

FULLY FEATURED EDDY CURRENT CONDUCTIVITY METER

# SIGMACHECK 2



## SIGMACHECK 2

### APPLICATIONS

- Material verification / sorting.
- Heat treatment verification.
- Heat or fire damage investigation.
- Lightning damage investigation.
- Material ageing assessment.
- Measuring phosphor content of Cu alloys.
- Monitoring of deposition process for non-ferrous material on a non-ferrous substrate.
- Monitoring the condition of highly stressed parts
- Forged/plated material verification.
- Non-conductive coating thickness measurement.
- Determining the purity / composition of materials i.e. gold bullion and coins.
- Aircraft structures e.g. Paint thickness measurement.
- Assessment of ageing of alloys.

### COMPLIANCE TO PROCEDURES

The SIGMACHECK 2 may be used to comply with the requirements of the following inspection procedures:

- Boeing BAC5651
- Airbus AITM 6-6004
- ASTM E1004
- AMS2658
- BS EN 2004
- MIL-STD-1537
- Bell Helicopter BPS 4453

The SIGMACHECK 2 Eddy Current Conductivity Meter is designed to give accurate conductivity measurements while offering the user the very best in reliability, usability, technology and cost-effectiveness.

The instrument is extremely user friendly and can just as easily be operated by a semi-skilled Operator as by Experts. It will be equally at home in the Aerospace, Metals Processing, Casting, Maintenance and Quality Assurance industries as well as appealing to Heat Treatment Specialists and those determining the purity of materials such as gold bullion and coins.



# 1:1 IMAGE

## SIGMACHECK 2

This image shows the SIGMACHECK 2 at its actual size.



## SIGMACHECK 2



### ADVANTAGES

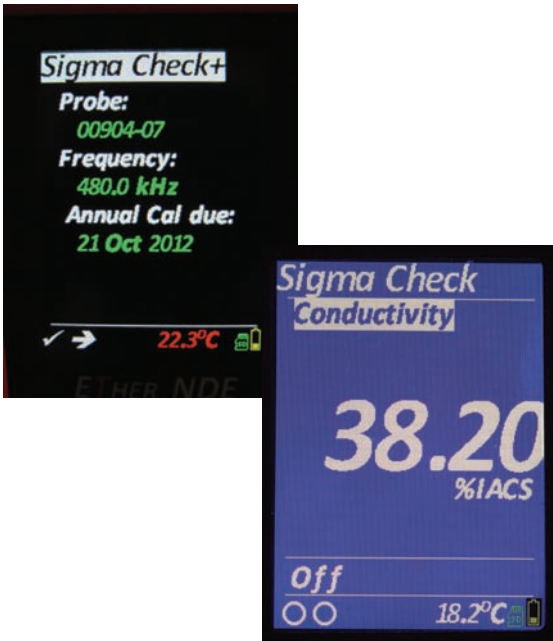
- High resolution colour display (2.8"/71mm, 320 pixels by 240 pixels).
- Lockdown mode allows advanced users to lock down features and settings for basic operator mode.
- Accurate conductivity range (0.5% IACS to 110% IACS, 0.28-64 Ms/m).
- Wide range of frequencies for testing thin materials (60kHz, 120kHz, 240kHz, 480kHz). Option of 960kHz.
- Non-conductive coating thickness. Measurement display up to 0.5mm.
- Lightweight (350 grams / 12 oz). Ergonomic slim-line case design and easy to hold probe with adjustable finger-grip.
- Two-year warranty on instrument (excludes batteries).

### KEY BENEFITS

- User programmable display.
- 2GB of data storage. Able to store over one million data points.
- Uploaded data can be viewed using MS Excel.
- Intelligent charger via USB Port.
- Multiple languages available. e.g. English, German, French, Spanish.
- Excellent resistance to "edge effect".
- Rapid Display of Conductivity Results.
- Battery life (up to 9 hours).
- Firmware can be upgraded in field.
- Different probes may be configured by loading the appropriate probe map from SD Card.
- Real-time clock for time and date so that readings can be "time stamped".
- Real-time PC control via USB or optional RS232 link.

# KEY FEATURES

## SIGMACHECK 2



### HIGH RESOLUTION DISPLAY

The full colour 2.8" LCD display screen is 320 x 240 pixels providing excellent resolution and displaying conductivity and lift-off results with up to three decimal places precision. The display features an adjustable LED backlight allowing the Operator to set their required screen brightness. The Operator can also customise both the background colours and text colours to meet their personal preference.

### RAPID DISPLAY OF CONDUCTIVITY RESULTS

The SIGMACHECK 2 offers a choice of four frequencies (60, 120, 240 and 480kHz) to allow the testing of a wide range of material thicknesses. The SIGMACHECK 2 is noted for rapid display of conductivity results.

### EXCELLENT DATA REPORTING AND BATTERY LIFE

*ETher NDE* also offer Field Exchangeable Probes with their configuration provided via micro SD Card or PC download via USB for the SIGMACHECK 2. This removes the need for the Instrument to be sent back for matching with the Probe. By using a card reader or our PC Software, the new data for the Probe can simply be copied onto the SD Card in the Instrument, speeding up this process even further.

USB PC Connectivity is built into the SIGMACHECK 2 for remote control and data logging. The USB Connection also offers real time data acquisition as well as eliminating any complicated driver installation. In addition, the USB Connection allows easy charging of the Instrument without having to swap the batteries.

### LIGHTWEIGHT AND ERGONOMICALLY DESIGNED

Weighing 350 grams (0.77 pounds) including batteries and measuring 163mm Long (6.4"), 80mm (3.1") Wide and 25mm (1") Deep, the SIGMACHECK 2 is compact and extremely lightweight. Housed in a sculpted case with a detachable flexible open-faced removable silicone rubber boot, the SIGMACHECK 2 is designed to be fully hand held. Further, the standard Probe has been designed to fit the hand well. Not only is the SIGMACHECK 2 very accurate, its ergonomic design makes it a delight to use.



## SIGMACHECK 2

### Ohms Law Equation:

$$I = \frac{V}{R}$$

**I** = Current (Amps)  
**V** = Voltage (Volts)  
**R** = Resistivity (ohms)

### Electrical Conductivity Equation:

$$\sigma = \frac{l}{RA}$$

**l** = length (cm)  
**A** = Area (cm<sup>2</sup>)  
**R** = Electrical Resistance of a uniform specimen of the material (ohms)

OR

$$R = \frac{l}{\sigma A}$$

**σ** = Conductivity (ohm<sup>-1</sup> cm<sup>-1</sup>)

Electrical conductivity is the measurement of a materials ability to conduct an electric current. This is the inverse of electrical resistivity, measuring a materials ability to resist an electric current.

Conductivity in metal is established using Ohm's Law, which states that current through a conductor between two points, is directly proportional to the potential difference across the two points. The resistance of the material, which is a constant for that material, allows the usual mathematical equation for this relationship to be true.

Conductivity is widely used to indicate material type and determine the state of heat treatment.

In order to give accurate readings the SIGMACHECK 2 uses a three-point reference method. The first measurement with the probe in the air and then two further measurements are required which span the range of interest.

The SIGMACHECK 2 is supplied with a detachable reference piece with two standards that span the range of commonly used metals.

*ETher NDE* also manufacture individual conductivity test blocks which may be used to match the clients own testing requirements. We can also provide a handy test block holder (Part number: ASIG003) that can hold up to five of these test blocks at any one time as shown above.



Conductivity Test Blocks In Holder

# SIGMACHECK 2

## STANDARD KIT



## OPTIONAL EXTRAS AVAILABLE



## SPECIFICATION

<b>Inspection Technology</b>	Eddy Current
<b>Operating Frequencies</b>	60 kHz, 120 kHz, 240 kHz, 480 kHz. Option of 960 kHz
<b>Conductivity Range</b>	0.5 % IACS to 110 % IACS, 0.28-64 MS/m
<b>Accuracy</b>	Probe must be in thermal equilibrium with test material, and instrument and probe stabilized prior to testing Minimum 15-minute warm up time for stabilisation. At 20°C: 0-20% IACS: ± 0.05 IACS At 20°C: >20% IACS ± 0.25% of readout
<b>Display Resolution</b>	Up to 3 decimal places
<b>Lift Off</b>	13 mm probe compensated to 0.020" (0.5mm) 7 mm probe compensated to 0.010" (0.25 mm)
<b>Temperature Measurement</b>	In-probe sensor (accurate to 0.5 °C) Range 0 °C to + 50 °C
<b>Automatic Temperature Compensation</b>	Conductivity measurements are corrected to the 20°C value
<b>Environmental Range</b>	0 to 95% relative humidity, 0°C to + 50°C for reliable operation
<b>Display</b>	2.8" (70mm) 320 x 240 pixels colour display. LCD with selectable backlight
<b>Construction &amp; Storage</b>	High impact, splash-proof, moulded UL94-5VA flame-retardant ABS case. Protective rubber boot to protect the unit, probes, probe cable, operator manual on USB, and removable stand
<b>Conductivity Standards</b>	On top of unit. Removable for value verification, and when attached ensures thermal equilibrium
<b>Power</b>	2 x 1.5 V AA NiMH Batteries, Approx up to 9 hrs life. Recommended rechargeable batteries: Panasonic Eneloop Pro, 1.2 V min.2500 mAh or equivalent) Can also use non-rechargeable AA cells
<b>Size (length x width x depth)</b>	163mm (6.4") x 80mm (3.1") x 25mm (1.0")
<b>Weight</b>	350g (0.77 pounds) including batteries
<b>Data Logger Memory</b>	Removable 2GB micro SD Card allowing over 1 million readings to be stored
<b>PC Connectivity</b>	USB port for charger and PC communications
<b>Probes</b>	13mm diameter for 60 kHz to 480 kHz 8mm probe operates at 60 kHz to 480 kHz Probes are interchangeable with simple operator resetting procedure. Probes are field exchangeable and do not require return to manufacturer for calibration
<b>Accessories</b>	A range of conductivity reference standards traceable to US and European standards are available for in field use. Up to five can be mounted on an aluminium anodised Settings Reference Blocks Holder (Part number: ASIG003)

## PRODUCT PART NUMBERS

**KISIG001A:** Kit, Instrument, SIGMACHECK 2 Conductivity Meter.

**ASIG010:** Accessory, Dual Conductivity Reference Standards, Nominal Values 8.5% and 101% IACS.

**ASIG002:** Accessory, Instrument Stand.

**ASIG004:** Accessory. Hard Peli 1400 Case with custom shaped foam inserts.

**PSIG001A:** Probe, Conductivity, Dia 13.00mm, Straight, Lemo 5-Way

**ALL05-L05-015-SIG2:** Accessory, Lead, 5-Way Lemo to 5-Way Lemo, 1.5m

**PSIG002A:** Probe, Conductivity, Dia 8.00mm, Straight, Lemo 5-Way

**ETHER NDE** continually strives to provide innovative solutions to eddy current testing in all possible inspection conditions.

Offering a range of innovative eddy current testing instruments and probes, **ETHER NDE** will endeavour to find the solution that best fits our client's specific needs.

At **ETHER NDE** we pride ourselves on our ability to remain client focussed, conducting our business with three simple promises to you:

1. The ability to speak to someone who understands our products and your application.
2. Industry leading delivery on goods and the ability to respond to your challenges.
3. Our products are second to none in both performance and quality.

Founded by John Hansen and Mike Reilly and supported by a skilled team, **ETHER NDE** boasts over 200 years of collective experience in non-destructive testing. Forward thinking and client responsive, **ETHER NDE** is the wise choice for all your eddy current testing needs.



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