



INTERNATIONAL TELECOMMUNICATION UNION

**ITU-T**

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

**M.410**

**MAINTENANCE: INTERNATIONAL TRANSMISSION  
SYSTEMS (ANALOGUE)**

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**NUMBERING OF DIGITAL BLOCKS IN  
TRANSMISSION SYSTEMS**

**ITU-T Recommendation M.410**

(Extract from the *Blue Book*)

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## NOTES

1 ITU-T Recommendation M.410 was published in Fascicle IV.1 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

2 In this Recommendation, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

**Recommendation M.410**

**NUMBERING OF DIGITAL BLOCKS IN TRANSMISSION SYSTEMS**

**1 General**

This Recommendation gives the numbering of tributaries in digital blocks and the numbering of blocks within higher order blocks and digital line system. The Series G Recommendations referred to below can be found in Volume III (Digital networks, transmission systems and multiplexing equipments).

**2 Primary multiplex equipment**

*2.1 Primary PCM multiplex equipment operating at 2048 kbit/s (Recommendation G.732)*

Channel time slots 1 to 15 and 17 to 31 are assigned to 30 telephone channels numbered from 1 to 30 as indicated in Figure 1/M.410.

Channel time slots	0 1 2 ..... 15 16 17 18 ..... 31
Numbering of telephone channels	- 1 2 ..... 15 - 16 17 ..... 30

FIGURE 1/M.410

**Example of primary multiplex equipment assignments**

*2.2 Primary PCM multiplex equipment operating at 1544 kbit/s (Recommendation G.733)*

Channel time slots 1 to 24 are assigned to 24 telephone channels numbered from 1 to 24.

*2.3 Synchronous digital multiplex equipment operating at 2048 kbit/s (Recommendation G.736)*

Channel time slots 1 to 31 are assigned to 31 channels at 64 kbit/s numbered from 1 to 31.

*2.4 Synchronous digital multiplex equipment operating at 1544 kbit/s (Recommendation G.734)*

Channel time slots 1 to 23 are assigned to 23 channels at 64 kbit/s numbered from 1 to 23.

*2.5 Primary PCM multiplex equipment at 2048 kbit/s and offering synchronous 64 kbit/s digital access options (Recommendation G.737)*

It should be possible to assign channel time slots 1 to 15 and 17 to 31 to thirty telephone channels numbered from 1 to 30 as indicated in Figure 1/M.410.

Provision should also be made to provide 64 kbit/s digital access to at least two of these channel time slots, allocated in an order of priority given in Recommendation G.737.

If there are  $n$  telephone channels and  $(30 - n)$  64 kbit/s digital accesses, the channels are numbered from 1 to 30, with the digital access channels having DA (digital access) appended to the channel number.

### 3 Second order PCM multiplex equipments

#### 3.1 Second order PCM multiplex equipment operating at 8448 kbit/s (Recommendation G.744)

##### 3.1.1 Channel time slots assignement for the case of channel associated signalling

Channel time slots 5 to 32, 34 to 65, 71 to 98 and 100 to 131 are assigned to 120 telephone channels numbered from 1 to 120 as indicated in Figure 2/M.410.

Channel time slots	0 1 2 3 4 5 6 ..... 32 33 34 ..... 65
Numbering of channels	- - - - - 1 2 ..... 28 - 29 ..... 60
Channel time slots	66 67 68 69 70 71 72 ..... 98 99 100 ..... 131
Numbering of channels	- - - - - 61 62 ..... 88 - 89 ..... 120

FIGURE 2/M.410

#### Example of second order PCM multiplex equipment assignments

##### 3.1.2 Channel time slot assignment for the case of common channel signalling

The telephone channels corresponding to channel time slots 2 to 32, 34 to 65, 67 to 98 and 100 to 131 are numbered from 1 to 127.

When there is a bilateral agreement between the Administrations involved for using channel time slot 1 for another telephone or service channel, this channel will be numbered 0.

#### 3.2 Second order digital multiplex equipment operating at 8448 kbit/s (Recommendations G.742 and G.745)

The four tributaries operating at 2048 kbit/s are numbered from 1 to 4 in the order of interleaving.

#### 3.3 Second order digital multiplex equipment operating at 6312 kbit/s (Recommendation G.743)

The four tributaries operating at 1544 kbit/s are numbered from 1 to 4 in the order of interleaving.

### 4 Higher order multiplex equipment

#### 4.1 Digital multiplex equipments operating at the third order bit rate of 34 368 kbit/s (Recommendation G.751 and G.753)

The four tributaries operating at 8448 kbit/s are numbered from 1 to 4 in the order of interleaving.

#### 4.2 Digital multiplex equipments operating at the fourth order bit rate of 139 264 kbit/s (Recommendations G.751 and G.754)

##### 4.2.1 Method using a 3rd order bit rate in the digital hierarchy

The four tributaries operating at 34 368 kbit/s are numbered from 1 to 4 in the order of interleaving.

##### 4.2.2 Method by directly multiplexing 16 digital signals at 8448 kbit/s

The 16 tributaries at 8448 kbit/s are numbered from 1 to 16: 1 to 4 in the order of interleaving for the first intermediate tributary at 34 368 kbit/s, 5 to 8 for the second, 9 to 12 for the third and 13 to 16 for the fourth as indicated in Figure 3/M.410.

Four intermediate tributaries at 34 368 kbit/s in the order of interleaving	1	2	3	4												
Tributaries at 8448 kbit/s in the order of interleaving	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

FIGURE 3/M.410

**Example of third order multiplex equipment assignments**

4.3 *Digital multiplex equipment based on a second order bit rate of 6312 kbit/s (Recommendation G.752)*

4.3.1 *Third order digital multiplex equipment operating at 32 064 kbit/s*

The five tributaries operating at 6312 kbit/s are numbered from 1 to 5 in the order of interleaving.

4.3.2 *Third order digital multiplex equipment operating at 44 736 kbit/s*

The seven tributaries operating at 6312 kbit/s are numbered from 1 to 7 in the order of interleaving.

**5 Digital line system at 564 992 kbit/s on coaxial pairs (Recommendation G.954)**

The four tributaries operating at 139 264 kbit/s are numbered from 1 to 4 in the order of interleaving.