Conti-Lab E
Continuous and Discontinuous Measurement in Liquid Steel
The constantly increasing requirements on measurement technology demand the integration of new technologies with regard to electronics hardware, interfaces and in particular the software for accurate temperature measurement in molten metal applications.

The Conti-Lab E meets all these requirements fully. Its impressive design capability is characterised by innovative evolution, resulting in superior reliability, operating convenience and flexibility.

The following features provide the foundation for the superior design concept of the Conti-Lab E:

- Two large non reflective numerical displays with 45 mm digit height, both displays with unit indication
- LED measurement sequence signalling
- High measuring accuracy by high resolution A/D converter
- Universal application with wide range power supply
- Characteristics for thermocouples type S, R, B, K, D
- Error measurement detection and interpretation
- Automatic test measurement recognition
- Two fixed data telegrams plus three additional data telegrams freely programmable via Web browser

The Conti-Lab E is an extremely versatile instrument which covers a wide spectrum of applications.

Ideally, the unit is used for temperature measurements in the tundish where it is required to check the complete bath temperature range from the beginning of the heating process until the molten steel solidifies.

For this application, Heraeus Electro-Nite offers the temperature probes listed below:

- Contitherm® and Contilance
  - immersion temperature sensors for continuous measurement in the tundish

- CasTemp
  - sensor for continuous temperature measurement, firmly installed and attached to the tundish
**Positherm®**
- disposable probe for immersion temperature measurements

The Contitherm® and Contilance sensors are immersed into the molten steel either by hand or with the manipulator using simple immersion devices.

The CasTemp sensor is installed near the tundish exit where it measures the temperature in real time without considerable delays. In addition to continuous temperature measurement, the Conti-Lab E can be used for immersion measurements with disposable probes.

The temperature measurement values are displayed separately.

- **Continuous temperature monitoring in the tundish to optimise the continuous casting process**
- **Second measuring channel for continuous temperature measurement can optionally be used for immersion measurements with disposable probes**
- **Simultaneous temperature measuring device with two thermocouples**
- **High measuring accuracy**
- **Monitoring of the temperature limit values**

**Instrument Highlights**

The rugged design of the Conti-Lab E makes it ideally suited to steel plant applications because the instrument can be housed close to the measuring location, thus

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**Temperature progress in tundish measured with CasTemp and Positherm® Sensors**

- **Measured Liquidus Temperature 1518 °C**
- **Calculated Liquidus Temperature 1518 °C**
enabling measuring cable length to be reduced to a minimum. The inclusion of large LED displays integrated into the equipment permit the instrument to be viewed from distances up to 30 metres.

- Rugged housing for field installation
- Integrated measuring data and measuring sequence display
- Short measuring cable lengths

The Conti-Lab E instrument is simple and easy to use with fully-automatic operation during measurement.

- Password-protected instrument parameter settings by LCD terminal

User-specific parameter settings and data message selection can be carried out by LCD user interface contained within the Conti-Lab E. Parameter settings for:

- Evaluation tolerances
- Thermocouple calibration types
- Measuring times
- Data interfaces
- Starting conditions
- Calibration offset

In addition to the manual instrument operation, parameter setup is also possible via Web browser.

- Instrument parameter set-up via Web browser

The Conti-Lab E is fitted with customer oriented instrument interfaces. Two data interfaces and signal outputs are strategic components of the basic devices.
Standard Interfaces and Outputs

- Measuring data output via serial 20 mA interface (TTY)
- Ethernet with real-time clock
- Control outputs for signal alarm devices and PLC

Extension Modules

The Ethernet interface and the optional Profibus-/Modbus interface allow the device operation in the network.

- Second serial interface
  TTY 20 mA
  or
  Profibus DP/Modbus RTU
  or
  Radio data transmission

Server Software for Network Installations

Conti-Lab E instruments are connected to a PC via an optional Ethernet interface.

The availability of specific software, supplied by Heraeus Electro-Nite, enables the user to display the contents of the Conti-Lab E on remote PC’s.

A further advantage is the ability to change parameters of the Conti-Lab E in a simple and fast manner via the clients remote PC.

The measurement curves and data can be viewed on the clients PC by using only Microsoft Internet Explorer®.
## Technical Data

### Conti-Lab E

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring application</td>
<td>continuous temperature measurement, immersion temperature measurement</td>
</tr>
<tr>
<td>Measuring input</td>
<td>2 galvanic insulated analog inputs, automatic probe recognition</td>
</tr>
<tr>
<td>Temperature input range</td>
<td>type S, 200 °C up to 1760 °C, type R, 200 °C up to 1760 °C, type B, 200 °C up to 1820 °C, type K, –100 °C up to 1370 °C, arithmetically linearized acc. to IEC 584, IPTS 68 or IPTS 48, type D, 200 °C up to 2300 °C acc. to ASTME 988</td>
</tr>
<tr>
<td>Delivery setting channel 1: continuous temperature measurement, type B</td>
<td>delivery setting channel 2: immersion temperature measurement, type S</td>
</tr>
<tr>
<td>Sample rate</td>
<td>10 samples/s</td>
</tr>
<tr>
<td>Measuring accuracy</td>
<td>±1 °C at 0 °C up to + 50 °C in measuring range &gt; 400 °C</td>
</tr>
<tr>
<td>Measuring circuit control</td>
<td>automatic thermocouple burnout control</td>
</tr>
<tr>
<td>Plateau recognition</td>
<td>plateau length 0.2 s up to 5 s, adjustable in 0.1 s steps</td>
</tr>
<tr>
<td>Immersion temperature measurement</td>
<td>window height 0.2 °C up to 10 °C, adjustable in 0.1 °C steps</td>
</tr>
<tr>
<td>Offset adjustment</td>
<td>±5 °C adjustable in 0.1 °C steps</td>
</tr>
<tr>
<td>Start condition</td>
<td>–100 °C up to 1200 °C adjustable in 25 °C steps</td>
</tr>
<tr>
<td>Detection of measuring failures</td>
<td>thermocouple burn out/ no evaluation</td>
</tr>
<tr>
<td>Displays</td>
<td>two 7-segment LED’s, 4-digits, display height 45 mm with unit indication</td>
</tr>
<tr>
<td>Measuring sequence display</td>
<td>LED green, yellow, red 4-digit display with floating point</td>
</tr>
<tr>
<td>Control outputs</td>
<td>3 Photo MOS relays 24 V up to 240 V AC/ DC, max. load 0.5 A additional output via Profibus DP (optional)</td>
</tr>
<tr>
<td>Measuring end sequence</td>
<td>0 s up to 10 s adjustable in 1 s steps static or mot. flash</td>
</tr>
<tr>
<td>Data interfaces</td>
<td>TTY 20 mA, serial protocol CTS/ 3964A/ 3964R or no protocol TCP/IP protocol</td>
</tr>
<tr>
<td>Additional interfaces/options</td>
<td>second serial interface TTY 20mA or Profibus DP/ Modbus RTU or radio data transmission (additional receiver unit necessary)</td>
</tr>
<tr>
<td>Data telegrams</td>
<td>2 selectable data telegrams, additional 3 free programmable data telegrams programmable via Web browser one of them selectable for each communication output</td>
</tr>
<tr>
<td>Housing, dimensions and weight</td>
<td>metal housing for wall-mounting, protection type IP 55, coating RAL 7035 dimensions: H = 230 mm, W = 260 mm, D = 150 mm</td>
</tr>
<tr>
<td>Operating data</td>
<td>power supply 90 up to 260 V AC, 47 up to 63 c.p.s. power consumption max. 50 VA ambient temperature 0 °C up to +50 °C</td>
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</tbody>
</table>

### Instrument variant Conti-Lance E

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
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<tbody>
<tr>
<td>Delivery setting channel 1: continuous temperature measurement, type B</td>
<td>delivery setting channel 2: continuous temperature measurement, type K further delivery settings on request</td>
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</tbody>
</table>

Further technical details on request. We reserve the right to modify illustrations and technical data without notice.

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