### Interface
- Interface type RS 485 interface
- Data output code binary code
- Transfer rate 38400 ... 230400 Bit/s
- Termination Switchable terminal resistor
- Query cycle time ≥ 10 ms

#### Interface 2
- Interface type USB Service

#### Input
- Input type 1 to 3 functional inputs, programmable
- Input impedance ≥ 27 kΩ

#### Output
- Output type 1 to 3 switch outputs, PNP, programmable, short-circuit protected
- Switching voltage Operating voltage
- Switching current 150 mA each output

#### Standard conformity
- Noise immunity EN 61000-6-2:2005
- Vibration resistance EN 60068-2-6:2008

#### Ambient conditions
- Operating temperature 0 ... 60 °C (32 ... 140 °F); -20 ... 60 °C (-4 ... 140 °F) (noncondensing; prevent icing on the lens!)
- Storage temperature -20 ... 85 °C (-4 ... 185 °F)
- Relative humidity 90 %, noncondensing

#### Mechanical specifications
- Connection type 8-pin, M12 x 1 connector
- Housing width 70 mm
- Housing height 70 mm
- Housing depth 50 mm
- Degree of protection IP67
- Material PC/ABS
- Mass approx. 160 g

#### Approvals and certificates
- UL approval cULus Listed, General Purpose, Class 2 Power Source, Type 1 enclosure
- CCC approval CCC approval / marking not required for products rated ≤ 36 V
Optical reading head PXV100-F200-R4-V19

Dimensions

Electrical connection

Pinout

Additional information

Accessories

PCV-USB-RS485-Converter Set
USB to RS 485 interface converter

PCV-KBL-V19-STR-RS485
Cable unit with power supply for USB / RS-485 interface converter

V19-G-ABG-PG9
Female connector, M12, 8-pin, shielded, field attachable

V19-G-ABG-PG9-FE
Female connector, M12, 8-pin, shielded, field attachable

PCV-SC12
Grounding clip for PCV system

PCV-LM25
Marker head for 25 mm code tape

PCV-MB1
Mounting bracket for PCV* read head

PCV-AG100
Alignment guide for PCV100-* read head

Vision Configurator
Operating software for camera-based sensors

General
The reading head is part of the positioning system in the method for measurement by Pepperl+Fuchs. It consists of a camera module and an integrated illumination unit among other things. The reading head detects position marks, which are put on an adhesive code band in the form of Data Matrix code. The mounting of the code band is as a rule stationary on a firm part of the plant (elevator shaft, overhead conveyor mounting rails…); that of the reading head is parallel on the moving "vehicle" (elevator car, overhead conveyor chassis…).

Mounting and commissioning
Mount the reading head such that its optical surface captures the optimal read distance to the
code band (see Technical Data). The stability of the mounting and the guidance of the vehicle must be provided such that the depth of field of the reading head is not closed during operation. All reading heads can be optimally customized by parameterization for specific requirements. The parameterization of reading heads with a bi-directional interface (all except SSI-interface) can take place via the interface itself (internal parameterization) or via an optical parameterization code (external parameterization). The reading heads with SSI interface only have the possibility of external parameterization via optical parameterization codes.

Displays and Controls
The reading head allows visual function check and fast diagnosis with 7 indicator LEDs. The reading head has 2 buttons on the reverse of the device to activate the alignment aid and parameterization mode.

LEDs

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>Label</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yellow</td>
<td>COM</td>
<td>Communication active</td>
</tr>
<tr>
<td>2</td>
<td>Green/red</td>
<td>PWR/ADJ ERR/NO CODE</td>
<td>Code recognized/not recognized, Error</td>
</tr>
<tr>
<td>3</td>
<td>Yellow</td>
<td>OUT1</td>
<td>Output 1</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
<td>OUT2/ADJ Y</td>
<td>Output 2, Alignment aid Y</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
<td>OUT3/ADJ Z</td>
<td>Output 3, Alignment aid Z</td>
</tr>
<tr>
<td>6,7</td>
<td>red/green/yellow</td>
<td>INTERNAL DIAGNOSTICS</td>
<td>Internal diagnostics</td>
</tr>
</tbody>
</table>

External parameterization
For external parameterization you require the parameterization code as Data Matrix with the desired reading head parameters. Data Matrix code cards for step-by-step external parameterization are printed in the reading heads operating instructions. Parameterization is only possible within 10 minutes of switching on the reading head. If a button is pressed after 10 minutes subsequent to switching on, there is visual signaling via the LEDs (LED1, yellow/LED2, red/LED3, yellow/LED4, yellow/LED5, yellow flash for 2 seconds)

- The switchover from normal operation to parameterization mode is via button 2 on the reverse of the reading head. Button 2 must be pressed for more than 2 seconds. LED3 now flashes.

  **Note:** Parameterization mode automatically ends after 1 minute of inactivity. The reading head returns to normal operation and works with unchanged settings.

- Place the parameterization code in the view of the camera module. After recognition of the parameterization code, the green LED2 lights up for 1s. In the event of an invalid parameterization code, the red LED2 lights up for 2 s.

- A short press on button 2 ends the parameterization mode and the changed parameters are not stored volatile in the reading head.

Alignment aid for the Y and Z coordinates
The activation of the alignment aid is only possible within 10 minutes of switching on the reading head. The switchover from normal operation to “alignment aid operating mode is via button 1 on the reverse of the reading head.

- Press the button 1 for longer than 2 s. LED2 flashes green for a recognized code band. LED2 flashes red for an unrecognized code band.

- **Z coordinate:** If the distance of the camera to the code band too small, the yellow LED5 lights up. If the distance of the camera to the code band too large, the yellow LED5 lights up. Within the target range, the yellow LED5 flashes at the same time as the green LED2.

- **Y coordinate:** If the optical axis of the camera is too deep in relation to the middle of the code band, the yellow LED4 lights up. If the optical axis is too high, the yellow LED4 extinguishes. Within the target range, the yellow LED4 flashes at the same time as the green LED2.

- A short press on button 1 ends the alignment aid and the reading head changes to normal operation.