Piksi Multi Settings

Firmware Version v1.2.14

1 Introduction

Piksi® Multi has a number of settings that can be controlled by the end user via the provided Swift Console or through the SBP binary message protocol. This document serves to enumerate these settings and provide a detailed description of the setting plus any relevant notes. If a setting is listed as "Expert" in this document, the "Show Advanced Settings" checkbox must be checked or the –expert command line argument must be passed to the Swift Console in order to see or modify the value. Settings listed as "readonly" cannot be modified by the user and are available for information only.

2   Settings Table

Grouping	Name	Description
acquisition		
	glonass acquisition enabled	Enable the GLONASS acquisition and raw measurements
	almanacs enabled	Enable the almanac-based acquisition
cell modem		
	debug	Additional debug messages for cell modem
	enable	None
	device	None
	APN	Access point name (provided by cell carrier)
	modem type	The type of cell modem in use.
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 0		
	sensitivity	Minimum time between events (0 = disabled)
	edge trigger	Select edges to trigger timestamped event capture
ext events 1		
	sensitivity	Duro only. Minimum time between events (0 = disabled)
	edge trigger	Duro only. Select edges to trigger timestamped event capture
ext events 2		
	sensitivity	Duro only. Minimum time between events (0 = disabled)
	edge trigger	Duro only. Select edges to trigger timestamped event capture
frontend		
	antenna bias	Enable/Disable 4.85V antenna bias
	antenna selection	Determines which antenna to use
glo 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
glo l2ca 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
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
	`gsa msg rate`	Number of Solution Periods between GSA 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		
	dgnss filter	Determines the type of carrier phase ambiguity resolution that the Piksi will attempt to achieve
	disable klobuchar correction	Disable Klobuchar ionospheric corrections
	glonass measurement std downweight factor	Down weights GLONASS measurements by a given factor in the navigation filter
	enable glonass	Enable GLONASS measurement processing in the navigation filter
	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
	hw version	Hardware version number
	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
	`spectrum analyzer`	Enable spectrum analyzer
	`heartbeat period milliseconds`	Period for sending the SBP HEARTBEAT messages
tcp client0		
	`enabled sbp messages`	Configure which messages should be sent on the port
	`address`	TCP/IP address for tcp client 0.
	`mode`	Communication protocol for tcp client 0
tcp client1		
	`enabled sbp messages`	Configure which messages should be sent on the port
	`address`	TCP/IP address for tcp client 1
	`mode`	Communication protocol for tcp client 1
tcp server0		
	`enabled sbp messages`	Configure which messages should be sent on the port
	`port`	TCP/IP port for tcp server 0
	`mode`	Communication protocol for tcp server 0 (port 55555)
tcp server1		
	`enabled sbp messages`	Configure which messages should be sent on the port
	`port`	TCP/IP port for tcp server 1
	`mode`	Communication protocol for tcp server 1 (port 55556)
track		
	`send trk detailed`	send detailed tracking state message
	`max pll integration time ms`	Controls maximum possible integration time for a measurement
	`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 glonass acquisition enabled

Description: Enable the GLONASS acquisition and raw measurements

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

Table 3.1.1: glonass acquisition enabled

Notes: This is a precondition for navigation with GLONASS.

3.1.2 almanacs enabled

Description: Enable the almanac-based acquisition

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

Table 3.1.2: almanacs enabled

Notes: None

3.2 cell modem

3.2.1 debug

Description: Additional debug messages for cell modem

Label	Value
readonly	False
group	cell modem
name	debug
expert	True
default value	False
type	boolean

Table 3.2.1: debug

3.2.2 enable

Description: None

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

Table 3.2.2: enable

3.2.3 device

Description: None

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

Table 3.2.3: device

3.2.4   APN

Description: Access point name (provided by cell carrier)

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

Table 3.2.4: APN

3.2.5   modem type

Description: The type of cell modem in use.

Label	Value
group	cell modem
name	modem type
expert	True
readonly	False
default value	GSM
type	enum
enumerated possible values	GSM,CDMA

Table 3.2.5: modem type

3.3   ethernet

3.3.1   gateway

Description: The default gateway for the IP config

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

Table 3.3.1: gateway

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

3.3.2   netmask

Description: The netmask for the IP config

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

Table 3.3.2: netmask

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

3.3.3   ip address

Description: The static IP address

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

Table 3.3.3: ip address

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

3.3.4   ip config mode

Description: Ethernet configuration mode

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

Table 3.3.4: 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'.

3.4   ext events 0

3.4.1   sensitivity

Description: Minimum time between events (0 = disabled)

Label	Value
group	ext events 0
name	sensitivity
expert	False
readonly	False
units	us (microseconds)
default value	0
type	integer
enumerated possible values	None

Table 3.4.1: 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.

3.4.2   edge trigger

Description: Select edges to trigger timestamped event capture

Label	Value
group	ext events 0
name	edge trigger
expert	False
readonly	False
units	N/A
default value	None
type	enum
enumerated possible values	None,Rising,Falling,Both

Table 3.4.2: 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.

3.5 ext events 1

3.5.1 sensitivity

Description: Duro only. Minimum time between events (0 = disabled)

Label	Value
group	ext events 1
name	sensitivity
expert	True
readonly	False
units	us (microseconds)
default value	0
type	integer
enumerated possible values	None

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: Duro only. Select edges to trigger timestamped event capture

Label	Value
group	ext events 1
name	edge trigger
expert	True
readonly	False
units	N/A
default value	None
type	enum
enumerated possible values	None,Rising,Falling,Both

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   ext events 2

3.6.1   sensitivity

Description: Duro only. Minimum time between events (0 = disabled)

Label	Value
group	ext events 2
name	sensitivity
expert	True
readonly	False
units	us (microseconds)
default value	0
type	integer
enumerated possible values	None

Table 3.6.1: 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.

3.6.2   edge trigger

Description: Duro only. Select edges to trigger timestamped event capture

Label	Value
group	ext events 2
name	edge trigger
expert	True
readonly	False
units	N/A
default value	None
type	enum
enumerated possible values	None,Rising,Falling,Both

Table 3.6.2: 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.

3.7   frontend

3.7.1   antenna bias

Description: Enable/Disable 4.85V antenna bias

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

Table 3.7.1: antenna bias

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

3.7.2   antenna selection

Description: Determines which antenna to use

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

Table 3.7.2: 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."

3.8 glo l1ca track

3.8.1 show unconfirmed

Description: Show unconfirmed tracking channels in tracking state

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

Table 3.8.1: show unconfirmed

3.8.2 xcorr cof

Description: cross correlation coefficient

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

Table 3.8.2: xcorr cof

3.8.3   xcorr delta

Description: cross correlation delta

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

Table 3.8.3: xcorr delta

3.8.4   xcorr time

Description: cross correlation time

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

Table 3.8.4: xcorr time

3.9   glo l2ca track

3.9.1   show unconfirmed

Description: Show unconfirmed tracking channels in tracking state

Label	Value
readonly	False
group	glo l2ca track
name	show unconfirmed
expert	True
type	boolean

Table 3.9.1: show unconfirmed

3.9.2   xcorr cof

Description: cross correlation coefficient

Label	Value
readonly	False
group	glo l2ca track
name	xcorr cof
expert	True
type	float

Table 3.9.2: xcorr cof

3.9.3   xcorr delta

Description: cross correlation delta

Label	Value
readonly	False
group	glo l2ca track
name	xcorr delta
expert	True
type	float

Table 3.9.3: xcorr delta

3.9.4   xcorr time

Description: cross correlation time

Label	Value
readonly	False
group	glo l2ca track
name	xcorr time
expert	True
type	float

Table 3.9.4: xcorr time

3.10   imu

3.10.1   imu raw output

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

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

Table 3.10.1: imu raw output

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

3.10.2   acc range

Description: The approximate range of accelerations that can be measured

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

Table 3.10.2: 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.

3.10.3   gyro range

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

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

Table 3.10.3: 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.

3.10.4   imu rate

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

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

Table 3.10.4: imu rate

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

3.11   l1ca track

3.11.1   show unconfirmed

Description: Show unconfirmed tracking channels in tracking state

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

Table 3.11.1: show unconfirmed

3.11.2   xcorr cof

Description: cross correlation coefficient

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

Table 3.11.2: xcorr cof

3.11.3   xcorr delta

Description: cross correlation delta

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

Table 3.11.3: xcorr delta

3.11.4   xcorr time

Description: cross correlation time

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

Table 3.11.4: xcorr time

3.12   l2cl track

3.12.1   show unconfirmed

Description: Show unconfirmed tracking channels in tracking state

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

Table 3.12.1: show unconfirmed

3.12.2   xcorr cof

Description: cross correlation coefficient

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

Table 3.12.2: xcorr cof

3.12.3   xcorr delta

Description: cross correlation delta

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

Table 3.12.3: xcorr delta

3.12.4   xcorr time

Description: cross correlation time

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

Table 3.12.4: xcorr time

3.13   l2cm track

3.13.1   show unconfirmed

Description: Show unconfirmed tracking channels in tracking state

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

Table 3.13.1: show unconfirmed

3.13.2   xcorr cof

Description: cross correlation coefficient

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

Table 3.13.2: xcorr cof

3.13.3   xcorr delta

Description: cross correlation delta

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

Table 3.13.3: xcorr delta

3.13.4   xcorr time

Description: cross correlation time

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

Table 3.13.4: xcorr time

3.14   ndb

3.14.1   erase l2c capb

Description: Erase stored L2C capability mask during boot

Label	Value
readonly	False
group	ndb
name	erase l2c capb
expert	True
default value	False
type	boolean

Table 3.14.1: erase l2c capb

3.14.2   erase utc params

Description: Erase stored UTC offset parameters during boot

Label	Value
readonly	False
group	ndb
name	erase utc params
expert	True
default value	False
type	boolean

Table 3.14.2: erase utc params

3.14.3   erase almanac wn

Description: Erase stored almanac week numbers during boot

Label	Value
readonly	False
group	ndb
name	erase almanac wn
expert	True
default value	False
type	boolean

Table 3.14.3: erase almanac wn

3.14.4   erase almanac

Description: Erase stored almanacs during boot

Label	Value
readonly	False
group	ndb
name	erase almanac
expert	True
default value	False
type	boolean

Table 3.14.4: erase almanac

3.14.5   erase ephemeris

Description: Erase stored ephmerides during boot

Label	Value
readonly	False
group	ndb
name	erase ephemeris
expert	True
type	boolean

Table 3.14.5: erase ephemeris

3.14.6   erase iono

Description: Erase stored ionospheric parameters during boot

Label	Value
readonly	False
group	ndb
name	erase iono
expert	True
default value	False
type	boolean

Table 3.14.6: erase iono

3.14.7   erase lgf

Description: Erase stored last fix information during boot

Label	Value
readonly	False
group	ndb
name	erase lgf
expert	True
type	boolean

Table 3.14.7: erase lgf

3.14.8   valid eph acc

Description: None

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

Table 3.14.8: valid eph acc

3.14.9   valid alm acc

Description: None

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

Table 3.14.9: valid alm acc

3.14.10   lgf update m

Description: Change in position required to update last good fix

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

Table 3.14.10: lgf update m

3.14.11   valid alm days

Description: Number of days for which Almanac is valid

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

Table 3.14.11: valid alm days

3.14.12   lgf update s

Description: Update period for navigation database last good fix

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

Table 3.14.12: lgf update s

3.15   nmea

3.15.1   gpgga msg rate

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

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

Table 3.15.1: 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.

3.15.2   gpgll msg rate

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

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

Table 3.15.2: 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.

3.15.3   gpgsv msg rate

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

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

Table 3.15.3: 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.

3.15.4 gphdt msg rate

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

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

Table 3.15.4: 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.

3.15.5 gprmc msg rate

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

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

Table 3.15.5: 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.

3.15.6   gpvtg msg rate

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

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

Table 3.15.6: 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.

3.15.7   gpzda msg rate

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

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

Table 3.15.7: 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.

3.15.8   gsa msg rate

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

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

Table 3.15.8: gsa 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.

3.16   ntrip

3.16.1   enable

Description: Enable NTRIP client

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

Table 3.16.1: enable

Notes: If True, NTRIP client will be used.

3.16.2 url

Description: NTRIP URL to use

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

Table 3.16.2: 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.

3.17 pps

3.17.1 frequency

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

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

Table 3.17.1: frequency

Notes: None

3.17.2   polarity

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

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

Table 3.17.2: polarity

Notes: None

3.17.3   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
readonly	False
units	us (microseconds)
default value	200000
type	integer
enumerated possible values	None

Table 3.17.3: width

Notes: None

3.17.4   offset

Description: Offset in microseconds between GPS time and the PPS

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

Table 3.17.4: offset

Notes: None

3.18   sbp

3.18.1   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
readonly	False
units	bytes
default value	255
type	integer
enumerated possible values	None

Table 3.18.1: 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.

3.19   simulator

3.19.1   mode mask

Description: Determines the types of position outputs for the simulator

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

Table 3.19.1: 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

3.19.2   radius

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

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

Table 3.19.2: radius

Notes: None

3.19.3   base ecef x

Description: Simulated base station position

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

Table 3.19.3: base ecef x

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

3.19.4   base ecef y

Description: Simulated base station position

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

Table 3.19.4: base ecef y

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

3.19.5   base ecef z

Description: Simulated base station position

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

Table 3.19.5: base ecef z

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

3.19.6   speed

Description: Simulated tangential speed of Piksi

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

Table 3.19.6: speed

Notes: None

3.19.7   phase sigma

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

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

Table 3.19.7: phase sigma

Notes: None

3.19.8   pseudorange sigma

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

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

Table 3.19.8: pseudorange sigma

Notes: None

3.19.9   cn0 sigma

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

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

Table 3.19.9: cn0 sigma

Notes: None

3.19.10   speed sigma

Description: Standard deviation of noise addition to simulated tangential speed

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

Table 3.19.10: speed sigma

Notes: None

3.19.11   pos sigma

Description: Standard deviation of simulated single point position

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

Table 3.19.11: pos sigma

Notes: None

3.19.12   num sats

Description: The number of satellites for the simulator

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

Table 3.19.12: num sats

Notes: None

3.19.13   enabled

Description: Toggles the Piksi internal simulator on and off

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

Table 3.19.13: 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.

3.20   skylark

3.20.1   enable

Description: Enable Skylark client

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

Table 3.20.1: enable

Notes: If True, Skyark client will be used.

3.20.2   url

Description: Skylark URL to use

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

Table 3.20.2: url

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

3.21   solution

3.21.1   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
readonly	False
units	N/A
default value	Fixed
type	enum
enumerated possible values	Fixed,Float

Table 3.21.1: 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.

3.21.2   disable klobuchar correction

Description: Disable Klobuchar ionospheric corrections

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

Table 3.21.2: disable klobuchar correction

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

3.21.3   glonass measurement std downweight factor

Description: Down weights GLONASS measurements by a given factor in the navigation filter

Label	Value
group	solution
name	glonass measurement std downweight factor
expert	True
readonly	False
units	N/A
default value	N/A
type	float
enumerated possible values	None

Table 3.21.3: glonass measurement std downweight factor

Notes: This parameter down weights GLONASS observations relative to GPS observations by this factor.

3.21.4   enable glonass

Description: Enable GLONASS measurement processing in the navigation filter

Label	Value
group	solution
name	enable glonass
expert	False
readonly	False
units	N/A
type	boolean
enumerated possible values	True,False

Table 3.21.4: enable glonass

Notes: If set to True, GLONASS measurements are processed in the navigation filter for SPP and RTK.

3.21.5   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
readonly	False
units	N/A
default value	False
type	boolean
enumerated possible values	True,False

Table 3.21.5: 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"

3.21.6   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
readonly	False
units	N/A
default value	2
type	integer
enumerated possible values	None

Table 3.21.6: 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.

3.21.7   disable raim

Description: Receiver Autonomous Integrity Monitoring

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

Table 3.21.7: disable raim

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

3.21.8   heading offset

Description: Rotate the heading output

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

Table 3.21.8: 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

3.21.9   elevation mask

Description: SPP / RTK solution elevation mask

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

Table 3.21.9: elevation mask

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

3.21.10   dgnss solution mode

Description: Selects the type of RTK solution to output

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

Table 3.21.10: 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.

3.21.11   soln freq

Description: The frequency at which a position solution is computed

Label	Value
group	solution
name	soln freq
expert	False
readonly	False
units	Hz
default value	1
type	integer
enumerated possible values	None

Table 3.21.11: soln freq

Notes: None

3.21.12   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
readonly	False
units	seconds
default value	30
type	float
enumerated possible values	None

Table 3.21.12: correction age max

Notes: None

3.22   standalone logging

3.22.1   file duration

Description: Duration of each logfile

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

Table 3.22.1: 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.

3.22.2   max fill

Description: Maximum storage device usage

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

Table 3.22.2: 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.

3.22.3   enable

Description: Standalone logging enabled

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

Table 3.22.3: 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).

3.22.4   output directory

Description: Standalone logging path

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

Table 3.22.4: 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.

3.23   surveyed position

3.23.1   broadcast

Description: Broadcast surveyed base station position

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

Table 3.23.1: 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.

3.23.2   surveyed alt

Description: Surveyed altitude of the Piksi's antenna

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

Table 3.23.2: 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.

3.23.3   surveyed lat

Description: Surveyed latitude of the Piksi's antenna

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

Table 3.23.3: 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.

3.23.4   surveyed lon

Description: Surveyed longitude of the Piksi's antenna

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

Table 3.23.4: 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.

3.24   system info

3.24.1   firmware build id

Description: Full build id for firmware version

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

Table 3.24.1: 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.

3.24.2   hw version

Description: Hardware version number

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

Table 3.24.2: hw version

Notes: This is a read only setting that corresponds to the version number printed on the oem module hardware version sticker.

3.24.3   firmware version

Description: Indicates the firmware version for the Local Piksi

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

Table 3.24.3: firmware version

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

3.24.4   nap channels

Description: Number of channels in SwiftNap FPGA

Label	Value
group	system info
name	nap channels
expert	True
readonly	True
units	N/A
default value	40
type	string
enumerated possible values	None

Table 3.24.4: nap channels

Notes: This is a read only setting.

3.24.5   mac address

Description: The MAC address of the Piksi

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

Table 3.24.5: mac address

Notes: This is a read only setting.

3.24.6   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
readonly	True
units	N/A
default value	N/A
type	string
enumerated possible values	None

Table 3.24.6: sbp sender id

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

3.24.7   uuid

Description: The UUID of the Piksi

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

Table 3.24.7: 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.

3.24.8   serial number

Description: The serial number of the Piksi receiver

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

Table 3.24.8: serial number

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

3.24.9   nap build date

Description: build date for SwiftNap FPGA bitstream

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

Table 3.24.9: nap build date

Notes: This is a read only setting.

3.24.10   loader build date

Description: build date for boot loader (uboot)

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

Table 3.24.10: loader build date

Notes: This is a read only setting.

3.24.11   pfwp build date

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

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

Table 3.24.11: pfwp build date

Notes: This is a read only setting.

3.24.12   nap build id

Description: build id for SwiftNap FPGA bitstream

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

Table 3.24.12: nap build id

Notes: This is a read only setting.

3.24.13   loader build id

Description: build id for loader (uboot)

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

Table 3.24.13: loader build id

Notes: This is a read only setting

3.24.14   pfwp build id

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

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

Table 3.24.14: pfwp build id

Notes: This is a read only setting.

3.24.15 firmware build date

Description: firmware build date

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

Table 3.24.15: firmware build date

Notes: This is a read only setting.

3.24.16 hw revision

Description: hardware revision for Piksi

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

Table 3.24.16: hw revision

Notes: This is a read only setting that refers to the product family of the hardware.

3.25   system monitor

3.25.1   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
readonly	False
units	N/A
type	boolean
enumerated possible values	True,False

Table 3.25.1: watchdog

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

3.25.2   spectrum analyzer

Description: Enable spectrum analyzer

Label	Value
group	system monitor
name	spectrum analyzer
expert	False
readonly	False
units	N/A
default value	False
type	boolean
enumerated possible values	True,False

Table 3.25.2: spectrum analyzer

Notes: This setting enables the on-device spectrum analyzer and associated SBP output. The spectrum analyzer is available from the "Advanced" tab of the console.

3.25.3   heartbeat period milliseconds

Description: Period for sending the SBP_HEARTBEAT messages

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

Table 3.25.3: heartbeat period milliseconds

Notes: None

3.26   tcp client0

3.26.1   enabled sbp messages

Description: Configure which messages should be sent on the port

Label	Value
group	tcp client0
name	enabled sbp messages
expert	False
readonly	False
units	N/A
default value	blank - all messages are enabled
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 Ethernet, the default value is optimal for logging and communication with the console.

3.26.2   address

Description: TCP/IP address for tcp client 0.

Label	Value
group	tcp client0
name	address
expert	False
readonly	False
units	N/A
default value	
type	string

Table 3.26.2: address

Notes: The address setting is defined according to the convention "hostname:port". For example, it should match the format 192.168.0.222:55555 or xxxxx.net:2101 .

3.26.3   mode

Description: Communication protocol for tcp client 0

Label	Value
group	tcp client0
name	mode
expert	False
readonly	False
units	N/A
default value	SBP (Swift Binary Protocol)
type	enum
enumerated possible values	SBP,NMEA,RTCM3 IN

Table 3.26.3: 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, 1006, 1010, and 1012 RTCMv3.1 messages and will not transmit or receive any other messages.

3.27   tcp client1

3.27.1   enabled sbp messages

Description: Configure which messages should be sent on the port

Label	Value
group	tcp client1
name	enabled sbp messages
expert	False
readonly	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 Ethernet, the default value is optimal for logging and communication with the console.

3.27.2 address

Description: TCP/IP address for tcp client 1

Label	Value
group	tcp client1
name	address
expert	False
readonly	False
units	N/A
default value	
type	string

Table 3.27.2: address

Notes: The address setting is defined according to the convention "hostname:port". For example, it should match the format 192.168.0.222:55555 or xxxxx.net:2101 .

3.27.3 mode

Description: Communication protocol for tcp client 1

Label	Value
group	tcp client1
name	mode
expert	False
readonly	False
units	N/A
default value	SBP (Swift Binary Protocol)
type	enum
enumerated possible values	SBP,NMEA,RTCM3 IN

Table 3.27.3: 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, 1006, 1010, and 1012 RTCMv3.1 messages and will not transmit or receive any other messages.

3.28   tcp server0

3.28.1   enabled sbp messages

Description: Configure which messages should be sent on the port

Label	Value
group	tcp server0
name	enabled sbp messages
expert	False
readonly	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 Ethernet, the default value is optimal for logging and communication with the console.

3.28.2   port

Description: TCP/IP port for tcp server 0

Label	Value
group	tcp server0
name	port
expert	False
readonly	False
units	N/A
default value	55555
type	integer

Table 3.28.2: port

Notes: None

3.28.3   mode

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

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

Table 3.28.3: 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, 1006, 1010, and 1012 RTCMv3.1 messages and will not transmit or receive any other messages.

3.29   tcp server1

3.29.1   enabled sbp messages

Description: Configure which messages should be sent on the port

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

Table 3.29.1: 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.

3.29.2   port

Description: TCP/IP port for tcp server 1

Label	Value
group	tcp server1
name	port
expert	False
readonly	False
units	N/A
default value	55556
type	integer

Table 3.29.2: port

Notes: None

3.29.3   mode

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

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

Table 3.29.3: 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, 1006, 1010, and 1012 RTCMv3.1 messages and will not transmit or receive any other messages.

3.30   track

3.30.1   send trk detailed

Description: send detailed tracking state message

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

Table 3.30.1: send trk detailed

Notes: None

3.30.2   max pll integration time ms

Description: Controls maximum possible integration time for a measurement

Label	Value
group	track
name	max pll integration time ms
expert	True
readonly	False
units	N/A
default value	20
type	integer
enumerated possible values	None

Table 3.30.2: max pll integration time ms

Notes: This can be used to configure the sensitivity and dynamic tracking modes permitted to be used by receiver. Lower values provide lower sensitivity and noisier phase measurements but better performance in dynamic conditions.

3.30.3   iq output mask

Description: Output raw I/Q correlations

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

Table 3.30.3: iq output mask

Notes: Bitmask of channel IDs (not PRNs)

3.30.4   elevation mask

Description: Tracking elevation mask

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

Table 3.30.4: elevation mask

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

3.31   uart0

3.31.1   enabled sbp messages

Description: Configure which messages should be sent on the port

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

Table 3.31.1: 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.

3.31.2   mode

Description: Communication protocol for UART0

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

Table 3.31.2: 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, 1006, 1010, and 1012 RTCMv3.1 messages and will not transmit or receive any other messages.

3.31.3 flow control

Description: Enable hardware flow control (RTS/CTS)

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

Table 3.31.3: flow control

Notes: None

3.31.4 baudrate

Description: The Baud rate for the UART 0

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

Table 3.31.4: baudrate

Notes: None

3.32   uart1

3.32.1   enabled sbp messages

Description: Configure which messages should be sent on the port

Label	Value
group	uart1
name	enabled sbp messages
expert	False
readonly	False
units	N/A
default value	1025, 520, 522, 524, 526, 23, 29, 257, 65282, 65, 72, 74, 2304, 80, 528, 134, 136, 16
type	string

Table 3.32.1: 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.

3.32.2   mode

Description: Communication protocol for UART 1

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

Table 3.32.2: 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, 1006, 1010, and 1012 RTCMv3.1 messages and will not transmit or receive any other messages.

3.32.3   flow control

Description: Enable hardware flow control (RTS/CTS)

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

Table 3.32.3: flow control

Notes: None

3.32.4   baudrate

Description: The Baud rate for the UART 1

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

Table 3.32.4: baudrate

Notes: None

3.33   usb0

3.33.1   enabled sbp messages

Description: Configure which messages should be sent on the port

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

Table 3.33.1: 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.

3.33.2   mode

Description: Communication protocol for USB0

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

Table 3.33.2: 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, 1006, 1010, and 1012 RTCMv3.1 messages and will not transmit or receive any other messages.