
euroclima

10 Information on airborne noise emitted by the air conditioning units - on request

Sound data can be printed on request on the technical data sheet, sample see **Figure 143**. The sound power is specified as A-weighted sound power level:

- **Line 1:** Sound power over the casing
- **Line 2:** Sound power inlet
- **Line 3:** Sound power outlet

The sound through the openings (sound power level in line 2 and 3) is the basis for the calculation of the on-site sound emissions from the environment.

AHU sound levels	63	125	250	500	1000	2000	4000	8000	Tot db (A)
1> Sound power level casing [db] +/- 4 dB	88,0	81,0	78,4	62,0	56,2	50,7	41,1	32,6	**71,9**
2> Sound power level air inlet [db] +/- 4 dB	93,2	90,0	96,0	87,0	77,0	74,0	72,0	66,0	**89,7**
3> Sound power level air outlet [db] +/- 4 dB	97,0	98,0	99,0	89,0	86,0	82,0	79,0	75,0	**93,8**
4> Sound press. for 1 [m] distance from AHU	68,7	61,7	59,1	42,7	36,9	31,4	21,8	20,0	**52,6**
5> Sound press. for 1 [m] distance from air inlet	85,8	83,3	90,0	81,5	71,7	68,8	67,1	61,1	**83,9**
6> Sound press. for 1 [m] distance from air outlet	89,6	91,3	93,0	83,5	80,7	76,8	74,1	70,1	**88,1**

Calculated sound pressure levels are indicative only. It corresponds to : free field hemispheric sound radiation from the unit casing (4), the inlet (5) and the outlet (6) opening. Other sound sources, acoustic character of the room, air flow noise, duct connections and vibrations can influence the sound pressure in dependence. In practice, therefore measured values on site may be different from the calculated ones.

Figure 143: Sound data information

11 ATEX units

The ignition hazard assessment was performed according to EN 13463-1:2009 and EN 1127-1:2011.
Applied protection: EN 13463-5:2011 Protection by constructional safety "c".

11.1 General notes

Hazardous areas must be rated on the frequency and duration of the occurrence of hazardous explosive atmospheres (gas / air or steam / air mixtures and / or dust / air mixtures). This is described in Directive 1999/92/EC.

Because of this zoning an adapt AHU must be used.

The relationship between zones and category as per **Table 14** described.

Group I: Underground facilities

Group II: Surface installations, category 1, 2 and 3

Letters: G gases, vapors, mists
D dust

Unit category	Selection for type of explosive atmosphere	Avoidance sources of ignition	Degree of security	Use in zone
1 G	Gas / gas-mixture or steam / gas-mixture or fog	Even in rare malfunctions	very high	0
2 G	Gas / gas-mixture or steam / gas-mixture or fog	Even with the usual malfunctions	high	1
3 G	Gas / gas-mixture or steam / gas-mixture or fog	In normal operation	normal	2
1 D	Dust / gas-mixture	Even in rare malfunctions	very high	20
2 D	Dust / gas-mixture	Even with the usual malfunctions	high	21
3 D	Dust / gas-mixture	In normal operation	normal	22

Table 14: AHU categories

Classification according to surface temperature for devices of group II G:

Temperature class	Max. surface temperature (°C)
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

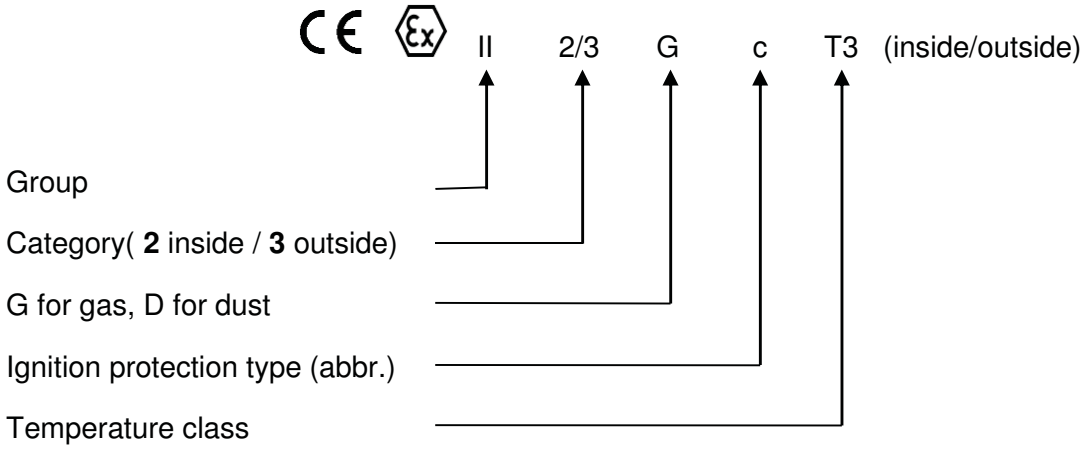
Table 15: Temperature classes of AHU category 2 G

For devices of group II D, the maximum surface temperature is specified.

The maximum allowable surface temperature must always be lower than the ignition temperature of the explosive atmosphere.

11.2 Information regarding the unit, protective systems and components

Example of designation



Evidence of compliance with EC - Directive 2014/34/EC
The manufacturer declares conformity to ATEX, in addition to equipment in category 2, the technical documentation in accordance with EC Directive 94/9/EC of TÜV South Germany deposited.

Type of use:

II 3 G c T3 (inside)

The AHU are designed for processing and transport of explosive atmospheres of Zone 2 but not for installation in Zone 2.
Equipment in this category provides in normal operation, the required level of security.

II 2 G c T3 (inside)

The AHU are designed for processing and transport of explosive atmospheres of zone 1 but not for installation in Zone 1.
The device-specific explosion protection measures in this category must provide themselves with frequent disturbances or equipment faults, which normally have to be considered, the required level of security.

II 2/3 G c T3 (inside / outside)

The AHU are used for processing and transport of explosive atmospheres of zone 1 and for installation in Zone 2.
The device-specific explosion protection, inside this category must provide themselves with frequent disturbances or equipment faults, which normally have to be considered, the required level of security.
The device-specific explosion protection, outside this category must provide themselves with frequent disturbances or equipment faults, which normally have to be considered, the required level of security.

Air leakage rate:
The air leakage rate of the air conditioner is determined at a vacuum of 400 Pa. The device corresponds to the tightness class L1 to EN 1886.
- Tightness Class L1 corresponds to a maximum air leakage rate of 0.15 l/(s*m2).
- This must be considered, therefore installation of equipment in areas with natural convection.
- During maintenance work must be ensured, that no explosive atmosphere is present.

Before starting the system ensure that all doors are closed and properly sealed so that there are no leaks and the device cannot be opened unintentionally.

The following conditions must prevail:
- On the intake side and in the vicinity of the device, the temperature shall not exceed -20 °C to +60 °C.
- An atmosphere with pressures from 0.8 bar to 1.1 bar shall be present in the environment of the AHU.

11.3 Information for commissioning, maintenance and repair

11.3.1 Foundation and erection

- Refer to **chapter 4 (Foundation / erection)**.
- The AHU must be connected to an external protective conductor system.

11.3.2 Assembly connection

Motor:
- Electrical connection, refer to **chapter 7.2 (AC motors)**: standard repair switches must be assembled outside the hazardous area.
- Connection potential compensation: according to the provided instructions of the motor manufacturer.

In general:
- All conductive connections (WT piping, siphon, ducts, ...) must be connected to a potential compensation.
- It must be ensured that parts that are necessary to achieve the degree of protection, cannot be removed accidentally or unintentionally.
- All doors are equipped with a closure device. The doors must be locked and the key removed.

During maintenance is to take care that no tools or other objects remain in the unit or duct system, to avoid malfunctions and sparks. – **Risk of explosion!**

11.3.3 Fan section

- Refer also to **chapter 9.2 (Fan / motor group)**.

- Belt: It's only allowed to use electrically conductive, flame retardant and self-extinguishing belts (ISO 9563 or ISO 1813).
- **Use original spare parts.**

In addition to these data, the guidelines included in the operating instructions of the fan and motor manufacturer are to follow.

11.3.4 Air filters

- It's only allowed to use electrostatic deductive filter.
- **Use original spare parts.**
- For filter types that are equipped with potential equalization cable, each filter cell must be connected to the potential settlement with the AHU in the fixed-mounted metal filter frame using self-tapping screws or bolts.
- To prevent the formation of an explosive atmosphere by stirring up of dust deposits, the equipment has protective systems and components designed to avoid deposits of combustible dusts as far as possible. Therefore, for all components corresponding service openings are provided.
- Periodically the AHU shall be cleaned (depending on the amount of dust) from dust.

11.3.5 Heat exchangers / steam humidifiers

The in the data sheet indicated heat exchange medium temperature and the steam humidifier surface temperature shall not be exceeded. Otherwise, the specified temperature class is no longer valid - **danger of explosion!** -and the declaration of conformity loses its validity.

11.3.6 Field devices

On site assembled field devices must comply the ATEX class specified by EUROCLIMA.
- The electrical components (switches, lights, sensors, motors, etc.) must be approved for operation in explosive atmospheres and must be equipped with an appropriate marking.
- The cabling must meet the relevant standards.
- Appropriate potential equalization has to be prepared.
- Outdoor units must be equipped with a professional lightning protection system and all metal parts have to be connected to the ground conductors.
- For indoor units all electrically conductive parts must be protected with a professional grounding measure (potential equalization). By derivation of lightning currents, this measure prevents the formation of ignition sources.
- Pipelines must be considered as a potential ignition source, since their temperature can rise up to 110°C.

11.3.7 Declaration of conformity

The declaration of conformity to ATEX applies only to the original delivery AHU and with proper repair and maintenance. When changes on the AHU are made, which are not agreed in writing, the declaration of conformity loses its validity.

12 Disassembly and disposal

12.1.1 Disassembly

At disassembly, the safety instructions of **chapter 2 (Safety instructions)** must be considered. It also apply the instructions in **chapter 3 (Reception control / unloading / transportation to installation site**). The casing can be disassembled relatively easy:

Disassembly of the casing:
- Disassembly of the external panels and removal of the insulation.
- Loosening of the screw connections.
- Loosening of the rivet connections by drilling the rivets.

Disassembly of the built-in parts:
- Secure slender components against tipping over.
- Use of appropriate scaffolds and load carrying equipment.
- The AHU components must be raised with suitable load carrying equipment (e.g. belt with hook or shekel with chain) and have to be secured until the components are safely fixed in the unit – see **Figure 144**.
- Handling: securing with belt – see **Figure 145**.

Figure 144: Lifting with chain hoist

Figure 145: Securing with belt