



PLC-ISC INTEGRATION INSTRUCTION

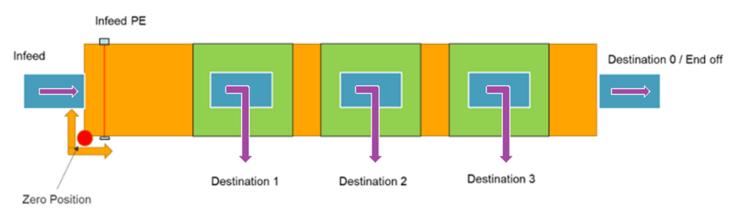
ISC CAM

DESTINATION IDENTIFICATION	3
DESTINATIONS UNIDIRECTIONAL SORTER	3
DESTINATIONS BIDIRECTIONAL SORTER	3
DESTINATIONS SWITCH 1-2	4
DESTINATIONS SWITCH 1-3 / 2-3	4
PLC COMMUNICATION & TIMING	5
BASIC SIGNALS FROM PLC	5
PRODUCT DESTINATION SIGNAL	-
PRODUCT DESTINATION EXTERNAL MODE	
PRODUCT DESTINATION INTERNAL MODE	8
REJECT SIGNAL	
ACTIVE CARRYWAY ENABLE/DISABLE	11
PRODUCT INFEED	
OVERRIDE ACTIVE CARRYWAY	
PARAMETER COMMUNICATION	
PARAMETER STRUCTURE	
PARAMETER UNIT CONVERSION	
PARAMETER WRITING	
PARAMETER READING	
SETTING UP COMMUNICATION	
TIA PORTAL INTEGRATION OF ISC CAM	
DOWNLOAD THE GSDML FILE.	
ADD THE GSDML FILE TO TIA PORTAL PROJECT.	
ADD ISC CAM TO "NETWORK VIEW"	
SETUP DEVICE CONNECTION	
ADD ISC CAM PLC TAGS TO PROGRAM FROM LIBRARY FILE	
CONFIGURE THE INPUT AND OUTPUT SIZE OF THE DEVICE	
SETUP ADDRESS FOR INPUT AND OUTPUT OF DEVICE AND CONNECT PLC TAGS	
ADDING A SECOND DEVICE TO A TIA PORTAL PROJECT	
ROCKWELL GENERIC ETHERNET DEVICE (GED) INTEGRATION OF ISC CAM	
IMPORT THE GENERIC ETHERNET DEVICE TO A STUDIO 5000 PROJECT.	
IMPORT ADD-ON INSTRUCTIONS – INPUT AND OUTPUT	
ADDING INPUT ADD-ON INSTRUCTION (AOI).	
ADDING OUTPUT ADD-ON INSTRUCTION (AOI).	
ADDING USER-DEFINED DATA TYPES (UDT) FOR INPUT AND OUTPUT AOI'S	
ISC CAM INTEGRATION USING ELECTRONIC DATA SHEET	29

DESTINATION IDENTIFICATION

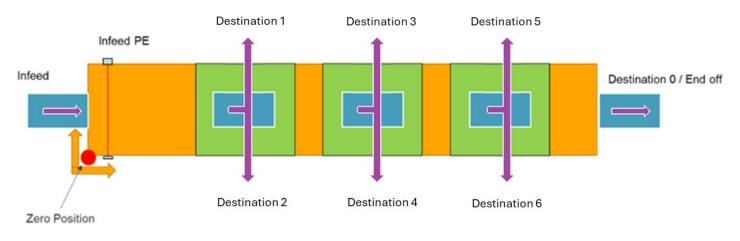
DESTINATIONS UNIDIRECTIONAL SORTER

AIM/DARB/S70X0



DESTINATIONS BIDIRECTIONAL SORTER

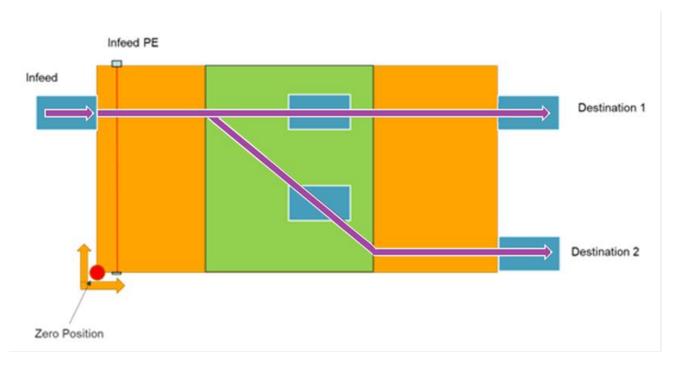
S70X0



DESTINATION IDENTIFICATION

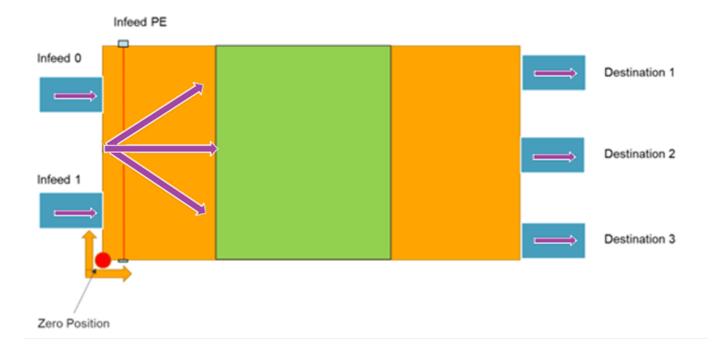
DESTINATIONS SWITCH 1-2

AIM/DARB/S70X0



DESTINATIONS SWITCH 1-3 / 2-3

S70X0



BASIC SIGNALS FROM PLC

In order to have proper response from ISC CAM, it is necessary that the basic signals are correct when a PLC is connected to ISC CAM. No matter which mode (external/internal) is being used, the following signals should be set:

Motor running: This signal should be set on whenever motor is running. If signal is not set, a fault will be given on the ISC CAM.

Active carryway enable right/left: in case of bidirectional belt, the applicable directions per active carryway should be set to be enabled. In case of unidirectional belt, this value can be ignored.

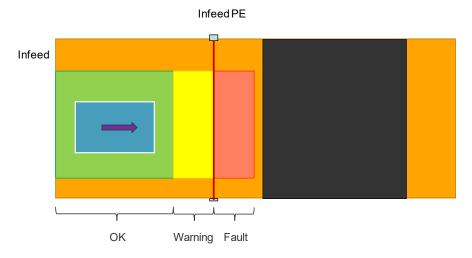
Active carryway enable: in case of unidirectional belt, the applicable active carryways should be set to be enabled. In case of bidirectional belt, this value can be ignored.

Run mode: Should be set either to External or Internal, depending on which mode is being used. External mode will use the product destination signal to assign destination for products. Internal mode will use the internal mode product counters to assign destinations for products.

PRODUCT DESTINATION SIGNAL

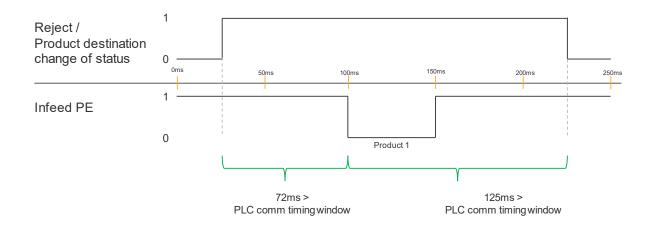
When changing the product destination (by reject signal or product destination number from PLC), the change of signal should be received before the product leading edge comes to the infeed PE (photoeye). The exact time when signal is expected is set in the configuration parameter PLC comm timing window (default 50ms before infeed PE). It is good practice to be setting the signal for the next product at the moment that the previous product has passed the infeed photoeye. The current status of the photoeye signal can be seen in the cyclic communication from ISC CAM to PLC.

When change of signal is received before the infeed PE, but too close to it, a warning is given (product destination signal received late). When change of signal is received just after the infeed PE, a fault is given (product destination signal received too late). When signal is not received at a correct time, it can result in having product going to wrong destination.

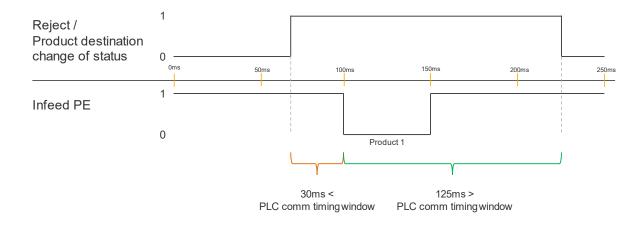


Please see below the timing diagrams for product destination timing. Please note that by default infeed PE signal is normally closed.

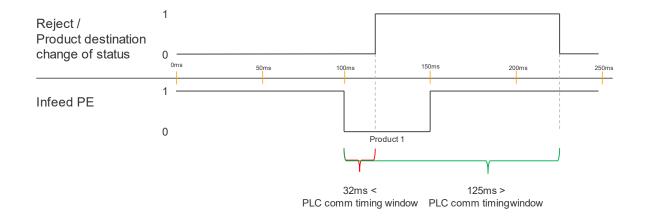
Product destination timing - OK



Product destination timing - Warning

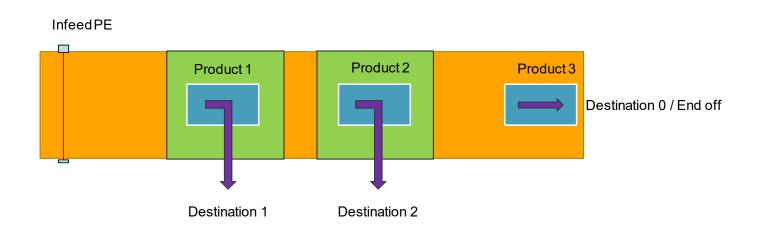


Product destination timing - Fault

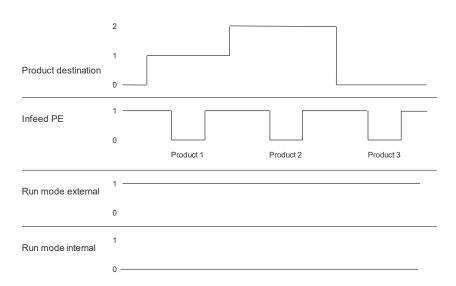


PRODUCT DESTINATION EXTERNAL MODE

When running ISC CAM in external mode, the PLC needs to send the destination information for each product. Please see the Divert destination document for proper destination numbers. The correct timing for product destination command can be seen in Product destination signal part. When using external mode, command External mode needs to be true, while command Internal mode needs to be false.



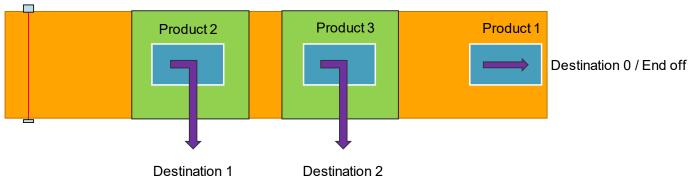
Product destination external



PRODUCT DESTINATION INTERNAL MODE

In internal mode the internal mode destination counters are being used to assign the destination for each product. In internal mode, it can be set how many products should go to each destination.

When using internal mode, command Internal mode needs to be true, while command External mode needs to be false.



Product destination internal

late mark and the	1			
Internal count 0	0			
Internal count 1	1			
	0			
Internal count 2	1			
	0			
Infeed PE	1			
	0			
		Product 1	Product 2	Product 3
Run mode external	1			
	0			
Run mode internal	1			
	0			

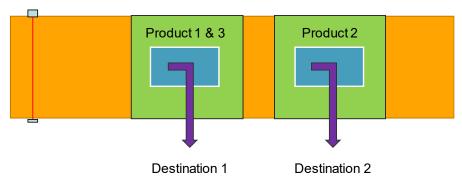
REJECT SIGNAL

When reject signal is enabled, it is possible to send a reject command through a 24v signal. The correct timing for reject signal can be seen in Product Destination Signal.

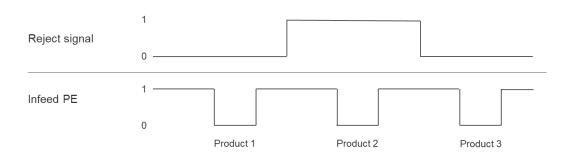
The reject destination can be specified on the vHMI or through the parameter writing from the PLC.

In the example below, it can either be used in internal or external mode. In both situations all products have been set to go to destination 1. Reject destination has been set to 2.

InfeedPE



Reject signal



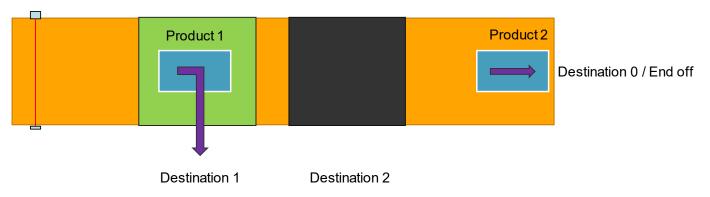
ACTIVE CARRYWAY ENABLE/DISABLE

It is possible to disable active carryways for example in case of full exit conveyor. If using bidirectional belts, it is possible to disable both directions (left/right) independently.

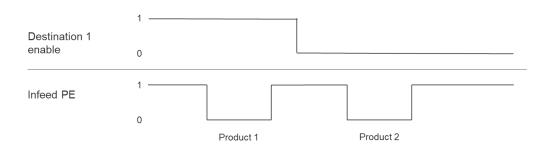
When product is set to the disabled destination, it will be reassigned to predefined default destination, provided this default destination is further along the belt. If it is not possible to use default destination, product will be sent end off. This ensures efficient product management even when certain destinations are not operational. Default destination can be set on the vHMI or through parameter writing from the PLC.

In the example below, it can either be used in internal or external mode. All products have been set to go the destination 1. Default destination has been set to end off.

InfeedPE



Active carryway enable/disable

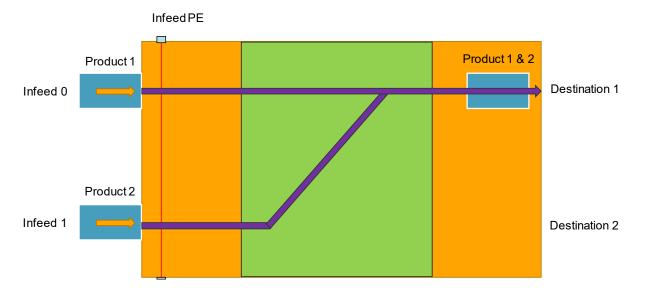


PRODUCT INFEED

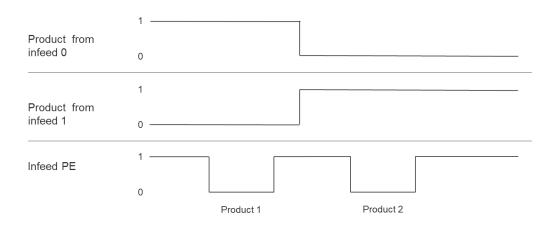
When using dual infeeds, it is necessary to set from the PLC which infeed is being used. By default, destinations are the same no matter which infeed is being used, the path that the product takes is different.

The infeed information needs to be received by the ISC CAM before the next product arrives at the infeed photo eye.

In the example below, it can either be used in internal or external mode. All products have been set to go the destination 1.



Product infeed



OVERRIDE ACTIVE CARRYWAY

It is possible to override the output to the valve(s). This overrides any outputs that ISC-CAM would send on normal operation. The output(s) can be set either on or off.

With DARB (S4500) and AIM (S800) the output values can be either 0 (off) or 1 (on).

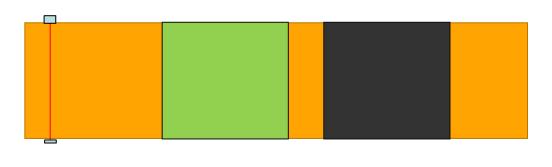
With S70X0 the output values can be from 0-65535, since each valve on valvebank can be set individually. Please see the vHMI instructions for more information.

In the example below, active carryway 1 is first overridden to be on, after a while it is overridden to be off. After this the override is deactivated.

Override active carryway pointer: Defines the active carryway, where the value will be overwritten. For example, value 2 will set the override value for active carryway 2.

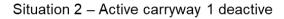
Override active carryway value: Defines the override value that will be written to selected active carryway. For example, AIM technology value 1 would mean forcing valve 'on' while value 0 would mean forcing valve 'off'.

Enable override active carryway: When override is enabled, it will use the value that has been set earlier with 'override active carryway pointer' and 'override active carryway value'. This parameter can be used to prime 'override active carryway pointer' and 'override active carryway value' and then executed, by setting 'Enable override active carryway' to 1.



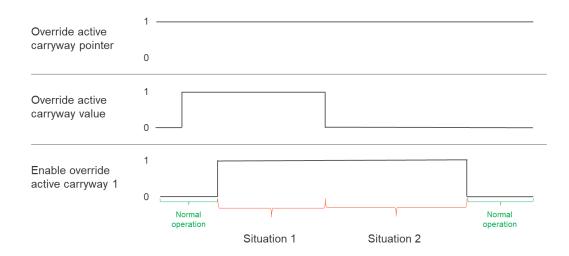
Situation 1 – Active carryway 1 active







Override active carryway



PARAMETER COMMUNICATION

PARAMETER STRUCTURE

Parameters are divided into different parameter groups. When writing or reading a parameter, it is important to know the parameter group and parameter number. These can be seen in the Interlocks document.

PARAMETER UNIT CONVERSION

Different parameters have different units. It is important to note this from the Interlocks file. Interlocks file also explains how to do the conversion of the parameter values.

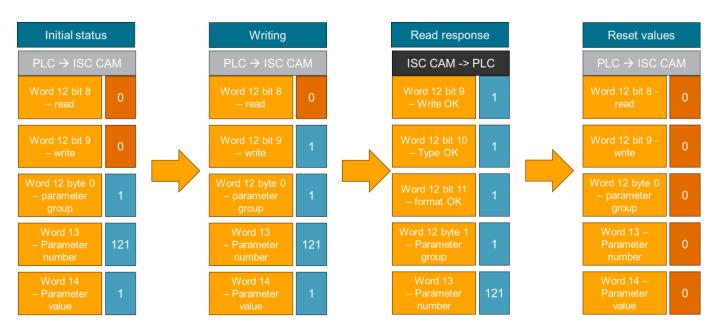
PARAMETER COMMUNICATION

PARAMETER WRITING

Writing a parameter happens only in the rising trigger of the write command. Please see below the proper sequence on getting a parameter written properly.

In this example parameter 'Reject destination' will be set to value 1.

In the interlocks file Parameter group in this case is 1 and parameter number 121.



Initial status: Parameter values should be set while write command is still false, to make sure that correct parameter information is available when the write command goes from false to true.

Writing: To write the parameter value, write command needs to be set to true.

Read response: To confirm that parameter writing has been successful, the response from ISC CAM should be checked. Write OK: If writing was successful, this value is 1.

Type OK: If parameter exists and is also writeable, this value is 1.

Format OK: If value of the parameter is in allowed range, this value is 1.

Parameter group: This value confirms to which parameter group the parameter belongs that was written. This should match the parameter group which was sent to ISC CAM.

Parameter number: This value confirms which parameter number was written. This should match the parameter number which was sent to ISC CAM.

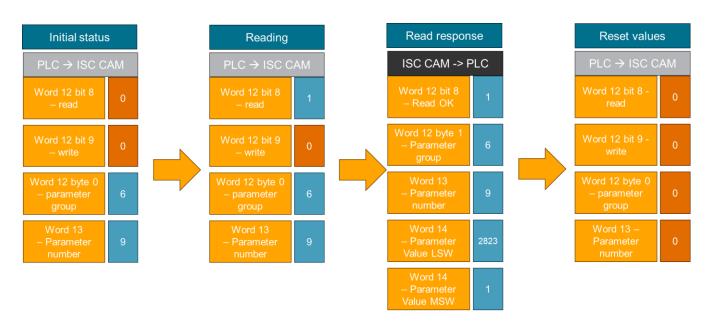
Reset values: all values should be reset after receiving feedback from the ISC CAM.

PARAMETER READING

Reading a parameter happens only in the rising trigger of the read command. Please see below the proper sequence on getting a parameter written properly.

In this example parameter 'Runtime counter' value will be read.

In the interlocks file Parameter group in this case is 6 and parameter number 9.



Initial status: Parameter values should be set while read command is still false, to make sure that correct parameter information is available when the read command goes from false to true.

Reading: To read the parameter value, read command needs to be set to true.

Read response: The current parameter value in the ISC CAM can be seen in the response from the ISC CAM. Read OK: If reading was successful, this value is 1.

Parameter group: This value confirms to which parameter group the parameter belongs that was read. This should match the parameter group value which was sent to ISC CAM.

Parameter number: This value confirms which parameter number was read. This should match the parameter number which was sent to ISC CAM.

Parameter value LSW: Least significant word for the value. This should be combined with MSW to get the full value. In this example LSW value 2823 equals 2823.

Parameter value MSW: Most significant word for the value. This should be combined with LSW to get the full value. In this example MSW value 1 equals 65536.

Total value: LSW + MSW. In this example total value equals 2823+65536 = 68359.

In the interlocks file the runtime value needs to be converted. Value gotten from ISC CAM equals 1.024 seconds. Meaning total value in seconds = 68359*1.024=70000 seconds. Which can further be converted to DD:HH:MM:SS format, meaning 00:19:26:40.

Reset values: all values should be reset after receiving feedback from the ISC CAM.

SETTING UP COMMUNICATION

TIA PORTAL INTEGRATION OF ISC CAM

DOWNLOAD THE GSDML FILE.

- Download "ISC CAM Network Integration Support Files" folder from the <u>Intralox</u> <u>Smart Carryway webpage</u>. Within that folder there will be two important documents.
- 2. "GSDML-INTRALOX-ISC-CAM-V2.xml"
- 3. "TIA_LIBRARY_15.1_ISC_CAM_v2"

ADD THE GSDML FILE TO TIA PORTAL PROJECT.

- Select "Options" scroll to and select "Manage general station description file (GSD)," Figure 1
- 5. A window will open "Manage general station description files" click on the ellipse button, Figure 2
- 6. A windows explorer will open, browse to the saved folder location of the downloaded GSD file, step 1a, click "Select Folder, Figure 3.
- 7. Check the box of the correct GSDML file in the Manage window and select "Install," Figure 4.
- 8. An installation complete window will appear, click close, Figure 5.
- 9. Upon closing the Hardware catalog, it shall be updated to include the ISC CAM module.

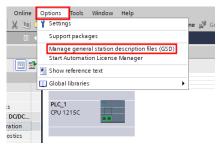


Figure 1: Options -> GSD File

Manage general station descriptio				×
Installed GSDs GSDs in the	project			
Source path: Z:\E\VM_Shared_File:	ISCIDL_V2.0	Interface\Additi	onalFiles\GSD	
Content of imported path				
File	Version	Language	Status	Info
gsdml-v2.3-intralox-business-logic	V2.3	English, Ger.	Already installed	Generic Bu
<		11		>
			Delete Install	Cancel

Figure 2: Manage general Station Description Files -> Browse Button



Figure 3: GSD Folder Selection

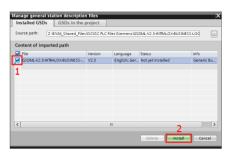


Figure 4: Install GSD File



Figure 5: Installation Result Window

ADD ISC CAM TO "NETWORK VIEW"

- 10. Go to "Device configuration" then "Network view," Figure 6.
- 11. Open the "Hardware catalog"
- 12. Navigate to the "ISC CAM PN Device," Other field devices > PROFINET IO > I/O > Intralox > ISC CAM > ISC CAM PN Device, Figure 7.
- 13. Drag and drop device in "Network view"
- 14. Click on "Not assigned" on the "ISC CAM PN Device," Figure 8.
- 15. Select the IO controller to connect the ISC CAM module.
- 16. A connection shall be established to the IO controller, Figure 9.

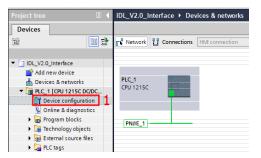


Figure 6: Device Configuration -> Network View

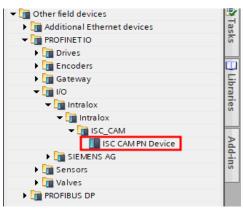


Figure 7: ISC CAM PN Device Hardware Catalog Selection

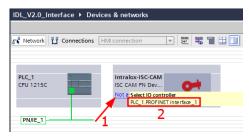


Figure 8: Connect ISC CAM to IO Controller

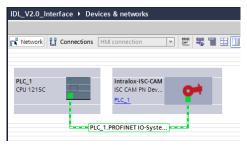


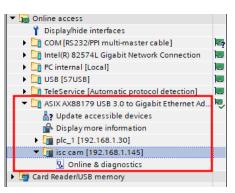
Figure 9: IO Controller Link

SETUP DEVICE CONNECTION

- 17. Connect to an ISC CAM via Ethernet connection.
- 18. Using the "Intralox ISC Service Tool" verify that computer is connected to ISC CAM by clicking "Search" button, Figure 10.
- 19. If the search is successful then a device will populate in the list with IP Address, Device type, etc., Figure 10.
- 20. In TIA Portal program open "Online access" find and open the adapter which is connected to ISC CAM. An ISC CAM device with the same IP address shall be listed under that adapter, Figure 11.
- 21. Open the ISC CAM device in the "Online access" tree. Go to "Online & diagnostics," Figure 11.
- 22. Choose "Functions" from the left column, Figure 12.
- 23. Verify the "MAC address" matches the connected device, Figure 12.
- 24. Can also verify connected ISC CAM device by selecting the "LED flashes" check box to the left of "Assign name" in Figure 13.
- 25. Change the IP Address to match the address of the project, Figure 12.
- 26. Provide a correct "Subnet mask" for the device, Figure 12.
- 27. Click "Assign IP address," Figure 12.
- 28. Scroll down to "Assing PROFINET device name" and enter "PROFINET device name" which matches the project, the click "Assign Name, Figure 13.

j.	tralox									
P rch	(F5) Change (F2)	Wink (F3) Ac	· • •	pboard Langu	4	EIP ICP (F6) Configuration (F	7) Exper	•	K lose	
	MAC address	Station na	IP address	Netmask	Gateway	Device type	FW Ve	Adapter	Protocol	
041	00:07:46:A2:20:32		192.168.1.145	255.255.255.0	192.168.1.145	DPP-1452453 ISC CAM	1.2.7.0	192.168.1.25	Service	

Figure 10: Intralox ISC Service Tool Search





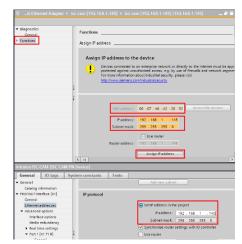


Figure 12: Setting IP Address for ISC CAM device

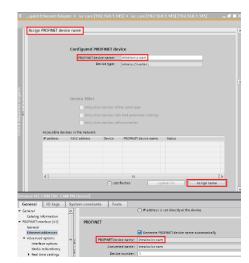


Figure 13: Configure Profinet Device Name for ISC CAM

ADD ISC CAM PLC TAGS TO PROGRAM FROM LIBRARY FILE

- 29. Choose Libraries from the right-hand column, Figure 14.
- 30. Choose "Global libraries", Figure 14.
- 31. Click on "Open global library" 🛄 button, Figure 14.
- 32. A file explorer window will open, navigate to the downloaded library file "TIA_LIBRARY_15.1_ISC_CAM_v2" and click "Open," Figure 14.
- 33. If the TIA Portal project is a version newer than V15.1 a new window will appear, "Open library," Figure 15.
- 34. Select One of the products listed "Totally Integrated Automation Portal" or "STEP 7 Basic" and select "Upgrade," Figure 15.
- 35. After the upgrade or opening of the library file. The library "TIA_LIBRARY_15.1_ISC_CAM_v2" shall be listed in the "Global Libraries," Figure 16.
- 36. Open "TIA_LIBRARY_15.1_ISC_CAM_v2" Library, Figure 16.
- 37. Open "Master copies," Figure 16.
- 38. The "ISC_CAM_Tags" can drag and drop into PLC tags of the project, Figure 16.

							₽ Ш≯	
					Options			2
					🗄 Library view 🖾			Tasks
					> Project library			6
					 Global libraries 			ÌC.
					00355	<u>9</u> -	19 1	Ē
					Name 3		Version	Libraries
					Buttons-and-Su Long Functions		-	3
					 Monitoring and 			H
					Documentation			Ad
								Add-Ins
								1
🔢 Open global	library							×
Look in:	ISC CAM 1	5.1 TIA Library	~ 0	d 12 💷 -				
	Name	^		te modified	Type	Size		
*	Additional	Eiler		14/2024 3:30 PM	File folder	SHEE		
Quick access	IM	r nes		4/2024 3:30 PM	File folder			
	Logs			0/2024 11:21 AM				
	System				File folder			
Desktop	TMP			4/2024 3:30 PM	File folder File folder			
	VRef			4/2024 3:30 PM	File folder			
Libraries	ISC CAM 1	5.1 TIA 4		4/2024 12:58 PM	Siemens TIA Porta	21 KB		
	-							
This PC							_	
-							5	
Network	File name:	ISC CAM 15.1 TIA					 Open 	
THE WORK	Files of type:	Global library					 Cancel 	-
		Open as read only						

Figure 14: Adding Global Library to TIA Portal Project

TIA Portal V15.1 Open library		
the library has a TIA Portal library version V15.1.		
to use this library with TIA Portal V16, it is upgraded to TIA I	Portal library version V16.	
the original library remains unchanged and the upgraded comms/ISC_CAM_V2.0_Siemens/ISC CAM 15.1 TA Library_1 Library:		ared_FilesUSCIProfinet ISC
ETEIVM_Shared_FilesUSCIProfinet ISC CommsUSC_CAM_V2	0_SiemensIISC CAM 15.1 TIA Libr	aryliSC CAM 15.1 TA al15_1
Product	Version used	Upgrade is possible
STEP 7 Basic	V15.1	🕗 Installed
	V15.1	Installed
Totally Integrated Automation Portal 1		

Figure 15: Library Upgrade from V15.1 to Newer Version of TIA Portal Project

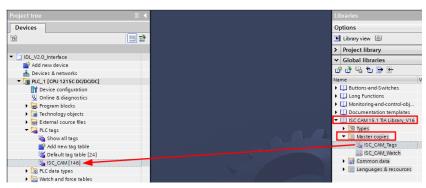


Figure 16: Adding ISC CAM PLC Tags to Project

CONFIGURE THE INPUT AND OUTPUT SIZE OF THE DEVICE.

- 39. Select "Device configuration" in the project, Figure 17.
- 40. Choose ISC CAM from the drop-down menu in "Device view," Figure 17.
- 41. Expand the window to the right of the device to view the "Device overview," Figure 17.
- 42. Open the "Hardware catalog" to the right of the "Device overview," Figure 17.
- 43. Open the "Module" in "Hardware catalog," Figure 17.
- 44. Drag and drop "IN 16 WORD" into "Device overview" "Slot" 1, Figure 17.
- 45. Drag and drop "OUT 16 WORD" into "Device overview" "Slot" 2, Figure 17.

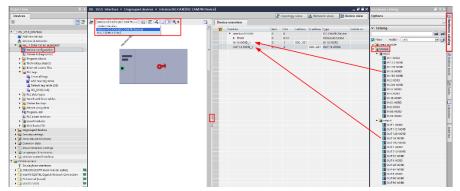


Figure 17: Configure Input and Output Size of ISC CAM Device

SETUP ADDRESS FOR INPUT AND OUTPUT OF DEVICE AND CONNECT PLC TAGS

- 46. Library file address for PLC tags is **input 500-531** and **output 500-531**.
- 47. If the address space 500...531 is occupied for Inputs or Output, follow steps 50-60 for how to change the PLC tags addresses. If the space is available, follow steps 48-49.
- Double click or highlight the entire "I address" field, type 500 and press enter. The value in the field for ISC CAM shall change to 500...531, Figure 18.
- 49. Double click or highlight the entire "Q address" field, type 500 and press enter. The value in the field for ISC CAM shall change to 500...531.
- 50. If the address range of 500...531 is reserved or used in the project. Choose the next available I & Q address space available in the TIA Portal project.
- 51. Open PLC tags "ISC_CAM," Figure 19.
- 52. Select "Address" column to organize the data in order, Figure 19.
- 53. Select the first input byte "i_NotUsed" data address %IB500 and change it to match the first byte of the available "I address" of the ISC CAM "Device overview," Figure 19.
- 54. With the mouse pointer hover of the first input byte at the bottom right-hand corner of the "Address" "%IB75" until the pointer icon changes to a + icon press and hold the left mouse button. Then drag all the way to the last input word "i_ParameterValueMSW" "%IW530" and let go of the left mouse button. By doing this step all the PLC tags shall change addresses to match the "I address" of the ISC CAM device, Figure 20.
- 55. A window will appear "AutoFill" choose "Overwrite tags" and press "OK," Figure 21.
- 56. Verify the address range of the input tags is within the range of the "I address" for the ISC CAM device.
- 57. If the output address range is used in the project, then steps 7e...7k will need to be completed for the output PLC tags and ISC CAM device output mapping. Figures 22-23.
- 58. Change the first output PLC tag "q_NotUsed(1)" "%Q500.0" to match the first "Q address," Figure 22.
- 59. Starting with the updated tag (q_NotUsed(1)) Address, grab the bottom right corner with the mouse icon and drag down all the way to the last output word "q_NotUsed(36)," Figure 23.
- 60. When the AutoFill window appears choose "Overwrite tags" and click "OK," Figure 21.

PN Device	•]						
Device	e overview						
- **	Module	Rack	Slot	I address	Q address	Туре	1
	 Intralox-ISC-CAM 	0	0			ISC CAM PN Device	
	PN-IO	0	0 X1			Intralox-ISC-CAM	
	IN 16 WORD_1	0	1	500531		IN 16 WORD	
	OUT 16 WORD_1	0	2		500531	OUT 16 WORD	
	OUT16 WORD_1	0	2		500531	OUT 16 WORD	

Figure 18: Set I and Q Address of ISC CAM device

	□ < 0	IDL_\	/2.0_Interface + PLC_1	CPU 1215C DC/0	C/DC] > PLC tag	s 🕨 150					
Devices											
18	🗉 🔮 🥩	10	∋ <u></u> ∃ ?? #								
		ISC_CAM 2									
IDL_V2.0_interface		,	lame	Data type	Address 🔺	Retain					
Add new device	1	-0	i_NotUsed	Byte	1 %1875	•					
💑 Devices & networks	2	-0	i_LifeBit	Bool	%1501.0 2						
PLC_1 [CPU 1215C DC/DC/DC]	3	-0	i_SystemReady	Bool	%1501.1						
Device configuration	4	-0	i_BeltMoving	Bool	%1501.2						
Online & diagnostics	5	-0	i_SystemFault	Bool	%1501.3						
Program blocks	6	-0	i_SystemWarning	Bool	%1501.4						
Technology objects	7	-0	i_SystemNextProduct	Bool	%1501.5						
External source files	8	-0	i_ReadingBusy	Bool	%1501.6						
🕶 🊂 PLC tags	9	-0	i_NotUsed(1)	Bool	%1501.7						
🖏 Show all tags	10	-0	i_Encoderfault	Bool	%1502.0						
💣 Add new tag table	11	-0	i_BeltWotorSignal#ault	Bool	%1502.1						
Default tag table [26]	12	-0	i_Airfressurefault	Bool	%1502.2						
5C_CAM[146]	13	-0	i_NotUsed(2)	Bool	%1502.3						
PLC data types	14	-0	i_IO-Link/ault	Bool	%1502.4						

Figure 19: Changing the First Input Byte of the ISC CAM PLC Tags

									💶 Tags	User constants	
ø	1) 🕑 😤 🖬									4
	ISC_C/	M									
	D	lame	Data type	Address	Retain	Acces	Write	Msibl	Comment		
1	0	i_NotUsed	Byte	\$4875					Unused byte	•	1
2	-a	i_LifeDit	Bool	5476.0					Heartbeat i	put for communication	1
3	-0	i_SystemReady	Bool	%176.1					System Rea	dy (no fault)	
4	-0	i_BeltMaxing	Bool	\$176.2					Encoder is p	ulsing indicating belt m	
5	-0	i_System#ault	Bool	5176.3					Fault in Mac	hine	
6	-0	i_SystemWarning	Bool	%176.4					System war	ning	
7	-0	i_SystemNextProduct	Bool	\$176.5					System real	ly for next product	
8	•	i_ReadingBusy	Bool	5176.6					tile reading	busy	
9	-0	i_NotUsed(1)	Bool	%176.7					Unused bit		
10	-0	i_EncoderFault	Bool	8477.0					Encoder fau	k .	U.
11	-0	i_BeltMotorSignalfault	Bool	5477.1					Motor run si	gnel missing	
12	-0	i_AirPressureFault	Bool	9477.2					Air pressure	fault	
13	0	(_NotUsed(2)	Bool	\$477.3					Unused bit		
14	-0	i_IO-Linkfault	Bool	\$177.4					IO-Link Faul	t	
15	-0	i_VoltageSupplyFault	Bool	%177.5					Powersupp	ly voltage low/high	
16	•	i_NotUsed(3)	Bool	9477.6					Unused bit		
	-0	i_OvercurrentFault	Bool	\$477.7					Output over	current	
18	-0	i_MinGapFault	Bool	%178.0					Gap betwee	n products too small	
19	a	i_infeedJamFault	Bool	9478.1					Product ja m	at infeed photo eye	
20	-0	i OutleedJamFault	Bool	\$178.2					Product is m	at outfee photo eve	

Figure 20: Input Address Change to Match ISC CAM Device



Figure 21: AutoFill Window – Overwrite Tags



Figure 22: Change Output PLC Tags to Match Device Q Address



Figure 23: Last Output PLC Tag Address to Match Device

ADDING A SECOND DEVICE TO A TIA PORTAL PROJECT

- 61. Follow the previous steps to setup a new device. Each ISC CAM added to a project will have to have a unique name.
- 62. When adding more than one ISC_CAM PLC tags to a project. It is important to make the correct selection when prompted. When dragging the library file into the PLC tags project. A "Paste" window will open, make sure to select "Rename and paste objects" and press "OK," Figure 24. This will rename all the tags automatically.
- 63. Make sure to follow previous steps for connecting the PLC tags to the appropriate I and Q address of the "Device overview," Figure 25 & 26.

Paste (00	80:000001) ×
	Conflicts detected during pasting
	Some of the objects you want to paste already exist here or in a different group.
	How do you want to continue?
	Rename and paste objects
	Replace existing objects and move to this location
	OK

Figure 24: Paste Warning When Adding More Than One ISC CAM PLC tags to a Project



Figure 25: Updating Input ISC CAM PLC Tags for Project



Figure 26: Updating Output ISC CAM PLC Tags for Project

ROCKWELL GENERIC ETHERNET DEVICE (GED) INTEGRATION OF ISC CAM

DOWNLOAD THE GED FILES.

- Download "ISC CAM Network Integration Support Files" folder from the <u>Intralox Smart</u> <u>Carrway webpage</u>. Within that folder there will be several important documents.
 GED ISC CAM v2.L5K – Generic Ethernet Device for ISC CAM
- GED_ISC_CAM_v2.L5K Generic Ethernet Device for ISC CAM
 AOI_ISC_CAM_v2_INPUTS.L5K AOI to convert data for inputs which do not fit the INT data format of the GED.
- AOI_ISC_CAM_v2_OUTPUTS.L5K AOI to convert data for output which do not fit the INT data format of the GED.
- 5. UDT_ISC_InDataConversion.L5K data type to match AOI Inputs.
- 6. UDT_ISC_OutDataConversion.L5K data type to match AOI Outputs.
- EXAMPLE_ISC_CAM_v2_COMM_ETHERNETIP.ACD example program which includes items 2, 3, 4, 5, and 6.

IMPORT THE GENERIC ETHERNET DEVICE TO A STUDIO 5000 PROJECT.

- 8. Open the "Controller Organizer," Figure 27.
- 9. Right click on "Ethernet" tree for the PLC which will have the ISC connection, Figure 26.
- 10. From the list choose "Import Module," Figure 27.
- 11. A file explorer window "Import Module" will open. Navigate to GED_ISC_CAM_v2.L5K and "Open" the file, Figure 28.
- 12. An "Import Configuration GED_ISC_CAM_v2.L5K" window will open. Update the name and description for the project if you would like it to be something other than the default, then click "OK", Figure 29.
- **13. Note:** The name will need to be unique if more than one ISC CAM module is added to a project.
- 14. After the import of the GED tags should have automatically been added to the program with descriptions, Figure 30.
- 15. If creating a Generic Ethernet Device, see Figure 31 for Assembly Instances.

Vendor: Parent: Name:	Rockwell Automation/Allen-Bradley Local ISC_CAM_145	Connection Para	ameters Assembly	
Description:	ISC CAM Module	Input:	Assembly Instance: 101 110	Size: 16 (16-bit) 16 (16-bit)
Comm Format	lost Name	Output: Configuration:		16 (16-bit) 0 (8-bit)
 IP Addre Host Na 		Status Input: Status Output:		

Figure 31: Assembly Instances for Generic Ethernet Device

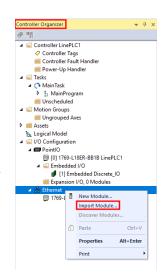


Figure 27: Import Module from Controller Organizer Ethernet Tree



Figure 28: Import Module File Explorer GED_ISC_CAM_v2.L5K



Figure 29: Import Configuration – GED_ISC_CAM_v2.L5K

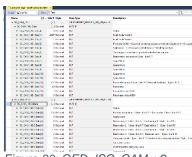


Figure 30: GED_ISC_CAM_v2 Controller Tags

IMPORT ADD-ON INSTRUCTIONS – INPUT AND OUTPUT

- 16. Within the "Controller Organizer" open the "Assets" folder then right click "Add-On Instructions and select "Import Add-On Instruction...," Figure 32.
- 17. In the file explorer "Import Add-On Instruction" navigate to "AOI_ISC_CAM_v2_INPUTS.L5K" and "Open" the file, Figure 33.
- 18. An "Import Configuration AOI_ISC_CAM_v2_INPUTS" window opens press "OK" to add file to project, Figure 34.
- 19. Follow steps 16, 17, and 18 to import AOI_ISC_CAM_v2_OUTPUTS.L5K add-on instruction.
- 20. Both AOI_ISC_CAM_v2_INPUTS and AOI_ISC_CAM_v2_OUTPUTS add-on instructions shall be added to the project, Figure 35.

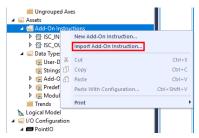


Figure 32: Import Add-On Instruction Controller Organizer



Figure 33: File Explorer Import Add-On Instruction – AOI_ISC_CAM_v2_INPUTS.L5K

C Produ	~ #4	Find,Replace			
et Content:		Instruction Properties			_
Add On Instructors Contractors Contractors	InportNews	Distruction Properties			
IT Southers	Operations	Jite Existing	\sim		
References		References will be imported as configured in the References fields	ars.		
To brons/ttarrings*	Final Names	BC_PI		Collision Setale	
	Description	Input data conversion for ISC CAM	~		
	Revision:	¥1.0			
	Revision Note:				
	Vendors				

Figure 34: Import Configuration - AOI_ISC_CAM_v2_INPUTS.L5K



Figure 35: AOI_ISC_CAM_v2_INPUTS & AOI_ISC_CAM_v2_OUTPUTS Added to Studio 5000 Project

ADDING INPUT ADD-ON INSTRUCTION (AOI).

- 21. The AOI_ISC_CAM_v2_INPUTS can be added to a rung in the program by simply dragging and dropping.
- 22. Create a data type for the AOI to store data. Double click in the "AOI_ISC_CAM_v2_INPUTS" field and type a unique data type name, then right click on the name, and select "New xyz." The "Data Type" shall be AOI_ISC_CAM_v2_INPUTS to match the AOI. Make sure the scope of the program is correct and click create, Figure 36.
- 23. Add the ISC CAM Module inputs words which correspond to the AOI, Figure 37.
- Create unique data types for the next four AOI output items of size INT, Figure 37. Already created UDTs could be used for this step.
- 25. Create unique data types for the next four AOI output items of size BOOL, Figure 37. Already created UDTs could be used for this step.

NOTE: There are input and output UDTs which could be used with the AOIs. The UDTs are an exact match for the AOI, see section "Adding UDTs for Input and Output AOI's."

New Parame	ter or Tag		×		
Name:	ISC IN1		Create 💌		[N
Description:		~	Cancel	ISC_N	
				ISC_IN	ISC_IN1
			Help	InputWord4	7
			Thep		??
				InputWord6	22
				InputWord12	2
Jsage:	Local Tag	~		inputtional a	77
caaye.	Local ray			ProductsOnBelt	2
	Base v Connec	diam.			??
Type:	Base Connec	200n		BeltSpeed	?
					??
Allas For:				LastProductDest	?
	line in	100			77
Data Type:	ISC_IN			ParameterGroup	
Parameter		_		ParameterReadOK	??
Connection:				Parameterikeaduk	??
connection.		_		ParameterTypeOK	?
Scope:	MainProgram	~		Turaneter Typeon	??
				ParameterValue0K	2
External	Read/Witte	~			??
Access:				ParameterWriteOK	?
Style:					22

Figure 36: New Data Type AOI_ISC_CAM_v2_INPUTS

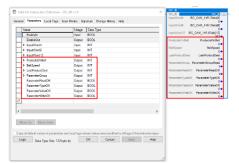


Figure 37: Output Data Types for AOI_ISC_CAM_v2_INPUTS

ADDING OUTPUT ADD-ON INSTRUCTION (AOI).

- 26. The AOI_ISC_CAM_v2_OUTPUTS can be added to a rung in the program by simply dragging and dropping.
- 27. Create a data type for the AOI to store data. Double click in the "AOI_ISC_CAM_v2_OUTPUTS" field and type a unique data type name, then right click on the name, and select "New xyz." The "Data Type" shall be AOI_ISC_CAM_v2_OUTPUTS to match the AOI. Make sure the scope of the program is correct and click create, like Figure 36.
- 28. Add the ISC CAM outputs words which correspond to the AOI, Figure 38. There is a UDT which includes each of the parameters, items 30-33 have more information.
- 29. Create unique data type names for all f the parameters in the AOI_ISC_CAM_v2_OUTPUTS, Figure 38.

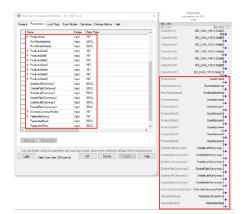
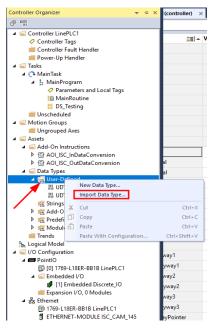


Figure 38: Input Data Types for AOI_ISC_CAM_v2_OUTPUTS

ADDING USER-DEFINED DATA TYPES (UDT) FOR INPUT AND OUTPUT AOI'S

- 30. Right-Click on" "User-Defined" under "Data Types" and select "Import Data Type," Figure 39.
- 31. Make sure to import "UDT_ISC_InDataConversion" and "UDT_ISC_OutDataConversion."
- 32. An input and output data type can be added to the program scope which includes the AOIs.
- 33. The data types match the AOI parameters, Figure 40 & 41.





Output data conversions for ISC CAM DL V2.0		input data conversions for ISC CAM IDL VZ.0	
	AOLISC_OutDated		AOLISC_InDeteConv
rversi ISC_ ISC_CAM_145:	Output/Vord1	SC_N_145 ISC_CAN_1451Data[4]	NOL_ISC_InDataConv nputWord4
ISC_CAM_145	Output/Word3	ISC_CAM_1451.Data[5]	nputWord6
ISC_CAM_145:		ISC_CAM_1451.Data[12]	nputWord12
ISC_CAM_145:		ISCCAM_145_InDataConversion.ProductsOnBelt	ProductsOnBelt
ISC_CAM_145:	Output/Vord6	ISCCAM_145_InDataConversion.BetSpeed	lettSpeed
ISC_CAM_145:	Output/Vord7	ISCCAM_145_InDataConversion.LastProductDest	.astProductDest
ISC_CAM_145:0	Output/Verd12	AM_145_InDataConversion.ParameterGroupRead	arameterGroup B
ISCCAM_145_OutDataConversion.Pro	ProductDest	CCAM_145_InDateConversion.ParameterReadOK	arameterReadOK
ISCCAM_145_OutDataConversion RunMor	RunModeinternal	CCAM_145_inDataConversion.ParameterTypeOK	arameterTypeOK
ISCCAM_145_OutDataConversion.RunMod	RunModeExternal	0 CCAM_145_InDataConversion ParameterValueOK 0	arameter/ValueOK
ISCCAM_145_OutDateConversion.Quan	ProductsDest0	CCAM_145_InDateConversion.ParameterWriteOK	arameterWriteOK
ISCCAII_145_OutDataConversion.Quan	ProductsDest1		
ISCCAM_145_OutDataConversion.Quan	ProductsDest2		
ISCCAII_145_OutDataConversion.Quan	ProductsDest3		
ISCCAW_145_OutDataConversion.Quan	ProductsDest4		
ISCCAM_145_OutDateConversion.Quan	ProductsDest5		
ISCCAW_145_OutDataConversion.Quan	ProductsDest6		
1 ISCCAII_145_OutDataConversion.EnableLeftCo	EnableLeftCarryw		
y1 ISCCAM_145_OutDateConversion.EnableRightCo	EnableRightCarryv		
2 ISCCAII_145_OutDataConversion.EnableLeftCo	EnableLeftCarryw		
y2 ISCCAM_145_OutDataConversion.EnableRightCo	EnableRightCarryv		
3 ISCCAII_145_OutDataConversion.EnableLeftCo	EnableLe#Carryw		
y3 ISCCAII_145_OutDataConversion.EnableRightCo	EnableRightCarrys		
sinter ISCCAM_145_OutDataConversion.OverrideCarryw	OverrideCarrywa		
ISCCAM_145_OutDataConversion.ParameterGr	ParameterGroup		
ISCCAM_145_OutDataConversion.Param	ParameterRead		
ISCCAM_145_OutDataConversion Param	ParameterWinte		

Figure 41: AOI with UDT Data Type

Name	📰 🔺 Value 🔹 Style	Data Type	Description	
ISC_CAM_155:0	()	AB:ISC_CAMIDL_Cv20_AFC575C1:O:0		
▲ ISCCAM_145_InDataConversion	{}}	UDT_ISC_InDataConversion		
ISCCAM_145_InDataConversion.ProductsOnBelt	0 Decimal	INT	Number of products on intralox belt	
ISCCAM_145_InDataConversion.BeltSpeed	0 Decimal	INT	Belt Speed Input Data from ISC CAM	
ISCCAM_145_InDataConversion.LastProductDest	0 Decimal	INT	Destination of last product inducted input from ISC CAM	
ISCCAM_145_InDataConversion.ParameterGroupRead	0 Decimal	INT	Parameter Group number read - feedback from ISC CAM	
ISCCAM_145_InDataConversion.ParameterReadOK	0 Decimal	BOOL	Parameter read successful feedback from ISC CAM	
ISCCAM_145_InDataConversion.ParameterTypeOK	0 Decimal	BOOL	Parameter type successfull feedback from ISC CAM	
ISCCAM_145_InDataConversion.ParameterValueOK	0 Decimal	BOOL	Parameter value in range successful feedback from ISC CAM	
ISCCAM_145_InDataConversion.ParameterWriteOK	0 Decimal	BOOL	Parameter write successful feedback from ISC CAM	
ISCCAM_145_OutDateConversion	{}	UDT_ISC_OutDataConversion		
ISCCAM_145_OutDataConversion.ProductDest	0 Decimal	INT	Destination for next product to be inducted - ISC CAM set for internal mode	
ISCCAM_145_OutDataConversion.RunModeInternal	0 Decimal	BOOL	Run mode internal - ISC CAM balancing logic control	
ISCCAM_145_OutDataConversion.RunModeExternal	0 Decimal	BOOL	Run mode external - PLC balancing logic control	
ISCCAM_145_OutDataConversion.QuantityLane0	0 Decimal	INT	Quantity of products to destination 0 for line balancing - ISC CAM internal	
ISCCAM_145_OutDataConversion.QuantityLane1	0 Decimal	INT	Quantity of products to destination 1 for line balancing - ISC CAM internal	
ISCCAM_145_OutDataConversion.QuantityLane2	0 Decimal	INT	Quantity of products to destination 2 for line balancing - ISC CAM internal	
ISCCAM_145_OutDataConversion.QuantityLane3	0 Decimal	INT	Quantity of products to destination 3 for line balancing - ISC CAM internal	
ISCCAM_145_OutDataConversion.QuantityLane4	0 Decimal	INT	Quantity of products to destination 4 for line balancing - ISC CAM internal	
ISCCAM_145_OutDataConversion.QuantityLane5	0 Decimal	INT	Quantity of products to destination 5 for line balancing - ISC CAM internal	
ISCCAM_145_OutDataConversion.QuantityLane6	0 Decimal	INT	Quantity of products to destination 6 for line balancing - ISC CAM internal	
ISCCAM_145_OutDataConversion.EnableLeftCarryway1	0 Decimal	BOOL	Enable/Disable carryway 1 left 0 = Disable 1 = Enable	
ISCCAM_145_OutDataConversion.EnableRightCarryway1	0 Decimal	BOOL	Enable/Disable carryway 1 right 0 = Disable 1 = Enable	
ISCCAM_145_OutDataConversion.EnableLeftCarryway2	0 Decimal	BOOL	Enable/Disable carryway 2 left 0 = Disable 1 = Enable	
ISCCAM_145_OutDataConversion.EnableRightCarryway2	0 Decimal	BOOL	Enable/Disable carryway 2 right 0 = Disable 1 = Enable	
ISCCAM_145_OutDataConversion.EnableLeftCarryway3	0 Decimal	BOOL	Enable/Disable carryway 3 left 0 = Disable 1 = Enable	
ISCCAM_145_OutDataConversion.EnableRightCarryway3	0 Decimal	BOOL	Enable/Disable carryway 3 right 0 = Disable 1 = Enable	
ISCCAM_145_OutDataConversion.OverrideCarrywayPointer 0 Decim 0 Decim		INT	Override active carryway point value	
ISCCAM_145_OutDataConversion.ParameterGroupWrite	0 Decimal	INT	Parameter group number write - 1, 2, 3, 6, or 7	
ISCCAM_145_OutDataConversion.ParameterRead	0 Decimal	BOOL	Parameter read value trigger	
ISCCAM 145 OutDataConversion.ParameterWrite	0 Decimal	BOOL	Parameter write value tripper	

Figure 40: Program Tags Utilizing UDT Data Type

ISC CAM INTEGRATION USING ELECTRONIC DATA SHEET

- 1. Download "ISC CAM Network Integration Support Files" folder from the <u>Intralox Smart Carrway webpage</u>. Within that folder there will be a document.
 - a. EDS_ISC_CAM_v2.EDS Electronic data sheet for ISC CAM
- 2. Import the electronic data sheet to your programming environment.
- After importing the electronic data sheet, you will need to add and configure the module. This typically involves setting up the IP address (Using the "Intralox ISC Service Tool"), device name, and keying.
 Please note that keying needs to be disabled!
- 4. Verify the Configuration: The module should now be configured in your programming environment and the device should be available in your Ethernet tree.