More Precision

confocalDT // Confocal chromatic measuring system
confocalDT IFC2461 systems are used for complex distance and thickness measurements. The IFC2461 controller is equipped with enhanced, optimized optical components enabling measuring rates up to 25 kHz without having to use an external light source. The high light intensity enables reliable measurements on difficult surfaces, e.g. on matt black objects or for multi-layer thickness measurement of glass. The active exposure regulation feature in the CCD line enables accurate, fast surface compensation on changing surfaces during dynamic measurement processes.

The controller can be operated with any IFS sensor and is available as a standard version for distance and thickness measurements or as a multi-peak version for multi-layer measurements.

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.
**Controller IFC2461**

<table>
<thead>
<tr>
<th>Feature</th>
<th>IFC2461</th>
<th>IFC2461MP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi peak measurement</td>
<td>1 layer</td>
<td>up to 5 layers</td>
</tr>
<tr>
<td>Light source</td>
<td>internal white LED</td>
<td></td>
</tr>
<tr>
<td>Measuring rate</td>
<td>continuously adjustable from 100 Hz to 25 kHz</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>Ethernet: 1 nm</td>
<td></td>
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<tr>
<td></td>
<td>RS422: 18 bits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>analog: 16 bits (teachable)</td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>up to 20 calibration tables for different sensors per channel, menu selection</td>
<td></td>
</tr>
<tr>
<td>Controller inputs/outputs</td>
<td>Sync-In/Trig-In, Sync-Out</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Error1-Out, Error2-Out</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Encoder (3x A, B, Index)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EtherCAT/Ethernet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RS422</td>
<td></td>
</tr>
<tr>
<td></td>
<td>analog: current, voltage (16-bit D/A converter)</td>
<td></td>
</tr>
<tr>
<td>EtherCAT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating elements, controller display</td>
<td>on/off switch; button for dark alignment (and for reset to factory settings after 10 sec)</td>
<td></td>
</tr>
<tr>
<td>Supply voltage, power consumption</td>
<td>24 VDC ± 15 %, approx. 10 W</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Aluminum case for DIN rail mounting</td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>IP40</td>
<td></td>
</tr>
<tr>
<td>Temperature range</td>
<td>Operation: +5 ... +50 °C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage: -20 ... +70 °C</td>
<td></td>
</tr>
<tr>
<td>Permissible ambient light</td>
<td>30,000 lx</td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>15 g, 6 ms</td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>2g / 10 Hz ... 500 Hz</td>
<td></td>
</tr>
<tr>
<td>Connection</td>
<td>Cable (optical fiber): 2 ... 50 m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EtherCAT, Ethernet: E2000</td>
<td></td>
</tr>
<tr>
<td>Max. cable lengths (all cables are shielded)</td>
<td>Supply, RS422, Sync./Error: &lt;30 m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>analog: &lt;30 m</td>
<td></td>
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<tr>
<td></td>
<td>Encoder: &lt;3 m</td>
<td></td>
</tr>
</tbody>
</table>

**Controller IFC2461 controller**

- 151.8 x 120 x 218 (can be removed)
- Sensor cable (optical fiber) 76.2 x 81.2 approx. 75
System design

The confocalDT system consists of:
- Sensor IFS240x
- Controller IFC24xx
- Fiber optic cable C24xx

Controller IFC242x
IFC2451
IFC2461
IFC2471 HS

Power supply
Encoder (option)
Digital I/O
Vacuum feed through (optional)
Sensor IFS240x

EtherCAT, Ethernet
RS422
Analog output (option)
Customer-specific modifications

Application examples are often found where the standard versions of the sensors and the controller 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

- IFS24xx/Vac
- C2400-x/Vac
- C2401-x
- Vacuum feed through
  - C2405.../Vac (KF or CF flange)
  - C2402.../Vac (KF flange)
- Controller IFC24xx
Accessories: mounting adapter
MA2402 for sensors 2402

Accessories: mounting adapter
MA2403 for sensors 2403

Accessories: mounting adapter
MA2404-12 for sensors IFS2404-2

Accessories: mounting adapter
MA2400 for sensors IFS2405-IFS2406 (consisting of a mounting block and a mounting ring)

Mounting block

Mounting ring

MA 2405-34 for sensors IFS2405-3

MA 2405-40 for sensors IFS2405-6

MA 2405-54 for sensors IFS2405-10

MA 2405-62 for sensors IFS2405-28 / IFS2405-30
Accessories

Software
IFD24n1-Tool  Free demo software tool included

Accessories light source
IFL2422/LE  Lamp module for IFC2422
IFL24x1/LED  Lamp module for IFC24x1
IFL2451/LED(003)  Lamp module for IFC2451(003)

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-x/PT  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 (01)  Optical 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/PT-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 feed through
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 IFC2451/61/71, 3 m, 10 m, 20 m
SC2471-x/IF2008  Connector cable IFC2451/61/71-IF2008, 3 m, 10 m, 20 m
PS2020  Power supply 24V / 2.5A
EC2471-3/OE  Encoder cable, 3m

Optical fiber
Temperature range: -50°C to 90°C
Bending radius: 30/40 mm

- Multimode core 50 µm / 26 µm / 20 µm
- Casing 125 µm
- Acrylate <250 µm
- Coating/buffer
- PVC: polyvinyl chloride
- PVDF: polyvinylidene fluoride
- Strain relief
- Ø6
- 25.5
- 6
- Ø8.8
- Ø2
- 3.45
- 9.5
- 6
- 2.5
- Ø2
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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