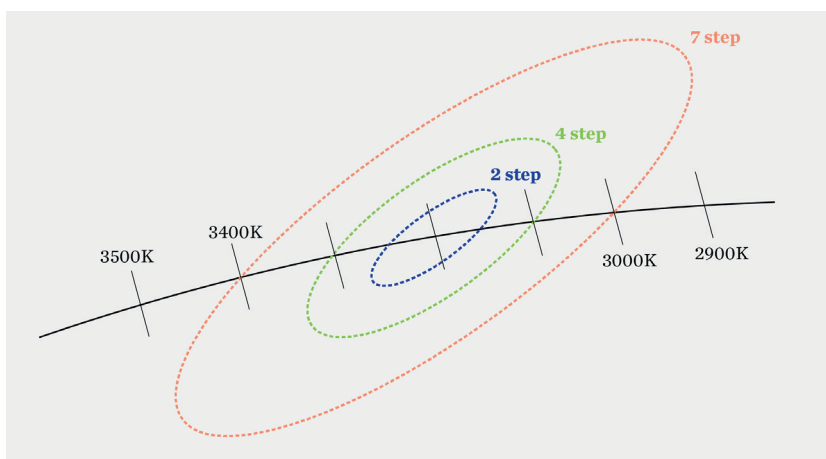
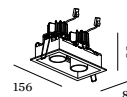


# FREQUENTLY ASKED QUESTIONS

## WHAT DOES 3-STEP MEAN?



## Example catalogue



### 2.0 LED

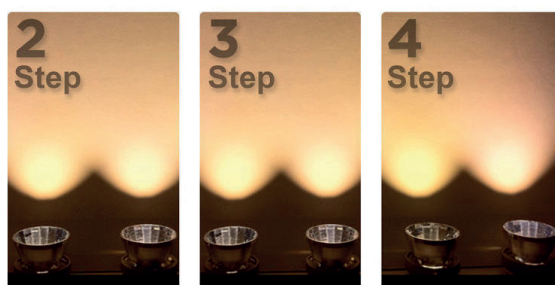
2x LED 7/10W | 350/500mA | 18Vf  
**COB 3-step** | excl. power supply  
 aluminium powder coated  
 1800-2850K 16V

0.34 kg | IP20 | 8-03-D | A-28°

74x148 | 35°/35° | 355° | 95 | 2-18

## MACADAM

Around 1940, David L. MacAdam introduced another measure for the quality of light. In empirical studies he tested what colours are perceived as the same. He found that all colours around a reference colour in a chromaticity diagram, which are indistinguishable to the average human eye, are circumscribed by an ellipse. MacAdam calls it a 1-step ellipse. Other concentric ellipses with the same distance to the reference point as the first ellipse are called 2-step, 3-step, 4-step ellipses and so forth. A 1116 ANSI binning can be described by a 3-step MacAdam ellipse and is currently the smallest binning offered by LED manufacturers. In calls for tenders, the homogeneity of LEDs is often defined in MacAdam ellipses. Another term used for this is SDCM Scale (Standard Deviation of Colour Matching).



1-step binning = differences are not visible

2 & 3-step binning = differences are not or hardly visible

4-step binning = differences are visible