

AMSL6A100 BACKUP DISPLAY PANEL Operations and Maintenance Manual



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1.0 GENERAL DESCRIPTION



The Backup Depth System is designed to be an independent depth measurement indicator for mounting inside a wireline unit. The depth is measured by a magnetic pickup mounted in the measuring head and displayed in either feet or meters at the display unit. The unit is powered by three internal batteries. It can be connected to an external AC or DC power source to keep the batteries charged.

The unit is designed to operate without intervention from the user. When external power fails, the depth display is maintained by the batteries. If the magnetic pickup is inactive for more than one hour, the depth is stored and the unit switches it self off.

Front panel controls allow the operator to:

- Zero the depth reading
- Adjust the depth value
- Select a different settings using the menu button
- Switch the power off manually (for use when running on battery power)

The unit is switched on automatically, when external power is restored, or When the user selects the enable switch on the front panel

2.0 OPERATING PROCEDURES

- 2.1 Turn the unit on by pressing the enable switch up. If external power is applied, the unit will power on automatically.

- 2.2 Select the appropriate settings from the menu (see section 4.0)

- 2.3 Set the depth to the proper value by using the set depth switches or to 0 by pressing the zero switch. Note: the enable switch needs to be pressed in order to set depth.

- 2.4 The system is now ready to measure depth.

- 2.5 After each run in the hole, reset the zero value before entering the hole again.

3.0 DESCRIPTION OF FEATURES

3.1 Enable Switch

The ENABLE/OFF switch is a center-biased three position switch. If you push the switch down, the magnetic pickup stores the displayed value in the non-volatile memory and switches the unit off if not on external power. *The unit cannot be switched off when connected to external power.*

The display unit forces you to use two switches, to prevent accidental loss or corruption of the depth display value.

The up position (ENABLE) does several things:

The unit powers on, and the unit re-displays the stored value.

Enable is also required to zero or increase/decrease the depth.

3.2 Menu Switch

This button is used to change the internal settings of the panel.

These settings include Measuring Head type, Line Size settings, Load Cell Angles, English/Metric units, Depth adjust (auto add/subtract), etc. Refer to section 4 for detailed description of these features.

3.3 Zero Switch

The ZERO switch allows you to zero the display, it is a two position momentary switch. To activate this switch, you must hold the ENABLE switch up, then press this switch up.

The rate of increase (or decrease) is controlled by the length of time the INCREASE/DECREASE switch is held in position. For small adjustments, hold the ENABLE switch up and jog the INCREASE/DECREASE switch.

3.4 Increase / Decrease Switch

The INCREASE/DECREASE switch is a center biased three position switch. Use the ENABLE switch to activate this switch:

Hold both the enable and the increase/decrease switches up and the display value increases

Hold the enable switch up, and the increase/decrease switch down and the display value decreases.

3.5 EXT PWR LED

There is one LED on the front panel of the display unit. The LED is lit when the unit is connected to an external power source, either 240/120 vac or 12 vdc. If the LED is not lit, then the unit is operating off of battery power.

4.0 MENU SELECTIONS

The internal settings of the panel can be set by pressing the menu button.

To change a setting, press and release the menu button until the desired setting is displayed. Use the +/- switch to change the setting. After a setting is changed, continue pressing the menu button until you pass the last setting. At this time you will be asked if you want to ACCEPT the setting changes. To accept the changes press + then the MENU button. If you press – or wait for four seconds, the changes will be ignored. If you wait for four seconds between switch presses, the panel will time out and go back to displaying depth.

There are four different menus, one for each of the different type of measuring systems.

3K – Kerr AM3K Cased Hole Measuring head
5K – Kerr AM5K Open Hole / Cased Hole Measuring head
SL – Kerr dual 16" Wheel Slickline Measuring head
OT – Other wheel size

To change the head type, press the menu button until Hd is displayed. At this time press the +/- button until the desired head type is selected. Press + then the menu button again to accept the setting.

Each head type has a different menu. Following are the available settings for each.

Note if the menu shorting jumper is installed (refer to page 16) then the head type cannot be changed. This prevents the operator from mistakenly selecting the wrong type of measuring head.

4.1 3K MODE

This mode is for a BenchMark AM3K cased hole measuring head.

The available menu selections in AM3K mode are:

LINE SIZE SETTINGS (LS)

Select the size of the cable you will be using. This setting will adjust the wheel size to account for the size of cable.

The available sizes are:

3/8, 5/16, 9/32, 1/4, 7/32

The wheel size settings for each are:

3/16" cable – 2.014 ft.

7/32" cable - 2.017 ft.

1/4" cable – 2.020 ft.

9/32" cable – 2.023 ft.

5/16" cable - 2.026 ft.

3/8" cable – 2.031 ft.

DEPTH ADJUST (Adj)

This setting is comparable to shimming a wheel. The amount selected will automatically be added or subtracted from the depth input. The values are feet / thousand.

DEPTH UNITS (UN)

This setting is used to set the display readout units to either FEET or METERS.

DIRECTION (dir)

This setting is used to reverse the counting direction. The depth should be increasing as you are going into the hole and decreasing as you are coming out of the hole. If it is going the opposite direction, use this setting to change it.

4.2 5K mode

No wheel size selections are available. It is set for 2'. Use the setting for any straight-line measuring device that uses a 2 foot measuring wheel.

The available menu selections in AM5K mode are:

DEPTH ADJUST (Adj)

This setting is comparable to shimming a wheel. The amount selected will automatically be added or subtracted from the depth input. The values are feet / thousand.

DEPTH UNITS (UN)

This setting is used to set the display readout units to either FEET or METERS.

DIRECTION (dir)

This setting is used to reverse the counting direction. The depth should be increasing as you are going into the hole and decreasing as you are coming out of the hole. If it is going the opposite direction, use this setting to change it.

4.3 SL mode

This mode is used for a Kerr SHARK slickline system using a 4' counter wheel.

The available menu selections in SL mode are:

LINE SIZE SETTINGS (LS)

Select the size of the cable you will be using. This setting will adjust the wheel size to account for this size of cable.

The available sizes are:

1/4, 7/32, 3/16, .125, .108, .092, .082,

DEPTH ADJUST (Adj)

This setting is comparable to shimming a wheel. The amount selected will automatically be added or subtracted from the depth input. The values are feet / thousand.

DEPTH UNITS (UN)

This setting is used to set the display readout units to either FEET or METERS.

DIRECTION (dir)

This setting is used to reverse the counting direction. The depth should be increasing as you are going into the hole and decreasing as you are coming out of the hole. If it is going the opposite direction, use this setting to change it.

4.4 OTHER (Oth)

This menu is to be used if you have a measuring device with a different wheel circumference than the standard Kerr measuring devices.

No line size selections are available

The available menu selections in the OTHER menu are:

WHEEL CIRCUMFERENCE (Cr)

This setting represents the circumference of the measuring wheel. Use the +/- switch to adjust the setting to match the circumference of the measuring wheel you are using.

DEPTH ADJUST (Adj)

This setting is comparable to shimming a wheel. The amount selected will automatically be added or subtracted from the depth input. The values are feet / thousand.

DEPTH UNITS (UN)

This setting is used to set the display readout units to either FEET or METERS.

DIRECTION (dir)

This setting is used to reverse the counting direction. The depth should be increasing as you are going into the hole and decreasing as you are coming out of the hole. If it is going the opposite direction, use this setting to change it.

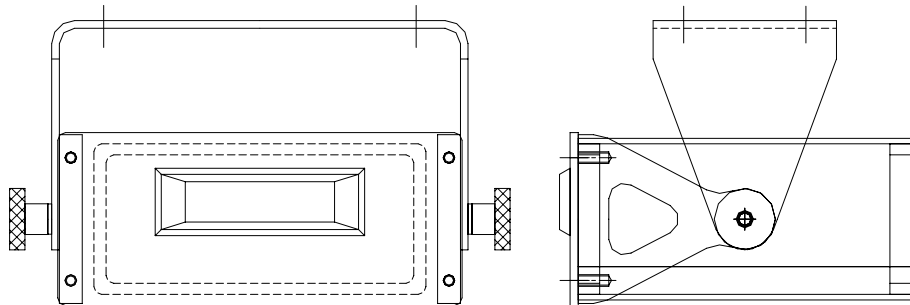
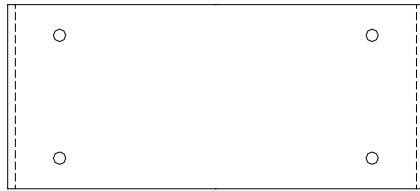
5.0 INSTALLATION AND MOUNTING

5.1 INSTALLATION PROCEDURE

- 5.1.1 Prepare an appropriate panel cut-out with four fixing holes (refer to drawing in section 6.1) or use one of the two mounting brackets shown below (section 5.2).
- 5.1.2 Connect the magnetic pickup cable to the rear of the unit.
- 5.1.3 Ensure that power is off. Connect the unit to a 12vdc or 120/240 vac power supply.
- 5.1.4 Insert the display unit into the panel and secure it at the four corners.
- 5.1.5 Check that the magnetic pickup signal has the correct polarity. Move the measuring wheel in the direction of positive depth (down). If the display shows a negative value, it can be corrected by rotating the magnetic pickup on the measuring head by 180 degrees or changing the direction using from the menu.
- 5.1.6 Ensure that the unit is setup for the desired measurement units (feet or meters).
- 5.1.7 Before you start to use the display unit, leave it connected to the external power for 4 hours to ensure that the batteries are fully charged.

5.2 MOUNTING KITS

5.2.1 AMS4A161 PIVOTING MOUNT

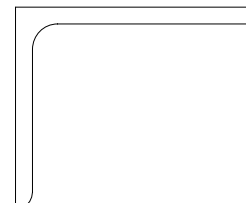


5.2.2 AMS4M110 PLATE MOUNT

TOP VIEW



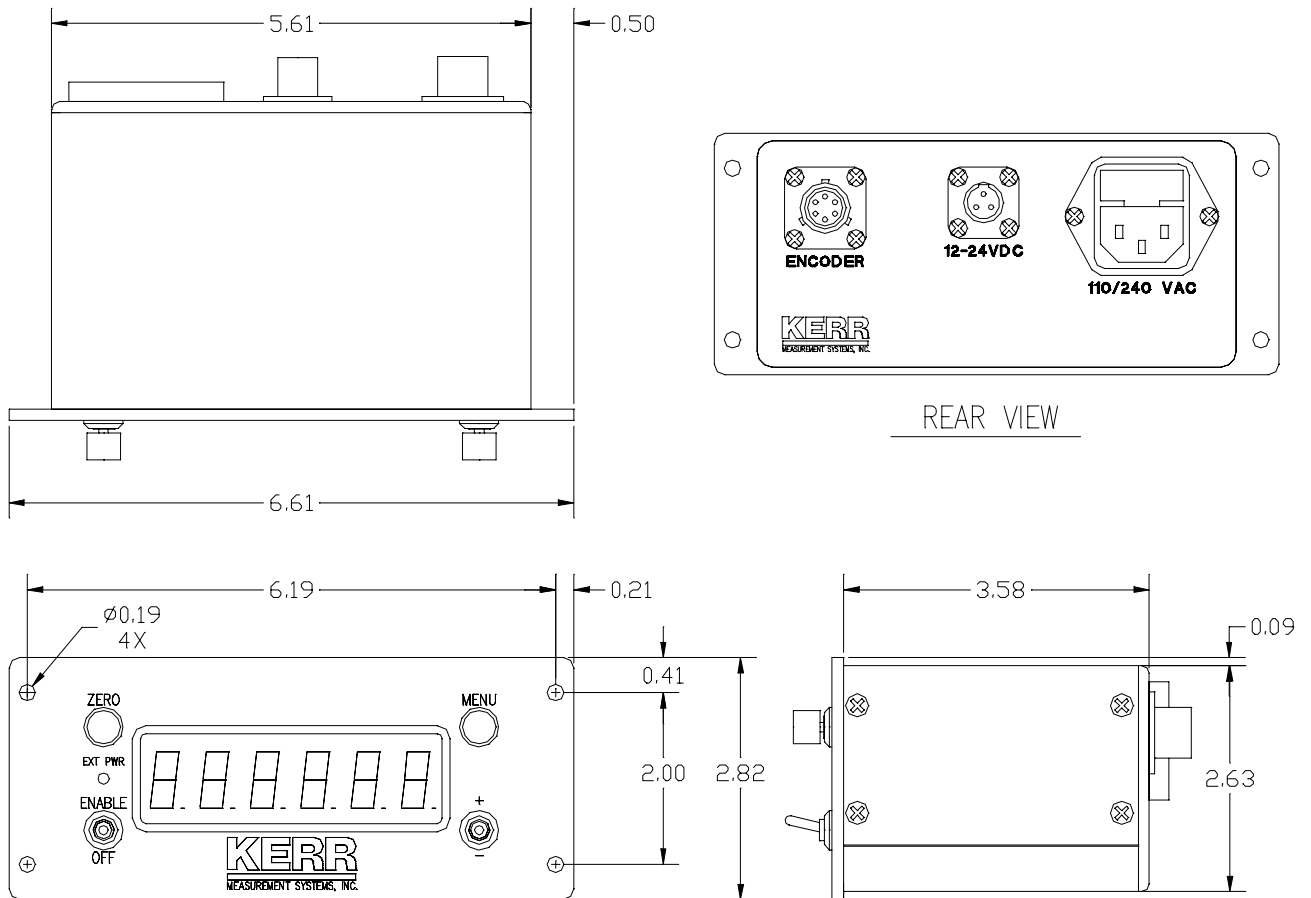
FRONT VIEW



SIDE VIEW

6.0 SPECIFICATIONS

6.1 Mechanical



Material	Aluminium, anodized
Weight	1.5 lbs (.68 kg)
Mounting	4 x .019 holes fixing centers: 6.19" (19.05 cm) from side, 2" (5.08 cm) from top/bottom.

6.2 Environmental

IP Rating	40
Temperature	0 to + 50 ° Centigrade
Humidity	10% - 80% RH non-condensing.

6.3 Electrical

Input power Voltage	100 - 240 VAC or 12 – 24 VDC
Input power frequency	50 - 60 Hz, DC
Input power current	0.4 A

6.4 Batteries

Battery	2100 mAh
Voltage	1.2 V NIMH
Lifetime	Approx. 5 years (depending on usage)

The batteries are trickle charged when external power is connected to the unit. The batteries are fully charged after 3 hours. The batteries discharge if the unit is left unpowered for a few weeks.

6.5 Power consumption and operating time

Operating	10 mA (typical)
Magnetic pickup assembly	20 mA (remainder powers the display)

6.6 AC Power Input

Live	Brown	White
Neutral	Blue	Black
Earth	Green/Yellow	Green

Power is fused inside the display unit case with a 250 mA fuse

6.7 DC Power-input

Live	Pin 1
Neutral	Pin 2
Earth	Pin 3

DC connector spec: AM5KP063 -CONN KPT06E8-33S 3 SOCKET

6.8 Depth measurement

Quadrature counts/revolution	16	
Measurement resolution	0.048 m	0.1573 ft
Display resolution	0.1 m	0.1 ft

6.9 Line Speed

Minimum Line Speed	0 ft/min
Maximum Line Speed	1200 ft/min

6.10 Power management

Power time-out with idle magnetic pickup	60 min
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The battery voltage and charge current can be displayed by pressing enable and menu at the same time.

The voltage will be displayed as:

E 4180

4180 would be a battery voltage of 4.18 volts. When the battery reaches 4.8v the charge will stop.

The charge current will be displayed as:

A 310

310 would be a battery charge current of 310 ma.

The display will cycle between the voltage and current display as long as the buttons are being depressed.

The charge current is limited to between 250 ma and 350 ma.

7.0 PARTS LISTS AND DIAGRAMS

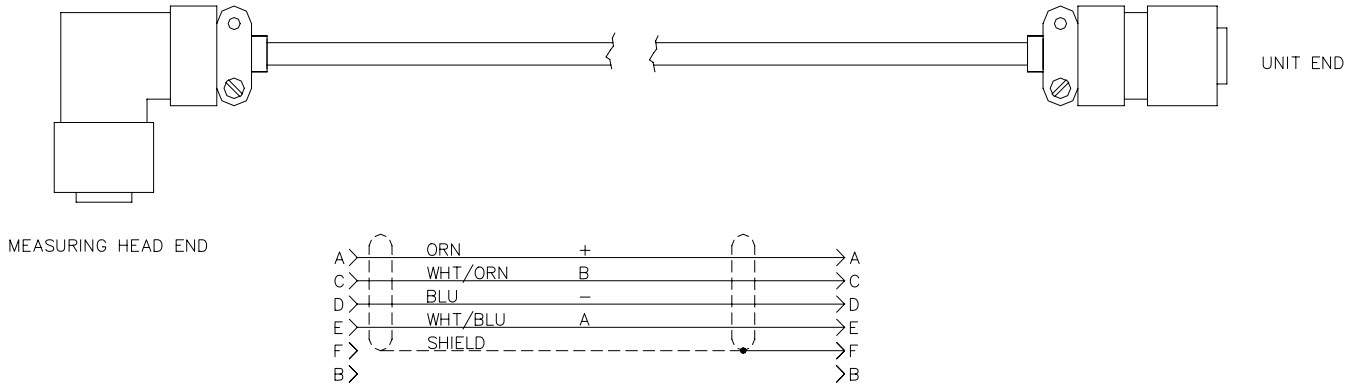
7.1 PARTS LISTS

ALS6A100 PANEL AMS BATT BACKUP DISPLAY

Part Number	Description	Qty Required	UM
ALS6M001	PANEL FRONT BACKUP PANEL MT	1	EA
ALS6M002	PANEL REAR BACKUP PANEL MT	1	EA
ALS6M004	CHASSIS BACKUP DISPLAY PNL TOP	1	EA
ALS6M005	CHASSIS BACKUP DISPLAY PNL BTM	1	EA
AM5KP056	CONN KPT02E10-6S RECEPTACLE	1	EA
AMS4P257	CONN KPT02E8-33P RECEPTACLE	1	EA
ALS6A010	PCB ASSY DEPTH BACKUP CONTROL	1	EA
AMS4P621	POWER SUPPLY 12V 7W 85-264ACIN	1	EA
C276P155	CABLE BELDEN 177431 10' AC	1	EA
AMS4P276	RECEPTACLE 115/240 VAC FUSED	1	EA
AM5KP142	FUSE 1250MA 250V BACKUP DSPLAY	2	EA
AMS4P618	BATTERY 1.2V NIMH AA 2100MAH	3	EA
AMS4P021	SWITCH CAP ALCO C-22 BLACK	1	EA
AMS7P017	SWITCH CAP ALCO C-22 RED	1	EA
AMS4P631	NUT 1/4-40 DRESS BRIGHT NICKEL	4	EA
AMS4P659	CONN TERMINAL RECPTACLE .25TAB	3	EA
AMS7P021	CONN 102398-4 AMP 12 POS PCB	1	EA
AMS7P023	CONN 102536-4 AMP 12 POS BACK	1	EA
AMS7P024	CONN 102681-1 AMP 12 POS FRONT	1	EA
AMS4P661	CONN HOUSING 3POS 2.5MM SHROUD	1	EA
AMS4P662	CONN FE TERMINAL CRIMP 2.5MM	4	EA
AMS4P663	CONN HOUSING 2POS 2.5MM SHROUD	1	EA
AMS4P713	BATTERY HLDR 3AA W 9V SNAP CON	1	EA
AMS4P714	BATTERY STRAP 9V SNAP ON 6"LD	1	EA
ALS6P085	SCREW 4-40 X 1/4 FH PHIL SST	16	EA
AMS8P091	SCREW 4-40 X 1/4 PHIL PAN SST	12	EA
AMS8P036	WASHER #4 LOCK SST	12	EA

7.2 Magnetic Pickup Cable – AM5KA024-020

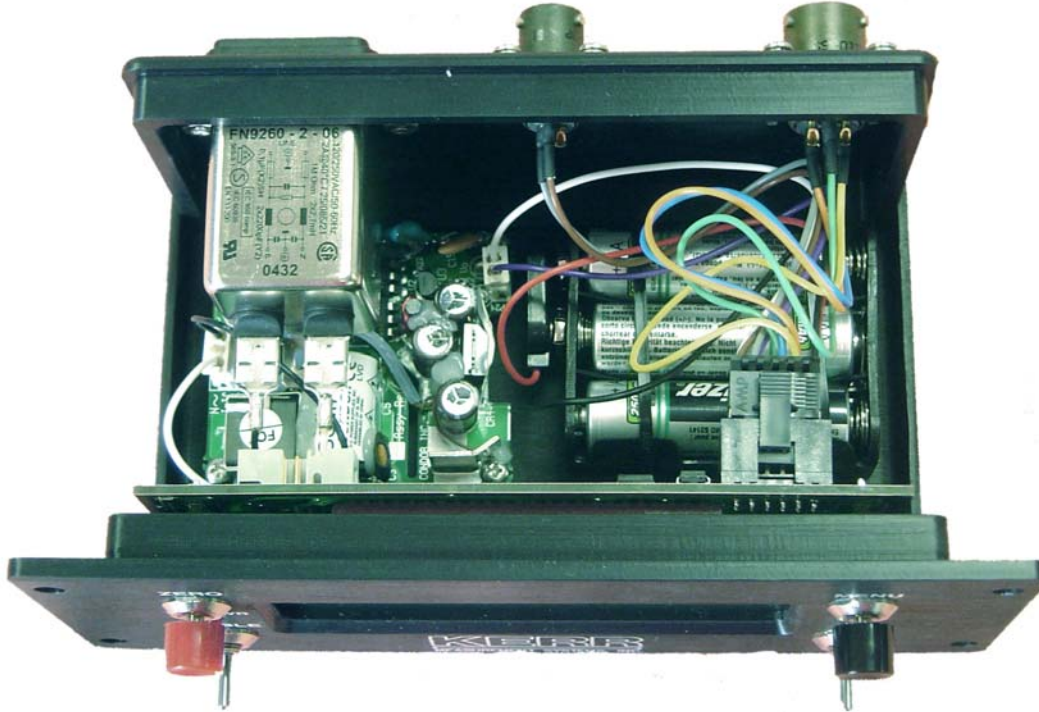
The wiring to the magnetic pickup is via a 6 pin MIL-C chassis socket. This is mounted with terminal A uppermost. The wiring to the magnetic pickup is pin-for-pin straight through.



Function	Pin Number
Vsensor	A
Channel A	E
Channel B	C
Ground	D

Kerr P/N	Description	Qty	Required
AMS4P222	CABLE 20/4C ALPHA 25154 BLACK SHIELDED 0.28OD	20	FT
AM5KP057	CONN KPT06F10-6P STR PLUG MS3116 W/STRAIN RELIEF	1	EA
AM5KP058	CONN KPT08F10-6S RT ANGLE PLUG W/STRAIN RELIEF OR EQUIVALENT	1	EA
AM5KP059	DUST CAP KPT8010C CANNON SHELL SIZE 10 OR EQUIV	2	EA
AM5KA034	BUSHING #9779-513-4 AMPHENOL	2	EA

7.3 INTERNAL VIEW TOP



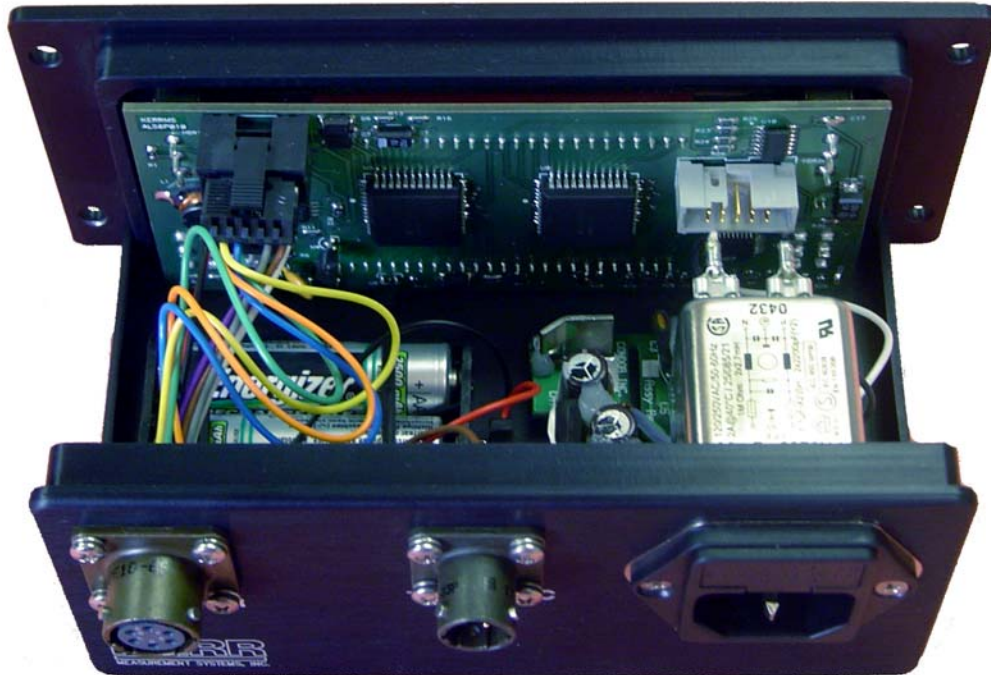
Note position of the three batteries.

USE ONLY 1.2V NIMH AA 2100MAH BATTERIES

WARNING

**DO NOT USE NON RECHARGEABLE
BATTERIES AS THEY ARE LIKELY TO
EXPLODE WHEN CHARGED**

7.3 INTERNAL VIEW REAR



Install a shorting jumper across pins 3 and 4 of the gray connector on the rear of the main pc board to prevent the head type from being changed.