

Atlas 3D Cam Solution

fact sheet

GE Energy's Atlas™ 3D Cam solution is designed to improve the operation of your Kaplan hydro turbine control system by providing a robust, digital upgrade to your existing Woodward™ analog electric or mechanical governor. The Atlas 3D Cam provides automatic blade positioning based on head and gate, as well as the best available lost generation protection due to failure of older, difficult to repair equipment. The control is specifically designed to replace the Woodward analog electric three-dimensional cam used on existing analog and mechanical systems.

Hydro Solutions from Across GE

Uniting the latest control technology with the experience and expertise of GE's design and software engineering creates an industry-leading solution to advance your hydro turbine control into the 21st century. The Woodward Atlas platform interfaces through a GE Fanuc touch screen, providing full access to the Operator Interface Terminal (OIT) for operation programming and debugging. Gate and head signals are processed through 3D curve functions in the Atlas to provide precise positioning of the turbine blades.

Failsafe features within the control provide for a variety of startup and shutdown conditions to minimize turbine runaways. A manual control option is implemented to enable index testing, troubleshooting, and maintenance.

Fully Configurable Controls

Engineered to your exact specifications, the Atlas 3D Cam control system is fully compatible and easy to interface with your existing hardware. The Atlas is programmed using the patented GAP™ pictures-to-code programming tool. Set point adjustments can be made while the unit is running, enhancing the uptime and reliability of the system.

The Atlas can be expanded to include all governor functions, creating a modular system that grows as your needs increase and your turbine generator requires greater control. The system can also be custom-designed to link directly to your hydro plant's control through a serial or Ethernet communications network.

Complete Hydro Solutions Provider

GE Energy aims to build an integrated solution on a single platform for your hydro plant. We offer the complete water to wire package, together with a commitment to innovative solutions for complete technology customization and total customer satisfaction. From connecting the turbine island and the balance of plant operations to a powerful, excitation and digital control interface to providing 24/7 service and support services for all of your hydro assets, GE is committed to being the comprehensive provider for all of your hydropower and water control needs.



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Benefits

- 3D Cam and manual blade positioning
- Online manipulation and updating of blade curve data
- Scalable from current operations to encompass all governor functions
- Manual operation for index testing
- 32-Bit microprocessor-based digital control
- Enhanced, user-friendly touch screen
- View program and make set point adjustments while unit is operational
- Digitally link to other systems through ModBus® Communications
- Optional factory remote support capability

GE Energy maintains more than 500 field services engineers on-call to provide a rapid response to your inquiries or service needs. Our global presence is supported by the GE Energy Learning Center, which provides onsite training from a large pool of professional instructors and controls specialists.

Enhance the protection against loss generation of your Kaplan hydro turbine with GE Energy's Atlas 3D Cam digital control upgrade.



Specifications

Input Signals		Output Signals	
Discrete Input		Comm Ports	
DI/01	Reserved Hydraulic SD	COMM/01	Spare
DI/02	On-Cam	COMM/02	OIT(Modbus)
DI/03	Blade Posn – Raise	COMM/03	OIT(Modbus)
DI/04	Blade Posn – Lower	4–20mA Input	
DI/05	Blade Tilt – Start	AI/01	Gate Posn
DI/06	Blade Tilt – Shutdown	AI/02	Blade Posn
DI/07	Blade Tilt – Overspeed	AI/03	Head Level
DI/08	Reset	AI/04	Tail Level
DI/09	Blade Lock	AI/05	Net-Head Level
DI/10	Manual Net-Head – Enable	AI/06	Manual Net-Head Level
DI/11	Manual Net-Head – Use 4-20mA	Speed Sensor	
DI/12	Manual Net-Head – Raise	SS/01	Spare
DI/13	Manual Net-Head – Lower	SS/02	Spare
DI/14	Spare	Actuator Driver	
DI/15	Spare	ACT/01	Spare
DI/16	Spare	ACT/02	Blade Actuator
DI/17	Spare	4–20mA Output	
DI/18	Spare	AO/01	Gate Posn Indication
DI/19	Spare	AO/02	Blade Posn Indication
DI/20	Spare	AO/03	Head Level Indication
DI/21	Oil Filter #1 D/P Hi	AO/04	Tail Level Indication
DI/22	Oil Filter #2 D/P Hi	AO/05	Net-Head Indication
DI/23	Reserved PS #1 Flt	AO/06	Spare
DI/24	Reserved PS #2 Flt	Discrete Output	
		Relay/01	Control OK
		Relay/02	General Control Alarm
		Relay/03	Summary Analog-Input Signal Failed
		Relay/04	On-Cam Indication
		Relay/05	Manual or Maintenance Mode Indication
		Relay/06	Blade Demand/Posn Mismatch Indication
		Relay/07	Blade Lock Indication
		Relay/08	Configurable Gate/ Blade Posn SW1
		Relay/09	Configurable Gate/ Blade Posn SW2
		Relay/10	Configurable Gate/ Blade Posn SW3
		Relay/11	Configurable Gate/ Blade Posn SW4
		Relay/12	Configurable Gate/ Blade Posn SW5

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