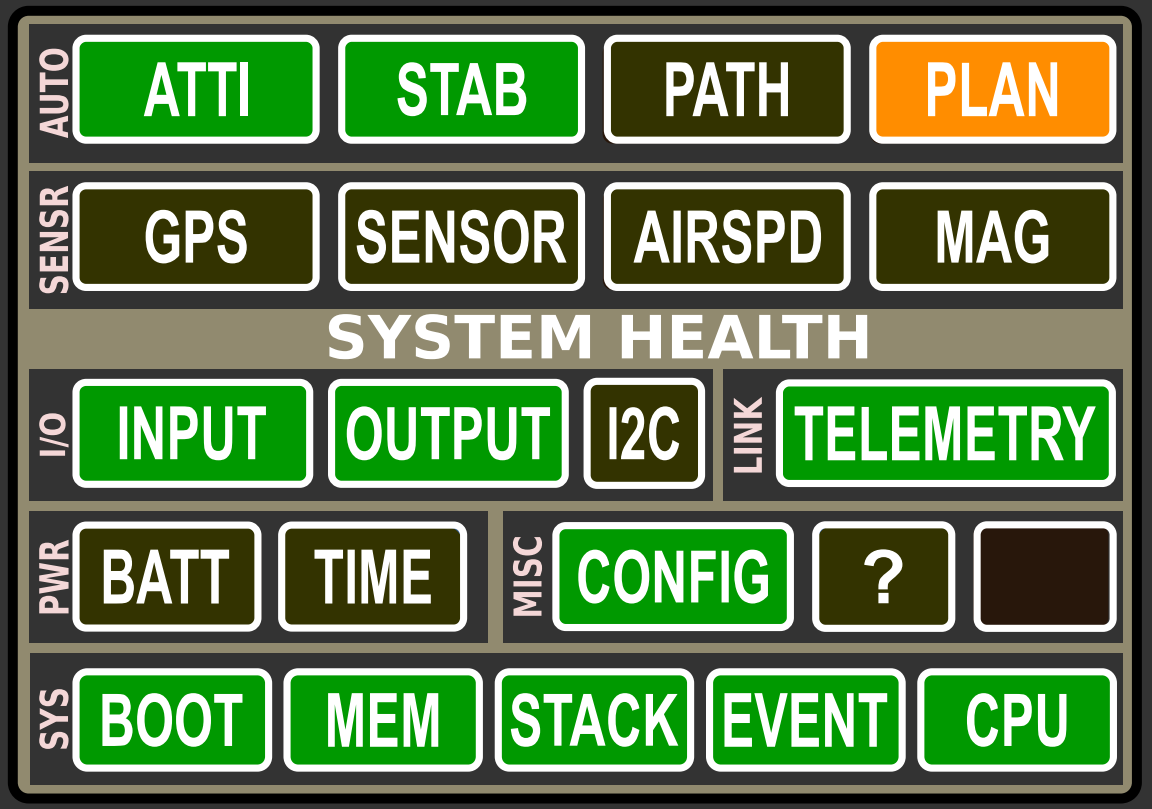

SYSTEM HEALTH

The System Health widget can be used to diagnose various problems and display which modules are running.

All objects, except for the special “Plan”, should be green for optimal flight performance or board cannot be armed for safely reasons.

All problems should be fixed first and System Health error-warning-critical alarm free.

INPUT ALARM

Input module handles the data that is coming from your receiver.

UNUSED

Should not appends...

ERROR

CRITICAL

R/C input has not been configured. Use Input tab or Transmitter Setup Wizard to configure your radio channel inputs.

WARNING

No R/C input data. Power up receiver with the flight battery or double check connection wires.

OUTPUT ALARM

Output module takes motor speed and servo position data from stabilization algorithms, and feeds it into output channels.

UNUSED

Should not appends...

ERROR

CRITICAL

Channel outputs have not been configured. Use Vehicle Setup Wizard to configure them automatically.

WARNING

CONFIG ALARM

Shows whether your flight controller board has been properly set up.

CRITICAL

CONFIG

Board configuration problem.

If you have set up GPS modes (GPS Assist, PosHold, RTB...) to one flight mode, then make sure that GPS Navigation (INS13) fusion algorithm is selected.
CC3D can't use GPS Navigation (INS13) and do not support GPS assisted modes.

Select "GPS Navigation (INS13)" in Config > Attitude Tab > Parameters > Attitude Estimation Algorithm.

CRITICAL

?

The question mark button show extended information about the previous config error:

One stabilized mode use a wrong thrust mode, like CruizeControl with Rate on Pitch/Roll.
Unsupported config for PWMSync or OneShot : Check if RC Input used is compatible with this mode or check your Output configuration.

AIRSPEED ALARM

Shows the status of an optional air speed sensor that can be used with fixed wing aircraft.

UNUSED

Airspeed sensor has not been configured to be used

ERROR

CRITICAL

WARNING

MEMORY ALARM

Displays the status of remaining memory (RAM) that are used by processes internal to the flight controller.

CRITICAL

Very low RAM left, flying cannot be done safely.
Less than 40bytes for CC/CC3D or 500bytes for others boards.

WARNING

Low amount of RAM left, flying can be done but don’t enable more software modules.
This is common with older flight controllers such as CopterControl.
Less than 200bytes for CC/CC3D or 1000bytes for others boards.

EVENT ALARM

Shows the status of event system. A very heavy load can cause the event system to be overloaded.

CRITICAL

Event system error or overloaded. This can be caused by a bug or too high telemetry update rates when OPLink has low baud, for example.

WARNING

Event system at high stress. See above.

CPU ALARM

Shows the CPU load

CRITICAL

CPU load is very high and has exceeded 95%, flight cannot be performed safely.

WARNING

CPU load is high and has exceeded 95%, but flight can be performed. Don’t enable more software modules or features like TPS or board rotation.
Should only occurs for CC/CC3D.

STACK ALARM

Shows the status of the microcontroller's stack, which is a place where low-level functions store data.

CRITICAL

-

WARNING

-

BOOT ALARM

Shows that a board reboot is required, or fail-safe settings have been loaded upon boot.

Boot alarm can be caused by various reasons:

- No valid telemetry option selected, so board will boot with default USB telemetry,
- Board initialization failed due to driver, module or RAM issues, and the board has been booted up using default configuration after 3 tries,
- Board has been put to safe mode by the user,
- Board needs a reboot to take in account hardware configuration changes.

TELEMETRY ALARM

Shows the status of Telemetry communications module

CRITICAL

Telemetry module has encountered an error. Set up only one telemetry output port. Telemetry system is disconnected.

WARNING

TIME ALARM

Shows whether you have enough energy in the battery left for flying, This requires at least a current sensor to work.

UNUSED

Battery monitoring module is not enabled, see Battery explanation.

CRITICAL

Battery energy is low, flying cannot be performed safely.
Estimated flight time based on battery usage is less than 30s.

WARNING

Low amount of energy in the battery, flying is still possible but estimated flight time based on battery usage is less than 60s.

BATTERY ALARM

Battery status shows whether you have enough voltage in the battery to fly. This module requires at least a battery voltage sensor to work.

UNUSED

Battery monitoring module is not enabled

CRITICAL

Battery voltage is very low, flying cannot be performed safely. Default limit is 3.1V/Cell

WARNING

Battery voltage is low, flying is still possible. Default limit is 3.4V/Cell

I2C ALARM

I2C is a bus that connects onboard or auxiliary sensors and handles the data transmissions. I2C is designed for communications internal to a PCB, and does not work so well via wire connections at high rates.

UNUSED

I2C module is not being used.

ERROR

CRITICAL

WARNING

MAGNETOMETER ALARM

Shows the status of the onboard or auxiliary magnetometer

UNUSED

MAG

Magnetometer is not being used in current configuration, or auxiliary magnetometer is not feeding data. Home location has to be set to enable or calibrate magnetometer.

CRITICAL

MAG

Data is coming from the magnetometer, but the readings are off by over 15%.
This can be caused by various reasons:

- Magnetometer has not been calibrated with current vehicle state (wires position...)
- There are high currents interfering with the magnetometer.
  Twist wires and route them away from magnetometer.
- Calibration was properly done outside, away from metallic objects, but the vehicle is now inside in a different magnetic environment. This behavior is normal.

WARNING

MAG

Magnetometer readings are off by over 5%

ATTITUDE ALARM

If all is well with gyroscope and accelerometer, it turns green after gyroscope calibration or EKF start for Revo.

ERROR

Transitional state : Attitude data not available, waiting for gyroscope calibration.
Don’t move the vehicle while gyros are being calibrated upon board power-up.
There is no data coming in from the sensors, which usually indicates faulty onboard sensors when running Complementary or unknown position from GPS, that needed for GPS Navigation (INS13) fusion algorithm.
If this error persists using Complementary fusion algorithm, the sensors can be damaged.

CRITICAL

Data is received from the sensors, but attitude information is not yet available.
Make sure that GPS and MAG alarms are green, and that all calibrations have been done properly. It sometimes helps to move the vehicle around a bit.

WARNING

EKF is running, but the state estimation is not optimal due to some incorrect data from sensors. Redo a good calibration and moving the vehicle a bit helps in this situation.

SENSOR ALARM

To be defined

UNUSED

ERROR

CRITICAL

WARNING

GPS ALARM

Shows the status of the GPS that can be connected to a flight controller. GPS is required for autonomous missions and assisted flight modes.

UNUSED

A GPS has not been configured to be used.

ERROR

The GPS has been configured, but no valid data is coming in. This is normal if flight battery is not connected, because GPS only gets power from external sources, not USB. Double check serial connection, Tx/Rx wires need to be crossed between board and GPS.

CRITICAL

Serial communication is fine but the GPS has no valid fix. Wait for GPS to gather satellites, and preferably have your vehicle in an open area.

WARNING

The GPS has a fix and navigation can be used. However, the position quality is very low (the indication is <7 satellites and/or PDOP > 3.5m). A blue LED will flash on the OP v8 and v9 GPS and indicate that one sat is received and give time clock.

STABILIZATION ALARM

Shows whether the board is capable of stabilizing flight. See also Attitude alarm.

ERROR

Waiting for gyroscope calibration. Don't move the vehicle while gyros are being calibrated upon board power-up.

CRITICAL

The stabilization module cannot stabilize flight. See Critical red Attitude status for explanation.

WARNING

Can be a brief alarm when one gyroscope update is missing.

PATH ALARM

Shows whether the board is capable of autonomous path following.

UNUSED

PATH

The flight controller has not been configured to do autonomous flying. Autonomous flight is only possible with fusion algorithm GPS Navigation (INS13).
Path follower can't work using CC3D and basic complementary.

CRITICAL

PATH

The system has been configured to initialize Path Follower module, but it can’t be used at the moment.

WARNING

PATH

It happens usually because EKF is not running, see Critical red Attitude alarm explanation.

PLAN ALARM

Shows the status of an autonomous flight plan that can be uploaded to board using the Ground Control Station.
A valid plan can be activated with a path follower flight mode.

UNUSED

PLAN

The flight controller has not been configured to do autonomous flying. Autonomous flight is only possible with fusion algorithm set to GPS Navigation.

CRITICAL

PLAN

Path has been uploaded, but data is invalid and cannot be used for autonomous missions.

WARNING

PLAN

No path plan has been uploaded, but the system is ready to receive a plan. This is okay if you don’t intend to do autonomous missions right now.