# Система точного позиционирования РНА

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Киргизия +996(312)96-26-47

эл.почта: phb@nt-rt.ru || сайт: https://pepperl-fuchs.nt-rt.ru/



# Vision Sensor PHA300-F200A-B17-T-V1D



- 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

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

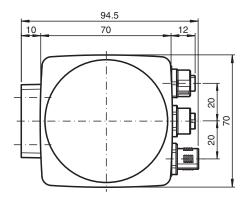


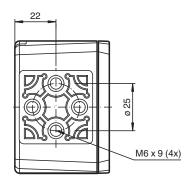


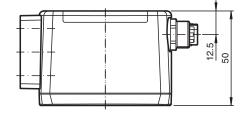
### **Function**

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.

### **Dimensions**







### **Technical Data**

General specifications	
Light type	Integrated LED lightning (infrared)
Object size	Hole diameter 13 mm
Response delay	100 ms
Read distance	300 mm
Depth of focus	± 50 mm

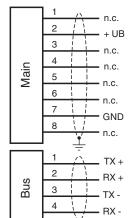
Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 283557\_eng.pdf

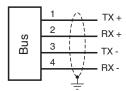
Capture range

**Technical Data** 

Capture range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Type		CMOS , Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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 <sub>0</sub>	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
Interface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm

max. 120 mm x 100 mm





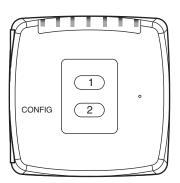
## **Connection Assignment**

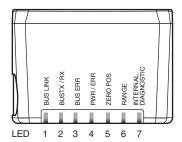
Main

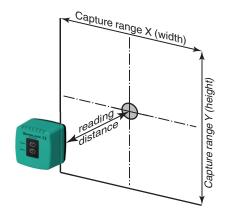


Profinet 1 & 2









#### 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**

- 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.



# Vision Sensor PHA400-F200-B17-V1D



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

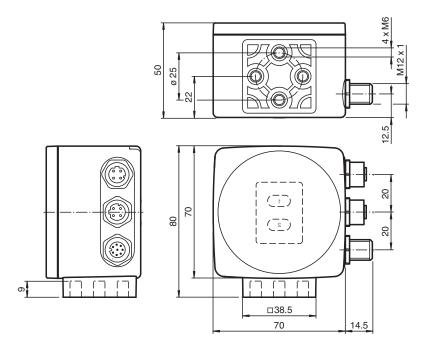
Precision positioning on hole in the 70 mm x 70 mm housing



### **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.

### **Dimensions**



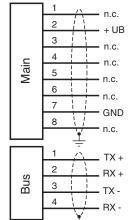
### **Technical Data**

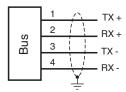
General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	400 mm	
Depth of focus	± 50 mm	

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Technical Data		
Capture range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Туре		CMOS, Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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 <sub>0</sub>	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
Interface	. 0	
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
Interface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		Champing to an observating to an observation of the control of the
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		COO approvar/ marking not required for products rated \$30 V
Operating temperature		$0 \dots 60  ^{\circ}\text{C}$ (32 $\dots$ 140 $^{\circ}\text{F})  , \;\; -20 \dots 60  ^{\circ}\text{C}$ (-4 $\dots$ 140 $^{\circ}\text{F})$ (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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm





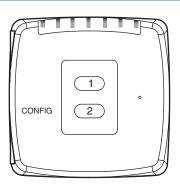
## **Connection Assignment**

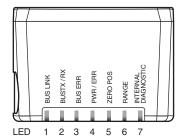
Main

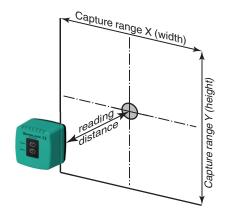
Profinet 1 & 2











#### 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**

- 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.



# Vision Sensor PHA300-F200A-B17-V1D



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

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

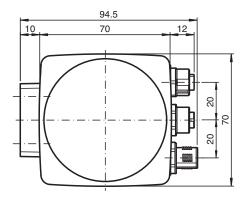


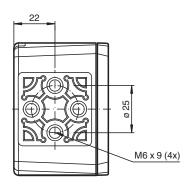


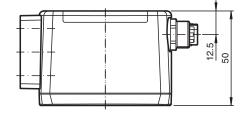
### **Function**

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.

### **Dimensions**







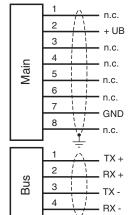
### **Technical Data**

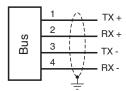
General specifications	
Light type	Integrated LED lightning (infrared)
Object size	Hole diameter 13 mm
Response delay	100 ms
Read distance	300 mm
Depth of focus	± 50 mm

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Technical Data		
Capture range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Туре		CMOS , Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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		F
Operating voltage	$U_B$	24 V DC +/- 15 %, PELV
No-load supply current	I <sub>0</sub>	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
Interface	1 0	O VV
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
		TOO MIDIUS
Interface 2		LICE (social source of)
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		<b>-</b>
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Operating temperature		$0 \dots 60~^{\circ}\text{C}$ (32 $\dots$ 140 $^{\circ}\text{F})$ , $$ -20 $\dots$ 60 $^{\circ}\text{C}$ (-4 $\dots$ 140 $^{\circ}\text{F})$ (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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm





## **Connection Assignment**

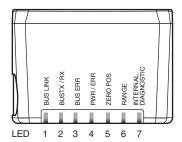
Main

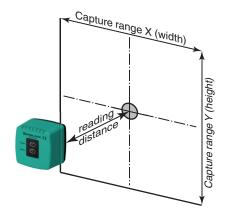
Profinet 1 & 2











#### 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**

- 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.



# Vision Sensor PHA300-F200-B17-T-V1D



- 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

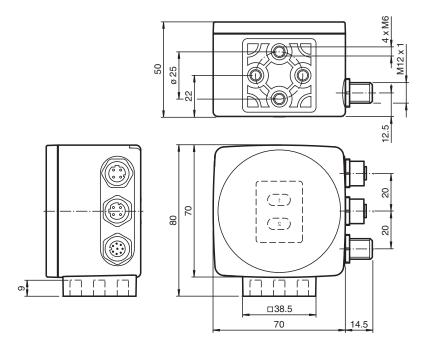
Precision positioning on hole in the 70 mm x 70 mm housing



### **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.

### **Dimensions**



### **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	300 mm	
Depth of focus	± 50 mm	

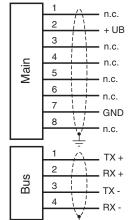
Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 265869\_eng.pdf

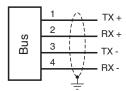
Capture range

**Technical Data** 

Ouptaid range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Type		CMOS , Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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	Io	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
Interface		
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
Interface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm

max. 120 mm x 100 mm





## **Connection Assignment**

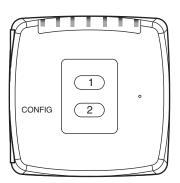
Main

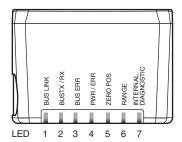


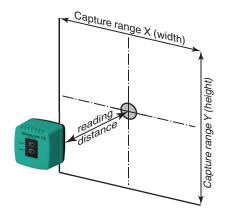












#### General

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**

- 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.



# Vision Sensor PHA200-F200A-B17-V1D



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

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

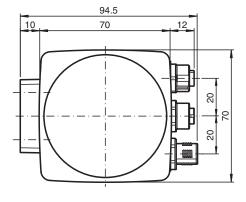


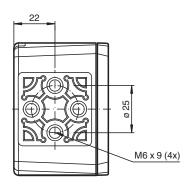


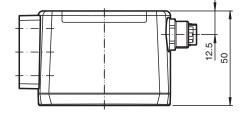
### **Function**

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.

### **Dimensions**







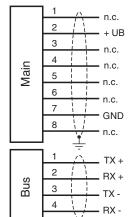
### **Technical Data**

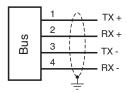
General specifications	
Light type	Integrated LED lightning (infrared)
Object size	Hole diameter 13 mm
Response delay	100 ms
Read distance	200 mm
Depth of focus	± 50 mm

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 266679\_eng.pdf

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Technical Data		
Capture range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Туре		CMOS, Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		10 a
Diagnostic Coverage (DC)		0 %
ndicators/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 <sub>0</sub>	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
nterface	. 0	
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
nterface 2		100 1415.00
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		12000 NBN0
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
·		exempt group according to EN 62471:2008
Photobiological safety  Approvals and certificates		exempt group according to EN 0247 1.2006
		CE
CE conformity		CE  CCC approval / marking not required for products rated ≤36 V
CCC approval		CCC approvar / marking not required for products rated \$36 v
Ambient conditions		0 60 °C /20 140 °F\ 00 60 °C /4 140 °F\ /papagadagaing: proyect ising
Operating temperature		0 60 °C (32 140 °F) , -20 60 °C (-4 140 °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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
TTIGUT		50 mm





## **Connection Assignment**

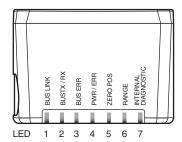
Main

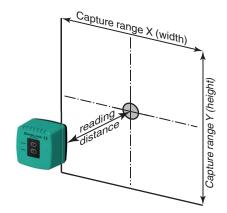


Profinet 1 & 2









#### 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**

- 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.



# Vision Sensor PHA200-F200-B17-V1D



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

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

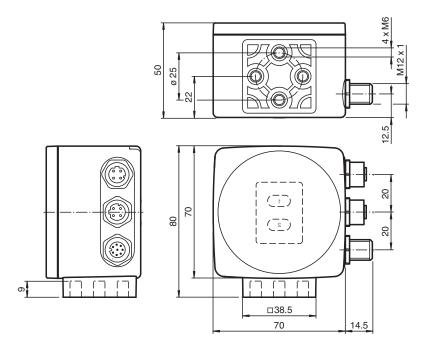




### **Function**

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.

### **Dimensions**



### **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	200 mm	
Depth of focus	± 50 mm	

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 266680\_eng.pdf

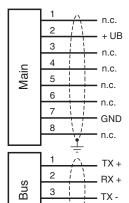
Capture range

Nominal ratings
Camera

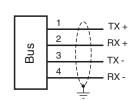
**Technical Data** 

Camera		
Туре		CMOS , Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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	Io	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
Interface	- 0	
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
Interface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		12000 KDIU3
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		
		EN 61000-6-4:2007+A1:2011 EN 61000-6-2:2005
Noise immunity		
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		OF.
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		0.0000(00.1400F) 00.000(4.4400F) (4.4400F)
Operating temperature		0 60 °C (32 140 °F) , $$ -20 60 °C (-4 140 °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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm

max. 120 mm x 100 mm



4



## **Connection Assignment**

Main

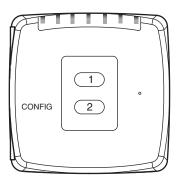
- RX -

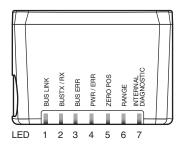


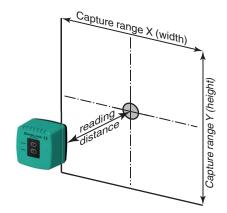
Profinet 1 & 2











#### 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**

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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**

- 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.



# Vision Sensor PHA400-F200A-B17-V1D



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

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

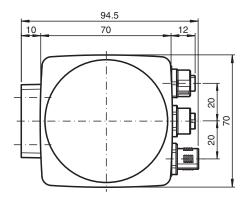


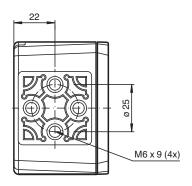


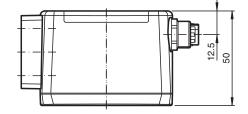
### **Function**

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.

### **Dimensions**







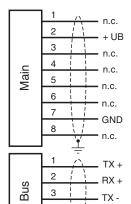
### **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	400 mm	
Depth of focus	± 50 mm	

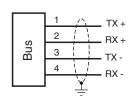
Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 270875\_eng.pdf

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Filename: 270875_
2024-02-07
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2024-02-07 Da
Release date:

Technical Data		
Capture range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Туре		CMOS, Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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 <sub>0</sub>	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
Interface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Operating temperature		$0 \dots 60~^{\circ}\text{C}~(32 \dots 140~^{\circ}\text{F})~,~~-20 \dots 60~^{\circ}\text{C}~(-4 \dots 140~^{\circ}\text{F})$ (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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm



4



## **Connection Assignment**

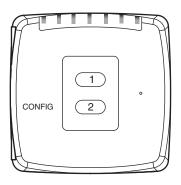
Main

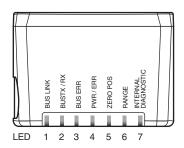
- RX -

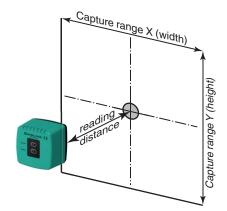
Profinet 1 & 2











#### 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.

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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**

- 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.



# Vision Sensor PHA400-F200A-B17-V1D



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

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

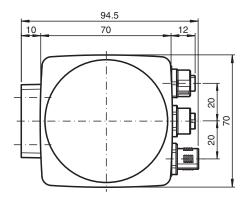


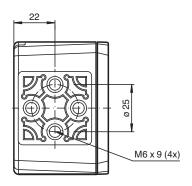


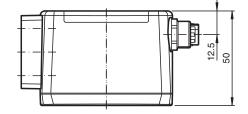
### **Function**

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.

### **Dimensions**





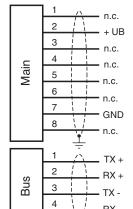


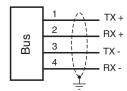
### **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	400 mm	
Depth of focus	± 50 mm	

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 270875\_eng.pdf

Technical Data		
Capture range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Type		CMOS, Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		10 a
Diagnostic Coverage (DC)		0 %
ndicators/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 <sub>0</sub>	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
nterface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Operating temperature		$0 \dots 60~^{\circ}\text{C}$ (32 $\dots$ 140 $^{\circ}\text{F})$ , $~$ -20 $\dots$ 60 $^{\circ}\text{C}$ (-4 $\dots$ 140 $^{\circ}\text{F})$ (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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm





# **Connection Assignment**

Main

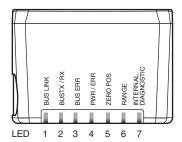
- RX -

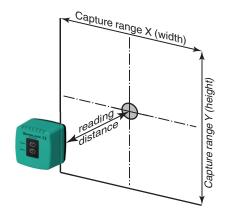
Profinet 1 & 2











#### 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**

- 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.



# Vision Sensor PHA600-F200A-B17-V1D



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

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

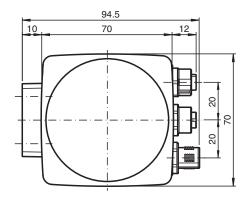


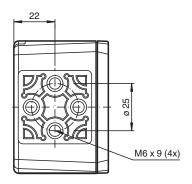


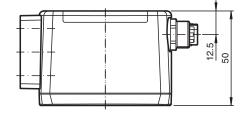
### **Function**

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.

### **Dimensions**







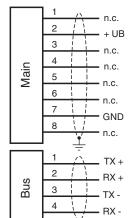
### **Technical Data**

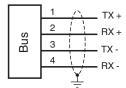
General specifications	
Light type	Integrated LED lightning (infrared)
Object size	Hole diameter 13 mm
Response delay	100 ms
Read distance	600 mm
Depth of focus	± 50 mm

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 291103\_eng.pdf

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Date of issu
2024-02-07 D
Release date:

Technical Data		
Capture range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Туре		CMOS, Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		10 a
Diagnostic Coverage (DC)		0 %
ndicators/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 <sub>0</sub>	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
nterface	. 0	
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
nterface 2		100 MB.00
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		12000 NB100
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		
Approvals and certificates		exempt group according to EN 62471:2008
• •		CE
CE conformity		
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		0 60 °C (32 140 °F) , -20 60 °C (-4 140 °F) (noncondensing; prevent icing
Operating temperature		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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
TTIGHT		/ V 111111





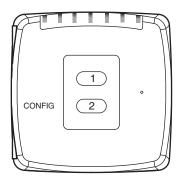
# **Connection Assignment**

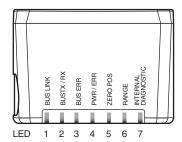
Main

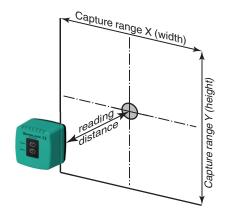


Profinet 1 & 2









#### 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**

- 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.



# Vision Sensor PHA500-F200-B17-V1D



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

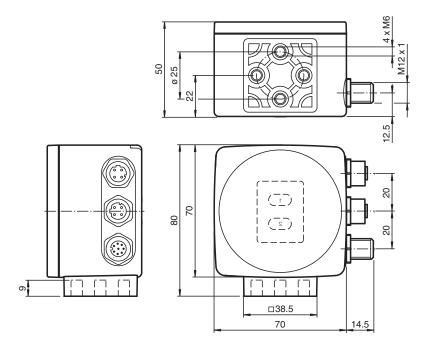
Precision positioning on hole in the 70 mm x 70 mm housing



### **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.

### **Dimensions**

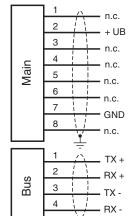


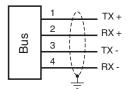
### **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	500 mm	
Depth of focus	± 50 mm	

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 292686\_eng.pdf

Technical Data		
Capture range		max. 90 mm x 90 mm
Nominal ratings		
Camera		
Туре		CMOS , Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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 <sub>0</sub>	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
Interface	1 ()	
Interface type		100 BASE-TX PROFINET
Protocol		
Transfer rate		PROFINET IO Real-Time (RT) Conformance class A  100 MBit/s
		TOO MIDIUS
Interface 2		LICE (social source and)
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		EN 00000 0 07 0000
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Operating temperature		$0 \dots 60~^{\circ}\text{C}$ (32 140 $^{\circ}\text{F})$ , $~$ -20 60 $^{\circ}\text{C}$ (-4 140 $^{\circ}\text{F})$ (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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm





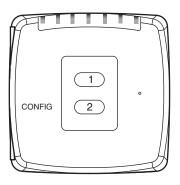
# **Connection Assignment**

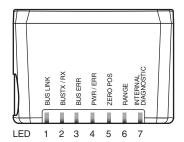
Main

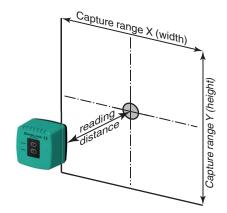


Profinet 1 & 2









#### 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**

- 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.



# Vision Sensor PHA500-F200A-B17-V1D



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

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

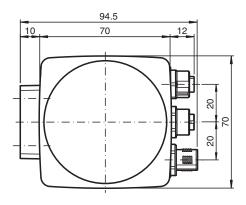


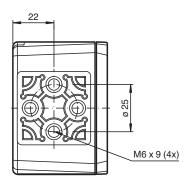


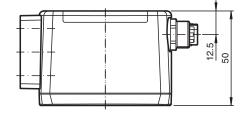
### **Function**

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.

### **Dimensions**







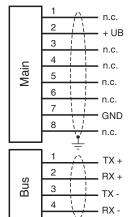
### **Technical Data**

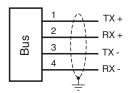
General specifications	
Light type	Integrated LED lightning (infrared)
Object size	Hole diameter 13 mm
Response delay	100 ms
Read distance	500 mm
Depth of focus	± 50 mm

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 292696\_eng.pdf

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Jate: 2024-02-07 Date of issue: 2024-02-07 Filename: 292696_6
Release

	max. 90 mm x 90 mm
	CMOS , Global shutter
	752 x 480 pixels
	256
	95 a
	10 a
	0 %
	LED green: Ready for operation
	7 LEDs (communication, alignment aid, status information)
	Button for parameterization
U₽	24 V DC +/- 15 %, PELV
	max. 400 mA
	6 W
• 0	
	100 BASE-TX PROFINET
	PROFINET IO Real-Time (RT) Conformance class A
	100 MBit/s
	TOO IVIDIUS
	USB (serial comport)
	12000 kBit/s
	12000 KDIVS
	EN 60068-2-27:2009
	EN 60068-2-6:2008
	EN 61000-6-4:2007+A1:2011
	EN 61000-6-2:2005
	exempt group according to EN 62471:2008
	CE
	CCC approval / marking not required for products rated ≤36 V
	0 60 °C (32 140 °F) , -20 60 °C (-4 140 °F) (noncondensing; prevent icing
	on the lens!)
	-30 85 °C (-22 185 °F)
	90 % , noncondensing
	IP67
	PC/ABS
	PC/ABS Plastic pane
	Plastic pane
	Plastic pane 4 x M6 threading
	Plastic pane 4 x M6 threading
	Plastic pane 4 x M6 threading approx. 200 g
	U <sub>B</sub> I <sub>0</sub> P <sub>0</sub>





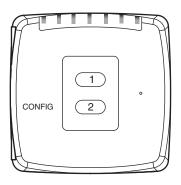
# **Connection Assignment**

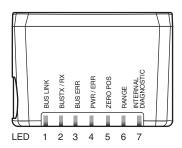
Main

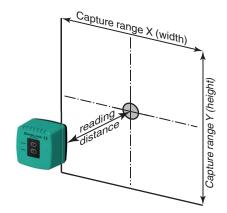












#### General

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**

- 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.



# Vision Sensor PHA600-F200-B17-V1D



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

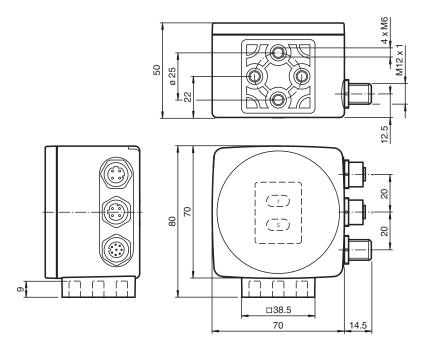
Precision positioning on hole in the 70 mm x 70 mm housing



### **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.

### **Dimensions**



### **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	600 mm	
Depth of focus	± 50 mm	

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 292701\_eng.pdf

Capture range

Nominal ratings
Camera

Type

 $\mathsf{MTTF}_\mathsf{d}$ 

**Technical Data** 

Number of pixels Gray scale

Functional safety related parameters

IVII II d		95 a
Mission Time (T <sub>M</sub> )		10 a
Diagnostic Coverage (DC)		0 %
ndicators/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 <sub>0</sub>	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
Interface	0	
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
Interface 2		100 MDIO
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		12000 KDIUS
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		
		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		0.5
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Operating temperature		$0 \dots 60~^{\circ}\text{C}$ (32 $\dots$ 140 $^{\circ}\text{F})$ , $~$ -20 $\dots$ 60 $^{\circ}\text{C}$ (-4 $\dots$ 140 $^{\circ}\text{F})$ (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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
***************************************		

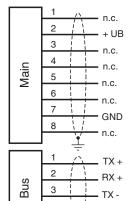
max. 120 mm x 100 mm

CMOS , Global shutter

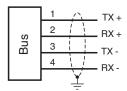
752 x 480 pixels

256

95 a



4



# **Connection Assignment**

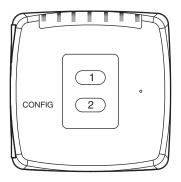
Main

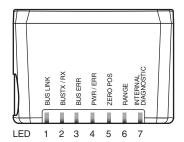
- RX -

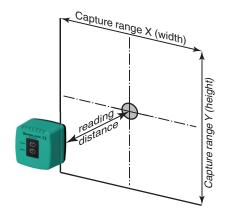


Profinet 1 & 2









#### 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**

- 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.



# Vision Sensor PHA150-F200A-B17-V1D



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

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

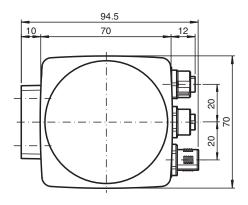


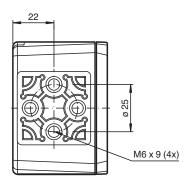


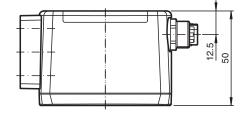
### **Function**

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.

### **Dimensions**







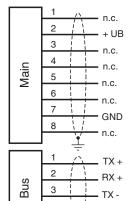
### **Technical Data**

General specifications	
Light type	Integrated LED lightning (infrared)
Object size	Hole diameter 13 mm
Response delay	100 ms
Read distance	150 mm
Depth of focus	± 50 mm

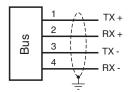
Release date: 2024-08-05 Date of issue: 2024-08-05 Filename: 293772\_eng.pdf

Release date: 2024-08-05 Date of issue: 2024-08-05 Filename: 293772_eng.pdf	
Release date: 2024-08-05 Date of issue: 2024-08-05 Filename: 293772_	eng.pdf
Release date: 2024-08-05 Date of issue: 2024-08-05	Filename: 293772_
Release date: 2024-08-05 Date of issue	s: 2024-08-05
Release date: 2024-08-06	5 Date of issue
Release da	te: 2024-08-06
	Release da

Technical Data		
Capture range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Type		CMOS, Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		10 a
Diagnostic Coverage (DC)		0 %
ndicators/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 <sub>0</sub>	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
nterface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Operating temperature		$0 \dots 60~^{\circ}\text{C}$ (32 $\dots$ 140 $^{\circ}\text{F})$ , $~$ -20 $\dots$ 60 $^{\circ}\text{C}$ (-4 $\dots$ 140 $^{\circ}\text{F})$ (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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm



4



# **Connection Assignment**

Main

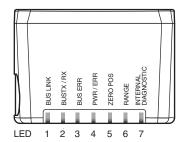
- RX -

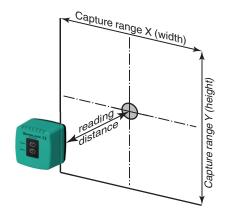


Profinet 1 & 2









#### 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		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**

- 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.



# Vision Sensor PHA200-F200A-B17-T-V1D



- 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

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

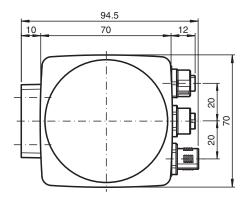


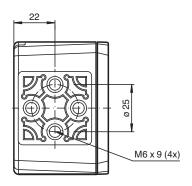


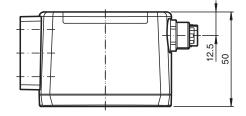
### **Function**

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.

### **Dimensions**







### **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	200 mm	
Depth of focus	± 50 mm	

Release date: 2024-08-05 Date of issue: 2024-08-05 Filename: 295658\_eng.pdf

Capture range

Nominal ratings
Camera

Type

 $\mathsf{MTTF}_\mathsf{d}$ 

**Technical Data** 

Number of pixels Gray scale

Mission Time (T<sub>M</sub>)

Function indicator

Control elements

**Electrical specifications** 

Diagnostic Coverage (DC)

Indicators/operating means
Operation indicator

Functional safety related parameters

Licoti iodi opcomodiiono		
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
Interface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm

max. 120 mm x 100 mm

CMOS, Global shutter

LED green: Ready for operation

Button for parameterization

7 LEDs (communication, alignment aid, status information)

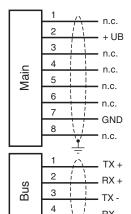
752 x 480 pixels

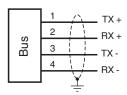
256

95 a

10 a

0 %





# **Connection Assignment**

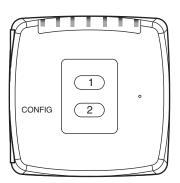
Main

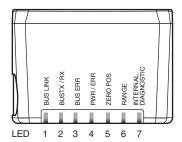
- RX -

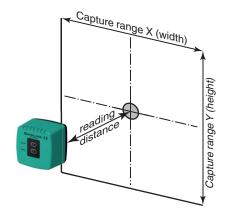












#### General

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**

- 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.



# Vision Sensor PHA150-F200-B17-V1D



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

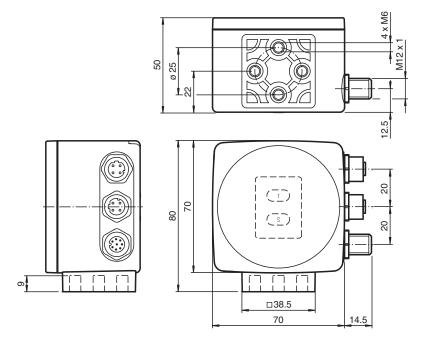
Precision positioning on hole in the 70 mm x 70 mm housing



### **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.

### **Dimensions**



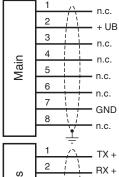
### **Technical Data**

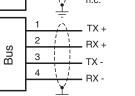
General specifications	
Light type	Integrated LED lightning (infrared)
Object size	Hole diameter 13 mm
Response delay	100 ms
Read distance	150 mm
Depth of focus	± 50 mm
Capture range	max. 120 mm x 100 mm
Nominal ratings	
Camera	

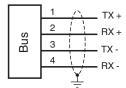
Release date: 2024-08-05 Date of issue: 2024-08-05 Filename: 307562\_eng.pdf

Technical	Data
Type	

Туре		CMOS , Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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 <sub>0</sub>	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
Interface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
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		-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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm







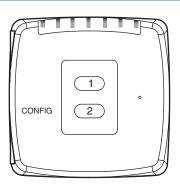
# **Connection Assignment**

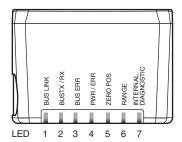
Main



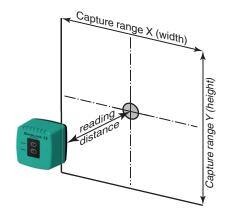








# **Characteristic Curve**



#### 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		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**

- 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.



# Vision Sensor PHA800-F200-B17-V1D



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

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

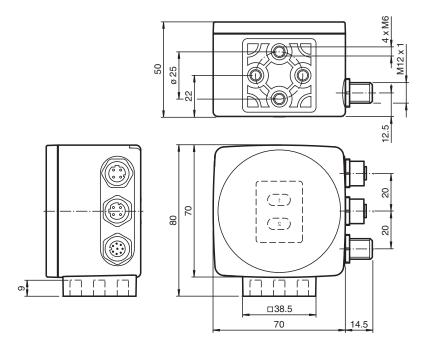




### **Function**

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.

### **Dimensions**



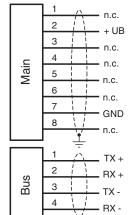
### **Technical Data**

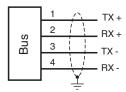
General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	800 mm	
Depth of focus	± 50 mm	

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 320263\_eng.pdf

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02-07 Filename: 32	
2024-02-07 Date of issue: 2024-02-	
s: 2024-02-07 Da	
Release date	

Technical Data		
Capture range		max. 120 mm x 100 mm
Nominal ratings		That I Le thin X 100 thin
Camera		
Type		CMOS , Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		230
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		10 a
Diagnostic Coverage (DC)		0%
ndicators/operating means		0 /0
Operation indicator		LED green: Ready for operation
Function indicator		7 LEDs (communication, alignment aid, status information)
Control elements		Button for parameterization
Electrical specifications		Satisfies paramotorization
Operating voltage	$U_B$	24 V DC +/- 15 %, PELV
No-load supply current	I <sub>0</sub>	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
nterface	1 ()	
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
nterface 2		100 UNIDINS
Interface z		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		12000 KDIVS
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6;2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
		exempt group according to EN 6247 1.2006
Approvals and certificates		CE
CE conformity		
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		0 60 °C (32 140 °F) , -20 60 °C (-4 140 °F) (noncondensing; prevent icing
Operating temperature		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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm





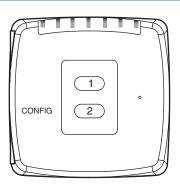
# **Connection Assignment**

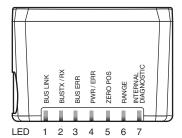
Main



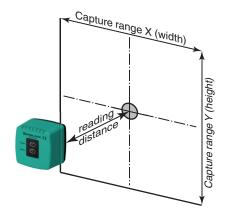
Profinet 1 & 2







# **Characteristic Curve**



#### 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**

- 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.



# Vision Sensor PHA400-F200A-B17-T-V1D



- 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

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

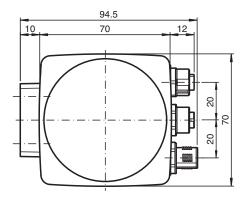


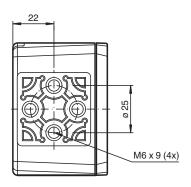


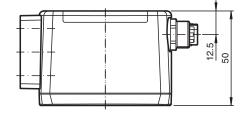
### **Function**

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.

### **Dimensions**







### **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	400 mm	
Depth of focus	± 50 mm	

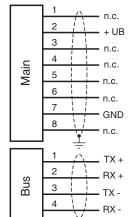
Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 323292\_eng.pdf

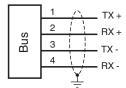
Capture range

**Technical Data** 

Capture range		max. 120 mm x 100 mm
Nominal ratings		
Camera		
Туре		CMOS , Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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 <sub>0</sub>	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
Interface		
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
Interface 2		
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm

max. 120 mm x 100 mm





# **Connection Assignment**

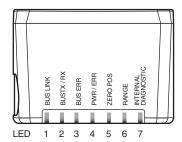
Main



Profinet 1 & 2







#### 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**

- 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.



# Vision Sensor PHA500-F200A-B17-T-V1D



- 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

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

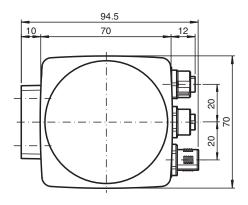


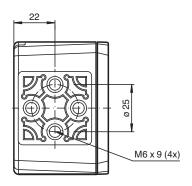


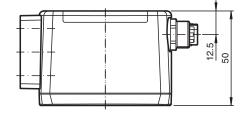
### **Function**

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.

### **Dimensions**







### **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	500 mm	
Depth of focus	± 50 mm	

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 323438\_eng.pdf

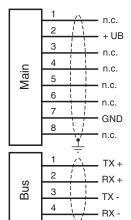
Capture range

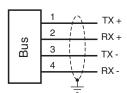
Nominal ratings Camera

**Technical Data** 

Туре		CMOS , Global shutter
Number of pixels		752 x 480 pixels
Gray scale		256
Functional safety related parameters		
MTTF <sub>d</sub>		95 a
Mission Time (T <sub>M</sub> )		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 <sub>0</sub>	max. 400 mA
Power consumption	P <sub>0</sub>	6 W
Interface	• 0	
Interface type		100 BASE-TX PROFINET
Protocol		PROFINET IO Real-Time (RT) Conformance class A
Transfer rate		100 MBit/s
Interface 2		100 MDIDS
		LICE (soviel compart)
Interface type		USB (serial comport)
Transfer rate		12000 kBit/s
Conformity		L = U = = = = = = = = = = = = = = = = =
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Emitted interference		EN 61000-6-4:2007+A1:2011
Noise immunity		EN 61000-6-2:2005
Photobiological safety		exempt group according to EN 62471:2008
Approvals and certificates		
CE conformity		CE
CCC approval		CCC approval / marking not required for products rated ≤36 V
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
Mass		approx. 200 g
Dimensions		
Height		70 mm
Width		70 mm
Depth		50 mm
Dopui		55

max. 90 mm x 90 mm





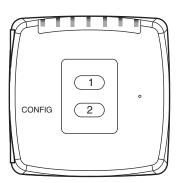
# **Connection Assignment**

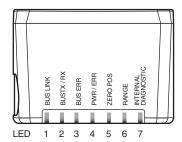
Main



Profinet 1 & 2







#### 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**

- 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.



# Vision Sensor PHA700-F200-B17-V1D



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

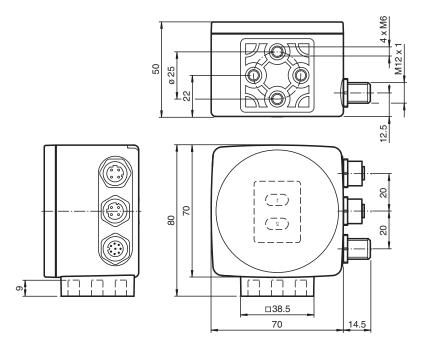
Precision positioning on hole in the 70 mm x 70 mm housing



### **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.

### **Dimensions**



## **Technical Data**

General specifications		
Light type	Integrated LED lightning (infrared)	
Object size	Hole diameter 13 mm	
Response delay	100 ms	
Read distance	700 mm	
Depth of focus	± 50 mm	

Release date: 2024-02-07 Date of issue: 2024-02-07 Filename: 70103352\_eng.pdf

Capture range

Nominal ratings Camera

Type

**Technical Data** 

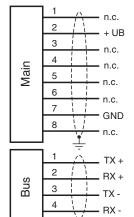
Number of pixels

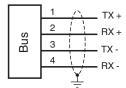
Number of pixels		752 X 400 PIXEIS	
Gray scale		256	
Functional safety related parameters			
MTTF <sub>d</sub>		95 a	
Mission Time (T <sub>M</sub> )		10 a	
Diagnostic Coverage (DC)		0 %	
Indicators/operating means			
Operation indicator		LED green: Ready for operation	
Function indicator		7 LEDs (communication, alignment aid, status information)	
Control elements		Button for parameterization	
Electrical specifications			
Operating voltage	$U_B$	24 V DC +/- 15 %, PELV	
No-load supply current	Io	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	
Interface 2			
Interface type		USB (serial comport)	
Transfer rate		12000 kBit/s	
Conformity			
Shock resistance		EN 60068-2-27:2009	
Vibration resistance		EN 60068-2-6:2008	
Emitted interference		EN 61000-6-4:2007+A1:2011	
Noise immunity		EN 61000-6-2:2005	
Photobiological safety		exempt group according to EN 62471:2008	
Approvals and certificates			
CE conformity		CE	
CCC approval		CCC approval / marking not required for products rated ≤36 V	
Ambient conditions			
Operating temperature		$0 \dots 60~^{\circ}\text{C}$ (32 $\dots$ 140 $^{\circ}\text{F})$ , $~$ -20 $\dots$ 60 $^{\circ}\text{C}$ (-4 $\dots$ 140 $^{\circ}\text{F})$ (noncondensing; prevent icin 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	
Mass		approx. 200 g	
Dimensions			
Height		70 mm	
Width		70 mm	
Depth		50 mm	

max. 120 mm x 100 mm

CMOS, Global shutter

752 x 480 pixels





# **Connection Assignment**

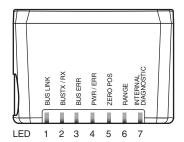
Main











#### 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**

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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**

- 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.

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Киргизия +996(312)96-26-47