

**TENSION DISPLAY PANEL  
ALS8A101  
2-3mv/v input signal**



**Program Revision – 8A101F**

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## 1.0 QUICK START

### Recommended Spare Parts List – ALS6A100

All parts listed are Critical Spares and are required to properly maintain this device.

We recommend that all customers stock the quantity indicated in the ‘**QTY**’ column. **IF** you are in a remote location or prefer having immediate availability of all spares, we recommend that you stock at least one of each item.

NOTE – BenchMark may not always have all spares in stock all the time.

P/N	DESCRIPTION	QTY	REF
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#### RECOMMENDED SPARE PARTS FOR ALL LOCATIONS

AMS4P569	LCD 6 DIGIT .71" REFLECTIVE TN LCD-S601C71TR LUMEX	0	Ref
ALS8A024	PCB ASSY TENSION BU LV	1	
AMS4P621	POWER SUPPLY 12V 7W 85-264ACIN CONDOR GSM11-12AAG	1	
AMS4P786	FUSE 0.5A 250V 5X20MM GLASS	2	
AMS4P618	BATTERY 1.2V NIMH AA ENERGIZER NH15BP-4	6	

## Obtaining Technical Assistance

Call BenchMark Wireline Products Inc. at +1 281 346 4300  
Or contact by email [mail@benchmarkwireline.com](mailto:mail@benchmarkwireline.com)  
Or fax in request at +1 281 346 4301

Information is also available on website [www.benchmarkwireline.com](http://www.benchmarkwireline.com)

Parts can be ordered by email, phone, or fax.

Equipment can be returned for repair and maintenance.  
Please notify us by Phone, email, or fax before sending any equipment.

To return equipment to BenchMark, ship it to:  
BenchMark Wireline Products  
36220 FM 1093  
Simonton, Texas 77476  
U.S.A.

Note – For better response, please have the Part Number available.

## 2.0 GENERAL DESCRIPTION

The Tension Display panel is designed to be an independent, low voltage 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.





## 3.0 DESCRIPTION OF BUTTONS & SWITCHES

### 3.1 ENABLE

The ENABLE/OFF switch is a center-biased three position switch. *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) is required to zero the tension.**

### 3.2 MENU

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

The ZERO button 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 button.

### 3.4 "+/-"

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 on of battery power.

## 4.0 MENU SELECTIONS

This panel may be configured by scrolling through settings using the **MENU** button.

**IMPORTANT NOTE:** To change an input value, 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. You will then 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 button presses, the panel will time out.

### 4.1 HEAD TYPE

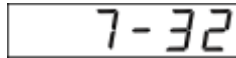
Press the **MENU** button again and the panel displays 'hd' for Head type. Select: the Head Type from this list.

- **HDSTND** - test stand hd 5 Jnd
- **HDLC** - load cell hd Lc
- **HDSN78** - passive ATEX certified hd 5n 78
- **HD5BU** - AM5K backup hd 5bu
- **HD5NA** - AM5K not amplified hd 5nA
- **HD5A** - AM5K amplified hd 5A
- **HD3NA** - AM3K not amplified hd 3nA
- **HD3A** - AM3K amplified hd 3A



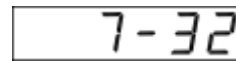
**NOTE** – after the **HEAD TYPE** has been chosen, only the menu items that pertain to that head type will be displayed.

**4.2 LINE SIZE**

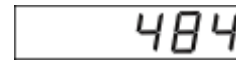


When the **MENU** button is pressed once the **LINE SIZE** is stored in the system. Use the '+/-' switch to change the display until desired line size setting is displayed.

Fractional values will be displayed like this



Decimal values will be displayed like this

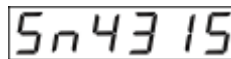


Line sizes will be displayed as the following options. Select a line size.

- 7-32
- 9-32
- 5-16
- 3-8
- 7-16
- 15-32ht
- 472
- 472ht
- 484
- 492
- 17-32
- 9-16

**NOTE** – the “ht” designates High Tension or Deep Groove tension wheels.

**4.3 SENSITIVITY NUMBER**



Press the **MENU** button again and the **SN Sensitivity Number** menu item will be displayed. You will have to input that value. It is found on the ID plate on the load cell.

**4.4 FULL SCALE** 

Press the **MENU** button again and the **FS Full Scale** menu item will be displayed and you will have to input the value. This is found on the ID plate on the load cell.

**4.5 SHUNT CAL** 

Press the **MENU** button again and the **SC Shunt Cal** menu item will be displayed. This value is automatically calculated by the panel based on other inputs. Immediately after that, the **SC Off** message will be displayed indicating that the value has now been erased.

**4.6 ANGLE** 

Press the **MENU** button again and the **ANGLE** menu item will be displayed. The system assumes and displays “0” zero. If the angle of the wire is anything other than that, primarily because a sheave is being used, calculate the angle and enter that value.

**4.7 UNIT OF MEASURE**  

Press the **MENU** button again and the panel displays ‘un’ for **UNIT OF MEASURE**. Either **LB** pounds or **KG** kilograms must be selected.

**4.8 TENSION HOLD – ZERO** 

Press the **MENU** button again and the panel displays ‘**TENSION HOLD**’. This indicates the maximum tension value recorded on the panel.

#### 4.9 ACCEPT Y/N

ACCEPT

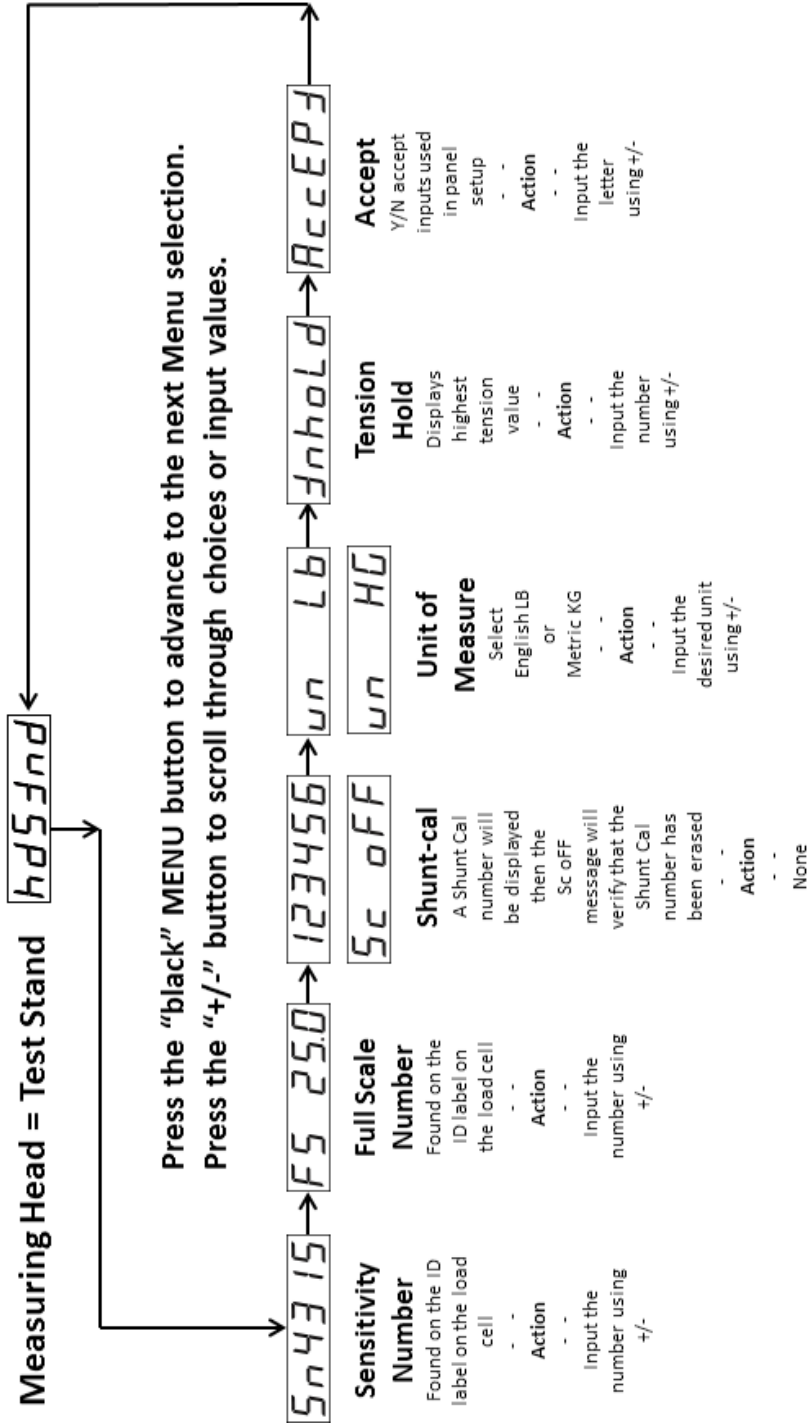
Press the **MENU** button again and the panel displays **ACCEPT**. If you want to accept the changes put the '+/-' switch in the '+' position. The panel displays **YES**. Pushing the menu button writes the new values to flash. If you want to discard the changes put the '+/-' switch to the '-' position.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

#### 4.10 MENU MAPS

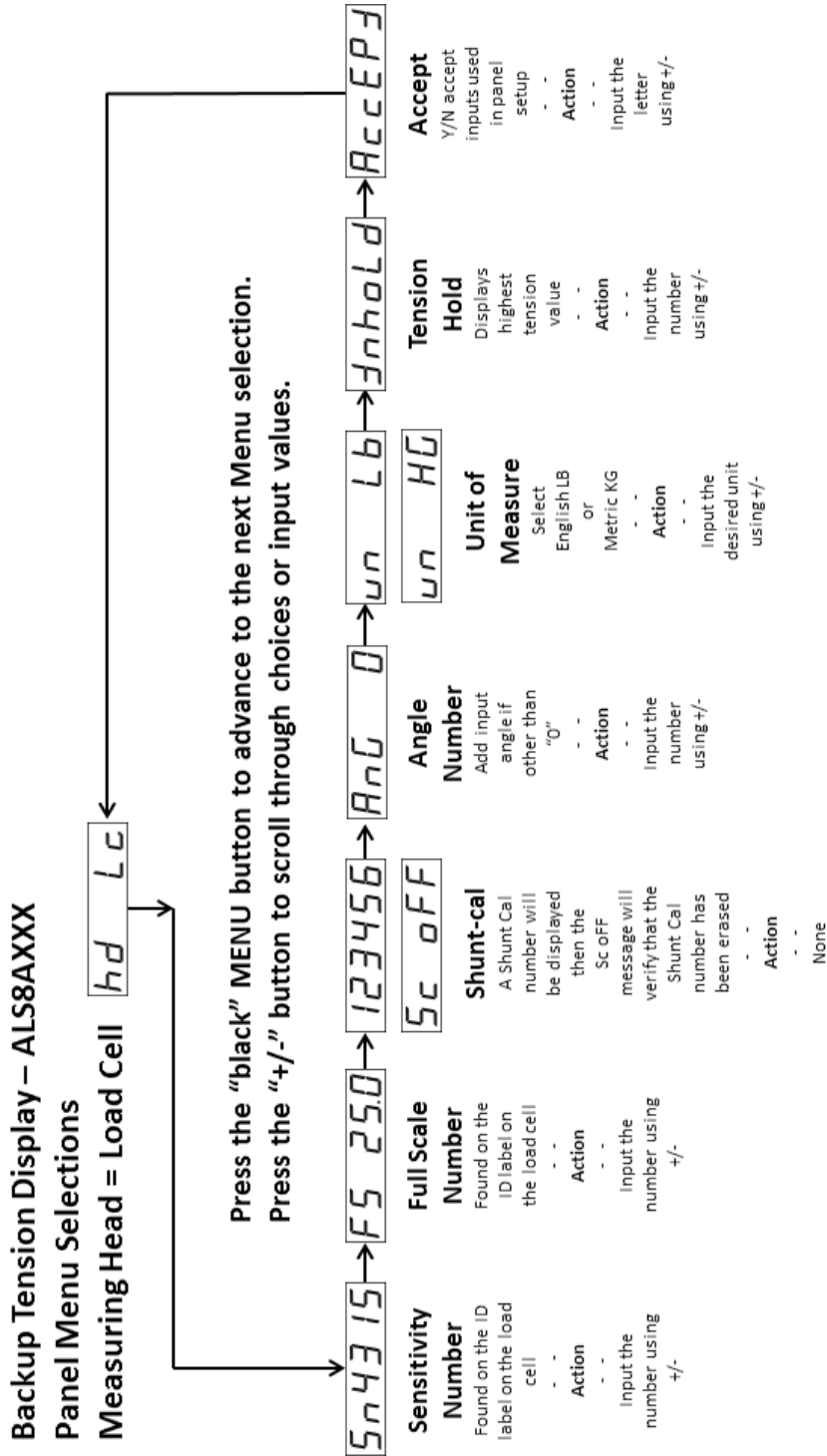
The following pages provide a complete MENU MAP for each type of Measuring Head. Select the head attached to the Tension Panel and the map will show the menu selections in order as they appear on the panel.

#### 4.10.1 MENU SELECTIONS - MEASURING HEAD - TEST STAND

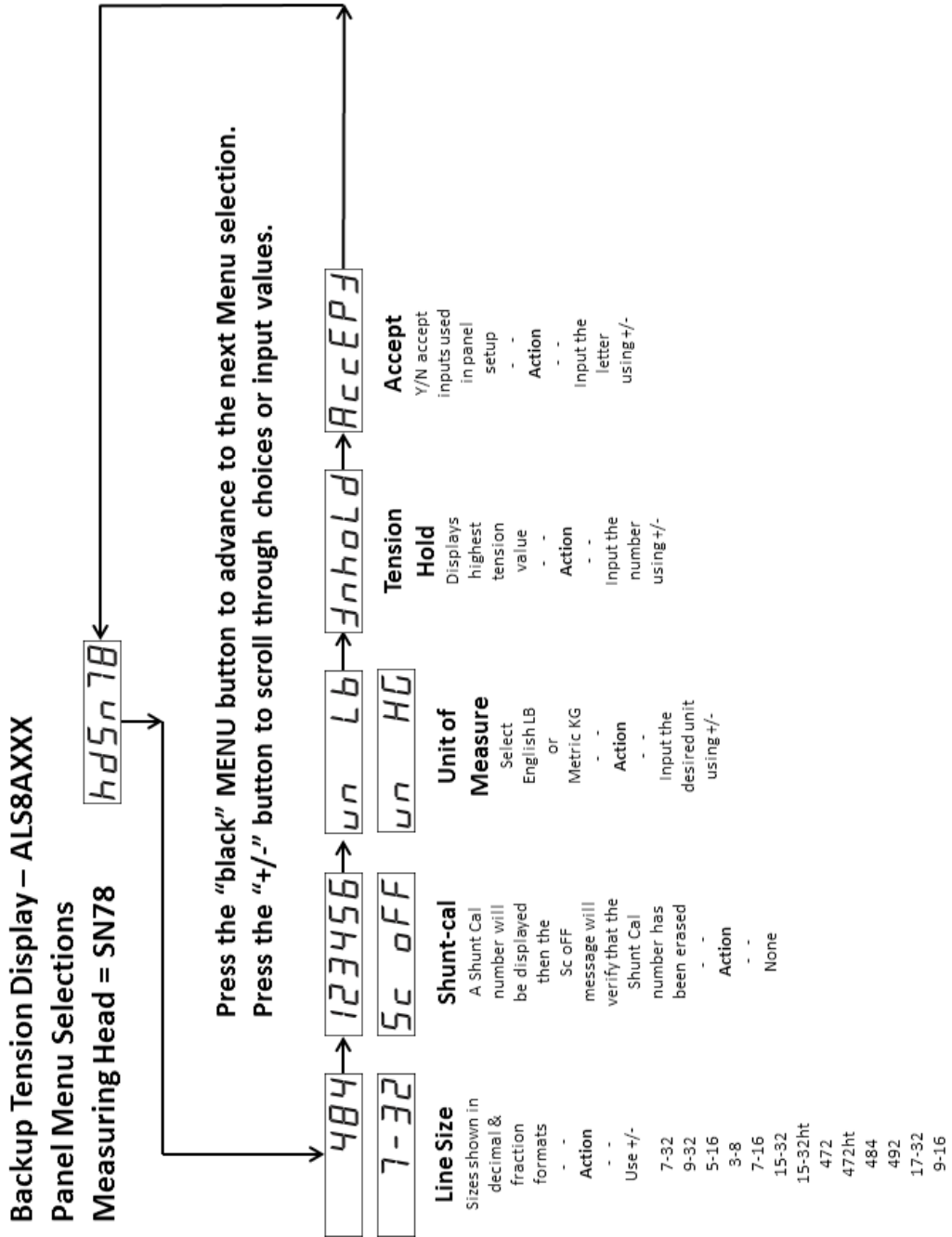
**Backup Tension Display – ALS8AXXX**  
**Panel Menu Selections**  
**Measuring Head = Test Stand**



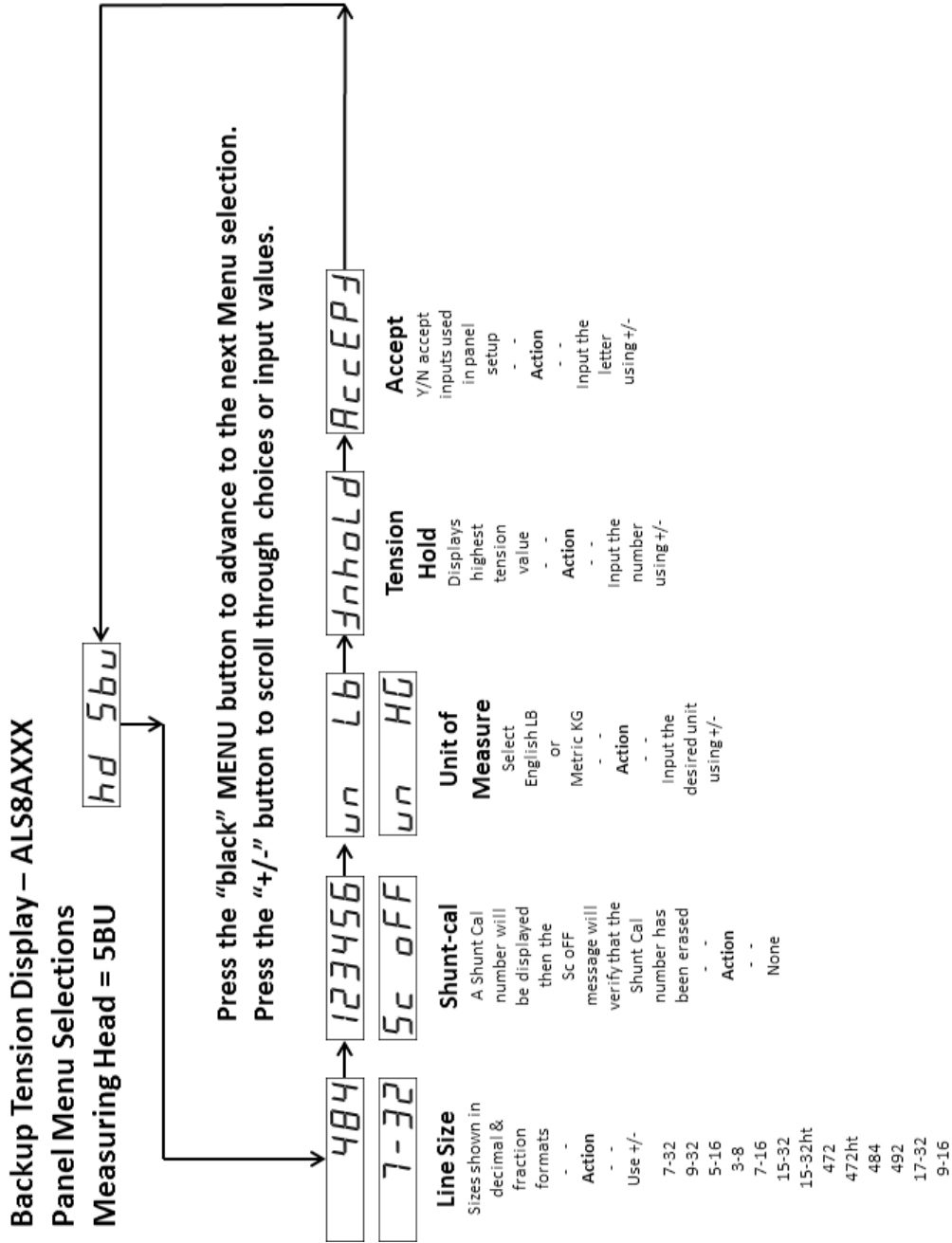
## 4.10.2 MENU SELECTIONS – MEASURING HEAD - LOAD CELL



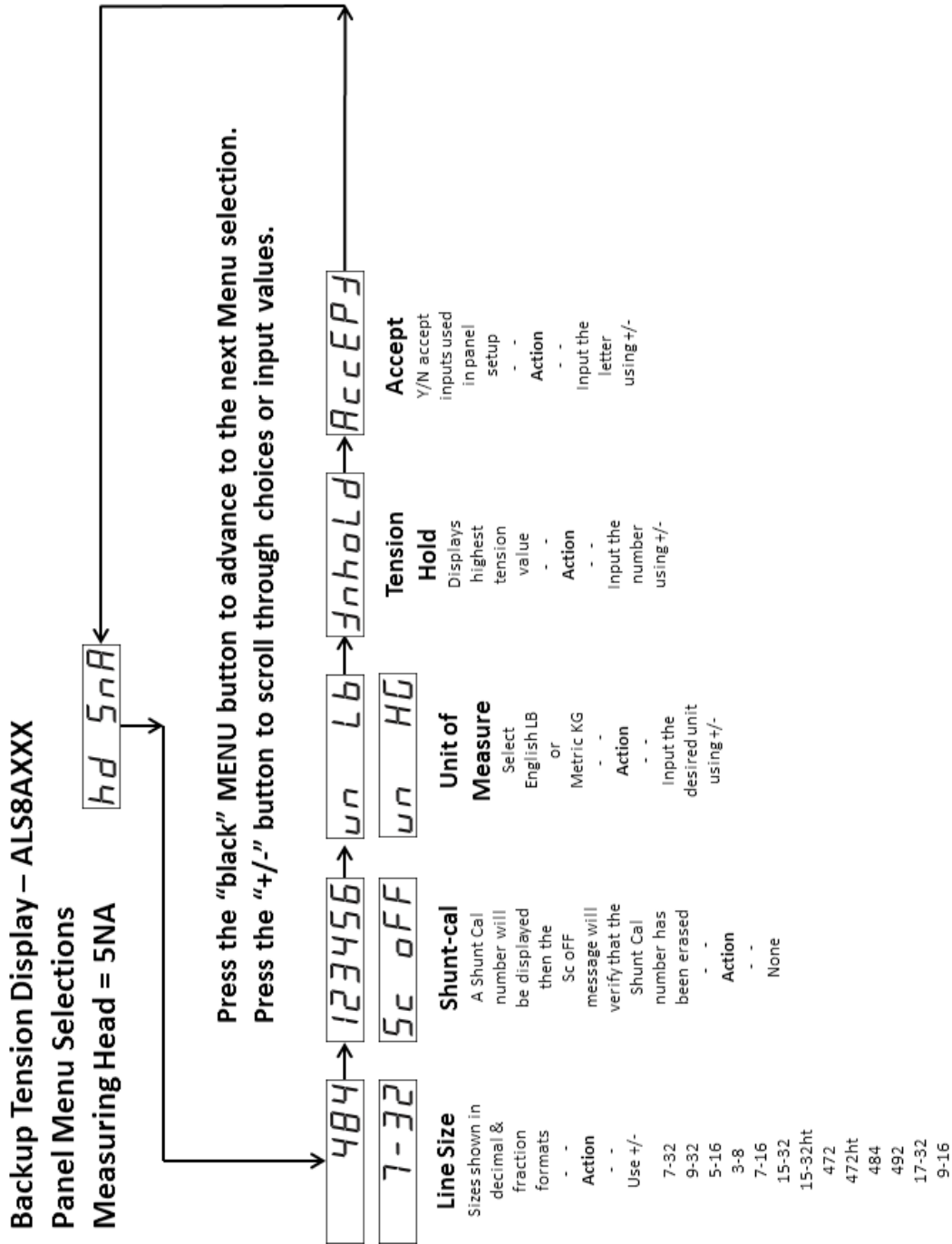
### 4.10.3 MENU SELECTIONS - MEASURING HEAD - SN78



#### 4.10.4 MENU SELECTIONS – MEASURING HEAD - 5BU

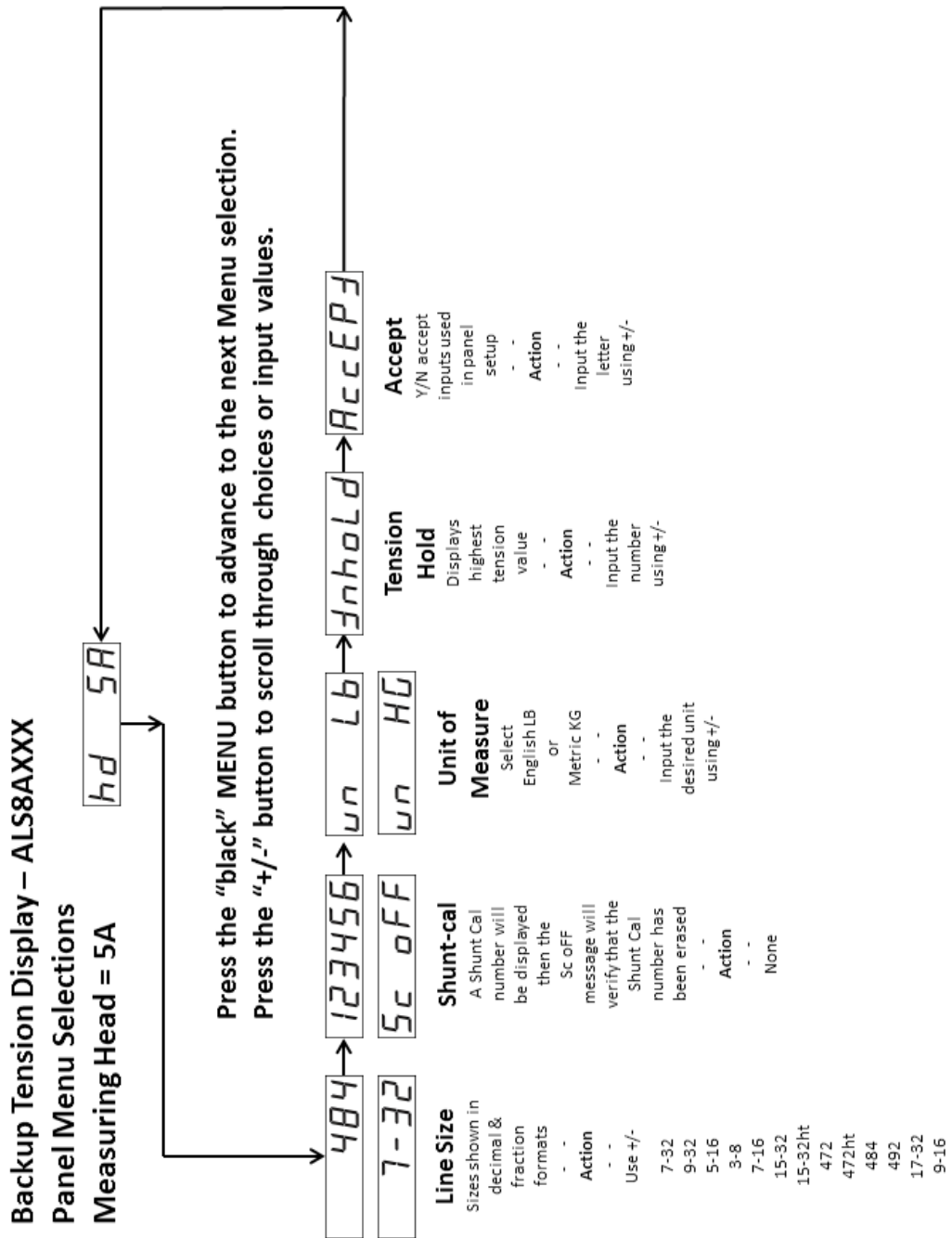


### 4.10.5 MENU SELECTIONS – MEASURING HEAD - 5NA

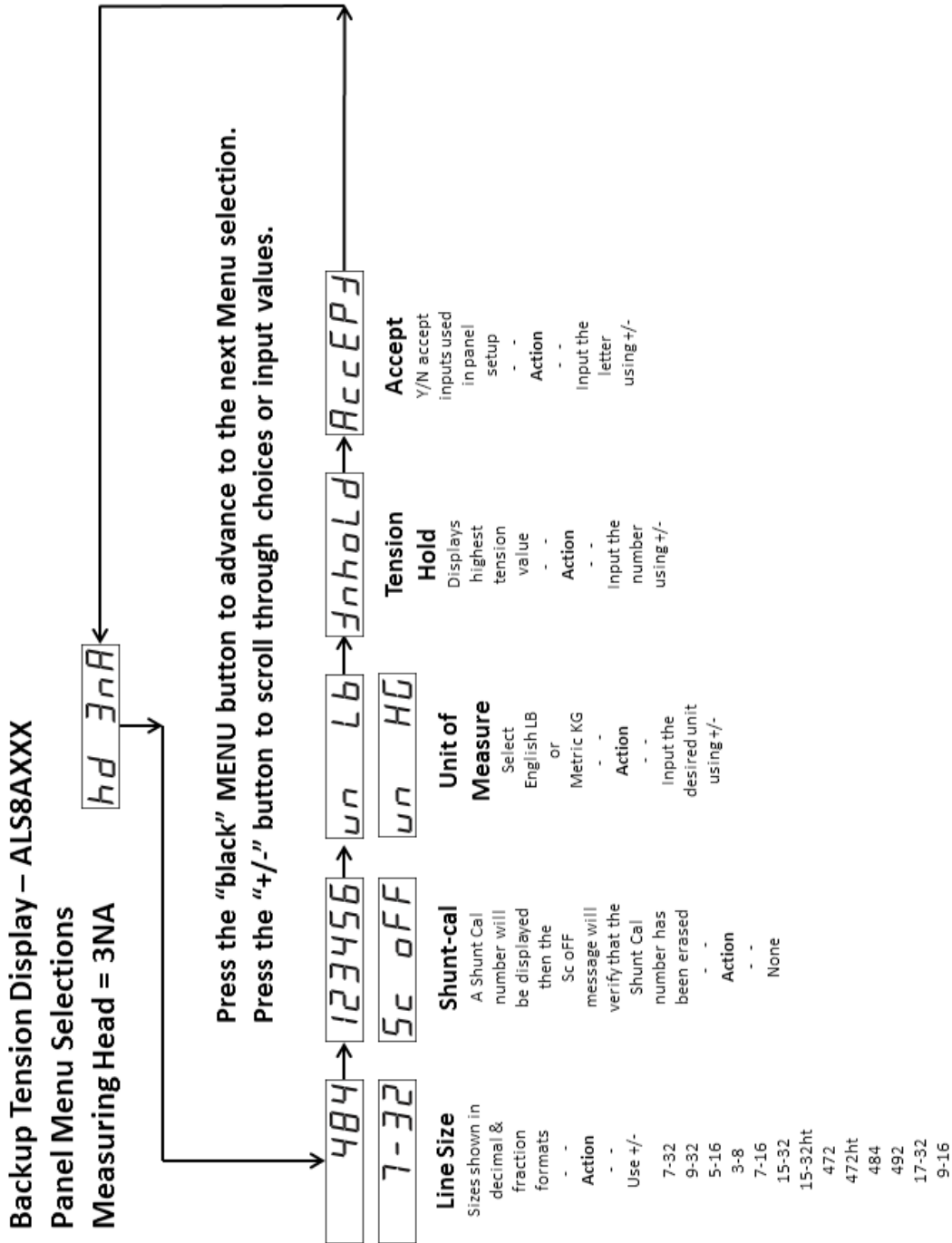




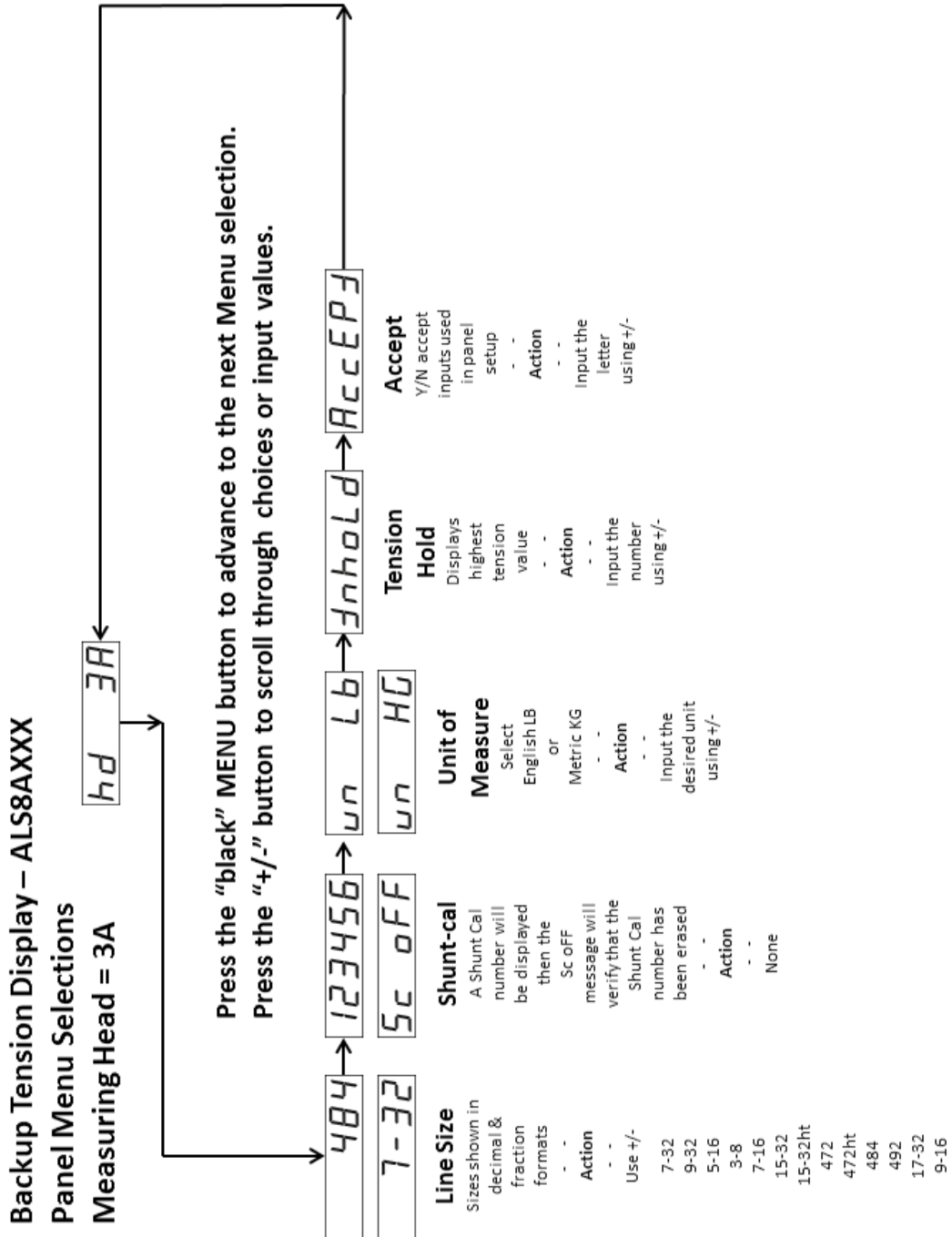
## 4.10.6 MENU SELECTIONS – MEASURING HEAD - 5A



### 4.10.7 MENU SELECTIONS – MEASURING HEAD - 3NA



## 4.10.8 MENU SELECTIONS – 3A



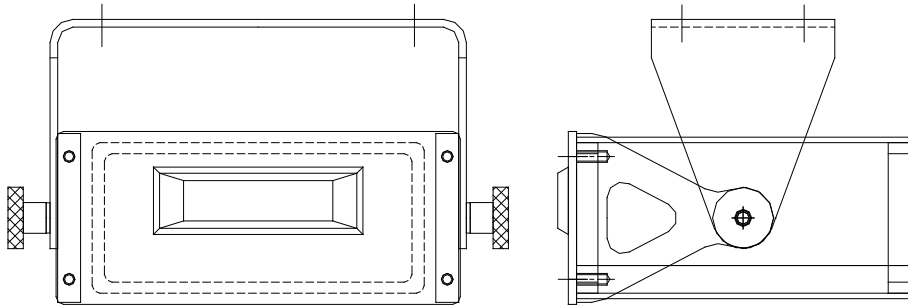
## **5.0 INSTALLATION AND MOUNTING**

### **5.1 INSTALLATION PROCEDURE**

- 5.1.1 Prepare an appropriate panel cut-out with four fixing holes (refer to drawing in section 5.2) or use one of the two mounting brackets shown in (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

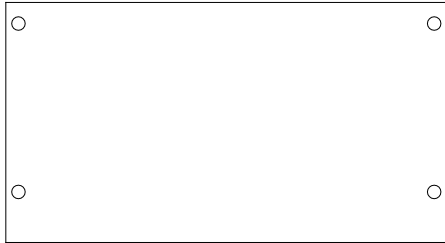
### AMS4A161 PIVOTING MOUNT



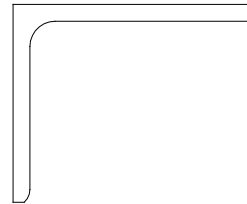
## 5.2 MOUNTING KITS continued

### AMS4M110 PLATE MOUNT

TOP VIEW



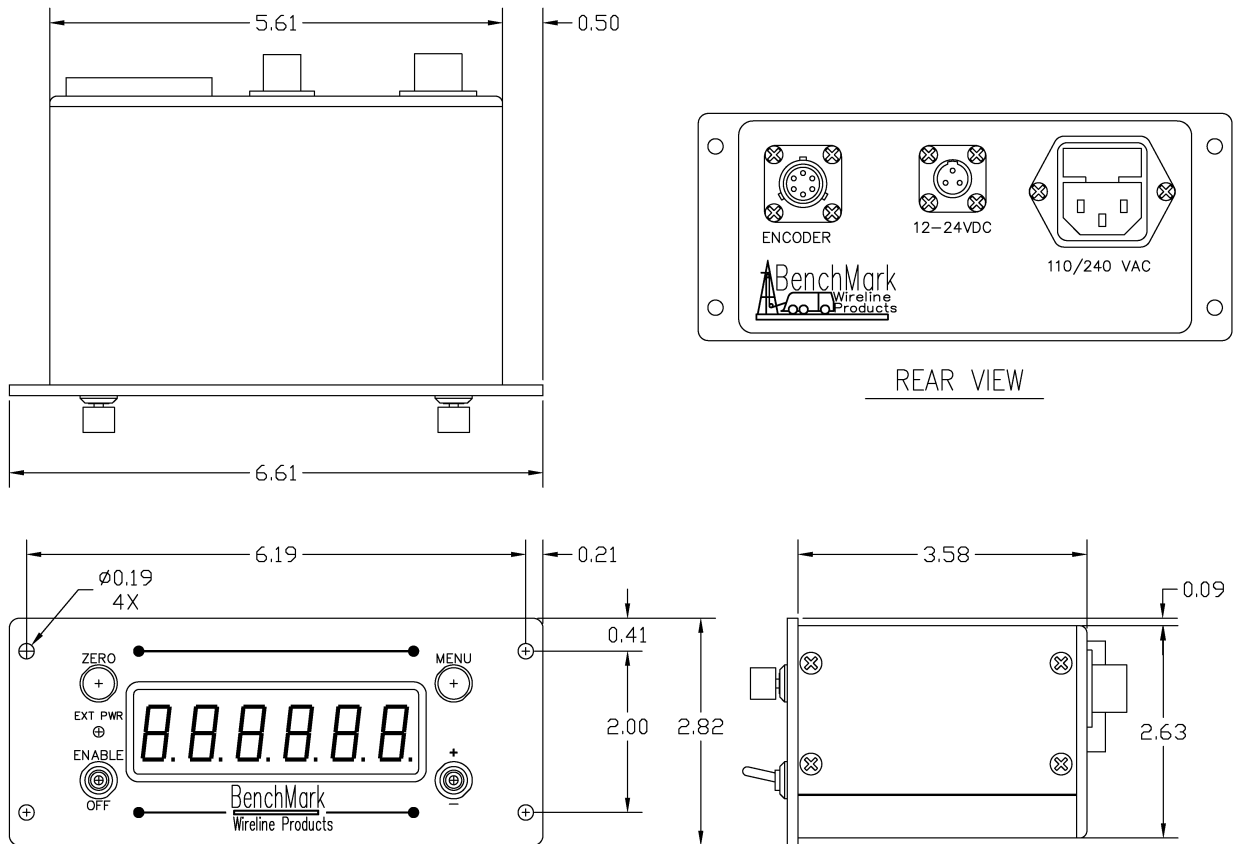
FRONT VIEW



SIDE VIEW

## 6.0 SPECIFICATIONS

### 6.1 Mechanical



Material	Aluminium, anodized
Weight	1.5 lbs (.68 kg)
Mounting	4 × .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 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.



## 6.6 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.

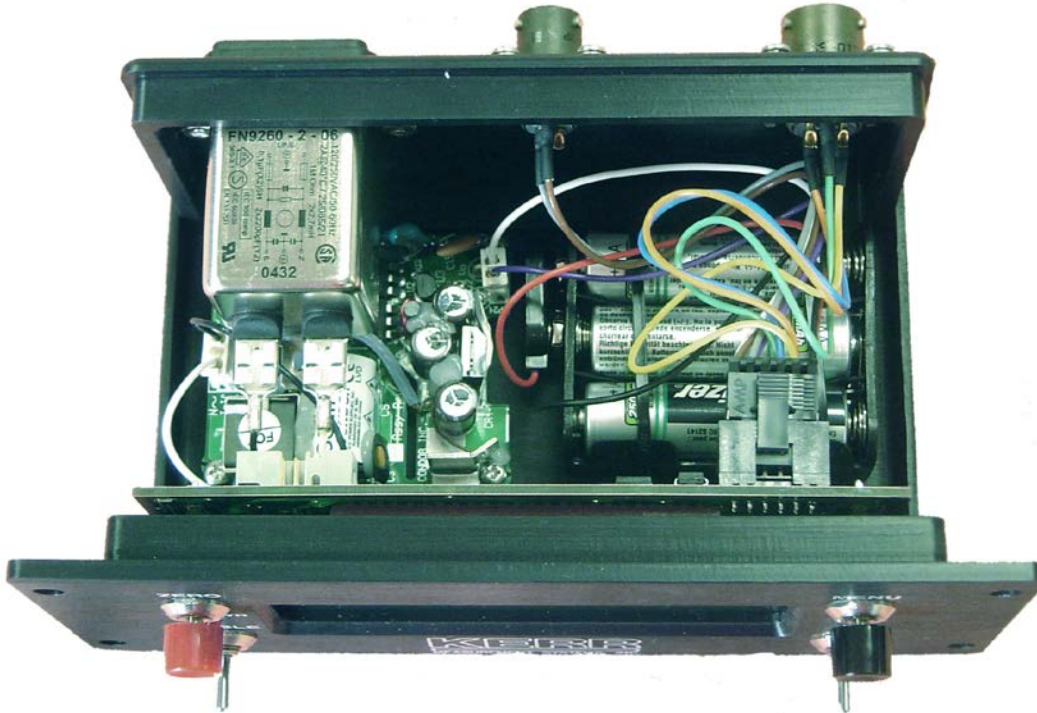
The charge current is limited to between 250 ma and 350 ma.

## 7.0 PARTS LISTS AND DIAGRAMS

### 7.1 PARTS LISTS ALS8A101 TENSION DISPLAY PANEL

P/N	DESCRIPTION	QTY	REF
ALS8A101	PANEL AMS TN BKUP AMP 2MV/V AM5K LOAD PIN OR PANCAKE LOAD CELL 110/240VAC - 12/24VDC		
ALS6M001-2	PANEL FR TENSION BKUP PNL MT	1	
ALS8M002	PANEL REAR TENS BKP	1	
ALS6M004	CHASSIS BACKUP DISPLAY PNL TOP	1	
ALS6M005	CHASSIS BACKUP DISPLAY PNL BTM	1	
AMS4P171	CONN KPSE02E12-10S RECEPTACLE 10 SOCKETS	1	LOAD CELL
AMS4P257	CONN KPT02E8-33P RECEPTACLE MS3112	1	
ALS4P020	CONN JACK BNC STRGHT 50OHM ISO	1	TENS OUT
AMS4P569	LCD 6 DIGIT .71" REFLECTIVE TN LCD-S601C71TR LUMEX	0	Ref
ALS8A024	PCB ASSY TENSION BU LV	1	
AMS4P621	POWER SUPPLY 12V 7W 85-264ACIN CONDOR GSM11-12AAG	1	
C276P155	CABLE BELDEN 177431 10' AC LINE INPUT	1	
AMS4P276	RECEPTACLE 115/240 VAC FUSED EMI FILTERED 2 AMP	1	
AMS4P786	FUSE 0.5A 250V 5X20MM GLASS	2	
AMS4P618	BATTERY 1.2V NIMH AA ENERGIZER NH15BP-4	6	
ALS8M057	TRAY BATTERY 6XAA BK TENS	1	
ALS8M037	CLAMP BATTERY 6XAA BKUP TENS	1	
ALS8P042	SPACER ROUND PHENLC #6 X 1-1/2 NON-THREADED	2	
AMS4P021	SWITCH CAP ALCO C-22 BLACK	1	MENU SW
AMS7P017	SWITCH CAP ALCO C-22 RED	1	ZERO SW
C276P046	WASHER #6 LOCK SS	2	
ALS8P043	SCREW 6-32 X 2 PHIL PAN SST	2	
AMS4P631	NUT 1/4-40 DRESS BRIGHT NICKEL 0.460 DIA X 0.090 THK	4	
AMS4P659	CONN TERMINAL RECPTACLE .25TAB AMP 2-520184-2	3	
AMS7P022	CONN 102398-6 AMP 16 POS PCB HARNESS BODY	1	102398-4
AMS7P026	CONN 102536-6 AMP 16 POS BACK COVER	1	
AMS7P025	CONN 102681-3 AMP 16 POS FRONT COVER	1	
AMS4P661	CONN HOUSING 3POS 2.5MM SHROUD MOLEX 50-37-5033	1	
AMS4P662	CONN FE TERMINAL CRIMP 2.5MM MOLEX 08-70-1040	4	
AMS4P663	CONN HOUSING 2POS 2.5MM SHROUD MOLEX 50-37-5023	1	
ALS8P041	HOLDER BATT 6AA W 9V SNAP CON	1	
ALS6P033	SCREW 4-40 X 3/16 FH PHIL SST	2	BATTERY HOLDER
ALS6P085	SCREW 4-40 X 1/4 FH PHIL SST	14	
AMS8P091	SCREW 4-40 X 1/4 PHIL PAN SST	12	
AMS8P036	WASHER #4 LOCK SST	12	
ALS4P019	CONN HOUSING CRIMP 2CKT .100	1	
ALS4P014	CONN TERM CRIMP 24-30AWG MOLEX 08-50-0005	2	

### 7.3 BATTERY REPLACEMENT



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**

## 7.4 USB DISK ADAPTER



### SOFTWARE UPDATE

In the event of a required software update the ALS8A101 tension panel must be re-programmed with the ALS9K211 USB Debug Adaptor connected to a computer using the Silicone Laboratories Flash Programming utility. This can be downloaded from the Silicone Laboratories website. Search for, silicon labs – support – downloads – 8 bit production programmer.

Remove the cover of the **ALS8A101** backup depth panel and connect the 20 pin connector to the HDR2 header and then apply power.

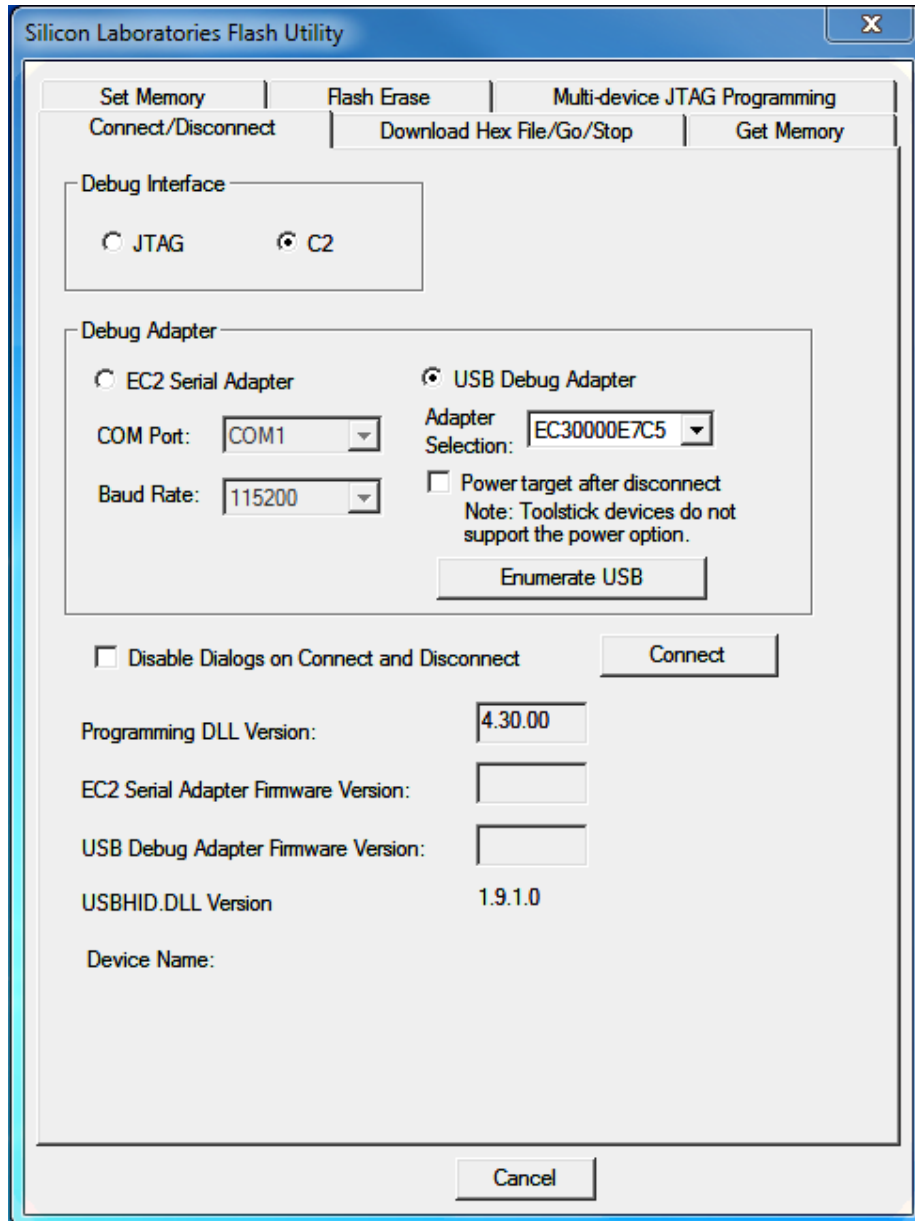
Next connect the USB Connector to a computer and start the Silabs flash programming utility.

## RE-PROGRAMMING INSTRUCTIONS

Refer to the following figure and ensure that connects/disconnects dialogue screen is configured accordingly.

Click on the Connect Button and the utility will respond with a “CONNECTED” message.

Now click on the “Download Hex File/Go/Stop” tab near the top of the dialog and next refer to the next figure.



## DOWNLOAD HEX FILE/GO/STOP DIALOG

Click on the “Browse” button and locate the new software Hex File for the ALS6A100 backup depth panel.

Next click on the “Download –Ad” and the utility will respond with a “Downloaded” message. Next click on the “Go” button and the utility will respond with a “Go” message.

Note – DO NOT press “STOP”.

Close the utility and cycle-power on the ALS6A100 Backup Depth Panel to confirm that the new software has been added by noting the displayed version number.

