

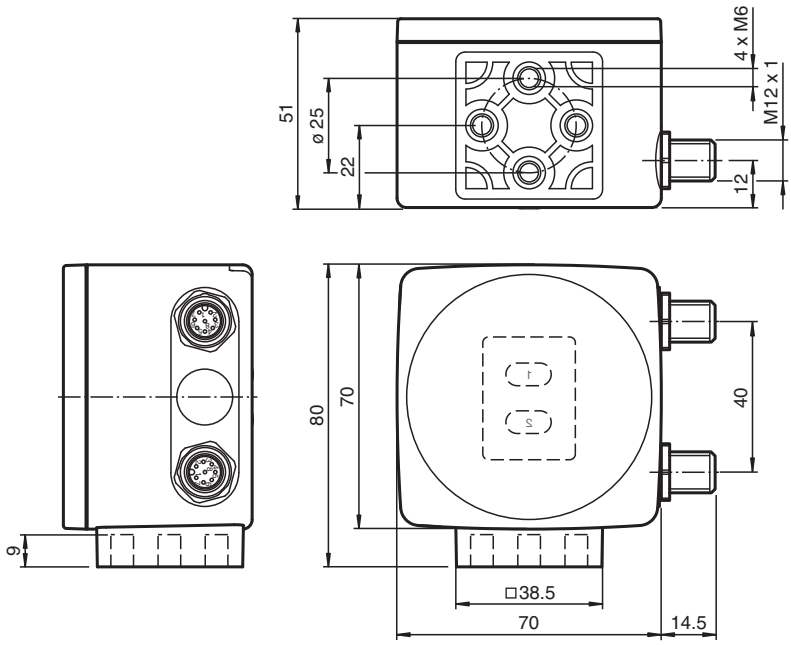
# Optical reading head

## PCV100-F200-SSI-V19

- SSI 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, in X and Y direction

Read head for incident light positioning system

## Dimensions




## 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 | | ± 20 mm |
| Reading field | | 50 mm x 30 mm |
| Ambient light limit | | 100000 Lux |
| Resolution | | ± 0.1 mm |
| **Nominal ratings** | | |
| Camera | | |

Release date: 2024-07-29 Date of issue: 2024-07-29 Filename: 236998_eng.pdf

## Technical Data

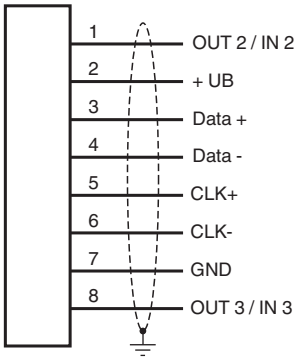
| | | |
|---|---|---|
| Type | | CMOS , Global shutter |
| Processor | | |
| Clock pulse frequency | | 600 MHz |
| Speed of computation | | 4800 MIPS |
| Digital resolution | | 32 Bit |
| **Functional safety related parameters** | | |
| $MTTF_d$ | | 93 a |
| Mission Time ($T_M$) | | 10 a |
| Diagnostic Coverage (DC) | | 0 % |
| **Indicators/operating means** | | |
| LED indication | | 7 LEDs (communication, alignment aid, status information) |
| **Electrical specifications** | | |
| Operating voltage | $U_B$ | 15 ... 30 V DC , PELV |
| No-load supply current | $I_0$ | max. 200 mA |
| Power consumption | $P_0$ | 3 W |
| **Interface 1** | | |
| Interface type | | SSI interface |
| Data output code | | Gray code, binary code , programmable |
| Monoflop time | | $T_m$ = 10 µs |
| Clock frequency | | 100 ... 1000 kHz |
| Query cycle time | | ≥ 3 ms |
| Pause time | tp | ≥ 20 µs<br>double request possible, if $t_p$ ≤ 10 µs |
| **Interface 2** | | |
| Interface type | | USB (serial comport) |
| Protocol | | 8E1 |
| Transfer rate | | 38.4 ... 460.8 kBit/s |
| **Input** | | |
| Input type | | 1 to 2 functional inputs , programmable |
| Input impedance | | ≥ 27 kΩ |
| **Output** | | |
| Output type | | 1 to 2 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 |
| **Approvals and certificates** | | |
| CE conformity | | CE |
| UKCA conformity | | UKCA |
| 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 |
| **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 |
| Degree of protection | | IP67 |
| Material | | |
| Housing | | PC/ABS |

Release date: 2024-07-29 Date of issue: 2024-07-29 Filename: 236998_eng.pdf

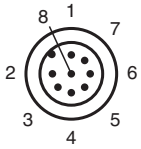
## Technical Data

| | | |
|---|---|---|
| Mass | | approx. 160 g |
| Dimensions | | |
| Height | | 70 mm |
| Width | | 70 mm |
| Depth | | 50 mm |
| **Factory settings** | | |
| X resolution (protocol) | | 1 mm |
| Y resolution (protocol) | | 1 mm |
| Code tape orientation | | 0 ° |
| "No Position" X value | | 0 |
| "No Position" Y value | | 0 |
| "No Position" speed value | | 127 |
| Overspeed threshold (protocol) | | 12.5 m/s |
| X value in case of error | | Error number |
| Y value in case of error | | Error number |
| Speed value in case of error | | Error number |
| SSI coding | | digital |
| Code tape width | | two-rowed |
| X positon offset | | 0 mm |
| Function input/output | | inactive |
| Data content | | X position , status |

## Connection



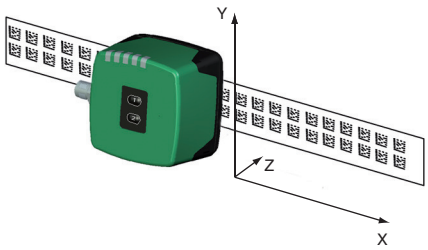

## Connection Assignment

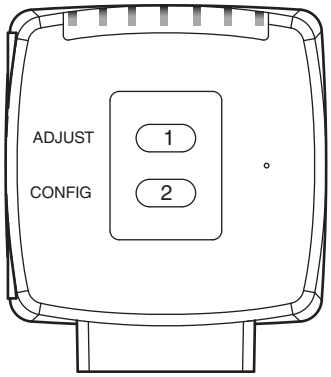


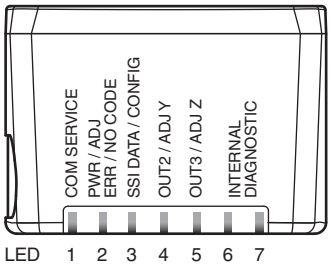

Release date: 2024-07-29 Date of issue: 2024-07-29 Filename: 236998_eng.pdf

## Characteristic Curve

### Coordinates




Release date: 2024-07-29 Date of issue: 2024-07-29 Filename: 236998_eng.pdf

## Additional Information

### 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 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.

### 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**

| LED | Color | Label | Meaning |
|---|---|---|---|
| 1 | Yellow | COM | USB interface, communication active |
| 2 | Green/red | PWR/ADJ<br>ERR/NO CODE | Code recognized/not recognized, Error |
| 3 | Yellow | SSI DATA/CONFIG | Data flow on SSI interface / configuration |
| 4 | Yellow | OUT2/ADJ Y | Output 2, Alignment aid Y |
| 5 | Yellow | OUT3/ADJ Z | Output 3, Alignment aid Z |
| 6,7 | red/green/yellow | INTERNAL<br>DIAGNOSTICS | Internal diagnostics |

### Data protocol

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Data | XP21 | XP20 | XP19 | XP18 | XP17 | XP16 | XP15 | XP14 | XP13 | XP12 | XP11 | XP10 | XP9 | XP8 | XP7 | XP6 | XP5 | XP4 | XP3 | XP2 | XP1 | XP0 | Out | Wrn | Err |
| | MSB | | | | | | | | | | | | | | | | | | | | | LSB | Status bits | | |

Position data is coded in XP0 ... XP21 (MSB first)

### Meaning of the status bits

| Out | Err | Wrn | Meaning |
|---|---|---|---|
| X | X | 1 | reserved |
| X | 1 | X | Error, error code in XP0 ... XP21 |
| 1 | X | X | No codes in read window (XP0 ... XP21 = 0) |

Error codes

| Error code | Meaning |
|---|---|
| 1 | reverse reading head orientation (180° contorted) |
| 2 | position error: unsecure position codes in reading window |
| >1000 | internal error |

### 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.

Release date: 2024-07-29 Date of issue: 2024-07-29 Filename: 236998_eng.pdf

# Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

## PEPPERL+FUCHS:

CCN15-30GS60-E2-V1 NBB2-8GM40-E0-V1 NBB5-18GM50-A0 NBB0.8-4M25-E0 NBB8-18GM50-E0
OQT150-R101-2EP-IO-V31 UB800-18GM40-I-V1 24772 34441 NBB2-12GM50-E2
OBR12M-R100-2EP-IO-V31-L OBR2500-12GM40-E5 NBB5-18GM50-E2 OBR5000-18GK40A-E2
OQT150-R100-2EP-IO-V31-L BF18 GLV30-8-2500/47/73C KLR-C02-2,2-2,0-K70 NBB1-4GM22-E2
NBB2-12GM50-A2-V1 114642 134143 UBE800-F77-SE2-V31 NBB0.8-5GM25-E2 NBB4-12GM50-A2-V1
OBD450-18GK40A-E2 S1SD-1AI-1U.1 MH4-2057 UB2000-F42-E6-V15 WCS3-MH1