

## 5.14.11 UBX-NAV-PVT (0x01 0x07)

### 5.14.11.1 Navigation Position Velocity Time Solution

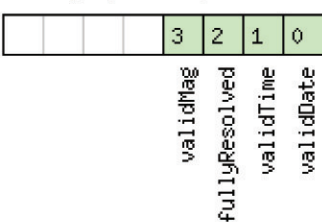
Message	<b>UBX-NAV-PVT</b>					
Description	<b>Navigation Position Velocity Time Solution</b>					
Firmware	Supported on: <ul style="list-style-type: none"> <li>• <a href="#">u-blox 9 with protocol version 27.11</a></li> </ul>					
Type	Periodic/Polled					
Comment	Note that during a leap second there may be more or less than 60 seconds in a minute. See the section Leap seconds in <a href="#">Integration manual</a> for details. This message combines position, velocity and time solution, including accuracy figures					
Message Structure	Header	Class	ID	Length (Bytes)	Payload	Checksum
	0xB5 0x62	0x01	0x07	92	see below	CK_A CK_B

Payload Contents:

Byte Offset	Number Format	Scaling	Name	Unit	Description
0	U4	-	iTOW	ms	GPS time of week of the navigation epoch. See the section iTOW timestamps in <a href="#">Integration manual</a> for details.
4	U2	-	year	y	Year (UTC)
6	U1	-	month	month	Month, range 1..12 (UTC)
7	U1	-	day	d	Day of month, range 1..31 (UTC)
8	U1	-	hour	h	Hour of day, range 0..23 (UTC)
9	U1	-	min	min	Minute of hour, range 0..59 (UTC)
10	U1	-	sec	s	Seconds of minute, range 0..60 (UTC)
11	X1	-	valid	-	Validity flags (see <a href="#">graphic below</a> )
12	U4	-	tAcc	ns	Time accuracy estimate (UTC)
16	I4	-	nano	ns	Fraction of second, range -1e9 .. 1e9 (UTC)
20	U1	-	fixType	-	GNSSfix Type: 0: no fix 1: dead reckoning only 2: 2D-fix 3: 3D-fix 4: GNSS + dead reckoning combined 5: time only fix
21	X1	-	flags	-	Fix status flags (see <a href="#">graphic below</a> )
22	X1	-	flags2	-	Additional flags (see <a href="#">graphic below</a> )
23	U1	-	numSV	-	Number of satellites used in Nav Solution
24	I4	1e-7	lon	deg	Longitude
28	I4	1e-7	lat	deg	Latitude
32	I4	-	height	mm	Height above ellipsoid
36	I4	-	hMSL	mm	Height above mean sea level
40	U4	-	hAcc	mm	Horizontal accuracy estimate
44	U4	-	vAcc	mm	Vertical accuracy estimate
48	I4	-	velN	mm/s	NED north velocity
52	I4	-	velE	mm/s	NED east velocity
56	I4	-	velD	mm/s	NED down velocity
60	I4	-	gSpeed	mm/s	Ground Speed (2-D)
64	I4	1e-5	headMot	deg	Heading of motion (2-D)
68	U4	-	sAcc	mm/s	Speed accuracy estimate
72	U4	1e-5	headAcc	deg	Heading accuracy estimate (both motion and vehicle)
76	U2	0.01	pDOP	-	Position DOP
78	X1	-	flags3	-	Additional flags (see <a href="#">graphic below</a> )
79	U1[5]	-	reserved1	-	<a href="#">Reserved</a>
84	I4	1e-5	headVeh	deg	Heading of vehicle (2-D)
88	I2	1e-2	magDec	deg	Magnetic declination
90	U2	1e-2	magAcc	deg	Magnetic declination accuracy

### Bitfield valid

This graphic explains the bits of valid



signed value  
 unsigned value  
 reserved

Name	Description
validDate	1 = valid UTC Date (see section Time validity in <a href="#">Integration manual</a> for details)
validTime	1 = valid UTC Time of Day (see section Time validity in <a href="#">Integration manual</a> for details)
fullyResolved	1 = UTC Time of Day has been fully resolved (no seconds uncertainty). Cannot be used to check if time is completely solved.
validMag	1 = valid Magnetic declination