USER MANUAL

iPro HVAC and Lighting

Installation and Operation User Manual

COPELAND

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1 Introduction

The HVAC and Lighting controller (*P/N 818-9004*) is a lighting and HVAC control board standalone controller. The HVAC and Lighting is capable of controlling heat and cool stages, fans, and economizers using on-board I/O and control algorithms. The HVAC and Lighting supports local physical inputs and outputs.

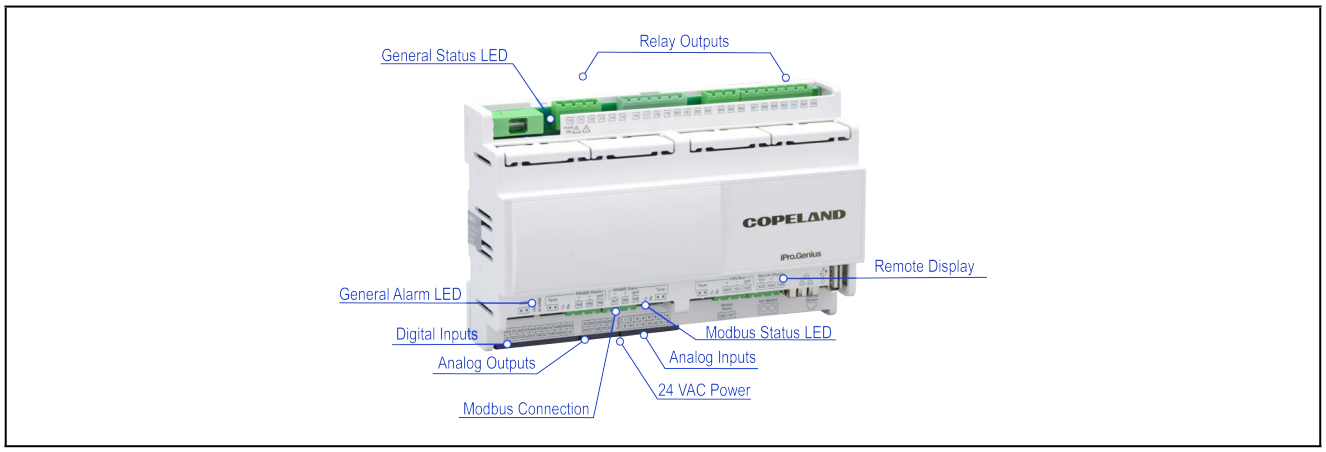


Figure 1-1 - HVAC and Lighting Controller

1.1 The HVAC and Lighting's I/O Points

The HVAC and Lighting supports 15 relay outputs, 6 analog outputs, 10 analog inputs, and 20 digital inputs.

The board has 10 analog inputs and 20 digital inputs. Its 15 relay outputs, rated 2.0 amps max, are used for activating and deactivating fans, heat and cool stages, economizers, and other systems or devices. Its 6 analog outputs may be used for air the damper.

1.2 Independent System Control

The HVAC and Lighting can control 5 lighting zones and 2 rooftop units (up to 2 heat/cool) independently.

1.3 HVAC and Lighting Application Enhancement Overview

The current application in the HVAC and Lighting platform for C-Store and Retail Stores can manage five lighting zones and two HVAC units. The enhancements to the application will be focused on the HVAC control, demand control, and its master schedule.

The HVAC control to support four more HVAC units, in addition to the current two, for a total of six units. There is one digital input for every HVAC unit for switching to occupancy mode and one digital input to turn cooling off if the function is enabled and the input is active is also included.

A demand control strategy will be added to adjust HVAC setpoints and provide the ability to turn loads off on a schedule or if the local KW reading is above the demand setpoint.

The additional inputs and outputs can be configured, read and overridden locally using a visograph and also remotely with XWEB.

1.4 Occupancy Enhancement

The occupancy input will provide another option for lights and HVAC to go into occupied mode.

In addition, a slave schedule provides different occupancy times for each HVAC unit.

1.5 Schedule Enhancement

For ease of programming, the default values of the schedules now have two events disabled.

2 Mounting and Powering

There are no restrictions on the location of the HVAC and Lighting controller (all local electrical code laws should be followed). The controller should be mounted in a location/environment that stays within a 20 to 85% relative humidity range (as specified by the label on the enclosure).

2.1 Installation

The HVAC and Lighting uses a DIN mount installation.

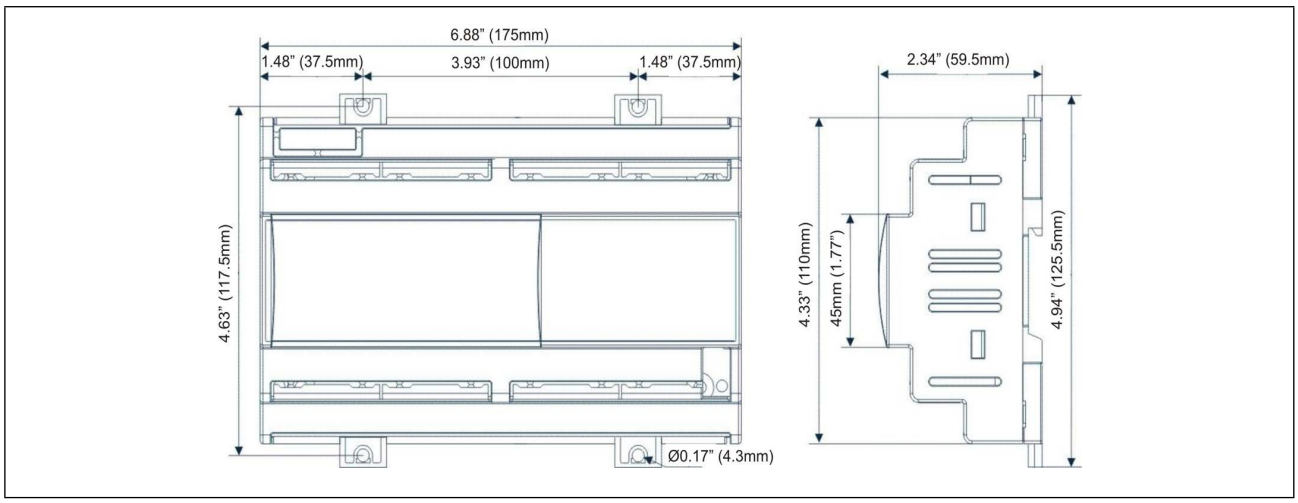


Figure 2-1 - DIN Mounting

2.1.1 Specifications - Mounting and Electrical

Table 2-1 - HVAC and Lighting Controller Specifications

Mount:	On a DIN rail (EN 50022, DIN 43880) Fastened with screws via the removable plastic flaps.
Material:	PC-ABS Thermoplastic
Self-extinguishing:	V0 (UL94)
Comparative Tracking Index (CTI):	300V
Color:	White
Power Supply:	24Vac +10/-15%, 50/60Hz 20 - 36Vdc
Consumption:	20VA (Vac), 15W (Vdc)
Connectors:	Phoenix quick coupling connectors for low voltage STELVIO 90° screw connectors for digital outputs (250Vac, 6A max)
Microprocessor:	AT91RM9200 32- bit 200Mhz
Temperature	50°F to 140°F (10 to 60°C)
Relative Humidity (RH)	20 to 85%
Permanent FLASH Memory:	128Mb, in 8- bit chunks
RAM:	2x128Kb, in 16- bit chunks
Internal Clock:	Standard

2.2 Powering

Copeland supplies a wide variety of 24VAC transformers with varying sizes without center taps. The power supply can be 24VAC/DC. If 24Vdc is used, PIN 1 is - and PIN 9 is + (see **Figure 2-2** for PIN 1 and 9 locations). **Table 2-2** shows the transformer sizes and are non-center-tapped.

2.2.1 Choosing Transformer Sizes

The transformer used to power the HVAC and Lighting should have at least a 20VA rating. The HVAC and Lighting should not share a transformer with any other devices.

Table 2-2 - Transformers Compatible with HVAC and Lighting

Transformer P/N	VA Rating	Primary Voltage
640-0041	50 VA	110 VAC
640-0042	50 VA	220 VAC

2.2.2 Power Wiring

The HVAC and Lighting units can be powered by one of the 50VA non-center-tapped transformers listed in **Table 2-2**. **Figure 2-2** shows how to wire the transformers to the HVAC and Lighting boards.

Neither side of the secondary should be connected to ground. Also, do not connect the center tap (if provided on the transformer) to ground. The entire secondary of the transformer should be isolated from any ground.

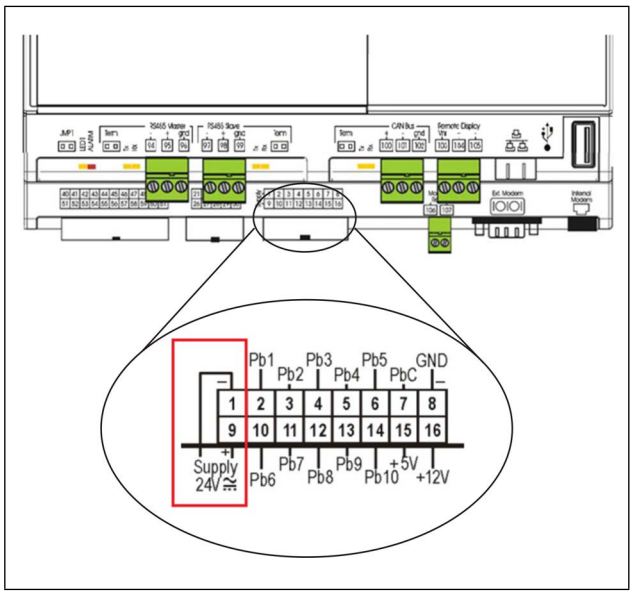


Figure 2-2 - Non-Center-Tapped Transformer Wiring Locations

2.2.3 Wire Types and Maximum Distances

For powering I/O boards, use only the listed wire types in **Table 2-3.** Two-conductor non-shielded cables are the recommended wire for connecting the transformer to the HVAC and Lighting. Shielded cable should not be used for power wiring. The center tap should be left disconnected, if present on the transformer.

Table 2-3 - Power Wiring Types

Power Wiring Types	
14 AWG	Belden 9495
18 AWG	Belden 9495

The wire length from the transformer determines the type wire gauge used. In most cases, the distance between the HVAC and Lighting and the transformer that supplies power to it is not enough to be of concern; *however, it is very important NOT to exceed this maximum wire length or the controller will not operate correctly.*
Use these formulas to determine if the wire gauge you are using fits within specification:

14 AWG:
Feet = 1920/VA

18 AWG:
Feet = 739/VA
(VA is the total VA rating of the controller)
For example, if you had an 80 VA load:
14 AWG: 24 ft.

Sensors requiring 24VAC should not be powered from the same transformer powering the input board. *Any devices that will be connected to the HVAC and Lighting unit's inputs or outputs must be powered with a separate 24VAC transformer.*

3 Network Addressing - Visograph

The network address makes a board unique from other boards on the network of the same type. This allows the site controller to find it and communicate with it easily.

The network address of the HVAC and Lighting is set using add-on devices called visographs (*P/N 318-7272*).

3.1 Connecting the Visograph

The visograph is connected with a 3-wire connection on pins 103, 104, and 105.

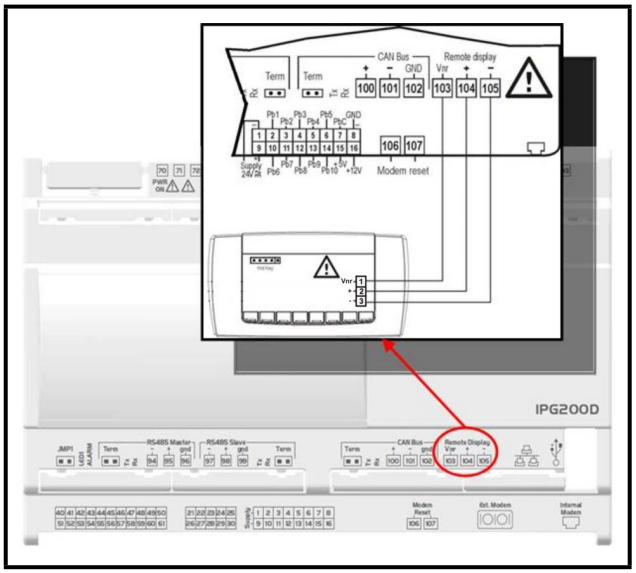


Figure 3-1 - Network ID Settings

⚠ CAUTION

The HVAC and Lighting may be damaged if the wires are crossed when connecting the visograph, especially if pin 103 (Vnr) is accidentally connected to + or –.

3.2 Visograph Navigation

From the visograph, you can:

- Set ModBus address
- Configure Lighting
- Configure HVAC

In order to enter the configuration, press keys T1, T3 and T8 at main menu for a few seconds (See **Figure 4-2**).

Navigation Buttons in Visograph

MENU	Press to go back to the main menu.
ENTER	Selects a field for editing or saves a changed field.
▲▼	Navigate to next or previous field. During edit mode, increases or decreases value.
◀▶	Navigate to next or previous screen.

Figure 3-2 - Visograph Buttons

NOTE

When the ModBus address is changed, the HVAC and Lighting will automatically reboot.

3.2.1 Versions Screen Update

If the Visograph version shown is not the most recent, set the Reload Display field to Yes. This will cause the display to download the latest screens contained in the HVAC and Lighting.

4 Input and Output Setup

4.1 Wiring Analog Inputs

The analog inputs are located on the same connector as the controller power supply.

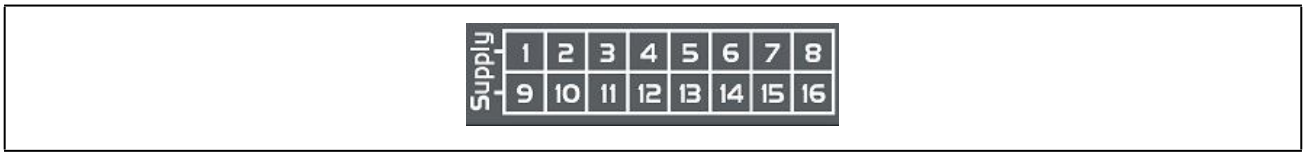


Figure 4-1 - Analog Input Connectors

The HVAC and Lighting provides separate input commons depending on the type of sensor connected. For temperature probes, all commons should be wired to PbC on terminal 7. For voltage output transducers, all commons should be wired to GND on terminal 8.

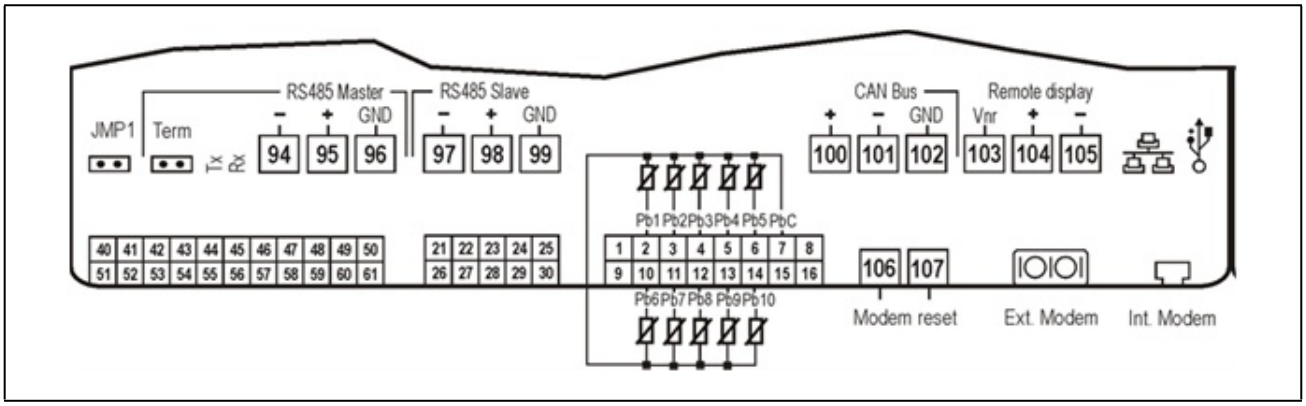


Figure 4-2 - Temperature Probe Wiring

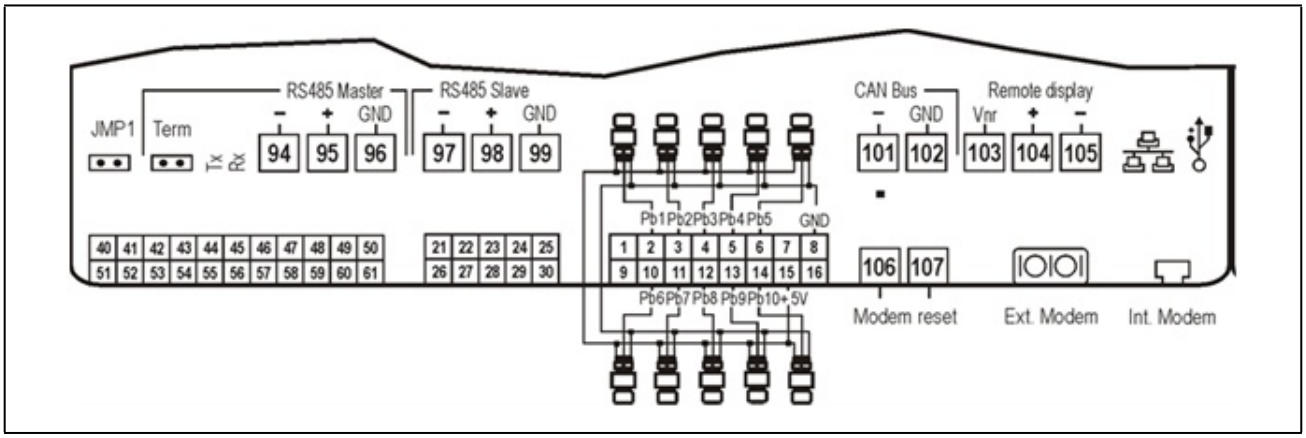


Figure 4-3 - Transducer Wiring for +5V Powered Devices

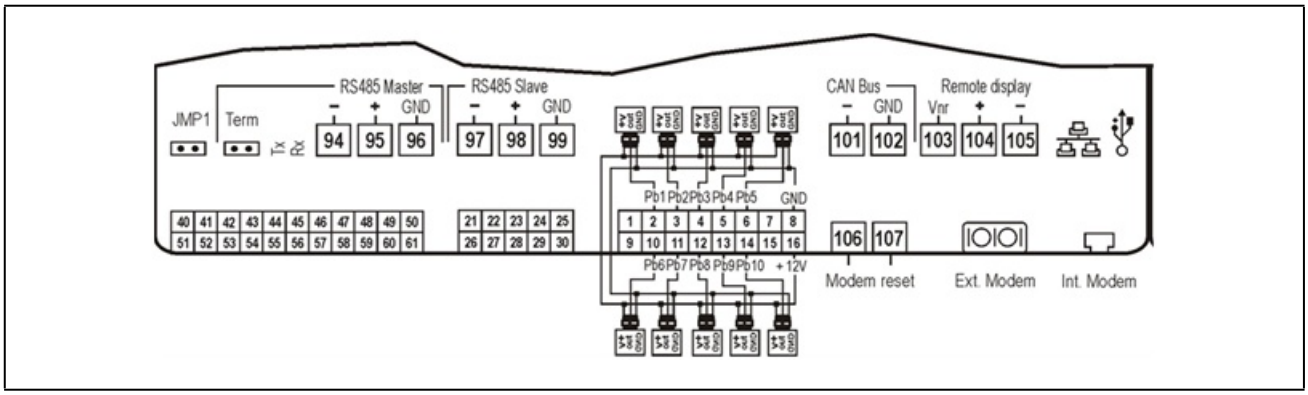


Figure 4-4 - Transducer Wiring for +12V Powered Devices

⚠ CAUTION Mis-wiring a sensor to the wrong common can result in damage to the HVAC and Lighting Controller.

⚠ CAUTION Any inputs that are powered with a voltage that differs from that supplied by the HVAC and Lighting (+12V or +5V) must be powered separately with another transformer in order to prevent the inputs from malfunctioning or being damaged. Do not use the same secondary of the controller's power to power the sensors.

Table 4-1 - Analog Input Connector Terminal Numbers

Terminal Number on Connector	Name
1	24VAC Supply -
2	Probe Input 1
3	Probe Input 2
4	Probe Input 3
5	Probe Input 4
6	Probe Input 5
7	Temperature Common
8	GND
9	24VAC Supply +
10	Probe Input 6
11	Probe Input 7
12	Probe Input 8
13	Probe Input 9
14	Probe Input 10
15	+5VDC
16	+12VDC

4.2 Wiring Digital Inputs

The digital inputs are located on a separate 22-pin connector.

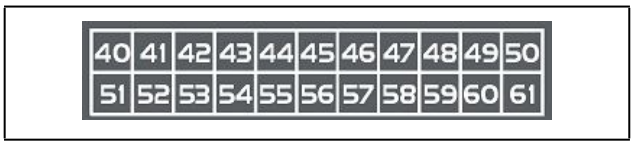


Figure 4-5 - Digital Input Connectors

The HVAC and Lighting provides a maximum of 20 opto-insulated digital inputs. However, only the first ten inputs are currently used (see **Table 5-2**). All digital inputs are voltage-free and are intended to have dry contact devices connected.

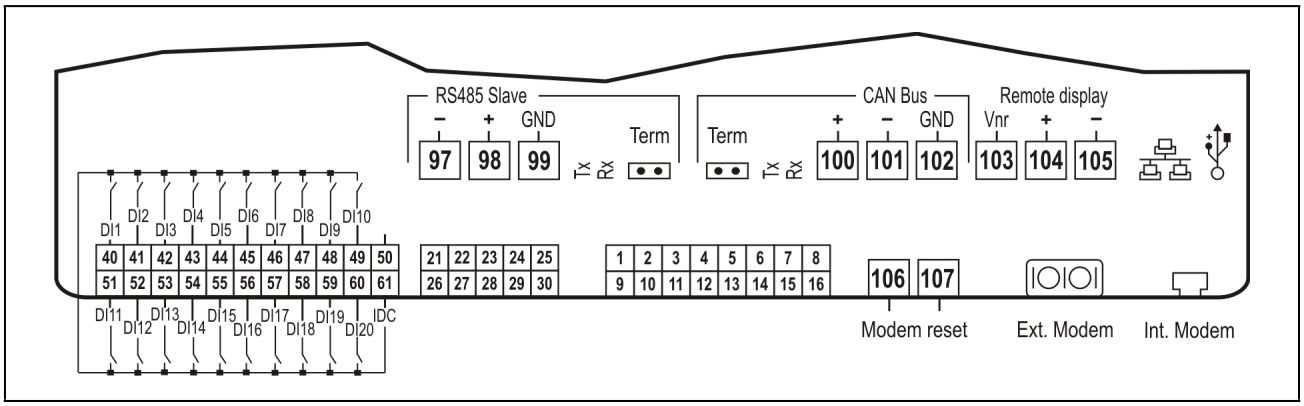


Figure 4-6 - Digital Input Wiring

Table 4-2 - Digital Input Connector Terminal Numbers

Terminal Number on Connector	Name
40	Digital Input 1
41	Digital Input 2
42	Digital Input 3
43	Digital Input 4
44	Digital Input 5
45	Digital Input 6
46	Digital Input 7
47	Digital Input 8
48	Digital Input 9
49	Digital Input 10
50	

Table 4-2 - Digital Input Connector Terminal Numbers

Terminal Number on Connector	Name
51	Digital Input 11
52	Digital Input 12
53	Digital Input 13
54	Digital Input 14
55	Digital Input 15
56	Digital Input 16
57	Digital Input 17
58	Digital Input 18
59	Digital Input 19
60	Digital Input 20
61	Digital Input 1

4.3 Wiring Digital Loads

The digital output relays are located across four separate connectors along the top side of the HVAC and Lighting.

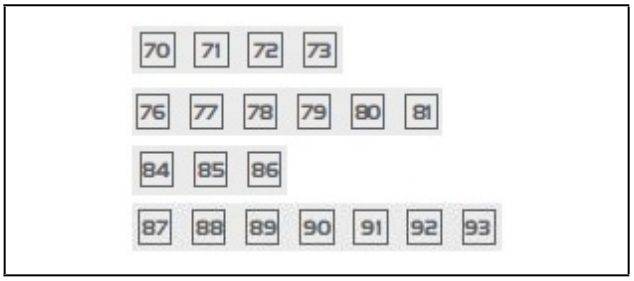


Figure 4-7 - Digital Load Connectors

The normally-open relay outputs on each connector share the same common and are not fused. Make sure to use the same voltage for all loads connected to the relays.

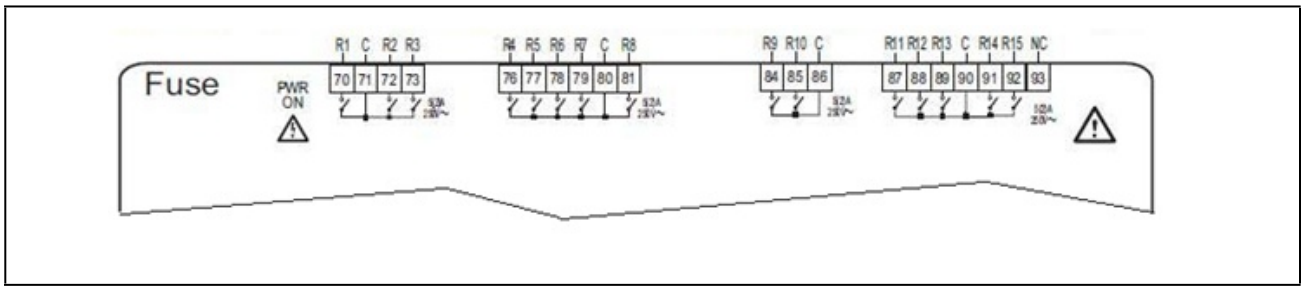


Figure 4-8 - Relay Output Wiring

Table 4-3 - Digital Relay Output Connector Terminal Numbers

Terminal Number on Connector	Name
70	Relay 1
71	Common for Relays 1-3
72	Relay 2
73	Relay 3
76	Relay 4
77	Relay 5
78	Relay 6
79	Relay 7
80	Common for Relays 4-8
81	Relay 8

Table 4-3 - Digital Relay Output Connector Terminal Numbers

Terminal Number on Connector	Name
84	Relay 9
85	Relay 10
86	Common for Relays 9-10
87	Relay 11
88	Relay 12
89	Relay 13
90	Common for Relays 11-15
91	Relay 14
92	Relay 15
93	

4.4 Wiring Analog Outputs

The analog outputs are located on a separate 12-pin connector.

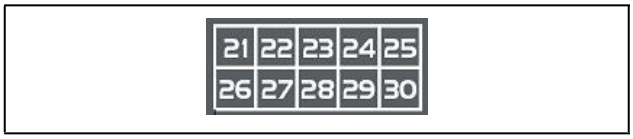


Figure 4-9 - Analog Outputs Connectors

The HVAC and Lighting provides six opto-isolated analog outputs. Because the analog outputs are opto-isolated, they must be separately powered by a 24V supply. The power supply can be 24VAC/DC. If 24Vdc is used, **PIN 28** is - and **PIN 29** is + (see **Figure 4-10** for PIN 28 and 29 locations). *For the outputs to function properly, connect a 24VAC supply (separate from the controller's main supply) to terminals 28 and 29. The same transformer used to power the devices controlled by the analog outputs (e.g., damper actuator) may be used to supply power to terminals 28 and 29.*

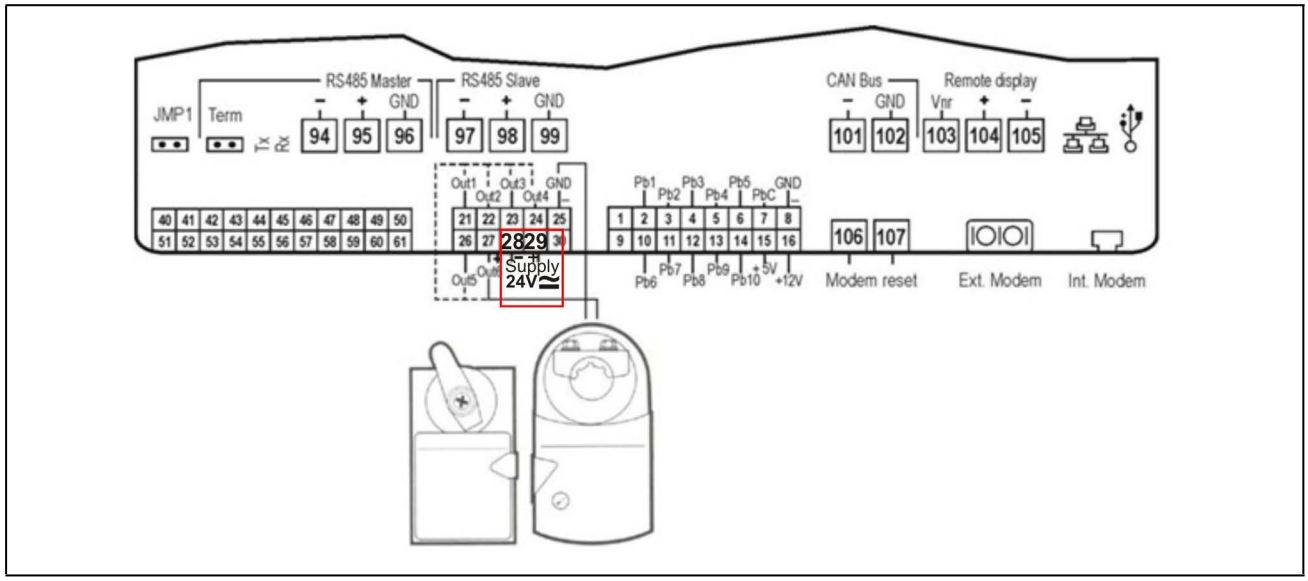


Figure 4-10 - Analog Output Wiring

CAUTION **The devices controlled by these analog outputs must be powered separately with another transformer (do not use the same secondary of the controller's power) in order to prevent the outputs from malfunctioning or being damaged.**

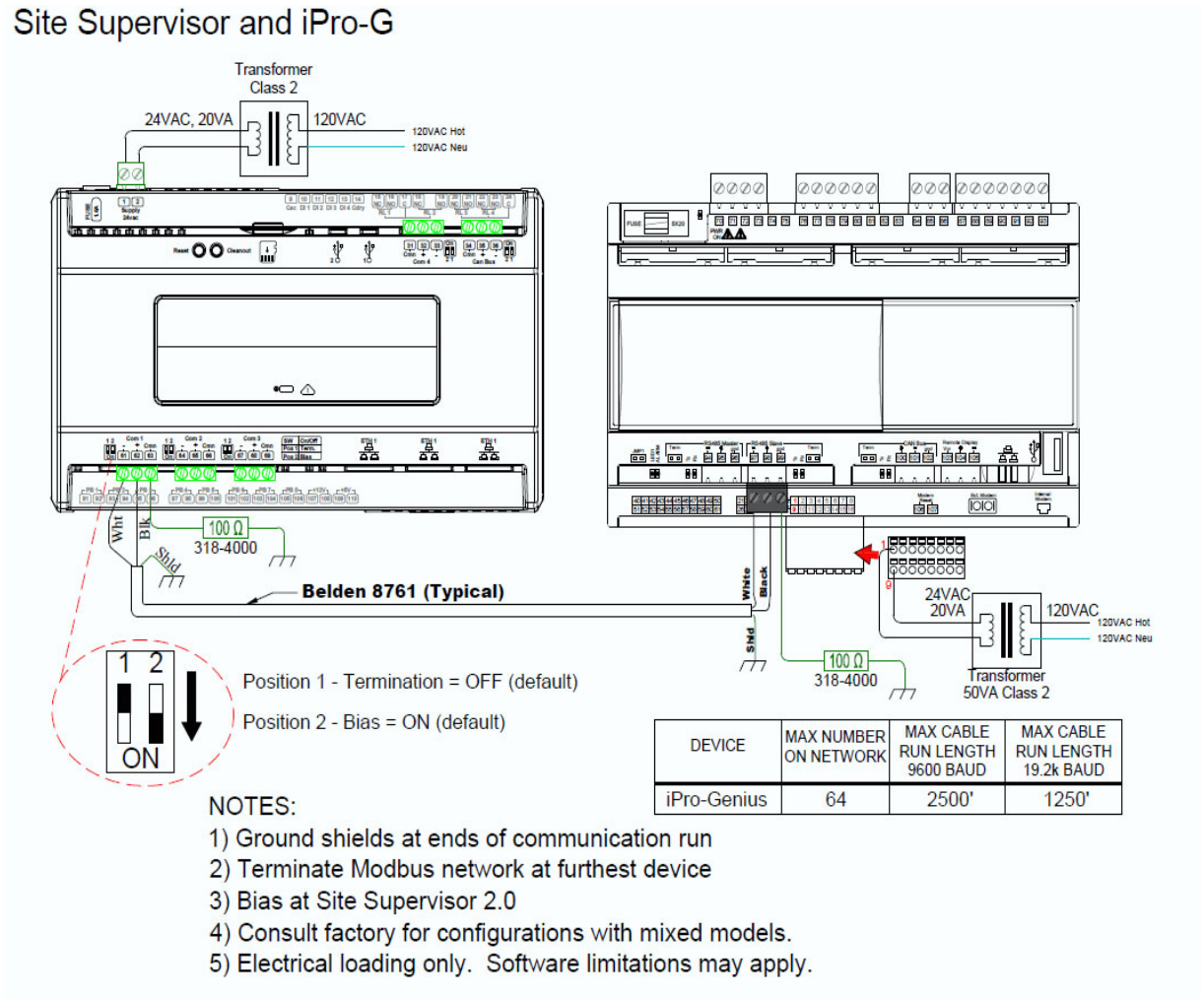
Table 4-4 - Digital Relay Output Connector Terminal Numbers

Terminal Number on Connector	Name
21	Analog Output 1
22	Analog Output 2
23	Analog Output 3
24	Analog Output 4
25	Analog Out Common

Table 4-4 - Digital Relay Output Connector Terminal Numbers

Terminal Number on Connector	Name
26	Analog Output 5
27	Analog Output 6
28	24VAC or 24VDC(-)
29	24VAC or 24VDC(+)
30	Analog Out Common

5 Wiring Connection to Site Supervisor



DEVICE	MAX NUMBER ON NETWORK	MAX CABLE RUN LENGTH 9600 BAUD	MAX CABLE RUN LENGTH 19.2k BAUD
iPro-Genius	64	2500'	1250'

Figure 5-1 - Site Supervisor Wiring

6 HVAC and Lighting Status LEDs

When an HVAC and Lighting board is powered up, you will be able to determine the operating status of the board by observing its status LEDs.

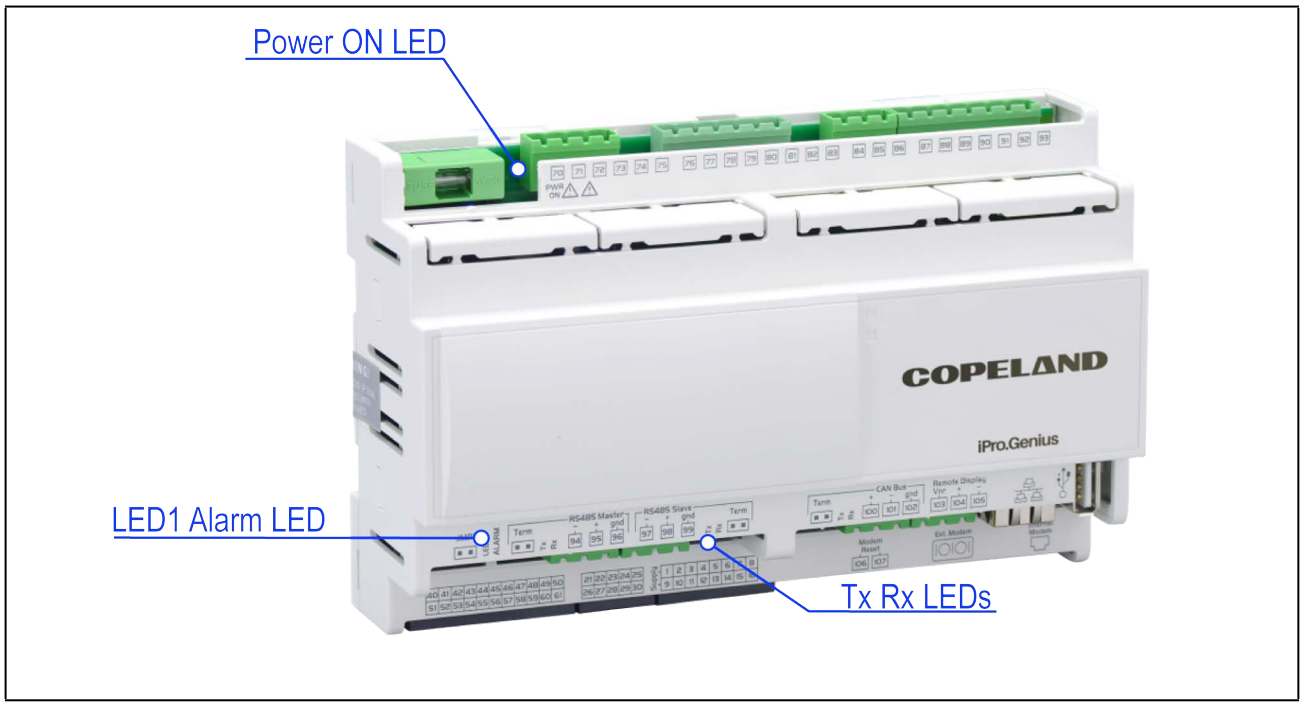


Figure 6-1 -HVAC and Lighting Status LED Locations

PWR ON LED

The PWR ON LED stays on continuously to show that the board is powered and operational. If this light is off, the board has likely lost power.

Tx and Rx LEDs

The Tx and Rx LEDs indicate when the HVAC and Lighting is sending or receiving messages on the RS485 network. The Tx LED blinks once every time the HVAC and Lighting sends a response to XWEB. The Rx LED blinks once when the HVAC and Lighting receives a message.

If the HVAC and Lighting is connected to the network and set up to communicate with XWEB, you should see these lights blinking regularly. If they do not blink regularly, there may be a problem with the network.

LED1

LED1 is a network status LED.

ALARM LED Status

If the red ALARM LED is on (solid), the HVAC and Lighting has an active alarm. When in this state, the Alarm relay output (if defined) will turn on.

If the red LED is on (solid) if any alarm or error happens; the alarms and errors are as follows:

Alarm:

- 10 probes error
- HVAC1: High temp alarm; Low temp alarm; Differential temp alarm; Fan alarm
- HVAC2: High temp alarm; Low temp alarm; Differential temp alarm; Fan alarm

7 Software Overview

The iPro for HVAC and Lighting and retail stores controls inside lighting, outside lighting and HVAC units. The lighting control has up to 5 zones assigned, (which represents one relay per zone). They drive the lights using schedules, light levels, overrides, and a combination of schedule and light level.

The HVAC control manages up to 2 cool and 2 heating stages, a fan output plus an economization output (in total 6 outputs per unit). The application runs two units on the main HVAC and Lighting board.

The lighting and HVAC applications are independent of each other. For example: if only lighting control is needed, the controller will operate only the lighting.

All inputs and outputs can be set to any specific function. For example, choose a specific function for DI 1-20, AI 1-10. For analog input AI, space temp can be set for 1-10 as a choice.

Lighting Control Program

Each relay output will have an instance of a lighting control "function block" (5 zones that are either inside or outside applications). All configuration and parameters for the "functions blocks" can be programmed locally (Visograph) and remotely (XWEB).

7.1 Schedules

The application supports 1 Master and 5 Slave schedules. The HVAC and Lighting associates a Slave schedule with the Master schedule. All schedules have the ability to be adjusted locally and remotely and support automatic Daylight Savings Time.

7.1.1 Master Schedule Control

The application supports one Master schedule that manages the store hours. All days of the week and three schedule events per day can be user configured (**Table 7-1**). On the Master Schedule, each day of the schedule has 3 different events that can be user defined. Time is in 24-hour format and entered as an absolute time. It also has the ability to associate with all Slave schedules and/or an HVAC unit for Occupied and Unoccupied modes. The Master Schedule defines the OCC mode on all HVAC units depending how it has been configured (Refer to **Section 7.3, HVAC Control**). The resolution is 10 minutes and the events must be consecutive (it is not possible to "overlap" the events). To disable an event or for unused events, set to 24:00, or set the same value to ON and OFF .

Table 7-1 - Schedule Control

Monday	ON	OFF
Sched Event 1	HH:MM	HH:MM
Sched Event 2	HH:MM	HH:MM
Sched Event 3	HH:MM	HH:MM
Tuesday	ON	OFF
Sched Event 1	HH:MM	HH:MM
Sched Event 2	HH:MM	HH:MM
Sched Event 3	HH:MM	HH:MM

When the master schedule (MS) is configured, these rules must be followed:

The range of MS1 is 0:00 to MS2: *first set the MS2 value*. You will then see that the range of MS1 has changed. Setting the schedule for MS2 first is to prevent the MS1 schedule from occurring after the MS1 schedule (MS2 < MS1) (OFF time >= ON time). The same rule should be applied for MS3, MS4, and MS5 master schedules.

The event should be split between two different days: The first event from 17:00 to 24:00 (for example, Monday) and the second event from 00:00 to 04:00. For example, the day is Tuesday because 00:00 to 04:00 are parameters of the day after Monday. The next example shows that the first event must always be scheduled *before* the last event:
MS1<=MS2<=MS3<=MS4<=MS5<=MS6.
MS6 must always be set to a time that occurs *after* an event before it.

The ON time 17:00 and OFF time 4:00 will not be able to be set with XWEB, because when the XWEB writes the data to the HVAC and Lighting controller, the program in the controller will check the data.
If the ON time occurs after the OFF time (ON time > OFF time), the data cannot be successfully written to the controller.

The HVAC and Lighting has its own verification program to prevent error data writing.

7.1.2 Slave Schedule Control

The application supports up to 5 Slave schedules, 1 for each lighting relay output, (which represents one relay per zone). Each one needs to have all days of the week available and up to 3 schedule events per day for user configuration. The time will be in 12 hr format entered as a relative time. Meaning, it will be added or subtracted to the

schedule event that corresponds to the corresponding day in the Master schedule. The resolution will be 10 minutes. For example, for Sunday: MS1+/-AS1<=MS2+/-AS2<=MS3+/-AS3<=MS4+/-AS4<=MS5+/-AS5<=MS6+/-AS6. The first slave schedule (AS) can be +/- (occur before or after) the time of the first master schedule (MS), but the master and slave schedules that occur before future schedules must be set to a time that occurs before them. For example, MS1+/-AS1 must be set to a time that occurs *before* MS2+/-AS2. Conversely, schedule MS6+/-AS6 cannot occur before MS5+/-AS5.

Table 7-2 - Slave Schedule Control

Monday	ON	OFF
Sched Event 1	-/+ HH:MM	-/+ HH:MM
Sched Event 2	-/+ HH:MM	-/+ HH:MM
Sched Event 3	-/+ HH:MM	-/+ HH:MM
Tuesday	**ON**	**OFF**
Sched Event 1	-/+ HH:MM	-/+ HH:MM
Sched Event 2	-/+ HH:MM	-/+ HH:MM
Sched Event 3	-/+ HH:MM	-/+ HH:MM

7.2 Lighting Control

The application will support an inside and outside lighting strategy. Both strategies work with a schedule, either Master or Slave, light level sensor, an override, or a combination of a light level and schedule. This delay will bypass if the DI is activated. However, this delay is not applicable if the application is in Logic Input mode.

In the operating modes using an analog light level value, the value needs to support both Lux and Foot Candle engineering units. The physical input supports a 0-5V light level sensor (*P/N 206-0002*). It can also support a 0-10V light level sensor.

7.2.1 Lighting Control - Physical Inputs and Outputs

The maximum number of analog outputs is 6. For lighting we are using only two (at the same time), however all AO should have configurable with AO options in Lighting and HVAC.

The physical inputs available to the lighting control are shown in **Table 7-3**. Digital inputs 1-5 can be assigned to any one of the DI options.

Table 7-3 - Physical Inputs

Inputs	Type
Logic/Override for Light 1	DI set between 1-20
Logic/Override for Light 2	DI set between 1-20
Logic/Override for Light 3	DI set between 1-20
Logic/Override for Light 4	DI set between 1-20
Logic/Override for Light 5	DI set between 1-20
Internal Light Level Sensor	Anlg set between 1-10
External Light Level Sensor	Anlg set between 1-10

The physical outputs available to the lighting control are shown in **Table 7-4**

Table 7-4 - Physical Outputs

Outputs	Type
Light 1	RO set between 1-15
Light 2	RO set between 1-15
Light 3	RO set between 1-15
Light 4	RO set between 1-15
Light 5	RO set between 1-15
Dimming Analog Out 1	AO
Dimming Analog Out 2	AO

7.2.2 Inside Lighting Control

Inside lighting control has four different ways of controlling:

- Dimming Control.
- Schedule Only.
- Schedule and Light Level Combination.
- Logic input.

7.2.2.1 Dimming Control

In dimming mode, the application works with the internal light level sensor to lower linearly as the light level increases. The mode has four parameters, which are the end points (define the endpoint of the dimming output). The dimming output has a rate of change to the analog output from short cycling.

Table 7-5 - Dimming Control

Parameter	Description	Default	Range
DC1 Maximum Dimming	Maximum Dimming Analog Output	0% -100%	0% -100%
DC2 Minimum Dimming	Minimum Dimming Analog Output	0% -100%	0% -100%
DC3 Max Dim Light Level	Maximum Dimming output at this light level parameter	100 FTC	0 -1000 FTC
DC4 Min Dim Light Level	Minimum Dimming output at this light level parameter	500 FTC	0 -1000FTC
DC5 Dimming Delay	Time Rate of Change	3 min	0 - 30 min

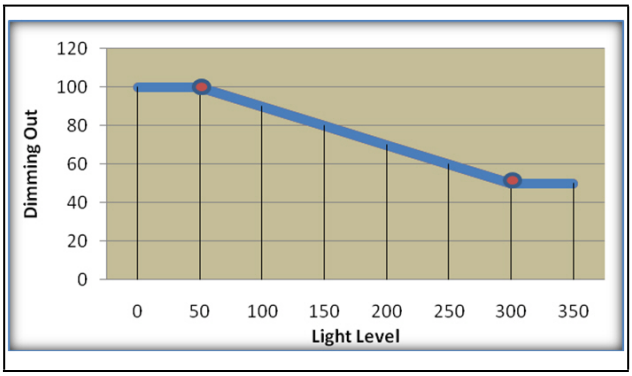


Figure 7-1 - Dimming Levels

The dimming is linear. The end points are a configured set in the user defined parameters (**Table 7-5**).

7.2.2.2 Schedule Only

In Schedule Only mode, the application will only work with the Master or Slave schedule assigned to it. As the schedule changes state, so does the relay output. For example, if the schedule is on, the relay output will also be on.

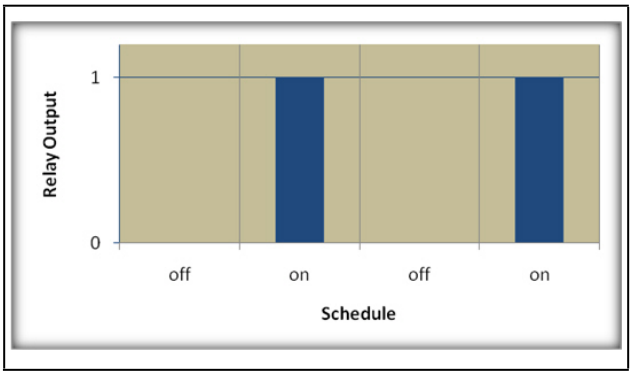


Figure 7-2 - Schedule

7.2.2.3 Schedule and Light Level Combination

With the Schedule and Light Level Combination, the relay output will come on with the schedule and enable the dimming mode, switching it from 0% to the calculated output. Therefore dimming will continue to operate normally as long as the schedule is on.

7.2.2.4 Logic Input

In Logic Input mode, the relay output will come on only if the override input reads an ON signal. Also, if logic input is defined as an override and the inside lights control is in any other mode of operation (Dimming, Schedule-only, Schedule, and Schedule and Dimming combination), the logic input will have priority and turn on the relay output. The application has the ability to switch the polarity of the digital inputs.

7.2.3 Outside Lighting Control

The outside lighting control has four different ways to control:

- Light Level Control.
- Schedule Only.
- Schedule and Light Level Combination.
- Logic input.

7.2.3.1 Light Level Control

In Light Level mode, the application works with the external light level sensor. The mode will have two parameters, cut in and cut out parameters. The relay will turn on when the light level value is below the cut-in parameter and turn off when it is above the cut-out parameter.

Table 7-6 - Cut Parameter

Parameter	Description	Range
LLC1 Cut In	Parameter at which the output will be turned ON	0-1000 FTC
LLC2 Cut Out	Parameter at which the output will be turned Off	0-1000FTC

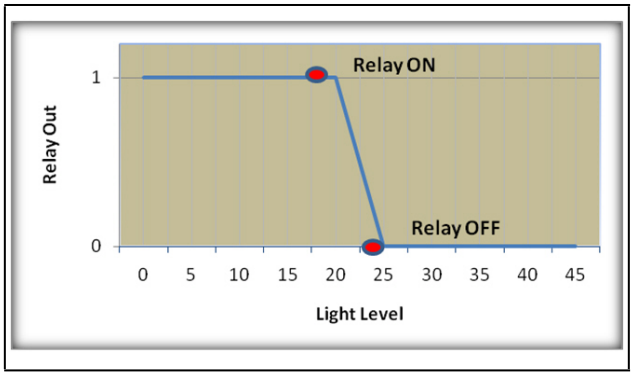


Figure 7-3 - Light Levels

7.2.3.2 Schedule Only

In Schedule Only mode, the application will only work with the Master or Slave schedule assigned to it. As the schedule changes state, so does the relay output. For example, if the schedule is on, the relay output will also be on.

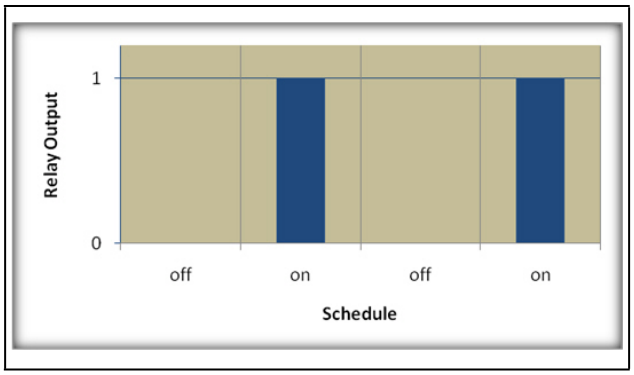


Figure 7-4 - Schedule

7.2.3.3 Schedule and Light Level Combination

In Schedule and Light Level Combination, the relay output will turn on if both the schedule assigned and the light level have triggering their outputs on. In order to turn off the relay output, either the schedule or the light level needs to switch off.

7.2.3.4 Logic Input

In Logic Input mode, the relay output will come on only if the override input reads an ON signal. Additionally, if a logic input is defined as an override and the outside light control is in any other mode of operation (light level, schedule only and schedule and LL combination), the logic input will have priority and turn on the relay output. The application has the ability to switch the polarity of the digital inputs.

7.3 HVAC Control

The application will support up to two HVAC units with up to two stages of cooling and heating. It will also have one fan output and one economizer output. The economizer can be defined as either analog (AO) or digital (RL). If the economizer is defined as digital, the damper will open and close: -100% open; 0% close. If the economizer is defined as analog, the economizer will modulate to have free cooling and maintain indoor mode. In Indoor Air Quality (IAQ) mode the application works with a CO2 sensor. The application also has a heat pump mode option to control in heat pump mode and has a shutdown input. If shutdown input is active, the unit with the active input will stop its cooling or heating, fan, and economizer control (disables the unit).

The HVAC Control temperature values will support Dixell and CPC sensors in both Fahrenheit and Celsius engineering units.

The application will need to support four additional HVAC/Heat pump units, for a total of six units. The main IPG board has two HVAC units, but every additional unit must be added to the system by the IPEX60D, which assigns its relays, 5 for every unit, to the application (same as the main IPG board). The extra output on the expansion module will be also available for assignment.

The application supports demand control by adding or subtracting from the active setpoint and a user definable value. If the KW reading is above a demand control user adjustable setpoint.

Table 7-7 - HVAC Demand Parameters

HVAC xx Unit Parameter	Description	Default Parameter	Range
Demand Bump	Add or Subtract demand bump Parameter for Active HVAC Parameter	0 DDF or DDC	-20 to 20 DDF or DDC
Demand Zone	Demand zone used	Not used	Not used up to zone 3

The application has the ability to enable a digital input to turn the cooling stages off if the input has an active signal. It will return to normal once the cooling stages are nonactive. The digital input will have the same properties as current digital inputs in the application.

Table 7-8 - HVAC Cool Parameters

HVAC xx Unit Parameter	Description	Default Parameter	Range
Forced Cool Shutdown	Option to Enable if Dig input is active the cooling stages will turn off after a delay	No	Yes - No
Forced Cool Off Delay	Amount of time before turning stages off	10 min	0 to 30 min
Forced Cool On Delay	Amount of time before enabling stages back to normal	1 min	0 to 30 min

7.3.1 Demand Control

The application will need to support the integration of the Energy Meter to provide the KW reading for the demand control strategy. The application will also need to monitor KWH and Power Factor and provide their values to the XWEB for logging.

The demand control strategy will have three relay outputs as demand zones. Each unit has 1 Demand Control Strategy and each Demand Control Strategy has 3 zones, so there are 3 zones for each unit. Each one can be available in any one of the following three modes: with a KW reading, KW/Schedule, schedule mode, with a fourth as not used.

In KW mode, the application will turn off the assigned output if the value is above the demand setpoint cut out and back to normal if below its cut in setpoint.

Table 7-9 - Demand Control Parameters

HVAC Zone xx Parameter	Description	Default Parameter	Range
Cut Out	Turns off Load	100 KW	0-1000 KW
Cut In	Turns on Load	80 KW	0-1000 KW
Relay Off Delay	Delay to turn off	0 min	0 to 30 min
Relay Off Delay	Delay to turn on	0 min	0 to 30 min

In KW/Schedule mode, the application will turn off the assigned output if the value is above the demand setpoint and the slave schedule is active (Occupied). If the slave schedule is not used, the master schedule will be used. On and Off delays are available.

In schedule mode, the application will turn off the assigned output if the slave schedule is active (Occupied). If the slave schedule is not used, the master schedule will be used. On and Off delays are available.

The addition, subtraction, configuration, and status of the additional units will be available locally (Visograph) and remotely (XWEB, Wizmate).

7.3.2 Energy Meter Register

The HVAC and Lighting Controller will collect, through the RS485 master, registers from the Energy Meter. Refer to the Energy Meter Manual (P/N 026-1726) and the Energy Meter ModBus Port Map Technical Bulletin (P/N 026-4911) for more information.

7.3.3 HVAC Control – Physical Inputs and Outputs-Default Setup

Table 7-10 -HVAC Control Input

Inputs	Type
RTU 1 Space Temperature 1	Anlg
RTU 1 Space Temperature 2	Anlg
RTU 1 Supply Temperature	Anlg
RTU 1 Return Temperature/Out RH *RTU 1 could be configured to Return Temperature/Out RH/CO2*	Anlg
RTU 1 Fan Proof	Dig
Emergency Shutdown 1	Dig
RTU 2 Space Temperature 1	Anlg
RTU 2 Space Temperature 2/OAT *RTU 2 can only be configured to Space Temperature*	Anlg
RTU 2 Supply Temperature	Anlg
RTU 2 Return Temperature/CO2 *RTU 2 can only be configured to Return Temperature/Out RH/CO2*	Anlg
RTU 2 Fan Proof	Dig
Outside Temperature	Anlg

Table 7-11 -HVAC Control Output

Outputs	Type
RTU 1 Fan	RO
RTU 1 Cool1	RO
RTU 1 Cool2	RO
RTU 1 Heat1/Rev Valve	RO
RTU 1 Heat2/Emerg HT	RO
RTU 2 Fan	RO
RTU 2 Cool1	RO
RTU 2 Cool2	RO
RTU2 Heat1/Rev Valve	RO
RTU Heat2/Emerg HT	RO
RTU 1 Economizer	AO
RTU 2 Economizer	AO

7.3.4 Cooling Control

Cooling control will have the ability to manage up to two stages of cooling using a control temperature.

7.3.4.1 Monitoring and Lockout Temperatures

There will be three monitoring temperatures, Supply, Return, and Outside; however, Return and Outside have alternate roles. The return temperature is the backup control temperature and the Outside is used in the cooling lockout.

Table 7-12 - Monitoring and Lockout

Input	Description	Function
Supply Temp	Supply Temperature	Monitoring
Return Temp	Return Temperature	Monitoring/Control
Outside Temp	Outside Temperature	Monitoring/LockOut

LockOut:

Prevents heating from turning on if the outside temperature is above a certain value. Likewise, the cooling should not be allowed to turn on if the outside air is below a certain value.

7.3.4.2 Control Temperature

The application will determine the control temperature from Space Temperature 1 or the average of Space Temperature 1 and 2 if the space temp 2 is defined. If Space Temperature 1 is the only temperature used for controlling and it fails, the backup temperature will be the return temperature. If controlling from the average mode and either of the space temperatures fail, the backup will become the other space temperature. However, if both temperatures fail in the Average Temperature mode, the backup will then become the return temperature.

Table 7-13 - Control Temperature

Input	Description	Function
Space Temp 1	Space Temperature 1	Control
Space Temp 2	Space Temperature 2	Control

Table 7-14 - Control Temperature

Input	Space Temp 1	Space Temp 2	Return air	Supply air	Backup Response
	Working	NA	Working	Working	Space 1
	Working	Working	Working	Working	Average
Status 1	Fault	Working	Working	Working	Space temp 2
Status 2	Working	Fault	Working	Working	Space Temp 1
Status 3	Fault	NA	Working Fault	Working	Control on return air if Return Probe is configured for RH or CO2. With no Return see Status 6 in this table
Status 4	Fault	Fault	Working Fault	Working	Control on return air if Return Probe is configured for RH or CO2. With no Return see Status 6 in this table
Status 5	Fault	Fault	Fault	Working	Unit stop in alarm
Status 6	Fault	Fault	Fault	Fault	Units stop in alarm

7.3.4.3 Space Temperature Control and Setpoints

The mode of operation will be determined automatically.

The setpoints are divided between occupied and unoccupied; these will be toggled from the Master Schedule in the Lighting Control application.

Occupied mode is generally the time of day a site is open to the public or “occupied;” the time is set in the master schedule. In this mode the HVAC unit will operate with the occupied setpoint.

In unoccupied mode, generally when the site is closed or “unoccupied;” the time is set in the master schedule. In this mode the HVAC unit will operate with the unoccupied setpoint.

Table 7-15 - Occupied Setpoints

Unit 1 Parameters	Unit 2 Parameters	Description	Default	Range
CL1	CL5	Occupied cooling parameter	73 DF	68DF-85DF
CL2	CL6	Cooling Deadband	3 DDF	0DDF-10DDF
CL3	CL7	Unoccupied cooling setpoint	76 DF	68DF-85DF
CL4	CL8	Second Cooling stage Delay	10 minutes	0 min-30 min

7.3.4.4 Cooling Control Strategy

The cooling application will control up to two stages of cooling. If the application is set for one stage, it will turn the cooling relay output on when the control temperature is above the setpoint plus ? deadband. It will turn off when the control temperature is below setpoint minus ? deadband.

If the application has been set for two stages of cooling, it will turn on the first cooling stage relay output when the control temperature is above the setpoint plus ? deadband. Once the first stage of cooling is on and the control temperature is above the setpoint plus ? for a user defined amount of time (delay), the second stage will turn on. The second stage will turn off once the control temperature is below the setpoint. The first stage will turn off when the control temperature is below setpoint minus ? deadband.

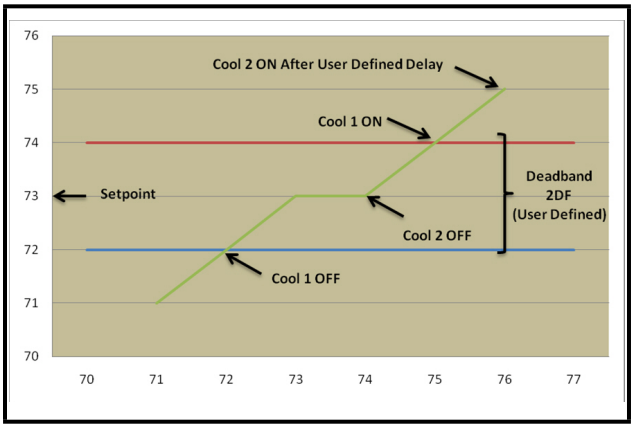


Figure 7-5 - Cooling Control Strategy

7.3.5 Heating Control

Heating control manages a maximum of two stages of heating using the control temperature.

7.3.5.1 Monitoring and Lockout Temperatures

There are three monitoring temperatures, Supply, Return, and Outside; however, Return and Outside will have alternate roles. The return temperature will be the backup control temperature and the Outside will be used in the heating lockout.

The application will use the outside temperature to lock the heating control regulation out.

Table 7-16 - Monitoring and Lockout

Input	Description	Function
Supply Temp	Supply Temperature	Monitoring
Return Temp	Return Temperature	Monitoring/Control
Outside Temp	Outside Temperature	Monitoring/ LockOut

Monitoring:

Values not used inside the application are available to be read from "outside" (For example: XWEB).

Control:

Value that is used inside the application.

LockOut:

Prevents heating from turning on if the outside temperature is above a certain value. Likewise, the cooling should not be allowed to turn on if the outside air is below a certain value.

7.3.5.2 Control Temperature

The application will determine the control temperature from Space Temperature 1 or the average of Space Temperature 1 and 2. If only controlling of Space Temperature 1 and it fails, the backup temperature will be the return temperature. If controlling from the average mode and either space temperature fails, the backup will be the other space temperature. However, if both temperatures fail in the Average Temperature mode, the backup will be the return temperature. See **Table 7-14**.

Table 7-17 - Control Temperature

Input	Description	Function
Space Temp 1	Space Temperature 1	Control
Space Temp 2	Space Temperature 2	Control

7.3.5.3 Space Temperature Control and Setpoints

The mode of operation will be determined automatically. The setpoints are divided between occupied and unoccupied; these can be toggled from any of the Master Schedules in the Lighting Control application.

Occupied mode is generally the time of day when a store is open. In this mode the HVAC unit will operate with the occupied setpoint.

Unoccupied mode is generally when a store is closed. In this mode the HVAC unit will operate with the unoccupied setpoint.

Table 7-18 - Occupied Setpoints

Unit 1 Parameter	Unit 2 Parameter	Description	Default	Range
HT 1	HT 5	Occupied heating parameter	73 DF	68DF-85DF
HT 2	HT 6	heating Deadband	3 DDF	0DDF-10DDF
HT 3	HT 7	Unoccupied heating setpoint	76 DF	68DF-85DF
HT 4	HT 8	Second heating stage Delay	10 minutes	0 min-30 min

7.3.5.4 Heating Control Strategy

The heating application will control up to two stages of heating. If the application is set for one stage, it will turn on the heating relay output when the control temperature is below the setpoint minus ? deadband. It will turn off when the control temperature is above setpoint plus ? deadband.

If the application has been set for two stages of heating, it will turn on the first heating stage relay output when the control temperature is below the setpoint minus ? deadband. Once the first stage of heating is on and the control temperature is below the setpoint minus ? for a user defined amount of time (delay), the second stage will turn on. The second stage will turn off once the control temperature is above the setpoint. The first stage will turn off when the control temperature is above setpoint plus ? deadband.

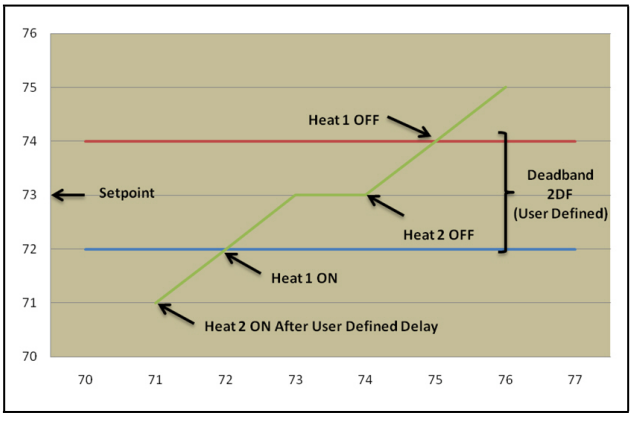


Figure 7-6 - Heating Control Strategy

7.3.5.5 Heat Pump Control

Heat pump control is identical to the heating control; however, the heating stage 1 will act as the reversing valve output. For example, it will be active when the space is in heat mode. The reversing valve operation has a configuration parameter to determine if heating is energize or de-energized. The parameter dictates which way the load pump is active or controls. The user defines whether cooling is energized or de-energized and vice versa. For example, if energized it is in cooling mode, if de-energized it is in heating mode.

The application will turn on cooling stage 1 when first stage of heat pump is on. It will turn on cooling stage 2 when the second stage of heat pump is on.

As for heating stage 2 output, it will act as emergency heat output, which will turn on after the user defined delay and heat pump stage one has been on. If the unit has only one heat pump stage, emergency heat delay will start counting after it.

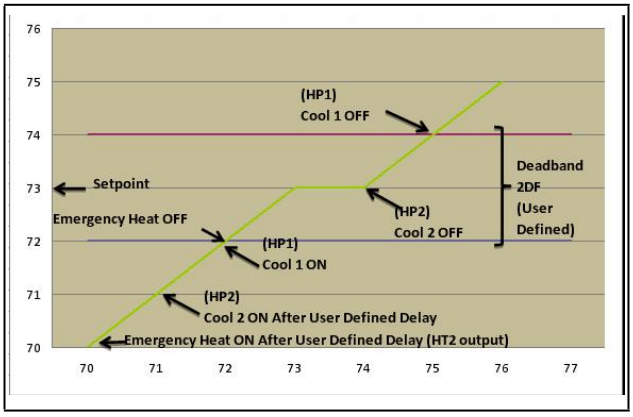


Figure 7-7 - Heat Pump Control

Table 7-19 - Functions

Relay Out (H/C Mode)	Function Becomes ?	Heat Pump Mode (HP Mode)
Cool 1	?	HP 1
Cool 2	?	HP 2
HT 1	?	RV
HT 2	?	Emergency HT

The setpoints are divided between occupied and unoccupied; these will be toggled from the Master Schedule in the Lighting Control application.

Occupied mode is generally the time of day a site is open to the public or "occupied;" the time is set in the master schedule. In this mode the HVAC unit will operate with the occupied setpoint.

Unoccupied mode is generally is when the site is closed or "unoccupied;" the time is set in the master schedule. In this mode the HVAC unit will operated with the unoccupied setpoint.

Table 7-20 - Occupied Setpoints

Unit 1 Parameters	Unit 2 Parameters	Description	Default	Range
HT 1	HT 6	Occupied Heating parameter	73 °DF	68°F-85°F
HT 2	HT 7	Heating Deadband	3 °F	0°F-10°F
HT 3	HT 8	Unoccupied Heating setpoint	76 °F	68°F-85°F
HT 4	HT 9	Second Heating stage Delay	10 minutes	0 min-30 min
HT 5	HT 10	Emergency Heating Delay	10 minutes	0 min-30 min

7.3.6 Fan Control

There are two separate Fan Control parameters (HVAC1 and HVAC2).

The fan has the ability to work in either continuous (On) or automatic (Auto) mode. During occupied mode, the fan will be able to run in either mode. However, during unoccupied time the fan will only run in automatic mode.

In Automatic mode, the fan runs any time either cooling or heating is required by the conditioned space or if fresh air is needed to bring down CO2 level. In Continuous mode, the fan operates constantly regardless of cooling or heating. Additionally, the fan has an on and off delay.

Fan control will also have the option to monitor a run input. After a user defined delay, the unit will shut down.

Table 7-21 - Occupied Setpoints

Unit 1 Parameters	Unit 2 Parameters	Description	Default	Range
HF2	HF12	Fan Operating Mode in Summer	Auto	On-Auto
HF3	HF13	Fan Operating Mode in Winter	Auto	On-Auto
HF4	HF14	Fan On Delay	0 minutes	0 min-5 min
HF5	HF15	Fan Off Delay	0 minutes	0 min-5 min

Table 7-21 - Occupied Setpoints

Unit 1 Parameters	Unit 2 Parameters	Description	Default	Range
HF6	HF16	Fan Proof Delay	2 minutes	0 min-10 min
HF8	HF18	Summer/Winter setpoint, above setpoint is Summer	55°F	0-90°F
HF9	HF19	Summer/Winter Hysteresis, below set-hys is Winter	5°F	0-90°F

7.3.7 Economizer Control

For Economizer Control there are two separate parameters, for HVAC1 and HVAC 2.

Economizer control will operate the outside damper in Free Cooling mode or by indoor air quality, whichever requires the most.

For Free Cooling in Cooling Mode, the damper observes any lockout to heating and cooling. IAQ will always have priority over lockout and operates normally. Note that Free Cooling is enabled in Cooling Mode, and IAQ is enabled when the CO2 probe is configured.

The outside damper can be operated by an analog output. Also, under the each relay output configuration will be an option to define a relay to drive the economizer when in digital mode (0%=relay off; 100%=relay on).

Free Cooling is enabled only in Cooling Mode and in Heating Mode the damper will only control by the indoor air quality function. The economizer operation in Heating Mode needs to be user defined. Cooling mode comprises Free Cooling and IAQ only. In Heating Mode, IAQ is only available from the damper (no Free Cooling is available in Heating Mode).

7.3.7.1 Economizer Enable

The application will check the valid condition of the outside air by comparing inside and outside temperatures or calculating outside enthalpy and comparing it to an user defined setpoint
(see Example 2). If conditions are valid, the application will enable operation of the outside damper by the free cooling mode. If the outside conditions are not optimal, free cooling is disabled.

Enthalpy control calculation is calculated with an outside temperature and humidity. RTU 1 return temp will have the ability to switch to an outside humidity input. Humidity input also needs to support 0-5V,
0-10V, and 4-20MA sensors.

In free cooling, the application will also determine if free cooling is required by the space. It will be determined by offset parameters.

Table 7-22 - Offset

Unit 1 Parameters	Unit 2 Parameters	Description
HE 1	HE 10	Specifies the amount of offset to be subtracted from the active occupied cooling setpoint to determine the space temperature at which economization is needed.
HE 2	HE 11	Specifies the amount of offset to be subtracted from the active unoccupied cooling setpoint to determine the space temperature at which economization is needed.

Once the application has determined the need for the outside damper to open, it will provide a linear output. The active cooling setpoint minus the economizer offset will provide the temperature that the minimum output will be. The active cooling setpoint will be the maximum output.

Table 7-23 - Occupied Setpoints

Unit 2 Parameters	Unit 1 Parameters	Description	Default	Range
HE12	HE 3	Maximum Dimming Analog Output	0%	0%-100%
HE 13	HE 4	Minimum Dimming Analog Output	100%	0%-100%

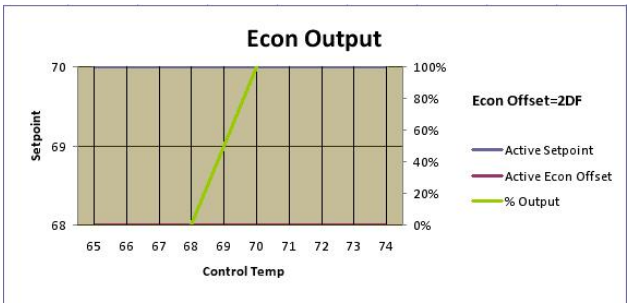


Figure 7-8 - Economization Output

7.3.7.2 Indoor Air Quality

There are two separate IAQ Control for HVAC1 and HVAC2 which are same CO2 sensor.

The Indoor Air Quality Control will share its input with the return temperature on each HVAC unit. If IAQ is required, the use of the return sensor would not be available.

The application will use a CO2 reading and end-point parameters to produce a linear output.

If one of the two Return Probes are configured for C02, this probe is shared between the two units.

One of the two return probe must be configured as a CO2 sensor. For that Unit this probe wont be used as a back-up probe.

Unit 1 Parameters	Unit 2 Parameters	Description	Default	Range
HI 1	HI 7	Maximum % Analog Output	100%	0%-100%
HI 2	HI 8	Minimum % Analog Output	0%	0%-100%
HI 3	HI 9	Maximum % Output at this CO2 Level	1800	500-3000
HI 4	HI 10	Minimum % Output at this CO2 Level	800	500-3000

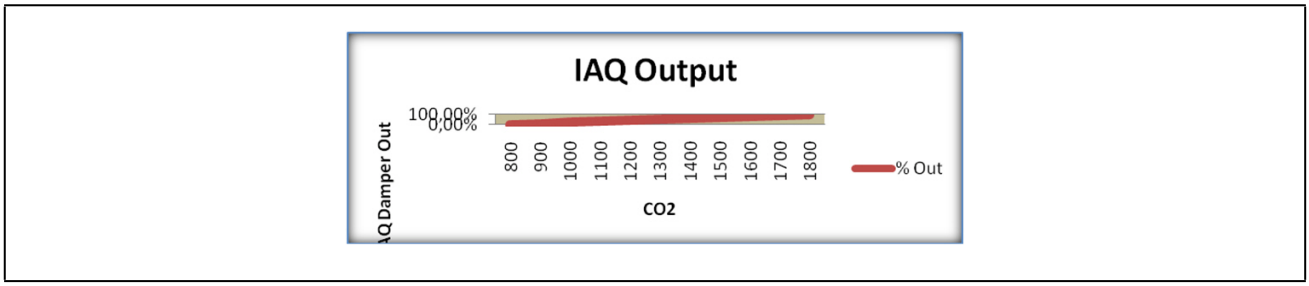


Figure 7-9 - Economization Output

7.3.7.3 Damper Control

The outside damper control will choose the Maximum Analog Output (HI 1) from the IAQ and free cooling modules. It will also have a minimum position available. If the damper is set to a digital mode, the application will trigger a maximum output (100%) when the analog output comparison between IAQ and free cooling reaches 100% and back to its minimum (0%) once it reaches 0%.

7.4 Alarms

The application will have alarm capabilities of high temperature, low temperature, fan proof and supply/return-space differential alarm parameters. All physical input failures will also have alarm capabilities. All alarms have a user-defined delay before the alarm becomes active.

The unit for the Delay of Probe error Alarm must be entered in seconds, not minutes.

Table 7-24 - Alarms

Unit 1 Parameters	Unit 2 Parameters	Alarms	Description	Default	Range
AL1	AL9	HiSpcTemp	High Space Temperature	85DF	70-95 DF
AL2	AL10	HiSpcTemp Dly	High Space Temperature Alarm Delay	60 min	0 min- 180min
AL3	AL11	LoSpcTemp	Lo Space Temperature	60DF	50-70 DF
AL4	AL12	LoSpcTemp Dly	Lo Space Temperature Alarm Delay	60 min	0 min- 180min
AL5	AL13	DiffTempAlrm	Differential Alarm from Return and Supply	16 DDF	0-30 DDF
AL6	AL14	DiffTempAlrm Dly	Differential Alarm Delay	60 min	0 min- 180min
AL7	AL15	FanPrfAlrm	Fan Proof Alarm	NA	NA
AL8	AL16	FanPrfAlrm Dly	Fan Proof Alarm Delay	3 min	0 min- 180min

7.4.1 Alarm Output

When one alarm condition is verified (as already visible in the red LED ALARM), the relay defined for the alarm will be ON. If the digital input defined to reset the alarm is pushed for 2 seconds, the alarm relay will be switched off (this function is also available in the Visograph). If after a defined time the alarm is still active, the relay alarm will be activated again.

When there is no alarm, the alarm relay will be OFF.

NOTE **This will be a relay selectable only in the HVAC and Lighting device and not in the expansions; the options for this re lay, called "ALARMS RELAY", will be: NU, RL01, RL2,..., RL 15.**

7.5 HVAC and Lighting Functions

Table 7-25 - Functions

HVAC and Lighting Functions	Description
Schedules	Supports 1 Master and 5 Slave schedules.
Lighting Control	Support an inside and outside lighting strategy.
HVAC Control	Support up to two HVAC units with up to two stages of cooling, heating, economization and fan Control.
Alarms	Alarm capabilities of high temperature, low temperature, fan proof and supply/ return-space differential alarm parameters.

7.6 HVAC and Lighting Parameters

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
	Lighting Parameters
LC3	Light Level Engineering HVAC (FTC or Lux)
MS1	Master Sched Event 1 ON on Sunday
MS2	Master Sched Event 1 OFF on Sunday
MS3	Master Sched Event 2 ON on Sunday
MS4	Master Sched Event 2 OFF on Sunday
MS5	Master Sched Event 3 ON on Sunday
MS6	Master Sched Event 3 OFF on Sunday
MM1	Master Sched Event 1 ON on Monday
MM2	Master Sched Event 1 OFF on Monday
MM3	Master Sched Event 2 ON on Monday
MM4	Master Sched Event 2 OFF on Monday
MM5	Master Sched Event 3 ON on Monday
MM6	Master Sched Event 3 OFF on Monday
MT1	Master Sched Event 1 ON on Tuesday
MT2	Master Sched Event 1 OFF on Tuesday
MT3	Master Sched Event 2 ON on Tuesday
MT4	Master Sched Event 2 OFF on Tuesday
MT5	Master Sched Event 3 ON on Tuesday
MT6	Master Sched Event 3 OFF on Tuesday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
MW1	Master Sched Event 1 ON on Wednesday
MW2	Master Sched Event 1 OFF on Wednesday
MW3	Master Sched Event 2 ON on Wednesday
MW4	Master Sched Event 2 OFF on Wednesday
MW5	Master Sched Event 3 ON on Wednesday
MW6	Master Sched Event 3 OFF on Wednesday
TM1	Master Sched Event 1 ON on Thursday
TM2	Master Sched Event 1 OFF on Thursday
TM3	Master Sched Event 2 ON on Thursday
TM4	Master Sched Event 2 OFF on Thursday
TM5	Master Sched Event 3 ON on Thursday
TM6	Master Sched Event 3 OFF on Thursday
MF1	Master Sched Event 1 ON on Friday
MF2	Master Sched Event 1 OFF on Friday
MF3	Master Sched Event 2 ON on Friday
MF4	Master Sched Event 2 OFF on Friday
MF5	Master Sched Event 3 ON on Friday
MF6	Master Sched Event 3 OFF on Friday
SM1	Master Sched Event 1 ON on Saturday
SM2	Master Sched Event 1 OFF on Saturday
SM3	Master Sched Event 2 ON on Saturday
SM4	Master Sched Event 2 OFF on Saturday
SM5	Master Sched Event 3 ON on Saturday
SM6	Master Sched Event 3 OFF on Saturday
AS1	Slave 1 Sched Event 1 ON on Sunday
AS2	Slave 1 Sched Event 1 OFF on Sunday
AS3	Slave 1 Sched Event 2 ON on Sunday
AS4	Slave 1 Sched Event 2 OFF on Sunday
AS5	Slave 1 Sched Event 3 ON on Sunday
AS6	Slave 1 Sched Event 3 OFF on Sunday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
AM1	Slave 1 Sched Event 1 ON on Monday
AM2	Slave 1 Sched Event 1 OFF on Monday
AM3	Slave 1 Sched Event 2 ON on Monday
AM4	Slave 1 Sched Event 2 OFF on Monday
AM5	Slave 1 Sched Event 3 ON on Monday
AM6	Slave 1 Sched Event 3 OFF on Monday
AT1	Slave 1 Sched Event 1 ON on Tuesday
AT2	Slave 1 Sched Event 1 OFF on Tuesday
AT3	Slave 1 Sched Event 2 ON on Tuesday
AT4	Slave 1 Sched Event 2 OFF on Tuesday
AT5	Slave 1 Sched Event 3 ON on Tuesday
AT6	Slave 1 Sched Event 3 OFF on Tuesday
AW1	Slave 1 Sched Event 1 ON on Wednesday
AW2	Slave 1 Sched Event 1 OFF on Wednesday
AW3	Slave 1 Sched Event 2 ON on Wednesday
AW4	Slave 1 Sched Event 2 OFF on Wednesday
AW5	Slave 1 Sched Event 3 ON on Wednesday
AW6	Slave 1 Sched Event 3 OFF on Wednesday
TA1	Slave 1 Sched Event 1 ON on Thursday
TA2	Slave 1 Sched Event 1 OFF on Thursday
TA3	Slave 1 Sched Event 2 ON on Thursday
TA4	Slave 1 Sched Event 2 OFF on Thursday
TA5	Slave 1 Sched Event 3 ON on Thursday
TA6	Slave 1 Sched Event 3 OFF on Thursday
AF1	Slave 1 Sched Event 1 ON on Friday
AF2	Slave 1 Sched Event 1 OFF on Friday
AF3	Slave 1 Sched Event 2 ON on Friday
AF4	Slave 1 Sched Event 2 OFF on Friday
AF5	Slave 1 Sched Event 3 ON on Friday
AF6	Slave 1 Sched Event 3 OFF on Friday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
SA1	Slave 1 Sched Event 1 ON on Saturday
SA2	Slave 1 Sched Event 1 OFF on Saturday
SA3	Slave 1 Sched Event 2 ON on Saturday
SA4	Slave 1 Sched Event 2 OFF on Saturday
SA5	Slave 1 Sched Event 3 ON on Saturday
SA6	Slave 1 Sched Event 3 OFF on Saturday
BS1	Slave 2 Sched Event 1 ON on Sunday
BS2	Slave 2 Sched Event 1 OFF on Sunday
BS3	Slave 2 Sched Event 2 ON on Sunday
BS4	Slave 2 Sched Event 2 OFF on Sunday
BS5	Slave 2 Sched Event 3 ON on Sunday
BS6	Slave 2 Sched Event 3 OFF on Sunday
BM1	Slave 2 Sched Event 1 ON on Monday
BM2	Slave 2 Sched Event 1 OFF on Monday
BM3	Slave 2 Sched Event 2 ON on Monday
BM4	Slave 2 Sched Event 2 OFF on Monday
BM5	Slave 2 Sched Event 3 ON on Monday
BM6	Slave 2 Sched Event 3 OFF on Monday
BT1	Slave 2 Sched Event 1 ON on Tuesday
BT2	Slave 2 Sched Event 1 OFF on Tuesday
BT3	Slave 2 Sched Event 2 ON on Tuesday
BT4	Slave 2 Sched Event 2 OFF on Tuesday
BT5	Slave 2 Sched Event 3 ON on Tuesday
BT6	Slave 2 Sched Event 3 OFF on Tuesday
BW1	Slave 2 Sched Event 1 ON on Wednesday
BW2	Slave 2 Sched Event 1 OFF on Wednesday
BW3	Slave 2 Sched Event 2 ON on Wednesday
BW4	Slave 2 Sched Event 2 OFF on Wednesday
BW5	Slave 2 Sched Event 3 ON on Wednesday
BW6	Slave 2 Sched Event 3 OFF on Wednesday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
TB1	Slave 2 Sched Event 1 ON on Thursday
TB2	Slave 2 Sched Event 1 OFF on Thursday
TB3	Slave 2 Sched Event 2 ON on Thursday
TB4	Slave 2 Sched Event 2 OFF on Thursday
TB5	Slave 2 Sched Event 3 ON on Thursday
TB6	Slave 2 Sched Event 3 OFF on Thursday
BF1	Slave 2 Sched Event 1 ON on Friday
BF2	Slave 2 Sched Event 1 OFF on Friday
BF3	Slave 2 Sched Event 2 ON on Friday
BF4	Slave 2 Sched Event 2 OFF on Friday
BF5	Slave 2 Sched Event 3 ON on Friday
BF6	Slave 2 Sched Event 3 OFF on Friday
SB1	Slave 2 Sched Event 1 ON on Saturday
SB2	Slave 2 Sched Event 1 OFF on Saturday
SB3	Slave 2 Sched Event 2 ON on Saturday
SB4	Slave 2 Sched Event 2 OFF on Saturday
SB5	Slave 2 Sched Event 3 ON on Saturday
SB6	Slave 2 Sched Event 3 OFF on Saturday
CS1	Slave 3 Sched Event 1 ON on Sunday
CS2	Slave 3 Sched Event 1 OFF on Sunday
CS3	Slave 3 Sched Event 2 ON on Sunday
CS4	Slave 3 Sched Event 2 OFF on Sunday
CS5	Slave 3 Sched Event 3 ON on Sunday
CS6	Slave 3 Sched Event 3 OFF on Sunday
CM1	Slave 3 Sched Event 1 ON on Monday
CM2	Slave 3 Sched Event 1 OFF on Monday
CM3	Slave 3 Sched Event 2 ON on Monday
CM4	Slave 3 Sched Event 2 OFF on Monday
CM5	Slave 3 Sched Event 3 ON on Monday
CM6	Slave 3 Sched Event 3 OFF on Monday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
CT1	Slave 3 Sched Event 1 ON on Tuesday
CT2	Slave 3 Sched Event 1 OFF on Tuesday
CT3	Slave 3 Sched Event 2 ON on Tuesday
CT4	Slave 3 Sched Event 2 OFF on Tuesday
CT5	Slave 3 Sched Event 3 ON on Tuesday
CT6	Slave 3 Sched Event 3 OFF on Tuesday
CW1	Slave 3 Sched Event 1 ON on Wednesday
CW2	Slave 3 Sched Event 1 OFF on Wednesday
CW3	Slave 3 Sched Event 2 ON on Wednesday
CW4	Slave 3 Sched Event 2 OFF on Wednesday
CW5	Slave 3 Sched Event 3 ON on Wednesday
CW6	Slave 3 Sched Event 3 OFF on Wednesday
TC1	Slave 3 Sched Event 1 ON on Thursday
TC2	Slave 3 Sched Event 1 OFF on Thursday
TC3	Slave 3 Sched Event 2 ON on Thursday
TC4	Slave 3 Sched Event 2 OFF on Thursday
TC5	Slave 3 Sched Event 3 ON on Thursday
TC6	Slave 3 Sched Event 3 OFF on Thursday
CF1	Slave 3 Sched Event 1 ON on Friday
CF2	Slave 3 Sched Event 1 OFF on Friday
CF3	Slave 3 Sched Event 2 ON on Friday
CF4	Slave 3 Sched Event 2 OFF on Friday
CF5	Slave 3 Sched Event 3 ON on Friday
CF6	Slave 3 Sched Event 3 OFF on Friday
SC1	Slave 3 Sched Event 1 ON on Saturday
SC2	Slave 3 Sched Event 1 OFF on Saturday
SC3	Slave 3 Sched Event 2 ON on Saturday
SC4	Slave 3 Sched Event 2 OFF on Saturday
SC5	Slave 3 Sched Event 3 ON on Saturday
SC6	Slave 3 Sched Event 3 OFF on Saturday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
DS1	Slave 4 Sched Event 1 ON on Sunday
DS2	Slave 4 Sched Event 1 OFF on Sunday
DS3	Slave 4 Sched Event 2 ON on Sunday
DS4	Slave 4 Sched Event 2 OFF on Sunday
DS5	Slave 4 Sched Event 3 ON on Sunday
DS6	Slave 4 Sched Event 3 OFF on Sunday
DM1	Slave 4 Sched Event 1 ON on Monday
DM2	Slave 4 Sched Event 1 OFF on Monday
DM3	Slave 4 Sched Event 2 ON on Monday
DM4	Slave 4 Sched Event 2 OFF on Monday
DM5	Slave 4 Sched Event 3 ON on Monday
DM6	Slave 4 Sched Event 3 OFF on Monday
DT1	Slave 4 Sched Event 1 ON on Tuesday
DT2	Slave 4 Sched Event 1 OFF of Tuesday
DT3	Slave 4 Sched Event 2 ON on Tuesday
DT4	Slave 4 Sched Event 2 OFF on Tuesday
DT5	Slave 4 Sched Event 3 ON on Tuesday
DT6	Slave 4 Sched Event 3 OFF on Tuesday
DW1	Slave 4 Sched Event 1 ON on Wednesday
DW2	Slave 4 Sched Event 1 OFF on Wednesday
DW3	Slave 4 Sched Event 2 ON on Wednesday
DW4	Slave 4 Sched Event 2 OFF on Wednesday
DW5	Slave 4 Sched Event 3 ON on Wednesday
DW6	Slave 4 Sched Event 3 OFF on Wednesday
TD1	Slave 4 Sched Event 1 ON on Thursday
TD2	Slave 4 Sched Event 1 OFF on Thursday
TD3	Slave 4 Sched Event 2 ON on Thursday
TD4	Slave 4 Sched Event 2 OFF on Thursday
TD5	Slave 4 Sched Event 3 ON on Thursday
TD6	Slave 4 Sched Event 3 OFF on Thursday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
DF1	Slave 4 Sched Event 1 ON on Friday
DF2	Slave 4 Sched Event 1 OFF on Friday
DF3	Slave 4 Sched Event 2 ON on Friday
DF4	Slave 4 Sched Event 2 OFF on Friday
DF5	Slave 4 Sched Event 3 ON on Friday
DF6	Slave 4 Sched Event 3 OFF on Friday
SD1	Slave 4 Sched Event 1 ON on Saturday
SD2	Slave 4 Sched Event 1 OFF on Saturday
SD3	Slave 4 Sched Event 2 ON on Saturday
SD4	Slave 4 Sched Event 2 OFF on Saturday
SD5	Slave 4 Sched Event 3 ON on Saturday
SD6	Slave 4 Sched Event 3 OFF on Saturday
ES1	Slave 5 Sched Event 1 ON on Sunday
ES2	Slave 5 Sched Event 1 OFF on Sunday
ES3	Slave 5 Sched Event 2 ON on Sunday
ES4	Slave 5 Sched Event 2 OFF on Sunday
ES5	Slave 5 Sched Event 3 ON on Sunday
ES6	Slave 5 Sched Event 3 OFF on Sunday
EM1	Slave 5 Sched Event 1 ON on Monday
EM2	Slave 5 Sched Event 1 OFF on Monday
EM3	Slave 5 Sched Event 2 ON on Monday
EM4	Slave 5 Sched Event 2 OFF on Monday
EM5	Slave 5 Sched Event 3 ON on Monday
EM6	Slave 5 Sched Event 3 OFF on Monday
ET1	Slave 5 Sched Event 1 ON on Tuesday
ET2	Slave 5 Sched Event 1 OFF on Tuesday
ET3	Slave 5 Sched Event 2 ON on Tuesday
ET4	Slave 5 Sched Event 2 OFF on Tuesday
ET5	Slave 5 Sched Event 3 ON on Tuesday
ET6	Slave 5 Sched Event 3 OFF on Tuesday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
EW1	Slave 5 Sched Event 1 ON on Wednesday
EW2	Slave 5 Sched Event 1 OFF on Wednesday
EW3	Slave 5 Sched Event 2 ON on Wednesday
EW4	Slave 5 Sched Event 2 OFF on Wednesday
EW5	Slave 5 Sched Event 3 ON on Wednesday
EW6	Slave 5 Sched Event 3 OFF on Wednesday
TE1	Slave 5 Sched Event 1 ON on Thursday
TE2	Slave 5 Sched Event 1 OFF on Thursday
TE3	Slave 5 Sched Event 2 ON on Thursday
TE4	Slave 5 Sched Event 2 OFF on Thursday
TE5	Slave 5 Sched Event 3 ON on Thursday
TE6	Slave 5 Sched Event 3 OFF on Thursday
EF1	Slave 5 Sched Event 1 ON on Friday
EF2	Slave 5 Sched Event 1 OFF on Friday
EF3	Slave 5 Sched Event 2 ON on Friday
EF4	Slave 5 Sched Event 2 OFF on Friday
EF5	Slave 5 Sched Event 3 ON on Friday
EF6	Slave 5 Sched Event 3 OFF on Friday
SE1	Slave 5 Sched Event 1 ON on Saturday
SE2	Slave 5 Sched Event 1 OFF on Saturday
SE3	Slave 5 Sched Event 2 ON on Saturday
SE4	Slave 5 Sched Event 2 OFF on Saturday
SE5	Slave 5 Sched Event 3 ON on Saturday
SE6	Slave 5 Sched Event 3 OFF on Saturday
SEb1	Slave 1 Enable
SEb2	Slave 2 Enable
SEb3	Slave 3 Enable
SEb4	Slave 4 Enable
SEb5	Slave 5 Enable

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
IO1	Light 1 Type (Inside or Outside)
IO2	Light 2 Type (Inside or Outside)
IO3	Light 3 Type (Inside or Outside)
IO4	Light 4 Type (Inside or Outside)
IO5	Light 5 Type (Inside or Outside)
LR1	Light 1 Relay Output
LR2	Light 2 Relay Output
LR3	Light 3 Relay Output
LR4	Light 4 Relay Output
LR5	Light 5 Relay Output
LAO1	Light 1 Analog Output
LAO2	Light 2 Analog Output
LAO3	Light 3 Analog Output
LAO4	Light 4 Analog Output
LAO5	Light 4 Analog Output
LDI1	Light 1 Digital Input Override
LDI2	Light 2 Digital Input Override
LDI3	Light 3 Digital Input Override
LDI4	Light 4 Digital Input Override
LDI5	Light 5 Digital Input Override
LAI1	Inside Light Level Sensor Analog Input
LAI2	Outside Light Level Sensor Analog Input
DC1	Maximum Dimming Analog Output (%)
DC2	Minimum Dimming Analog Output (%)
DC3	Maximum Dimming Output Setpoint (FTC or Lux)
DC4	Minimum Dimming Output Setpoint (FTC or Lux)
DC5	Dimming Output Change Delay
LLC1	Outdoor Light Level CutON Setpoint
LLC2	Outdoor Light Level CutOFF Setpoint

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
DoN1	Light 1 ON Delay
DoN2	Light 2 ON Delay
DoN3	Light 3 ON Delay
DoN4	Light 4 ON Delay
DoN5	Light 5 ON Delay
DoF1	Light 1 OFF Delay
DoF2	Light 2 OFF Delay
DoF3	Light 3 OFF Delay
DoF4	Light 4 OFF Delay
DoF5	Light 5 OFF Delay
AiC	Light 1 Inside Control Method
BiC	Light 2 Inside Control Method
CiC	Light 3 Inside Control Method
DiC	Light 4 Inside Control Method
EiC	Light 5 Inside Control Method
AoC	Light 1 Outside Control Method
BoC	Light 2 Outside Control Method
CoC	Light 3 Outside Control Method
DoC	Light 4 Outside Control Method
EoC	Light 5 Outside Control Method
EL1	Light 1 Enable
EL2	Light 2 Enable
EL3	Light 3 Enable
EL4	Light 4 Enable
EL5	Light 5 Enable
SnT1	Inside Light Level Sensor Type
SnT2	Outside Light Level Senser Type
LADI	Light Alarm Digital Input

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
	HVAC Regulation Parameters
HC2	HVAC Shutdown Digital Input (for 6 units)
HC3	HVAC Engineering HVAC (C or F)
HC4	Temperature Sensor Type (CPC or Dixell)
1HP1	HVAC 1 Supply Temperature Sensor Input
1HP2	HVAC 1 Return Temp, RH, or CO2 Sensor Input
1HP3	Outside Air Temperature (OAT) Sensor Input
1HP4	HVAC 1 Space Temperature Sensor 1 Input
1HP5	HVAC 1 Space Temperature Sensor 2 Input
1HP6	HVAC 1 Space Temperature Sensor 2 Present
2HP1	HVAC 2 Supply Temperature Sensor Input
2HP2	HVAC 2 Return Temp, RH, or CO2 Sensor Input
2HP4	HVAC 2 Space Temperature Sensor 1 Input
2HP5	HVAC 2 Space Temperature Sensor 2 Input
2HP6	HVAC 2 Space Temperature Sensor 2 Present
1CL1	HVAC 1 Occupied Cooling Setpoint
1CL2	HVAC 1 Cooling Deadband
1CL3	HVAC 1 Unoccupied Cooling Setpoint
1CL4	HVAC 1 Cooling Stage 2 Delay
2CL1	HVAC 2 Occupied Cooling Setpoint
2CL2	HVAC 2 Cooling Deadband
2CL3	HVAC 2 Unoccupied Cooling Setpoint
2CL4	HVAC 2 Cooling Stage 2 Delay
1Ht1	HVAC 1 Occupied Heating Setpoint
1Ht2	HVAC 1 Heating Deadband
1Ht3	HVAC 1 Unoccupied Heating Setpoint
1Ht4	HVAC 1 Heating Stage 2 Delay
1Ht5	HVAC 1 Heat Pump Emergency Heat Delay
2Ht1	HVAC 2 Occupied Heating Setpoint
2Ht2	HVAC 2 Heating Deadband
2Ht3	HVAC 2 Unoccupied Heating Setpoint
2Ht4	HVAC 2 Heating Stage 2 Delay
2Ht5	HVAC 2 Heat Pump Emergency Heat Delay

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
1CLS2	HVAC 1 Cooling Stage 2 Enable
2CLS2	HVAC 2 Cooling Stage 2 Enable
1HtS2	HVAC 1 Heating Stage 2 Enable
2HtS2	HVAC 2 Heating Stage 2 Enable
1CLL	HVAC 1 Cooling Lockout Setpoint
2CLL	HVAC 2 Cooling Lockout Setpoint
1HtL	HVAC 1 Heating Lockout Setpoint
2HtL	HVAC 2 Heating Lockout Setpoint
1CR1	HVAC 1 Cooling Stage 1 Output
1CR2	HVAC 1 Cooling Stage 2 Output
1HR1	HVAC 1 Heating Stage 1 Output
1HR2	HVAC 1 Heating Stage 2 Output
2CR1	HVAC 2 Cooling Stage 1 Output
2CR2	HVAC 2 Cooling Stage 2 Output
2HR1	HVAC 2 Heating Stage 1 Output
2HR2	HVAC 2 Heating Stage 2 Output
1CTR	HVAC 1 Cooling TR
2CTR	HVAC 2 Cooling TR
1HTR	HVAC 1 Heating TR
2HTR	HVAC 2 Heating TR
1Pm1	HVAC 1 Heat Pump (Yes/No)
1Pm2	HVAC 1 Reversing Valve Cooling (Heat Enable/Cool Enable)
1Pm3	HVAC 1 Reversing Valve ON Delay
1Pm4	HVAC 1 Reversing Valve OFF Delay
2Pm1	HVAC 2 Heat Pump (Yes/No)
2Pm2	HVAC 2 Reversing Valve Cooling (Heat Enable/Cool Enable)
2Pm3	HVAC 2 Reversing Valve ON Delay
2Pm4	HVAC 2 Reversing Valve OFF Delay
EHu1	HVAC 1 Enable
EHu2	HVAC 2 Enable
EHS1	Enable HVAC 1 Slave Schedule
EHS2	Enable HVAC 2 Slave Schedule

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
1HDI	HVAC 1 Occupancy Digital Input
2HDI	HVAC 2 Occupancy Digital Input
	HVAC Fan Parameters
1HF1	HVAC 1 Fan Proof Digital Input
1HF2	HVAC 1 Summer Fan Mode (ON/Auto)
1HF3	HVAC 1 Winter Fan Mode (ON/Auto)
1HF4	HVAC 1 Fan On Delay
1HF5	HVAC 1 Fan Off Delay
1HF6	HVAC 1 Fan Proof Delay
1HF7	HVAC 1 Fan Relay Output
1HF8	HVAC 1 Summer/Winter Setpoint
1HF9	HVAC 1 Summer/Winter Hysteresis (Subtracts From Setpoint)
1HF10	HVAC 1 Shutdown Enable/Disable
2HF1	HVAC 2 Fan Proof Digital Input
2HF2	HVAC 2 Summer Fan Mode (ON/Auto)
2HF3	HVAC 2 Winter Fan Mode (ON/Auto)
2HF4	HVAC 2 Fan On Delay
2HF5	HVAC 2 Fan Off Delay
2HF6	HVAC 2 Fan Proof Delay
2HF7	HVAC 2 Fan Relay Output
2HF10	HVAC 2 Shutdown Enable/Disable
1HFP	HVAC 1 Fan Proof Shutdown Period
2HFP	HVAC 2 Fan Proof Shutdown Period
1HFPd	HVAC 1 Fan Proof Shutdown Restart Delay
2HFPd	HVAC 2 Fan Proof Shutdown Restart Delay
	HVAC Economizer Parameters
1HE1	HVAC 1 Econimizer Offset Occupied (Subtracts From Setpoint)
1HE2	HVAC 1 Econimizer Offset Unoccupied (Subtracts From Setpoint)
1HE3	HVAC 1 Maximum Econimization Analog Output (%)
1HE4	HVAC 1 Minimum Econimization Analog Output (%)
1HE5	HVAC 1 OA Damper Analog Output
1HE6	HVAC 1 OA Damper Relay Output

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
1HE7	HVAC 1 Economizer Output Type (Analog or Relay Output)
1HE8	HVAC 1 Economization Method (Temp or Enthalpy)
1HE9	HVAC 1 Outside Enthalpy Setpoint
2HE1	HVAC 2 Econimizer Offset Occupied (Subtracts From Setpoint)
2HE2	HVAC 2 Econimizer Offset Unoccupied (Subtracts From Setpoint)
2HE3	HVAC 2 Maximum Econimization Analog Output (%)
2HE4	HVAC 2 Minimum Econimization Analog Output (%)
2HE5	HVAC 2 OA Damper Analog Output
2HE6	HVAC 2 OA Damper Relay Output
2HE7	HVAC 2 Economizer Output Type (Analog or Relay Output)
2HE8	HVAC 2 Economization Method (Temp or Enthalpy)
2HE9	HVAC 2 Outside Enthalpy Setpoint
1HI1	HVAC 1 IAQ Maximum Analog Output (%)
1HI2	HVAC 1 IAQ Minimum Analog Output (%)
1HI3	HVAC 1 CO2 Maximum Setpoint (PPM)
1HI4	HVAC 1 CO2 Minimum Setpoint (PPM)
1HI5	HVAC 1 CO2 Sensor Lower Limit
1HI6	HVAC 1 CO2 Sensor Upper Limit
2HI1	HVAC 2 IAQ Maximum Analog Output (%)
2HI2	HVAC 2 IAQ Minimum Analog Output (%)
2HI3	HVAC 2 CO2 Maximum Setpoint (PPM)
2HI4	HVAC 2 CO2 Minimum Setpoint (PPM)
2HI5	HVAC 2 CO2 Sensor Lower Limit
2HI6	HVAC 2 CO2 Sensor Upper Limit
1RtC	HVAC 1 Return Temperature Input Configuration (Return, RH, or CO2)
1RtT	HVAC 1 Return Temperature Input Type (4-20mA, 0-10V, or 0-5V)
2RtC	HVAC 2 Return Temperature Input Configuration (Return, RH, or CO2)
2RtT	HVAC 2 Return Temperature Input Type (4-20mA, 0-10V, or 0-5V)

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
Other Parameters	
1AL1	HVAC 1 High Space Temperature Alarm
1AL2	HVAC 1 High Space Temperature Alarm Delay
1AL3	HVAC 1 Low Space Temperature Alarm
1AL4	HVAC 1 Low Space Temperature Alarm Delay
1AL5	HVAC 1 Temperature Differential Alarm
1AL6	HVAC 1 Temperature Differential Alarm Delay
1AL7	HVAC 1 Fan Proof Alarm Delay
2AL1	HVAC 2 High Space Temperature Alarm
2AL2	HVAC 2 High Space Temperature Alarm Delay
2AL3	HVAC 2 Low Space Temperature Alarm
2AL4	HVAC 2 Low Space Temperature Alarm Delay
2AL5	HVAC 2 Temperature Differential Alarm
2AL6	HVAC 2 Temperature Differential Alarm Delay
2AL7	HVAC 2 Fan Proof Alarm Delay
DoP1	RL01 Polarity (Open/Closed)
DoP2	RL02 Polarity (Open/Closed)
DoP3	RL03 Polarity (Open/Closed)
DoP4	RL04 Polarity (Open/Closed)
DoP5	RL05 Polarity (Open/Closed)
DoP6	RL06 Polarity (Open/Closed)
DoP7	RL07 Polarity (Open/Closed)
DoP8	RL08 Polarity (Open/Closed)
DoP9	RL09 Polarity (Open/Closed)
DoP10	RL10 Polarity (Open/Closed)
DoP11	RL11 Polarity (Open/Closed)
DoP12	RL12 Polarity (Open/Closed)
DoP13	RL13 Polarity (Open/Closed)
DoP14	RL14 Polarity (Open/Closed)
DoP15	RL15 Polarity (Open/Closed)
DIP1	DI01 Polarity (Open/Closed)
DIP2	DI02 Polarity (Open/Closed)
DIP3	DI03 Polarity (Open/Closed)

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
DIP4	DI04 Polarity (Open/Closed)
DIP5	DI05 Polarity (Open/Closed)
DIP6	DI06 Polarity (Open/Closed)
DIP7	DI07 Polarity (Open/Closed)
DIP8	DI08 Polarity (Open/Closed)
DIP9	DI09 Polarity (Open/Closed)
DIP10	DI010 Polarity (Open/Closed)
DIP11	DI011 Polarity (Open/Closed)
DIP12	DI012 Polarity (Open/Closed)
DIP13	DI013 Polarity (Open/Closed)
DIP14	DI014 Polarity (Open/Closed)
DIP15	DI015 Polarity (Open/Closed)
DIP16	DI016 Polarity (Open/Closed)
DIP17	DI017 Polarity (Open/Closed)
DIP18	DI018 Polarity (Open/Closed)
DIP19	DI019 Polarity (Open/Closed)
DIP20	DI020 Polarity (Open/Closed)
OFs1	Probe 1 Offset
OFs2	Probe 2 Offset
OFs3	Probe 3 Offset
OFs4	Probe 4 Offset
OFs5	Probe 5 Offset
OFs6	Probe 6 Offset
OFs7	Probe 7 Offset
OFs8	Probe 8 Offset
OFs9	Probe 9 Offset
OFs10	Probe 10 Offset
DpA	Analog Input (Pb) Error Alarm Delay

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
	HVAC Unit 3
U3P	HVAC Unit 3 Presence (And Please config Unit3 IPEX60D canbus addr = 1)
EHu3	HVAC 3 Enable
EHS3	Enable HVAC 3 Slave Schedule
3HP1	HVAC 3 Supply Temperature Sensor Input
3HP2	HVAC 3 Return Temp, RH, or CO2 Sensor Input
3HP4	HVAC 3 Space Temperature Sensor 1 Input
3HP5	HVAC 3 Space Temperature Sensor 2 Input
3HP6	HVAC 3 Space Temperature Sensor 2 Present
3CL1	HVAC 3 Occupied Cooling Setpoint
3CL2	HVAC 3 Cooling Deadband
3CL3	HVAC 3 Unoccupied Cooling Setpoint
3CL4	HVAC 3 Cooling Stage 2 Delay
3Ht1	HVAC 3 Occupied Heating Setpoint
3Ht2	HVAC 3 Heating Deadband
3Ht3	HVAC 3 Unoccupied Heating Setpoint
3Ht4	HVAC 3 Heating Stage 2 Delay
3Ht5	HVAC 3 Heat Pump Emergency Heat Delay
3CLs2	HVAC 3 Cooling Stage 2 Enable
3Hts2	HVAC 3 Heating Stage 2 Enable
3CLL	HVAC 3 Cooling Lockout Setpoint
3HtL	HVAC 3 Heating Lockout Setpoint
3CR1	HVAC 3 Cooling Stage 1 Output
3CR2	HVAC 3 Cooling Stage 2 Output
3HR1	HVAC 3 Heating Stage 1 Output
3HR2	HVAC 3 Heating Stage 2 Output
3CTR	HVAC 3 Cooling TR
3HTR	HVAC 3 Heating TR
3Pm1	HVAC 3 Heat Pump (Yes/No)
3Pm2	HVAC 3 Reversing Valve Cooling (Heat Enable/Cool Enable)
3Pm3	HVAC 3 Reversing Valve ON Delay
3Pm4	HVAC 3 Reversing Valve OFF Delay

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
3HF1	HVAC 3 Fan Proof Digital Input
3HF2	HVAC 3 Summer Fan Mode (ON/Auto)
3HF3	HVAC 3 Winter Fan Mode (ON/Auto)
3HF4	HVAC 3 Fan On Delay
3HF5	HVAC 3 Fan Off Delay
3HF6	HVAC 3 Fan Proof Delay
3HF7	HVAC 3 Fan Relay Output
3HF8	HVAC 3 Summer/Winter Setpoint
3HF9	HVAC 3 Summer/Winter Hysterisis (Subtracts From Setpoint)
3HF10	HVAC 3 Shutdown Enable/Disable
3HFP	HVAC 3 Fan Proof Shutdown Period
3HFPd	HVAC 3 Fan Proof Shutdown Restart Delay
3HE1	HVAC 3 Econimizer Offset Occupied (Subtracts From Setpoint)
3HE2	HVAC 3 Econimizer Offset Unoccupied (Subtracts From Setpoint)
3HE3	HVAC 3 Maximum Econimization Analog Output (%)
3HE4	HVAC 3 Minimum Econimization Analog Output (%)
3HE5	HVAC 3 OA Damper Analog Output
3HE6	HVAC 3 OA Damper Relay Output
3HE7	HVAC 3 Economizer Output Type (Analog or Relay Output)
3HE8	HVAC 3 Economization Method (Temp or Enthalpy)
3HE9	HVAC 3 Outside Enthalpy Setpoint
3HI1	HVAC 3 IAQ Maximum Analog Output (%)
3HI2	HVAC 3 IAQ Minimum Analog Output (%)
3HI3	HVAC 3 CO2 Maximum Setpoint (PPM)
3HI4	HVAC 3 CO2 Minimum Setpoint (PPM)
3HI5	HVAC 3 CO2 Sensor Lower Limit
3HI6	HVAC 3 CO2 Sensor Upper Limit
3RtC	HVAC 3 Return Temperature Input Configuration (Return, RH, or CO2)
3RtT	HVAC 3 Return Temperature Input Type (4-20mA, 0-10V, or 0-5V)
3AL1	HVAC 3 High Space Temperature Alarm
3AL2	HVAC 3 High Space Temperature Alarm Delay
3AL3	HVAC 3 Low Space Temperature Alarm

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
3AL4	HVAC 3 Low Space Temperature Alarm Delay
3AL5	HVAC 3 Temperature Differential Alarm
3AL6	HVAC 3 Temperature Differential Alarm Delay
3AL7	HVAC 3 Fan Proof Alarm Delay
3DoP1	RL01 Polarity (Open/Closed)
3DoP2	RL02 Polarity (Open/Closed)
3DoP3	RL03 Polarity (Open/Closed)
3DoP4	RL04 Polarity (Open/Closed)
3DoP5	RL05 Polarity (Open/Closed)
3DoP6	RL06 Polarity (Open/Closed)
3DIP1	DI01 Polarity (Open/Closed)
3DIP2	DI02 Polarity (Open/Closed)
3DIP3	DI03 Polarity (Open/Closed)
3OFs1	Pb1 Offset
3OFs2	Pb2 Offset
3OFs3	Pb3 Offset
3OFs4	Pb4 Offset
3OFs5	Pb5 Offset
3OFs6	Pb6 Offset
3OFs7	Pb7 Offset
3DpA	Analog Input (Pb) Error Alarm Delay
3HDI	HVAC 3 Occupancy Digital Input
	HVAC Unit 4
U4P	HVAC Unit 4 Presence (And Please config Unit4 IPEX60D canbus addr = 2)
EHu4	HVAC 4 Enable
EHS4	Enable HVAC 4 Slave Schedule
4HP1	HVAC 4 Supply Temperature Sensor Input
4HP2	HVAC 4 Return Temp, RH, or CO2 Sensor Input
4HP4	HVAC 4 Space Temperature Sensor 1 Input
4HP5	HVAC 4 Space Temperature Sensor 2 Input
4HP6	HVAC 4 Space Temperature Sensor 2 Present

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
4CL1	HVAC 4 Occupied Cooling Setpoint
4CL2	HVAC 4 Cooling Deadband
4CL3	HVAC 4 Unoccupied Cooling Setpoint
4CL4	HVAC 4 Cooling Stage 2 Delay
4Ht1	HVAC 4 Occupied Heating Setpoint
4Ht2	HVAC 4 Heating Deadband
4Ht3	HVAC 4 Unoccupied Heating Setpoint
4Ht4	HVAC 4 Heating Stage 2 Delay
4Ht5	HVAC 4 Heat Pump Emergency Heat Delay
4CLs2	HVAC 4 Cooling Stage 2 Enable
4Hts2	HVAC 4 Heating Stage 2 Enable
4CLL	HVAC 4 Cooling Lockout Setpoint
4HtL	HVAC 4 Heating Lockout Setpoint
4CR1	HVAC 4 Cooling Stage 1 Output
4CR2	HVAC 4 Cooling Stage 2 Output
4HR1	HVAC 4 Heating Stage 1 Output
4HR2	HVAC 4 Heating Stage 2 Output
4CTR	HVAC 4 Cooling TR
4HTR	HVAC 4 Heating TR
4Pm1	HVAC 4 Heat Pump (Yes/No)
4Pm2	HVAC 4 Reversing Valve Cooling (Heat Enable/Cool Enable)
4Pm3	HVAC 4 Reversing Valve ON Delay
4Pm4	HVAC 4 Reversing Valve OFF Delay
4HF1	HVAC 4 Fan Proof Digital Input
4HF2	HVAC 4 Summer Fan Mode (ON/Auto)
4HF3	HVAC 4 Winter Fan Mode (ON/Auto)
4HF4	HVAC 4 Fan On Delay
4HF5	HVAC 4 Fan Off Delay
4HF6	HVAC 4 Fan Proof Delay
4HF7	HVAC 4 Fan Relay Output
4HF8	HVAC 4 Summer/Winter Setpoint
4HF9	HVAC 4 Summer/Winter Hysteresis (Subtracts From Setpoint)
4HF10	HVAC 4 Shutdown Enable/Disable

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
4HFP	HVAC 4 Fan Proof Shutdown Period
4HFPd	HVAC 4 Fan Proof Shutdown Restart Delay
4HE1	HVAC 4 Econimizer Offset Occupied (Subtracts From Setpoint)
4HE2	HVAC 4 Econimizer Offset Unoccupied (Subtracts From Setpoint)
4HE3	HVAC 4 Maximum Econimization Analog Output (%)
4HE4	HVAC 4 Minimum Econimization Analog Output (%)
4HE5	HVAC 4 OA Damper Analog Output
4HE6	HVAC 4 OA Damper Relay Output
4HE7	HVAC 4 Economizer Output Type (Analog or Relay Output)
4HE8	HVAC 4 Economization Method (Temp or Enthalpy)
4HE9	HVAC 4 Outside Enthalpy Setpoint
4HI1	HVAC 4 IAQ Maximum Analog Output (%)
4HI2	HVAC 4 IAQ Minimum Analog Output (%)
4HI3	HVAC 4 CO2 Maximum Setpoint (PPM)
4HI4	HVAC 4 CO2 Minimum Setpoint (PPM)
4HI5	HVAC 4 CO2 Sensor Lower Limit
4HI6	HVAC 4 CO2 Sensor Upper Limit
4RtC	HVAC 4 Return Temperature Input Configuration (Return, RH, or CO2)
4RtT	HVAC 4 Return Temperature Input Type (4-20mA, 0-10V, or 0-5V)
4AL1	HVAC 4 High Space Temperature Alarm
4AL2	HVAC 4 High Space Temperature Alarm Delay
4AL3	HVAC 4 Low Space Temperature Alarm
4AL4	HVAC 4 Low Space Temperature Alarm Delay
4AL5	HVAC 4 Temperature Differential Alarm
4AL6	HVAC 4 Temperature Differential Alarm Delay
4AL7	HVAC 4 Fan Proof Alarm Delay
4DoP1	RL01 Polarity (Open/Closed)
4DoP2	RL02 Polarity (Open/Closed)
4DoP3	RL03 Polarity (Open/Closed)
4DoP4	RL04 Polarity (Open/Closed)
4DoP5	RL05 Polarity (Open/Closed)
4DoP6	RL06 Polarity (Open/Closed)

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
4DIP1	DI01 Polarity (Open/Closed)
4DIP2	DI02 Polarity (Open/Closed)
4DIP3	DI03 Polarity (Open/Closed)
4OFs1	Pb1 Offset
4OFs2	Pb2 Offset
4OFs3	Pb3 Offset
4OFs4	Pb4 Offset
4OFs5	Pb5 Offset
4OFs6	Pb6 Offset
4OFs7	Pb7 Offset
4DpA	Analog Input (Pb) Error Alarm Delay
4HDI	HVAC 4 Occupancy Digital Input
	HVAC Unit 5
U5P	HVAC Unit 5 Presence (And Please config Unit5 IPEX60D canbus addr = 3)
EHu5	HVAC 5 Enable
EHS5	Enable HVAC 5 Slave Schedule
5HP1	HVAC 5 Supply Temperature Sensor Input
5HP2	HVAC 5 Return Temp, RH, or CO2 Sensor Input
5HP4	HVAC 5 Space Temperature Sensor 1 Input
5HP5	HVAC 5 Space Temperature Sensor 2 Input
5HP6	HVAC 5 Space Temperature Sensor 2 Present
5CL1	HVAC 5 Occupied Cooling Setpoint
5CL2	HVAC 5 Cooling Deadband
5CL3	HVAC 5 Unoccupied Cooling Setpoint
5CL4	HVAC 5 Cooling Stage 2 Delay
5Ht1	HVAC 5 Occupied Heating Setpoint
5Ht2	HVAC 5 Heating Deadband
5Ht3	HVAC 5 Unoccupied Heating Setpoint
5Ht4	HVAC 5 Heating Stage 2 Delay
5Ht5	HVAC 5 Heat Pump Emergency Heat Delay
5CLs2	HVAC 5 Cooling Stage 2 Enable
5Hts2	HVAC 5 Heating Stage 2 Enable
5CLL	HVAC 5 Cooling Lockout Setpoint

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
5HtL	HVAC 5 Heating Lockout Setpoint
5CR1	HVAC 5 Cooling Stage 1 Output
5CR2	HVAC 5 Cooling Stage 2 Output
5HR1	HVAC 5 Heating Stage 1 Output
5HR2	HVAC 5 Heating Stage 2 Output
5CTR	HVAC 5 Cooling TR
5HTR	HVAC 5 Heating TR
5Pm1	HVAC 5 Heat Pump (Yes/No)
5Pm2	HVAC 5 Reversing Valve Cooling (Heat Enable/Cool Enable)
5Pm3	HVAC 5 Reversing Valve ON Delay
5Pm4	HVAC 5 Reversing Valve OFF Delay
5HF1	HVAC 5 Fan Proof Digital Input
5HF2	HVAC 5 Summer Fan Mode (ON/Auto)
5HF3	HVAC 5 Winter Fan Mode (ON/Auto)
5HF4	HVAC 5 Fan On Delay
5HF5	HVAC 5 Fan Off Delay
5HF6	HVAC 5 Fan Proof Delay
5HF7	HVAC 5 Fan Relay Output
5HF8	HVAC 5 Summer/Winter Setpoint
5HF9	HVAC 5 Summer/Winter Hysteresis (Subtracts From Setpoint)
5HF10	HVAC 5 Shutdown Enable/Disable
5HFP	HVAC 5 Fan Proof Shutdown Period
5HFPd	HVAC 5 Fan Proof Shutdown Restart Delay
5HE1	HVAC 5 Econimizer Offset Occupied (Subtracts From Setpoint)
5HE2	HVAC 5 Econimizer Offset Unoccupied (Subtracts From Setpoint)
5HE3	HVAC 5 Maximum Econimization Analog Output (%)
5HE4	HVAC 5 Minimum Econimization Analog Output (%)
5HE5	HVAC 5 OA Damper Analog Output
5HE6	HVAC 5 OA Damper Relay Output
5HE7	HVAC 5 Economizer Output Type (Analog or Relay Output)
5HE8	HVAC 5 Economization Method (Temp or Enthalpy)
5HE9	HVAC 5 Outside Enthalpy Setpoint

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
5HI1	HVAC 5 IAQ Maximum Analog Output (%)
5HI2	HVAC 5 IAQ Minimum Analog Output (%)
5HI3	HVAC 5 CO2 Maximum Setpoint (PPM)
5HI4	HVAC 5 CO2 Minimum Setpoint (PPM)
5HI5	HVAC 5 CO2 Sensor Lower Limit
5HI6	HVAC 5 CO2 Sensor Upper Limit
5RtC	HVAC 5 Return Temperature Input Configuration (Return, RH, or CO2)
5RtT	HVAC 5 Return Temperature Input Type (4-20mA, 0-10V, or 0-5V)
5AL1	HVAC 5 High Space Temperature Alarm
5AL2	HVAC 5 High Space Temperature Alarm Delay
5AL3	HVAC 5 Low Space Temperature Alarm
5AL4	HVAC 5 Low Space Temperature Alarm Delay
5AL5	HVAC 5 Temperature Differential Alarm
5AL6	HVAC 5 Temperature Differential Alarm Delay
5AL7	HVAC 5 Fan Proof Alarm Delay
5DoP1	RL01 Polarity (Open/Closed)
5DoP2	RL02 Polarity (Open/Closed)
5DoP3	RL03 Polarity (Open/Closed)
5DoP4	RL04 Polarity (Open/Closed)
5DoP5	RL05 Polarity (Open/Closed)
5DoP6	RL06 Polarity (Open/Closed)
5DIP1	DI01 Polarity (Open/Closed)
5DIP2	DI02 Polarity (Open/Closed)
5DIP3	DI03 Polarity (Open/Closed)
5OFs1	Pb1 Offset
5OFs2	Pb2 Offset
5OFs3	Pb3 Offset
5OFs4	Pb4 Offset
5OFs5	Pb5 Offset
5OFs6	Pb6 Offset
5OFs7	Pb7 Offset
5DpA	Analog Input (Pb) Error Alarm Delay
5HDI	HVAC 5 Occupancy Digital Input

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
	HVAC Unit 6
U6P	HVAC Unit 6 Presence (And Please config Unit6 IPEX60D canbus addr = 4)
EHu6	HVAC 6 Enable
EHS6	Enable HVAC 6 Slave Schedule
6HP1	HVAC 6 Supply Temperature Sensor Input
6HP2	HVAC 6 Return Temp, RH, or CO2 Sensor Input
6HP4	HVAC 6 Space Temperature Sensor 1 Input
6HP5	HVAC 6 Space Temperature Sensor 2 Input
6HP6	HVAC 6 Space Temperature Sensor 2 Present
6CL1	HVAC 6 Occupied Cooling Setpoint
6CL2	HVAC 6 Cooling Deadband
6CL3	HVAC 6 Unoccupied Cooling Setpoint
6CL4	HVAC 6 Cooling Stage 2 Delay
6Ht1	HVAC 6 Occupied Heating Setpoint
6Ht2	HVAC 6 Heating Deadband
6Ht3	HVAC 6 Unoccupied Heating Setpoint
6Ht4	HVAC 6 Heating Stage 2 Delay
6Ht5	HVAC 6 Heat Pump Emergency Heat Delay
6CLs2	HVAC 6 Cooling Stage 2 Enable
6Hts2	HVAC 6 Heating Stage 2 Enable
6CLL	HVAC 6 Cooling Lockout Setpoint
6HtL	HVAC 6 Heating Lockout Setpoint
6CR1	HVAC 6 Cooling Stage 1 Output
6CR2	HVAC 6 Cooling Stage 2 Output
6HR1	HVAC 6 Heating Stage 1 Output
6HR2	HVAC 6 Heating Stage 2 Output
6CTR	HVAC 6 Cooling TR
6HTR	HVAC 6 Heating TR
6Pm1	HVAC 6 Heat Pump (Yes/No)
6Pm2	HVAC 6 Reversing Valve Cooling (Heat Enable/Cool Enable)
6Pm3	HVAC 6 Reversing Valve ON Delay
6Pm4	HVAC 6 Reversing Valve OFF Delay

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
6HF1	HVAC 6 Fan Proof Digital Input
6HF2	HVAC 6 Summer Fan Mode (ON/Auto)
6HF3	HVAC 6 Winter Fan Mode (ON/Auto)
6HF4	HVAC 6 Fan On Delay
6HF5	HVAC 6 Fan Off Delay
6HF6	HVAC 6 Fan Proof Delay
6HF7	HVAC 6 Fan Relay Output
6HF8	HVAC 6 Summer/Winter Setpoint
6HF9	HVAC 6 Summer/Winter Hysterisis (Subtracts From Setpoint)
6HF10	HVAC 6 Shutdown Enable/Disable
6HFP	HVAC 6 Fan Proof Shutdown Period
6HFPd	HVAC 6 Fan Proof Shutdown Restart Delay
6HE1	HVAC 6 Econimizer Offset Occupied (Subtracts From Setpoint)
6HE2	HVAC 6 Econimizer Offset Unoccupied (Subtracts From Setpoint)
6HE3	HVAC 6 Maximum Econimization Analog Output (%)
6HE4	HVAC 6 Minimum Econimization Analog Output (%)
6HE5	HVAC 6 OA Damper Analog Output
6HE6	HVAC 6 OA Damper Relay Output
6HE7	HVAC 6 Economizer Output Type (Analog or Relay Output)
6HE8	HVAC 6 Economization Method (Temp or Enthalpy)
6HE9	HVAC 6 Outside Enthalpy Setpoint
6HI1	HVAC 6 IAQ Maximum Analog Output (%)
6HI2	HVAC 6 IAQ Minimum Analog Output (%)
6HI3	HVAC 6 CO2 Maximum Setpoint (PPM)
6HI4	HVAC 6 CO2 Minimum Setpoint (PPM)
6HI5	HVAC 6 CO2 Sensor Lower Limit
6HI6	HVAC 6 CO2 Sensor Upper Limit
6RtC	HVAC 6 Return Temperature Input Configuration (Return, RH, or CO2)
6RtT	HVAC 6 Return Temperature Input Type (4-20mA, 0-10V, or 0-5V)
6AL1	HVAC 6 High Space Temperature Alarm
6AL2	HVAC 6 High Space Temperature Alarm Delay
6AL3	HVAC 6 Low Space Temperature Alarm
6AL4	HVAC 6 Low Space Temperature Alarm Delay

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
6AL5	HVAC 6 Temperature Differential Alarm
6AL6	HVAC 6 Temperature Differential Alarm Delay
6AL7	HVAC 6 Fan Proof Alarm Delay
6DoP1	RL01 Polarity (Open/Closed)
6DoP2	RL02 Polarity (Open/Closed)
6DoP3	RL03 Polarity (Open/Closed)
6DoP4	RL04 Polarity (Open/Closed)
6DoP5	RL05 Polarity (Open/Closed)
6DoP6	RL06 Polarity (Open/Closed)
6DIP1	DI01 Polarity (Open/Closed)
6DIP2	DI02 Polarity (Open/Closed)
6DIP3	DI03 Polarity (Open/Closed)
6OFs1	Pb1 Offset
6OFs2	Pb2 Offset
6OFs3	Pb3 Offset
6OFs4	Pb4 Offset
6OFs5	Pb5 Offset
6OFs6	Pb6 Offset
6OFs7	Pb7 Offset
6DpA	Analog Input (Pb) Error Alarm Delay
6HDI	HVAC 6 Occupancy Digital Input
	HVAC Unit 1 Slave
1Sun1	HVAC Slave 1 Sched Event ON - Sunday
1Sun2	HVAC Slave 1 Sched Event OFF - Sunday
1Mon1	HVAC Slave 1 Sched Event ON - Monday
1Mon2	HVAC Slave 1 Sched Event OFF - Monday
1Tue1	HVAC Slave 1 Sched Event ON - Tuesday
1Tue2	HVAC Slave 1 Sched Event OFF - Tuesday
1Wed	HVAC Slave 1 Sched Event ON - Wednesday
1Wed2	HVAC Slave 1 Sched Event OFF - Wednesday
1Thu1	HVAC Slave 1 Sched Event ON - Thursday
1Thu2	HVAC Slave 1 Sched Event OFF - Thursday
1Fri1	HVAC Slave 1 Sched Event ON - Friday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
1Fri2	HVAC Slave 1 Sched Event OFF - Friday
1Sat1	HVAC Slave 1 Sched Event ON - Saturday
1Sat2	HVAC Slave 1 Sched Event OFF - Saturday
	HVAC Unit 2 Slave
2Sun1	HVAC Slave 2 Sched Event ON - Sunday
2Sun2	HVAC Slave 2 Sched Event OFF - Sunday
2Mon1	HVAC Slave 2 Sched Event ON - Monday
2Mon2	HVAC Slave 2 Sched Event OFF - Monday
2Tue1	HVAC Slave 2 Sched Event ON - Tuesday
2Tue2	HVAC Slave 2 Sched Event OFF - Tuesday
2Wed1	HVAC Slave 2 Sched Event ON - Wednesday
2Wed2	HVAC Slave 2 Sched Event OFF - Wednesday
2Thu1	HVAC Slave 2 Sched Event ON - Thursday
2Thu2	HVAC Slave 2 Sched Event OFF - Thursday
2Fri1	HVAC Slave 2 Sched Event ON - Friday
2Fri2	HVAC Slave 2 Sched Event OFF - Friday
2Sat1	HVAC Slave 2 Sched Event ON - Saturday
2Sat2	HVAC Slave 2 Sched Event OFF - Saturday
	HVAC Unit 3 Slave
3Sun1	HVAC Slave 3 Sched Event ON - Sunday
3Sun2	HVAC Slave 3 Sched Event OFF - Sunday
3Mon1	HVAC Slave 3 Sched Event ON - Monday
3Mon2	HVAC Slave 3 Sched Event OFF - Monday
3Tue1	HVAC Slave 3 Sched Event ON - Tuesday
3Tue2	HVAC Slave 3 Sched Event OFF - Tuesday
3Wed1	HVAC Slave 3 Sched Event ON - Wednesday
3Wed2	HVAC Slave 3 Sched Event OFF - Wednesday
3Thu1	HVAC Slave 3 Sched Event ON - Thursday
3Thu2	HVAC Slave 3 Sched Event OFF - Thursday
3Fri1	HVAC Slave 3 Sched Event ON - Friday
3Fri2	HVAC Slave 3 Sched Event OFF - Friday
3Sat1	HVAC Slave 3 Sched Event ON - Saturday
3Sat2	HVAC Slave 3 Sched Event OFF - Saturday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
	HVAC Unit 4 Slave
4Sun1	HVAC Slave 4 Sched Event ON - Sunday
4Sun2	HVAC Slave 4 Sched Event OFF - Sunday
4Mon1	HVAC Slave 4 Sched Event ON - Monday
4Mon2	HVAC Slave 4 Sched Event OFF - Monday
4Tue1	HVAC Slave 4 Sched Event ON - Tuesday
4Tue2	HVAC Slave 4 Sched Event OFF - Tuesday
4Wed1	HVAC Slave 4 Sched Event ON - Wednesday
4Wed2	HVAC Slave 4 Sched Event OFF - Wednesday
4Thu1	HVAC Slave 4 Sched Event ON - Thursday
4Thu2	HVAC Slave 4 Sched Event OFF - Thursday
4Fri1	HVAC Slave 4 Sched Event ON - Friday
4Fri2	HVAC Slave 4 Sched Event OFF - Friday
4Sat1	HVAC Slave 4 Sched Event ON - Saturday
4Sat2	HVAC Slave 4 Sched Event OFF - Saturday
	HVAC Unit 5 Slave
5Sun1	HVAC Slave 5 Sched Event ON - Sunday
5Sun2	HVAC Slave 5 Sched Event OFF - Sunday
5Mon1	HVAC Slave 5 Sched Event ON - Monday
5Mon2	HVAC Slave 5 Sched Event OFF - Monday
5Tue1	HVAC Slave 5 Sched Event ON - Tuesday
5Tue2	HVAC Slave 5 Sched Event OFF - Tuesday
5Wed1	HVAC Slave 5 Sched Event ON - Wednesday
5Wed2	HVAC Slave 5 Sched Event OFF - Wednesday
5Thu1	HVAC Slave 5 Sched Event ON - Thursday
5Thu2	HVAC Slave 5 Sched Event OFF - Thursday
5Fri1	HVAC Slave 5 Sched Event ON - Friday
5Fri2	HVAC Slave 5 Sched Event OFF - Friday
5Sat1	HVAC Slave 5 Sched Event ON - Saturday
5Sat2	HVAC Slave 5 Sched Event OFF - Saturday

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
	HVAC Unit 6 Slave
6Sun1	HVAC Slave 6 Sched Event ON - Sunday
6Sun2	HVAC Slave 6 Sched Event OFF - Sunday
6Mon1	HVAC Slave 6 Sched Event ON - Monday
6Mon2	HVAC Slave 6 Sched Event OFF - Monday
6Tue1	HVAC Slave 6 Sched Event ON - Tuesday
6Tue2	HVAC Slave 6 Sched Event OFF - Tuesday
6Wed1	HVAC Slave 6 Sched Event ON - Wednesday
6Wed2	HVAC Slave 6 Sched Event OFF - Wednesday
6Thu1	HVAC Slave 6 Sched Event ON - Thursday
6Thu2	HVAC Slave 6 Sched Event OFF - Thursday
6Fri1	HVAC Slave 6 Sched Event ON - Friday
6Fri2	HVAC Slave 6 Sched Event OFF - Friday
6Sat1	HVAC Slave 6 Sched Event ON - Saturday
6Sat2	HVAC Slave 6 Sched Event OFF - Saturday
	Demand Control 1
1EF1	HVAC Unit 1: Cool Demand Bump
1EF2	HVAC Unit 1: Heat Demand Bump
1EF3	HVAC Unit 1: Enable Zone 1
1EF4	HVAC Unit 1: Enable Zone 2
1EF5	HVAC Unit 1: Enable Zone 3
1EF6	HVAC Unit 1: Zone 1 Mode
1EF7	HVAC Unit 1: Zone 2 Mode
1EF8	HVAC Unit 1: Zone 3 Mode
1EF9	HVAC Unit 1: Zone 1 Relay Configuration
1EF10	HVAC Unit 1: Zone 2 Relay Configuration
1EF11	HVAC Unit 1: Zone 3 Relay Configuration
1EF12	HVAC Unit 1: Demand Control Cut Out of Zone 1
1EF13	HVAC Unit 1: Demand Control Cut in of Zone 1
1EF14	HVAC Unit 1: Demand Control Relay ON Delay of Zone 1
1EF15	HVAC Unit 1: Demand Control Relay OFF Delay of Zone 1
1EF16	HVAC Unit 1: Demand Control Cut Out of Zone 2
1EF17	HVAC Unit 1: Demand Control Cut in of Zone 2

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
1EF18	HVAC Unit 1: Demand Control Relay ON Delay of Zone 2
1EF19	HVAC Unit 1: Demand Control Relay OFF Delay of Zone 2
1EF20	HVAC Unit 1: Demand Control Cut Out of Zone 3
1EF21	HVAC Unit 1: Demand Control Cut in of Zone 3
1EF22	HVAC Unit 1: Demand Control Relay ON Delay of Zone 3
1EF23	HVAC Unit 1: Demand Control Relay OFF Delay of Zone 3
1EF24	HVAC Unit 1: Enable / Disable Forced Cool Shut Down
1EF25	HVAC Unit 1: Forced Cool OFF Delay
1EF26	HVAC Unit 1: Forced Cool Recover Delay
	Demand Control 2
2EF1	HVAC Unit 2: Cool Demand Bump
2EF2	HVAC Unit 2: Heat Demand Bump
2EF3	HVAC Unit 2: Enable Zone 1
2EF4	HVAC Unit 2: Enable Zone 2
2EF5	HVAC Unit 2: Enable Zone 3
2EF6	HVAC Unit 2: Zone 1 Mode
2EF7	HVAC Unit 2: Zone 2 Mode
2EF8	HVAC Unit 2: Zone 3 Mode
2EF9	HVAC Unit 2: Zone 1 Relay Configuration
2EF10	HVAC Unit 2: Zone 2 Relay Configuration
2EF11	HVAC Unit 2: Zone 3 Relay Configuration
2EF12	HVAC Unit 2: Demand Control Cut Out of Zone 1
2EF13	HVAC Unit 2: Demand Control Cut in of Zone 1
2EF14	HVAC Unit 2: Demand Control Relay ON Delay of Zone 1
2EF15	HVAC Unit 2: Demand Control Relay OFF Delay of Zone 1
2EF16	HVAC Unit 2: Demand Control Cut Out of Zone 2
2EF17	HVAC Unit 2: Demand Control Cut in of Zone 2
2EF18	HVAC Unit 2: Demand Control Relay ON Delay of Zone 2
2EF19	HVAC Unit 2: Demand Control Relay OFF Delay of Zone 2
2EF20	HVAC Unit 2: Demand Control Cut Out of Zone 3
2EF21	HVAC Unit 2: Demand Control Cut in of Zone 3
2EF22	HVAC Unit 2: Demand Control Relay ON Delay of Zone 3
2EF23	HVAC Unit 2: Demand Control Relay OFF Delay of Zone 3

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
2EF24	HVAC Unit 2: Enable / Disable Forced Cool Shut Down
2EF25	HVAC Unit 2: Forced Cool OFF Delay
2EF26	HVAC Unit 2: Forced Cool Recover Delay
	Demand Control 3
3EF1	HVAC Unit 3: Cool Demand Bump
3EF2	HVAC Unit 3: Heat Demand Bump
3EF3	HVAC Unit 3: Enable Zone 1
3EF4	HVAC Unit 3: Enable Zone 2
3EF5	HVAC Unit 3: Enable Zone 3
3EF6	HVAC Unit 3: Zone 1 Mode
3EF7	HVAC Unit 3: Zone 2 Mode
3EF8	HVAC Unit 3: Zone 3 Mode
3EF9	HVAC Unit 3: Zone 1 Relay Configuration
3EF10	HVAC Unit 3: Zone 2 Relay Configuration
3EF11	HVAC Unit 3: Zone 3 Relay Configuration
3EF12	HVAC Unit 3: Demand Control Cut Out of Zone 1
3EF13	HVAC Unit 3: Demand Control Cut in of Zone 1
3EF14	HVAC Unit 3: Demand Control Relay ON Delay of Zone 1
3EF15	HVAC Unit 3: Demand Control Relay OFF Delay of Zone 1
3EF16	HVAC Unit 3: Demand Control Cut Out of Zone 2
3EF17	HVAC Unit 3: Demand Control Cut in of Zone 2
3EF18	HVAC Unit 3: Demand Control Relay ON Delay of Zone 2
3EF19	HVAC Unit 3: Demand Control Relay OFF Delay of Zone 2
3EF20	HVAC Unit 3: Demand Control Cut Out of Zone 3
3EF21	HVAC Unit 3: Demand Control Cut in of Zone 3
3EF22	HVAC Unit 3: Demand Control Relay ON Delay of Zone 3
3EF23	HVAC Unit 3: Demand Control Relay OFF Delay of Zone 3
3EF24	HVAC Unit 3: Enable / Disable Forced Cool Shut Down
3EF25	HVAC Unit 3: Forced Cool OFF Delay
3EF26	HVAC Unit 3: Forced Cool Recover Delay
	Demand Control 4
4EF1	HVAC Unit 4: Cool Demand Bump
4EF2	HVAC Unit 4: Heat Demand Bump

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
4EF3	HVAC Unit 4: Enable Zone 1
4EF4	HVAC Unit 4: Enable Zone 2
4EF5	HVAC Unit 4: Enable Zone 3
4EF6	HVAC Unit 4: Zone 1 Mode
4EF7	HVAC Unit 4: Zone 2 Mode
4EF8	HVAC Unit 4: Zone 3 Mode
4EF9	HVAC Unit 4: Zone 1 Relay Configuration
4EF10	HVAC Unit 4: Zone 2 Relay Configuration
4EF11	HVAC Unit 4: Zone 3 Relay Configuration
4EF12	HVAC Unit 4: Demand Control Cut Out of Zone 1
4EF13	HVAC Unit 4: Demand Control Cut in of Zone 1
4EF14	HVAC Unit 4: Demand Control Relay ON Delay of Zone 1
4EF15	HVAC Unit 4: Demand Control Relay OFF Delay of Zone 1
4EF16	HVAC Unit 4: Demand Control Cut Out of Zone 2
4EF17	HVAC Unit 4: Demand Control Cut in of Zone 2
4EF18	HVAC Unit 4: Demand Control Relay ON Delay of Zone 2
4EF19	HVAC Unit 4: Demand Control Relay OFF Delay of Zone 2
4EF20	HVAC Unit 4: Demand Control Cut Out of Zone 3
4EF21	HVAC Unit 4: Demand Control Cut in of Zone 3
4EF22	HVAC Unit 4: Demand Control Relay ON Delay of Zone 3
4EF23	HVAC Unit 4: Demand Control Relay OFF Delay of Zone 3
4EF24	HVAC Unit 4: Enable / Disable Forced Cool Shut Down
4EF25	HVAC Unit 4: Forced Cool OFF Delay
4EF26	HVAC Unit 4: Forced Cool Recover Delay
	Demand Control 5
5EF1	HVAC Unit 5: Cool Demand Bump
5EF2	HVAC Unit 5: Heat Demand Bump
5EF3	HVAC Unit 5: Enable Zone 1
5EF4	HVAC Unit 5: Enable Zone 2
5EF5	HVAC Unit 5: Enable Zone 3
5EF6	HVAC Unit 5: Zone 1 Mode
5EF7	HVAC Unit 5: Zone 2 Mode
5EF8	HVAC Unit 5: Zone 3 Mode

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
5EF9	HVAC Unit 5: Zone 1 Relay Configuration
5EF10	HVAC Unit 5: Zone 2 Relay Configuration
5EF11	HVAC Unit 5: Zone 3 Relay Configuration
5EF12	HVAC Unit 5: Demand Control Cut Out of Zone 1
5EF13	HVAC Unit 5: Demand Control Cut in of Zone 1
5EF14	HVAC Unit 5: Demand Control Relay ON Delay of Zone 1
5EF15	HVAC Unit 5: Demand Control Relay OFF Delay of Zone 1
5EF16	HVAC Unit 5: Demand Control Cut Out of Zone 2
5EF17	HVAC Unit 5: Demand Control Cut in of Zone 2
5EF18	HVAC Unit 5: Demand Control Relay ON Delay of Zone 2
5EF19	HVAC Unit 5: Demand Control Relay OFF Delay of Zone 2
5EF20	HVAC Unit 5: Demand Control Cut Out of Zone 3
5EF21	HVAC Unit 5: Demand Control Cut in of Zone 3
5EF22	HVAC Unit 5: Demand Control Relay ON Delay of Zone 3
5EF23	HVAC Unit 5: Demand Control Relay OFF Delay of Zone 3
5EF24	HVAC Unit 5: Enable / Disable Forced Cool Shut Down
5EF25	HVAC Unit 5: Forced Cool OFF Delay
5EF26	HVAC Unit 5: Forced Cool Recover Delay
Demand Control 6	
6EF1	HVAC Unit 6: Cool Demand Bump
6EF2	HVAC Unit 6: Heat Demand Bump
6EF3	HVAC Unit 6: Enable Zone 1
6EF4	HVAC Unit 6: Enable Zone 2
6EF5	HVAC Unit 6: Enable Zone 3
6EF6	HVAC Unit 6: Zone 1 Mode
6EF7	HVAC Unit 6: Zone 2 Mode
6EF8	HVAC Unit 6: Zone 3 Mode
6EF9	HVAC Unit 6: Zone 1 Relay Configuration
6EF10	HVAC Unit 6: Zone 2 Relay Configuration
6EF11	HVAC Unit 6: Zone 3 Relay Configuration
6EF12	HVAC Unit 6: Demand Control Cut Out of Zone 1
6EF13	HVAC Unit 6: Demand Control Cut in of Zone 1
6EF14	HVAC Unit 6: Demand Control Relay ON Delay of Zone 1

Table 7-26 - HVAC and Lighting Parameters

Parameter	Description
6EF15	HVAC Unit 6: Demand Control Relay OFF Delay of Zone 1
6EF16	HVAC Unit 6: Demand Control Cut Out of Zone 2
6EF17	HVAC Unit 6: Demand Control Cut in of Zone 2
6EF18	HVAC Unit 6: Demand Control Relay ON Delay of Zone 2
6EF19	HVAC Unit 6: Demand Control Relay OFF Delay of Zone 2
6EF20	HVAC Unit 6: Demand Control Cut Out of Zone 3
6EF21	HVAC Unit 6: Demand Control Cut in of Zone 3
6EF22	HVAC Unit 6: Demand Control Relay ON Delay of Zone 3
6EF23	HVAC Unit 6: Demand Control Relay OFF Delay of Zone 3
6EF24	HVAC Unit 6: Enable / Disable Forced Cool Shut Down
6EF25	HVAC Unit 6: Forced Cool OFF Delay
6EF26	HVAC Unit 6: Forced Cool Recover Delay
	Other Parameters 2
ShD1	Turn Cool OFF Digital Input
EEM1	Address of Energy Meter
EEM2	Period of Refresh EEM Value
EEM3	Baud Rate
EEM4	Parity Bit
EEM5	Data Bits
EEM6	Stop Bits
ShD2	Turn Cool OFF Digital Input Mode
ZRS	Default Zone Relay Status (when Demand Control Mode = nu or Demand Control Disable)
ALR	Alarm Relay
ALD	Alarm Mute Digital Input
ARD	Alarm Recover Delay

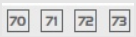
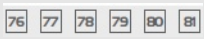
Table 7-27 - HVAC and Lighting Retail Controller I/O (5 Lighting Outputs & 2 RTU)

Input	Description	Output	Description
PB1	Internal Light Level Sensor	R1	Lighting Relay 1
PB2	External Light Level Sensor	R2	Lighting Relay 2
PB3	RTU 1 Space Temperature 1	R3	Lighting Relay 3
PB4	RTU 1 Space Temperature 2	R4	RTU 1 Fan
PB5	RTU 1 Supply Temperature	R5	RTU 1 Cool1
PB6	RTU 1 Return Temperature/Out RH	R6	RTU 1 Cool2
PB7	RTU 2 Space Temperature 1	R7	RTU 1 Heat1/Rev Valve
PB8	RTU 2 Space Temperature 2	R8	RTU 1 Heat2/Emerg HT
PB9	RTU 2 Supply Temperature	R9	Lighting Relay 4
PB10	RTU 2 Return Temperature/CO2	R10	Lighting Relay 5
DI1	Logic/Override for Relay 1	R11	RTU 2 Fan
DI2	Logic/Override for Relay 2	R12	RTU 2 Cool1
DI3	Logic/Override for Relay 3	R13	RTU 2 Cool2
DI4	Logic/Override for Relay 4	R14	RTU2 Heat1/Rev Valve
DI5	Logic/Override for Relay 5	R15	RTU Heat2/Emerg HT
DI6	RTU 1 Fan Proof	AO1	Dimming Analog Out
DI7	Emergency Shutdown 1	AO2	Outside Damper 1
DI8	RTU 2 Fan Proof	AO3	Outside Damper 2
DI9	Emergency Shutdown 2	AO4	NA
DI10	NA	AO5	NA
DI11	NA	AO6	NA
DI12	NA		
DI13	NA		
DI14	NA		
DI15	NA		
DI16	NA		
DI17	NA		
DI18	NA		
DI19	NA		
DI20	NA		

8 Connections

8.1 HVAC and Lighting Connector Descriptions

Table 8-1 - Descriptions of the Connections

Connector	Function
	Connector for 24VAC/DC power supply analog inputs (Pb1 - Pb10, PbC) Additional power (+5VDC, +12VDC, GND)
	Opto-insulated analog outputs (Out1 - Out6, GND) 24VAC/DC power supply for the opto-insulated analog output
	Potential free opto-insulated digital inputs (DI1 - DI20, DIC) Opto-insulated 24VAC/DC digital inputs (DI1 - DI20, GND)
	USB port for downloads (BIOS, ISaGRAF® application, maps of parameters, remote display applications, network configuration, website) and uploads (log files)
	TCP/IP Ethernet port
	Connector for remote terminal (VISOGRAPH), maximum 2 terminals per HVAC and Lighting.
	CANBUS connector for expansions (IPEXx0D) and drivers for electronic valves (XEVx0D Rx and Tx LED to indicate that communication is active Closed circuit terminal (Term)
	RS485 Slave connector Rx and Tx LED to indicate that communication is active Closed circuit terminal (Term)
	RS485 Master connector Rx and Tx LED to indicate that communication is active Closed circuit terminal (Term)
	Digital relay outputs (for digital outputs with potential free contacts) 3 NO relays, 1 common
	Digital relay outputs (for digital outputs with live contacts) 3 NO relays, 1 common and 2 potential free (Neutral)
	Digital relay outputs (for digital outputs with potential free contacts) 5 NO relays, 1 common
	Digital relay outputs (for digital outputs with live contacts) 5 NO relays, 1 common and 2 potential free (Neutral)
	Digital relay outputs 2 NO relays, 1 common
	Digital relay outputs (only for 215D versions) 5 NO relays, 1 common and 1 potential free (Neutral)

8.2 Terminal Number Descriptions

Table 8-2 - Terminal Number Descriptions

Terminal No.	Type of Input	Description
1	Supply	Power 24VACor 24VDC (-)
2	Pb1	Analog Input 1 (Temperature, 0-10V, 0-1V, 0-5V)
3	Pb2	Analog Input 2 (Temperature, 0-10V, 0-1V, 0-5V)
4	Pb3	Analog Input 3 (Temperature, 0-10V, 0-1V, 0-5V)
5	Pb4	Analog Input 4 (Temperature, 0-10V, 0-1V, 0-5V)
6	Pb5	Analog Input 5 (Temperature, 0-10V, 0-1V, 0-5V)
7	PbC	Common for temperature inputs (*DO NOT TIE TO GROUND*)
8	GND (-)	Additional power reference 5Vdc and 12Vdc and analog inputs (0 -10V, 0 -1V, 0 -5V)
9	Supply	Power 24Vac or 24Vdc (+)
10	Pb6	Analog Input 6 (Temperature, 0-10V, 0-1V, 0-5V)
11	Pb7	Analog Input 7 (Temperature, 0-10V, 0-1V, 0-5V)
12	Pb8	Analog Input 8 (Temperature, 0-10V, 0-1V, 0-5V)
13	Pb9	Analog Input 9 (Temperature, 0-10V, 0-1V, 0-5V)
14	Pb10	Analog Input 10 (Temperature, 0-10V, 0-1V, 0-5V)
15	+5V	Additional power +5Vdc
16	+12V	Additional power +12Vdc
21	Out1	Opto-insulated analog output 1, 0 -10V
22	Out2	Opto-insulated analog output 2, 0 -10V
23	Out3	Opto-insulated analog output 3, 0 -10V
24	Out4	Opto-insulated analog output 4, 0 -10V
25	GND (-)	Common opto-insulated analog output
26	Out5	analog output 5, 0 -10V
27	Out6	analog output 6, 0 -10V
28	Supply	Power for opto-insulated analog outputs at 24VAC or 24VDC (-)
29	Supply	Power for opto-insulated analog outputs at 24VAC or 24VDC (+)
30	GND (-)	Common opto-insulated analog output
40	DI1	Opto-insulated digital input 1
41	DI2	Opto-insulated digital input 2
42	DI3	Opto-insulated digital input 3
43	DI4	Opto-insulated digital input 4

Table 8-2 - Terminal Number Descriptions

Terminal No.	Type of Input	Description
44	DI5	Opto-insulated digital input 5
45	DI6	Opto-insulated digital input 6
46	DI7	Opto-insulated digital input 7
47	DI8	Opto-insulated digital input 8
48	DI9	Opto-insulated digital input 9
49	DI10	Opto-insulated digital input 10
50	GND (-)	Common opto-insulated digital inputs 1 to 20 (if inputs 24Vac or 24Vdc)
51	DI11	Opto-insulated digital input 11
52	DI12	Opto-insulated digital input 12
53	DI13	Opto-insulated digital input 13
54	DI14	Opto-insulated digital input 14
55	DI15	Opto-insulated digital input 15
56	DI16	Opto-insulated digital input 16
57	DI17	Opto-insulated digital input 17
58	DI18	Opto-insulated digital input 18
59	DI19	Opto-insulated digital input 19
60	DI20	Opto-insulated digital input 20
61	IDC	Common opto-insulated digital inputs 1 to 20 (if potential free inputs)
70	RL1	Relay 1 normally open contact
71	C	Common relays 1, 2 and 3
72	RL2	Relay 2 normally open contact
73	RL3	Relay 3 normally open contact
74	C	Not Used
75	C	Not Used
76	RL4	Relay 4 normally open contact
77	RL5	Relay 5 normally closed contact
78	RL6	Relay 6 normally closed contact
79	RL7	Relay 7 normally closed contact
80	C	Common relays 4, 5, 6, 7 and 8
81	RL8	Relay 8 normally closed contact
82	C	Not Used
83	C	Not Used

Table 8-2 - Terminal Number Descriptions

Terminal No.	Type of Input	Description
84	RL9	Relay 9 normally closed contact
85	RL10	Relay 10 normally closed contact
86	C	Common relays 9 and 10
87	RL11	Relay 11 normally closed contact
88	RL12	Relay 12 normally closed contact
89	RL13	Relay 13 normally closed contact
90	C	Common relays 11, 12, 13, 14 and 15
91	RL14	Relay 14 normally closed contact
92	RL15	Relay 15 normally closed contact
93	C	Not Used
94	RS485 Master	RS485 Master connection (-)
95	RS485 Master	RS485 Master connection (+)
96	RS485 Master	RS485 Master connection (insulated gnd)
97	RS485 Slave	RS485 Slave connection (-)
98	RS485 Slave	RS485 Slave connection (+)
99	RS485 Slave	RS485 Slave connection (insulated gnd)
100	CAN Bus	CAN Bus connection (+), not open
101	CAN Bus	CAN Bus connection (-), not open
102	CAN Bus	CAN Bus connection (insulated gnd), not open
103	Remote Display	Connection for VISOGRAPH remote terminal (Vnr)
104	Remote Display	Connection for VISOGRAPH remote terminal (+)
105	Remote Display	Connection for VISOGRAPH remote terminal (-)
106	Modem Reset	Not Used
107	Modem Reset	Not Used

8.3 Technical Specifications

8.3.1 Analog Inputs

Table 8-3 - Analog Input Specifications

Analog conversion type:	10-bit A/D converter
Number of inputs:	10
Type of analog input: **(configurable via software parameter)**	NTC Dixell (-50T110°C; 10KΩ±1% at 25°C) PTC Dixell(-55T115°C; 990Ω±1% at 25°C) Digital input (potential free contact) Voltage: 0 - V, 0 - 5V, 0 - 10V (input resistance 3.7KΩ) Current: 0 - 20mA, 4 - 20mA (input resistance 100?)
Digital input status variation detection time:	100ms (in any case it depends on the cycle time set by the user in the given application)
Accuracy:	NTC, PTC: ±1% 0-1V: ±20mV 0-5V: ±100mV 0-10V:±200mV 2-20mA, 4-20mA: ±0.30mA
Additional power:	+12V: 200mA in total +5v: 100mA

⚠ CAUTION Any inputs that are powered with a voltage that differs from that supplied by the device (+12V or +5V) must be powered separately with another transformer (do not use the same secondary of the controller's power) in order to prevent the inputs from malfunctioning or being damaged.

8.3.2 Digital Inputs

Table 8-4 - Digital Input Specifications

Type: **(configurable via software parameter)**	Opto-insulated potential free or live contact (24VAC/DC) External power 24Vac/dc ±20%
Number of inputs:	20
Digital input status variation detection time:	100ms (in any case it depends on the cycle time set by the user in the given application)

⚠ CAUTION If the digital inputs are used with voltage, use another transformer (do not use the same secondary of the controller's power) in order to prevent the inputs from malfunctioning or being damaged.

8.3.3 Analog Outputs

Table 8-5 - Analog Outputs Specification

Type:	Opto-insulated with separate 24VAC/DC power supply
Number of outputs:	10
Type of analog output: **(configurable via software parameter)**	4 fixed outputs 0-10VDC (Out1 - Out4) 2 configurable outputs 0-10VDC, 4-20mA (Out5 and Out6)
Maximum load:	40mA (Out1 - Out4) 20mA (Out5 and Out6) max with configured outputs 0-10VDC 400? max with configured outputs 4-20Ma 22Ω per live analog output
Accuracy:	Out1 – Out4: ±2% full scale Out5 – Out6: ±2% full scale
Resolution:	8 bit

⚠ CAUTION The electrical devices controlled by these analog outputs must be powered separately with another transformer (do not use the same secondary of the controller's power) in order to prevent the outputs from malfunctioning or being damaged.

8.3.4 Digital Outputs

Table 8-6 - Digital Outputs Specifications

Type:	Relays with NO contacts
Number of outputs:	10 or 15, depending on the model
Type of output: **(configurable via software parameter)**	Relays with normally open contact
Maximum load:	5A(250Vac) SPST 5(2)A

⚠ CAUTION Verify the capacity of the output used. There is double insulation between the digital outputs and the low voltage of the rest of the circuit. Do not use different voltages for the various groups of relays nor within each group.

8.4 Wiring

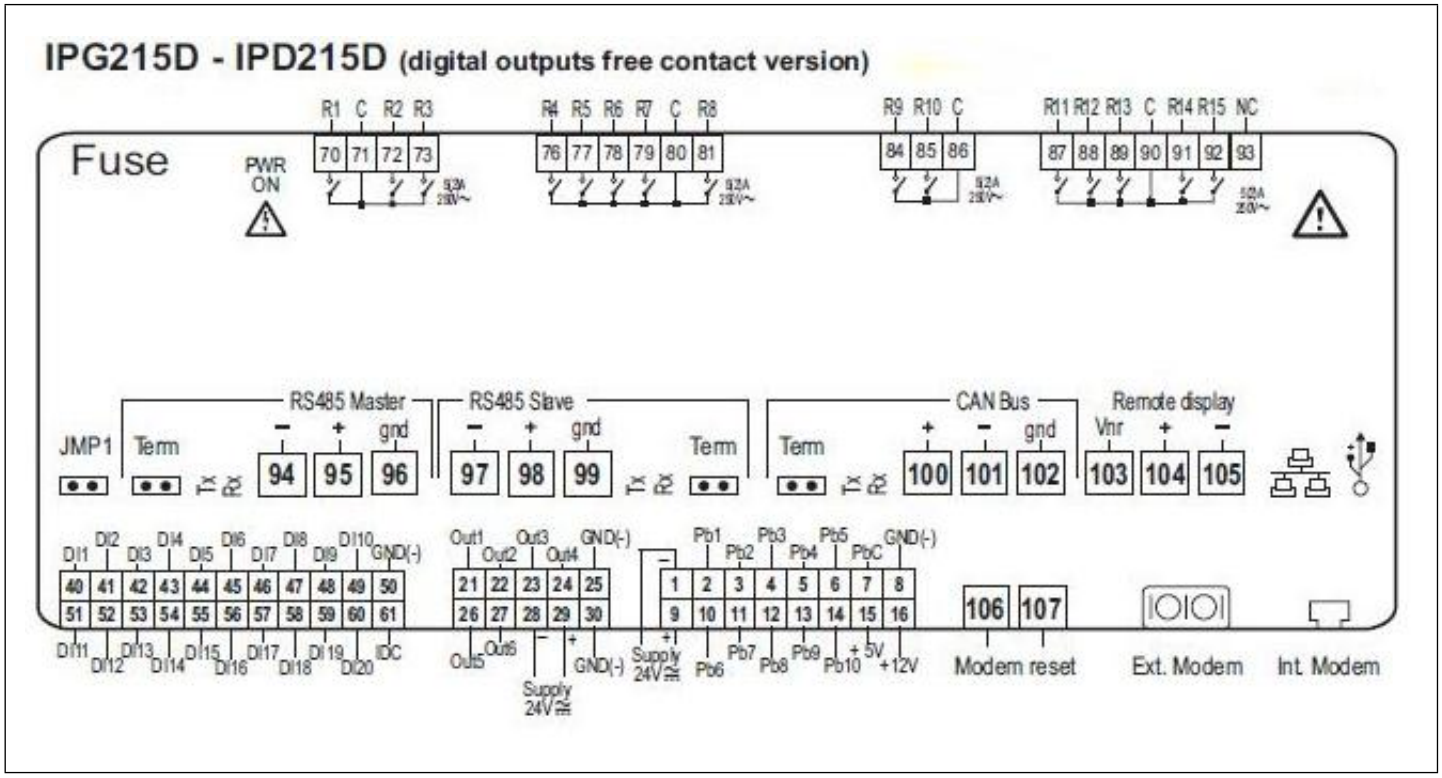


Figure 8-1 - HVAC and Lighting Detail

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