# Argus Control Systems







# **Our Offering**

#### **Environmental Controls**









#### Control for Walk-In and Reach -In Chambers









## The Argus Control System

**Argus Titan** 

The Titan system is a comprehensive hardware and software control solution. It is three systems in one:

# Control An advanced automated equipment control system Alarm A comprehensive monitoring and alarm system Data acquisition

A powerful data acquisition system (data recording, archiving, tabular and graphical trend analysis, data export).







### The Argus Control System



#### Argus Titan System Hardware

Typical hardware components include:



Controllers and I/O modules are designed to be distributed to where the action is. They can be located very close to the equipment they monitor and control, and are designed for a wide range of environmental conditions. In many cases this can substantially reduce low and line voltage installation costs when compared to centralized control systems where all wiring must be run to a single location.





### **Combination Panels (Optional)**



#### Line Voltage Interfacing

Argus can provide custom engineered combination panels containing the Argus Titan control hardware along with prewired power distribution and line voltage relays matched to the controlled loads.

- Space saving 'all-in-one' design
- Line voltage relay modules are factory matched to each load







### The Argus Titan System





#### **Control Targets**



#### **Diurnal Set Point Schedule**

- Diurnal 24-hour repeating program
- "Absolute Control" controls via exact time of day e.g. 9am
- "Relative Control" controls via Dawn and Dusk e.g. 1 hour before dawn
  - Since dawn and dusk times shift with the seasons depending on your latitude, time settings using relative times shift according to the geographical settings on your system controller.





#### **Multistep Setpoint Schedule**

- Used when more complex programming is required
- Create multiple programs (ie. Flower weeks 1-3, Flower weeks 4-6, Flower weeks 6-8 etc) to run as an automatic schedule or change between programs 'on-the fly'.





**HVAC Equipment Co-Ordination** 



#### Climate Energy Balance

As opposed to a BMS, it is based on a feed forward principle and uses information from outdoor weather and climate zone sensors to analyse the current indoor and outdoor conditions. It then compares this information to the current climate targets and calculates a desired output response for heating and ventilation equipment.

Heating Required       27.22       S         Wentilation Required       0.00       S         Heat Required       10.60       C         Clinate Temperature       10.60       C         Heating Torget       10.60       C         Temperature Difference       -0.60       S         Heating Outdoor Temp. FF Response       5.64       S         Heating Outdoor Temp. FF Response       5.64       S         TOTAL Temperature Heating Required       27.22       S         Cooling Froportional Response       -5.64       S         TOTAL Temperature Heating Required       27.22       S         Outdoor Light FF Response       -5.64       S         Outdoor Light Influence Multiplier       1.66       Not         Outdoor Light Influence Multiplier       1.66       Not         Dehumidify Heat Torget       0.00 S       S         Dehumidify Heat Orgonse       -33.6 MBh       Not       Not         Dehumidify Heat Proportional Response       -0.60 S       Not         Dehumidify Heat Proportional Response       0.60 S       Not         Dehumidify Heat Proportional Response       0.60 S       Not         Dehumidify Heat Proportional Response       0.60 S       No		
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Heating System Request End 90.00 °C	Heating System Request End 90.00 °C	? Climate Energy Balance Input Values





**Climate Equipment Decisions** 



#### Shade

- Timed Open/Close Operation
- Light based operation
- Opening Steps
- Shading Steps
- Day/Night Crack settings
- Thermal Override
- Night reopening
- Spray Settings



#### **CO2 Enrichment**

- Output control
- Concentration control
- Time window
- External Enable/Disable
- Spray Settings override
- Emergency Heat overide
- Emergency Shutdown & restart



#### **Humidity Control**

- Hysteresis algorithms to reduce the ON/OFF cycling times of a humidifiers
- VPD Control
- Using heating for dehumidification
- Using ventilation for dehumidification
- Chemical drier operation



#### **Other Control Programs**

Developed for configuring generic decision logic and event monitoring, examples include:

- Conditional Equations
- Math matrix
- PID Equations
- Triggers
- Filters and Functions
- Custom sensors, load cells, moisture probes
- BACnet, Modbus interfacing via Argus Translator





#### **Lighting Control**



#### Lighting

- Photoperiod start/end time settings can be absolute (time of day) or relative (tied to dawn or dusk)
- Cyclical lighting settings for energy efficient photoperiod control
- Time windowed supplementary light control
- Automatic reset of user initiated overrides
- Light sensor based operation
- Light level and light duration proving times
- Light accumulation override features to reduce energy costs and extend lamp life
- Minimum cycle on times to prevent short cycling of lighting equipment
- Additional overrides, limits, and operating logic as required

#### **Daily Light Integral**

- Measures the Daily Light Integral (DLI) at the crop level
- Uses a new algorithm to predict the available natural light as the basis for supplementary lighting control
- Delivers a standard DLI despite daily and seasonal weather variations
- Optimizes energy consumption and lamp usage







### **Example Program Linkages**



#### **Program Linkage**

Equipment control decisions are driven by input information from sensors in conjunction with sophisticated internal algorithms and user-defined parameters to control target proves such as vent position.







### **Irrigation & Fertigation Management**

#### **Irrigation System Management**

#### **Irrigation Scheduling**

- System wide capacity management
- Intelligent, demand-based irrigation strategies
- Water source and storage tank level management
- Evapotranspiration modelling
- Water conservation strategies
- Water quality monitoring and control
- Crop moisture status monitoring
- Water treatment and leachate recycling system

Alarm Status	
Nutrient System	Irrigation System
Nutrient System	Irrigation System
Control pe Control Temperature System Press. Flow Rate	System Ready Output         100.00 %           System Load         100 %           System Status         Ready           Current System Feed         D04 FR24
17 702 (6.54 pc (3),5 °C (3),5 °C (2),1 (47,130)	Desired System Feed Number of Valves Watering 4 0500008 0%; URR; Irrigation Zones 1.46, 042-Irrig, Solenoid #4 05: IRR; Irrigation Zones 1.46, 042-Irrig, Solenoid #5 0600031 0%; URR; Irrigation Zones 1.46; 042-Irrig, Solenoid #5 163: IRR; Irrigation Schedule with Feeds; Timeclock Decision 160:0016 1%; Irrigation Schedule with Feeds; Timeclock Decision 161; IRR; Irrigation Schedule with Feeds; Timeclock Decision
	Number of Valves Queued 8 10:00:220 H5; IRR; Irrigation Zones 1-36; GH2-Irrig, Solenoid #1 H5; R8; Irrigation Schedule with Feeds; Timeclock Decision 10:00:220 H5; IRR; Irrigation Schedule with Feeds; Timeclock Decision 10:00:220 H5; IRR; Irrigation Schedule with Feeds; Timeclock Decision 10:00:220 H5; IRR; Irrigation Schedule with Feeds; Timeclock Decision

#### **Nutrient Control**



#### **Fertigation Control**

- Full single-element dosing options are available as well as standard A/B style stock tank applications. Programming and operations are managed seamlessly by the Argus fertigation management software.
- Can produce up to 64 distinct user specified recipes
- Full set-point control for EC and pH









#### Perfect Vision, total control

#### Control of your facility at your fingertips

"It's a safe, secure and powerful enhancement to one of the most advanced environmental control systems on the market"







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	Â	gus		🧳 💄 Master
Home / My Space / Greenhouse#1				19/2/25 13:06:30
Summary				
Outdoor Temperature 20.92 °C Wind Speed 5 km/h	Solar Dawn 6:00 Not Raining	Outdoor Light Energy 595 Wim <sup>2</sup>	Wind Direction West	Solar Dusk 6:00 Not Raining
Sensors	Setpoints		Heat/Cool Requests	
77,8 °C Citizes Tropension Citizes Tropension	Cooling Target	23.33 °C 🖌	Ventilation Required	0.00 %
	Temperature Setpint	22.22 °C 🖌	Temp. Venting Reg'd	0.00 %
	Heating Target	21.11 °C 🖌	Dehumid. Venting Req'd	0.00 %
	Dehumidity Target	70.0 %Rh 🇪	Heating Required	0.00 %
Climate Temperature 23.06 °C Climate Humidity 70.0 %Bh	Humidity Setpoint	70.0 %Rh 🖌	Temp. Heating Reg'd	0.00 %
Soil Temp 23.206 °C Climate VPD 6.55 mb	Humidify Target	60.0 %Rh 🕜	Dehumid. Heating Regid	0.00 %
Hundity Dato: 23.206 *C Deer Point Temp: 6.55 mb	MAX Dehum. Vent Setpt	15.00 %		
	MAX Dehum. Heat Setpt	10.00 %		
	Soil Temp Setpoint	18.33 °C 🖌		





### **Support & Training**

#### **Customer support**



### Flexible sessions and adaptable content

- Full remote operation capabilities and support via on-line system access
- Modular components are easily replaced in the field
- Easy to understand custom wiring diagrams and system documentation
- We maintain deep factory inventories of standard system components
- 24/7 Emergency Line



#### **Customisable training sessions**



#### Flexible sessions and adaptable content

At Argus Controls, we are committed to providing our customers with the best service possible and ensuring that our users' needs are met.

- Introduction and Welcome
- Argus System Overview
- Hardware Fundamentals
- Software Fundamentals
- Navigation and Screen Configuration
- Overview of and application of basic control elements
- Hands-on exercises

- Programing fundamentals
- Environmental control 101
- Advanced control elements
- DLI
- VPD
- Feeding/Watering
- Batch vs. inline nutrient systems
- Hands-on nutrient system exercises

- · Advanced applications exercises
- Remote
  - access/troubleshooting -Argus Live
- Visual Controls
- Troubleshooting practical exercises
- Final exam





### **Argus Software Views**







### **Argus Software Views**





