



**ZEISS Hybrid Planetarium  
SKYMASTER VELVET**



# ZEISS Hybrid Planetarium SKYMASTER VELVET

It takes an optical-mechanical planetarium projector to simulate a starry sky that is really brilliant, one that captivates and inspires the audience. At the same time, who would forgo the flexibility of a digital planetarium? For small and medium-sized domes, ZEISS offers the no-compromise combination of analog star projec-


tion with SKYMASTER ZKP 4 LED and digital full-dome projection with VELVET LED. No compromise means (a) that the digitally projected imagery will not spoil the brilliance of the stars on the night sky and (b) that the digital and analog planetarium projections will always be in perfect register.

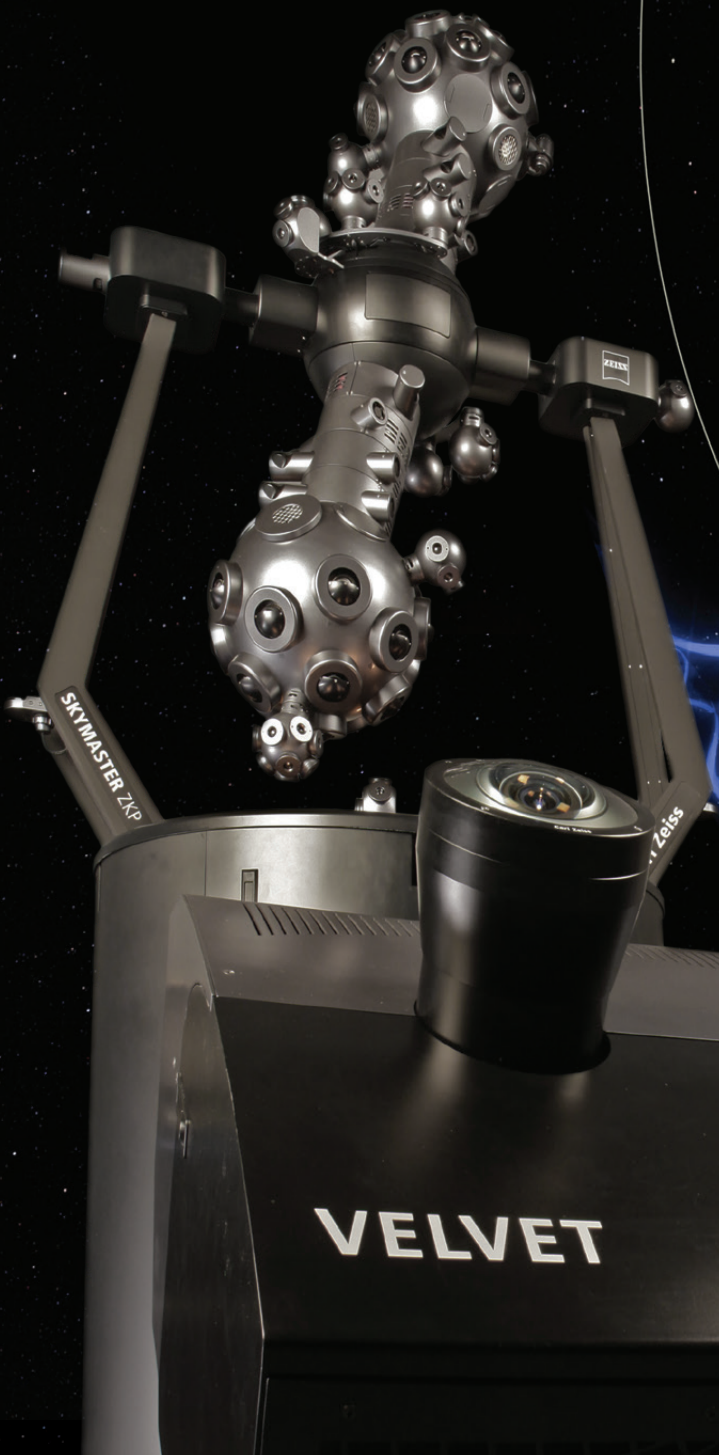
## SKYMASTER ZKP 4 LED

In the SKYMASTER ZKP 4 LED, ZEISS combines two leading-edge technologies that make for tiny but extremely bright and pin-sharp stars: Fiber optics and LED light sources. Never before the artificial night sky was so close to the natural one. SKYMASTER ZKP 4 LED displays exactly the number of stars that can be discerned by human eyes under best viewing conditions at night, while not overloading the sky on a small or medium-sized planetarium dome. Here's an artificial starry sky as clear as the natural one at its best.

A convenient-to-handle control panel and sophisticated software make it possible for the analog and digital planetarium functions to be operated simultaneously. ZEISS ensures that all digital features – such as, e.g., the 88 constellation figures – automatically register with the optically projected stars. The user is free to assign show parts and functions to the planetarium projector and to the digital system.

**VELVET**

 Carl Zeiss



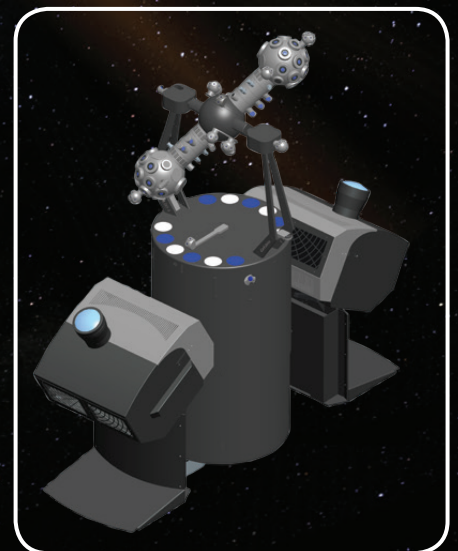
### VELVET LED

The VELVET LED projectors, designed and manufactured by ZEISS, are in every respect just perfect for dome projection. Regarding contrast, the projectors outperform all other makes on a worldwide scale, offering absolute black where black is part of the image. Thanks to this technology, digital planetarium functions can, without any compromise, be combined with the optically projected stars, with nothing dulling the velvety black background of the night sky.

For dome-filling (360°x180°) and shadow-free projection, two VELVET LED projectors are used, installed right next to the SKYMASTER ZKP 4 LED. The integrated software makes easy jobs of show compilation and playback. The digital planetarium comprises all classical functions plus many extras – among them a three-dimensional Earth with a mark of the observer's current position, tracking planet trails, the formation of the analemma, atmospheric effects; and many more.

### UNIVIEW™

The UNIVIEW planetarium software opens up the universe to the audience in 3D and interactively. Viewers are taken on a trip from the Earth to the other planets of the solar system, across the Milky Way and beyond. The software package visualizes the entire observable cosmos. Extraordinary imagery and countless didactic functions make understanding the structures of the universe plain sailing. Operation with the computer mouse is easy and intuitive.



SKYMASTER ZKP 4 LED  
with VELVET LED  
(computer drawing).

# Specification

## Dome parameters

Diameter / Tilt	8 m to 14 m / 0°
Projection surface	360° x 180°, shadow-free
Horizon height	2055 mm
Resolution of fulldome projection	approx. 4.6 million pixels net
Temperature	+18°C to +30°C
Temperature change	max. 5°/h
Relative humidity	max. 70%
Power requirements	240 V / 220 V ±10 %, 50 Hz, approx. 5 kVA 130 V / 110 V ±10 %, 60 Hz, approx. 5 kVA

## SKYMASTER ZKP 4 LED

Height, max./min.	2750 / 1725 mm
Diameter of substructure	780 mm
Weight	280 kg
Starry sky	approx. 7000 stars (down to magnitude 6.3), 18 colored; Milky Way, 26 nebulae and galaxies
Solar system	Sun, Moon, planets, dwarf and minor planets, comets
Didactic functions	Great circles, scales, pole markers, compass rose, 38 constellation figures, nautical triangle
Lighting	Stars, planets: LED Blue, white, east and west horizon lights: halogen
Motions	Diurnal motion, azimuth rotation, polar altitude variation, annual motion, precession, vertical circle rotation, hour circle rotation
Modes of presentation	Topocentric, geocentric, orrery

## VELVET LED Projectors

Footprint (incl. ZKP 4)	approx. 2300 mm (north-south) x 680/(780) mm (east-west)
height, max.	approx. 1210 mm
Weight	approx. 100 kg (projector with housing)
Technology	ZEISS True Black Projection Technology
Imager	LVDS DMD™ with DarkChip3™
Resolution	WQXGA (2560 x 1600)
Lens	ZEISS DIGIGON 178
Contrast	2,500,000 : 1
Lamps	LED-based RGB solid-state lighting

## Operation / Software

Manual control panel	450 mm (W) x 250 mm (D) x 50 mm (H)
Planetarium	software for analog and digital planetarium presentations
Fulldome projections	powerdome III
Control console*	1840 mm (W) x 980 mm (D) x 1280 mm (H) including space for computer and sound equipment, lockable drawer, slide-out keyboard rests, monitor holder

\*option

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