



PINE_{lab} is a customized space for field measurements in a wide range of environments. Equipped with thermal insulation and air conditioning, the INP laboratory container PINE_{lab} enables measurements even in adverse environments.

Overview

Our PINE instrument revolutionized the field of atmospheric ice nucleation measurements allowing researchers to investigate aerosol-cloud processes and to perform fully-automated long-term INP measurements at temperatures down to -65°C.

PINE_{lab} takes your field measurements to a new level. PINE_{lab} enables outdoor measurements in the field away from scientific laboratories in environments that are interesting for the determination of INP concentrations. The only requirement for using PINE_{lab} is a suitable electrical connection and, if desired, internet access to operate the equipment.

The 8 feet container offers enough space to set up a small workplace with computer for data analysis and to house additional instruments if needed. It includes mounting and transport fixations for one PINE instrument.



Applications

- Aerosol-cloud research
- Observation and monitoring of ice nucleating particles
- Laboratory investigations on aerosol ice-nucleating properties

PINE_{lab}: The laboratory container PINE_{lab} provides your environment for comfortable outdoor INP measurements in the field.

Features

- Weather proof enclosure
- 8 ft standard high cube container
- Fixations for the mounting and transport of PINE
- Isolation of the container with:
 - 80 mm mineral wool (roof and walls)
 - 100 mm mineral wool (floor)
- Cable feedthrough for the PINE tubes (1x on the roof and 1x on the side wall of the container)
- 4 additional sockets for instruments included
- 2 component top coat (PUR), colour RAL 9010 (pure white)
- Damping system for the PINE product for its protection during transport

Electrical equipment

- Electricity: 3~AC, 400 V, 50 Hz, 16 A external CEE connector plug (3P+N+PE) with internal distribution into:
 - L1: 1x 230 V / 16 A for the PINE product + 2x sockets
 - L2: 1x 230 V / 16 A for the air conditioning system
 - L3: 1x 230 V / 16 A for the light + 2x sockets
 - sockets (CEE 7/4 / type F plug), light, PINE and air conditioning system are equipped with separate circuit breakers
 - other external connector or distribution upon request
- Air conditioning system with an implemented 2 kW heater
 - Nominal cooling capacity: 4.7 kW
 - Outdoor temperature for cooling: +20°C up to +60°C
 - Outdoor temperature for heating: -32°C up to +20°C

Remarks

- Comply with the limits for use in extreme environments.
- Transportation by trucks, trains, container ships.
- For transport, be sure to follow the description in the manual.



Commissioning of PINE



Transport of a PINE and PINE_{lab} by container ship



Preparation of a measurement campaign

Detailed specifications:

8 ft high cube container	
length	2.438 mm
width	2.200 mm
height	2.565 mm
Weight (without PINE).....	< 1200 kg
Top code (2 component)	colour RAL 9010
External connection	3~AC, 400 V, 50 Hz, 16 A CEE (3P+N+PE) socket

Technologies

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