



EDGE GSF System

EDGE GSF / EDGE GSF Controller Screenless

Models:

074-11879, 074-11880, 074-11841, 074-11838, 074-11837, 074-11836, 074-11833, 074-11832, 074-11877, 074-11963, 074-11868

User Manual

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All information, illustrations, photos, and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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1 Introduction

Topics Covered in this Chapter

- System Overview
- Contact information
- General Safety Precautions and Usage
- Safety Messages
- Telecommunication Advice
- Terms of Use
- Inspecting Your Received System
- Ordering Information

System Overview

The main function of the EDGE Gestation Sow Feeder System (EDGE GSF System) is to provide feed to sows. The EDGE GSF Feeders and the EDGE GSF Controller Screenless communicate using a WiFi infrastructure composed of access points, Ethernet switches, and a router.

Sows enter a feeding stall and the RFID reader reads the tag to identify the sow. The data for that sow is retrieved from the EDGE GSF Controller Screenless and delivered to the EDGE GSF Feeder. The EDGE GSF Feeder will then dispense the correct amount of feed. The EDGE GSF Feeder can control up to 3 paint sprayers to mark sows as they eat. The EDGE GSF System can support up to 250 EDGE GSF Feeders per EDGE GSF Controller Screenless.

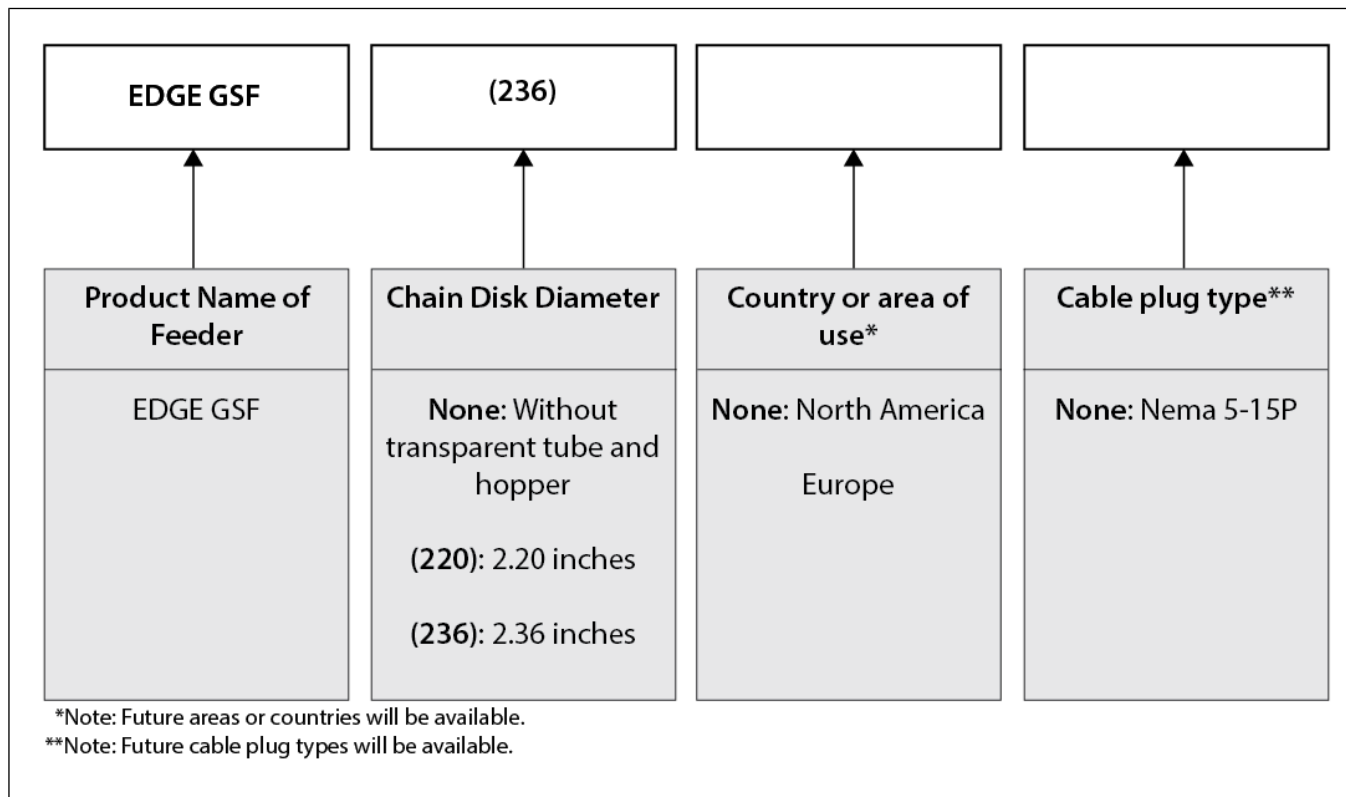


Feed for Optimal Performance

For an optimal performance of the EDGE GSF system, use mixed wet crushed grains at a relative humidity between 10% and 15%.

Product Nomenclature

Figure 1-1 Product Nomenclature



Contact information

Sales

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BRAZIL


Contact your nearest GSI authorized representative. Consult the Brazilian representative list at:
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Manufacturer










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WARNING

Warranty is void if this product is used in a manner not specified by the manufacturer. Every effort has been made to ensure that this manual is complete, accurate and up to date. The information contained in this manual is subject to change without notice.

General Safety Precautions and Usage

Safety Symbols

	Warning. Read the following text carefully; it contains important information which, if ignored, may cause the controller to operate improperly
	High Voltage. Hazard of electrical shock. Read the message and follow the instructions carefully
	Direct current (DC)
	Alternating current (AC)
	Protective Earth Ground Terminal, Primarily used for protective earth terminals. Terminal connected to conductive parts of a device for the purpose of safety and is intended to be connected to an external system for protective grounding
	Functional Ground Terminal Primarily used for functional earth terminals which are generally associated with test and measurement circuits. These terminals are not for safety earthing purposes but provide an earth reference point.
NOTE:	To emphasize points or remind readers of something, or to indicate minor problems in the outcome of what they are doing
	Failure to follow the instructions can result in damaged equipment or loss of data or potential problems
	Failure to follow the instructions carefully can result in serious or fatal injury
IMPORTANT:	The following information is of great significance and must be read carefully
	Read the following text carefully; it contains important information which, if ignored, may cause the controller to operate improperly
Tip	Shortcut or a faster way of getting to an end result

Safety Messages



Turn off the main electrical disconnect switch prior to servicing any of the boxes. Failure to do so might lead to serious injury or death.

Always use extreme caution when measuring voltage or performing procedures that require a module to be powered on.

Electrostatic Discharge Prevention When Manipulating a Printed Circuit Board (PCB)

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures.

Always follow ESD on a PCB-prevention procedures when you remove and replace components. Ensure that the chassis is electrically connected to earth ground. Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the grounding clip to an unpainted surface of the chassis frame to safely ground unwanted ESD voltages. To guard against ESD damage and shocks, the wrist strap and cord must operate properly. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

For safety, periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohm (Mohm).



The radio (ESP32-WROOM-32D) circuit board on EDGE GSF Feeder and the radio module (M7DB6) circuit board on EDGE GSF Controller Screenless are electrostatic discharge (ESD) sensitive. ESD precautions must be observed when handling and installing these components.

Telecommunication Advice



The radio module installations must be protected from electrical transients on the power supply and I/O lines. This is especially important in outdoor installations, and/or where connections are made to sensors with long leads. Inadequate transient protection can result in damage and/or create a fire and safety hazard.

Radio Module Inside EDGE GSF Feeder

The EDGE GSF Feeder contains a wireless module at 2.4GHz inside: ESP32-WROOM-32D from Expressif Systems manufacturer. ESP32-WROOM-32D module is FCC/IC/CE certified. This is valid in the case no other intentional or unintentional radiator components are incorporated into the product and no change in the module circuitry.

Radio Module Inside EDGE GSF Controller Screenless

The EDGE GSF Controller Screenless contains a wireless radio module inside: M7DB6 from Redpine manufacturer. M7DB6 module is FCC/IC/CE certified. This is valid in the case no other intentional or unintentional radiator components are incorporated into the product and no change in the module circuitry.

Radio device inside EDGE GSF LFID with Auto Tuning

The EDGE GSF has also a radio accessory: EDGE GSF LFID with Auto Tuning. This product contains a radio device inside at 134.2 KHz.

EDGE GSF Feeder FCC ID and IC ID

The FCC ID of Expressif Systems Wireless radio module (ESPWROOM32D) is 2AC7Z-ESPWROOM32D.

The IC ID of Expressif Systems Wireless radio module (ESPWROOM32D) is 21098-ESPWROOM32D.

EDGE GSF Controller Screenless FCC ID and IC ID

The FCC ID of Redpine Wireless radio module (M7DB6) is XF6-M7DB6.

The IC ID Redpine Wireless radio module (M7DB6) is 8407A-M7DB6

EDGE GSF LFID with Auto Tuning FCC ID and IC ID

The FCC ID of the LFID module is 2AFLZGSFLFIDAUT.

The IC ID of the LFID module is 11880A-GSFLFIDAUT.

FCC Caution and Safety Notices on EDGE GSF and EDGE GSF Controller Screenless

Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Antenna Gain Restriction on EDGE GSF Feeder

The radio module does not allow the possibility to use another antenna. It uses a PCB antenna. The WiFi PCB gain antenna is 3.7 dBi.

FCC Antenna Gain Restriction on EDGE GSF Controller Screenless

The Redpine Wireless radio (M7DB6) has been designed to operate with any patch antenna up to 2.6 dBi of gain at 2.4GHz, or any patch up to 4dBi of gain at 5GHz.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm (7-7/8 in.) from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Antenna Gain Restriction on EDGE GSF LFID with Auto Tuning

The radio device does not allow the possibility to use another coil antenna.

IC RSS-247 Detachable Antenna Gain Restriction on EDGE GSF Feeder

The radio module does not allow the possibility to use another antenna. It uses a PCB antenna. The WiFi PCB gain antenna is 3.7 dBi.

IC RSS-247 Detachable Antenna Gain Restriction on EDGE GSF Controller Screenless

This device has been designed to operate with the antennas having a maximum gain of 2.6 dBi of gain at 2.4GHz and 4dBi of gain at 5GHz. The required antenna impedance is 50 ohms.

IC RSS-247 Detachable Antenna Gain Restriction on EDGE GSF LFID with Auto Tuning

The radio module does not allow the possibility to use another coil antenna.

Health and Radiation

This equipment should be installed and operated with minimum distance 20 cm (7-7/8 in.) between the radiator and your body.

Terms of Use

Read and follow all installation, operation, and maintenance information carefully before using the product. Refer to the user documentation for complete product specifications. If the product is used in a manner not specified, the protection provided by the product warranty will be void.

Using the Product According to Your Function

A responsible body is an individual or group responsible for the use and maintenance of equipment, for ensuring that the equipment is operated within its specifications and operating limits, and for ensuring that operators are adequately trained.

Operators use the product for its intended function.

Maintenance personnel perform routine procedures on the product to keep it operating properly. At this level, all procedures whose do not touch high voltage. The maintenance personnel can work on high voltage only if they have the competences as an electrician.

Service personnel are trained to work on live circuits, perform safe installations, and repair products. Only properly trained service personnel may perform installation and service procedures. (In other words: electricians, Service personnel employed by or active in an organization, business, or service).

General Safety Usage

Follow the guidelines given below for safe usage of the product:

- Installation must only be performed by qualified service personnel
- Carefully read all instructions
- Comply with local and national safety codes
- Repairs must only be performed by qualified service personnel
- When replacing the fuses, use only the same type and same rating as specified
- Make sure the unit is disconnected from AC Power when servicing
- Do not try to operate the system if it is damaged. Disconnect the Power from the units and call your local service representative
- Do not operate while condensation is present
- Use of the system in a manner not specified by these instructions may impair the safety protection provided by the system. Do not operate the system outside its rated supply voltages or environmental range
- Omission to read the installation and user manuals or to comply with the warnings and references contained herein can result in serious bodily injury or damages to the controllers

Chapter 1: Introduction

- Do not insert metal objects into the connectors
- Use the system only as specified, or the protection supplied by the product can be compromised
- Follow all installation and maintenance recommendations and consider all provided information regarding product specifications and limitations
- Do not use the system if it does not operate correctly
- The enclosures must be closed and locked at all times, particularly when operating the system
- Use only specified replacement parts

Inspecting Your Received System

Inspect your system and make sure you have received all expected parts.

Each EDGE GSF System is designed specifically for a site, therefore quantities of components will vary, but the main components of a typical system are listed below.

Table 1-1 *EDGE GSF System Components*

Item
EDGE GSF Feeder
Hopper
Transparent tubing
Screws to fasten the transparent tubing
Hose clamps
EDGE GSF LFID with Auto Tuning
EDGE GSF Controller Screenless
EDGE PSU 24V 36W
Routers
Ethernet Switches
Access Points
Ceiling mounting brackets (for Access Points)
Feeding Stall
RFID Wand Reader (optional)

Damage Inspection

Your system and its components were carefully inspected both electrically and mechanically before shipment. After unpacking all items, check for any obvious signs of physical damage that may have occurred during transit. Report any damage to the shipping agent immediately. Save the original box for possible future shipment.

Returning the Unit for Repair

If you must return the system for repair, carefully package the system in its original box or an equivalent. Contact your local customer service department to get return instructions. Have on hand the system's serial number and date code found on the system's main board. See [Contact information, page 6](#).

Ordering Information

A basic EDGE GSF System consists of the following equipment:

- 1x EDGE GSF Controller Screenless with associated power supply
- 1x Router
- 1x GSF Stall
- 1x EDGE GSF Feeder
- 1x Access Point
- 1x Ethernet Switch
- 0x PoE Power Supply

The following explains quantities to order.

EDGE GSF Controller Screenless

There is one EDGE GSF Controller Screenless in the EDGE GSF system. The EDGE GSF Controller Screenless can be installed in a barn environment or in an office.

Router

One router supports up to 250 EDGE GSF Feeders.

The router must be installed in an office environment.

GSF Stalls and EDGE GSF Feeders

Use one stall per every 16 to 18 sows and one EDGE GSF Feeder per stall.

Access Points

EDGE GSF Feeders use WiFi to communicate between themselves, and to the main controller. Having a strong WiFi signal throughout the barn is essential for a good working system. The system includes a router, one or more Ethernet switches, and one or more access points.

The router makes a logical link between devices, the Ethernet switches act as wire extenders, and the access points distribute the WiFi signal. The WiFi signal has maximum coverage when the access point is in a non-obstructed line of sight. Wooden walls and ceilings lower the WiFi signal strength. Metal support beams or girders will create low signal WiFi areas and metal or aluminum covered walls will block the WiFi signal.

The access points supplied with the EDGE GSF System has a typical coverage of 10,000sqft. when not obstructed, this is a square of 100' by 100'. The signal is still there at 110', but it's no longer optimum and its strength cannot be predicted. If shaded by a beam, this distance can be considerably less.

The access point emits a signal horizontally in a circle manner. It should be mounted in the center of the desired coverage area. Remembering that the coverage area is a circle around the access point, wall mounting is not recommended. When mounting the access point on a wall, it should be oriented properly and mounted as high as possible.

Planning the location and quantity of access points should be done with the plans of the barn. Place an access point on the ceiling for each 100' x 100' square and locate the EDGE GSF Feeders with direct view of the access points. For a barn that is 230' by 100' and has few wooden or metal obstacles, use 2

Chapter 1: Introduction

access points. If the WiFi signal must go through wooden walls, it is better to use 3 access points. As metal walls essentially block the WiFi signal, there must be one access point per metal room.

These are guidelines and experimentation may be required to create a WiFi network that delivers a strong signal to each component.

Access points are designed to work in a barn environment. They are Powered Over Ethernet (PoE), so they must be connected to the Ethernet switch, not to the router. The router does not support PoE. Access points cannot be daisy chained.

Ethernet Switch

A typical installation is the router in an office and an Ethernet switch located in the barn with the access points connected to the Ethernet switch. The Ethernet switch distributes the network signal from the router to a possible seven connections that can be a mix of access points and other Ethernet switches. **A single Ethernet switch can only support a maximum of 4 access points due to power limitations.** By connecting multiple Ethernet switches in series, a large quantity of access points can be connected, making up the network backbone of the farm.

Router, Ethernet switches and access points cannot be separated by more than 300' of cable. If a cable run length greater than 300' is required, an additional Ethernet switch must be used to repeat the signal and extend the cable.

Any access point can be connected to any Ethernet switch, and any number of Ethernet switches can be cascaded if required. There should be only one cable connecting two Ethernet switches together.

The Ethernet switch provided with the EDGE GSF System must be protected in an IP65 Nema 4X enclosure to be protected from the barn environment. Cable glands must be used and must be mounted properly to maintain the IP65.

PoE Power Supply

Additional PoE power supplies are not required since the power is fed to the access points by the Ethernet switch. A PoE power supply is available to order if the access point doesn't power ON because the cable length is too long.

2 EDGE GSF Feeder

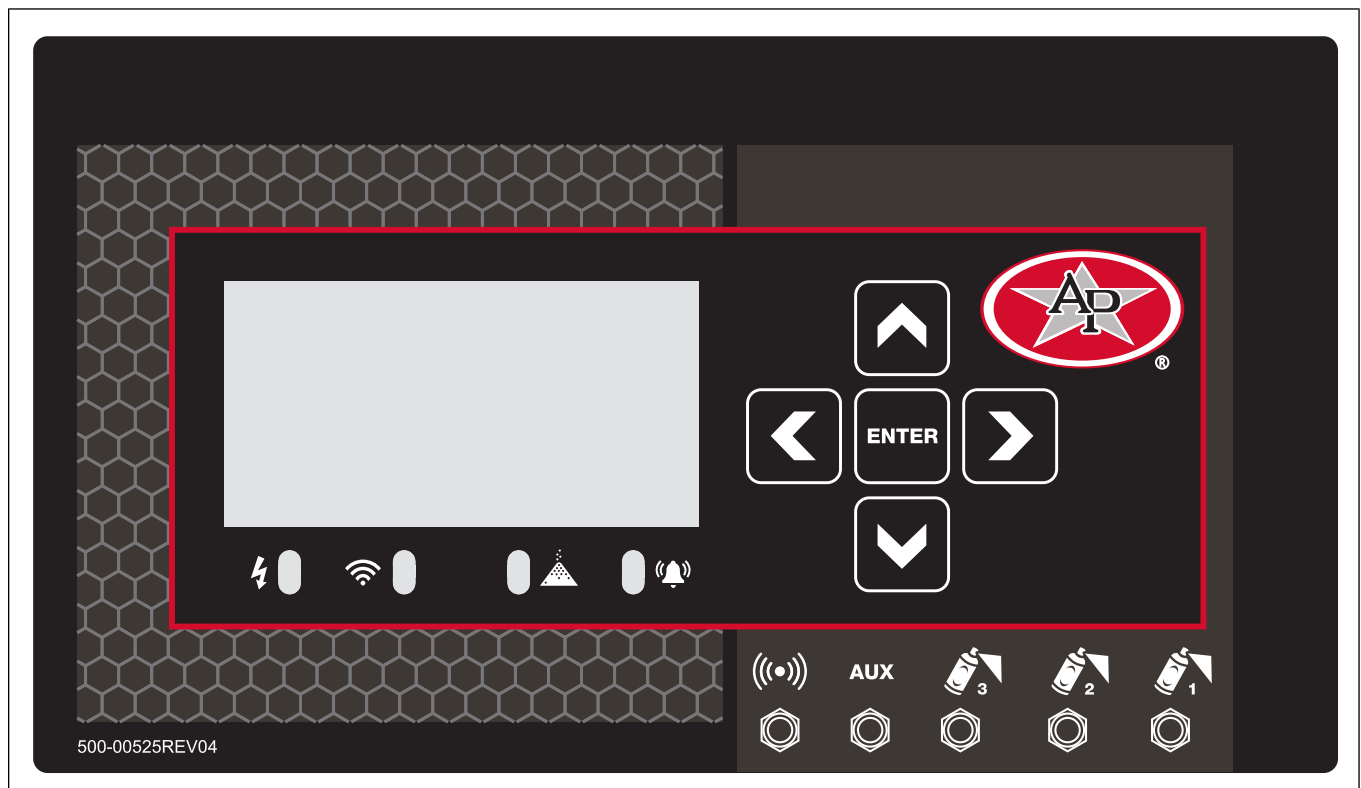
Topics Covered in this Chapter

- EDGE GSF Feeder Interface
- Calibrating an EDGE GSF Feeder

EDGE GSF Feeder Interface

The user interface consists of an OLED screen, four LED indicators, four directional buttons and an enter button.

Figure 2-1 User Interface for the EDGE GSF Feeder



Navigation Controls





- Use the Up and Down buttons to change values.
- Use the Left and Right buttons to advance the menu forward or backwards.
- Press **Enter** to accept a value.

User Menus

Menu	Description
Manual Feeding	Allows you to manually turn the auger motor on and off.
Solenoid Outputs	Allows you to manually turn the four discrete outputs on and off individually.
Versions Info	Displays the firmware version, bootloader, and the radio firmware.
Wireless Settings	In this menu you can: <ul style="list-style-type: none"> • Get the WiFi information, network name, IP address, and Mac address • Get and set the RF power • Start the SmartConfig process
Calibration	Allows you to start the calibration process.
Factory Reset	Sets the EDGE GSF Feeder back to factory default settings. NOTE: This will erase all the data stored in the EDGE GSF Feeder. After it is reset, the EDGE GSF Feeder will not be connected to the EDGE GSF System network. It will automatically begin the Configuration Wizard after restart.
Restart Feeder	Allows you to manually reboot the EDGE GSF Feeder without having to disconnect the power.

LED Meanings

Table 2-1 LED Identification

LED Identification	Description
 (Power State)	Green : EDGE GSF Feeder is ON.
	OFF : EDGE GSF Feeder is OFF.
 (Wireless Communication State)	OFF : No radio module is present or the radio module defective.
	Red : Radio module present, no WiFi connection, no EDGE GSF Controller Screenless connection
	Red + Green : WiFi connected, no communication with EDGE GSF Controller Screenless
 (Feed Supplying State)	Green : There is feed available in the auger.
	Red : There is an out of feed condition.
 (Alarm State)	OFF : No alarms conditions detected.
	Red : Alarm condition detected.

Calibrating an EDGE GSF Feeder

During a new setup or when you change the type of feed, you must perform a calibration.

What You Should Know

The EDGE GSF Feeder dispenses the feed on a time bases, so the type and texture of feed has an effect on how much is dispensed for a certain amount of time.

All the EDGE GSF Feeders share the same calibration data. Once you perform a calibration on one EDGE GSF Feeder, it is propagated to all the others. You can calibrate at any time, but at the end of the process, all the EDGE GSF Feeders will receive the new calibration data.

BEFORE PROCEEDING: Make sure that the auger is full of feed. If required, use the **Manual Feed** feature to fill it.

Procedure

1. Use an empty bucket to catch the feed.
2. Weigh the empty bucket.
3. Navigate to the calibration menu on the EDGE GSF Feeder.
4. Place the empty bucket under the auger.
5. Press **Enter** to start the first pass of feed dispensing.
6. Weigh the bucket with the feed.
7. Subtract the weight of the empty bucket from the weight of the bucket with the feed to get the actual weight of the feed that was dispensed.
8. Enter the feed weight into the EDGE GSF Feeder.
9. Empty the bucket.
10. Repeat the process for a second pass.
11. After the second pass feed weight has been entered, the EDGE GSF Feeder will calculate the mean of the two passes and send that value to the EDGE GSF Controller Screenless.
12. After 15 minutes, the EDGE GSF Controller Screenless will send the new calibration information to all the EDGE GSF Feeders.

NOTES

3 User Interface

Topics Covered in this Chapter

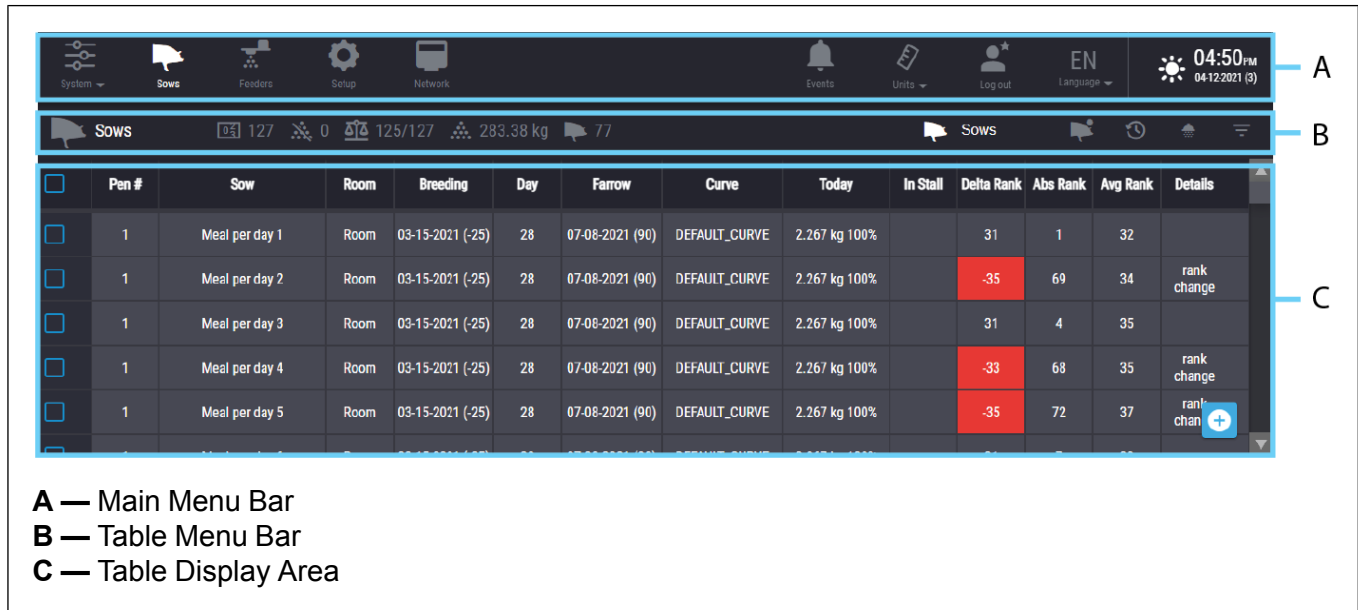
- Overview of User Interface
- Setup
- Local Area Network
- Site Configuration
- System Configuration
- Time and Units
- User Management
- Rooms
- Curve Editor
- Software Update
- Daily Report
- Events Screen
- Feeders
- Setup

Overview of User Interface

To access the gestation sow feeding (GSF) interface, you will need a computer, phone, or tablet that is connected to the GSF controller via the ESF-CLIENT-NETWORK or gsiedge.com. The gestation sow-feeding system (GSF) is a self-contained Edge sub system.

NOTE: *Software is browser based, so navigation is the same as a web browser. The screens will adjust depending on the device used and window size, therefore, menu and icon locations may shift. For example, icons may have moved to a drop down menu instead of being displayed. All screens for these instructions are taken from a fully expanded window.*

Figure 3-1 Full Screen



Main Menu Bar (A)

The main menu bar is where you go to setup the parameters for your system and view information about your sows.

Figure 3-2 Main Menu Bar



Table 3-1 Main Menu Bar

Item	Name	Description
1	SYSTEM MENU	Go to System menu to set up the following: Site Configuration, System Configuration, Time and Units, User Management, Rooms, Feed Curves, Software Updates, and Reports.
2	SOWS	Displays current information about active sows, new sows, feeding history, sprayer events, and allows filtering of sow data.
3	FEEDERS	Displays data about each feeder and allow you to discover and configure a new feeder, make connection test, and identify a feeder location.
4	SETUP	Allows you configure the equipment for each room.
5	NETWORK	Allows you to view the IP address of the LAN.
6	EVENTS	List information about notifications, alarms and troubles.
7	UNITS	Gives quick access to change the units of measure.
8	LOG OUT	Close the access of the web to the controller for that specific user.

Table 3-1 Main Menu Bar (cont'd.)

Item	Name	Description
9	LANGUAGE	Quick access to change the language of the controller text.
10	CLOCK and DATE	Click for quick access to change the Time and Units.

Table Menu Bar (B)

The icons in The Table Menu bar control the information that is displayed in the table.

Figure 3-3 Table Menu Bar



Table 3-2 Table Menu Bar

Item	Name	Description
1	TABLE DATA	A synopsis of the data in the table is shown in gray. This example shows total active sows, total non eaters (0), total sows fed (125 out of 127), total feed consumed (283 kg), and total sows listed in the table (77).
2	ACTIVE SOWS	Displays information about the sows in the table.
3	NEW SOWS	Displays the information about the new sows.
4	3 DAY HISTORY	Displays the past 3 days and current day feeding information for each sow. It will show the weight of feed delivered to the sow for each day.
5	NEXT SPRAYED	Displays any livestock marking events by the paint sprayer.
6	FILTER	The filter window allows you to filter the database based on the parameters you select and displays that information in the table.
7	ADD NEW SOW	This icon is not in the menu bar, but is located in the bottom right corner of the table. When pressing the add a sow button, the user is prompted to enter parameters for the new sow to be added in the system. To be valid, a new sow entry must have a UNIQUE sow number. When a new sow is created, the fields which are assigned a default value are automatically set to that default value, unless a different value has been set by the user. When a new sow is added in the system, her information must be "pushed" to the feeders in the pen where the sow is located. If no pen number is set, the sow will not be "tracked" for non-eating alarms but its pregnancy day and calendar notifications (if any) will continue to work. A new sow created that is not assigned to a pen will be tracked as non-eater.

Setup

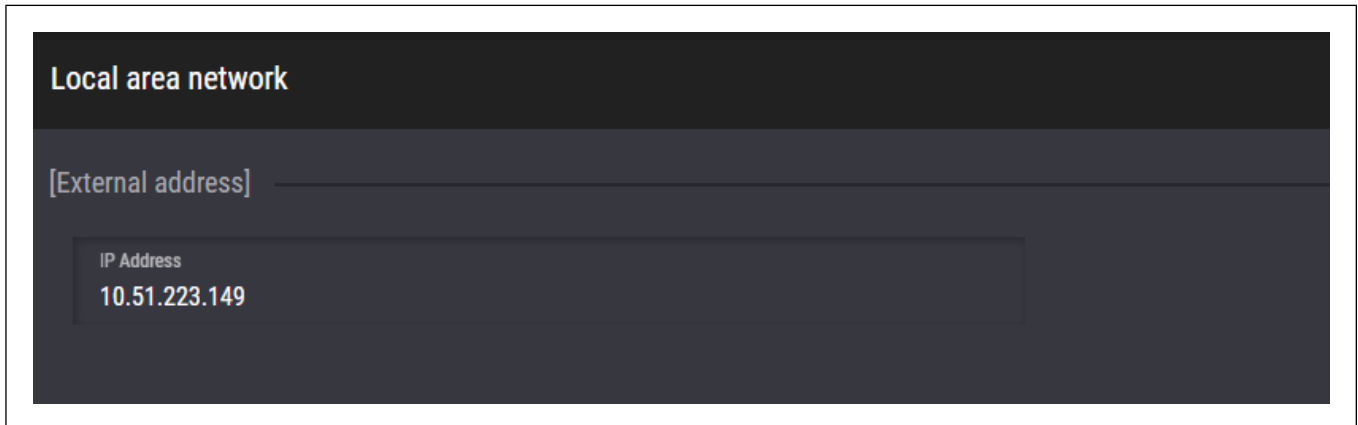
You must create a room and enter the parameters for the site during initial setup or nothing will be accessible.

Local Area Network

The local area network screen is where you input the information for your local network connections.

These settings should already be configured correctly by the installer. The "External IP address" is important if your GSF network is connected to an existing customer network. This IP address should be used to access the controller if you are already connected to the customer network and not to the ESF-CLIENT-NETWORK.

Figure 3-4 *Local Area Network*



Site Configuration

Site configuration is where you setup the site name and the controller name. These are required to access the system through gsiedge.com.

1. Go to System > Site.
2. Enter the Site name and the Controller name.

System Configuration

System configuration allows you to import or export information to the Edge Main controller.

From here you can:

- Import or delete configuration
- Export configuration
- Configure a profile
- Import or delete GSF database
- Import/Export Contact List
- Import/Export Database
- Restart Controller

The file must be a file that has been exported from a controller. The file can be one stored locally on the controller or imported from a USB drive.

Figure 3-5 System Configuration and Import

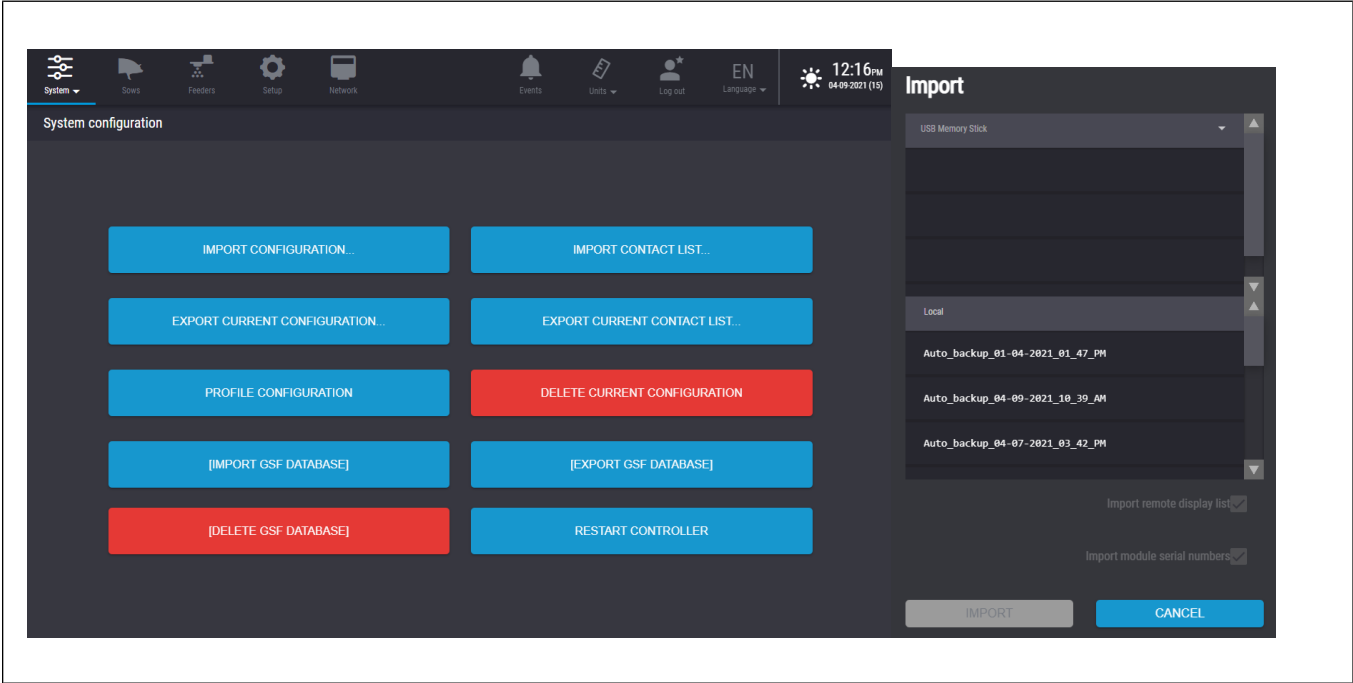
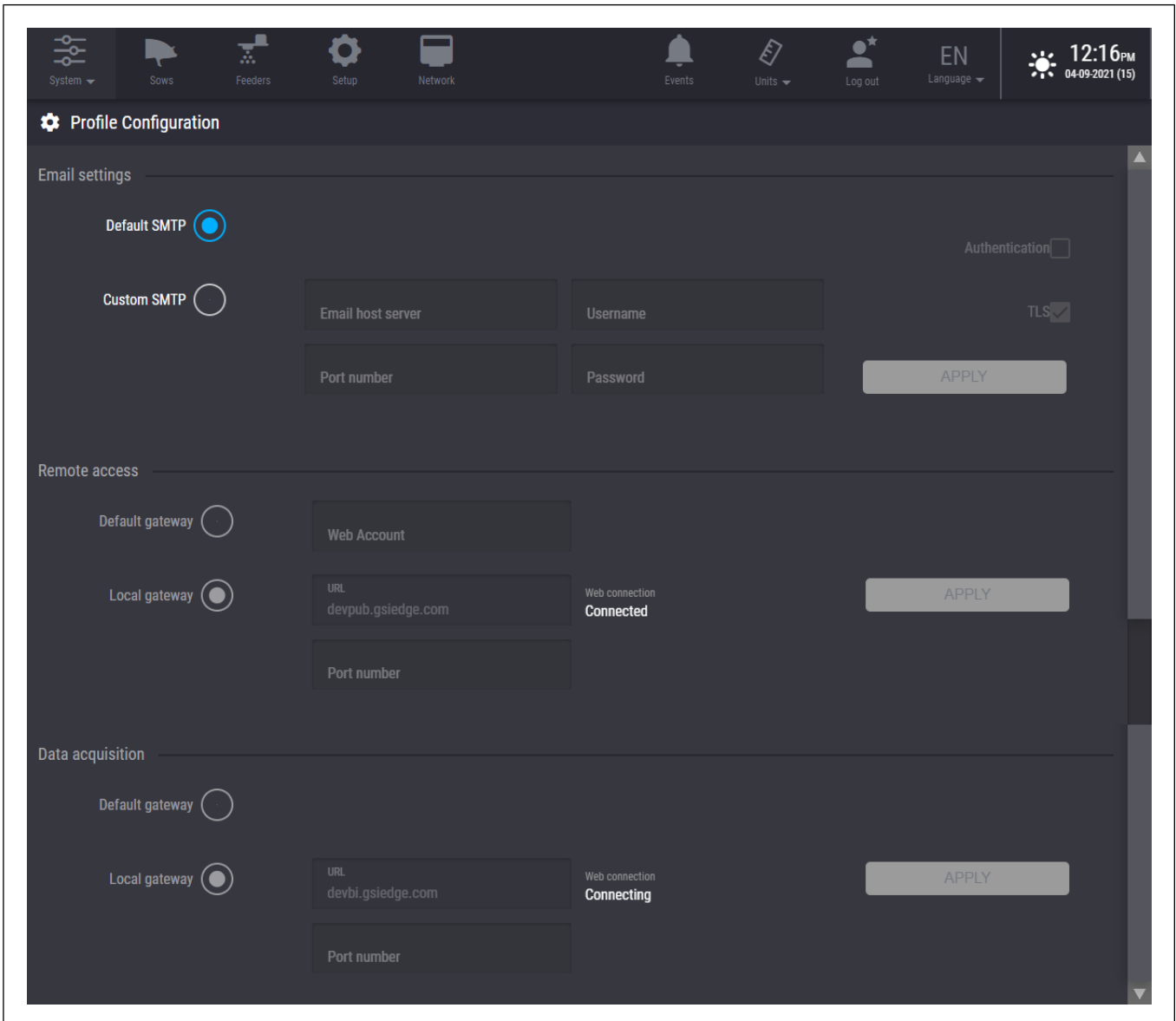


Figure 3-6 Profile Configuration

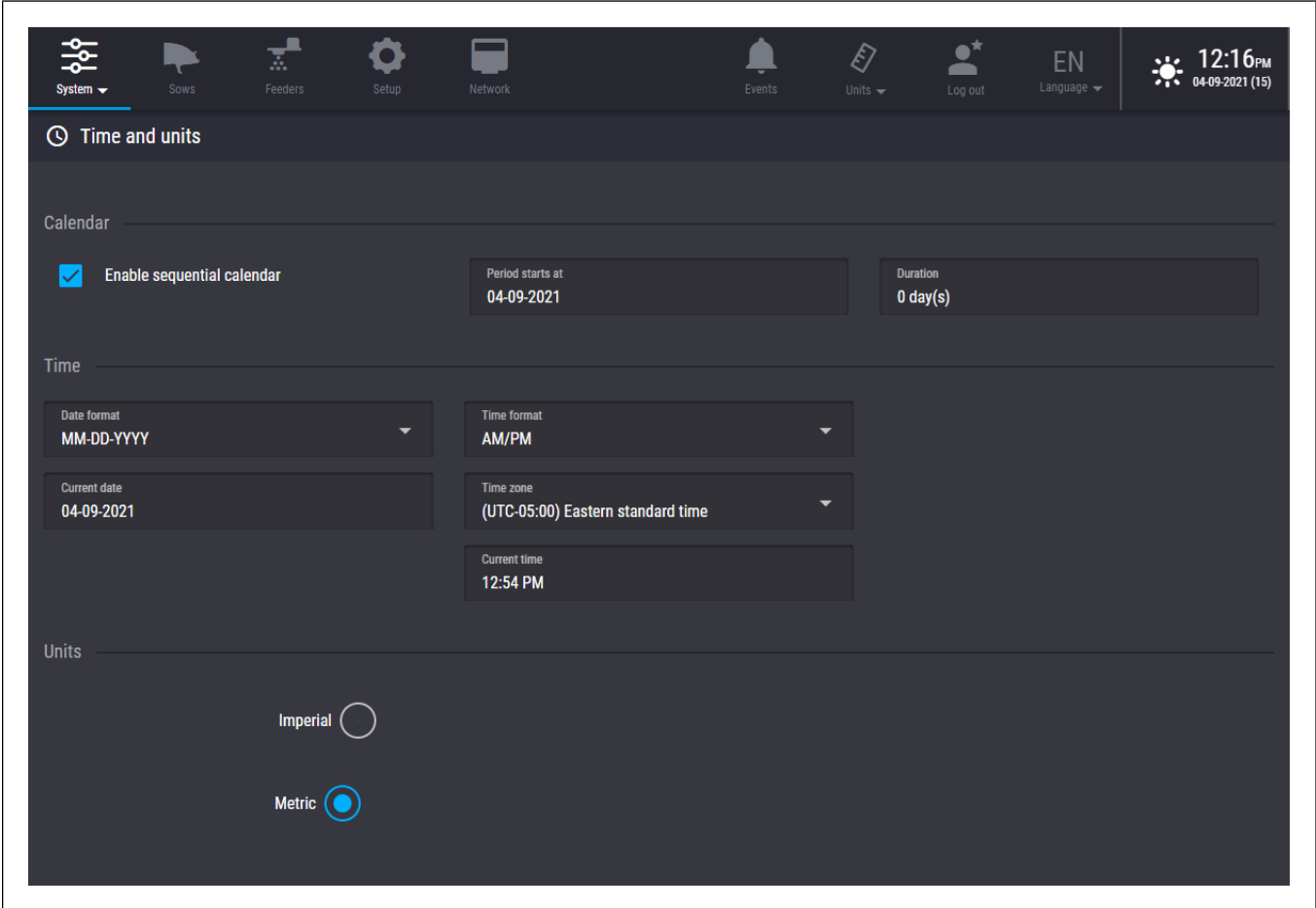


Time and Units

Time and units is where you to set the time and the units of measure for the system and should be part of your initial setup. It is important to set the correct time and date, as many functions depend on the time. The GSF feeders will automatically synchronize with the settings on the controller.

- 1. Enter the time and date formats.
- 2. Select Unit type, Imperial or Metric.

Figure 3-7 Time and Units



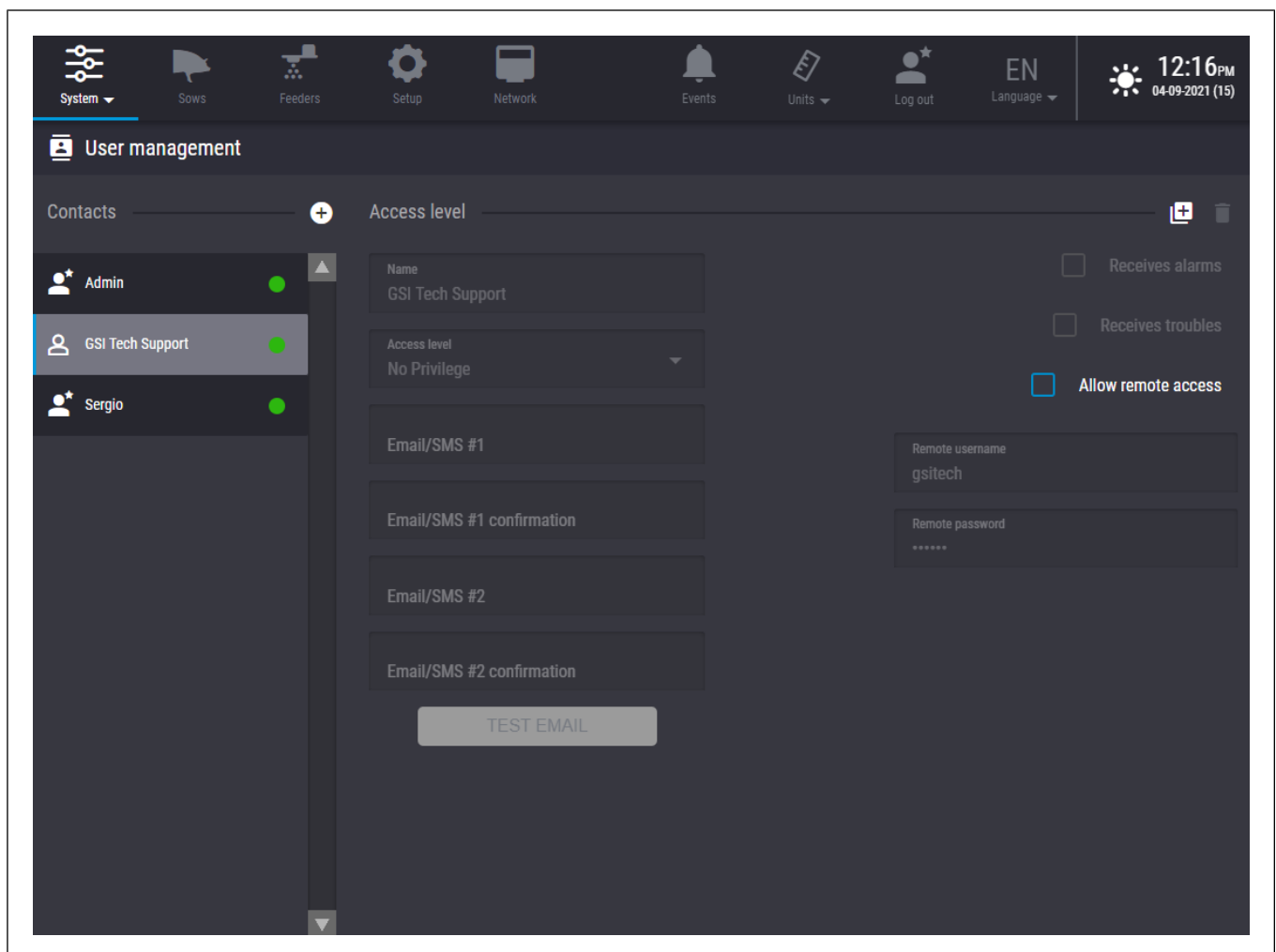
User Management

In order to access the system, a system administrator must add you as a user or contact. The system administrator can grant each contact different levels of access to the system.

To setup a new contact:

1. Click the Plus icon.
2. Enter the information for the contact and the access level.
3. If you want the contact to have remote access, check the Allow remote access box and fill in the user name and password.
4. Once an email is entered and confirmed, the receive alarms and troubles check boxes will be available.

Figure 3-8 User Management



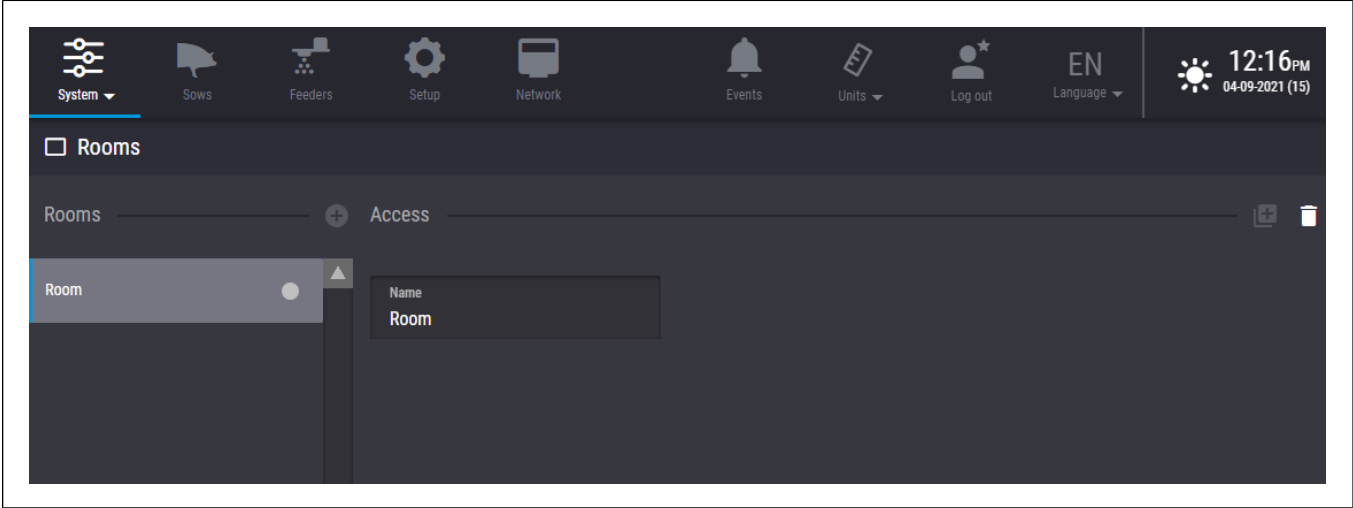
Rooms

A room must exist before you can set the parameters for the room. It is recommended that you set up your rooms to make them specific to your site. To create a Room, you must have administrative privileges.

NOTE: You can only create or delete rooms here. You must go to **Setup** to configure the parameters for the room.

- 1. Click on the plus icon to add a room.
- 2. Click on Garbage can to delete a room.

Figure 3-9 Rooms

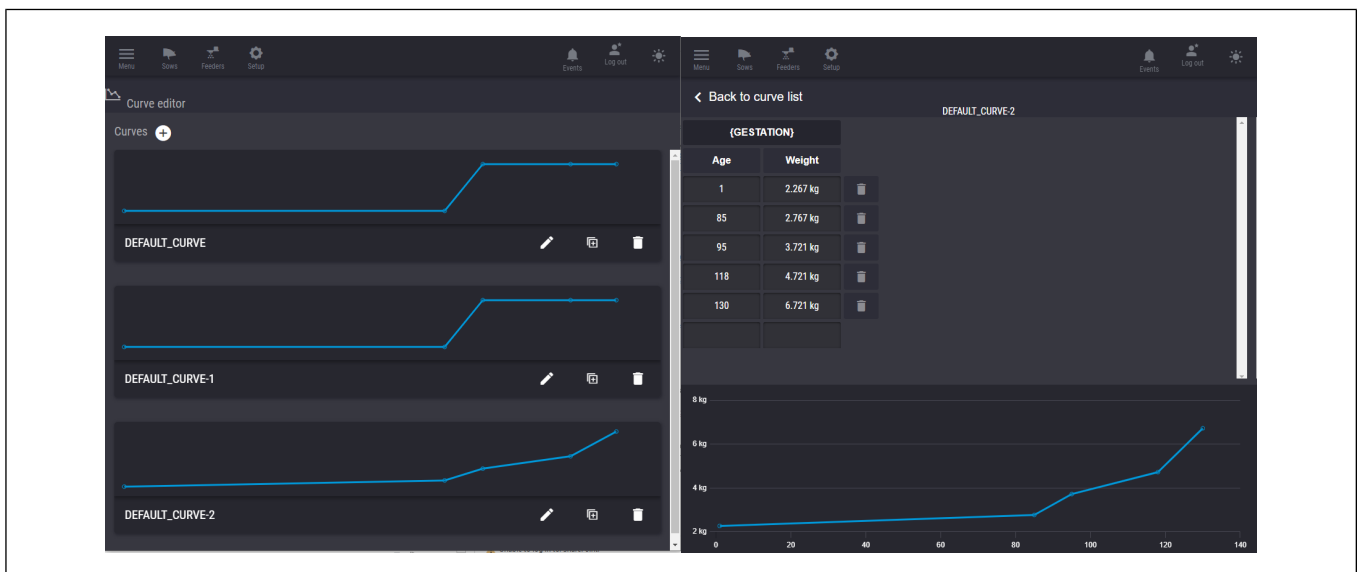


Curve Editor

A default feed curve will already exist when the system is initially installed. The feed curves can be edited at anytime. At a minimum, you must have a default feeding curve that will be assigned when a new sow is detected. Multiple feed curves can be created for specific sow states. To access feed curves, go to System> Curve Editor.

1. To create a new feed curve, click the **Add** button and enter the name for the feed curve.
2. Enter the days and weights for your feed curve.
3. To delete a curve, click on the trash can icon.
4. To duplicate a feed curve, click the duplicate icon under the curve you want to duplicate.
5. To edit a feed curve, click the edit icon.

Figure 3-10 Feed Curves



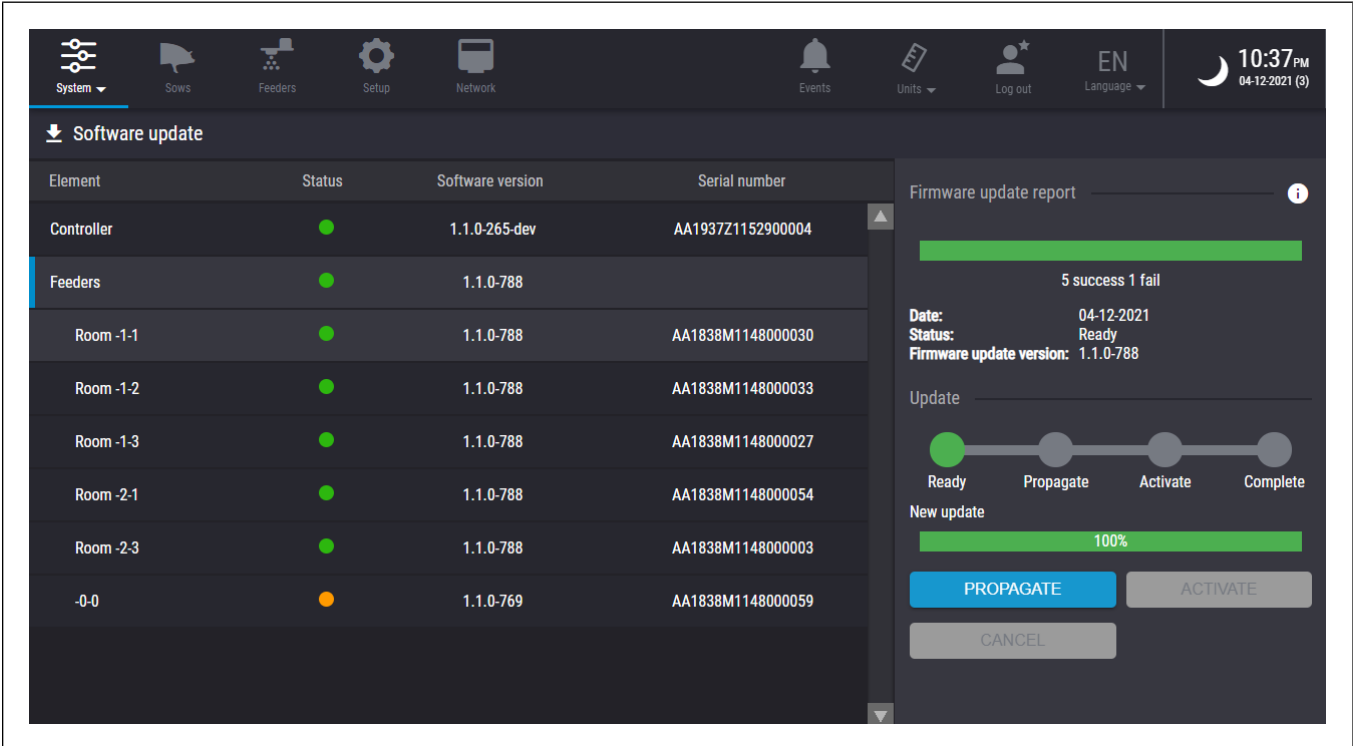
Software Update

The software update screen allows you to do the following:

- Update Controller software
- Update Feeder software
- Enter license key for software
- View Status
- View serial numbers of controller and feeders

You have 2 ways to update the controller, or by a new version (latest) that will automatically be listed when available or if you want to update the controller to a specific version from a usb drive.

Figure 3-11 Software Update

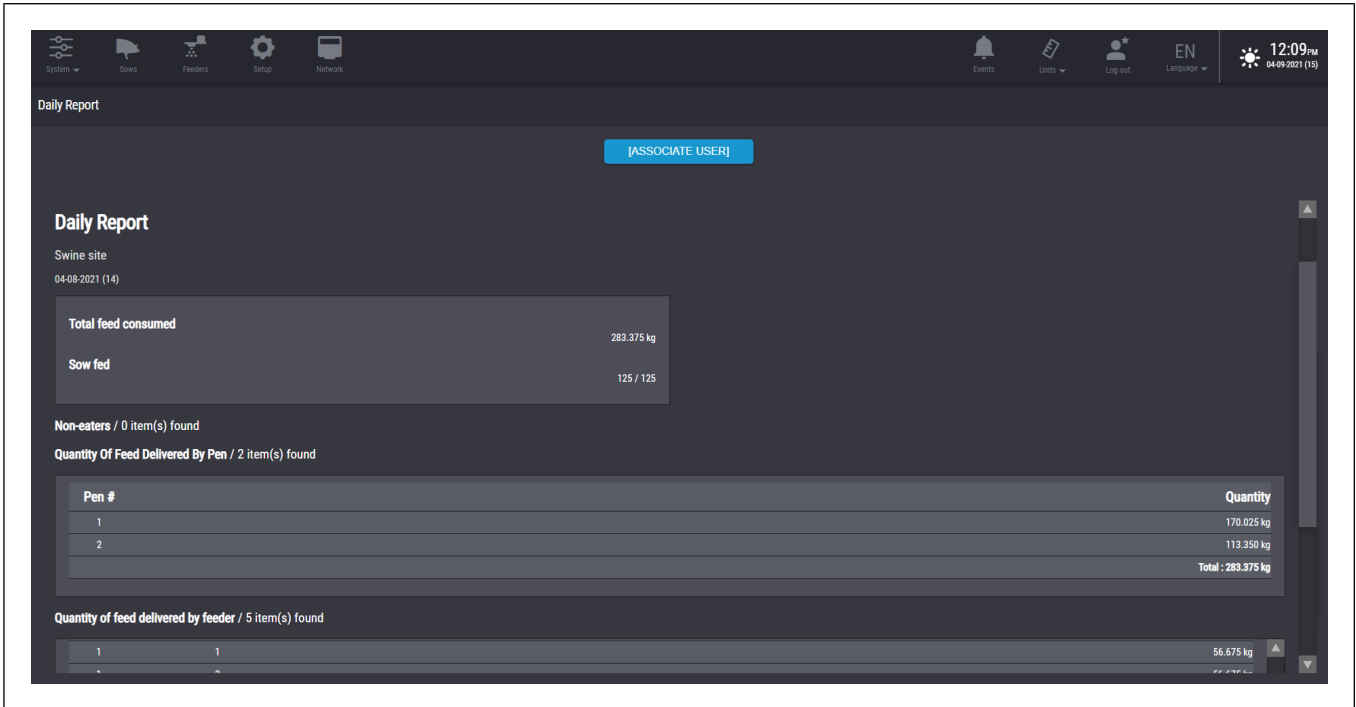


Daily Report

This screen allows you to add someone to receive reports. Click on [ASSOCIATE USER], then select the user from the list.

NOTE: To add someone to the report list, go to User Management and add new contact.

Figure 3-12 Daily Report



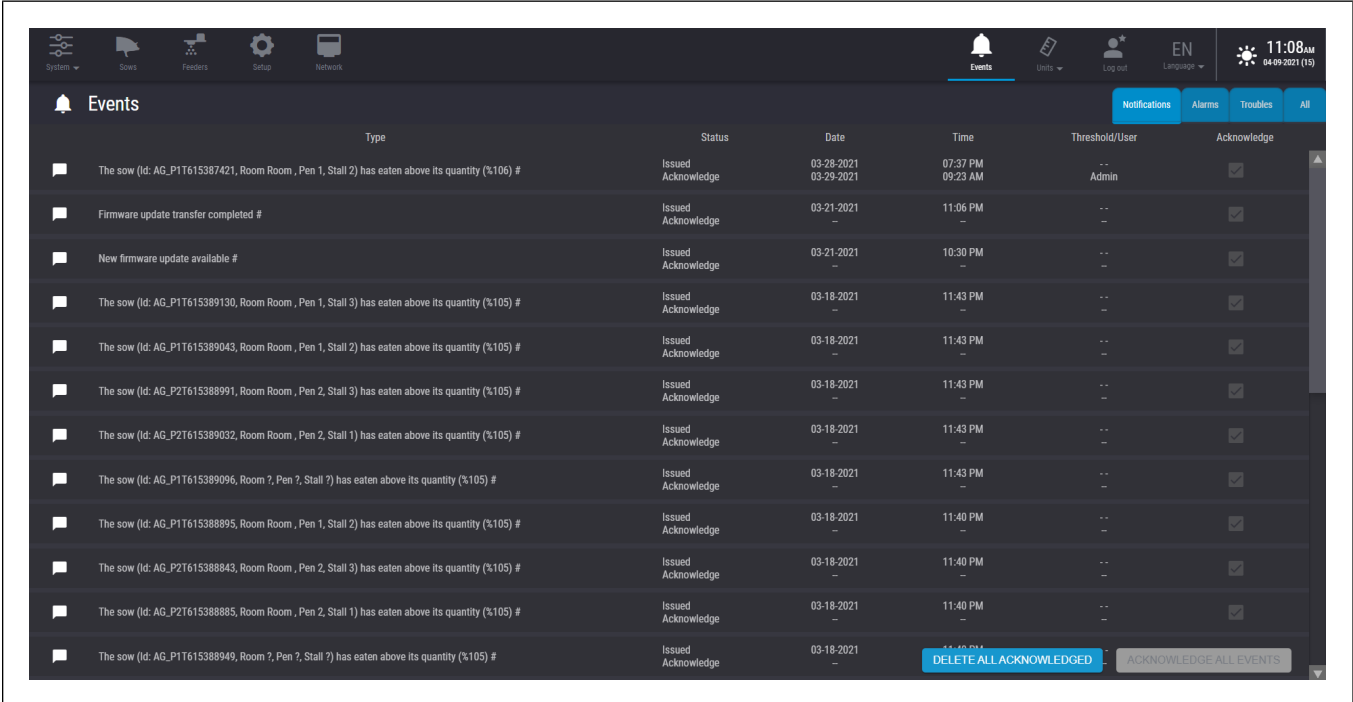
Events Screen

From this screen you can view when the alarms were recognized by the system and when they were acknowledged.

- 1. Click on the Events Icon to view Notifications, Alarms, and Troubles.
- 2. Click on the event and check Acknowledge to identify you are addressing the issue.
- 3. You can click on the tabs in the upper right corner to view a specific group of events. This will allow you to acknowledge all events at once and delete all acknowledged events.

NOTE: All events deleted will come back after a reboot of the controller.

Figure 3-13 Events

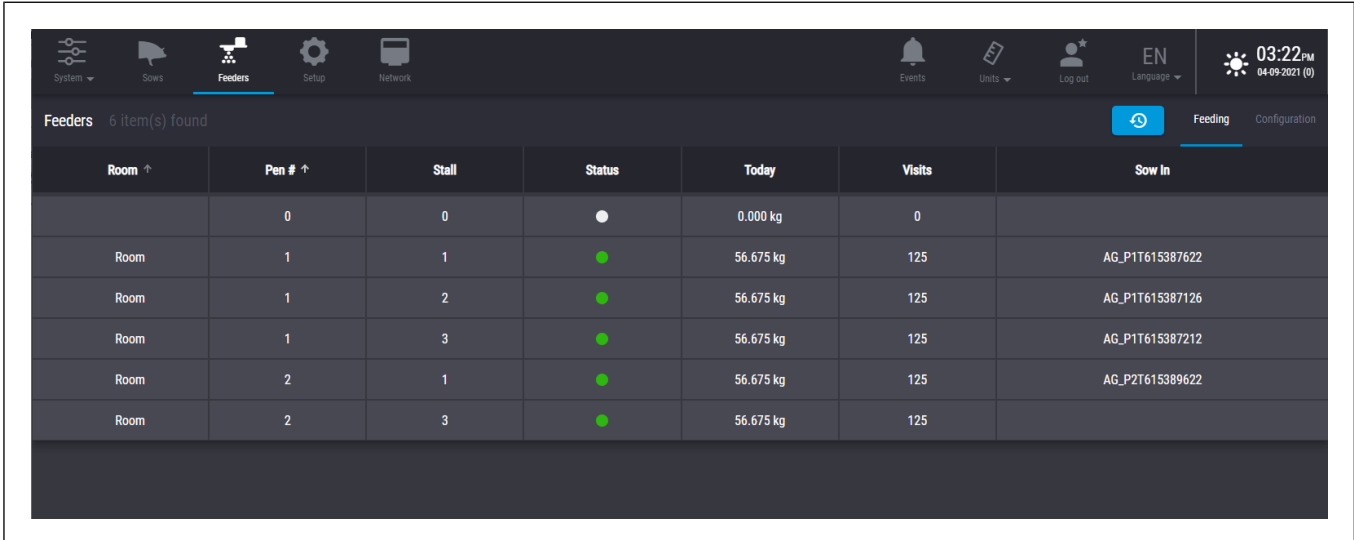


Feeders

The Feeder screen displays the feeders that are currently being used by the system and detailed information about each feeder.

From this screen you can test the connection of a feeder and remotely reboot a feeder. You can also identify a feeder by clicking on the bulb icon, the OLED screen of that feeder will blink for 10 minutes.

Figure 3-14 Feeding Screen



The screenshot shows the 'Feeding' screen in a mobile application. At the top, there is a navigation bar with icons for System, Sows, Feeder (selected), Setup, and Network. On the right side of the navigation bar, there are icons for Events, Units, Log out, Language (EN), and a clock showing 03:22 PM on 04-09-2021. Below the navigation bar, the text 'Feeder 6 item(s) found' is displayed. A table with 7 columns is shown: Room, Pen #, Stall, Status, Today, Visits, and Sow In. The first row has a white dot in the Status column, while the other five rows have green dots. The 'Today' column shows '0.000 kg' for the first row and '56.675 kg' for the others. The 'Visits' column shows '0' for the first row and '125' for the others. The 'Sow In' column contains alphanumeric codes for each row.

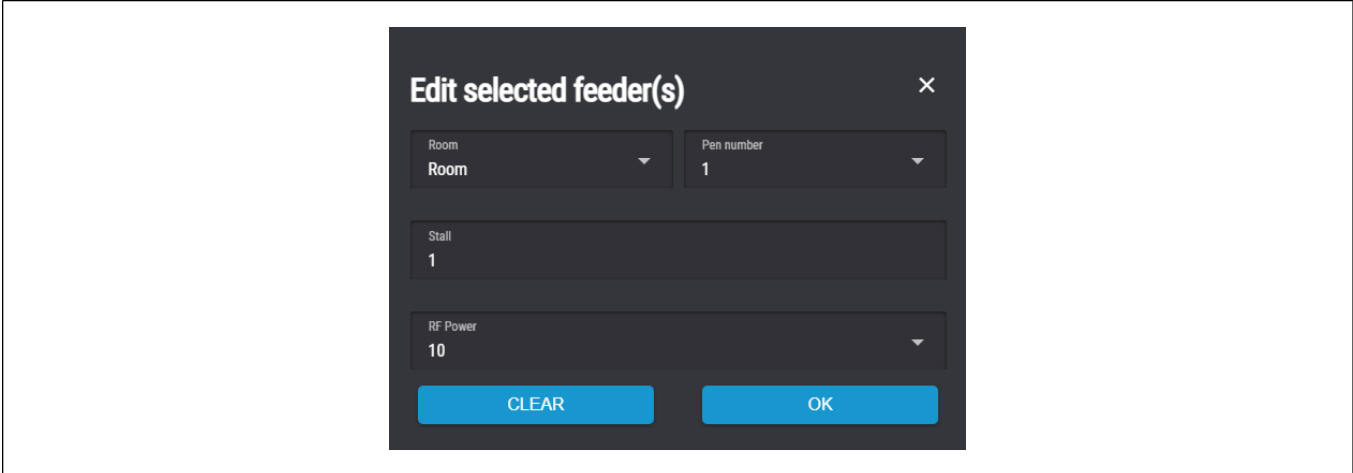
Room ↑	Pen # ↑	Stall	Status	Today	Visits	Sow In
	0	0	●	0.000 kg	0	
Room	1	1	●	56.675 kg	125	AG_P1T615387622
Room	1	2	●	56.675 kg	125	AG_P1T615387126
Room	1	3	●	56.675 kg	125	AG_P1T615387212
Room	2	1	●	56.675 kg	125	AG_P2T615389622
Room	2	3	●	56.675 kg	125	

Configuration Screen

From the Configuration Screen you can do the following:

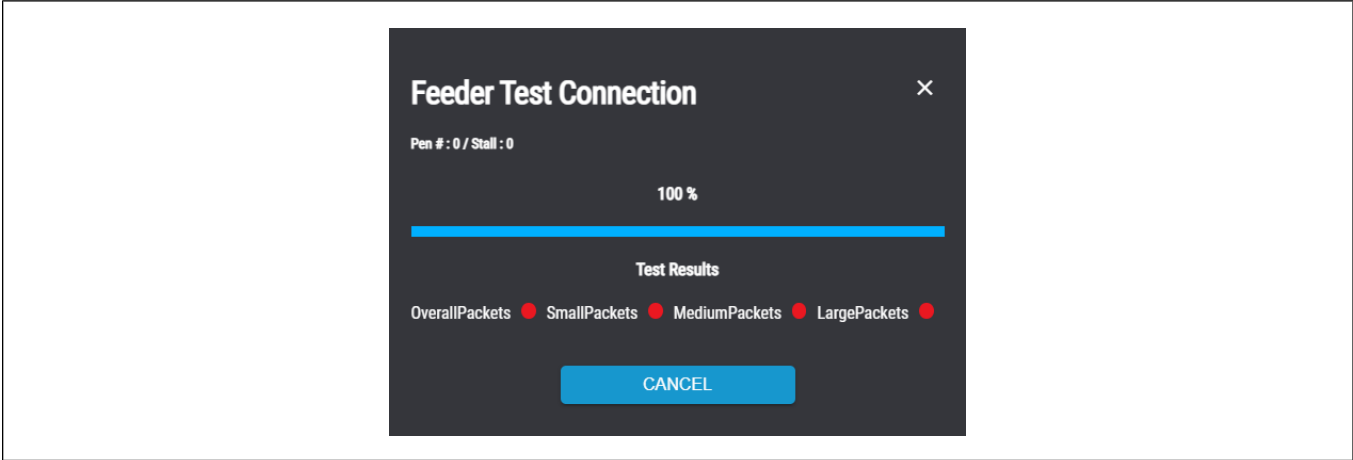
- Configure a feeder by selecting a feeder using the check box. A menu will pop up from the bottom of the window. From the pop up menu you can Edit, Reboot, Flash Format or Delete the selected feeder. If you need to troubleshoot the WiFi signal of a feeder, for example, if a feeder is far away and behind multiple walls, you can increase the RF Power here. These values are set by default in the firmware and are only accessible to solve specific communication problem on a site.

Figure 3-15 Edit Feeders



- Identify a feeder by clicking on the light bulb icon in the Identify Column. This will make the specific feeder OLED screen blink for 10 minutes so you can physically locate it.
- Can discover newly installed feeders by clicking the Discovery button.
- Start a connection test to make sure the feeder communication is working.

Figure 3-16 Feeder Connection Test



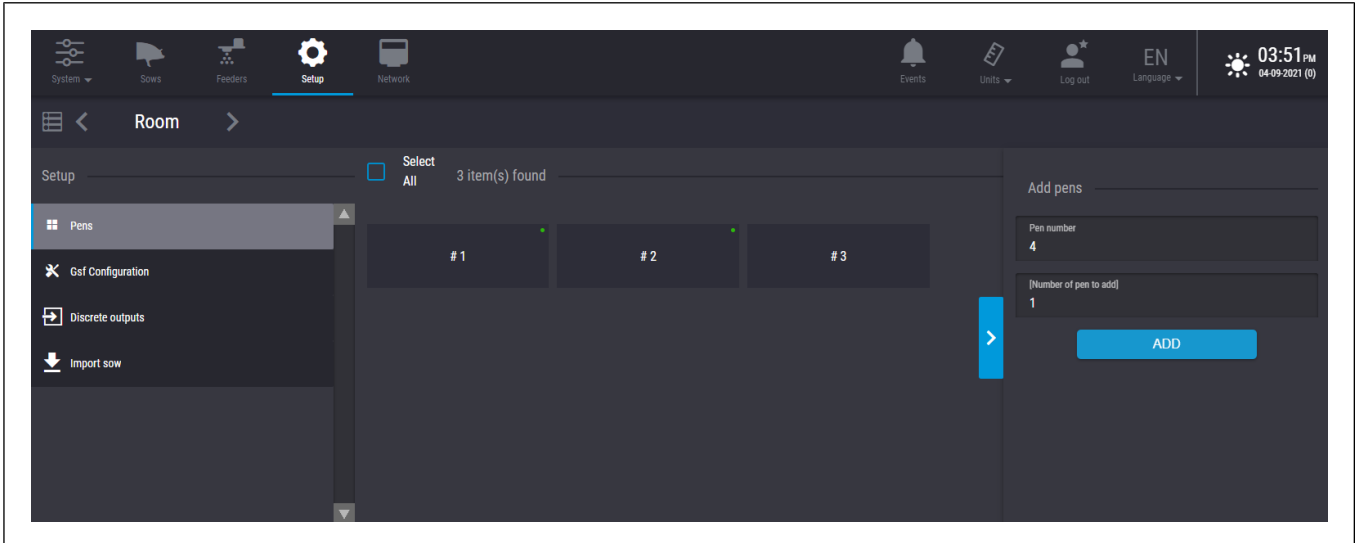
Setup

A Room must already be created before it can be setup.

Pens

To add pens, click the plus sign, enter the pen information and click Add.

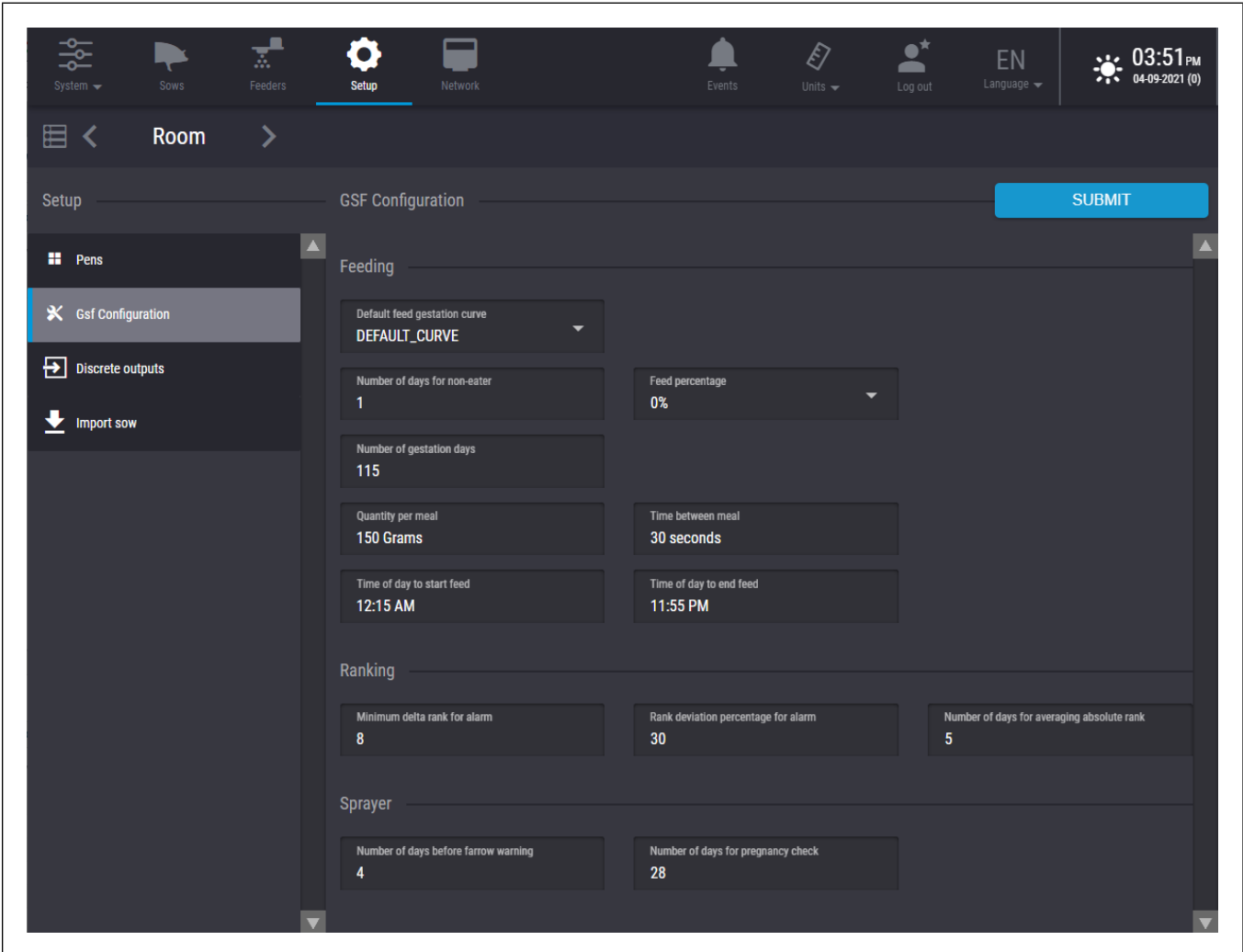
Figure 3-17 Adding Pens



GSF Configuration

To Configure the GSF feeder, select GSF Configuration. Once you have entered all the settings, click Submit to send the information to the feeder.

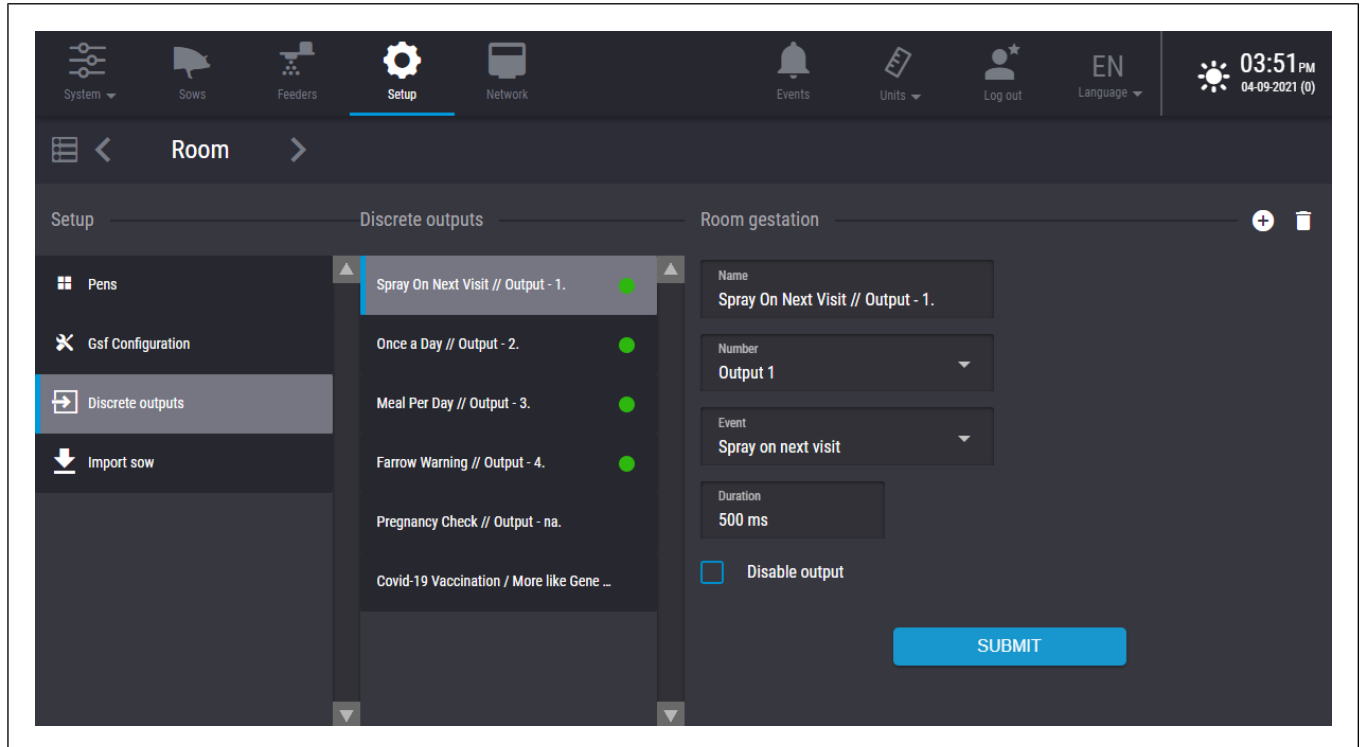
Figure 3-18 GSF Configuration



Discrete Outputs

As the Feeder modules have 4 outputs that can be used to drive various equipment such as paint sprayers and water valves, this section will allow you to set a configuration of one or multiple outputs for different events.

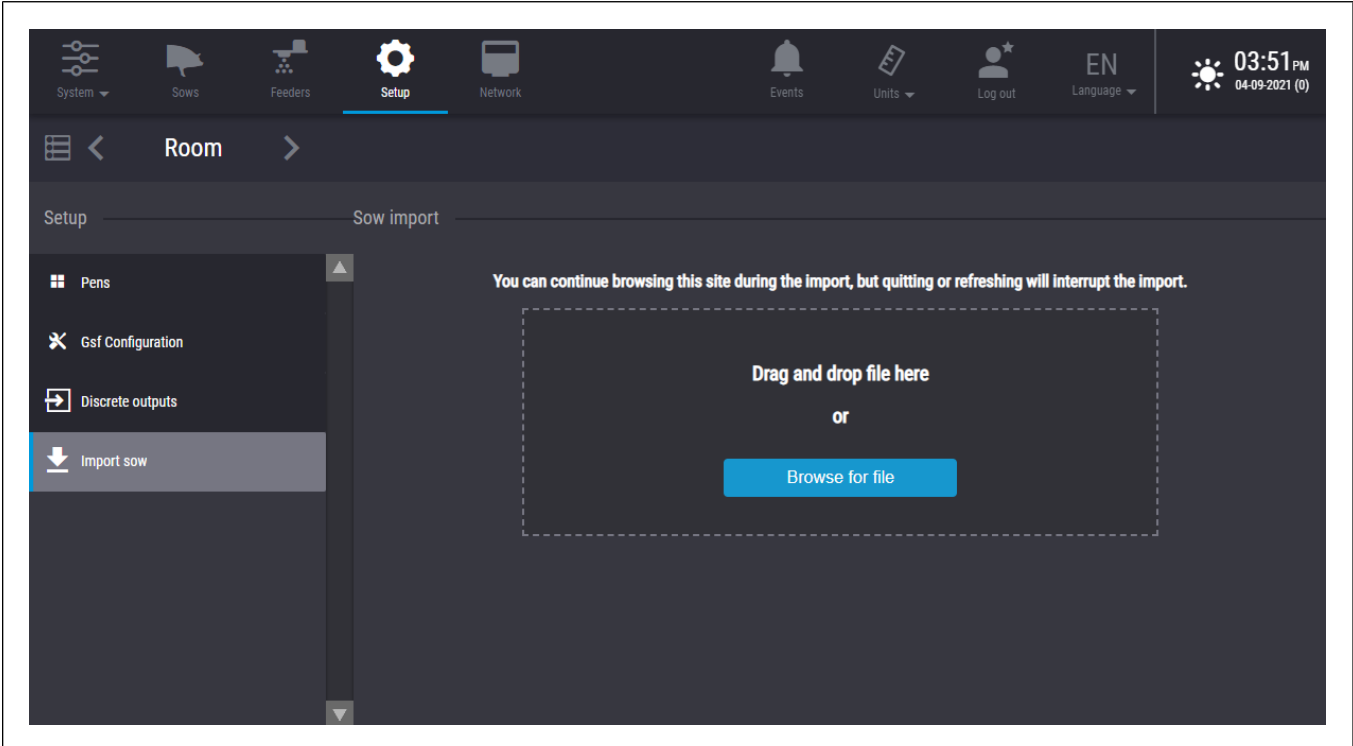
Figure 3-19 Discrete Outputs



Import Sow List

You can import a sow list by browsing or dragging and dropping the file to the screen.

Figure 3-20 Import Sow List



NOTES

4 Wand

Topics Covered in this Chapter

- Wand RFID Tag Reader
- AGCO Wand Application

Wand RFID Tag Reader

The Wand is a hand held portable scanner used to read RFID tags used specifically for livestock applications.

The Wand RFID tag reader that is provided by Allflex, complies with ISO standards ISO11784 / ISO11785 for FDX-B technology.

The Wand kit contains the items listed below.

Table 4-1 *Wand Kit*

GSIE P/N	GSI Group P/N	Description
084-60000	GSF-10000	EDGE GSF Wand
		Wand Stick
		Cellular
		Cellular Holder

AGCO Wand Application

Connecting the Wand App to the EDGE GSF Controller Screenless

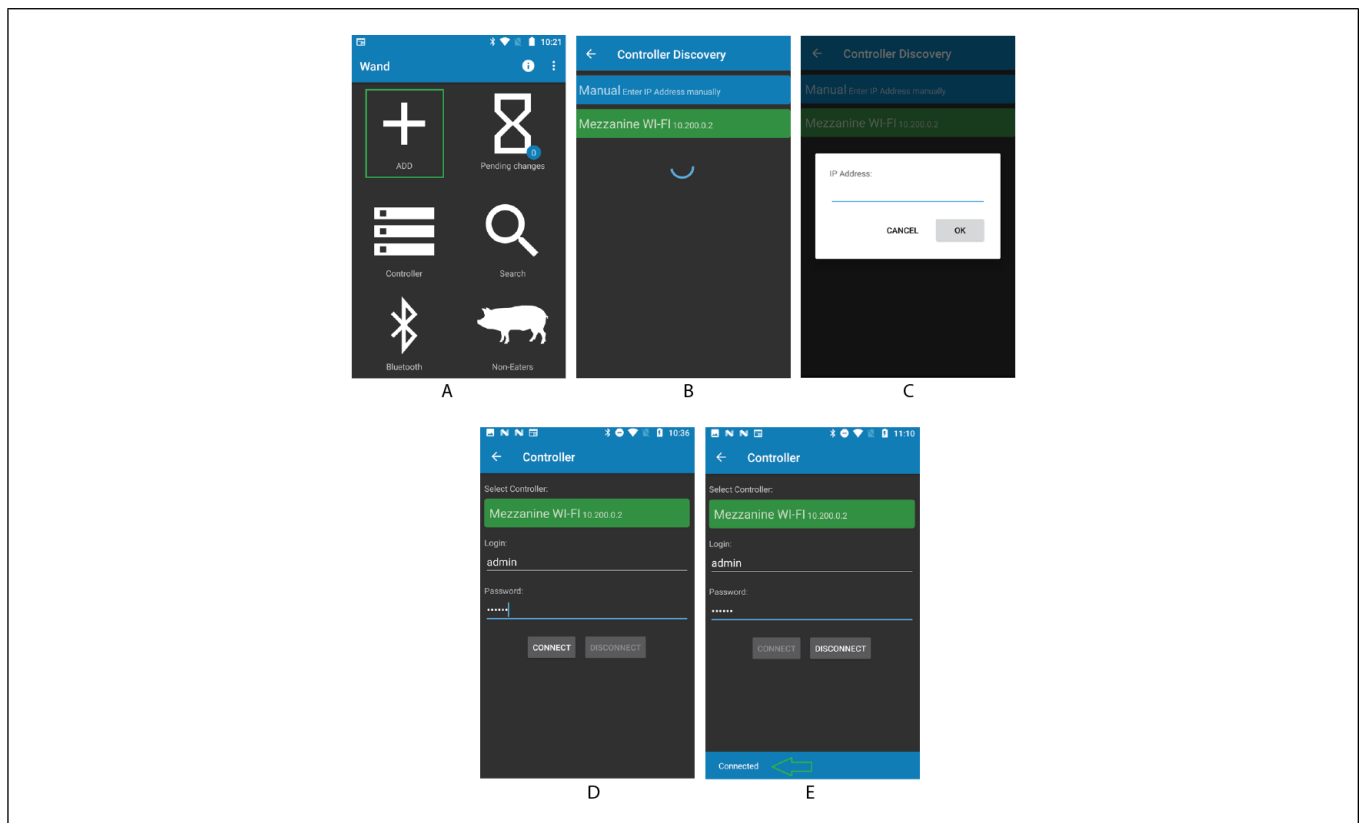
Before You Begin

You need to have the EDGE GSF System installed and the network configured. Refer to EDGE GSF / EDGE GSF Controller Screenless Installation Manual, if needed. Completing the following steps successfully will connect the AGCO Wand App with the EDGE GSF Controller Screenless. If the AGCO Wand App is not already installed on the device, you can download the AGCO Wand application from google play.

1. Open the AGCO Wand application.
2. Press the Controller icon to open the Controller Discovery screen. (A)
3. Choose Search or Manual.
 - Search automatically (B) locates any available system until the function is activated.
 - Manual (C) allows you to physically enter the controller IP address.
4. Once your EDGE GSF Controller Screenless is discovered, select it and enter your Login and Password (D).
5. Press Connect.

The screen will display connected if successful (E).

Figure 4-1 Connecting to the EDGE GSF Controller Screenless



Pairing the Wand to a Device (Bluetooth)

Before You Begin

- Bluetooth of device set to ON.
- Reader Stick (RS420): Powered on and made discoverable. (See RS420 user manual for more details.)
- AGCO WAND Application: Version 1.0 or greater.

1. On your device, go to Settings > Bluetooth and turn on Bluetooth.

Stay on this screen until you complete the steps to pair the Wand RFID reader.

2. Place the Wand RFID reader in discovery mode and wait for it to appear on your device.

If you don't see it or aren't sure how to make it discoverable, refer to the Wand RFID reader instructions.

3. To pair, tap the Wand RFID reader name (RS420) when it appears onscreen.

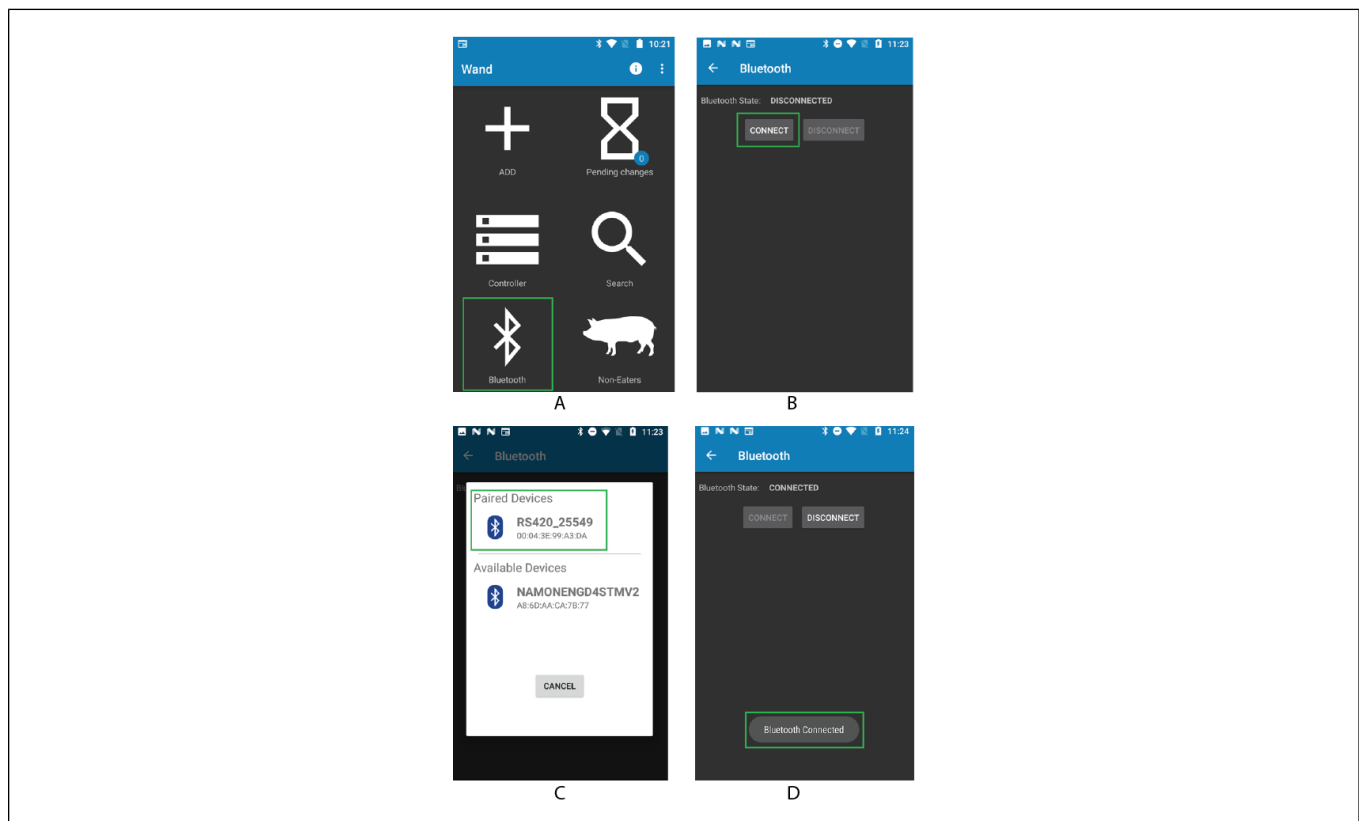
4. Open the AGCO Wand App and press the Bluetooth icon (A), then press the Connect button (B).

All paired devices should display on screen (C).

5. Press the Wand RFID reader (RS420) to connect.

If successful, it should display Bluetooth Connected (D).

Figure 4-2 Pairing Wand to Device

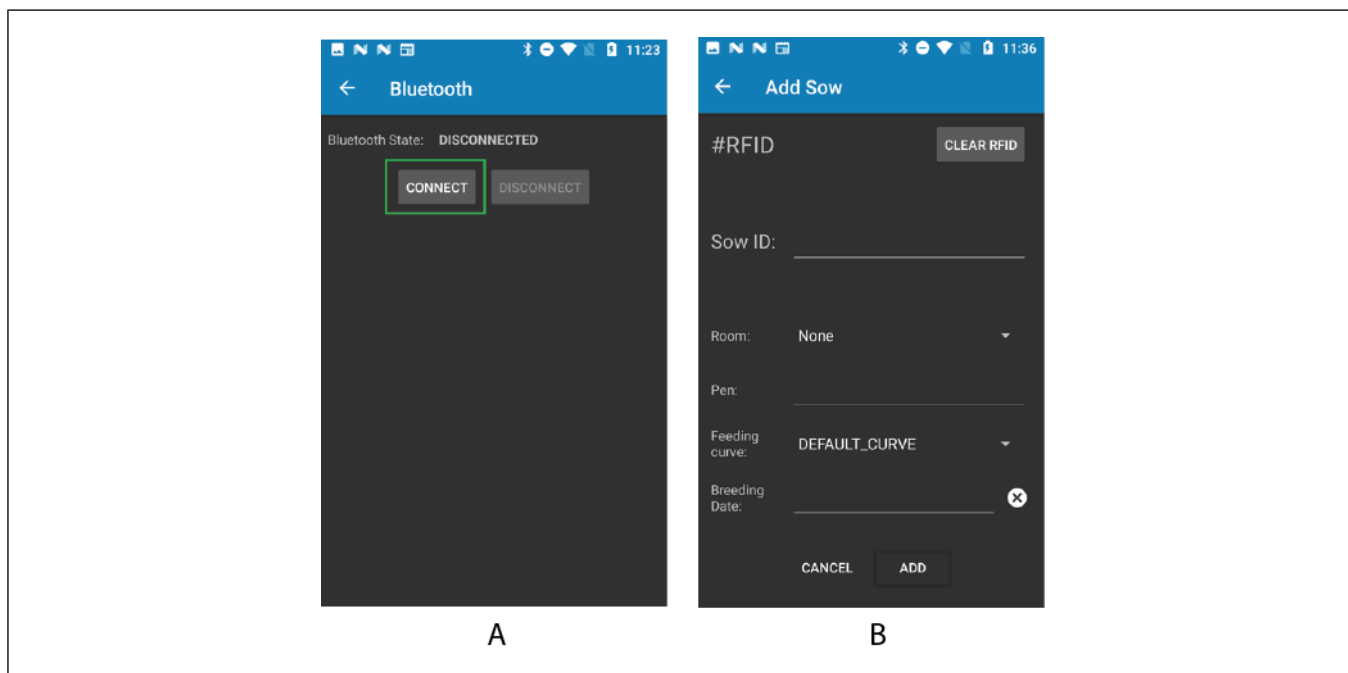


Adding a Sow to the EDGE GSF Controller Screenless

You can manually add a sow to the system using the Wand RFID reader to scan a sow ID to add her to the system. With this method, you can set the feed curve, room, pen, and breeding date.

1. Open AGCO Wand application.
2. Press **Add** icon (A).
3. Scan the sow RFID tag using the Wand RFID reader.
4. Set the parameters for the sow and press **Add** (B).
 - Sow ID – (This will automatically populate from the RFID tag.)
 - Room
 - Pen
 - Feeding curve - (The default curve will automatically be entered, but you can choose another curve from the drop down list.)
 - Breeding date

Figure 4-3 Adding a sow



Search Function

Search allows you to view and edit information about a specific sow. You can choose a sow from an auto-populated list generated from the system, typing in the sow ID or RFID, or using the Wand RFID reader.

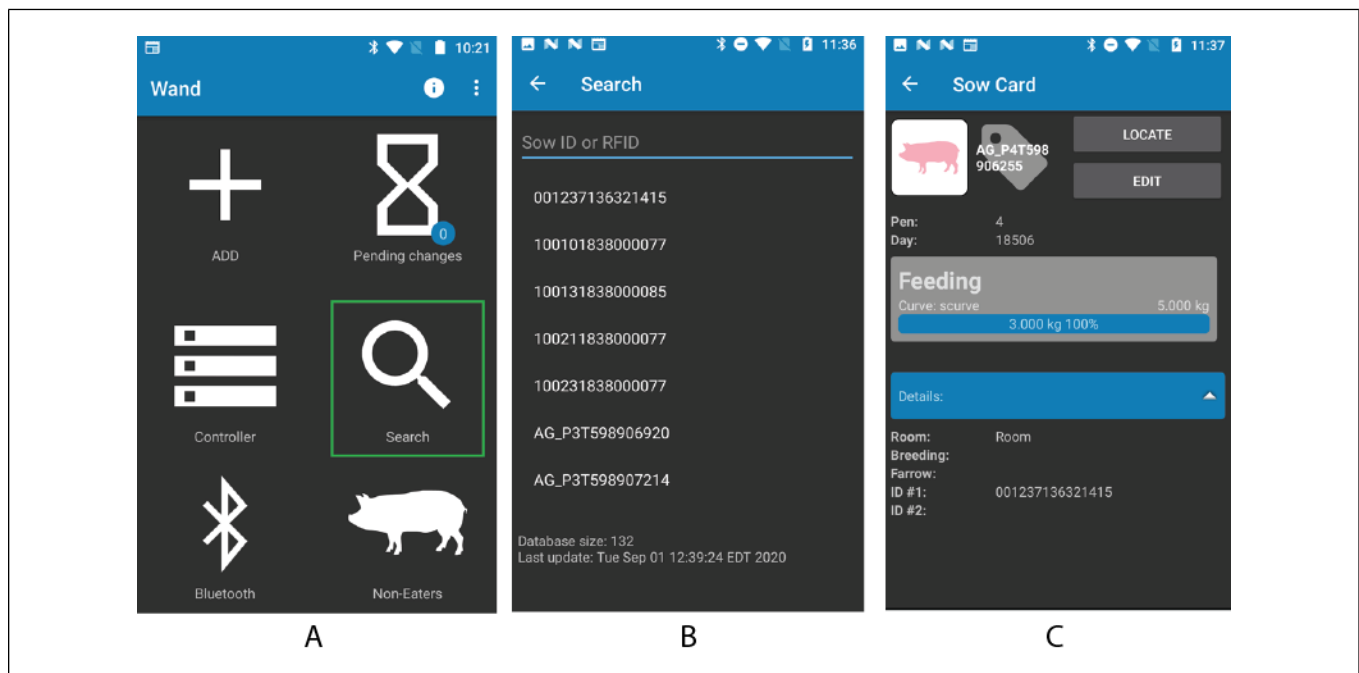
1. Open the AGCO Wand application.
2. Press **Search** (A).
3. Choose a sow from the list, type in the Sow ID/RFID, or use the Wand RFID reader to scan the tag.
4. Select the Sow ID or RFID (B).

This will open the Sow Card that displays the information about the sow (C).

5. Press Edit to change information about the sow.
6. Press **Save**.

Sow information is automatically updated to the system.

Figure 4-4 Search Function



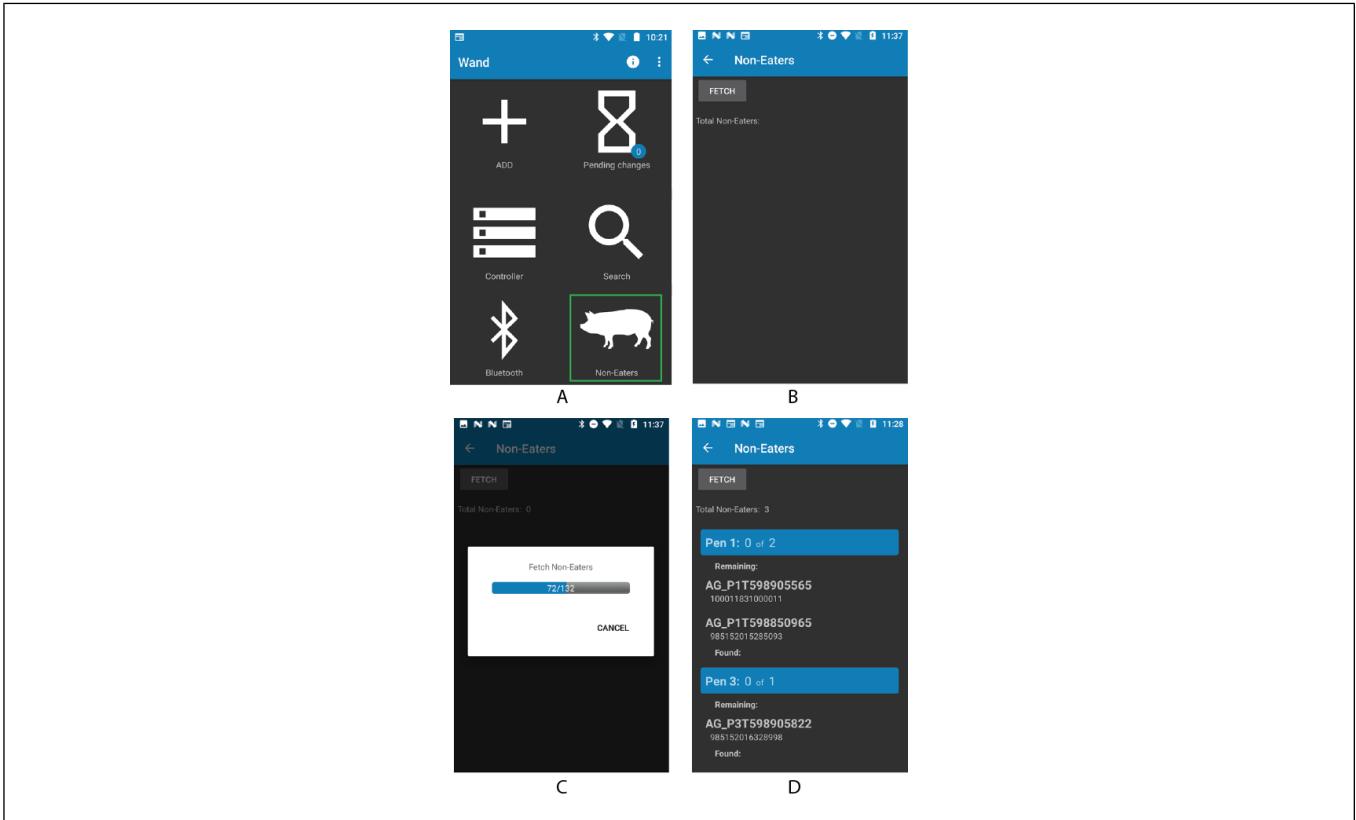
Finding Non-Eaters

This allows you to locate non-eaters for that day. You will receive an alarm when a sow is a considered non-eater during the day change.

1. Open the AGCO Wand application.
2. Press **Non-Eaters** (A).
3. Press **Fetch** (B).

The database will load (C) and display all non-eaters (D).

Figure 4-5 Finding Non-Eaters



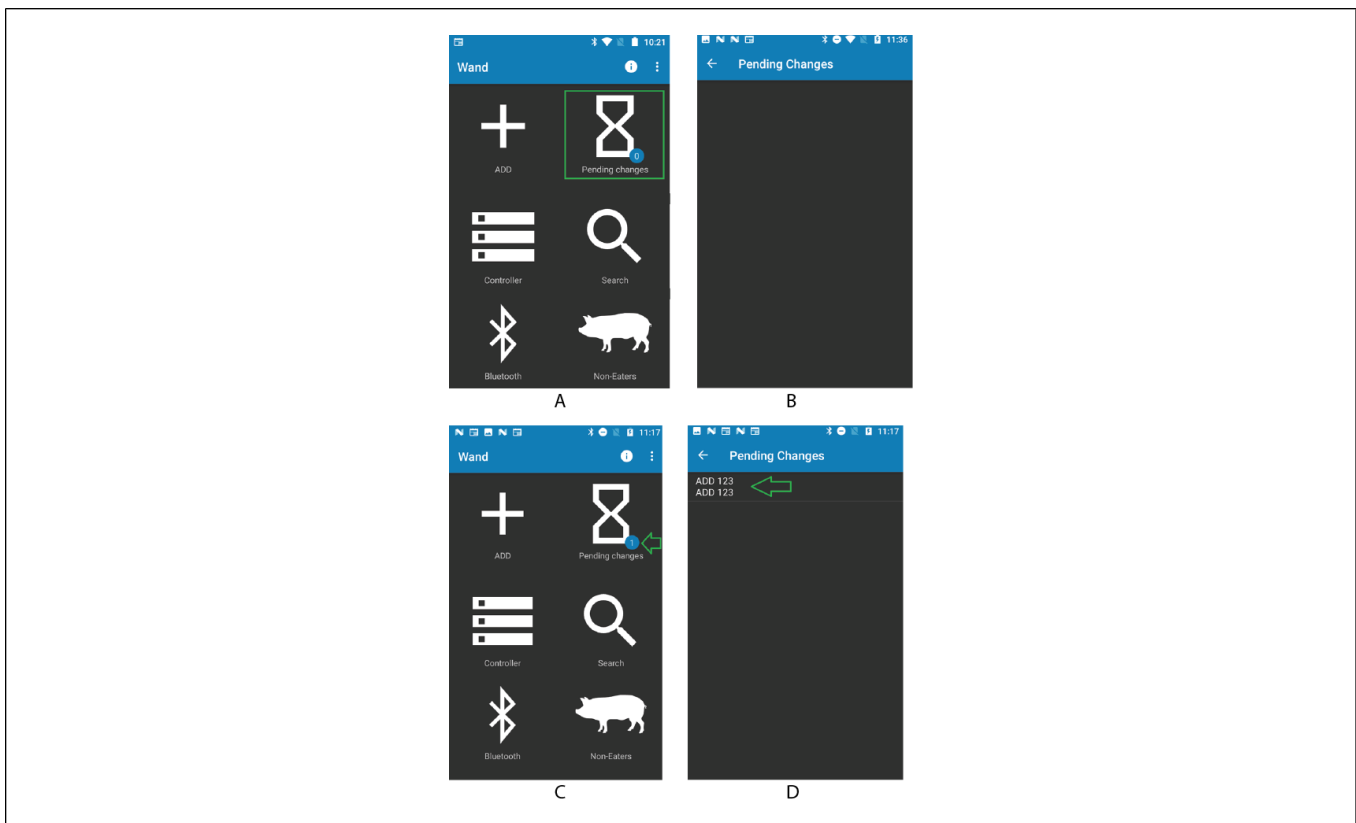
Pending Changes

When the AGCO Wand application is disconnected from the EDGE GSF Controller Screenless, any changes you make to a Sow Card will be saved and stored as a pending change. Once the connection is reestablished, all pending changes will be updated to the EDGE GSF Controller Screenless.

Press the **Pending Changes** icon (A).

- The number of pending changes will be displayed in the blue circle at the bottom of the **Pending Changes** icon (A & C).
- If there are no changes, nothing will be listed (B).
- If there are changes, they will be listed on the Pending Changes page (D).

Figure 4-6 Pending Changes

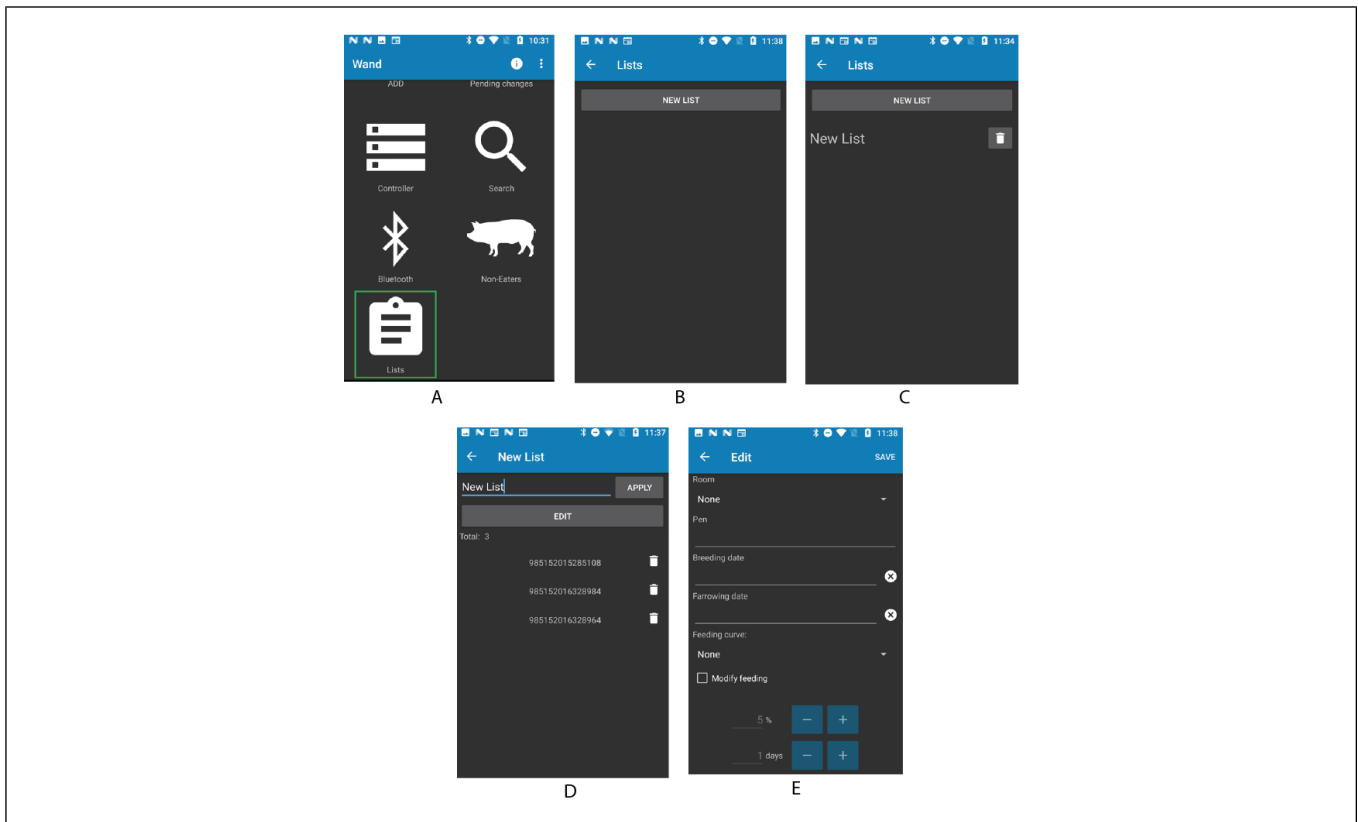


Creating a List

This is where you can create lists of multiple sows that can be grouped together to represent identical action, such as feed curve, room, pen change, breeding date and farrowing date.

1. Press the **List** icon (A).
2. Press **New List** button (B).
3. Press on the name **New List** to edit the name (C).
4. Edit the name and click **Apply** (D).
5. Add sows to the new list.
6. Press **Edit** (D) to edit the parameters for the list.
7. Press **Save** (E).

Figure 4-7 Creating a List



5 Maintenance

Topics Covered in this Chapter

- Inspecting and Cleaning the EDGE GSF
- Inspecting and Cleaning the EDGE GSF Controller Screenless
- Tightening the connections
- Replacing a fuse
- Replacing the Coin Battery on EDGE GSF Controller Screenless
- Replacing the Coin Battery on EDGE GSF
- Replacing the Auger or \ and Plastic Elbow
- Replacing the BLDC Motor
- Replacing the EDGE GSF
- Emptying the Feed from an EDGE GSF

Inspecting and Cleaning the EDGE GSF

Regularly inspecting and cleaning the EDGE GSF can prolong the life and keep the system functioning properly.

Before You Begin



Before servicing the system, disconnect the main voltage supply.



Do not pressure wash the EDGE GSF.



Maintenance must only be performed by maintenance personnel and qualified service personnel.

1. Use a damp cloth to wipe clean the exterior of the enclosure.
2. Every 3 months, open and inspect the enclosure for moisture or dust build-up. Replace the cover when inspection is complete.

Inspecting and Cleaning the EDGE GSF Controller Screenless

Inspecting the controllers and keeping them clean can help prolong the proper functioning of the system.

Before You Begin



Disconnect the voltage supply before servicing or performing any maintenance operations.



Lock the EDGE GSF Controller Screenless once the wiring is completed or when servicing. Use the included nut and bolt or a padlock (not included) to lock the controller.

- Every few months, open and inspect the enclosure for moisture or dust build-up.



Only maintenance personnel and service personnel can do that.

- Using a damp cloth, wipe clean the exterior of the enclosure.



Do not pressure wash the EDGE GSF Controller Screenless.

Tightening the connections



Inspection must only be performed by qualified service personnel.



Before servicing the system, disconnect the main voltage supply.



Wear appropriate grounding devices such as an anti-static wristband to service the system.

The connections must be verified to make sure they are not loose and the installation is safe. Inspection also ensures that no overheating has occurred at the connections.

The connections on power and control terminals must be verified every 3-12 Months. Look at the wiring instructions in the manual for the tightening torque required according to the specific terminal.

Replacing a fuse

Before You Begin

Only service personnel is authorized to replace a fuse.



Wear appropriate grounding devices such as an anti-static wristband to service the system.

1. Disconnect the main voltage supply and ensure the box is completely powered down.
2. Locate the broken fuse and replace it with a fuse of the same tolerance.
3. Reconnect the main voltage supply, and ensure all equipment powers up.

Replacing the Coin Battery on EDGE GSF Controller Screenless

If the battery alarm is displayed, the coin battery needs to be changed. Correctly changing the coin battery will make sure the system continues to function properly.

Before You Begin



Maintenance must only be performed by maintenance personnel and qualified service personnel.



Before servicing the system, disconnect the main voltage supply.



Wear appropriate grounding devices such as an anti-static wristband to service the system.

1. Disconnect the main voltage supply and ensure the box is completely powered down.
2. Locate the coin battery at BAT1 on PCB-495.
3. Remove the coin battery from PCB-495.
4. Install a new coin battery on PCB-495.
5. Reconnect the main voltage supply, and ensure all equipment powers up.
6. Adjust the date and time on your GSF Controller Screenless.

Replacing the Coin Battery on EDGE GSF

If the battery alarm is displayed, the coin battery needs to be changed. Correctly changing the coin battery will make sure the system continues to function properly.

Before You Begin



Maintenance must only be performed by maintenance personnel and qualified service personnel.



Before servicing the system, disconnect the main voltage supply.



Wear appropriate grounding devices such as an anti-static wristband to service the system.

1. Disconnect the main voltage supply by unplugging the AC cable plug and ensure the EDGE GSF is completely powered down.
2. Remove the EDGE GSF cover.
3. Locate the coin battery at BAT1 on PCB-452.
4. Remove the coin battery.

5. Install a new coin battery.
6. Replace the EDGE GSF cover.
7. Reconnect the main voltage supply, and ensure all equipment powers up.
8. Adjust the date and time on your EDGE GSF.

Replacing the Auger or \ and Plastic Elbow

Before You Begin



Maintenance must only be performed by qualified service personnel.



Before servicing the system, unplug the EDGE GSF power cord from the electrical outlet.



Forgetting to unplug the EDGE GSF power cord from the outlet could cause injury to fingers.



Forgetting to remove feed from the EDGE GSF can cause injury when removing from the chain disk tube.

1. Close the slide to the EDGE GSF hopper.
2. Empty all feed from the EDGE GSF transparent tube by running the BLDC motor.
3. Unplug the EDGE GSF power cord from the electrical outlet.
4. Unlock and remove the plastic elbow by turning it counterclockwise.
5. Remove the auger and clean out the enclosure.
6. Reinstall the new parts.
7. Reinstall the plastic elbow by turning it clockwise onto the enclosure and align it with the drop tube.
8. Plug the EDGE GSF power cord into the electrical outlet.
9. Open the slide to the EDGE GSF hopper.

Replacing the BLDC Motor

Before You Begin



Maintenance must only be performed by qualified service personnel.



Before servicing the system, unplug the EDGE GSF power cord from the electrical outlet.



Forgetting to unplug the EDGE GSF power cord from the outlet could cause injury to fingers.



Forgetting to remove feed from the EDGE GSF can cause injury when removing from the chain disk tube.

1. Close the slide to the EDGE GSF hopper.
2. Empty all feed from the EDGE GSF transparent tube by running the BLDC motor.
3. Unplug the EDGE GSF power cord from the electrical outlet.
4. Unlock and remove the plastic elbow by turning it counterclockwise.
5. Remove the auger and clean out the enclosure.
6. Remove the four screws from the auger motor fastener.
7. Remove the cover from the EDGE GSF and remove the BLDC motor.
8. Reinstall the four screws to connect the motor to the auger motor fastener.
9. Reinstall the EDGE GSF cover.
10. Reinstall the auger.
11. Reinstall the plastic elbow by turning it clockwise onto the enclosure and align it with the drop tube.
12. Plug the EDGE GSF power cord into the electrical outlet.
13. Open the slide to the EDGE GSF hopper.

Replacing the EDGE GSF

Before You Begin



Maintenance must only be performed by qualified service personnel.



Before servicing the system, unplug the EDGE GSF power cord from the electrical outlet.



Forgetting to unplug the EDGE GSF power cord from the outlet could cause injury to fingers.



Forgetting to remove feed from the EDGE GSF can cause injury when removing from the chain disk tube.

1. Close the slide to the EDGE GSF hopper.
2. Empty all feed from the EDGE GSF transparent tube by running the BLDC motor.
3. Unplug the EDGE GSF power cord from the electrical outlet.
4. Loosen the hose clamps and slide them to the side and remove the EDGE GSF from the chain disk tube.
5. Reinstall the new EDGE GSF by following the installation instructions in the manual.
6. Plug the EDGE GSF power cord into the electrical outlet.
7. Open the slide to the EDGE GSF hopper.

Emptying the Feed from an EDGE GSF

1. Close the slide to the EDGE GSF hopper.
2. Run the BLDC motor until all the feed is emptied from the EDGE GSF hopper.
The hopper is empty once the feed stops dropping out from the elbow.
3. Open the slide to the EDGE GSF hopper.

6 Troubleshooting

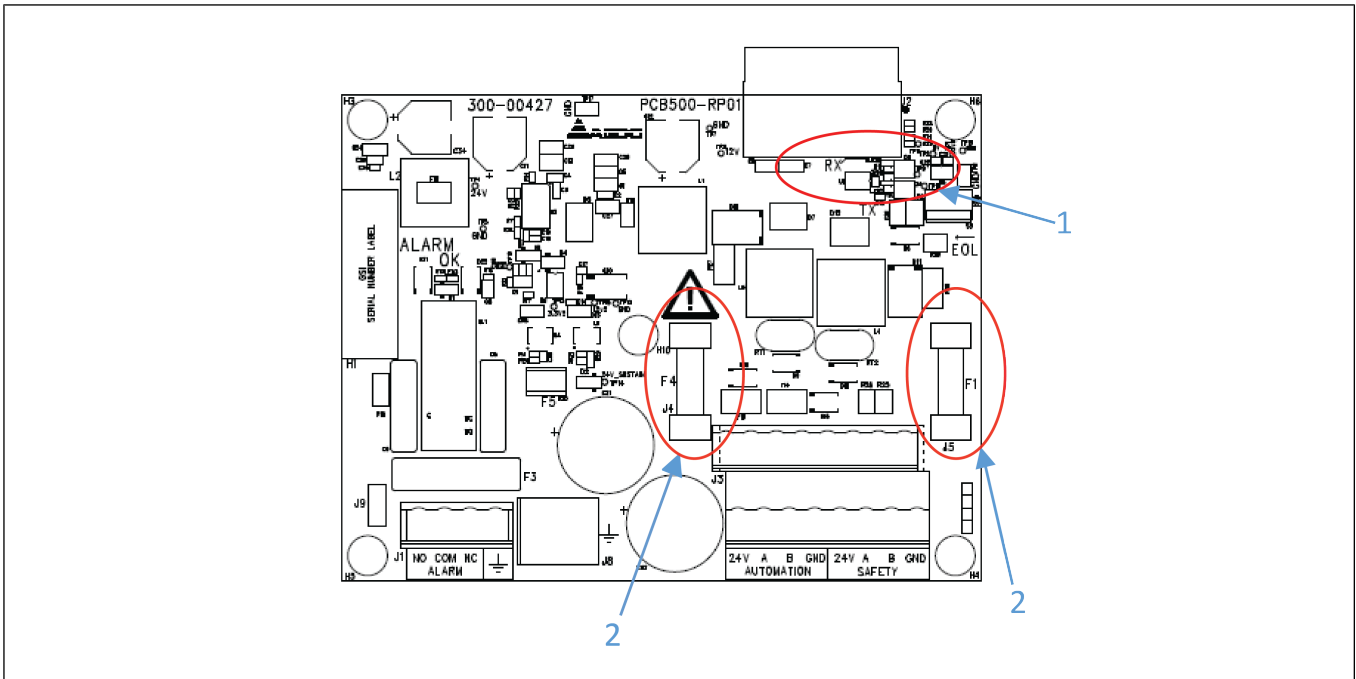
EDGE GSF

Table 6-1 Troubleshooting

Problem	Possible Solution
EDGE GSF does not power up	Verify if the AC power cable plug is connected in the outlet
	Verify if the outlet breaker is not opened or correctly sized
	Ensure that the AC power cable plug is not disconnected in the EDGE GSF plastic enclosure
	Verify if the outlet provides a voltage from 100-Vac to 120Vac
	Verify if the power led is green on the user interface
	If the problem persists, contact AP or GSI Electronics
EDGE GSF sprayers output does not activate	Verify if the Sprayer cable connector is properly connected in the EDGE GSF sprayer connector
	Verify if the Sprayer cable terminal is properly connected on the PCB-452
	Try to activate the sprayer output by using the Solenoid Output menu on the EDGE GSF
	Validate that the sprayer solenoid does not draw more than 1.4Amps
	If the software has shut down the sprayer output because of overcurrent. Correct the issue before resetting the fault
	If the problem persists, contact AP or GSI Electronics
EDGE GSF LFID with Auto Tuning does not work	Verify if the EDGE GSF LFID with Auto Tuning cable connector is properly connected in the EDGE GSF LFID with Auto Tuning connector
	Verify if the EDGE GSF LFID with Auto Tuning cable terminal is properly connected on the PCB-452
	If the problem persists, contact AP or GSI Electronics

EDGE GSF Controller Screenless

Figure 6-1 PCB500 in the EDGE GSF Controller Screenless Enclosure



1	Automation network activity LEDs and Safety network activity LEDs	
2	F4	Automation network fuse
	F1	Safety network fuse

Table 6-2 EDGE GSF Controller Screenless Troubleshooting

Problem	Solution
The EDGE GSF Controller Screenless doesn't Power on	Verify if the following LEDs are activated on PCB-495: LED 12V, LED 5V, LED 3.3V1, LED 3.3V2
	Verify if the fuses F4 and / or F1 are burned, if that is the case, find the issue and correct it then replace the burned fuse.
	Measure the voltage between the terminal 24V and GND. The voltage must be at least 16V
	Verify if the Power link is installed correctly: Terminal 24V from EDGE PSU 24V 36W to EDGE GSF Controller Screenless terminal 24V, Terminal GND from EDGE PSU 24V 36W to EDGE GSF Controller Screenless terminal GND
	Verify if the Power link is not cut: wire is cut
	Verify if the power link length is below 500 feet (150m) with the recommended gage.
	If the problem persists, contact AP or GSI Electronics

EDGE PSU 24V 36W**Table 6-3** *EDGE PSU 24V 36W Troubleshooting*

Problem	Solution
The PSU 24V 36W does not power up	Verify if there is a voltage from 100Vac to 240Vac at the main supply input.
	Verify if the wires are installed correctly.
	Verify if there is 24Vdc at the DC output.
	If the problem persists, contact AP or GSI Electronics.
Issues with the 24Vdc output	The 24Vdc output is not able to supply the external module. Ensure that the 24Vdc output does not draw more than 1.5A.
	Verify if the external module wiring is conformed to the wiring diagram.
	Verify if the power link length is below 500 feet (150m) with the recommended gage.
	If the problem persists, contact AP or GSI Electronics.
The external module does not still power up	Measure the voltage between the terminal 24V and GND on the external module. The voltage must be at least 16V.
	Verify if the power link is installed correctly: Terminal 24V from the external module to the PSU 24V 36W OUT(+), Terminal GND from the external module to the PSU 24V 36W OUT(-).
	Verify if the power link is not cut: the wire is cut or fuses are burned up.
	Verify if the power link length is below 500 feet (150m) with the recommended gage.
	If the problem persists, contact AP or GSI Electronics.

NOTES

A LED Meanings

EDGE GSF

Figure A-1 EDGE GSF Feeder User Interface

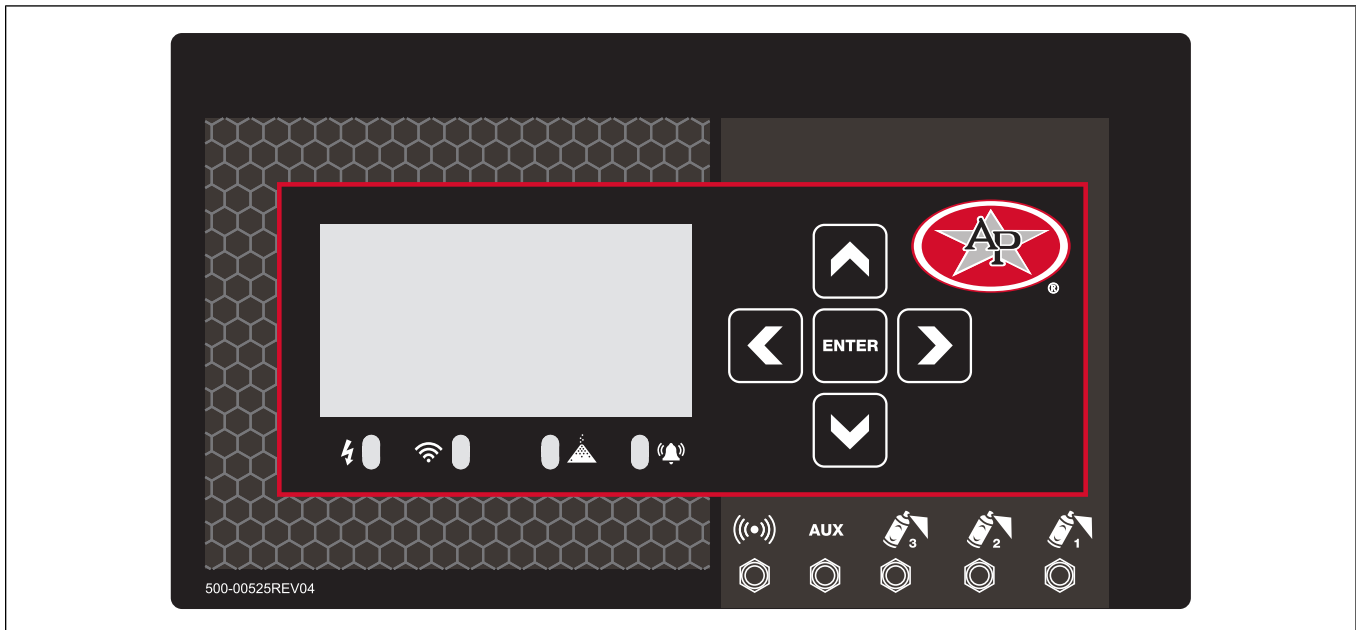






Table A-1 EDGE GSF Feeder LED Identification

LED Identification	Description
 (Power State)	Green : If the EDGE GSF Feeder is powered on
	Off : If no power
 (Wireless Communication State)	Off : No radio module present or radio module defective
	Red : Radio module present, no WiFi connection, no EDGE GSF Controller Screenless connection
	Red + Green : WiFi connected, no communication with EDGE GSF Controller Screenless
 (Feed Supplying State)	Green : There is feed available in the auger
	Red : There is an out of feed condition
 (Alarm State)	Off : No alarms, all is good
	Red : Alarm condition

Appendix A: LED Meanings

Table A-2 PCB-452 LED Identification

LED identification	Description
24V	Led active when the 24VDC is present
5V	Led active when the 5VDC is present
3.3V	Led active when the 3.3VDC is present
TX RX	Led blinks off during activity
USB	Led active when USB port is activated

EDGE GSF Controller Screenless

Table A-3 EDGE GSF Controller Screenless LED Identification

LED Identification	Description
12V	LED active when the 12VDC is present
5V	LED active when the 5VDC is present
1.5V	LED active when the 1.5VDC system is present
3.3V1	LED active when the 3.3VDC bus 1 is present
3.3V2	LED active when the 3.3VDC bus 2 is present
SATA ACT.	LED active when SATA drive is used
WLAN	LED active when wireless communication is established
WWAN	Not used
WPAN	Not used
LINK1000	LED active when 1000 Base-Tx is used
LINK100	LED active when 100 Base-Tx is used
LINK/ACTIVITY	LED active when the link is present LED blinks off during activity
USB0 ON	LED active when USB port is activated
USB1 USB2 ON	LED active when USB port is activated
USB3 ON	LED active when USB port is activated
THRM TRIP	Not used
DGB1	Indicate the TOP EDGE hardware revision
DGB2	
DBG3	
DBG4	
TX on PCB-500	LED blinks when TX activity on Safety port or Automation port
RX on PCB-500	LED blinks when RX activity on Safety port or Automation port
ALARM OK on PCB-500	LED active when there is not an alarm

B Safety Characteristics and Certification

Safety Characteristics

The EDGE GSF and EDGE GSF Controller Screenless are Safety Class I according to IEC classification and has been designed to meet the requirements of UL 61010-1 third edition, CAN/CSA-C22.2 n° 61010-1 third edition, EN 61010-1: 2010 (Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use). It is an Installation Category II intended for operation from a normal single phase or two phase(s) supply according to the power cord.

The EDGE GSF and EDGE GSF Controller Screenless have been tested in accordance with IEC61010-1 and has been supplied in a safe condition. This instruction manual contains some information and warnings which have to be followed by the user to ensure safe operation and to retain the instrument in a safe condition.

These Safety EU directives were followed:

- 2014/35/EU The Low Voltage Directive (LVD)
- 2014/30/EU The Electromagnetic Compatibility Directive (EMC)

EMC characteristics - Emissions Standards for EDGE GSF

The EDGE GSF has been designed to meet the requirements of the EMC Directive 2014/30/EU, FCC directives, Industry Canada directives. The compliance was demonstrated by meeting the test limits of the following standards:

- EN 61000-6-4 (2019) : Emission tests levels for industrial environment
- EN61326-1 (2013) : EMC product standard for Electrical Equipment for Measurement, Control and Laboratory Use
- IEC EN 60730-1 (2016): Automatic electrical controls for household and similar use - Part 1: General requirements - EMC requirements
- FCC part 15 Subpart B, class A
- EMC certification: ICES-003 - Information Technology Equipment (ITE) — Limits and Methods – class A
- ETSI EN 301 489-1 V2.2.3 (2019-11): Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
- ETSI EN 301 489-17 V3.2.2 (2019-12), ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU
- ETSI EN 301 489-3 V2.1.1 (2019-03): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

Appendix B: Safety Characteristics and Certification

Table B-1 Emissions

Test number	Test name	Standard	Standard level
1	Conducted emissions	CISPR 11 FCC part 15, Subpart B ICES-003 EN61000-6-4 ETSI EN 301 489-17 and ETSI EN 301 489-3, article 8.4 →EN 55032	Group 1, class A Class A Class A Class A Class A
2	Radiated emissions	CISPR 11 FCC part 15, Subpart B ICES-003 EN61000-6-4 ETSI EN 301 489-17 and ETSI EN 301 489-3, article 8.2 →EN 55032	Group 1, class A Class A Class A Class A Class A
3	Harmonic current emissions	IEC61000-3-2 ETSI EN 301 489-17 and ETSI EN 301 489-3, article 8.5 → EN 61000-3-2	Class A
4	Flickers limitation	IEC61000-3-3 ETSI EN 301 489-17 and ETSI EN 301 489-3, article 8.6 → EN 61000-3-3	≤4% on the main sector voltage envelope

EMC characteristics - Immunity Standard for EDGE GSF

The EDGE GSF has been designed to meet the requirements of the EMC Directive 2014/30/EU, FCC directives, Industry Canada directives. The compliance was demonstrated by meeting the test limits of the following standards:

- EN61326-1 (2013) : EMC product standard for Electrical Equipment for Measurement, Control and Laboratory Use
- EN 61000-6-2 (2019): Immunity tests levels for industrial environment
- IEC EN 60730-1 (2016): Automatic electrical controls for household and similar use - Part 1: General requirements - EMC requirements
- ETSI EN 301 489-1 V2.2.3 (2019-11): Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
- ETSI EN 301 489-17 V3.2.2 (2019-12), ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU
- ETSI EN 301 489-3 V2.1.1 (2019-03): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

Appendix B: Safety Characteristics and Certification

Test methods, limits and performance achieved are shown below (requirement shown in brackets):

Table B-2 Immunity

Test number	Test name	Standard	Standard level
5	Radiated, radio-frequency, electromagnetic field immunity test	IEC61000-4-3 : ETSI EN 301 489-17 and ETSI EN 301 489-3, article 9.2→ EN61000-4-3	Modulation: 80% AM at 1kHz, 80MHz - 1GHz: 10V/m 1.4GHz-2 GHz: 3 V/m 2GHz-2.7GHz: 3 V/m 2.7GHz-6GHz: 3 V/m Performance: A (A)
6	Immunity to conducted disturbances, induced by radio-frequency fields	IEC61000-4-6 ETSI EN 301 489-17 ETSI EN 301 489-3, article 9.5→ EN61000-4-6	Frequency test range : 150KHz and 80Mhz at 10Vrms Pause time: 0,5s (AC line, Earth, I/O connections >3m) Performance A (A)
7	Electrostatic discharge immunity test	IEC61000-4-2 ETSI EN 301 489-17 and ETSI EN 301 489-3, article 9.3→ EN61000-4-2	± 8 kV air ± 6 kV contact Performance A (B)
8	Electrical fast transient/burst immunity test	IEC61000-4-4 ETSI EN 301 489-17 and ETSI EN 301 489-3, article 9.4→ EN 61000-4-4	±2kV/5kHz and 100kHz on the main AC >3m ±1kV/5kHz and 100kHz on the I/O ports >3m (not applicable) Performance A (B)
9	Surge immunity test	IEC61000-4-5 ETSI EN 301 489-17 and ETSI EN 301 489-3, article 9.8→ EN 61000-4-5	On the main sector : L-PE : ±2kV L-L : ±1kV 10Ω+2Ω (AC power) On the I/O ports : <9m (Not applicable) Performance A (B)
10	Power frequency magnetic field immunity test	IEC61000-4-8	30 A/m Performance A (B)

Appendix B: Safety Characteristics and Certification

Table B-2 Immunity (cont'd.)

Test number	Test name	Standard	Standard level
11	Voltage dips, short interruptions and voltage variations immunity tests	IEC61000-4-11 ETSI EN 301 489-17 and ETSI EN 301 489-3, article 9.7→ EN 61000-4-11	0%, 1, 1 cycle: Performance A (B) 40%, 1, 10 cycles: Performance A (C) 70%, 1, 25 cycles: Performance A (C) 0%, 1, 250 cycles: Performance A (C)
12	Supply frequency variations	IEC 61000-4-28	±5% Performance A (C)
13	Harmonics and interharmonics including mains signalling at a. c. power port, low frequency immunity tests	IEC 61000-4-13 :	Test level class 2 Performance A (C)

The definitions of performance criteria are:

Performance criterion A: During test, normal performance within the specification limits.

Performance criterion B: During test, temporary degradation, or loss of function or performance which is self-recovering.

Performance criterion C: During test, temporary degradation, or loss of function or performance which requires operator intervention or system reset occurs.

EMC Characteristics — Emission Standards for EDGE GSF Controller Screenless

The EDGE GSF Controller Screenless has been designed to meet the requirements of the EMC Directive 2014/30/EU, FCC directives, Industry Canada directives. The compliance was demonstrated by meeting the test limits of the following standards:

Standard	Description
EN 61000-6-4 (2019)	Emission tests levels for industrial environment
EN61326-1 (2013)	EMC product standard for Electrical Equipment for Measurement, Control and Laboratory Use
IEC EN 60730-1 (2016/A1:2019):	Automatic electrical controls for household and similar use - Part 1: General requirements - EMC requirements
FCC part 15 Subpart B	Class A
EMC certification: ICES-003	Information Technology Equipment (issue 6, 2016) – class A

Appendix B: Safety Characteristics and Certification

Standard	Description
ETSI EN 301 489-1 (2019-11):	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
ETSI EN 301 489-17 (2019-12):	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

Test number	Test name	Standard	Standard level
1	Conducted emissions	CISPR 11 : EN 55011 FCC part 15, subpart B ICES-003 EN61000-6-4 EN 55032 ETSI EN 301 489-17, article 8.4 →EN 55032	Group 1, class A Class A Class A Class A Class A
2	Radiated emissions	CISPR 11 EN 55011 FCC part 15, subpart B ICES-003 EN61000-6-4 EN 55032 ETSI EN 301 489-17, article 8.2 →EN 55032	Group 1, class A Class A Class A Class A Class A
3	Harmonic current emissions	IEC61000-3-2 ETSI EN 301 489-17, article 8.5 → EN 61000-3-2	Class A
4	Flickers limitation	IEC61000-3-3 ETSI EN 301 489-17, article 8.6 → EN 61000-3-3	≤4% on the main voltage supply envelope

EMC Characteristics — Immunity Standards for EDGE GSF Controller Screenless

The EDGE GSF Controller Screenless has been designed to meet the requirements of the EMC Directive 2014/30/EU, FCC directives, Industry Canada directives. The compliance was demonstrated by meeting the test limits of the following standards:

Appendix B: Safety Characteristics and Certification

Standard	Description
EN61326-1 (2013)	EMC product standard for Electrical Equipment for Measurement, Control and Laboratory Use
EN 61000-6-2 (2019):	Immunity tests levels for industrial environment
IEC EN 60730-1 (2016/A1:2019):	Automatic electrical controls for household and similar use - Part 1: General requirements - EMC requirements
ETSI EN 301 489-1 (2019-11):	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
ETSI EN 301 489-17 (2019-12):	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

Test number	Test name	Standard	Standard level
5	Radiated, radio-frequency, electromagnetic field immunity test	IEC61000-4-3 TSI EN 301 489-17, article 9.2→ EN61000-4-3	Modulation: 80% AM at 1kHz, 80MHz - 1GHz: 10V/m 1.4GHz-2 GHz: 3 V/m 2GHz-2.7GHz: 3 V/m 2.7GHz-6GHz: 3 V/m Performance: A (A)
6	Immunity to conducted disturbances, induced by radio-frequency fields	IEC61000-4-6 ETSI EN 301 489-17, article 9.5→ EN61000-4-6	Frequency test range : 150KHz and 80Mhz at 10Vrms Pause time: 0,5s (AC line, Earth, I/O connections >3m) Performance A (A)
7	Electrostatic discharge immunity test	IEC61000-4-2 ETSI EN 301 489-17, article 9.3→ EN61000-4-2	± 8 kV air ± 6kV contact Performance A (B)
8	Electrical fast transient/burst immunity test	IEC61000-4-4 ETSI EN 301 489-17, article 9.4→ EN 61000-4-4	±2kV/5kHz/100KHz on the main sector ±1kV/5kHz/100KHz on the I/O >3m Performance A (B)
9	Surge immunity test	IEC61000-4-5 ETSI EN 301 489-17, article 9.8→ EN 61000-4-5	On the main voltage supply: L-PE : ±2kV L-L : ±1kV I/O : L-PE : ±1kV L-L : ±1kV
10	Power frequency magnetic field immunity test	IEC61000-4-8	30 A/m, Performance A (B)
11	Voltage dips, short interruptions and voltage variations immunity tests	IEC61000-4-11	0%, 1, 1 cycle: Performance A (B) 40%, 1, 10 cycles: Performance A (C) 70%, 1, 25 cycles: Performance A (C) 0%, 1, 250 cycles: Performance A (C)

Appendix B: Safety Characteristics and Certification

Test number	Test name	Standard	Standard level
		ETSI EN 301 489-17, article 9.7→ EN 61000-4-11	
12	Supply frequency variations	IEC 61000-4-28	±5% Performance A (C)
13	Harmonics and interharmonics including mains signalling at a.c. Power port, low frequency immunity tests	IEC 61000-4-13	Test level class 2 Performance A (C)

The definitions of performance criteria are as follows:

- Performance criterion A — During test normal performance within the specification limits
- Performance criterion B — During test, temporary degradation, or loss of function or performance which is self-recovering
- Performance criterion C — During test, temporary degradation, or loss of function or performance which requires operator intervention or system reset occurs.

Environment Characteristics

Parameter	Condition	Value
Environment Location	Inside	
Temperature Operating	Operating	0 to 40°C (32 to 104°F)
	Storage	-20 to +50°C (-4 to +122°F)
Humidity (Maximum Relative)	0 to 10 °C (32 to 50 °F)	Non condensing
Operating	10 to 30 °C (50 to 86 °F)	95 % (± 3%) Non condensing
	30 to 40 °C (86 to 104 °F)	95 % (± 3%) Non condensing
	Storage	Non condensing
Altitude		2000 Meters Max. (6561 Ft. Max)
Electromagnetic Environment		IEC EN 61326-1 IEC EN 60730-1 EN 61000-6-4 EN 61000-6-2 ETSI EN 301 489-1 ETSI EN 301 489-17 ETSI EN 301 489-3

Appendix B: Safety Characteristics and Certification

Parameter	Condition	Value
Enclosure Protection		Nema 250 : type 12 IP : 54, ref : IEC60529
Impact rating (IK)		8

The EDGE GSF and EDGE GSF Controller Screenless was tested under IEC60068-1 (Environmental testing - Part 1: General and guidance)

Environmental Characteristics

These Environmental EU directives were followed:

- EU 2015/863 The RoHS 3 (RoHS 2 amended) Directive
- 2012/19/EU The WEEE 2 Directive
- 1907/2006/EU The REACH regulation
- 2006/66/EC The Battery Directive
- 94/62/EC Packaging and packaging waste Directive
- 97/129/EC Packaging material identification Directive

C EC Declaration of Conformity

(In accordance with EN ISO 17050-1 2004)



EC DECLARATION OF CONFORMITY

(In accordance with EN ISO 17050-1 2004)

We: GSI Electronics Inc.
Of: 5200, Armand-Frappier, Saint-Hubert (Québec), Canada, J3Z 1G5

In accordance with the following Directive(s):

2014/35/EU	The Low Voltage Directive (LVD)
2014/30/EU	The Electromagnetic Compatibility Directive (EMC)
2014/53/EU	The Electromagnetic Compatibility Directive (RED)
EU 2015/863	The RoHS 3 (RoHS 2 amended) Directive
2012/19/EU	The WEEE 2 Directive
1907/2006/EU	The REACH regulation
2006/66/EC	The Battery Directive
94/62/EC	Packaging and packaging waste Directive
97/129/EC	Packaging material identification Directive

Hereby declare that:

Equipment: The EDGE GSF system is a farm system, which the main function is to provide feed to sows.

Models number: EDGE GSF | EDGE Feeder GSF
EDGE GSF LFID with Auto Tuning
GSF Controller Screenless
EDGE PSU 24V 36W

is in conformity with the applicable requirements of the following documents:

Directive	Ref. No.	Title	Edition/date
LVD	EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use Part 1: General requirements	2010
EMC	EN 61326-1	Electrical equipment for measurement, control and laboratory use - EMC requirements Industrial environment	2013
EMC	EN 61000-6-2	Immunity tests levels for industrial environment	2019
EMC	EN 61000-6-4	Emission tests levels for industrial environment	2019

Appendix C: EC Declaration of Conformity

Directive	Ref. No.	Title	Edition/date
EMC	IEC EN 60730-1	Automatic electrical controls for household and similar use - Part 1: General requirements- EMC requirements (Applicable on GSF Controller Screenless and EDGE PSU 24V 36W only)	2016/A1:2019
RED	ETSI EN 301 489-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements	2019-11
RED	ETSI EN 301 489-17	(when it is used in association with a wireless device) Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU	2019-12
RoHS	EN 50581	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	2012

GSI Electronic Inc. hereby declares that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all applicable Essential Requirements of the Directives.



D Innovation, Science and Economic Development Canada Statement

This device complies with RSS-247, RSS-210, and ICES-003 of Innovation, Science and Economic Development Canada Rules. Operation of this device is subject to the following two (2) conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

The EDGE GSF contains a wireless module at 2.4GHz inside: ESP32-WROOM-32D from Expressif Systems manufacturer. ESP32-WROOM-32D module is FCC/IC/CE certified. This is valid in the case no other intentional or un-intentional radiator components are incorporated into the product and no change in the module circuitry. The EDGE GSF has also a radio accessory: EDGE GSF LFID with Auto Tuning.

The IC ID of Expressif Systems Wireless radio module (ESPWROOM32D) is 21098-ESPWROOM32D
The IC ID of the LFID module is 11880A-GSFLFIDAUT.

The EDGE GSF Controller Screenless uses radiation-emitting technology: a Wireless Radio at 2.4 GHz and 5GHz from Redpine. This wireless technology is used by GSI Electronics to replace a solid link between two controllers. EDGE GSF Controller Screenless contains a Redpine Wireless radio (M7DB6). The IC ID is: 8407A-M7DB6.

Ce dispositif est conforme à la norme CNR-247, CNR-210, et ICES-003 d' Innovation, Sciences et Développement économique Canada. Son fonctionnement est sujet aux deux conditions suivantes:

- (1) le dispositif ne doit pas produire de brouillage préjudiciable, et
- (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Le EDGE GSF contient un module sans fil à 2.4GHz à l'intérieur: ESP32-WROOM-32D du manufacturier Expressif Systems. Le module ESP32-WROOM-32D est certifié FCC/IC/CE. Certification. Ce ci est valide si aucun autre intentionnel ou non intentionnel composant radio est incorporé dans le produit et qu'il n'y a aucun changement dans le circuit. Le EDGE GSF a aussi un accessoire radio: EDGE GSF LFID with Auto Tuning.

L'identifiant IC du module sans fil d'Expressif Systems (ESPWROOM32D) est 21098-ESPWROOM32D .
L'identifiant IC du module LFID est 11880A-GSFLFIDAUT.

Le Contrôleur EDGE GSF sans écran utilise une technologie sans fil à 2.4GHz et 5GHz. Le Contrôleur EDGE GSF sans écran contient un module radio de Redpine (M7DB6). Le numéro IC ID est 8407AM7DB6.

IMPORTANT:

Radiation Exposure Statement: This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Déclaration d'exposition aux radiations: Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

E FCC Part 15 Statement

FCC Statement regarding the importation of radio frequency devices capable of causing harmful interference.

GSI Electronics Inc. develops, manufactures and distributes innovative technological products for the agricultural industry. Our unique expertise allows us to offer accurate, simple and diverse electronic, data processing and mechanical solutions for improving agricultural production.

The EDGE GSF Feeder contains a wireless module at 2.4GHz inside: ESP32-WROOM-32D from Expressif Systems manufacturer. ESP32-WROOM-32D module is FCC/IC/CE certified. This is valid in the case no other intentional or un-intentional radiator components are incorporated into the product and no change in the module circuitry. The EDGE GSF has also a radio accessory: EDGE GSF LFID with Auto Tuning. The FCC ID of Expressif Systems Wireless radio module (ESPWROOM32D) is 2AC7Z-ESPWROOM32D. The FCC ID of the LFID module is 2AFLZGSFLFIDAUT.

The EDGE GSF Controller Screenless uses radiation-emitting technology: a Wireless Radio at 2.4 GHz and 5GHz from Redpine. This wireless technology is used by GSI Electronics to replace a solid link between two controllers. EDGE GSF Controller Screenless contains a Redpine Wireless radio (M7DB6), the FCC ID is XF6-M7DB6.

The Wireless Module classed as intentional radiators (FCC 47-part 15-Subpart C). The Wireless radio respects the emission limitations and the performances required by the standards FCC 15.247, FCC 15.407, FCC 15.207, FCC 15.209, RSS-247, RSS-210, ETSI EN 300 328, ETSI EN 300 330, ETSI EN 301 893. The Wireless Module is used in a production context and in an industrial context (FCC 47-part 15-Subpart B - Class A).

GSI Electronics Inc. hereby declares that the equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult GSI Electronics

NOTES

F FCC RF Exposure

Statement regarding the importation of radio frequency devices capable of causing radiation exposure.

GSI Electronics Inc. develops, manufactures and distributes innovative technological products for the agricultural industry. Our unique expertise allows us to offer accurate, simple and diverse electronic, data processing and mechanical solutions for improving agricultural production.

The EDGE GSF Feeder contains a wireless module at 2.4GHz inside: ESP32-WROOM-32D from Expressif Systems manufacturer. ESP32-WROOM-32D module is FCC/IC/CE certified. This is valid in the case no other intentional or un-intentional radiator components are incorporated into the product and no change in the module circuitry. The EDGE GSF has also a radio accessory: EDGE GSF LFID with Auto Tuning. The FCC ID of Expressif Systems Wireless radio module (ESPWROOM32D) is 2AC7Z-ESPWROOM32D. The FCC ID of the LFID module is 2AFLZGSFLFIDAUT.

The EDGE GSF Controller Screenless uses radiation-emitting technology: a Wireless Radio at 2.4 GHz and 5GHz from Redpine. This wireless technology is used by GSI Electronics to replace a solid link between two controllers. EDGE GSF Controller Screenless contains a Redpine Wireless radio (M7DB6), the FCC ID is XF6-M7DB6.

The Wireless Module classed as intentional radiators (FCC 47-part 15-Subpart C). The Wireless radio respects the emission limitations and the performances required by the standards FCC 15.247, FCC 15.407, FCC 15.207, FCC 15.209, RSS-247, RSS-210, ETSI EN 300 328, ETSI EN 300 330, ETSI EN 301 893.

The Wireless Module complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

NOTES

G FDA Declaration

Statement regarding the importation of devices and public health hazard directives from FDA (U.S. Food and Drug Administration)

GSI Electronics Inc. develops, manufactures and distributes innovative technological products for the agricultural industry. Our unique expertise allows us to offer accurate, simple and diverse electronic, data processing and mechanical solutions for improving agricultural production.

GSI Electronics' controllers are shipping under 9032.89.60.30 Canada (Automatic Regulating or Controlling Instruments & Apparatus). Electronic controllers are used to monitor and to control animal environment in a barn: ventilation function; heating function; lightning function; alert system function. Electronic controllers can be used to control the food distribution and to scale animals.

Electronic controllers do not use laser technologies. Electronic controllers use liquid crystal display (LCD) or Light-emitting diodes (LED). It is important to note also that electronic controller incorporating Liquid Crystal Displays (LCD) or Light-emitting diodes (LED) are not capable of emitting x-radiation.

The EDGE GSF Feeder contains a wireless module at 2.4GHz inside: ESP32-WROOM-32D from Expressif Systems manufacturer. ESP32-WROOM-32D module is FCC/IC/CE certified. This is valid in the case no other intentional or un-intentional radiator components are incorporated into the product and no change in the module circuitry. The EDGE GSF has also a radio accessory: EDGE GSF LFID with Auto Tuning. The FCC ID of Expressif Systems Wireless radio module (ESPWROOM32D) is 2AC7Z-ESPWROOM32D. The FCC ID of the LFID module is 2AFLZGSFLFIDAUT.

The EDGE GSF Controller Screenless uses radiation-emitting technology: a Wireless Radio at 2.4 GHz and 5GHz from Redpine. This wireless technology is used by GSI Electronics to replace a solid link between two controllers. EDGE GSF Controller Screenless contains a Redpine Wireless radio (M7DB6), the FCC ID is XF6-M7DB6.

The Wireless Module classed as intentional radiators (FCC 47-part 15-Subpart C). The Wireless radio respects the emission limitations and the performances required by the standards FCC 15.247, FCC 15.407, FCC 15.207, FCC 15.209, RSS-247, RSS-210, ETSI EN 300 328, ETSI EN 300 330, ETSI EN 301 893. The Wireless Module is used in a production context and in an industrial context (FCC 47-part 15-Subpart B - Class A).

The Wireless Module complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

GSI Electronics devices are not used in contact with animal food. Electronic controllers do not manipulate vaccines or drugs.

As such these products and are not subject to the FDA standards and do not pose a public health hazard.

NOTES

H Reduction of Hazardous Substances

REACH directive

The REACH directive addresses the production and use of chemical substances, and their potential impacts on both human health and the environment. On June 1, 2007, the European Commission promulgated new legislation that covers the registration, evaluation, authorization and restriction of chemical within the European Union community. This new regulation is commonly known as REACH, an acronym for **R**egistration, **E**valuation and **A**uthorization of **C**hemicals (EC Regulation 1907/2006).

GSI Electronics supports the underlying goals of REACH, which are consistent with our own commitment to promote the responsible manufacturing, use and handling of chemicals. GSI Electronics uses and promotes components suppliers or components manufacturers who will meet the pre-registration deadline for all chemical substances in quantities greater than one metric ton. The information provided here is accurate to the best of our knowledge at the present time.

RoHS directive

The **R**estriction of **H**azardous **S**ubstances Directive 2002/95/EC, RoHS, Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment, was adopted in February 2003 by the European Union. The RoHS directive took effect on 1 July 2006, and is required to be enforced and become law in each member state. This directive restricts (with exceptions) the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment: Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr6+), Polybrominated biphenyls (PBB), Polybrominated diphenyl ether (PBDE). The RoHS 2 directive (2011/65/EU) is an evolution of the original directive and became law on 21 July 2011 and took effect 2 January 2013. It addresses the same substances as the original directive while improving regulatory conditions and legal clarity.

The new version RoHS 3 Directive (2015/863/EU) caught all electronic and electrical products and added four new restricted substances - all phthalates. The four phthalates are mainly used as insulation plasticizers: Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP), Diisobutyl phthalate (DIBP).

GSI Electronics hereby certifies that all components are RoHS Compliant and fulfills the definition and restrictions defined under Directive 2015/863/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE). The information provided here is accurate to the best of our knowledge at the present time.

The RoHS declaration is available, contact GSI Electronics or the European representative.

Battery directive

The Battery Directive, Directive 2006/66/EC (Previous Directive, Directive 91/157/EEC), of the European Parliament regulates the manufacture, the disposal, the recycling of batteries and accumulators in the European Union.

GSI Electronics uses Lithium cell button in a light industrial context or industrial context. GSI Electronics encourages the batteries and accumulators recycling.

NOTES

Disposal and Recycling Information

North America : Canada

As the concern for the volume of electronic waste grows, a number of Provinces in Canada have passed regulations since 2006 to divert electronics waste from the landfills and to protect the environment. These waste diversion regulations require manufacturers of covered electronic devices to participate in approved electronic product stewardship programs. The programs allow consumers and businesses to drop off eligible electronic devices for recycling, free of charge at numerous depots throughout the Province.

For more detailed information about the recycling of the device or batteries, contact your local city office, the household waste disposal service, or the retail store where you purchased this device. These collection points are accessible free of charge.

North America : United States

For more detailed information about the recycling of the device or batteries, contact your local city office, the household waste disposal service, or the retail store where you purchased this device. These collection points are accessible free of charge.

Instructions for disposal of waste equipment by users

The "crossed out wheelie bin" symbol on the device (and any included batteries) indicates that they should not be disposed of as normal household garbage. Do not dispose of your device or batteries as unsorted municipal waste. The device (and any batteries) should be handed over to a certified collection point for recycling or proper disposal at the end of their life.



For more detailed information about the recycling of the device or batteries, contact your local city office, the household waste disposal service, or the retail store where you purchased this device. These collection points are accessible free of charge. All products with this sign must be brought to these collection points.

The disposal of this device is subject to the Waste from Electrical and Electronic Equipment (WEEE) directive of the European Union. The reason for separating WEEE and batteries from other waste is to minimize the potential environmental impacts on human health of any hazardous substances that may be present.

There are two ways available to dispose of waste:

Appendix I: Disposal and Recycling Information

- Public system— contact your municipality or the nearest collection site to dispose of Electrical and electronic Equipment waste
- Private system— For a Return Material Authorization for Disposal of Waste Equipment, contact customer support at 1-877-926-2777 or by e-mail at mtl_techsupport@agcocorp.com

J California Proposition 65

California Proposition 65 - Statement regarding the importation of devices and public health hazard directives from The Office of Environmental Health Hazard Assessment (OEHHA)

In 1986, California voters approved Proposition 65, an initiative to address their growing concerns about exposure to toxic chemicals. That initiative is officially known as the Safe Drinking Water and Toxic Enforcement Act of 1986. The law requires California to publish a list of chemicals known to cause cancer or reproductive toxicity, and for businesses with 10 or more employees to provide warnings when they knowingly and intentionally cause significant exposures to listed chemicals.

This list currently includes more than 850 chemicals. Proposition 65 does not ban or restrict the sale of chemicals on the list. The warnings are intended to help Californians make informed decisions about their exposures to these chemicals from the products they use and the places they go.

The Office of Environmental Health Hazard Assessment (OEHHA) administers the Proposition 65 program.

In 2016, OEHHA launched a new website, www.P65Warnings.ca.gov, to provide the public with more information on chemicals, products, and locations associated with Proposition 65 warnings. The website is part of the state's effort to provide Californians with more useful information on chemicals they are being exposed to and ways to protect themselves.

People who read Proposition 65 warnings and want to learn more can go to the website to find additional information about chemicals and best practices for reducing or eliminating exposures. The website contains fact sheets about Proposition 65 chemicals and specific types of exposure, such as from furniture products or enclosed parking facilities. It also answers frequently asked questions about Proposition 65 and includes a glossary of Proposition 65 terms.

GSI Electronics Inc. develops, manufactures and distributes innovative technological products for the agricultural industry. Our unique expertise allows us to offer accurate, simple and diverse electronic, data processing and mechanical solutions for improving agricultural production.

GSI Electronics' controllers are shipping under 9032.89.60.30 Canada (Automatic Regulating or Controlling Instruments & Apparatus). Electronic controllers are used to monitor and to control animal environment in a barn: ventilation function; heating function; lightning function; alert system function. Electronic controllers can be used to control the food distribution and to scale animals.

GSI Electronics Inc. Hereby declare that Electronic controllers can contain chemicals listed from OEHHA Chemicals list.

NOTES

K Product Material Composition

EDGE GSF Feeder

Material	Weight		Percentage of the product weight (%)
	Lbs	Grams	
Packaging material	5.00	2267.96	44.05
Plastic material	3.70	1678.29	32.60
Electronic Circuits	0.75	340.19	6.61
Metal	0.65	294.84	5.73
Cable	1.38	625.96	12.16
Lithium Batteries	0.05	22.68	0.44

EDGE GSF LFID with Auto Tuning

Material	Weight		Percentage of the product weight (%)
	Lbs	Grams	
Packaging material	3.00	1360.78	52.17
Plastic material	2.35	1065.94	40.87
Electronic Circuits	0.05	22.68	0.87
Metal	0.075	34.02	1.30
Lithium Battery	0.28	127.01	4.87

EDGE GSF Controller Screenless

Material	Weight		Percentage of the product weight (%)
	Lbs	Grams	
Packaging material	3.00	1360.78	24.69
Plastic material	5.75	2608.16	62.16
Electronic Circuits	0.90	408.23	9.73
Metal	0.05	22.68	0.54
Lithium Battery	0.05	22.68	0.41

NOTES

L Lithium battery statement

Based on the United Nations recommendation, regulations have been placed on the transportation of lithium metal batteries and lithium ion batteries by the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA), the International Maritime Organization (IMO). Packing and transportation are formally regulated according to the amount of lithium contained in lithium batteries. Transportation of lithium batteries must conform to these regulations.

The equipment can contain one Lithium button cell « BR-2032 » installed in the circuit boards per equipment packaging. The Lithium button cells installed in the circuit boards is classed: UN3091 - Lithium metal batteries contained in equipment. These batteries contain least that 1 gram of Lithium.

These batteries can be treated as exempt from UN3091 and shipped as non-dangerous goods.

NOTES

M Packaging Characteristics

The following directives were followed during the packaging process

2015/863/EU	The RoHS 3 directive
2012/19/EU	The WEEE 2 directive
1907/2006/EU	The REACH regulation
2006/66/EC	The battery directive
94/62/EC	Packaging and packaging waste directive
97/129/EC	Packaging material identification directive

The packaging is only in cardboard to respect international standards about environment standards:

EN 13428	Packaging - Requirements specific to manufacturing and composition - Prevention by source reduction
EN 13429	Packaging - Reuse
EN 13430	Packaging - Requirements for packaging recoverable by material recycling
EN 13431	13431 Packaging - Requirements for packaging recoverable in the form of energy recovery, including specification of minimum inferior calorific value
EN 13432	Packaging - Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging

The packaging was tested under ISTA 3A (Packaged Products for Parcel Delivery System Shipment weighing 150 lbs or less – is a test used for simulating courier companies shipping environments).

Shipping, EDGE packaging and Lithium battery: EDGE packaging shall be capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein according to the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA), the International Maritime Organization (IMO) requirements.

Handling symbols on EDGE packaging: the standard is ISO R/780 (Packaging - Pictorial marking for handling of goods).

NOTES

N EDGE GSF - End-of-Life Disassembly

This disassembly and recycling guidance provides general guidance for the disassembly of the referenced product to remove components and materials requiring selective treatment, as defined by EU directive 2002/96/EC and, Waste Electrical and Electronic Equipment (WEEE).

Models and Descriptions

This document provides disassembly instructions for the product listed in the next table.

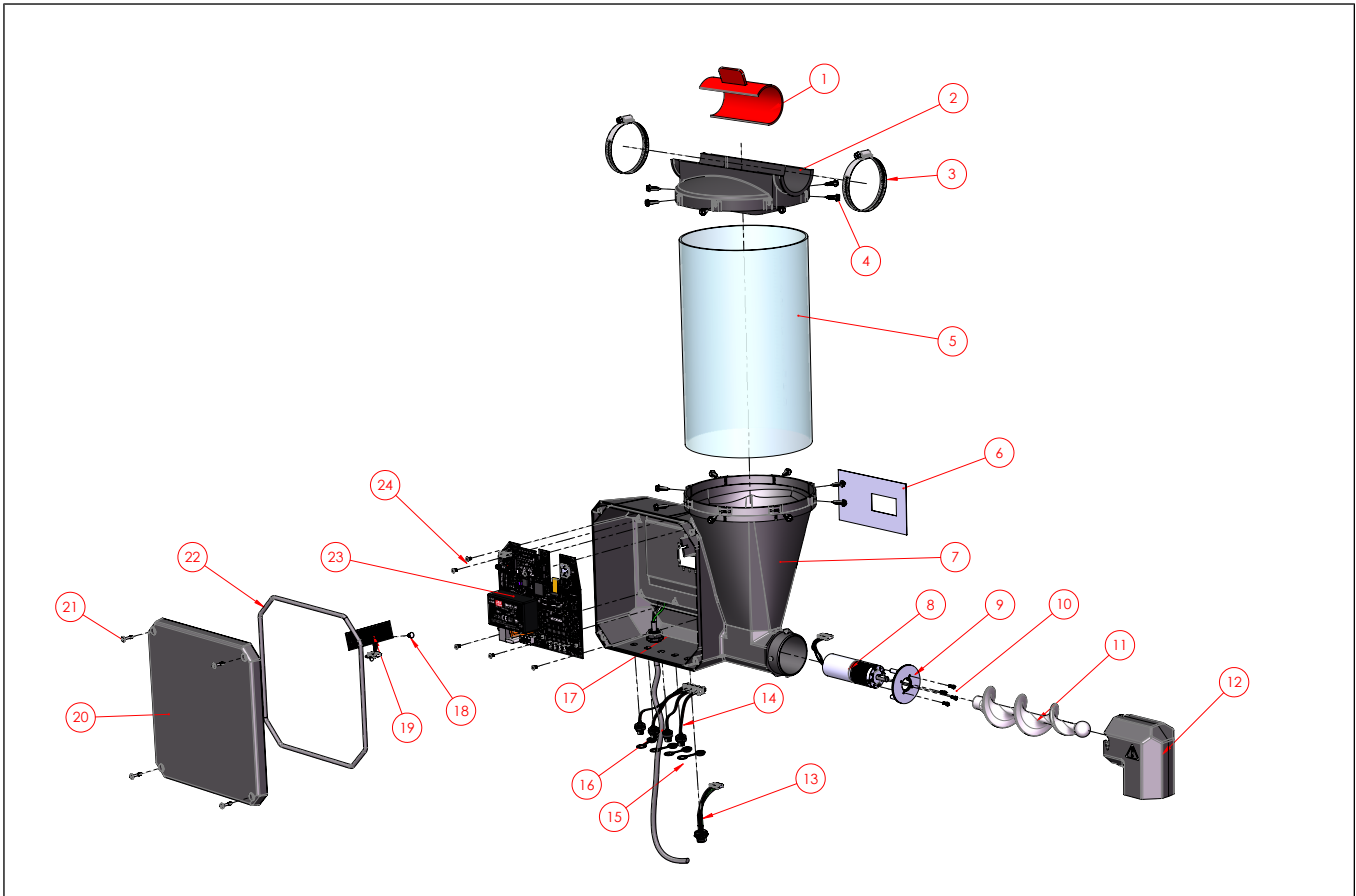
Marketing name (GSI Electronics part number)	Description
EDGE GSF	Feeder

Required Tools

The next table lists the type and size of the tools that would typically be used to disassemble the product to a point where components and materials requiring selective treatment can be removed.

Phillips screwdriver	#1
Phillips screwdriver	#2
Flat-head screwdriver	Small
Flat-head screwdriver	Large
Side cutters	—

Disassembly of EDGE GSF



Item	Description	Item	Description
1	PLASTIC SHUTTER	13	EDGE GSF LFID with Auto Tuning CABLE CONNECTORS
2	PLASTIC HOPPER	14	SPRAYERS CABLES CONNECTORS
3	HOSE CLAMP	15	PLASTIC CAPS
4	SCREW,#10-16	16	AC CABLE PLUG
5	TRANSPARENT TUBE	17	CABLE GLANDS
6	USER INTERFACE MEMBRANE	18	SCREWS
7	EDGE GSF PLASTIC ENCLOSURE	19	PCB-461
8	AUGER BLDC MOTOR	20	PLASTIC EDGE GSF COVER
9	AUGER MOTOR FASTENER	21	SCREWS FOR PLASTIC EDGE GSF COVER
10	AUGER MOTOR SCREWS	22	GASKET
11	PLASTIC AUGER	23	PCB-452
12	PLASTIC ELBOW	24	PCBS SCREWS

Items Requiring Selective Treatment

Items in the product that are classified as requiring selective treatment are provided in the following table.

Item description	Notes	Quantity of items included in the product	Location
Printed Circuit Boards (PCB) or Printed Circuit Assemblies (PCA)	With a surface greater than 10 square cm	2	PCB-452 (item 23) PCB-461 (item 19)
Batteries	All types including standard alkaline and lithium coin or button style batteries.	1	PCB-452 (item 23), at BAT 1 location
Mercury containing components	For example, mercury in lamps, display backlights, scanner lamps, lamps, lightning application, switches, batteries.	none	
Liquid Crystal Displays (LCD)	With a surface greater than 100 square cm and all those back-lighted with gas discharge lamps.	1	OLED
Cathode Ray Tubes (CRT)		none	
Capacitors / condensers	Containing polychlorinated biphenyls PCB / polychlorinated terphenyls PCT.	none	
Electrolytic Capacitors / Condensers	Measuring greater than 2.5cm in diameter or height.	none	
External electrical cables and cords		1	AC CABLE PLUG (Item 16) EDGE GSF LFID with Auto Tuning CABLE CONNECTORS (item 13) SPRAYERS CABLES CONNECTORS (item 14)
Gas Discharge Lamps		none	
Plastics containing Brominated Flame Retardants		none ¹	
Components and parts containing toner and ink, including liquids, semi-liquids (gel/paste) and toner		none	

Appendix N: EDGE GSF - End-of-Life Disassembly

Item description	Notes	Quantity of items included in the product	Location
Components and waste containing asbestos		none	
Components, parts and materials containing refractory ceramic fibres		none	
Components, parts and materials containing radioactive substances		none	
Components, parts and materials containing chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC), hydrofluorocarbons (HFC), hydrocarbons (HC)		none	

¹All plastics used in this product are RoHS compliant and do not contain PBBs or PBDEs

Product Disassembly Process

The next session lists the basic steps that you should follow to remove components for recycling and materials requiring selective treatment.

Note: For the next steps, EDGE GSF is unplugged and unfasten from the chain disk tube.

Step	Process
Remove and recycle External Electrical cables and internal Electrical cables	<ol style="list-style-type: none"> 1. Unscrew and open the enclosure cover (item 20). 2. Remove the wires from the EDGE GSF enclosure bottom (item 7), by unscrewing cable gland (item 17) and cables connectors (item 13, 14) with a key. 3. Disconnect the cables connectors (item 13, 14) and the AC cable plug (item 16). 4. Recycle the cables.
Remove and recycle Printed Circuit Assembly	<ol style="list-style-type: none"> 1. Unscrew and open the enclosure cover (item 20). 2. Locate these PCBs: <ul style="list-style-type: none"> • PCB-452 (item 19) • PCB-461 (item 23) 3. Unscrew with a Philips screwdriver #1 and remove the screws (item 18, 24) from the PCBs. 4. Remove the PCBs from the EDGE GSF.

Step	Process
Recycle Lithium Battery	<ol style="list-style-type: none"> 1. Unscrew and open the enclosure cover (item 20). 2. Locate this PCB: <ul style="list-style-type: none"> • PCB-452 (item 19) 3. Locate the Lithium battery at BAT 1 location. 4. Remove the Lithium battery and recycle.
Recycle plastic	<ol style="list-style-type: none"> 1. Unscrew and open the enclosure cover (item 20). 2. Remove the Gasket (item 22). 3. Remove the Elbow (item 12) and the auger (item 11). 4. Remove the auger motor fasteners and remove the motor from the EDGE GSF. 5. Unfasten the transparent tube (item 5) and the hopper (item 2) from EDGE GSF by unscrewing screws (item 4). 6. Keep only plastic parts. 7. Recycle the plastic enclosure and the plastic parts.
Recycle metal parts	<ol style="list-style-type: none"> 1. Recycle metal parts of the EDGE GSF: collars (item 3), screws (item 4, 10, 18, 21), auger motor (item 8), auger motor fastener (item 9).

NOTES

O EDGE GSF LFID with Auto Tuning - End-of-Life Disassembly

This disassembly and recycling guidance provides general guidance for the disassembly of the referenced product to remove components and materials requiring selective treatment, as defined by EU directive 2002/96/EC and, Waste Electrical and Electronic Equipment (WEEE).

Models and Descriptions

This document provides disassembly instructions for the product listed in the next table.

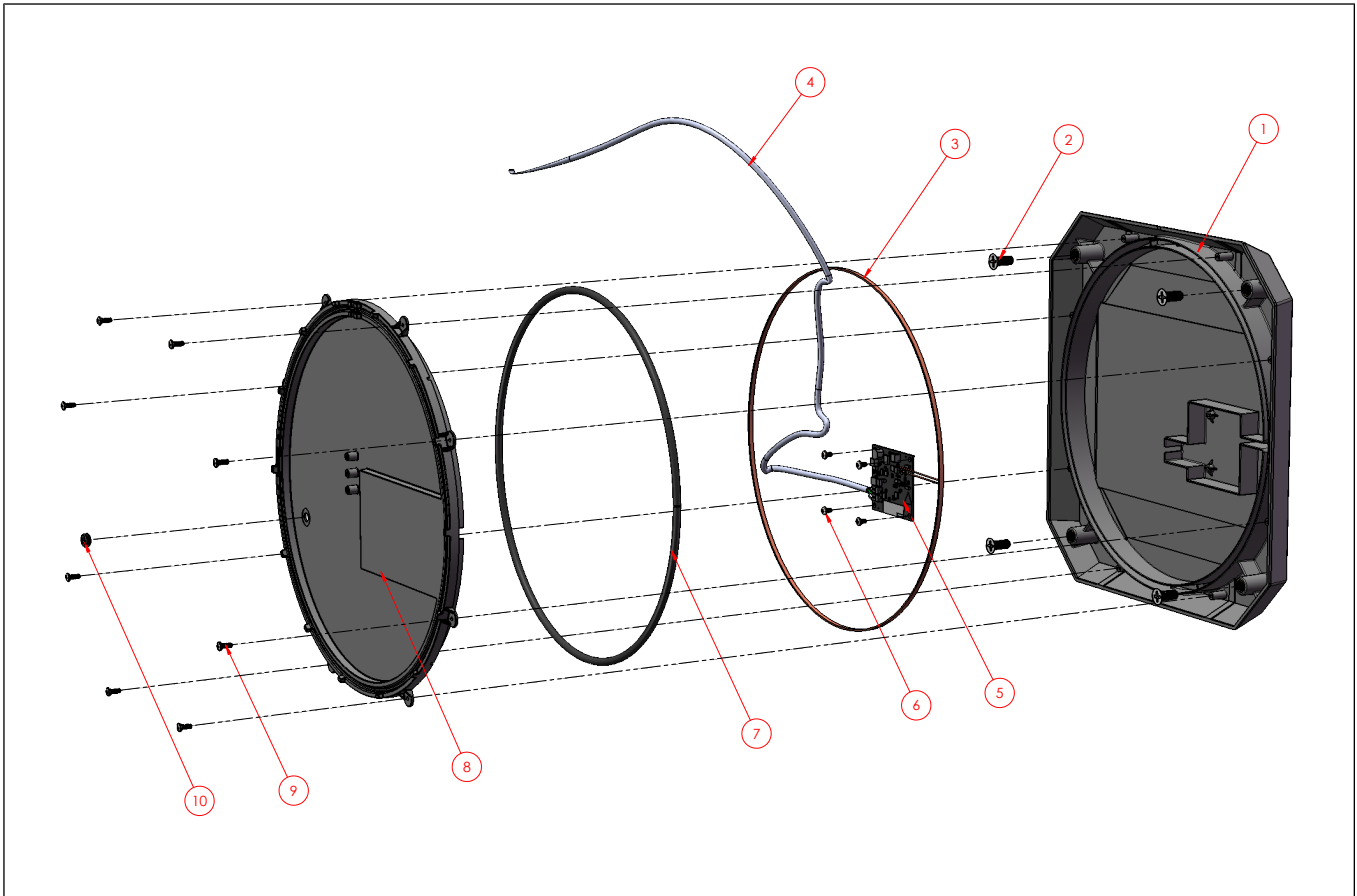
Marketing name (GSI Electronics part number)	Description
EDGE GSF LFID WITH AUTO TUNING	LFID Antenna

Required Tools

The next table lists the type and size of the tools that would typically be used to disassemble the product to a point where components and materials requiring selective treatment can be removed.

Phillips screwdriver	#1
Phillips screwdriver	#2
Flat-head screwdriver	Small
Flat-head screwdriver	Large
Side cutters	—

Disassembly of EDGE GSF LFID with Auto Tuning



Item number	Description	Item number	Description
1	PLASTIC ANTENNA ENCLOSURE	6	PCB SCREWS
2	SCREW,M8-1.25,20MM	7	GASKET
3	ANTENNA COIL	8	PLASTIC ANTENNA COVER
4	EDGE GSF LFID with Auto Tuning CABLE CONNECTOR	9	SCREW,#6-19,3/8IN
5	PCB-518	10	GROMMET

Items Requiring Selective Treatment

Items in the product that are classified as requiring selective treatment are provided in the following table.

Item description	Notes	Quantity of items included in the product	Location
Printed Circuit Boards (PCB) or Printed Circuit Assemblies (PCA)	With a surface greater than 10 square cm	1	PCB-518 (item 5)
Batteries	All types including standard alkaline and lithium coin or button style batteries.	none	
Mercury containing components	For example, mercury in lamps, display backlights, scanner lamps, lamps, lightning application, switches, batteries.	none	
Liquid Crystal Displays (LCD)	With a surface greater than 100 square cm and all those back-lighted with gas discharge lamps.	none	
Cathode Ray Tubes (CRT)		none	
Capacitors / condensers	Containing polychlorinated biphenyls PCB / polychlorinated terphenyls PCT.	none	
Electrolytic Capacitors / Condensers	Measuring greater than 2.5cm in diameter or height.	none	
External electrical cables and cords		1	EDGE GSF LFID with Auto Tuning CABLE CONNECTOR (Item 4)
Gas Discharge Lamps		none	
Plastics containing Brominated Flame Retardants		none ¹	
Components and parts containing toner and ink, including liquids, semi-liquids (gel/paste) and toner		none	
Components and waste containing asbestos		none	

Appendix O: EDGE GSF LFID with Auto Tuning - End-of-Life Disassembly

Item description	Notes	Quantity of items included in the product	Location
Components, parts and materials containing refractory ceramic fibres		none	
Components, parts and materials containing radioactive substances		none	
Components, parts and materials containing chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC), hydrofluorocarbons (HFC), hydrocarbons (HC)		none	

¹All plastics used in this product are RoHS compliant and do not contain PBBs or PBDEs

Product Disassembly Process

The next session lists the basic steps that you should follow to remove components for recycling and materials requiring selective treatment.

Note: For the next steps, EDGE GSF LFID with Auto Tuning is unplugged and unfasten from the GSF stall.

Step	Process
Remove and recycle External Electrical cables and internal Electrical cables	<ol style="list-style-type: none"> 1. Unscrew and open the EDGE GSF LFID with Auto Tuning cover (item 8). 2. Cut and remove the wires from the EDGE GSF LFID with Auto Tuning enclosure. 3. Recycle the cable (item 4). 4. Cut and remove the antenna coil (item 3) from the EDGE GSF LFID with Auto Tuning enclosure.
Remove and recycle Printed Circuit Assembly	<ol style="list-style-type: none"> 1. Unscrew and open the EDGE GSF LFID with Auto Tuning cover (item 8). 2. Locate this PCB: <ul style="list-style-type: none"> • PCB-518 (item 5) 3. Unscrew with a Philips screwdriver #1 and remove the screws (item 6) from the PCB. 4. Remove the PCBs from the EDGE GSF LFID with Auto Tuning.
Recycle plastic	<ol style="list-style-type: none"> 1. Unscrew and open the EDGE GSF LFID with Auto Tuning cover (item 8). 2. Remove the Gasket (item 7). 3. Keep only plastic parts. 4. Recycle the plastic enclosure and the plastic parts.
Recycle metal parts	<ol style="list-style-type: none"> 1. Recycle metal parts of the EDGE GSF LFID with Auto Tuning.

P EDGE GSF Controller Screenless - Product End-of-Life Disassembly

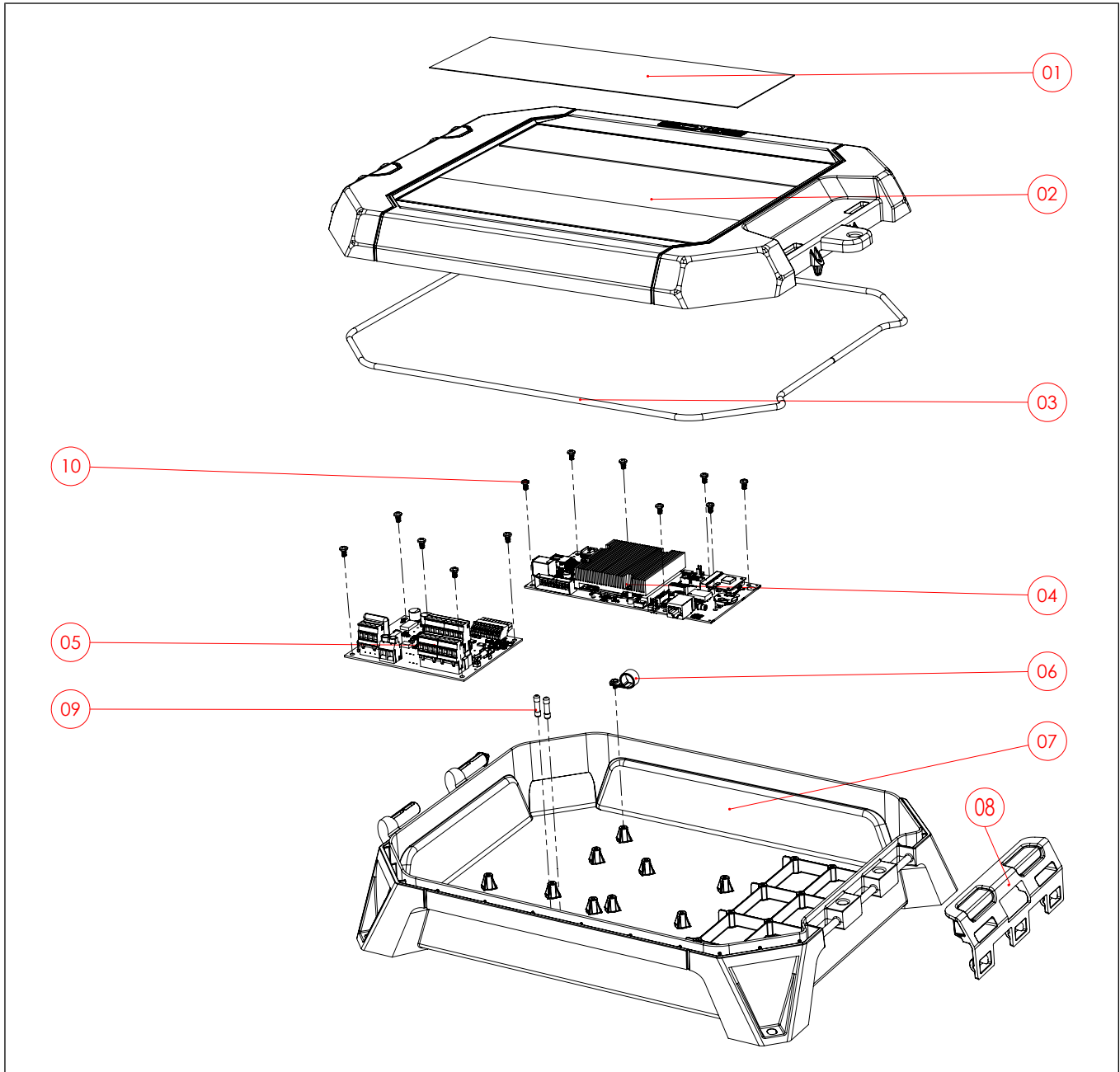
This disassembly and recycling guidance provides general guidance for the disassembly of the referenced product to remove components and materials requiring selective treatment, as defined by EU directive 2002/96/EC and, Waste Electrical and Electronic Equipment (WEEE).

Required Tools

The next table lists the type and size of the tools that would typically be used to disassemble the product to a point where components and materials requiring selective treatment can be removed.

Phillips screwdriver	#1
Phillips screwdriver	#2
Flat-head screwdriver	Small
Flat-head screwdriver	Large
Side cutters	—

Disassembly of EDGE GSF Controller Screenless



Item number	Description	Item number	Description
1	Membrane	6	Cable clamp
2	Top plastic enclosure	7	Bottom plastic enclosure
3	Top gasket	8	Plastic latch
4	PCB-495	9	Fuses
5	PCB-500	10	Screws #6-19,3/8IN

Items Requiring Selective Treatment

Item description	Notes	Quantity of items included in the product	Location
Printed Circuit Boards (PCB) or Printed Circuit Assemblies (PCA)	With a surface greater than 10 square cm	2	PCB-495 PCB-500
Batteries	All types including standard alkaline and lithium coin or button style batteries.	1	PCB-495 The Lithium coin or button style battery is located on BAT1
Mercury containing components	For example, mercury in lamps, display backlights, scanner lamps, lamps, lightning application, switches, batteries.	none	
Liquid Crystal Displays (LCD)	With a surface greater than 100 square cm and all those back-lighted with gas discharge lamps.	1	LCD GRAPHC)
Cathode Ray Tubes (CRT)		none	
Capacitors / condensers	Containing polychlorinated biphenyls PCB / polychlorinated terphenyls PCT.	none	
Electrolytic Capacitors / Condensers	Measuring greater than 2.5cm in diameter or height.	none	
External electrical cables and cords		none ¹	
Gas Discharge Lamps		none	
Plastics containing Brominated Flame Retardants		none ²	
Components and parts containing toner and ink, including liquids, semi-liquids (gel/paste) and toner		none	
Components and waste containing asbestos		none	
Components, parts and materials containing refractory ceramic fibres		none	

Appendix P: EDGE GSF Controller Screenless - Product End-of-Life Disassembly

Item description	Notes	Quantity of items included in the product	Location
Components, parts and materials containing radioactive substances		none	
Components, parts and materials containing chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC), hydrofluorocarbons (HFC), hydrocarbons (HC)		none	

¹ GSI Electronics does not provide the external electrical cable

²All plastics used in this product are RoHS compliant and do not contain PBBs or PBDEs

Product Disassembly Process

Step	Process
Remove the coin battery and recycle	<ol style="list-style-type: none"> 1. Unlock and open the enclosure cover. 2. Locate the PCB-495. The Lithium coin or button style battery is located on BAT1. 3. Remove and slide the coin battery from the battery socket.
Remove external electrical cables and internal electrical cables and recycle	<ol style="list-style-type: none"> 1. Unlock and open the enclosure cover. 2. Remove the wires from the BASE ASSEMBLED by unscrewing terminal blocks with a small flat-head screw driver and a large flat-head screw driver. 3. Remove the cables between the BASE ASSEMBLED and the TOP ASSEMBLED. 4. Cut the TIE WRAP located on the TOP ASSEMBLED. 5. Unscrew with a Philips screw driver #1 and remove the screws from the SHIELD. 6.. Remove the SHIELD. 7. Unplug the cable from TOP ASSEMBLED. 8. Unscrew with a Philips screw driver #1 and remove the screws from the CABLE CLAMP. 9. Remove the cables from the CABLE CLAMP. 10. Unplug the cable from BASE ASSEMBLED.

Appendix P: EDGE GSF Controller Screenless - Product End-of-Life Disassembly

Step	Process
Printed Circuit assembly and recycling	<ol style="list-style-type: none"> 1. Unlock and open the enclosure cover (TOP ASSEMBLED). 2. Locate these PCBs from BASE ASSEMBLED. PCB-495 PCB-500 3. Unscrew with a Philips screw driver #1 and remove the screws from the PCBs. 4. Remove the PCBs from the enclosure.
Remove LCD and recycle(only on EDGE 2 Controllers with screen)	<p>Cables are unplugged.</p> <ol style="list-style-type: none"> 1. Unlock and open the enclosure cover (TOP ASSEMBLED). 2. After removing the SHIELD, unscrew with a Philips screw driver #1 and remove the screws from the ALUMINIUM BRACKET. 3. Remove the ALUMINIUM BRACKET and the LCD GRAPHIC from TOP ASSEMBLED, 4. Unscrew with a Philips screw driver #1 and remove the screws from the ALUMINIUM BRACKET and the LCD GRAPHIC.
Recycle plastic	<ol style="list-style-type: none"> 1. Unlock and open the enclosure cover (TOP ASSEMBLED). 2. From TOP ASSEMBLED, remove the LCD GASKET. 3. Keep only plastic parts. 4. Recycle the plastic enclosure and the plastic parts.
Recycle Metal	Recuperate all metals

NOTES

Limited Warranty - Protein Products

The GSI Group, LLC. ("GSI") warrants products which it manufactures, to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months from the date of purchase (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI's sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

Warranty Enhancements: The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period.

	Product	Warranty Period
AP® Fans	Performer Series Direct Drive Fan Motor	3 Years
AP® and Cumberland®	Flex-Flo/Pan Feeding System Motors	2 Years
Electronic Controls	All Protein controls manufactured by GSI	24 Months from date code on part
Cumberland® Feeding and Watering Systems	Feeder System Pan Assemblies	5 Years, prorated **
	Feed Tubes (1.75" and 2.00")	10 Years, prorated *
	Centerless Augers	10 Years, prorated *
	Watering Nipples	10 Years, prorated *

* Warranty prorated from material list price:
 0 to 3 years - no material cost to end user
 3 to 5 years - end user pays 25%
 5 to 7 years - end user pays 50%
 7 to 10 years - end user pays 75%

** Warranty prorated from material list price:
 0 to 3 years - no material cost to end user
 3 to 5 years - end user pays 75%

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH HEREIN; SPECIFICALLY, GSI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) ANY PRODUCT MANUFACTURED OR SOLD BY GSI, OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. This warranty is not transferable and applies only to the original end user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor. Prior to installation, the end user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained.

Service Parts:

GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase, unless specified in Enhancements above. Parts not manufactured by GSI will carry the Manufacturer's Warranty.

(Protein Limited Warranty_REV01_06 November 2018)

This equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.



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