Optical Distance Sensors ODS 96

Technical Description

Software Description



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1

1.1

General Information

Explanation of Symbols

The symbols used in this operating manual are explained below.



Attention

This symbol appears in front of text which must be carefully observed. Failure to heed this information can lead to injuries to personnel or damage to the equipment.



Attention Laser Radiation

This symbol warns of possible danger through hazardous laser radiation.



Notice

This symbol indicates text which contains important information.

1.2

Important Terms

Triangulation Distance measuring procedure, which determines the distance of an object by the incidence angle of the light reflected from the object.

Absolute measurement accuracy Shows the possible divergence of the measurement value from the anticipated value through changes in the environmental conditions during the measuring process. Higher accuracy is given at constant environmental conditions.

- *Repeatability* Measuring distance change with repeated measurement at the same output signal (observe the same peripheral conditions as with resolution).
 - **Resolution** The smallest possible distance change of the measured object, which causes a definite change in the output signal. Resolution is higher in the proximate area than in the distant area. Small objects can be recognized better in the proximate area.

Remission Return and/or degree of reflection of the radiated light.

Integration time The integration time of the ODS 96 is comparable to the exposure time in a camera. It is automatically adjusted to the intensity of the reflected light and thus depends on the reflectance factor of the measured object. It is inversely proportional to the measurement frequency.

- *Measurement frequency* The measurement frequency represents the number of measurements per second. When adjusting the integration time to the reflectivity independency, the measurement frequency changes corresponding to the reflectivity value.
- *Response time* The time period required by the ODS to obtain stable measurements after change of the reflectivity behavior.
 - *Delay before start-up* The delay before start-up indicates the point in time when the first valid measurement can be obtained after switching on.

Light switching/	Indicates the behavior of the switching output when an object is inside the
Dark switching	tought/parametered switching distance. At light switching, the switching out-
	put is active (high), at dark switching inactive.

Insensitivity towards Indicates the insensitivity of the measurement result towards extraneous extraneous light light. The ODS 96 is reliably measuring even with extraneous light intensity of 5 kLux. Typical light intensity in a work place is only 1 kLux.

1.3 **Declaration of Conformity**

> The optical distance sensors of the series ODS 96 have been manufactured observing current European standards and guidelines.

0 11 Notice

The corresponding declaration of conformity can be requested from the manufacturer.

The manufacturer of the product, Leuze electronic GmbH & Co. in D-73277 Owen/Teck, possesses a certified quality assurance system in accordance with ISO 9001.



2 **Safety Notices**

2.1 Safety Standard

The optical distance sensors of the series ODS 96 have been developped, manufactured and tested, observing current safety standards. They correspond to the state of the art.

2.2

Intended Use



Attention

The protection of personnel and the device cannot be guaranteed if the device is operated in a manner not corresponding to its intended use.

Optical distance sensors of the series ODS 96 are intelligent, adjustable sensors with CCD element for distance measuring.

In particular, unauthorized uses include:

- rooms with explosive atmospheres (zone 0, 1). Operation in zone 2 is possible with a manufacturer's declaration.
- operation for medical purposes

Fields of application Th

The optical distance sensors of the series ODS 96 have been designed for the following areas of application:

- Distance measurement
- Contour determination
- Stack positioning
- Filling level measurement
- Packet conveying machines and many more

2.3

2.4

Working Safely



Attention Laser Radiation

The ODS 96 M/D, V, S ... are laser devices of the Laser Protection Class 2. Do not look directly into the laser beam.

Observe the applicable legal and local regulations for the operation of laser units.



Attention

Access to or making changes to the device, except where positively described in this operating manual, is not authorized.

Organizing Measures

Documentation All entries in this operating manual must be heeded, in particular those in section 2 "Safety Notices". Carefully store this operating manual where it is accessible at all times.

Safety regulations Observe the locally applicable legal regulations and the rules of the employer's liability insurance association.

Qualified personnel Mounting, commissioning and maintenance of the device may only be carried out by qualified personnel. Electrical work must be carried out by a certified electrician.

Repair Repairs must only be carried out by the manufacturer or an authorized representative.

3 Description

3.1 General description

The ODS 96 is a distance measuring device with a large area of application. The equipment is available as LED or laser version with analog or digital outputs. The distance measuring device works on the triangulation principle and uses a CCD line for evaluating the measurement signal.

An integrated microcontroller enables parameter programming via an optional programming software. Except for the RS 485 interface, the switching points of the switching outputs of all other types can be set without software via a teach-in input.

Through adjustment of the integration time (exposure time) to the intensity of the objects' reflected light, a high degree of independence from the reflectivity properties of the measured object is achieved. In case of low reflectivity (dark objects) a lower measurement frequency results.

Accessories To expand the functionality of the ODS 96, a programming software is available.

With regard to their dimensions, the ODS 96 distance sensors are identical with the sensors of the series 96 of Leuze electronic. Particularly, the mounting accessories of the series 96 can be used for the ODS 96. Details can be found in section 4 "Technical Data".

3.2 Typical Areas of Application for the ODS 96

3.2.1 Continuous Distance Measuring

All ODS 96 types with analog or digital output can be used for continuous distance measuring. In order to use all features of the ODS 96, use of the programming software is recommended.

Depending on position or settings of the ODS, various applications are possible:

- Measuring the thickness of planks with two opposing sensors and a differential of the two measured values.
- Stack/Object height measuring Even with difficult surfaces, the stack/ object height of moving objects can be measured. Averaging is recommended here.
- Contour determination through controlled passing movement of an object through the beam of the ODS 96.
- Volume measuring by taking measurements on two levels during the concurrent movement of the object. Leuze electronic offers a system solution: the VMS volume measurement system.

In case of ODS 96 types with analog outputs, it is recommended to limit the working range of the analog output to the required distance range. The analog output will then be activated within the distance range from 1 ... 10 V or 4 - 20 mA. Distances outside this range will automatically have an output voltage of < 1 V, 4 mA or > 10 V, 20 mA.

3.2.2

Positioning Tasks

For simple positioning tasks, all ODS 96 M/S types with two teachable switching outputs are suitable.

The ODS 96 is mounted in a way to enable positioning in the direction of the measuring beam. Both switching outputs are tought to the required position. In case the distance is smaller than the tought position, switching output 1 is active and switches the positioning motor to enlarge the distance. In case the distance is bigger than the tought position, switching output 2 is active and switches the positioning motor to reduce the distance.

Using this method, positioning tasks can be performed without difficulties.



Figure 3.1: Application example "Positioning Tasks"

3.2.3

Filling Level Control for Bulk Goods

For the filling level control in connection with control of material flow, all ODS 96 types with one switching output are suitable. However, the programming software is required to adjust the hysteresis.

The ODS 96 is mounted ensuring that its measuring beam meets the surface of the bulk good vertically. Using the software, function of Q1 is set to "light switching" and the minimal filling level entered as lower limit. The upper limit is set to the maximum range of the ODS (600 mm or 2000 mm, depending on the ODS type). The distance between minimum and maximum filling level is entered as hysteresis. Material flow is switched on/off by the ODS as soon as the filling level falls below the lower limit or reaches the maximum.



Figure 3.2: Application example "Filling Level Control"

○ Notice] For mo

For mounting instructions please refer to section 5.2 "Mounting".

3.3

ODS 96 Models

Types Two different types of the ODS 96 are available:

- Infrared distance sensor
- Measurement range 100 600 mm
- Laser distance sensor with visible red light Measurement range 200 - 2000 mm

3.3.1 ODS 96 M/V with Analog Output



Figure 3.3: Behavior of the analog output, ODS 96 M/V (LED)

10



Figure 3.4: Behavior of the analog output, ODS 96 M/V (laser)

Behavior of the output, ODS 96 M/V

The ODS 96 M/V has an analog output with linear behavior inside the respective measurement range. The user can choose between current output (4 - 20 mA) and voltage output (1 - 10 V). Above and below the linear range, linearity is lost however, the output values signify an upper deviation (> 20 mA respectively > 10 V) or a lower deviation (< 4 mA respectively < 1 V) of the measurement range.

Additionally, a switching output is available with the ODS 96 M/V. The position within the measuring range, at which the switching output is active can be set as needed via a teach-in lead. The breadth of the active range is \pm 2 mm (LED) respectively \pm 10 mm (laser).

Using the optional programming software, the declivity of the output characteristic curve can be changed (steep progression with concurrent reduction of the measurement range). Furthermore, the switching behavior of the additional switching output can be individually set.

3.3.2

ODS 96 M/D with Serial Output



Figure 3.5: Serial output, ODS 96 M/D

Serial output of the The serial output of the ODS 96 M/D delivers a continuous data stream. The ODS 96 M/D measurement value is transmitted with two byte. The LSB signifies the Highand the Low-Byte, to ensure recognition of definite coherence. For transmission, no telegram frame, but only the normal serial protocol is used. The transmission protocol consists of 8 databit, 1 startbit, 1 stopbit, no parity. The

ODS 96 M/D has a digital output which is realized either through the RS 232 or the RS 485 interface. The transmission rate is 9600 baud at the RS 232 interface and 9600 baud without termination at the RS 485 interface.

A "C" program example demonstrates how bytes are read and processed for further usage:

```
Program example in "C"
                          //Start of the program for measurement value generation------
                                   Rxbyte = inportb(RXB(COM2.port_adr)); //Read transmitted byte
                                   if (flag==0)
                                                                             //First byte has to be a
                                                                             //Low-Byte
                                   {
                                         if ((Rxbyte \& 0x01) == 0)
                                                                             //Test on Low-Byte
                                         {
                                               value = (Rxbyte & 0xFE) >> 1; //Insert measurement value
                                                                             //point-aligned
                                               flag = 1;
                                                                             //Next received
                                                                             //byte has to be a
                                                                             //High-Byte
                                               }
                          }
                          else
                          {
                                   if ((Rxbyte & 0x01) == 1)
                                                                             //Test on High-Byte
                                   {
                                               value = ((Rxbyte&0xFE) << 6); //Insert point-aligned in
                                                                             //measurement value
                                               flag = 0;
                                                                             //14 Bit measurement value
                                                                             //is generated
                                               measurement value = value; //Save measurement value
                                   }
                          }
                          // End of program of measurement value generation------
```

The behavior of the switching output of the ODS M/D can be set as described with the ODS 96 M/V. However, the ODS 96 M/D type with RS 485 interface does not offer a teach input.



ODS 96 M/S with Two Switching Outputs



Figure 3.6: Behavior of the switching outputs, ODS 96 M/S

ODS 96 M/S with two switching outputs The two switching outputs of the ODS 96 M/S are working independently from each other. Through the teach input, the second signal edge can be tought at output 1, the first signal edge is situated at the beginning of the measurement range. The first signal edge can be tought at output 2, the second signal edge is situated at the end of the measurement range.

A teach line is available for both switching outputs, meaning the switching outputs are tought alternatingly. The presently tought output is displayed through the simultaneous or alternating flashing of the LEDs.

The outputs can be adjusted independently of each other by using the optional programming software.

Technical Data 4

4.1 **Optical Data**

[ODS 96	ODS 96		
	M/V, M/D, M/S	M/V, M/D, M/S Laser		
Optical data				
Measurement range ¹	100-600 mm	200-2000 mm		
Resolution	≤ 0,5 mm	≤ 5 mm		
Light source	LED (modulated light)	Laser (modulated light)		
Wavelength	880 nm (infrared)	660 nm (visible redlight)		
l ight-spot diameter	approx. 10 mm (over whole	divergent min. 3x12 mm in		
Light-spot diameter	measuring range)	2000 mm distance		
Error limits				
Absolute measure-	+ 29/	+ 20/		
ment accuracy ¹	± 2 /6	± 270		
Repeatability ²	± 0,5%	± 0,5%		
b/w detection thresh-	< 10/	< 10/		
olds (6%/90%) ^{≥ 1%}		≤ 1 /0		
Timing				
Switching frequency	20-100 Hz	10-100 Hz		
Response time	≤ 10	00 ms		
Delay before start-up	≤ 30	0 ms		

Table 1: Optical data, Error limits, Timing1.Reflectance factor 6%...90%, over the whole temperature range, measured object \geq 50x50 mm² 2.Same object, measured object \geq 50x50 mm²

4.2 **LED Indicators**

LED	ODS 96 M/V	, M/V Laser;	ODS M/S, M/S Laser		
	ODS 96 M/D	, M/D Laser			
	teach-in on GND	teach-in on +U _B	teach-in on GND	teach-in on +U _B	
permanent green light	Device Ready		Device Ready		
flaching groon	Error	Teach-in proce-	Error	Teach-in	
nasning green	Enor	dure ¹	Enor	procedure ¹	
green off	no voltage		no voltage		
vellow perma-	Object inside		Object inside		
pent light	teach-in measure-		measurement		
nem ngm	ment distance		range		
vellow flash-		Teach-in	Object outside	Teach-in	
ing		procedure1	measurement	proceduro ¹	
ing		procedure	range	procedure	
	Object outside		no object		
yellow off	teach-in measure-		detected		
	ment distance		UEIECIEU		

 Table 2: LED indicators

 1. The teach-in process is described in detail in section 5.3 "Teach-In"

4.3

Electrical Data, Installation Data

	M/V; M/V Laser	M/D; M/D Laser	M/S; M/S Laser
Electrical data			
Operating voltage U _B	1830 V DC (incl. residual ripple) 1030 V DC (incl. residual ripple)		
Residual ripple		\leq 15% of U _B	
Bias current	≤ 150 mA		
Switching outputs ¹	PNP transistor, high-active 2 PNP transistor out puts, high active		
Signal voltage high/low		\geq (U _B - 2V) / \leq 2V	/
Analog output	RL ≥ 2 kOhm (Voltage) 110 V RL ≤ 500 Ohm (Current) 420 mA		
Output current			max. 100 mA per transistor output
Digital output RS 232		9600 Baud	
RS 485		9600 Baud, no ter- mination	
Transmission protocol		2 Byte transm., cont. data stream	
Mechanical data			
Housing		Diecast zinc	
Optical cover		Glass	
Weight		380g	
Connection type	lermir	hals or M 12 dia. co	nnectors
Ambient temp. (opera-	-20°C+50°C / -30°C+70°C		
Extraneous light limit	< 5 kl ux		
Protective circuit ²	1.2.3		
VDE safety class ³		II, all-insulated	
Protection class		IP 67	
Impact resistance	Semi-sinusoi	dal, 30 gn, 11 ms (\	/DE 0660T208)
Vibration resistance	10-55 Hz	, max. 7,5 gn (VDE	0660T208)
Electromagnetic compatibil- ity	Severity level 3 (IEC 60947-5-2)		

 Table 3: Electrical, Mechanical, and Environmental data

 1.Inversion possible through programming software

2.1=transient protection, 2= polarity reversal protection, 3= short circuit protection for all outputs 3.Rating voltage 250 V AC



Dimensioned and Connection Drawings



Figure 4.1: Dimensioned drawing ODS 96 devices









ODS 96 M/S

4.5





Accessories

The following accessories are available for the ODS 96:

Designation	Order No.	Short Description
KB-ODS96-1500	50082007	Parameterizing cable 1,5 m
KB-ODS96-6000	50061428	Parameterizing cable 6 m
ODS96-PS	50082006	Programming software
KB-095-5000-5	50020500	Connection lead (M12, angled, 5 m)
KB-095-5000-5A	50020499	Connection lead (M12, axial, 5 m)
BT 96	50025570	Mounting part
UMS 96	50026204	Universal mounting system

Table 4: Accessories

5 Installation

5.1 Storage, Transportation

Unpacking

- Check the packaging for any damage. If damage is found, notify the post office or shipping agent as well as the supplier.
 - Scheck the delivery contents using your order and the delivery papers:
 - delivered quantity
 - device type and model as indicated on the name-plate
 - accessories
 - operating manual
 - Save the original packaging for later storage or shipping.

If you have any questions concerning your shipment, please contact your supplier or your local Leuze electronic sales office.

Observe the applicable local regulations when disposing of the packaging materials.

5.2 Mounting

Mounting systems are available which have to be ordered separately at Leuze electronic. For order numbers please refer to section 4.5 "Accessories". Apart from this, the through-borings can be used for individual mounting of the ODS 96, depending on the area of application.

Mounting of the ODS 96 To avoid errors while the object enters the measurement beam, correct movement direction of the objects has to be observed. The following graphics show instructions on the installation of the ODS 96:

Preferred movement of the objects





Preferred mounting in connection to objects with structured surface



Figure 5.2: Preferred mounting, objects with structured surface

View through a chase



Figure 5.3: View through a chase

If the ODS 96 has to be installed behind a cover, the chase has to have at least the size of the optical glass cover. Otherwise, a correct measurement is not possible or can not be guaranteed.

Teach-In 5.3

Notice

programming software.

Switching points can also be set through teach-in without using the software. Connected to the teach-in procedure, differences occur between the ODS 96 M/S types with two switching outputs and the analog and digital device:

Teach-In procedure ODS 96 M/V, ODS 96 M/D Solution the measured object at the desired distance. Connect the teach input for ≥ 2 sec. to +U_B. After that, connect the teach input to GND. The switching output is tought.

The tought switching point represents the middle of the switching range of the output.

These default values are preset:

- Function characteristics of the switching output: "light switching"
- Switching range: ± 2 mm with infrared devices and ± 10 mm with laser devices
- Hysteresis: ± 1 mm with infrared devices and ± 5 mm with laser devices

These values can only be changed by using the programming software.

Ο 11 The teach-in procedure can be extended and facilitated through the optional

Teach-In procedure ODS 96 M/S \Leftrightarrow Position the measured object at the first desired distance. Connect the teach input for $\geq 2 \text{ sec. to } + U_B$. The LEDs are flashing simultaneously. Reconnect the teach input to GND. The first switching output is tought. Now, position the measured object at the second desired distance. Connect the teach input for $\geq 2 \text{ sec to } + U_B$. The LEDs are flashing alternatingly. Reconnect the teach input to GND. The second switching output is tought. In non-operational mode, the teach input is connected to GND.

6 Software

General description The programming software can be used either for online programming of the connected ODS 96 or for the offline generation of configurations. For this purpose, the command **Type!**, explained in section 6.3.1 "Description of the Menu Commands" can be used. After starting the program a dialog is displayed in which you have to choose a device (see section 6.3 "Starting the Program"). After the offline generation of a parameter configuration, this configuration can be transmitted to the ODS 96 after connection to the PC has been established.

The order number for the software can be found in section 4.5 "Accessories".

6.1 Connection of the PC

A special parameter plug is situated behind the plastic cover on the backside of the ODS 96. Connection between the ODS 96 and the PC is established by means of the cable included in the shipment.

Connect the cable to the parameter plug on the ODS 96 and to a serial interface on the PC. More information on the definition of the interface can be found in section 6.3.1 "Description of the Menu Commands".

6.2

Installation of the Programming Software

Requirements for the installation of the programming software:

- Windows 3.1 or Windows 95/98/NT,
- 486 processor or faster,
- •4 MByte RAM,
- 2 MByte free disk space
- and a CD-Rom drive.

Starting the Installation File

- ♦ Insert the installation CD into your CD drive.
- In the following window, define the path for the installation directory and confirm with **End**.

ODS 96 Parametricesoftw	are Installation Bite geben Sie das Installationsverzeichnis an ODS 96 Parametiterzottware.
	ODS 96 Parametriersoftware Verzeichnis: C:\odd:96par LabWindows/CVI Run-Time Engine Verzeichnis:
	C:WINNT/System32/CVIRTE Andern

Figure 6.1: Installation directory

♦ Follow the installation routine.

6.3 Starting the Program

After successful installation and restart of the computer, the programming software is ready to use.

♦ Choose the ODS 96 programming software icon from the program group.

Without connected ODS, the following window appears after the program start, letting you choose a device:



Figure 6.2: Device selection

Enc Type: Objects :		
Туре	ODS 96 M/V-5060-220	Leuze electroni
Digited value	2250-	
mm	2000-	
C Stat massurement	1750-	
	1500	
Stop measurement	는 1250- 월	
*		
Print	750-	
	250-	

If an ODS is connected, the following window appears:

Figure 6.3: Start menu before measurement

The software automatically recognizes the connected sensor with its default settings.

6.3.1 Description of the Menu Commands

- *File* Under menu item "File" you can switch to parameterization mode or quit the program.
- *Type!* Menu item "Type!" enables presetting of parameters and generation of parameter files without connected ODS. In this menu you can choose a device for which parameter files should be defined.
- *Options* The following three possibilities are offered under "Options":
 - Language selection to choose the language for dialogue.
 - Interface to choose the port to which the cable to the ODS is connected (standard: COM 1). The programming software automatically recognizes the interface used. Choosing a different port could become necessary if more than one sensor is used.
 - Change password: first enter your old, then your new password and confirm with OK.
 - ? Choose **About...**, for information on programming software (product, program, device version, as well as for the address of Leuze electronic).

Programming and Adjustment Possibilities

At this point, the various programming possibilities will be explained. As already mentioned, the software offers an extended functionality. For programming purposes, proceed as follows:

Switching to Parameterization Mode

Sklick on **Parameterization** in the start window.

6.3.2

Password If the program has been started for the first time that day, the password has to be entered. The factory-set password is: **ODS 96**.

			4	Leuze ele	ctronic
Туре		Dev	ce number	Software	version
ODS 96 M/V-5010-600-421					
Working range analog output			Additional extraneo	us light suppression	on
lower range limit	\$ 100.0	mm	Number of measure	mente for evereging:	ott
upper range limit:	\$ 600.0	mm	Trainber of measure	inenis ioi uveraging.	1
Switching outputs					
			ļ .	Load parameters	
Q1 fro	m: 单 290.0	mm		<u>S</u> ave parameters	
light switching 🗾 to:	\$ 310.0	mm			
		_	Bea	d parameters from OE	IS
Hysteresis:	+/- 🛒 1.0	mm	<u></u>	ite parameters to ODS	;

After entering and confirming the following window appears:

Figure 6.4: Parameterization mode, ODS 96 with analog output

In the upper part of the window, information on the connected ODS 96 device is displayed.

Options The complete parameter set for the ODS 96 is stored in a default parameter file. In case of necessary service, the command **Options** \rightarrow **Write default parameters** can be used to transmit the contents of this file to the ODS 96.

The command **Options** \rightarrow **Write customer parameters**, triggers the same result as the button **Write parameters to ODS**.

Working range analog output You can adjust which distance corresponds to a voltage of 1 V, 4 mA at the analog output (lower range limit) and which distance corresponds to a voltage of 10 V, 20 mA (upper range limit).

The shortest adjustable range is 44 mm for the LED version and 400 mm for the Laser version.

		▲ Leuze electronic
Туре	Dev	vice number Software version
ODS 96 M/S-5100-424		
Working range analog oulput		Additional extraneous light suppression
lower longe limit:	200 mm	Number of measurements for everaging:
upper range limit	2000 mm	
Switching outputs		
01	A 1100	Load parameters
	om: 🚽 1100 mm	Seve peremotors
iight switching	. <u>- 1300</u> mm	gave parameters
Q2 1	om: 单 200 mm	
light switching	: 🖨 1200 mm	Bead parameters from ODS
Hysteresis:	+/- 🗘 10 mm	Write parameters to ODS

This area is inaccessible with ODS 96 devices without analog output.



- *Switching outputs* Depending on the ODS 96 type, values for either one or two switching outputs can be set. The adjustable parameters have the following meaning:
 - Light switching: in case an object is inside the area defined under "from to", the switching output is active (high).
 - **Dark switching**: in case an object is inside the area defined under "from to", the switching output is **inactive**.
 - **Hysteresis**: Expansion of the switching range for switching off. For switching on, the set switching points remain always valid. Adjustable value range:
 - •0 .. 300 mm LED device
 - •0 .. 1000 mm laser device

It is possible to adjust values which exceed the limits of the measurement ranges. A regulation happens at the following values:

	LED device	Laser device
Lower range	75 mm	170 mm
Upper range	800 mm	2200 mm

Table 5: Regulation values of the sensors



600

Teach point

has been tought on the upper range limit \rightarrow the first signal edge will be tought through the teach input.

The combination "Programming through software, teaching through teach input" can be performed independently for each switching output. This means also for ODS 96 types with more than one switching output.

Additional extraneous light suppression

Number of Pa measurements for m averaging in

All conventional measures have been taken to render the ODS 96 insensitive towards extraneous light. Through a special way of signal processing, the integrated microcontroller enables an additional extraneous light suppression.

Particularly objects with uneven or reflective surface require the measurement value be taken from the average of several measurements instead of just one.



Notice

100

The higher the number of measurements for averaging is chosen, the lower is the number of measurements per time unit (refreshing of measurement results).

Software

Load parameters	Use this button if you want to reload settings that have already been stored. Choose the appropriate path in the dialog window.
Save parameters	Save personal settings:
	After you have performed measurements, klick on Save parameters. Save your results in the desired directory.
о Ц	Notice If necessary, Leuze electronic can only deliver replacement sensors with de- fault settings. You as customer are responsible for correct storage of your changed data sets.
Read parameter from ODS	Use this button if you want to read the present settings from the ODS. The ODS 96 transmits the data to the PC.
Write parameters to ODS	After having finished work in the parameterization mode, use this button to write the new settings to the ODS.
Quit parameterization	To ensure that all data has been sent correctly to the ODS, use the button Quit parameterization only after the status line in the lower left corner of the parameter window shows the message Parameters written to ODS .

7	Appendix
7.1	How to update the parameter files of the ODS 96 software
Update from diskette	🔄 Copy file ODS96PAR.DAT from A: to C:\ods96par.
	Sopy all files from A:\DATA to C:\ods96par\DATA.
Update from the	& Select the Leuze WWW-server (http://www.leuze.de)
internet	Schange to the download directory (Download -> Optosensory engineering -> Software).
	Sownload the file updODS96.exe for Win3.1x or updODS96.exe for Win95/NT

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