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Library of PLC data types for peripheral / technology modules and PROFIdrive drives (LPD)

SIMATIC STEP 7 Basic/Professional (TIA Portal)

<https://support.industry.siemens.com/cs/ww/en/view/109482396>

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1 Library overview

1.1 Basics of PLC data types

PLC data types are user-defined data structures that can be used several times in the program. The structure of a PLC data type consists of several elements of different data types.

PLC data types can be used for the following:

- As data types for variables in the variable declaration of code modules or in data modules.
- As a template for creating global data blocks with the same data structure.
- In SIMATIC S7-1200 and SIMATIC S7-1500 as a template for creating structured PLC variables.

1.2 Address space (control and feedback interface).

Modules occupy different addresses in the process image of the inputs and outputs, depending on their configuration. Depending on the operating mode (e.g. counting), the process image of the inputs can be defined as control interface and the outputs as feedback interface. The structure of the address spaces (control and feedback interface) is described in the respective manuals of the modules.

The library LPD (Library of PLC Datatypes) provides these control and feedback interfaces as individual PLC data types. With the PLC data types you can create PLC variables and thus access the input and output area in the user program in a structured and symbolic way.

1.3 Parameter data sets

With the TIA Portal you parameterize the modules in your project. You define the properties of the modules using various parameters. The project planning is then loaded into the controller.

With the optional parameterization in the user program, you can transfer the parameters to the module via data sets in the RUN operating mode. The structure of the parameter data sets is described in the respective manuals of the modules.

The library LPD (Library of PLC Datatypes) provides the structure of the parameter data sets as individual PLC data types. With the PLC data types you can create variables in data blocks and thus generate data sets which you transfer to the modules with the WRREC instruction.

The RDREC statement can be used to read the data sets.

1.4 Hardware and software requirements

Requirements for this library

In order to be able to use the functionality of the library described here, the following hardware and software requirements must be met.

Hardware

All PLC data types in the library can be used universally with the following controllers:

- SIMATIC S7-1200 and SIMATIC S7-1200 F product family
- SIMATIC S7-1500 and SIMATIC S7-1500 F product family

Software

- SIMATIC STEP 7 Basic/Professional V15.1 (TIA Portal)

2 Working with the library

The PLC data types are stored as types in the library and are therefore versioned. This allows you to benefit from the advantages of types.

- Central update function for library elements
- Versioning of library elements

Note

Information on the general handling of libraries can be found in the Guide to Library Handling

<https://support.industry.siemens.com/cs/ww/en/view/109747503>

and in the Programming Guide for S7-1200/1500 in the section "Libraries".

<https://support.industry.siemens.com/cs/ww/en/view/81318674>

Note

All PLC data types in the LPD were created according to the programming style guide.

<https://support.industry.siemens.com/cs/ww/en/view/81318674>

For more information on libraries, visit the TIA Portal:

- Subject page Libraries
<https://support.industry.siemens.com/cs/ww/en/view/109738702>
- Automate in less than 10 minutes TIA Portal: Time Savers – Global libraries
<https://support.industry.siemens.com/cs/ww/en/view/78529894>
- Which elements from STEP 7 (TIA Portal) can be stored in a library as a type or as a copy template?
<https://support.industry.siemens.com/cs/ww/en/view/109476862>
- How can you automatically open a global library when starting TIA Portal V13 or higher and use it as a corporate library, for example?
<https://support.industry.siemens.com/cs/ww/en/view/100451450>
- How can you open a global library with write permissions in STEP 7 (TIA Portal)?
<https://support.industry.siemens.com/cs/ww/en/view/37364723>
- Library with general functions for STEP 7 (TIA Portal) and S7-1200 / S7-1500
<https://support.industry.siemens.com/cs/ww/en/view/109479728>

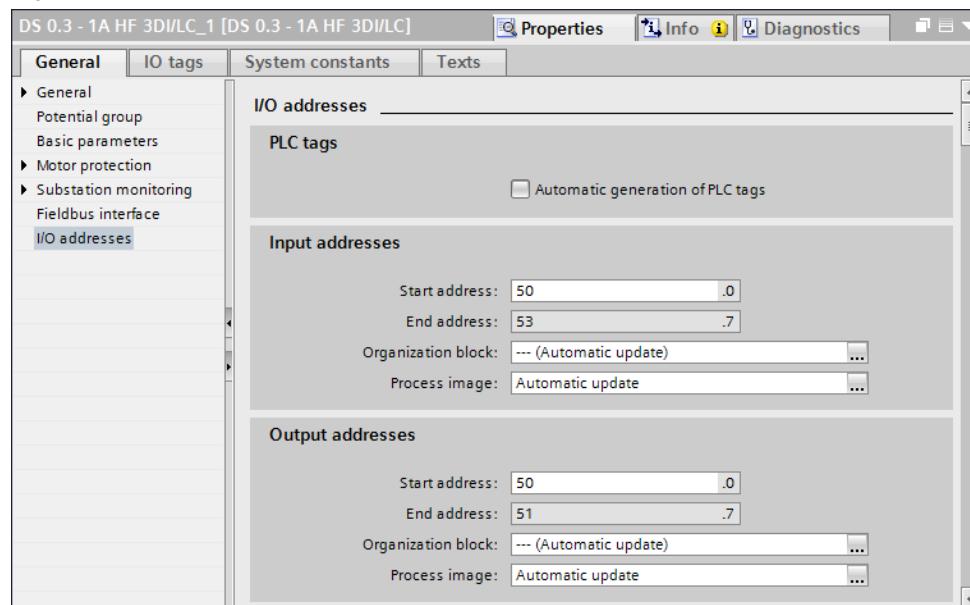
3 Use of the PLC data types

3.1 Address space (process image of the inputs/outputs) using the example of a motor starter

To be able to access the process image of the motor starter inputs/outputs in the user program in a structured and symbolic way, you must do the following:

- Create a PLC variable of type "LPD_typeMotorStarterOut" and assign the start address of the outputs of the module.
- Create a PLC variable of type "LPD_typeMotorStarterIn" and assign the start address of the inputs of the module.

Figure 3-1: I/O addresses of the motor starter module



3 Use of the PLC data types

Figure 3-2: PLC variables with the addresses of the motor starter module

Default tag table				
	Name	Data type	Address	Comment
1	motorStarterOut	"LPD_typeMotorStarterOut"	%Q50.0	
2	motorCw	Bool	%Q50.0	Motor CW
3	motorCcW	Bool	%Q50.1	Motor CCW (Reversing starters only)
4	res02	Bool	%Q50.2	Reserved
5	tripReset	Bool	%Q50.3	Trip RESET
6	emergencyStart	Bool	%Q50.4	Emergency start
7	res05	Bool	%Q50.5	Reserved
8	res06	Bool	%Q50.6	Reserved
9	coldStart	Bool	%Q50.7	Cold start
10	res10	Bool	%Q51.0	Reserved
11	res11	Bool	%Q51.1	Reserved
12	res12	Bool	%Q51.2	Reserved
13	res13	Bool	%Q51.3	Reserved
14	res14	Bool	%Q51.4	Reserved
15	res15	Bool	%Q51.5	Reserved
16	res16	Bool	%Q51.6	Reserved
17	disableQuickStop	Bool	%Q51.7	Disable quick stop
18	motorStarterIn	"LPD_typeMotorStarterIn"	%I50.0	
19	ready	Bool	%I50.0	Ready (automatic)
20	motorOn	Bool	%I50.1	Motor on
21	groupFault	Bool	%I50.2	Group fault
22	groupWarning	Bool	%I50.3	Group warning
23	input1	Bool	%I50.4	Input 1 (with 3DI/LC module)
24	input2	Bool	%I50.5	Input 2 (with 3DI/LC module)
25	input3	Bool	%I50.6	Input 3 (with 3DI/LC module)
26	inputLC	Bool	%I50.7	Input LC (with 3DI/LC module)
27	currMotorCurrentBit0	Bool	%I51.0	Current motor current Icurr [%] Bit 0
28	currMotorCurrentBit1	Bool	%I51.1	Current motor current Icurr [%] Bit 1
29	currMotorCurrentBit2	Bool	%I51.2	Current motor current Icurr [%] Bit 2
30	currMotorCurrentBit3	Bool	%I51.3	Current motor current Icurr [%] Bit 3
31	currMotorCurrentBit4	Bool	%I51.4	Current motor current Icurr [%] Bit 4
32	currMotorCurrentBit5	Bool	%I51.5	Current motor current Icurr [%] Bit 5
33	manLocalMode	Bool	%I51.6	Manual local mode (with 3DI/LC module)
34	res17	Bool	%I51.7	Reserved
35	readyStartMotorOn	Bool	%I52.0	Ready to start for motor on
36	motorCw	Bool	%I52.1	Motor CW
37	motorCcW	Bool	%I52.2	Motor CCW (Reversing starters only)
38	quickStopActive	Bool	%I52.3	Quick stop active

3.2 Address space (control and feedback interface) using the example of DI 16x24VDC HF

In counting mode, channel 0 and channel 1 are used for counting.

To control the counting function directly via the control and confirmation interface, you must do the following:

- Create a PLC variable of type "LPD_typeDI16HFCountControl" and assign the start address of the outputs of the module.
- Create a PLC variable of type "LPD_typeDI16HFCountFeedback" and assign the start address of the inputs of the module.

Figure 3-3: I/O addresses of the module DI 16x24VDC HF

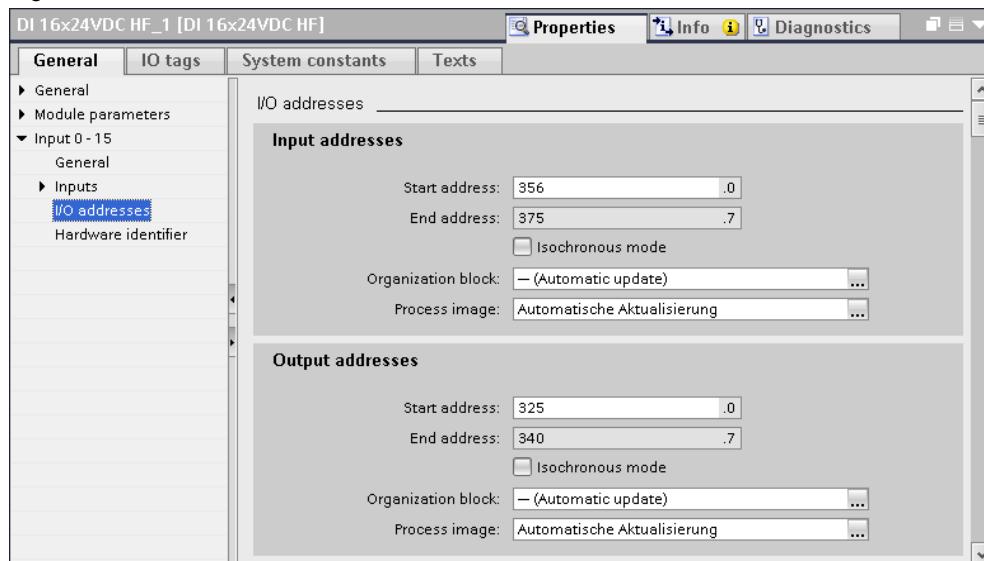


Figure 3-4: PLC variables with the addresses of the module DI 16x24VDC HF

Default tag table				
	Name	Data type	Address	Comment
1	DI16HFControl	"LPD_typeDI16HFCountControl"	%Q325.0	
2	channel	Array[0..1] of LPD_typeDI16HFCountControlChannel	%Q325.0	Channel 0 to 1
3	channel[0]	LPD_typeDI16HFCountControlChannel	%Q325.0	
4	loadValue	DWord	%QD325	Load value counter
5	controlByte	Byte	%QB329	Control byte counter
6	reserved0	Byte	%QB330	Reserved
7	reserved1	Byte	%QB331	Reserved
8	reserved2	Byte	%QB332	Reserved
9	channel[1]	LPD_typeDI16HFCountControlChannel	%Q333.0	
10	DI16HFFeedback	"LPD_typeDI16HFCountFeedback"	%I356.0	
11	stsDIO	Bool	%I356.0	Status DIO
12	stsDI1	Bool	%I356.1	Status DI1
13	stsDI2	Bool	%I356.2	Status DI2
	stsDI	Bool	%I356.3	Status

With the PLC data types, you can now access the input and output area in the user program in a structured and symbolic way.

3.3 Example of parameter data sets for DI 16x24VDC HF

As of firmware version V2.1.0 of the module, channels 0 and 1 can be used in the operating mode "Counting" or "DI". The remaining channels can be used as standard inputs (DI).

This example describes how to parameterize the first channel of the DI module as a counter.

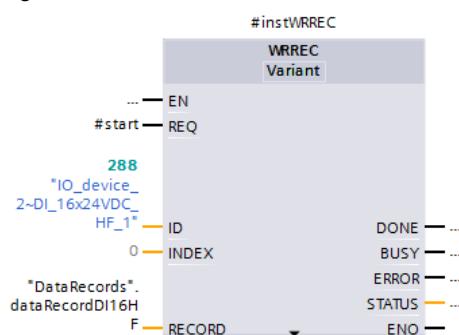
- To do this, create a parameter data set of the PLC data type "LPD_typeDI16HFDataRecCount" in a data block. The required structure of the data set is defined in the PLC data type.
- Enter the desired parameter values in the "Start value" column. The values in Byte 0 and Byte 1 are fixed and must not be changed. A description of the parameters can be found in the device manual.

Figure 3-5: Parameter data set for channel in "Counting" operating mode

DataRecords		
	Name	Data type
1	Static	
2	dataRecordDI16HF	"LPD_typeDI16HFDataRecordCount"
3	majMinVer	Byte
4	channelParamLength	Byte
5	enableDiagnostics	Byte
6	inputDelay	Byte
7	behavior	Byte
8	behaviorDQ	Byte
9	highCountingLimit	UDInt
10	startValue	UDInt
11	comparisonValue	UDInt

- The parameter data set is transferred to the module with the instruction WRREC. The number of the data set depends on the module and channel.

Figure 3-6: Parameter data set 0 to module DI 16x24VDC HF

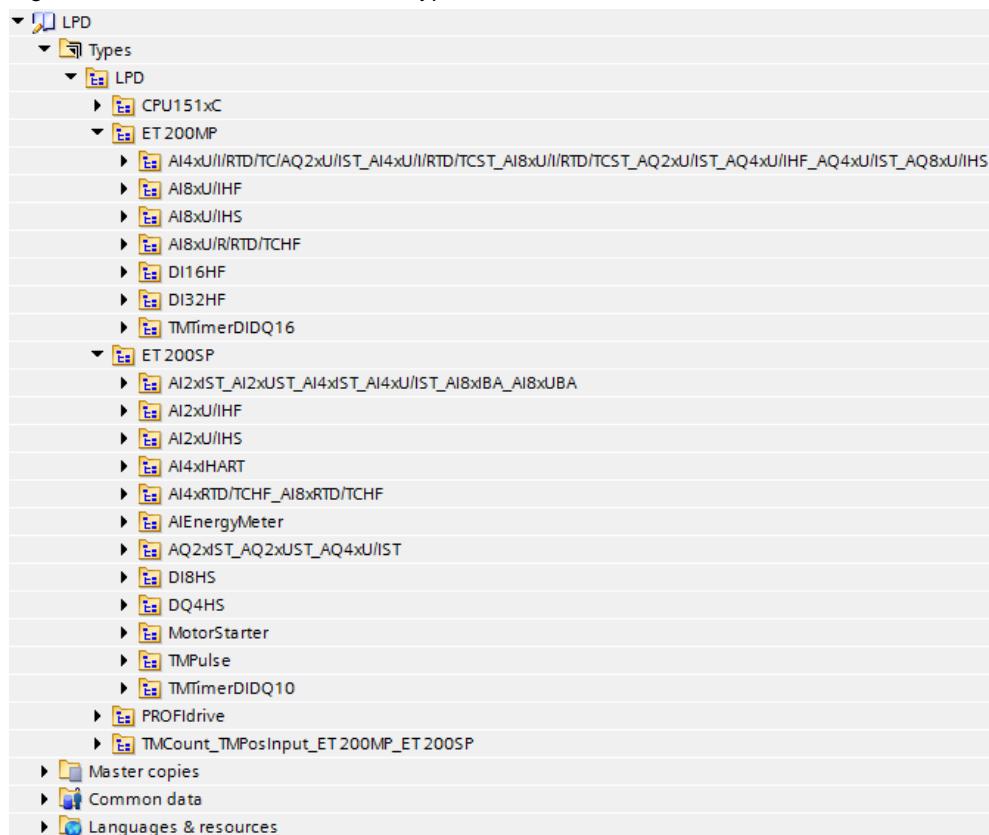


The following applies to the DI 16x24VDC HF module:

- Configuration 1 x 16 channel:
Data set 0 for channel 0, data set 1 for channel 1 ... Data set 15 for channel 15
- Configuration 2 x 8 channel:
Data set 0 to 7 for channel 0 to 7 (submodule 1)
Data set 0 to 7 for channel 8 to 15 (submodule 2)
- For channel 0 and channel 1, the data set can be selected for counting mode or DI mode.
- For channels 2 to 15, only the data set for DI mode can be used.

4 Overview of the PLC data types

Figure 4-1: Overview of the PLC data types



4.1 SIMATIC CPU151xC (6ES751x-1CK00-0AB0)

The following data types can be found in the folder "LPD > CPU151xC" and "LPD > TMCount_TMPosInput_ET 200MP_ET 200SP".

Table 4-1: Address space (control and feedback interface).

PLC data type	Function
LPD_typeCountControlCh	Control interface for High Speed Counter (HSC) per channel
LPD_typeCountFeedbackCh	Feedback interface for High Speed Counter (HSC) per channel

Note

The PLC data types for High Speed Counters (HSC) can also be used for the technology modules TM Count and TM PosInput of the SIMATIC ET 200SP and SIMATIC ET 200MP. They can therefore be found in the library in the shared folder "TMCount_TMPosInput_ET 200MP_ET 200SP".

Table 4-2: Parameter data sets

PLC data type	Function
LPD_typeCPU151xCDataRecAICh	Parameter data set for input channels of the analog onboard periphery Data set 0..4 for channel 0..4
LPD_typeCPU151xCDataRecAQCh	Parameter data set for output channels of the analog onboard periphery Data set 64..65 for channel 0..1
LPD_typeCPU151xCDataRecDICh	Parameter data set for input channels of the digital onboard periphery Data set 0..15 for channel 0..15
LPD_typeCPU151xCDataRecDQCh	Parameter data set for output channels of the digital onboard periphery Data set 64..79 for channel 0..15
LPD_typeCPU151xCCountDataRec	Parameter data set for High Speed Counter (HSC) Data set 128
LPD_typeCPU151xCCountDataRecCh	Channel parameters for High Speed Counter (HSC)
LPD_typeCountHwIrq	PLC data type for process alarms
LPD_typeCountBehaviorDQ	PLC data type for behavior DQ
LPD_typeCountBehaviorDI	PLC data type for behavior DI
LPD_typeCountValues	PLC data type for values

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109478675> or

<https://support.industry.siemens.com/cs/ww/en/view/109478676>

4.2 SIMATIC Drive Controller (6ES7615-xDF10-0AB0)

DI/DQ 8 (Interface X142)

The following data types can be found in the folder "LPD > DriveController > DI/DQ8_X142.

Table 4-3: Address space (process image of the inputs/outputs)

PLC data type	Function
LPD_typeDriveControlIDIDQ8Control	Control Interface at interface X142
LPD_typeDriveControlIDIDQ8Feedback	Feedback Interface at interface X142

Further information on the SIMATIC Drive Controller and the structure of the data structures can be found in the System manual:

<https://support.industry.siemens.com/cs/ww/en/view/109766665>

4.3 I&M Data

The following data types can be found in the folder "LPD > I&M".

Table 4-4: I&M Data

PLC data type	Function
LPD_typeI&M0	I&M 0: Read device identification Data set 0xAFF0
LPD_typeI&M1	I&M 1: Read/write equipment marking Data set 0xAFF1
LPD_typeI&M2	I&M 2: Read/write installation Data set 0xAFF2
LPD_typeI&M3	I&M 3: Read/write description Data set 0xAFF3

Note

With PROFIBUS, access to the I&M data is possible with data set 255.

Note

You can read the data sets and the I&M data using the "RDREC" statement. You use the INDEX parameter to select which data set is to be read by the assembly.

Further information on the structure of the I&M data structures can be found e.g. under:

<https://support.industry.siemens.com/cs/ww/en/view/109766665>

4.4 SIMATIC ET 200MP / SIMATIC S7-1500 module

4.4.1 DI 16x24VDC HF (6ES7521-1BH00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > DI16HF".

Table 4-5: Address space (control and feedback interface).

PLC data type	Function
LPD_typeDI16HFCountControl	Control interface for counters on channel 0 and channel 1 (Counting mode)
LPD_typeDI16HFCountControlCh	Control interface for counter to one channel (counting mode)
LPD_typeDI16HFCountFeedback	Feedback interface for counters on channel 0 and channel 1 (Counting mode)
LPD_typeDI16HFCountFeedbackCh	Feedback interface for counter to one channel (counting mode)

Table 4-6: Parameter data sets

PLC data type	Function
LPD_typeDI16HFDataRecCountCh	Parameter data set for input channels in Counting mode (channels 0 and 1 only) Data set 0..1 for channel 0..1
LPD_typeDI16HFDataRecDICh	Parameter data set for input channels in operating mode DI Data set 0..15 for channel 0..15

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59193001>

Note

The design of the control and feedback interface for meters on one channel is identical for the modules "DI 16x24VDC HF" and "DI 32x24VDC HF".

The structure of the parameter data sets for the modules "DI 16x24VDC HF" and "DI 32x24VDC HF" are also identical.

4.4.2 DI 32x24VDC HF (6ES7521-1BL00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > DI32HF".

Table 4-7: Address space (control and feedback interface).

PLC data type	Function
LPD_typeDI32HFCountControl	Control interface for counters on channel 0 and channel 1 (Counting mode)
LPD_typeDI32HFCountControlCh	Control interface for counter to one channel (counting mode)
LPD_typeDI32HFCountFeedback	Feedback interface for counters on channel 0 and channel 1 (Counting mode)
LPD_typeDI32HFCountFeedbackCh	Feedback interface for counter to one channel (counting mode)

Table 4-8: Parameter data sets

PLC data type	Function
LPD_typeDI32HFDataRecCountCh	Parameter data set for input channels in Counting mode (channels 0 and 1 only) Data set 0..1 for channel 0..1
LPD_typeDI32HFDataRecDICh	Parameter data set for input channels in operating mode DI Data set 0..31 for channel 0..31

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59192896>

4.4.3 TM Timer DIDQ 16x24V (6ES7552-1AA00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > TMTimerDIDQ16".

Table 4-9: Address space (control and feedback interface).

PLC data type	Function
LPD_typeTMTimerDIDQ16Control	Interface for TM Timer DIDQ 16x24V
LPD_typeTMTimerDIDQ16Feedback	Feedback interface for TM Timer DIDQ 16x24V

Table 4-10: Parameter data sets

PLC data type	Function
LPD_typeTMTimerDIDQ16DataRec	Parameter data set for TM Timer DIDQ 16x24V for setting up the operating modes: Data set 128

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/95153313>

4.4.4 TM Count 2x24V (6ES7550-1AA0*-0AB0)

The following data types can be found in the folder "LPD > TMCOUNT_TMRPOSINPUT_ET 200MP_ET 200SP".

Table 4-11: Address space (control and feedback interface).

PLC data type	Function
LPD_typeCountControlCh	Control interface for High Speed Counter (HSC) per channel in operating mode "Manual operating mode"
LPD_typeCountFeedbackCh	Feedback interface for High Speed Counter (HSC) per channel in operating mode "Manual operating mode"
LPD_typeCountFastModeFeedbackCh	Feedback interface for High Speed Counter (HSC) per channel in operating mode "Fast Mode"

Table 4-12: Parameter data sets

PLC data type	Function
LPD_typeCount2DataRec	Parameter data set for High Speed Counter (HSC): Data set 128
LPD_typeCountDataRecCh	Parameter data set for High Speed Counter (HSC) per channel
LPD_typeCountHwlrq	PLC data type for process alarms
LPD_typeCountBehaviorDQ	PLC data type for behavior DQ
LPD_typeCountBehaviorDI	PLC data type for behavior DI
LPD_typeCountValues	PLC data type for values

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109783960>

4.4.5 TM PosInput 2 (6ES7551-1AB00-0AB0)

The following data types can be found in the folder "LPD > TMCount_TMPosInput_ET 200MP_ET 200SP".

Table 4-13: Address space (control and feedback interface).

PLC data type	Function
LPD_typeCountControlCh	Control interface for High Speed Counter (HSC) per channel in operating mode "Manual operating mode"
LPD_typeCountFeedbackCh	Feedback interface for High Speed Counter (HSC) per channel in operating mode "Manual operating mode"

Table 4-14: Parameter data sets

PLC data type	Function
LPD_typeCount2SSIDataRec	Parameter data set for position acquisition with SSI absolute encoder: Data set 128
LPD_typeCountSSIDataRecCh	Parameter data set for position acquisition with SSI absolute encoder per channel
LPD_typeCount2DataRec	Parameter data set for High Speed Counter (HSC): Data set 128
LPD_typeCountDataRecCh	Parameter data set for High Speed Counter (HSC) per channel
LPD_typeCountHwIrq	PLC data type for process alarms
LPD_typeCountBehaviorDQ	PLC data type for behavior DQ
LPD_typeCountBehaviorDI	PLC data type for behavior DI
LPD_typeCountValues	PLC data type for values

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/61777657>

4.4.6 AI 4xU/I/RTD/TC / AQ 2xU/I ST (6ES7534-7QE00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > AI4xU/I/RTD/TC/AQ2xU/IST_AI4xU/I/RTD/TCST_AI8xU/I/RTD/TCST_AQ2xU/IST_AQ4xU/IHF_AQ4xU/IST_AQ8xU/IHS".

Table 4-15: Parameter data sets

PLC data type	Function
LPD_typeAISTDataRec0Ch	Parameter data set for input channels 1 x 4-channel: Data set 0..3 for channel 0..3 4 x 1-channel: Data set 0 for channels 0..3 (submodule 1..4)
LPD_typeAQDataRec64Ch	Parameter data set for output channels 1 x 2-channel: Data set 64..65 for channel 0..1 2 x 1-channel: Data set 64 for channels 0..1 (submodule 1..2)
LPD_typeAISTDataRec192Ch	Parameter data set for dynamic reference temperature Data set 192..195 for channel 0..3

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Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/91688109>

4.4.7 AI 4xU/I/RTD/TC ST (6ES7531-7QD00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > AI4xU/I/RTD/TC/AQ2xU/IST_AI4xU/I/RTD/TCST_AI8xU/I/RTD/TCST_AQ2xU/IST_AQ4xU/IHF_AQ4xU/IST_AQ8xU/IHS".

Table 4-16: Parameter data sets

PLC data type	Function
LPD_typeAIStDataRec0Ch	Parameter data set for input channels 1 x 4-channel: Data set 0..3 for channel 0..3 4 x 1-channel: Data set 0 for channels 0..3 (submodule 1..4)
LPD_typeAIStDataRec192Ch	Parameter data set for dynamic reference temperature Data set 192..195 for channel 0..3

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/91688401>

4.4.8 AI 8xU/I HF (6ES7531-7NF00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > AI8xU/IHF".

Table 4-17: Parameter data sets

PLC data type	Function
LPD_typeAI8HFDataRec0Ch	Parameter data set for input channels 1 x 8-channel: Data set 0..7 for channel 0..7 8 x 1-channel: Data set 0 for channels 0..7 (submodule 1..8)
LPD_typeAI8HFDataRec0ScaleCh	Parameter data set with scaling of the measured values Data set 0..7 for channel 0..7

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109483587>

4.4.9 AI 8xU/I HS (6ES7531-7NF10-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > AI8xU/IHS".

Table 4-18: Parameter data sets

PLC data type	Function
LPD_typeAI8HSDDataRec0Ch	Parameter data set for input channels 1 x 8-channel: Data set 0..7 for channel 0..7 8 x 1-channel: Data set 0 for channels 0..7 (submodule 1..8)

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59193206>

4.4.10 AI 8xU/I/RTD/TC ST (6ES7531-7KF00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > AI4xU/I/RTD/TC/AQ2xU/IST_AI4xU/I/RTD/TCST_AI8xU/I/RTD/TCST_AQ2xU/IST_AQ4xU/IHF_AQ4xU/IST_AQ8xU/IHS".

Table 4-19: Parameter data sets

PLC data type	Function
LPD_typeAISTDataRec0Ch	Parameter data set for input channels 1 x 8-channel: Data set 0..7 for channel 0..7 8 x 1-channel: Data set 0 for channels 0..7 (submodule 1..8)
LPD_typeAI8STDDataRec8	Parameter data set, reference channel (COMP) of the module Data set 8
LPD_typeAISTDataRec192Ch	Parameter data set for dynamic reference temperature Data set 192..199 for channel 0..7

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59193205>

4.4.11 AI 8xU/R/RTD/TC HF (6ES7531-7PF00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > AI8xU/R/RTD/TCHF".

Table 4-20: Parameter data sets

PLC data type	Function
LPD_typeAI8URRTDTCHFDataRec0Ch	Parameter data set for input channels 1 x 9-channel: Data set 0..8 for channel 0..8 9 x 1-channel: Data set 0 for channels 0..8 (submodule 1..9) Channel 8 is reference channel
LPD_typeAI8URRTDTCHFDataRec192Ch	Parameter data set for dynamic reference temperature Data set 192..200 for channel 0..8

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PLC data type	Function
LPD_typeAI8URRTDTCHFDataRec235	Parameter data set for scalable measuring range Data set 235
LPD_typeAI8URRTDTCHFDataRec235Ch	Parameter data set for scalable measuring range per channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109483586>

4.4.12 AQ 2xU/I ST (6ES7532-5NB00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > AI4xU/I/RTD/TC/AQ2xU/IST_AI4xU/I/RTD/TCST_AI8xU/I/RTD/TCST_AQ2xU/IST_AQ4xU/IHF_AQ4xU/IST_AQ8xU/IHS".

Table 4-21: Parameter data sets

PLC data type	Function
LPD_typeAQDataRec64Ch	Parameter data set for output channels 1 x 2-channel: Data set 64..65 for channel 0..1 2 x 1-channel: Data set 64 for channels 0..1 (submodule 1..2)

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/91688388>

4.4.13 AQ 4xU/I HF (6ES7532-5ND00-0AB0)

The following data types can be found in the folder "ET 200MP > AI4xU/I/RTD/TC/AQ2xU/IST_AI4xU/I/RTD/TCST_AI8xU/I/RTD/TCST_AQ2xU/IST_AQ4xU/IHF_AQ4xU/IST_AQ8xU/IHS".

Table 4-22: Parameter data sets

PLC data type	Function
LPD_typeAQDataRec64Ch	Parameter data set for output channels 1 x 4-channel: Data set 64..67 for channel 0..3 4 x 1-channel: Data set 64 for channels 0..3 (submodule 1..4)

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109483585>

4.4.14 AQ 4xU/I ST (6ES7532-5HD00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > AI4xU/I/RTD/TC/AQ2xU/IST_AI4xU/I/RTD/TCST_AI8xU/I/RTD/TCST_AQ2xU/IST_AQ4xU/IHF_AQ4xU/IST_AQ8xU/IHS".

Table 4-23: Parameter data sets

PLC data type	Function
LPD_typeAQDataRec64Ch	Parameter data set for output channels 1 x 4-channel: Data set 64..67 for channel 0..3 4 x 1-channel: Data set 64 for channels 0..3 (submodule 1..4)

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59191850>

4.4.15 AQ 8xU/I HS (6ES7532-5HF00-0AB0)

The following data types can be found in the folder "ET 200MP > AI4xU/I/RTD/TC/AQ2xU/IST_AI4xU/I/RTD/TCST_AI8xU/I/RTD/TCST_AQ2xU/IST_AQ4xU/IHF_AQ4xU/IST_AQ8xU/IHS".

Table 4-24: Parameter data sets

PLC data type	Function
LPD_typeAQDataRec64Ch	Parameter data set for output channels 1 x 8-channel: Data set 64..71 for channel 0..7 8 x 1-channel: Data set 64 for channel 0..7 (submodule 1..8)

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59193551>

4.4.16 DI 16x24VDC HS (6ES7521-7BH00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > DI16HS_DI16Namur".

Table 4-25: Address space (control and feedback interface)

PLC data type	Function
LPD_typeDI16HSCountControlCh0to3	Control interface in counter operating mode at channel 0 to 3
LPD_typeDI16HSCountControlCh	Control interface in counter operating mode for one channel
LPD_typeDI16HSCountFeedbackCh0to3	Feedback interface in counter operating mode at channel 0 to 3
LPD_typeDI16HSCountFeedbackCh	Feedback interface in counter operating mode for one channel

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Table 4-26: Parameter data sets

PLC data type	Function
LPD_typeDI16HSDataRecCount	Parameter data set in counter operating mode at channel 0 to 3 and DI operating mode at channel 4 to 15
LPD_typeDI16HSDataRecCountCh	Parameter data set in counter operating mode for one channel
LPD_typeDI16HSDataRecDI	Parameter data set in DI operating mode at channel 0 to 15
LPD_typeDI16HSDataRecDICh	Parameter data set in DI mode for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109806801>

4.4.17 DI 16xNAMUR HF (6ES7521-7TH00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > DI16HS_DI16Namur".

Table 4-27: Address space (control and feedback interface)

PLC data type	Function
LPD_typeDI16HSCountControlCh0to3	Control interface in counter operating mode at channel 0 to 3
LPD_typeDI16HSCountControlCh	Control interface in counter operating mode for one channel
LPD_typeDI16HSCountFeedbackCh0to3	Feedback interface in counter operating mode at channel 0 to 3
LPD_typeDI16HSCountFeedbackCh	Feedback interface in counter operating mode for one channel

Table 4-28: Parameter data sets

PLC data type	Function
LPD_typeDI16HSDataRecCount	Parameter data set in counter operating mode at channel 0 to 3 and DI operating mode at channel 4 to 15
LPD_typeDI16HSDataRecCountCh	Parameter data set in counter operating mode for one channel
LPD_typeDI16HSDataRecDI	Parameter data set in DI operating mode at channel 0 to 15
LPD_typeDI16HSDataRecDICh	Parameter data set in DI mode for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109798382>

4.4.18 DQ 8x24VDC/2A HF (6ES7522-1BF00-0AB0)

The following data types can be found in the folder "LPD > ET 200MP > DQ8HF".

Table 4-29: Address space (control and feedback interface)

PLC data type	Function
LPD_typeDQ8HFPWMCh0and4	Address space in pulse width modulation mode for channel 0 and channel 4

Table 4-30: Parameter data sets

PLC data type	Function
LPD_typeDQ8HFDataRec64to71	Parameter data set for DQ8 Data set 64 to 71
LPD_typeDQ8HFDataRec129	Parameter data set for DQ8 Data set 129
LPD_typeDQ8HFDataRec130	Parameter data set for DQ8 Data set 130
LPD_typeDQ8HFDataRec131	Parameter data set for DQ8 Data set 131

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59193089>

4.5 SIMATIC ET 200SP Module

4.5.1 DI 8x24VDC HS (6ES7131-6BF00-0DA0)

The following data types can be found in the folder "LPD > ET 200SP > DI8HS".

Table 4-31: Address space (control and feedback interface)

PLC data type	Function
LPD_typeDI8HSCountControlCh	Control interface for counter to one channel (counting mode) Since the structure does not end at a WORD limit, a separate PLC variable with the corresponding addresses must be created for each channel in this module. (see Figure 4-2)
LPD_typeDI8HSCountFeedbackState	Status feedback interface (Counting operating mode) Since the structure does not end at a WORD limit, a separate PLC variable with the corresponding addresses must be created for this module for the status and per channel. (see Figure 4-2)
LPD_typeDI8HSCountFeedbackCh	Feedback interface for counter to one channel (counting mode) Create a separate PLC variable for each channel. (see Figure 4-2)
LPD_typeDI8HSOVS	Address space in oversampling mode for channel 0 to channel 7
LPD_typeOVSCh	Address space in oversampling mode for a channel

Figure 4-2: I/O addresses and PLC variables from module DI 8x24VDC HS

Name	Data type	Address
1 di8hsControl0	"LPD_typeDI8HSCountControlCh"	%Q159.0
2 di8hsControl1	"LPD_typeDI8HSCountControlCh"	%Q164.0
3 di8hsControl2	"LPD_typeDI8HSCountControlCh"	%Q169.0
4 di8hsControl3	"LPD_typeDI8HSCountControlCh"	%Q174.0
5 di8hsstate	"LPD_typeDI8HSCountFeedbackState"	%I396.0
6 di8hsFeedback0	"LPD_typeDI8HSCountFeedbackCh"	%I397.0
7 di8hsFeedback1	"LPD_typeDI8HSCountFeedbackCh"	%I403.0
8 di8hsFeedback2	"LPD_typeDI8HSCountFeedbackCh"	%I409.0
9 di8hsFeedback3	"LPD_typeDI8HSCountFeedbackCh"	%I415.0

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Table 4-32: Parameter data sets

PLC data type	Function
LPD_typeDI8HSDataRecCount	Parameter data set for channel 0 to 3 in Counting operating mode Data set 128
LPD_typeDI8HSDataRecCountCh	Parameter data set for a channel in Counting operating mode
LPD_typeDI8HSDataRecDI	Parameter data set for channel 0 to 7 in DI operating mode Data set 128
LPD_typeDI8HSDataRecDICh	Parameter data set for a channel in DI operating mode
LPD_typeDI8HSDataRecOVS	Parameter data set for channel 0 to 7 in operating mode Oversampling Data set 128
LPD_typeDI8HSDataRecOVSCh	Parameter data set for a channel in oversampling mode

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109475339>

Information about Padding bytes when using structured data types can be found under:

<https://support.industry.siemens.com/cs/ww/en/view/109773506/128293305611>

4.5.2 DQ 4x24VDC/2A HS (6ES7132-6BD20-0DA0)

The following data types can be found in the folder "LPD > ET 200SP > DQ4HS" und "LPD > ET 200SP > DI8HS".

Table 4-33: Address space (control and feedback interface).

PLC data type	Function
LPD_typeDQ4HSOVS	Address space in oversampling mode for channel 0 to channel 3
LPD_typeOVSCh	Address space in oversampling mode for a channel
LPD_typeDQ4HSPWM	Address space in pulse width modulation mode for channel 0 to channel 3

Table 4-34: Parameter data sets

PLC data type	Function
LPD_typeDQ4HSDataRec	Parameter data set for DQ4 Data set 128
LPD_typeDQ4HSDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109475185>

4.5.3 TM Timer DIDQ 10x24V (6ES7138-6CG00-0BA0)

The following data types can be found in the folder "LPD > ET 200SP > TMTimerDIDQ10".

Table 4-35: Address space (control and feedback interface).

PLC data type	Function
LPD_typeTMTimerDIDQ10Control	Control Interface for TM Timer DIDQ 10x24V
LPD_typeTMTimerDIDQ10Feedback	Feedback interface for TM Timer DIDQ 10x24V

Table 4-36: Parameter data sets

PLC data type	Function
LPD_typeTMTimerDIDQ10DataRec	Parameter data set for TM Timer DIDQ 10x24V; Data set 128

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/95153951>

4.5.4 TM Count 1x24V (6ES7138-6AA0*-0BA0)

The following data types can be found in the folder "LPD > TMCount_TMPosInput_ET 200MP_ET 200SP".

Table 4-37: Address space (control and feedback interface).

PLC data type	Function
LPD_typeCountControlCh	Control interface for High Speed Counter (HSC) per channel in operating mode "Manual operating mode"
LPD_typeCountFeedbackCh	Feedback interface for High Speed Counter (HSC) per channel in operating mode "Manual operating mode"
LPD_typeCountFastModeFeedbackCh	Feedback interface for High Speed Counter (HSC) per channel in operating mode "Fast Mode"

Table 4-38: Parameter data sets

PLC data type	Function
LPD_typeCount1DataRec	Parameter data set for High Speed Counter (HSC): Data set 128
LPD_typeCountDataRecCh	Parameter data set for High Speed Counter (HSC) per channel
LPD_typeCountHwIrq	PLC data type for process alarms
LPD_typeCountBehaviorDQ	PLC data type for behavior DQ
LPD_typeCountBehaviorDI	PLC data type for behavior DI
LPD_typeCountValues	PLC data type for values

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109768445>

4.5.5 TM PosInput 1 (6ES7138-6BA00-0BA0)

The following data types can be found in the folder "LPD > TMCount_TMPosInput_ET 200MP_ET 200SP".

Table 4-39: Address space (control and feedback interface).

PLC data type	Function
LPD_typeCountControlCh	Control interface for High Speed Counter (HSC) per channel in operating mode "Manual operating mode"
LPD_typeCountFeedbackCh	Feedback interface for High Speed Counter (HSC) per channel in operating mode "Manual operating mode"

Table 4-40: Parameter data sets

PLC data type	Function
LPD_typeCount1SSIDataRec	Parameter data set for position acquisition with SSI absolute encoder. Data set 128
LPD_typeCountSSIDataRecCh	Parameter data set for position acquisition with SSI absolute encoder per channel
LPD_typeCount1DataRec	Parameter data set for High Speed Counter Data set 128
LPD_typeCountDataRecCh	Parameter data set for High Speed Counter (HSC) per channel
LPD_typeCountHwIrq	PLC data type for process alarms
LPD_typeCountBehaviorDQ	PLC data type for behavior DQ
LPD_typeCountBehaviorDI	PLC data type for behavior DI
LPD_typeCountValues	PLC data type for values

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109482269>

4.5.6 TM Pulse 2x24V (6ES7138-6DB00-0BB1)

The following data types can be found in the folder "LPD > ET 200SP > TMPulse".

Table 4-41: Address space (control and feedback interface).

PLC data type	Function
LPD_typeTMPulseControl	Control interface TM Pulse Operating modes: Pulse output, PWM, pulse chain, on/off delay
LPD_typeTMPulseControlCh	Control interface TM Pulse for a channel Operating modes: Pulse output, PWM, pulse chain, on/off delay
LPD_typeTMPulseControlMotor	Control interface TM Pulse Operating mode: DC motor
LPD_typeTMPulseControlMotorCh	Control interface TM Pulse for a channel Operating mode: DC motor
LPD_typeTMPulseControlFrequ	Control interface TM Pulse Operating mode: Frequency output

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PLC data type	Function
LPD_typeTMPPulseControlFrequCh	Control interface TM Pulse for a channel Operating mode: Frequency output
LPD_typeTMPPulseFeedback	Control interface TM Pulse
LPD_typeTMPPulseFeedbackCh	Control interface TM Pulse for a channel

Note

The TM Pulse 2x24V has two channels. You can assign a different operating mode to each channel. In this case you can create your own PLC data type from the PLC data types of the library according to your configuration.

Table 4-42: Parameter data sets

PLC data type	Function
LPD_typeTMPPulseDataRec	Parameter data set TM Pulse Data set 128
LPD_typeTMPPulseDataRecHead	Header parameter data set
LPD_typeTMPPulseDataRecCh	Parameter data set TM Pulse for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109478710>

4.5.7 Motor starters (3RK1308-0**00-0CP0)

The following data types can be found in the folder "LPD > ET 200SP > MotorStarter".

Table 4-43: Address space (process image of the inputs/outputs)

PLC data type	Function
LPD_typeMotorStarterOut	Process image of the outputs motor starters
LPD_typeMotorStarterIn	Process image of the inputs motor starters

Table 4-44: Data sets

PLC data type	Function
LPD_typeMotorStarterEntry	Data type for an entry in the logbook
LPD_typeMotorStarterDS7x	Data sets (DS) for Motor starters DS 72: Logbook - Read device error DS 73: Logbook - Read releases DS 75: Logbook - Read events
LPD_typeMotorStarterDS92	DS 92: Read device diagnosis
LPD_typeMotorStarterDS94	DS 94: Read measured values
LPD_typeMotorStarterDS95	DS 95: Read statistics
LPD_typeMotorStarterDS201	DS 201: Reading/writing device parameter 1
LPD_typeMotorStarterDS202	DS 202: Reading/writing device parameter 2
LPD_typeMotorStarterDS203	DS 203: Reading device parameter 1
LPD_typeMotorStarterDS204	DS 204: Reading device parameter 2

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Table 4-45: I&M data

PLC data type	Function
LPD_typeMotorStarterI&M0	I&M 0: Read device identification Data set 0xAFF0
LPD_typeMotorStarterI&M1	I&M 1: Read/write equipment marking Data set 0xAFF1
LPD_typeMotorStarterI&M2	I&M 2: Read/write installation Data set 0xAFF2
LPD_typeMotorStarterI&M3	I&M 3: Read/write description Data set 0xAFF3

Note

With PROFIBUS, access to the I&M data is possible with data set 255.

Note

You can read the data sets and the I&M data using the "RDREC" statement. You use the INDEX parameter to select which data set is to be read by the assembly.

Further information on the motor starter and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109479973>

4.5.8 AI 2xI 2-/4-wire ST (6ES7134-6GB00-0BA1)

The following data types can be found in the folder "LPD > ET 200SP > AI2xIST_AI2xUST_AI4xIST_AI4xU/IST_AI8xIBA_AI8xUBA".

Table 4-46: Parameter data sets

PLC data type	Function
LPD_typeAI2xSTDataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAIxSTDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109481112>

4.5.9 AI 2xU/I 2-/4-wire HF (6ES7134-6HB00-0CA1)

The following data types can be found in the folder "LPD > ET 200SP > AI2xU/IHF".

Table 4-47: Parameter data sets

PLC data type	Function
LPD_typeAI2xUIHFDataRec128V1	Parameter data set for input channels V1.0 Data set 128 for entire module
LPD_typeAI2xUIHFDataRecChV1	Parameter data set for one channel V1.0
LPD_typeAI2xUIHFDataRec128V2	Parameter data set for input channels V2.0 Data set 128 for entire module
LPD_typeAI2xUIHFDataRecChV2	Parameter data set for one channel V2.0

PLC data type	Function
LPD_typeAI2xUIHFDataRec128V2Scale	Parameter data set for input channels V2.0 Scale Data set 128 for entire module
LPD_typeAI2xUIHFDataRecChV2Scale	Parameter data set for one channel V2.0 Scale

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/89116945>

4.5.10 AI 2xU/I 2-/4-wire HS (6ES7134-6HB00-0DA1)

The following data types can be found in the folder "LPD > ET 200SP > AI2xU/IHS".

Table 4-48: Parameter data sets

PLC data type	Function
LPD_typeAI2xUIHSDataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAI2xUIHSDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/73108737>

4.5.11 AI 2xU ST (6ES7134-6FB00-0BA1)

The following data types can be found in the folder "LPD > ET 200SP > AI2xIST_AI2xUST_AI4xIST_AI4xU/IST_AI8xIBA_AI8xUBA".

Table 4-49: Parameter data sets

PLC data type	Function
LPD_typeAI2xSTDataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAIxSTDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109481113>

4.5.12 AI 4xI 2-/4-wire ST (6ES7134-6GD00-0BA1)

The following data types can be found in the folder "LPD > ET 200SP > AI2xIST_AI2xUST_AI4xIST_AI4xU/IST_AI8xIBA_AI8xUBA".

Table 4-50: Parameter data sets

PLC data type	Function
LPD_typeAI4xSTDataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAIxSTDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59768161>

4.5.13 AI 4xRTD/TC 2-/3-/4-wire HF (6ES7134-6JD00-0CA1)

The following data types can be found in the folder "LPD > ET 200SP > AI4xRTD/TCHF_AI8xRTD/TCHF".

Table 4-51: Parameter data sets

PLC data type	Function
LPD_typeAI4xRTDTCHFDataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAIxRTDTCHFDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59753600>

4.5.14 AI 4xU/I 2-wire ST (6ES7134-6HD00-0BA1)

The following data types can be found in the folder "LPD > ET 200SP > AI2xIST_AI2xUST_AI4xIST_AI4xU/IST_AI8xIBA_AI8xUBA".

Table 4-52: Parameter data sets

PLC data type	Function
LPD_typeAI4xSTDataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAIxSTDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59753624>

4.5.15 AI 8xI 2-/4-wire BA (6ES7134-6GF00-0AA1)

The following data types can be found in the folder "LPD > ET 200SP > AI2xIST_AI2xUST_AI4xIST_AI4xU/IST_AI8xIBA_AI8xUBA".

Table 4-53: Parameter data sets

PLC data type	Function
LPD_typeAI8xBADataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAIxSTDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109475183>

4.5.16 AI 8xRTD/TC 2-wire HF (6ES7134-6JF00-0CA1)

The following data types can be found in the folder "LPD > ET 200SP > AI4xRTD/TCHF_AI8xRTD/TCHF".

Table 4-54: Parameter data sets

PLC data type	Function
LPD_typeAI8xRTDTCHFDataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAIxRTDTCHFDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/89116957>

4.5.17 AI 8xU BA (6ES7134-6FF00-0AA1)

The following data types can be found in the folder "ET 200SP > AI2xIST_AI2xUST_AI4xIST_AI4xU/IST_AI8xIBA_AI8xUBA".

Table 4-55: Parameter data sets

PLC data type	Function
LPD_typeAI8xBADataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAIxSTDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109475182>

4.5.18 AI 4xI 2-wire 4...20mA HART (6ES7134-6TD00-0CA1)

The following data types can be found in the folder "LPD > ET 200SP > AI4xIHART".

Table 4-56: Parameter data sets

PLC data type	Function
LPD_typeAI4xIHARTDataRec128	Parameter data set for input channels Data set 128 for entire module
LPD_typeAI4xIHARTDataRecCh	Parameter data set for one channel
LPD_typeAI4xIHARTDataRec140	Parameter data set for HART mapping Parameter Data set 140 for entire module
LPD_typeAI4xIHARTDataRec140Ch	Parameter data set 140 for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/105037964>

4.5.19 AQ 2xI ST (6ES7135-6GB00-0BA1)

The following data types can be found in the folder "LPD > ET 200SP > AQ2xIST_AQ2xUST_AQ4xU/IST".

Table 4-57: Parameter data sets

PLC data type	Function
LPD_typeAQ2xSTDataRec128	Parameter data set for output channels Data set 128 for entire module
LPD_typeAQxSTDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109481114>

4.5.20 AQ 2xU ST (6ES7135-6FB00-0BA1)

The following data types can be found in the folder "LPD > ET 200SP > AQ2xIST_AQ2xUST_AQ4xU/IST".

Table 4-58: Parameter data sets

PLC data type	Function
LPD_typeAQ2xSTDataRec128	Parameter data set for output channels Data set 128 for entire module
LPD_typeAQxSTDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109481115>

4.5.21 AQ 4xU/I ST (6ES7135-6HD00-0BA1)

The following data types can be found in the folder "LPD > ET 200SP > AQ2xIST_AQ2xUST_AQ4xU/IST".

Table 4-59: Parameter data sets

PLC data type	Function
LPD_typeAQ4xSTDataRec128	Parameter data set for output channels Data set 128 for entire module
LPD_typeAQxSTDataRecCh	Parameter data set for one channel

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/59753612>

4.5.22 AI Energy Meter ST (6ES7134-6PA00-0BD0)

The following data types can be found in the folder "ET 200SP > AIEnergyMeter > 400VST_ST".

Table 4-60: Parameter data sets

PLC data type	Function
LPD_typeEMSTDataRec128	Parameter data set for Energy Meter Data set 128 for entire module
LPD_typeEMSTDataRecCh	Parameter data set for one channel (Phase)

The successor product for the module "AI Energy Meter ST" is the following module "AI Energy Meter 400VAC ST" with the article number "6ES7134-6PA01-0BD0".

4.5.23 AI Energy Meter 400VAC ST (6ES7134-6PA01-0BD0)

The following data types can be found in the folder "ET 200SP > AIEnergyMeter > 400VST_ST".

Table 4-61: Parameter data sets

PLC data type	Function
LPD_typeEM400VSTDataRec128	Parameter data set for Energy Meter Data set 128 for entire module
LPD_typeEMSTDataRecCh	Parameter data set for one channel (Phase)
LPD_typeEM400VSTDataRec142	Measured value data set for Energy Meter Data set 142 for basic measured values (read only)
LPD_typeEM400VSTDataRec143	Measured value data set for Energy Meter Data set 143 for energy counters (read and write)

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109481116>

4.5.24 AI Energy Meter 480VAC ST (6ES7134-6PA20-0BD0)

The following data types can be found in the folder "ET 200SP > AIEnergyMeter > 480VST".

Table 4-62: Parameter data sets

PLC data type	Function
LPD_typeEM480VSTDDataRec128	Parameter data set for Energy Meter Data set 128 for entire module
LPD_typeEM480VSTDDataRecCh	Parameter data set for one channel (Phase)
LPD_typeEM480VSTDDataRec129	Parameter data set for Energy Meter Data set 129 for limit monitoring
LPD_typeEM480VSTDDataRecParam	Parameter data set for one limit parameter block
LPD_typeEM480VSTDDataRec130	Parameter data set for Energy Meter Data set 130 for user data mapping
LPD_typeEM480VSTDDataRec142	Measured value data set for Energy Meter Data set 142 for basic measured values (read only)
LPD_typeEM480VSTDDataRec143	Measured value data set for Energy Meter Data set 143 for energy counters (read and write)
LPD_typeEM480VSTDDataRec144	Measured value data set for Energy Meter Data set 144 for maximum values (read only)
LPD_typeEM480VSTDDataRec145	Measured value data set for Energy Meter Data set 145 for minimum values (read only)
LPD_typeEM480VSTDDataRec147	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 (read only)
LPD_typeEM480VSTDDataRec148	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 (read only)
LPD_typeEM480VSTDDataRec149	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 (read only)
LPD_typeEM480VSTDDataRec150	Measured value data set for Energy Meter Data set 150 for advanced measurement and status values (read only)

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109481117>

4.5.25 AI Energy Meter 480VAC/CT HF (6ES7134-6PA00-0CU0)

The following data types can be found in the folder "ET 200SP > AIEnergyMeter > 480VCTHF_480VRCHF".

Table 4-63: Parameter data sets

PLC data type	Function
LPD_typeEM480VCTHFDataRec128	Parameter data set for Energy Meter Data set 128 for entire module
LPD_typeEM480VCTHFDataRecCh	Parameter data set for one channel (Phase)
LPD_typeEM480VHFDDataRec129	Parameter data set for Energy Meter Data set 129 for limit monitoring

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PLC data type	Function
LPD_typeEM480VHFDataRecParam	Parameter data set for one limit parameter block
LPD_typeEM480VHFDataRec130a131	Parameter data set for Energy Meter Data set 130 und 131 for user data mapping
LPD_typeEM480VHFDataRec135	Parameter data set for Energy Meter Data set 135 for data record mapping
LPD_typeEM480VHFDataRec142V2	Measured value data set for Energy Meter Data set 142 for basic measured values version 2 (read only)
LPD_typeEM480VHFDataRec142V3	Measured value data set for Energy Meter Data set 142 for basic measured values version 3 (read only)
LPD_typeEM480VHFDataRec143	Measured value data set for Energy Meter Data set 143 for energy counters (read and write)
LPD_typeEM480VHFDataRec144V1	Measured value data set for Energy Meter Data set 144 for maximum values version 1 (read only)
LPD_typeEM480VHFDataRec154	Measured value data set for Energy Meter Data set 154 for maximum values with time stamp (read only)
LPD_typeEM480VHFDataRec145V1	Measured value data set for Energy Meter Data set 145 for minimum values version 1 (read only)
LPD_typeEM480VHFDataRec155	Measured value data set for Energy Meter Data set 155 for minimum values with time stamp (read only)
LPD_typeEM480VHFDataRec147V0	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 0 (read only)
LPD_typeEM480VHFDataRec147V1	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 1 (read only)
LPD_typeEM480VHFDataRec148V0	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 0 (read only)
LPD_typeEM480VHFDataRec148V1	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 1 (read only)
LPD_typeEM480VHFDataRec149V0	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 0 (read only)
LPD_typeEM480VHFDataRec149V1	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 1 (read only)
LPD_typeEM480VHFDataRec150V1	Measured value data set for Energy Meter Data set 150 for advanced measurement and status values version 1 (read only)
LPD_typeEM480VHFDataRec151Real	Measured value data set for Energy Meter Data set 151 for user-defined data record with REAL values (read only)
LPD_typeEM480VHFDataRec160	Measured value data set for Energy Meter Data set 160 for power quality analysis (read only)
LPD_typeEM480VHFDataRec161	Measured value data set for Energy Meter Data set 161 for harmonics voltage (read only)

PLC data type	Function
LPD_typeEM480VHFDataRec163	Measured value data set for Energy Meter Data set 163 for harmonics current (read only)
LPD_typeEM480VHFDataRec170	Measured value data set for Energy Meter Data set 170 information data record on available measured values
LPD_typePNIOTimeStamp	Time stamp (PNIO-Time stamp 12 byte)
LPD_typeRealValueAndPNIOTimeStamp	REAL value and time stamp

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109759685>

4.5.26 AI Energy Meter 480VAC/RC HF (6ES7134-6PA20-0CU0)

The following data types can be found in the folder "ET 200SP > AIEnergyMeter > 480VCTHF_480VRCHF".

Table 4-64: Parameter data sets

PLC data type	Function
LPD_typeEM480VRCHFDataRec128	Parameter data set for Energy Meter Data set 128 for entire module
LPD_typeEM480VRCHFDataRecCh	Parameter data set for one channel (Phase)
LPD_typeEM480VHFDataRec129	Parameter data set for Energy Meter Data set 129 for limit monitoring
LPD_typeEM480VHFDataRecParam	Parameter data set for one limit parameter block
LPD_typeEM480VHFDataRec130a131	Parameter data set for Energy Meter Data set 130 und 131 for user data mapping
LPD_typeEM480VHFDataRec135	Parameter data set for Energy Meter Data set 135 for data record mapping
LPD_typeEM480VHFDataRec142V2	Measured value data set for Energy Meter Data set 142 for basic measured values version 2 (read only)
LPD_typeEM480VHFDataRec142V3	Measured value data set for Energy Meter Data set 142 for basic measured values version 3 (read only)
LPD_typeEM480VHFDataRec143	Measured value data set for Energy Meter Data set 143 for energy counters (read and write)
LPD_typeEM480VHFDataRec144V1	Measured value data set for Energy Meter Data set 144 for maximum values version 1 (read only)
LPD_typeEM480VHFDataRec154	Measured value data set for Energy Meter Data set 154 for maximum values with time stamp (read only)
LPD_typeEM480VHFDataRec145V1	Measured value data set for Energy Meter Data set 145 for minimum values version 1 (read only)
LPD_typeEM480VHFDataRec155	Measured value data set for Energy Meter Data set 155 for minimum values with time stamp (read only)

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PLC data type	Function
LPD_typeEM480VHFDataRec147V0	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 0 (read only)
LPD_typeEM480VHFDataRec147V1	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 1 (read only)
LPD_typeEM480VHFDataRec148V0	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 0 (read only)
LPD_typeEM480VHFDataRec148V1	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 1 (read only)
LPD_typeEM480VHFDataRec149V0	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 0 (read only)
LPD_typeEM480VHFDataRec149V1	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 1 (read only)
LPD_typeEM480VHFDataRec150V1	Measured value data set for Energy Meter Data set 150 for advanced measurement and status values version 1 (read only)
LPD_typeEM480VHFDataRec151Real	Measured value data set for Energy Meter Data set 151 for user-defined data record with REAL values (read only)
LPD_typeEM480VHFDataRec160	Measured value data set for Energy Meter Data set 160 for power quality analysis (read only)
LPD_typeEM480VHFDataRec161	Measured value data set for Energy Meter Data set 161 for harmonics voltage (read only)
LPD_typeEM480VHFDataRec163	Measured value data set for Energy Meter Data set 163 for harmonics current (read only)
LPD_typeEM480VHFDataRec170	Measured value data set for Energy Meter Data set 170 information data record on available measured values
LPD_typePNIOTimeStamp	Time stamp (PNIOTime stamp 12 byte)
LPD_typeRealValueAndPNIOTimeStamp	REAL value and time stamp

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109759689>

4.5.27 AI Energy Meter EE@Industry profile E0 / E1 / E2 / E3

The following data types can be found in the folder "ET 200SP > EnergyMeter".

Table 4-65: Parameter data sets

PLC data type	Function
LPD_typeEEatIndustryProfileE0	Measurement data profile E0
LPD_typeEEatIndustryProfileE1	Measurement data profile E1
LPD_typeEEatIndustryProfileE2	Measurement data profile E2
LPD_typeEEatIndustryProfileE3	Measurement data profile E3

The structure of the input user data for the module versions according to the EE@Industry standard is fixed and depends on the selected measurement data profile.

The measurement data profiles are supported by the following modules:

- ET 200SP Energy Meter 480VAC ST
- ET 200SP Energy Meter 480VAC/CT HF
- ET 200SP Energy Meter 480VAC/RC HF

4.5.28 AI Energy Meter CT ST (6ES7134-6PA01-0BU0)

The following data types can be found in the folder "ET 200SP > AIEnergyMeter > CTST_RCST".

Table 4-66: Parameter data sets

PLC data type	Function
LPD_typeEMCTSTDatRec128	Parameter data set for Energy Meter Data set 128 for entire module
LPD_typeEMCTSTDatRecCh	Parameter data set for one channel (Phase)
LPD_typeEMSTDatRec129	Parameter data set for Energy Meter Data set 129 for limit monitoring
LPD_typeEMSTDatRecParam	Parameter data set for one limit parameter block
LPD_typeEMSTDatRec130	Parameter data set for Energy Meter Data set 130 for user data mapping
LPD_typeEMSTDatRec135	Parameter data set for Energy Meter Data set 135 for data record mapping
LPD_typeEMSTDatRec142V2	Measured value data set for Energy Meter Data set 142 for basic measured values version 2 (read only)
LPD_typeEMSTDatRec142V3	Measured value data set for Energy Meter Data set 142 for basic measured values version 3 (read only)
LPD_typeEMSTDatRec143	Measured value data set for Energy Meter Data set 143 for energy counters (read and write)
LPD_typeEMSTDatRec144	Measured value data set for Energy Meter Data set 144 for maximum values version 1 (read only)
LPD_typeEMSTDatRec154	Measured value data set for Energy Meter Data set 154 for maximum values with time stamp (read only)

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PLC data type	Function
LPD_typeEMSTDataRec145	Measured value data set for Energy Meter Data set 145 for minimum values (read only)
LPD_typeEMSTDataRec155	Measured value data set for Energy Meter Data set 155 for minimum values with time stamp (read only)
LPD_typeEMSTDataRec147V0	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 0 (read only)
LPD_typeEMSTDataRec147V1	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 1 (read only)
LPD_typeEMSTDataRec148V0	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 0 (read only)
LPD_typeEMSTDataRec148V1	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 1 (read only)
LPD_typeEMSTDataRec149V0	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 0 (read only)
LPD_typeEMSTDataRec149V1	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 1 (read only)
LPD_typeEMSTDataRec150	Measured value data set for Energy Meter Data set 150 for advanced measurement and status values (read only)
LPD_typeEMSTDataRec151Real	Measured value data set for Energy Meter Data set 151 for user-defined data record with REAL values (read only)
LPD_typePNIOTimeStamp	Time stamp (PNIO-Time stamp 12 byte)
LPD_typeRealValueAndPNIOTimeStamp	REAL value and time stamp

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109800759>

4.5.29 AI Energy Meter RC ST (6ES7134-6PA21-0BU0)

The following data types can be found in the folder "ET 200SP > AIEnergyMeter > CTST_RCST".

Table 4-67: Parameter data sets

PLC data type	Function
LPD_typeEMRCSTDataRec128	Parameter data set for Energy Meter Data set 128 for entire module
LPD_typeEMRCSTDataRecCh	Parameter data set for one channel (Phase)
LPD_typeEMSTDataRec129	Parameter data set for Energy Meter Data set 129 for limit monitoring
LPD_typeEMSTDataRecParam	Parameter data set for one limit parameter block
LPD_typeEMSTDataRec130	Parameter data set for Energy Meter Data set 130 for user data mapping

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PLC data type	Function
LPD_typeEMSTDataRec135	Parameter data set for Energy Meter Data set 135 for data record mapping
LPD_typeEMSTDataRec142V2	Measured value data set for Energy Meter Data set 142 for basic measured values version 2 (read only)
LPD_typeEMSTDataRec142V3	Measured value data set for Energy Meter Data set 142 for basic measured values version 3 (read only)
LPD_typeEMSTDataRec143	Measured value data set for Energy Meter Data set 143 for energy counters (read and write)
LPD_typeEMSTDataRec144	Measured value data set for Energy Meter Data set 144 for maximum values version 1 (read only)
LPD_typeEMSTDataRec154	Measured value data set for Energy Meter Data set 154 for maximum values with time stamp (read only)
LPD_typeEMSTDataRec145	Measured value data set for Energy Meter Data set 145 for minimum values (read only)
LPD_typeEMSTDataRec155	Measured value data set for Energy Meter Data set 155 for minimum values with time stamp (read only)
LPD_typeEMSTDataRec147V0	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 0 (read only)
LPD_typeEMSTDataRec147V1	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 1 (read only)
LPD_typeEMSTDataRec148V0	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 0 (read only)
LPD_typeEMSTDataRec148V1	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 1 (read only)
LPD_typeEMSTDataRec149V0	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 0 (read only)
LPD_typeEMSTDataRec149V1	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 1 (read only)
LPD_typeEMSTDataRec150	Measured value data set for Energy Meter Data set 150 for advanced measurement and status values (read only)
LPD_typeEMSTDataRec151Real	Measured value data set for Energy Meter Data set 151 for user-defined data record with REAL values (read only)
LPD_typePNIOTimeStamp	Time stamp (PNIO-Time stamp 12 byte)
LPD_typeRealValueAndPNIOTimeStamp	REAL value and time stamp

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109800760>

4.5.30 AI Energy Meter CT HF (6ES7134-6PA01-0CU0)

The following data types can be found in the folder "ET 200SP > AIEnergyMeter > CTHF_RCHF".

Table 4-68: Parameter data sets

PLC data type	Function
LPD_typeEMCTHFDatRec128	Parameter data set for Energy Meter Data set 128 for complete module
LPD_typeEMCTHFDatRecCh	Parameter data set for one channel (Phase)
LPD_typeEMHFDatRec129	Parameter data set for Energy Meter Data set 129 for limit monitoring
LPD_typeEMHFDatRecParam	Parameter data set for one limit parameter block
LPD_typeEMHFDatRec130a131	Parameter data set for Energy Meter Data set 130 und 131 for payload mapping
LPD_typeEMHFDatRec134	Parameter data set for Energy Meter Data set 135 for measured value recording
LPD_typeEMHFDatRec135	Parameter data set for Energy Meter Data set 135 for data record mapping
LPD_typeEMHFDatRec142V2	Measured value data set for Energy Meter Data set 142 for basic measured values version 2 (read only)
LPD_typeEMHFDatRec142V3	Measured value data set for Energy Meter Data set 142 for basic measured values version 3 (read only)
LPD_typeEMHFDatRec143	Measured value data set for Energy Meter Data set 143 for energy counters (read and write)
LPD_typeEMHFDatRec144	Measured value data set for Energy Meter Data set 144 for maximum values version 1 (read only)
LPD_typeEMHFDatRec154	Measured value data set for Energy Meter Data set 154 for maximum values with time stamp (read only)
LPD_typeEMHFDatRec145	Measured value data set for Energy Meter Data set 145 for minimum values (read only)
LPD_typeEMHFDatRec155	Measured value data set for Energy Meter Data set 155 for minimum values with time stamp (read only)
LPD_typeEMHFDatRec147V0	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 0 (read only)
LPD_typeEMHFDatRec147V1	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 1 (read only)
LPD_typeEMHFDatRec148V0	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 0 (read only)
LPD_typeEMHFDatRec148V1	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 1 (read only)

PLC data type	Function
LPD_typeEMHFDDataRec149V0	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 0 (read only)
LPD_typeEMHFDDataRec149V1	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 1 (read only)
LPD_typeEMHFDDataRec150	Measured value data set for Energy Meter Data set 150 for advanced measurement and status values (read only)
LPD_typeEMHFDDataRec151Real	Measured value data set for Energy Meter Data set 151 for user-defined data record with REAL values (read only)
LPD_typeEMHFDDataRec160	Measured value data set for Energy Meter Data set 160 for power quality analysis (read only)
LPD_typeEMHFDDataRec161	Measured value data set for Energy Meter Data set 161 for harmonics voltage (read only)
LPD_typeEMHFDDataRec163	Measured value data set for Energy Meter Data set 163 for harmonics current (read only)
LPD_typeEMHFDDataRec169	Measured value data set for Energy Meter Data set 169 for power failure analysis (read only)
LPD_typeEMHFDDataRec170	Measured value data set for Energy Meter Data set 170 information data record on available measured values (read only)
LPD_typeEMHFDDataRec173	Measured value data set for Energy Meter Data set for measured value recording recorder channel 1 (read only)
LPD_typeEMHFDDataRec174	Measured value data set for Energy Meter Data set 174 for measured value recording recorder channel 1 (read only)
LPD_typePNIOTimeStamp	Time stamp (PNIO-Time stamp 12 byte)
LPD_typeRealValueAndPNIOTimeStamp	REAL value and time stamp

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109800757>

4.5.31 AI Energy Meter RC HF (6ES7134-6PA21-0CU0)

The following data types can be found in the folder "ET 200SP > AIEnergyMeter > CTHF_RCHF".

Table 4-69: Parameter data sets

PLC data type	Function
LPD_typeEMRcHFDataRec128	Parameter data set for Energy Meter Data set 128 for complete module
LPD_typeEMRCHFDataRecCh	Parameter data set for one channel (Phase)
LPD_typeEMHFDDataRec129	Parameter data set for Energy Meter Data set 129 for limit monitoring
LPD_typeEMHFDDataRecParam	Parameter data set for one limit parameter block

4 Overview of the PLC data types

PLC data type	Function
LPD_typeEMHFDATARec130a131	Parameter data set for Energy Meter Data set 130 und 131 for payload mapping
LPD_typeEMHFDATARec134	Parameter data set for Energy Meter Data set 135 for measured value recording
LPD_typeEMHFDATARec135	Parameter data set for Energy Meter Data set 135 for data record mapping
LPD_typeEMHFDATARec142V2	Measured value data set for Energy Meter Data set 142 for basic measured values version 2 (read only)
LPD_typeEMHFDATARec142V3	Measured value data set for Energy Meter Data set 142 for basic measured values version 3 (read only)
LPD_typeEMHFDATARec143	Measured value data set for Energy Meter Data set 143 for energy counters (read and write)
LPD_typeEMHFDATARec144	Measured value data set for Energy Meter Data set 144 for maximum values version 1 (read only)
LPD_typeEMHFDATARec154	Measured value data set for Energy Meter Data set 154 for maximum values with time stamp (read only)
LPD_typeEMHFDATARec145	Measured value data set for Energy Meter Data set 145 for minimum values (read only)
LPD_typeEMHFDATARec155	Measured value data set for Energy Meter Data set 155 for minimum values with time stamp (read only)
LPD_typeEMHFDATARec147V0	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 0 (read only)
LPD_typeEMHFDATARec147V1	Measured value data set for Energy Meter Data set 147 for phase-specific measured values L1 version 1 (read only)
LPD_typeEMHFDATARec148V0	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 0 (read only)
LPD_typeEMHFDATARec148V1	Measured value data set for Energy Meter Data set 148 for phase-specific measured values L2 DS version 1 (read only)
LPD_typeEMHFDATARec149V0	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 0 (read only)
LPD_typeEMHFDATARec149V1	Measured value data set for Energy Meter Data set 149 for phase-specific measured values L3 DS version 1 (read only)
LPD_typeEMHFDATARec150	Measured value data set for Energy Meter Data set 150 for advanced measurement and status values (read only)
LPD_typeEMHFDATARec151Real	Measured value data set for Energy Meter Data set 151 for user-defined data record with REAL values (read only)
LPD_typeEMHFDATARec160	Measured value data set for Energy Meter Data set 160 for power quality analysis (read only)

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PLC data type	Function
LPD_typeEMHFDataRec161	Measured value data set for Energy Meter Data set 161 for harmonics voltage (read only)
LPD_typeEMHFDataRec163	Measured value data set for Energy Meter Data set 163 for harmonics current (read only)
LPD_typeEMHFDataRec169	Measured value data set for Energy Meter Data set 169 for power failure analysis (nur lesbar)
LPD_typeEMHFDataRec170	Measured value data set for Energy Meter Data set 170 information data record on available measured values (read only)
LPD_typeEMHFDataRec173	Measured value data set for Energy Meter Data set for measured value recording recorder channel 1 (read only)
LPD_typeEMHFDataRec174	Measured value data set for Energy Meter Data set 174 for measured value recording recorder channel 1 (read only)
LPD_typePNIOTimeStamp	Time stamp (PNIO-Time stamp 12 byte)
LPD_typeRealValueAndPNIOTimeStamp	REAL value and time stamp

Further information about the module and the structure of the data structures can be found in the device manual:

<https://support.industry.siemens.com/cs/ww/en/view/109800758>

4.6 PROFIdrive telegrams

4.6.1 Standard PLC data types for PROFIdrive telegrams

You can use PROFIdrive telegrams to transfer setpoints and actual values, control and status words and other parameters between the controller and the drive or encoder. The following PROFIDrive telegrams are already integrated in the TIA Portal and are not supplied separately in the "LPD" library.

Table 4-70: Standard PLC data types for PROFIdrive telegrams

Standard PLC data type	Description of the supported PROFIdrive telegrams
PD_TEL1 PD_TEL1_IN PD_TEL1_OUT	Telegram 1, Speed regulation ZSW1, NIST_A STW1, NSOLL_A
PD_TEL2 PD_TEL2_IN PD_TEL2_OUT	Telegram 2, Speed regulation ZSW1, NIST_B, ZSW2 STW1, NSOLL_B, STW2
PD_TEL3 PD_TEL3_IN PD_TEL3_OUT	Telegram 3, speed control, 1 position encoder ZSW1, NIST_B, ZSW2, G1_ZSW, G1_XIST1, G1_XIST2 STW1, NSOLL_B, STW2, G1_STW
PD_TEL4 PD_TEL4_IN PD_TEL4_OUT	Telegram 4, speed control, 2 position encoder ZSW1, NIST_B, ZSW2, G1_ZSW, G1_XIST1, G1_XIST2, G2_ZSW, G2_XIST1, G2_XIST2 STW1, NSOLL_B, STW2, G1_STW, G2_STW
PD_TEL5 PD_TEL5_IN PD_TEL5_OUT	Telegram 5, speed control with DSC, 1 position encoder ZSW1, NIST_B, ZSW2, G1_ZSW, G1_XIST1, G1_XIST2 STW1, NSOLL_B, STW2, G1_STW, XERR, KPC
PD_TEL6 PD_TEL6_IN PD_TEL6_OUT	Telegram 6, speed control with DSC, 2 position encoder ZSW1, NIST_B, ZSW2, G1_ZSW, G1_XIST1, G1_XIST2, G2_ZSW, G2_XIST1, G2_XIST2 STW1, NSOLL_B, STW2, G1_STW, G2_STW, XERR, KPC
PD_TEL81 PD_TEL81_IN PD_TEL81_OUT	Telegram 81, indicator channel ZSW2_ENC, G1_ZSW, G1_XIST1, G1_XIST2 STW2_ENC, G1_STW
PD_TEL83 PD_TEL83_IN PD_TEL83_OUT	Telegram 83, encoder channel, 32 bit actual velocity value ZSW2_ENC, G1_ZSW, G1_XIST1, G1_XIST2, NIST_B STW2_ENC, G1_STW
PD_TEL101 PD_TEL101_IN PD_TEL101_OUT	Telegram 101, with torque limitation ZSW1_611UMode, NIST_B, ZSW2_611UMode, MELDW, E_ANALOG, E_ANALOG_1, AIST, PIST, MSOLL_GLATT STW1_611UMode, NSOLL_B, STW2_611UMode, MOMRED, A_ANALOG, A_ANALOG_1
PD_TEL102 PD_TEL102_IN PD_TEL102_OUT	Telegram 102, with torque limitation ZSW1_611UMode, NIST_B, ZSW2_611UMode, MELDW, G1_ZSW, G1_XIST1, G1_XIST2 STW1_611UMode, NSOLL_B, STW2_611UMode, MOMRED, G1_STW
PD_TEL103 PD_TEL103_IN PD_TEL103_OUT	Telegram 103, with torque limitation ZSW1_611UMode, NIST_B, ZSW2_611UMode, MELDW, G1_ZSW, G1_XIST1, G1_XIST2, G2_ZSW, G2_XIST1, G2_XIST2 STW1_611UMode, NSOLL_B, STW2_611UMode, MOMRED, G1_STW, G2_STW
PD_TEL105 PD_TEL105_IN PD_TEL105_OUT	Telegram 105, with torque limitation, DSC ZSW1_611UMode, NIST_B, ZSW2_611UMode, MELDW, G1_ZSW, G1_XIST1, G1_XIST2 STW1_611UMode, NSOLL_B, STW2_611UMode, MOMRED, G1_STW, XERR, KPC
PD_TEL106 PD_TEL106_IN PD_TEL106_OUT	Telegram 106, with torque limitation, DSC ZSW1_611UMode, NIST_B, ZSW2_611UMode, MELDW, G1_ZSW, G1_XIST1, G1_XIST2, G2_ZSW, G2_XIST1, G2_XIST2 STW1_611UMode, NSOLL_B, STW2_611UMode, MOMRED, G1_STW, G2_STW, XERR, KPC

4 Overview of the PLC data types

Note

Of the standard PLC data types mentioned above for PROFIdrive telegrams, only telegrams 1, 2, 3, 4, 81 and 83 are relevant for the controllers of the SIMATIC S7-1200 family.

Table 4-71: Subordinate standard PLC data types

Standard PLC data type	Description
PD_Gx_STW	Encoder x control word
PD_Gx_ZSW	Encoder x status word
PD_MELDW	Message word
PD_STW1	Control word 1
PD_STW1_611UMode	Control word 1 (for telegrams 1xx with technology version >= V4.0)
PD_STW2	Control word 2
PD_STW2_611UMode	Control word 2 (for telegrams 1xx with technology version >= V4.0)
PD_STW2_ENC	Control word 2 ENCODER
PD_ZSW1	
PD_ZSW1_611UMode	Status word 1 (for telegrams 1xx with technology version >= V4.0)
PD_ZSW2	Status word 2
PD_ZSW2_611UMode	Status word 2 (for telegrams 1xx with technology version >= V4.0)
PD_ZSW2_ENC	Status word 2 ENCODER

Note

A description of the SINAMICS G120 PROFIdrive telegrams can be found in the "SINAMICS G120 Control Units CU240B-2/CU240E-2 List Manual":

<https://support.industry.siemens.com/cs/ww/en/view/109751314>

A description of the SINAMICS G120 PROFIdrive telegrams can be found in the "SINAMICS G120 Control Units CU250S-2 List Manual":

<https://support.industry.siemens.com/cs/ww/en/view/109751315>

A description of the SINAMICS S120/S150 PROFIdrive telegrams can be found in the "SINAMICS S120/S150 List Manual":

<https://support.industry.siemens.com/cs/ww/en/view/109760366>

A description of the SINAMICS V90 PROFIdrive telegrams can be found in the "SINAMICS V90, SIMOTICS S-1FL6 Operating Instructions":

<https://support.industry.siemens.com/cs/ww/en/view/109762404>

Note

A description of the PROFIdrive telegrams supported by the TIA Portal and further information can be found in the TIA Portal V15.1 online help or in the system manual.

"SIMATIC STEP 7 Basic/Professional V15.1 und SIMATIC WinCC V15.1":

<https://support.industry.siemens.com/cs/ww/en/view/109755202>

4.6.2 Further PLC data types for PROFIdrive telegrams

The following data types for PROFIdrive telegrams can be found in the folder "LPD > PROFIdrive".

Table 4-72: Additional PROFIdrive telegrams

PLC data type	Description of the PROFIdrive telegrams
LPD_typePDTel7 LPD_typePDTel7IN LPD_typePDTel7OUT	Telegram 7 ZSW1, AKTSATZ STW1, SATZANW
LPD_typePDTel9 LPD_typePDTel9IN LPD_typePDTel9OUT	Telegram 9 ZSW1 AKTSATZ, ZSW2, XIST_A STW1, SATZANW, STW2; MDI_TARPOS, MDI_VELOCITY, MDI_ACC, MDI_DEC, MDI_MOD
LPD_typePDTel20 LPD_typePDTel20IN LPD_typePDTel20OUT	Telegram 20 ZSW1, NIST_A_GLATT, IAIST_GLATT, MIST_GLATT, PIST_GLATT, MELD_NAMUR STW1, NSOLL_A
PD_TEL82 PD_TEL82_IN PD_TEL82_OUT	Telegram 82 ZSW2_ENC, G1_ZSW, G1_XIST1, G1_XIST2, NIST_A STW2_ENC, G1_STW
PD_TEL84 PD_TEL84_IN PD_TEL84_OUT	Telegram 84 ZSW2_ENC, G1_ZSW, G1_XIST3, G1_XIST2, NIST_B STW2_ENC, G1_STW
LPD_typePDTel110 LPD_typePDTel110IN LPD_typePDTel110OUT	Telegram 110 ZSW1 AKTSATZ, POS_ZSW, ZSW2, MELDW, XIST_A STW1, SATZANW, POS_STW, STW2; MDI_TARPOS, MDI_VELOCITY, MDI_ACC, MDI_DEC, MDI_MOD
LPD_typePDTel111 LPD_typePDTel111IN LPD_typePDTel111OUT	Telegram 111 ZSW1, POS_ZSW1, POS_ZSW2, ZSW2, MELDW, XIST_A, NIST_B, FAULT_CODE, WARN_CODE, userPZD12 STW1, POS_STW1, POS_STW2, STW2; OVERRIDE, MDI_TARPOS, MDI_VELOCITY, MDI_ACC, MDI_DEC, userPZD12
LPD_typePDTel116 LPD_typePDTel116IN LPD_typePDTel116OUT	Telegram 116 ZSW1, NIST_B, ZSW2, MELDW, G1_ZSW, G1_XIST1, G1_XIST2, G2_ZSW, G2_XIST1, G2_XIST2, AIST_GLATT, MSOLL_GLATT, PIST_GLATT, ITIST_GLATT STW1, NSOLL_B, STW2, MOMRED, G1_STW, G2_STW, XERR, KPC
LPD_typePDTel118 LPD_typePDTel118IN LPD_typePDTel118OUT	Telegram 118 ZSW1, NIST_B, ZSW2, MELDW, G2_ZSW, G2_XIST1, G2_XIST2, G3_ZSW, G3_XIST1, G3_XIST2, AIST_GLATT, MSOLL_GLATT, PIST_GLATT, ITIST_GLATT STW1, NSOLL_B, STW2, MOMRED, G2_STW, G3_STW, XERR, KPC
LPD_typePDTel125 LPD_typePDTel125IN LPD_typePDTel125OUT	Telegram 125 ZSW1, NIST_B, ZSW2, MELDW, G1_ZSW, G1_XIST1, G1_XIST2 STW1, NSOLL_B, STW2, MOMRED, G1_STW, XERR, KPC, M_VST, DSC_STW, res, T_SYMM
LPD_typePDTel126 LPD_typePDTel126IN LPD_typePDTel126OUT	Telegram 126 ZSW1, NIST_B, ZSW2, MELDW, G1_ZSW, G1_XIST1, G1_XIST2, G2_ZSW, G2_XIST1, G2_XIST2 STW1, NSOLL_B, STW2, MOMRED, G1_STW, G2_STW, XERR, KPC, M_VST, DSC_STW, res, T_SYMM
LPD_typePDTel136 LPD_typePDTel136IN LPD_typePDTel136OUT	Telegram 136 ZSW1, NIST_B, ZSW2, MELDW, G1_ZSW, G1_XIST1, G1_XIST2, G2_ZSW, G2_XIST1, G2_XIST2, AIST_GLATT, MSOLL_GLATT, PIST_GLATT, ITIST_GLATT STW1, NSOLL_B, STW2, MOMRED, G1_STW, G2_STW, XERR, KPC, M_VST, DSC_STW, res, T_SYMM
LPD_typePDTel138 LPD_typePDTel138IN LPD_typePDTel138OUT	Telegram 138 ZSW1, NIST_B, ZSW2, MELDW, G2_ZSW, G2_XIST1, G2_XIST2, G3_ZSW, G3_XIST1, G3_XIST2, AIST_GLATT, MSOLL_GLATT, PIST_GLATT, ITIST_GLATT STW1, NSOLL_B, STW2, MOMRED, G2_STW, G3_STW, XERR, KPC, M_VST, DSC_STW, res, T_SYMM

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PLC data type	Description of the PROFIdrive telegrams
LPD_typePDTel139	Telegram 139
LPD_typePDTel139IN	ZSW1, NIST_B, ZSW2, MELDW, G1_ZSW, G1_XIST1, G1_XIST2, SP_ZSW, SP_XIST_A, SP_XIST_D, SP_KONFIG, res, AIST_GLATT, MSOLL_GLATT, PIST_GLATT, ITIST_GLATT
LPD_typePDTel139OUT	STW1, NSOLL_B, STW2, MOMRED, G1_STW, res7, XERR, KPC, M_VST, DSC_STW, res14, T_SYMM
LPD_typePDTel166	Telegram 166
LPD_typePDTel166IN	ZSW1, NIST_B, ZSW2, MELDW, G1_ZSW, G1_XIST1, G1_XIST2, G2_ZSW, G2_XIST1, G2_XIST2, VA_VALVELIFT, VA_TORQUE, VA_POWER, VA_PRESSURE_A, VA_PRESSURE_B
LPD_typePDTel166OUT	STW1, NSOLL_B, STW2, MOMRED, G1_STW, G2_STW, XERR, KPC, G1_MP, G1_MP_ZSW
LPD_typePDTel220	Telegram 220
LPD_typePDTel220IN	ZSW1_BM, NIST_A_NIST_A_GLATT, IAIST_IAIST_GLATT, MIST_MIST_GLATT, WARN_CODE, FAULT_CODE, ZSW2_BM, r1482_userPZD8, userPZD9, userPZD10
LPD_typePDTel220OUT	STW1_BM, NSOLL_B, STW2_BM, M_ADD, M_LIM, userPZD7, userPZD8, userPZD9, userPZD10
LPD_typePDTel350	Telegram 350
LPD_typePDTel350IN	ZSW1, NIST_A_GLATT, IAIST_GLATT, ZSW3
LPD_typePDTel350OUT	STW1, NSOLL_A, M_LIM, STW3
LPD_typePDTel352	Telegram 352
LPD_typePDTel352IN	ZSW1, NIST_A_GLATT, IAIST_GLATT, MIST_GLATT, WARN_CODE, FAULT_CODE
LPD_typePDTel352OUT	STW1, NSOLL_A, userPZD3, userPZD4, userPZD5, userPZD6
LPD_typePDTel370	Telegram 370
LPD_typePDTel370IN	E_ZSW1
LPD_typePDTel370OUT	E_STW1
LPD_typePDTel371	Telegram 371
LPD_typePDTel371IN	E_ZSW1_BM, IAIST, WARN_CODE, FAULT_CODE, userPZD5, userPZD6, userPZD7, userPZD8
LPD_typePDTel371OUT	E_STW1_BM, userPZD2, userPZD3, userPZD4, userPZD5
LPD_typePDTel390	Telegram 390
LPD_typePDTel390IN	CU_ZSW1, E_DIGITAL
LPD_typePDTel390OUT	CU_STW1, A_DIGITAL
LPD_typePDTel391	Telegram 391
LPD_typePDTel391IN	CU_ZSW1, E_DIGITAL, MT_ZSW, MT1_ZS_F, MT1_ZS_S, MT2_ZS_F, MT2_ZS_S
LPD_typePDTel391OUT	CU_STW1, A_DIGITAL, MT_STW
LPD_typePDTel392	Telegram 392
LPD_typePDTel392IN	CU_ZSW1, E_DIGITAL, MT_ZSW, MT1_ZS_F, MT1_ZS_S, MT2_ZS_F, MT2_ZS_S, MT3_ZS_F, MT3_ZS_S, MT4_ZS_F, MT4_ZS_S, MT5_ZS_F, MT5_ZS_S, MT6_ZS_S
LPD_typePDTel392OUT	CU_STW1, A_DIGITAL, MT_STW
LPD_typePDTel393	Telegram 393
LPD_typePDTel393IN	CU_ZSW1, E_DIGITAL, E_DIGITAL_1, MT_ZSW, MT1_ZS_F, MT1_ZS_S, MT2_ZS_F, MT2_ZS_S, MT3_ZS_F, MT3_ZS_S, MT4_ZS_F, MT4_ZS_S, MT5_ZS_F, MT5_ZS_S, MT6_ZS_F, MT6_ZS_S, MT7_ZS_F, MT7_ZS_S, MT8_ZS_F, MT8_ZS_S, E_ANALOG
LPD_typePDTel393OUT	CU_STW1, A_DIGITAL, A_DIGITAL_1, MT_STW
LPD_typePDTel394	Telegram 394
LPD_typePDTel394IN	CU_ZSW1, E_DIGITAL, E_DIGITAL_1
LPD_typePDTel394OUT	CU_STW1, A_DIGITAL, A_DIGITAL_1
LPD_typePDTel395	Telegram 395
LPD_typePDTel395IN	CU_ZSW1, E_DIGITAL, E_DIGITAL_1, MT_ZSW, MT_DIAG, MT_ZS_1, MT_ZS_2, MT_ZS_3, MT_ZS_4, MT_ZSB1, MT_ZS_5, MT_ZS_6, MT_ZS_7, MT_ZS_8, MT_ZSB2, MT_ZS_9, MT_ZS_10, MT_ZS_11, MT_ZS_12, MT_ZSB3, MT_ZS_13, MT_ZS_14, MT_ZS_15, MT_ZS_16, MT_ZSB4
LPD_typePDTel395OUT	CU_STW1, A_DIGITAL, A_DIGITAL_1, MT_STW

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PLC data type	Description of the PROFIdrive telegrams
LPD_typePDTel396 LPD_typePDTel396IN LPD_typePDTel396OUT	Telegram 396 CU_ZSW1, E_DIGITAL, E_DIGITAL_1, MT_ZSW, MT1_ZS_F, MT1_ZS_S, MT2_ZS_F, MT2_ZS_S, MT3_ZS_F, MT3_ZS_S, MT4_ZS_F, MT4_ZS_S, MT5_ZS_F, MT5_ZS_S, MT6_ZS_F, MT6_ZS_S, MT7_ZS_F, MT7_ZS_S, MT8_ZS_F, MT8_ZS_S, E_ANALOG CU_STW1, A_DIGITAL, A_DIGITAL_1, MT_STW, NOCKEN1_ZS_F, NOCKEN1_ZS_S, NOCKEN2_ZS_F, NOCKEN2_ZS_S, NOCKEN3_ZS_F, NOCKEN3_ZS_S, NOCKEN4_ZS_F, NOCKEN4_ZS_S, NOCKEN5_ZS_F, NOCKEN5_ZS_S, NOCKEN6_ZS_F, NOCKEN6_ZS_S, NOCKEN7_ZS_F, NOCKEN7_ZS_S, NOCKEN8_ZS_F, NOCKEN8_ZS_S
PD_TEL860 PD_TEL860_IN PD_TEL860_OUT	Telegramm 860 G1_XIST1, NIST_B G1_XIST1_PRESET_A

The subordinate data types for PROFIdrive telegrams can be found in the "PROFIdrive > _Additional" folder.

Table 4-73: Subordinate PLC data types

PLC data type	Description
LPD_typePDADigital	Digital output (16 Bit)
LPD_typePDADigital1	Digital output (16 Bit)
LPD_typePDAktsatz	Current set
LPD_typePDCUSTW1	Control word 1 for the Control Unit
LPD_typePDCUZSW1	Status word 1 for the Control Unit
LPD_typePDEDigital	Digital input (16 Bit)
LPD_typePDEDigital1	Digital input (16 Bit)
LPD_typePDESTW1	Control word 1 for Active Infeed (ALM, SMART)
LPD_typePDESTW1BM	Control word 1 for Infeed, variant BM (ALM, BLM, SLM)
LPD_typePDEZSW1	Status word 1 for the Active Infeed
LPD_typePDEZSW1BM	Status word 1 for Infeed, variant BM (ALM, BLM, SLM)
LPD_typePDMDIMOD	Positioning mode
LPD_typePDMeldNamur	NAMUR message bit bar
LPD_typePDMTSTW	Measuring probe control word
LPD_typePDMTZSW	Measuring probe status word
LPD_typePDPOSSTW	Positioning control word
LPD_typePDPOSSTW1	Positioning control word 1
LPD_typePDPOSSTW2	Positioning control word 2
LPD_typePDPOSZSW	Positioning status word
LPD_typePDPOSZSW1	Positioning status word 1
LPD_typePDPOSZSW2	Positioning status word 2
LPD_typePDSatzanw	Set selection
LPD_typePDSTW1BM	Control word 1, variant for BM
LPD_typePDSTW2BM	Control word 2, variant for BM
LPD_typePDSTW2ENC	Control word 2 ENCODER
LPD_typePDSTW3	Control word 3
LPD_typePDSTW1VIK	Control word 1 Interface Mode VIK-NAMUR
LPD_typePDSTW1Pos	Control word 1 Positioning Mode
LPD_typePDZSW1BM	Status word 1, variant for BM
LPD_typePDZSW2BM	Status word 2, variant for BM
LPD_typePDZSW2ENC	Status word 2 ENCODER

PLC data type	Description
LPD_typePDZSW3	Status word 3
LPD_typePDZSW1VIK	Status word 1 Interface Mode VIK-NAMUR
LPD_typePDZSW1Pos	Status word 1 Positioning Mode

4.6.3 Use of PLC data types for PROFIdrive telegrams

Use of the PLC data types for PROFIdrive telegrams in the data block for data connection PROFIdrive drive/PROFIdrive encoder

The data block for the data connection must be created by the user. The data module must contain a data structure of the data type "PD_TELx" for the data binding. "x" stands for the telegram number of the drive or encoder configured in the device configuration.

To create a data module for the data binding, proceed as follows:

1. Create a new data block of type "Global DB".
2. Select the data block in the project navigation and select the context menu command "Properties".
3. Deactivate the following attributes under Attributes and accept the change with OK:
 - "Store in load memory only"
 - "Data block in device write-protected"
 - "Optimized device access" for SIMATIC S7-1200 and for SIMATIC S7-1500 with technology version < V4.0
4. Open the data block in the block editor.
5. Insert a variable in the block editor and enter under "Data type" e.g. "PD_TEL5" for the PROFIdrive telegram 5 or "LPD_typePDTel111" for the PROFIdrive telegram 111.

Figure 4-3: PROFIdrive-Telegram in the data block

DriveData		
	Name	Data type
1	Static	
2	tel5	PD_TEL5
3	Input	PD_TEL5_IN
4	Output	PD_TEL5_OUT
5	tel111	"LPD_typePDTel111"
6	Input	"LPD_typePDTel111In"
7	Output	"LPD_typePDTel111Out"

Use of PLC data types for PROFIdrive telegrams in a variable table

With the PLC data types "PD_TELx" or "LPD_typePDTelx" for PROFIdrive telegrams you can create PLC variables in the variable table and thus access the input and output area in the user program in a structured and symbolic way.

To create PLC variables for the input and output area, proceed as follows:

1. Insert a variable in the variable table and enter "PD_TEL5_IN" for the input area of the PROFIdrive telegram 5, for example, under "Data type".
2. Enter the configured start address of the input area of the PROFIdrive telegram or the drive under "Address".
The address can be found in the properties of the PROFIdrive telegram (see [Figure 4-5](#)) or in the properties of the drive (see [Figure 4-6](#)).
3. Insert a variable in the variable table and enter "PD_TEL5_OUT" for the output area of the PROFIdrive telegram 5, for example, under "Data type".
4. Enter the configured start address of the output area of the PROFIdrive telegram or the drive under "Address".
The address can be found in the properties of the PROFIdrive telegram (see [Figure 4-5](#)) or in the properties of the drive (see [Figure 4-6](#)).

Figure 4-4: PLC variables for the PROFIdrive telegram 5

Default tag table		
	Name	Data type
tel5In	"PD_TEL5_IN"	%I256.0
ZSW1	PD_ZSW1	%I256.0
NoSpeedDeviation	Bool	%I256.0
ControlRequested	Bool	%I256.1
SpeedComparisonValueReachedExceeded	Bool	%I256.2
TorqueLimitNotReached	Bool	%I256.3
OpenHoldingBrake	Bool	%I256.4
NoMotorOvertemperature	Bool	%I256.5
ActualSpeedPositive	Bool	%I256.6
NoPowerUnitOvertemperature	Bool	%I256.7
ReadyToSwitchOn	Bool	%I257.0
ReadyToOperate	Bool	%I257.1
OperationEnabled	Bool	%I257.2
FaultPresent	Bool	%I257.3
NoCoastStopActivated	Bool	%I257.4
NoQuickStopActivated	Bool	%I257.5
SwitchingOnInhibited	Bool	%I257.6
AlarmPresent	Bool	%I257.7
NIST_B	DWord	%ID258
ZSW2	PD_ZSW2	%I262.0
G1_ZSW	PD_Gx_ZSW	%I264.0
G1_XIST1	DWord	%ID266
G1_XIST2	DWord	%ID270
tel5Out	"PD_TEL5_OUT"	%Q256.0
STW1	PD_STW1	%Q256.0
NSOLL_B	DWord	%QD258
STW2	PD_STW2	%Q262.0
G1_STW	PD_Gx_STW	%Q264.0
XERR	DWord	%QD266
KPC	DWord	%QD270

Note

You can only use the data type supported by the TIA Portal, for example "PD_TEL5_IN" in the variable table, if the data type is available in the project navigation under "PLC data types". To do this, you must first use the data type in a data block.

When translating unused PLC data types supported by the TIA Portal are deleted in the project navigation under "PLC data types".

4 Overview of the PLC data types

Figure 4-5: Addresses PROFIdrive-Telegram

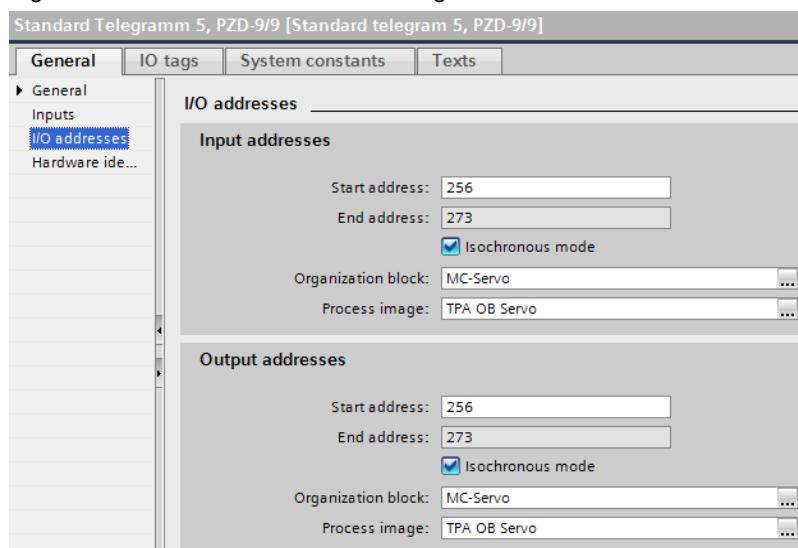


Figure 4-6: Drive addresses

Telegram configuration										
	Name	Item	Link	Telegram	Length	Extension	...	Type	Partner	Partner data area
	Drive_1	1								
	Send (Actual value)		↗	Standard telegram 1	2 words	0 words	→	CD	PLC_1	I 274...277
	Receive (Setpoint)		↗	Standard telegram 1	2 words	0 words	←	CD	PLC_1	Q 274...277

Use of the PLC data types for PROFIdrive telegrams for communication with Get_IO and Set_IO

Use the "Get_IO" instruction to consistently read out all inputs of a PROFINET IO device (e.g. drive). You can use the "Set_IO" instruction to transfer data consistently to the PROFINET IO device (e.g. drive).

To create a consistent data transmission with the PLC data types for PROFIdrive telegrams and the instructions "Get_IO" and "Set_IO", proceed as follows:

1. Define a variable with the data type, e.g. "LPD_typePDTel111" for the PROFIdrive telegram 111. (see [Use of the PLC data types for PROFIdrive telegrams in the data block](#))
2. Determine the HW identification of the PROFIdrive telegram. The HW identification is taken from the system constants of the variable table.

Figure 4-7: Tag table

	Name	Data type	Value
18	Local-MC	Hw_SubModule	51
19	SINAMICS-S120-CU320-2PN-DO_SERVO_1~SIEMENS_telegram_111_PZD-1...	Hw_SubModule	270
20	SINAMICS-S120-CU320-2PN-Proxy	Hw_SubModule	258
21	SINAMICS-S120-CU320-2PN-Head	Hw_SubModule	262
22	SINAMICS-S120-CU320-2PN-DO_Control_Unit_1	Hw_SubModule	265

The HW identification can also be found in the properties of the device view in the tab System constants.

Figure 4-8: Device view:

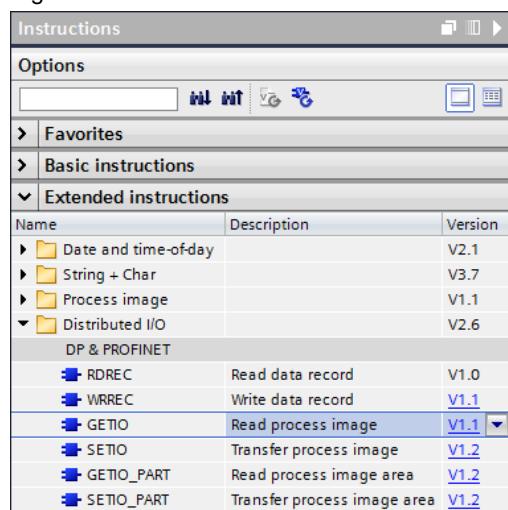
Module	Rack	Slot	I address	Q address	Type
SINAMICS-S120-CU320-2PN	0	0			SINAMICS S120/S150 CU320-2 PN V5.1
PNIO	0	0 X150			SINAMICS-S120-CU320-2PN
DO Control Unit_1	0	1			DO Control Unit
Module Access Point	0	1 1			Module Access Point
without PROFIsafe	0	1 2			without PROFIsafe
	0	1 3			
DO SERVO_1	0	2			DO SERVO
Module Access Point	0	2 1			Module Access Point
	0	2 2			
SIEMENS telegram 111, PZD-12/12; SERVO	0	2 3	0...23	0...23	SIEMENS telegram 111, PZD-12/12; SERVO
	0	2 4			
	0	2 5			

Name	Type	Hardware identifier	Used by
SINAMICS-S120-CU320-2PN-DO_SERVO_1~SIEMENS_telegram_111_PZD-1...	Hw_SubModule	270	PLC_1

4 Overview of the PLC data types

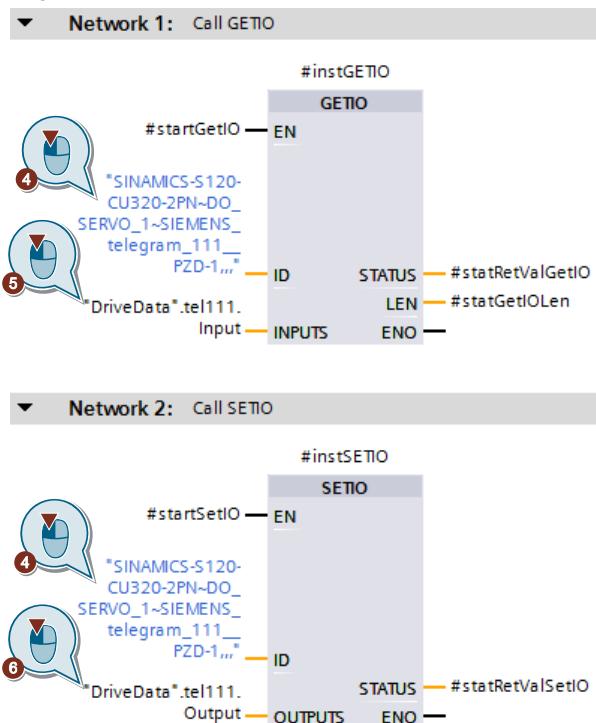
3. Insert the Get_IO and Set_IO statements from the Instructions task card into your program.

Figure 4-9: Taskcard



4. Connect the parameter "ID" of the instructions "Get_IO" and "Set_IO" with the hardware identification of the PROFIdrive telegram.
5. Connect the parameter "INPUTS" of the instruction "Get_IO" with the input structure "Input" of the variables defined under point 1.
6. Connect the parameter "OUTPUTS" of the instruction "Set_IO" with the output structure "Output" of the variables defined under point 1.

Figure 4-10: Program



5 Appendix

5.1 Service and support

Industry Online Support

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

The Industry Online Support is the central address for information about our products, solutions and services.

Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks:

support.industry.siemens.com

Technical Support

The Technical Support of Siemens Industry provides you fast and competent support regarding all technical queries with numerous tailor-made offers

– ranging from basic support to individual support contracts. Please send queries to Technical Support via Web form:

siemens.com/SupportRequest

SITRAIN – Digital Industry Academy

We support you with our globally available training courses for industry with practical experience, innovative learning methods and a concept that's tailored to the customer's specific needs.

For more information on our offered trainings and courses, as well as their locations and dates, refer to our web page:

siemens.com/sitrain

Service offer

Our range of services includes the following:

- Plant data services
- Spare parts services
- Repair services
- On-site and maintenance services
- Retrofitting and modernization services
- Service programs and contracts

You can find detailed information on our range of services in the service catalog web page:

support.industry.siemens.com/cs/sc

Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The app is available for iOS and Android:

support.industry.siemens.com/cs/ww/en/sc/2067

5.2 Industry Mall



The Siemens Industry Mall is the platform on which the entire siemens Industry product portfolio is accessible. From the selection of products to the order and the delivery tracking, the Industry Mall enables the complete purchasing processing – directly and independently of time and location:

mall.industry.siemens.com

5.3 Links and literature

Table 5-1

Nr.	Thema
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to this entry page of this application example https://support.industry.siemens.com/cs/ww/en/view/109482396
\3\	Device manual SIMATIC S7-1500/ET 200MP Digital input module DI 16x24VDC HF 6ES7521-1BH00-0AB0 https://support.industry.siemens.com/cs/ww/en/view/59193001
\4\	Device manual SIMATIC S7-1500/ET 200MP Digital input module DI 32x24VDC HF 6ES7521-1BL00-0AB0 https://support.industry.siemens.com/cs/ww/en/view/59192896
\5\	Device manual SIMATIC ET 200MP/S7-1500 Technology module TM Timer DIDQ 16x24V 6ES7552-1AA00-0AB0 https://support.industry.siemens.com/cs/ww/en/view/95153313
\6\	Device manual SIMATIC S7-1500/ET 200MP Technology module TM PosInput 2 6ES7551-1AB00-0AB0 https://support.industry.siemens.com/cs/ww/en/view/61777657
\7\	Device manual SIMATIC S7-1500/ET 200MP Technology module TM Count 2x24V 6ES7550-1AA00-0AB0 https://support.industry.siemens.com/cs/ww/en/view/109783960
\8\	Device manual SIMATIC ET 200SP Digital input module DI 8x24VDC HS 6ES7131-6BF00-0DA0 https://support.industry.siemens.com/cs/ww/en/view/109475339
\9\	Device manual SIMATIC ET 200SP Digital output module DQ 4x24VDC/2A HS 6ES7132-6BD20-0DA0 https://support.industry.siemens.com/cs/ww/en/view/109475185

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Nr.	Thema
\10\	Device manual SIMATIC ET 200SP Technology module TM Pulse 2x24V 6ES7138-6DB00-0BB1 https://support.industry.siemens.com/cs/ww/en/view/109478710
\11\	Device manual SIMATIC ET 200SP Technology module TM Timer DIDQ 10x24V 6ES7138-6CG00-0BA0 https://support.industry.siemens.com/cs/ww/en/view/95153951
\12\	Device manual SIMATIC ET 200SP Technology module TM PosInput 1 6ES7138-6BA00-0BA0 https://support.industry.siemens.com/cs/ww/en/view/109482269
\13\	Device manual SIMATIC ET 200SP Technology module TM Count 1x24V 6ES7138-6AA00-0BA0 https://support.industry.siemens.com/cs/ww/en/view/109768445
\14\	Device manual SIMATIC S7-1500 CPU 1511C-1 PN 6ES7511-1CK00-0AB0 https://support.industry.siemens.com/cs/ww/en/view/109478675
\15\	Device manual SIMATIC S7-1500 CPU 1512C-1 PN 6ES7512-1CK00-0AB0 https://support.industry.siemens.com/cs/ww/en/view/109478676
\16\	SINAMICS G120 Control Units CU240B-2/CU240E-2 List Manual https://support.industry.siemens.com/cs/ww/en/view/109751314
\17\	SINAMICS G120 Control Units CU250S-2 List Manual https://support.industry.siemens.com/cs/ww/en/view/109751315
\18\	SINAMICS S120/S150 List Manual https://support.industry.siemens.com/cs/ww/en/view/109760366
\19\	SINAMICS V90, SIMOTICS S-1FL6 Operating instructions https://support.industry.siemens.com/cs/ww/en/view/109762404
\20\	SIMATIC STEP 7 Basic/Professional V15.1 and SIMATIC WinCC V15.1 https://support.industry.siemens.com/cs/ww/en/view/109755202
\21\	Device manual SIMATIC S7-1500/ET 200MP Analog input /output module AI 4xU/I/RTD/TC / AQ 2xU/I ST (6ES7534-7QE00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/91688109
\22\	Device manual SIMATIC S7-1500/ET 200MP Analog input module AI 4xU/I/RTD/TC ST (6ES7531-7QD00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/91688401
\23\	Device manual SIMATIC S7-1500/ET 200MP Analog input module AI 8xU/I HF (6ES7531-7NF00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/109483587
\24\	Device manual SIMATIC S7-1500/ET 200MP Analog input module AI 8xU/I HS (6ES7531-7NF10-0AB0) https://support.industry.siemens.com/cs/ww/en/view/59193206
\25\	Device manual SIMATIC S7-1500/ET 200MP Analog input module AI 8xU/I/RTD/TC ST (6ES7531-7KF00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/59193205

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Nr.	Thema
\26\	Device manual SIMATIC S7-1500/ET 200MP Analog input module AI 8xU/R/RTD/TC HF (6ES7531-7PF00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/109483586
\27\	Device manual SIMATIC S7-1500/ET 200MP Analog output module AQ 2xU/I ST (6ES7532-5NB00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/91688388
\28\	Device manual SIMATIC S7-1500/ET 200MP Analog output module AQ 4xU/I HF (6ES7532-5ND00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/109483585
\29\	Device manual SIMATIC S7-1500/ET 200MP Analog output module AQ 4xU/I ST (6ES7532-5HD00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/59191850
\30\	Device manual SIMATIC S7-1500/ET 200MP Analog output module AQ 8xU/I HS (6ES7532-5HF00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/59193551
\31\	Device manual SIMATIC ET 200SP Analog input module AI 2xI 2-/4-wire ST (6ES7134-6GB00-0BA1) https://support.industry.siemens.com/cs/ww/en/view/109481112
\32\	Device manual SIMATIC ET 200SP Analog input module AI 2xU/I 2-/4-wire HF (6ES7134-6HB00-0CA1) https://support.industry.siemens.com/cs/ww/en/view/89116945
\33\	Device manual SIMATIC ET 200SP Analog input module AI 2xU/I 2-/4-wire HS (6ES7134-6HB00-0DA1) https://support.industry.siemens.com/cs/ww/en/view/73108737
\34\	Device manual SIMATIC ET 200SP Analog input module AI 2xU ST (6ES7134-6FB00-0BA1) https://support.industry.siemens.com/cs/ww/en/view/109481113
\35\	Device manual SIMATIC ET 200SP analog input module AI 4xI 2-/4-wire ST (6ES7134-6GD00-0BA1) https://support.industry.siemens.com/cs/ww/en/view/59768161
\36\	Device manual SIMATIC ET 200SP analog input module AI 4xRTD/TC 2-/3-/4-wire HF (6ES7134-6JD00-0CA1) https://support.industry.siemens.com/cs/ww/en/view/59753600
\37\	Device manual SIMATIC ET 200SP Analog input module AI 4xU/I 2-wire ST (6ES7134-6HD00-0BA1) https://support.industry.siemens.com/cs/ww/en/view/59753624
\38\	Device manual SIMATIC ET 200SP Analog input module AI 8xI 2-/4-wire BA (6ES7134-6GF00-0AA1) https://support.industry.siemens.com/cs/ww/en/view/109475183
\39\	Device manual SIMATIC ET 200SP Analog input module AI 8xRTD/TC 2-wire HF (6ES7134-6JF00-0CA1) https://support.industry.siemens.com/cs/ww/en/view/89116957

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Nr.	Thema
\40\	Device manual SIMATIC ET 200SP Analog input module AI 8xU BA (6ES7134-6FF00-0AA1) https://support.industry.siemens.com/cs/ww/en/view/109475182
\41\	Device manual SIMATIC ET 200SP Analog input module AI 4xI 2-wire 4...20mA HART (6ES7134-6TD00-0CA1) https://support.industry.siemens.com/cs/ww/en/view/105037964
\42\	Device manual SIMATIC ET 200SP Analog input module AQ 2xI ST (6ES7135-6GB00-0BA1) https://support.industry.siemens.com/cs/ww/en/view/109481114
\43\	Device manual SIMATIC ET 200SP Analog input module AQ 2xU ST (6ES7135-6FB00-0BA1) https://support.industry.siemens.com/cs/ww/en/view/109481115
\44\	Device manual SIMATIC ET 200SP Analog input module AQ 4xU/I ST (6ES7135-6HD00-0BA1) https://support.industry.siemens.com/cs/ww/en/view/59753612
\45\	Device manual SIMATIC ET 200SP Motor starter (3RK1308-0**00-0CP0) https://support.industry.siemens.com/cs/ww/en/view/109479973
\46\	List Manual SINAMICS G120 Control Units CU240B-2/CU240E-2 https://support.industry.siemens.com/cs/ww/en/view/109751314
\47\	List Manual SINAMICS G120 Control Units CU250S-2 https://support.industry.siemens.com/cs/ww/en/view/109751315
\48\	List Manual SINAMICS S120/S150 https://support.industry.siemens.com/cs/ww/en/view/109760366
\49\	Operating instructions SINAMICS V90, SIMOTICS S-1FL6 https://support.industry.siemens.com/cs/ww/en/view/109762404
\50\	Device manual SIMATIC ET 200SP Analog input module AI Energy Meter 400VAC ST (6ES7134-6PA01-0BD0) https://support.industry.siemens.com/cs/ww/en/view/109481116
\51\	Device manual SIMATIC ET 200SP Analog input module AI Energy Meter 480VAC ST (6ES7134-6PA20-0BD0) https://support.industry.siemens.com/cs/ww/en/view/109481117
\52\	Device manual SIMATIC ET 200SP Analog input module AI Energy Meter 480VAC/CT HF (6ES7134-6PA00-0CU0) https://support.industry.siemens.com/cs/ww/en/view/109759685
\53\	Device manual SIMATIC ET 200SP Analog input module AI Energy Meter 480VAC/RC HF (6ES7134-6PA20-0CU0) https://support.industry.siemens.com/cs/ww/en/view/109759689
\54\	Device manual SIMATIC ET 200SP Analog input module AI Energy Meter CT ST (6ES7134-6PA01-0BU0) https://support.industry.siemens.com/cs/ww/en/view/109800759

Nr.	Thema
\55\	Device manual SIMATIC ET 200SP Analog input module AI Energy Meter RC ST (6ES7134-6PA21-0BU0) https://support.industry.siemens.com/cs/ww/en/view/109800760
\56\	Device manual SIMATIC ET 200SP Analog input module AI Energy Meter CT HF (6ES7134-6PA01-0CU0) https://support.industry.siemens.com/cs/ww/en/view/109800757
\57\	Device manual SIMATIC ET 200SP Analog input module AI Energy Meter RC HF (6ES7134-6PA21-0CU0) https://support.industry.siemens.com/cs/ww/en/view/109800758
\58\	SIMATIC STEP 7 Basic/Professional V17 and SIMATIC WinCC V17 https://support.industry.siemens.com/cs/ww/en/view/109798671
\59\	Device manual SIMATIC S7-1500/ET 200MP Digital input module DI 16x24VDC HS (6ES7521-7BH00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/109806801
\60\	Device manual SIMATIC S7-1500/ET 200MP Digital input module DI 16xNAMUR HF (6ES7521-7TH00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/109798382
\61\	Device manual SIMATIC S7-1500/ET 200MP digital output module DQ 8x24VDC/2A HF (6ES7522-1BF00-0AB0) https://support.industry.siemens.com/cs/ww/en/view/59193089
\62\	System manual SIMATIC Drive Controller (6ES7615-*DF10-0AB0) https://support.industry.siemens.com/cs/ww/en/view/109766665
\63\	SIMATIC STEP 7 Basic/Professional V18 and SIMATIC WinCC V18 https://support.industry.siemens.com/cs/ww/en/view/109815056

5.4 Change documentation

Table 5-2

Version	Date	Modifications
V1.0	Sept 2016	First version
V1.1	02/2017	Standard data types for TM_COUNT replaced by own PLC data types. Extensions: <ul style="list-style-type: none">• Motor starters Standard PROFIdrive telegrams
V1.2	01/2019	Extensions: <ul style="list-style-type: none">• PROFIdrive telegrams Analog modules for SIMATIC ET 200SP / ET 200MP
V1.3	09/2019	Extensions: <ul style="list-style-type: none">• PROFIdrive telegrams 82, 84, 860• AI Energy Meter Correction: <ul style="list-style-type: none">• PROFIdrive telegrams 7, 9, 20, 110, 111, 166

5 Appendix

Version	Date	Modifications
V1.4	04/2022	Extensions: <ul style="list-style-type: none">• AI Energy Meter CT ST• AI Energy Meter RC ST• AI Energy Meter CT HF• AI Energy Meter RC HF
V1.5	11/2022	Extensions: <ul style="list-style-type: none">• DI 16x24VDC HS• DI 16xNAMUR HF• DQ 8x24VDC/2A HF
V1.6	04/2023	Extensions for TIA Portal V17/V18: <ul style="list-style-type: none">• Data sets for Drive Controller• I&M Data
V1.7	05/2023	Changes Data sets for Drive Controller (Byte tag changed to 8 bool tags) New: Fast Mode Feedback Channel for TM Count