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How to read or write a single parameter using FB287

SINAMICS G120, FB287, read or write a single parameter, TIA Portal, PROFINET, PROFIBUS, Acyclic communication

https://support.industry.siemens.com/cs/ww/en/view/109475970

1 Read or write a single parameter using FB287

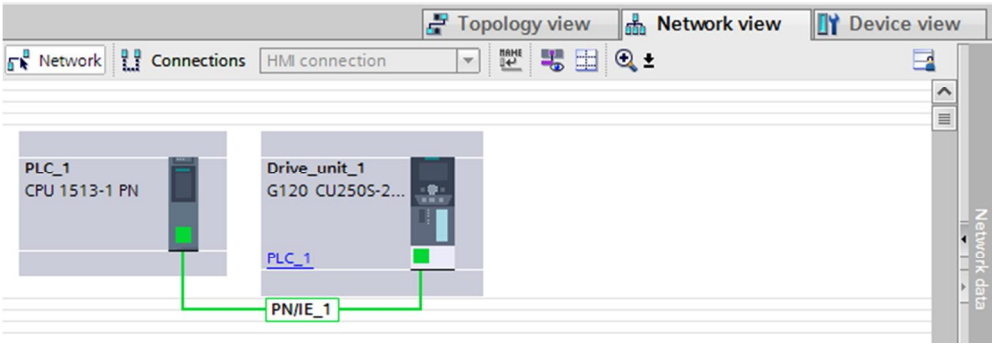
FB287 is a function block for single parameter access, which calls the acyclic communication blocks RDREC/SFB52 and WRREC/SFB53 internally. FB287 is integrated in the libraries of the TIA Portal software.

1.1.1 Configure hardware in TIA Portal.

Before the utilization of FB287, make sure the configuration is completed in TIA Portal and the communication between the controller and the drive is established.

This example includes a CPU1513-1 PN (V1.5) and a G120 with CU250S-2 PN (V4.6).

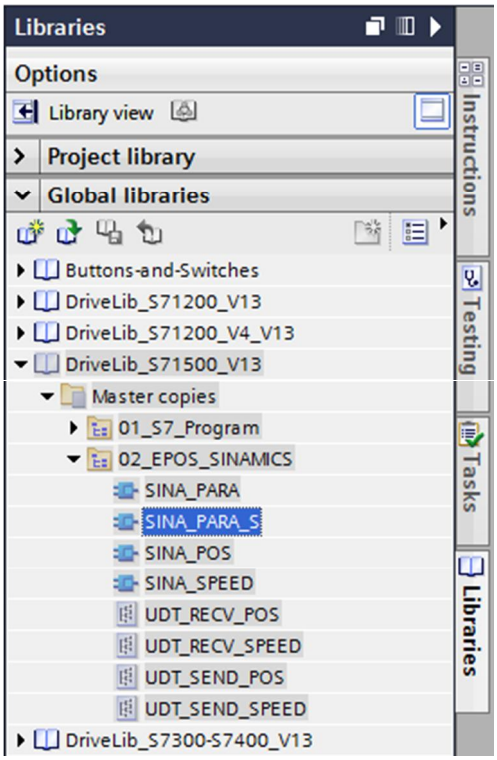
Figure 01 Communication configuration



1.1.2 Insert FB287 in the main program (OB1) or cyclic interrupt OB (e.g. OB32).

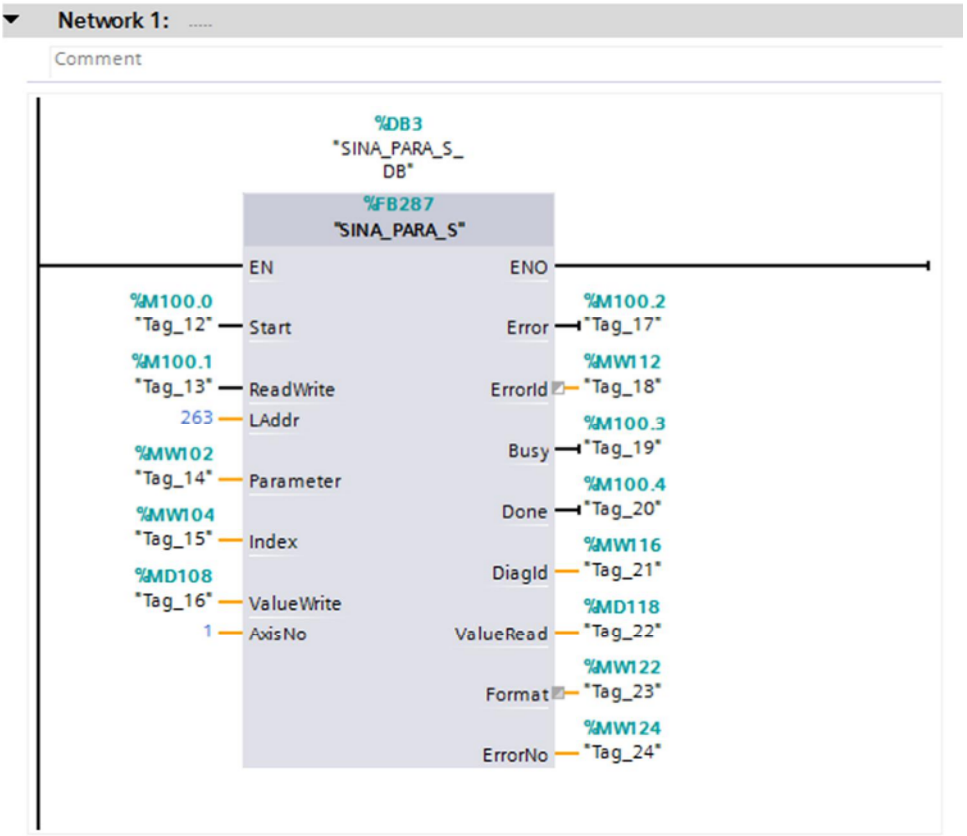
FB287 can be found as SINA_PARA_S in the libraries. There are different libraries for different PLCs (S7-300/S7-400, S7-1200, S7-1500).

Figure 02 Drive libraries



The following picture shows the FB287 with terminals assigned.

Figure 03 FB287



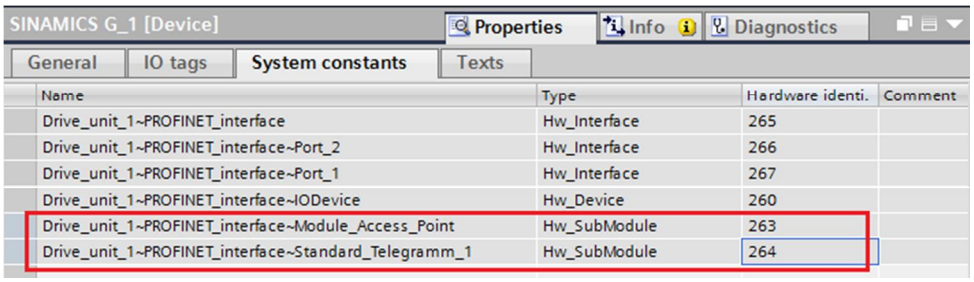
The following table shows the definition for each terminal of the block.

Table 01 Terminal definition for FB287

Terminal	Type	Description
Start	BOOL	Start of the job
ReadWrite	BOOL	Type of job: 0=read, 1=write
LAddr	HW-IO/INT	Hardware ID of the actual value telegram slot or diagnostics address of the axis or drive
Parameter	INT	Parameter number
Index	INT	Parameter index
ValueWrite	REAL	Parameter value to be written
AxisNo	INT	Axis number for multi-axis system For G120 inverters, AxisNo=1
Error	BOOL	Group error active: Error=1
ErrorId	DWORD	Error ID
Busy	BOOL	Job being processed: Busy=1
Done	BOOL	Job completed without error: edge change from 0 to 1
DiagId	WORD	Extended communication error: error during SFB call
ValueRead	REAL	Actual value of read parameter
Format	INT	Format of read parameter
ErrorNo	INT	Error number according to PROFIdrive profile

For terminal LAddr, hardware ID of the actual value telegram slot or diagnostics address of the axis or drive can be assigned to it.

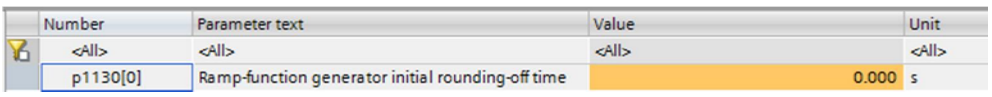
Figure 04 Hardware ID selection for terminal LAddr



1.1.3 Read the value of p1130 (Ramp function generator initial rounding-off time).

Use a watch table to read a single parameter after compiling and downloading the project to the PLC. According to the parameter view of Startdrive, the original value of p1130 is 0.0s.

Figure 05 The original value of p1130



Set the following values to the tags on FB287's terminals:

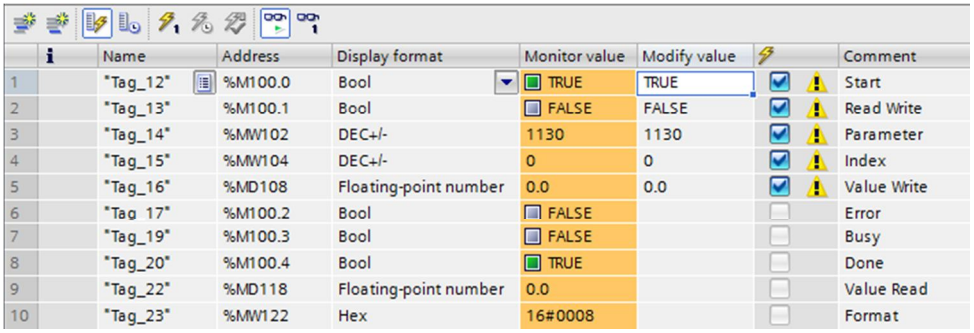
ReadWrite=0, reading request

Parameter=1130, specify the parameter number

Index=0, specify the index for the parameter

A rising edge on terminal Start starts the reading task. After the reading task is finished, the Done bit is set. And the parameter value is shown in ValueRead.

Figure 06 Watch table for reading p1130



	Name	Address	Display format	Monitor value	Modify value		Comment
1	"Tag_12"	%M100.0	Bool	TRUE	TRUE		Start
2	"Tag_13"	%M100.1	Bool	FALSE	FALSE		Read Write
3	"Tag_14"	%MW102	DEC+/-	1130	1130		Parameter
4	"Tag_15"	%MW104	DEC+/-	0	0		Index
5	"Tag_16"	%MD108	Floating-point number	0.0	0.0		Value Write
6	"Tag_17"	%M100.2	Bool	FALSE			Error
7	"Tag_19"	%M100.3	Bool	FALSE			Busy
8	"Tag_20"	%M100.4	Bool	TRUE			Done
9	"Tag_22"	%MD118	Floating-point number	0.0			Value Read
10	"Tag_23"	%MW122	Hex	16#0008			Format

1.1.4 Modify the value of p1130 to 0.5s.

Use a watch table to write a single parameter.
Set the following values to the tags on FB287's terminals:

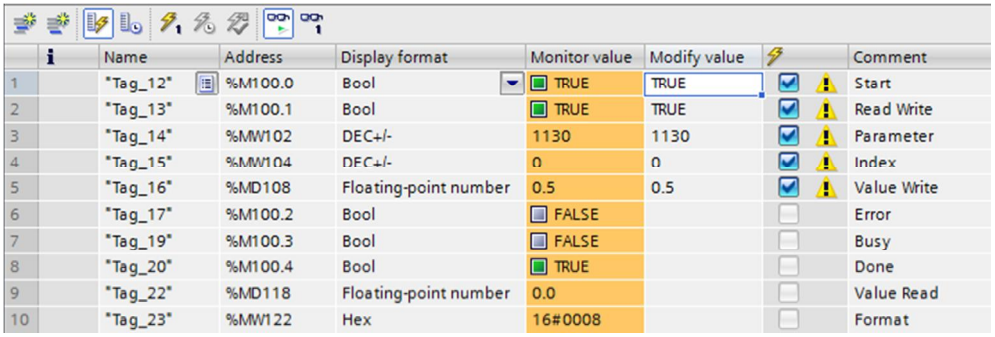
ReadWrite=1, writing request

Parameter=1130, specify the parameter number

Index=0, specify the index for the parameter

ValueWrite=0.5, specify the value to be written

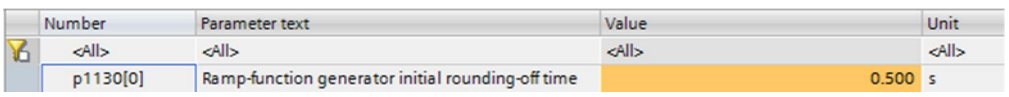
Figure 07 Watch table for writing p1130



	Name	Address	Display format	Monitor value	Modify value		Comment
1	"Tag_12"	%M100.0	Bool	TRUE	TRUE		Start
2	"Tag_13"	%M100.1	Bool	TRUE	TRUE		Read Write
3	"Tag_14"	%MW102	DEC+/-	1130	1130		Parameter
4	"Tag_15"	%MW104	DEC+/-	0	0		Index
5	"Tag_16"	%MD108	Floating-point number	0.5	0.5		Value Write
6	"Tag_17"	%M100.2	Bool	FALSE			Error
7	"Tag_19"	%M100.3	Bool	FALSE			Busy
8	"Tag_20"	%M100.4	Bool	TRUE			Done
9	"Tag_22"	%MD118	Floating-point number	0.0			Value Read
10	"Tag_23"	%MW122	Hex	16#0008			Format

A rising edge on terminal Start starts the writing task. After the writing task is finished, the Done bit is set. And the modified parameter value can be seen from the parameter view of Startdrive.

Figure 08 The modified value of p1130



Number	Parameter text	Value	Unit
<All>	<All>	<All>	<All>
p1130[0]	Ramp-function generator initial rounding-off time	0.500	s

NOTE

1. FB287 is available for S7-300/400, S7-1200 and S7-1500 PLCs.
2. FB287 is available for both PROFINET and PROFIBUS.
3. FB287 is available for both SINAMICS S and SINAMICS G inverters.
4. The parameter value is handled in the format of floating-point number. For example, if p1000=6 (setpoint selection, integer 16), 6.0 will be the result of a reading request. For a writing request, 1.0 for the ValueWrite can change p1000 to 1.