ENHANCED INSTRUCTIONS

Bit Field Distribute: BTD

File Arithmetic and Logic: FAL

Copy File **(COP)** Synchonous And Copy File **(CPS)**

Digital Alarm Instruction:ALMD

Analog Alarm Instruction: ALMA

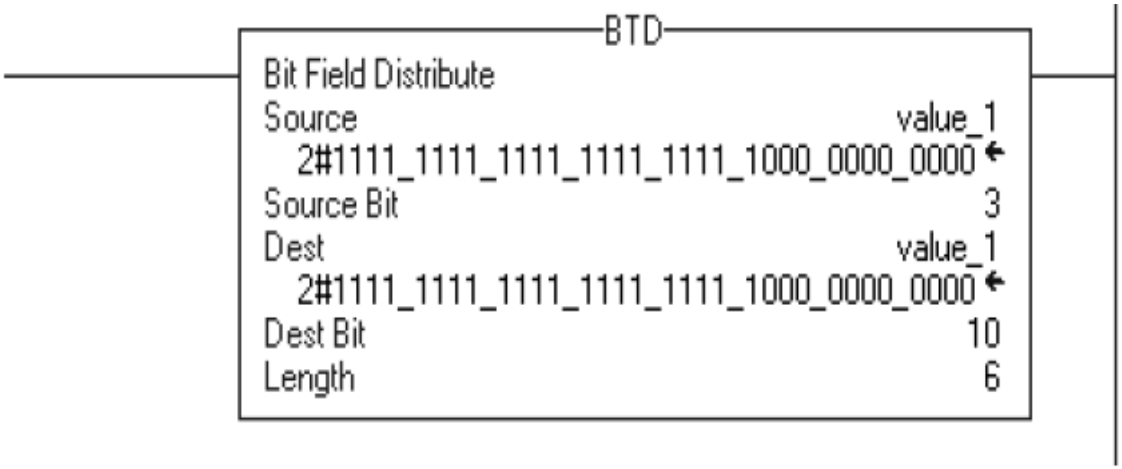
MSG, GSV, SSV Instructions.

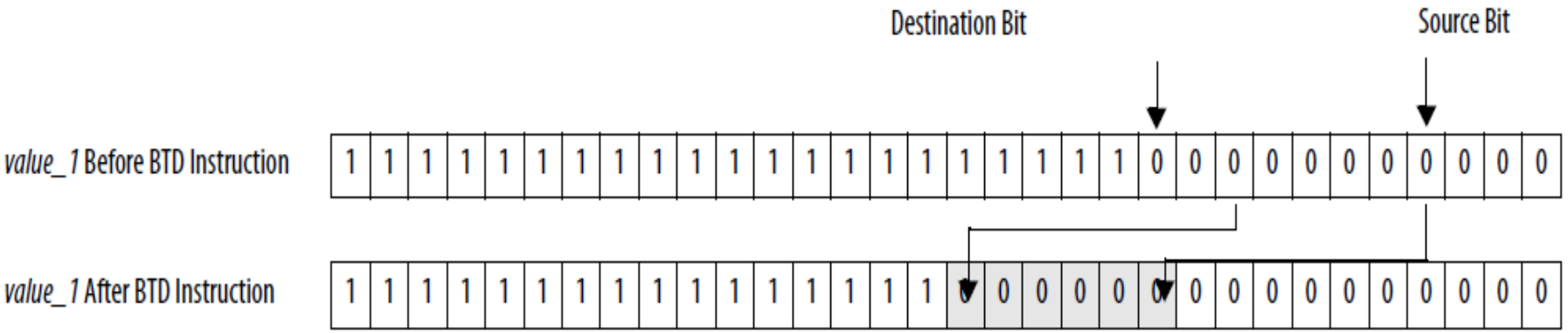
Minor And MaJor Fault

MOV_LOGICAL INSTRUCTIONS

Bit Field Distribute: BTD

BTD copies specified bits from the source, shifts the bits to appropriate position and write the bits into Destination





MOV_LOGICAL INSTRUCTIONS

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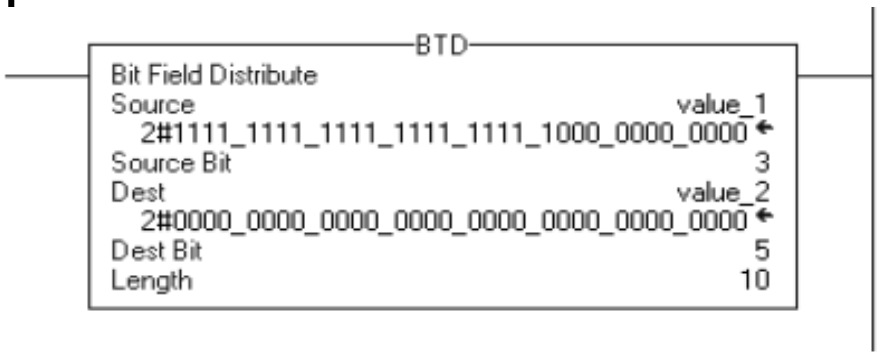

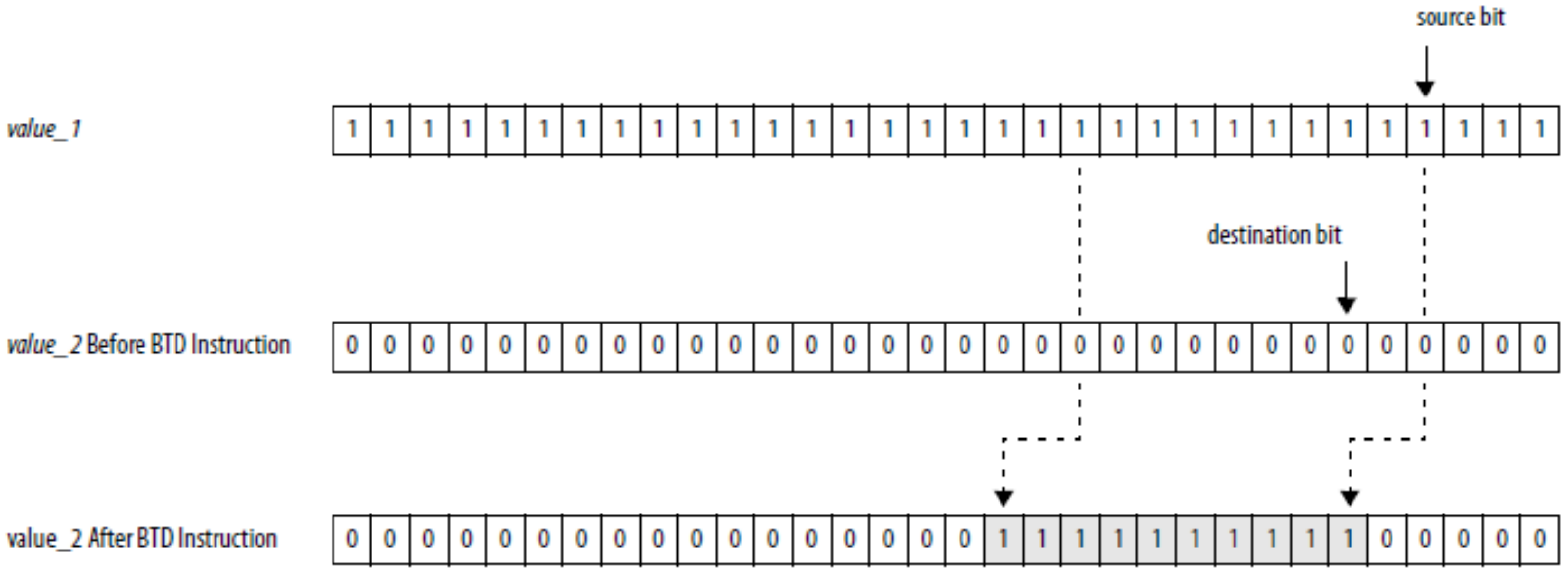

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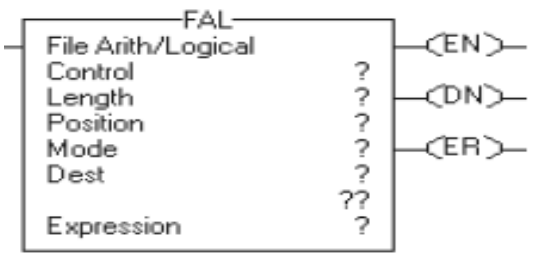
ARRAY FILE INSTRUCTIONS

File Arithmetic and Logic: FAL

FAL performs copy, arithmetic, logic and function operations on data stored in an array.



Operand	Type	Format	Description
Control	CONTROL	Tag	Control structure for the operation
Length	DINT	Immediate	Number of elements in the array to be manipulated
Position	DINT	Immediate	Current element in array Initial value is typically 0
Mode	DINT	Immediate	How to distribute the operation Select INC, ALL, or enter a number
Destination	SINT INT **DINT** **REAL**	Tag	Tag to store the result
Expression	SINT INT **DINT** **REAL**	Immediate Tag	An expression consisting of tags and/or immediate values separated by operators
	A SINT or INT tag converts to a DINT value by sign-extension.		

Selection Mode of operations.

If You Want To	Select This Mode
Operate on all of the specified elements in an array before continuing on to the next instruction	All
Distribute array operation over a number of scans Enter the number of elements to operate on per scan (1-2147483647)	Numerical
Manipulate one element of the array each time the rung-condition-in goes from false to true	Incremental

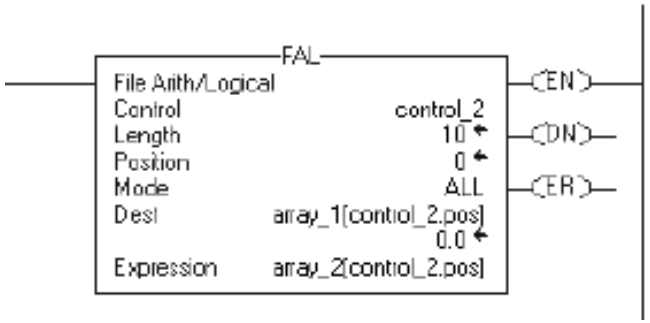
Structured Text

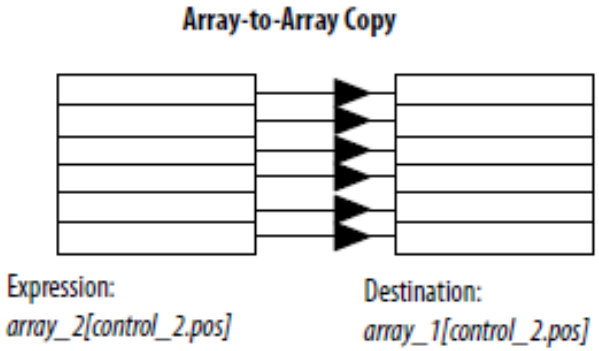
FOR position = 0 TO length DO
destination[position] := numeric_expression;
END_FOR;

ARRAY FILE INSTRUCTIONS

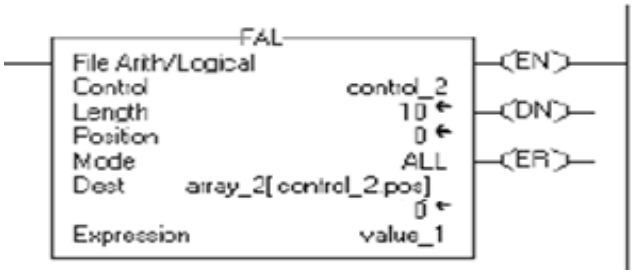
FAL Examples

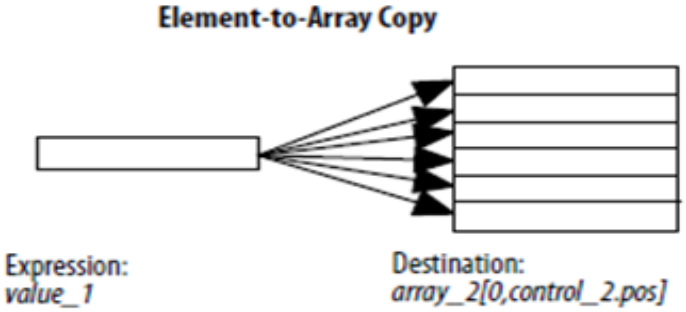
When enabled, FAL copies each element of array 2 into the same position within array 1





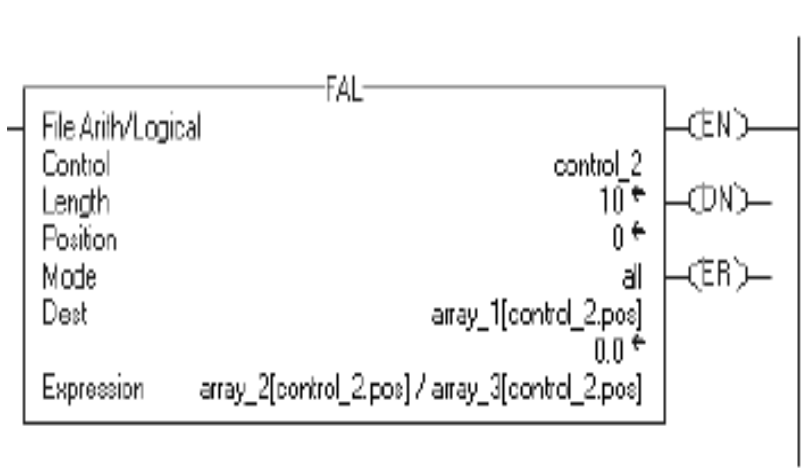
When enabled, FAL copies value_1 into the first 10 positions of array_2.

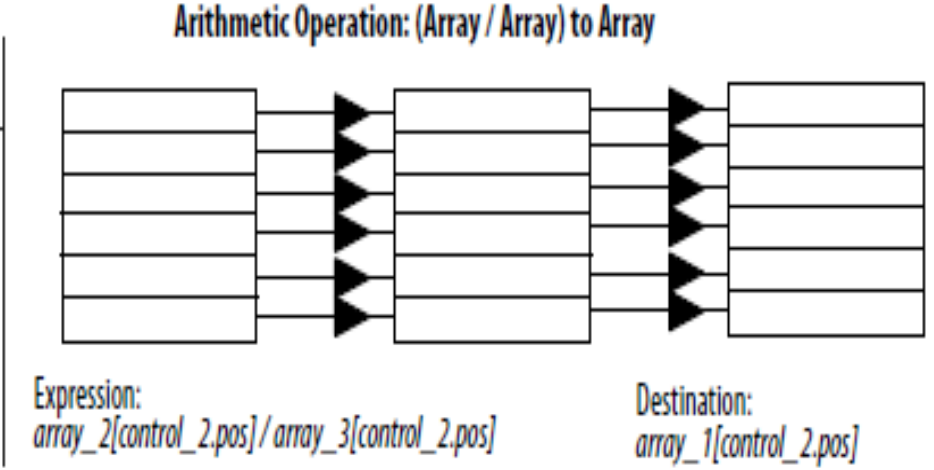




ARRAY FILE INSTRUCTIONS

When enabled, FAL dives the value in the current position of array_2 with the value in the current position of array_3 and stores the result in the current position of array_1.



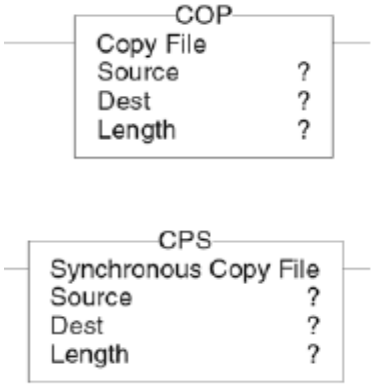


ARRAY FILE INSTRUCTIONS

Copy File **(COP)** Synchonous And Copy File **(CPS)**

The COP and CPS copy the value(s) in the Source to the Destination.

The Source remains unchanged



Operand	Type	Format	Description
Source	**SINT** **INT** **DINT** **REAL** **string** structure	Tag	Initial element to copy. Important: the Source and Destination operands should be the same data type, or unexpected results may occur.
Destination	**SINT** **INT** **DINT** **REAL** **string** structure	Tag	Initial element to be overwritten by the Source Important: the Source and Destination operands should be the same data type, or unexpected results may occur.
Length	DINT	Immediate Tag	Number of Destination elements to copy.

Difference between COP and CPS

If the source or destination is	And you want to	Then select	Notes
• Produced tag • Consumed tag • I/O data • Data that another task can overwrite	Prevent the data from changing during the copy operation	CPS	• Tasks that attempt to interrupt a CPS instruction are delayed until the instruction is done.
	Allow the data to change during the copy operation	COP	
None of the above	→	COP	

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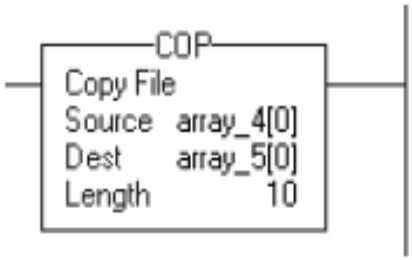
ARRAY FILE INSTRUCTIONS

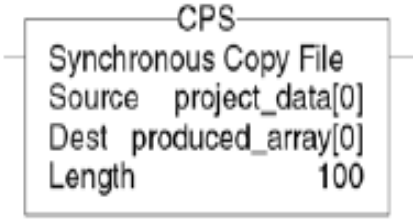
COP and CPS Examples

When enabled, COP copies the first 10 elements of array_4 into the first 10 elements of array_5



ST: COP(array_4[0],array_5[0],10);

When enabled, CPS copies 100 elements of project_data[0] into the 100 elements of produced_array[0]. No I/O Updates or other Tasks can change the data



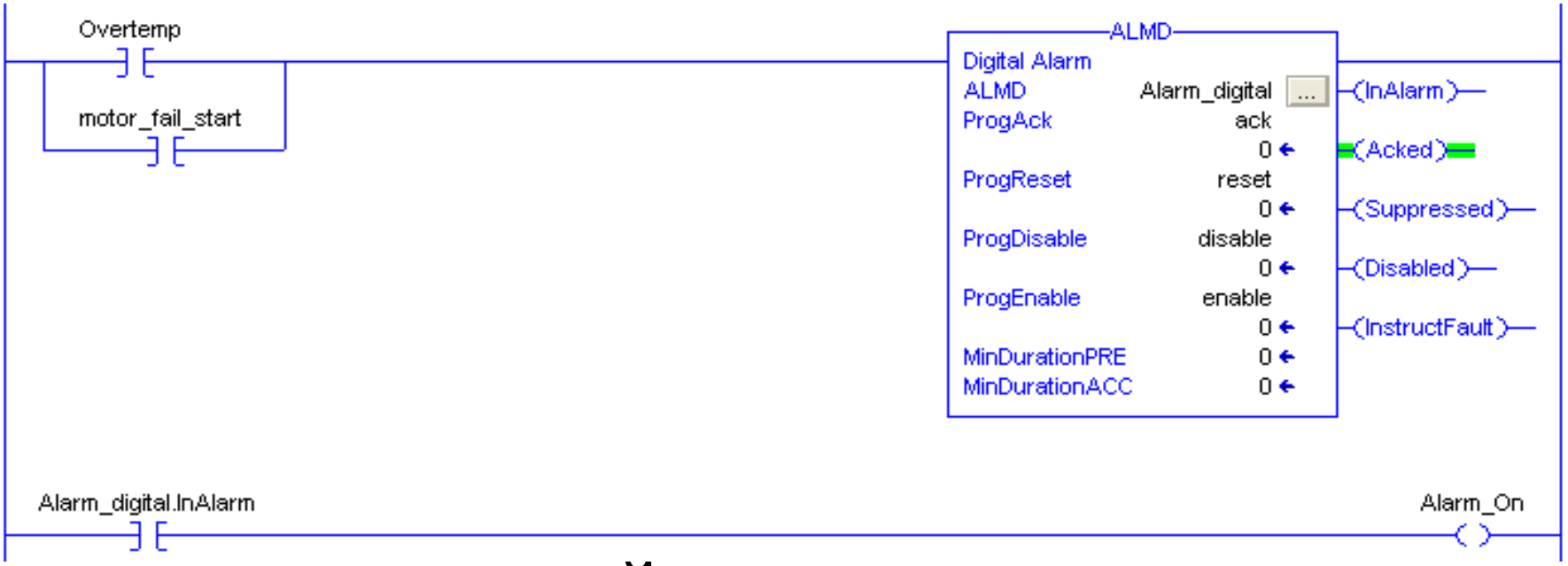
ST:CPS(project_data[0],produced_array[0],100);

DIGITAL ALARM INSTRUCTION

Digital Alarm Instruction:ALMD

Scope: MainProgram | Show... | Show All

Name	Alias For	Base Tag	Data Type	Style
ack			BOOL	Decimal
Alarm_On			BOOL	Decimal
disable			BOOL	Decimal
enable			BOOL	Decimal
motor_fail_start			BOOL	Decimal
Overtemp			BOOL	Decimal
reset			BOOL	Decimal
Alarm_digital			ALARM_DIGITAL	

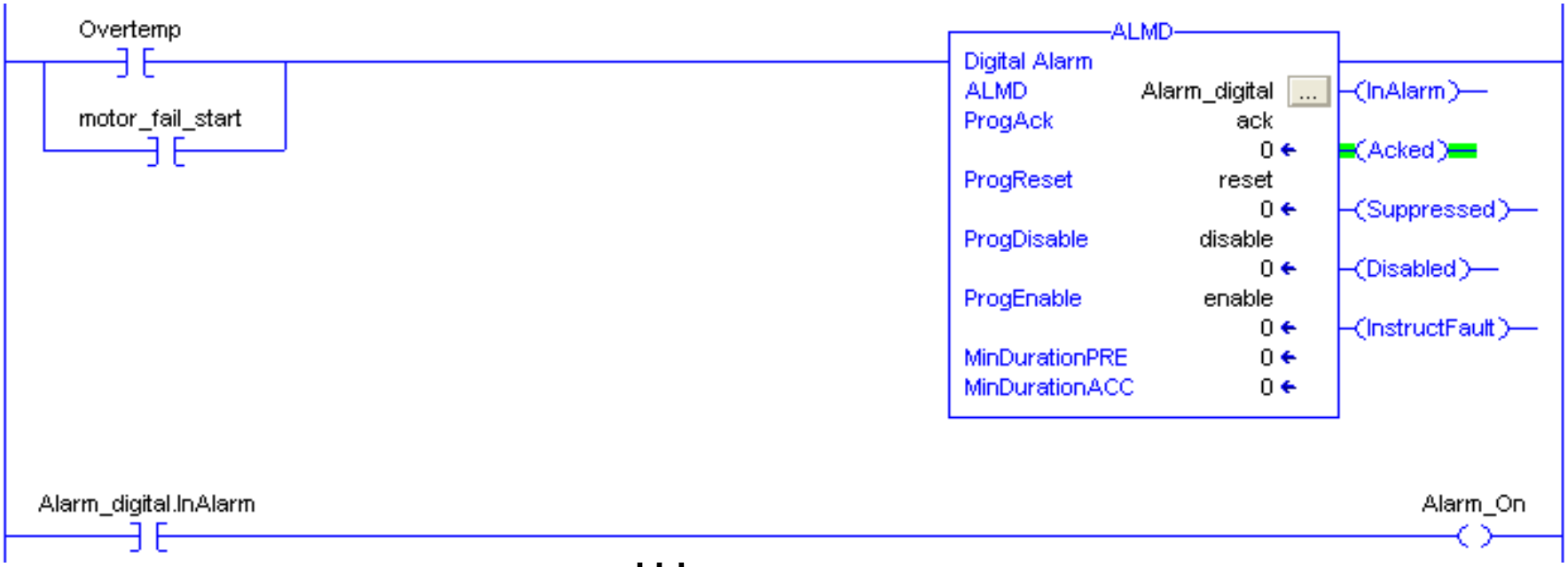


DIGITAL ALARM INSTRUCTION

Digital Alarm Instruction:ALMD

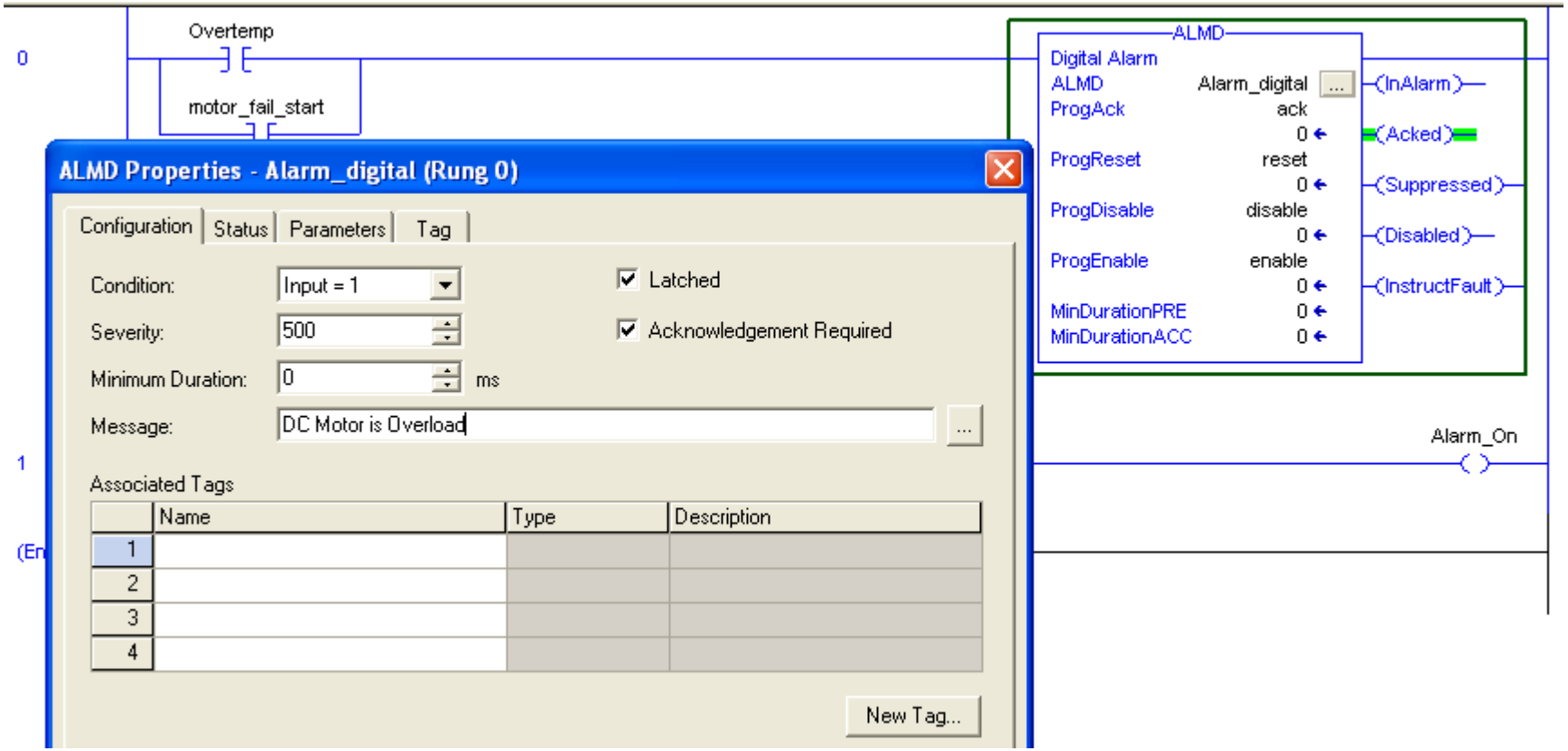
Scope: MainProgram | Show... | Show All

Name	Alias For	Base Tag	Data Type	Style
ack			BOOL	Decimal
Alarm_On			BOOL	Decimal
disable			BOOL	Decimal
enable			BOOL	Decimal
motor_fail_start			BOOL	Decimal
Overtemp			BOOL	Decimal
reset			BOOL	Decimal
Alarm_digital			ALARM_DIGITAL	



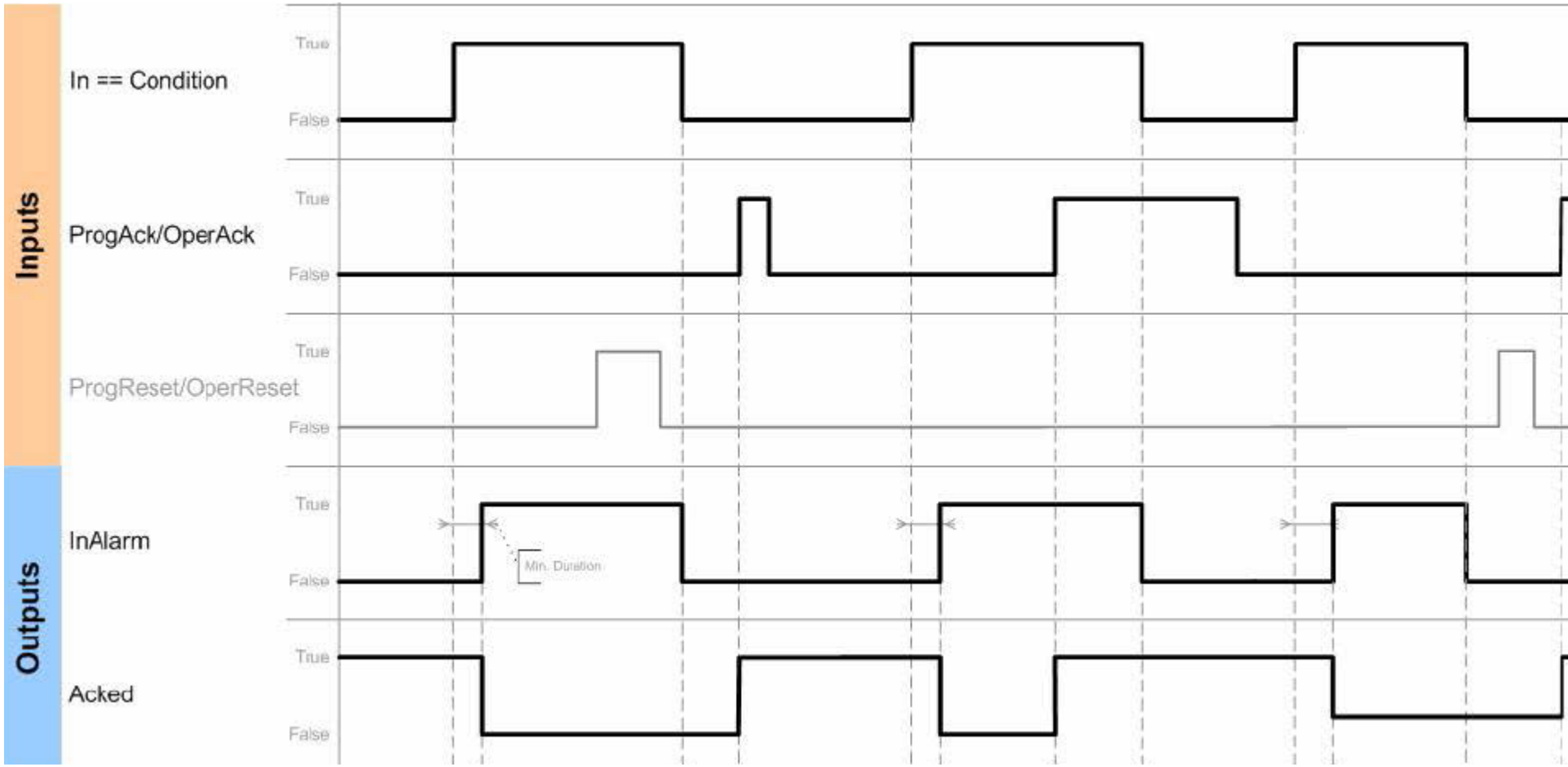
DIGITAL ALARM INSTRUCTION

ALMD:Creating Message to display in Factory Talk View



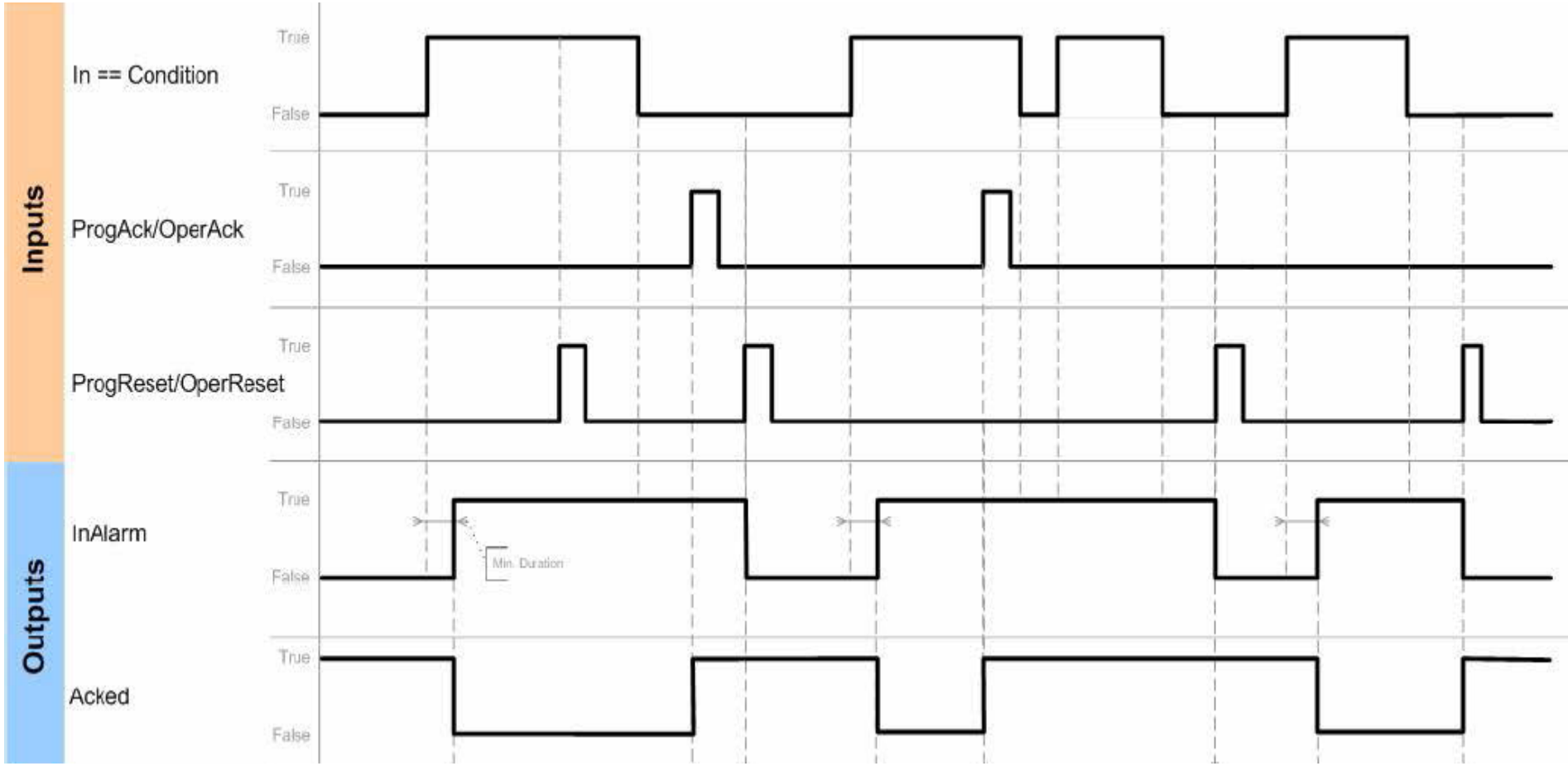
DIGITAL ALARM INSTRUCTION

ALMD Alarm Acknowledge Required and Not Latch



DIGITAL ALARM INSTRUCTION

ALMD Alarm Acknowledge Required and Latched

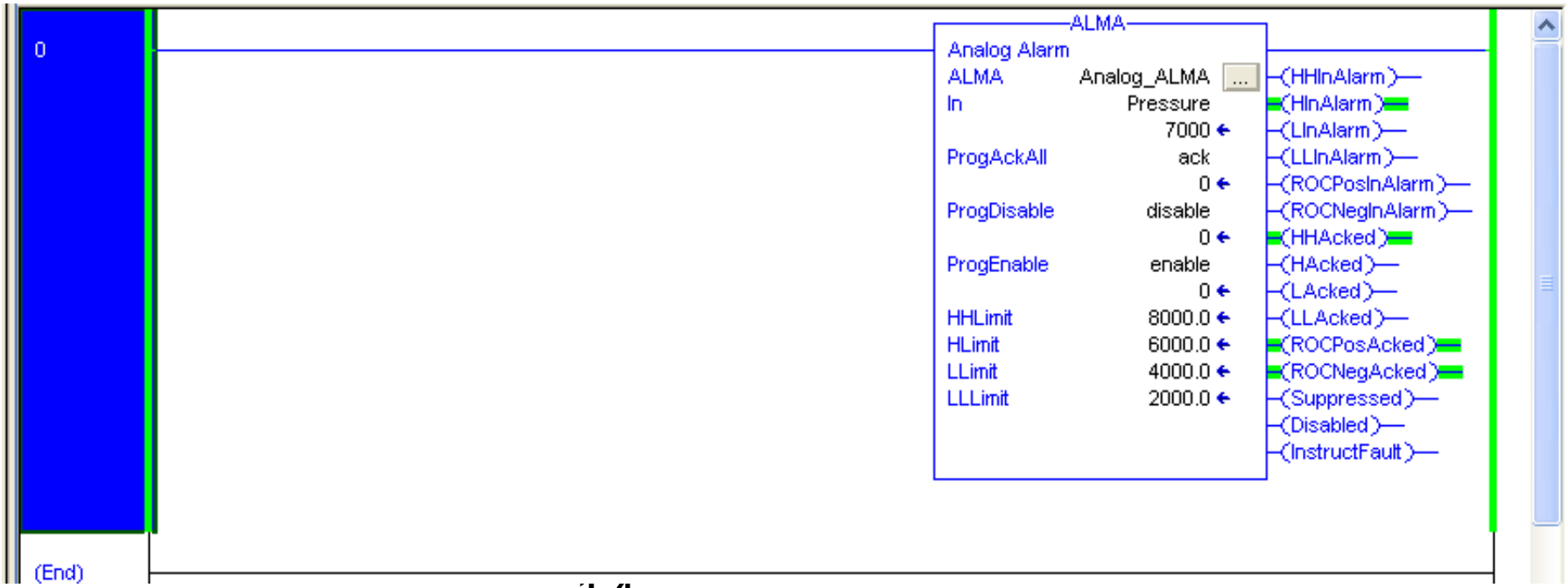


ANALOG ALARM INSTRUCTION: ALMA

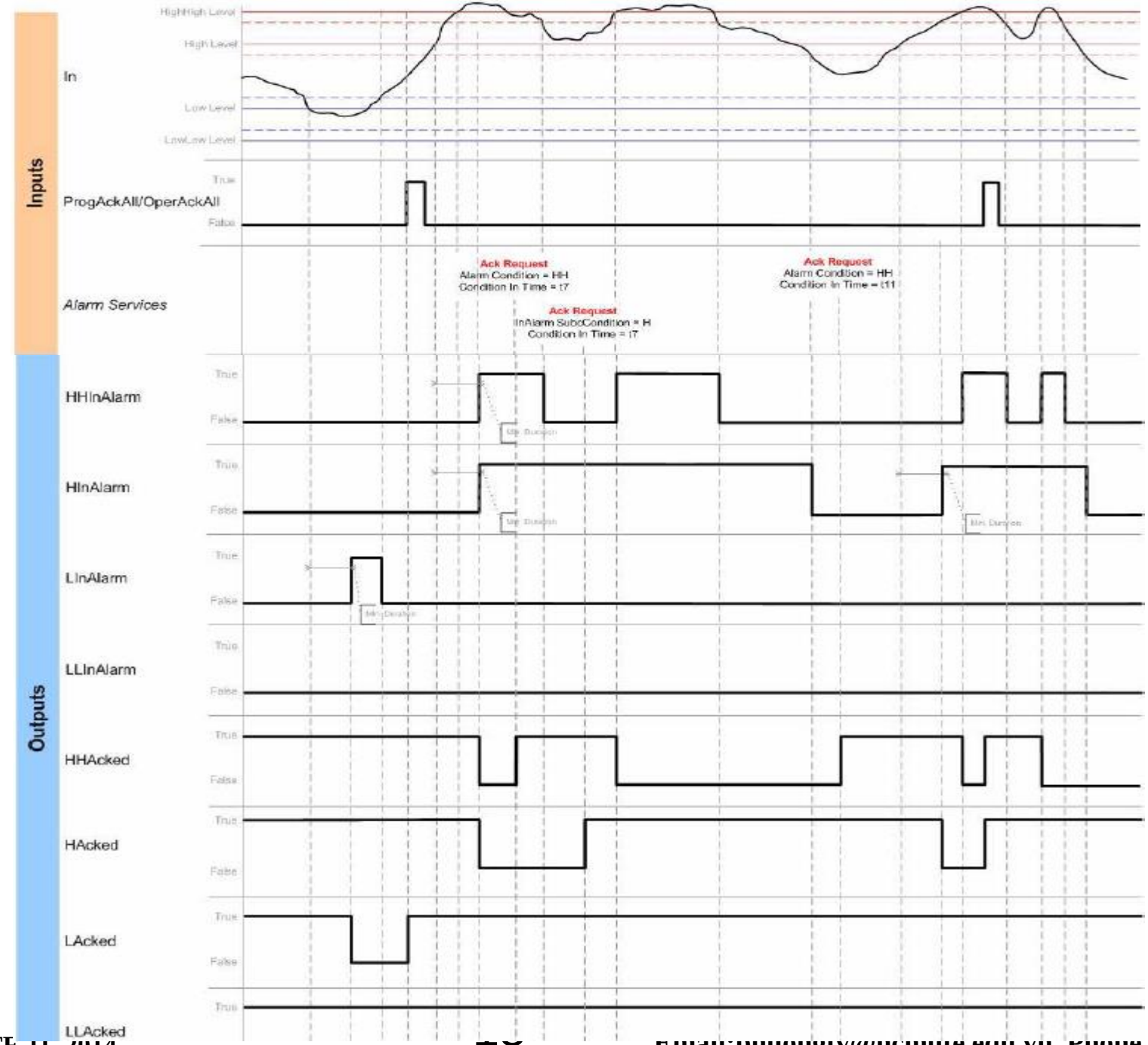
ALMA Alarm Acknowledge Required

Scope: MainProgram | Show... | Show All

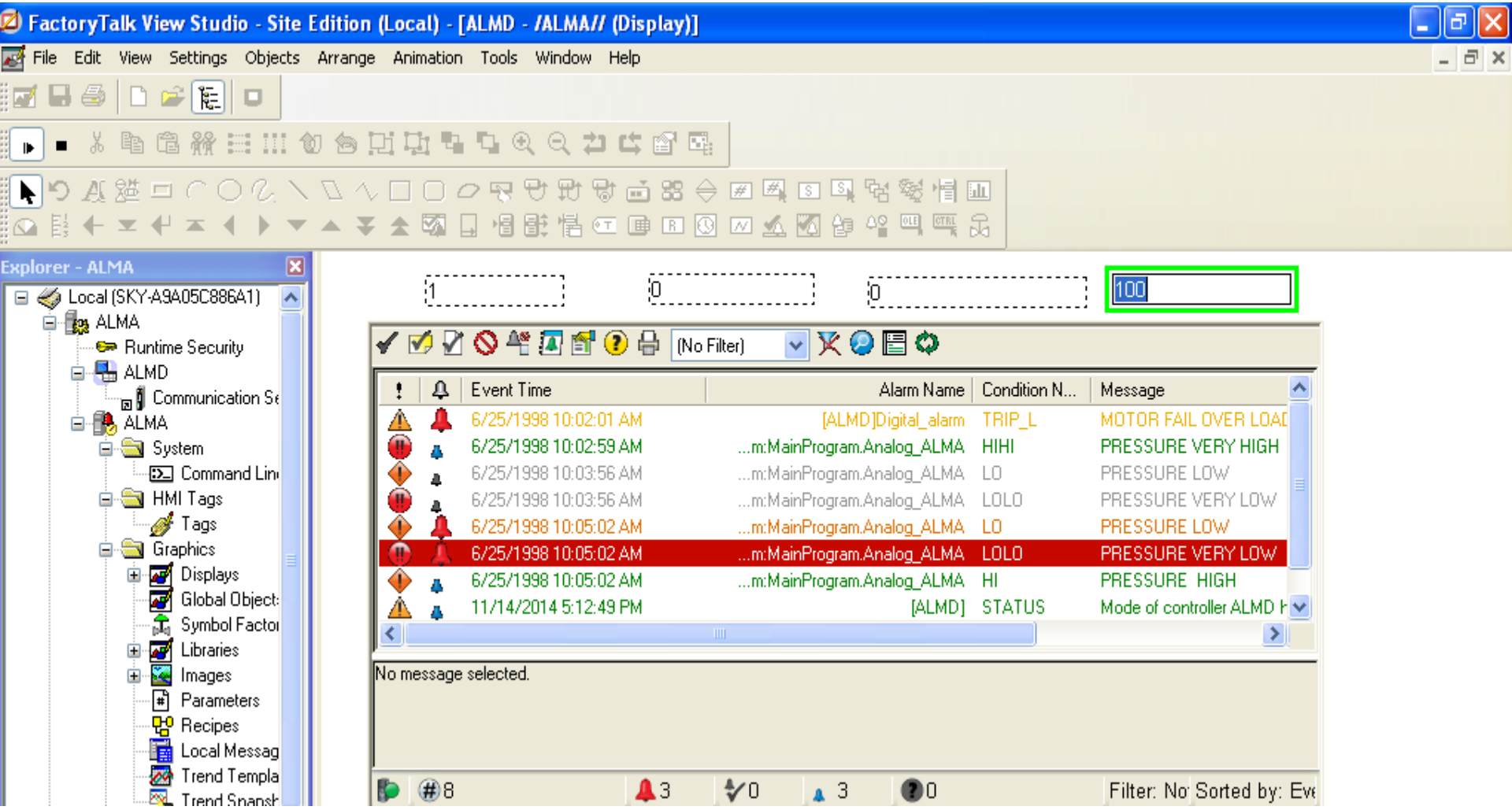
Name	Alias For	Base Tag	Data Type	Style
ack			BOOL	Decimal
disable			BOOL	Decimal
enable			BOOL	Decimal
reset			BOOL	Decimal
Analog_ALMA			ALARM_ANALOG	
Pressure			DINT	Decimal



Inputs And Outputs Data Of ALMA



ANALOG ALARM INSTRUCTION: ALMA



MSG, GSV, SSV INSTRUCTIONS

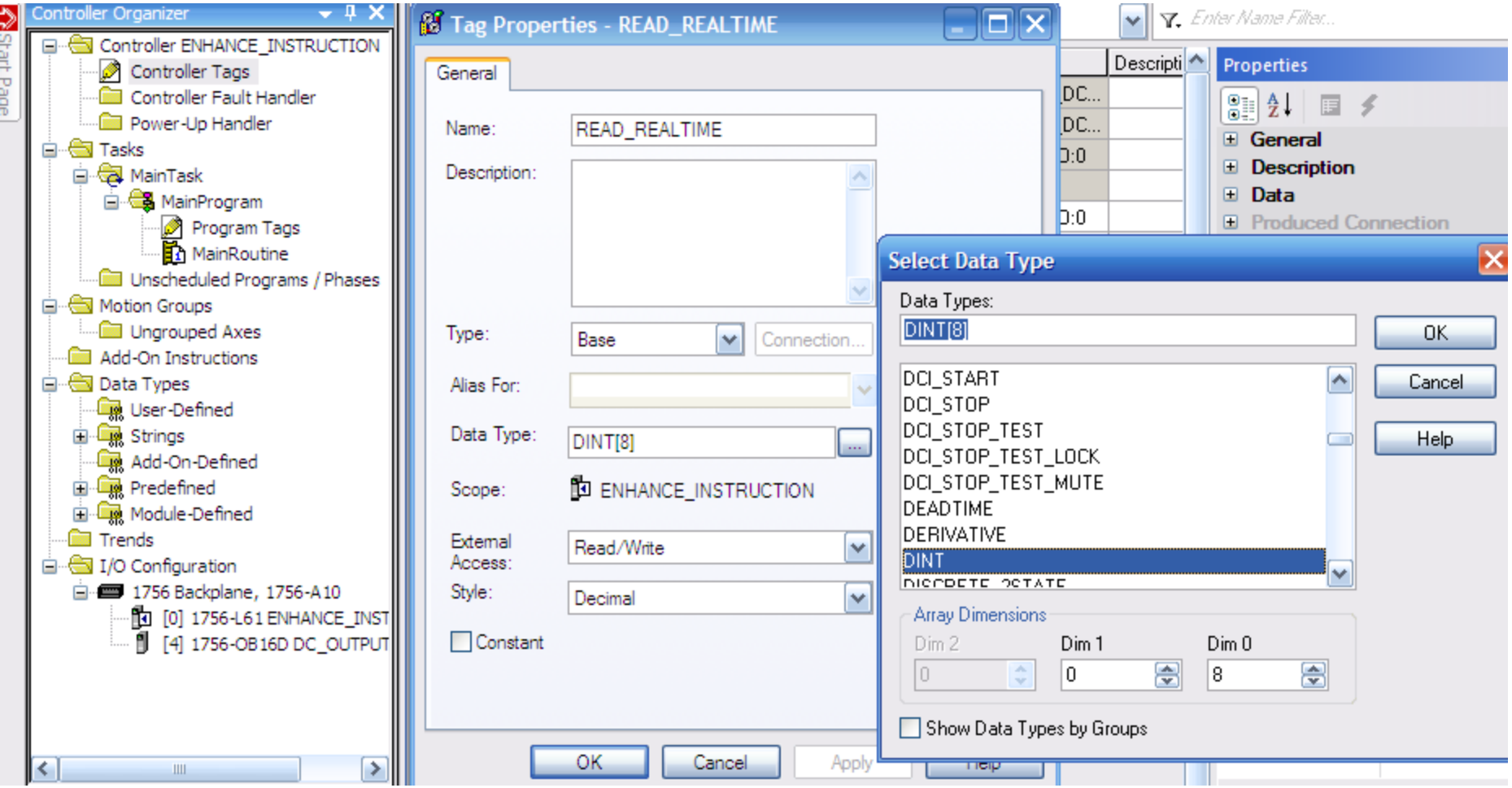
I/O Instructions: Message Control (MSG), Get System Value(GSV), Set system Value(SSV)

If You Want To	Use This Instruction	Available In These Languages
send data to or from another module	MSG	relay ladder structured text
get controller status information	GSV	relay ladder structured text
set controller status information	SSV	relay ladder structured text
• send output values to an I/O module or consuming controller at a specific point in your logic • trigger an event task in another controller	IOT	relay ladder structured text

MSG, GSV, SSV INSTRUCTIONS

Read Realtime in PLC

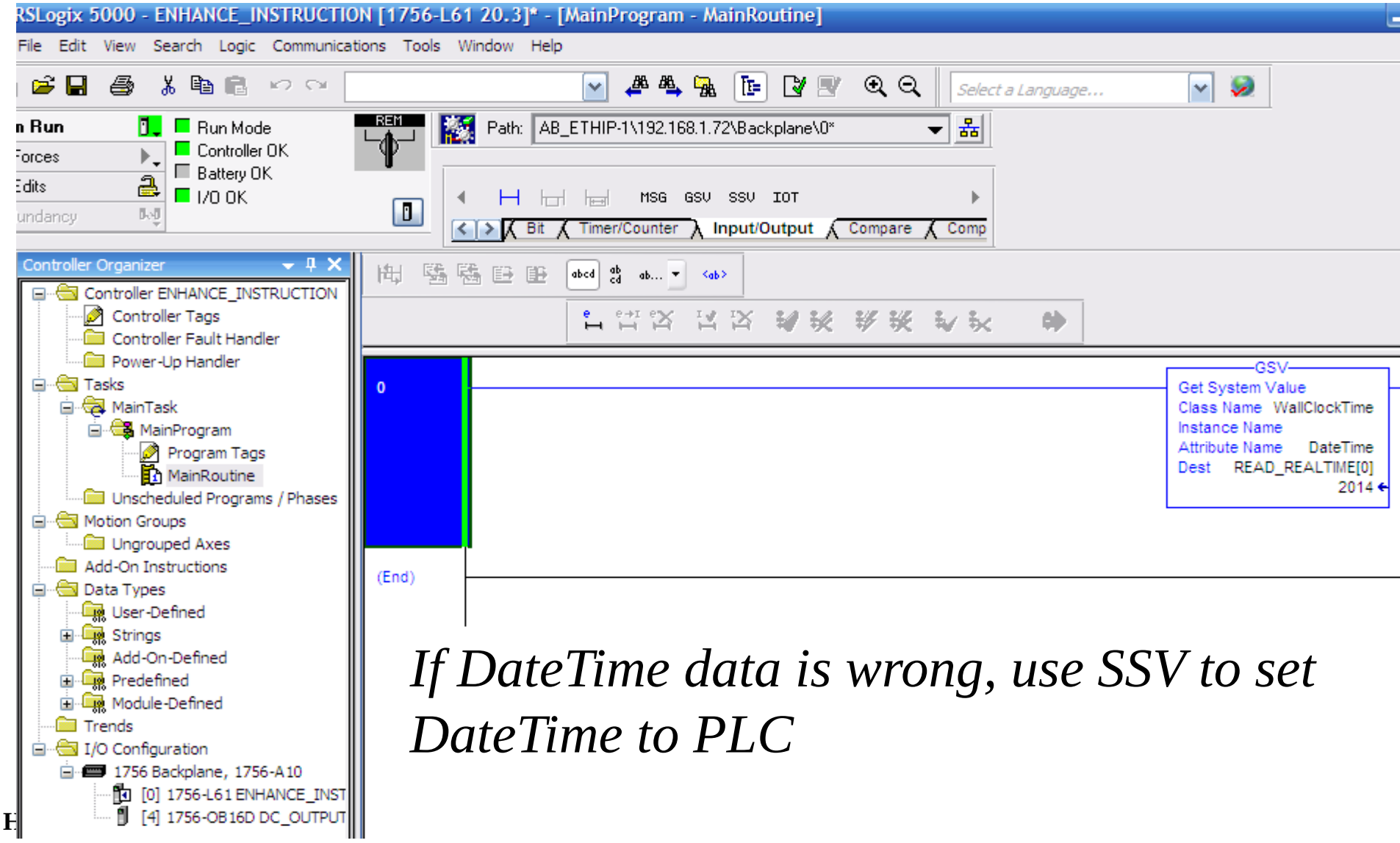
Create a tag to store DateTime data of PLC, the tag is 8(DINT) Array



MSG, GSV, SSV INSTRUCTIONS

Use GSV instruction to read and store Realtime in plc

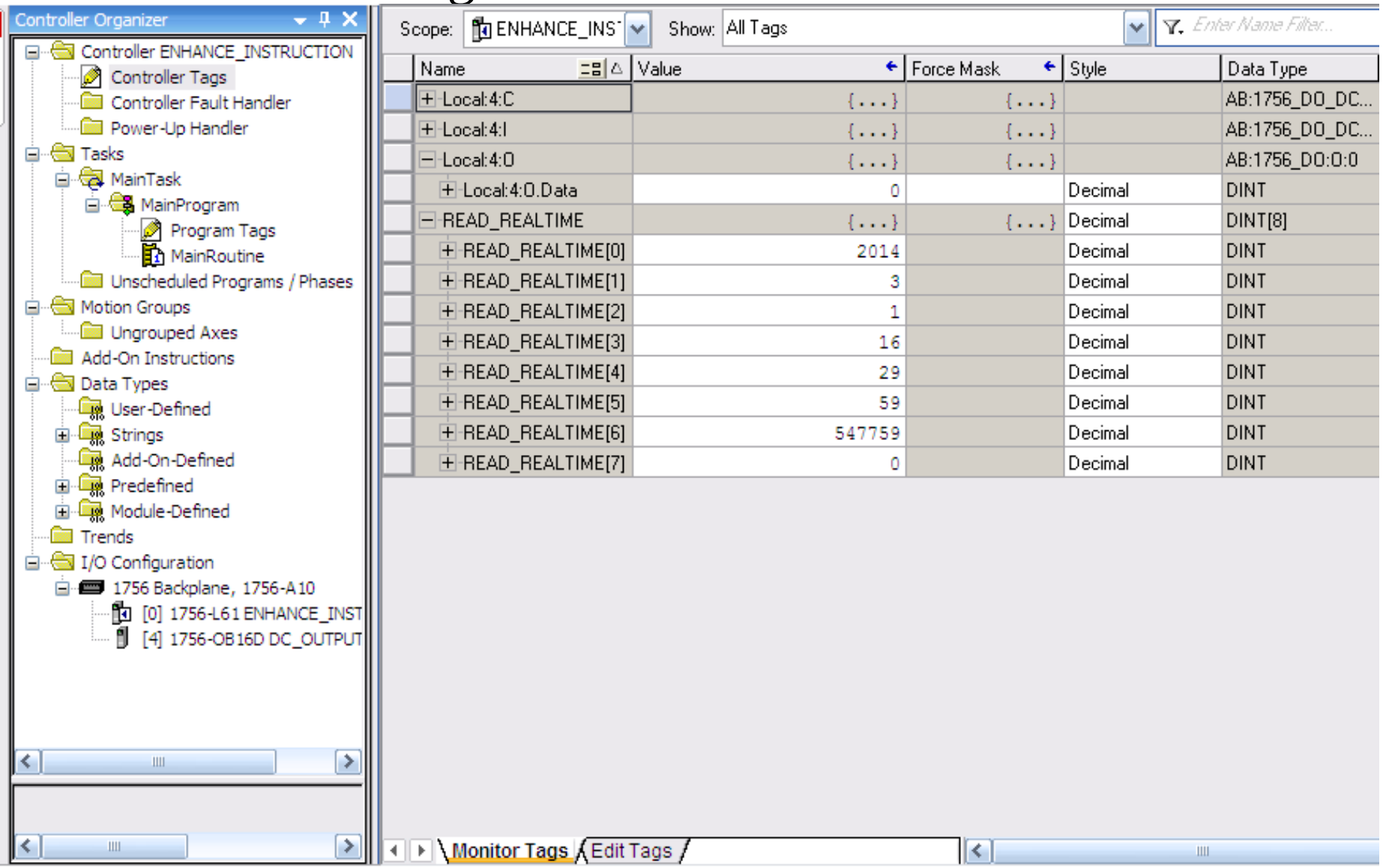
Depend on your applications, which data in array is used



If DateTime data is wrong, use SSV to set DateTime to PLC

MSG, GSV, SSV INSTRUCTIONS

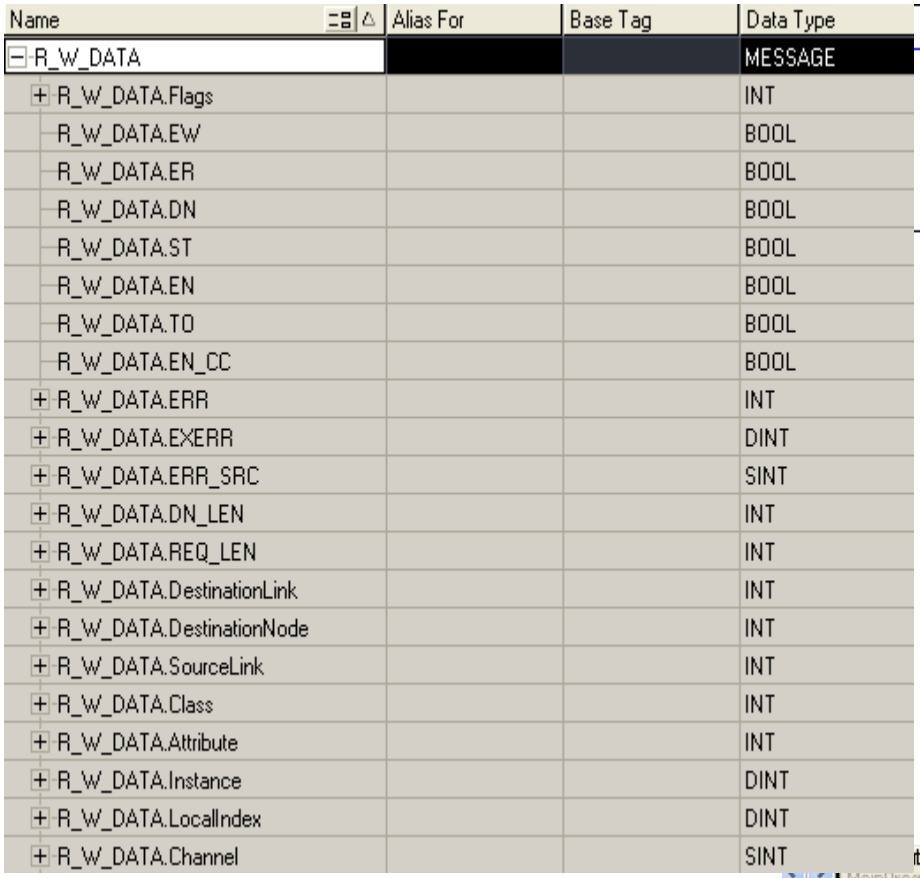
Choose Monitor Tags to view DateTime data of the controller



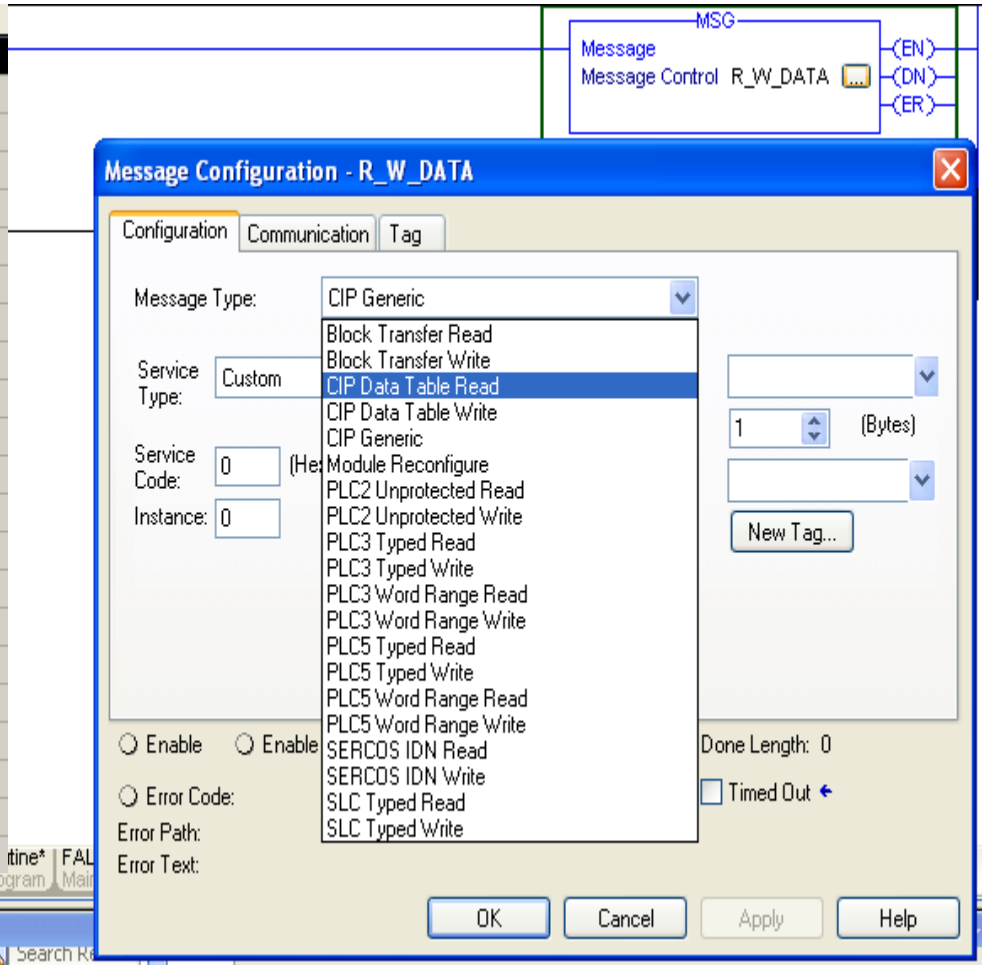
MSG, GSV, SSV INSTRUCTIONS

Message Control (MSG)

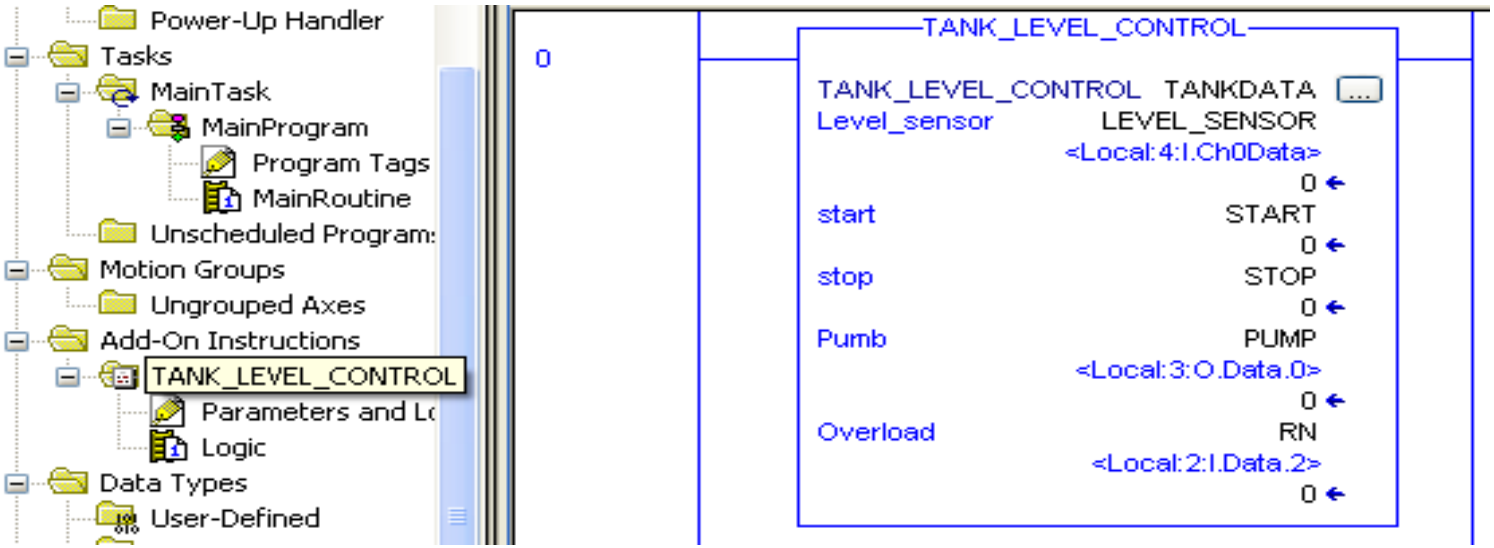
Read or write data to or from the controller or a block of data to or from another module on another network.



Name	Alias For	Base Tag	Data Type
R_W_DATA			MESSAGE
R_W_DATA.Flags			INT
R_W_DATA.EW			BOOL
R_W_DATA.ER			BOOL
R_W_DATA.DN			BOOL
R_W_DATA.ST			BOOL
R_W_DATA.EN			BOOL
R_W_DATA.TO			BOOL
R_W_DATA.EN_CC			BOOL
R_W_DATA.ERR			INT
R_W_DATA.EXERR			DINT
R_W_DATA.ERR_SRC			SINT
R_W_DATA.DN_LEN			INT
R_W_DATA.REQ_LEN			INT
R_W_DATA.DestinationLink			INT
R_W_DATA.DestinationNode			INT
R_W_DATA.SourceLink			INT
R_W_DATA.Class			INT
R_W_DATA.Attribute			INT
R_W_DATA.Instance			DINT
R_W_DATA.LocalIndex			DINT
R_W_DATA.Channel			SINT



ADDON INSTRUCTION

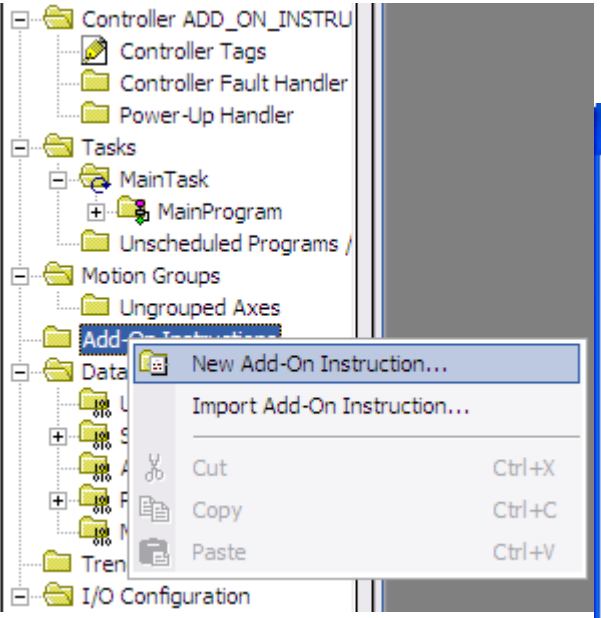


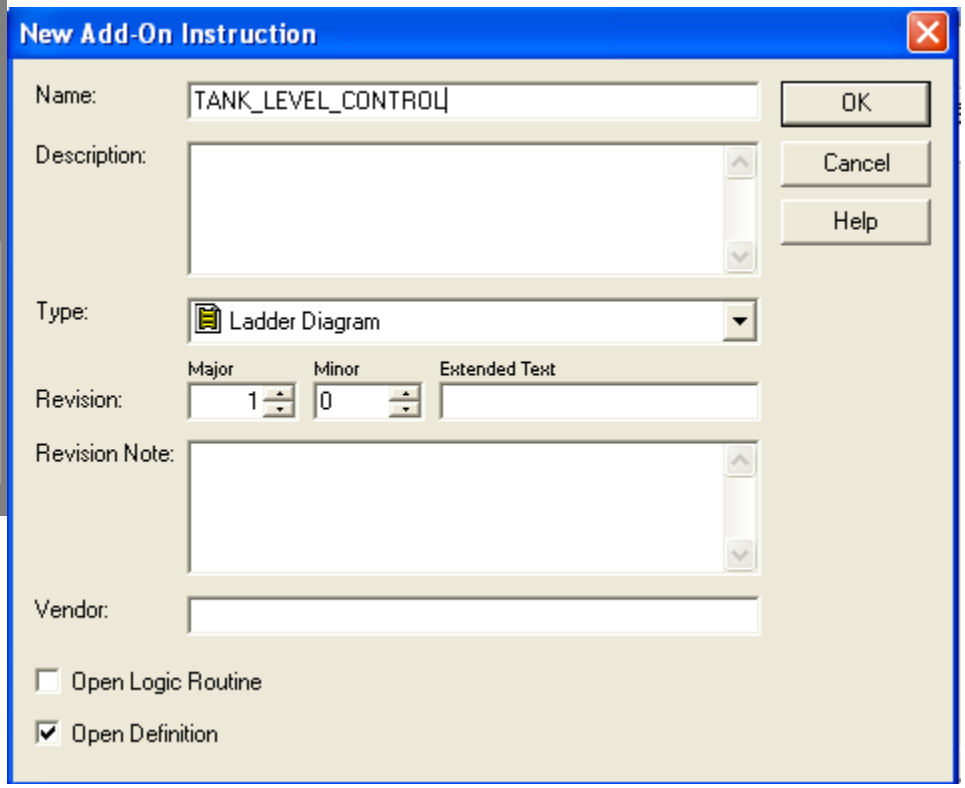
Add-on Instruction introduction

- Custom Instruction
- Reuse code
- Provide an easier to understand interface
- Export and Import an Add-on Instruction

ADDON INSTRUCTION

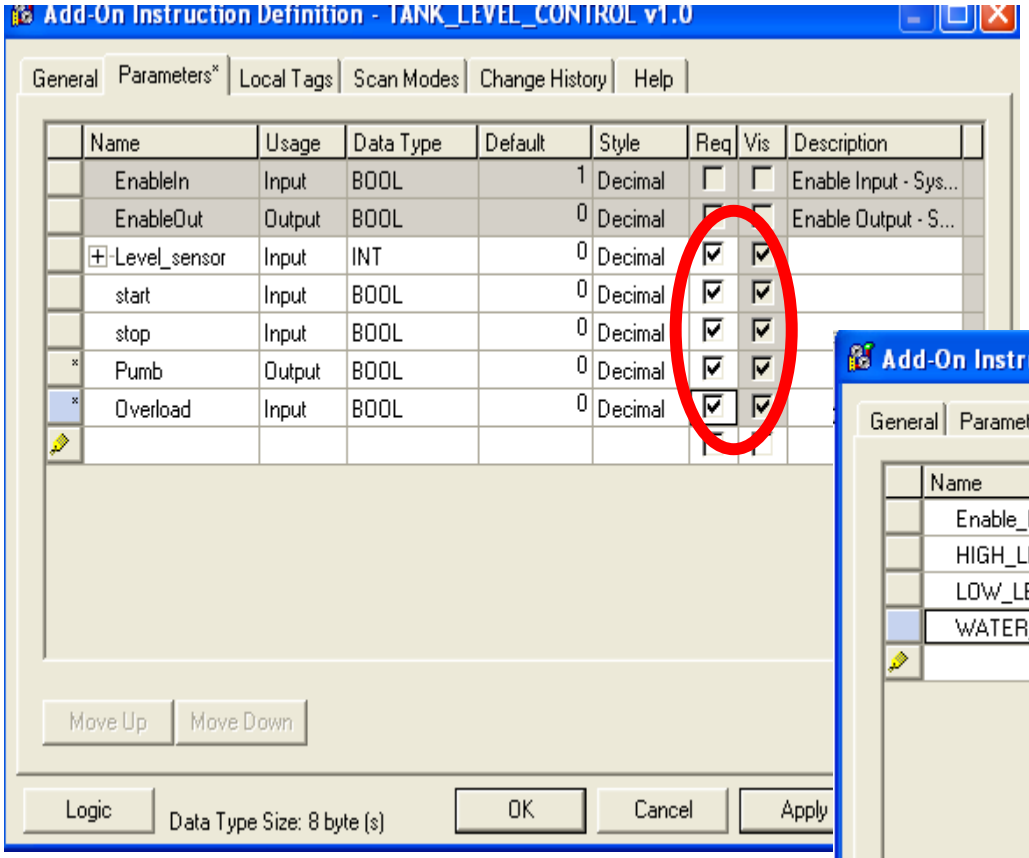
Creating Add-on Instruction

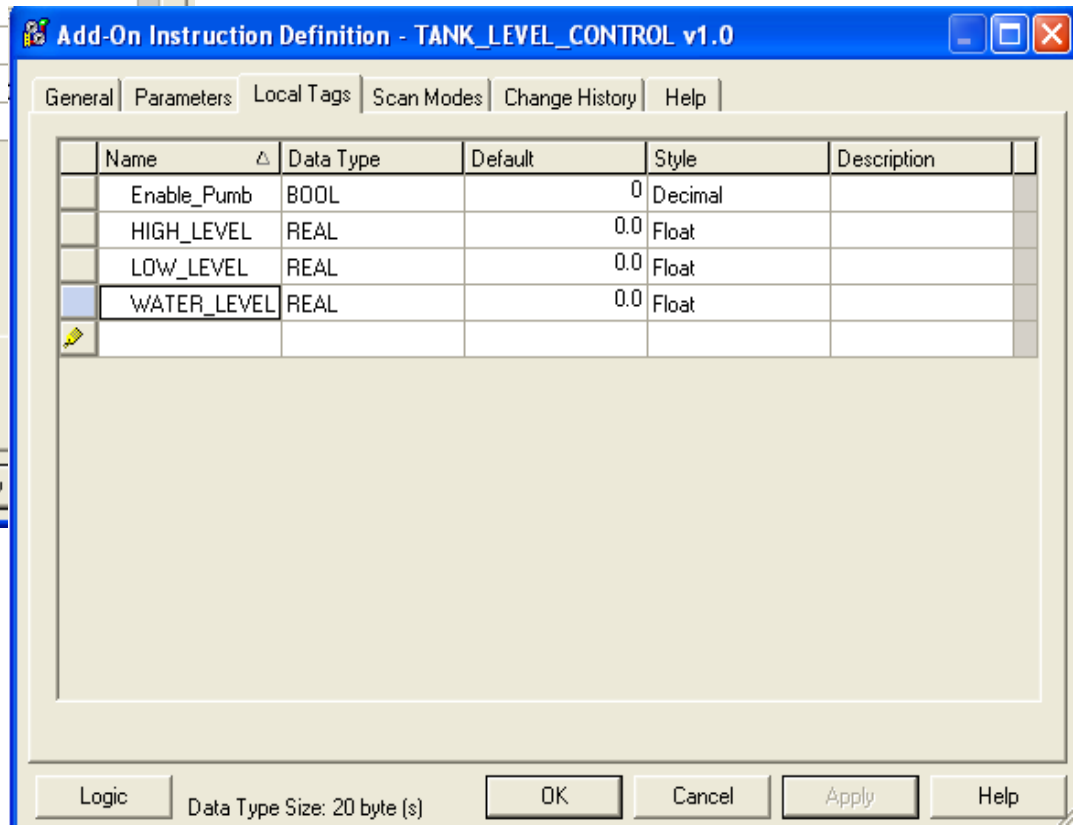




ADDON INSTRUCTION

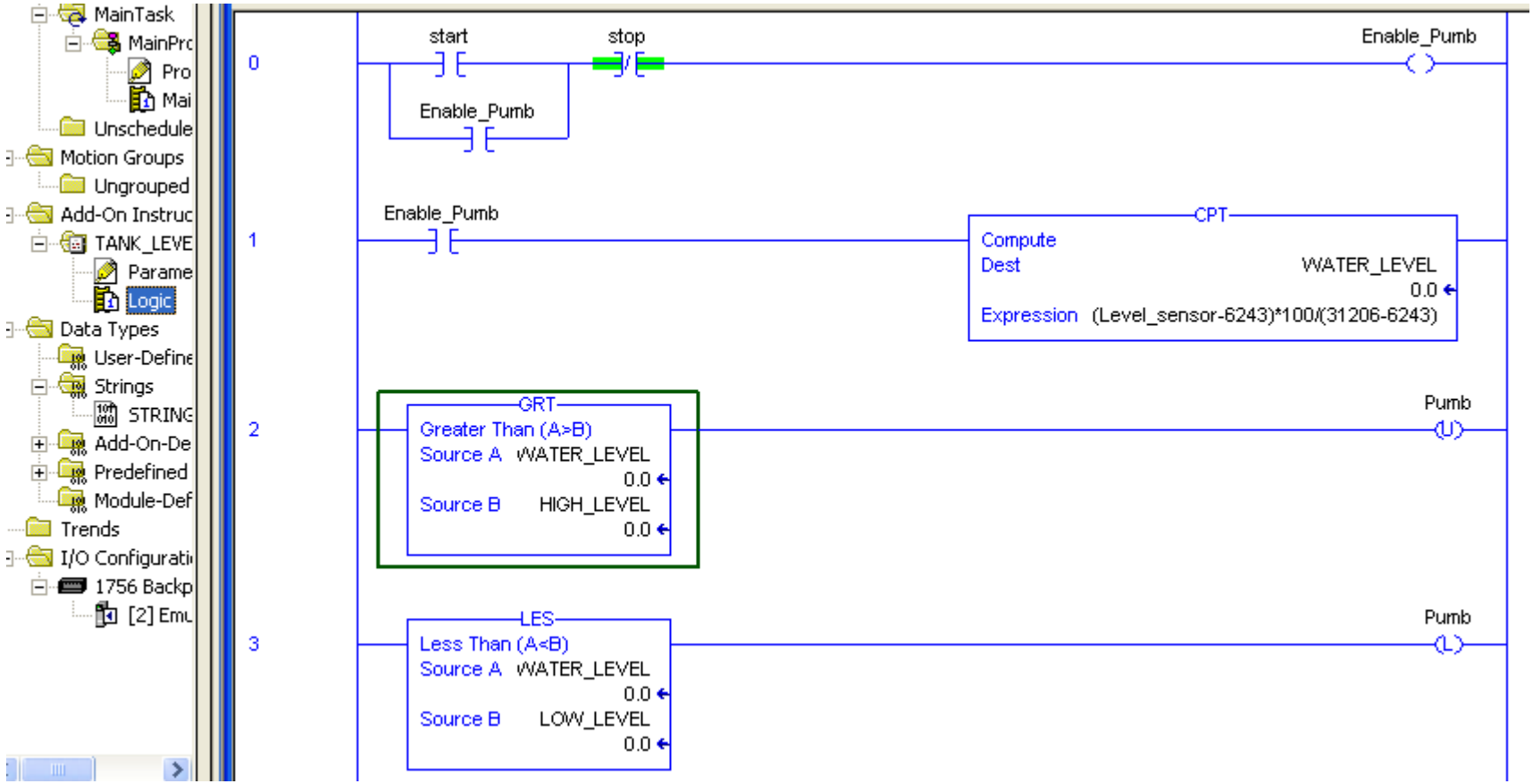
Creating parameters and Local Tags





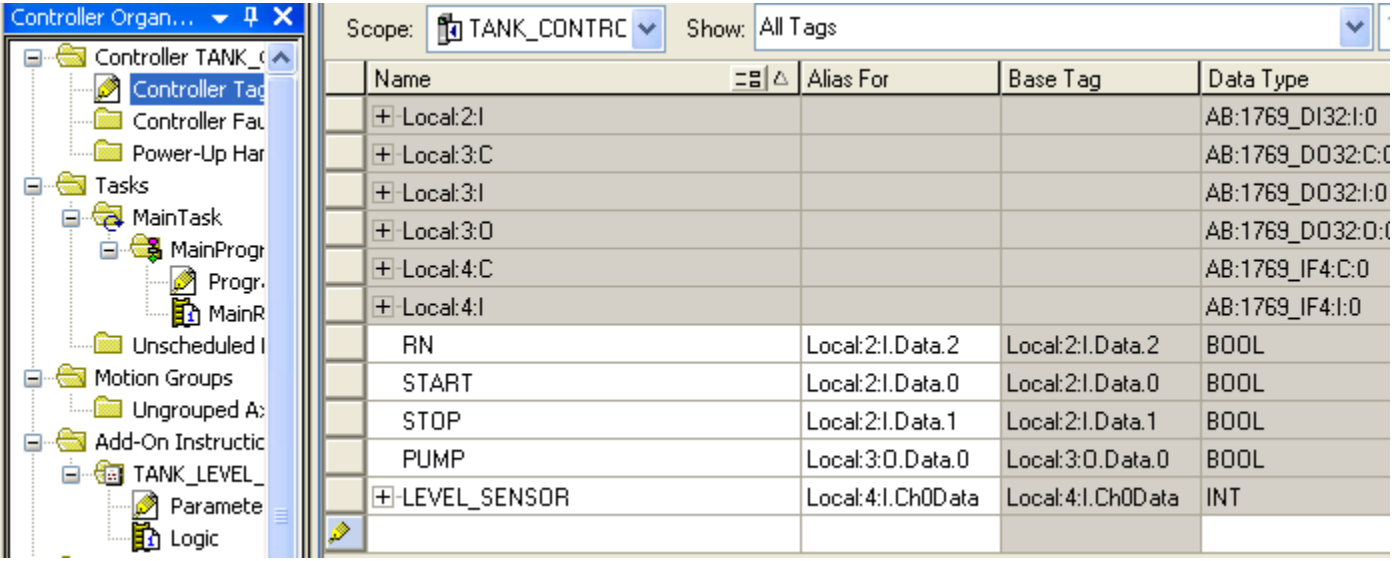
ADDON INSTRUCTION

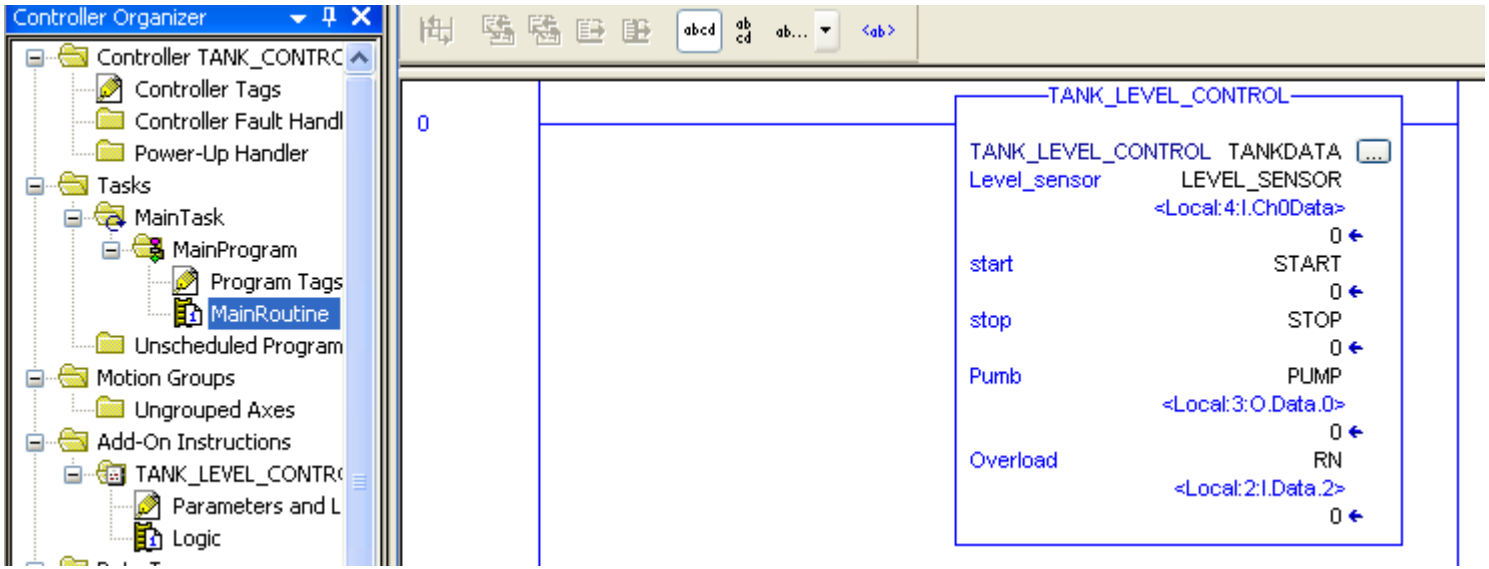
Creating logic for the Add-on Instruction



ADDON INSTRUCTION

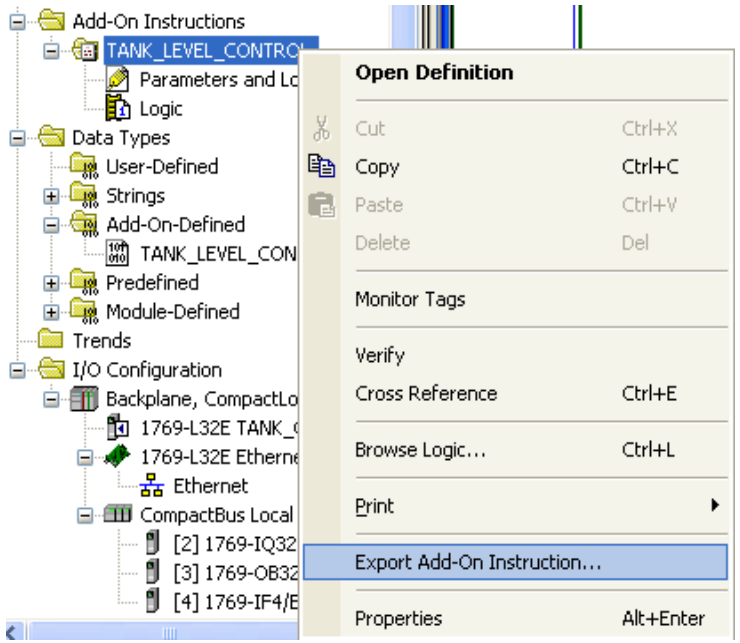
Creating I/O Tags and Adding the Add_on instruction to project.

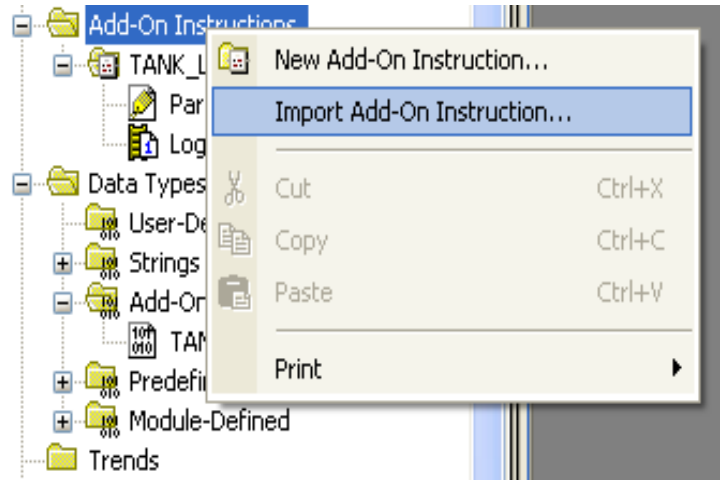


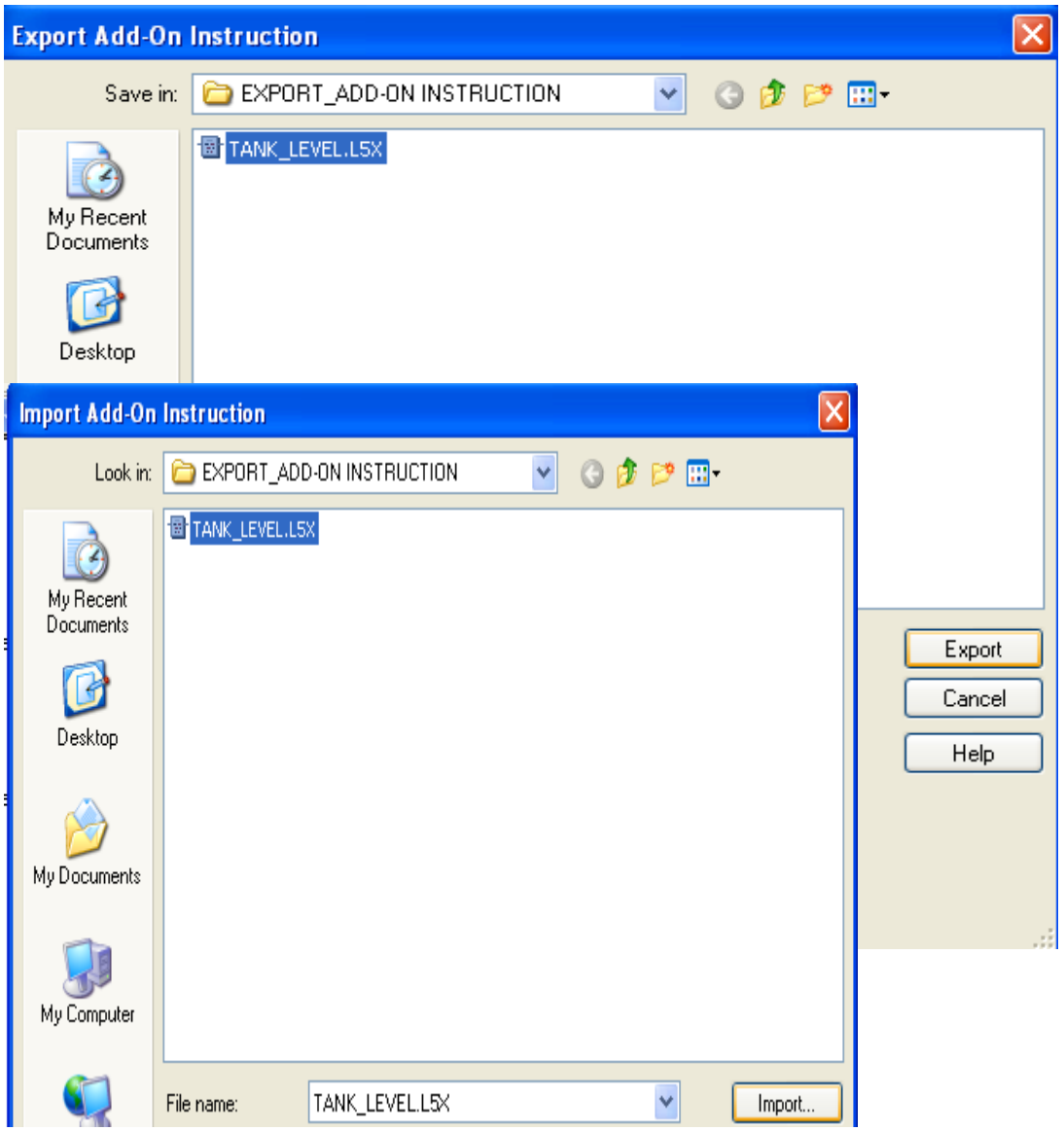


ADDON INSTRUCTION

Export and Import the Add-on Instruction







MINOR AND MAJOR FAULT

Minor Fault: The CPU does not switch to faulted mode

- Periodic Task overlap.
- Load from nonvolatile memory.
- Problem with serial port.
- Low battery…..

Major Fault: The CPU switch to faulted mode

The CPU powered on in run mode.

A required I/O module connection failed.

Configuration fault occurred…..

MINOR FAULT CODES

Type	Code	Cause	Recovery Method
4	4	An arithmetic overflow occurred in an instruction.	Fix program by examining arithmetic operations (order) or adjusting values.
4	5	In a GSV/SSV instruction, the specified instance was not found.	Check the instance name.
4	6	In a GSV/SSV instruction, either: · specified Class name is *not* supported · specified Attribute name is *not* valid	Check the Class name and Attribute name.
4	7	The GSV/SSV destination tag was too small to hold all of the data.	Fix the destination so it has enough space.
4	35	PID delta time ≤0.	Adjust the PID delta time so that it is > 0.
4	36	PID setpoint out of range	Adjust the setpoint so that it is within range.
4	51	The LEN value of the string tag is greater than the DATA size of the string tag.	1. Check that no instruction is writing to the LEN member of the string tag. 2. In the LEN value, enter the number of characters that the string contains.
4	52	The output string is larger than the destination.	Create a new string data type that is large enough for the output string. Use the new string data type as the data type for the destination.
4	53	The output number is beyond the limits of the destination data type.	Either: · Reduce the size of the ASCII value.

MINOR FAULT CODES

4	56	The Start or Quantity value is invalid.	1. Check that the Start value is between 1 and the DATA size of the Source. 2. Check that the Start value plus the Quantity value is less than or equal to the DATA size of the Source.
4	57	The AHL instruction failed to execute because the serial port is set to no handshaking.	Either: · Change the Control Line setting of the serial port. · Delete the AHL instruction.
6	2	Periodic task overlap. Periodic task has not completed before it is time to execute again.	Simplify program(s), or lengthen period, or raise relative priority, etc.
7	49	Project loaded from nonvolatile memory.	
9	0	Unknown error while servicing the serial port.	Contact Rockwell Automaiton Technical Support.

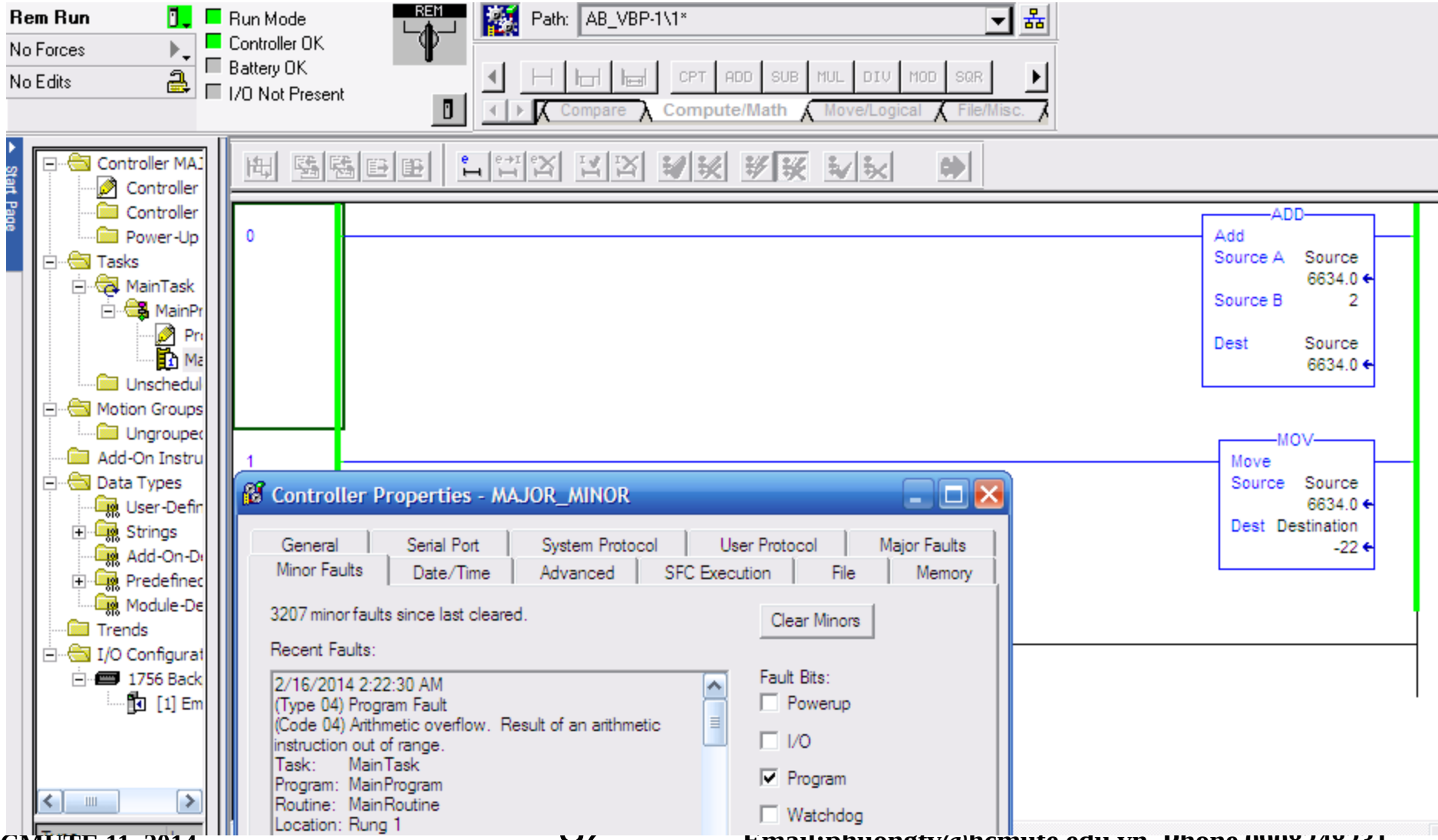
MINOR FAULT CODES

Type	Code	Cause	Recovery Method
9	1	The CTS line is not correct for the current configuration.	Disconnect and reconnect the serial port cable to the controller. Make sure the cable is wired correctly
9	2	Poll list error. A problem was detected with the DF1 master's poll list, such as specifying more stations than the size of the file, specifying more then 255 stations, trying to index past the end of the list, or polling the broadcast address (STN #255).	Check for the following errors in the poll list: · total number of stations is greater than the space in the poll list tag · total number of stations is greater than 255 · current station pointer is greater than the end of the poll list tag · a station number greater than 254 was encountered
9	5	DF1 slave poll timeout. The poll watchdog has timed out for slave. The master has not polled this controller in the specified amount of time.	Determine and correct delay for polling.
9	9	Modem contact was lost. DCD and/or DSR control lines are not being received in proper sequence and/or state.	Correct modem connection to the controller.
10	10	Battery not detected or needs to be replaced.	Install new battery.

MINOR FAULT CODES

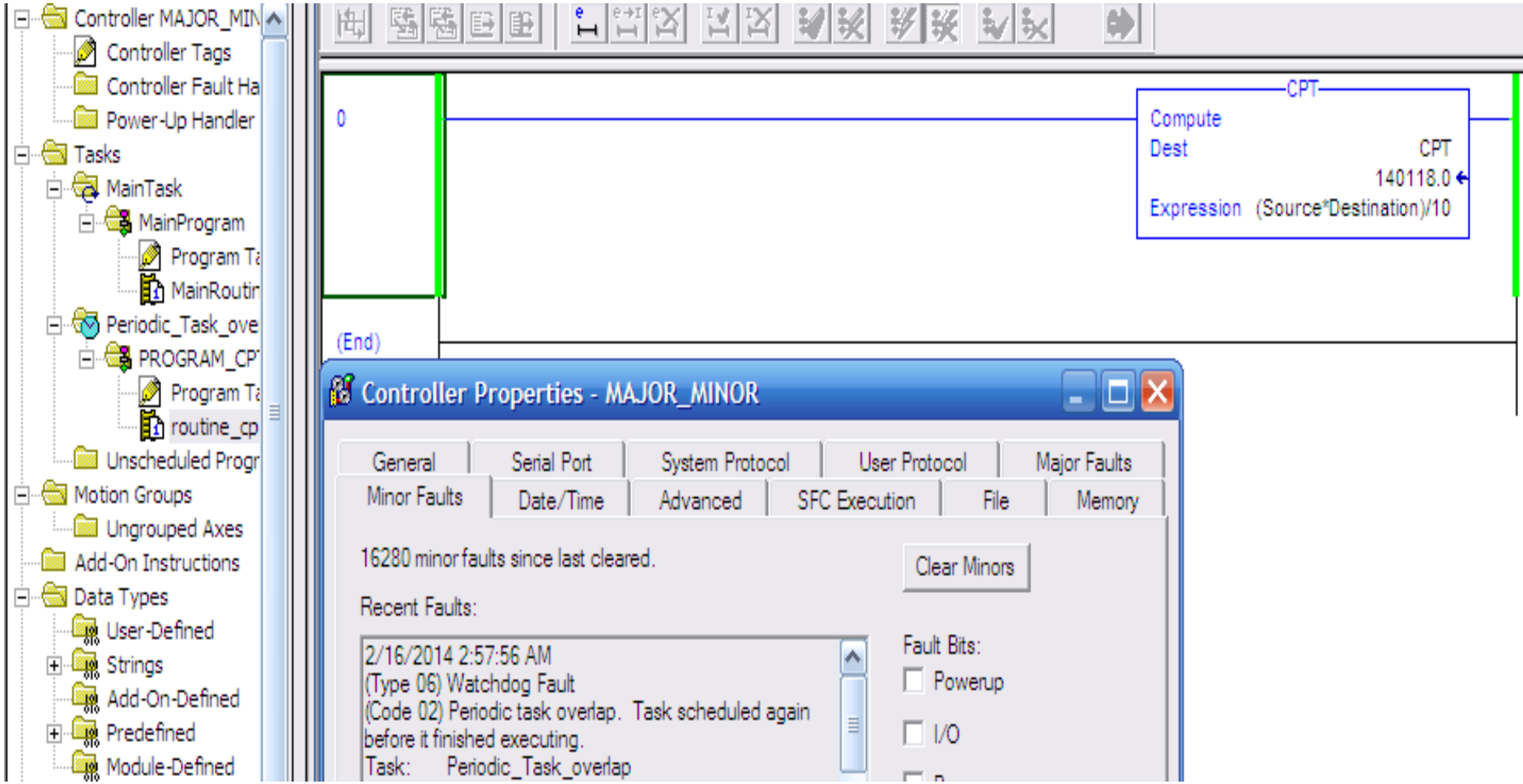
Ex1: Arithmetic overflow, result of arithmetic instruction is out of range(

Type =4, code =4)



MINOR FAULT CODES

EX2: Periodic task overlap, Task scheduled again before it finished executing(Type =6, code =2)



MAJOR FAULT CODES

Type	Code	Cause	Recovery Method
1	1	The controller powered on in Run mode.	Execute the power-loss handler.
1	15	• A 1769 power supply is connected directly to the controller's 1769 CompactBus, with an invalid configuration. • The 1768 power supply powering the controller has failed.	• Remove the power supply from the 1769 CompactBus and cycle power to the system. • Replace the power supply.
1	60	For a controller with *no* CompactFlash card installed, the controller: • detected a non-recoverable fault • cleared the project from memory	1. Clear the fault. 2. Download the project. 3. Change to remote run/run mode. If the problem persists: 1. Before you cycle power to the controller, record the state of the OK and RS232 LEDs. 2. Contact Rockwell Automation support. See the back of this publication.
1	61	For a controller with a CompactFlash card installed, the controller: • detected a non-recoverable fault • wrote diagnostic information to the CompactFlash card • cleared the project from memory	1. Clear the fault. 2. Download the project. 3. Change to remote run/run mode. If the problem persists, contact Rockwell Automation support. See the back of this publication.
3	16	A required I/O module connection failed.	Check that the I/O module is in the chassis. Check electronic keying requirements.

MAJOR FAULT CODES

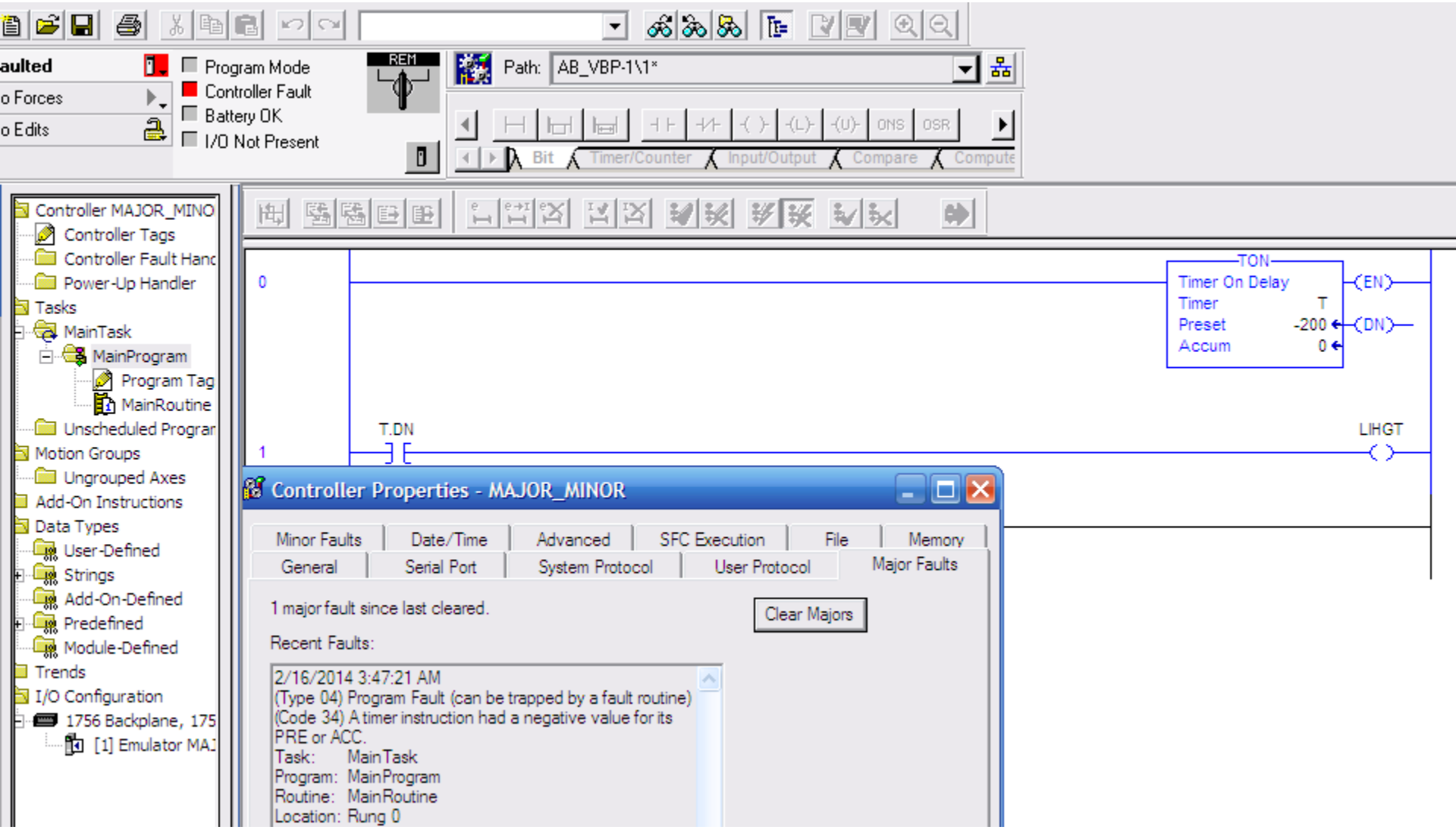
3	20	Possible problem with the ControlBus chassis.	Not recoverable - replace the chassis.
3	23	At least one required connection was not established before going to Run mode.	Wait for the controller I/O light to turn green before changing to Run mode.
4	16	Unknown instruction encountered.	Remove the unknown instruction. This probably happened due to a program conversion process.
4	20	Array subscript too big, control structure .POS or .LEN is invalid.	Adjust the value to be within the valid range. Don't exceed the array size or go beyond dimensions defined.
4	21	Control structure .LEN or .POS < 0.	Adjust the value so it is > 0.
4	31	The Parameters of the JSR instruction do not match those of the associated SBR or RET instruction.	Pass the appropriate number of Parameters. If too many Parameters are passed, the extra ones are ignored without any error.
4	34	A timer instruction has a negative preset or accumulated value.	Fix the program to not load a negative value into timer preset or accumulated value.
4	42	JMP to a label that did not exist or was deleted.	Correct the JMP target or add the missing label.

MAJOR FAULT CODES

4	82	A sequential function chart (SFC) called a subroutine and the subroutine tried to jump back to the calling SFC. Occurs when the SFC uses either a JSR or FOR instruction to call the subroutine.	Remove the jump back to the calling SFC.
4	83	The data tested was not inside the required limits.	Modify value to be within limits.
4	84	Stack overflow.	Reduce the subroutine nesting levels or the number of Parameters passed.
4	89	In a SFR instruction, the target routine does not contain the target step.	Correct the SFR target or add the missing step.
6	1	Task watchdog expired. User task has not completed in specified period of time. A program error caused an infinite loop, or the program is too complex to execute as quickly as specified, or a higher priority task is keeping this task from finishing.	Increase the task watchdog, shorten the execution time, make the priority of this task "higher," simplify higher priority tasks, or move some code to another controller.
7	40	Store to nonvolatile memory failed.	1. Try again to store the project to nonvolatile memory. 2. If the project fails to store to nonvolatile memory, replace the memory board.
7	41	Load from nonvolatile memory failed due to controller type mismatch.	Change to a controller of the correct type or download the project and store it on the CompactFlash card.
7	42	Load from nonvolatile memory failed because the firmware revision of the project in nonvolatile memory does not match the	Update the controller firmware to the same revision level as the project that is in nonvolatile memory.

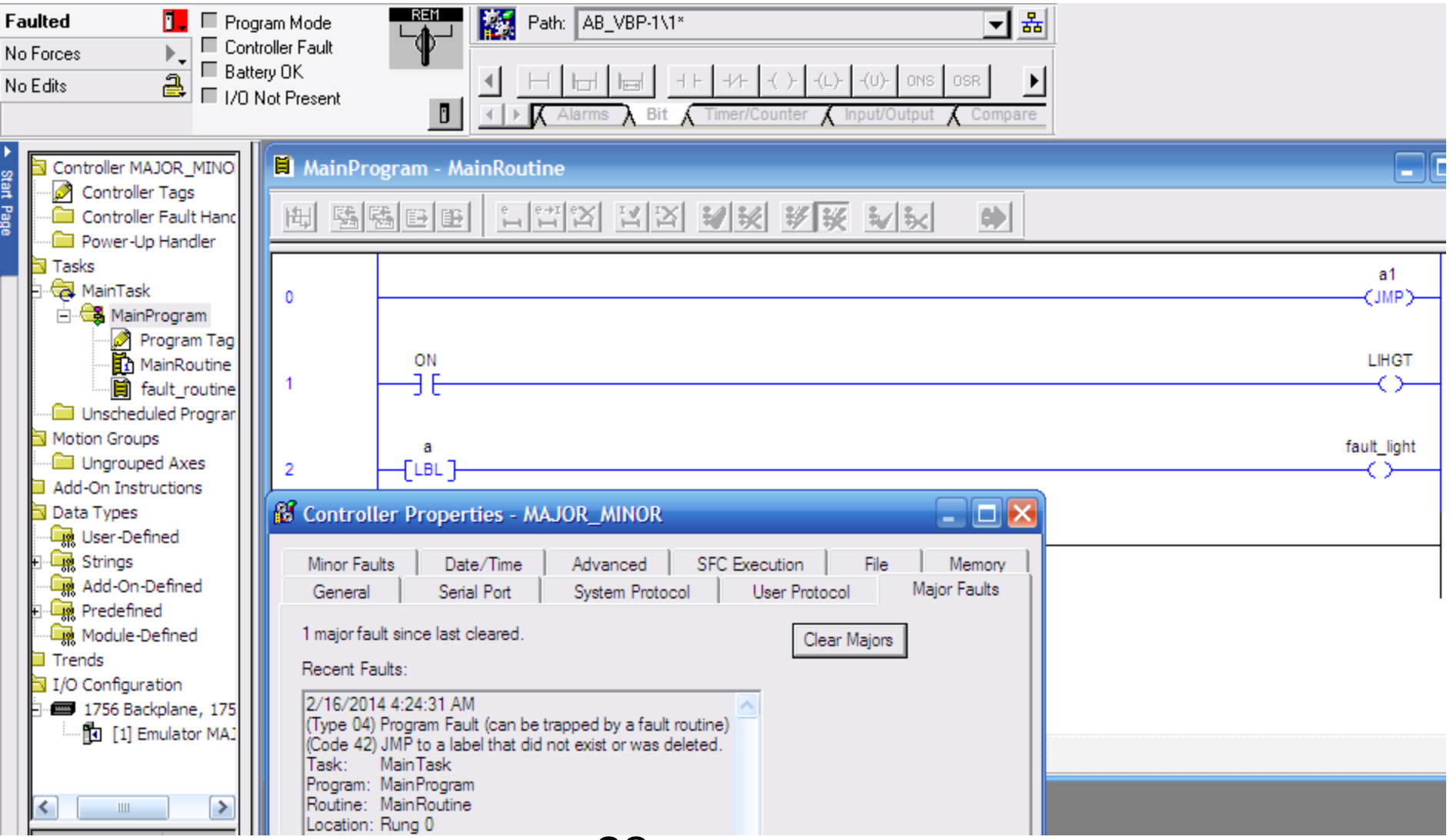
MAJOR FAULT CODES

EX3: Timer with a negative value preset for its Pre (Type =04, code =34)



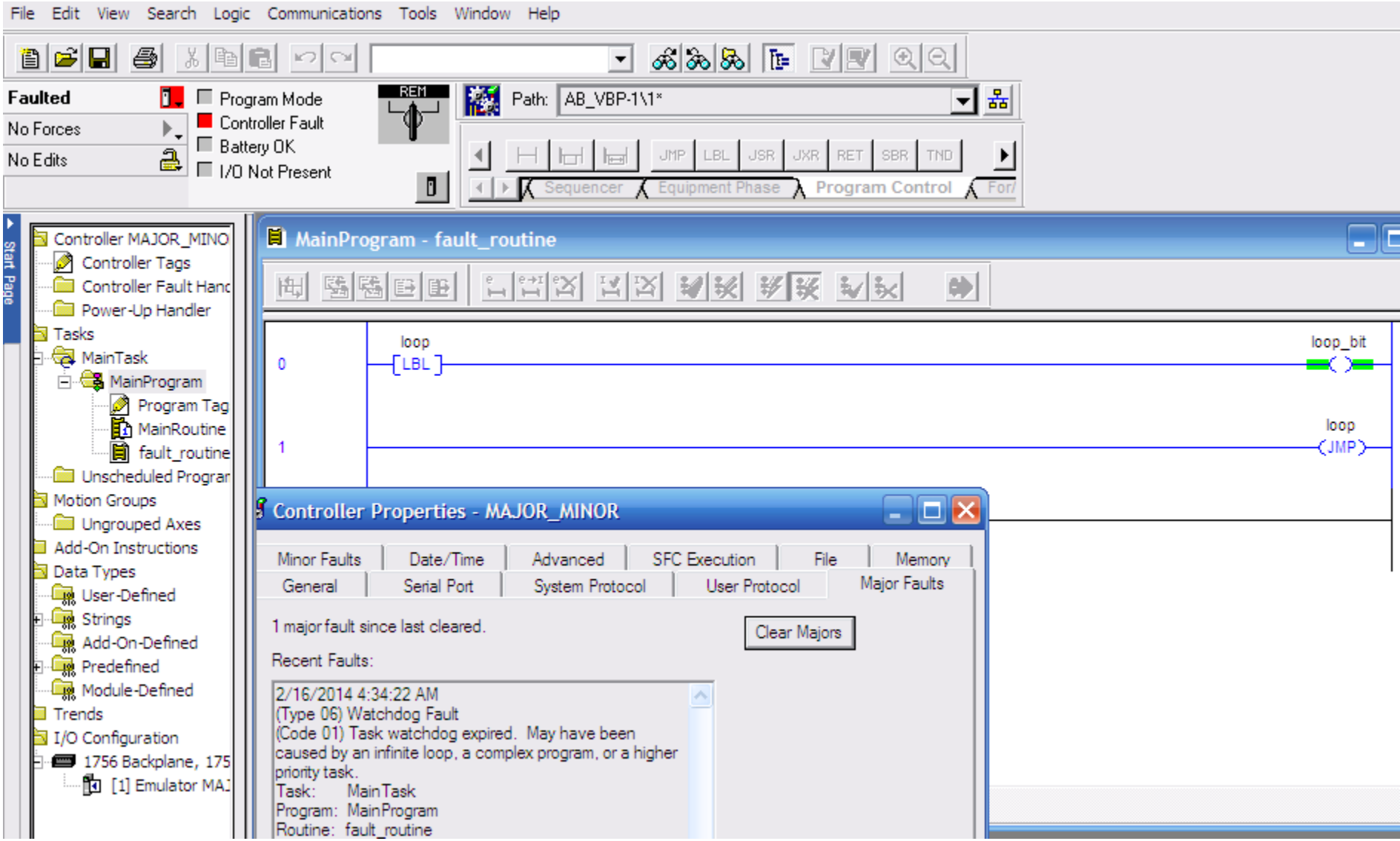
MAJOR FAULT CODES

EX4: JMP to a label that do not exits (Type =04, code =42)



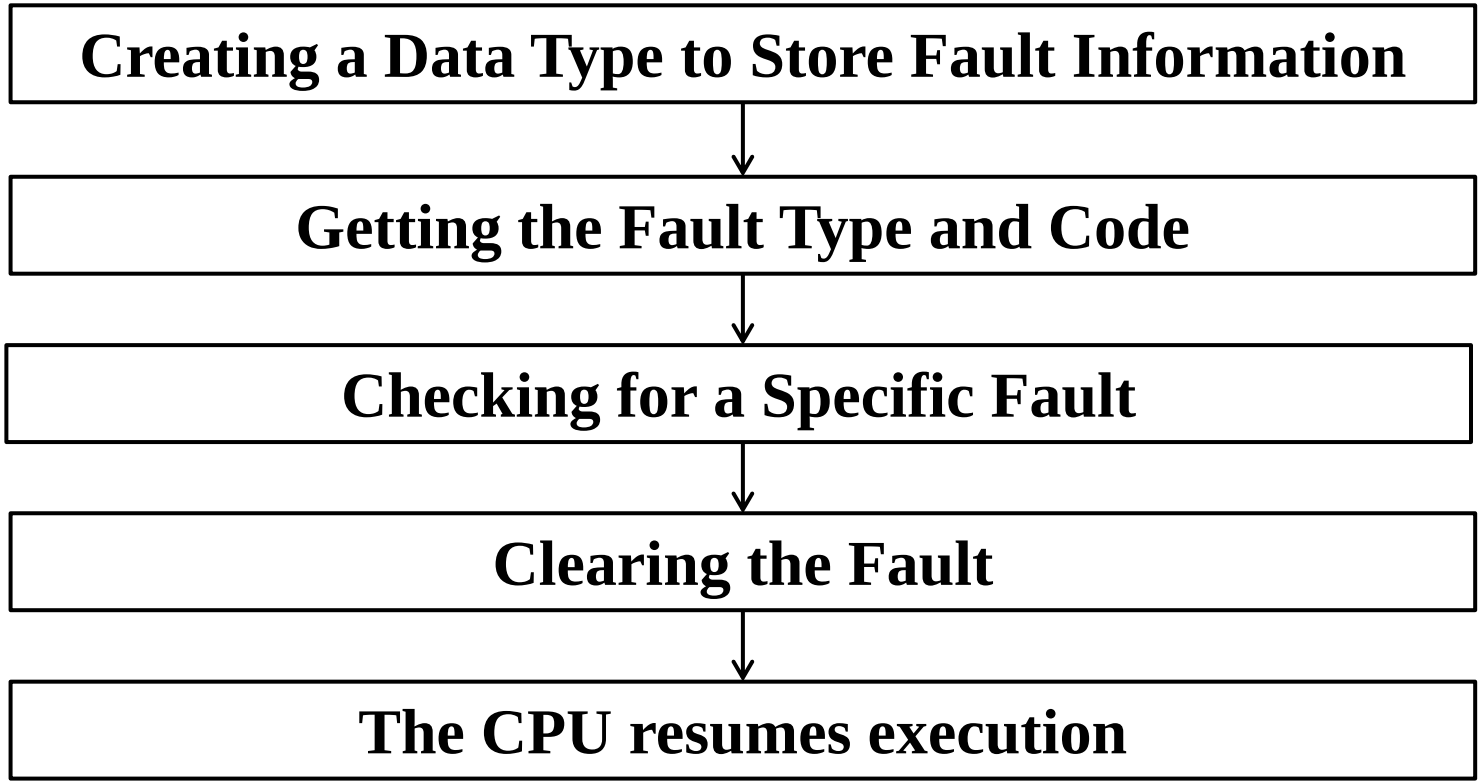
MAJOR FAULT CODES

EX5: Task watchdog expired(Type =06, code =01)



HANDLING FAULTs

Programmatically Clear a Major Fault



HANDLING FAULTs

Choosing Where To Place The Fault Routine .

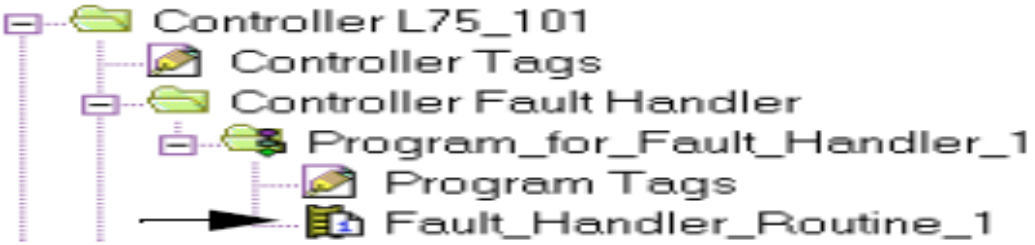
If you want take specific action/clear the fault when		Do this
Condition	**Fault Type**	
The execution of an instruction faults	4	Create a Fault Routine for a Program
Communication with an I/O module fails	3	Create a Routine for the Controller Fault Handler
Watchdog time for a task expires	6	
While a project is downloading to the controller, the keyswitch is placed in RUN	8	
The controller powers up in run/remote run mode	1	Create a Routine for the Power-Up Handler

HANDLING FAULTs

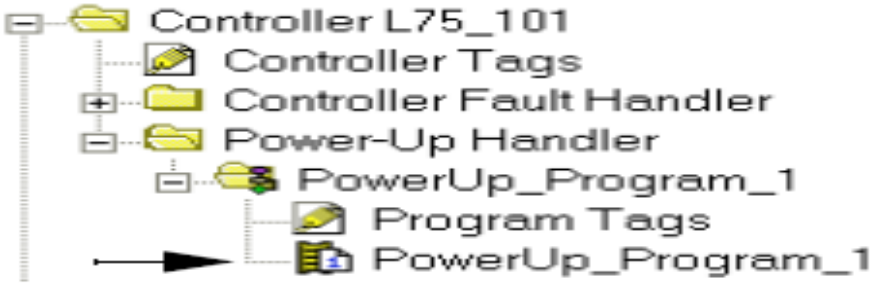
Choosing Where To Place The Fault Routine .

Program Fault Routine

Controller Fault Routine



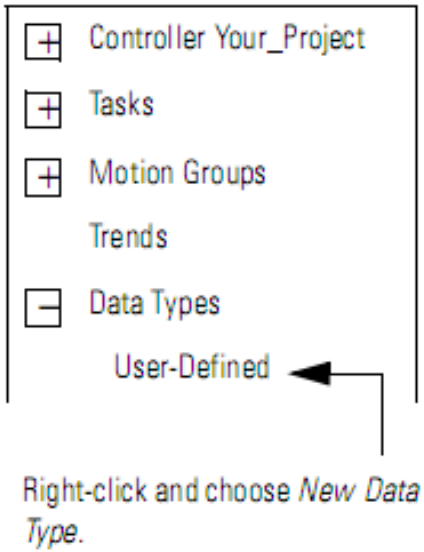
Power-Up Fault Handler Routine



HANDLING FAULTs

Creating a Data Type to Store Fault Information.

To create a new data type:



Right-click and choose *New Data Type*.

Data Type: FAULTRECORD

Name	FAULTRECORD
Description	Stores the MajorFaultRecord attribute or MinorFaultRecord attribute of the PROGRAM object.

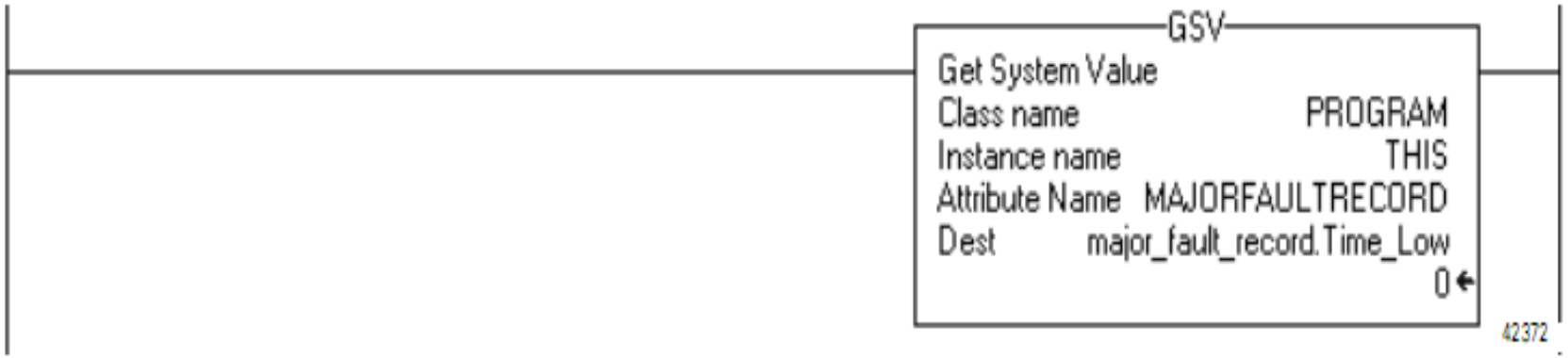
Members

	Name	Data Type	Style	Description
	Time_Low	DINT	Decimal	lower 32 bits of the fault timestamp value
	Time_High	DINT	Decimal	upper 32 bits of the fault timestamp value
	Type	INT	Decimal	fault type (program, I/O, etc)
	Code	INT	Decimal	unique code for the fault
	Info	DINT[8]	Hex	fault specific information

- To access system information, use GSV(Get System Value) and SSV(Set System Value) Instruction.
- For status information about a program, access the program Objects.
- For fault information, access these attribute of the program Object

HANDLING FAULTs

Getting the Fault Type and Code.

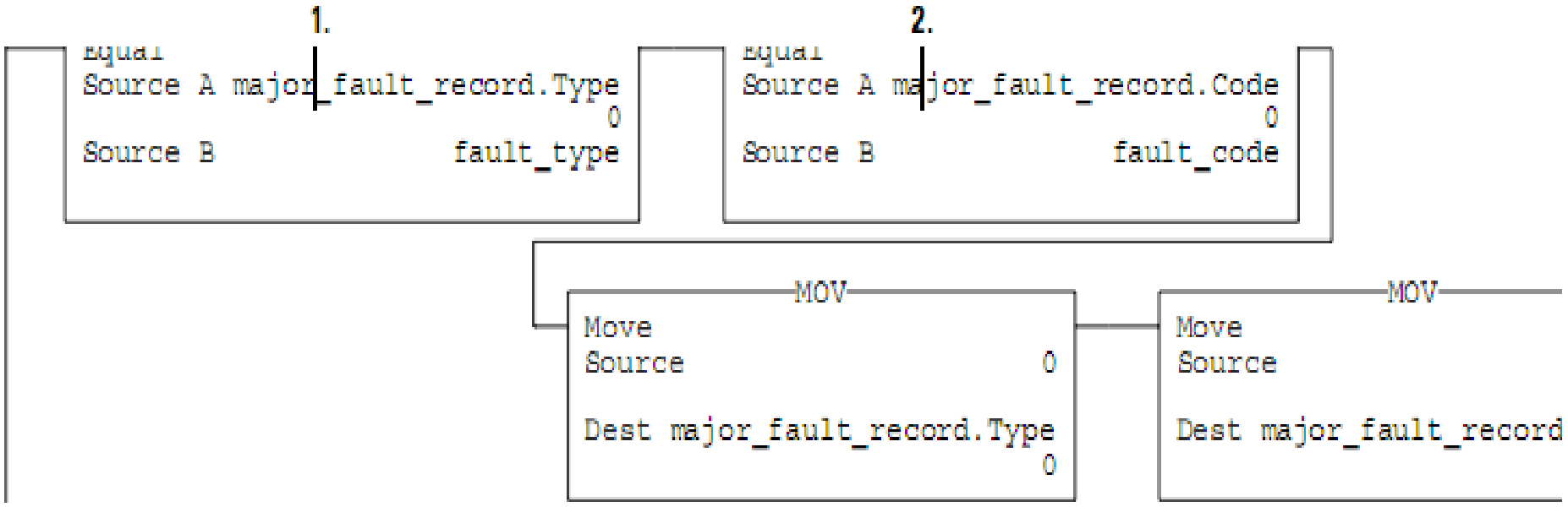


1. The GSV instruction accesses the MAJORFAULTRECORD attribute of this program. This attribute stores information about the fault.

2. The GSV instruction stores the fault information in the major_fault_record tag (of type FAULTRECORD). When you enter a tag that is based on a structure, enter the first member of the tag.

HANDLING FAULTs

Checking for a Specific Fault.



1. The first EQU instruction checks for a specific type of fault, such as program, I/O. In Source B, enter the value for the type of fault that you want to clear.

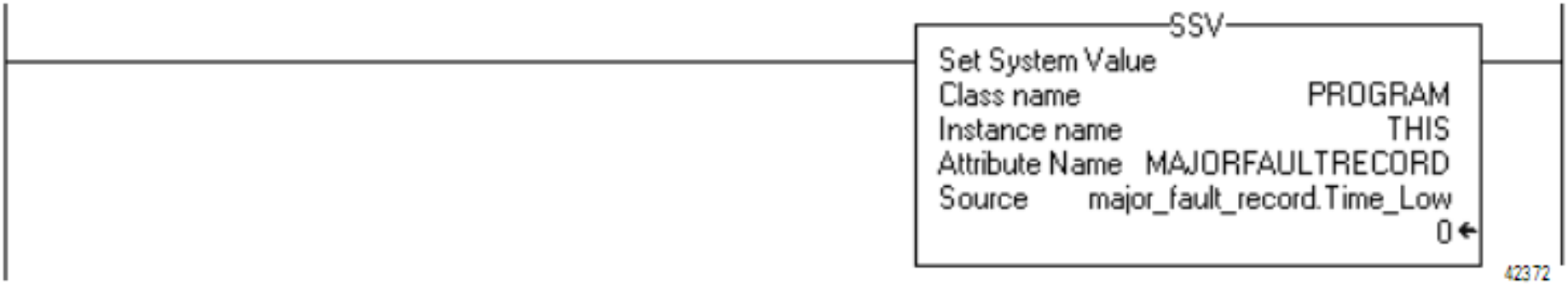
2. The second EQU instruction checks for a specific fault code. In Source B, enter the value for the code that you want to clear.

3. The first CLR instruction sets to zero the value of the fault type in the major_fault_record tag.

4. The second CLR instruction sets to zero the value of the fault code in the major_fault_record tag.

HANDLING FAULTs

Clearing the Fault.



1. The SSV instruction writes new values to the MAJORFAULTRECORD attribute of this program.

2. The SSV instruction writes the values contained in the major_fault_record tag. Since the Type and Code member are set to zero, the fault clears and the controller resumes execution.

HANDLING FAULTs

Example: Checking and clearing the fault when CPU powered in run mode:

Type =1, Code = 1.

Creating a Data type to store fault information of program

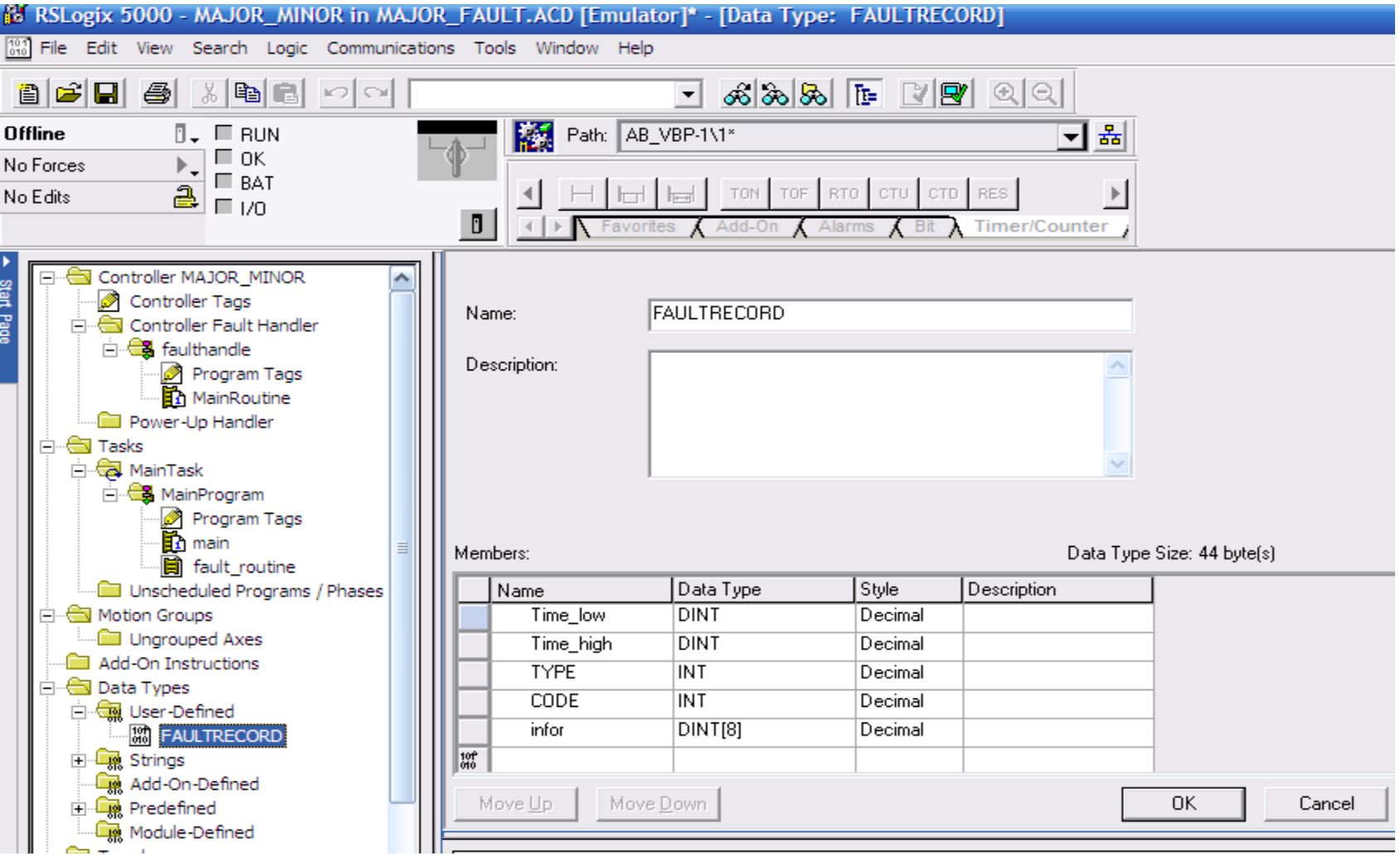
Use GSV instruction to read MAJORFAULTRECORD attribute of the program

Checking for a specific fault **Type** and **Code** then clearing the fault

Use SSV instruction to write new value to MAJORFAULTRECORD attribute of the program.

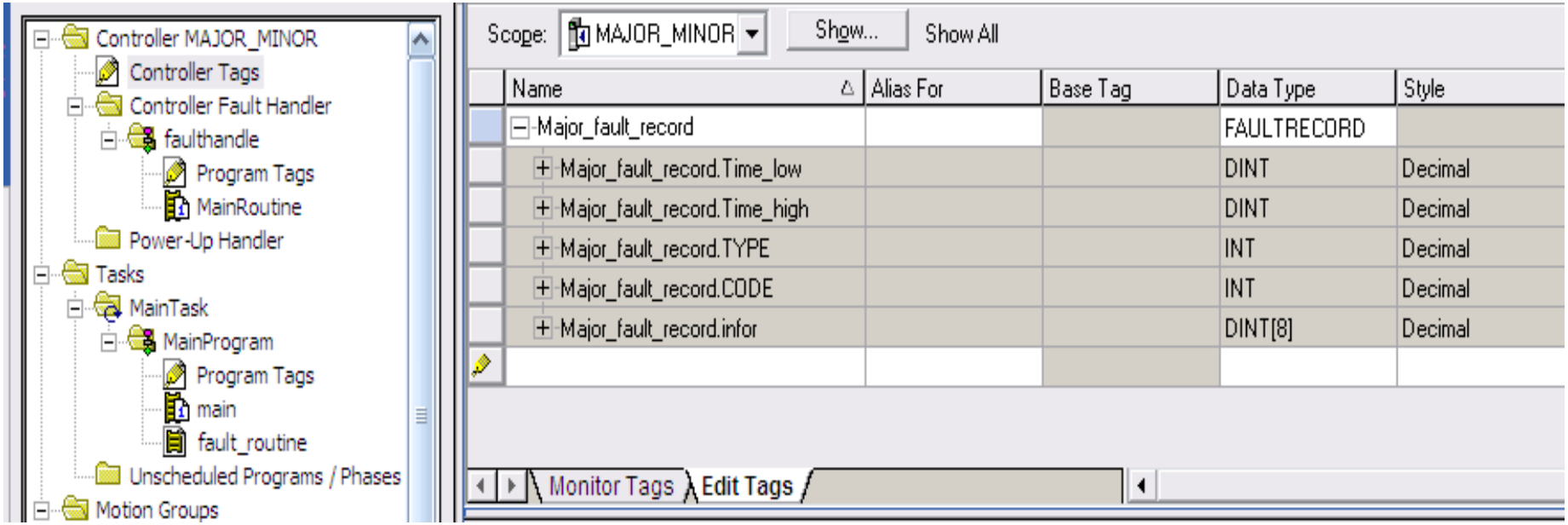
HANDLING FAULTs

- Creating a Data Type to store fault information of program



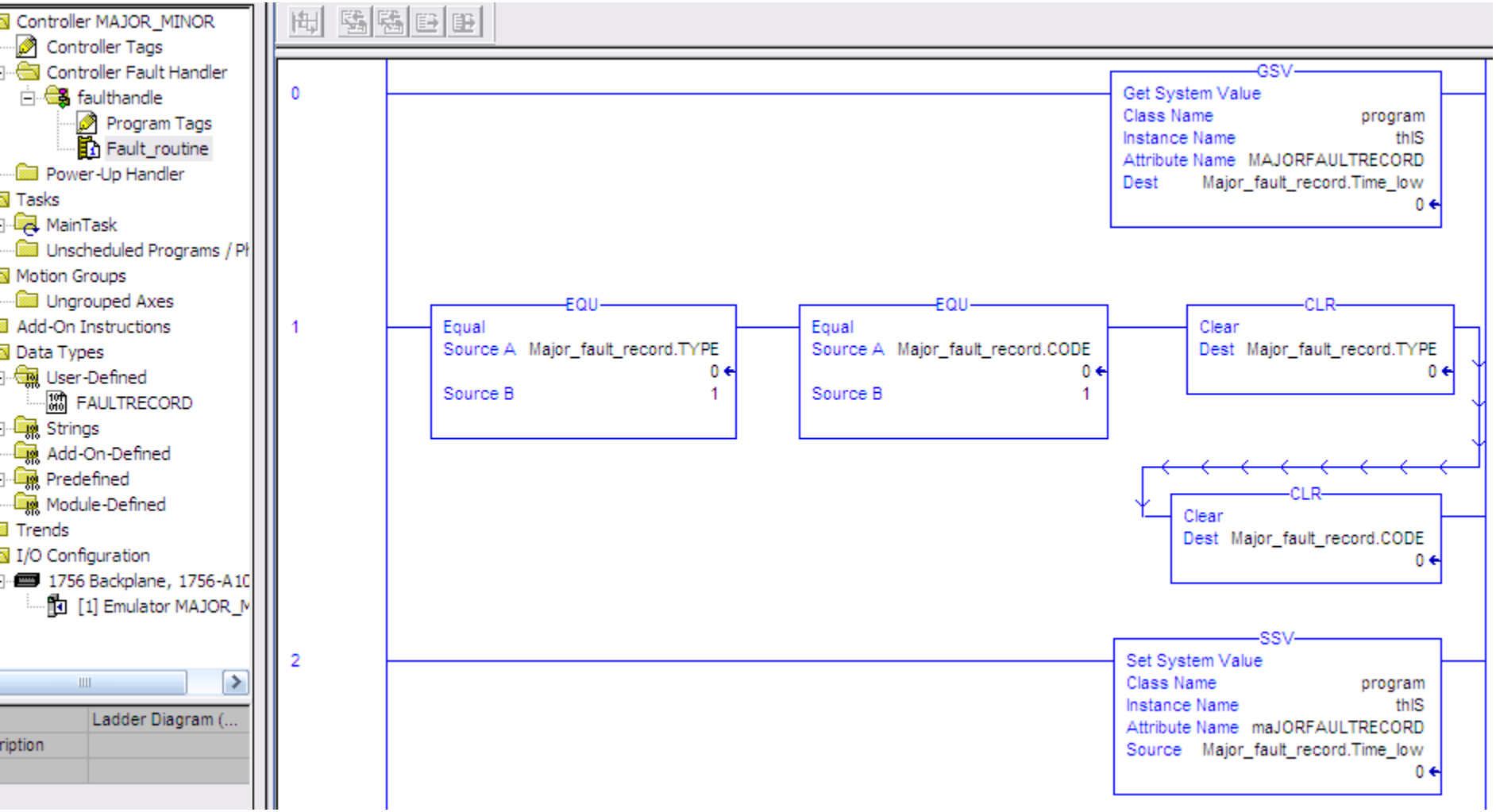
HANDLING FAULTs

- Creating a tag to store MAJORFAUTRECORD of the program



HANDLING FAULTs

- Creating a routine in Controller Fault Handler and write a program as following



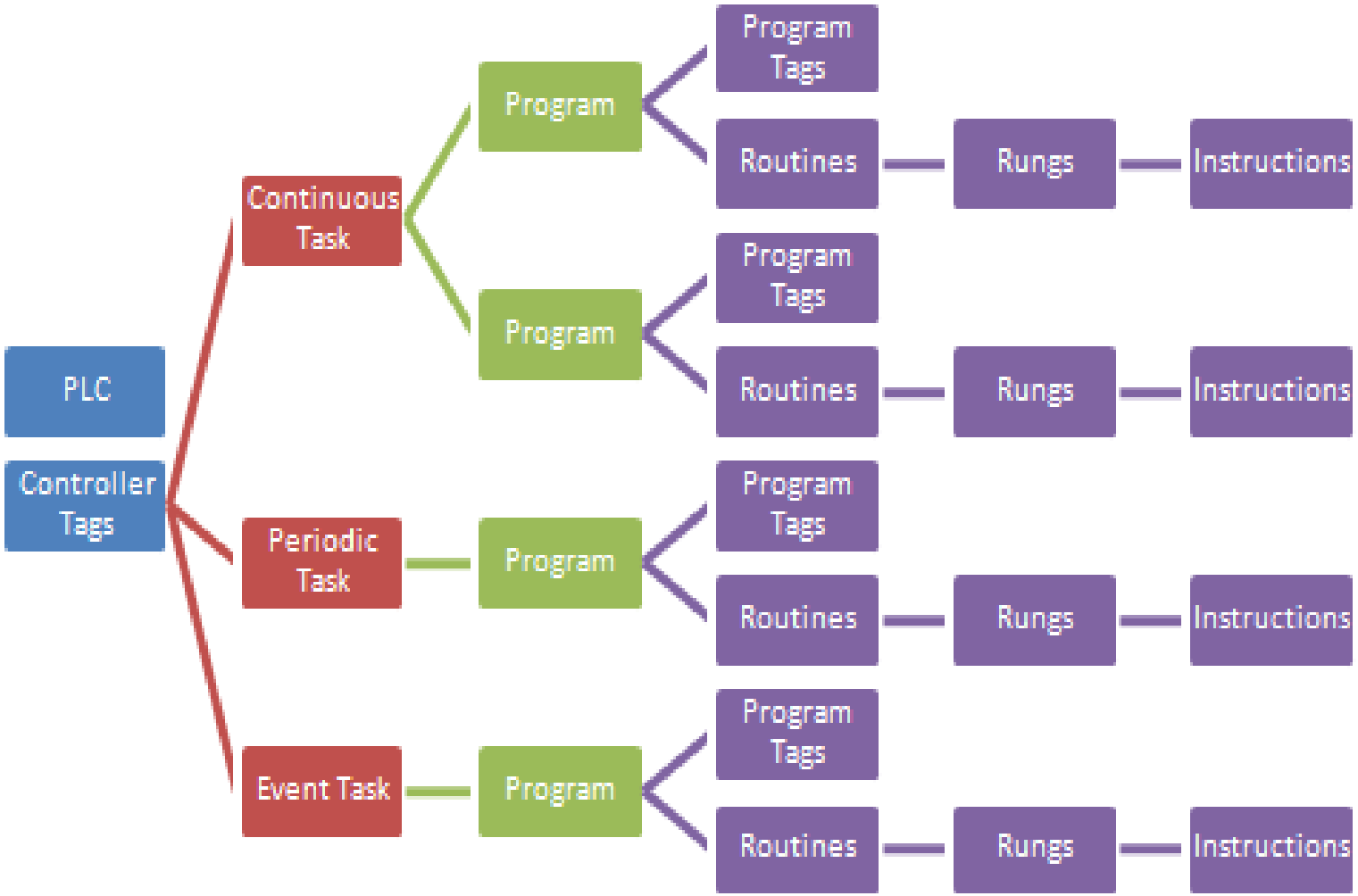
HANDLING FAULT

EX2: Handling faults for the CPU

Condition	Fault Type	
The execution of an instruction faults	4	Create a Fault Routine for a Program
Communication with an I/O module fails	3	Create a Routine for the Controller Fault Handler
Watchdog time for a task expires	6	
While a project is downloading to the controller, the keyswitch is placed in RUN	8	
The controller powers up in run/remote run mode	1	Create a Routine for the Power-Up Handler

RSLOGIX 5000 CONTROLLER TASKS

A RSLogix 5000 Controller supports three type of tasks



RSLOGIX 5000 CONTROLLER TASKS

A RSLogix 5000 Controller supports three type of tasks

- Continuous Tasks
- Periodic Task
- Event Task

Characteristic of Tasks

- The controller executes only one Task at one time
- A Task can interrupt a different task that is executing and take control if it has high priority
- In any given Task, only one program executes at one time.

RSLOGIX 5000 CONTROLLER TASKS

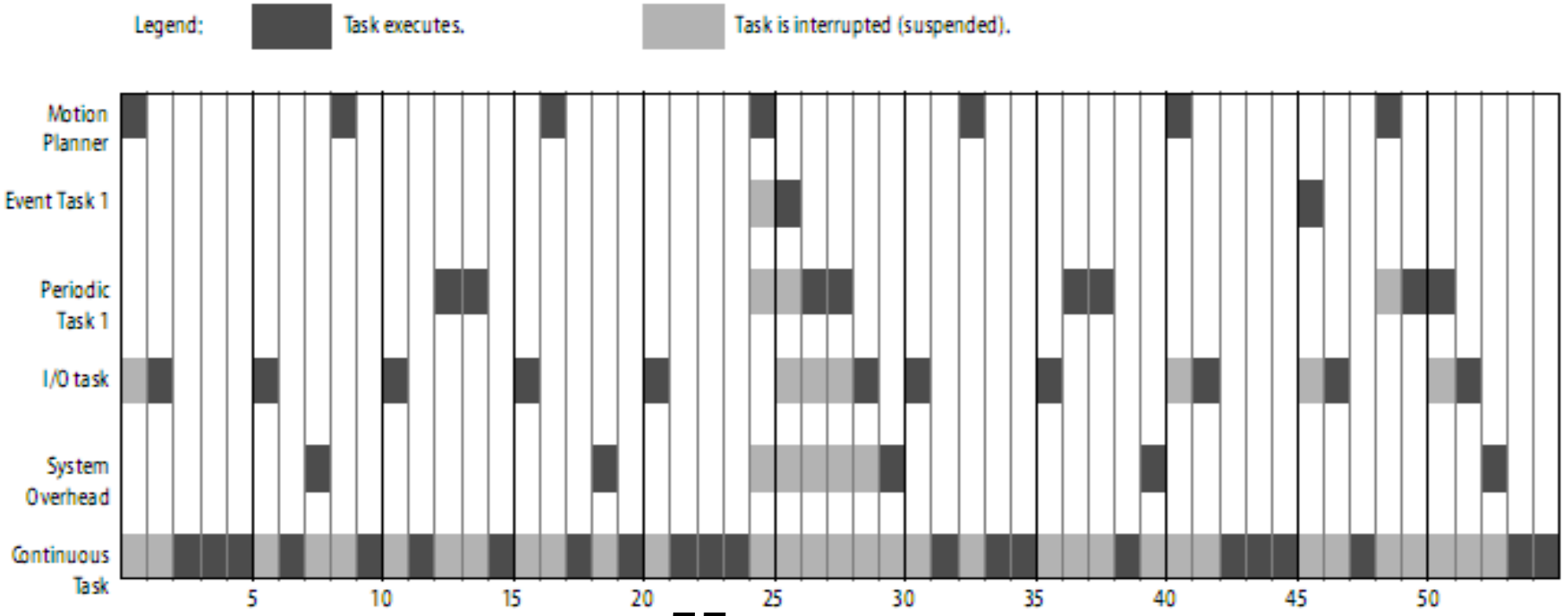
Function of Tasks

If you want to execute a section of your logic	Then use this type of task	Description
All of the time	Continuous Task	The continuous task runs in the background. Any CPU time not allocated to other operations (such as motion, communication, and periodic or event tasks) is used to execute the programs within the continuous task. • The continuous task runs all the time. When the continuous task completes a full scan, it restarts immediately. • A project does not require a continuous task. If used, there can be only one continuous task.
• At a constant period (example, every 100 ms) • Multiple times within the scan of your other logic	Periodic Task	A periodic task performs a function at a specific period. Whenever the time for the periodic task expires, the periodic task: • interrupts any lower priority tasks. • executes one time. • returns control to where the previous task left off. You can configure the time period from 0.1 ms. . . 2000 s. The default is 10 ms.
Immediately when an event occurs	Event Task	An event task performs a function only when a specific event (trigger) occurs. Whenever the trigger for the event task occurs, the event task: • interrupts any lower priority tasks. • executes one time. • returns control to where the previous task left off. The trigger can be a: • change of a digital input. • new sample of analog data. • certain motion operations. • consumed tag. • EVENT instruction. **Important:** Some Logix5000 controllers do not support all triggers.

RSLOGIX 5000 CONTROLLER TASKSt

This example depicts execution of a project with three tasks

Task	Priority	Period	Execution time	Duration
Motion planner	N/A	8 ms (course update rate)	1 ms	1 ms
Event task 1	1	N/A	1 ms	1…2 ms
Periodic task 1	2	12 ms	2 ms	2…4 ms
I/O task—n/a to ControlLogix and SoftLogix controllers. See page 11.	7	5 ms (fastest RPI)	1 ms	1…5 ms
System overhead	N/A	Time slice = 20%	1 ms	1…6 ms
Continuous task	N/A	N/A	20 ms	48 ms



RSLOGIX 5000 CONTROLLER TASKS

Examples for using Tasks

Fill a tank to its maximum level and then open a drain valve.	Continuous task
Collect and process system parameters and send them to a display.	Continuous task
Complete step 3 in a control sequence—reposition the bin diverter.	Continuous task
Your system must check the position of a field arm each 0.1 s and calculate the average rate of change in its position. This is used to determine braking pressure.	Periodic task
Read the thickness of a paper roll every 20 ms.	Periodic task
A packaging line glues boxes closed. When a box arrives at the gluing position, the controller must immediately execute the gluing routine.	Event task
In a high-speed assembly operation, an optical sensor detects a certain type of reject. When the sensor detects a reject, the machine must immediately divert the reject.	Event task
In an engine test stand, you want to capture and archive each analog data immediately after each sample of data.	Event task
Immediately after receiving new production data, load the data into the station.	Event task
In a line that packages candy bars, you have to make sure that the perforation occurs in the correct location on each bar. Each time the registration sensor detects the registration mark, check the accuracy of an axis and perform any required adjustment.	Event task
A gluing station must adjust the amount of glue it applies to compensate for changes in the speed of the axis. After the motion planner executes, check the command speed of the axis and vary the amount of glue, if needed.	Event task
In a production line, if any of the programs detect an unsafe condition the entire line must shut down. The shutdown procedure is the same regardless of the unsafe condition.	Event task

RSLOGIX 5000 CONTROLLER TASKS

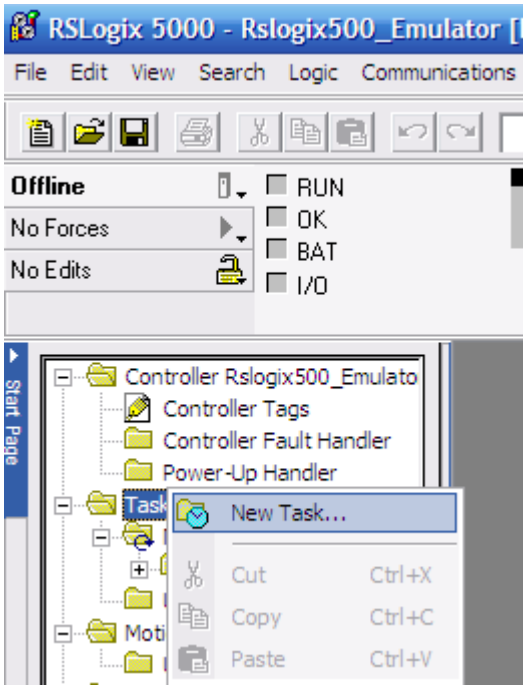
Priority Periodic and Event Tasks: The priority of each task tells the controller what to do

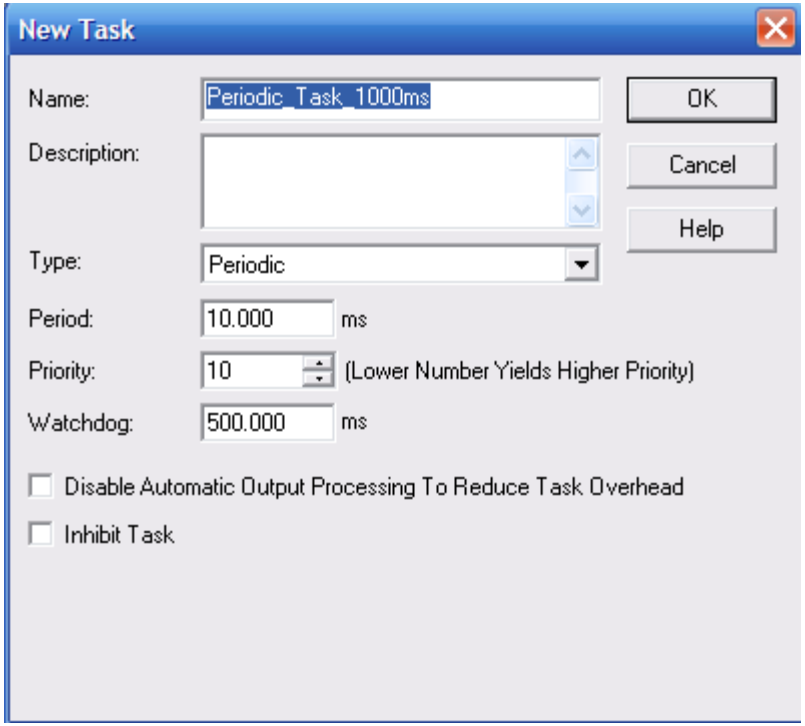
If you want	Then	Notes
This task to interrupt another task	Assign a priority number that is less than (higher priority) the priority number of the other task.	•A higher priority task interrupts all lower priority tasks. •A higher priority task can interrupt a lower priority task multiple times.
Another task to interrupt this task	Assign a priority number that is greater than (lower priority) the priority number of the other task.	
This task to share controller time with another task	Assign the same priority number to both tasks.	The controller switches back and forth between each task and executes each one for 1 ms.

PROGRAM FOR PERIODIC TASKS

Creating a Periodic Task, Putting an appropriate name, selecting Task Type, Periodic and Priority, creating a program and writing a logic program

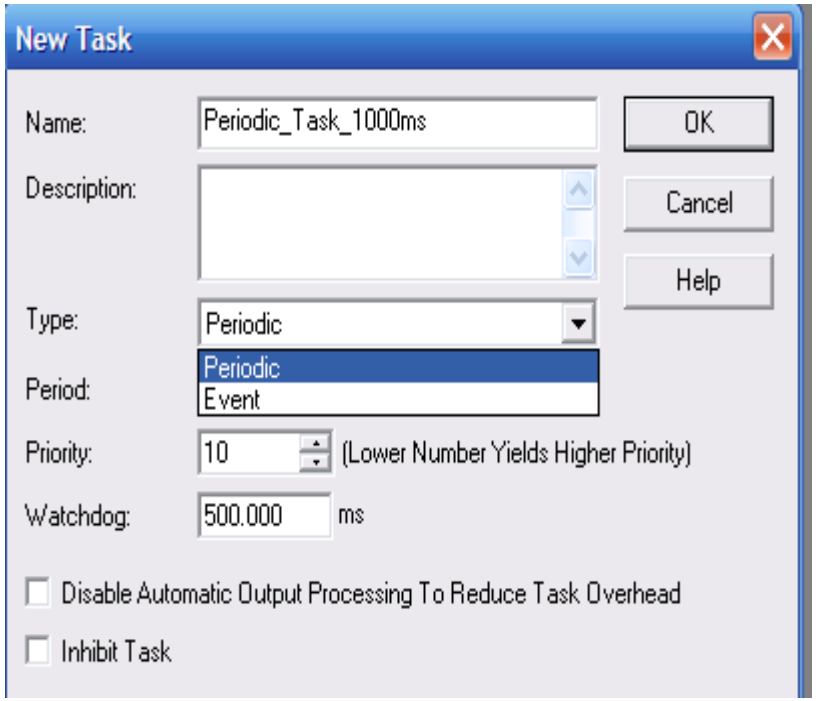
- **Creating a Periodic Task, enter an appropriate name**

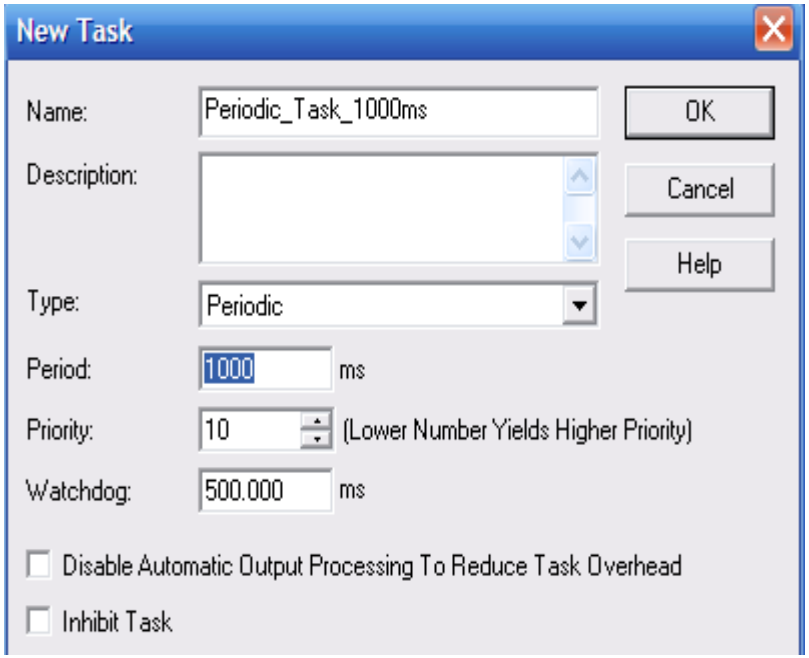




PROGRAM FOR PERIODIC TASKS

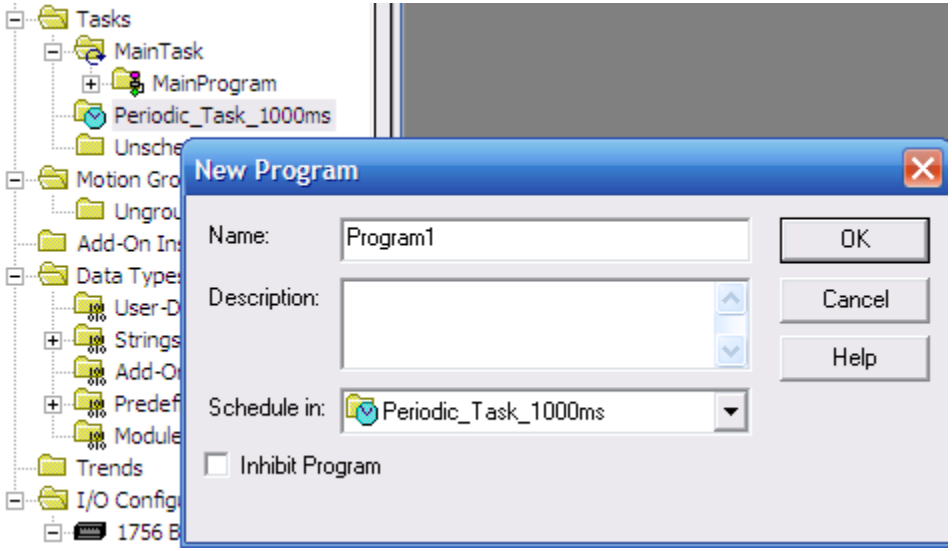
➢ **Selecting Task Type, Periodic and Priority**

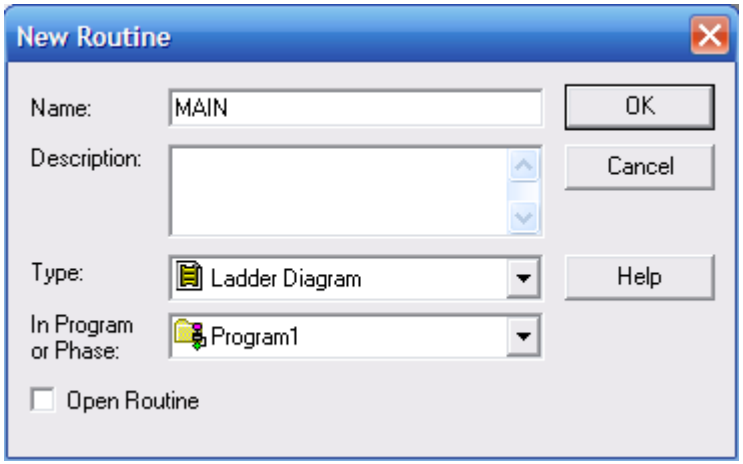


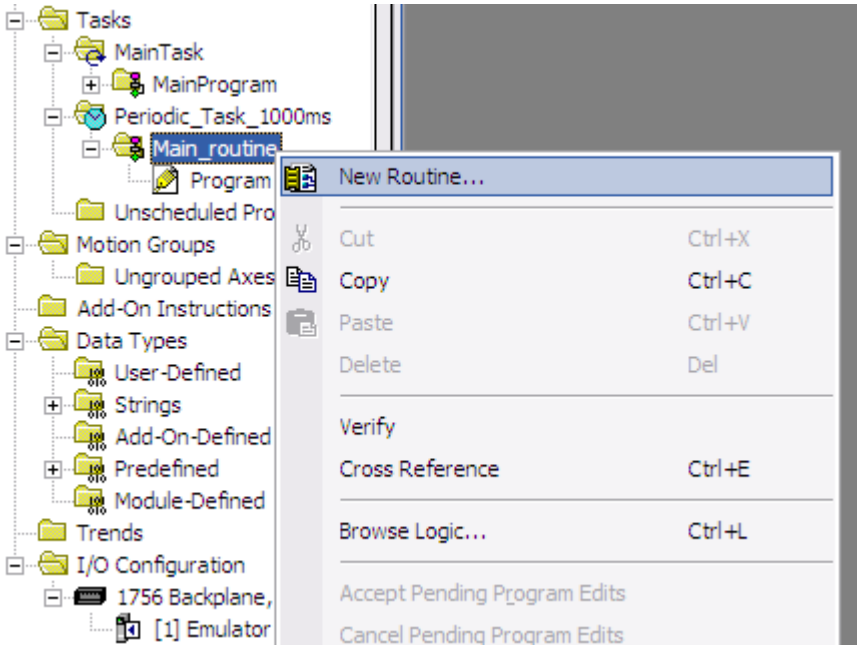


PROGRAM FOR PERIODIC TASKS

➢ **Creating a new Program with appropriate name and a new routine**

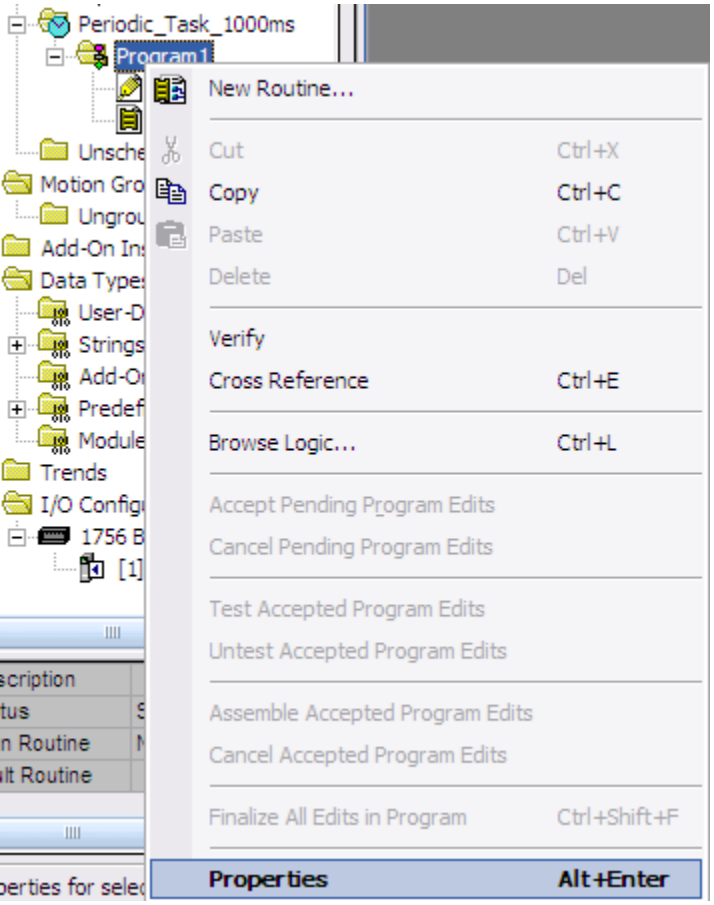


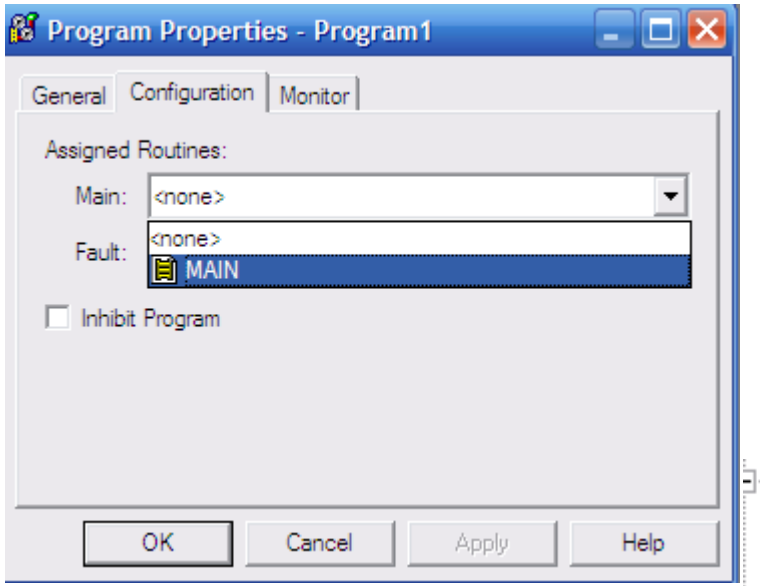


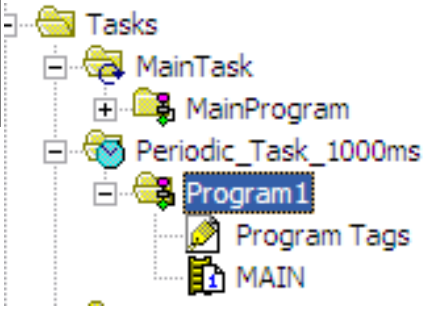


PROGRAM FOR PERIODIC TASKS

- **Select Main Routine for writing logic program**

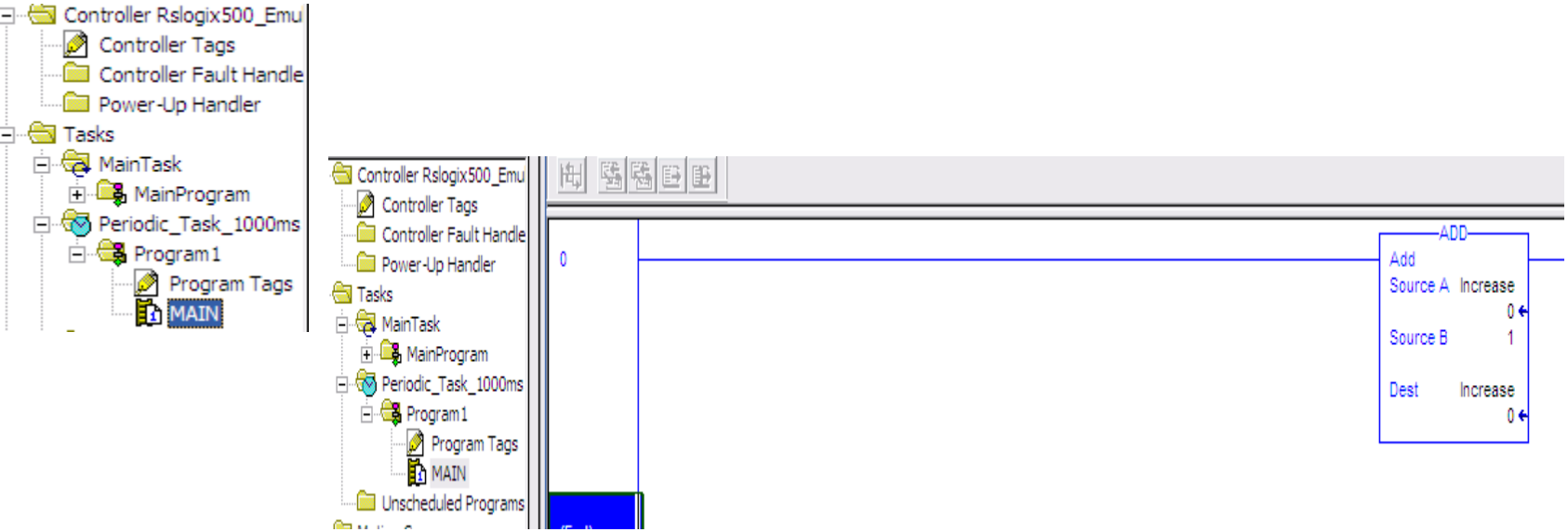






PROGRAM FOR PERIODIC TASKS

➢**Selecting Main Routine for writing a Program**



Add Instruction will executed one every 1000ms

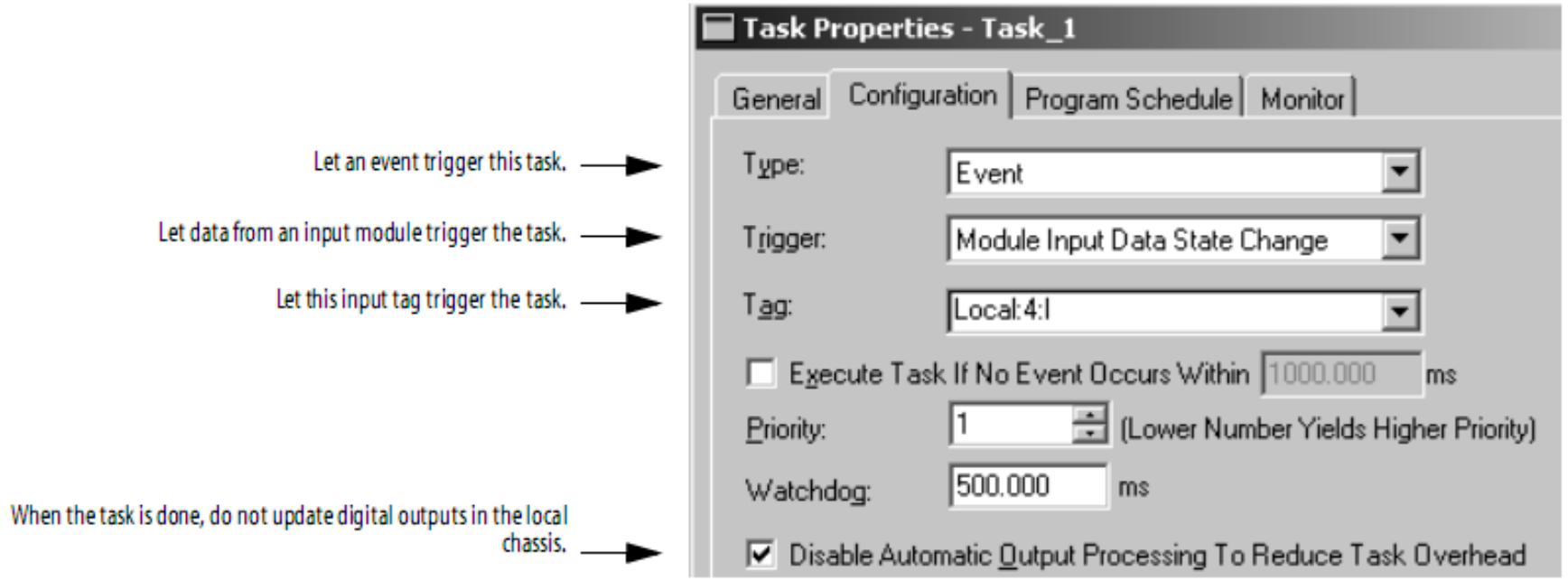
MANAGE EVENT TASKS

Choosing the Trigger for an Event Task

To trigger an event task when	Use this trigger	With these considerations
Digital input turns On or Off	Module Input Data State Change	• Only one input module can trigger a specific event task. • The input module triggers the event task based on the change of state (COS) configuration for the module. The COS configuration defines which points prompt the module to produce data if they turn On or Off. This production of data (due to COS) triggers the event task. • Typically, enable COS for only one point on the module. If you enable COS for multiple points, a task overlap of the event task may occur.
Analog module samples data	Module Input Data State Change	• Only one input module can trigger a specific event task. • The analog module triggers the event task after each real time sample (RTS) of the channels. • All the channels of the module use the same RTS.
Controller gets new data via a consumed tag	Consumed Tag	• Only one consumed can trigger a specific event task. • Typically, use an IOT instruction in the producing controller to signal the production of new data. The IOT instruction sets an event trigger in the producing tag. This trigger passes to the consumed tag and triggers the event task. • When a consumed tag triggers an event task, the event task waits for all the data to arrive before the event task executes.
Specific condition or conditions occur within the logic of a program	EVENT instruction	Multiple EVENT instructions can trigger the same task. This lets you execute a task from different programs.

MANAGE EVENT TASKS

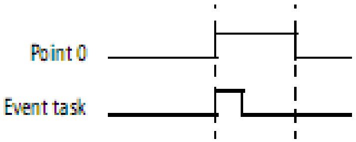
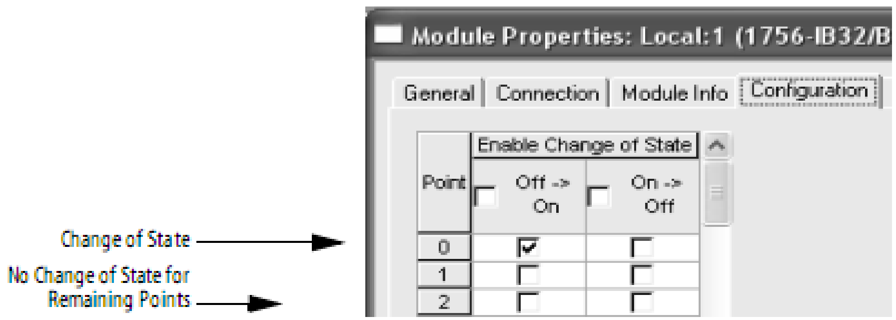
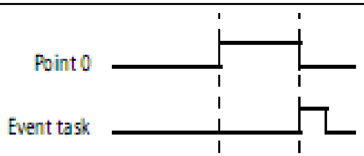
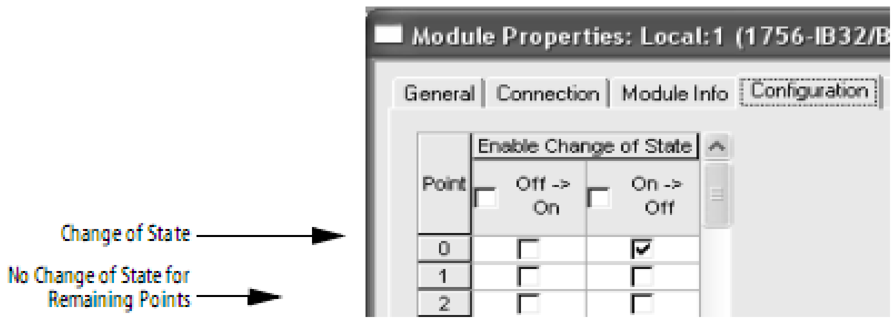
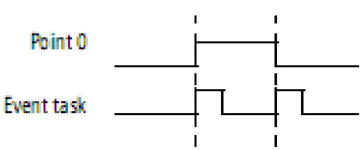
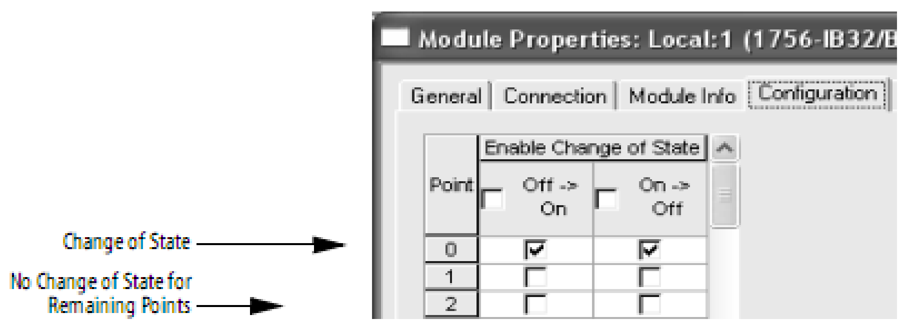
Module Input Data State Change Trigger



Event Task is trigged whenever data from input change

MANAGE EVENT TASKS

Choosing Trigger for Module Input State

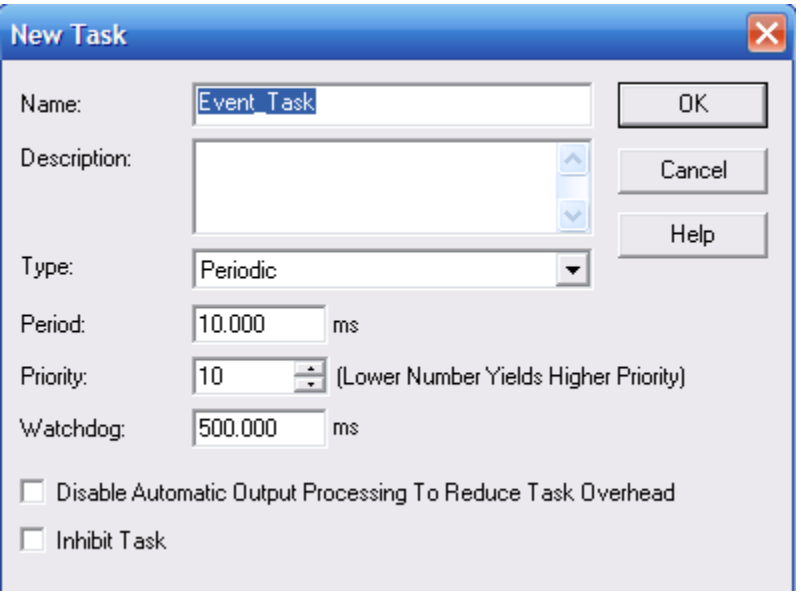
If you want this	Then configure the input module like this (Point 0 is an example)
	
	
	

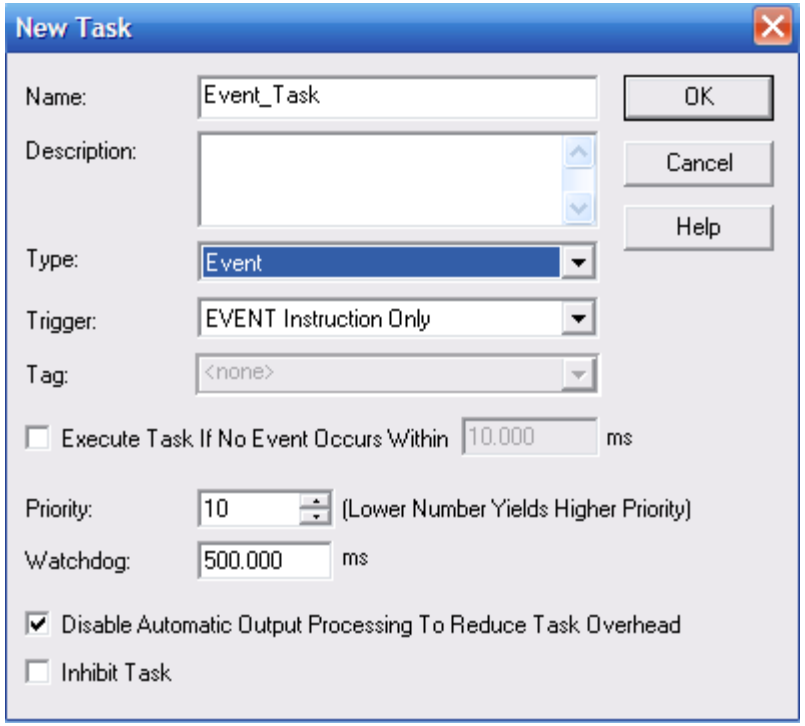
Event Task is trigged whenever data from input change

PROGRAM FOR EVENT TASKS

Creating an ***Event Task***, enter an appropriate name, Selecting Task Type, event And Priority, creating a Program and writing a logic program

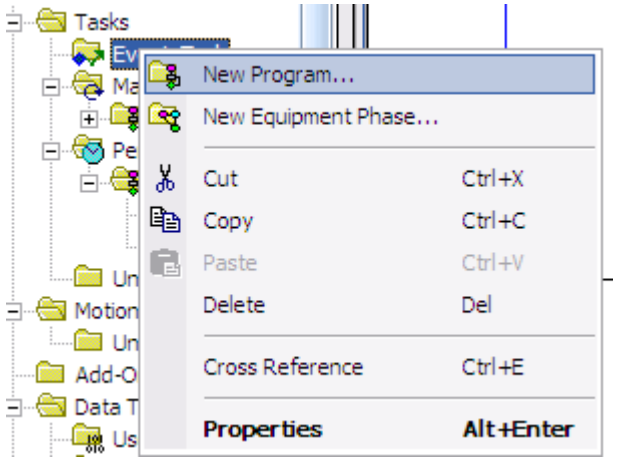
- Creating an **Event Task**, enter an appropriate **name**, **Type of Task , Trigger and Priority**

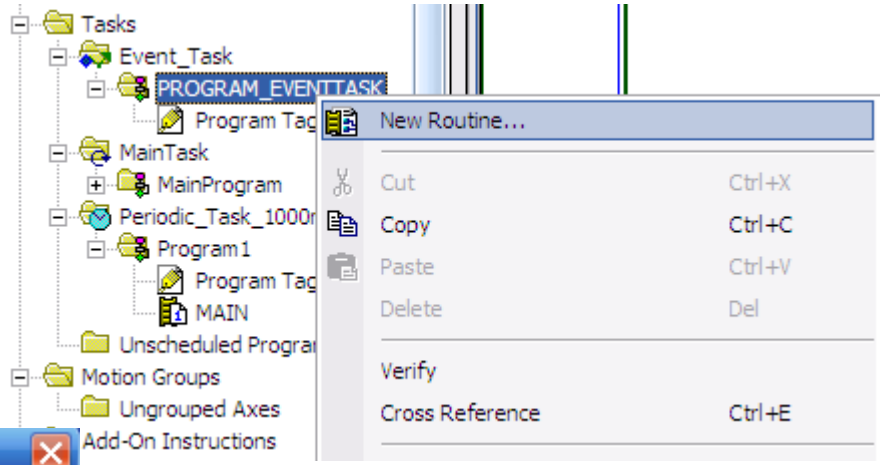


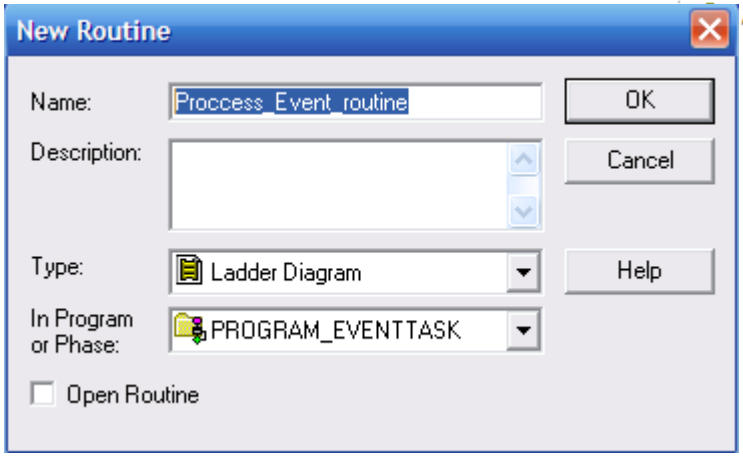


PROGRAM FOR EVENT TASKS

- Creating a new Program with appropriate name and a new routine

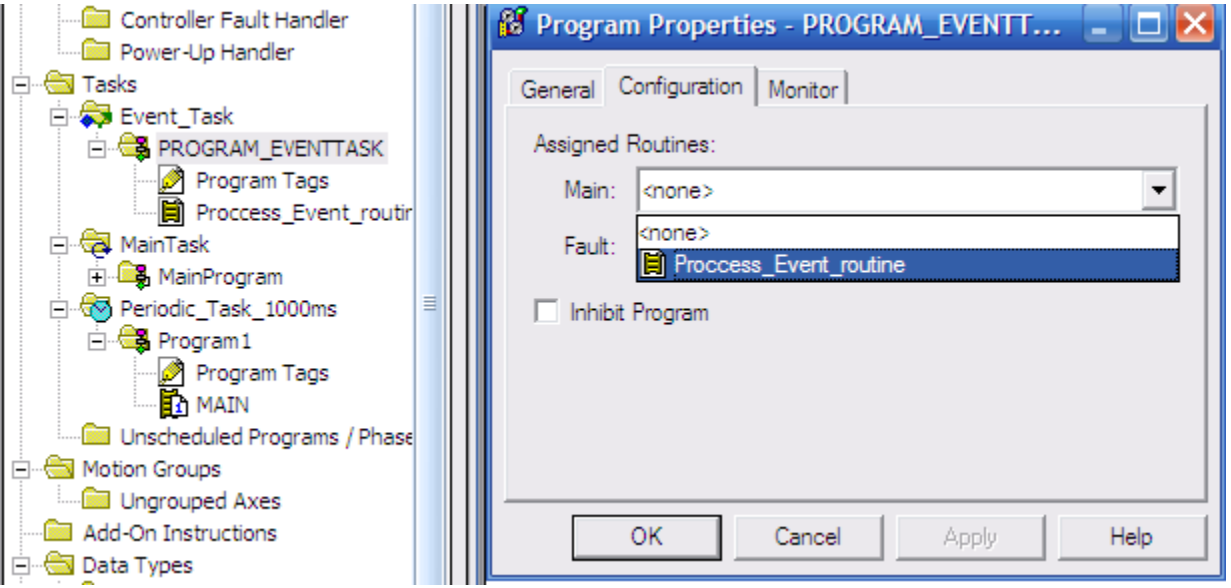


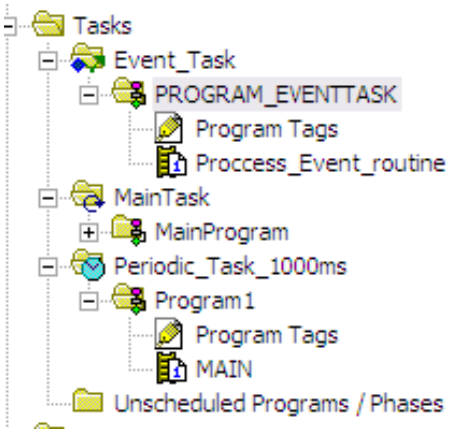




PROGRAM FOR EVENT TASKS

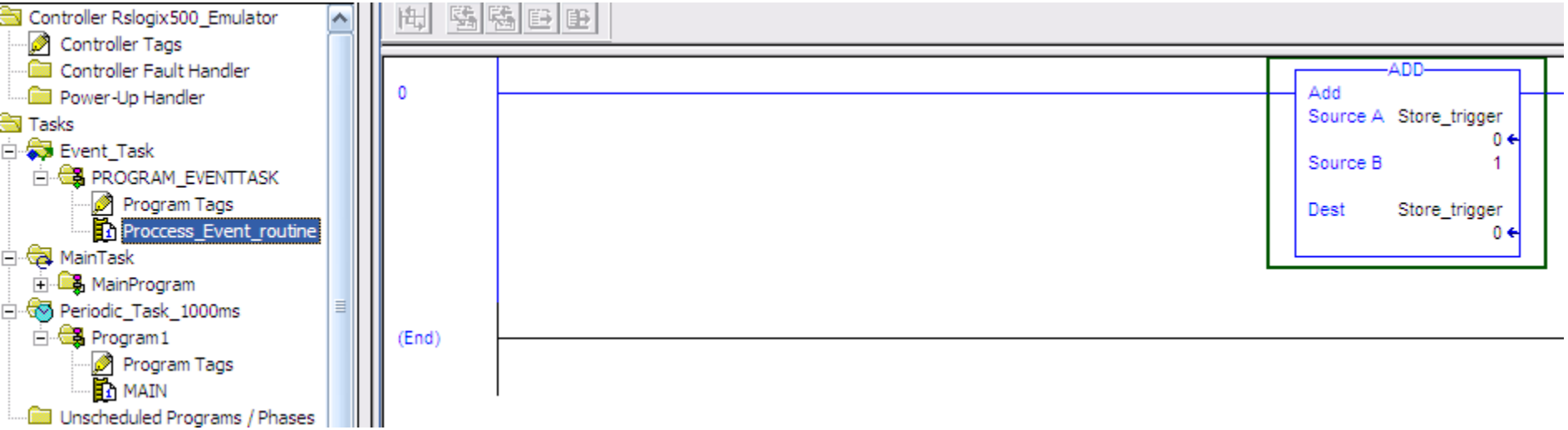
- Selecting Main Routine in Event Task to write logic program





PROGRAM FOR EVENT TASKS

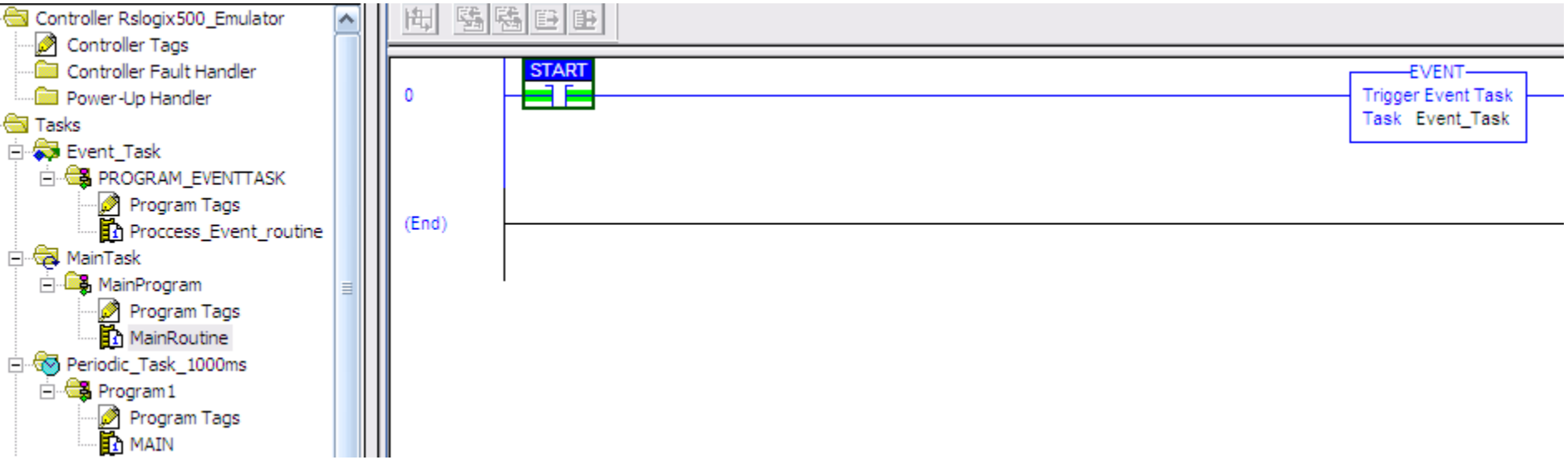
- Selecting Main Routine in Event Task to write a Program



Add Instruction will executed whenever Event Task is Called

PROGRAM FOR EVENT TASKS

Use Trigger Event Instruction to call Event_Task



Trigger Task Instruction is placed in another Task.