

INTELLISPEC™ SV

Hardware Guide [BNS/ Preforms]

Pressco Technology Inc.

73343 Rev. 04



Original Instructions

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Table of Contents

Chapter 1 Introduction	5
Welcome!.....	5
About this manual.....	5
Typographical Conventions.....	5
Safety Considerations	5
Static Discharge Protection	6
Chapter 2 Safety Information	7
Health Warnings - Photosensitive Epilepsy	7
Symbols.....	8
Warning Devices	9
Residual Risk	10
Intended Use.....	10
Prohibited Use	10
Personal Protective Equipment	10
Personnel Safety	11
Lifting heavy objects	12
Authorized Users.....	13
Spare Parts Usage	13
Chapter 3 System Specifications	15
Environmental conditions.....	15
Specifications	15
Declaration of Conformity - Intellispec System	26
Declaration of Conformity - Embedded Cluster Box.....	27
Declaration of Conformity - Cluster Box	28
Chapter 4 Installation requirements	29
Shipping and Handling	29
Recommendations prior to installation	29
System Block Diagram - BNS	30
Assembly, location, and mounting requirements.....	31
Commissioning.....	34
Chapter 5 Intellispec cabinet and user interface	35
User interface input devices	35
Chapter 6 System Hardware Information	39
Power Up	39
Power Down.....	40
Servicing the User Interface.....	40
Wiring Diagrams.....	41
Rebooting the Intellispec System.....	47
Light Tree	49
Chapter 7 Cluster Box	51
Declaration of Conformity - Cluster Box	53
Declaration of Conformity - Embedded Cluster Box.....	54
Types of Cluster Boxes	54

Cluster box external connections	57
Servicing the Cluster Box	65
Internal wiring diagrams for cluster boxes	66
Chapter 8 Inspection Modules	81
Observe the Part Image	81
Base inspection module	82
Neck/ Sidewall inspection module.....	85
Seal Surface inspection module	89
Preform Seal Endcap inspection module	91
Preform Sidewall inspection module	94
PWC inspection module.....	96
PW360 inspection module.....	98
Chapter 9 Extended I/O (Optional).....	103
Extended I/O board.....	103
Extended I/O inside the cluster box.....	115
Extended I/O Configuration in the software.....	116
Chapter 10 Maintenance Frequency - BNS	121
Cleaning the Vision Processor filter	122
Cleaning the Cluster Box filters.....	123
Cleaning Optical Surfaces.....	124
Cleaning Glass Surfaces.....	124
Cleaning the Camera Lens.....	125
Cleaning the Beam Splitter Seal Surface module.....	126
Cleaning the Beam Splitter	126
Cleaning Plastic Surfaces.....	127
Cleaning the Part Detector and Reflector	127
Chapter 11 How to Contact Pressco	129
Index	131

Chapter 1

Introduction

Welcome!

Congratulations on your purchase of an Intellispec system! The Intellispec is a high-speed machine vision system designed specifically for product and online process monitoring. It is a powerful tool that provides inspection much more reliably than the human eye or sampling methods. The latest PC technology, powerful inspection algorithms, online adjustment capability, and inspection data storage allow the Intellispec to automatically inspect parts with extreme accuracy on high-speed lines.

The Intellispec will help you provide the highest quality of products shipped to your customers.

About this manual

This is your Hardware Guide to the Pressco Intellispec Series V Vision Inspection System. This Hardware Guide covers technical information necessary to adjust and maintain the Series V Intellispec Systems.

❖ *Note: Programming and user interface operations are covered in a separate manual titled "Software Guide (5.x)" Some software references in this manual are applicable to software version 5.6.*

This guide was published: Monday, May 18, 2020

Typographical Conventions

Following is a list of typographical conventions used in this manual:

- **Bold type** indicates a topic heading or an important item or statement.
- *Italicized type* indicates emphasis.
- Names of main components and system control signals have the first letter of each word capitalized. For example: Processor Cabinet.
- Danger messages appear as shown below:



Danger - Danger messages alert you to specific conditions that can cause serious or fatal personal injury. Danger messages give you important information which must be observed to prevent injury.



Caution - Caution messages indicate important information which must be observed to prevent: loss of data, poor system performance, or equipment damage.

❖ *Note: Notes contain special information that warrants being set off from the body text as shown here.*

Safety Considerations

Observe the following safety warnings when operating the system or working near it:



Warning - Potential for projectiles to strike persons and cause injury. Keep clear of reject devices.



Warning - Sensitive electronics and High Voltages may be exposed. Keep Processor Cabinet/ Electrical Control Box door closed.

Static Discharge Protection



Caution - Electronic components can be damaged by static electricity discharge.

Always observe the following precautions before removing, installing or handling any electronic components within the Inspection System:

- Wear an anti-static wristband which is grounded to the Inspection System.
- Stand on an anti-static, grounded floor mat, and lay circuit boards on the mat during any board replacement.
- Keep circuit boards in static shield bags when storing and transporting. Ensure the bag is sealed.

Chapter 2

Safety Information

This section contains operator safety information that must be read before operating or servicing the system.



Warning - Do not, under any circumstances, tamper with sealed machine parts or devices. This could result in the removal of protections that might create potentially hazardous conditions.



Warning - This product contains no operator serviceable parts. Refer servicing to qualified personnel. To prevent electrical shock do not open cabinet doors whilst power is connected.

Health Warnings - Photosensitive Epilepsy



WARNING: PHOTSENSITIVE EPILEPSY/ SEIZURES

A small percentage of individuals may experience epileptic symptoms or seizures when exposed to certain patterns or flashing lights. Exposure to the flashing lights in vision inspection systems may also trigger epileptic symptoms or seizures in these individuals. These flashing lights may trigger epileptic symptoms or seizures in persons who have no history of epileptic symptoms or seizures. If you, or anyone in your family has an epileptic condition or has had seizures of any kind, consult your physician before operating this machinery.

IMMEDIATELY DISCONTINUE use and consult your physician if you experience any of the following symptoms while operating this machinery:

- Dizziness
- Altered vision
- Eye or muscle twitches
- Loss of awareness
- Disorientation
- Seizures
- Any involuntary movement or convulsion

Epileptic symptom or seizure triggers vary from person to person. Some common triggers are:

- Flashing lights used for vision inspection systems or fire alarms
- Certain video games or TV broadcasts containing rapid flashes or alternating patterns of different colors
- Bright, contrasting patterns such as white bars against a black background
- Flashing white light followed by darkness
- Stimulating images that take up your complete field of vision, such as being very close to a TV screen or computer monitor
- Certain colors, such as red and blue

If you encounter something that might trigger epileptic symptoms or seizures without warning:

- Do not close your eyes (this could cause a flicker effect)
- Do not look directly at the flashing lights or trigger source
- Do cover one eye with the palm of your hand immediately
- Do turn away from the flashing lights or trigger source

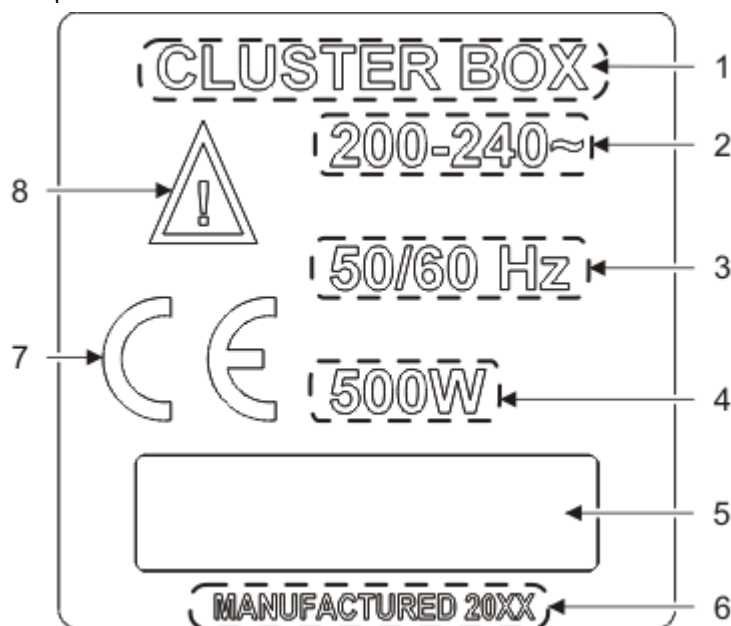
Symbols

The following symbols are used on or near the Intellispec system. Be aware of potential risk hazards.

	CAUTION Risk of danger. Refer to accompanying user documentation before use.
	WARNING Risk of electric shock
	On (supply)
	Off (supply)
	Alternating current
	Protective conductor terminal

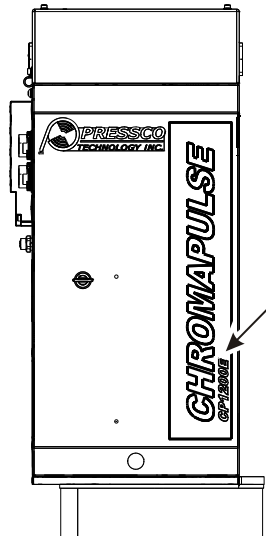
Marking

The following illustration shows an example label that you will find on the Intellispec system components.



- 1) Name of component. NOTE: Chromapulse model is listed on the front panel of the module. See example below.
- 2) Voltage range in Volts AC
- 3) Frequency range in Hertz (Hz)
- 4) Maximum rated power in watts (W) with all accessories or plug-in modules connected
- 5) Serial number is listed in this box
- 6) Year of manufacture
- 7) Component certification
- 8) Risk of danger. Refer to accompanying documentation before use.

An example of a Chromapulse module label with the model number is shown below.



Warning Devices

The Intellispec vision inspection system has warning devices that indicate system failure or report excessive defects or warnings for your production line.

Alarms

User-programmable alarms allow you to set the duration of the lights in the optional light tree and the horn if certain criteria are met.

In addition to the light tree, an alarm button is displayed on screen when certain criteria are met. You can click the alarm button to clear the alarm and see more detailed information about the alarm condition.



Light Tree

The optional light tree may be mounted on or near an inspection module, or near a cluster box (if applicable). The optional horn, mounted with the light tree provides an audible warning.

For more information, refer to **Light tree status** (on page 49).



Light Tree (optional)

- Red (Alarm)
- Amber (Warning)
- Green (Online)
- Blue (Power)

Residual Risk

The Pressco system has been designed to minimize any danger of personal injury. However, the system uses rejection devices to remove defective product from the production stream. Also, the electronics cabinets contain risk of shock if they are opened.

Observe the following safety warnings when operating the system or working near it:



Warning - Potential for projectiles to strike persons and cause injury. Keep clear of reject devices.



Warning - Sensitive electronics and High Voltages may be exposed. Keep Processor Cabinet/ Electrical Control Box door closed.

Intended Use

Type of Process: The Pressco system is intended to monitor container and other special manufacturing processes and identify non-conforming product.

Intended Use: The Pressco system is designed and constructed for use in an indoor industrial environment, always sheltered from the weather.

Space Required: The Pressco system and accompanying sensors must be installed in a place that will enable safe and easy installation, size changeover, user operation, and maintenance procedures.

Prohibited Use



Warning - If this instrument is not used as specified, the protection provided by the equipment could be impaired. This instrument must only be used in a normal condition (in which all means of protection are intact).



Important - The Pressco system should NOT be used for any purpose other than specifically indicated in the section titled **Intended Use** (on page 10).

The following uses are **not** intended:

-  Use in an explosive environment
-  Use in a flammable environment
-  Use in a damp, moist, or wet environment, except where specifically indicated

Personal Protective Equipment



Important - Always follow the safety requirements of your plant in addition to the recommendations below.

We recommend, at minimum, use of the following Personal Protective Equipment (PPE):

	Protective clothing
	Protective gloves
	Protective ear plugs or headphones
	Protective eye wear
	Protective foot wear

Personnel Safety

The following rules are recommended to ensure the safety of personnel in charge of machine operation and maintenance.

During machine operation:

	Only one operator is needed to operate the machine. All others must keep at a safe distance.
	Operators must be familiar with all machinery connected to the Pressco equipment and know how to use emergency stop devices. Note: the emergency stop devices may not be connected directly to the Pressco equipment, but it is important to know how to use them.
	Before putting the Pressco system online, the operator must ensure that all safety devices used with all connected machinery are in place and operational. Do not operate with guards removed.
	The operator must maintain maximum focus on his work and be alert throughout his shift. If this is not the case, immediately inform the shift supervisor.

When carrying out maintenance or repair work:

	Disconnect master switch. For switch locations, refer to the Power Up (on page 39) and Power Down section.
	Before starting the machine, ensure that no person is close to the machine.
	If maintenance or repair requires the disconnection or removal of safety or protection systems, this operation must be supervised by authorized personnel who must ensure the prevention of personal injury or damage to the machine. All machine movements must be performed with limited speed and limited movements.
	Maintenance or repair work on electrical components must be carried out exclusively by authorized, trained personnel. When running tests with power connected, you must strictly comply with the rules provided.
	Personnel working on higher parts of a machine must wear a harness and hook it on to the structure and must always move with extreme caution.
	Never perform lubrication or maintenance procedures on mechanical parts with the machine running.

 For your safety, **do not:**

- Open safety guards during machine operation
- Perform maintenance and repair while the system is running
- Lean on the machine
- Sit on the machine components
- Use the machine for purposes other than those listed in this manual
- Modify parts of the machine
- Allow unqualified personnel to operate or perform maintenance procedures on the machine

Lifting heavy objects



Caution - Some components are heavy. Take proper precautions to prevent personal injury or damage to equipment. If you are not capable of lifting the object alone, ask a capable person to help lift the object, or use a mechanical lifting device

The components do not have handles to lift the equipment. Be sure to:

- Lift equipment from the bottom - do not use wires, brackets, nor other protrusions
- Keep fingers away from sensor lenses to keep the equipment clean
- Proceed slowly

➤ **To safely lift equipment:**



Caution - Do not twist your body when moving the load. Instead take small steps with your feet turning until you are in the correct position.

1. Stand close to the load and center yourself over it with your feet shoulder width apart.
2. Tighten your abdominal muscles.
3. Keeping your back straight, bend your knees and squat down to the floor.

4. Get a good grasp on the load with both hands.
5. Keeping the load close to your body, use your leg muscles to stand up lifting the load off the floor.
 - Your back should remain straight throughout lifting, using only the muscles in the legs to lift the load.
6. To place the load in the appropriate spot, bend at the knees using only your leg muscles to lower the load.

Authorized Users

Trained machine operators, mechanic and electrical maintenance staff, and plant managers are considered authorized users of the Pressco system. These users should carefully read the information contained in this manual. The plant manager must ensure that the safety recommendations included in this manual are observed.



Warning - Allowing workers who are unfamiliar with the production process to operate the Pressco system could result in hazard risk.

If you are unclear about any part of this manual, **contact Pressco Technical Support** (on page 2).



Important - No worker should ever operate the system outside of his/ her own area of competence and responsibility.

Proper Operation:

Only one worker is to operate the system at any given time. The correct position for the operator is in front of the user interface monitor or control enclosure (if applicable).

Repairs:

Any repair on the system shall be carried out exclusively by Pressco Technology Inc. service personnel or by other service expressly authorized by Pressco Technology Inc.

Spare Parts Usage

The following restrictions apply to replacing parts:



Warning - Using spare parts that are not designed to Pressco's specifications can compromise the safety and effectiveness of the Pressco system.

- The use of parts that are not within Pressco's design specifications is prohibited. This prohibition applies in particular when the parts involved contain or are connected with safety devices.
- Before resuming production, make sure all safety devices are in working order.

Pressco Technology Inc. shall not be liable in any way if any of the above-described directions are not complied with.

To obtain a spare parts list, contact the customer service department at Pressco. **How to Contact Pressco** (on page 2).

Pressco's technicians are available to help customers, in their own plant, to solve any problem that might arise during use and maintenance of the system.

Chapter 3

System Specifications

This instrument has been designed and tested in accordance with Publication EN61010-1 (2010) Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use and has been supplied in a safe condition. The instruction documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the instrument in a safe condition.

For dimensions and other specifications for other Intellispec systems, refer to:

- FHCP 3X systems: "Hardware Guide [FHCP 3X EZ]"
- Compact Single Lane systems: "Hardware Guide [CSL+]"

Environmental conditions

The Intellispec Series V system is designed to be safe in the following environmental conditions:

❖ *Note: Please consult **Pressco Technology Inc.** (on page 2) if your environmental conditions are outside of those listed.*

Condition	Specifications
Indoor/ outdoor use	Indoor use only
Altitude	Up to 2000 meters
Operating Temperature	5 °C to 50 °C
Storage Temperature	0 °C to 70 °C
Humidity	Maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 50 °C
Mains supply	Voltage fluctuations up to ± 10 % of the nominal voltage
Overvoltage protection rating	Transient overvoltage typically present on MAINS supply NOTE: the normal level of transient overvoltages is impulse withstand (overvoltage) category II of IEC 60364-4-443.
Rated pollution degree	This instrument is designed for use in Installation Category II and Pollution Degree 1 as per EN61010-1 and EN60664 respectively.



Warning - This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Sound Pressure Level

The horn on the optional **light tree** (on page 9) has a maximum 105dB level at 1 meter distance in front of the horn. Use proper hearing protection as specified by your plant safety instructions.

Specifications

The following sections contain electrical specifications and measurements for components of the Intellispec Series V system. Your system contains only the components necessary for your application.

User Interface

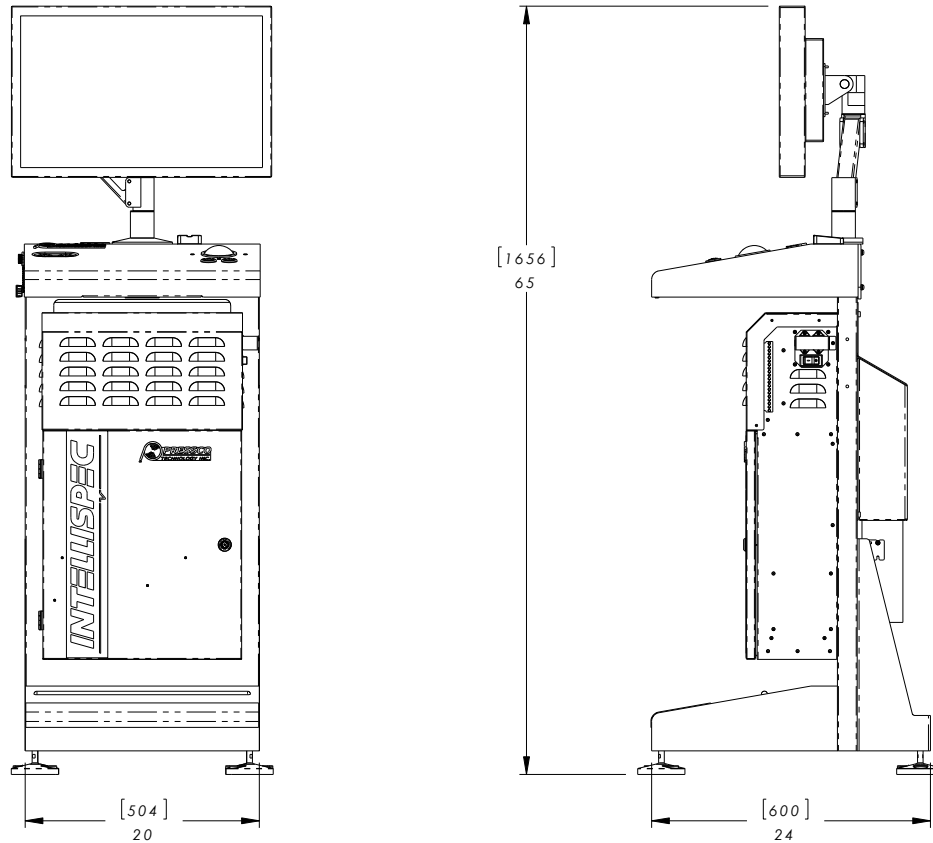
User Interface Electrical Specifications

Standard User Interface - No UPS included	
Voltage Range	100-240VAC
Frequency	50/60Hz
Current	5A @ 120VAC, 100% Load

User Interface with Optional 750VA UPS, 120VAC Nominal	
Voltage Range	100-132VAC
Frequency	50/60Hz
Current	6.3A @ 120VAC, 100% Load

User Interface with Optional 1KVA UPS, 230VAC Nominal	
Voltage Range	200-240VAC
Frequency	50/60Hz
Current	4.3A @ 230VAC, 100% Load

User Interface measurements



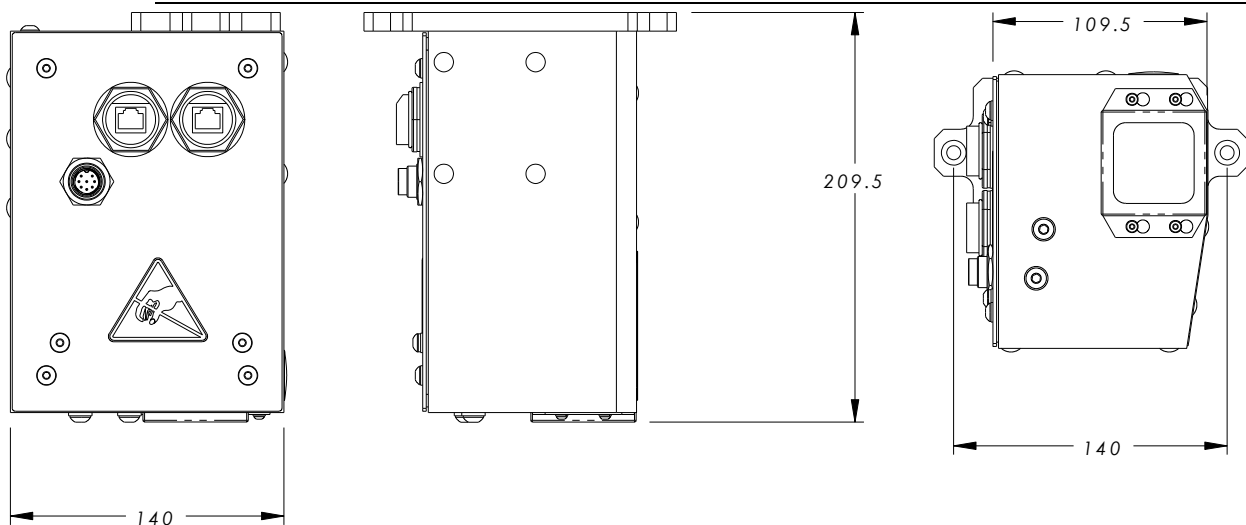
Measurement	Value
Weight (total user interface)	79.7 Kg [177 lb]
Weight (stand with monitor arm and all attached components)	31 Kg [68 lb]
Weight (computer)	25 Kg [55 lb]
Weight (Monitor)	11.3 Kg max [25 lb]
Weight (UPS)	12.7 Kg [28 lb]
Height	1656 mm [65 in]
Width	504 mm [20 in]
Depth	600 mm [24 in]

Base, Neck, and Seal inspection module weights

Measurement	Value
Weight (total base, neck, seal mast and modules)	44 Kg [98 lb]
Weight (base camera module)	2.3 Kg [5 lb]
Weight (neck camera module)	2.7 Kg [6 lb]
Weight (seal camera module with light array)	2.7 Kg [6 lb]
Weight (BNS lower unit - lighting arrays)	8.2 Kg [18 lb]
Weight (BNS mast)	34.6 Kg [77 lb]

Base camera module dimensions Series V

❖ *Note: measurements do not include connectors*

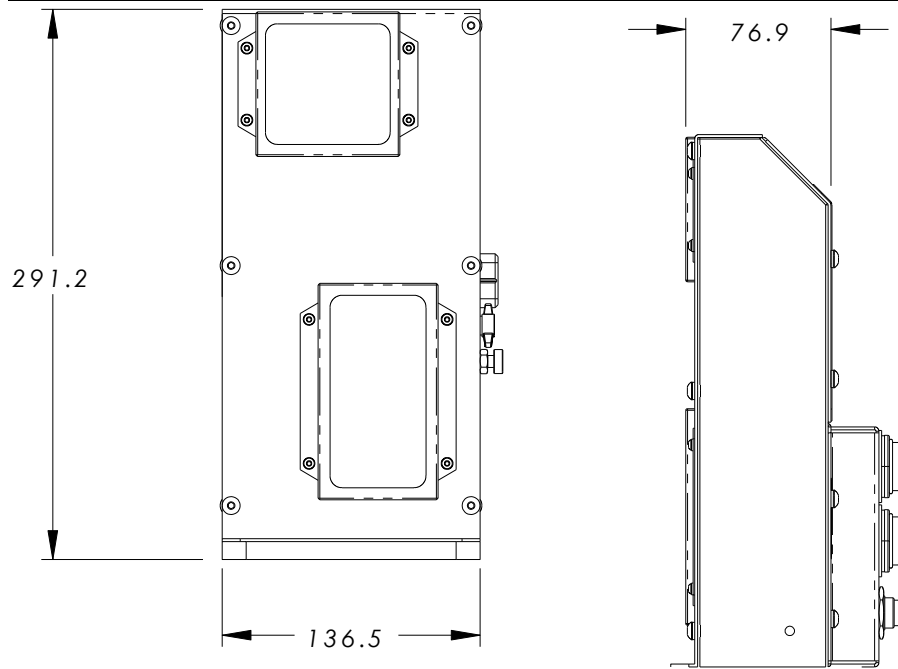


Position module 5 to 15 mm over seal surface.

Measurement	Value
Height (base camera module)	209.5 mm
Width (base camera module)	140 mm
Depth (base camera module)	140 mm

Neck/ Sidewall camera dimensions Series V

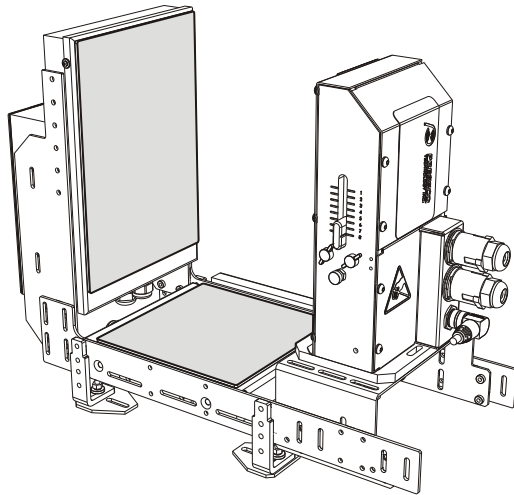
❖ Note: measurements do not include connectors



Measurements are shown in millimeters.

Base/Neck mast dimensions Series V

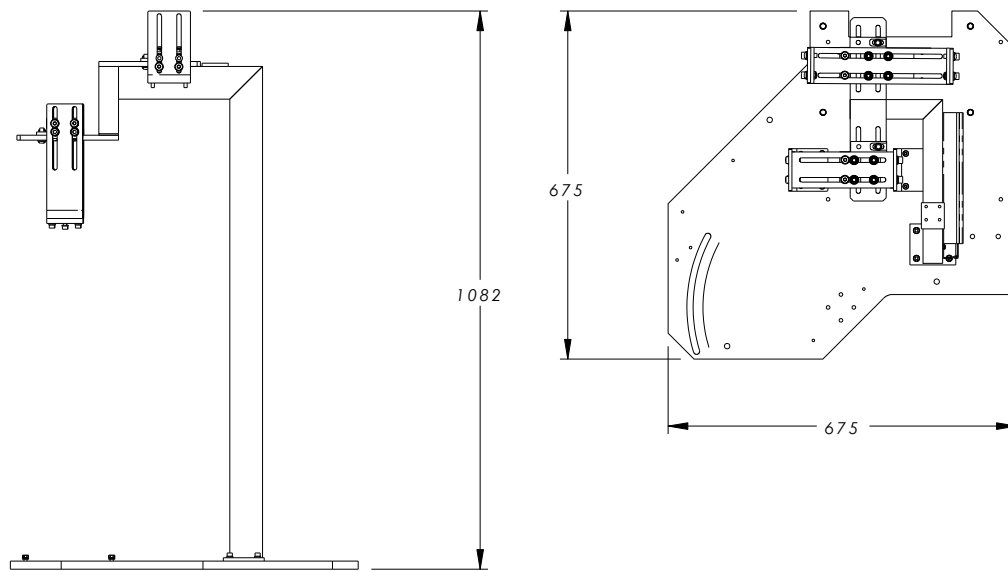
The base/neck mast holds the lighting arrays for the base and neck inspection modules.



❖ Note: measurements do not include connectors



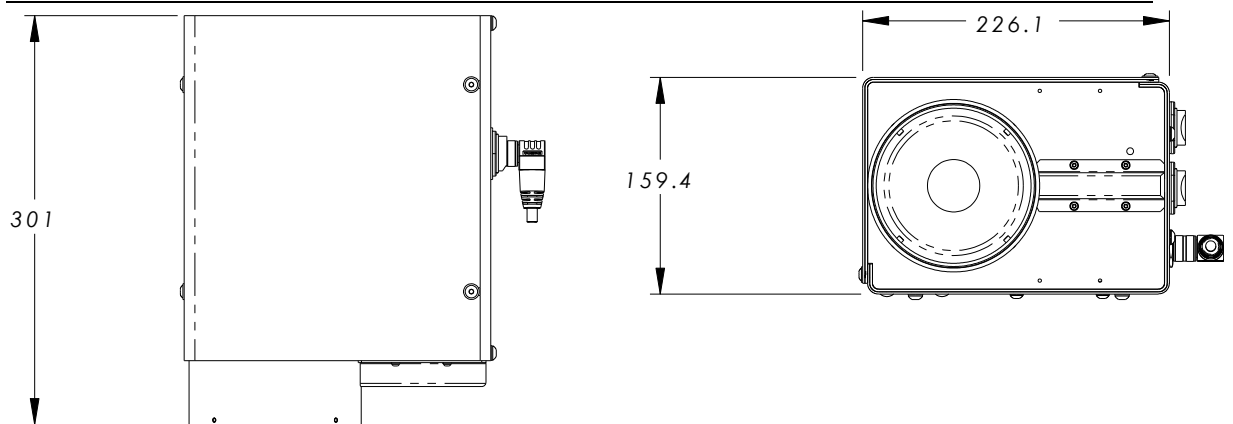
Caution - This object is heavy. Review the section on **lifting heavy objects** (on page 12) before moving this object.



Measurements are shown in millimeters.

Seal Surface Inspection module dimensions Series V

❖ *Note: measurements do not include connectors*

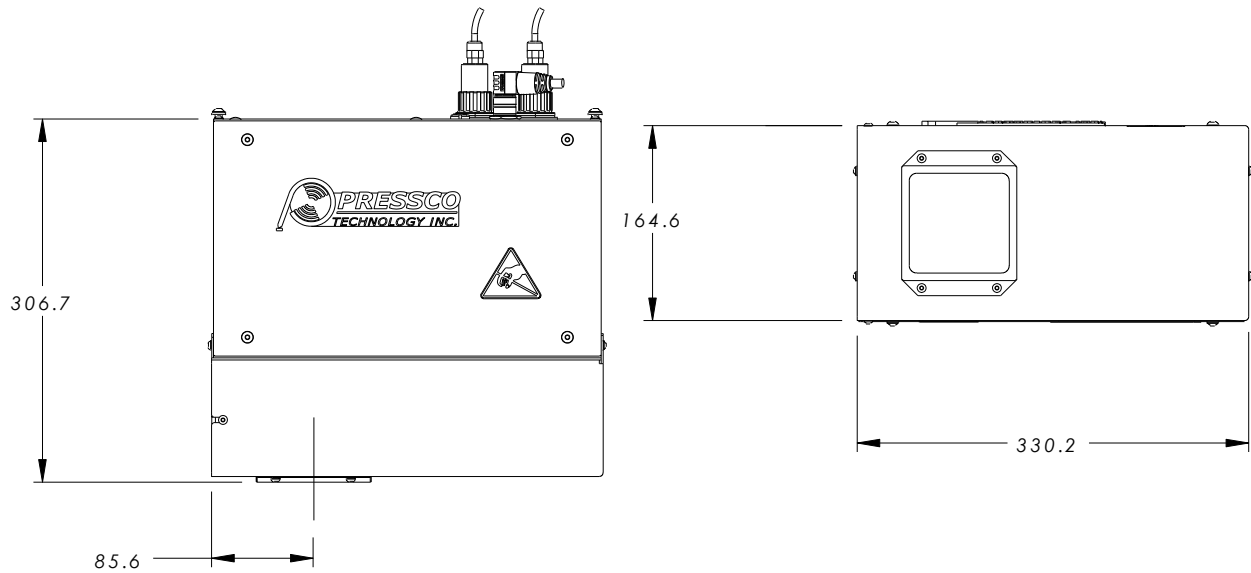


- For finish $\varnothing$ less than 35 mm, position 112 mm above grippers
- For finish $\varnothing$ greater than 35 mm, position 175 mm above grippers

Measurement	Value
Height	301 mm
Width	226.1 mm
Depth	159.4 mm

Preform Seal Endcap Inspection module dimensions

❖ Note: measurements do not include connectors

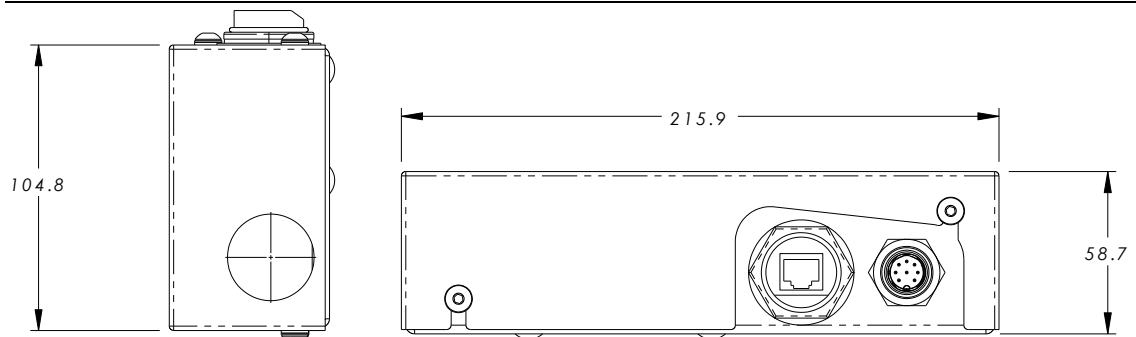


Measurement	Value
Height	306.7 mm
Width	330.2 mm
Depth	164.6 mm
Distance from edge to center of preform	85.6 mm

Position the module from reference "A" to 25 mm above the seal surface of the preform.

Preform Sidewall Inspection module dimensions

❖ Note: measurements do not include connectors



Measurements are shown in millimeters.

Cluster Box Series V

Cluster Box Electrical Specifications



Caution - Before switching on this instrument, ensure the power supply voltage is in the specified range.

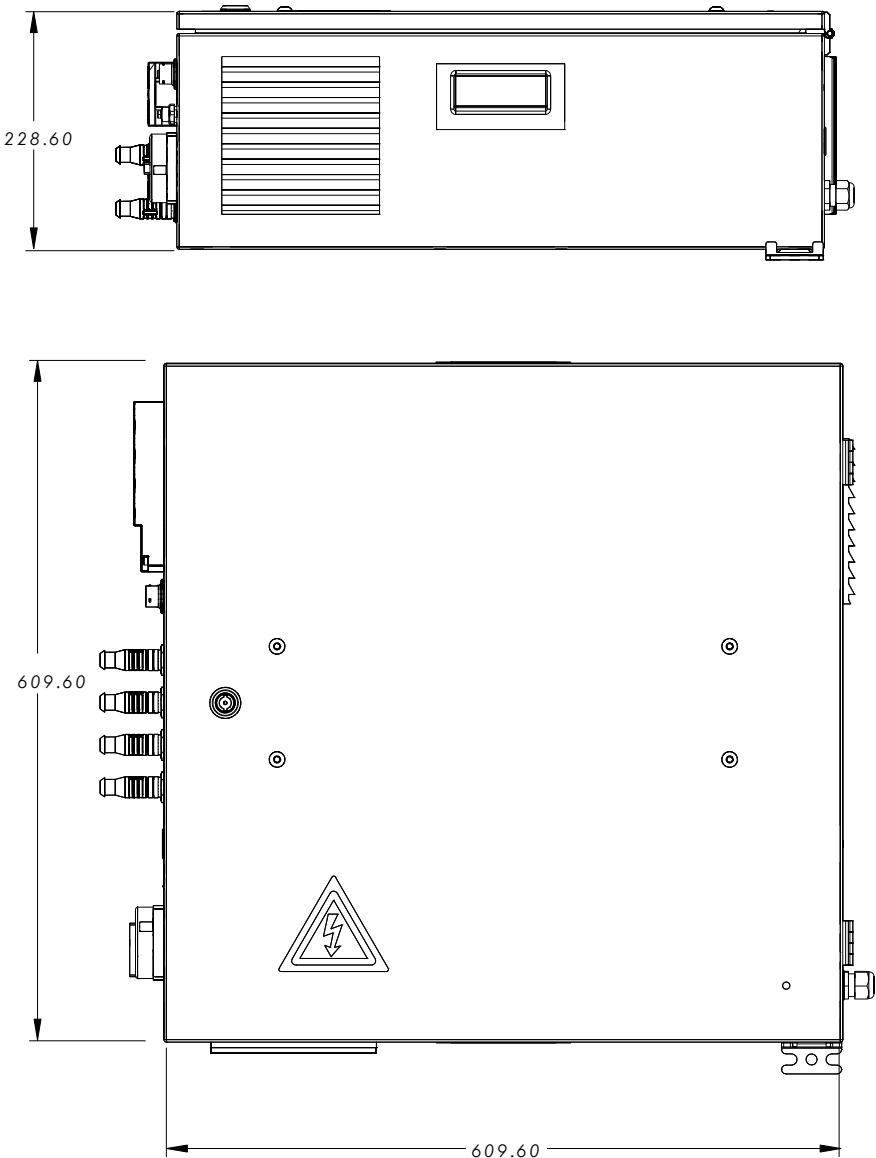
❖ *Note: the Cluster Box is not present in all systems. It is mainly used when sensors are installed within a blow molder or similar machinery.*

500VA UPS, 120VAC Nominal	
Voltage Range	100-132VAC
Frequency	50/60Hz
Current	4.2A @ 120VAC, 100% Load

500VA UPS, 230VAC Nominal	
Voltage Range	200-240VAC
Frequency	50/60Hz
Current	2.2A @ 230VAC, 100% Load

1KVA Transformer, 400VAC	
Voltage Range	380-420VAC
Frequency	50/60Hz
Current	2.5A @ 400VAC, 100% Load

Classic Cluster Box measurements



Measurement	Value
Weight	45 Kg [99 lb]
Height	609.60 mm [24 in]
Width	609.60 mm [24 in]
Depth	228.60 mm [9 in]

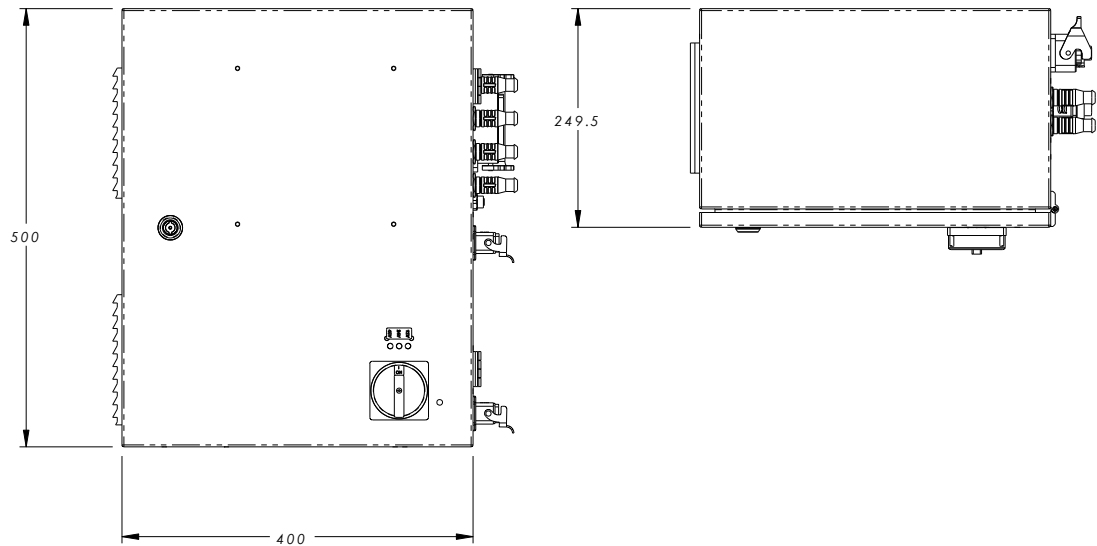
❖ *Note: measurements do not include connectors or switches.*



Caution - This object is heavy. Review the section on **lifting heavy objects** (on page 12) before moving this object.

Embedded Cluster Box measurements

The following are the weight and dimensions of the 400V Embedded Cluster Box.



Measurement	Value
Weight	45 Kg [99 lb]
Height	500 mm [19.69 in]
Width	400 mm [15.75 in]
Depth	249.5 mm [9.82 in]

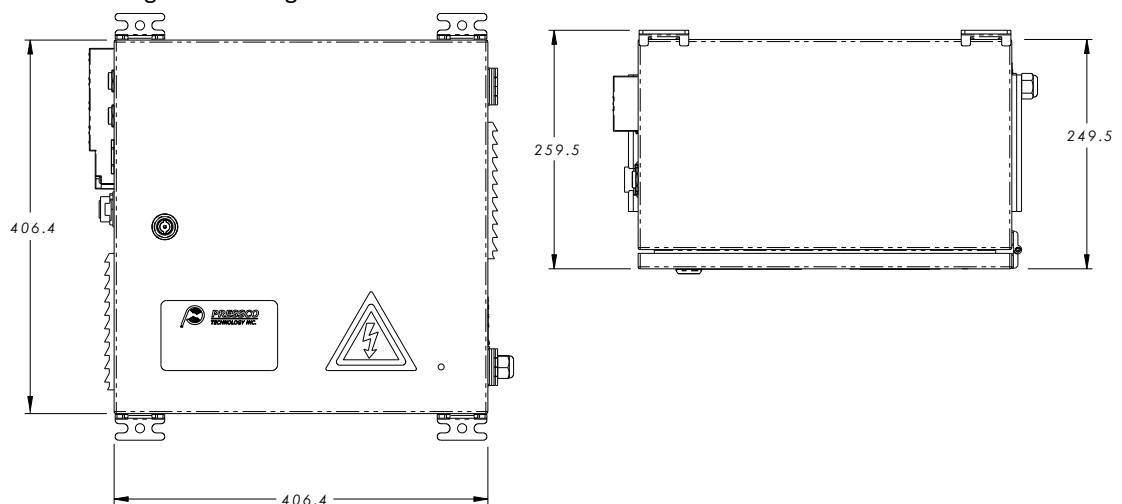
❖ *Note: measurements do not include connectors or switches*



Caution - This object is heavy. Review the section on **lifting heavy objects** (on page 12) before moving this object.

Micro and Wash-Down Cluster Box measurements

The following are the weight and dimensions of the Micro or Wash-Down Cluster Box.



Measurement	Value
Weight	30.23 Kg [66.5 lb]
Height	406.40 mm [16 in]
Width	406.40 mm [16 in]
Depth	254 mm [10 in]

❖ *Note: measurements do not include connectors or switches.*



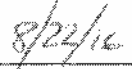
Caution - This object is heavy. Review the section on ***lifting heavy objects*** (on page 12) before moving this object.

Declaration of Conformity - Intellispec System

Declaration	The listed product is in conformity with following Union harmonization legislation: Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility and with Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. The Technical Documentation demonstrates the fulfillment of the essential requirements as set out in Annex I of the above Directive.
Manufacturer	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA This declaration of conformity is issued under the sole responsibility of the manufacturer.
Product Name	Intellispec Series V Inspection System
Referenced harmonised standards to which conformity is declared:	EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements EN 55011:2009 +A1:2010: Radiated / Conducted Emissions EN 61000-4-2:2009: ESD Immunity EN 61000-4-3:2006 + A1:2008 + A2:2010: Radiated RF Immunity EN 61000-4-4:2004 + A1:2010: EFT Burst Immunity EN 61000-4-5:2006: Surge Immunity EN 61000-4-6:2009: Conducted RF Immunity EN 61000-4-11:2004: Voltage Dips & Interruptions EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
Technical File	EMR2932 & ES2932
Place	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA

Signed for and on behalf of Pressco Technology Inc., 29200 Aurora Road, Cleveland, OH USA 44139:

 VP, ENG. OPERATIONS



Name, Position

Date

Signed: Fredrick F. Awig

Date: 22 August 2016

Name: **Fredrick F. Awig**

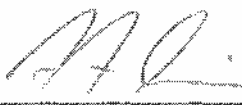
Title: **VP of Engineering & Operations**

Signed for and on behalf of Pressco Technology Inc.

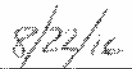
Declaration of Conformity - Embedded Cluster Box

Declaration	The listed product is in conformity with following Union harmonization legislation: Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility and with Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. The Technical Documentation demonstrates the fulfillment of the essential requirements as set out in Annex I of the above Directive.
Manufacturer	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA This declaration of conformity is issued under the sole responsibility of the manufacturer.
Product Name	Embedded Cluster Box
Referenced harmonised standards to which conformity is declared:	EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements EN 55011:2009 +A1:2010: Radiated / Conducted Emissions EN 61000-4-2:2009: ESD Immunity EN 61000-4-3:2006 + A1:2008 + A2:2010: Radiated RF Immunity EN 61000-4-4:2004 + A1:2010: EFT Burst Immunity EN 61000-4-5:2006: Surge Immunity EN 61000-4-6:2009: Conducted RF Immunity EN 61000-4-11:2004: Voltage Dips & Interruptions EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
Place	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA

Signed for and on behalf of Pressco Technology Inc., 29200 Aurora Road, Cleveland, OH USA 44139:

 VP, ENG. OPERATIONS

Name, Position



Date

Signed: Fredrick F. Awig

Date: 22 August 2016

Name: **Fredrick F. Awig**

Title: **VP of Engineering & Operations**

Signed for and on behalf of Pressco Technology Inc.

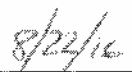
Declaration of Conformity - Cluster Box

Declaration	The listed product is in conformity with following Union harmonization legislation: Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility and with Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. The Technical Documentation demonstrates the fulfillment of the essential requirements as set out in Annex I of the above Directive.
Manufacturer	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA This declaration of conformity is issued under the sole responsibility of the manufacturer.
Product Name	Cluster Box
Referenced harmonised standards to which conformity is declared:	EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements EN 55011:2009 +A1:2010: Radiated / Conducted Emissions EN 61000-4-2:2009: ESD Immunity EN 61000-4-3:2006 + A1:2008 + A2:2010: Radiated RF Immunity EN 61000-4-4:2004 + A1:2010: EFT Burst Immunity EN 61000-4-5:2006: Surge Immunity EN 61000-4-6:2009: Conducted RF Immunity EN 61000-4-11:2004: Voltage Dips & Interruptions EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
Place	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA

Signed for and on behalf of Pressco Technology Inc., 29200 Aurora Road, Cleveland, OH USA 44139:

 VP, ENG OPERATIONS

Name, Position



Date

Signed: Fredrick F. Awig

Date: 22 August 2016

Name: **Fredrick F. Awig**

Title: **VP of Engineering & Operations**

Signed for and on behalf of Pressco Technology Inc.

Chapter 4

Installation requirements

Shipping and Handling

Pressco Technology Inc. ships unassembled components in packing cases designed to protect the contents during handling and from exposure to weather.

Unless otherwise specified in the contract with the machine order, the Customer shall supply Pressco Technology Inc. with the means and equipment necessary for the unloading, lifting, and handling of machine parts. Pressco Technology Inc. deems it important to have one of their technicians supervise the process of unloading, handling, and lifting the machine. The technician can give useful advice as to the logical sequence in which the components should be unpacked and positioned for ease of assembly.



Warning - Only qualified personnel must be involved in the operation of unloading, handling, and lifting the machine. Pressco Technology Inc. shall not be liable for damage to components and/or personal injury resulting from the involvement of unauthorized personnel and/or failure to comply with the directions provided in this manual in relation to lifting and transport.



Important - The site supervisor will be responsible for ensuring that all the various mounting phases are carried out safely and in compliance with current regulations.

After the machine is delivered, check for any damage that might have occurred during shipping. In case of damage, contact **Pressco Technology Inc** (on page 2).

In handling the machine, always keep it close to the ground.



We recommend using a forklift truck with adequate capacity and forks to suit the weight to be lifted (machine plus packaging).

The dimensions and weight of a crate are listed below. Note that this is the maximum size and weight. The size and weight of the crate may be less depending on your configuration. You may receive multiple crates depending on your configuration.

Size	152.4 cm x 124.46 cm x 152.4 cm (60 x 49 x 60 inches)
Weight	453.592 kg (1000 lbs.)

Recommendations prior to installation

Before the machine is installed, the Pressco installer, together with the Customer (or representative) shall check the following criteria in the environment where the machine is to be installed:

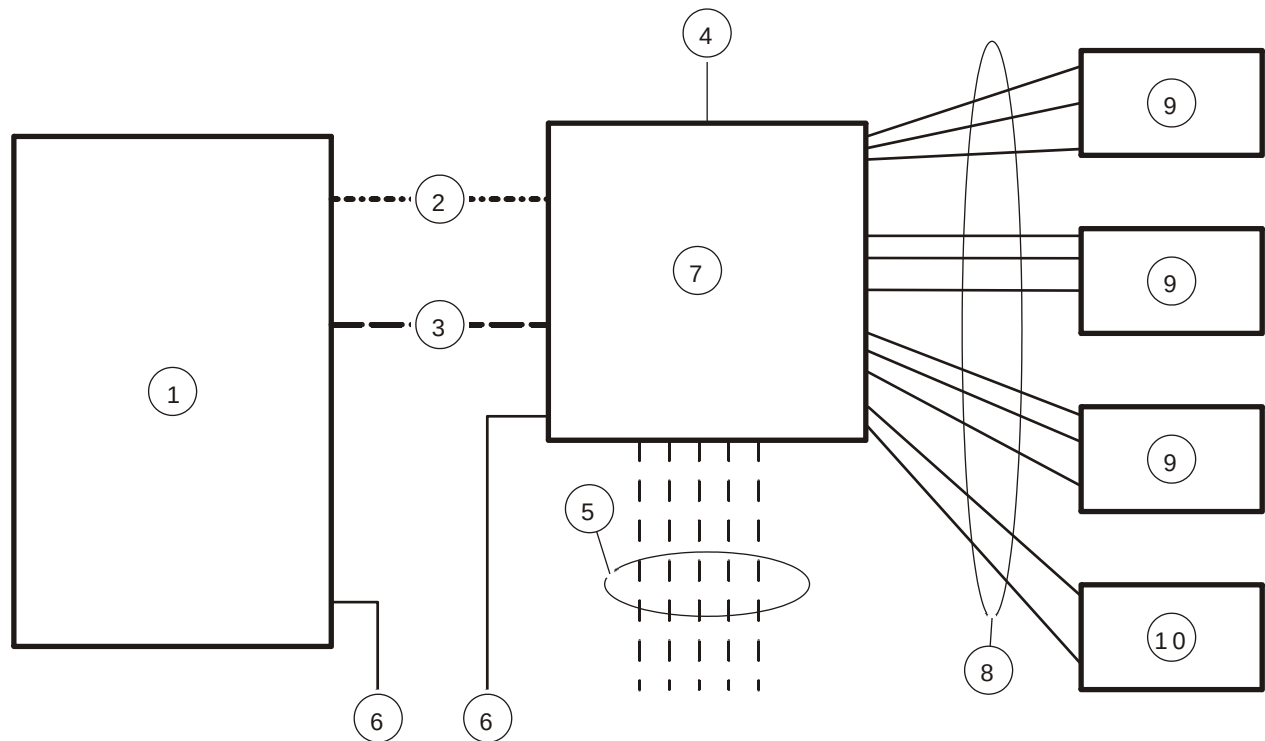
- Work required by contract for the installation of the machine has been carried out
- The plant layout drawing that describes where the machine will be installed is the final drawing agreed to by Pressco Technology Inc.
- The space and height required for installation are actually available
- Only the components included in the installation layout are present in the area where the machine is to be mounted. Ensure no machines or components have been added at a later stage that might hinder mounting or make it more difficult. Should this be the case, immediately contact Pressco's Project Engineering personnel to arrange a suitable solution to the problem.

We recommend the following prior to machine installation:

- Transport the machine in its packaging to the area where it will be installed to minimize possibility of damage
- Carefully remove the packaging material and check components for damage
- Check tightness of mechanical components, as they can loosen during transport
- Prepare the compressed air mains line. Before making final connections, ensure that the pipes are clean and free from any debris.

System Block Diagram - BNS

The drawing below shows a basic block diagram for a typical BNS system with a cluster box and three sensors (camera modules). The drawing shows camera modules that contain only one camera each.



- 1) Vision Processor (PC, monitor, and UPS)
- 2) PDN (Pressco Data Network) ethernet green cable
- 3) Inspection sensor/ camera ethernet blue cable
- 4) Light tree (optional)
- 5) Sensor cables (for part present sensor, encoder, machine part, pocket detect, reject confirm) For details: **I/O connectors** (see "**8 port I/O boxes**" on page 59)
- 6) AC power
- 7) Cluster box
- 8) PDN ethernet green cable, Inspection sensor/ camera ethernet blue cable, power and trigger cable (item 10 has only PDN cable and power and trigger cable)
- 9) Inspection sensor/ camera module (example: base, neck, seal surface)
- 10) Light array assembly (for base/neck cameras)

Assembly, location, and mounting requirements

Utilities to be supplied by customer

The following utilities are required to operate the Pressco Intellispec system. Before making connection, make sure the utility matches the technical specifications. More than one connection of the utilities may be required depending on the number of modules installed. Refer to specific wiring diagrams.

Utility	Requirements
Air supply for rejection device	Pipe size must be such that there will be no pressure decrease during machine operation. Air must be dry and free of oil.
Electrical supply	Provide one each electrical socket to comply with: ▪ User interface electrical specifications (on page 16) (use the specifications that apply to your system) ▪ Integrated tunnel electrical specifications (if applicable) ▪ Cluster box electrical specifications (on page 22) (if applicable)
Internet connection (optional)	Provide a shielded ethernet cable to use Pressco's remote support through the Internet.

Protective earthing

This product must be grounded (earthed). If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock.



Danger - Improper connection of the equipment grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service technician if you are in doubt as to whether the product is properly grounded.

Cord Connected Equipment

The product will be equipped with a supply cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with local codes and ordinances.

Do not modify the plug provided with the product - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

Cable Direct

This product must be connected to a grounded metal, permanent wiring system, or an equipment grounding conductor must be run with the circuit conductors and be connected to the equipment grounding terminal.

Electrical connection

Make sure that the power outlet voltage matches the voltage required by the machine. Refer to the specifications for equipment included with your system:

- **User interface electrical specifications** (on page 16)
- Integrated tunnel electrical specifications (if applicable)
- **Cluster box electrical specifications** (on page 22) (if applicable)



Warning - Power Switch is the power disconnect device. Do not position the equipment such that access to the disconnect switch is impaired. If not readily accessible (such as within a rack or mounting out of reach), an additional disconnect device should be installed that can isolate the Live and Neutral lines of the mains power supply, whilst leaving the protective earth intact.

Installation

Pressco Technology Inc. recommends that the machine be **installed and assembled by Pressco's specialized technicians**. This is of vital importance for correct machine operation.



Warning - Pressco Technology Inc. shall not be liable in case of failures or damage to property and/or personal injury resulting from or connected with assembly if this has been carried out by unauthorized personnel, or is not in compliance with the indications given in this manual.

To carry out production and cleaning/ servicing operations, it is important for the machine to have a minimum amount of space all around and away from walls.

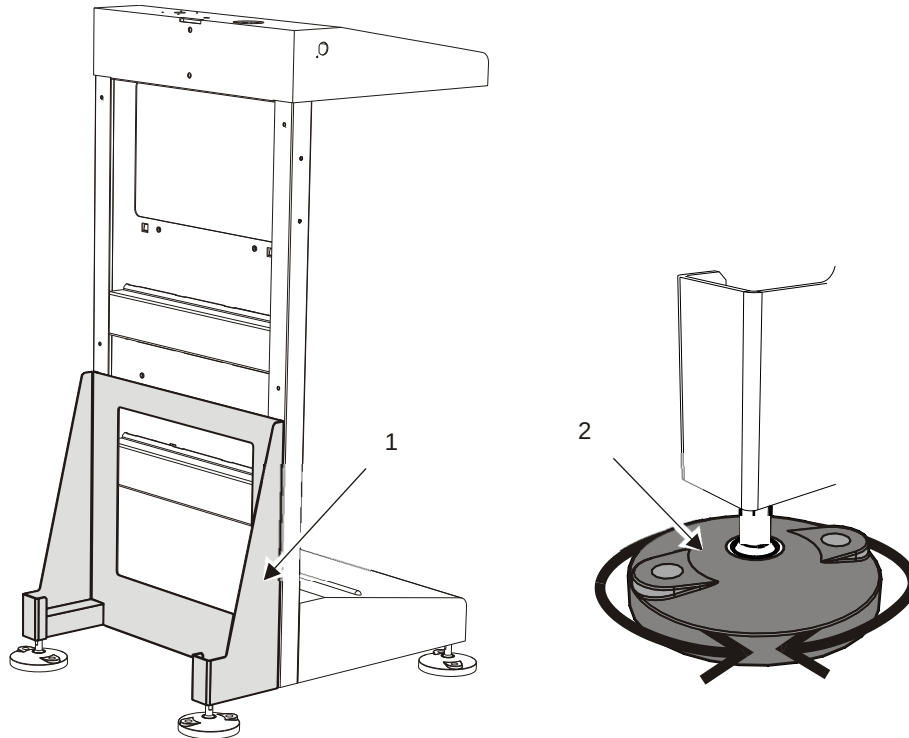
Ventilation

Place the Pressco Intellispec components in a position with adequate ventilation to allow proper air flow through the air filters.

Component	Spacing
User Interface	Leave 1 meter [39 inches] clear around machine
Cluster box (not used on all systems)	Leave 100 mm clear in front of the fan and vent

Stability of user interface

Ensure the stability of the user interface. Also refer to the directives in the **Personnel Safety** (on page 11) section.



➤ To make sure the user interface is stable:

1. Make sure that the user interface stabilizer [item 1] is secured properly to the user interface.
2. Adjust the feet [item 2] to level the user interface. Proper leveling can help ensure proper operation.

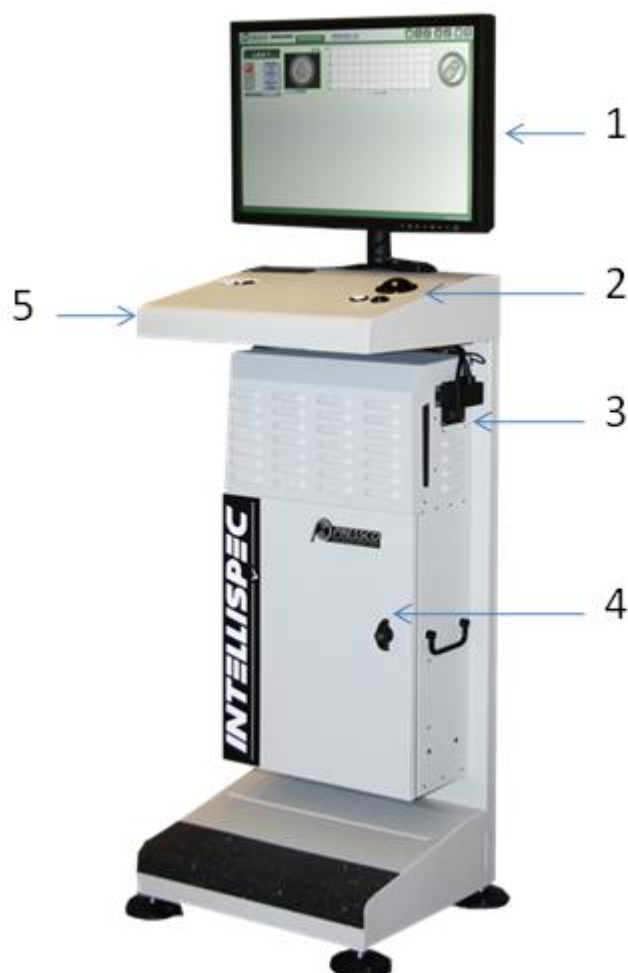
Commissioning

Before placing the machine into operation, make sure the following checks are completed:

Completed	Yes	No
Positioning and leveling of the unit		
Connection of compressed air line to connection points		
Connection of power supply to vision processor cabinet		
Connection of power supply to cluster box (if applicable)		
Connection of power supply to integrated inspection module(s) if applicable		
Proper wiring from user interface cabinet to sensor module(s) and cluster box (if applicable) using the wiring diagrams		

Chapter 5

Intellispec cabinet and user interface



- 1) 24" Diagonal color LCD with optional touch screen. An on-screen keyboard (OSK) is displayed when needed.
- 2) Trackball with two sets (left-handed or right-handed) of buttons: Select buttons [✓] and Information buttons [i]
- 3) Vision processor on/off switch.
- 4) Inside the cabinet: Ethernet switches, Vision processor, Mechanical keyboard (MKB)
- 5) USB convenience port is mounted on the side of the user interface.

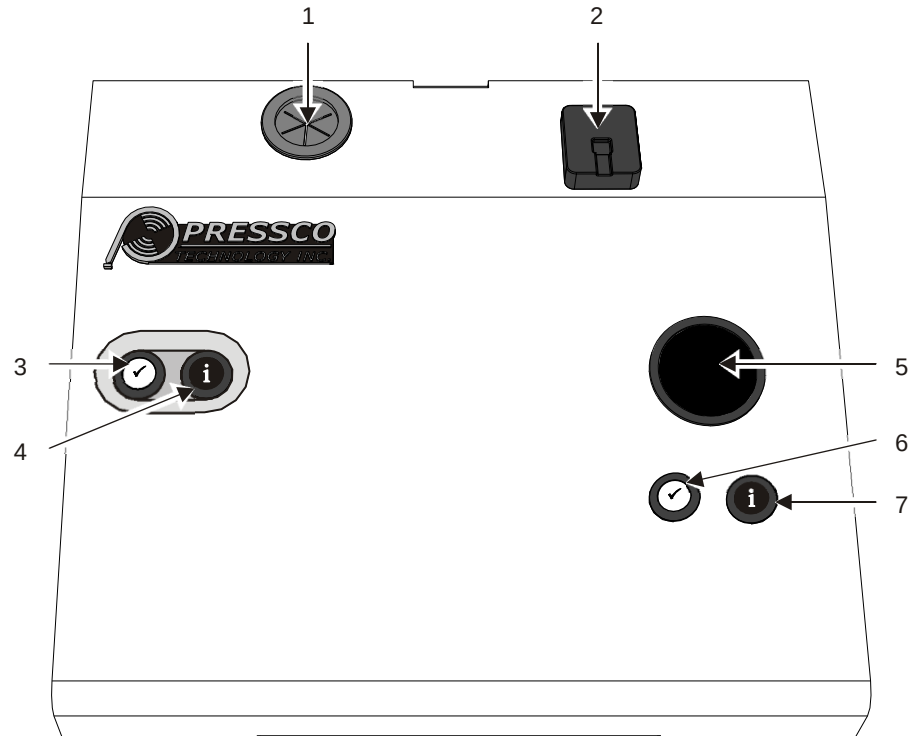
User interface input devices

The following devices are available to input information to the Intellispec system:

- **Trackball and buttons** (see "**How to select menu items**" on page 36)
- On Screen Keyboard (OSK)
- Touch Screen monitor (optional)
- Temporarily connected conventional **Mechanical Keyboard (MKB)** (on page 37)
- **USB Ports** (on page 37)
- Optional Biometric Identification login **device** (see "**Biometric login device**" on page 38)

User interface selection devices

The user interface hardware consists of several buttons and selection devices:



- 1) (not a button) Grommet for user interface equipment cords.
- 2) Optional Biometric Identification login device
- 3 and 4) Secondary set of buttons, used with track ball. See also items 6 and 7.
- 5) Track Ball
- 6) Button (left-click) to select and activate objects on screen
- 7) Button (right-click) to call up a context-sensitive menu about the selected object on screen

How to select menu items

Use the track ball to select, interact, and change active objects on the screen. The track ball will be required for all inspection editing tasks.

Use the left button [] to select and activate objects on the screen. Use the right button [] to call up a context-sensitive menu related to the area or object clicked. A second set of each button type is located on the left side of the podium for two-handed operation.

❖ *Note: Swapping the button assignments is not supported. The second set of buttons is to accommodate left-handed users.*

Action	Result
Point (move pointer with the track ball)	Display Tool Tip when hovered over active object
Click (Left-click) ✓	A click initiates various actions. Nothing happens when the pointer is clicked on a disabled object.
Double-click ✓ ✓	A double-click initiates various actions. For example, edit an inspection.
Right-click ⓘ	Display a context-sensitive menu when you click on an enabled object. The context-sensitive menu often contains functions that are also available in a menu bar or other screens. For example, add a point to a polygon.
Drag (hold the left button while moving the track ball)	Examples: move a selected Region of Interest (ROI) around an image or move an inspection in a Tree View to change the order of execution.

Mechanical keyboard (MKB)

The system supports the temporary connection of a conventional mechanical keyboard using one of the available **USB ports** (on page 37). This keyboard will mostly be used for system level tasks such as BIOS configuration, Network configuration, and System level setup.



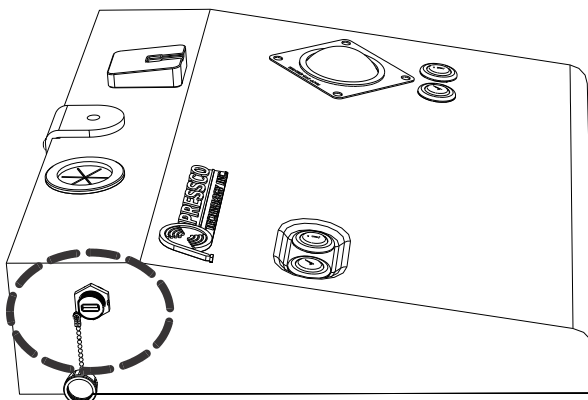
The keyboard:

- Is primarily used by Pressco Field Service Engineers
- Is stored inside the Vision PC chassis
- Requires a stable location when in use

USB Ports

There are USB ports available to back up or transfer data, and also to connect the optional mechanical keyboard. One is mounted on the side of the user interface pedestal.

Some touch screen monitors have additional USB connectors on the side of the monitor.



Biometric login device

The Biometric Identification login device is used to log in and out of the Intellispec system. This device is optional and must be purchased with the system.



To log in with this device, press your finger to the device. The following are conditions for use:

- You must use the same finger as initially set up by your administrator
- If you do not know how your account was set up (or which finger you used), contact your administrator
- If, after three tries, the Intellispec does not recognize your finger print, you must log in using the on screen keyboard (OSK)

Chapter 6

System Hardware Information

This section shows wiring diagrams and pinouts, and lists signals of various Intellispec system components.

❖ *Note: some sections are only included in books pertaining to specific applications. This book may not contain all of the sections below.*

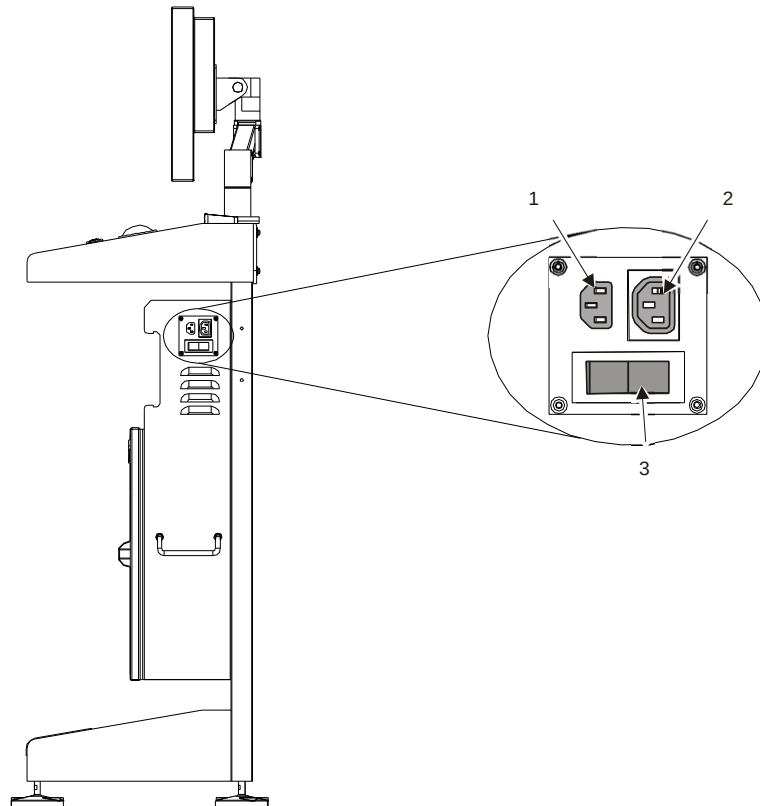
Related sections include:

- **Cluster Box** (on page 51)
- **Inspection Module Adjustments** (see "**Inspection Modules**" on page 81)
- **Extended I/O** (see "**Extended I/O (Optional)**" on page 103)
- **Maintenance Frequency - BNS** (on page 121)
- Maintenance Frequency - Integrated Tunnels

Power Up

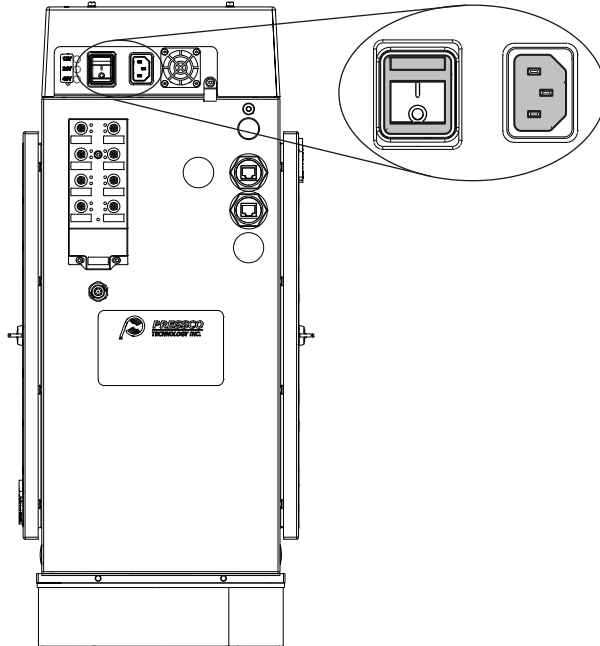
Intellispec Series V systems have multiple power switches. Make sure the power switches are turned on for the user interface, each camera module, and cluster box (if applicable). See the illustrations below for power switch locations.

The power connections for the user interface are found on the right side of the cabinet.



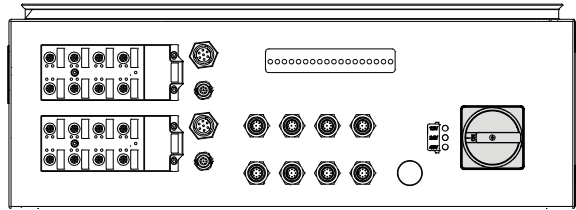
- 1) PC (computer) power connector
2) Monitor power connector

3) User interface power switch Each integrated camera module (for example the CPV series of inspection tunnels) has its own power on/off switch.



In system configurations that have a cluster box:

- if the cluster box has a UPS, open the cluster box door and switch on the UPS, then
- turn the external on/off switch to power all camera modules connected to the cluster box.



Power Down

To completely power down all components of the Intellispec, make sure the following power switches are turned off:

- User interface
- Integrated inspection modules (if applicable)
- Cluster box (if applicable)
- UPS inside the Cluster box (if applicable). Open the Cluster box door to switch off the UPS.

The user interface, inspection modules, and cluster box are all independent of each other. Therefore, if you need to service any of the above modules, any one can be turned off by itself.



Important - If you re-start the computer, turn off the User Interface power and leave it off for about 40 seconds before turning it back on. This allows the electronic components to correctly reset.

To see the locations of the power switches, refer to **Powering on the system** (see "**Power Up**" on page 39).

Servicing the User Interface



Warning - Potential hazardous voltage from the UPS. Use caution when servicing.

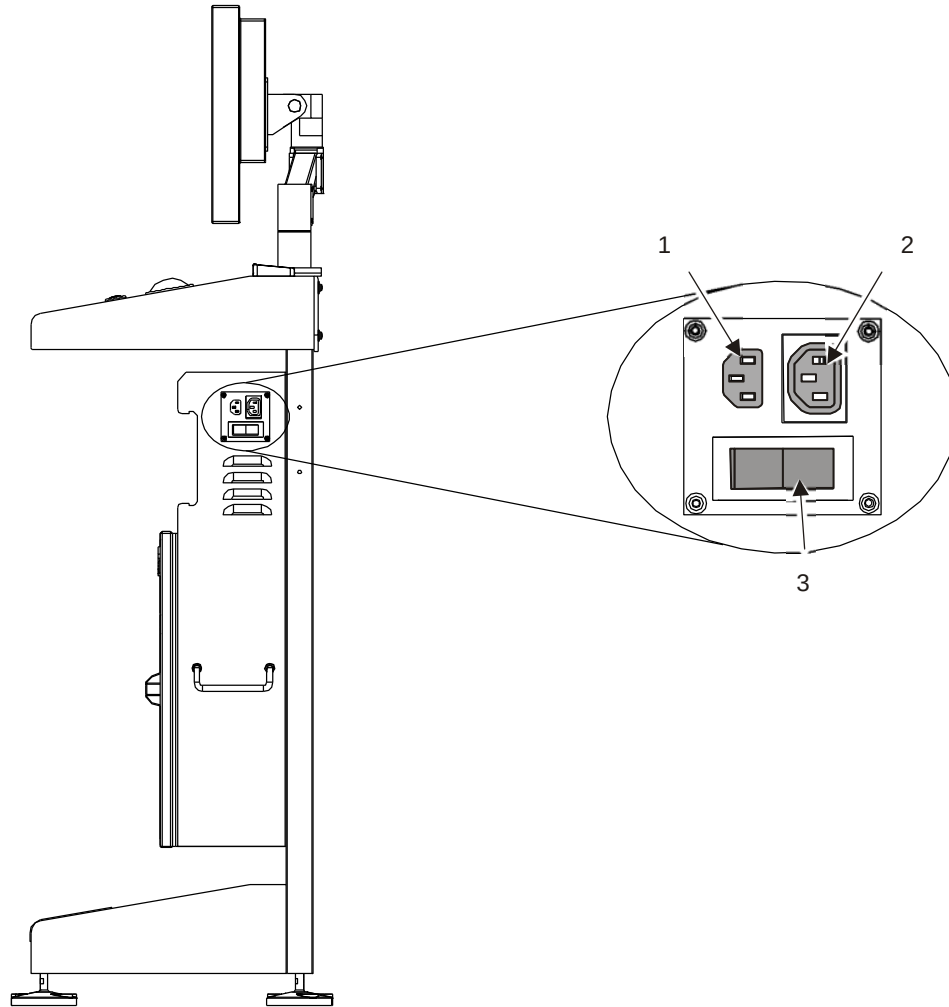
Wiring Diagrams

Pressco PC outlet wiring



Warning - The Pressco PC outlet is only to be used to provide power to the Intellispec PC. Any other use is prohibited.

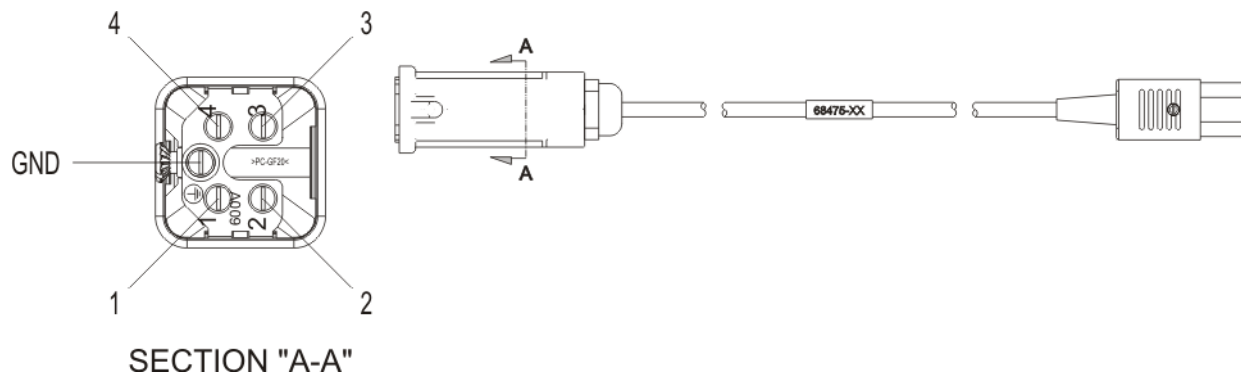
The power connections for the user interface are found on the right side of the cabinet.



1) PC (computer) power connector

2) Monitor power connector

3) User interface power switchWiring details:



Output: 230VAC, 500W

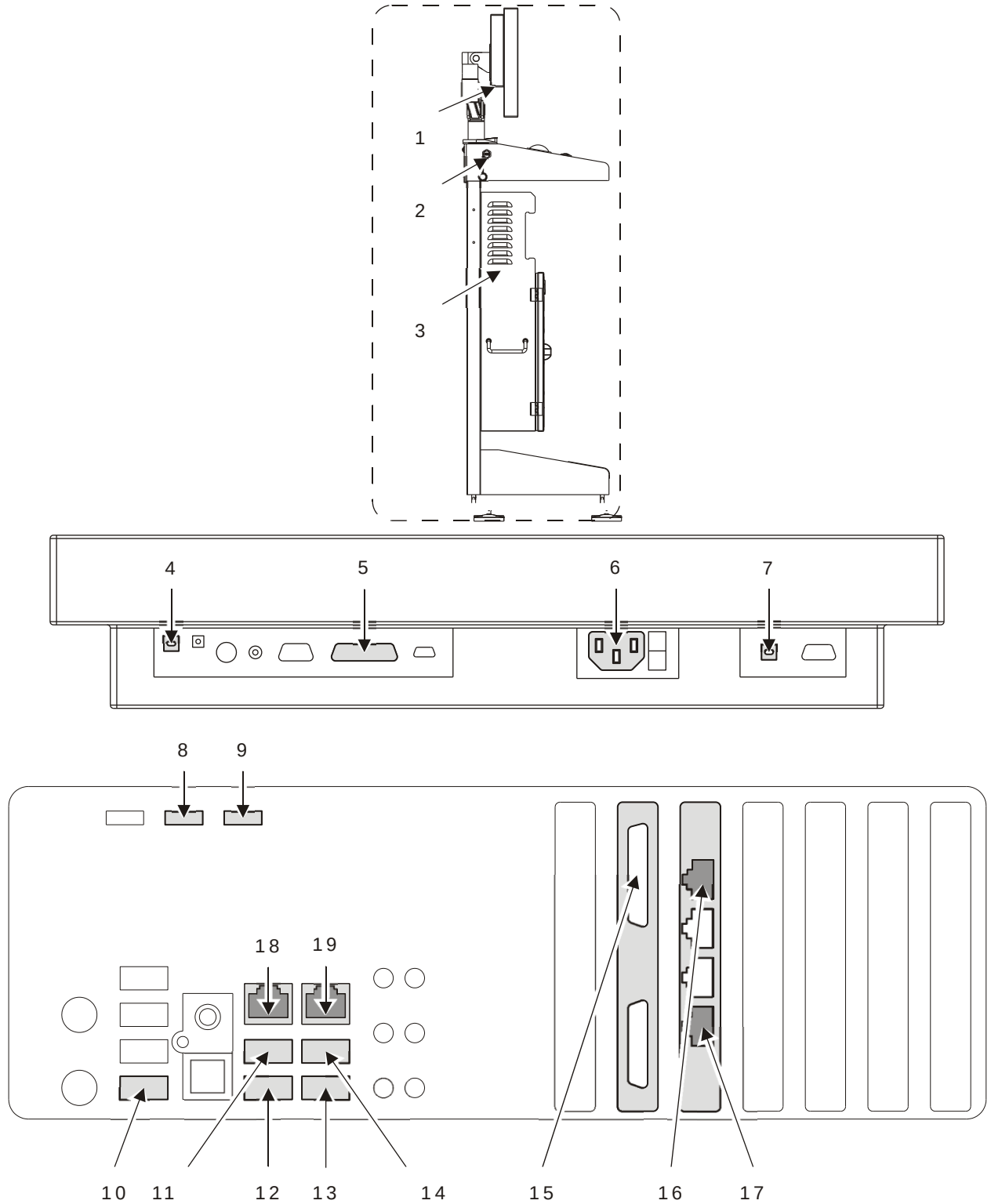
Outlet mating connector: Harting: insert 09200042611, hood 09200031440

Use wire type UL1015 or equivalent, 16awg (1.44mm²) min.

Wiring chart			
Pin number, 5-pin connector	Wire color	Pin number, 3-pin connector	Description
1	black	L	L1
2	white	N	L2
GND	green	GND	PE

User Interface external connections

❖ Note: the connectors not called out in the diagram have no connection



- 1) Monitor connector panel
- 2) Convenience USB port
- 3) PC [inside the cabinet]

Monitor connector panel connectors

- 4) Auxiliary USB connector
- 5) DVI input
- 6) AC power connector
- 7) Touch screen USB connector

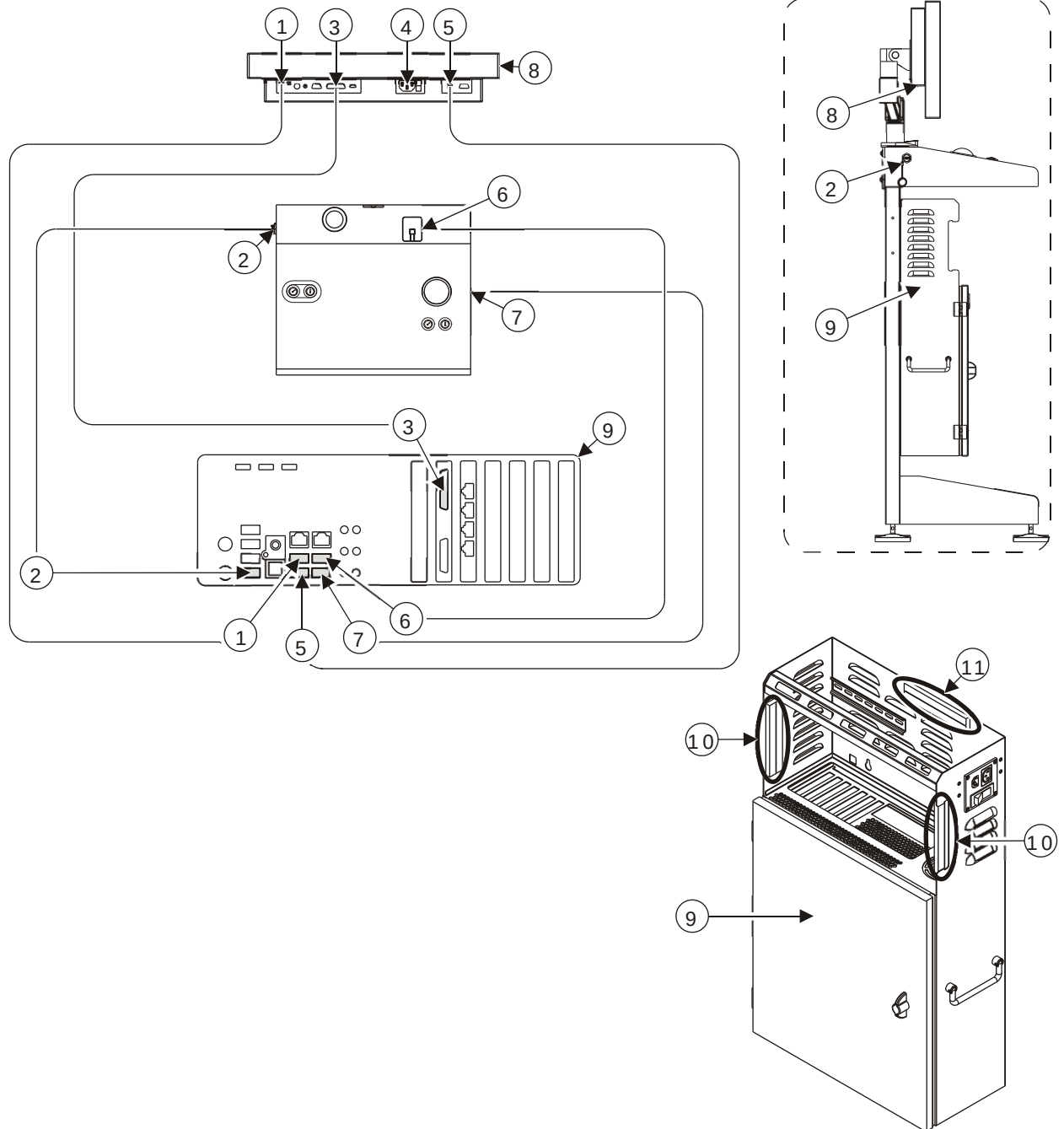
PC connectors

- 8) 2 pin power connector for camera ethernet switch
- 9) 2 pin power connector for PDN ethernet switch
- 10) Convenience USB port connector
- 11) Monitor auxiliary USB connector
- 12) Monitor touch screen USB connector
- 13) Trackball USB connector
- 14) Biometric device USB connector
- 15) DVI connector
- 16) Ethernet connector for camera ethernet switch (blue cable)
- 17) Ethernet connector for PDN ethernet switch (green cable)
- 18) Optional plant network connection
- 19) Optional remote user interface connection

❖ *For more information, refer to **Wiring diagram user interface/ PC** (on page 45).*

Wiring diagram user interface/ PC

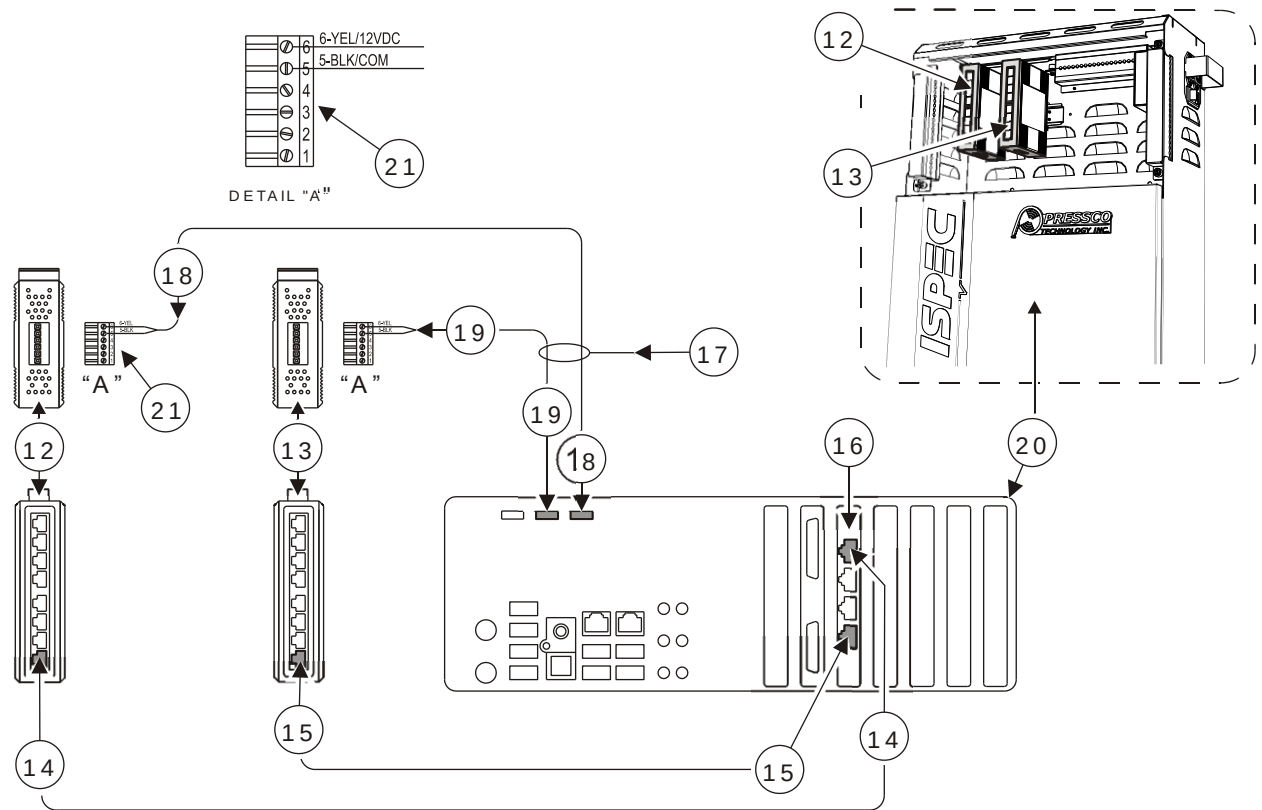
The following diagram shows the wire connections between the monitor, user interface, and PC.



- 1) Monitor auxiliary USB cable
- 2) Convenience USB port cable
- 3) DVI cable (included with monitor). (Remove DVI-VGA adapter if present)
- 4) AC power in for monitor
- 5) Touchscreen USB cable (for optional touchscreen monitor)
- 6) Optional Biometric device -USB cable. **!** Do not plug in until application software is installed.
- 7) Trackball USB cable. **!** Do not plug in the PS/2 connector.
- 8) View of monitor connector panel

- 9) PC. Connectors are inside cabinet.
- 10) Side cable entry locations
- 11) Cable entry. Route cables behind the PC mounting panel, through the cable entry at the back of the PC.

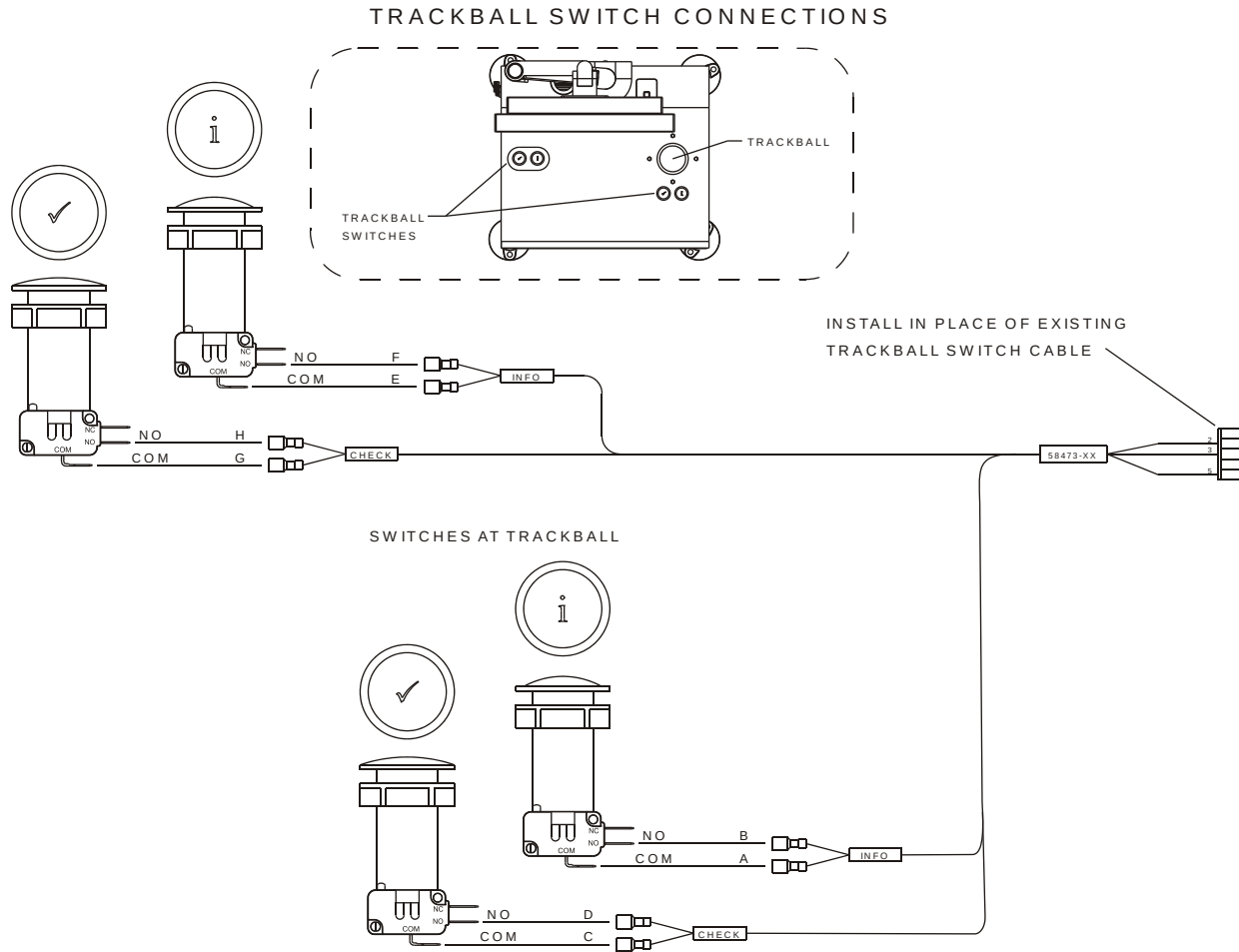
Wiring diagram ethernet switches



- 12) Ethernet switch for cameras [on left]
- 13) Ethernet switch for Pressco Device Network (PDN) [on right]
- 14) Blue ethernet cable
- 15) Green ethernet cable
- 16) Quad ethernet card
- 17) Two pin power connectors. Cables are included with PC.
- 18) Two pin power cable
- 19) Two pin power cable
- 20) PC
- 21) Detail "A" Ethernet switch power connection

❖ *Note: the Cat-6 ethernet cabling is divided into two groups. The green cabling goes to/from the cameras and lighting circuitry. The blue cabling goes to/from the part tracking circuitry.*

Wiring diagram trackball



Rebooting the Intellispec System

You may need to reboot the entire system if power or communication has been lost between the Vision Processor and the Cluster Box.

Symptoms may include that the inspection module light has stopped flashing, and the system is no longer taking pictures. Rebooting the system will reconnect the Vision Processor with the Part Tracker in the cluster box.

❖ *Note: if the power to both the Vision Processor UPS and the Cluster box is interrupted for more than two minutes, the software will automatically shut itself down and then shut down the Vision Processor PC. The software will restart. You will just need to log in and put the system back online.*

It may not be necessary to completely reboot the system each time the power to cluster box is interrupted. Try restarting the application.

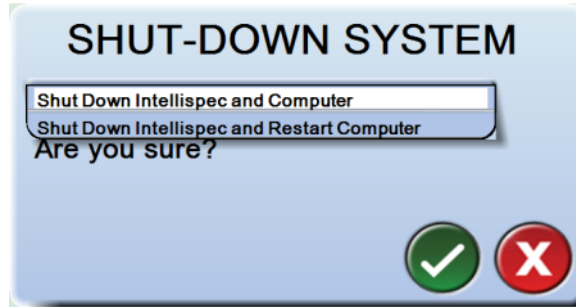
Restarting the Application

You must have proper user permissions to exit the software. This prevents unauthorized system shutdowns. Contact your system administrator if you need user permissions.

➤ To exit Intellispec software:

1. Log in.

2. Select Home  | Tools  | **Exit System**.
3. Select an option.



4. Select the OK  button. The Intellispec software and/or computer shuts down (and restarts if applicable).
5. Connect the **Mechanical keyboard (MKB)** (on page 37).
6. Press Ctrl + Alt + Delete on the mechanical keyboard.
7. Use the Log Off option to log off of Intellispec.
8. At the Windows Login Prompt, enter “pvpass” as the password for the Intellispec user account. Once login is complete the Series V application software will be launched.

Rebooting the entire system

If restarting the application does not clear the errors, try rebooting the entire system. This involves shutting down the software, the processor cabinet, and the cluster box (if applicable).

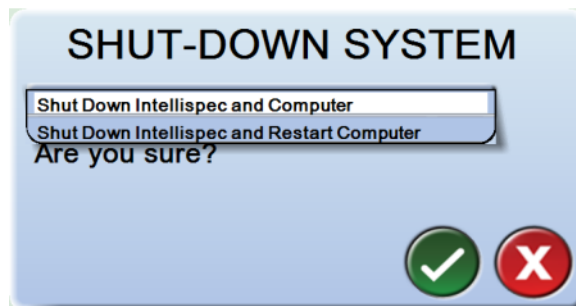
❖ *Note: The system reboot takes several minutes to complete.*

Processor Cabinet Shutdown

You must have proper user permissions to exit the software. This prevents unauthorized system shutdowns. Contact your system administrator if you need user permissions.

➤ To exit Intellispec software:

1. Log in.
2. Select Home  | Tools  | **Exit System**.
3. Select an option.



4. Select the OK  button. The Intellispec software and/or computer shuts down (and restarts if applicable).

➤ To shut down the Processor Cabinet:

1. Connect the **Mechanical keyboard (MKB)** (on page 37).
2. Press Ctrl + Alt + Delete on the mechanical keyboard.
3. Use the Shutdown option to shut down the PC.
4. Once the PC has shut down, turn off the Processor Cabinet ON/OFF switch. For location, see **Power Up** (on page 39).

-
- ❖ *Note: The Processor Cabinet ON/OFF switch must be off for approximately 40 seconds before turning it back on for proper restart.*
-

Cluster Box Shutdown

1. Shut off the cluster box external rotary power switch. For location of the power switch, see the illustration of the cluster box in the **Power Up** (on page 39) section.
2. If you have a UPS inside the cluster box, open the cluster box and shut off the UPS. Shutting off the UPS will conserve battery power.
3. Wait at least one minute for all Pressco Devices to fully power down.

Cluster Box Power Up

1. If you have a UPS inside the cluster box, open the cluster box to turn ON the UPS.
2. Turn ON the cluster box external rotary power switch.
3. Verify the 12VDC, 24VDC, and 48VDC power status indicators of the cluster box turn ON.
4. Wait at least one minute for all Pressco Devices to fully power up.

Processor Cabinet Power Up

1. Turn ON the Processor Cabinet ON/OFF switch. The system will launch the Intellispec software.
2. Log in to the system and begin using the system.

Notes

- If power to the cluster box is interrupted on a cluster box that does not come equipped with a UPS, the following prompt will be displayed.
"Part Tracker Exception: the Part Tracker has closed its communication port on Lane n. Reset the Part Tracker and restart the application."
- This message is an indication that the Part Tracker and the Application software communication link has been broken for an extended period of time.

Light Tree

The optional light tree may be mounted on or near an inspection module, or near a cluster box (if applicable). The optional horn, mounted with the light tree provides an audible warning.

For more information, refer to **Light tree status** (on page 49).



Light Tree (optional)

- Red (Alarm)
- Amber (Warning)
- Green (Online)
- Blue (Power)

Light tree status

The lights on the optional light tree will turn on, off, or blink depending on status of certain hardware. Each lane has its own light tree. The table below lists the different states for each light.

Light color	Condition	What it means
Red	On - steady	Alarm condition
Red	On - blinking	Part tracker board lost communication with the host PC or has an error and needs to initiate an alarm
Red	Off	No alarm (OK)
Amber	On	Warning alarm condition
Amber	Off	No warning (OK)
Amber	0.5 second flash	System automatically resets Asynchronous Correlation FIFO (not used in all systems)
Green	On	Lane is online
Green	Off	Lane is offline
Blue	On	Part tracker board has power (OK)
Blue	Off	Part tracker board has no power

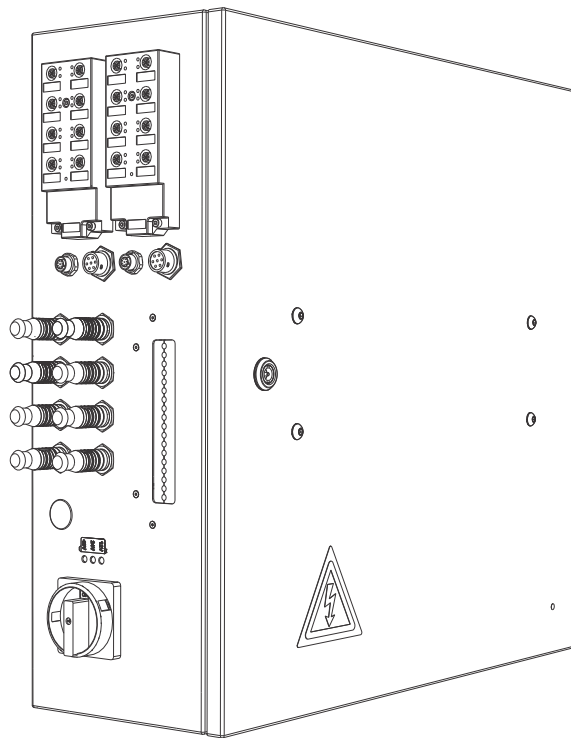
Chapter 7

Cluster Box

The Cluster Box is added to system configurations where the sensors have very limited mounting space. An example of a configuration is a typical base, neck, sidewall, seal surface inspection system mounted in a blow molder. The Cluster box contains:

- Part tracker board
- Power supplies for sensors and lighting arrays
- Ethernet switches
- Connections for sensors, encoder, and light tree
- **Extended I/O** (see "**Extended I/O (Optional)**" on page 103) kit (optional)

❖ *Note: the illustration below shows one type of cluster box (see "Types of Cluster Boxes" on page 54). Yours may look different.*



Caution - Before switching on this instrument, ensure the power supply voltage is in the specified range.



Warning

This is a Safety Class 1 Product (provided with a protective earthing ground, incorporated in the power cord). The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor inside or outside of the instrument is likely to make the instrument dangerous. Intentional interruption is prohibited.



Caution

This instrument is designed for use in Installation Category II and Pollution Degree 1 as per EN61010-1 and EN60664 respectively.



Warning - If this instrument is not used as specified, the protection provided by the equipment could be impaired. This instrument must only be used in a normal condition (in which all means of protection are intact).

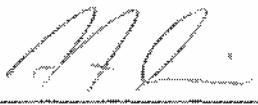


Warning - Power Switch is the power disconnect device. Do not position the equipment such that access to the disconnect switch is impaired. If not readily accessible (such as within a rack or mounting out of reach), an additional disconnect device should be installed that can isolate the Live and Neutral lines of the mains power supply, whilst leaving the protective earth intact.

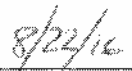
Declaration of Conformity - Cluster Box

Declaration	The listed product is in conformity with following Union harmonization legislation: Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility and with Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. The Technical Documentation demonstrates the fulfillment of the essential requirements as set out in Annex I of the above Directive.
Manufacturer	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA This declaration of conformity is issued under the sole responsibility of the manufacturer.
Product Name	Cluster Box
Referenced harmonised standards to which conformity is declared:	EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements EN 55011:2009 +A1:2010: Radiated / Conducted Emissions EN 61000-4-2:2009: ESD Immunity EN 61000-4-3:2006 + A1:2008 + A2:2010: Radiated RF Immunity EN 61000-4-4:2004 + A1:2010: EFT Burst Immunity EN 61000-4-5:2006: Surge Immunity EN 61000-4-6:2009: Conducted RF Immunity EN 61000-4-11:2004: Voltage Dips & Interruptions EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
Place	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA

Signed for and on behalf of Pressco Technology Inc., 29200 Aurora Road, Cleveland, OH USA 44139:

 VP, ENG OPERATIONS

Name, Position



Date

Signed: Fredrick F. Awig

Date: 22 August 2016

Name: **Fredrick F. Awig**

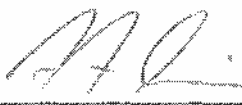
Title: **VP of Engineering & Operations**

Signed for and on behalf of Pressco Technology Inc.

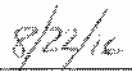
Declaration of Conformity - Embedded Cluster Box

Declaration	The listed product is in conformity with following Union harmonization legislation: Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility and with Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. The Technical Documentation demonstrates the fulfillment of the essential requirements as set out in Annex I of the above Directive.
Manufacturer	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA This declaration of conformity is issued under the sole responsibility of the manufacturer.
Product Name	Embedded Cluster Box
Referenced harmonised standards to which conformity is declared:	EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements EN 55011:2009 +A1:2010: Radiated / Conducted Emissions EN 61000-4-2:2009: ESD Immunity EN 61000-4-3:2006 + A1:2008 + A2:2010: Radiated RF Immunity EN 61000-4-4:2004 + A1:2010: EFT Burst Immunity EN 61000-4-5:2006: Surge Immunity EN 61000-4-6:2009: Conducted RF Immunity EN 61000-4-11:2004: Voltage Dips & Interruptions EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
Place	Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA

Signed for and on behalf of Pressco Technology Inc., 29200 Aurora Road, Cleveland, OH USA 44139:

 VP, ENG. OPERATIONS

Name, Position



Date

Signed: Fredrick F. Awig

Date: 22 August 2016

Name: **Fredrick F. Awig**

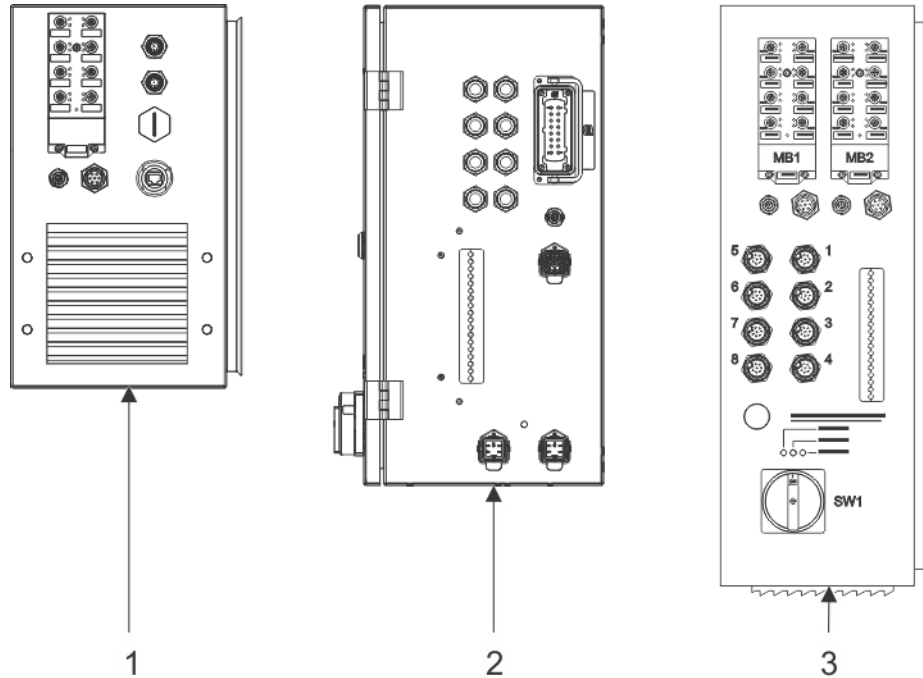
Title: **VP of Engineering & Operations**

Signed for and on behalf of Pressco Technology Inc.

Types of Cluster Boxes

There are several types of cluster boxes that differ in size, external wiring, and voltage rating. Use the chart below to identify your cluster box.

For **external I/O connections**, determine whether your cluster box is a classic, embedded, wash-down, or micro model. The basic shapes are shown below:



1) Micro or Wash-Down cluster box. Note: Wash-Down version has a protective cover over the filter and fan vents

2) Embedded cluster box

3) Classic cluster boxFor **internal wiring**, refer to the cluster box with the voltage rating that matches the voltage used in your plant.

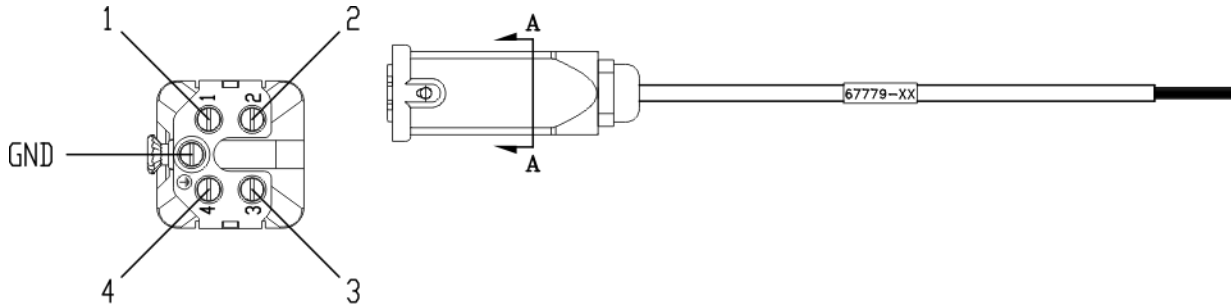
Voltage Rating	Model Type	Part Number	External wiring	Internal wiring
400 VAC	Embedded	66716	<i>Embedded Cluster box external connections</i> (on page 62)	<i>Embedded Cluster box 400VAC</i> (on page 69)
400 VAC	Classic	58806	<i>Classic Cluster box external connections</i> (see " <i>Classic cluster box external connectors</i> " on page 58)	<i>Classic Cluster box 400VAC</i> (on page 66)
230 VAC	Classic	66083	<i>Classic Cluster box external connections</i> (see " <i>Classic cluster box external connectors</i> " on page 58)	<i>Cluster box 230VAC</i> (on page 76)
230 VAC	Micro	66611	<i>Wash-Down and Micro Cluster box external connections</i> (see " <i>Cluster box 77797 external connections</i> " on page 63)	<i>Cluster box 230VAC</i> (on page 76)
230 VAC	Wash-down	66263	<i>Wash-Down and Micro Cluster box external connections</i> (see " <i>Cluster box 77797 external connections</i> " on page 63)	<i>Cluster box 230VAC</i> (on page 76)
120 VAC	Classic	59213	<i>Classic Cluster box external connections</i> (see " <i>Classic cluster box external connectors</i> " on page 58)	<i>Cluster box 120VAC</i> (on page 73)
120 VAC	Micro	66610	<i>Wash-Down and Micro Cluster box external connections</i> (see " <i>Cluster box 77797 external connections</i> " on page 63)	<i>Cluster box 120VAC</i> (on page 73)
120 VAC	Wash-down	66260	<i>Wash-Down and Micro Cluster box external connections</i> (see " <i>Cluster box 77797 external connections</i> " on page 63)	<i>Cluster box 120VAC</i> (on page 73)

Cluster box external connections

Cluster Box Mains wiring

The mains voltage supply to the Cluster Box should be wired according to the following diagram. For voltage rating, refer to the **Cluster Box Electrical Specifications** (on page 22).

Wiring details:



SECTION "A-A"

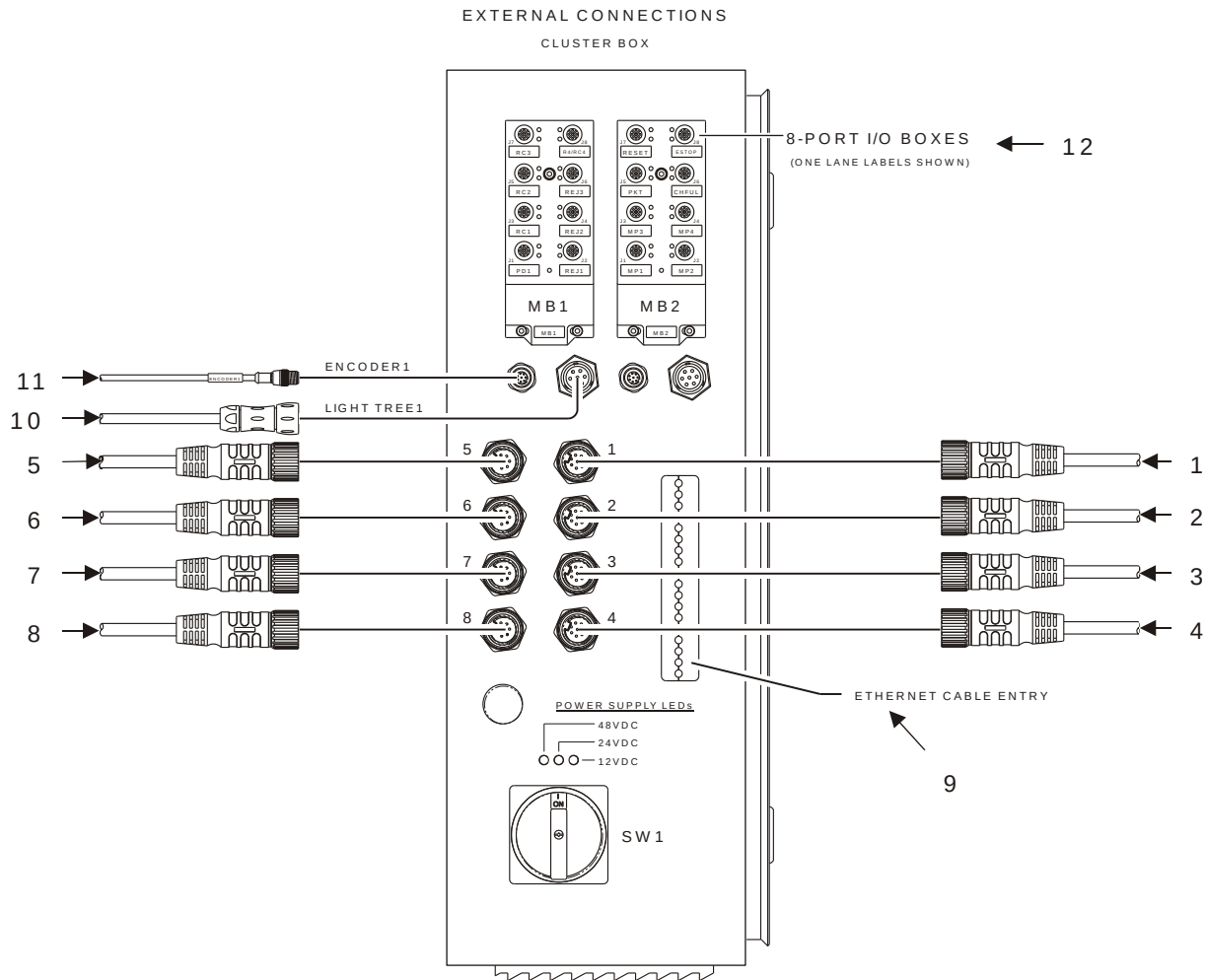
Mains mating connector: Harting: insert 09200042711, hood 09200031440

Use wire type UL1015 or equivalent, 16awg (1.44mm²) min.

Wiring chart		
Pin number, 5-pin connector	Wire color	Description
1	black	L1
2	white	L2
GND	green	PE

Classic cluster box external connectors

❖ *Note: the cluster box is not included with all systems*



To connect sensors 1-8 and determine the number of network connections, refer to the **Cluster box system configurations** (on page 60).

9) Ethernet cable entry

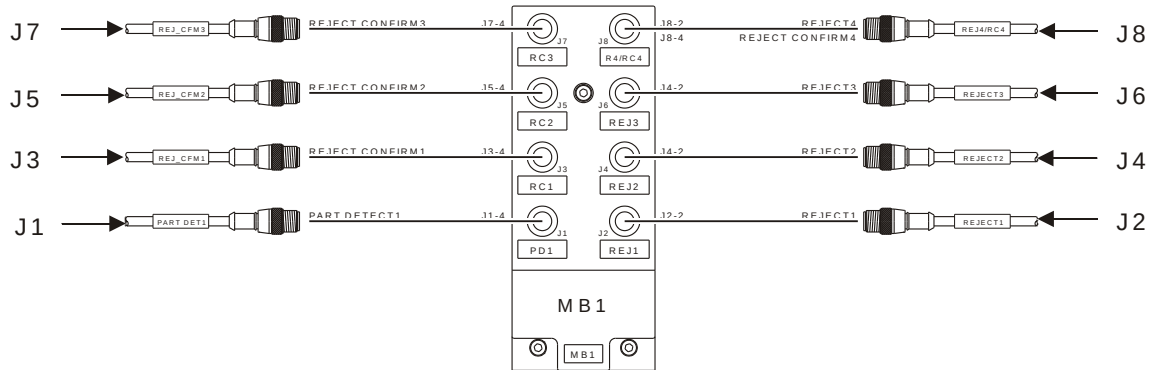
10) Light Tree 1

11) Encoder 1

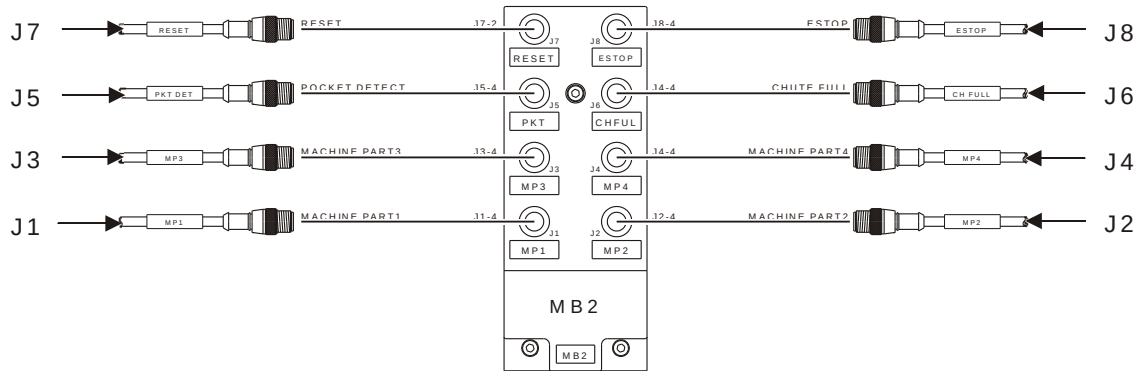
12) **8 port I/O boxes** (on page 59)

8 port I/O boxes

8-PORT I/O BOX-MB1



8-PORT I/O BOX-MB2



8 port I/O box MB1

J1	PD1	Part detect 1
J2	REJ1	Reject 1
J3	RC1	Reject Confirm 1
J4	REJ2	Reject 2
J5	RC2	Reject Confirm 2
J6	REJ3	Reject 3
J7	RC3	Reject Confirm 3
J8	R4/ RC4	Reject 4/ Reject Confirm 4

8 port I/O box MB2			For typical base/neck/ seal configuration in a blow molder
J1	MP1	Machine Part 1	Cavity
J2	MP2	Machine Part 2	Spindle
J3	MP3	Machine Part 3	Infeed transfer arm
J4	MP4	Machine Part 4	
J5	PKT	Pocket Detect	
J6	CHFUL	Chute Full	
J7	RESET	Reset	
J8	ESTOP	Emergency stop	

Cluster box system configurations

Eight-sensor cluster boxes should be wired according to the configuration in the following tables. Please note the following:

- Starting with port 1 – connect the modules in order, skipping a connection if and only if the module just connected has two cameras (2 camera sidewall and PSE).
- Label the cables on the cluster box side with matching designations (1 to 8). Label the other end of the cable with the module name.
- Modules are to be connected in the order listed here:
 - 1) Base
 - 2) Neck or Sidewall
 - 3) Seal
 - 4) Preform Seal/Endcap
 - 5) Preform Wall
 - 6) IMASS Base
 - 7) Imass Wall (uppermost)
 - 8) Imass Wall (next uppermost)

Use the table below that matches your system configuration, and connect the modules accordingly.

- [*] T connection to lighting controller
- [+] Module connects to endcap lighting

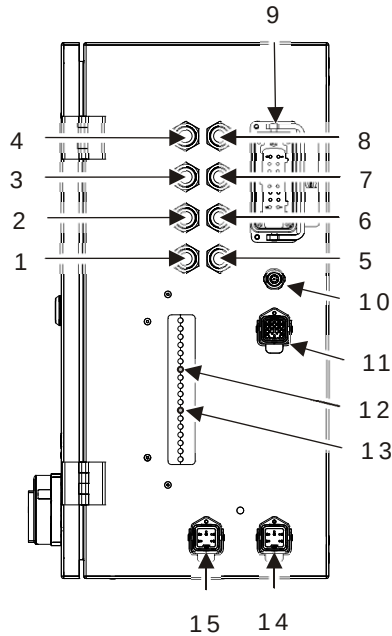
Chan -nel	B2WS- PSEPW- M	BNS- PSEPW- M2	BNS-M3	BWS- PSEPW- M2	B-PSEPW -M	B-M2	PSEPW- M	NS- PSE
1	Base*	Base*	Base*	Base*	Base*	Base*	PSE+	Neck*
2	Sidewall	Neck	Neck	Sidewall	PSE+	Imass Base	-	Seal
3	-	Seal	Seal	Seal	-	Imass Wall	PW	PSE*
4	Seal	PSE+	Imass Base	PSE+	PW*	-	Imass	-
5	PSE+	-	Imass Wall	-	Imass	-	-	-
6	-	PW*	Imass Wall	PW*	-	-	-	-
7	PW*	Imass Base	-	Imass Base	-	-	-	-
8	Imass Base	Imass Wall	-	Imass Wall	-	-	-	-

Network Connections

(1) indicates one network cable connection, (2) indicates two network cable connections

Module	PDN (green)	Data (blue)
Base	1	1
Neck	-	1
Sidewall	-	1
Sidewall (2 camera)	-	2
Seal	1	1
PSE	2	2
PW	1	1
Imass	1	-
Controller	1	-
Computer	1	1

Embedded Cluster box external connections



To connect sensors 1-8 and determine the number of network connections, refer to the **Cluster box system configurations** (on page 60).

9) To PCC (programmable controller)

10) Pressco encoder

11) Light tree and horn

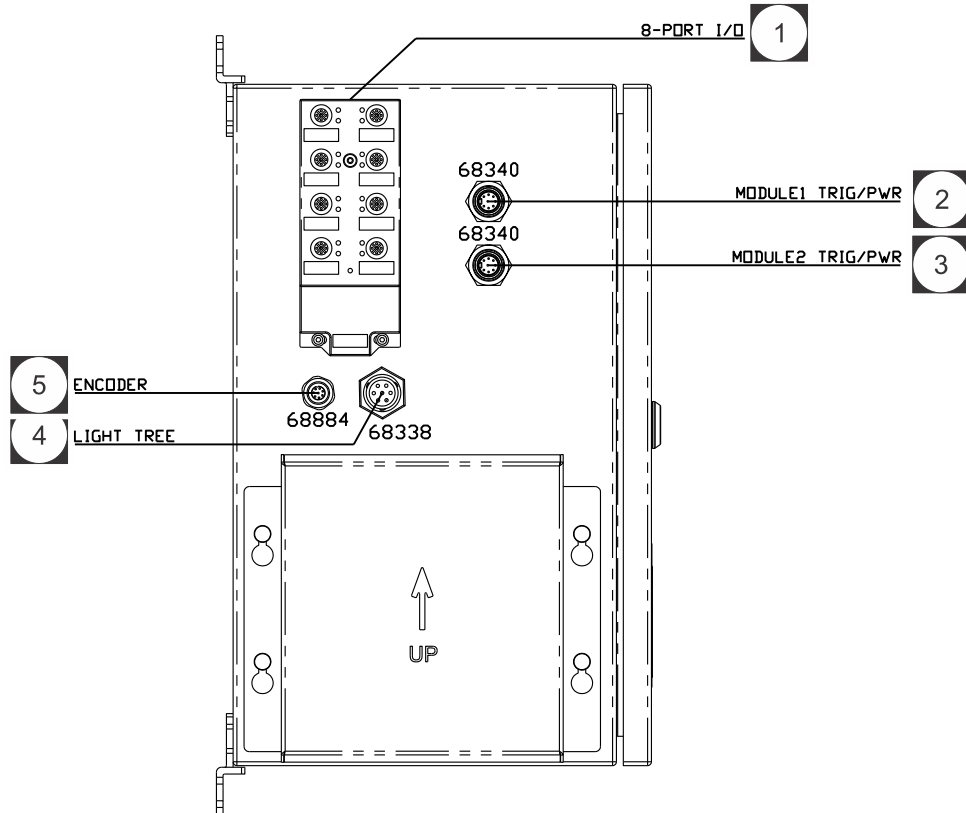
12) PDN network (green)

13) Sensor network (blue)

14) 230 V to Pressco PC

15) 400 V supply

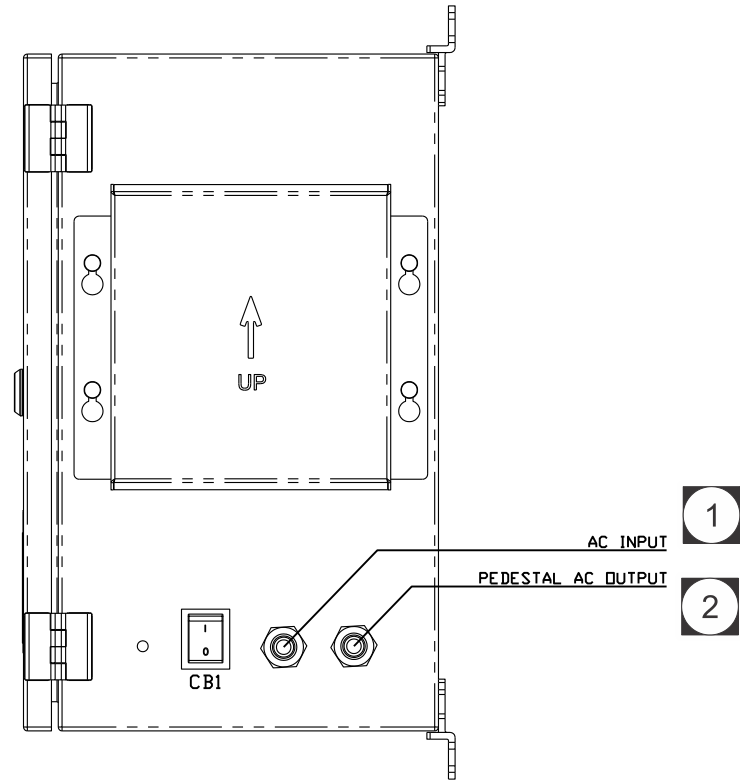
Cluster box 77797 external connections



❖ *Note: the Wash-Down version of this box has a protective cover over the filter and fan vents*

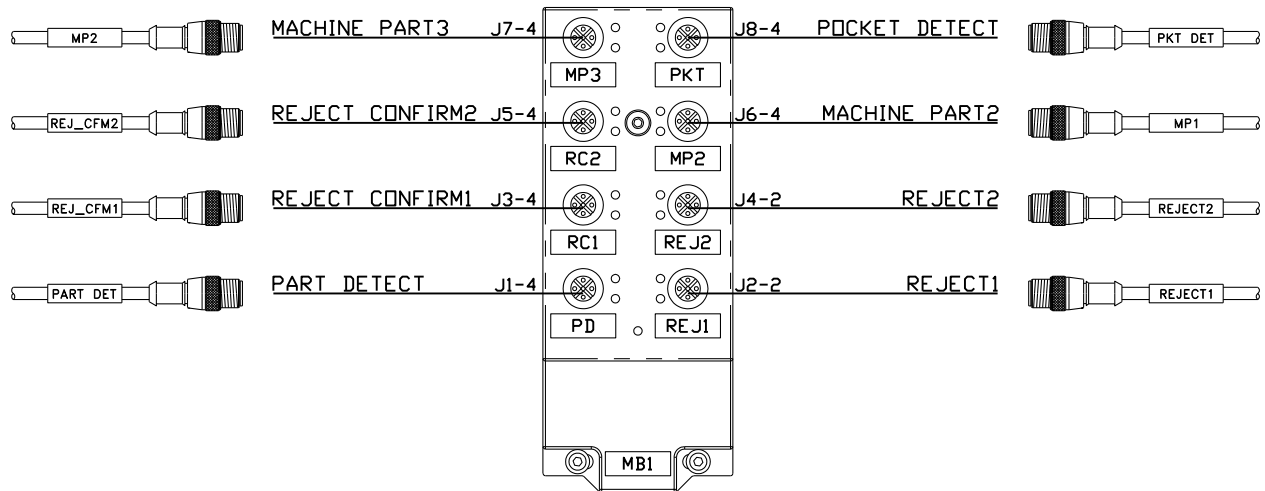
1	8 port I/O box (refer to table below)
2	Sensor 1
3	Sensor 2
4	Light tree and horn
5	Encoder

Power connections



1	AC input
2	Pedestal AC output

8 port I/O connections



J1	PD	Part Detect
J2	R1	Reject 1
J3	RC1	Reject Confirm 1
J4	R2	Reject 2
J5	RC2	Reject Confirm 2
J6	MP2	Machine Part 2
J7	MP3	Machine Part 3
J8	PKT	Pocket Detect

Servicing the Cluster Box

This instrument has been designed and tested in accordance with Publication EN61010-1 (2010) Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use and has been supplied in a safe condition. The instruction documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the instrument in a safe condition.



Warning - This product contains no operator serviceable parts. Refer servicing to qualified personnel. To prevent electrical shock do not remove covers.



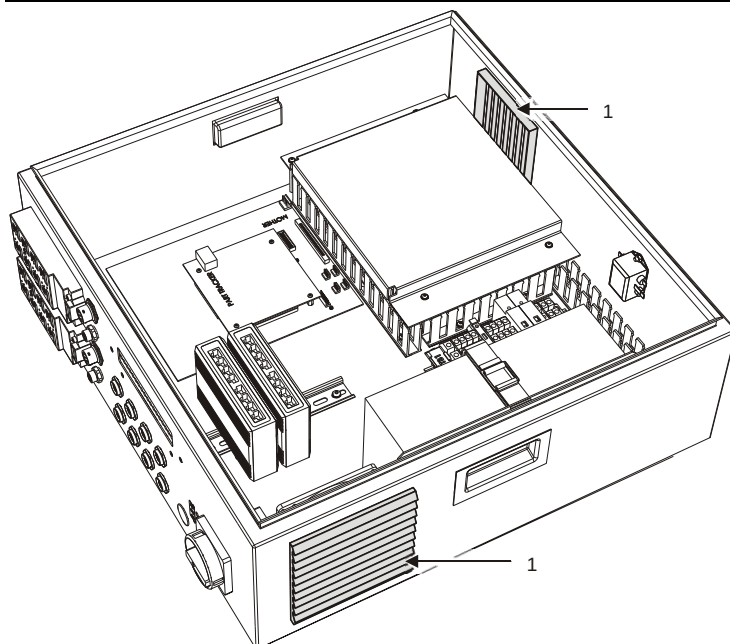
Caution - Before switching on this instrument, ensure the power supply voltage is in the specified range.

Cleaning the Cluster Box filters

Clean the filter on the vents when they get dirty. We recommend that you clean them at least once a month. Remove the covers to access the filters.

- If the filter contains only dry dust and dirt, rinse it in plain water
- If it contains oily dust and dirt, clean it in soapy water
- Dry the filter completely before reinstalling it

❖ *Note: the illustration shows a Classic cluster box. However, all types of cluster boxes use the same filter replacement.*



To replace a filter, use the part number listed below:

	Part Number	Description
1	65779	Replacement filter element (same part number is used in both locations)

Replacing fuses - Cluster box



Warning - For continued protection against fire hazard, replace fuses only with the same type and ratings. The use of other fuses or materials is prohibited.



Warning - Disconnect the product from the mains supply before replacing the fuse(s).

Refer to the section pertaining to the voltage rating on your fuse box for details. Choose from the options below.

Wiring diagram terminal strip classic cluster box 400VAC (on page 67)

Wiring diagram terminal strip embedded cluster box 400VAC (on page 70)

Wiring diagram terminal strip cluster box 120VAC (on page 73)

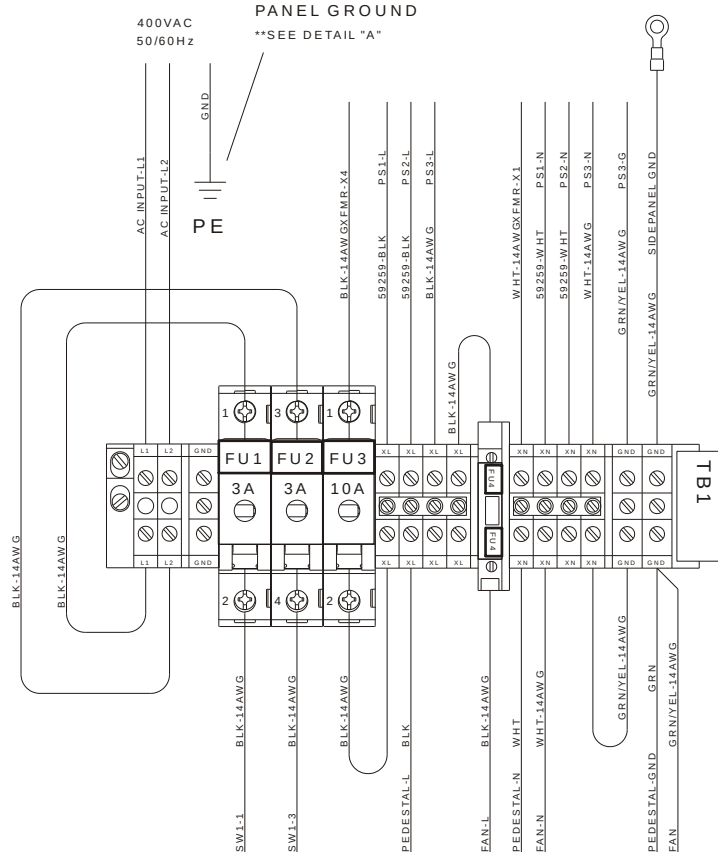
Wiring diagram terminal strip cluster box 230VAC (on page 76)

Internal wiring diagrams for cluster boxes

Classic Cluster box 400VAC

The following diagrams apply for Classic cluster boxes wired for 400VAC.

Wiring diagram terminal strip classic cluster box 400VAC



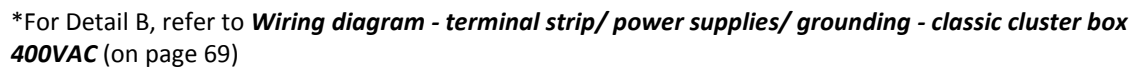
****Detail A: Wiring diagram - terminal strip/ power supplies/ grounding - classic cluster box 400VAC** (on page 69)

Classic Cluster box 400VAC fuses		
Part Number	Fuse	Value
65345	FU1	3A, 600VAC, Time Delay, Class CC
65345	FU2	3A, 600VAC, Time Delay, Class CC
65346	FU3	10A, 600VAC, Time Delay, Class CC
51818	FU4 (quantity 2)	0.5A, 250VA, 5x20mm

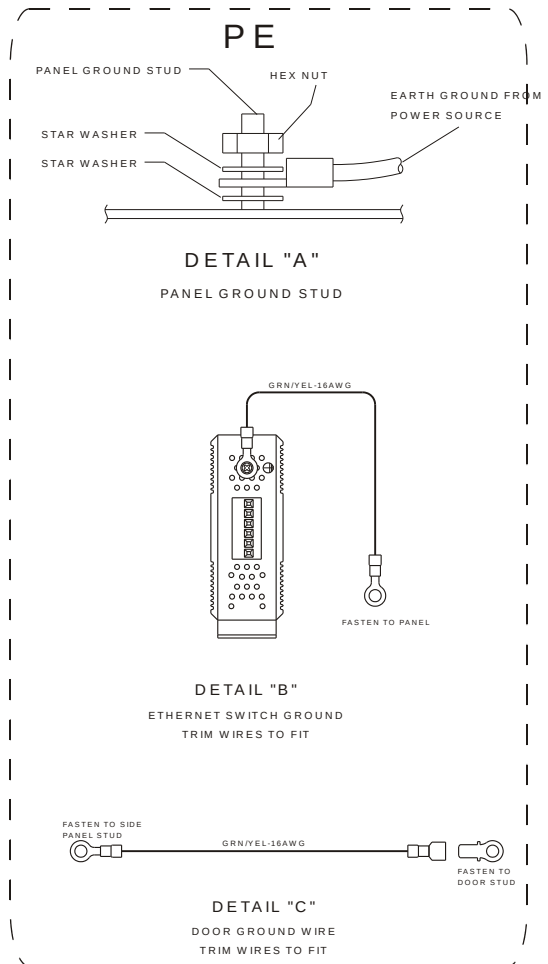
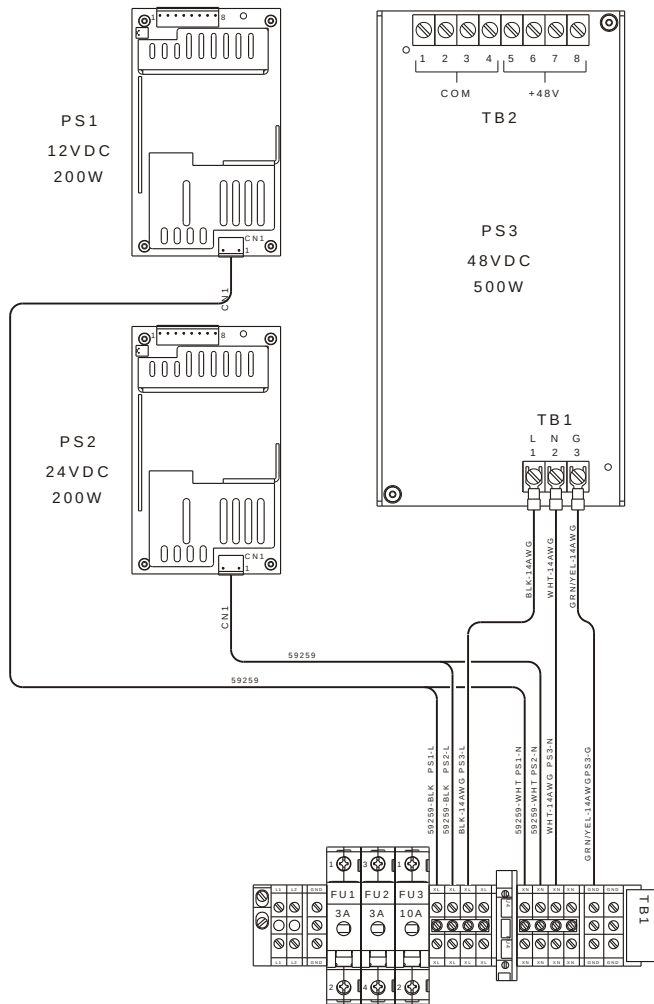
❖ Note: Fuse kit 66990 is available. It contains all the above fuses.

❖

DC POWER DISTRIBUTION



Wiring diagram - terminal strip/ power supplies/ grounding - classic cluster box 400VAC

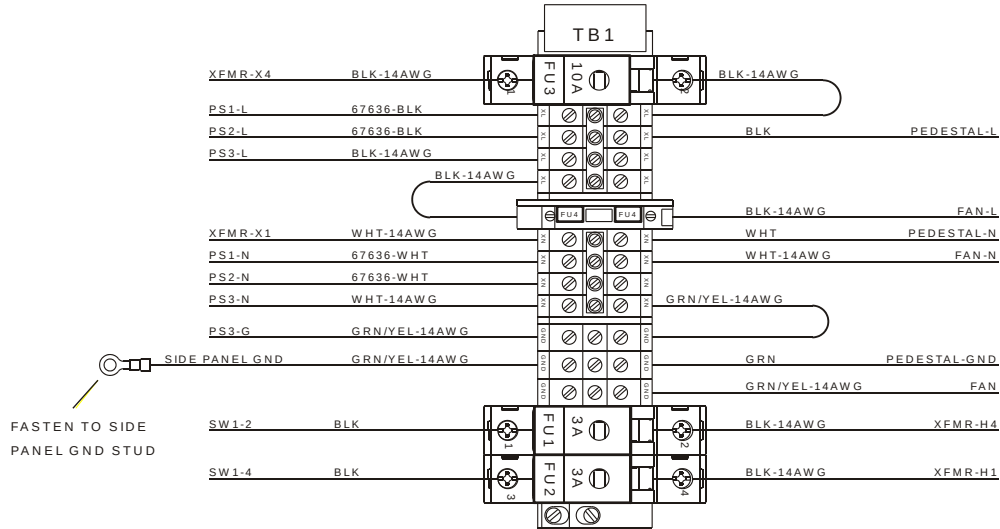


Embedded Cluster box 400VAC

The following diagrams apply for Embedded cluster boxes wired for 400VAC.

Wiring diagram terminal strip embedded cluster box 400VAC

TERMINAL STRIP TB1



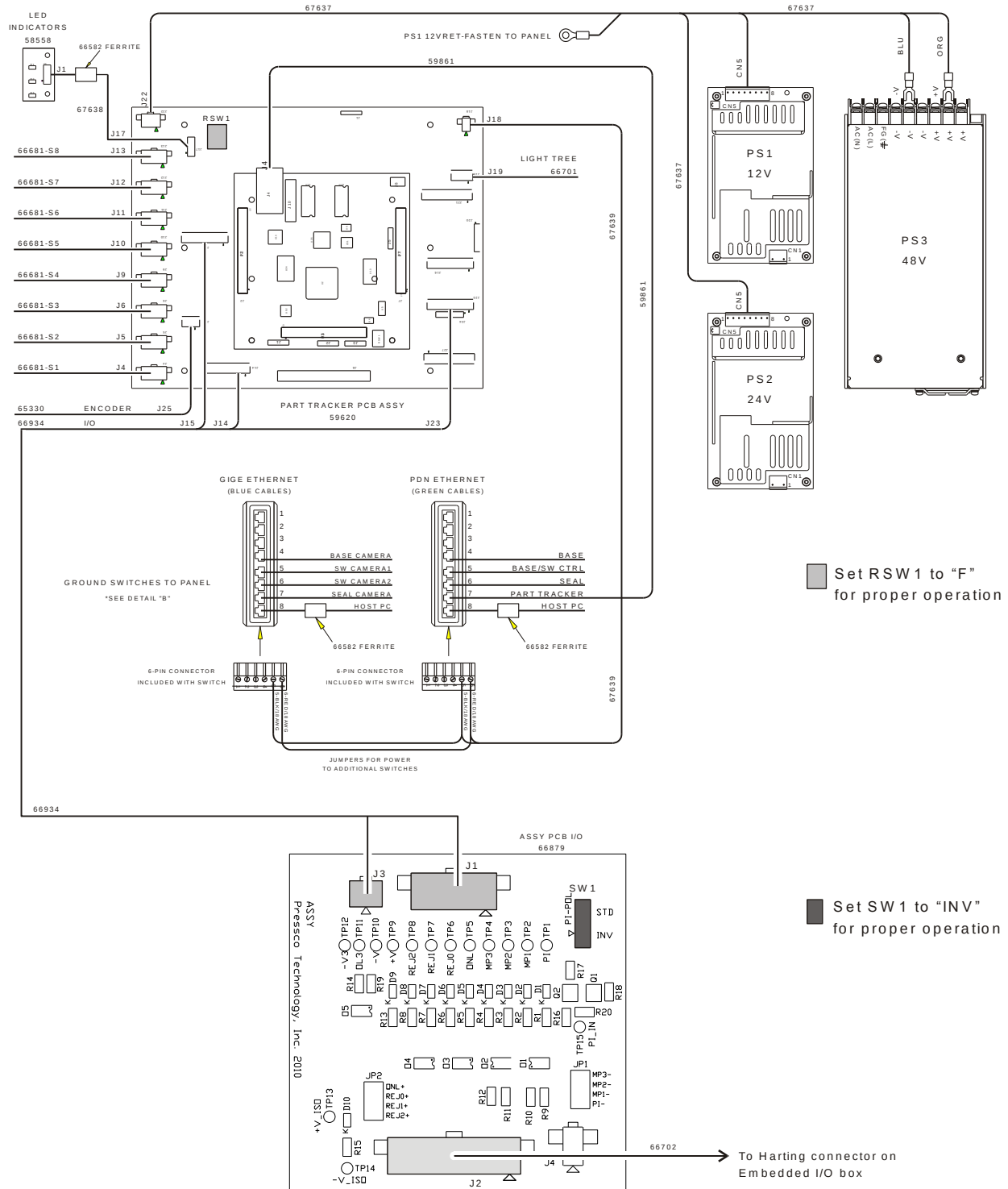
Embedded Cluster box fuses

Part Number	Fuse	Value
65345	FU1	3A, 600VAC, Time Delay, Class CC
65345	FU2	3A, 600VAC, Time Delay, Class CC
65346	FU3	10A, 600VAC, Time Delay, Class CC
51818	FU4 (quantity 2)	0.5A, 250VAC, 5x20mm

❖ Note: Fuse kit 66990 is available. It contains all the above fuses.

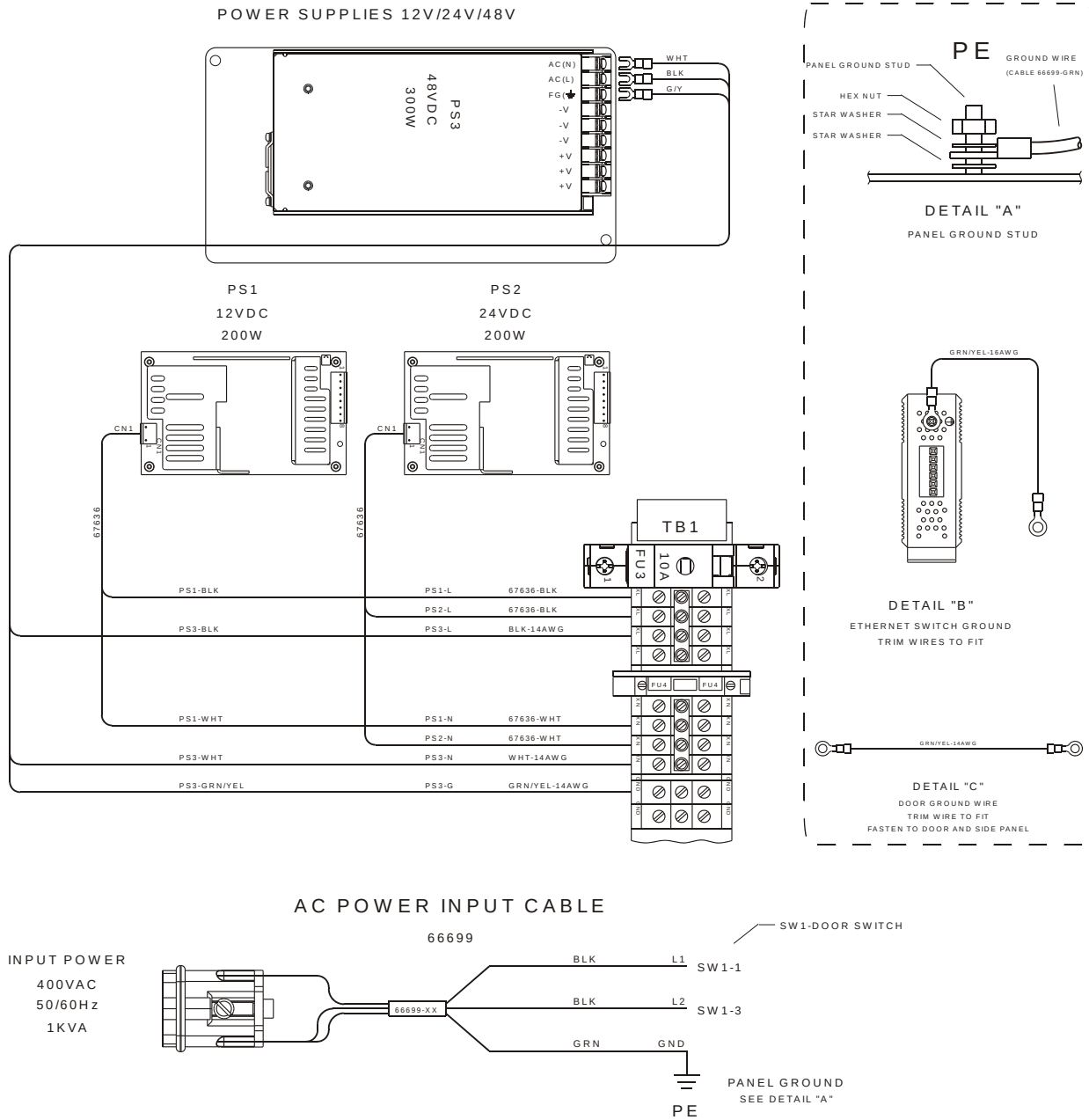
Wiring diagram - DC power distribution embedded cluster box 400VAC

DC POWER DISTRIBUTION



*For Detail B, refer to **Wiring diagram - terminal strip/ power supplies/ grounding embedded cluster box 400VAC** (on page 72)

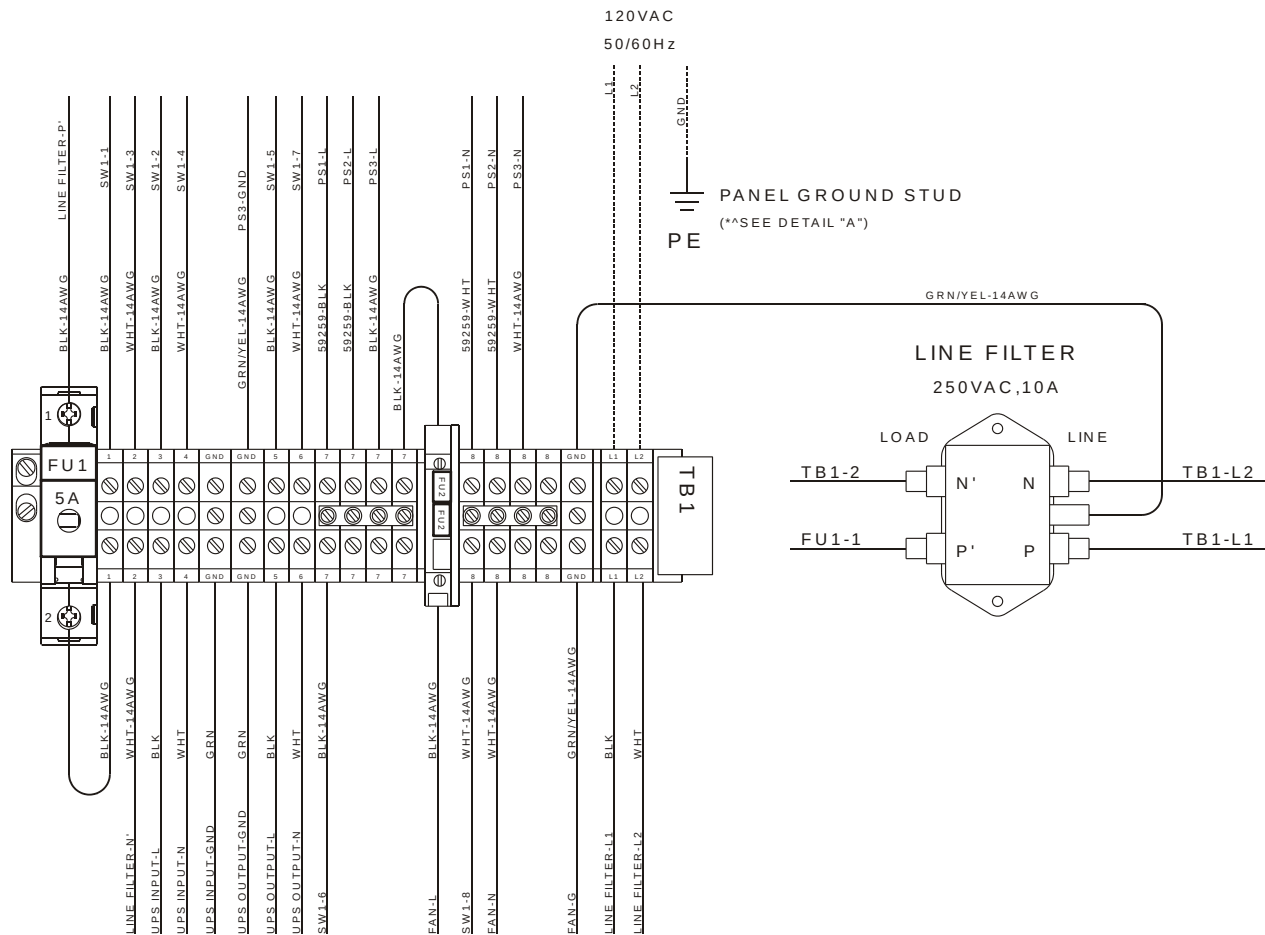
Wiring diagram - terminal strip/ power supplies/ grounding embedded cluster box 400VAC



Cluster box 120VAC

The following diagrams apply for cluster boxes wired for 120VAC.

Wiring diagram terminal strip cluster box 120VAC



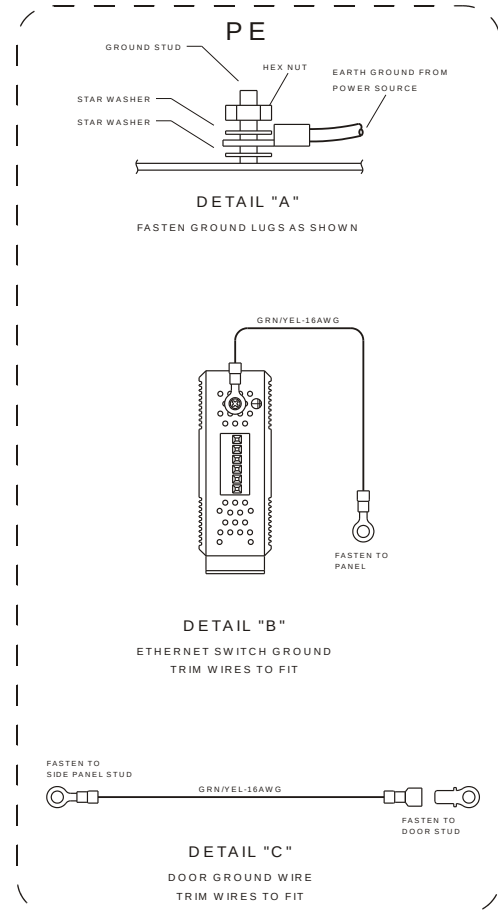
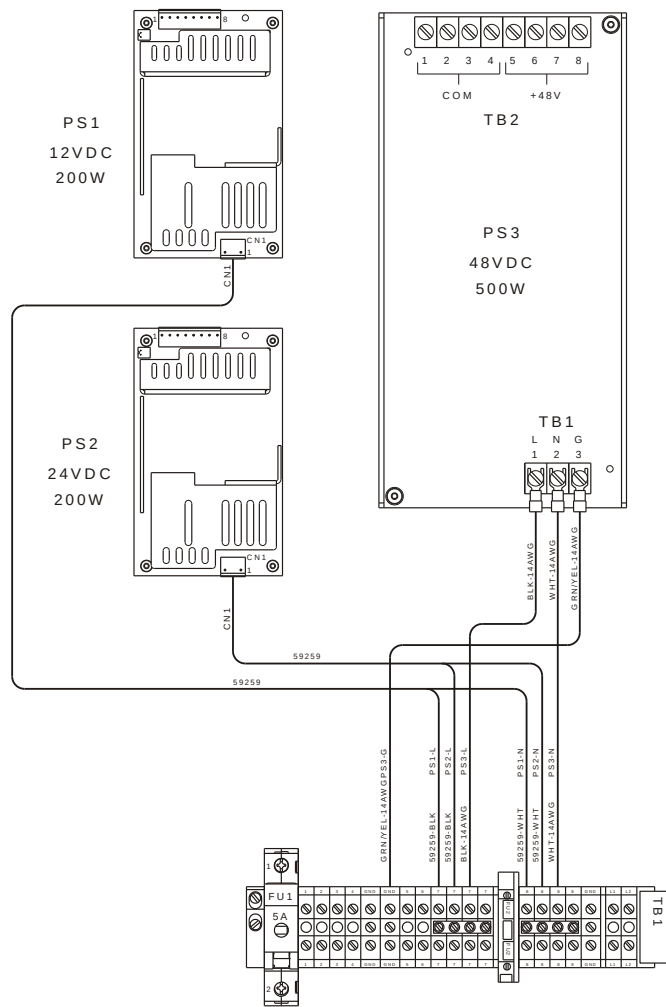
*^ Detail A: **Wiring diagram - terminal strip/ power supplies/ grounding - cluster box 120VAC** (on page 75)

Classic Cluster box 120VAC fuses		
Part Number	Fuse	Value
66780	FU1	5A, 600VAC, Time Delay, Class CC
59164	FU2	0.5A, 250VAC, 5x20mm

DC POWER DISTRIBUTION



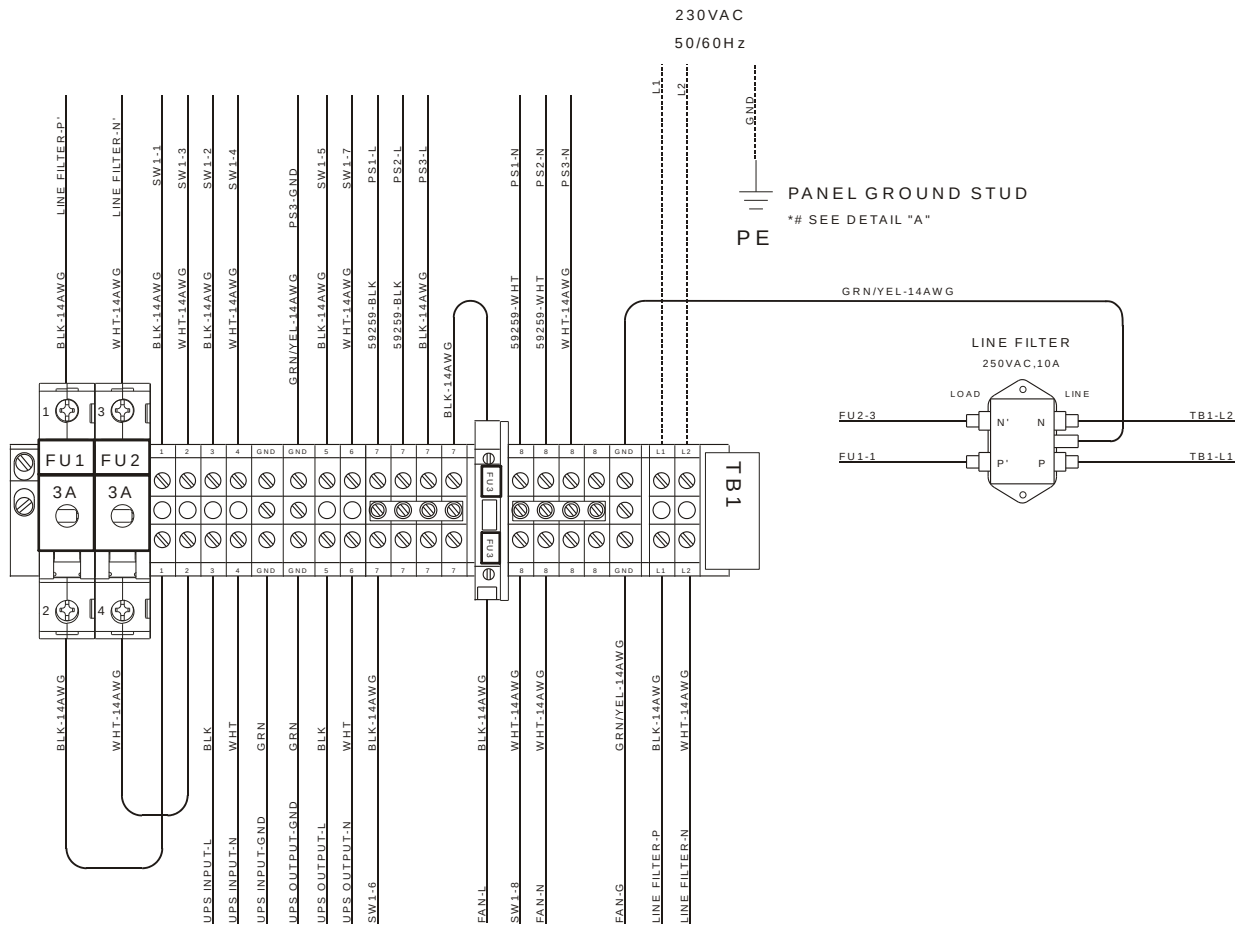
Wiring diagram - terminal strip/ power supplies/ grounding - cluster box 120VAC



Cluster box 230VAC

The following diagrams apply for cluster boxes wired for 230VAC.

Wiring diagram terminal strip cluster box 230VAC



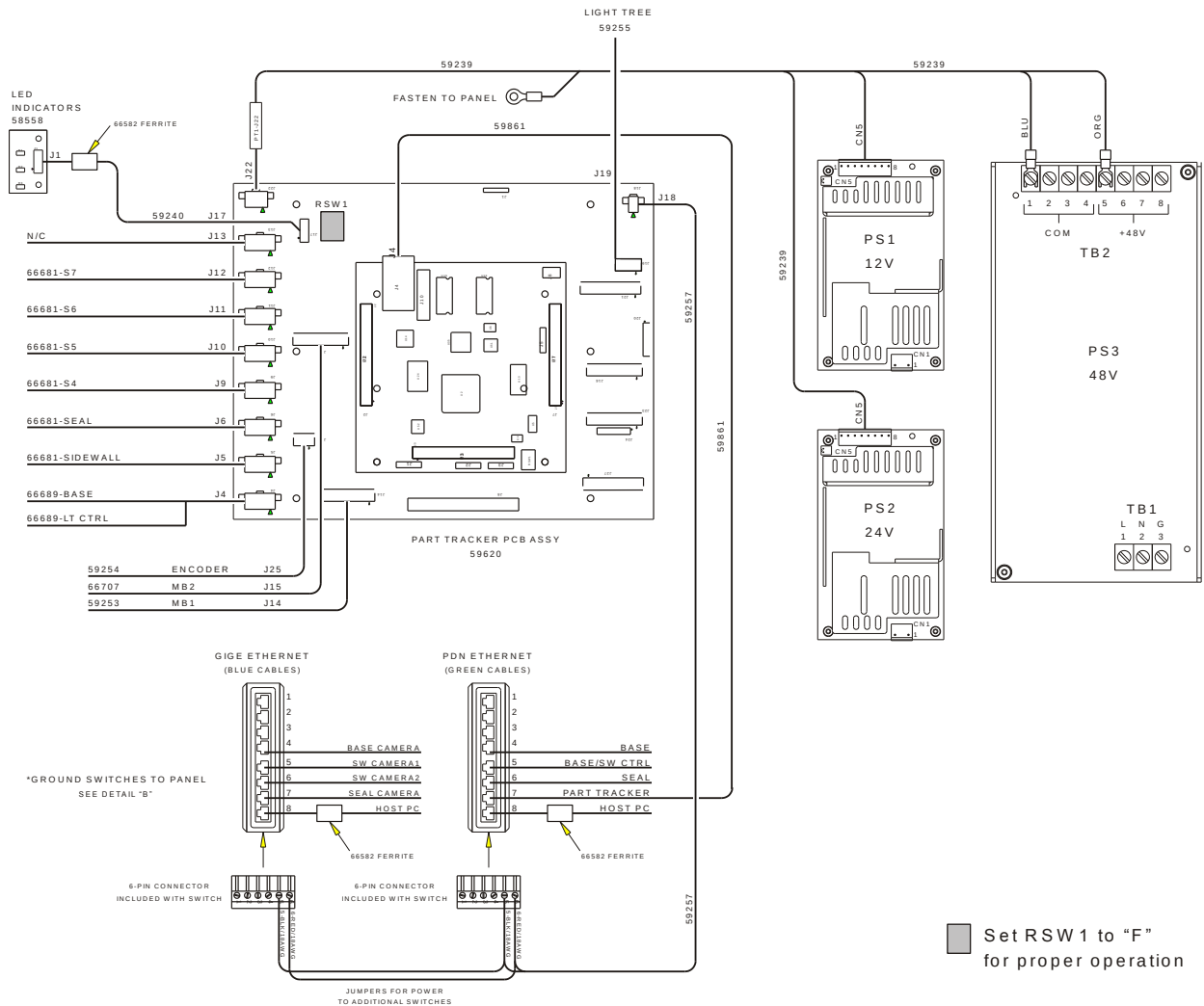
*# Detail A: **Wiring diagram - terminal strip/ power supplies/ grounding - cluster box 230VAC** (on page 78)

Classic Cluster box 230VAC fuses		
Part Number	Fuse	Value
65345	FU1	3A, 600VAC, Time Delay, Class CC
65345	FU2	3A, 600VAC, Time Delay, Class CC
51818	FU3	0.5A, 250VAC, 5x20mm

❖ Note: Fuse kit 66990 is available. It contains all the above fuses.

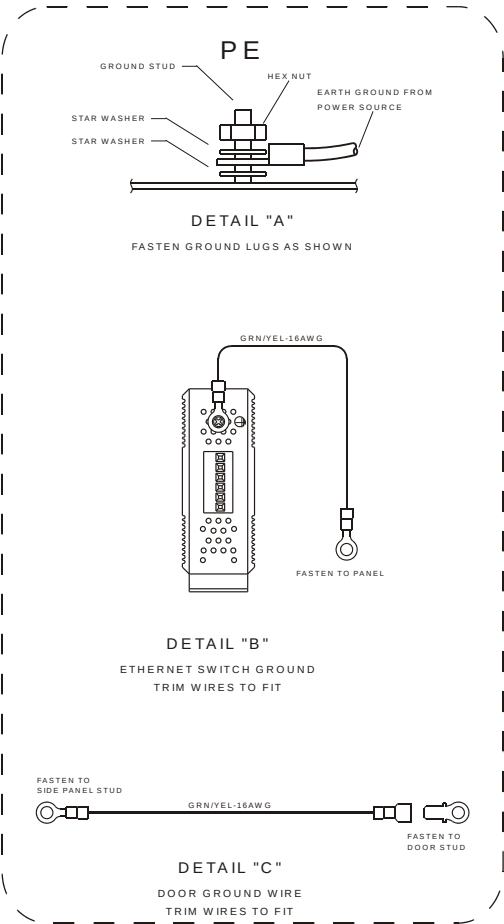
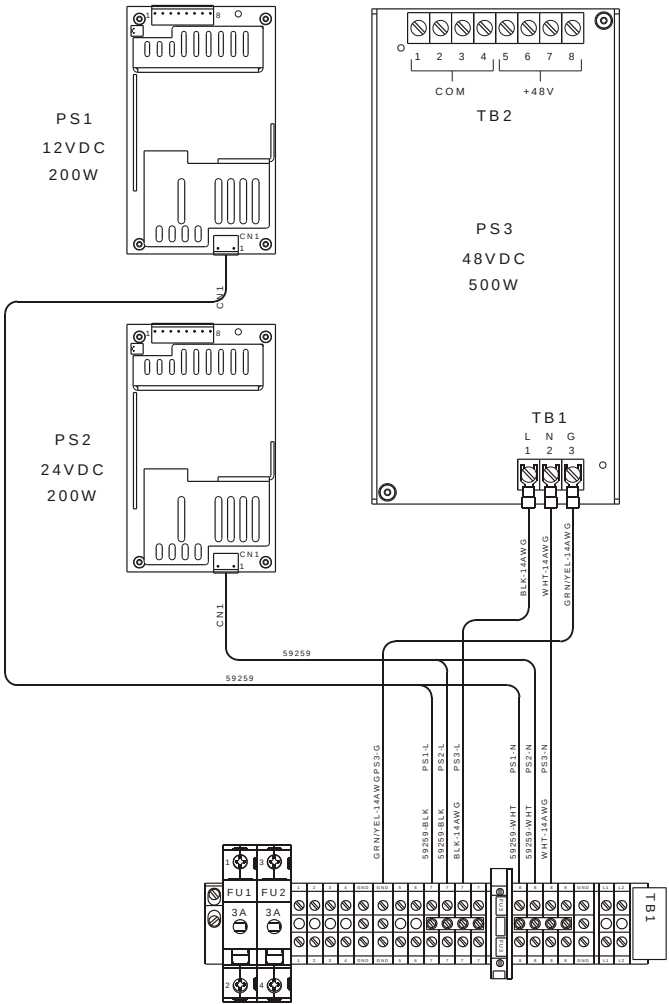
Wiring diagram - DC power distribution cluster box 230VAC

DC POWER DISTRIBUTION



*For Detail B, refer to **Wiring diagram - terminal strip/ power supplies/ grounding - cluster box 230VAC** (on page 78)

Wiring diagram - terminal strip/ power supplies/ grounding - cluster box
230VAC



Micro and Wash-Down Cluster box

The following diagrams apply for the Micro and Wash-Down Cluster boxes.

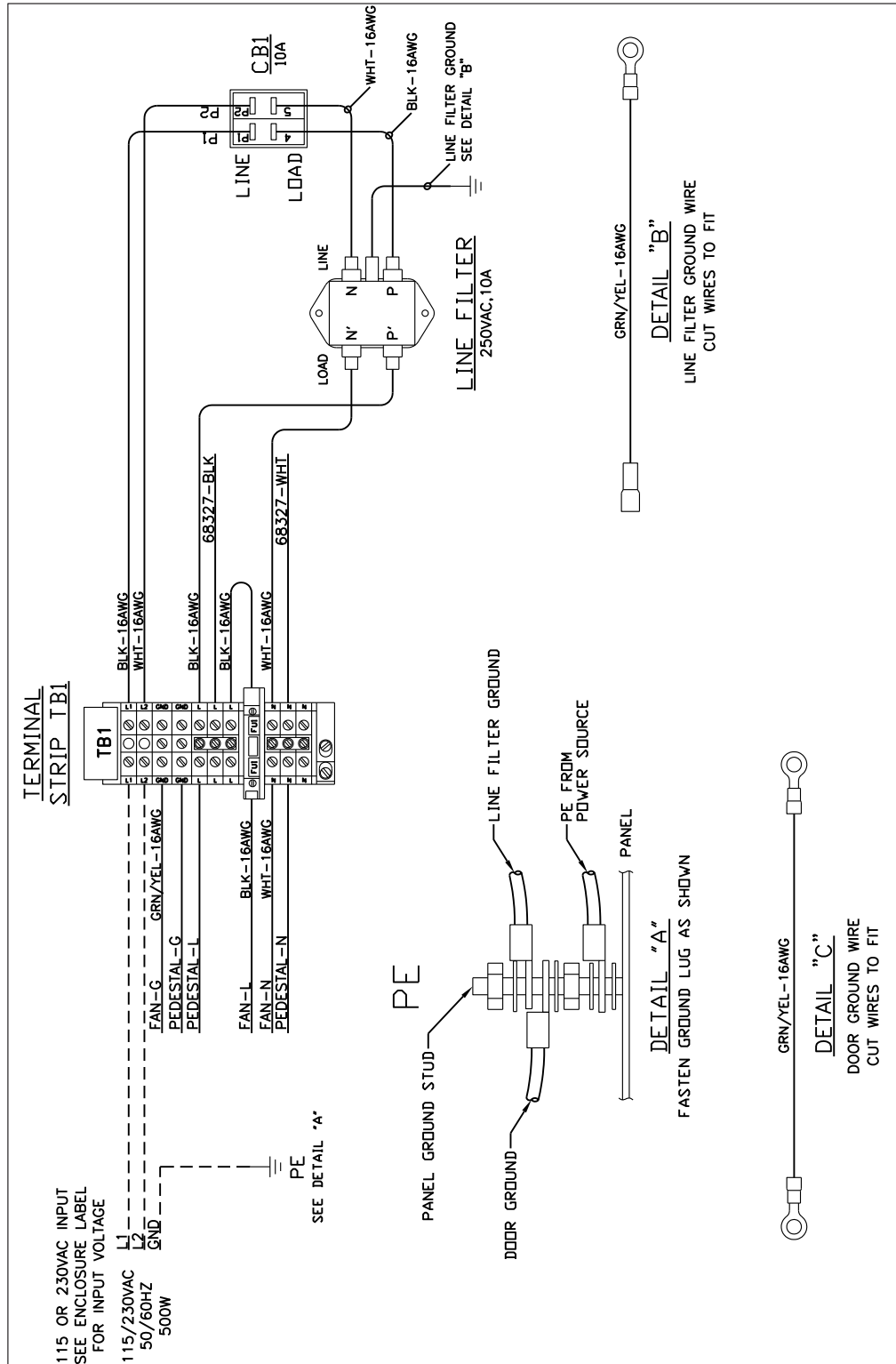
Replacing fuses - Cluster box

 Warning - For continued protection against fire hazard, replace fuses only with the same type and ratings. The use of other fuses or materials is prohibited.

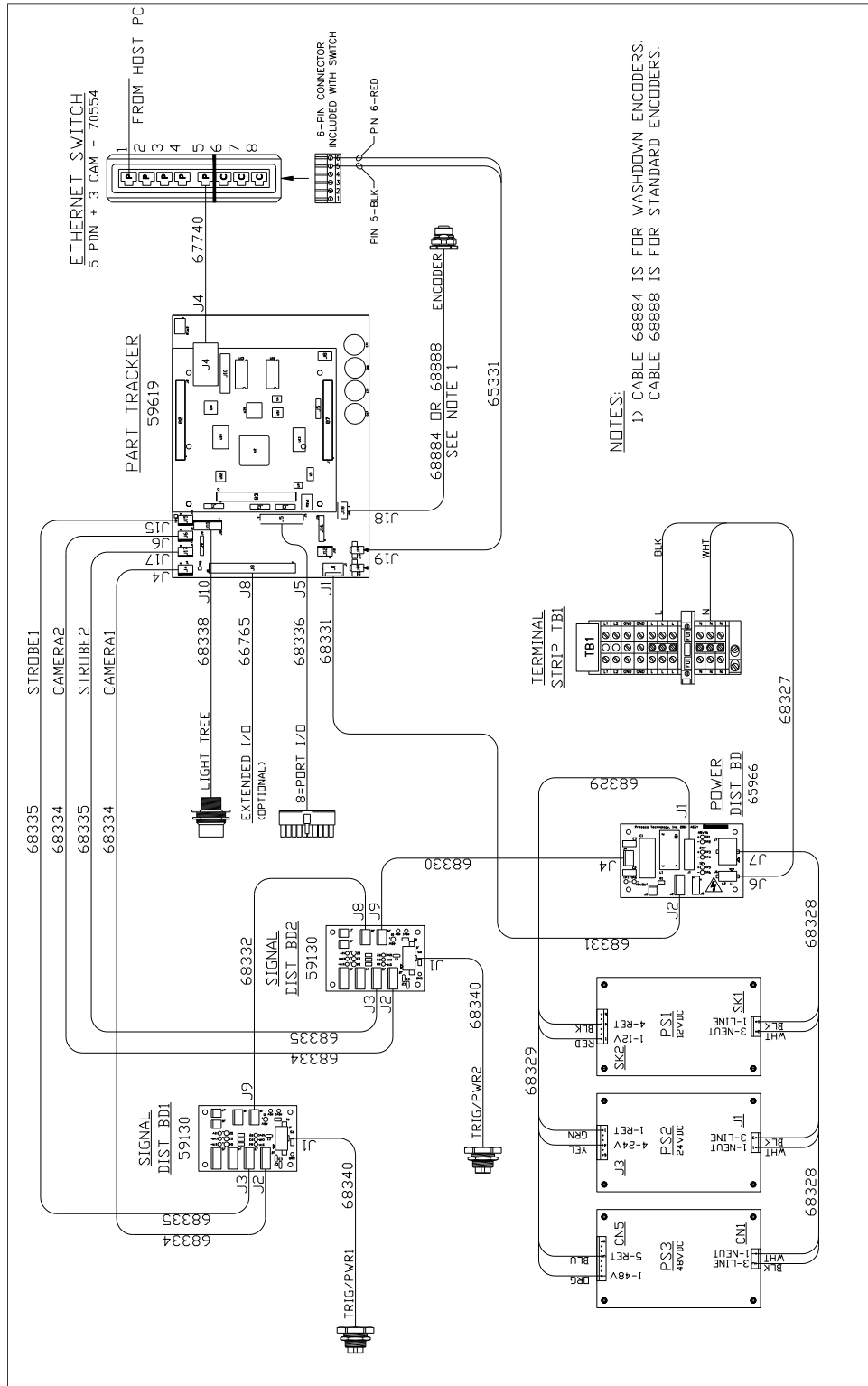
 Warning - Disconnect the product from the mains supply before replacing the fuse(s).

Pressco Part Number	Fuse	Value
51818	FU1	0.5 Amp 5x20mm

Wiring diagram - terminal strip Cluster Box 77797



Wiring diagram - DC power distribution Cluster Box 77797



Chapter 8

Inspection Modules

Inspection module adjustments include the camera position, aperture, and camera focus.

The **focus** adjustment controls the clarity of the image; the **aperture** adjustment controls the amount of light admitted by the shutter. Normally the inspection modules do not require further adjustment after initial system setup. Circumstances that might require additional adjustments are camera replacement, strobe replacement, or a substantial change in part size or color.



Danger - The inspection modules are mounted near moving machinery. Use extreme caution to avoid contact with moving machinery when servicing inspection modules as serious personal injury could result. Ensure machinery is in an emergency stop state before servicing inspection modules.

Observe the Part Image

When adjusting the focus, aperture, or height for any inspection module, it is helpful to use Offline Imaging so that you can immediately see the effect of an adjustment on the image quality.



➤ To use Run in Immediate Mode:

1. Make sure the lane is offline.

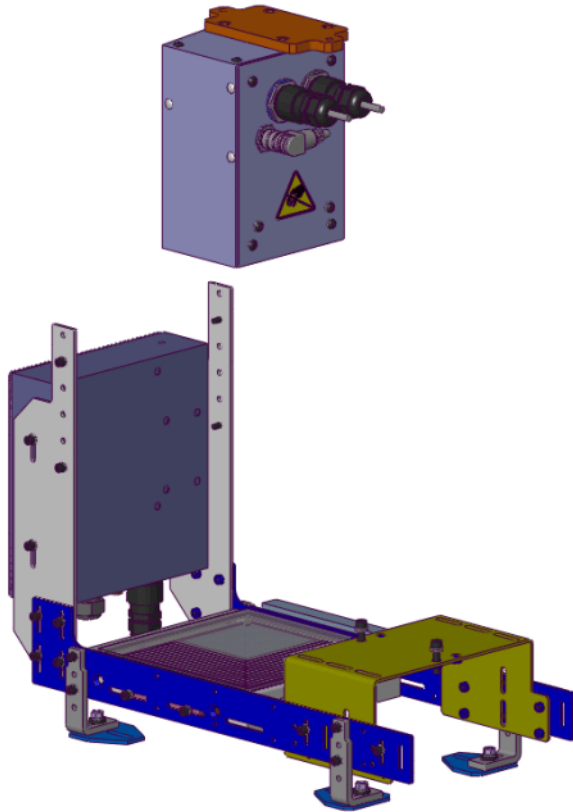


2. Select a sensor , then right-click the button.
3. Select **Offline Imaging** from the menu.
4. Click the **Run** button under Immediate Mode, then run a part through the inspection module.

While the system is in this mode, you will be able to make adjustments to focus, aperture, or camera height.

Base inspection module

The Base inspection module is a two part assembly including a base camera module and a base lighting array. The Base inspection module detects surface holes, base folds, off-center gates, gate cracks, and clarity defects.



Adjusting the Base Inspection Module

Adjustments available for the Base inspection module include camera focus, aperture, and camera height.

❖ *Note: most adjustments are performed during installation. Normally, you will not need to adjust this inspection module.*

Aperture Adjustment - Base

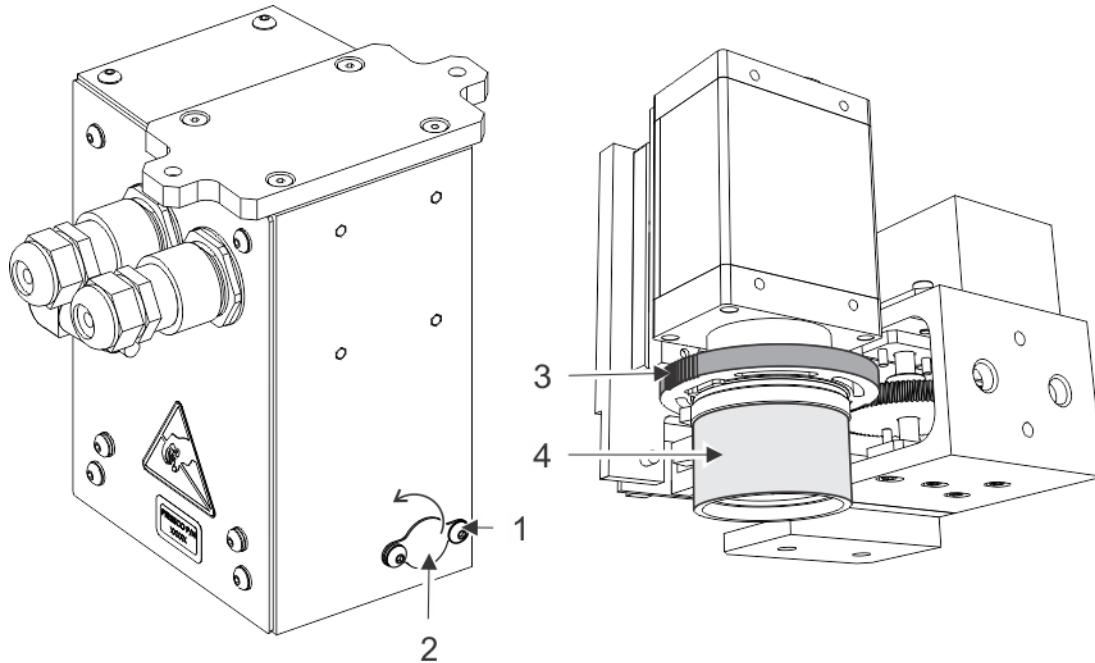
The basic adjust lighting function provides the range of light intensity required for most applications. However, you can manually adjust the aperture if necessary. For best results when adjusting, **observe the part image** (on page 81).

❖ *Note: if your inspection module does not have an access hole or panel, then adjust the aperture through the Camera Gain and Offset menu from the Sensor menu.*

➤ **To adjust the aperture and focus for the Base module:**

1. Loosen the screw [item 1] to release the cover plate.
2. Slide the cover plate [item 2] out of the way to gain access to the inside of the module. A hole provides access.
3. Using a finger, gently turn the focus [item 3] and aperture [item 4] rings until the desired image is achieved.

4. Slide the cover plate [item 2] back into place.
5. Tighten the screw [item 1] to lock the cover plate.



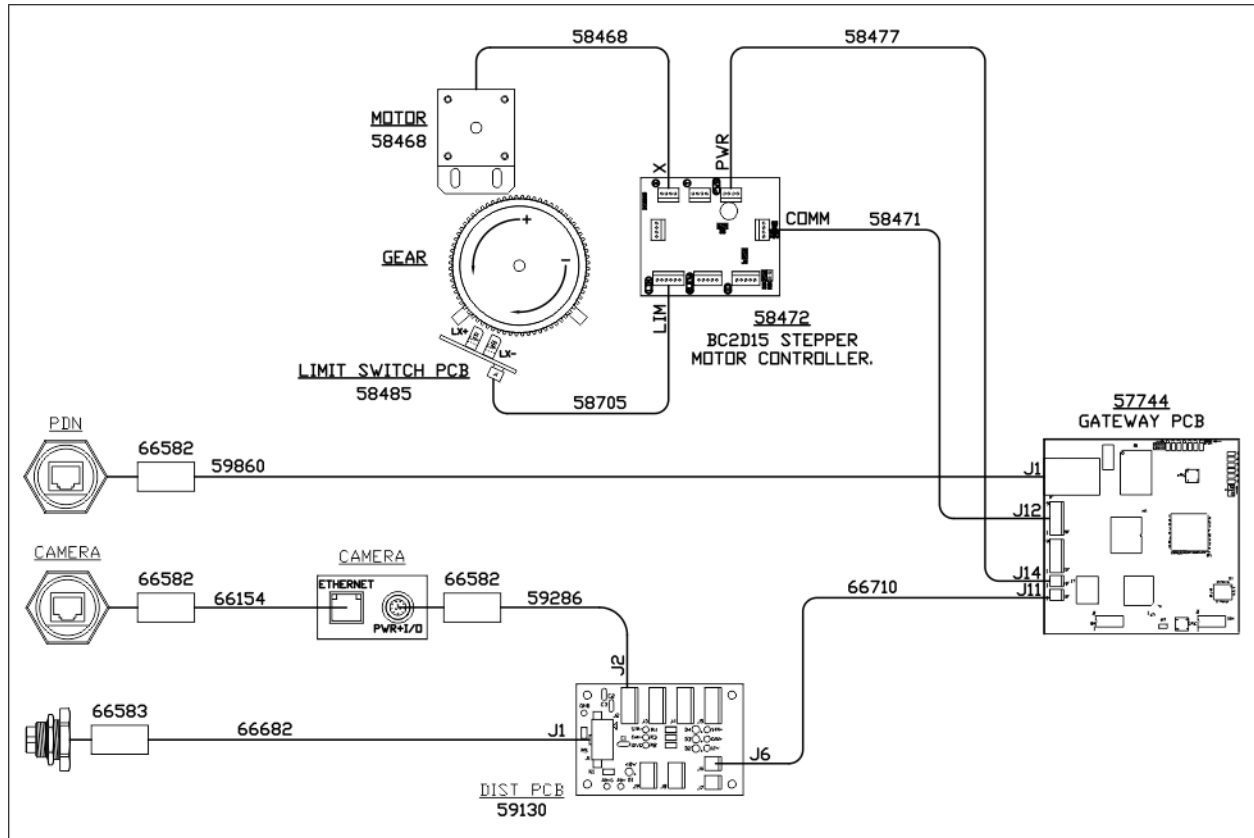
Camera Height Adjustment - Base

The camera height only needs to be changed if the height of the finish above the gripper fingers changes dramatically from one type of manufactured part to another.

❖ *Note: camera height is adjusted during installation. Normally, you do not need to adjust.*

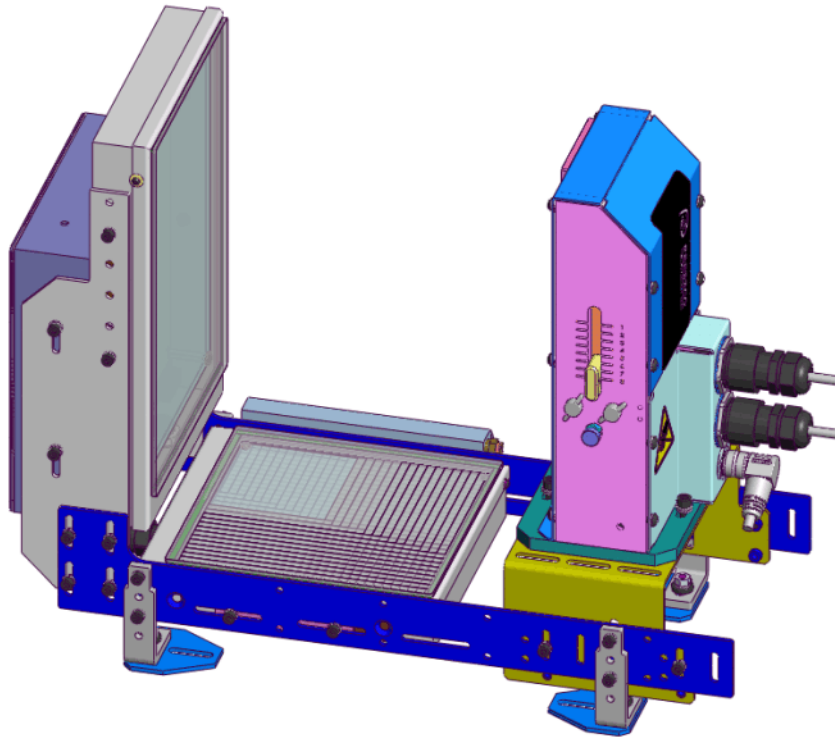
The base camera height is adjusted by moving the camera enclosure up or down. The camera should be mounted as close to the bottle as possible without contacting the bottle. This will help achieve the optimum view of the bottle base. Slotted holes in the mounting brackets provide for vertical adjustment of the camera enclosure.

Wiring Diagram - Base module



Neck/ Sidewall inspection module

The Neck/ Sidewall inspection module is a two part assembly including a camera module and a lighting array. The Neck /Sidewall inspection module detects neck folds, neck holes, asymmetry, choked necks, improper clarity, under-blown bottles, incorrect color, and other defects.



Adjusting the Neck/ Sidewall Inspection Module

Adjustments available for the Neck/ Sidewall inspection module include camera focus and aperture. The camera focus adjustment is not servo-controlled in most neck/ sidewall inspection modules. Adjustments must be made inside the inspection module.

Aperture and Focus Adjustment - Neck

The basic adjust lighting function provides the range of light intensity required for most applications. However, you can manually adjust the aperture if necessary.

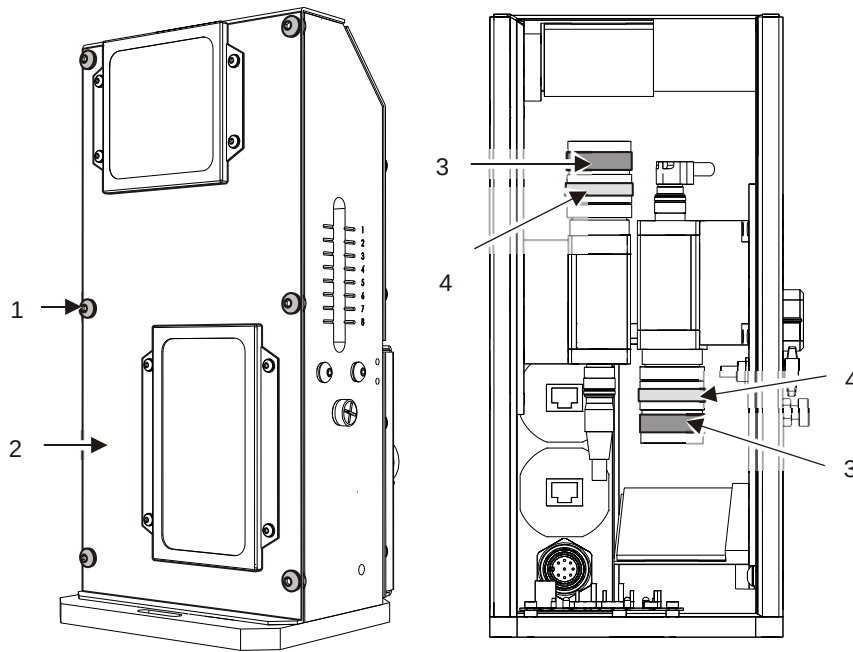
Manual adjustments available for the Neck/ Sidewall inspection module include camera focus and aperture. For best results when adjusting: **Observe the Part Image** (on page 81).

❖ *Note: If your system has a one camera Neck inspection module, then ignore the drawings and references to the second camera.*

➤ **To adjust the cameras:**

1. Remove the six access plate fasteners [item 1] shown and carefully pull back the access plate [item 2]. Be careful not to damage the wiring.
2. Turn the aperture adjust ring [item 3] while viewing the image on the monitor. Adjust until the desired image brightness is achieved.
3. Repeat for the other camera if applicable.
4. Adjust the focus [item 4] for best image clarity.
5. Repeat for the other camera if applicable.

6. Reinstall the access plate [item 2] and fasteners [item 1].



Camera Height Adjustment - Neck

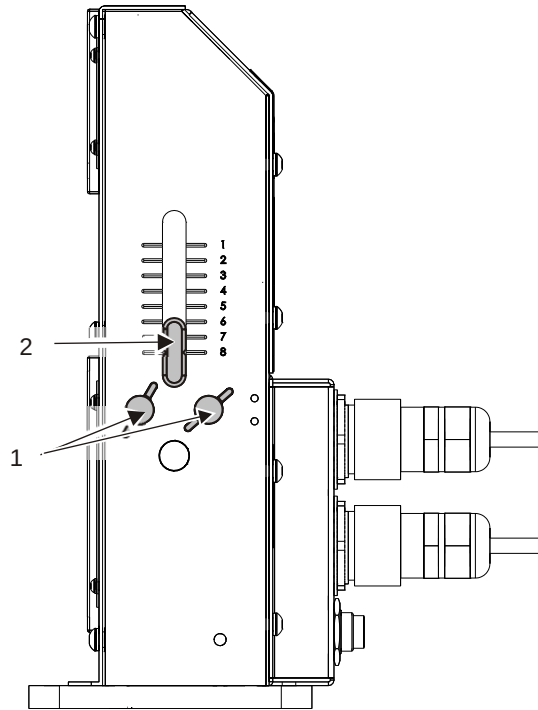
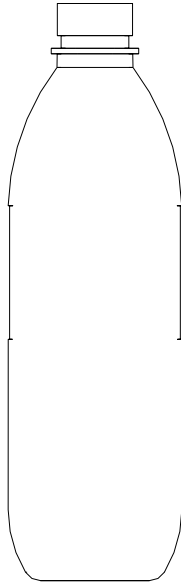
❖ *Note: if your system has one camera, then there are no adjustments available.*

You can change the position of second neck/ sidewall camera to accommodate large changes in bottle size.

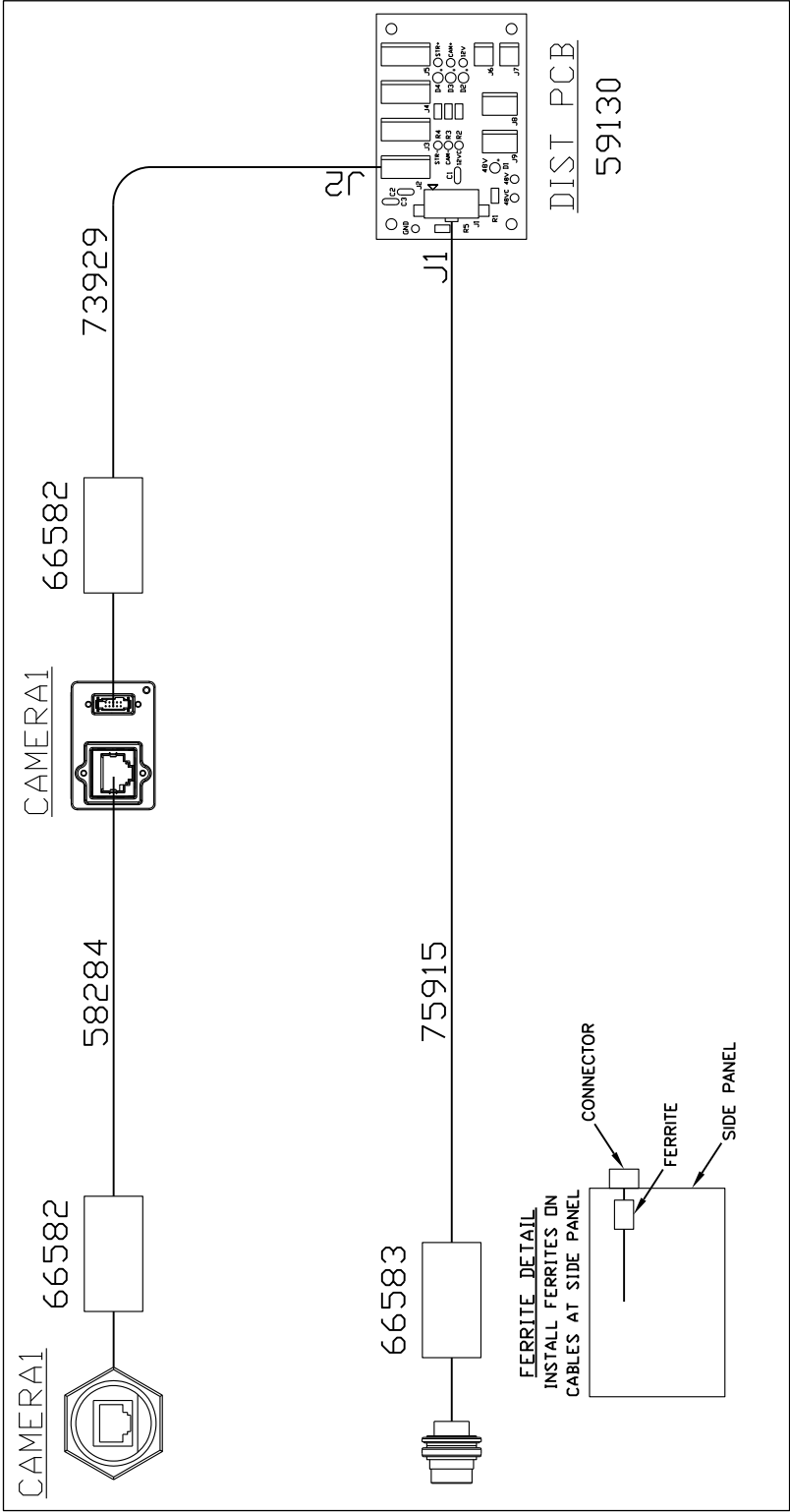
➤ **To change the second camera height:**

1. For best results when adjusting, **observe the part image** (on page 81).
2. Loosen both adjustment knobs [item 1].
3. Move the camera to the desired position, using the scale indicator [item 2] on the side of the module.
 - For smaller bottles, move the camera towards the '1' position.
 - For larger bottles, move the camera towards the '8' position.

4. Tighten both knobs [item 1].

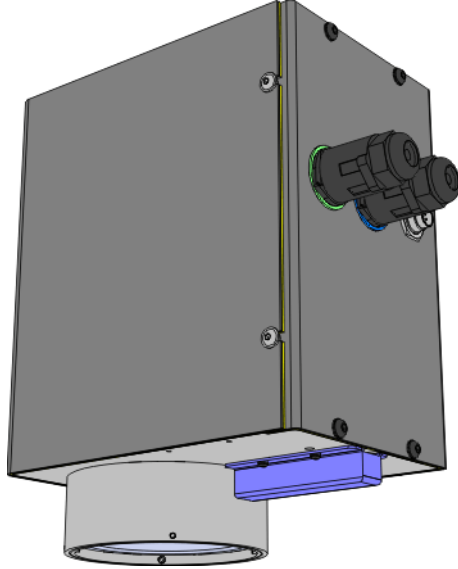


Wiring Diagram - Neck/Sidewall module



Seal Surface inspection module

The Seal Surface Inspection Module inspects the seal surface of the bottle. The module detects visible light reflected from the seal surface. The camera produces an image of the seal surface for detecting nicks, scratches, short shots, blown finishes, and out-of-tolerance seal diameters. The camera takes a top-down view of the seal surface. The lighting array is mounted inside the camera housing, directly above the seal surface.



Adjusting the Seal Surface Module

Adjustments available for the Seal Surface inspection module include camera focus, aperture, image size, and camera height. The camera focus is *not* servo-controlled in the seal surface inspection module.

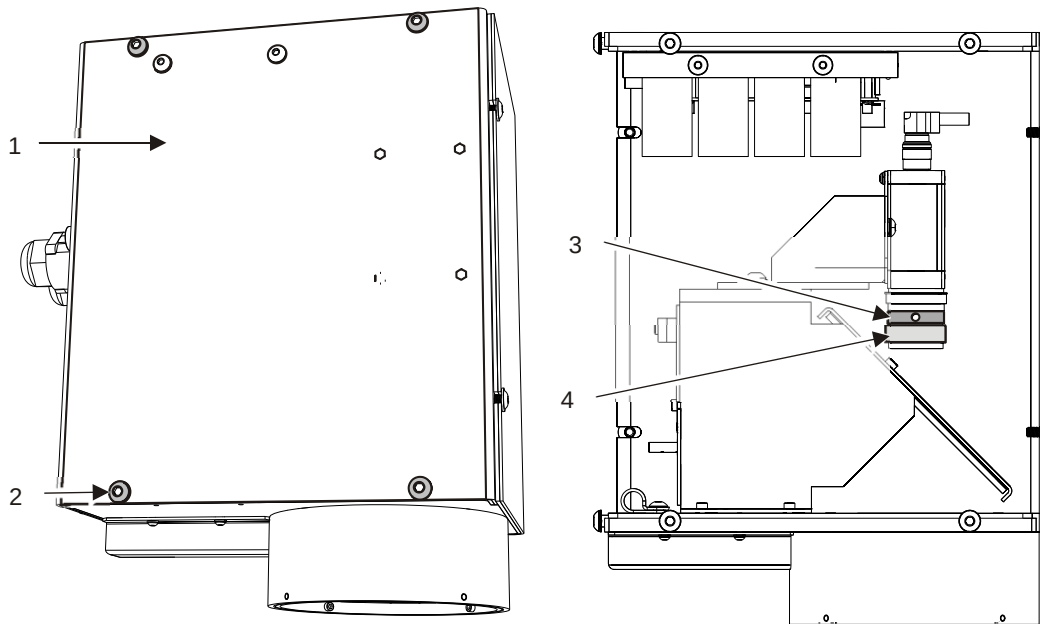
Camera Focus Adjustment - Seal

The basic adjust lighting function provides the range of light intensity required for most applications. However, you can manually adjust the aperture if necessary. For best results when adjusting, **Observe the Part Image** (on page 81).

➤ *To adjust the Seal Surface camera aperture and focus:*

1. Refer to the illustration below.
2. Remove the four access plate fasteners shown [item 2] and carefully pull back the access plate [item 1]. Be careful not to damage the wiring.
3. Turn the aperture adjust ring [item 3] while viewing the image on the monitor. Adjust until the desired image brightness is achieved.
4. Turn the focus adjust ring [item 4] while observing the part image on the monitor, adjusting for the sharpest image.

5. Reinstall the access plate [item 1] and fasteners [item 2].

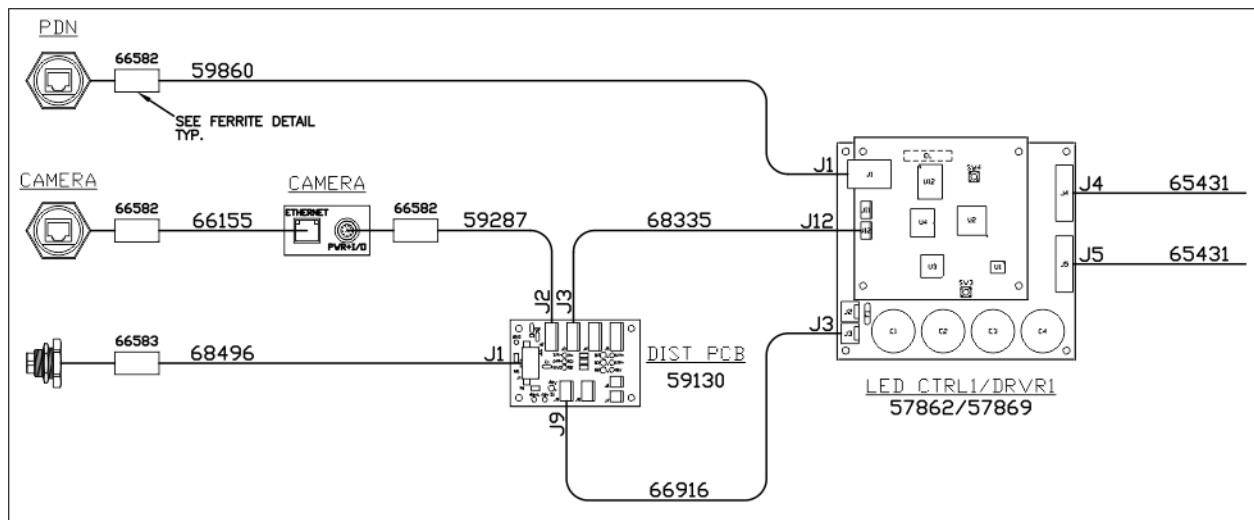


1	Access plate
2	Fasteners (four places)
3	Aperture adjust ring
4	Focus adjust ring

Camera Height Adjustment - Seal

To achieve an optimal view of the seal surface, the camera enclosure is usually set to five inches above the seal surface of the bottle. To adjust the camera height, move the camera enclosure up or down.

Wiring Diagram - Seal module

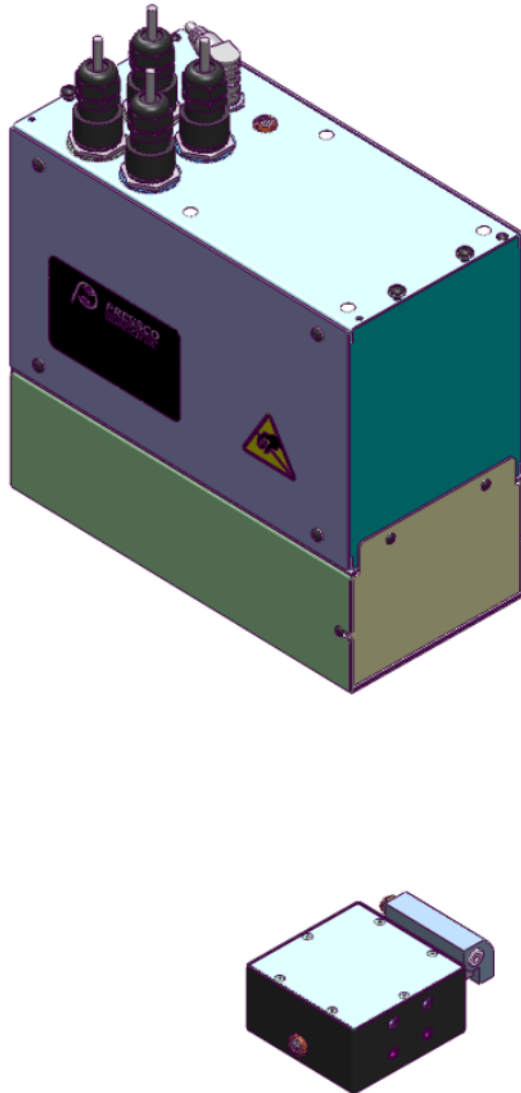


Preform Seal Endcap inspection module

This module contains two cameras and two solid state illumination panels. The cameras and one of the illumination components are housed in the main enclosure. The second illumination panel is mounted in a separate enclosure. Both are mounted inside a blow molder.

The main enclosure is typically mounted above a preform's seal surface and the second illumination panel is located below the end cap. In this configuration, the cameras inspect the seal surface and the end cap of a preform simultaneously.

The illustration below shows the main enclosure and second illumination panel.



Adjusting the Preform Seal Endcap module

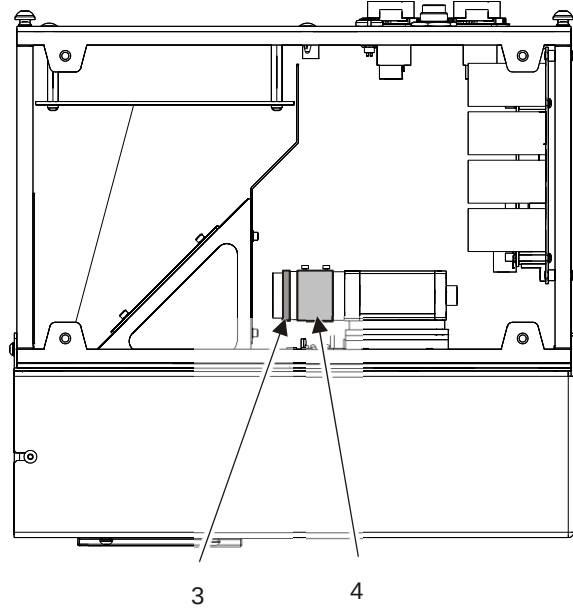
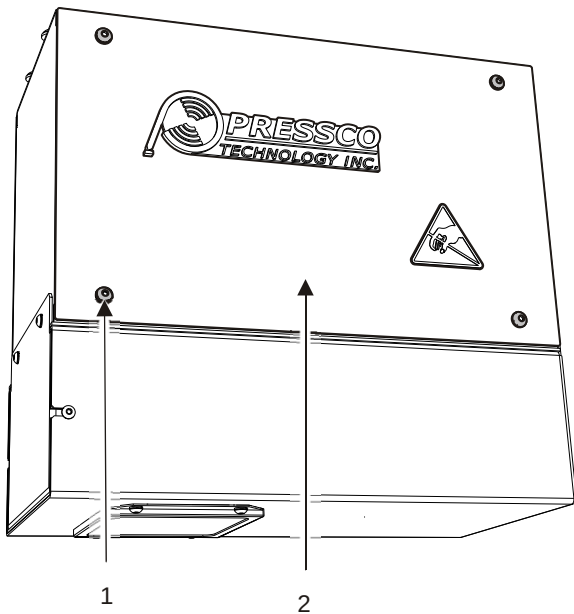
Adjustments available for the preform seal endcap inspection module include camera focus and aperture. No further adjustments to the camera are necessary. The module is set up for the largest sized preform during installation. If you change to a smaller sized preform, the preform takes up less space on the image.

Camera Focus and Aperture adjustment - PSE

The aperture controls the amount of light that passes through the lens. The programmable light source provides the range of light intensity required for most applications. However, you can manually adjust the aperture if necessary by turning the aperture adjust ring on the camera lens.

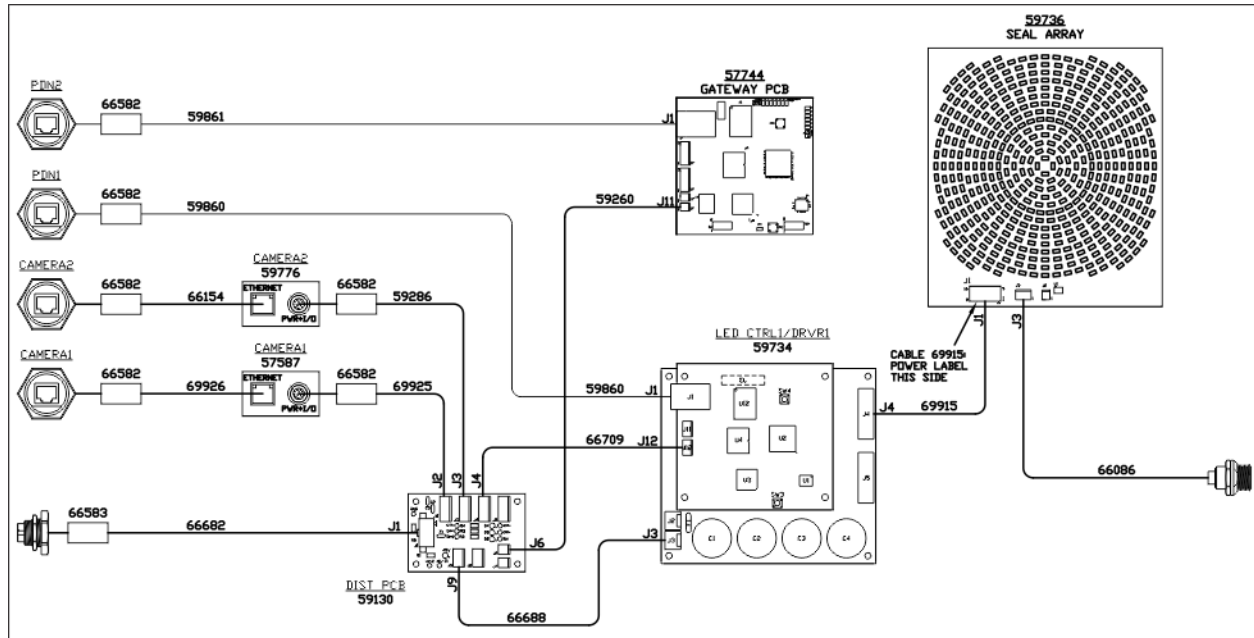
➤ To adjust the aperture or focus:

1. Remove the four access plate fasteners shown [item 1] and carefully pull back the access plate [item 2]. Be careful not to damage the wiring.
2. Adjust focus [item 3] or aperture [item 4] for the seal surface camera.
3. Reinstall the access plate [item 2] and fasteners [item 1].

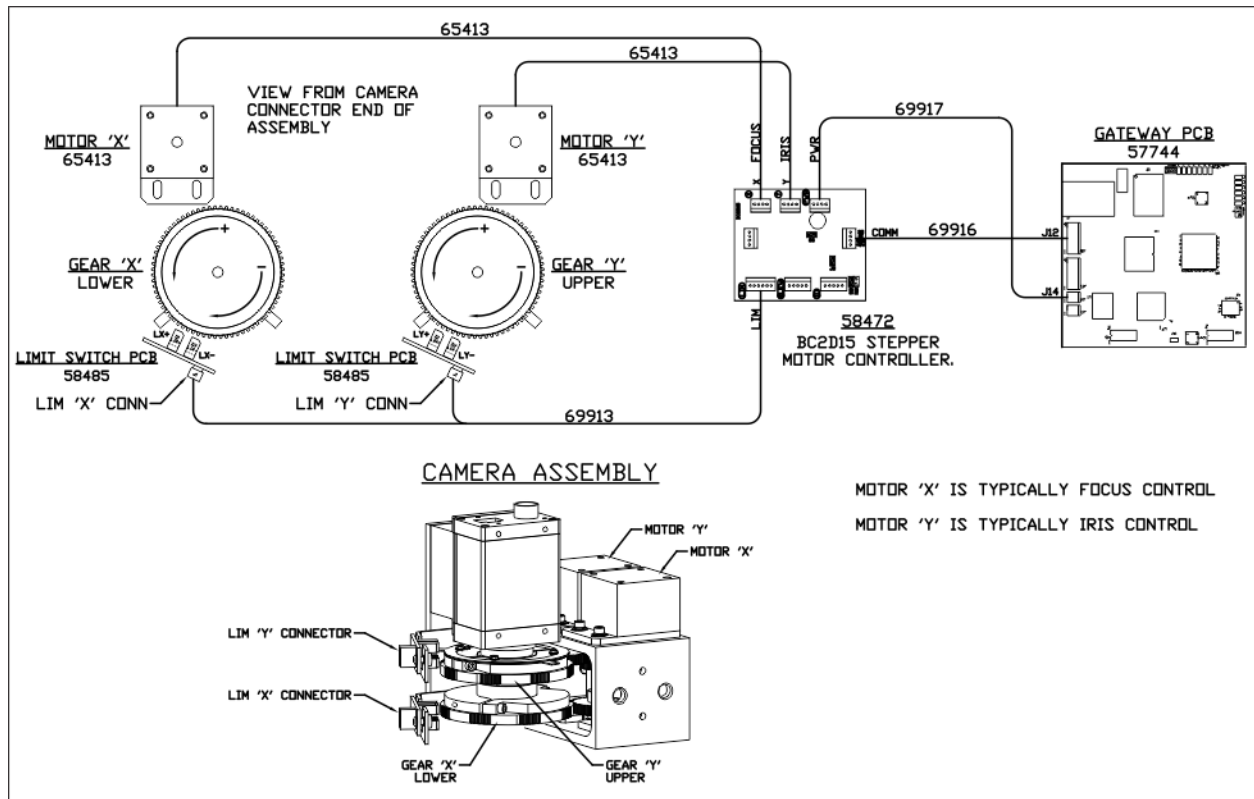


- 1) Fasteners (four places)
- 2) Access plate
- 3) Focus adjust ring
- 4) Aperture adjust ring

Wiring Diagram - PSE module, sheet 1



Wiring Diagram - PSE module, sheet 2

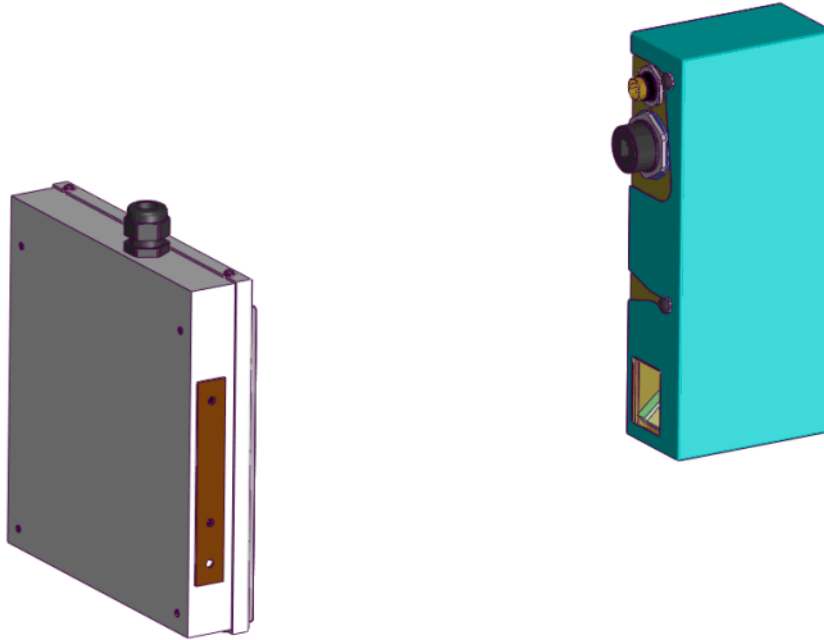


Preform Sidewall inspection module

This module contains a single camera and a single solid state illumination panel. The camera and the illumination components are both mounted on the inside of a blowmolder (near the turn of the oven).

The camera enclosure is mounted to view the sidewall of the preform horizontally. The illumination panel provides backlit imaging.

The illustration below shows a preform sidewall inspection module.



Adjusting the preform sidewall module

Adjustments available for the preform sidewall inspection module include camera focus and aperture. No further adjustments to the camera are necessary. The module is set up for the largest sized preform during installation. If you change to a smaller sized preform, the preform takes up less space on the image. Aperture and focus adjustments must be made inside the inspection module.

Camera Focus and Aperture adjustment - PW

The aperture controls the amount of light that passes through the lens. The programmable light source provides the range of light intensity required for most applications. However, you can manually adjust the aperture if necessary by turning the aperture adjust ring on the camera lens.

➤ *To adjust the aperture or focus:*

1. Carefully remove the cover. Be careful not to damage the wiring.
2. Adjust aperture [1] or focus [2] while observing the part image on the monitor.

The schematic diagram illustrates the electrical connections for the camera system. It features three main components: a CAMERA, an ETHERNET module, and a DIST PCB (59130).

- CAMERA:** The top-left component, represented by a hexagonal symbol with a camera lens icon. It is connected to a rectangular block labeled 66582.
- ETHERNET:** The top-middle component, represented by a rectangular symbol with an Ethernet port icon and the text "ETHERNET" and "PWR+I/O". It is connected to a rectangular block labeled 66582.
- DIST PCB (59130):** The bottom-right component, represented by a rectangular symbol with various pins and labels. It is connected to a rectangular block labeled 66583.

The connections are as follows:

- The CAMERA is connected to the 66582 block.
- The 66582 block is connected to the ETHERNET module.
- The ETHERNET module is connected to the 66582 block.
- The 66582 block is connected to the 66583 block.
- The 66583 block is connected to the DIST PCB (59130).

The DIST PCB (59130) has various pins labeled, including GND, 5V, 3V, 2V, 1V, 0V, 1V, 2V, 3V, 5V, 12V, 24V, 48V, 96V, 192V, 384V, 768V, 1536V, 3072V, 6144V, 12288V, 24576V, 49152V, 98304V, 196608V, 393216V, 786432V, 1572864V, 3145728V, 6291456V, 12582912V, 25165824V, 50331648V, 100663296V, 201326592V, 402653184V, 805306368V, 1610612736V, 3221225472V, 6442450944V, 12884901888V, 25769803776V, 51539607552V, 103079215104V, 206158430208V, 412316860416V, 824633720832V, 1649267441664V, 3298534883328V, 6597069766656V, 13194139533312V, 26388279066624V, 52776558133248V, 105553116266496V, 211106232532992V, 422212465065984V, 844424930131968V, 1688849860263936V, 3377699720527872V, 6755399441055744V, 13510798882111488V, 27021597764222976V, 54043195528445952V, 108086391056891840V, 216172782113783680V, 432345564227567360V, 864691128455134720V, 1729382256910269440V, 3458764513820538880V, 6917529027641077760V, 13835058055282155520V, 27670116110564311040V, 55340232221128622080V, 110680464442257244160V, 221360928884514488320V, 442721857769028976640V, 885443715538057953280V, 1770887431076115906560V, 3541774862152231813120V, 7083549724304463626240V, 14167099448608927252480V, 28334198897217854504960V, 56668397794435709009920V, 113336795588871418019840V, 226673591177742836039680V, 453347182355485672079360V, 906694364710971344158720V, 1813388729421942688317440V, 3626777458843885376634880V, 7253554917687770753269760V, 14507109835375541506539520V, 29014219670751083013079040V, 58028439341502166026158080V, 116056878683004332052316160V, 232113757366008664104632320V, 464227514732017328209264640V, 928455029464034656418529280V, 1856910058928069312837058560V, 3713820117856138625674117120V, 7427640235712277251348234240V, 14855280471424554502696468480V, 29710560942849109005392936960V, 59421121885698218010785873920V, 118842243771396436021571747840V, 237684487542792872043143495680V, 475368975085585744086286991360V, 950737950171171488172573982720V, 1901475900342342976345147965440V, 3802951800684685952690295930880V, 7605903601369371905380591861760V, 15211807202738743810761183723520V, 30423614405477487621522367447040V, 60847228810954975243044734894080V, 121694457621909950486089469788160V, 243388915243819900972178939576320V, 486777830487639801944357879152640V, 973555660975279603888715758305280V, 1947111321950559207777431516610560V, 3894222643901118415554863033221120V, 7788445287802236831109726066442240V, 15576890575604473662219452132884480V, 31153781151208947324438904265768960V, 62307562302417894648877808531537920V, 124615124604835789297755617063075840V, 249230249209671578595511234126151680V, 498460498419343157191022468252303360V, 996920996838686314382044936504606720V, 1993841993677372628764089873009213440V, 3987683987354745257528179746018426880V, 7975367974709490515056359492036853760V, 15950735949418981030112718984073707520V, 31901471898837962060225437968147415040V, 63802943797675924120450875936294830080V, 127605887595351848240901751872589660160V, 255211775190703696481803503745179320320V, 510423550381407392963607007490358640640V, 1020847100762814785927214014980717281280V, 2041694201525629571854428029961434562560V, 4083388403051259143708856059922869125120V, 8166776806102518287417712119845738250240V, 16333553612205036574835424239691476500480V, 32667107224410073149670848479382953000960V, 65334214448820146299341696958765906001920V, 130668428897640292598683393917531812003840V, 261336857795280585197366787835063624007680V, 522673715590561170394733575670127248015360V, 1045347431181122340789467151340254496030720V, 2090694862362244681578934302680508992061440V, 4181389724724489363157868605361017984122880V, 8362779449448978726315737210722035968245760V, 16725558898897957452631474421444071936491520V, 33451117797795914905262948842888143872983040V, 6690223559559182981052589

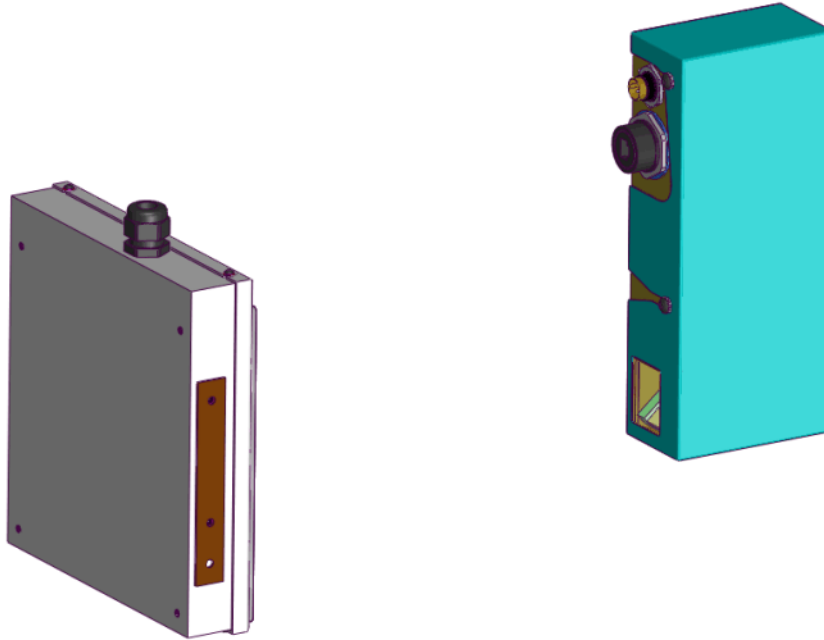
PWC inspection module

The difference between this module and the Preform Sidewall module is that this module has a color camera. The PW module has a monochrome camera.

This module contains a single camera and a single solid state illumination panel. The camera and the illumination components are both mounted on the inside of a blowmolder (near the turn of the oven).

The camera enclosure is mounted to view the sidewall of the preform horizontally. The illumination panel provides backlit imaging.

The illustration below shows a preform sidewall inspection module.



Adjusting the PWC module

Adjustments available for the preform sidewall inspection module include camera focus and aperture. No further adjustments to the camera are necessary. The module is set up for the largest sized preform during installation. If you change to a smaller sized preform, the preform takes up less space on the image. Aperture and focus adjustments must be made inside the inspection module.

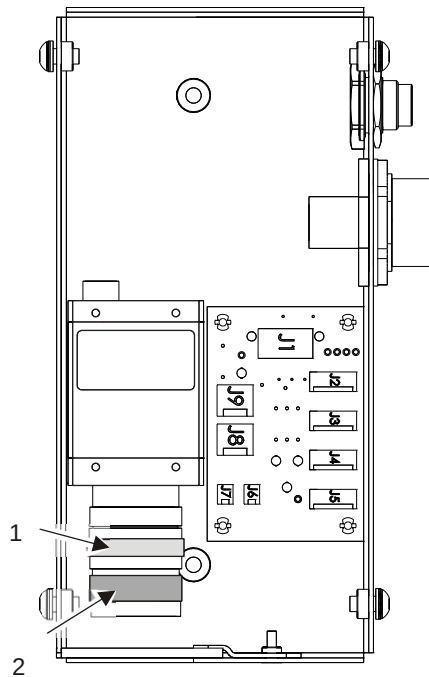
Aperture and Focus Adjustment - PWC module

The aperture controls the amount of light that passes through the lens. The programmable light source provides the range of light intensity required for most applications. However, you can manually adjust the aperture if necessary by turning the aperture adjust ring on the camera lens.

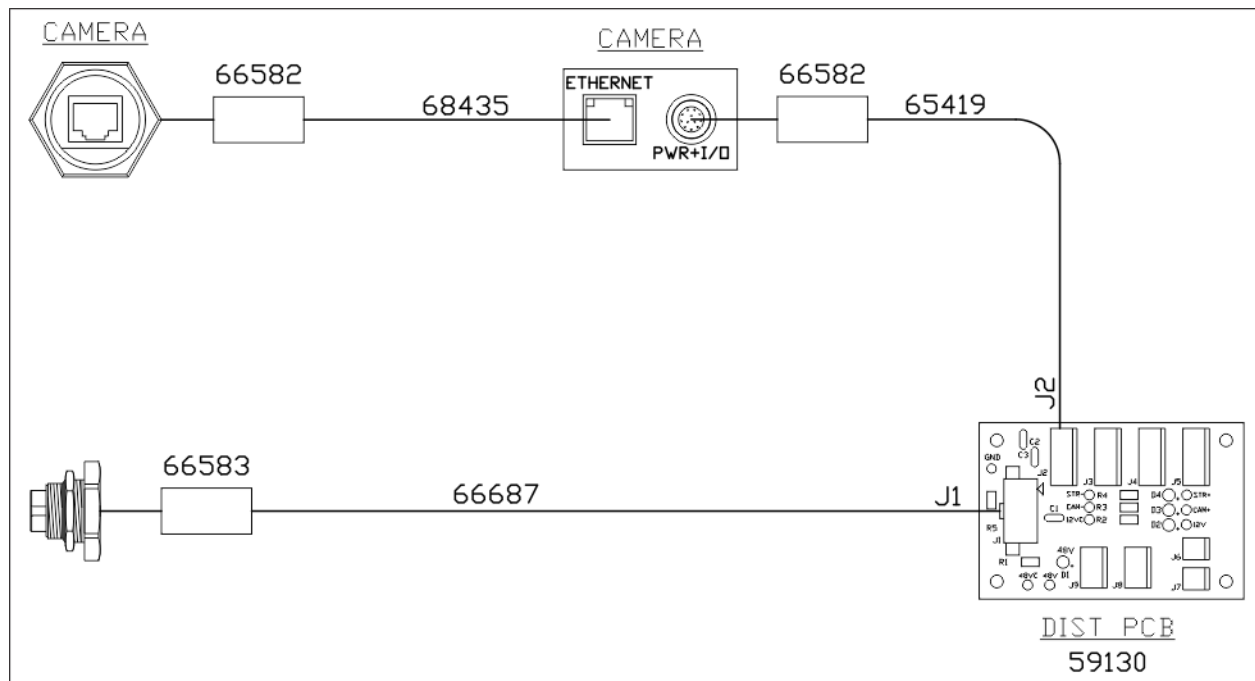
➤ *To adjust the aperture or focus:*

1. Carefully remove the cover. Be careful not to damage the wiring.
2. Adjust aperture [1] or focus [2] while observing the part image on the monitor.

3. Reinstall the cover.



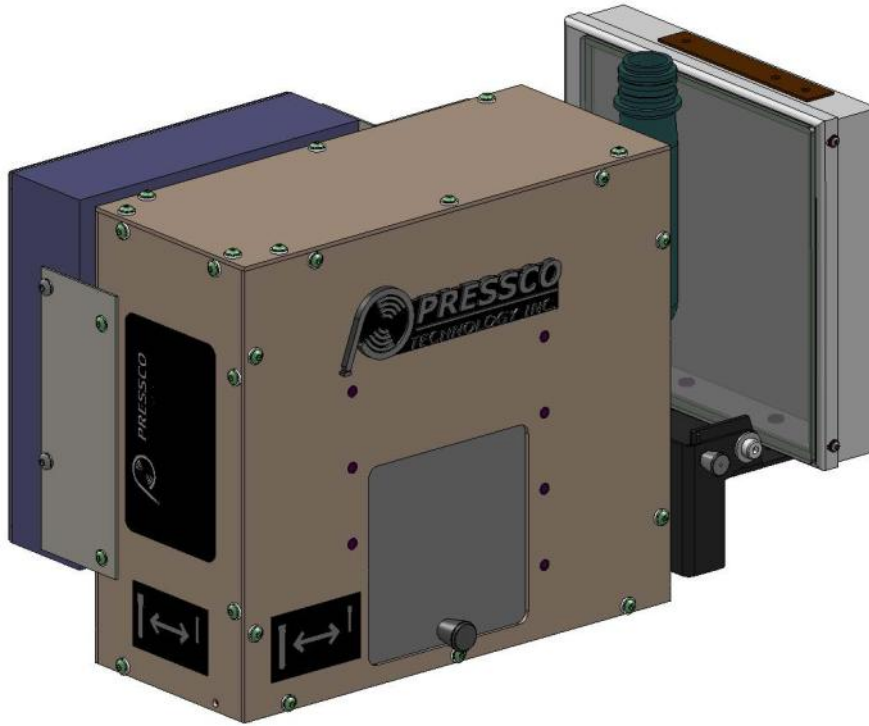
Wiring Diagram - PWC module



PW360 inspection module

PW360 = 360 degrees of preform wall inspection

This inspection module provides 360° inspection for bits of Post Consumer Regrind (PCR) in finished preforms. PCR bits, normally black in color, are more reliably detected in preforms and not in bottles.



There are two versions of the PW360 module: Manual focus [item A] and Motorized focus [item B] as shown below. The Motorized focus module has an additional connector.



The control box on the side of the module can be located in a different position than the module, if necessary. In certain production environments, you may not have enough room for both the inspection module and control box. There is an attached cable that allows you to position that control box away from the inspection module.

Adjusting the PW360 module

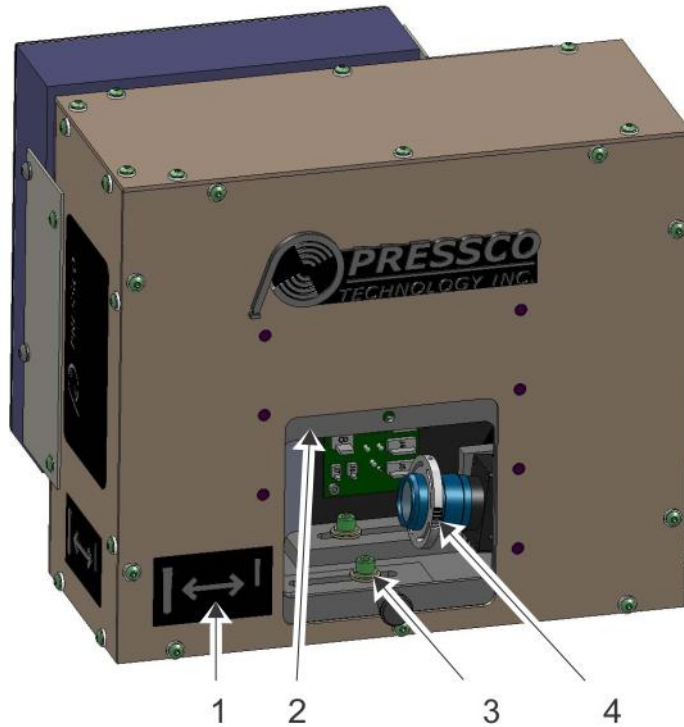
Adjustments available for the PW360 module include camera focus and mirror position for different sized preforms. No further adjustments to the camera are necessary. The module is set up for the largest sized preform during installation.

Focus and Position Adjustment - PW360 module

You can adjust the camera focus for this module, and the optics position if necessary, to accommodate different sized preforms.

➤ *To adjust the camera focus:*

- If you have a motorized focus inspection module, use the Camera Focus and Aperture screen in the software.
- If you have a manual focus inspection module, refer to the illustration below.
 - 1) For best results when adjusting: **Observe the Part Image** (on page 81).
 - 2) Slide the door [item 2] up to access the inside of the module.
 - 3) Turn the focus ring [item 4] to achieve the desired focus.
 - 4) Close the door [item 2] and make sure the handle falls into the detent position to lock it.



1	Sticker on two sides of the module indicates that you can adjust for different preform sizes. Loosen screw [item 3] and move in the direction indicated on the sticker to adjust for larger or smaller preform size.
2	Slide door open to adjust focus or preform inspection position.
3	Loosen screw to adjust optics for different preform sizes. The camera does not move; the internal mirrors move.
4	Focus adjust ring.



Important

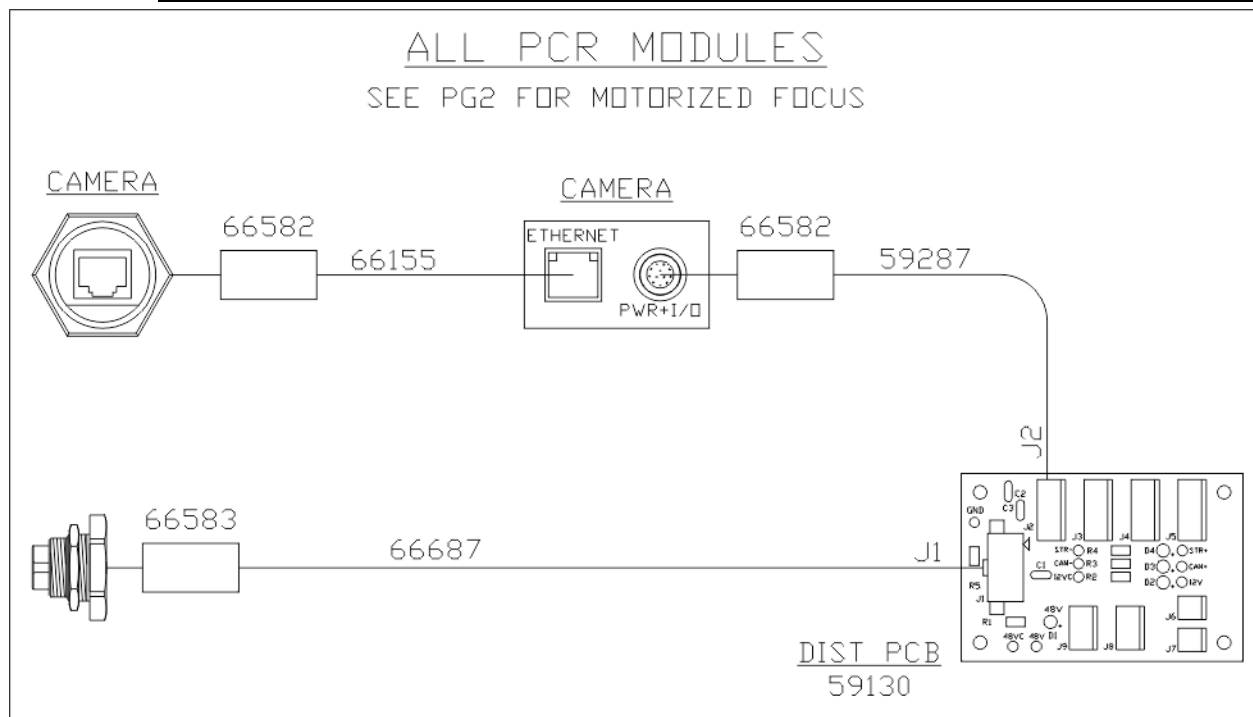
Do not loosen or attempt to adjust the screw located behind item 3. There is no user adjustment for that screw.

➤ To adjust for different sized preforms:

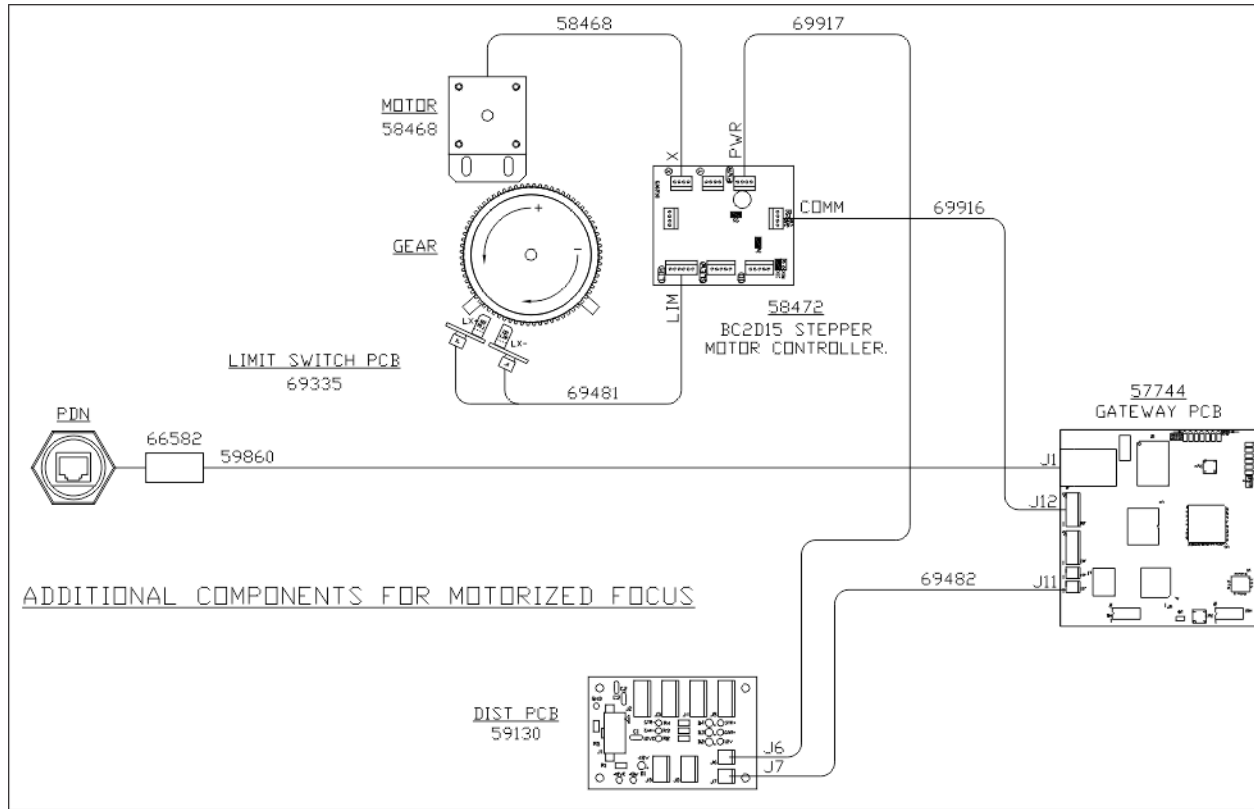
1. Refer to the illustration above.
2. For best results when adjusting, **observe the part image** (on page 81).
3. Slide the door [item 2] up to access the inside of the module.
4. Loosen the screw [item 3] and move the optics plate. The sticker on the side of the module [item 1] indicates the direction to move, for larger or smaller preforms.
5. Look at the image of the preform on the Intellispec screen. When you have adjusted the position for the best preform image, tighten the screw [item 3].
6. Close the door [item 2] and make sure the handle falls into the detent position to lock it.

Wiring Diagram - PW360 module, sheet 1

❖ Note: the original name for this module was PCR, thus the title in the drawing



Wiring Diagram - PW360 module, sheet 2



Chapter 9

Extended I/O (Optional)

This section contains information about the **optional** Extended I/O board.

- ❖ *Note: In some systems, such as FHCP 3X inspection systems, the Extended I/O board is always included (not optional).*
-

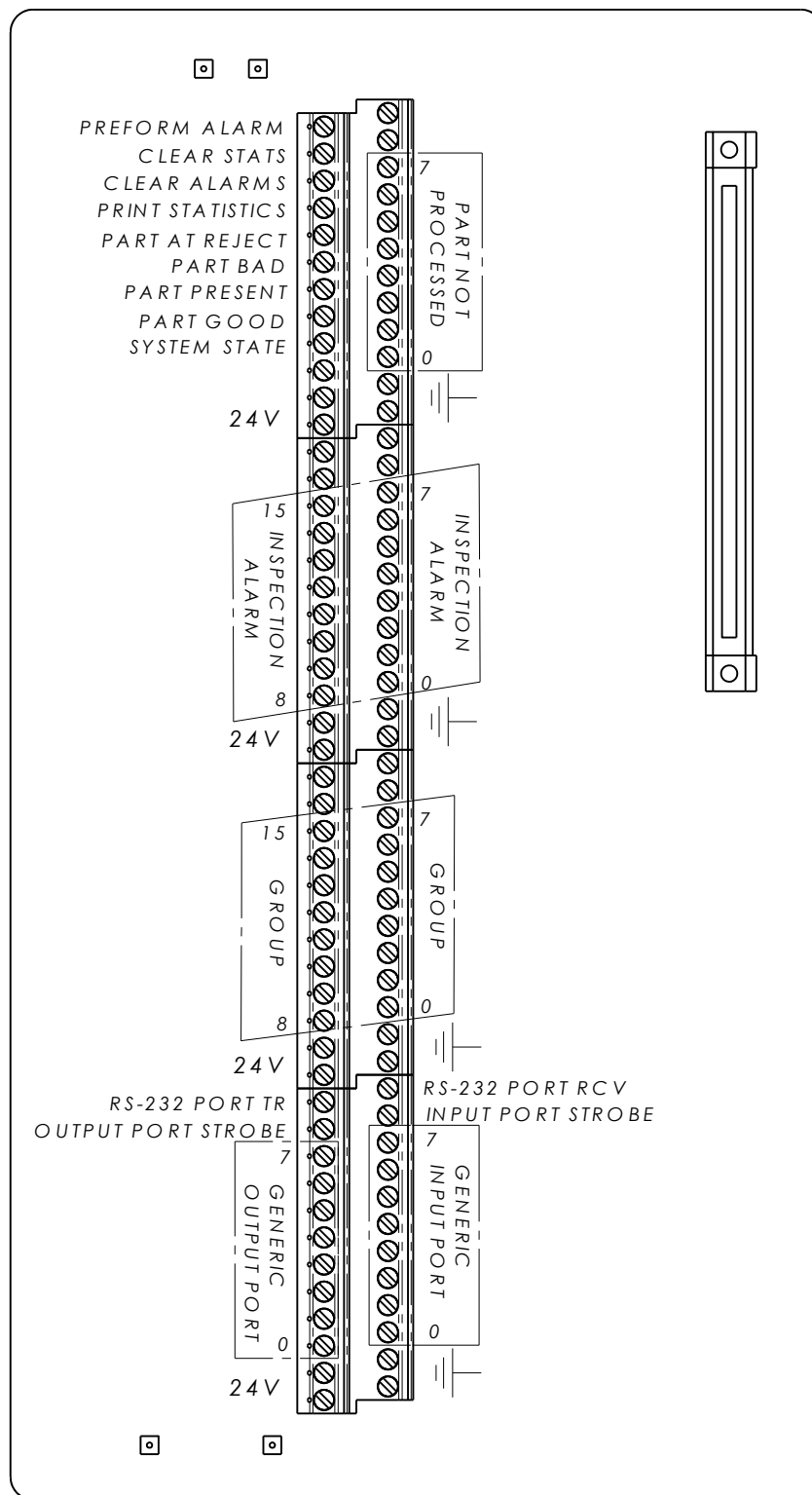
Extended I/O board

This optional module provides additional input and output ports for communicating with the Intellispec Series V system. The board may be installed within a **cluster box** (see "**Extended I/O inside the cluster box**" on page 115) or within an inspection module. The board is connected to the lane's Part Tracker board via a ribbon cable.

- ❖ *Note: Each Extended I/O board handles only one lane.*
 - ❖ *Note: Extended I/O is not available with an Embedded Cluster Box.*
-

Some signals must be enabled in the software through the **Extended I/O Configuration** (see "**Extended I/O Configuration in the software**" on page 116).

Below is the basic layout for the Extended I/O module.



Extended I/O signals - firmware up to F259

The Series V Extended I/O signals are listed in the table below. For the location on the Extended I/O board, refer to the **Extended I/O terminal block reference** (on page 114).

Corresponding software and firmware versions:

- 5.3 – F(204 - 224)
- 5.4 – F(231 – 249)
- 5.5 – F(250 – 274)

❖ *Note: some signals are not currently used*

All Extended I/O inputs are PNP. Outputs are selectable to be either open collector or open emitter. However, that selection applies to ALL output signals.

The input and power LEDs are visual indicators. The output LEDs illuminate if the current reaches 40mA or higher, which is approaching maximum current. The maximum current output is 50mA. See also information about **Extended I/O circuits** (on page 114).

*The signals marked with an asterisk must be enabled through **Extended I/O Configuration** (see "**Extended I/O Configuration in the software**" on page 116) in the software.

Signal - firmware up to version F259	I/O	Connector	Indicator LED	Comments/ Reference
Clear Stats*	I	J4-P23	D2	Clears the lane statistics
Clear Alarms*	I	J4-P22	D3	Clears the lane alarms
Print Statistics*	I	J4-P21	D4	Prints the lane statistics to currently configured printer or file Schedule Reports
Preform Alarm	I	J4-P24	D1	Used only in special applications. Activated by the Preform Material Handling system.
System State*	O	J4-P16	D11	Indicates whether the lane is online or offline. Online = active. Offline = inactive.
Part Present (Part Detect)*	O	J4-P18	D9	Pulses for 12 ms when the part present sensor detects a part
Part Good* (Group A)	O	J4-P17	D7	Pulses for 12 ms for each part declared good by the inspection
Part Bad* (Group A)	O	J4-P19	D5	Pulses for 12 ms for each part declared bad by the inspection
Part at Reject* (Group A)	O	J4-P20	D13	Pulses for 12 ms for each part that crosses the reject point (online mode only)
Part Not Processed: (Rejector 0)	O	J4-P3	D109	Pulses for 12 ms when a part is not processed due to a system malfunction (online mode only)
Part Not Processed: (Rejector 1)	O	J4-P4	D113	
Part Not Processed: (Rejector 2)	O	J4-P5	D117	
Part Not Processed: (Rejector 3) Firmware versions before F225	O	J4-P6	D121	
Reject Confirm 0	O	J4-P7	D107	Output signal when reject is confirmed (from F168 to F224 firmware)
Reject Confirm 1	O	J4-P8	D111	
Part Good (Group B)* - Part Not Processed 3	O	J4-P6	D121	Group B outputs Firmware versions F225 and later (see J1-P20 through J1-P22 for firmware versions before F225)
Part Bad (Group B)* - Part Not Processed 4	O	J4-P7	D107	
Part at Reject (Group B)* - Part Not Processed 5	O	J4-P8	D111	

Signal - firmware up to version F259	I/O	Connector	Indicator LED	Comments/ Reference
Reject Confirm Sensor blocked	O	J4-P9	D115	Reject confirm sensor signal pulse width exceeding programmed limit (F168 and later DPT firmware)
Host communication lost (Firmware from F168 to F224 only)	O	J4-P10	D119	Output signal when communication to/from host is disrupted
Unassigned (Firmware versions F225 and later)		J4-P10	D119	
Inspection Alarm 0	O	J3-P3	D59	Pulses when the associated alarm condition occurs and stays active until the alarm is cleared Lane Alarm Configuration and Sensor Alarm Configuration *J3-P22 Inspection Alarm 15 supported with F168 and later DPT firmware. In earlier firmware versions, this signal is "Host Communication Lost"
Inspection Alarm 1	O	J3-P4	D67	
Inspection Alarm 2	O	J3-P5	D75	
Inspection Alarm 3	O	J3-P6	D83	
Inspection Alarm 4	O	J3-P7	D57	
Inspection Alarm 5	O	J3-P8	D65	
Inspection Alarm 6	O	J3-P9	D73	
Inspection Alarm 7	O	J3-P10	D81	
Inspection Alarm 8	O	J3-P15	D63	
Inspection Alarm 9	O	J3-P16	D71	
Inspection Alarm 10	O	J3-P17	D79	
Inspection Alarm 11	O	J3-P18	D87	
Inspection Alarm 12	O	J3-P19	D61	
Inspection Alarm 13	O	J3-P20	D69	
Inspection Alarm 14	O	J3-P21	D77	
Inspection Alarm 15*	O	J3-P22	D85	
Group 0	O	J2-P3	D17	Pulses for 12 ms when an inspection fails in the user-defined group (online mode only) Walk By Setup
Group 1	O	J2-P4	D25	
Group 2	O	J2-P5	D33	
Group 3	O	J2-P6	D41	
Group 4	O	J2-P7	D15	
Group 5	O	J2-P8	D23	
Group 6	O	J2-P9	D31	
Group 7	O	J2-P10	D39	
Group 8	O	J2-P15	D21	
Group 9	O	J2-P16	D29	
Group 10	O	J2-P17	D37	

Signal - firmware up to version F259	I/O	Connector	Indicator LED	Comments/ Reference
Group 11	O	J2-P18	D45	
Group 12	O	J2-P19	D19	
Group 13	O	J2-P20	D27	
Group 14	O	J2-P21	D35	
Group 15	O	J2-P22	D43	
Generic Input Port 0	I	J1-P3	D48	Port 0 and Port 1 used in Remote Part Program Switching Reserved for Asynchronous Correlation These bits may be used for Auto-Learn
Generic Input Port 1	I	J1-P4	D50	
Generic Input Port 2	I	J1-P5	D51	
Generic Input Port 3	I	J1-P6	D52	
Generic Input Port 4	I	J1-P7	D55	
Generic Input Port 5	I	J1-P8	D56	
Generic Input Port 6	I	J1-P9	D47	
Generic Input Port 7	I	J1-P10	D49	
Input Port Strobe	I	J1-P11	D53	Reserved for Asynchronous Correlation
Generic Output Port 0	O	J1-P15	D91	Reserved for Asynchronous Correlation
Generic Output Port 1	O	J1-P16	D95	
Generic Output Port 2	O	J1-P17	D101	
Generic Output Port 3	O	J1-P18	D105	
Generic Output Port 4	O	J1-P19	D89	Encoder Z pulse output
Generic Output Port 5	O	J1-P20	D93	Part at Reject (Group B) (Firmware versions before F225)
Generic Output Port 6	O	J1-P21	D99	Part Bad (Group B) (Firmware versions before F225)
Generic Output Port 7	O	J1-P22	D103	Part Good (Group B) (Firmware versions before F225)
Output Port Strobe	O	J1-P23	D97	Reserved for future use
RS-232 Port TR	O	J1-P24	D202	Reserved for future use
RS-232 Port RCV	I	J1-P12	D200	Reserved for future use

All Connectors

Function	Pin			
Isolated ground	J1-P1, J1-P2	J2-P1, J2-P2	J3-P1, J3-P2	J4-P1, J4-P2
24 V (isolated)	J1-P13, J1-P14	J2-P13, J2-P14	J3-P13, J3-P14	J4-P13, J4-P14

Test Points

Function	Test Point
24 V	TP2
24 V Gnd	TP3
3.3 V	TP1
3.3 V Gnd.	TP4

Extended I/O signals - firmware version F260 and later

The Series V Extended I/O signals are listed in the table below. For the location on the Extended I/O board, refer to the **Extended I/O terminal block reference** (on page 114).

Corresponding firmware/ software versions:

- 5.5 – F(250 – 274)
- 5.6 – F(275 – 299)
- 5.7 – F(300 – 324)

❖ *Note: some signals are not currently used*

All Extended I/O inputs are PNP. Outputs are selectable to be either open collector or open emitter. However, that selection applies to ALL output signals.

The input and power LEDs are visual indicators. The output LEDs illuminate if the current reaches 40mA or higher, which is approaching maximum current. The maximum current output is 50mA. See also information about **Extended I/O circuits** (on page 114).

*The signals marked with an asterisk must be enabled through **Extended I/O Configuration** (see "**Extended I/O Configuration in the software**" on page 116) in the software.

Signal - firmware F260 and later	I/O	Connector	Indicator LED	Comments/ Reference
Clear Stats*	I	J4-P23	D2	Clears the lane statistics
Clear Alarms*	I	J4-P22	D3	Clears the lane alarms
Print Statistics*	I	J4-P21	D4	Prints the lane statistics to currently configured printer or file Schedule Reports
Preform Alarm	I	J4-P24	D1	Used only in special applications. Activated by the Preform Material Handling system.
System State*	O	J4-P16	D11	Indicates whether the lane is online or offline. Online = active. Offline = inactive.
Part Present (Part Detect)*	O	J4-P18	D9	Pulses for 12 ms when the part present sensor detects a part
Part Good* (Group A)	O	J4-P17	D7	Pulses for 12 ms for each part declared good by the inspection
Part Bad* (Group A)	O	J4-P19	D5	Pulses for 12 ms for each part declared bad by the inspection
Part at Reject* (Group A)	O	J4-P20	D13	Pulses for 12 ms for each part that crosses the reject point (online mode only)
Part Not Processed: (Rejector 0)	O	J4-P3	D109	Pulses for 12 ms when a part is not processed due to a system malfunction (online mode only)
Part Not Processed: (Rejector 1)	O	J4-P4	D113	
Part Not Processed: (Rejector 2)	O	J4-P5	D117	
Part Good (Group B)*	O	J4-P6	D121	Group B outputs
Part Bad (Group B)*	O	J4-P7	D107	
Part at Reject (Group B)*	O	J4-P8	D111	

Signal - firmware F260 and later	I/O	Connector	Indicator LED	Comments/ Reference
Reject Confirm Sensor blocked	O	J4-P9	D115	Reject confirm sensor signal pulse width exceeding programmed limit
System OK	O	J4-P10	D119	Host is NOT lost, and system is ONLINE
Inspection Alarm 0	O	J3-P3	D59	Set when the associated alarm condition occurs and stays active until the alarm is cleared Lane Alarm Configuration and Sensor Alarm Configuration Note: bit 15 is not seen in the Alarms dialog – the number of available bits is limited to 15 (0 – 14). Bit 15 has a specialized function (“host lost” on the part tracker side).
Inspection Alarm 1	O	J3-P4	D67	
Inspection Alarm 2	O	J3-P5	D75	
Inspection Alarm 3	O	J3-P6	D83	
Inspection Alarm 4	O	J3-P7	D57	
Inspection Alarm 5	O	J3-P8	D65	
Inspection Alarm 6	O	J3-P9	D73	
Inspection Alarm 7	O	J3-P10	D81	
Inspection Alarm 8	O	J3-P15	D63	
Inspection Alarm 9	O	J3-P16	D71	
Inspection Alarm 10	O	J3-P17	D79	
Inspection Alarm 11	O	J3-P18	D87	
Inspection Alarm 12	O	J3-P19	D61	
Inspection Alarm 13	O	J3-P20	D69	
Inspection Alarm 14	O	J3-P21	D77	
Inspection Alarm 15	O	J3-P22	D85	
Group 0	O	J2-P3	D17	Pulses for 12 ms when an inspection fails in the user-defined group (online mode only) Walk By Setup
Group 1	O	J2-P4	D25	
Group 2	O	J2-P5	D33	
Group 3	O	J2-P6	D41	
Group 4	O	J2-P7	D15	
Group 5	O	J2-P8	D23	
Group 6	O	J2-P9	D31	
Group 7	O	J2-P10	D39	
Group 8	O	J2-P15	D21	
Group 9	O	J2-P16	D29	
Group 10	O	J2-P17	D37	
Group 11	O	J2-P18	D45	
Group 12	O	J2-P19	D19	
Group 13	O	J2-P20	D27	
Group 14	O	J2-P21	D35	

Signal - firmware F260 and later	I/O	Connector	Indicator LED	Comments/ Reference
Group 15	O	J2-P22	D43	
Generic Input Port 0	I	J1-P3	D48	Port 0 and Port 1 used in Remote Part Program Switching These bits may be used for Auto-Learn or Alternate Part Processing
Generic Input Port 1	I	J1-P4	D50	
Generic Input Port 2	I	J1-P5	D51	
Generic Input Port 3	I	J1-P6	D52	
Generic Input Port 4	I	J1-P7	D55	
Generic Input Port 5	I	J1-P8	D56	
Generic Input Port 6	I	J1-P9	D47	
Generic Input Port 7	I	J1-P10	D49	
Input Port Strobe	I	J1-P11	D53	
Generic Output Port 0	O	J1-P15	D91	
Generic Output Port 1	O	J1-P16	D95	
Generic Output Port 2	O	J1-P17	D101	
Generic Output Port 3	O	J1-P18	D105	
Generic Output Port 4	O	J1-P19	D89	
Generic Output Port 5	O	J1-P20	D93	
Generic Output Port 6	O	J1-P21	D99	
Generic Output Port 7	O	J1-P22	D103	
Output Port Strobe	O	J1-P23	D97	Pulsed When data of Generic Output Port (0-7) is set
RS-232 Port TR	O	J1-P24	D202	Reserved for future use
RS-232 Port RCV	I	J1-P12	D200	Reserved for future use

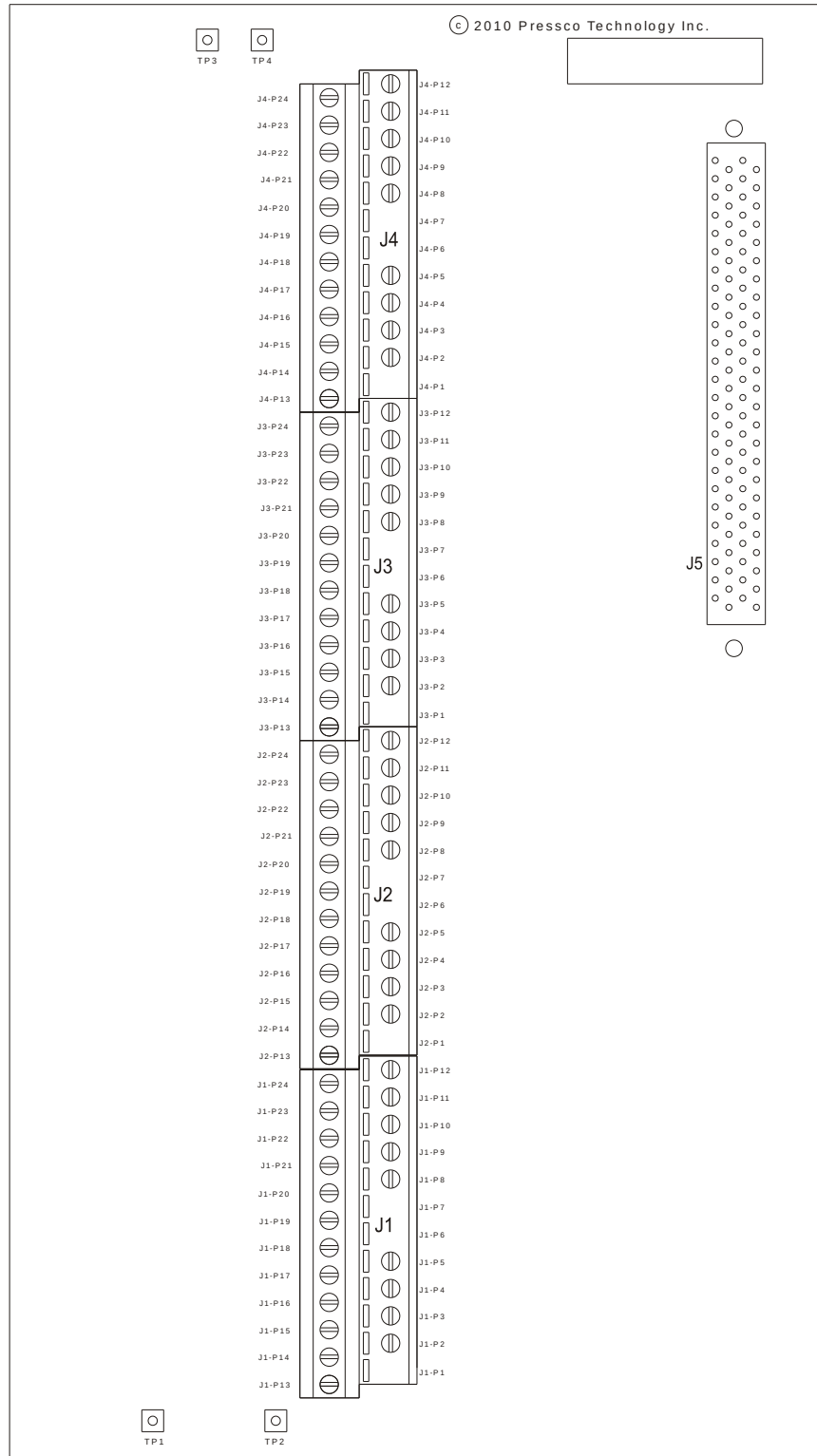
All Connectors

Function	Pin			
Isolated ground	J1-P1, J1-P2	J2-P1, J2-P2	J3-P1, J3-P2	J4-P1, J4-P2
24 V (isolated)	J1-P13, J1-P14	J2-P13, J2-P14	J3-P13, J3-P14	J4-P13, J4-P14

Test Points

Function	Test Point
24 V	TP2
24 V Gnd	TP3
3.3 V	TP1
3.3 V Gnd.	TP4

Extended I/O terminal block reference



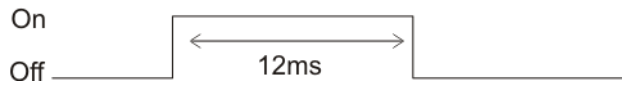
Extended I/O circuits

The following illustrations show typical input and output circuits you can use to communicate with your plant's PLC, or to connect external LEDs or light trees.

➤ **Specifications:**

- Minimum dwell time of the **input** device is 1.1 ms
- Maximum **output** load is 50 mA
- Default value of **output** pulse is 12ms. Some output signals, such as alarms, must be cleared on the Intellispec before they turn off.

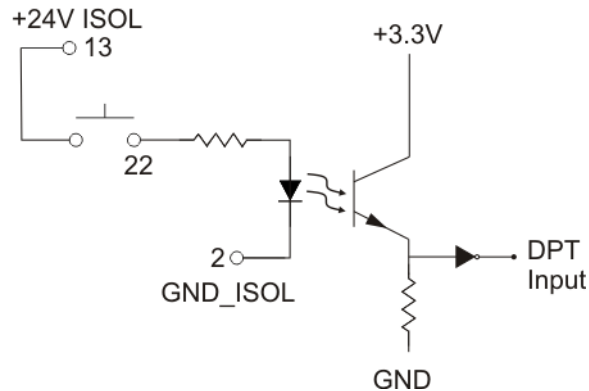
Default timing of pulsed output



The following illustration shows a typical circuit that can be used to clear alarms.

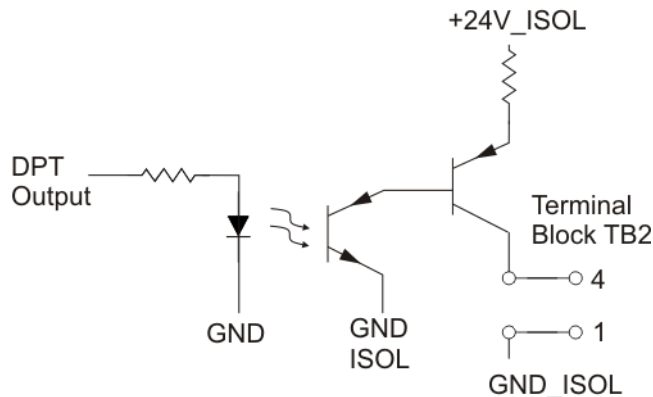
CLEAR ALARMS - INPUT

Terminal Block TB4



The following illustration shows a typical circuit that can be used for a group output.

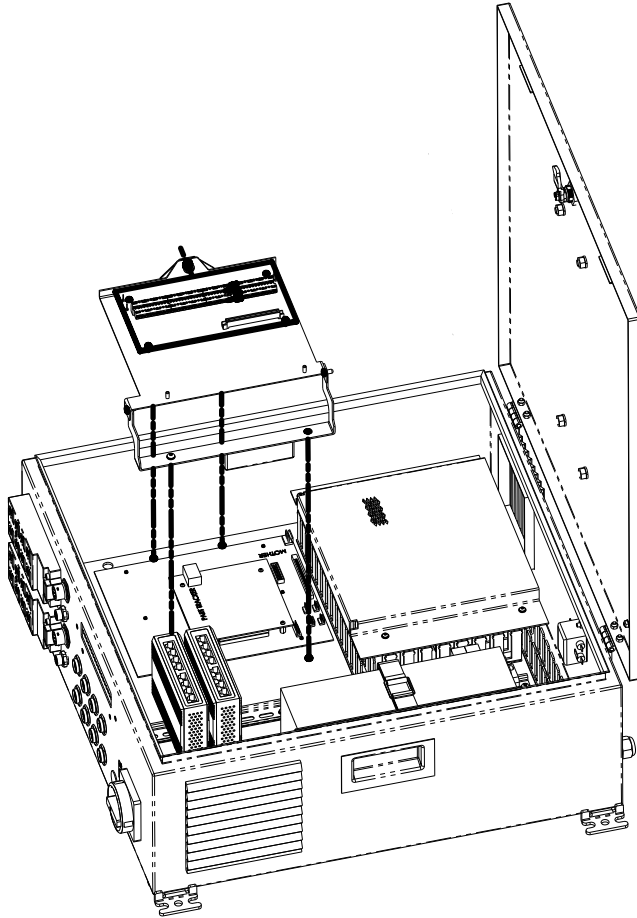
GROUP 1 - OUTPUT



Extended I/O inside the cluster box

The **Extended I/O** (see "**Extended I/O board**" on page 103) kit (optional) is installed inside the cluster box as shown below. If you have a different type of cluster box, the location of the Extended I/O kit may vary.

❖ *Note: Extended I/O is not available with an Embedded Cluster Box.*



Extended I/O Configuration in the software

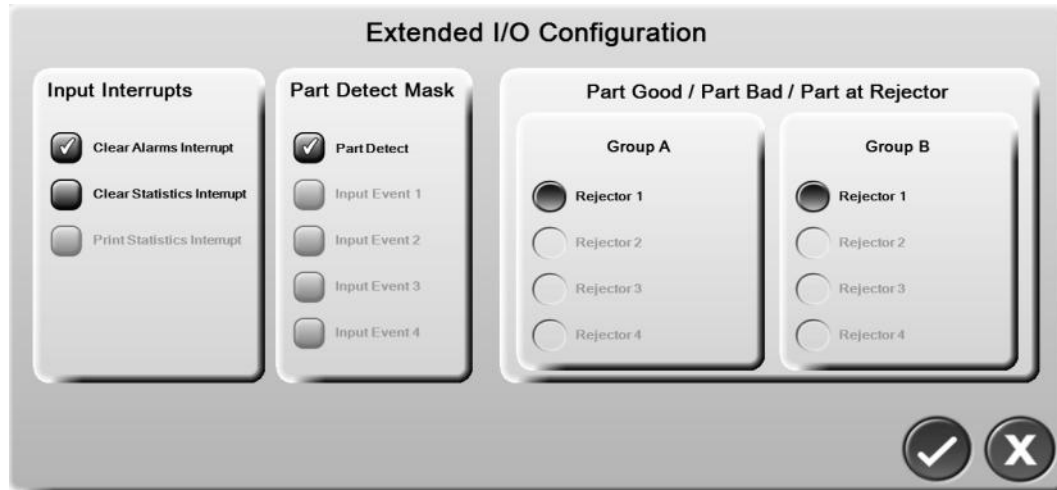
Enable input or output signals to perform a function on the Intellispec system or monitor the production lane in your plant. These settings must be done for each Extended I/O board for each lane.

See also the sections about **Extended I/O** (see "**Extended I/O board**" on page 103) and **Extended I/O Signals** (see "**Extended I/O signals - firmware up to F259**" on page 104, "**Extended I/O signals - firmware version F260 and later**" on page 109) in the Intellispec Hardware Guide.

To get to this screen: From Lane or Sensor Overview mode, select Tools  | **Hardware Setup** | **Extended I/O Configuration**.

This screen displays some of the inputs and outputs on the optional extended I/O board.

If one of the extended I/O ports is used it must be enabled here in the software, and the hardware must be connected appropriately.



Input Interrupts

These signals produce an input pulse to the Intellispec to perform the following functions.

Clear Alarms Interrupt

Clear the lane alarms.

Clear Statistics Interrupt

Clear the lane statistics.

Print Statistics Interrupt

Print the lane statistics to the currently configured printer or file. See also Schedule Reports.

Part Detect Mask

Choose which Part Detect or other input events to trigger the Part Present output on the Extended I/O board. This is an OR function. Any enabled Part Detect signal or Input Event that goes active will activate the Extended I/O Part Present output.

Part Detect

The signal goes active when the sensor detects a part.

Input Event N

The Part Tracker board accepts up to five* input events (Part detectors or other sensors). Part tracking is always controlled by the Part Detect signal (Input Event 0). You might use other input events (1 - 4) in your system to trigger the Part Present output signal.

*Only if your system has an 8-channel Part Tracker board. If your system has a 2-channel Part Tracker board, then only one Part Detect signal is used. The other input events are not available.

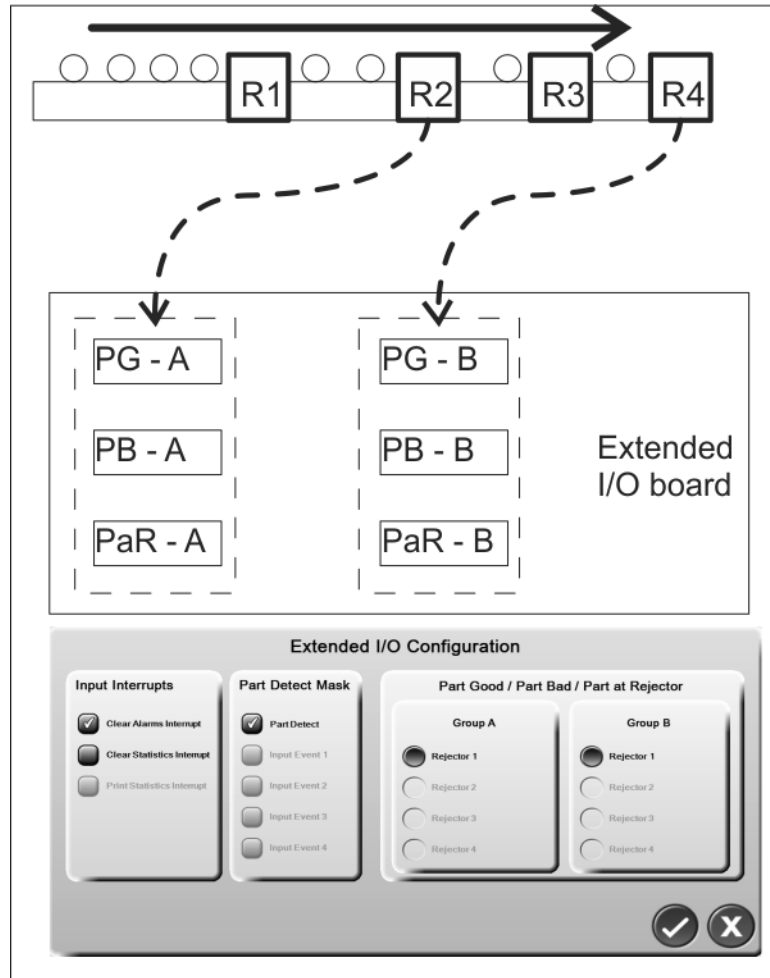
Part Good/ Part Bad/ Part at Rejector

Choose which rejector signal to activate the **Part Good**, **Part Bad**, and **Part at Rejector** signals on the Extended I/O board. After a part is inspected, the system determines whether the part is good or bad. As the part passes by Rejector 1, 2, 3, or 4, the Part Good/ Part Bad/ and Part at Rejector signals are activated on the Extended I/O board. There are two groups of Part Good/ Part Bad/ and Part at Rejector signals - Group A and Group B. You choose which rejector is associated with Group A and/or Group B. You can have both groups associated with the same rejector, if desired. See **Extended I/O signals** (see "**Extended I/O signals - firmware up to F259**" on page 104, "**Extended I/O signals - firmware version F260 and later**" on page 109).

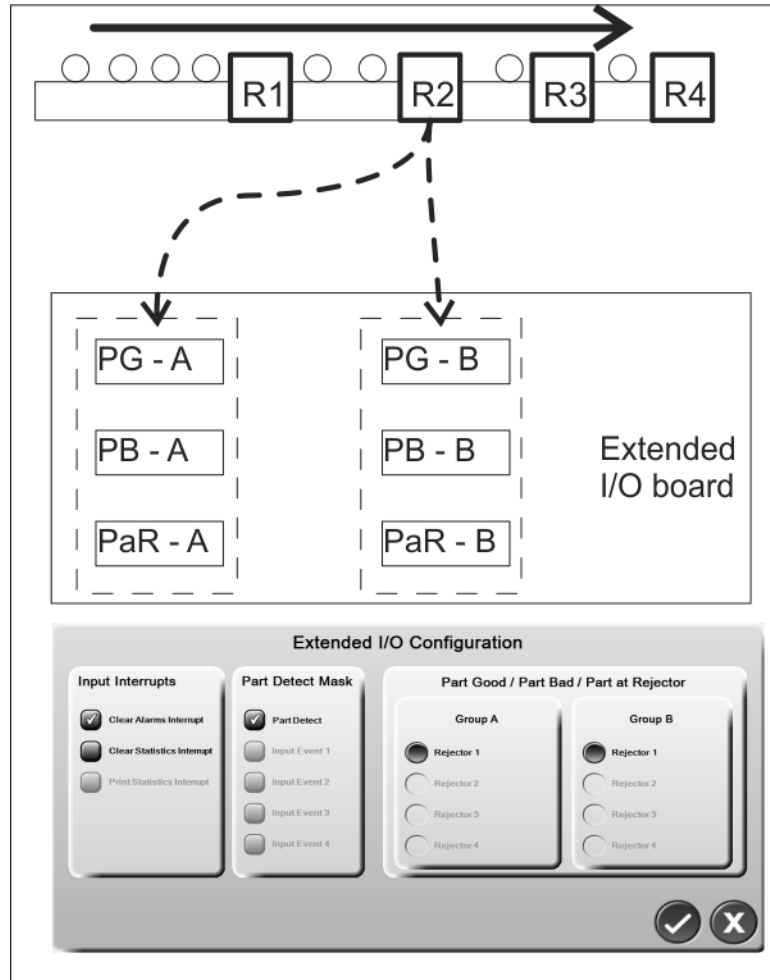
❖ *Note: If your system has a 2-channel Part Tracker board, then the lane has up to two rejectors. If your system has an 8-channel Part Tracker board, then the lane has up to four rejectors.*

Example 1 below: Group A is triggered when the part passes Rejector 2, and Group B is triggered when the part passes Rejector 4. The illustration below shows a basic block diagram with a conveyor with four rejectors. Those rejectors output a signal to the Extended I/O board, based on the Extended I/O configuration.

- **R** = Rejector
- **PG** = Part Good signal, Group A and Group B
- **PB** = Part Bad signal, Group A and Group B
- **PaR** = Part at Reject signal, Group A and Group B



Example 2 below: Group A is triggered when the part passes Rejector 2, and Group B is also triggered when the part passes Rejector 2.



Chapter 10

Maintenance Frequency - BNS

Follow the guidelines for cleaning and maintenance of the Intellispec system and the inspection modules.

Intellispec Processor Cabinet and General Components			
Item	Description	Once per day or shift	Once per month
Observe Proper inspection	Verify that defective parts are being rejected by inserting a known defective part through inspection	X	
Observe Proper inspection	Verify that no stray parts are stuck in or near the inspection module or reject station	X	
Observe Proper inspection	Verify that no buildup of dirt or contaminants has occurred on inspection module, part detector, or conveyor. Clean if necessary.	X	
Observe Proper inspection	Verify that each camera's image is properly centered, focused, and properly lit. Adjust if necessary.	X	
Vision Processor filter	Rinse in clean water; use mild soap and water solution if oily. <i>Cleaning the Vision Processor filter</i> (on page 122)		X
Cluster Box filters (if applicable)	Rinse in clean water; use mild soap and water solution if oily. <i>Cleaning the Cluster Box filters</i> (on page 65)		X

Inspection Modules PET/ Preform			
Item	Description	Once per week	Once per month
Glass surfaces (see " Cleaning Glass Surfaces " on page 124)	Clean with soft, clean, oil-free cloth dampened with glass cleaning solution.	X	
Plastic surfaces (see " Cleaning Plastic Surfaces " on page 127)	Clean with soft, clean, oil-free cloth dampened with mild soap and water solution.	X	
Part Detect Sensor and Reflector	Clean with soft, clean, oil-free cloth dampened with mild soap and water solution.	X	
Beam Splitter Seal Surface (see " Cleaning the Beam Splitter Seal Surface module " on page 126) and PSE modules (see " Cleaning the Beam Splitter " on page 126)	Clean with soft, clean, oil-free cloth dampened with lens cleaning solution.		X

Cleaning the Vision Processor filter

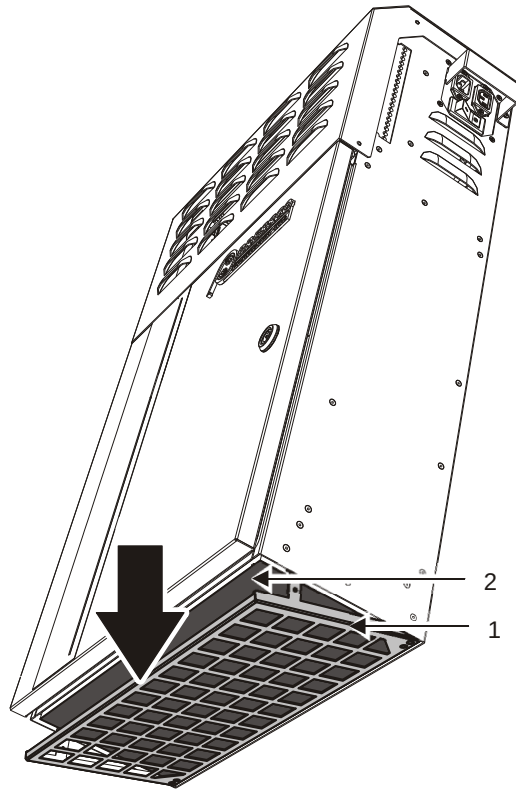
The filter for the vision processor should be cleaned once a month for best results. The filter is located underneath the user interface cabinet. If the filter has holes or is too dirty to clean, then replace it with Pressco part number 66621.

❖ *Note: You may need to clean the filters weekly depending on plant conditions*

➤ To clean the filter:

1. Pull down the front of the grate [item 1] with your fingers.
2. Remove the filter [item 2] and clean it.
 - If the filter contains dry dust and dirt, rinse it in plain water
 - If the filter contains oily dust and dirt, clean it in soapy water, then rinse in clear water
3. Dry the filter completely, then place it back underneath the user interface cabinet.

4. Push the grate closed.



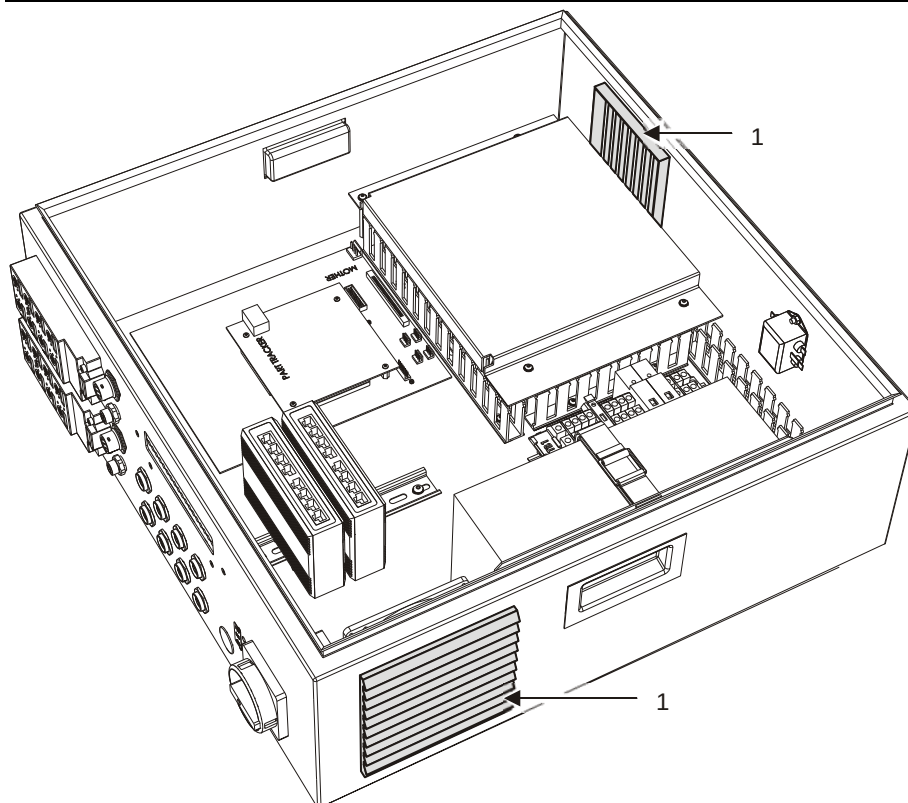
- 1) Grate to hold filter in place
- 2) Part number 66621 - filter for vision processor

Cleaning the Cluster Box filters

Clean the filter on the vents when they get dirty. We recommend that you clean them at least once a month. Remove the covers to access the filters.

- If the filter contains only dry dust and dirt, rinse it in plain water
- If it contains oily dust and dirt, clean it in soapy water
- Dry the filter completely before reinstalling it

❖ *Note: the illustration shows a Classic cluster box. However, all types of cluster boxes use the same filter replacement.*



To replace a filter, use the part number listed below:

	Part Number	Description
1	65779	Replacement filter element (same part number is used in both locations)

Cleaning Optical Surfaces



Important - Debris and contamination could build up on both the glass and plastic surfaces. This dirt could appear in the inspection windows, causing false rejects of parts, or it could degrade lighting. Clean glass and plastic surfaces often to avoid false rejects.

To maintain proper image quality and system performance, the clear glass and plastic surfaces on the Inspection Modules must be cleaned on a regular basis. Dirt and debris that appear in the image can cause false rejects. An oily film on optical surfaces can cause false rejects or missed defects.

Cleaning Glass Surfaces

Glass surfaces that may require cleaning are:

- Camera Lens
- Beam Splitter (if present)
- Secondary lens (if present)
- Secondary mirror (if present)

➤ **To clean glass surfaces:**

- Blow off dust with canned, compressed air
- Use a clean non-abrasive cloth dampened with lens cleaning solution
- Use lens tissue and lens cleaning solution on camera lenses
- If surface has compound on it, first clean with alcohol, then with lens cleaning solution

❖ *Note: Cleaning frequency will depend on plant and process conditions.*

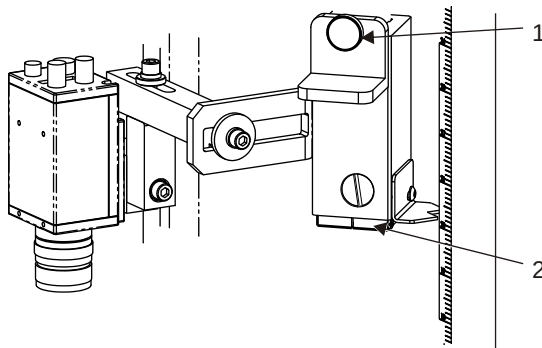
Cleaning the Camera Lens



Caution - Do not touch the lens with fingers or oily cloths.

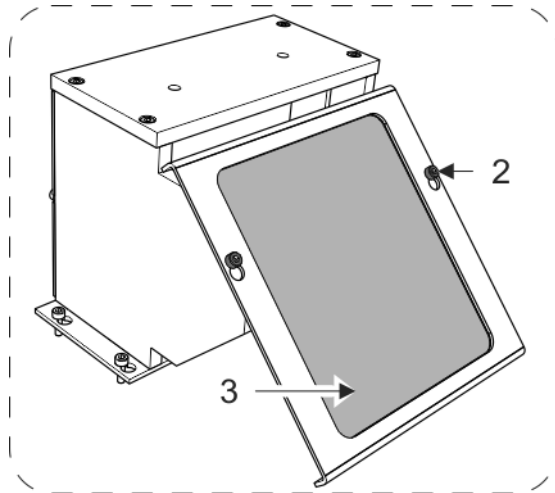
➤ **To clean the camera lens:**

1. Raise the camera to access the lens by loosening the height adjustment screw [item 1].
2. Leave the clamping bracket in place [item 2].
3. Clean all camera lenses with lens tissue and lens cleaning fluid. Be careful not to alter the focus or aperture of the cameras.
4. Slide the camera back into position as marked by the clamping bracket.
5. Tighten the height adjustment screw
6. Re-adjust aperture and focus if needed.



- 1) Camera height adjustment screw
- 2) Clamping bracket - camera height reference

Cleaning the Beam Splitter Seal Surface module



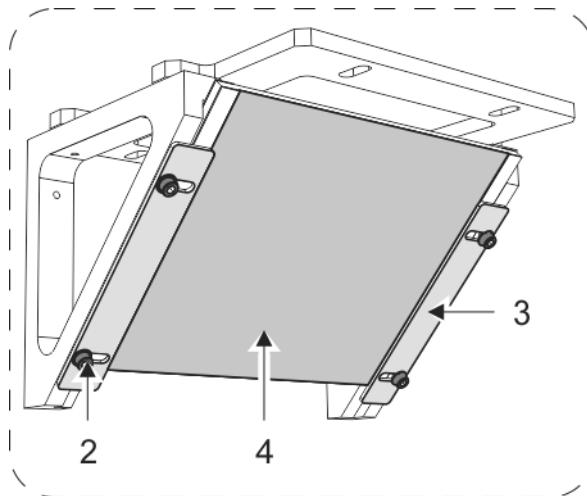
2	Screws
3	Beam Splitter

➤ To clean the beam splitter:

1. **Raise the camera** (see "**Cleaning the Camera Lens**" on page 125) if necessary. Be sure to note the camera position before moving it.
2. Loosen the two screws [item 2] and carefully remove the beam splitter.
3. Clean the beam splitter [item 3].
 - Blow off dust from beam splitter with canned, compressed air.
 - **Clean the glass** (see "**Cleaning Glass Surfaces**" on page 124) on the beam splitter using lens tissue and lens cleaner.
 - Replace the beam splitter with glass to the inside. Tighten the screws.

Cleaning the Beam Splitter

You must remove the Beam Splitter to access the bottom side for cleaning. The beam splitter is used in preform sidewall endcap (PSE) modules.



2	Screws
3	Retaining plates
4	Beam Splitter

➤ **To clean beam splitter:**

1. **Raise the camera** (see "**Cleaning the Camera Lens**" on page 125) if necessary. Be sure to note the camera position before moving it.
2. Loosen the four screws [item 2].
3. Slide the retaining plates [item 3] to the sides and carefully remove the beam splitter.
4. Clean the beam splitter [item 4].
 - Blow off dust from beam splitter with canned, compressed air.
 - **Clean the glass** (see "**Cleaning Glass Surfaces**" on page 124) on the beam splitter using lens cleaner and lens tissue.
5. Replace the beam splitter with the reflective side to the outside.
6. Slide the retaining plates back in place and tighten the screws.

Cleaning Plastic Surfaces

Plastic surfaces that may require cleaning are:

- Dome Light Diffuser
- Ring Light Diffuser
- Light Shield (if present)
- Beam Splitter Diffuser (if present)

❖ *Note: Cleaning frequency will depend on plant and process conditions.*

➤ **To clean plastic surfaces:**

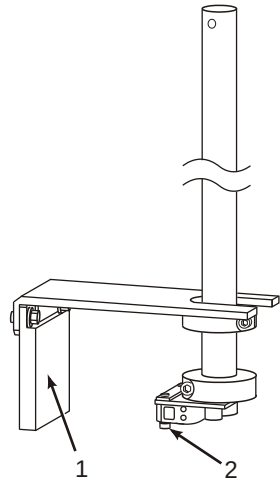
Do	Do Not
Use canned compressed air to blow away dust	Do not wipe away dirt as plastic coating may be scratched
Use a clean, non-abrasive cloth dampened with mild soap and water solution. Saturate surface completely to let particles wash away.	Do not use paper towels or paper napkins – these may scratch surfaces
Dry the surface with clean, compressed air	

Cleaning the Part Detector and Reflector

The part detect sensor and reflector surfaces of the part detector must remain clean to properly detect parts. Clean these surfaces regularly to prevent dirt and oil build-up.

Clean the part detector surfaces with a soft, clean, lint-free cloth dampened with a mild soap and water solution. Do not use a glass cleaning solution or strong solvent on the plastic surfaces as they might be damaged.

The frequency of cleaning will depend on plant and process conditions.



- 1) Part detect reflector
- 2) Part detect sensor

Chapter 11

How to Contact Pressco

24/ 7 Customer Support:

+1 440-498-2000

E-mail:

dispatch@pressco.com (*mailto:dispatch@pressco.com*) or *techsupport@pressco.com*
(*mailto:techsupport@pressco.com*)

Customer Service Fax:

+1 440-498-4761

Mailing Address:

Pressco Technology Inc. 29200 Aurora Rd. Cleveland, OH USA 44139-1847

Main Phone:

+1 440-498-2600

Web Site:

www.pressco.com (*http://www.pressco.com*)

Business Hours:

Monday - Friday, 8:00am - 5:00pm Eastern Standard Time

Index

8

8 PORT I/O BOXES • 59

A

ABOUT THIS MANUAL • 5

ADJUSTING THE BASE INSPECTION MODULE • 82

ADJUSTING THE NECK/ SIDEWALL INSPECTION
MODULE • 85

ADJUSTING THE PREFORM SEAL ENDCAP MODULE • 91

ADJUSTING THE PREFORM SIDEWALL MODULE • 94

ADJUSTING THE PW360 MODULE • 99

ADJUSTING THE PWC MODULE • 96

ADJUSTING THE SEAL SURFACE MODULE • 89

ALARMS • 9

APERTURE ADJUSTMENT - BASE • 82

APERTURE AND FOCUS ADJUSTMENT - NECK • 85

APERTURE AND FOCUS ADJUSTMENT - PWC MODULE
• 96

ASSEMBLY, LOCATION, AND MOUNTING
REQUIREMENTS • 31

AUTHORIZED USERS • 13

B

BASE CAMERA MODULE DIMENSIONS SERIES V • 18

BASE INSPECTION MODULE • 82

BASE, NECK, AND SEAL INSPECTION MODULE WEIGHTS
• 17

BASE/NECK MAST DIMENSIONS SERIES V • 19

BIOMETRIC LOGIN DEVICE • 38

C

CAMERA FOCUS ADJUSTMENT - SEAL • 89

CAMERA FOCUS AND APERTURE ADJUSTMENT - PSE •
92

CAMERA FOCUS AND APERTURE ADJUSTMENT - PW •
94

CAMERA HEIGHT ADJUSTMENT - BASE • 83

CAMERA HEIGHT ADJUSTMENT - NECK • 86

CAMERA HEIGHT ADJUSTMENT - SEAL • 90

CLASSIC CLUSTER BOX 400VAC • 66

CLASSIC CLUSTER BOX EXTERNAL CONNECTORS • 58

CLASSIC CLUSTER BOX MEASUREMENTS • 23

CLEANING GLASS SURFACES • 124

CLEANING OPTICAL SURFACES • 124

CLEANING PLASTIC SURFACES • 127

CLEANING THE BEAM SPLITTER • 126

CLEANING THE BEAM SPLITTER SEAL SURFACE
MODULE • 126

CLEANING THE CAMERA LENS • 125

CLEANING THE CLUSTER BOX FILTERS • 65, 123

CLEANING THE PART DETECTOR AND REFLECTOR • 127

CLEANING THE VISION PROCESSOR FILTER • 122

CLUSTER BOX • 51

CLUSTER BOX 120VAC • 73

CLUSTER BOX 230VAC • 76

CLUSTER BOX 77797 EXTERNAL CONNECTIONS • 63

CLUSTER BOX ELECTRICAL SPECIFICATIONS • 22

CLUSTER BOX EXTERNAL CONNECTIONS • 57

CLUSTER BOX MAINS WIRING • 57

CLUSTER BOX SERIES V • 22

CLUSTER BOX SYSTEM CONFIGURATIONS • 60

COMMISSIONING • 34

D

DECLARATION OF CONFORMITY - CLUSTER BOX • 28,
53

DECLARATION OF CONFORMITY - EMBEDDED CLUSTER
BOX • 27, 54

DECLARATION OF CONFORMITY - INTELLISPEC SYSTEM
• 26

E

ELECTRICAL CONNECTION • 31

EMBEDDED CLUSTER BOX 400VAC • 70

EMBEDDED CLUSTER BOX EXTERNAL CONNECTIONS •
62

EMBEDDED CLUSTER BOX MEASUREMENTS • 24

ENVIRONMENTAL CONDITIONS • 15

EXTENDED I/O (OPTIONAL) • 103

EXTENDED I/O BOARD • 103

EXTENDED I/O CIRCUITS • 114

EXTENDED I/O CONFIGURATION IN THE SOFTWARE •
116

EXTENDED I/O INSIDE THE CLUSTER BOX • 115

EXTENDED I/O SIGNALS - FIRMWARE UP TO F259 • 104

EXTENDED I/O SIGNALS - FIRMWARE VERSION F260
AND LATER • 109

EXTENDED I/O TERMINAL BLOCK REFERENCE • 114

F

FOCUS AND POSITION ADJUSTMENT - PW360 MODULE
• 99

H

HEALTH WARNINGS - PHOTOSENSITIVE EPILEPSY • 7
HOW TO CONTACT PRESSCO • 129
HOW TO SELECT MENU ITEMS • 36

I

INSPECTION MODULES • 81
INSTALLATION • 32
INSTALLATION REQUIREMENTS • 29
INTELLISPEC CABINET AND USER INTERFACE • 35
INTENDED USE • 10
INTERNAL WIRING DIAGRAMS FOR CLUSTER BOXES • 66
INTRODUCTION • 5

L

LIFTING HEAVY OBJECTS • 12
LIGHT TREE • 9, 49
LIGHT TREE STATUS • 50

M

MAINTENANCE FREQUENCY - BNS • 121
MARKING • 8
MECHANICAL KEYBOARD (MKB) • 37
MICRO AND WASH-DOWN CLUSTER BOX • 78
MICRO AND WASH-DOWN CLUSTER BOX MEASUREMENTS • 24

N

NECK/ SIDEWALL CAMERA DIMENSIONS SERIES V • 19
NECK/ SIDEWALL INSPECTION MODULE • 85

O

OBSERVE THE PART IMAGE • 81

P

PERSONAL PROTECTIVE EQUIPMENT • 10
PERSONNEL SAFETY • 11
POWER DOWN • 40
POWER UP • 39
PREFORM SEAL ENDCAP INSPECTION MODULE • 91
PREFORM SEAL ENDCAP INSPECTION MODULE DIMENSIONS • 21
PREFORM SIDEWALL INSPECTION MODULE • 94
PREFORM SIDEWALL INSPECTION MODULE DIMENSIONS • 21
PRESSCO PC OUTLET WIRING • 41
PROHIBITED USE • 10

PROTECTIVE EARTHING • 31
PW360 INSPECTION MODULE • 98
PWC INSPECTION MODULE • 96

R

REBOOTING THE INTELLISPEC SYSTEM • 47
RECOMMENDATIONS PRIOR TO INSTALLATION • 29
REPLACING FUSES - CLUSTER BOX • 66, 78
RESIDUAL RISK • 10

S

SAFETY CONSIDERATIONS • 5
SAFETY INFORMATION • 7
SEAL SURFACE INSPECTION MODULE • 89
SEAL SURFACE INSPECTION MODULE DIMENSIONS SERIES V • 20
SERVICING THE CLUSTER BOX • 65
SERVICING THE USER INTERFACE • 40
SHIPPING AND HANDLING • 29
SOUND PRESSURE LEVEL • 15
SPARE PARTS USAGE • 13
SPECIFICATIONS • 15
STABILITY OF USER INTERFACE • 32
STATIC DISCHARGE PROTECTION • 6
SYMBOLS • 8
SYSTEM BLOCK DIAGRAM - BNS • 30
SYSTEM HARDWARE INFORMATION • 39
SYSTEM SPECIFICATIONS • 15

T

TYPES OF CLUSTER BOXES • 54
TYPOGRAPHICAL CONVENTIONS • 5

U

USB PORTS • 37
USER INTERFACE • 16
USER INTERFACE ELECTRICAL SPECIFICATIONS • 16
USER INTERFACE EXTERNAL CONNECTIONS • 43
USER INTERFACE INPUT DEVICES • 35
USER INTERFACE MEASUREMENTS • 17
USER INTERFACE SELECTION DEVICES • 36
UTILITIES TO BE SUPPLIED BY CUSTOMER • 31

V

VENTILATION • 32

W

WARNING DEVICES • 9

WIRING DIAGRAM - BASE MODULE • 84

WIRING DIAGRAM - DC POWER DISTRIBUTION CLASSIC
CLUSTER BOX 400VAC • 68

WIRING DIAGRAM - DC POWER DISTRIBUTION
CLUSTER BOX 120VAC • 74

WIRING DIAGRAM - DC POWER DISTRIBUTION
CLUSTER BOX 230VAC • 77

WIRING DIAGRAM - DC POWER DISTRIBUTION
CLUSTER BOX 77797 • 80

WIRING DIAGRAM - DC POWER DISTRIBUTION
EMBEDDED CLUSTER BOX 400VAC • 71

WIRING DIAGRAM - NECK/SIDEWALL MODULE • 88

WIRING DIAGRAM - PSE MODULE, SHEET 1 • 93

WIRING DIAGRAM - PSE MODULE, SHEET 2 • 93

WIRING DIAGRAM - PW MODULE • 95

WIRING DIAGRAM - PW360 MODULE, SHEET 1 • 100

WIRING DIAGRAM - PW360 MODULE, SHEET 2 • 101

WIRING DIAGRAM - PWC MODULE • 97

WIRING DIAGRAM - SEAL MODULE • 90

WIRING DIAGRAM - TERMINAL STRIP CLUSTER BOX
77797 • 79

WIRING DIAGRAM - TERMINAL STRIP/ POWER
SUPPLIES/ GROUNDING - CLASSIC CLUSTER BOX
400VAC • 69

WIRING DIAGRAM - TERMINAL STRIP/ POWER
SUPPLIES/ GROUNDING - CLUSTER BOX 120VAC • 75

WIRING DIAGRAM - TERMINAL STRIP/ POWER
SUPPLIES/ GROUNDING - CLUSTER BOX 230VAC • 78

WIRING DIAGRAM - TERMINAL STRIP/ POWER
SUPPLIES/ GROUNDING EMBEDDED CLUSTER BOX
400VAC • 72

WIRING DIAGRAM ETHERNET SWITCHES • 46

WIRING DIAGRAM TERMINAL STRIP CLASSIC CLUSTER
BOX 400VAC • 67

WIRING DIAGRAM TERMINAL STRIP CLUSTER BOX
120VAC • 73

WIRING DIAGRAM TERMINAL STRIP CLUSTER BOX
230VAC • 76

WIRING DIAGRAM TERMINAL STRIP EMBEDDED
CLUSTER BOX 400VAC • 70

WIRING DIAGRAM TRACKBALL • 47

WIRING DIAGRAM USER INTERFACE/ PC • 45

WIRING DIAGRAMS • 41