



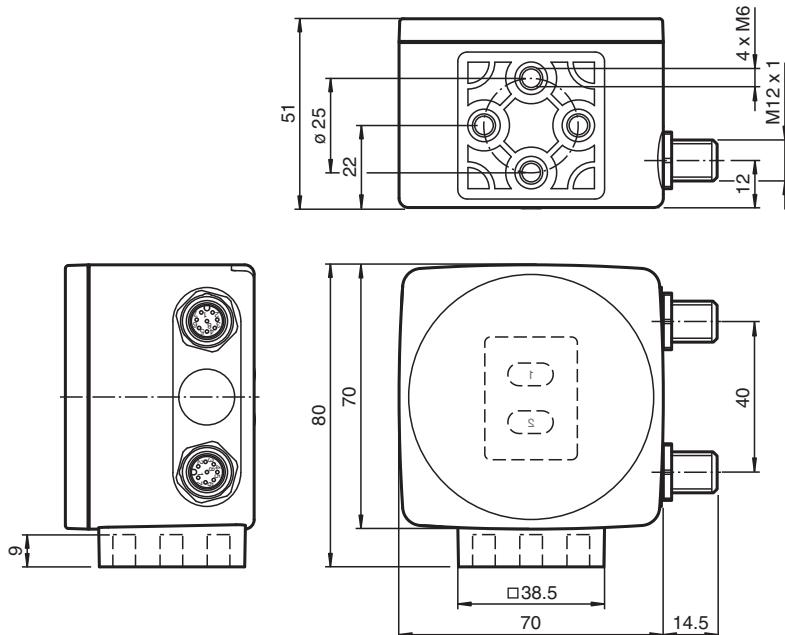
Optical reading head PXV100SI-F200-SSI-V19

- 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

Read head for incident light positioning system



Dimensions



Technical Data

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General specifications

Passage speed	v	$\leq 8 \text{ m/s}$
Measuring range		max. 10000 m
Light type		Infrared
Scan rate		100 s^{-1}
Read distance		100 mm
Depth of focus		+ 20 mm / - 40 mm
Reading field		115 mm x 73 mm
Ambient light limit		100000 Lux
Accuracy		$\pm 0.2 \text{ mm}$

Nominal ratings

Camera

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

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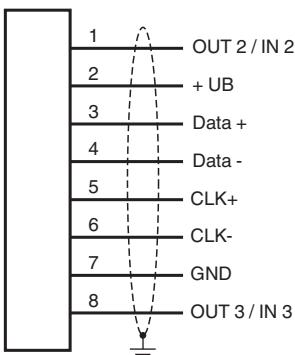
Technical Data

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	77 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	t _p	≥ 20 µs 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	
Conformity		
Photobiological safety	exempt group according to EN 62471:2008	
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	
UL approval	cULus Listed, 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		

Technical Data

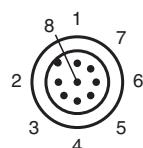
Housing	PC/ABS
Mass	approx. 170 g
Dimensions	
Height	70 mm
Width	70 mm
Depth	50 mm
Factory settings	
X resolution (protocol)	1 mm
Y resolution (protocol)	1 mm
Code tape orientation	0 °
"No Position" X value	0
"No Position" Y value	0
"No Position" speed value	127
Overspeed threshold (protocol)	12.5 m/s
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	one-rowed
X positon offset	0 mm
Function input/output	inactive
Data content	X position , status

Connection



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Connection Assignment



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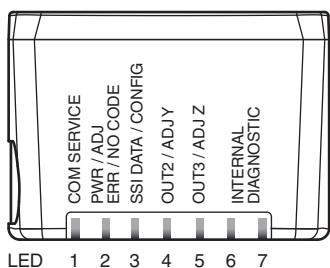
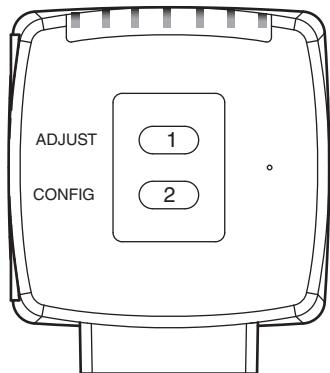
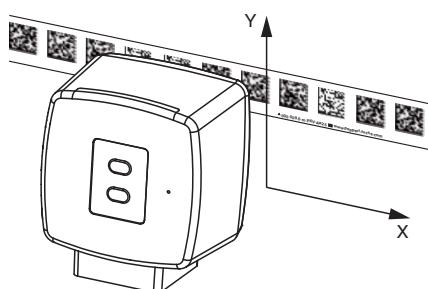
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Function Principle

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	LSB																							
MSB																	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.