INTELLISPEC™ SV

Hardware Guide [CSL+]

Pressco Technology Inc.

73345 Rev. 03

Original Instructions

Written and designed at:

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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 the Intellispec Series V Compact Single Lane (CSL+) System

The Intellispec CSL+ system performs high-speed vision inspection of parts, like the standard Intellispec Series V system.

This book covers information for CSL+ systems. The term CSL may be substituted for CSL+. Differences are pointed out where applicable.

The following is a summary of how the Intellispec Series V CSL+ system differs from the standard Intellispec Series V system.

➢ *The Intellispec Series V CSL system DOES:*

- Support one lane of inspection, supporting up to three cameras* (as opposed to up to eight lanes on a standard system). Note: Some camera configurations require extra hardware.
  - *CSL systems support one camera. CSL+ systems support three cameras.
- Support Intellispec Series V E² tunnels.
- Support all cameras currently supported by Intellispec Series V standard systems.
- Support the following applications:
  - Lined shell
  - Food ends
  - EZO ends
  - Three piece cans
  - Two piece cans
  - Twist closures
  - Crowns
- Support touch screen or non-touch screen options.
- Support wall mount or pole mount options.
- Support the biometric reader option.
- Support plant networking.

➢ *The Intellispec Series V CSL system does NOT:*

- Have a pedestal for the computer and user interface.
- Support the Defect Database option.
- Support the remote user interface.
- Support cluster boxes.

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 5.5.*

This guide was published: Tuesday, May 15, 2018

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 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.

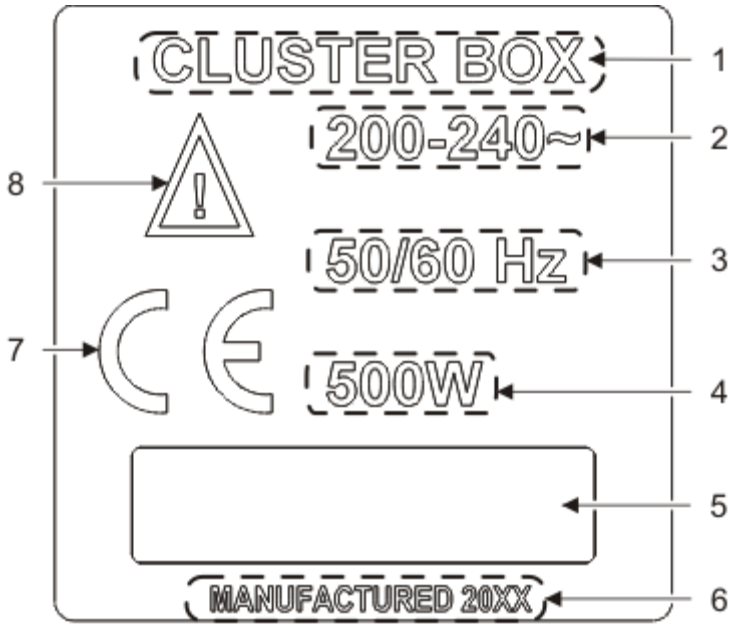
Symbols

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

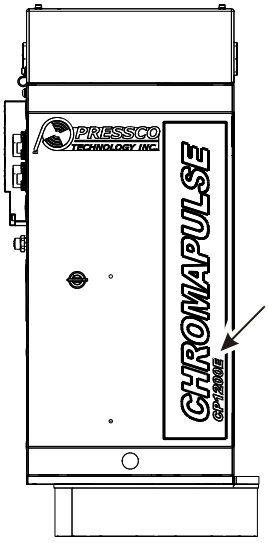
5 - Serial number is listed in this box

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 Series V 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 39).

Light Tree (optional)

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

Residual Risk

The Vacuum Cap Conveyor 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 door closed.

Intended Use

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

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

Space Required: The Vacuum Cap Conveyor machine 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 Vacuum Cap Conveyor system should NOT be used for any purpose other than specifically indicated in the section titled ***Intended Use*** (on page 9).

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.
	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 33) 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 Intellispec 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 Intellispec 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 Vacuum Cap Conveyor 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 Vacuum Cap Conveyor 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.

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

CSL User Interface Electrical Specifications

The following are electrical specifications for different configurations of the User Interface:

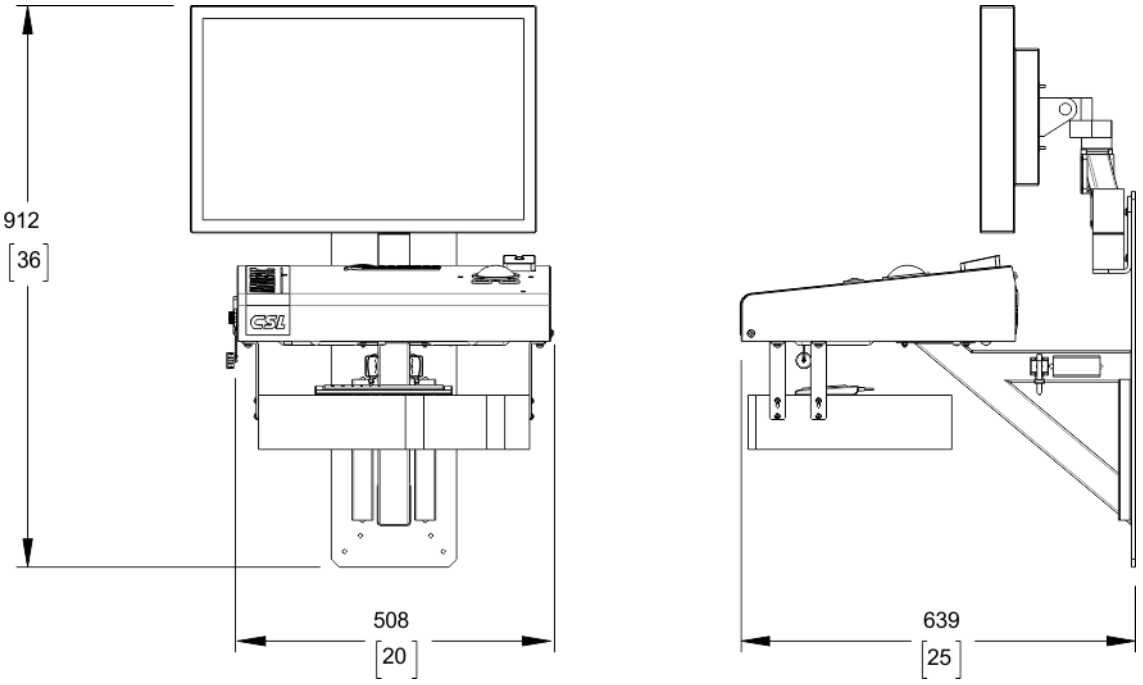
User Interface with 500VA UPS, 120VAC	
Voltage Range	100-132VAC
Nominal Voltage	120VAC
UPS Input Current	5.6A @ max load
UPS Output Power (max)	300W
Frequency	50/60Hz

User Interface with 500VA UPS, 230VAC	
Voltage Range	200-240VAC
Nominal Voltage	230VAC
UPS Input Current	2.4A @ max load
UPS Output Power (max)	300W
Frequency	50/60Hz

 Caution - Before connecting this system to the mains power supply, ensure that the supply voltage is within the specified range.

CSL User Interface dimensions

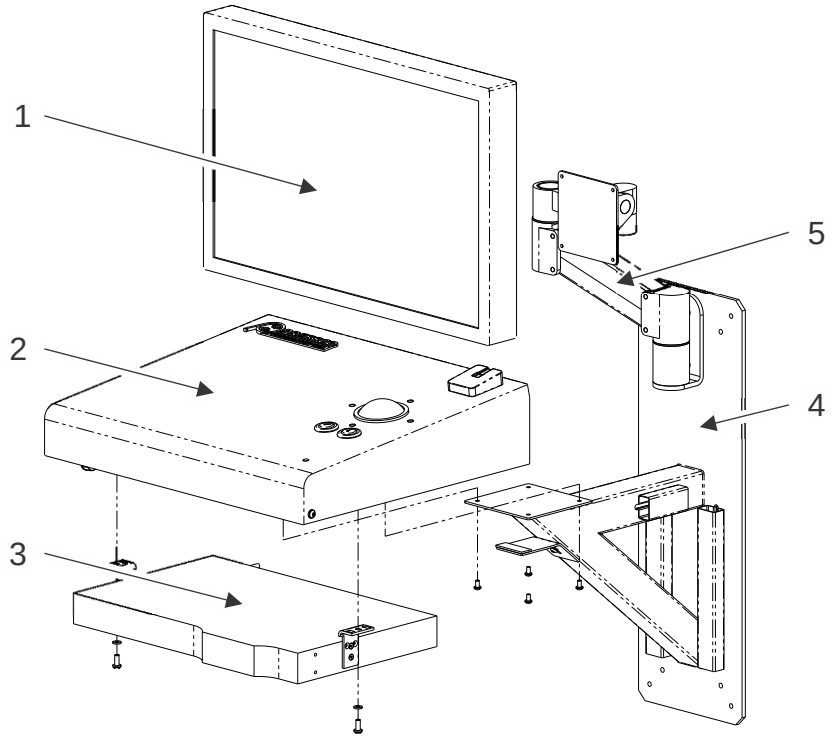
The following are the dimensions of the Intellispec Series V CSL User Interface (see illustration below):



Measurement	Value
Height	912 mm [36 in]
Width	508 mm [20 in]
Depth	639 mm [25 in]

CSL User Interface weights

The following are the weights of the Intellispec Series V CSL User Interface (see illustration below):



item	Description	Weight
1	Monitor	11.3 Kg [25 lb]
2	User Interface	18.6 Kg [41 lb]
3	UPS	9.5 Kg [21 lb]
4	Weldment	8.2 Kg [18 lb]
5	Monitor Arm	4.5 Kg [10 lb]
	Total User Interface	52.2 Kg [115 lb]

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

Integrated Tunnel Electrical Specifications

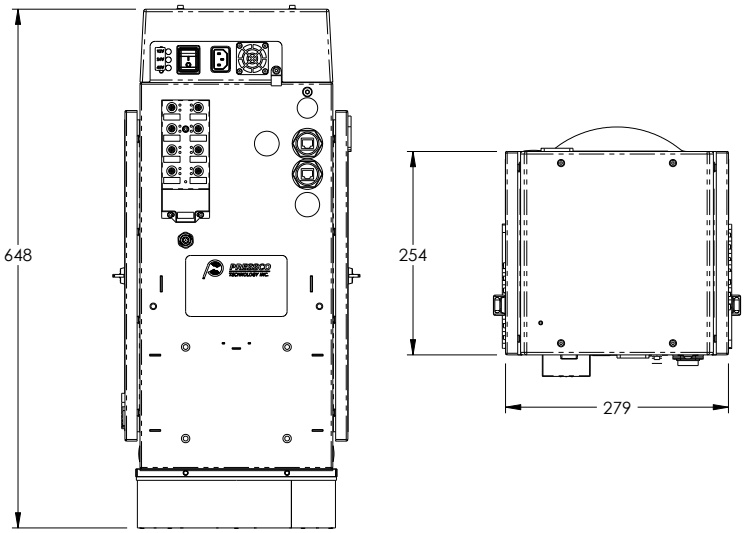
The following are electrical specifications for the integrated tunnel (an inspection module that contains cameras and part tracking in one unit, such as the CP/ EV series tunnels).

Standard - No UPS	
Voltage Range	100-240VAC
Frequency	50/60Hz
Current	6.2A @ 120VAC, 100% Load

Optional 500VA UPS, 120VAC Nominal	
Voltage Range	100-132VAC
Frequency	50/60Hz
Current	4.1 @ 120VAC, 100% Load

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

CP/EV module measurements



Measurement	Value
Weight	16.4 Kg [36 lb]
Height	648 mm
Width	254 mm
Depth	279 mm

❖ *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.

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: 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 - CSL 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	Compact Single Lane (CSL)
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: 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 and Wiring

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	1143 cm x 889 cm x 1244.6 cm (45 x 35 x 49 inches)
Weight	204.12 kg (450 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.

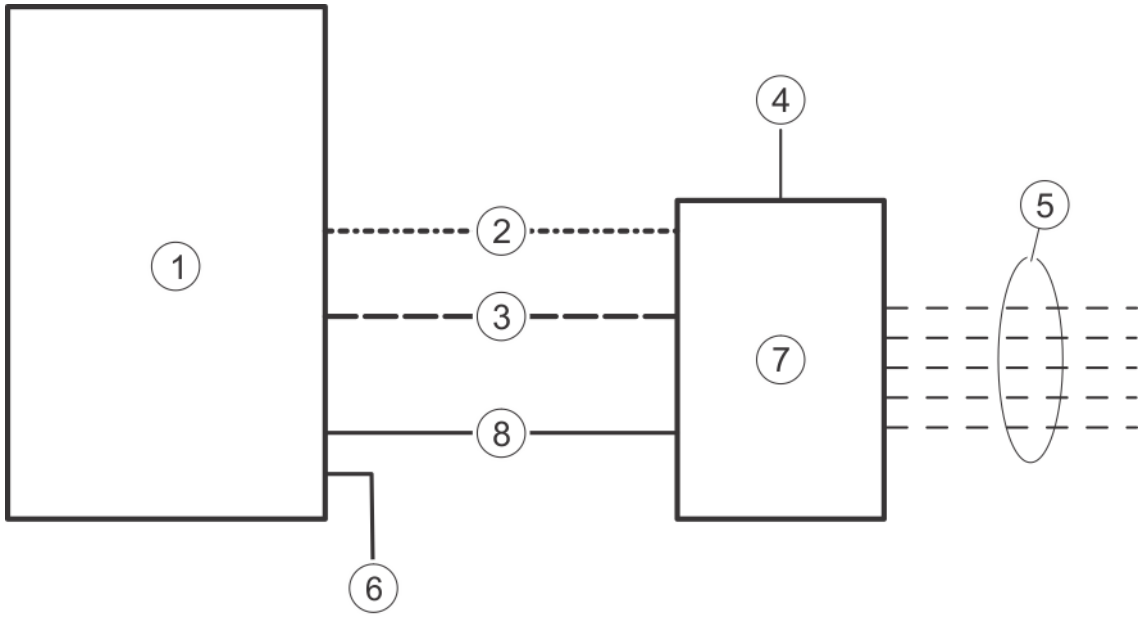
We recommend the following prior to machine installation:

- 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 - CSL

Below is a basic block diagram for Series V Intellispec. This drawing shows the major components for the system. Your system will contain only the components required for your application. The numbered components are listed in the table below.

The drawing below shows a basic block diagram for a system with an integrated tunnel (with one camera).



1	User Interface (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 "***Chromapulse module external connections***" on page 51)
6	AC power in
7	Integrated tunnel (example: CP/EV inspection module)
8	AC power from user interface to tunnel (source of power is UPS)

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*** (see "***CSL User Interface Electrical Specifications***" on page 16) (use the specifications that apply to your system) ▪ ***Integrated tunnel electrical specifications*** (on page 18) (if applicable) ▪ Cluster box electrical specifications (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.

The UPS chassis provides a protective earth ground lug on the back panel. Use this ground lug to connect any equipment that requires a chassis ground.

Caution - 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.

Caution - Do not replace detachable mains supply cords with inadequately rated cords. Only use properly rated cords.

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 rounding terminal.

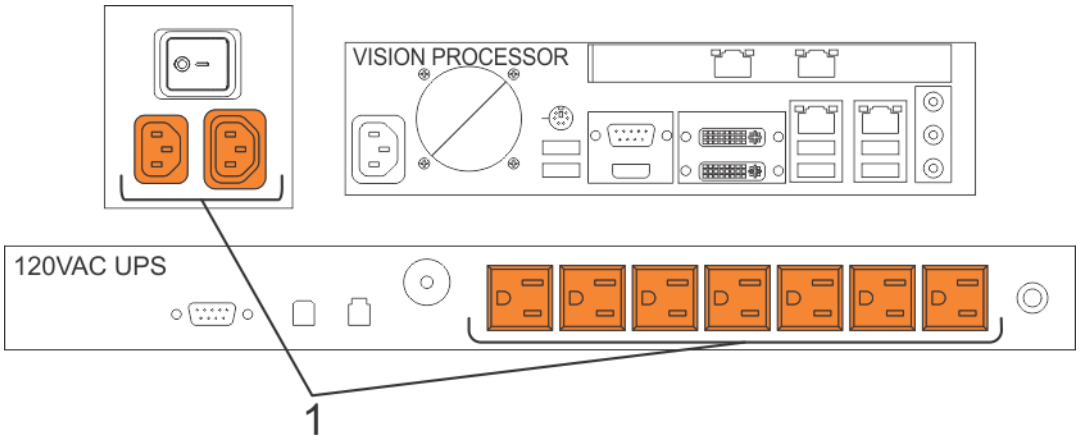
Electrical connection

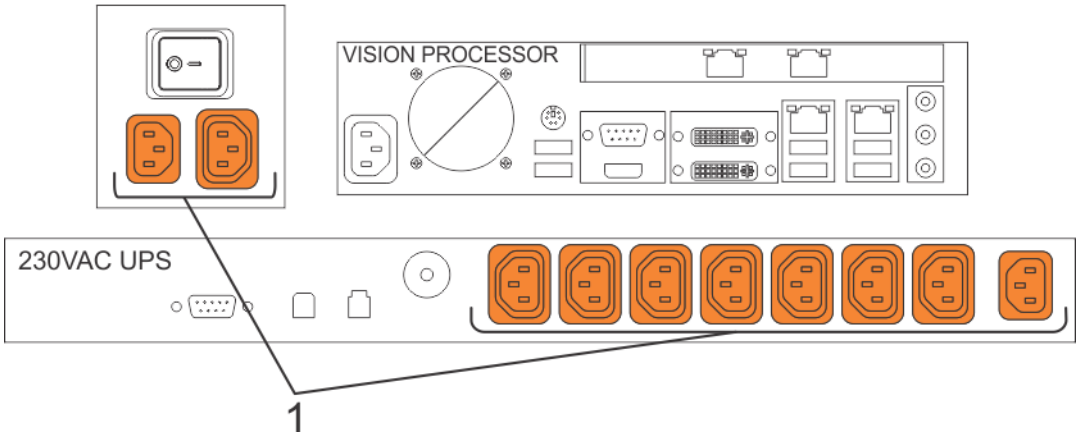
Make sure that the power outlet voltage matches the voltage required by the machine. Refer to the specifications for equipment included with your system:

- ***CSL User Interface Electrical Specifications*** (on page 16)
- ***Integrated tunnel electrical specifications*** (on page 18)

Warning - Due to the presence of an uninterruptible power supply, appliance couplers (power cords) are the power disconnect device. Do not position the equipment such that access to the couplers 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, while leaving the protective earth intact.

To isolate the Compact Single Lane System from the power supply, ALL couplers identified below MUST be disconnected.





1) To remove power from the system, disconnect power cords from ALL highlighted outlets

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

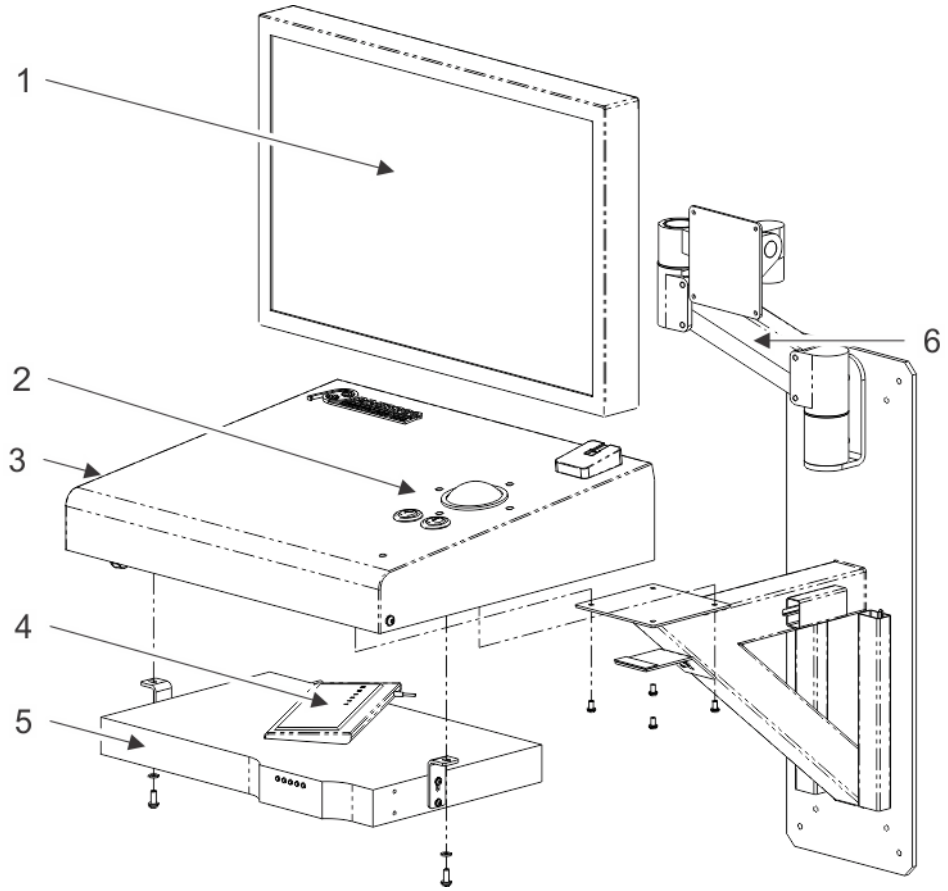
Commissioning

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 user interface 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 CSL 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 buttons: Select button [✓] Information and right-click button [i]
3	USB convenience port is mounted on the side of the user interface.
4	Mechanical keyboard (MKB) for administrative tasks
5	UPS (Uninterruptible Power Supply)
6	Mounting arm

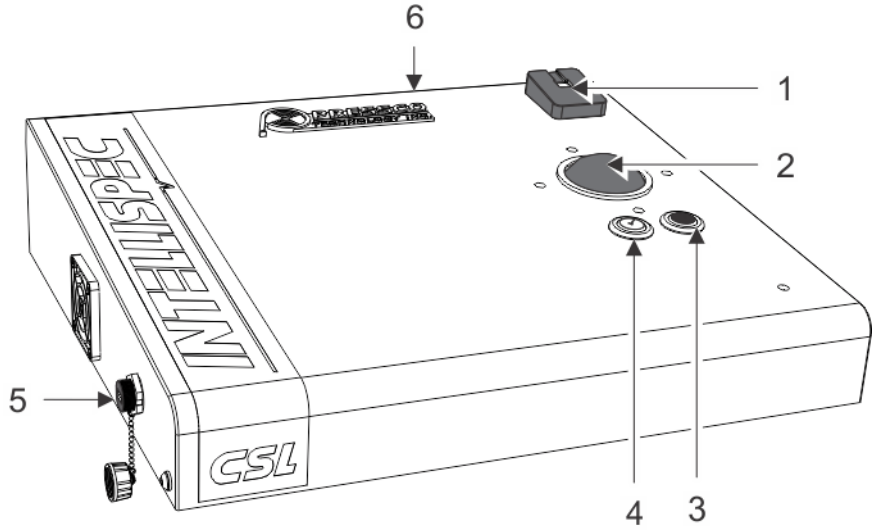
User interface input devices

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

- ***Trackball and buttons*** (see "***How to select menu items***" on page 30)
- On Screen Keyboard (OSK)
- Touch Screen monitor (optional)
- Temporarily connected conventional ***Mechanical Keyboard (MKB)*** (on page 31)
- ***USB Ports*** (on page 31)
- Optional Biometric Identification login ***device*** (see "***Biometric login device***" on page 32)

CSL User interface selection devices

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



1	Optional Biometric Identification login device
2	Track Ball
3	Button (right-click) to call up a context-sensitive menu about the selected object on screen
4	Button (left-click) to select and activate objects on screen
5	USB convenience port
6	AC power switch located on the back of the unit

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 [i] 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 31). This keyboard will mostly be used for system level tasks such as BIOS configuration, Network configuration, and Operating System level setup.

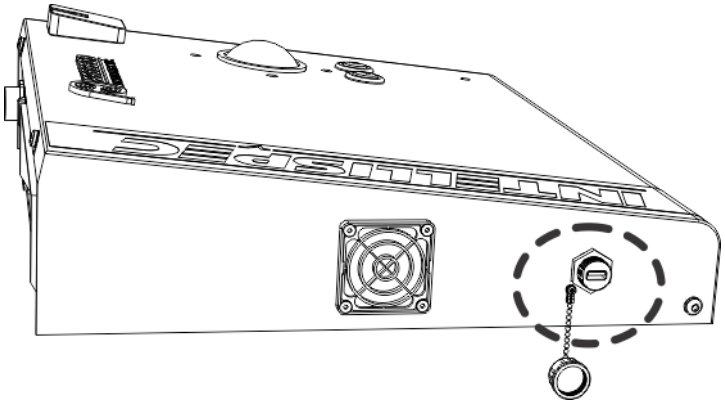
The keyboard:

- Is primarily used by Pressco Field Service Engineers
- Rests on the UPS when not in use
- 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.

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
- ***Inspection Module Adjustments*** (see "***Inspection Modules***" on page 41)
- ***Extended I/O*** (on page 75)
- Maintenance Frequency - BNS
- ***Maintenance Frequency*** (see "***Maintenance Frequency - Compact Single Lane***" on page 87) - Integrated Tunnels

Power Up

The Intellispec Series V CSL system has one power switch on the back of the enclosure that provides power to all components in the system.

Power Down

To power down the Intellispec Series V CSL and its components, turn off the switch located on the back of the unit.

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.

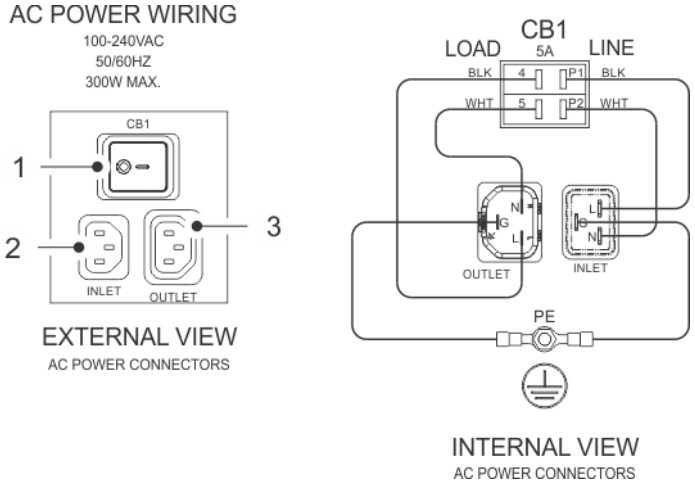
Servicing the User Interface

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.



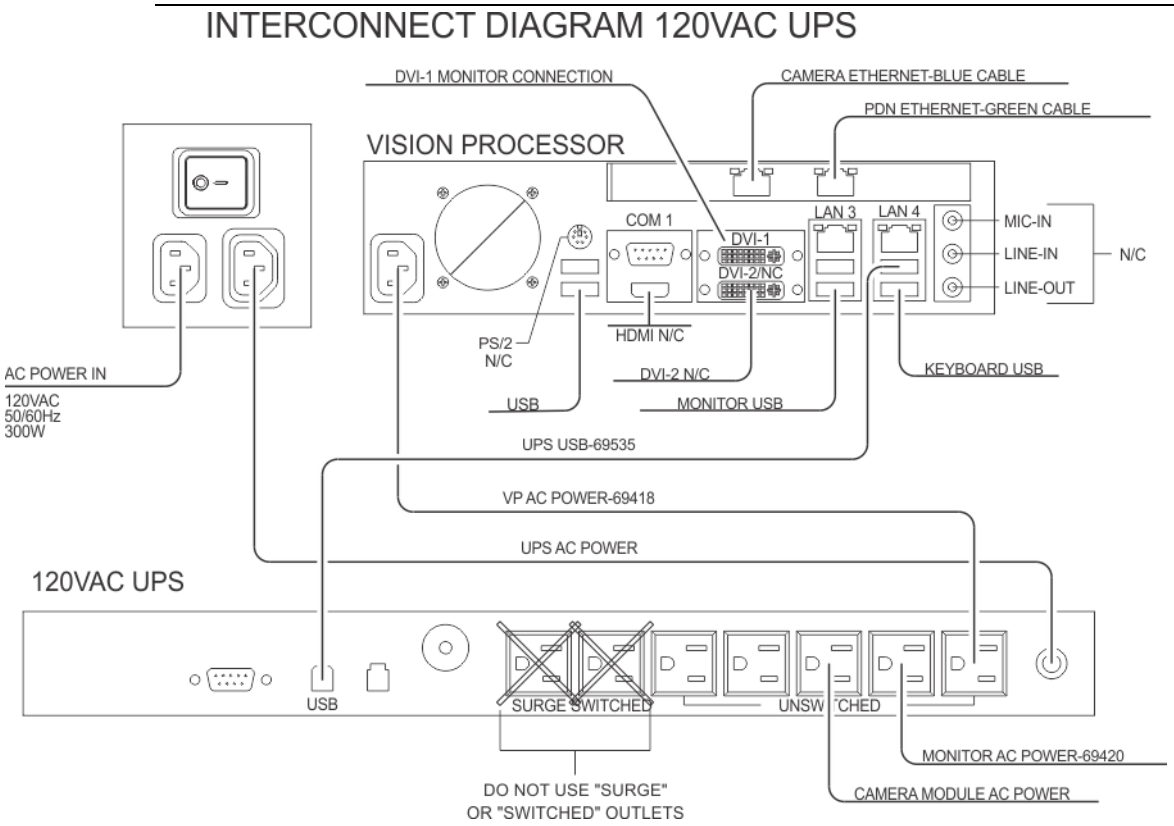
1) User interface power switch

2) AC Power in

3) UPS AC Power

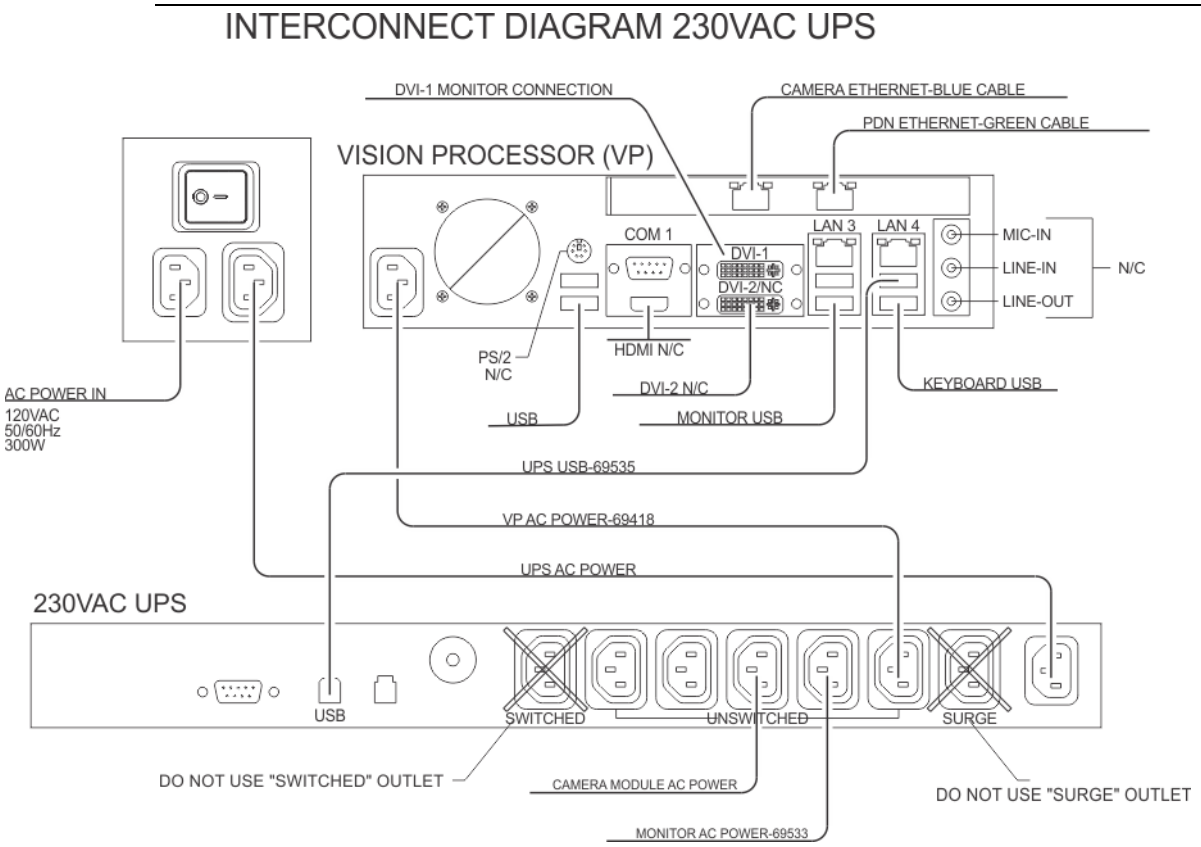
User Interface external connections - 120VAC UPS

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



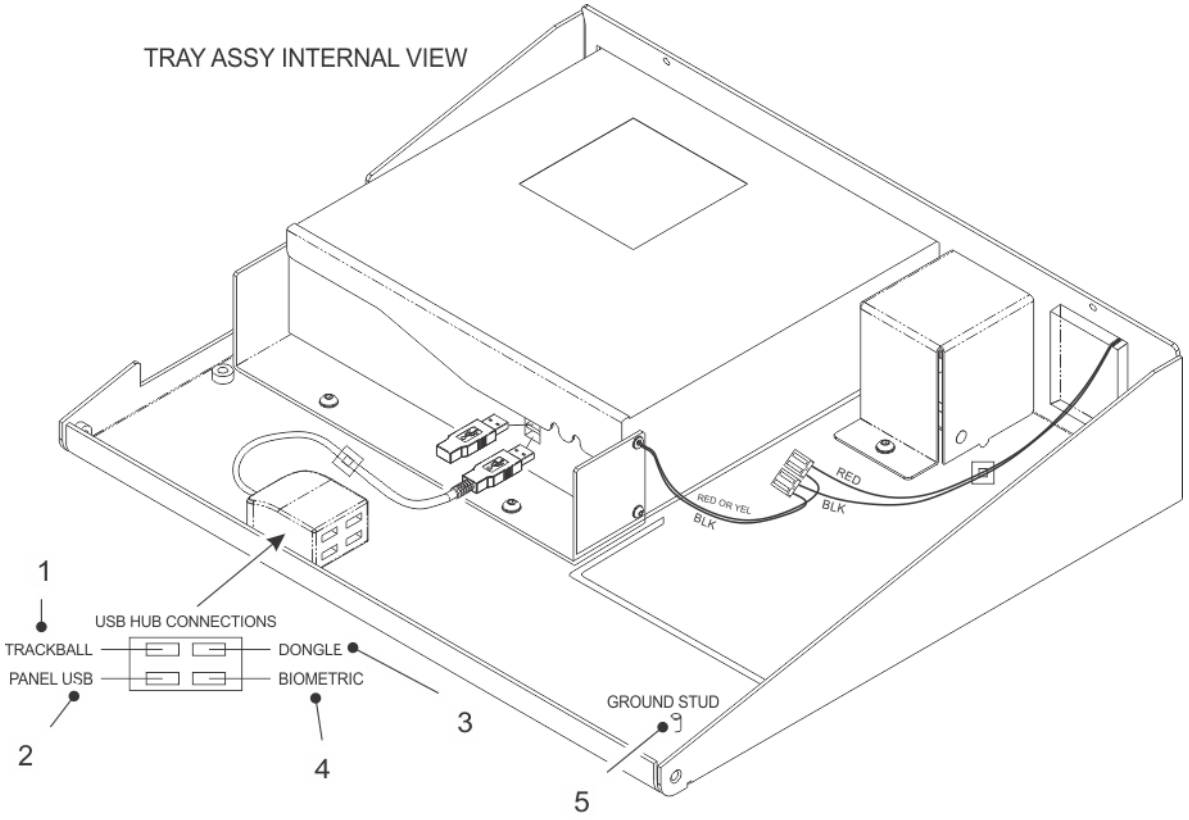
User Interface external connections - 230VAC UPS

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



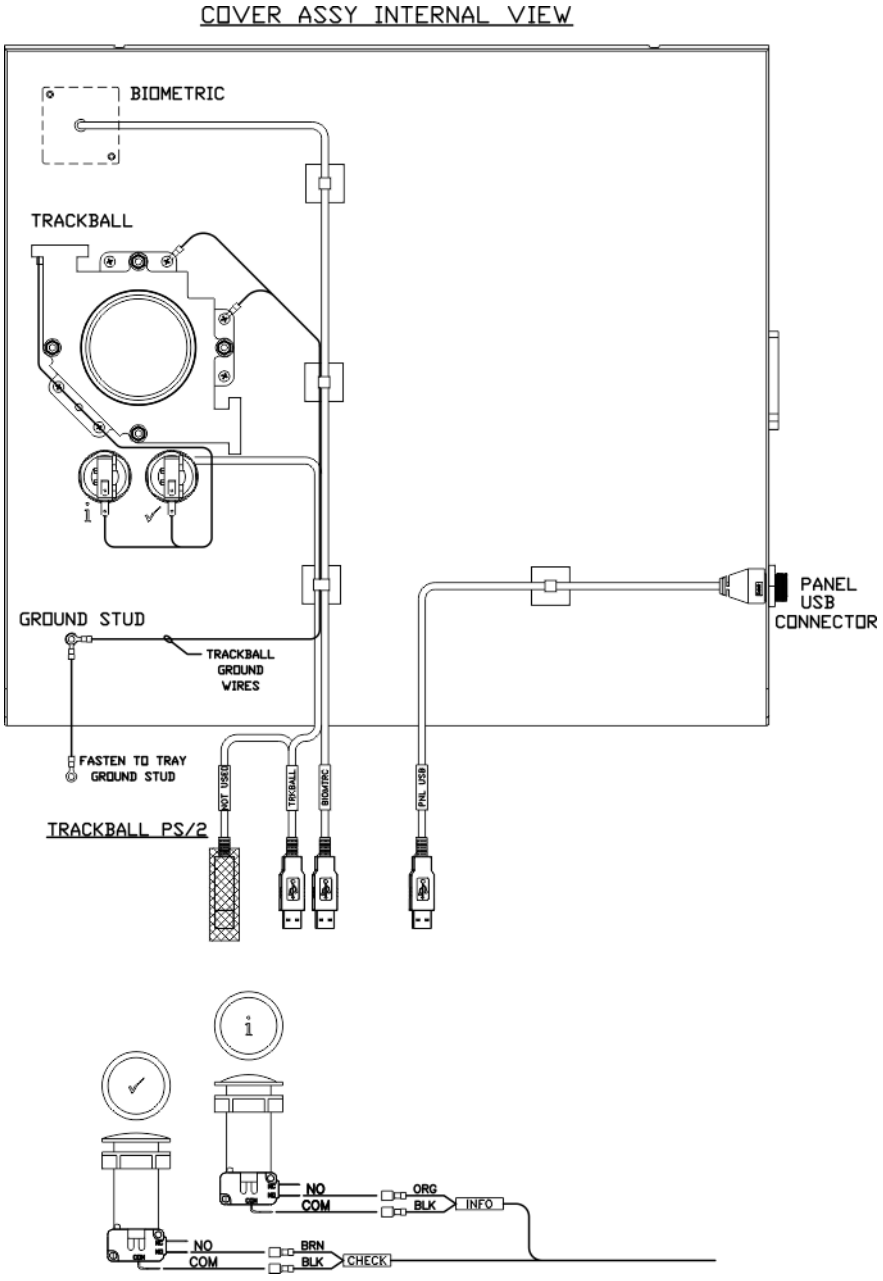
User Interface internal connections

The following diagram shows the internal USB connections of the Intellispec Series V CSL unit.



1) Trackball USB connection
2) Panel USB connection
3) Dongle
4) Biometric device USB connection
5) ground stud (for reference)

Wiring diagram trackball



Rebooting the Intellispec System

You may need to reboot the system if power or communication has been lost. 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.

❖ *Note: if the power to the UPS is interrupted for more than 30 seconds, 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.*

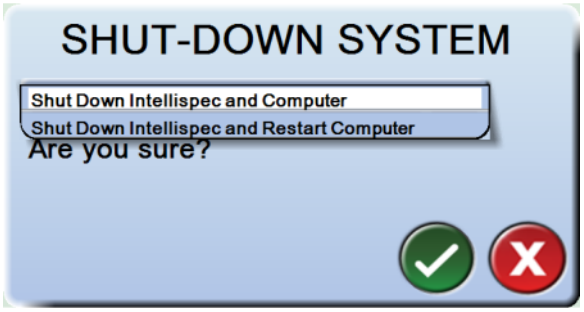
Restarting the Application

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

Important - When restarting the software, it is important to choose the correct option from the Shut Down System menu. Only select Shut Down Intellispec and Restart Computer as described below.

➢ ***To restart the Intellispec software:***

1. Log in.
2. Make sure all lanes are offline (all lanes have the red stoplight). For more information, see Online / Offline.
3. Click the Home button .
4. Click the Tools button to display the Tools menu.
5. Click the Exit System option.
6. A drop-down menu allows you to choose an option. Choose: "Shut down the Intellispec and restart the computer."



7. Click the OK button. The Intellispec software and computer shuts down and restarts. The software will come up in System Overview mode where you can log in to continue operating the system.

Rebooting the computer

If restarting the application does not clear the errors, or the software does not restart, or you see the "System in Transition" message, try rebooting the computer.

1. Connect the ***Mechanical keyboard (MKB)*** (on page 31).
2. Press Ctrl + Alt + Delete on the mechanical keyboard.
3. Use the Log Off option to log off of Intellispec.
4. 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.

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

Vision Processor Shutdown

If restarting the application or computer does not clear the errors, try rebooting the entire system. This involves shutting down the software and removing power.

➢ ***To shut down the Vision Processor:***

1. Without exiting from the Intellispec software application, turn off the Vision Processor ON/OFF switch on the back of the User Interface. For the location, see ***Power Up*** (on page 33).
2. WAIT while the UPS shuts down - approximately 30-40 seconds.
3. Leave the Vision Processor off for an additional 40 seconds to allow the inspection module LPIP to discharge.
4. Turn on the Vision Processor switch to restart the system. The software will come up in System Overview mode where you can log in to continue operating the system.

Important - The Vision Processor ON/OFF switch must be off for approximately 40 seconds to before turning it back on for proper restart.

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 39).

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

Inspection Modules

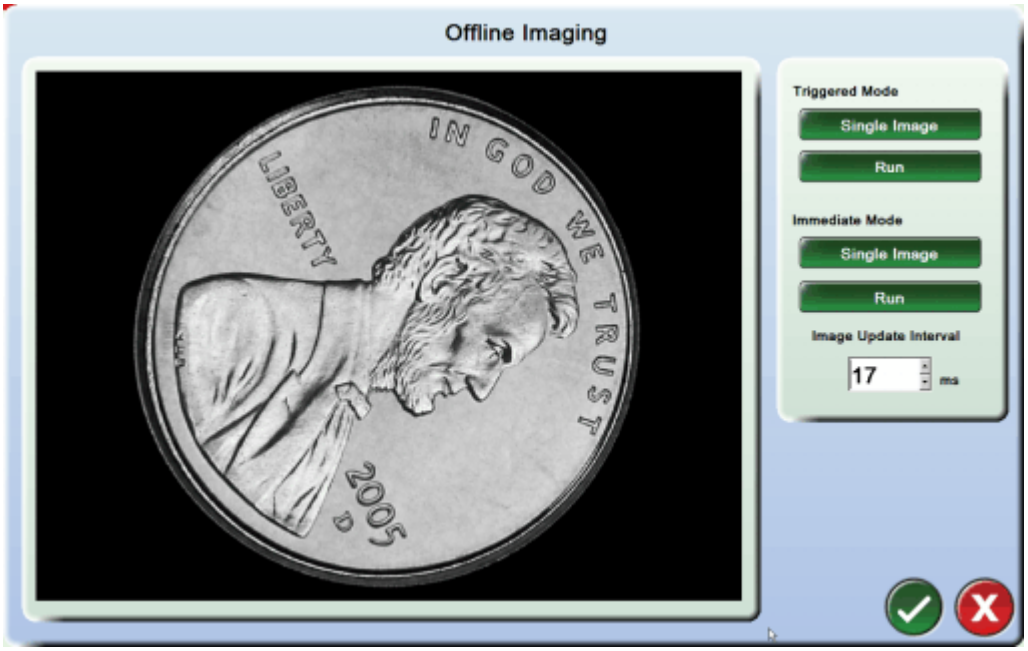
Inspection module adjustments include the camera position, aperture, and camera focus.

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:***

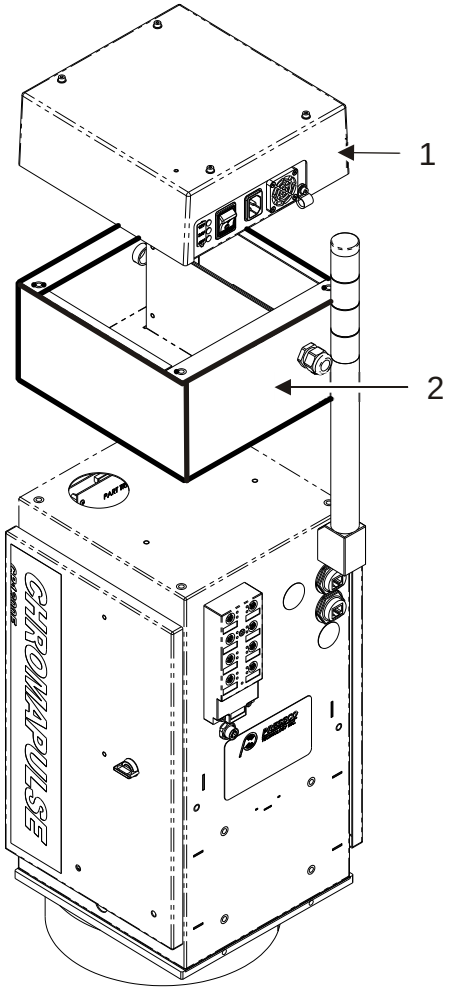
1. Make sure the lane is offline.
2. Select a sensor 

, 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.

Extended I/O in inspection modules

The ***Extended I/O*** (see "***Extended I/O board***" on page 75) kit (optional) is installed within Chromapulse inspection modules as shown below.

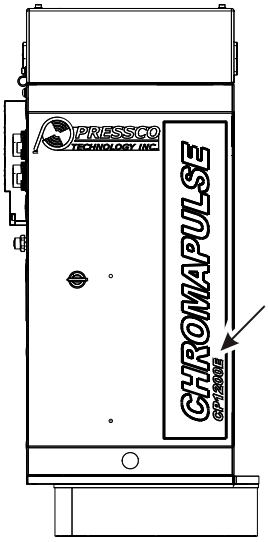


1) power cap

2) Extended I/O kit

CP/E Series modules

The CP/E series of inspection modules is a group of modules with similar components. The module's appearance and adjustments are similar between models. The difference between model numbers lies in the specific lighting and optics for inspection of different types of parts. To see your model number, look at the label on the outside of the module.

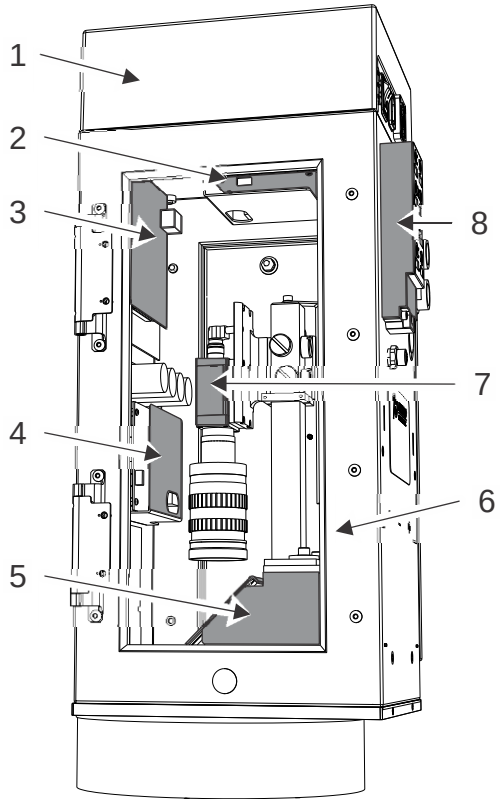


An ***Extended I/O*** (on page 75) kit is available for the CP/ E series inspection modules.

This section covers CP/E models including:

- CP500E
- CP750E
- CP1200E
- CP1500E

The basic components of the CP/EV module are shown below.



1) Power assembly

2) Second driver and light control module (models CP1200E and CP1500E only)

3) Part Tracker assembly

4) Driver and light control module

5) Fill light module with beam splitter

6) Ethernet switch (mounted on inside wall - not shown)

7) Camera

8) 8-port I/O box: ***CP/ EV inspection module I/O connectors*** (see "***Chromapulse module external connections***" on page 51)

Adjusting the CP/ E Series modules

Module Height Adjustment

The height of the module is easily adjusted. Refer to the illustration below. Loosen the adjustment knob [item 4] and use the handle [item 3] to move the module up or down. You can move the module with one hand while viewing the image on the monitor. Tighten the knob when desired height is achieved.

Caution: Loosen only one knob [2 or 4] at a time. Otherwise, the weight of the module may not be supported.

Adjust for different part size

- Move the module up or down to increase or decrease the size of the part image while adjusting the module. ***Observe the Part Image*** (on page 41)
- Use camera position adjustment to adjust for small change in part size - ***Camera Position Adjustment*** (on page 46)
- The adjustable stops [items 1 and 5] can be used to mark where the module is supposed to rest. For example, the bottom stop [item 5] can be placed at the module's lowest inspection height. You can easily raise the module to clean or clear jams, then lower the module back down to the stop.
- The top stop [item 1] can be used to mark the module's highest inspection height – for your largest inspected part.

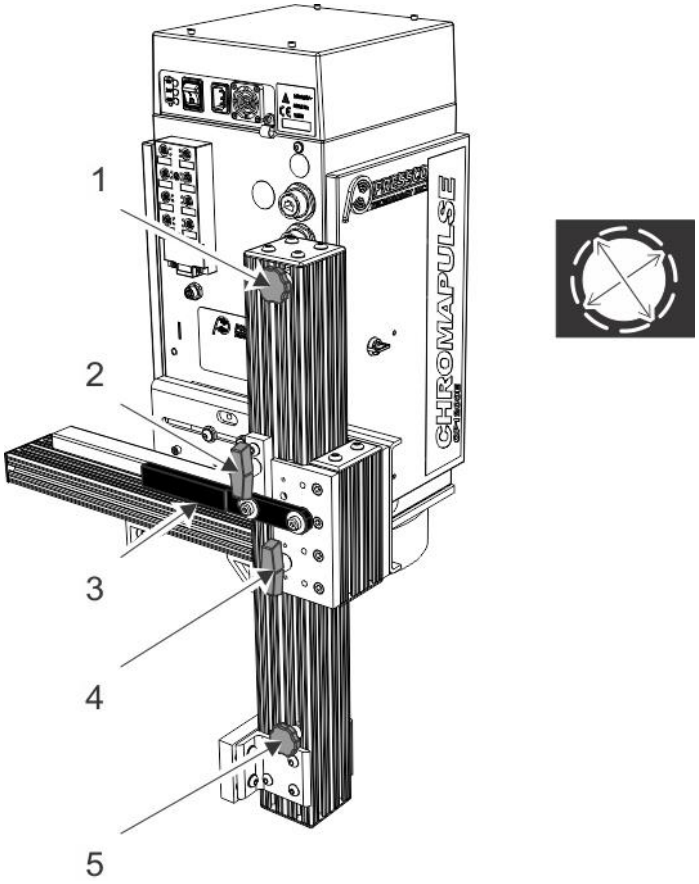
➢ *To adjust module height (or to raise the module for cleaning or clearing jams):*

1. Loosen the adjustment knob [item 4].

   ❖ *Note: if you need a greater range of movement [example: you are changing from inspecting a shorter part to a much taller part], then loosen knob 2 first. Move the module using the handle, then tighten knob 2. Then use knob 4 for smaller adjustments.*

2. Use handle [item 3] to move the module up or down.

3. Tighten the knob [item 4].



1) Adjustable stop - highest inspection position

2) Range Knob - locks the pivot position in place. Loosen only if you need to increase the range of movement of the module, move the module using the handle, then tighten the knob.

3) Handle - use to move the module up or down

4) Adjustment Knob - loosen to move the module, then tighten to secure the module in place

5) Adjustable stop - lowest inspection position

Switch sides

The CP/E series modules are designed for maximum flexibility to fit into your production line. During installation, the module can be changed so that the height adjustment brackets can be placed on the other side of the module.

Likewise, the doors of the module may be removed and their hinges attached to the other side, for the door to swing oppositely.

Camera Adjustments

If your inspection module has the optional motorized focus and aperture feature, you can adjust the focus and aperture through the software: Camera Focus and Aperture.

Focus Adjustment

Look at the part image to observe the adjustments: ***Observe the Part Image*** (on page 41)

To adjust focus, carefully remove or open the inspection module cover. Turn the focus adjust ring while observing the part image on the monitor. Adjust the focus for the sharpest image. If needed, adjust the aperture, then reinstall the cover.

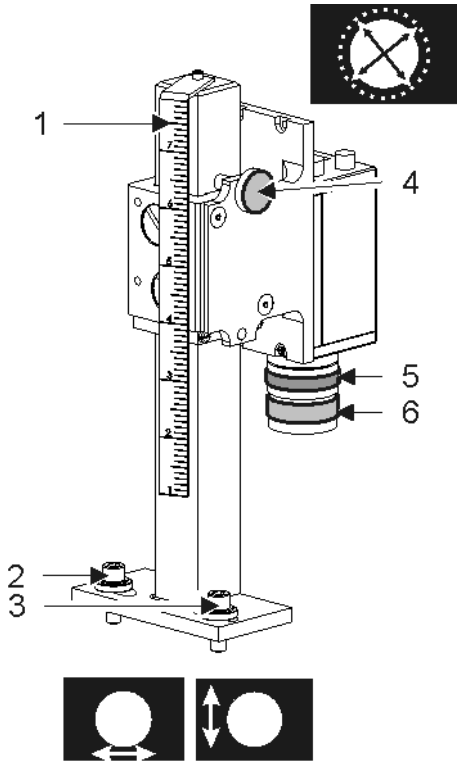
Aperture Adjustment

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. Reinstall the cover.

Camera Position Adjustment

❖ *Note: Normally, you do not need to adjust camera position. Adjust only if you are initially installing, or have replaced the inspection module.*

The cameras can be adjusted for image size and position. Carefully remove the side panel cover of the inspection module. Adjust cameras as necessary while observing image on Intellispec monitor. After making all camera adjustments, replace module cover.



1) Note camera position on scale when adjusting for your part

2 and 3) Additional camera position adjustments - horizontal or vertical on the Intellispec image

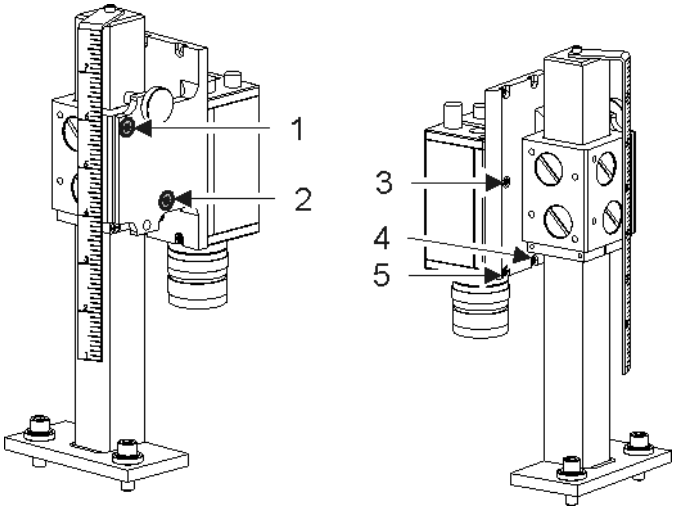
4) Camera position - adjust for image size

5) Focus adjustment (or aperture adjustment depending on lens)

6) Aperture adjustment (or focus adjustment depending on lens)

Replacing Camera

On rare occasion, you may need to replace a camera in a CP/E inspection module.



➢ ***To replace camera:***

1. Remove the two screws [items 1 and 2].
2. Remove camera from mounting plate and attach new camera.
3. Tighten two screws [items 1 and 2].
4. If necessary, adjust the screws attached to camera bracket [items 3, 4, 5] to square the image on screen.

Lighting Adjustments

To adjust the lighting, use the software adjustments.

To see the image on the screen:

Observe the Part Image (on page 41)

Adjust lighting through either:

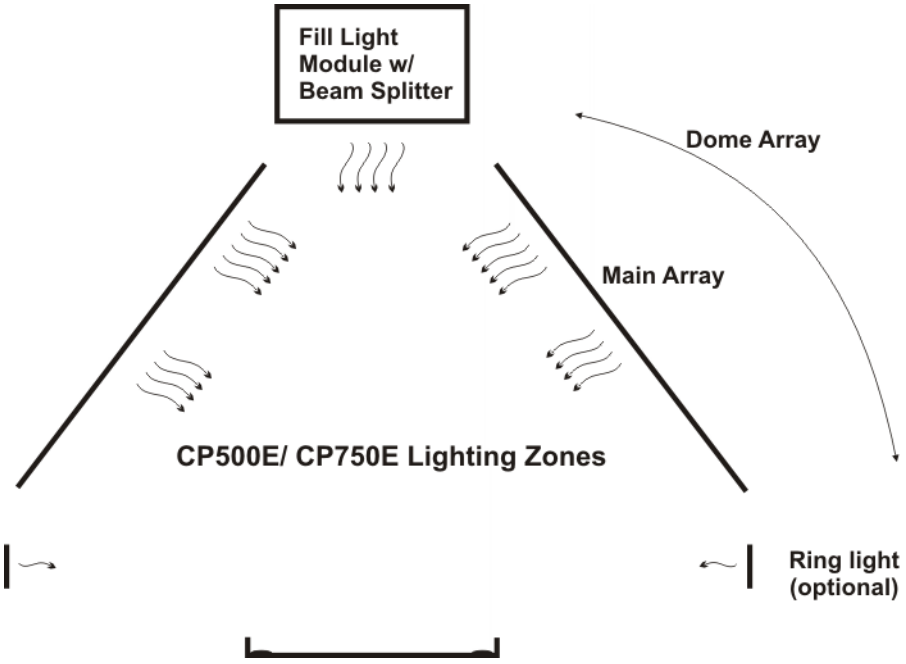
- Basic adjust lighting, or
- Advanced adjust lighting

Most often, you will use Basic Adjust Lighting.

Lighting zones CP500E/ CP750E

These modules use one camera and several lighting zones (see below). The camera and lighting zone configuration for CP500E and CP750E are the same; however, the angle of the lighting array of the CP500E is different than that of the CP750E. The illustration below shows the zone grouping for these modules.

These zones are programmed at Pressco and should not be changed. You may view the setup in Advanced adjust lighting.

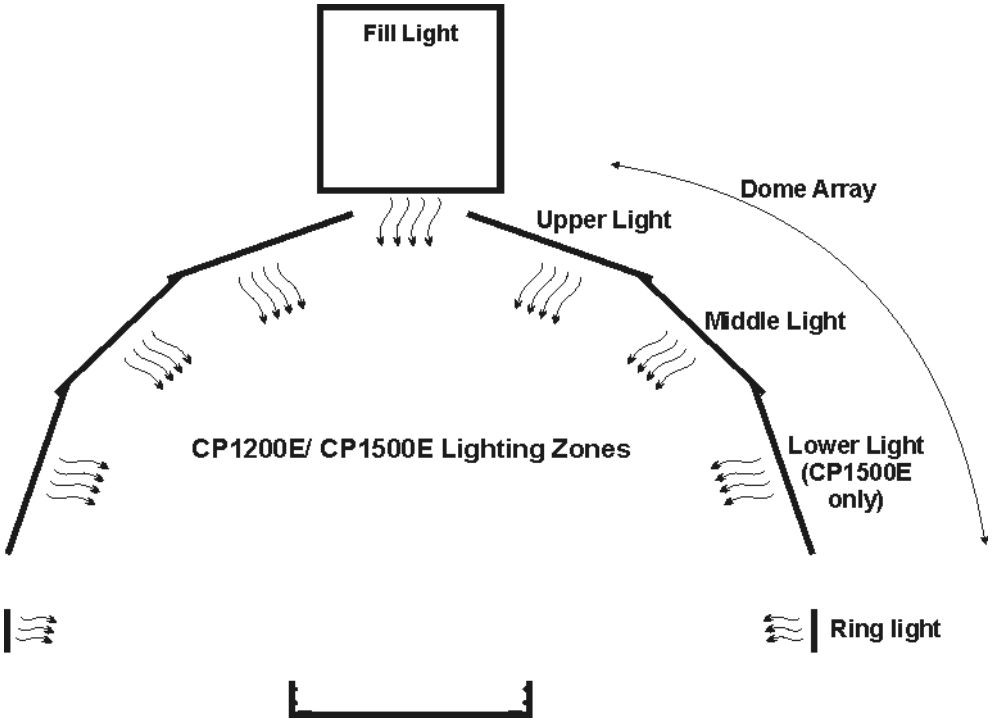


CP500E/ CP750E lighting zones		
Fill light with beam splitter (optional)	**Main array**	**Ring light (optional)**
4 zones: ▪ 1 red zone ▪ 1 green zone ▪ 1 blue zone ▪ 1 IR zone	9 zones: ▪ 3 red zones ▪ 2 green zones ▪ 2 blue zones ▪ 2 IR zones	1 zone: ▪ 1 red zone

CP1200E/ CP1500E

These modules use one camera and several lighting zones (see below). The zone configuration is similar between these modules, except that the CP1500E has an additional Lower Light array. The illustration below summarizes the grouping of the light zones for the CP1200E and CP1500E inspection modules.

These zones are programmed at Pressco and should not be changed. You may view the setup in Advanced adjust lighting.

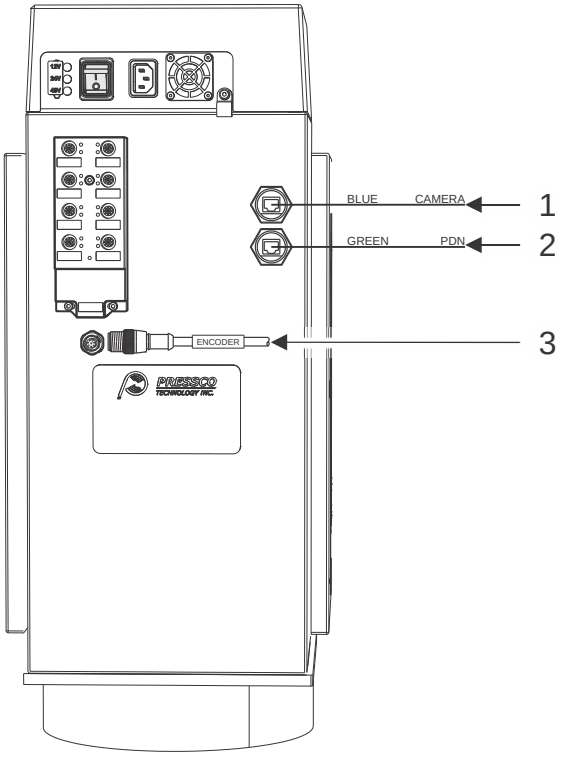


CP1200E lighting zones				
Fill light (optional)	**Upper light**	**Middle light**	**Ring light (optional)**	
4 zones: ▪ 1 red zone ▪ 1 green zone ▪ 1 blue zone ▪ 1 IR zone	9 zones: ▪ 3 red zones ▪ 2 green zones ▪ 2 blue zones ▪ 2 IR zones	8 zones: ▪ 2 red zones ▪ 2 green zones ▪ 2 blue zones ▪ 2 IR zones	4 zones: ▪ 1 red zone ▪ 1 green zone ▪ 1 blue zone ▪ 1 IR zone	OR: ▪ 2 red zones ▪ 2 blue zones OR: ▪ 4 red zones OR: ▪ 1 red zone

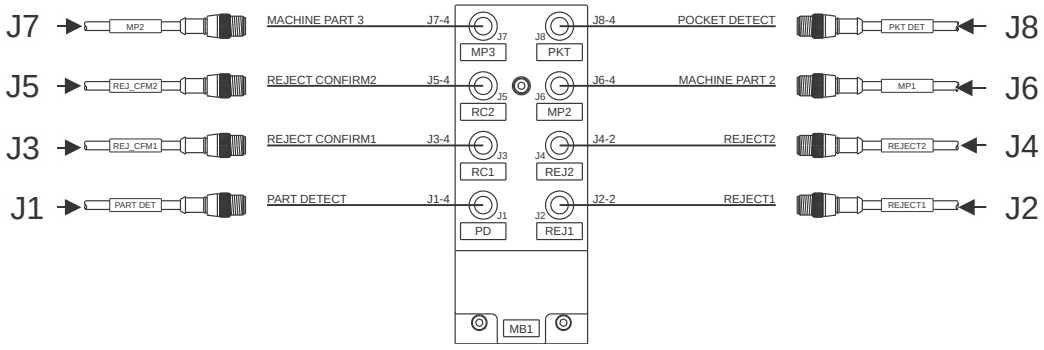
CP1500E					
Fill light (optional)	**Upper light**	**Middle light**	**Lower light**	**Ring light (optional)**	
4 zones: ▪ 1 red zone ▪ 1 green zone ▪ 1 blue zone ▪ 1 IR zone	9 zones: ▪ 3 red zones ▪ 2 green zones ▪ 2 blue zones ▪ 2 IR zones	8 zones: ▪ 2 red zones ▪ 2 green zones ▪ 2 blue zones ▪ 2 IR zones	8 zones: ▪ 2 red zones ▪ 2 green zones ▪ 2 blue zones ▪ 2 IR zones	4 zones: ▪ 1 red zone ▪ 1 green zone ▪ 1 blue zone ▪ 1 IR zone	OR: ▪ 2 red zones ▪ 2 blue zones OR: ▪ 4 red zones OR: ▪ 1 red zone

Chromapulse module external connections

❖ *Note: this inspection module is not used in all systems. Your configuration may vary.*



8-PORT I/O BOX-MB1



8 port I/O Box MB1

1) Blue cable - Camera

2) Green cable - PDN (Pressco Device Network)

3) Encoder. 8 pin panel connector.

J1) PD - Part detect

J2) REJ1 - Reject 1

J3) RC1 -Reject Confirm 1

J4) REJ2 -Reject 2

J5) RC2 - Reject Confirm 2

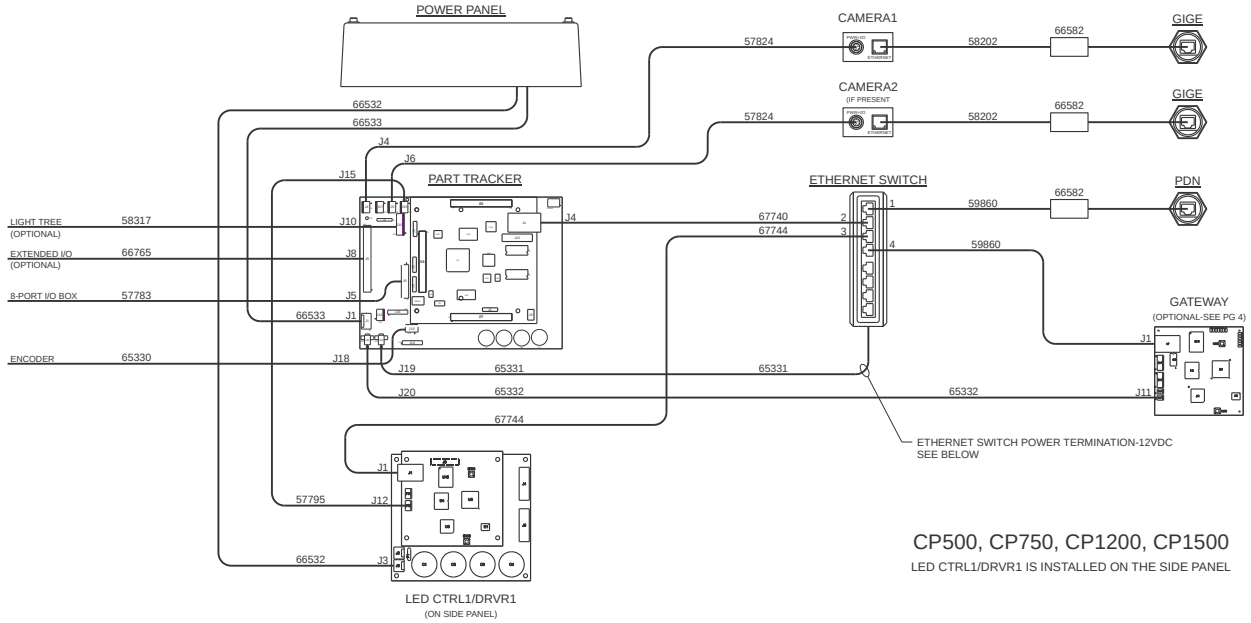
J6) MP2 - Machine Part 2

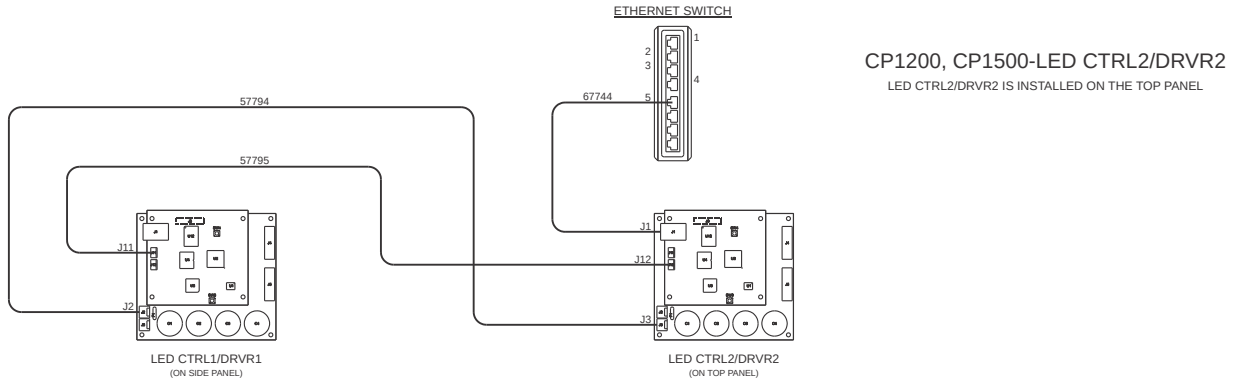
J7) MP3 - Machine Part 3

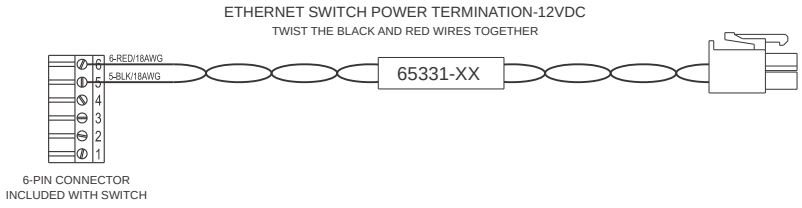
J8) PKT - Pocket Detect

CP/E inspection module internal connections

This drawing shows the internal wiring typical of inspection modules CP500, CP750, CP1200, and CP1500.



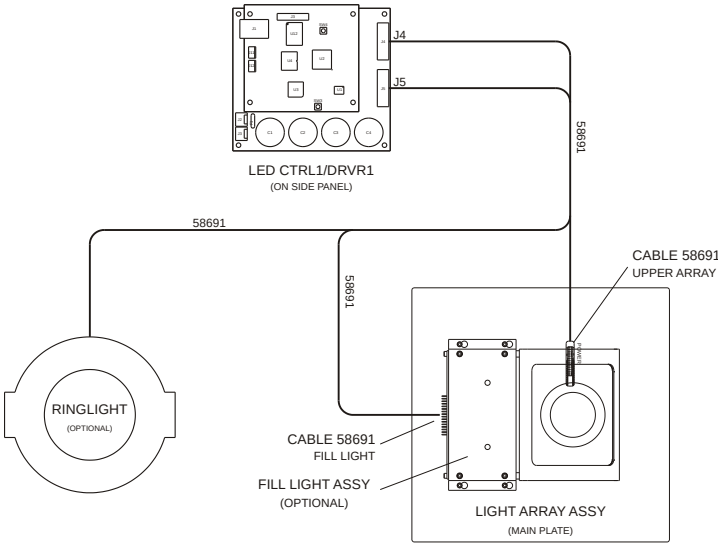




❖ *Note: on Part Tracker assembly, switch RSW1 must be set to '0' for proper operation*

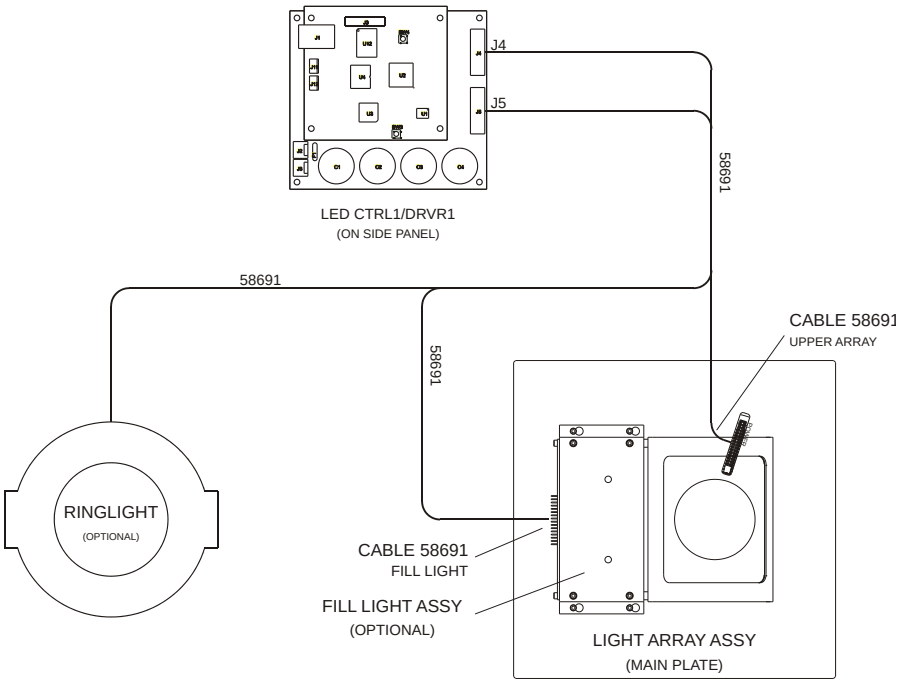
CP500E light array connections

CP500-LIGHT ARRAY CONNECTIONS



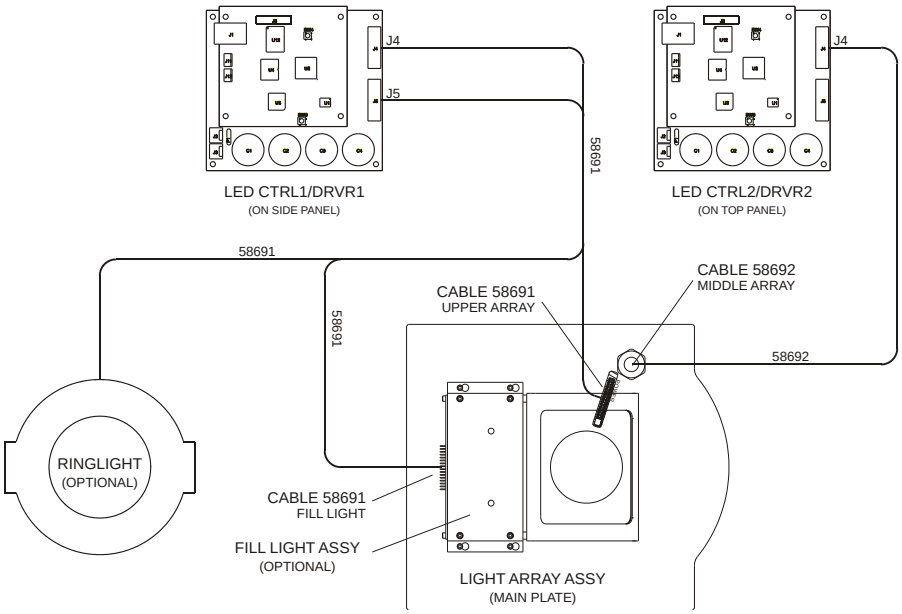
CP750E light array connections

CP750-LIGHT ARRAY CONNECTIONS



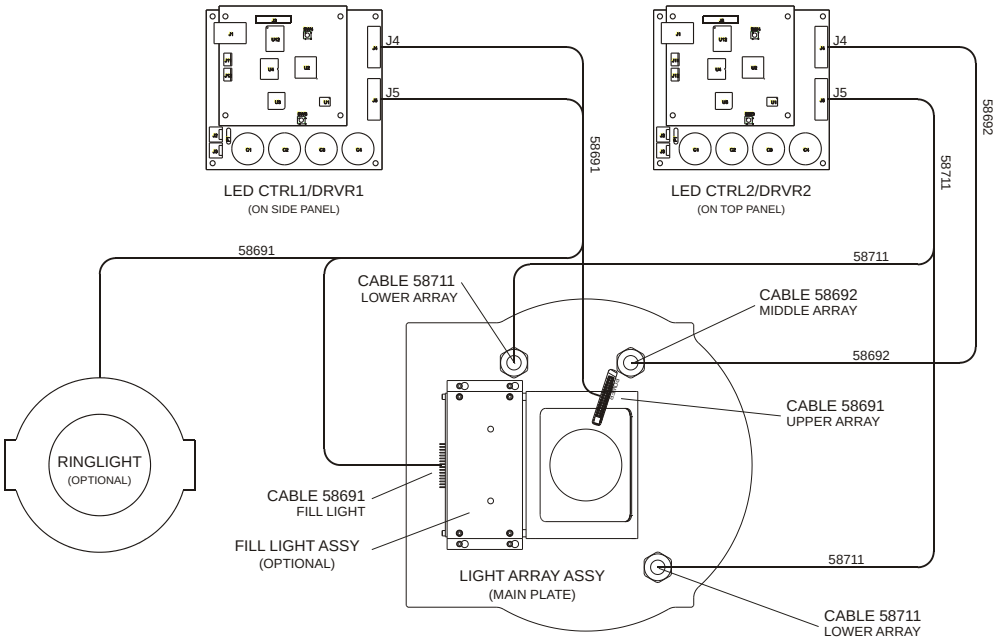
CP1200E light array connections

CP1200-LIGHT ARRAY CONNECTIONS

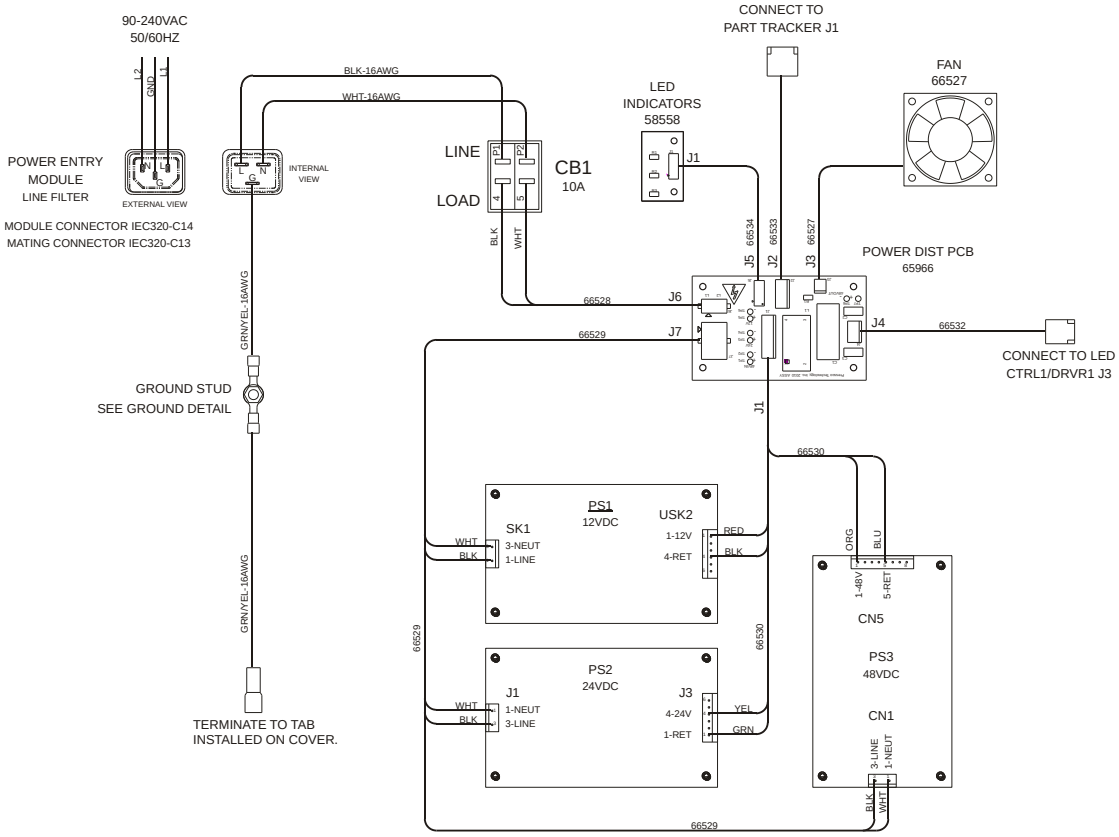


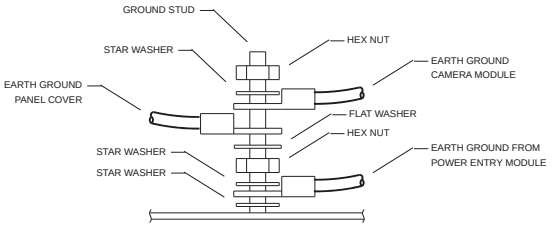
CP1500E light array connections

CP1500-LIGHT ARRAY CONNECTIONS

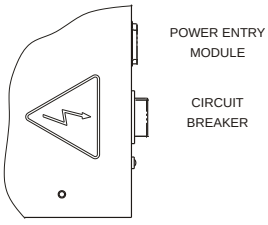


CP/E Power Panel connections





GROUND DETAIL
FASTEN GROUND LUGS AS SHOWN



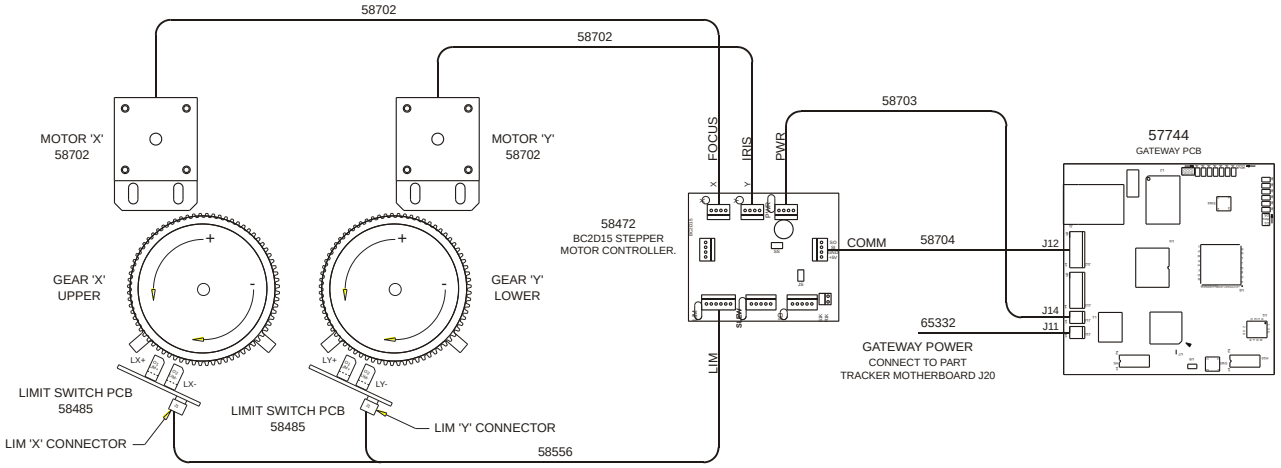
DETAIL "A"
APPLY ITEM 35 LABEL TO TOP OF
COVER AT AC POWER ENTRY POINT

CP/ E Motorized focus connections (optional)

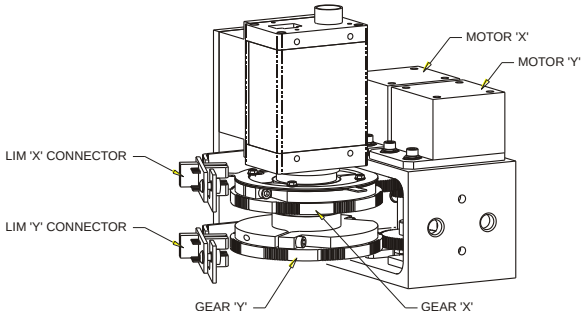
The following wiring diagram shows the wiring between the motors and controllers for inspection modules that have the motorized focus option.

MOTORIZED FOCUS CONNECTIONS

(OPTIONAL)



CAMERA ASSEMBLY



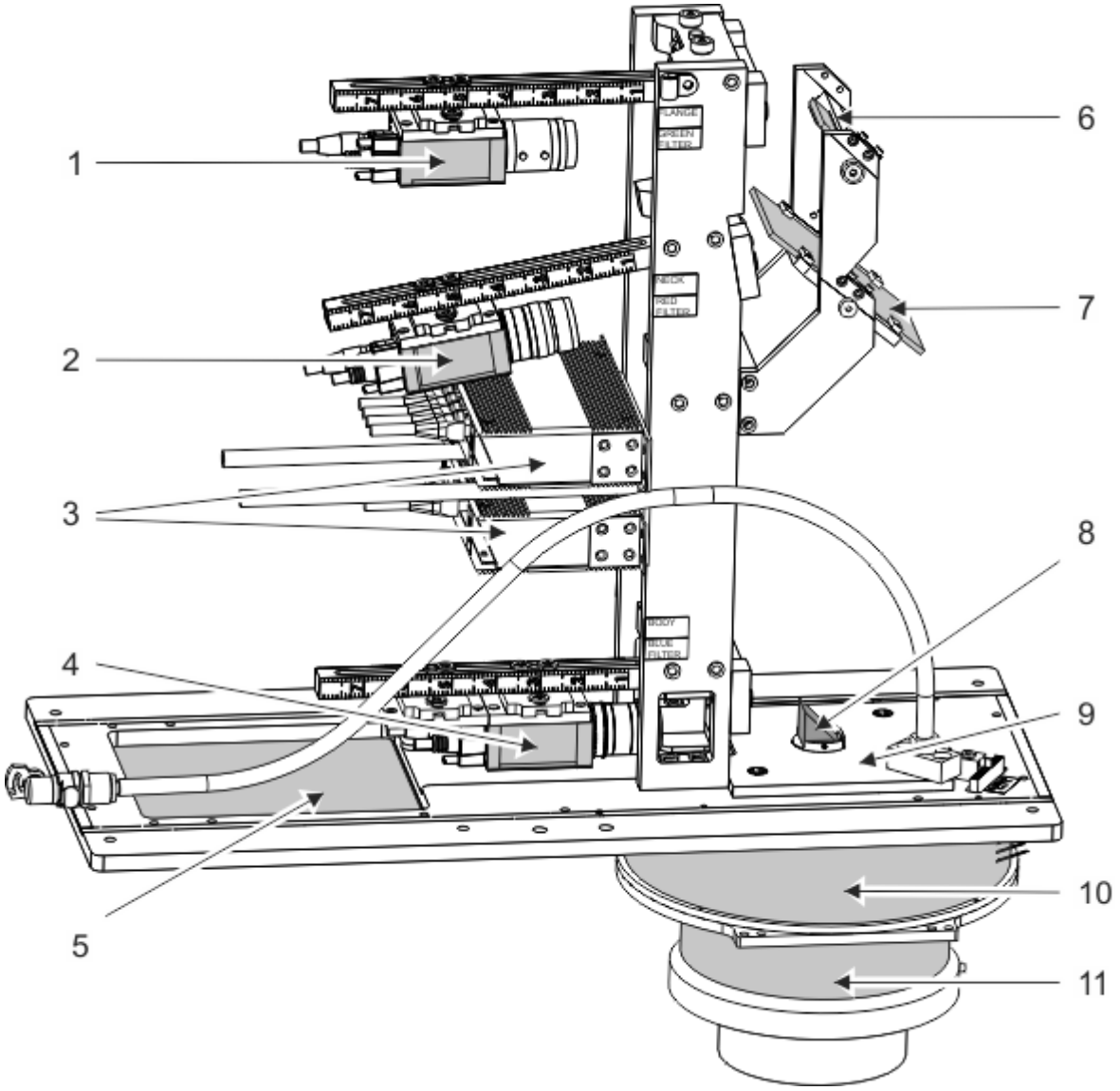
CP4422EV inspection module

The CP4422E inspection module provides comprehensive inside of can inspection. The module can be configured with up to four cameras to inspect the flange, neck, and body of the can. The main components of the CP4422E are shown below. Note that your system may not contain all components shown.

❖ *Note: if this module is used with an Intellispec Series V CSL system, there is a limit of two cameras.*

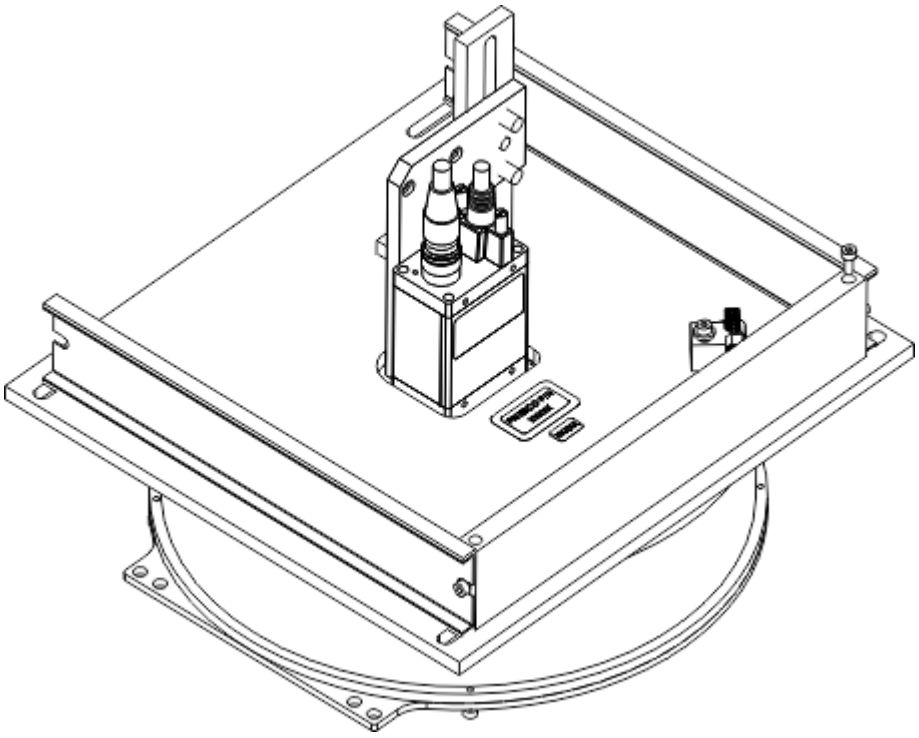
The color of the arrays and filters on the cameras dictates what color the camera sees. The Neck camera sees only red light. The Body camera sees only blue light. The Flange camera sees only green light.

An ***Extended I/O*** (on page 75) kit is available for the CP4422E.



1	Flange camera with Green Pass filter installed
2	Neck camera with Red Pass filter installed
3	Ethernet switch
4	Body camera with Blue Pass filter installed
5	Plate or space for Auxiliary module
6	Beam splitter/ mirror assembly
7	First surface mirror
8	Periscope assembly for body camera
9	Window - neck and flange cameras look through
10	Body, flange, and neck arrays inside
11	Ellipsoidal mirror inside

An auxiliary module may be installed to provide additional inspection (the area inspection depends on your application). It is installed in place of the plate [item 5]. An example auxiliary module is shown below.



Adjusting the CP4422EV module

Camera Adjustments

If your inspection module has the optional motorized focus and aperture feature, you can adjust the focus and aperture through the software: Camera Focus and Aperture.

Focus Adjustment

Look at the part image to observe the adjustments: ***Observe the Part Image*** (on page 41)

To adjust focus, carefully remove or open the inspection module cover. Turn the focus adjust ring while observing the part image on the monitor. Adjust the focus for the sharpest image. If needed, adjust the aperture, then reinstall the cover.

Lighting Adjustments

To adjust the lighting, use the software adjustments.

To see the image on the screen:

Observe the Part Image (on page 41)

Adjust lighting through either:

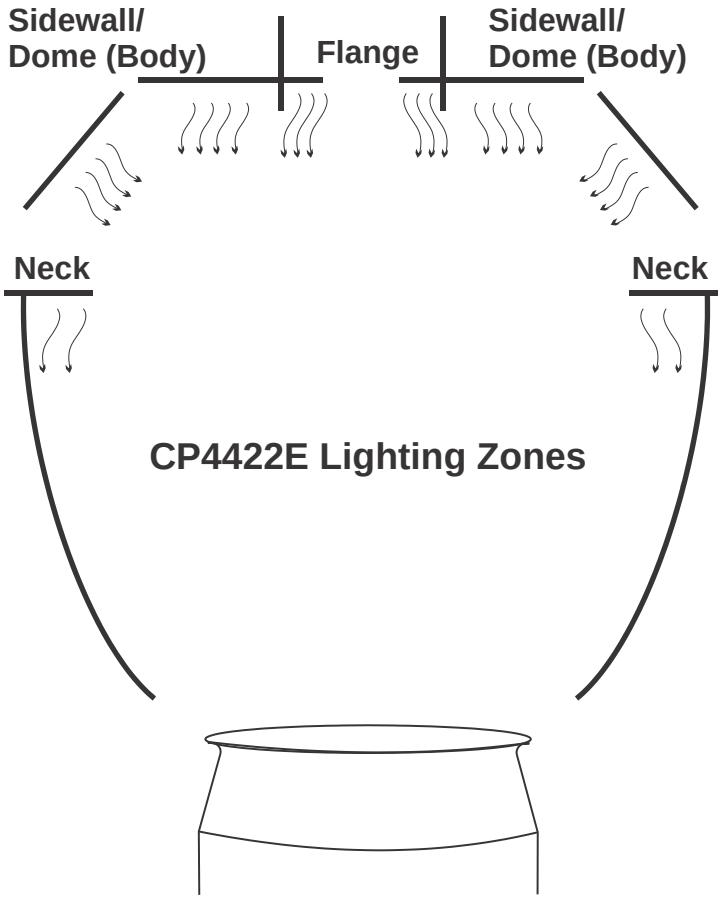
- Basic adjust lighting, or
- Advanced adjust lighting

Most often, you will use Basic Adjust Lighting.

Lighting Zones CP4422E

The illustrations and table below show the lighting zone grouping for the CP4422E inspection module. The illustration shows a module with three cameras installed.

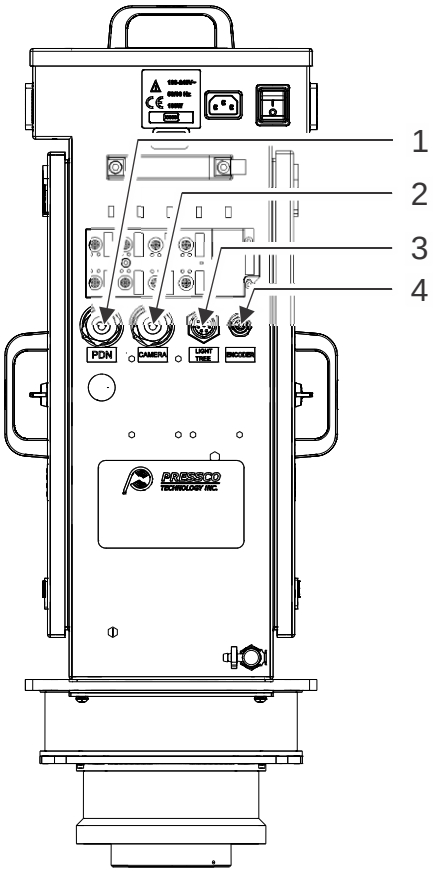
❖ *Note: These zones are programmed at Pressco and should not be changed. You may view the setup in Advanced adjust lighting.*



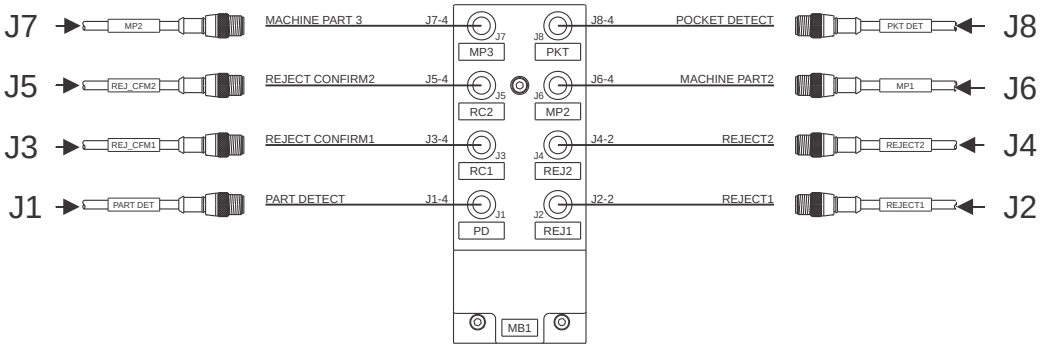
Body (upper array type)	Neck (lower array type)	Flange (ring array type)
10 blue zones	1 red zone	3 green zones

CP4422E module external connections

❖ *Note: this inspection module is not used in all systems. The configuration of your inspection module may vary.*



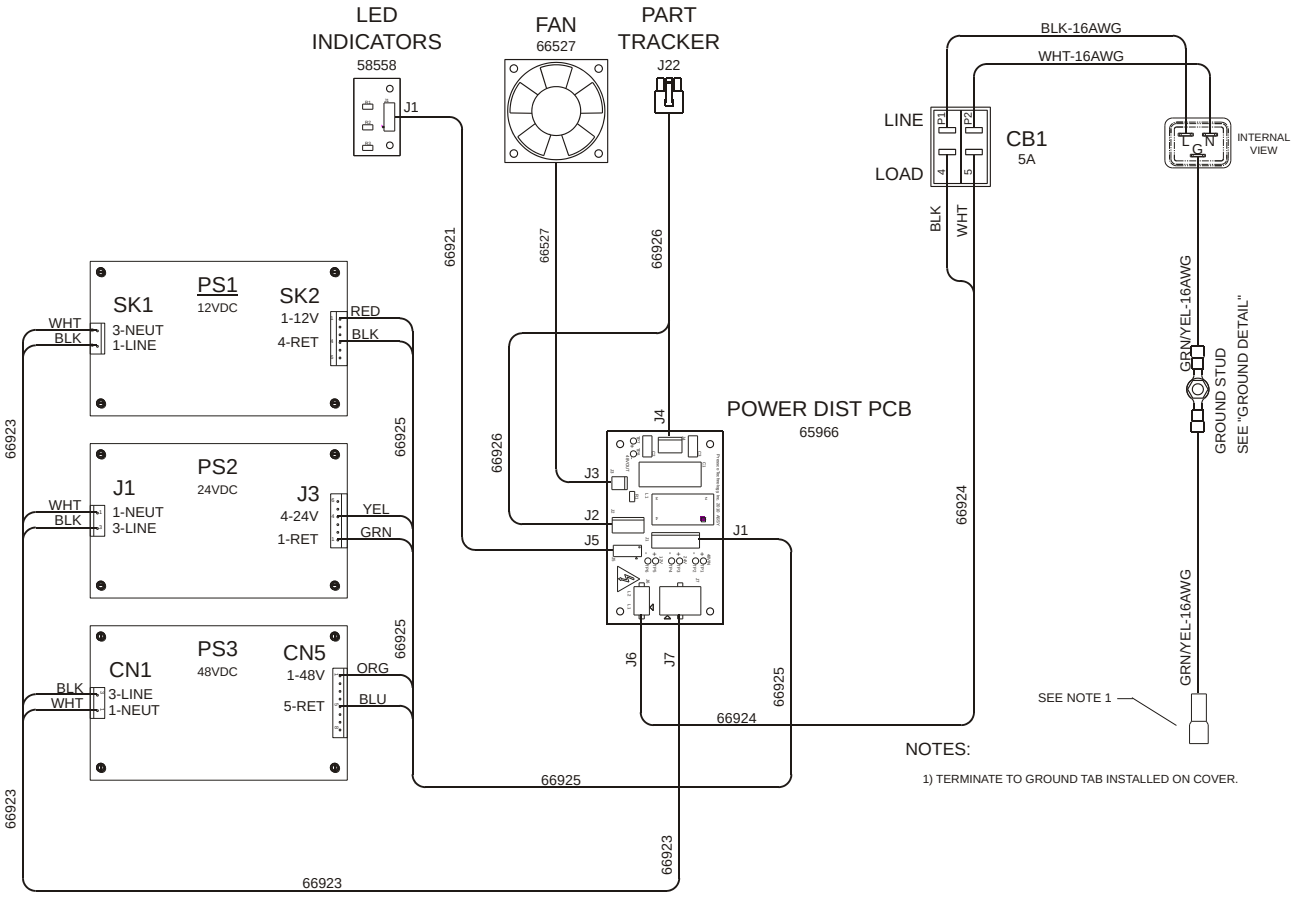
8-PORT I/O BOX-MB1

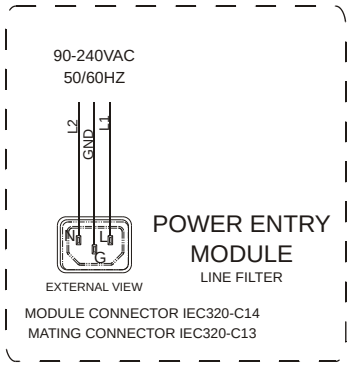


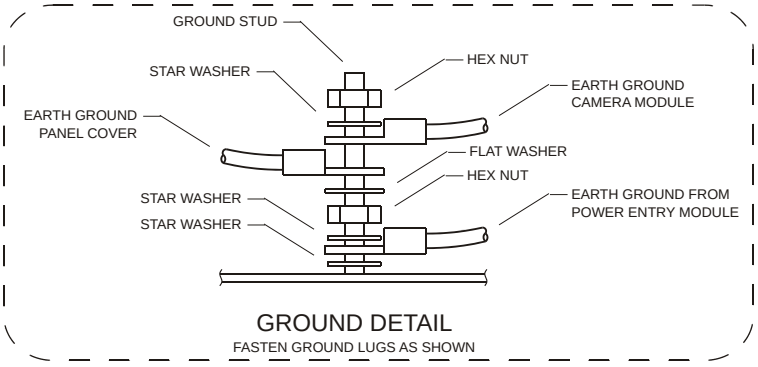
8 port I/O Box MB1		
1		Green cable - PDN (Pressco Device Network)
2		Blue cable - Camera
3		Light tree cable
4		Encoder. 8 pin panel connector.
J1	PD	Part detect
J2	REJ1	Reject 1
J3	RC1	Reject Confirm 1
J4	REJ2	Reject 2
J5	RC2	Reject Confirm 2
J6	MP2	Machine Part 2
J7	MP3	Machine Part 3
J8	PKT	Pocket Detect

CP4422EV internal connections page 1

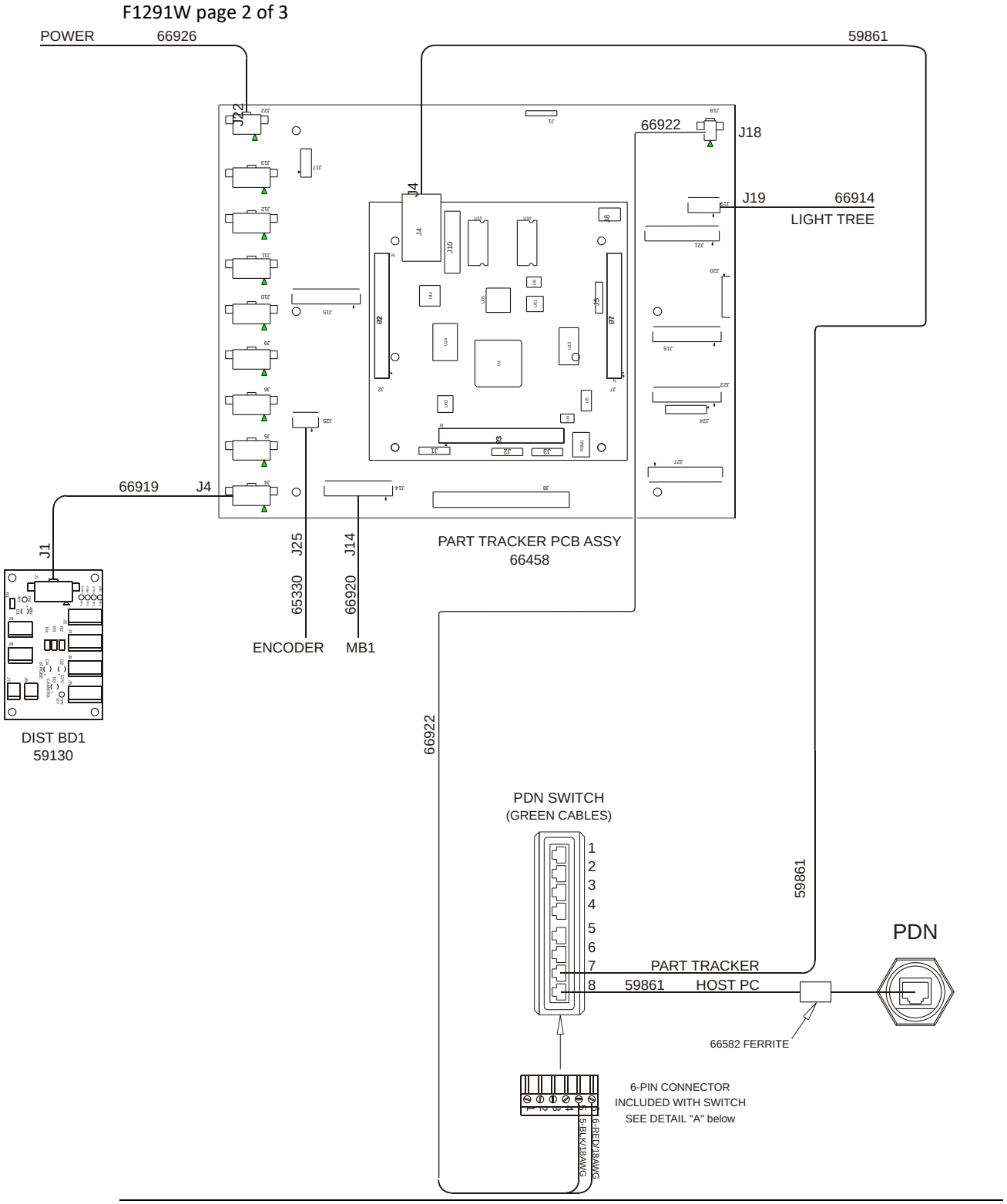
F1291W page 1 of 3





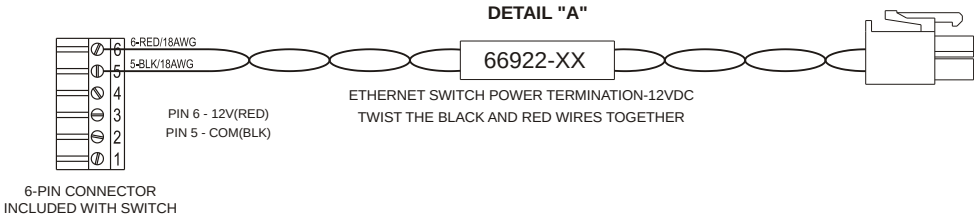


CP4422EV internal connections page 2



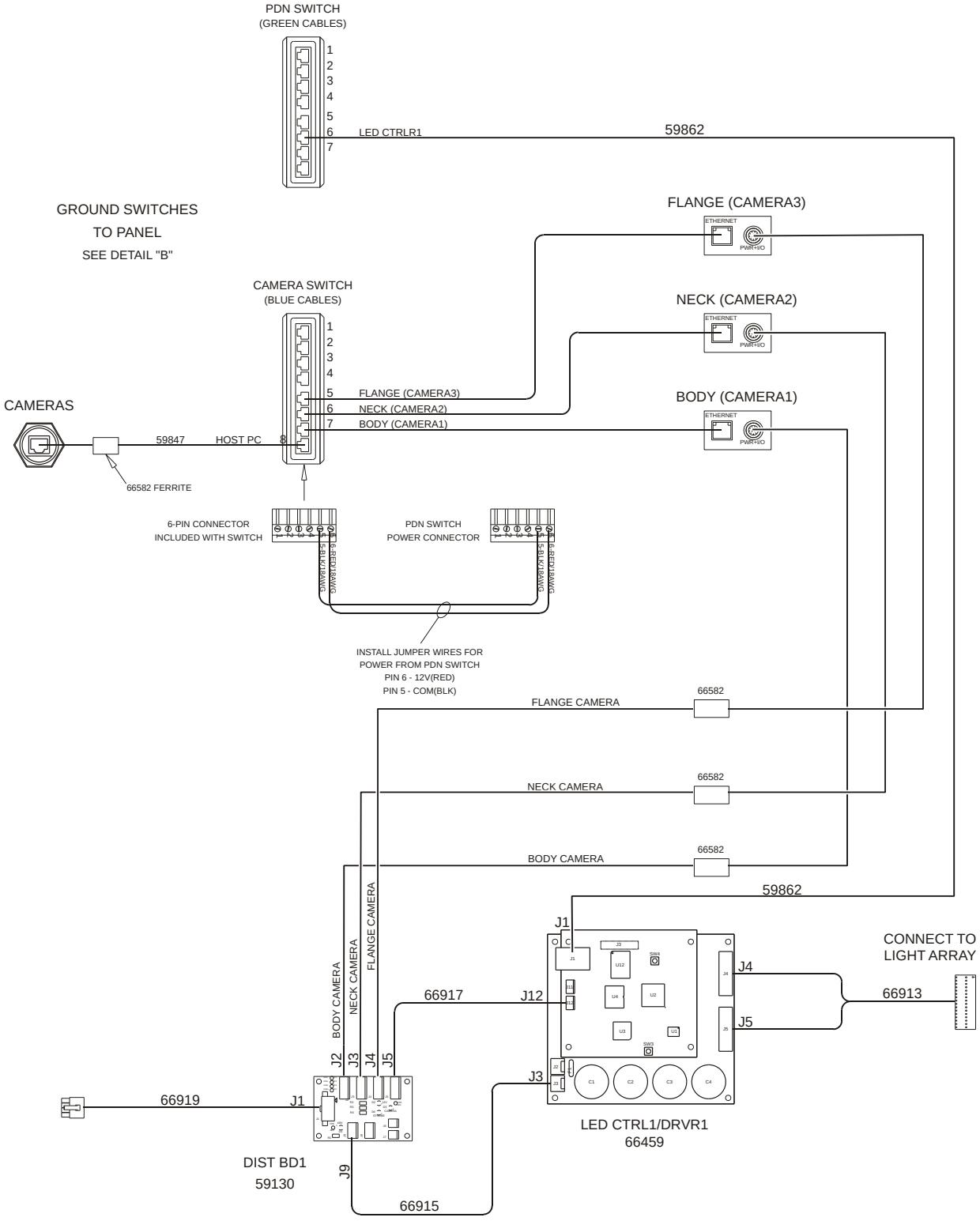
❖ *Note: on Part Tracker assembly, switch RSW1 must be set to 'F' for proper operation*

Detail "A"

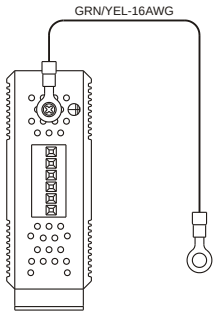


CP4422EV internal connections page 3

F1291W page 3 of 3



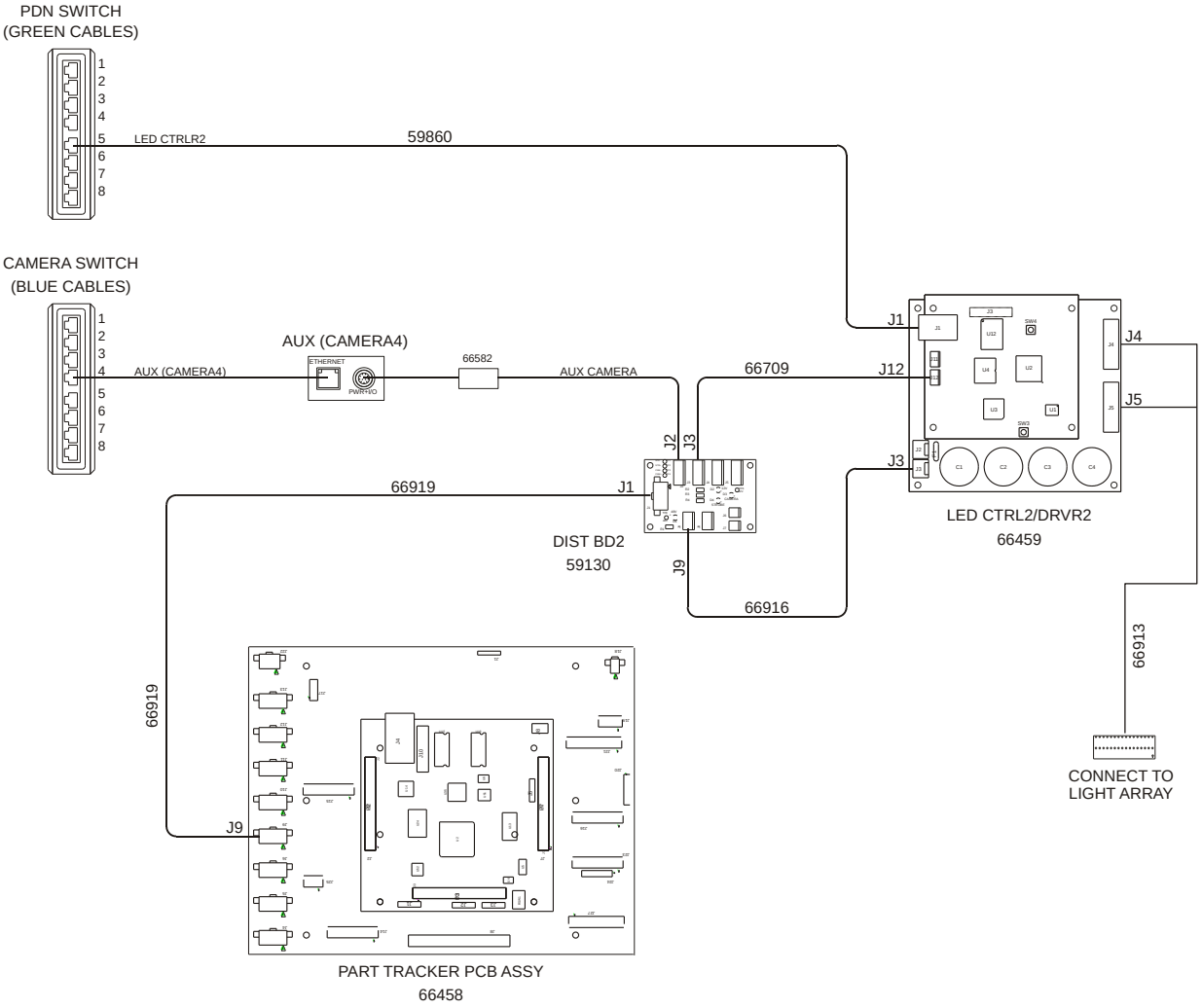
Detail "B"



DETAIL "B"

ETHERNET SWITCH GROUND
TRIM WIRES TO FIT

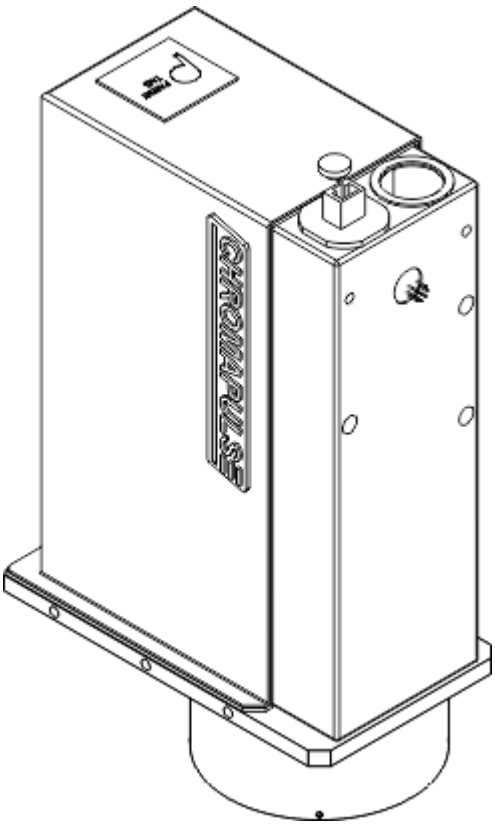
CP4422EV auxiliary module internal connections



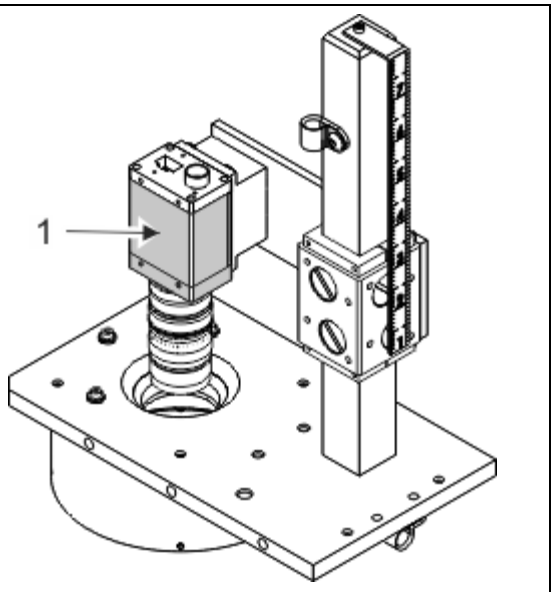
CP500 inspection module

The CP500 inspection module is in a smaller package for confined spaces. It inspects mostly smaller crowns and closures.

The CP500 is shown below.



CP500 outside view



CP500 inside view with covers removed

1 - Camera

Adjusting the CP500/ V module

Camera Adjustments

If your inspection module has the optional motorized focus and aperture feature, you can adjust the focus and aperture through the software: Camera Focus and Aperture.

Lighting Adjustments

To adjust the lighting, use the software adjustments.

To see the image on the screen:

Observe the Part Image (on page 41)

Adjust lighting through either:

- Basic adjust lighting, or
- Advanced adjust lighting

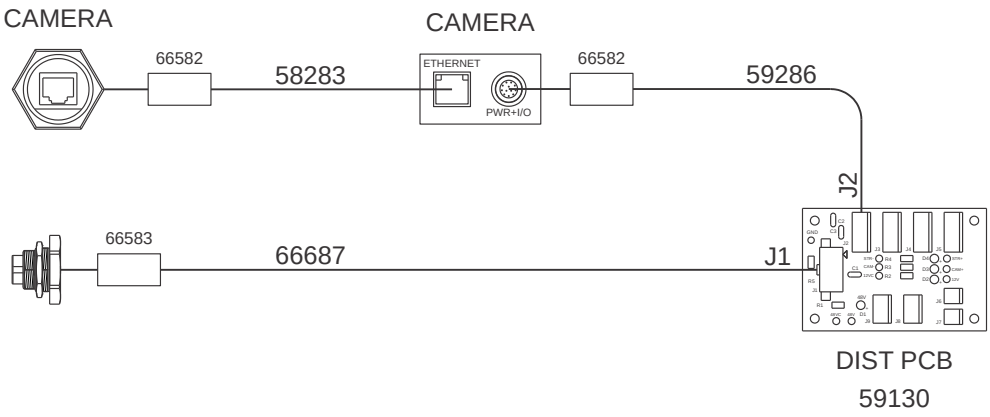
Most often, you will use Basic Adjust Lighting.

Lighting zones CP500

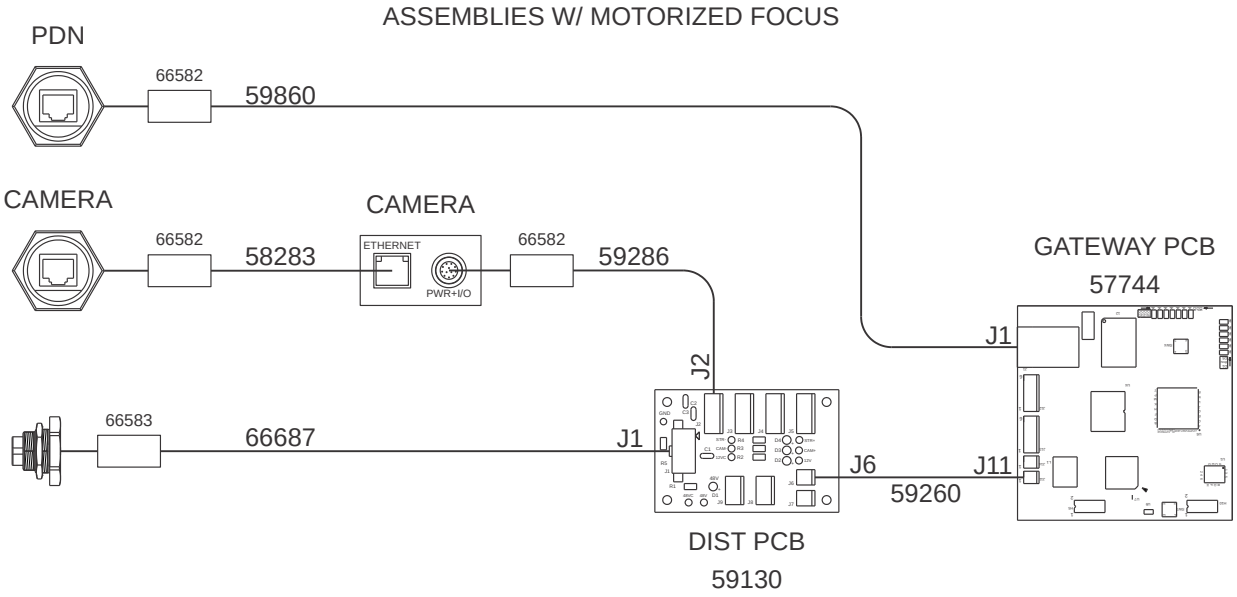
The lighting zones are the same as the CP500E inspection module. See ***Lighting zones CP500E/ CP750E*** (on page 47).

CP500 inspection module internal connections

ASSEMBLIES W/O MOTORIZED FOCUS



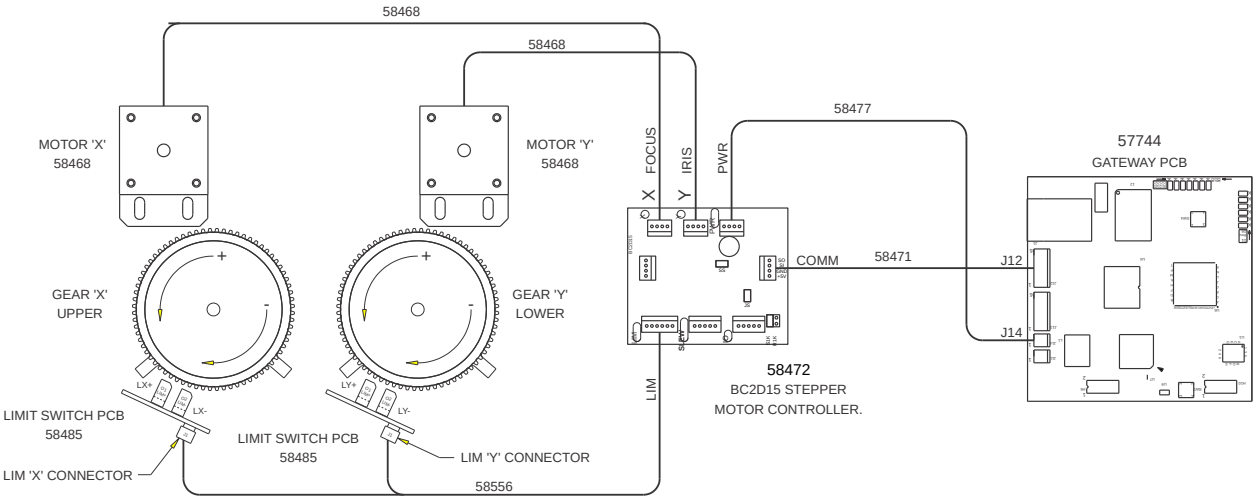
ASSEMBLIES W/ MOTORIZED FOCUS



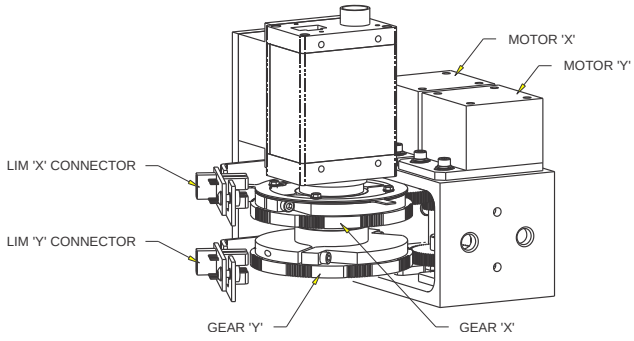
CP500 Motorized focus connections (optional)

The following wiring diagram shows the wiring between the motors and controllers for inspection modules that have the motorized focus option.

ASSEMBLIES W/ MOTORIZED FOCUS



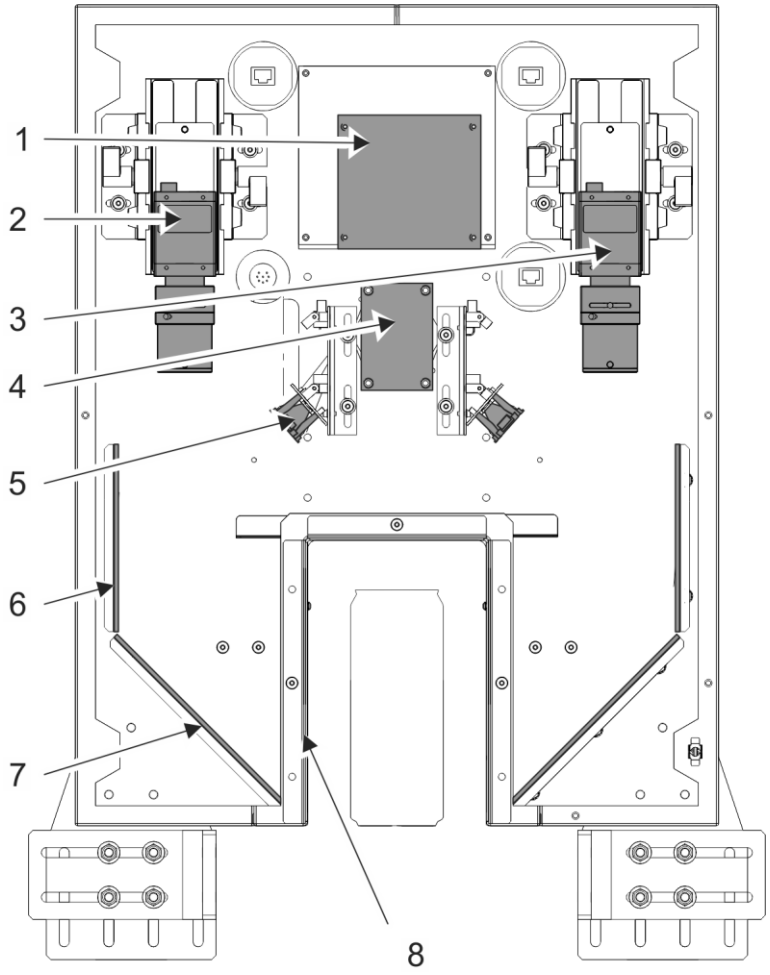
CAMERA ASSEMBLY



CPX inspection module

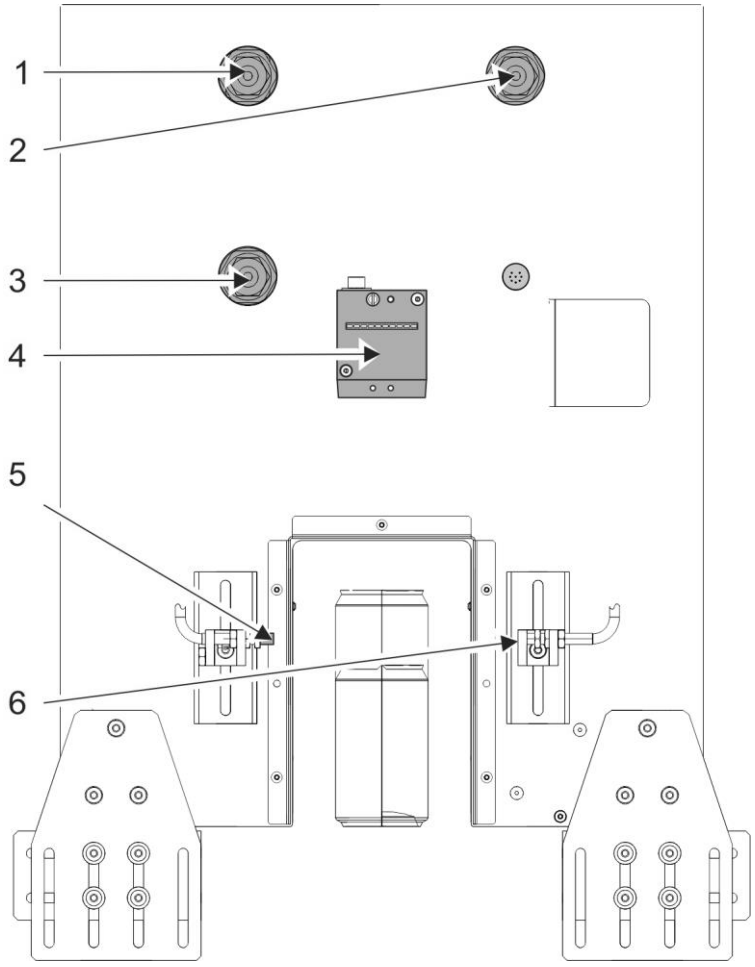
The CPX module contains the lighting and optics to inspect the decoration on the outside of cans to detect mixed labels and gross decorator defects. The basic components of the inspection module are shown below.

CPX front view (with door removed)



1	Light control board
2	Camera 1
3	Camera 2
4	Signal distribution board
5	LED light source (quantity 4)
6	First surface mirror for optics (one on each side of module)
7	First surface mirror for optics (one on each side of module)
8	Glass shield

CPX back view



1	Blue cable - Camera 2 connector
2	Blue cable - Camera 1 connector
3	Green cable - PDN (Pressco Device Network)
4	Photoelectric sensor "Smarteye"
5	Part detector cable
6	Part detector cable

Adjusting the CPX camera

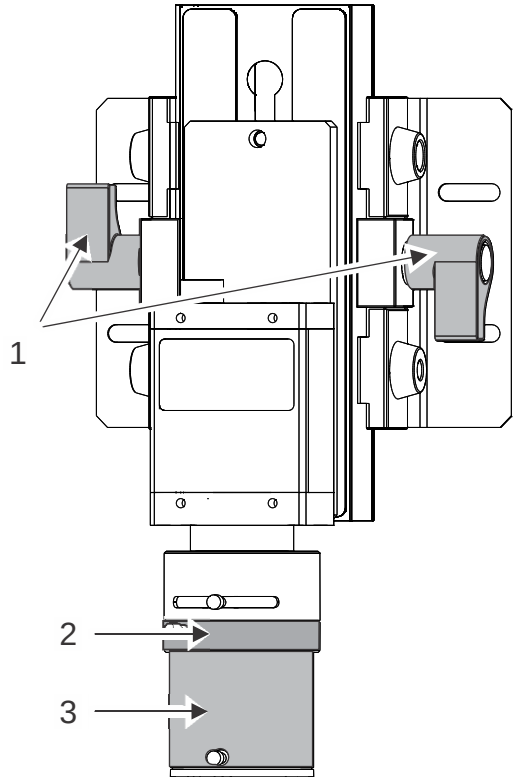
Inspection module adjustments include the camera position, aperture, and camera focus.

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.

The camera can be moved up or down for fine tuning the image. The focus and aperture can be adjusted manually if necessary.

❖ *Note: The camera inspects the top five inches of a can, or the whole length of a 12 ounce can. This adjustment is not for large adjustments.*



1	Camera adjust to fine tune the image area
2	Aperture adjust
3	Focus adjust

Camera Adjustments

If your inspection module has the optional motorized focus and aperture feature, you can adjust the focus and aperture through the software: Camera Focus and Aperture.

Lighting Adjustments

To adjust the lighting, use the software adjustments.

To see the image on the screen:

Observe the Part Image (on page 41)

Adjust lighting through either:

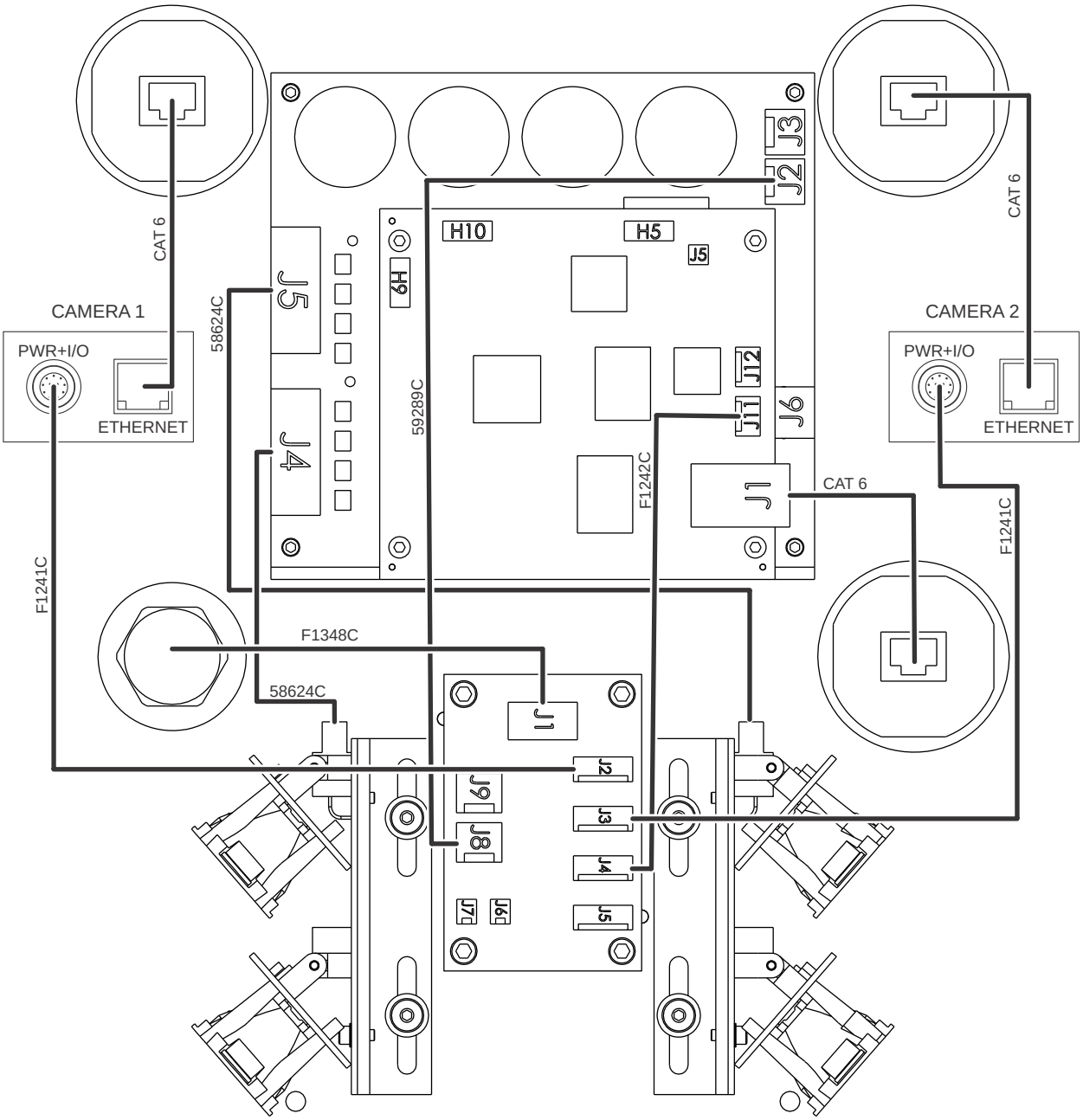
- Basic adjust lighting, or
- Advanced adjust lighting

Most often, you will use Basic Adjust Lighting.

Lighting zones CPX

The lighting zones for the CPX module consist of the right side and the left side. Lighting adjustments make either side brighter or darker.

CPX internal connections



Chapter 8

Extended I/O

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).*

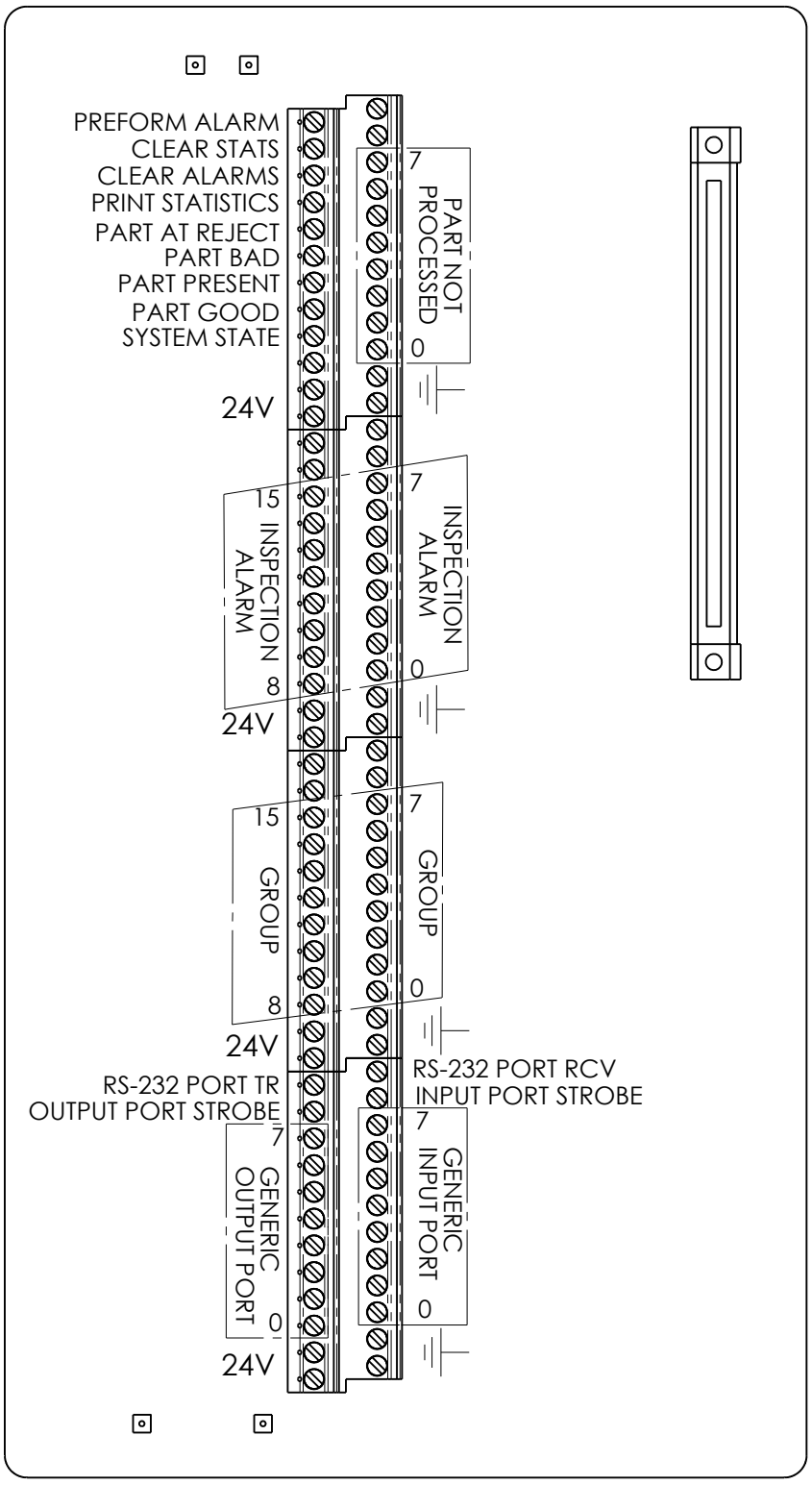
Extended I/O board

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 or within an ***inspection module*** (see "***Extended I/O in inspection modules***" on page 42). 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*** (on page 83).

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



Extended I/O signals

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 81).

❖ *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 81).

*The signals marked with an asterisk must be enabled through ***Extended I/O Configuration*** (on page 83) in the software.

Signal	I/O	Connector	Indicator LED	Comments/ Reference
Clear Stats*	I	J4-23	D2	Clears the lane statistics
Clear Alarms*	I	J4-22	D3	Clears the lane alarms
Print Statistics*	I	J4-21	D4	Prints the lane statistics to currently configured printer or file Schedule Reports
Preform Alarm	I	J4-24	D1	Used only in special applications. Activated by the Preform Material Handling system.
System State*	O	J4-16	D11	Indicates whether the lane is online or offline. Online = active. Offline = inactive.
Part Present (Part Detect)*	O	J4-18	D9	Pulses for 12 ms when the part present sensor detects a part
Part Good* (Group A)	O	J4-17	D7	Pulses for 12 ms for each part declared good by the inspection
Part Bad* (Group A)	O	J4-19	D5	Pulses for 12 ms for each part declared bad by the inspection
Part at Reject* (Group A)	O	J4-20	D13	Pulses for 12 ms for each part that crosses the reject point (online mode only)
Group 0	O	J2-3	D17	Pulses for 12 ms when an inspection fails in the user-defined group (online mode only) Walk By Setup
Group 1	O	J2-4	D25	
Group 2	O	J2-5	D33	
Group 3	O	J2-6	D41	
Group 4	O	J2-7	D15	
Group 5	O	J2-8	D23	
Group 6	O	J2-9	D31	
Group 7	O	J2-10	D39	
Group 8	O	J2-15	D21	
Group 9	O	J2-16	D29	
Group 10	O	J2-17	D37	
Group 11	O	J2-18	D45	
Group 12	O	J2-19	D19	
Group 13	O	J2-20	D27	
Group 14	O	J2-21	D35	
Group 15	O	J2-22	D43	
Part Not Processed: (Rejector 0)	O	J4-3	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	J4-4	D113	

Signal	I/O	Connector	Indicator LED	Comments/ Reference
Part Not Processed: (Rejector 2)	O	J4-5	D117	
Part Not Processed: (Rejector 3)	O	J4-6	D121	
Reject Confirm 0	O	J4-7	D107	Output signal when reject is confirmed (F168 and later DPT firmware)
Reject Confirm 1	O	J4-8	D111	
Reject Confirm Sensor blocked	O	J4-9	D115	Reject confirm sensor signal pulse width exceeding programmed limit (F168 and later DPT firmware)
Host communication lost	O	J4-10	D119	Output signal when communication to/from host is disrupted (F168 and later DPT firmware)
Inspection Alarm 0	O	J3-3	D59	Pulses when the associated alarm condition occurs and stays active until the alarm is cleared Lane Alarm Configuration and Sensor Alarm Configuration *J3-22 Inspection Alarm 15 supported with F168 and later DPT firmware. In earlier firmware versions, this signal is "Host Communication Lost"
Inspection Alarm 1	O	J3-4	D67	
Inspection Alarm 2	O	J3-5	D75	
Inspection Alarm 3	O	J3-6	D83	
Inspection Alarm 4	O	J3-7	D57	
Inspection Alarm 5	O	J3-8	D65	
Inspection Alarm 6	O	J3-9	D73	
Inspection Alarm 7	O	J3-10	D81	
Inspection Alarm 8	O	J3-15	D63	
Inspection Alarm 9	O	J3-16	D71	
Inspection Alarm 10	O	J3-17	D79	
Inspection Alarm 11	O	J3-18	D87	
Inspection Alarm 12	O	J3-19	D61	
Inspection Alarm 13	O	J3-20	D69	
Inspection Alarm 14	O	J3-21	D77	
Inspection Alarm 15*	O	J3-22	D85	
Generic Input Port 0	I	J1-3	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	J1-4	D50	
Generic Input Port 2	I	J1-5	D51	
Generic Input Port 3	I	J1-6	D52	
Generic Input Port 4	I	J1-7	D55	
Generic Input Port 5	I	J1-8	D56	
Generic Input Port 6	I	J1-9	D47	
Generic Input Port 7	I	J1-10	D49	
Input Port Strobe	I	J1-11	D53	Reserved for Asynchronous Correlation

Signal	I/O	Connector	Indicator LED	Comments/ Reference
Generic Output Port 0	O	J1-15	D91	Reserved for Asynchronous Correlation
Generic Output Port 1	O	J1-16	D95	
Generic Output Port 2	O	J1-17	D101	
Generic Output Port 3	O	J1-18	D105	
Generic Output Port 4	O	J1-19	D89	Encoder Z pulse output
Generic Output Port 5	O	J1-20	D93	Part at Reject (Group B)
Generic Output Port 6	O	J1-21	D99	Part Bad (Group B)
Generic Output Port 7	O	J1-22	D103	Part Good (Group B)
Output Port Strobe	O	J1-23	D97	Reserved for future use
RS-232 Port TR	O	J1-24	D202	Reserved for future use
RS-232 Port RCV	I	J1-12	D200	Reserved for future use

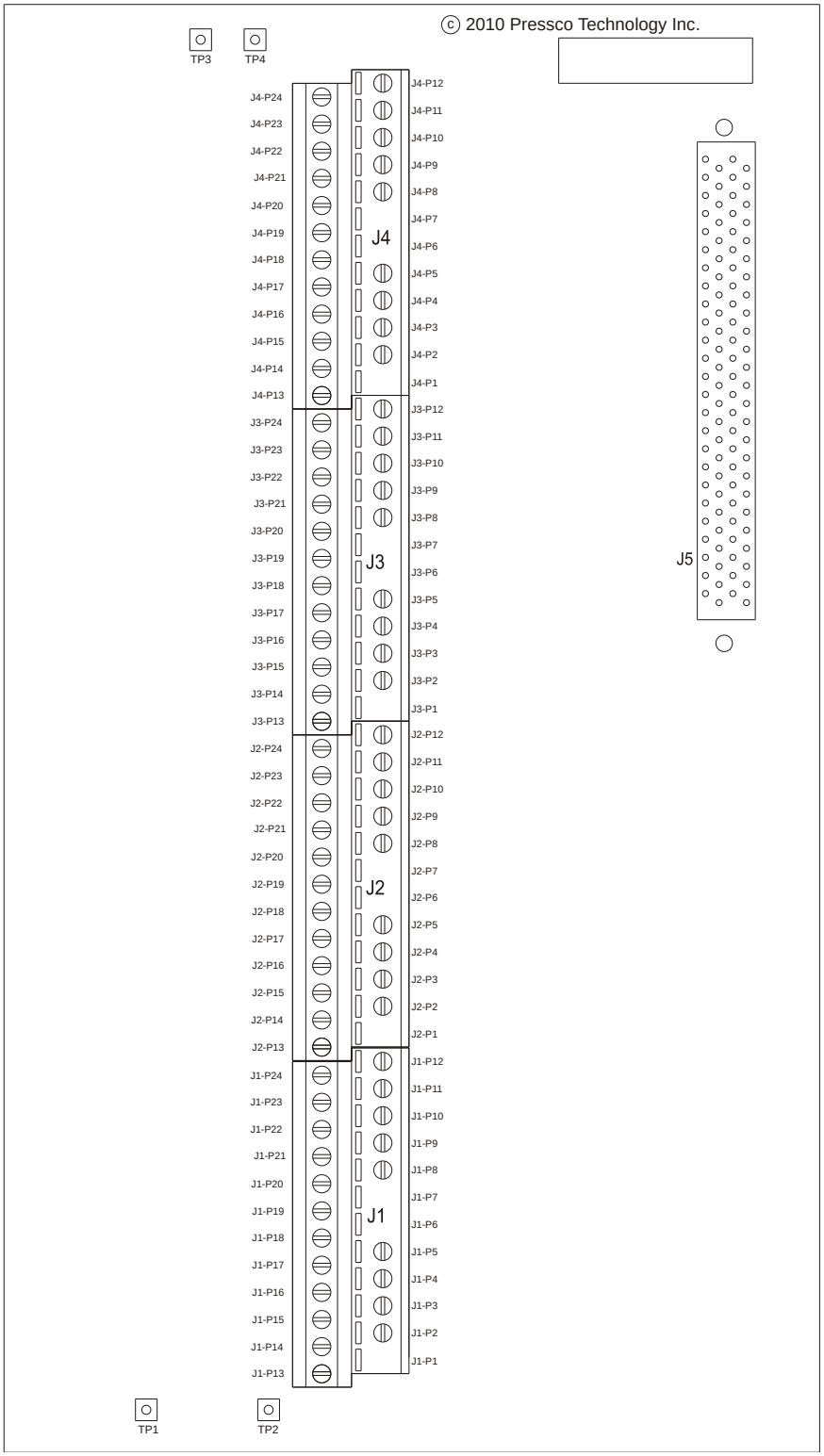
All Connectors

Function	Pin
Isolated ground	1, 2
24 V (isolated)	13, 14

Test Points

Function	Test Point
24 V	2
24 V Gnd	3
3.3 V	1
3.3 V Gnd.	4

Extended I/O terminal block reference



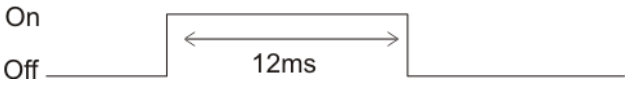
Extended I/O circuits

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:*

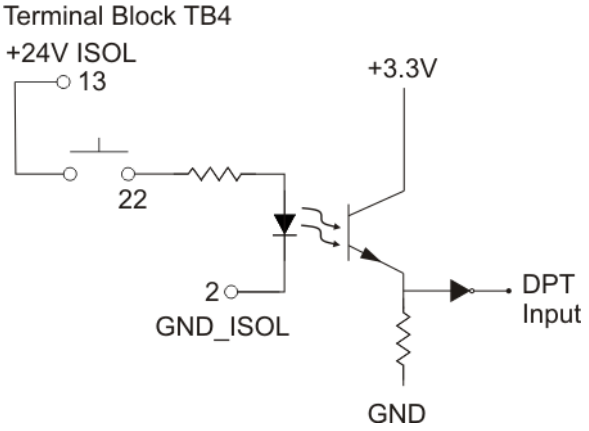
- Minimum dwell time of the **input** device is 1.1 ms
- Maximum **output** load is 50 mA
- Default value of **output** pulse is 12ms. Some output signals, such as alarms, must be cleared on the Intellispec before they turn off.

Default timing of pulsed output



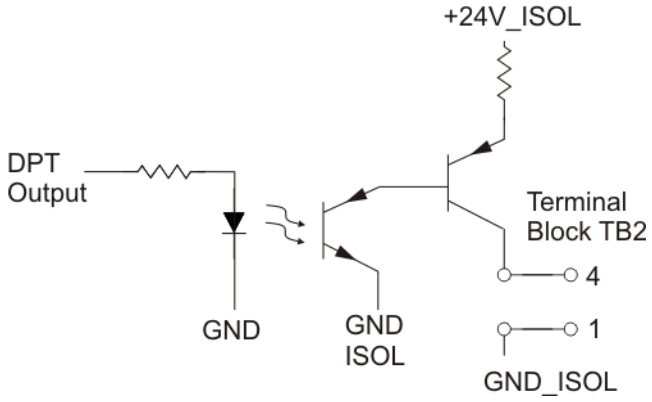
The following illustration shows a typical circuit that can be used to clear alarms.

CLEAR ALARMS - INPUT



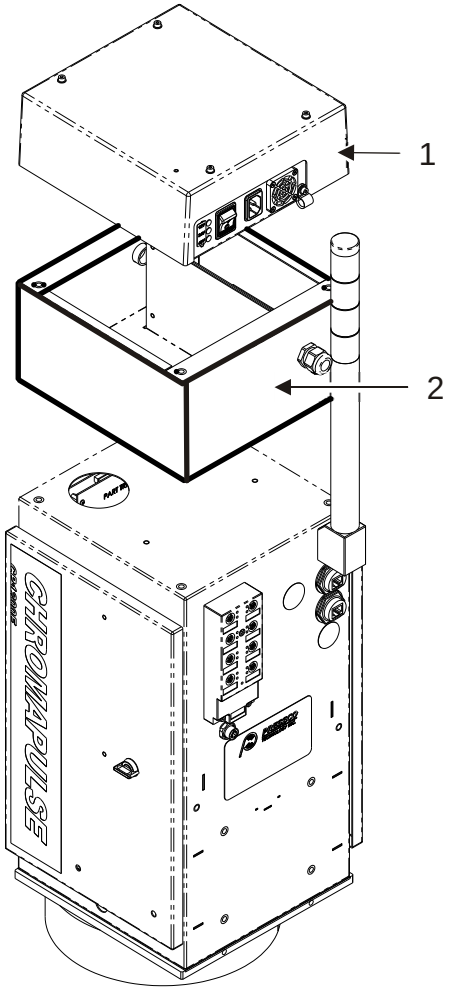
The following illustration shows a typical circuit that can be used for a group output.

GROUP 1 - OUTPUT



Extended I/O in inspection modules

The ***Extended I/O*** (see "***Extended I/O board***" on page 75) kit (optional) is installed within Chromapulse inspection modules as shown below.



1) power cap

2) Extended I/O kit

Extended I/O Configuration

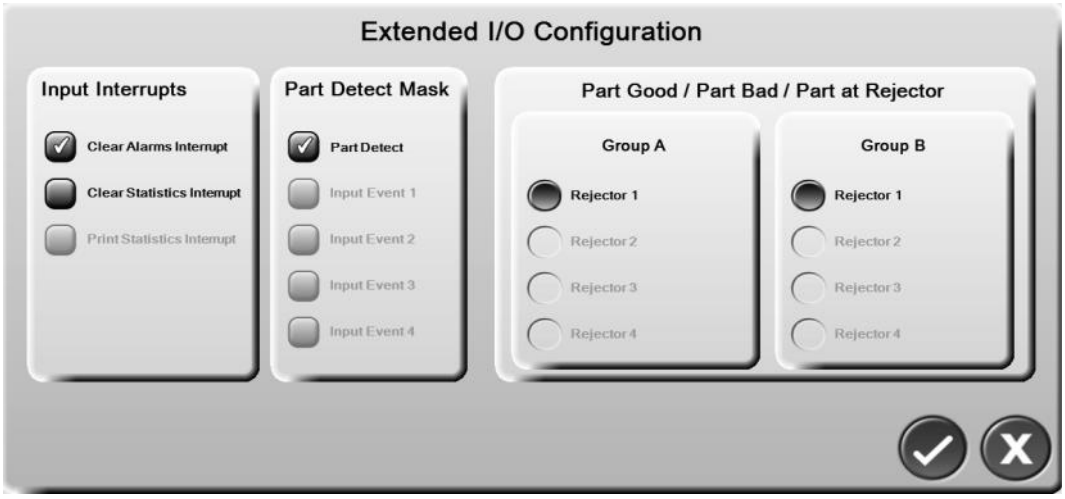
Enable input or output signals to perform a function on the Intellispec system or monitor the production lane in your plant. These settings must be done for each Extended I/O board for each lane.

See also the sections about ***Extended I/O*** (see "***Extended I/O board***" on page 75) and ***Extended I/O Signals*** (on page 76) 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.

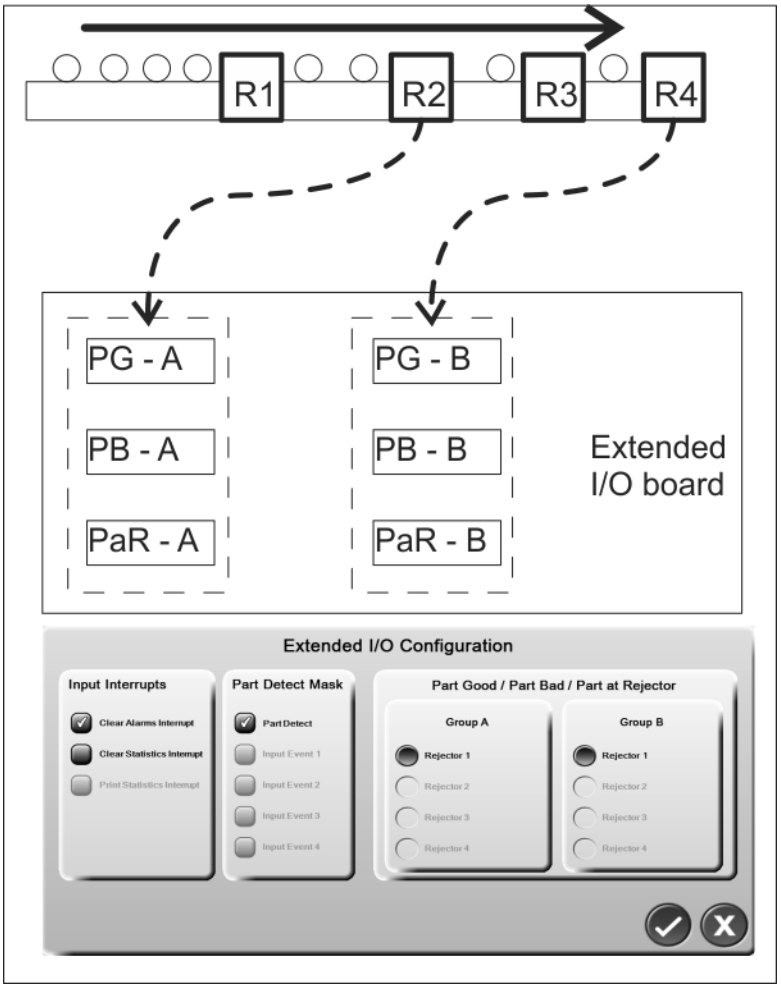
Part Good/ Part Bad/ Part at Rejector

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*** (on page 76).

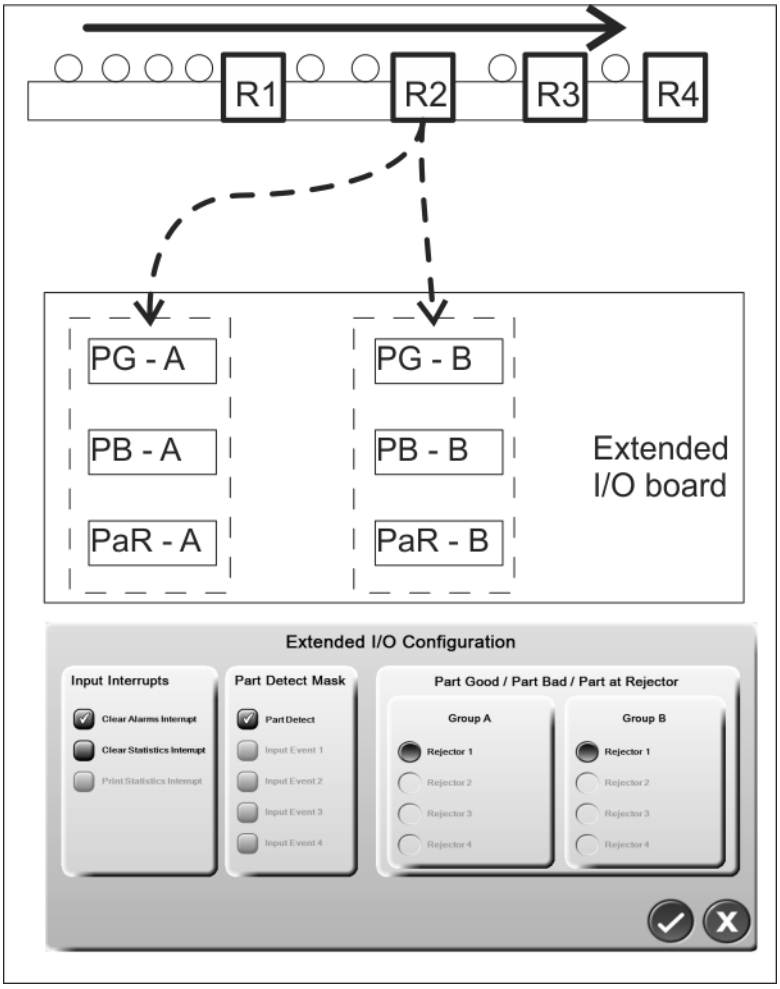
❖ *Note: If your system has a 2-channel Part Tracker board, then the lane has up to two rejectors. If your system has an 8-channel Part Tracker board, then the lane has up to four rejectors.*

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 9

Maintenance Frequency - Compact Single Lane

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

Intellispec Series V CSL enclosure 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 sensor image is properly centered, focused, and properly lit. Adjust if necessary.	**X**	
User Interface Enclosure filter	Rinse in clean water; use mild soap and water solution if oily. ***Cleaning the User Interface Enclosure filter*** (on page 88)		**X**

Inspection Modules Chromapulse			
Item	**Description**	**Once per day or shift**	**Once per month**
Part Detect Sensor and Reflector	Clean with soft, clean, oil-free cloth dampened with mild soap and water solution. Wipe dry. ***Cleaning the Part Detector*** (on page 93)	Once per week	
Camera lens	Clean only with lens tissue and lens cleaner. Be careful not to alter focus or aperture. ***Cleaning the Camera Lens*** (on page 91)		**X**
Glass surfaces: Beam Splitter and Secondary lens	Clean with soft, clean, oil-free cloth dampened with lens cleaning solution. ***Cleaning the Chromapulse Beam Splitter*** (on page 90)		**X**
Ellipsoidal mirror	Normally does not need cleaning. If dirty, blow off dust with compressed air, and follow instructions. ***Cleaning the Ellipsoidal Mirror*** (on page 92)		Only if dirt appears on image
Plastic surfaces: Dome light or Ring light diffusers	Clean with soft, clean, oil-free cloth dampened with mild soap and water solution. Wipe dry.		**X**
Fan filters CP4422EV	Rinse in clean water; use mild soap and water solution if oily. ***Cleaning the Chromapulse Fan Filters*** (see "***Replacing/ Cleaning the Chromapulse CP4422EV Fan Filters***" on page 89)		**X**
Filter/ Regulator	Replace filters ***Replacing Filter/ Regulator Filters*** (on page 94)	Oil removal filter - replace every **2000 hours** Oil vapor removal filter - replace every **12 months**	

Cleaning the User Interface Enclosure filter

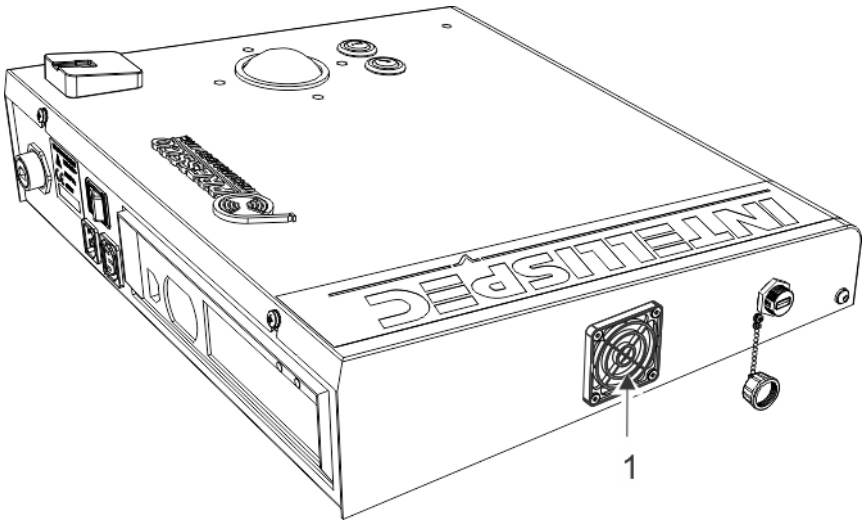
The filter for the user interface enclosure should be cleaned once a month for best results. The filter is located on the side of the unit. Replace with a new filter when necessary.

❖ *Note: Frequency of cleaning will depend upon plant conditions*

➢ ***To clean the filter:***

1. Remove the filter [item 1] 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

2. Dry the filter completely, then place it back in the retainer.



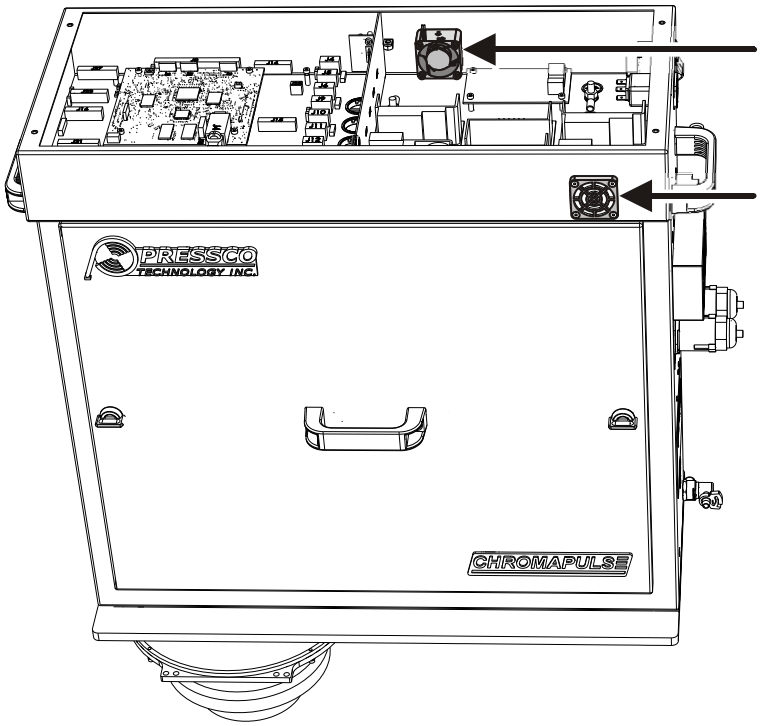
1	Part number 45355 - replacement filter

Replacing/ Cleaning the Chromapulse CP4422EV Fan Filters

Replace the filters once a month, using part number 66446.

If you do not have replacement filters, clean them once per 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



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

	Part Number	Description

	Part Number	Description
1	66446	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:***

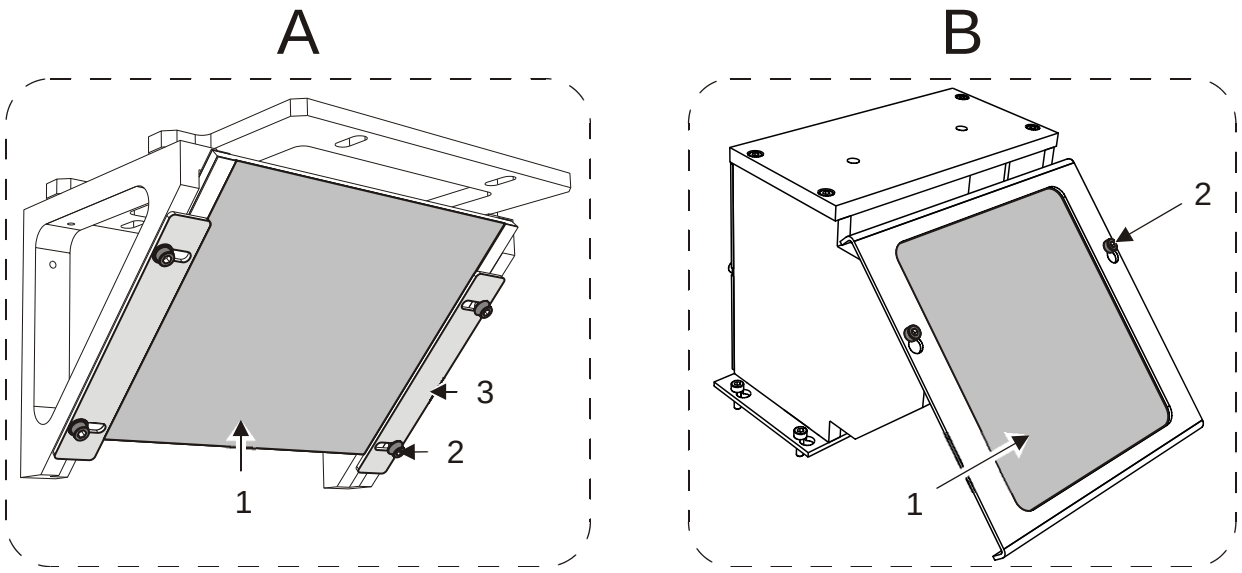
- Blow off dust with canned, compressed air
- Use a clean non-abrasive cloth dampened with lens cleaning solution
- Use lens tissue and lens cleaning solution on camera lenses
- If surface has compound on it, first clean with alcohol, then with lens cleaning solution

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

Cleaning the Chromapulse Beam Splitter

You must remove the Beam Splitter (on some Chromapulse models) to access the bottom side for cleaning. The method for removing the beam splitter depends on your inspection module.

In the illustration below, item A is used in preform sidewall endcap (PSE) modules. Item B is used in seal surface modules and some Chromapulse modules (example: CP750EV, CP1200EV, and more).



1) Beam Splitter

2) Screws

3) Retaining plates

➢ ***To clean beam splitter:***

1. ***Raise the camera*** (see "***Cleaning the Camera Lens***" on page 91) if necessary. Be sure to note the camera position before moving it.
2. Loosen the screws [item 2] and carefully remove the beam splitter.
   - **Item A** has four screws. Slide the retaining plates [item 3] to the sides and remove the beam splitter.
   - **Item B** has two screws. Loosen the screws to remove the beam splitter.
3. Clean the beam splitter [item 1].
   - Blow off dust from beam splitter with canned, compressed air.
   - ***Clean the glass*** (see "***Cleaning Glass Surfaces***" on page 90) on the beam splitter using lens tissue and lens cleaner.
4. Replace the beam splitter assembly.
   - **Item A** - Replace the beam splitter with the reflective side to the outside. Slide the retaining plates back in plates and tighten the screws.
   - **Item B** - Replace the beam splitter with glass to the inside. Tighten the screws.

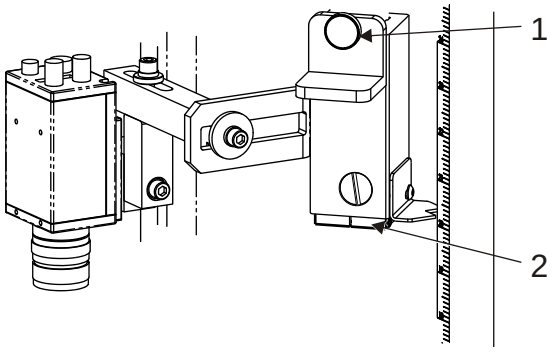
Cleaning the Camera Lens

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 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 Ellipsoidal Mirror

This mirror provides the enhanced neck image for optimal inspection of the neck of a can.

Warning - The special surface of the mirror can be easily scratched. Take special precautions and do not touch the surface of the mirror.

❖ *Note: This mirror does **not** require periodic cleaning. Contact Pressco Service if the mirror has dirt or marks that cannot be blown off with clean, compressed air.*

In most systems, the mirror has a built-in air cleaning system. Air is blown through the module to keep dust and debris off the mirror and out of the module. There are no bottom shields on these modules. You do not have to clean the mirror in these modules.

Cleaning the Part Detector

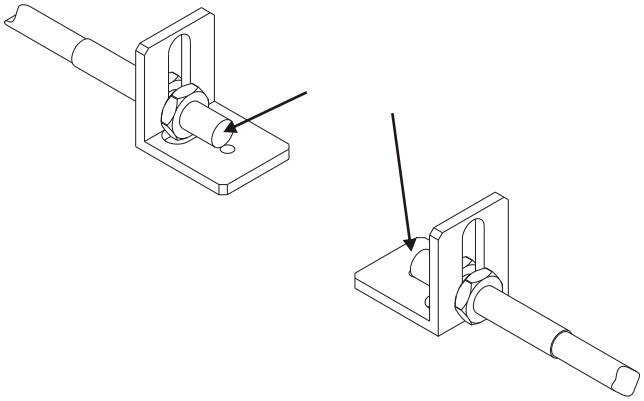
Your system will be equipped with either a part detector or proximity sensor, depending on your application. The proximity sensor does not use a reflector. However, the cleaning procedure for either of these types of sensors is similar.

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.

➢ ***To clean the part detector:***

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

❖ *Note: The frequency of cleaning will depend on plant and process conditions.*

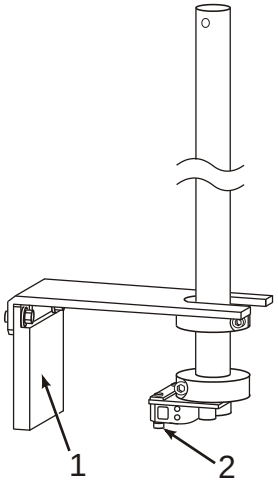


Cleaning the Part Detector and Reflector

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.

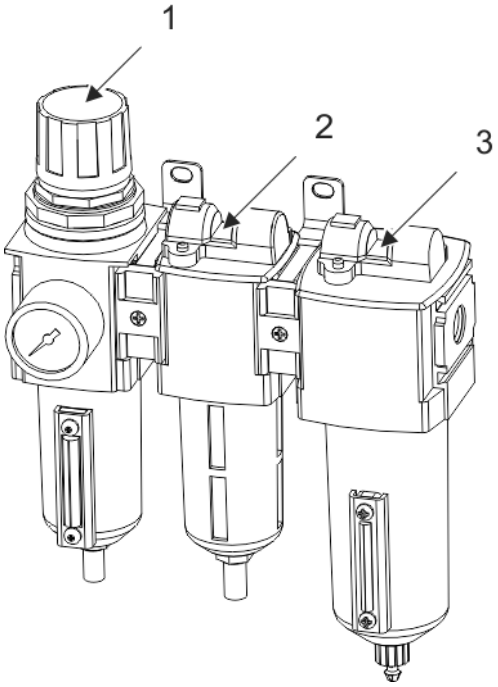


1) Part detect reflector

2) Part detect sensor

Replacing Filter/ Regulator Filters

The filter/ regulator assembly shown below is installed with CP4422EV inspection modules. Replace filters.



	Pressco part number	Description	Replace at least:
1		Filter/ regulator. No filter change necessary.	
2	67620	Filter oil removal	Every 2000 hours
3	67621	Filter oil vapor removal	Once per year
	67622	Kit (contains one each of 67620 and 67621) ▪ It is easier to replace both of these filters at the same time	

Chapter 10

How to Contact Pressco

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Business Hours:

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

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