PD CEN/TS 16450:2013
Incorporating corrigendum November 2013

BSI Standards Publication

Ambient air — Automated measuring systems for the measurement of the concentration of particulate matter (PM10; PM2,5)

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National foreword

This Published Document is the UK implementation of CEN/TS 16450:2013.

The CEN/CENELEC correction notice 26 June 2013 provided a revised English language text, incorporating the following editorial corrections.

– In Table 4, sixth row, replace "1 % RH" by "1 %";

– In 7.4.8, modify the title to read "Dependence of span on supply voltage";

– In 8.4.9, replace "every year" by "every 6 months".

The UK participation in its preparation was entrusted to Technical Committee EH/2/3, Ambient atmospheres.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Published by BSI Standards Limited 2013

ISBN 978 0 580 84888 9

ICS 13.040.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2013.

Amendments/corrigenda issued since publication

Date	Text affected
30 November 2013	Implementation of CEN correction notice 26 June 2013

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 16450

May 2013

ICS 13.040.20

English Version

Ambient air - Automated measuring systems for the measurement of the concentration of particulate matter (PM10; PM2,5)

Air ambiant - Systèmes automatisés de mesurage de la concentration de matière particulaire (PM10 ; PM2,5)

Außenluft - Automatische Messeinrichtungen zur Bestimmung der Staubkonzentration (PM10; PM2,5)

This Technical Specification (CEN/TS) was approved by CEN on 6 November 2012 for provisional application.

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Ref. No. CEN/TS 16450:2013: E

Foreword

This document (CEN/TS 16450:2013) has been prepared by Technical Committee CEN/TC 264 “Air quality”, the secretariat of which is held by DIN.

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1 Scope

In order to be in compliance with EU Air Quality Directive requirements [1], the reference methods given in the Directive for the measurement of mass concentrations of particulate matter are not commonly used for operation in routine monitoring networks. These networks usually apply automated continuous measurement systems (AMS), such as those based on the use of oscillating microbalances or ß-ray attenuation, and on in-situ optical methods. Such AMS are typically capable of producing 24-hour average measurement values over a measurement range up to 1 000 µg/m^3 and 1-hour average measurement values up to 10 000 µg/m^3, if applicable, where the volume of air is the volume at ambient conditions near the inlet at the time of sampling.

The 1-hour average values may be used for:

— direct information of the public;

— aggregation to produce daily or yearly average concentration values for regulatory reporting purposes.

EU Air Quality Directive 2008/50/EC [1] allows the use of such systems after demonstration of equivalence with the reference method, i.e., after demonstration that these systems meet the Data Quality Objectives for continuous measurements. Guidelines for the demonstration of equivalence are given in Reference [2].

This Technical Specification lays down the minimum performance requirements and test procedures for the selection of appropriate AMS for particulate matter (type approval). This includes the evaluation of its equivalence with the reference method.

Further, this Technical Specification describes minimum requirements for ongoing quality assurance – quality control (QA/QC) of AMS deployed in the field. These requirements are necessary to ensure that uncertainties of measured concentrations are kept within the required limits during extended periods of continuous monitoring in the field, and include procedures for maintenance, calibration and control checks.

Additional procedures are described that determine whether an instrument's equivalence to the reference method is maintained through possible pollution climate changes, over periods longer than five years.

Lastly, this Technical Specification describes requirements and procedures for the treatment and validation of raw measurement data that are to be used for the assembly of daily or yearly average concentration values. Experiences with existing methods for data treatment and validation – for similar AMS – have learned that the different ways of data treatment and validation applied may lead to significant differences in reported results for similar datasets [3].

When the Technical Specification is used for other purposes than the EU Directive, the range and uncertainty requirements may not apply.

This Technical Specification contains information for different groups of users.

Clauses 5 and 6 and Annex A contain general information about the principles of automated continuous measurement systems for particulate matter, and relevant equipment.

Clause 7 and Annexes B and C are specifically directed towards test houses and laboratories that perform type-approval testing of automated continuous measurement systems for particulate matter. These clauses contain information about:

— type-approval test conditions, test procedures and test requirements;

— system performance requirements;

— evaluation of the type-approval test results;

— evaluation of the uncertainty of the measurement results of the automated continuous measurement systems for particulate matter based on the type-approval test results.