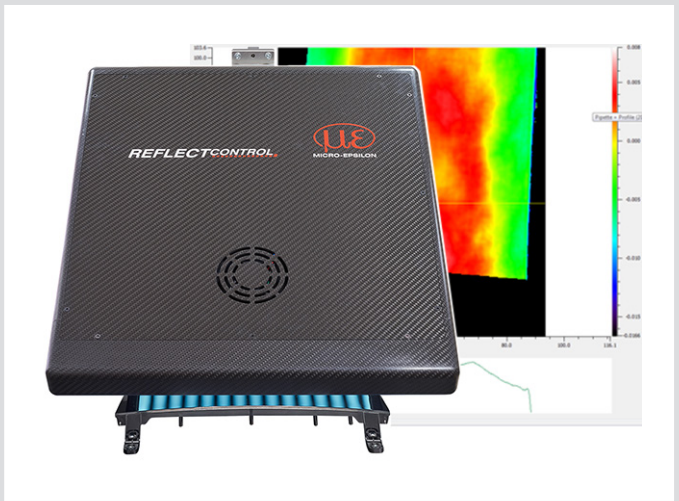
MICRO-EPSILON



Operating Instructions

reflectCONTROL Sensor

RCS130-160

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Contents

1. Safety

System operation assumes knowledge of the operating instructions.

1.1 Symbols Used

The following symbols are used in these operating instructions:

⚠ CAUTION	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates a situation that may result in property damage if not avoided.
➡	Indicates a user action.
i	Indicates a tip for users.
`Measurement`	Indicates hardware or a software button/menu.

1.2 Warnings

⚠ CAUTION

Connect the power supply and the display/output device according to the safety regulations for electrical equipment.

> Risk of injury

> Damage to or destruction of the sensor and/or the controller

NOTICE

Avoid impacts and shocks to the system.

> Damage to or destruction of the system

Protect the cables against damage.

> Failure of the measuring device

1.3 Notes on CE Marking

The following apply to the reflectCONTROL Sensor RCS130-160 series:

- EU Directive 2014/30/EU
- EU Directive 2011/65/EU

Products which carry the CE mark satisfy the requirements of the EU directives cited and the relevant applicable harmonized European standards (EN). The measuring system is designed for use in industrial environments.

The EU Declaration of Conformity and the technical documentation are available to the responsible authorities according to the EU Directives.

1.4 Intended Use

The measuring system is designed for use in an industrial environment.

It is used for non-contacting surface inspection of highly reflecting materials, quality monitoring and dimensional inspection.

The measuring system must only be operated within the limits specified in the technical data, see 2.4.

The system must be used in such a way that no persons are endangered or machines and other material goods are damaged in the event of malfunction or total failure of the system.

Take additional precautions for safety and damage prevention in case of safety-related applications.

1.5 Proper Environment

- Area between camera and target must not be soiled (for example water, abrasion, dust etc.).
- Temperature range:
  - Operation: +10 ... +40 °C (+50 ... +104 °F), general
  - Operation: +22 °C ±2 °C (+71.6 °F ±3.6 °F) for 3D measurements
  - Storage: -10 ... +60 °C (+14 ...+140 °F)
- Humidity: 10 % ... 80 %, (non-condensing)
- Ambient pressure: Atmospheric pressure
- Area between sensor and target must be free of water, abrasion, dust etc.

1.6 Software Security

The following important information must be observed for all application software based on reflectCONTROL. The modification of hardware or software components is essentially not permitted. Exceptions must be approved of in writing by Micro-Epsilon Messtechnik GmbH & Co. KG.

The automatic start of software components that do not originate from Micro-Epsilon Messtechnik GmbH & Co. KG and which run in the background of the measurement process is not permitted. During the use of virus scanners there may be limitations in system availability.

The integration of systems from Micro-Epsilon Messtechnik GmbH & Co. KG into networks must only be performed by qualified personnel. In doing so, the system operator is responsible for security on the network.

Micro-Epsilon Messtechnik GmbH & Co. KG shall accept no claims arising from non-observance of these safety instructions.

2. Functional Principle, Technical Data

2.1 Measuring Principle

The reflectCONTROL Sensor automatically inspects highly reflecting surfaces.

1 reflectCONTROL Sensor

2 Holder [1]

3 Supporting surface for the target/object [1]

Fig. 1 Full view of the measuring system

The reflectCONTROL Sensor operates according to the principle of phase measuring deflectometry. The measurement technique is particularly suitable for defect detection and measurement of even reflecting surfaces. With deflectometry, the surface itself is not examined but its optically distorted or intensity weakening effect which shows itself in the mirror image of a pattern. In the process, a sine pattern is shown on a display and then the reflection of this pattern is recorded by a camera. A few images are recorded using a CCD camera between phase displacements of the displayed pattern and curvatures and intensity amplitudes over the entire surface are algorithmically determined using the data obtained.

For the 3D measurement, simultaneous image acquisition by two cameras from different directions is performed. The combined evaluation of the data of both cameras enables a stable 3D reconstruction of the target.

Calibration is required for the 3D reconstruction. The positions of the cameras, the screen and the imaging characteristics of the cameras are determined here using a special calibration mirror. The 3D reconstruction provides a point cloud with X/Y/Z coordinates.

1) Not included in delivery

2.2 Structure

The compact system contains all the necessary components for the measurement in one housing.

2.3 Requirements for the Target

The prerequisite for deflectometry is that the striped pattern can be recorded by the camera via the target. As flat and reflecting as possible surfaces are optimal. Convex curved targets (beams are scattered) may have to be examined from multiple measurement positions.

2.4 Technical Data

Model		**RCS130-160**
Measurement area Length x width (x * y) [1]	in reference plane	170 mm x 160 mm
Acquisition of measurement data		approx. 1.2 s … 6 s
Evaluation		approx. 2 s … 8 s
Resolution	x, y	100 µm
Planarity measurement error	z [2]	< 1 µm
Supply voltage		24V DC (must not exceed 26 V)
Power consumption		< 50 W
Interfaces and connections		1 x GigE Vision (RJ45), 1 x Ethernet (RJ45), power supply (3-pin Lemo connector)
Mounting		mechanically reproducible adapter flange
Temperature range	Storage	-10 ... +60 °C (+14 ...+140 °F)
	Operation [2]	0 °C … +40 °C (+32 °F ... +104 °F) (for 3D measurements: max. fluctuation of ±2 °C after referencing)
Humidity [2]		10 % … 80 %, non-condensing (for 3D measurements: max. fluctuation of ±2 % after referencing)
Design		carbon housing with controlled fan, design with integrated controller
Weight		< 7 kg

1) Size specifications refer to the reference plane. Trapezoidal measuring field - the medium width is specified. Exact dimensions, see Fig. 2.

2) Measured after referencing with a plane mirror (Ø 300 mm and a flatness of lambda/10) at a max. distance tolerance of ±0.1 mm. After referencing, a maximum temperature fluctuation of ± 2 °C and change of humidity of ±2 % are to be complied with.

3. Delivery

3.1 Unpacking/Included in Delivery

1 Measuring system

1 24V supply cable, open ends

1 Operating instructions

- Carefully remove the components of the measuring system from the packaging and ensure that the goods are forwarded in such a way that no damage can occur.
- Check the delivery for completeness and shipping damage immediately after unpacking.
- If there is damage or parts are missing, immediately contact the manufacturer or supplier.

3.2 Storage

Temperature range (storage): -10 ... +60 °C (+14 ...+140 °F)

Humidity: 10 % ... 80 % (non-condensing)

4. Installation and Assembly

4.1 Precautions

No sharp or heavy objects should be allowed to affect the cable sheath.

Avoid folding the cables. Check the plug-in connections for firm seating.

The measuring system is an optical system used to measure in the µm range.

i Ensure careful handling during installation and operation.

4.2 RCS130-160 Dimensions, Measuring Window

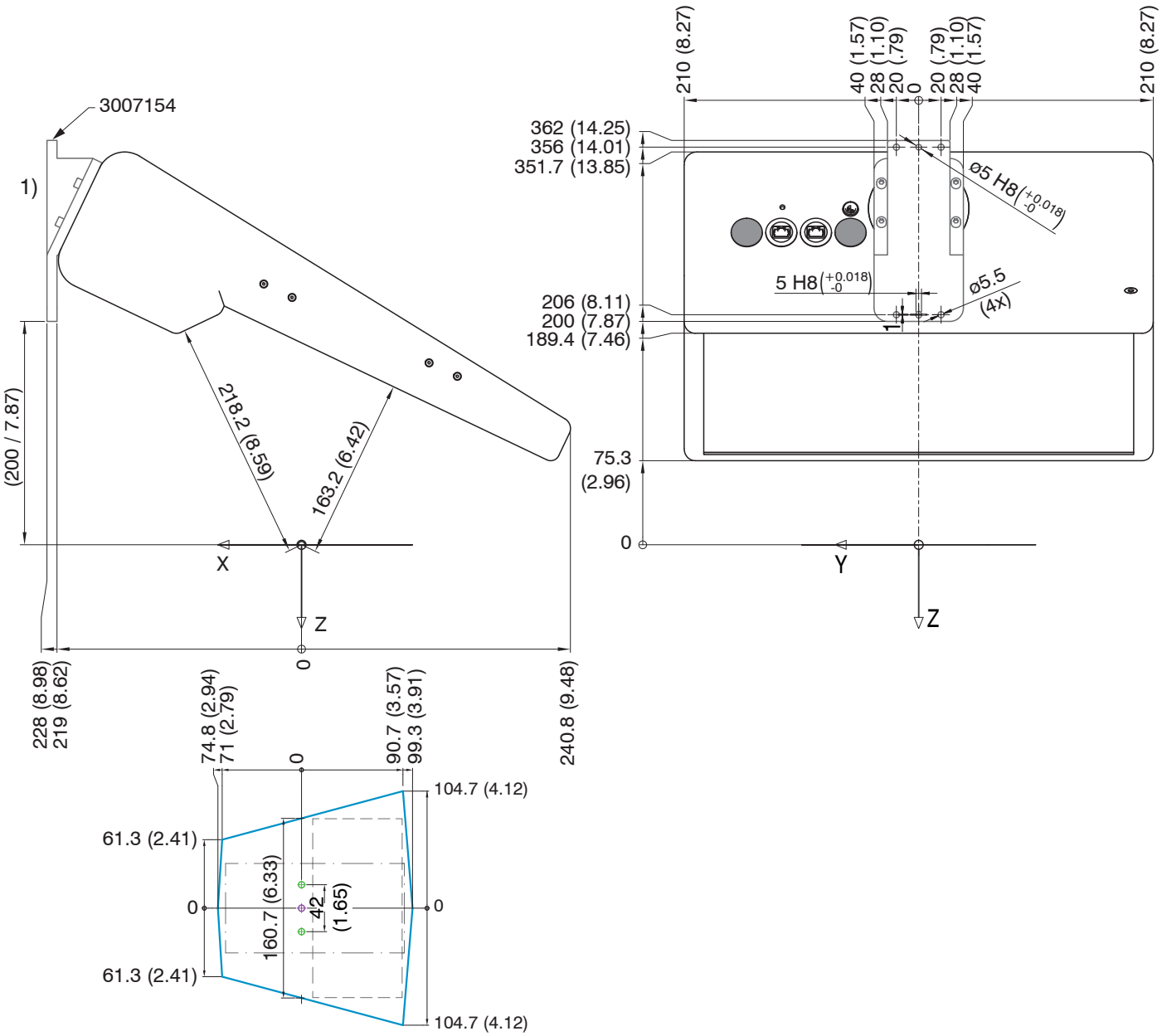


Fig. 2 Dimensional drawing of RCS130-160 measuring system with measuring window

Legend		
		Position of target/object
		Outer boundary of measuring field
		Piercing points of both cameras' main beams
		Zero point of the measuring field's coordinate system

1) Optionally available mounting adapter, see A 1

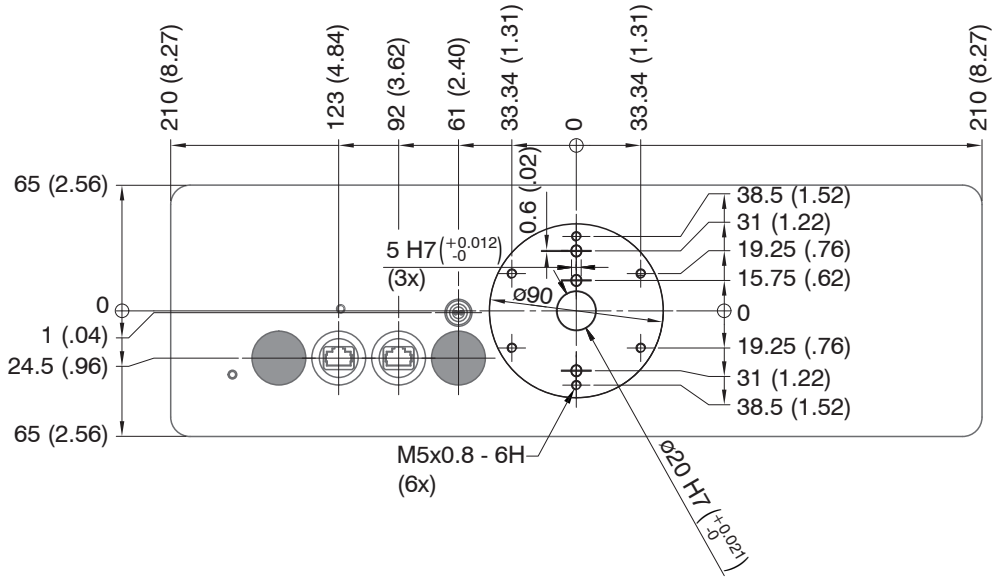
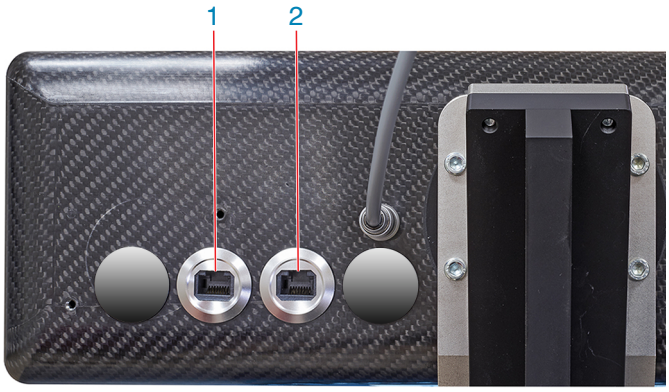


Fig. 3 Dimensional drawing of mounting bores

4.3 Electrical Connections, Interfaces

4.3.1 Interfaces

The measuring system has the following interfaces:



1 Ethernet diagnosis interface

2 GigE Vision
Parameter setting and process control

1000 Mbps,
RJ45 connection

Fig. 4 Rear view of RCS130-160 with interface connections

4.3.2 Connection Options

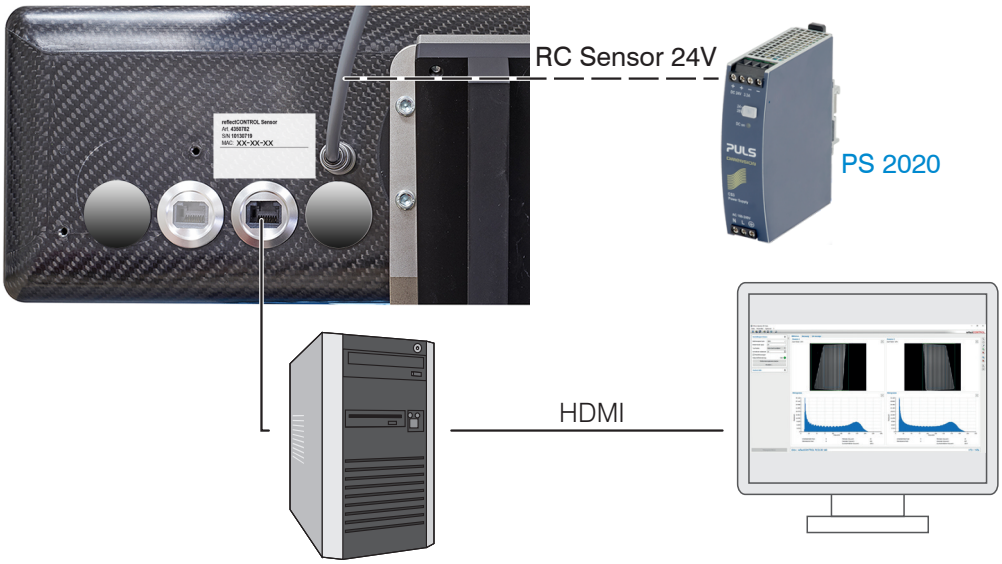
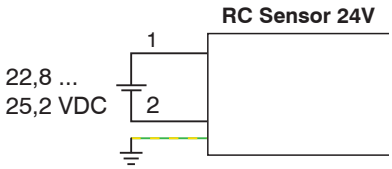


Fig. 5 Connection plan for standard operation

4.3.3 Supply Voltage

Nominal value: 24 V DC (22.8 ... 25.2 V, P < 60 W).

- Only turn on the power supply after wiring has been completed.
- Connect the inputs “1” and “2” at the sensor with a 24V power supply.



Cable RC Sensor 24V	Assignment
black (1)	+24 V
black (2)	Ground
yellow/green	PE

Fig. 6 Supply voltage connection

Use the power supply only for measuring devices; do not use it at the same time for drives or similar sources of impulse interference. MICRO-EPSILON recommends using the optionally available PS2020 power supply, for the sensor, see A 1.

5. Operation

5.1 General

The software is installed on the sensors at the factory. The user is not required to perform any installation. The sensor is accessed via GenICam/GigE Vision from Version 2.1.

The package includes a download link to the client software from Micro-Epsilon. This package consists of the `3D-View` software and an SDK with corresponding sample programs.

3D-View can be installed on Windows 7/8/10 (64-bit) computers and enables

- the setting of system parameters,
- the execution of measurements and
- the visualization of measurement results.

The measurement data generated can be exported in different standard formats.

5.2 Process to Turn On and Turn Off

5.2.1 Turning On

The system starts when the supply voltage is applied. The controller in the sensor starts the boot process.

The system will be operational after a startup time of approx. 60 sec.

It can then be connected to any compatible software via GigE Vision, e.g., 3D-View by Micro-Epsilon.

5.2.2 Turning Off

Turn off the system as follows:

➡ Disconnect the 24V power supply.

5.3 Positioning Target

The surface of the target must be in the depth of field range of the lenses both for the defect detection as well as for the 3D reconstruction. The tolerances for the vertical positioning are approx. 40 µm (-20 µm to +20 µm). The dimensions of the measuring fields that the target must be located within can be found in the dimensional drawing, see Fig. 2.

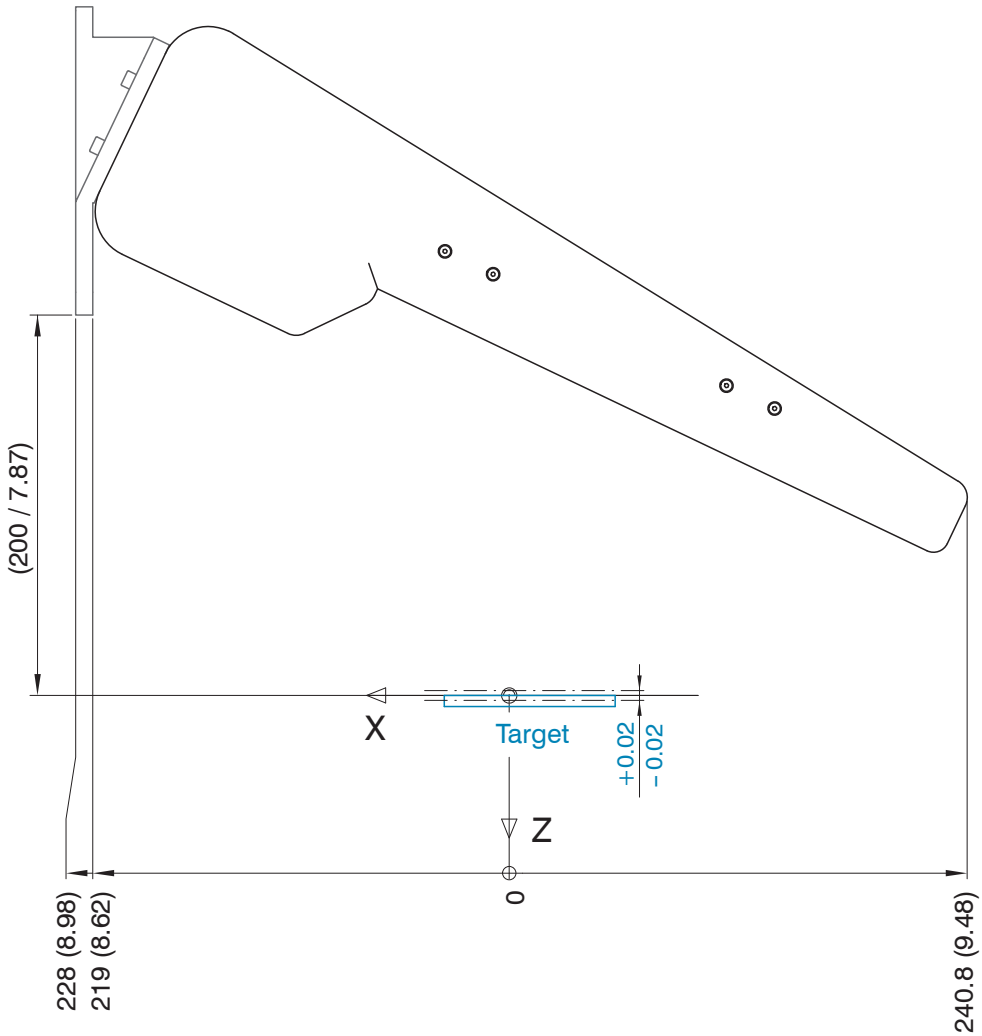


Fig. 7 Vertical tolerance field for the target surface

➡ Position the measuring system so that it is level.

5.4 Shading

Lateral scattered light on the target can cause measurement inaccuracies.

i Avoid scattered light, e.g. bright daylight, on the target.

Shade the measurement environment if required.

5.5 Measurement Procedure

Let the measurement equipment warm up for approx. 15 minutes, 120 minutes for high-precision measurements, before you perform any measurement. This prevents measurement inaccuracies.

The following table shows the most important steps of a measurement process:

Step 1	Positioning target		Chap. 5.3
Step 2	Basic settings, e.g. camera, striped pattern		
Step 3	Image acquisition		
Step 4	2D Data processing	3D Data processing	
	Result images: base intensity, amplitude, curvature	3D point cloud	
Step 5	Save results		

Fig. 8 Measurement process steps, software blocks

Place the target in the object plane for the measurement. Then, the camera (exposure time), the striped pattern and the number of images can be parametrized. Depending on the selected number of images, the image acquisition takes approx. 1 ... 2 s. The result images of the deflectometry are available after the data processing in 2D mode or 3D mode. The expected processing time is 1… 60 s which particularly depends on the `Binning`, `ReconstructionGridsize` and `Patterntype` parameters.

Details about setting the parameters are available in the software description.

Please refer to the appendix, see A 2, for details about the parameters.

6. Liability for Material Defects

All components of the device have been checked and tested for functionality at the factory.

However, if defects occur despite our careful quality control, MICRO-EPSILON or your dealer must be notified immediately.

The liability for material defects is 12 months from delivery. Within this period, defective parts, except for wearing parts, will be repaired or replaced free of charge, if the device is returned to MICRO-EPSILON with shipping costs prepaid.

Any damage that is caused by improper handling, the use of force or by repairs or modifications by third parties is not covered by the liability for material defects.

Repairs are carried out exclusively by MICRO-EPSILON.

Further claims can not be made. Claims arising from the purchase contract remain unaffected.

In particular, MICRO-EPSILON shall not be liable for any consequential, special, indirect or incidental damage.

In the interest of further development, Micro-Epsilon reserves the right to make design changes without notification. For translations into other languages, the German version shall prevail.

7. Service, Repair

For any defect on the system:

- If possible, save the current system settings in a parameter set to reload them into the system after the repair.

If the cause of a fault cannot be clearly identified, please send the entire measuring system to:

MICRO-EPSILON MESSTECHNIK
GmbH & Co. KG
Koenigbacher Str. 15
94496 Ortenburg / Germany

Tel. +49 (0) 8542 / 168-0
Fax +49 (0) 8542 / 168-90
info@micro-epsilon.com
www.micro-epsilon.com

8. Decommissioning, Disposal

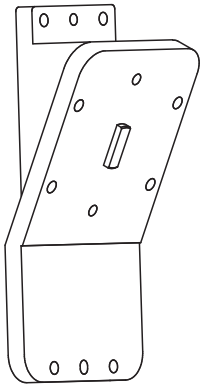
➡ Remove the electrical connection cables from the measuring system.

Incorrect disposal may cause harm to the environment.

➡ Dispose of the device, its components and accessories, as well as the packaging materials in compliance with the applicable country-specific waste treatment and disposal regulations of the region of use.

Appendix

A 1 Optional Accessories

rC Sensor adapter		Mounting adapter from AlMg4.5Mn0.7 item 3007154
PS2020		Power supply for DIN rail installation; input 230 VAC, output 24 VDC/2.5 A

A 2 GenICam reflectCONTROL Parameters

Details about setting the parameters are available in the software description, see 3D View operating instructions.

Parameter Description

Observe the notes below if you operate the sensor with a third party library for GenICam/GigE Vision:

- The library must support GigE Vision 2.1. In particular, `MultiPart` mode must be supported.
- Three sources are available to set the parameters of the sensor, see the `SourceSelector` description below. However, data are always transmitted using `StreamChannel 0`. Before starting data transmission with the `AcquisitionStart` command, the entry `Source0` must be selected as `SourceSelector`.
- The network card used should be configured as follows:
  - Jumbo frames: enable/use largest possible value
  - Interrupt moderation: enable
  - Interrupt moderation rate: adaptive
  - Receive buffer: use largest possible value
- The `Coord3D_C32f` pixel format is used for 3D measurements. If this pixel format is not supported by the library used, the `Mono16` pixel format can be used as an alternative. In that case, however, the resolution or measuring range is limited.
- The operating mode and sensor data transmitted are controlled using the parameter `ComponentEnable` and the associated selectors `SourceSelector`, `RegionSelector` and `ComponentSelector`, as well as via `TriggerMode` and `TriggerSoftware`. The following modes are possible, among others:
  - Setup operation (continuous transmission of raw images):
    - TriggerMode = Off
    - ComponentEnable [Source1][Region0][Intensity] = 1
    - ComponentEnable [Source2][Region0][Intensity] = 1
    - Set all other selector combinations for ComponentEnable to 0
  - Measurement mode 2D:
    - TriggerMode = On
    - ComponentEnable [Source1][Region0][Amplitude] = 1
    - ComponentEnable [Source1][Region0][Curvature] = 1
    - ComponentEnable [Source1][Region0][Base] = 1
    - ComponentEnable [Source2][Region0][Amplitude] = 1
    - ComponentEnable [Source2][Region0][Curvature] = 1
    - ComponentEnable [Source2][Region0][Base] = 1
    - Set all other selector combinations for ComponentEnable to 0
    - Trigger a measurement by "TriggerSoftware"
  - Measurement mode 3D:
    - TriggerMode = On
    - ComponentEnable [Source0][Scan3dExtraction0][Range] = 1
    - If you want a mask image for invalid points: ComponentEnable [Source0][Scan3dExtraction0] [Confidence] = 1
    - Set all other selector combinations for ComponentEnable to 0
    - Trigger a measurement by "`TriggerSoftware`"

Name	Description	Documentation text
RegionSelector ([SourceSelector])	Selects the Region of interest to control.	Serves as a switch for the parameters to describe the measuring field. Note that this switch also depends on the SourceSelector. The following settings are possible: - Region0: Describes the measuring field of the cameras [Source1] or [Source2] - Scan3dExtraction0: Describes the 3D measuring field [Source0]
Width[SourceSelector][RegionSelector]	Width of the image provided by the device (in pixels).	The width of the measuring field in pixels [Region0] or the number of points in x direction [Scan3dExtraction0]
Height[SourceSelector][RegionSelector]	Height of the image provided by the device (in pixels).	The height of the measuring field in pixels [Region0] or the number of points in y direction [Scan3dExtraction0]
OffsetX[SourceSelector][RegionSelector]	Horizontal offset from the origin to the region of interest (in pixels).	The offset of the measuring field in pixels [Region0]. This parameter has no effect on [Scan3dExtraction0].
OffsetY[SourceSelector][RegionSelector]	Vertical offset from the origin to the region of interest (in pixels).	The offset of the measuring field in pixels [Region0]. This parameter has no effect on [Scan3dExtraction0].
PixelFormat[SourceSelector][RegionSelector][ComponentSelector]	Format of the pixels provided by the device.	Indicates the pixel format used for the selected component. The pixel format Mono8 is available for the [Intensity], [Amplitude], [Curvature], [Base] and [Confidence] components. You can select Mono16 or Coord3D_C32f for the 3D data [Range].
BinningHorizontal	Number of horizontal photo-sensitive cells to combine together.	Note: BinningHorizontal and BinningVertical always have the same value
BinningVertical	Number of vertical photo-sensitive cells to combine together.	Note: BinningHorizontal and BinningVertical always have the same value
ComponentSelector ([Regionselector][SourceSelector])	The ComponentSelector defines the various data components which are available on the device for streaming.	The following entries are available: - Intensity: Live camera image - Amplitude: Amplitude image - Curvature: Curvature image - Base: Image of base intensities - Range: 3D data - Confidence: Mask for invalid points in 3D data The following combinations of SourceSelector, RegionSelector and ComponentSelector are permitted: - [Source0][Scan3dExtraction0][Range] - [Source0][Scan3dExtraction0][Confidence] - [Source1/Source2][Region0][Intensity] - [Source1/Source2][Region0][Amplitude] - [Source1/Source2][Region0][Curvature] - [Source1/Source2][Region0][Base]

ComponentEnable[SourceSelector][Regionselector][ComponentSelector]	Controls if the selected component, which is defined by SourceSelector, RegionSelector and ComponentSelector, is active and streaming.	Describes the components to be transmitted. It is used in particular to distinguish between setup operation (live mode) and measurement mode. Setup operation is enabled, if only the [Intensity] components are enabled.
ImageScale[SourceSelector][ComponentSelector]	2D Mode components only: Scale	Scaling factor for the gray values of the [Amplitude], [Curvature] and [Base] components
ImageOffset[SourceSelector][ComponentSelector]	2D Mode components only: Offset	Offset for the gray values of the [Amplitude], [Curvature] and [Base] components
ExposureTime	Sets the Exposure time when ExposureMode is Timed and ExposureAuto is Off.	Exposure time of the cameras
PatternDisplay	Defines the pattern that is shown except during measuremen	Definition of the pattern displayed on the monitor: - Bright: Homogeneous white image with a brightness of 255 - Medium: Homogeneous gray images with a brightness of 127 - Dark: Homogeneous black image with a brightness of 0 - Pattern (standard): Measurement pattern (sine) Homogeneous images (in particular "Dark" or "Medium") can be used as screen saver during longer waiting periods. With successive measurements, you should maintain the "Pattern" setting to save time.
PatternWidth	Width of sine stripes on monitor.	Strip width of the sine pattern on the screen.
PatternCount	Number of different sine stripe images used for calculation.	The number of sine patterns and images to be recorded which are used for one measurement.
AmplitudeThreshold	3D mask generation + curvature image	Only pixels whose amplitude value (before offset and scaling) is greater than this threshold value are used to calculate the result. This allows you to exclude unwanted pixels with a low degree of reflection (e.g., outside the measured object or near the edges).
PatternType	Selects the type of pattern projection.	Provides pre-defined options for setting the number of sine patterns and the images to be recorded that are used for one measurement: - HighSpeed: 4 - Balanced: 6 - HighPrecision: 12 - Custom: Choose a user-defined value for the number of sine patterns (see "PatternCount")
Scan3dExtractionMethod	Selects the method for extracting 3D from the input sensor data.	Defines the measurement modes: - Standard: Standard measurement mode - SensorReferencing: Is used to perform a reference measurement
Scan3dCoordinateSelector	Selects which Coordinate to retrieve data from.	Is used as switch for the selected 3D coordinate
Scan3dCoordinateScale[Scan3dCoordinateSelector]	Returns the Scale for the selected coordinate axis of the image included in the payload	Defines the resolution of the point cloud in x and y direction. If the Mono16 format is used, scaling can be defined additionally for the z coordinate.

Scan3dCoordinateOffset [Scan3dCoordinateSelector]	Returns the Offset for the selected coordinate axis of the image included in the payload.	Defines the offset of the point cloud in x and y direction. If the Mono16 format is used, the offset can be defined additionally for the z coordinate. The following formula can be used to transform the x and y indices into real world coordinates: Coord_real = Scan3dCoordinateOffset[Scan3dCoordinateSelector] + index * Scan3dCoordinateScale[Scan3dCoordinateSelector]
Scan3dInvalidDataFlag [Scan3dCoordinateSelector]	Specifies if a special value is available for identifying non valid 3d Coordinates	Indicates whether the scan3dInvalidDataValue parameter can be used to identify invalid points. The value is "true" if no mask is transmitted.
Scan3dInvalidDataValue [Scan3dCoordinateSelector]	Value which identifies non valid 3d Coordinates	If no mask is transmitted, this value defines the invalid points in the 3D data.
TrendRemoval	Remove global trend from 3D data	To set a trend, a polynomial can be fitted to the surface using an approximation method. Subsequently, the fitted polynomial is substracted from the surface. The following settings are available: - None: No trend is fitted. - Plane: A trend in the form of a plane is created. - Custom: The polynomial degree is set manually (see TrendRemovalCustomX/TrendRemovalCustomY)
TrendRemovalCustomX	Set custom trend removal function degree in X	The polynomial degree in the x direction for the determination of a trend (see TrendRemoval)
TrendRemovalCustomY	Set custom trend removal function degree in Y	The polynomial degree in the Y direction for the determination of a trend (see TrendRemoval)
ReduceMask	Erosion of mask [pixel]	This parameter enables the 3D data erosion. This is how pixels at the edge can be hidden. Enabling this parameter is only necessary when it is not sufficient to hide undesired pixels with the "AmplitudeThreshold" parameter. The following entries are available: - None: Data are not eroded - 3x3: Data are eroded with a square structure mask with a size of 3x3 pixels. - 5x5: Data are eroded with a square structure mask with a size of 3x3 pixels. - 7x7: Data are eroded with a square structure mask with a size of 7x7 pixels.
ReconstructionGridSize	Reconstruction grid size [pixel]	Defines the grid size used in the sensor to calculate the 3D data in pixels. The "n" value means that every "nth" pixel of the raw data is used to calculate the 3D data. The higher this value, the lower the calculation time. This parameter has no effect on the scaling of the 3D coordinates.
MultiAreaMode	Multiple areas: Mode	This parameter indicates whether the object to be measured consists of several independent areas: OneAreaMode: Measuring object consists of one contiguous area (normal case) MultiAreaMode: Measurement of several individual measuring objects, i.e. several contiguous areas
MinAreaSize	Minimum area size [pixel]	Defines the number of pixels required for the reconstruction of an area, i.e. smaller areas are ignored. This parameter only takes effect when the MultiAreaMode is enabled.

ReferencingActive	Specifies if the recently executet reference measurement is active.	Indicates whether a previously performed reference measurement is enabled, and thus whether the 3D point cloud is calculated relative to the reference measurement.
ReferencingBinning	Returns the binning factor used of the recently executet reference measurement.	Indicates which value was used for the BinningHorizontal or BinningVertical during the enabled reference measurement. This value must correspond to the current value for Binning in order to perform valid measurements.
ReferencingMode	Specifies the kind of referencing, i.e. if planar targets or nonplanar targets with known shape are used for referencing.	Defines the type of referencing. Referencing with flat and non-planar targets with known shape are possible. With non-planar targets, a description file for the target (shape, contour) is required. The correct type of referencing is to be set both when performing the reference measurement (Scan3dExtractionMethod "SensorReferencing") and during the application (Scan3dExtractionMethod "Default").
ReferencingContour	Specifies if the contour of the referencing target is displayed in the intensity images (i.e. live images of cameras)	Indicates wheter the contour of non-planar reference targets (ReferencingMode "Nonplanar") is displayed in the intensity images. Is used as positioning aid for the reference target when performing the reference measurement (Scan3dExtractionMethod "SensorReferencing"). Displaying the contour can also be used with (Scan3dExtractionMethod "Default") in order to position the measuring objects within the referencing area.
ReferencingTargetID	Identifier of referencing target (e.g. part number, serial number) in case of ReferencingMode "Nonplanar"	Description (e.g. part number, serial number) for non-planar reference target (ReferencingMode "Nonplanar"), whose description file (shape, contour) is stored in the sensor for the calculation of the referencing. Is used for a comparison with the description of the actually used target for the reference measurement.
ReferencingValid	Specifies if valid reference data are available	This parameter indicates whether valid reference data are available on the sensor in such a way that they can be used with an active reference (see "ReferencingActive" parameter).
Gain	Controls the selected gain as an absolute physical value.	The gain with which the cameras in the sensor are operated.
EventFrameTriggerMissed	Returns the unique Identifier of the FrameTriggerMissed type of Event.	This event is triggered when a measurement is triggered although the most recent measurement has not yet been completed.
EventExposureEndData	Category that contains all the data features related to the ExposureEnd Event	This event is triggered when image acquisition for a measurement has been completed and calculation of the 3D results is started. The sensor or measuring object can now be moved to the next measuring position.
EventFrameEndData	Category that contains all the data features related to the FrameEnd Event	This event is triggered when the measurement is completed.
EventError	Returns the unique identifier of the Error type of Event.	This event is triggered when an error occurs during the measurement.

EventErrorCode	Returns the error code.	This parameter returns the defect type for a measuring error. The following error codes are possible: - 1: Error Sensor Hardware: An error occurred in a hardware component in the sensor. Contact Micro-Epsilon - 2: Error Sensor Acquisition: An error occurred during data acquisition in the sensor. Contact Micro-Epsilon - 3: Error 3D Reconstruction: The 3D reconstruction could not be calculated. - 4: Error 3D Resampling: Resampling of 3D data was not successful. - 5: Error 3D Filter: An error occurred during application of the 3D filter operations. - 6: Error Sensor referencing: An error occurred when the reference measurement was performed. - 7: Error reference data: The data in the reference measurement are invalid. - 8: Error Apply Sensor referencing: An error occurred when the reference measurement was applied.
EventErrorMessage	Returns a detailed error message for the error.	In addition to the erroy type, an additional description of the measuring error is retured if necessary.
SourceSelector	Selects the source to control.	Is used as a switch for the data source to be configured: - Source0: Virtual source for 3D measured data - Source1: Camera 1 - Source2: Camera 2

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