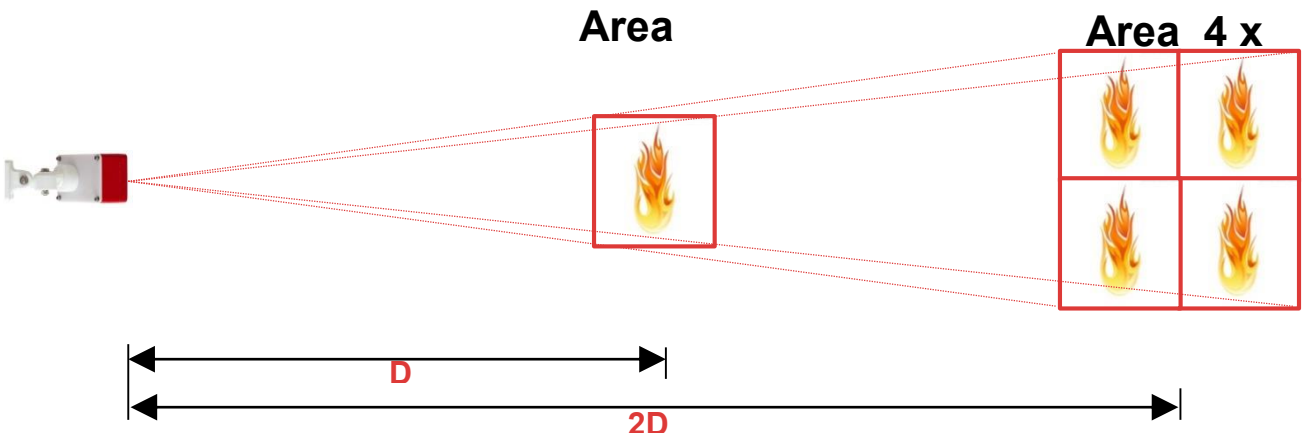
Square law



The Square law.

The square law is applicable to many optical devices including Flame Detectors. In this case the fire size and distance between the detector and the fire:

If a Flame detector is able to detect a fire at a certain maximum distance then the fire size must be four times bigger when the distance to the fire is doubled. In other words:

Double distance = four times bigger fire.

This goes for all fire detectors including the ones that are based on camera technology. The maximum sensitivity of a detector can be calculated by dividing the maximum surface A by the square distance: $c = A/d^2$.
With this factor "c" you can calculate the maximum distance d = root(A/c) and minimum fire surface $A = c \times d^2$.

NOTE! This calculation cannot be used infinitely. When the distance increases factors such as water vapor, cold CO_2 and flame flicker have more impact.