Piksi Multi Settings

Firmware Version v1.1.27

1 Introduction

Piksi Multi has a number of settings that can be controlled by the end user via the provided Piksi Console or through the SBP binary message protocol. This Document serves to enumerate these settings with an explanation and any relevant notes. If a setting is listed as "Expert" in this document, the –expert command line argument must be passed to the Piksi Console in order to see or modify the value.

2 Settings Table

Grouping	Name	Description
acquisition		
	sbas enabled	Enable the SBAS constellation
	almanacs enabled	Enable the almanac-based acquisition
cell modem		
	enable	None
	device	None
	APN	Access point name (provided by cell carrier)
cn0 est		
	cutoff	cn0 cutoff
	alpha	cn0 estimation parameter
	cn0 shift	cn0 estimation parameter
	cn0 shift	cn0 estimation parameter
	nbw	cn0 estimation parameter
	scale	cn0 estimation parameter
	pri2sec threshold	Cn0 threshold to transition to 2nd stage tracking
	sec2pri threshold	Cn0 threshold to transition to out of 2nd stage tracking
ethernet		
	gateway	The default gateway for the IP config
	netmask	The netmask for the IP config
	ip address	The static IP address
	ip config mode	Ethernet configuration mode
ext events		
	sensitivity	Minimum time between events (0 = disabled)
	edge trigger	Select edges to trigger timestamped event capture
frontend		
	antenna bias	Enable/Disable 4.85V antenna bias
	antenna selection	Determines which antenna to use
imu		
	imu raw output	Enable/Disable IMU raw data output from onboard Bosch BMI160 IMU
	acc range	The approximate range of accelerations that can be measured
	gyro range	The approximate range of angular rate that can be measured
	imu rate	The data rate (in Hz) for IMU raw output
l1ca track		
	show unconfirmed	Show unconfirmed tracking channels in tracking state
	xcorr cof	cross correlation coefficient
	xcorr delta	cross correlation delta
	xcorr time	cross correlation time
l2cl track		
	show unconfirmed	Show unconfirmed tracking channels in tracking state
	xcorr cof	cross correlation coefficient
	xcorr delta	cross correlation delta
	xcorr time	cross correlation time
l2cm track		
	show unconfirmed	Show unconfirmed tracking channels in tracking state
	xcorr cof	cross correlation coefficient
	xcorr delta	cross correlation delta
	xcorr time	cross correlation time
ndb		
	erase l2c capb	Erase stored L2C capability mask during boot

	erase utc params	Erase stored UTC offset parameters during boot
	erase almanac wn	Erase stored almanac week numbers during boot
	erase almanac	Erase stored almanacs during boot
	erase ephemeris	Erase stored ephmerides during boot
	erase iono	Erase stored ionospheric parameters during boot
	erase lgf	Erase stored last fix information during boot
	valid eph acc	None
	valid alm acc	None
	lgf update m	Change in position required to update last good fix
	valid alm days	Number of days for which Almanac is valid
	lgf update s	Update period for navigation database last good fix
nmea		
	gpgga msg rate	Number of Solution Periods between GPGGA NMEA messages being sent
	gpgll msg rate	Number of Solution Periods between GPGLL NMEA messages being sent
	gpgsv msg rate	Number of Solution Periods between GPGSV NMEA messages being sent
	gphdt msg rate	Number of Solution Periods between GPHDT NMEA messages being sent
	gprmc msg rate	Number of Solution Periods between GPRMC NMEA messages being sent
	gpvtg msg rate	Number of Solution Periods between GPVTG NMEA messages being sent
	gpzda msg rate	Number of Solution Periods between GPZDA NMEA messages being sent
	gpgsa msg rate	Number of ticks between GPGSA NMEA messages being sent
ntrip		
	enable	Enable NTRIP client
	url	NTRIP URL to use
pps		
	frequency	Generate a pulse with the given frequency (maximum = 20 Hz)
	polarity	Logic level on output pin when the PPS is active
	width	Number of microseconds the PPS will remain active (allowed range from 1 to 999999 us)
	offset	Offset in microseconds between GPS time and the PPS
sbp		
	obs msg max size	Determines the maximum message length for raw observation sbp messages
simulator		
	mode mask	Determines the types of position outputs for the simulator
	radius	Radius of the circle around which the simulated Piksi will move
	base ecef x	Simulated base station position
	base ecef y	Simulated base station position
	base ecef z	Simulated base station position
	speed	Simulated tangential speed of Piksi
	phase sigma	Standard deviation of noise added to the simulated carrier phase
	pseudorange sigma	Standard deviation of noise added to the simulated pseudo range
	cn0 sigma	Standard deviation of noise added to the simulated signal to noise ratio
	speed sigma	Standard deviation of noise addition to simulated tangential speed
	pos sigma	Standard deviation of simulated single point position
	num sats	The number of satellites for the simulator
	enabled	Toggles the Piksi internal simulator on and off
skylark		
	enable	Enable Skylark client
	url	Skylark URL to use
solution		
	known baseline d	Determines the baseline vector for the "init known baseline" feature
	known baseline e	Determines the baseline vector for the "init known baseline" feature
	known baseline n	Determines the baseline vector for the "init known baseline" feature
	dgnss filter	Determines the type of carrier phase ambiguity resolution that the Piksi will attempt to achieve

	`disable klobuchar correction`	Disable Klobuchar ionospheric corrections
	`send heading`	Enables SBP heading output. Heading is calculated from base station to rover and represents the inverse tangent of the north and east components of the baseline
	`output every n obs`	Integer divisor of solution frequency for which the observations will be output
	`disable raim`	Receiver Autonomous Integrity Monitoring
	`heading offset`	Rotate the heading output
	`elevation mask`	SPP / RTK solution elevation mask
	`dgnss solution mode`	Selects the type of RTK solution to output
	`soln freq`	The frequency at which a position solution is computed
	`correction age max`	The maximum age of corrections for which an RTK solution will be generated
standalone logging		
	`file duration`	Duration of each logfile
	`max fill`	Maximum storage device usage
	`enable`	Standalone logging enabled
	`output directory`	Standalone logging path
surveyed position		
	`broadcast`	Broadcast surveyed base station position
	`surveyed alt`	Surveyed altitude of the Piksi's antenna
	`surveyed lat`	Surveyed latitude of the Piksi's antenna
	`surveyed lon`	Surveyed longitude of the Piksi's antenna
system info		
	`firmware build id`	Full build id for firmware version
	`firmware version`	Indicates the firmware version for the Local Piksi
	`nap channels`	Number of channels in SwiftNap FPGA
	`mac address`	The MAC address of the Piksi
	`sbp sender id`	The SBP sender ID for any messages sent by the device
	`uuid`	The UUID of the Piksi
	`serial number`	The serial number of the Piksi receiver
	`nap build date`	build date for SwiftNap FPGA bitstream
	`loader build date`	build date for boot loader (uboot)
	`pfwp build date`	build date for real-time GNSS firmware (piksi firmware)
	`nap build id`	build id for SwiftNap FPGA bitstream
	`loader build id`	build id for loader (uboot)
	`pfwp build id`	build id for real-time GNSS firmware (piksi firmware)
	`firmware build date`	firmware build date
	`hw revision`	hardware revision for Piksi
system monitor		
	`watchdog`	Enable hardware watchdog timer to reset the Piksi if it locks up for any reason
	`heartbeat period milliseconds`	Period for sending the SBP HEARTBEAT messages
tcp server0		
	`enabled sbp messages`	Configure which messages should be sent on the port
	`mode`	Communication protocol for tcp server 0 (port 55555)
tcp server1		
	`enabled sbp messages`	Configure which messages should be sent on the port
	`mode`	Communication protocol for tcp server 1 (port 55556)
track		
	`send trk detailed`	send detailed tracking state message
	`iq output mask`	Output raw I/Q correlations

	elevation mask	Tracking elevation mask
uart0		
	enabled sbp messages	Configure which messages should be sent on the port
	mode	Communication protocol for UART0
	flow control	Enable hardware flow control (RTS/CTS)
	baudrate	The Baud rate for the UART 0
uart1		
	enabled sbp messages	Configure which messages should be sent on the port
	mode	Communication protocol for UART 1
	flow control	Enable hardware flow control (RTS/CTS)
	baudrate	The Baud rate for the UART 1
usb0		
	enabled sbp messages	Configure which messages should be sent on the port
	mode	Communication protocol for USB0

Table 2.0.1: Summary of message types

3 Settings Detail

3.1 acquisition

3.1.1 sbas enabled

Description: Enable the SBAS constellation

Label	Value
group	acquisition
name	sbas enabled
expert	True
enumerated possible values	true,false
units	N/A
default value	False
type	boolean

Table 3.1.1: sbas enabled

Notes: None

3.1.2 almanacs enabled

Description: Enable the almanac-based acquisition

Label	Value
group	acquisition
name	almanacs enabled
expert	True
enumerated possible values	true,false
units	N/A
default value	False
type	boolean

Table 3.1.2: almanacs enabled

Notes: None

3.2 cell modem

3.2.1 enable

Description: None

Label	Value
group	cell modem
name	enable
expert	True
units	N/A
default value	False
type	boolean

Table 3.2.1: enable

3.2.2 device

Description: None

Label	Value
group	cell modem
name	device
expert	True
units	N/A
default value	ttyACM0
type	string

Table 3.2.2: device

3.2.3 APN

Description: Access point name (provided by cell carrier)

Label	Value
group	cell modem
expert	True
units	N/A
default value	INTERNET
type	string
name	APN

Table 3.2.3: APN

3.3 cn0 est

3.3.1 cutoff

Description: cn0 cutoff

Label	Value
group	cn0 est
name	cutoff
expert	True

Table 3.3.1: cutoff

3.3.2 alpha

Description: cn0 estimation parameter

Label	Value
group	cn0 est
name	alpha
expert	True

Table 3.3.2: alpha

3.3.3 cn0 shift

Description: cn0 estimation parameter

Label	Value
group	cn0 est
name	cn0 shift
expert	True

Table 3.3.3: cn0 shift

3.3.4 cn0 shift

Description: cn0 estimation parameter

Label	Value
group	cn0 est
name	cn0 shift
expert	True

Table 3.3.4: cn0 shift

3.3.5 nbw

Description: cn0 estimation parameter

Label	Value
group	cn0 est
name	nbw
expert	True

Table 3.3.5: nbw

3.3.6 scale

Description: cn0 estimation parameter

Label	Value
group	cn0 est
name	scale
expert	True

Table 3.3.6: scale

3.3.7 pri2sec threshold

Description: Cn0 threshold to transition to 2nd stage tracking

Label	Value
group	cn0 est
type	float
name	pri2sec threshold
expert	True

Table 3.3.7: pri2sec threshold

3.3.8 sec2pri threshold

Description: Cn0 threshold to transition to out of 2nd stage tracking

Label	Value
group	cn0 est
type	float
name	sec2pri threshold
expert	True

Table 3.3.8: sec2pri threshold

3.4 ethernet

3.4.1 gateway

Description: The default gateway for the IP config

Label	Value
group	ethernet
name	gateway
expert	False
units	N/A
default value	192.168.0.1
type	string

Table 3.4.1: gateway

Notes: The configured gateway in XXX.XXX.XXX.XXX format.

3.4.2 netmask

Description: The netmask for the IP config

Label	Value
group	ethernet
name	netmask
expert	False
units	N/A
default value	255.255.255.0
type	string

Table 3.4.2: netmask

Notes: The configured netmask in XXX.XXX.XXX.XXX format.

3.4.3 ip address

Description: The static IP address

Label	Value
group	ethernet
name	ip address
expert	False
units	N/A
default value	192.168.0.222
type	string

Table 3.4.3: ip address

Notes: The configured IP address in XXX.XXX.XXX.XXX format.

3.4.4 ip config mode

Description: Ethernet configuration mode

Label	Value
group	ethernet
name	ip config mode
expert	False
enumerated possible values	Static,DHCP
units	N/A
default value	Static
type	enum

Table 3.4.4: ip config mode

Notes: If DHCP is chosen the IP address will be assigned automatically. The DHCP assigned IP address cannot be viewed under the Settings tab, instead use the Advanced Tab and click on 'Refresh Network Status'.

3.5 ext events

3.5.1 sensitivity

Description: Minimum time between events (0 = disabled)

Label	Value
group	ext events
name	sensitivity
expert	False
enumerated possible values	None
units	us (microseconds)
default value	None
type	integer

Table 3.5.1: sensitivity

Notes: Any event that is triggered within the sensitivity window after the previous event will be ignored and no MSG_EXT_EVENT will be generated.

3.5.2 edge trigger

Description: Select edges to trigger timestamped event capture

Label	Value
group	ext events
name	edge trigger
expert	False
enumerated possible values	None,Rising,Falling,Both
units	N/A
default value	None
type	enum

Table 3.5.2: edge trigger

Notes: You can use this to record the exact time that some external event in your system occurred, e.g. camera shutter time. Upon detecting the event, Piksi will generate a MSG_EXT_EVENT message reporting the event, including a timestamp accurate to better than a microsecond.

3.6 frontend

3.6.1 antenna bias

Description: Enable/Disable 4.85V antenna bias

Label	Value
group	frontend
name	antenna bias
expert	False
units	N/A
type	bool

Table 3.6.1: antenna bias

Notes: Most active antennas require an antenna bias in order to power the amplifier in the antenna.

3.6.2 antenna selection

Description: Determines which antenna to use

Label	Value
group	frontend
name	antenna selection
expert	False
enumerated possible values	Primary,Secondary
units	N/A
default value	Primary
type	enum

Table 3.6.2: antenna selection

Notes: This setting selects the antenna input that should be used by the Piksi. Most Piksi Multi boards ship with only a "Primary" antenna connector, so this should always be set to "Primary."

3.7 imu

3.7.1 imu raw output

Description: Enable/Disable IMU raw data output from onboard Bosch BMI160 IMU

Label	Value
group	imu
expert	False
default value	False
type	boolean
name	imu raw output

Table 3.7.1: imu raw output

Notes: The IMU raw data can be seen in the Advanced Tab of the Swift Console

3.7.2 acc range

Description: The approximate range of accelerations that can be measured

Label	Value
group	imu
enumerated possible values	2, 4, 8, 16
expert	False
name	acc range
units	g
default value	8
type	enum

Table 3.7.2: acc range

Notes: When 2 g is chosen, it means the accelerometer is scaled to measure about +/- 2 g of acceleration. Refer to the IMU datasheet for detailed information.

3.7.3 gyro range

Description: The approximate range of angular rate that can be measured

Label	Value
group	imu
enumerated possible values	125, 250, 500, 1000, 2000
expert	False
name	gyro range
units	deg/s
default value	1000
type	enum

Table 3.7.3: gyro range

Notes: When 125 is chosen, it means the gyro is scaled to measure about +/- 125 deg/s of angular rate. Refer to the IMU datasheet for detailed information.

3.7.4 imu rate

Description: The data rate (in Hz) for IMU raw output

Label	Value
group	imu
enumerated possible values	25, 50, 100, 200
expert	False
name	imu rate
units	Hz
default value	50
type	enum

Table 3.7.4: imu rate

Notes: It is recommended to use Ethernet or USB for IMU data output for data rates over 25 Hz

3.8 l1ca track

3.8.1 show unconfirmed

Description: Show unconfirmed tracking channels in tracking state

Label	Value
group	l1ca track
type	boolean
name	show unconfirmed
expert	True

Table 3.8.1: show unconfirmed

3.8.2 xcorr cof

Description: cross correlation coefficient

Label	Value
group	l1ca track
type	float
name	xcorr cof
expert	True

Table 3.8.2: xcorr cof

3.8.3 xcorr delta

Description: cross correlation delta

Label	Value
group	l1ca track
type	float
name	xcorr delta
expert	True

Table 3.8.3: xcorr delta

3.8.4 xcorr time

Description: cross correlation time

Label	Value
group	l1ca track
type	float
name	xcorr time
expert	True

Table 3.8.4: xcorr time

3.9 l2cl track

3.9.1 show unconfirmed

Description: Show unconfirmed tracking channels in tracking state

Label	Value
group	l2cl track
type	bool
name	show unconfirmed
expert	True

Table 3.9.1: show unconfirmed

3.9.2 xcorr cof

Description: cross correlation coefficient

Label	Value
group	l2cl track
type	float
name	xcorr cof
expert	True

Table 3.9.2: xcorr cof

3.9.3 xcorr delta

Description: cross correlation delta

Label	Value
group	l2cl track
type	float
name	xcorr delta
expert	True

Table 3.9.3: xcorr delta

3.9.4 xcorr time

Description: cross correlation time

Label	Value
group	l2cl track
type	float
name	xcorr time
expert	True

Table 3.9.4: xcorr time

3.10 l2cm track

3.10.1 show unconfirmed

Description: Show unconfirmed tracking channels in tracking state

Label	Value
group	l2cm track
type	bool
name	show unconfirmed
expert	True

Table 3.10.1: show unconfirmed

3.10.2 xcorr cof

Description: cross correlation coefficient

Label	Value
group	l2cm track
type	float
name	xcorr cof
expert	True

Table 3.10.2: xcorr cof

3.10.3 xcorr delta

Description: cross correlation delta

Label	Value
group	l2cm track
type	float
name	xcorr delta
expert	True

Table 3.10.3: xcorr delta

3.10.4 xcorr time

Description: cross correlation time

Label	Value
group	l2cm track
type	float
name	xcorr time
expert	True

Table 3.10.4: xcorr time

3.11 ndb

3.11.1 erase l2c capb

Description: Erase stored L2C capability mask during boot

Label	Value
group	ndb
expert	True
type	boolean
name	erase l2c capb

Table 3.11.1: erase l2c capb

3.11.2 erase utc params

Description: Erase stored UTC offset parameters during boot

Label	Value
group	ndb
expert	True
type	boolean
name	erase utc params

Table 3.11.2: erase utc params

3.11.3 erase almanac wn

Description: Erase stored almanac week numbers during boot

Label	Value
group	ndb
expert	True
type	boolean
name	erase almanac wn

Table 3.11.3: erase almanac wn

3.11.4 erase almanac

Description: Erase stored almanacs during boot

Label	Value
group	ndb
expert	True
type	boolean
name	erase almanac

Table 3.11.4: erase almanac

3.11.5 erase ephemeris

Description: Erase stored ephmerides during boot

Label	Value
group	ndb
expert	True
type	boolean
name	erase ephemeris

Table 3.11.5: erase ephemeris

3.11.6 erase iono

Description: Erase stored ionospheric parameters during boot

Label	Value
group	ndb
expert	True
type	boolean
name	erase iono

Table 3.11.6: erase iono

3.11.7 erase lgf

Description: Erase stored last fix information during boot

Label	Value
group	ndb
expert	True
type	boolean
name	erase lgf

Table 3.11.7: erase lgf

3.11.8 valid eph acc

Description: None

Label	Value
group	ndb
name	valid eph acc
expert	True
units	meters
default value	100
type	int

Table 3.11.8: valid eph acc

3.11.9 valid alm acc

Description: None

Label	Value
group	ndb
name	valid alm acc
expert	True
units	meters
default value	5000
type	int

Table 3.11.9: valid alm acc

3.11.10 lgf update m

Description: Change in position required to update last good fix

Label	Value
group	ndb
name	lgf update m
expert	True
units	meters
default value	10000
type	int

Table 3.11.10: lgf update m

3.11.11 valid alm days

Description: Number of days for which Almanac is valid

Label	Value
group	ndb
name	valid alm days
expert	True
units	days
default value	6
type	int

Table 3.11.11: valid alm days

3.11.12 lgf update s

Description: Update period for navigation database last good fix

Label	Value
group	ndb
name	lgf update s
expert	True
units	seconds
default value	1800
type	int

Table 3.11.12: lgf update s

3.12 nmea

3.12.1 gpgga msg rate

Description: Number of Solution Periods between GPGGA NMEA messages being sent

Label	Value
group	nmea
name	gpgga msg rate
expert	False
units	Solution Period
default value	1
type	integer

Table 3.12.1: gpgga msg rate

Notes: This setting represents the integer number of solution periods between each transmission of the NMEA message. For example, if the solution rate is 10 Hz, and this rate setting is 2, the NMEA message will be sent every two solution epochs at a rate of 5 Hz. If this setting is 0, the msg will be suppressed.

3.12.2 gpgll msg rate

Description: Number of Solution Periods between GPGLL NMEA messages being sent

Label	Value
group	nmea
name	gpgll msg rate
expert	False
units	Solution Period
default value	10
type	integer

Table 3.12.2: gpgll msg rate

Notes: This setting represents the integer number of solution periods between each transmission of the NMEA message. For example, if the solution rate is 10 Hz, and this rate setting is 2, the NMEA message will be sent every two solution epochs at a rate of 5 Hz. If this setting is 0, the msg will be suppressed.

3.12.3 gpgsv msg rate

Description: Number of Solution Periods between GPGSV NMEA messages being sent

Label	Value
group	nmea
name	gpgsv msg rate
expert	False
units	Solution Period
default value	10
type	integer

Table 3.12.3: gpgsv msg rate

Notes: This setting represents the integer number of solution periods between each transmission of the NMEA message. For example, if the solution rate is 10 Hz, and this rate setting is 2, the NMEA message will be sent every two solution epochs at a rate of 5 Hz. If this setting is 0, the msg will be suppressed.

3.12.4 gphdt msg rate

Description: Number of Solution Periods between GPHDT NMEA messages being sent

Label	Value
group	nmea
name	gphdt msg rate
expert	False
units	Solution Period
default value	1
type	integer

Table 3.12.4: gphdt msg rate

Notes: This setting represents the integer number of solution periods between each transmission of the NMEA message. For example, if the solution rate is 10 Hz, and this rate setting is 2, the NMEA message will be sent every two solution epochs at a rate of 5 Hz. If this setting is 0, the msg will be suppressed.

3.12.5 gprmc msg rate

Description: Number of Solution Periods between GPRMC NMEA messages being sent

Label	Value
group	nmea
name	gprmc msg rate
expert	False
units	Solution Period
default value	10
type	integer

Table 3.12.5: gprmc msg rate

Notes: This setting represents the integer number of solution periods between each transmission of the NMEA message. For example, if the solution rate is 10 Hz, and this rate setting is 2, the NMEA message will be sent every two solution epochs at a rate of 5 Hz. If this setting is 0, the msg will be suppressed.

3.12.6 gpvtg msg rate

Description: Number of Solution Periods between GPVTG NMEA messages being sent

Label	Value
group	nmea
name	gpvtg msg rate
expert	False
units	Solution Period
default value	1
type	integer

Table 3.12.6: gpvtg msg rate

Notes: This setting represents the integer number of solution periods between each transmission of the NMEA message. For example, if the solution rate is 10 Hz, and this rate setting is 2, the NMEA message will be sent every two solution epochs at a rate of 5 Hz. If this setting is 0, the msg will be suppressed.

3.12.7 gpzda msg rate

Description: Number of Solution Periods between GPZDA NMEA messages being sent

Label	Value
group	nmea
name	gpzda msg rate
expert	False
enumerated possible values	None
units	Solution Period
default value	10
type	integer

Table 3.12.7: gpzda msg rate

Notes: This setting represents the integer number of solution periods between each transmission of the NMEA message. For example, if the solution rate is 10 Hz, and this rate setting is 2, the NMEA message will be sent every two solution epochs at a rate of 5 Hz. If this setting is 0, the msg will be suppressed.

3.12.8 gpgsa msg rate

Description: Number of ticks between GPGSA NMEA messages being sent

Label	Value
group	nmea
name	gpgsa msg rate
expert	False
enumerated possible values	None
units	Solution Periods
default value	10
type	integer

Table 3.12.8: gpgsa msg rate

Notes: This setting represents the integer number of solution periods between each transmission of the NMEA message. For example, if the solution rate is 10 Hz, and this rate setting is 2, the NMEA message will be sent every two solution epochs at a rate of 5 Hz. If this setting is 0, the msg will be suppressed.

3.13 ntrip

3.13.1 enable

Description: Enable NTRIP client

Label	Value
group	ntrip
name	enable
expert	True
enumerated possible values	True,False
units	N/A
default value	False
type	boolean

Table 3.13.1: enable

Notes: If True, NTRIP client will be used.

3.13.2 url

Description: NTRIP URL to use

Label	Value
group	ntrip
name	url
expert	True
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.13.2: url

Notes: URL to use with NTRIP client. NTRIP must be enabled to use this setting. URLs should be HTTP URLs with optional credentials, a port, and a mountpoint path such as username:password@example.com:2101/BAZ_RTCM3 or example.com:2101/BAZ_RTCM3.

3.14 pps

3.14.1 frequency

Description: Generate a pulse with the given frequency (maximum = 20 Hz)

Label	Value
group	pps
name	frequency
expert	False
enumerated possible values	None
units	Hz
default value	1.0
type	double

Table 3.14.1: frequency

Notes: None

3.14.2 polarity

Description: Logic level on output pin when the PPS is active

Label	Value
group	pps
name	polarity
expert	False
enumerated possible values	0, 1
units	Logic Level
default value	1
type	integer

Table 3.14.2: polarity

Notes: None

3.14.3 width

Description: Number of microseconds the PPS will remain active (allowed range from 1 to 999999 us)

Label	Value
group	pps
name	width
expert	False
enumerated possible values	None
units	us (microseconds)
default value	200000
type	integer

Table 3.14.3: width

Notes: None

3.14.4 offset

Description: Offset in microseconds between GPS time and the PPS

Label	Value
group	pps
name	offset
expert	False
enumerated possible values	None
units	us (microseconds)
default value	0
type	integer

Table 3.14.4: offset

Notes: None

3.15 sbp

3.15.1 obs msg max size

Description: Determines the maximum message length for raw observation sbp messages

Label	Value
group	sbp
name	obs msg max size
expert	False
enumerated possible values	None
units	bytes
default value	102
type	integer

Table 3.15.1: obs msg max size

Notes: This parameter is useful for tuning observation messages for compatibility with radio modems. Some serial modems will internally split serial packets for their protocol and this parameter allows the size of the message to be reduced as to prevent the modem from sending multiple packets. If the parameter exceeds 255 bytes (the maximum size of an SBP message), the Piksi firmware will ignore the parameter and use 255 bytes. If the parameter is set smaller than the size of one observation, the Piksi firmware will ignore the parameter and use the size of one observation as the maximum message size.

3.16 simulator

3.16.1 mode mask

Description: Determines the types of position outputs for the simulator

Label	Value
group	simulator
name	mode mask
expert	False
enumerated possible values	None
units	N/A
default value	$15(decimal), 0xF(hexadecimal)$
type	packed bitfield

Table 3.16.1: mode mask

Notes: bit 0 (decimal value 1) turns on single point position PVT simulated outputs
bit 1 (decimal value 2) turns on the satellite tracking simulated outputs
bit 2 (decimal value 4) turns on Float IAR simulated RTK outputs
bit 3 (decimal value 8) turns on Fixed IAR simulated RTK outputs

3.16.2 radius

Description: Radius of the circle around which the simulated Piksi will move

Label	Value
group	simulator
name	radius
expert	False
enumerated possible values	None
units	meters
default value	100
type	double

Table 3.16.2: radius

Notes: None

3.16.3 base ecef x

Description: Simulated base station position

Label	Value
group	simulator
name	base ecef x
expert	False
enumerated possible values	None
units	meters
default value	-2706098.845
type	double

Table 3.16.3: base ecef x

Notes: Earth Centered Earth Fixed (ECEF) x position of the simulated base station.

3.16.4 base ecef y

Description: Simulated base station position

Label	Value
group	simulator
name	base ecef y
expert	False
enumerated possible values	None
units	meters
default value	-4261216.475
type	double

Table 3.16.4: base ecef y

Notes: Earth Centered Earth Fixed (ECEF) y position of the simulated base station.

3.16.5 base ecef z

Description: Simulated base station position

Label	Value
group	simulator
name	base ecef z
expert	False
enumerated possible values	None
units	meters
default value	3885597.912
type	double

Table 3.16.5: base ecef z

Notes: Earth Centered Earth Fixed (ECEF) z position of the simulated base station.

3.16.6 speed

Description: Simulated tangential speed of Piksi

Label	Value
group	simulator
name	speed
expert	False
enumerated possible values	None
units	m/s
default value	4
type	double

Table 3.16.6: speed

Notes: None

3.16.7 phase sigma

Description: Standard deviation of noise added to the simulated carrier phase

Label	Value
group	simulator
name	phase sigma
expert	False
enumerated possible values	None
units	cycles
default value	0.03
type	double

Table 3.16.7: phase sigma

Notes: None

3.16.8 pseudorange sigma

Description: Standard deviation of noise added to the simulated pseudo range

Label	Value
group	simulator
name	pseudorange sigma
expert	False
enumerated possible values	None
units	meters
default value	4
type	double

Table 3.16.8: pseudorange sigma

Notes: None

3.16.9 cn0 sigma

Description: Standard deviation of noise added to the simulated signal to noise ratio

Label	Value
group	simulator
name	cn0 sigma
expert	False
enumerated possible values	None
units	dBm-Hz
default value	0.3
type	double

Table 3.16.9: cn0 sigma

Notes: None

3.16.10 speed sigma

Description: Standard deviation of noise addition to simulated tangential speed

Label	Value
group	simulator
name	speed sigma
expert	False
enumerated possible values	None
units	$meters^2/s^2$
default value	0.15
type	double

Table 3.16.10: speed sigma

Notes: None

3.16.11 pos sigma

Description: Standard deviation of simulated single point position

Label	Value
group	simulator
name	pos sigma
expert	False
enumerated possible values	None
units	$meters^2$
default value	1.5
type	double

Table 3.16.11: pos sigma

Notes: None

3.16.12 num sats

Description: The number of satellites for the simulator

Label	Value
group	simulator
name	num sats
expert	False
enumerated possible values	None
units	N/A
default value	9
type	integer

Table 3.16.12: num sats

Notes: None

3.16.13 enabled

Description: Toggles the Piksi internal simulator on and off

Label	Value
group	simulator
name	enabled
expert	False
enumerated possible values	true,false
units	N/A
default value	False
type	boolean

Table 3.16.13: enabled

Notes: The Piksi simulator will provide simulated outputs of a stationary base station and the Local Piksi moving in a circle around the base station. The simulator is intended to aid in system integration by providing realistic looking outputs but does not faithfully simulate every aspect of device operation.

3.17 skylark

3.17.1 enable

Description: Enable Skylark client

Label	Value
group	skylark
name	enable
expert	True
enumerated possible values	True,False
units	N/A
default value	False
type	boolean

Table 3.17.1: enable

Notes: If True, Skyark client will be used.

3.17.2 url

Description: Skylark URL to use

Label	Value
group	skylark
name	url
expert	True
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.17.2: url

Notes: URL to use with Skylark client. Skylark must be enabled to use this setting.

3.18 solution

3.18.1 known baseline d

Description: Determines the baseline vector for the "init known baseline" feature

Label	Value
group	solution
name	known baseline d
expert	False
enumerated possible values	None
units	meters
default value	0
type	double

Table 3.18.1: known baseline d

Notes: This sets the number of meters that the rover is Down from the base station when the "init known baseline" feature is used.

3.18.2 known baseline e

Description: Determines the baseline vector for the "init known baseline" feature

Label	Value
group	solution
name	known baseline e
expert	False
enumerated possible values	None
units	meters
default value	0
type	double

Table 3.18.2: known baseline e

Notes: This sets the number of meters that the rover is East from the base station when the "init known baseline" feature is used.

3.18.3 known baseline n

Description: Determines the baseline vector for the "init known baseline" feature

Label	Value
group	solution
name	known baseline n
expert	False
enumerated possible values	None
units	meters
default value	0
type	double

Table 3.18.3: known baseline n

Notes: This sets the number of meters that the rover is North from the base station when the "init known baseline" feature is used.

3.18.4 dgnss filter

Description: Determines the type of carrier phase ambiguity resolution that the Piksi will attempt to achieve

Label	Value
group	solution
name	dgnss filter
expert	True
enumerated possible values	Fixed,Float
units	N/A
default value	Fixed
type	enum

Table 3.18.4: dgnss filter

Notes: If "fixed", the Piksi will output a integer fixed ambiguity estimate. If no fixed solution is available, it will revert to the float solution. If "float", the device will only output the float ambiguity estimate. This settings is not used by Piksi Multi.

3.18.5 disable klobuchar correction

Description: Disable Klobuchar ionospheric corrections

Label	Value
group	solution
name	disable klobuchar correction
expert	True
enumerated possible values	True,False
units	N/A
default value	False
type	boolean

Table 3.18.5: disable klobuchar correction

Notes: If True, Klobuchar ionospheric corrections will not be applied.

3.18.6 send heading

Description: Enables SBP heading output.
Heading is calculated from base station to rover and represents
the inverse tangent of the north and east components of the baseline

Label	Value
group	solution
name	send heading
expert	False
enumerated possible values	True,False
units	N/A
default value	False
type	boolean

Table 3.18.6: send heading

Notes: No smoothing or additional processing is provided to improve heading output.
The heading feature requires the following additional settings
Time Matched Mode
Equal Observation rate between both base and rover
The observation rate will also determine the heading output rate and is defined as "soln freq" / "output every n obs"

3.18.7 output every n obs

Description: Integer divisor of solution frequency for which the observations will be output

Label	Value
group	solution
name	output every n obs
expert	False
enumerated possible values	None
units	N/A
default value	10
type	integer

Table 3.18.7: output every n obs

Notes: For instance, if the solution frequency (soln_freq) is 10 Hz, and the output_every_n_obs setting is 10, it means that the observation output will occur at a rate of 1 Hz. Since the observations are the information used by the Piksi receiving corrections from the connected Piksi, this determines the rate of information sharing for RTK solution output. This parameter is designed to tune the rate at which correction information is passed from one Piksi to the other as to efficiently use radio modem bandwidth and fit with user applications.

3.18.8 disable raim

Description: Receiver Autonomous Integrity Monitoring

Label	Value
group	solution
name	disable raim
expert	True
enumerated possible values	True,False
units	None
default value	False
type	boolean

Table 3.18.8: disable raim

Notes: If True, RAIM checks will not be performed.

3.18.9 heading offset

Description: Rotate the heading output

Label	Value
group	solution
name	heading offset
expert	False
enumerated possible values	N/A
units	degrees
default value	None
type	double

Table 3.18.9: heading offset

Notes: Adds an offset to the heading output to rotate the heading vector to align the baseline heading with a desired 0 heading. Valid values are -180.0 to 180.0 degrees

3.18.10 elevation mask

Description: SPP / RTK solution elevation mask

Label	Value
group	solution
name	elevation mask
expert	False
enumerated possible values	None
units	degrees
default value	10
type	float

Table 3.18.10: elevation mask

Notes: Satellites must be above the horizon by at least this angle before they will be used in a solution.

3.18.11 dgnss solution mode

Description: Selects the type of RTK solution to output

Label	Value
group	solution
name	dgnss solution mode
expert	False
enumerated possible values	Low Latency, Time Matched, No DGNSS
units	N/A
default value	Low Latency
type	enum

Table 3.18.11: dgnss solution mode

Notes: A "Low Latency" solution uses an internal model of anticipated satellite observations to provide RTK output with minimal latency but slightly reduced accuracy. "Low Latency" mode assumes that the base station is stationary. For applications where accuracy is desired over timeliness or when both Piksi's are moving, "Time Matched" mode can be chosen. This means that the RTK output will require a corresponding set of correction observations for each timestamp. When "No DGNSS" is chosen, no differential output will be attempted by Piksi.

3.18.12 soln freq

Description: The frequency at which a position solution is computed

Label	Value
group	solution
name	soln freq
expert	False
enumerated possible values	None
units	Hz
default value	10
type	integer

Table 3.18.12: soln freq

Notes: None

3.18.13 correction age max

Description: The maximum age of corrections for which an RTK solution will be generated

Label	Value
group	solution
name	correction age max
expert	False
enumerated possible values	None
units	seconds
default value	30
type	float

Table 3.18.13: correction age max

Notes: None

3.19 standalone logging

3.19.1 file duration

Description: Duration of each logfile

Label	Value
group	standalone logging
expert	False
units	minutes
default value	10
type	int
name	file duration

Table 3.19.1: file duration

Notes: Sets the number of minutes to output to each standalone log file before opening the next one. If this setting is changed while logging is enabled, it will go into effect immediately which will close the current file if its length exceeds the new duration.

3.19.2 max fill

Description: Maximum storage device usage

Label	Value
group	standalone logging
expert	False
units	percent
default value	95
type	int
name	max fill

Table 3.19.2: max fill

Notes: Sets a limit on how full the storage device can be before logging is stopped. If the drive is more than this percent full, no new log files will be created and a warning will be logged every 30 seconds. If this setting is changed while logging is enabled, it will go into effect on the next file that is created.

3.19.3 enable

Description: Standalone logging enabled

Label	Value
group	standalone logging
expert	False
units	N/A
default value	False
type	boolean
name	enable

Table 3.19.3: enable

Notes: Setting this to true triggers the logger to start trying to write logs to the output_directory. Setting this to false will immediately close the current file and stop logging. Reenabling logging will increment the session counter which is reflected in the log file names (see USB Logging File Output section).

3.19.4 output directory

Description: Standalone logging path

Label	Value
group	standalone logging
expert	False
units	N/A
default value	/media/sda1/
type	string
name	output directory

Table 3.19.4: output directory

Notes: Sets the paths in which to write logs. A warning will be logged every 30 seconds if this path is invalid or unavailable. The system will not create a folder that does not exist. If this setting is changed while logging is enabled, it will go into effect on the next file that is created.

3.20 surveyed position

3.20.1 broadcast

Description: Broadcast surveyed base station position

Label	Value
group	surveyed position
name	broadcast
expert	False
enumerated possible values	true,false
units	None
default value	False
type	boolean

Table 3.20.1: broadcast

Notes: This flag ultimately determines whether the SBP message with identifier MSG_BASE_POS_ECEF will be calculated and sent. Logically, setting this attribute to "true" sets the Local Piksi as a base station and configures the unit to send its surveyed position coordinates to the other Piksi(s) with which the base station is communicating. If "true", the remote Piksi that receives the surveyed position will calculate and communicate a pseudo absolute RTK position based upon the received position.

3.20.2 surveyed alt

Description: Surveyed altitude of the Piksi's antenna

Label	Value
group	surveyed position
name	surveyed alt
expert	False
enumerated possible values	None
units	meters
default value	0
type	Double

Table 3.20.2: surveyed alt

Notes: This setting represents the altitude of the Piksi's antenna above the WGS84 ellipsoid, in meters. If surveyed position "broadcast" is set to "true", this coordinate will be communicated to remote Piksis for use in calculating their pseudo-absolute position. This value should be precise to 1 cm. Any errors in the surveyed position will directly affect the pseudo-absolute RTK position measurement reported by the Rover.

3.20.3 surveyed lat

Description: Surveyed latitude of the Piksi's antenna

Label	Value
group	surveyed position
name	surveyed lat
expert	False
enumerated possible values	None
units	degrees
default value	0
type	Double

Table 3.20.3: surveyed lat

Notes: This setting represents the latitude of the local Piksi's antenna, expressed in decimal degrees relative to the equator (north = positive, south = negative). If surveyed position "broadcast" is set to "true", the coordinate will be communicated to remote Piksis for use in calculating their pseudo-absolute RTK position. The value should be as accurate as possible and should have precision to at least 7 digits following the decimal point. For reference, 1e-7 degrees of latitude is about 1.1 cm on the surface of the earth. Any errors in the surveyed position will directly affect the pseudo-absolute RTK position measurement reported by the remote Piksi.

3.20.4 surveyed lon

Description: Surveyed longitude of the Piksi's antenna

Label	Value
group	surveyed position
name	surveyed lon
expert	False
enumerated possible values	None
units	degrees
default value	0
type	Double

Table 3.20.4: surveyed lon

Notes: This setting represents the longitude of the local Piksi's antenna, expressed in decimal degrees relative to the Prime Meridian (east = positive, west = negative). If surveyed position "broadcast" is set to "true", the coordinate will be communicated to remote Piksis for use in calculating their pseudo-absolute RTK position. The value should be as accurate as possible and should have precision to at least 7 digits following the decimal point. For reference, 1e-7 degrees of longitude at 35 degree latitude is about 1 cm. Any errors in the surveyed position will directly affect the pseudo-absolute RTK position measurement reported by the remote Piksi.

3.21 system info

3.21.1 firmware build id

Description: Full build id for firmware version

Label	Value
group	system info
name	firmware build id
expert	False
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.1: firmware build id

Notes: For user generated images, this will appear the same as the command "git describe –dirty". This is a read only setting.

3.21.2 firmware version

Description: Indicates the firmware version for the Local Piksi

Label	Value
group	system info
name	firmware version
expert	False
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.2: firmware version

Notes: The git hash is removed from this version identifier. This is a read only setting.

3.21.3 nap channels

Description: Number of channels in SwiftNap FPGA

Label	Value
group	system info
name	nap channels
expert	True
enumerated possible values	None
units	N/A
default value	24
type	string

Table 3.21.3: nap channels

Notes: This is a read only setting.

3.21.4 mac address

Description: The MAC address of the Piksi

Label	Value
group	system info
name	mac address
expert	False
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.4: mac address

Notes: This is a read only setting.

3.21.5 sbp sender id

Description: The SBP sender ID for any messages sent by the device

Label	Value
group	system info
name	sbp sender id
expert	False
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.5: sbp sender id

Notes: ID value is equal to the lower 16 bits of the UUID. This is a read only setting.

3.21.6 uuid

Description: The UUID of the Piksi

Label	Value
group	system info
name	uuid
expert	False
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.6: uuid

Notes: The UUID is a universally unique identifier for this Piksi. The lower 16 bits of the UUID are used for the SBP Sender ID. This is a read only setting.

3.21.7 serial number

Description: The serial number of the Piksi receiver

Label	Value
group	system info
name	serial number
expert	False
enumerated possible values	None
units	N/A
default value	N/A
type	integer

Table 3.21.7: serial number

Notes: This number should match the number on the barcode on the board and cannot be modified.

3.21.8 nap build date

Description: build date for SwiftNap FPGA bitstream

Label	Value
group	system info
name	nap build date
expert	True
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.8: nap build date

Notes: This is a read only setting.

3.21.9 loader build date

Description: build date for boot loader (uboot)

Label	Value
group	system info
name	loader build date
expert	True
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.9: loader build date

Notes: This is a read only setting.

3.21.10 pfwp build date

Description: build date for real-time GNSS firmware (piksi_firmware)

Label	Value
group	system info
name	pfwp build date
expert	True
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.10: pfwp build date

Notes: This is a read only setting.

3.21.11 nap build id

Description: build id for SwiftNap FPGA bitstream

Label	Value
group	system info
name	nap build id
expert	True
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.11: nap build id

Notes: This is a read only setting.

3.21.12 loader build id

Description: build id for loader (uboot)

Label	Value
group	system info
name	loader build id
expert	True
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.12: loader build id

Notes: This is a read only setting

3.21.13 pfwp build id

Description: build id for real-time GNSS firmware (piksi_firmware)

Label	Value
group	system info
name	pfwp build id
expert	True
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.13: pfwp build id

Notes: This is a read only setting.

3.21.14 firmware build date

Description: firmware build date

Label	Value
group	system info
name	firmware build date
expert	False
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.14: firmware build date

Notes: This is a read only setting.

3.21.15 hw revision

Description: hardware revision for Piksi

Label	Value
group	system info
name	hw revision
expert	False
enumerated possible values	None
units	N/A
default value	N/A
type	string

Table 3.21.15: hw revision

Notes: This is a read only setting.

3.22 system monitor

3.22.1 watchdog

Description: Enable hardware watchdog timer to reset the Piksi if it locks up for any reason

Label	Value
group	system monitor
name	watchdog
expert	True
enumerated possible values	true,false
units	N/A
type	boolean

Table 3.22.1: watchdog

Notes: You must reset the Piksi for changes to this setting to take effect.

3.22.2 heartbeat period milliseconds

Description: Period for sending the SBP_HEARTBEAT messages

Label	Value
group	system monitor
name	heartbeat period milliseconds
expert	False
enumerated possible values	None
units	ms
default value	1000
type	integer

Table 3.22.2: heartbeat period milliseconds

Notes: None

3.23 tcp server0

3.23.1 enabled sbp messages

Description: Configure which messages should be sent on the port

Label	Value
group	tcp server0
name	enabled sbp messages
expert	False
units	N/A
default value	blank - all messages are enabled
type	string

Table 3.23.1: enabled sbp messages

Notes: The enabled sbp messages settings is a list of message types and rate divisors that will be sent out of the interface. If left blank, all messages will be sent. If not blank, a comma separated list of SBP message IDs in base 10 integer format should be provided. Optionally, a divisor can be specified after the / character for each id. For example, an entry of 3456/10 would provide message with ID 3456 at 1/10th the normal rate. For Ethernet, the default value is optimal for logging and communication with the console.

3.23.2 mode

Description: Communication protocol for tcp server 0 (port 55555)

Label	Value
group	tcp server0
name	mode
expert	False
enumerated possible values	SBP,NMEA,RTCM3 IN
units	N/A
default value	SBP (Swift Binary Protocol)
type	enum

Table 3.23.2: mode

Notes: "SBP" configures the interface to transmit messages specified in the 'enabled_sbp_messages' setting and to receive incoming SBP messages. If the mode is changed from SBP the console will no longer be able to communicate over the interface.

"NMEA OUT" configures the interface to transmit the GGA, RMC, GGL, VTG, ZDA, GSA, and GSV NMEA 0183 messages. The interface will not receive incoming messages.

"RTCMv3.1 IN" configures the interface to receive RTK corrections in RTCM format. The interface will receive 1001, 1002, 1003, 1004, 1005, 1006 and 1007 RTCMv3.1 messages and will not transmit or receive any other messages.

3.24 tcp server1

3.24.1 enabled sbp messages

Description: Configure which messages should be sent on the port

Label	Value
group	tcp server1
name	enabled sbp messages
expert	False
units	N/A
default value	blank - all messages are enabled
type	string

Table 3.24.1: enabled sbp messages

Notes: The enabled sbp messages settings is a list of message types and rate divisors that will be sent out of the interface. If left blank, all messages will be sent. If not blank, a comma separated list of SBP message IDs in base 10 integer format should be provided. Optionally, a divisor can be specified after the / character for each id. For example, an entry of 3456/10 would provide message with ID 3456 at 1/10th the normal rate. For Ethernet, the default value is optimal for logging and communication with the console.

3.24.2 mode

Description: Communication protocol for tcp server 1 (port 55556)

Label	Value
group	tcp server1
name	mode
expert	False
enumerated possible values	SBP,NMEA,RTCM3 IN
units	N/A
default value	SBP (Swift Binary Protocol)
type	enum

Table 3.24.2: mode

Notes: "SBP" configures the interface to transmit messages specified in the 'enabled_sbp_messages' setting and to receive incoming SBP messages. If the mode is changed from SBP the console will no longer be able to communicate over the interface.

"NMEA OUT" configures the interface to transmit the GGA, RMC, GGL, VTG, ZDA, GSA, and GSV NMEA 0183 messages. The interface will not receive incoming messages.

"RTCMv3.1 IN" configures the interface to receive RTK corrections in RTCM format. The interface will receive 1001, 1002, 1003, 1004, 1005, 1006 and 1007 RTCMv3.1 messages and will not transmit or receive any other messages.

3.25 track

3.25.1 send trk detailed

Description: send detailed tracking state message

Label	Value
group	track
expert	True
default value	False
type	boolean
name	send trk detailed

Table 3.25.1: send trk detailed

Notes: None

3.25.2 iq output mask

Description: Output raw I/Q correlations

Label	Value
group	track
name	iq output mask
expert	True
enumerated possible values	None
units	N/A
default value	None
type	integer

Table 3.25.2: iq output mask

Notes: Bitmask of channel IDs (not PRNs)

3.25.3 elevation mask

Description: Tracking elevation mask

Label	Value
group	track
name	elevation mask
expert	True
enumerated possible values	None
units	degrees
default value	0
type	float

Table 3.25.3: elevation mask

Notes: Satellites must be above the horizon by at least this angle before they will be tracked.

3.26 uart0

3.26.1 enabled sbp messages

Description: Configure which messages should be sent on the port

Label	Value
group	uart0
name	enabled sbp messages
expert	False
units	N/A
default value	68, 72, 73, 74, 65535
type	string

Table 3.26.1: enabled sbp messages

Notes: The enabled sbp messages settings is a list of message types and rate divisors that will be sent out of the interface. If left blank, all messages will be sent. If not blank, a comma separated list of SBP message IDs in base 10 integer format should be provided. Optionally, a divisor can be specified after the / character for each id. For example, an entry of 3456/10 would provide message with ID 3456 at 1/10th the normal rate. For uart1, the default value is optimal for logging and communication with the console.

3.26.2 mode

Description: Communication protocol for UART0

Label	Value
group	uart0
name	mode
expert	False
enumerated possible values	SBP,NMEA OUT,RTCM3v3.1 IN
units	N/A
default value	SBP (Swift Binary Protocol)
type	enum

Table 3.26.2: mode

Notes: "SBP" configures the interface to transmit messages specified in the 'enabled_sbp_messages' setting and to receive incoming SBP messages. If the mode is changed from SBP the console will no longer be able to communicate over the interface.

"NMEA OUT" configures the interface to transmit the GGA, RMC, GGL, VTG, ZDA, GSA, and GSV NMEA 0183 messages. The interface will not receive incoming messages.

"RTCMv3.1 IN" configures the interface to receive RTK corrections in RTCM format. The interface will receive 1001, 1002, 1003, 1004, 1005, 1006 and 1007 RTCMv3.1 messages and will not transmit or receive any other messages.

3.26.3 flow control

Description: Enable hardware flow control (RTS/CTS)

Label	Value
group	uart0
name	flow control
expert	False
enumerated possible values	None
units	NA
default value	False
type	boolean

Table 3.26.3: flow control

Notes: None

3.26.4 baudrate

Description: The Baud rate for the UART 0

Label	Value
group	uart0
name	baudrate
expert	False
enumerated possible values	None
units	bps
default value	115200
type	integer

Table 3.26.4: baudrate

Notes: None

3.27 uart1

3.27.1 enabled sbp messages

Description: Configure which messages should be sent on the port

Label	Value
group	uart1
name	enabled sbp messages
expert	False
units	N/A
default value	blank - all messages are enabled
type	string

Table 3.27.1: enabled sbp messages

Notes: The enabled sbp messages settings is a list of message types and rate divisors that will be sent out of the interface. If left blank, all messages will be sent. If not blank, a comma separated list of SBP message IDs in base 10 integer format should be provided. Optionally, a divisor can be specified after the / character for each id. For example, an entry of 3456/10 would provide message with ID 3456 at 1/10th the normal rate. For uart1, the default value is optimal for logging and communication with the console.

3.27.2 mode

Description: Communication protocol for UART 1

Label	Value
group	uart1
name	mode
expert	False
enumerated possible values	SBP,NMEA OUT,RTCM3v3.1 IN
units	N/A
default value	SBP (Swift Binary Protocol)
type	enum

Table 3.27.2: mode

Notes: "SBP" configures the interface to transmit messages specified in the 'enabled_sbp_messages' setting and to receive incoming SBP messages. If the mode is changed from SBP the console will no longer be able to communicate over the interface.

"NMEA OUT" configures the interface to transmit the GGA, RMC, GGL, VTG, ZDA, GSA, and GSV NMEA 0183 messages. The interface will not receive incoming messages.

"RTCMv3.1 IN" configures the interface to receive RTK corrections in RTCM format. The interface will receive 1001, 1002, 1003, 1004, 1005, 1006 and 1007 RTCMv3.1 messages and will not transmit or receive any other messages.

3.27.3 flow control

Description: Enable hardware flow control (RTS/CTS)

Label	Value
group	uart1
name	flow control
expert	False
enumerated possible values	None
units	NA
default value	False
type	boolean

Table 3.27.3: flow control

Notes: None

3.27.4 baudrate

Description: The Baud rate for the UART 1

Label	Value
group	uart1
name	baudrate
expert	False
enumerated possible values	None
units	bps
default value	115200
type	integer

Table 3.27.4: baudrate

Notes: None

3.28 usb0

3.28.1 enabled sbp messages

Description: Configure which messages should be sent on the port

Label	Value
group	usb0
name	enabled sbp messages
expert	False
units	N/A
default value	blank - all messages are enabled
type	string

Table 3.28.1: enabled sbp messages

Notes: The enabled sbp messages settings is a list of message types and rate divisors that will be sent out of the interface. If left blank, all messages will be sent. If not blank, a comma separated list of SBP message IDs in base 10 integer format should be provided. Optionally, a divisor can be specified after the / character for each id. For example, an entry of 3456/10 would provide message with ID 3456 at 1/10th the normal rate. For uart1, the default value is optimal for logging and communication with the console.

3.28.2 mode

Description: Communication protocol for USB0

Label	Value
group	usb0
name	mode
expert	False
enumerated possible values	SBP,NMEA,RTCM3 IN
units	N/A
default value	SBP (Swift Binary Protocol)
type	enum

Table 3.28.2: mode

Notes: "SBP" configures the interface to transmit messages specified in the 'enabled_sbp_messages' setting and to receive incoming SBP messages. If the mode is changed from SBP the console will no longer be able to communicate over the interface.

"NMEA OUT" configures the interface to transmit the GGA, RMC, GGL, VTG, ZDA, GSA, and GSV NMEA 0183 messages. The interface will not receive incoming messages.

"RTCMv3.1 IN" configures the interface to receive RTK corrections in RTCM format. The interface will receive 1002, 1004, 1005, and 1006 RTCMv3.1 messages and will not transmit or receive any other messages.