

THE NEW DXO

"DIMLUX XTREME OUTPUT"

CALIFORNIA SPECIFICATION

HPS 1250W 400V DE BULB

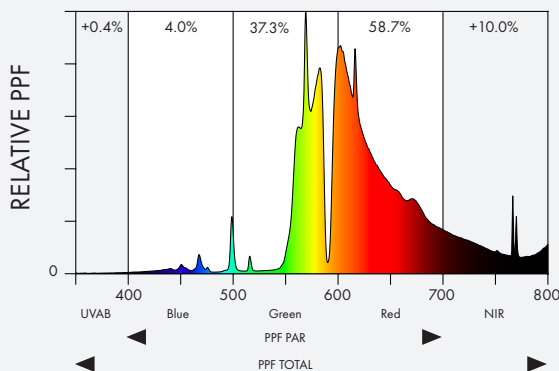
The DXO CA spec bulb was developed with one goal in mind, to be the most efficient bulb ever made and, together with the Dimlux Expert Series MKII 1000W fixture, to be the only in the world to comply with the 2022 California Energy Code.

DIMLUX HAS UPGRADED THE 1000W EXPERT SERIES FULL FIXTURE IN THE RUN-UP TO THE 2022 CALIFORNIA ENERGY CODE THAT WILL TAKE EFFECT IN 2023.

It's necessary for complete fixture + bulb combination to meet the high efficiency requirement of this Energy Code. The result is the MKII fixture, which already uses the most efficient Ultra Optics 98 reflector, now using a completely redesigned ballast which is 30% more efficient.

The new MKII fixture together with the new DXO CA spec bulb is the only combination in the world to have a system efficacy (PPE) of more than 2.1 μ mol/J, an unprecedented achievement that was thought to be impossible.

Most competing brands barely reach the 1.8 μ mol/J, and only a few reach the 1.9 μ mol/J.



DIMLUX XTREME OUTPUT CALIFORNIA SPEC 1250W 2780 μ mol/s 2,23 μ mol/J 400V DE

Light Output PAR (PPF 400-700nm): 2780 μ mol/s @1250W

Light Output Total (PPF 350-800nm): 3370 μ mol/s @ 1250W

Photon Efficacy PAR (PPE 400-700nm): 2,23 μ mol/J @1150-1250W

Photon Efficacy Total (PPE 350-800nm): 2,46 μ mol/J @1150-1250W



THE NEW MKII FIXTURE TOGETHER WITH THE NEW DXO CA SPEC BULB IS THE ONLY COMBINATION IN THE WORLD TO HAVE A SYSTEM EFFICACY (PPE) OF MORE THAN 2.1 $\mu\text{MOL}/\text{J}$, AN UNPRECEDENTED PERFORMANCE THAT WAS THOUGHT TO BE IMPOSSIBLE TO ACHIEVE.

- Optimized red and orange spectrum and high PAR (Photosynthetic Active Radiation) to stimulate flower growth and improve fruiting,
- The only optimized bulb for High Frequency electronic ballasts with 1000-1250W boost,
- Works with any high frequency electronic 1000W fixture or ballast,
- Top efficacy at 1150-1250W, and outperforming any other make and model even at 1000W,
- Dimming range 600-1250W,
- Only bulb that reaches over 2.2 $\mu\text{mol}/\text{J}$ and even more than 2.4 $\mu\text{mol}/\text{J}$ in the PAR Total range (350-800nm),
- Highest share of Far-Red in the market, which has, together with red, has an equal or even greater effect on photosynthesis. The ratio R:FR = 6:1 (sunlight = 1:1, LED = between 20:1 and 10:1)

PPF, PPE AND PPF TOTAL AND PPE TOTAL

The PPF (Photosynthetic Photon Flux) is the amount of photons that fall within the PAR range which are received by the crop within a certain time period, expressed in $\mu\text{mol}/\text{s}$. The PPE (Photosynthetic Photon Efficacy) is expressed in $\mu\text{mol}/\text{s}/\text{W}$, or how efficiently the amount of photons within the PAR range are delivered per Watt consumed. Until recently, the idea was that all light that contributed to photosynthesis in the electromagnetic spectrum ranged from 400 to 700nm along the McCree curve. The 400-700nm region is also known as the PAR (Plant Active Radiation) region. Now we know the wavelengths that fall outside this range do have an effect on the morphology and steering mechanisms of the plant, but to a lesser extent on photosynthesis (see image). In fact, it spans the range from 300nm to 800nm, but due to the decreasing response in the 300-400nm and 700-800nm regions, and the fact that it was not possible at the time to produce sensors that followed this decreasing curve, they simplified the PAR region to be rectangular.

The latest insights show that the McCree Curve is not complete. McCree determined the curve with the limited resources available at the time. He did this by shining pure colors on different plants using a light bulb and a prism. At the time, he calculated the influence of individual colors on photosynthesis by means of a photosynthesis measurement.

According to new insights, the wavelengths of NIR (Near Infrared) 700-800nm, when combined with the wavelengths in the red PAR region 600-700nm contribute to photosynthesis to an equal or even greater extent than when applied individually. It has also been found that if the individual wavelengths are presented as a whole to the whole plant instead of to a single leaf and for longer periods with higher intensity, it appears that the McCree curve will look very different. The curve should therefore be redefined taking into account recent insights.

With this new knowledge, it is better to look no longer at the limited and outdated PPF or PPE 400- 700nm for the power of a light source for growing, but at the PPF Total and PPE Total (350- 800nm), as these also contain the photons of UV and NIR. PPF Total, is also called Photobiologic Photon Flux (PBF).

