

CHRONOS II - GOTO HYBRID Planetarium®



Compact, LED, opto-mechanical planetarium

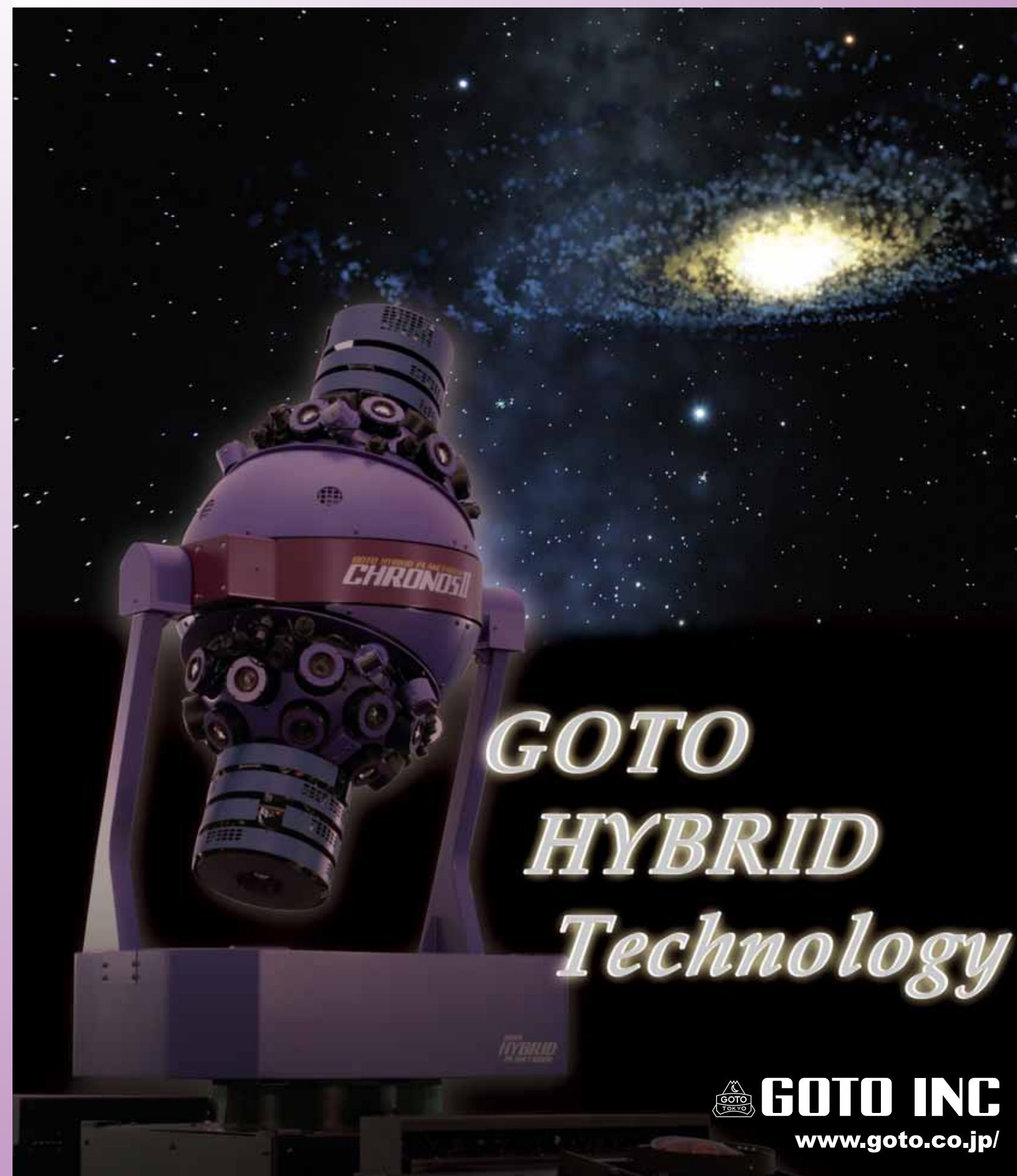
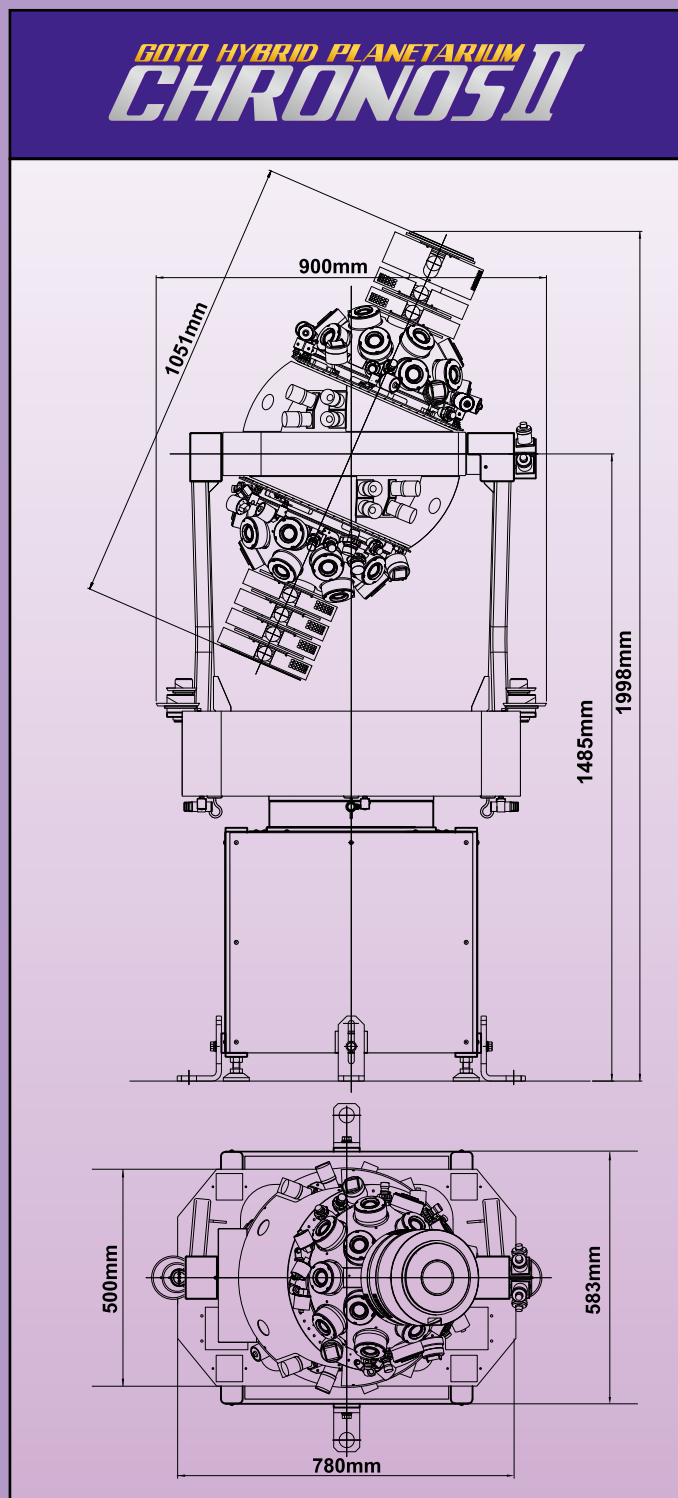
Scope	Dome Type	Horizontal (Uses gravity shutters for horizon cutoff or electronic switching as objects approach the horizon)
	Dome Diameter Range	8-16 meters (26-53 feet)
	Standard Seating	50 - 160 seats (unidirectional or concentric)
Fixed Star Projector	Optical Projection Type	double hemisphere 100% full sky with no obstructions
	Star Lamp Type	Long-life LED illumination. Life time over 30,000 hours, depending on type of use and duty cycle. Color Temperature ~5000°K
	Number of Stars	~8,500 down to mag 6.5, or more upon request
	Star Plate Type	Proprietary compound plates, for extreme accuracy of magnitude, and the smallest known star images in an opto-mechanical planetarium projector
	Bright Stars	21 via separate LED projector tubes, with appropriate colors shown
	Deep Sky Objects	36, including Magellanic clouds
Milky Way	Standard:	Diffuse type, LED illuminated, with independent dimming or linked to star level setting
	Moving Object Projectors	Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn Ultra-long life, bright LED illumination All are computer driven by rapid X-Y slewing mirrors Alternate modes feature Orrery, Orbiting Earth Satellite Moons of Jupiter, and others Moon shows precise phasing and surface features Sun and Moon are shown 1 degree in size
Main Body Motions	4-Axis type:	Diurnal, Latitude, Azimuth, Precession, each at up to 3 RPM Annual - up to 60 sec./year in continuous mode, or "jump" to any time or date in 15 sec. or less
	Diffuse Instrument Lighting	Daylight (white, using Ultra-long life LED illumination)
Maintenance		Ten year maintenance cycle for most slip rings Low cost maintenance contracts available Factory trained technicians in USA, India, Japan, Asia
	Weight	Projector: 380 kg
Size		Main body length: 1051mm
Power Consumption		90-230VAC, 50/60Hz, 3.0KVA max, 1.5KVA typical. (The lowest power consumption in its class.)

OPTIONAL PACKAGES

Option Package A • Our Galaxy	Lensed LED projection using 10 million micro-stars to show amazing detail in the structure of the Milky Way. Independent dimming or linked to starfield.
Option Package B • Storyteller	12 individually-controlled constellation outline projectors which move with all main body motions. 88 outlines are provided. Colored LED sunrise, sunset, and twilight glow projectors in east and west. Adjustable direction for seasonal change.
Option Package C • Navigator	LED illuminated coordinate lines including Ecliptic, Equator, Meridian
Option Package D • Elevators	• 600 mm Scissors Lift for use on flat floors • 2,000 mm Chain Lift for use with pit
Package E • Console Desk	GOTO's steel desk to accept the control panels of the CHRONOS II or CHRONOS II HYBRID.
Control Interface	Dozens of dedicated control switches, sliders and other controls plus remote wireless device.

Note: All levels of CHRONOS II may be synchronized with selected full-dome systems.

Specifications subject to change without notice.



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GOTO CHRONOS II Leading the planetarium field into the future!

The Best Gets Better

The original GOTO CHRONOS rapidly became America's fastest-selling new opto-mechanical planetarium projector. Its extremely accurate and fast digitally-driven sun, moon, and planet projectors and its beautiful skies made it the instant number one.

Planetarians fell in love with the ergonomically-designed control console and the effortless live programming it supported so well. It had very low maintenance costs, had a wealth of constellation outlines and other features previously seen only on much larger machines, yet was priced very competitively. And after GOTO INC developed the world's first color full-dome video system in 1996, and the first HYBRID planetarium in 2004, the CHRONOS was also synchronized with full-dome video in a HYBRID. What could be better? CHRONOS II – that's what.

Times Change

The planetarium environment has changed since 1996. Truly realistic starry skies are still done only with opto-mechanical projectors. But full-dome video has matured to the point where much of the imaging previously done with slides, film, and special effects projectors can now be done adequately with digital video. And more producers are gaining skill in creating animations for this new medium.

But there is still a need for a planetarium projection system that can be operated live by an educator in real time, without time-consuming pre-scripting. Educational institutions still need a beautiful pinpoint sharp sky with 8,500 or more tiny stars showing against an inky black background, and with user-friendly controls. They need swift and computer-accurate positioning of objects on the sky and a set of status displays to help the operator do an excellent live or automated program.

Planetarians still need tools to create their own programs which fulfill the needs of their audiences, and to react to new celestial events quickly, or to answer questions immediately. For many users, playback of full-dome movies or pre-scripted sequences is not enough. It's time for the new CHRONOS II HYBRID.

It's green

Well no, it's still purple, but the CHRONOS II is the world's first full-featured planetarium projector to be 100% illuminated by energy-efficient, extremely long-life light emitting diodes (LEDs)! This means the CHRONOS II consumes about 1/3 the power of traditional projectors, helping the environment, and eliminating burned out light bulbs in the middle of a show! Other benefits of LED technology are better color temperature, cooler light sources requiring fewer, quieter cooling fans, and brilliant projections for more than 30,000 hours before easy LED replacement.



High brightness LED device

It's brighter!

New GOTO star plate technology, paired with state of the art LED technology yields tiny star images that are more than five (5) times brighter than before! That means the CHRONOS II is now great for domes from 8-16 meters (26-53 feet) in diameter. This new power looks great together with video in HYBRID configurations!

It's compact and durable

The CHRONOS II uses the same, proven technology for motion and control that the superb CHRONOS used. Expect a 30+ year lifetime for this machine with easy, low-maintenance features throughout the design. At only 1.1 meters long, the CHRONOS II's main body presents a very small profile, and the entire projector – including sun, moon, and planets - easily fits down into the elevator pits of older pinhole projectors, making it the perfect projector for both replacement work and new installations.

It is a pleasure to control

GOTO knows how planetarium educators use their equipment. We know that instructors must have full and flexible control of the planetarium at all times. When students fill the dome with questions, there is no time for programming complex computers, or even searching command menus on glowing monitors to make something happen. Instead, planetarians expect smooth, simple control at their fingertips, even in complete darkness. That's right, no glaring computer monitors are necessary to execute full manual control of live programming. So you can see what your audience sees!

GOTO provides the planetarium industry's most complete and flexible manual control console. Real, dedicated sliders, push button switches, and jog-dial analog motion controls are laid out in an ergonomic fashion that has been tested by and developed with actual planetarium educators - not just engineers!



So complex motions of the sky, jumps to different dates and times, overlaid graphics, and much more is possible with a single touch of a dedicated control. This eliminates the need for time-consuming pre-programming for the vast majority of educational uses. And if the user desires to use a wireless, hand-held control device, or pre-program an entire show, that is easily done with the CHRONOS II HYBRID's sophisticated yet simple choice of control interfaces.

GOTO believes that you'll choose the CHRONOS II HYBRID Planetarium system to teach astronomy. All full-dome systems can play back movies created by someone else. We have created our GOTO HYBRID Planetariums™ to also help you teach what you want to teach! You are in control with the CHRONOS II HYBRID Planetarium. Don't sacrifice that control by settling for a system with only a keyboard and mouse to try to run a live show.

Your best value

By leaving off many of the auxiliary projectors used on older machines, the CHRONOS II costs less initially, and has a low maintenance cost. Yet all of those older auxiliary functions and many new and exciting ones are easily available via the fully synchronized and easy-to-control full-dome video system which completes the GOTO CHRONOS II HYBRID Planetarium system.



Ball State University



Kumamoto City Museum



Sage Valley Jr. High, Gillette, WY



Shinagawa City Gotanda Culture Center