










More Precision

capaNCDT // Capacitive sensors for displacement, distance & gap



High-performance measuring system (up to 8 channels) capaNCDT 6500

-  Multi-channel system with subnanometer resolution
-  **INTERFACE** Analog output and digital interface (Ethernet / EtherCAT)
-  Data rate digital: up to 7.8 kSa/s
-  Integrated calculation function, e.g., for thickness measurements
-  Modular system scalable up to 8 channels
-  With internal or external preamplifier available
-  Intuitive operation via web interface

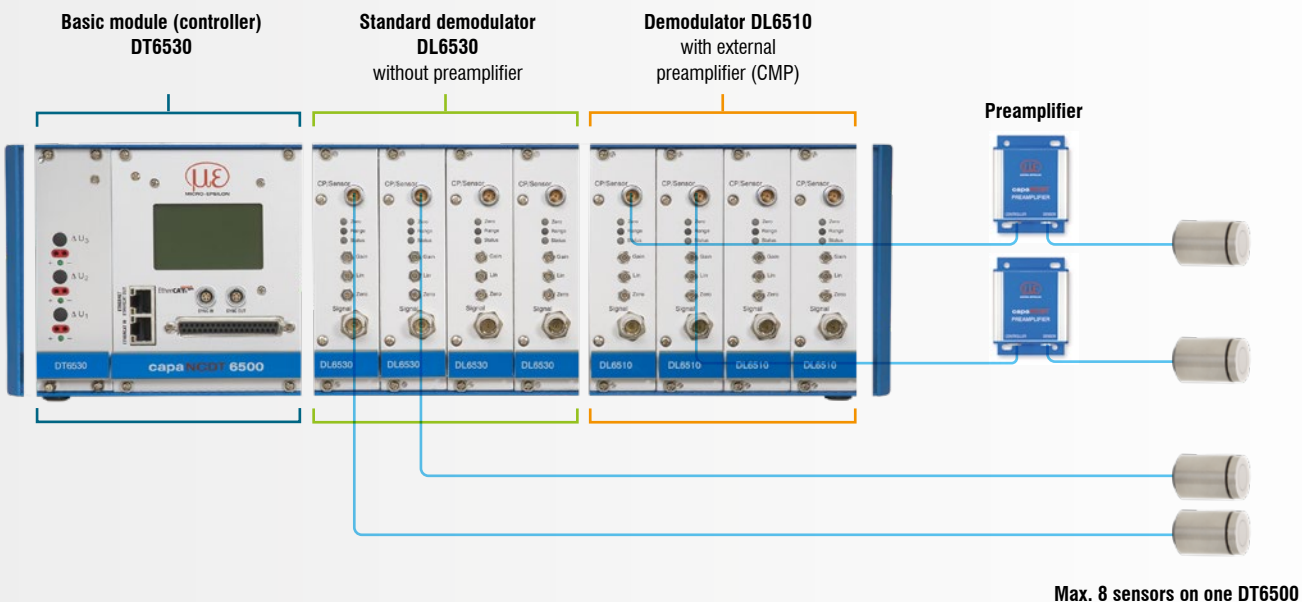


The capaNCDT 6500 offers maximum resolution and precision for up to 8 sensors. Inside the rugged aluminum housing, interchangeable and freely combinable demodulator modules ensure optimal signal processing for a wide range of measurement requirements.

The system is easily configured via an integrated web interface, which can be accessed via the Ethernet port. Features such as filtering and averaging, trigger functions, data logging, digital linearization, and arithmetic calculations allow for flexible adaptation to a wide variety of measurement tasks.

The demodulator version DL6530 has an integrated preamplifier. To improve accuracy or when using longer cables, one of the external preamplifiers (CP6001 or CPM6011) is used in conjunction with the DL6510 demodulator.

Variable sensor connections for maximum performance in your application



| Model | | DT6530 | | |
|---------------------------------|-------------|--|---|---------------------|
| Demodulator | | DL6530 | DL6510 with CP6001 | DL6510 with CPM6011 |
| Resolution ^[1] | Static | 0.00003 % FSO | | 0.0006 % FSO |
| | Dynamic | 0.002 % FSO | | 0.015 % FSO |
| Frequency response (-3dB) | | 8.5 kHz, switchable to 1 kHz, 20 Hz | | |
| Measuring rate | | 4 x 7.8 kSa/s; 8 x 3.9 kSa/s | | |
| Linearity ^[2] | | < ±0.025 % FSO | | < ±0.05 % FSO |
| Temperature stability | | < 5 ppm FSO / K (digital); < 10 ppm FSO / K (analog) | | < 80 ppm FSO/K |
| Replaceability ^[3] | | < ±0.05 % FSO | | < ±0.1 % FSO |
| Long-term stability | | < ±0.004% FSO/month | | < ±0.04% FSO/month |
| Synchronization | | yes (internal + external) | | |
| Supply voltage | | 230 VAC | | |
| Power consumption | | 12 W + 3.2 W / demodulator | | |
| Signal input | | TTL (5 V) | | |
| Digital interface | | Ethernet (24 bits) / EtherCAT | | |
| Analog output | | 0 ... 10 V (max. 10 mA, short circuit proof) / (0) 4 ... 20 mA (max. burden 500 Ω) | | |
| Connection | | Sensor: triax connector (DL6530) or 5-pin connector (DL6510); power supply: IEC connector; trigger/sync: 37-pin Sub-D connector; signal: analog via 37-pin Sub-D connector or BNC, digital via RJ45 connector (suitable connection cables, see accessories) | | |
| Mounting | | Table-top device or 19-inch rack | | |
| Temperature range | Storage | -10 ... 75 °C | | |
| | Operation | 10 ... 60 °C | | |
| Shock (DIN EN 60068-2-29) | | 20 g / 5 ms in 3 axes, two directions each, 1000 shocks each | | |
| Vibration (DIN EN 60068-2-6) | | 1 mm / 10 Hz ... 49.8 Hz in 3 axes, 10 cycles each 10 g / 49.8 ... 2000 Hz in 3 axes, 10 cycles each | | |
| Protection class (DIN EN 60529) | | IP20 | | |
| Weight | Controller | Base system for max. 2 measuring channels: 3.5 kg; base system for max. 8 measuring channels: 6.0 kg | | |
| | Demodulator | 0.4 kg per equipped measuring channel (demodulator) | 0.5 kg per equipped measuring channel (demodulator) and external preamplifier | |
| Compatibility | | compatible with all capaNCDT sensors | | |
| No. of measurement channels | | max. 2 or max 8 (depending on the base system) | | |

^[1] FSO = Full Scale Output | RMS noise referred to the end of the measuring range; static = 2 Hz, dynamic = maximum frequency response of the controller

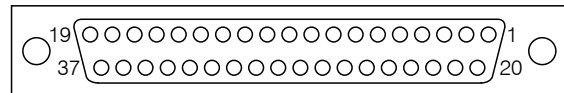
^[2] Applies to the controller only. The total linearity of the measuring channel is the sum of the controller and sensor values.

^[3] FSO = Full Scale Output | The value corresponds to the slope error that occurs when a sensor is replaced without recalibration

DT6530

Pin assignment analog output, trigger and synchronization

| Pin | Assignment | Pin | Assignment | Pin | Assignment |
|-----|-----------------|-----|----------------|-----|-----------------|
| 1 | U-Out channel 1 | 13 | Trigger_In | 25 | AGND channel 6 |
| 2 | U-Out channel 2 | 14 | Sync_In-8M | 26 | AGND channel 7 |
| 3 | U-Out channel 3 | 15 | Sync_Out-8M | 27 | AGND channel 8 |
| 4 | U-Out channel 4 | 16 | Sync_In-31K | 28 | I-Out channel 2 |
| 5 | U-Out channel 5 | 17 | Sync_Out-31K | 29 | I-Out channel 4 |
| 6 | U-Out channel 6 | 18 | Not assigned | 30 | I-Out channel 6 |
| 7 | U-Out channel 7 | 19 | Not assigned | 31 | I-Out channel 8 |
| 8 | U-Out channel 8 | 20 | AGND channel 1 | 32 | GND_Trigger_I |
| 9 | I-Out channel 1 | 21 | AGND channel 2 | 33 | Sync_In+ 8M |
| 10 | I-Out channel 3 | 22 | AGND channel 3 | 34 | Sync_Out+ 8M |
| 11 | I-Out channel 5 | 23 | AGND channel 4 | 35 | Sync_In+ 31K |
| 12 | I-Out channel 7 | 24 | AGND channel 5 | 36 | Sync_Out+ 31K |
| | | | | 37 | Not assigned |

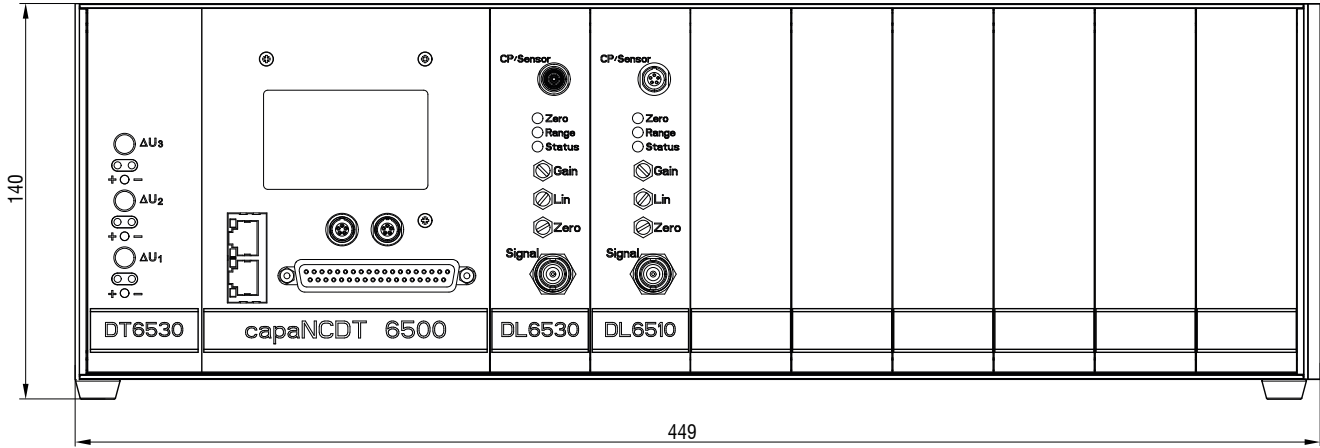


Solder side view, 37-pin Sub-D cable connector

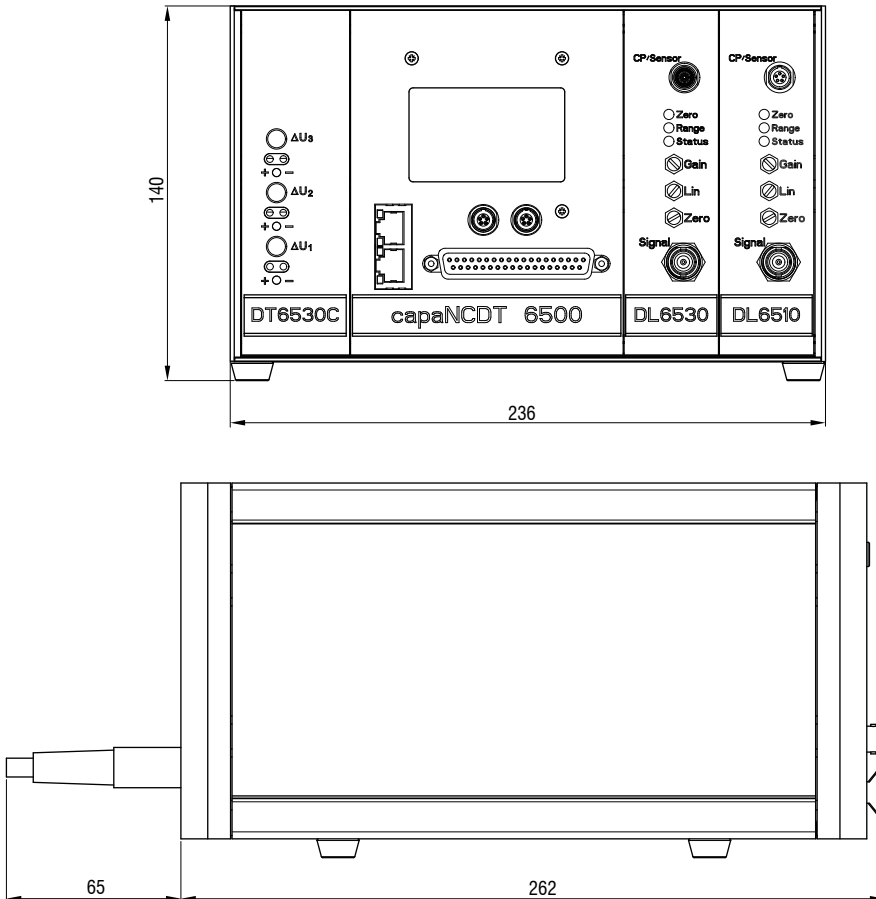
DT6530

If there are three or more measuring channels, the housing length remains the same.
 A shorter housing version is available as an option for systems with one or two measuring channels.

Dimensions for 3 to 8 measuring channels



Dimensions for 1 to 2 measuring channels



Connections and combinations

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Controller



DT6100



DT6200



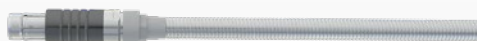
DT6500

Sensor cable



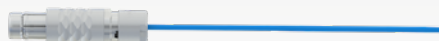
Type: CCg

Robust triaxial cable for industrial applications
 Cable diameter: 3.1 mm (± 0.1 mm)
 Minimum bending radius: static approx. 10 mm /
 dynamic approx. 30 mm
 Temperature resistance: -20 ... +85 °C (permanent) /
 -20 ... +100 °C (limited to 10,000 h)
 Standard length: 2 m (optional lengths see p. 41)



Type CCg/PT

Crush-resistant triaxial cable with protective metal tubing
 Cable diameter: 6 mm (± 0.15 mm)
 Minimum bending radius: static approx. 20 mm /
 dynamic approx. 30 mm
 Temperature resistance: -20 °C ... +85 °C (permanent) /
 -20 ... +100 °C (limited to 10,000 h)
 Standard length: 2 m (optional lengths see p. 41)



Type CCm

Low-outgassing triaxial cable for UHV and cleanroom
 Cable diameter: 2.1 mm (± 0.1 mm)
 Minimum bending radius: static approx. 7 mm /
 dynamic approx. 25 mm
 Temperature resistance: up to -100 ... 200 °C
 Standard length: 1.4 m (optional lengths see p. 41)



Type CCo

Low-outgassing triaxial cable for high temperatures
 Cable diameter: 3.1 mm (± 0.1 mm)
 Minimum bending radius: static approx. 10 mm /
 dynamic approx. 30 mm
 Temperature resistance: -20 ... +200 °C
 Standard length: 2 m (optional lengths see p. 41)

Sensors with integrated cable use the cable types CCM and CCg

Type CCM

Low-outgassing triaxial cable for UHV and cleanroom
 Cable diameter: 2.1 mm (± 0.1 mm)
 Minimum bending radius: static approx. 15 mm /
 dynamic approx. 30 mm
 Temperature resistance: up to 200 °C
 Standard length: 1.4 m (optional lengths see p. 41)

Type: CCg

Robust triaxial cable for industrial applications
 Cable diameter: 3.1 mm (± 0.1 mm)
 Minimum bending radius: static approx. 10 mm /
 dynamic approx. 30 mm
 Temperature resistance: -20 °C ... +85 °C (permanent) /
 -20 ... +100 °C (limited to 10,000 h)
 Standard length: 2 m (optional lengths see p. 41)

Plug connector



Type B connector



Type B / 90 connector



Type B / IP connector



Type C connector



Type C / 90 connector

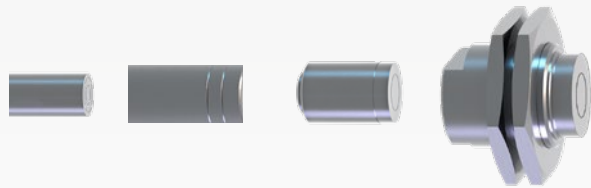


Type E connector

Sensors with socket



CS-x, CSE and CSE/Mx models
with a measuring range from 1 mm



CS, CS-x, CSE and CSE/Mx models
with measuring range up to 1 mm



CSF flat sensors with socket

Sensors with integrated cable

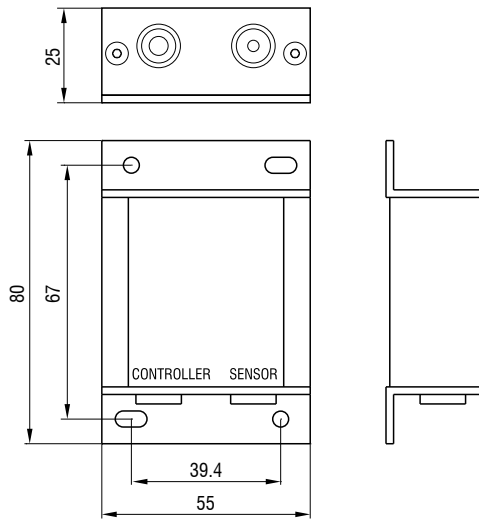


Connection accessories and signal cables

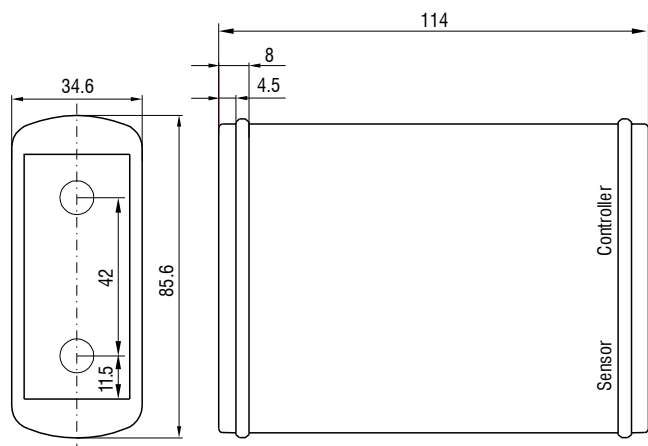
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| Controller accessories | | | | | | | | |
|------------------------|---|--|--------|--------|--------|--------|-----------|--|
| Article | | Description | DT65xx | DT62xx | DT611x | DT6120 | DT61x0/IP | |
| SCACx/4 |  | Analog signal cable 4-pin with XYZ connector / open ends Standard length: 3 m Optional lengths available: 6 m / 10 m / 12 m / 15 m | | X | | | | |
| PC6200-x/4 |  | Power supply and trigger cable 4-pin with XYZ connector / open ends Standard length: 3 m Optional lengths available: 5 m / 15 m | | X | | | | |
| SC6000-x |  | Power supply and trigger cable 5-pin with XYZ connector / open ends Standard length: 0.3 m Optional lengths available: 3 m / 5 m / 15 m | X | X | | | | |
| SCACx/5 |  | Power supply and signal cable 5-pin with XYZ connector / open ends Standard length: 3 m Optional lengths available: 4 m / 5 m / 6 m / 8 m / 15 m | | | X | | | |
| SCACx/6 |  | Power supply and signal cable 6-pin with XYZ connector / open ends Standard length: 3 m | | | | X | | |
| SCACx/6/IP |  | Power supply and signal cable IP68 6-pin with XYZ connector / open ends Standard length: 3 m | | | | | X | |
| CAx |  | Pre-amplifier connection cable 5-pin with XYZ connector both ends Standard length: 3 m Optional lengths available: 5 m / 10 m / 15 m / 20 m | X | | | | | |
| CMP6011 |  | External pre-amplifier for standard measurements | X | | | | | |
| CP6001 |  | External pre-amplifier for high precision measurements | X | | | | | |
| PS2020 |  | Power supply unit Input 100-240 VAC Output 24 VDC / 2.5 A Mounting on a symmetrical DIN rail 35 mm x 7.5 mm DIN 50022 | | X | X | X | X | |
| IF1032 |  | Interface module for Ethernet/EtherCAT | | | X | X | X | |

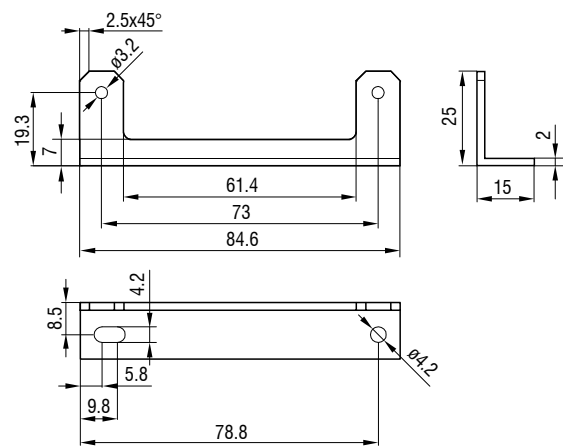
CPM6011
External preamplifier



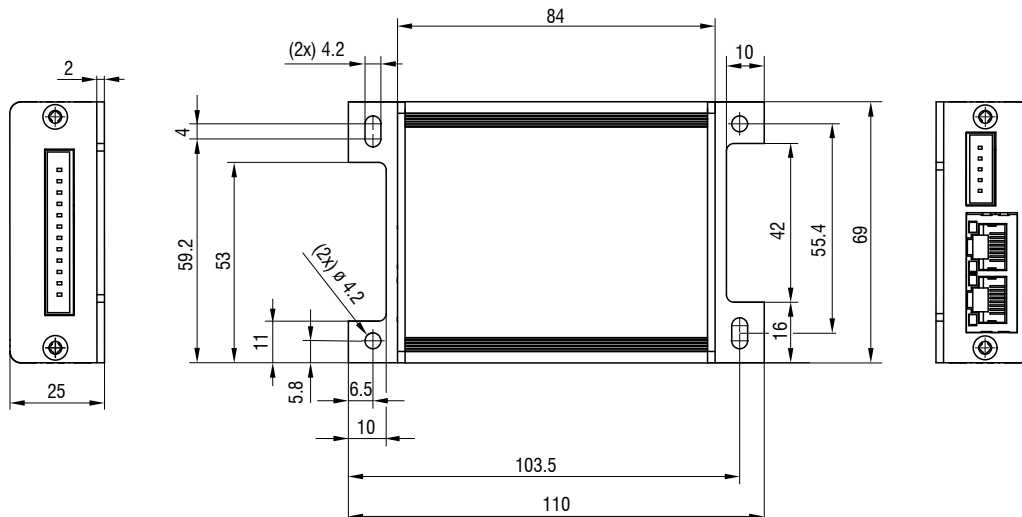
CP6001
External preamplifier



Mounting bracket for CP6001



IF1032
Interface module



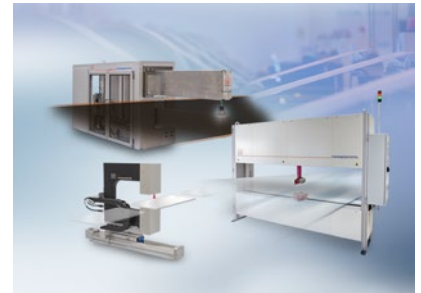
Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



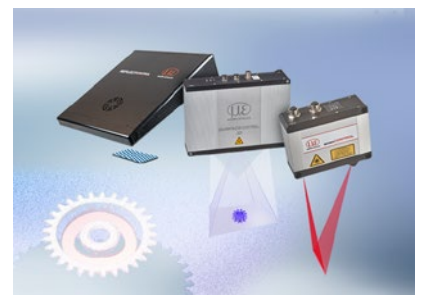
Measuring and inspection systems for metal strips, plastics and rubber



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