

UBX Messages Overview continued

Mon-mornic		Aessages Overview cor	ntinued			_	
347 MON-SMGR	Page	Mnemonic	Cls/ID	Length	Туре	Description	
350 MON-SPT	346	MON-RXR	0x0A 0x21	1	Output	Receiver status information	
354 MON-TXBUF	347	MON-SMGR	0x0A 0x2E	16	Periodic/Polled	Synchronization manager status	
355 MON-VER	350	MON-SPT	0x0A 0x2F	4 + 12*numR	Polled	Sensor production test	
355 MON-VER	354	MON-TXBUF	0x0A 0x08	28	Periodic/Polled	Transmitter buffer status	
NAV-AOPSTATUS	355	MON-VER	0x0A 0x04	0	Poll Request	Poll receiver and software version	
357 NAV-AOPSTATUS 0x01 0x60 16 Periodic/Polled AssistNow Autonomous status 358 NAV-ATT 0x01 0x05 32 Periodic/Polled Attitude solution 359 NAV-CLOCK 0x01 0x22 20 Periodic/Polled Clock solution 359 NAV-COV 0x01 0x36 64 Periodic/Polled Clock solution 360 NAV-DOP 0x01 0x31 16 + 12*numCh Periodic/Polled DGPS data used for NAV 361 NAV-DOP 0x01 0x34 16 Periodic/Polled Dilution of precision 362 NAV-EELL 0x01 0x34 16 Periodic/Polled Position error ellipse parameters 363 NAV-EECE 0x01 0x34 16 Periodic/Polled Position error ellipse parameters 363 NAV-EECE 0x01 0x34 8 + 2*numFe	355	MON-VER	0x0A 0x04	40 + 30*N	Polled	Receiver and software version	
358 NAV-ATT 0x01 0x05 32 Periodic/Polled Attitude solution 359 NAV-CLOCK 0x01 0x22 20 Periodic/Polled Clock solution 359 NAV-COV 0x01 0x36 64 Periodic/Polled Clock solution 360 NAV-DGPS 0x01 0x31 16 + 12*numCh Periodic/Polled DGPS data used for NAV 361 NAV-DOP 0x01 0x34 16 Periodic/Polled Dilution of precision 362 NAV-EELL 0x01 0x34 16 Periodic Position error ellipse parameters 363 NAV-EEC 0x01 0x34 16 Periodic End of epoch 363 NAV-GEOFENCE 0x01 0x39 8 + 2*numFe Periodic/Polled Geofencing status 364 NAV-HPPOSECEF 0x01 0x14 36 Periodic/Polled High precision position solution in ECEF 365 NAV-HPPOSELLH 0x01 0x28 16 Periodic/Polled Navigation message cross-check 370 NAV-ODO 0x01 0x34 8 + 6*numSy Periodic/Polled GNSS		UBX CI	ass NAV		Navigation Results N	Messages	
359 NAV-CLOCK 0x01 0x22 20 Periodic/Polled Clock solution 359 NAV-COV 0x01 0x36 64 Periodic/Polled Covariance matrices 360 NAV-DGPS 0x01 0x31 16 + 12*numCh Periodic/Polled DGPS data used for NAV 361 NAV-DOP 0x01 0x04 18 Periodic/Polled Dilution of precision 362 NAV-EELL 0x01 0x34 16 Periodic/Polled Position error ellipse parameters 363 NAV-EOE 0x01 0x34 4 Periodic/Polled Geofencing status 364 NAV-HPPOSECEF 0x01 0x13 28 Periodic/Polled High precision position solution in ECEF 365 NAV-HPPOSLLH 0x01 0x14 36 Periodic/Polled High precision geodetic position solution 367 NAV-NMI 0x01 0x28 16 Periodic/Polled Navigation message cross-check 370 NAV-ODD 0x01 0x34 8 + 6*numSv Periodic/Polled GNSS orbit database info 371 NAV-ORB 0x01 0x01 20 Pe	357	NAV-AOPSTATUS	0x01 0x60	16	Periodic/Polled	AssistNow Autonomous status	
359 NAV-COV 0x01 0x36 64 Periodic/Polled Covariance matrices 360 NAV-DGPS 0x01 0x31 16 + 12*numCh Periodic/Polled DGPS data used for NAV 361 NAV-DOP 0x01 0x04 18 Periodic/Polled Dilution of precision 362 NAV-EELL 0x01 0x3d 16 Periodic/Polled Position error ellipse parameters 363 NAV-EOE 0x01 0x3d 4 Periodic/Polled Geofencing status 364 NAV-HPPOSECEF 0x01 0x39 8 + 2*numFe Periodic/Polled High precision position solution in ECEF 365 NAV-HPPOSELH 0x01 0x14 36 Periodic/Polled High precision geodetic position solution 367 NAV-HPPOSELH 0x01 0x28 16 Periodic/Polled Navigation message cross-check 370 NAV-ODD 0x01 0x028 8 + 6*numSv Periodic/Polled GNSS orbit database info 371 NAV-POSECEF 0x01 0x01 20 Periodic/Polled Position solution in ECEF 374 NAV-POSELH 0x01 0x02	358	NAV-ATT	0x01 0x05	32	Periodic/Polled	Attitude solution	
NAV-DGPS	359	NAV-CLOCK	0x01 0x22	20	Periodic/Polled	Clock solution	
361 NAV-DOP 0x01 0x04 18 Periodic/Polled Dilution of precision 362 NAV-EELL 0x01 0x3d 16 Periodic/Polled Position error ellipse parameters 363 NAV-EOE 0x01 0x61 4 Periodic/Polled End of epoch 363 NAV-GEOFENCE 0x01 0x39 8 + 2*numFe Periodic/Polled Geofencing status 364 NAV-HPPOSECEF 0x01 0x13 28 Periodic/Polled High precision position solution in ECEF 365 NAV-HPPOSELH 0x01 0x14 36 Periodic/Polled High precision geodetic position solution 367 NAV-NMI 0x01 0x28 16 Periodic/Polled Navigation message cross-check 370 NAV-ODD 0x01 0x09 20 Periodic/Polled GNSS orbit database info 371 NAV-ORB 0x01 0x04 8 + 6*numSv Periodic/Polled Position solution in ECEF 374 NAV-POSECEF 0x01 0x02 28 Periodic/Polled Relative position solution 375 NAV-POSECH 0x01 0x02 40 P	359	NAV-COV	0x01 0x36	64	Periodic/Polled	Covariance matrices	
362 NAV-EELL 0x01 0x3d 16 Periodic/Polled Position error ellipse parameters 363 NAV-EOE 0x01 0x61 4 Periodic End of epoch 363 NAV-GEOFENCE 0x01 0x39 8 + 2*numFe Periodic/Polled Geofencing status 364 NAV-HPPOSECEF 0x01 0x13 28 Periodic/Polled High precision position solution in ECEF 365 NAV-HPPOSLLH 0x01 0x14 36 Periodic/Polled High precision geodetic position solution 367 NAV-NMI 0x01 0x28 16 Periodic/Polled Navigation message cross-check 370 NAV-ODO 0x01 0x09 20 Periodic/Polled Odometer solution 371 NAV-ORB 0x01 0x34 8 + 6*numSv Periodic/Polled GNSS orbit database info 374 NAV-POSECEF 0x01 0x01 20 Periodic/Polled Position solution in ECEF 374 NAV-POSLLH 0x01 0x02 28 Periodic/Polled Relative position solution 375 NAV-POSLLH 0x01 0x32 40	360	NAV-DGPS	0x01 0x31	16 + 12*numCh	Periodic/Polled	DGPS data used for NAV	
363 NAV-EOE 0x01 0x61 4 Periodic End of epoch 363 NAV-GEOFENCE 0x01 0x39 8 + 2*numFe Periodic/Polled Geofencing status 364 NAV-HPPOSECEF 0x01 0x13 28 Periodic/Polled High precision position solution in ECEF 365 NAV-HPPOSLLH 0x01 0x14 36 Periodic/Polled High precision geodetic position solution 367 NAV-NMI 0x01 0x28 16 Periodic/Polled Navigation message cross-check 370 NAV-ODO 0x01 0x09 20 Periodic/Polled Odometer solution 371 NAV-ORB 0x01 0x34 8 + 6*numSv Periodic/Polled GNSS orbit database info 374 NAV-POSECEF 0x01 0x01 20 Periodic/Polled Position solution in ECEF 374 NAV-POSLLH 0x01 0x02 28 Periodic/Polled Geodetic position solution 375 NAV-PVT 0x01 0x07 92 Periodic/Polled Navigation position velocity time solution 379 NAV-RESETODO 0x01 0x10 0<	361	NAV-DOP	0x01 0x04	18	Periodic/Polled	Dilution of precision	
NAV-GEOFENCE Ox01 0x39 8 + 2*numFe Periodic/Polled Geofencing status	362	NAV-EELL	0x01 0x3d	16	Periodic/Polled	Position error ellipse parameters	
364 NAV-HPPOSECEF 0x01 0x13 28 Periodic/Polled High precision position solution in ECEF 365 NAV-HPPOSLLH 0x01 0x28 16 Periodic/Polled Navigation message cross-check 370 NAV-ODO 0x01 0x29 20 Periodic/Polled Odometer solution 371 NAV-ODO 0x01 0x34 8 + 6*numSv Periodic/Polled GNSS orbit database info 374 NAV-POSECEF 0x01 0x01 20 Periodic/Polled Position solution in ECEF 374 NAV-POSLLH 0x01 0x02 28 Periodic/Polled Geodetic position solution 375 NAV-PVT 0x01 0x02 28 Periodic/Polled Navigation position velocity time solution 375 NAV-PVT 0x01 0x07 92 Periodic/Polled Relative positioning information in 379 NAV-RELPOSNED 0x01 0x30 40 Periodic/Polled Reset odometer 381 NAV-SAT 0x01 0x35 8 + 12*numSvs Periodic/Polled Satellite information 383 NAV-SBAS 0x01 0x32 12 + 12*cnt<	363	NAV-EOE	0x01 0x61	4	Periodic	End of epoch	
365 NAV-HPPOSLLH 0x01 0x14 36 Periodic/Polled High precision geodetic position solution 367 NAV-NMI 0x01 0x28 16 Periodic/Polled Navigation message cross-check 370 NAV-ODO 0x01 0x09 20 Periodic/Polled Odometer solution 371 NAV-ORB 0x01 0x34 8 + 6*numSv Periodic/Polled GNSS orbit database info 374 NAV-POSECEF 0x01 0x01 20 Periodic/Polled Position solution in ECEF 374 NAV-POSLLH 0x01 0x02 28 Periodic/Polled Geodetic position solution 375 NAV-PVT 0x01 0x07 92 Periodic/Polled Navigation position velocity time solution 379 NAV-RELPOSNED 0x01 0x32 40 Periodic/Polled Relative positioning information in 381 NAV-RESETODO 0x01 0x10 0 Command Reset odometer 381 NAV-SAT 0x01 0x35 8 + 12*numSvs Periodic/Polled Satellite information 383 NAV-SLAS 0x01 0x42 20 +	363	NAV-GEOFENCE	0x01 0x39	8 + 2*numFe	Periodic/Polled	Geofencing status	
367 NAV-NMI 0x01 0x28 16 Periodic/Polled Navigation message cross-check 370 NAV-ODO 0x01 0x09 20 Periodic/Polled Odometer solution 371 NAV-ORB 0x01 0x34 8 + 6*numSv Periodic/Polled GNSS orbit database info 374 NAV-POSECEF 0x01 0x01 20 Periodic/Polled Position solution in ECEF 374 NAV-POSLLH 0x01 0x02 28 Periodic/Polled Geodetic position solution 375 NAV-PVT 0x01 0x07 92 Periodic/Polled Navigation position velocity time solution 379 NAV-RELPOSNED 0x01 0x3C 40 Periodic/Polled Relative positioning information in 381 NAV-RESETODO 0x01 0x10 0 Command Reset odometer 381 NAV-SAT 0x01 0x35 8 + 12*numSvs Periodic/Polled Satellite information 383 NAV-SBAS 0x01 0x32 12 + 12*cnt Periodic/Polled QZSS L1S SLAS status data 386 NAV-SOL 0x01 0x06 52 Periodic/Poll	364	NAV-HPPOSECEF	0x01 0x13	28	Periodic/Polled	High precision position solution in ECEF	
370 NAV-ODO 0x01 0x09 20 Periodic/Polled Odometer solution 371 NAV-ORB 0x01 0x34 8 + 6*numSv Periodic/Polled GNSS orbit database info 374 NAV-POSECEF 0x01 0x01 20 Periodic/Polled Position solution in ECEF 374 NAV-POSLLH 0x01 0x02 28 Periodic/Polled Geodetic position solution 375 NAV-PVT 0x01 0x07 92 Periodic/Polled Navigation position velocity time solution 379 NAV-RELPOSNED 0x01 0x3C 40 Periodic/Polled Relative positioning information in 381 NAV-RESETODO 0x01 0x10 0 Command Reset odometer 381 NAV-SAT 0x01 0x35 8 + 12*numSvs Periodic/Polled Satellite information 383 NAV-SBAS 0x01 0x32 12 + 12*cnt Periodic/Polled SBAS status data 385 NAV-SLAS 0x01 0x42 20 + 8*cnt Periodic/Polled QZSS L1S SLAS status data 386 NAV-SOL 0x01 0x06 52 Periodic/Polled Navigation solution information 388 NAV-STATUS 0x01 0x03 16 Periodic/Polled Receiver navigation status 390 NAV-SVINFO 0x01 0x3B 40 Periodic/Polled Survey-in data 393 NAV-SVIN 0x01 0x24 20 Periodic/Polled BeiDou time solution	365	NAV-HPPOSLLH	0x01 0x14	36	Periodic/Polled	High precision geodetic position solution	
371 NAV-ORB	367	NAV-NMI	0x01 0x28	16	Periodic/Polled	Navigation message cross-check	
374 NAV-POSECEF 0x01 0x01 20 Periodic/Polled Position solution in ECEF 374 NAV-POSLLH 0x01 0x02 28 Periodic/Polled Geodetic position solution 375 NAV-PVT 0x01 0x07 92 Periodic/Polled Navigation position velocity time solution 379 NAV-RELPOSNED 0x01 0x3C 40 Periodic/Polled Relative positioning information in 381 NAV-RESETODO 0x01 0x10 0 Command Reset odometer 381 NAV-SAT 0x01 0x35 8 + 12*numSvs Periodic/Polled Satellite information 383 NAV-SBAS 0x01 0x32 12 + 12*cnt Periodic/Polled SBAS status data 385 NAV-SLAS 0x01 0x42 20 + 8*cnt Periodic/Polled Navigation solution information 386 NAV-SOL 0x01 0x06 52 Periodic/Polled Receiver navigation status 390 NAV-SVINFO 0x01 0x30 8 + 12*numCh Periodic/Polled Space vehicle information 392 NAV-SVIN 0x01 0x38 40	370	NAV-ODO	0x01 0x09	20	Periodic/Polled	Odometer solution	
NAV-POSLLH Ox01 0x02 28 Periodic/Polled Geodetic position solution	371	NAV-ORB	0x01 0x34	8 + 6*numSv	Periodic/Polled	GNSS orbit database info	
375 NAV-PVT 0x01 0x07 92 Periodic/Polled Navigation position velocity time solution 379 NAV-RELPOSNED 0x01 0x3C 40 Periodic/Polled Relative positioning information in 381 NAV-RESETODO 0x01 0x10 0 Command Reset odometer 381 NAV-SAT 0x01 0x35 8 + 12*numSvs Periodic/Polled Satellite information 383 NAV-SBAS 0x01 0x32 12 + 12*cnt Periodic/Polled SBAS status data 385 NAV-SLAS 0x01 0x42 20 + 8*cnt Periodic/Polled QZSS L1S SLAS status data 386 NAV-SOL 0x01 0x06 52 Periodic/Polled Navigation solution information 388 NAV-STATUS 0x01 0x03 16 Periodic/Polled Receiver navigation status 390 NAV-SVINFO 0x01 0x30 8 + 12*numCh Periodic/Polled Space vehicle information 392 NAV-SVIN 0x01 0x38 40 Periodic/Polled Survey-in data 393 NAV-TIMEBDS 0x01 0x24 20 Periodic/Polled BeiDou time solution	374	NAV-POSECEF	0x01 0x01	20	Periodic/Polled	Position solution in ECEF	
379 NAV-RELPOSNED 0x01 0x3C 40 Periodic/Polled Relative positioning information in 381 NAV-RESETODO 0x01 0x10 0 Command Reset odometer 381 NAV-SAT 0x01 0x35 8 + 12*numSvs Periodic/Polled Satellite information 383 NAV-SBAS 0x01 0x32 12 + 12*cnt Periodic/Polled SBAS status data 385 NAV-SLAS 0x01 0x42 20 + 8*cnt Periodic/Polled QZSS L1S SLAS status data 386 NAV-SOL 0x01 0x06 52 Periodic/Polled Navigation solution information 388 NAV-STATUS 0x01 0x03 16 Periodic/Polled Receiver navigation status 390 NAV-SVINFO 0x01 0x30 8 + 12*numCh Periodic/Polled Space vehicle information 392 NAV-SVIN 0x01 0x38 40 Periodic/Polled Survey-in data 393 NAV-TIMEBDS 0x01 0x24 20 Periodic/Polled BeiDou time solution	374	NAV-POSLLH	0x01 0x02	28	Periodic/Polled	Geodetic position solution	
381 NAV-RESETODO 0x01 0x10 0 Command Reset odometer 381 NAV-SAT 0x01 0x35 8 + 12*numSvs Periodic/Polled Satellite information 383 NAV-SBAS 0x01 0x32 12 + 12*cnt Periodic/Polled SBAS status data 385 NAV-SLAS 0x01 0x42 20 + 8*cnt Periodic/Polled QZSS L1S SLAS status data 386 NAV-SOL 0x01 0x06 52 Periodic/Polled Navigation solution information 388 NAV-STATUS 0x01 0x03 16 Periodic/Polled Receiver navigation status 390 NAV-SVINFO 0x01 0x30 8 + 12*numCh Periodic/Polled Space vehicle information 392 NAV-SVIN 0x01 0x38 40 Periodic/Polled Survey-in data 393 NAV-TIMEBDS 0x01 0x24 20 Periodic/Polled BeiDou time solution	375	NAV-PVT	0x01 0x07	92	Periodic/Polled	Navigation position velocity time solution	
381 NAV-SAT 0x01 0x35 8 + 12*numSvs Periodic/Polled Satellite information 383 NAV-SBAS 0x01 0x32 12 + 12*cnt Periodic/Polled SBAS status data 385 NAV-SLAS 0x01 0x42 20 + 8*cnt Periodic/Polled QZSS L1S SLAS status data 386 NAV-SOL 0x01 0x06 52 Periodic/Polled Navigation solution information 388 NAV-STATUS 0x01 0x03 16 Periodic/Polled Receiver navigation status 390 NAV-SVINFO 0x01 0x30 8 + 12*numCh Periodic/Polled Space vehicle information 392 NAV-SVIN 0x01 0x3B 40 Periodic/Polled Survey-in data 393 NAV-TIMEBDS 0x01 0x24 20 Periodic/Polled BeiDou time solution	379	NAV-RELPOSNED	0x01 0x3C	40	Periodic/Polled	Relative positioning information in	
383 NAV-SBAS 0x01 0x32 12 + 12*cnt Periodic/Polled SBAS status data 385 NAV-SLAS 0x01 0x42 20 + 8*cnt Periodic/Polled QZSS L1S SLAS status data 386 NAV-SOL 0x01 0x06 52 Periodic/Polled Navigation solution information 388 NAV-STATUS 0x01 0x03 16 Periodic/Polled Receiver navigation status 390 NAV-SVINFO 0x01 0x30 8 + 12*numCh Periodic/Polled Space vehicle information 392 NAV-SVIN 0x01 0x3B 40 Periodic/Polled Survey-in data 393 NAV-TIMEBDS 0x01 0x24 20 Periodic/Polled BeiDou time solution	381	NAV-RESETODO	0x01 0x10	0	Command	Reset odometer	
385NAV-SLAS0x01 0x4220 + 8*cntPeriodic/PolledQZSS L1S SLAS status data386NAV-SOL0x01 0x0652Periodic/PolledNavigation solution information388NAV-STATUS0x01 0x0316Periodic/PolledReceiver navigation status390NAV-SVINFO0x01 0x308 + 12*numChPeriodic/PolledSpace vehicle information392NAV-SVIN0x01 0x3B40Periodic/PolledSurvey-in data393NAV-TIMEBDS0x01 0x2420Periodic/PolledBeiDou time solution	381	NAV-SAT	0x01 0x35	8 + 12*numSvs	Periodic/Polled	Satellite information	
386NAV-SOL0x01 0x0652Periodic/PolledNavigation solution information388NAV-STATUS0x01 0x0316Periodic/PolledReceiver navigation status390NAV-SVINFO0x01 0x308 + 12*numChPeriodic/PolledSpace vehicle information392NAV-SVIN0x01 0x3B40Periodic/PolledSurvey-in data393NAV-TIMEBDS0x01 0x2420Periodic/PolledBeiDou time solution	383	NAV-SBAS	0x01 0x32	12 + 12*cnt	Periodic/Polled	SBAS status data	
388 NAV-STATUS 0x01 0x03 16 Periodic/Polled Receiver navigation status 390 NAV-SVINFO 0x01 0x30 8 + 12*numCh Periodic/Polled Space vehicle information 392 NAV-SVIN 0x01 0x3B 40 Periodic/Polled Survey-in data 393 NAV-TIMEBDS 0x01 0x24 20 Periodic/Polled BeiDou time solution	385	NAV-SLAS	0x01 0x42	20 + 8*cnt	Periodic/Polled	QZSS L1S SLAS status data	
390 NAV-SVINFO 0x01 0x30 8 + 12*numCh Periodic/Polled Space vehicle information 392 NAV-SVIN 0x01 0x3B 40 Periodic/Polled Survey-in data 393 NAV-TIMEBDS 0x01 0x24 20 Periodic/Polled BeiDou time solution	386	NAV-SOL	0x01 0x06	52	Periodic/Polled	Navigation solution information	
392 NAV-SVIN 0x01 0x3B 40 Periodic/Polled Survey-in data 393 NAV-TIMEBDS 0x01 0x24 20 Periodic/Polled BeiDou time solution	388	NAV-STATUS	0x01 0x03	16	Periodic/Polled	Receiver navigation status	
393 NAV-TIMEBDS 0x01 0x24 20 Periodic/Polled BeiDou time solution	390	NAV-SVINFO	0x01 0x30	8 + 12*numCh	Periodic/Polled	Space vehicle information	
· · · · · · · · · · · · · · · · · · ·	392	NAV-SVIN	0x01 0x3B	40	Periodic/Polled	Survey-in data	
394 NAV-TIMEGAL 0x01 0x25 20 Periodic/Polled Galileo time solution	393	NAV-TIMEBDS	0x01 0x24	20	Periodic/Polled	BeiDou time solution	
	394	NAV-TIMEGAL	0x01 0x25	20	Periodic/Polled	Galileo time solution	
395 NAV-TIMEGLO 0x01 0x23 20 Periodic/Polled GLONASS time solution	395	NAV-TIMEGLO	0x01 0x23	20	Periodic/Polled	GLONASS time solution	
397 NAV-TIMEGPS 0x01 0x20 16 Periodic/Polled GPS time solution	397	NAV-TIMEGPS	0x01 0x20	16	Periodic/Polled	GPS time solution	
398 NAV-TIMELS 0x01 0x26 24 Periodic/Polled Leap second event information	398	NAV-TIMELS	0x01 0x26	24	Periodic/Polled	Leap second event information	



UBX Messages Overview continued

OBAI	3								
Page	Mnemonic	Cls/ID	Length	Туре	Description				
400	NAV-TIMEUTC	0x01 0x21	20	Periodic/Polled	UTC time solution				
401	NAV-VELECEF	0x01 0x11	20	Periodic/Polled	Velocity solution in ECEF				
402	NAV-VELNED	0x01 0x12	36	Periodic/Polled	Velocity solution in NED frame				
	UBX Cla	ass RXM		Receiver Manager M	essages				
403	RXM-IMES	0x02 0x61	4 + 44*numTx	Periodic/Polled	Indoor Messaging System information				
406	RXM-MEASX	0x02 0x14	44 + 24*num	Periodic/Polled	Satellite measurements for RRLP				
407	RXM-PMREQ	0x02 0x41	8	Command	Power management request				
408	RXM-PMREQ	0x02 0x41	16	Command	Power management request				
409	RXM-RAWX	0x02 0x15	16 + 32*num	Periodic/Polled	Multi-GNSS raw measurement data				
413	RXM-RAWX	0x02 0x15	16 + 32*num	Periodic/Polled	Multi-GNSS raw measurements				
416	RXM-RLM	0x02 0x59	16	Output	Galileo SAR short-RLM report				
417	RXM-RLM	0x02 0x59	28	Output	Galileo SAR long-RLM report				
418	RXM-RTCM	0x02 0x32	8	Output	RTCM input status				
419	RXM-SFRBX	0x02 0x13	8 + 4*numW	Output	Broadcast navigation data subframe				
420	RXM-SFRBX	0x02 0x13	8 + 4*numW	Output	Broadcast navigation data subframe				
421	RXM-SVSI	0x02 0x20	8 + 6*numSV	Periodic/Polled	SV status info				
	UBX CI	ass SEC		Security Feature Me	Security Feature Messages				
423	SEC-UNIQID	0x27 0x03	9	Output	Unique chip ID				
	UBX CI	ass TIM		Timing Messages					
	TIM-DOSC 0x0D 0x11 8								
424	TIM-DOSC	0x0D 0x11	8	Output	Disciplined oscillator control				
424 424	TIM-DOSC TIM-FCHG	0x0D 0x11 0x0D 0x16	8 32	Output Periodic/Polled	Disciplined oscillator control Oscillator frequency changed notification				
				<u>'</u>					
424	TIM-FCHG	0x0D 0x16	32	Periodic/Polled	Oscillator frequency changed notification				
424 425	TIM-FCHG TIM-HOC	0x0D 0x16 0x0D 0x17	32	Periodic/Polled Input	Oscillator frequency changed notification Host oscillator control				
424 425 426	TIM-FCHG TIM-HOC TIM-SMEAS	0x0D 0x16 0x0D 0x17 0x0D 0x13	32 8 12 + 24*num	Periodic/Polled Input Input/Output	Oscillator frequency changed notification Host oscillator control Source measurement				
424 425 426 428	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04	32 8 12 + 24*num 28	Periodic/Polled Input Input/Output Periodic/Polled	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data				
424 425 426 428 429	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03	32 8 12 + 24*num 28 28	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data				
424 425 426 428 429 430	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12	32 8 12 + 24*num 28 28 56	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data				
424 425 426 428 429 430 432	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS TIM-TP	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12 0x0D 0x01	32 8 12 + 24*num 28 28 56	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic Periodic	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data Time pulse time data				
424 425 426 428 429 430 432	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS TIM-TOS TIM-TP TIM-VCOCAL	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12 0x0D 0x01 0x0D 0x15	32 8 12 + 24*num 28 28 56 16	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic Periodic/Polled Command	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data Time pulse time data Stop calibration				
424 425 426 428 429 430 432 434 435	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS TIM-TP TIM-VCOCAL TIM-VCOCAL	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12 0x0D 0x01 0x0D 0x15 0x0D 0x15	32 8 12 + 24*num 28 28 56 16 1	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic Periodic Command Command	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data Time pulse time data Stop calibration VCO calibration extended command				
424 425 426 428 429 430 432 434 435 436	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS TIM-TOS TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12 0x0D 0x01 0x0D 0x15 0x0D 0x15 0x0D 0x15	32 8 12 + 24*num 28 28 56 16 1 12	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic Periodic/Polled Command Command Periodic/Polled	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data Time pulse time data Stop calibration VCO calibration extended command Results of the calibration Sourced time verification				
424 425 426 428 429 430 432 434 435 436	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS TIM-TOS TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12 0x0D 0x15 0x0D 0x15 0x0D 0x15 0x0D 0x06	32 8 12 + 24*num 28 28 56 16 1 12	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic Periodic/Polled Command Command Periodic/Polled Periodic/Polled	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data Time pulse time data Stop calibration VCO calibration extended command Results of the calibration Sourced time verification				
424 425 426 428 429 430 432 434 435 436 437	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS TIM-TOS TIM-TP TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12 0x0D 0x15 0x0D 0x15 0x0D 0x15 0x0D 0x16	32 8 12 + 24*num 28 28 56 16 1 12 12	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic Periodic/Polled Command Command Periodic/Polled Periodic/Polled Periodic/Polled Periodic/Polled	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data Time pulse time data Stop calibration VCO calibration extended command Results of the calibration Sourced time verification				
424 425 426 428 429 430 432 434 435 436 437	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS TIM-TP TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL TIM-VCOCAL	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12 0x0D 0x15 0x0D 0x15 0x0D 0x15 0x0D 0x16 0x0D 0x16	32 8 12 + 24*num 28 28 56 16 1 1 12 20	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic Periodic/Polled Command Command Periodic/Polled Periodic/Polled Periodic/Polled Periodic/Polled Periodic/Polled Periodic/Polled	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data Time pulse time data Stop calibration VCO calibration extended command Results of the calibration Sourced time verification essages Poll backup restore status				
424 425 426 428 429 430 432 434 435 436 437	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS TIM-TP TIM-VCOCAL	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12 0x0D 0x15 0x0D 0x15 0x0D 0x15 0x0D 0x16 0x0D 0x16 0x0D 0x16 0x0D 0x16 0x0D 0x16	32 8 12 + 24*num 28 28 56 16 1 12 12 20	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic Periodic/Polled Command Command Periodic/Polled Periodic/Polled Firmware Update Me Poll Request Command	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data Time pulse time data Stop calibration VCO calibration extended command Results of the calibration Sourced time verification essages Poll backup restore status Create backup in flash				
424 425 426 428 429 430 432 434 435 436 437 438 438	TIM-FCHG TIM-HOC TIM-SMEAS TIM-SVIN TIM-TM2 TIM-TOS TIM-TP TIM-VCOCAL	0x0D 0x16 0x0D 0x17 0x0D 0x13 0x0D 0x04 0x0D 0x03 0x0D 0x12 0x0D 0x15 0x0D 0x15 0x0D 0x15 0x0D 0x16 0x0D 0x16 0x0D 0x16 0x0D 0x16 0x0D 0x14 0x09 0x14	32 8 12 + 24*num 28 28 56 16 1 12 12 20 0 4	Periodic/Polled Input Input/Output Periodic/Polled Periodic/Polled Periodic Periodic/Polled Command Command Periodic/Polled Periodic/Polled Periodic/Polled Periodic/Polled Periodic/Polled Command Command Command Command Command Command	Oscillator frequency changed notification Host oscillator control Source measurement Survey-in data Time mark data Time pulse time and frequency data Time pulse time data Stop calibration VCO calibration extended command Results of the calibration Sourced time verification essages Poll backup restore status Create backup in flash Clear backup in flash				



32.8 UBX-ACK (0x05)

Ack/Nak Messages: i.e. Acknowledge or Reject messages to UBX-CFG input messages. Messages in the UBX-ACK class output the processing results to UBX-CFG and some other messages.

32.8.1 UBX-ACK-ACK (0x05 0x01)

32.8.1.1 Message acknowledged

Message		UBX-ACK-ACK									
Description		Message acknowledged									
Firmware		Supported on:									
			• u-blox 8 / u-blox M8 protocol versions 15, 15.01, 16, 17, 18, 19, 19.1, 19.2, 20, 20.01,								
		2	20.1, 20.2, 20.3, 22, 22.01, 23 and 23.01								
Туре		Ou	tput								
Comment		Output upon processing of an input message. A UBX-ACK-ACK is sent as soon									
		as possible but at least within one second.									
		Hea	ader	Class	ID	Length	(Bytes)		Payload	Checksum	
Message Structure		Oxl	B5 0x62	0x05	0x01	2			see below	CK_A CK_B	
Payload Contents:											
Byte Offset Num		ber	Scaling	Name	Name		Unit	Description			
Form		nat									
0	U1	-		clsI	clsID		-	Class ID of the Acknowledged Message			
1	U1	-		msgI	msgID		-	Message ID of the Acknowledged			
							Message				

32.8.2 UBX-ACK-NAK (0x05 0x00)

32.8.2.1 Message not acknowledged

Message		UBX-ACK-NAK										
Description	Message not acknowledged											
Firmware		Su	Supported on:									
		• (ı-blox 8 /	u-blo	x M8 p	orotoc	ol versio	ns 15, 15.01, 16, 17, 18,	19, 19.1, 1	9.2, 20, 20.01,		
		2	20.1, 20.2	2, 20.3	, 22, 2	2.01, 2	3 and 23	3.01				
Туре		Ou	Output									
Comment		Ou	Output upon processing of an input message. A UBX-ACK-NAK is sent as soon									
		as	as possible but at least within one second.									
			ader	Class	ID	Length	(Bytes)		Payload Checksum			
Message Stru	Message Structure		B5 0x62	0x05	0x00	2			see below	CK_A CK_B		
Payload Conte	nts:					•						
Byte Offset	Byte Offset Num		Scaling	Name	Name		Unit	Description				
Form		nat										
0 U1			-	clsI	clsID		-	Class ID of the Not-Acknowledged				
								Message				
1 U1			_	msgI	msgID		-	Message ID of the Not-Acknowledged				
								Message				