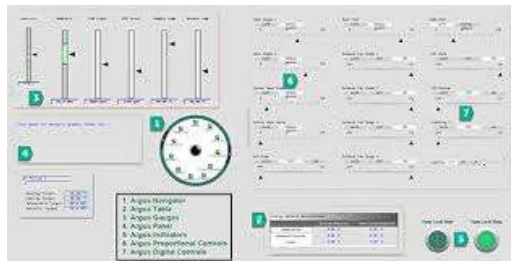


Argus Control Systems



Our Offering

Environmental Controls



Fertigation Systems



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

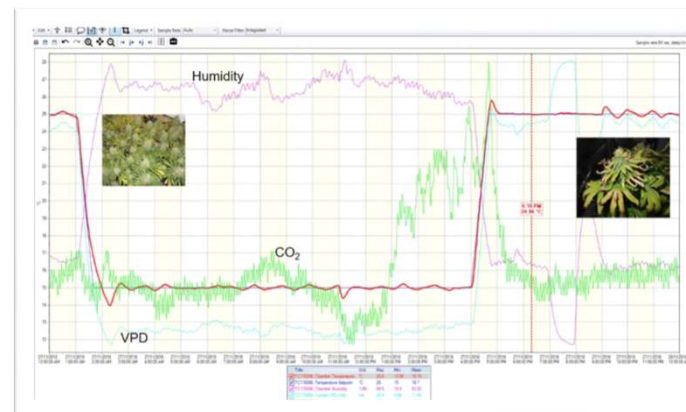
An advanced automated equipment **control** system

Alarm

A comprehensive **monitoring** and **alarm** system

Data acquisition

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

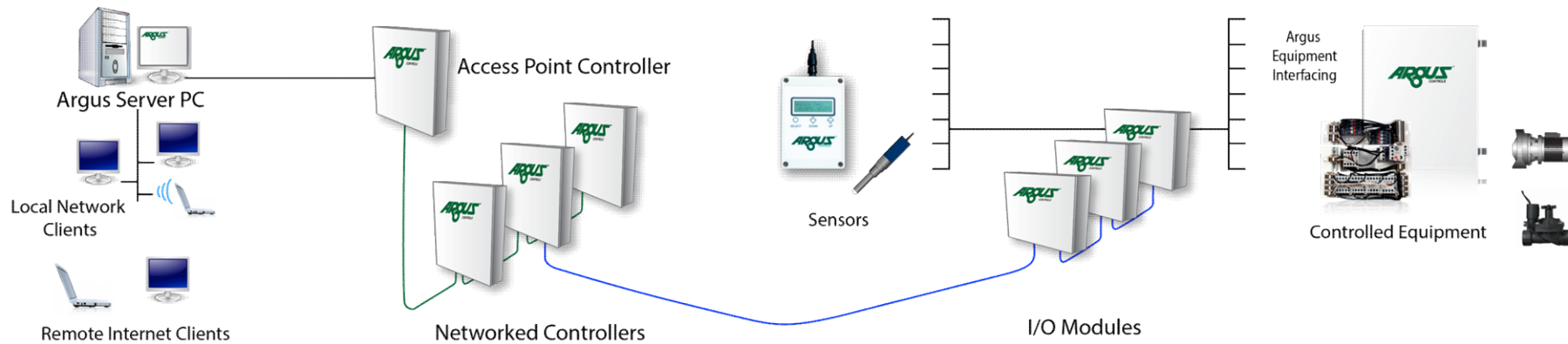


The Argus Control System



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.

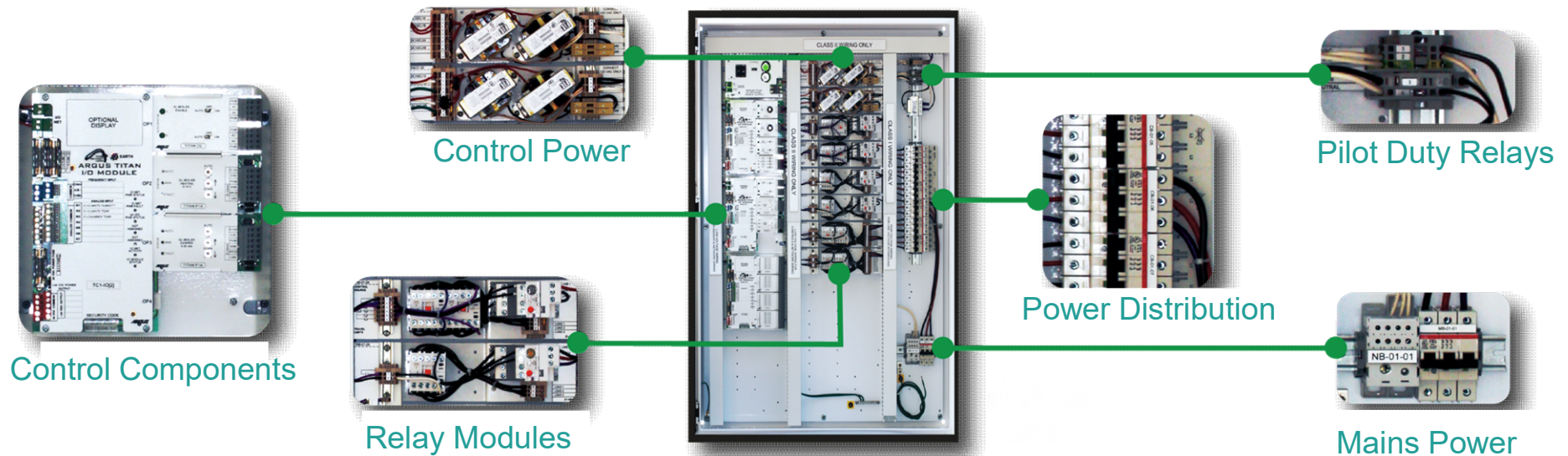
Combination Panels (Optional)



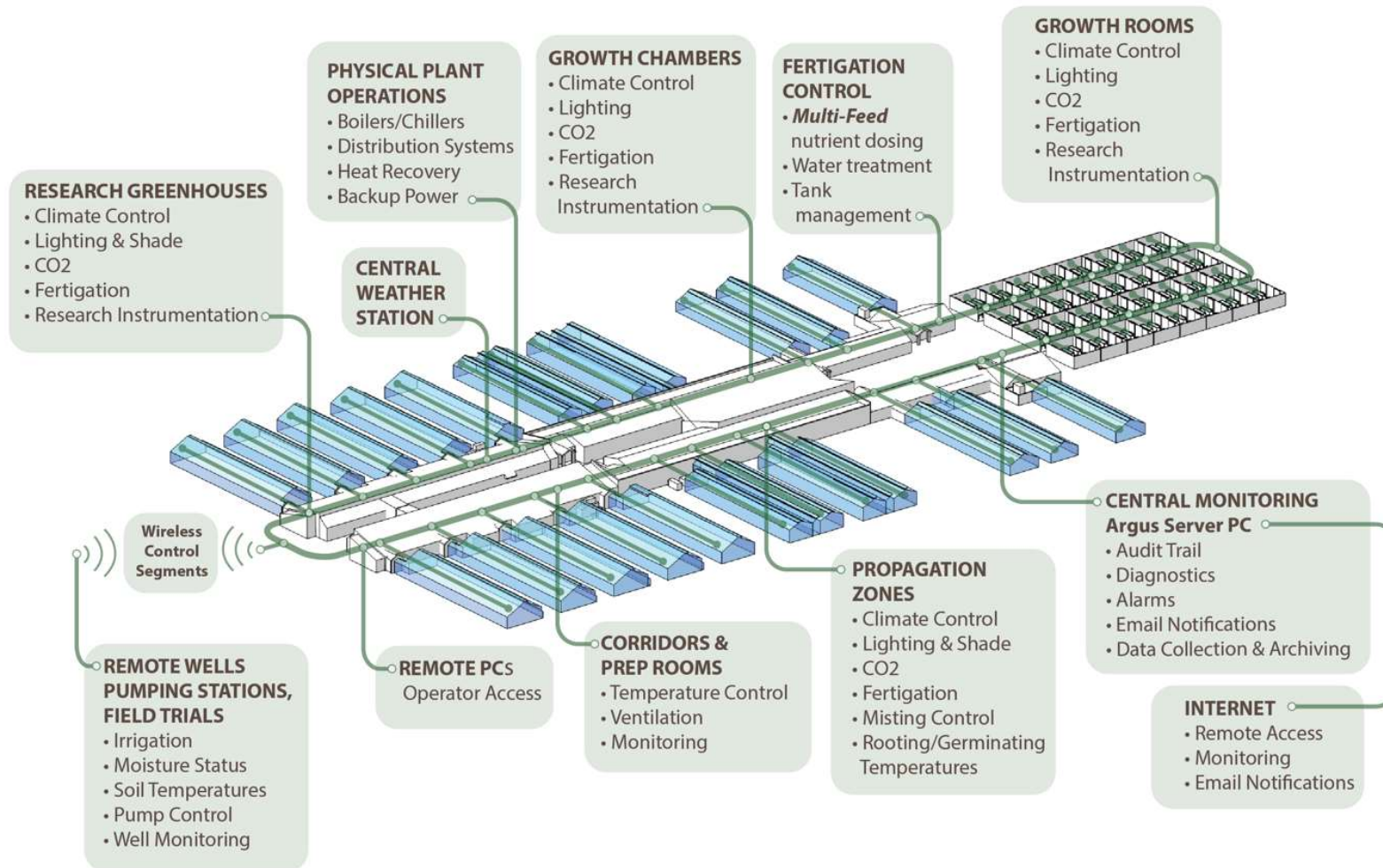
Line Voltage Interfacing

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



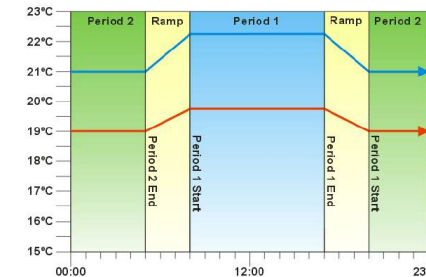
Climate Management

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’.

Climate Management

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.

The screenshot displays the 'Climate Energy Balance' control interface. It is organized into several sections with adjustable parameters and calculated values:

- Heating Required:** 27.22 %
- Ventilation Required:** 0.00 %
- Heat Required for Temperature Control Settings:**
 - Current Heating Target: 19.00 °C
 - Climate Temperature: 19.68 °C
 - Temperature Difference: -0.68 °C
 - Heating Proportional Response: -17.00 %
 - Heating Integral Response: 44.22 %
 - Heating Outdoor Temp. FF Response: 5.84 %
 - Heating Outdoor Light FF Response: -5.84 %
 - TOTAL Temperature Heating Required: 27.22 %
- Ventilation for Temperature Control Settings:**
 - Current Cooling Target: 22.00 °C
 - Climate Temperature: 19.68 °C
 - Temperature Difference: -2.60 °C
 - Cooling Proportional Response: -23.20 %
 - Cooling Integral Response: 0.00 %
 - Proportional + Integral Total: 0.00 %
 - Outdoor Light Influence Multiplier: 1.00
 - Outdoor Light Mult. Adjusted Response: 0.00 %
 - Outdoor Temp Influence Multiplier: 1.00
 - TOTAL Temperature Ventilation Required: 0.00 %
- Heat Required for Dehumidification Settings:**
 - Climate Humidity: 46.2 %Rh
 - Dehumidify Heat Target: 80.0 %Rh
 - Dehumidify Heat Offset: 0.0 %Rh
 - Humidity Difference: -33.8 %Rh
 - Dehumidify Heat Proportional Response: -100.00 %
 - Dehumidify Heat Integral Response: 0.00 %
 - TOTAL Dehumid. Heating Required: 0.00 %
- Ventilation Required for Dehumidification Settings:**
 - Climate Humidity: 46.2 %Rh
 - Dehumidify Vent. Target: 80.0 %Rh
 - Humidity Difference: -33.8 %Rh
 - Dehumidify Vent Proportional Response: -100.00 %
 - Dehumidify Vent Integral Response: 0.00 %
 - Outdoor Temp Influence Multiplier: 1.00
 - Outdoor Temp Mult. Adjusted Response: 0.00 %
 - Less 'P' Heat Component: -17.00 %
 - TOTAL Dehumid. Venting Required: 0.00 %
- Heating System Request Temperature Settings:**
 - Make Requests to Heating System #: Not Used
 - TOTAL Temperature Heating Required: 27.22 %
 - TOTAL Dehumid. Heating Required: 0.00 %
 - Higher Of The Heat Requests
 - Heating System Request Start: 0.00 °C
 - Heating System Request End: 90.00 °C
 - Current Heat Pipe Temperature Request: 24.49 °C
- Setup Information:**
 - Climate Energy Balance
 - Climate Energy Balance Input Values

Climate Management

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 override
- 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**

Climate Management

Lighting Control

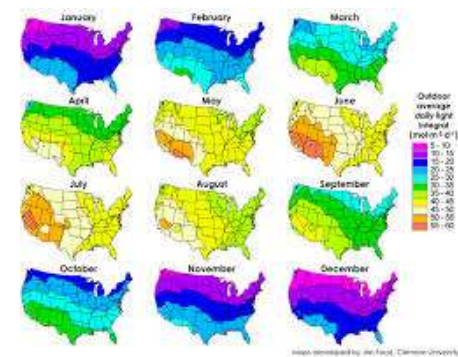


Lighting

- 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

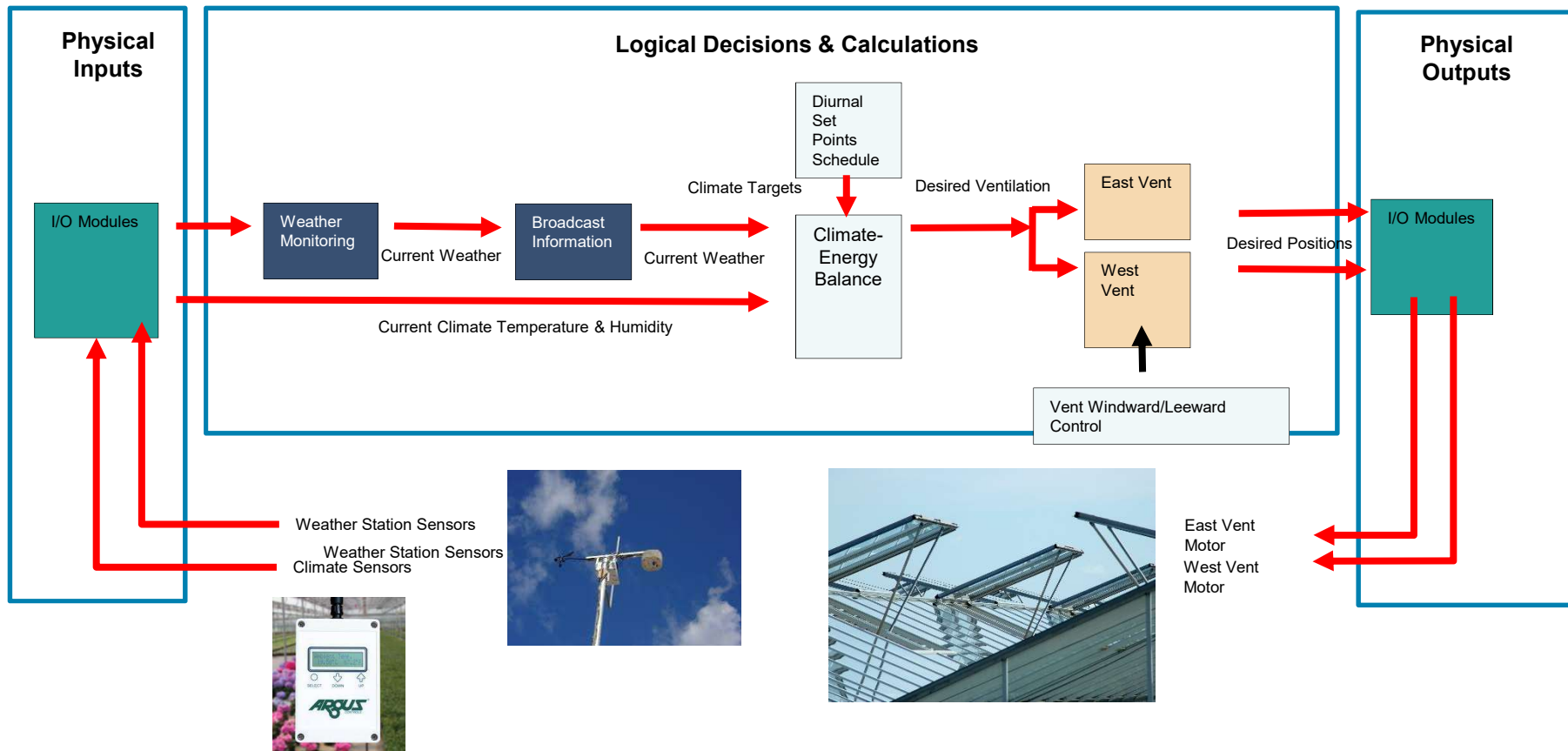


Example Program Linkages



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

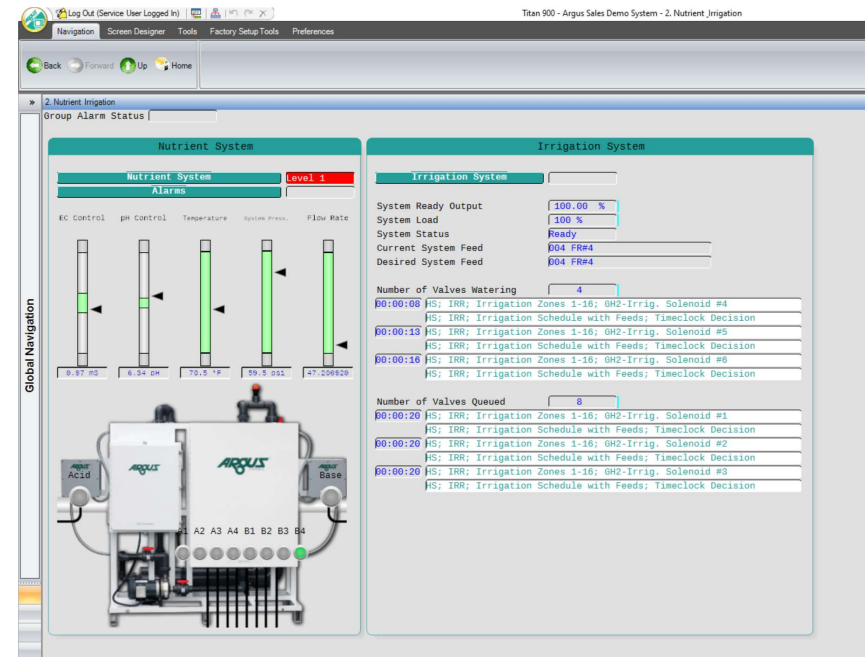
- System wide capacity management
- Intelligent, demand-based irrigation strategies
- Water source and storage tank level management
- Evapotranspiration modelling
- Water conservation strategies
- Water quality monitoring and control
- Crop moisture status monitoring
- Water treatment and leachate recycling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

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

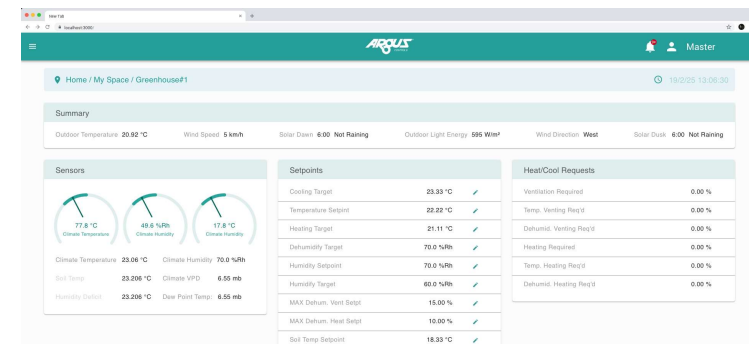
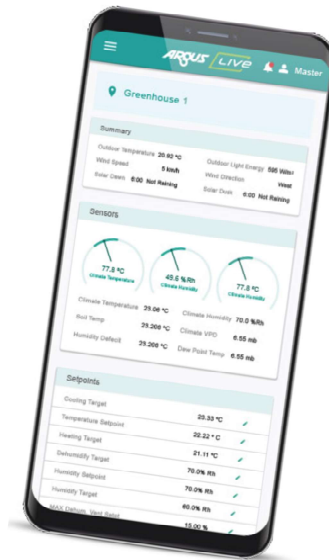
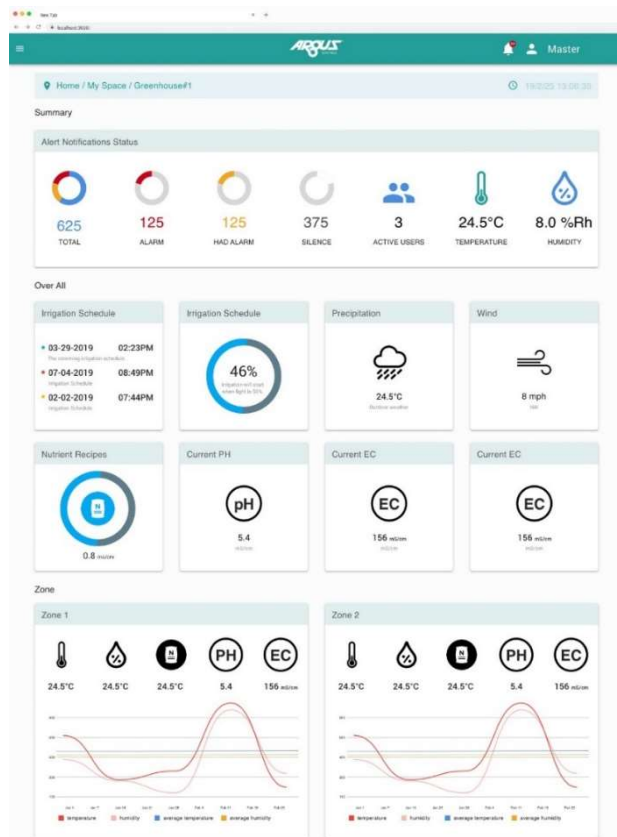


Perfect Vision, total control



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”



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

- Programming 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

The screenshot displays the Argus Controls software interface. At the top, a navigation bar includes 'Navigation', 'Screen Designer', 'Tools', 'Factory Setup Tools', and 'Preferences'. Below this is a secondary navigation bar with 'Back', 'Forward', 'Up', and 'Home' buttons, and an 'Alarm Active' indicator on the right. The main content area is titled 'Homescreen' and features the Argus Controls logo and contact information for a Conviron company. A 'Weather Station Readings' panel is visible on the left, and a 3D model of a greenhouse facility is shown in the center. The 3D model is annotated with numbered callouts (1-5) corresponding to a legend on the right. The legend identifies: 1. Greenhouses, 2. Nutrient & Irrigation, 3. Heating System, 4. Chambers, and 5. Cannabis Operation.

ARGUS CONTROLS
A CONVIRON COMPANY
For Technical Support, please contact Service
Tel: 1-888-667-2091 (Toll Free - CAN & US)
Tel: 1-604-536-9100 (Local & International)
Email: service@arguscontrols.com
[Argus Customer Portal](#)

Weather Station Readings

Outdoor Temp	54.3 °F
Outdoor Light	183 W/m ²
Accum Light	1957 Joule
Instant Joules	66 Joule
Wind Dir.	East
Wind Speed	5 mph
Peak Wind Speed	5 mph
Wind Speed (m/s)	2.493 m/s
Rain Status	Not Raining
Snow Status	Not Snowing

Global Navigation

- 1. Greenhouses
- 2. Nutrient & Irrigation
- 3. Heating System
- 4. Chambers
- 5. Cannabis Operation

Argus Software Views

