

**TENSION DISPLAY PANEL  
ALS8A120  
4-20MA Current Loop input**



## 1.0 GENERAL DESCRIPTION

The 4-20MA Tension Display panel is designed to be an independent tension measurement indicator for mounting inside a wireline unit. The tension signal is read from a load cell connected to a wireline sheave or from a load pin in the measuring head. It can be displayed in either pounds or kilograms 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.

An external output is provided to allow the panel to be connected to an analog gauge to show tension.

The unit is designed to operate without intervention from the user. When external power fails, the display is maintained by the batteries. If the input is inactive for more than one hour the unit switches itself off.

Front panel controls allow the operator to:

- Zero the tension reading
- 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 The system is now ready to measure tension.

## 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 panel stores the menu setting 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 the tension.

### 3.2 Menu Switch

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

These settings include Load Cell type, Scales, Load Cell Angles, English/Metric units, 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.

### 3.4 Increase / Decrease Switch

The INCREASE/DECREASE switch is a center biased three position switch. Use this switch to change values in each menu.

### 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.

**IMPORTANT NOTE:** 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.

### 4.1 LINE SIZE OR LOAD CELL FULL SCALE

#### 4.1.1 LINES SIZE (WITH HEAD TYPE 3K OR 5K)

When the menu button is pressed once, the panel will display '**LS**' and then Line Size stored in the system. Use the +/- switch to change the display until desired line size setting is displayed.

**IMPORTANT NOTE:** If the first menu is 'FS' then the Load Cell is selected as the head type. Refer to 4.3 for information regarding full scale values.

Line sizes will be displayed as the following options:

LS 3:16	-	3K and 5K
LS 7:32	-	3K and 5K
LS 9:32	-	3K and 5K
LS 5:16	-	3K and 5K
LS 3:8	-	3K and 5K
LS 7:16	-	5K only
LS 15:32	-	5K only
LS 15d	-	5K only
LS 472	-	5K only
LS 472d	-	5K only
LS 484	-	5K only
LS 492	-	5K only
LS 17:32	-	5K only

#### 4.1.2 FS LOAD CELL

The panel will display Hd\_LC for the Load Cell when Head Type LC is selected.

The panel will display **FS XY.AB** where X is tens of thousands of pounds, Y is thousands of pounds, A is hundreds of pounds and B is 10's of pounds. Use the +/- switch to select the setting the desired setting.

#### PANCAKE STYLE LOAD CELL

(typically used on the BenchMark tension test stand)

This value is located on the load cell tag. See the following example.



This is an Example of a load Cell Tag. Note: This tag will be used for full scale and sensitivity values.

### COMPRESSION LOAD CELL WITH HYDRAULIC GAUGE

(typically used with a "Martin Decker" hydraulic load cell installed in a measuring head).



Multiply effective area of the of the surface area by the full scale PSI value of the electrical transducer connected to the load cell.

Example 1: A typical 5000 pound MD Totco load cell has a area of 4.02 sq inches. If a transducer with a full scale reading of 500 PSI is used then the number to be entered would be 2010 pounds.

Example 2: A typical 10,000 pound MD Totco load cell has a area of 6.44 sq inches. If a transducer with a full scale reading of 1475 PSI is used then the number to be entered would be 9500 pounds.

## 4.2 DISPLAY CALIBRATE RESULT

If the panel is connected to a load cell that includes a calibrate or shunt cal function, the calibrate signal will be displayed at this time.

## 4.3 UNITS MENU

Press the menu button again and the panel displays 'UN' for units. Select 'LB' for pounds or 'Hg' for Kilograms.

Note: Remember to move to menu 4.4 to accept these changes.

## 4.4 HEAD TYPE

Press the menu button again and the panel displays '**Hd**' for Head type.

Select '**5H**' for the 5k head or '**3H**' for the 3K Head. The line size menu will then be the first option on the menu (4.1.1.)

Select '**LC**' for use with the load cell. This setting is used for the pancake style load cell on the top of the tension test stand. When using the load cell, the line size menu will be replaced with the 'FS' or full scale menu.

## 4.5 ACCEPT/DISCARD CHANGES

Press the menu button again and the panel displays **ACCEPT**. If you want to accept the changes put the +/- switch in the '+' position. The panel displays 'YES'. Pushing the menu button writes the new values to flash. If you want to discard the changes put the '+/-' switch to the '-' position. The panel will display 'NO'. Push the menu button again.

## **5.0 INSTALLATION AND MOUNTING**

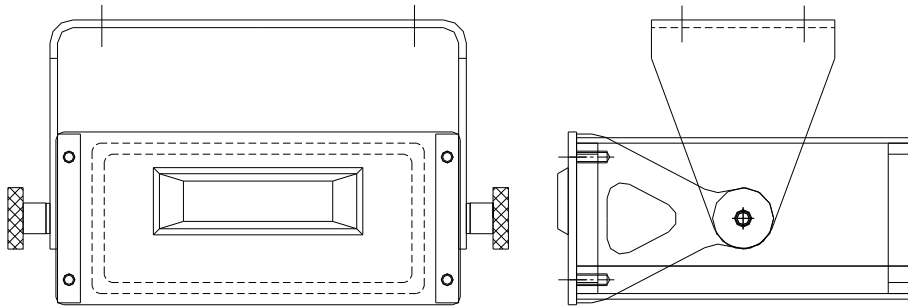
### **5.1 INSTALLATION PROCEDURE**

- 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 tension input 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 Ensure that the unit is setup for the desired measurement units (pounds or kilograms).
- 5.1.6 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

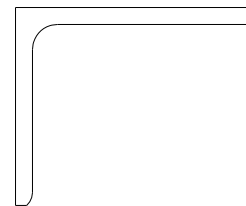
TOP VIEW



FRONT VIEW

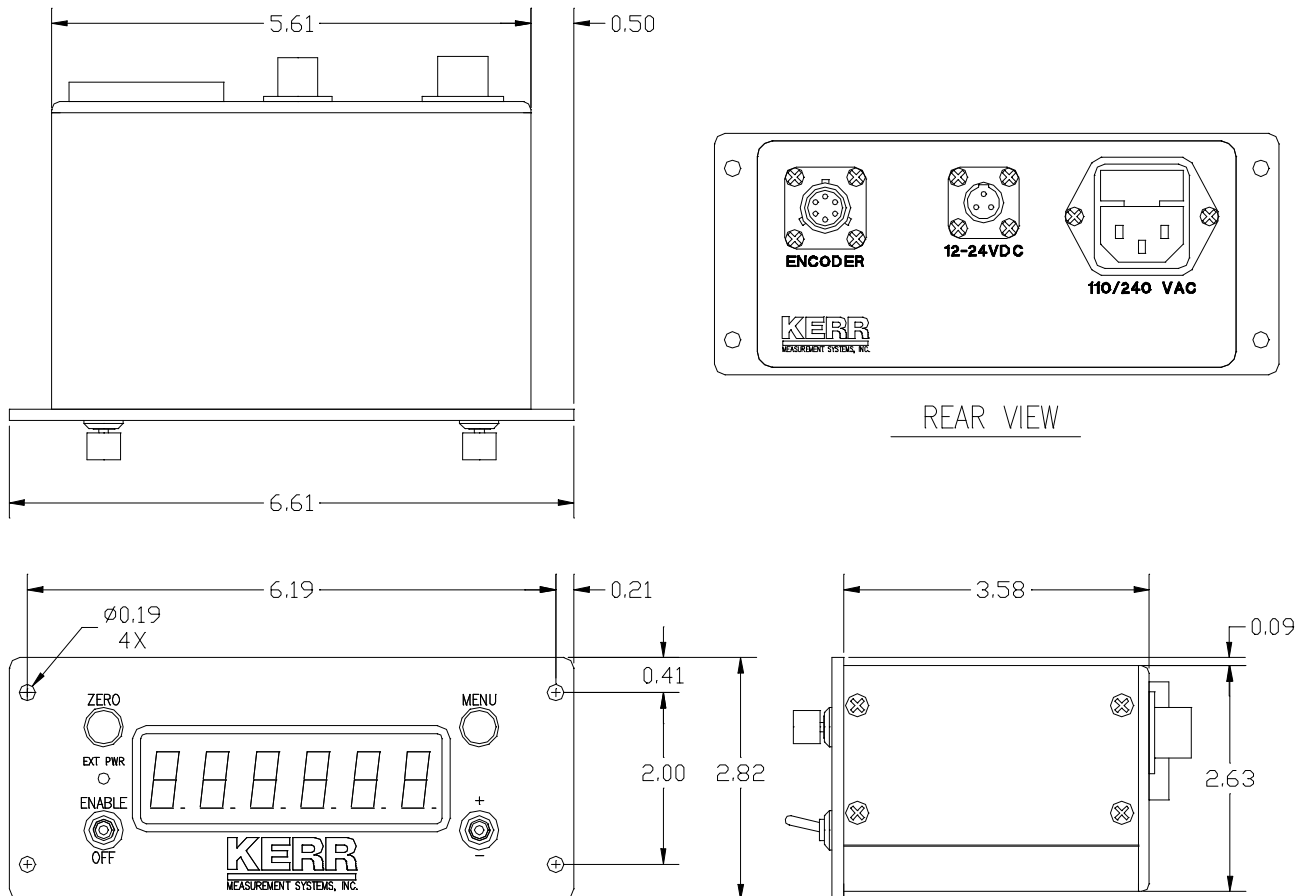


SIDE VIEW



## 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.

### 6.6 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: AMS4P257 -CONN KPT06E8-33P 3 PIN

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.

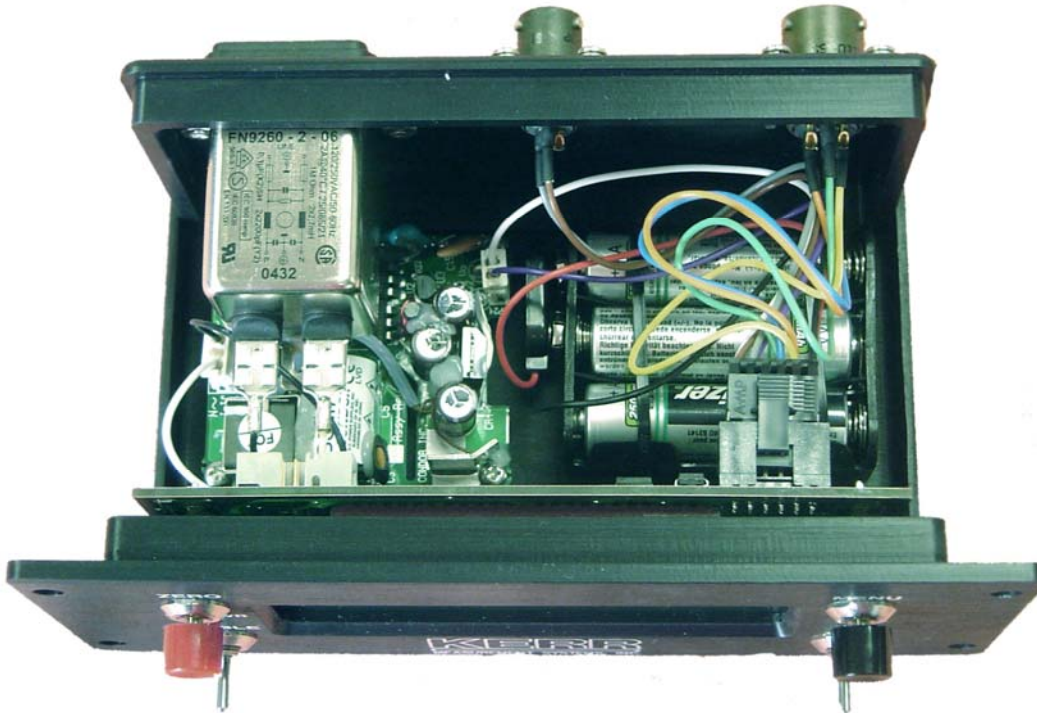
The charge current is limited to between 250 ma and 350 ma.

## 7.0 PARTS LISTS AND DIAGRAMS

### 7.1 PARTS LISTS ALS8A120 TENSION DISPLAY PANEL

LINE NO.	PART NO.	DESCRIPTION	QTY	REFERENCE
1	ALS6M001-2	PANEL FR TENSION BKUP PNL MT	1	
2	ALS8M009	PANEL REAR TENS BKP 4-20	1	
4	ALS6M004	CHASSIS BACKUP DISPLAY PNL TOP	1	
5	ALS6M005	CHASSIS BACKUP DISPLAY PNL BTM	1	
6	C276P366	CONN MS3102E-14S-5S	1	LOAD CELL
7	AMS4P257	CONN KPT02E8-33P RECEPTACLE	1	
8	AMS4P039	CONN MS3102E-14S-5P	1	TENS OUT
9	AMS4P569	LCD 6 DIGIT .71" REFLECTIVE TN	0	
10	ALS8A021B	PCB ASSY TENSION BU 4-20	1	
12	AMS4P621	POWER SUPPLY 12V 7W 85-264ACIN	1	
15	C276P155	CABLE BELDEN 177431 10' AC	1	
16	AMS4P276	RECEPTACLE 115/240 VAC FUSED	1	
17	AMS4P786	FUSE 0.5A 250V 5X20MM GLASS	2	
18	AMS4P618	BATTERY 1.2V NIMH AA 2100MAH	6	
22	AMS4P021	SWITCH CAP ALCO C-22 BLACK	1	MENU SW
23	AMS7P017	SWITCH CAP ALCO C-22 RED	1	ZERO SW
28	AMS4P631	NUT 1/4-40 DRESS BRIGHT NICKEL	4	
31	AMS4P659	CONN TERMINAL RECPTACLE .25TAB	3	
35	AMS7P022	CONN 102398-6 AMP 16 POS PCB	1	
36	AMS7P026	CONN 102536-6 AMP 16 POS BACK	1	
37	AMS7P025	CONN 102681-3 AMP 16 POS FRONT	1	
38	AMS4P661	CONN HOUSING 3POS 2.5MM SHROUD	1	
39	AMS4P662	CONN FE TERMINAL CRIMP 2.5MM	4	
40	AMS4P663	CONN HOUSING 2POS 2.5MM SHROUD	1	
41	ALS8P041	HOLDER BATT 6AA W 9V SNAP CON	1	
42	ALS8M057	TRAY BATTERY 6XAA BK TENS	1	
43	ALS8M037	CLAMP BATTERY 6XAA BKUP TENS	1	
44	ALS8P042	SPACER ROUND PHENLC #6 X 1-1/2	2	
48	ALS8P043	SCREW 6-32 X 2 PHIL PAN SST	2	
49	ALS6P033	SCREW 4-40 X 3/16 FH PHIL SST	2	BATTERY HOLDER
50	ALS6P085	SCREW 4-40 X 1/4 FH PHIL SST	14	
51	AMS8P091	SCREW 4-40 X 1/4 PHIL PAN SST	12	
52	AMS8P036	WASHER #4 LOCK SST	12	
53	ALS8A121	PLUG SHORTING ALS8A120	1	

## 7.2 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**