AGILITY CONTROLLER USER GUIDE

INTRODUCTION

The Agility Controller is a powerful yet easy to use controller family based on the proven Logix Axiom platform. Since it is Web-Based, virtually any smartphone, tablet, PC or laptop can be used to monitor and configure the Agility Controller. The controller is highly field-configurable using simple screens and requires no expensive custom programming. And help and documentation is built-in and always available.

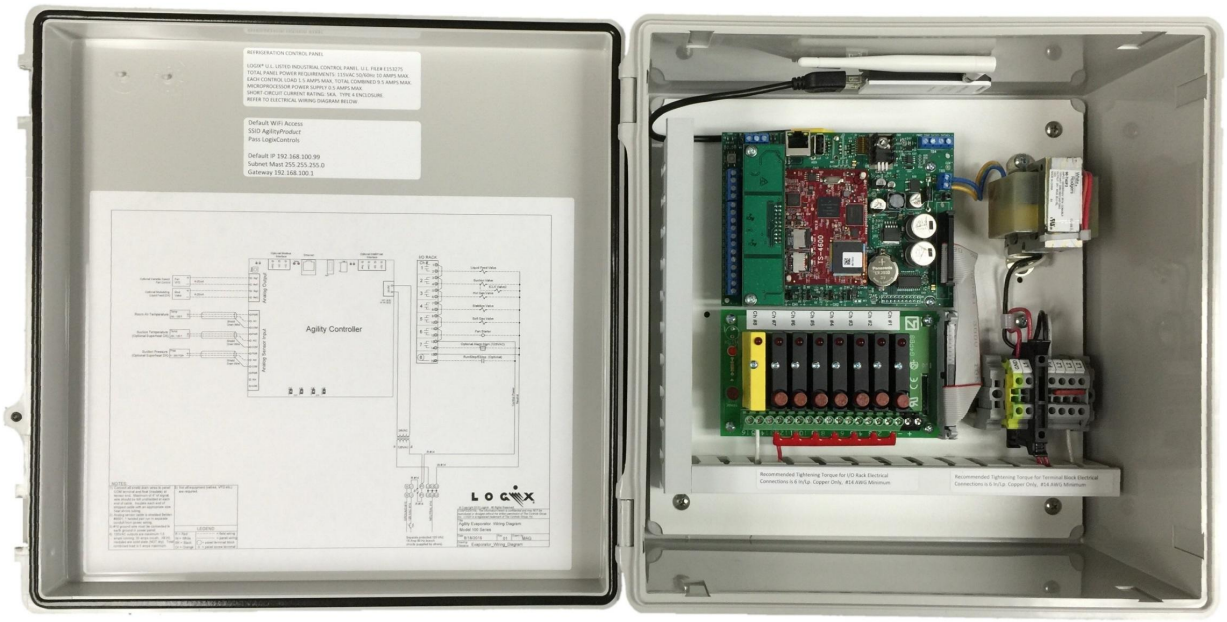


FIGURE 1- TYPICAL AGILITY CONTROLLER PANEL

KEY FEATURES

1. Universal Web-Based Operator Interface
    a. Graphical Web-Browser access from any smartphone, tablet, laptop or PC.
    b. Built-in online help system and documentation
2. Agility Controller Platform
    a. Up to 4 Analog Sensor Inputs for measuring Temperature, Pressure, Humidity etc.
    b. Up to 2 fully-isolated Analog Outputs to drive VFDs and valve positioners.
    c. Up to 8 (optionally 16) isolated line voltage digital input or outputs
    d. 10/100 Isolated Ethernet Port
    e. Flexible WiFi access allows operation as either an access point or as a client connection to an existing WiFi network.
    f. Open-Standard Modbus through both Ethernet and an Isolated Serial Port allows easy 3rd-party integration into most any control system.
    g. USB slot for field program updates and for saving/restoring settings
    h. LEDs provide direct indication of Agility Controller status.
    i. Powerful Open-Source ARM Linux Operating System

j. "Watchdog" timer insures reliable operation and resets the Agility controller in the unlikely event of a malfunction.

3. Rugged Type-4X Enclosure withstands indoor, outdoor and washdown environments.
4. Evaporator Application
    a. Field Configurable for a wide variety of applications
        i. Low Temp, High Temp, Dock Heat/Cool, User-Defined
        ii. Up to 5 valves outputs with support for newer valve technology (CK6D, ICLX etc.)
        iii. 1 fan output
        iv. 1 alarm output for annunciators or alerting systems
        v. 1 input configurable as Run/Stop or Emergency Stop (ex. Ammonia Sensor shutdown).
    b. Fan can be a single speed or Variable Speed with the 4-20mA Analog Output option.
    c. Precise platinum temperature sensor for accurate, reliable operation.
    d. Flexible temperature control, high and low alarm setpoints
    e. Flexible defrost sequencing: Pump Out, Pre Defrost, Soft Gas, Defrost, Stabilize, and Coil Cool
    f. Defrost initiation on cooling runtime and/or time of day+day of week.
    g. IntelliFrost compatible for true demand defrost initiation.
    h. History log of alarms and warnings
    i. Optional Superheat and Modulating DX valve control
5. Condenser Application
    a. Field Configurable for a wide variety of applications
        i. Up to 6 fans or pumps in any combination.
        ii. 1 alarm output for annunciators or alerting systems
        iii. 1 fan fault alarm input.
    b. Fans can be a single speed or Variable Speed with the 4-20mA Analog Output option.
    c. Powerful stager maintains accurate pressure control.
    d. Alternate cold weather operating sequence
    e. Floating Pressure Setpoint based on ambient temperature and relative humidity conditions maximizes energy conservation.
    f. History log of alarms and warnings
6. EPCS Application
    a. Designed to comply with IIAR-2 requirements
    b. Supports up to two zones of pressure relief control
    c. Support for 250# or 300# rated vessels

AGILITY CONTROLLER INSTALLATION

SAFETY NOTIFICATION

Important Safety Considerations

It is very important for the user to consider the adverse effects of power, wiring, component, sensor, or software failures in designing any type of control or monitoring system. This Agility Controller is not designed for applications in which a malfunction of the Agility Controller could result in a hazardous and or dangerous condition. In no circumstance may this Agility Controller be used to limit any piece of equipment to a safe mode of operation. This is especially important where economic loss or human life is involved. It is important that the user employ satisfactory overall system design. It is agreed

between the buyer and Logix that this is the buyer's responsibility. It is the responsibility of the installer to ensure that the installation is in compliance with all national and local codes. Installation should only be attempted by a licensed electrician familiar with codes, standards, and proper safety procedures for line-voltage installations.

Caution

Read this Entire Document Prior to Installation and Operation of this Unit.

Warning

Risk of Electrical Shock. Severe injury or death can result from electric shock during contact with line voltage wiring and equipment. Disconnect and lock-out all power sources during installation and service.

Mounting Location Considerations

1. Overall Dimensions - 13.4"W x 13.0"H x 7.1"D
2. Environmental
    a. Temperature
        i. Operating Temperature -22°F - +122°F (-30°C - +50°C)
        ii. Protect from direct sunlight which can cause the enclosure to exceed its operating temperature limit.
    b. Humidity
        i. Maintain operating and storage relative humidity between 10% and 95%, non-condensing.
    c. Mechanical Considerations
        i. The UL-Rated Type 4X enclosure allows mounting in indoor or outdoor locations.
        ii. Mount in a low vibration location.
        iii. Mount in a location providing protection from damage.
        iv. Mount in a location providing easy access for servicing.
        v. Mount in proximity to controlled or monitored equipment to reduce installation costs.
3. Networking Considerations
    a. WiFi signal range is diminished by walls, metal objects, etc.
    b. Ethernet (CAT5e) network cabling is limited to 328 feet. Longer distances require additional equipment (not provided) such as a repeater or fiber-optic link.
    c. Modbus RTU twisted pair cabling is limited to 4000 feet total.

Power Requirements

1. The Agility Controller requires 100VAC – 125VAC, 50/60Hz power and consumes up to a total of 10 Amps (including controller and controlled devices). The controller itself requires 0.5 Amps leaving 9.5 Amps available for controlled devices.
2. Do not "tap in" to the Agility Controller to power other equipment or otherwise alter the intended function of the Agility Controller.

Security Considerations

1. Network Security Considerations - Agility is not designed to be connected directly to the public Internet. Rather it should reside behind a firewall on a private network. Remote access, if any, should be implemented through a secure VPN connection.
2. The Agility Controller's WiFi network name and password are field configurable. At a minimum, the WiFi Access Point password should be changed.

3. Agility Password Protection - the Agility Controller features a built-in password mechanism to prevent unauthorized changes to the controller's settings. The Agility Controller supports up to ten unique user names and passwords. Although setting up passwords is not required, it is strongly recommended.

Wiring and Installation

1. Consult the application-specific Wiring Diagram supplied with your Agility Controller for specific wiring details.
2. Water and debris can and will find its way through conduit connections. **Do Not Drill/Puncture the Top of the Enclosure or the Warranty Shall Be Void.**
3. Controller 120VAC Power Wiring – a dedicated 15 Amp branch circuit is required.
4. Sensor Analog Inputs – shielded wire is required. A good choice is Belden 9501 or equal. Connect the shield at the Agility Controller end of the cable only. Refer to the Wiring Diagram for more details.
5. Variable Analog Outputs (Optional) – shielded wire is required. A good choice is Belden 9501 or equal.
6. Digital Inputs and Outputs – keep all line voltage wiring away from low voltage (sensor, network etc.) wiring. 120VAC outputs are maximum 1.5 amps running, 30 amps inrush. All I/O modules are solid state (NOT dry contacts). Total combined load is 9.5 amps maximum.
7. Wired Ethernet (Optional) – use standard CAT5 or better cable with high quality end terminations. Avoid kinks and tight bends which can degrade network performance. Limit individual network cable length to 100 meters or 328 feet.
8. Modbus RTU (Optional) – high quality shield twisted-pair cable is required. A good choice is Belden 9841 or equal. Limit total network cabling length to 4000 feet.

Quick Start Overview

1. Install the Agility Controller following the provided installation instructions and wiring diagrams. At a minimum, wire the 120VAC power supply connections.
2. Power on the Agility Controller.
3. Access the Agility Controller's web pages using one of the following methods. Note that once a smartphone, tablet laptop or PC is connected to the Agility Controller, the controller's network and WiFi configuration can (and should) be altered.
    a. Method 1: **WiFi Access** (preferred method)
    b. Once the Agility Controller has been powered-up for more than 30 seconds, connect a smartphone, tablet or laptop to the Agility-xxxx WiFi hotspot (xxxx varies by Agility application). The default password is LogixControls.
    c. Access agility.com using the smartphone, tablet or laptop's web browser.
    d. Method 2: **Ethernet Access** (alternate method)
    e. Using CAT5 cabling, connect both the Agility Controller and a PC or laptop into a suitable network switch (not provided).
    f. The Agility Controller's default IP address is 192.168.100.99 and its net mask is 255.255.255.0. Configure the laptop or PC with a compatible (but different) IP address.
    g. Once the Agility Controller has been powered-up for 30 seconds or longer, access 192.168.100.99 with the PC or laptop's web browser.
4. The Main Status web page displays an animated graphical indication of equipment operation in real-time.
5. Accessing menus and changing settings.
    a. The application menu is accessed by selecting the menu ☰ symbol displayed in the upper left corner.
    b. The menu tree expands where the > symbol is shown and contracts where the V symbol is shown.
    c. Navigate to the desired page.
    d. On settings pages, select either Save Settings or Cancel to discard any changes.

6. Safety Status and Acknowledgement
    a. A green checkmark icon is displayed when no alarm or warning conditions exist.
    b. A red flashing beacon icon is displayed when any unacknowledged alarm or warning condition exists. Select the icon to display and acknowledge the alarm or warning.
    c. A dormant orange beacon icon is displayed when an acknowledged but still active alarm or warning condition exists.
7. Accessing Online Documentation and Help
    a. Wiring Diagram and Troubleshooting Guides are available through the *Configuration & Diagnostics>Agility Documentation* sub-menu.
    b. When accessing Agility setpoint pages, specific help is available by selecting the help icon in the upper left corner.

NETWORK CONFIGURATION

The Agility Controller features both wired Ethernet and Wireless WiFi access to its graphical user interface. Both the Ethernet and WiFi networks can be configured for each site's specific network requirements. Since the Agility Controller has its own Web Server it utilizes a fixed “Static” IP address.

WIFI NETWORK CONFIGURATION

The WiFi network can be configured to operate in three (3) distinct modes:

1. **Local Access Point** - The WiFi acts similar to a Hot Spot allowing direct access to the Agility Controller's graphical web interface. This is the easiest method to configure and is the default configuration.
2. **Connect to Existing** - The WiFi is a client and connects to an existing WiFi network. This will require additional IT support to determine the Agility Controller's IP address obtained from the existing WiFi Access Point.
3. **Disable WiFi Access** - The WiFi interface is disabled.

WIFI NETWORK SETTINGS PAGE

1. **WiFi Network Type** - Enter the desired WiFi network type: Local Access Point (create a Local WiFi network), Connect to Existing (join an existing WiFi network) or Disable WiFi Access.
2. **Access Point Channel** - Enter the WiFi Access Point channel. This is only utilized for Local Access Point WiFi networks. Typical values are 1, 6 and 11. Other values may result in poor performance and/or a malfunctioning network.
3. **WiFi Network Name (SSID)** - Enter the name of the WiFi network.
    a. For **Local Access Point** WiFi networks this should be a name unique to other WiFi networks. For example this could be "Agility-F4" for Freezer 4's Agility Controller.
    b. For **Connect to Existing** WiFi networks, enter the name of the existing WiFi network.
4. **WiFi Network Password** - Enter the password for the WiFi network.
    a. For **Local Access Point** WiFi networks this is the password required to connect to the WiFi network. The password must be between 8 and 63 characters in length and can contain any combination of letters and numbers (no spaces).
    b. For **Connect to Existing** WiFi networks, enter the password of the existing network.

The Agility Controller’s WiFi network can be enabled or disabled by installing or removing the W-ON jumper located on the Agility Controller board. To enable the WiFi network, place the jumper over both pins and allow 30 seconds for the WiFi network to appear. To disable the WiFi network, place the jumper over a single pin.

Ethernet Network Configuration

Before attempting to alter the Ethernet settings you should have a firm understanding of how networks function and how each setting affects the network. It is beyond the scope of the document to provide the required documentation or training for this complicated topic. If you are unfamiliar with network configuration, have a network professional or IT department configure this device. **Warning:** Improper network settings can affect an entire network, possible rendering it inoperable. This behavior applies to any device attached to an Ethernet network, not just an Agility Controller.

Ethernet Network Settings Page

1. The Default button forces the network configuration back to the factory-configured settings.
2. The Agility Controller's MAC Address is shown at the bottom of the page. This is sometimes needed by IT personnel.
3. Ethernet Settings
    a. **Eth0 IP Address** - Enter the unique IP address for this device. For example, 10.0.100.200. The default IP address is 192.168.100.99.
    b. **Eth0 Subnet Mask** - Enter the Subnet Mask for this device. For example, 255.0.0.0. The default Subnet Mask is 255.255.255.0.
    c. **Eth0 Broadcast Mask** (optional) - Enter the Broadcast Mask for this device. If unknown or not required, enter 0.0.0.0
    d. **Eth0 Gateway** - Enter the Gateway address for this device. For example, 10.0.100.1. The default Gateway address is 192.168.100.1.

Modbus Support

Modbus is a de facto standard of communications commonly available in industrial control products. The Agility Controller functions as a Modbus slave simultaneously on both the Ethernet and the isolated Com 1 RS-485 serial port.
Modbus/TCP is available on the Ethernet port on the standard port 502.
Modbus RTU is available on Com 1 isolated RS-485 serial port.

a. The serial port is configured as 9600 BPS, 8N1.
b. The ID is determined by the DIP switch settings.

The Modbus Register Map is available in the Agility Controller's Documentation sub-menu.

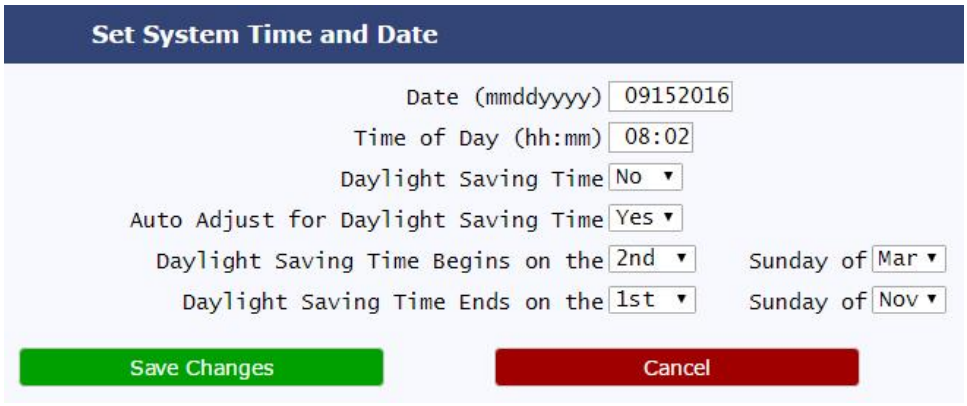
Specifications

1. Environmental
    a. Operating Temperature -30°C - +50°C (-22°F - +122°F)
    b. Operating Humidity 10% – 95% Non-Condensing
    c. Dimensions 13.4"W x 13.0"H x 7.1"D
2. Power 100VAC – 125VAC, 50/60Hz 10 Amps max.
    a. Agility processor – 0.5 Amps max.
    b. Individual digital outputs – 1.5 Amps max.
    c. Combined total digital Input/Outputs - 9.5 Amps maximum.
3. WiFi Network
    a. Secure WPA2 Encryption
    b. WiFi Mode:
        i. Local Access Point (Hotspot) allowing access to the Agility Controller only.
        ii. Client (Connect to existing WiFi network). Access is dependent on the existing network's configuration.

    c. Type/Speed
        i. Up to 150Mbps data rate.
        ii. IEEE 802.11n,g,b is compatible with a wide range of WiFi devices.
4. Ethernet Network
    a. 10/100 BaseT
    b. TCP/IP Protocol

Agility Configuration Setpoints

Set Time and Date



Date (mmddyyyy)

Enter the desired date in the mmddyyyy format. For example, December 9th, 2016 would be entered as **12092016**.

Time of Day (hh:mm)

Enter the desired time of day using the 24 hour hh:mm format. Note the : is required.

Daylight Saving Time

Enter **Yes** if Daylight Saving Time is currently in effect in your area. Enter **No** if Daylight Saving Time is not in effect in your area or if your area does not have Daylight Saving Time.

Auto Adjust for Daylight Saving Time

Enter **Yes** to allow automatic adjustments for Daylight Saving Time. Enter **No** if you wish to manually adjust the time and/or date.

Daylight Saving Time Beginning Date

Daylight Saving Time Ending Date

Starting in March of 2007, daylight time in the United States began on the second Sunday in March and end on the first Sunday in November. The **Daylight Saving Time Beginning and Ending Date** settings allow modification of the date at which Daylight Saving Time begins and ends. **These settings should be adjusted cautiously**.

Network Configuration

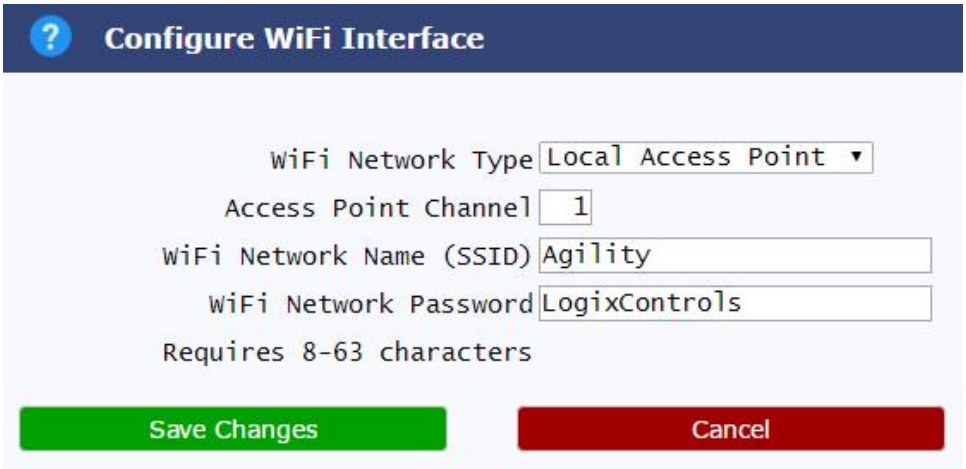
Network Configuration Overview

The Agility Controller features both wired Ethernet and Wireless WiFi access to its graphical user interface. Both the Ethernet and WiFi networks can be configured for each site's specific network requirements. Since the Agility Controller has its own Web Server it utilizes a fixed "Static" IP address.

Configure WiFi Interface

The Agility Controller's wireless WiFi network configuration is setup on this page. The WiFi network can be configured to operate in three (3) distinct modes:

1. **Local Access Point** - The WiFi acts similar to a Hot Spot allowing direct access to the Agility Controller's graphical web interface. This is the easiest method to configure and is the default configuration.
2. **Connect to Existing** - The WiFi is a client and connects to an existing WiFi network. This will require additional IT support to determine the Agility Controller's IP address obtained from the existing WiFi Access Point.
3. **Disable WiFi Access** - The WiFi interface is disabled.



WiFi Network Type

Enter the desired WiFi network type: **Local Access Point** (create a Local WiFi network), **Connect to Existing** (join existing WiFi network) or **Disable WiFi Access**.

Access Point Channel

Enter the WiFi Access Point channel. This is only utilized for **Local Access Point** WiFi networks. Typical values are 1, 6 and 11. Other values will result in poor performance and/or a malfunctioning network.

WiFi Network Name (SSID)

Enter the name of the WiFi network.

For **Local Access Point** WiFi networks this should be a name unique to other WiFi networks. For example this could be "Agility-F4" for Freezer 4's Agility Controller.

For **Connect to Existing** WiFi networks, enter the name of the existing WiFi network.

WiFi Network Password

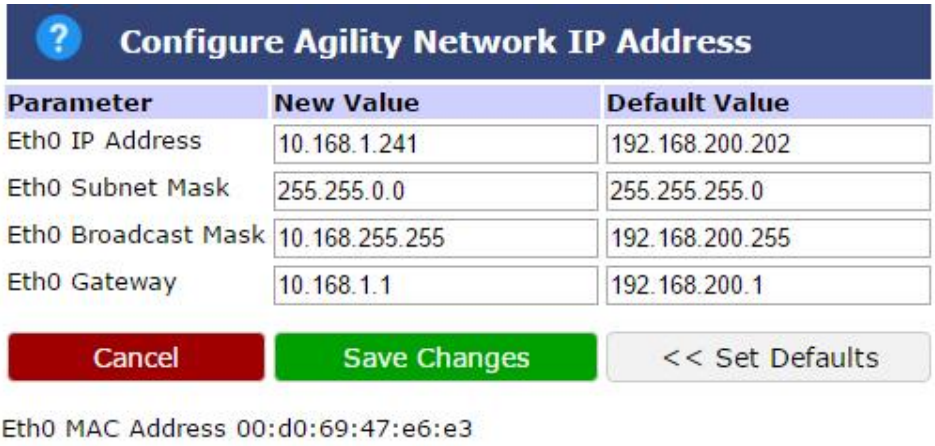
Enter the password for the WiFi network.

For **Local Access Point** WiFi networks this is the password required to connect to the WiFi network. The password must be between 8 and 63 characters in length and can contain any combination of letters and numbers (no spaces).

For **Connect to Existing** WiFi networks, enter the password of the existing network.

Configure Ethernet Network IP Address

The Agility Controller's Ethernet network is configured on this page. Before attempting to alter these settings you should have a *firm* understanding of how networks function and how each setting affects the network. It is beyond the scope of the document to provide the required documentation or training for this complicated topic. If you are unfamiliar with network configuration, have your IT department configure this device.



The **Default** button forces the network configuration back to the factory-configured settings.

The Agility Controller's MAC Address is shown at the bottom of the page. This is sometimes needed by IT personnel.

Eth0 IP Address

Enter the unique IP address for this device. For example, 10.0.100.200

Eth0 Subnet Mask

Enter the Subnet Mask for this device. For example, 255.0.0.0

Eth0 Broadcast Mask (optional)

Enter the Broadcast Mask for this device. If unknown or not required, enter 0.0.0.0

Eth0 Gateway

Enter the Gateway address for this device. For example, 10.0.100.1

Agility Password Setpoints

Password Security Overview

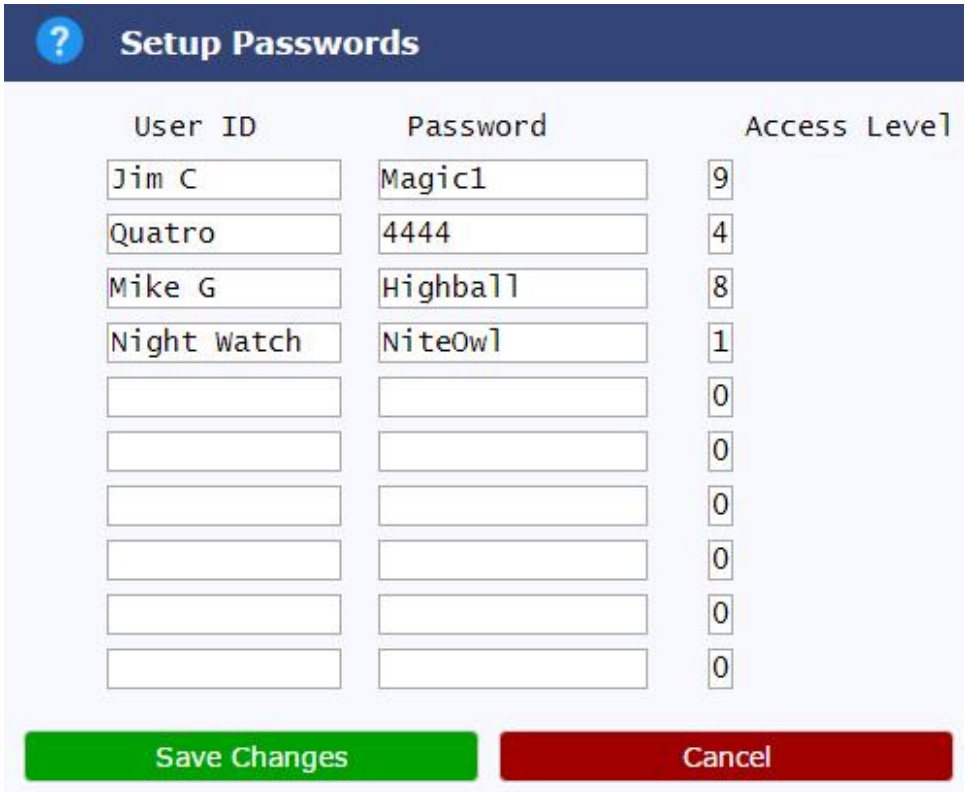
The Agility Controller features a built-in password mechanism to prevent unauthorized changes to the controller. The controller supports up to ten unique user names and passwords. While setting up passwords is not required, it is strongly recommended. Password protection is enabled when at least one user is set up. This requires a user to be signed in with the appropriate level password to change setpoints or acknowledge safeties.

Setpoint Page Password Security

Each setpoint page is pre-configured with a unique minimum password access level required to modify the settings. When a setpoint page or menu selection is accessed, Agility will prompt the user to sign in, if not already. If a valid user name and password is not entered, the page's settings will still be displayed, allowing observation but not modification.

Setup Passwords

To access the Setup Passwords page, from the **Secure Access** menu, select **Setup Passwords** and provide a top level password when prompted.



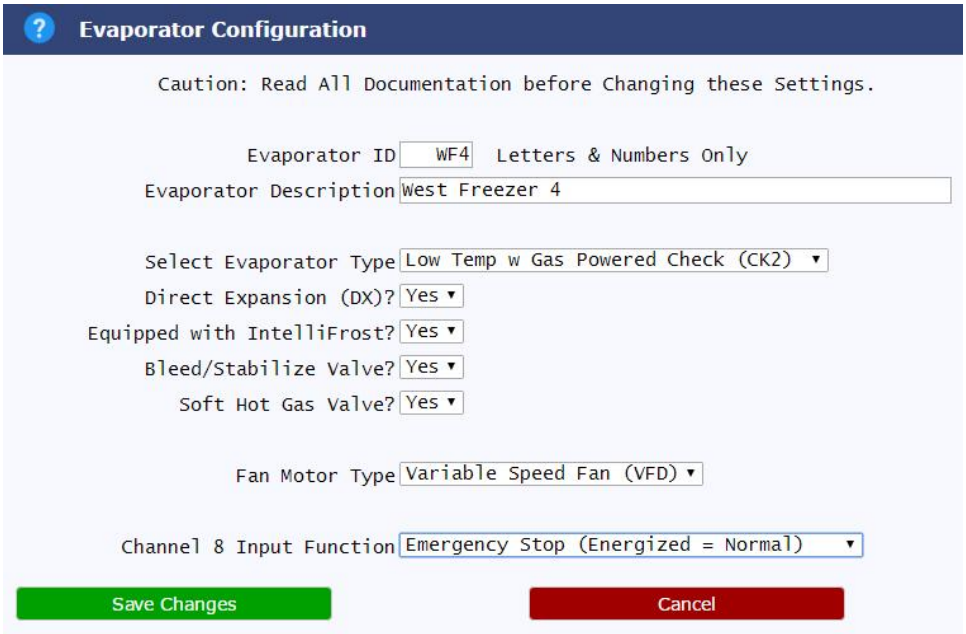
The **User ID** field contains the user's public name and/or ID. The **Password** field contains the user's secret password required to access the system. The **Access Level** field contains the user's system access level with **1** as the most restrictive through **8** as the least restrictive. Passwords can be any combination of letters, numbers and/or punctuation with a maximum of **15** and minimum of **4** characters in length. Similarly, the **User ID** can be any combination of letters, numbers and/or punctuation up to a maximum of **12** characters in length.

Signing In and Out

From the **Secure Access** menu, select **Sign In** or **Sign Out**. A user will be automatically signed out after there has been no activity in the Agility page for longer than 10 minutes.

Agility Evaporator Configuration Setpoints

Evaporator Configuration



Select Evaporator Type

Low Temp w Gas Powered Check (CK2)

Select this option for a typical low-temperature application where the suction solenoid is electrically **energized** to **close** as is the case with a CK2 gas-powered check valve. The Evaporator may or may not have bleed and pre-hot gas solenoids.

Low Temp w CK5/6D Gas Powered Check

Select this option for a typical low-temperature application where the suction solenoid is electrically **energized** to **close** as is the case with a CK5D and CK6D valves. The Evaporator may (CK6D) or may not (CK5D) have a bleed solenoid and may or may not have a pre-hot gas solenoid.

Low Temp w Danfoss ICLX

Select this option for a low-temperature application where a Danfoss ICLX valve is utilized.

Low Temp w Energize to Open Suction

Select this option for a typical low-temperature application where the suction solenoid is electrically **energized** to **open**. The Evaporator may or may not have bleed and pre-hot gas solenoids.

High Temp or Dock Evaporator

Select this option for a typical mid & high-temperature application such as a dock or cooler. The Evaporator may or may not have hot-gas, bleed and pre-hot gas solenoids.

Heat/Cool Evaporator

Select this option for a typical heat/cool application such as a dock evaporator. The Air Unit may or may not have bleed and pre-hot gas solenoids.

High Temp Fan On Defrost

Select this option for a typical high temp operation where the evaporator is defrosted by running the fan.

Custom Configured Valves (CAUTION)

Select this option for a custom valve control configurations where the evaporator is controlled in uncommon sequenced. Add additional Valve Configuration page allows defining the valve states for all stages of the evaporator's control.

Direct Expansion (DX)

Select **Yes** if the Evaporator is equipped with a modulating Direct-Expansion (DX) valve controlled by suction superheat. Select **No** for non-DX evaporators.

Equipped with IntelliFrost

Select **Yes** if the Evaporator is equipped with a Logix IntelliFrost™ Frost Detector.

Bleed/Stabilize Valve

Select **Yes** if the Evaporator is equipped with a Bleed/Equalize/Stabilize valve.

Soft Hot Gas Valve

Select **Yes** if the Evaporator is equipped with a Soft (Pre) Hot Gas valve.

Select Fan Motor Type

Single Speed Fan

Select this option for a typical on/off fan motor application.

Variable Speed Fan (VFD)

Select this option for a variable speed fan motor application. The fan speed will vary based on return air temperature.

Select Channel 8 Input Type

Emergency Stop (Energized = Normal)

Select this option to configure Input Channel 8 as an **Emergency Stop** input. The Input is electrically *energized* for *normal operation* (fail-safe). De-energizing the input will immediately shut down the evaporator and generate an Emergency Stop alarm condition. Re-energizing the input will not restart the evaporator, it must be manually restarted.

Run/Stop (Energized to Run Evaporator)

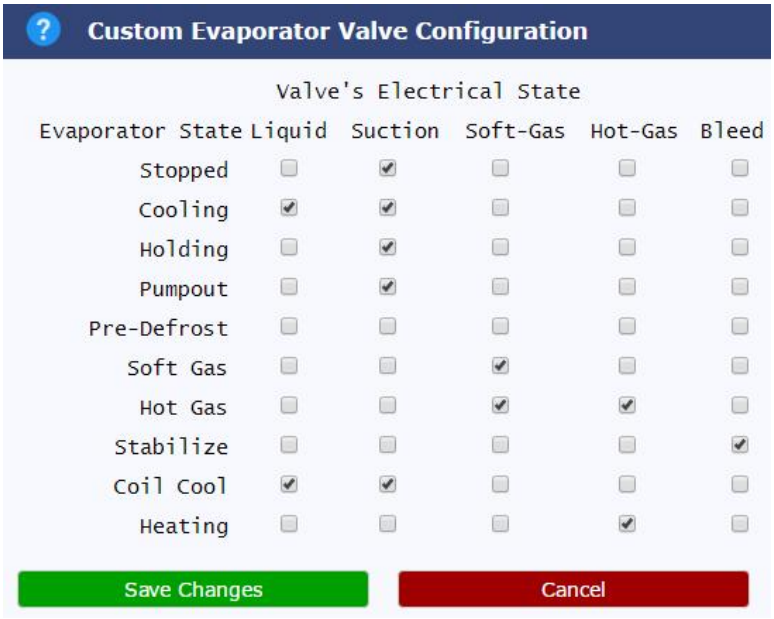
Select this option to configure Input Channel 8 as an **Run/Stop** input. *Energize* the Input to begin *normal operation*. De-energize the input to stop the evaporator.

Ignore Input (Operator Start/Stop)

Select this option to ignore Input Channel 8. The evaporator can be started or stopped through menu selection only.

Custom Evaporator Valve Configuration

Unusual Evaporator valve sequence requirements may require a customized solution. This page allows defining each valve's electrical state for each step in the evaporator control sequence.



Valve's Electrical State

For each valve in each state, **check** the box if the valve output should be **energized**. **Uncheck** the box if the valve output should be **de-energized**.

Evaporator State

This is a list of all Evaporator States in the control sequence. All valves must be configured for all Evaporator States, even if the state might not apply.

Agility Evaporator Operating Setpoints

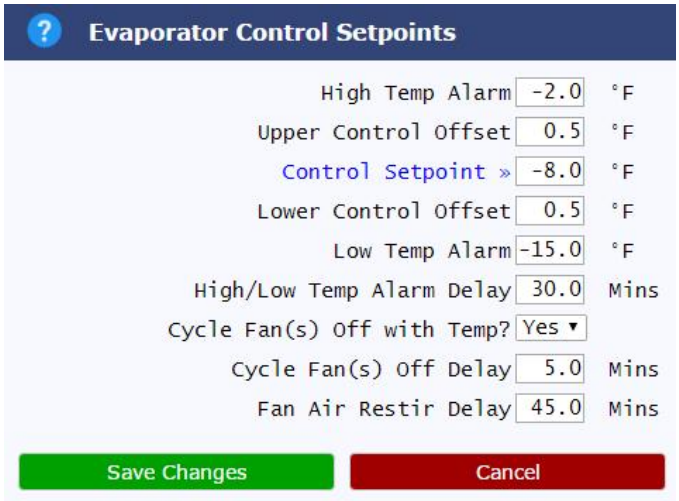
Evaporator Operating Mode

Set Operating Mode Menu

An evaporator may be placed into different modes of operation from the menu as follows:

Start Evaporator	Initiate normal Evaporator cooling/heating.
Stop Evaporator	Disables automatic control with all control valves closed and fans off. Safety alarming is also disabled.
Set Evaporator Down	Similar to **Stop** above but '**Down**' is indicated instead of **Stop**. An Evaporator that is **Down** will ignore the Run/Stop digital input. Also used to distinguish an Evaporator down for maintenance.
Defrost Evaporator	Initiate an Evaporator defrost sequence.

Evaporator Control Setpoints



Control Setpoint

Enter the temperature to maintain in the zone. Typically, the cooling (liquid feed) valve is opened and closed to maintain the Control Setpoint zone temperature. Variable speed fans, if equipped, will also trim to maintain this temperature.

Upper and Lower Control Offset

Enter the temperature control offset over/under the **Control Setpoint**. No changes in temperature control occur while the zone temperature is between this deadband defined by the **Control Setpoint** plus the **Upper Control Offset** and the **Control Setpoint** minus the **Lower Control Offset**.

For example, at a **Control Setpoint** of 20°, an **Upper Control Offset** of 1°, and a **Lower Control Offset** of 2° an Evaporator will operate as follows:

- Above 21° the Evaporator will begin cooling
- Below 18° the Evaporator will be holding (stop cooling)
- Between 18° and 21° no changes in control will occur (deadband). The Evaporator may be either cooling or holding.

High Temp Alarm

If the temperature in the zone is higher than this setpoint for a period longer than the **Hi/Low Temp Alarm Delay** an alarm is generated.

Low Temp Alarm

If the temperature in the zone is lower than this setpoint for a period longer than the **Hi/Low Temp Alarm Delay** an alarm is generated.

High/Low Temp Alarm Delay

Enter the alarm time delay for both high and low zone temperature alarms.

Cycle Fans Off with Temperature?

Select **Yes** to allow the evaporator fan(s) to cycle off after the **Cycle Fans Off Delay** when the temperature in the room is satisfied. The fans will cycle on when the temperature exceeds the setpoint plus deadband. Entering **No** will operate the fan(s) continuously except during defrost and when the evaporator is stopped. Fan cycling can save significantly reduce energy use.

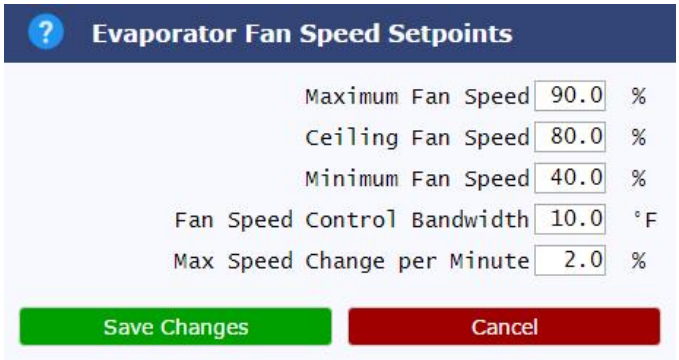
Cycle Fans Off Delay

When the zone temperature falls below the setpoint less the deadband, the fan(s) will delay shutting off by the **Cycle Fans Off Delay** time.

Fan Air Restir Delay

If the evaporator fan has been cycled off for a period longer than the **Restir Delay**, the fan will be forced to run for a time equal to the **Cycle Fans Off Delay**. This feature avoids air stratification caused by the lack of air movement.

Evaporator Fan Control



Fan Speed Setpoints

Fan speed is varied based on return air temperature. Fan speed is increased when temperature exceeds setpoint plus deadband but decreased as soon as temperature falls below setpoint.

Maximum Fan Speed

The Variable Frequency Drive speed will never exceed the **Maximum Fan Speed** setpoint. Refer to the **Minimum Fan Speed** setting, below, for additional details.

Ceiling Fan Speed

When Fan speed increases past the **Ceiling Fan Speed** setpoint the effective **Max Speed Change per Minute** setpoint is limited to **1%** up to the **Maximum Fan Speed**. This mitigates the probability of running at higher fan speeds at which energy usage escalates rapidly. Typical settings are **75%** - **90%**.

Minimum Fan Speed

The Fan speed will never drop below the **Minimum Fan Speed** setpoint except for defrosting or fan cycling, which stops the fan completely. In addition, the cooling valve will remain open until the VFD fan slows to the minimum speed. If the **Minimum Fan Speed** and **Maximum Fan Speed** are set to the same value, the VFD will run at that setting and the cooling valve will cycle on and off based on temperature (identical to a single speed fan's behavior). If the **Minimum Fan Speed** is set *above* the **Maximum Fan Speed**, the VFD will operate at the **Maximum Fan Speed** setting and the *cooling valve will remain open*.

VFD Fan Control Bandwidth

Control Bandwidth sets the overall sensitivity for fan speed control (Bandwidth = temperature above + temperature below setpoint). A larger **Control Bandwidth** decreases sensitivity. The amount of the **Max Speed Change per Minute** setpoint utilized is proportional to this Bandwidth. Small values will make the fan control more sensitive but may cause control overshoot and waste energy.

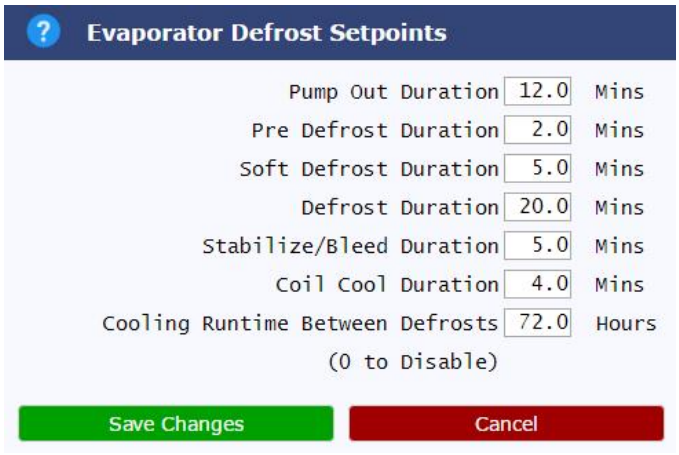
Max Speed Change per Minute

Enter the maximum allowed fan speed percent change in one minute. The applied **Change per Minute** is proportional to the **VFD Fan Control Bandwidth** and reaches this maximum setpoint when temperature exceeds the **VFD Fan Control Bandwidth**. For example, given a room temperature 2° above the evaporator setpoint and a Control Bandwidth of **8°**, the most the fan will be allowed to increase in one minute is half of the **Max Speed Change per Minute**. If room temperature rose to 4° above setpoint then the full Change per Minute would be utilized. Typical values are between **2%** and **10%**. Higher values will make the fan control more sensitive but may cause control overshoot and waste energy.

Evaporator Defrosting

Evaporator defrosting may be initiated either by time of day Defrost Schedules, by accumulated runtime of the cooling valve, by **IntelliFrost™** direct frost measurement (optional), or by selecting **Defrost** as the Evaporator Mode.

Defrost Cycle Setpoints



Enter a **0** duration setpoint to bypass any of the defrost steps.

Pump Out Duration

During Pump Out the cooling (liquid feed) valve is closed, the suction valve opened and the fan is run as refrigerant is boiled out of the coil. Defrosting time will be significantly longer if this duration is too short.

Pre Defrost Duration

During Pre Defrost the suction valve will be closed and the fan(s) turned off.

Soft Defrost Duration

During Soft Defrost a hot gas pre-pressure valve (if equipped) will be opened and the fan(s) turned off.

Defrost Duration

Valve operation during a Defrost is determined by the zone type. Typically, a hot gas defrost valve will be opened. Minimizing this duration by observing actual ice removal time can significantly reduce energy use. If the evaporator is equipped with an **IntelliFrost™** sensor, the frost level will be directly measured and the Defrost Duration automatically shortens. **If the evaporator is equipped with an IntelliFrost sensor, it is important that this setpoint be set significantly longer than the longest anticipated defrost cycle.** This setting then serves as a backup to the IntelliFrost sensor.

Bleed/Stabilize Duration

During Bleed/Stabilize the bleed valve shall be opened and all other valves closed. In the absence of a bleed valve this cycle can be used to allow the relief regulator to stabilize.

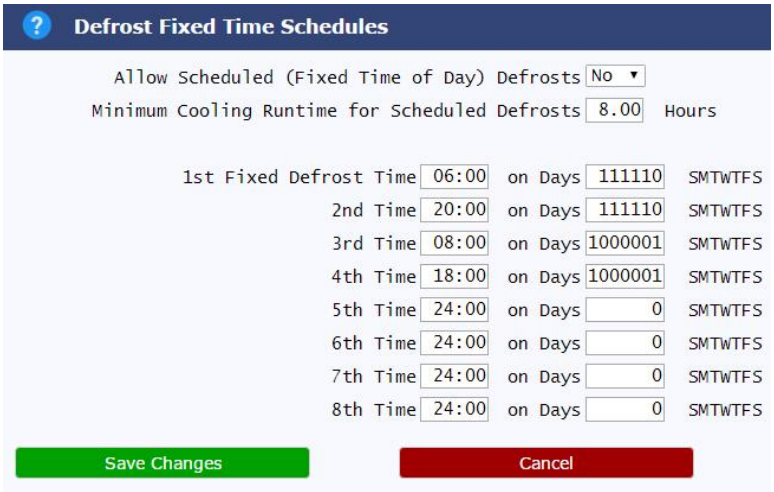
Coil Cool Duration

During Coil Cool the cooling (liquid feed) and suction valves shall be opened but the fan shall remain stopped. This freezes any water droplets to coil before normal cooling resumes so the product does not get wet.

Cooling Runtime Between Defrosts

The **Cooling Runtime Between Defrosts** setpoint allows automatic defrost initiation based on the accumulated hours the cooling valve has been open since the last defrost. Enter **0** to disable this feature. If the Cooling Valve is open for a total runtime exceeding the **Cooling Runtime Between Defrosts** setting the air unit will initiate a defrost. This strategy may be used in conjunction with Time-of-Day Scheduled Defrost strategy.

Defrost Fixed Time Schedules



Allow Fixed Time Defrosts

Select this option to allow time-of-day defrost scheduling. Note that this approach may be used in conjunction with cooling runtime defrosting.

Minimum Cooling Runtime for Fixed Time Defrost

Enter the minimum accumulated cooling runtime before allowing a time-of-day defrost. If cooling runtime is below this setpoint when a time-of-day defrost is scheduled the defrost cycle shall be skipped.

Fixed Defrost Time

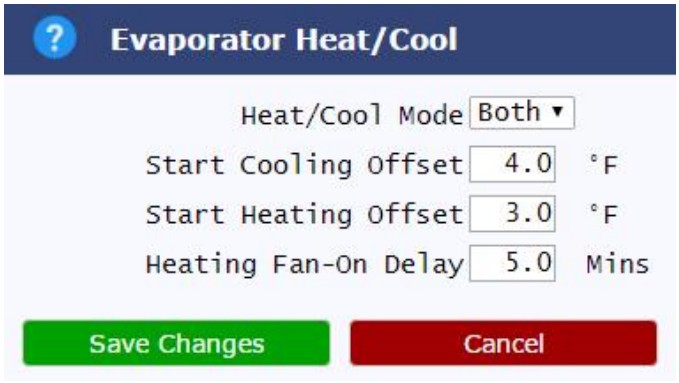
Enter the time of day in 24 hour format for the desired zone defrost times. Eight different Defrost Time setpoints allow flexibility throughout a week.

Days

Select which **Days** of the week to schedule a defrost at the **Defrost Time**. Enter a **1** to schedule a day of the week, enter a **0** to skip a day. The Days of the Week are formatted as SMTWTFS (**S**unday, **M**onday **T**ues etc.). For example, **0001001** will defrost on Wednesdays and Saturdays.

Evaporator Heating/Cooling

Evaporators with Heating and Cooling Capability



Heat/Cool Mode

The **Heat/Cool Mode** setting can be used to restrict the Evaporator to either the **Cool** or **Heat** mode of operation. When set to **Both** the Evaporator will switch between heating and Colling as needed.

Start Cooling Offset

Once the Room Air Temperature rises above the **Start Cooling Offset** setting and the **Heat/Cool Mode** setting is set to **Both** the Evaporator will switch to the cooling mode of operation.

Start Heating Offset

Once the Room Air Temperature falls below the **Start Heating Offset** setting and the **Heat/Cool Mode** setting is set to **Both** the Evaporator will switch to the heating mode of operation.

Heating Fan-On Delay

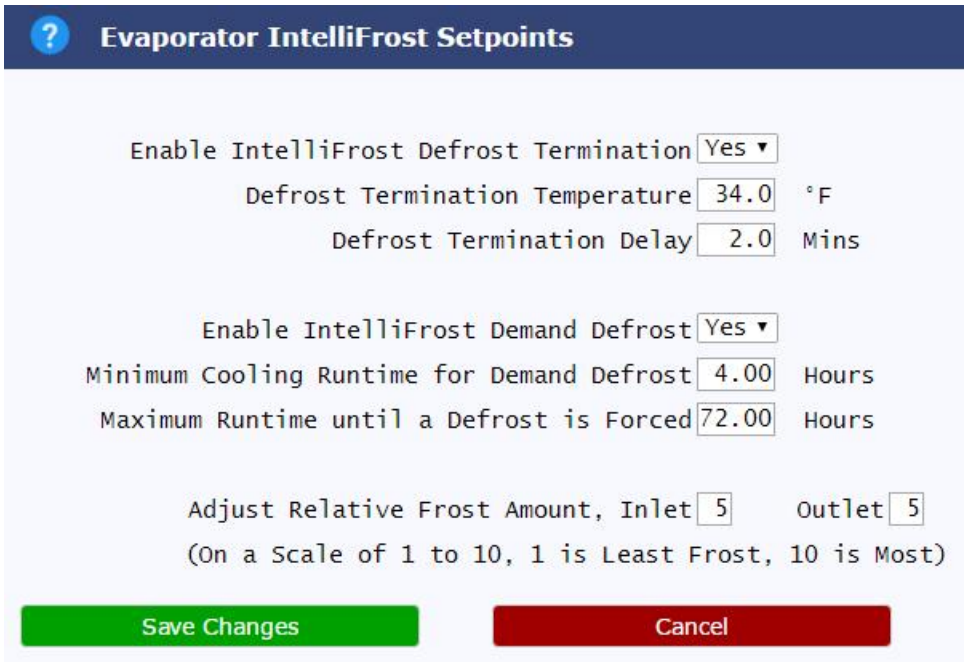
When an Evaporator starts Heating, the fan will be delayed for the **Heating Fan-On Delay** time.

IntelliFrost™ Defrost Management System

The Logix® IntelliFrost™ Automatic Defrost System directly measures frost accumulation and initiates a defrost sequence when the frost level reaches a user-defined level (designated as "100%"). The frequency an air unit *actually* needs to defrost can vary by a factor 10 or more over the course of a year. Even periods of vacancy (e.g. weekends) have very large differences in defrost frequency. IntelliFrost's direct frost measurement provides substantial opportunity for energy conservation and increased productivity by eliminating unnecessary defrost cycles.

During installation, the IntelliFrost sensor self-calibrates to its environment. Before installation the air unit must be defrosted to remove all frost from its heat exchange surfaces (fins). The frost sensor is then installed and calibrated to the 0% "No Frost" level. Based on the installation calibration, the 100% "Ready to Defrost" level is automatically determined. As the "Ready to Defrost" level is somewhat subjective, the "Ready to Defrost" level can adjusted later using a simple "on a scale of 1 to 10" (less frost or more frost) setting.

See the *IntelliFrost™ System Installation and Operation Manual* for detailed information regarding the installation and operation of the IntelliFrost™ Automatic Defrost System.



Automatic Defrost Termination

The Automatic Defrost Termination Setpoints allows the user to configure Automatic Defrost Termination Setpoints for each zone.

Enable IntelliFrost Defrost Termination

The defrost sequence will terminate when the fin temperature exceeds the **Defrost Termination Temperature** setpoint. Enter **Yes** to enable Automatic Defrost Termination for the indicated Air Unit.

Defrost Termination Temperature

Enter the temperature the fins must be above before a defrost can be terminated. If the evaporator fin temperature rises above the **Defrost Termination Temperature** setting for a time exceeding the **Defrost Termination Delay** the air unit will terminate the defrost sequence.

IMPORTANT NOTE: The **Defrost Duration** setting must be set significantly longer than what is required for a typical defrost sequence. The IntelliFrost must determine that the air unit is fully defrosted. It does this by sensing the fin temperature. Once the fin temp exceeds the **Defrost Termination Temperature** setting (typically set to 35°F), the IntelliFrost considers the air unit fully defrosted and it then terminates the defrost sequence. If the defrost is terminated by a short Defrost Duration setting before both IntelliFrost probes reach

the termination temperature, the IntelliFrost unit will not properly detect the end of defrost and the probe will indicate a defrost error.

Defrost Termination Delay

Enter the length of time the evaporator fin temperature must be above the **Defrost Termination Temperature** setpoint before a defrost sequence is terminated.

IntelliFrost Demand Defrost Setpoints

Enable IntelliFrost Demand Defrost

The defrost sequence will automatically be initiated when the frost level reaches 100% on either the inlet or outlet frost sensor. Enter **Yes** to enable demand defrost for the indicated air unit.

Minimum Cooling Runtime for Demand Defrost

Enter the minimum time the air unit must be cooling (accumulated Cooling Runtime) before a demand defrost can be initiated.

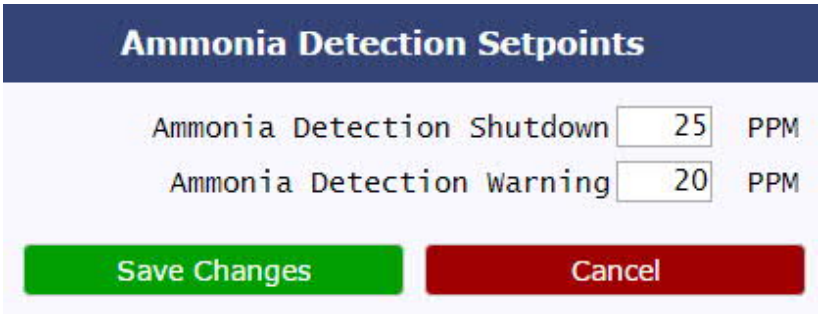
Maximum Runtime until a Defrost is Forced

Enter the maximum runtime allowed before the air unit is forced to defrost. This ensures a defrost is performed occasionally during very light load conditions. Typical settings are between 24 and 120 hours.

Relative Frost Amount

The Relative Frost Amount can be adjusted using a scale of 1 to 10, with 10 being the most frost, 1 being the least frost, and 5 being the middle. The amount of frost is relative to the 100% Frost level set during the calibration of the sensor.

Ammonia Detection Setpoints



Ammonia Detection Shutdown

Enter the ammonia gas concentration level in PPM above which the Evaporator will be shut down and the alarm annunciator energized. A setting of **25 PPM** is typically applied to comply with regulatory requirements.

Ammonia Detection Warning

Enter the ammonia gas concentration warning level in PPM above which the alarm annunciator will be energized.

Agility Controller Troubleshooting Guide

Warning:

Risk of Electrical Shock. Severe injury or death can result from electric shock during contact with line voltage wiring and equipment. Disconnect and lock-out all power sources during installation and service.

Caution:

Before any work is performed either inside an Agility panel or to any devices interfaced to an Agility panel, all sources of hazardous voltage, both into and out of the panel must be disconnected. The circuit protectors and/or circuit breakers installed in the Agility panel may not disconnect all sources of power. As Logix cannot verify the actual installation and any modifications of the control panel, Logix recommends that, at a minimum, all circuits both inside the panel and interfaced to the panel be thoroughly verified as disconnected and safe with a high quality electrical meter, which is tested to be functional before and after the verification procedures, before any work is performed on the panel or interfaced devices. Even if all known circuits are disconnected, it is still possible a circuit may become inadvertently energized from another source.

All work must be performed by personnel who are fully qualified to work on industrial control panels.

Troubleshooting Guide

This Troubleshooting Guide is divided into the following sections:

1. Status LEDs
2. Agility LED Error Codes
3. Power and Circuit Protection
4. Analog Sensors
5. Analog Sensor Calibration
6. Analog Outputs
7. Digital Outputs
8. Networking
9. Restoring Default Settings

Refer to the Agility Panel Layout Drawing to assist in locating components.

Status LEDs

The Agility Controller has multiple LEDs indicating its operational status.

Both the red and the green LEDs, labeled Status, indicate the general condition of the controller. The behavior of these LEDs differs during initial power-on and normal operation.

During power-on, both LEDs should immediately illuminate. Within a few seconds the red LED should turn off. This indicates the processor is operational. If an abnormal condition exists during the self-test phase, the red LED will issue a unique blink code to indicate the source of the error. Refer to the next section for details. No LEDs will illuminate if there are power supply issues (ex. a blown fuse).

Several seconds later during a normal power-on cycle, the green LED should begin flashing in a consistent one second on then one second off blinking pattern. This indicates the "heartbeat" of normal Agility Controller operation.

Each of the two serial communication ports has a pair of LEDs indicating transmission and reception of serial data. The TX LED indicates the Agility Controller has sent a message. The RX LED indicates the Agility Controller has received a message.

The Ethernet jack has a green LED which indicates a basic connection to the network. It does not indicate that the network settings are correctly set.

Agility Power On Self Test (POST) Codes

During power-up, the Agility microcontroller performs a Power On Self Test (**POST**). Any abnormal conditions are reported by the Red Status LED: A long blink (a one second On period followed by a one second Off) followed by a number of short blinks. The number of short blinks indicates the POST error code. For example, one long blink followed by four (4) short blinks would indicate POST code four (4) which indicates "EEPROM Memory Failure". Multiple errors are flashed sequentially, one after another with a long blink between each code.

Agility POST Code List (may vary by application; refer to online error code list)
1 Unrecoverable Error
2 Program Recovery Mode
3 NBus Failure
4 EEPROM Memory Failure
5 Digital I/O Driver Fault
6 Analog Output Module Error
7 COM-1 Failure
8 COM-2 Failure
9 Device Initialization Chain Failure
10 Task Initialization Chain Failure
11 Invalid Library Function
12 Factory Defaults Error
13 WebServer Fault

Power and Circuit Protection

The Agility Controller requires a dedicated 120VAC power circuit. The Agility Controller contains a 10 amp fuse to protect both itself and any controlled devices. Each digital output is also individually fused with a 4 amp fuse. Each digital output is rated for a maximum of 1.5 amps for a combined total of 9.5 amps.

Additionally the analog sensor +24V and Com 2 +24V are protected with a self-resetting polymer fuses rated at 1/10th amp. When a polymer fuse is exposed to over-current conditions, power must be removed before the fuse will reset.

Analog Sensor Troubleshooting

The safety message "Sensor Under-Range" indicates at least one sensor is sending an excessively low signal (under the normal operating range) to the Agility panel. Typically causes of a low signal are a broken wire or damaged sensor.

The safety message "Sensor Over-Range" indicates at least one sensor is sending an excessively high signal (over the normal operating range) to the Agility panel. Typically causes of a over-range signal are a shorted wire or damaged sensor. A faulty sensor will display a series of question marks instead of a normal sensor reading. View I/O Status to ascertain which sensor is faulting. Moisture penetration into a sensor's enclosure is the most common source of sensor failure. Refer to the sensor installation wiring diagrams for installation information.

Problem	Test	Possible Solution	Comments
"Sensor Under-Range" safety message.	Measure +24VDC supply at the sensor. The voltage should be near +24VDC.	1. The +24VDC Power wire is shorted to the Common (shield) wire. An Automatically Resettable fuse protect the sensor's +24VDC power. The cause of the short must be removed before +24VDC power will be restored. In some cases, the Agility controller must be powered-down for approximately 5 seconds. 2. Break in supply wire to sensor. 3. The sensor supply is wired incorrectly. The sensor should be supplied by +24VDC power from the "Pwr" terminal. Review the wiring diagram and correct any wiring errors. 4. The Agility +24VDC supply is faulty. Replace the Agility controller assembly.	Refer to the Sensor Diagnostics Diagram
"Sensor Under-Range" safety message (continued).	Measure the signal wire from the sensor. It should be between +0.5VDC and +3VDC (approximately).	1. Sensor is bad if voltage is not between +0.5VDC and +3VDC, often from water damage. Replace Sensor if signs of corrosion are present. 2. Signal wire is broken or disconnected if voltage is near zero.	Refer to the Sensor Diagnostics Diagram

"Sensor Over-Range" safety message.	Measure the signal wire from the sensor. It should be between +0.5VDC and +3VDC (approximately).	1. Sensor's probe is disconnected from sensor transmitter if voltage is above +3VDC. 2. A wiring short is shorting the +24VDC Power wire to sensor's Signal wire. 3. The sensor supply is wired incorrectly. The sensor should be supplied +24VDC power from the Agility "Pwr" terminal.	Refer to the Sensor Diagnostics Diagram
Sensor reading fluctuates.	Verify cable is shielded and grounded at Agility panel end only.	1. Use shielded twisted-pair cable such as Belden #9501 and connect the shield at the Agility Common (COM) terminal only. 2. Sensor is faulty or wet and needs replacing. 3. Sensor cannot support an extremely long probe wire lead length.	Refer to the Sensor Diagnostics Diagram
Sensor reading is too high or too low.	Compare reading against a **known**, **accurate** sensor.	1. Use the Calibration routine for normal (up to 5%) sensor deviation. 2. Sensor is being affected by external sources (unusual air flow, lights, moisture). If moisture is observed inside sensor enclosure dry completely and retest. Drill a weep hole at the lowest point to limit moisture related problems. 3. Sensor is damaged or faulty and needs replacing.	

Analog Sensor Calibration

The Sensor Calibration routine permits small adjustments to fine-tune sensor readings. Most sensors deployed with the Agility Control System are accurate to within 1% - calibrating beyond 1% would indicate a malfunctioning sensor, faulty wiring or an inaccurate calibration device (very common) or calibration methodology (also very common). Sensor calibration is limited to within 5% of the sensor's pre-programmed range.

A Sensor should only be calibrated against a device *known to be accurate under identical conditions*.

To obtain reliable results, it is very important to use a high precision reference device (i.e. a lab thermometer or pressure gauge), preferably one traceable to a NIST reference standard. Note that thermocouple-based digital thermometers are designed for a wide range of temperature measurement and therefore make a poor choice as a calibration instrument.

When calibrating a temperature sensor, the probe and calibrating device should be as close as possible to one another, preferably in direct contact. A surprising large amount of heat is given off by the human body, so make sure to keep well away from the temperature sensor during calibration. Also, be sure to calibrate

a sensor at the exact same location. For example do not attempt to calibrate a ceiling mounted temperature sensor by measuring air temperature near the floor. The calibration may be off by ten (10) degrees or more.

Sensor Calibration Procedure

To calibrate a sensor:

1. From the **Configuration and Diagnostics** menu, select **Calibrate Sensors**.
2. Select the desired sensor to display its calibration settings.
3. Type in the new, accurate reading in the **Enter Correct Value** setpoint and then select **Save Changes**.

The **Span** and **Offset** adjustments are automatically recalculated and permanently saved to the Agility unit. **Span** describes the pre-programmed range in proportion to the electrical signal (typically 4-20ma). **Offset** defines the "starting point" by comparing the minimum range value with the electrical signal. Because both factors are dynamically adjusted, calibration is most effective when the sensor is close to either extreme of its sensing range, i.e. calibrate a 0 - 300 PSIG pressure sensor when the pressure is at or near 0 PSIG then again at or near 300 PSIG.

Analog Output Troubleshooting

The Agility Controller's two analog outputs generate an active 4-20mA signal to control variable speed or position devices including modulating valves and variable speed motors. Since the Agility Controller *actively* generates the control signal, **no other source of power should be connected to the current loop**. Additionally, each 4-20mA current loop is optically isolated to eliminate troublesome ground loop conditions.

The surest method to determine if the analog output is functional is to entirely remove the field wiring from the pair of analog output terminals and, using a high quality digital DC milliamp meter, directly measure the signal. A reading between 4mA and 20mA indicates a functional analog output.

Digital Output Troubleshooting

Digital Outputs are solid state relays driven by an isolated low voltage signal from the Agility microcontroller. Some sections also apply to a faulty Input module.

Problem	Test	Possible Solution	Comments
Digital Output fails to **energize**.	Verify that the microcontroller is trying to energize the output by viewing View I/O Status.	Enable (or disable) the control mechanism that energizes the output.	Some outputs, such as suction pilot valves or compressor unloaders may be energized when the control routine is off ("Reverse Logic").

Digital Output fails to **energize** (continued).	Verify Red LED is illuminated for the Digital Output.	1. I/O Module is faulty. 2. I/O Rack cable is loose or faulty. 3. Agility Controller board is faulty 4. Agility Controller power is off.	This also applies to Inputs.
Digital Output fails to **energize**(continued).	Verify 120VAC is present on digital output line side.	1. The fuse in Agility panel is disconnected or blown. 2. Power is disabled at external main breaker. 3. 4 Amp fuse is blown - determine cause **first** then replace fuse. 4. The load device is a loose neutral connection.	Also applies to Inputs.
Digital Output fails to **de-energize**.	Verify LED is not illuminated for the Digital Output.	1. Enable (or disable) the control mechanism that is keeping the output energized.	Some outputs, such as suction pilot valves or compressor unloaders may be energized when the control routine is off.
Digital Output fails to **de-energize** (continued).	Measure output voltage with a load connected.	1. Connected load is very small (less than 25mA) and leakage current is causing the output to stay at or near 120VAC. 2. Connect a larger load and re-measure output voltage.	Refer to the Digital Input Output Schematic.

Network Troubleshooting

WiFi Troubleshooting

Review the Agility WiFi configuration section of the installation guide. Verify the W-ON jumper is installed across both pins. If it is missing or only on a single pin, the WiFi network will be disabled. Verify your device (smartphone, tablet, laptop etc.) is not in “Airplane Mode”.

For Local Access Point (hot spot) configurations, verify the Agility’s network SSID (name) is shown on your device’s WiFi connection screen. If it is not shown, the Agility’s WiFi network may be off (W-ON jumper removed) or may be misconfigured as **Connect to Existing** or **Disable WiFi Access**.

Verify the correct password is entered on your device. Try forgetting the WiFi network on your device and reconnecting to the Agility WiFi network.

Try resetting the Agility network configuration (see Restoring Default Settings below) and carefully reconfiguring it.

Ethernet Troubleshooting

Verify the green link LED on the Ethernet jack is illuminated. If the LED is dark there is likely cabling issue (broken and disconnected) or equipment issue (network switch or router malfunctioning or powered off).

If the green link LED on the Ethernet jack is illuminated and you can't connect to the device, the Agility network settings are likely misconfigured. A misconfigured Ethernet device (not just Agility but any networkable device) can conflict with other devices and/or cause an entire network to malfunction. Before attempting to alter the Ethernet settings you should have a firm understanding of how networks function and how each setting affects the network. It is beyond the scope of the document to provide the required documentation or training for this complicated topic. If you are unfamiliar with network configuration, have a network professional or IT department configure this device.

Verify if another device is misconfigured and is corrupting the Ethernet network. For example, a newly-installed web-camera was improperly configured with the same IP address as the Agility Controller, resulting in an address conflict. The symptoms include intermittent and/or no connectivity.

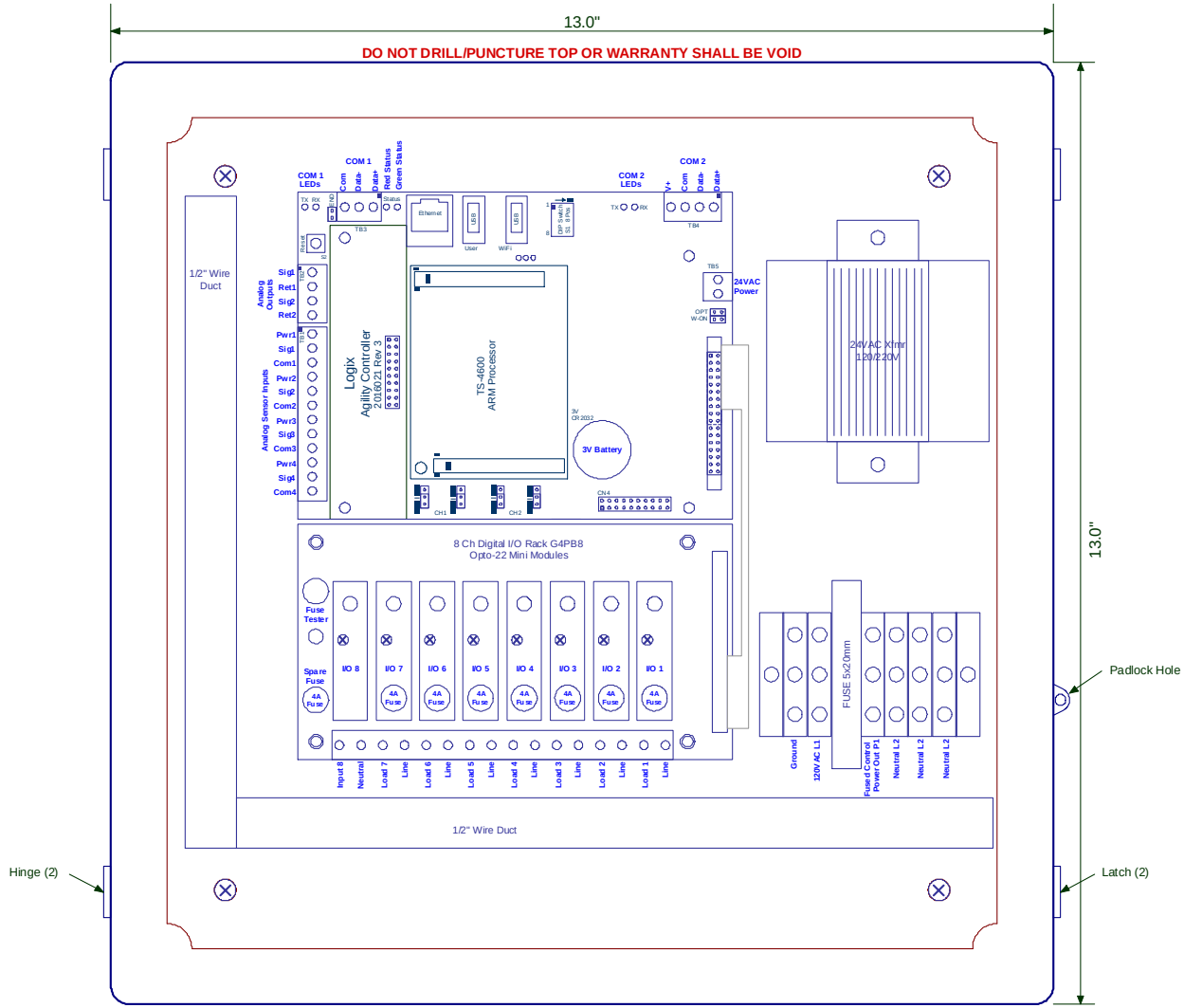
Try resetting the Agility network configuration (see Restoring Default Settings below) and carefully reconfiguring it.

Restoring Default Settings

To restore default settings to the Agility Controller, install the OPT jumper over both pins and set DIP switches 8 On, switch 7 Off. DIP switches 1-6 determine type of operation as follows:

1) Set switches 1-6 On to set Factory Default Setting. This will reset all setpoints and the WiFi configuration back to factory defaults. This will not reset the Ethernet IP address and netmask (see below).
2) Set switch 1 Off, switches 2-6 On to clear all analog sensor calibrations.
3) Set switches 1 and 3 Off, switches 2, 4-6 On to set default WiFi (SSID name and password) and Ethernet (IP Address, Netmask and Gateway) network settings.

Once the DIP switches are set, reset the Agility Controller and wait a minimum 15 seconds before setting DIP switches back off. Default Settings have now been restored.



Enclosure Overall Dimensions
13.4"W x 13.0"H x 7.1"D

Agility 8 I/O Panel Layout

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Rev 3 2016/8/29 MAG

Not to Scale

Figure 1- Agility Panel Layout

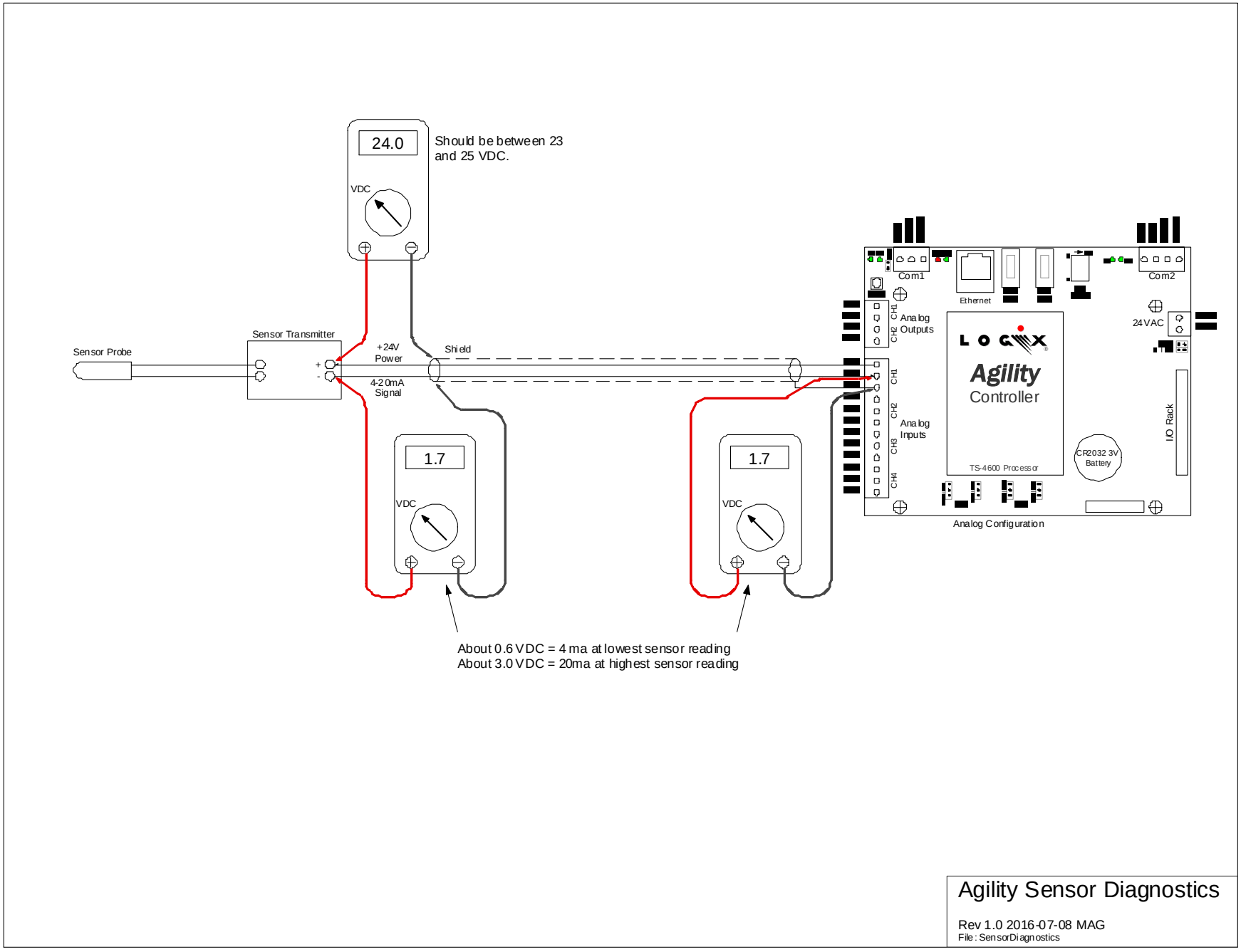
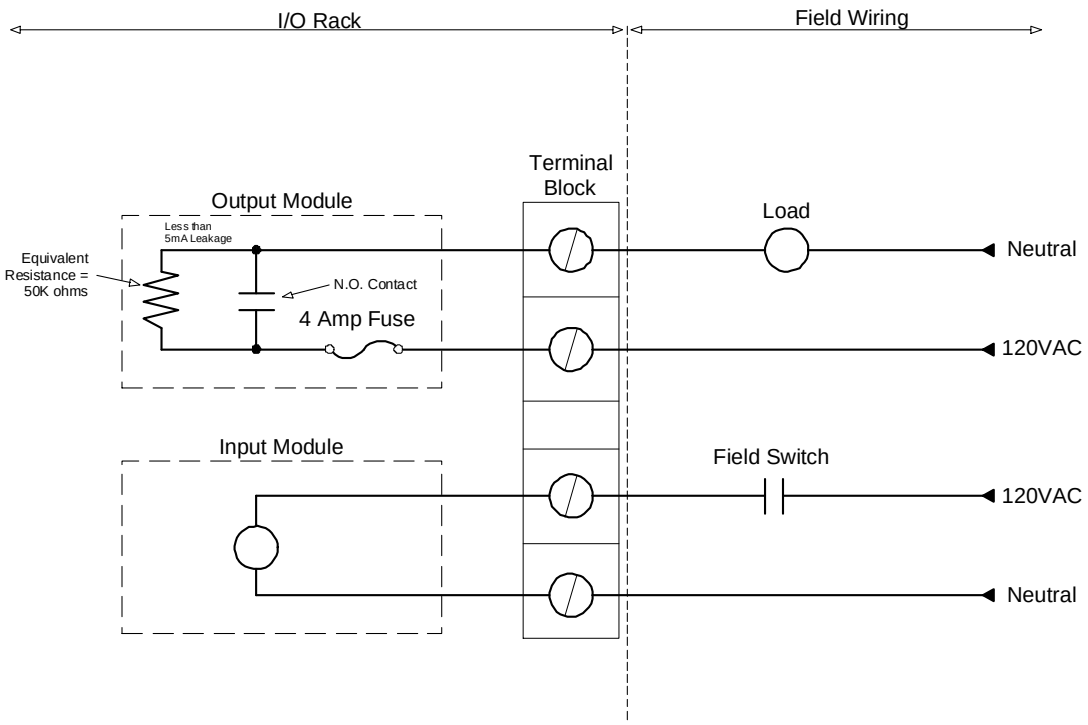


Figure 2- Agility Sensor Diagnostics Diagram



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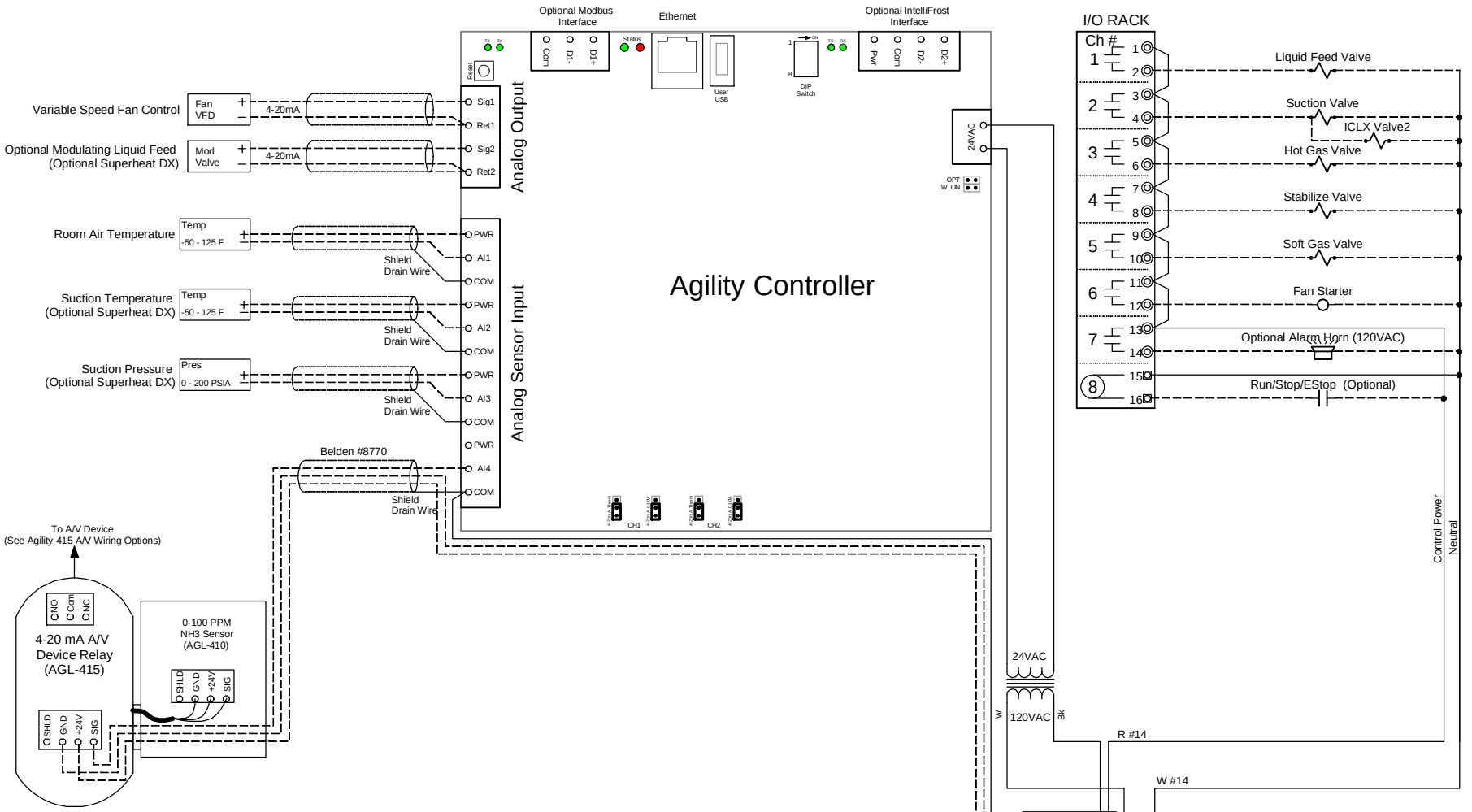
Title: Agility Digital Input Output Schematic		
Date: 07/11/2016	Rev: 01	Drawn by: MAG
Drawing Filename: AgilityDigInOutSchem.axd		

Figure 3- Agility Digital Input/Output Schematic



NOTES:

1) Connect all shield drain wires to panel COM terminal and float (insulate) at sensor end. Maximum of 4" of signal wire should be left unshielded at each end of cable. Insulate each end of stripped cable with an appropriate size heat shrink tubing.
2) Analog sensor cable is shielded Belden #9501, 1 twisted pair run in separate conduit from power wiring.
3) #10 ground wire must be connected to earth ground in power panel.
4) 120VAC outputs are maximum 1.5 amps running, 30 amps inrush. All I/O modules are solid state (NOT dry). Total combined load is 9.5 amps maximum.
5) Not all equipment (valves, VFD etc.) are required.
6) RM420-LR is pre-configured to trigger at 25PPM.
7) Ammonia detection cable is Belden #8770 - not inlcuded.
8) RM420-LR mounted directly onto NH3 sensor.
9) Wire Sensor Cable directly to NH3 Sensor if AGL-415 option is not used.

LEGEND	
R = Red	——— = field wiring
W = White	——— = panel wiring
BK = Black	◯ = panel terminal block
Or = Orange	o = panel screw terminal

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Title: Agility Evaporator Wiring Diagram
Model 410 Series

Date	Rev	Drawn by
05/05/2017	01	MAG

Drawing Filename: Agility_EvapNH3_Wiring_Diagram