EThер Application Note: AP004

CONDUCTIVITY MEASUREMENTS ON WELDCHECK+ AND AEROCHECK+

Conductivity measurements are required in the aircraft manufacturing and maintenance fields where they are used to verify proper alloy/temper, detect heat damaged components, to determine the purity of precious metals or to measure paint thickness.

ETher NDE recommends the following probe package to perform conductivity measurements.

NIST Conductivity Probe Kit to fit WeldCheck+ – AeroCheck+:

(Please note that this kit only works on a WeldCheck+ and AeroCheck+)

EThер NDE Part No.	**Description**
Kit Part Number: KACON001 - KIT, Conductivity Inspection **- NIST** - Std Dia 13mm Probe (To fit AeroCheck Plus)	
Includes:	
PCON001	Probe, Conductivity, 60kHz, Dia 13.00mm, Straight, Lemo 7-Way (AeroCheck Plus)
ASIG014	Accessory, Dual Conductivity Reference Standards, Nominal Values 9% and 59% IACS (SigmaCheck) **NIST** VALUES
ALL12-L07-007-CON	Accessory, Lead, 12-Way Lemo to 7-Way Lemo, 0.7m, Conductivity (To fit AeroCheck Plus Conductivity Probe)
40516	SKIRT - Conductivity Probe (AeroCheck Plus)
B3061S	SCREW - M3 THUMB SCREW
40517	REFERENCE HOLDER - Dual Condustivity Standard (Thermal Bridge for Stability)
APCON001	QUICK REFERNCE CARD - GUIDE TO USING CONDUCTIVITY PROBE PCON001

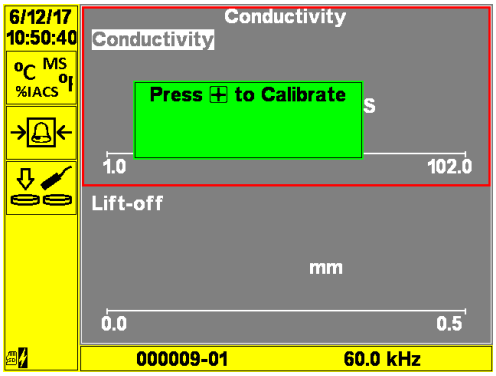
TEST PROCEDURE

Equipment required:

Probe: Conductivity, 60kHz, Dia 13.00mm, Straight, Lemo 7-Way (AeroCheck Plus) – PCON001
Accessory: Lead, 12-Way Lemo to 7-Way Lemo, 0.7m, Conductivity – ALL12-L07-007-CON
Accessory: Dual Conductivity Reference Standard – ASIG010
REFERENCE HOLDER - Dual Conductivity Standard, (Thermal Bridge for Stability) – 40517

Setup:

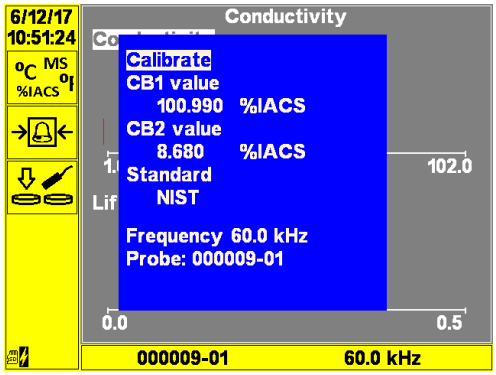
1. Switch instrument on.
2. Connect probe to cable and connect to the instrument.
3. Instrument will auto detect the probe and go into conductivity mode, as shown:



4. Press OK key to calibrate if the message box is shown, otherwise press left arrow and select the calibrate icon:

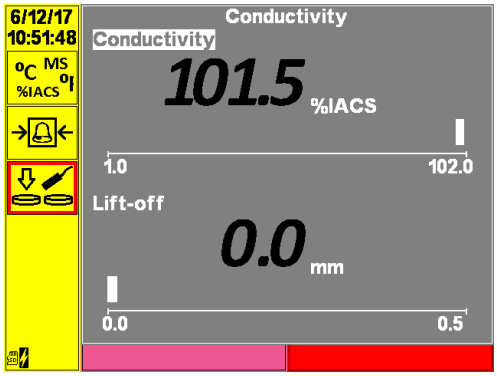
Scroll down and enter CB1 and CB2 %IACS values as shown on Dual Conductivity Reference Standard, press the back button, the unit will then go back to the main calibration screen.

5. Calibrate the probe by following the on screen prompts.



6. Once calibrated carry out measurement, example measurement shown:

7. Disconnect the probe cable and the conductivity mode will exit and the instrument will return to its normal operation mode.



Additional Features:

To Set display panes cursor right then up down to select pane to change then cursor right each key press changes display from Conductivity, Metal Sort, Minimum Thickness at measured conductivity and Lift Off/Non-conductive Coating thickness.

To set Units (both type and resolution) and Metal Sort select this icon with the cursor Key and press enter to open menu to set units display precision. Move up down left column to select Unit, Press Enter and then left right to select digit or item, up down to change and then enter to validate.

Sets the alarm range for both conductivity value and lift-off. First select the required display panes as the two displayed panes. Then select this icon with the cursor keys and press enter to select. The numeric value at the left end of the scale is highlighted press enter to edit the value. The Up Down Cursor Keys edit a digit and left right change the digit selected. Press enter to confirm selection. Press the right cursor key to move the selected numeric value and repeat the above procedure for each value to be edited.

Press the Back Key to exit this function.

Tips for Accurate Measurements:

Always ensure that Probe, Dual Reference and Material to be tested are at the same temperature.
Re-calibrate the instrument every 15 minutes. There is a visual warning that the calibration needs to be repeated. Frequent calibration is the key to accurate measurement.
Try not to hold the face of the probe, dual reference or material to be tested in your in your as this will change the temperature.

Specification:

Accuracy

0.5%-10% IACS better than +/- 0.05% IACS
10%-25% IACS better than +/- 0.25% IACS
25%-60% IACS better than +/-0.5% IACS
60%-110% IACS better than +/- 1% IACS
Lift off corrected to 1.0 mm
No temperature compensation
All Errors at 90% Confidence Level

Resolution

3 decimal points max
Auto resolution mode AutoS= Legacy Instrument, Auto= SigmaCheck.