Heraeus

Conti-Lab E

Conti-Lab E
Continuous and Discontinuous
Measurement in Liquid Steel

Electro-Nite

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Conti-Lab E

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.

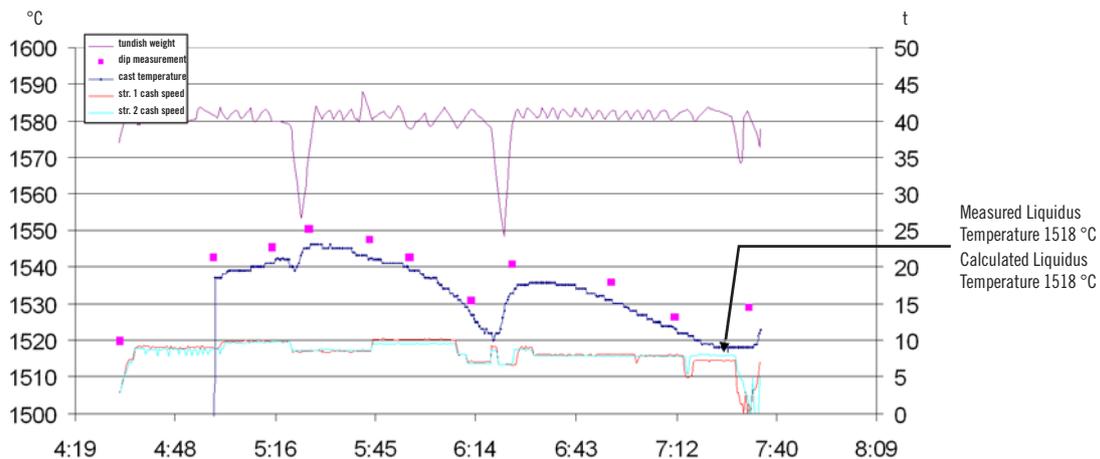The temperature measurement values are displayed separately.

- **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

Temperature progress in tundish measured with CasTemp and Positherm® Sensors

Measured Liquidus
Temperature 1518 °C
Calculated Liquidus
Temperature 1518 °C

Bath temperature measurement in the tundish

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.

Conti-Lab E instrument variant with radio data transmission

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
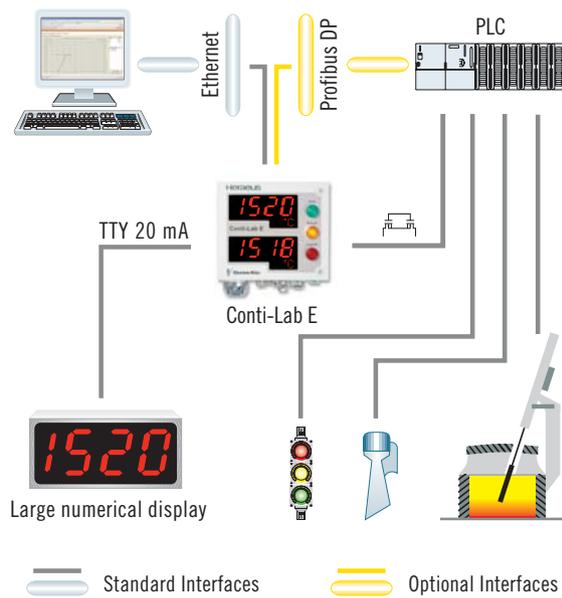
Server Software for Network Installations

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
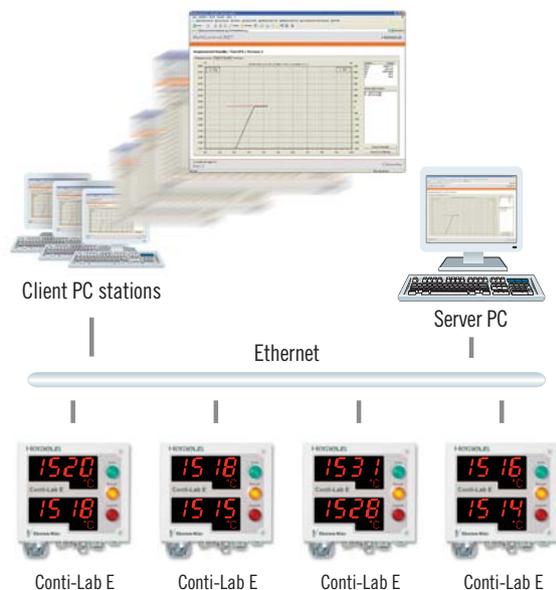the Conti-Lab E on remote PC's.

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®.

Conti-Lab E interfaces in application

Large numerical display

Standard Interfaces   Optional Interfaces

Conti-Lab E instruments in network environment

Client PC stations

Server PC

Ethernet

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Technical Data

Conti-Lab E

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, −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
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 to10 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)
Data telegrams	2 selectable data telegrams, additional 3 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 +50 °C

Instrument variant Conti-Lance E

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