

# Seagull #GPK2

## User Manual



Product: Seagull #GPK2  
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# GENERAL INFORMATION

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

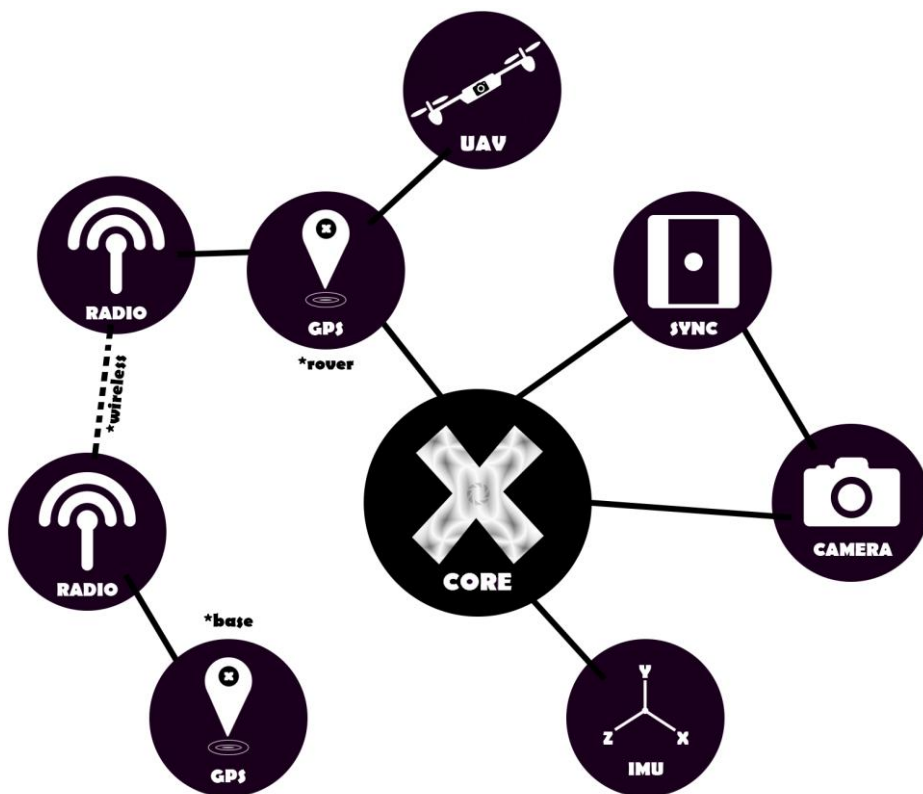
Seagull #GPK2 is a dual-band professional grade GNSS receiver which can be utilized in various applications where high precision positioning is required. Typical precision that can be achieved with #GPK2 in RTK mode is - 1 centimeter!

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

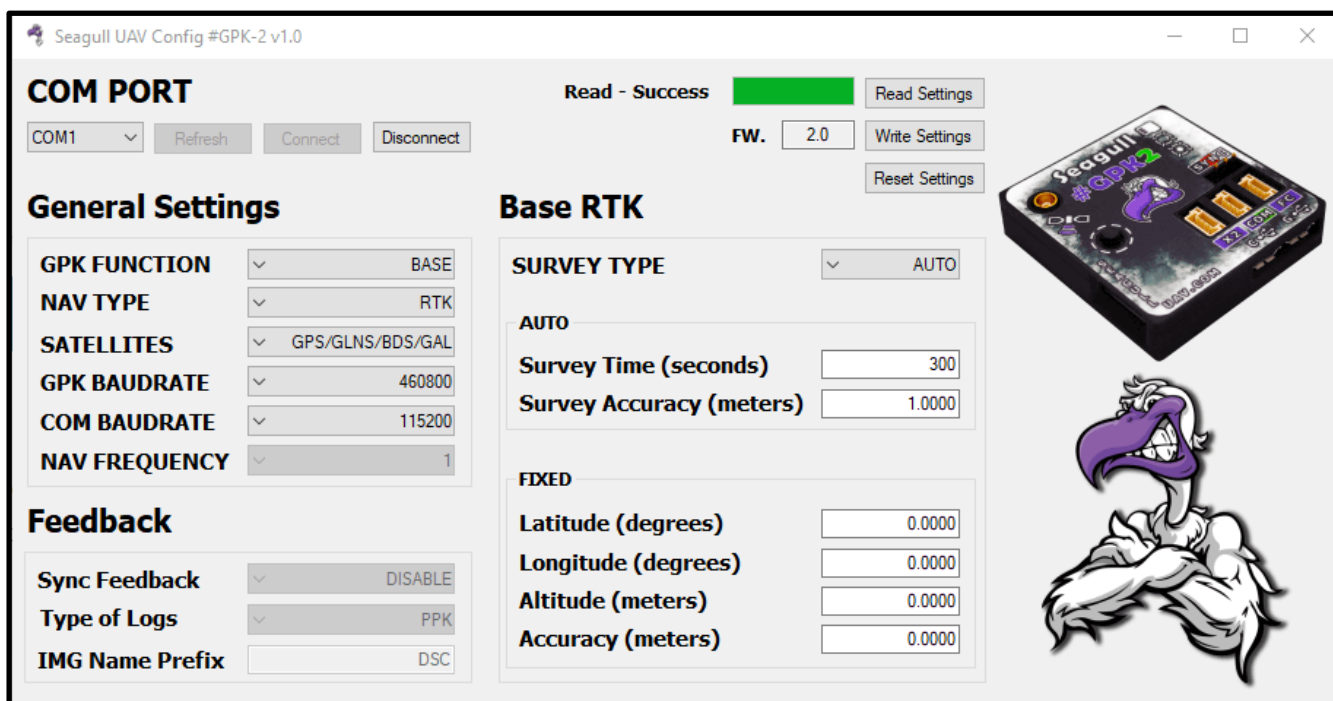
## GENERAL

#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
<b>GENERAL SETTINGS</b>				
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.
<b>FEEDBACK SETTINGS</b>				
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.
<b>BASE RTK SETTINGS</b>				
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.
<b>BASE FIXED POSITION</b>				
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



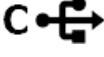
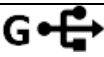
# FLIGHT CONTROLLER INTEGRATION

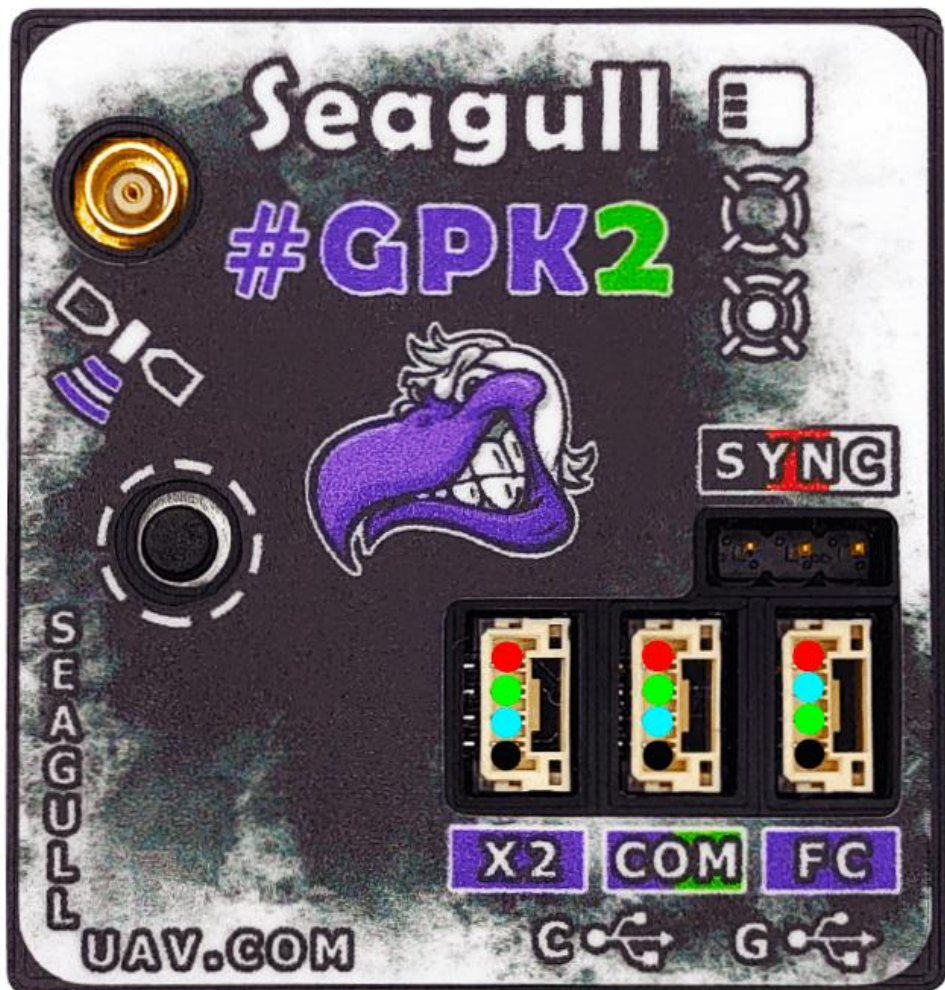
## PIXHAWK / PIXRACER / ARDUPILOT BASED FC

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 <b>PURPLE FOR BASE</b> <b>GREEN FOR ROVER</b>	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:

 <b>SD CARD</b>	<b>ACTION</b>
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
 <b>GNSS LOCK</b>	<b>ACTION</b>
Solid on	GNSS lock has been established
Off	No GNSS lock
 <b>RTK LOCK</b>	<b>ACTION</b>
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, 25Hz 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.)