More Precision

confocalDT // Confocal chromatic sensor system
The confocalDT 2465 and 2466 controllers enable fast, high-precision distance and thickness measurements up to 30 kHz. They are available as a single- or dual-channel variant. In addition, the MP models measure the thickness of up to 5 transparent layers at once. The controllers are characterized by high luminous intensity which enables very fast and reliable measurements even on dark surfaces.

The controller can be operated with any IFS sensor and is available as a standard version for distance measurements or as a multi-peak version for multi-layer thickness measurements. Using a special calculation function, the confocalDT 2466 dual-channel version evaluates both channels. Measurement acquisition is synchronous and can be carried out while exploiting the full measuring rate for both channels.

Due to a user-friendly web interface, no additional software is necessary to configure the controller and the sensors. Data output is via Ethernet, EtherCAT, RS422 or analog output. Optionally available interface modules enable the data to be output also via PROFINET or EtherNet/IP.
<table>
<thead>
<tr>
<th>Model</th>
<th>IFC2465</th>
<th>IFC2465MP</th>
<th>IFC2466</th>
<th>IFC2466MP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ethernet/EtherCAT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td></td>
<td></td>
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<tr>
<td>Ethernet/EtherCAT</td>
<td>1 nm</td>
<td></td>
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<tr>
<td>RS422</td>
<td>18 bit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog</td>
<td>16 bits (teachable)</td>
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</tr>
<tr>
<td>Measuring rate</td>
<td>continuously adjustable from 100 Hz to 30 kHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linearity</td>
<td>typ. &lt; ±0.025 % FSO (depends on sensor)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-layer measurement</td>
<td>1 layer</td>
<td>5 layers</td>
<td>1 layer</td>
<td>5 layers</td>
</tr>
<tr>
<td>Light source</td>
<td></td>
<td>internal white LED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of characteristic curves</td>
<td>up to 20 characteristic curves for different sensors per channel, selection via table in the menu</td>
<td></td>
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<tr>
<td>Permissible ambient light</td>
<td>30,000 lx</td>
<td></td>
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<td></td>
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<tr>
<td>Synchronization</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage</td>
<td>24 VDC ±15 %</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Power consumption</td>
<td>approx. 10 W</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal input</td>
<td>sync-in / trig-in; 2x encoders (A+, A-, B+, B-, index) or 3x encoders (A+, A-, B+, B-)</td>
<td>Ethernet / EtherCAT / RS422 / PROFINET / EtherNet/IP</td>
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<td></td>
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<tr>
<td>Digital interface</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog output</td>
<td>Current: 4 … 20 mA; voltage: 0 … 10 V (16 bit D/A converter)</td>
<td>Error1-Out, Error2-Out</td>
<td></td>
<td></td>
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<tr>
<td>Switching output</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Digital output</td>
<td></td>
<td>sync-out</td>
<td></td>
<td></td>
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<tr>
<td><strong>Connector</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical</td>
<td></td>
<td></td>
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<tr>
<td>Electrical</td>
<td></td>
<td>pluggable optical fiber via E2000 socket, length 2 m … 50 m, min. bending radius 30 mm</td>
<td></td>
<td></td>
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<tr>
<td>3-pin supply terminal strip; encoder connection (15-pin, HD-sub socket, max. cable length 3 m, 30 m with external encoder supply); RS422 connection socket (9-pin, Sub-D, max. cable length 30 m); 3-pin output terminal strip (max. cable length 30 m); 11-pin I/O terminal strip (max. cable length 30 m); RJ45 socket for Ethernet (out) / EtherCAT (in/out) (max. cable length 100 m)</td>
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<tr>
<td>Mounting</td>
<td>free-standing, DIN rail mounting</td>
<td></td>
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</tr>
<tr>
<td>Temperature range</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Storage</td>
<td>-20 … +70 °C</td>
<td></td>
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<tr>
<td>Operation</td>
<td>+5 … +50 °C</td>
<td></td>
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</tr>
<tr>
<td>Shock (DIN EN 60068-2-27)</td>
<td>15 g / 6 ms in XYZ axis, 1000 shocks each</td>
<td></td>
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<tr>
<td>Vibration (DIN EN 60068-2-6)</td>
<td>2 g / 20 … 500 Hz in XYZ axis, 10 cycles each</td>
<td></td>
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<tr>
<td>Protection class (DIN EN 60529)</td>
<td>IP40</td>
<td></td>
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<tr>
<td>Material</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>approx. 1.8 kg</td>
<td>approx. 2.25 kg</td>
<td></td>
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<tr>
<td>Compatibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>compatible with all confocalDT sensors</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>No. of measurement channels</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control and indicator elements</td>
<td>Multifunction button (two adjustable functions and reset to factory setting after 10 s); 5x LEDs for intensity, range, status and supply voltage</td>
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</tbody>
</table>

FSO = Full Scale Output

1) Illuminant: light bulb
2) Connection via interface module (see accessories)
3) No loss of intensity and linearity due to two synchronous measurement channels
The confocalDT system consists of:

- Sensor IFS240x
- Controller IFC24xx
- Fiber optic cable C24xx
Customer-specific modifications

Application examples are often found where the standard versions of the sensors and the controllers are performing at their limits. To facilitate such special tasks, it is possible to customize the sensor design and to adjust the controller accordingly. Common requests for modifications include changes in design, mounting options, customized cable lengths and modified measuring ranges.

Possible modifications

- Sensors with connector
- Cable length
- Vacuum suitability up to UHV
- Specific lengths
- Customer-specific mounting options
- Optical filter for ambient light compensation
- Housing material
- Measuring range / Offset distance

Vacuum setup

Vacuum feedthrough
C2405.../Vac (KF or CF flange)
C2402.../Vac (KF flange)
IFS24xx / Vac
C2400/PT-x-Vac C2401-x
Controller IFC24xx
Adjustable mounting adapter
The adjustable JMA mounting adapter simplifies the alignment and fine adjustment of confocal sensors. You can integrate the sensors with the adapter directly into the machine and then align them directly on site. This corrects, e.g., minor deviations caused by mounting and compensates for tilted measuring objects. With two-sided thickness measurements, the mounting adapter supports the fine alignment of the two measuring points.

Scope of supply
- Adjustable mounting adapter
- Sensor holder for smaller diameters (not with JMA-27)
- Screwdriver for positioning
- Assembly instructions

Sensor holder for smaller diameters

Sensor holder for JMA-08

Sensor holder for JMA-10

Sensor holder for JMA-12

Sensor holder for JMA-20
Software
IFD24xx-Tool Software demo tool included

Accessories light source
IFL2422/LED Lamp module for IFC2422 and IFC2466
IFL24x1/LED Lamp module for IFC2421 and IFC2465

Cable extension for sensors
CE2402 cable with 2x E2000/APC connectors
CE2402-x Extension for optical fiber (3 m, 10 m, 13 m, 30 m, 50 m)
CE2402/PT3-x Extension for optical fiber with protection tube for mechanical stress
(3 m, 10 m, customer-specific length up to 50 m)

Cable for IFS2404 sensors
C2404-x Optical fiber with FC/APC and E2000/APC connectors
Fiber core diameter 20 µm (2 m)

Cables for IFS2405/IFS2406/2407-0,1 sensors
C2401 cable with FC/APC and E2000/APC connectors
C2401-x Optical fiber (3 m, 5 m, 10 m, customer-specific length up to 50 m)
C2401/PT3-x Optical fiber with protection tube for mechanical stress
(3 m, 5 m, 10 m, customer-specific length up to 50 m)
C2401-x(01) Optical fiber core diameter 26 µm (3 m, 5 m, 15 m)
C2401-x(10) Drag-chain suitable optical fiber (3 m, 5 m, 10 m)

C2400 cable with 2x FC/APC connectors
C2400-x Optical fiber (3 m, 5 m, 10 m, customer-specific length up to 50 m)
C2400/PT-x Optical fiber with protection tube for mechanical stress
(3 m, 5 m, 10 m, customer-specific length up to 50 m)
C2400/PT-x-Vac Optical fiber with protection tube suitable for use in vacuum
(3 m, 5 m, 10 m, customer-specific length up to 50 m)
Cable for IFS2407/90-0,3 sensors
C2407-x  Optical fiber with DIN connector and E2000/APC (2 m, 5 m)

Vacuum feedthrough
C2402/Vac/KF16  Vacuum feed through with optical fiber, 1 channel, vacuum side FC/APC, non-vacuum side E2000/APC, clamping flange KF 16
C2405/Vac/1/KF16  Vacuum feed through on both sides FC/APC socket, 1 channel, clamping flange type KF 16
C2405/Vac/1/CF16  Vacuum feed through on both sides FC/APC socket, 1 channel, flange type CF 16
C2405/Vac/6/CF63  Vacuum feed through FC/APC socket, 6 channels, flange type CF 63

Other accessories
SC2471-x/USB/IND  Connector cable IFC2461/71, 3 m, 10 m, 20 m
SC2471-x/IF2008  Connector cable IFC2461/71-IF2008, 3 m, 10 m, 20 m
PS2020  Power supply 24 V / 2.5 A
EC2471-3/OE  Encoder cable, 3 m
IF2030/PNET  Interface module for PROFINET connection
IF2030/ENETIP  Interface module for EtherNet/IP connection

Optical fiber
Temperature range: -50 °C to 90 °C
Bending radius: 30/40 mm
Sensors and Systems from Micro-Epsilon

Sensors and systems for displacement, distance and position

Sensors and measurement devices for non-contact temperature measurement

Measuring and inspection systems for metal strips, plastics and rubber

Optical micrometers and fiber optics, measuring and test amplifiers

Color recognition sensors, LED analyzers and inline color spectrometers

3D measurement technology for dimensional testing and surface inspection

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