ISC CAM Virtual HMI User Instructions

S45x0 Technology

Version 1.2

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Table of Contents

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Intended design and use of Virtual HMI

- Virtual HMI (vHMI) facilitates the interaction of non-controls experts with the Intralox equipment for:

  - Commissioning,
  - Adjust key operating parameters,
  - Communicating faults,
  - Communicating basic operating datalogging.

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How to use this document

- Additional documents from the Intralox User Manual

  - Mechanical drawing of Intralox Equipment
    - Dimensions of Intralox equipment and position of the components

  - Functional layout drawing of Intralox equipment
    - Application information: product trajectories, belt speeds, min product gaps,

  - ISC Interlocks Document

  - ISC Troubleshooting Guide

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Good to know

- Default IP Address: 192.168.1.254

- IP address displayed on the HMI updates only after reboot of the ISC CAM (power off/on).

- All parameters/values displayed on HMI are available on the ethernet network

- Click on "Submit" button to implement changes on the 'fly'.

- Units: SI

- IDL: Intralox Divert Logic

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Connection to the Virtual HMI

How to connect to the Virtual HMI?

- Connect with a laptop to the ethernet network of the ISC CAM
  - If the ISC CAM is not connected to any ethernet network, connect directly to the ethernet port of the ISC CAM.

- Write the IP address of the ISC CAM on the navigation bar of an internet browser such as Microsoft Edge, Google Chrome, Mozilla Firefox or similar.
  - If the IP address of the ISC CAM is unknown, please request it to the responsible/manager of PLC network or use the Intralox Service Tool available on www.Intralox.com/isccam for identification
  - Default IP address: 192.168.1.254

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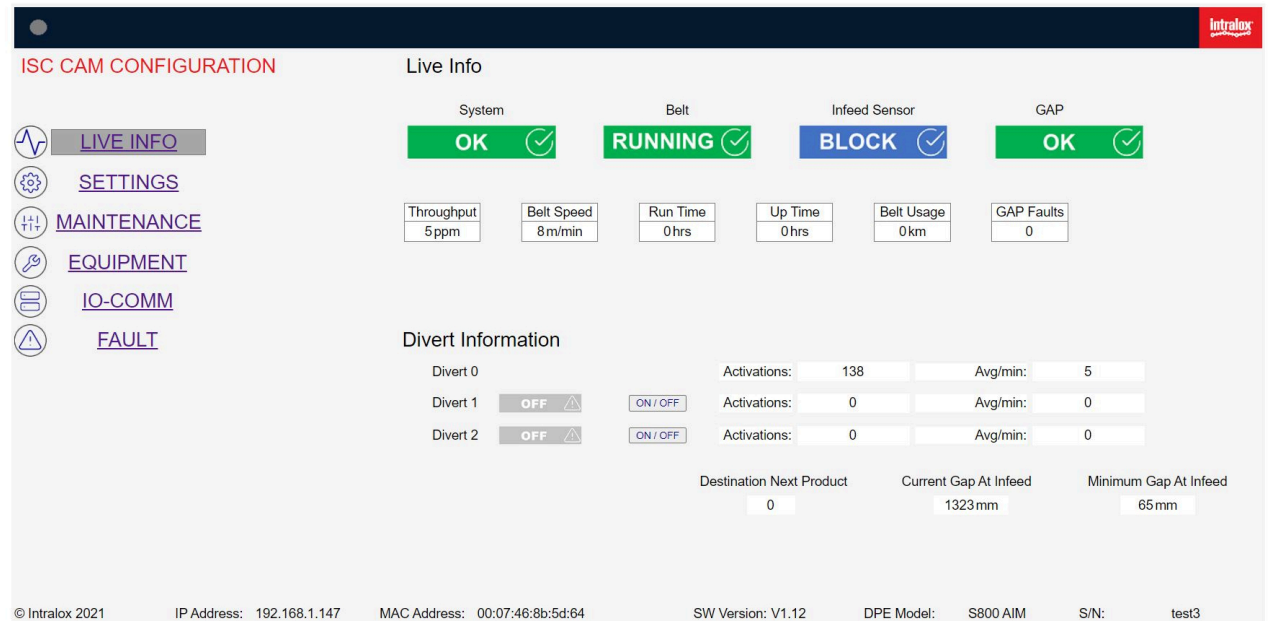
HMI Overview

Pages

The Virtual HMI:
- Live info
- Settings
- Maintenance
- Equipment
- IO-Communication
- Faults

Interface Overview

1. **Navigation panel**

2. **Bottom Information Bar**
   - IP Address of ISC CAM
   - MAC Address: Electronics unique identifier
   - SW Version: Intralox Divert Logic Version
   - DPE Model: Intralox Product Family
   - S/N: serial number of the Intralox equipment

3. **Page Unique Information**
   This is the main page of the HMI, different information will be displayed on this page depending on the selected page.

4. **Live bit**
   This "light" will flash green when PLC connectivity is activated and is sending live bit.

1. Live page

End in Mind

Provide an overview of the status of Intralox equipment using real-time operating data. The data is generated from the field components:

- Infeed PE (infeed photo eye),
- encoder,
- solenoids valves.

Intended users:
Equipment operator, controls- engineers, maintenance technicians.

'Read only' page

Live Info – Indicators

System
General system status.

Belt
Status of the belt.

Infeed Sensor
Status Infeed PE.

Gap
Status of gap between 2 consecutive products measured by the Infeed PE.

See troubleshooting guideline.

Live Info – Indicators

Throughput
Number of products crossing the Infeed PE in the last minute, updated every minute.
(not instantaneously)

Belt Speed

Run Time
Time duration since ISC CAM is powered on for the first time. It only increases when the belt is moving. (receiving encoder pulses)

Up Time
Time duration since the ISC CAM was last time powered on.

Belt Usage
Total distance travelled by the belt since first encoder pulse.

Gap Fault
Total number of 'Gap Not OK' since the first encoder pulse. See page faults for definition of GAP not "OK".

Live Info – Divert Information

ON/OFF button
ON: Available to divert products
OFF: Not available to divert products

When divert is "OFF" the ISC CAM would not activate this exit even if the LINE PLC indicates it.

Use the "OFF" button when a zone needs to be temporarily unavailable.

Activations
Total number of diverts since first encoder pulse received by the ISC CAM.
Average per Minute:
Products diverted in the last minute.

Destination Next Product
Destination assigned to next product crossing the Infeed PE.

Current Gap at Infeed
Gap measured by Infeed PE between the last two products.
Default gap displayed is the length of the Intralox conveyor.

Minimal Gap at Infeed
Minimal required distance between 2 products for the Intralox equipment to operate correctly. See functional Layout and ISC Troubleshooting guideline.
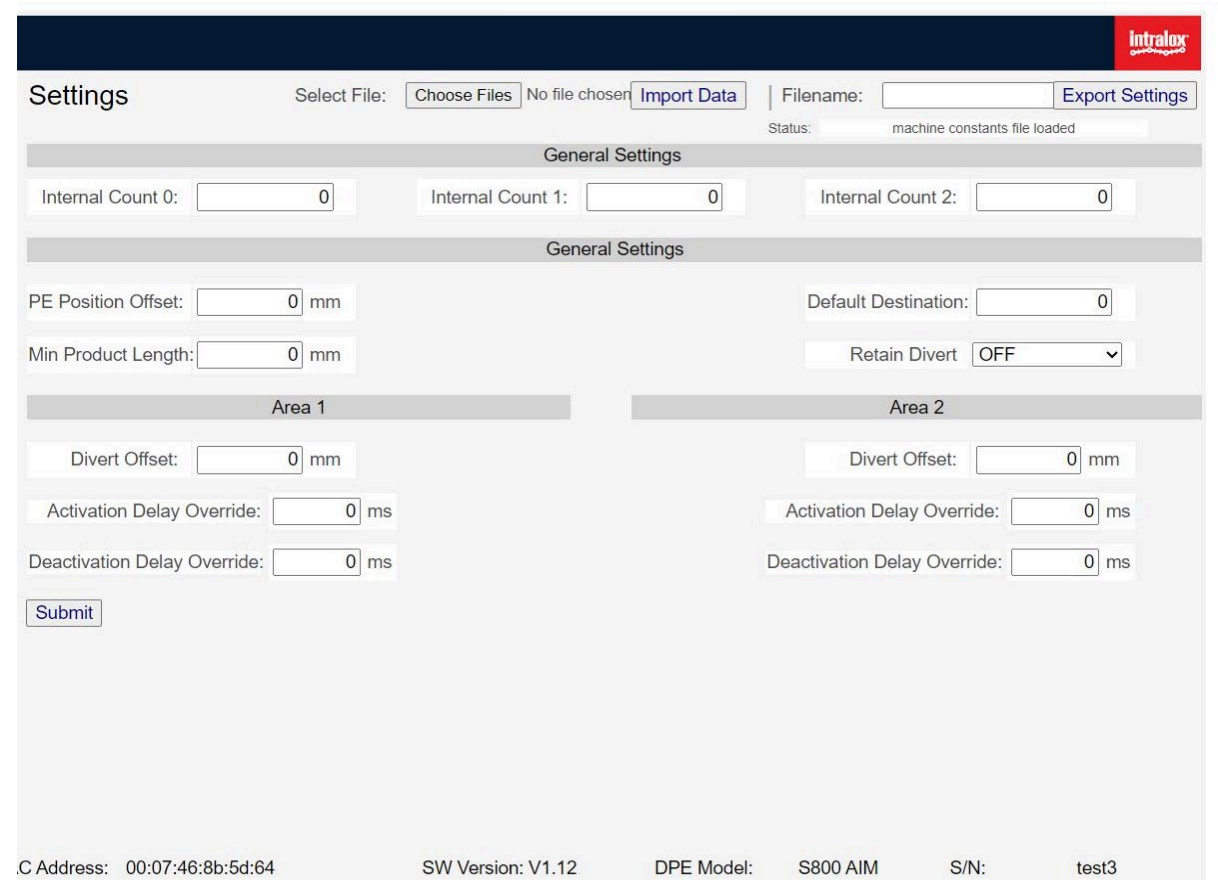
2. Settings Page

End in Mind

Provides the ability to modify key operating parameters (settings) of the Intralox equipment to optimize the trajectory of products.

Intended users:
Technical operators,
Ex. maintenance technicians.

'Read and Write'.

Option to import and export 'Application setting files'

Setting General

Import Data Button
Import a backup of the application settings from file. (extension ".apl"). Ex: factory setting

Export Setting Button
Creates a backup of the application settings to file

Internal Count 0, 1 and 2 [Write]
Slugs/Train functionality.
Number of products allocated to divert #. Only applicable when ISC CAM is working in
"Internal Model", see HMI Page "Equipment".
Nominal range 0..255

Min Product Length [Write]
Minimum distance the infeed PE signal must be stable, to be accepted as product read. Shorter distances will be considered 'noise' or "product debris" such as tape of shrink plastic.
Nominal range 25mm..75mm

PE Position Offset [Write]
Infeed PE distance from the location specified in "PE position" the "EQUIPMENT" page.
Nominal value 0mm

Default Destination [Write]
Destination of product when no signal is received from the Line PLC (external mode) or no slugs/train function is set (internal mode)
Nominal value 0

Retain Divert [Write]
Divert activation changes when product needs change direction

Setting General

Divert Offset [Write]
Distance of start of divert area from the position specified in the "EQUIPMENT" Page & see Mechanical Drawing of position.
Nominal range -500mm..500mm

Divert Mode [Write]
Predefine setting for diverting/sorting the products. See image in next page for explanation

Divert Distance Override [Write]
Divert distance: Lateral travel distance of the product (perpendicular to belt travel direction) measured with the encoder pulses.
See image in next page for explanation.

Default Distance: belt width
Override: sets new distance.
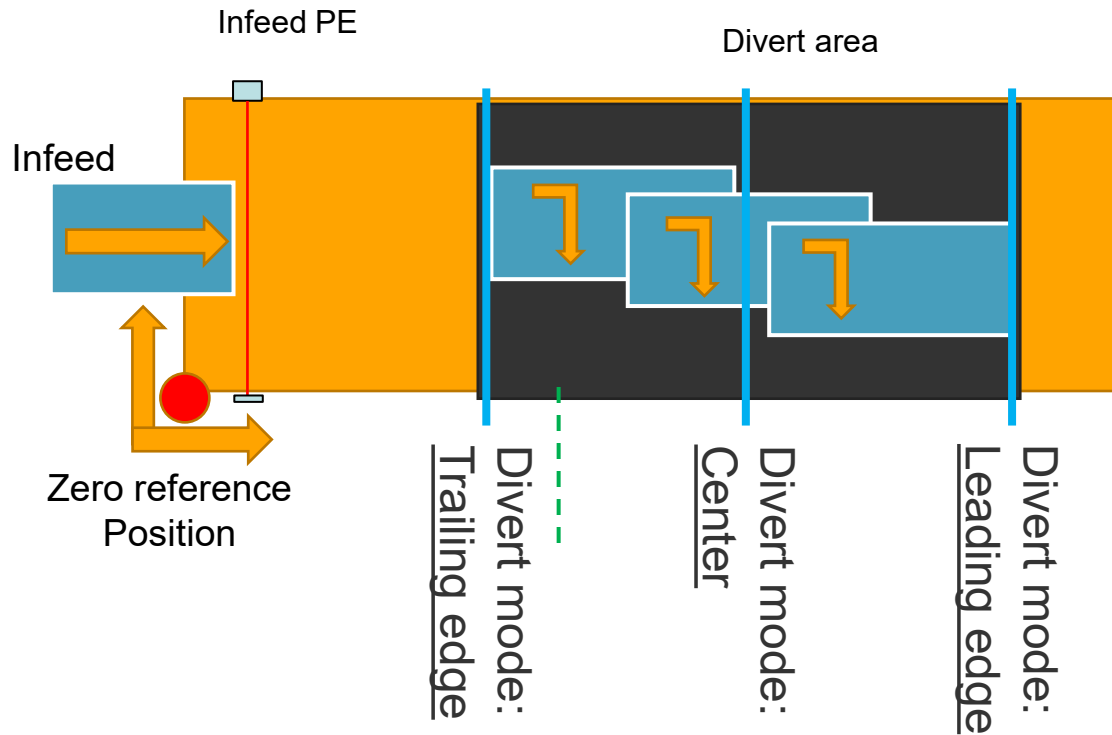*Nominal range 0(default)/100mm..500mm*

Activation Delay Override [Write]
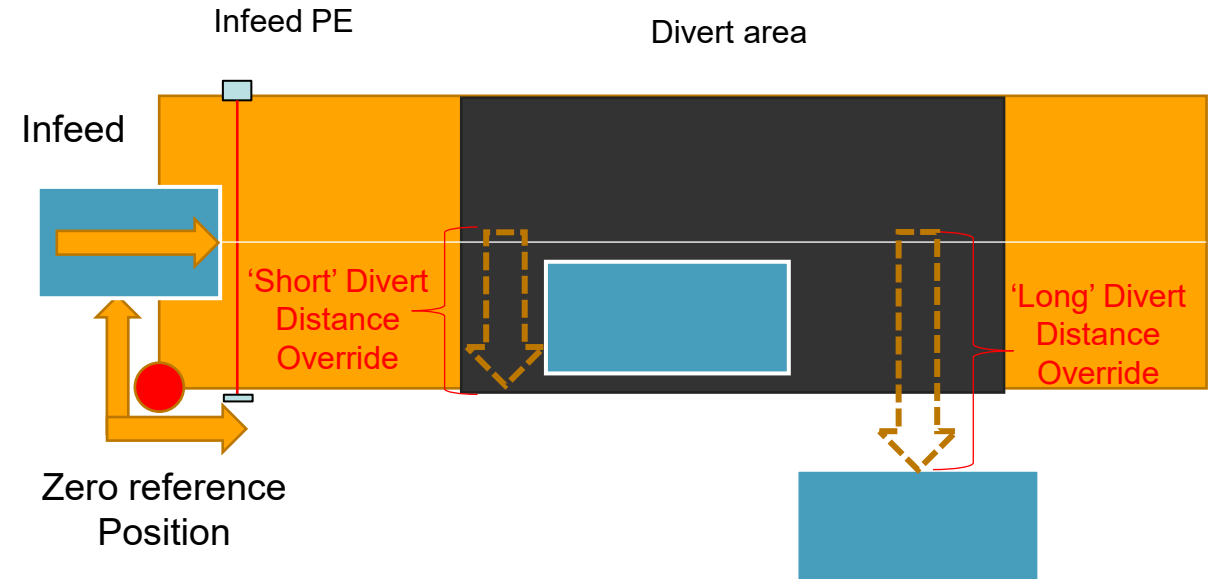**Activation Delay.** This value considers mechanical delays of the activation system of the Intralox equipment.

Override: sets a new delay
Nominal value 0

Divert Modes DARB

Divert Distance DARB

Infeed PE

Divert area

Infeed

Zero reference
Position

Divert mode:
Trailing edge

Divert mode:
Center

Divert mode:
Leading edge

Infeed PE

Divert area

Infeed

Zero reference
Position

'Short' Divert
Distance
Override

'Long' Divert
Distance
Override

Trailing Edge: Activation is triggered when trailing edge of the product reaches the start of activation area.
Center: Activation is triggered when center of the product reaches the center of the activation area
Leading Edge: Activation is triggered when leading edge of the product reaches the end of activation area
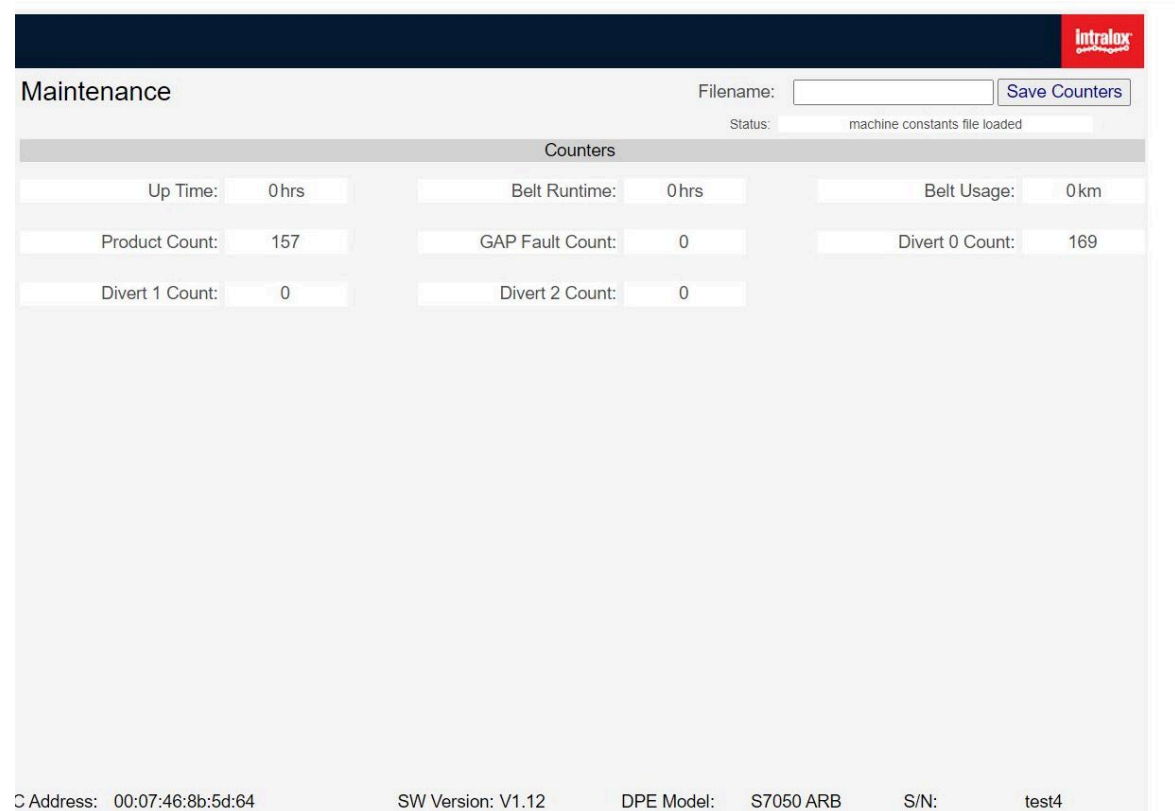
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3. Maintenance Page

End in Mind

Display the 'equipment log' with <u>absolute</u> counter values

Intended users:
Maintenance technicians

'Read only'

Ability to export counter files.

Maintenance

Up time
Time elapsed since the ISC CAM was powered on. It resets to zero when the ISC CAM is powered off.

Belt Run Time
Time elapsed since the ISC CAM received the first encoder pulse. It only increments when the ISC CAM receives encoder pluses. It never resets to zero

Belt Usage
Total distance travelled by the belt since first encoder pulse. It never resets to zero

Product Count
Total count number of products that passed the Infeed PE (absolute value) since first encoder pulse.

GAP Fault Count
Total number of 'Gap Not OK' since the first encoder pulse. See page faults for definition of GAP not "OK".

Divert count
Total number of activations of each divert since first encoder pulse.

4. Equipment Page

End in Mind

Ability to modify key operating parameters (settings) of the Intralox equipment to optimise the trajectory of products.

Intended users:
Controls engineers, Maintenance operators.

'Read and write'

Options to import Intralox equipment mechanical dimensions

Equipment -Application Data

ISC CAM CONFIGURATION

Equipment

Select File: | Choose Files | No file chosen | Import Data
Status: machine constants file loaded

LIVE INFO

SETTINGS

MAINTENANCE

EQUIPMENT

IO-COMM

FAULT

Application Data

| Application: | Switch | Activation Type: | R&R 1-3 | Belt Type: | S7050 ARB | Minimum GAP: | 65 mm |
| Hardwired Signal: | Disable | Run Mode: | Internal | Sensor Mode: | Light On | Fault Override: | 0 |

Belt Data

| Conveyor Length: | 1465 mm | Belt Width: | 2007 mm | Sprocket Teeth: | 10 | Pitch: | 81 mm |
| Encoder Resolution: | 64 | Belt Traveled/Pulse: | 3.96 mm/P | Maximum Speed: | 90 m/min | Minimum Speed: | 0 m/min |

Divert Data

| Divert Area Count: | 1 | Zone Length: | 64 mm | Inf. Sensor Count: | 1 | PE Position: | 135 |
| Valve Placement: | Left |

Area 1				Area 2		
Position:	126 mm	Activation Delay:	55 ms	Position:	1547 mm	Activation Delay:	22 ms
		Zone Count:	7			Zone Count:	2

Submit

© Intralox 2021   IP Address: 192.168.1.147   MAC Address: 00:07:...:5d:64   SW Version: V1.12   DPE Model: S7050 ARB   S/N: test4

Click "Submit" button to implement changes

Application [Read only]
Type of functionality that the Intralox equipment is performing when diverting products: Sorter or Switch

Activation Type [Read only]
Type of mechanical activation mechanism used for engaging with Intralox belt for diverting products: S45X0, S70X0 or AIM

Minimum Gap [Read only]
Minimal required distance between 2 products for the Intralox equipment to operate correctly. See Functional Layout

Hardwired Signal [Read only]
Hardwire signal "enable" results that ONLY the 1st divert reacts to the discrete signal of 24VDC to activate. The discrete signal has priority over the ethernet signal. Use hardware signal when the Intralox equipment has a high-speed reject

Run Mode [Write]
Internal Mode: ISC CAM operates in autonomous mode with an internal counter for diverting products
External Mode: ISC CAM requires the input signal from the Line PLC for diverting (or not) each product.

Sensor Mode [Write]
Applicable to Infeed PE.
Default: LIGHT MODE

Fault Override [Write]
Mask - Selection: number, overrides faults.
See HMI Page "Faults".

Equipment –Belt Data

Conveyor Length [Read only]
Length in [mm] of the frame of the Intralox equipment.

Belt width [Read only]

Sprocket Teeth [Read only]
Number of teeth of the sprocket

Pitch [Read only]
Length of the module of the belt.

Encoder Resolution [Read only]
Number of pulses generated by the encoder per revolution. Default = 64 pulse/rev

Belt Travel/pulse [Read only]
Conversion of the belt travel distance in [1/10mm] for each encoder pulse. Dependant of the belt pitch

Maximum Speed [Read only]
Recommended Maximum belt speed of the Intralox equipment. Functional Layout.

Minimum Speed [Read only]
Recommended minimum belt speed of Intralox equipment. Functional Layout

S45X0 DARB Application

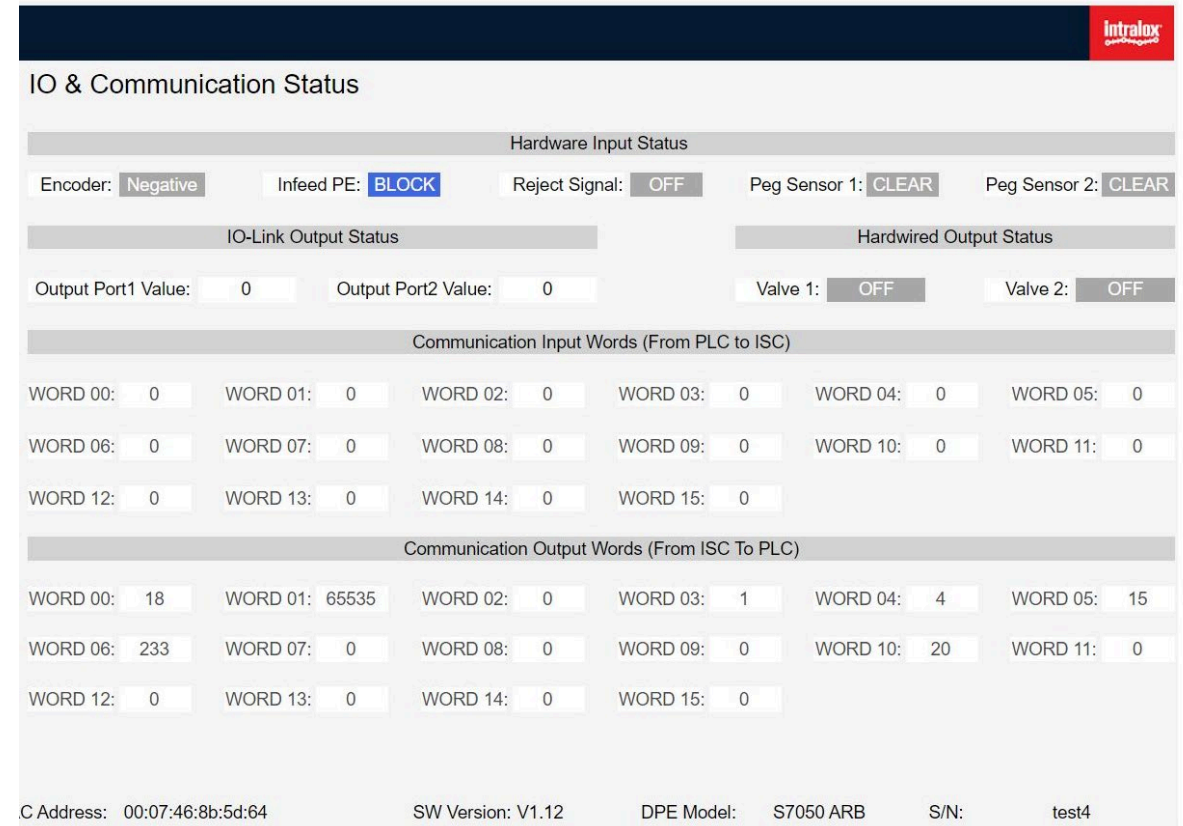DARB Switch is equivalent to a DARB Sorter of 1 divert.
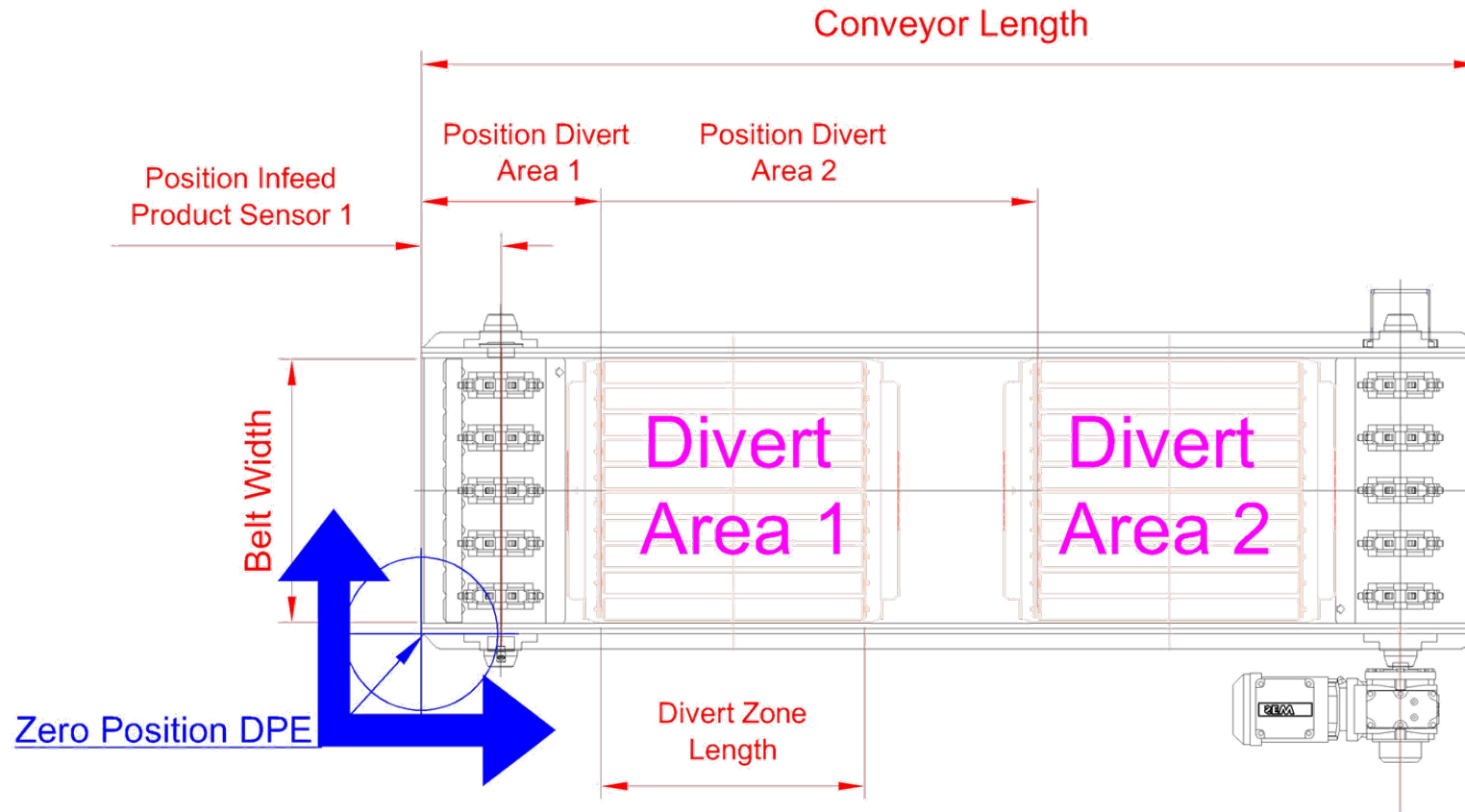
5.IO-COMM Page

End in Mind

Detail the communication status between the ISC CAM with the field components and the line PLC. Please refer to the ISC CAM Interlocks Document for additional information and ISC Troubleshooting document actions

Intended users:
Line control engineers

'Read only'

IO-COMM Status

ISC CAM CONFIGURATION

IO & Communication Status

LIVE INFO

SETTINGS

MAINTENANCE

EQUIPMENT

IO-COMM

FAULT

Hardware Input Status

Encoder: Negative	Infeed PE: BLOCK	Reject Signal: OFF	Peg Sensor 1: CLEAR	Peg Sensor 2: CLEAR

IO-Link Output Status		Hardwired Output Status	
Output Port1 Value: 0	Output Port2 Value: 0	Valve 1: OFF	Valve 2: OFF

Communication Input Words (From PLC to ISC)

WORD 00: 0	WORD 01: 0	WORD 02: 0	WORD 03: 0	WORD 04: 0	WORD 05: 0
WORD 06: 0	WORD 07: 0	WORD 08: 0	WORD 09: 0	WORD 10: 0	WORD 11: 0
WORD 12: 0	WORD 13: 0	WORD 14: 0	WORD 15: 0		

Communication Output Words (From ISC To PLC)

WORD 00: 18	WORD 01: 65535	WORD 02: 0	WORD 03: 1	WORD 04: 4	WORD 05: 15
WORD 06: 233	WORD 07: 0	WORD 08: 0	WORD 09: 0	WORD 10: 20	WORD 11: 0
WORD 12: 0	WORD 13: 0	WORD 14: 0	WORD 15: 0		

© Intralox 2021   IP Address: 192.168.1.147   MAC Address: 00:07:46:8b:5d:64   SW Version: V1.12   DPE Model: S7050 ARB   S/N: test4

Encoder
Status of encoder, blinking with each pulse with screen updates every 0.5second .

Infeed PE
Status of Infeed PE.
"Block": beam is blocked.
Screen updates every 0.5second .

Reject Signal
Input status of hardwire reject signal

Peg Sensor 1
Only applicable for AIM applications. Status of peg sensor of divert 1, blinking with each peg passing the beam the peg sensor (belt movement required)

Screen updates every 0.5second .

Peg Sensor 2
Only applicable for AIM applications with 2 diverts. Status of peg sensor of divert 2, blinking with each peg passing the beam the peg sensor (belt movement required)

Screen updates every 0.5second .

IO-COMM Status

IO-Link Output Status
Out Port 1 valve
Only applicable to S70X0 technology. Status of valve bank.

Out Port 2 valve (optional)
Only applicable to S70X0 technology. Status of valve bank.

Hardware Output Status
Valve 1
Only applicable to S45X0 and AIM technology
OFF: valve is off
ON: valve is on.

Valve 2 (optional)
Only applicable to S45X0 and AIM technology
OFF: valve is off
ON: valve is on.

IO-COMM Input Words

Words sent by the ISC CAM to the Line PLC through the ethernet network.

See ISC CAM Interlocks file on ISC Webpage

IO-COMM Output Words

Words received by the ISC CAM from the Line PLC through the ethernet network

See ISC CAM Communication Interlocks file on ISC Webpage.
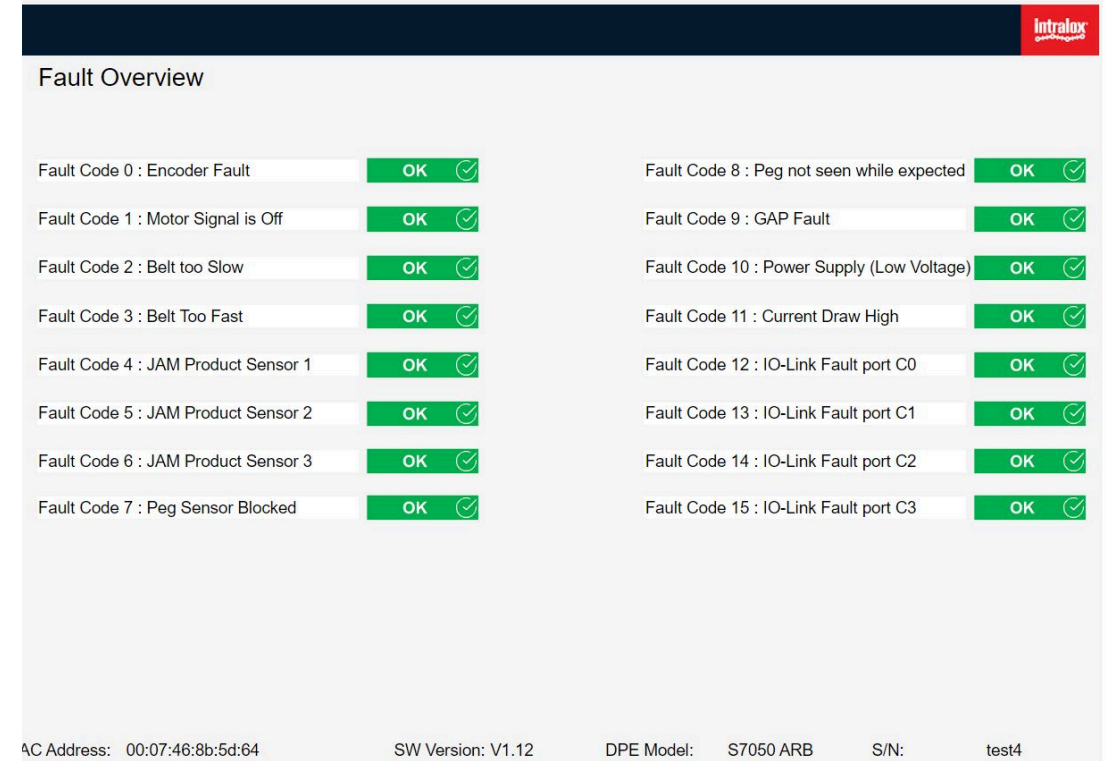
6. Fault Page

End in Mind

Display the status of the faults generated by the ISC CAM in human readable interface.

Refer to the ISC CAM Interlocks Document for details and ISC Troubleshooting document for actions

Intended users:
all users

'Read only'

Fault 0-7

ISC CAM CONFIGURATION — Fault Overview

Fault	Status
Fault Code 0 : Encoder Fault	OK
Fault Code 1 : Motor Signal is Off	OK
Fault Code 2 : Belt too Slow	OK
Fault Code 3 : Belt Too Fast	OK
Fault Code 4 : JAM Product Sensor 1	OK
Fault Code 5 : JAM Product Sensor 2	OK
Fault Code 6 : JAM Product Sensor 3	OK
Fault Code 7 : Peg Sensor Blocked	OK
Fault Code 8 : Peg not seen while expected	OK
Fault Code 9 : GAP Fault	OK
Fault Code 10 : Power Supply (Low Voltage)	OK
Fault Code 11 : Current Draw High	OK
Fault Code 12 : IO-Link Fault port C0	OK
Fault Code 13 : IO-Link Fault port C1	OK
Fault Code 14 : IO-Link Fault port C2	OK
Fault Code 15 : IO-Link Fault port C3	OK

© Intralox 2021   IP Address: 192.168.1.147   MAC Address: 00:07:46:8b:5d:64   SW Version: V1.12   DPE Model: S7050 ARB   S/N: test4

Fault Code 0
No encoder signal received from encoder

Fault Code 1
Encoder pulsing but no signal received from Line PLC when motor is ON.

Fault Code 2
Belt speed is slower than minimum recommended speed. See "EQUIPMENT" page and Functional Layout for minimum speed

Fault Code 3
Belt speed is faster than maximum recommended speed. See "EQUIPMENT" page and Functional Layout for minimum s

Fault Code 4
Infeed PE blocked , see ISC troubleshooting guide.

Fault Code 5
Optional. See Functional Layout for configuration of Intralox Equipment

Fault Code 6
Optional. See Functional Layout for configuration of Intralox Equipment

Fault Code 7
Only applicable to AIM technology. Peg sensor(s) 1 or 2 (if applicable) blocked, see ISC troubleshooting guide.

Fault 8-15

Fault Code 8
Only applicable to AIM Technology Peg missing in the belt.

Fault Code 9
See MIN GAP value in "EQUIPMENT" page.

Fault Code 10
Power supply low voltage. See ISC troubleshooting guide.

Fault Code 11
Current draw too high, see ISC troubleshooting guide.

Fault Code 12
Only applicable to S70x0 Technology with valve banks.

Optional. See Functional Layout for configuration of Intralox equipment

Fault Code 13
Only applicable to S70X0 Technology with valve banks.
See Functional Layout for configuration of Intralox equipment and ISC troubleshooting guide.

Fault Code 14
Only applicable to S70X0 Technology with valve banks.

Optional. See Functional Layout for configuration of Intralox equipment , and ISC troubleshooting guide.

Fault Code 15
Only applicable to S70X0 Technology with valve banks.

Optional. See Functional Layout for configuration of Intralox equipment and ISC troubleshooting guide.