ACTRIS aerosol in-situ instruments compliance

ACTRIS-ERIC version 1.8 November 2026. This list will be frequently updated

This list of ACTRIS compliant instruments will be amended and expanded based on performance tests proving the ACTRIS compliance in terms of data quality and defined target measurements uncertainties.

- The performances of existing instruments models are evaluated from previous calibration report.
- For a performance test of current instrument models, three instruments of one model are tested to fulfill a minimum statistical relevance.
- For non-commercial custom-made instruments (e.g. MPSS), often only one instrument underwent the performance test.
- Manufacturers are invited to apply for a performance test of new instruments models.

Performance Test Evaluation:

- „Compliance approved“ means three or more instruments of on model were tested and the performance report is available.
- „Compliance conditionally approved“ means that the instrument has been tested but the evaluation report is not yet available.
- „Compliance preliminary“ means that less than 3 instruments were tested.
- „Compliance test protocol under development“ means there are no final performance criteria yet.

Particle number concentration D_{P50}=10nm (WCCAP, PACC)

Instruments type: Condensation Particle Counter (CPC)

TSI:

3750-10 (also sold as 3750-CEN10) CEN compatible (current model; calibration provided by CAIS-ECAC)
performance test completed: compliance approved

3750 (current model; upgrade to 3750-10 required; calibration provided by CAIS-ECAC)
performance test: not applicable after upgrade

3772 ACTRIS compatible (old model; calibration provided by CAIS-ECAC)
performance test completed: compliance conditionally approved (CAIS-ECAC offline correction software)

3010 (old model; not ACTRIS compliant; calibration provided by CAIS-ECAC until end of 2025)
performance test: not applicable

GRIMM:

5410-0.6/5412-0.6 CEN (0.6l/min) compatible (current model; calibration provided by CAIS-ECAC)
performance test completed: compliance approved

5410-1.0/5412-1.0 CEN (1l/min) compatible (current model; calibration provided by CAIS-ECAC)
performance test completed: compliance approved

5421-0.3 CEN compatible (current model; calibration provided by CAIS-ECAC)
performance test: compliance approved

5421-0.6 CEN compatible (current model; calibration provided by CAIS-ECAC)
performance test: compliance approved

Envea / Airmodus:

A20 CEN compatible (current model; calibration provided by CAIS-ECAC)
performance test: compliance approved

AVL: performance test: compliance approved

AVL Ultrafine Particle Monitor CEN compatible (current model; calibration provided by CAIS-ECAC)

Nano particle number concentration < 10nm (CCC, WCCAP)

Instruments type: Nano Condensation Particle Counter (Nano CPC)
ACTRIS compliance criteria test protocol under development.

TSI:

3756 (current model; calibration provided by CAIS-ECAC)
performance test: compliance preliminary

3776 (old model; calibration provided by CAIS-ECAC)
performance test: compliance preliminary

3789 (current model; calibration provided by CAIS-ECAC)
performance test: compliance test protocol under development

3757-50 (1 nm CPC -Nano Enhancer 3757 + CPC 3750) (current model; calibration provided by CAIS-ECAC)
performance test: compliance test protocol under development

Envea / Airmodus:
A11: Particle Size Magnifier A10 PSSM + A2 + CPC (old model; calibration provided by CAIS-ECAC)
performance test: compliance test protocol under development
A20-UF (current model; calibration provided by CAIS-ECAC)
performance test: compliance preliminary
A12 retrofit: A10 PSM retrofitted to PSM2.0 + A20 CPC (updated model; calibration provided by CAIS-ECAC))
performance test: compliance test protocol under development

Particle number size distribution - mobility diameter 10-800nm (WCCAP, PACC)

Instrument type: Mobility Particle Size Spectrometer

TSI:
SMPS 3938W50-PP-CEN10 (Classifier (positive HV) 308201 with DMA 3083 and CPC 3750-10) CEN compatible (current model; calibration provided by CAIS-ECAC)
performance test: compliance conditionally approved
SMPS 3938W50-DP-CEN10 (Classifier (dual HV) 308202 with DMA 3083 and CPC 3750-10) CEN compatible (current model; calibration conditionality provided by CAIS-ECAC)
performance test: compliance approved
SMPS 3938W50-CEN10 (Classifier (negative HV) 308200 with DMA 3083 and CPC 3750-10) CEN compatible (current model; calibration provided by CAIS-ECAC)
performance test: compliance conditionally approved (*A negative voltage is also accepted if an older classifier was upgraded. For harmonization reasons, a positive voltage is preferred.*)

TROPOS:
TROPOS MPSS CEN compatible (current model; calibration provided by CAIS-ECAC)
performance test: compliance approved

GRIMM:
GRIMM SMPS+C 5420 CEN compatible (current model; calibration provided by CAIS-ECAC)
performance test: compliance approved

UHEL:
UHEL MPSS CEN compatible with TSI 3750 CPC (calibration provided by CAIS-ECAC)
performance test: compliance approved

FMI:
FMI MPSS CEN compatible (calibration provided by CAIS-ECAC)
performance test: compliance approved

NILU:
NILU MPSS CEN compatible (calibration provided by CAIS-ECAC)
performance test: not approved yet

ISPRA:
ISPRA MPSS CEN compatible (calibration provided by CAIS-ECAC)
performance test: not approved yet

Nano particle number size distribution 1 -10 nm (CCC, WCCAP)

Instrument type: Nano Mobility Particle Size Spectrometer.

ACTRIS compliance test protocol under development.

TSI:

1nm Scanning Mobility Particle Sizer (SMPS) 3938E57: DMA 3086 + CPC 3757-50 (Nano Enhancer 3757 + CPC 3750) (current model; calibration provided by CAIS-ECAC)

performance test: compliance test protocol under development

Nano Scanning Mobility Particle Sizer (SMPS) 3938N56: Nano DMA 3085A + CPC 3756 (current model; calibration provided by CAIS-ECAC)

performance test: compliance test protocol under development

TROPOS:

TROPOS Nano MPSS (part of a dual MPSS) (current model; calibration provided by CAIS-ECAC)

performance test: compliance test protocol under development

UHEL:

UHEL Nano DMPS (part of a dual MPSS) with TSI 3756 CPC (calibration provided by CAIS-ECAC)

performance test: compliance test protocol under development

Airmodus:

A11: A10 PSM + A20 CPC (old model; calibration provided by CAIS-ECAC)

performance test: compliance test protocol under development

A12 retrofit: A10 PSM retrofitted to PSM2.0 + A20 CPC (updated model; calibration provided by CAIS-ECAC))

performance test: compliance test protocol under development

Airel:

Neutral Cluster and Air Ion Spectrometer (NAIS) (models 4 and newer; calibration provided by CAIS-ECAC)

performance test: compliance test protocol under development

GRIMM:

Nano Mobility Particle Size Spectrometer (PSMPS) with Airmodus PSM + GRIMM 5417 CPC (current model; calibration provided by CAIS-ECAC)

performance test: compliance test protocol under development

Particle number size distribution - aerodynamic diameter 0.8 to 10 µm (WCCAP, PACC)

Instrument type: Aerodynamic Particle Size Spectrometer

TSI:

APS 3321 (current model; calibration provided by CAIS-ECAC)

performance test: compliance conditionally approved

Particle light scattering and backscattering coefficient – multiwavelength (WCCAP, PACC)

Instrument type: Integrating Nephelometer

TSI:
3563 (old model; calibration provided by CAIS-ECAC until end of 2025)
performance test: compliance conditionally approved

Acoem (Ecotech):
Aurora 4000 (old model; calibration provided by CAIS-ECAC)
performance test: compliance conditionally approved
Aurora 3000 (old model; calibration provided by CAIS-ECAC)
performance test: compliance conditionally approved
Aurora NE-400 Polar (current model; calibration provided by CAIS-ECAC)
performance test: compliance approved
Aurora NE-300 (current model; calibration provided by CAIS-ECAC)
performance test: compliance approved

AirPhoton:
IN101 (current model; calibration provided by CAIS-ECAC)
performance test: compliance approved

Particle light absorption coefficient and black carbon (WCCAP, PACC)

Instrument type: Absorption Photometer

Thermo Scientific:
MAAP 5012 (old model; calibration provided by CAIS-ECAC)
performance test: compliance conditionally approved

Aerosol Magee Scientific:
Aethalometer AE31 (old model; calibration provided by CAIS-ECAC until end of 2025)
performance test: compliance conditionally approved
Aethalometer AE33/43 (current model; calibration provided by CAIS-ECAC)
performance test: compliance conditionally approved
Aethalometer AE36/AE36s (current model; calibration provided by CAIS-ECAC)
performance test: compliance approved.

Cloud Condensation nuclei number concentration (WCCAP)

Instrument type: Cloud Condensation Nuclei Counter

DROPLET Measurement Technologies:
CCN-100/200 (current model; calibration provided by CAIS-ECAC)
performance test: compliance conditionally approved

Mass concentration of submicron non-refractory aerosol composition (ACMCC)

Instrument type: Aerosol Mass Spectrometers/Aerosol Chemical Speciation Monitor

Aerodyne:

Quadrupole-ACSM (current model; calibration provided by CAIS-ECAC)

A PM1 aerodynamic lens and standard vaporizer is recommended by default at ACTRIS observational platforms.
performance test: compliance conditionally approved

ToF-ACSM (current model; calibration provided by CAIS-ECAC)

(e.g., where particularly low quantification limits shall be attained) and other types of aerosol mass spectrometers might be used, depending on circumstance and scientific objectives.
performance test: compliance conditionally approved

Mass concentration of particulate organic tracers (OGTAC-CC)

Technical requirements documentation and measurement guidelines for the determination of particulate organics are currently under development.

Organic and Elemental Carbon (OGTAC-CC, ERLAP)

Instrument type: OC/EC Analyzer

DRI:
2001 (old model; calibration provided by CAIS-ECAC)
2015 (current model; calibration provided by CAIS-ECAC)

Sunset:
4G (current model; calibration provided by CAIS-ECAC)
4L (current model; calibration provided by CAIS-ECAC)
5L (current model; calibration provided by CAIS-ECAC)

Mass concentration of particulate elements (EMC2)

For the offline analysis of elemental constituents in particulate matter, no dedicated technique or instrumentation is recommended.
Standard and commercial instrumentation for PIXE, XRF and ICP-MS are considered.
For offline analysis with ED-XRF, spectrometers with sample holders allowing the analysis of 47 mm diameter filters are recommended.
For offline PIXE and ED-XRF analysis, the use of pure ring-supported stretched thin polytetrafluoroethylene (PTFE) filters such as Pall Life Science Teflo W/RING 2 µm 47 mm (product id R2PJ047) is recommended.

For online analysis of elemental constituents in particular matter:
Sailbri Cooper Inc. Xact 625i (current model; calibration provided by CAIS-ECAC) compliance test protocol under development.