

Seagull #GPK2

User Manual



Product: Seagull #GPK2
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GENERAL INFORMATION

***** Please read this manual thoroughly before connecting and configuring Seagull #GPK2 *****

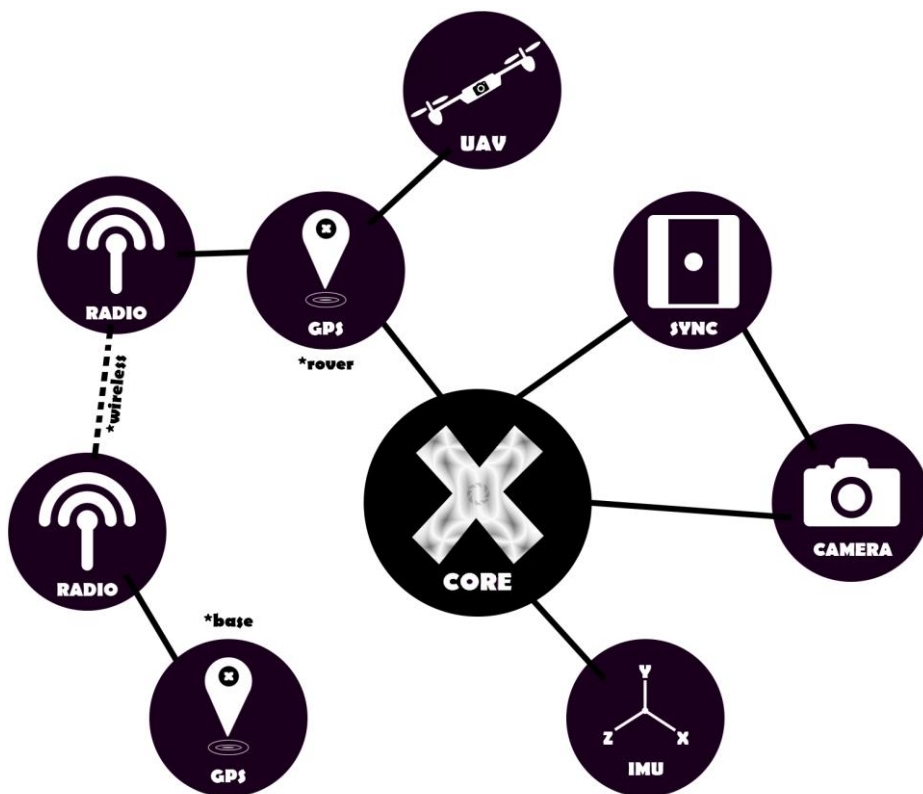
Seagull #GPK2 is a dual-band professional grade GNSS receiver which can be utilized in various applications where high precision positioning is required. Typical precision that can be achieved with #GPK2 in RTK mode is - 1 centimeter!

Receiver is capable of tracking and decoding the following satellite signals - GPS L1C/A - L2C, GLONASS L10F - L20F, GALILEO E1-B/C - E5b, BEIDOU B1I - B2I. #GPK2 modules can operate as ROVER or BASE – in Real Time Kinematic / Post Processed Kinematic / Moving Baseline modes.

The modules support internal data logging of RAW data for post processing and in LATITUDE/LONGITUDE/ALTITUDE formats. #GPK2 features an onboard EVENT PIN – which can be used to log precise co-ordinates based on camera shutter feedback or other.

#GPK2 features:

- High refresh rate – up to 10Hz MB, 20Hz RTK, 15Hz PPK, 25Hz PVT GNSS
- Concurrent GNSS constellations supported – 4
- High position accuracy – up to 1 cm!
- Internal data logging – RTK / PPK / PVT GNSS
- Event logging – Such as shutter release
- Two operational modes – BASE / ROVER
- Multiple NAV modes – Real Time Kinematic, Post Processed Kinematic, Moving Baseline



CONFIGURING #GPK2

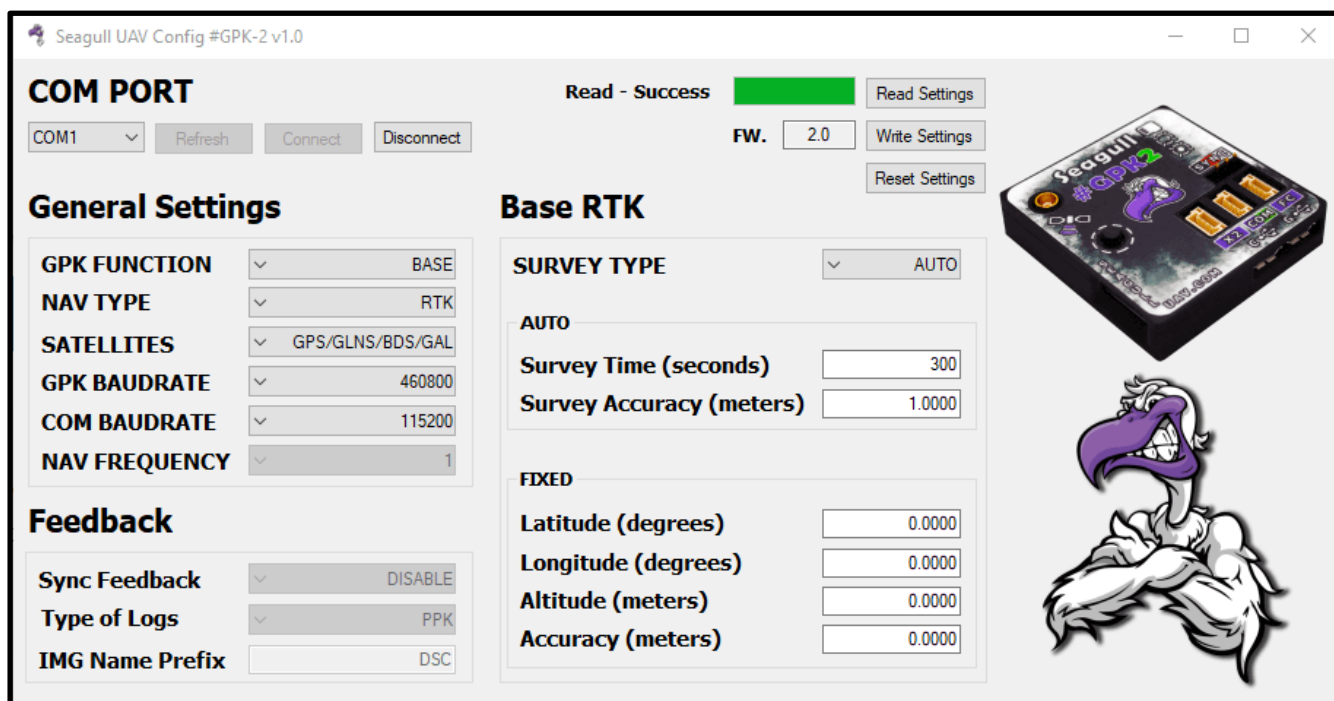
GENERAL

#GPK2 can be configured by "Seagull-GPK2-Config.exe" that can be downloaded via the following link:

<https://www.seagulluav.com/seagull-gpk2-support/>

Please use the C USB Port on #GPK2 to configure.

Seagull #GPK2 Configurator example photo



SETTINGS AND VALUES TABLE

SETTING NAME	SETTINGS	RANGE	DEFAULT	DESCRIPTION
GENERAL SETTINGS				
GPS Function	MANUAL / BASE / ROVER	n/a	BASE	This setting defines the #GPK2 functionality whether it should be established as BASE, ROVER or MANUALLY configured by the user.
Navigation Type	RTK / PPK / MB	n/a	RTK	GNSS module navigation type whether its Real Time Kinematic, Post Processed Kinematic or Moving baseline.
Satellites	GPS/GLONASS/BEIDOU/GALILEO	n/a	GPS/GLNS/BDS/GAL	It is recommended to use 4 satellite systems. User can adjust accordingly to the region.
GPK Baudrate	Value	1200 - 960000	460800	Baudrate used for communicating with devices that are connected to #GPK2. Reflects to X2 and FC ports or internal logger. At high navigation frequencies it is recommended to use higher baudrate value.
COM Baudrate	Value	1200 - 960000	115200	Baudrate used for inputting RTCM corrections to #GPK2 for Real Time Kinematic navigation.
Navigation Frequency	1 – 20Hz / AUTO	n/a	AUTO	Navigation rate set for the GNSS receiver. Typically, it is set to AUTO - so #GPK2 will set the navigation rate to the maximum rate depending on the navigation type set.
FEEDBACK SETTINGS				
Sync Feedback	DISABLE / ENABLE	n/a	DISABLE	Enables EVENT PIN logging – only possible when unit is functioning as ROVER.
Type of Logs	PPK / LLA / BOTH	n/a	PPK	User can choose what type of log should be generated – whether Post Processed Kinematic, LAT/LONG/ALT or both.
IMG Name Prefix	n/a	n/a	DSC	User can define what name should be before numbering of the logged co-ordinates, only valid for LLA based logs.
BASE RTK SETTINGS				
Survey Type	AUTO / FIXED	n/a	AUTO	Defines whether the BASE should AUTO survey its location based on accuracy entered or FIXED if user knows the co-ordinates of the BASE's location.
Survey Time	Value in seconds	0 <> *a lot (9e+15)	300	Auto survey for base lock time frame – will wait and try to lock precise coordinate for the timeframe set out to survey for.
Survey Accuracy	Value in meters	0 <> *a lot (9e+15)	1	Desired auto survey accuracy for the base. Will keep surveying until the precision is achieved.
BASE FIXED POSITION				
Latitude	Value in degrees	0 <> *a lot (9e+15)	0 (disabled)	Known fixed position needs to be entered for ultimate precision.
Longitude	Value in degrees	0 <> *a lot (9e+15)	0 (disabled)	Known fixed position needs to be entered for ultimate precision.
Altitude	Value in meters	0 <> *a lot (9e+15)	0 (disabled)	Known fixed altitude needs to be entered for ultimate precision.
Accuracy	Value in meters	0 <> *a lot (9e+15)	0 (disabled)	Enter how accurate the coordinates provided are Latitude + Longitude



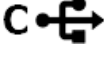
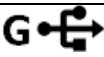
FLIGHT CONTROLLER INTEGRATION

PIXHAWK / PIXRACER / ARDUPILOT BASED FC

Connect the #GPK2 module that is operating in ROVER mode to Pixhawk1, Pixhawk2, Pixracer or other ArduPilot / PX4 based flight controllers directly into the GPS marked ports. There is no need to setup any extra configuration, because all the necessary modes are set by #GPK2.






PORT / PIN DEFINITIONS

PORT	DEFINITION	PINS			
X2	Port for connecting to #X2 or other loggers	VIN (3.9 -12V)	TX (3.3V)	RX (3.3V)	GND
COM	RTCM data input port PURPLE FOR BASE GREEN FOR ROVER	VIN (3.9 -12V)	TX (3.3V)	RX (3.3V)	GND
FC	Port for connecting to Flight Controllers	VIN FC (typically 5V do not exceed 3.9 – 12V limits)	RX (3.3V)	TX (3.3V)	GND
SYNC	EVENT PIN for internal	SIGNAL PIN ACTIVATED LOGIC 0V	N / C (NOT CONNECTED)	GND	
	Internal logging START/STOP button.				
	MCX style antenna connection port.	Recommended to use 3.3V dual band active antenna with LNA.			
	Controller USB - config adjust and firmware update port	The unit can be powered via USB 4.4 – 12V useful when operating as a BASE			
	GNSS USB - for updating firmware and manual setting adjustment via U-center				



TROUBLESHOOTING

To determine the current state of Seagull #GPK2 - simply read the output of the LEDs' and reference it to the table below:

 SD CARD	ACTION
Blinking	Micro SD card - is not present
Flashing rapidly	Micro SD card initialization error – please check format!
Fading	Micro SD card has been initialized and waiting for log to start
Solid on	Micro SD card – logging has been activated
 GNSS LOCK	ACTION
Solid on	GNSS lock has been established
Off	No GNSS lock
 RTK LOCK	ACTION
Blinking	RTK FLOAT
Solid on	RTK FIXED
Off	No RTK lock

TECHNICAL SPECIFICATIONS

- Ublox ZED-F9P GNSS receiver
- Following signals supported: L1C/A - L2C, L10F - L20F, E1-B/C - E5b, B1I - B2I (GPS/GLONASS/GALILEO/BEIDOU)
- Refresh rate: up to 10Hz Moving Baseline, 25Hz Real Time Kinematic, 15Hz RAW (Post Processed Kinematic), 25Hz PVT (UBX Binary)
- Supply voltage: 3.9 – 12v (5v recommended – do **NOT** exceed 12v!)
- Current draw: 140mA AVERAGE
- Dimensions: 44.2mm x 46.6mm x 10mm
- Weight: 20g (without misc. cables, antenna etc.)