



MANUAL

M-Sens NIR



This guide applies to the following versions:
Hardware: MCU-0 00, MCU-0 01, MCU-1 00, MCU-1 01

ENVEA Process GmbH

TABLE OF CONTENTS

Warnings	8
OVERVIEW	10
Features.....	10
Hardware Components	11
Display	11
Processor	11
Motherboard.....	12
Battery Backup	12
Analog Outputs.....	13
Power Supply.....	13
Opto22 (Optional Accessory)	13
Factory Floor Module (Optional Accessory)	14
Mounting.....	15
Electrical Connections.....	16
Power Source	16
Battery.....	16
Ethernet.....	16
Analog Outputs.....	16
Discrete IO	16
Connection Ports	17
Wiring Schematic.....	18
Terminal Blocks	19
Setup Network IP	20
Specifications.....	21
Features	23
Hardware Components	24
Display	24
Mounting Plate.....	24
M12 Bulkhead Connectors	25
Mounting.....	25
Electrical Connections	27

Power Source	27
Ethernet.....	27
Setup Network IP.....	28
Specifications.....	29
OVERVIEW	30
Features	30
Installation Types.....	31
Belt Conveyor	31
Sensor Height	32
Product Height Variation	33
Screw Conveyor	34
Pneumatic/Gravity Feed.....	36
Mounting.....	37
Electrical Connections	39
Supply Power.....	39
Communications	39
Specifications.....	39
OVERVIEW	41
Main Screen.....	42
Home Screen	43
Histogram	43
Section A – Information.....	44
Section B – Alarm Counts	44
Section C – Change Product	44
Section D – Chart.....	45
Section E – Recent Value	45
Section F – Statistics	45
Section G – Data	45
SPC.....	45
Section A – Information.....	46
Section B – Alarm Counts	46
Section C – Change Product	46
Section D – Chart.....	47

Section E – Recent Value	47
Section F – Statistics	47
Section G – Samples	47
Reports	47
Section A – Histogram Chart	48
Section B – Table Data	48
Section C – Reports Available	48
Section D – Upload Data	48
Configuration Screens	49
System	50
Section A – Global System Settings	51
Section B – Optional Categories	51
Section C – Save Button	52
Products	52
Section A – Available Products	53
Section B – General	53
Section C – Alarms	53
Section D – Opto Port	54
Section E – Calibration	54
Section F – Save Button	54
Backup	54
Section A – Log	55
Section B – Actions	55
Setup Shifts	56
Controller IP	56
Optimize	57
Section A – Calibration Table	58
Section B – Product Settings	58
Section C – SPC Chart	59
Section D – Histogram Chart	59
Section E – Recent Value	59
Section F – Statistics	59
Section G – Alarm Counts	60

Section H – Raw Data	60
Section I – Save.....	60
Firmware	60
Sensor Health	62
Section A – General	63
Section B – Health	63
Section C – Signals	63
IO Check	63
Section A – Discrete IO	64
Section B – Analog IO	64
Logs	65
Section A – Logs.....	65
Section B – Navigation.....	66
Alarms	66
Section A – Alarms.....	67
Section B – Navigation.....	67
App Settings	68
Connection	68
Database.....	69
Section A – Server Name	70
Section B – Authentication	70
Section C – Database	71
Section D – Test/Save Connection.....	71
Appearance	71
About.....	71

TABLE OF FIGURES

Figure 1 - Ethernet and microSD locations	11
Figure 2 - Ethernet Connection	11
Figure 3 - Battery Location	13
Figure 4 - Mounting Dimensions.....	15
Figure 5- Opening the Terminal Block	19
Figure 6 - Inserting the Conductor.....	19
Figure 7 - Securing Conductor	19
Figure 8 - Reset button location	20
Figure 9 - Physical Dimensions.....	21
Figure 10 - Display.....	24
Figure 11 - Mounting Dimensions	26
Figure 12 - M12 Ethernet Wiring	27
Figure 13 - Physical Dimensions.....	29
Figure 14 - Distance between sensor and material	32
Figure 15 - Plow to even height.....	33
Figure 16 - View port for screw conveyor.....	34
Figure 17 - Screw conveyor measurement location	35
Figure 18 - Clamp collars	37
Figure 19 - Pivot locking bolt.....	38
Figure 20 - Physical Dimensions.....	40
Figure 21 - Main screen.....	42
Figure 22 - Home Screen	43
Figure 23 - Histogram Data	44
Figure 24 - SPC Chart.....	46
Figure 25 - Reports.....	48
Figure 26 - Configuration Screen	50
Figure 27 - System Setup	51
Figure 28 - Product Configuration	52
Figure 29 - Backup Screen	55
Figure 30 - Shift Setup	56
Figure 31 - Controller IP.....	57
Figure 32 - Change highlighted on calibration table	58
Figure 33 - Change to calibration shown on SPC	59
Figure 34 - Upgrade Firmware.....	61
Figure 35 - Diagnostic Menu	62
Figure 36 - Sensor Health	63
Figure 37 - ID Check.....	64

Figure 38 - Logs.....	65
Figure 39 - Alarm Notification.....	66
Figure 40 - Alarm Screen.....	67
Figure 41 - Application Settings.....	68
Figure 42- Connection Screen.....	69
Figure 43 - Database Setup	70

Warnings

	<p>The ENVEA devices are designed for connection to hazardous electric voltages. Ignoring this warning can result in severe personal injury or mechanical damage. To avoid the risk of electric shock and fire, the safety instructions of this manual must be observed, and the guidelines followed. The specifications must not be exceeded, and the device must only be applied as described in the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prior to the commissioning of the device, this manual must be examined carefully. <input type="checkbox"/> Only qualified personnel (technicians) should install these devices. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
	<p>Until the ENVEA device is fixed, do not connect hazardous voltages to the devices. The following operations should only be carried out on a disconnected device by service personnel:</p> <ul style="list-style-type: none"> <input type="checkbox"/> General mounting, connection, and disconnection of wires. <input type="checkbox"/> Replacing fuses (2A for 24VDC, 10A for 5VDC). <input type="checkbox"/> Replacing LED display. <input type="checkbox"/> Replacing power supply. <input type="checkbox"/> Replacing motherboard. <p>All other repairs must be done by ENVEA only.</p>

Symbol Identification

	<p>Triangle with an exclamation mark: Warning, potentially lethal situation.</p>
---	--

Safety Instructions

Environment

Avoid high temperatures, mechanical vibrations, shock, as well as moisture and heavy moisture. Indoor usage only

UL Installation Requirements

Maximum supply voltage fluctuations +/-10%.

For use in only pollution degree 2 or better.

Over-voltage category II.

Max. wire size.....AWG 20-8

Use Copper Conductors Only

Mounting

Only technicians who are familiar with the technical terms, warnings, and instructions in the manual should connect this device. Mounting and connections should comply with local and national legislation for installation of electric equipment.

Electrical Connections for Permanent Condition

Electrical connections should be performed in accordance with ANSI/NFPA 70, NEC, with CSA C22.1, CEC, Part I, or with both as appropriate, and shall meet the requirements of DVD.2 to DVD.3, as applicable.

Cleaning

When disconnected, the device may be cleaned with a cloth moistened with distilled water.

OVERVIEW

The ENVEA controller is a real-time processing unit that is the ‘brain’ of the ENVEA NIR system. It stores the configuration of the system, communicates to the sensors, performs all calculations, and shares information to compatible devices via Ethernet. In addition, any field wiring for IO alarms, analog outputs, and factory floor integrations are terminated in this cabinet. As such, it is designed to be mounted on the factory floor in an electrical room or nearby.

This guide contains information about how to mount, install, and setup the ENVEA controller for initial usage.

Features

- Two 4-20mA analog outputs.
- 2G *microSD* card used to store reports
- Battery backup
- Network interface 10/100Base-T with LEDs
- 4-line LCD display for status and configuration
- Factory floor integration hardware (optional accessory)
- Eight isolated discrete **ID** using Opto22 G4 modules (optional accessory)
 - Available input voltages: 10-32 VDC, 90-140 VAC, 180-280 VAC
 - Available output voltages: 5-60 VDC, 12-140 VAC, 24-280 VAC

Hardware Components

This section describes the primary components in the ENVEA controller.

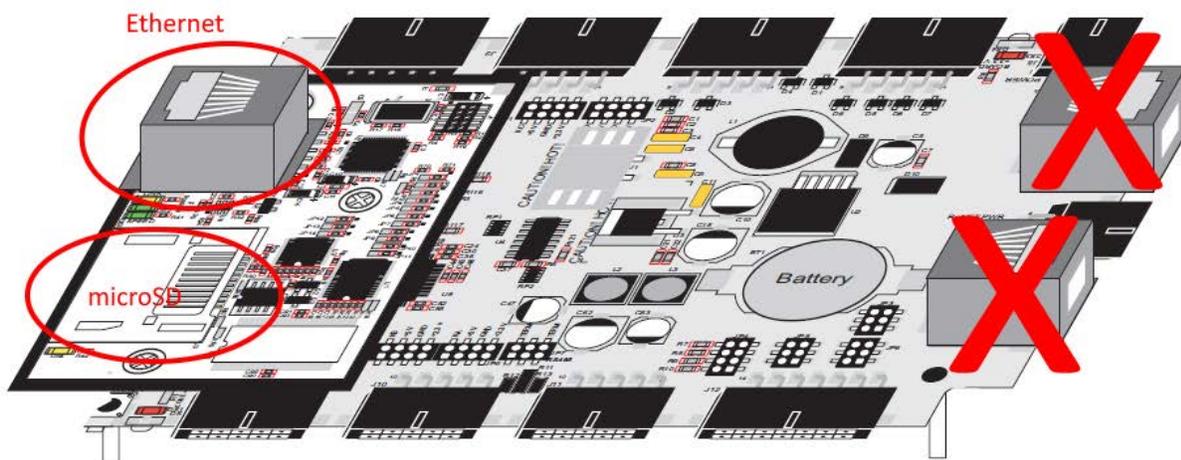
Display

The 4-line LCD display mounted to the enclosure is used to set the IP address of the controller and view the current readings. Press the **Mode** and **Select** buttons to navigate through the display configuration.

Processor

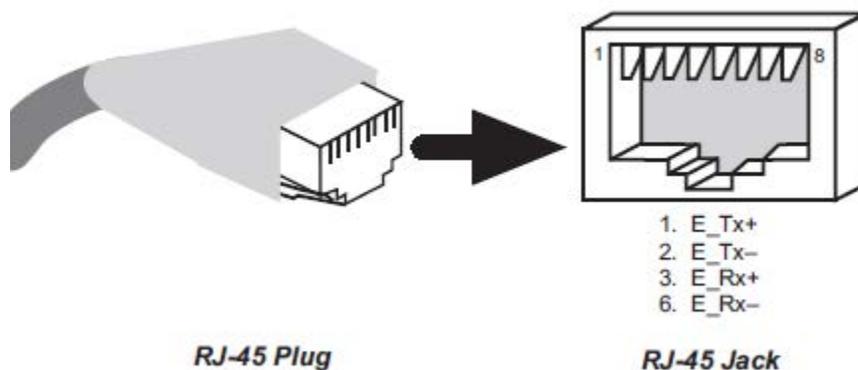
The processor is a daughter card that is mounted on the motherboard which performs all calculations and generates reports. Mounted to the processor board is the Ethernet port and the *microSD* slot.

Figure 1 - Ethernet and microSD locations



The processor should be connected to the local network to enable communication with the other ENVEA peripheral equipment (See Figure 2 - Ethernet Connection).

Figure 2 - Ethernet Connection



The *microSD* is used to store reports that can be uploaded via the Windows interface to a SQL database for archiving.

The microSD card requires FAT16 formatting to function correctly

If the processor card is replaced, it may be necessary to re-calibrate the analog outputs and install firmware on the processor. Please consult ENVEA prior to replacing.

Motherboard

The motherboard supports the processor and provides the termination points for IO and communication channels.

Battery Backup

The controller uses a battery to retain settings during power outages which may need to be replaced periodically. Average estimated life for the battery is 2.7 years without power to the controller, the actual service life of the battery will be longer since it would normally be powered from an external power source. See ENVEA software manual on how to perform a backup and restore of the system in the case of catastrophic failure.

Prior to replacing the battery, perform a backup of the system.

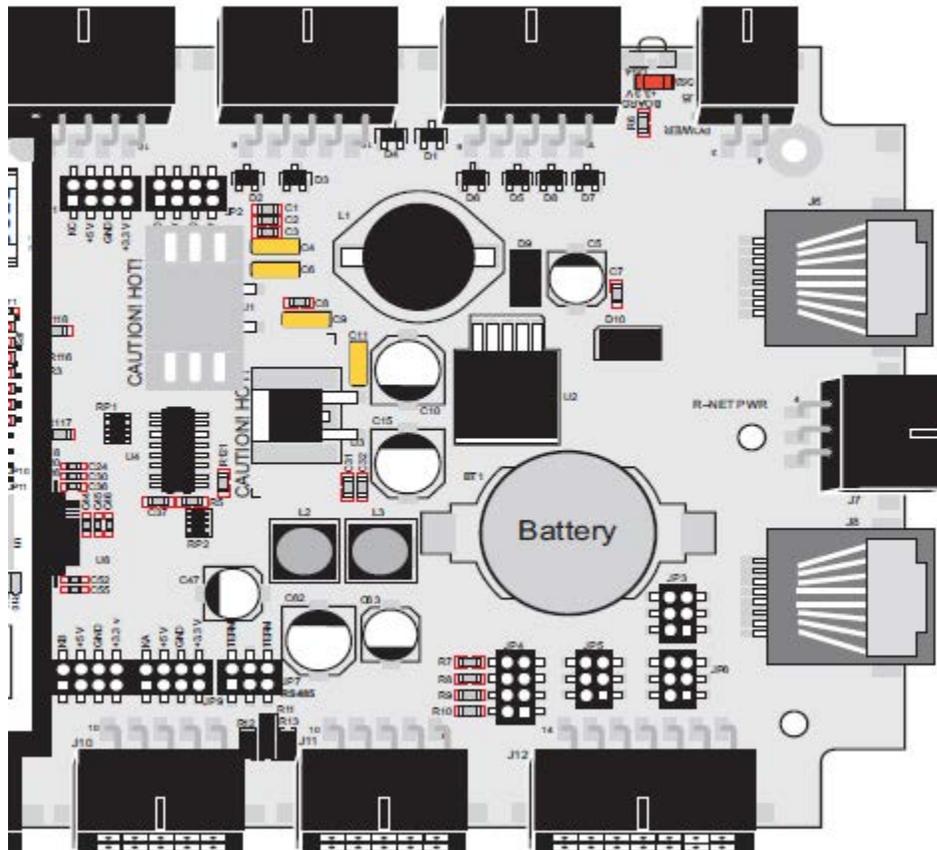
To replace the battery (see Figure 3 - Battery Location), lift the battery spring clip and slide out the old battery. Install the new CR2032 battery in the holder with the + side facing up.



Failure to replace the battery with a CR2032 may result in damage to the system.

Cycle power to the controller after replacing the battery for the first time and confirm the system is operating correctly (note: this can be confirmed by checking to see that the IP address did not change on the 4-line LCD display).

Figure 3 - Battery Location



Exercise care if the battery is replaced with external power applied

Analog Outputs

The system has two 4-20mA analog outputs available to transmit measurement results.

The analog outputs are self-powered and cannot be powered via an external power source.

The customer can connect to the analog outputs via the terminal blocks shown on the wiring schematic (see [Wiring Schematic](#)).

Power Supply

The power supply provides +24 VDC and +5 VDC to the controller components. It can also be used to power external displays and sensors via the M12 connector on the bottom of the enclosure.

Opto22 (Optional Accessory)

The optional discrete IO package allows a user to connect to the following discrete signals:

DIO	Description
0	Low-Low Alarm
1	Low Alarm
2	High Alarm
3	High-High Alarm
4	Loss of Product Alarm
5	Dirty Lens Alarm
6	OptoPort Output. Used when an OptoPort accessory is used to catch powders in a chute application.
7	External Trigger. When user sets the input high, the system does not take any readings.

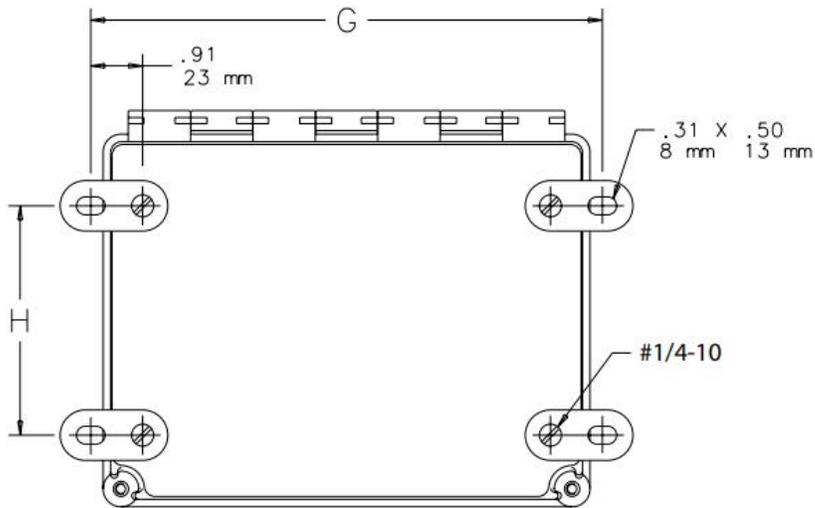
Factory Floor Module (Optional Accessory)

If an optional factory floor accessory is purchased, refer to the accessory documentation for termination instructions.

Mounting

The unit should be mounted in an area that is accessible, but does not exceed the environmental specifications (see [SPECIFICATIONS](#) for more information). The recommended solution is to use the brackets included with the controller (see Figure 4 - Mounting Dimensions)

Figure 4 - Mounting Dimensions



	in. [mm]
G	12.94 [329]
H	8.00 [203]

Electrical Connections

Power Source

Power should be provided to the controller and terminated to the terminal blocks per the wiring schematic (see [Wiring Schematic](#)). The supply voltage is 90-264 VAC (47 to 63 Hz) with a maximum current of 2.0A.

ENVEA recommends a dedicated circuit be supplied to the controller and the power wires are provided mechanical protection, e.g. wires are contained in conduit. A qualified electrician should be contracted to install conduit, wiring, and terminate all connections per local electrical code.

The Line and Neutral (TB13 and TB14) are installed on terminal blocks with a disconnect. To remove power, insert an 1/8" flat screwdriver in the orange slot and lift.

If a short circuit or over-voltage condition occurs, the power supply's automatic trip circuit will disconnect power. To reset, power must be cycled to the unit.

Battery

Remove the pull tab on the battery to enable the battery backup.

Ethernet

The controller should be connected to local area network using an Ethernet cable plugged into the processor's Ethernet port (see [Processor](#) for more information)

Analog Outputs

The field connection points for the two 4-20mA analog outputs are on the blue terminal blocks and should be wired per the table below:

AO Channel	Field Terminal Number	Description
0	TB4 (+) and TB5 (-)	Measurement
1	TB6 (+) and TB7 (-)	Temperature

Discrete IO

To connect the discrete IO to their desired device, install the Opto22 G4 module into the DIO port desired (0-7); secure the G4 module to the backplane. Terminate the wires (10 AWG max.) to the Opto22 field terminations using the following table:

DIO Position	Field Terminal Number
0	1 and 2
1	3 and 4
2	5 and 6
3	7 and 8
4	9 and 10
5	11 and 12
6	13 and 14
7	15 and 16

All G4 modules MUST use 5VDC logic or permanent damage may occur to the controller

Connection Ports

On the bottom of the controller are three circular bulkhead ports. The 4-pin female port is used to supply power to sensors and displays. All ENVEA peripheral equipment is supplied power using the same circular ports with this pin configuration:

Pin	Description
1	+5 VDC
2	Ground
3	+24 VDC
4	Ground

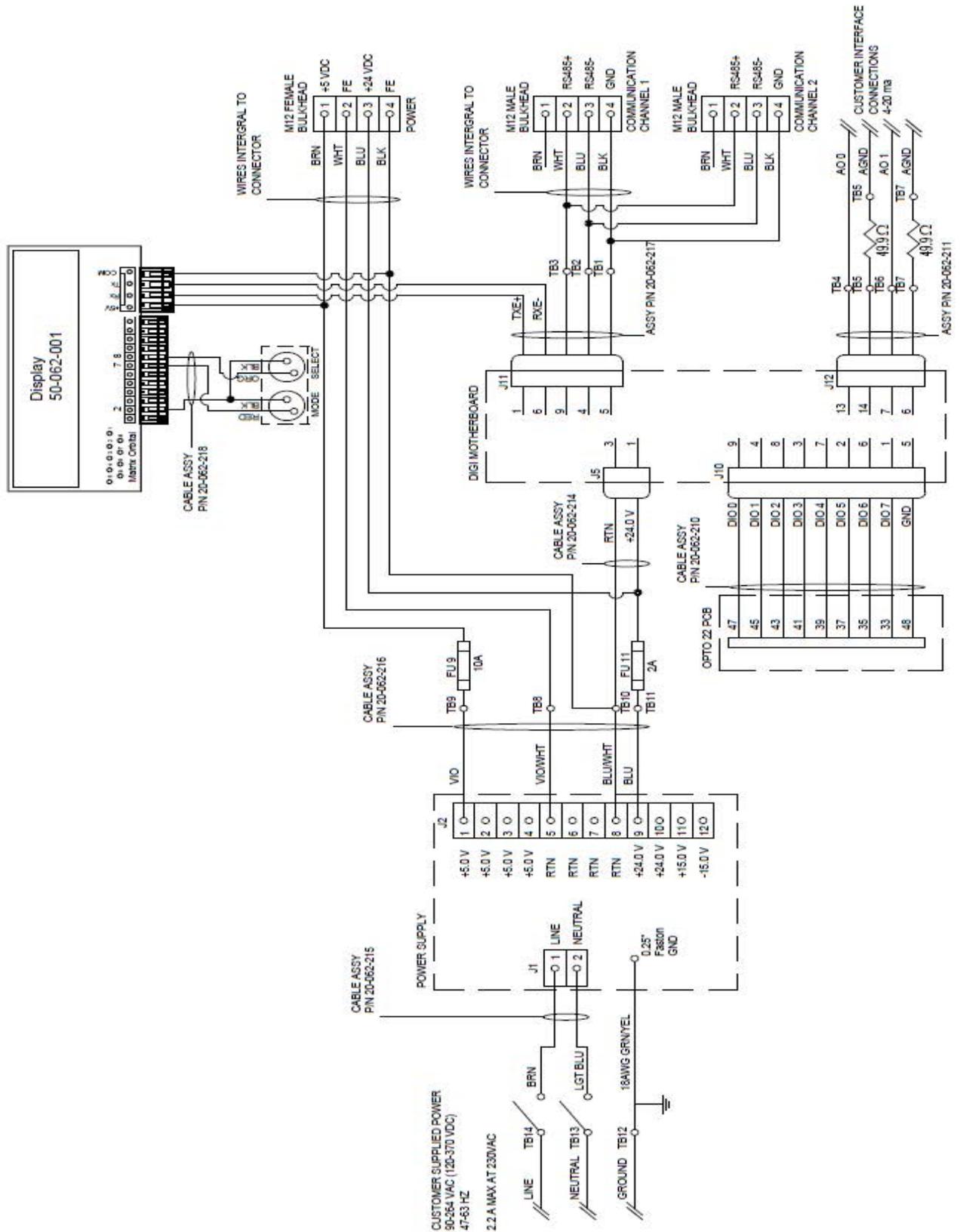
The other two male ports are for the communication line to the sensors. Both connections are identical, a sensor can be connected to either port (max. of two sensors per controller). The pin configuration for this connection is:

Pin	Description
1	NC
2	RS 485+
3	RS 485-
4	Ground

The connection ports are keyed, DO NOT force the connectors in to the wrong port or they may be damaged.

See [Wiring Schematic](#) for more detailed wiring information.

Wiring Schematic



Terminal Blocks

The controller uses spring loaded terminals which users may not be familiar with, the following instructions show how to insert/remove wires.

Figure 5- Opening the Terminal Block

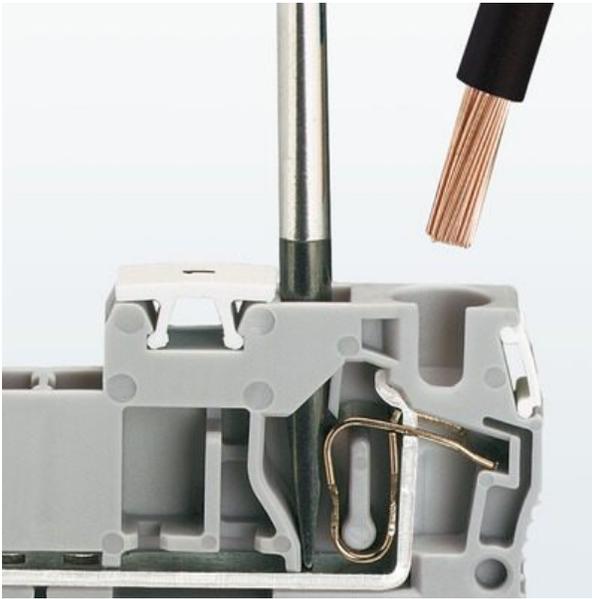
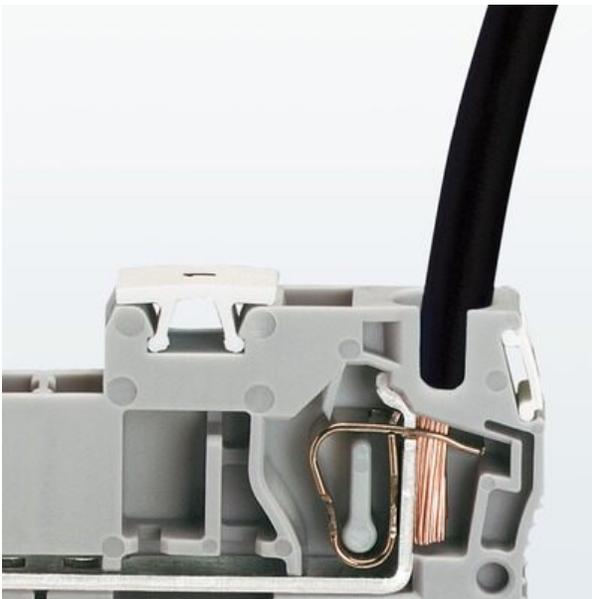


Figure 6 - Inserting the Conductor



Figure 7 - Securing Conductor

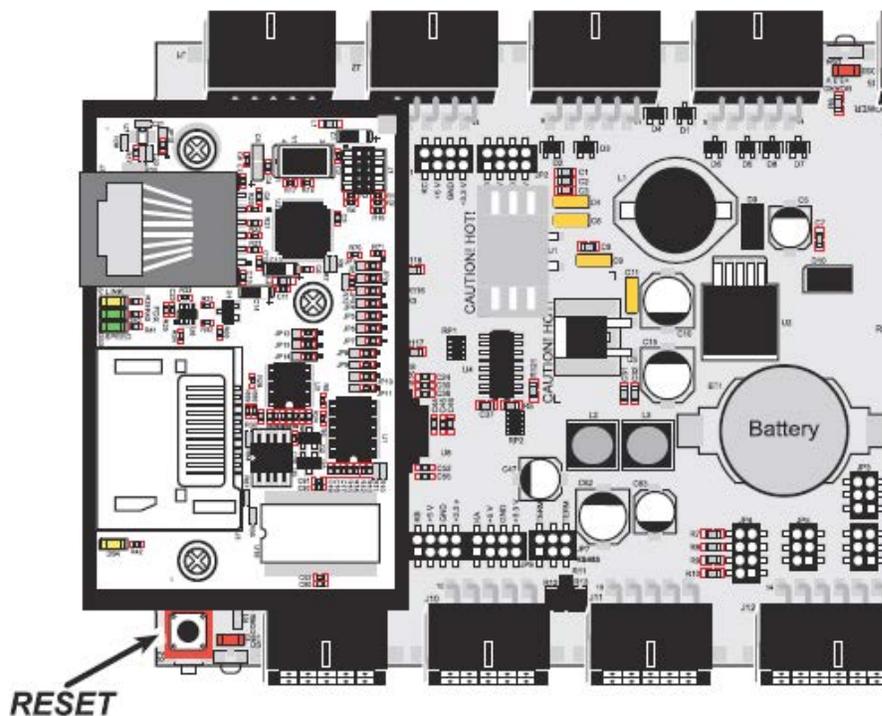


Setup Network IP

After connecting the Ethernet cable to the processor, the controller IP needs to be changed to a valid address. Using the LCD display on the front of the panel perform the following:

1. Press the **Select** button to view the Net Info
2. Press the **Select** button to change the IP
3. The first digit is identified with a caret, pressing the **Select** button changes the value and pressing the **Mode** button advances the caret to the next digit.
4. Enter a valid IP address and Subnet mask.
5. After entering the values, accept the changes by pressing **Mode**. To cancel the changes, press **Select**.
6. After entering the IP address, the controller must be rebooted by pressing the reset button on the Motherboard (see Figure 8 - Reset button location).

Figure 8 - Reset button location

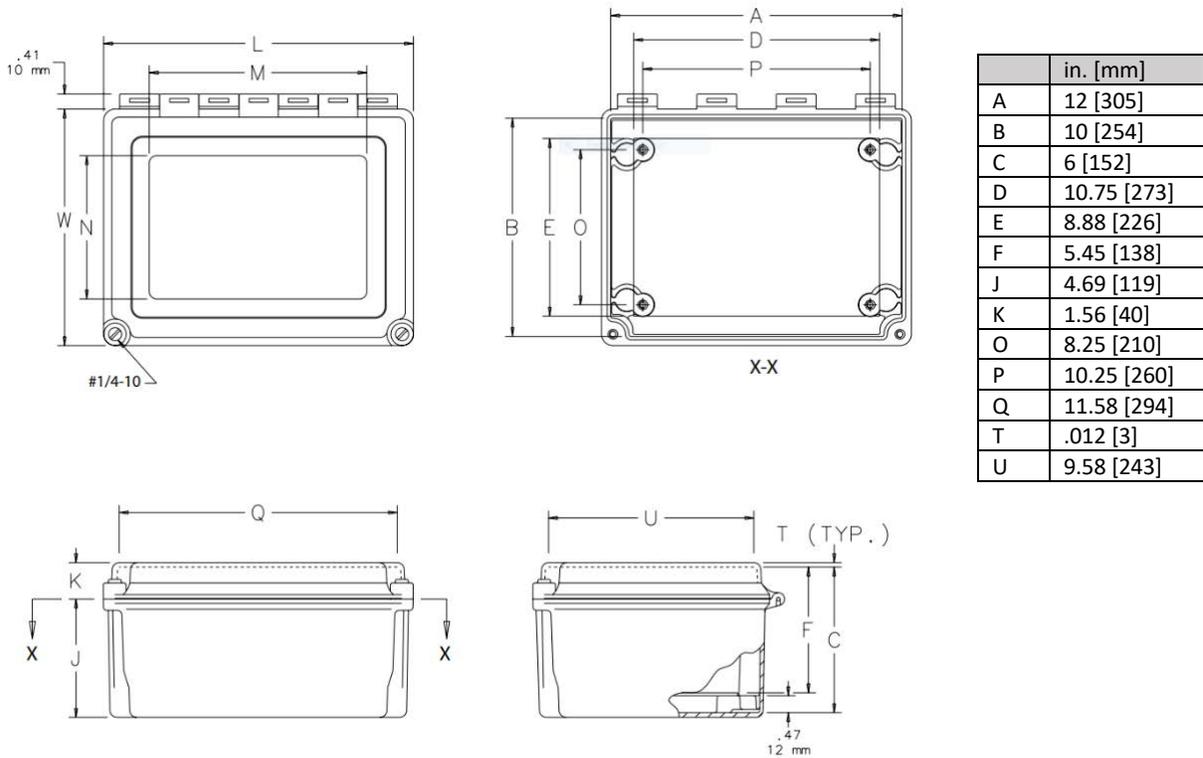


After changing the network settings, the system must be reset to apply the changes

Specifications

Feature	
Power	90-264 VAC, 47-63Hz, 120 Watt max.
Temperature	0 to 50C
Humidity	5-90% non-condensing
Weight	9 lbs. (4.0 kg)
Altitude (max.)	2000m (6562 ft)
Usage	Indoor usage only
Rating	NEMA 12
Battery	CR2032
24VDC fuse	2A 5x20mm
5VDC fuse	10A 5x20mm

Figure 9 – Physical Dimensions



OVERVIEW

The ENVEA operator display is an optional accessory designed to display live data to operators on the plant floor. The display does not allow users to make configuration changes to the system, however they are able to change to any available product stored in the controller. The ENVEA system is designed to support up to 4 displays communicating to the controller via an Ethernet connection.

The display cannot be used to make configuration changes to the system, it is only for monitoring the process

This guide contains information about how to mount, install, and setup the ENVEA display.

Features

- Low power consumption: 24 VDC @250mA
- Standard Network interface 10/100Base-T
- 7" capacitive color touchscreen
- Several mounting options available, including standard VESA mounting
- Aluminum and Stainless-Steel models available

Hardware Components

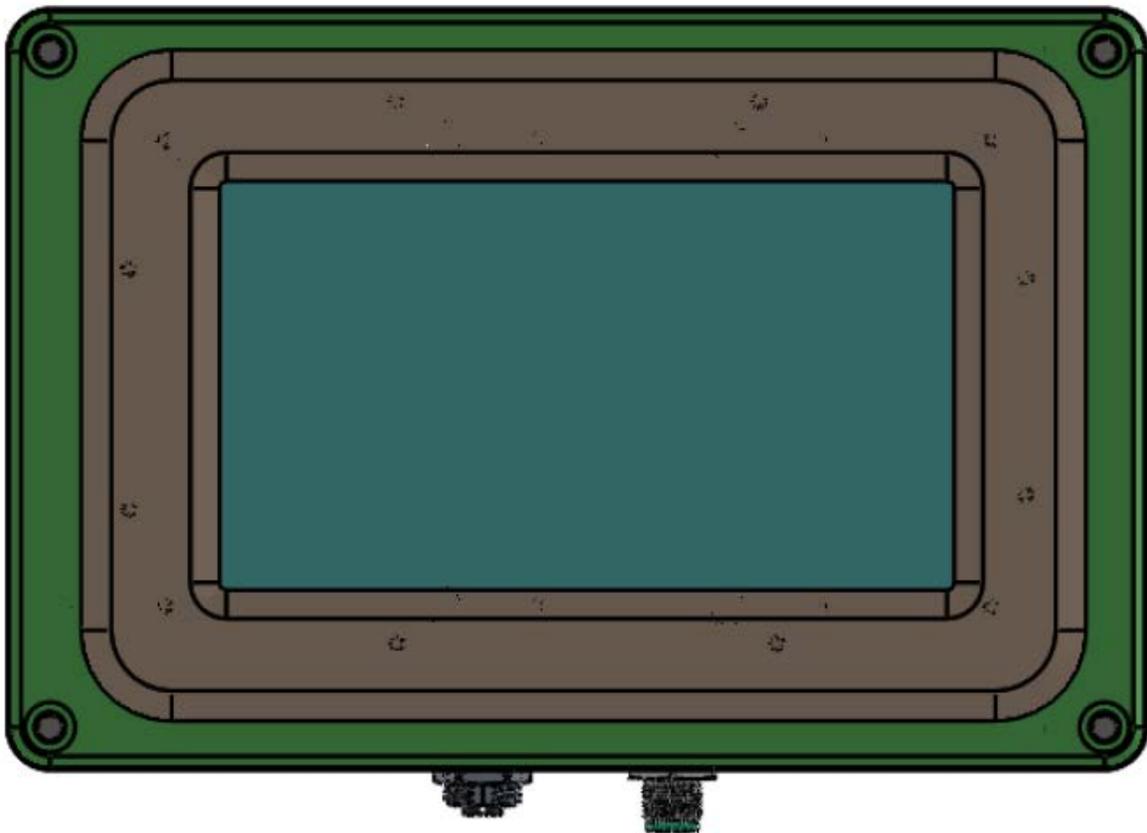
This section describes the primary components in the ENVEA controller.

Display

The high-resolution 7" TFT touchscreen is mounted to the front of the enclosure.

Cleaning the display with harsh chemicals or abrasives may scratch and/or damage the display

Figure 100 - Display



Mounting Plate

The mounting plate is secured to the back of the display and accommodates securing the display using a standard 75mm x 75mm or 100mm x 100mm VESA pattern.

M12 Bulkhead Connectors

There are two connectors on the bottom of the enclosure. One for power and a second for Ethernet connection. The connectors are keyed to ensure the wrong cable cannot be plugged into the wrong port.

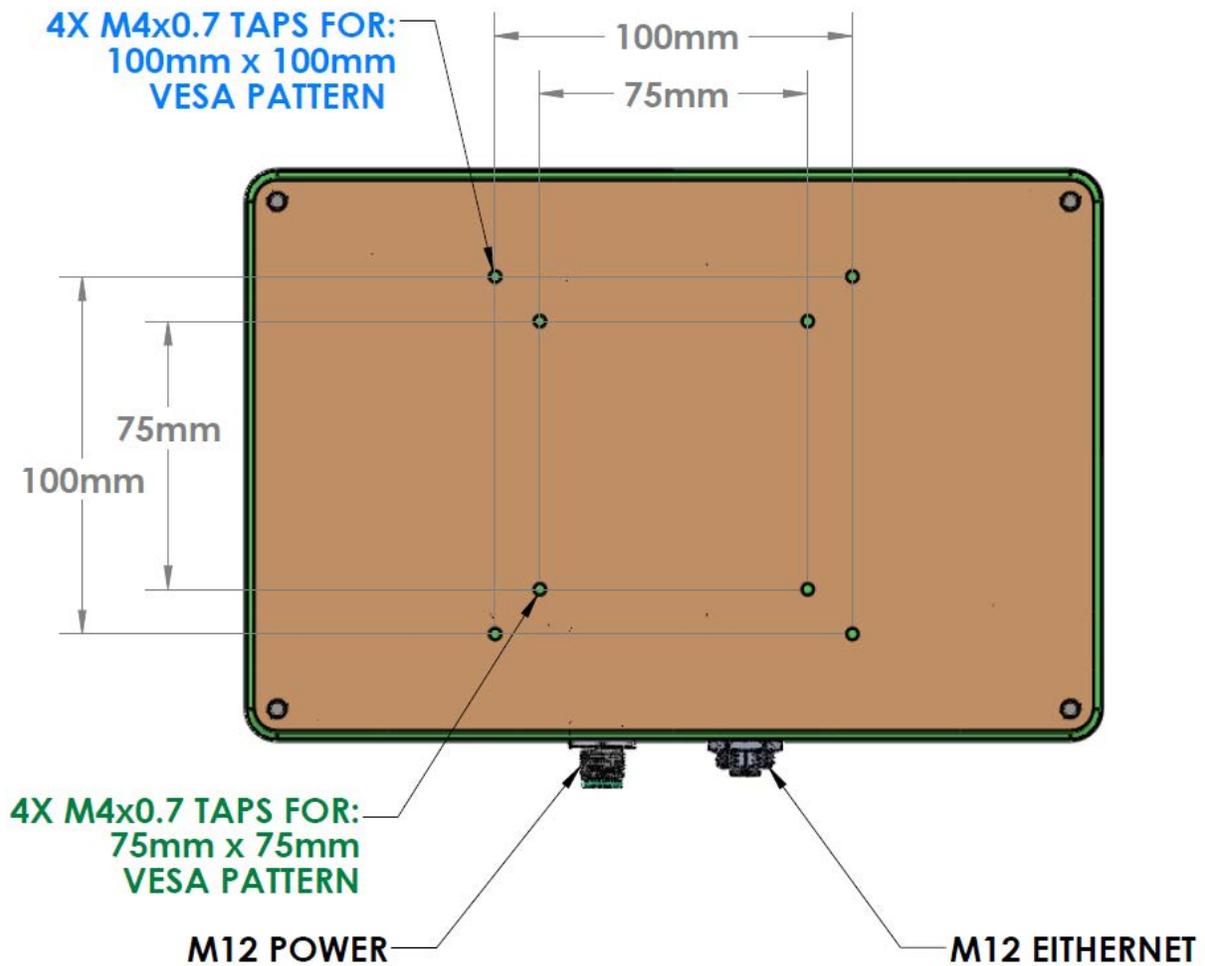
Mounting

The unit should be mounted in an area that is accessible and easily visible to operators, but does not exceed the environmental specifications (see

Specifications for more information). The recommended solution is to use a standard VESA mount in order to easily position the monitor as desired.

Mount display in an area accessible and visible to users

Figure 11 - Mounting Dimensions



Electrical Connections

Power Source

Typically input power is supplied to the M12 bulkhead from the controller, however an external source can be used if necessary. The 4-pin male power port on the bottom of the display and should be wired using the following pin configuration:

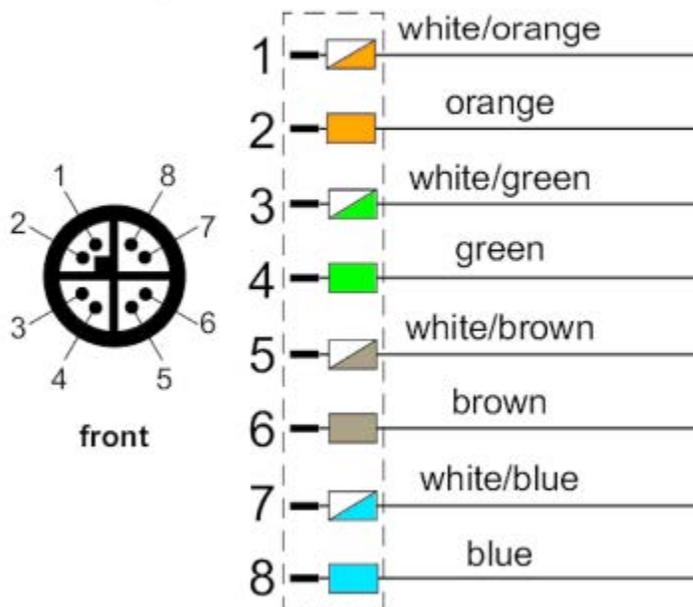
Pin	Description
1	NC
2	NC
3	+24 VDC
4	Ground

Ethernet

The Ethernet connection uses an industrial M12 plug that accepts a standard CAT5E or CAT6 cable with a diameter from 5.0 to 9.7mm in diameter. The cable termination is:

Figure 12 - M12 Ethernet Wiring

M12 plug



Setup Network IP

After connecting the power and Ethernet cables to the display, the display needs to be assigned an IP address and connected to a controller.



Press the  on the bottom to set the IP address and Subnet mask of the display. Enter the IP address of the controller. Once both fields are entered, cycle power to the unit.

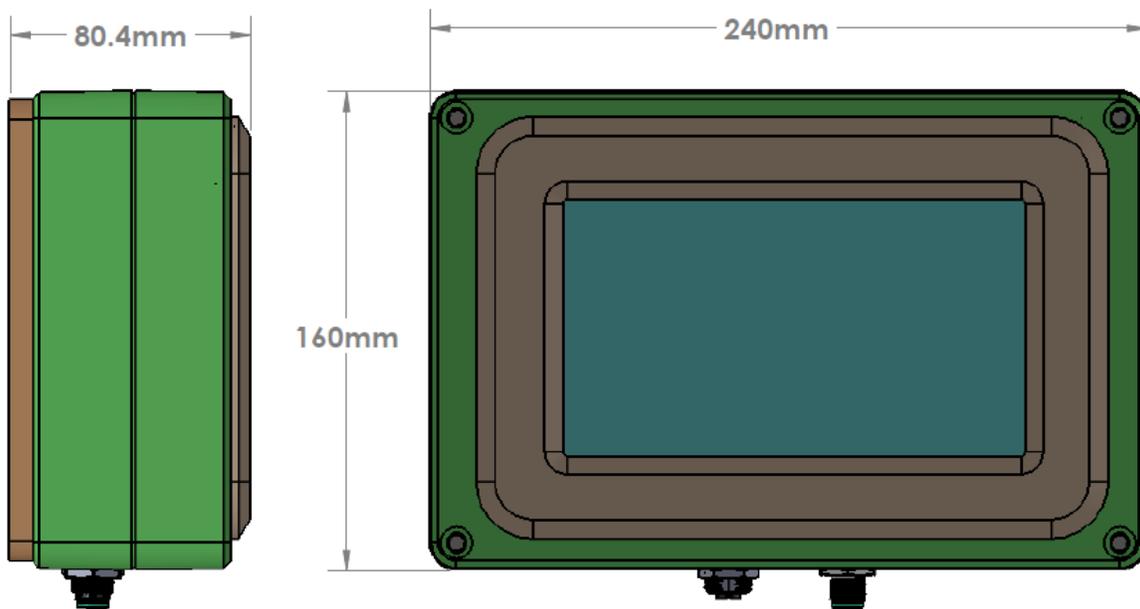
If the display's IP address is changed, the unit MUST be re-booted to apply the change

After setting the controller IP, the data will automatically be displayed.

Specifications

Feature	
Power	24 VDC, 6 Watt max.
Temperature	-20 to +70 C
Humidity	5-90% non-condensing
Weight	7 lbs. (3.2 kg)

Figure 13 – Physical Dimensions



OVERVIEW

The ENVEA sensor is an industrially rugged Near-InfraRed (NIR) sensor designed to non-invasively measure the moisture content (MC) of material. The sensor continuously samples readings 3000 times per second and uses an advanced algorithm to calculate a highly accurate MC%. In addition to measuring MC, it also has multiple onboard sensors to self-monitor critical functions and notify users of any maintenance required.

Although the sensor can be used to measure material in a lab, it is designed for industrial applications that may be in high humidity and/or high temperature (up to 80° C) environments (see **Specifications**).

This guide contains information about how to mount, install, and setup the ENVEA sensor for three primary installation types: (1) belt conveyor, (2) screw conveyor, or (3) pneumatic and/or gravity feed.

Features

- Industrial M12 connector for input power
- Industrial M12 connector for communications
- IP69 rated
- Temperature range 0-80° C
- Over 20 diagnostic sensors continuously monitoring sensor health
- Available in two finishes: (a) powder coated aluminum or (b) 316 Stainless Steel
- Optional temperature sensor to measure product temperature

Installation Types

This section describes the three primary installation options available: (1) belt conveyor, (2) screw conveyor, or (3) pneumatic/gravity feed.

Belt Conveyor

In this installation the sensor is mounted above a belt conveyor with material passing below the sensor. The sensor shines a light on the passing material and calculates the moisture content.

With over 3000 measurements per second, the ENVEA sensor is capable of reporting accurate results regardless of belt speed

The moisture content is measured under the illuminated light only, which is approximately 2,5 cm²

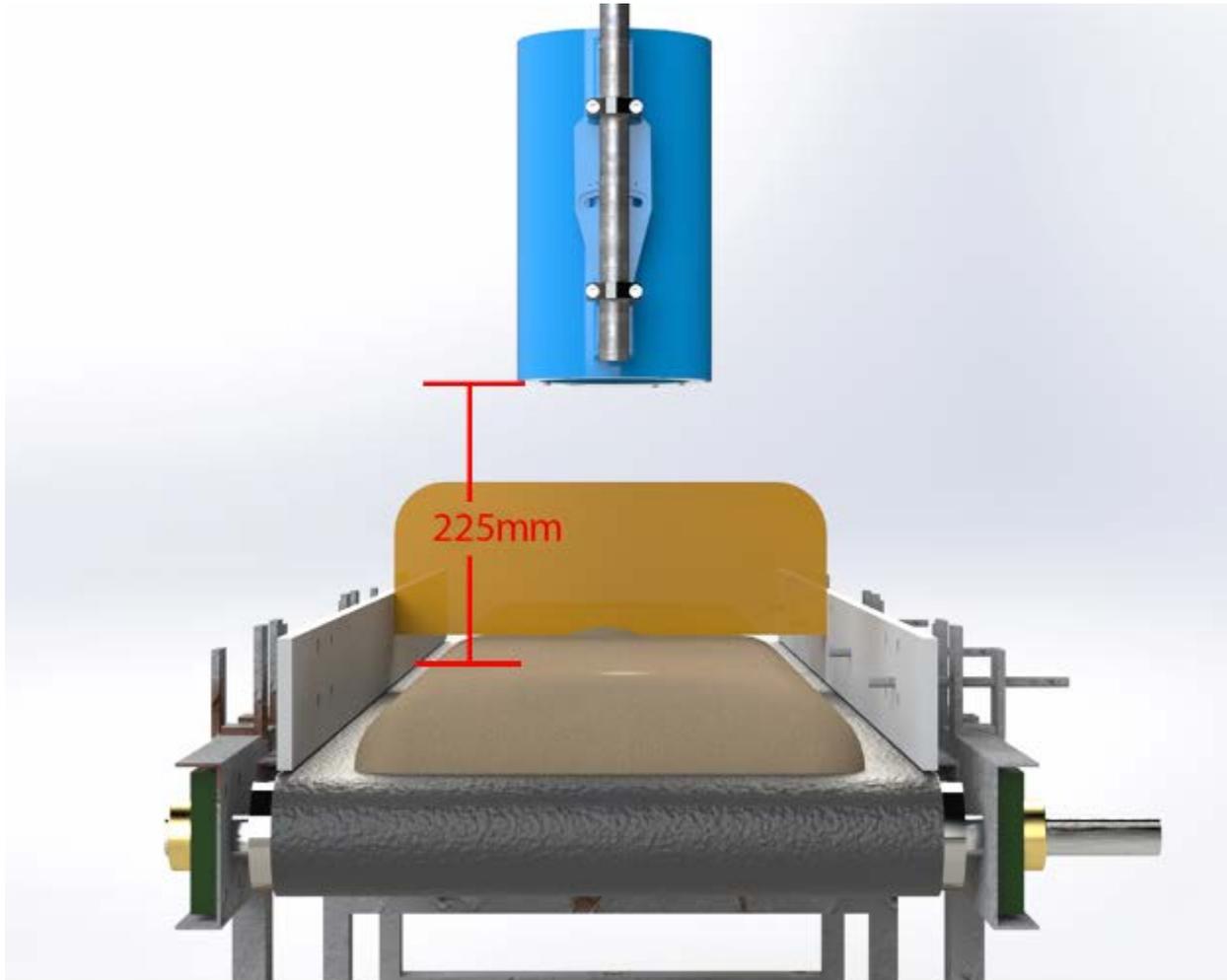
The material being measured should not exceed 50mm is diameter

In highly dusty environments, install the Dust Shield accessory to minimize dust collection on the ENVEA lens

Sensor Height

The sensor is designed to be placed approximately 225mm away from the material being measured, mounted on a 22mm diameter pipe with lens towards the material.

Figure 14 - Distance between sensor and material

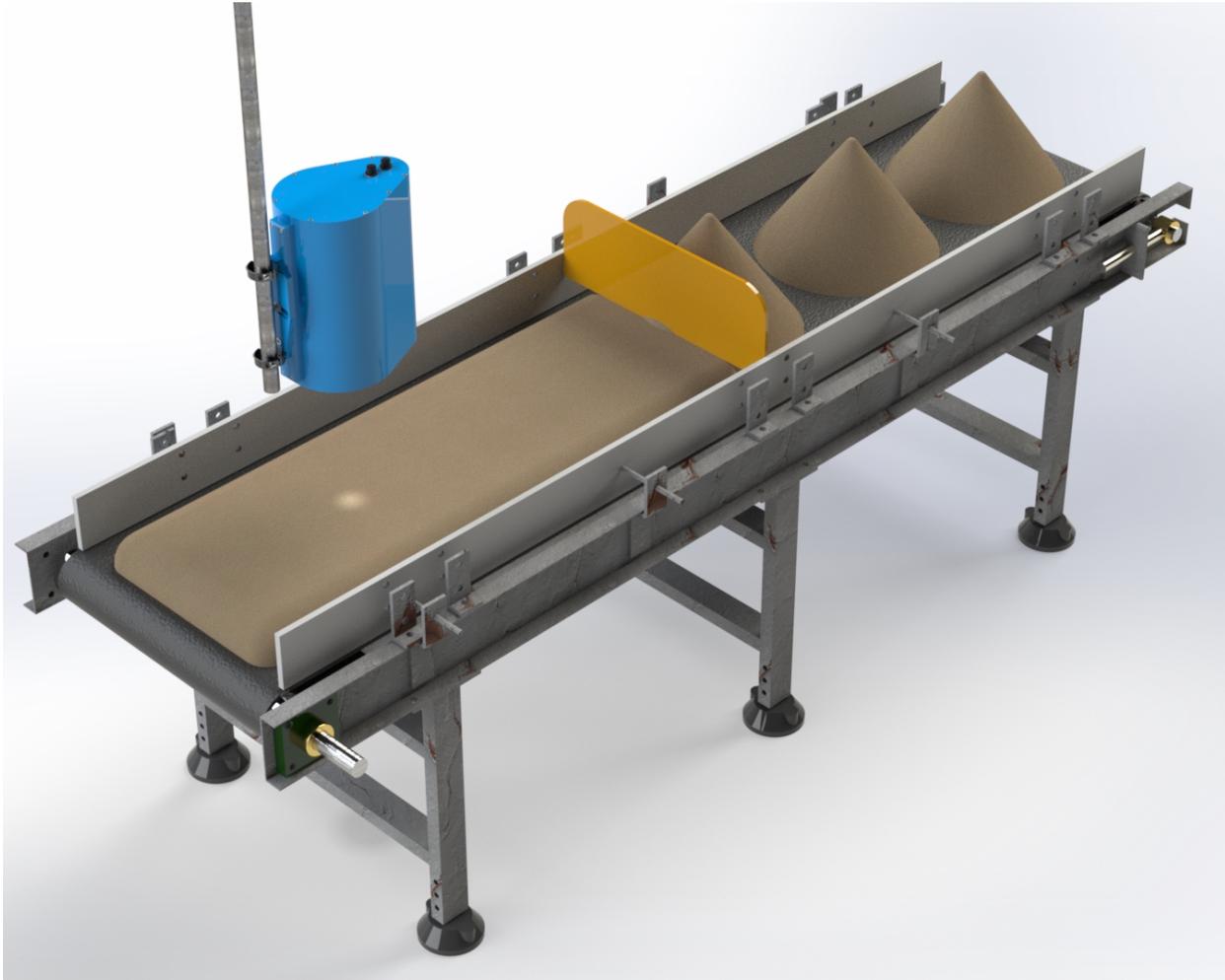


Although 225mm distance is optimal, each installation is unique, and the distance may be changed to anywhere between 175-350mm

Product Height Variation

In the case of intermittent product flow or in situations where the product level changes drastically, it may be necessary to install a plow to obtain a more uniform product height (see Figure 15 - Plow to even height).

Figure 15 - Plow to even height



For maximum accuracy, the product height should not vary by more than $\pm 25\text{mm}$

Screw Conveyor

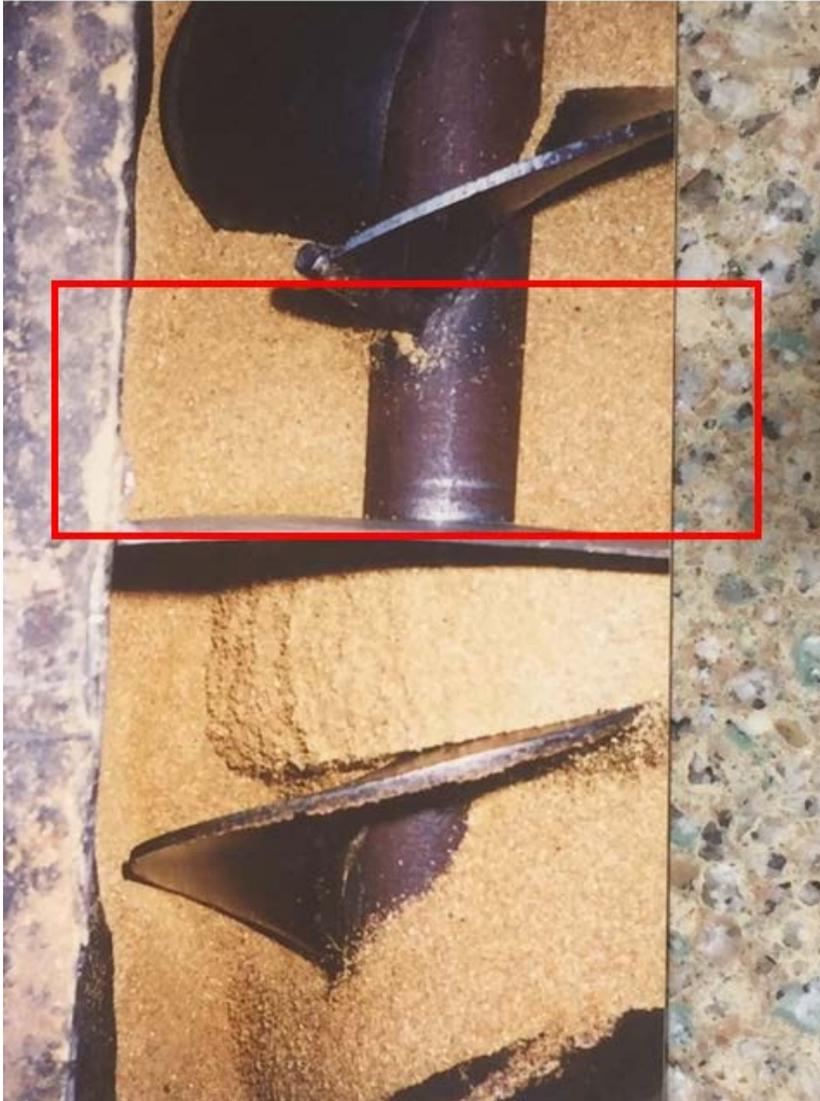
In this type of installation, a 100-125mm diameter hole is cut in the screw conveyor cover half-way between the center shaft and side wall. The light from the ENVEA shines through the hole illuminating the material as it is transported.

Figure 16 - View port for screw conveyor



If the auger is visible to the ENVEA system, this may negatively impact the results of the measurement. If this is the case, it is recommended to cut out a section of the auger where the ENVEA is measuring product (see Figure 17 - Screw conveyor measurement location).

Figure 17 - Screw conveyor measurement location



Remove section of screw conveyor so the ENVEA only measures the material

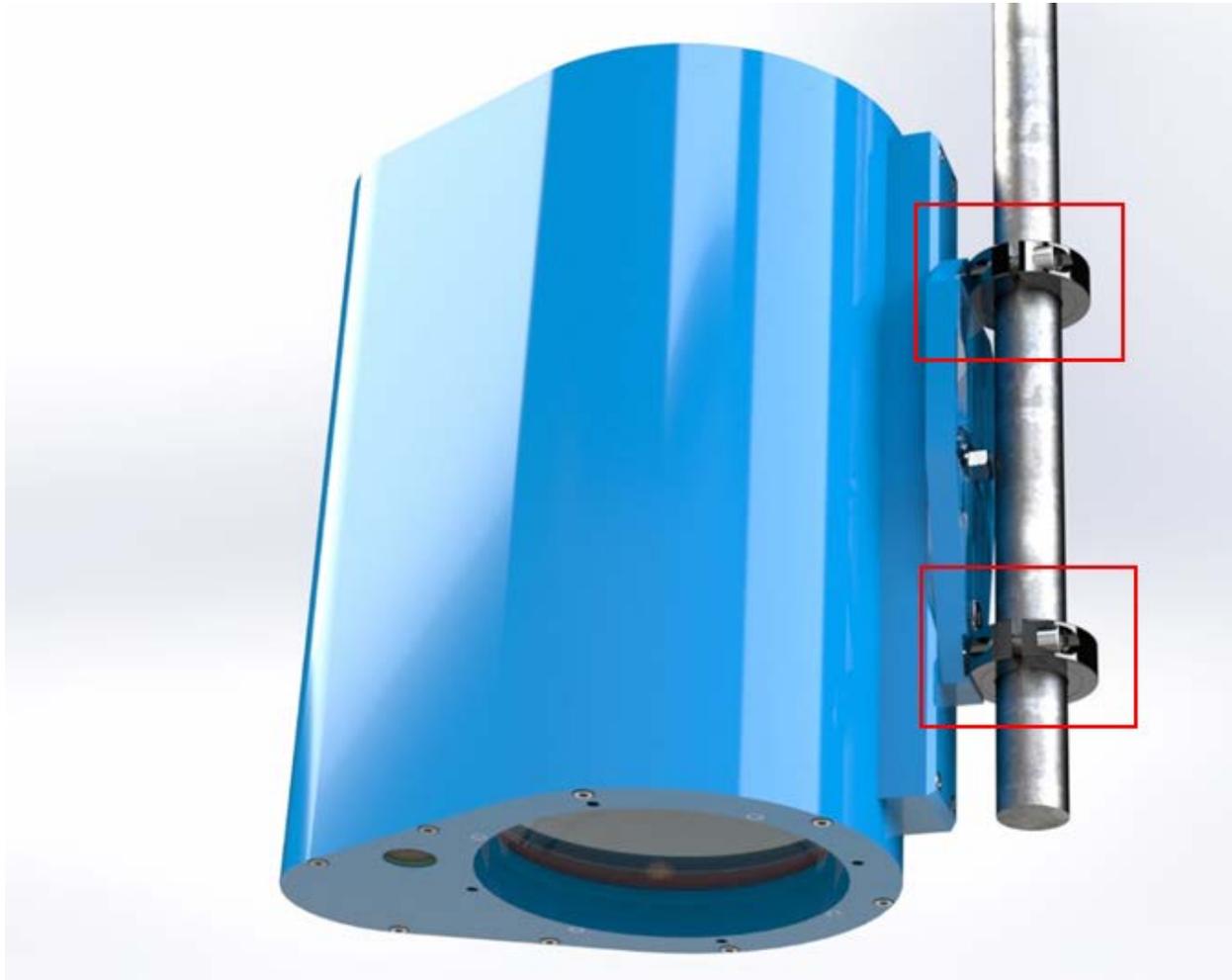
Pneumatic/Gravity Feed

The last type of installation is known as a gravity feed or pneumatic conveyance. Typically a powder or fine particulate is conveyed in a tube using gravity and/or air. The ENVEA system can measure this material using an OptoPort accessory to collect samples, measure the results, and blow off the collection window. For more information on this installation, see the OptoPort Manual.

Mounting

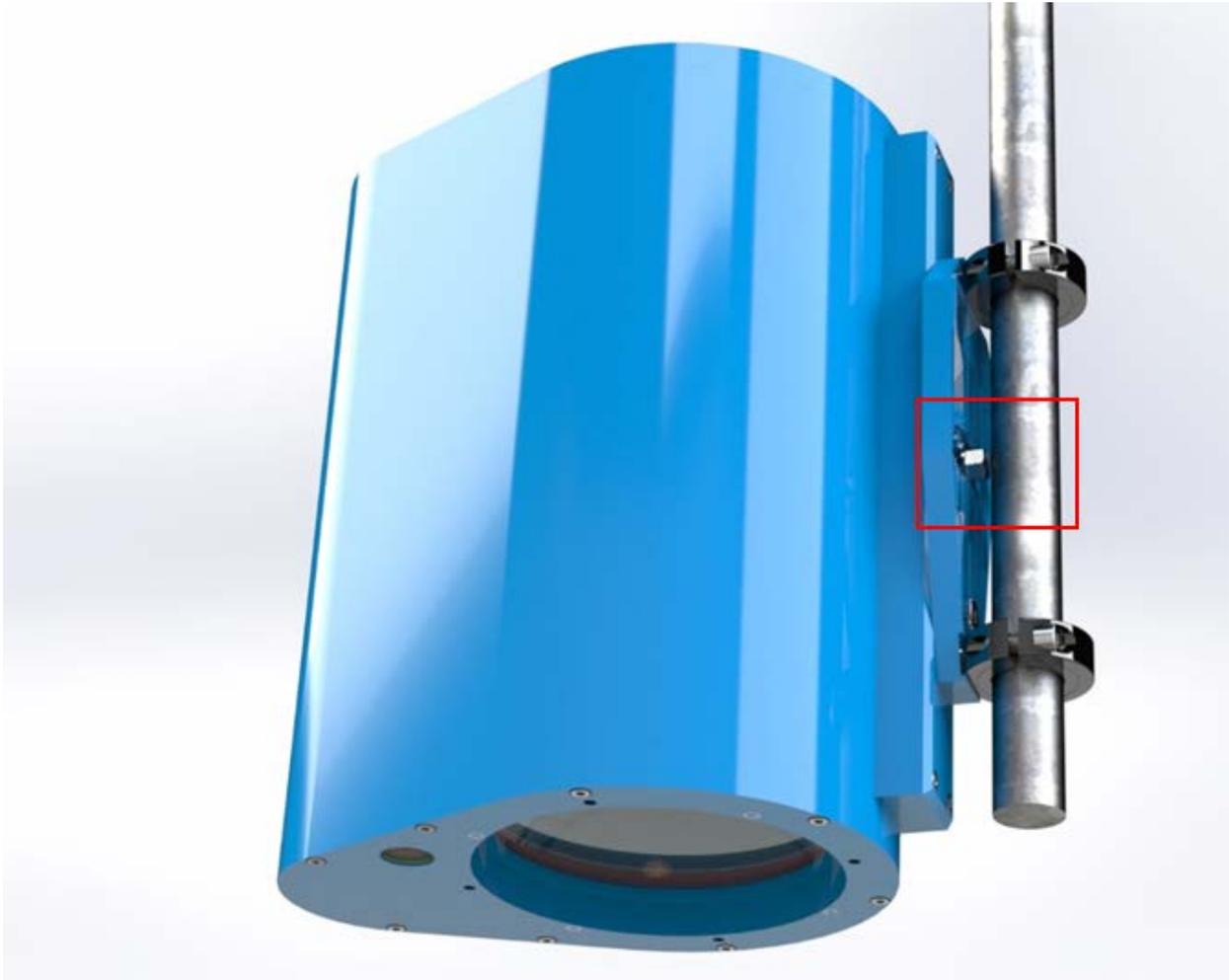
The sensor should be mounted in an area that is accessible and over the product, but does not exceed the environmental specifications (see [SPECIFICATIONS](#) for more information). The recommended solution is to install the sensor on a 22mm diameter pipe, then tighten the two clamp collars using a 3/16" Allen wrench.

Figure 18 - Clamp collars



After securing the sensor to the pipe, it may be necessary to rotate the sensor angle to prevent the sensor signal from being saturated due to a shiny, wet, or very reflective surface (e.g. a stainless steel idler roller beneath clear film). It can be rotated $\pm 30^\circ$ while in-situ to reduce the signal response. Loosen the locking bolt near the clamp collars with a 3/8" open ended wrench, rotate the sensor and re-secure with the locking bolt.

Figure 19 - Pivot locking bolt



Electrical Connections

Supply Power

The sensor input power is typically supplied from the ENVEA controller cabinet; however, it may be supplied from an alternate power supply.

The minimum voltage required by the sensor is 23.5VDC and 4.8VDC. Care must be taken to ensure the voltage drop does not exceed these limits.

The input power port is an M12 4-pin male connector mounted on the top of the sensor using the following pin configuration:

Pin	Description
1	+5 VDC
2	Ground
3	+24 VDC
4	Ground

The M12 connector is keyed so the power cable can ONLY be plugged into the power port

Communications

The second M12 port on the top of the sensor is dedicated for communication and should route back to the ENVEA controller cabinet.

The maximum length of the communication cable is 2500'

The pin configuration for this connection is:

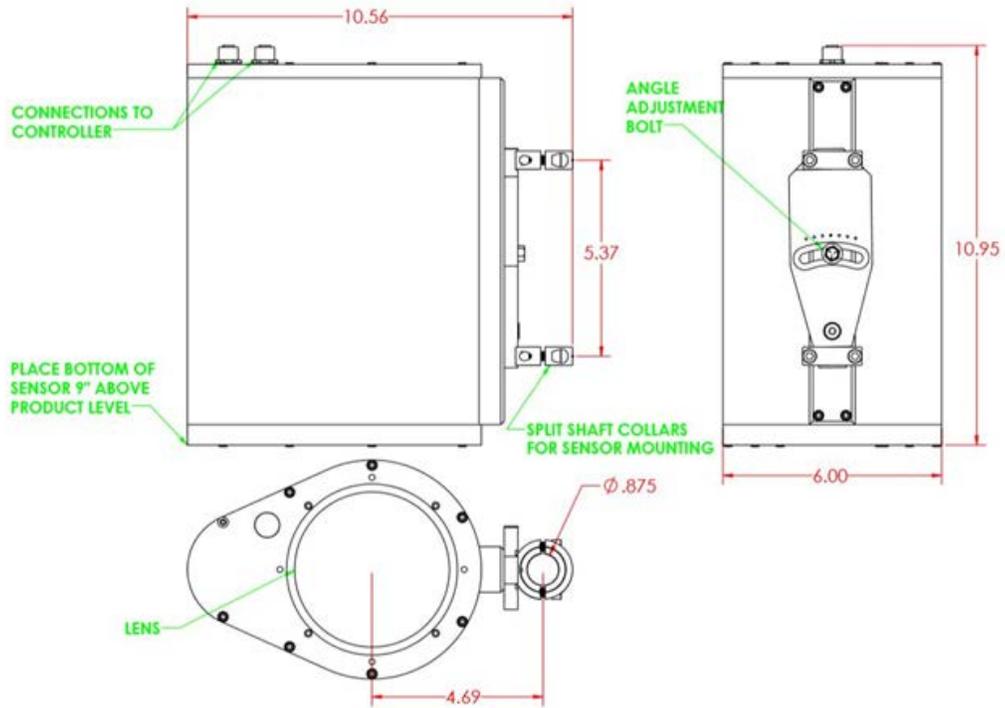
Pin	Description
1	NC
2	RS 485+
3	RS 485-
4	Ground

Specifications

Feature	
Power	23.5 VDC (0.75 A), 5 VDC (3.0 A)
Temperature	0 to 80C
Humidity	5-95% non-condensing
Weight	12 lbs. (5.4 kg)

Rating	IP69
Distance to product	7-14"
Measurement area	1 in ²

Figure 20 – Physical Dimensions



OVERVIEW

ENVEA software is a Windows based application that allows users to connect to the ENVEA system via a local Ethernet connection. The minimum suggested hardware to run the application is:

- Win 7 (32 or 64 bit) or greater
- .NET Framework v4.8
- 8G RAM
- 10 GB of hard-drive space
- Intel i3 3.6 GHz or faster
- Internet access to update the application

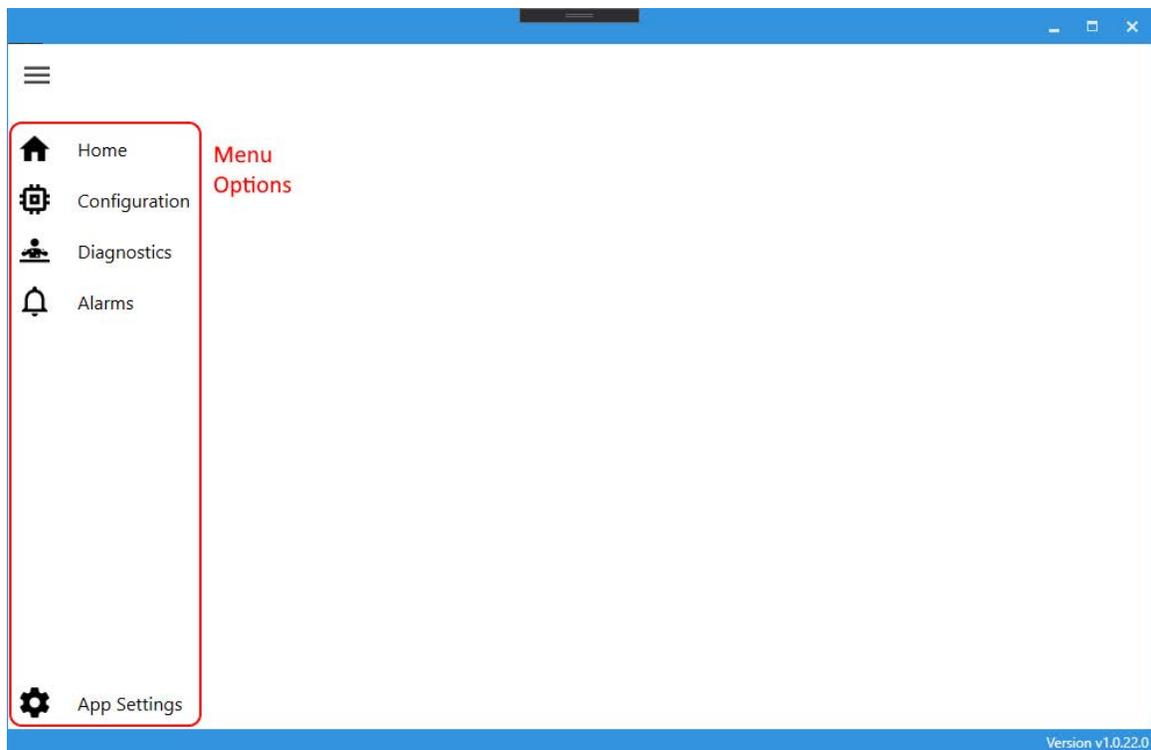
The software is designed to provide users with easy to understand screens displaying real-time information to users. In addition, more advanced users can make and apply configuration changes to the system.

Main Screen

The primary screen (Figure 21 - Main screen) displayed shows the five areas a user may view, they are:

1. **Home.** These are the primary screens users can view and monitor the process information from the sensors. This includes both current values and historical information. No configuration of the system is accessible from these screens.
2. **Configuration.** All options related to configuration of the system is performed in this area. Changes made are written to the system's firmware which are retained upon a system reboot.
3. **Diagnostics.** Detailed information about sensor health and system checks.
4. **Alarms.** Active and previous alarms are viewed here.
5. **App Settings.** Settings related to the Windows application. Changes made here only apply to the local PC and are NOT saved to the system firmware.

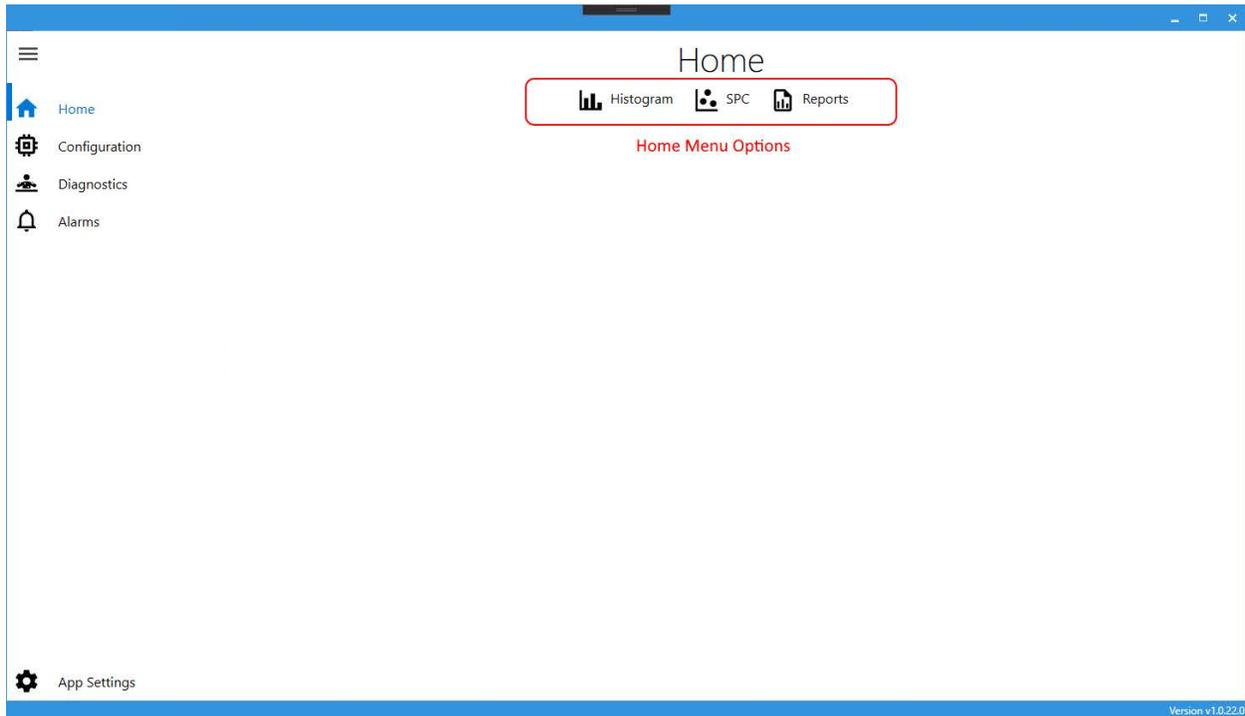
Figure 21 - Main screen



Home Screen

The home screen (see Figure 211 - Home Screen) allows users to monitor live data as a **Histogram** or **Statistical Process Control (SPC)**. Historical information can be viewed in **Reports**.

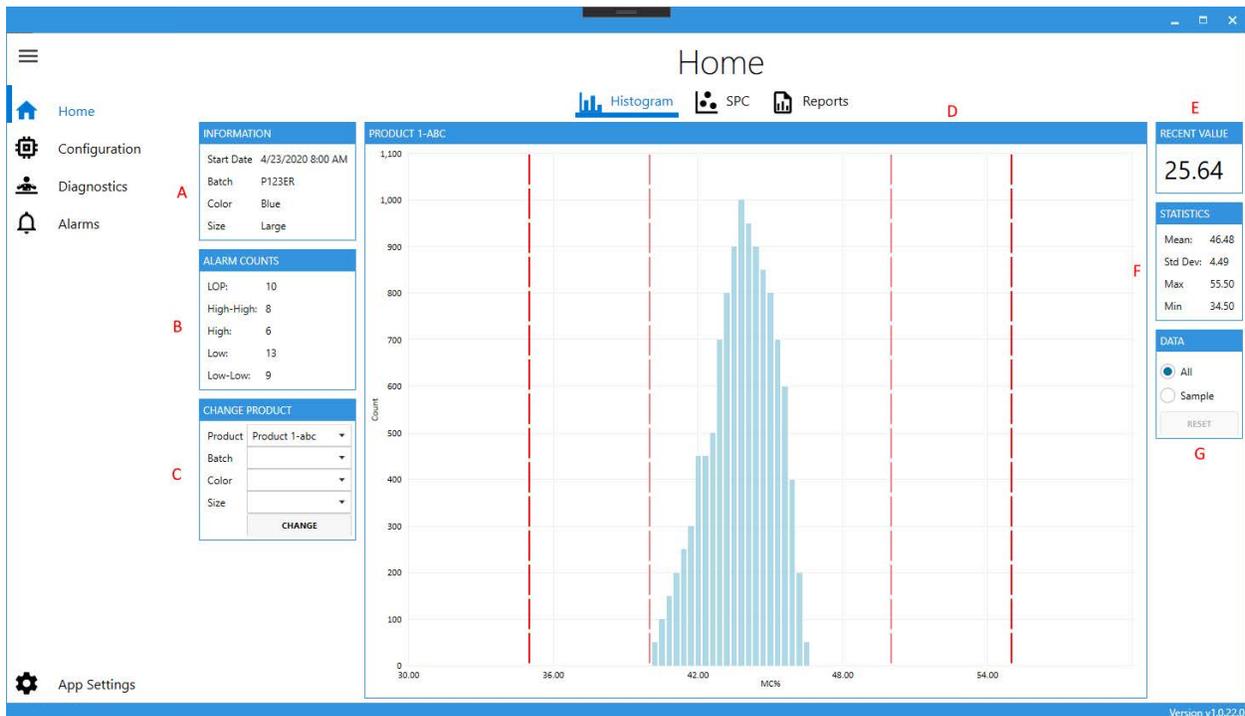
Figure 211 - Home Screen



Histogram

The histogram screen displays a summary of all data collected by ENVEA over a user specified time range. The screen is divided into seven areas labeled A through G (see Figure 212 - Histogram Data).

Figure 212 - Histogram Data



Section A – Information

This window displays general information on what is currently being measured by the ENVEA system.  includes the following:

- Start Date: starting date and time when the histogram data began collecting information.
- Batch, Color, Size: there are three optional fields entered by a user when the system is collecting data. For illustration purposes only, the figure shows Batch, Color, and Size, however the labels and allowed entries are fully configurable by the user (see [Section B – Optional Categories](#) for information on how to configure these fields).

Section B – Alarm Counts

Alarm counts display the number of times the recorded process values have exceeded the limits for the current time period. These limits are defined by the product rules in the Configuration section (see [Section C – Alarms](#)).

Section C – Change Product

 the type of product being measured changes, the user manually selects the new product (and any optional data entries) and clicks **Change** to inform the ENVEA system. ENVEA will reset the Histogram data and apply the newly selected product parameters.

Section D – Chart

This is a histogram chart of the data measured by the ENVEA system. A histogram chart displays data grouped into bins, which are displayed as columns. When a value falls within the bin range, the column height is increased by one. The result is a chart that shows the distribution of all data collected since the *Start Time*.

If product's minimum and/or maximum process limits are configured, red dashed lines are displayed where an out of process condition occurs. The process limit lines are only displayed if limits are configured.

Section E – Recent Value

The most recent value measured by the ENVEA

Section F – Statistics

Basic statistical values for the histogram chart data. The average, standard deviation, minimum value, and maximum value are displayed.

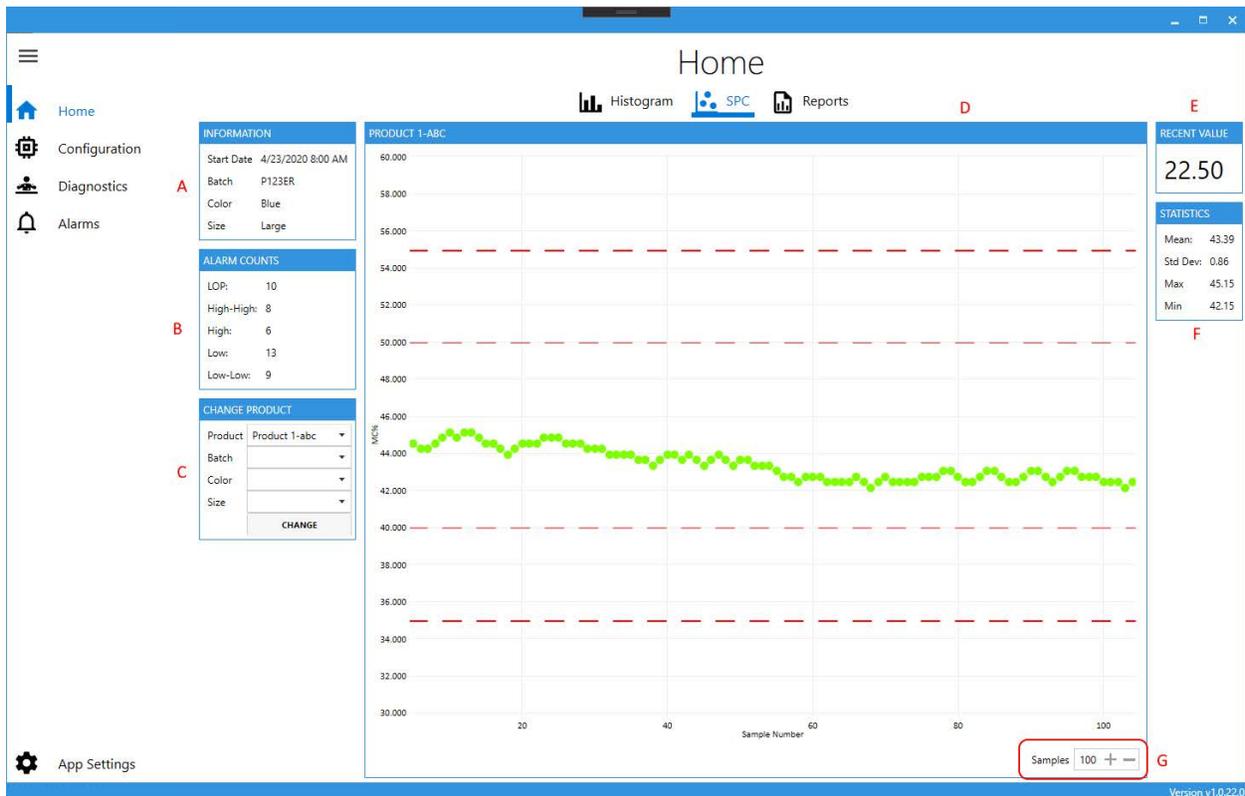
Section G – Data

The user can choose to reset the histogram chart and view the resulting data which is useful if the process has changed and the user wants to see the impact of the change. Click the **Sample** button and then **Reset** to clear the data. Note, resetting the sample data does NOT change the histogram data collected for automatic shift reporting (see [SETUP SHIFTS](#) for how to setup automatic reports). Click the **All** button to view data collected for the shift.

SPC

The SPC chart (Figure 213 - SPC Chart) shows the most recent data collected. The chart displays a dot each time the sensor measures the material; the most recent data is added on the right and the oldest dot is on the left side. This view is particularly useful when analyzing quickly changing process conditions. However, there is a limit to the number of points visible on the screen. If more data is desired, the histogram is a better tool. The screen is divided into seven areas labeled A through G.

Figure 213 - SPC Chart



Section A – Information

This displays general information on what is currently being measured by the ENVEA system. It includes the following:

- Start Date: starting date and time when the histogram data begin collecting information.
- Batch, Color, Size: there are three optional fields entered by a user when the system is collecting data. For illustration purposes only, the figure shows Batch, Color, and Size, however the labels and allowed entries are fully configurable by the user (see [Section B – Optional Categories](#) for information on how to configure these fields).

Section B – Alarm Counts

Alarm counts displays the number of times the recorded process values has exceeded the user defined limits for the current time period. These limits are defined by the product rules in the Configuration section (see [Section C – Alarms](#)).

Section C – Change Product

If the type of product being measured changes, the user manually selects the new product (and any optional data entries) and clicks **Change** to inform the ENVEA system. ENVEA will reset the Histogram data and apply the product parameters.

Section D – Chart

This is a point chart representation of the data measured by the ENVEA system. Each value is added as a dot to the chart, with the most recent added on the right side.

If product's minimum and/or maximum process limits are configured, red dashed lines can be used to determine when an out of process condition occurs. The process limit lines are only displayed for configured limits.

Section E – Recent Value

The most recent value measured by the ENVEA

Section F – Statistics

Basic statistical values for the histogram chart data. The average, standard deviation, minimum value, and maximum value are displayed.

Section G – Samples

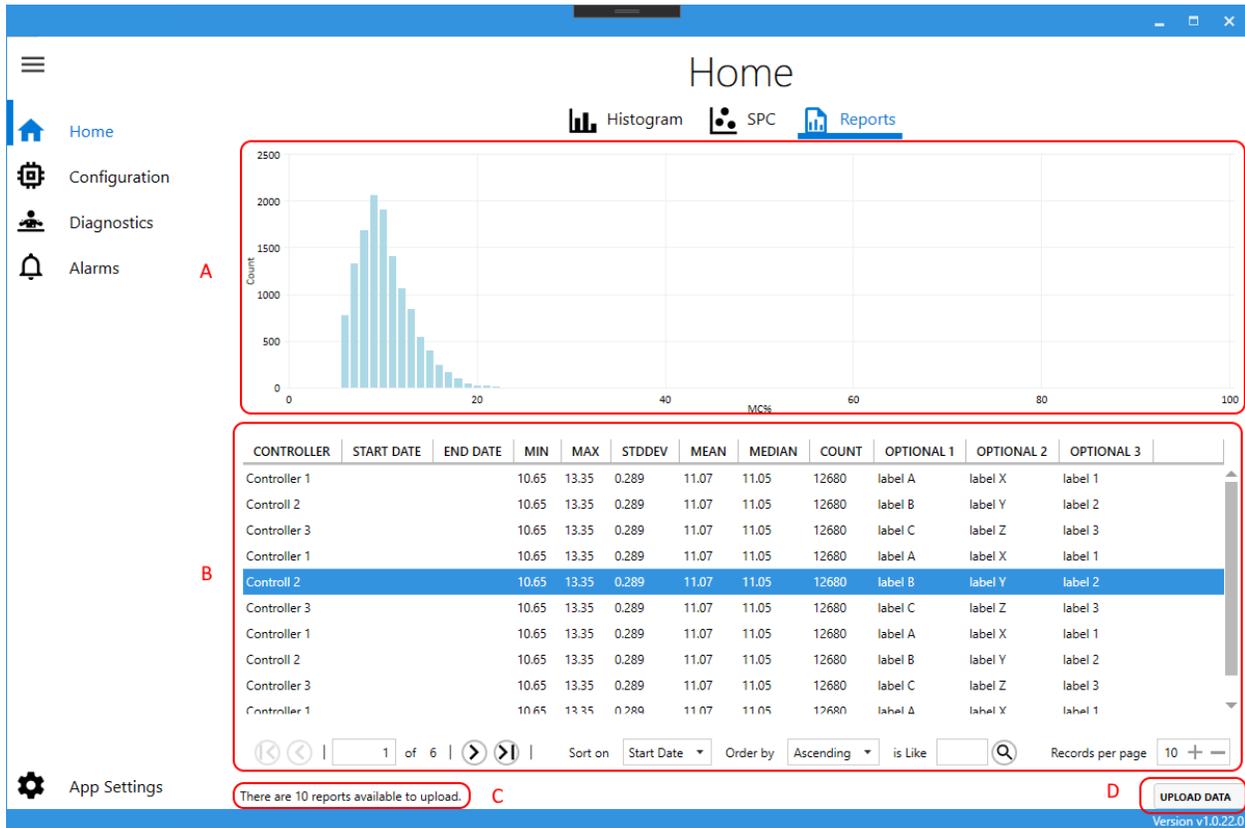
User selects the number of samples to display on the chart. Maximum value is 1000 points.

Reports

The Reports chart (Figure 214 - Reports) shows historical data collected and saved to a database.

The Reports function requires the database setup first (see [Section C – Database](#))

Figure 214 - Reports



Section A – Histogram Chart

The histogram of historical data selected in Section B is displayed.

Section B – Table Data

Data stored in the database is shown in the table. The bottom of the table allows the user to page forward and backward to locate the desired report.

Section C – Reports Available

The number of reports available in the ENVEA system is shown on this indicator.

Section D – Upload Data

If a report is available to save to the database, the **Upload Data** button is visible. Clicking this option will read the reports from the ENVEA system and save them to the database.

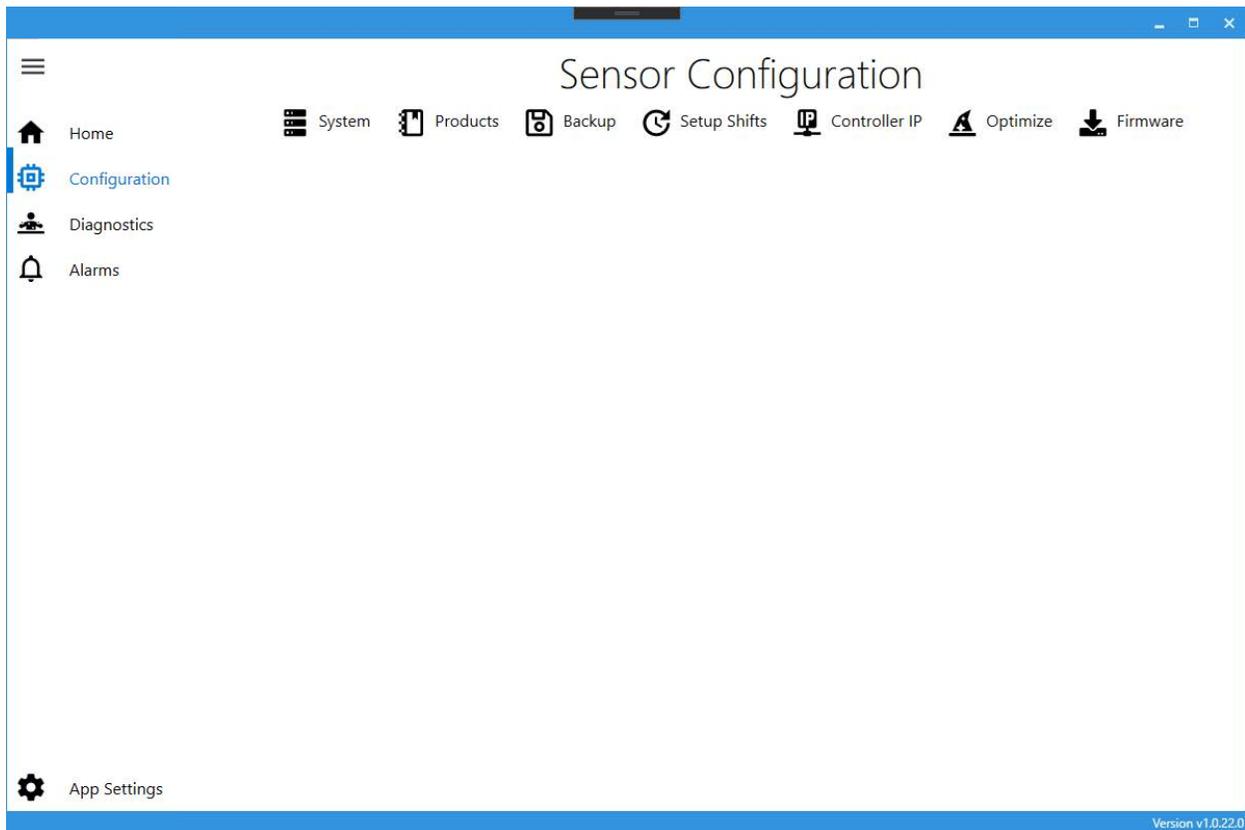
Configuration Screens

The configuration tab allows the user to set and store parameters directly to the ENVEA system, care should be taken whenever making a process change (see Figure 215 - Configuration Screen). Each change to the system is logged for audit purposes (see [LOGS](#))

The primary functions available are:

- **System:** Global parameter changes to the ENVEA system are made in this tab.
- **Products:** Configuring a product's process rules and parameters are made in this tab. This includes calibration, process limits, and data smoothing.
- **Backup:** backup and restore functionality for the system can be performed via this screen. It is recommended to make periodic backups of the system configuration for disaster recovery.
- **Setup Shifts:** the system can automatically record ENVEA values and out of process conditions during a shift. This screen allows the user to configure the shift start and end times.
- **Controller IP:** the ENVEA system requires a static IP, this screen allows the user to change the system's IP. Note: after changing the IP, the application needs to be changed to communicate with this new IP (see [Connection](#))
- **Optimize:** while the system is measuring a product, it is sometimes desirable to simulate how product rule changes impact the results. This screen provides tools to make changes, view the simulated results, and then either accept or discard the changes.
- **Firmware:** the firmware in the ENVEA system can be upgraded via this screen.

Figure 215 - Configuration Screen



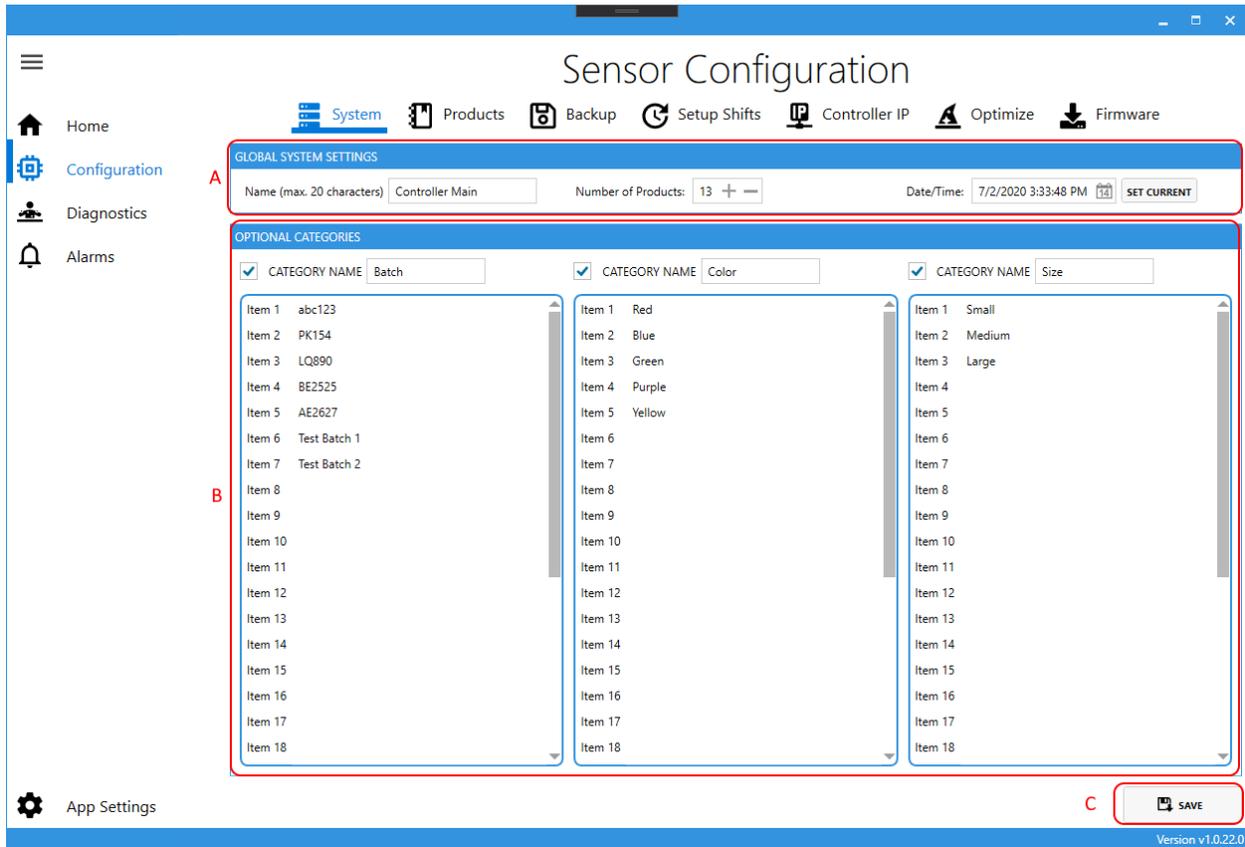
System

The system screen has three sections (see Figure 216 - System Setup):

- Section A: general settings for the controller
- Section B: user defined optional values
- Section C: save settings to the controller

After making a configuration change, a backup should be performed for disaster recovery (see [BACKUP](#))

Figure 216 - System Setup



Section A – Global System Settings

This section has three setting values:

- Name: the user may provide a user-friendly name for the controller. This is useful when multiple controllers are on-site and it is necessary to distinguish between systems.
- Number of Products: this defines the number of products which are configured in the system. Set this number to how many products are being monitored by the system. The maximum allowed value is 120. If additional products are required in the future, increase as necessary.
- Date/Time: the controller has its own internal clock for items like automatic shift reports. Set the time to match the local PC time.

Section B – Optional Categories

Optional categories are useful to add context to the data being monitored by the system. This optional information is displayed to users on the live monitor screens and is also appended to shift reports. These categories are user-configurable to fit site specific needs. For example, users may want to record the color of the product being monitored.

Section C – Save Button

Once the changes are made, users can apply the changes to the controller by clicking the **Save** button.

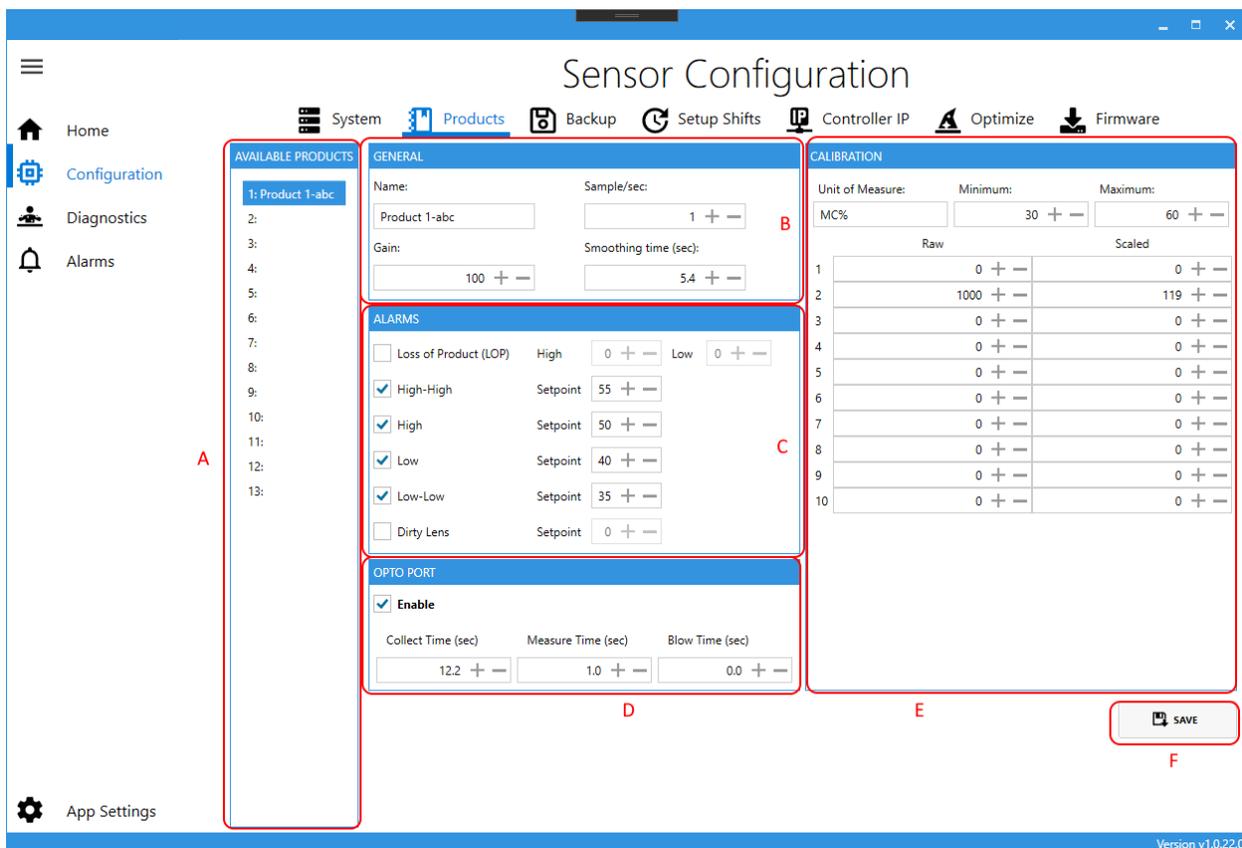
Products

The product screen allows the user sets the 'rules' for how the ENVEA responds for a product. Some information users can change include (see Figure 217 - Product Configuration):

- Section A: list of products available to configure in the system
- Section B: general parameters like name, gain, sample rate, etc.
- Section C: alarms
- Section D: Opto port configuration (an optional accessory for vertical chutes)
- Section E: calibration table

After making a configuration change, a backup should be performed for disaster recovery (see [BACKUP](#))

Figure 217 - Product Configuration



The screenshot shows the 'Sensor Configuration' interface with the following sections highlighted:

- A:** AVAILABLE PRODUCTS list (1: Product 1-abc, 2:, 3:, 4:, 5:, 6:, 7:, 8:, 9:, 10:, 11:, 12:, 13:)
- B:** GENERAL parameters (Name: Product 1-abc, Sample/sec: 1, Gain: 100, Smoothing time (sec): 5.4)
- C:** ALARMS settings (High-High, High, Low, Low-Low, Dirty Lens)
- D:** OPTO PORT settings (Enable checked, Collect Time (sec): 12.2, Measure Time (sec): 1.0, Blow Time (sec): 0.0)
- E:** CALIBRATION table (Unit of Measure: MC%, Minimum: 30, Maximum: 60, Raw and Scaled values for 10 rows)
- F:** SAVE button

	Raw		Scaled	
	Value	Unit	Value	Unit
1	0	+	0	+
2	1000	+	119	+
3	0	+	0	+
4	0	+	0	+
5	0	+	0	+
6	0	+	0	+
7	0	+	0	+
8	0	+	0	+
9	0	+	0	+
10	0	+	0	+

Section A – Available Products

This is a list of products the user may configure on the system. The number of products displayed is defined on the System Configuration screen (see [Section A – GLOBAL SETTINGS](#))

Section B – General

The items available to configure are:

- Name: name of the product
- Sample/sec: number of samples to measure per second. Maximum is 255 samples/second.
- Gain: between 0% (no gain) and 100% (maximum gain) and determines how much gain to apply on the signal. A rule of thumb is the gain should be set to 70% of maximum before clipping. For example, if the signal starts to clip at 60%, then the gain should be set to 70% of 60% = 42%. The gain can be adjusted as necessary without impacting the calibration table as long as the signal does not clip (see section [Sensor Health](#) for information about clipping)
- Smoothing time (sec): if there is noise in the measurement results, a moving average can be applied to smooth out the results. Set the value between 0.0 to 25.5 seconds.

Section C – Alarms

Process alarms can be used to determine if the process is in control. The user defines the parameters per application. The process alarms are defined as follows:

- High-High: system measures a value greater than limit
- High: system measures a value greater than limit but less than High-High (if enabled)
- Low: system measures a value lower than low but greater than Low-Low (if enabled)
- Low-Low: system measures a value lower than limit

In addition, there is a Loss of Product (LOP) alarm condition when the system is no longer measuring the product, e.g. measuring the conveyor material. When this value is set, and the system determines an LOP condition, the user is informed the system is not measuring product.

Finally, there is a Dirty Lens parameter. This can be set to detect if the lens is dirty and requires cleaning to ensure an accurate result is reported.

Section D – Opto Port

The Opto Port accessory is used to measure fine grained materials collected in a chute. If it is being used, the following timer values should be entered:

- Collect Time (sec): the amount of time to collect sample in the chute
- Measure Time (sec): the length of time to measure the sample
- Blow Time (sec): the length of time to actuate a blower to clear the sample area

Section E – Calibration

The calibration section is where a user defines the relationship between the sensor signal and moisture content. The following values can be entered:

- Unit of Measure: this is a description label of what is being measure, e.g. MC%
- Minimum: the minimum value allowed
- Maximum: the maximum value allowed
- Raw vs. Scaled: A calibration table that establishes a relationship between the sensor value and moisture content. The raw and scaled values can be between -2147483.648 and +2147483.647.

Section F – Save Button

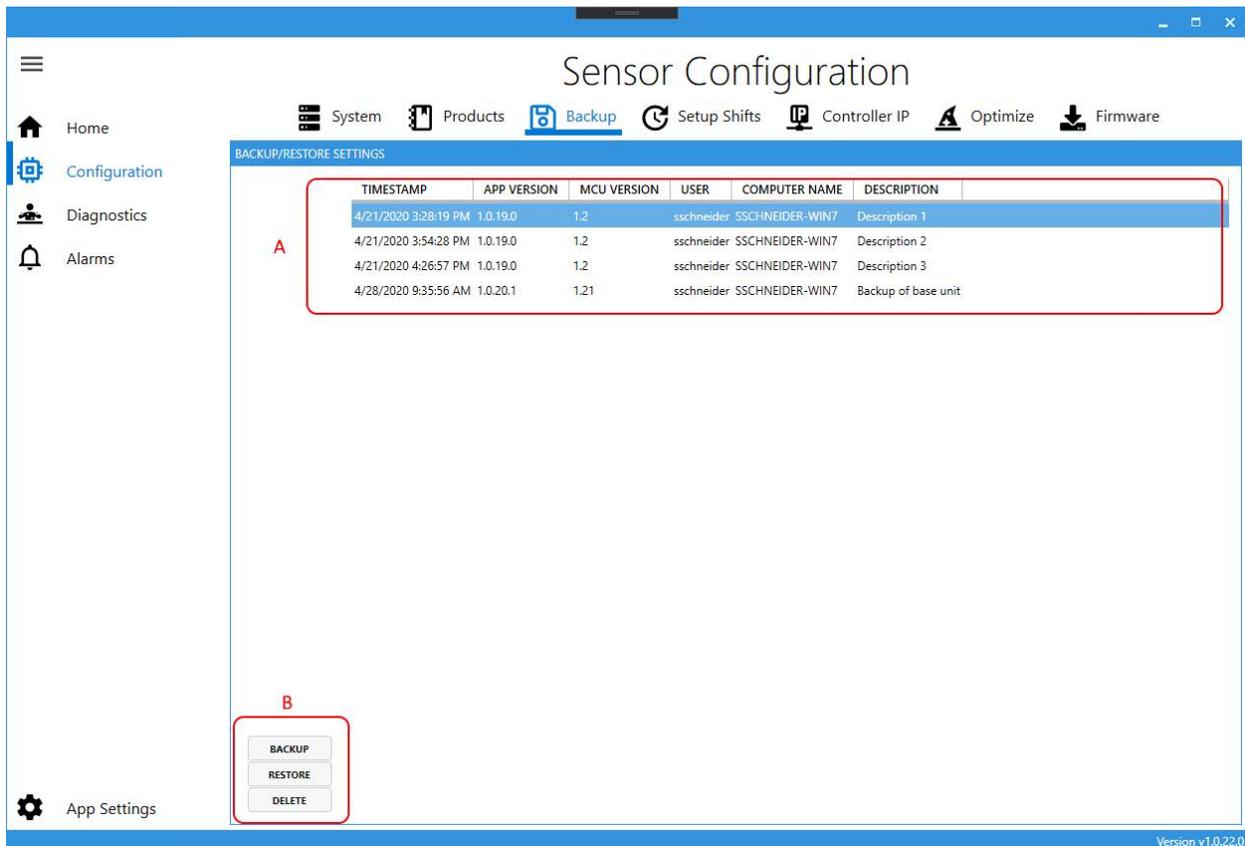
The **Save** button downloads the information to the controller. The changes are applied immediately.

Backup

The ENVEA system has full backup and restoration functionality for disaster recovery. The screen has two sections: (a) record of all backups, and (b) functions to backup/restore. All backups are saved to the SQL server database.

The backup/restore function requires the database to setup first (see [Section C - Database](#))

Figure 218 - Backup Screen



Section A – Log

The log section shows all system backups along with the following information:

- Timestamp: this is the date and time when the backup was performed
- App Version: the version of the application when the backup was performed
- MCU version: the firmware version of the controller
- User: the person logged into Windows who performed the backup
- Computer Name: which computer initiated the backup
- Description: optional descriptive information the user entered regarding the backup

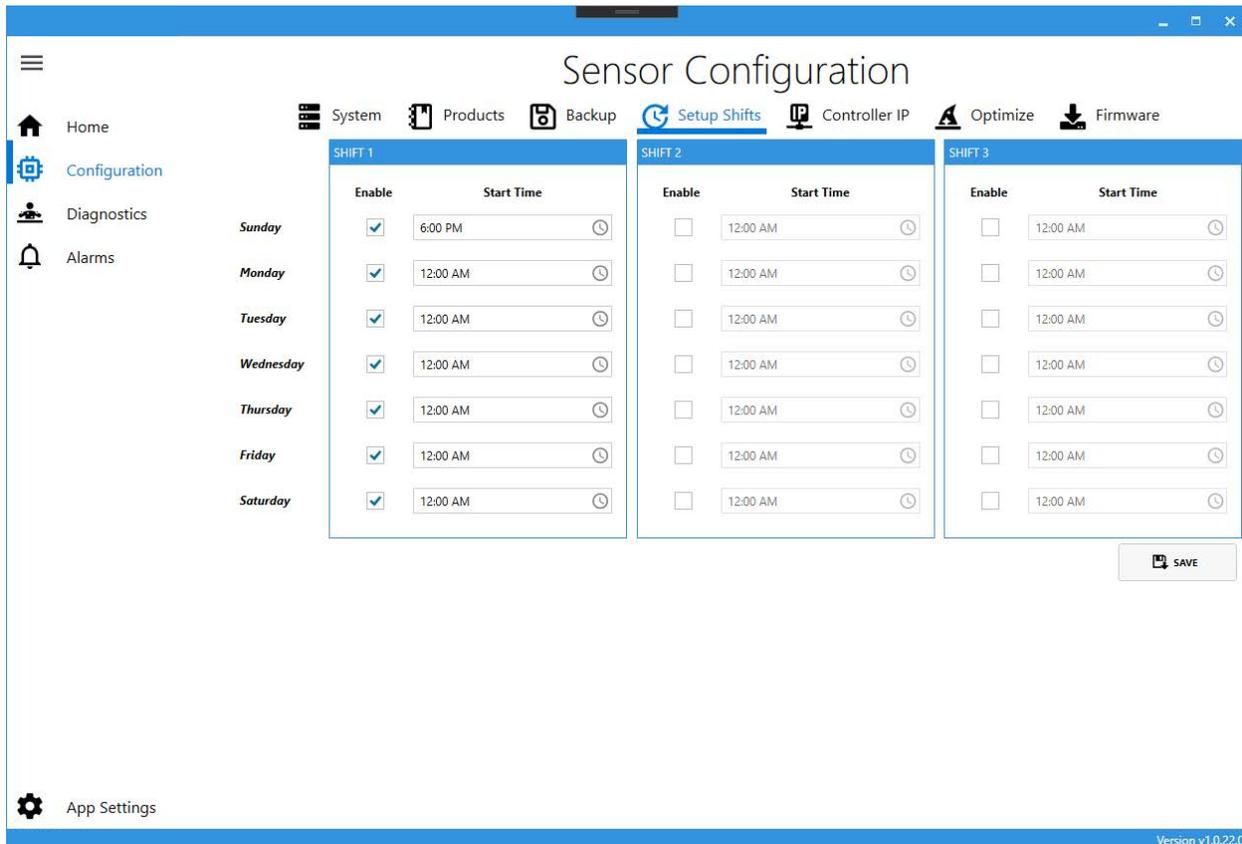
Section B – Actions

- Click the **Backup** button to save all the settings. User will be prompted for an optional description of the backup, then confirm.
- To restore, select a backup from the log in Section A then click the **Restore** button. User will be prompted to confirm restoring before overwriting the system settings.
- Clicking the **Delete** button will permanently remove the backup from the database. The user will be prompted to confirm *permanently* deleting this action.

Setup Shifts

If shifts are setup in the ENVEA system, it will automatically summarize and record the ENVEA results per shift. There are up to three shifts available per day, up to 7 days per week (see Figure 19 - Shift Setup).

Figure 19 - Shift Setup



	SHIFT 1		SHIFT 2		SHIFT 3	
	Enable	Start Time	Enable	Start Time	Enable	Start Time
Sunday	<input checked="" type="checkbox"/>	6:00 PM	<input type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM
Monday	<input checked="" type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM
Tuesday	<input checked="" type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM
Wednesday	<input checked="" type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM
Thursday	<input checked="" type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM
Friday	<input checked="" type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM
Saturday	<input checked="" type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM	<input type="checkbox"/>	12:00 AM

SAVE

App Settings

Version v1.0.22.0

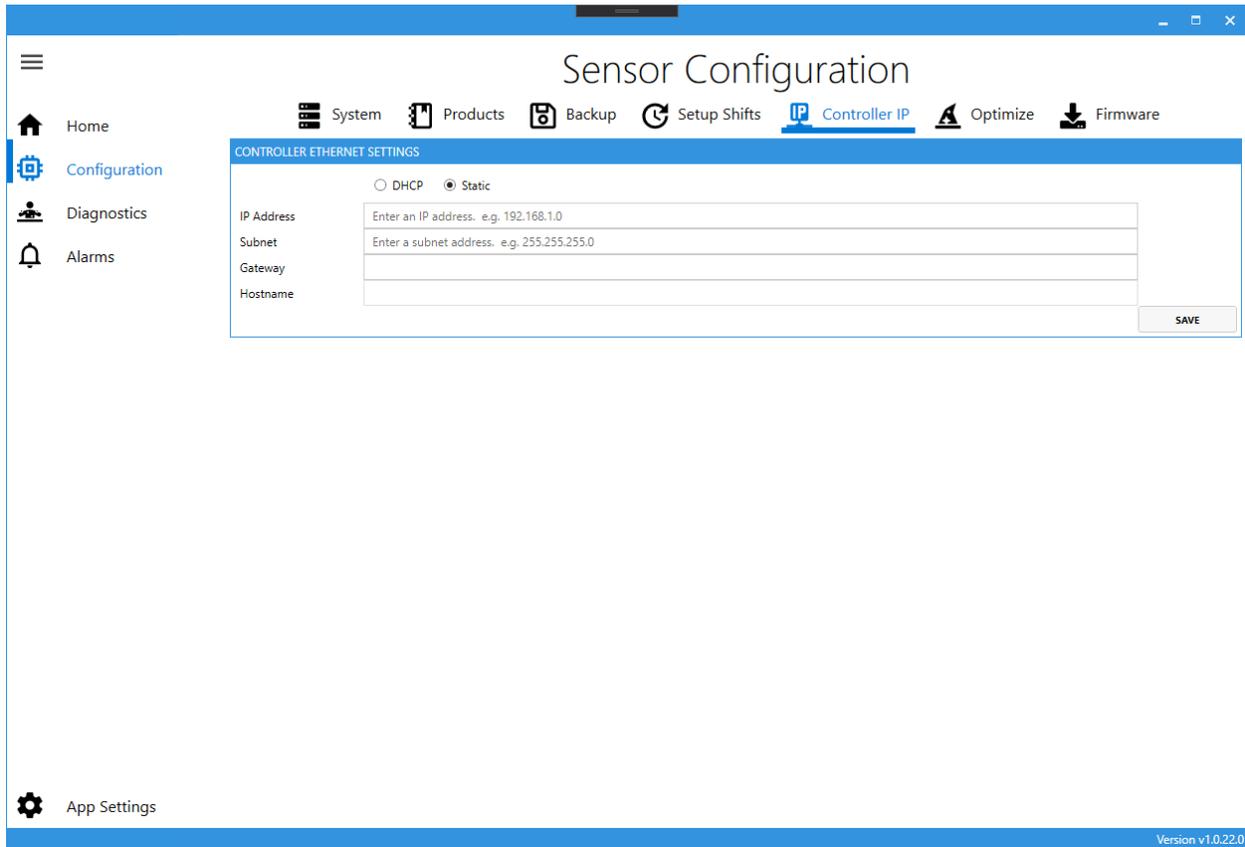
The user checks the box for the shift they would like enabled and enters the starting time for the shift. When the next shift starts, the data that was collected is archived and the data is cleared. Any new data is saved to the current shift.

After making a configuration change, a backup should be performed for disaster recovery (see [BACKUP](#))

Controller IP

The controller IP address can be changed from the application. However, after changing the IP the application connection IP will need to be changed too. Enter the desired IP using the parameters provided by the IT department (see Figure 20 - Controller IP)

Figure 20 - Controller IP



Optimize

This screen provides functionality to make parameter changes to the currently running, view the simulated results, and then either accept or discard the changes. The primary sections are:

- Section A: calibration table for the product
- Section B: product settings related to data smoothing and process limits
- Section C: SPC chart of product values
- Section D: histogram chart of product values
- Section E: the most recent product value
- Section F: statistics on the SPC chart
- Section G: number of out process alarms
- Section H: raw data obtained from the sensor
- Section I: commands to clear the histogram chart and save any changes made

Any change made on this screen are simulated and shown, however this is a *simulated* result only. The change is not applied until the **Save** button is pressed. Any change is highlighted to indicate it varies from the controller value; hovering over the change triangle in the upper left corner shows the user the original value stored in the controller. This allows the user to freely make changes without impacting production until the desired result is achieved.

After making a configuration change, a backup should be performed for disaster recovery (see [BACKUP](#))

Section A – Calibration Table

The calibration section is where a user defines the relationship between the sensor signal and moisture content. See [Section E – CALIBRATION](#) for detailed information about setting the values. Figure 21 - Change highlighted on calibration table shows how a change to the table is displayed to the user.

Figure 21 - Change highlighted on calibration table

CALIBRATION		
	Raw Value	Scaled Value
1	0 + -	0 + -
2	1000 + -	100 + -
3	0 + -	0 + -
4	0 + -	0 + -
5	0 + -	0 + -
6	0 + -	0 + -
7	0 + -	0 + -
8	0 + -	0 + -
9	0 + -	0 + -
10	0 + -	0 + -

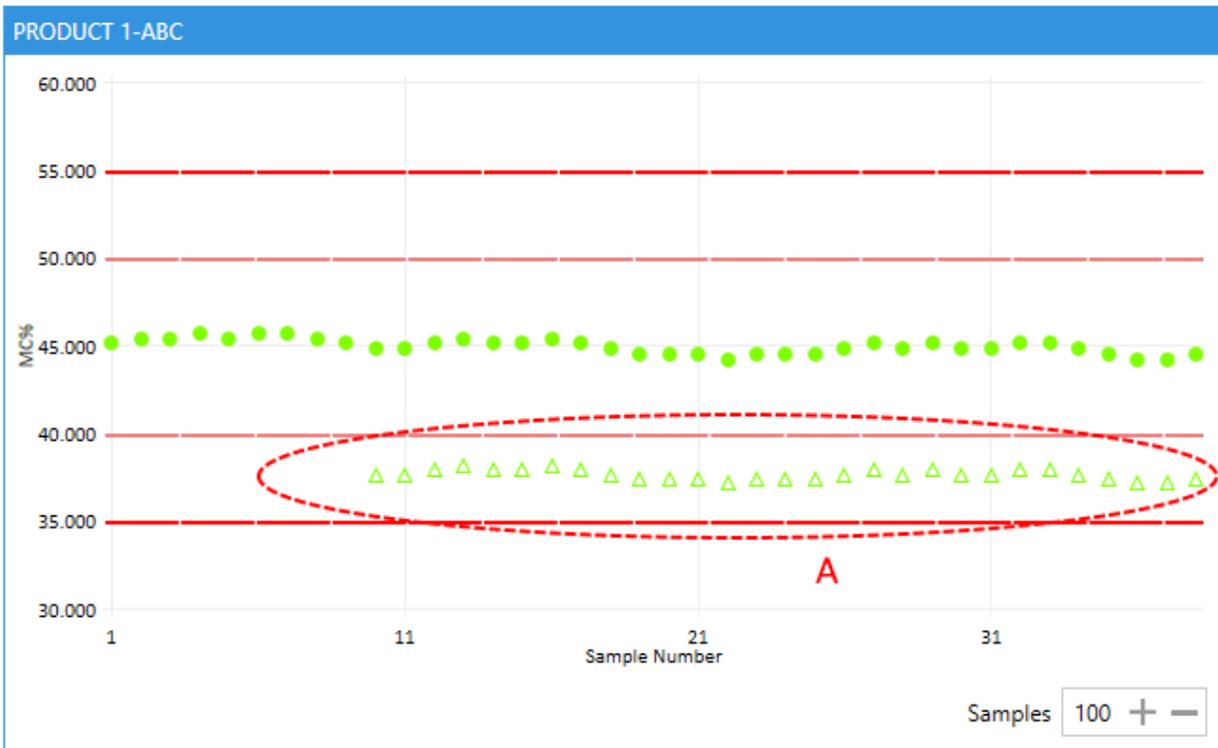
Section B – Product Settings

Process alarms can be used to determine if the process is in control. The user defines the parameters per application. See [Products](#) section for detailed information.

Section C – SPC Chart

This chart displays the most recent values measured by the system. If a change to the Calibration Table is made, a second series of triangles is shown to indicate the impact of this change (See Figure 22 - Change to calibration shown on SPC).

Figure 22 - Change to calibration shown on SPC



Section D – Histogram Chart

The histogram chart shows the distribution of values captured for a large amount of data. Any change made to the calibration table is reflected in the distribution, however if the dataset is already large it may be difficult to discern the impact of the change. To better see the impact, click **Reset Histogram** to clear the graph and show new data points. Note: this does not impact the histogram being recorded in the controller.

Section E – Recent Value

This is the most recent value measured by the system.

Section F – Statistics

Basic statistics for the data in the SPC chart. For more detail information see [Section F – STATISTICS](#)

Section G – Alarm Counts

These are out of process alarms that have occurred. See [Section B – ALARM COUNTS](#) for more information.

Section H – Raw Data

Raw data can be useful to determine what values to set the LOP alarms and calibration table entries. The data displayed is the most recent value measured.

Section I – Save

To apply the changes to the product, click the **Save** button.

Firmware

The system firmware is upgraded from this screen in a two-step process (see Figure 23 - Upgrade Firmware).

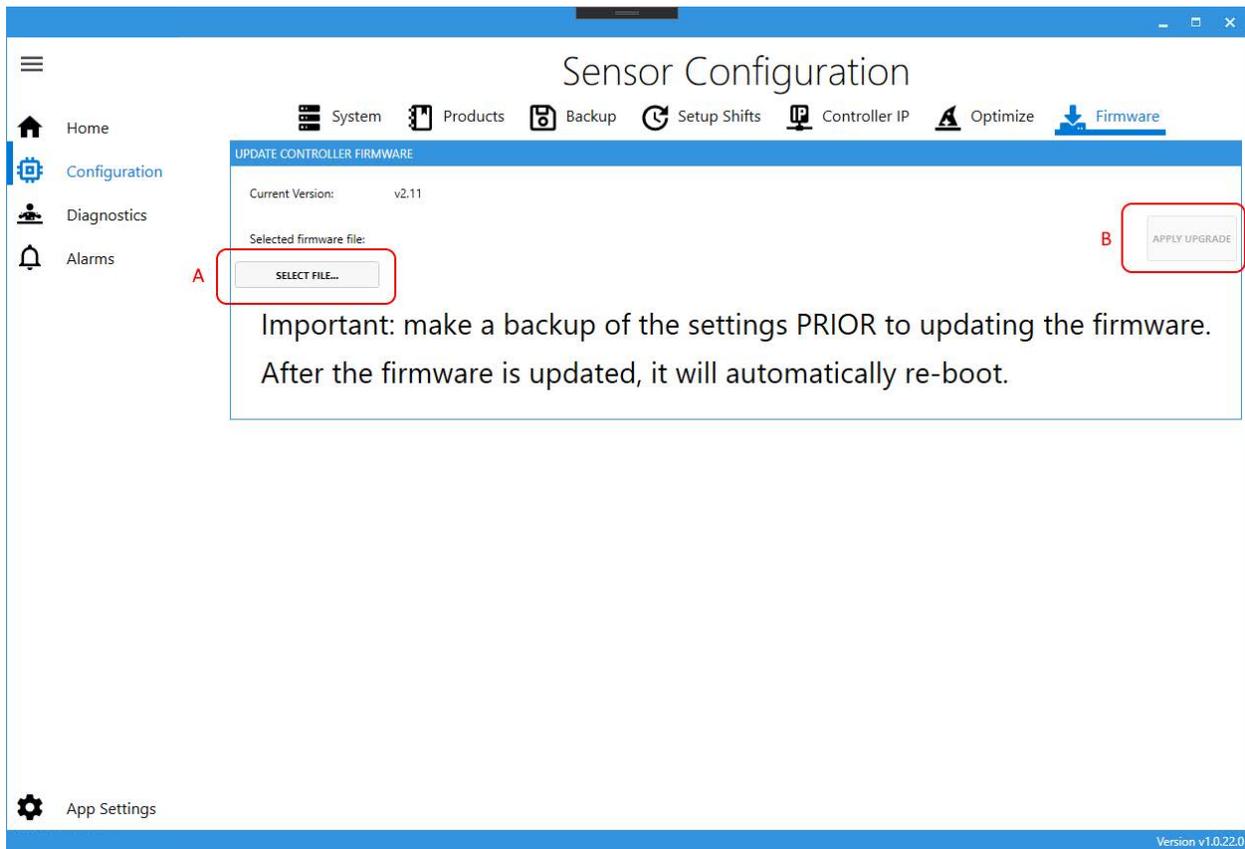
Step A: click the **Select File** button and select the desired firmware file to install

Step B: click the **Apply Upgrade** button to initiate the firmware upgrade

After the system has updated, wait 30 seconds then try to re-connect to the sensor in the App Settings – Connection screen (see [Connection](#)).

Prior to upgrading the firmware, a backup should be performed (see [BACKUP](#))

Figure 23 - Upgrade Firmware



Home Configuration Diagnostics Alarms

System Products Backup Setup Shifts Controller IP Optimize Firmware

UPDATE CONTROLLER FIRMWARE

Current Version: v2.11

Selected firmware file:

A SELECT FILE...

B APPLY UPGRADE

Important: make a backup of the settings PRIOR to updating the firmware.
After the firmware is updated, it will automatically re-boot.

App Settings

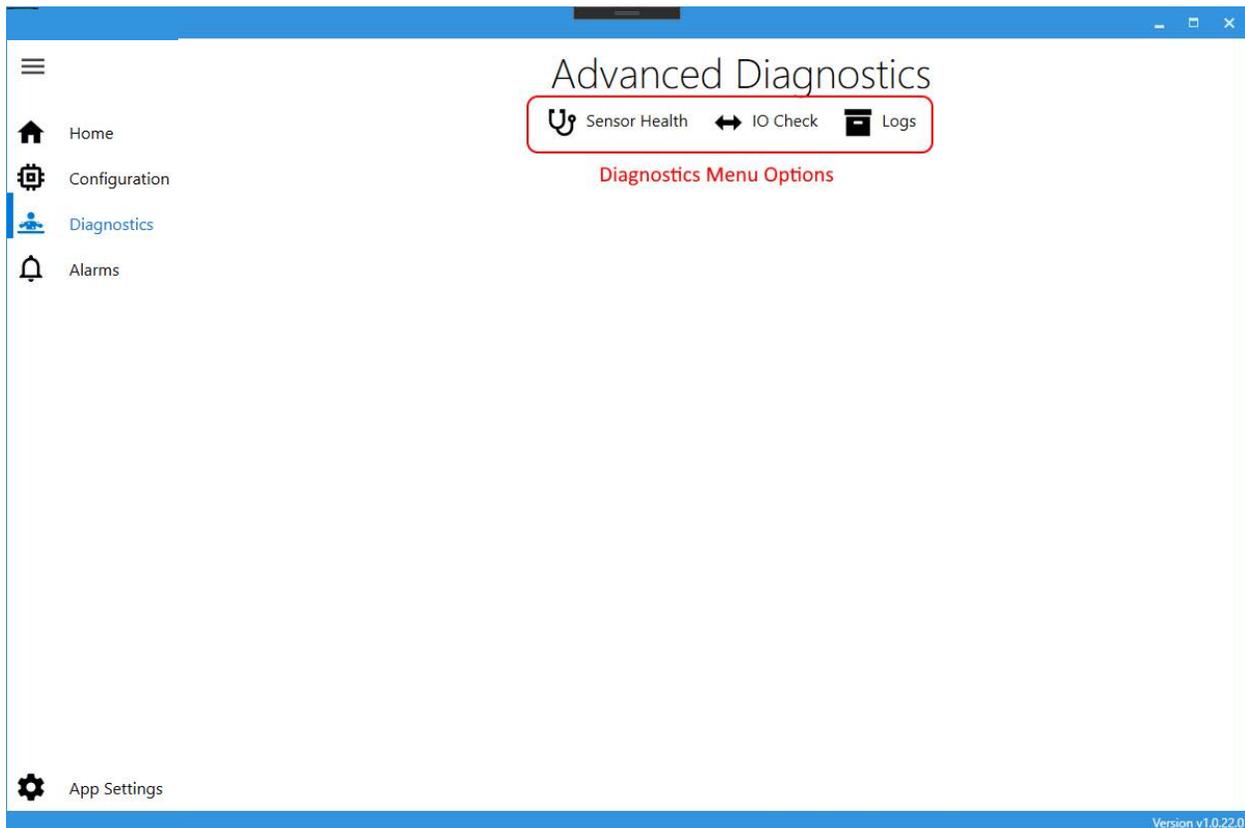
Version v1.0.22.0

Diagnostics Screens

The Diagnostic screen (Figure 24 - Diagnostic Menu) has three options:

- ❑ **Sensor Health:** user may monitor detailed information about a sensor's health. This includes all health sensors, general status information, and NIR results.
- ❑ **IO Check:** this screen provides functionality to check hardware discrete IO and analog outputs
- ❑ **Logs:** a record of all configuration changes and general status information.

Figure 24 - Diagnostic Menu

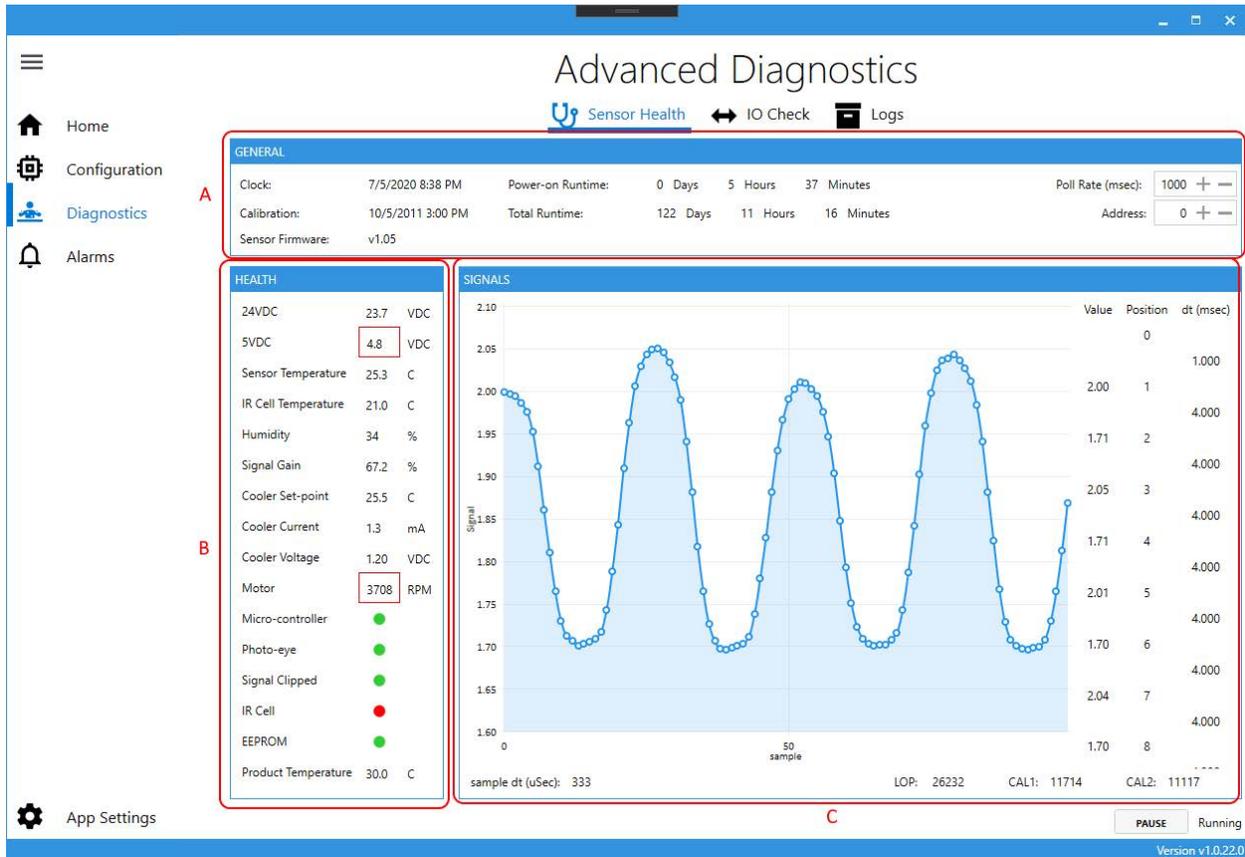


Sensor Health

This screen is an advanced diagnostics screen showing detailed information about a sensor. It is designed to diagnose a problem with the sensor, and identify the issue. Typically a technician with knowledge of how the sensor functions would view this data on this screen in a remote troubleshooting session. The following lists the primary sections in Figure 25 - Sensor Health:

- ❑ Section A: general information about the sensor
- ❑ Section B: detailed on-board diagnostic information in the sensor
- ❑ Section C: raw IR data captured by the sensor

Figure 25 - Sensor Health



Section A – General

The area shows information such as when the sensor was last calibrated, how long the unit has been in service, and the firmware version.

There are two controls that allow a user to select which sensor to view data (i.e. Address) and how quickly to read the information from the sensor (i.e. Poll Rate).

Section B – Health

Detailed results from the sensor's onboard sensors. This includes information like voltages, temperatures, and alarm conditions. The *Signal Clipped* indicator is an important item to watch when setting up a product; if this is illuminated the gain on the sensor is too high and needs to be adjusted.

Section C – Signals

Raw data measured by the sensor. This can be used to determine how well the sensor is measuring the material.

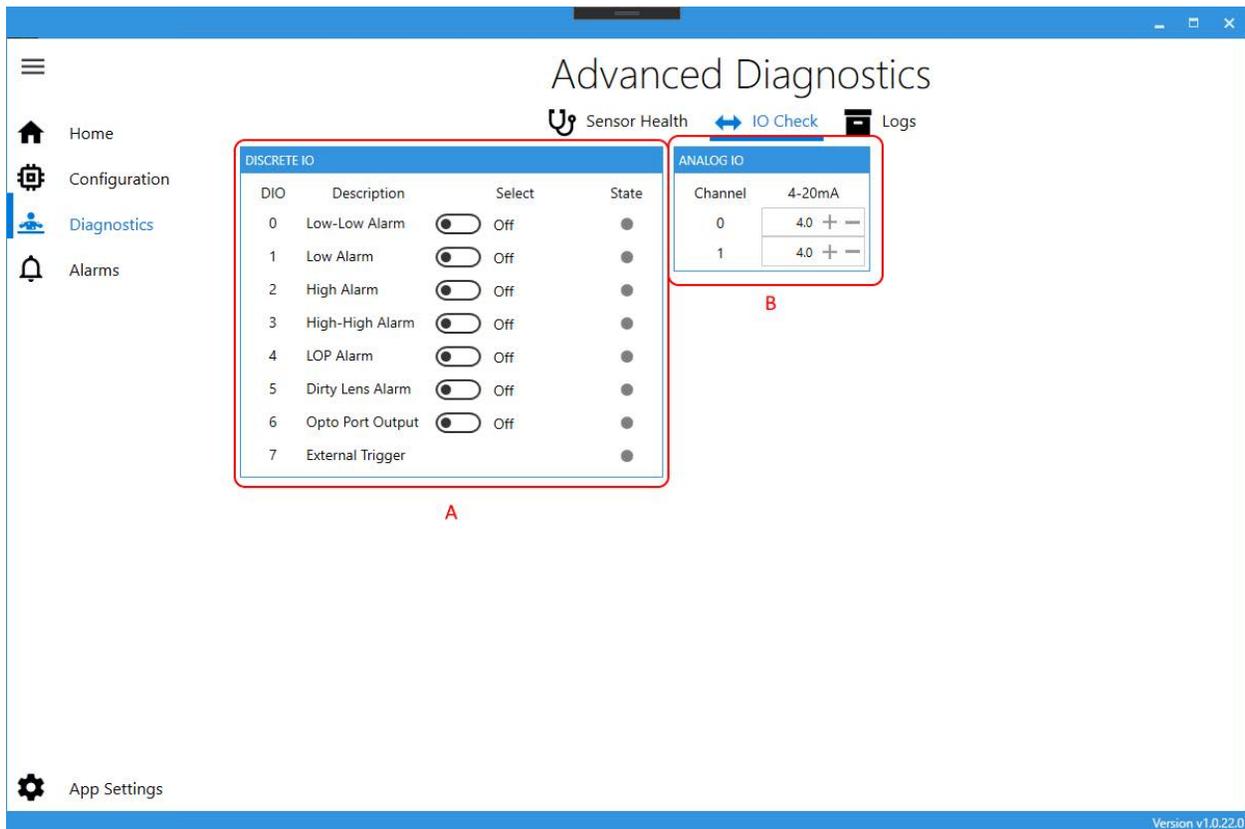
IO Check

The IO Check screen (see Figure 26 - IO Check) allows users to test the discrete IO points and analog outputs in order to confirm the IO is correctly terminated to the field IO points.

This screen will automatically refresh the data once per second, so ensure any I/O check waits at least that long.

The user must confirm the ENVEA system will not take any readings during I/O checkout

Figure 26 - I/O Check



Section A – Discrete IO

This section provides functionality to turn on the discrete outputs for DIO 0-6. The user may actuate DIO 7 (External Trigger) and confirm the State light illuminates when on.

Section B – Analog IO

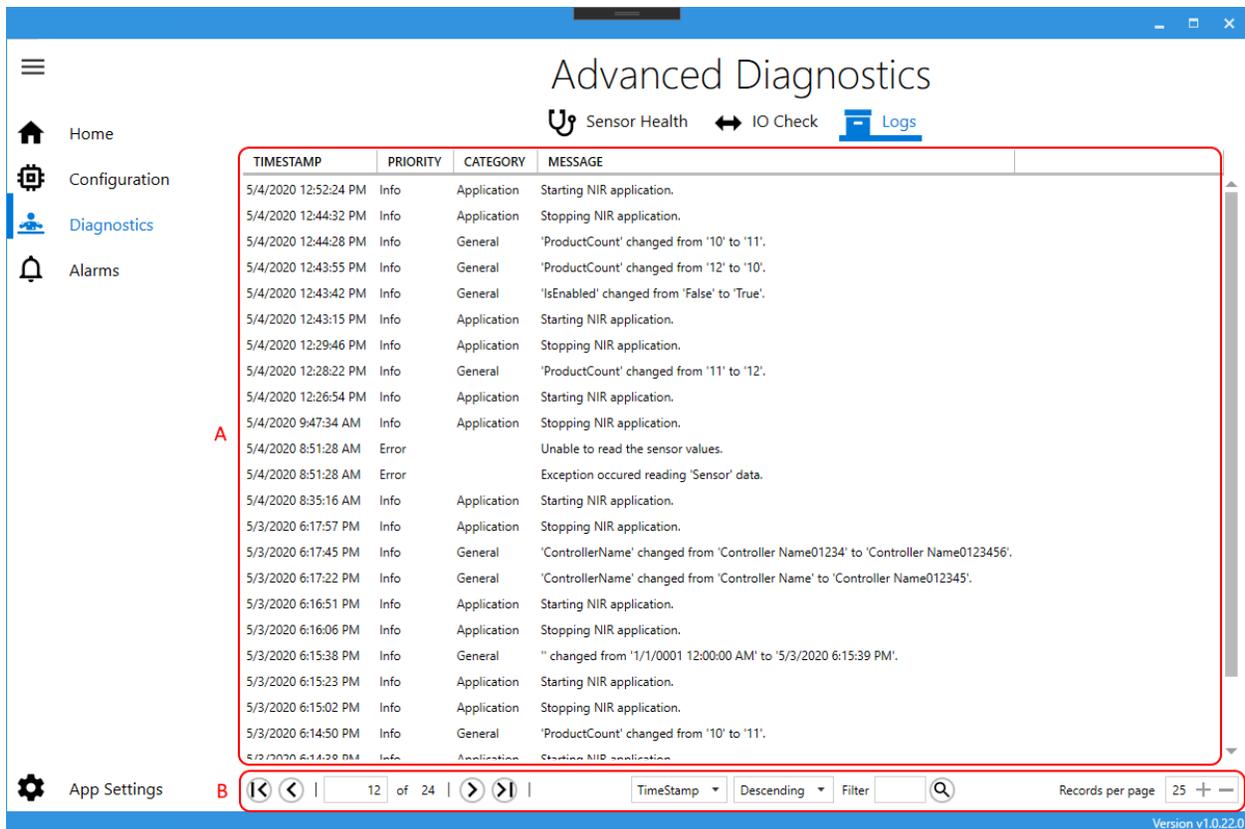
The user may set the analog output value for each channel and confirm the level is reached.

Logs

The log screen displays general information about the software and any errors that may have occurred. In addition, there is a record of any system changes performed. This audit trail can be of assistance when the system does not respond as it had previously and a user is looking to verify if a change was made in order to explain the new behavior.

The logs function requires the database to setup first (see [Section C – Database](#))

Figure 27 - Logs



The screenshot shows the 'Advanced Diagnostics' application window. The main content area displays a table of logs. The table has four columns: 'TIMESTAMP', 'PRIORITY', 'CATEGORY', and 'MESSAGE'. The logs show various events such as starting and stopping the NIR application, changes in product count, and sensor-related errors. A red box labeled 'A' highlights the log table, and another red box labeled 'B' highlights the table's navigation controls at the bottom, including page numbers and sorting options.

TIMESTAMP	PRIORITY	CATEGORY	MESSAGE
5/4/2020 12:52:24 PM	Info	Application	Starting NIR application.
5/4/2020 12:44:32 PM	Info	Application	Stopping NIR application.
5/4/2020 12:44:28 PM	Info	General	'ProductCount' changed from '10' to '11'.
5/4/2020 12:43:55 PM	Info	General	'ProductCount' changed from '12' to '10'.
5/4/2020 12:43:42 PM	Info	General	'IsEnabled' changed from 'False' to 'True'.
5/4/2020 12:43:15 PM	Info	Application	Starting NIR application.
5/4/2020 12:29:46 PM	Info	Application	Stopping NIR application.
5/4/2020 12:28:22 PM	Info	General	'ProductCount' changed from '11' to '12'.
5/4/2020 12:26:54 PM	Info	Application	Starting NIR application.
5/4/2020 9:47:34 AM	Info	Application	Stopping NIR application.
5/4/2020 8:51:28 AM	Error		Unable to read the sensor values.
5/4/2020 8:51:28 AM	Error		Exception occurred reading 'Sensor' data.
5/4/2020 8:35:16 AM	Info	Application	Starting NIR application.
5/3/2020 6:17:57 PM	Info	Application	Stopping NIR application.
5/3/2020 6:17:45 PM	Info	General	'ControllerName' changed from 'Controller Name01234' to 'Controller Name0123456'.
5/3/2020 6:17:22 PM	Info	General	'ControllerName' changed from 'Controller Name' to 'Controller Name012345'.
5/3/2020 6:16:51 PM	Info	Application	Starting NIR application.
5/3/2020 6:16:06 PM	Info	Application	Stopping NIR application.
5/3/2020 6:15:38 PM	Info	General	" changed from '1/1/0001 12:00:00 AM' to '5/3/2020 6:15:39 PM'.
5/3/2020 6:15:23 PM	Info	Application	Starting NIR application.
5/3/2020 6:15:02 PM	Info	Application	Stopping NIR application.
5/3/2020 6:14:50 PM	Info	General	'ProductCount' changed from '10' to '11'.
5/2/2020 6:14:28 PM	Info	Application	Starting NIR application.

Section A – Logs

This section displays the following information:

- Timestamp: The date and time when alarm was generated.
- Priority: Unique ID number identifying the source of the alarm.

- Category: type of alarm
- Message: A description of the alarm condition.

Section B – Navigation

The user can page forward/backward in the logs, change the number of logs shown per page, or filter the logs.

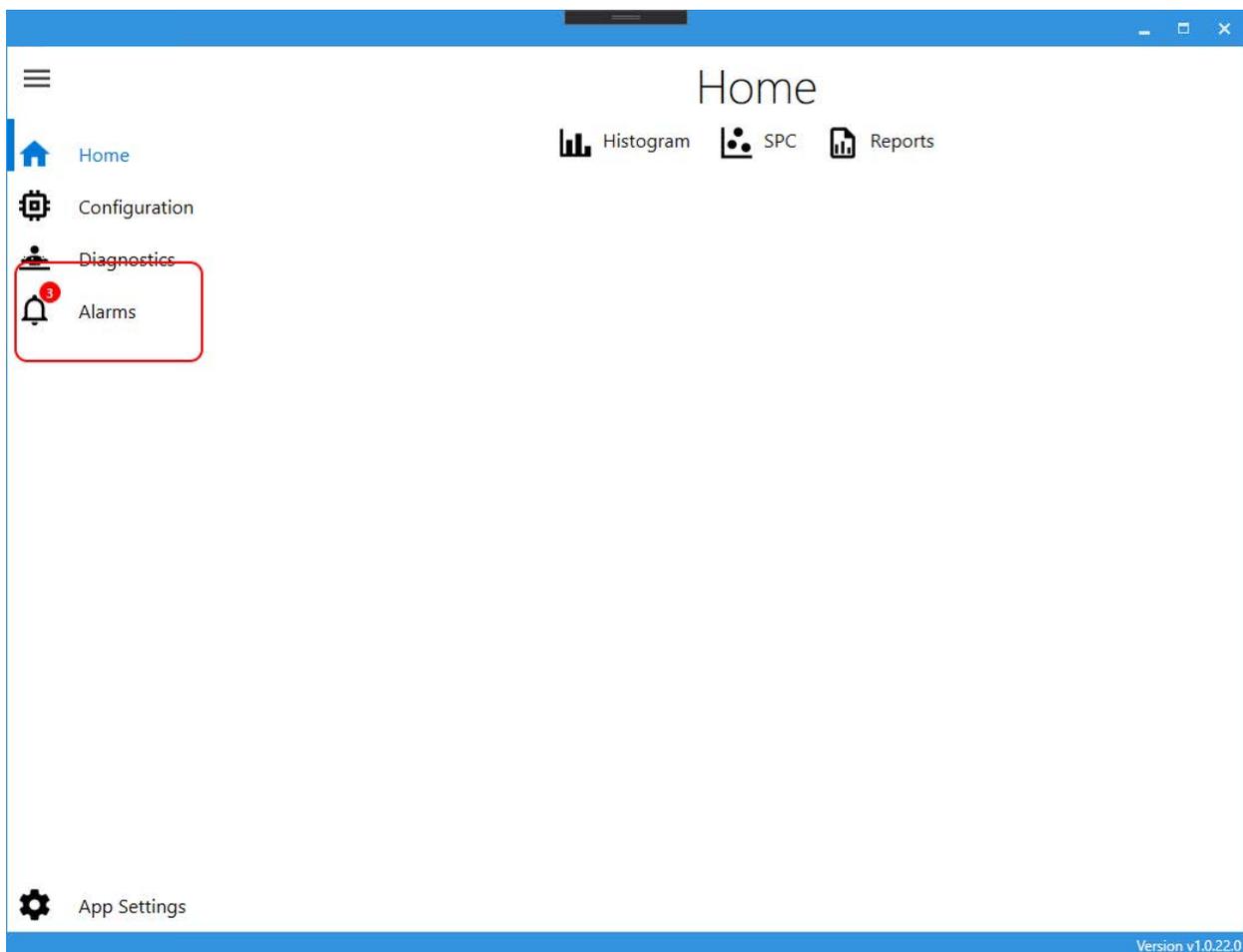
Alarms

When an alarm condition is detected by the system, an alarm notification icon is shown along with the number of new alarms detected (see

Figure 28 - Alarm *Notification*).

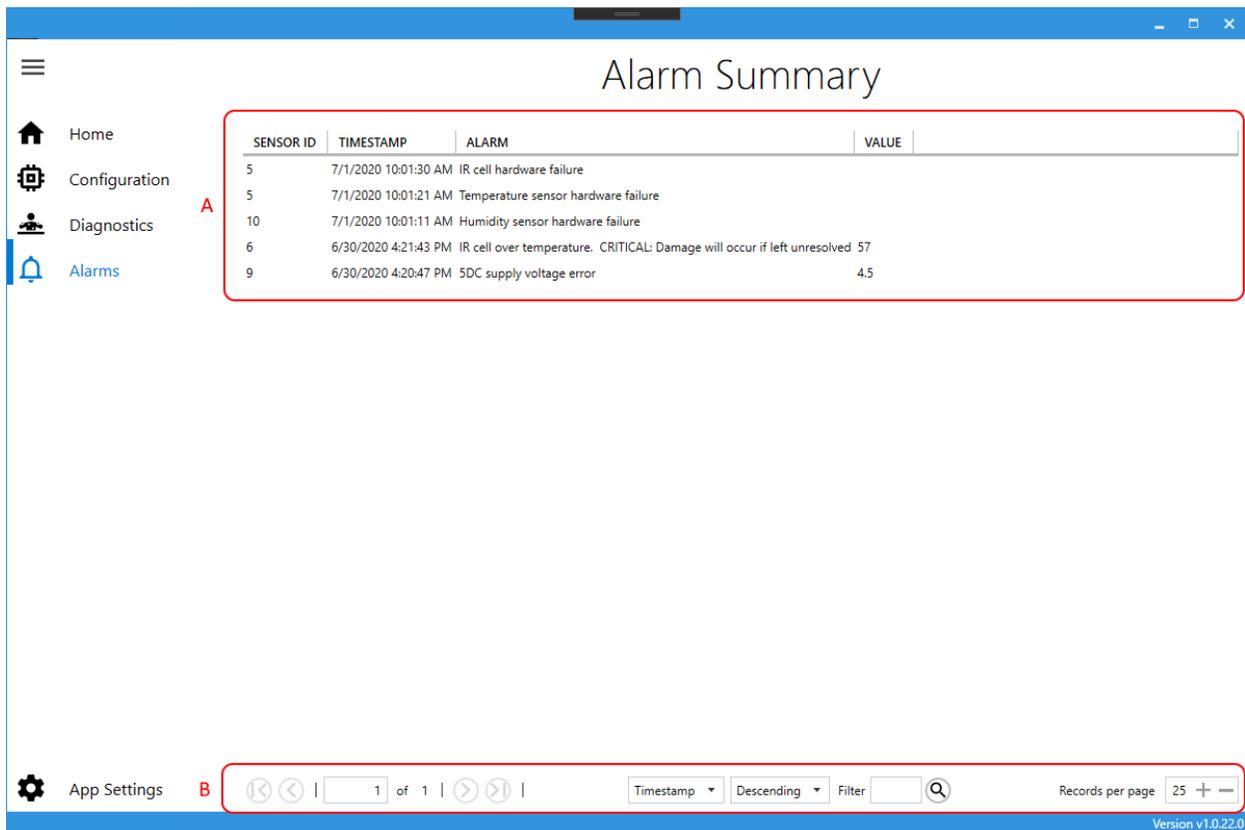
The alarms function requires the database to setup first (see [Section C – Database](#))

Figure 28 - Alarm Notification



Clicking the **Alarms** button displays the screen in Figure 40 - Alarm Screen.

Figure 40 - Alarm Screen



The screenshot shows the 'Alarm Summary' interface. On the left is a navigation menu with 'Alarms' selected. The main area contains a table of alarm events:

SENSOR ID	TIMESTAMP	ALARM	VALUE
5	7/1/2020 10:01:30 AM	IR cell hardware failure	
5	7/1/2020 10:01:21 AM	Temperature sensor hardware failure	
10	7/1/2020 10:01:11 AM	Humidity sensor hardware failure	
6	6/30/2020 4:21:43 PM	IR cell over temperature. CRITICAL: Damage will occur if left unresolved	57
9	6/30/2020 4:20:47 PM	SDC supply voltage error	4.5

At the bottom, there is a navigation bar with 'App Settings', page navigation (1 of 1), sorting (Timestamp, Descending), a filter input, and 'Records per page' (25).

The alarm summary includes two sections.

Section A – Alarms

Contains the following information:

- Sensor ID: Unique ID number identifying the source of the alarm.
- Timestamp: The date and time when alarm was generated.
- Alarm: A description of the alarm condition.
- Value: If the alarm condition includes information about the alarm value it is shown here.

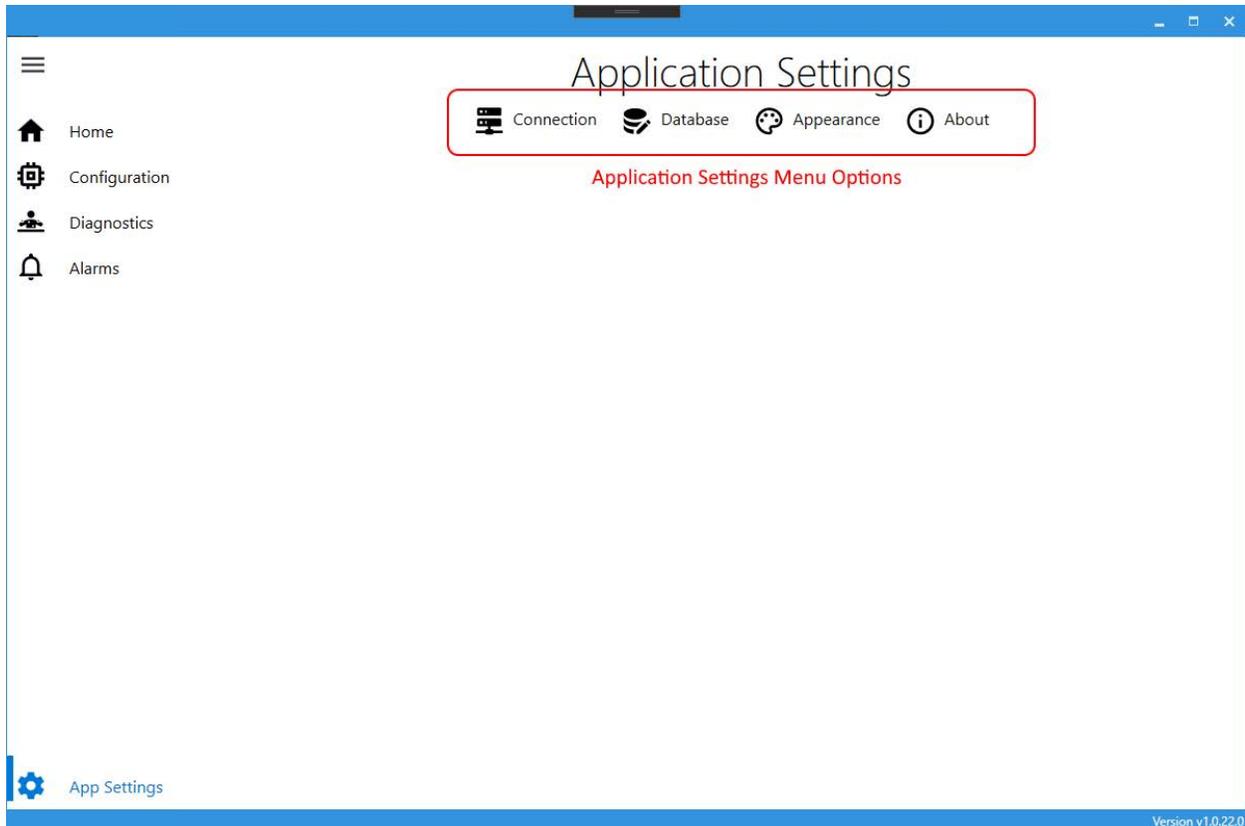
Section B – Navigation

The user can page forward/backward in the alarms, change the number of alarms shown per page, or filter the alarms.

App Settings

The Application Settings screen (Figure 29 - Application Settings) allows users to establish a **Connection** to an ENVEA system, setup the **Database** for archival purposes, customize the application's **Appearance**, and update the software in the **About** screen. All configuration changes in the Application Settings are *only* applied to the local PC. If the software is installed on another PC, these settings will need to be changed.

Figure 29 - Application Settings

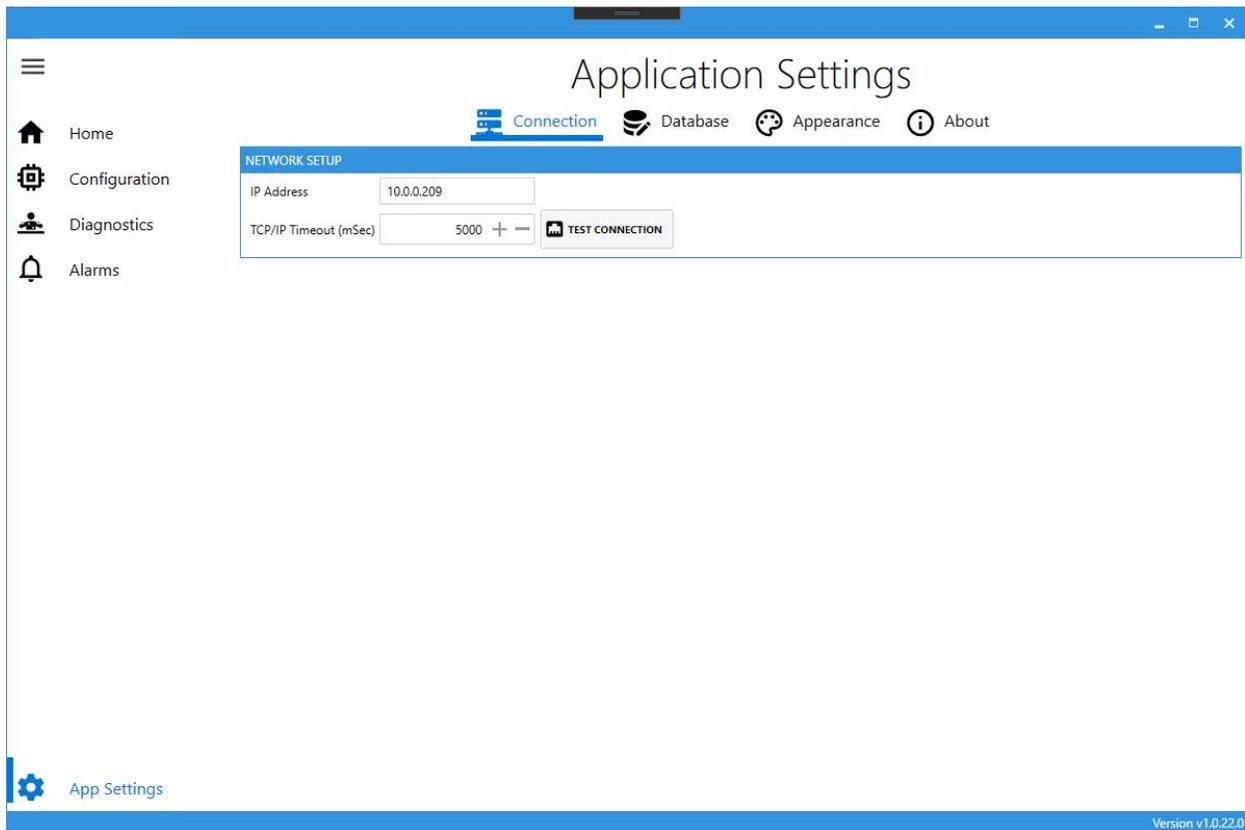


Connection

The software communicates to the ENVEA system via standard Ethernet network protocol. After determining the static IP of the ENVEA system, enter the IP address in the field (see Figure 42 - Connection Screen). Test the communication is successful by clicking the **Test Connection** button.

The TCP/IP timeout value allows a user to determine the maximum time for a response before responding with an error. On slow networks, it may be necessary to increase this timeout value to reduce the number of communication errors.

Figure 42 - Connection Screen



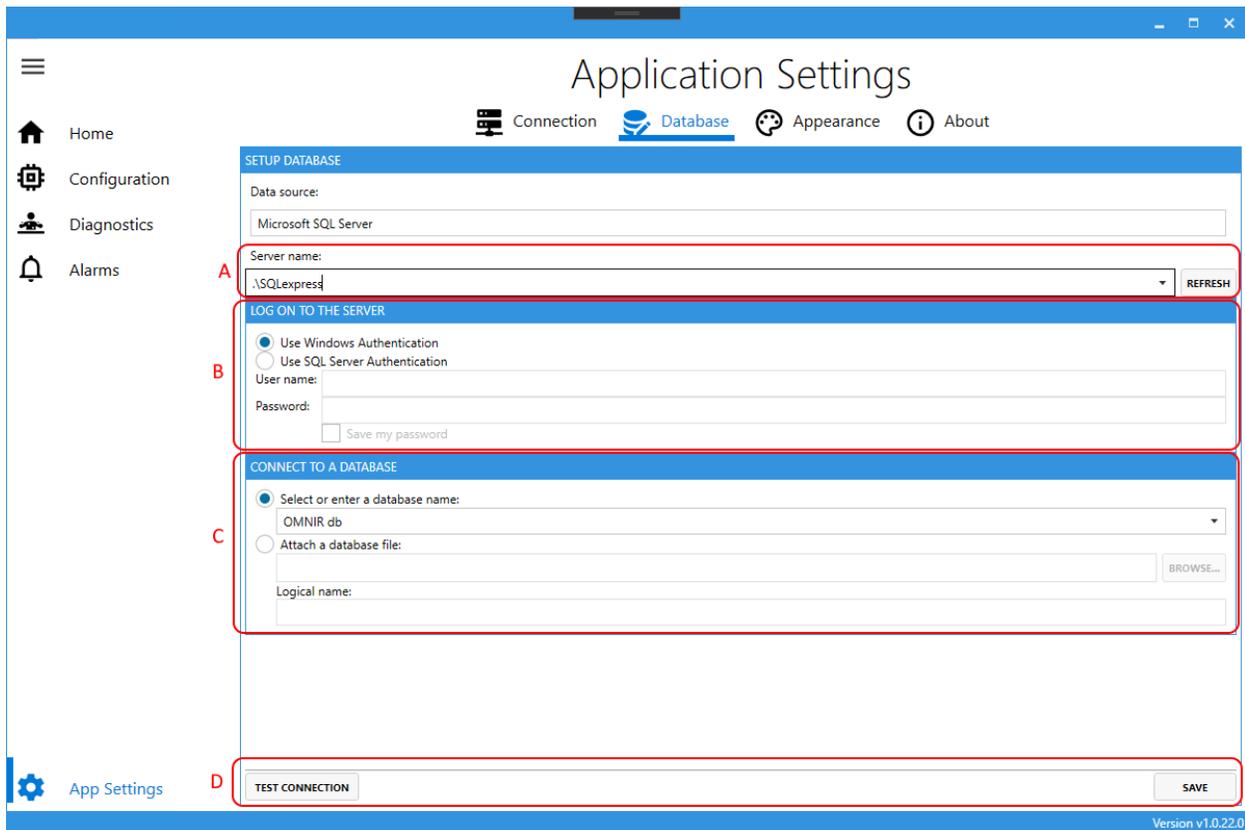
Database

The ENVEA system stores log information, backups, and other data in a SQL server. The server is typically on the same PC as the application, however it can also be located on any networked PC. When the SQL server is networked, the data can be shared on multiple PCs and  can ensure the information is backed up for disaster planning purposes.

Prior to running the system, it is highly recommended to establish a connection to the database

There are four sections to in the database setup screen (see Figure 30 - Database Setup), they are (a) Server Name, (b) Authentication, (c) Database, and (d) Test/Save database connection.

Figure 30 - Database Setup



Section A – Server Name

Click the pull-down button to search for available SQL servers, then select the SQL Server instance (Note: if SQL server is on the PC the default setting is **.\SQLExpress**). In the event the server is not found, the user can also manually type in the address of the server. The correct format to access SQL server is the *computer name\SQL server name*.

The **Refresh** button will re-search for an available SQL server.

Section B – Authentication

The authentication section ensures the user has rights to access the data. Either use the built-in Windows authentication or SQL server's authentication. Note: setting up authentication rights is beyond the scope of this document and is typically managed by an IT department.

Section C – Database

To choose an existing database, click the pull-down to search for available databases on the selected SQL server. If a database exists on the SQL server but is not available to select, the user does not have sufficient Authentication rights.

The IT department should provide alternative Authentication credentials or ensure the existing credentials have rights.

To create a new database, enter the database name.

Section D – Test/Save Connection

After entering data into sections A, B, and C, the **Test Connection** can be used to confirm the connection is valid. Click the **Save** button to accept the changes. If this is a new database, the user will need to confirm creating a database.

Appearance

Users can customize the appearance of the application to Light or Dark as well choose accent colors.

About

This screen provides detailed information about the application and identifies if a new application version is available. If the application can be updated, click the **Update** button to install the new version.

An internet connection is required to upgrade the application
