

## ETHer NDE Application Note: AP025

### EDDY CURRENT INSPECTION - PockET

PockET is a compact single-channel, single-frequency eddy current instrument designed to detect both surface and sub-surface defects. Despite its miniature size, it delivers fast scanning speeds, advanced signal processing, and a crystal-clear high-resolution display making inspections simple, reliable, and repeatable.

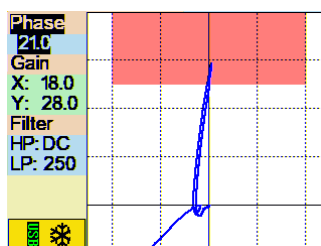


#### PockET Kit

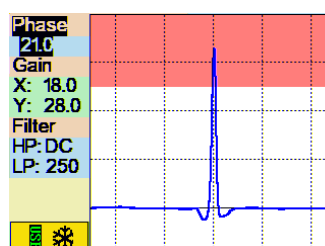
KIPET001 Kit, PockET, Single Frequency Eddy Current Flaw Detector Includes:

- IPET001 Instrument, PockET, Single Frequency Eddy Current Flaw Detector, (1kHz - 6MHz)
- A288 Male USB A to Male Micro USB B, USB 2.0 Black, 1m
- A092 Power Supply, USB, includes UK, AU, EU, US Input: 90-264V AC, Output: 5W (RS:121-7187)
- AC025 Accessory, Hard Carry Case PockET.
- ALLCX-M02-015A Accessory Lead, Lemo 00 to Microdot, 1.5m
- 41407 Quick Reference Card - PockET

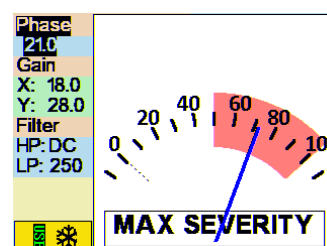
#### Display Options:



XY



Time-Base



Meter

## Application Examples:

### High Frequency Surface Inspection Kit (2MHz and 200kHz Examples)



<b>KASUR002</b>	<b>KIT, Surface Inspection - PockET</b>
PU500PSFE/NFE	Probe, Unshielded, 500kHz, Fe/NFe, Plastic Handle, Straight, 100mm Long
PS002PS028-114N	Probe, Shielded, 2MHz, Plastic Handle, Straight, 28mm Tip Length (Total Length 114mm, 4.5") (Straight Shank)
PS500PD064-114N	Probe, Shielded, 500kHz, Plastic Handle, Double, Crank, 6.4 (0.25") Tip Length (Total Length 114mm, 4.5") (15deg Crank, 90deg tip Shank)
PS200PC195-114N	Probe, Shielded, 200kHz, Plastic Handle, Crank 19.5 (0.75") Tip Length (Total Length 114mm, 4.5") (45deg Crank Shank)
PK065002NFE	Probe, Knife, 65 deg, 2MHz, NFe, Unshielded
ALLCX-M02-015A	Accessory, Lead, Lemo 00 to Microdot, 1.5m
ATBF	Accessory, Test Block, Ferrous (Steel EN1A), 0.2, 0.5, 1.0mm slots
ATBA	Accessory, Test Block, Aluminum Alloy 7075-T6, 0.2, 0.5, 1.0mm slots
AW003	Accessory, Butterfly PTFE Tape (Pack of 30)
AC002	Accessory, Deluxe Probe Case PHDC1

### High Frequency Surface Inspection

These notes are offered as a guide to help carry out a test for surface inspection using High Frequency Eddy Currents. There are two high frequency surface inspection examples on the instrument;

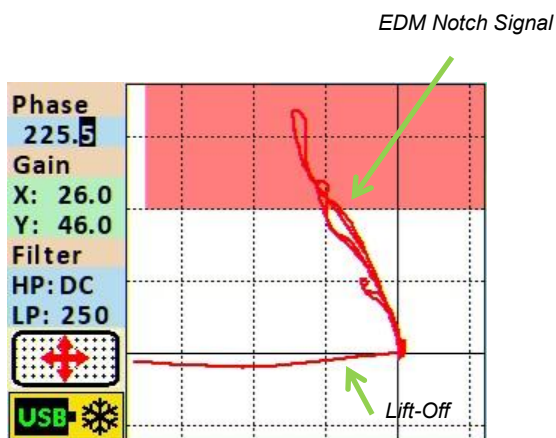
- Abs 2MHz – using the Lemo 00
- Abs 200kHz - using the Lemo 00

### Equipment Required:

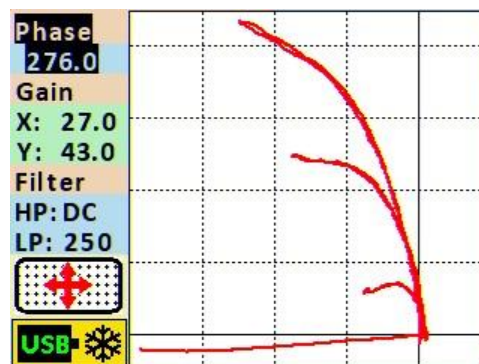
- 200kHz Absolute Probe - PS200PD064-114N
- 2MHz Absolute Probe - PS002PC195-114N
- Lead, Lemo 00 to Microdot – ALLCX-M02-015A
- Aluminium 7075-T6 test Block with 3 slots 0.2, 0.5, 1.0mm – ATBA
- Ferrous Steel (EN1A) with 3 slots 0.2, 0.5, 1.0mm – ATBF

### Setup:

1. Connect the probe to the cable and connect it to the instrument.
2. Switch the instrument on, press Menu, and select the Settings pane.
3. Using the arrow button scroll down to Load Setting, press Enter key. Use the up/down arrow buttons to highlight **Abs 2MHz** or **Abs 200kHz**, load by pressing the Enter key.
4. Press the Menu/Back button twice to get to the operating screen.
5. Place the probe on the Reference Standard (away from EDM notches). Lift the probe off the surface, place back on surface move across the notch and note the signal response.
6. If more or less sensitivity is required increase or decrease the X/Y Gain as required until signal amplitude as required.
7. Adjust the phase to set the lift off horizontal by either using the Auto Phase Key or adjusting the Phase.
8. Carry out scan of the component.



2MHz – ATBA Aluminum Test Block, 0.2, 0.5, 1.0mm slots



200kHz – ATBA Aluminum Test Block, 0.2, 0.5, 1.0mm slots



**Note:**

1. If you use a different Frequency probe, remember to adjust Frequency setting on the instrument to match the probe.
2. Where possible always use a Reference Standard, which is a similar material to that which is to be inspected.
3. Always try and keep the probe normal (90°) to the surface of inspection, especially if scanning in a radius.

## Sub surface Inspection Kit

### Low Frequency Surface Inspection Kit (5kHz Example)



<b>KASUBS002</b>	<b>KIT, Sub Surface Inspection - PockET</b>
PUS16	Probe, Surface/Sub-Surface, Straight, Dia 16mm, 100Hz - 100KHz, Plastic, Lemo 4-Way
PUS11	Probe, Surface, Straight, Dia 11mm, 300Hz - 200KHz, Plastic, Lemo 4-Way
ALL04-L04-015-R	Accessory, Lead, 4-Way Lemo to 4-Way Lemo 1.5m, REFLECTION, (PockET)
ATB001	Accessory, Test Block, Aluminium 7075-T6, , 1.6mm Thick, x4 Flat Bottom Holes 75%(1.2mm), 50%(0.8mm), 25%(0.4mm), 12.5%(0.2mm), Deep.

### Low Frequency Sub-Surface Inspection

These notes are offered as a guide to help carry out a test for low frequency sub-surface inspection using Low Frequency Eddy Currents.

#### Equipment Required:

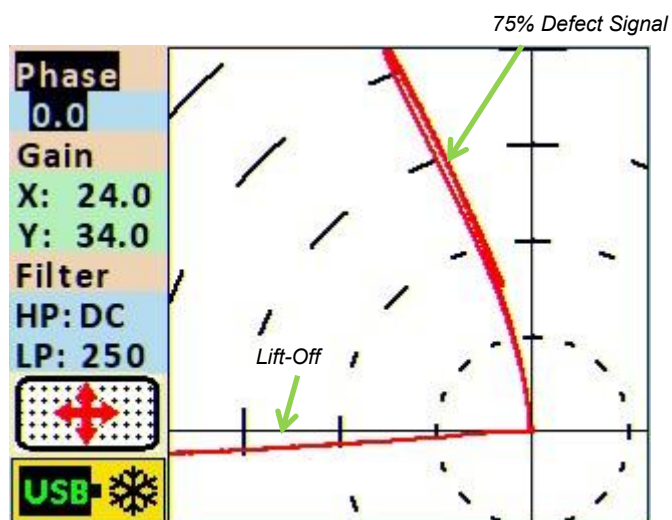
- 300Hz – 100kHz Reflection Probe – PUR16
- Lead, Lemo 4-Way to Lemo 4-Way Reflection Type – ALL04-L04-015R
- Aluminium Thin Plate – ATB001

#### Setup:

1. Connect the probe to the cable and connect it to the instrument.
2. Switch the instrument on, press Menu, and select the Settings pane.
3. Using the arrow button scroll down to Load Setting, press Enter key. Use the up/down arrow buttons to highlight **Spot 5kHz**, load by pressing the Enter key.
4. Press the Menu/Back button twice to get to the operating screen.
5. Place the probe on the Reference Standard (away from defects) with the flat-bottomed holes facing downwards. Lift the probe off the surface, place back on surface move across the defects and note the signal response.
6. If more or less sensitivity is required increase or decrease the X/Y Gain as required until signal amplitude as required.
7. Adjust the phase to set the lift off horizontal by either using the Auto Phase Key or adjusting the Phase.
8. Carry out scan of component.

#### Note:

1. Use your finger as a guide along the edge of the test piece. This will help maintain the same probe to edge distance.
2. Always try and keep the probe normal (90°) to the surface of inspection.



## Weld Inspection Kit



<b>KAPET001</b>	<b>KIT, Weld, Probes + Accessories (PockET)</b>
PWM100S000	Probe, Weld, Dia 16.00mm (Medium) 100kHz, Straight, Disconnect
PUB100K	Probe, Unshielded, Broad Band, 100k, (35kHz-250kHz), BNC
ATBW	Accessory, Test Block, Weld Probe, Ferrous, (Steel EN1A) + x4 0.5mm Shims, 0.5, 1.0, 2.0mm slots
ALL04-L04-015-B	Accessory, Lead, 4-Way Lemo to 4-Way Lemo 1.5m, BRIDGE
ALLCX-B02-015A	Accessory, Lead, Lemo 00 to BNC, 1.5m
AW003	Accessory, Butterfly PTFE Tape (Pack of 30)
AC002	Accessory, Deluxe Probe Case PHDC1

## Weld Probe Inspection 100kHz

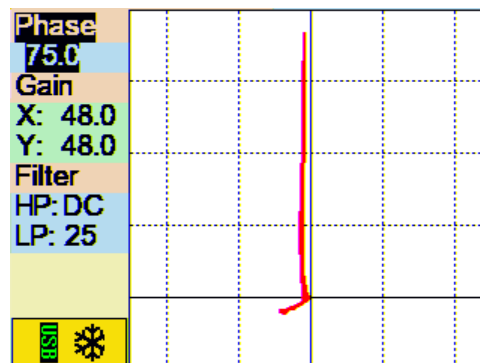
These notes are offered as a guide to help carry out a Weld Probe Inspection.

### Equipment Required

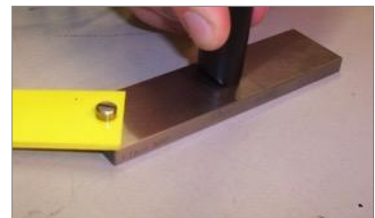
- Lead, Lemo 4-Way to Lemo 4-Way Bridge Type – ALL04-L04-015-B
- 100kHz Weld Probe Bridge – PWM100S000
- Ferrous Steel (EN1A) Test Block with 3 slots 0.5, 1.0, 2.0mm and 4 - 0.5 mm shims - ATBW

### Setup

1. Connect the Weld probe to the cable and connect it to the instrument.
2. Switch the instrument on, press the Menu button, and select the Settings pane.
3. Using the arrow button scroll down to Load Setting, the menu until Load & Save is highlighted, press Enter key. Use the up/down arrow buttons to highlight **Weld 100kHz**, load by pressing the Enter key.
4. Press the Menu/Back button twice to get to the operating screen.
5. Place the probe on the test block and Press Balance
6. Move the probe over the defects.
7. If more or less sensitivity is required, use the side pane, select gain, increase or decrease signal amplitude as required.
8. Adjust the phase to set the defect signal vertical by using the side pane, select Phase, adjust as required.
9. Carry out scan of component.



0.5mm Deep Slot





## Paint Probe (Weld Setting)

These notes are offered as a guide to help carry out a paint Probe Inspection.

### Equipment Required

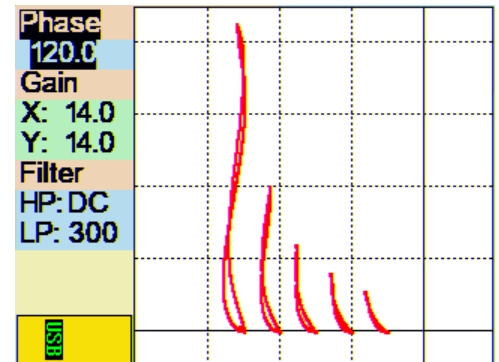
Probe, Unshielded, Broad Band, 100k - PUB100K

Accessory, Lead. Lemo 00 to BNC, 1.5m - ALLCX-B02-015A

Steel Test Block with 3 slots 0.5, 1.0, 2.0mm and 4 - 0.5 mm shims - ATBW

### Setup

1. Connect the probe to the cable and connect it to the instrument.
2. Switch the instrument on, press Menu, and select the Settings pane.
3. Using the arrow button scroll down to Load Setting, press Enter key. Use the up/down arrow buttons to highlight **Paint 100kHz**, load by pressing the Enter key.
4. Press the Menu/Back button twice to get to the operating screen.
5. Hold the probe in Air press the balance button, place the probe on a good area of the test block, lift off.
6. Adjust gain and phase from the side pane to make the lift off full screen and vertical.
7. Go to the display pane move the X Offset by + 10%, repeat the test with x1 yellow shim.
8. Repeat the above to create a signal from the remaining x3 shims.



Bare Metal, 0.5, 1.0, 1.5 and 2.0mm Shim

