

# SKYMASTER ZKP 4 LED

## Planetarium Projector for the Digital Age

### Stars that inspire

The projection of the starry sky is what a planetarium is all about. Whether the artificial stars can fascinate and inspire hinges on the quality of imaging. Carl Zeiss has set the standards for realistic and brilliant stars on the planetarium dome since 1923. In the age of digital video projection, more than ever before, it's true that bright and point-shaped stars on a black, velvety background can only be produced with optical projection. In the new SKYMASTER ZKP 4 LED, Carl Zeiss combines two leading-edge technologies to deliver extremely bright, tiny and pin-sharp light dots: ZEISS fiber optics and LED lighting. Never before has an artificial sky been as close to the natural one. Thanks to LEDs, the stars are not only three times as bright as before, but also pure white compared to slightly reddish hue of halogen-lit stars.

Introducing LED illumination, Carl Zeiss sticks to its concept of a realistic simulation of the night sky. The number of stars of the northern and southern skies projected remains approximately 7000 – the quantity which a human eye can perceive under premium conditions, and which will not overload the view of the heavens in a planetarium of small or medium dome size. The brightest stars shine with their natural colors; faint objects are represented as far as the naked eye could see their natural counterparts, and the Milky Way is realistically simulated by optical projection.

Expending only 35 watts, the LEDs even reduce power consumption by 66%. In addition, their long service life cuts down maintenance costs. An LED lamp needs to be changed only after 60,000 operating hours, i.e., after practically 20 years.



*SKYMASTER ZKP 4 Planetarium projector*

### Digital planet control

SKYMASTER ZKP 4 comes with eight object projectors. They can display all the planets as well as project other objects of the solar system such as comets and dwarf planets together with their orbital data – at the right time, in the right place, and – thanks to new LEDs – many times brighter than before. Digital drives are provided to permit time jumps in a matter of seconds.

### Modular design

SKYMASTER ZKP 4 is a modular system. It is up to you to decide which didactic functions you want to be included. The projector supplied with powerdome® Systems is designed for easy control of the ZEISS digital full-dome projection in synchronism with the optical-mechanical projector.

### Supreme operating convenience

An easy-to-handle panel with pushbuttons and rotary controls, plus sophisticated operating software, permits manual operation of the planetarium functions including the digital ones. It's no problem to change between live operation and fully automatic playback, or to use both modes in combination.

# Technical Data

Projection Dome		Auditorium	
Dome diameter / tilt:	6 m to 15 m, 0°	Temperature:	+15°C to +30°C
Reflectivity:	40 % to 75 %	Temperature changes:	max. 5°C/h
Horizon height:	2055 mm	Rel. humidity:	max. 70 %
Projection Instrument		Control Console*	
Height, max./min.:	2750 / 1725 mm	Width:	1840 mm
Diameter, substructure:	780 mm	Depth:	980 mm
Weight:	approx. 280 kg	Desk height:	1130 mm
Power Supply		Control	
Operating voltage:	240/220V ±10%, 50 Hz	Control computer:	Industrial PC
	130/110V ±10%, 60 Hz	Control panel:	450 x 250 x 50 mm
Power consumption:	1.8 kVA (max.)	Operating system:	MS Windows®
	1.0 kVA (typ.)	Operating software:	ZEISS SKYPOST 4
Projections			
Starry Sky:	entire northern and southern sky, approx. 7 000 stars (down to magnitude 6 <sup>m</sup> 3)		
Colored stars:	18, all stars down to 1 <sup>m</sup> 6 with natural reddish and bluish tints		
Milky Way:	optical projection		
Deep-sky objects:	26, all important nebulae and galaxies visible to the human eye		
Sun:	selectable sizes: approx. 1° diameter and pointlike		
Moon:	approx. 1° diameter, visible surface details, automatic and motion-independent phase changes		
Planets / solar system objects:	7 projectors (incl. projector for Sun) for the presentation of planets, dwarf planets, comets, satellites and star motions		
Coordinates:	meridian, ecliptic, equator, vertical circle, hour circle, azimuth scale, zenith mark, hour angle scale, celestial pole, precession scale, nautical triangle, cardinal points		
Constellation figures:	38 figures		
Illuminations:	blue, white, horizon lights east and west		
Special Projector:	Shooting stars		
Additional equipment			
Lift:	built-in, lifting height: 530 mm		
Azimuth turn table:	unlimited motion and positionable		
LED illumination			
Starry sky:	2 x 35 W high-power LED, color temperature: 6 500 K, life-time: approx. 60,000 h		
Planets / objects:	8 x 10 W white LED, color temperature: 6 500 K, life-time: ca. 60,000 h		

\* Additional equipment