



TROUBLESHOOTING AND REFERENCE MANUAL
IDL-C-2.X

ISC CARRYWAY AUTOMATION MODULE

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1 TROUBLESHOOTING AND REFERENCE OVERVIEW

This troubleshooting manual contains the necessary information to troubleshoot, reset, and replace an Intralox® Smart Carryway Carryway Automation Module (ISC CAM) with Intralox Divert Logic Controller (IDL-C) version 2.x.

The manual is divided into the following sections:

- HMI warnings and faults
- ISC CAM LED indicator reference
- Application issues
- Troubleshooting procedures
- HMI information reference


2 HMI WARNINGS AND FAULTS

View warnings and faults on the **Fault** HMI page. Some fault information is also included in the indicators at the top of the **Live Info** HMI page.

Warnings: A warning indicates that the ISC CAM has detected an out-of-scope situation which should be corrected to ensure the equipment continues to correctly function. Warnings are notifications to the user. ISC CAM behavior does not change when a warning occurs.

On the **Settings** HMI page, you can modify some warning thresholds.

Faults: A fault indicates that the ISC CAM has detected an out-of-scope situation that requires immediate action. Correct functionality cannot be guaranteed. Faults generally result from hardware issues or application failures. Some faults automatically reset.



Fault

Reset
Clear history

Fault history: A - Most recent fault / P - Oldest fault

Active faults		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	OK	Gap between products too small	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	OK	Infeed PE jammed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	OK	Outfeed PE jammed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	OK	Product buffer too full	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	OK	AIM Peg sensor fault	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	OK	Product destination signal received too late	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	OK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	OK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	OK	Encoder fault	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	OK	Motor run signal missing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	OK	Air pressure fault	△	△	-	-	-	-	-	-	-	-	-	-	-	-	-
11	OK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	OK	IO-Link Fault	△	△	△	-	-	-	-	-	-	-	-	-	-	-	-
13	OK	Power supply voltage low/high	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	OK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	OK	Output overcurrent	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Warning

Reset
Clear history

Warning history: A - Most recent warning / P - Oldest warning

Active warnings		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	OK	Gap between products small	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	OK	Infeed PE jammed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	OK	Outfeed PE jammed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	OK	Product buffer nearly full	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	OK	AIM Damaged or missing peg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	OK	Product destination signal received late	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	OK	Product did not sort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	OK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	OK	Belt speed too slow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	OK	Belt speed too fast	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	OK	Belt elongation limit reached	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	OK	Belt acceleration too fast	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	OK	Belt deceleration too fast	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	OK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	OK	High CPU usage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	OK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

IDL V2_0229	Run Mode Internal	PLC Disconnected	IP Address	MAC Address
S800 AIM Sorter			192.168.1.254	00:07:46:8C:0A:E1
S/N AIMS0R3EXITZX				

Figure 1: Fault HMI page

- Gap between products small (warning) and Gap between products too small (fault)
- Infeed PE jammed (warning and fault)
- Product buffer nearly full (warning) and Product buffer full (fault)
- Product destination signal received late (warning) and Product destination signal received too late (fault)

2 HMI WARNINGS AND FAULTS

- AIM only: Damaged or missing peg (warning)
- AIM only: Peg sensor fault
- Belt speed too slow (warning)
- Belt speed too fast (warning)
- Belt elongation limit reached (warning)
- Belt acceleration too fast (warning)
- Belt deceleration too fast (warning)
- High CPU usage (warning)
- Encoder fault
- Motor run signal missing (fault)
- IO-Link fault
- Power supply voltage low/high (fault)
- Too much current draw (fault)

WARNING AND FAULT PAIRS

GAP BETWEEN PRODUCTS TOO SMALL OR SMALL

A sufficient gap between products is required for the equipment to correctly divert products. If the gap is too small, products may jam or fail to reach their intended destinations.

The **Gap between products too small** fault occurs when the measured distance between consecutive products or trains is less than the **Min. gap size**, which is the minimum gap necessary for successful product diverts. Intralox defines and sets the minimum gap value for each application. The **Min. gap size** value is listed on the **Equipment HMI** page.

This fault can cause jams or cause products to not reach the assigned destination. On the Settings HMI page, in the **Application Settings** section, configure the **Gap Too Small Action** setting, which determines the action taken when the **Gap between products too small** fault occurs.

The **Gap between products small** warning occurs when the measured distance between two (2) products is smaller than the **gap warning distance** configured by the user.

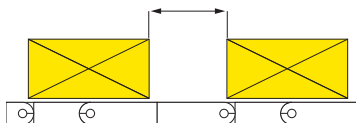


Figure 2: Gap between products

You can wait for the fault or warning to automatically reset or you can reset it manually.

- **Automatic Reset:** The fault or warning resets when the infeed PE (photoelectric sensor) detects a gap larger than the **Min. gap size**. The fault or warning remains active until a product following a sufficient gap blocks the infeed.
- **Manual Reset:** Reset the fault or warning manually from the **Fault** page or use the PLC to send a reset command. (See the ISC CAM network communication data interface guide for more information.)

Corrective action: Decrease the rate of products or arriving at the infeed to increase the gap.

GAP TOO SMALL ACTION

Application Settings

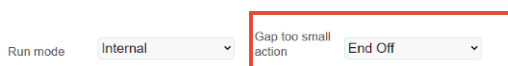


Figure 3: Gap too small action on Settings HMI page

2 HMI WARNINGS AND FAULTS

The **Gap too small action** defines how ISC CAM acts on a product following an insufficient gap. Select the **Gap too small action** on the **Settings** HMI page. Select the action most suitable for the production line application and needs.

The **Gap too small action** is taken for the product immediately following the insufficient gap.

- **Follow previous:** When the ISC CAM detects a too-small gap between one (1) product and the next, it attempts to send the second product to the same destination as the first product. This setting is useful for identical products and non-dependent destinations.
- **Attempt to divert:** When the ISC CAM detects a too-small gap between one (1) product and the next, it attempts to send the second product to its assigned destination. Success may vary based on product size, weight, and equipment load and speed. (This option is available for sorters, but not switches.)
- **End off:** When the ISC CAM detects a too-small gap between one (1) product and the next, it attempts to send the second product to the outfeed. (This option is available for sorters, but not switches.)



- A product assigned to destination C after small gap
- B gap too small action: follow previous
- C gap too small action: attempt to divert
- D gap too small action: end off

Figure 4: Gap too small action

GAP WARNING DISTANCE

Application Settings

Run mode

Artificial min. product length mm max: 1000 min: 0

Gap warning distance mm max: 1500 min: 0

Figure 5: Gap warning distance on the Settings HMI page

The **Gap warning distance** activates a warning when the infeed PE detects a gap between consecutive products or trains smaller than the configured value.

Set the **Gap warning distance** slightly above the **Min. gap size** value on the **Equipment** HMI page. A gap warning distance of **0** disables gap size warnings.

INFEED PE JAMMED

The **Infeed PE jammed** fault occurs in two situations:

- The infeed PE identifies a product that exceeds the **Jam distance**.
- The Infeed PE is obstructed due to a stranded product.

Intralox defines and sets the **Jam distance** value for each application. The value is listed on the **Equipment** HMI page. When the fault occurs, the equipment attempts to divert the product.

2 HMI WARNINGS AND FAULTS

The **Infeed PE jammed** warning occurs in two (2) situations:

- A product blocks the infeed PE for longer than the configured **Jam warning distance**.
- The infeed PE remains blocked due to a stranded product.

You can wait for the fault to automatically reset, or you can reset it manually.

- **Automatic Reset:** The fault resets automatically when the infeed PE is unblocked while the belt is in motion.
- **Manual Reset:** You manually reset the fault or warning from the **Fault** page or via the PLC. For more information, see the ISC CAM network communication data interface guide.

Corrective action to address a jammed infeed PE includes:

- Clear any product jams.
- Limit the size of the products introduced.
 - See the equipment technical package or contact Intralox Customer Service for more information.
- Improve the product transfer.

JAM WARNING DISTANCE

The screenshot shows the Settings HMI page with several configuration fields. The 'Run mode' is set to 'Internal' and 'Gap too small action' is set to 'End Off'. The 'Artificial min. product length' is 0 mm, and 'Debounce distance' is 0 mm. The 'Gap warning distance' is 202 mm. The 'Jam warning distance' is 1000 mm, which is highlighted with a red box. Each numerical input field has a 'max' and 'min' value indicated above it.

Figure 6: Jam warning distance on the Settings HMI page

The **Jam warning distance** triggers a warning when the infeed PE remains blocked for the specified length as measured by encoder pulses. Set the jam warning distance slightly below the jam distance listed on the **Equipment** HMI page to receive a warning before the jam fault triggers. The jam warning cannot be disabled.

PRODUCT BUFFER FULL OR NEARLY FULL

The buffer tracks up to 32 products for sorters and S7000/S7050 switches with a single valve bank. For S7000/S7050 switches with a dual valve bank, the buffer tracks up to 16 products.

The **Product buffer full** fault occurs when the number of products on the equipment exceeds the tracking capacity of the ISC CAM.

When this fault occurs, new products overwrite existing products on the buffer. Overwritten products either go to the end-off (if retain activation is off) or follow the previous product (if retain activation is on).

The **Product buffer nearly full** warning occurs when there are four (4) or fewer free spots in the product buffer, indicating that the buffer is nearing maximum capacity.

You can wait for the fault or warning to automatically reset, or you can reset it manually.

- **Automatic Reset:** The fault or warning automatically resets when a product enters the infeed PE after enough products are diverted and removed from the buffer.
- **Manual Reset:** On the **Settings** HMI page, click the **Reset Product Buffer** button to empty (erase) the product buffer.
 - When you manually reset a fault, any remaining products continue to end off (if retain activation is off) or follow the previous product (if retain activation is on).
 - When you manually reset a warning, any remaining products on the belt are not acted upon.

Corrective action: Limit the number of products on the belt.

2 HMI WARNINGS AND FAULTS

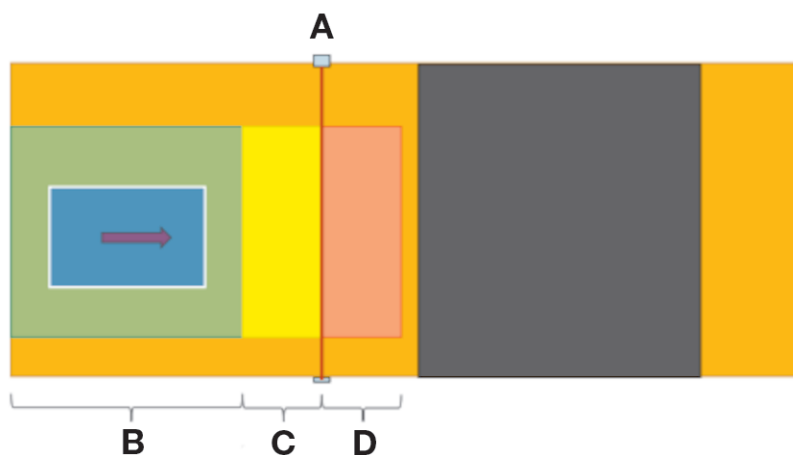
PRODUCT DESTINATION SIGNAL RECEIVED TOO LATE OR LATE

The system monitors PLC communication timing to ensure proper product handling. Intralox sets the **PLC comm timing** window during equipment assembly and testing to account for communication delays and timing requirements. View this value on the **Equipment** page in the PLC communication section.

The **Product destination signal received too late** fault occurs when ISC CAM receives a destination signal just after the infeed PE detects the product. This timing creates uncertainty about whether the signal applies to the current or next product, potentially causing divert failures.

When this fault occurs, the product follows the previous product to the same destination. The new destination is applied to the next product that arrives at the infeed PE.

The **Product destination signal received late** warning occurs when the PLC sends a destination or reject signal just before the infeed PE detects the product



A infeed PE

B acceptable timing for destination signal

C destination signal triggers warning

D destination signal triggers fault

Figure 7: Product destination signal timing

You can wait for the fault or warning to automatically reset, or you can reset it manually.

- **Automatic Reset:** The fault or warning automatically resets after a new change of destination is detected in a timely manner.
- **Manual Reset:** You manually reset the fault or warning either from the **Fault** page or via the PLC. For more information, see the ISC CAM network communication guide.

Corrective action: Send product destination signals earlier to prevent timing faults and warnings. The optimal timing is immediately after the infeed PE fully detects the previous product.

AIM ONLY: DAMAGED OR MISSING PEG WARNING

For equipment with AIM technology, the **Damaged or missing peg** warning occurs when the sensor fails to change state within one (1) belt module length. This indicates a broken or missing peg, or debris blocking the sensor.

You can wait for the warning to automatically reset or reset it manually.

Automatic Reset: The warning automatically resets when the peg sensor changes state with the belt in motion.

2 HMI WARNINGS AND FAULTS

Manual Reset: Manually reset the warning either on the **Fault** HMI page or with a PLC command. For more information, see *PLC Integration* in the ISC CAM Commissioning and Integration Manual.

Possible Cause	Corrective Action
A peg missing or broken	Add a peg or replace the broken peg
Dust or debris is blocking the peg sensor	Clean the peg sensor to remove any debris

AIM ONLY: PEG SENSOR FAULT

For equipment with AIM technology, the **Peg sensor** fault occurs when the sensor fails to detect pegs for a long period. A broken or blocked peg sensor typically causes this fault.

When this fault occurs, the equipment may either fail to divert the product or divert it late.

You can wait for the fault to automatically reset or reset it manually.

Automatic Reset: The fault automatically resets when the peg sensor changes state with the belt in motion.

Manual Reset: Manually reset the fault either on the **Fault** HMI page or via a PLC command. For more information, see the ISC CAM Network Communication Data Interface file.

Possible Cause	Corrective Action
The peg sensor is incorrectly installed	Correct the installation of the peg sensor
Dust or debris is blocking the peg sensor	Clean the peg sensor and remove any debris
The peg sensor is damaged or broken	Replace the peg sensor
The peg sensor cable is loose or damaged	Reconnect or replace the peg sensor cable

BELT ACCELERATION TOO FAST WARNING

The **Belt acceleration too fast** warning occurs when the ISC CAM detects an excessively fast belt speed ramp-up (rapid start). Intralox defines and sets the maximum allowed belt acceleration for each application. View the **Maximum allowed belt acceleration** value on the **Equipment** HMI page.

You can wait for the warning to automatically reset or reset it manually.

Automatic Reset: The belt acceleration too fast warning automatically resets 10 seconds after the warning occurs.

Manual Reset: Manually reset the warning either on the **Fault** HMI page or with a PLC command.

Possible Cause	Corrective Action
An excessively fast ramp-up (rapid start) of the belt is detected	Increase the ramp-up time of the belt or install a soft start controller

BELT DECELERATION TOO FAST WARNING

The **Belt deceleration too fast** warning occurs when ISC CAM detects an excessively fast belt ramp-down (rapid stop). Intralox sets the **Maximum allowed belt deceleration** for each application. View the **Maximum allowed belt deceleration** value on the **Equipment** HMI page.

You can wait for the warning to automatically reset or reset it manually.

Automatic Reset: The belt deceleration too fast warning automatically resets 10 seconds after the warning occurs.

Manual Reset: Manually reset the warning on the **Fault** HMI page or via the PLC.

2 HMI WARNINGS AND FAULTS

Possible Cause	Corrective Action
An excessively fast ramp-down (rapid stop) of the belt is detected	Increase the ramp-down time of the belt or install a soft start controller

BELT ELONGATION LIMIT REACHED WARNING

The **Belt elongation limit reached** warning occurs when the belt elongation exceeds the maximum elongation allowed for the belt type. Intralox sets the allowed belt elongation during equipment assembly and testing. View the **Allowed belt elongation** value on the **Equipment** HMI page.

Possible Cause	Corrective Action
The belt elongation exceeds the allowed elongation	Replace the belt

BELT SPEED TOO SLOW WARNING

The **Belt speed too slow** warning occurs when the belt speed remains below the minimum belt speed for more than one (1) second. If the belt speed is too low, “stick slip” motion can occur causing product transfer issues. Intralox sets the minimum belt speed during equipment assembly and testing. View the **Min. speed** value on the **Equipment** HMI page.

Automatic Reset: The **Belt speed too slow** warning automatically resets when the belt speed exceeds the minimum belt speed.

Possible Cause	Corrective Action
The belt is moving slower than the allowed minimum belt speed	Increase the belt speed to within the acceptable range. Decrease the ramp-up and ramp-down times.

BELT SPEED TOO FAST WARNING

The **Belt speed too fast** warning occurs when the belt speed remains above the maximum belt speed for more than one (1) second. If the belt speed is too high, divert timing issues can occur. Excessive belt speed can also cause excessive wear on the belt, sprockets, wearstrips, and other equipment components. Intralox defines and sets the maximum belt speed value for each application. View the **Max. speed** value on the **Equipment** HMI page.

Automatic Reset: The belt speed too fast warning automatically resets when the belt speed falls below the maximum belt speed.

Possible Cause	Corrective Action
The belt is moving faster than the maximum belt speed	Decrease the belt speed to within the acceptable range

HIGH CPU USAGE WARNING

The **High CPU usage** warning occurs when the ISC CAM CPU is overloaded with communication from the PLC.

Automatic Reset: The high CPU usage warning automatically resets when the CPU load returns to normal levels.

Possible Cause	Corrective Action
The CPU is overloaded	Reduce size or speed of communication from the PLC

ENCODER FAULT

The **Encoder fault** occurs when ISC CAM receives a "run" signal, but the encoder does not pulse. The **Encoder fault** also occurs if the encoder signal does not change state and the infeed PE triggers multiple times within a fixed time window. Intralox defines and sets the encoder fault time window for each application. View the time window under **Fault timer** on the **Equipment HMI** page.

Automatic Reset: The fault automatically resets when the encoder starts pulsing.

Manual Reset: Manually reset the warning either on the **Fault HMI** page or via a PLC command. For more information, see PLC integration in the Commissioning and Integration manual.

Possible Cause	Corrective Action
The encoder is broken	Replace the encoder
The encoder cable is loose or damaged	Reconnect or replace the encoder cable
The motor running signal is sent incorrectly from the PLC	Verify that the motor running signal is sent when the belt is running

IO-LINK FAULT

The **IO-Link fault** occurs when communication with a valve bank malfunctions.

Automatic reset: The fault automatically resets when proper communication with the valve bank resumes.

Possible Cause	Corrective Action
The valve bank is broken	Replace the valve bank
The valve bank cable is loose or damaged	Reconnect or replace the valve bank cable

MOTOR RUN SIGNAL MISSING FAULT

The **Motor run signal missing** fault occurs when the ISC CAM is connected to a PLC and the encoder is pulsing but the motor running signal is missing. This fault only occurs if the ISC CAM is connected to a PLC.

Automatic Reset: The motor run signal missing fault automatically resets when the motor running signal is sent.

Possible Cause	Corrective Action
The connection to the PLC is incorrect or communication between the ISC CAM and PLC was not properly established	Verify the network integration of the ISC CAM and establish proper communication between the ISC CAM and the PLC. For more information, see <i>PLC Integration</i> in the ISC CAM Commissioning and Integration Manual.

Automatic Reset: The motor run signal missing fault automatically resets when the correct signals are given.

Possible Cause	Corrective Action
The signal timing between the PLC and ISC CAM is incorrect	Ensure that the signal is sent in a timely manner

POWER SUPPLY VOLTAGE LOW/HIGH FAULT

The **Power supply voltage low/high** fault occurs when the ISC CAM power supply voltage is below 18 V.

Automatic Reset: The **Too low voltage from power supply** fault automatically resets when the voltage rises to 18 V or higher.

2 HMI WARNINGS AND FAULTS

Possible Cause	Corrective Action
The power supply is faulty	Adjust or replace the power supply
A voltage drop is occurring between the power supply and the ISC CAM	Adjust or relocate the power supply

TOO MUCH CURRENT DRAW FAULT

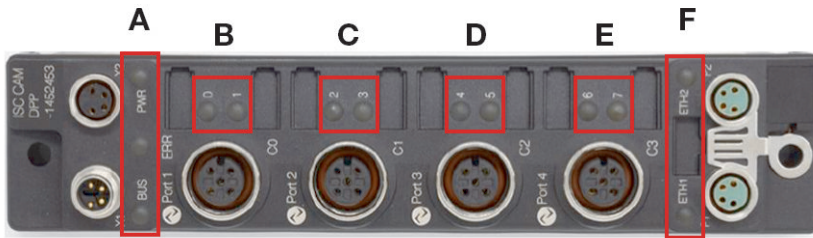
The **Too much current draw** fault occurs when the output current is higher than 0.5 A.

Automatic Reset: The **Too much current draw** fault automatically resets when the current falls to 0.5 A.

Possible Cause	Corrective Action
An electrical short is occurring in one (1) of the cables or sensors	Replace the broken cable or sensor

3 ISC CAM LED INDICATOR REFERENCE

LED INDICATORS



- A** bus, error, and power supply status
- B** LED 0-1
- C** LED 2-3
- D** LED 4-5
- E** LED 6-7
- F** ETH1 and ETH2

Figure 8: ISC CAM LED indicators

BUS, ERR, AND PWR LEDS

BUS LED	Description
Off	No voltage connected
Green	Active connection to a master
Green flashing (1.5 Hz)	ISC CAM active
Red	IP address conflict, restore mode active, F reset active, or Modbus connection time-out
Red flashing	Wink command active
Red/green flashing (1 Hz)	Automatic negotiation, waiting for DHCP address assignment, or waiting for boot P address assignment

ERR LED	Description
Off	No voltage connected
Green	No diagnostics
Red	Diagnostic message pending

PWR LED	Description
Off	No voltage or undervoltage at V1
Green	Voltage at V1 and V2 OK
Red	No voltage or undervoltage at V2

LED 0–1

LED	Indicates	Description
LED 0	C0 Pin4	Input status of the encoder, slowly flashes green when belt is moving
LED 1	C0 Pin2	Input status of the infeed PE, off when infeed PE is blocked

LED 0	Description
Off	No input signal
Flashing green (<1Hz)	Encoder pulsing

3 ISC CAM LED INDICATOR REFERENCE

LED 1	Description
Off	Input not active, infeed PE blocked
Green	Input active, infeed PE clear

LED 2–7 FOR DARB TECHNOLOGY

LED	Indicates	In DARB technology
LED 2	C1 Pin4	—
LED 3	C1 Pin2	Output status to the valve for active carryway 1
LED 4	C2 Pin4	—
LED 5	C2 Pin2	Output status to the valve for active carryway 2
LED 6	C3 Pin4	—
LED 7	C3 Pin2	Output status to the valve for active carryway 3

LED 3/5/7 Light	Description
Off	Output not active, valve not energized
Green	Output active, valve energized
Red	Output active with overload or short circuit

LED 2–7 FOR ARB S7000/S7050

LED	Indicates	In ARB S7000/7050 technology
LED 2	C1 Pin4	IO-Link communication status (data processing status) between ISC and the valve bank or the valve bank module status on active carryway 1
LED 3	C1 Pin2	—
LED 4	C2 Pin4	IO-Link communication status (data processing status) between ISC and the valve bank or the valve bank module status on active carryway 2
LED 5	C2 Pin2	—
LED 6	C3 Pin4	(Sorters only) IO-Link communication status (data processing status) between ISC and the valve bank or the valve bank module status on active carryway 3
LED 7	C3 Pin2	—

LED 2/4/6 Light	Description (channel in IO-Link mode)
Off	Port inactive, no IO-Link communication, diagnostics deactivated
Green flashing	IO-Link communication, process data valid
Red flashing	IO-Link communication active and module error, invalid process data
Red	IO-Link supply error free, no IO-Link communication or module error, process data invalid

LED 2–7 FOR AIM TECHNOLOGY

LED	Indicates	In AIM technology
LED 2	C1 Pin4	Input status of the peg sensors for active carryway 1, flashes green when the belt is moving
LED 3	C1 Pin2	Output status to the valve for active carryway 1

3 ISC CAM LED INDICATOR REFERENCE

LED	Indicates	In AIM technology
LED 4	C2 Pin4	Input status of the peg sensors for active carryway 2, flashes green when the belt is moving
LED 5	C2 Pin2	Output status to the valve for active carryway 2
LED 6	C3 Pin4	Input status of the peg sensors for active carryway 3, flashes green when the belt is moving
LED 7	C3 Pin2	Output status to the valve for active carryway 3

LED 2/4/6 Light	Description (Channel in SIO mode (DI))
Off	Input not active, peg sensor blocked
Green	Input active, peg sensor clear

LED 3/5/7 Light	Description
Off	Output not active, valve not energized
Green	Output active, valve energized
Red	Output active with overload or short circuit

LED 6–7 FOR 24-VDC DISCRETE IO CONNECTION

NOTE: LED 6 and LED 7 indicate the input and output of the 24-VDC discrete IO connection if wired. For more information, see *Reject Products With 24-VDC Discrete IO Connection* in the *ISC CAM Commissioning and Integration Manual*.

LED	Indicates	For 24-VDC discrete IO connection, if wired
LED 6	C3 Pin4	Input status (reject products)
LED 7	C3 Pin2	Output status (system run or fault)

LED 6 Light	Description
Off	Input not active, products divert normally
Green	Input active, products divert to the reject destination

LED 7 Light	Description
Off	Not active
Green	System running, no faults
Red	System has a fault, requires diagnostic

ETH1 AND ETH2

LED	Description
ETH1	Connection status of port 1 to the ethernet or IP network
ETH2	Connection status of port 2 to the ethernet or IP network

ETH1, ETH2 LED	Description
Off	No ethernet connection
Green	100-Mbps ethernet connection established
Green flashing	100-Mbps ethernet traffic
Yellow	10-Mbps ethernet connection established
Yellow flashing	10-Mbps ethernet traffic

LED FAULTS

POWER FAULT: RED PWR LED

Possible Cause	Corrective Action
Connector loose	Retorque the connector per torque specifications listed on the Connection Diagram for your equipment (available at https://intraox.com/isccam)
Facility power disrupted (no voltage)	Contact facility management to correct the power disruption
Damaged power cable	Replace the power cable
Facility power incorrect (voltage too high or too low)	Contact facility management to obtain the correct 24-VDC power

POWER FAULT: RED BUS LED

Possible Cause	Corrective Action
IP address conflict	Set and verify the IP address. For more information, see the <i>ISC CAM Commissioning and Integration Manual</i> .
Restore mode active	Power cycle the ISC CAM
Modbus connection timeout	Power cycle the ISC CAM. Verify the network settings and hardware.

POWER FAULT: RED/GREEN (1 HZ) BUS LED

Possible Cause	Corrective Action
Autonegotiation	No action is required
Waiting for the assignment of a DHCP address or BootP address	Ensure that the network sends the address to the ISC CAM

POWER FAULT: RED ERR LED

Possible Cause	Corrective Action
Diagnostic message pending	No action is required

4 APPLICATION ISSUES

PRODUCT TRANSFERS OUT TOO EARLY

The ISC CAM may not be causing this issue. See the equipment user manual for more troubleshooting options.

NOTE: When changing settings on the **Settings** HMI page, consider how the ISC CAM prioritizes inputs. For more information, see *Command Prioritization* in the *ISC CAM Commissioning and Integration Manual*.

Possible Cause	Corrective Action
The active carryway activates too early due to different friction factors between the product and belt rollers	On the Settings HMI page, adjust the Divert trigger point , or adjust the Product tracking point to activate at a different time: <ul style="list-style-type: none"> When the center of the product reaches the center of the carryway When the trailing edge of the product reaches the start of the carryway
The active carryway activates too early due to an incorrect belt elongation value	Measure the actual belt elongation and set the belt elongation override value on the Maintenance HMI page. See <i>Belt Pitch Override</i> in the <i>ISC CAM Commissioning and Integration Manual</i> and the equipment user manual for more information.
The active carryways do not complete movement	<ol style="list-style-type: none"> Ensure the air pressure is correct Ensure the equipment is clean On the Settings HMI page, adjust the Divert distance dwell

PRODUCT TRANSFERRING OUT TOO LATE

The ISC CAM may not be causing this issue. See the equipment user manual for more troubleshooting options.

Possible Cause	Corrective Action
The active carryway activates too late due to different friction factors between product and belt rollers	On the Settings HMI page, adjust the Divert trigger point , or adjust the Product tracking point to activate at a different time: <ul style="list-style-type: none"> When the center of the product reaches the center of the carryway When the trailing edge of the product reaches the start of the carryway
Equipment components are worn	Inspect and replace components as needed
The active carryway activates too late due to an incorrect belt elongation value	Measure the actual belt elongation and set the belt elongation override value on the Maintenance HMI page. See <i>Belt Pitch Override</i> in the <i>ISC CAM Commissioning and Integration Manual</i> and the equipment user manual for more information.
The active carryways do not complete movement	<ol style="list-style-type: none"> Ensure that the air pressure is correct Ensure that the equipment is clean On the Settings HMI page, adjust the Divert distance dwell

PRODUCT SKEWING

The ISC CAM may not be causing this issue. See the equipment user manual for more troubleshooting options.

Possible Cause	Corrective Action
Products are skewed when they arrive at the infeed	Minimize product skewing at the infeed of the Intralox equipment

Possible Cause	Corrective Action
The infeed transfer is configured incorrectly (for example, incorrect transfer height)	Adjust the transfers to minimize skewing. For more information, see the equipment user manual
The belt speed differs from upstream or downstream equipment	Adjust belt speeds so they are identical
The trajectory settings are not correct	On the Settings HMI page, adjust the Product tracking point and Divert trigger point

PRODUCTS DO NOT DIVERT

The ISC CAM may not be causing this issue. See the equipment user manual for more troubleshooting options.

Possible Cause	Corrective Action
The PLC or inspection system is not sending the destination or reject command to the ISC on time and in the correct format	Ensure that the PLC or inspection system sends the right information, on time and in the correct format
The ISC does not receive sensor signals	On the Live Info HMI page, verify the status of the encoder and the infeed PE. If either is defective: <ol style="list-style-type: none"> 1. Inspect the LEDs on the ISC 2. Inspect cable connections 3. Replace components
The air pressure is low	Increase air pressure to the acceptable range
The actuation system (valve or cylinder) is defective	Replace faulty components
The gap between products is smaller than the minimum gap for the application	Increase the gap between products arriving at the infeed to meet the Min. gap size value on the Equipment HMI page. For more information about product gaps, see the equipment Functional Layout or contact Intralox Customer Service.
The active carryway is disabled (either from the HMI or the PLC)	On the Live Info HMI page, verify that the active carryways are enabled. For more information, see <i>PLC Signals</i> and <i>Disable Active Carryways</i> in the <i>ISC CAM Commissioning and Integration Manual</i> .
For AIM equipment, debris is obstructing the diverter paddle	Visually inspect the cylinder, paddle, and carryway cavity where the paddle is mounted. Remove any debris.

BELT NOT MOVING

The ISC CAM may not be causing this issue. See the equipment user manual for more troubleshooting options.

Possible Cause	Corrective Action
Products are jammed on the equipment, or the belt is overloaded	<ol style="list-style-type: none"> 1. Clear any product jams 2. Review the product load to ensure that it is not excessive for the equipment. Reduce the load as needed.

4 APPLICATION ISSUES

Possible Cause	Corrective Action
The sprockets do not engage the belt	<ol style="list-style-type: none"> 1. Ensure the sprockets are properly positioned on the belt 2. Inspect the sprockets for excessive wear. Replace the sprockets as needed. 3. Measure the sprocket bore for excessive wear 4. Inspect the sprocket pockets in the belt for excessive wear. Replace belt modules as needed 5. Inspect the belt for excessive elongation 6. Inspect the belt to ensure proper back tension is applied. Adjust the belt as needed. 7. Inspect the catenary sag in the returnway. Adjust the return rollers as needed.
The drive motor is not operating properly	<ol style="list-style-type: none"> 1. Ensure the drive motor power is connected and the drive motor is wired properly 2. Ensure the variable-frequency drive (VFD) is operating properly (if applicable)
The shafts are damaged or not adjusted properly	<ol style="list-style-type: none"> 1. Ensure the drive motor is securely mounted to the drive shaft 2. Inspect the shaft bearings for damage or excessive wear
The downstream equipment or chutes are full	Ensure that the downstream equipment and chutes are clear

PRODUCTS DO NOT REACH THE ASSIGNED DESTINATION

The ISC CAM may not be causing this issue. See the equipment user manual for more troubleshooting options.

Possible Cause	Corrective Action
Debris is blocking the belt or belt rollers from moving	Clean the belt to remove any debris blocking the belt or belt rollers
The bottom surface of the product is not suitable for the equipment	<ol style="list-style-type: none"> 1. Inspect the bottom surface of the product for moisture, oils, debris, damage, or irregularities 2. Remove any debris or damaged products
The belt is not installed properly	<ol style="list-style-type: none"> 1. Ensure that the belt is properly aligned down the length of the equipment 2. Ensure that the belt properly engages the sprockets. 3. Inspect the catenary sag in the returnway and, if needed, adjust the return rollers
Debris is blocking the Rack and Roll rollers from rotating	<ol style="list-style-type: none"> 1. Disable power to the equipment 2. Open the belt 3. Inspect the Rack and Roll rollers to ensure that they rotate freely 4. Remove any debris that is blocking the movement of the Rack and Roll rollers 5. As needed, clean the Rack and Roll rollers to remove debris 6. Close the belt and restart the equipment
The belt or belt rollers are damaged	<ol style="list-style-type: none"> 1. Inspect the belt, belt rollers, and rods to ensure that they are undamaged and operating properly 2. Replace components as needed 3. Measure the belt length to ensure that improper catenary sag does not cause damage 4. Measure the sprocket bore for excessive wear 5. Replace components as needed
The belt rollers are excessively worn	<ol style="list-style-type: none"> 1. Inspect belt rollers for excessive wear 2. Replace belt modules as needed

4 APPLICATION ISSUES

Possible Cause	Corrective Action
The Rack and Roll rollers are excessively worn	<ol style="list-style-type: none"> 1. Disable power to the equipment 2. Open the belt 3. Inspect the Rack and Roll rollers for excessive wear 4. Replace any damaged Rack and Roll rollers 5. Close the belt and restart the equipment
The Rack and Roll rollers are blocked	<ol style="list-style-type: none"> 1. Ensure that the Rack and Roll rollers move properly 2. Ensure that the Rack and Roll system is functioning properly 3. Ensure that the actuation system is connected properly and that power is supplied to the Rack and Roll actuator 4. Ensure that the needed air pressure is supplied to the pneumatics. For this step, see the pneumatic schematics. For more information, contact Intralox Customer Service 5. If applicable, ensure that the Rack and Roll electric actuators are properly connected
The gap between products is smaller than the minimum gap for the application	Increase the gap between products arriving at the infeed to meet the "Min. gap size" value on the Equipment HMI page. For more information about product gaps, see the equipment Functional Layout or contact Intralox Customer Service.
The infeed PE or peg sensor is blocked or malfunctioning	<ol style="list-style-type: none"> 1. Remove any debris that is blocking the sensors 2. Ensure that sensors are aligned properly to see products 3. Ensure that sensors are calibrated properly 4. Repair or replace sensors as needed
The pneumatics are not functioning properly	<ol style="list-style-type: none"> 1. Ensure that proper air pressure is supplied to the pneumatics 2. Ensure that clean, dry air is supplied to the pneumatics 3. Ensure that the solenoid valves are functioning properly 4. Ensure that the pneumatic cylinders move properly
The encoder is not operating properly	<ol style="list-style-type: none"> 1. Ensure that the encoder is properly connected 2. Ensure that the encoder pulses per revolution (PPR) value is set to 64 3. Repair or replace the encoder
The PLC is not functioning properly	<ol style="list-style-type: none"> 1. Ensure that the PLC is not faulty 2. Reset the PLC and restart the equipment 3. Connect to the PLC and ensure that the program is running properly
The infeed PE sensors are not secured properly or do not face each other	<ol style="list-style-type: none"> 1. Ensure that sensor brackets are tight, so sensors cannot move during operation 2. Ensure that both sensors of a set directly face each other
The destination equipment or chute is full	Ensure that the destination equipment or chute is clear
<p>An ISC CAM IDL C-1.x is tracking more than 15 products.</p> <p>An ISC CAM IDL C-2.x is tracking more than 32 products.</p>	Increase the product gap or decrease throughput
The active carryway activates too early or too late due to an incorrect belt elongation value	Measure the actual belt elongation and set the belt elongation override value on the Maintenance HMI page. See <i>Belt Pitch Override</i> in the <i>ISC CAM Commissioning and Integration Manual</i> and the equipment user manual for more information.

4 APPLICATION ISSUES

Possible Cause	Corrective Action
Active carryways were disabled, either from the HMI or via PLC communication	On the Live Info HMI page, verify that the active carryways are enabled. Activate carryways with PLC communication if needed.
A valve override is active either from the HMI or via PLC communication	On the IO-COMM HMI page, verify the valve override is not active. If an override is active, deactivate it either from the HMI or the PLC (if used). For more information, see the <i>ISC CAM Commissioning and Integration Manual</i> .
The trajectory settings are incorrect	Check the trajectory settings on the Settings HMI page. For more information, see the <i>ISC CAM Commissioning and Integration Manual</i> .

PRODUCTS DO NOT TRANSFER PROPERLY

The ISC CAM may not be causing this issue. See the equipment user manual for more troubleshooting options.

Possible Cause	Corrective Action
The infeed transfer is too high or too low	Adjust the transfer height
The belt speed is set incorrectly	Set the belt speed within the "Min. speed" and "Max. speed" values listed on the Equipment HMI page
Debris is blocking the transfer	Remove any debris blocking the transfer
The product is too small for the transfer to convey	Contact Intralox Customer Service for assistance
Product bottom surface is not suitable for the equipment	<ol style="list-style-type: none"> 1. Inspect the product bottom surface for moisture, oils, debris, damage, or irregularities 2. Remove any debris or damaged products
Powered roller transfer is not set to the proper speed	Adjust the powered roller speed as needed
The transfer roller is not working	<ol style="list-style-type: none"> 1. Inspect for damaged rollers and replace with new rollers 2. Inspect for damaged bearings and replace with new bearings
Products are not oriented properly when they enter the transfer	Ensure that products are oriented properly when entering the transfer

UNUSUAL NOISE OR VIBRATION COMING FROM THE BELT

The ISC CAM may not be causing this issue. See the equipment user manual for more troubleshooting options.

Possible Cause	Troubleshooting Suggestion
The catenary sag is not adjusted properly	<ol style="list-style-type: none"> 1. Measure belt pitch and adjust the belt pitch override in the HMI as needed 2. Inspect the catenary sag in the returnway and adjust as needed. For more information, see the equipment user manual.
Debris in the belt is causing excessive noise	Clean the belt to remove any debris
For AIM equipment, a peg is jumping the paddle	Clean the paddle and pneumatic cylinders and ensure they operate properly

Possible Cause	Troubleshooting Suggestion
For AIM equipment, a peg is jumping the paddle during activation	On the Settings HMI page, adjust the “Activation delay override” value. Change the value in increments of five (5) ms or less.
For AIM equipment, a peg is jumping the paddle during de-activation	On the Settings HMI page, adjust the “De-activation delay override” value. Change the value in increments of five (5) ms or less.

UNUSUAL NOISE OR VIBRATION COMING FROM THE SHAFT SUPPORT BEARINGS

The ISC CAM may not be causing this issue. See the equipment user manual for more troubleshooting options.

Possible Cause	Corrective Action
The shaft support bearings are damaged	<ol style="list-style-type: none"> 1. Inspect the bearings to ensure they are not damaged 2. Ensure the bearings are lubricated properly 3. Repair or replace components as needed
The sprockets shift under the weight of the belt as the shaft rotates, causing a clicking noise	<ol style="list-style-type: none"> 1. Determine if the noise occurs four (4) times per shaft revolution 2. If needed, record the setting on the VFD, then lower the speed of the VFD to hear the noise 3. If the noise occurs four (4) times per shaft revolution, it is the normal noise of the sprockets shifting 4. Ensure that the sprocket is installed properly. Verify that all fasteners are tightened on the split sprockets. Tighten the split sprocket halves to each other, not the shaft. 5. For further assistance, contact Intralox Customer Service

NO PRODUCT ON EQUIPMENT BUT INFEED PE REPORTS BLOCKAGE

Possible Cause	Corrective Action
Dust or debris is blocking the infeed PE	Remove debris or other blockage
The infeed PE is damaged	Replace the infeed PE sensor
The infeed PE cable is loose or damaged	Reconnect or replace the infeed PE cable

5 TROUBLESHOOTING PROCEDURES

LOCATE DEVICE WITH WINK FUNCTION

Use the Intralox Service Tool (available at <https://intralox.com/isccam>) to visually identify a specific ISC CAM device on the line network.

1. Click **Search** to discover ISC CAM devices.
2. Click the device in the list to select it.
3. Click **Wink**. The BUS LED on the device flashes white.
4. Find the ISC CAM device with the red flashing BUS LED.

RESET TO FACTORY SETTINGS

Follow these steps to reset the ISC CAM to factory settings with the Intralox Service Tool (available at <https://intralox.com/isccam>). Contact Intralox Customer Service before performing this procedure. Use the Intralox Service Tool to reset ISC CAM to factory settings. A factory reset removes essential configuration information.

1. Click **Search** to discover ISC CAM devices.
2. Click the device to select it.
3. Click **Actions**, then **Factory Reset** to reset the device to factory settings.

REPLACE ISC CAM

This procedure describes how to replace the ISC CAM device with a new unit.

The procedure takes approximately 30 minutes. If replacing a device with IDL-C-v1.x firmware that is integrated with a PLC, allow additional time to update the PLC communications.

See the *ISC CAM Commissioning and Integration Manual* and download other supporting files at <https://intralox.com/isccam>.

NOTE: Contact Intralox Customer Service for assistance before starting this process.

PREPARE TO REPLACE ISC CAM

1. Download the ISC CAM connection diagram for your equipment from <https://intralox.com/isccam>.
2. Locate the application settings file (.apl) exported from the existing ISC CAM unit at the end of commissioning. If the file is not available and the existing ISC CAM is still accessible via ethernet, see *Export Settings* in the *ISC CAM Commissioning and Integration Manual* to connect to the HMI and export the settings.

REMOVE HARDWARE

1. Disable power to the ISC CAM.
2. Photograph or label cable connections for future reference.
3. Disconnect all cables from the ISC CAM.
 - a. Disconnect the power port.
 - b. Disconnect ports C0–C3.

5 TROUBLESHOOTING PROCEDURES

- c. Disconnect network connection (ethernet) ports.

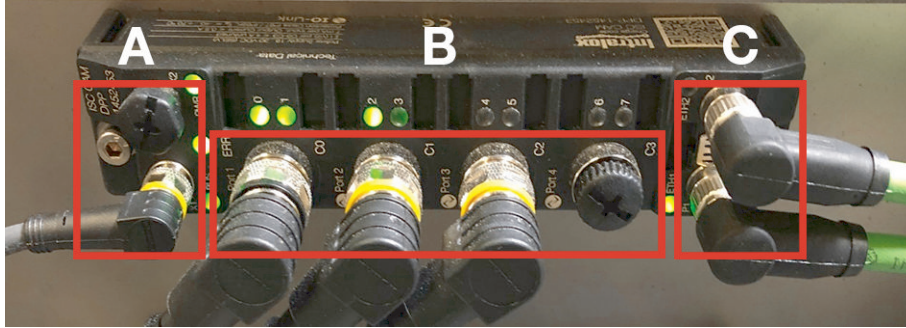


Figure 9: ISC CAM ports

- A: power
- B: C0-C3
- C: Ethernet

4. Remove the ISC CAM by removing two (2) screws, one (1) at each end of the module.



Figure 10: ISC CAM mounting screws

INSTALL HARDWARE

Follow this procedure to mount and connect the new ISC CAM.

1. Tighten the two (2) screws to install the new ISC CAM in the same location.

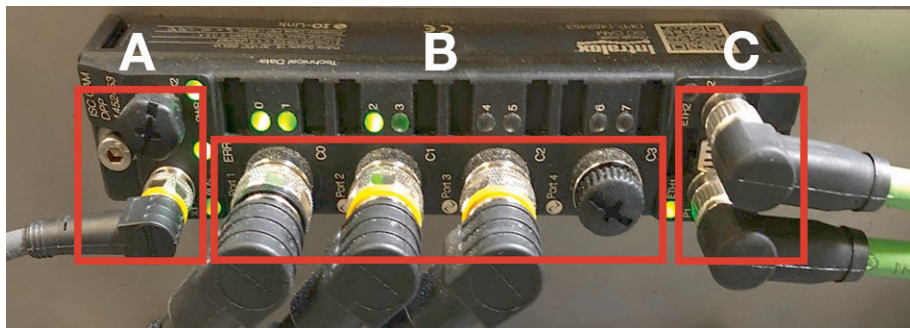


Figure 11: ISC CAM mounting screws

5 TROUBLESHOOTING PROCEDURES

2. Reconnect the cables to the same ports.

NOTE: Refer to the photograph taken during removal. For more information, refer to the connection diagram for your equipment technology available at <https://intralox.com/isccam>.



A power

B C0-C3

C network connection

Figure 12: Reconnect cables

3. Tighten the adapters and cable connectors to the torque specifications in the connection diagram.
NOTE: ISC CAM achieves IP65-67-69K ingress protection when connectors are properly torqued and dust caps cover unused ports. If connector torque is insufficient, dust and water can intrude and vibration can cause the connectors to loosen further.
4. Enable power to the ISC CAM and wait 20 seconds for the ISC CAM to boot.

CONFIGURE NEW ISC CAM

1. Follow the commissioning instructions in the *ISC CAM Commissioning and Integration Manual* to configure the new ISC CAM device network connection.
Set the IP address (and name, if applicable) as previously configured for the ISC CAM in the line network.
2. On the **Settings** HMI page, under Application Data, click **Import settings**.
3. Import the binary (.bin) file included in the technical package.
4. Ensure that the serial number in the information bar at the bottom of the HMI matches the serial number on the equipment.
NOTE: If the serial numbers do not match, contact [Intralox Customer Service](#).
5. Click **Import Settings** again.
6. Import the application settings (.apl) file exported from the previous ISC CAM.
NOTE: If you cannot import the application settings (.apl) file from the previous ISC CAM, retrieve the latest application file from the equipment technical package.
7. Verify HMI parameters match the values recorded in your earlier screenshots of the six HMI pages.
8. Reboot the ISC CAM with a power cycle or click **Actions** then **Reboot** in the Intralox Service Tool.
9. Verify that all LEDs are flashing green, which indicates that all cables are connected correctly.
If any LED is red, see *LED Indicators* for more information.

6 HMI INFORMATION REFERENCE

This section includes additional detail and reference for information in the ISC CAM HMI.

LIVE INFO PAGE

The **Live Info** HMI page provides a comprehensive overview of the system status, enabling integrators, technicians, and operators to quickly identify and address issues.

The **Live Info** page is divided into two (2) sections: **System information** and **Active carryway information**. The **System information** section provides a snapshot of the current operational status of Intralox equipment, with system status indicators based on operating data. The **Active carryway information** section provides throughput data. For sorter applications, users can enable and disable active carryways using the toggles in this section.

NOTE:

Information on the **Live Info** HMI page varies depending on belt series, technology, and equipment type.

LIVE INFO PAGE INFORMATION

View the following information on the **Live Info** page.

Information	Description
Up time	The time since the last reboot.
Run time	The time the equipment has performed its current function.
Stand-by time	The time since the equipment was powered on.
Gap at infeed	The intentional spacing between products at the infeed PE. Controlling this distance is crucial for sortation, quality control, efficiency, and damage prevention.
Product length	The measured length of the item on the equipment. Product length influences equipment design, system efficiency, sortation, handling, and safety. Longer products require larger gaps to prevent collisions or overlapping.
Minimum gap at infeed	The smallest allowable distance between products. This value is set automatically based on the equipment configuration. Factors include product size, product shape, belt speed, and downstream process requirements. Consult Intralox support to determine the appropriate gap for your application.
Belt acceleration	The rate at which the speed of the belt increases. Belt acceleration affects efficiency, reliability, and product handling quality.
Belt speed	The rate at which the belt moves. Belt speed is typically expressed in feet per minute (ft/min) or meters per minute (m/min). Optimal speed varies based on application and system design.
Belt usage	The total distance the belt has traveled over its lifetime. Belt usage is important for maintenance planning, cost estimation, performance monitoring, and predictive maintenance.
Destination last product	The destination assigned to the last product.
Throughput	The number of products conveyed in a minute, expressed as products per minute (ppm).
Products on belt	The number of products currently on the belt. The number of products affects throughput, efficiency, safety, and resource utilization. Too many products can cause collisions and jams. Optimal loading enhances productivity.
Product buffer slots free	The number of unoccupied slots in the product buffer. The default buffer size is 32 products.

SETTINGS PAGE

On the **Settings** HMI page, set parameters, trajectories, and trajectory presets ("recipes") to optimize ISC CAM behavior for your application. The **Settings** page is for technical operators, such as maintenance technicians, who are responsible for adjusting the performance of the Intralox equipment.

From the **Settings** page, you can view and adjust settings for read and write operations among other parameters. You can also export settings to an application (.apl) file and later import the file to restore the settings. See the *ISC CAM Commissioning and Integration Manual* for detailed information about ISC CAM settings.

MAINTENANCE PAGE

The **Maintenance** page shows counter values. The page gives maintenance personnel a detailed record with valuable insight about system operation. Maintenance personnel can use the insights to identify potential issues and optimize system performance.

Most data on the **Maintenance** page is read only, which maintains the integrity of the log data and prevents accidental modification. Users can export counter files.

MAINTENANCE PAGE INFORMATION

View the following information on the **Maintenance** page.

Information	Description
Product counter	The total number of valid products that have passed the infeed PE since the system started counting. The count is updated each time the infeed product sensor detects a product.
Start-stop counter	Increments each time the equipment completes a cycle. A "cycle" is complete when the equipment has both started and stopped. The start-stop counter is useful for applications in which the equipment must start and stop frequently.
Boot counter	Increments each time the equipment system is powered on ("booted"). The boot counter is useful for maintenance and troubleshooting.
CPU Cycle speed	Time, in milliseconds (ms), that the CPU takes to complete one program cycle
Usage	The total distance the belt has traveled over its lifetime. Belt usage is similar to vehicle mileage. The belt usage parameter helps operators: <ul style="list-style-type: none"> • Plan for maintenance and replacement • Estimate the cost of operation • Learn about system performance • Identify potential issues before they cause failures
Average speed	The average belt speed, typically in feet per minute (ft/min) or meters per minute (m/min)
Max. speed	The maximum belt speed, in ft/min or m/min
Max. acceleration	The maximum rate at which the belt speed has increased. This parameter is crucial for system efficiency and reliability.
Max. deceleration	The maximum rate at which the belt speed has decreased. This parameter affects system efficiency and product handling quality.
Active carryway (1-3)	Each active carryway counter tracks the total number of times that carryway was activated since the system started counting.

The **Faults** section includes basic fault information. More information is available on the **Fault** HMI page. Use the **Fault** page for system maintenance and troubleshooting.

EQUIPMENT PAGE

The **Equipment** page is a read only interface with key equipment parameters. The page is useful for controls engineers integrating the ISC CAM into the line network for communication purposes. The page is also useful for maintenance operators who are troubleshooting the system.

For more detailed information, see the *Functional Layout and Mechanical Drawing* section of the technical package.

EQUIPMENT PAGE INFORMATION

View the following information on the **Equipment** page.

Information	Description
Application	The function that the Intralox equipment performs when diverting products (sorter or switch)
Conveyor length	The length of the Intralox equipment frame
Sprocket (Teeth)	The number of teeth on the sprocket
Min. gap size	The minimum gap between consecutive products necessary for successful product diverts.
Jam distance	The largest allowable length of products at the infeed PE. A product blocking the infeed PE beyond this distance is considered a jam, which can affect system efficiency, reliability, and product handling quality.
Type	The Intralox belt series used in the Intralox equipment
Pitch	The length of the belt module
Width	The width of the belt
Min. speed	The minimum belt speed of the Intralox equipment
Max. speed	The maximum belt speed of the Intralox equipment
Max. acceleration	The maximum belt acceleration of the Intralox equipment
Max. deceleration	The maximum belt deceleration of the Intralox equipment
Type	The type of encoder used. "DI - Pulse" is the standard pulse encoder physically connected to the ISC CAM
Input	The port and pin used as the input for the encoder
Resolution	The number of pulses per revolution (ppr) that the encoder generates (64 ppr standard)
Fault timer	The time after which an encoder fault occurs
Pulse distance	The distance that the belt travels (in inches or millimeters) per encoder pulse
Type	The type of sensor used for the infeed. "1 (Single)" indicates that a single physical infeed PE is connected to the ISC CAM
Position	The distance from the "zero-location"
Debounce	The debounce distance for the infeed PE. The debounce distance is a configurable delay that can be used to prevent a transient condition from causing a fault or warning. The debounce time helps ensure that the sensor only activates in response to a deliberate change in the detected condition, not a temporary fluctuation.
Input	The port and pin used as the input for the infeed PE
Infeed lane	The location of the product infeed
Activation Angle	The angle at which the product travels after activation
Activation zone width	The width of the activation zone or zones
Active carryways	The number of active carryways in the equipment

6 HMI INFORMATION REFERENCE

Information	Description
Active carryway port offset	Where the first divert connects to the ISC CAM.
Position	The distance from the "zero-location"
Zone Length	The length of a single activation zone
Activation delay	The standard mechanical delay from the valve activation signal to the activation of the carryway
Deactivation delay	The standard mechanical delay from the valve deactivation signal to the deactivation of the carryway
Peg Sensor offset	The distance between the peg sensor and the diverter paddle

IO-COMM PAGE

The **IO-COMM** page provides a detailed overview of the communication statuses between the ISC CAM, equipment components, and the line PLC. This page gives line-control engineers live information about system operation.

Most data on the **IO-COMM** page is read only, which maintains the integrity of the log data and prevents accidental modification. The page provides a comprehensive overview of system communication status, which helps engineers quickly identify and address any issues.

IO-COMM PAGE INFORMATION

View the following information on the **IO-COMM** page.

NOTE: The following parameters are only indicators. For more information about any of the values, use **IO-trace**.

Information	Description
Encoder	The status of the encoder
Infeed PE 0	The status of the infeed PE
Peg Sensor (1–3)	The status of each peg sensor
Valve AIM	The status of each valve
RAW IO	The status of each IO port

FAULT PAGE

The **Fault** page displays the statuses of faults and warnings generated by the ISC CAM. The page gives all users a clear and understandable overview of any issues that may arise during system operation.

The **Fault** page is easily understood by users of all levels. The interface provides a comprehensive overview of system fault statuses, which helps users to quickly identify and address any issues.

FAULT AND WARNING HISTORY

A			B									
Active faults			Fault history: A - Most recent fault / P - Oldest fault									
			A	B	C	D	E	F	G	H	I	J
0	⚠	Fault Gap between products too small	⚠	-	-	⚠	-	-	-	-	-	-
1	✓	OK Infeed PE jammed	-	⚠	-	-	-	-	-	-	-	-
2	✓	OK -	-	-	-	-	-	-	-	-	-	-
3	✓	OK Product buffer full	-	-	⚠	⚠	⚠	⚠	⚠	-	-	-
4	✓	OK AIM Peg sensor fault	-	-	-	-	-	-	-	-	-	-

Figure 13: Active faults and fault history

A: active faults

B: fault history

The **Fault** page includes a table of active or recent faults and warnings. The icon on the far left of each row of the indicates whether the fault or warning is still active. Columns A through P show the fault or warning history. History information is shown with the latest faults and warnings on the left and the oldest on the right.

Every time the fault or warning status changes, the previous status is stored in the history and older history values shift one column to the right.

WARNING RESET AND CLEAR HISTORY

Warning



Figure 14: Warning reset and clear history on Faults HMI page

The following warnings only automatically reset when the fault conditions are no longer present at the fault-specific trigger point (such as when a new product arrives at the infeed PE):

- Gap between products small
- Infeed PE jammed
- Product buffer nearly full
- AIM damaged or missing peg
- Product destination signal received late
- Belt elongation limit reached
- Belt acceleration too fast
- Belt deceleration too fast
- High CPU usage

To reset these warnings before the next warning-specific trigger point, on the **Fault** page, in the **Warning** section, click **Reset**. You can also reset the warnings by sending a warning reset command from the PLC. All other warnings are periodically checked and reset if the warning condition is no longer present.

To reset the fault or warning history, click **Clear history**.

FAULT RESET

Fault



Figure 15: Fault reset and clear history on Faults HMI page

The following faults only automatically reset when the fault conditions are no longer present at the fault-specific trigger point (such as when a new product arrives at the infeed PE):

- Gap between products too small
- Infeed PE jammed
- Product buffer full
- AIM peg sensor fault
- Product destination signal received too late
- Encoder fault

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- Motor run signal missing

To reset these faults before the next fault-specific trigger point, on the **Fault** HMI page, in the Fault section, click **Reset**. You can also reset the faults by sending a fault reset command from the PLC.

All other faults are periodically checked and reset if the fault condition is no longer present.

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