

Annex One: ID Alignment Details

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一、Alignment

The valid ID for the standard frame is bit 11, and bit 29 for the extended frame. When it comes to store ID by using 32-bit unsigned integer, there might be two storage methods: Right-aligned method (Direct ID mode) and left-aligned method (SJA1000 / register mode). *Alignment methods involved with the interface function library of this USBCAN device are compatible with the interface function library of USBCAN ZLG Series device.*

1.1 Right-aligned method

Right-aligned method, that is, ID.0 as the least significant bit of ID is aligned with Bit.0. As the following table shown:

unsigned int (bit31～bit0)																																
high																												low	Bit			
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Bit
																					10	9	8	7	6	5	4	3	2	1	0	Standard
			28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Extended

1.2 Left-aligned method

Left-aligned method, that is, ID.10 (standard frame) as the most significant bit of ID and ID.28 (extended frame) are aligned with Bit.31. As the following table shown:

unsigned int (bit31～bit0)																																
high																													low	Bit		
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Bit
10	9	8	7	6	5	4	3	2	1	0																						Standard
28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0				Extended

二、ID Right-aligned Method (Direct ID Method)

CAN message ID is represented by unsigned int in the interface function library with a total of 32 bits. Among of which, the valid ID of the standard frame is 11 bit, and 29 bit for extended frame with right-aligned method (direct ID method), that is, ID.0 as the least significant bit is aligned with Bit.0. As the following table shown:

ID(bit31～bit0)																																
high																												low	Bit			
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Bit
																					10	9	8	7	6	5	4	3	2	1	0	Standard
			28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Extended

Note: In the table, the bit in dark background cell represents valid bit of the ID, ID.0 as the least significant bit of ID is aligned with Bit.0.

E.g.:

1. Standard frame ID: Standard frame ID is 00 00 01 23(HEX), 11 bit is the valid, actual ID value is 00 00 01 23H.
2. Extended frame ID: Extended frame ID is 1F 01 02 03(HEX), 29 bit is the valid, actual ID value is 1F 01 02 03H.

三、AccCode/AccMask Left-aligned Method (Register Mode)

AccCode (filtering acceptance yards) / AccMask (filter mask) is represented in the interface function library with unsigned integer with a total of 32 bits, including standard frame with valid ID is bit 11, and the extended frame bit 29 by using the left-aligned method (register mode), that is, ID.10 (standard frame) as the most significant bit of the ID and ID.28 (extended frame) are aligned with Bit.31. As the following table shown:

AccCode/AccMask (bit31～bit0)																																
high																												low	Bit			
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Bit
10	9	8	7	6	5	4	3	2	1	0																						Standard
28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0				Extended

Note: In the table, the bit in dark background cell represents valid bit of the ID, the most significant bit of ID is aligned with Bit31.

E.g.:

1. Standard frame ID: Standard frame ID is 00 00 01 23(HEX), 11 bit is the valid, so the actual value should be shifted to the left by 21 bits, obtaining AccCode/AccMask value 24 60 00 00H.

2. Extended frame ID: Extended frame ID is 1F 01 02 03(HEX), 29 bit is the valid, so the actual value should be shifted to the left by 3 bits, obtaining AccCode/AccMask value F8 08 10 18H.