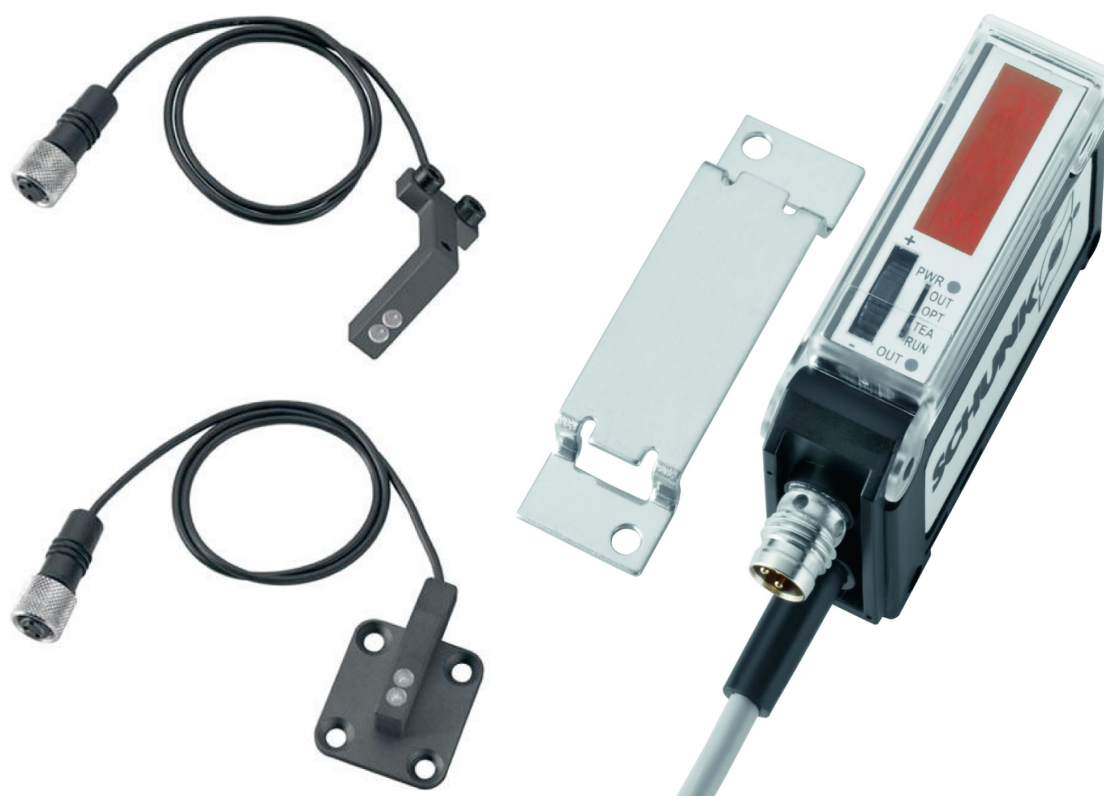


Assembly and Operating Manual

OAS with electronic sensor evaluation

Retro-reflective sensor



Imprint

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We reserve the right to make alterations for the purpose of technical improvement.

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thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

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1 General

1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

1.1.1 Presentation of Warning Labels

To make risks clear, the following signal words and symbols are used for safety notes.



⚠ DANGER

Danger for persons!

Non-observance will inevitably cause irreversible injury or death.



⚠ WARNING

Dangers for persons!

Non-observance can lead to irreversible injury and even death.



⚠ CAUTION

Dangers for persons!

Non-observance can cause minor injuries.

NOTICE

Material damage!

Information about avoiding material damage.

1.1.2 Applicable documents

- General terms of business*
- Catalog data sheet of the purchased product *
- Assembly- and Operating Manual of the SCHUNK-module, on which the sensor is mounted *

The documents marked with an asterisk (*) can be downloaded on our homepage schunk.com

1.2 Warranty

If the product is used as intended, the warranty is valid for 24 months from the ex-works delivery date under the following conditions:

- Observe the applicable documents, [Applicable documents](#) [▶ 5]
- Observe the ambient conditions and operating conditions, [Environmental and operating conditions](#) [▶ 7]

1.3 Scope of delivery

The scope of delivery includes

- Optical distance and presence sensor OAS with force/torque sensor system controller in the version ordered
- Force/torque sensor system controller in the variant ordered:
 - OAS with force/torque sensor system controller V09-D
 - OAS with force/torque sensor system controller V10-D
 - OAS with force/torque sensor system controller V10-A
- Top-hat rail
- Accessory pack

2 Basic safety notes

2.1 Intended use

The sensor is used exclusively to monitor whether a workpiece is present or how far the gripper and workpiece are from each other.

- The product is intended for installation in a machine/system. The applicable guidelines must be observed and complied with.
- The product may only be used within the scope of its technical data, [Technical data](#) [► 11].

2.2 Inappropriate use

The product is not a safety component in accordance with the EC Machine Directive 2006/42/EC and must not be used in safety-relevant parts of machine control units.

2.3 Constructional changes

Implementation of structural changes

By conversions, changes, and reworking, e.g. additional threads, holes, or safety devices can impair the functioning or safety of the product or damage it.

- Structural changes should only be made with the written approval of SCHUNK.

2.4 Spare parts

Use of unauthorized spare parts

Using unauthorized spare parts can endanger personnel and damage the product or cause it to malfunction.

- Use only original spare parts or spares authorized by SCHUNK.

2.5 Environmental and operating conditions

- Make sure that the product is used only in the context of its defined application parameters, [Technical data](#) [► 11].
- Ensure that maintenance and lubrication intervals are observed, [Maintenance](#) [► 35].
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Exceptions are products that are designed especially for contaminated environments.

2.6 Personnel qualification

Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

Trained electrician	Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.
Qualified personnel	Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.
Instructed person	Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.
Service personnel of the manufacturer	Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

2.7 Notes on particular risks

The general rule is:

- Secure the system against accidental operation during all work.
- All work must be performed by skilled personnel only.
- The product can pose hazards if, for example:
 - the product is not used as intended.
 - the product is not installed correctly.
 - the maintenance or assembly instructions are not observed.
- Avoid any manner of working that may interfere with the function and operational safety of the product.



⚠ DANGER

Danger from electric voltage!

Touching live parts may result in death.

- Switch off the power supply before any assembly, adjustment or maintenance work and secure against being switched on again.
- Only qualified electricians may perform electrical installations.
- Check if de-energized, ground it and hot-wire.
- Cover live parts.



⚠ WARNING

Risk of injury due to incorrect use!

The sensor does not constitute a safety component and is intended merely to detect objects.

- Do not use the sensor as a safety component.
- Observe the Machine Directive and Accident Prevention Regulations.



⚠ WARNING

Possible risk of injury due to sudden movements!

- During assembly/disassembly and when teaching the sensor, the automated system and the module concerned must be enabled.
- Work on the module may be carried out only by qualified specialist personnel.

NOTICE

Risk of damage to the sensor!

Ensure gripper fingers and sensor do not collide when assembling the sensor.

- Dimension gripper fingers accordingly.
 - Follow the assembly instructions.
-

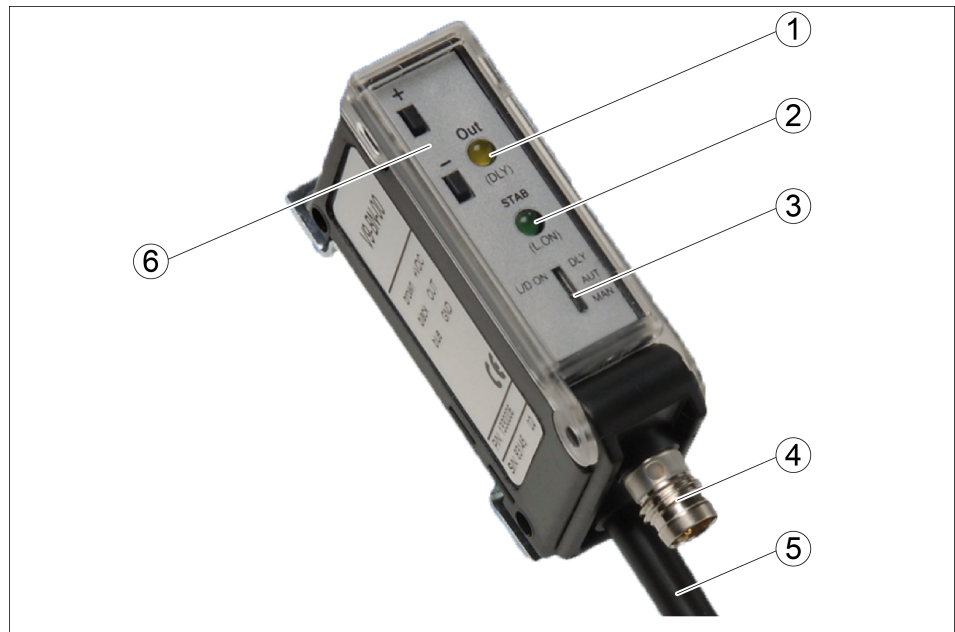
3 Technical data

Product designation	OAS with force/torque sensor system controller		
	V09-D	V10-D	V10-A
Ambient temperature [°C] Min. Max.	-10 +55		
IP rating	IP65		
Power supply [VDC] Min. Max.	10 30	15 30	
Current consumption Ø [mA] Max. current [A]	40 0.18	45 0.18	
Limit frequency [Hz]	500	500	-
Output signal	digital	digital	analog
Output current [mA]	100	200	-
Output voltage [VDC]	-	-	0 ... 10
Operation principle	clocked		
Operating display	Green LED		
Signal display	Yellow LED	LED yellow/ 7-segment display	

More technical data is included in the catalog data sheet.
Whichever is the latest version.

4 Design and description

4.1 Force/torque sensor system controller V09-D

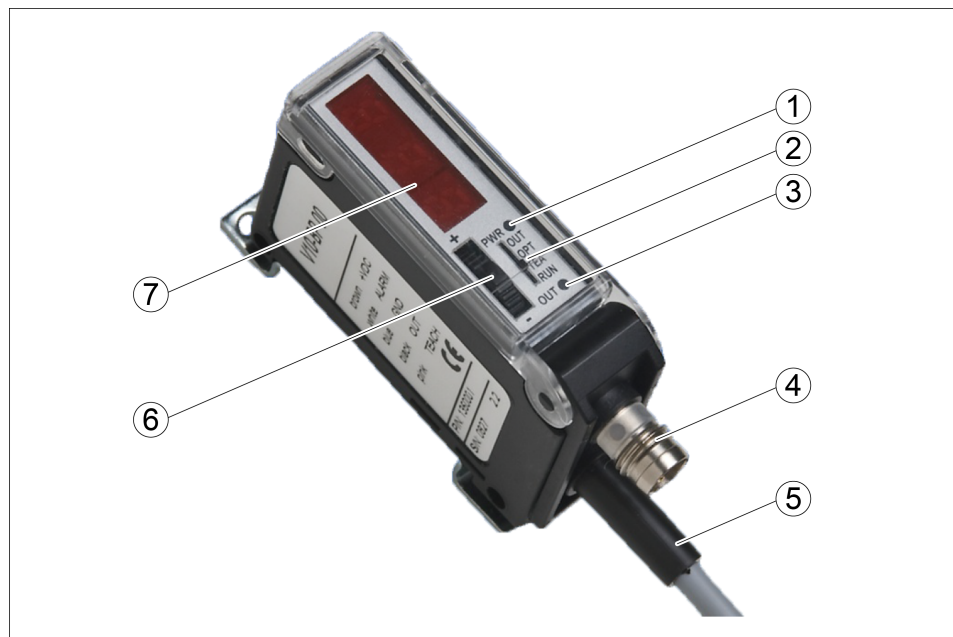


1	LED OUT (yellow)	4	Sensor connection
2	LED L.ON (green)	5	Connection power supply
3	Slide switches	6	Selection keys

The slide switch (arrow) on the force/torque sensor system controller can be used to select between different operating modes.

The green LED indicates a safe signal state. The yellow LED shows the switching condition at the output.

4.2 Force/torque sensor system controller V10-D/A



1	LED PWR (green)	5	Connection voltage supply
2	Slide switches	6	Jog switch
3	LED OUT (yellow)	7	Signal and dialog display
4	Sensor connection		

The slide switch (arrow) on the force/torque sensor system controller can be used to select between different menu items. The green LED indicates an energy supply is present. The yellow LED shows whether the switching point has been reached or not. In the 7-segment display, the signal strength is shown as a value between 0 and 999.

5 Assembly

NOTE

The assembly instructions in this chapter are generally applicable. Module-specific assembly instructions for the sensor can be found in the Assembly and Operating Manual for the module, which can be downloaded at schunk.com

5.1 Mechanical connection

NOTICE

Property damage due to incorrect bending radius!

The product may get damaged if the cable's bending radius is less than the minimum.

- **Static:** 10 times the cable diameter.
 - **Dynamic:** 15 times the cable diameter.
-

NOTE

- Do not use the sensor as a safety component.
 - Do not pull on the cable of the sensor.
 - Secure the cable and connection plug so that they are not taught and cannot move during operation.
 - Do not exceed the permitted bending radius of the cable.
 - Do not allow the sensor to come into contact with hard objects and chemicals (e. g., nitric acid, chromic acid and sulfuric acid).
-

5.2 Electrical connection OAS V09-D

NOTICE

Material damage due to incorrect bending radii!

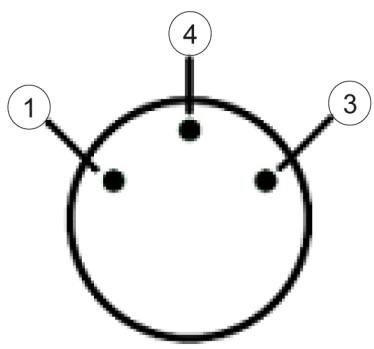
The product may get damaged if the bending radius of the cable is less than the minimum.

- The bending radius must be at least 7.5 times the cable diameter.

NOTE

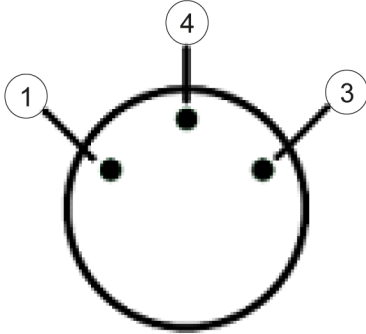
Observe the maximum electrical energy values [Technical data](#) [► 11].

Components of the electrical connection V09-D

Type	Sensor, M8, 3-pin		Force/torque sensor system controller output	
Assignment			Open wire strands	
PIN	1	+transmitter	brown	+VCD
	4	GND/shielding	blue	-GND
	3	+receiver	black	Signal output

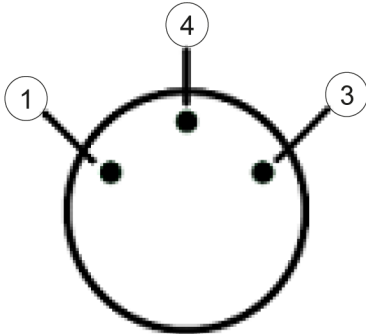
5.3 Electrical connection OAS V10-A

Components of the electrical connection V10-A

Type	Sensor, M8, 3-pin		Force/torque sensor system controller output	
Assignment			Open wire strands	
PIN	1	+transmitter	brown	+VCD
	4	GND/shielding	blue	-GND
	3	+receiver	black	Analog output +
			pink	Teach input
			white	Analog GND +

5.4 Electrical connection OAS V10-D

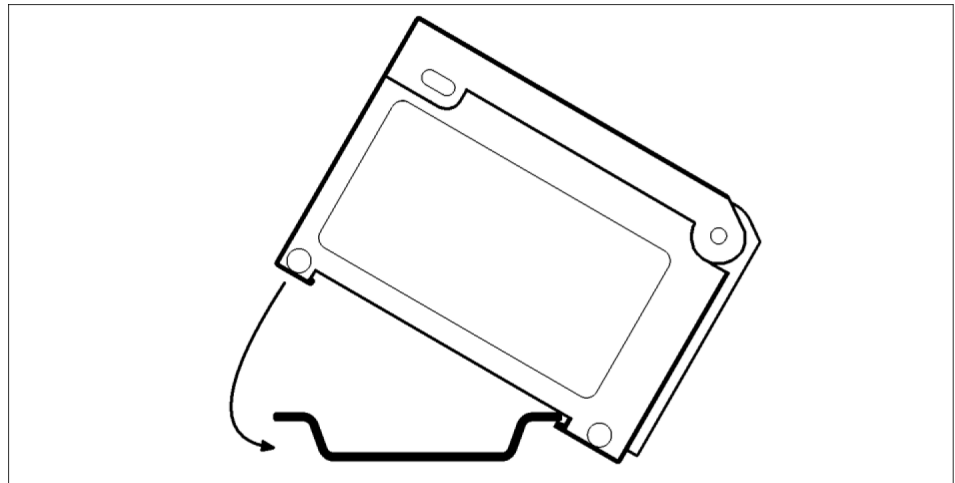
Components of the electrical connection V10-D

Type	Sensor, M8, 3-pin		Force/torque sensor system controller output	
Assignment			Open wire strands	
PIN	1	+transmitter	brown	+VCD
	4	GND/shielding	blue	-GND
	3	+receiver	black	Signal output
			pink	Teach input
			white	Alarm output

5.5 Mounting the force/torque sensor system controller

Mounting

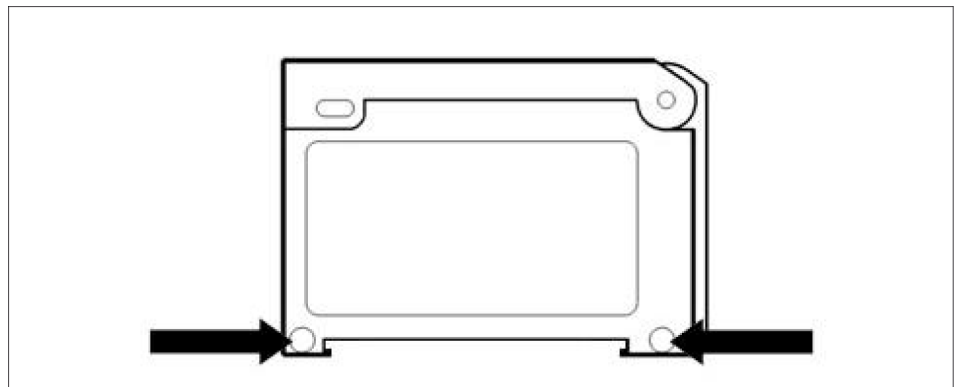
The force/torque sensor system controller is mounted on a top-hat rail:



Assembly of the force/torque sensor system controller

- Secure the top-hat rail at the desired location.
- Place the force/torque sensor system controller on the top-hat rail.
- Connect the force/torque sensor system controller to the supply voltage.

Alternative

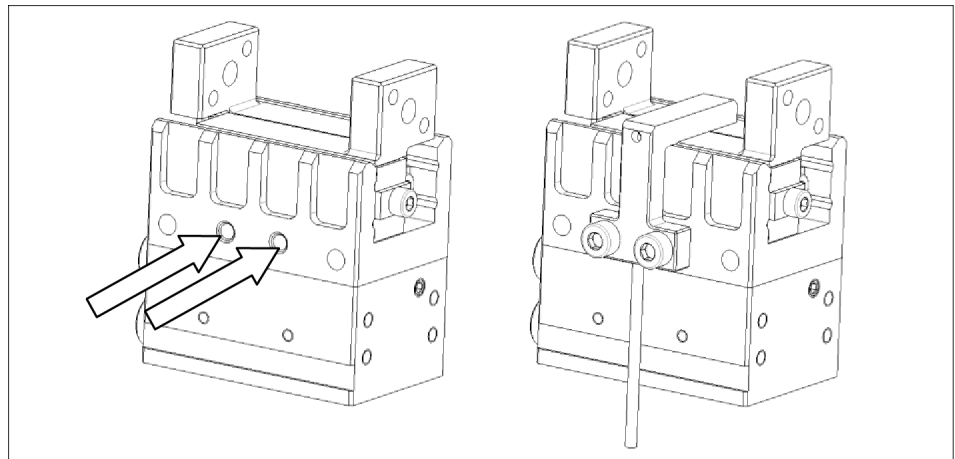


Alternative assembly of force/torque sensor system controller

If assembly with a top-hat rail is not possible:

- Fasten the force/torque sensor system controller with screws using the two lateral bore holes on the bottom of the housing.
- Connect the force/torque sensor system controller to the supply voltage.

5.6 Mounting sensor on the gripper MPG-plus



- Screw the sensor to the side of the housing of the gripper. The sensor should point in the direction of the gripper fingers. 2xM3 screws must be provided by the customer.
- Connect the sensor to the force/torque sensor system controller.

6 Adjusting the force/torque sensor system controller V09-D

6.1 Settings

You can set when the switching signal is to be present at the output on the force/torque sensor system controller [Force/torque sensor system controller V09-D](#) [► 12].

With light on receiver:

- light switching (LIGHT ON)
- or darkening, dark switching (DARK ON)

You can also set pulse extension, which extends the output signal by 50ms.

- Set the selector switch to DLY L/D ON.
- Switch on pulse extension using the (+) button (yellow LED lights up) or switch it off (yellow LED goes out).
- Using the (-) button, activate light switching (yellow LED lights up) or dark switching (yellow LED is off).

6.2 Teaching in the switching point

NOTE

We recommend using automatic mode AUT on the force/torque sensor system controller to set the switching point and, if required, then carrying out fine adjustment manually.

6.2.1 Automatic mode (AUT)

For automatic mode, set the selector switch to AUT position.

The switching point can be set automatically in three ways:

- Fully automatic
- Two-point method
- Setting switching threshold to a certain position

Fully automatic

- Press the (+) or (-) button to the left of the LEDs for between 3 and 60 seconds.

During this time, the force/torque sensor system controller will adjust itself while operation is in process, thereby generating the optimum switching threshold.

The green LED will flash rapidly for approx. 3s and then go out.

- After releasing the button, the green LED will flash slowly for approx. 2s when the setting operation has been successful. The setting operation is then finished and the current value is saved.

Two-point method

- While the object is located within the light beam, press the (+) button.
- Now, when no object is located within the light beam, press the (-) button.
Confirmation with these buttons will generate two measurement values. The force/torque sensor system controller places the switching threshold exactly in between. During the setting operation, the green LED will flash rapidly. Once the setting operation is successful, the LED will flash slowly for approx. 2 s. The setting operation is then finished and the current value is saved.

Setting switching threshold to a certain position

- Place the object at the switching position.
- Press (+) and (-) briefly in succession.
The force/torque sensor system controller determines the switching point at this point. During the setting operation, the green LED will flash rapidly. Once the setting operation is successful, the LED will flash slowly for approx. 2 s. The setting operation is then finished and the current value is saved.

6.2.2 Manual mode (MAN)

The switching threshold can be either set or finely adjusted manually.

The starting point for the setting is the last relevant value saved (factory setting: maximum range).

- Set the selector switch to MAN position.
- To increase the range, press the (+) button until the desired signal safety is attained.

ALTERNATIVELY

To lower the range, press the (-) button until the desired signal safety is attained.

7 Adjusting the force/torque sensor system controller V10-D/A

7.1 Settings

A menu item is selected with the selector switch [Force/torque sensor system controller V10-D/A](#) [▶ 13].

To the left of the selector switch is the jog switch, which can be used to adjust settings in the menu items. You can move the jog switch up (+) or down (-). Pressing on the jog switch will enable you to select individual menu items.

The following options are available as menu items: OUT (signal options), OPT (amplifier options), TEA (teach menu) and RUN (operating mode).

OUT menu item	<p>d – I : Switches between light switching (lon) and dark switching (don)</p> <p>OFd: Off delay 0...250 ms</p> <p>OnD: On delay 0...250 ms</p> <p>OUT menu item [▶ 25]</p>
OPT menu item	<p>PLc: Lock setting yes/no</p> <p>trn: Rotate display by 180°</p> <p>dOF: Switch off display no/yes</p> <p>HyS: Hysteresis setting as a % of the signal value taught (3; 6, 9; 12); default:12</p> <p>dEF: Reset to factory settings yes/no</p> <p>Teaching in the switching point [▶ 22]</p>
TEA menu item	<p>Aut: Fully automatic</p> <p>IPt: Single-point method</p> <p>2Pt: Two-point method</p> <p>Flt: Fine adjustment</p> <ul style="list-style-type: none"> • POT: Potentiometer 0...127 • Abs: Change absolute value 0...999 The entire switching range is moved. • tLo: Change lower switching threshold 0...999 • tHi: Change upper switching threshold 0...999 • ALH: Change alarm level 0...999 • ret: Back to "Fit" <p>Settings in the TEA menu [▶ 22]</p>
RUN menu item	<p>0...999: current signal value</p> <p>Jog +: Display upper switching threshold</p> <p>Jog -: Display lower switching threshold</p>

7.2 Teaching in the switching point

NOTE

We recommend using automatic mode AUT on the force/torque sensor system controller to set the switching point and, if required, then carrying out fine adjustment manually.

7.2.1 Settings in the TEA menu

To teach in a switching point, set the selector switch on the OAS V10-D/A to TEA to enter the Teach menu. You can select the individual menu items using the jog switch.

The following three teaching methods are available:

- Fully automatic
- Single-point method
- Two-point method

Fully automatic

- Set selector switch to TEA position.
After a brief period, "Aut" will appear on the display.
- Press the jog switch in to select the "Aut" method.
- While the "Aut" indicator is flashing (approx. 30 times), move the object to be detected into the sensor beam and back out again.
The sensor will automatically detect the data and specify the switching point.
- Press the jog switch in to confirm the switching point.
RdY will appear on the display telling you teaching of the new switching point has been successful.

Single-point method

- Set selector switch to RUN position.
- Set selector switch to TEA position.
After a brief period, "Aut" will appear on the display.
- Select the "IPt" method with the jog switch.
- Place the object to be detected within the sensor beam.
- Press the jog switch in to confirm the "IPt" menu item.
The sensor is now taught to this point and hysteresis has been set automatically.

Two-point method

- Set selector switch to RUN position.
- Set selector switch to TEA position.
After a brief period, "Aut" will appear on the display.
- Select the "2Pt" method with the jog switch.
- Press the jog switch in to confirm the "2Pt" menu item.

NOTE

Place the object that causes the higher signal value within the sensor beam first. This is generally the brighter, more highly reflective object or that located closer to the sensor.

- Place the first object to be detected inside the sensor beam and remove it again.
- Proceed in the same way with the second object you want to detect.

The switching point is now placed exactly between the two determined values. Hysteresis is now set automatically.

- Set selector switch to RUN position.
-

Manual settings

The entire hysteresis range can be moved using the menu item "Fit" and manual changes then made to the values determined.

Possible changes are:

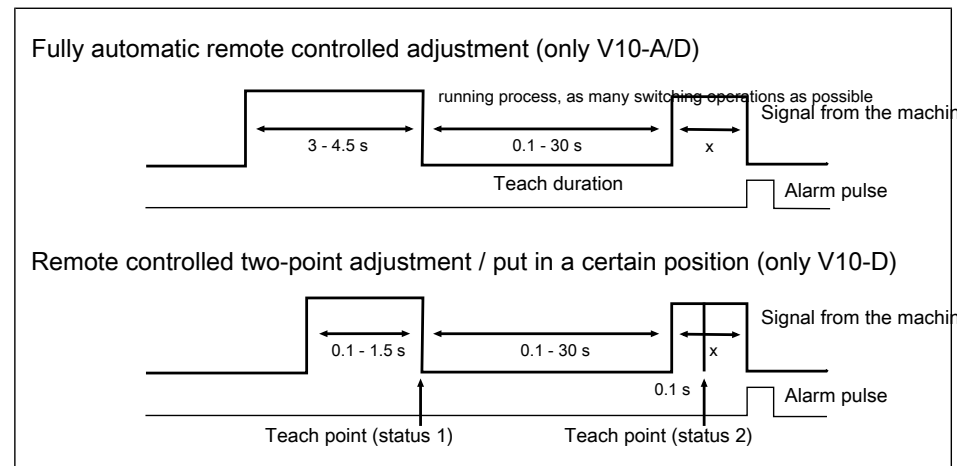
- High level
- Low level
- Alarm level

7.2.2 Set switching threshold remotely (Remote-Teach)

The switching threshold of the amplifier can also be set remotely by the machine control system (PLC) via the teach line (pink/gray) (note: only in run mode!)

Required voltages	PNP	NPN
Input voltage signal "1"	> 9 V	< 3 V
Input voltage signal "0"	< 5 V	> 6 V
Input current	< 3 mA	< 3 mA

The remote (external) teach process is controlled by two pulses sent from the PLC to the amplifier. The duration of the first pulse determines the teach variant (fully automatic or two-point teach/position). The duration of the second pulse determines how the determined value for the switching threshold is stored.



x = 3 - 4.5 s

Permanent storage (maximum 100,000 times);
The successful procedure is confirmed with a signal of 100 ms length at the alarm output.

x = 0.1 - 1.5 s

Non-permanent storage (until next shutdown);
The successful procedure is confirmed with a signal of 100 ms length at the alarm output.

7.2.3 OUT menu item

- Light/dark switching** If a dark object is to be detected against a light surface, the output may switch to high after the switching point has been taught if no object is detected. As soon as the object comes within range of the sensor, the sensor will switch to low as the object is reflected more poorly than the subsurface.
- The force/torque sensor system controller is equipped with light/dark switching for such cases. If switching is activated, the output signal is inverted and the output is set to low if there is no object. If an object is within range of the sensor, it is then set to high.
- Off/on delay** The on delay can be adjusted so that an object is detected by the sensor within a certain time until the output is set to high.
- With the adjustable off delay, the time an object stays within the sensor beam is extended at the output signal if this is extremely short.

8 Notes on the operation of the sensor

8.1 Repeat accuracy

Repeat accuracy will fluctuate between 0.1 % and 0.5 % according to the distance between the sensor and the measuring object:

Repeat accuracy

Measuring distance	30 mm	100 mm	200 mm
Switching point deviation	0,2 mm	0,24 mm	0,96 mm
% (of maximum distance)	0,1 %	0,12 %	0,48 %

Values are based on optimal ambient conditions i.e.

- The sensor being shielded against sunlight
- No electromagnetic interference factors

8.2 Use of an extension cable between sensor and force/torque sensor system controller

We recommend the system is operated without the use of an extension cable.

NOTICE

Interference may occur and the output signal may jump spontaneously due to the EMC load when using an extension cable between the sensor and force/torque sensor system controller!

- Note the following method for teaching the sensor.

In case of data cable malfunctions between the sensor and force/torque sensor system controller due to electromagnetic influence, proceed as follows when teaching the sensor:

- Determine the distance at which an object is to be detected.
- Multiply the measured value of the distance by a factor of 1.5 then use this for teaching the sensor.

This method guarantees that the digital output signal remains stable even in case of fluctuating analog values.

Example:

The measuring distance measured during operation is 100 mm. Since an extension cable is attached between the sensor and force/torque sensor system controller, which is exposed to EMC load, the special method of teaching has to be used. The teaching distance in this case is $1.5 * 100 \text{ mm} = 150 \text{ mm}$. During operation, the sensor will now extend far enough above the switching point so that it cannot reach the switching level in case of signal fluctuations due to EMC.

NOTE

If no cable extension is used for the sensor, there is no need to use this method.

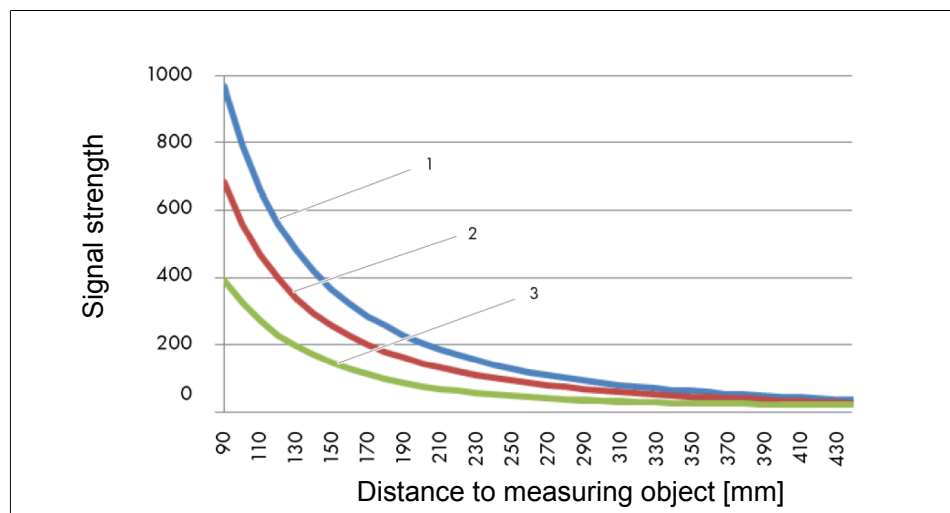
8.3 Influence of workpiece surface

The surface and shape of the object to be gripped have a direct influence on the signal strength and therefore on the switching point of the force/torque sensor system controller.

The following generally applies for teaching:

- Move gripper fingers to the desired position.
- Use the same gripper fingers as during operation.
- Use the same workpiece that is also to be gripped during operation.
- Use the same lighting conditions as during operation.

Failure to heed the above points may lead to the switching point changing during operation. This may lead to the object being detected too late or not at all.



Influence of different surfaces on signals

1	White paper	3	black foil
2	Aluminum		

NOTICE

Possibility of a duplicated switching point

If the sensor is moved significantly closer to the measuring object, the curve will no longer rise constantly. In case of direct contact, the signal strength will be virtually '0'.

- Always observe the minimum distance to the measuring object.

If the sensor is taught at a signal strength of 400 for instance, the switching range is between 90 and 150 mm, depending on the surface of the workpiece.

The following table contains factors that will help you to gauge your own application scenario. These factors are based on a maximum distance of 250 mm using white Kodak photographic paper.

Surface material	Type of reflection	Factor
Aluminum, finished, blank	reflective	3.2...3.8
Brass, rolled	reflective	2.9...3.6
Aluminum, finished, black-anodized	reflective	2.4...2.8
VA steel, drawn blank	reflective	2.1...2.6
PVC gray, untreated	mixed	0.6...1.1
PVC black, untreated	mixed	0.5...1.0
Kodak card, gray	diffuse	0.52
Foam rubber, black	diffuse	approx. 0.04
Aluminum, sawn	mixed	approx. 2.5...3.2
Aluminum, dirty	mixed	approx. 2.1...2.8

Example:

Finished aluminum is to be detected at virtually the maximum scanning distance attainable by the sensor:

$$250 \text{ mm} * 3.2...3.8 = 800...950 \text{ mm.}$$

8.4 Influence of contamination

The product meets the requirements of IP 65. Loads which exceed this protection class may reduce the life span or cause failure of the sensor or force/torque sensor system controller.

Contamination such as chippings and coolant on the workpiece or on the fingers will cause significant changes to the sensor signal. The sensor therefore needs to be taught using the following method:

- Determine the distance at which an object is to be detected.
- Multiply this distance by a factor of 1.5 then use this for teaching the sensor.

This method guarantees that the digital output signal remains stable even in case of fluctuating analog values (e.g. due to the different positions of the chips).

Example:

The measuring distance measured during operation is 100 mm. Since there is contamination by chips, the teach-in must be carried out as follows:

The teaching distance in this case is $1.5 * 100 \text{ mm} = 150 \text{ mm}$.

During operation, the sensor will now extend far enough above the switching point so that it cannot reach the switching level in case of signal fluctuations due to the contamination.

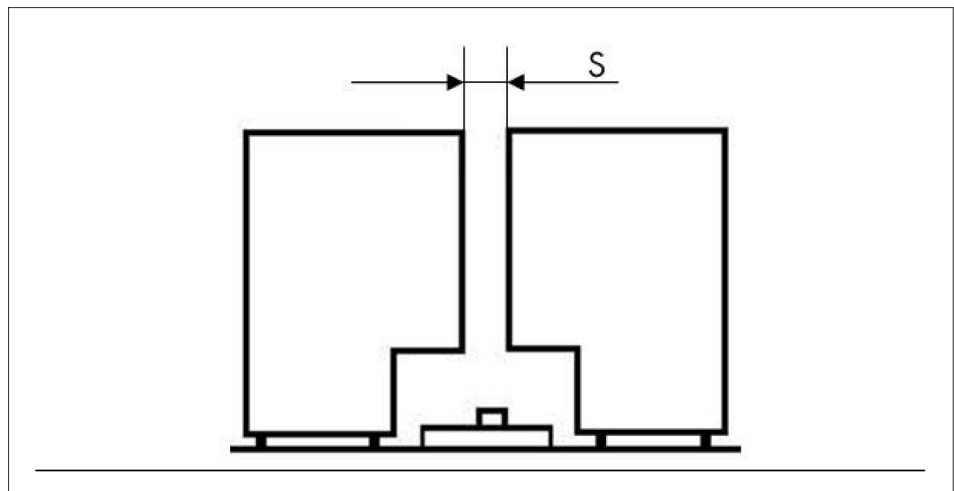
8.5 Influence of gripper fingers

Besides the workpiece surface, the shape and surface of the gripper fingers may also have an influence on the signal strength. Attention must also be paid to the position of the fingers. The gap width s here indicates the distance between two gripper fingers.

NOTICE

The switching point may be adjusted and machine parts may be damaged or destroyed.

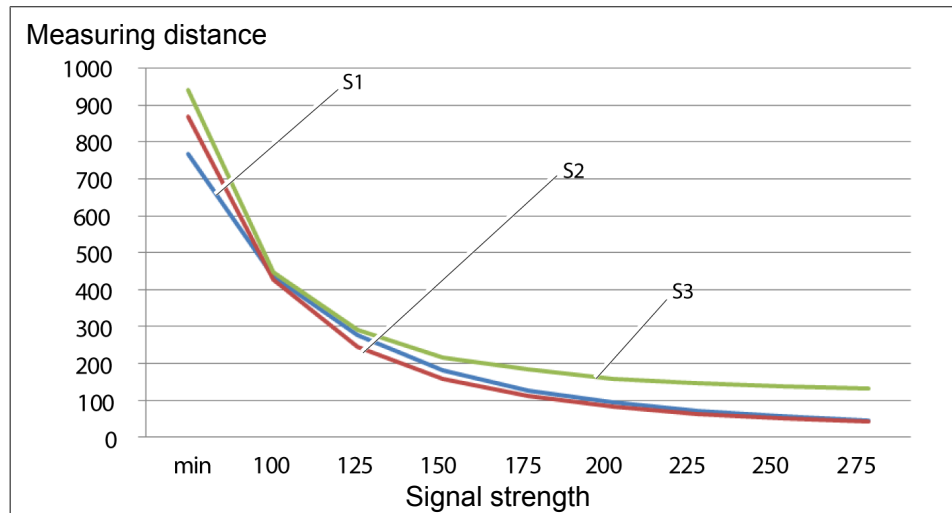
The sensor must be taught under the conditions and using the workpieces used later during operation.



Definition of gap width s

NOTE

- The closer the gripper fingers are together, the closer the object needs to be taught to obtain a significant signal value. Particularly with a narrow gap width, the sensor needs to be shielded from ambient light. ☒ Saturation.
 - In case of black gripper fingers, the switching point may be reached in closed position even though no object is located directly within the light beam.
 - The shape of the finger must be selected so that the gripper fingers have no effect on the sensor result in any gripping state.
-

Example 1

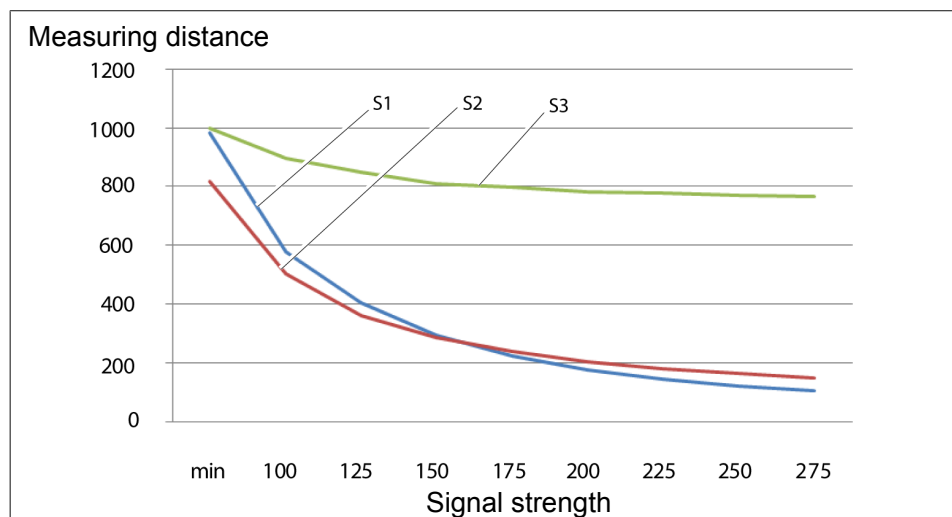
Finger material: Aluminum

gap width:

s1: 23 mm

s2: 14,5 mm

s3: 6 mm

Example 2

Finger material: Black plastic

gap width:

s1: 23 mm

s2: 14,5 mm

s3: 6 mm

8.6 Influence of temperature

NOTICE

Possible damage to model or automated system!

Factors like ice or condensation water will change the signal value and therefore the sensor's switching point.

- Always take environmental factors into account when teaching the sensor.

The electronic system is fully functional within a temperature range from -10 to $+55^{\circ}\text{C}$.

Significant temperature fluctuations may however occur during operation and the resultant environmental influences may affect the sensor signal. This may lead to an erroneous output signal.

8.7 Influence of external light sources

The sensor can essentially be used with normal ambient lighting (factory lighting etc.). The sensor should however be protected from direct sunlight during operation. If it is not, the sensor may become saturated so that it can no longer detect objects.

8.8 IP protection class

The product meets the requirements of IP 65.

Loads which exceed this protection class may reduce the life span or cause down-time of the sensor or force/torque sensor system controller.

9 Troubleshooting

9.1 No LED lights up on the force/torque sensor system controller

Possible cause	Corrective action
supply voltage not connected.	Connect supply voltage.
Object distance is not optimal.	Change distance to object. OR Reset range on control unit output.
Control unit output defective.	Change control unit.

9.2 No switching signal being emitted by force/torque sensor system controller

Possible cause	Corrective action
No object in the light beam	Set range on the force/torque sensor system controller
	Place object in light beam.
Connection cable of force/torque sensor system controller is not connected to the sensor	Connect connection cable
Connection cable of force/torque sensor system controller is defective	Change sensor.
Proximity switch defective or set incorrect.	Set range on the force/torque sensor system controller
	Readjust or change sensor.
Only with force/torque sensor system controller type V10-D: light/dark switching is set incorrectly	Set light/dark switching according to the workpiece

9.3 Switching point has changed

Possible cause	Corrective action
Temperature has changed significantly or is even not within the operating conditions.	Reset range on control unit output.
	Adjust environmental conditions to operating conditions.
Dirt on sensor optics.	Clean sensor.

9.4 Display does not output any values

Only with force/torque sensor system controller type V10

Possible cause	Corrective action
supply voltage not connected.	Connect supply voltage.
Object distance is not optimal.	Change distance to object. OR Reset range on control unit output.
Proximity switch defective or set incorrect.	Readjust or change sensor.
Replace display.	Switch on display via "OPT" menu item

10 Maintenance

It is recommended dirt be removed from the lenses with a cloth at appropriate intervals depending on environmental conditions/ ambient influences.

Should the switching point change due to new ambient conditions, this will need to be retight.

11 Translation of the original EC Declaration of Conformity

In terms of **the EC Machinery Directive 2006/42/EG, Annex II, Part B**

Manufacturer SCHUNK GmbH & Co. KG
Bahnhofstr. 106 – 134
D-74348Lauffen/Neckar



We hereby declare that the following product:

Product designation: Optical distance and presence sensor OAS with force/
torque sensor system controller

Identnummer 308865 – 308867, 308875 – 308880, 308891 – 308895

complies with the following relevant provision:

EC Directive on Electromagnetic Compatibility (2004/108/EG, i.d.F. 89/336/EWG)

Applied harmonized standards, especially:

EN 60947-5-2 (:2004-11) Proximity switch

Person responsible for documentation: Mr. Robert Leuthner, Adress:
see adress of the manufacturer

Signature: see original declaration

Lauffen/Neckar, July 2019

Ralf Winkler;
Business Unit Manager R & D
Mechanical Gripping Systems