INTELLI-HOOD-3 END USER MANUAL

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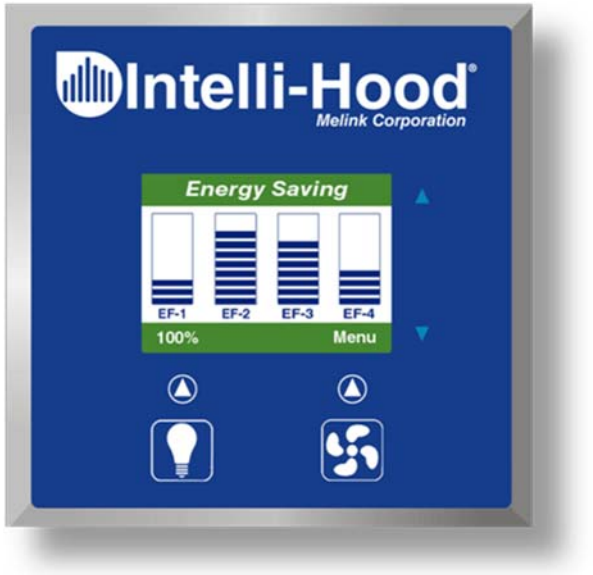
OPERATION MANUAL



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I. About this Document

The purpose of this document is to provide basic Operation and Maintenance information for the Intelli-Hood Kitchen Ventilation Control System. The intended audience of this document is the end user of the system: the building owner, kitchen manager, kitchen staff, or maintenance technician.
This document will instruct the reader on basic operation, maintenance, and troubleshooting.

II. Related Documents

Related documents should be referenced as needed for additional information.

203-3101 Submittal and Technical Overview

- Provides brief overview of system and high level description of each component.

203-3102 Operations and Maintenance Manual

- This document.
- Provides information regarding basic operation, maintenance, and troubleshooting

203-3103 Installation Manual

- Provides detailed installation instructions of the components including mechanical installation of parts, power wiring, and control wiring.

VFD Manuals

- Refer to documents provided by VFD OEM for information regarding any aspect of the Variable Frequency Drives including power wiring, control wiring, programming, and faults.

III. Glossary of Abbreviations

The following terms and abbreviations are used throughout literature pertaining to the Intelli-Hood System.

- IH: Intelli-Hood
- VFD: Variable Frequency Drive
- TP: Touchpad
- APU: Air Purge Unit
- SC: System Controller
- HC: Hood Controller
- AT: Aux Touchpad

IV. Operational Modes of the Intelli-Hood

There are four (4) Modes of the Intelli-Hood. The Modes are defined below. Other sections of the manual will describe more detail about how the Intelli-Hood system changes modes.

Energy Saving Mode

Energy Saving Mode is the operational state when one or more exhaust fans are on. In most cases, all exhaust fans controlled by Intelli-Hood will be in Energy Saving Mode at the same time, however, in some installations, it is possible that some fans be in Energy Saving Mode while others remain in Standby.

Standby Mode

In Standby Mode, the exhaust fans are not operating, but Intelli-Hood is monitoring temperature and optic sensors. The Touchpads are typically used to manually change the mode of the system between Standby and Energy Saving Mode. Depending on conditions detected by sensors and programmable options, it is possible for Intelli-Hood to automatically change modes.

100% Mode (Bypass)

100% Mode (also referred to as Bypass or Sensor Bypass) is a secondary function. Typically, the Intelli-Hood is set to appropriately send the exhaust fans to full speed based on conditions detected by temperature and optic sensors. The kitchen staff person has the ability to send the fans to full speed by placing the system into 100% Mode when it is currently operating in Energy Saving Mode. 100% Mode is a timed function with a default expiration time of 10 minutes. After the timer expires, fans will revert back to Energy Saving Mode.

Emergency Fire Mode

Emergency Fire Mode is triggered by the hood fire suppression system or other fire prevention system of the building. This mode is activated when the main power (120 or 230 VAC single phase) to the Intelli-Hood System Controller is shut off. Through control wiring and programming of VFDs, the exhaust fans are commanded to run at full speed. In most cases, supply fan VFDs are commanded to stop running. In this mode, the Intelli-Hood System Controller, User Interfaces and Hood Sensors have no power and function.

V. Touchpad

The Touchpad is the primary user interface point of the Intelli-Hood system. Every Intelli-Hood is equipped with at least one Touchpad. Some systems are installed with multiple Touchpad's. Figure 1 illustrates the Touchpad and descrptions of each component are listed below.

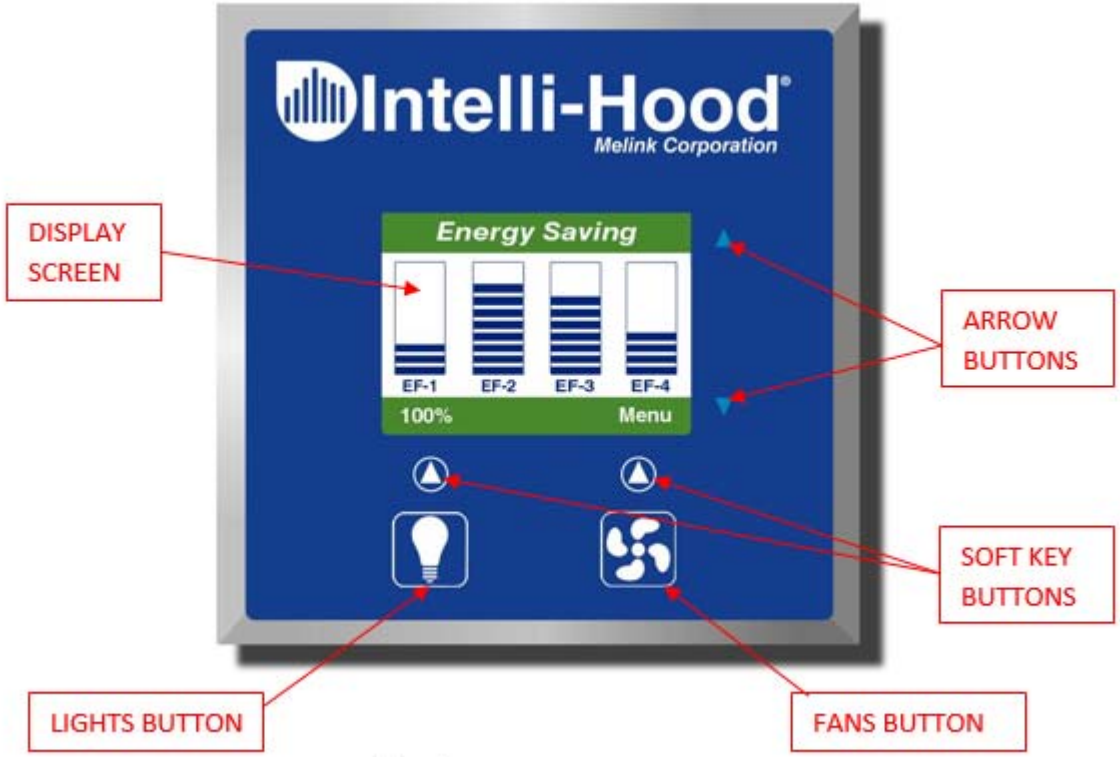


Figure 1: Touchpad

Fans Button

The Fans Button is typically used to change the state of the system between STANDBY MODE (exhaust fans off) and ENERGY SAVING MODE (exhaust fans running).

Lights Button

The Lights Button is typically used to turn the lights of the hood on/off. This function is optional and may not be used in all installations of Intelli-Hood. Consult the design documents of your particular installation to determine if this button is used.

Display Screen

The Display Screen shows the operational state of the Intelli-Hood system. Symbols and Messages that appear on the screen are explained elsewhere in this manual.

Softkey Buttons

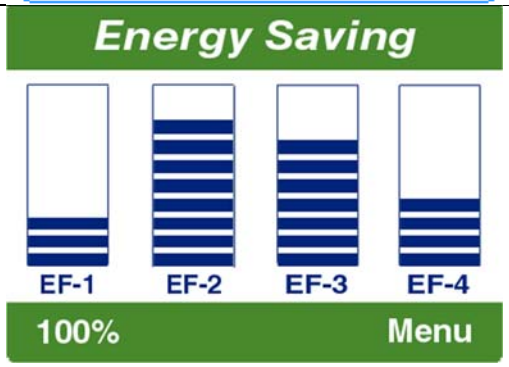
Two Softkey Buttons below the Display Screen are used for the function displayed on the screen. In Normal Operation Modes, the Right Button is used to access programming and help Menus, and the left button is used to active the "100% Fan Speed Mode". In Programming Modes, the functions of the buttons change.

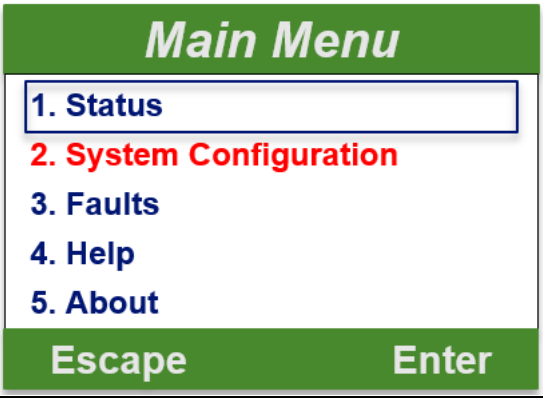
Arrow Buttons

Two Arrow Buttons are used to move among programming parameters and change programming values.

Display Screen

The Display shows the status of the Intelli-Hood System. Screenshots of the display in various situations are shown Figures 2 through x.

	Standby Mode • Intelli-Hood logo splash screen • Fans are off • Right Softkey can be used to enter Menus
	Energy Saving Mode • Energy Saving in top bar denotes Energy Saving Mode. • At least one fan associated to this Touchpad is in Energy Saving Mode, but not necessarily all fans. • Display will scroll through the Hoods and Fans that are Active and display their operating speeds. • Left Soft Key can be used to send the system to 100% Mode. • Right Soft Key can be used to enter Menus
	100% Mode • "Bypass Mode" in top bar denotes 100% Mode. • Display will scroll through the Hoods and Fans and display their operating speeds.

	• Left Soft Key can be used to send the system to "Normal" Energy Saving Mode. • Right Soft Key can be used to enter Menus
	Menus Home Screen • The screenshot shown is the Main Menu Screen, the first screen of the Menus. • Arrows and Enter key (right softkey) can be used to make choices. • ESC button (left softkey) will exit the Menu and return to the operating screen(s). • Refer to the Menus section of this document for more information regarding menus.

Typical Operation

The FANS button is typically used to change the system mode from Standby to Energy Saving and vice-versa. If multiple Touchpads are installed, then it is possible to program relationships to dictate which fan is controlled by each Touchpad.

VI. Touchpad Main Menu

Status Menu

The Display Menu will allow the Kitchen Staff Person or Maintenance Technician to view basic system status items such as Faults, VFD Speeds, and Hood Sensor status in a list format. The Display Menu is accessible to any user.

System Configuration Menu

The System Configuration Menu is a mean by which one can change the setup of the Intelli-Hood system for the particular kitchen installation. The number of hoods, fans, and many parameters can be configured through the System Configuration Menu. The Intelli-Hood Technical Menu contains detailed information about the System Configuration Menu.

When one selects System Configuration Menu from the Main Menu, the screen will prompt the user to input a pass code to proceed. This pass code is intended to prevent the accidental access of the System Configuration Menu. One should not attempt to modify the System Configuration Menu parameters without a thorough knowledge of Intelli-Hood programming. Refer to the Intelli-Hood Technical Manual or contact Melink Corporation or your Intelli-Hood Regional Distributor for more assistance.

Faults Menu

The Faults Menu contains information about any active faults as well as suggestions for resolution.

Help Menu

The Help Menu contains instructions for contacting Technical Support and other information.

About Menu

The About Menu contains information about the device including firmware version, S/N, IP Address, and current time.

Network Diagnostics Menu

The Network Diagnostics Menu runs some tests to determine what (if any) network issues could be preventing the System Controller from accessing the Melink servers. Tests included are: checking for security keys, validating the DNS server, and verifying that ports 22, 80, and 123 are open.

VII. Aux Touchpad

The Aux Touchpad (AT) is a secondary user interface point of the Intelli-Hood system. The Aux Touchpad is intended to be used in large installations with hoods and fans where there is desire to operate some fans without operating other fans. Aux Touchpads provide additional on/off user interface points to the Intelli-Hood system. Up to 10 Aux Touchpads can be installed on an Intelli-Hood.

The Aux Touchpad can not show status or speeds of the fans. The Aux Touchpad can indicate a fault, but it can not indicate the fault type. The Intelli-Hood Configuration parameters can not be adjusted with a Aux Touchpad. Therefore, the Aux Touchpad should never be used as the only user Interface Device of an Intelli-Hood installation.

Fans Button

The Fans Button is used to change the state of the system from STANDBY MODE (exhaust fans off) to ENERGY SAVING MODE (exhaust fans running). When the system is in ENERGY SAVING MODE, the green indicator light under the fans button will illuminate.

Lights Button

The Lights Button will control an output signal to turn the lights of the hoods on/off. The indicator light under the button will show the state of the lights output.

100% Mode Button

The 100% Mode Button may be used to change the system from ENERGY SAVING MODE to 100% MODE. The 100% Button will have no function if the system is in STANDBY MODE. The indicator light under the 100% Button shows that exhaust fans are in 100% MODE.

Fault Light

The Fault Light is an alarm indicator light. The Fault Light indicates a fault of some type. There are several fault types as listed in the Troubleshooting Section. The Aux Touchpad does not show the fault type. A Fault Message will appear on one of the Touchpad Devices.

VIII. Methods of Turning Fans On/Off

It is important to understand that there are several methods by which the fans can turn on and off (change from STANDBY to ENERGY SAVING MODE). Depending on the installation, different methods may be used. In various installations, some methods are disabled. Refer to the installation documents of the individual installation to understand how a particular installation is setup. Refer to the Intelli-Hood Technical Guide for programming information for how to change the features and sequence of operations.

Fans Button

In most Intelli-Hood installations, the kitchen staff person will use the Fans Button to turn the fans on/off. However, sometime, the keypad is disabled and the Fans Button will have no funtion. There will be other methods to turn the fans on/off. Refer to the other possible methods described below.

If there are multipe user interface devices on an Intelli-Hood system, then relationships are be setup in programming parameters such that Keypad A controls some hoods while Keypad B controls other hoods. Refer to a the Technical Manual for more information regarding system programming.

Auto On/Off by Hood Temperature

The Intelli-Hood system can be programmed to turn on automatically by hood temperature. When the temperature in the hood reaches a certain threshold (100F), the fans will turn on. In most kitchens, several exhaust fans share a common supply fan. In these kitchens, if one hood triggers its fan to turn on, then the other exhaust fans and the supply fan must turn on as well. In other kitchens, exhaust fans may be able to turn on independently of one another.

Auto-Off is a separate function from Auto-On. The system can be programmed such that if a hood is below a setpoint temperature (75F), then the exhaust fan will shut off. Similar to the Auto-On function, hoods that share the supply fan cannot turn off independently of one another. Therefore, all hoods associated to a common supply fan must be below the setpoint temperature before any of them turn off automatically.

Remote Input by Toggle Switch

Intelli-Hood can be programmed to turn the fans on/off based on the state of an external toggle switch, such as a traditional wall or hood mounted switch. This setup is common in retrofit projects where Intelli-Hood is being installed after the kitchen has been in use for many years. The existing kitchen staff may not want to change the method of turning fans on/off. Intelli-Hood can be setup to accept a signal from the existing toggle switch.

Remote Input by Special Hood Feature such as Water Wash, Ultraviolet Light System, Hood Damper System

Some exhaust hood systems have sophisticated control panels that may control Water Wash, UV Lights, or Hood Damper Systems. These systems have their own electronic sequence of operation for processes that must be performed before the exhaust fans are turned on. When Intelli-Hood is interfaced to these Hood System, the sequence of operation will vary. Sometimes the Intelli-Hood will trigger the Hood Panel while in other

installations, the Hood Panel will give a start signal to Intelli-Hood. Refer to project-specific documentation for more information.

Remote Input by Building Automation System

The Intelli-Hood System supports BACnet protocol. Through BACnet communication, a Building Automation Network may command Intelli-Hood system to turn fans on/off at specific times.

High Temperature Alarm Mode

High Temperature Alarm Mode is similar to Auto On Function. When the temperature of a hood reaches a setpoint (default setting is 200F), the exhaust fan will turn on full speed and run for a minimum time of 5 minutes. After the 5 minute time period, the Intelli-Hood system will operate in normal Energy Saving Mode. High Temperature Alarm mode is a default feature of Intelli-Hood.

Internal Clock Schedule

Intelli-Hood can be programmed to turn on and off at specific times of the day based on the real time clock of the Intelli-Hood Controller.

Multiple Modes

Intelli-Hood can be programmed such that several of the above methods can turn on a system. For example, Intelli-Hood can be programmed to turn on at a specific time of day every day, but if a kitchen staff person wanted to start or stop the fans with the Touchpad or Aux Touchpad, then he/she would be able to do so.

IX. Emergency Fire Mode aka Purge Mode

Per the building safety codes in most jurisdictions, when a fire occurs in the kitchen, all exhaust fans are required to run at full speed and all supply air sources are required to shut off. Intelli-Hood can be triggered into this mode by shutting off the 120/230V single phase input power System Controller. Through wiring and programming of the Variable Frequency Drives, the drives will run at full speed. In most installations, the Intelli-Hood System Controller input power is wired through a fire relay or from a shunt-tripped breaker such that it automatically loses power in the event of a fire.

X. Program Settings

Below is a list of program settings for Intelli-Hood. Please reference the Program Settings Explanation Manual for additional details.

#	Parameter	Default Value	Range of Values
Hood Controller Parameters			
HCxx-01	Hood Controller Address	1	0 To 39
HCxx-02	Name	HC-x	Up to 20 Characters
HCxx-03	Optic Sensor	Yes	Yes or No
HCxx-04	Temp Channel 1	Hood	No, Hood, On/Off, Supply, Space, Auto Span
HCxx-05	Temp Channel 1 Span Max. (°F)	90	50F To 200F (Increments Of 5F)
HCxx-06	Temp Channel 2	No	No, Hood, On/Off, Supply, Space, Auto Span
HCxx-07	Temp Channel 2 Span Max. (°F)	Match Channel 1	50F To 200F (Increments Of 5F), Match Channel 1
HCxx-08	Temp Channel 3	No	No, Hood, On/Off, Supply, Space, Auto Span
HCxx-09	Temp Channel 3 Span Max. (°F)	Match Channel 1	50F To 200F (Increments Of 5F), Match Channel 1
HCxx-10	Temp Channel 4	No	No, Hood, On/Off, Supply, Space, Auto Span
HCxx-11	Temp Channel 4 Span Max. (°F)	Match Channel 1	50F To 200F (Increments Of 5F), Match Channel 1
HCxx-12	Temp Actual Channel 1	Measured Temp	User Inputs Actual Temperature 0 To 500F
HCxx-13	Temp Actual Channel 2	Measured Temp	User Inputs Actual Temperature 0 To 500F
HCxx-14	Temp Actual Channel 3	Measured Temp	User Inputs Actual Temperature 0 To 500F
HCxx-15	Temp Actual Channel 4	Measured Temp	User Inputs Actual Temperature 0 To 500F
HCxx-16	Temp Channel 1 Span Min. (°F)	75	50F to 90F (Increments of 1F)
HCxx-17	Temp Channel 2 Span Min. (°F)	Match Channel 1	50F to 90F (Increments of 1F), Match Channel 1
HCxx-18	Temp Channel 3 Span Min. (°F)	Match Channel 1	50F to 90F (Increments of 1F), Match Channel 1
HCxx-19	Temp Channel 4 Span Min. (°F)	Match Channel 1	50F to 90F (Increments of 1F), Match Channel 1
HCxx-20	Optic Smoke Density	Medium	Low, Medium, or High
HCxx-21	BACnet Device Instance ID	0	0 to 4194302
HCxx-22	Active on BACnet	No	Yes or No

Exhaust Hood Parameters			
EHxx-01	Primary Exhaust ID	1	1 to 39
EHxx-02	Name	Hood xx	Up To 20 Characters
EHxx-03	Minimum Speed	30%	30% To 100%, Increments Of 5%
EHxx-04	Maximum Speed	100%	30% To 100%, Increments Of 5%
EHxx-05	Temperature Sensor Node(s)	None	01-1 to 39-4
EHxx-06	Optic Sensor Node(s)	None	1 to 39; Sensors listed in format of "Address".
EHxx-07	Auto On Hood Temperature	Not Used	Not Used, Auto On 70F - 120F
EHxx-08	Auto On Space Differential	Not Used	Not Used, Room Difference +1F - +40F
EHxx-09	Auto Off Hood Temp	Not Used	Not Used, Auto Off 65F - 100F
EHxx-10	Auto Off Space Differential	Not Used	Not Used, Room Difference +1F - +20F
EHxx-11	Auto On/Off Grouping	Yes	Yes Or No

EHxx-12	Temperature Alarm Auto On	200F	Not Used, System, 100F, 125F, 150F, 200F, 250F, 300F
EHxx-13	Short Cycle Ratio	Not Used	Not Used, 20%, 30%, 40%, 50%, 60%, 70%, 80%
EHxx-14	Exhaust Volume	1000	0 to 100,000
EHxx-15	Hood Group	1	1-10
EHxx-16	Optic Hang time	System	System, 5, 10, 15, 30, 45, 60, 120, 180, 300

Exhaust Fan Parameters

EFxx-01	Primary Exhaust Address	1	1 to 39
EFxx-02	Name	EF-xx	Up To 5 Characters
EFxx-03	Output Type	ABB ACH550	System Output Allen Bradley Powerflex 4/40 Allen Bradley Powerflex 400 ABB ACH550 Trane TR200 Allen Bradley Powerflex 52x LSIS SV-iS7 Siemens G120P Schneider Altivair 212 Yaskawa Z100
EFxx-04	BACnet Device Instance ID	0	0 to 4194302
EFxx-05	Display Status	Yes	Yes or No
EFxx-06	Active on BACnet	Yes	Yes or No

Aux Airflow Parameters

AAxx-01	Aux Airflow Address	41	40 to 128
AAxx-02	Name	AA-xx	Up To 5 Characters
AAxx-03	Algorithm	Average	Average, Highest, Lowest
AAxx-04	Related Airflows	None	List All Exhaust and Aux Airflows
AAxx-05	Output Type	ABB ACH550	System Output Allen Bradley Powerflex 4/40 Allen Bradley Powerflex 400 ABB ACH550 Trane TR200 Allen Bradley Powerflex 52x LSIS SV-iS7 Siemens G120P Schneider Altivair 212 Yaskawa Z100
AAxx-06	Design Airflow	1000	0 to 100,000
AAxx-07	BACnet Device Instance ID	0	0 to 4194302
AAxx-08	Display Status	Yes	Yes or No
AAxx-09	Active on BACnet	Yes	Yes or No

System Parameters

SY-01	Address	1	1
SY-02	Name	System Controller	Up To 20 Characters

SY-03	Relay 1 Output	MUA Damper	None Exhaust Temp Alarm Smoke Fan On MUA Damper Temperature Fault Optic Fault VFD Fault System Fault 24/7
SY-04	Groups Affecting Relay 1 Output	1	1 to 10
SY-05	Relay 2 Output	MUA Damper	Same as SY-03
SY-06	Groups Affecting Relay 2 Output	1	1 to 10
SY-07	24VDC Output 1	MUA Damper	Same as SY-03
SY-08	Groups Affecting 24VDC Output 1	1	1 to 10
SY-09	24VDC Output 2	MUA Damper	Same as SY-03
SY-10	Groups Affecting 24VDC Output 2	1	1 to 10
SY-11	Digital Input 1	70% Min Speed	None Remote On/Off Remote Enable/Disable 50% Min Speed 60% Min Speed 70% Min Speed 80% Min Speed 90% Min Speed 100% Min Speed External Fault Input Lights On/Off External Alert
SY-12	Groups Affected by Digital Input 1	1	1 to 10
SY-13	Digital Input 2	Remote On/Off	Same as SY-11
SY-14	Groups Affected by Digital Input 2	1	1 to 10
SY-15	Digital Input 3	None	Same as SY-11
SY-16	Groups Affected by Digital Input 3	1	1 to 10
SY-17	Analog Output Algorithm	Average	None, Average, Highest, Lowest
SY-18	Analog Output Source	None	List all Aux Airflows
SY-19	Analog Input Function	Not In Use	Not in Use, Highest, Add, Average, Aux. Highest, Aux. Add, Aux. Average
SY-20	Analog Input Minimum	0	0 to 100
SY-21	Analog Input Maximum	100	0 to 100
SY-22	Analog Input Scale	100	0 to 100
SY-23	Analog Input Remote On Threshold	0	0 to 100
SY-24	Analog Input Associated Groups	1	1 to 10
SY-25	Bypass Timer	10 min	30 sec, 1 min, 5 min, 10 min, 20 min, 30 min, 1 hr, 2 hr, 4 hr
SY-26	Optic Hang Time	15 sec	5 sec, 10 sec, 15 sec, 30 sec, 60 sec, 90 sec, 120 sec, 180 sec, 240 sec, 300 sec
SY-27	Fan Speed Reporting Method	VFD Feedback	VFD Feedback, Command Speed
SY-28	Temperature Alarm Auto On	200F	Not Used, 100F, 125F, 150F, 200F, 250F, 300F

SY-29	Temperature Alarm Auto Off	Not Used	Not Used, On-10F, On-20F, On-30F
SY-30	Temperature Alarm Tone	No	Yes or No
SY-31	Temperature Alarm Hoods to Activate	All Hoods	All Hoods, Hood Group, Hood Only, None
SY-32	Data Log Sample Rate	5 minutes	10s, 30s, 1min, 2min, 3min, 5min, 10min, 30min
SY-33	Auto On, Manual Off, Delay Time	2 minutes	10s, 30s, 1min, 2min, 3min, 5min, 10min, 30min
SY-34	Unit Display	12H/F	12H/F, 24H/F, 12H/C, 24H/C
SY-35	Analog Output Min	0	0 to 100
SY-36	Analog Output Max	100	0 to 100
SY-37	VFD Baud Rate	9600 Baud	9600 Baud, 19200 Baud, 38400 Baud, 57600 Baud, 115200 Baud
SY-38	VFD Serial Mode	8-E-1	8-N-1, 8-E-1, 8-O-1
SY-39	Time Zone	New York, US	Relevant Time Zones
SY-40	Display Language	English	English, Francais, Espanol, Deutsche
SY-41	Use DHCP	Yes	Yes or No
SY-42	Static IP	192.168.200.101	Valid IP Address
SY-43	Netmask	255.255.255.0	Valid IP Address
SY-44	Gateway	0.0.0.0	Valid IP Address
SY-45	DNS Server 1	0.0.0.0	Valid IP Address
SY-46	DNS Server 2	0.0.0.0	Valid IP Address
SY-47	BACnet Device Instance ID	654000	0 to 4194302
SY-48	BACnet Auto Number	Yes	Yes or No
SY-49	BACnet Port	47808	47808 to 65535
SY-50	BACnet DNET	654	1 to 65534
SY-51	BACnet Watchdog	300	0 to 600 (seconds)

Touchpad Parameters

TPx-01	Touchpad Hood Network Address	1	1-10
TPx-02	Name	TP-01	Up To 20 Characters
TPx-03	Light Controller Addresses	System Controller	System Controller, LC-01 to LC-10
TPx-04	Bypass Softkey Visible	Yes	Yes Or No
TPx-05	Associated Groups On/Off	1	1 to 10
TPx-06	Lights Button Active	Yes	Yes Or No
TPx-07	Fans Button Active	Yes	Yes Or No
TPx-08	Hood Groups Displayed	1	1 to 10

Aux Touchpad Parameters

ATx-01	Aux Touchpad Address	1	0-9
ATx-02	Name	AT-1	Up To 20 Characters
ATx-03	Light Controller Addresses	System Controller	System Controller, LC-01 to LC-10
ATx-04	Bypass Button Active	Yes	Yes Or No
ATx-05	Lights Button Active	Yes	Yes Or No
ATx-06	Fans Button Active	Yes	Yes Or No
ATx-07	Associated Groups On/Off	1	1 to 10

Scheduling Parameters

SDxx-01	Schedule ID	1	1 to 10

SDxx-02	Schedule Name	Schedule x	Up to 20 Characters
SDxx-03	Groups	All Selected	1 to 10
SDxx-04	Action Start	None	None, Fans On, Fans Off, Preset Minimum, Calculated Minimum
SDxx-05	Action End	None	None, Fans On, Fans Off, Preset Minimum, Calculated Minimum
SDxx-06	Month Start	January	January through December
SDxx-07	Day Start	1	1 to 31
SDxx-08	Month End	December	January through December
SDxx-09	Day End	31	1 to 31
SDxx-10	Days of Week	All Selected	Sun to Sat
SDxx-11	Time Start	08:00	00:00 to 23:59
SDxx-12	Time End	22:00	00:00 to 23:59
SDxx-13	Preset Speed	100	0 to 100

Analog Output Module Parameters

AOMx-01	Address	101	1 to 254
AOMx-02	Name	AOM-x	Up to 20 Characters
AOMx-03	Analog Output 0 Algorithm	Average	None, Average, Highest, Lowest
AOMx-04	Analog Output 0 Related Airflows	None	List All Exhaust and Aux Airflows
AOMx-05	Analog Output 0 Min	0	0 to 100
AOMx-06	Analog Output 0 Max	100	0 to 100
AOMx-07	Analog Output 0 Type	0-10VDC	0-10VDC, 0-20mA
AOMx-08	Analog Output 1 Algorithm	Average	None, Average, Highest, Lowest
AOMx-09	Analog Output 1 Related Airflows	None	List All Exhaust and Aux Airflows
AOMx-10	Analog Output 1 Min	0	0 to 100
AOMx-11	Analog Output 1 Max	100	0 to 100
AOMx-12	Analog Output 1 Type	0-10VDC	0-10VDC, 0-20mA
AOMx-13	Analog Output 2 Algorithm	Average	None, Average, Highest, Lowest
AOMx-14	Analog Output 2 Related Airflows	None	List All Exhaust and Aux Airflows
AOMx-15	Analog Output 2 Min	0	0 to 100
AOMx-16	Analog Output 2 Max	100	0 to 100
AOMx-17	Analog Output 2 Type	0-10VDC	0-10VDC, 0-20mA
AOMx-18	Analog Output 3 Algorithm	Average	None, Average, Highest, Lowest
AOMx-19	Analog Output 3 Related Airflows	None	List All Exhaust and Aux Airflows
AOMx-20	Analog Output 3 Min	0	0 to 100
AOMx-21	Analog Output 3 Max	100	0 to 100
AOMx-22	Analog Output 3 Type	0-10VDC	0-10VDC, 0-20mA
AOMx-23	Digital Input 0	None	Same as SY-11
AOMx-24	Groups Affected by Digital Input 0	1	1 to 10
AOMx-25	Digital Input 1	None	Same as SY-11
AOMx-26	Groups Affected by Digital Input 1	1	1 to 10
AOMx-27	Digital Input 2	None	Same as SY-11
AOMx-28	Groups Affected by Digital Input 2	1	1 to 10
AOMx-29	Digital Input 3	None	Same as SY-11
AOMx-30	Groups Affected by Digital Input 3	1	1 to 10

Digital Input Module Parameters

DIMx-01	Address	111	1 to 254
DIMx-02	Name	DIM-x	Up to 20 Characters
DIMx-03	Digital Input 0	None	Same as SY-11
DIMx-04	Groups Affected by Digital Input 0	1	1 to 10
DIMx-05	Digital Input 1	None	Same as SY-11
DIMx-06	Groups Affected by Digital Input 1	1	1 to 10
DIMx-07	Digital Input 2	None	Same as SY-11
DIMx-08	Groups Affected by Digital Input 2	1	1 to 10
DIMx-09	Digital Input 3	None	Same as SY-11
DIMx-10	Groups Affected by Digital Input 3	1	1 to 10
DIMx-11	Digital Input 4	None	Same as SY-11
DIMx-12	Groups Affected by Digital Input 4	1	1 to 10
DIMx-13	Digital Input 5	None	Same as SY-11
DIMx-14	Groups Affected by Digital Input 5	1	1 to 10
DIMx-15	Digital Input 6	None	Same as SY-11
DIMx-16	Groups Affected by Digital Input 6	1	1 to 10
DIMx-17	Digital Input 7	None	Same as SY-11
DIMx-18	Groups Affected by Digital Input 7	1	1 to 10
DIMx-19	Digital Input 8	None	Same as SY-11
DIMx-20	Groups Affected by Digital Input 8	1	1 to 10
DIMx-21	Digital Input 9	None	Same as SY-11
DIMx-22	Groups Affected by Digital Input 9	1	1 to 10
DIMx-23	Digital Input 10	None	Same as SY-11
DIMx-24	Groups Affected by Digital Input 10	1	1 to 10
DIMx-25	Digital Input 11	None	Same as SY-11
DIMx-26	Groups Affected by Digital Input 11	1	1 to 10
DIMx-27	Digital Input 12	None	Same as SY-11
DIMx-28	Groups Affected by Digital Input 12	1	1 to 10
DIMx-29	Digital Input 13	None	Same as SY-11
DIMx-30	Groups Affected by Digital Input 13	1	1 to 10
DIMx-31	Digital Input 14	None	Same as SY-11
DIMx-32	Groups Affected by Digital Input 14	1	1 to 10
DIMx-33	Digital Input 15	None	Same as SY-11
DIMx-34	Groups Affected by Digital Input 15	1	1 to 10

Digital Output Module Parameters

DOMx-01	Address	111	1 to 254
DOMx-02	Name	DOM-x	Up to 20 Characters
DOMx-03	Relay 0 Output	None	Same as SY-03
DOMx-04	Groups Affecting Relay 0 Output	1	1 to 10
DOMx-05	Relay 1 Output	None	Same as SY-03
DOMx-06	Groups Affecting Relay 1 Output	1	1 to 10
DOMx-07	Relay 2 Output	None	Same as SY-03
DOMx-08	Groups Affecting Relay 2 Output	1	1 to 10

DOMx-09	Relay 3 Output	None	Same as SY-03
DOMx-10	Groups Affecting Relay 3 Output	1	1 to 10
DOMx-11	Relay 4 Output	None	Same as SY-03
DOMx-12	Groups Affecting Relay 4 Output	1	1 to 10
DOMx-13	Relay 5 Output	None	Same as SY-03
DOMx-14	Groups Affecting Relay 5 Output	1	1 to 10
DOMx-15	Relay 6 Output	None	Same as SY-03
DOMx-16	Groups Affecting Relay 6 Output	1	1 to 10
DOMx-17	Relay 7 Output	None	Same as SY-03
DOMx-18	Groups Affecting Relay 7 Output	1	1 to 10

Virtual Input Module Parameters

VIMx-01	Address	1	1 to 254
VIMx-02	Name	VIM-x	Up to 20 Characters
VIMx-03	Virtual Input 1	None	Same as SY-11
VIMx-04	Groups Affected by Virtual Input 1	1	1 to 10
VIMx-05	Virtual Input 2	None	Same as SY-11
VIMx-06	Groups Affected by Virtual Input 2	1	1 to 10
VIMx-07	Virtual Input 3	None	Same as SY-11
VIMx-08	Groups Affected by Virtual Input 3	1	1 to 10
VIMx-09	Virtual Input 4	None	Same as SY-11
VIMx-10	Groups Affected by Virtual Input 4	1	1 to 10
VIMx-11	BACnet Device Instance ID	0	0-4194302

Virtual Output Module Parameters

VOMx-01	Address	11	1 to 254
VOMx-02	Name	VOM-x	Up to 20 Characters
VOMx-03	Virtual Output 1	None	Same as SY-03
VOMx-04	Groups Affecting Virtual Output 1	1	1 to 10
VOMx-05	Virtual Output 2	None	Same as SY-03
VOMx-06	Groups Affecting Virtual Output 2	1	1 to 10
VOMx-07	Virtual Output 3	None	Same as SY-03
VOMx-08	Groups Affecting Virtual Output 3	1	1 to 10
VOMx-09	Virtual Output 4	None	Same as SY-03
VOMx-10	Groups Affecting Virtual Output 4	1	1 to 10
VOMx-11	BACnet Device Instance ID	0	0-4194302

Aux Lighting Controller Parameters

LCx-01	Lighting Controller Address	1	0-9
LCx-02	Name	ALC-1	Up To 20 Characters

Analog Input Module Parameters

AIMx-01	Aux Power Hood Network Address	131	131-140
AIMx-02	Name	AIM-01	Up To 20 Characters
AIMx-03	AI0 Function	Not In Use	Not In Use, Highest, Add, Average, Aux. Highest, Aux. Add, Aux. Average
AIMx-04	AI0 Minimum	0	0 to 100

AIMx-05	AI0 Maximum	100	0 to 100
AIMx-06	AI0 Type	0-20mA	0-20mA, 0-10VDC
AIMx-07	AI0 Scale	100	0 to 100
AIMx-08	AI0 Remote On Threshold	0	0 to 100
AIMx-09	AI0 Associated Groups	1	1 to 10
AIMx-10	AI1 Function	Not In Use	Not In Use, Highest, Add, Average, Aux. Highest, Aux. Add, Aux. Average
AIMx-11	AI1 Minimum	0	0 to 100
AIMx-12	AI1 Maximum	100	0 to 100
AIMx-13	AI1 Type	0-20mA	0-20mA, 0-10VDC
AIMx-14	AI1 Scale	100	0 to 100
AIMx-15	AI1 Remote On Threshold	0	0 to 100
AIMx-16	AI1 Associated Groups	1	1 to 10
AIMx-17	AI2 Function	Not In Use	Not In Use, Highest, Add, Average, Aux. Highest, Aux. Add, Aux. Average
AIMx-18	AI2 Minimum	0	0 to 100
AIMx-19	AI2 Maximum	100	0 to 100
AIMx-20	AI2 Type	0-20mA	0-20mA, 0-10VDC
AIMx-21	AI2 Scale	100	0 to 100
AIMx-22	AI2 Remote On Threshold	0	0 to 100
AIMx-23	AI2 Associated Groups	1	1 to 10
AIMx-24	AI3 Function	Not In Use	Not In Use, Highest, Add, Average, Aux. Highest, Aux. Add, Aux. Average
AIMx-25	AI3 Minimum	0	0 to 100
AIMx-26	AI3 Maximum	100	0 to 100
AIMx-27	AI3 Type	0-20mA	0-20mA, 0-10VDC
AIMx-28	AI3 Scale	100	0 to 100
AIMx-29	AI3 Remote On Threshold	0	0 to 100
AIMx-30	AI3 Associated Groups	1	1 to 10
AIMx-31	AI4 Function	Not In Use	Not In Use, Highest, Add, Average, Aux. Highest, Aux. Add, Aux. Average
AIMx-32	AI4 Minimum	0	0 to 100
AIMx-33	AI4 Maximum	100	0 to 100
AIMx-34	AI4 Type	0-10VDC	0-20mA, 0-10VDC
AIMx-35	AI4 Scale	100	0 to 100
AIMx-36	AI4 Remote On Threshold	0	0 to 100
AIMx-37	AI4 Associated Groups	1	1 to 10
AIMx-38	AI5 Function	Not In Use	Not In Use, Highest, Add, Average, Aux. Highest, Aux. Add, Aux. Average
AIMx-39	AI5 Minimum	0	0 to 100
AIMx-40	AI5 Maximum	100	0 to 100
AIMx-41	AI5 Type	0-10VDC	0-20mA, 0-10VDC
AIMx-42	AI5 Scale	100	0 to 100
AIMx-43	AI5 Remote On Threshold	0	0 to 100
AIMx-44	AI5 Associated Groups	1	1 to 10
AIMx-45	AI6 Function	Not In Use	Not In Use, Highest, Add, Average, Aux. Highest, Aux. Add, Aux. Average

AIMx-46	AI6 Minimum	0	0 to 100
AIMx-47	AI6 Maximum	100	0 to 100
AIMx-48	AI6 Type	0-10VDC	0-20mA, 0-10VDC
AIMx-49	AI6 Scale	100	0 to 100
AIMx-50	AI6 Remote On Threshold	0	0 to 100
AIMx-51	AI6 Associated Groups	1	1 to 10
AIMx-52	AI7 Function	Not In Use	Not In Use, Highest, Add, Average, Aux. Highest, Aux. Add, Aux. Average
AIMx-53	AI7 Minimum	0	0 to 100
AIMx-54	AI7 Maximum	100	0 to 100
AIMx-55	AI7 Type	0-10VDC	0-20mA, 0-10VDC
AIMx-56	AI7 Scale	100	0 to 100
AIMx-57	AI7 Remote On Threshold	0	0 to 100
AIMx-58	AI7 Associated Groups	1	1 to 10

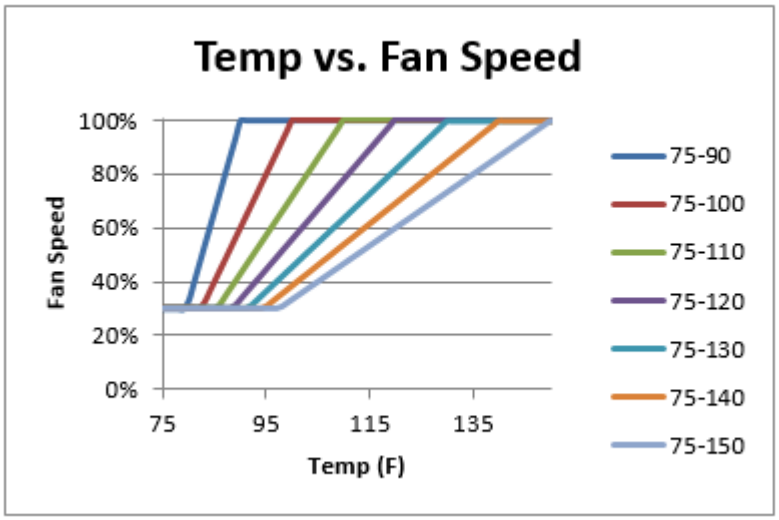
XI. Optimizing Energy Savings

Understanding Fan Speed Modulation, Building Balance, and Smoke Capture

At its core, Melink Corporation believes that all citizens should strive to be efficient with energy usage. Melink would like Kitchen Managers and Maintenance technicians to understand a little bit about how Intelli-Hood operates in order to make smart decisions about the setup and save as much energy as possible.

Melink Corporation assumes that a kitchen is designed for correct amounts of exhaust and supply air before Intelli-Hood is installed. If a kitchen does not have sufficient smoke capture or is out of balance, then the exhaust and supply systems must be corrected before Intelli-Hood is installed. Intelli-Hood cannot correct building imbalances on its own.

Intelli-Hood uses two types of sensors to control fan speed. Temperature sensors installed in the exhaust duct monitor the temperature of the exhaust air. Programming parameters for minimum/ maximum temperature and minimum/maximum speed determine the relationship of fan speed to temperature. The second sensor set is optical sensors. Any time that the optic sensors see smoke or other effluent, the System Controller sends the VFDs to full speed.



Tuning the temperature and speed setpoints is very important to gaining maximum energy savings. One method is to set the Intelli-Hood maximum temperature 10 to 20 degrees Fahrenheit more than the actual maximum temperature of the hood exhaust air. Thus, when there is maximum cooking load with no smoke, the fan runs at 80 to 90% speed, and the only time that the fans will run at 100% speed is when the optical sensors see effluent.

Also, adjusting the minimum speed as low as possible is improves energy savings as well. The default minimum speed is 30%. It is possible to change the minimum speed below 30%; however, one should be aware that when the minimum speed is extremely low, smoke may roll out of the hood before the optic sensors see it and it may cause issues with the motor not being able to spin. Minimum speeds below 30% cause too much stress on fan motors and should not be used.

It should be noted that fan motor energy consumption has a cubic relationship with fan motor speed (per the Fan Laws). Thus, a fan running at 90% of maximum speed uses 73% (0.90 * 0.90 * 0.90) of the energy as the fan running at 100% speed. A fan running at 50% speed uses 13% of the energy. Thus, most of the energy savings come from trimming the high end of the fan speed profile. It is more important to shave off speed at the high end by properly calibrating temperature span than it is to shave off speed at the low end with the minimum speed when looking at motor energy savings. Regardless, it is still important to recognize that a significant portion of energy savings often comes from conditioned air savings, which has a linear relationship with fan speed.

XII. Maintenance

Cleaning the Optic Sensors

The Intelli-Hood Optic Sensors must be cleaned periodically. The time between cleanings will vary depending on the application and quantity of grease in the airstream of a ventilation hood. Optic sensors in applications with high amounts of grease may need to be cleaned a 2 or 3 times per month. Some applications may have optic sensors that can go several months between cleanings.

If the sensors get too much contamination on the lenses, an optic fault will occur. The fans will run at full speed until the sensors are cleaned and reset.

In order to clean the optic sensors, follow the steps below. Cleaning of the optic sensors may be performed with the fans on or off.

- Press the pushbutton latches on the sides of the optic box and remove the cover.
- Wipe the lens of the optic circuit board with a soft, moist cloth
- Replace the cover of the optic box ensuring that the cable connecting the optic box cover to the optic bracket is not in front of the lens.

Cleaning the Hoods

When doing a general cleaning of the kitchen hood, cover the optic sensors with plastic wrap and thick tape before using high pressure water, steam or other cleaning chemicals in the hood.

Do not get any of the circuit boards in any other devices of Intelli-Hood wet.

Cleaning the Temperature Sensors

Temperature sensors rarely need to be cleaned. If extremely large amounts of grease and other contamination build on the sensor, the probes should be brushed or wiped clean.

Maintenance of Touchpad and Aux Touchpad Devices

Do not use a sharp kitchen utensil or other object to press buttons on the Touchpad or Aux Touchpad. Press the buttons with human fingers only.

Clean the keypad surfaces with a moist cloth. Light-duty cleaning chemicals such as Simple-Green and 409 may be used.

XIII. Troubleshooting

Intelli-Hood Touchpad Devices will display fault messages when fault conditions arise. Also, if the Intelli-Hood has internet access and is properly configured, email messages can be sent to owners or managers of the kitchen alerting them of the situation. Aux Touchpads will illuminate their Fault Light, but one must consult a Touchpad in order to see the fault message.

Below is a comprehensive list of potential faults that can occur.

Fault Text	**Meaning**
<Fan Name> VFD Comm. Fault	Lost communication to the VFD for the listed fan
<Fan Name> VFD Fault <VFD Error Code>	VFD tripped with the listed fault code
<Exhaust Hood Name> Temp Fault	Temperature probe is missing
<Exhaust Hood Name> Optic Fault	Optics associated with Exhaust Hood but Hood Controller is configured with optics disabled; Optic receiver signal is too low for detection; Optic receiver missing; Optic emitter missing; Optic receiver signal is too strong for detection
External Fault	A digital input set for External Fault is active
External Alert	A digital input set for External Alert is active
<Device Name> Lost. Comm	Lost communication to the named device. This includes Hood Controllers, Auxiliary Lighting Controllers, Digital Output Modules, Digital Input Modules, Analog Output Modules and Analog Input Modules

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Hood Cleaning Precautions

<u>Important</u>: Always keep components dry as possible, they are not made for heavy water contact

1. Optic Sensors

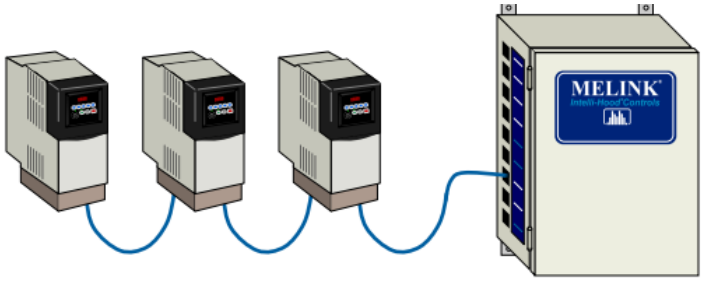
The Optic Sensors are water-resistant, but not water proof. During a hood cleaning service, they must be protected from getting wet. The optic box should be sealed with tape or plastic wrap.

2. Touchpad

The touchpad cover should be wiped clean, but it should not be soaked with excessive water. If the face is damaged, more care must be taken to avoid letting water get through the label to the electronic circuit card behind the face. Also, care should be taken to avoid letting excessive water get behind the touchpad through the seam between the touchpad plate and the hood.

3. VFD and Processor Cabinet (if applicable)

The end cabinet of the hood does not have a top cover. It is completely open. Care must be taken to avoid getting the components inside the end cabinet wet.



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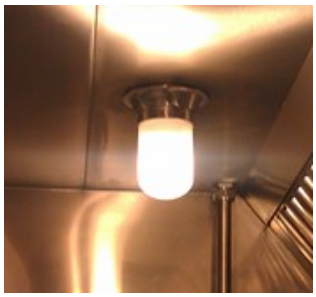
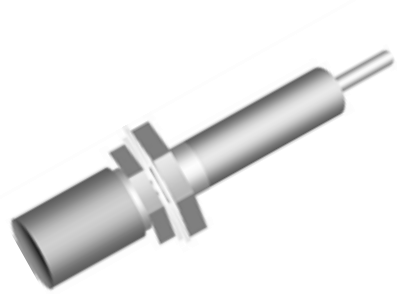
4. Hood Lights

The hood light fixtures must be kept dry. Water inside a light fixture will create a short on the circuit and damage the Melink Processor which powers the lights.

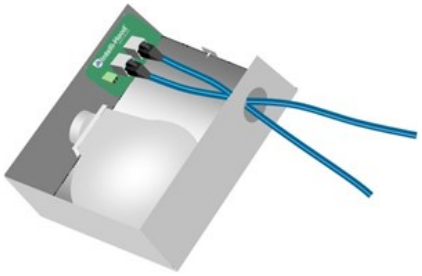


5. Top of Hood

On top of the hood, one will find Air Purge Units (APU), Temperature Probes, and a network of control cables. The top of the hood is not normally cleaned, so water exposure should not be an issue. If anyone needs to be on top of the hood for any reason, they must be careful not to step on any of these components.



Temperature Probe



Air Purge Unit

6. Rooftop Fan Disconnect Switch

The safety disconnect switch for each exhaust fan on top of the roof must be kept dry. This disconnect switch may be mounted on the side of the fan or inside the top cover. Water inside the disconnect switch will cause the VFD to trip and it will be unable to run the motor. If this occurs, an electrician must be called out to clean or replace the disconnect switch.

Example—Fan Disconnect Switch

For unaddressed questions, please call 513-965-7300 to request tech support

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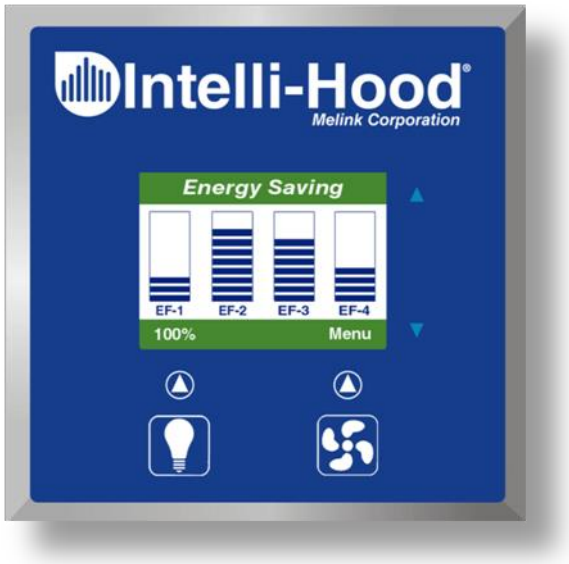

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Last Updated 7/22/2015

Table of Contents

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Intelli-Hood®
Troubleshooting Guide

I. About this Document

The purpose of this document is to provide basic troubleshooting techniques for the Intelli-Hood Kitchen Control System. The intended audience of this document is the end user of the system: the building owner, kitchen manager, kitchen staff, or maintenance technician.

II. Related Documents

Operations and Maintenance Manual

- Provides information regarding basic operation & maintenance.

Installation Manual

- Provides detailed installation instructions of the components including mechanical installation of parts, power wiring, and control wiring.

VFD Manuals

- Refer to documents provided by the VFD manufacturer for information regarding any aspect of the Variable Frequency Drives including power wiring, control wiring, programming, and faults. Information can be found on their respective web pages.
- System is continually expanding capabilities. Presently, capable of utilizing Modbus control for ABB, Allen-Bradley, Trane, Danfoss, Siemens, Schneider, Samsung, & Yaskawa.

III. Glossary of Abbreviations

The following terms and abbreviations are used throughout literature pertaining to the Intelli-Hood System.

- IH: Intelli-Hood
- VFD: Variable Frequency Drive
- TP: Touchpad
- APU: Air Purge Unit
- SC: System Controller
- HC: Hood Controller
- AT: Auxiliary Touchpad
- AIO: Auxiliary Analog Out Device
- ALC: Auxiliary Light Controller
- APD: Auxiliary Power Device
- EF: Exhaust Fan
- MUA: Make Up Air

IV. Diagnostics/Troubleshooting

a. Touchpad Display (TP)

Fault Description	Items to Check
Temp Fault	• Make sure that the sensors are clean. It is not always necessary unless it has a large amount of grease or build up. • Check the connections that go from the temperature probe to the Hood Controller. • Check for any damaged components. • Check that the number of temp sensors installed matches the number of temp sensors programmed. Under menu hit Status (1) and go to hood controllers (3) and hit enter. If a temperature sensor is not connected properly or does not work then it will show as "missing". • Check Temperature offset • On the hood controller there are different ports that can be used to connect the cables for temperature sensors, swapping those may help to get rid of the fault. • Check if temperature sensor resistance is approximately 100 Ohms. • Cycle power to the unit.
Optic Fault	• Verify no obstructions to optic sensor infrared beam (Ansul Pipes, pots / pans, etc). • Confirm sensor lenses are clean. • Make sure that the cables are connected tightly on optic boards & on the hood controller. • Check alignment; use web application to check gain/voltage levels. If see attempts to calibrate when changing alignment, hardware is working properly. • Using the keypad, go to Status and under hood controller verify that the optics are not

	missing. • Cycle power to the unit.
Variable Frequency Drive (VFD) Comm. Fault	• VFD type (ABB, Allen Bradley, Danfoss, etc) may not be identified correctly in Exhaust Fan or Aux Airflow programming. • Check EF &MUA Aux Airflow status and confirm VFD type is correct. • Check display on VFD(s) for a fault (i.e. F5 or F13). Go to respective VFD and confirm if any fault codes exist and troubleshoot in accordance with VFD User's Manual.
Touchpad Frozen	• System may have lost configuration or configuration file was corrupted, tech support downloads the configuration files and emails it to the technician working on site. The tech will drag it to the root directory of a USB and save it as a ConfigurationFiles.zip file, power off the unit, place USB in port, cycle power on to the unit. • Verify that the base board LED's are lighting up. Power the system controller off, replace the cell battery on the base board then power back on. • Confirm proper addressing of Network Devices (Hood Controllers and Touchpads).
Unable to enter System Configuration	• Enter menu screen on Touchpad, and with System Configuration selected, press and hold up/down arrows until text changes from red to blue (Approx 15 seconds)
Touchpad not displaying correct devices (OR) Multiple Touchpads on same SC are frozen	• Check hardcoded address on Touchpad (TP), press and hold the up/down arrows on the TP for 30 seconds. Change address to correct number. Power cycle System Controller to hardcode new address. Replacement TP maybe defaulted to address of 1. • Check programming of devices in service app.
Light Button Works but TP is blank	• TP ribbon cable loose between boards (OR) boards not seated
Fans Button not working	• Check Exhaust Hood menu. Confirm on/off

	control is set to correct Touchpad address
Touchpad displaying incorrect Exhaust Fan (EF) & Make-Up Air (MUA)	• Check Exhaust Hood menu. Confirm Touchpad Display Node • Check corresponding EF's & MUA's devices to confirm which TP is actually selected

b. System Controller (SC)

Fault Description	Items to Check
LED's not on	• System may have lost input power. • Check connectors from Power Brick to I/O Board.
LED on CPU Board not pulsing green	• Firmware may be corrupted.
Digital Inputs / Outputs programmed but inactive	• Verify DI/DO(s) are assigned to Exhaust Hood.
Unable to Direct Connect via PC	• Verify Use DHCP set to No.
Auxiliary Input / Output (AIO) not working	• Verify System Controller (SC) and Variable Frequency Drives (VFD's) parity is set to 8-N-1.
Lights not working	• Check fuse, if blown confirm lighting circuit is less than 15 amps. • Confirm lighting leads are wired to System Controller (SC) or Auxiliary Light Controller (ALC) for control.
24VDC is not there	• Check 24VDC fuse. • Check 24VDC connection from power board to base board. • Verify DI/DO(s) are assigned to exhaust hoods.
System won't turn on	• Check power dipswitch located near fuse is "ON". • Check for AC power, may be interrupted by a shunt trip or Ansul micro switch. • Check circuit breaker panel. • If power is at the System Controller (SC), check fuse. • Check Power Brick to I/O Board connections • Possible interlock with enable feature selected

	to Building Automation System (BAS) or Water Wash Panel.
Digital Input / Outputs are not controlling proper hoods	• Confirm "Hood Groups" programmed correctly

c. Hood Controller (HC)

Fault Description	Items to Check
LED not pulsing	• Hood Controller (HC) may have lost communication to System Controller (SC). • Confirm cable connections to other HC's & SC.
Hood Controller (HC) LED pulsing but not communicating correctly	• Confirm HC rotary switches are set to proper address. • If HC is last in the Hood Network string, confirm Terminal Resistor dip switch is on.
APU fan(s) not working	• Check for voltage drop issue. • Check cable connections

d. Optic/Temp Sensor

Fault Description	Items to Check
Optic Fault "Emitter Missing" ▪ White printed circuit Board "Receiver Missing" ▪ Blue Printed Circuit Board	• Verify no optic sensor obstructions in hood. • Confirm sensors are clean. • Make sure that the cables are connected tightly on optic boards & on the hood controller. • Check alignment; use web application to check gain/voltage levels. If see attempts to calibrate when changing alignment, hardware is working properly. • Using the keypad, go to Status and under hood controller verify that the optics are not missing. • Many smartphone cameras can see Emitter Light. Use phone camera to verify light is

	emitting.
Temp Fault	• Make sure that the sensors are clean. It is not always necessary unless it has a large amount of grease or build up. • Check the connections that go from the temperature probe to the HC. • Check for any damaged components. • Check that the number of temp sensors installed matches the number of temp sensors programmed. Under menu hit Status (1) and go to hood controllers (3) and hit enter. If a temperature sensor is not connected properly or does not work then it will show as "missing". • On the hood controller there are different ports that can be used to connect the cables for temperature sensors, swapping those may help to get rid of the fault. • Verify temperature sensor resistance is about 100 Ohms. • Cycle power to the unit.
Temperature not measuring correctly	• Temp probe may be defective. • Temp offset may be programmed incorrectly.

e. Variable Frequency Drives (VFD's)

Fault Description	Items to Check
Depends on VFD type	• Confirm Fault codes and refer to VFD Operations Manual.

f. Exhaust Fans (EF's)

Fault Description	Items to Check
EF will not run	• Confirm no faults at the Variable Frequency Drive (VFD). • Verify disconnect on the roof is turned on.
EF has high current draw	• Confirm motor rotation is spinning in the correct direction. • Confirm actual condition of the motor. Belt tension correct or general cleaning performed.
EF is running, but low to no air flow	• Grease filters may need to be cleaned. • Check belt on fan, it may be broken or loose. • Obstruction in the duct. • If installed, dampers stuck shut. • Duct cleanout removed.
EF has an over voltage	• Check for condensation in the disconnect.
EF are running at 100%, but the MUA not running	• System Controller (SC) has lost power (Firemode) • Possible override interlock to Variable Frequency Drives (VFD's) from other control sources if power is present and System Controller (SC) is operating.

g. Make-Up Air (MUA) Interlock

Fault Description	Items to Check
MUA will not turn on	• Confirm start/stop from a 24VDC relay or internal relay is connected from the SC to the correct terminal points on the MUA control circuit.
System will not speed up when call for heat (OR) call for cool	• Confirm closure is received at the System Controller (SC) for the correct terminal points of the Make-Up Air (MUA). (Generally after the Outdoor Air Temperature Sensor but before the Low Air Pressure switch).

h. Building Automation System (BAS) & BACnet

Fault Description	Items to Check
BAS cannot discover System Controller (SC)	• Check Ethernet cable and port connection. • Confirm IP address in the About Screen. • Check IP settings are configured per site's IT requirements in the System Menu. Static IP (If not using DHCP), Netmask, Gateway, Domain Name System (DNS) Server 1, DNS Server 2
BAS cannot discover Exhaust Fan (EF) & Make-Up Air (MUA) data	• Destination Network (DNET) number might need to be changed from 1 to a unique number to avoid data collision

i. Auxiliary Input / Output (AIO)

Fault Description	Items to Check
AIO won't work	• Check connections, 24VDC and digital comms from System Controller (SC) to AIO. • Confirm device exists in configuration, configuration settings and associated AUX air flows programmed and their associated devices providing speed reference. • Confirm parity in SC and Variable Frequency Drives (VFD's) is set to 8-N-1. • Confirm dip switch on module set to "Normal"

j. Auxiliary Light Controller (ALC)

Fault Description	Items to Check
ALC won't work	• Check Ethernet cable and port connection. • Confirm light controller address selected on touchpad for lights operation. • Confirm device exists in configuration. • Confirm lighting circuit is connected to ALC from control.

k. Auxiliary Power Device (APD)

Fault Description	Items to Check
APD is not boosting signal	• Check circuit breaker. • Check connections. • Check for power.

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BACnet Protocol Implementation Conformance Statement (PICS)

Version 8.0
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BACnet Protocol Implementation Conformance Statement

Date: 11-02-2016
Vendor Name: Melink Corporation (Vendor ID 654)
Product Name: Intelli-Hood
Product Model Number: IH3 SC
Application Software Version: 2.2
Firmware Revision: 0.8.4
BACnet Protocol Revision: 12

Product Description:

Melink Intelli-Hood is a demand ventilation product which conserves energy for the commercial kitchen industry. It is particularly used in conjunction with VFD's (Variable Frequency Drives) which control the speed of the kitchen EF (Exhaust Fans) and kitchen MUA (Make-Up Air) units. When smoke is created under normal cooking conditions, the optic sensors signal the exhaust fan VFD to send the exhaust fan motor to full speed until all smoke is removed from the kitchen hood. The temperature sensors measure the heat present and signals the VFD which in-turn, modulates the EF between minimum speed and full speed. The MUA works in unison with the EF to maintain balance and conserves energy of conditioned heated or cooled air.

BACnet Standardized Device Profile (Annex L):

BACnet Application Specific Controller (B-ASC)

List all BACnet Interoperability Building Blocks Supported (Annex K):

DS-RP-B, DS-RPM-B, DS-WP-B, DM-DDB-B, DM-DOB-B

Segmentation Capability:

None

Standard Object Types Supported:
All objects are statically created based upon device configuration. Create object and delete object are not supported. See object list at the end of this document for more information.

- Analog Value
- Binary Value
- Device

Data Link Layer Options:
BACnet IP, (Annex J)

Device Address Binding:
Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.)
No

Networking Options:
None

Network Security Options:

- Non-secure Device - is capable of operating without BACnet Network Security

Character Sets Supported:
UTF-8

Object/Property Support Matrix

The following table summarizes the Object Types/Properties Supported:

	Object Type		Analog Range or Binary Active/Inactive Text	Present Value Access Type	Object Number
Object Name (Value Text)	Binary Value	Analog Value			
System Controller					
Digital Input 1 Status	✓		Closed/Open	Read only	BV0
Digital Input 2 Status	✓		Closed/Open	Read only	BV1
Digital Input 3 Status	✓		Closed/Open	Read only	BV2
Digital Output 1 Status	✓		Energized/De-Energized	Read only	BV3
Digital Output 2 Status	✓		Energized/De-Energized	Read only	BV4
24VDC Out 1 Status	✓		Energized/De-Energized	Read only	BV5
24VDC Out 2 Status	✓		Energized/De-Energized	Read only	BV6
Analog Input Status		✓	0-100%	Read only	AV0
Analog Output Status		✓	0-100%	Read only	AV1
For each Exhaust Fan and Auxiliary Airflow					
Operation Status	✓		Running/Stopped	Read only	BV0
Fault Active	✓		Yes/No	Read only	BV1
Reset VFD Fault	✓		Yes/No	Commandable	BV2
Maximum Output Frequency		✓	0-254 Hz	Read only	AV0
% Commanded Speed		✓	0-100%	Read only	AV1
% Actual Speed		✓	0-100%	Read only	AV2
Output Current[1]		✓	0-32768 A	Read Only	AV3
Output Energy[2]		✓	0-32768 kWh	Read Only	AV4

[1] Output Current is not updated for System VFDs

[2] Output Energy is not updated for System and Allen-Bradley PowerFlex 4/40 VFDs

	Object Type		Analog Range or Binary Active/Inactive Text	Present Value Access Type	Object Number
Object Name (Value Text)	Binary Value	Analog Value			
For each Hood Controller					
Temperature 1		✓	-40°F to 400°F	Read only	AV0
Temperature 2		✓	-40°F to 400°F	Read only	AV1
Temperature 3		✓	-40°F to 400°F	Read only	AV2
Temperature 4		✓	-40°F to 400°F	Read only	AV3
Optics Tripped	✓		Yes/No	Read only	BV0
For each Virtual Input Module					
Digital Input 1	✓		On/Off	Read/Write	BV0
Digital Input 2	✓		On/Off	Read/Write	BV1
Digital Input 3	✓		On/Off	Read/Write	BV2
Digital Input 4	✓		On/Off	Read/Write	BV3
Analog Input 1		✓	0-100%	Read/Write	AV1
Analog Input 2		✓	0-100%	Read/Write	AV2
Analog Input 3		✓	0-100%	Read/Write	AV3
Analog Input 4		✓	0-100%	Read/Write	AV4
For each Virtual Output Module					
Digital Output 1 Status		✓	Energized/De-Energized	Read Only	BV0
Digital Output 2 Status		✓	Energized/De-Energized	Read Only	BV1
Digital Output 3 Status		✓	Energized/De-Energized	Read Only	BV2
Digital Output 4 Status		✓	Energized/De-Energized	Read Only	BV3

Device Object Description

This section describes in further detail each of the Device Objects in the Object/Property Support Matrix and a brief description of each object associated with each Device Object type.

System Controller

The System Controller is the main Device Object for the system. It acts as a virtual BACnet router for the other Device Objects populated on the Intelli-Hood system. The System Controller Device Object has the following objects which reflect the status of I/O on the System Controller hardware.

Digital Input Status

These three Binary Values reflect the state of the three physical Digital Inputs located on the System Controller I/O board. These are dry contacts which can be used to command the Intelli-Hood system to react to external input. If the digital input is inactive ("Open"), then the physical digital input does not have a completed circuit between the referenced digital input and ground. If the digital input is active ("Closed"), then the physical digital input circuit has been completed and the digital input is commanding the system. The following is the list of possible digital input configurations and how they affect the Intelli-Hood system.

Remote On/Off

A Remote On/Off digital input is an edge sensitive input. When the digital input changes state from inactive to active, it requests that the fans in the associated Hood Groups turn on. When the digital input changes state from active to inactive, it requests that the fans in the associated Hood Groups turn off. Since a Remote On/Off digital input is edge sensitive, multiple digital inputs (i.e., toggle switches on either end of a kitchen) can be used to turn on and off the same set of fans. Also note that the Remote On/Off command will be ignored if the Hood Group is disabled or in High Temperature Alarm.

Remote On

This is similar to the Remote On/Off digital input setting. However, when the digital input changes state from active to inactive, it does not request that the fans turn off.

Remote On 100%

This digital input requests that associated fans turn on when the digital input changes state from inactive to active just like the Remote On digital input setting. In addition, when active the digital input requests that associated fans run at full speed.

Remote Enable/Disable

A Remote Enable/Disable input is a level sensitive input. When the digital input is inactive, the associated Hood Groups are disabled and the fans will not turn on unless a High Temperature Alarm has been reached. When the digital input is active, the associated Hood Groups are enabled and fans can be turned on or off. If there are multiple Remote Enable/Disable digital inputs associated with a Hood Group, all digital inputs need to be active before the fans are allowed to turn on. Note that the Remote Enable/Disable input does not turn any fans on itself.

Remote On/Off with Enable

A combination of the Remote On/Off and the Remote Enable/Disable digital inputs. This acts as a Remote Enable/Disable digital input as described above. However, it also requests that fans start in the associated Hood Groups.

50% Minimum Speed through 100% Minimum Speed

A Minimum Speed digital input is a level sensitive input. When active, this digital input dictates that the minimum fan speed for all fans in its associated Hood Group be at least at the digital input's listed minimum. If multiple minimum speed digital inputs are associated with the same Hood Group and they are active at the same time, the highest minimum speed is applied. The minimum speed digital input also needs to be higher than the Exhaust Hood's configured minimum speed to take effect. For example, if one digital input is set for 50% minimum speed and another is set for 80% minimum speed and both digital inputs are associated with the same Hood Groups, then if both digital inputs are active then all fans will have a minimum run speed of 80%. Note that the Minimum Speed digital inputs do not command fans to turn on or off but only set the minimum speed for the fans when they are on.

External Fault

An External Fault digital input is a level sensitive input. An External Fault input can be used to signal the Intelli-Hood system that a fault occurred with some other equipment related to the Intelli-Hood system. When active, the system will report on the Touchpad and, when fans are running, command the associated Hood Groups to run its fans at full speed. In addition, when the digital input changes state from inactive to active, the External Fault digital input commands the associated Hood Groups to turn on their fans.

Lights On/Off

A Lights On/Off digital input is an edge sensitive input. Each Touchpad and Auxiliary Touchpad has a Lights button for turning lights on and off, however the Lights On/Off digital input can be used if the user would prefer to use existing toggle switches for turning lights on and off. When this digital input changes state from inactive to active, it commands lights to turn on for associated Hood Groups. If the digital input changes state from active to inactive, it commands lights to turn off for associated Hood Groups. Since this digital input is edge sensitive, multiple digital inputs can be used to turn on and off the same set of lights.

External Alert

The External Alert digital input is a level sensitive input. This digital input can be used to alert a non-critical failure for equipment that is external to the Intelli-Hood system. If this digital input is active, an "External Alert" message is displayed in the title on the main screen on the Touchpad. This digital input does not affect fan speed.

Digital Output and 24VDC Output Status

The System Controller has two dry contact digital outputs and two 24VDC outputs. If the digital output is active ("Energized") then the dry contacts are closed or 24VDC is output depending on the digital output. If the digital output is inactive ("De-Energized") then the dry contact is open or 0VDC is output depending on the digital output. The digital outputs are driven based upon their configuration and the state of the associated Hood Groups. The following is a short description of each digital output configuration option and how the system state affects the digital output.

Temperature Alarm

Each Exhaust Hood has its own "Temperature Alarm Auto On" parameter which sets at which temperature system should react to a Temperature Alarm. When a Temperature Alarm occurs, all fans in the Hood Group turn on and run at full speed. A Temperature Alarm digital output will be energized if an associated Hood Group is in a Temperature Alarm state.

Smoke

A Smoke digital output can be used to detect when the fans are triggered to run full speed due to optics being tripped. If the optics on an associated Hood Group detect effluent or have a fault, then the Smoke digital output is energized.

Fan On

The Fan On digital output can be used to determine if fans are on or off for an associated Hood Group. If any fan in an associated Hood Group is on, then the Fan On digital output will be energized.

MUA Damper

If the Make-Up Air unit has a damper that closes when the Make-Up Air unit is not running, then the damper needs to be opened before the fan should run. A MUA Damper digital output is then used to signal the damper to open. If there is any input which requests an associated Hood Group to turn on its fans (Fans button from either the Touchpad or Auxiliary Touchpad, Schedule, Remote On/Off digital input), then a MUA Damper digital output is energized. This can then trigger the damper to open and allow fan operation.

Temperature Fault

A Temperature Fault digital output will be energized if there is a fault with any temperature probe in any associated Hood Group.

Optic Fault

An Optic Fault digital output will be energized if there is a fault with any optics in any associated Hood Groups.

VFD Fault

A VFD Fault digital output will be energized if there is any VFD Fault (lost communication or VFD tripped due to a fault) on any VFD in any associated Hood Group.

System Fault

A combination digital output that will be energized on multiple fault situations. A System Fault digital output will be energized if there is either a Temperature Fault, Optic Fault, VFD Fault, or an active External Fault digital input on any associated Hood Group.

24/7

A 24/7 digital output is energized whenever the Intelli-Hood system is powered up and has begun normal operation.

Analog Input Status

The is one physical analog input on the Intelli-Hood System Controller. The analog input can be configured in either 0-10VDC or 0-20 mA operation and can affect any Hood Group in the system. The Analog Input Status reports the current value of the system's physical analog input as a percentage. The following is a short description of the different modes of operation for the analog input.

Highest

The affected Exhaust Fans and Auxiliary Airflows either run at the calculated fan speed or the percent speed governed by this analog input, whichever is highest.

Add

The analog input percentage is added to the calculated fan speed for the Exhaust Fans and Auxiliary Airflows.

Average

The fan speed for the Exhaust Fans and Auxiliary Airflows is first calculated and then is averaged with the analog input value.

Aux. Highest

The affected Auxiliary Airflows either run at the calculated fan speed or the percent speed governed by this analog input, whichever is highest. Exhaust Fans are not affected.

Aux. Add

The analog input percentage is added to the calculated fan speed for the Auxiliary Airflows. Exhaust Fans are not affected.

Aux. Average

The fan speed for the Auxiliary Airflows is first calculated and then is averaged with the analog input value. Exhaust Fans are not affected.

Analog Output Status

There is one physical analog output on the Intelli-Hood System Controller. The analog output can be configured in either 0-10VDC or 0-20mA operation and can be associated with any Auxiliary Airflows in the system. The Analog Output Status reports the current value of the system's physical analog output as a percentage.

Exhaust Fans and Auxiliary Airflows

Each Exhaust Fan and Auxiliary Airflow can be configured to be present on the BACnet interface or not. By default all Exhaust Fans and Auxiliary Airflows are enabled on the BACnet interface and will populate as a separate Device Object with a DNET matching the configured "BACnet DNET" for the system. The Exhaust Fans and the Auxiliary Airflows have the same Object list. Below is a description of each fan's Objects.

Operation Status

The Operation Status is a Binary Value that reports whether the fan is running or stopped. If the Binary Value is active, then the fan is running.

Fault Active

The Fault Active reports whether there is an active VFD fault on the VFD used for this fan. If this value is active, then the VFD has tripped due to a fault and is not running.

Clear VFD Fault

If the situation resulting in a VFD fault has been resolved, the VFD still will need its VFD fault cleared before the VFD will power a fan. The Clear VFD Fault Binary Value can be used to attempt to clear a VFD Fault. If the Clear VFD Fault Binary Value is set to 1 (active), then the system will attempt to clear the fault on the associated VFD. Reading the Clear VFD Fault will always return inactive.
NOTE: Clearing a VFD fault when the problem responsible for the VFD fault has not been resolved can lead to VFD, motor or fan damage.

Maximum Output Frequency

The Maximum Output Frequency lists the maximum speed the fan is allowed to run in Hertz. This can be used in conjunction with the % Commanded Speed and % Actual Speed to determine the commanded and actual speed in Hertz.

% Commanded Speed

This is the speed at which the system is commanding the fan to run as a percentage.

% Actual Speed

This is the speed at which the fan is currently running as a percentage. Note there will be a difference between % Commanded Speed and % Actual Speed during normal operation due to the ramp up and ramp down timing for the VFD.

Output Current

The instantaneous output current reading as reported by the VFD. The output current is not available on all VFD models; be sure it is available on your VFD if you would like to monitor this value.

Output Energy

The reported kWh counter of the VFD. The kWh counter is not available on all VFD models; be sure it is available on your VFD if you would like to monitor this value. Note that the Intelli-Hood system does not internally track this number and that the kWh counter does eventually roll over on all VFDs. If the Output Energy is being monitored, it is suggested to account for any counter rollover.

Hood Controllers

Each Hood Controller houses up to four temperature sensors and one set of optics for temperature and effluent detection. By default there is not a Device Object present for each Hood Controller, but the system can be configured to do so. Below is a list of the Hood Controller Objects.

Temperature 1 through Temperature 4

Each Hood Controller has one Analog Value that represents the current temperature of the related temperature probe in Fahrenheit. The temperature readings are updated once every 30 seconds.

Optics Tripped

The Optics Tripped Binary Value is active if the Hood Controller's optics have detected effluent or if there is an optic fault. If the Optics Tripped value is active, then any associated fans that are on will be running full speed.

Virtual Input Module

A Virtual Input Module is a virtual device to provide a means to add digital inputs to the system that can be controlled via BACnet. Below is a list of the Objects available on the Virtual Input Module.

Digital Input 1 through Digital Input 4

The Virtual Input Module has four digital inputs that mimic the operation of the physical digital inputs on the System Controller. See the "Digital Input Status" section under the System Controller on page 6 for a description of the different digital input configurations. The Intelli-Hood system has a BACnet Watchdog timeout that is used to reset the Virtual Input Module's digital inputs if no BACnet communication has been received in a given amount of time. See the BACnet Watchdog description on page 21 for more details on this configuration parameter.

Analog Input 1 through Analog Input 4

The Virtual Input Module has four analog inputs that mimic the operation of the physical analog input on the System Controller. See the "Analog Input Status" section under the System Controller on page 10 for a description of the different analog input configurations. The Intelli-Hood system has a BACnet Watchdog timeout that is used to reset the Virtual Input Module's analog inputs if no BACnet communication has been received in a given amount of time. See the BACnet Watchdog description on page 21 for more details on this configuration parameter.

Virtual Output Module

A Virtual Output Module is a virtual device to provide a means to add digital outputs to the system that can be monitored via BACnet. Below is a list of the Objects available on the Virtual Input Module.

Digital Output 1 through Digital Output 4

The Virtual Output Module has four digital outputs that mimic the operation of the physical digital outputs on the System Controller. See the "Digital Output Status" section under the System Controller on page 8 for a description of the different digital output configurations.

Getting Started: Pre-Installation Checklist

Before connecting the Intelli-Hood system in your BACnet network, the system needs its network and BACnet specific configuration to be setup correctly. If these settings are known prior to delivery, Melink can configure the Intelli-Hood system's network and BACnet settings for you so it is ready when the system is installed. Below is a quick checklist of settings that could be determined prior to installation. Contact Melink prior to installation with the following configuration settings (either fill in by hand or copy details in some other manner) and these can be configured on your Intelli-Hood system prior to installation.

Network Settings

DHCP Enabled: ☐Yes ☐No
Static IP: _____
Netmask: _____
DNS Server 1: _____
DNS Server 2: _____

System Controller BACnet Settings

BACnet Device Instance ID: _____
BACnet Auto Number: ☐Yes ☐No
BACnet Port: _____
BACnet DNET: _____

Exhaust Fan 1 BACnet Settings

BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Exhaust Fan 2 BACnet Settings

BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Exhaust Fan 3 BACnet Settings

BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Exhaust Fan 4 BACnet Settings

BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Auxiliary Airflow 1 BACnet Settings
BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Auxiliary Airflow 2 BACnet Settings
BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Auxiliary Airflow 3 BACnet Settings
BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Auxiliary Airflow 4 BACnet Settings
BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Hood Controller 1 BACnet Settings
BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Hood Controller 2 BACnet Settings
BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Hood Controller 3 BACnet Settings
BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

Hood Controller 4 BACnet Settings
BACnet Device Instance ID: _____
BACnet Enabled: ☐Yes ☐No

If you unsure of how many Exhaust Fans, Auxiliary Airflows or Hood Controllers your system will have, contact Melink and we can let you know how many of each are scheduled to be included in your system. **NOTE:** Actual number of Exhaust Fans, Auxiliary Airflows, and Hood Controllers is dependent upon the configuration of the Intelli-Hood system. Four of each are shown here for illustrative purposes but is not definitive or a limit.

Configuring the Intelli-Hood System

There are three different methods in which the user can configure the Intelli-Hood system. It can be configured through the Touchpad, directly over the network using the web-based configuration, or a configuration file can be uploaded through a USB Flash drive. This section describes how to configure the system in each of these methods.

Configuration through the Touchpad

Refer to Section 5 in the Operation Manual for general tips on navigating the Touchpad. The remainder of this document refers to Touchpad buttons as described in the Operator's Manual.

Follow these steps to unlock configuration.

1. From the Touchpad's Main Screen, press the "Menu" softkey to go to the Main Menu.
2. While on the Main Menu, option 2 titled "System Configuration" is red to indicate that configuration is locked. Press the Up and Down buttons at the same time and hold the buttons down for ten seconds. "System Configuration" should change from red to blue to indicate that configuration is unlocked. Release the Up and Down buttons at this point.
3. Use the Down arrow to highlight the "System Configuration" option and press "Enter" to navigate to the System Configuration.

For general navigation, the right softkey is used to navigate down into a new screen, the Up and Down arrows are used to navigate options on a screen and the left softkey is used to go back up one level.

Network Configuration through the Touchpad

If network settings need to be changed on-site, you most likely will need to change these settings through the Touchpad as you may not be able to access the Intelli-Hood system to perform web-based configuration. To navigate to the network settings:

1. Unlock configuration as described previously.
2. From the Main Menu, go to System Configuration->System to get to the general system settings.
3. Navigate down to the network configuration settings. Changes are applied as soon as each item is changed.

BACnet Configuration through the Touchpad

There are system level BACnet configuration settings as well as BACnet configuration settings specific to each Exhaust Fan, Auxiliary Airflow and Hood Controller in the system. This describes how to get to each of these settings through the Touchpad.

1. Unlock configuration as described previously.
2. To get to the system level BACnet configuration settings from the Main Menu, go to System Configuration->System to get to the general system settings. Navigate down to find the system level BACnet configuration settings.
3. To get to the Exhaust Fan BACnet configuration settings from the Main Menu, go to System Configuration->Exhaust Fans to get to the Exhaust Fans' configuration. Select the Next button to select which Exhaust Fan you would like to configure. Once you are on the screen for the Exhaust Fan you would like to configure, navigate down to get to the Exhaust Fan's BACnet configuration settings.
4. To get to the Auxiliary Airflow BACnet configuration settings from the Main Menu, go to System Configuration->Auxiliary Airflows to get to the Auxiliary Airflows' configuration. Select the Next button to select which Auxiliary Airflow you would like to configure. Once you are on the screen for the Auxiliary Airflow you would like to configure, navigate down to get to the Auxiliary Airflow's BACnet configuration settings.
5. To get to the Hood Controller BACnet configuration settings from the Main Menu, go to System Configuration->Hood Controllers to get to the Hood Controllers' configuration. Select the Next button to select which Hood Controller you would like to configure. Once you are on the screen for the Hood Controller you would like to configure, navigate down to get to the Hood Controller's BACnet configuration settings.

Configuration through the Web-Based Configuration

If the Intelli-Hood system's networking configuration is setup, you can configure the Intelli-Hood system through its web-based interface. To configure the system through the web-based interface:

1. Connect any device with an up-to-date web browser up to the same network as the Intelli-Hood system. We suggest using either Firefox or Chrome for a web browser. Please note that at this time MS Internet Explorer does not work properly with Intelli-Hood.
2. On your device's web browser, go to http://<IP address of Intelli-Hood system>/ih3-configurator, where <IP address of Intelli-Hood system> is replaced with the IP address the Intelli-Hood system is using.
3. On the left side of the screen is a list of devices in the Intelli-Hood configuration. To setup system-level network and BACnet configuration, select the "System Controller" device from the list on the left. On the right, the system-level configuration parameters are shown. All networking and BACnet configuration settings are at the end of the list.

4. To setup Exhaust Fan, Auxiliary Airflow or Hood Controller BACnet configuration, select the appropriate Exhaust Fan, Auxiliary Airflow or Hood Controller device from the list on the left. On the right, the device's configuration will be shown.
5. After changing configuration, click "Save Configuration" to save any configuration changes.

Configuration through a USB Flash Drive

Every time the configuration is saved, the Intelli-Hood system saves a backup of up to the last 30 configurations to a USB flash drive if it is installed. Backups are stored in the directory "last_logs" on the USB flash drive with the one titled "ConfigurationFiles.zip" containing the latest configuration. It is suggested that you keep a backup of the system configuration in a safe location in case you need to revert the configuration for some reason. You can also obtain Melink's copy of the configuration if you need to revert configuration to match how it was configured when it originally shipped.

To apply a new configuration from the USB flash drive:

1. Remove the USB flash drive from the Intelli-Hood system.
2. Copy the configuration zip file to the root directory on the USB flash drive.
3. Power off the Intelli-Hood system.
4. Insert the USB flash drive into the Intelli-Hood system.
5. Power on the Intelli-Hood system. During bootup the system reads and applies the new configuration.

Networking Setup and Configuration

There are a limited number of network configuration parameters for the Intelli-Hood system. This section describes each in detail.

Use DHCP
Tells the system whether it should use DHCP to obtain an IP address or not. The Intelli-Hood system defaults to "Yes". If you are able to use DHCP then the Intelli-Hood system may be able to determine the rest of the following network settings from your DHCP server.

Static IP
If the system will not use DHCP to obtain an IP address, you need to fill in a valid static IP address. If DHCP is enabled, then this value is ignored.

Netmask
Specify the netmask for the subnet on which the Intelli-Hood system resides. You can set this if DHCP is enabled but it may be overridden by the DHCP server.

Gateway
Specify the IP address of the Gateway if the Intelli-Hood system needs to communicate with devices on another network. This is generally not needed unless you are setting up the system for remote access. You can set this if DHCP is enabled but it may be overridden by the DHCP server.

DNS Server 1 and DNS Server 2
Specify the IP address of the DNS servers for the Intelli-Hood system. This is not needed unless you are setting up the system for remote access. You can set this if DHCP is enabled but it may be overridden by the DHCP server.
If you are setting up the system for remote access, we suggest using 8.8.8.8 and 8.8.4.4 for DNS servers.

Time Zone
Although this is not a network related configuration parameter, it is useful so the Intelli-Hood system displays the correct time throughout the year. This defaults to "New York, US (UTC -5, DST)".

When any of the networking configuration parameters change, the Intelli-Hood system restarts the networking interface with the updated settings. This takes about 10 to 15 seconds after the settings have changed.

BACnet Setup and Configuration

The Intelli-Hood system has separate system-level, Exhaust Fan, Auxiliary Airflow and Hood Controller specific BACnet configuration parameters. This section describes each in detail.

System Controller BACnet Device Instance ID

This specifies the Device Instance ID that will be used by the System Controller. The System Controller's Device Instance ID defaults to 654000. Change this number as needed based on available Device Instance IDs on your BACnet network.

System Controller BACnet Auto Number

Since the Intelli-Hood system is a virtual BACnet router with each Exhaust Fan, Auxiliary Airflow and Hood Controller present as a separate Device Object, each one needs to have a unique Device Instance ID. If you plan to sequentially number the Device Instance IDs for the virtual Device Objects, the Intelli-Hood system can auto number the virtual Device Objects for you. If "BACnet Auto Number" is set to "Yes", each Exhaust Fan, Auxiliary Airflow and Hood Controller will be assigned a unique Device Instance ID sequentially after the System Controller's Device Instance ID. See Appendix A if you need specific details on how the automatic Device Instance Numbering works.

If you cannot use a sequential set of Device Instance IDs, then set this parameter to No and statically assign each Device Instance ID.

System Controller BACnet Port

This specifies the UDP Port on which the Intelli-Hood system uses for BACnet communication. This defaults to 47808 (0xBAC0).

System Controller DNET

This is the destination network (DNET) number for the virtual Device Objects. This needs to be unique on your BACnet network or you will have communication issues to the Intelli-Hood system. This defaults to 654.

System Controller BACnet Watchdog

This is the watchdog timeout for resetting the Virtual Input Module's digital inputs. This guards against the system being stuck in a state due to loss of communication. If the system receives no BACnet communication that is addresses for the Intelli-Hood system for the communication timeout period, then all digital inputs on all Virtual Input Modules are reset. This can be set to between 0 and 600 seconds. Setting this parameter to 0 seconds disables the watchdog. This defaults to 300 seconds.

Exhaust Fan, Auxiliary Airflow, Hood Controller, Virtual Input Module and Virtual Output Module Device Instance ID
This is the statically assigning the Device Instance ID for each Exhaust Fan, Auxiliary Airflow, Hood Controller, Virtual Input Module and Virtual Output Module. If "BACnet Auto Number" is set to "Yes", these numbers are ignored. These all default to 0. Note that if you are statically assigning Device Instance IDs that they all need to be unique on the BACnet network.

Exhaust Fan, Auxiliary Airflow, and Hood Controller Active on BACnet
Given the number of Device Objects that are possible with the Intelli-Hood system, some sites may not need to monitor all devices and may want to limit the number of Device Objects on their BACnet network. If you do not want to monitor a particular Exhaust Fan, Auxiliary Airflow or Hood Controller then you can use this parameter to remove that particular device from the BACnet interface. If a devices "Active on BACnet" parameter is set to "No", then there will not be a Device Object created for that device. This setting defaults to "Yes" for the Exhaust Fans and Auxiliary Airflows. This setting defaults to "No" for the Hood Controllers.

Common BACnet Interfacing Use Cases

This section describes some common use cases for BACnet interaction with the Intelli-Hood system and how to accomplish such tasks.

Monitoring Fan Speeds

The most common usage is to monitor the fan speed. There are several points that are useful for monitoring fan speed.

Maximum Output Frequency

Each Exhaust Fan and Auxiliary Airflow reports the Maximum Operating Frequency as Analog Value 0. This typically is only changed at the VFD during installation. Depending on how you need to translate your data, you may want to check this value for each fan during initial setup so you can convert fan speed to Hz.

% Actual Speed

Each Exhaust Fan and Auxiliary Airflow reports % Actual Speed as Analog Value 2. This is the fan speed as reported by the VFD as a percentage.

Fault Active

Each Exhaust Fan and Auxiliary Airflow reports Fault Active on Binary Value 1. If there is a fault at the VFD or if the Intelli-Hood system has lost communication to the VFD, then Fault Active is set for that fan. This may be useful to monitor to detect problems with the fans when they occur.

Monitoring Energy Consumption

In addition to fan speed, you can also monitor the energy consumption of the fans controller by the Intelli-Hood system.

Output Energy

This is the reported kWh usage from the VFD. This is present on Analog Value 4 on each Exhaust Fan and Auxiliary Airflow. Whether this value is updated or not depends on the VFDs installed. See the Object/Property Support Matrix to see if the VFDs installed in your system have a kWh counter available.

Note that the kWh counter does eventually rollover on each VFD. How long it takes to rollover is dependent upon the VFD being used and how much energy it consumes. If you are using the kWh counter to track energy usage, we suggest you read this value often enough to detect when the kWh count rolls over on the VFDs.

Setting Time on the Intelli-Hood system

There are several Intelli-Hood functions, such as Schedules, that are most useful if the Intelli-Hood system is set for the correct time. The Intelli-Hood system can synchronize time using the Network Time Protocol. However, typical installations will segregate the BACnet network from outside internet access. In these instances you can set the Intelli-Hood system's time from your Operator's Workstation.

The Intelli-Hood system supports the UTC Time Synchronization service. Follow your Operator Workstation's instructions on how to set a Device Object's time using UTC Time Synchronization. The Intelli-Hood system has a separate configuration parameter for its time zone, so there is no need to update the UTC offset through the Operator's Workstation.
If you are setting the Intelli-Hood system's time in this manner, it is suggested that the time be updated often to keep the Intelli-Hood system's time in sync. Setting the time once per day should be sufficient.

Appendix A: Device List and Device Instance Numbering

The Intelli-Hood 3 System Controller is a scalable device that can control up to 64 VFDs. The items listed in the Object/Property Support Matrix list the points available from the Intelli-Hood 3 system at this time. As such, the Intelli-Hood 3 system's BACnet interface is implemented as a virtual router. The System Controller is the main Device Object and the router; each Exhaust Fan, Auxiliary Airflow, Hood Controller, Virtual Output Module and Virtual Input Module is populated at separate Device Objects behind the router. From the user's perspective each Exhaust Fan, for example, will appear to be a separate physical device on the system. This implementation means that another Exhaust Fan or Auxiliary Airflow can be added to the system without changing how the previous points are accessed. By default, the system will auto-number the Device Instance Numbers for the System Controller, Exhaust Fans, Auxiliary Airflows, Hood Controllers, Virtual Output Modules and Virtual Input Modules to reduce the number of items that need to be configured for the system. This section summarizes how the user can determine the Device Instance Number and the Device Object MAC address for each virtual device when the System Controller auto-assigns the Device Instance Numbers.

The System Controller Device Object is Device Instance Number defaults to 654000 (Vendor ID x 1000). Each Exhaust Fan, Auxiliary Airflow, Hood Controller, Virtual Output Module and Virtual Input Module is then numbered after the System Controller in the following manner:

1. Exhaust Fans, Auxiliary Airflows, Hood Controllers, Virtual Output Modules and Virtual Input Modules are numbered immediately after the System Controller. With the default settings, they will start with Device Instance Number 654001.
2. Exhaust Fans and Auxiliary Airflows are sorted before being assigned a Device Instance Number. They are sorted first by its configured name, then by its Modbus address, then by an internal Universally Unique Identifier (UUID) to ensure a consistent sort order.
3. Hood Controllers are numbered immediately after the last Exhaust Fan or Auxiliary Airflow.
4. Hood Controllers are sorted before being assigned a Device Instance Number. They are sorted first by its configured name, then by its Hood Network address, then by an internal UUID to ensure a consistent sort order.
5. Virtual Output Modules are numbered immediately after the Hood Controllers.
6. Virtual Output Modules are sorted before being assigned a Device Instance Number. They are sorted first by its configured name, then by its address, then by an internal UUID to ensure a consistent sort order.

7. Virtual Input Modules are numbered immediately after the Virtual Output Modules.
8. Virtual Input Modules are sorted before being assigned a Device Instance Number. They are sorted first by its configured name, then by its address, then by an internal UUID to ensure a consistent sort order.

This Device Instance Numbering scheme ensures that, for a given system configuration, all Device Objects maintain a consistent numbering.

The Object Instances associated with each Device Object are as shown in the Object/Property Support Matrix. The Exhaust Fan Device Objects, for example, contain the Object instances listed under the "For each Exhaust Fan and Auxiliary Airflow" section. For each Device Object, its Objects will be in the ordered listed. For example, Operation Status will always be Binary Value 0 for each Exhaust Fan or Auxiliary Airflow.

Device Object MAC Address

The MAC address for each Device Object is based upon the IP address of the Intelli-Hood 3 System Controller. The System Controller Device Object will match the System Controller IP address and it uses the standard BACnet UDP port 47808 (0xBAC0) by default. For the rest of the device objects, the IP address is reversed and the last octet is set to 1 for the first additional Device Object. The last octet is then incremented for each additional Device Object.

Example Scenarios

Below are some example configurations to show how the Device Object numbering and the MAC addressing works with the default configuration options.

Scenario 1:
System Controller IP Address: 142.51.5.36
Exhaust Fan 1: KEF-02, Modbus Address 2
Exhaust Fan 2: KEF-05, Modbus Address 5
Auxiliary Airflow 1: MUA-41, Modbus Address 41
Hood Controller 1: HC-01, Hood Network Address 1
Virtual Output Module 1: VOM-01, address 1

Resulting Device Object List:

Device Instance Number	Device Object MAC Address	Device Object Name
654000	142.51.5.36:0xBAC0	System Controller
654001	36.5.51.1:0xBAC0	KEF-02
654002	36.5.51.2:0xBAC0	KEF-05
654003	36.5.51.3:0xBAC0	MUA-41
654004	36.5.51.4:0xBAC0	HC-01
654005	36.5.51.5:0xBAC0	VOM-01

Scenario 2:
System Controller IP Address: 10.20.21.100
Exhaust Fan 1: Fryer EF, Modbus Address 1
Exhaust Fan 2: Island EF, Modbus Address 2
Exhaust Fan 3: Grill EF, Modbus Address 3
Exhaust Fan 4: Banquet EF, Modbus Address 4
Auxiliary Airflow 1: West Supply, Modbus Address 41
Auxiliary Airflow 2: East Supply, Modbus Address 42
Auxiliary Airflow 3: 0-10VDC, Modbus Address 43
Hood Controller 1: HC-01, Hood Network Address 1
Hood Controller 2: HC-02, Hood Network Address 2
Hood Controller 3: HC-03, Hood Network Address 3
Hood Controller 4: HC-04, Hood Network Address 4

Resulting Device Object List:

Device Instance Number	Device Object MAC Address	Device Object Name
654000	10.20.21.100:0xBAC0	System Controller
654001	100.21.20.1:0xBAC0	0-10VDC
654002	100.21.20.2:0xBAC0	Banquet EF
654003	100.21.20.3:0xBAC0	East Supply
654004	100.21.20.4:0xBAC0	Fryer EF
654005	100.21.20.5:0xBAC0	Grill EF
654006	100.21.20.6:0xBAC0	Island EF
654007	100.21.20.7:0xBAC0	West Supply
654008	100.21.20.8:0xBAC0	HC-01
654009	100.21.20.9:0xBAC0	HC-02
654010	100.21.20.10:0xBAC0	HC-03
654011	100.21.20.11:0xBAC0	HC-04

Manual Device Instance Numbering

Prior to June 25, 2014, only automated Device Instance Numbering was supported. The FW2014.06.25 firmware release added support for static Device Instance Numbering. This section describes how to statically set the Device Instance Numbers.

The System Controller defaults its Device Instance Number to 654000. This can be changed to any valid BACnet Device Instance Number (0-4194302). From the Touchpad, this configuration item is under *Menu->System Configuration->System->BACnet Instance ID*. This is the Device Instance Number that will be used for the System Controller.

The System Controller can also be set to auto number the remaining devices under *Menu->System Configuration->System->BACnet Auto Number*. This can be useful if you need to set the Device Instance Numbers to be within a certain range but do not care what the Device Instance Number is for a particular device.

The following is a modification to the previous example in which only the System Controller's BACnet Device Instance Number is modified in the configuration.

Scenario 2a:
System Controller IP Address: 10.20.21.100
System Controller BACnet Device Instance Number: 500
System Controller BACnet Auto Number: Yes
Exhaust Fan 1: Fryer EF, Modbus Address 1
Exhaust Fan 2: Island EF, Modbus Address 2
Exhaust Fan 3: Grill EF, Modbus Address 3
Exhaust Fan 4: Banquet EF, Modbus Address 4
Auxiliary Airflow 1: West Supply, Modbus Address 41
Auxiliary Airflow 2: East Supply, Modbus Address 42
Auxiliary Airflow 3: 0-10VDC, Modbus Address 43
Hood Controller 1: HC-01, Hood Network Address 1
Hood Controller 2: HC-02, Hood Network Address 2
Hood Controller 3: HC-03, Hood Network Address 3
Hood Controller 4: HC-04, Hood Network Address 4

Resulting Device Object List:

Device Instance Number	Device Object MAC Address	Device Object Name
500	10.20.21.100:0xBAC0	System Controller
501	100.21.20.1:0xBAC0	0-10VDC
502	100.21.20.2:0xBAC0	Banquet EF
503	100.21.20.3:0xBAC0	East Supply
504	100.21.20.4:0xBAC0	Fryer EF
505	100.21.20.5:0xBAC0	Grill EF
506	100.21.20.6:0xBAC0	Island EF
507	100.21.20.7:0xBAC0	West Supply
508	100.21.20.8:0xBAC0	HC-01
509	100.21.20.9:0xBAC0	HC-02
510	100.21.20.10:0xBAC0	HC-03
511	100.21.20.11:0xBAC0	HC-04

If, however, on your network you need to manually assign each Device Instance Number, that option is also available. Each Exhaust Fan, Auxiliary Airflow, Hood Controller, Virtual Input Module and Virtual Output Module in the system has a BACnet Device Instance Number configuration option. When BACnet Auto Number is set to "Yes", the system ignores these configuration values for the Exhaust Fans, Auxiliary Airflows, Hood Controllers, Virtual Input Modules and Virtual Output Modules and auto numbers these devices. When BACnet Auto Number is set to "No", the configured BACnet Device Instance Number for each device is used. Note that these values will be used regardless of collision; if all Exhaust Fans and Auxiliary Airflows in a system are configured to use Device Instance Number 0, then that is how the system will operate. Take care to use unique values when statically assigning the BACnet Device Instance Numbers.

Verifying BACnet Device Instance Numbers

When the system is in operation, there are several ways you can verify the Device Instance Numbers that were assigned. Depending on your building configuration and your operator workstation, the simplest method may be to send a Who-Is request to the expected Device Instance Numbers. If the system is on your network and properly configured, then your operator workstation should discover all the devices. If this did not work, you can verify from the Touchpad which Device Instance Numbers were assigned to all devices.

From the Intelli-Hood Touchpad, go to *Menu->Status->VFDs*. Status on each Exhaust Fan and Auxiliary Airflow is available with the BACnet Device Instance Number shown as the last item. Select *Next* to go to the next device in the list. If the Device Instance Number for an Exhaust Fan or an Auxiliary Airflow is not what you expected, then check the configuration for that device. Similarly, you can find the assigned Device Instance Numbers for all Hood Controllers by navigating to *Menu->Status->Hood Controllers*. The Device Instance Number for each Hood Controller is the shown as the last item. Select *Next* to go to the next device in the list. Navigate to *Menu->Status->Virtual Input Modules* and *Menu->Status->Virtual Output Modules* to find the Device Instance Numbers for the Virtual Input Modules and Virtual Output Modules respectively.

Appendix B: Troubleshooting Guide

This section describes possible solutions to some common problems when connecting to the Intelli-Hood system.

Cannot detect any Intelli-Hood Device Objects

Problem:
The Intelli-Hood system cannot be discovered from the Operator's Workstation. Device discovery yields no results for the expected Intelli-Hood Device Objects. Search for specific points under specific Device Objects also yields no results.

Diagnosis:
Validate network connectivity is working and configured correctly for the Intelli-Hood system. See the section "Networking Setup and Configuration" and review the steps and validate that the Intelli-Hood system can be seen on the network.

If you are doing a ranged Device discovery, validate that the Intelli-Hood system is configured for the correct Device Instance Numbers. See the section "BACnet Setup and Configuration" and review the settings for the Intelli-Hood system.

Melink sells a standard System Controller and a Lite System Controller. The Lite System Controller does not support BACnet communication. To determine if you have a standard or Lite System Controller, either go to *Menu->About* from the Touchpad or look at the label on the inside door of the System Controller enclosure. If the serial number starts with "V3", for example "V300012" then you have a standard System Controller and BACnet communication is available. If the serial number starts with "V4", for example "V400020", then you have a Lite System Controller and BACnet communication is not available. If you do have a Lite System Controller, contact Melink Corporation on how to obtain a standard System Controller.

Can only detect the System Controller Device Object

Problem:
The Operator's Workstation can detect the System Controller Device Object and its points, but it does not discover the Exhaust Fan, Auxiliary Airflow or the Hood Controller Device Objects.

Diagnosis:
The most common cause for this problem is due to how most Operator Workstations perform Device discovery. Most will send a Who-Is message that is formatted such that it does not get broadcast through BACnet routers. This is intentional by the Operator Workstation in order to speed up Device discovery. Each Operator Workstation's interface is different, but these are the general steps to follow in order to discover the Intelli-Hood virtual Device Objects:

1. Through the Operator Workstation, discover the BACnet routers in the network. This option is usually called "BACnet Discovery" or "Network Discovery" on the Operator Workstation.
2. After the BACnet routers are discovered, you should see a BACnet router that matches the DNET configured for the Intelli-Hood system. Select that BACnet router on your Operator Workstation.
3. After selecting the Intelli-Hood BACnet router, perform Device discovery again. You should now see the virtual Device Objects.

Another common cause is if the Intelli-Hood's DNET is configured for the same DNET as a different BACnet router or BBMD on the network. To diagnose this problem:

1. Validate the DNET for the Intelli-Hood system is configured correctly. See the section "BACnet Setup and Configuration" for details on how to validate the DNET is configured correctly.
2. If the DNET is configured as intended, verify that there isn't another BACnet router or BBMD that is incorrectly configured for the same DNET. To do so, unplug the Intelli-Hood system from the network and then attempt to discover the BACnet networks ("Network Discovery" or "BACnet Discovery" as described above). If you discover a device that is setup with the Intelli-Hood's DNET, then determine whether to change the Intelli-Hood's DNET or the other device's DNET.

It is also possible that all Exhaust Fans, Auxiliary Airflows and Hood Controllers are configured with incorrect Device Instance Numbers or are configured to not be visible through the BACnet interface. See the section "BACnet Setup and Configuration" and validate the Exhaust Fans, Auxiliary Airflows and Hood Controllers have correct BACnet configuration.

Cannot set the Intelli-Hood system time

Problem:
Through the Operator Workstation, you are attempting to set the Intelli-Hood's system time using either Time Synchronization or UTC Time Synchronization. The Intelli-Hood system is responding but the Intelli-Hood system's time is not changing.

Diagnosis:
There was an issue with Time Synchronization and UTC Time Synchronization in system firmware FW2015.09.16 and earlier. If this is the case, then contact Melink about obtaining a firmware upgrade for your Intelli-Hood system.

Virtual Input Module digital inputs and analog inputs keep resetting

Problem:
The Virtual Input Module's digital inputs are set through the Operator's Workstation and the system reacts to the change in state. After several minutes, all the digital inputs on the Virtual Input Module are reset.

Diagnosis:
Check the BACnet Watchdog configuration settings. The system will reset all the digital inputs and analog inputs on all Virtual Input Modules if the Intelli-Hood system receives no BACnet communication for the time specified by the BACnet Watchdog parameter (default setting of five minutes). Any BACnet communication directed toward the Intelli-Hood system, including reading data points, will restart the watchdog timeout. Either extend the BACnet Watchdog timeout or query the Intelli-Hood system often enough to reset the watchdog timeout.

Revision History

Version	Date	Description
1.0	8-15-2013	Initial document release
2.0	2-6-2013	-Corrected Firmware Revision and Application Software Revision -Updated and expanded detail in Object Property Support Matrix -Added description for Device Instance numbering and Device Object MAC Address numbering
2.1	5-29-2014	Update formatting
3.0	9-16-2014	-Updated firmware revision -Removed unused points -Added description for static Device Instance Numbering
4.0	9-25-2015	-Updated formatting to clarify device operation -Removed references to BBMD and Foreign Device support
5.0	10-21-2015	-Updated the Object Property Support Matrix to include the currently supported points -Added detail on the new Hood Controller points -Added sections for system configuration -Add section for common use cases -Added troubleshooting section -Correct language in regard to BACnet Device Instance numbering
6.0	4-4-2016	-Added detailed descriptions for each Device type. -Added description of the Digital Input and Digital Output configuration options. -Added the Virtual Input Module -Added the Virtual Output Module
7.0	9-16-2016	-Updated formatting -Added analog input support
8.0	11-2-2016	-Updated the Object Property Support Matrix to include the currently supported points -Added 'Remote On' and 'Remote On 100%' digital input option descriptions -Minor formatting changes

CONTACTS:

1. Who do I contact if I have problems with my Intelli-hood-3 system?

Installation contractor:

CEMCO ELECTRIC **(714) 822-4926**
When calling, provide your name, site name, address, call back number and the problem. Dispatcher will connect you with a Senior Melink Tech to help troubleshoot over the phone or mobilize to your site (charges may apply if it is determined that the issue is not covered under warranty).

Manufacturer:

MELINK COROPRATION **(513) 965-7300 (24/7)**
After hours, press 7 to be connected with the on-call technician.

2. Who do I contact if I need parts for my Intelli-hood-3 system?

Local Distributor

CEMCO ELECTRIC **(714) 822-4926**
We stock almost every replacement part you may need for your IH3 system.
Most orders are processed and shipped same day if before 3:00pm PST.