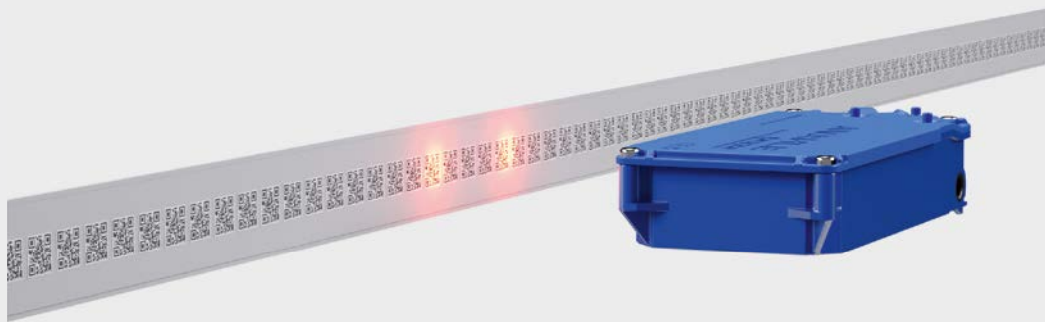
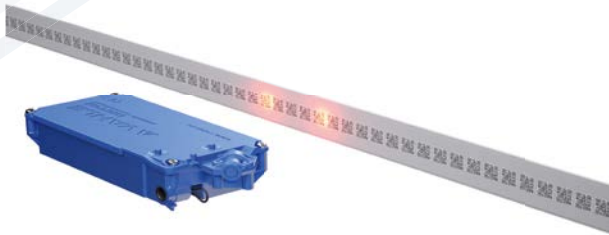




vPOS – POSITIONING SYSTEMS
APOS OPTIC



APOS OPTIC – KEY HIGHLIGHTS

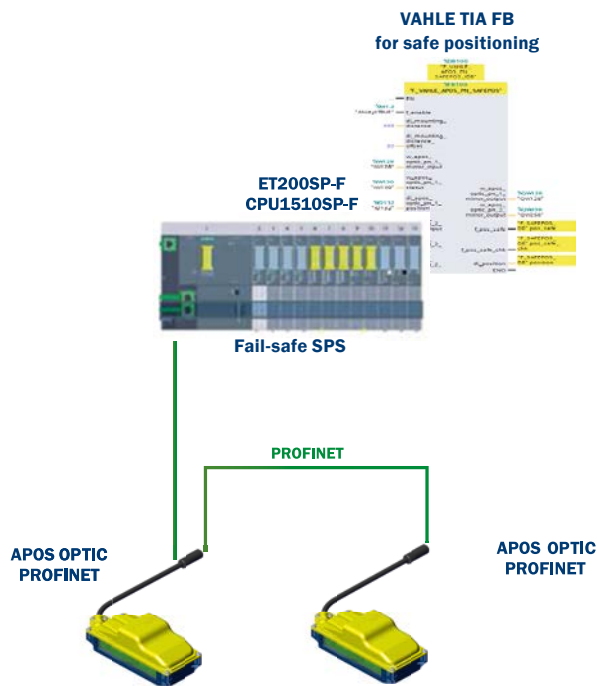
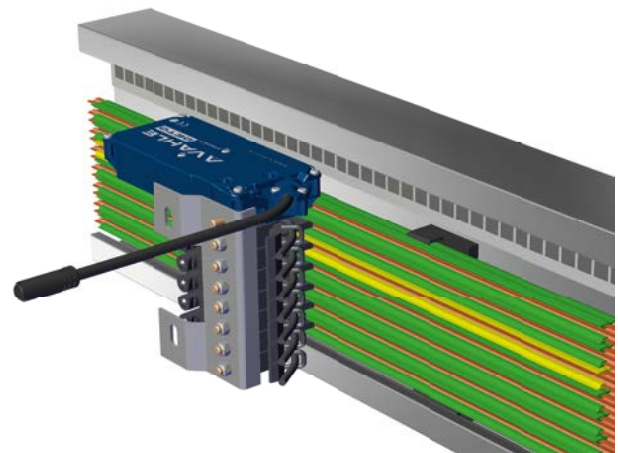


RELIABLE POSITIONING SYSTEM

Dual integrated cameras ensure high reliability in critical functions. Instant and accurate positioning is available after system interruptions or restarts.

COMPLETE SOLUTIONS

APOS Optic offers simple and easy assembly and integration with other VAHLE systems to provide compact and efficient solutions in one package.



SAFE POSITION

For safety-related applications a security function referred to as „Safe Position“ with Performance Level d, Cat. 3, in accordance with DIN EN ISO 13849-1, can be realised in conjunction with TÜV-certified TIA system modules.

QUICK COMMISSIONING AND MAINTENANCE

With the help of the APOS Optic Diagnosis Kit and the APOS ServiceTool software the data of the reading heads can be read, updates can be carried out, the code strip inspected and errors of the reading head can be analysed.

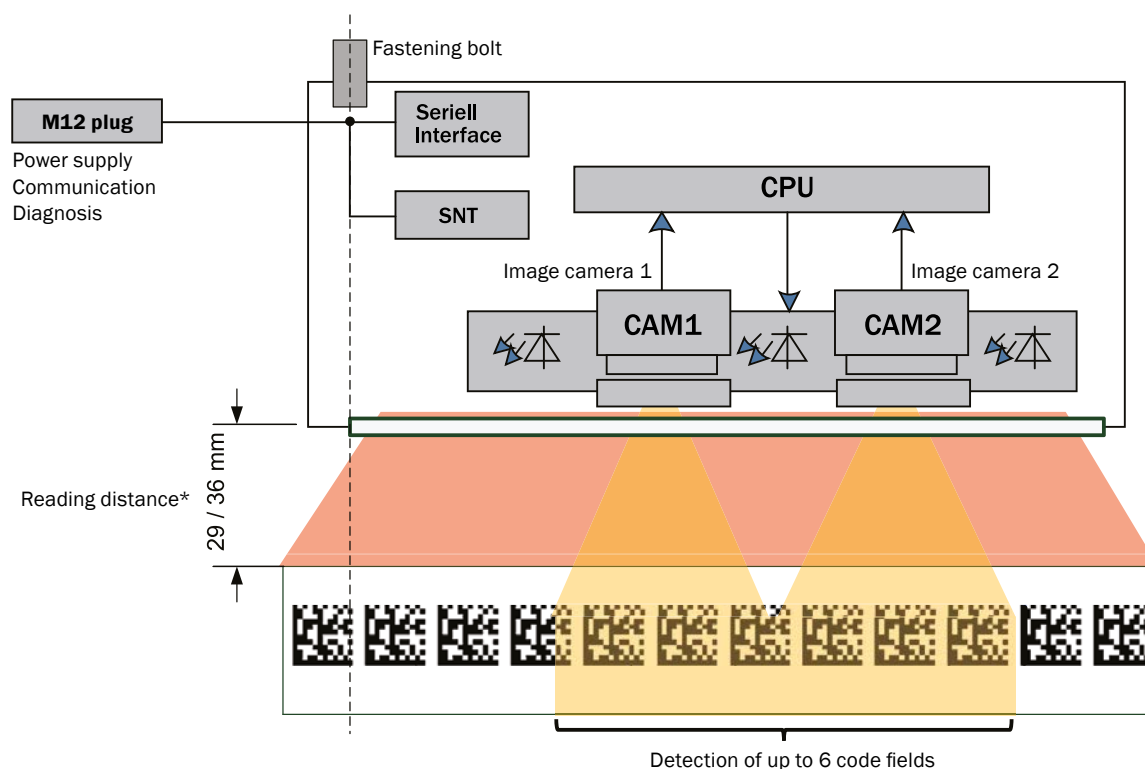


APOS OPTIC – FUNCTION

Modern material handling applications such as automobile production, assembly lines and storage and retrieval systems require gapless and exact positioning of the mobile equipment throughout the entire processing cycle. APOS Optic - of the product range vPOS - achieves this task by providing optical reading of the DataMatrix code strip.

OPERATION

VAHLE APOS Optic reading heads come equipped with dual cameras and integrated LED lighting. The dual cameras allow the reading head to detect up to six DataMatrix code fields at one time. Only one code field is required to determine positioning. This redundancy allows the reading head to bridge small gaps or damages to the codetape without error. The integrated LED lighting is another factor that ensures process reliable detection.



* The reading distance of 29 mm is only applicable in conjunction with code strip carriers and assembly on the current collector package.

The positioning system operates with the simple and efficient Data Matrix code strip. This permits absolute position detection up to a maximum travel range of 10,000 meters. Instant positioning is available after interruptions and the LED light source is unaffected by ambient lighting conditions.

APOS OPTIC – SERIAL READING HEADS

TECHNICAL DATA

Electrical Data

Voltage.....	24 VDC (20...30VDC)
Power consumption.....	Max. 130 mA
Power input	< 3 W
Start-up time	< 2 sec

Measurement electronics

Accuracy	± 1 mm
Reading rate.....	≤ 3 m/s (180 m/min)
Lighting.....	Integrated LED code strip lighting

M-12 Connections

Plug coding.....	4-pole A-coded (RS485)
	8-pole A-coded (SSI)

Ambient conditions

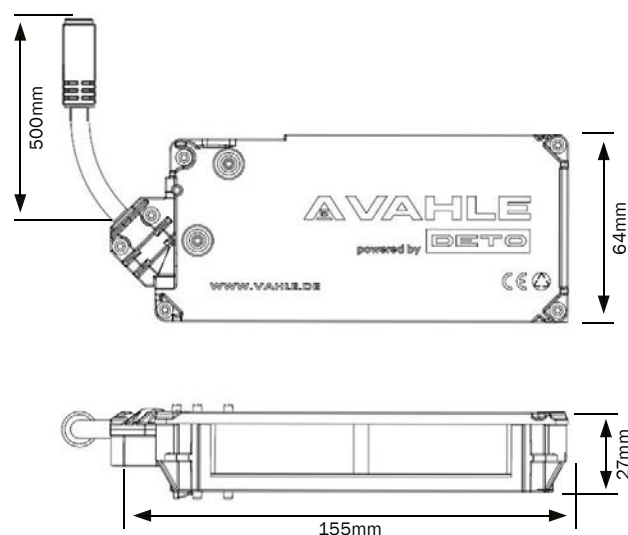
Operating temperature	0°C ... 60°C
Storage temperature.....	-15°C ... 60°C

Mechanical Data

Protection Type	IP54
Depth of field.....	± 14 mm
Inclination.....	$\pm 1,5^\circ$
Dimensions	155 x 64 x 27 mm
Weight.....	ca. 200 g
Tolerances height	4 mm / 6 mm
Reading distance.....	29 or 36 mm (see below)



DIMENSIONS



RANGE OF PRODUCTS

Description	Protocol*	Data Rate [kBit/s]	Order No.
Reading distance 03: 29 mm			
LK-03-RS485-D-576-D1-54	DETO	57.6	10011578
Reading distance 02: 36 mm			
LK-02-RS485-D-1152-D1-54	DETO	115.2	10010601
LK-02-RS485-D-625-D1-54	DETO	62.5	10004141
LK-02-RS485-D-576-D1-54	DETO	57.6	10004140
LK-02-RS485-S-625-D1-54	Binary protocol type 2	62.5	10005457
LK-02-RS485-S-576-D1-54	Binary protocol type 2	57.6	10005456
LK-02-SSI-4-D1-54	25Bit GRAY	-	10014882

* More protocol types are available on request. Please contact our Techsales in case of need.

APOS OPTIC – PROFINET READING HEADS

TECHNICAL DATA

Electrical Data

Voltage.....	24 VDC (20...30VDC)
Power consumption.....	Max. 600 mA
Power input	< 13 W
Start-up time	< 2 sec

Measurement electronics

Accuracy	± 1 mm
Reading rate.....	≤ 3 m/s (180 m/min)
Lighting.....	Integrated LED code strip lighting

M-12 Connections

Plug coding.....	4-pole A-coded
	4-pole D-coded

Ambient conditions

Operating temperature	0°C ... 60°C
Storage temperature.....	-15°C ... 60°C

Mechanical Data

Protection Type	IP54
Depth of field.....	±14 mm
Inclination.....	± 1,5°
Dimensions	155x64x50 mm
Weight.....	ca. 260 g
Tolerances height	4mm / 6mm
Reading distance.....	36 mm

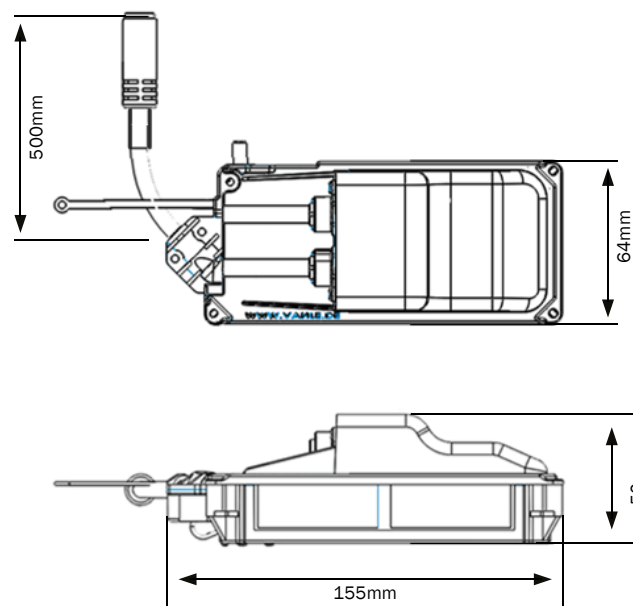


Standard version



PROFISAFE version

DIMENSIONS



RANGE OF PRODUCTS

Description	Protocol	Data Rate [MBit/s]	Order No.
Reading distance 02: 36 mm			
LK-02-PNIO2-S-D1-54	PROFINET-IO CC-B	100	10011072
LK-02-PNIO2-SAFE-DX-54 Incl. VAHLE TIA PROFINET component, Safe Position*	PROFINET-IO CC-B	100	10013679

* Always assemble two reading heads (LK-02-PNIO2-SAFE) for the APOS optic System „Safe Position.“ With the SPS either use CPU 1510SP F-1 PN or CPU 1512SP F-1 PN (both Siemens, product family ET200-SP). The version Standard PROFINET only requires one reading head (LK-02-PNIO2-S).

APOS OPTIC – DIAGNOSIS

APOS OPTIC DIAGNOSIS KIT

The APOS Optic Diagnosis Kit enables a complete diagnosis and trouble shooting.

The APOS optic ServiceTool allows for:

- Firmware updates and restarting the reading heads
- Display of the current position values of each camera
- Graphic presentation of the position progression
- Display of camera images



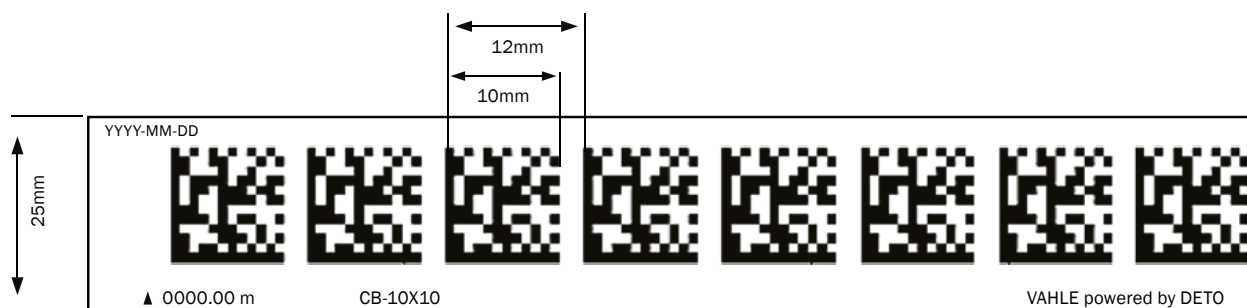
With the help of the APOS Code Generator, defective code strip segments can quickly be reprinted and replaced.

Please contact our Techsales in case of need.

RANGE OF PRODUCTS

Description		Order No.
APOS Optic Diagnosis Kit	Diagnosis interface, PC APOS optic Service Tool-Lite, APOS optic Code Generator USB/RS485 adapter, USB/RS422 adapter, power adapter and case	10014747

APOS OPTIC – DATA MATRIX CODE STRIP



RANGE OF PRODUCTS

Description	Coding	Order No.
Code strip : 100 m drum*		
Code Strip CB25	0 - 100.000	10004169
Code Strip CB25	100.001 - 200.000	10005781
Code Strip CB25	200.001 - 300.000	10005782
Code Strip CB25	300.001 - 400.000	10005784
Code Strip CB25	400.001 - 500.000	10005786
Code strip: 50 m drum*		
Code Strip CB25	0 - 50.000	10010849
Code Strip CB25	100.001 - 150.000	10012051
Code Strip CB25	200.001 - 250.000	10012610

* More code strip lengths are available on request. Please contact our Techsales in case of need.

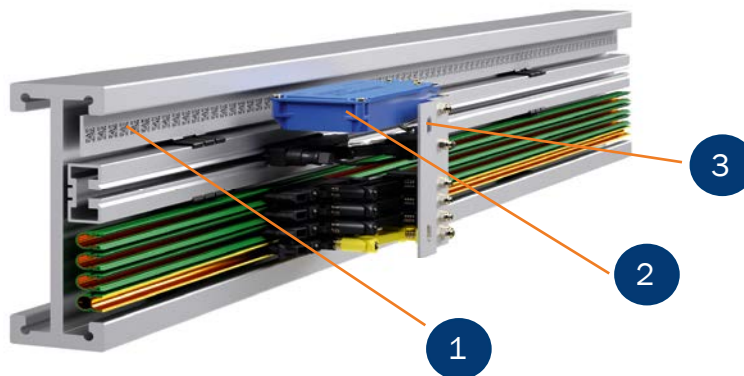
APOS OPTIC – FIXING MATERIAL



RANGE OF PRODUCTS

Description		Dimensions	Order no.
Support profile for data matrix code strip	VTS-TP-28x2x6000-S	28x2x6000 mm	P9999996 ⁽¹⁾
Universal bracket for reading head	VTS-HLK-SHE-SB	71,5x3x1200 mm	0144509/00

APOS OPTIC –SYSTEM INTEGRATION



EXAMPLE: EMS APPLICATION⁽²⁾

- 1 The APOS Optic code strip is mounted in the EMS profile by using an aluminum bar.
- 2 In this application, the APOS Optic reading head is integrated above the mobile SMGM coupler and the U10 current collector.
- 3 A special bracket provides a common mounting plate for the APOS Optic reading head, the U10 current collector and also for the mobile SMGM coupler.

(1) It is a matter of a pseudo order number. Our Techsales will check the profile components in detail by ordering.

(2) More system combinations are available on request. Please contact our Techsales in case of need. Please take into account that the EMS components are not part of VAHLE delivery scope.



Paul Vahle GmbH & Co. KG

Westicker Str. 52
59174 Kamen
Germany

Tel.: +49 2307 704-0
Fax: +49 2307 704-444
automation@vahle.de

www.vahle.com