
Air quality — Exchange of data —

Part 2:
Condensed data format

Qualité de l'air — Échange de données —

iTeh STANDARD PREVIEW
Partie 2: Format condensé de données
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ISO 7168-2:1999

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Printed in Switzerland

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7168-2 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 4, *General aspects*.

ISO 7168 consists of the following parts, under the general title *Air quality — Exchange of data*:

— *Part 1: General data format*

— *Part 2: Condensed data format*

The first editions of the several parts of ISO 7168 together cancel and replace the first edition (ISO 7168:1985), which has been technically revised.

Annexes A, B, C and D form a normative part of this part of ISO 7168. Annexes E, F and G are for information only.

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Introduction

For the interpretation or comparison of air quality data, the data themselves are usually not sufficient. Other information may be needed for a proper evaluation, e.g. basic information on the measurement, such as

- object of the measurements,
- place of sampling,
- date of sampling,

or additional information, such as

- the measuring method used,
- sampling period of a single measurement,
- characteristics of the sampling site,
- validity of the data.

In some cases, the user will need other information to be compared with the measured data in conformity with regulations or to enable certain complex processing operations to be performed, e.g.

- additional meteorological data,
- geographical and economic data, [ISO 7168-2:1999](https://standards.iteh.ai/catalog/standards/sist/34d593d0-d99c-4be0-a4a1-18/iso-7168-2-1999)
- data on localised or diffuse atmospheric emissions, <https://standards.iteh.ai/catalog/standards/sist/34d593d0-d99c-4be0-a4a1-18/iso-7168-2-1999>

The transmission of such information in a data file is not mandatory. Where necessary and possible, this supplementary information may be attached to a data file as comment.

ISO 7168-1 specifies the general data format for the exchange of air quality data. This general data format supports both the direct readability and the automated processing of data files. Each information presented in a data file prepared in accordance with ISO 7168-1 is related to a defined keyword and therefore consistently self-explanatory. The general data format is intended for the international exchange of air quality data.

ISO 7168-2 specifies a condensed data format which is intended only for the exchange of data files between automatic data processing systems. A good knowledge of the file structure is necessary for the interpretation of these data files.

Air quality — Exchange of data —

Part 2: Condensed data format

1 Scope

This part of ISO 7168 specifies a condensed data format for presentation of air quality data. Contrary to the general data format specified in ISO 7168-1, the condensed data format reduces the file size. This format is intended particularly for exchanging files between automatic data processing systems. Therefore, it is restricted to the minimum information necessary for processing data.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 7168. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 7168 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1000:1992, *SI units and recommendations for the use of their multiples and of certain other units*.

ISO 3166-1:1997, *Codes for the representation of names of countries and their subdivisions*.

ISO 3534-1:1993, *Statistics — Vocabulary and symbols — Part 1: Probability and general statistical terms*.

ISO 4226:1993, *Air quality — General aspects — Units of measurement*.

ISO 6709:1983, *Standard representation of latitude, longitude and altitude for geographic points location*.

ISO 6879:1995, *Air quality — Performance characteristics and related concepts for air quality measuring methods*.

ISO 7168-1:1998, *Air quality — Exchange of data — Part 1: General data format*.

ISO 8756:1994, *Air quality — Handling of temperature, pressure and humidity data*.

ISO/IEC 646:1991, *Information technology — ISO 7-bit coded character set for information interchange*.

3 Terms and definitions

For the purposes of this part of ISO 7168, the terms and definitions given in ISO 6879 and the following apply.

3.1

air quality characteristic

one of the quantifiable properties relating to an air mass under investigation, for example, concentration of a constituent

3.2**air quality data**

values of the air quality characteristic

3.3**data**

air quality data and general data

3.4**general data**

additional data other than air quality data needed for a proper evaluation of the air quality data transmitted

4 Symbols and abbreviated terms

CR	Carriage return
dec	decimal
LF	Line feed
RNL	Return to new line
UT	Universal time

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5 File format**5.1 Overview**

The data file is divided into four groups: <https://standards.iteh.ai/catalog/standards/sist/34d593d0-d99c-4be0-a4a1-7e3ce9b17518/iso-7168-2-1999>

- a) The identification group (see 7.1) gives the name and address of the institution transmitting the air quality data and defines the number of description blocks and data blocks.
- b) The description group (see 7.2) consists of description blocks, which present in a measurand record information on each measurand, e.g. the measurement method used, and in one or more site records details of the sampling sites.
- c) The data group (see 7.3) consists of data blocks. Each data block has a data control record (see 7.3.1) which summarizes the frequency and type of values given in the following data record (see 7.3.2).
- d) The comment group (see 7.4) provides a comment control record and the comments in the comment record.

5.2 Construction of data files

Data files shall be constructed in accordance with the following rules:

- a) The data file shall be in compliance with the international information exchange code defined in ISO/IEC 646 (see Annex A). Specific national characters shall not be used for the presentation of air quality data. Furthermore, certain control characters shall not be used in the data file (shaded characters in Table A.1).
- b) A *return to new line* (RNL) code shall be placed at the beginning of the file and at the end of each line. The RNL consists of a line feed plus carriage return (decimal codes 13 and 10) to enable the processing of the files on different operating systems.

6 Specifications

6.1 Creation of file names

6.1.1 General

The file name is deliberately restricted to eight characters plus one full stop plus three characters (i.e. eleven characters). Parametering of the file name enables identification of the content of the file. This includes information about the measurement location and the date of the measurement. The parameters used for the construction of file names are defined in Table 1.

Table 1 — Parameters for constructing file names

Parameter	Description	Number of characters	Value / Format ^a
SSSSS	Measuring station	5	<alphanumeric>
YY	Year of measurement date	2	00 to 99
MM	Month of measurement date	2	01 to 12
DDD	Day number within the year of the measurement date	3	001 to 366
X	Unused field in the file name	1	- {hyphen} or letter A to Z
Q	File qualifier	1	see Table 2

^a Permissible formats are presented in angle brackets.

6.1.2 Formatted file names

The formatted file name consists of eight characters plus one full stop plus three characters. The most righthand position in the file name is reserved for the file qualifier which specifies the internal status of the file according to Table 2.

Table 2 — Values of file qualifier Q

Value of Q	Description
V	Validated data file
U	Unvalidated data file
I	Internal incomplete data file

6.1.2.1 Daily file

A daily file includes information within a day. The file name shall be constructed in the following way:

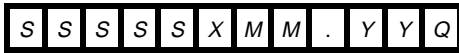
S	S	S	S	S	D	D	D	.	Y	Y	Q
---	---	---	---	---	---	---	---	---	---	---	---

EXAMPLE "13241046.96V"

- Daily file with validated data from 15th February 1996
- Station code: 13241

6.1.2.2 Monthly file

A monthly file includes information within a month. Different files may be distinguished by letters A to Z in unused fields (X). The file name shall be constructed in the following way:

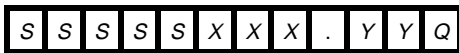


EXAMPLE "XD345A12.97V" and "XD345C12.97V"

- a) Monthly files A and C with validated data from December 1997
- b) Station code: XD345

6.1.2.3 Annual file

An annual file includes information within a year. Different files may be distinguished by letters A to Z in unused fields (X). The file name shall be constructed in the following way:



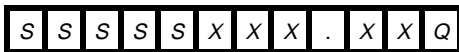
EXAMPLE "00787---.98U"

- a) Annual file with unvalidated data from year 1998
- b) Station code: 00787

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6.1.2.4 Multiannual file

A multiannual file includes information covering more than a year. Different files may be distinguished by letters A to Z in unused fields (X). The file name shall be constructed in the following way:



EXAMPLE "GF78I-XA.--I" and "GF78I-XB.--I"

- a) Multiannual files XA and XB with an incomplete data set; time information is specified in the data file.
- b) Station code: GF78I

6.1.3 File names for other purposes

Other file names may be used in situations where the use of file names formatted in accordance with 6.1.1 is not appropriate. In such cases, the most righthand character shall be different from the characters specified in Table 2.

6.2 Formats for presentation of data

6.2.1 General data

General data are generally formatted in a fixed numerical format, a fixed alphanumerical format or a variable alphanumerical format.

The descriptors of these formats (symbols N, A and V) relating to the nature of the information placed in the fields are not expressed in the alphanumeric sequence (the nature of information is only interpreted through the identification of the position of the field in the sequence).

6.2.1.1 Fixed numerical format: [n] N [p]

n: zone repetition number. *n* is optional if it equals 1.

p: total number of characters in the reserved zone. There shall only be numerical characters (0 to 9), signs and spaces in this field. The numerical value shall be right-justified and spaces shall be placed in the remaining part on the field.

6.2.1.2 Fixed alphanumerical format: [n] A [p]

n: zone repetition number. *n* is optional if it equals 1.

p: total number of characters within a reserved zone. When the length of the information is less than *p*, the message shall be left-justified and the remaining part shall be filled with spaces.

6.2.1.3 Variable alphanumerical format: [n] V [p]

n: zone repetition number. *n* is optional if it equals 1.

p: total number of characters in the reserved zone. When the length of the information is less than *p*, even zero, the length of this field will be reduced to the length of the information.

6.2.1.4 Other formats

The longitude, latitude and altitude field shall conform with the specifications of Annex D.

Time information shall be presented according to the following alphanumerical field:

Y	Y	M	M	D	D	h	h	m	m
---	---	---	---	---	---	---	---	---	---

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where

YY is the year

MM is the month

DD is the day

hh is the hour

mm is the minute

If formats other than those recommended here are used, they shall be provided in the comment section.

6.2.2 Air quality data**6.2.2.1 General**

The air quality data shall always be presented as integers, in the units specified in ISO 4226 or ISO 1000. The necessary multiplication factor is represented by the exponent to the base 10 and shall be stated in the data control record.

Each datum is linked to a quality code which indicates the validity of the data. These quality codes are listed in Table 3 and specified in 6.2.2.2.

Table 3 — Data qualifier values

Data qualifier	Value
calibration_drift	D
calibration_mode	C
corrected_datum	O
estimated_datum	E
faulty_measurement	F
invalid_datum	I
maintenance_mode	M
no_datum	N
usable_datum	U
zero_mode	Z

6.2.2.2 Data qualifiers

6.2.2.2.1 calibration drift

This data qualifier indicates that the measured datum is incorrect between two calibrations. The only permitted value is "D".

6.2.2.2.2 calibration mode

This data qualifier indicates that the measurement instrument operates in a calibration mode. During calibration a reference gas mixture is introduced for calibration purposes. The only permitted value is "C".

6.2.2.2.3 corrected datum

This data qualifier indicates that the following datum has been corrected. The only permitted value is "O".

6.2.2.2.4 estimated datum

This data qualifier specifies that the following datum is an estimate. The datum did not exist before estimation, it was faulty or invalid. The only permitted value is "E".

6.2.2.2.5 faulty measurement

This data qualifier indicates a failure detected in the data acquisition chain. The only permitted value is "F".

6.2.2.2.6 invalid datum

This data qualifier indicates that the following datum is invalid and should not be taken into account. The only permitted value is "I".

6.2.2.2.7 maintenance mode

This data qualifier indicates that the datum was acquired during maintenance operations on a measurement device. In this case the measurement is generally invalid. The only permitted value is "M".

6.2.2.2.8 no datum

This qualifier indicates that the datum is absent. The following data field is empty. The only permitted value is "N".

6.2.2.2.9 usable datum

This qualifier indicates an usable datum. The only permitted value is "U".

6.2.2.2.10 zero mode

This data qualifier indicates that a zero test was conducted or a complementary gas free of measurands was introduced. The only permitted value is "Z".

7 File contents

The meaning of the data fields presented in a data file and their formats are specified in Table 4. Furthermore, the complete format and the number of lines used by a record are specified. The file structure is shown in Annex F. An example of a data file is presented in Annex G.

Table 4 — Definition and formats of data fields

Field	Format	Number of lines
<p>a) Identification group The identification group provides information on the institution record and the header record.</p> <p>1) Data supplier record The institution record provides all relevant information about the institution providing the data.</p> <p>— Name of the institution Name of the organization exchanging the air quality data or the name of the authority performing the measurements.</p> <p>— Address of the institution Full address of the institution, in correct order for postal use.</p> <p>— Country of the institution Short name of the country of the institution, in the English language and in accordance with ISO 3166 (see examples in Annex D).</p> <p>2) Header record The header record provides information on the number of description and data blocks included in the data file.</p> <p>— Number of description blocks</p> <p>— Number of data blocks</p>	<p>4V72</p> <p>V72</p> <p>2V72</p> <p>V72</p> <p>2N5</p> <p>N5</p> <p>N5</p>	<p>4</p> <p>1</p>
<p>b) Description group The description group consists of description blocks.</p> <p>— Description block The description block presents a measurand record and one or more site records.</p> <p>1) Measurand record The measurand record provides detailed information on the measurand.</p> <p>— Number of sites Number of site records following the measurand record.</p> <p>— Measurand code Code of the measurand in accordance with Annex B.</p> <p>— Measurand name Name of the measurand in the English language and in accordance with Annex B.</p> <p>— Measurand unit Unit of the measured quantity in accordance with the text representation of ISO 4226 or ISO 1000.</p>	<p>N3, A3, A16, A10, A18, N5, A5, 2N6</p> <p>N3</p> <p>A3</p> <p>A16</p> <p>A10</p>	<p>1</p>