



General conditions:

Devices must not be transported in a high humidity environment, in the presence of corrosive aggressive substances and in an environment with rapid temperature changes where vapor condensation occurs.

Circuit breakers are supplied by the manufacturer in a switched-off state and must be transported in this way.

Transport conditions:

During transportation the products may be exposed to the environment with the following parameters according to EN 60721-3-2:

2K2/2B1/2C2/2S2/2M2

2K2:

Generally, the class includes transport in non-heated weather-protected spaces in a wide range of climate types except for cold climate. It also includes transport in ventilated spaces.

The product can be transported in heated pressurized cargo areas of aircraft.

Low air temperature	-25 °C ¹⁾
High air temperature in unventilated areas	+60 °C ¹⁾
High air temperature in ventilated areas	+40 °C ¹⁾
Change of temperature air / air	-25 °C / +25 °C
Change of temperature air / water	NO
Relative humidity without combination with rapid temperature changes	75 % at 30 °C
Relative humidity combined with rapid temperature changes at high relative humidity	NO
Absolute humidity combined with rapid temperature changes	NO
Low air pressure	70 kPa (70 kPa is about 3 000 m)
Air pressure change (kPa / min)	NO
Ambient air flow	NO
Rain	NO
Solar radiation	700 W/m ²
Thermal radiation	NE
Water from sources other than rain	NE
Humidity	NO

1)

These are limit values with a short duration





2B1:

The class includes transport in areas without a special risk of being attacked by biological factors (flora or fauna). It includes transport in spaces designed in such a way that mold, pest infestation, etc. are highly unlikely to occur.

Flora
Fauna

Negligible
Negligible

2C2:

The class includes transport in outdoor conditions except for sea carriage on open decks of ships. Transport also takes place in areas with normal industrial activity, except for those that generate large amounts of chemical pollution.

Salts contained in seawater and salts used for road salting	Salt mist due to road salting or adequate sea salt concentration in mist		
Sulfur dioxide	1.0 mg/m ³ ; 0.3 mg/m ³ ;	0.37 cm ³ /m ³ 0.11 cm ³ /m ³	... 30 minutes / day ... mean value
Hydrogen sulfide	0.5 mg/m ³ ; 0.1 mg/m ³ ;	0.36 cm ³ /m ³ 0.071 cm ³ /m ³	... 30 minutes / day ... mean value
Hydrogen chloride	0.5 mg/m ³ ; 0.1 mg/m ³ ;	0.33 cm ³ /m ³ 0.066 cm ³ /m ³	... 30 minutes / day ... mean value
Hydrogen fluoride	0.03 mg/m ³ ; 0.01 mg/m ³ ;	0.036 cm ³ /m ³ 0.012 cm ³ /m ³	... 30 minutes / day ... mean value
Ammonia	3.0 mg/m ³ ; 1.0 mg/m ³ ;	4.2 cm ³ /m ³ 1.4 cm ³ /m ³	... 30 minutes / day ... mean value
Ozone	0.1 mg/m ³ ; 0.05 mg/m ³ ;	0.05 cm ³ /m ³ 0.025 cm ³ /m ³	... 30 minutes / day ... mean value
Nitrogen oxides	1.0 mg/m ³ ; 0.5 mg/m ³ ;	0.52 cm ³ /m ³ 0.26 cm ³ /m ³	... 30 minutes / day ... mean value

2S2:

The class includes both outdoor and indoor transport considering also sweeping of dusty floors. Transportation in sandy desert areas is not included.

Sand in the air	0.1 mg/m ³
Dust (sedimentation)	3 mg/ (m ³ ·h)





2M2:

The class includes transport by all types of flatbed trucks and trailers in areas with a well-developed road network. It also includes transport by rail wagons with specially designed shock absorbers and ship transport.

Stationary sinusoidal vibrations

Deflection amplitude	3.5 mm	frequency range 2 ÷ 9 Hz
Acceleration amplitudes	10 m/s ²	frequency range 92 ÷ 200 Hz
	15 m/s ²	frequency range 2002 ÷ 500 Hz

Stationary random vibration

Acceleration spectral density	1 m ² /s ²	frequency range 102 ÷ 200 Hz
	0.3 m ² /s ²	frequency range 2002 ÷ 2000 Hz

Non-stationary vibrations including blows

Peak acceleration	100 m/s ²	response spectrum type „I“
	300 m/s ²	response spectrum type „II“

Free fall and overturn

Product group	Free fall	Overturn
Modular devices MINIA	20 cm	Yes
Moulded case circuit breakers Modeion	20 cm	Yes
Air circuit breakers ARION	NO	NO
Fuse systems Varius	20 cm	Yes
Distribution boards and switchboard cabinets Distri	NO	NO

Rocking, swinging

Angle	±35°
Period	8 s
Constant acceleration	20 m/s ²
Static load	It depends on a device. Generally, it is necessary to load the package only to such an extent that the bottom package is not deformed.

More detailed information in EN 60721-3-2.

