

SavvyLevel External Mount Installation Guide

Before you install SavvyLevel, please first take the time to read and understand this guide. In particular the Wiring requirements *Step 5* overleaf.

References to caravan in this guide also applies to campers, recreational vehicles, 4WD or trailers where SavvyLevel is intended to be installed.

The SavvyLevel External mount kit is designed to mount the SavvyLevel device externally. Useful for heavily clad caravans where improved signal performance (to the tow vehicle) is required. It comprises a lid, base, componentry protection cradle, and one cable gland. You will need to supply a [neutral cure silicone](#) to complete the installation process (or use a separately purchased external mount wiring kit).

SavvyLevel External Mount key features:

- Is strong, UV, hail, wind, stone, dust, dirt and temperature stable.
- Is IP68 rated (when properly installed).
- Allows manufacturer choice of connecting cable.
- Insignificant signal degradation to the tow vehicle.
- Hidden mounting method aesthetically appealing.
- Easily retrofittable to existing systems by customers or installers – no special equipment is required.

STEP 1 - FINDING A GOOD LOCATION

Recommended Mounting Location for Caravans

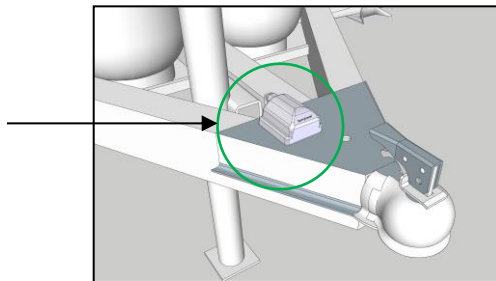


Figure 1

THINGS TO CONSIDER

SavvyLevel requires good reliable signal communication between it and your Smartphone. Keep in mind that you will most probably operate your Smartphone inside your tow vehicle. Best performance can be achieved if you mount the device where there are minimal metallic obstructions. For caravans, generally somewhere on the 'A' frame is a good location.

Mounting under your caravan is not advised. Its low proximity to the ground means that much of the transmitted signal will be absorbed by the ground.

SavvyLevel MUST be mounted level horizontally (less than 15°) with cable gland facing the Caravan. It also must be straight and forward (**NOT ANGLED WITH THE 'A' FRAME**) – see *Figure 1 and 2*.

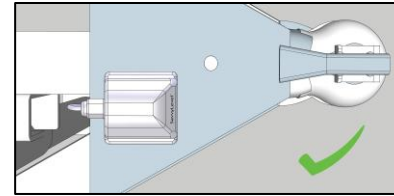


Figure 2

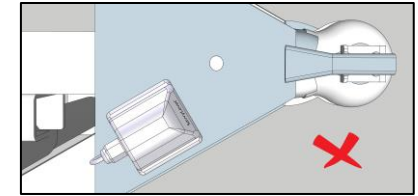


Figure 3

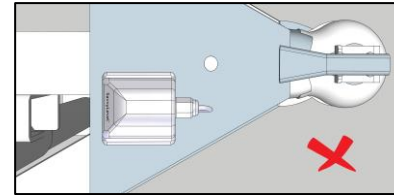


Figure 4

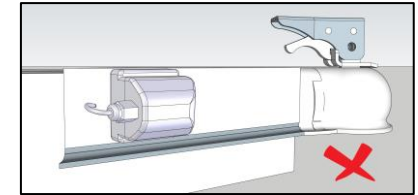


Figure 5

STEP 2 - MOUNTING BASE PLATE

The SavvyLevel external mount lid and baseplate are treated separately. The base plate is first mounted to the 'A' frame. Using 4 x M4 screws or rivets.

Make sure the base plate is mounted parallel to the caravan and NOT the 'A' frame. It must also be mounted level horizontally. Figure 6 show correct mounting.

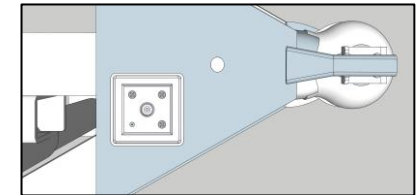


Figure 6

STEP 3 - ASSEMBLING THE LID

- A. Mount the Cable Gland to the Lid, making sure that the rubber washer is on the **outside**. Properly tighten only the internal nylon lock nut, with the following considerations:

- Do not rotate the body of the cable gland when tightening, use the internal lock nut only.
- Do not overtighten the internal lock nut as the sealing washer will 'pop' out.



Figure 7

- B. Separate the SavvyLevel lid from the SavvyLevel unit (the SavvyLevel lid can be discarded), cut the red connectors from the black and red wire and remove the rubber grommet (leave enough length of wire for connection to the supply cable, approx. 4 cm). Place the protection Cradle (that protects the SavvyLevel circuitry) as shown in *Figure 7*.
- C. Feed the supply cable through the Cable Gland in the Lid. Connect the positive (red) and negative (black) wires into the power supply cable from the caravan *Figure 8*.

- D. Add a small dollop of Silicone to each side of the Cradle to fix it in place (arrow marked in Figure 7).
- E. Carefully place the SavvyLevel into the Lid, drawing the power cable back. See Figures 9 and 10. **Make sure that you do not mount the SavvyLevel backwards.** The power wires must face towards the Cable Gland.
- F. When there is approximately between 2 – 3 cm of caravan power cable (outer insulated sheath) still in the lid, tighten the Cable Gland to create a waterproof seal.



Figure 8



Figure 9



Figure 10

STEP 4 - WEATHER SEALING THE LID

With the SavvyLevel placed in the Lid there will be a small gap around the edge. Now use a silicone gun to insert silicone around the inside edges of the mount. Push the SavvyLevel to make sure it is properly in place. **USE PLENTY OF SILICONE (MORE IS BETTER THAN LESS).** See Figures 11, 12 and 14.



Figure 11



Figure 12

The base is designed to ensure the silicon is forced into the correct places to guarantee a complete fully sealed fit. The silicon will also bond the Lid to the Base.

Once the silicone is applied place the Lid onto the base plate for complete seal. The lid will 'grab' the baseplate and any excess air will be injected through the baseplate central hole and excess silicone will be forced internally into the baseplate cavity. See Figure 13 and 14.

STEP 5 – IMPORTANT WIRING CONSIDERATIONS

1. For a weatherproof seal (IP68 rated) make sure to use power cable between **3 – 6.5 mm** diameter. The cable gland used can only clamp cables within this range. **DO NOT use unsheathed (figure 8 or single strand cable) as the cable gland cannot seal against this.**
2. SavvyLevel must be connected to a **separately fused** power supply. For more details refer to document 'Application Note for Wiring' option 4.
3. If you wish to tap into the tow vehicles power source, remember that while the power hitching plug is disconnected from the tow vehicle, SavvyLevel will not be operational.
4. When connecting your power lead to a suitable 12v DC voltage source (known as the 'connection point'), keep in mind that **this 'connection point' must be weather protected** (this includes the copper wire, insulation and its outer insulated sheath). **Failure to adequately protect this 'connection point' will, over time, cause water to ingress through the inside of the power cable and will damage your SavvyLevel.**

If it is not possible to environmentally protect the 'connection point' from rain, water etc., then cover the entire connection (exposed copper, insulation and outer sheath) with supplied silicone or another appropriate sealant. Alternately you may use any other appropriate IP68 rated connection system.

NOTE: The SavvyLevel device utilises a highly efficient power regulation system, it can operate from wide voltage sources ranging from 7v to 30v. SavvyLevel only draws a tiny amount of current (less than 12mA). Although this current is small it is still recommended that the supply be switchable to preserve battery charge during long periods of non-use (approximately 1 year with a 100 Ah battery).

CONCEPT OF OPERATION (IP68)

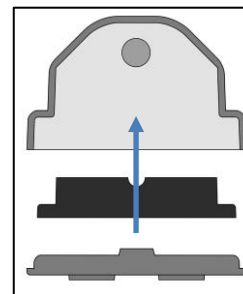


Figure 13

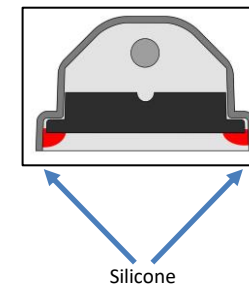
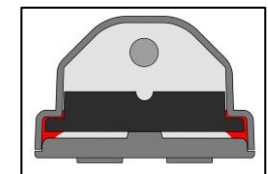


Figure 14



Pressing the Base into the Lid squeezes the silicone into the gaps.
Figure 15

Once these steps have been successfully completed and the silicone has set the SavvyLevel external mount will be rated to the IP68 standard.

Happy levelling, enjoy.

