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Standard coding of dates and periods

Codification unifiée des dates et des périodes

Einheitliche Codierung des Datums und der Zeitabschnitte



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Summary

This leaflet sets out the coding system for dates and periods that must be used by all UIC members in electronic data interchange.

The leaflet contains two coding systems:

1. A system based on *ISO Standard 8601* that must be used for all new message development. It offers railway companies the possibility to exchange date and period data with non-UIC parties.
2. A proprietary UIC system. This system is kept in the leaflet only to enable railway companies to continue to use existing messages and, as such, to avoid main changes in their systems. In the long term, it will be abolished.

In addition, the leaflet lists some UIC proprietary provisions which have no equivalent in *ISO Standard 8601*. They may be used together with the *ISO Standard 8601* coding system.

1 - Introduction

Electronic data interchange (EDI) facilitates communication between railway companies. However, one of the main requirements to achieve smooth communication is the use of a common codification system for the coded data elements contained in electronic messages.

The aim of this leaflet is to set forth the principles of a uniform coding system for the representation of dates and periods based on the Gregorian calendar. It contains the following main parts:

1. **A coding system based on *ISO Standard 8601* (see Bibliography - page 25).**

It enables UIC members to exchange date and period data not only within the UIC community, but also with third parties. The use of this coding system is mandatory for all newly developed messages.

2. **A proprietary UIC coding system.**

In order to allow railway companies to continue to use existing messages and, as such, to prevent the need for changes in these messages and in the computer systems that use them, the old, proprietary coding system of UIC is temporarily kept in the leaflet. This system is no longer allowed for new message development and should be abolished in the long term.

3. **Additional UIC proprietary provisions.**

Some cases of period representations provided by the UIC proprietary coding system are not covered by *ISO Standard 8601*. These cases are included as a separate part in the leaflet and adapted to the *ISO Standard 8601* formats.

2 - ISO Standard 8601 based coding system

2.1 - General remarks

This point sets forth the principles of uniform date and time period coding, in accordance with *ISO Standard 8601*.

To avoid any ambiguity in representations of dates, times and periods of time, single letter designators are employed in certain cases.

This point only includes the parts of the *ISO Standard 8601*, which are of mandatory use for date, time and period representation in UIC-based messages. UIC members may use other parts of that standard in bilateral agreement.

2.2 - Coding principles

2.2.1 - *ISO Standard 8601* deals with the coding of dates (i.e. the stipulation of a point in time according to the Gregorian calendar) and of time periods (i.e. intervals between two points in time).

The structure and structural principles of the code are explained in points **2.3** (dates) - [page 4](#), **2.4** (time of the day) and **2.5** (date/time combined) - [page 6](#) and **2.6** (time periods) - [page 8](#).

For certain applications with special requirements and under precise conditions established by the competent Commission, non-significant characters may be omitted as a means of reducing costs. Blanks should not be used in the representations either.

2.2.2 - Uniform date and time period coding in accordance with *ISO Standard 8601* requires the use of appropriate (written) characters (figures, letters and punctuation marks).

2.2.3 - Where necessary, the following characters are used for separation purposes:

- [-] (hyphen) to separate the elements of a date (year, month, day, or sometimes week),
- [:] (colon) to separate the elements of a time (hour, minute, second),
- [/] (slash) to separate the two components in the representation of periods of time.

For UIC messages, the use of these separators is not recommended.

2.2.4 - Characters used as designators:

- [P] is used as time interval (period) designator, preceding a data element which represents a given duration of a time interval,
- [T] is used as time designator to indicate the start of the representation of the time of the day in combined date and time of day expressions,
- [W] is used as week designator, preceding a data element that represents the ordinal number of a calendar week within the year.

In representations of duration (see point 2.6.1.2 - page 8), the following characters are also used as a part of the representation when required: [Y] year, [M] month or minutes, [W] week, [D] day, [H] hour and [S] second.

ISO Standard 8601 contains other designators that may be used in representations of periods of time. They are not recommended for use in UIC messages.

o 2.3 - Uniform coding of dates

2.3.1 - Code structure

2.3.1.1 - Calendar date (basic code)

The full basic code (calendar date) has 8 numeric positions.

The positions are divided up into 3 groups, each of which represents a time unit.

Year	Month	Day
XXXX	XX	XX

Example: 18 February 1998

Basic code: 19980218

Extended format: 1998-02-18

2.3.1.2 - Variant 1 (ordinal dates)

This variant allows for the use of ordinal day numbers in a given year.

The full code has 7 numeric positions.

The positions are divided up into 2 groups, each of which represents a time unit.

The ordinal day number in the year is represented using three digits (the first day of the year being [001] and subsequently days shall be numbered in ascending sequence).

Year	Day
XXXX	XXX

Example: the 49th day of 1998

Basic code: 1998049

Extended format: 1998-049

2.3.1.3 - Variant 2 (week dates)

This variant allows for the use of the week date (calendar week and day of the week) in a given year.

The full code has 7 numeric and 1 alphabetic positions.

The numeric positions are divided up into 3 groups, each of which represents a time unit.

The calendar week in the year is represented using two digits (the first calendar week of the year being [01] and subsequently weeks shall be numbered in ascending sequence).

The day of the week is represented by one digit. Monday shall be identified as day [1] of any calendar week, and subsequent days of the same week shall be numbered in ascending sequence to Sunday (day [7]).

The week date is preceded by a designator [W].

Year	Separator	Calendar week	Day of the week
XXXX	W	XX	X

Example: Tuesday in the 37th week of 2000

Basic code: 2000W372

Extended format: 2000-W37-2

2.3.2 - Rules for composition of the uniform code

2.3.2.1 - Only four-digit year codes should be used.

2.3.2.2 - Representations may be truncated in order to avoid the obligation to specify unnecessary trailing elements such as days and months.

Example:

2001 the year 2001

200101 January 2001

2001W13 13th week of 2001

o 2.4 - Uniform coding of the time of day

2.4.1 - Code Structure

The full code has 6 numeric positions.

The numeric positions are divided up into 3 groups, each of which represents a time unit.

Hour	Minute	Second
XX	XX	XX

Example: 13:25 and 15 seconds

Basic code: 132515

Extended format: 13:25:15

2.4.2 - Rules for composition of the uniform code

2.4.2.1 - Representations may be truncated in order to avoid the obligation to specify unnecessary trailing elements such as seconds and minutes.

Example:

2014 20:14

20 20th hour of the day (8 p.m.)

2.4.2.2 - The time of the day is based on the 24-hour timekeeping system. Hours are represented by two digits from [00] to [24], minutes by two digits from [00] to [59], and seconds by two digits from [00] to [59].

NB : the use of the value 24 for the representation of an hour is not recommended.

2.4.2.3 - Precision is limited to the second.

o 2.5 - Uniform coding of the date and time of day combined

2.5.1 - Code structure

Combinations of the date and time of day are presented by a date (see point 2.3 - page 4), followed by a designator [T], followed by time of day (see point 2.4).

2.5.1.1 - Calendar date (basic code)

The full code for the combination of the calendar date and time of day has 15 positions.

14 are numeric and one is alphabetic.

The numeric positions are divided into 6 groups, each of which represents a time unit. The designator [T] serves as a separation between the date and the time of day.

Year	Month	Day	Separator	Hour	Minute	Second
XXXX	XX	XX	T	XX	XX	XX

Example: 18 February 1998 at 13:25 and 15 seconds

Basic code: 19980218T132515

Extended format: 1998-02-18T13:25:15

2.5.1.2 - Variant 1 (ordinal dates)

The full code for the combination of the ordinal date and time of day has 14 positions.

13 are numeric and one is alphabetic.

The numeric positions are divided into 5 groups, each of which represents a time unit. The designator [T] serves as a separation between the date and the time of day.

Year	Day	Separator	Hour	Minute	Second
XXXX	XXX	T	XX	XX	XX

Example: The 49th day of 1998, at 13:25:15

Basic code: 1998049T132515

Extended format: 1998-049T13:25:15

2.5.1.3 - Variant 2 (week dates)

The full code for the combination of the week date and time of day has 15 positions.

13 are numeric and 2 are alphabetic.

The numeric positions are divided into 6 groups, each of which represents a time unit. The designator [T] serves as a separation between the date and the time of day. The use of designator [W] is described in point [2.3.1.3 - page 5](#).

Year	Separator	Calendar week	Day of the week	Separator	Hour	Minute	Second
XXXX	W	XX	X	T	XX	XX	XX

Example: Tuesday in the 37th week of 2000, at 13:25:15

Basic code: 2000W372T132515

Extended format: 2000-W37-2T13:25:15

2.5.2 - Rules for composition of the uniform code

2.5.2.1 - The date is encoded in accordance with the provisions of point 2.3 - page 4. The time of the day is encoded in accordance with point 2.4 - page 6.

2.5.2.2 - Representations may be truncated in order to avoid the obligation to specify unnecessary trailing elements such as seconds and minutes.

Example:

20010129T2014 29 January 2001, 20:14

o 2.6 - Uniform coding of time intervals (periods)

2.6.1 - Code structure

2.6.1.1 - Periods expressed by start and end

The time interval is represented through the notation of start and end date and/or time and through the notation of the duration if desired. The encoding process involves the notation of:

- the code of the start date/time,
- the sign indicating the relationship between the first and the second date (slash),
- the code of the end date/time.

Example: A time interval starting at 15 minutes and 55 seconds past 8.00 on the 21st of December 1997 and ending at 30 minutes and 45 seconds past 22.00 on the 19th of January 1998.

Basic code: 19971221T081555/19980119T223045

Extended format: 1997-12-21T08:15:55/1998-01-19T22:30:45

2.6.1.2 - Periods expressed by a duration (not associated with any start or end)

The time interval is represented through the notation of a duration. A duration is represented by a designator [P] followed by one or more duration indications, each represented by a number followed by a time unit designator. The number of years shall be followed by the designator [Y], the number of months by [M], the number of weeks by [W], and the number of days by [D]. The part including time components shall be preceded by the designator [T]; the number of hours shall be followed by [H], the number of minutes by [M], and the number of seconds by [S].

Example:

P2Y4M24DT18H A time interval with a duration of 2 years, 4 months, 24 days and 18 hours.

2.6.1.3 - Periods expressed by a start and a duration

The time interval is represented through the notation of a start date/time and a duration. The encoding involves the notation of:

- the code of the start date/time,
- the sign indicating the relationship between the start and the duration (slash),
- the duration.

Example: A time period lasting 2 years, 4 months, 24 days and 18 hours, starting on the 21st of December 1997 at 15 minutes and 55 seconds past 8.00.

Basic code: 19971221T081555/P2Y4M24DT18H

Extended format: 1997-12-21T08:15:55/P2Y4M24DT18H

2.6.1.4 - Periods expressed by a duration and an end

The time interval is represented through the notation of a duration and an end date/time. The encoding involves the notation of:

- the duration,
- the sign indicating the relationship between the duration and the end (slash),
- the code of the end date/time.

Example: A period of 2 years, 4 months, 24 days and 18 hours that ends on the 21st of December 1997 at 15 minutes and 55 seconds past 8.00.

Basic code: P2Y4M24DT18H/19971221T081555

Extended format: P2Y4M24DT18H/1997-12-21T08:15:55

2.6.2 - Rules for composition of uniform codes

The dates on which the period begins and/or ends are encoded in accordance with the provisions of point [2.3 - page 4](#).

The times of day at which the period begins and/or ends are encoded in accordance with the provisions of point [2.4 - page 6](#).

Combinations of dates and times of day at which the period begins and/or ends are encoded in accordance with the provisions of point [2.5 - page 6](#).

o 3 - UIC proprietary coding system

3.1 - Introduction

This point describes the formerly used UIC proprietary coding system for dates and time intervals (periods). This coding system is kept in the leaflet only to enable the continuation of existing applications. It should not be used for new message development.

3.2 - The UIC standard code

The standard code comprises two parts:

- the actual coding of dates, i.e. the indication of a specific position identified according to the Gregorian calendar,
- the coding of periods, i.e. the time intervals between two specific dates.

The structure of the codes and the instructions for their preparation are given in Appendix B, points B.1 - page 14 (for dates) and B.2 - page 15 (for periods) to this leaflet.

3.3 - The standard functional indices

In order to effect the international exchange of information in entirely satisfactory conditions, it may be necessary to clarify certain factors included in the standard code for dates and periods.

These indications are provided by additional codes, called standard functional indices.

The structure of standard functional indices and the instructions for their preparation are given in the following Appendices to this leaflet:

Appendix B, point B.3 - page 18: Time differences between encoded times and Universal Time (UTC)

Appendix B, point B.4 - page 19: Days of the week

Appendix B, point B.5 - page 19: Particular categories of days

3.4 - Use of the standard codes and standard functional indices

The use of these standard codes is obligatory in all exchanges of information between Railways intended for transmission or electronic data processing. This also applies to standard functional indices insofar as they are absolutely essential for understanding the standard codes.

R 4 - Additional UIC proprietary provisions

This point includes UIC proprietary provisions that were available in former versions of this leaflet. They are kept in this leaflet because they are not covered by *ISO Standard 8601* or by other official standards. They are, where possible, adapted to the norms set out in *ISO Standard 8601*.

Sub-divisions of regular time periods

In most cases, the coding of regular time periods is covered in point [2.6 - page 8](#). However, for some sub-divisions of regular time periods, the following UIC specific coding applies.

4.1 - Code structure

The uniform codes have twelve positions, sub-divided into groups and running from left to right, as follows:

- Time unit code (year, month, week, day, ...)
 - Character denoting which type of sub-division has to be applied on the time unit
 - Ordinal number indicating position of the sub-division within the time unit
 - Zeros where necessary
- } *If smallest given time unit is sub-divided*

NB : trailing zeroes may be omitted.

4.2 - Rules for the composition of the code

- The codes for time units are the same as the codes for dates ([see point 2.3 - page 4](#)), times of the day ([see point 2.4 - page 6](#)) or combinations of dates and times of the day ([see point 2.5 - page 6](#)).
- Characters specific to the sub-division of time units are listed in Appendix C, point [C.1 - page 20](#). The attribution of such signs avoids confusion with codes based on calendar times.
- The details of the codes for different time periods are given in Appendix C, point [C.2 - page 21](#).
- The start and end times for regular time periods are explained in Appendix C, point [C.3 - page 22](#).

The competent Commissions will keep the number of types of regular time periods needed for the applications as low as possible.

5 - Management of this leaflet

Maintenance of the uniform date and time period coding shall be carried out in accordance with the provisions of *UIC Leaflet 920* (see [Bibliography - page 25](#)).

○ **Appendix A - ISO Standard 8601 based coding system**

Table 1 : Spans of different groups and examples of date coding, with variant

	Positions of the code														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Basic code (calendar date)	Year				Month		Day		Sep.	Hour		Minute		Second	
Span of groups	1	9	0	0	0	1	0	1	T	0	0	0	0	0	0
to:	2	0	9	9	1	2	3	1		2	3	5	9	5	9
Example: 18 February 1998, 13:25:15	1	9	9	8	0	2	1	8	T	1	3	2	5	1	5
Variant 1 (ordinal date)	Year				Day			Sep.	Hour		Minute		Second		
Span of groups	1	9	0	0	0	0	1	T	0	0	0	0	0	0	
to:	2	0	9	9	3	6	6		2	3	5	9	5	9	
Example: 18 February 1998, 13:25:15	1	9	9	8	0	4	9	T	1	3	2	5	1	5	
Variant 2 (week date)	Year				Sep.	Calendar week		Day of wk.	Sep.	Hour		Minute		Second	
Span of groups	1	9	0	0	W	0	0	1	T	0	0	0	0	0	0
to:	2	0	9	9		5	3	7		2	3	5	9	5	9
Example: 18 February 2001, 13:25:15	2	0	0	1	W	0	7	7	T	1	3	2	5	1	5

Appendix B - UIC proprietary coding system

B.1 - Standard coding of dates

B.1.1 - Code structure

B.1.1.1 - General codes

The standard general codes shall comprise 12 positions divided into 6 segments of 2 positions, each segment corresponding to a unit of time:

Year	Month	Day	Hour	Minute	Second
XX	XX	XX	XX	XX	XX

B.1.1.2 - Variant

In order to facilitate processing in certain applications, this variant enables the day to be identified according to its order number in the year (and not in the month).

For this purpose, the 2nd and 3rd segments of the general codes shall be used, the order number of the day in the year being then preceded by the conventional figure 2 (not normally used in this position), to avoid any confusion with the general codes.

Year	Day	Hour	Minute	Second
XX	2XXX	XX	XX	XX

B.1.2 - Instructions for the preparation of standard codes

B.1.2.1 - For economy reasons, and by derogation from the ISO recommendations, the year shall be identified by its last two digits only.

B.1.2.2 - Precision is limited to the second, i.e. 1/60th of a minute.

B.1.2.3 - The following table gives the range of the segments, and practical examples for the general codes and variant.

Table 2 : Range of the segments for the general codes and variant

	Positions of the code											
	1	2	3	4	5	6	7	8	9	10	11	12
General codes	Year		Month		Day		Hour		Minute		Second	
Range of segments	0	0	0	1	0	1	0	0	0	0	0	0
to:	9	9	1	2	3	1	2	3	5	9	5	9
Example: 9 August 1995 at 14:45:15	9	5	0	8	0	9	1	4	4	5	1	5
Variant	Year			Day			Hour		Minute		Second	
Range of segments	0	0	2	0	0	1	0	0	0	0	0	0
to:	9	9		3	6	6	2	3	5	9	5	9
Example: 9 August 1995 at 14:45:15	9	5	2	2	2	1	1	4	4	5	1	5

B.2 - Standard coding of periods

B.2.1 - Code structure

B.2.1.1 - Miscellaneous periods

A miscellaneous period shall be defined by the two specific dates and times at the beginning and end of it.

The coding shall be effected in the following sequence:

- code of the date and time of the start of the period,
- a sign indicating the association between the preceding date and time and the next one (hyphen),
- code of the date and time of the end of the period.

B.2.1.2 - Regular periods

These periods correspond to a unit of time, or to a simple specific fraction of a unit of time.

For economy reasons, use of a simpler coding than that described in point **B.2.1.1** is recommended in this case.

The standard codes comprise 10 positions with the following sequence, from left to right:

- the codes of the units of time
 - a conventional digit, characteristic of the division of the unit
 - the order number of the fraction in the unit
 - any noughts where applicable
- } *in case of division of the smallest given unit of time*

NB : it should be noted that positions that are not essential, might, in certain circumstances, be omitted from the exchange process.

B.2.2 - Instructions for the preparation of standard codes

Precision is limited to the second.

B.2.2.1 - Miscellaneous periods

The start-of-period and end-of-period dates and times shall be coded according to the provisions stipulated in point [B.1 - page 14](#).

B.2.2.2 - Regular periods

- The codes for the time units are identical to those used in the coding of dates (see point [B.1](#)).
- The conventional signs for the division of units of time, are fixed as follows:
 - 9 = half of the corresponding period
 - 8 = a third of the corresponding period
 - 7 = a quarter of the corresponding period
 - 6 = a sixth of the corresponding period
 - 5 = the division of the year into weeks
 - 4 = the division of the day into day and night periods
 - 2 = the division of the year into days (as in the coding of dates: see point [B.1.1.2 - page 14](#))
- Conventional digits are used to avoid any confusion with codes based on calendar dates.
- Details of the codes of the different periods are given in point [B.2.3 - page 17](#).
- The specific limits of the start and end of the regular periods are explained in point [B.2.4 - page 17](#).

R B.2.3 - Detail of the standard codes for regular periods

Table 3 : Standard codes for regular periods

Periods	Positions of the code									
	1	2	3	4	5	6	7	8	9	10
Periods in relation to the year										
1. Year <i>order number</i> 00 to 99	x	x	0	0	0	0	0	0	0	0
2. Six months <i>year, conventional digit, order number of the half year period</i>	x	x	9	x 1 or 2 ^a	0	0	0	0	0	0
3. Four months <i>year, conventional digit, order number of the four-month period</i>	x	x	8	x 1 to 3	0	0	0	0	0	0
4. Three months <i>year, conventional digit, order number of the three-month period</i>	x	x	7	x 1 to 4	0	0	0	0	0	0
5. Two months <i>year, conventional digit, order number of the two-month period</i>	x	x	6	x 1 to 6	0	0	0	0	0	0
6. Month <i>year, order number of the one-month period</i> 01 to 12	x	x	x	x	0	0	0	0	0	0
7. Year <i>year, conventional digit, order number of the one-week period</i> ^b 01 to 53	x	x	5	x	x	0	0	0	0	0
8. Day <i>General codes</i> <i>year, month, order number of the one-day period</i> 01 to 31	x	x	x	x	x	x	0	0	0	0
Variant <i>year, conventional digit, order number of the day in the year</i> 001 to 366	x	x	2	x	x	x	0	0	0	0

a. Other digits (3 and 4, for example) may be used conventionally to code the standard periods of the "summer service" or "winter service".
b. The day in the week may be identified by associating the code prescribed in 7. with the functional index given in point B.4.

Legend: X = position to be replaced by a corresponding character
0 = not used (zeroes may be omitted)

B.2.4 - Specific limits for the start and end of regular periods

See point [C.3 - page 22.](#)

B.3 - Uniform function codes expressing time differences between encoded times and Universal Time (UTC)

This point sets forth the uniform function code numbers to be used to indicate time differences between encoded local time and Universal Time.

Universal Time is Greenwich Mean Time (Meridian 0).

B.3.1 - Code structure

The code number is a single digit.

B.3.2 - Values

The following values must be used to denote time zones (they correspond to the number of hours' difference from Universal Time):

- 0 = Western European Time
- 1 = Middle European Time
- 2 = Eastern European Time
- 3 = Moscow Time
- 4 = Ural Time
- 5 = Pamir Time
- 6 = Tibet Time
- 7 = Baikal Time
- 8 = China Time
- 9 = Japan (or Vladivostok) Time

Example: Representation of the local time of 32 minutes and 45 seconds past 20.00 (Eastern European Time):

20 32 45 + 02 00 → 20 : 32 : 45 + 02 : 00

The application of "Summertime" or "Daylight saving time," (i.e. moving clocks forward by 60 minutes in comparison with the mean time in the time zone) is equivalent to a shift to the next time zone.

B.4 - Uniform function codes denoting days of the week

B.4.1 - Code structure

The code number is a single digit.

B.4.2 - Values

The function codes are as follows:

- 1 = Monday
- 2 = Tuesday
- 3 = Wednesday
- 4 = Thursday
- 5 = Friday
- 6 = Saturday
- 7 = Sunday

B.5 - Uniform function codes denoting particular categories of days

B.5.1 - Structure

The code number is a single digit. It can be combined with the signs in point **B.4**.

B.5.2 - Values

The following figures will be used for international data interchange:

- 0 = Ordinary day
- 1 = Public Holiday

2 to 6 remain to be allocated. They may be allocated on the basis of proposals by the competent Commissions.

Values 7 to 9 are available to railways for their own use (internal needs or bilateral agreements).

R Appendix C - Additional UIC provisions

C.1 - Uniform function codes for the sub-division of time units when encoding time periods

The following code values are used to specify sub-divisions of time units:

- 9 = Half of the time unit in question
- 8 = One third of the time unit in question
- 7 = One quarter of the time unit in question
- 6 = One sixth of the time unit in question
- 5 = Division of a day into daytime and night-time

These code values are used to avoid any confusion with codes based on calendar dates.

Details of the codes of the different periods are given in point [C.2 - page 21](#).

The specific limits of the start and end of the regular periods are explained in point [C.3 - page 22](#).

C.2 - Detail of the standard codes for sub-divided regular periods

Only sub-divided periods not covered by *ISO Standard 8601* are represented in this table.

Table 4 : Standard codes for sub-divided regular periods

Time periods	Positions of the code											
	1	2	3	4	5	6	7	8	9	10	11	12
Half year (six-month period) <i>year, sign, ordinal number of half year</i>	x	x	x	x	9	1 or 2 ^a	0	0	0	0	0	0
Third of year (four-month period) <i>year, sign, ordinal number of third of year</i>	x	x	x	x	8	1 to 3	0	0	0	0	0	0
Quarter of year (three-month period) <i>year, sign, ordinal number of quarter of year</i>	x	x	x	x	7	1 to 4	0	0	0	0	0	0
Sixth of year (two-month period) <i>year, sign, ordinal number of sixth of year</i>	x	x	x	x	6	1 to 6	0	0	0	0	0	0
Day - or night-time <i>date, sign, day/night indicator: 1 = day, 2 = night</i>	x	x	x	x	x	x	x	x	5	1 or 2	0	0

a. Other values (such as 3 and 4) can be used as signs to denote uniform periods, e.g. "summer timetable period" or "winter timetable period". The competent Commissions, which set the limits for these periods every year, will deliver a decision on this issue.

Legend: X = position to be replaced by a corresponding character
0 = not used (zeroes may be omitted)

Example:

First half of 2001	200191
Second third of 2001	200182
First quarter of 2001	200171
Fourth sixth of 2001	200164
Daytime 25/01/2001	2001012551 (basic date format)

C.3 - Specific limits for the start and end of sub-divided regular periods

The peculiarities inherent in the measurement of time require that the start and end of time periods be established with precision. The start and end of time periods are indicated using the first and last elementary unit (seconds) of the time period or by the first and last sub-time period.

For example, the hour n runs from the first second of the first minute to the 60th second of the 60th minute.

A day (considered as a time period) extends from the first second of the first minute of the first hour to the 60th second of the 60th minute of the 24th hour.

The link between date notation (point in time) according to points 2.3 - page 4, 2.4 or 2.5 - page 6 and time period notation (see point 2.6 - page 8) is made by establishing when elementary units and time periods begin in the way described below:

- The 1st second of the 1st minute of the hour n begins at point in time: $(n-1).00.00$
- The 2nd second of the 1st minute of the hour n begins at point in time: $(n-1).00.01$
- The 1st second of the 2nd minute of the hour n begins at point in time: $(n-1).01.00$
- The 60th second of the 60th minute of the hour n begins at point in time: $(n-1).59.59$
- The 1st second of the 1st minute of the hour $n + 1$ begins at point in time: $n.00.00$
- A day begins at point in time 0.00.00 with the beginning of the 1st second of the 1st minute of the 1st hour. Consequently, the point in time 24.00.00 does not occur.

Period	First unit of time	Last unit of time
sixth of an hour	1. 1st second of 1st minute	60th second of 10th minute
	2. 1st second of 11th minute	60th second of 20th minute
	3. 1st second of 21st minute	60th second of 30th minute
	4. 1st second of 31st minute	60th second of 40th minute
	5. 1st second of 41st minute	60th second of 50th minute
	6. 1st second of 51st minute	60th second of 60th minute
quarter of an hour	1. 1st second of 1st minute	60th second of 15th minute
	2. 1st second of 16th minute	60th second of 30th minute
	3. 1st second of 31st minute	60th second of 45th minute
	4. 1st second of 46th minute	60th second of 60th minute
third of an hour	1. 1st second of 1st minute	60th second of 20th minute
	2. 1st second of 21st minute	60th second of 40th minute
	3. 1st second of 41st minute	60th second of 60th minute

Period	First unit of time	Last unit of time
half an hour	1. 1st second of 1st minute	60th second of 30th minute
	2. 1st second of 31st minute	60th second of 60th minute
hour	1st second of 1st minute	60th second of 60th minute
daytime	1st second of 1st minute of 7th hour	60th second of 60th minute of 18th hour
night-time	1st second of 1st minute of 19th hour	60th second of 60th minute of 6th hour
sixth of day	1. 1st second of 1st minute of 1st hour	60th second of 60th minute of 4th hour
	2. 1st second of 1st minute of 5th hour	60th second of 60th minute of 8th hour
	3. 1st second of 1st minute of 9th hour	60th second of 60th minute of 12th hour
	4. 1st second of 1st minute of 13th hour	60th second of 60th minute of 16th hour
	5. 1st second of 1st minute of 17th hour	60th second of 60th minute of 20th hour
	6. 1st second of 1st minute of 21st hour	60th second of 60th minute of 24th hour
quarter of day	1. 1st second of 1st minute of 1st hour	60th second of 60th minute of 6th hour
	2. 1st second of 1st minute of 7th hour	60th second of 60th minute of 12th hour
	3. 1st second of 1st minute of 13th hour	60th second of 60th minute of 18th hour
	4. 1st second of 1st minute of 19th hour	60th second of 60th minute of 24th hour
two months	1st second of 1st minute of 1st hour	60th second of 60th minute of 24th hour
	1. of 1st day of 1st month	of day Z ^(a) of 2nd month
	2. of 1st day of 3rd month	of day Z ^(a) of 4th month
	3. of 1st day of 5th month	of day Z ^(a) of 6th month
	4. of 1st day of 7th month	of day Z ^(a) of 8th month
	5. of 1st day of 9th month	of day Z ^(a) of 10th month
6. of 1st day of 11th month	of day Z ^(a) of 12th month	
three months	1st second of 1st minute of 1st hour	60th second of 60th minute of 24th hour
	1. of 1st day of 1st month	of day Z ^(a) of 3rd month
	2. of 1st day of 4th month	of day Z ^(a) of 6th month
	3. of 1st day of 7th month	of day Z ^(a) of 9th month
	4. of 1st day of 10th month	of day Z ^(a) of 12th month
four months	1st second of 1st minute of 1st hour	60th second of 60th minute of 24th hour
	1. of 1st day of 1st month	of day Z ^(a) of 4th month
	2. of 1st day of 5th month	of day Z ^(a) of 8th month
	3. of 1st day of 9th month	of day Z ^(a) of 12th month
six months	1st second of 1st minute of 1st hour	60th second of 60th minute of 24th hour
	1. of 1st day of 1st month	of day Z ^(a) of 6th month
	2. of 1st day of 7th month	of day Z ^(a) of 12th month
year	1st second of 1st minute of 1st hour of 1st day of 1st month	60th second of 60th minute of 24th hour of 31st day of 12th month
third of day	1. 1st second of 1st minute of 1st hour	60th second of 60th minute of 8th hour
	2. 1st second of 1st minute of 9th hour	60th second of 60th minute of 16th hour
	3. 1st second of 1st minute of 17th hour	60th second of 60th minute of 24th hour

Period	First unit of time	Last unit of time
half-day	1. 1st second of 1st minute of 1st hour 2. 1st second of 1st minute of 13th hour	60th second of 60th minute of 12th hour 60th second of 60th minute of 24th hour
day	1st second of 1st minute of 1st hour	60th second of 60th minute of 24th hour
ten days	1st second of 1st minute of 1st hour 1. of 1st day 2. of 11th day 3. of 21st day	60th second of 60th minute of 24th hour of 10th day of 20th day of day Z ^(a)
half-month	1st second of 1st minute of 1st hour 1. of 1st day 2. of 16th day	60th second of 60th minute of 24th hour of 15th day of day Z ^(a)
month	1st second of 1st minute of 1st hour of 1st day	60th second of 60th minute of 24th hour of day Z ^(a)
week	1st second of 1st minute of 1st hour of 1st day	60th second of 60th minute of 24th hour of 7th day

a. Z is the number of the last day of the month, i.e.: 28 or 29 for February, 30 for April, June, September and November, 31 for January, March, May, July, August, October and December.

NB : the week coinciding with the change of year will be ascribed to the year which contains the greater number of days of that week; depending on the case, it will bear the number 53 of year n or the number 01 of year n+ 1.

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