

INPUT/OUTPUT PROCESSOR

FUNCTIONAL DESCRIPTION

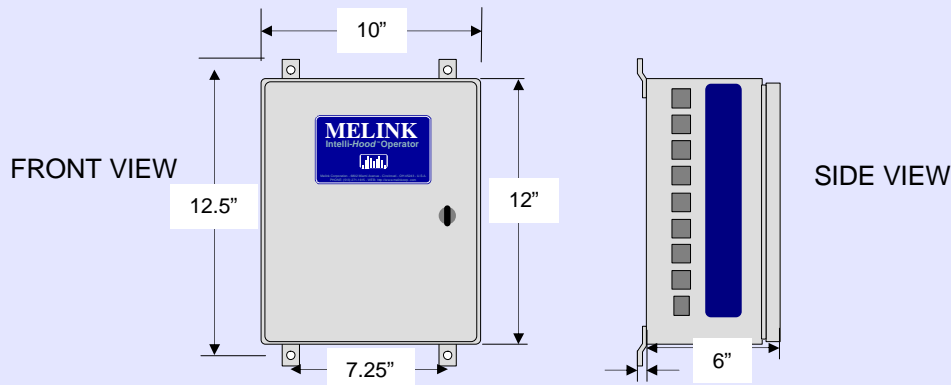
The Input/Output Processor controls the lights and fans for up to four hoods. It is typically mounted above the ceiling and communicates between the hood sensors and VFDs via plug-n-play cables. It is also connected to a keypad mounted on the front face of one of the hoods for easy user interface.

MECHANICAL SPECIFICATIONS

- Painted enclosure for durable construction and smooth finish
- Up to 4 pairs of optic sensors
- Up to 4 temperature channels (up to 4 temperature sensors in series per channel)
- Up to 4 independent exhaust fan VFD outputs + supply fan VFD output; communication via RS-485
- Up to 8 Air Purge Units
- Auto Start/Stop Command and Real-Time Clock for Scheduling
- Comfort Mode : Utilizes cool outside air to keep kitchen comfortable
- (1) Programmable relay output for controlling an external device
- (6) Programmable dry inputs for communicating to I/O Processor via relay closures
- (5) Programmable 24VAC outputs for controlling external devices
- Plug-n-play cables provided for quick and easy installation; single cable to each hood

ELECTRICAL SPECIFICATIONS

Input Voltage :120 V AC or 220 V AC
 Frequency :50 Hz to 60 Hz +/- 3%
 Power Consumption.....100 W
 Ambient Temperature :41°F up to 104°F
 Hood Lights :120 V AC to 220 V AC 15 A max
 Low Voltage plenum-rated, shielded cables to VFD(s), Optic Sensors, APU(s) and Temperature Sensors



KEYPAD

FUNCTIONAL DESCRIPTION

The Keypad provides a wide range of functions: light and fan operation, 100% sensor bypass capability, system setup (i.e. minimum speed, temperature span) and monitoring (i.e. percent fan speed, temperature level, diagnostics). One Keypad can control one Input/Output Processor (4 hoods).

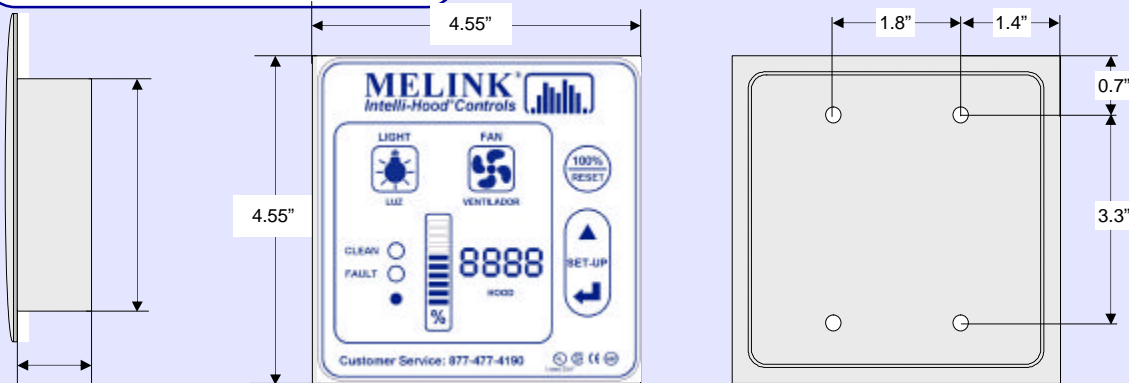
GENERAL SPECIFICATIONS

- Fan On/Off
- Light On/Off
- Speed and menu visualization (4-digit display and 10-LED bar graph)
- Emergency sensor bypass
- Fault and calibration LED's
- Stainless steel cover plate (304L) for durable construction and smooth finish
- Synthetic membrane keypad for water protection

ELECTRICAL SPECIFICATIONS

- Low voltage : 5Vdc
- Plug-n-play connection

HOUSING DIMENSIONS



TEMPERATURE SENSORS

FUNCTIONAL DESCRIPTION

A Temperature Sensor is mounted in the exhaust duct of each hood to monitor the exhaust air temperature. A serial RS-485 signal is sent from the Input/Output Processor to the respective Variable Frequency Drive(s) to automatically adjust fan speed for each hood based on the actual heat load.

(The temperature span is factory set at 75F-90F which means the fans run at minimum speed at 75F and increase proportionately to 100% speed at 90F. Both the temperature span and minimum speed can be set at the Keypad).

**** For applications involving short-cycle hoods, a second Temperature Sensor is also mounted in one of the supply ducts. The purpose is to prevent the exhaust air readings from being influenced by the short-cycle supply air.*

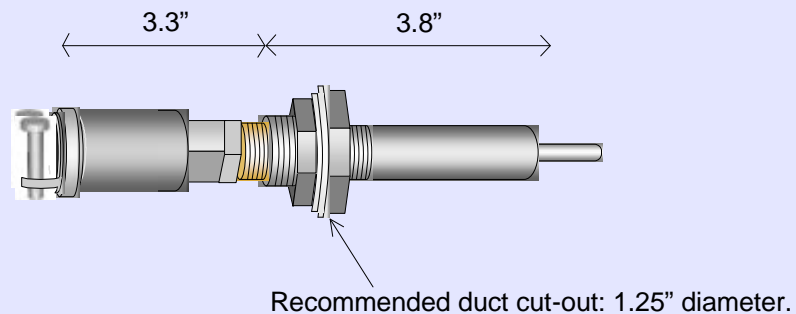
GENERAL SPECIFICATIONS

- Stainless steel housing (304L) for durable construction and smooth finish
- Stainless steel temperature probe: 1/4"OD with 0.20" wall thickness
- Temperature rating: 1000F
- Strain relief

ELECTRICAL SPECIFICATIONS

- RTD Rating: 100 Ohms with 0.385 platinum coefficient
- Electrical Connection: Plug-n-play connection

HOUSING DIMENSIONS



OPTIC SENSORS

FUNCTIONAL DESCRIPTION

The Optic Sensors consist of an Emitter and a Receiver which get mounted on opposite ends of the kitchen hood. An infrared beam spans the length of the hood to detect any smoke/vapors generated by the cooking appliances. Upon detection, a signal is sent to the Input/Output Processor which automatically ramps the fan(s) up to 100% speed.

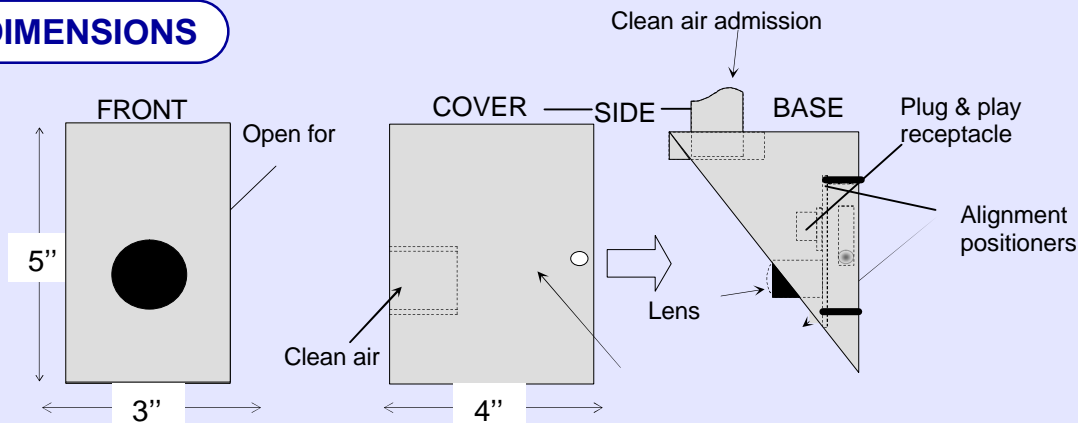
MECHANICAL SPECIFICATIONS

- Stainless steel housing (304 L) for durable construction and smooth finish
- Spring push buttons on housing for easy removal and cleaning
- Stainless steel air purge pipe (304 L)
- Air purging capability to prevent fouling of optic lenses
- Air straightening channel for optimal effectiveness of air purge
- Alignment nuts and springs for easy alignment of Emitter and Receiver
- Maximum distance between Emitter & Receiver: 45 feet

ELECTRICAL SPECIFICATIONS

- Infrared Detection
- Response Time: 0.2 seconds
- Auto-calibration: Every day at start-up or 24 hours
- Ambient temperature: Max 105F purge air
- Cable plugs provided for quick and easy installation
- Low Voltage: 24vdc

DIMENSIONS



AIR PURGE UNIT

FUNCTIONAL DESCRIPTION

The Air Purge Unit Enclosure consists of a miniature blower mounted on each end of the hood, over the Optic Sensors inside a steel box. The purpose of the blower is to pressurize the Emitter and Receiver housing with clean air to prevent grease vapors from “fouling” the optic lenses, while the box also houses a distribution board to route the control cables to the sensors on the hood.

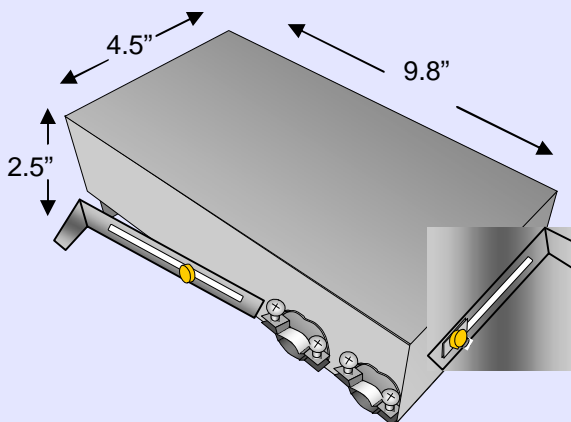
MECHANICAL SPECIFICATIONS

- Compact & rugged blower construction for easy installation and maximum life
- Permanently lubricated ball bearings to eliminate maintenance
- 25 CFM at free air
- 14ga Galvanized Steel
- Thumb-adjustable supports

ELECTRICAL SPECIFICATIONS

- Low voltage: 24VDC (therefore no conduit required)
- Power consumption: 20W for energy efficient operation
- Plug-n-Play cable connection to Input/Output Processor
- Four RJ-45 style jacks allow for interconnection of all sensors

HOUSING DIMENSIONS



VARIABLE FREQUENCY DRIVE (VFD)

FUNCTIONAL DESCRIPTION

The electronic motor starter is a variable frequency drive (VFD) which is used to control the exhaust and supply fan motors. The VFD modulates the speed of the fan motors by varying the output voltage and frequency based on a serial RS-485 signal received from the Input/Output Processor. The VFD also sends a feedback signal to the Input/Output Processor in order for the keypad to display the actual speed of the motor.

MECHANICAL SPECIFICATIONS

- NEMA 1 Enclosure (NEMA 4 Available).
- Soft-start capability.
- Digital keypad displays output frequency, current, voltage, and allows programming for field modifications.
- Protective Functions: motor overload, overheating, overcurrent, overvoltage, output shorts, etc.
- High and low frequency limiters.
- Adjustable torque boost.



ELECTRICAL SPECIFICATIONS

Input Voltage :200-240 V/ 1 ϕ AC, 200-230 V/ 3 ϕ AC, or 380-480 V/ 3AC
Input Frequency :50 Hz to 60 Hz +/- 3%
Output Voltage :80-240 V/ 3 ϕ AC or 160-480 V/ 3 ϕ AC
Ambient Temperature :14 $^{\circ}$ F up to 122 $^{\circ}$ F
Humidity :20%-95% relative humidity (non-condensing)