



Model Number

PHA500-F200A-B17-T-V1D

Precision positioning on hole in the 70 mm x 70 mm housing

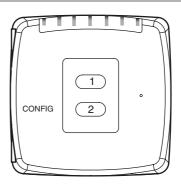
Features

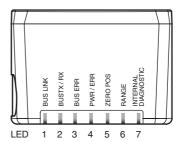
- Detects the position of an index hole
- Large capture range
- High operating range
- Integrated contrast compensation
- Compact design
- **PROFINET** interface
- Integrated illumination
- Extended temperature range

Function

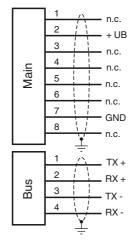
The sensor has been developed for the precision positioning of high-bay racking operating equipment. It detects circular holes in the racking structure and their positional deviation from the nominal position. The sensor operates in two dimensions.

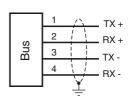
Indicating / Operating means





Electrical connection





Pinout





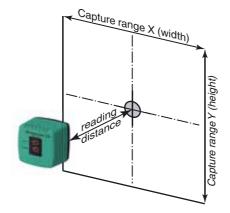
Technical data

Light type	General specifications			
Read distance	Light type		Integrated LED lightning (infrared)	
Read distance 500 mm Depth of focus ±50 mm Capture range max. 90 mm x 90 mm Nominal ratings Camera Type CMOS , Global shutter Number of pixels 752 x 480 pixels Gray scale 256 Functional safety related parameters MTTF _d 20 a Mission Time (T _M) 10 a Diagnostic Coverage (DC) 0% Indicators/operating means Operation indicator LED green: Ready for operation Function indicator 7 LEDs (communication, alignment aid, status information) Control elements Button for parameterization Electrical specifications Operating voltage U _B 24 V DC +/- 15 %, PELV No-load supply current I ₀ max. 400 mA Power consumption P ₀ 6 W Interface Interface type 100 BASE-TX PROFINET Protocol PROFINET IO Real-Time (RT) Conformance class A Transfer rate 100 MBit/s Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 %, noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Object size		Hole diameter 13 mm	
Depth of focus Capture range Nominal ratings Camera Type CMOS , Global shutter Number of pixels Gray scale Type CMOS , Global shutter Number of pixels Gray scale Type CMOS , Global shutter Number of pixels Gray scale TYPE Number of pixels TYPE TYPE TYPE TYPE TYPE TYPE TYPE TYPE	Response delay		100 ms	
Capture range	Read distance		500 mm	
Nominal ratings Camera Type CMOS , Global shutter Number of pixels 752 x 480 pixels Gray scale 256 Functional safety related parameters MTTF _d 20 a Mission Time (T _M) 10 a Diagnostic Coverage (DC) 0 % Indicators/operating means Operation indicator LED green: Ready for operation Function indicator 7 LEDs (communication, alignment aid, status information) Control elements Button for parameterization Electrical specifications Operating voltage U _B 24 V DC +/- 15 %, PELV No-load supply current I ₀ max. 400 mA Power consumption P ₀ 6 W Interface Interface type 100 BASE-TX PROFINET Protocol PROFINET IO Real-Time (RT) Conformance class A Transfer rate 100 MBit/s Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 %, noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Depth of focus		± 50 mm	
Camera Type CMOS , Global shutter Number of pixels 752 x 480 pixels Gray scale 256 Functional safety related parameters MTTF _d 20 a Mission Time (T _M) 10 a Diagnostic Coverage (DC) 0 % Indicators/operating means Operation indicator LED green: Ready for operation Function indicator 7 LEDs (communication, alignment aid, status information) Control elements Button for parameterization Electrical specifications Operating voltage U _B 24 V DC +/- 15 %, PELV No-load supply current I ₀ max. 400 mA Power consumption P ₀ 6 W Interface Interface type 100 BASE-TX PROFINET Protocol PROFINET IO Real-Time (RT) Conformance class A Transfer rate 100 MBit/s Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 %, noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Capture range		max. 90 mm x 90 mm	
Type CMOS , Global shutter Number of pixels 752 x 480 pixels Gray scale 256 Functional safety related parameters MTTF _d 20 a Mission Time (T _M) 10 a Diagnostic Coverage (DC) 0 % Indicators/operating means Operation indicator 1 LED green: Ready for operation Function indicator 7 LEDs (communication, alignment aid, status information) Control elements Button for parameterization Electrical specifications Operating voltage U _B 24 V DC +/- 15 %, PELV No-load supply current I ₀ max. 400 mA Power consumption P ₀ 6 W Interface Interface type 100 BASE-TX PROFINET Protocol PROFINET IO Real-Time (RT) Conformance class A Transfer rate 100 MBit/s Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Nominal ratings			
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Mission Time (T _M) 10 a Diagnostic Coverage (DC) 0 % Indicators/operating means Operation indicator LED green: Ready for operation Function indicator 7 LEDs (communication, alignment aid, status information) Control elements Button for parameterization Electrical specifications Operating voltage U _B 24 V DC +/- 15 %, PELV No-load supply current I ₀ max. 400 mA Power consumption P ₀ 6 W Interface Interface type 100 BASE-TX PROFINET Protocol PROFINET IO Real-Time (RT) Conformance class A Transfer rate 100 MBit/s Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Functional safety related param	eters		
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Function indicator Control elements Button for parameterization Electrical specifications Operating voltage No-load supply current Power consumption Po 6 W Interface Interface type Interface transfer rate Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature Storage temperature Relative humidity Power consumption Po 6 W Interface Interface type Inter	Indicators/operating means			
Control elements Electrical specifications Operating voltage No-load supply current Power consumption Interface Interface type Protocol Transfer rate Standard conformity Noise immunity Noise immunity Ambient conditions Operating temperature Storage temperature Palative humidity Mechanical specifications Degree of protection Material Housing Operating voltage UB 24 V DC +/- 15 %, PELV Max. 400 mA 10 max. 400 mA 8 W 100 BASE-TX PROFINET PROFINET IO Real-Time (RT) Conformance class A 100 MBit/s Standard conformity EN 61000-6-2:2005 Ambient conditions -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 %, noncondensing Mechanical specifications Degree of protection Material Housing Optical face Installation 4 x M6 threading	Operation indicator		LED green: Ready for operation	
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Control elements		Button for parameterization	
No-load supply current Power consumption Po 6 W Interface Interface type Interface type Protocol Transfer rate Standard conformity Noise immunity Poerating temperature Storage temperature Relative humidity Poerating Poeratin	Electrical specifications			
Power consumption P ₀ 6 W Interface Interface type 100 BASE-TX PROFINET Protocol PROFINET IO Real-Time (RT) Conformance class A Transfer rate 100 MBit/s Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Operating voltage	U_{B}	24 V DC +/- 15 %, PELV	
Interface Interface type 100 BASE-TX PROFINET Protocol PROFINET IO Real-Time (RT) Conformance class A Transfer rate 100 MBit/s Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	No-load supply current	I ₀	max. 400 mA	
Interface type Protocol PROFINET IO Real-Time (RT) Conformance class A Transfer rate 100 MBit/s Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection Material Housing Optical face Installation 100 MASE-TX PROFINET P	Power consumption	Po	6 W	
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Transfer rate 100 MBit/s Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Interface type		100 BASE-TX PROFINET	
Standard conformity Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Installation 4 x M6 threading	Protocol		PROFINET IO Real-Time (RT) Conformance class A	
Noise immunity EN 61000-6-2:2005 Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Transfer rate		100 MBit/s	
Ambient conditions Operating temperature -30 60 °C (-22 140 °F) (noncondensing; prevent icing on the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Installation 4 x M6 threading	Standard conformity			
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the lens!) Storage temperature -30 85 °C (-22 185 °F) Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Ambient conditions			
Relative humidity 90 % , noncondensing Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Operating temperature			
Mechanical specifications Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Storage temperature		-30 85 °C (-22 185 °F)	
Degree of protection IP67 Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Relative humidity		90 % , noncondensing	
Material Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Mechanical specifications			
Housing PC/ABS Optical face Plastic pane Installation 4 x M6 threading	Degree of protection		IP67	
Optical face Plastic pane Installation 4 x M6 threading	Material			
Installation 4 x M6 threading	Housing		PC/ABS	
	Optical face		Plastic pane	
Mass approx. 200 g	Installation		4 x M6 threading	
	Mass		approx. 200 g	

Approvals and certificates

cULus Listed, General Purpose, Class 2 Power Source **UL** approval CCC approval CCC approval / marking not required for products rated ≤36 V Approvals CE

Curves / Diagrams



Accessories

V19-G-5M-PUR-ABG

Female cordset, M12, 8-pin, shielded, PUR cable

V1SD-G-2M-PUR-ABG-V1SD-G

Ethernet bus cable, M12 to M12, PUR cable 4-pin, CAT5e

V1SD-G-5M-PUR-ABG-V1SD-G

Ethernet bus cable, M12 to M12, PUR cable 4-pin, CAT5e

PCV-MB1

Mounting bracket for PCV* read head

PCV-SC12A

Grounding clip for PCV system

PCV-SC12

Grounding clip for PCV system

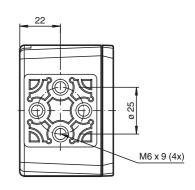
V19-G-2M-PUR-ABG

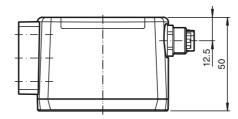
Female cordset, M12, 8-pin, shielded, PUR cable

V19-G-10M-PUR-ABG

Female cordset, M12, 8-pin, shielded, PUR cable

Other suitable accessories can be found at www.pepperl-fuchs.com





General

The PHA... Vision Sensor has been developed for the rack fine positioning of stock feeders. This device detects circular holes in the rack structure and determines the position deviation of these holes in relation to the target position. The Vision Sensor operates in two dimensions.

Mounting and Commissioning

Mount the PHA... Vision Sensor in such a way that the optical surface of the device captures the optimum distance to the carrier/hole (see "Technical Data"). The stability of the Vision Sensor mounting and the manner in which the vehicle is guided must ensure that the device is not operated outside of its depth of focus range.

All Vision Sensors can be adapted to optimally meet specific requirements by means of parameterization.

Indicators and Controls

The PHA... Vision Sensor is equipped with seven indicator LEDs for carrying out visual function checks and rapid diagnostics. The read head is equipped with two buttons at the back for activating the parameterization mode.

LEDs

LED	Color	Labeling	Meaning
1	yellow	BUS LINK	PROFINET communication active
2	yellow	BUS TX / RX	Data transfer
3	red	BUS ERR	PROFINET communication error
4	green/red	PWR/ERR	Fault with power supply/general error
5	yellow	ZERO POS	Zero position reached
6	yellow	RANGE	Within detection/capture range
7	red/green/yellow	INTERNAL DIAGNOSTIC	Internal diagnostics

External Parameterization

In order to parameterize the device externally, the parameterization code is required in the form of a data matrix containing the desired parameters. Data matrix code cards detailing the step-by-step process for externally parameterizing the device are printed in the operating instructions for the Vision Sensor.

- The Vision Sensor is switched over from normal operation to parameterization mode using button 2 on the back of the device. To switch the device over, button 2 must be pressed and held for more than two seconds. LED5 then flashes.
 - **Note:** Parameterization mode is exited automatically if the device is inactive for one minute. In this case, the Vision Sensor 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 LED4 lights up for one second. In the event of an invalid parameterization code, LED4 lights up red for two seconds.
- Briefly pressing button 2 will end parameterization mode. Unsaved changes will be lost.