

# Optical reading head

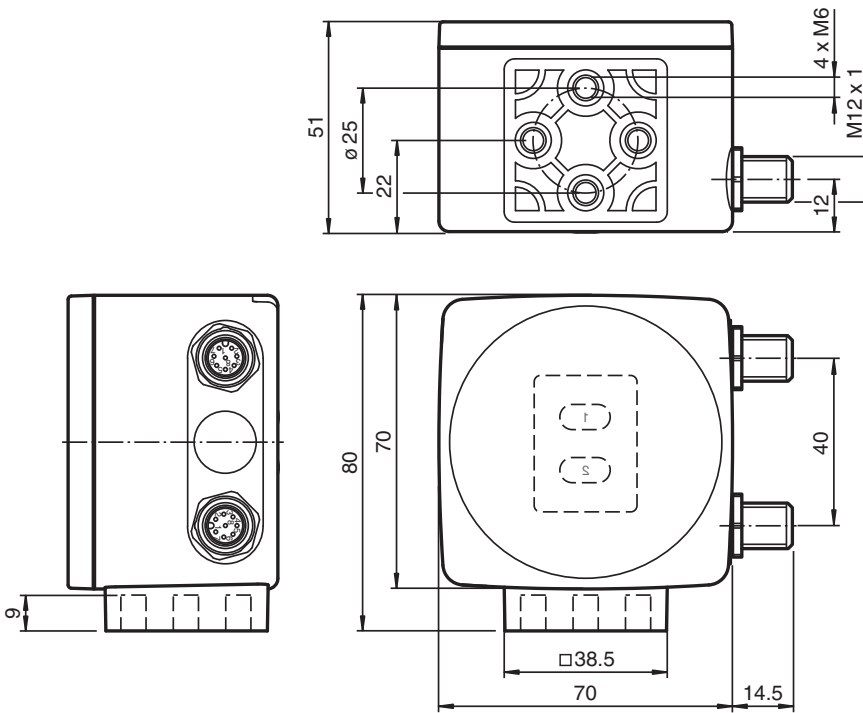
## PXV100AS-F200-SSI-V19-6011

- SSI interface
- Non-contact positioning on 2-colored Data Matrix code tapes
- 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.
- Ideal for application in combination with SafePXV

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		100 s <sup>-1</sup>
Read distance		100 mm
Depth of focus		+ 30 mm / - 30 mm
Reading field		60 mm x 35 mm
Ambient light limit		100000 Lux
Accuracy		± 0.2 mm

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111  
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com

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## Technical Data

<b>Nominal ratings</b>			
Camera			
Type		CMOS , Global shutter	
Processor			
Clock pulse frequency		600 MHz	
Speed of computation		4800 MIPS	
Digital resolution		32 Bit	
<b>Functional safety related parameters</b>			
MTTF <sub>d</sub>		93 a	
Mission Time (T <sub>M</sub> )		10 a	
Diagnostic Coverage (DC)		0 %	
<b>Indicators/operating means</b>			
LED indication		7 LEDs (communication, alignment aid, status information)	
<b>Electrical specifications</b>			
Operating voltage	U <sub>B</sub>	15 ... 30 V DC , PELV	
No-load supply current	I <sub>0</sub>	max. 200 mA	
Power consumption	P <sub>0</sub>	3 W	
<b>Interface 1</b>			
Interface type		SSI interface	
Data output code		Gray code, binary code , programmable	
Monoflop time		T <sub>m</sub> = 10 μs	
Clock frequency		100 ... 1000 kHz	
Query cycle time		≥ 3 ms	
Pause time	tp	≥ 20 μs double request possible, if t <sub>p</sub> ≤ 10 μs	
<b>Interface 2</b>			
Interface type		USB (serial comport)	
Protocol		8E1	
Transfer rate		38.4 ... 460.8 kBit/s	
<b>Input</b>			
Input type		1 to 2 functional inputs , programmable	
Input impedance		≥ 27 kΩ	
<b>Output</b>			
Output type		1 to 2 switch outputs , PNP , programmable , short-circuit protected	
Switching voltage		Operating voltage	
Switching current		150 mA each output	
<b>Standard conformity</b>			
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	
<b>Approvals and certificates</b>			
CCC approval		CCC approval / marking not required for products rated ≤36 V	
<b>Ambient conditions</b>			
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	
<b>Mechanical specifications</b>			
Connection type		8-pin, M12 x 1 connector	
Degree of protection		IP67	
Material			
Housing		PC/ABS	
Mass		approx. 170 g	

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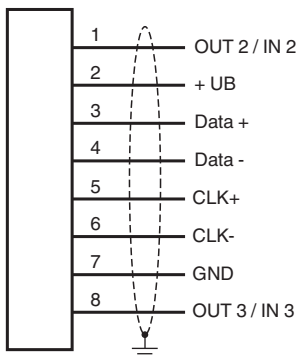
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fa-info@sg.pepperl-fuchs.com

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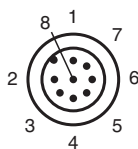
## Technical Data

<b>Dimensions</b>	
Height	70 mm
Width	70 mm
Depth	50 mm
<b>Factory settings</b>	
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	one-rowed
X positon offset	0 mm
Function input/output	inactive
Data content	X position , status

## Connection



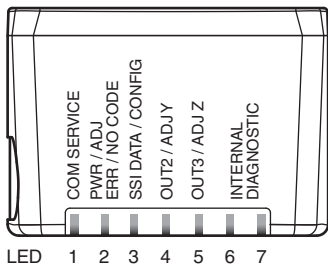
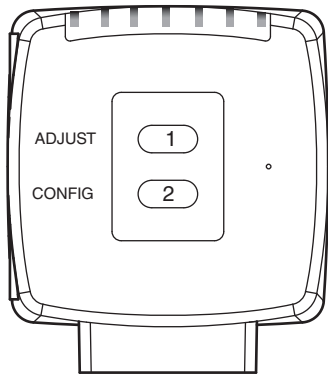
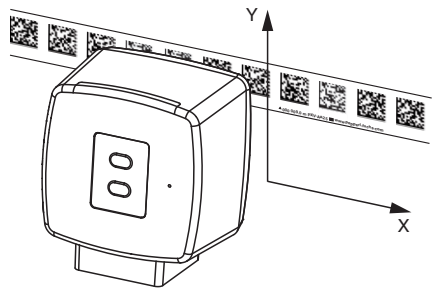
## Connection Assignment



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## Function Principle

### Position Data



**Additional Information**

**General**

The reader forms part of the positioning system in the Pepperl+Fuchs incident light process. The reader's features include a camera module and an integrated illumination unit, enabling it to detect position markers printed onto an adhesive code tape in the form of Data Matrix codes. Generally speaking, the code tape is mounted stationary on a fixed part of the plant (e.g., elevator shaft, overhead conveyor mounting rails) and the reader is mounted parallel on the moving "vehicle" (e.g., elevator car, overhead conveyor chassis).

**Mounting and Commissioning**

Mount the reader such that the optical surface of the device captures the optimal reading distance to the code tape (see "Technical Data"). The stability of the mounting and the manner in which the vehicle is guided ensure that the reader is not operated outside of its depth of focus range. All readers can be adapted to optimally meet specific requirements through parameterization.

**Indicators and Operating Elements**

The reader is equipped with seven indicator LEDs for carrying out visual function checks and quick diagnostics. The reader is equipped with two buttons at the back for activating the alignment aid and parameterization mode.

**LEDs**

LED	Color	Label	Meaning
1	Yellow	COM	Communication active to USB interface
2	Green/red	PWR/ADJ ERR/NO CODE	Code detected/not detected, error
3	Yellow	SSI DATA/CONFIG	Data flow to 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 DIAGNOSTIC	Internal diagnostics

**Data Log**

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

Position data encoded in XP0 ... XP21 (MSB first)

**Meaning of status bits**

Out	Err	Wrn	Meaning
X	X	1	Reserved
X	1	X	Error, error code in XP0 ... XP21
1	X	X	No position codes in the reading window (XP0 ... XP21 = 0)

**Error codes**

Error code	Meaning
1	Reader aligned incorrectly (rotated 180°)
2	Position error: Position codes in the reading window are not unique
>1000	Internal fault

**External Parameterization**

To parameterize the device externally, the parameterization code is required in the form of a Data Matrix containing the desired reader parameters. Data Matrix code cards detailing the step-by-step process for externally parameterizing the device are printed in the operating instructions for the reader.

The reader can be parameterized only within ten minutes of being switched on. If a key is pressed after ten minutes of the device being switched on, a visual signal is given by the LEDs (LED1, yellow/LED2, red/LED3, yellow/LED4, yellow/LED5, yellow, flashing for two seconds).

- The switchover from normal mode to parameterization mode is made by pressing button 2 on the back of the reader. To switch the device over, button 2 must be pressed and held for more than two seconds. LED3 then flashes.
  - Note:** Parameterization mode is exited automatically if the device is inactive for one minute. In this case, the reader reverts to normal mode and operates without the settings having been changed.
- Place the parameterization code in the field of vision of the camera module. After the parameterization code is detected, the green LED2 lights up for one second. In the event of an invalid parameterization code, LED2 lights up red for two seconds.
- Briefly pressing button 2 will end parameterization mode and the changed parameters are saved in the non-volatile memory of the reader.

**Alignment Aid for the Y and Z Coordinates**

The activation of the alignment aid is possible only within ten minutes of switching on the reader. The switchover from normal mode to "Alignment aid" mode is performed via button 1 on the back of the reader.

- Press the button 1 for longer than two seconds. LED2 flashes green for a recognized code tape. LED2 flashes red for an unrecognized code tape.
- Z coordinate:** If the distance of the camera to the code tape is too small, the yellow LED5 lights up. If the distance is too great, the yellow LED5 goes out. Within the target range, the yellow LED5 and the green LED2 flash synchronously.
- Y coordinate:** If the optical axis of the camera is too low relative to the middle of the code tape, the yellow LED4 lights up. If the optical axis is too high, the yellow LED4 goes out. Within the target range, the yellow LED4 and the green LED2 flash synchronously.
- Briefly pressing button 1 ends the alignment aid, and the reader switches to normal mode.

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