SLOVENSKI STANDARD
SIST EN 17255-1:2019

01-september-2019

Emisije nepremičnih virov - Sistemi za zajem in vrednotenje podatkov (DAHS) - 1. del: Specifikacija zahtev za vrednotenje podatkov in poročanje

Stationary source emissions - Data acquisition and handling systems - Part 1: Specification of requirements for the handling and reporting of data

Emissionen aus stationären Quellen - Auswerteeinrichtungen - Teil 1: Festlegung von Anforderungen an die Handhabung und den Bericht von Daten

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Émissions de sources fixes - Systèmes d'acquisition et de traitement de données - Partie 1 : Spécification des exigences relatives au traitement et à la déclaration de données

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EUROPEAN STANDARD

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English Version

Stationary source emissions - Data acquisition and handling systems - Part 1: Specification of requirements for the handling and reporting of data

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This European Standard was approved by CEN on 26 May 2019.

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European foreword

This document (EN 17255-1:2019) has been prepared by Technical Committee CEN/TC 264 “Air Quality”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2020, and conflicting national standards shall be withdrawn at the latest by January 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document is Part 1 of the EN 17255 series.

The EN 17255 series, published under the general title *Stationary source emissions — Data acquisition and handling systems*, specifies:

— requirements for the handling and reporting of data;

— requirements on data acquisition and handling systems;

— requirements for the performance test of data acquisition and handling systems;

— requirements for the installation and on-going quality assurance and quality control of data acquisition and handling systems.

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Introduction

This document forms part of a series of standards which, between them, govern the process for the quality assurance of data received by a data acquisition and handling system (DAHS) from automated measuring systems (AMS), being used for monitoring emissions from stationary sources and quality ensured to EN 14181.

The input data can be either in analogue representation or in digital form directly from an AMS or via a digital bus system. Inputs can include the data from the AMS, peripheral data needed for calculation of reported data and information on plant conditions needed to apply data selection criteria.

The data acquisition and handling system (DAHS) receives the raw data, as they are measured, averaged and presented by the AMS, and converts, averages, stores and reports data as required by legislation.

This series of standards suggests that the process of data handling is best performed in a dedicated DAHS. It does not preclude the use of other options for all or part of the process provided that it can be shown that they meet all of the requirements of the standard, particularly in relation to speed, accuracy, access, security and validation.

This series of standards applies to DAHS installed after the date of implementation.

EN 17255-1 relates specifically to the handling of the data. It defines the calculations to be carried out to produce the data outputs that DAHS provide. It specifies the minimum outputs required to meet the requirements of legislation such as the European Industrial Emissions Directive (IED) and the regulations defining the European Pollutant Release and Transfer Register (E-PRTR). The calculations are based on the requirements in these directives and regulations. These two reporting requirements form the basis of this series of standards. However, although DAHS can provide other data outputs, such calculations are outside the scope of this standard. The European emissions trading regulation defines different validation and procedures for missing data, but the general principles in this standard can be used.

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1 Scope

This document specifies the conversion of raw data from an automated measuring system (AMS) to reported data by a data acquisition and handling system (DAHS). This specification includes:

— requirements for the handling of data;

— requirements for the reporting of data;

— calculation procedures required.

The main items covered by this document are given by, but not limited to raw data acquisition, raw data validation, data correction and data averaging.

This document supports the requirements of EN 14181 and legislation such as the IED and E-PRTR. It does not preclude the use of additional features and functions provided the minimum requirements of this document are met and that these features do not adversely affect data quality, clarity or access.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14181:2014, *Stationary source emissions — Quality assurance of automated measuring systems*

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3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
data acquisition and handling system
DAHS
system, which automatically receives, processes, stores and outputs data from automated measuring systems

3.2
automated measuring system
AMS
measuring system permanently installed on site for continuous monitoring of emissions or measurement of peripheral parameters

[SOURCE: EN 14181]

Note 1 to entry: Apart from the analyser, an AMS includes facilities for taking samples (e.g. probe, sample gas lines, flow meters and regulator, delivery pump) and for sample conditioning (e.g. dust filter, pre-separator for interferents, cooler, converter). This definition also includes testing and adjusting devices that are required for functional checks and, if applicable, for commissioning.

Note 2 to entry: The term “automated measuring system” (AMS) is typically used in Europe. The term “continuous emission monitoring system” (CEMS) is also typically used in the UK and USA.

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Note 3 to entry: An AMS can provide data on reportable quantities (e.g. mass concentration of a pollutant), peripheral parameters used to adjust the data (e.g. oxygen) or measured quantities which are subsequently combined with other data to form reported data (e.g. flow subsequently used with mass concentration to form mass emission data).

3.3
measurand
particular quantity subject to measurement

[SOURCE: EN 15259:2007]

Note 1 to entry: The measurand is a quantifiable property of the stack gas, for example mass concentration of a measured component, temperature, velocity, mass flow, oxygen content and water vapour content.

3.4
peripheral parameter
specified physical or chemical quantity which is needed for conversion of measured values to specified conditions

[SOURCE: EN 14181:2014]

Note 1 to entry: Peripheral parameters are called “reference quantities” in EN 15259.

Note 2 to entry: Peripheral parameters for standardizing the mass concentration of a pollutant are for instance the concentration of oxygen, concentration of water vapour, temperature, and pressure.

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3.5
plant process parameter
specified quantity describing plant conditions or other plant information

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3.6
emission limit value
ELV
limit value given in regulations such as EU Directives, ordinances, administrative regulations, permits, licences, authorisations or consents

Note 1 to entry: ELV can be stated as concentration limits expressed as half-hourly, hourly and daily averaged values, or mass flow limits expressed as hourly, daily, weekly, monthly or annually aggregated values.

Note 2 to entry: ELV is mostly stated at standard conditions for dry gas and at a reference oxygen concentration.

3.7
maximum permissible uncertainty
uncertainty requirement on AMS measured values given by legislation or competent authorities

[SOURCE: EN 14181:2014]

3.8
legislation
directives, acts, ordinances and regulations

[SOURCE: EN 15267-1:2009]

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3.9
calibration function
linear relationship between the values of the SRM and the AMS with the assumption of a constant residual standard deviation

[SOURCE: EN 14181:2014]

Note 1 to entry: The calibration function is determined in QAL2.

Note 2 to entry: EN 13284-2 allows the use of quadratic calibration functions in specific cases.

3.10
valid calibration range
range of calibrated measured values at standard conditions determined during QAL2 or AST

Note 1 to entry: The valid calibration range is defined in EN 14181 and EN ISO 16911-2.

3.11
measurement range
range of values that the raw data from an AMS can lie within and be considered valid

Note 1 to entry: For AMS using an analogue 4 mA to 20 mA output the measurement range is conventionally taken as being equivalent to the 4 mA to 20 mA range. For analogue and digital data the valid range of values can be defined by legislation, derived from instrument testing or be an internal configuration of the AMS.

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Note 2 to entry: The measurement range is not the same as the calibration range as the calibration range is defined in terms of standardized calibrated values.

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3.12
data

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recorded value with associated information

Note 1 to entry: Associated information can be status signals.

3.13
raw data
value received directly from the AMS, optionally after scaling e.g. to units representing concentrations, and associated status signals

Note 1 to entry: Status signals can be the status of the measured values or plant operation status.

3.14
valid data
data which are deemed to have passed particular quality requirements related to a specified usage

3.15
data product
defined data, recorded or calculated from input data, with a specified method of determination, and available to the user of the DAHS as a recognised data set

Note 1 to entry: Examples specified in this standard include FLD, STA and LTA.

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3.16
first level data
FLD
raw data or average values calculated from the raw data, both including status signals

Note 1 to entry: The raw data can be converted to concentration units.

3.17
standardized first level data
SFLD
first level data calibrated and converted to standard conditions using peripheral first level data

Note 1 to entry: This value is not for compliance assessment but can used to provide data that are used by the operator for process or abatement control or optimization.

3.18
status signal
binary value or enumerated value from the plant, AMS or operation personnel signifying a specific state of operation

3.19
binary value
value which can assume one of two discrete values

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Note 1 to entry: The two discrete values are usually associated with the Boolean values 0 and 1, FALSE and TRUE.

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Note 2 to entry: Binary values can be received from the plant, be generated by the DAHS, from the AMS or be keyed in by the operator's personnel.

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3.20
enumerated value
value which can only assume one of a number of defined states

3.21
average
arithmetic mean of valid data over a specified time period T

Note 1 to entry: The time period over which the average is calculated can be fixed, rolling, partial or accumulating.

3.22
accumulating average
arithmetic mean of valid data over a time period with a fixed starting point and floating end point up to a limit T

Note 1 to entry: An accumulating average can be calculated as an average in which the time period begins at midnight or any integral multiple of a specified time period T thereafter. With t being the time between two data samples, an accumulating average is calculated during each period of length T. During the time of calculation, the average period increases from t to T as the number of data included in the calculation is increased from 1 to T/t. The accumulating average is calculated at the end of each time period t.

Note 2 to entry: At the end of each time period T the accumulating average is the same as the block average over the same time period.

Note 3 to entry: Accumulating averages are not used for emissions reporting but can be used by operators for an early identification of possible exceedances of an emission limit value.

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3.23
block average
average over a fixed time period at a fixed time

Note 1 to entry: A block average is an average in which the time period begins at midnight or any integral multiple of this time period thereafter. The block average is calculated at the end of each time period.

3.24
rolling average
average over a fixed time period and calculated at regular time intervals

3.25
short-term average
STA
average related to the shortest time period used for reporting

Note 1 to entry: Short-term averages are based on the shortest time period of averages the plant shall report to the authorities for each measured component. According to variations in different EU Directives the shortest time period can be 10 min, 30 min or 1 h, depending on the type and application of the plant.

3.26
standardized short-term average
SSTA
short-term average converted to standard conditions using short-term averages of peripheral parameters

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3.27
cumulative standardized short-term average
CSSTA

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value determined according to the calculation for a standardized short-term average but determined as an accumulated average calculated over a shorter time period

Note 1 to entry: This value is not for reporting. It can be used to provide an indication of whether the next SSTA value is likely to exceed an ELV, before the full STA period has elapsed, potentially allowing for mitigating actions.

3.28
validated short-term average
VSTA
standardized short-term average with the relevant confidence interval subtracted to comply with EU Directive reporting requirements

3.29
long-term average
LTA
average calculated from SSTA or VSTA over a specified time period as specified in 8.12

Note 1 to entry: A long-term average can be e.g. a daily, monthly or yearly average.

3.30
substitute value
value used instead of a missing value, e.g. due to fault or malfunction of the AMS

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3.31
Coordinated Universal Time
UTC
time scale maintained by the International Bureau of Weights and Measures (BIPM) and the International Earth Rotation Service (IERS) that forms the basis of a coordinated dissemination of standard frequencies and time signals

Note 1 to entry: Adapted from EN ISO 19108:2005.

Note 2 to entry: UTC provides the basis of standard time, the use of which is legal in most European countries. See also ISO 8601-1:2019.

Note 3 to entry: UTC divides time into days, hours, minutes and seconds.

3.32
time stamp
UTC or UTC plus a fixed offset throughout the year

Note 1 to entry: This does not include adjustment for daylight saving.

3.33
standard time
time scale derived from UTC, by a time shift established in a given location by the competent authority

[SOURCE: ISO 8601-1:2019, 3.1.1.14]

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Note 1 to entry: The time shift of a standard time may vary in the course of a year, such as due to daylight savings.

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3.34
Daylight Saving Time
DST
standard time during the summer months commonly obtained by adjusting the time forward by one hour

Note 1 to entry: Daylight saving time (DST), also known as summer time, is a conventional local time adopted by many countries of the world on a seasonal basis. Most commonly DST is obtained by adjusting the time forward by one hour for the spring, summer and early autumn periods.

3.35
reportable mode
mode or modes of plant operation during which reporting is required for a specific regulatory requirement

Note 1 to entry: Reportable modes can include start-up, shut-down and normal operation.

Note 2 to entry: Different reporting requirements define different reportable modes. The term 'reportable mode' is therefore used in this document to refer collectively to whichever specific conditions are applicable for a given reporting regulation.

Note 3 to entry: The calculation stages defined in this document are repeated for different reportable modes and for each pollutant.