

Service Note No. 007

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Product: AX24/Sphynx-2

Reducing the fan noise of the AX24/Sphynx-2 AD/DA Converter

For some applications the converter need to be placed in an environment where, as low fan noise as possible is required. This may be when placed in the studio close to the instruments and microphones, or when placed in the control room, where a low back ground noise is required.

If the converter is placed in a machine room or a closed rack there will normally not be any problems with the fan noise.

The AX24 and Sphynx-2 converters are designed with a reduced speed circuitry for the fan, and a thermostat that will speed up the fan if the internal temperature gets too high. When the converter is switched on the fan will shortly speed up to insure proper operation.

Generally the noise of the fan when listened to is composed of a low frequency noise from the bearings, and a more high frequency fan noise/ticking. The actual airflow is not audible.

The most dominant noise however is the low frequency noise, and infact this noise is amplified some due to the stiffness of the rubber suspensions holding the fan. When the fan finger guard is mounted on the rubber suspensions are stretched so they couples the noise to the chassis.

This coupling can be avoided by releasing two of the rubber suspensions from the fan finger guard holes, so only the two opposite holes are going through the suspension ends. The other two should only be resting on top of the suspension ends.

So, In order to reduce the fan noise tree measures can be taken:

1. Release the fan finger guard according to the above description
2. Change the fan according to the description below
3. Place the unit in a rack

Converters are from production equipped with 60mm low noise ebm papst fans with special damping kit. The used type is:

Papst 612 N/2GML, with an airflow of 14,7 CMF, and a noise og19 dBA

It is possible to replace this fan with an other low noise type, though it has a lower airflow

Papst 612 NGL, with an airflow of 12,4 CMF, and a noise og16 dBA

This should first be done after having tried to release the fan finger guard. Since this will give the most significant improvement.

If needed - after having replaced the fan - the high frequency noise can be further reduced if the unit-side - where the fan is mounted - is placed close to a stiff plate a wall of preferably a mounted in a rack.

Replacing the fan

The existing fan can be removed the following way:

1. Remove the main plug from the unit
2. Remove the lid of the unit
3. The fan is placed at the left side seen from the front
4. Remove the fan finger guard from the outside of the unit
5. Use a screwdriver to push the suspensions trough the chassis
6. Remove the wire for the fan from the PCB in the left side of the unit
7. Pull carefully the fan up, the rubber suspensions will be a little in the way, but it can be done

Install the new fan:

1. Repeat the above process in the reverse way
2. It is a little tricky to get the rubber suspensions trough the holes. It can be recommended to start with the ones in the bottom.
3. When mounting the fan finger guard, only mount the two opposite holes on the suspension ends