Application Note

FESTO

Device services and methods in CMMT-XX-MP executing and resetting via Siemens PLC within the TIA environment

This application note describes the using of the device services and methods offered for certain functions in CMMT-XX-MP within the TIA environment controlled by a Siemens PLC.

CMMT-xx-MP

100461

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1 Components/Software used

Type/Name	Version Software/Firmware	Date of manufacture
CMMT-XX-MP	32.0.9.9	
Festo Automation Suite	V2.5.0.635	
CMMT-AS-MP PlugIn	V2.5.1.2	
TIA Portal	TIA V18	
Festo_PNU_Single_	V0.1	
Festo PtP Library	V17.3.3	

Table 1.1: 1 Components/Software used

1.1 Topology of the system

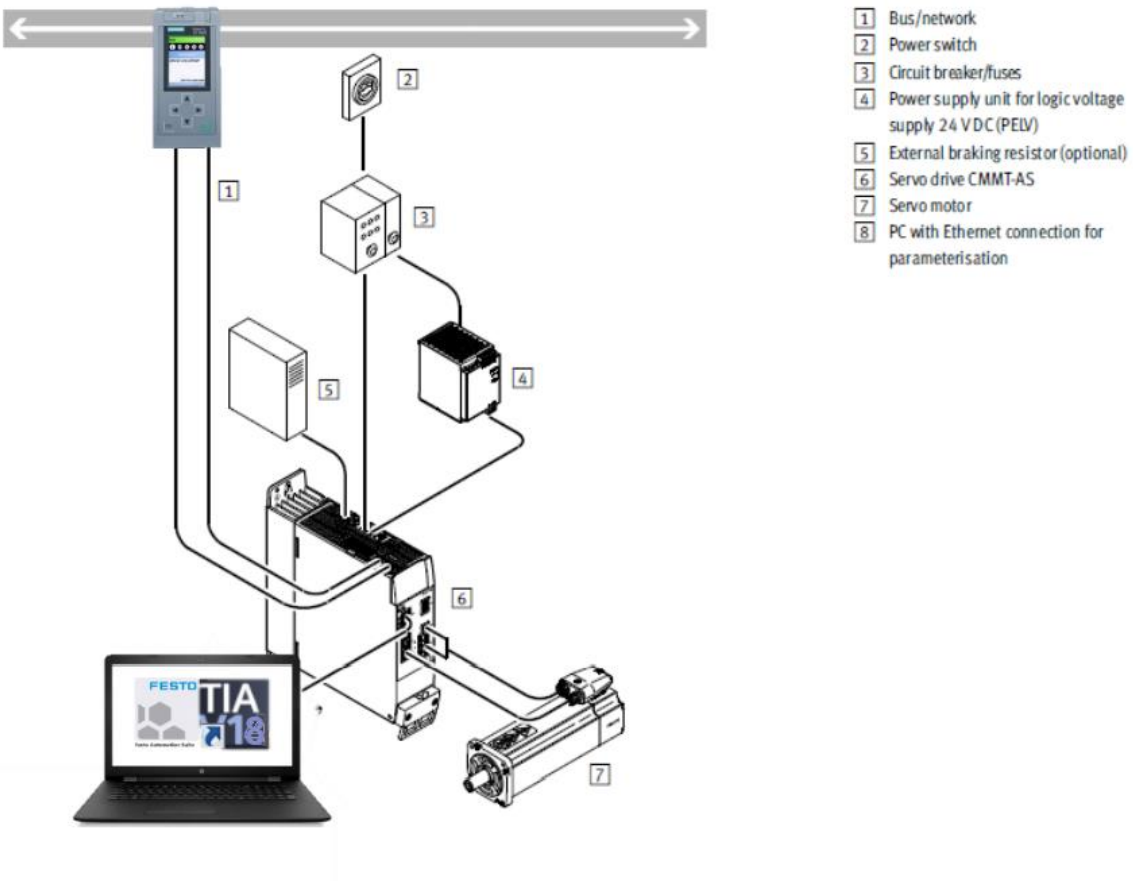


Figure 1.1 : overview of tested system

Please refer to the picture above and make sure all wires are correctly placed and connected

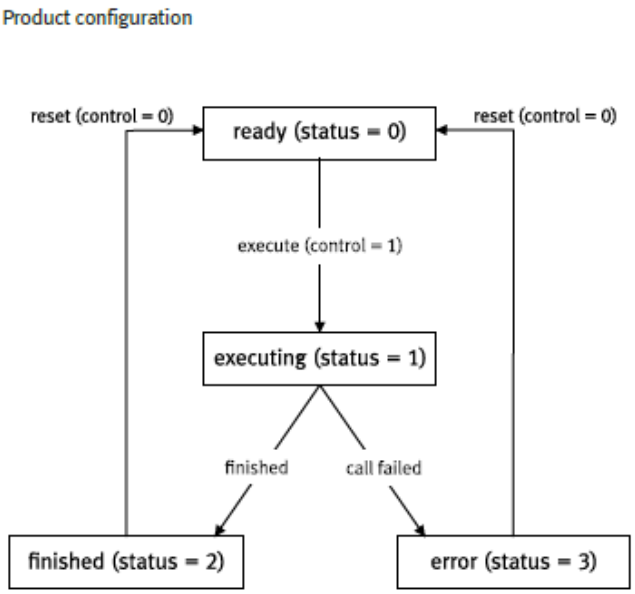
To confiture and run the system for commissioning, it is necessary to install named software in the table 1.1 above on your laptop or other PC system which you will do commissioning with.

2 Application description

What are device service & methods?

Device services are executed by the methods described in the following. Functions close to the hardware, such as reset of the device, can be called.
Available methods are listed in the SW Manual of the controllers CMMT-AS-MP & CMMT-ST-MP in chapter 3.1.5 Device services and methods. A method must be used correctly to perform the required function successfully.
The procedure for a successful use of the methods will be explained in this application note.

Following diagram shows the procedure for a method:



The status query of a method delivers one of the following return values:
Method status:
– 0 = ready
– 1 = execute
– 2 = ended
– 3 = error
The query of the return code of a method delivers one of the following return values:
– 0 = successful
– 1 = error

For a successful use of a method it must be called and closed correctly. The related parameters for a method must be sampled sequentially and the status need to be compared with the values listed in the SW manual.

3 Methods executing and resetting via Siemens PLC

Listed methods in the SW manual looks like the following:

E.g. method for "Request Reinit":

PROFIdrive

Method	PNU	Data type	Function	Description
Request ReInit	1010	USINT	Control	Value = 1: execute method Value = 0: reset method
	1011	USINT	Status	Status
	1012	UINT	Return value	Return code

Tab. 124: Request ReInit

Procedure of calling the method:

PNU 1011 sample the status => 0 = ready; 1 = execute; 2 = ended; 3 = error

➔ the first sampling of the status with the result "0=ready" will confirm that the method is ready for executing. Otherwise it must be reset and executed afterwards to get a successful procedure.

PNU 1010 write value = 1=> execute the method

PNU 1011 sample the status => 0 = ready; 1 = execute; 2 = ended; 3 = error

PNU 1012 sample the return value => 0 = successful; 1 = error

PNU 1010 write value = 0 => reset the method

3.1 In the following the procedure with a Siemens PLC will be explained in detail

For sampling the PNU´s which are related to the methods it was used the Festo_PNU_RW_Single_1200 function block from the PtP library available on the Support Portal.

Siemens function blocks
PtP function blocks for TiA portal

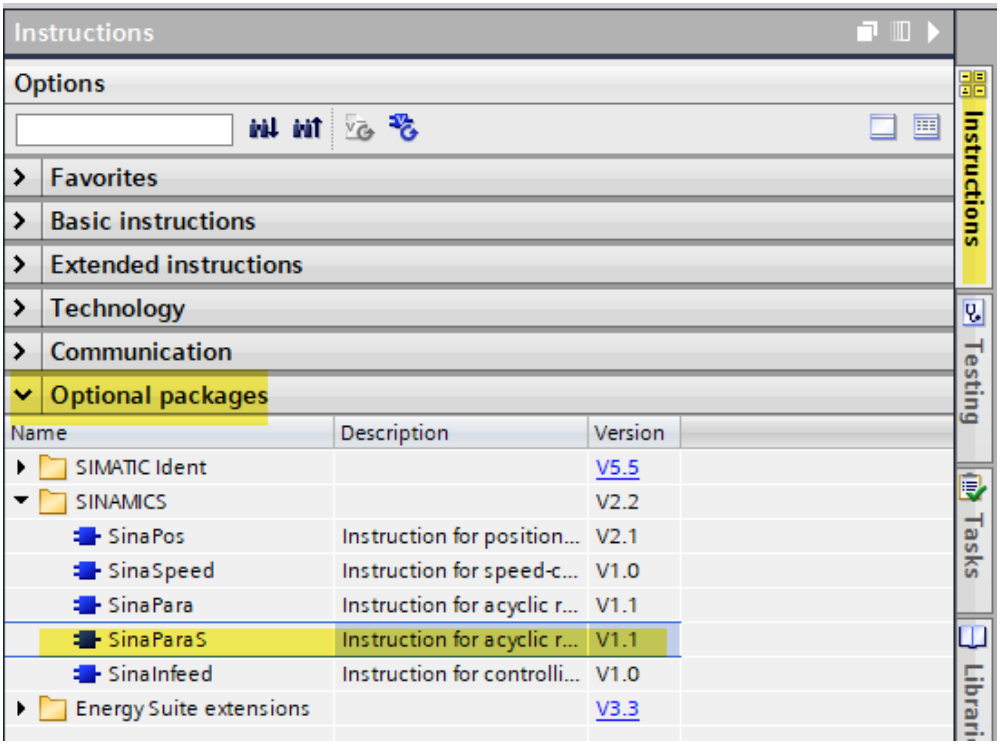
3.9
05/07/2022

➔ Function blocks
➔ File and language versions

⊟ Library includes following function blocks:

- Point-to-Point Movements
- Extended process data channel (EPD)
- Controllerdriven homing (AC4-Homing)
- Full parameterization
- Acyclic parameter access
- Error messages
- Parameterization of record table

Furthermore the SINA_Para_S function block available in the TIA environment under => Instructions => Optional Packages could be used as well for the procedure.

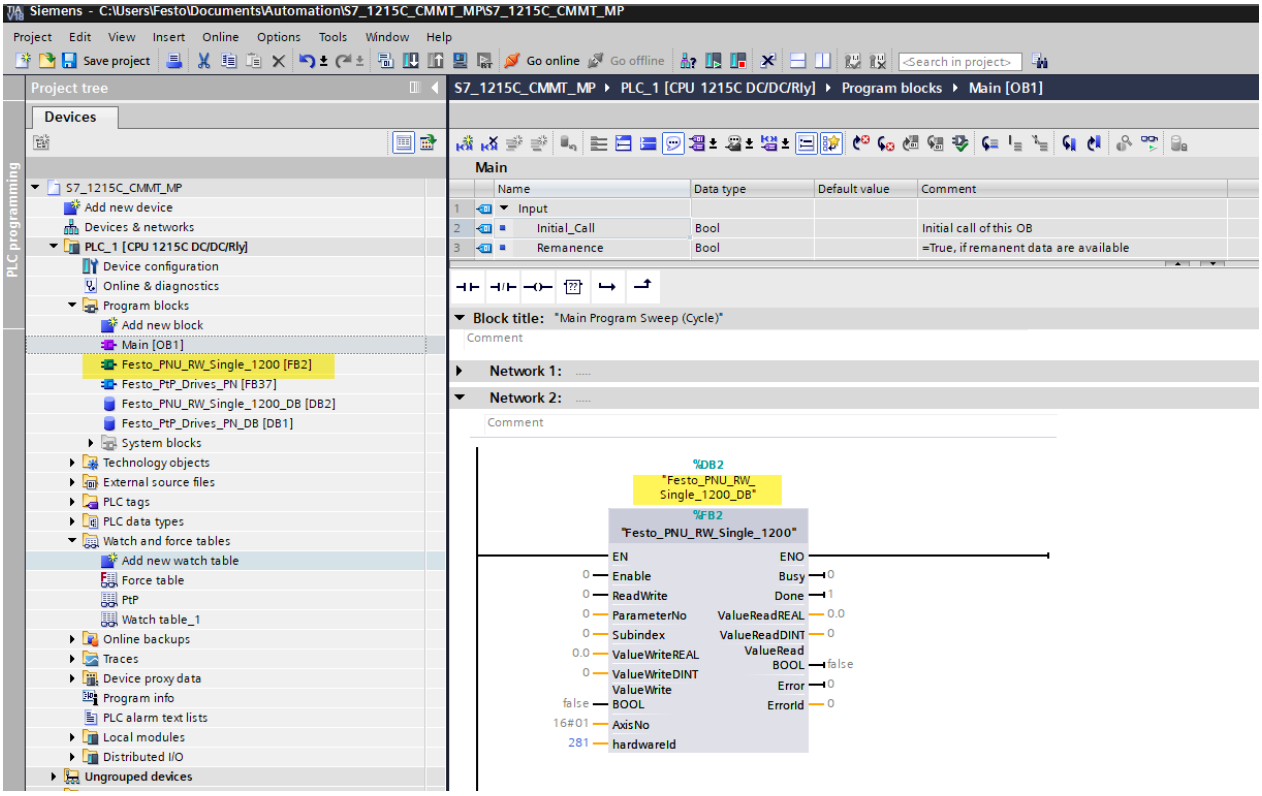


3.2 Festo_PNU_RW_Single vs Sina_Para_S

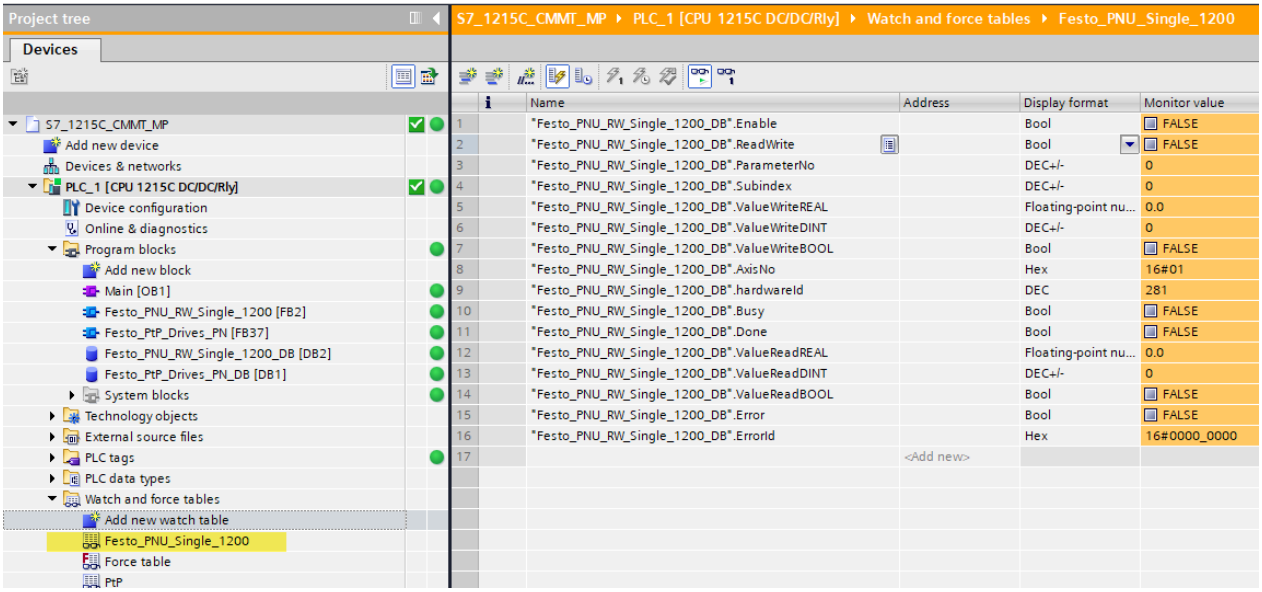
Main difference in both function blocks are the inputs & outputs which has to be used for the values.

- Festo_PNU_RW_Single is using the input #ValueWriteDINT & the output #ValueReadDINT
- Sina_Para_S Is using the input #ValueWrite1 & output #ValueRead1

3.3 Executing and resetting the method “Request Reinit” via Siemens PLC with using the TIA environment :

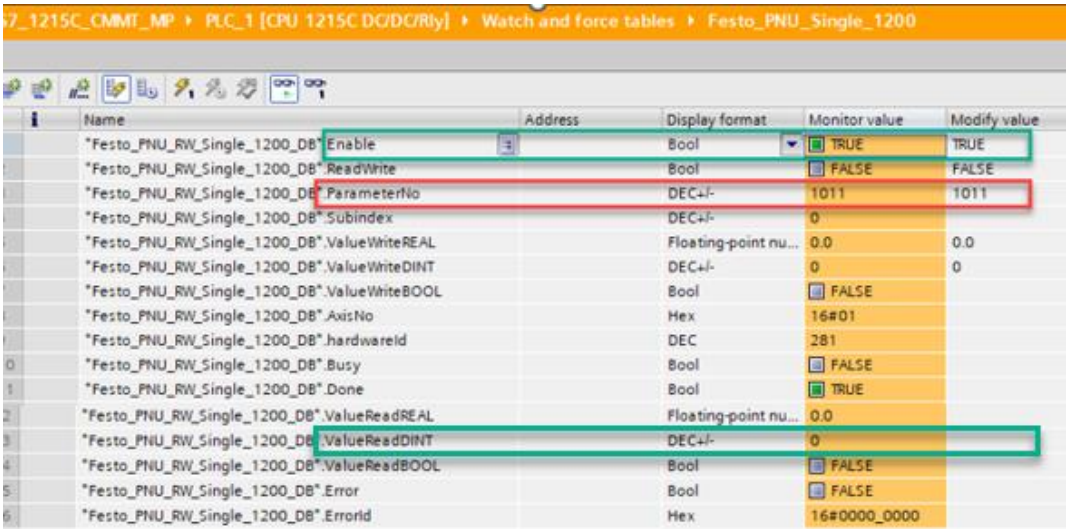


3.4 Creating the watchlist for the Single FB

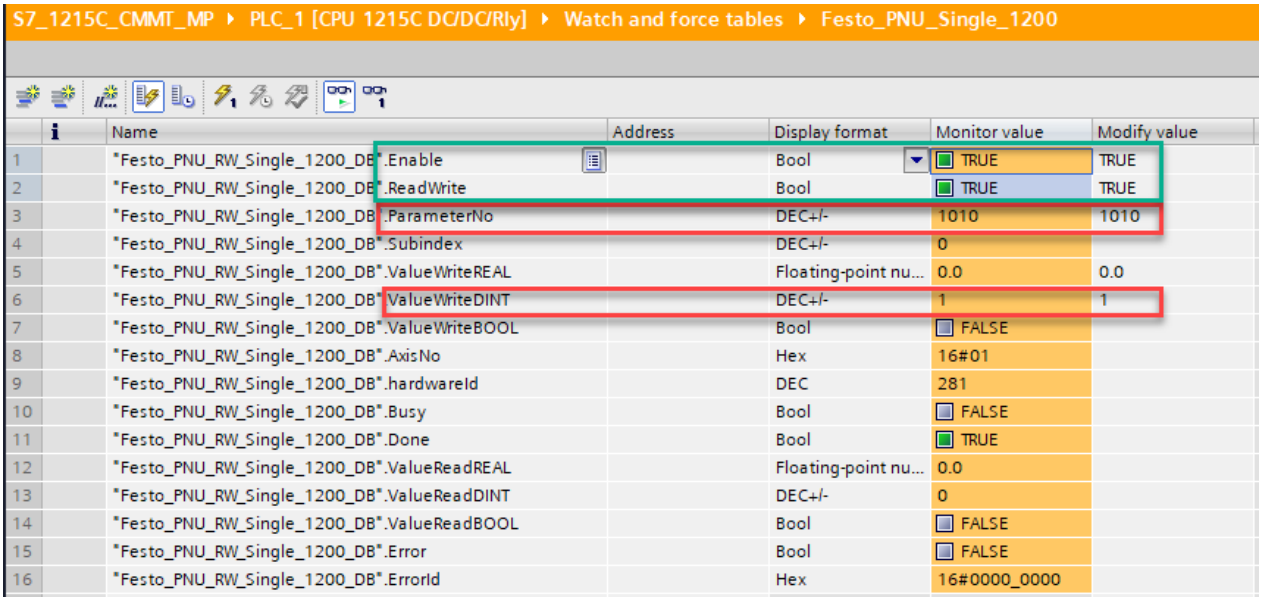


3.5 Sending the needed values step by step for the PNU´s used in the method:

Sampling the status of the method (to be sure that the method is ready for the procedure):



Executing the method:



Sample the status:

S7_1215C_CMMT_MP ▸ PLC_1 [CPU 1215C DC/DC/Rly] ▸ Watch and force tables ▸ Festo_PNU_Single_1200

	Name	Address	Display format	Monitor value	Modify value
1	"Festo_PNU_RW_Single_1200_DB".Enable		Bool	TRUE	TRUE
2	"Festo_PNU_RW_Single_1200_DB".ReadWrite		Bool	FALSE	FALSE
3	"Festo_PNU_RW_Single_1200_DB".ParameterNo		DEC+/-	1011	1011
4	"Festo_PNU_RW_Single_1200_DB".Subindex		DEC+/-	0	
5	"Festo_PNU_RW_Single_1200_DB".ValueWriteREAL		Floating-point nu...	0.0	0.0
6	"Festo_PNU_RW_Single_1200_DB".ValueWriteDINT		DEC+/-	0	0
7	"Festo_PNU_RW_Single_1200_DB".ValueWriteBOOL		Bool	FALSE	
8	"Festo_PNU_RW_Single_1200_DB".AxisNo		Hex	16#01	
9	"Festo_PNU_RW_Single_1200_DB".hardwareId		DEC	281	
10	"Festo_PNU_RW_Single_1200_DB".Busy		Bool	FALSE	
11	"Festo_PNU_RW_Single_1200_DB".Done		Bool	TRUE	
12	"Festo_PNU_RW_Single_1200_DB".ValueReadREAL		Floating-point nu...	0.0	
13	"Festo_PNU_RW_Single_1200_DB".ValueReadDINT		DEC+/-	2	
14	"Festo_PNU_RW_Single_1200_DB".ValueReadBOOL		Bool	FALSE	
15	"Festo_PNU_RW_Single_1200_DB".Error		Bool	FALSE	
16	"Festo_PNU_RW_Single_1200_DB".ErrorId		Hex	16#0000_0000	

Sample the return code:

S7_1215C_CMMT_MP ▸ PLC_1 [CPU 1215C DC/DC/Rly] ▸ Watch and force tables ▸ Festo_PNU_Single_1200

	Name	Address	Display format	Monitor value	Modify value
1	"Festo_PNU_RW_Single_1200_DB".Enable		Bool	TRUE	TRUE
2	"Festo_PNU_RW_Single_1200_DB".ReadWrite		Bool	FALSE	FALSE
3	"Festo_PNU_RW_Single_1200_DB".ParameterNo		DEC+/-	1012	1012
4	"Festo_PNU_RW_Single_1200_DB".Subindex		DEC+/-	0	
5	"Festo_PNU_RW_Single_1200_DB".ValueWriteREAL		Floating-point nu...	0.0	0.0
6	"Festo_PNU_RW_Single_1200_DB".ValueWriteDINT		DEC+/-	0	0
7	"Festo_PNU_RW_Single_1200_DB".ValueWriteBOOL		Bool	FALSE	
8	"Festo_PNU_RW_Single_1200_DB".AxisNo		Hex	16#01	
9	"Festo_PNU_RW_Single_1200_DB".hardwareId		DEC	281	
10	"Festo_PNU_RW_Single_1200_DB".Busy		Bool	FALSE	
11	"Festo_PNU_RW_Single_1200_DB".Done		Bool	TRUE	
12	"Festo_PNU_RW_Single_1200_DB".ValueReadREAL		Floating-point nu...	0.0	
13	"Festo_PNU_RW_Single_1200_DB".ValueReadDINT		DEC+/-	0	
14	"Festo_PNU_RW_Single_1200_DB".ValueReadBOOL		Bool	FALSE	
15	"Festo_PNU_RW_Single_1200_DB".Error		Bool	FALSE	
16	"Festo_PNU_RW_Single_1200_DB".ErrorId		Hex	16#0000_0000	

Reset the method:

S7_1215C_CMMT_MP ▸ PLC_1 [CPU 1215C DC/DC/Rly] ▸ Watch and force tables ▸ Festo_PNU_Single_1200

	Name	Address	Display format	Monitor value	Modify value
1	"Festo_PNU_RW_Single_1200_DB".Enable		Bool	TRUE	TRUE
2	"Festo_PNU_RW_Single_1200_DB".ReadWrite		Bool	TRUE	TRUE
3	"Festo_PNU_RW_Single_1200_DB".ParameterNo		DEC+/-	1010	1010
4	"Festo_PNU_RW_Single_1200_DB".Subindex		DEC+/-	0	
5	"Festo_PNU_RW_Single_1200_DB".ValueWriteREAL		Floating-point nu...	0.0	0.0
6	"Festo_PNU_RW_Single_1200_DB".ValueWriteDINT		DEC+/-	0	0
7	"Festo_PNU_RW_Single_1200_DB".ValueWriteBOOL		Bool	FALSE	
8	"Festo_PNU_RW_Single_1200_DB".AxisNo		Hex	16#01	
9	"Festo_PNU_RW_Single_1200_DB".hardwareId		DEC	281	
10	"Festo_PNU_RW_Single_1200_DB".Busy		Bool	FALSE	
11	"Festo_PNU_RW_Single_1200_DB".Done		Bool	TRUE	
12	"Festo_PNU_RW_Single_1200_DB".ValueReadREAL		Floating-point nu...	0.0	
13	"Festo_PNU_RW_Single_1200_DB".ValueReadDINT		DEC+/-	0	
14	"Festo_PNU_RW_Single_1200_DB".ValueReadBOOL		Bool	FALSE	
15	"Festo_PNU_RW_Single_1200_DB".Error		Bool	FALSE	
16	"Festo_PNU_RW_Single_1200_DB".ErrorId		Hex	16#0000_0000	

With the above steps the method was executed, the function was performed in the CMMT-XX-MP, the status and return code was sampled and the method was reset afterwards correctly.

The above procedure could be used for the available methods in general.

4 Other available methods not yet listed in the manual for CMMT-xx-MP with the firmware V32.0.9.9

Name	Profidrive method number
Reset referencing status	10020: MethodControl: Value = 1 Call method 10021: MethodStatus: see method status in manual 10022: MethodOutput: returnCode
Start event table	10014: MethodControl: Value = 1 Call method 10015: MethodStatus: see method status in manual 10016: MethodOutput: returnCode
Stop event table	10017: MethodControl: Value = 1 Call method 10018: MethodStatus: see method status in manual 10019: MethodOutput: returnCode
LED device identification	1054: MethodControl: Value = 1 Call method 1055: MethodStatus: see method status in manual 1056: MethodInput: Identify States (0:Off, 1: On, 2: On time controlled) 1057: MethodOutput: returnCode
Activate firmware update	1068: MethodControl: Value = 1 Call method 1069: MethodStatus: see method status in manual 1070: MethodInput: slot, UINT16 1071: MethodOutput: returnCode 1072: MethodOutput: slot, UINT16
Factory parameter	1073: MethodControl: Value = 1 Call method 1074: MethodStatus: see method status in manual 1075: MethodOutput: returnCode
Start trace	1062: MethodControl: Value = 1 Call method 1063: MethodStatus: see method status in manual 1064: MethodOutput: returnCode
Stop trace	1065: MethodControl: Value = 1 Call method 1066: MethodStatus: see method status in manual 1067: MethodOutput: returnCode