

4.2.15 Status Blocks

ChannelStatus	Number: 4013
	"OnChange" interval: default PVT output rate (see 4.1.8)

This block describes the current satellite allocation and tracking status of the active receiver channels. Active channels are channels to which a satellite has been allocated.

This block uses a two-level sub-block structure analogous to that of the `MeasEpoch` block. For each active channel, a `ChannelSatInfo` sub-block contains all satellite-dependent information such as health, azimuth and elevation. Each of these sub-blocks contains `N2 ChannelStateInfo` sub-blocks, `N2` being the number of active antennas in a given channel (for single-antenna receivers, `N2` is one). The `ChannelStateInfo` reports information such as the tracking status and PVT usage of a given signal type tracked on a given antenna.

Inactive channels are not contained in the `ChannelStatus` block.

Health, tracking and PVT status fields are available for each satellite. These status fields consist of a sequence of up to 8 two-bit fields. Each 2-bit field contains the status of one of the signals transmitted by the satellite. The position of the 2 bits corresponding to a given signal is dependent on the constellation, but is otherwise fixed. It is indicated in the tables below.

GPS:

Reserved		Reserved		L1C		L5		L2C		P2(Y)		P1(Y)		L1CA	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

GLONASS:

Reserved		Reserved		Reserved		L3		L2CA		L2P		L1P		L1CA	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Galileo:

Reserved		E5-AltBOC		E5b		E5a		E6BC		E6A		L1BC		L1A	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

SBAS:

Reserved		Reserved		Reserved		Reserved		Reserved		Reserved		L5		L1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

BeiDou:

Reserved		Reserved		B2b		B2a		B1C		B3I		B2I		B1I	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

QZSS:

Reserved		Reserved		L1S		L1C		L6		L5		L2C		L1CA	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

NavIC/IRNSS:

Reserved		Reserved		Reserved		Reserved		Reserved		Reserved		Reserved		L5	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N	u1			Number of channels for which status are provided in this SBF block, i.e. number of <code>ChannelSatInfo</code> sub-blocks. If N is 0, there are no active channels available for this epoch.
SB1Length	u1	1 byte		Length of a <code>ChannelSatInfo</code> sub-block, excluding the nested <code>ChannelStateInfo</code> sub-blocks
SB2Length	u1	1 byte		Length of a <code>ChannelStateInfo</code> sub-block
Reserved	u1[3]			Reserved for future use, to be ignored by decoding software
<i>SatInfo</i>	...	...		<i>A succession of N ChannelSatInfo sub-blocks, see definition below</i>
Padding	u1[.]			Padding bytes, see 4.1.5

`ChannelSatInfo` sub-block definition:

Parameter	Type	Units	Do-Not-Use	Description
SVID	u1			Satellite ID, see 4.1.9
FreqNr	u1		0	For GLONASS FDMA signals, this is the frequency number, with an offset of 8. It ranges from 1 (corresponding to an actual frequency number of -7) to 21 (corresponding to an actual frequency number of 13). Otherwise, <code>FreqNr</code> is reserved and must be ignored by the decoding software.
Reserved1	u1[2]			Reserved for future use, to be ignored by decoding software
Azimuth/RiseSet	u2	1 degree	511 3	bit field: Bits 0-8: Azimuth [0,359]. 0 is North, and Azimuth increases towards East. Bits 9-13: Reserved Bits 14-15: Rise/Set Indicator: 0: Satellite setting 1: Satellite rising 3: Elevation rate unknown
HealthStatus	u2			Sequence of 2-bit health status fields, each of them taking one of the following values: 0 : health unknown, or not applicable 1 : healthy 3 : unhealthy The 2-bit health status is a condensed version of the health status as sent by the satellite. For SBAS, the health status is set from the almanac data (MT17).
Elevation	i1	1 degree	-128	Elevation [-90,90] relative to local horizontal plane
N2	u1			Number of <code>ChannelStateInfo</code> blocks following this <code>ChannelSatInfo</code> block. There is one <code>ChannelStateInfo</code> sub-block per antenna.
RxChannel	u1			Channel number, see section 4.1.11.
Reserved2	u1			Reserved for future use, to be ignored by decoding software
Padding	u1[.]			Padding bytes, see 4.1.5

<i>StateInfo</i>	A succession of <i>N2 ChannelStateInfo</i> sub-blocks, see definition below
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ChannelStateInfo sub-block definition:

Parameter	Type	Units	Description
Antenna	u1		Antenna number (0 for main antenna)
Reserved	u1		Reserved for future use, to be ignored by decoding software
TrackingStatus	u2		Sequence of 2-bit tracking status fields, each of them taking one of the following values: 0: idle or not applicable 1: Search 2: Sync 3: Tracking
PVTStatus	u2		Sequence of 2-bit PVT status fields, each of them taking one of the following values: 0: not used 1: waiting for ephemeris 2: used 3: rejected
PVTInfo	u2		Internal info
Padding	u1[.]		Padding bytes, see 4.1.5

ReceiverStatus	Number: 4014 "OnChange" interval: 1s
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The `ReceiverStatus` block provides general information on the status of the receiver.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
CPUload	u1	1 %	255	Load on the receiver's CPU. The load should stay below 80% in normal operation. Higher loads might result in data loss.
ExtError	u1			<p>Bit field reporting external errors, i.e. errors detected in external data. Upon detection of an error, the corresponding bit is set for a duration of one second, and then resets.</p> <p>Bit 0: SISERROR: set if a violation of the signal-in-space ICD has been detected for at least one satellite while that satellite is reported as healthy. Use the command "lif, SisError" for details.</p> <p>Bit 1: DIFFCORRERROR: set when an anomaly has been detected in an incoming differential correction stream, causing the receiver to fail to decode the corrections. Use the command "lif, DiffCorrError" for details.</p> <p>Bit 2: EXTSENSORERROR: set when a malfunction has been detected on at least one of the external sensors connected to the receiver. Use the command "lif, ExtSensorError" for details.</p> <p>Bit 3: SETUPERROR: set when a configuration/setup error has been detected. An example of such error is when a remote NTRIP Caster is not reachable. Use the command "lif, SetupError" for details.</p> <p>Bits 4-7: Reserved</p>
UpTime	u4	1 s		Number of seconds elapsed since the start-up of the receiver, or since the last reset.

RxState	u4			<p>Bit field indicating the status of key components of the receiver:</p> <p>Bit 0: Reserved</p> <p>Bit 1: ACTIVEANTENNA: this bit is set when an active antenna is sensed at the main antenna connector. This functionality is only available on certain receiver models.</p> <p>Bit 2: EXT_FREQ: this bit is set if an external frequency reference is detected at the 10 MHz input, and cleared if the receiver uses its own internal clock.</p> <p>Bit 3: EXT_TIME: this bit is set if a pulse has been detected on the TimeSync input.</p> <p>Bit 4: WNSET: see corresponding bit in the SyncLevel field of the ReceiverTime block.</p> <p>Bit 5: TOWSET: see corresponding bit in the SyncLevel field of the ReceiverTime block.</p> <p>Bit 6: FINETIME: see corresponding bit in the SyncLevel field of the ReceiverTime block.</p> <p>Bit 7: INTERNALDISK_ACTIVITY: this bit is set for one second each time data is logged to the internal disk (DSK1). If the logging rate is larger than 1 Hz, set continuously.</p> <p>Bit 8: INTERNALDISK_FULL: this bit is set when the internal disk (DSK1) is full. A disk is full when it is filled to 95% of its total capacity.</p> <p>Bit 9: INTERNALDISK_MOUNTED: this bit is set when the internal disk (DSK1) is mounted.</p> <p>Bit 10: INT_ANT: this bit is set when the GNSS RF signal is taken from the internal antenna input, and cleared when it comes from the external antenna input (only applicable on receiver models featuring an internal antenna input).</p> <p>Bit 11: REFOUT_LOCKED: if set, the 10-MHz frequency provided at the REF OUT connector is locked to GNSS time. Otherwise it is free-running.</p> <p>Bit 12: LBAND_ANT: this bit is set when the L-band signal is tracked from the dedicated L-band antenna, and cleared when it is tracked from the same antenna as the GNSS signals, or when the receiver does not support L-band tracking.</p> <p>Bit 13: EXTERNALDISK_ACTIVITY: this bit is set for one second each time data is logged to the external disk (DSK2). If the logging rate is larger than 1 Hz, set continuously.</p> <p>Bit 14: EXTERNALDISK_FULL: this bit is set when the external disk (DSK2) is full. A disk is full when it is filled to 95% of its total capacity.</p> <p>Bit 15: EXTERNALDISK_MOUNTED: this bit is set when the external disk (DSK2) is mounted.</p> <p>Bit 16: PPS_IN_CAL: this bit is set when PPS IN delay calibration is on-going. Only applicable to PolaRx5TR receivers.</p> <p>Bit 17: DIFFCORR_IN: this bit is set for one second each time differential corrections are decoded. If the input rate is larger than 1 Hz, set continuously.</p> <p>Bit 18: INTERNET: this bit is set when the receiver has internet access. If not set, there is either no internet access, or the receiver could not reliably determine the status.</p> <p>Bits 19-31: Reserved</p>
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Rev 1

RxError	u4			<p>Bit field indicating whether an error occurred previously. If this field is not equal to zero, at least one error has been detected.</p> <p>Bit 0: Reserved</p> <p>Bit 1: Reserved</p> <p>Bit 2: Reserved</p> <p>Bit 3: SOFTWARE: set upon detection of a software warning or error. This bit is reset by the command "lif, error".</p> <p>Bit 4: WATCHDOG: set when the watchdog expired at least once since the last power-on.</p> <p>Bit 5: ANTENNA: set when antenna overcurrent condition is detected.</p> <p>Bit 6: CONGESTION: set when an output data congestion has been detected on at least one of the communication ports of the receiver during the last second.</p> <p>Bit 7: Reserved</p> <p>Bit 8: MISSEDEVENT: set when an external event congestion has been detected during the last second. It indicates that the receiver is receiving too many events on its EVENTx pins.</p> <p>Bit 9: CPUOVERLOAD: set when the CPU load is larger than 90%.</p> <p>Bit 10: INVALIDCONFIG: set if one or more configuration file (e.g. permissions) is invalid or absent.</p> <p>Bit 11: OUTOFGEOFENCE: set if the receiver is currently out of its permitted region of operation (geofencing).</p> <p>Bit 12: Reserved</p> <p>Bit 13: Reserved</p> <p>Bit 14: Reserved</p> <p>Bit 15: Reserved</p> <p>Bit 16: Reserved</p> <p>Bits 17-31: Reserved</p>
N	u1			Number of AGCState sub-blocks this block contains.
SBLength	u1	1 byte		Length of a AGCState sub-block.
CmdCount	u1		0	Command cyclic counter, incremented each time a command is entered that changes the receiver configuration. After the counter has reached 255, it resets to 1.
Temperature	u1	1 °C	0	Not applicable.
AGCState	...	...		A succession of N AGCState sub-blocks, see definition below
Padding	u1[.]			Padding bytes, see 4.1.5

AGCState sub-block definition:

Parameter	Type	Units	Do-Not-Use	Description
FrontEndID	u1			<p>Bit field indicating the frontend code and antenna ID:</p> <p>Bits 0-4: frontend code:</p> <ul style="list-style-type: none"> 0: GPSL1/E1 1: GLOL1 2: E6 3: GPSL2 4: GLOL2 5: L5/E5a 6: E5b/B2I 7: E5(a+b) 8: Combined GPS/GLONASS/SBAS/Galileo L1 9: Combined GPS/GLONASS L2 10: MSS/L-band 11: B1I 12: B3I 13: S-band <p>Bits 5-7: Antenna ID: 0 for main, 1 for <i>Aux1</i> and 2 for <i>Aux2</i></p>
Gain	i1	1 dB	−128	<p>AGC gain, in dB.</p> <p>The Do-Not-Use value is used to indicate that the frontend PLL is not locked.</p>
SampleVar	u1		0	Normalized variance of the IF samples. The nominal value for this variance is 100.
BlankingStat	u1	1 %		Current percentage of samples being blanked by the pulse blanking unit. This field is always 0 for receiver without pulse blanking unit.
Padding	u1[..]			Padding bytes, see 4.1.5

SatVisibility	Number: 4012
	"OnChange" interval: 1s

This block contains the azimuth and elevation of all the satellites above the horizon for which the ephemeris or almanac is available.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N	u1			Number of satellites for which information is provided in this SBF block, i.e. number of <code>SatInfo</code> sub-blocks.
SBLength	u1	1 byte		Length of one <code>SatInfo</code> sub-block
<i>SatInfo</i>	...	...		<i>A succession of N SatInfo sub-blocks, see definition below</i>
Padding	u1[.]			Padding bytes, see 4.1.5

`SatInfo` sub-block definition:

Parameter	Type	Units	Do-Not-Use	Description
SVID	u1			Satellite ID, see 4.1.9
FreqNr	u1		0	For GLONASS FDMA signals, this is the frequency number, with an offset of 8. It ranges from 1 (corresponding to an actual frequency number of -7) to 21 (corresponding to an actual frequency number of 13). Otherwise, <code>FreqNr</code> is reserved and must be ignored by the decoding software.
Azimuth	u2	0.01 degrees	65535	Azimuth. 0 is North, and azimuth increases towards East.
Elevation	i2	0.01 degrees	-32768	Elevation relative to local horizontal plane.
RiseSet	u1			Rise/set indicator: 0: satellite setting 1: satellite rising 255: elevation rate unknown
SatelliteInfo	u1			Satellite visibility info based on: 1: almanac 2: ephemeris 255: unknown
Padding	u1[.]			Padding bytes, see 4.1.5

InputLink	Number:	4090
	"OnChange" interval:	1s

The `InputLink` block reports statistics of the number of bytes and messages received and accepted on each active connection descriptor.

Per connection descriptor, the receiver maintains two byte counters (`NrBytesReceived` and `NrBytesAccepted`) and two message counters (`NrMsgReceived` and `NrMsgAccepted`), which are reported in the sub-blocks. These counters provide useful information on the quality of the transmission link, and of the bandwidth efficiency.

These counters (as well as the age of the last message) are reset simultaneously on the following events:

- start-up of the receiver
- overflow of one of the counters
- change of input type
- deactivation of a connection descriptor, e.g. on disconnection of USB or IP ports.

There is one sub-block per connection descriptor for which statistics is available.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N	u1			Number of connection descriptors for which communication link statistics are included
SBLength	u1	1 byte		Length of one <code>InputStatsSub</code> sub-block.
<i>InputStats</i>	...	...		<i>A succession of N <code>InputStatsSub</code> sub-blocks, see definition below</i>
Padding	u1[.]			Padding bytes, see 4.1.5

InputStatsSub sub-block definition:

Parameter	Type	Units	Do-Not-Use	Description																																																		
CD	u1			Identifier of the connection to which this information applies:																																																		
				Value of CD	Connection type	Example	0-31	COMx, with x=CD	1: COM1	32-47	USBx, with x=CD-32	33: USB1	48-63	OTGx, with x=CD-48	49: OTG1	64-95	IPx, with x=CD-54	64:IP10	96-127	DSKx, with x=CD-96	97:DSK1	128-159	NTRx, with x=CD-128 (NTRIP connections)	129:NTR1	160-191	IPsx, with x=CD-160 (IP server connections)	161:IPs1	192	BT01 (Bluetooth connection)		193	BT02 (Bluetooth connection)		196	UHF1 (UHF Modem)		200-205	IPRx, with x=CD-200 (IP receive connections)	201:IPR1	210	DCL1 (cellular data-call connection)		214	CAN1 (CAN stream interface)		215-219	Reserved		220	SPI1 (SPI interface)		221-255	Reserved	
				Value of CD	Connection type	Example																																																
				0-31	COMx, with x=CD	1: COM1																																																
				32-47	USBx, with x=CD-32	33: USB1																																																
				48-63	OTGx, with x=CD-48	49: OTG1																																																
				64-95	IPx, with x=CD-54	64:IP10																																																
				96-127	DSKx, with x=CD-96	97:DSK1																																																
				128-159	NTRx, with x=CD-128 (NTRIP connections)	129:NTR1																																																
				160-191	IPsx, with x=CD-160 (IP server connections)	161:IPs1																																																
				192	BT01 (Bluetooth connection)																																																	
				193	BT02 (Bluetooth connection)																																																	
				196	UHF1 (UHF Modem)																																																	
				200-205	IPRx, with x=CD-200 (IP receive connections)	201:IPR1																																																
				210	DCL1 (cellular data-call connection)																																																	
				214	CAN1 (CAN stream interface)																																																	
				215-219	Reserved																																																	
				220	SPI1 (SPI interface)																																																	
				221-255	Reserved																																																	
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Type	u1			Type of data: 0: none 1: DaisyChain (includes "echo" messages) 32: CMD 33: SBF 34: AsciiDisplay (see setDataInOut command) 35: RINEX 36: CGGTTS 40: BINEX 64: NMEA 96: RTCMv2 97: RTCMv3 98: CMRv2 99: RTCMV (a proprietary variant of RTCMv2) 100: SPARTN 101: LBMP 110: raw LBAS1 from e.g. NTRIP 111: raw LBAS2 from e.g. NTRIP 118: raw LBAND data from Beam1 119: raw LBAND data from Beam2 120: raw LBAND data from Beam3 121: raw LBAND data from Beam4 128: Reserved 129: Reserved 130: Reserved 131: SBG (IMU sensor) 132: Reserved 133: Reserved 134: Reserved 135: Reserved 136: Reserved 137: ADIS 160: ASCIIIn
AgeOfLastMessage	u2	1 s	65535	Age of the last accepted message. If the age is older than 65534s, it is clipped to 65534s.
NrBytesReceived	u4	1 byte	4294967295	Total number of bytes received ⁽⁶⁾
NrBytesAccepted	u4	1 byte	4294967295	Total number of bytes ⁽⁶⁾ in messages that passed the check for this type of input (CRC, parity check, ...). The ratio of <code>NrBytesAccepted</code> to <code>NrBytesReceived</code> gives an indication of the quality of the communication link.
NrMsgReceived	u4	1 message		Total number of messages of type <code>Type</code> received.
NrMsgAccepted	u4	1 message		Total number of messages of type <code>Type</code> that were interpreted and used by the receiver. The ratio of <code>NrMsgAccepted</code> to <code>NrMsgReceived</code> gives an indication of the bandwidth usage efficiency
Padding	u1[..]			Padding bytes, see 4.1.5

⁽⁶⁾ Note that, for RTCM 2.x, one 8-bit byte contains 6 RTCM data bits.

OutputLink	Number: 4091
	"OnChange" interval: 1s

The `OutputLink` block reports statistics of the number of bytes sent on each active connection descriptor.

Per connection descriptor, the receiver maintains two byte counters `NrBytesProduced` and `NrBytesSent`, which are reported in the sub-block. They provide an indication of the amount of data output and data lost on a given connection.

These counters are reset simultaneously on the following events:

- start-up of the receiver
- overflow of one of the counters
- deactivation of a connection descriptor, e.g. on disconnection of USB or IP ports
- change of COM port settings.

There is one `OutputStatsSub` sub-block per connection descriptor for which statistics is available. Each `OutputStatsSub` sub-block contains a number of `OutputTypeSub` sub-blocks. These sub-blocks indicate which data type has been output through the connection in question during the last second. If no output happened during the last second, there is no `OutputTypeSub` sub-block.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N1	u1			Number of <code>OutputStatsSub</code> sub-blocks in this <code>OutputLink</code> block.
SB1Length	u1	1 byte		Length of an <code>OutputStatsSub</code> sub-block, excluding the nested <code>OutputTypeSub</code> sub-block
SB2Length	u1	1 byte		Length of an <code>OutputTypeSub</code> sub-block
Reserved	u1[3]			Reserved for future use
<i>OutputStats</i>	...	...		<i>A succession of N1 <code>OutputStatsSub</code> sub-blocks, see definition below</i>
Padding	u1[.]			Padding bytes, see 4.1.5

OutputStatsSub sub-block definition:

Parameter	Type	Units	Description			
CD	u1		Identifier of the connection to which this information applies:			
			Value of CD		Connection type	Example
			0-31	COMx, with x=CD	1: COM1	
			32-47	USBx, with x=CD-32	33: USB1	
			48-63	OTGx, with x=CD-48	49: OTG1	
			64-95	IPx, with x=CD-54	64:IP10	
			96-127	DSKx, with x=CD-96	97:DSK1	
			128-159	NTRx, with x=CD-128 (NTRIP connections)	129:NTR1	
			160-191	IPsx, with x=CD-160 (IP server connections)	161:IPS1	
			192	BT01 (Bluetooth connection)		
			193	BT02 (Bluetooth connection)		
			196	UHF1 (UHF Modem)		
			200-205	IPRx, with x=CD-200 (IP receive connections)	201:IPR1	
			210	DCL1 (cellular data-call connection)		
			214	CAN1 (CAN stream interface)		
			215-219	Reserved		
			220	SPI1 (SPI interface)		
221-255	Reserved					
N2	u1		Number of OutputTypeSub sub-blocks included at the end of this OutputStatsSub sub-block			
AllowedRate	u2	1 kbyte / s	Maximum datarate recommended on this connection			
NrBytesProduced	u4	1 byte	Total number of bytes produced by the receiver. See also the NrBytesSent field.			
NrBytesSent	u4	1 byte	Total number of bytes actually sent (i.e. without congestions or transmission errors). The ratio of NrBytesSent to NrBytesProduced gives an indication of the amount of bandwidth overload. NrBytesSent and NrBytesProduced are 32-bit counters. If one of them overflows, both counters are reset to zero.			
NrClients	u1		Number of clients currently connected to this connection. Most connection types can only serve one client at a time, but each IP server (IPS) port can serve up to eight simultaneous clients. Note that when NrClients is more than one, the fields NrBytesProduced and NrBytesSent are the number of bytes produced and sent to each individual client.			
Reserved	u1[3]		Reserved for future use			
Padding	u1[..]		Padding bytes, see 4.1.5			
OutputType	...	...	A succession of N2 OutputTypeSub sub-blocks, see definition below		

Rev 1

OutputTypeSub sub-block definition:

Parameter	Type	Units	Description
Type	u1		Type of data: 0: none 1: DaisyChain (includes "echo" messages) 32: CMD 33: SBF 34: AsciiDisplay (see setDataInOut command) 35: RINEX 36: CGGTTS 40: BINEX 64: NMEA 96: RTCMv2 97: RTCMv3 98: CMRv2 99: RTCMV (a proprietary variant of RTCMv2) 118: raw LBAND data from Beam1 119: raw LBAND data from Beam2 120: raw LBAND data from Beam3 121: raw LBAND data from Beam4
Percentage	u1	1 %	Percentage of the produced bytes that belong to this type (during the last second)
Padding	u1[.]		Padding bytes, see 4.1.5

NTRIPClientStatus	Number: 4053 "OnChange" interval: 1s
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This block reports the current status of the NTRIP client connections.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N	u1			Number of NTRIP client connections for which status is provided in this block, i.e. number of NTRIPClientConnection sub-blocks.
SBLength	u1	1 byte		Length of one NTRIPClientConnection sub-block
NTRIPClientConnection	...	...		A succession of N NTRIPClientConnection sub-blocks, see definition below
Padding	u1[..]			Padding bytes, see 4.1.5

NTRIPClientConnection sub-block definition:

Parameter	Type	Units	Description
CDIndex	u1		Index of the NTRIP connection (1 for NTR1, 2 for NTR2, etc) for which status is provided in this sub-block.
Status	u1		NTRIP client status: 0: Connection disabled 1: Initializing 2: Running, differential corrections are being received and the link statistics is available in the <code>InputLink</code> block. 3: Error detected, the error code is provided in the next field. 4: Retrying, client encountered an error, we are trying to reconnect. The error code is provided in the next field. 5: Disabled since the settings are a duplicate of another active NTRIP connection.
ErrorCode	u1		NTRIP error code: 0: No error 1: Initialization error (e.g. source table retrieval failure) 2: Authentication error 3: Connection error 4: Mountpoint does not exist 5: Mountpoint unavailable 6: Waiting for GGA 7: GGA sending disabled when required by mountpoint 8: Resolving host failed 9: Out of region 10: TLS setup error 11: TLS handshake error 12: TLS fingerprint error 13: TLS time not known 254: Unknown error
Info	u1		Bitfield indicating miscellaneous info about the Connection status: Bit 0: TLS was used to make secure NTRIP connection if this bit is set Bits 1-7: Reserved
Padding	u1[.]		Padding bytes, see 4.1.5

NTRIPServerStatus	Number: 4122 "OnChange" interval: 1s
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This block reports the current status of the NTRIP server connections.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N	u1			Number of NTRIP server connections for which status is provided in this block, i.e. number of <code>NTRIPServerConnection</code> sub-blocks.
SBLength	u1	1 byte		Length of one <code>NTRIPServerConnection</code> sub-block
<code>NTRIPServerConnection</code>	...	...		A succession of <i>N</i> <code>NTRIPServerConnection</code> sub-blocks, see definition below
Padding	u1[.]			Padding bytes, see 4.1.5

`NTRIPServerConnection` sub-block definition:

Parameter	Type	Units	Description
CDIndex	u1		Index of the NTRIP connection (1 for NTR1, 2 for NTR2, etc) for which status is provided in this sub-block.
Status	u1		NTRIP server status: 0: Connection disabled 1: Initializing 2: Running, differential corrections are being sent and the link statistics is available in the <code>OutputLink</code> block. 3: Error detected, the error code is provided in the next field. 4: Error detected. Currently trying to reconnect. The error code is provided in the next field. 5: Disabled since the settings are a duplicate of another active NTRIP connection.
ErrorCode	u1		NTRIP error code: 0: No error 1: Initialization error 2: Authentication error 3: Connection error 4: Mountpoint does not exist 5: Configuration conflict error 6: Resolving host failed 7: TLS setup error 8: TLS handshake error 9: TLS fingerprint error 10: TLS time not known 254: Unknown error
Info	u1		Bitfield indicating miscellaneous info about the Connection status: Bit 0: TLS was used to make secure NTRIP connection if this bit is set Bits 1-7: Reserved
Padding	u1[.]		Padding bytes, see 4.1.5

IPStatus	Number: 4058
	"OnChange" interval: output each time one or more IP parameters change

This block contains information on the receiver's Ethernet interface (hostname, IP address, gateway, netmask and MAC address).

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
MACAddress	u1[6]			MAC address. The first byte corresponds to the MSB of the address.
IPAddress	u1[16]		All elements set to 0	IP address. For future upgradability, this field can contain a 128-bit IPv6 address. In the current firmware version, the first 12 bytes are always set to 0, and the last 4 bytes contain the IPv4 IP address, or are set to zero if the IP address is not known or not applicable.
Gateway	u1[16]		All elements set to 0	Gateway address. For future upgradability, this field can contain a 128-bit IPv6 address. In the current firmware version, the first 12 bytes are always set to 0, and the last 4 bytes contain the IPv4 IP address, or are set to zero if the gateway address is not known or not applicable.
Netmask	u1		255	Number of bits used to identify the network (CIDR notation).
Reserved	u1[3]			Reserved for future use, to be ignored by decoding software.
HostName	c1[32]			Receiver hostname on the Ethernet interface, or empty if not known.
Padding	u1[...]			Padding bytes, see 4.1.5

Rev 1

DynDNSStatus	Number: 4105
	"OnChange" interval: 1s

This block contains dynamic DNS (DynDNS) status information.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
Status	u1			DynDNS status: 0: DynDNS disabled 1: Updating IP address 2: IP address updated at the DynDNS server. DynDNS is ready to use. 254: Error detected, the error code is provided in the next field.
ErrorCode	u1			DynDNS error code: 0: No error 1: Unspecified error 2: Abusive update 3: User name and password mismatch 4: Not a credited user 5: Hostname is not a fully-qualified domain name 6: Hostname does not exist in this user account 7: Hostname blocked for update abuse 8: Bad agent 9: DNS error 10: DynDNS server problem or maintenance 11: DynDNS server not reachable
IPAddress	u1[16]		All elements set to 0	IP address that has been registered at the DynDNS server. For future upgradability, this field can contain a 128-bit IPv6 address. In the current firmware version, the first 12 bytes are always set to 0, and the last 4 bytes contain the IPv4 IP address, or are set to zero if the IP address is not known or not applicable (e.g. because registration failed).
Padding	u1[..]			Padding bytes, see 4.1.5

Rev 1

QualityInd	Number:	4082
	"OnChange" interval:	1s

The `QualityInd` block contains quality indicators for the main functions of the receiver. Each quality indicator is a value from 0 to 10, 0 corresponding to poor quality and 10 to very high quality.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N	u1			Number of quality indicators contained in this block
Reserved	u1			Reserved for future use, to be ignored by decoding software.
Indicators	u2[N]			<p>N successive quality indicators, coded as follows:</p> <p>Bits 0-7: Quality indicator type:</p> <ul style="list-style-type: none"> 0: Overall quality 1: GNSS signals from main antenna 2: GNSS signals from aux1 antenna 11: RF power level from the main antenna 12: RF power level from the aux1 antenna 21: CPU headroom 25: OCXO stability (only available on PolaRx5S receivers) 30: Base station measurements. This indicator is only available in RTK mode. A low value could for example hint at severe multipath or interference at the base station, or also at ionospheric scintillation. 31: RTK post-processing. This indicator is only available when the position mode is not RTK. It indicates the likelihood of getting a cm-accurate RTK position when post-processing the current data. <p>Bits 8-11: Value of this quality indicator (from 0 for low quality to 10 for high quality, or 15 if unknown)</p> <p>Bits 12-15: Reserved for future use, to be ignored by decoding software.</p>
Padding	u1[.]			Padding bytes, see 4.1.5

DiskStatus	Number: 4059 "OnChange" interval: 1s
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This block reports the size and usage of the disks mounted on the receiver.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N	u1			Number of <code>DiskData</code> sub-blocks this block contains.
SBLength	u1	1 byte		Length of one <code>DiskData</code> sub-blocks in bytes.
Reserved	u1[4]			Reserved for future use
<i>DiskData</i>	...	...		<i>A succession of N <code>DiskData</code> sub-blocks, see definition below</i>
Padding	u1[.]			Padding bytes, see 4.1.5

DiskData sub-block definition:

Parameter	Type	Units	Do-Not-Use	Description
DiskID	u1			ID of the disk, starting at 1 for the internal SD Memory Card.
Status	u1			Bit field: Bit 0: DISK_MOUNTED: bit set when the disk is mounted. Bit 1: DISK_FULL: bit set when the disk is full. A disk is full when it is filled to 95% of its total capacity. Bit 2: DISK_ACTIVITY: bit set for one second each time data is written to the disk. If the logging rate is larger than 1 Hz, set continuously. Bit 3: LOGGING_ENABLED: bit set when at least one file is open on the disk, regardless of the logging rate. Bit 4: MOUNTING: bit set when disk is being mounted. Bit 5: FORMATTING: bit set when disk is being formatted. Bits 6-7: Reserved
DiskUsageMSB	u2		65535 ⁽⁷⁾	16 MSB of the total disk usage. The disk usage in bytes is given by $\text{DiskUsageMSB} \times 4294967296 + \text{DiskUsageLSB}$.
DiskUsageLSB	u4		4294967295 ⁽⁷⁾	32 LSB of the total disk usage. The disk usage in bytes is given by $\text{DiskUsageMSB} \times 4294967296 + \text{DiskUsageLSB}$.
DiskSize	u4	1 Mbyte	0	Total size of the disk, in megabytes.
CreateDeleteCount	u1			Counter incremented by one each time a file or a folder is created or deleted on this disk. This counter starts at zero at receiver start-up and restarts at zero after having reached 255.
Error	u1		255	Disk error: 0: No error 1: Disk partition is too large 2: Disk does not have any partition 3: File system check and recovery failed 4: Disk in use over USB 254: Disk mount failed due to unknown error
Padding	u1[..]			Padding bytes, see 4.1.5

⁽⁷⁾ The disk usage is invalid if both DiskUsageMSB is 65535 and DiskUsageLSB is 4294967295.

RFStatus	Number: 4092
	"OnChange" interval: 1s

The `RFStatus` block provides information on the radio-frequency (RF) bands where interferences have been detected and/or notch filters have been applied.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N	u1			Number of RF bands for which data is provided in this SBF block, i.e. number of <code>RFBand</code> sub-blocks.
SBLength	u1	1 byte		Length of one sub-block
Flags	u1			Bit field: Bit 0: Set when a spoofing suspicion is determined. Bits 1-7: Reserved
Reserved	u1[3]			Reserved for future use, to be ignored by decoding software.
<i>RFBand</i>	...	...		<i>A succession of N <code>RFBand</code> sub-blocks, see definition below</i>
Padding	u1[.]			Padding bytes, see 4.1.5

`RFBand` sub-block definition:

Parameter	Type	Units	Description
Frequency	u4	1 Hz	Center frequency of the RF band addressed by this sub-block.
Bandwidth	u2	1 kHz	Bandwidth of the RF band.
Info	u1		Info on this RF band: Bits 0-3: Mode: 1: This RF band is suppressed by a notch filter set manually with the command setNotchFiltering . 2: The receiver detected interference in this band, and successfully canceled it. 8: The receiver detected interference in this band. No mitigation applied. Bits 4-5: Reserved Bits 6-7: Antenna ID: 0 for main, 1 for <i>Aux1</i> and 2 for <i>Aux2</i>
Padding	u1[.]		Padding bytes, see 4.1.5

P2PPStatus	Number: 4238 "OnChange" interval: 1s
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This block reports the status of the active P2PP (Point-to-Point Protocol) sessions. See the **setPointToPoint** command for details.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
N	u1			Number of active P2PP sessions for which status is provided in this block, i.e. number of P2PPSession sub-blocks.
SBLength	u1	1 byte		Length of one P2PPSession sub-block
P2PPSession	...	...		A succession of N P2PPSession sub-blocks, see definition below
Padding	u1[.]			Padding bytes, see 4.1.5

P2PPSession sub-block definition:

Parameter	Type	Units	Description
SessionID	u1		Index of the P2PP session (1 for P2PP1, 2 for P2PP2, etc) for which status is provided in this sub-block.
Port	u1		Index for the COM port the P2PP session is configured on (1 for COM1, 2 for COM2, etc).
Status	u1		Bit field: Bit 0: Mode: Bit set if the P2PP session is in Server mode, and unset if it is in Client mode (future functionality). Bits 1-7: P2PP status: 0: Initializing 1: Waiting for Connection 2: Connected 3: Disconnecting 4: Error, see ErrorCode field below
ErrorCode	u1		P2PP error: 1: No error 2: Configuration 3: Port Acquisition 4: Port Lock 5: Start Daemon 6: Server Authentication 7: Client Authentication 8: Timeout on Activity 9: Timeout on Negotiation 10: Link Negotiation 255: Unspecified
Padding	u1[.]		Padding bytes, see 4.1.5

CosmosStatus	Number: 4243 "OnChange" interval: 1s
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The `CosmosStatus` block provides information on the status of the Cosmos receiver service.

Parameter	Type	Units	Do-Not-Use	Description
Sync1	c1			Block Header, see 4.1.1
Sync2	c1			
CRC	u2			
ID	u2			
Length	u2	1 byte		
TOW	u4	0.001 s	4294967295	Receiver time stamp, see 4.1.3
WNc	u2	1 week	65535	
Status	u1			The status of Cosmos receiver service: 0: Disabled 1: Running
Padding	u1[.]			Padding bytes, see 4.1.5