



Conti-Lab E

Continuous and Discontinuous Measurement
in Liquid Steel

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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 five 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 measurement



Conti-Lab E





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 optimize 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

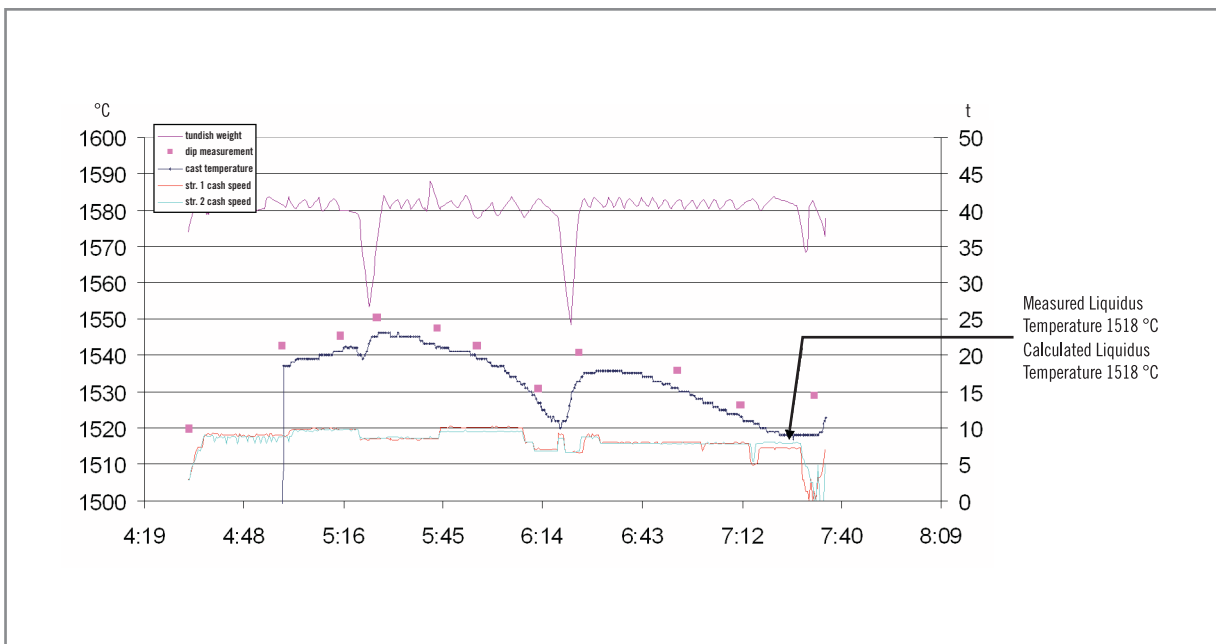
The rugged design of the Conti-Lab E makes it ideally suited to steel plant applications because the instrument can be housed close to the measuring location, thus enabling measuring cable length to be reduced to a minimum.

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
- Short measuring cable lengths
- Integrated measuring data and measuring sequence display

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



Temperature progress in tundish measured with CasTemp and Positherm® Sensors

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

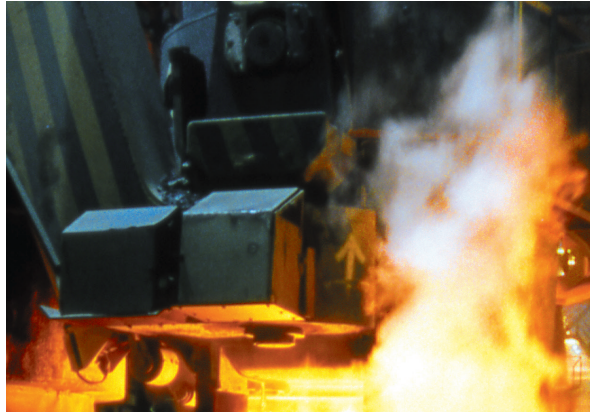
The Conti-Lab E is fitted with customer oriented instrument interfaces. Two data interfaces and signal outputs are strategic components of the basic devices.



Conti-Lab E instrument variant with radio data transmission



Bath temperature measurement in the tundish



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
- or
- mA output 0/4 ... 20 mA

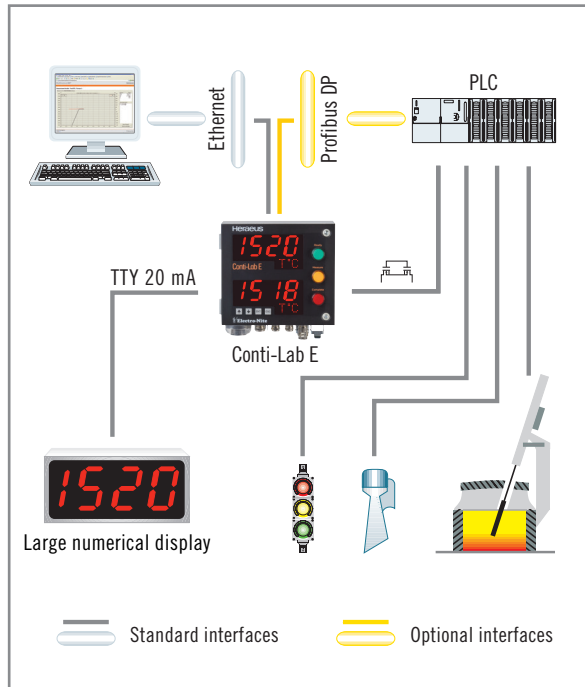
Server Software for Network Installations

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

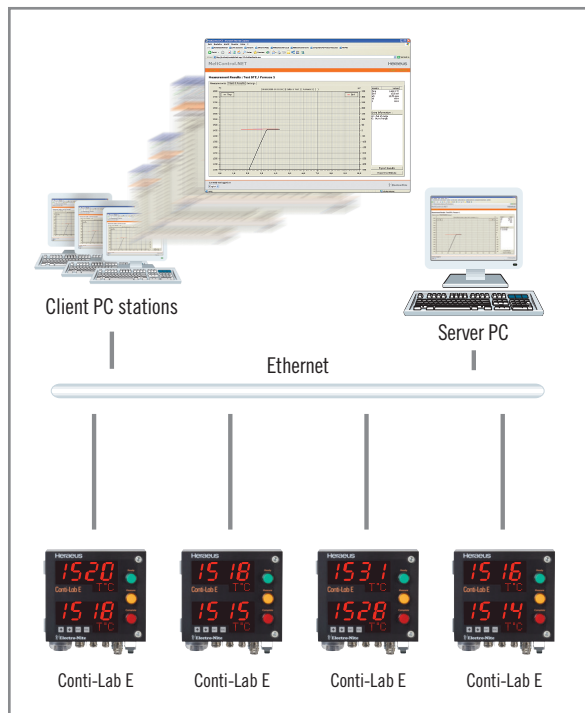
The availability of specific software, supplied by Heraeus Electro-Nite, enables the user to display the contents of the Conti-Lab E on remote PC's.

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®. (Microsoft Internet Explorer® is a registered trademark of the Microsoft Corporation.)



Conti-Lab E interfaces in application



Conti-Lab E instruments in network environment

Technical data

Conti-Lab E

| Item | Description | | |
|--|--|--|---|
| Measuring application | continuous temperature measurement | immersion temperature measurement | |
| Measuring input | 2 galvanic insulated analog inputs | automatic probe recognition | |
| Temperature input range | 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, 2100 °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 ASTM E 988 |
| Delivery setting channel 1: continuous temperature measurement, type B | delivery setting channel 2: immersion temperature measurement, type S | further delivery settings on request | |
| Sample rate | 10 samples/ s | | |
| Measuring accuracy | ± 1 °C | at 0 °C up to + 50 °C ambient temperature | in measuring range > 400 °C |
| Measuring circuit control | automatic thermocouple burnout control | | |
| Plateau recognition immersion temperature measurement | plateau length 0.2 s up to 5 s, adjustable in 0.1 s steps | window height 0.2 °C up to 10 °C, adjustable in 0.1 °C steps | |
| Offset adjustment | ± 5 °C | adjustable in 0.1 °C steps | |
| Start condition | – 100 °C up to 1200 °C | adjustable in 25 °C steps | |
| Detection of measuring failures | thermocouple burn out/ no evaluation | measurement out of range | no cold junction |
| Displays | two 7 segment LED's, 4 digits, display height 45 mm | with unit indication | display resolution 1 °C/ 1 °F |
| Measuring sequence display | “ready“, “measurement“, “complete” | LED green, yellow, red | 4 digit display with floating point |
| Control outputs | 3 Photo MOS relays | 24 V up to 240 V AC/ DC, max. load 0.5 A | additional output via Profibus DP (optional) |
| Measuring end sequence | 0 s up to 10 s | adjustable in 1 s steps | static or mot. flash |
| Data interfaces | TTY 20 mA, serial | protocol CTS/ 3964/ 3964R | or no protocol |
| | Ethernet incl. real time clock | TCP/IP protocol | |
| Additional interfaces/ options | second serial interface TTY 20mA | or Profibus DP/ Modbus RTU | or radio data transmission (additional receiver unit necessary) |

| | | | |
|---------------------------------------|---|-------------------------------------|---|
| | mA output | 0,4 mA up to 20 mA | 2 channel |
| Data telegrams | 2 selectable data telegrams, additional 5 free programmable data telegrams | programmable via Web browser | one of them selectable for each communication output |
| Housing, dimensions and weight | metal housing for wall-mounting, protection type IP 55, weight: approx. 7.5 kg | coating RAL 7035 | dimensions: h = 230 mm, w = 260 mm, d = 150 mm |
| Operating data | 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 150 °C |

Instrument variant Conti-Lance E

| Delivery settings | | |
|---|---|---|
| Delivery setting channel 1: continuous temperature measurement, type B | delivery setting channel 2: continuous temperature measurement, type K | further delivery settings on request |

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