CAN Protocol 정의

CAN_SPEED : 500kbps

■ M8P Data (1Hz)

▸ Position (1) UBX-NAV-HPPOSLLH(lat, lon, hMSL)

Identifier Type	Identifier	DLC
Standard ID	0x001	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
WGS84_Lat	위도	0	31	degree	uint32_t	1e-7
WGS84_Lon	경도	32	63	degree	uint32_t	1e-7

7	6	5	4	3	2	1	0	
WGS84_Lat(1)								0
WGS84_Lat(2)								8
WGS84_Lat(3)								16
WGS84_Lat(4)								24
WGS84_Lon(1)								32
WGS84_Lon(2)								40
WGS84_Lon(3)								48
WGS84_Lon(4)								56

▸ Position (2)

Identifier Type	Identifier	DLC
Standard ID	0x002	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
WGS84_Alt	높이	0	31	meter	uint32_t	1e-3
NED_N	X 좌표(North)	32	63	meter	float	-

7	6	5	4	3	2	1	0	
WGS84_Alt(1)								0
WGS84_Alt(2)								8
WGS84_Alt(3)								16
WGS84_Alt(4)								24
NED_N(1)								32
NED_N(2)								40
NED_N(3)								48
NED_N(4)								56

▸ Position (3)

Identifier Type	Identifier	DLC
Standard ID	0x003	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
NED_E	Y 좌표(East)	0	31	meter	float	-
NED_D	Z 좌표(Down)	32	63	meter	float	-

7	6	5	4	3	2	1	0	
NED_E(1)								0
NED_E(2)								8
NED_E(3)								16
NED_E(4)								24
NED_D(1)								32
NED_D(2)								40
NED_D(3)								48
NED_D(4)								56

▸ Position Variation (1) UBX-NAV-HPPOSLLH(hAcc, vAcc)

Identifier Type	Identifier	DLC
Standard ID	0x004	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
Hori_Accuracy	수평면 정확도	0	31	meter	uint32_t	1e-4
Vert_Accuracy	수직면 정확도	32	63	meter	uint32_t	1e-4

7	6	5	4	3	2	1	0	
Hori_Accuracy(1)								0
Hori_Accuracy(2)								8
Hori_Accuracy(3)								16
Hori_Accuracy(4)								24
Vert_Accuracy(1)								32
Vert_Accuracy(2)								40
Vert_Accuracy(3)								48
Vert_Accuracy(4)								56

▸ Flags

Identifier Type	Identifier	DLC
Standard ID	0x005	3

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
fixType	GNSS Fix Type	0	7	-	uint8_t	-
flags	Fix status flags	8	15	bit field	uint8_t	-
flags2	Additional flags	16	23	bit field	uint8_t	-

7	6	5	4	3	2	1	0	
fixType								0
flags								8
flags2								16

fixType

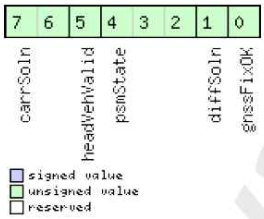
0 : no fix　　1 : DR only　　2 : 2D-fix

3 : 3D-fix　　4 : GNSS + DR Combined　　5 : Time Only Fix (RTK)

Flags

Bitfield flags

This graphic explains the bits of `flags`

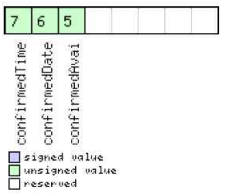


Name	*Description*
`gnssFixOK`	1 = valid fix (i.e within DOP & accuracy masks)
`diffSoln`	1 = differential corrections were applied
`psmState`	Power Save Mode state (see Power Management): 0: PSM is not active 1: Enabled (an intermediate state before Acquisition state 2: Acquisition 3: Tracking 4: Power Optimized Tracking 5: Inactive
`headVehValid`	1 = heading of vehicle is valid
`carrSoln`	Carrier phase range solution status: 0: no carrier phase range solution 1: float solution (no fixed integer carrier phase measurements have been used to calculate the solution) 2: fixed solution (one or more fixed integer carrier phase range measurements have been used to calculate the solution) (not supported in protocol versions less than 20)

Flags2

Bitfield flags2

This graphic explains the bits of `flags2`



Name	*Description*
`confirmedAvai`	1 = information about UTC Date and Time of Day validity confirmation is available (see Time Validity section for details) (This flag is always unset for in protocol versions less than 19)
`confirmedDate`	1 = UTC Date validity could be confirmed (see Time Validity section for details)
`confirmedTime`	1 = UTC Time of Day could be confirmed (see Time Validity section for details)

■ VN-300 Data (100Hz)

▸ Attitude (1)

Identifier Type	Identifier	DLC
Standard ID	0x011	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
Roll	X축 각도	0	31	Degree	float	-
Pitch	Y축 각도	32	63	Degree	float	-

7	6	5	4	3	2	1	0	
Roll(1)								0
Roll(2)								8
Roll(3)								16
Roll(4)								24
Pitch(1)								32
Pitch(2)								40
Pitch(3)								48
Pitch(4)								56

▸ Attitude (2)

Identifier Type	Identifier	DLC
Standard ID	0x012	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
Yaw	Z축 각도	0	31	Degree	float	-
U_Roll	1σ Uncertain Roll	32	63	Degree	float	-

7	6	5	4	3	2	1	0	
Yaw(1)								0
Yaw(2)								8
Yaw(3)								16
Yaw(4)								24
U_Roll(1)								32
U_Roll(1)								40
U_Roll(1)								48
U_Roll(1)								56

▸ Attitude (3)

Identifier Type	Identifier	DLC
Standard ID	0x013	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
U_Pitch	1σ Uncertain Pitch	0	31		float	-
U_Yaw	1σ Uncertain Yaw	32	63		float	-

7	6	5	4	3	2	1	0	
U_Pitch(1)								0
U_Pitch(2)								8
U_Pitch(3)								16
U_Pitch(4)								24
U_Yaw(1)								32
U_Yaw(2)								40
U_Yaw(3)								48
U_Yaw(4)								56

▸ Position (1) VN-300

Identifier Type	Identifier	DLC
Standard ID	0x014	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
WGS84_Lat	위도	0	63	degree	double	-

▸ Position (2) VN-300

Identifier Type	Identifier	DLC
Standard ID	0x015	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
WGS84_Lon	경도	0	63	degree	double	-

▸ Position (3) VN-300

Identifier Type	Identifier	DLC
Standard ID	0x016	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
WGS84_Alt	높이	0	63	meter	double	-

▸ Position (4) VN-300

Identifier Type	Identifier	DLC
Standard ID	0x017	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
NED_N	N축 위치	0	31	meter	float	-
NED_E	E축 위치	32	63	meter	float	-

7	6	5	4	3	2	1	0	
NED_N(1)								0
NED_N(2)								8
NED_N(3)								16
NED_N(4)								24
NED_E(1)								32
NED_E(2)								40
NED_E(3)								48
NED_E(4)								56

▸ Position (5) & Velocity(1)

Identifier Type	Identifier	DLC
Standard ID	0x018	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
NED_D	D축 위치	0	31	meter	float	-
VEL_N	N축 속력	32	63	m/s	float	-

7	6	5	4	3	2	1	0	
NED_D(1)								0
NED_D(2)								8
NED_D(3)								16
NED_D(4)								24
VEL_N(1)								32
VEL_N(2)								40
VEL_N(3)								48
VEL_N(4)								56

▸ Velocity (2) VN-300

Identifier Type	Identifier	DLC
Standard ID	0x019	8

Label	Description	시작 Bit	종료 Bit	Unit	Data형	Scale
VEL_E	E축 속력	0	31	m/s	float	-
VEL_D	D축 속력	32	63	m/s	float	-

7	6	5	4	3	2	1	0	
VEL_E(1)								0
VEL_E(2)								8
VEL_E(3)								16
VEL_E(4)								24
VEL_D(1)								32
VEL_D(2)								40
VEL_D(3)								48
VEL_D(4)								56