### Model Number

**PCV100-F200-B6-V15B-6011**

Read head for incident light positioning system

### Features

- **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, in X and Y direction**
- **PROFIBUS interface**

### Technical data

#### General specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passage speed $v$</td>
<td>$\leq 6 \text{ m/s}$</td>
</tr>
<tr>
<td>Measuring range</td>
<td>$\text{max. } 10,000 \text{ m}$</td>
</tr>
<tr>
<td>Light type</td>
<td>Integrated LED lightning (red)</td>
</tr>
<tr>
<td>Read distance</td>
<td>100 mm</td>
</tr>
<tr>
<td>Depth of focus</td>
<td>$\pm 40 \text{ mm}$</td>
</tr>
<tr>
<td>Reading field</td>
<td>60 mm x 35 mm</td>
</tr>
<tr>
<td>Ambient light limit</td>
<td>100,000 Lux</td>
</tr>
<tr>
<td>Resolution</td>
<td>$\pm 0.1 \text{ mm}$</td>
</tr>
</tbody>
</table>

#### Nominal ratings

- **Camera**
  - Type: CMOS, Global shutter
- **Processor**
  - Clock pulse frequency: 600 MHz
  - Speed of computation: 4800 MIPS

#### Functional safety related parameters

- **MTTFd**: 20 a
- **Mission Time ($T_M$)**: 10 a
- **Diagnostic Coverage (DC)**: 0%

#### Indicators/operating means

- **LED indicator**: 7 LEDs (communication, alignment aid, status information)

#### Electrical specifications

- **Operating voltage $U_B$**: $15 \ldots 30 \text{ V DC, PELV}$
- **No-load supply current $I_0$**: max. 400 mA
- **Power consumption $P_0$**: 6 W

#### Interface

- **Interface type**: PROFIBUS DP V0
- **Protocol**: PROFIBUS DP acc. to EN 60170
- **Transfer rate**: 9.6; 19.2; 93.75; 187.5; 500; 1500 kBit/s, 3; 6; 12 Mbit/s self-synchronizing

#### Interface 2

- **Interface type**: USB Service

#### Input

- **Input type**: 1 function input
  - 0-level: $-U_B$ or unwired
  - 1-level: $+8 \text{ V } \ldots +U_B$, programmable
- **Input impedance**: $\geq 27 \text{ kΩ}$

#### 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

- **Emitted interference**: EN 61000-6-4:2007+A1:2011
- **Noise immunity**: EN 61000-6-2:2005
- **Shock resistance**: EN 60068-2-27:2009
- **Vibration resistance**: EN 60068-2-6:2008

#### Ambient conditions

- **Operating temperature**: $0 \ldots 60 ^\circ \text{C} (32 \ldots 140 ^\circ \text{F})$, $-20 \ldots 60 ^\circ \text{C} (-4 \ldots 140 ^\circ \text{F})$
- **Storage temperature**: $-20 \ldots 85 ^\circ \text{C} (-4 \ldots 185 ^\circ \text{F})$
- **Relative humidity**: 90 %, noncondensing

#### Mechanical specifications

- **Connection type**: 8-pin, M12x1 connector, standard (supply+IO)
  - 5-pin, M12x1 socket, B-coded (Bus Out)
  - 5-pin, M12x1 connector, B-coded (Bus In)
- **Housing width**: 70 mm
- **Housing height**: 70 mm
- **Degree of protection**: IP67
- **Material**
  - Housing: PC/ABS
- **Mass**: approx. 200 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

General
The PCV… 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 Tech-

Dimensions

Electrical Connection

Pinout

Additional Information

Accessories

ICZ-TR-V15B
Terminal resistor for PROFIBUS

V15B-G-2M-PUR-ABG-V15B-G
Bus cable PROFIBUS, M12 to M12, PUR cable

V15B-G-5M-PUR-ABG-V15B-G
Bus cable PROFIBUS, M12 to M12, PUR cable

PCV-SC12
Grounding clip for PCV system

PCV-AG100
Alignment guide for PCV100-* read head

PCV-LM25
Marker head for 25 mm code tape

PCV-MB1
Mounting bracket for PCV* read head

PCV-SC12A
Grounding clip for PCV system

V19-G-2M-PUR-ABG
Female cordset, M12, 8-pin, shielded, PUR cable

V19-G-10M-PUR-ABG
Female cordset, M12, 8-pin, shielded, PUR cable

Vision Configurator
Operating software for camera-based sensors

PCV-KBL-V19-STR-USB
USB cable unit with power supply
nical 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.

Displays and Controls
The PCV... 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>BUS STATE</td>
<td>Profibus communication active</td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
<td>BUS ERR</td>
<td>Profibus communication Error</td>
</tr>
<tr>
<td>3</td>
<td>Green/red</td>
<td>PWR/ADJ</td>
<td>Code recognized/not recognized, Error</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
<td>SSI DATA/CONFIG</td>
<td>Output 1, configuration</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
<td>OUT2/ADJ Y</td>
<td>Output 2, Alignment aid Y</td>
</tr>
<tr>
<td>6</td>
<td>Yellow</td>
<td>OUT3/ADJ Z</td>
<td>Output 3, Alignment aid Z</td>
</tr>
<tr>
<td>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, green; LED4, yellow; LED5, yellow; LED6, 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. LED4 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 LED3 lights up for 1 s. In the event of an invalid parameterization code, the red LED3 lights up for 2 s.

- A short press on button 2 ends the parameterization mode.

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.

- Z coordinate: If the distance of the camera to the code band too small, the yellow LED6 lights up. If the distance of the camera to the code band too large, the yellow LED6 lights up. Within the target range, the yellow LED6 flashes at the same time as the green LED3.

- Y coordinate: If the optical axis of the camera is too deep in relation to the middle of the code band, the yellow LED5 lights up. If the optical axis is too high, the yellow LED5 extinguishes. Within the target range, the yellow LED5 flashes at the same time as the green LED3.

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