



## SUBCAM

SUBMERGE | SCHEDULE | VIDEO

A video camera capable of being submerged up to 60m in a marine environment, which records video multiple times a day for months on end. The length of the video recording and schedule is fully configurable.

## USER MANUAL



# {PRODUCT SPECIFICATION}

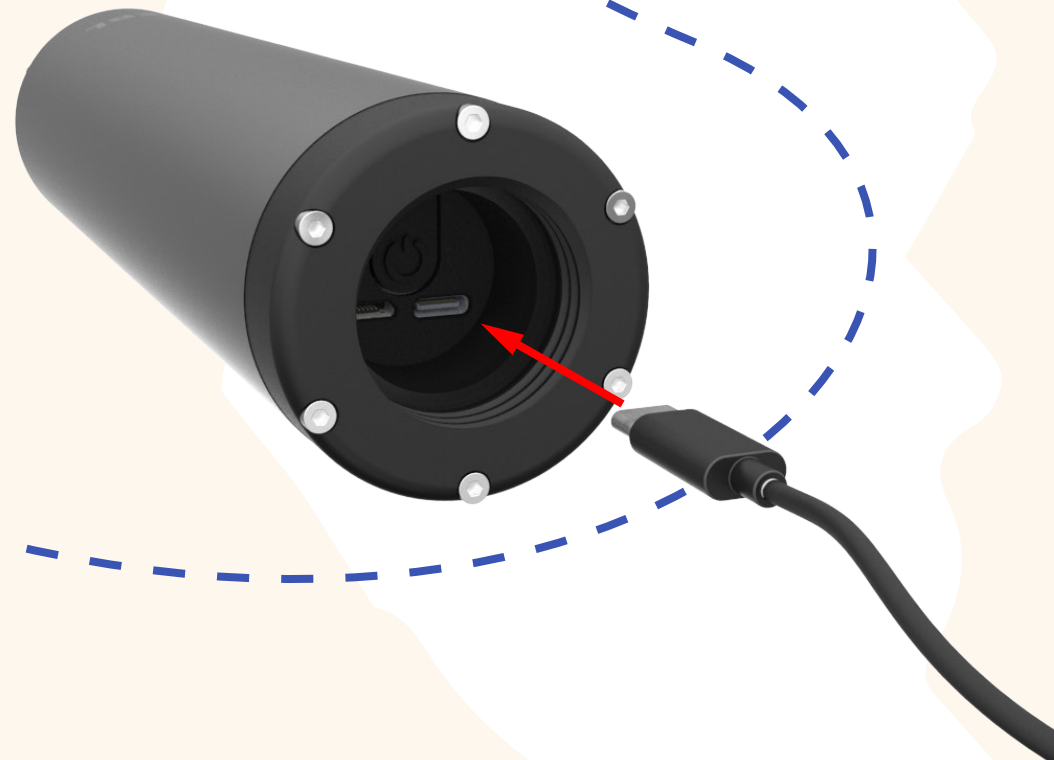
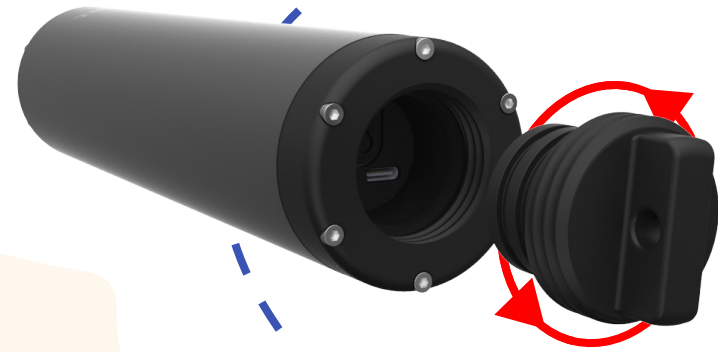
Camera sensor	CMOS 12-megapixel Sony IMX708, 12MP.
Video resolution and frame rate	1080p50fps (maximum). Resolution and frame-rate can be configured.
Image resolution	4608 × 2592 pixels (maximum). Resolution can be configured.
Focus	Phase Detection Autofocus (PDAF). Can be configured to fixed focus. Range: 5cm-∞.
Exposure settings	HDR mode (up to 3 megapixel output).
Waterproof Housing	IP68 (rated to 60m below sea level).
Output file type	MP4 / JPEG.
Scheduling	The device can be programmed to take either a video or image once or multiple times per day. This is set by entering the wake-up time(s) in the configuration file on the SD Card.
Memory	Micro SD Card 64GB.
Battery	12.8AH Lithium-Ion Battery (will last approximately 60 days capturing 2 minutes of video per day).
Charging Battery	Rechargeable with USB-C Cable.
Dimensions	55Øx226mm.

## {CHARGING}

**Remove bung and plug USB-C into camera to charge.**

The camera will take around four hours to fully-charge.

Accurate battery charge percentage can be checked on the confirmation email (see configuration section).



# {CONFIGURATION}

## Open Configuration.yml on USB stick using Notepad.

Editable fields are highlighted in **Blue**. Most importantly, ensure to update the WiFi and email details.

**Wake\_hours:** These are the times that the device will wake up and take a video every day. Ensure to closely follow the formatting using no spaces and a single comma between each time.

**System\_name:** This name will be a prefix on the video files. E.g. PEBL\_Subcam\_1\_YYYY-MM-DD\_hh-mm-ss.

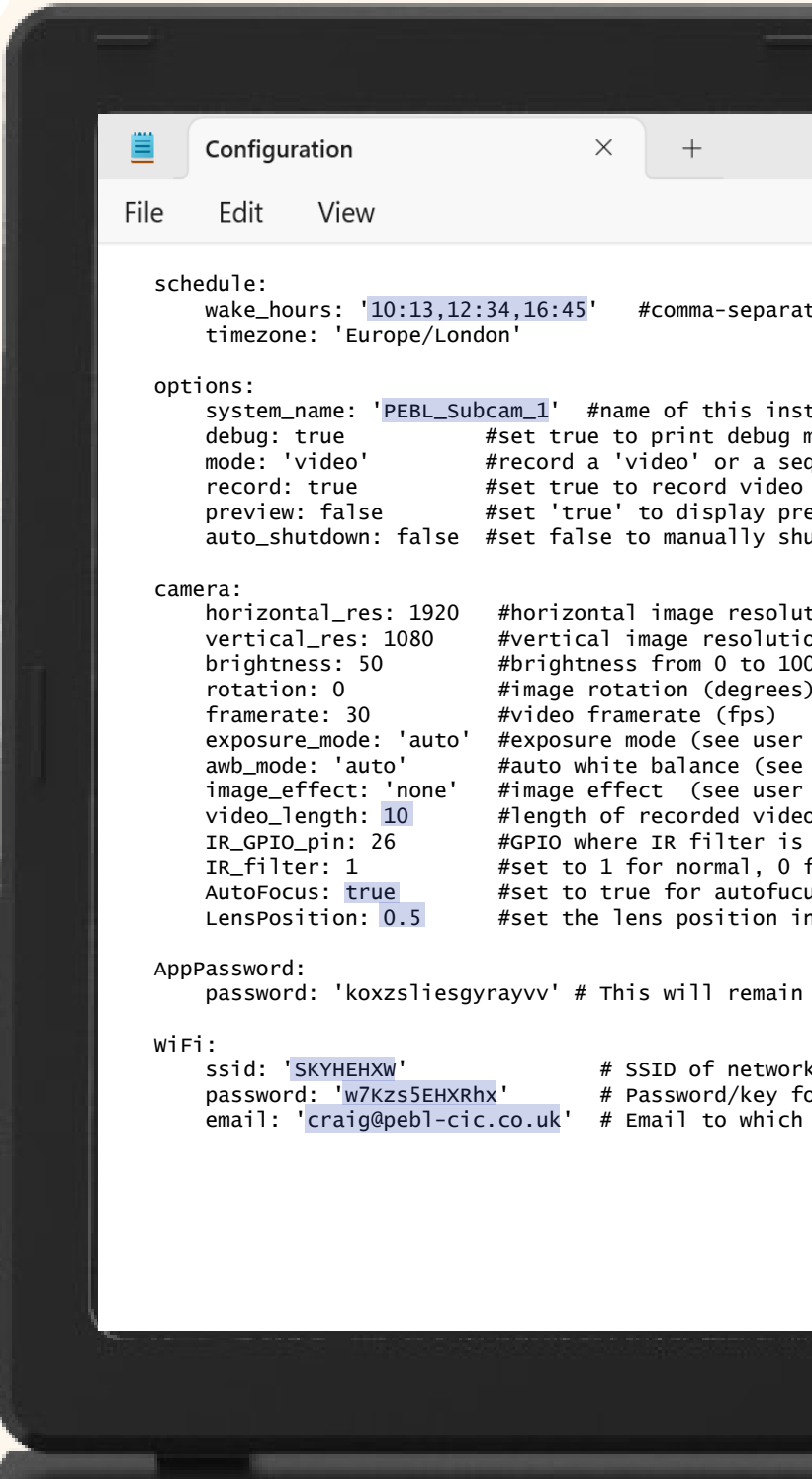
**Video\_length:** This the recording length of each video.

**AutoFocus:** True (ON), False (OFF). Edit as appropriate.

**LensPosition:** If AutoFocus is set to False, this will change the focus distance. This is the same as rotating a focus ring on a camera.

Keep the formatting exactly the same as the example Configuration file. Ensure to keep the inverted commas in place and don't add spaces after or before entries.

Save and eject the USB once complete.



```
Configuration
File Edit View

schedule:
  wake_hours: '10:13,12:34,16:45' #comma-separated
  timezone: 'Europe/London'

options:
  system_name: 'PEBL_Subcam_1' #name of this inst
  debug: true #set true to print debug m
  mode: 'video' #record a 'video' or a sec
  record: true #set true to record video
  preview: false #set 'true' to display pre
  auto_shutdown: false #set false to manually shu

camera:
  horizontal_res: 1920 #horizontal image resolut
  vertical_res: 1080 #vertical image resolutio
  brightness: 50 #brightness from 0 to 100
  rotation: 0 #image rotation (degrees)
  framerate: 30 #video framerate (fps)
  exposure_mode: 'auto' #exposure mode (see user
  awb_mode: 'auto' #auto white balance (see
  image_effect: 'none' #image effect (see user
  video_length: 10 #length of recorded video
  IR_GPIO_pin: 26 #GPIO where IR filter is
  IR_filter: 1 #set to 1 for normal, 0 f
  AutoFocus: true #set to true for autofocu
  LensPosition: 0.5 #set the lens position in

AppPassword:
  password: 'koxzsliesgrayvv' # This will remain

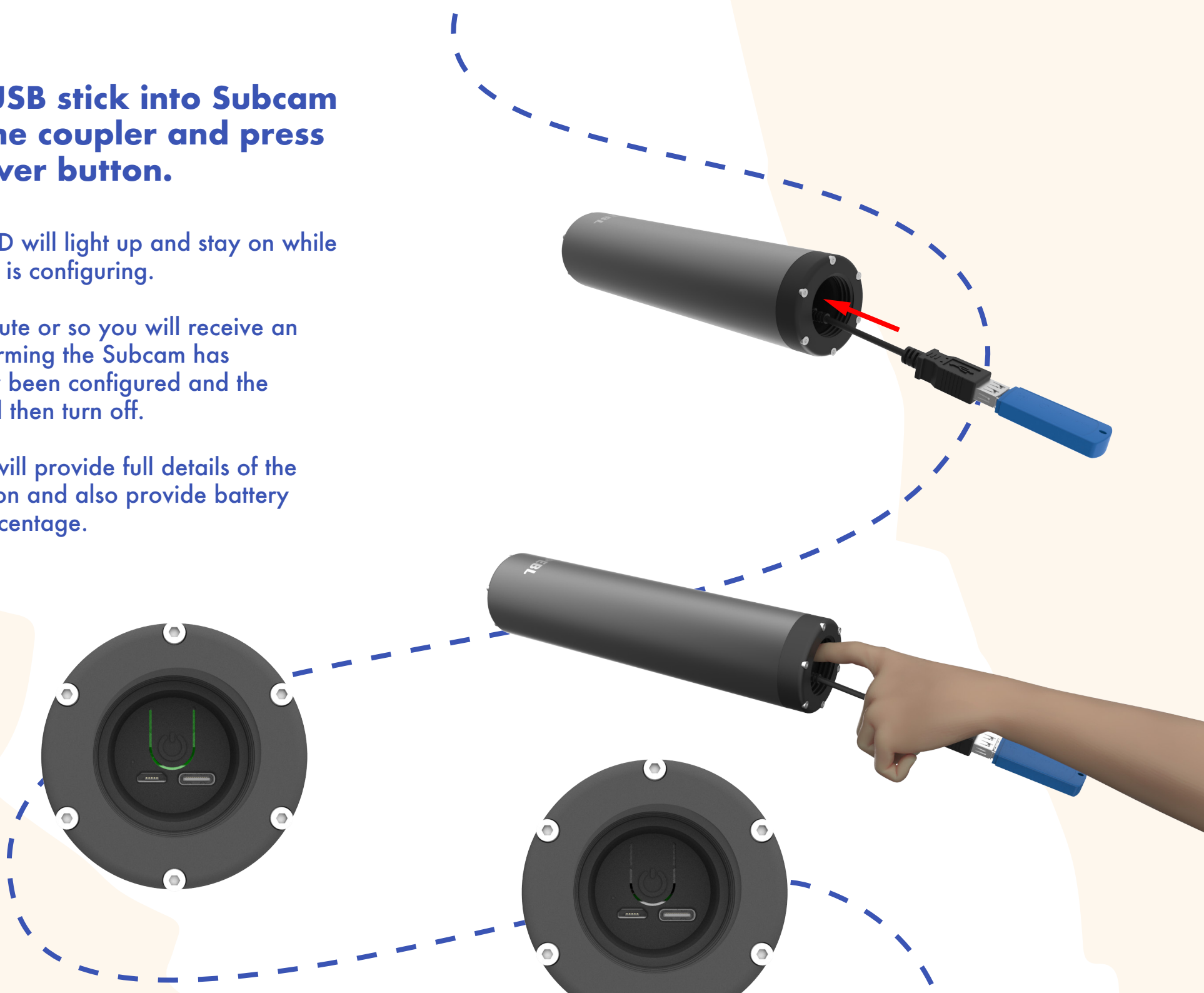
WiFi:
  ssid: 'SKYHEHXW' # SSID of network
  password: 'w7Kzs5EHXRhx' # Password/key fo
  email: 'craig@pebl-cic.co.uk' # Email to which
```

## Insert USB stick into Subcam using the coupler and press the power button.

A green LED will light up and stay on while the camera is configuring.

After a minute or so you will receive an email confirming the Subcam has successfully been configured and the camera will then turn off.

This email will provide full details of the configuration and also provide battery charge percentage.



## Remove the **USB** from the camera and screw the bung back on.

The camera is now successfully set up and will wake up at the scheduled time(s) and record a video.

This same schedule will be repeated every day unless the camera is reconfigured.

In the example below, the camera will wake up at 14:00, take a video, then turn off, wake up at 15:34, take a video and then turn off. The next wakeup time will be the following day at 14:00.

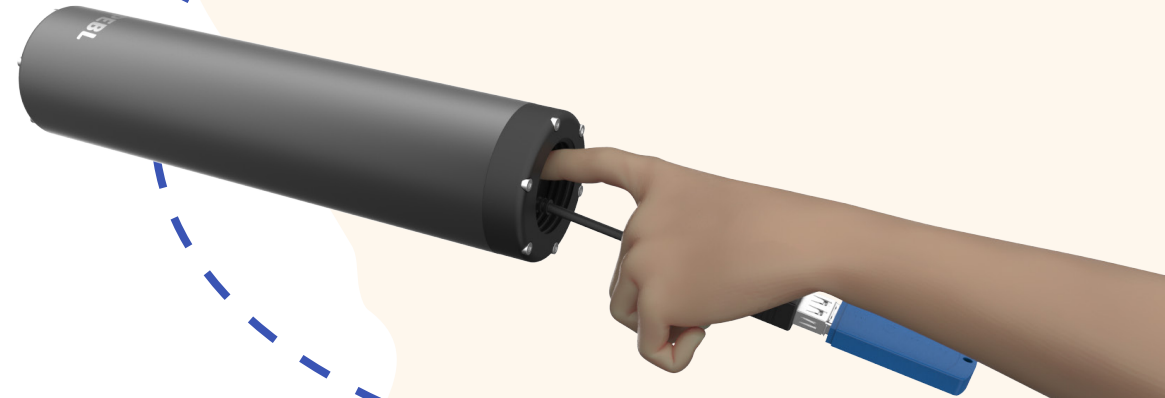
```
schedule:  
  wake_hours: '14:00,15:34'
```



## {RETRIEVING FILES}

Insert **USB stick** into **Subcam** using the coupler and press the **power button**.

Any video files on the camera will automatically be transferred to the **USB stick**.



# {TROUBLESHOOTING}

## Email has not been received

Plug USB into computer and open usb\_control.log.

The file will either look like A or B.

**A**

```
usb_control
File Edit View
INFO:root:Checking for the USB
INFO:root:Detected USB device "PEBL"
INFO:root:Set interrupt flag
WARNING:root:No record process running, nothing to kill
INFO:root:File copied FROM USB: "/media/pi/PEBL//Configuration.yml"
INFO:root:New wiFi details applied: SSID=VM9542850, key=qpjz7XvPsgxn
INFO:root:Network connection successful, IP=192.168.0.60
Ln 3, Col 9 | 100% | Unix (LF) | UTF-8
```

Check the correct email address has been entered on the configuration file.

Check your Junk inbox and ensure you allow emails from "pebl.subcam@gmail.com".

**B**

```
usb_control
File Edit View
INFO:root:Checking for the USB
INFO:root:Detected USB device "PEBL"
INFO:root:Set interrupt flag
WARNING:root:No record process running, nothing to kill
INFO:root:File copied FROM USB: "/media/pi/PEBL//Configuration.yml"
INFO:root:New wiFi details applied: SSID=VM9542850, key=qpjz7XvPsgx
ERROR:root:Network connection failed
ERROR:root:Maximum retry attempts exceeded
Ln 3, Col 9 | 100% | Unix (LF) | UTF-8
```

Check the correct WiFi details have been entered. Shown above in **Blue**.

The network must be secure (password protected).

Ensure the camera is reasonably close to the router during configuration.

Attempt to connect to a different network.

Check that the Configuration.yml file has not accidentally been saved as Configuration.yml.txt or some other format.

Ensure the USB is formatted using FAT32.

Ensure the Configuration file formatting has been replicated with no spaces before or after entries and single quotation marks ( ' ') are used. See examples below.

CORRECT

```
wifi:
  ssid: 'vm9542850'
  password: 'qpjz7XvPsgxn'
  email: 'craig@pebl-cic.co.uk'
```

INCORRECT

```
wifi:
  ssid: 'vm9542850
  password: 'qpjz7XvPsgxn '
  email: 'craig@pebl-cic.co.uk'
```



# The camera is not waking up at scheduled times

Plug USB into computer and open Configuration.yml.

Wake hours must be entered in ascending order in twentyfour hour format using a semi-colon to separate hours and minutes and a single comma between times. The entries must also have no spaces between times. Lastly, a single quotation mark (') must be before the first time and after the last.

CORRECT

```
schedule:  
  wake_hours: '14:00,15:34'
```

INCORRECT

```
schedule:  
  wake_hours: '14:00 ,15:34'
```

SPACE ADDED AFTER TIME.

CORRECT

```
schedule:  
  wake_hours: '14:00,15:00,17:00'
```

INCORRECT

```
schedule:  
  wake_hours: '14:00,15,17'
```

FULL TIME NOT GIVEN. MUST BE HH:MM.

CORRECT

```
schedule:  
  wake_hours: '9:45,14:00,15:00'
```

INCORRECT

```
schedule:  
  wake_hours: '14:00,15:00,9:45'
```

TIME NOT IN ASCENDING ORDER.

# {MAINTENANCE}

## **ANTI-FOULING**

To clean off any fouling on the Subcam, we recommend submerging the device in Virkon (agricultural bleach). Dilute to manufacturers specification and leave submerged for 24 hours before rinsing in distilled water.

## **SILICA GEL**

The silica gel sachet should be replaced every 6 months to ensure the electronics are protected from condensation inside the enclosure.

## **O-RING SEALS**

it is recommended that the seals are kept greased at all times. Any silicone grease can be used. We use Nitecore SG7 Silicone Grease purely for the reason that it is clear.

## **HELP AND SUPPORT**

PEBL is committed to providing aftercare support for all of its products and services. If any further assistance is required regarding the use of our products then please get in touch via email to [Christian@PEBL-CIC.co.uk](mailto:Christian@PEBL-CIC.co.uk).