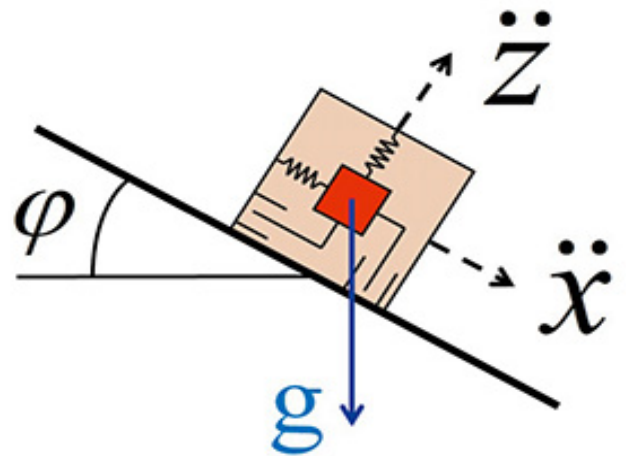
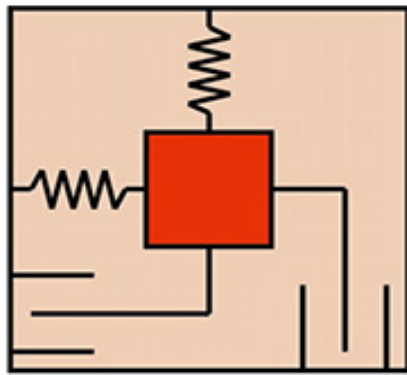


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Sensors and GPS for Drones and Quadcopters





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1. Introduction and functionality

1.1 Sensors for quadcopters and drones

The name of this model construction division, which was completely new just a few years ago, has developed. At the beginning there was the term 'quadcopter'. Since many model makers also build systems with six or eight propellers, there are also the terms 'hexacopter' and 'octocopter'. These different designs are also referred to with the general term of the multicopter.

The term 'drone' has also been used for these systems since around 2010. This term is originally known for military flight systems. This refers to unmanned flying objects that can fly autonomously via GPS or also remotely. It is important that they are unmanned, i.e. that no pilot is sitting in the cockpit. In principle, this can mean the systems of all possible flight principles, i.e. in addition to quad- and multicopters also fixedwing aircraft, as well as helicopters. In colloquial terms, however, the term drone has now almost become a synonym for quadcopter or general multicopter. This book only deals with this colloquial term drone, i.e. with the quad- or multicopters. The unmanned fixed-wing aircraft are therefore not dealt with here.

The sensors used have also evolved. The first quadcopters only had gyros in two or three axes. This resulted in high demands on the pilot of the drone. The acceleration sensors were added later, the combination allowed an automatic angular control. Then came the compass, the air pressure sensor and the GPS. Today all types and other sensors are

used, which greatly simplifies the control of the drones. The sensors are the key for a simple control. The aim of this booklet is to explain their function in context with drones.

1.2 Steering mechanism and technical background

Quadrocopters are aircraft with four propellers. They have the same control capabilities as helicopters. [Figure 1](#) illustrates this. The stick assignment of the remote control, as shown in [Figure 2](#), is most commonly selected. However there are also model pilots who swap the left and right sides.

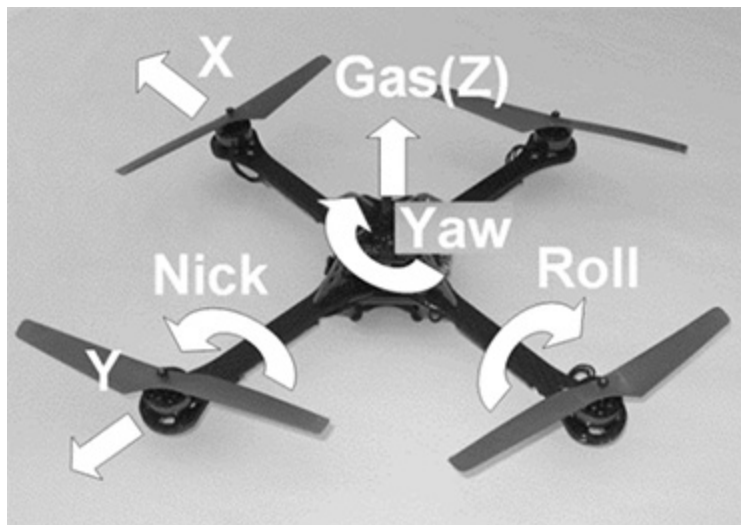


Figure 1: Steering possibilities.