

# Klau PPK & PPP 7700B User Manual



[www.klauppk.com](http://www.klauppk.com)

Rev- 1.00

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**KL AU**  
G E O M A T I C S

# Table of Contents

Introduction.....	3
Disclaimer.....	3
Overview.....	4
PPK & PPP Unit.....	4
Wire Harness.....	5
Antenna.....	6
Configuration.....	7
Camera Trigger.....	7
Distance Based Triggering.....	8
Time Based Triggering.....	9
General Operation.....	10
Technical Specifications.....	11
Connections.....	11
Dimensions & Weight.....	11
Battery Recommendations.....	11
Power Input.....	11
Operating Temperature.....	11
Event/Top of Frame Input.....	12
Camera Trigger Output.....	12
Antenna.....	12
USB Storage.....	12
Main Connector.....	13
Warning.....	14

# Introduction

KlauPPK 7700 series is a survey grade GNSS solution designed for accurate aerial mapping from drones and manned aircraft. The product is light weight, designed to attach to many different drones using KlauPPK mounting solutions. GNSS data is logged in the USB drive for later post-processing with survey grade base station data. The system connects to various cameras to capture precise shutter event timing in order to create accurate camera coordinates in post-processing.

KlauPPK is intended to be used on drones with a specified mounting kit, or inside the cabin in manned aircraft. The system is designed to be connected to a camera for photogrammetric mapping applications.

## Disclaimer

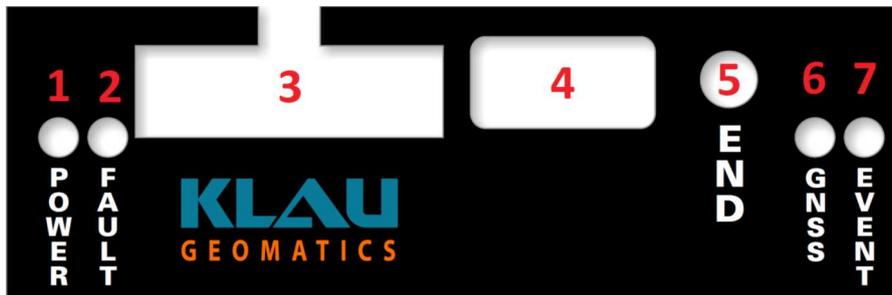
We strongly recommend that you remove aircraft propellers before installing any Klau products.

To avoid any performance degradation or damage caused by imbalanced payloads, please follow Klau Geomatics' guides for correct installation.

As we are not able to control the end user's specific usage, installation, modification (including the use of non-specified parts), and improper use. Direct or indirect damage or injury caused by the behaviour above, our company will not cover any loss and responsibility.

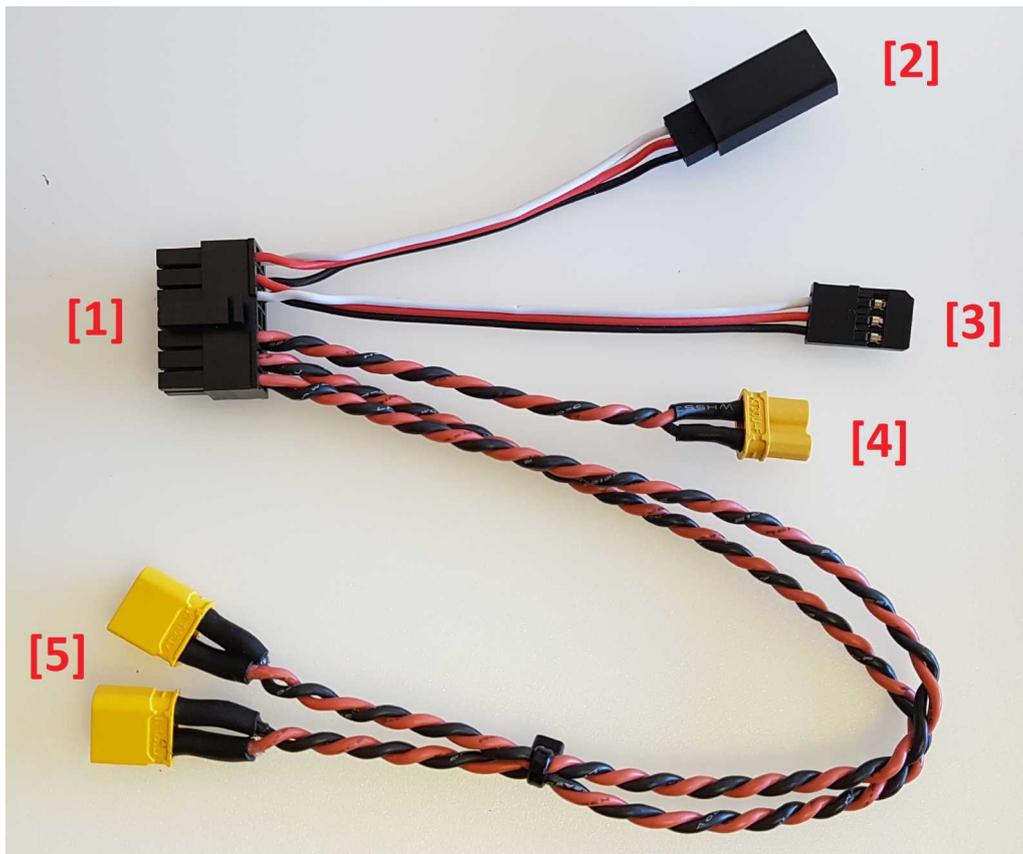
# Overview

## PPK & PPP Unit



- 1 – Power LED (Green) – Illuminated when device is running.
- 2 – Fault LED (Red) – Illuminated when fault detected. Restart required.
- 3 – Wire Harness Connection.
- 4 – USB port for data logging.
- 5 – Logging LED (White) + End logging button.
- 6 – GNSS LED (Green) – Pulses when a GNSS signal is received.
- 7 – Event LED (Blue) – Illuminates when a signal from the camera is seen.
- 8 – Status/Configuration LCD.
- 9 – Micro USB port for software upgrades.
- 10 – Antenna Connection.
- 11 – Hidden Button – Configuration of camera trigger.

## Wire Harness



1 - Klau PPK or PPP unit main connector. (*Technical Specifications page for pinout*)

2 - Trigger Output for Camera or Klau Gimbal. (*not available with DJI cameras*)

3 – Event/Top of frame Input from Camera.

4 - Auxiliary Power Output (*same as input voltage*)

5 - Main Power Input x2 – Connects to Battery (*can also be connected to the M210's Aux Power Plug, please refer to your DJI owners manual for more information regarding this connection*).

**Note:** *The system has 2 isolated power inputs so a battery swap can be performed without turning off power to the device. Please see the technical specifications for further information regarding batteries and power input.*

## Antenna



1 – PPK Antenna

2 – PPP Antenna

3 – Antenna Cable – Antenna Connection

4 – Antenna Cable – PPK/PPP Connection

# Configuration

## Camera Trigger

- The Klau Geomatics 7700 series has 2 modes for triggering your camera.
  - Distance Based Triggering – In this mode your camera will trigger at the distance selected.
  - Time Based Triggering – In this mode your camera will trigger at the set time interval once it has left the home zone. It will continue to trigger until it returns to the home zone.
- First locate the ‘Hidden Button’ as shown on **Page 3** of this document.  
*Note: This button is recessed and can be pressed with a paper-clip, small screwdriver or other small object.*
- While the device is starting up and the Klau Geomatics logo is displayed on the screen [**Figure 1**], press and hold the Hidden Button for a minimum of 3 seconds. The button can be released once the menu has opened.

*Note: Once the menu is accessed, briefly pressing the button will move to the next menu item, to select an item simply pause on the desired setting for 3 seconds.*

**Figure 1:**



## Distance Based Triggering

- Select “Distance” option. *[Figure 1]*
- Distance Interval *[Figure 2]* can be set to one of the following parameters: 3m, 5m, 7.5m, 10m, 12.5m, 15m, 20m, 25m, 30m, 40m.
- Minimum Time *[Figure 3]* can be set to one of the following parameters: 0.5sec, 1sec, 1.5sec, 2sec, 3sec, 4sec, 5sec, 10sec, 15sec.

*Note: This is the minimum time between photos, to prevent camera buffer overload this should be set to 2 seconds as a safeguard for most cameras.*

**Figure 1:**



**Figure 2:**



**Figure 3:**



## Time Based Triggering

- Select “Time” option. *[Figure 1]*
- Home Zone *[Figure 2]* can be set to one of the following parameters:  
3m, 5m, 7.5m, 10m, 12.5m, 15m, 20m, 25m, 30m, 40m.
- Time Interval *[Figure 3]* can be set to one of the following parameters:  
0.5sec, 1sec, 1.5sec, 2sec, 3sec, 4sec, 5sec, 10sec, 15sec.  
**Note:** This is the minimum time between photos, to prevent camera buffer overload this should be set to 2 seconds as a safeguard for most cameras.

*Figure 1:*



*Figure 2:*



*Figure 3:*



# General Operation

- Run a base station on a known control point, logging GNSS data at 1 second intervals. Measure height of antenna.
  - Alternatively, you can use CORS data within 20km.
- Turn on the 7700 system by connecting one of the power cables to the battery or drone.
- You should expect to see the Green “Power” LED illuminate. Once the initialisation process has completed, the White “End” button will begin to flash indicating data is now being written to the USB drive.
- The Green “GNSS” LED will begin to flash slowly once a signal has been received. When the signal quality has increased to a satisfactory level, the Green “GNSS” LED will flash in sync with the White “End” button.
- Leave the system running continuously and stationary for at least 5 minutes. (20 minutes for Real-Time systems). The display on the device will show a “System Ready” message once this time has elapsed. (*Firmware v2.01 and above will also give a quick audible notification*).
- Fly the mission with your usual mission planner and flight control
- After landing, allow the system to run for a few minutes undisturbed.
- **BEFORE** turning off the device, push and hold the “End” button for 3 or more seconds to close the file currently being written to the USB drive. If the file has been closed successfully the White “End” button will have now stopped flashing.

**To capture checkpoints coordinates:** Centre the camera over your ground mark, wait at least 2 minutes then take a photo.

**Note:** *When performing a battery hot-swap ensure the fully charged battery is connected before disconnecting the flat battery.*

# Technical Specifications

## Connections

Antenna	MCX jack receptical
Power Inputs	XT-30 – Male (XT-60 adaptor included)
Power Output	XT-30 – Female
Camera Input (Event)	Futaba Plug – 3-Pin Female
Camera Output (Trigger)	Futaba Plug – 3-Pin Male
USB Drive	USB 2.0 socket

## Dimensions & Weight

Enclosure Size	79mm x 54mm x 26mm
Weight without Antenna	96g
Weight WITH Antenna	138g

## Battery Recommendations

PPK/PPP unit	3s 1000mAh LiPo (Minimum)
PPK/PPP unit with Klau Gimbal	4s 1500mAh LiPo (Minimum)

## Power Input

6v Minimum	25v Maximum	1000mA @ 12v
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## Operating Temperature

Minimum -40°C	Maximum +80°C
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### WARNING

Do not exceed maximum power input.

Do not operate device outside of recommended operating temperature.

## Event/Top of Frame Input

High Pulse Signal (White wire)	Requires a rising edge pulse above 1.7v
Low Pulse Signal (Red wire)	Requires a falling edge pulse below 4.4v

## Camera Trigger Output

Focus Signal (White wire)	Falling edge pulse activated 50ms before Shutter Signal
Shutter Signal (Red wire)	Falling edge pulse (90mS duration)

## Antenna

Harxon HX-CHX600A	GPS L1/L2/L5/L-band + GLONASS L1/L2 + BDS B1/B2/B3 + Galileo E1/E5b/E5a
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## USB Storage

Recommended (included in kit)	Sandisk 16GB Ultra Fit High Speed 3.1
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Other confirmed compatible drives	Kingston Technology DataTraveller 3.0 – 32GB
	Kingston Technology DataTraveller 2.0 – 32GB
	Toshiba Corporation DTSE9 - 8GB
	Sony Corporation Storage Media – 8GB
	Teclast CoolFlash – 32GB

**Note:** The USB device must be classed as ‘High-Speed’. If the USB device has multiple partitions, only the first partition will be written to.

## Main Connector

<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>
<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>

14 - Pos IN 1

7 - Gnd

13 - Pos IN 2

6 - Gnd

12 - Pos OUT

5 - Gnd

11 - TX Data Com4

4 - RX Data Com4

10 - Event RISING (white)

3 - Gnd

9 - Event FALLING (red)

2 - Gnd

8 - Trigger SHUTTER (red)

1 - Trigger FOCUS (white)

## Warning

The KlauPPK GNSS antenna must have a clear view of the sky to track satellites and will not function indoors or under vegetation.

Do not use your device if there is any signs of damage to the enclosure, wire harness or antenna. This includes but is not limited to damage caused by moisture.

The KlauPPK 7700 series has no user serviceable internal parts. For repairs and maintenance please contact your local authorised distributor or the Klau Geomatics office.

For information on safe disposal of electronic equipment please check your local rules and regulations with the necessary authorities. Alternatively, contact your local distributor or Klau Geomatics office.

Klau Geomatics

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