

Seagull #GPK

User Manual



Product: Seagull #GPK
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GENERAL INFORMATION

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

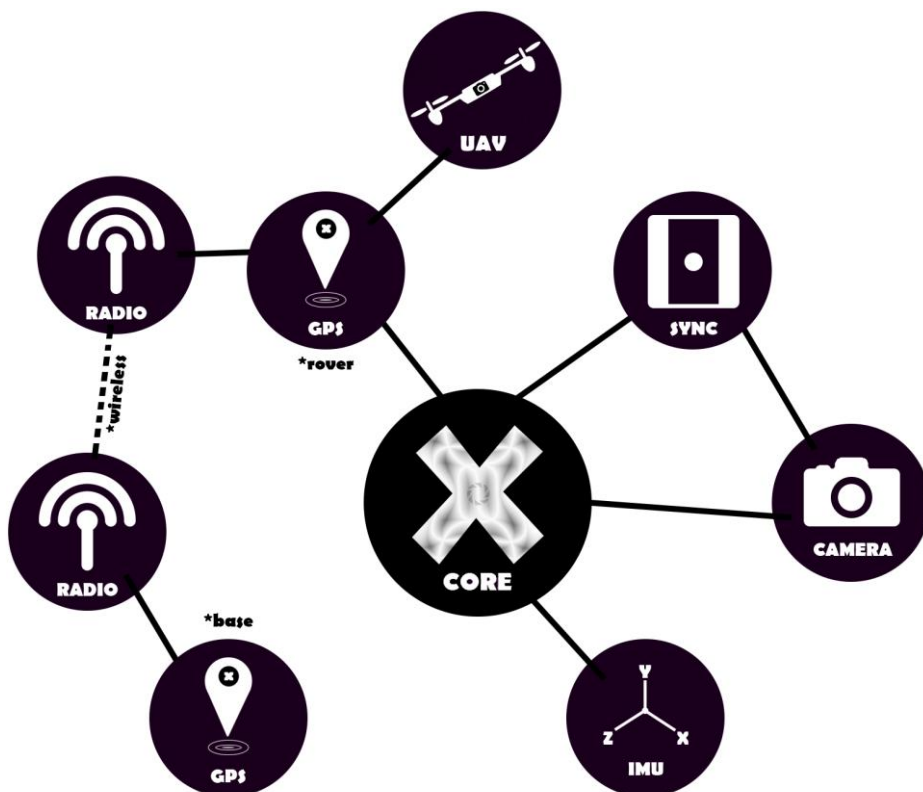
Seagull #GPK is an RTK/PPK/MB GNSS receiver which can be used as navigation device for your UAV platform and capable of logging shutter events from the camera – without requiring external loggers!

#GPK can operate as both BASE and ROVER, depending on the user selection.

Typical precision that can be achieved with #GPK operating in kinematic modes is 1-2.5cm! Results may vary depending on atmospheric conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility and geometry.

#GPK features:

- **High refresh rate** – 4Hz MB, 5Hz RTK, 10Hz RAW, 10Hz PVT GNSS
- **Concurrent GNSS constellations supported** – 2
- **High precision navigation in RTK** – 2.5cm!
- **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 #GPK

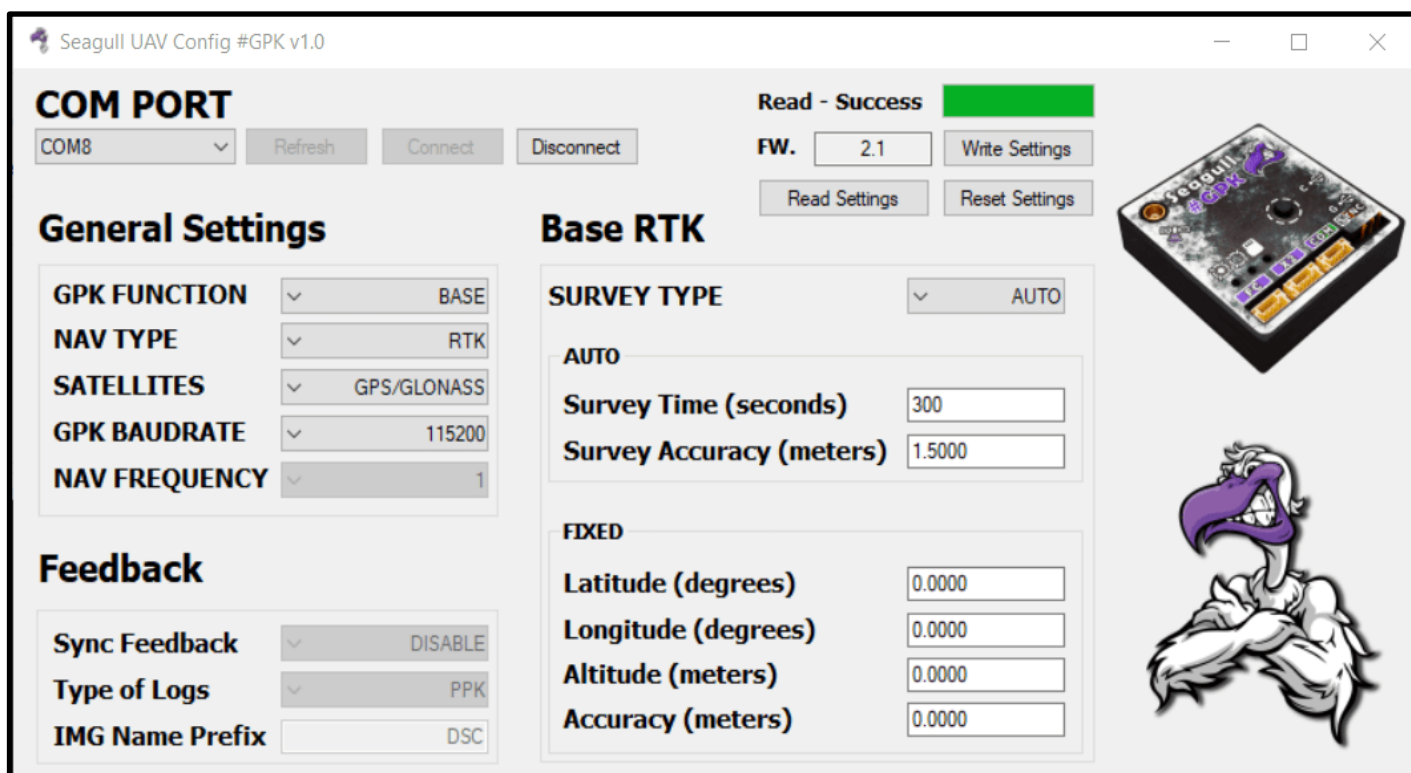
GENERAL

#GPK can be configured by “Seagull-GPK-Config.exe” that can be downloaded via the following link:

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

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

Seagull #GPK 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 #GPK functionality whether it should be established as base, rover or manually configured by the user.
Navigation type	RTK / PPK / MB	n/a	RTK	GPS module navigation type whether its Real Time Kinematic, Post Processed Kinematic or Moving baseline.
Satellites	GPS and Glonass / GPS and Beidou	n/a	GPS / Glonass	Satellite system to use: GPS and GLONASS GPS and BEIDOU
GPK Baudrate	Value	1200 - 960000	115200	Baud rate used for communicating with #MAP-X2 or other devices that #GPK is connected to. The baud rate must match the device that #GPK relates to.
Navigation Frequency	1 – 10Hz / AUTO	n/a	AUTO	Navigation rate set for the GNSS receiver. Typically, it is set to AUTO so #GPK will set the navigation rate to the maximum possible rate depending on the navigation type set out.
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 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.
Accuracy	Value in meters	0 <> *a lot (9e+15)	3	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



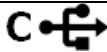
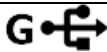
FLIGHT CONTROLLER INTEGRATION

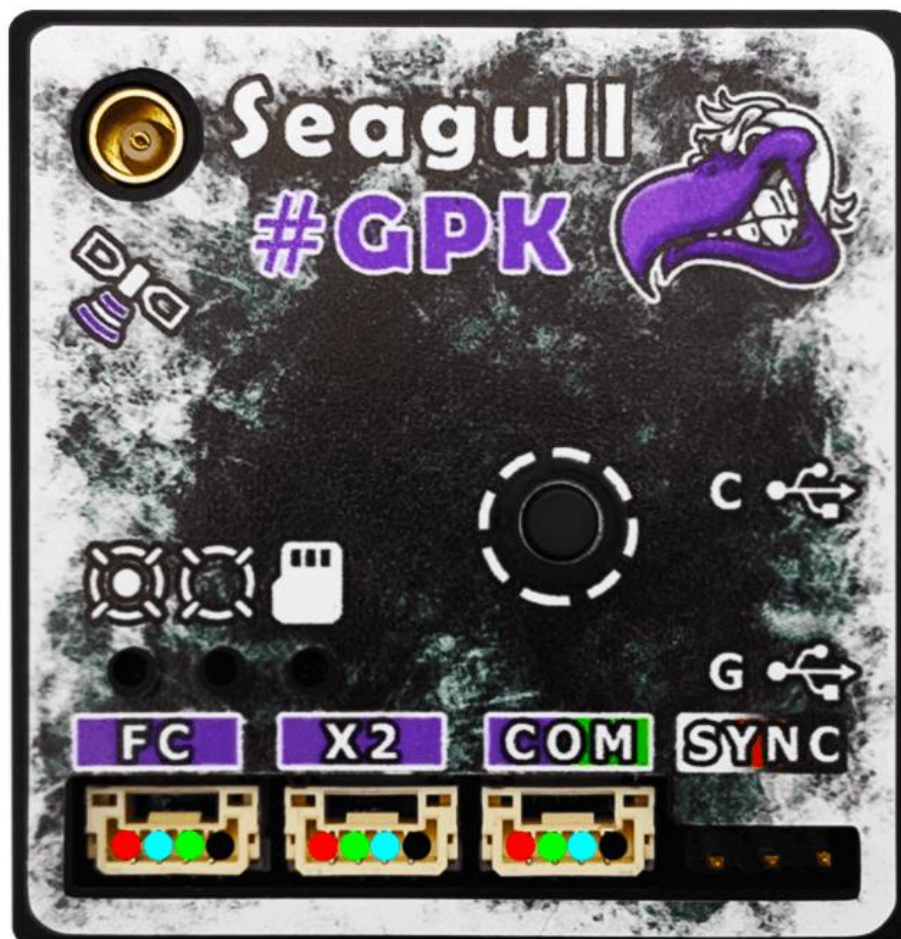
PIXHAWK / PIXRACER / ARDUPILOT BASED FC

Connect the #GPK module that is operating in ROVER mode to Pixhawk1, Pixhawk2, Pixracer or other ArduPilot 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 #GPK.






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	Communication 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 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 setup				



TROUBLESHOOTING

To determine the current state of Seagull #GPK - 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 NEO-M8P-2 GNSS receiver
- Following signals supported: L1C/A, L10F, B1I (GPS/GLONASS/ /BEIDOU)
- Refresh rate: up to 4Hz Moving Baseline, 8Hz Real Time Kinematic, 10Hz RAW (Post Processed Kinematic), 10Hz PVT (UBX Binary)
- Supply voltage: 3.9 – 12v (5v recommended – do **NOT** exceed 12v!)
- Current draw: 100mA AVERAGE
- Dimensions: 42.7mm x 44.5mm x 10.2mm
- Weight: 16g (without misc. cables, antenna etc.)