

TECHNICAL DOCUMENTATION

Example 21.2

Project	Example21_2
Designer	
Application	example_21_2.stu
Software Version	ControlExpert V15.0-SP1
Creation Date	6/16/2023 2:35:40 PM
Last Modification Date	6/16/2023 2:35:40 PM
Target PLC	BMX P34 1000 02.00CPU 340-10 Modbus

Derived Data Types

Name	Type	Comment
ADDM_TYPE	ARRAY[0..7] OF INT	Common array for communication EF Mid-Range
Altivar31_Cmds	<Struct>	
Cmd_Word	INT	word 8501
Freq	INT	word 8502
Altivar31_Stat us	<Struct>	
Status_Word	INT	word 3201
Out_Freq	INT	word 3202
Freq_Ref_Before_Ramp	INT	word 3203
Motor_Amps	INT	word 3204
Motor_Torque	INT	word 3205
Ext_Status	INT	word 3206
Ext_Status2	INT	word 3250
Motor_VFD_Type	<Struct>	
Run_Status	BOOL	Run Status (1=running)
At_Speed	BOOL	Drive at speed
Any_Fail	BOOL	Overall Failure Alarm (1=alarm)
Run_Fail	BOOL	Run failure alarm (1=failure)
Drive_Fail	BOOL	Drive failure (1=failure)
Comm_Fail	BOOL	Communication to VFD failure (1=failure)
Seq_Start	BOOL	Motor start initiated from sequence
Seq_Stop	BOOL	Motor stop initiated from sequence
Cmd_Direction	BOOL	Commanded direction 0 - forward, 1 - reverse
Fault_Code	INT	Drive fault code (word 3206)
Fault_Code2	INT	Drive fault code 2 (word 3250)
Cmd_Speed	REAL	Reference motor speed 0-100
Act_Speed	REAL	Actual motor speed 0-100
Act_Current	REAL	Actual motor current, amps
Act_Torque	REAL	Actual motor torque, 0-100
Status_Word_Type	<Struct>	
Ready	BOOL	
Active	BOOL	
Enabled	BOOL	
Drive_Fault	BOOL	
Voltage_Disabled	BOOL	
Quick_Stop	BOOL	
Switch_On_Disabled	BOOL	
Alarm	BOOL	
Reserved1	BOOL	
Local_Mode	BOOL	
At_Reference	BOOL	
LFRD_Ref_Exceeded	BOOL	
Reserved2	BOOL	
Reserved3	BOOL	

Derived Data Types

Name	Type	Comment
Stop_By_Key pad	BOOL	
Direction	BOOL	0-forward, 1 reverse

Derived FB Types

Name	Version	Date
Motor_VFD	0.28	6/26/2011 5:48:13 PM

Copyright © 2011 - 2023 Dogwood Valley Press, LLC.	Author:	5 Derived FB Types	Printed on 6/16/2023
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Motor_VFD

Properties:

Version:0.28

Descriptive file:

<inputs>:

Name	Type	Value	Comment
Alarm_Reset	BOOL		
Man_Mode	BOOL		
Man_Start	BOOL		
Man_Stop	BOOL		
Comm_Health	BOOL		

<outputs>:

None

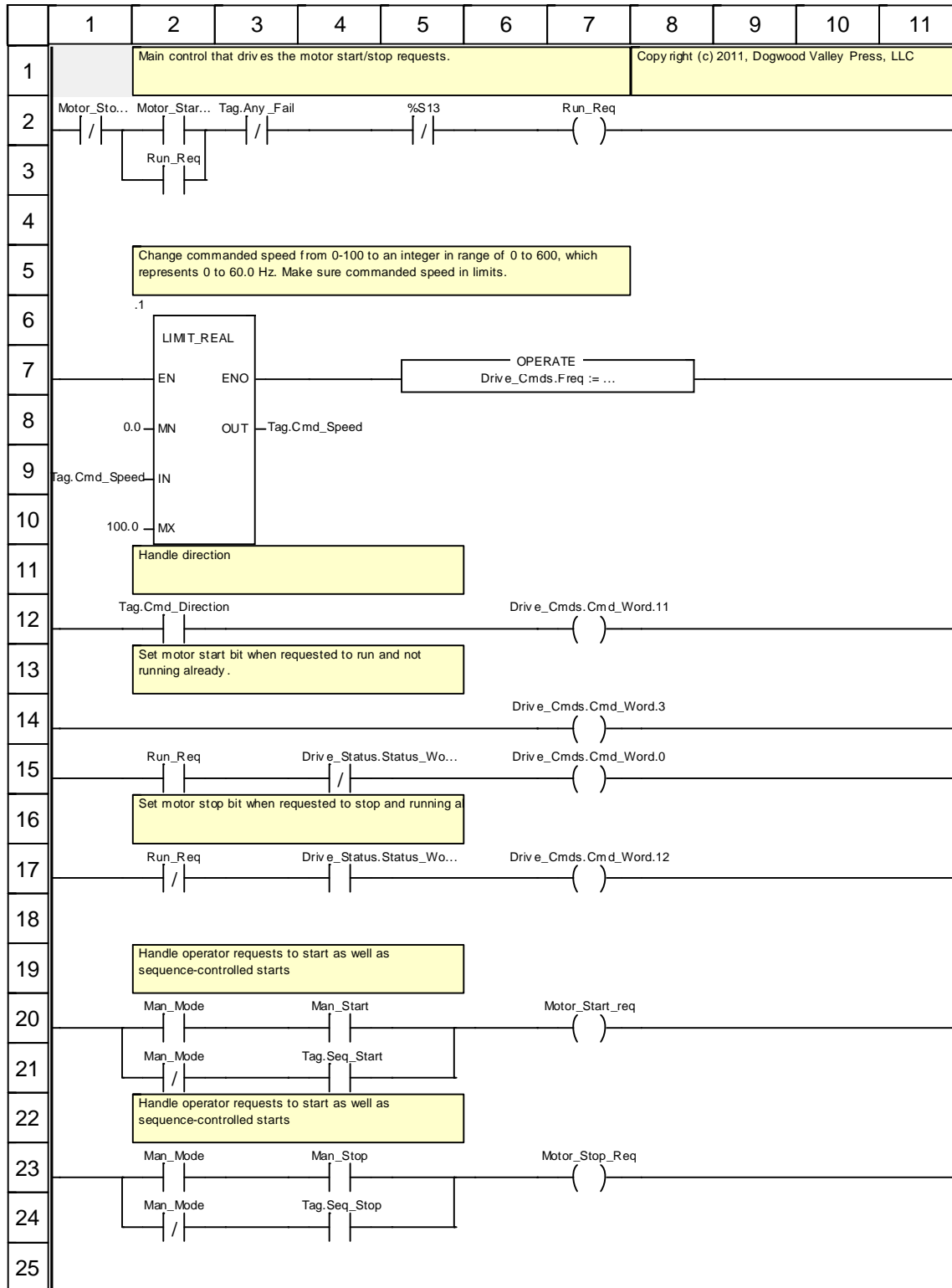
<inputs/outputs>:

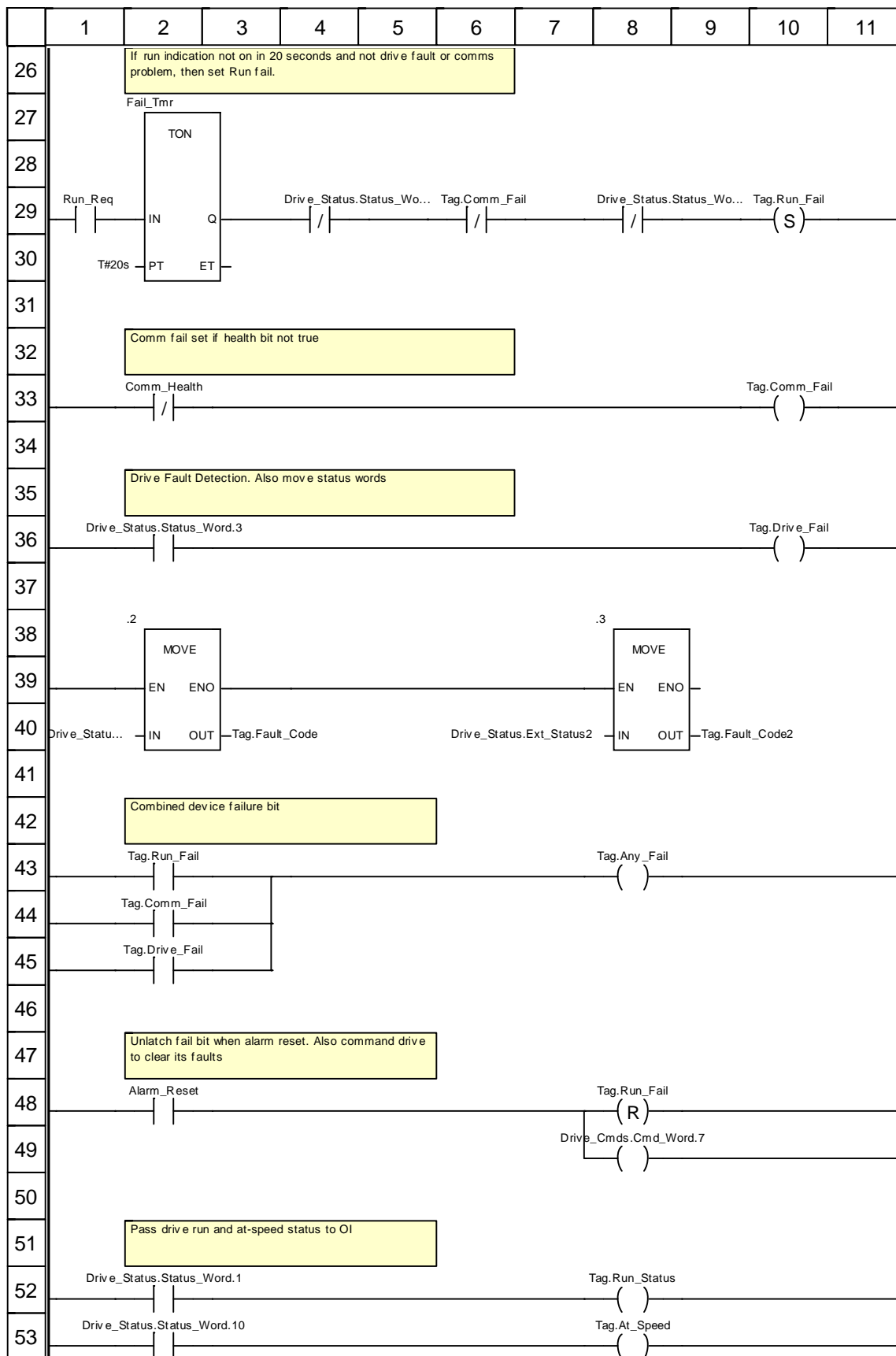
Name	Type	Value	Comment
Drive_Status	Altivar31_Status		
Status_Word	INT		word 3201
Out_Freq	INT		word 3202
Freq_Ref_Before_Ramp	INT		word 3203
Motor_Amps	INT		word 3204
Motor_Torque	INT		word 3205
Ext_Status	INT		word 3206
Ext_Status2	INT		word 3250
Drive_Cmds	Altivar31_Cmds		
Cmd_Word	INT		word 8501
Freq	INT		word 8502
Tag	Motor_VFD_Type		
Run_Status	BOOL		Run Status (1=running)
At_Speed	BOOL		Drive at speed
Any_Fail	BOOL		Overall Failure Alarm (1=alarm)
Run_Fail	BOOL		Run failure alarm (1=failure)
Drive_Fail	BOOL		Drive failure (1=failure)
Comm_Fail	BOOL		Communication to VFD failure (1=failure)
Seq_Start	BOOL		Motor start initiated from sequence
Seq_Stop	BOOL		Motor stop initiated from sequence
Cmd_Direction	BOOL		Commanded direction 0 - forward, 1 - reverse
Fault_Code	INT		Drive fault code (word 3206)
Fault_Code2	INT		Drive fault code 2 (word 3250)
Cmd_Speed	REAL		Reference motor speed 0-100
Act_Speed	REAL		Actual motor speed 0-100
Act_Current	REAL		Actual motor current, amps
Act_Torque	REAL		Actual motor torque, 0-100

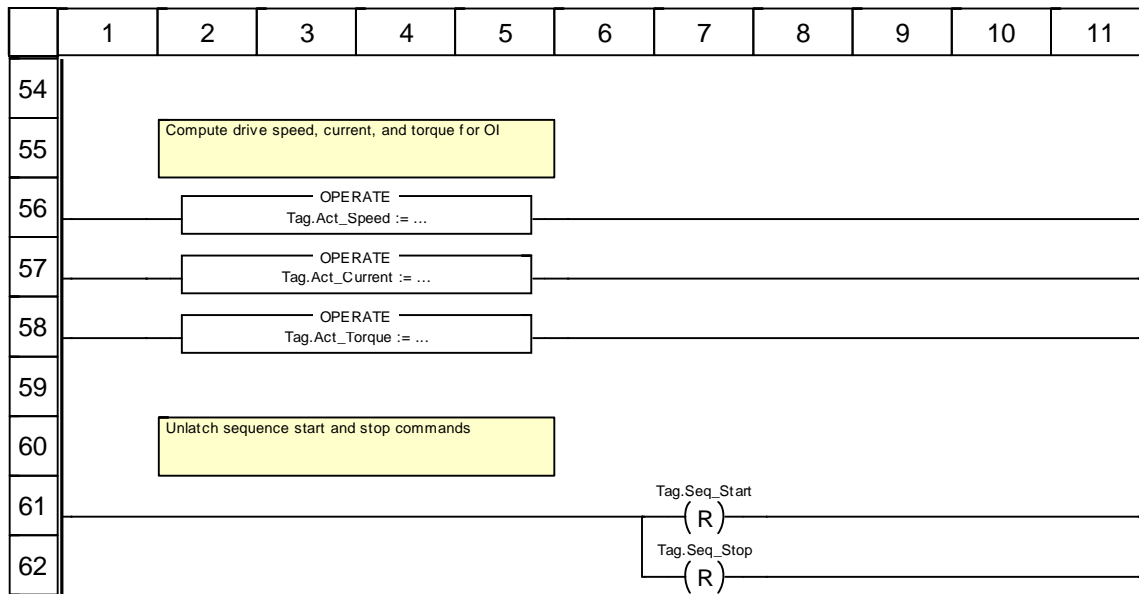
<public>:

None

Main <DFB> : [Motor_VFD]







Truncated labels:

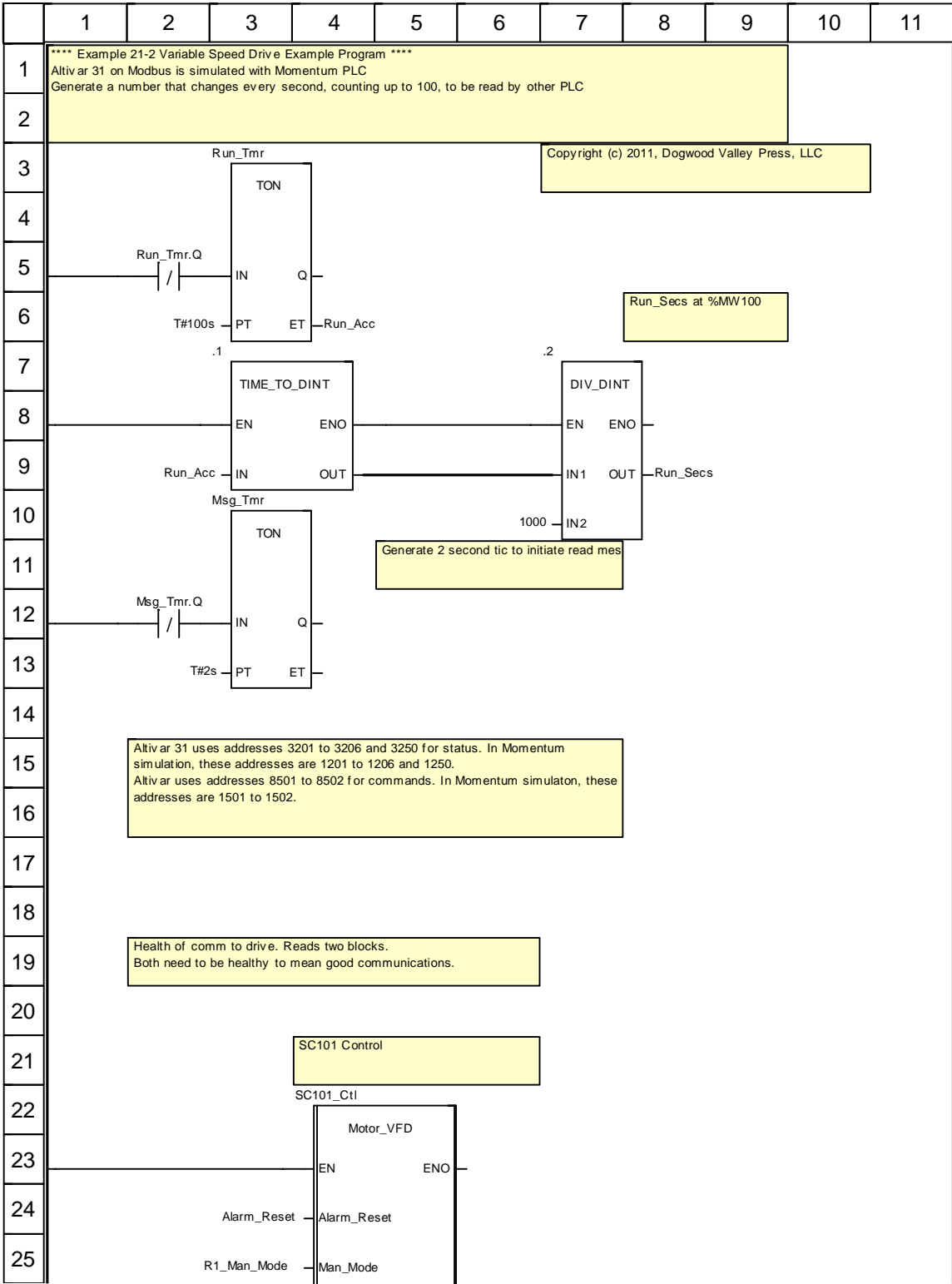
Label	Position(s)
Drive_Cmds.Freq := REAL_TO_INT((Tag.Cmd_Speed/100.0)*600.0);	(5, 7)
Drive_Status.Status_Word.1	(4, 15) (4, 17) (8, 29)
Drive_Status.Status_Word.3	(4, 29)
Motor_Start_req	(2, 2)
Motor_Stop_Req	(1, 2)
Tag.Act_Current := (INT_TO_REAL(Drive_Status.Motor_Amps))/10.0;	(2, 57)
Tag.Act_Speed := ((INT_TO_REAL(Drive_Status.Out_Freq))/600.0)*100.0;	(2, 56)
Tag.Act_Torque := INT_TO_REAL(Drive_Status.Motor_Torque);	(2, 58)

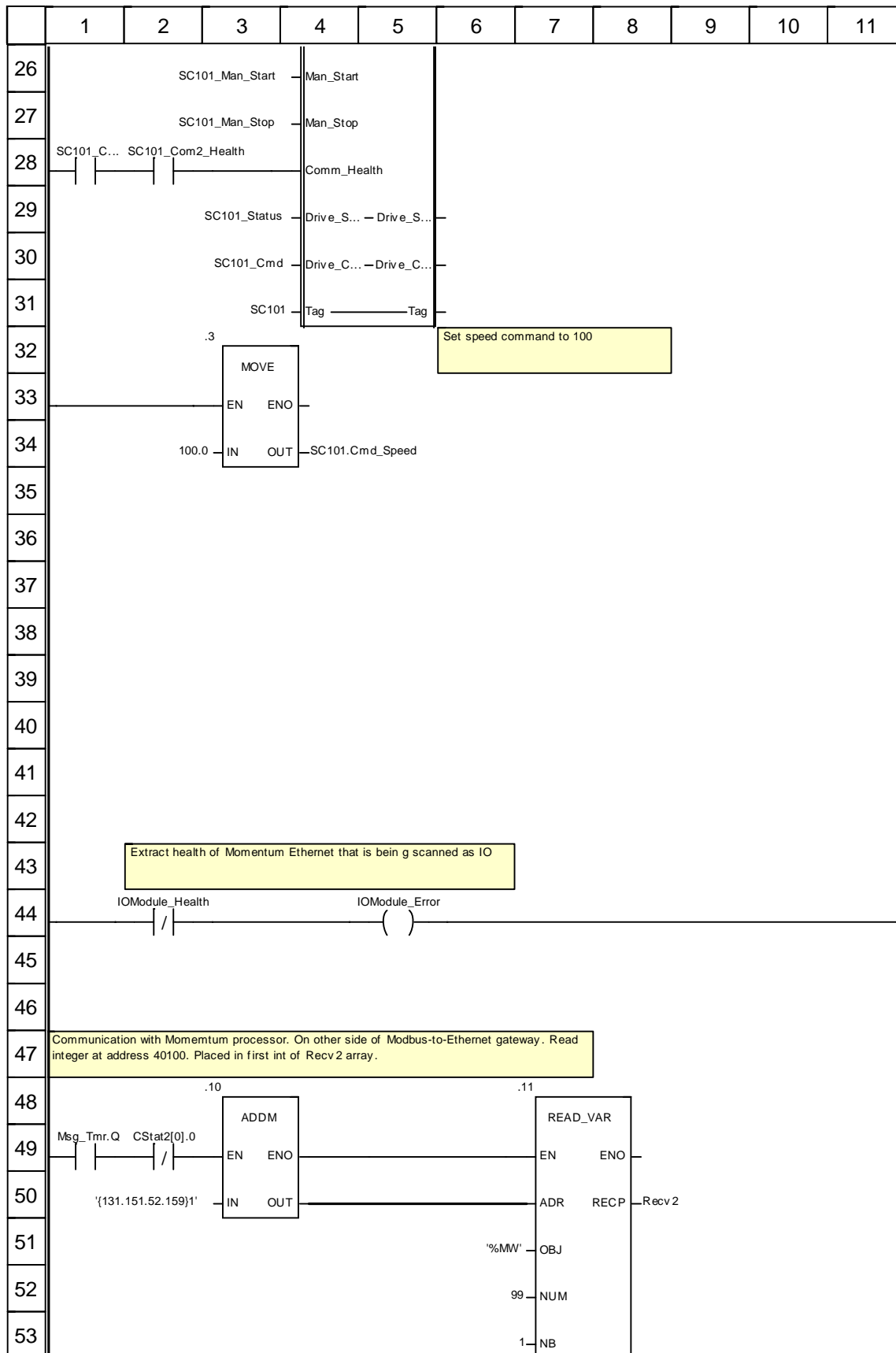
MAST

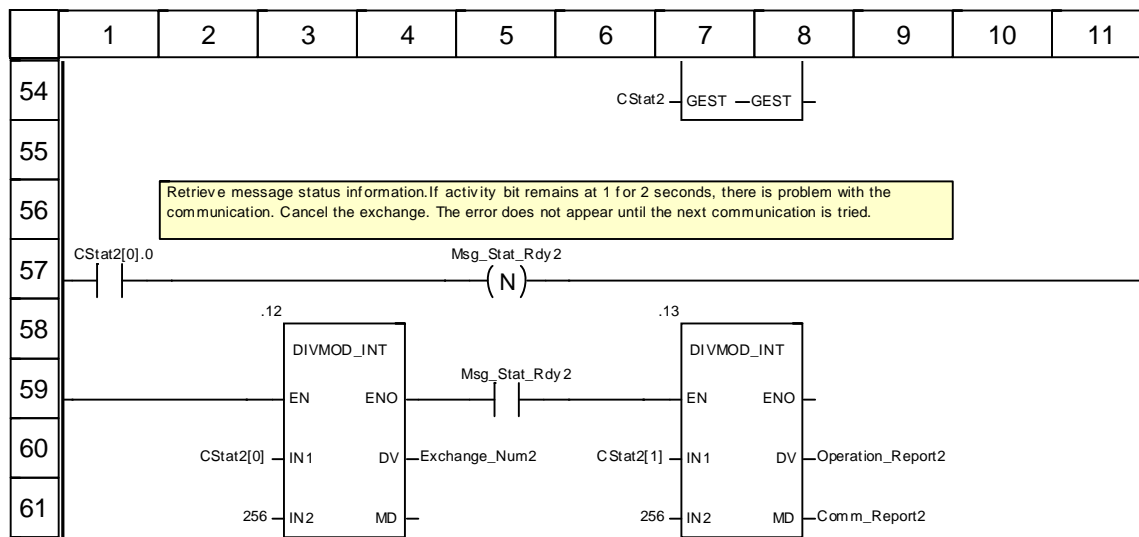
Specific properties

Configuration	Cyclic
Task period configuration	0
Watchdog time configuration	250

Main : [MAST]







Truncated labels:

Label	Position(s)
SC101_Com1_Health	(1, 28)

Cross References

Application:

Addresses

Object	Referred into	Location	Usage
%IW0.1.0.1	(Not directly used)		
(%IW0.1.0.1.0)	Variables & FB instances	IOModule_Health	M
(%IW0.1.0.1.1)	Variables & FB instances	SC101_Com1_Health	M
(%IW0.1.0.1.2)	Variables & FB instances	SC101_Com2_Health	M
%MW200	Ethernet_1	I/O Scanning: RD Ref Master, row 1	R/W
%MW201	Ethernet_1	I/O Scanning: RD Ref Master, row 2	R/W
	Variables & FB instances	SC101_Status	M
%MW207	Ethernet_1	I/O Scanning: RD Ref Master, row 3	R/W
%MW300	Ethernet_1	I/O Scanning: WR Ref Master, row 1	R/W
%MW301	Ethernet_1	I/O Scanning: WR Ref Master, row 2	R/W
	Variables & FB instances	SC101_Cmd	M

Variables or FB instances

Object	Referred into	Location	Usage
Alarm_Reset	Main : [MAST]	(l 22, c: 4)	R
Comm_Report2	Main : [MAST]	(l 58, c: 7)	W
CStat2	Main : [MAST]	(l 48, c: 7)	R/W
		(l 49, c: 2)	R
		(l 57, c: 1)	R
		(l 58, c: 3)	R
		(l 58, c: 7)	R
Exchange_Num2	Main : [MAST]	(l 58, c: 3)	W
IOModule_Error	Main : [MAST]	(l 44, c: 5)	W
IOModule_Health	Main : [MAST]	(l 44, c: 2)	R
Msg_Stat_Rdy2	Main : [MAST]	(l 57, c: 5)	W
		(l 59, c: 5)	R
Msg_Tmr	Main : [MAST]	(l 12, c: 2)	R
		(l 49, c: 1)	R
		(l 10, c: 3)	FC
Operation_Report2	Main : [MAST]	(l 58, c: 7)	W
R1_Man_Mode	Main : [MAST]	(l 22, c: 4)	R
Recv2	Main : [MAST]	(l 48, c: 7)	W
Run_Acc	Main : [MAST]	(l 3, c: 3)	W
		(l 7, c: 3)	R
Run_Secs	Main : [MAST]	(l 7, c: 7)	W
Run_Tmr	Main : [MAST]	(l 5, c: 2)	R
		(l 3, c: 3)	FC
SC101	Main : [MAST]	(l 22, c: 4)	R/W
		(l 32, c: 3)	W
SC101_Cmd	Main : [MAST]	(l 22, c: 4)	R/W
SC101_Com1_Health	Main : [MAST]	(l 28, c: 1)	R
SC101_Com2_Health	Main : [MAST]	(l 28, c: 2)	R

Cross References

Object	Referred into	Location	Usage
SC101_Ctl	Main : [MAST]	(l: 22, c: 4)	FC
SC101_Man_Start	Main : [MAST]	(l: 22, c: 4)	R
SC101_Man_Stop	Main : [MAST]	(l: 22, c: 4)	R
SC101_Status	Main : [MAST]	(l: 22, c: 4)	R/W

EF objects

Object	Referred into	Location	Usage
addm	Main : [MAST]	(l: 48, c: 3)	FC
div_dint	Main : [MAST]	(l: 7, c: 7)	FC
divmod_int	Main : [MAST]	(l: 58, c: 3)	FC
		(l: 58, c: 7)	FC
move	Main : [MAST]	(l: 32, c: 3)	FC
read_var	Main : [MAST]	(l: 48, c: 7)	FC
time_to_dint	Main : [MAST]	(l: 7, c: 3)	FC

Cross References

Motor_VFD:

Addresses

Object	Referred into	Location	Usage
%S13	Main <DFB> : [Motor_VFD]	(I 2, c: 5)	R

Variables or FB instances

Object	Referred into	Location	Usage
Alarm_Reset	Main <DFB> : [Motor_VFD]	(I 48, c: 2)	R
Comm_Health	Main <DFB> : [Motor_VFD]	(I 33, c: 2)	R
Drive_Cmds	Main <DFB> : [Motor_VFD]	(I 7, c: 5)	W
		(I 12, c: 7)	W
		(I 14, c: 7)	W
		(I 15, c: 7)	W
		(I 17, c: 7)	W
		(I 49, c: 8)	W
Drive_Status	Main <DFB> : [Motor_VFD]	(I 15, c: 4)	R
		(I 17, c: 4)	R
		(I 29, c: 4)	R
		(I 29, c: 8)	R
		(I 36, c: 2)	R
		(I 38, c: 2)	R
		(I 38, c: 8)	R
		(I 52, c: 2)	R
		(I 53, c: 2)	R
		(I 56, c: 2)	R
		(I 57, c: 2)	R
		(I 58, c: 2)	R
Fail_Tmr	Main <DFB> : [Motor_VFD]	(I 27, c: 2)	FC
Man_Mode	Main <DFB> : [Motor_VFD]	(I 20, c: 2)	R
		(I 21, c: 2)	R
		(I 23, c: 2)	R
		(I 24, c: 2)	R
Man_Start	Main <DFB> : [Motor_VFD]	(I 20, c: 4)	R
Man_Stop	Main <DFB> : [Motor_VFD]	(I 23, c: 4)	R
Motor_Start_req	Main <DFB> : [Motor_VFD]	(I 2, c: 2)	R
		(I 20, c: 7)	W
Motor_Stop_Req	Main <DFB> : [Motor_VFD]	(I 2, c: 1)	R
		(I 23, c: 7)	W
Run_Req	Main <DFB> : [Motor_VFD]	(I 2, c: 7)	W
		(I 3, c: 2)	R
		(I 15, c: 2)	R
		(I 17, c: 2)	R
		(I 29, c: 1)	R
Tag	Main <DFB> : [Motor_VFD]	(I 2, c: 3)	R
		(I 6, c: 2)	R
		(I 6, c: 2)	W
		(I 7, c: 5)	R
		(I 12, c: 2)	R
		(I 21, c: 4)	R
		(I 24, c: 4)	R
		(I 29, c: 6)	R
		(I 29, c: 10)	W
		(I 33, c: 10)	W

Cross References

Object	Referred into	Location	Usage
		(l 36, c: 10)	W
		(l 38, c: 2)	W
		(l 38, c: 8)	W
		(l 43, c: 2)	R
		(l 43, c: 8)	W
		(l 44, c: 2)	R
		(l 45, c: 2)	R
		(l 48, c: 8)	W
		(l 52, c: 8)	W
		(l 53, c: 8)	W
		(l 56, c: 2)	W
		(l 57, c: 2)	W
		(l 58, c: 2)	W
		(l 61, c: 7)	W
		(l 62, c: 7)	W

EF objects

Object	Referred into	Location	Usage
int_to_real	Main <DFB> : [Motor_VFD]	(l 56, c: 2)	FC
		(l 58, c: 2)	FC
		(l 57, c: 2)	FC
limit_real	Main <DFB> : [Motor_VFD]	(l 6, c: 2)	FC
move	Main <DFB> : [Motor_VFD]	(l 38, c: 2)	FC
		(l 38, c: 8)	FC
real_to_int	Main <DFB> : [Motor_VFD]	(l 7, c: 5)	FC