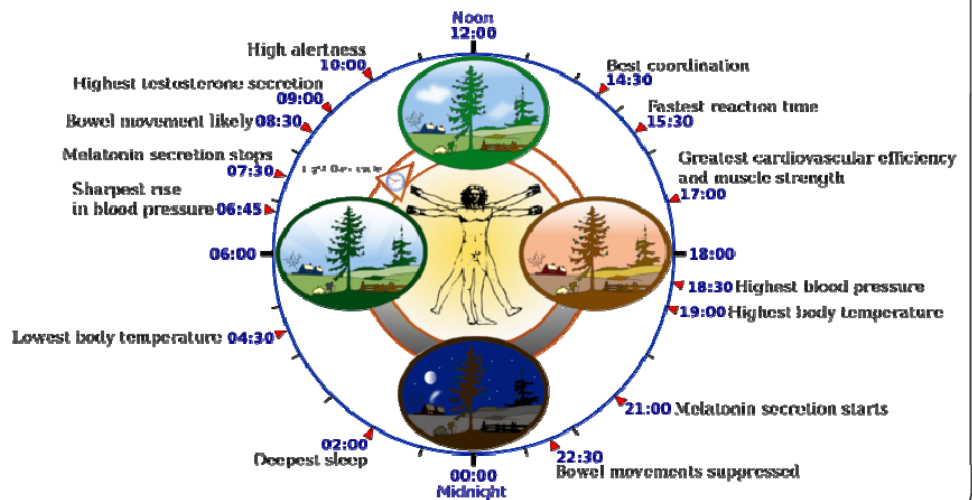




Intelligent Dynamic LED Luminaires

**This week at ARC 09, UK Based Photonstar LED Ltd. are launching their SmartWhite dynamic intelligent luminaire—a lighting solution meeting the needs of both visual and circadian human systems whilst maintaining high efficiency and complying with building standards. Combined with control and feedback using luminaire based intelligence for integration into building control systems, this groundbreaking new product will project this young British company to centre stage of the future of lighting.**

Photonstar LED have an established range of high quality illumination grade LED solutions which meet and exceed many environmental & construction requirements with a lifetime of 50,000 hours. The latest SmartWhite luminaires utilise PhotonStar's patented ChromaWhite technology to emulate natural daylight cycles with a large tuneable colour gamut from 3000K to 6500K with a very high colour quality with a CRI in excess of 90. SmartWhite luminaires can be preset to cycle through the natural daylight range for enhanced local environment improving wellbeing, sleep, mood, efficiency and alertness. Colour and colour quality is then locked and self correcting over the full lifetime of the unit. Units can be tuned to emulate tungsten, halogen, metal halide and CFL whilst combining excellent colour quality and ultimate efficiency and without the radiated heat or UV .



Visual Lighting

### SmartWhite - Visual lighting:

Whilst colour-mixing LEDs to produce white is not new, the PhotonStar SmartWhite intelligent luminaire uses patented LED ChromaWhite module technology to achieve highest colour quality – with a CRI in excess of 90-95, and best in class efficiency of 80-90 lumens/watt. This is not possible with typical RGB LED modules, which when mixed together to form white light typically have a CRI between 30-60 and low efficiency (typically 30 lm/W with today's modules). Other low energy options such as CFLs achieve a CRI around 80.

The PhotonStar approach is different and results in full spectral colour illuminance and true colour irradiance and reproduction. Objects are perceived in their true daylight colours. For colour sensitive applications such as retail, museums, galleries, & graphics the accuracy that the eye is able to perceive the colour is essential.

In existing RGB luminaires, the varying colour degradation of the individual LEDs results in unpredictable output in the longer term. SmartWhite's intelligence guarantees that over the 50,000 hour lifetime, no colour degradation will be observed. The luminaire will constantly retune to the required colour temperature, quality and intensity based on the active onboard colour sensor.

Circadian Lighting

### SmartWhite – Circadian Lighting:

Natural daylight cycles throughout the day affecting the human circadian rhythm. Research on the circadian system has already shown that exposure to light in various forms and at different times is the factor with the most power to affect the efficiency of individuals through mechanisms both physiological - linked to the production of hormones, especially melatonin - and psychological. A harmony exists between the timing of our pre-programmed clock and the local, solar light-dark pattern no matter where we are on the planet. When that harmony is broken disturbances in a number of bodily functions begin to appear, as it can be, for example, by air travel. Jet lag symptoms include poor sleep, fatigue, poor digestion, and general malaise.

The photoreceptors and neurons serving the circadian system are distinctly separate within the retina. SmartWhite luminaires address the needs of the circadian system by emulating daylight cycling through from 3000 to 6500K throughout the day (or as required) in an intelligent luminaire, whilst maintaining extremely high CRI for the visual system and high efficiency for the environment. With a control system, a simulated daylight cycle is achieved in the building, with uniform light levels automatically adjusting to fluctuations in ambient light.

## SmartWhite: Eco-lighting

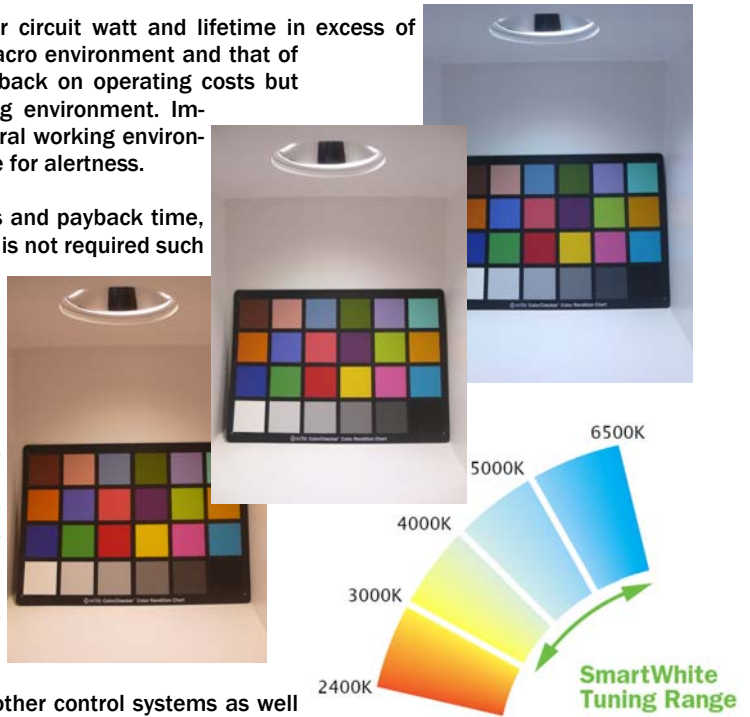
With an efficiency of greater than 50 luminaire lumens per circuit watt and lifetime in excess of 50,000 hours, the luminaire meets the needs of both the macro environment and that of the micro-environment. Efficiency savings provide rapid payback on operating costs but are also complimented by efficiency savings in the working environment. Improved concentration and reduced errors due to a more natural working environment supporting the natural circadian rhythm, and added blue for alertness.

A built in high efficiency mode further improves the statistics and payback time, operating at 70 luminaire lumens/watt when full illumination is not required such as in an unoccupied corridor.

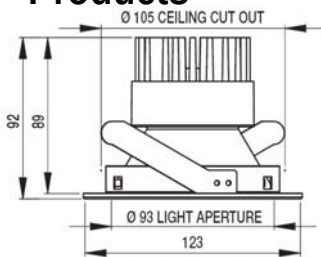
## SmartWhite: Control and Feedback

SmartWhite is now being specified into some of the most technologically advanced building designs. With active feedback, the colour temperature, quality as well as intensity are maintained over the life of the luminaire guaranteeing improved quality and extended life between building maintenance cycles. The built in thermal protection, ensures any sudden fluctuations in ambient temperature or peripheral failures do not detrimentally affect the SmartWhite performance.

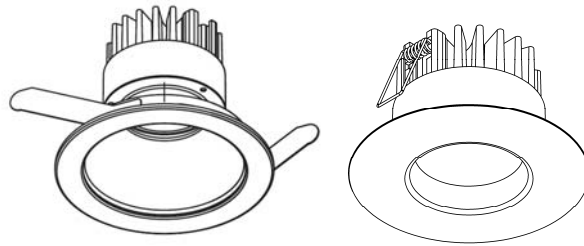
Luminaire based intelligence compatible with DMX, DALI & other control systems as well as 2 channel analogue input / output, fully dimmable and tunable, SmartWhite is a perfect partner for even the most advanced building control systems.



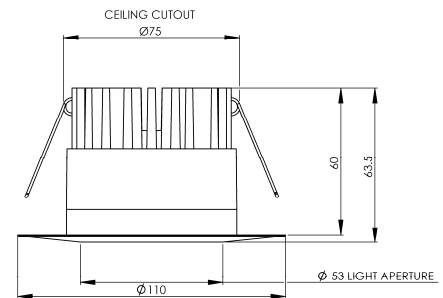
## Products



SmartWhite CeilingStar10-12W Downlighter



SmartWhite CeilingStar5 TT-12W Downlighter



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