

### Please Note

These "Technical Tips" help sheets aim to answer commonly asked questions in a concise and informative manner - they are for advice & guidance only and do not replace any of the manuals or other literature supplied with our products.

### Tip Classification

1. Enclosures - Camera Housings
- 2.

### Product : CAMERA HOUSING

### Problem : Why are there vent slots in the heated housing?

### Solution :

Why are there ventilation holes in your CCTV housings?

There are lots of ways to keep an external CCTV camera housing clear from moisture and condensation. You can either vent out the moisture and air and balance it with the relative humidity of the ambient air external to the housing or you can trap the moist air inside and try and deal with the problem with silica gel bags etc.

If you had a damp problem in a house you would prevent further damp getting in the house then make sure the ventilation is good. Blocking off ventilation is sure fire way of creating damp problems. This is why the exterior housings have ventilation holes.

For external housings, natural ventilation is a good option, it's the one everybody, everyday uses in their car and home. When you get in to a car soaking from rain the car's natural ventilation combined with the heater soon disperses the moist air.

The relative humidity of air that we breathe isn't that high, so natural ventilation of a CCTV housing is a good choice. It's simple, reliable and helps prevent damage to sensitive electronics, as they don't have moisture condensing on the pcb's. Of course you need to restrict the ventilation we are only talking about a trickle of airflow, but the trickle pays dividends. If you have small amount of ventilation and a small heat source in a housing it will be problem free. The camera alone will provide the tiny amount of heat required and in the winter months the heater tops it up. The ventilation inlet is positioned so that it allows air to enter but not the rain to penetrate.

The other way to stop damp and condensation is to batten down the hatches with no damp in the housing to start with, but how practical is this? System Q Ltd have sold products that work in both ways. We have sold housings with a small natural vent (aver 30K of them in the UK - no misting up problems) and the wells know Advanced-Vision Camera (Qcam to some people) over 70K units in the UK. The Qcam is completely sealed electronics, lens and all so if moisture is in the camera when it's used outdoors it's going to mist up.

To stop the Qcam misting up we remove all the moisture from the air within the camera. We do this by baking the cameras PCB and lens in a low heat oven for 48hrs; this gently removes all moisture trapped in the lens assembly or any moisture on the PCB. Next we test the camera in a controlled air-conditioned environment to make sure the focus and functions are correct after the oven drying. Whilst in the controlled environment the camera is placed into an airtight moulding and resin poured in to the mould to seal all air off from the lens and electronics.



Figure 1

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The resin takes about 8 hours to dry. When dry we test the camera again to ensure that focus and all electronic functions are still 100% after the manufacturing process.

The camera is then taken to QC bench to check the performance of the camera in different light conditions and if its 100% the QC stickers attached to it.

This process of total seal is done under tight factory conditions with an oven. On a wet and windy cold day in November you are going to get some moisture in a housing no matter how careful you are! In this instant you have two choices; 1- get enough silica gel bags in the housing to absorb all the moisture or 2, let a small vent naturally replace the moisture by new drier air heated by the cameras electronics and housing heater. Number 2 will always be reliable and simple (tip - don't get gel bags wet in the rain and bake them before use!)

The problem with silica bags are that you must have enough in the housing for the moisture in there and if the internal temperature is too high the moisture in the bags will be atomised and contained within the trapped air of the housing. Ok, if hot enough the moist air will still not condensate on the front glass but the high humidity will slowly start to attack the sensitive electronics of the camera and lens.

That's why there are ventilation slots in the System Q external heated housing.



Figure 1