Data Logging in Kinetix 5300, 5500 and 5700

Rockwell Automation

Content

Data Logging

- Overview
- Parameters
- Add-On Profile (AOI)
- Application Sample Program
- Transfer Time

Data Logging Overview

Rockwell Automation

Data Logging Overview

- **Description**
  - Data Logging allows to log up to 40,000 data points for one to four channels at rates as low as the loop update of the drives of 125µs.
  - This feature is available only via message instructions.
  - An Add-on Instruction (AOI) was developed to use Data Logging. This AOI is presented at the end of this document.

- **Firmware**
  - The Data Logging feature is available with:
    - Kinetix 5700 firmware 7.003 and later
    - Kinetix 5500 firmware 2.002 and later
    - Kinetix 5300 firmware 13.1 and later

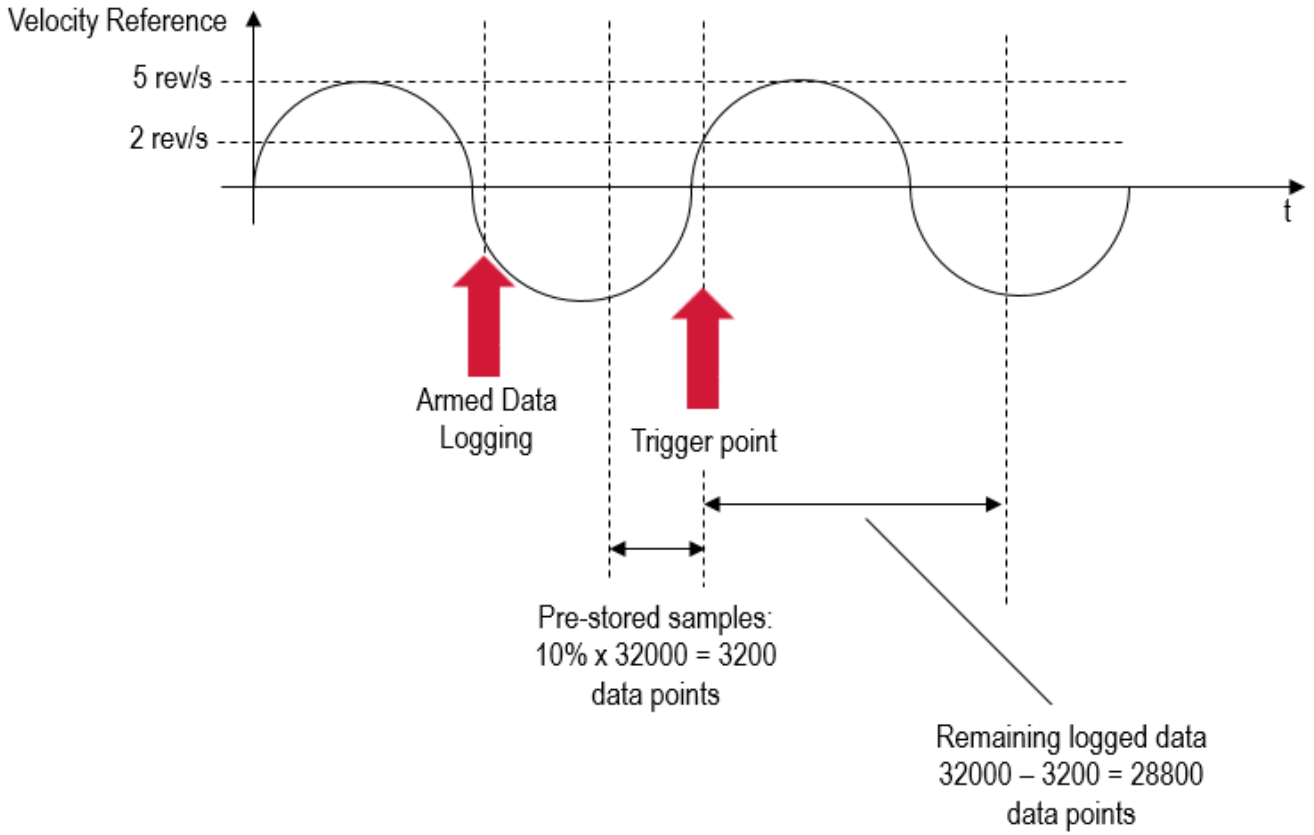
Data Logging Parameters

Data Logging Parameters

The Data Logging parameter are as follows:

(An example is provided in the figure)

- Data source 1 = 453 (Velocity Reference)
- Trigger Type = Signal
- Trigger Source = 453 (Velocity Reference)
- Trigger Mode = 3 (>= Trigger Level)
- Trigger Level = 2 rev/s
- Sample period = 125µs
- Capture size = 32000
- Pre-store samples = 10%



Set the number of the parameter to log real-time data in each one of the four channels (0, 1, 2 and 3)

The list of parameters that can be set as Data Source are listed next.

Data Logging Parameters

Data Source and Trigger Source attributes:

Attribute ID	Attribute Name	Read/Write	Data Type	Units	Kinetix 5700 Kinetix 5500	K5700 DFE Power Supply	K5700 AFE Power Supply	K5300
2011	AC Line Current	Read	REAL	Amps (rms)	N	N	Y	N
2225	AC Line Electrical Angle	Read	REAL	Degrees	N	N	Y	N
2010	AC Line Frequency	Read	REAL	Herts	N	N	Y	N
2012	AC Line Voltage	Read	REAL	Volts (rms)	N	N	Y	N
483	Acceleration Feedback	Read	REAL	counts/sec/sec	Y	N	N	Y
452	Acceleration Feedforward Command	Read	REAL	counts/sec/sec	Y	N	N	Y
460	Acceleration Feedforward Gain	Write	REAL	%	Y	N	N	Y
367	Acceleration Fine Command.	Read	REAL	counts/sec/sec	Y	N	N	Y
482	Acceleration Reference	Read	REAL	counts/sec/sec	Y	N	N	Y
2106	Active Current Error	Read	REAL	% Rated	N	N	Y	N
2118	Active Current Feedback	Read	REAL	% Rated	N	N	Y	N
2080	Active Current Reference	Read	REAL	% Rated	N	N	Y	N
2082	Active Current Reference - Compensated	Read	REAL	% Rated	N	N	Y	N
2081	Active Current Reference - Filtered	Read	REAL	% Rated	N	N	Y	N
2104	Active Current Reference - Limited	Read	REAL	% Rated	N	N	Y	N
2093	Active Current Trim	Write	REAL	% Rated	N	N	Y	N
844	Adaptive Tuning Gain Scaling Factor	Read	REAL	pu	Y	N	N	Y
812	Bus Observer Current Estimate	Read	REAL	% Rated	N	N	Y	N
811	Bus Observer Voltage Rate Estimate	Read	REAL	Volts / sec	N	N	Y	N
638	Bus Regulator Capacity	Read	REAL	% Regulator Rated	Y (K5500) N (K5700)	Y	Y	Y
2054	Bus Voltage Error	Read	REAL	Volts	N	N	Y	N

Data Logging Parameters

Data Source and Trigger Source attributes:

Attribute ID	Attribute Name	Read/Write	Data Type	Units	Kinetix 5700 Kinetix 5500	K5700 DFE Power Supply	K5700 AFE Power Supply	K5300
2053	Bus Voltage Feedback	Read	REAL	Volts	N	N	Y	N
2050	Bus Voltage Reference	Read	REAL	Volts	N	N	Y	N
2060	Bus Voltage Set Point	Write	REAL	Volts	N	N	Y	N
637	Converter Capacity	Read	REAL	% Regulator Rated	N	Y	Y	N
2103	Converter Current Limit Source	Read	DINT	0 = Not Limited 1 = Motoring Power Limit 2 = Regenerative Power Limit 3 = Current Vector Limit 4 = Thermal Current Limit 5 = Active Power Limit 6 = Reactive Power Limit	N	Y	Y	N
2100	Converter Operative Current Limit	Read	REAL	% Rated	N	Y	Y	N
605	Converter Output Current	Read	REAL	Amps	N	Y	Y	N
606	Converter Output Power	Read	REAL	Power Units	N	Y	Y	N
520	Current Command	Read	REAL	% Motor Rated	Y	N	N	Y
527	Current Error	Read	REAL	% Motor Rated	Y	N	N	Y
529	Current Feedback	Read	REAL	% Motor Rated	Y	N	N	Y

Data Logging Parameters

Data Source and Trigger Source attributes:

Attribute ID	Attribute Name	Read/Write	Data Type	Units	Kinetix 5700 Kinetix 5500	K5700 DFE Power Supply	K5700 AFE Power Supply	K5300
522	Current Limit Source	Read	DINT	0 = Not Limited 1 = Inverter Peak Current Limit 2 = Motor Peak Current Limit 3 = Inverter Thermal Current Limit 4 = Motor Thermal Current Limit	Y	N	N	Y
524	Current Reference	Read	REAL	% Motor Rated	Y	N	N	Y
620	DC Bus Voltage	Read	REAL	Volts	Y	Y	Y	Y
528	Flux Current Error	Read	REAL	% Motor Rated	Y	N	N	Y
530	Flux Current Feedback	Read	REAL	% Motor Rated	Y	N	N	Y
525	Flux Current Reference	Read	REAL	% Motor Rated	Y	N	N	Y
636	Inverter Capacity	Read	REAL	% Inverter Rated	Y	N	N	Y
801	Load Observer Acceleration Estimate	Read	REAL	counts/sec/sec	Y	N	N	Y
806	Load Observer Bandwidth	Write	REAL	radians/sec	Y	N	N	Y
807	Load Observer Integrator Bandwidth	Write	REAL	radians/sec	Y	N	N	Y
802	Load Observer Torque Estimate	Read	REAL	% Motor Rated	Y	N	N	Y

Data Logging Parameters

Data Source and Trigger Source attributes:

Attribute ID	Attribute Name	Read/Write	Data Type	Units	Kinetix 5700 Kinetix 5500	K5700 DFE Power Supply	K5700 AFE Power Supply	K5300
635	Motor Capacity	Read	REAL	% Motor Rated	Y	N	N	Y
523	Motor Electrical Angle	Read	REAL	Degrees	Y	N	N	Y
521	Operative Current Limit	Read	REAL	% Motor Rated	Y	N	N	Y
601	Output Current	Read	REAL	Amps (RMS)	Y	Y	Y	Y
600	Output Frequency	Read	REAL	Hz	Y	N	N	Y
603	Output Power	Read	REAL	kW	Y	Y	Y	Y
602	Output Voltage	Read	REAL	Volts (RMS)	Y	N	N	Y
436	Position Error	Read	REAL	counts	Y	N	N	Y
434	Position Feedback	Read	DINT	counts	Y	N	N	Y
1402	Position Feedback 1	Read	DINT	counts	Y	N	N	Y
1452	Position Feedback 2	Read	DINT	counts	Y	N	N	Y
365	Position Fine Command	Read	DINT	counts	Y	N	N	Y
442	Position Integrator Bandwidth	Write	REAL	radians/sec	Y	N	N	Y
437	Position Integrator Output	Read	REAL	revs/sec	Y	N	N	Y
441	Position Loop Bandwidth	Write	REAL	radians/sec	Y	N	N	Y
438	Position Loop Output	Read	REAL	revs/sec	Y	N	N	Y
432	Position Reference	Read	DINT	counts	Y	N	N	Y
2107	Reactive Current Error	Read	REAL	% Rated	N	N	Y	N
2119	Reactive Current Feedback	Read	REAL	% Rated	N	N	Y	N
2083	Reactive Current Reference	Read	REAL	% Rated	N	N	Y	N
2084	Reactive Current Reference - Compensated	Read	REAL	% Rated	N	N	Y	N
2105	Reactive Current Reference - Limited	Read	REAL	% Rated	N	N	Y	N

Data Logging Parameters

Data Source and Trigger Source attributes:

Attribute ID	Attribute Name	Read/Write	Data Type	Units	Kinetix 5700 Kinetix 5500	K5700 DFE Power Supply	K5700 AFE Power Supply	K5300
565	Slip Compensation	Read	REAL	RPM	Y	N	N	Y
496	System Inertia (Kj)	Write	REAL	% Motor Rated/(counts/sec/sec)	Y	Y	N	N
495	Torque Estimate	Read			Y	Y	N	N
505	Torque Limit - Negative	Write	REAL	% Motor Rated	Y	Y	N	N
504	Torque Limit - Positive	Write	REAL	% Motor Rated	Y	Y	N	N
502	Torque Low Pass Filter Bandwidth	Write	REAL	radians/sec	Y	Y	N	N
843	Torque Low Pass Filter Bandwidth Estimate	Read	REAL	radians/sec	Y	Y	N	N
792	Torque Notch Filter 2 Frequency Estimate	Read	REAL	radians/sec	Y	Y	N	N
793	Torque Notch Filter 2 Magnitude Estimate	Read	REAL	% Motor Rated	Y	Y	N	N
794	Torque Notch Filter 2 Width Estimate	Read	REAL	-	Y	Y	N	N
795	Torque Notch Filter 3 Frequency Estimate	Read	REAL	radians/sec	Y	Y	N	N
796	Torque Notch Filter 3 Magnitude Estimate	Read	REAL	% Motor Rated	Y	Y	N	N
797	Torque Notch Filter 3 Width Estimate	Read	REAL	-	Y	Y	N	N
798	Torque Notch Filter 4 Frequency Estimate	Read	REAL	radians/sec	Y	Y	N	N
799	Torque Notch Filter 4 Magnitude Estimate	Read	REAL	% Motor Rated	Y	Y	N	N
800	Torque Notch Filter 4 Width Estimate	Read	REAL	-	Y	Y	N	N
841	Torque Notch Filter Frequency Estimate	Read	REAL	radians/sec	Y	Y	N	N
842	Torque Notch Filter Magnitude Estimate	Read	REAL	% Motor Rated	Y	Y	N	N
791	Torque Notch Filter Width Estimate	Read	REAL	-	Y	Y	N	N
492	Torque Reference	Read	REAL	% Motor Rated	Y	Y	N	N
493	Torque Reference Filtered	Read	REAL	% Motor Rated	Y	Y	N	N
494	Torque Reference Limited	Read	REAL	% Motor Rated	Y	Y	N	N

Data Logging Parameters

Data Source and Trigger Source attributes:

Attribute ID	Attribute Name	Read/Write	Data Type	Units	Kinetix 5700 Kinetix 5500	K5700 DFE Power Supply	K5700 AFE Power Supply	K5300
491	Torque Trim	Write	REAL	% Motor Rated	Y	Y	N	N
1240	Track Section Coil 1 Current Feedback	Read	REAL	Amps	N	N	N	N
1249	Track Section Coil 10 Current Feedback	Read	REAL	Amps	N	N	N	N
1250	Track Section Coil 11 Current Feedback	Read	REAL	Amps	N	N	N	N
1251	Track Section Coil 12 Current Feedback	Read	REAL	Amps	N	N	N	N
1241	Track Section Coil 2 Current Feedback	Read	REAL	Amps	N	N	N	N
1242	Track Section Coil 3 Current Feedback	Read	REAL	Amps	N	N	N	N
1243	Track Section Coil 4 Current Feedback	Read	REAL	Amps	N	N	N	N
1244	Track Section Coil 5 Current Feedback	Read	REAL	Amps	N	N	N	N
1245	Track Section Coil 6 Current Feedback	Read	REAL	Amps	N	N	N	N
1246	Track Section Coil 7 Current Feedback	Read	REAL	Amps	N	N	N	N
1247	Track Section Coil 8 Current Feedback	Read	REAL	Amps	N	N	N	N
1248	Track Section Coil 9 Current Feedback	Read	REAL	Amps	N	N	N	N
455	Velocity Error	Read	REAL	revs/sec	Y	N	N	Y
454	Velocity Feedback	Read	REAL	revs/sec	Y	N	N	Y
1403	Velocity Feedback 1	Read	REAL	revs/sec	Y	N	N	Y
1453	Velocity Feedback 2	Read	REAL	revs/sec	Y	N	N	Y
433	Velocity Feedforward Command	Read	REAL	revs/sec	Y	N	N	Y
440	Velocity Feedforward Gain	Write	REAL	%	Y	N	N	Y
366	Velocity Fine Command	Read	REAL	revs/sec	Y	N	N	Y
462	Velocity Integrator Bandwidth	Write	REAL	radians/sec	Y	N	N	Y
456	Velocity Integrator Output	Read	REAL	revs/sec/sec	Y	N	N	Y

Data Logging Parameters

Data Source and Trigger Source attributes:

Attribute ID	Attribute Name	Read/Write	Data Type	Units	Kinetix 5700 Kinetix 5500	K5700 DFE Power Supply	K5700 AFE Power Supply	K5300
458	Velocity Limit Source	Read	DINT	0 = Not Limited 1 = Positive Limit 2 = Negative Limit 3 = Bus Overvoltage Limit 4 = Max Extended Speed Limit	Y	N	N	Y
461	Velocity Loop Bandwidth	Write	REAL	radians/sec	Y	N	N	Y
457	Velocity Loop Output	Read	REAL	revs/sec/sec	Y	N	N	Y
469	Velocity Low Pass Filter Bandwidth	Write	REAL	radians/sec	Y	N	N	Y
453	Velocity Reference	Read	REAL	revs/sec	Y	N	N	Y
451	Velocity Trim	Write	REAL	revs/sec	Y	N	N	Y

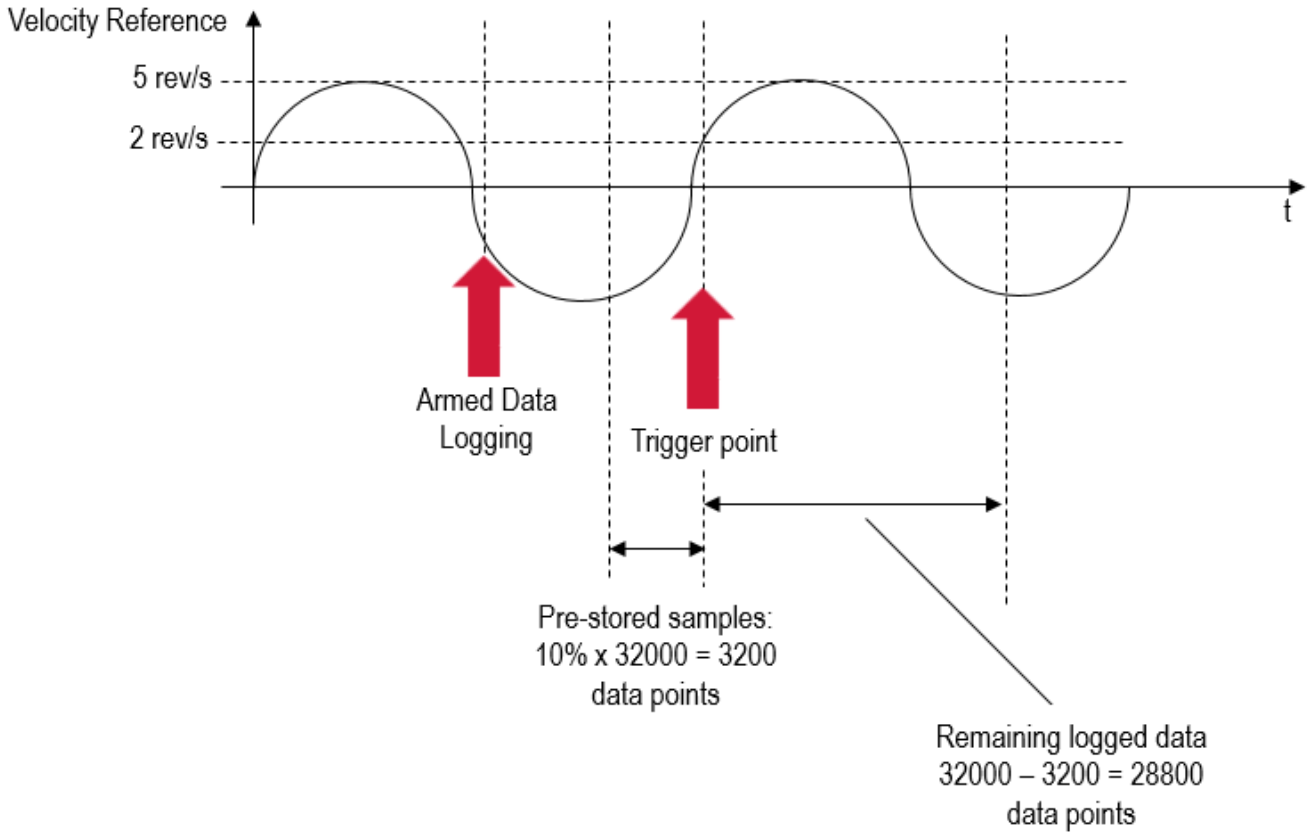
NOTES
- Units defined as “*pu*” means per unit.
- Units defined in “*counts*” refers to feedback counts.
- Units defined in “*revs*” refers to motor revolutions

Data Logging Parameters

The Data Logging parameter are as follows:

(An example is provided in the figure)

- Data source 1 = 453 (Velocity Reference)
- **Trigger Type = Signal**
- Trigger Source = 453 (Velocity Reference)
- Trigger Mode = 3 (>= Trigger Level)
- Trigger Level = 2 rev/s
- Sample period = 125µs
- Capture size = 32000
- Pre-store samples = 10%



0: Signal
1: Boolean

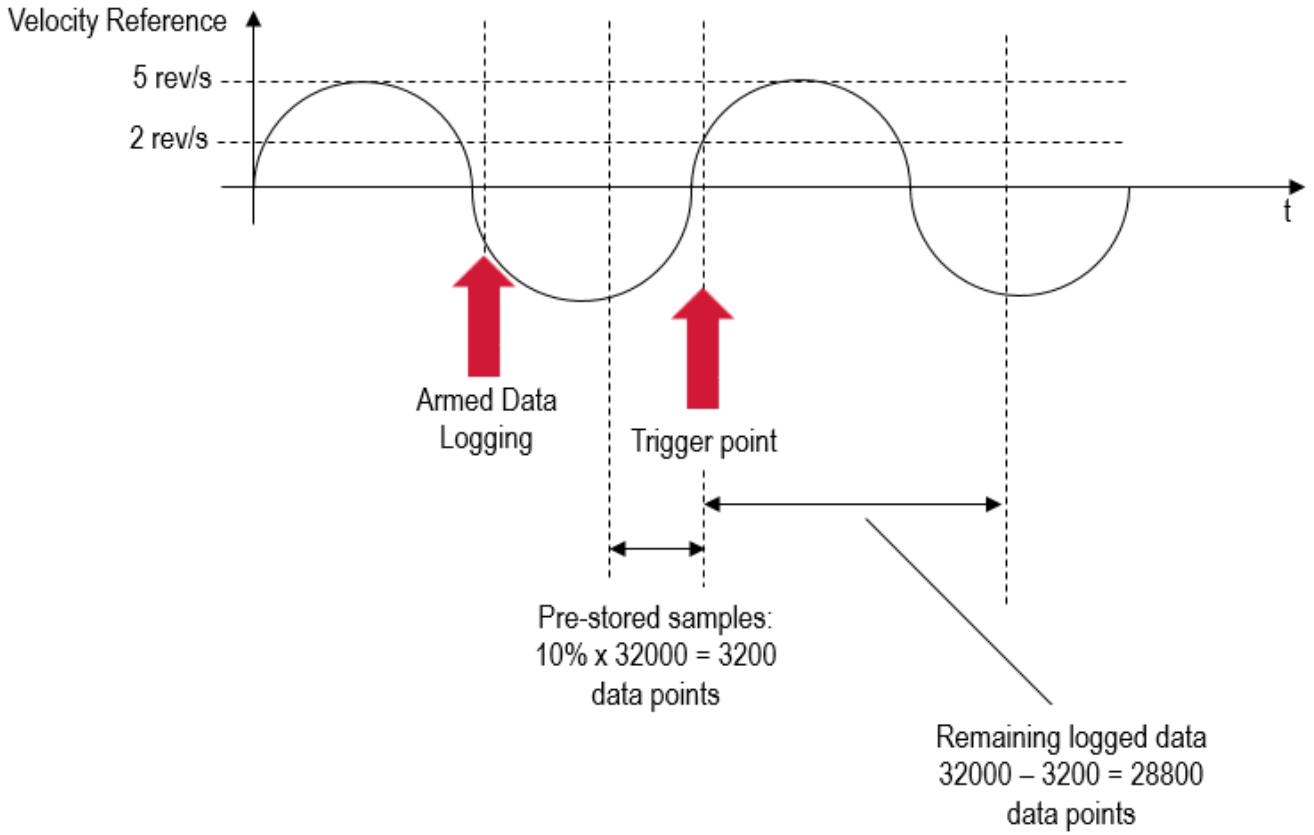
NOTE: Kinetix K5300, 5500 and Kinetix 5700 do not support Boolean type.

Data Logging Parameters

The Data Logging parameter are as follows:

(An example is provided in the figure)

- Data source 1 = 453 (Velocity Reference)
- Trigger Type = Signal
- Trigger Source = 453 (Velocity Reference)
- Trigger Mode = 3 (>= Trigger Level)
- Trigger Level = 2 rev/s
- Sample period = 125µs
- Capture size = 32000
- Pre-store samples = 10%



Set the number of the attribute that will be used as a trigger to start the data logging in all active channels (0, 1, 2 and 3).

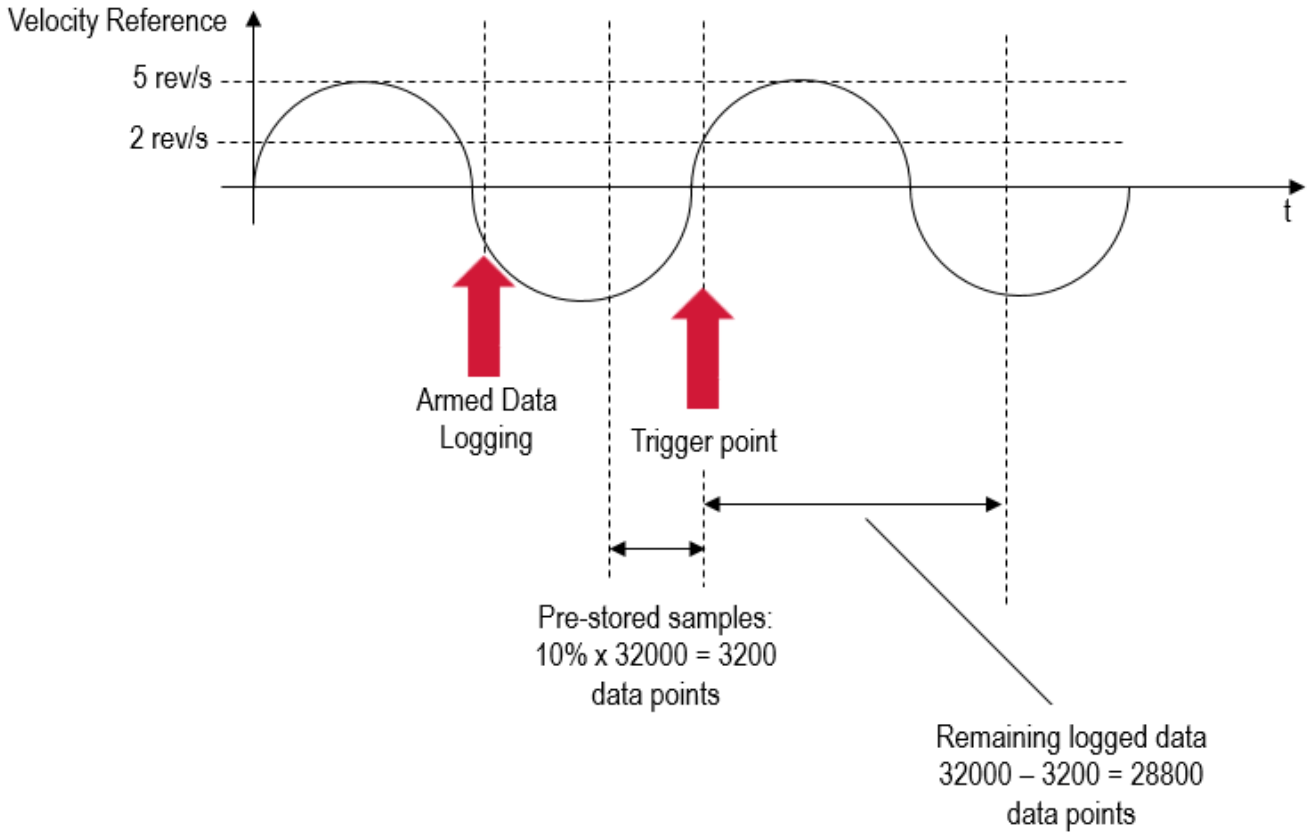
Trigger Source can be set to any of the parameters that can be used as Data Source.

Data Logging Parameters

The Data Logging parameter are as follows:

(An example is provided in the figure)

- Data source 1 = 453 (Velocity Reference)
- Trigger Type = Signal
- Trigger Source = 453 (Velocity Reference)
- **Trigger Mode = 3 (>= Trigger Level)**
- Trigger Level = 2 rev/s
- Sample period = 125µs
- Capture size = 32000
- Pre-store samples = 10%



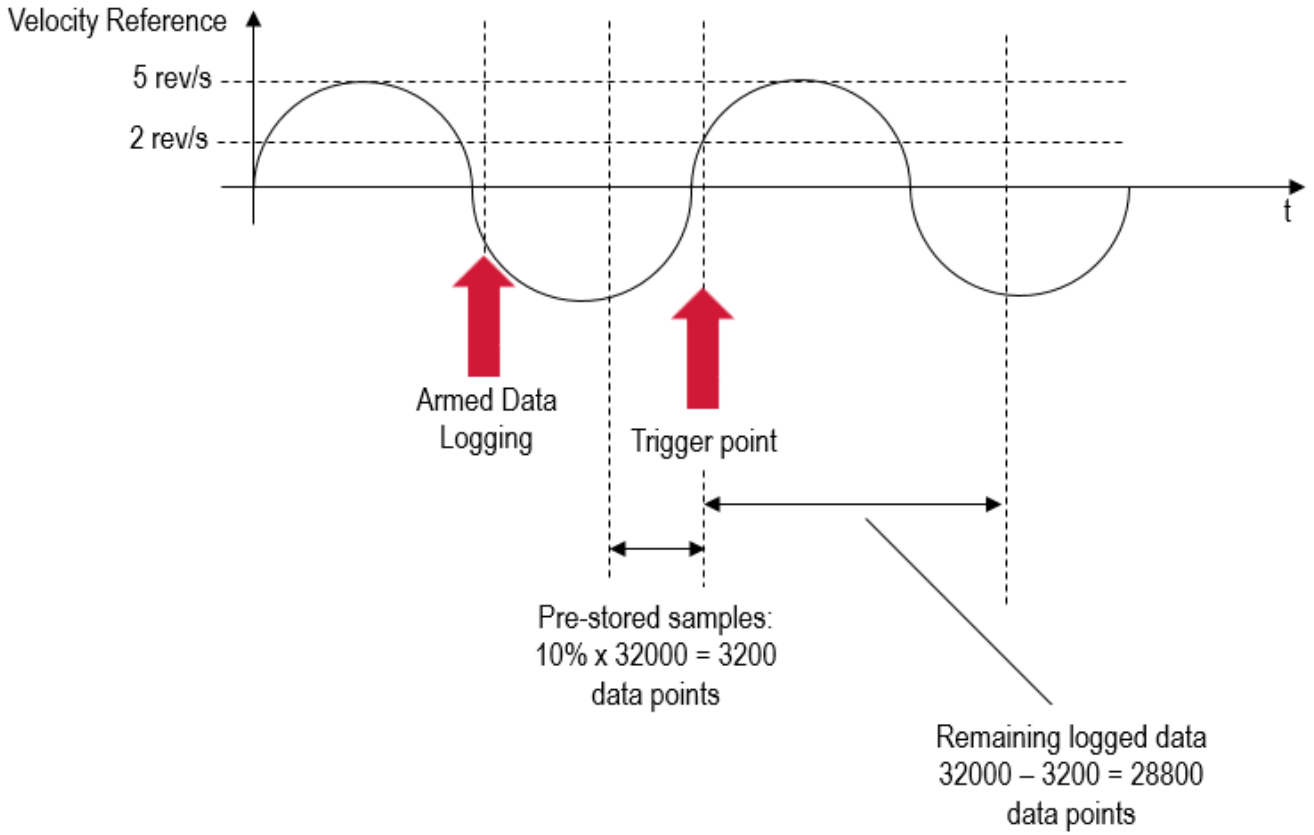
0: Immediate
1: Positive Edge Trigger
2: Negative Edge Trigger
3: Greater or equal to the Trigger Level
4: Lesser or equal to the Trigger Level

Data Logging Parameters

The Data Logging parameter are as follows:

(An example is provided in the figure)

- Data source 1 = 453 (Velocity Reference)
- Trigger Type = Signal
- Trigger Source = 453 (Velocity Reference)
- Trigger Mode = 3 (>= Trigger Level)
- **Trigger Level = 2 rev/s**
- Sample period = 125µs
- Capture size = 32000
- Pre-store samples = 10%



This is the value of the attribute in Trigger Source that causes a trigger event.

The units of the Trigger Level are defined either in the Axis Properties or in Publication MOTION-RM003D.

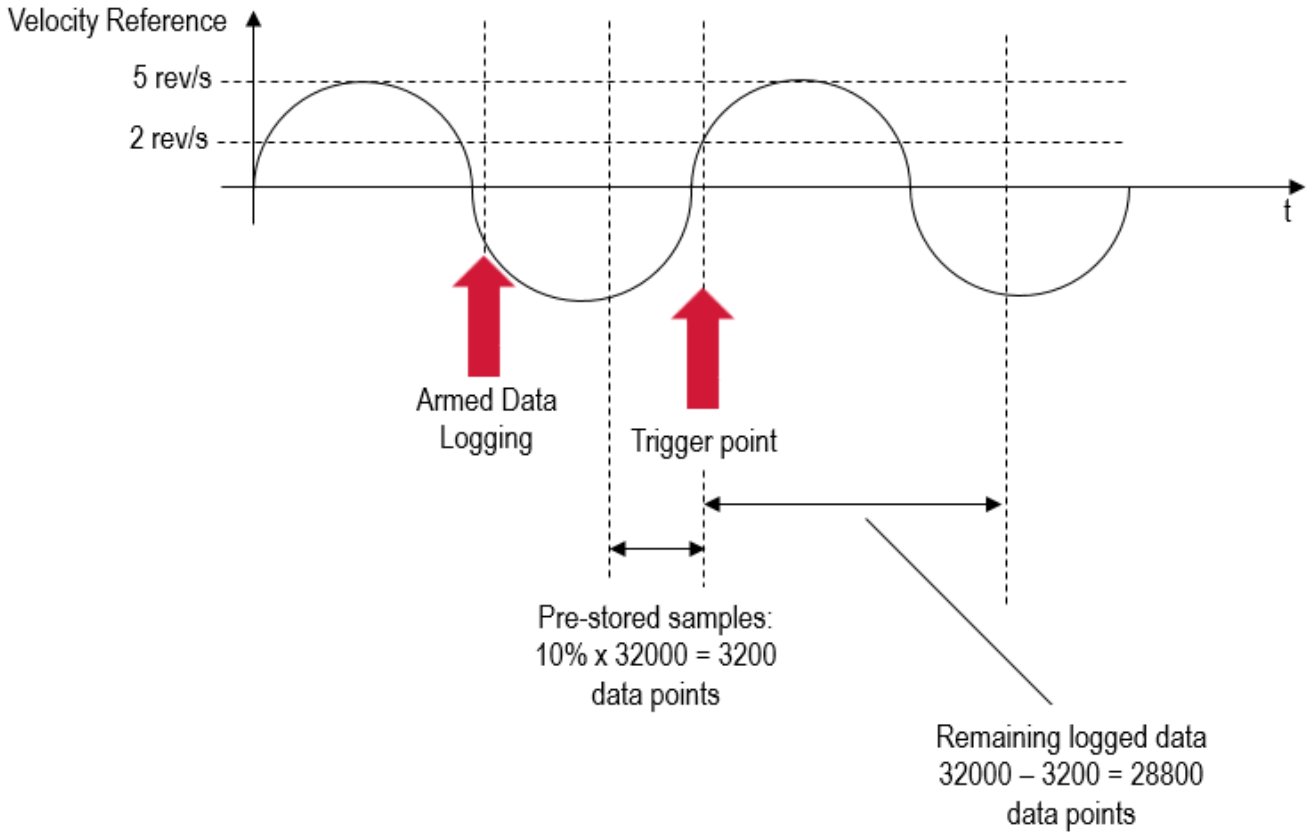
Example: In the case shown in this slide, when the actual value of Velocity Feedback (Par 453) is greater or equal to 2 rev/sec, a trigger event occurs.

Data Logging Parameters

The Data Logging parameter are as follows:

(An example is provided in the figure)

- Data source 1 = 453 (Velocity Reference)
- Trigger Type = Signal
- Trigger Source = 453 (Velocity Reference)
- Trigger Mode = 3 (>= Trigger Level)
- Trigger Level = 2 rev/s
- **Sample period = 125µs**
- Capture size = 32000
- Pre-store samples = 10%



This is the period of time between real-time data points logged in the data buffer.

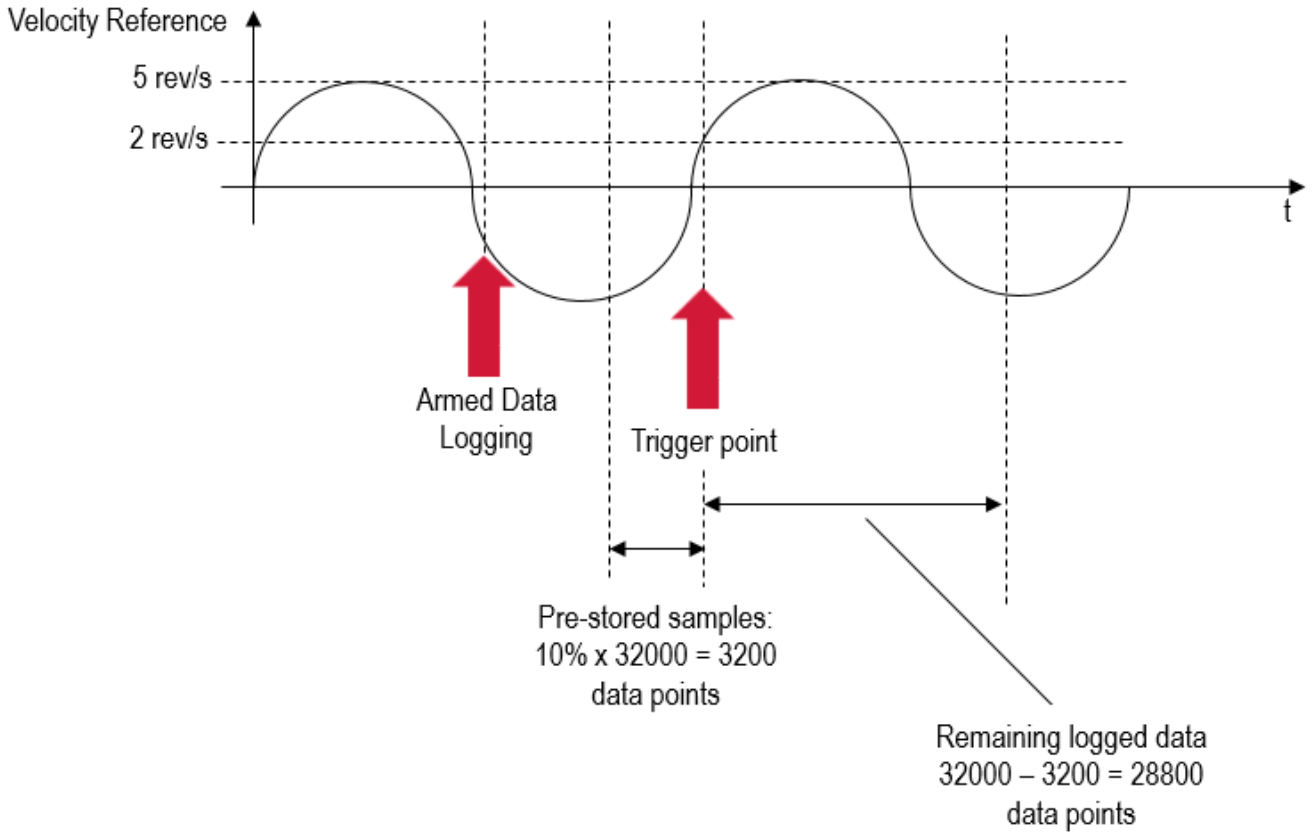
This Sample Period must be a multiple of the loop update time of the drive. If the loop update time is 125µs, the Sample Period can be 125µs, 250µs, 375 µs , etc.

Data Logging Parameters

The Data Logging parameter are as follows:

(An example is provided in the figure)

- Data source 1 = 453 (Velocity Reference)
- Trigger Type = Signal
- Trigger Source = 453 (Velocity Reference)
- Trigger Mode = 3 (>= Trigger Level)
- Trigger Level = 2 rev/s
- Sample period = 125µs
- **Capture size = 32000**
- Pre-store samples = 10%



This is the number of samples of real-time data to be logged per channel (0 to 3).

The maximum number of data points per channel is 40,000.

Total time of the logged data:
Sample Period x Capture Size

Example:
Total time = 125µs x 32000 = 4.0 sec

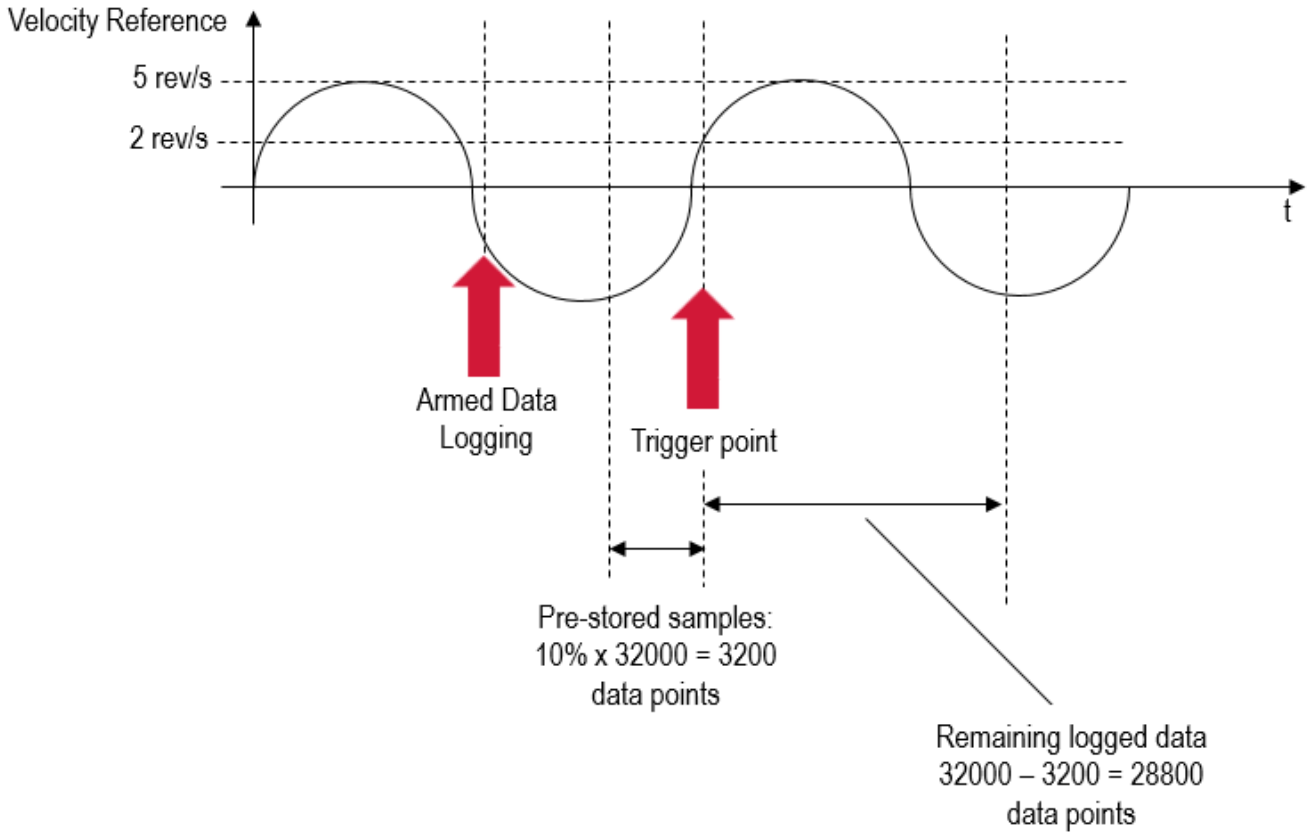
Rockwell Automation

Data Logging Parameters

The Data Logging parameter are as follows:

(An example is provided in the figure)

- Data source 1 = 453 (Velocity Reference)
- Trigger Type = Signal
- Trigger Source = 453 (Velocity Reference)
- Trigger Mode = 3 (>= Trigger Level)
- Trigger Level = 2 rev/s
- Sample period = 125µs
- Capture size = 32000
- **Pre-store samples = 10%**



This is the percentage of the total logged data that will be stored before the trigger event.

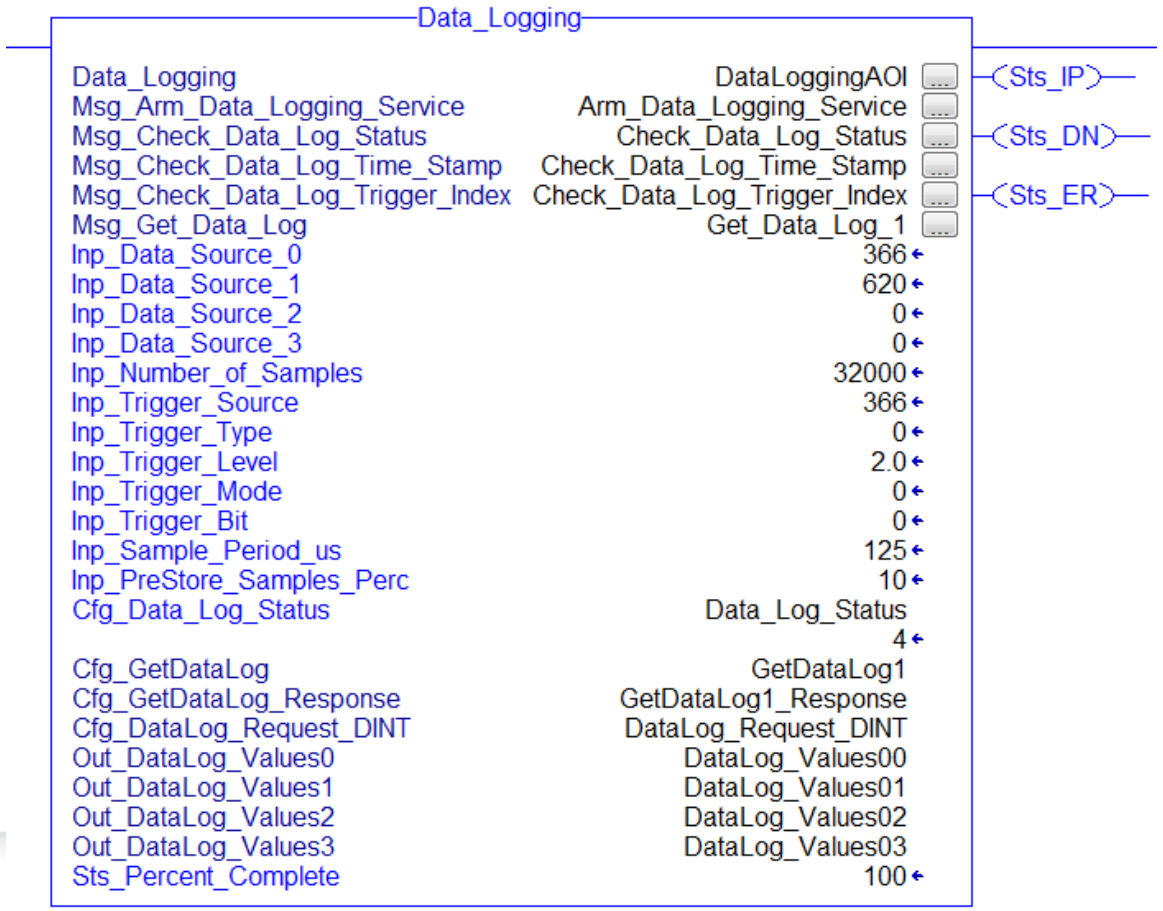
Example: If
- Pre-store samples = 10%, and
- Captured size = 32000

Then:
- There will be 3200 samples logged before the trigger event and 28800 samples stored after the trigger event.

Data Logging AOI

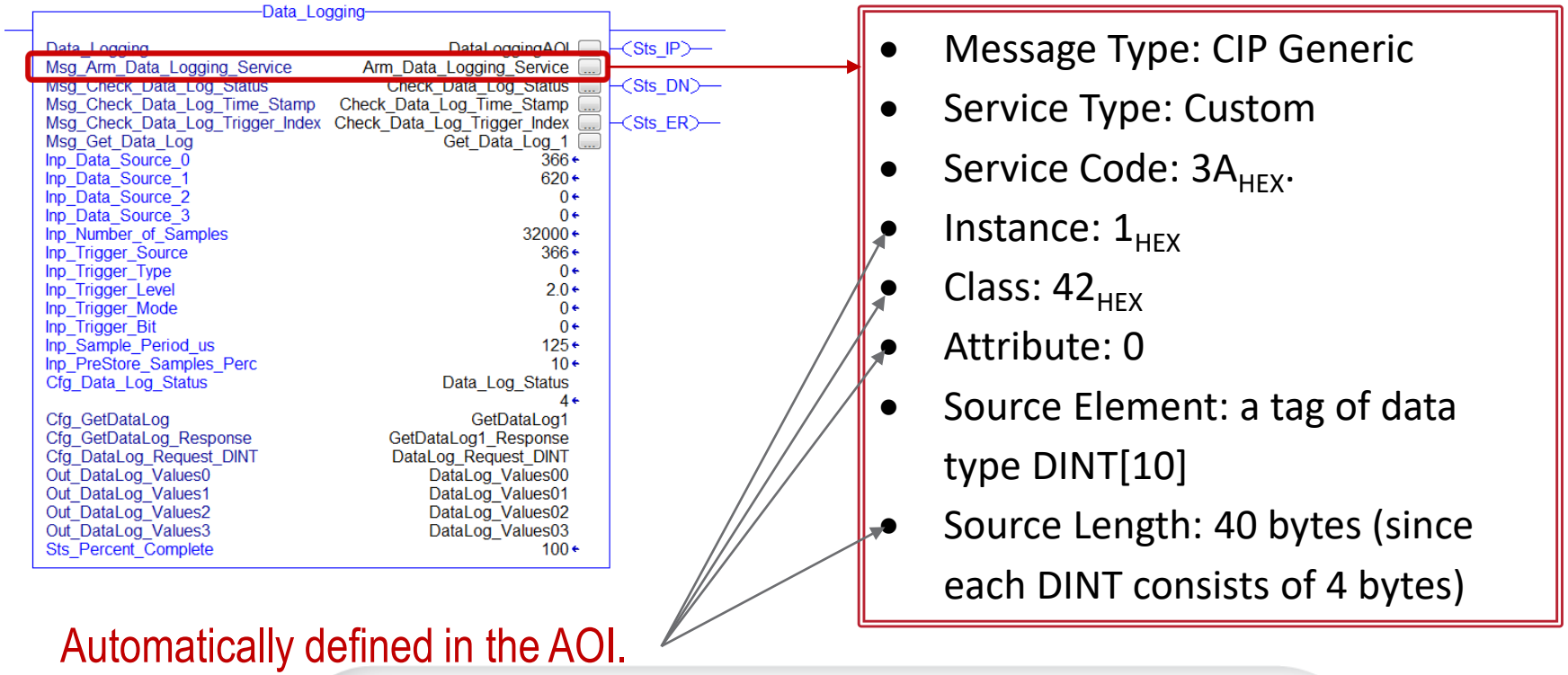
Data Logging AOI

This AOI can be used to configure the Data Logging feature in the drive and to copy the real-time logged data from all channels from the drive to the controller.



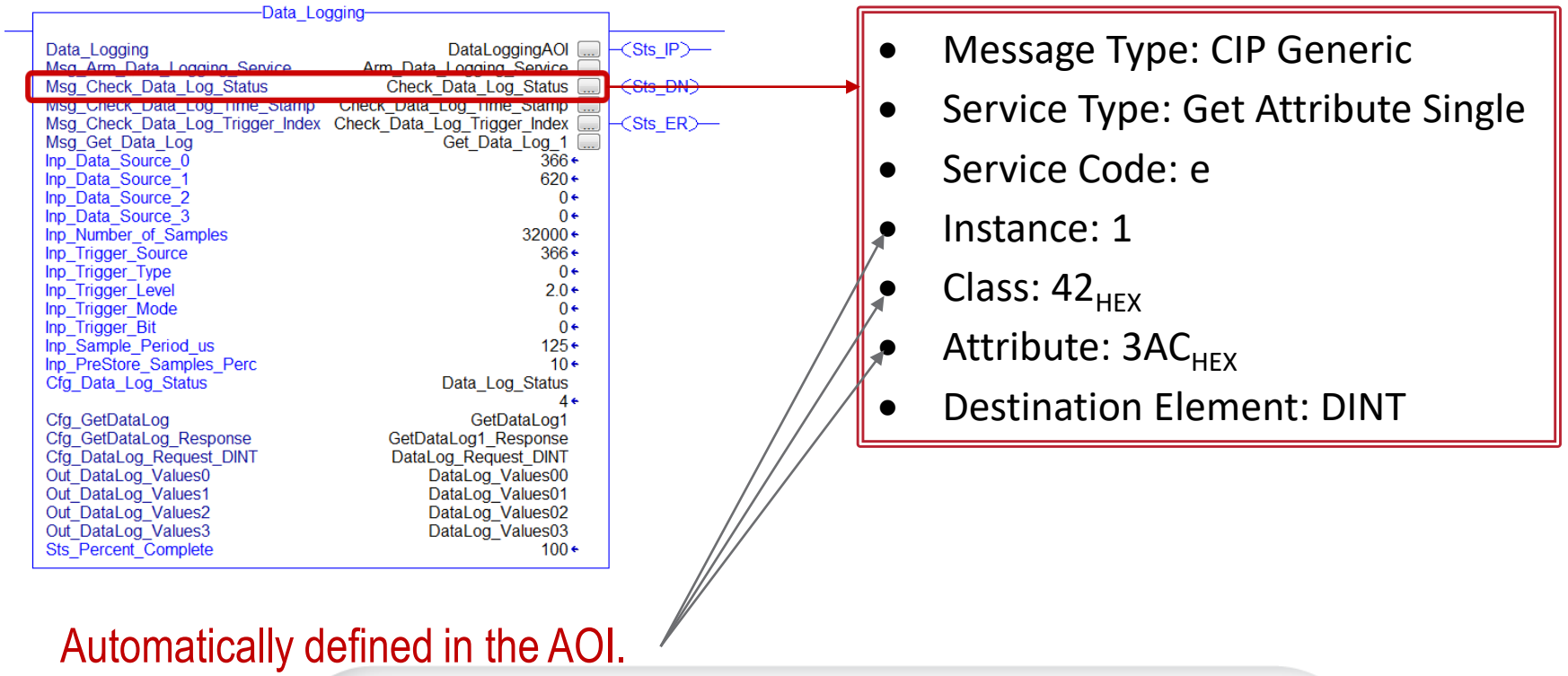
Data Logging AOI - Configuration

The **Msg_Arm_Data_Logging_Service** configures and arms the Data Logging feature in the drive. The data source, number of samples, trigger source, trigger type, trigger level, trigger mode, trigger bit, sample period, and pre-stored samples are sent to the drive with this message instruction.



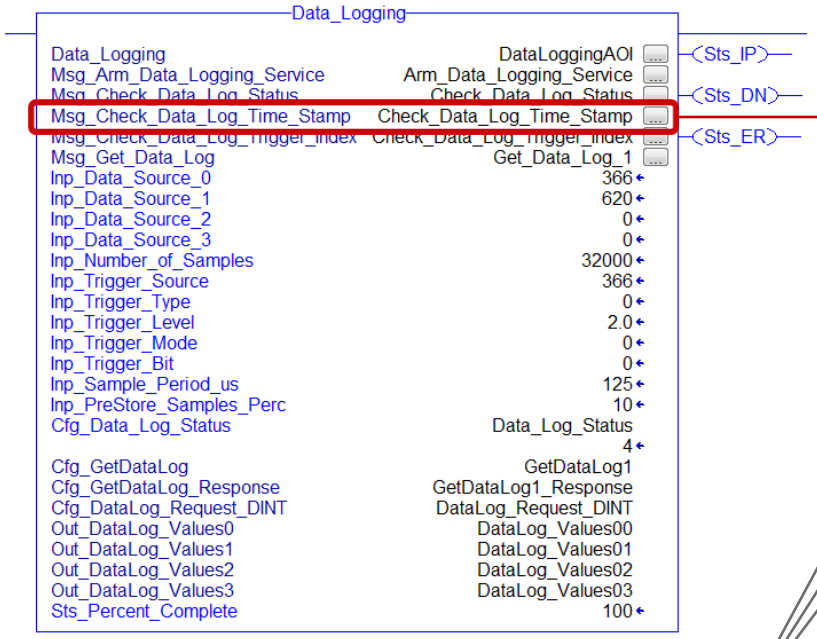
Data Logging AOI - Configuration

The **Msg_Check_Data_Log_Status** reads the status of the data collection process which can be: 0 = Inactive; 1 = Buffering; 2 = Buffered and Armed; 3 = Triggered and Collecting; and 4 = Collected.



Data Logging AOI - Configuration

The **Msg_Check_Data_Log_Time_Stamp** reads the time stamp associated with the data logging trigger event. This time stamp is given in nanoseconds.

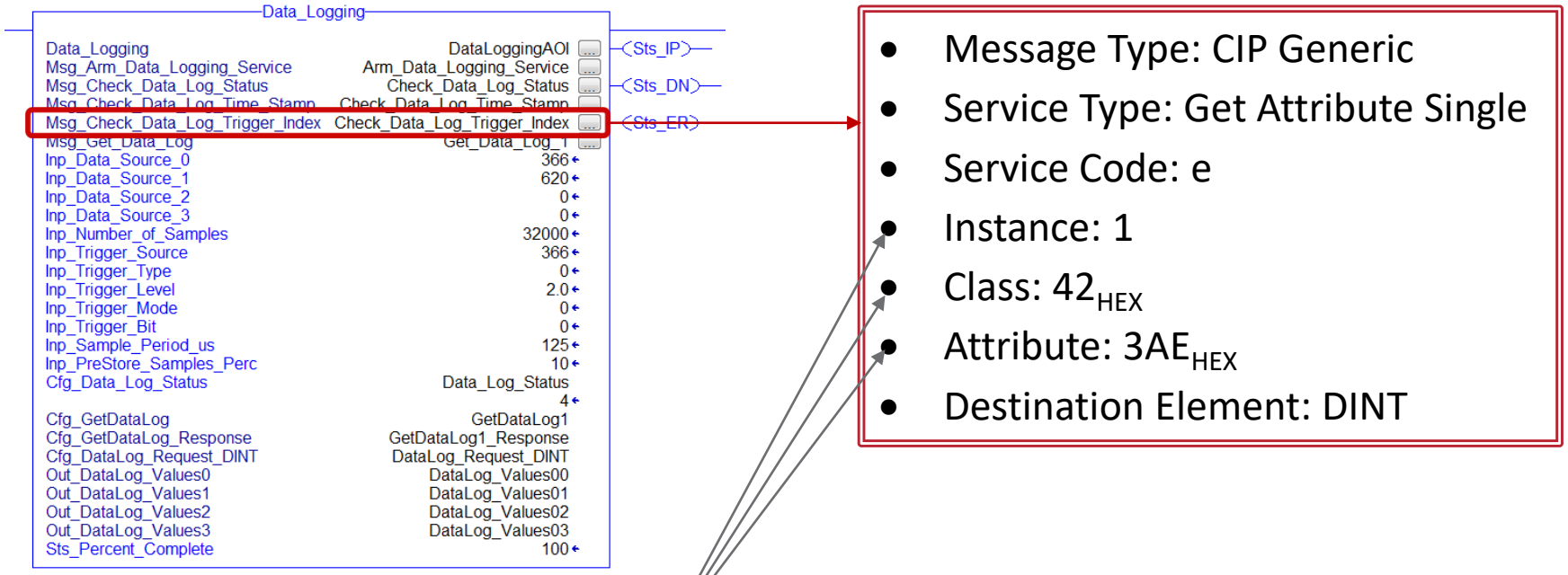


- Message Type: CIP Generic
- Service Type: Get Attribute Single
- Service Code: e
- Instance: 1
- Class: 42_{HEX}
- Attribute: $3AD_{HEX}$
- Destination Element: LINT

Automatically defined in the AOI.

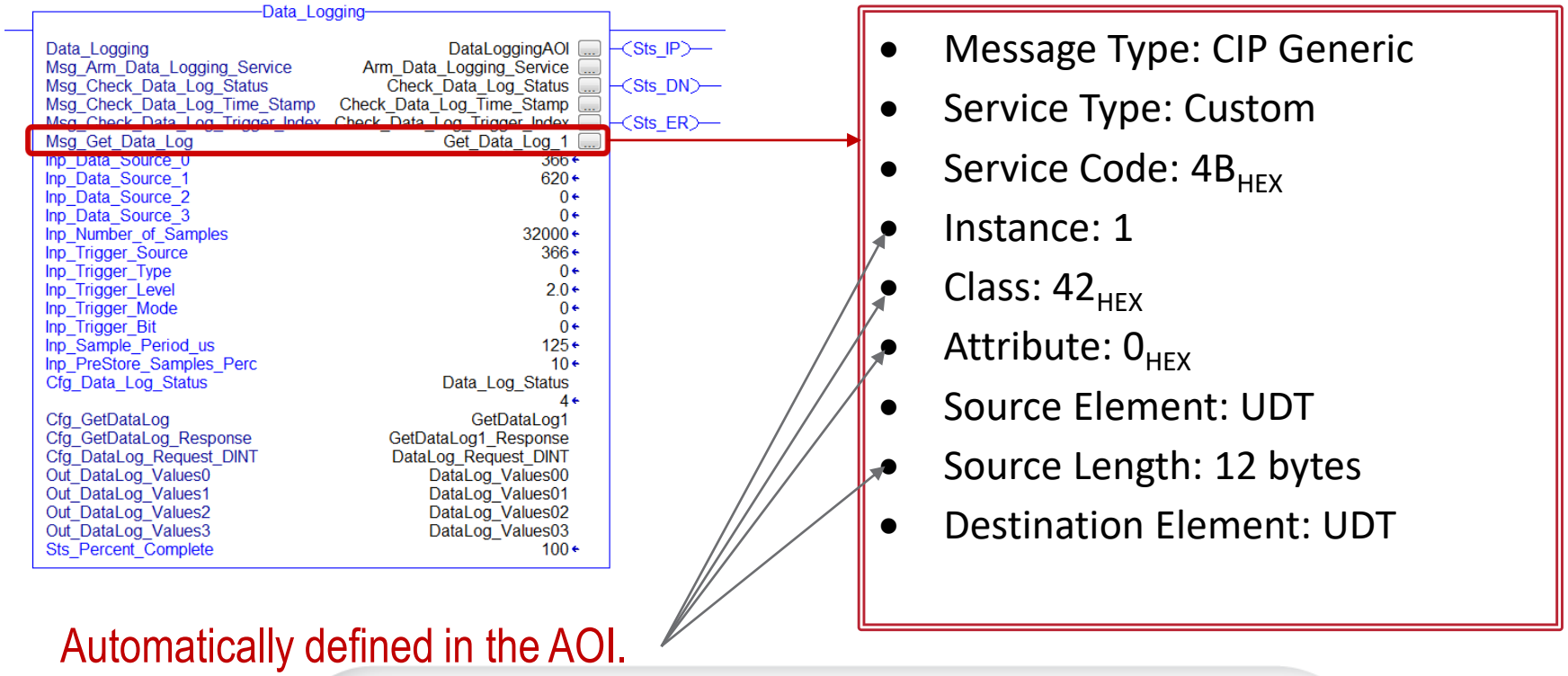
Data Logging AOI - Configuration

The **Msg_Check_Data_Log_Trigger_Index** reads the index of the data point associated with the data logging trigger event. The trigger index is from 0 to 39999. For example, if the Pre-store Sample is 10% and Capture Size of 32000, the Trigger Index would be 3199.



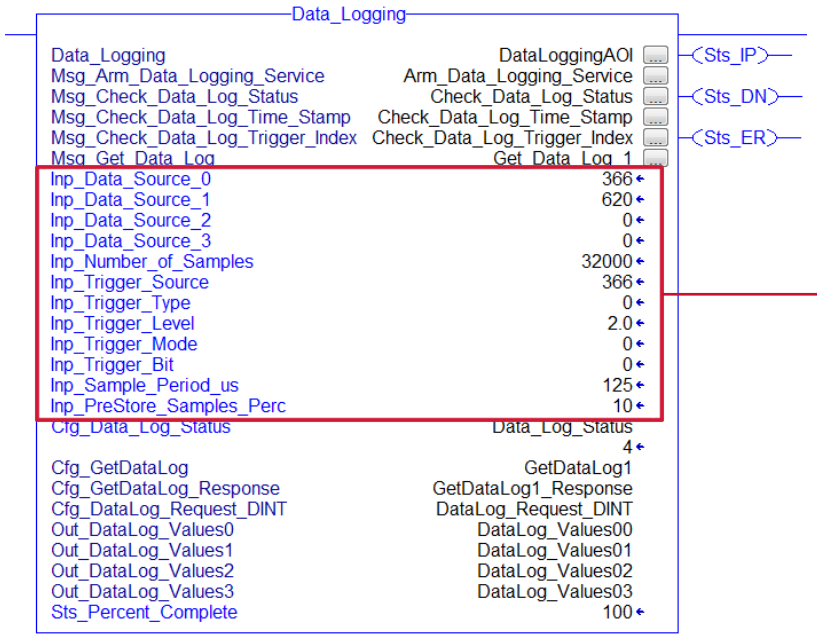
Data Logging AOI - Configuration

The **Msg_Get_Data_Log** reads the data that was logged in the drive and copy into the controller. The same message instruction is used to read each channel of data log. The AOI automatically reconfigures this message instruction to copy data from each channel to the controller.



Data Logging AOI - Configuration

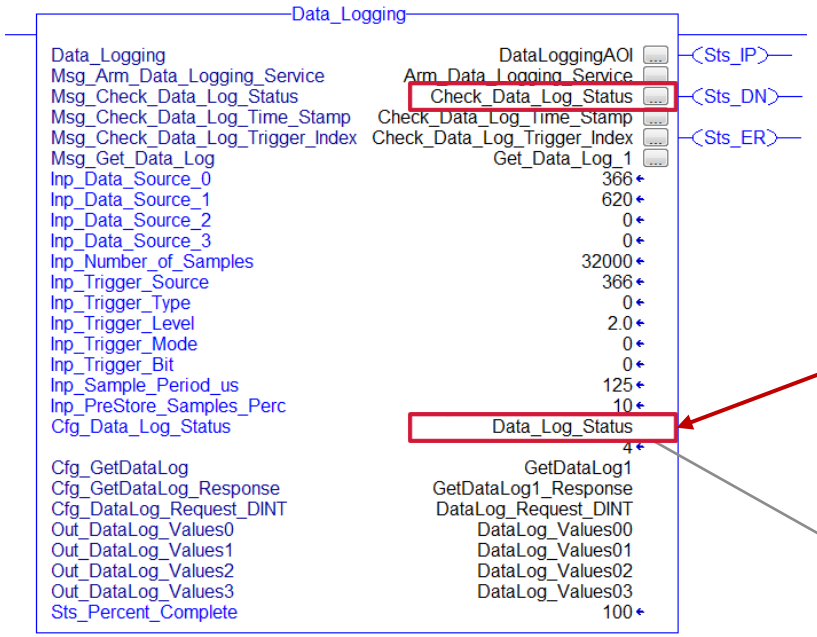
Data logging configuration parameters: Data Source, Capture Size, Trigger Source, Trigger Type, Trigger Level, Trigger Mode, Trigger Bit

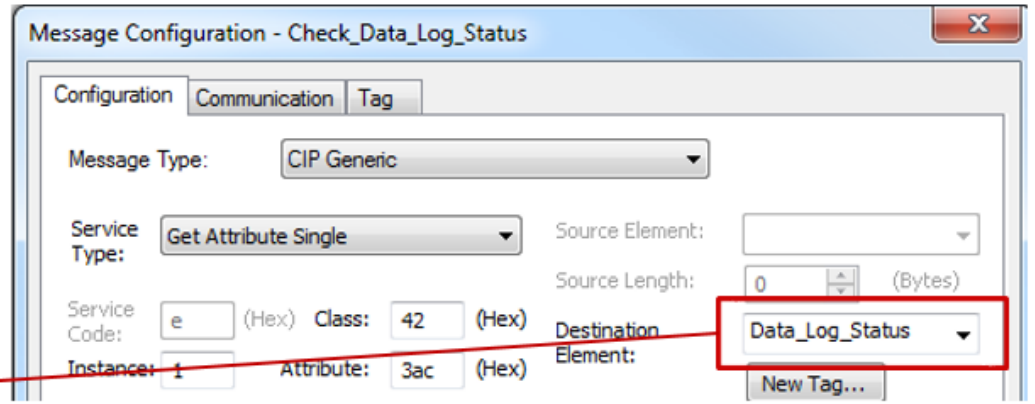


- Data Source (0…3): enter the attribute ID
- Number of Samples: 1… 40,000
- Trigger Source: enter the attribute ID
- Trigger Type: 0 (only option supported in K5500)
- Trigger Level: units defined in Logix
- Trigger Mode: 0: Immediate, 3: >= Trigger Level, 4: <= Trigger Level
- Trigger Bit: not supported for K5500
- Sample Period: multiples of the loop update in µs
- Pre-Store Samples: 0…100 with units in %

Data Logging AOI - Configuration

Cfg_Data_Log_Status is a DINT used internally by the AOI and it is configured as follows:



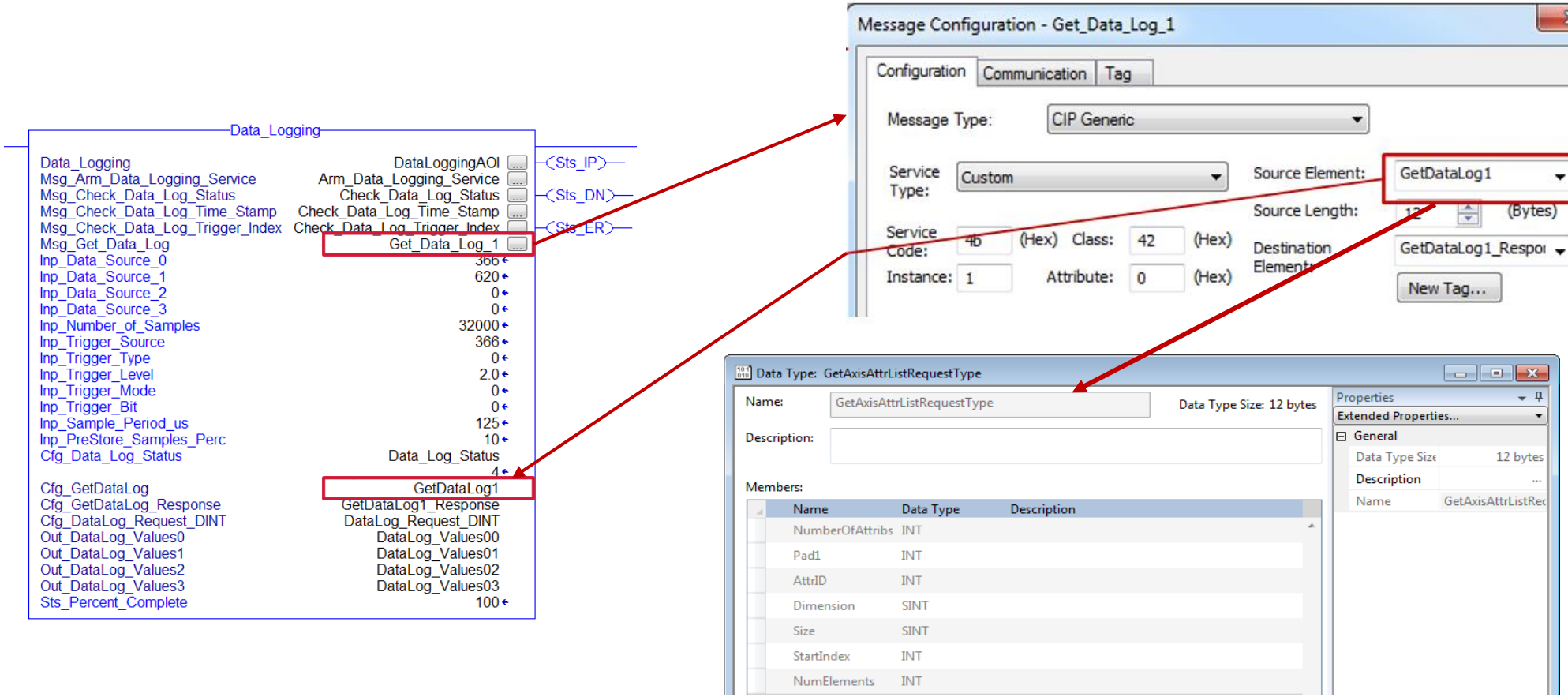


Possible states:

- 0: Inactive
- 1: Buffering
- 2: Buffered and Armed
- 3: Triggered and Collecting
- 4: Collected

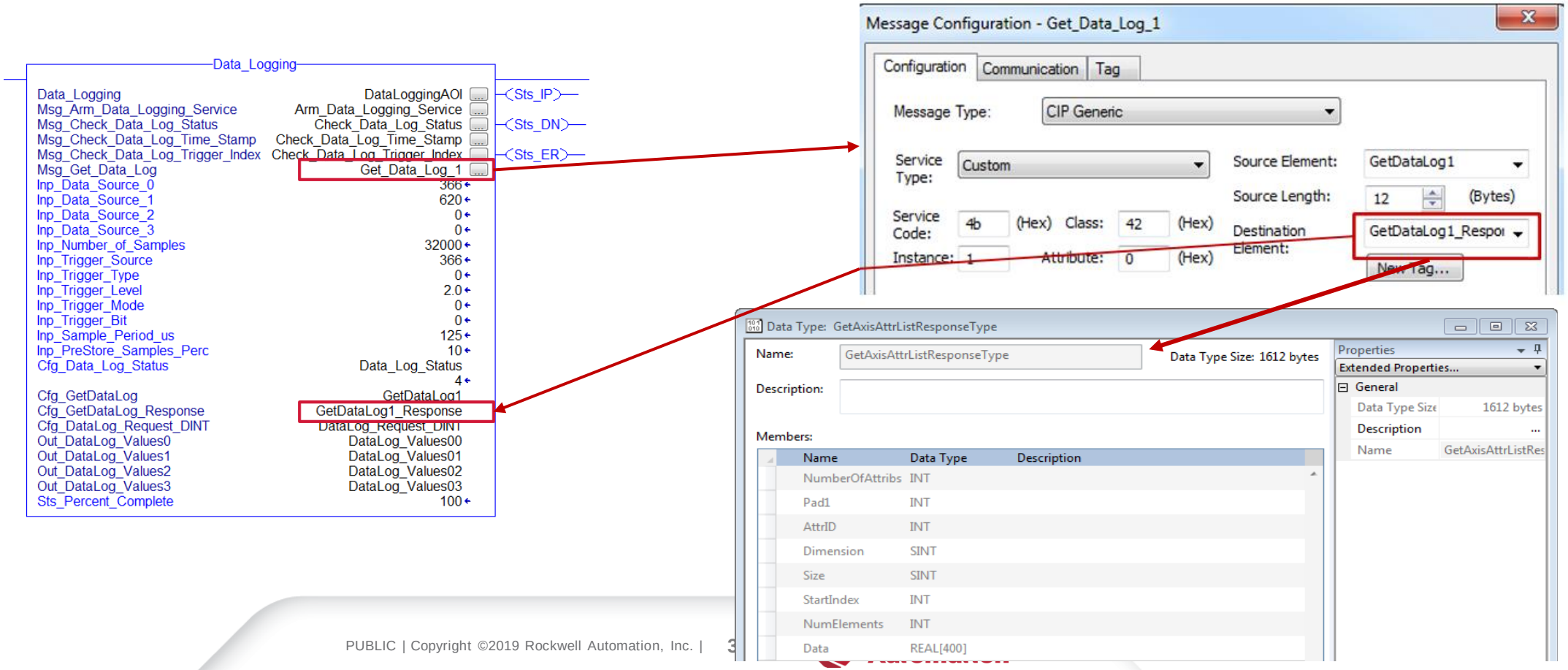
Data Logging AOI - Configuration

Cfg_GetDataLog is an UDT used internally by the AOI and it is configured as follows:



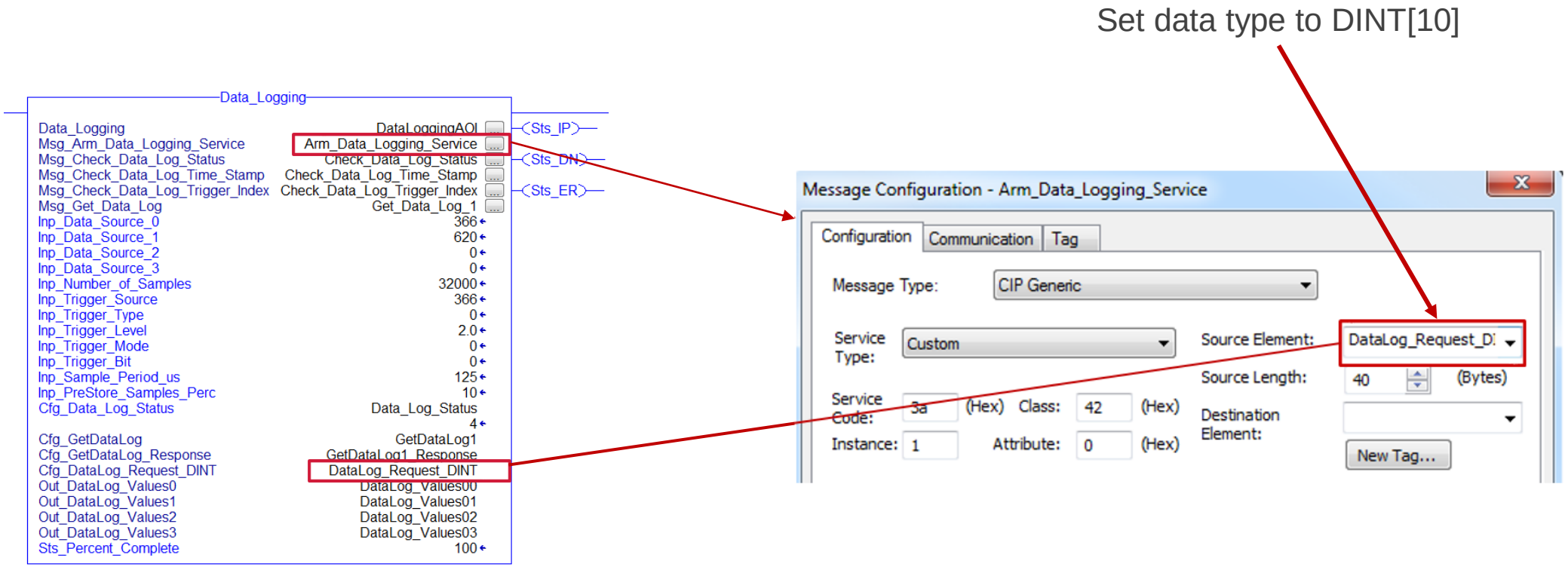
Data Logging AOI - Configuration

Cfg_GetDataLog_Response is an UDT used internally by the AOI and it is configured as follows:



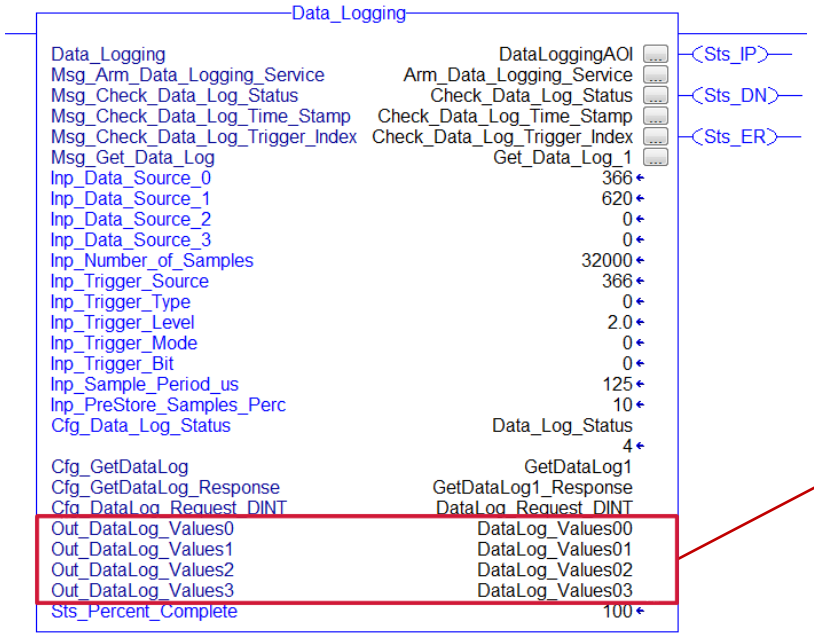
Data Logging AOI - Configuration

Cfg_DataLog_Request_DINT is a DINT[10] array used internally by the AOI and it is configured as follows:



Data Logging AOI - Configuration

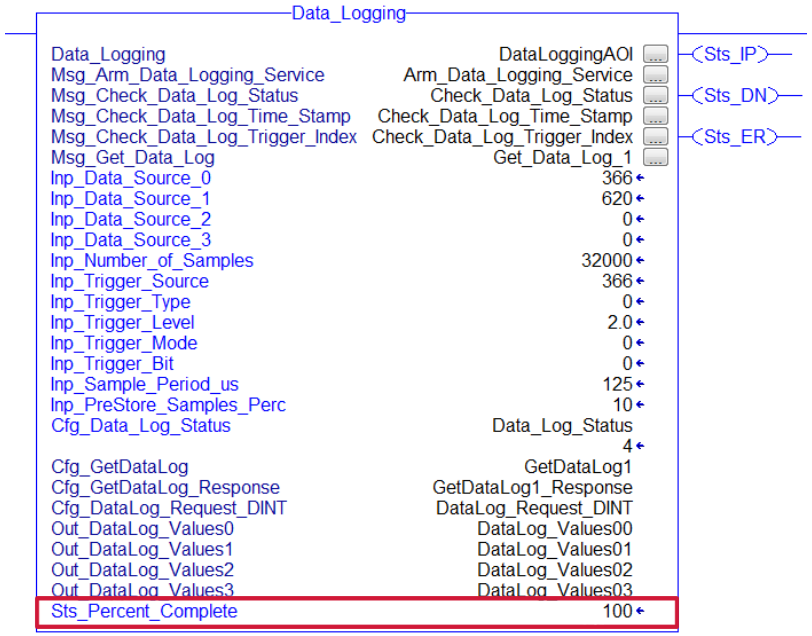
The **Out_DataLog_ValuesX** are arrays of 40,000 REAL tags where the real-time data logged in the drive will be copied into the controller. For the channels that are not in use, the data in these arrays will be cleared when the AOI is enabled.



- Out_DataLog_Value0 is a REAL[40000]
- Out_DataLog_Value1 is a REAL[40000]
- Out_DataLog_Value2 is a REAL[40000]
- Out_DataLog_Value3 is a REAL[40000]

Data Logging AOI - Configuration

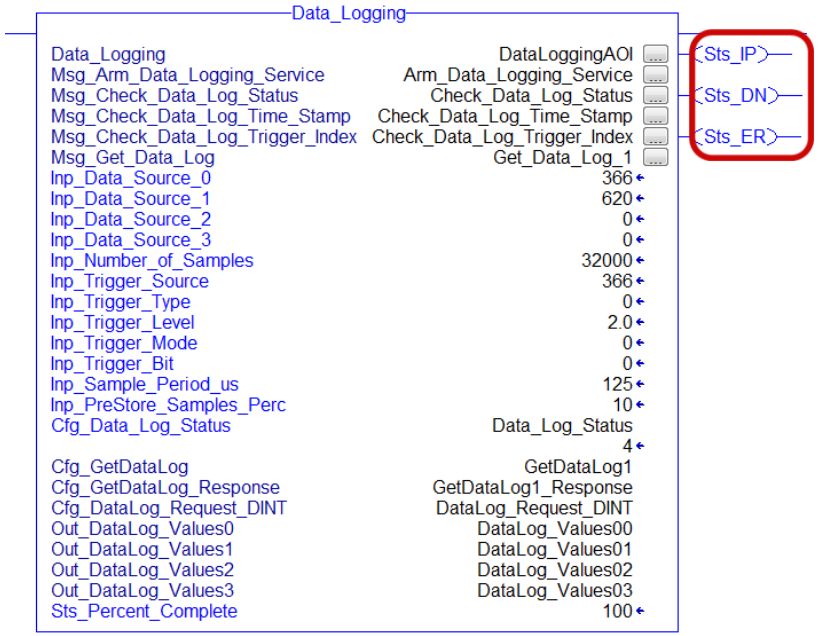
The **Sts_Percent_Complete** indicates the progress of the data logging process per channel. For example, if channel 1 and 3 are being used to log data, the Sts_Percent_Complete will vary from 0 to 100% for channel 1, and then from 0 to 100% again for channel 2 as the AOI transfers data from the drive to the controller.



Data Logging AOI - Configuration

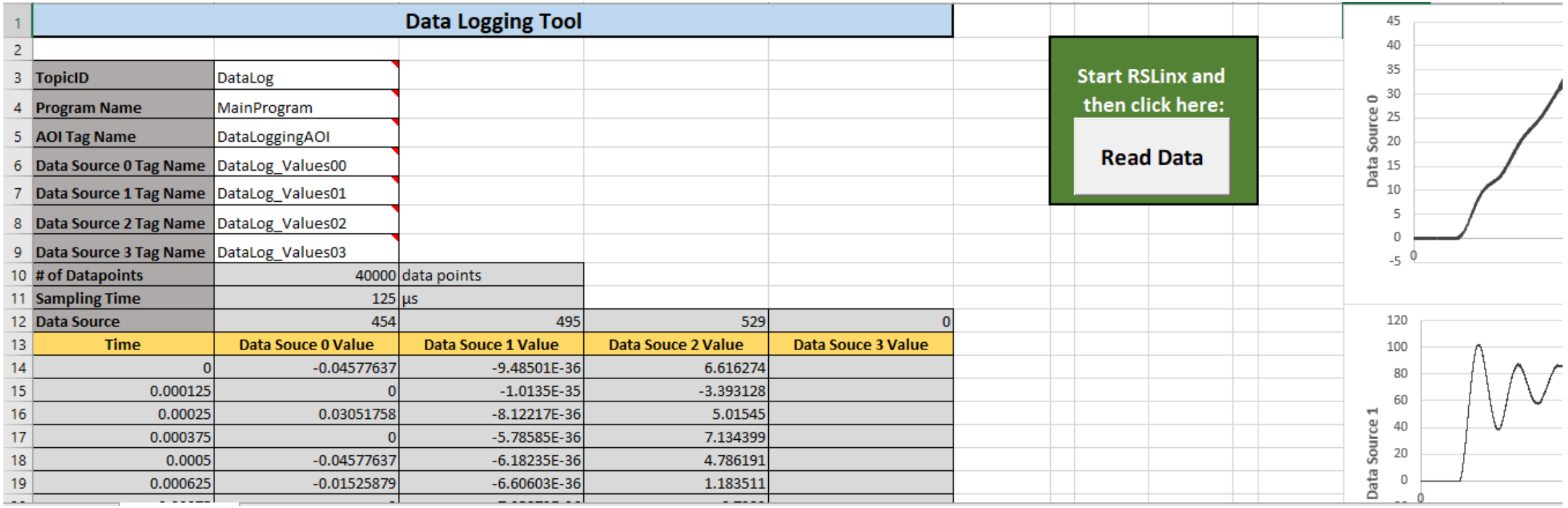
This AOI has three status bits:

- **Sts_IP**: This status bit will be set while the AOI is waiting for a trigger event, buffering data and storing data in the controller.
- **Sts_DN**: This bit will be set when the last real-time data point been stored in the controller and while the AOI is enabled.
- **Sts_ER**: If any of the message instructions fault, this status error bit will be set. It is reset when the AOI is re-enabled.



Data Logging Tool

The **Data Logging Tool** is a VBA application in Excel that allows to read and display the logged data.



1	Data Logging Tool				
2					
3	TopicID	DataLog			
4	Program Name	MainProgram			
5	AOI Tag Name	DataLoggingAOI			
6	Data Source 0 Tag Name	DataLog_Values00			
7	Data Source 1 Tag Name	DataLog_Values01			
8	Data Source 2 Tag Name	DataLog_Values02			
9	Data Source 3 Tag Name	DataLog_Values03			
10	# of Datapoints	40000	data points		
11	Sampling Time	125	µs		
12	Data Source	454	495	529	0
13	Time	Data Souce 0 Value	Data Souce 1 Value	Data Souce 2 Value	Data Souce 3 Value
14	0	-0.04577637	-9.48501E-36	6.616274	
15	0.000125	0	-1.0135E-35	-3.393128	
16	0.00025	0.03051758	-8.12217E-36	5.01545	
17	0.000375	0	-5.78585E-36	7.134399	
18	0.0005	-0.04577637	-6.18235E-36	4.786191	
19	0.000625	-0.01525879	-6.60603E-36	1.183511	

Start RSLinx and then click here:

Read Data

Rockwell Automation

Data Logging Tool

Steps to use this tool:

1. **Topic ID**: Create a Topic in RSLinx that points to the controller connected to the drive with this Data Logging AOI. To create a topic in RSLinx follow these steps:
   a) Open RSLinx, and select “DDE/OPC” on the menu
   b) Select “Topic Configuration” option, click “New”, and type a name to this Topic,
   c) Select the controller that contains this AOI, and hit “Apply”.

   Type the name of this Topic in the Data Logging Tool in the field called “TopicID”,

1. **Program Name:** If the AOI and Data Source tags are program scoped, enter the program name here. Leave blank if the tags are controller scoped.
2. **AOI Tag Name:** the name of the tag that defines the AOI.
3. **Data Source 0 Tag Name**: Name of the tag used in the AOI for Out_DataLog_Value0.
4. **Data Source 1 Tag Name**: Name of the tag used in the AOI for Out_DataLog_Value1.
5. **Data Source 2 Tag Name**: Name of the tag used in the AOI for Out_DataLog_Value2.
6. **Data Source 3 Tag Name**: Name of the tag used in the AOI for Out_DataLog_Value3.

   NOTE: The *AOI Tag Name*, *Data Source 0 Tag Name*, *Data Source 1 Tag Name*, *Data Source 2 Tag Name*, and *Data Source 3 Tag Name* must have the same scope (controller or program) for this tool to function properly.

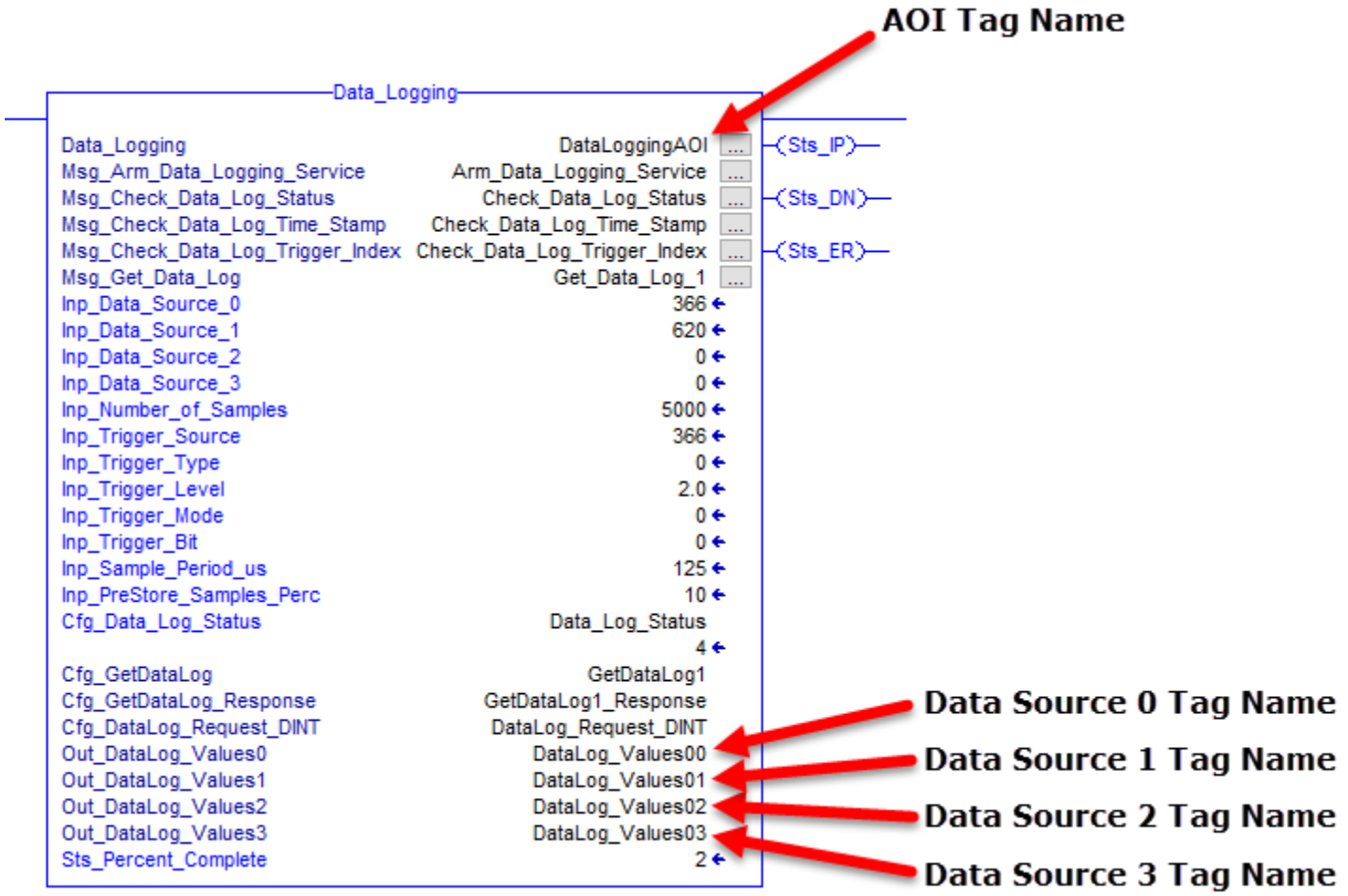
7. Hit **Read Data** after the AOI finished logging data and the logged data is automatically plotted.

Data Logging Tool

The values for:

- *AOI Tag Name*
- *Data Source 0 Tag Name*
- *Data Source 1 Tag Name*
- *Data Source 2 Tag Name*, and
- *Data Source 3 Tag Name*

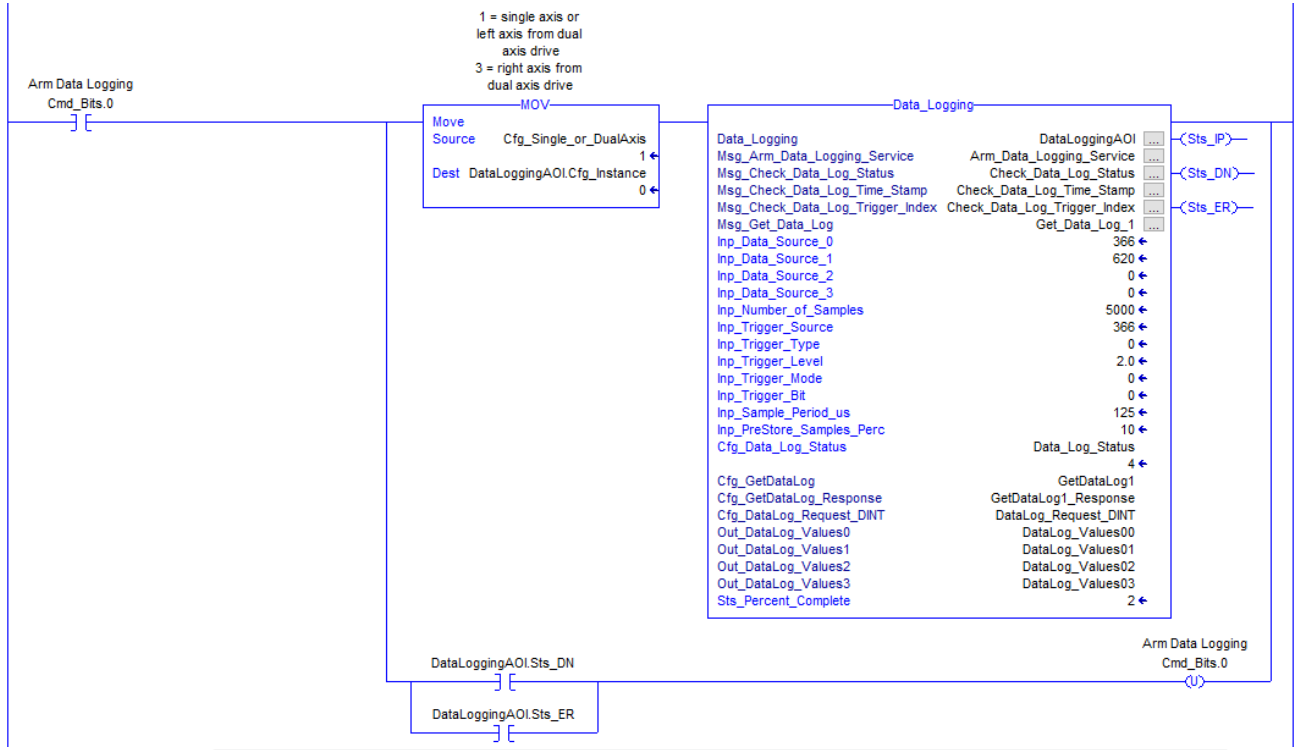
are illustrated in this figure.



Data Logging Application Program

Application Sample Program

This application code demonstrates how to enable the Data Logging AOI in order to arm the Data Logging feature and then copy the real-time logged data into the controller. This AOI needs to stay active while the data logging process is in progress. As shown in this application code, the AOI is automatically disabled after the data logging process is completed or in the occurrence of a fault.



Data Logging Transfer Time

Data Logging Transfer Time

- There are three main steps in the data logging process in which time needs to be taken into account:
  - time to log data into the drive
  - time to transfer data from the drive → controller
  - time to transfer data from the controller → PC (this is an optional step)
- The table shown below provides some measurements of the time involved in these three steps. In this test, the Sample Period was set to 125µs, Trigger Mode to Immediately, and Pre-Store Samples to 10%.

Test Conditions		Time to Log Data in the drive	Time to transfer data from the drive to the controller	Time to transfer data from the controller to PC
Number of Data Sources	Number of Samples			
1	1000	0.125 sec	2.1 sec	4.0 sec
	5000	0.625 sec	8.7 sec	5.0 sec
	20000	2.500 sec	33.6 sec	8.5 sec
	40000	5.000 sec	72.0 sec	16.8 sec
2	1000	0.125 sec	3.8 sec	4.9 sec
	5000	0.625 sec	17.2 sec	6.6 sec
	20000	2.500 sec	69.7 sec	17.3 sec
	40000	5.000 sec	138.9 sec	26.6 sec

The transfer rate was between 1.74ms and 2.1ms per data point

Thank you

www.rockwellautomation.com

Rockwell Automation