

**Checkmate IV Celox**

**Checkmate IV QuiK-Cup**

Checking of correct instrument function and calibration  
with one instrument

# Checkmate IV Celox Checkmate IV QuiK-Cup

## Checking of correct instrument function and calibration with one instrument

Temperature and oxygen measurements, as well as thermal analysis, are an indispensable component in the processing and quality control in steelmaking, iron and nonferrous melting applications.

The instruments used to measure temperature, oxygen activity and thermal analysis are often used under extreme ambient temperature conditions. This requires frequent checks of the equipment functionality and calibration using the Checkmate IV.

With the Checkmate IV instrument, Heraeus Electro-Nite has further developed a measuring instrument, which carries out these functional checks and calibration test fast and reliably.

Checkmate IV has a robust, shock-resistant housing, is portable, and independently powered by batteries making it ideal for easy use under aggressive shop-floor conditions.

By using the appropriate plug-in adapters, the connection from Checkmate IV to the different instruments can be made via the lances and cables to ensure accurate calibration and correct functioning throughout the entire measuring system.

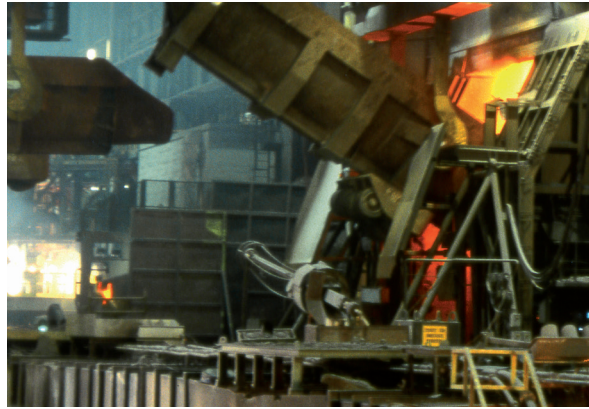
Checkmate IV operation is controlled by four large function keys. The actual test sequence runs automatically by intuitive menu and the test results are shown immediately on the display.

- Quick and easy check of complete system
- High calibration accuracy
- Portable application by use of batteries
- Quick changeable batteries by lateral battery compartment with quick closure
- Shock-resistant metal housing
- Rugged, large industrial keypad



Checkmate IV





Two types of Checkmate IV are available:

- Checkmate IV Celox
- Checkmate IV QuiK-Cup

**Checkmate IV Celox**

Checkmate IV Celox confirms the correct working equipment functionality and calibration of temperature and oxygen measuring instruments.

At the same time the precise calibration of the measuring instruments can be verified by programmable, fixed temperature and EMF values. Alternatively, it is possible to simulate a slag curve.

In the "Insulation Check" mode, Checkmate IV Celox examines fast and clearly the electrical conductor and the contact system of the immersion lance for its insu-

lation resistance. The detailed test result is indicated on the display.

**Checkmate IV QuiK-Cup**

The Checkmate IV QuiK-Cup determines the equipment functionality and calibration of temperature measuring instruments and thermal analysis equipment. In the same test mode these instruments are calibrated with programmable, fixed temperature values.

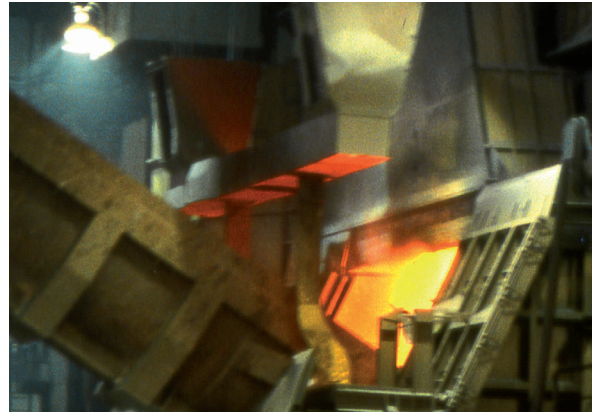
With three cooling curves, simulated by the Checkmate IV QuiK-Cup, an extended function test is carried out to confirm reliable detection of the critical arrest points from the cooling curve. The mode "Insulation Check" is identical for both instruments, Checkmate IV QuiK-Cup and Checkmate IV Celox.



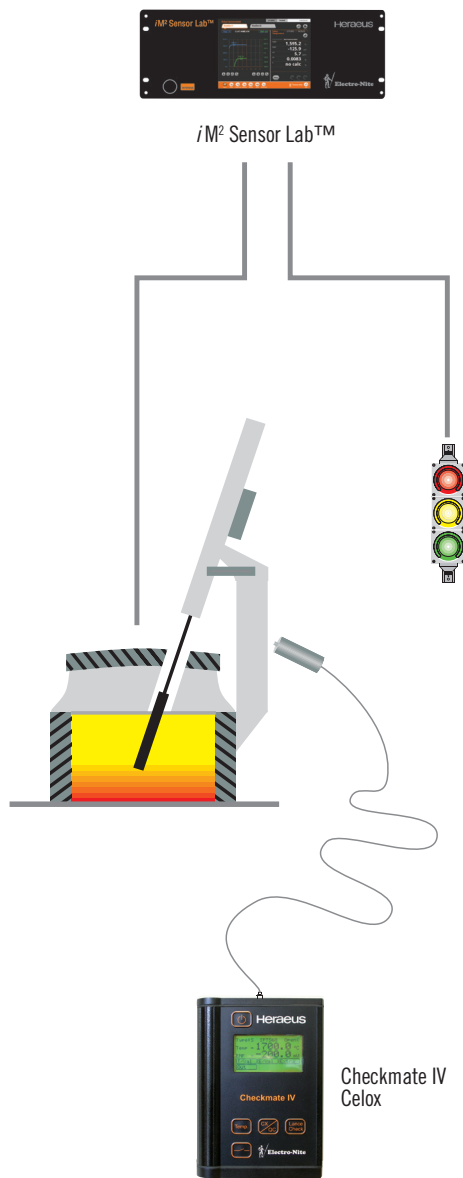
Check with immersion lance



Check with QuiK-Cup holder



- instrument calibration of bath temperature and EMF
- instrument function test
- simulation of slag curves
- insulation check of immersion lances



Checkmate IV Celox in steel plants

- Instrument calibration of temperature
- Instrument function test
- Simulation of cooling curves
- Insulation check of immersion lances and QuiK-Cup holders



Checkmate IV QuiK-Cup in foundries

# Technical data

## Checkmate IV Celox

Item	Description
<b>Operational functions</b>	bath temperature/EMF simulation, insulation check, slag curve simulation
<b>Calibration values</b>	7 fixed temperature values, 7 fixed EMF values, optional 6 fixed EMF values and 1 slag curve
<b>Thermocouple types</b>	type S 50 to 1760 °C type R 50 to 1760 °C type B 100 to 1820 °C linearized acc. to IEC 584, IPTS 68/48, ITS 90
<b>EMF range</b>	EMF -600 mV to +300 mV
<b>Temperature and EMF accuracy</b>	temperature $\pm 0.05\%$ , $\pm 0.6\text{ °C}$ , EMF $\pm 0.05\%$ , $\pm 0.1\text{ mV}$ , at +18 °C to +28 °C ambient temperature
<b>Reference temperature</b>	0 °C with cold junction compensation
<b>Display</b>	LCD graphic display, 128 x 64 dots, with/without background illumination
<b>Display resolution</b>	temperature 0.1 °C, EMF 0.1 mV
<b>Operation</b>	menu controlled operation, foil keypad with 5 press bottom keys
<b>Power supply</b>	4 alkaline batteries type AA 1.5 V, load circuit with load capacity display
<b>Ambient temperature</b>	0 °C to +40 °C
<b>Housing</b>	aluminium housing, protection IP 40 with lateral battery compartment
<b>Scope of delivery</b>	incl. Positherm Celox lance adapter instrument adapters in various versions and carrying bag on request

## Checkmate IV QuiK-Cup

Item	Description
<b>Operational functions</b>	temperature- and cooling curve simulation, insulation check
<b>Calibration values</b>	7 fixed values for “bath temperature”, 4 fixed values and 3 cooling curves for “thermal analysis”
<b>Thermocouple types</b>	type S 50 to 1760 °C type R 50 to 1760 °C type B 100 to 1820 °C type K 50 to 1370 °C linearized acc. to IEC 584, IPTS 68/48, ITS 90
<b>Temperature accuracy</b>	temperature $\pm 0.05\%$ , $\pm 0.6\text{ °C}$ , at +18 °C to +28 °C ambient temperature
<b>Reference temperature</b>	0 °C with cold junction compensation
<b>Display</b>	LCD graphic display, 128 x 64 dots, with/without background illumination
<b>Display resolution</b>	temperature 0.1 °C
<b>Operation</b>	menu controlled operation, foil keypad with 5 press bottom keys
<b>Power supply</b>	4 alkaline batteries type AA 1.5 V, load circuit with load capacity display
<b>Ambient temperature</b>	0 °C to +40 °C
<b>Housing</b>	aluminium housing, protection IP 40 with lateral battery compartment
<b>Scope of delivery</b>	incl. QuiK-Cup adapter and Positherm Celox lance adapter instrument adapters in various versions and carrying bag on request

Further technical details on request, deviations from illustrations and technical data indicated reserved.

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