R835
WIRELESS BOOM ANGLE INDICATOR
Installation and Operation Manual

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The purpose of this manual is to provide the customer with the operating procedures essential for the promotion of proper machine operation for its intended purpose. It is important to over-stress proper usage. All information in this manual should be read and understood before any attempt is made to operate the machine.

Since the manufacturer has no direct control over machine application and operation, conformance with good safety practice in this area is the responsibility of the user and his operating personnel.

All procedures herein are based on the use of the system under proper operating conditions, with no deviations from the original design. Alteration and/or modification of the equipment is strictly forbidden without written approval from RaycoWylie Systems.

The R835 Wireless Boom Angle Indicator is to be regarded only as an aid to the operator.

This system must never be used, under any circumstances, as a substitute for the good judgment of a crane operator when carrying out approved crane-operating procedures. Responsibility for the safe operation of the crane lies with the crane operator. The indicator equipment will not necessarily prevent crane damage due to overloading and related causes if not set properly.

Before operating a crane equipped with a Wylie system indicator, the operator must carefully read the information in both this manual and the crane manufacturer operator's manual. He must also have read and understood the CIMA safety manual, the latest ASME B30.5 standard and the current OSHA, federal, state and local regulations applicable to his job. Correct functioning of the system depends upon routine daily inspection.

Any suspected faults or apparent damage should be immediately reported to the responsible authority before using the crane.

Since safety of personnel and proper use of the machine is of primary concern, different symbols are used throughout this manual to emphasize certain areas. The following definitions indicate the level of hazard when these symbols appear throughout this manual.

Whenever one of these symbols appears in this manual, personnel safety is a concern. Please take time to read and understand these definitions!

DANGER: INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.

CAUTION: INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO BE USED TO ALERT AGAINST UNSAFE PRACTICES.

IMPORTANT: INDICATES A SITUATION THAT MAY CAUSE MACHINE DAMAGE IF NOT CORRECTLY FOLLOWED.

NOTE: PROVIDES INFORMATION THAT MAY BE OF SPECIAL INTEREST.

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GENERAL DESCRIPTION OF THE SYSTEM

1.1 Introduction

The Wylie Wireless Boom Angle Indicator (R835) is designed as an aid to the crane operator. It eliminates guesswork by measuring and clearly indicating the boom angle to the crane operator. The R835 has a user adjustable maximum boom angle limit. A visual and audible warning is also given if the boom angle exceeds the preset warning limit. Furthermore an output electrical signal is generated which can be used to activate the lockout function or others such as a light or a siren.

The indicator consists of two basic elements:

A) A display unit in the cab, showing the boom angle and giving warning signals should the limit be exceeded.

B) A wireless boom angle sensor, which measures the boom angle and sends the value to the Display unit by radio link to bring live readings on screen.

1.2 Warning

When using R835 system, always observe the safety rules and regulations applicable in the country of operation to reduce the risk of personal injury or damage to the equipment. Each safety instruction throughout this manual must be taken into consideration when using the R835 system. The information contained in this manual will enable qualified personnel to properly operate and efficiently perform maintenance.

1.3 Component Description

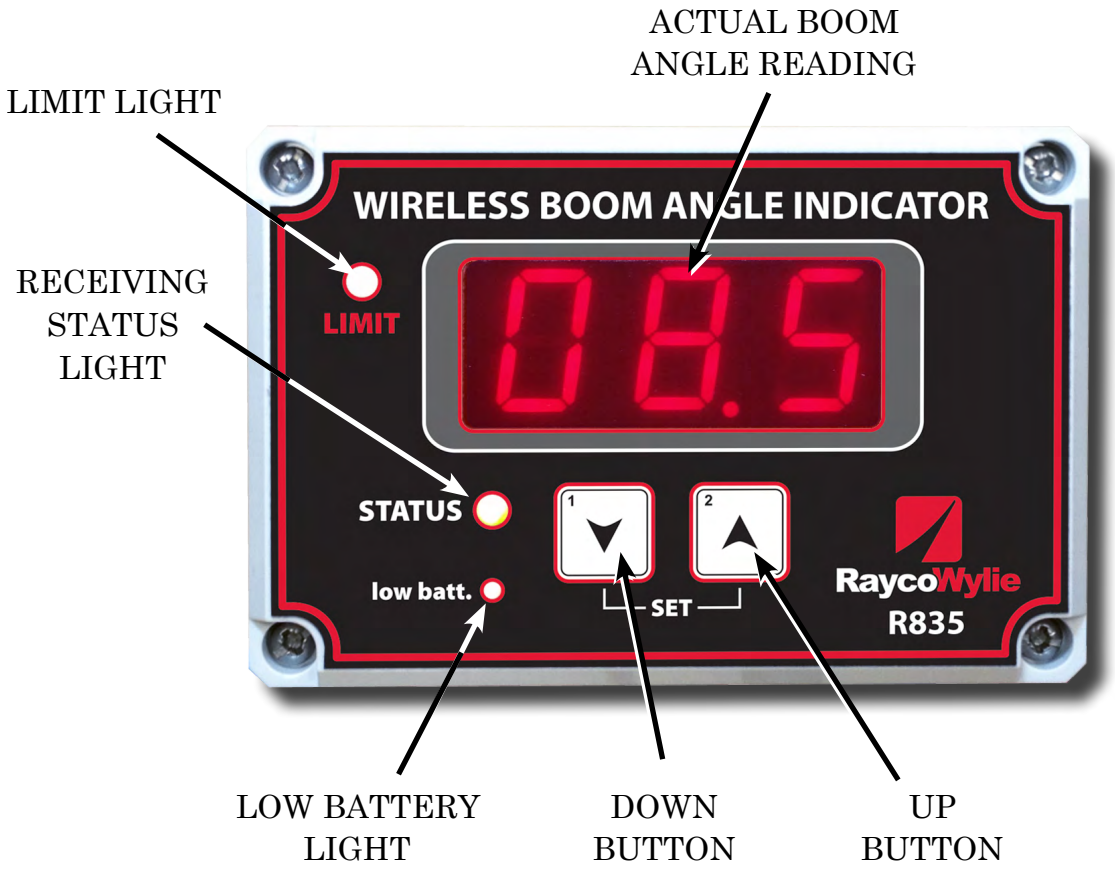
1.3.1 Display Unit

The display is mounted in a convenient position in front of the operator's working area. It's microprocessor based, meaning that there is a computer inside the box with operating software.

This software has 2 operating modes allowing different functions:

1) Normal Mode
2) Limit setting Mode

These modes will be described more in detail in the operating section of this manual.

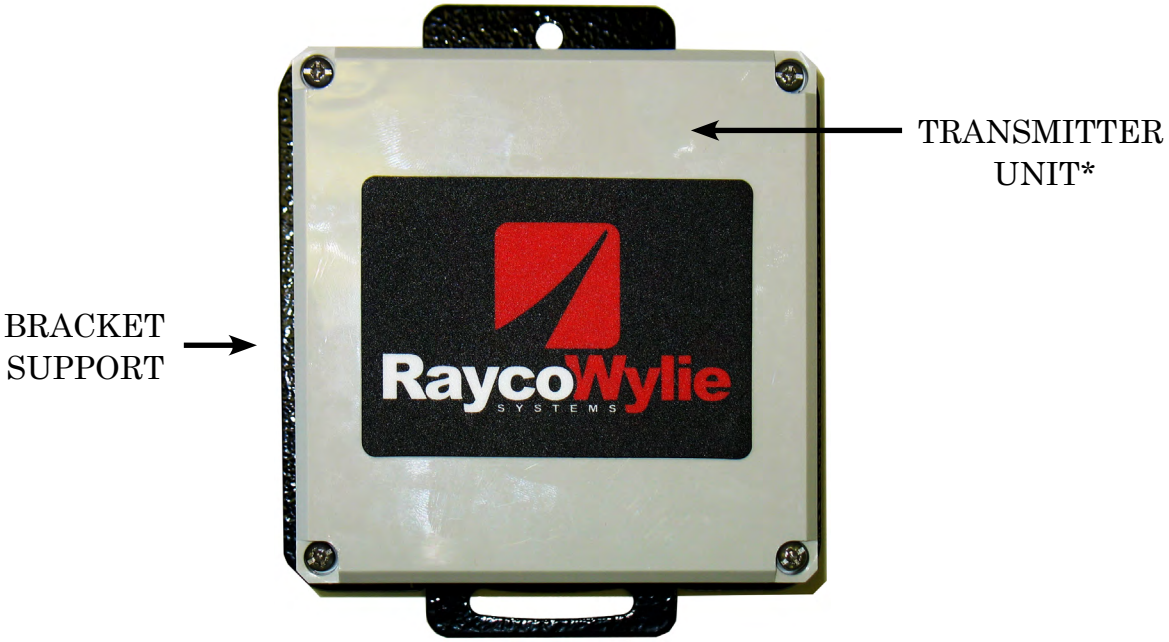


Picture 1: R835 Display box

1.3.2 Wireless Boom Angle Sensor

The boom angle sensor is delivered with a bracket support that allows the sensor to be mounted on the boom.

The boom angle sensor contains different parts that are described as follows:



Picture 2: Boom angle sensor complete assembly

Note*: The transmitter unit contains the battery and the transmitting antenna.

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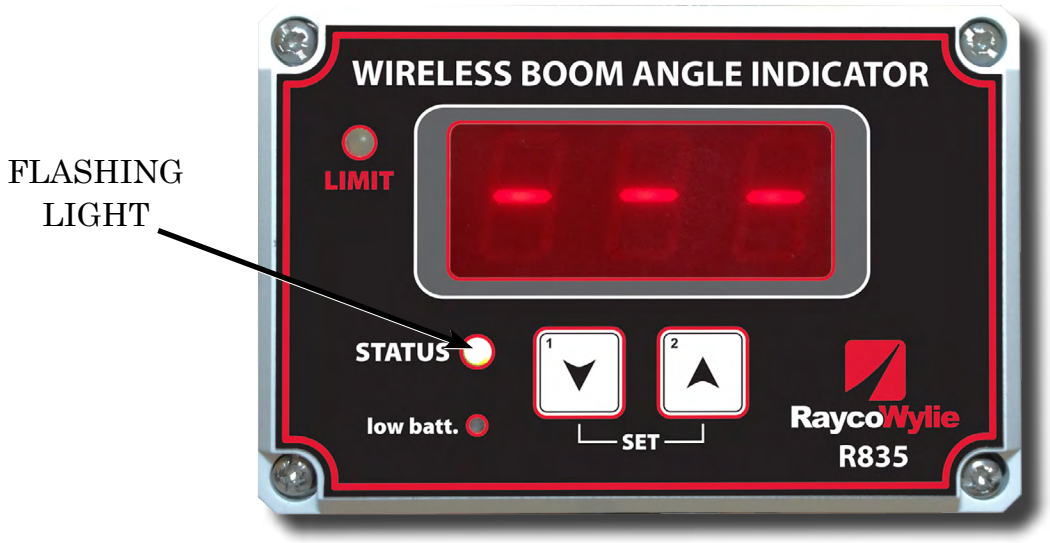
OPERATING PROCEDURE

2.1 Normal Mode

Switch on the electrical supply (i.e.: crane key switch) to the R835 system. During the time the indicator is waiting for a valid radio transmission from the boom angle sensor, the display will show three horizontal lines and the green status light will flash.



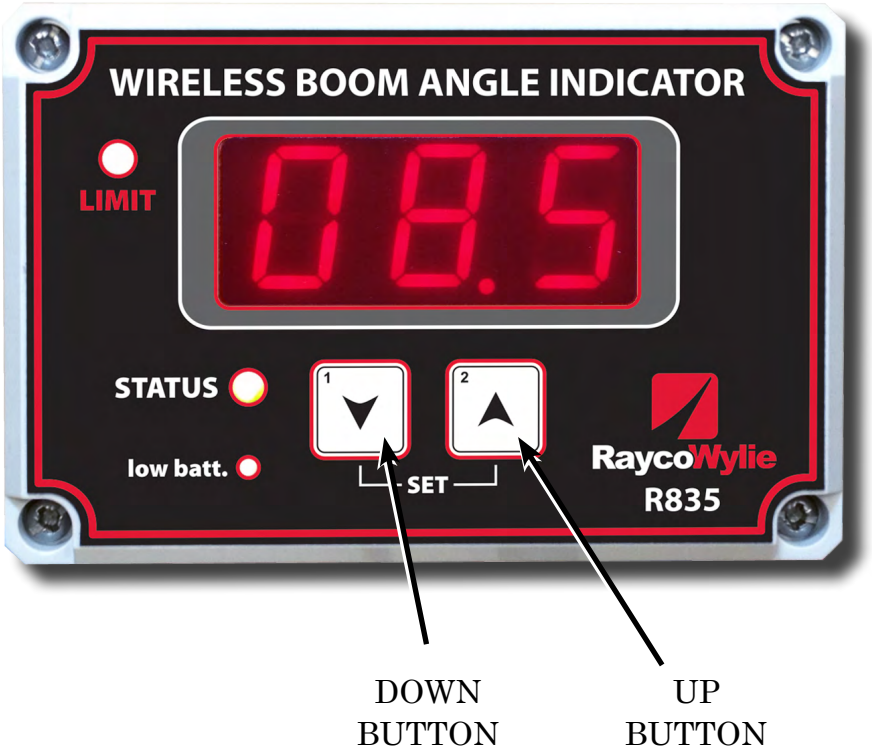
Picture 3: R835 Waiting for transmission from the boom angle sensor

Once a reliable radio communication link is established with the boom angle sensor, the system will enter Normal Mode. Then, the boom angle value will be displayed and the green status light will remain on without flashing.

If the status light flashes continuously for a period more than 30 seconds, it means the display has not received a valid message from the boom angle sensor. Check if the paper tag insulating the battery contacts has been properly removed. It can also be incorrectly programmed to receive the wrong boom angle sensor. To correctly program the R835 follow the programming ID number procedure described at page 16.

2.2 Limit Setting Mode

As soon the UP or DOWN button is pressed the display enter automatically in the limit setting mode. To change the limit use the Up or DOWN buttons repeatedly to increase or decrease the limit. Holding down the UP or DOWN buttons will increase the editing speed. When finish wait 5 seconds without pressing any buttons and the display will return to it normal mode by itself.



If the boom angle exceeds the boom angle limit, the "Limit" light will turn on and the internal buzzer will be heard.

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INSTALLATION AND SETUP

3.1 Display Mounting & Wiring

Determine the mounting location inside the cab in order to facilitate viewing by the operator. The display can be mounted on the dash or on a sidewall.
Use one of the three holes available at the top of the bracket and another one at the bottom of the bracket. Install the display using bolts ¼".

A power and alarm cable is provided with the R835 display. The power supply can be from 10-30 volts DC.

Pin #	Color	Description	Details
1	RED	Power	10-30 VDC
2	BLACK	Ground	Battery (-)
3	WHITE	Alarm NC	Normally Closed Contact
4	BLUE	Alarm Common	Common Contact

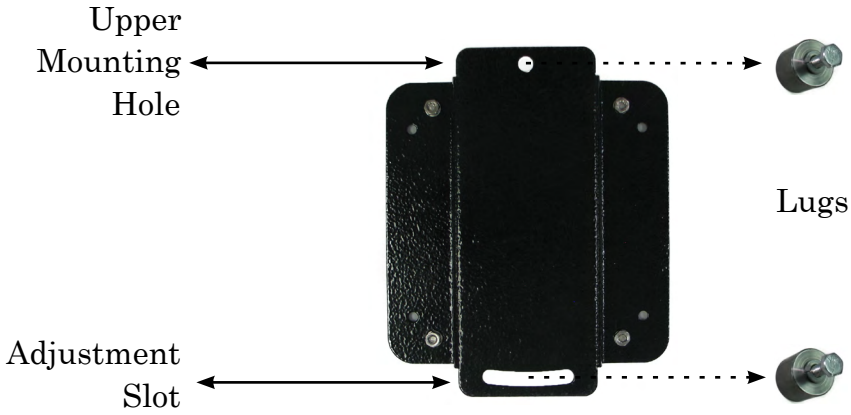
3.2 Wireless boom angle sensor installation

3.2.1 Installing the boom angle sensor on the boom

1. Choose the proper location on the boom where to install the boom angle sensor. The angle sensor has been factory programmed to be installed on the left side, at the base, with the boom at zero degrees.

2. Place the 2 lugs according to the location of the upper mounting hole on the bracket and in relation to the center of the bottom adjustment slot, as shown on pic. 4. Please refer to technical drawing section 4.3 for complete layout details.

3. Weld the (**2**) lug nuts **1”** diameter (included in the package) to the boom at the selected position and fix the bracket to the lug nuts using the (**2**) bolts **¼”-20** and washers (also included).



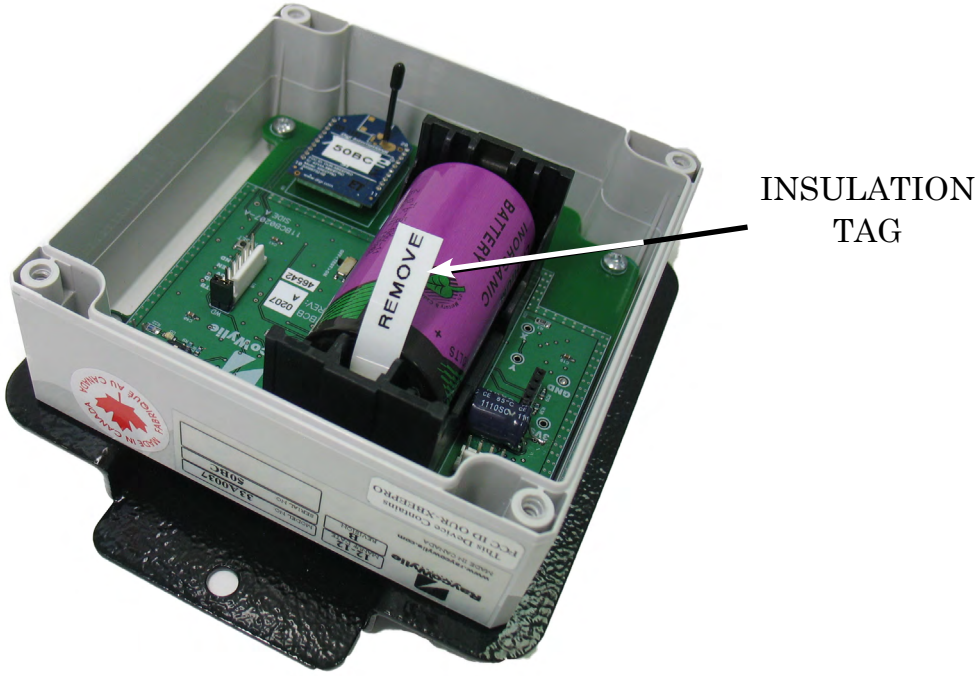
Picture 4 : Mounting bracket (rear view)

3.3 Zero adjustment (zeroing the system)

Do not weld in proximity of the Boom sensor or the Display

3.3.1 Paper insolation tag removal

1. Unscrew the four Phillips screws using a phillips screwdriver to remove the cover of the boom angle sensor.
2. Remove by hand the paper tag insulation.
3. Replace the cover and screw in the Phillips screws. Do not over-tighten.



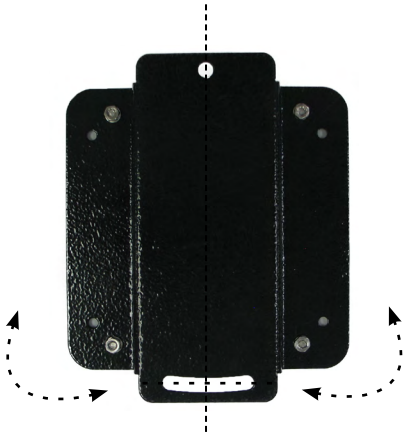
Picture 6: Angle sensor

3.3 Zeroing the system (zeroing the system)

1. The boom angle sensor has been factory programmed; however the offset corresponding to angle zero must be adjusted after installation using the adjustment slot.

2. Turn on the boom angle indicator and force data transmission by physically varying the angle of the unit more than **3°** degrees. Please refer to section **2** "Operating procedure".

3. Loosen the bolt of the adjustment slot and adjust the angle sensor until the display indicates **0°** degrees. Then, tighten the lug nuts properly so it holds its position.



Adjust angle sensor until a reading of zero on display

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MAINTENANCE

4.1 Battery Replacement

Always use a RaycoWylie Systems supplied battery. These are long duration batteries of **3.6** volts that are not available in stores. See the cover of this manual to find telephone numbers for ordering. Order # **11HEX0032**.

3.6 Volt Battery

1. Unscrew the four phillips screws using screwdriver in order to remove the cover of the boom angle sensor.
2. Remove the battery by hand.
3. Install the new battery, pay attention to insert the right polarity, positive end and negative end properly.
4. Replace the cover and screw in the Phillips screws. Do not over-tighten.

4.2 Programming the ID number

If you have to change the boom angle sensor, you will have to change manually the ID number the R835 will listen to. So changing the boom angle ID number is required only if the boom angle sensor is changed and the display must be manually set to listen to another one.

The ID number contains 4 digits, the first 2 digits are noted “High” by “H” and the last 2 digits are noted “Low” by “L”. Each digit of the ID number is coded in Hexadecimal (0-9, A-F).

Here’s how to change the ID number:

1. First, find the serial number of the boom angle sensor. It is located on a label directly on the boom angle sensor.

Top view

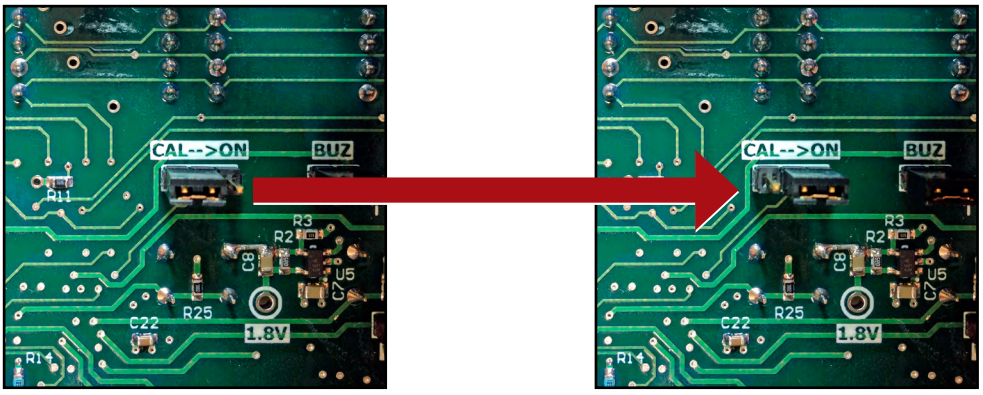
2 digits “HIGH” part of the ID number

2 digits “LOW” part of the ID number

2. The first two digits of the serial number are the “HIGH” part of the ID number and the two digits following are the “LOW” part of the ID number. Take note of these four digits.

3. Turn off the power supply of the R835 display. Using a Phillips screwdriver, open the display box of the R835.

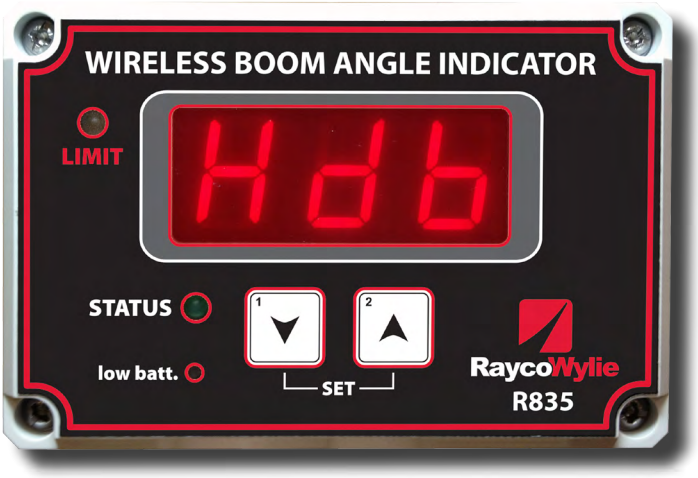
4. Find on the printed circuit board inside the cover 3 metal pins with the word “CAL” and “ON” next to it. Move the jumper so that it covers the 2 pins of the “ON” side as pictured below.



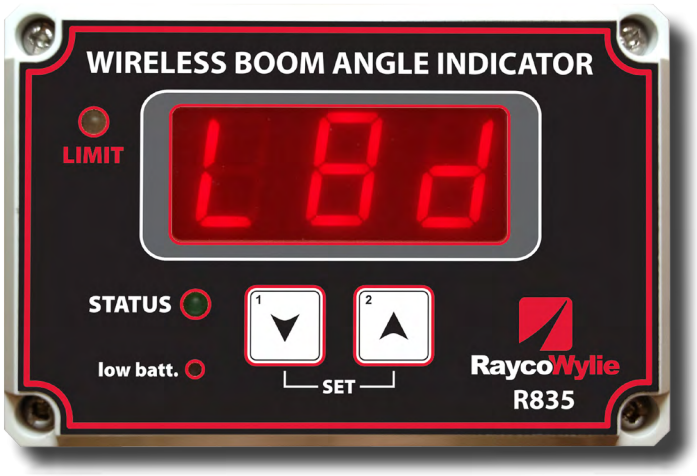
Normal Mode Calibration Mode

5. Put the R835 cover back on and turn on the power supply.

6. First you need to edit the “HIGH” part of the ID number. Use the “down” button to change the first digit and the “up” button to change the second one.



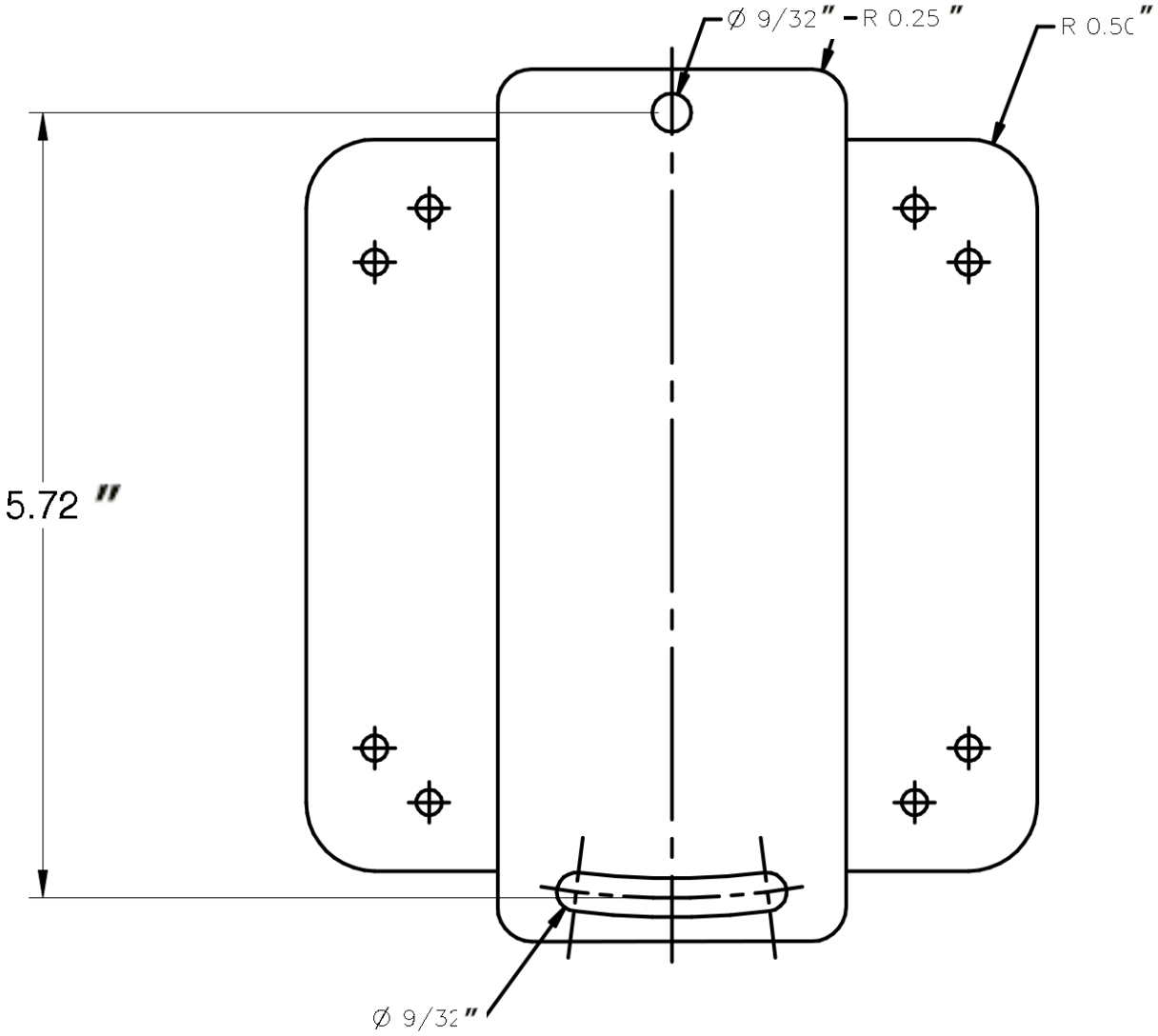
7. When you finish editing the “HIGH” part of the ID number, press both buttons at the same time to switch to the “LOW” part editing.



8. Make changes using the “up” and “down” buttons like you did with the “HIGH” part. Press both buttons again to switch back to the “HIGH” part editing to confirm your ID number.

9. Switch off the power supply and put the jumper back at is original position. The jumper must be at the “ON” position. Put the R835 cover back on and switch on the power supply.

4.3 Technical Drawings



Picture 7: Mounting bracket (rear view).

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