

Thermocouples and Equipment



Fast, accurate, and reliable liquid metal temperature readings are indispensable tools for cost-effective temperature control during iron and steel production. As the exclusive distributor of Heraeus Electro-Nite sensors in Ontario and Quebec, we offer a wide choice of thermocouple types, probe lengths, and immersion lances to suit all process applications. Plus, additional non-splash designs for improved operator protection and multi-immersion designs are available for critical applications and use in your foundry.

XT - Thermocouple



Heraeus Electro-Nite's invention of the multiple immersion thermocouple was an important advance in molten metal temperature measurement. Because it produced more readings per thermocouple, the original XT lance sharply reduced the per reading cost in foundry applications. An improved model, the patented XT/2, has extended the market dominance achieved by its predecessor. It quickly became, and remains today, the industry standard for economy, accuracy, and dependability. (Page 14)

IF - Thermocouple



The IF model thermocouple is designed for use in small induction furnace, crucible furnace and ladle applications (generally 500 lbs or less). The IF thermocouple measurement element is 1 1/2" long and responds very quickly. It will give accurate temperature measurements in 2-5 seconds. The IF thermocouple is available in Type S (10%) and Type B (6/30) calibration. The IF thermocouple can be used with a removable protection sleeve that protects the pole hardware from radiant heat. (Page 15)

ML Positherm



Low cost, speed, accuracy, and dependability have made the small diameter ML Positherm by HEN the industry standard. Easy penetration of the molten metal is aided by the small diameter of the lance, and its low mass minimizes heat absorption from the hot junction. (Read more on Page 15)

Samplers



Our range of samplers for steel has been adapted to foundry requirements. Most common is the SaF sampler (sampler for foundries), showing a perfect structure for the analyzing spectrometer. As standard, SaF's diameter is 35 mm, thickness on choice (4, 6, 8, 10 and 12 mm). Especially for the pouring line, the SaF-DO gives extra good filling at low superheats. It comes in 4, 6 and 12mm thicknesses.

Quik Spec 3000 - Spectrometer Sampler For Molten Metal



The QS3000 sampler gives the molten metal producer a cost effective, portable and easy to use device for accurate sampling of molten metal. A superior quality sample is essential for accurate and repeatable analysis of cast iron, ductile iron and blast furnace iron on OES (Optical Emission Spectrometer). Free graphite and contamination in the sample can cause erroneous measurements in carbon, silicon and sulfur. (Read more on Page 16)



Digi-Temp - Temperature Measurement In Molten Metals



The ever increasing demands on measurement technology requires the integration of new electronic hardware, interfaces and on particular software. The DigiTemp-E 4 meets all these requirements fully. Its features are reliable, easy to use & flexible for various applications. The DTE4 Wireless has both wired & wireless upgrade.

BENEFITS:

- Switchable Wired input and Wireless upgrade
- Designed for shop floor use
- QUBE T Compatible with a wireless connection and signal strength indicator
- Case size 10" W X 9" H X 6" deep
- Programmable degrees F or degrees C
- Remote temperature display output
- Signal lights and buzzer on the case
- Measurement accuracy better than 1.8 F (1° C)
- Non reflective 2" or 45mm display
- 400° F to 3,300° F measurement range
- RS232 serial, ethernet, TTY output communications
- Programmable type S, R and B - IPTS 1948 & IPTS 1968
- Visible signal (red, yellow, green and buzzer output)
- Lock and display

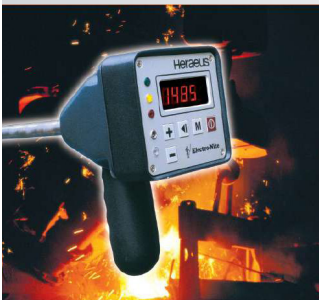


QUBE T

1. Transmitter
2. Handle
3. Battery & charging station



Digi-Lance



The Digilance 4 is designed for temperature measurement of molten metal with immersion thermocouples. It can be used in ferrous and non-ferrous applications and it works with all Asbury offered immersion thermocouples. Upgraded electronics ensure long service life & reliable temperature measurements.

This ergonomically designed light aluminum casting housing, industry proven electronics and reliable battery power system are some of the standard features. This unit includes standard options such as ready (green), measure (yellow) and complete (red) signal lights on the face for ease of operation, 400° F - 3300° F measurement range, & programmable ° F or ° C temperature scale. The unit is available in any combination of Type S or Type B, IPTS 1948 & 1968 calibration standards.

FEATURES OF Model DL4M with memory:

- Stores the last 500 Measurements
- Heat Number can be entered
- Easy wireless IR data download
- Easy to use download software
- Stainless steel pole and contact block

FEATURES OF Model DL4M

- Designed light aluminum casting housing,
- Industry proven electronics
- Reliable battery power system

The DL4M instrument being used to take a reading in an induction furnace



Here is the DL4M easily downloading the data to a PC with wireless infrared technology

Checkmate



The Checkmate IV is a two-channel device that simulates temperatures and QuiK-Cup values. It is used to check the correct functioning of all Heraeus

Electro-Nite's temperature measuring instruments. The instrument has a robust aluminum casing with membrane keypad and graphical multi-function display. It is operated with five membrane keys. It has a plug connector

CAPABILITIES:

For Positherm measurements, seven temperatures can be simulated and the element types S, R, and B can be set. In the QuiK-Cup version, four temperatures and three typical cooling curves type K can be output. To check the measuring cables and the measuring lance, the Checkmate IV measures the insulation resistance along individual wires.

FEATURES/APPLICATIONS

- Comes with Carrying Case Ground
- Easy to use
- Programmable Type B, S, R and K thermocouple output, with IPTS 48 and IPTS 68 calibration tables
- Programmable in degrees F and C
- Oxygen millivolt output or Liquidus Temp for Temp / Carbon systems
- Flexible set-up for thermal analysis output
- Portable for use on the shop floor
- Thermal analysis cooling curve simulation
- Versatility with Cables to adapt to any needed interface; pole, stand, instrument, etc.
- Powered by stable 4 x 1.5 V AA batteries
- Operating ambient temperature range: 32°F- 104°F (0°C- 40°C)

Accuracy

Temperature	$\pm 0.05\% \pm 2.0^\circ\text{F}$
Thermal Analysis	$\pm 0.05\% \pm 2.0^\circ\text{F}$
emf	$\pm 0.05\% \pm 0.3\text{mV}$

SLFK Sensor Lab

Sensor Lab Foundry offers a complete thermal analysis solution. The system utilizes cooling curves from special crucibles (QuiK-Cup® disposable measurement test cups) to calculate chemical composition (carbon equivalent, carbon and silicon) or to evaluate undercooling of cast iron melts. Measurements can be taken from two separate stations simultaneously. This precise and versatile measuring instrument has a wide range of features:

FEATURES

- An advanced measuring algorithm
- Live visualization of the cooling curve
- Result calculation configurable by material type
- Multiple communication output protocols
- Process range indication
- Direct access to result trending
- Local storage of up to 3000 measurements
- Ability to add custom equations
- Wireless measurements capability
- Remote client access
- Easy USB data export
- Compatible with the MeltControl 2020 measurement data system for foundries

BENEFITS:

- Two independent QuiK-Cup® measurement stations (wired and/or wireless)
- Automatic detection of standard Te and non-Te QuiK-Cup®
- Small size and light weight desktop style enclosure allowing easy installation
- Intuitive setup and operation
- Ranges and equations for different cast iron materials



Please contact canadainfo@asbury.com today, for the solutions of tomorrow.

QuiK-Cup® QCTE



The QuiK-Cup has foregone a long awaited upgrade in the Thermal Analysis Sector. The New QCTE is the evolution of all our learned knowledge in Making Thermal Analysis Cups for Iron applying lessons learned in square cup and round cup strategies.

The result is a round solidification chamber with a square cup exterior and connection system. Our decades of engineering have yielded a super connection with an accelerated solidification with improved accuracy.

Improved Packaging : 50/Tray, 100 per Box , 3000 per Pallet 36#s per box 1100 lbs. /Pallet



**Figure 1:
QK200 in use**

Design Improvements:

Heraeus Electro-Nite has undertaken a re-design project to improve the QuiK-Cup- and TECT1 : iron thermal analysis cups. During 2013 the cup was re-designed and testing was completed. A new assembly machine was built in the Hartland WI plant.

We are now ready to begin conversion of existing cup customers. The new design will initially replace current model QK200 and TT200. It will eventually replace all cup models, the nonferrous 1QK 100, TT100 and the MgCup TT335 will come later in 2015.

A contact block change is necessary for customers changing from the round TECTIIP cups. Measurements, with the new design are the same as with the current model . however they are 20% faster.

New Design Features:

The new design incorporates a round solidification chamber with the traditional square contact block plug-in (Figure 2 & 3). The primary goal of the re-design was to improve accuracy and overall reliability.

- Accuracy of silicon and carbon prediction improves 10 %
- Enhanced welding method improves thermocouple strength 30%
- Cement mixture increases shelf life from 1 year to 3 years
- Stronger core sand improves cup engagement on the stand.
- 15% reduction in fume generation when iron is poured
- More obvious plug-in orientation identification
- 20% faster measurements
- Packaging remains the same - 100/box and 3000/pallet

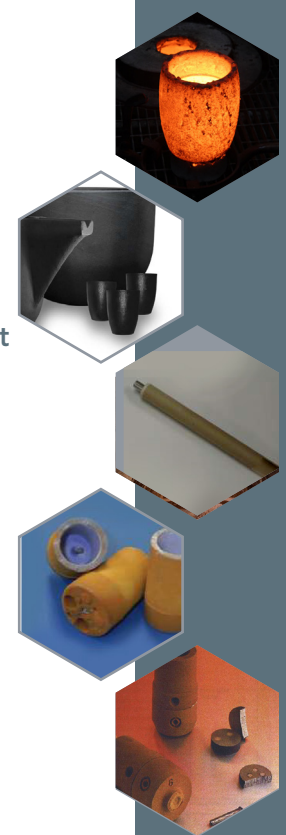
**Figure 2:
QK200 - QuikCup**



**Figure 3:
QK200 - QuikCup**



**Figure 4:
TT200 - TECTIP**



XT® MULTI-USE THERMOCOUPLES



IMMERSION THERMOCOUPLES FOR FOUNDRY APPLICATIONS

XT® Thermocouple: Heraeus Electro-Nite's invention of the multiple immersion thermocouple was an important advance in molten metal temperature measurement. Because it produced more readings per thermocouple, the original XT lance sharply reduced the per reading cost in foundry applications. An improved model, the patented XT/2, has extended the market dominance achieved by its predecessor. It quickly became, and remains today, the industry standard for economy, accuracy, and dependability.

XT/2:

In foundry applications such as induction furnaces, fuel-fired crucible furnaces, cupola fore hearths, ladles—anywhere, in fact, where heavy slag cover is absent—the XT/2 lance gives the foundryman an unbeatable combination of advantages.

A patented design, the XT/2 thermocouple has a quartz U-bend embedded in a special insulating refractory cement. A refractory fiber sheath prevents splashing when the lance is immersed.

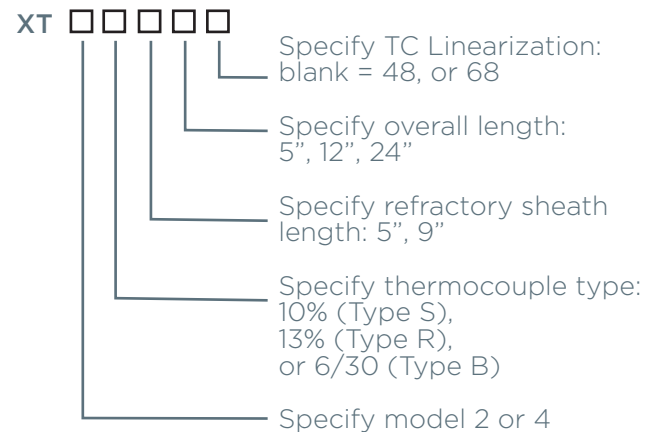
The sheath is precisely engineered to help extend the XT/2's useful life, protecting the contacts and minimizing cold junction heating even after repeated immersions. The internal shape of the sheath creates a positive stop and seal when the sheath is fitted to the cardboard tube, adding an effective thermal barrier at the top of the thermocouple insert. A wrapping of aluminum foil protects the paper tube.

These exclusive design features, coupled with strict quality standards of its components and production, give the XT/2 lance a high degree of dependability, accuracy and consistently longer operating life. Superiority of the XT/2 design is demonstrated when the lance is used for quickly repeated measurements. Because of the minimized internal heat build-up, the XT/2 delivers accurate readings over a rapid series of three or four immersions.

XT/4 Model for Special Applications:

A premium model, the XT/4 lance, is recommended for use in stainless steel, corrosive iron alloys, unusually high tapping temperatures, and other special applications.

ORDERING APPLICATION:

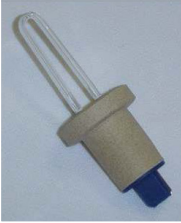


When ordering, specify the model: the standard XT/2 or the premium XT/4 and the thermocouple type (S, R or B). Also specify one of the four combinations of refractory sheath length to overall lance length as follows:

Refractory Length	Overall Length
5	5
5	5
9	9
9	9

Example: XT21055
Packaging: 50 piece per box

IF THERMOCOUPLES



The IF model thermocouple is designed for use in small induction furnace, crucible furnace and ladle applications (generally 500 lbs or less). The IF thermocouple measurement element is 1 ½" long and responds very quickly. It will give accurate temperature measurements in 2-5 seconds. The IF thermocouple is available in Type S (10%) and Type B (6/30) calibration. The IF thermocouple can be used with a removable protection sleeve that protects the pole hardware from radiant heat.



The IF thermocouple can be used in both ferrous and non ferrous metal with Instruments such as the DL4, DL4M and DTE3 as well as other instrumentation. Typically, the IF thermocouple will last for 4-8 measurements depending on the type of metal and the amount of slag. The IF model is also available with a hard ceramic protection sleeve, this model, the NSLIF, is used in vacuum melting applications where metal contamination is a concern.

The IF thermocouple has a 1 ½ inch long thermocouple loop cemented into a ceramic body. The quick disconnect connector allows for connection to a measurement pole.

The NSLIF model has a hard ceramic protection sleeve available in 6" or 12" in lengths

Shown on the right, is the IF thermocouple attached to a measurement pole, taking a temperature in a crucible furnace



ML Positherm - Single Immersion Small Diameter Lance

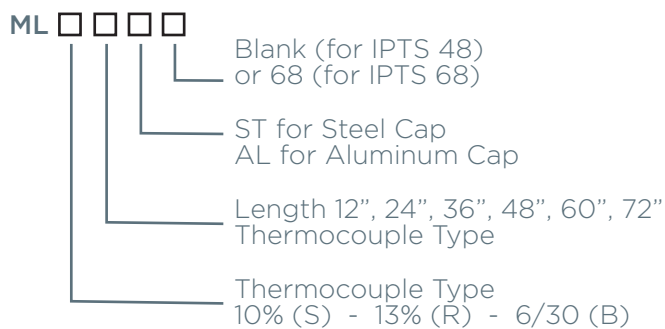


EXCLUSIVE FEATURES MAKE POSITHERM AN INDUSTRY STANDARD

Low cost, speed, accuracy, and dependability have made the small diameter ML Positherm by HEN the industry standard.

Easy penetration of the molten metal is aided by the small diameter of the lance, and its low mass minimizes heat absorption from the hot junction. The quartz loop is mounted with a specially formulated cement that resists moisture pick up and damage in storage. All three of these single use lances (EN3, ML Positherm, and ENtherm) are made with a monolithic ceramic body that has proved much more reliable than other designs utilizing plastic bodies and large exposed surfaces of unfired castable cement.

ORDERING APPLICATION:



QuiK-Spec® 3000

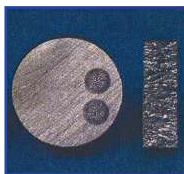


SPECTROMETER SAMPLER FOR MOLTEN METAL

The QS3000 sampler gives the molten metal producer a cost effective, portable and easy to use device for accurate sampling of molten metal.

IRON ANALYSIS

A superior quality sample is essential for accurate and repeatable analysis of cast iron, ductile iron and blast furnace iron on OES (Optical Emission Spectrometer). Free graphite and contamination in the sample can cause erroneous measurements in carbon, silicon and sulfur. The QS3000 sampler provides the lab with a sample that is superior in sample reproducibility than commercially available standards. This unique device eliminates the need for spoon sampling. The QS3000 sampler offers a consistent disc and pin that is easy to run in the lab.



< Polished Sample

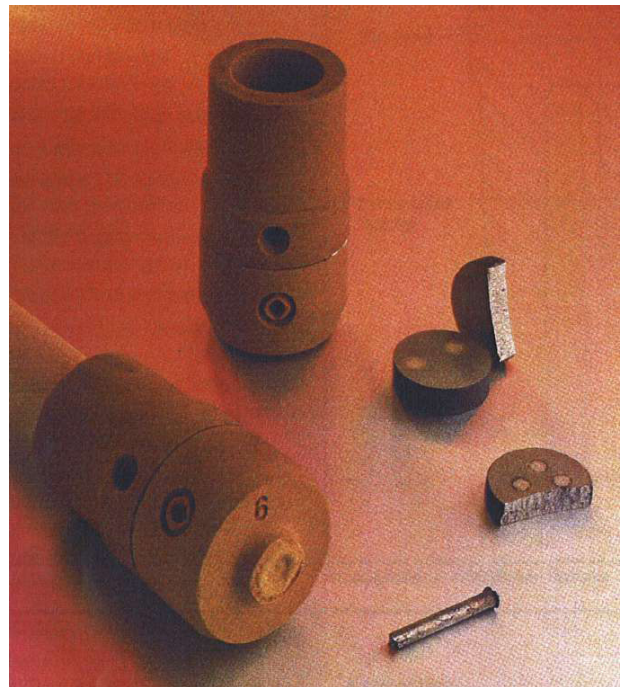
QS3000 Iron Sampler Series with Reusable Cardboard Tube.>

STEEL ANALYSIS

The QS3000 sampler is ideal for molten steel. Aluminum or zirconium deoxidation can be added for high oxygen applications. Consistent surface quality reduces preparation time and yields accurate OES analysis. The sampler can be used in the furnace or ladle.

NONFERROUS ANALYSIS

In nonferrous applications the QS3000 is convenient to use and yields a sample which is homogeneous and easy to prepare. The QS3000 sampler allows sampling of the metal at any processing step.



Please contact canadainfo@asbury.com today, for the solutions of tomorrow.