Chapter 6

Data Framing

6.1.3 Assignment of Mini Header

Header Number	x Range	Use	Additional Info
0x		Reserved	
1x		Reserved	
2x		Reserved	
3x	1 to 5	Slow Data	Used for character transfer of user's data communication via PC. Data communication of D-PRS is treated as slow data communication. (Range indicates the number of valid characters per block.)
4x	0 to 3	Message	Used for messages handled by radio unit's display. (Range indicates indicates the data block number.)
5x	1 to 5	Wireless Header Retransmission	Used to retransmit the wireless header.
6x		Reserved	(Excluding x = 6)
66		No Data	Indicates no data in data frame.
7x		Reserved	
8x	1 to F	Fast Data	Used for Fast Data transmission. Range indicates length of data, from 1 to 15 bytes.
9x	0 to C	Fast Data	Used for Fast Data transmission. Range indicates length of data, from 16 to 28 bytes.
Ax		Reserved	
Bx		Reserved	
Cx	2	Code Squelch	Data indicates two-digit code of code squelch.
Dx		Reserved	
Ex		Reserved	
Fx		Reserved	

Chapter 7

Fast Data

Follow this definition to use voice frames for data. Normal voice frames should be used when PTT is pressed.

7.1 Fast Data Frame Structure

Fast Data follows the same format of slow data, except the handling of audio frames and mini header assignments are different (see Chapter 6).

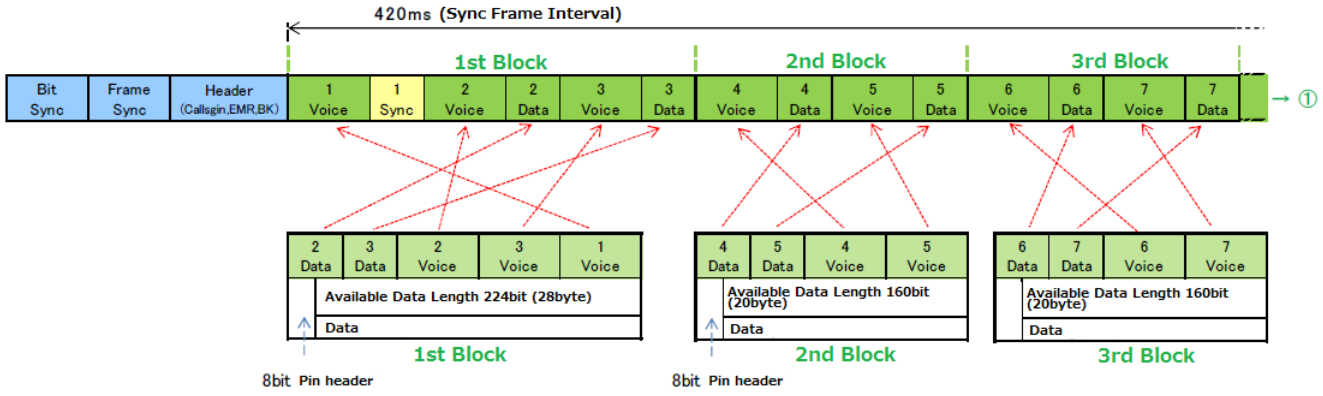
Block number 1 includes the sync frame and is longer than blocks 2-10. If it is necessary to switch to audio, wait for the end of the current Fast Data block boundary before starting a normal slow data block with voice data.

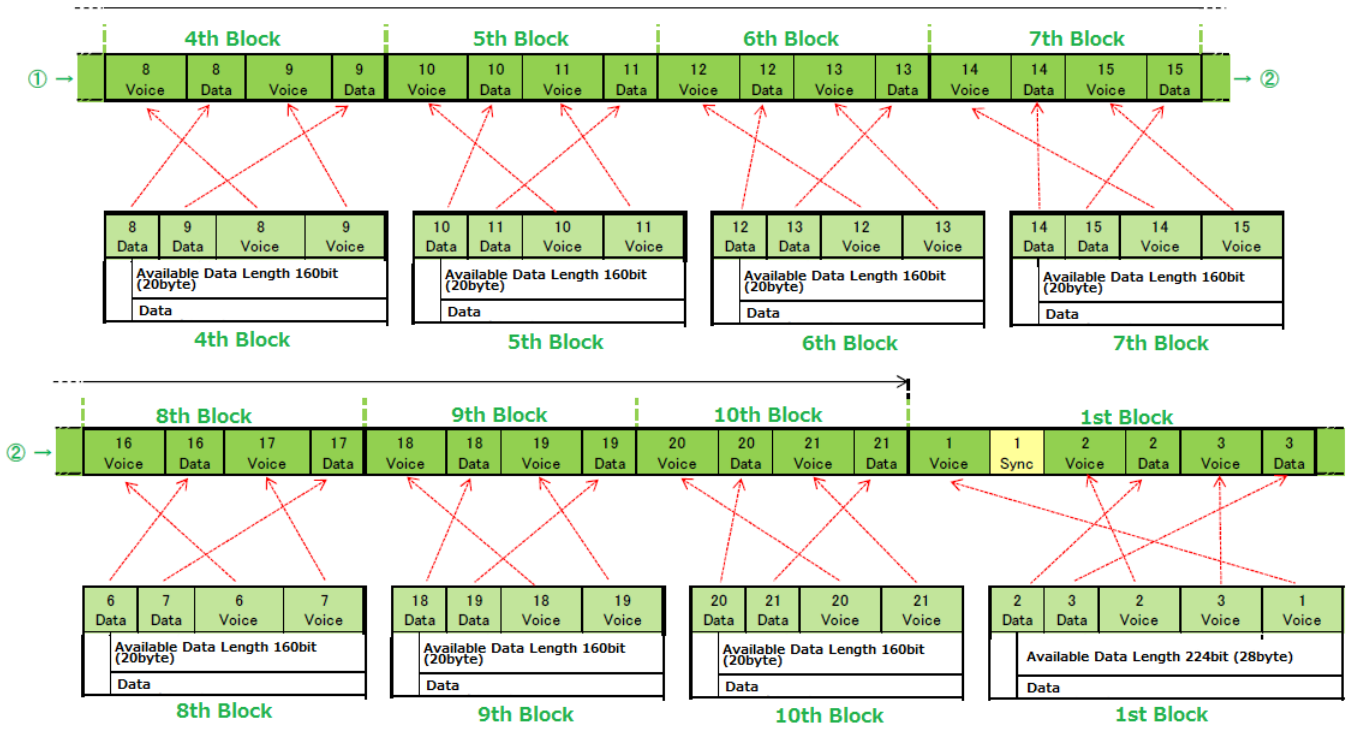
Note: The beep tone should be included during a Fast Data transmission about every 1 second. The slow data block with a beep tone should be inserted between Fast Data block boundaries.

This data transfer method has a speed of about 3480bps.

7.2 Fast Data Block Layout

Note: The images below use the term “Pin header” to refer to the mini header discussed in Section 6.1.3.





7.3 Block Assembly of Fast Data

Only the block containing Sync (block number 1) has an effective data length of 28 bytes (224 bits):

Fast Data, Block 1												
2nd Data		3rd Data		2nd Voice			3rd Voice			1st Voice		
4 bytes of effective data				24 bytes of effective data								
1 byte	2 bytes	1 byte	2 bytes	4 bytes	1 byte	4 bytes	4 bytes	1 byte	4 bytes	4 bytes	1 byte	4 bytes
Header	Data	Guard	Data	Data	N.R.	Data	Data	N.R.	Data	Data	N.R.	Data

Blocks that do not contain Sync (block numbers 2 to 10) have an effective data length of 20 bytes (160 bits):

Fast Data, Blocks 2-10 (labeled as Block 2)									
4th Data		5th Data		4th Voice			5th Voice		
4 bytes of effective data				16 bytes of effective data					
1 byte	2 bytes	1 byte	2 bytes	4 bytes	1 byte	4 bytes	4 bytes	1 byte	4 bytes
Header	Data	Guard	Data	Data	N.R.	Data	Data	N.R.	Data

Header Mini-header byte as described in Section 6.1.3.

Guard A guard bit to prevent false detection of packet loss, an arbitrary value not matching the packet loss pattern is adopted.

N.R. (Noise reduction) Always assign 0x02 to reduce abnormal noise of the vocoder on the receiving side when receiving on an existing model

7.4 Fast Data Scrambling

Scrambling is applied to the Fast Data voice and data frames according to the specification in Appendix 1.

(See images in original STD5_0b.pdf from JARL)

In practice, the following bytes (in hexadecimal) are used to scamble voice frames when used with Fast Data:

```
70 4F 93 40 64 74 6D 30 2B
```

Data frames are always scrambled, regardless of whether Fast Data is in use:

```
70 4F 93
```

Note that the first three bytes in both strings are identical.