

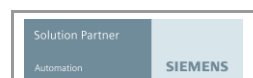
Dittel System 6000

DS6000

PROFIBUS[®]/PROFINET[®] Communication

Description - Supplement

Date of Issue: March 2021
Version: 10
Article no.: ODNDL03EN04 (D60023)



Description -**Supplement** ODNDL03EN04

(D60023) Supplement for all Installation and Operation Manuals of the DS6000 System using PROFIBUS®.

This description - supplement was originally published in German. In case of any disputes due to the translation, the reference will be solely the German text.

Version 10**Valid with DSCC****Software** Version V 3.65 (Build 0663) or later**Valid with GSD file** Version V1.4 or later
(PROFIBUS®)**Valid with GSD file** GSDML-V2.33-DITTEL-DS7000-20190305.xml or later
(PROFINET®)

Revision History

This list gives you a description of all changes of this document due to new software, mistakes, or errors.

Version	Reason for change	Date
1	New	May 2008
2	Change of name to 'DITTEL MESSTECHNIK GMBH'	February 2009
3	Offices updated, modules P6001, P6002 and S6000 added	October 2010
4	Data format M6000/M6001 updated, data format P6000 added	July 2012
5	Data format P6001FD added, acquisition of Dittel Messtechnik GmbH by MARPOSS S.p.A.	August 2012
6	Changes due to acquisition of Dittel Messtechnik GmbH by MARPOSS S.p.A., Italy	June 2014
7	Data formats AE6000, DM6000, M6000, P6001 FD, S6000 updated, PKW description in the appendix	August 2014
8	Update of maximum unbalance value	October 2015
9	PROFINET® modules, corrections	April 2020
10	Small corrections	March 2021

NOTICE

- ▷ Please read this description thoroughly!
- ▷ Keep this description for further use!

Service Information Should any unusual problem arise or further information be desired, please contact your nearest MARPOSS representative.

This manual was created with great care. Nevertheless, it cannot be ruled out that this manual may contain errors which lead to unpredictable difficulties when operating. Please send us your comments. Please describe the problem briefly and include the manual's article number, section or figure number, and the page number.

Send your comments to Technical Publications
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Errors and technical modifications subject to change

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1 General

PROFIBUS® (Process Field Bus) is the powerful, open and rugged bus system for process and field communication in cell networks with few users and for data communication according to IEC 61158/EN 50170.

PROFINET® (Process Field Network) is the open Industrial Ethernet standard for automation of PROFIBUS & PROFINET International (PI). PROFINET is based on TCP/IP and IT standards, is real-time capable and makes it possible to integrate fieldbus systems.

Automation devices such as PLCs, PCs, HMI devices, sensors, or actuators can communicate via this bus system. The IEC 61158 / EN 50170 standard makes allowance at the same time for the future of your investments since existing plants can be expanded using components that conform to the international standard.

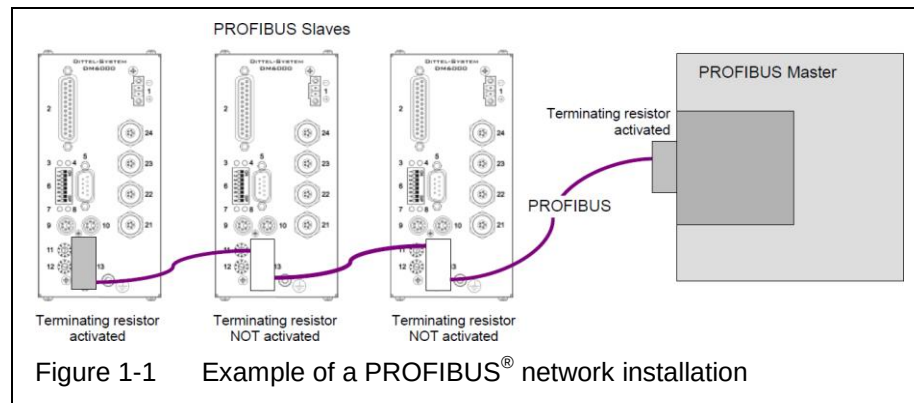
1.1 Network rules

NOTICE

- Bus cables to connect PROFIBUS® connector # 13 to the computer or Automation System must be made by qualified staff of the customer or preassembled cables should be used.
- Connecting PROFINET® connector #30/31 to the computer or Automation System must be made by qualified staff of the customer.

Please take the following PROFIBUS® rules into account:

- The bus line must be terminated at **both ends**. To do this, switch ON the terminating resistor in the PROFIBUS® connector of the last DS6000 Module (Slave) and the connector at the Master, and switch OFF any other terminators. By activating the terminating resistor, the outgoing bus cable is disconnected from the incoming bus cable.
- It is necessary to apply a 5 V voltage to at least one terminator. This is automatically supplied as soon as the PROFIBUS® connector with the terminating resistor fitted is connected to a powered DS6000 module. The DS6000 module equipped with a terminating resistor must always be supplied with power when the network starts up and during operation.
- Each DS6000 module must first be connected and then activated.
- When disconnecting a DS6000 module, first deactivate the DS6000 module, and then remove the connector.
- The PROFIBUS® cable lengths for standard use may not exceed 100 m (328 ft.) in total.



1.2 Requirements of the Automation System

Consult the appropriate documentation of your Automation System (e.g. SINUMERIK®) for the conditions of establishing the PROFIBUS®/PROFINET® configuration.

1.3 Creating a PROFIBUS® Configuration

- ▷ All PROFIBUS® nodes (stations, DS6000 modules) are properly wired and supplied with 24 V DC.
- ▷ Different bus addresses (module addresses) are set on the master and on all slaves.
- ▷ The current GSD file (refer to Dittel DVD 'Profibus') must be integrated into the Automation System.

General data types char: 1 byte sign independent
 short: 2 bytes sign independent
 long: 4 bytes sign independent

PKW data types: Unsigned16: 2 bytes unsigned
 Unsigned32: 4 bytes unsigned

Data format: 'big endian', if not specified otherwise

1.4 Creating a PROFINET® Configuration

- ▷ All PROFINET® nodes (stations, DS6000 modules) are properly wired and supplied with 24 V DC.
- ▷ Unique device names are set on the PROFINET® IO-Controller und all IO-Devices.
- ▷ The current GSD file (refer to Dittel DVD 'Profinet') must be integrated into the Automation System (e.g. Step7).

General data types: char: 1 byte sign independent
short: 2 bytes sign independent
long: 4 bytes sign independent

PKW data types: Unsigned16: 2 bytes unsigned
Unsigned32: 4 bytes unsigned

Data format: 'big endian', if not specified otherwise

2 Data format Dittel System 6000

2.1 Configure PROFIBUS®

NOTICE

Configuration, programming, and commissioning have to be performed by qualified staff.

- Start HW-Config ➤ Open the station and start the »HW-Config« by double clicking on the **Hardware** icon.

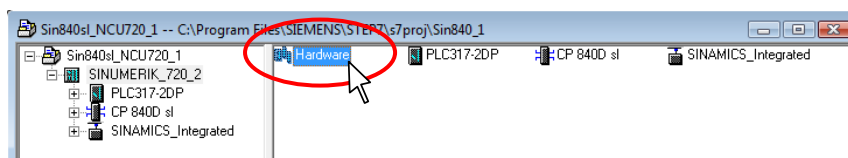


Figure 2-1

- Adding PROFIBUS® module: ➤ To add the Dittel System 6000 to the configuration click on the line »Dittel System 6000« with the left mouse and drag and drop the »Dittel Systems 6000« to the DP master system.

The DP master system appears in the docking window with this icon: 

- Represented as a crossed circle while dragging, the cursor changes shape when it is exactly placed on the DP master system.

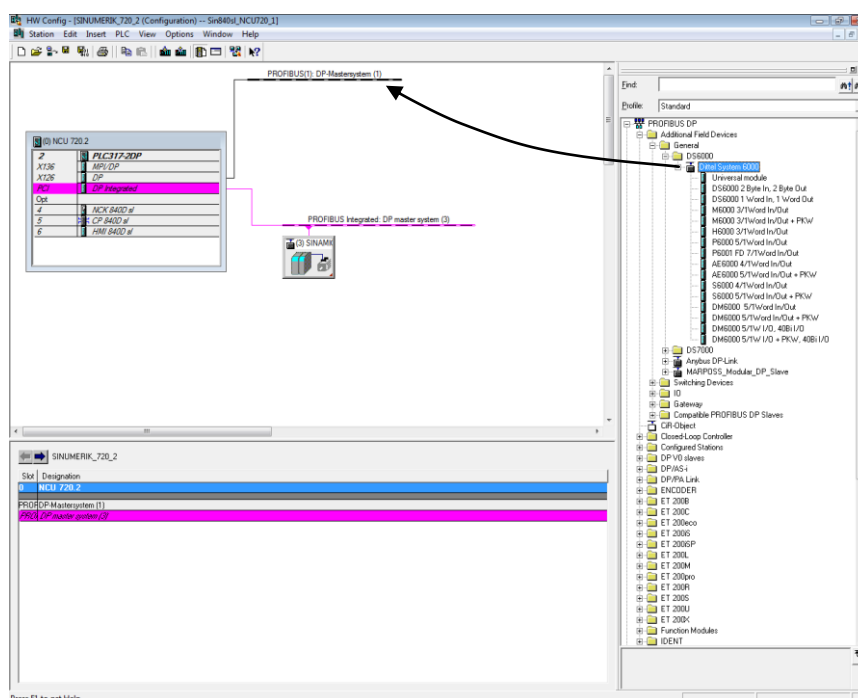


Figure 2-2

- Properties ➤ After releasing the left mouse button, the pop-up window **Properties** is displayed.
- In the **Parameter** dialog enter the PROFIBUS® address of the respective DS6000 Module (see coding switches #11 and #12, e. g. '3' in this case) and confirm with [OK].

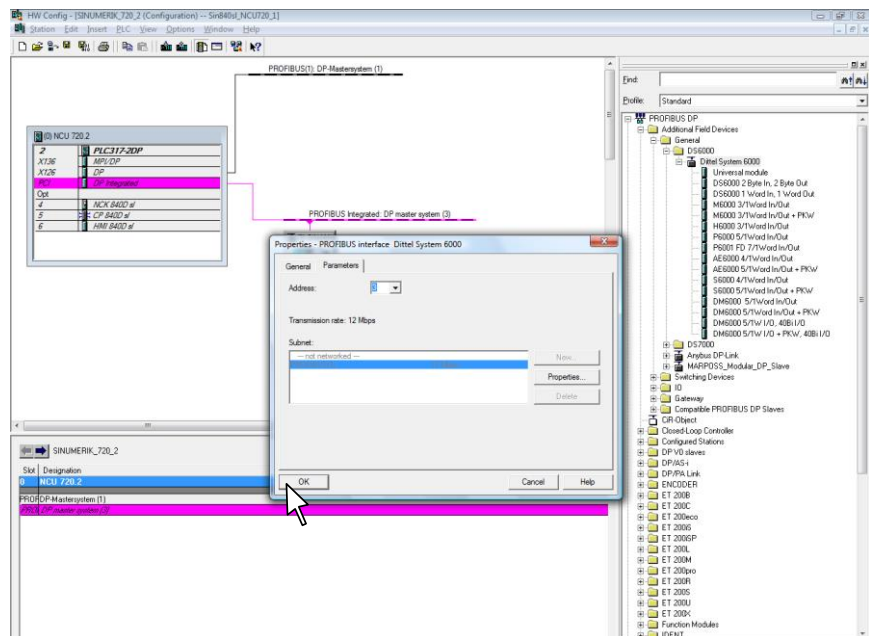


Figure 2-3 Enter PROFIBUS® address

After closing the dialog window, the Dittel System 6000 is added to the DP master system.

A detail view of the Dittel Systems 6000 is displayed.

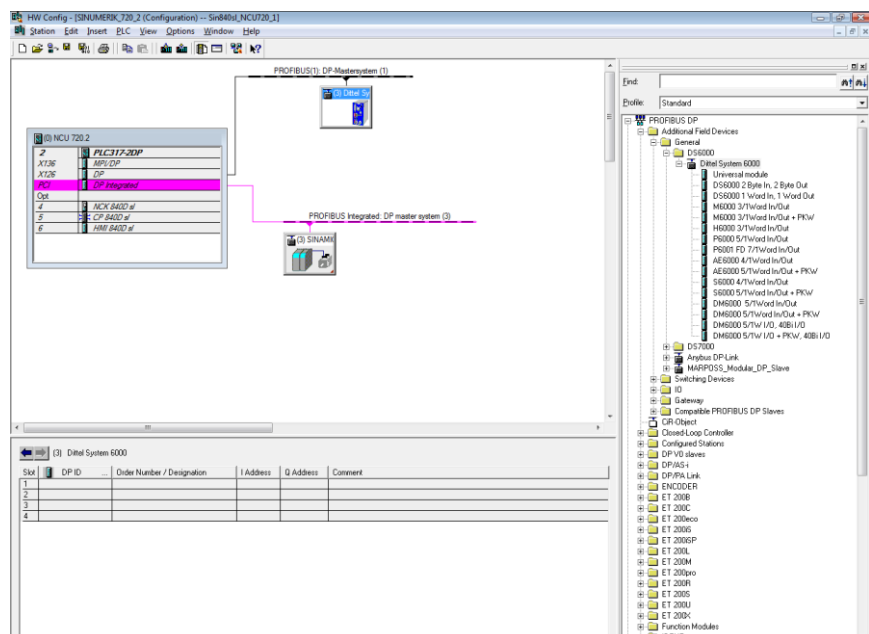


Figure 2-4

2.2 Configure PROFINET®

NOTICE

Configuration, programming, and commissioning have to be performed by qualified staff.

- Start HW-Config ➤ Open the station and start the »HW-Config« by double clicking on the **Hardware** icon.

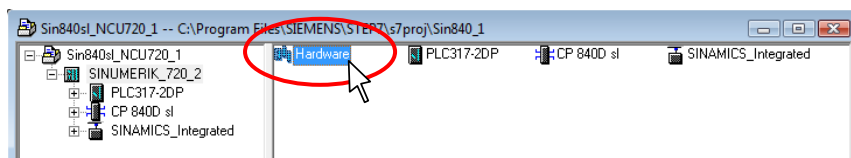


Figure 2-5

- Adding PROFINET® module: ➤ To add the Dittel System 6000 to the configuration click on the line »Dittel System 6000« with the left mouse and drag and drop the »Dittel Systems 6000« to the PROFINET-IO-System in the docking window.

The PROFINET-IO-System appears in the docking window with this icon:

- Represented as a crossed circle while dragging, the cursor changes shape when it is exactly placed on the PROFINET-IO-System.

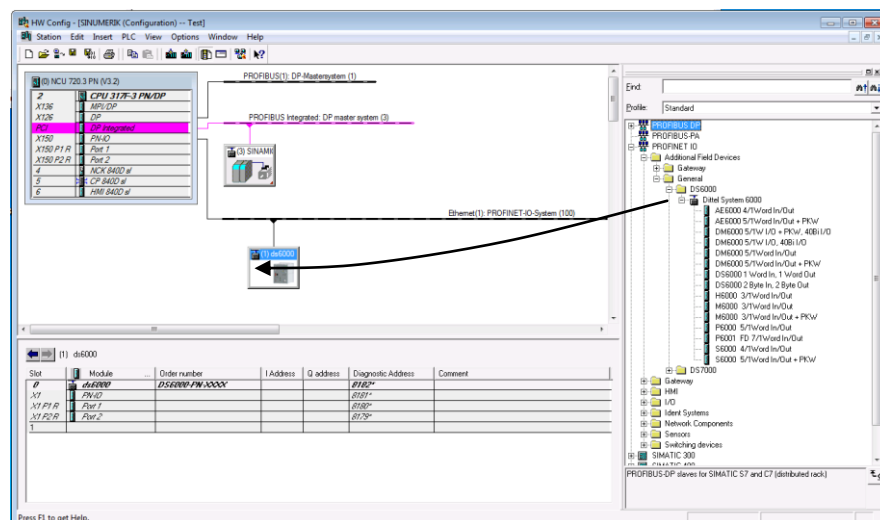


Figure 2-6

- Properties: ▷ After releasing the left mouse button, the pop-up window **Properties** is displayed.
- ▷ Ensure that the device name is correct.

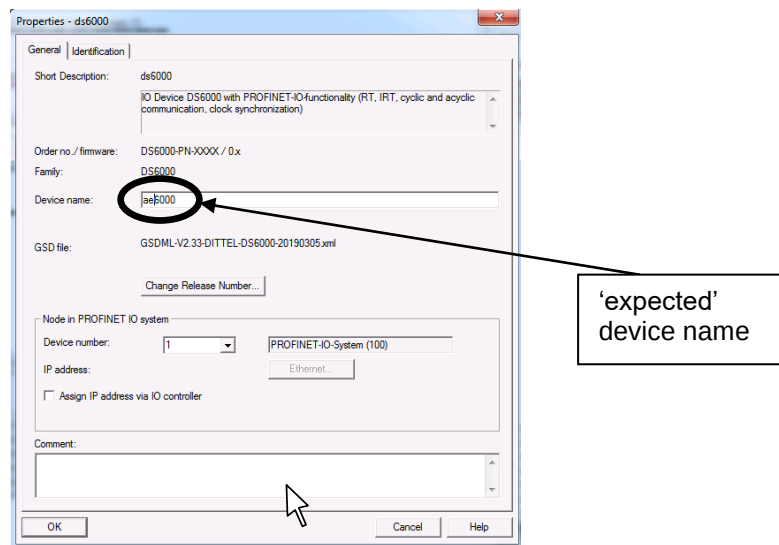


Figure 2-7

NOTICE

Important information about device names:

Before the IO Controller can communicate with an IO Device, the IO Device needs a device name. PROFINET® chose that approach because device names are easier to remember and handle than complex IP addresses.

Assigning a device name to a specific IO Device can be compared with configuring a PROFIBUS® address for a DP Slave.

As delivered an IO Device has no device name. Only after the assignment of a device name with the help of a PG/PC ('actual' device name) which matches the 'expected' device name of the project (see Figures 2-7 to Figure 2-9), IO Controllers are able to address IO Devices, e.g. for transmission of projected data like IP addresses in the startup phase or exchanging cyclic data in run mode.

Device names need to be unique within a PROFINET® subnet.

► Here, check that the device name is correct.

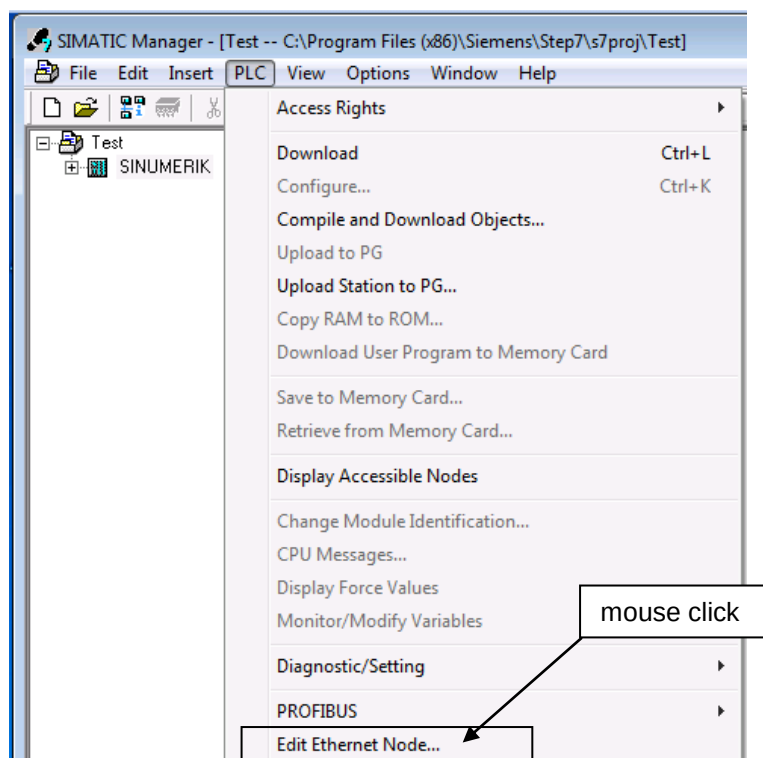


Figure 2-8

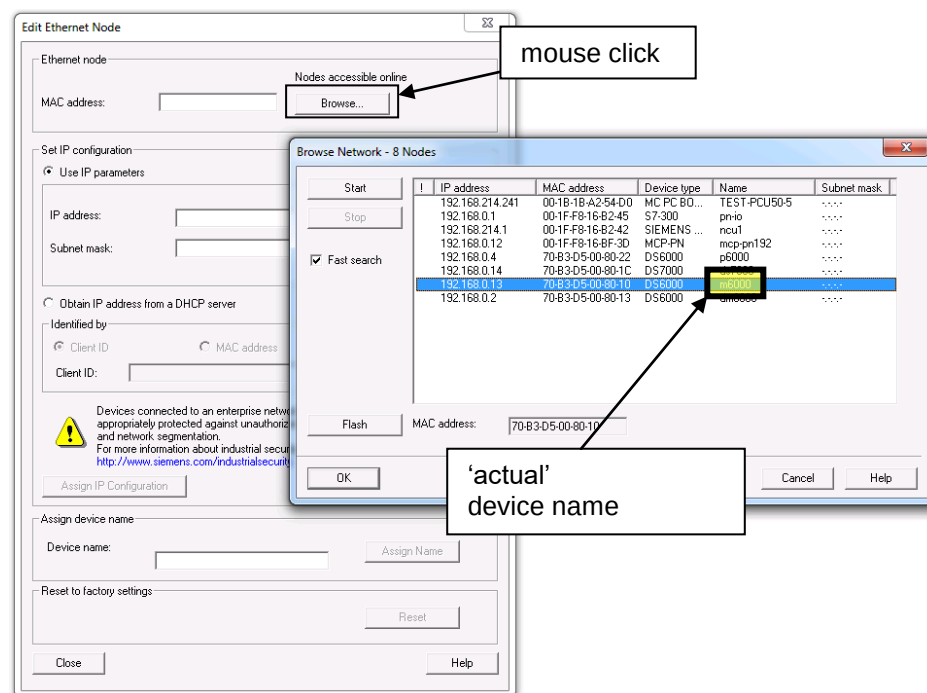


Figure 2-9

NOTICE

For all DS6000 modules, the PROFINET® default configuration is »DS6000 1 Word In, 1 Word Out«.

3 Module M6000 / M6001

3.1 Commissioning PROFIBUS®

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

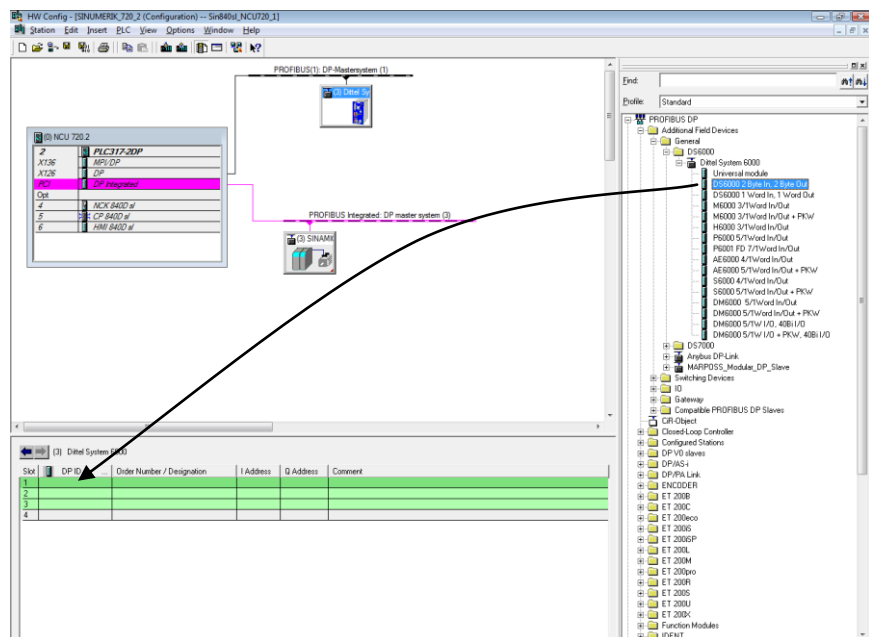


Figure 3-1 DS6000 2 Byte In, 2 Byte Out

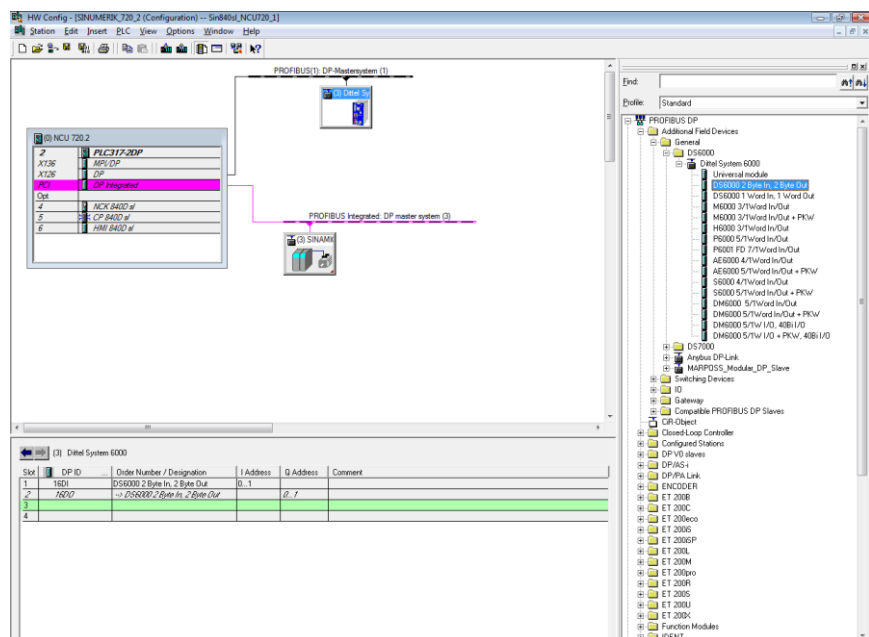


Figure 3-2 DS6000 2 Byte In, 2 Byte Out

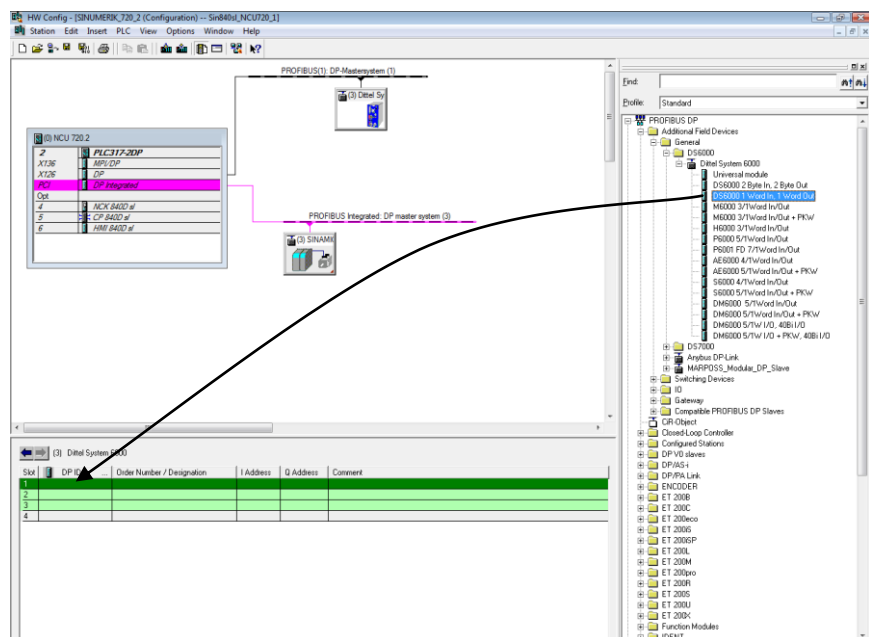


Figure 3-3 DS6000 1 Word In, 1 Word Out

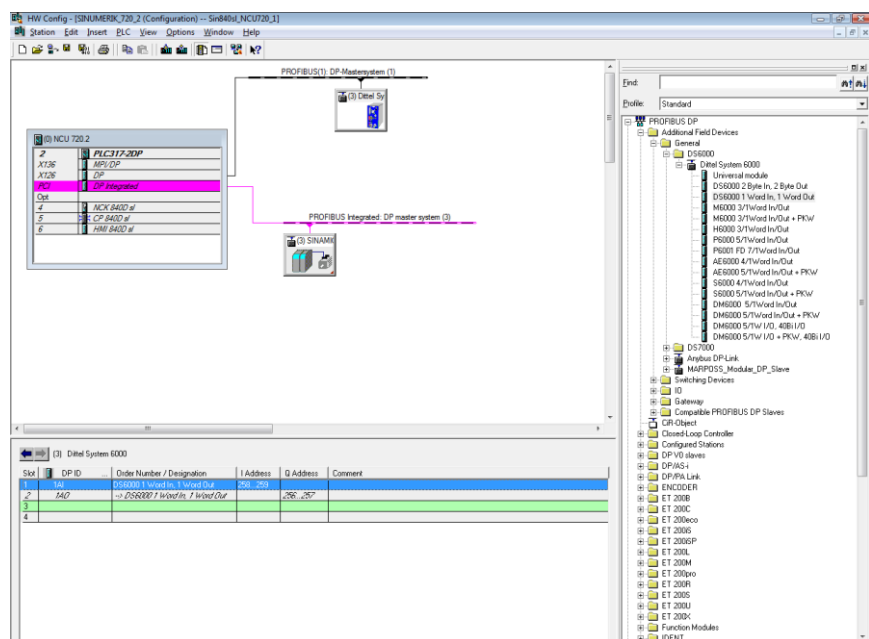


Figure 3-4 DS6000 1 Word In, 1 Word Out

3.2 Commissioning PROFINET®

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

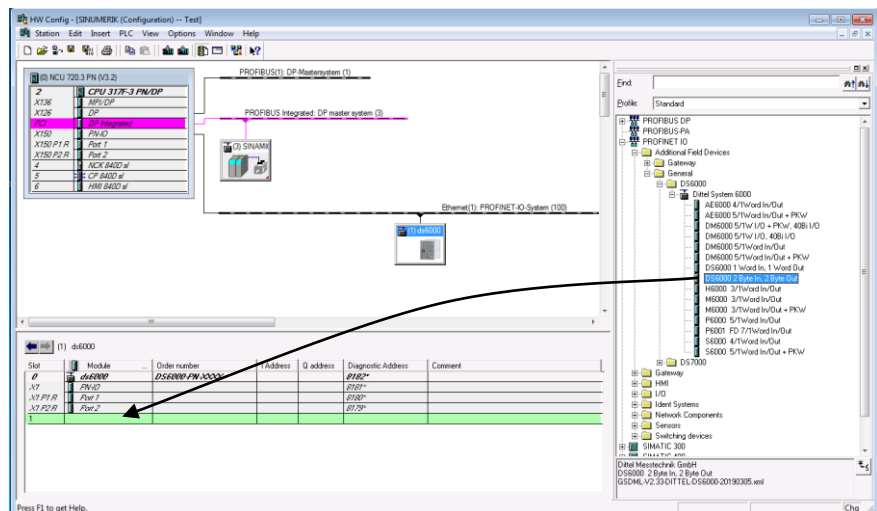


Figure 3-5 DS6000 2 Byte In, 2 Byte Out

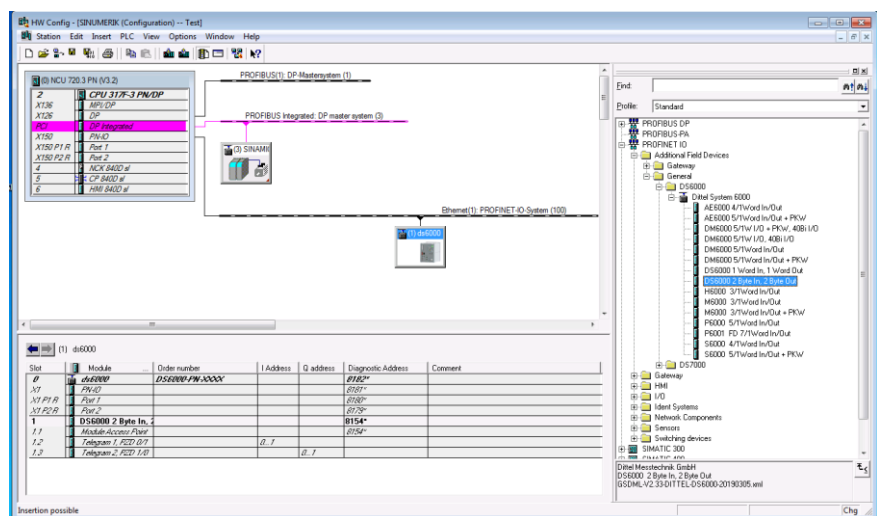


Figure 3-6 DS6000 2 Byte In, 2 Byte Out

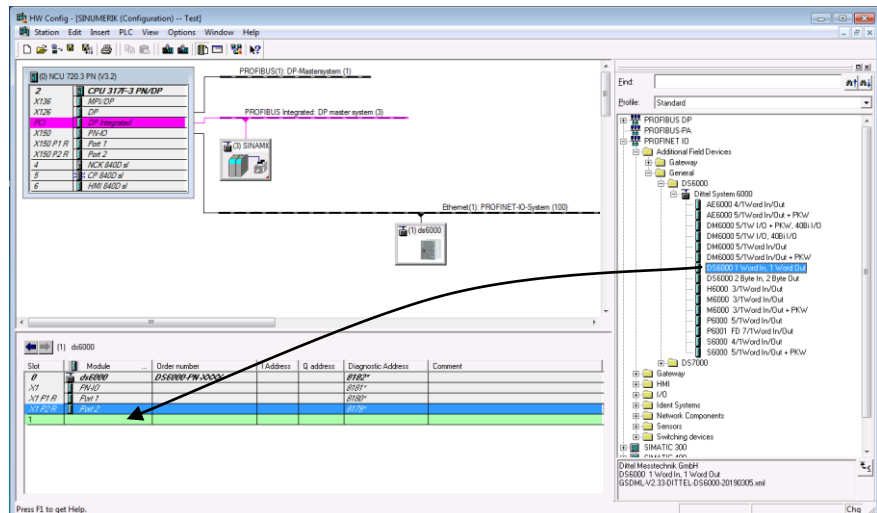


Figure 3-7 DS6000 1 Word In, 1 Word Out

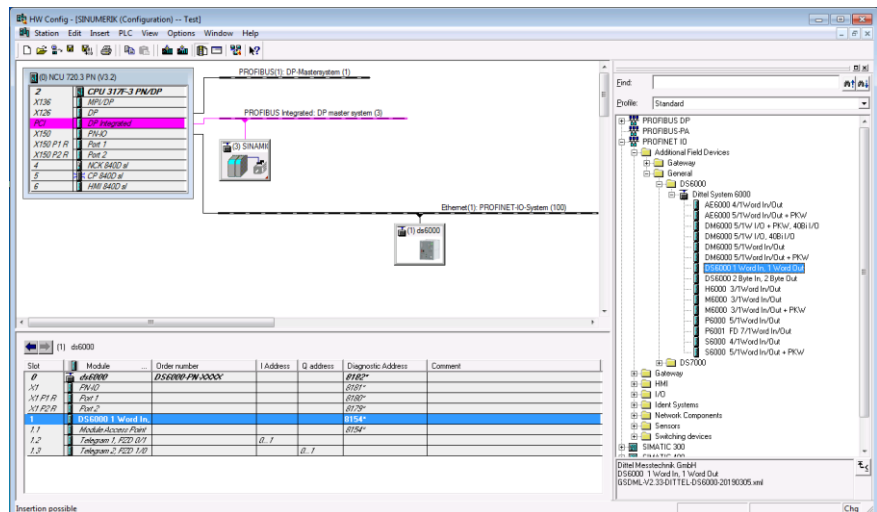


Figure 3-8 DS6000 1 Word In, 1 Word Out

3.3 Interface

3.3.1 Automation System to Module M6000 / M6001

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.0	1.0	Balancing Start/Stop	Static Signal from 0 to 1: Balancing START Static Signal from 1 to 0: Balancing STOP
0.1	1.1	Neutral Position Start/Stop	Static Signal from 0 to 1: Neutral Position START Static Signal from 1 to 0: Neutral Position STOP
0.2	1.2	Operation via keys or buttons inhibited	Static 1: Operator actions on the PC or Automation System keyboard/Softkeys are disabled
0.3	1.3	Selects Set No. 1.3	see following Truth Table 3.3.3
0.4	1.4	Selects Set No. 1.4	see following Truth Table 3.3.3
0.5	1.5	Selects Set No. 1.5	see following Truth Table 3.3.3
0.6	1.6	Selects Set No. 1.6	see following Truth Table 3.3.3
0.7	1.7	Blanking of the Unbalance Reading	Static 1: no Unbalance Reading, e.g. while grinding
0.8	0.0	Blanking of the Proximity Switch Error Reading	Static 1: blanking of the Proximity Switch Error Reading, e.g. at Spindle Stop
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

Parallel Operation PROFIBUS®/PROFINET® with static Hardwire Interface, connector # 2

In principle, parallel operation of the PROFIBUS®/PROFINET® with the Hardwire Interface is possible. In this case, the last change is executed, both on the Hardwire Interface and on

PROFIBUS®/PROFINET® word 0.

An exception are the signals »**Operation via keys or buttons inhibited**«, »**Blanking of the Unbalance Reading**« and »**Blanking of the Proximity Switch Error Reading**«. The static and the PROFIBUS®/PROFINET® signals of these functions are connected by logical OR.

3.3.2 Module M6000 / M6001 to Automation System

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.0	1.0	Status	Ongoing Balancing: 1
0.1	1.1	System Monitoring	System OK: 1
0.2	1.2	Monitoring Balancing Time	Balancing Time exceeded: 0
0.3	1.3	Monitoring Unbalance Limit 1	Unbalance below Limit 1: 1 Unbalance above Limit 1: 0
0.4	1.4	Monitoring Unbalance Limit 2	Unbalance below Limit 2: 1 Unbalance above Limit 2: 0
0.5	1.5	Monitoring Speed Limit 1	Speed below Speed Limit 1: 1 Speed above Speed Limit 1: 0
0.6	1.6	Monitoring Speed Limit 2	Speed below Speed Limit 2: 1 Speed above Speed Limit 2: 0
0.7	1.7	Monitoring Neutral Position	Neutral Position reached: 1
0.8	0.0	Monitoring Turn-off Threshold	Turn-off Threshold reached: 1
0.9	0.1	Neutral Position active	While weights are turning towards Neutral Position: 1
0.10	0.2	Pre-balancing active	from Module Software Version 1.1, build number 0.50 or later: Pre-balancing active: 1
0.11	0.3	Confirms Set No. 0.3	from Module Software Version 1.1, build number 0.50 or later: see following Truth Table 3.3.3
0.12	0.4	Confirms Set No. 0.4	from Module Software Version 1.1, build number 0.50 or later: see following Truth Table 3.3.3
0.13	0.5	Confirms Set No. 0.5	from Module Software Version 1.1, build number 0.50 or later: see following Truth Table 3.3.3

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.14	0.6	Confirms Set No. 0.6	from Module Software Version 1.1, build number 0.50 or later: see following Truth Table 3.3.3
0.15	0.7	reserved	Static 0

3.3.3 Truth Table to select or confirm* the appropriate Memory Sets

NOTICE

During an ongoing balancing process, **NO** change of the Set Number is permitted! A change of the Set Number aborts immediately the function of balancing.

Selects Set No./confirms Set No.*	x.6	x.5	x.4	x.3
No change	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

* from Module Software Version 1.1, build number 0.50 or later

3.4 Extension with Data Format »M6000 3/1Word In/Out«

3.4.1 PROFIBUS®

From Module Software Version 1.1 or later.

Project with »M6000 3/1Word In/Out«

Adding ▷ Highlight the data format »M6000 3/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

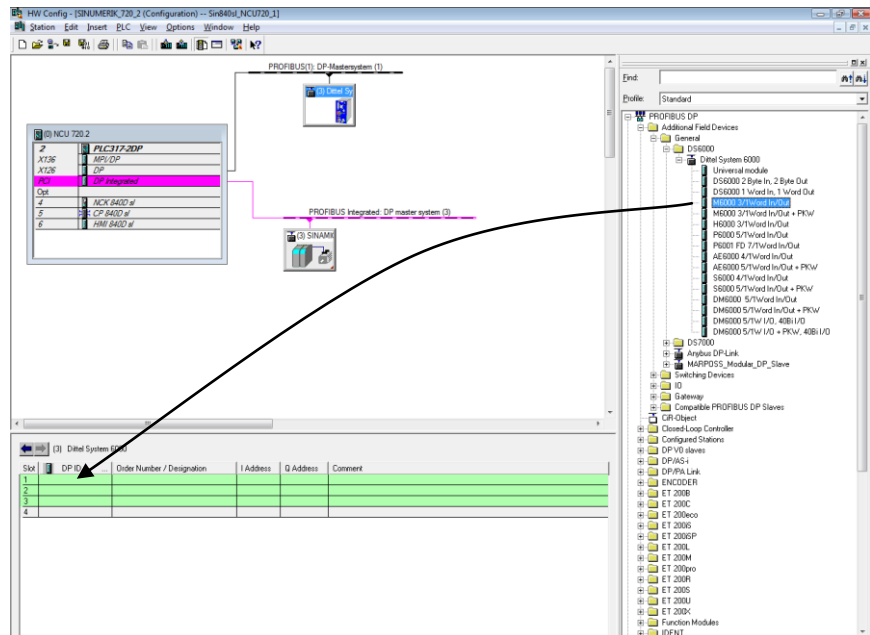


Figure 3-9 M6000 3/1Word In/Out

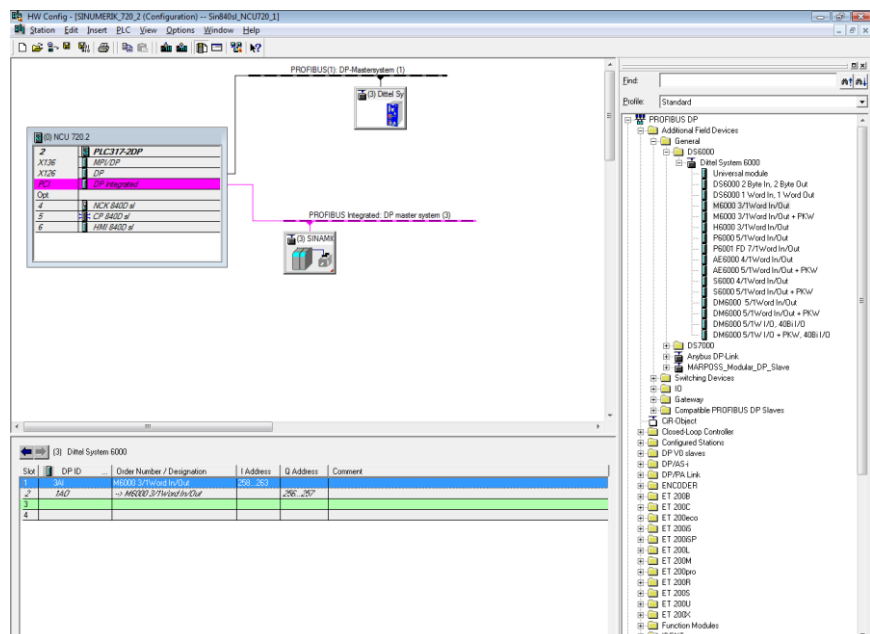


Figure 3-10 M6000 3/1Word In/Out

Properties ▷ With the LEFT mouse button double click on line »M6000 3/1Word In/Out«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Unbalance are found.

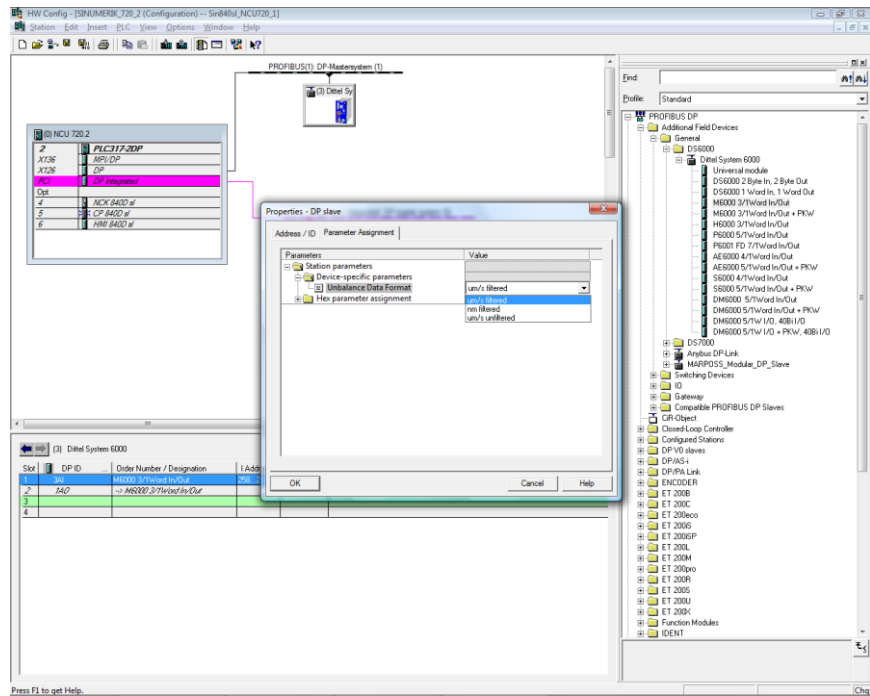


Figure 3-11

3.4.2 PROFINET®

Project with »M6000 3/1Word In/Out«

Adding ▷ Highlight the data format »M6000 3/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

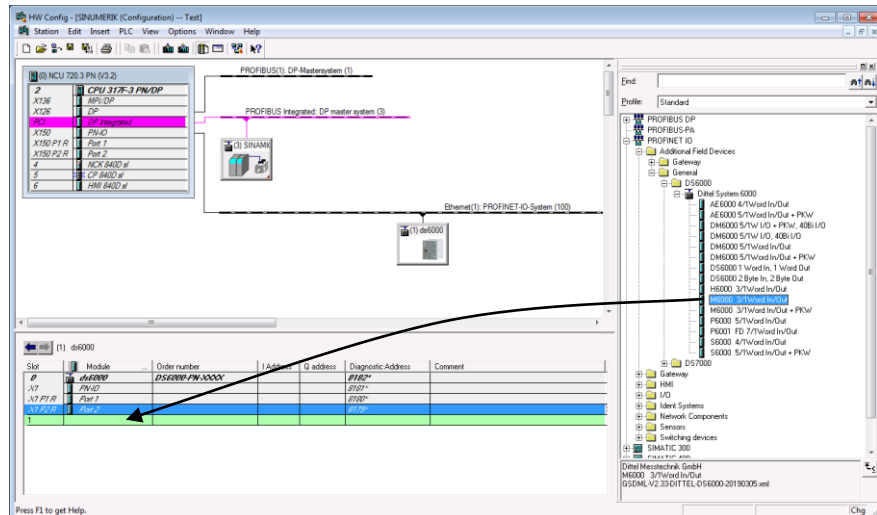


Figure 3-12 M6000 3/1Word In/Out

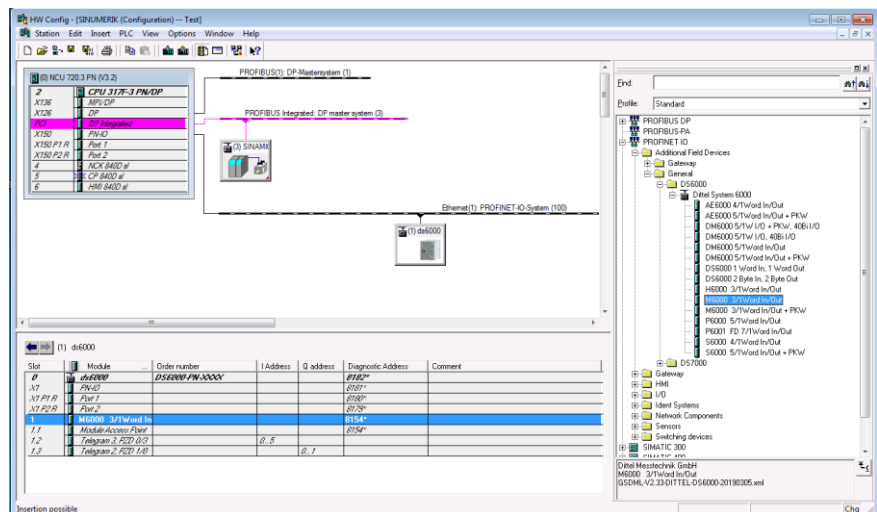


Figure 3-13 M6000 3/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »Properties - Module Access Point« appears.

Open the register »Parameters«. In the folder »Module Parameter« the settings for the Unbalance are found.

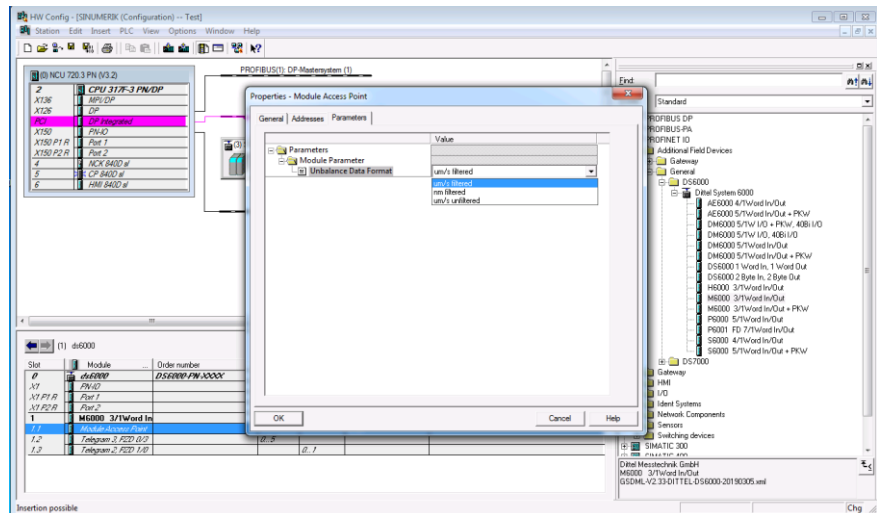


Figure 3-14

3.4.3 Automation System to Module M6000 / M6001

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 3.3.1, Automation System to Module M6000/M6001

3.4.4 Module M6000 / M6001 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 3.3.2, Module M6000/M6001 to Automation System
2	Revolutions per minute	short	Output of speed signal at maximum sampling rate
4	Unbalance	short	Output of Unbalance at maximum sampling rate - Unbalance Data Format, $\mu\text{m/s}$ filtered, as shown (filtered, 0 ... 1023 $\mu\text{m/s}$, current Offset) - Unbalance Data Format, nm filtered, as shown (filtered, 0 ... ca. 22000 nm current Offset) 0 when RPM < 300 1/min From Module Software V1.2 Unbalance Data Format, nm filtered, as shown (filtered, 0 ... 65534 (0xFFFF) nm current Offset 0xFFFF nm, when Overflow - Unbalance Data Format, $\mu\text{m/s}$ unfiltered, (unfiltered, (0 ... 1023 $\mu\text{m/s}$ Offset = 0)) The choice is made while adjusting the parameters with the planning tool.

3.5 Extension with Data Format »M6000 3/1Word In/Out + PKW«

3.5.1 PROFIBUS®

From Module Software Version 1.2 or later and GSD-file Version V1.6 or later.

Project with »M6000 3/1Word In/Out + PKW«

Adding ▢ Highlight the data format »M6000 3/1Word In/Out + PKW«. Using the LEFT mouse button, drag and drop the data format to the detail view.

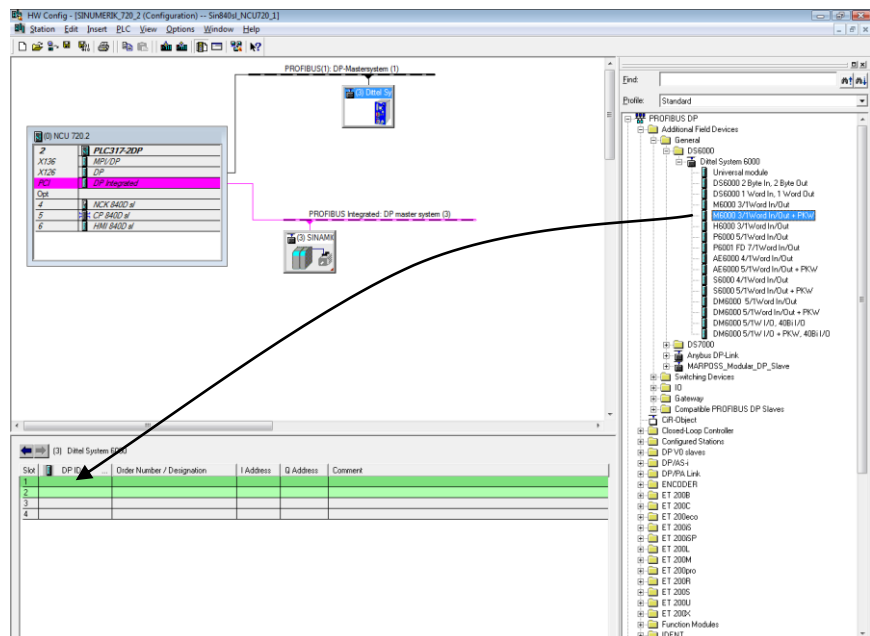


Figure 3-15 M6000 3/1Word In/Out + PKW

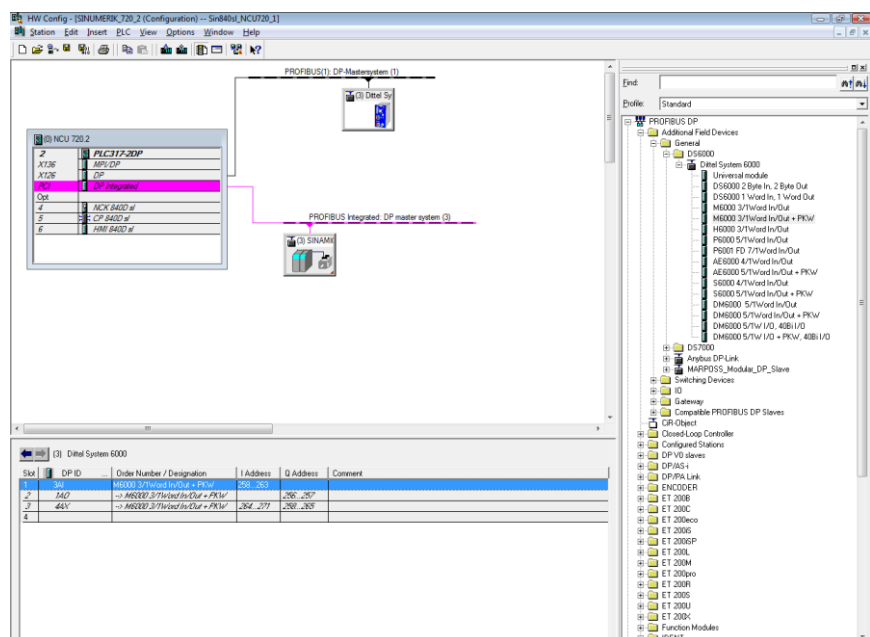


Figure 3-16 M6000 3/1Word In/Out + PKW

- Properties ▷ With the LEFT mouse button double click on line »M6000 3/1Word In/Out + PKW«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Unbalance are found.

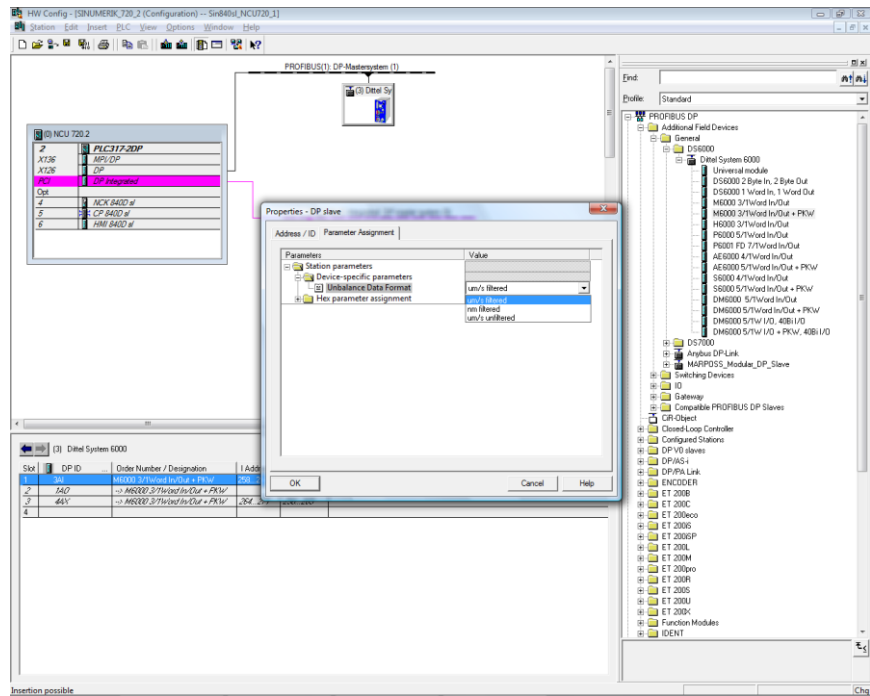
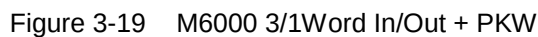
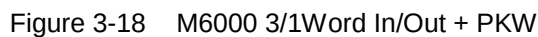


Figure 3-17

Project with »M6000 3/1Word In/Out + PKW«



Properties ▷ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Unbalance are found.

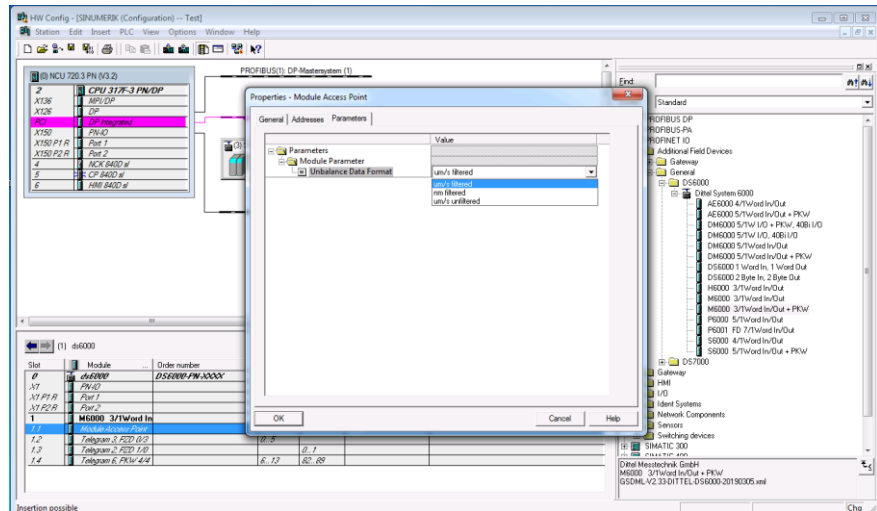


Figure 3-20

3.5.3 Automation System to Module M6000 / M6001

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 3.3.1, Automation System to Module M6000/M6001
2	PKW	4 * short	Parameter data area

3.5.4 Module M6000 / M6001 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 3.3.2, Module M6000/M6001 to Automation System
2	Revolutions per minute	short	Output of speed signal at maximum sampling rate
4	Unbalance	short	Output of Unbalance at maximum sampling rate • Unbalance Data Format, $\mu\text{m/s}$ filtered, as shown (filtered, 0 ... 1023 $\mu\text{m/s}$, current Offset) • Unbalance Data Format, nm filtered, as shown (filtered, 0 ... 65534 (0xFFFFE) nm current Offset 0xFFFF nm, when Overflow) • Unbalance Data Format, $\mu\text{m/s}$ unfiltered, (unfiltered, (0 ... 1023 $\mu\text{m/s}$ Offset = 0)) The choice is made while adjusting the parameters with the planning tool.
6	PKW	4 * short	Parameter data area

3.5.5 Parameter description M6000

3.5.3.1 Parameters for Sets

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
0	RPM Input	1	0	Unsigned16	0	3	1	0 = internal 1 = 1÷1 2 = 1÷2 3 = 1÷4	R/W
1	Internal RPM	1	0	Unsigned16	300	30000	3000	Speed in RPM (300 RPM ... 30000 RPM)	R/W
2	Sensor Adaptation	1	0	Unsigned16	0	3	3	0 = ÷6 1 = ÷3 2 = ÷2 3 = ÷1	R/W
3	Unbalance Limit 1	1	0	Unsigned16	10	200	10	in µm/s (10 µm/s ... 200 µm/s)	R/W
4	Unbalance Limit 2	1	0	Unsigned16	200	1000	800	in µm/s (200 µm/s ... 1000 µm/s)	R/W
5	RPM Limit 1	1	0	Unsigned16	300	30000	600	in RPM (300 RPM ... 30000 RPM)	R/W
6	RPM Limit 2	1	0	Unsigned16	300	30000	2000	in RPM (300 RPM ... 30000 RPM)	R/W
7	Scaling of analog RPM output	1	0	Unsigned16	0	2	0	0 = 1000 RPM /V 1 = 2000 RPM /V 2 = 3000 RPM /V	R/W
8	Unbalance Offset	1	0	Unsigned16	0	100	0	in µm/s (0 µm/s ... 100 µm/s)	R/W
9	Turn-off Threshold	1	0	Unsigned16	0	60	0	in µm/s (0 µm/s ... 60 µm/s)	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
10	Balancing Strategy	1	0	Unsigned16	0	2	0	0 = Normal 1 = Adaptive 1 2 = Adaptive 2	R/W
11	Maximum Balancing Time	1	0	Unsigned16	10	300	90	in s (10 s ... 300 s)	R/W
12	Motor Speed Multiplier	1	0	Unsigned16	2	10	2	= value*0.5 (1 ... 5)	R/W
13	Measurement Time	1	0	Unsigned16	1	10	2	in s (1 s ... 10 s)	R/W
14	Sample and Hold Setting	1	0	Unsigned16	1	3	1	1 = Fine 2 = Medium 3 = Rough	R/W
15	Two-Plane Balancing	1	0	Unsigned16	0 0	0 1	0 0	0 = False 1 = True (depends on licensing) False without license 'Two-Plane Auto Balancing' or 'Two-Plane Pre-Balancing' False/ with license 'Two-Plane Auto Balancing' or True 'Two-Plane Pre-Balancing'	R/W
16	Two-Plane Auto Balancing: switching difference	1	0	Unsigned16	0 1	0 10	0 1	= value*10 in % (depends on licensing) 0 % without license 'Two-Plane Auto Balancing' 10 ... 100 % with license 'Two-Plane Auto-Balancing', i.e. values >0 signalise 'Two-Plane Auto Balancing' licensing	R/W

3.5.3.2 Balancing configuration

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
200	M Parameters	1	0	Unsigned16	0x0000	0x0007	0x0000	Bit 0: Proximity Switch Type 0 = PNP, 1 = NPN Bit 1: Lock RPM Limit 0 = False, 1 = True Bit 2: Blank Unbalance Indication 0 = True, 1 = False The min./max. values are interpreted per parameter	R/W
201	Module Parameters	1	0	Unsigned16	1	99	1	Two-Plane Auto Balancing: assigned Slave Module (1 ... 99)	R/W
202	Identification Data	15	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14	Unsigned16	-	-	-	Low byte relevant only Module Type 1 Production Year as of 2000 Production Week Software Version value/10 Build number value/100 Article Number in BCD code hundred thousands/ten thsds thousands/hundreds tens/ones Serial Number (4 bytes) LSB MSB Operating Hours in hours (3 bytes) LSB MSB	RO
203	Invalid PNU							Parameter not available	

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
204	Save Set/	2	0	Unsigned16	0	15	1	Write ¹ : 0: Saving M parameters and module parameters 1 – 15: Saving current settings as parameterised set number	R/W
	Select Set		1		1		1	Read: Reading the currently selected set number Write: Select set Read : Reading the currently selected set number	
205	View	2	0 1	Unsigned16	1 0	99 119	1 0	Number of view to be selected Address of operating unit 0 (- 99) Broadcast to all operating units 100 – 119 to addressed operating unit	R/W

¹ Typically 1,000,000 save operations are possible per set. This corresponds to an expected lifetime of approximately 10 years for the EEPROMs when saving every 5 minutes.

4 Module H6000 / H6001 (PROFIBUS® only)

4.1 Commissioning

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

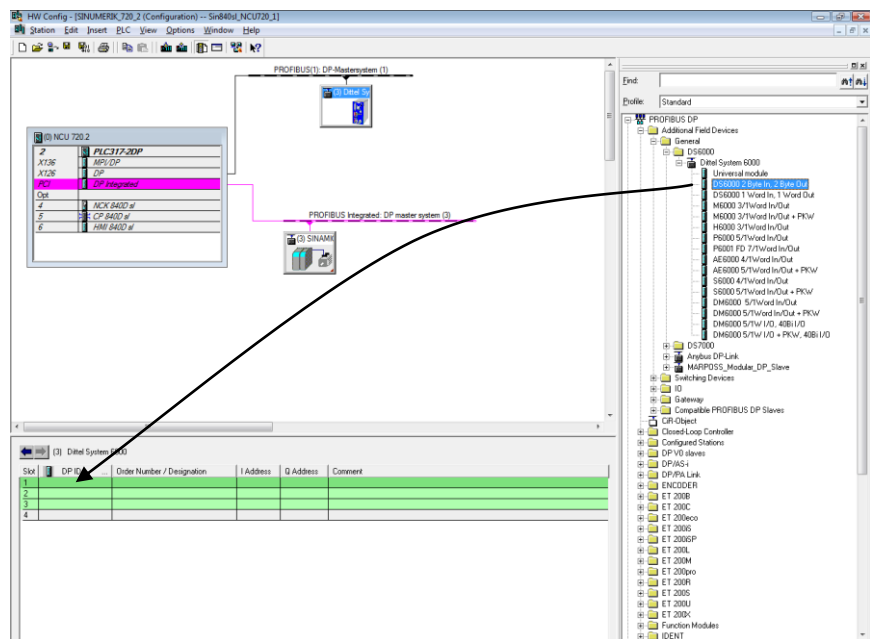


Figure 4-1 DS6000 2 Byte In, 2 Byte Out

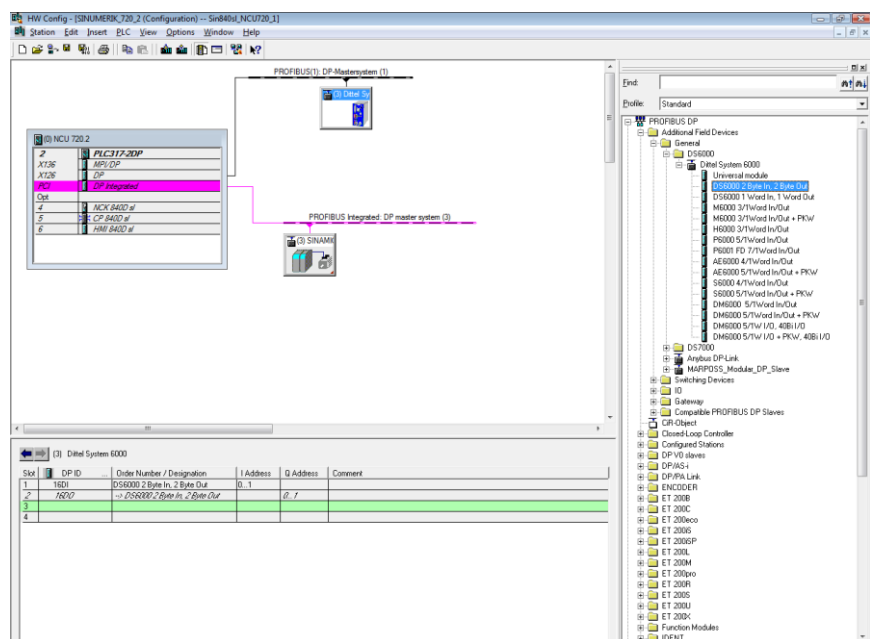


Figure 4-2 DS6000 2 Byte In, 2 Byte Out

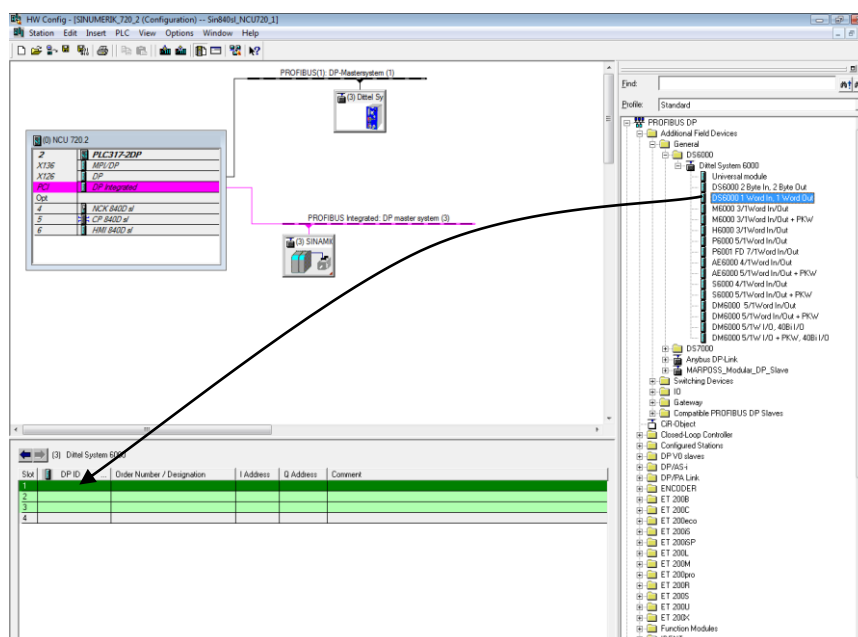


Figure 4-3 DS6000 1 Word In, 1 Word Out

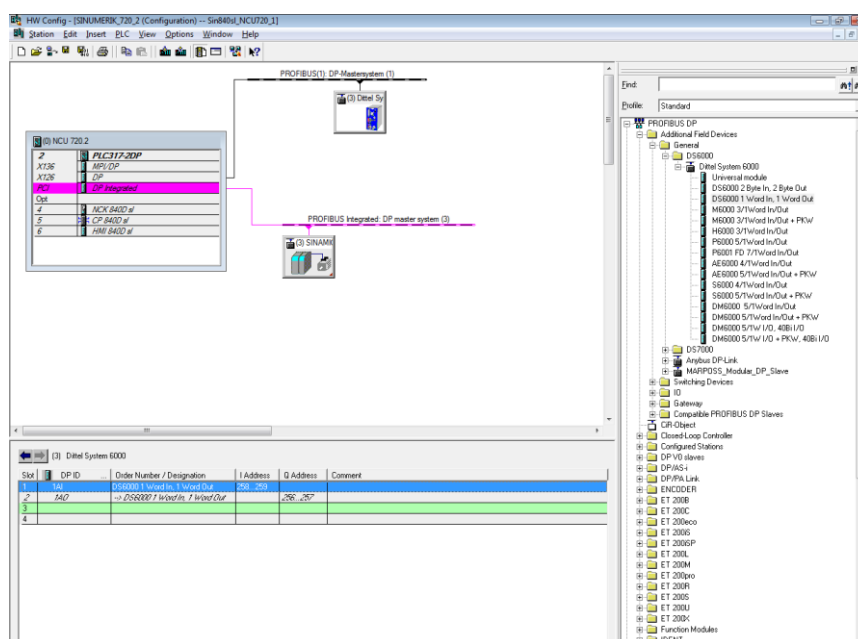


Figure 4-4 DS6000 1 Word In, 1 Word Out

4.2 Interface

4.2.1 Automation System to Module H6000 / H6001

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.0	1.0	Balancing Start/Stop	Static Signal from 0 to 1: Balancing START Static Signal from 1 to 0: Balancing STOP
0.1	1.1	reserved	Static 0
0.2	1.2	Operation via keys or buttons inhibited	Static 1: Operator actions on the PC or Automation System keyboard/Softkeys are disabled
0.3	1.3	Selects Set No. 1.3	see following Truth Table 4.2.3
0.4	1.4	Selects Set No. 1.4	see following Truth Table 4.2.3
0.5	1.5	Selects Set No. 1.5	see following Truth Table 4.2.3
0.6	1.6	Selects Set No. 1.6	see following Truth Table 4.2.3
0.7	1.7	Blanking of the Unbalance Reading	Static 1: no Unbalance Reading, e.g. while grinding
0.8	0.0	Blanking of the Proximity Switch Error Reading	Static 1: blanking of the Proximity Switch Error Reading, e.g. at Spindle Stop
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

Parallel Operation PROFIBUS with static Hardwire Interface, connector # 2

In principle, parallel operation of the PROFIBUS® with the Hardwire Interface is possible. In this case, the last change is executed, both on the Hardwire Interface and on PROFIBUS® word 0.

An exception are the signals »**Operation via keys or buttons inhibited**«, »**Blanking of the Unbalance Reading**« and »**Blanking**

of the Proximity Switch Error Reading«. The static and the PROFIBUS® signals of these functions are connected by logical OR.

4.2.2 Module H6000 / H6001 to Automation System

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.0	1.0	Status	Ongoing Balancing: 1
0.1	1.1	System Monitoring	System OK: 1
0.2	1.2	Monitoring Balancing Time	Balancing Time exceeded: 0
0.3	1.3	Monitoring Unbalance Limit 1	Unbalance below Limit 1: 1 Unbalance above Limit 1: 0
0.4	1.4	Monitoring Unbalance Limit 2	Unbalance below Limit 2: 1 Unbalance above Limit 2: 0
0.5	1.5	Monitoring Speed Limit 1	Speed below Speed Limit 1: 1 Speed above Speed Limit 1: 0
0.6	1.6	Monitoring Speed Limit 2	Speed below Speed Limit 2: 1 Speed above Speed Limit 2: 0
0.7	1.7	reserved	Static 0
0.8	0.0	Monitoring Turn-off Threshold	Turn-off Threshold reached: 1
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

4.2.3 Truth Table to select the appropriate Memory Sets

NOTICE

During an ongoing balancing process, **NO** change of the Set Number is permitted! A change of the Set Number aborts immediately the function of balancing.

Selects Set No.	1.6	1.5	1.4	1.3
No change	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

4.3 Extension with Data Format H6000 3/1Word In/Out

From Module Software Version 1.1 or later

Project with »H6000 3/1Word In/Out«

Adding ▷ Highlight the data format »H6000 3/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

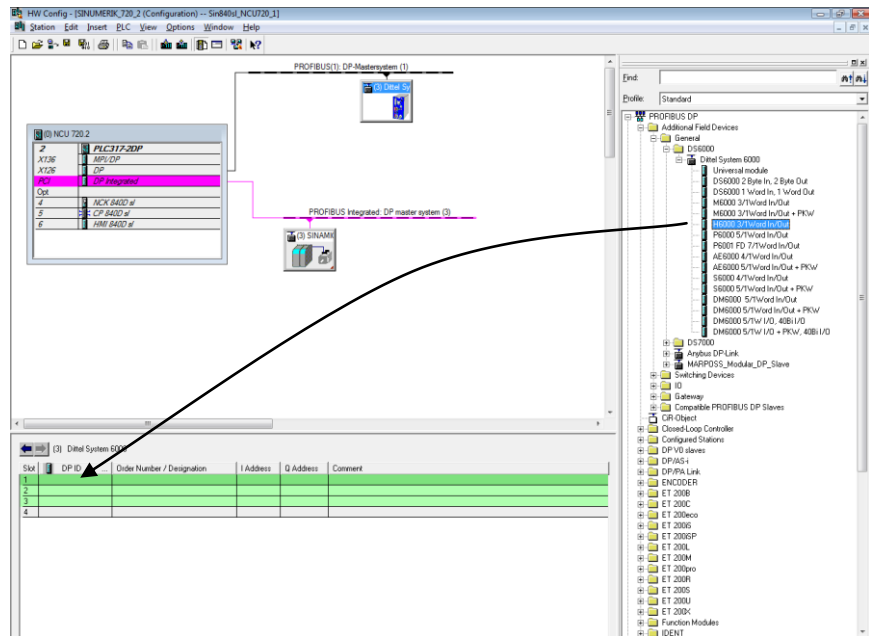


Figure 4-5 H6000 3/1Word In/Out

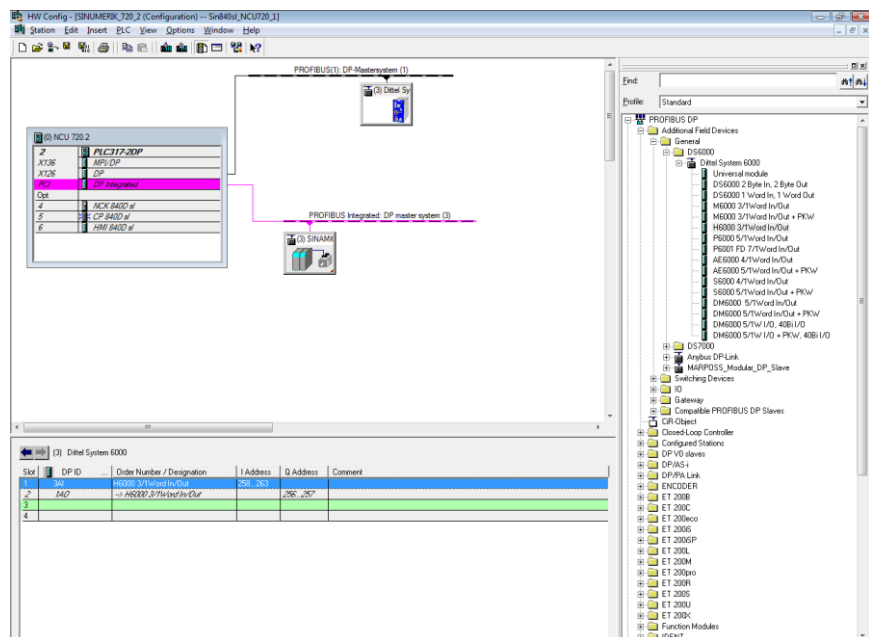


Figure 4-6 H6000 3/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »H6000 3/1Word In/Out«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Unbalance are found.

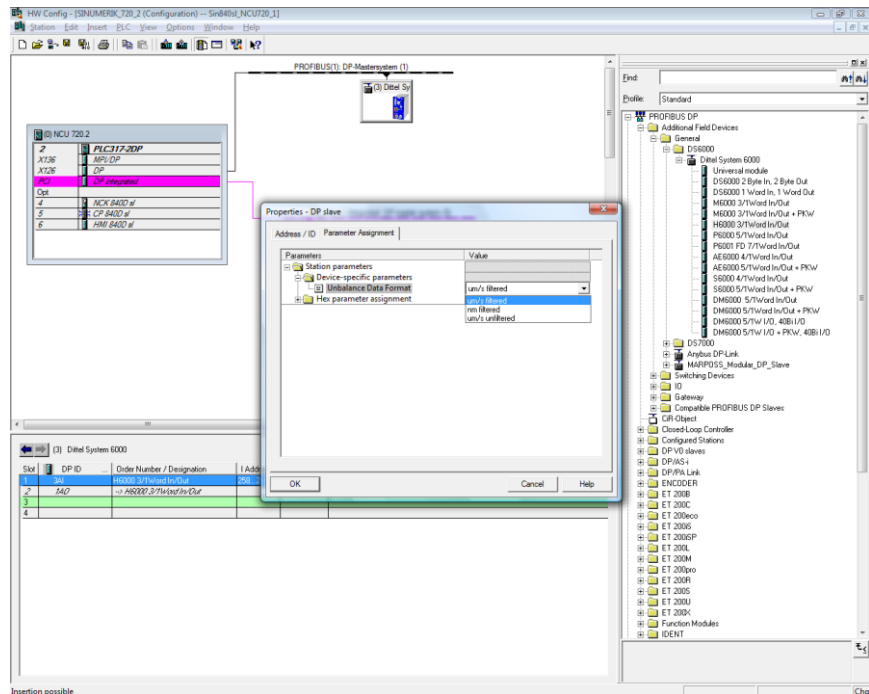


Figure 4-7

4.3.1 Automation System to Module H6000 / H6001

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 4.2.1, Automation System to Module H6000/H6001

4.3.2 Module H6000 / H6001 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 4.2.2, Module H6000/H6001 to Automation System
2	Revolutions per minute	short	Output of speed signal at maximum sampling rate
4	Unbalance	short	Output of Unbalance at maximum sampling rate • Unbalance Data Format, $\mu\text{m/s}$ filtered, as shown (filtered, 0 ... 1023 $\mu\text{m/s}$, current Offset) • Unbalance Data Format, nm filtered, as shown (filtered, (0 ... ca. 22000 nm current Offset) 0 when RPM < 300 1/min • Unbalance Data Format, $\mu\text{m/s}$ unfiltered, (unfiltered, (0 ... 1023 $\mu\text{m/s}$ Offset = 0) The choice is made while adjusting the parameters with the planning tool.

5 Module P6001

5.1 Commissioning PROFIBUS®

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

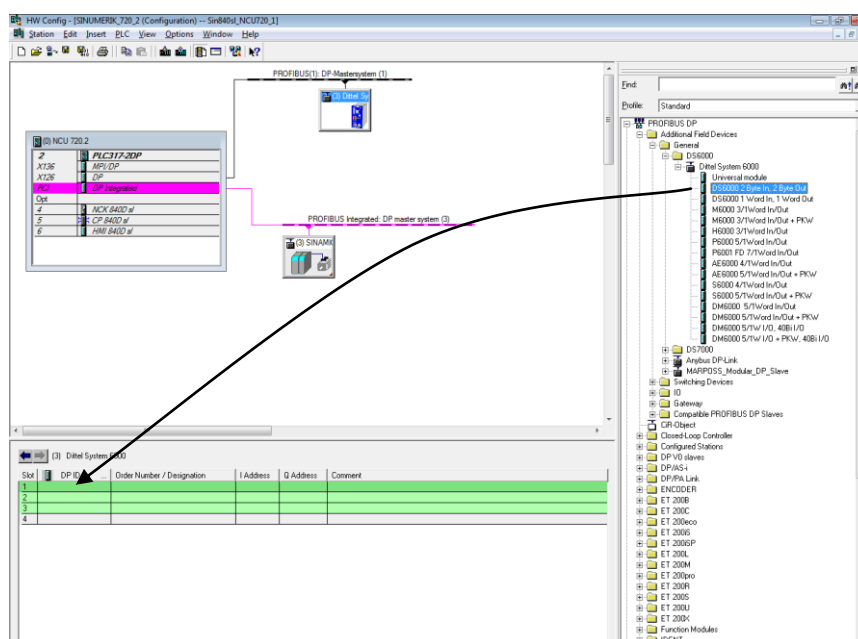


Figure 5-1 DS6000 2 Byte In, 2 Byte Out

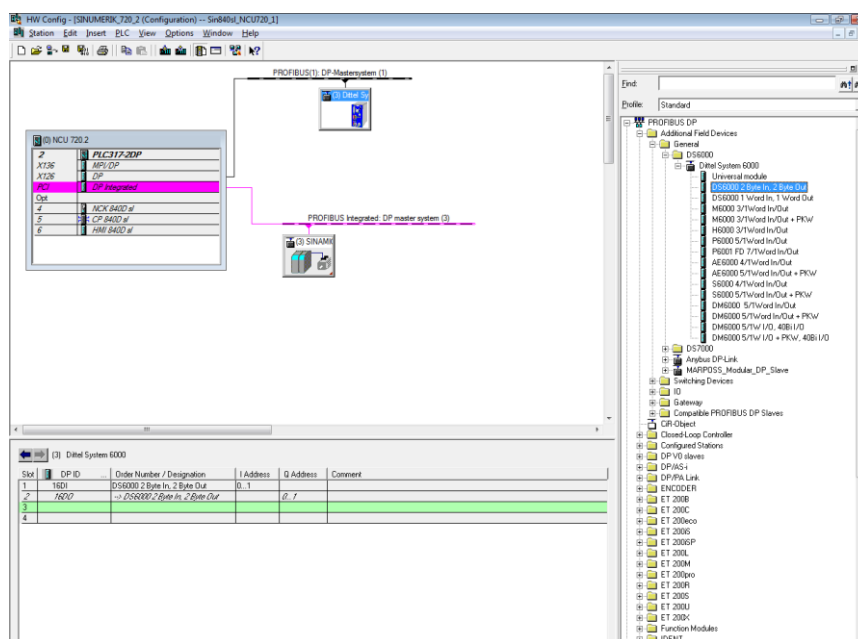


Figure 5-2 DS6000 2 Byte In, 2 Byte Out

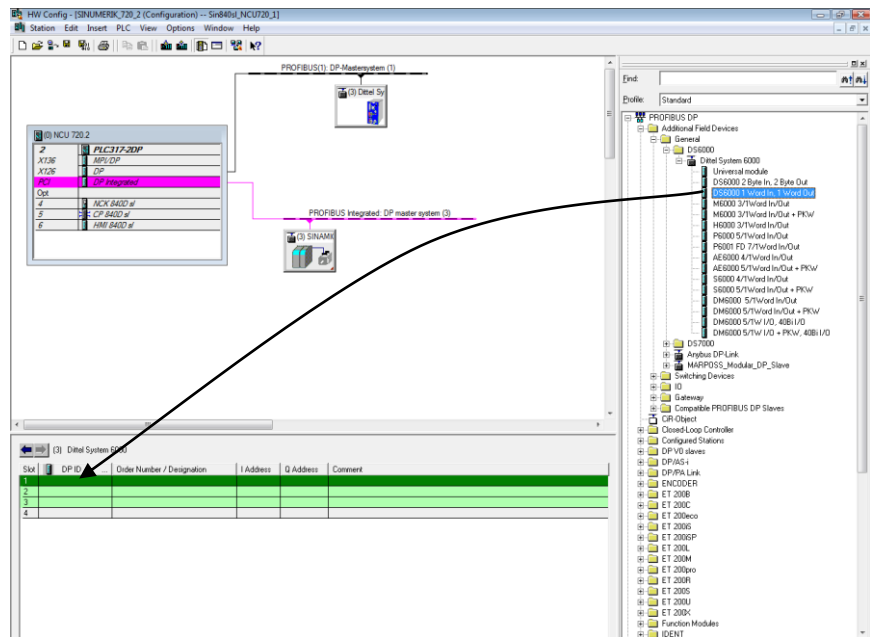


Figure 5-3 DS6000 1 Word In, 1 Word Out

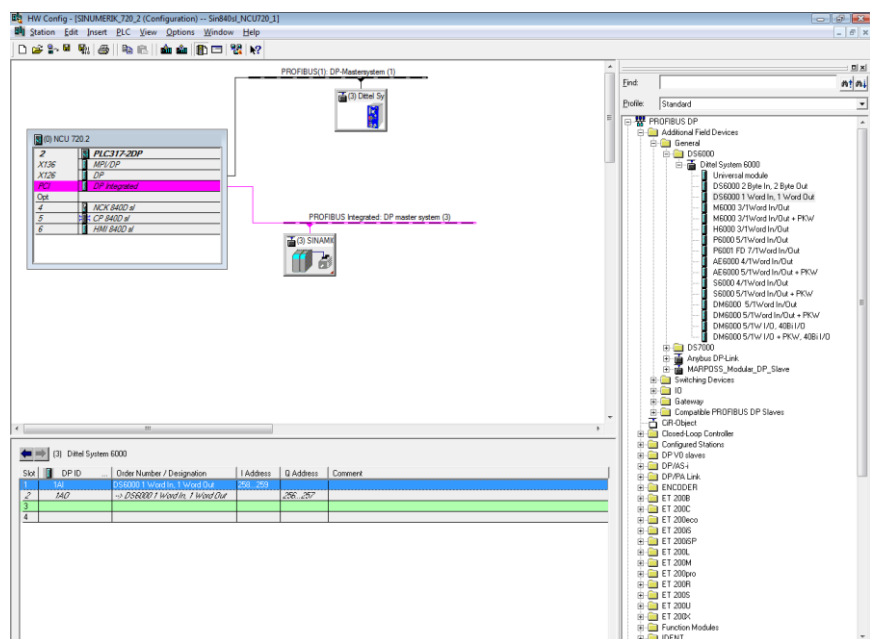


Figure 5-4 DS6000 1 Word In, 1 Word Out

5.2 Commissioning PROFINET®

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

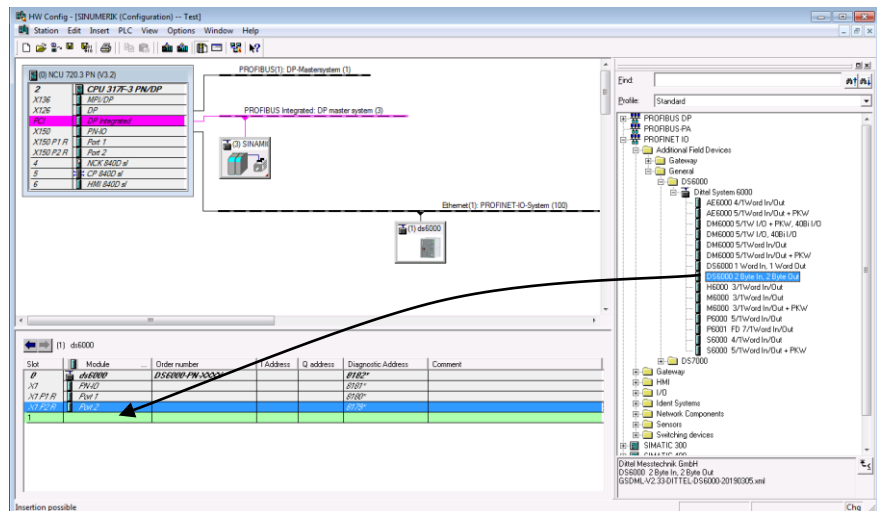


Figure 5-5 DS6000 2 Byte In, 2 Byte Out

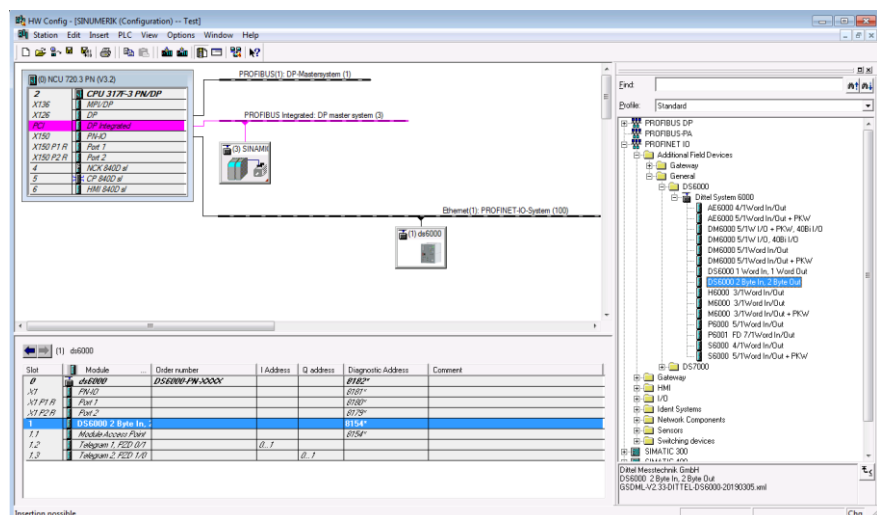


Figure 5-6 DS6000 2 Byte In, 2 Byte Out

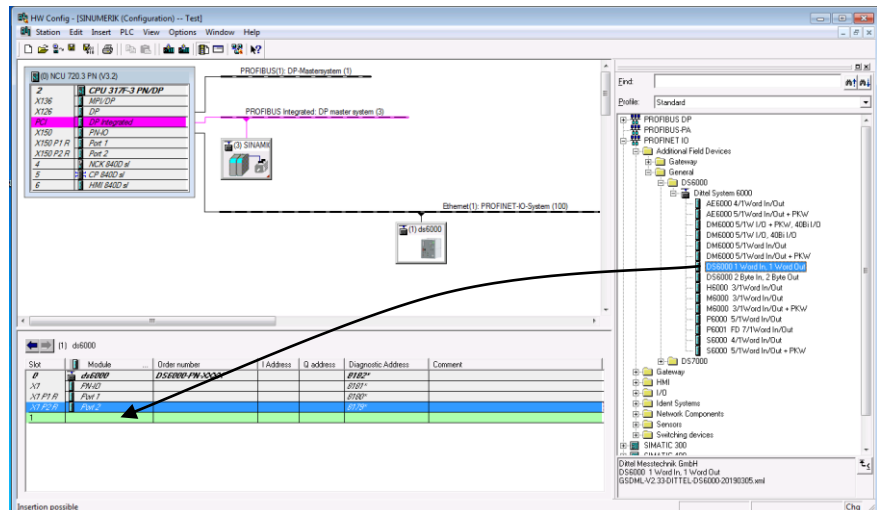


Figure 5-7 DS6000 1 Word In, 1 Word Out

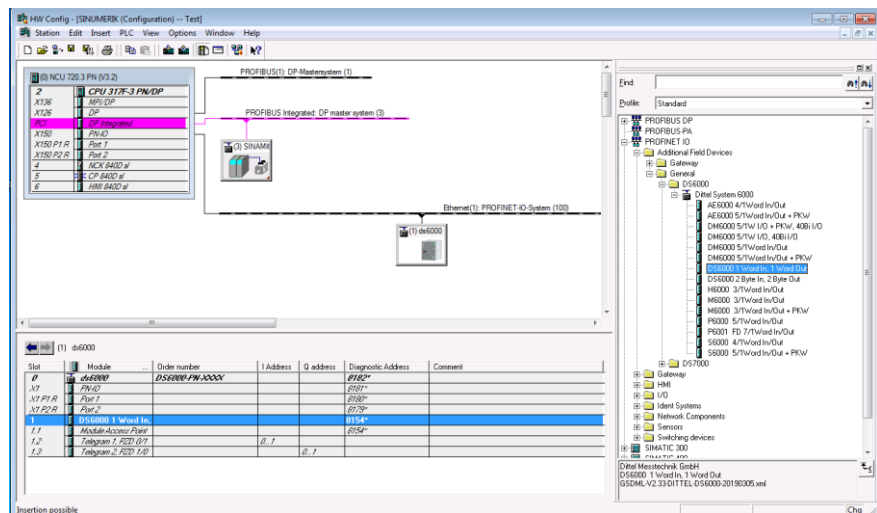


Figure 5-8 DS6000 1 Word In, 1 Word Out

5.3 Interface

5.3.1 Automation System to Module P6001

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.0	1.0	reserved	Static 0
0.1	1.1	reserved	Static 0
0.2	1.2	Operation via keys or buttons inhibited	Static 1: Operator actions on the PC or Automation System keyboard/Softkeys are disabled
0.3	1.3	Selects Set No. 1.3	see Truth Table 5.2.3
0.4	1.4	Selects Set No. 1.4	see Truth Table 5.2.3
0.5	1.5	Selects Set No. 1.5	see Truth Table 5.2.3
0.6	1.6	Selects Set No. 1.6	see Truth Table 5.2.3
0.7	1.7	reserved	Static 0
0.8	0.0	reserved	Static 0
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

Parallel Operation PROFIBUS®/PROFINET® with static Hardware Interface, connector # 2

In principle, parallel operation of the PROFIBUS®/PROFINET® with the Hardware Interface is possible. In this case the last change is executed, both on the Hardware Interface and PROFIBUS®/PROFINET® word 0.

An exception is the signal »**Operation via keys or buttons inhibited**«. The static and the PROFIBUS®/PROFINET® signal of this function are connected by logical **OR**.

5.3.2 Module P6001 to Automation System

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.0	1.0	reserved	Static 0
0.1	1.1	System Monitoring	Unbalance and Speed signal OK: 1
0.2	1.2	reserved	Static 0
0.3	1.3	Monitoring Unbalance Limit 1	Unbalance below Limit 1: 1 Unbalance above Limit 1: 0
0.4	1.4	Monitoring Unbalance Limit 2	Unbalance below Limit 2: 1 Unbalance above Limit 2: 0
0.5	1.5	Monitoring Speed Limit	Speed below Speed Limit: 1 Speed above Speed Limit: 0
0.6	1.6	reserved	Static 0
0.7	1.7	reserved	Static 0
0.8	0.0	reserved	Static 0
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	Confirms Set No. 0.3	see Truth Table 5.2.3
0.12	0.4	Confirms Set No. 0.4	see Truth Table 5.2.3
0.13	0.5	Confirms Set No. 0.5	see Truth Table 5.2.3
0.14	0.6	Confirms Set No. 0.6	see Truth Table 5.2.3
0.15	0.7	reserved	Static 0

5.3.3 Truth Table to select or confirm the appropriate Memory Sets

NOTICE

During an ongoing pre-balancing process, **NO** change of the Set Number is permitted! A change of the Set Number aborts immediately the function of pre-balancing.

Selects Set No./confirms Set No.	x.6	x.5	x.4	x.3
No change	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

5.4 Extension with Data Format »P6000 5/1Word In/Out«

5.4.1 PROFIBUS®

From Module Software Version 1.1 or later.

Project with »P6000 5/1Word In/Out«

Adding ▷ Highlight the data format »P6000 5/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

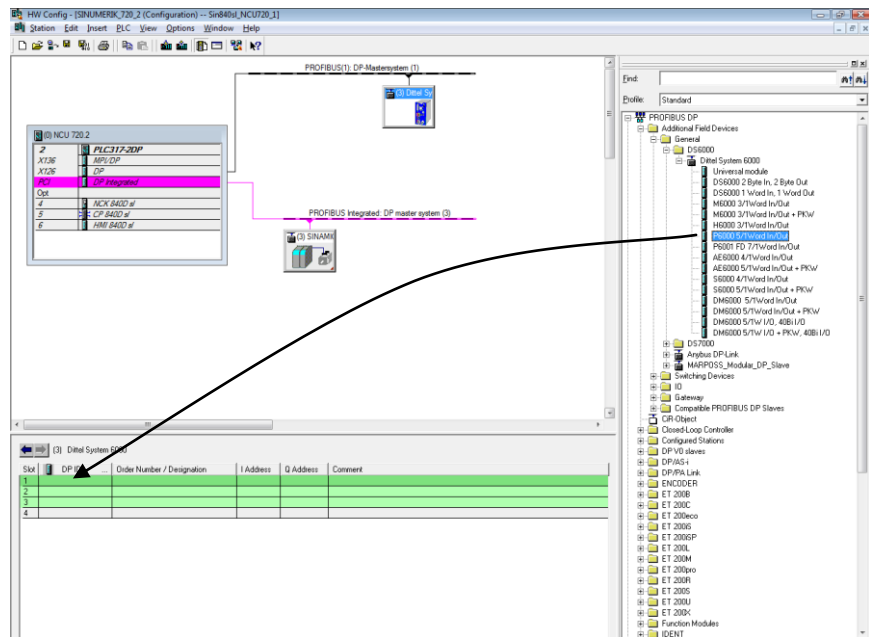


Figure 5-9 P6000 5/1Word In/Out

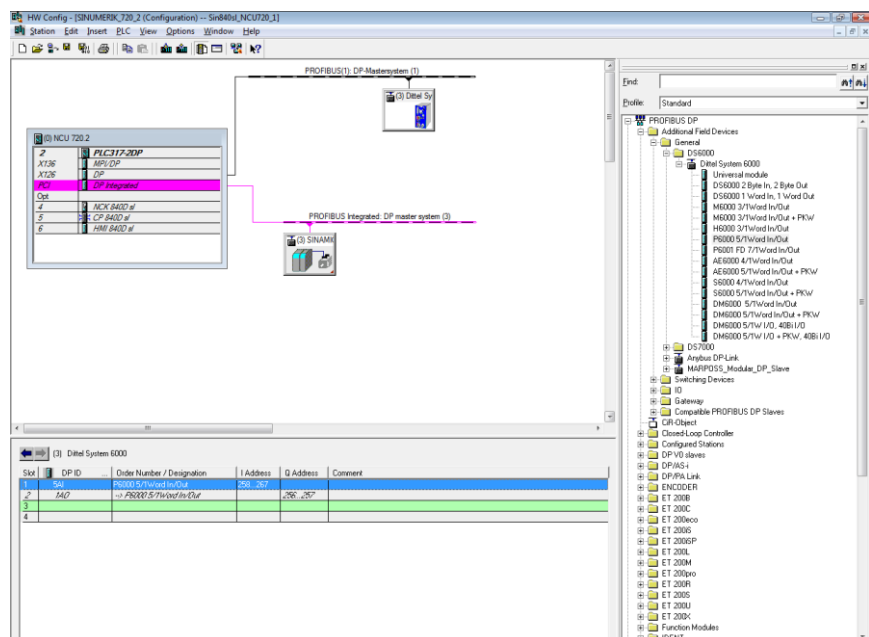


Figure 5-10 P6000 5/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »P6000 5/1Word In/Out«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »**Device-specific parameters**« the settings for the Unbalance are found.

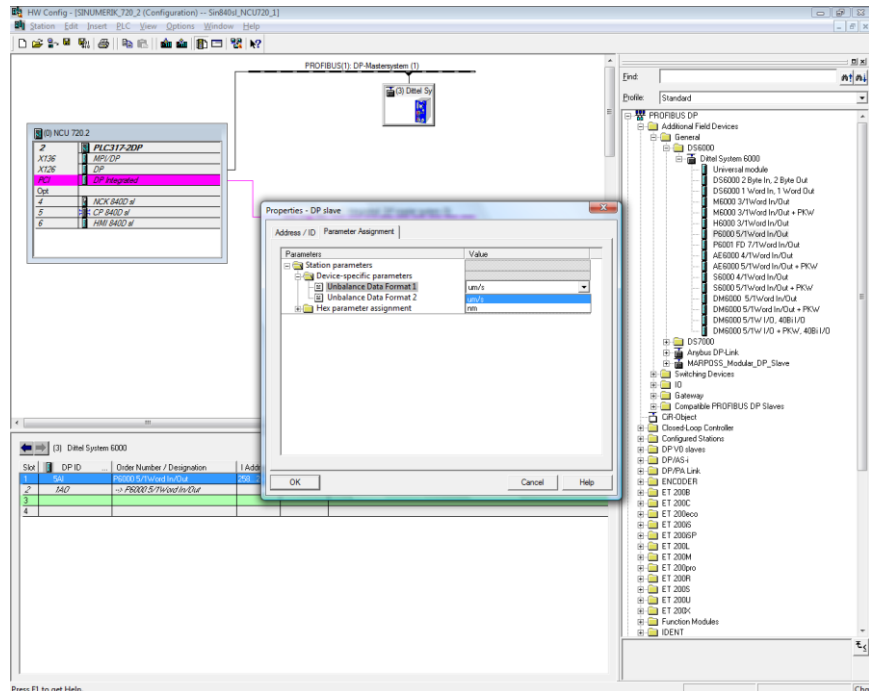


Figure 5-11

5.4.2 PROFINET®

Project with »P6000 5/1Word In/Out«

Adding ▷ Highlight the data format »P6000 5/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

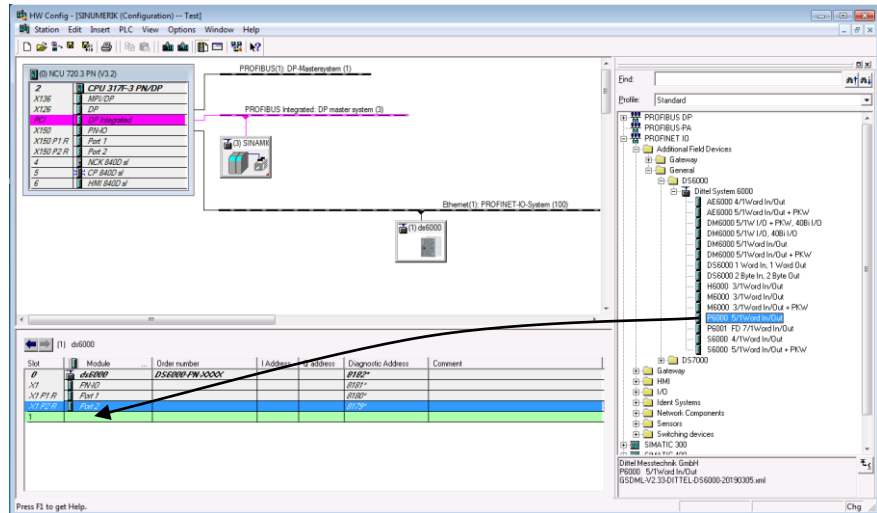


Figure 5-12 P6000 5/1Word In/Out

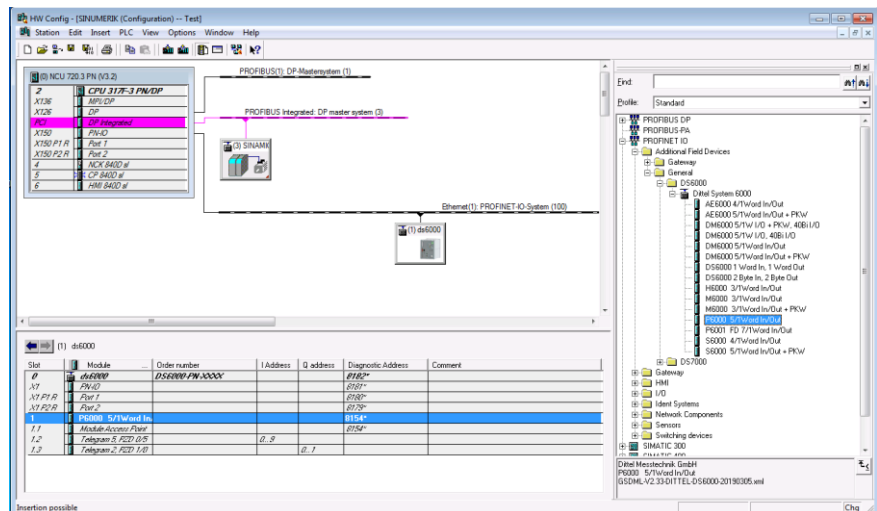


Figure 5-13 P6000 5/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Unbalance are found.

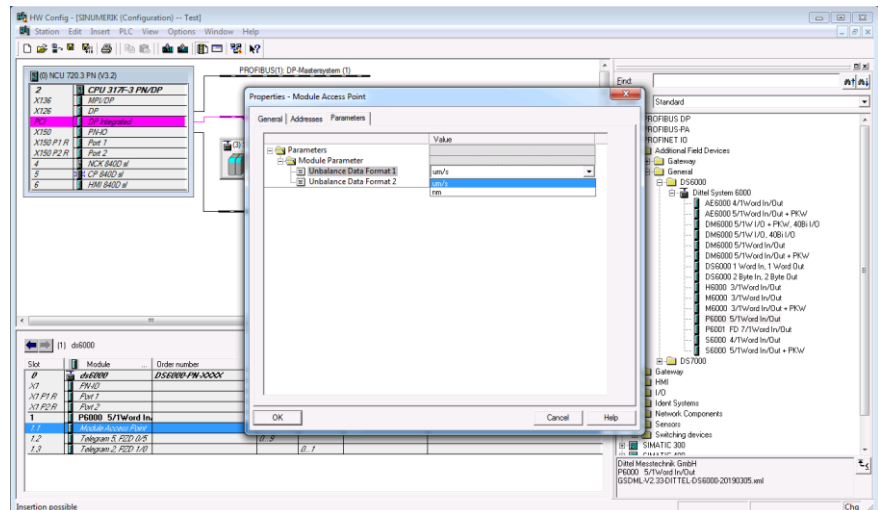


Figure 5-14

5.4.3 Automation System to Module P6001

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 5.2.1, Automation System to Module P6001

5.4.4 Module P6001 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 5.2.2, Module P6001 to Automation System
2	Revolutions per minute	short	Output of speed signal (maximum sampling rate) coming from Speed Sensor which belongs to Vibration Transducer Input # 18
4	Unbalance	short	Output of unbalance signal (maximum sampling rate) coming from Vibration Transducer Input # 18 (current Offset) • filtered (0 ... 1023 $\mu\text{m/s}$) • filtered (0 ... ca. 22000 nm) 0 when RPM < 300 1/min Module-Software 1.2: • filtered (0 ... 65534 (0xFFFFE) nm) 0xFFFF when Overflow The choice is made while adjusting the parameters (,Unbalance Data Format 1') with the planning tool.
6	reserved	short	Values are invalid
8	reserved	short	Values are invalid The selection with the planning tool is not effective while adjusting the parameters (,Unbalance Data Format 2').

6 Module P6002 (PROFIBUS® only)

6.1 Commissioning

- Adding ▶ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- ▶ The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

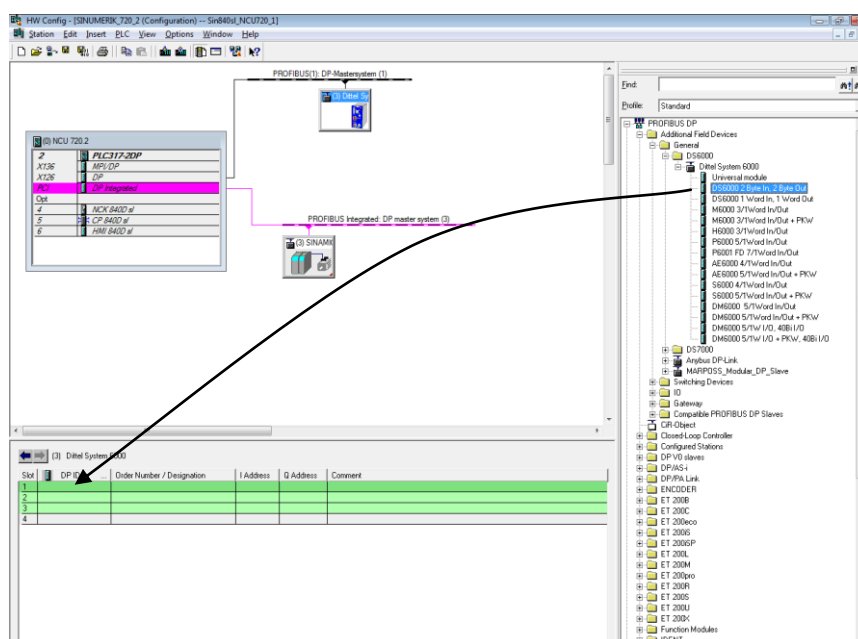


Figure 6-1 DS6000 2 Byte In, 2 Byte Out

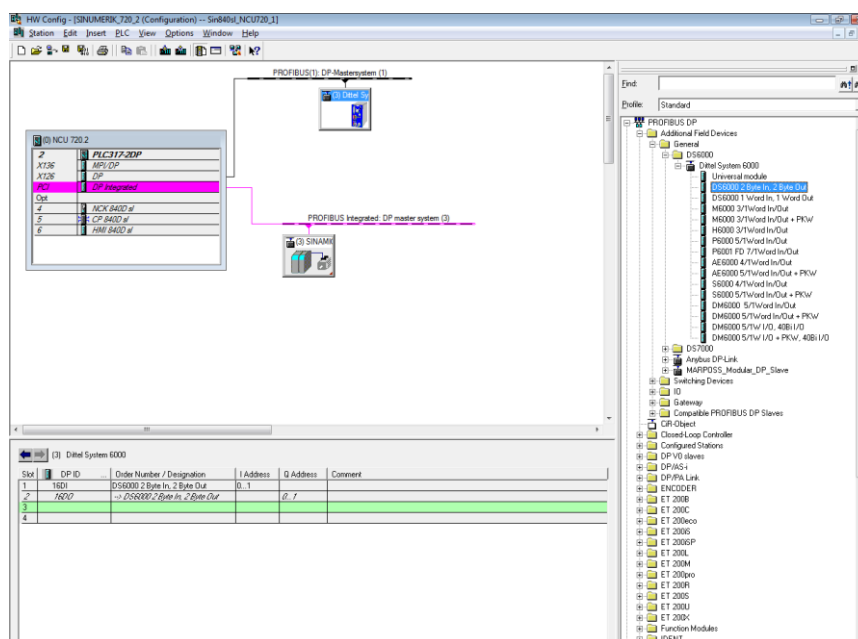


Figure 6-2 DS6000 2 Byte In, 2 Byte Out

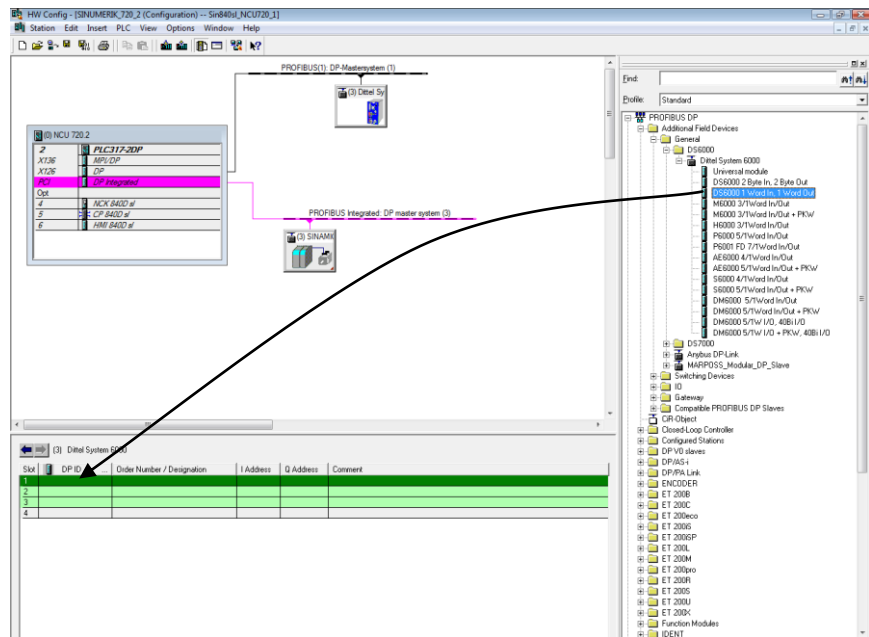


Figure 6-3 DS6000 1 Word In, 1 Word Out

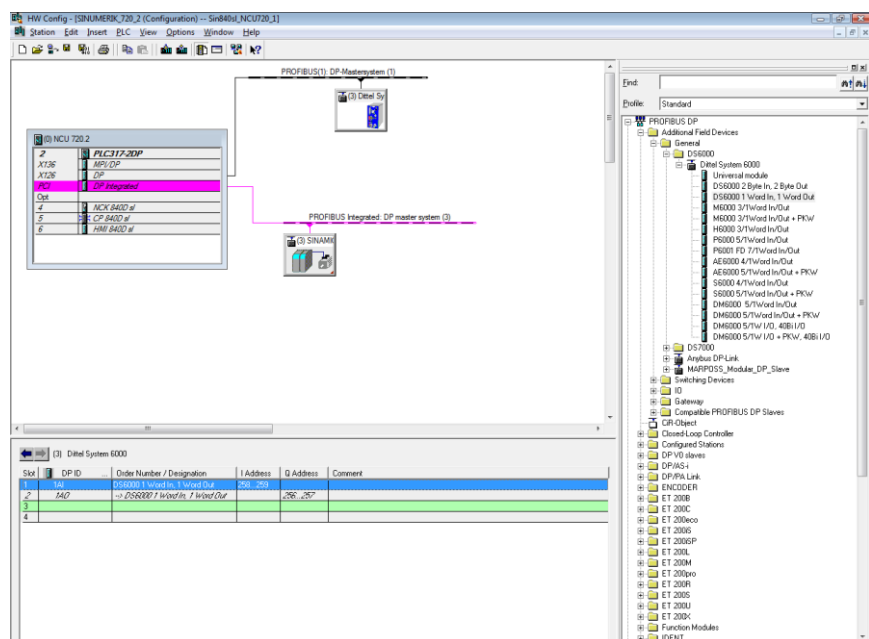


Figure 6-4 DS6000 1 Word In, 1 Word Out

6.2 Interface

6.2.1 Automation System to Module P6002

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.0	1.0	reserved	Static 0
0.1	1.1	reserved	Static 0
0.2	1.2	Operation via keys or buttons inhibited	Static 1: Operator actions on the PC or Automation System keyboard/Softkeys are disabled
0.3	1.3	Selects Set No. 1.3	see Truth Table 6.2.3
0.4	1.4	Selects Set No. 1.4	see Truth Table 6.2.3
0.5	1.5	Selects Set No. 1.5	see Truth Table 6.2.3
0.6	1.6	Selects Set No. 1.6	see Truth Table 6.2.3
0.7	1.7	reserved	Static 0
0.8	0.0	reserved	Static 0
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

Parallel Operation PROFIBUS® with static Hardware Interface, connector # 2:

In principle, parallel operation of the PROFIBUS® with the Hardware Interface is possible. In this case the last change is executed, both on the Hardware Interface and PROFIBUS® word 0.

An exception is the signal »**Operation via keys or buttons inhibited**«. The static and the PROFIBUS® signal of this function are connected by logical **OR**.

6.2.2 Module P6002 to Automation System

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.0	1.0	reserved	Static 0
0.1	1.1	System Monitor 1: Vibration Transducer Input 18 and belonging Speed Sensor Input	Unbalance and Speed signal OK: 1
0.2	1.2	System Monitoring 2: Vibration Transducer Input 28 and belonging Speed Sensor Input	Unbalance and Speed signal OK: 1
0.3	1.3	Monitoring Unbalance Limit 1: Vibration Transducer Input 18	Unbalance below Limit 1: 1 Unbalance above Limit 1: 0
0.4	1.4	Monitoring Unbalance Limit 2: Vibration Transducer Input 18	Unbalance below Limit 2: 1 Unbalance above Limit 2: 0
0.5	1.5	Speed signal coming from Speed Sensor which belongs to Vibration Transducer Input 18	Speed below Speed Limit: 1 Speed above Speed Limit: 0
0.6	1.6	Speed signal coming from Speed Sensor which belongs to Vibration Transducer Input 28	Speed below Speed Limit: 1 Speed above Speed Limit: 0
0.7	1.7	Monitoring Unbalance Limit 1: Vibration Transducer Input 28	Unbalance below Limit 1: 1 Unbalance above Limit 1: 0
0.8	0.0	reserved	Static 0
0.9	0.1	Monitoring Unbalance Limit 2: Vibration Transducer Input 28	Unbalance below Limit 2: 1 Unbalance above Limit 2: 0
0.10	0.2	reserved	Static 0
0.11	0.3	Confirms Set No. 0.3	see Truth Table 6.2.3
0.12	0.4	Confirms Set No. 0.4	see Truth Table 6.2.3
0.13	0.5	Confirms Set No. 0.5	see Truth Table 6.2.3
0.14	0.6	Confirms Set No. 0.6	see Truth Table 6.2.3
0.15	0.7	reserved	Static 0

6.2.3 Truth Table to select or confirm the appropriate Memory Set

NOTICE

During an ongoing pre-balancing process, **NO** change of the Set Number is permitted! A change of the Set Number aborts immediately the function of pre-balancing.

Selects Set No./confirms Set No.	x.6	x.5	x.4	x.3
No change	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

6.3 Extension with Data Format »P6000 5/1Word In/Out«

From Module Software Version 1.1 or later.

Project with »P6000 5/1Word In/Out«

Adding ▷ Highlight the data format »P6000 5/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

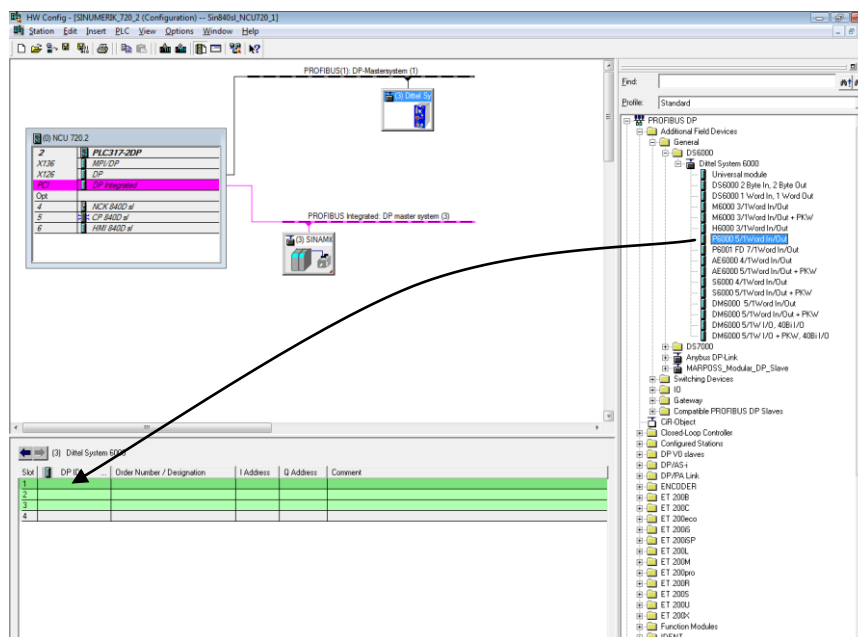


Figure 6-5 P6000 5/1Word In/Out

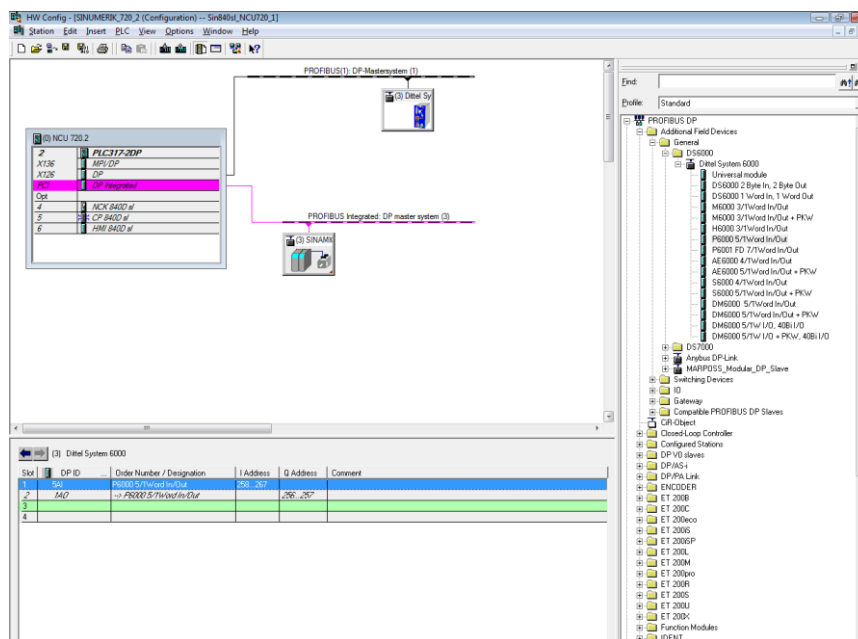


Figure 6-6 P6000 5/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »P6000 5/1Word In/Out«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »**Device-specific parameters**« the settings for the Unbalance are found.

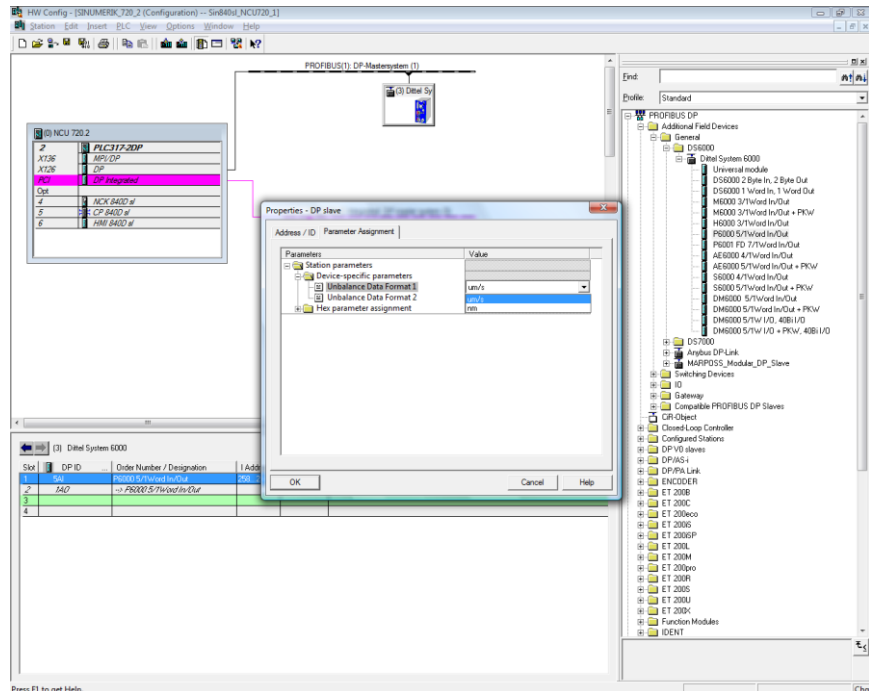


Figure 6-7

6.3.1 Automation System to Module P6002

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 6.2.1, Automation System to Module P6002

6.3.2 Module P6002 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 6.2.2, Module P6002 to Automation System
2	Rev per minute 1	short	Output of speed signal (maximum sampling rate) coming from Speed Sensor which belongs to Vibration Transducer Input # 18
4	Unbalance 1	short	Output of unbalance signal (maximum sampling rate) coming from Vibration Transducer Input # 18 (current Offset) • filtered (0 ... 1023 $\mu\text{m/s}$) • filtered (0 ... ca. 22000 nm) 0 when RPM < 300 1/min Module-Software 1.2: • filtered (0 ... 65534 (0xFFFFE) nm) 0xFFFF when Overflow The choice is made while adjusting the parameters (,Unbalance Data Format 1') with the planning tool.
6	Rev per minute 2	short	Output of speed signal (maximum sampling rate) coming from Speed Sensor which belongs to Vibration Transducer Input # 28
8	Unbalance 2	short	Output of unbalance signal (maximum sampling rate) coming from Vibration Transducer Input # 28 (current Offset). • filtered (0 ... 1023 $\mu\text{m/s}$) • filtered (0 ... ca. 22000 nm) 0 when RPM < 300 1/min Module-Software 1.2: • filtered (0 ... 65534 (0xFFFFE) nm) 0xFFFF when Overflow The choice is made while adjusting the parameters (,Unbalance Data Format 2') with the planning tool.

7 Module P6001 FD

7.1 Commissioning PROFIBUS®

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

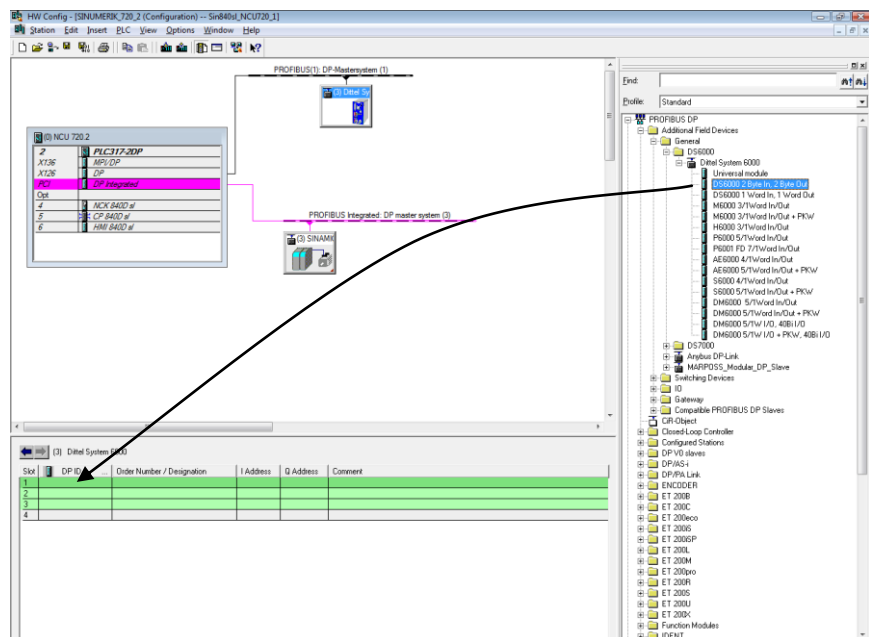


Figure 7-1 DS6000 2 Byte In, 2 Byte Out

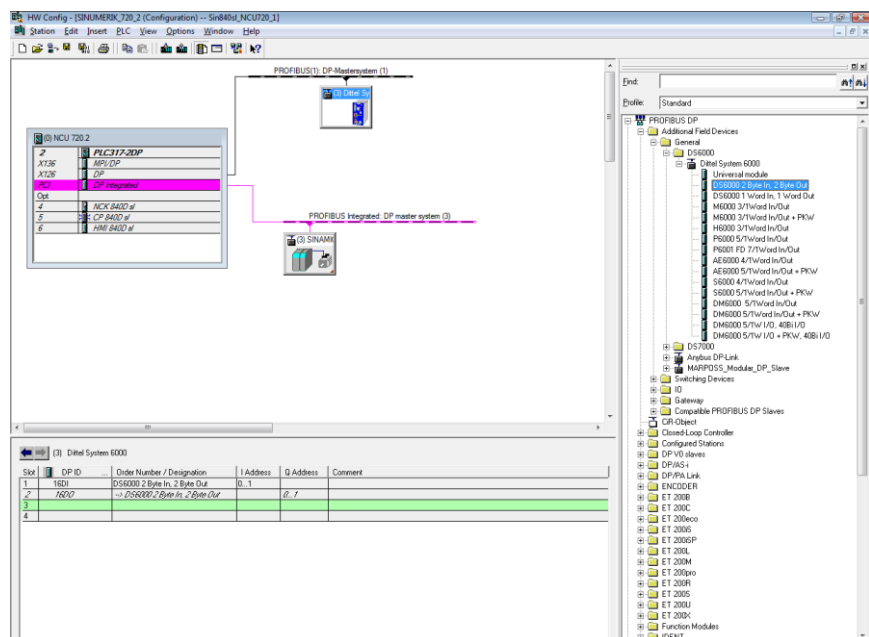


Figure 7-2 DS6000 2 Byte In, 2 Byte Out

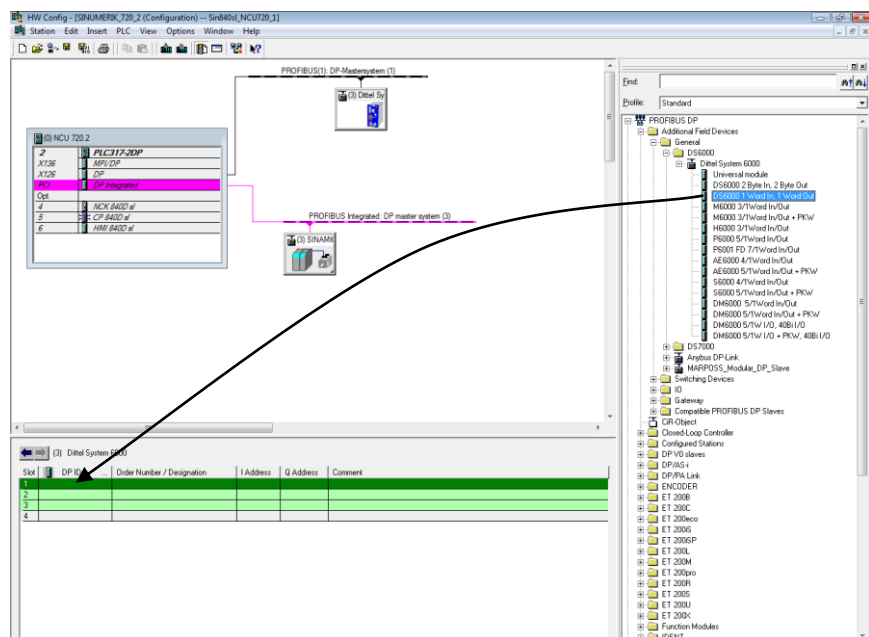


Figure 7-3 DS6000 1 Word In, 1 Word Out

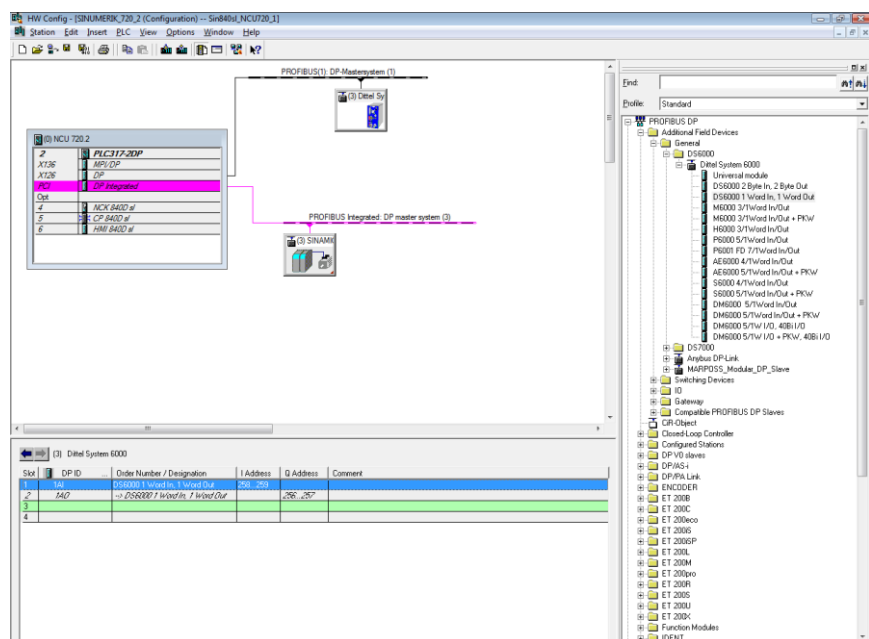


Figure 7-4 DS6000 1 Word In, 1 Word Out

7.2 Commissioning PROFINET®

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

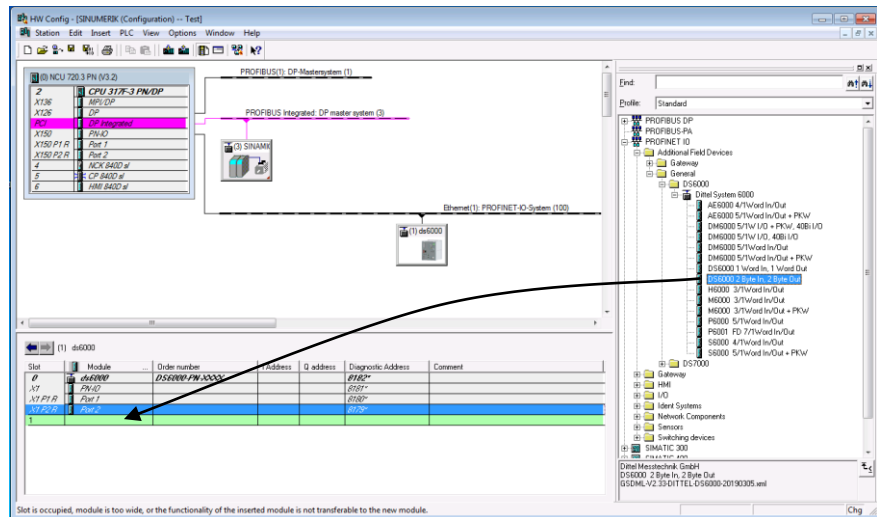


Figure 7-5 DS6000 2 Byte In, 2 Byte Out

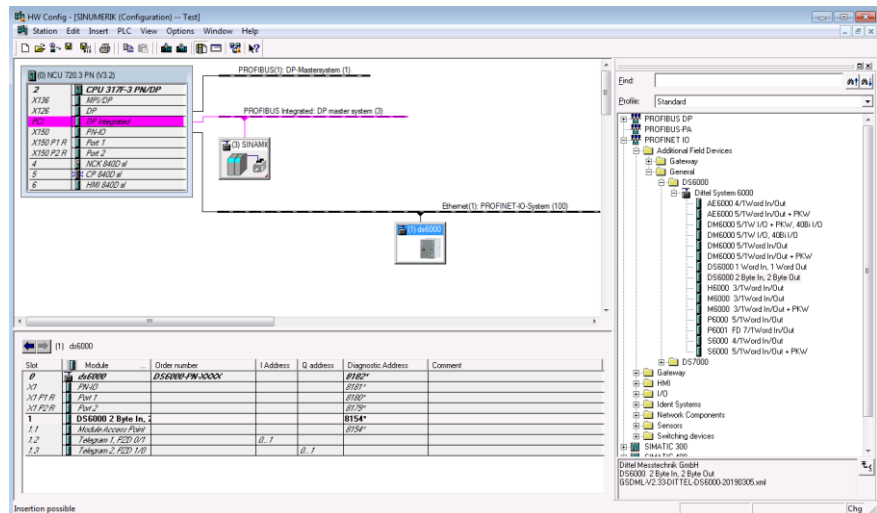
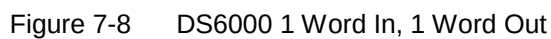
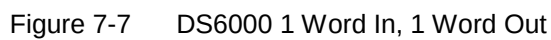


Figure 7-6 DS6000 2 Byte In, 2 Byte Out



7.3 Interface

7.3.1 Automation System to Module P6001FD

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.0	1.0	reserved	Static 0
0.1	1.1	reserved	Static 0
0.2	1.2	Operation via keys or buttons inhibited	Static 1: Operator actions on the PC or Automation System keyboard/Softkeys are disabled
0.3	1.3	Selects Set No. 1.3	see Truth Table 7.2.3
0.4	1.4	Selects Set No. 1.4	see Truth Table 7.2.3
0.5	1.5	Selects Set No. 1.5	see Truth Table 7.2.3
0.6	1.6	Selects Set No. 1.6	see Truth Table 7.2.3
0.7	1.7	reserved	Static 0
0.8	0.0	reserved	Static 0
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

Parallel Operation PROFIBUS®/PROFINET® with static Hardware Interface, connector # 2:

In principle, parallel operation of the PROFIBUS®/PROFINET® with the Hardware Interface is possible. In this case the last change is executed, both on the Hardware Interface and PROFIBUS®/PROFINET® word 0.

An exception is the signal »**Operation via keys or buttons inhibited**«. The static and the PROFIBUS®/PROFINET® signal of this function are connected by logical **OR**.

7.3.2 Module P6001FD to Automation System

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.0	1.0	reserved	Static 0
0.1	1.1	System Monitoring	Unbalance and Speed signal OK: 1
0.2	1.2	reserved	Static 0
0.3	1.3	Monitoring Unbalance Limit 1	Unbalance below Limit 1: 1 Unbalance above Limit 1: 0
0.4	1.4	Monitoring Unbalance Limit 2	Unbalance below Limit 2: 1 Unbalance above Limit 2: 0
0.5	1.5	Monitoring Speed Limit	Speed below Speed Limit: 1 Speed above Speed Limit: 0
0.6	1.6	reserved	Static 0
0.7	1.7	reserved	Static 0
0.8	0.0	reserved	Static 0
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	Confirms Set No. 0.3	see Truth Table 7.2.3
0.12	0.4	Confirms Set No. 0.4	see Truth Table 7.2.3
0.13	0.5	Confirms Set No. 0.5	see Truth Table 7.2.3
0.14	0.6	Confirms Set No. 0.6	see Truth Table 7.2.3
0.15	0.7	reserved	Static 0

7.3.3 Truth Table to select or confirm the appropriate Memory Sets

NOTICE

During an ongoing pre-balancing process, **NO** change of the Set Number is permitted! A change of the Set Number aborts immediately the function of pre-balancing.

Selects Set No./confirms Set No.	x.6	x.5	x.4	x.3
No change	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

7.4 Extension with Data Format »P6000 5/1Word In/Out«

7.4.1 PROFIBUS®

From Module Software Version 1.2 or later.

Project with »P6000 5/1Word In/Out«

Adding ▷ Highlight the data format »P6000 5/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

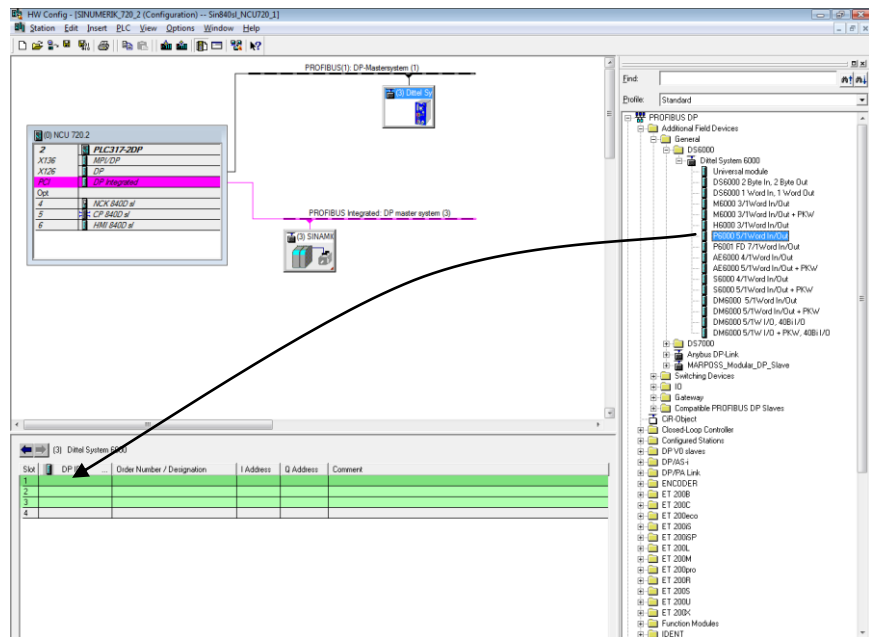


Figure 7-9 P6000 5/1Word In/Out

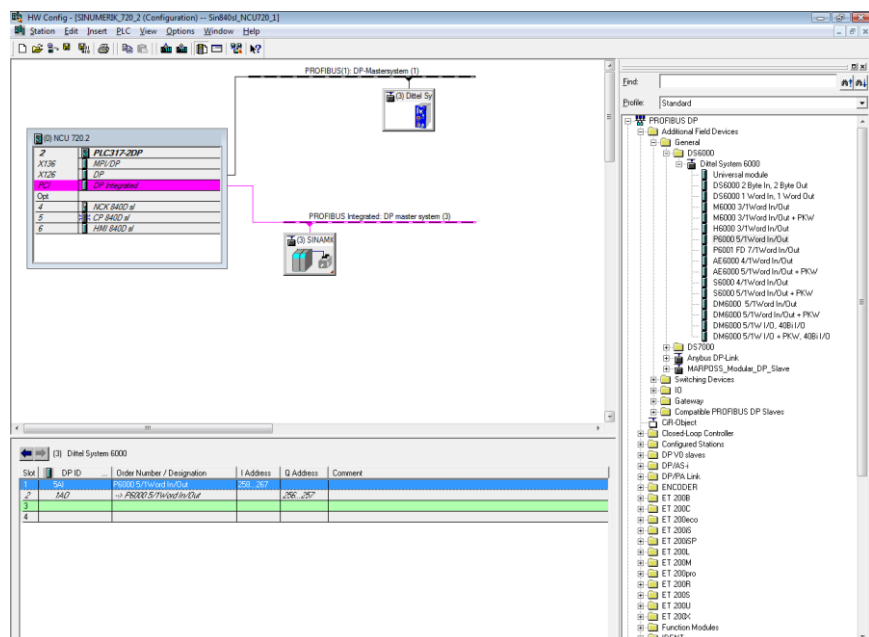


Figure 7-10 P6000 5/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »P6000 5/1Word In/Out«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Unbalance are found.

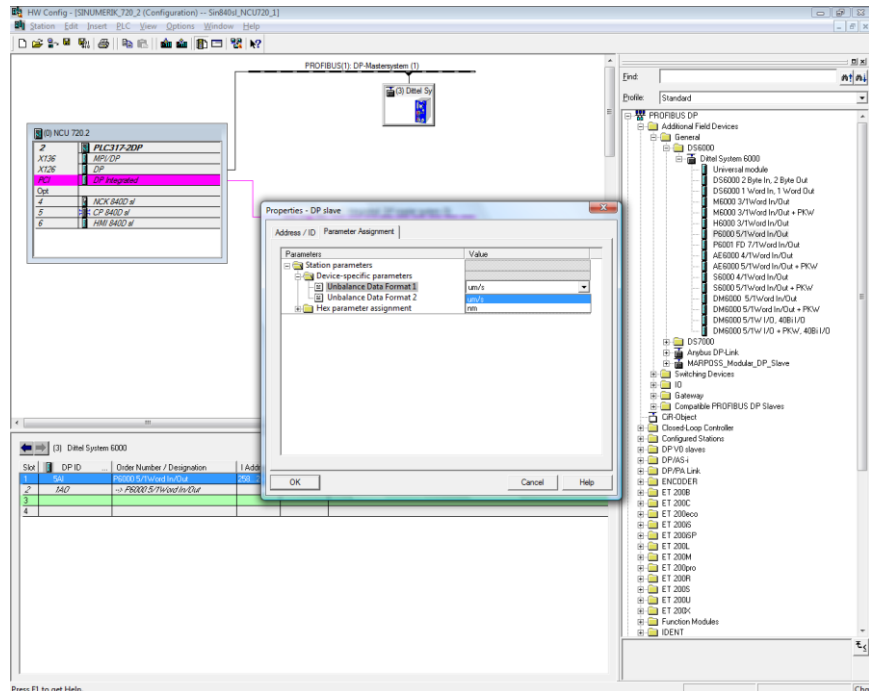


Figure 7-11

7.4.2 PROFINET®

Project with »P6000 5/1Word In/Out«

Adding ▷ Highlight the data format »P6000 5/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

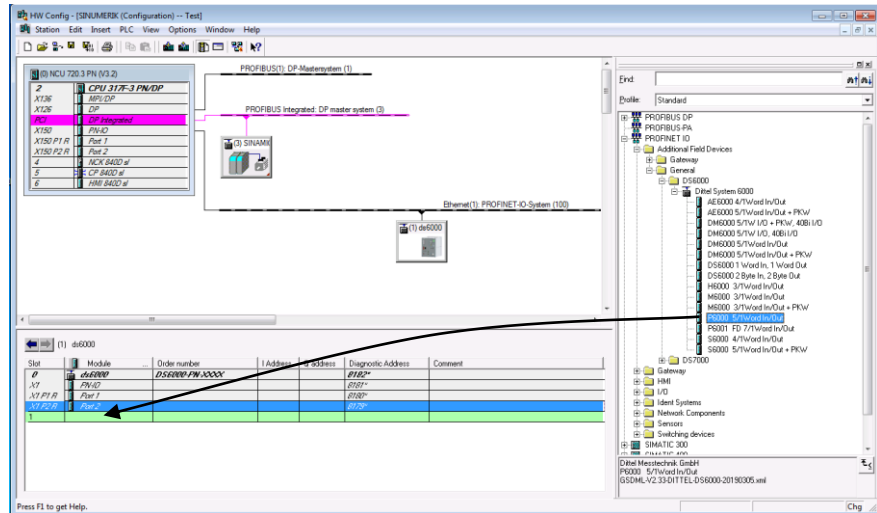


Figure 7-12 P6000 5/1Word In/Out

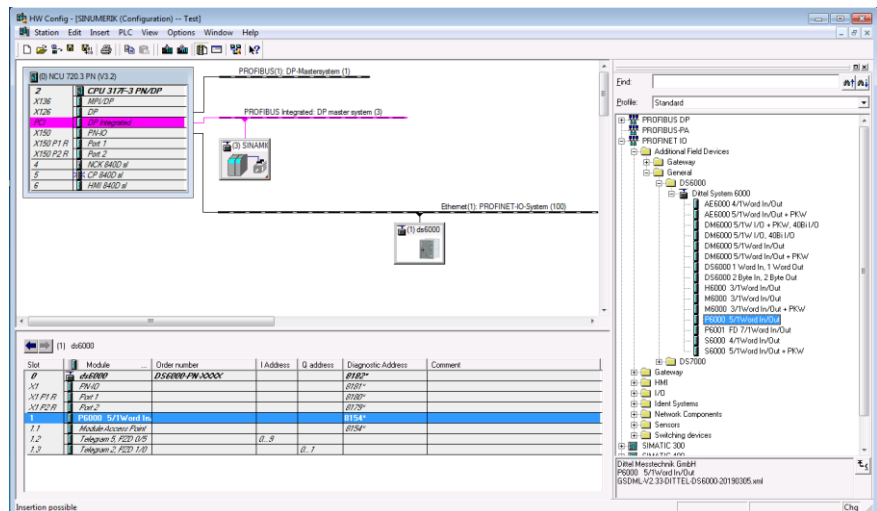


Figure 7-13 P6000 5/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Unbalance are found.

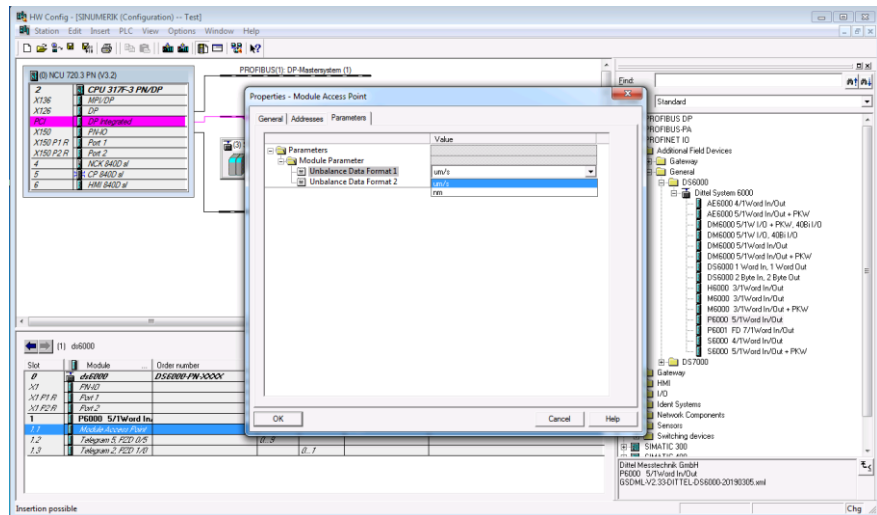


Figure 7-14

7.4.3 Automation System to Module P6001FD

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 7.2.1, Automation System to Module P6001FD

7.4.4 Module P6001FD to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 7.2.2, Module P6001FD to Automation System
2	Rev per minute 1	short	Output of speed signal (maximum sampling rate) coming from Speed Sensor which belongs to Vibration Transducer Input # 18
4	Unbalance 1	short	Output of unbalance signal (maximum sampling rate) coming from Vibration Transducer Input # 18 (current Offset) • filtered (0 ... 1023 $\mu\text{m/s}$) • filtered (0 ... 65534 (0xFFFE) nm) 0xFFFF when Overflow The choice is made while adjusting the parameters (,Unbalance Data Format 1') with the planning tool.
6	unused From Module Software Version 1.2 build number 0.14 or later: Status 1	short	0 Bit 0: 1 when Vibration Transducer is faulty Bit 1: 1 when actual RPM is outside the permitted RPM range Bit 2: reserved Bit 3: 1 when 'Out of Lock' Bit 4: 1 when Speed Sensor switches
8	Unbalance 1	short	Output of unbalance signal (maximum sampling rate) coming from Vibration Transducer Input # 18 (Offset = 0) • unfiltered (0 ... 1023 $\mu\text{m/s}$) The selection is not effective while adjusting the parameters (,Unbalance Data Format 2') with the planning tool.

7.5 Extension with Data Format »P6001 FD 7/1Word In/Out«

7.5.1 PROFIBUS®

From Module Software Version 1.2, build number 0.14 and GSD file Version 1.5.

Project with »P6001 FD 7/1Word In/Out«

Adding ▷ Highlight the data format »P6001 FD 7/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

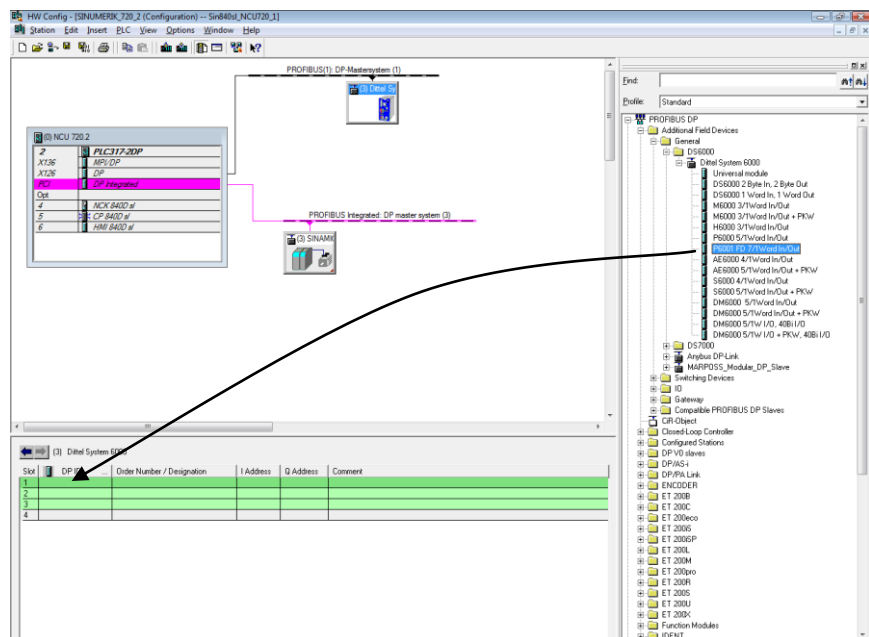


Figure 7-15 P6001 FD 7/1Word In/Out

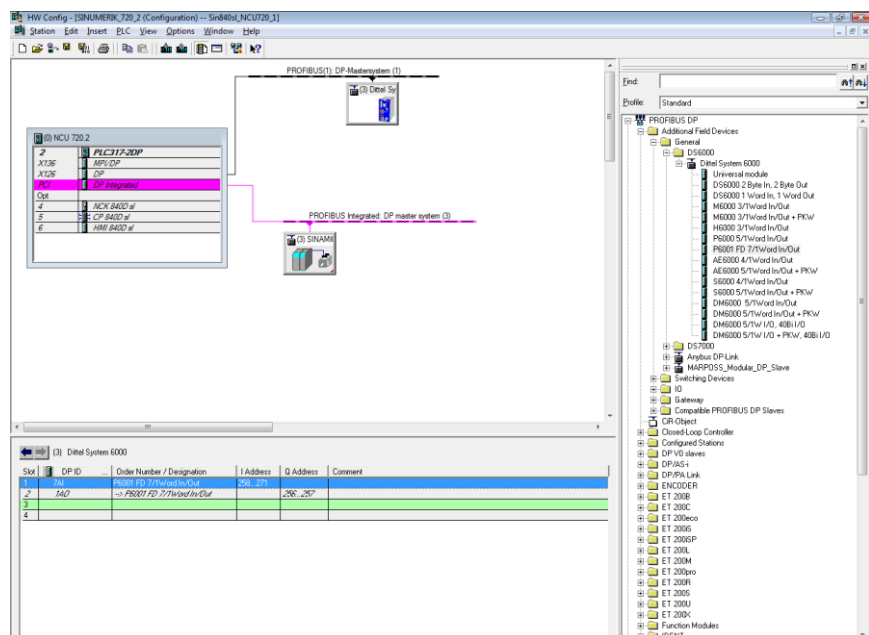


Figure 7-16 P6001 FD 7/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »P6001 7/1Word In/Out«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »**Device-specific parameters**« the settings for the Unbalance are found.

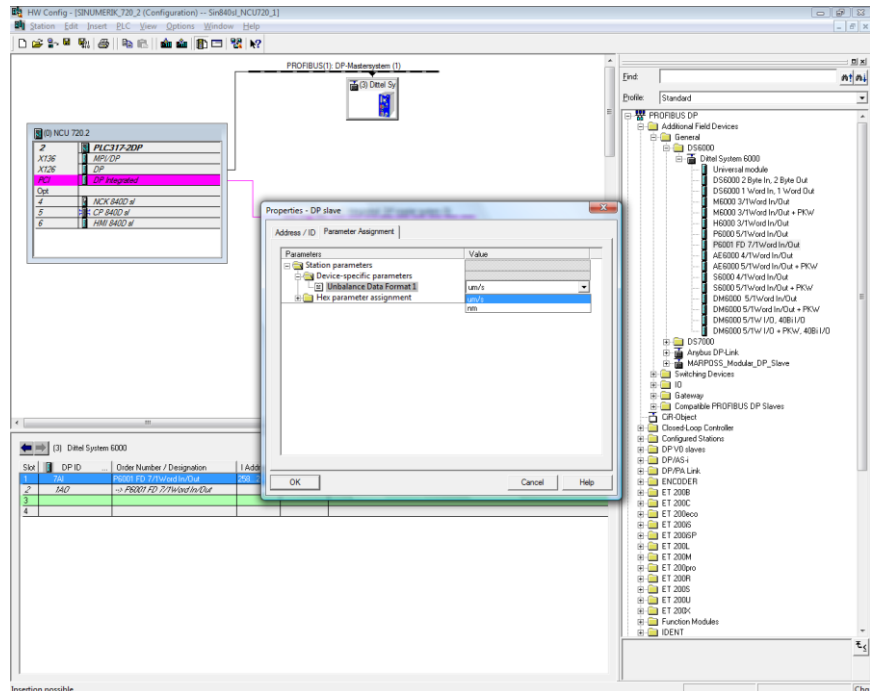


Figure 7-17 P6001 FD 7/1Word In/Out

7.5.2 PROFINET®

Project with »P6001 FD 7/1Word In/Out«

- Adding ▷ Highlight the data format »P6001 FD 7/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

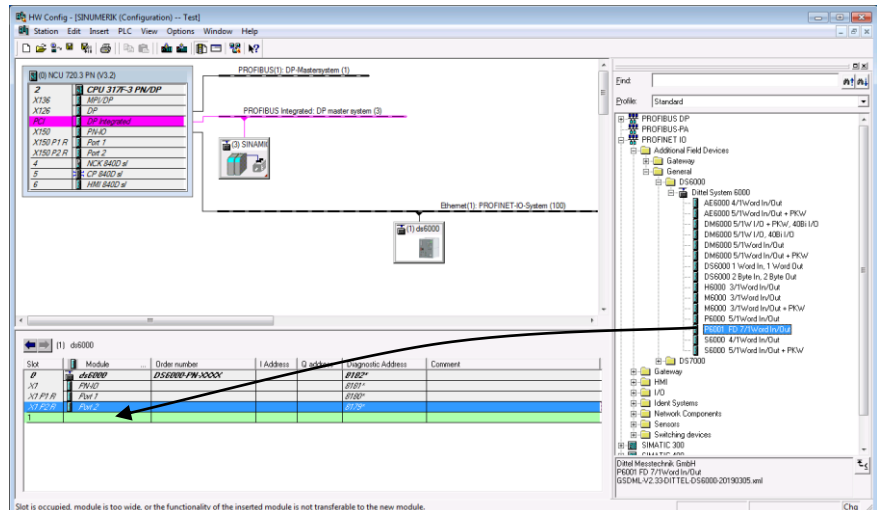


Figure 7-18 P6001 FD 7/1Word In/Out

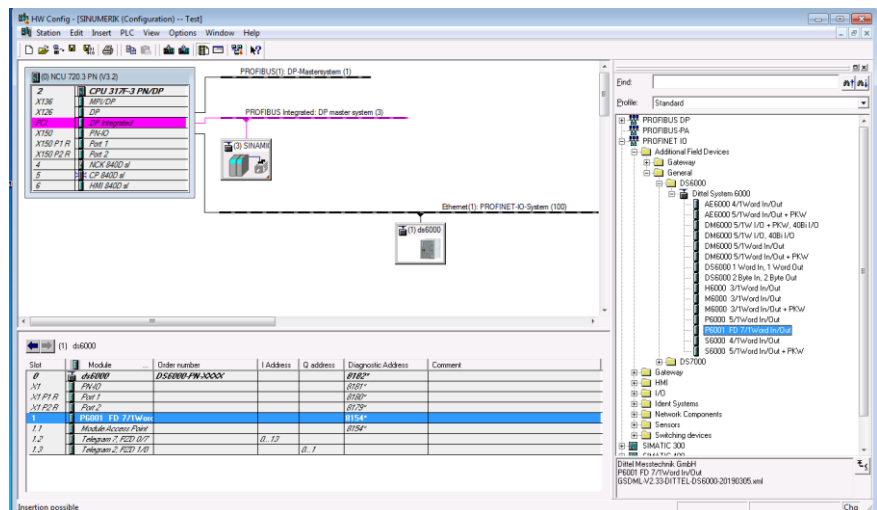


Figure 7-19 P6001 FD 7/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Unbalance are found.

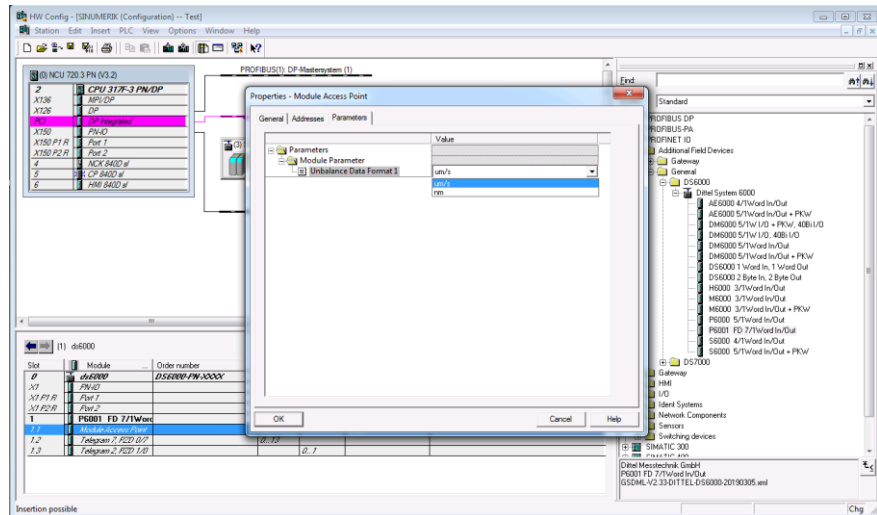


Figure 7-20 P6001 FD 7/1Word In/Out

7.5.3 Automation System to Module P6001FD

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 7.2.1, Automation System to Module P6001FD

7.5.4 Module P6001FD to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 7.2.2, Module P6001FD to Automation System
2	Rev per minute 1	short	Output of speed signal (maximum sampling rate) coming from Speed Sensor which belongs to Vibration Transducer Input # 18
4	Unbalance 1	short	Output of unbalance signal (maximum sampling rate) coming from Vibration Transducer Input # 18 (current Offset) • filtered (0 ... 1023 $\mu\text{m/s}$) • filtered (0 ... 65534 (0xFFFFE) nm) 0xFFFF when Overflow The choice is made while adjusting the parameters (,Unbalance Data Format 1') with the planning tool.
6	Status 1	short	Bit 0: 1 when Vibration Transducer is faulty Bit 1: 1 when actual RPM is outside the permitted RPM range Bit 2: reserved Bit 3: 1 when 'Out of Lock' Bit 4: 1 when Speed Sensor switches
8	Unbalance 1	short	Output of unbalance signal (maximum sampling rate) coming from Vibration Transducer Input # 18 (Offset = 0) unfiltered (0 ... 1023 $\mu\text{m/s}$)
10	Unbalance 1 X coordinate	short	Output of the unbalance X coordinate (max. sampling rate) in two's complement -1023 ... + 1023 $\mu\text{m/s}$
12	Unbalance 1 Y coordinate	short	Output of the unbalance Y coordinate (max. sampling rate) in two's complement -1023 ... + 1023 $\mu\text{m/s}$

8 Module AE6000 / AE6001

8.1 Commissioning PROFIBUS®

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

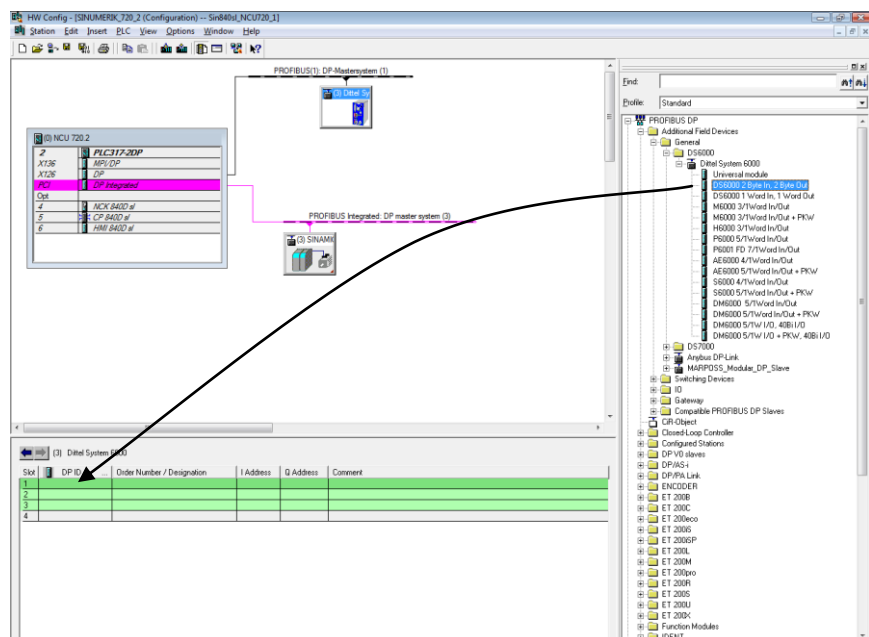


Figure 8-1 DS6000 2 Byte In, 2 Byte Out

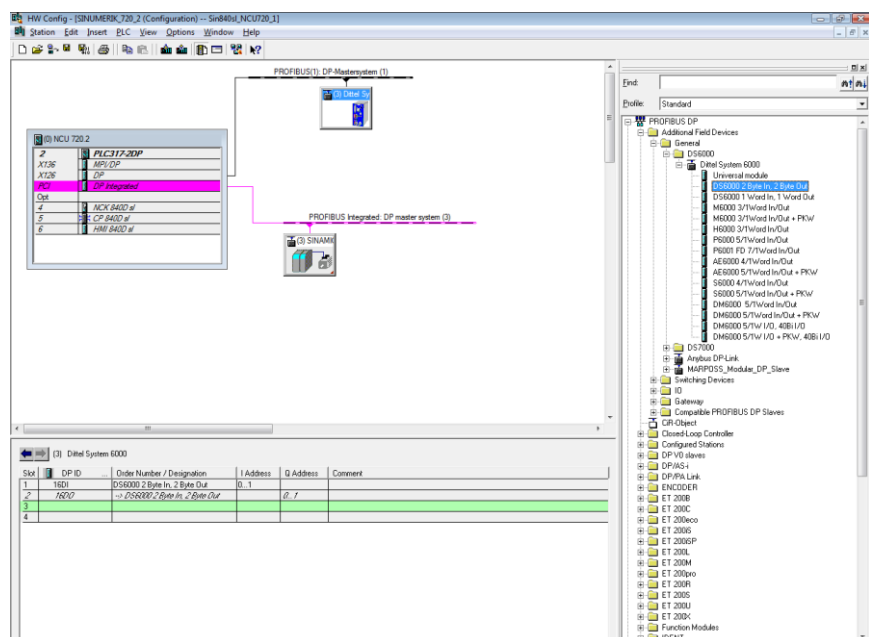


Figure 8-2 DS6000 2 Byte In, 2 Byte Out

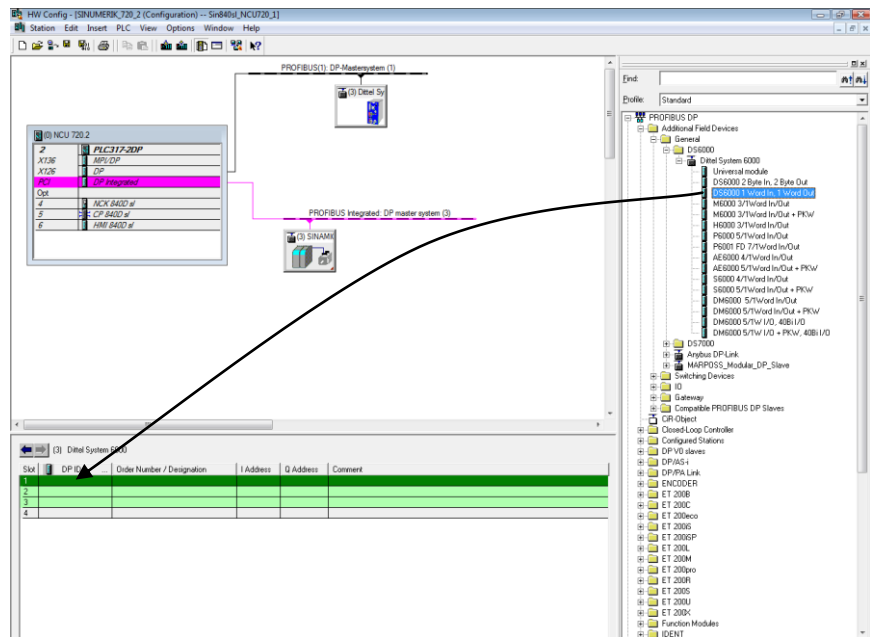


Figure 8-3 DS6000 1 Word In, 1 Word Out

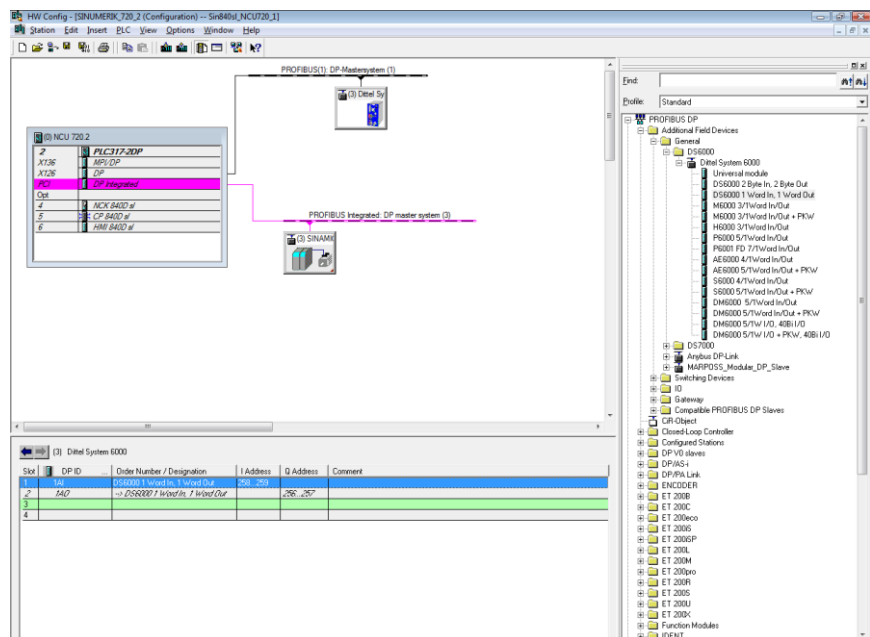


Figure 8-4 DS6000 1 Word In, 1 Word Out

8.2 Commissioning PROFINET®

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

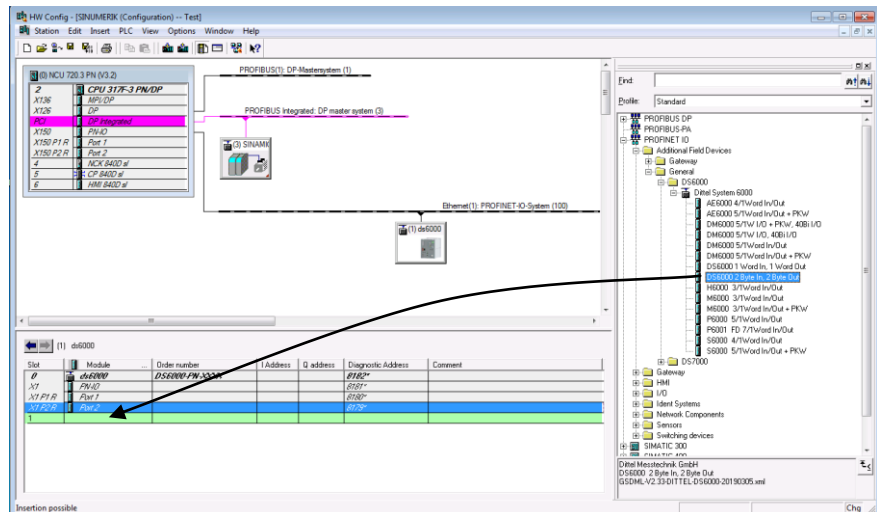


Figure 8-5 DS6000 2 Byte In, 2 Byte Out

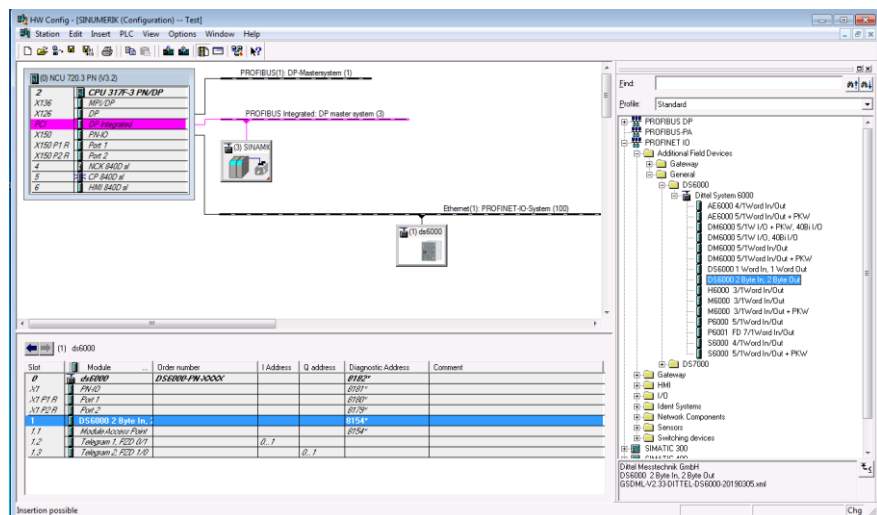


Figure 8-6 DS6000 2 Byte In, 2 Byte Out

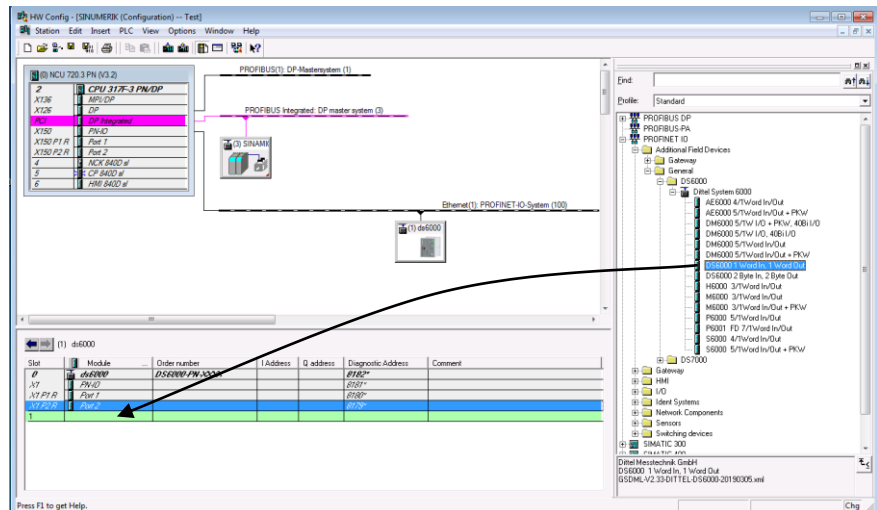


Figure 8-7 DS6000 1 Word In, 1 Word Out

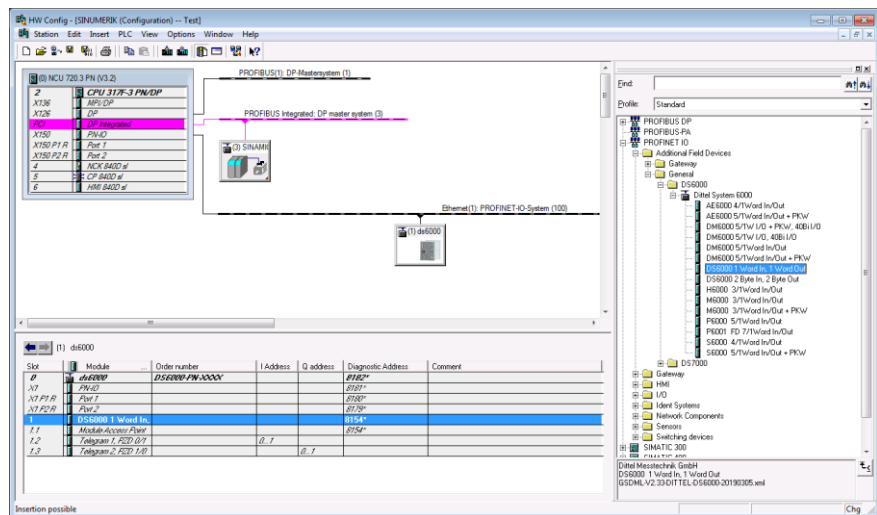


Figure 8-8 DS6000 1 Word In, 1 Word Out

8.3 Interface

8.3.1 Automation System to Module AE6000 / AE6001

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.0	1.0	Start/Stop monitoring AE/Crash/Voltage/ Envelope*	Static Signal from 0 to 1: START monitoring AE/Crash/Voltage/Envelope* Static Signal from 1 to 0: STOP monitoring AE/Crash/Voltage/Envelope*
0.1	1.1	Learning Envelope/ Monitoring Envelope*	Static 0: Monitoring Envelope active Static 1: Learning Envelope active
0.2	1.2	Operation via keys or buttons inhibited	Static 1: Operator actions on the PC or Automation System keyboard/Softkeys are disabled
0.3	1.3	Selects Set No. 1.3	see Truth Table 8.2.3
0.4	1.4	Selects Set No. 1.4	see Truth Table 8.2.3
0.5	1.5	Selects Set No. 1.5	see Truth Table 8.2.3
0.6	1.6	Selects Set No. 1.6	see Truth Table 8.2.3
0.7	1.7	Selects Set No. 1.7	see Truth Table 8.2.3
0.8	0.0	AE/Voltage/Envelope* Automatic Offset	Static 1: AE/Voltage/Envelope* Automatic Offset ON
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

* only valid with license 'Envelope'

Parallel Operation PROFIBUS®/PROFINET® with static Hardwire Interface, connector # 2

In principle, parallel operation of the PROFIBUS®/PROFINET® with the Hardwire Interface is possible. In this case the last change is

executed, both on the Hardwire Interface and PROFIBUS®/PROFINET® word 0.

An exception are the signals »**Operation via keys or buttons inhibited**« and »**AE/Voltage/Envelope* Automatic Offset**«. The static and the PROFIBUS®/PROFINET® signals of these functions are connected by logical OR.

8.3.2 Module AE6000 / AE6001 to Automation System

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.0	1.0	Status	Monitoring of AE/Crash/Voltage/Envelope* in progress: 1
0.1	1.1	Monitoring Sensor 1	AE/Crash/Envelope* Sensor OK: 1
0.2	1.2	Monitoring Sensor 2	Voltage Input OK: 1 Voltage Input open or overdriven: 0
0.3	1.3	Monitoring AE Limit 1	Signal below AE Limit 1: 1 Signal above AE Limit 1: 0
0.4	1.4	Monitoring AE Limit 2	Signal below AE Limit 2: 1 Signal above AE Limit 2: 0
0.5	1.5	Monitoring AE Limit 3	Signal below AE Limit 3: 1 Signal above AE Limit 3: 0
0.6	1.6	Monitoring AE Limit 4	Signal below AE Limit 4: 1 Signal above AE Limit 4: 0
0.7	1.7	Monitoring Voltage Limit U	Voltage below Voltage Limit U: 1 Voltage above Voltage Limit U: 0
0.8	0.0	Monitoring Crash Limit C	Signal below Crash Limit C: 1 Signal above Crash Limit C: 0
0.9	0.1	Monitoring Error response time of Envelope*	Error response time not exceeded*: 1 Error response time exceeded*: 0
0.10	0.2	reserved	Static 0
0.11	0.3	Confirms Set No. 0.3	from Module Software Version 1.1, build number 0.24 or later see Truth Table 8.2.3
0.12	0.4	Confirms Set No. 0.4	from Module Software Version 1.1, build number 0.24 or later see Truth Table 8.2.3
0.13	0.5	Confirms Set No. 0.5	from Module Software Version 1.1, build number 0.24 or later see Truth Table 8.2.3
0.14	0.6	Confirms Set No. 0.6	from Module Software Version 1.1, build number 0.24 or later see Truth Table 8.2.3
0.15	0.7	Confirms Set No. 0.7	from Module Software Version 1.1, build number 0.24 or later see Truth Table 8.2.3

* only valid with license 'Envelope'

8.3.3 Truth Table to select or confirm* the appropriate Memory Sets

NOTICE

During an ongoing Process Monitoring operation, **NO** change of the Set Number is permitted! The device does not recognise a change of the Set.

Selects Set No./confirms Set No.*	x.7	x.6	x.5	x.4	x.3
No change	0	0	0	0	0
1	0	0	0	0	1
2	0	0	0	1	0
3	0	0	0	1	1
4	0	0	1	0	0
5	0	0	1	0	1
6	0	0	1	1	0
7	0	0	1	1	1
8	0	1	0	0	0
9	0	1	0	0	1
10	0	1	0	1	0
11	0	1	0	1	1
12	0	1	1	0	0
13	0	1	1	0	1
14	0	1	1	1	0
15	0	1	1	1	1
16	1	0	0	0	0
17	1	0	0	0	1
18	1	0	0	1	0
19	1	0	0	1	1
20	1	0	1	0	0
21	1	0	1	0	1
22	1	0	1	1	0
23	1	0	1	1	1
24	1	1	0	0	0
25	1	1	0	0	1
26	1	1	0	1	0
27	1	1	0	1	1
28	1	1	1	0	0
29	1	1	1	0	1
30	1	1	1	1	0
31	1	1	1	1	1

* from Module Software Version 1.1, build number 0.24 or later

8.4 Extension with Data Format »AE6000 4/1Word In/Out«

8.4.1 PROFIBUS®

From Module Software Version 1.1 or later

Project with »AE6000 4/1Word In/Out«

Adding ▷ Highlight the data format »AE6000 4/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

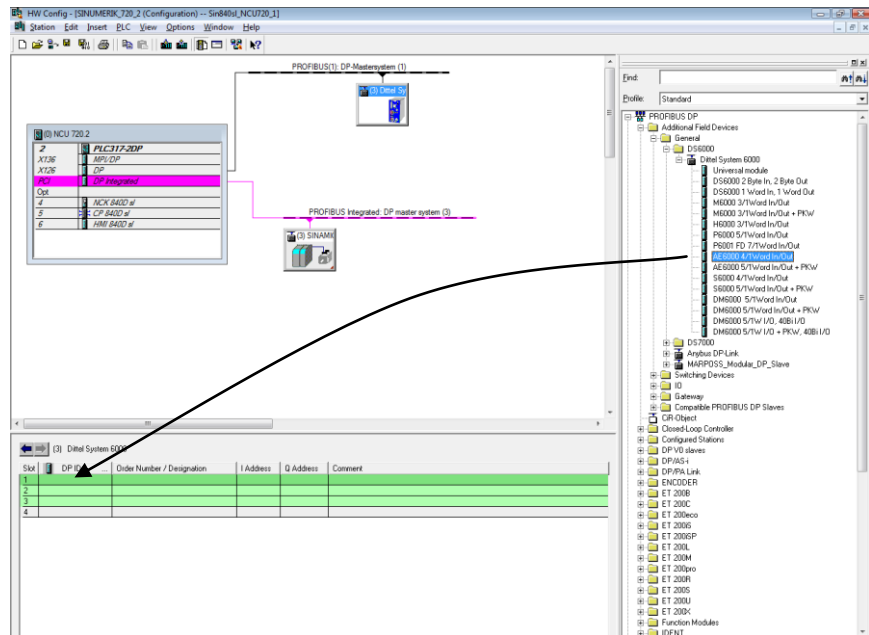


Figure 8-9 AE6000 4/1Word In/Out

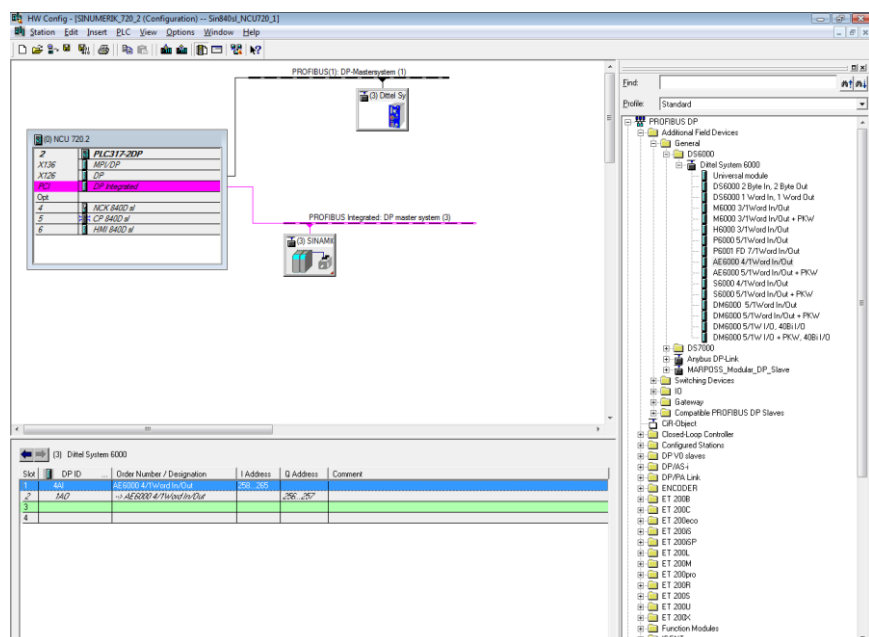


Figure 8-10 AE6000 4/1Word In/Out

Properties ▷ With the LEFT mouse button double click on line »AE6000 4/1Word In/Out«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the AE signal (**AE Data Format**) are found.

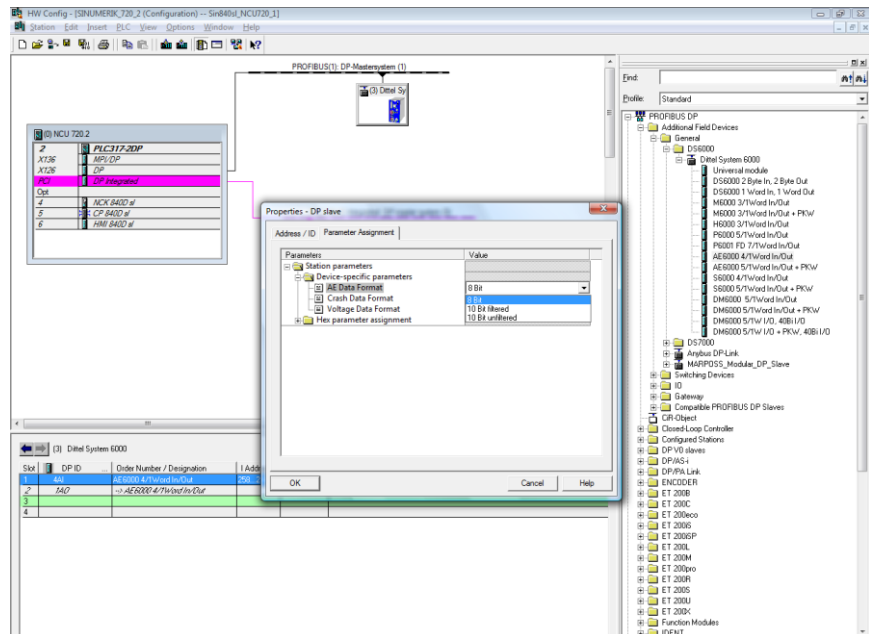


Figure 8-11

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Crash signal (**Crash Data Format**) are found.

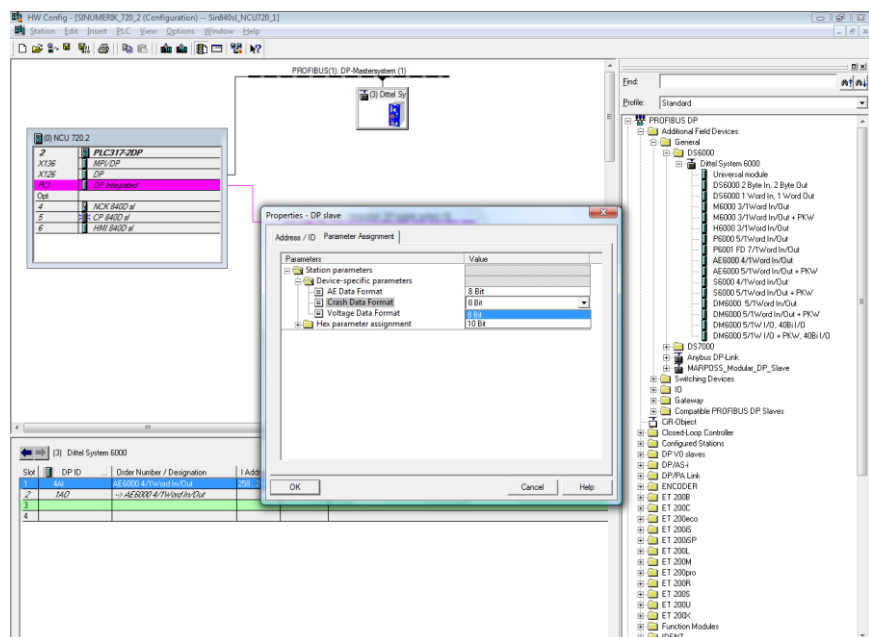


Figure 8-12

Open the register »Parameter Assignment«. In the folder »Device-specific parameters« the settings for the Voltage signal (**Voltage Data Format**) are found.

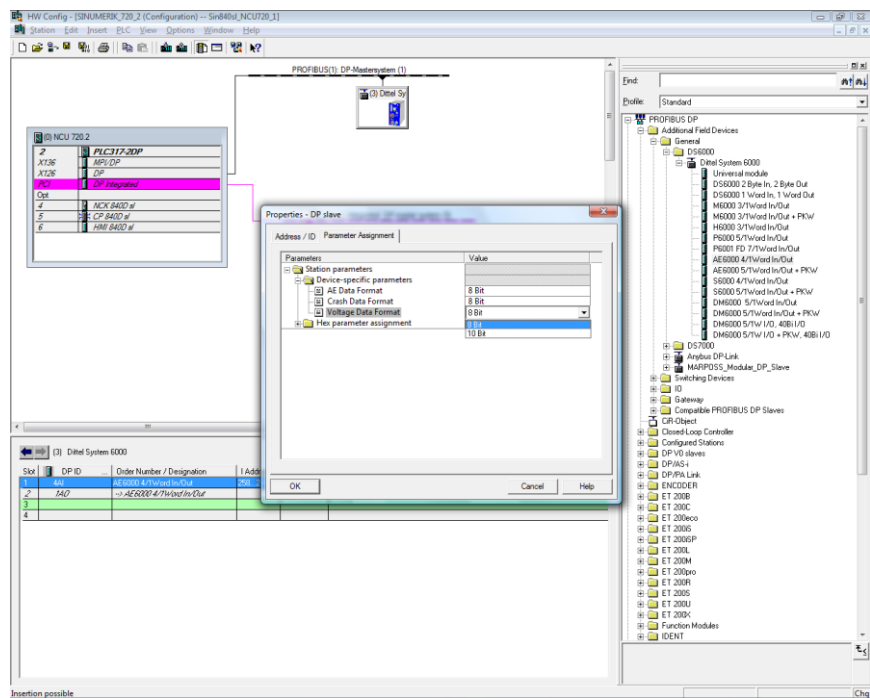


Figure 8-13

8.4.2 PROFINET®

Project with »AE6000 4/1Word In/Out«

- Adding ▷ Highlight the data format »AE6000 4/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

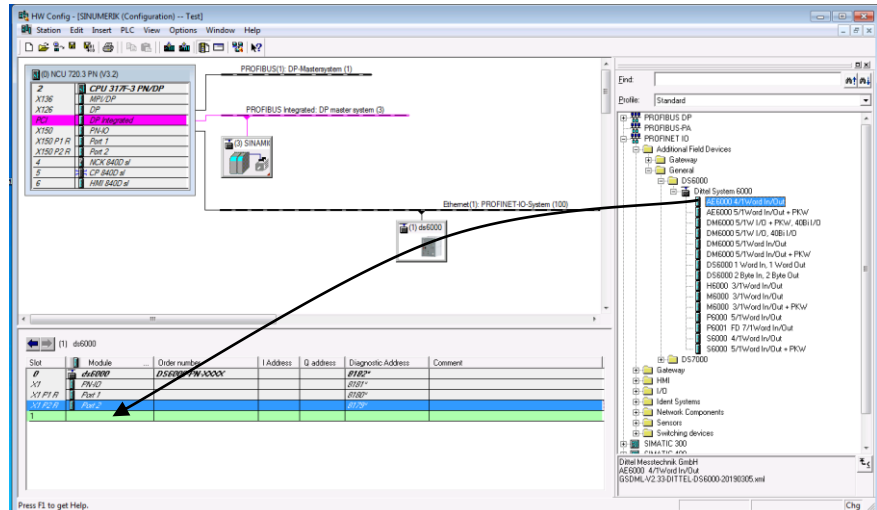


Figure 8-14 AE6000 4/1Word In/Out

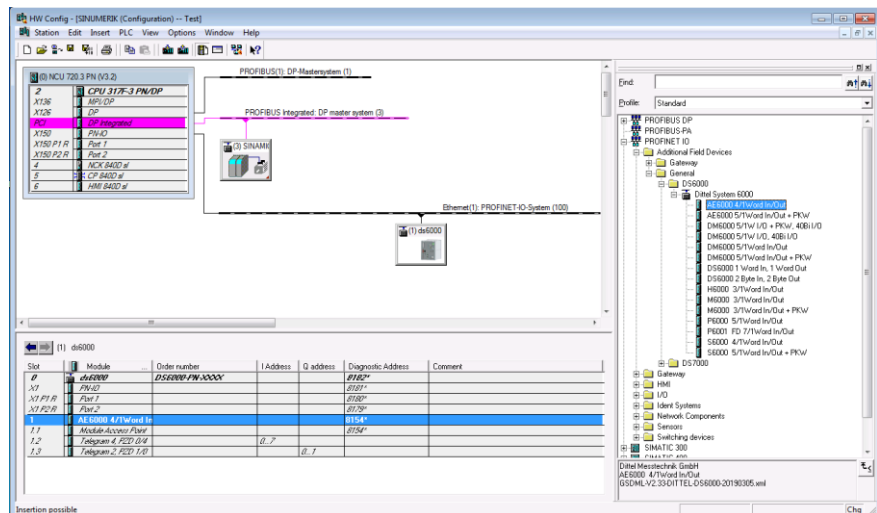


Figure 8-15 AE6000 4/1Word In/Out

Properties ▷ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the AE signal (**AE Data Format**) are found.

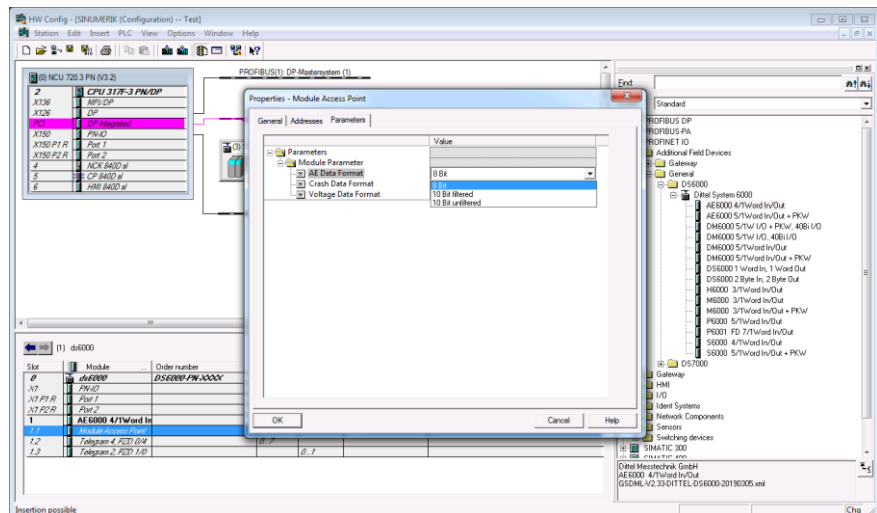


Figure 8-16

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Crash signal (**Crash Data Format**) are found.

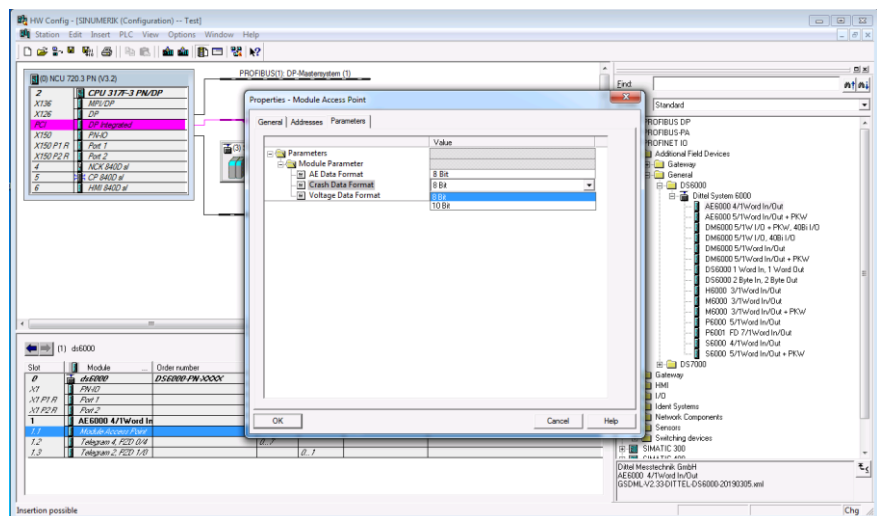


Figure 8-17

Open the register »Parameters«. In the folder »Module Parameter« the settings for the Voltage signal (**Voltage Data Format**) are found.

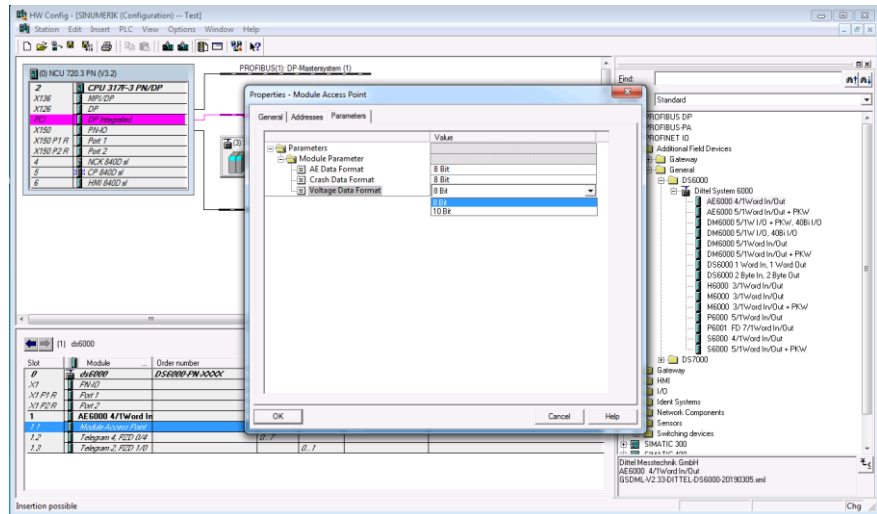


Figure 8-18

8.4.3 Automation System to Module AE6000 / AE6001

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 8.2.1, Automation System to Module AE6000/AE6001

8.4.4 Module AE6000 / AE6001 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 8.2.2, Module AE6000/AE6001 to Automation System
2	AE signal	short	Output of AE signal (1 ms sampling rate): • AE Data Format, 8 Bit, as displayed (filtered, 0 ... 200, current Offset) • AE Data Format, 10 Bit filtered (0 ... 1023, Offset = 0) • AE Data Format, 10 Bit unfiltered (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
4	Crash signal	short	Output of Crash signal (1 ms sampling rate): • Crash Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Crash Data Format, 10 Bit (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
6	Voltage signal	short	Output of Voltage signal (1 ms sampling rate): • Voltage Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Voltage Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.

8.5 Extension with Data Format »AE6000 5/1Word In/Out + PKW«

8.5.1 PROFIBUS®

From Module Software Version 1.2 or later.

Project with »AE6000 5/1Word In/Out + PKW«

Adding ▷ Highlight the data format »AE6000 5/1Word In/Out + PKW«.
Using the LEFT mouse button, drag and drop the data format to the detail view.

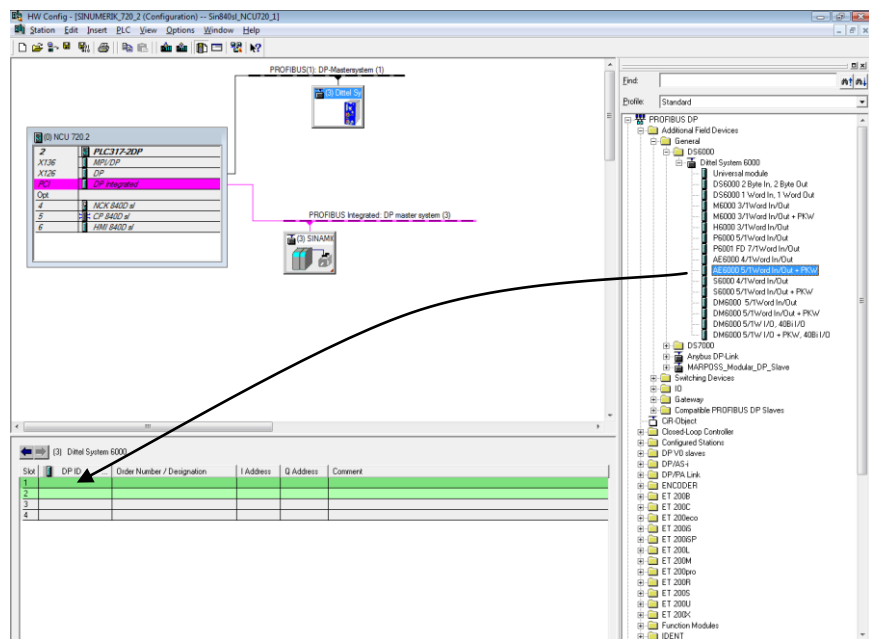


Figure 8-19 AE6000 5/1Word In/Out + PKW

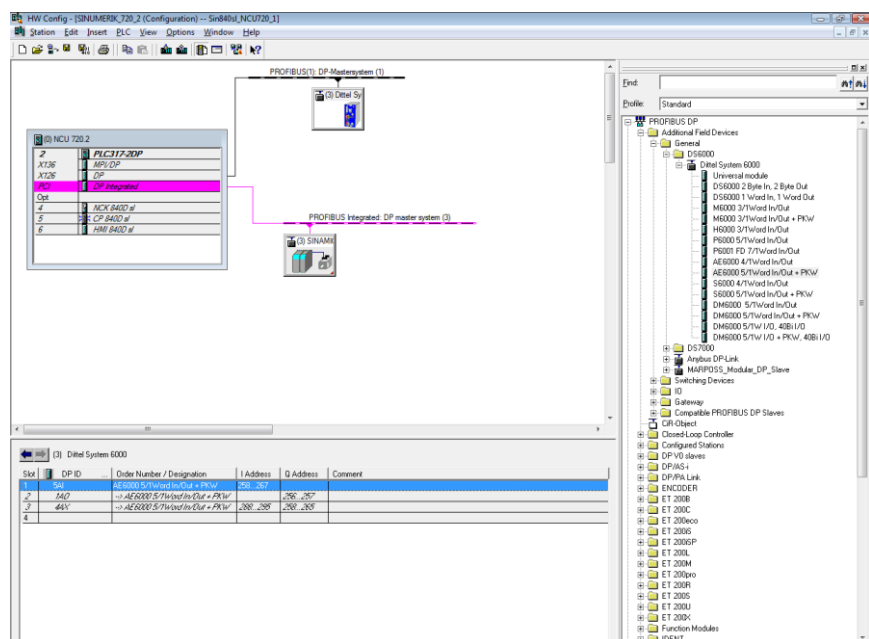


Figure 8-20 AE6000 5/1Word In/Out + PKW

- Properties ▷ With the LEFT mouse button double click on line »AE6000 5/1Word In/Out + PKW«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the AE signal (**AE Data Format**) are found.

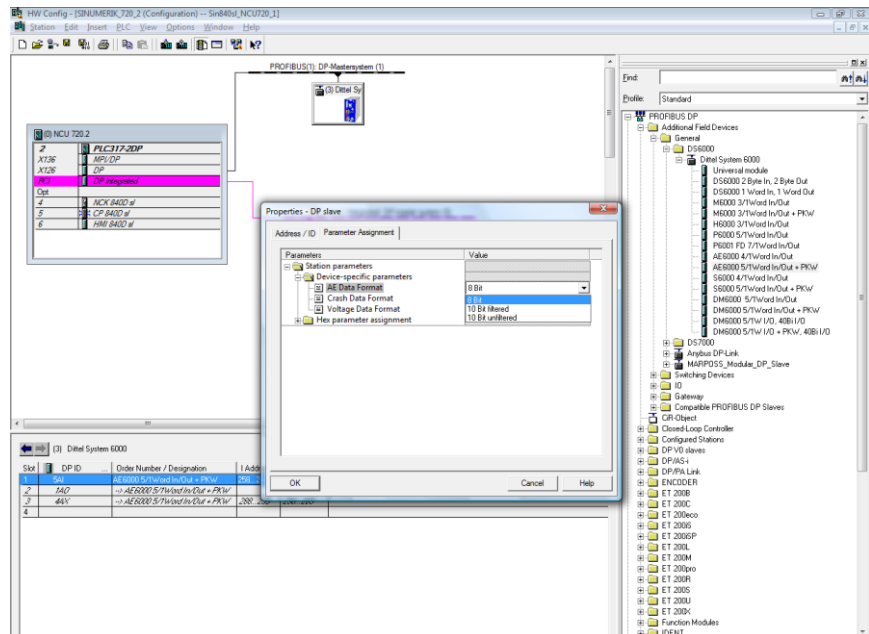


Figure 8-21

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Crash signal (**Crash Data Format**) are found.

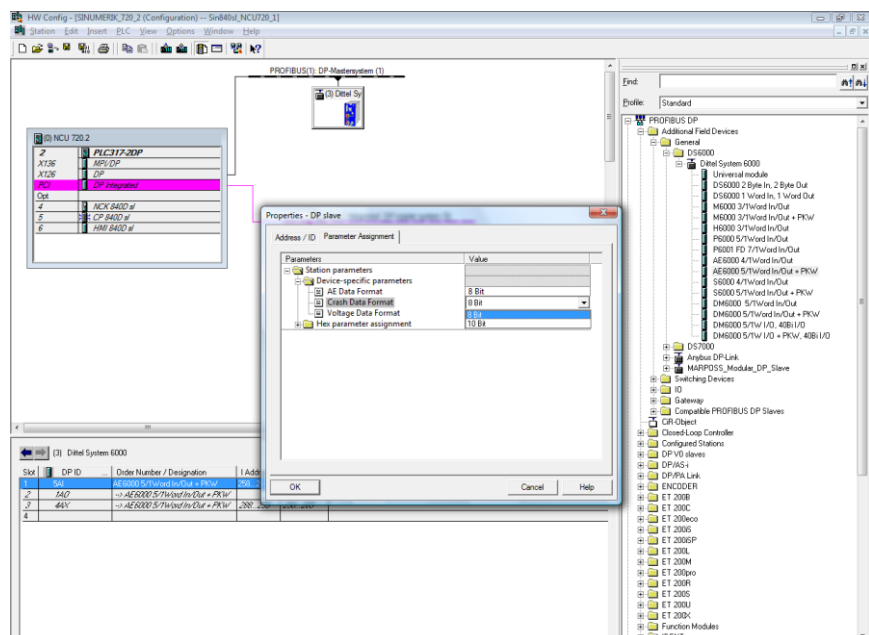


Figure 8-22

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Voltage signal (**Voltage Data Format**) are found.

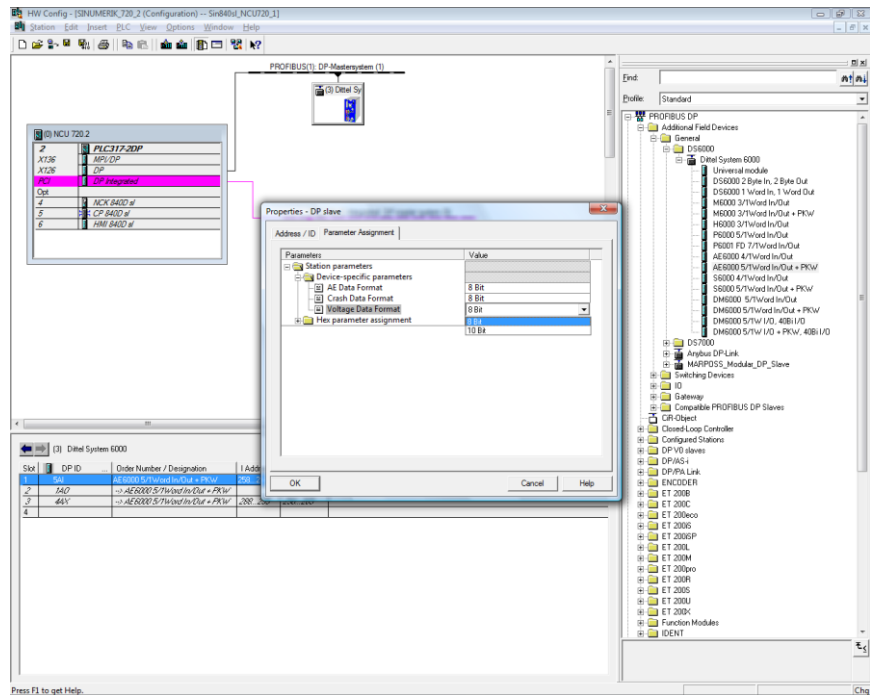


Figure 8-23

8.5.2 PROFINET®

Project with »AE6000 5/1Word In/Out + PKW«

- Adding ▷ Highlight the data format »AE6000 5/1Word In/Out + PKW«.
Using the LEFT mouse button, drag and drop the data format to the detail view.

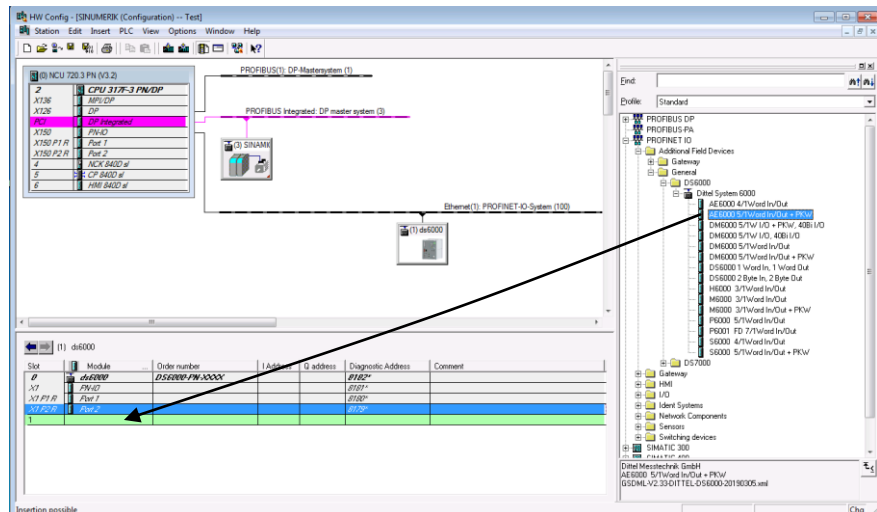


Figure 8-24 AE6000 5/1Word In/Out + PKW

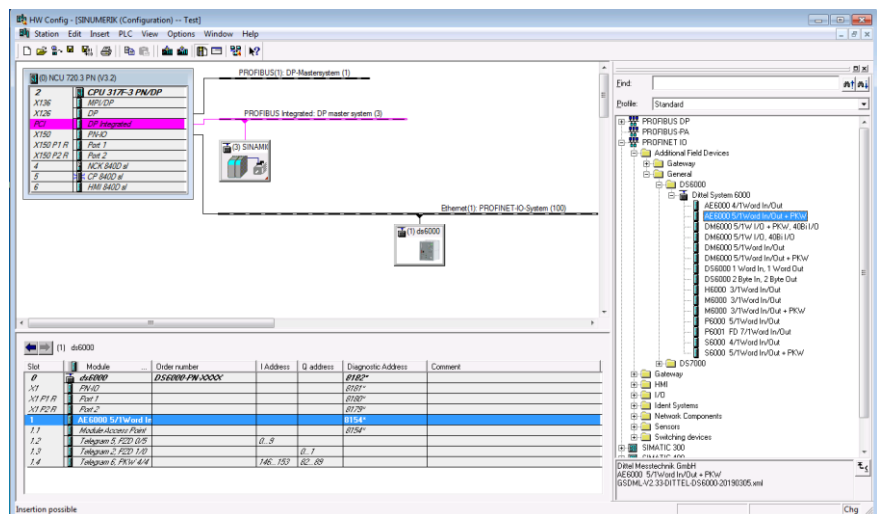


Figure 8-25 AE6000 5/1Word In/Out + PKW

Properties ▷ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the AE signal (**AE Data Format**) are found.

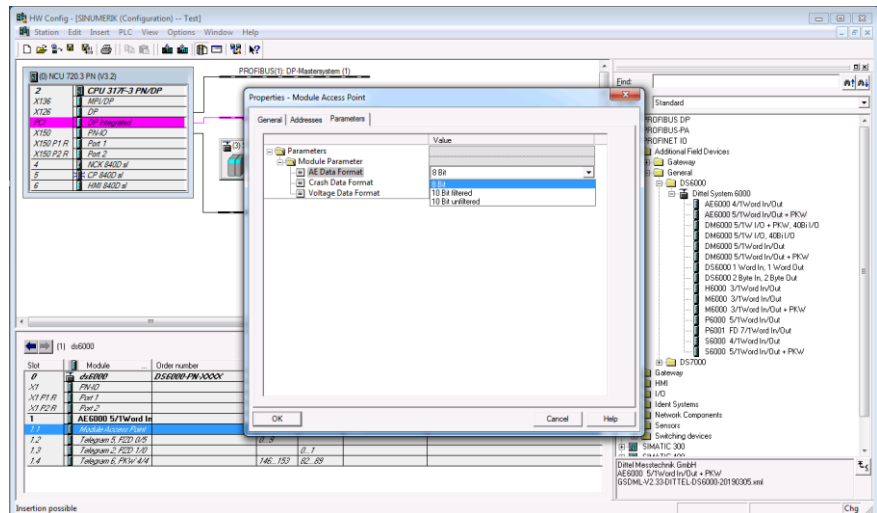


Figure 8-26

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Crash signal (**Crash Data Format**) are found.

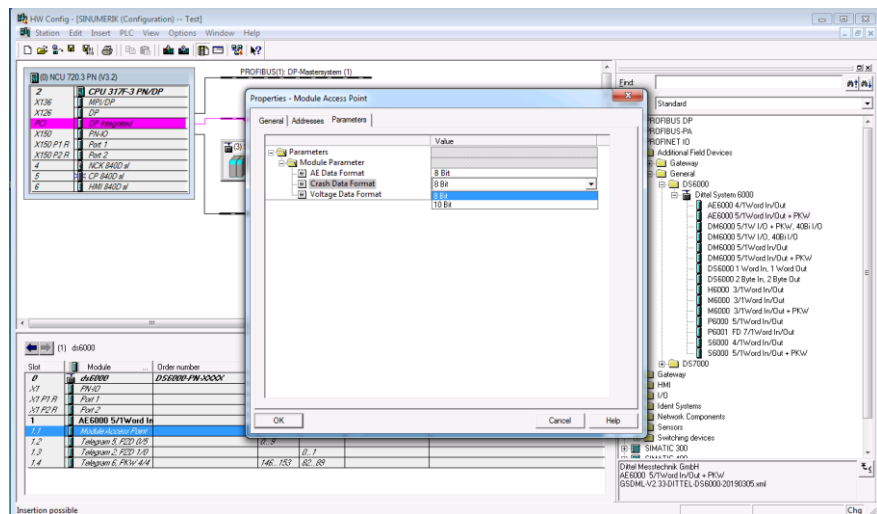


Figure 8-27

Open the register »Parameters«. In the folder »Module Parameter« the settings for the Voltage signal (**Voltage Data Format**) are found.

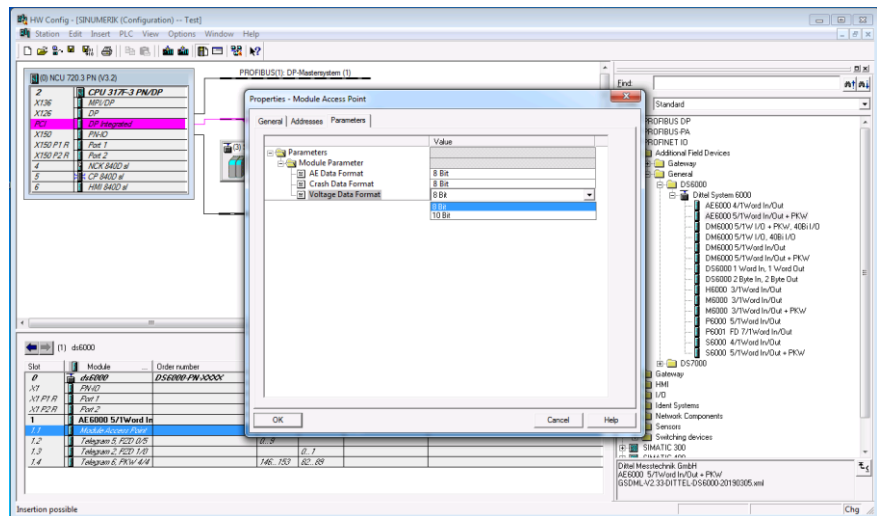


Figure 8-28

8.5.3 Automation System to Module AE6000 / AE6001

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 8.2.1, Automation System to Module AE6000/AE6001
2	PKW	4 * short	Parameter data area

8.5.4 Module AE6000 / AE6001 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 8.2.2, Module AE6000/AE6001 to Automation System
2	AE signal	short	Output of AE signal (1 ms sampling rate): • AE Data Format, 8 Bit, as displayed (filtered, 0 ... 200, current Offset) • AE Data Format, 10 Bit filtered (0 ... 1023, Offset = 0) • AE Data Format, 10 Bit unfiltered (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
4	Crash signal	short	Output of Crash signal (1 ms sampling rate): • Crash Data Format, 8 Bit, as shown, (0 ... 200, current Offset) • Crash Data Format, 10 Bit (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
6	Voltage signal	short	Output of Voltage signal (1 ms sampling rate): • Voltage Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Voltage Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
8	reserved	short	
10	PKW	4 * short	Parameter data area

8.5.5 Parameter description AE6000

8.5.5.1 Signal sources – standard

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
0	Continuous Measurement	1	0	Unsigned16	0	1	1	0 = False 1 = True	R/W
1	Measurement Time	1	0	Unsigned16	1	90	10	in s (1 s ... 90 s)	R/W
2	AE Offset Range/ AE Auto Offset	1	0	Unsigned16	0x0000	0x0005 0x0006 (from Module Software Version 1.3 or later)	0x0004	Bit 1/0: AE Offset Range 0 = 0 ... 25 % 1 = 0 ... 66 % 2 = 0 ... 150 % (from Module Software V1.3 or later) Bit 2: AE Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
3	AE Input	1	0	Unsigned16	0	3 0 (AE6001)	0	0 = Sensor 1 (AE6001: always 0) 1 = Sensor 2 2 = Sensor 3 3 = Sensor 4	R/W
4	AE Signal Smoothing	1	0	Unsigned16	0	3	2	0 = 3 Hz 1 = 10 Hz 2 = 30 Hz 3 = 100 Hz	R/W
5	AE Frequency Range	1	0	Unsigned16	0	3	1	0 = Low 1 = Medium-low 2 = Medium-high 3 = High	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
6	AE Amplification	1	0	Unsigned16	0	70	50	in dB (0 ... 70 dB)	R/W
7	AE Offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %) depends on AE Offset Range (PNU2) Values above the Offset Range are limited to the maximum value.	R/W
8	Crash Amplification	1	0	Unsigned16	0	7	2	in steps of 5 dB 0 = 0 dB 1 = 5 dB ... 7 = 35 dB	R/W
9	Crash Offset	1	0	Unsigned16	0	25	0	in % (0 ... 25 %)	R/W
10	Crash Limit	1	0	Unsigned16	0	99	50	in % (0 ... 99 %)	R/W
11	Voltage Offset Range/Voltage Auto Offset	1	0	Unsigned16	0x0000	0x0005 0x0006 (from Module Software Version 1.3 or later)	0x0000	Bit 1/0: Voltage Offset Range 0 = 0 ... 25 % 1 = 0 ... 66 % 2 = 0 ... 150 % (from Module Software V1.3 or later) Bit 2: Voltage Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
12	Voltage Measurement Range	1	0	Unsigned16	0	3	3	0 = 1 V 1 = 2 V 2 = 5 V 3 = 10 V	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
13	Voltage Offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %) depends on Voltage Offset Range (PNU11) Values above the Offset Range are limited to the maximum value.	R/W

8.5.5.2 Evaluation strategies – limits

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
100	AE Limit 1	1	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
101	AE Limit 2	1	0	Unsigned16	0	99	40	in % (0 ... 99 %)	R/W
102	AE Limit 3	1	0	Unsigned16	0	99	60	in % (0 ... 99 %)	R/W
103	AE Limit 4	1	0	Unsigned16	0	99	80	in % (0 ... 99 %)	R/W
104	Voltage Limit	1	0	Unsigned16	0	99	50	in % (0 ... 99 %)	R/W

8.5.5.3 Evaluation strategies – enhanced strategies

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
110	Additional monitoring/ number of nodes	2	0	Unsigned16	1	4	1	Number of nodes: 1 = 100 2 = 200 3 = 300 4 = 800	R/W
			1		0	1*	0	Additional monitoring: 0 = None, remaining Envelope parameters are not effective 1 = Envelope	
111	Envelope: Free Envelope Memory	1	0	Unsigned16	0	222	222	Number of blocks of free Envelope memory (for 32 nodes)	RO
112	Envelope: Upper Limit	1	0	Unsigned16	0	199	10	in steps of 0.5 % (0.5 % ... 99.5 %) 0 = Off	R/W
113	Envelope: Lower Limit	1	0	Unsigned16	0	199	10	in steps of 0.5 % (0.5 % ... 99.5 %) 0 = Off	R/W
114	Envelope: Horizontal Offset	1	0	Unsigned16	1	30000	5	in steps of 0.01 s (0.01 s ... 30 s)	R/W
115	Envelope: Error Response Time	1	0	Unsigned16	0	30000	10	in steps of 0.01 s (0.01 s ... 30 s)	R/W
116	Envelope: Learning after each workpiece	1	0	Unsigned16	0	100	0	in steps of 1 % (1 % ... 100 %) 0 = False	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
117	Envelope: Learning next workpiece	1	0	Unsigned16	0	100	0	in steps of 1 (1 ... 100) 0 = False	R/W
118	Envelope: Envelope duration	1	0	Unsigned32	0	4294901759	0	in steps of 0.01 s (0.01 s ... 42949017.59 s) 0 = not available	RO

* Max. value depends on licensing

Without license 'Envelope': Max. value = 0

With license 'Envelope': Max. value = 1

8.5.5.4 AE Configuration

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
200	AE Parameters	2	0	Unsigned16	0x0000	0x003F 0x0031 (AE6001)	0x0000	Configuration word Bit 0: Active Sensor 1 0 = False, 1 = True Bit 1: Active Sensor 2 0 = False, 1 = True Bit 2: Active Sensor 3 0 = False, 1 = True Bit 3: Active Sensor 4 0 = False, 1 = True Bit 4: Enable Positive Hold 0 = False, 1 = True Bit 5: Enable Negative Hold 0 = False, 1 = True The min./max. values are interpreted per parameter Hold Time in steps of 10 ms (10 ms ... 1000 ms)	R/W
			1		1	100	1		
201	Invalid PNU							Parameter not available	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
202	Identification Data	15	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14	Unsigned16	-	-	-	Low byte relevant only Module Type 8 Production Year as of 2000 Production Week Software Version value/10 Build number value/100 Article Number in BCD code hundred thsds/ten thsds thousands/hundreds tens/ones Serial Number (4 bytes) LSB MSB Operating Hours in hours (3 bytes) LSB MSB	RO
203	Invalid PNU							Parameter not available	R/W
204	Save set (from Module Software Version 1.3, build number 0.33 or later	1	0	Unsigned16	1	31	1	Write¹: Saving current settings as parameterised set number Read: Reading the currently selected set number	R/W
205	View (from Module Software Version 1.3, build number 0.33 or later)	2	0 1	Unsigned16	1 0	99 119	1 0	Number of view to be selected Address of operating unit 0 (- 99) Broadcast to all operating units 100 – 119 to addressed operating unit	R/W

¹ Typically 1,000,000 save operations are possible per set. This corresponds to an expected lifetime of approximately 10 years for the EEPROMs when saving every 5 minutes.

9 Module DM6000

9.1 Commissioning PROFIBUS®

- Adding ➤ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

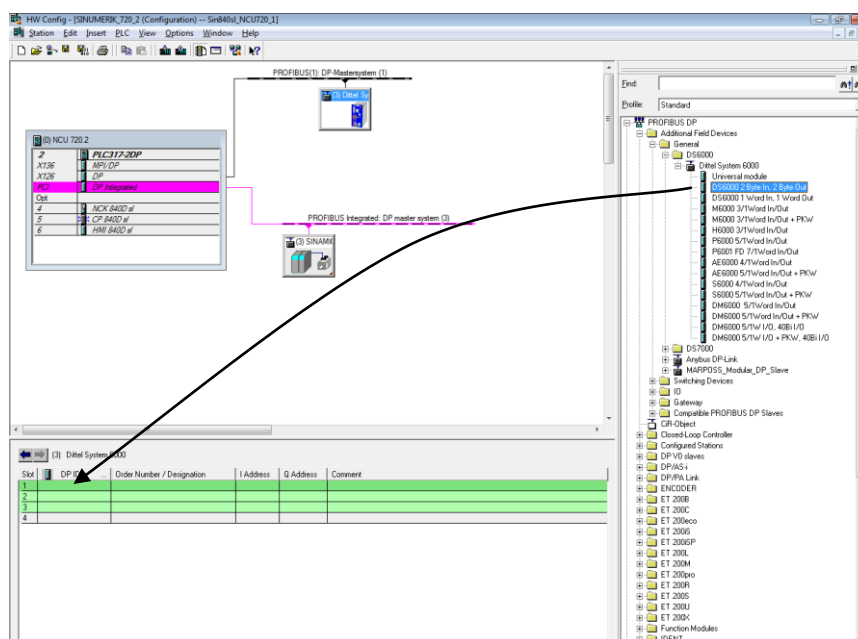


Figure 9-1 DS6000 2 Byte In, 2 Byte Out

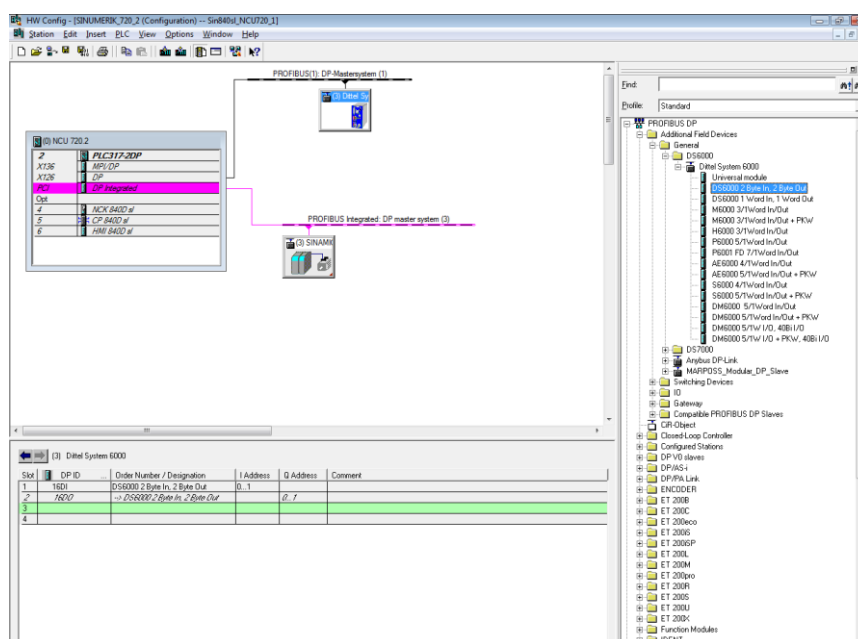


Figure 9-2 DS6000 2 Byte In, 2 Byte Out

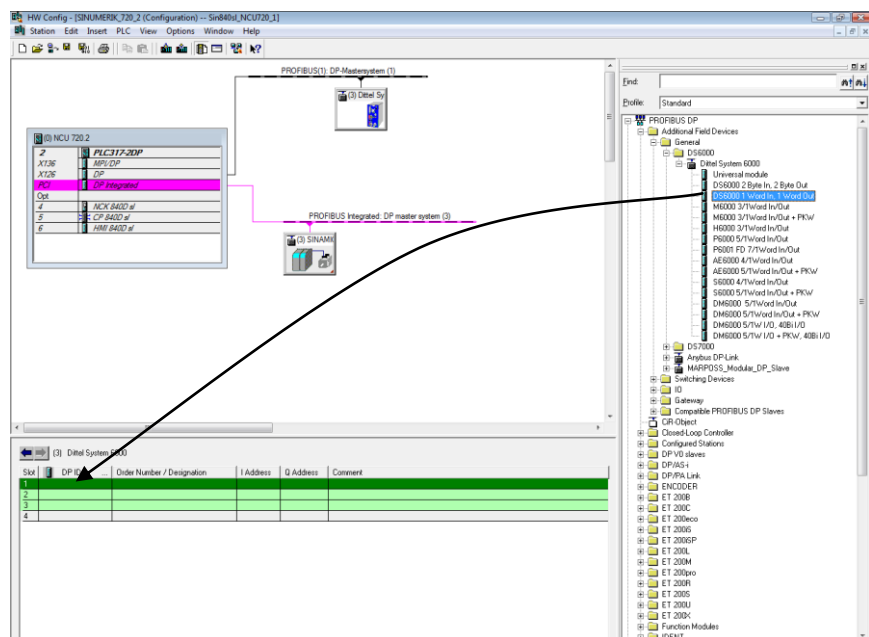


Figure 9-3 DS6000 1 Word In, 1 Word Out

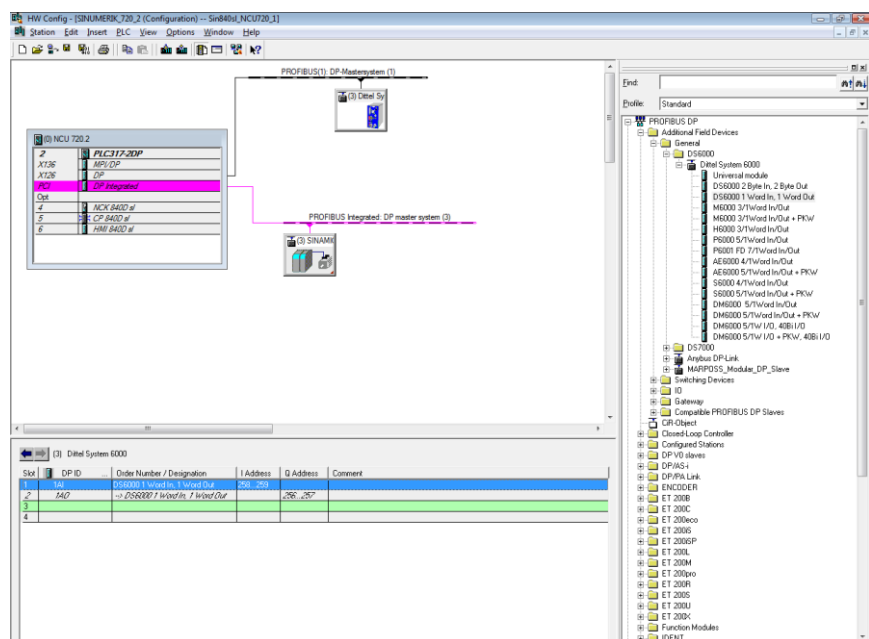
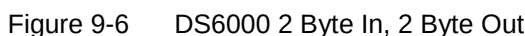
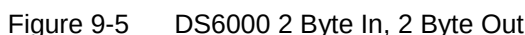


Figure 9-4 DS6000 1 Word In, 1 Word Out

- To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.



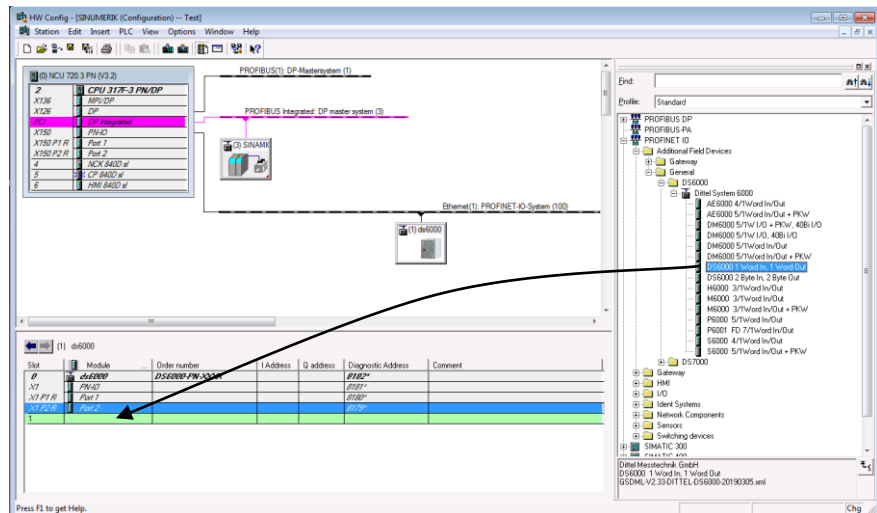


Figure 9-7 DS6000 1 Word In, 1 Word Out

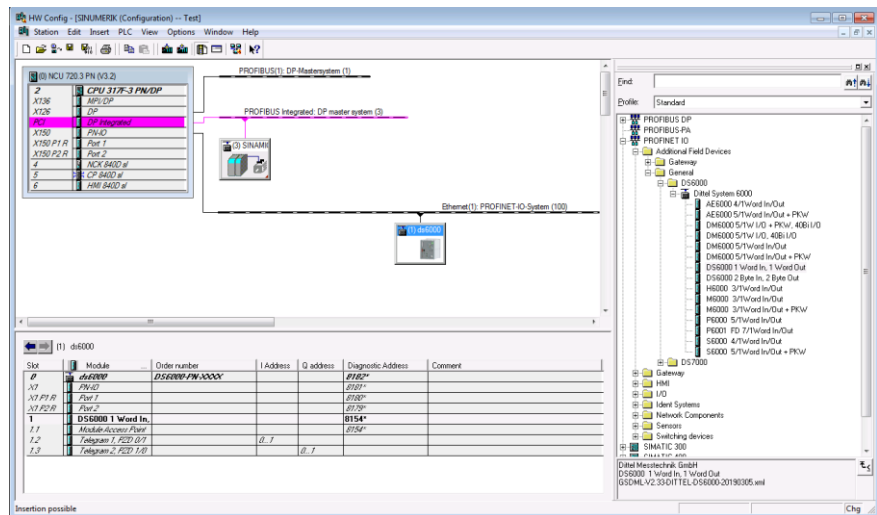


Figure 9-8 DS6000 1 Word In, 1 Word Out

9.3 Interface

9.3.1 Automation System to Module DM6000

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.0	1.0	Start/Stop monitoring AE/Crash (CR)/Voltage (U)/Envelope (ENV)*/ PROFIBUS (PB)**	Static Signal from 0 to 1: START monitoring AE/CR/U/ENV*/PB** Static Signal from 1 to 0: STOP monitoring AE/CR/U/ENV*/PB**
0.1	1.1	Dual Function: - Learning Envelope* YES/NO - Monitoring Envelope* NO/YES - Segment ON/OFF	Static HIGH signal when starting: ,Learning ENV* YES, 'Monitoring ENV*': NO Static LOW signal when starting: ,Learning ENV* NO, 'Monitoring ENV*': YES Static HIGH signal after starting: 'Segment' ON Static LOW signal after starting: 'Segment' OFF <i>Starting = Process monitoring Start (pin # 12)</i>
0.2	1.2	Operation via keys or buttons inhibited	Static 1: Operator actions on the PC or Automation System keyboard/Softkeys are disabled
0.3	1.3	Selects Set No. 1.3	see Truth Table 9.2.3
0.4	1.4	Selects Set No. 1.4	see Truth Table 9.2.3
0.5	1.5	Selects Set No. 1.5	see Truth Table 9.2.3
0.6	1.6	Selects Set No. 1.6	see Truth Table 9.2.3
0.7	1.7	Selects Set No. 1.7	see Truth Table 9.2.3
0.8	0.0	AE/U/Envelope*/ PROFIBUS** Automatic Offset	Static 1: AE/U/ENV*/PB** Automatic Offset ON
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

* only valid with license 'Envelope'

** only valid with license 'PROFIBUS® DATA CHANNELS'

Parallel operation PROFIBUS®/PROFINET® with static Hardwire Interface, connector # 2

In principle, parallel operation of the PROFIBUS®/PROFINET® with the Hardwire Interface is possible. In this case the last change is executed, both on the Hardwire Interface and PROFIBUS®/PROFINET® word 0.

The '**Start/Stop monitoring AE/Crash (CR)/Voltage (U)/Envelope (ENV)*/PROFIBUS (PB)****' and '**Learning Envelope*/Monitoring Envelope***' functions have to be generated by the same interface, however (PROFIBUS®/PROFINET® or Static Hardwire Interface).

An exception are the signals »**Operation via keys or buttons inhibited**« and »**AE/U/Envelope*/PB** Automatic Offset**«. The static and the PROFIBUS®/PROFINET® signals of these functions are connected by logical OR.

9.3.2 Module DM6000 to Automation System

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.0	1.0	Status	Ongoing Process Monitoring: 1
0.1	1.1	Monitoring Sensor 1	AE/Crash/ENV* Sensor OK: 1
0.2	1.2	Monitoring Sensor 2	Voltage Input OK: 1 Voltage input open or overdriven: 0
0.3	1.3	Monitoring Limit 1	Signal below Limit 1: 1 Signal above Limit 1: 0
0.4	1.4	Monitoring Limit 2	Signal below Limit 2: 1 Signal above Limit 2: 0
0.5	1.5	Monitoring Limit 3	Signal below Limit 3: 1 Signal above Limit 3: 0
0.6	1.6	Monitoring Limit 4	Signal below Limit 4: 1 Signal above Limit 4: 0
0.7	1.7	Monitoring Limit 5	Signal below Limit 5: 1 Signal above Limit 5: 0
0.8	0.0	Monitoring Crash Limit	Signal below Crash Limit: 1 Signal above Crash Limit: 0
0.9	0.1	Monitoring Envelope*	Error response time not exceeded*: 1 Error response time exceeded*: 0
0.10	0.2	reserved	Static 0
0.11	0.3	Confirms Set No. 0.3	see Truth Table 9.2.3
0.12	0.4	Confirms Set No. 0.4	see Truth Table 9.2.3
0.13	0.5	Confirms Set No. 0.5	see Truth Table 9.2.3
0.14	0.6	Confirms Set No. 0.6	see Truth Table 9.2.3
0.15	0.7	Confirms Set No. 0.7	see Truth Table 9.2.3

* only valid with license 'Envelope'

9.3.3 Truth Table to select or confirm the appropriate Memory Sets

NOTICE

During an ongoing Process Monitoring operation, **NO** change of the Set Number is permitted! The device does not recognise a change of the Set.

Selects Set No./confirms Set No.	x.7	x.6	x.5	x.4	x.3
No change	0	0	0	0	0
1	0	0	0	0	1
2	0	0	0	1	0
3	0	0	0	1	1
4	0	0	1	0	0
5	0	0	1	0	1
6	0	0	1	1	0
7	0	0	1	1	1
8	0	1	0	0	0
9	0	1	0	0	1
10	0	1	0	1	0
11	0	1	0	1	1
12	0	1	1	0	0
13	0	1	1	0	1
14	0	1	1	1	0
15	0	1	1	1	1
16	1	0	0	0	0
17	1	0	0	0	1
18	1	0	0	1	0
19	1	0	0	1	1
20	1	0	1	0	0
21	1	0	1	0	1
22	1	0	1	1	0
23	1	0	1	1	1
24	1	1	0	0	0
25	1	1	0	0	1
26	1	1	0	1	0
27	1	1	0	1	1
28	1	1	1	0	0
29	1	1	1	0	1
30	1	1	1	1	0
31	1	1	1	1	1

9.4 Extension with Data Format DM6000 5/1Word In/Out

9.4.1 PROFIBUS®

From Module Software Version 1.2 or later.

- Adding ➤ Highlight the data format »DM6000 5/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

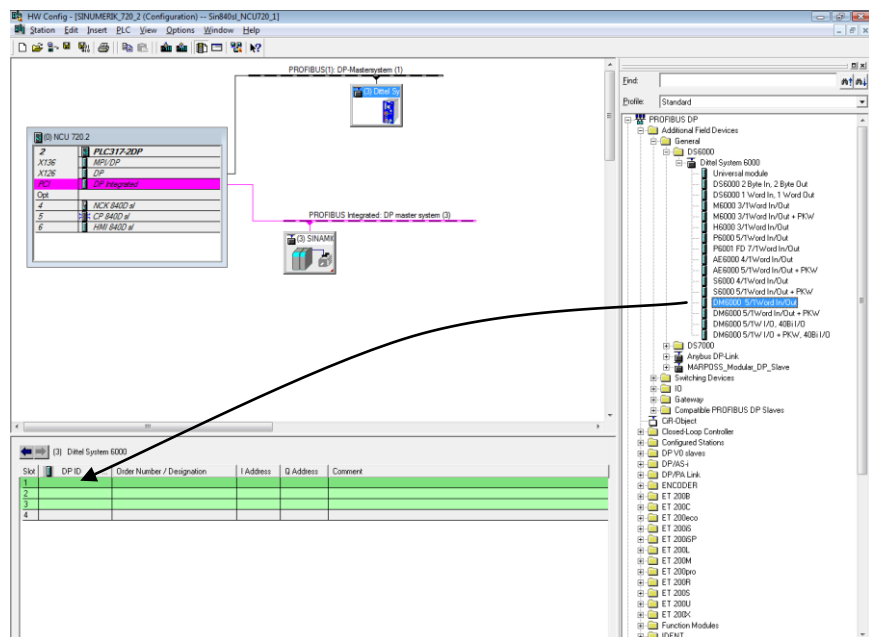


Figure 9-9 DM6000 5/1Word In/Out

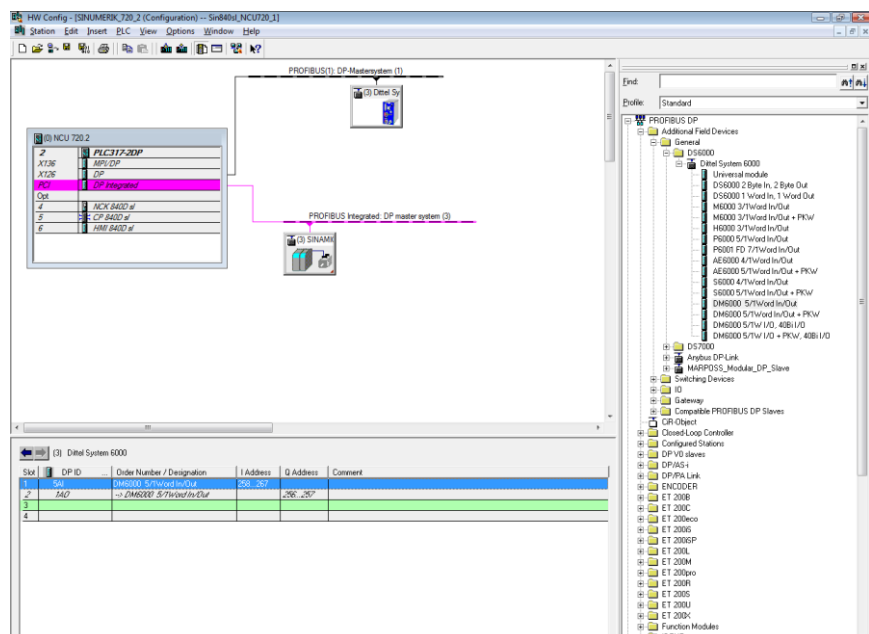


Figure 9-10 DM6000 5/1Word In/Out

Properties ▷ With the LEFT mouse double button click on line »DM6000 5/1Word In/Out«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the AE signal (**AE Data Format**) are found.

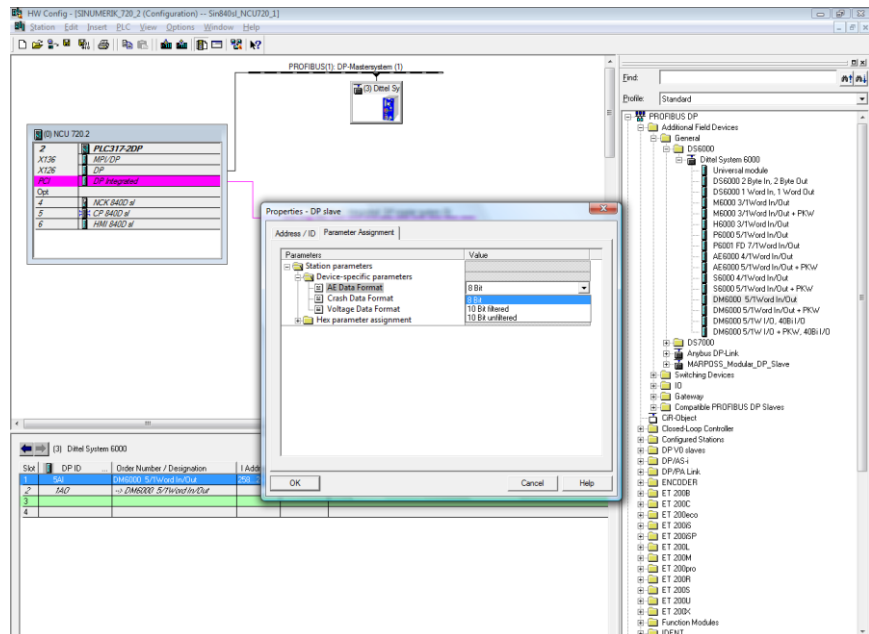


Figure 9-11

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Crash signal (**Crash Data Format**) are found.

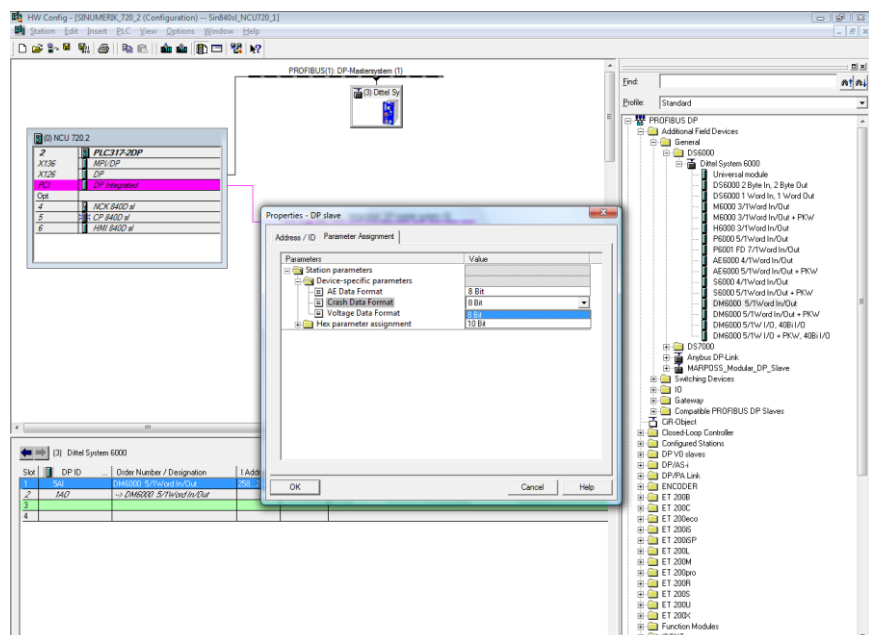


Figure 9-12

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Voltage signal (Voltage Data Format) are found.

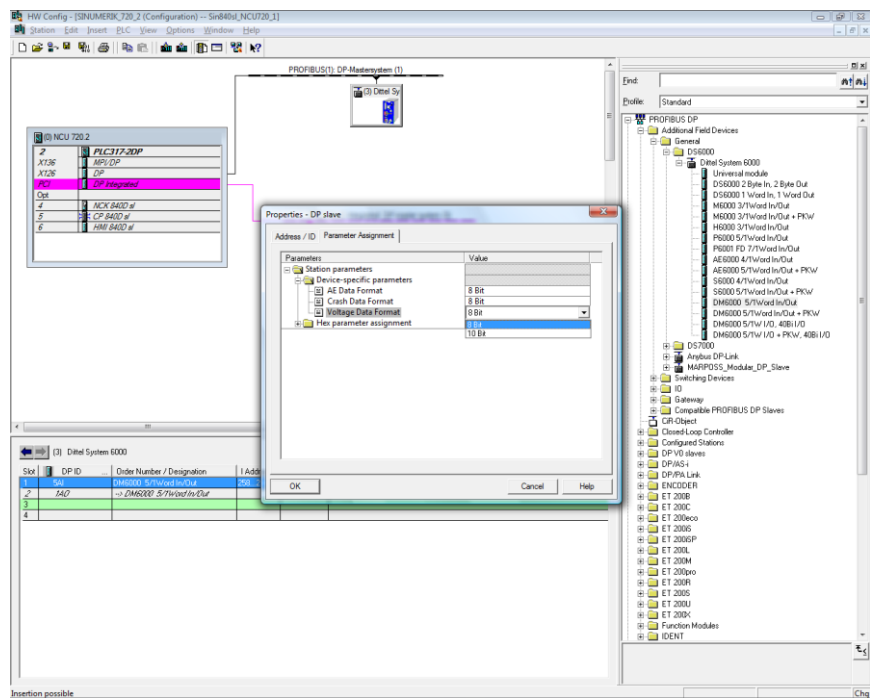


Figure 9-13

9.4.2 PROFINET®

Adding ➤ Highlight the data format »DM6000 5/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

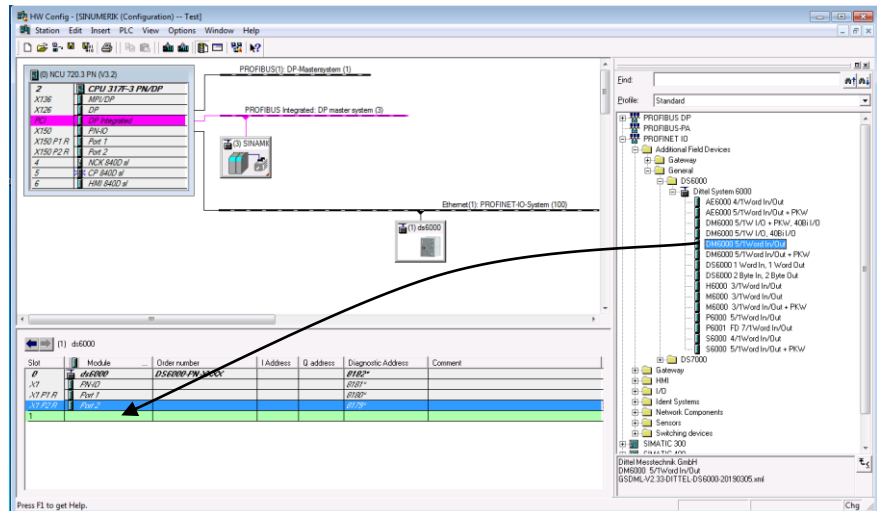


Figure 9-14 DM6000 5/1Word In/Out

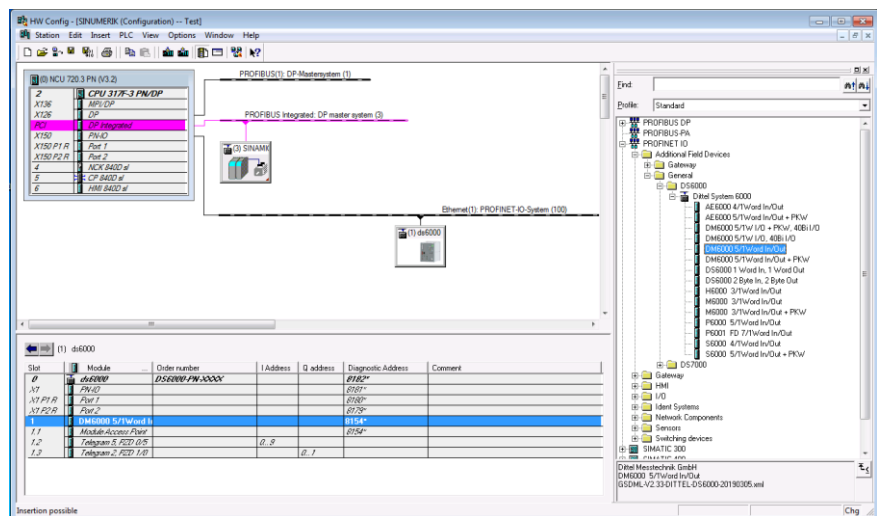


Figure 9-15 DM6000 5/1Word In/Out

Properties ➤ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the AE signal (**AE Data Format**) are found.

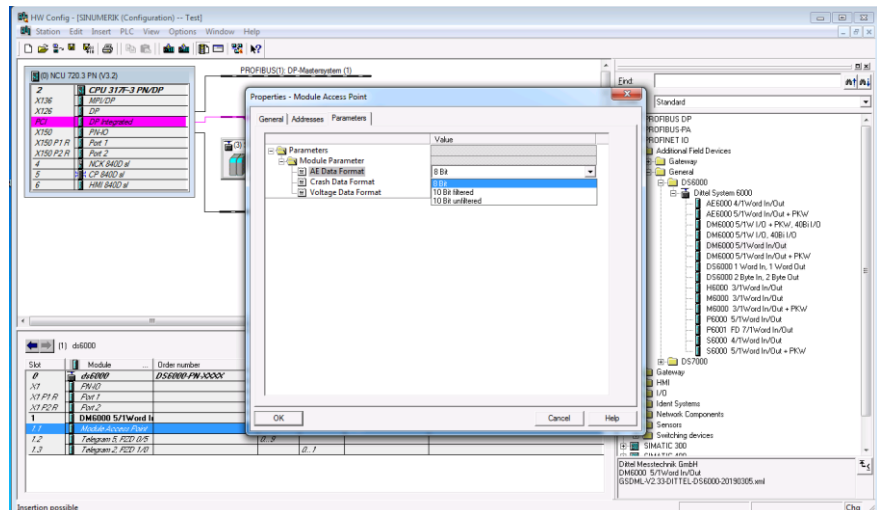


Figure 9-16

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Crash signal (**Crash Data Format**) are found.

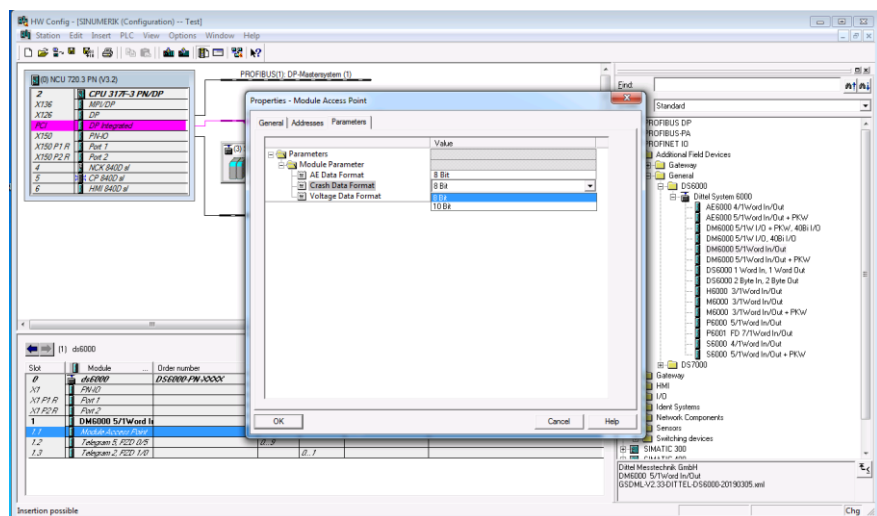


Figure 9-17

Open the register »Parameters«. In the folder »Module Parameter« the settings for the Voltage signal (**Voltage Data Format**) are found.

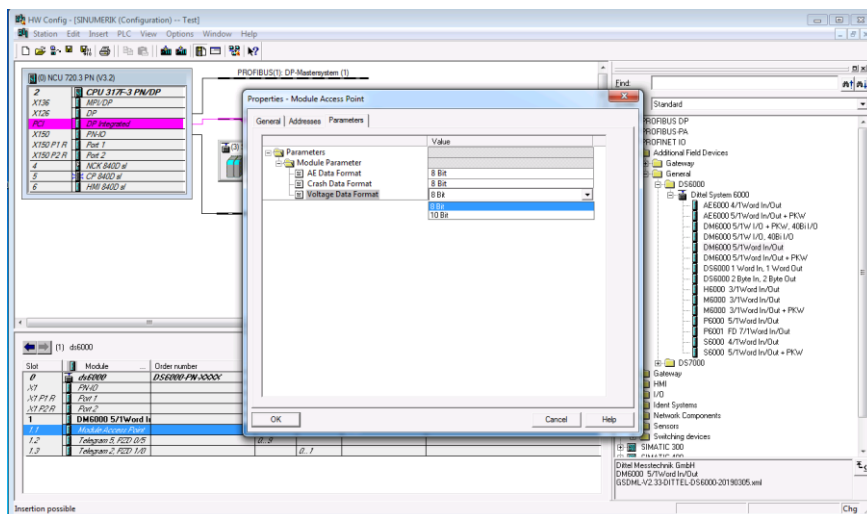


Figure 9-18

9.4.3 Automation System to Module DM6000

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 9.2.1, Automation System to Module DM6000

9.4.4 Module DM6000 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 9.2.2, Module DM6000 to Automation System
2	AE signal	short	Output of AE signal (1 ms sampling rate): • AE Data Format, 8 Bit, as displayed (filtered, 0 ... 200, current Offset) • AE Data Format, 10 Bit filtered (0 ... 1023, Offset = 0) • AE signal, 10 Bit unfiltered, (unfiltered (0 ... 1023, Offset = 0)) The choice is made while adjusting the parameters with the planning tool.
4	Crash signal	short	Output of Crash signal (1 ms sampling rate): • Crash Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Crash Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
6	Voltage signal	short	Output of Voltage signal (1 ms sampling rate): • Voltage Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Voltage Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
8	DM6000 Interface	short	Limits 6 ... 10: Bits 3 – 7 Monitoring Envelope: Bits 8 – 9, see following table

Pos. Word.Bit	Function	Value/Action
4.0	reserved	Static 0
4.1	reserved	Static 0
4.2	reserved	Static 0
4.3	Monitoring Limit 6	Signal below Limit 6: 1 Signal above Limit 6: 0
4.4	Monitoring Limit 7	Signal below Limit 7: 1 Signal above Limit 7: 0
4.5	Monitoring Limit 8	Signal below Limit 8: 1 Signal above Limit 8: 0
4.6	Monitoring Limit 9	Signal below Limit 9: 1 Signal above Limit 9: 0
4.7	Monitoring Limit 10	Signal below Limit 10: 1 Signal above Limit 10: 0
4.8	Signal below Monitoring Envelope	Error response time not exceeded*: 1 Error response time exceeded*: 0
4.9	Signal above Monitoring Envelope	Error response time not exceeded*: 1 Error response time exceeded*: 0
4.10	reserved	Static 0
4.11	reserved	Static 0
4.12	reserved	Static 0
4.13	reserved	Static 0
4.14	reserved	Static 0
4.15	reserved	Static 0

* only valid with license 'Envelope'

9.5 Extension with Data Format DM6000 5/1Word In/Out + PKW

9.5.1 PROFIBUS®

From Module Software Version 1.2 or later.

- Adding ➤ Highlight the data format »DM6000 5/1Word In/Out + PKW«.
Using the LEFT mouse button, drag and drop the data format to the detail view.

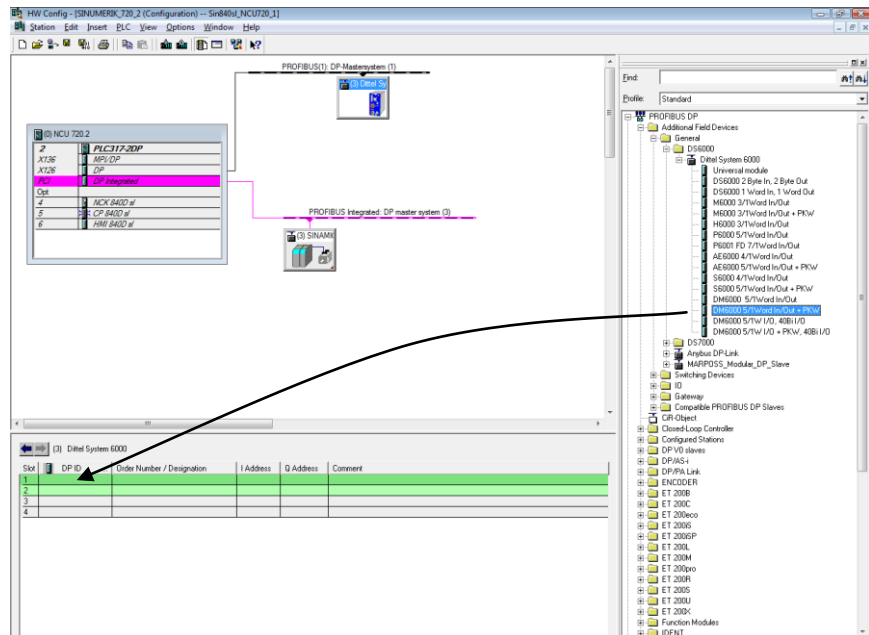


Figure 9-19 DM6000 5/1Word In/Out + PKW

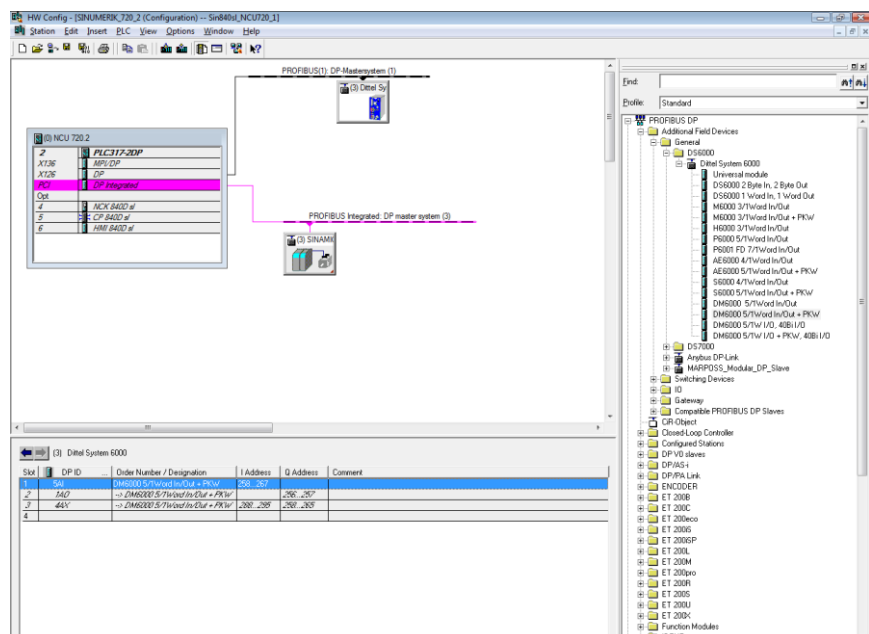


Figure 9-20 DM6000 5/1Word In/Out + PKW

- Properties ▷ With the LEFT mouse double button click on line »DM6000 5/1Word In/Out + PKW«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the AE signal (**AE Data Format**) are found.

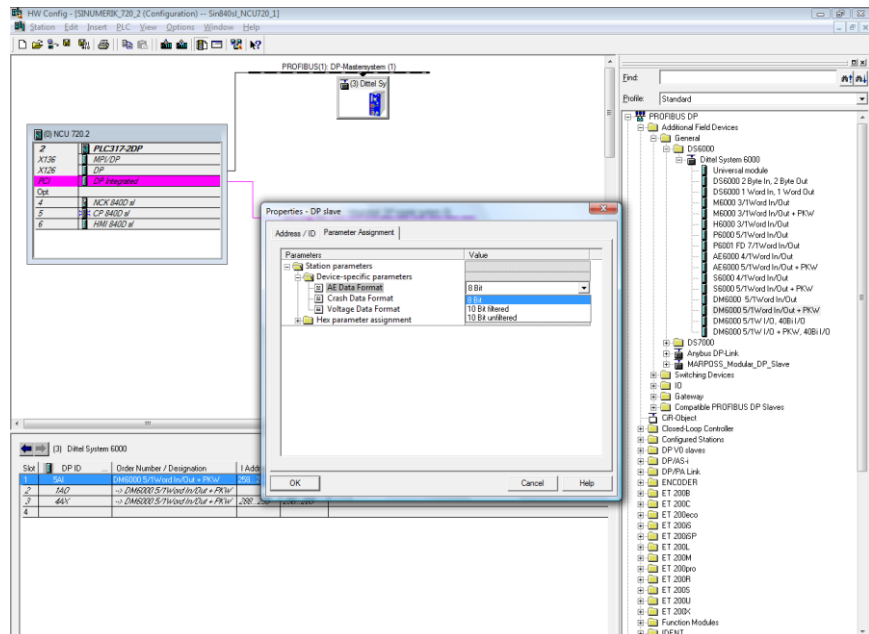


Figure 9-21

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Crash signal (**Crash Data Format**) are found.

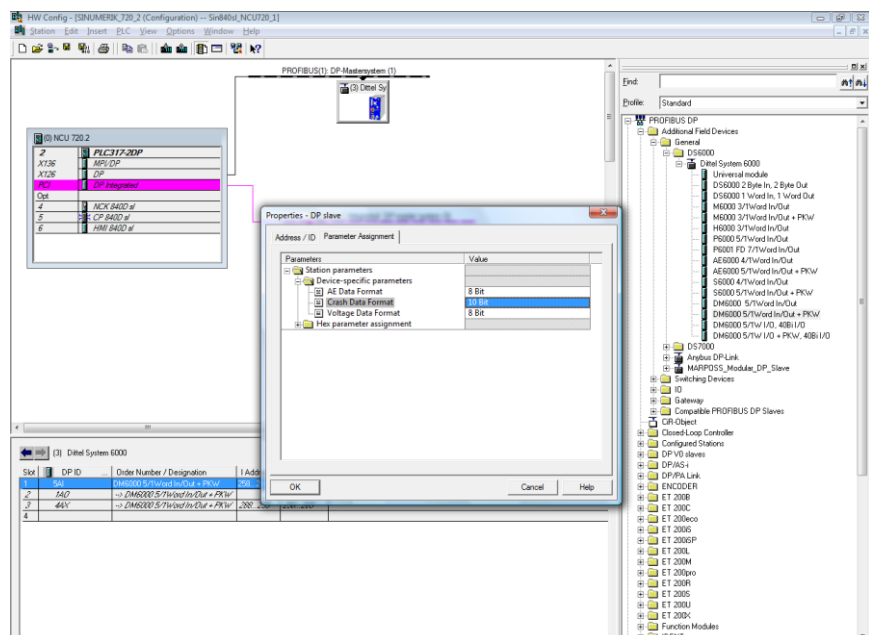


Figure 9-22

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Voltage signal (**Voltage Data Format**) are found.

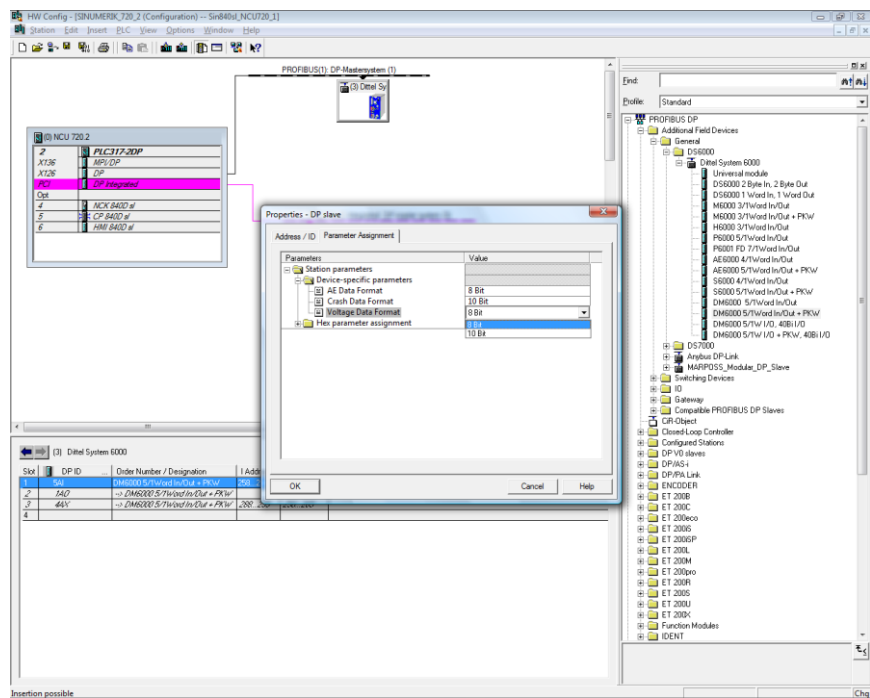


Figure 9-23

9.5.2 PROFINET®

Adding ▸ Highlight the data format »DM6000 5/1Word In/Out + PKW«. Using the LEFT mouse button, drag and drop the data format to the detail view.

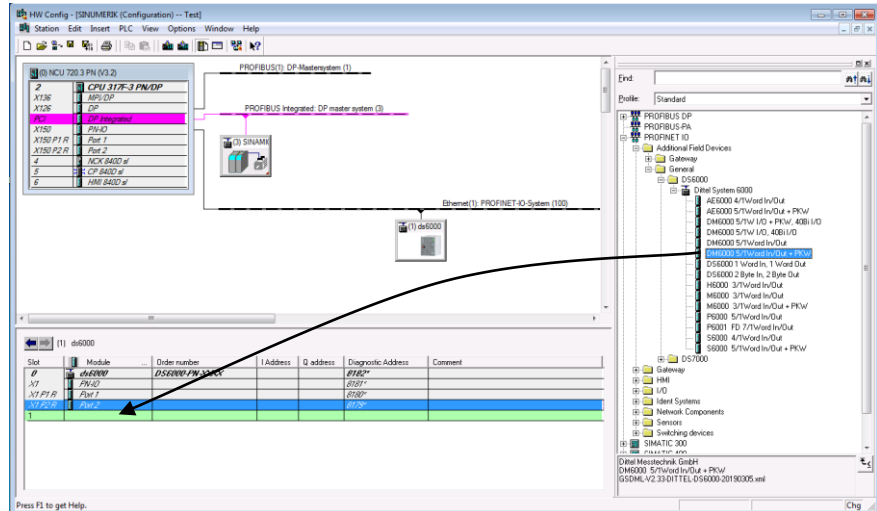


Figure 9-24 DM6000 5/1Word In/Out + PKW

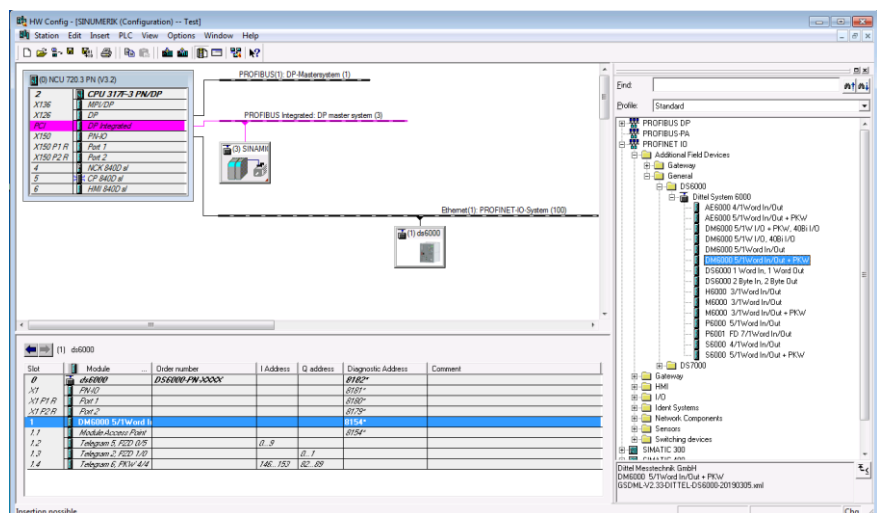


Figure 9-25 DM6000 5/1Word In/Out + PKW

Properties ➤ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the AE signal (**AE Data Format**) are found.

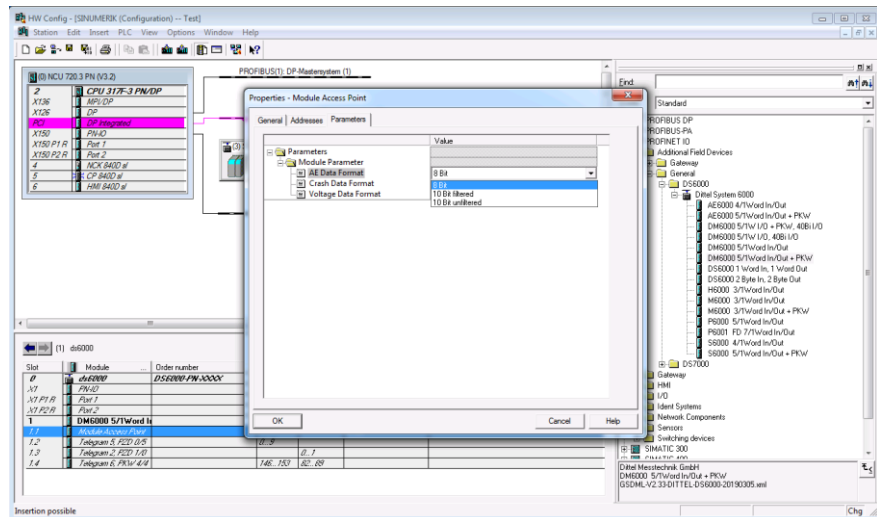


Figure 9-26

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Crash signal (**Crash Data Format**) are found.

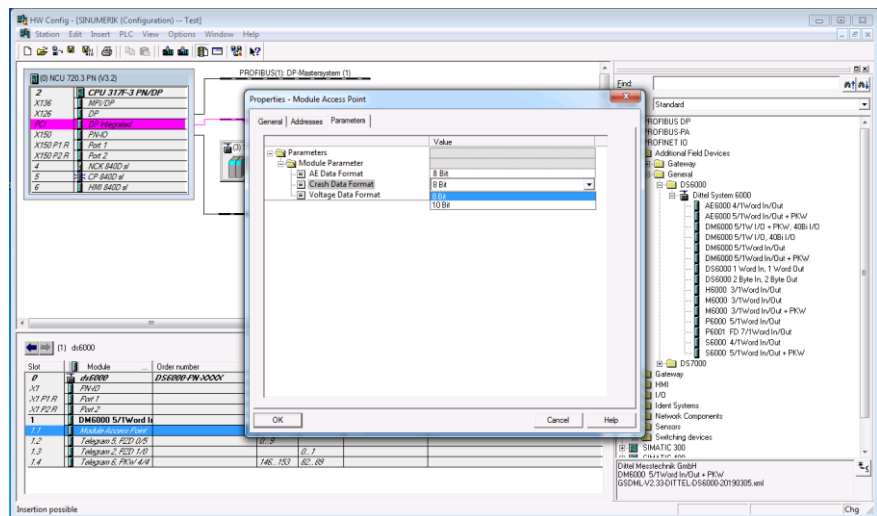


Figure 9-27

Open the register »Parameters«. In the folder »Module Parameter« the settings for the Voltage signal (**Voltage Data Format**) are found.

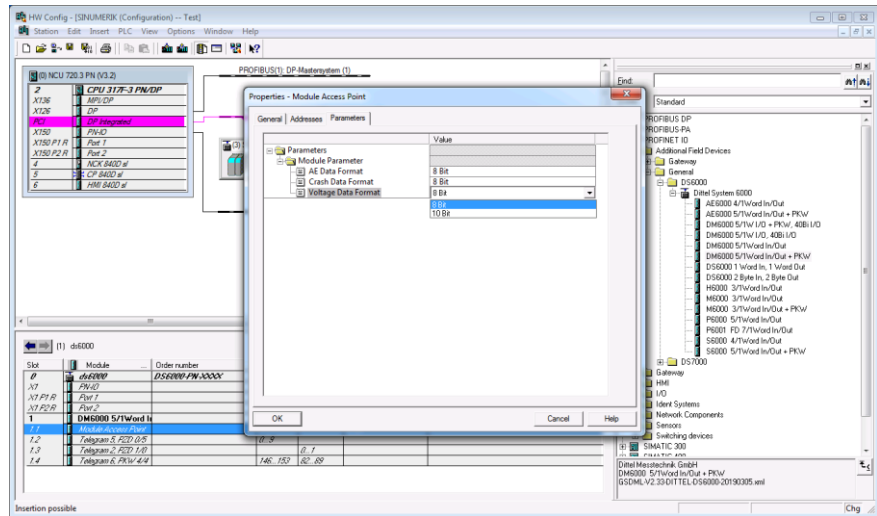


Figure 9-28

9.5.3 Automation System to Module DM6000

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 9.2.1, Automation System to Module DM6000
2	PKW	4 * short	Parameter data area

9.5.4 Module DM6000 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 9.2.2, Module DM6000 to Automation System
2	AE signal	short	Output of AE signal (1 ms sampling rate): • AE Data Format, 8 Bit, as displayed (filtered, 0 ... 200, current Offset) • AE Data Format, 10 Bit filtered (0 ... 1023, Offset = 0) • AE signal, 10 Bit unfiltered, (unfiltered (0 ... 1023, Offset = 0)) The choice is made while adjusting the parameters with the planning tool.
4	Crash signal	short	Output of Crash signal (1 ms sampling rate): • Crash Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Crash Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
6	Voltage signal	short	Output of Voltage signal (1 ms sampling rate): • Voltage Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Voltage Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
8	DM6000 Interface	short	Limits 6 ... 10: Bits 3 – 7 Monitoring Envelope: Bits 8 – 9, see following table
10	PKW	4 * short	Parameter data area

Pos. Word.Bit	Function	Value/Action
4.0	reserved	Static 0
4.1	reserved	Static 0
4.2	reserved	Static 0
4.3	Monitoring Limit 6	Signal below Limit 6: 1 Signal above Limit 6: 0
4.4	Monitoring Limit 7	Signal below Limit 7: 1 Signal above Limit 7: 0
4.5	Monitoring Limit 8	Signal below Limit 8: 1 Signal above Limit 8: 0
4.6	Monitoring Limit 9	Signal below Limit 9: 1 Signal above Limit 9: 0
4.7	Monitoring Limit 10	Signal below Limit 10: 1 Signal above Limit 10: 0
4.8	Signal below Monitoring Envelope	Error response time not exceeded*: 1 Error response time exceeded*: 0
4.9	Signal above Monitoring Envelope	Error response time not exceeded*: 1 Error response time exceeded*: 0
4.10	reserved	Static 0
4.11	reserved	Static 0
4.12	reserved	Static 0
4.13	reserved	Static 0
4.14	reserved	Static 0
4.15	reserved	Static 0

* only valid with license 'Envelope'

9.5.5 Parameter description DM6000

9.5.5.1 Signal sources – standard

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
0	Continuous Measurement	1	0	Unsigned16	0	1	1	0 = False 1 = True	R/W
1	Measurement Time	1	0	Unsigned16	1	90	10	in s (1 s ... 90 s)	R/W
2	AE Offset Range/ AE Auto Offset	1	0	Unsigned16	0x0000	0x0006	0x0004	Bit 1/0: AE Offset Range 0 = 0 ... 25 % 1 = 0 ... 66 % 2 = 0 ... 150 % Bit 2: AE Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
3	AE Input	1	0	Unsigned16	0	3	0	0 = Sensor 1 1 = Sensor 2 2 = Sensor 3 3 = Sensor 4	R/W
4	AE Signal Smoothing	1	0	Unsigned16	0	3	2	0 = 3 Hz 1 = 10 Hz 2 = 30 Hz 3 = 100 Hz	R/W
5	AE Frequency Range	1	0	Unsigned16	0	3	1	0 = Low 1 = Medium-low 2 = Medium-high 3 = High	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
6	AE Amplification	1	0	Unsigned16	0	70	50	in dB (0 ... 70 dB)	R/W
7	AE Offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %) depends on AE Offset Range (PNU2) Values above the Offset Range are limited to the maximum value.	R/W
8	Crash Amplification	1	0	Unsigned16	0	7	2	in steps of 5 dB 0 = 0 dB 1 = 5 dB ... 7 = 35 dB	R/W
9	Crash Offset	1	0	Unsigned16	0	25	0	in % (0 ... 25 %)	R/W
10	Crash Limit	1	0	Unsigned16	0	99	50	in % (0 ... 99 %)	R/W
11	Voltage Offset Range/Voltage Auto Offset	1	0	Unsigned16	0x0000	0x0006	0x0000	Bit 1/0: Voltage Offset Range 0 = 0 ... 25 % 1 = 0 ... 66 % 2 = 0 ... 150 % Bit 2: Voltage Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
12	Voltage Measurement Range	1	0	Unsigned16	0	3	3	0 = 1 V 1 = 2 V 2 = 5 V 3 = 10 V	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
13	Voltage Offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %) depends on Voltage Offset Range (PNU11) Values above the Offset Range are limited to the maximum value.	R/W
14	Invalid PNU							Parameter not available	R/W
15*	PROFIBUS 1 Auto Offset/Offset Range	1	0	Unsigned16	0x0003	0x0007	0x0003	Bit 1/0: Offset Range 3 = 0 ... 200 % Bit 2: Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
16*	PROFIBUS 1 signal source	1	0	Unsigned16	0	8	0	0 = Axis 1 1 = Axis 2 ... 7 = Axis 8 8 = Off	R/W
17*	PROFIBUS 1 signal type	1	0	Unsigned16	1	3	1	0 = Reserved 1 = Torque 2 = Real power 3 = Actual current value	R/W
18*	PROFIBUS 1 filter type/filter time constant	1	0	Unsigned16	0x0001	0xFFFE	10	Bit 15: Filter type 0 = Block Mean Value 1 = Pt1 Bit 0 to 14: Filter time constant in ms (1 ms ... 32766 ms) The min./max. values are interpreted per parameter	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
19*	PROFIBUS 1 Signal attenuation	1	0	Unsigned16	0	140	50	in dB	R/W
20*	PROFIBUS 1 Signal offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %)	R/W
21*	PROFIBUS 1 Emergency stop when exceeding limit	1	0	Unsigned16	0	10	0	0 = Off 1 = Limit 1 ... 10 = Limit 10 (limit assigned to emergency stop)	R/W
22*	PROFIBUS 1 reserved	1	0	Unsigned16	0	0	0	reserved	R/W
23*	PROFIBUS 2 Auto Offset/Offset Range	1	0	Unsigned16	0x0003	0x0007	0x0003	Bit 1/0: Offset Range 3 = 0 ... 200 % Bit 2: Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
24*	PROFIBUS 2 signal source	1	0	Unsigned16	0	8	8	0 = Axis 1 1 = Axis 2 ... 7 = Axis 8 8 = Off	R/W
25*	PROFIBUS 2 signal type	1	0	Unsigned16	1	3	1	0 = Reserved 1 = Torque 2 = Real power 3 = Actual current value	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
26*	PROFIBUS 2 filter type/filter time constant	1	0	Unsigned16	1	0xFFFE	10	Bit 15: Filter type 0 = Block Mean Value 1 = Pt1 Bit 0 to 14: Filter time constant in ms (1 ms ... 32766 ms) The min./max. values are interpreted per parameter	R/W
27*	PROFIBUS 2 Signal attenuation	1	0	Unsigned16	0	140	50	in dB	R/W
28*	PROFIBUS 2 Signal offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %)	R/W
29*	PROFIBUS 2 Emergency stop when exceeding limit	1	0	Unsigned16	0	10	0	0 = Off 1 = Limit 1 ... 10 = Limit 10 (limit assigned to emergency stop)	R/W
30*	PROFIBUS 2 reserved	1	0	Unsigned16	0	0	0	reserved	R/W
31*	PROFIBUS 3 Auto Offset/Offset Range	1	0	Unsigned16	0x0003	0x0007	0x0003	Bit 1/0: Offset Range 3 = 0 ... 200 % Bit 2: Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
32*	PROFIBUS 3 signal source	1	0	Unsigned16	0	8	8	0 = Axis 1 1 = Axis 2 ... 7 = Axis 8 8 = Off	R/W
33*	PROFIBUS 3 signal type	1	0	Unsigned16	1	3	1	0 = Reserved 1 = Torque 2 = Real power 3 = Actual current value	R/W
34*	PROFIBUS 3 filter type/filter time constant	1	0	Unsigned16	1	0xFFFE	10	Bit 15: Filter type 0 = Block Mean Value 1 = Pt1 Bit 0 to 14: Filter time constant in ms (1 ms ... 32766 ms) The min./max. values are interpreted per parameter	R/W
35*	PROFIBUS 3 Signal attenuation	1	0	Unsigned16	0	140	50	in dB	R/W
36*	PROFIBUS 3 Signal offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %)	R/W
37*	PROFIBUS 3 Emergency stop when exceeding limit	1	0	Unsigned16	0	10	0	0 = Off 1 = Limit 1 ... 10 = Limit 10 (limit assigned to emergency stop)	R/W
38*	PROFIBUS 3 reserved	1	0	Unsigned16	0	0	0	reserved	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
39*	PROFIBUS 4 Auto Offset/Offset Range	1	0	Unsigned16	0x0003	0x0007	0x0003	Bit 1/0: Offset Range 3 = 0 ... 200 % Bit 2: Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
40*	PROFIBUS 4 signal source	1	0	Unsigned16	0	8	8	0 = Axis 1 1 = Axis 2 ... 7 = Axis 8 8 = Off	R/W
41*	PROFIBUS 4 signal type	1	0	Unsigned16	1	3	1	0 = Reserved 1 = Torque 2 = Real power 3 = Actual current value	R/W
42*	PROFIBUS 4 filter type/filter time constant	1	0	Unsigned16	1	0xFFFE	10	Bit 15: Filter type 0 = Block Mean Value 1 = Pt1 Bit 0 to 14: Filter time constant in ms (1 ms ... 32766 ms) The min./max. values are interpreted per parameter	R/W
43*	PROFIBUS 4 Signal attenuation	1	0	Unsigned16	0	140	50	in dB	R/W
44*	PROFIBUS 4 Signal offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %)	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
45*	PROFIBUS 4 Emergency stop when exceeding limit	1	0	Unsigned16	0	10	0	0 = Off 1 = Limit 1 ... 10 = Limit 10 (limit assigned to emergency stop)	R/W
46*	PROFIBUS 4 reserved	1	0	Unsigned16	0	0	0	reserved	R/W

* depends on licensing:

Without license ,PROFIBUS® Data Channels':

Parameters not effective

With license ,PROFIBUS® Data Channels':

Parameters not effective in this project as ,Tool & Process Monitoring' is not projected

9.5.5.2 Evaluation strategies – limits

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
100	Limit 1	2	0 1	Unsigned16	0 0	99 6*	20 1	in % (0 ... 99 %) Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	R/W
101	Limit 2	2	0 1	Unsigned16	0 0	99 6*	40 1	in % (0 ... 99 %) Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	R/W
102	Limit 3	2	0 1	Unsigned16	0 0	99 6*	60 1	in % (0 ... 99 %) Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
103	Limit 4	2	0 1	Unsigned16	0 0	99 6*	80 1	in % (0 ... 99 %) Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	R/W
104	Limit 5	2	0 1	Unsigned16	0 0	99 6*	50 2	in % (0 ... 99 %) Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	R/W
105	Limit 6	2	0 1	Unsigned16	0 0	99 6*	20 0	in % (0 ... 99 %) Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
106	Limit 7	2	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
			1		0	6*	0	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	
107	Limit 8	2	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
			1		0	6*	0	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	
108	Limit 9	2	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
			1		0	6*	0	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
109	Limit 10	2	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
			1		0	6*	0	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	

* Max. value depends on licensing:

Without license ‚PROFIBUS® Data Channels’:

Max. value = 2

With license ‚PROFIBUS® Data Channels’:

Max. value = 6 (not effective in this project)

9.5.5.3 Evaluation strategies – enhanced strategies

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
110	Envelope Additional Monitoring	2	0	Unsigned16	2	4	3	Number of Envelope nodes: 2 = 200 3 = 300 4 = 800	R/W
			1		0	6*	0	Monitored input: 0 = None, remaining Envelope parameters are not effective 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	
111	Envelope Free Envelope Memory	1	0	Unsigned16	0	411	411	Number of blocks of free Envelope memory (for 32 nodes respectively segment time points)	RO
112	Envelope Upper Limit	1	0	Unsigned16	0	199	10	in steps of 0.5 % (0.5 % ... 99.5 %) 0 = Off	R/W
113	Envelope Lower Limit	1	0	Unsigned16	0	199	10	in steps of 0.5 % (0.5 % ... 99.5 %) 0 = Off	R/W
114	Envelope Horizontal Offset	1	0	Unsigned16	1	30000	5	in steps of 0.01 s (0.01 s ... 30 s)	R/W
115	Envelope Error Response Time	1	0	Unsigned16	0	30000	10	in steps of 0.01 s (0.01 s ... 30 s)	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
116	Envelope Learning after each workpiece	1	0	Unsigned16	0	100	0	in steps of 1 % (1 % ... 100 %) 0 = False	R/W
117	Envelope Learning next workpiece	1	0	Unsigned16	0	100	0	in steps of 1 (1 ... 100) 0 = False	R/W
118	Envelope Envelope duration	1	0	Unsigned32	0	4294901759	0	in steps of 0.01 s (0.01 s ... 42949017.59 s) 0 = no Envelope available	RO
119	Envelope Segment Synchronisation	1	0	Unsigned16	0	2**	0	0 = No synchronisation 1 = Without time correction 2 = With time correction	R/W

* Max. value depends on licensing

Without license 'Envelope':

With license 'Envelope', without license 'PROFIBUS® Data Channels':

With license 'Envelope' and license 'PROFIBUS® Data Channels':

Max. value = 0

Max. value = 2

Max. value = 6 (not effective in this project however)

** Max. value depends on licensing (parameters effective only with license 'Envelope')

Without license 'Segmented Envelope':

With license 'Segmented Envelope':

Max. value = 0

Max. value = 2

9.5.5.4 AE Configuration

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
200	Parameter	3	0	Unsigned16	0x0000	0x003F	0x0000	Configuration word Bit 0: Sensor 1 0 = Passive, 1 = Active Bit 1: Sensor 2 0 = Passive, 1 = Active Bit 2: Sensor 3 0 = Passive, 1 = Active Bit 3: Sensor 4 0 = Passive, 1 = Active Bit 4: Positive Hold 0 = False, 1 = True Bit 5: Negative Hold 0 = False, 1 = True	R/W
			1		1	100	1	Hold Time in steps of 10 ms (10 ms ... 1000 ms)	
			2		10	65	10	Sinumerik Profibus Communication Communication clock in ms (not effective in this project)	
201	Invalid PNU							Parameter not available	R/W

PNU	Parameter name	No. of sub-index elements	Sub- index	Data type	Min. value	Max. value	Default value	Description	Access
202	Identification Data	15	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14	Unsigned16	-	-	-	Low byte relevant only Module Type 9 Production Year as of 2000 Production Week Software Version value/10 Build number value/100 Article Number in BCD code hundred thsds/ten thsds thousands/hundreds tens/ones Serial Number (4 bytes) LSB Operating Hours MSB in hours (3 bytes) LSB MSB	RO

9.6 Extension with Data Format DM6000 5/1W I/O, 40Bi I/O

9.6.1 PROFIBUS®

From Module Software Version 1.2 or later.

Adding ▸ Highlight the data format »DM6000 5/1W I/O, 40Bi I/O«. Using the LEFT mouse button, drag and drop the data format to the detail view.

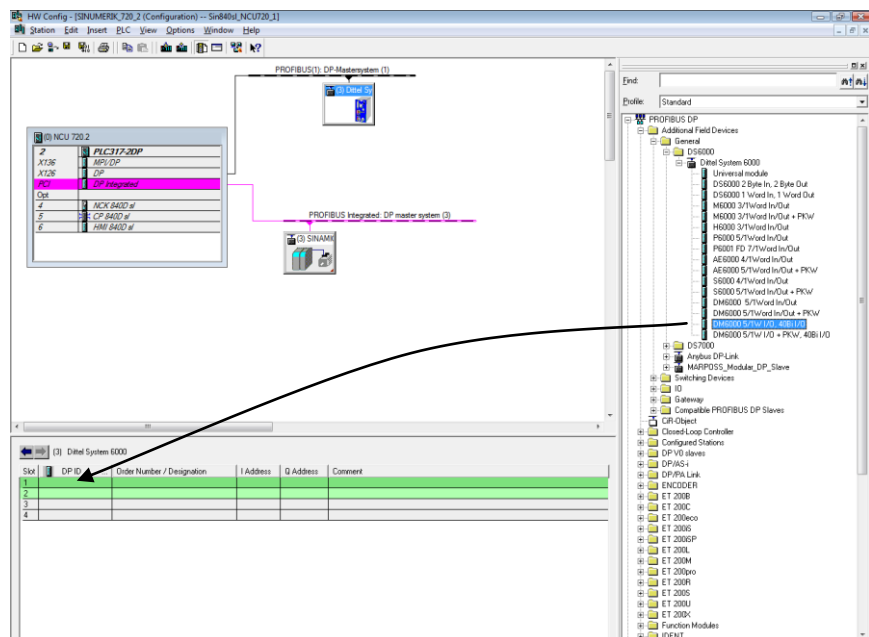


Figure 9-29 DM6000 5/1W I/O, 40Bi I/O

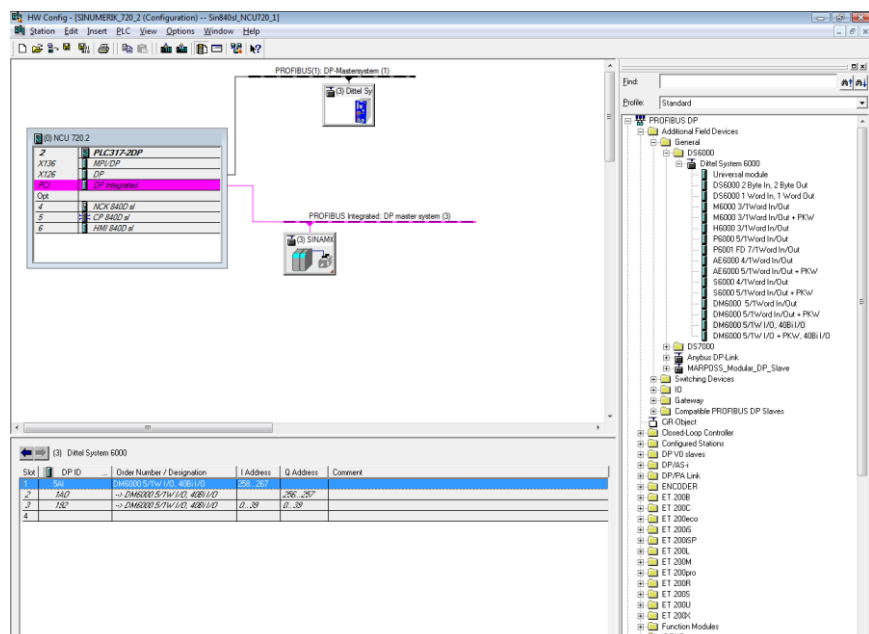


Figure 9-30 DM6000 5/1W I/O, 40Bi I/O

Properties ▷ With the LEFT mouse double button click on line » DM6000 5/1W I/O, 40Bi I/O «. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the AE signal (**AE Data Format**) are found.

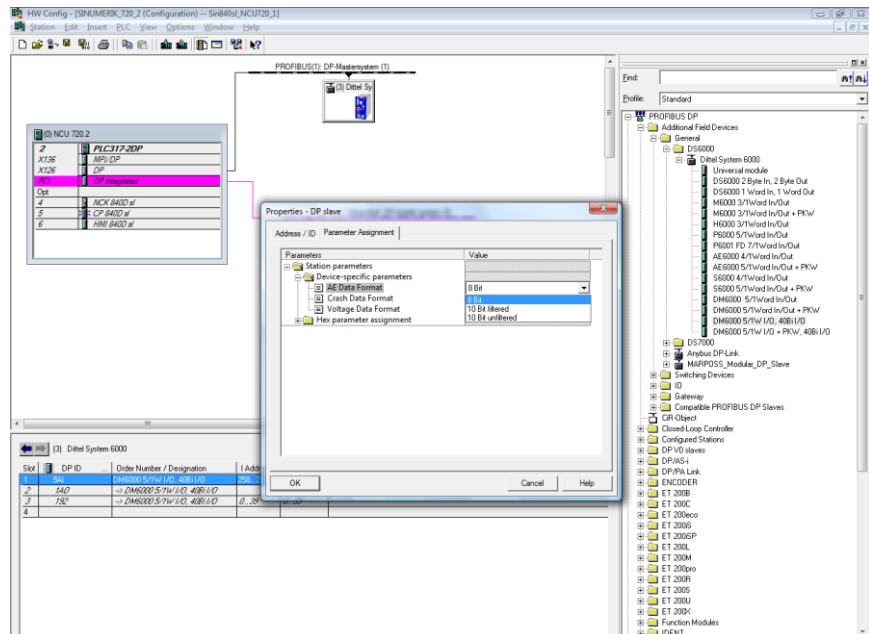


Figure 9-31

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Crash signal (**Crash Data Format**) are found.

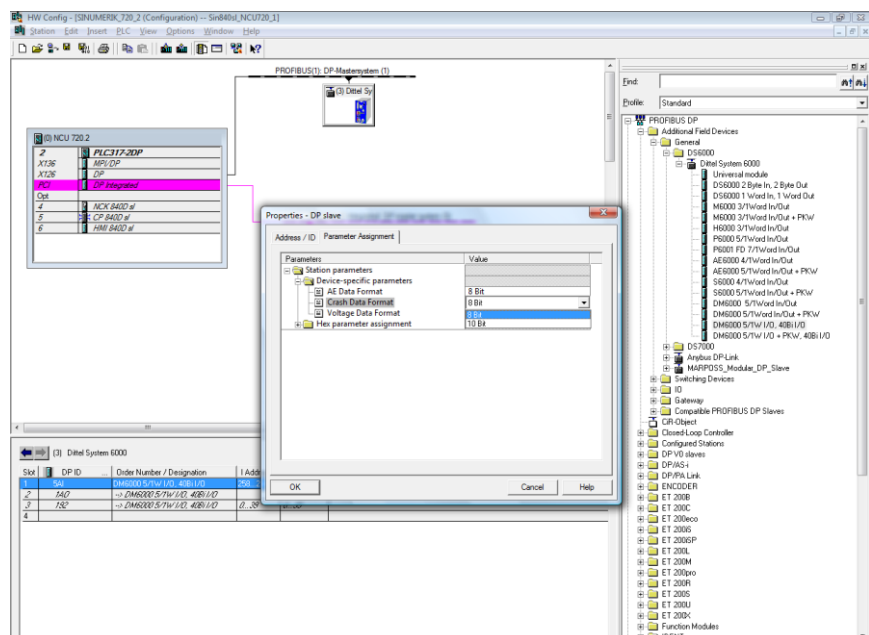


Figure 9-32

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Voltage signal (**Voltage Data Format**) are found.

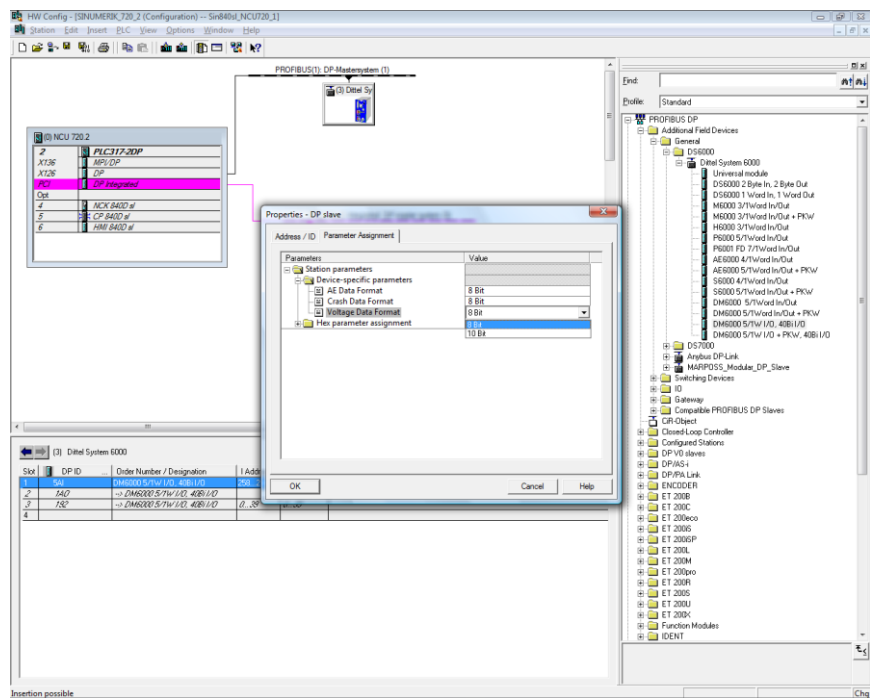


Figure 9-33

9.6.2 PROFINET®

Adding ▹ Highlight the data format »DM6000 5/1W I/O, 40Bi I/O«. Using the LEFT mouse button, drag and drop the data format to the detail view.

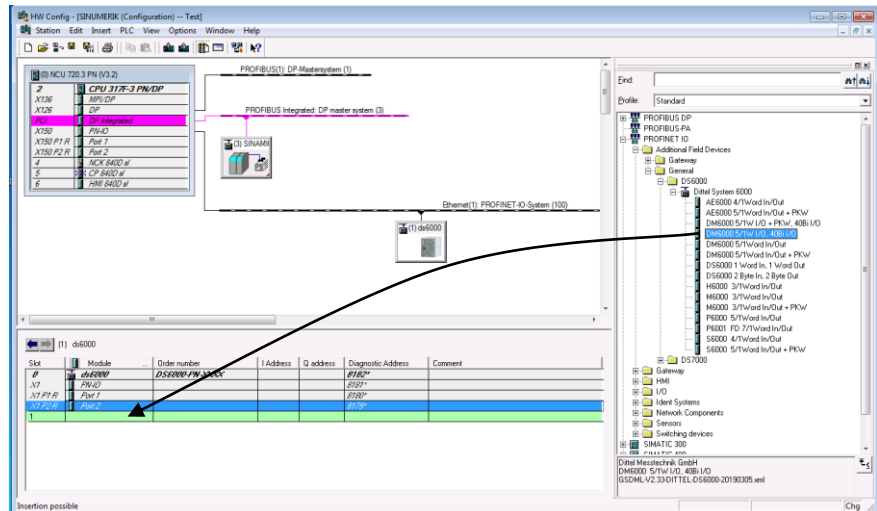


Figure 9-34 DM6000 5/1W I/O, 40Bi I/O

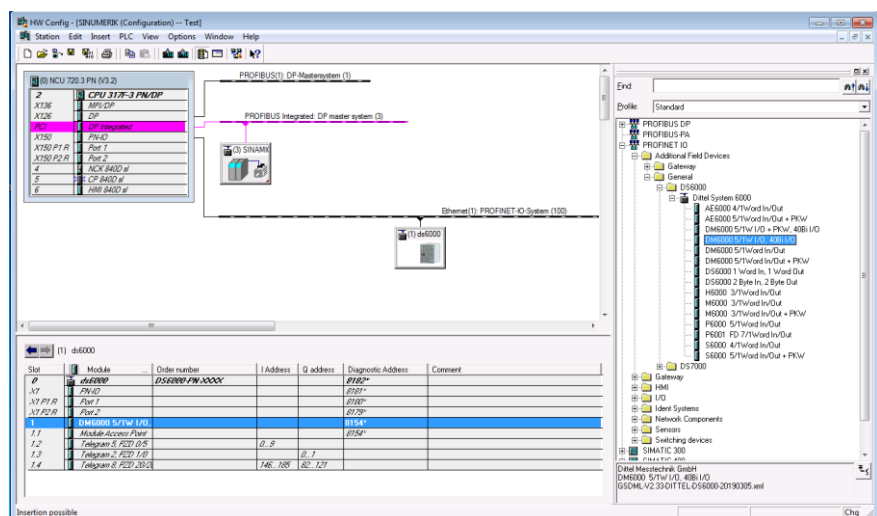


Figure 9-35 DM6000 5/1W I/O, 40Bi I/O

Properties ➤ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the AE signal (**AE Data Format**) are found.

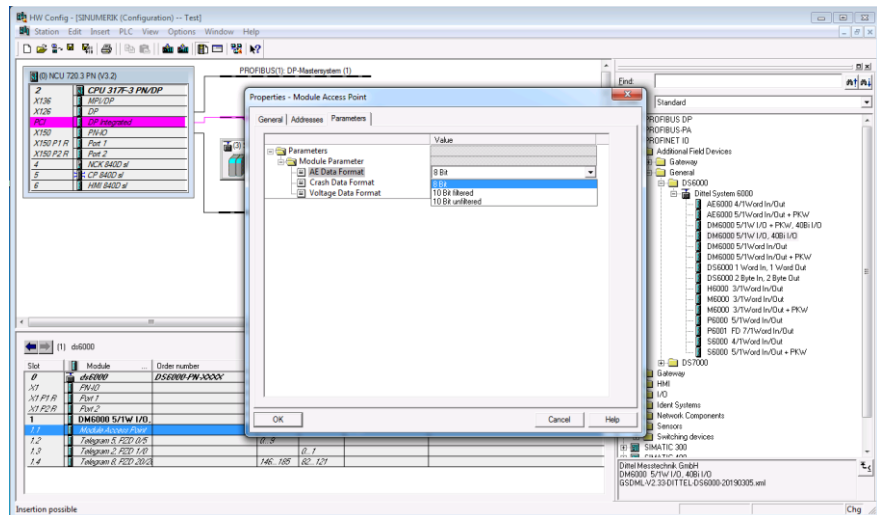


Figure 9-36

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Crash signal (**Crash Data Format**) are found.

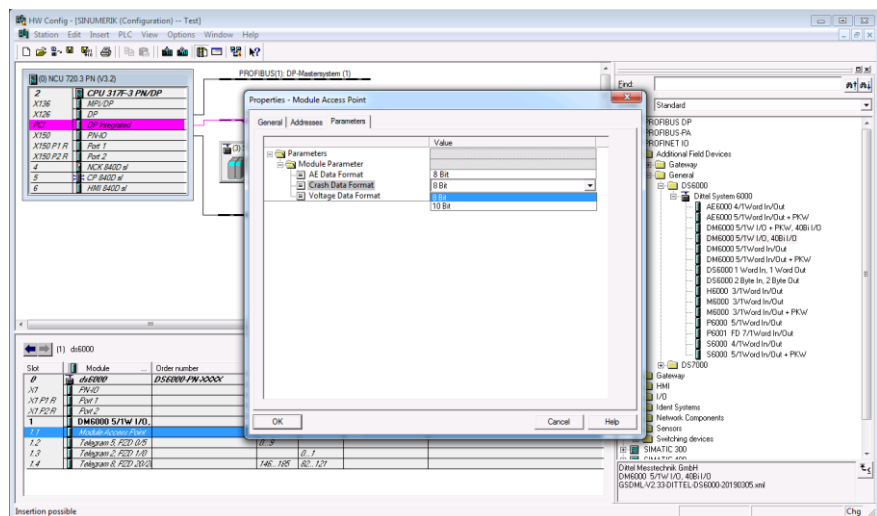


Figure 9-37

Open the register »Parameters«. In the folder »Module Parameter« the settings for the Voltage signal (**Voltage Data Format**) are found.

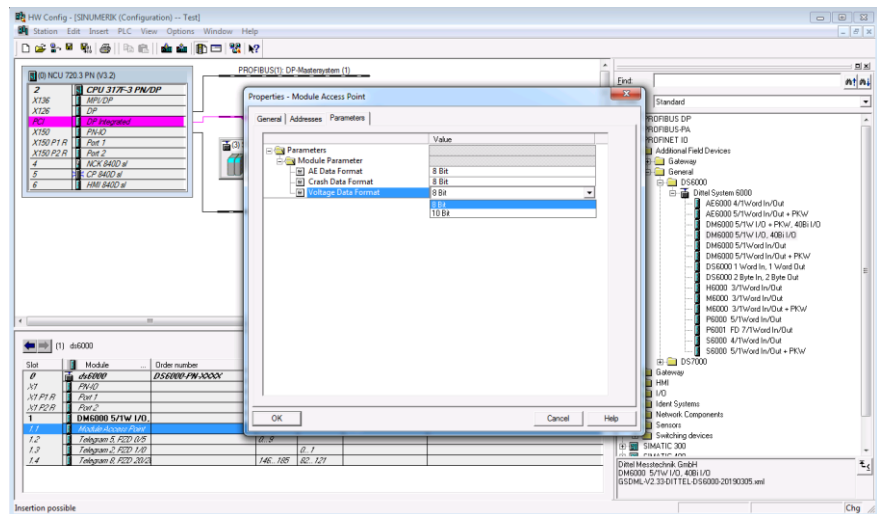


Figure 9-38

9.6.3 Automation System to Module DM6000

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 9.2.1, Automation System to Module DM6000
2	Tool & Process Monitoring Configuration	8* char	Global parameters (little endian)
10	Tool & Process Monitoring Signal data 1	long	Monitored axis 1 (little endian)
14	Tool & Process Monitoring Signal data 2	long	Monitored axis 2 (little endian)
18	Tool & Process Monitoring Signal data 3	long	Monitored axis 3 (little endian)
22	Tool & Process Monitoring Signal data 4	long	Monitored axis 4 (little endian)
26	Tool & Process Monitoring Signal data 5	long	Monitored axis 5 (little endian)
30	Tool & Process Monitoring Signal data 6	long	Monitored axis 6 (little endian)
34	Tool & Process Monitoring Signal data 7	long	Monitored axis 7 (little endian)
38	Tool & Process Monitoring Signal data 8	long	Monitored axis 8 (little endian)

9.6.4 Module DM6000 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 9.2.2, Module DM6000 to Automation System
2	AE signal	short	Output of AE signal (1 ms sampling rate): • AE Data Format, 8 Bit, as displayed (filtered, 0 ... 200, current Offset) • AE Data Format, 10 Bit filtered (0 ... 1023, Offset = 0) • AE signal, 10 Bit unfiltered, (unfiltered (0 ... 1023, Offset = 0)) The choice is made while adjusting the parameters with the planning tool.
4	Crash signal	short	Output of Crash signal (1 ms sampling rate): • Crash Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Crash Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
6	Voltage signal	short	Output of Voltage signal (1 ms sampling rate): • Voltage Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Voltage Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
8	DM6000 Interface	short	Limits 6 ... 10: Bits 3 – 7 Monitoring Envelope: Bits 8 – 9, see following table
10	Tool & Process Monitoring Configuration	8 * char	Global parameters (little endian)
18	Tool & Process Monitoring Configuration 1	4 * char	Monitored axis 1 (little endian)

Offset in bytes	Description	Format	Remark
22	Tool & Process Monitoring Configuration 2	4 * char	Monitored axis 2 (little endian)
26	Tool & Process Monitoring Configuration 3	4 * char	Monitored axis 3 (little endian)
30	Tool & Process Monitoring Configuration 4	4 * char	Monitored axis 4 (little endian)
34	Tool & Process Monitoring Configuration 5	4 * char	Monitored axis 5 (little endian)
38	Tool & Process Monitoring Configuration 6	4 * char	Monitored axis 6 (little endian)
42	Tool & Process Monitoring Configuration 7	4 * char	Monitored axis 7 (little endian)
46	Tool & Process Monitoring Configuration 8	4 * char	Monitored axis 8 (little endian)

Pos. Word.Bit	Function	Value/Action
4.0	reserved	Static 0
4.1	reserved	Static 0
4.2	reserved	Static 0
4.3	Monitoring Limit 6	Signal below Limit 6: 1 Signal above Limit 6: 0
4.4	Monitoring Limit 7	Signal below Limit 7: 1 Signal above Limit 7: 0
4.5	Monitoring Limit 8	Signal below Limit 8: 1 Signal above Limit 8: 0
4.6	Monitoring Limit 9	Signal below Limit 9: 1 Signal above Limit 9: 0
4.7	Monitoring Limit 10	Signal below Limit 10: 1 Signal above Limit 10: 0
4.8	Signal below Monitoring Envelope	Error response time not exceeded*: 1 Error response time exceeded*: 0
4.9	Signal above Monitoring Envelope	Error response time not exceeded*: 1 Error response time exceeded*: 0
4.10	reserved	Static 0
4.11	reserved	Static 0
4.12	reserved	Static 0
4.13	reserved	Static 0
4.14	reserved	Static 0
4.15	reserved	Static 0

* only valid with license 'Envelope'

9.7 Extension with Data Format DM6000 5/1W I/O + PKW, 40Bi I/O

9.7.1 PROFIBUS®

From Module Software Version 1.2 or later.

- Adding ➤ Highlight the data format »DM6000 5/1W I/O + PKW, 40Bi I/O «. Using the LEFT mouse button, drag and drop the data format to the detail view.

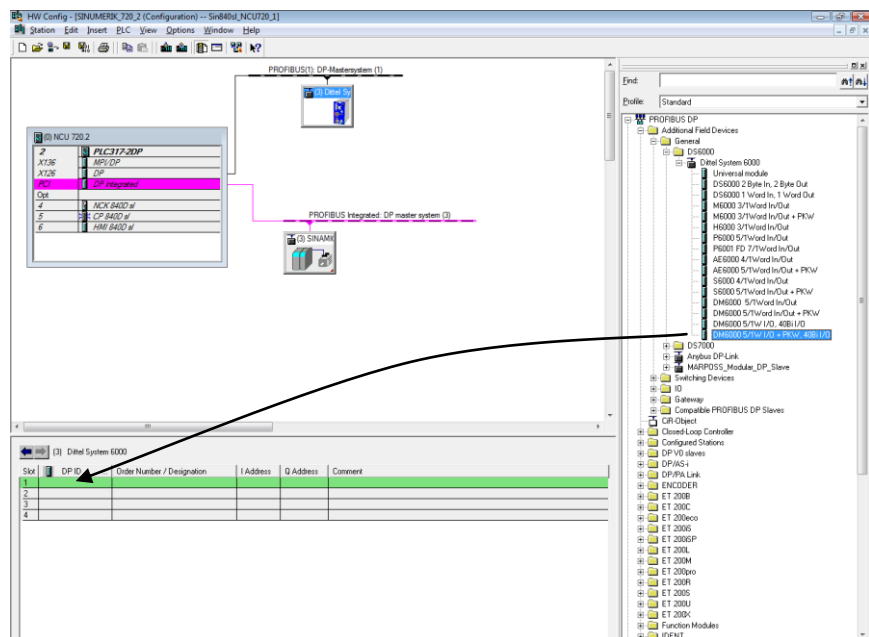


Figure 9-39 DM6000 5/1W I/O + PKW, 40Bi I/O

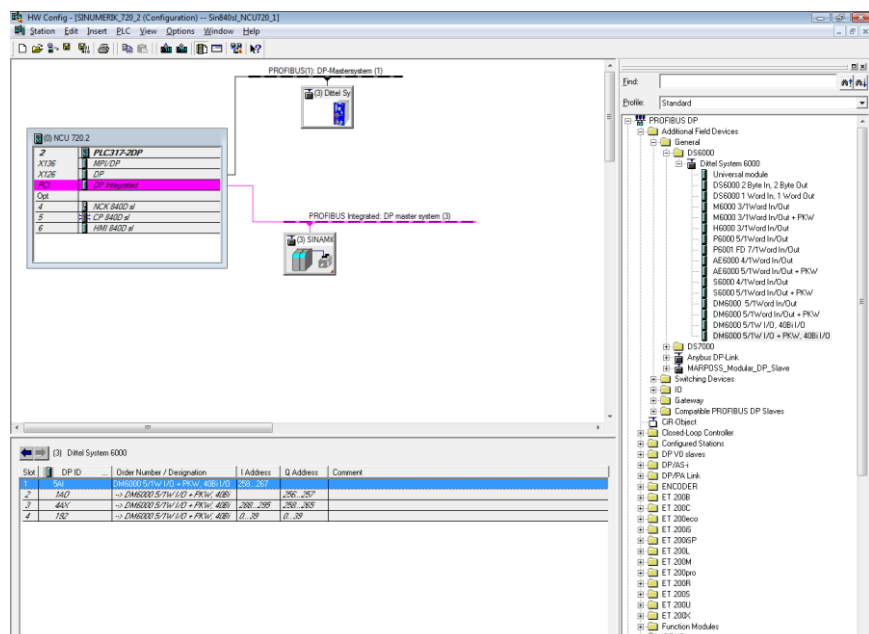


Figure 9-40 DM6000 5/1W I/O + PKW, 40Bi I/O

Properties ➤ With the LEFT mouse double button click on line »DM6000 5/1W I/O + PKW, 40Bi I/O«. A dialogue window »**Properties DP-Slave**« appears.

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the AE signal (**AE Data Format**) are found.

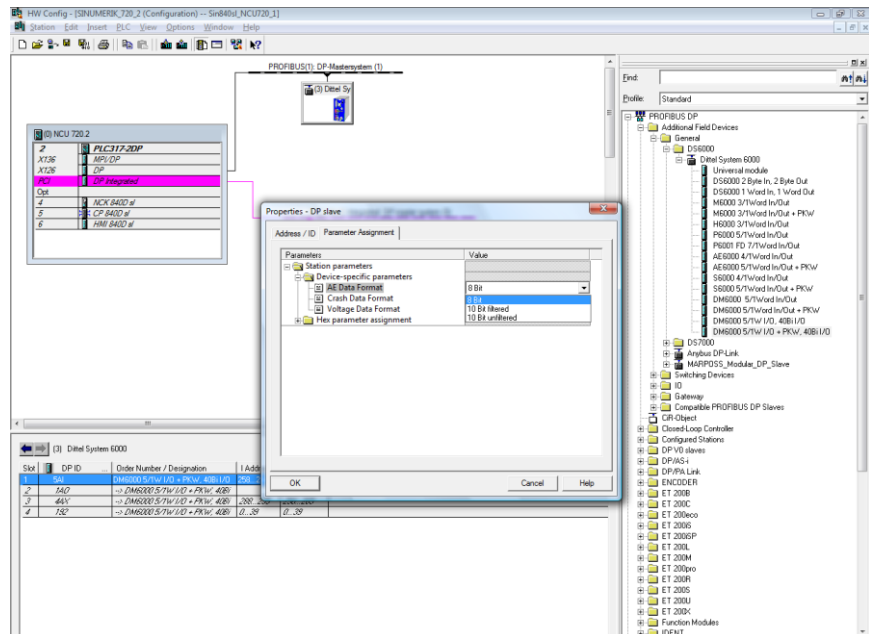


Figure 9-41

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Crash signal (**Crash Data Format**) are found.

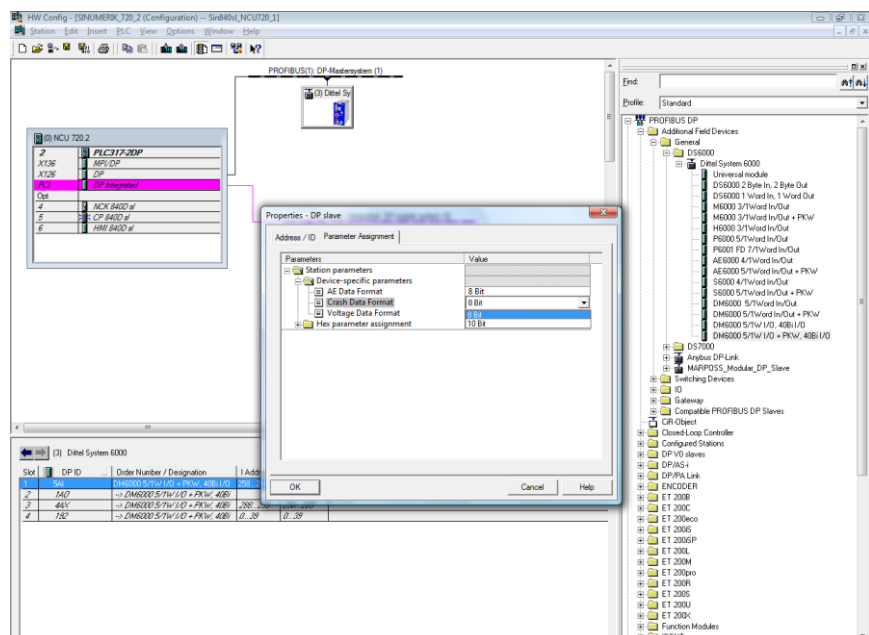


Figure 9-42

Open the register »**Parameter Assignment**«. In the folder »Device-specific parameters« the settings for the Voltage signal (**Voltage Data Format**) are found.

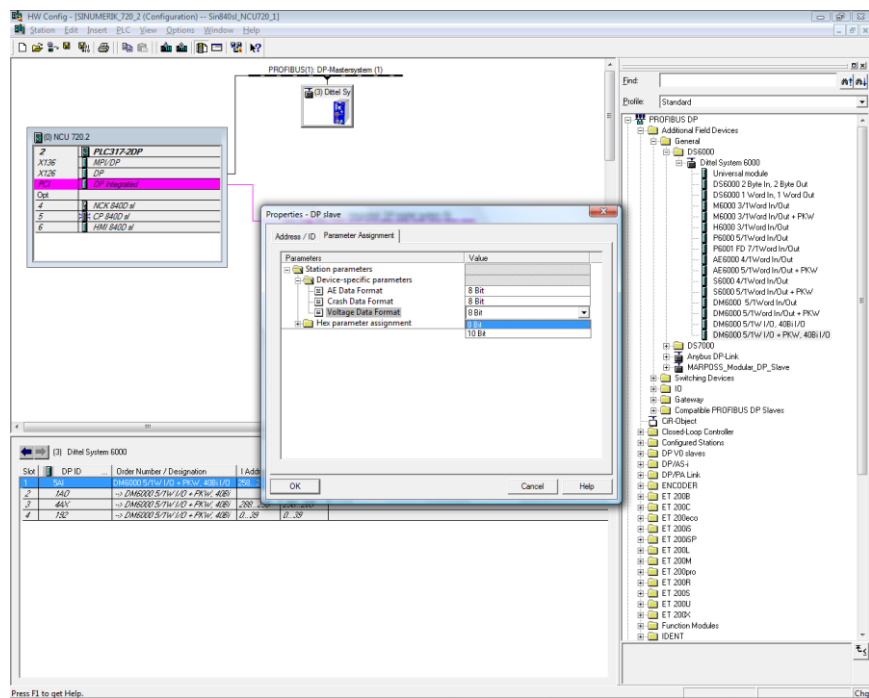


Figure 9-43

9.7.2 PROFINET®

Adding ▹ Highlight the data format »DM6000 5/1W I/O + PKW, 40Bi I/O «. Using the LEFT mouse button, drag and drop the data format to the detail view.

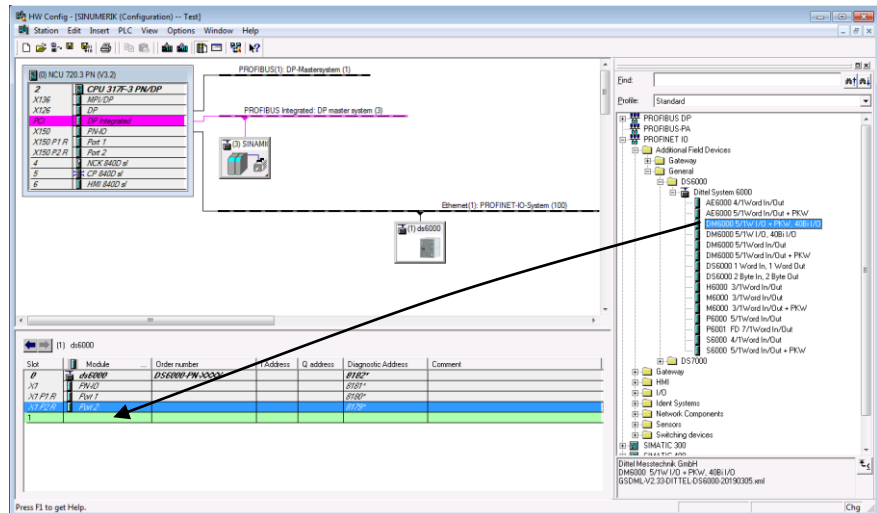


Figure 9-44 DM6000 5/1W I/O + PKW, 40Bi I/O

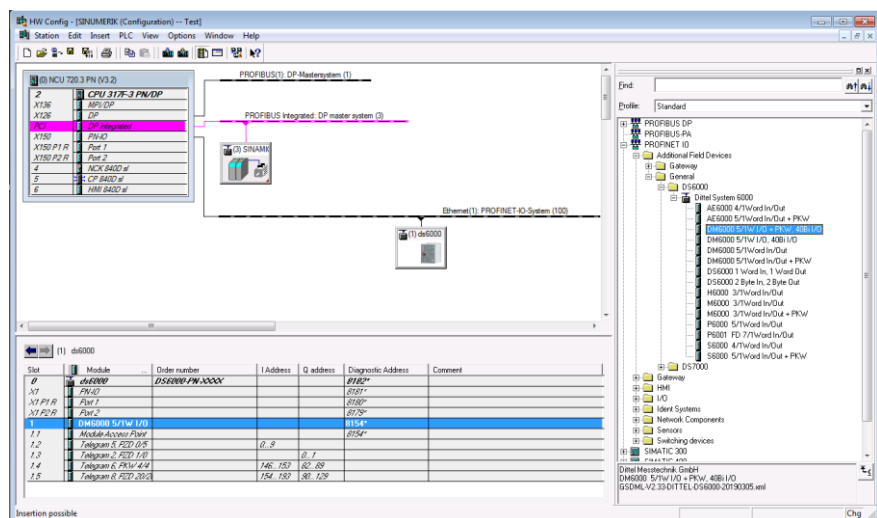


Figure 9-45 DM6000 5/1W I/O + PKW, 40Bi I/O

Properties ➤ With the LEFT mouse button double click on line »Module Access Point«. A dialogue window »**Properties - Module Access Point**« appears.

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the AE signal (**AE Data Format**) are found.

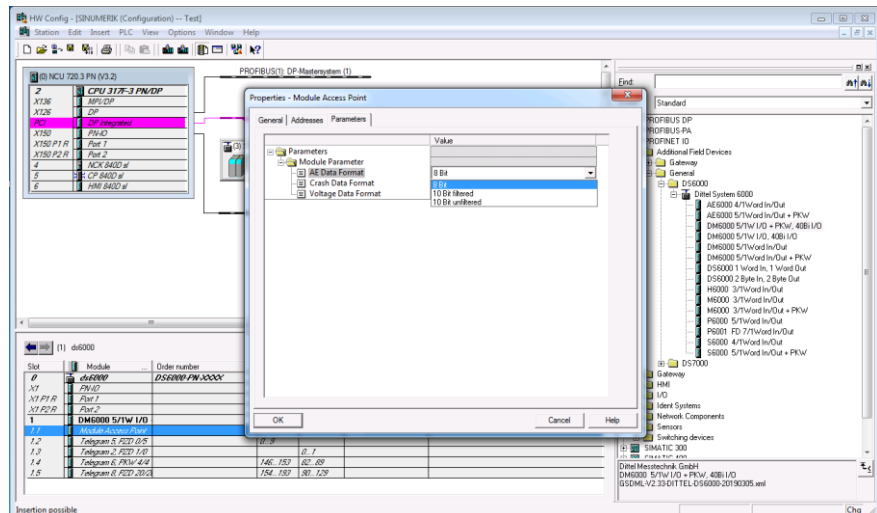


Figure 9-46

Open the register »**Parameters**«. In the folder »Module Parameter« the settings for the Crash signal (**Crash Data Format**) are found.

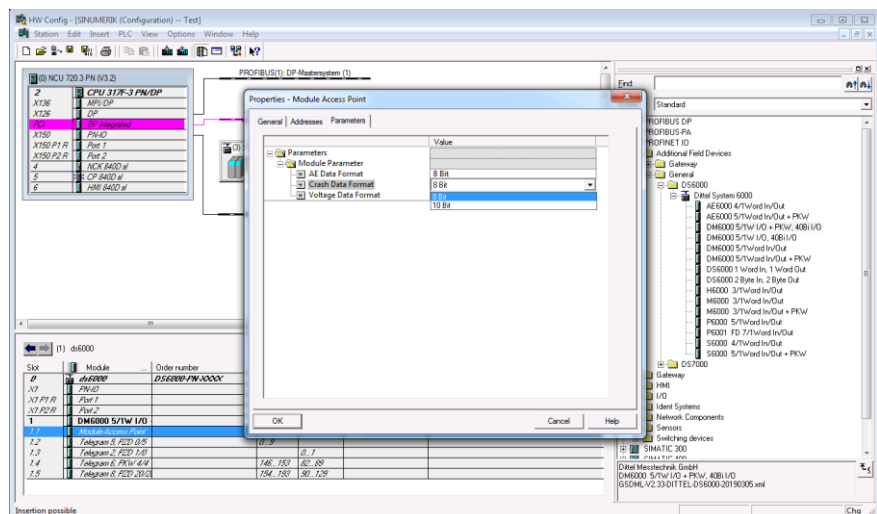


Figure 9-47

Open the register »Parameters«. In the folder »Module Parameter« the settings for the Voltage signal (**Voltage Data Format**) are found.

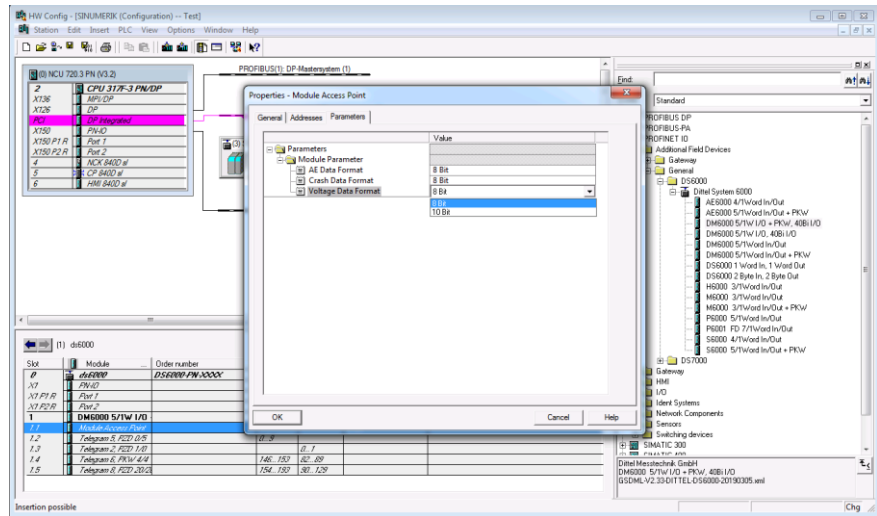


Figure 9-48

9.7.3 Automation System to Module DM6000

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 9.2.1, Automation System to Module DM6000
2	PKW	4 * short	Parameter data area
10	Tool & Process Monitoring Configuration	8 * char	Global parameters (little endian)
18	Tool & Process Monitoring Signal data 1	long	Monitored axis 1 (little endian)
22	Tool & Process Monitoring Signal data 2	long	Monitored axis 2 (little endian)
26	Tool & Process Monitoring Signal data 3	long	Monitored axis 3 (little endian)
30	Tool & Process Monitoring Signal data 4	long	Monitored axis 4 (little endian)
34	Tool & Process Monitoring Signal data 5	long	Monitored axis 5 (little endian)
38	Tool & Process Monitoring Signal data 6	long	Monitored axis 6 (little endian)
42	Tool & Process Monitoring Signal data 7	long	Monitored axis 7 (little endian)
46	Tool & Process Monitoring Signal data 8	long	Monitored axis 8 (little endian)

9.7.4 Module DM6000 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 9.2.2, Module DM6000 to Automation System
2	AE signal	short	Output of AE signal (1 ms sampling rate): • AE Data Format, 8 Bit, as displayed (filtered, 0 ... 200, current Offset) • AE Data Format, 10 Bit filtered (0 ... 1023, Offset = 0) • AE signal, 10 Bit unfiltered, (unfiltered (0 ... 1023, Offset = 0)) The choice is made while adjusting the parameters with the planning tool.
4	Crash signal	short	Output of Crash signal (1 ms sampling rate): • Crash Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Crash Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
6	Voltage signal	short	Output of Voltage signal (1 ms sampling rate): • Voltage Data Format, 8 Bit, as displayed (0 ... 200, current Offset) • Voltage Data Format, 10 Bit, (0 ... 1023, Offset = 0) The choice is made while adjusting the parameters with the planning tool.
8	DM6000 Interface	short	Limits 6 ... 10: Bits 3 – 7 Monitoring Envelope: Bits 8 – 9, see following table
10	PKW	4 * short	Parameter data area
18	Tool & Process Monitoring Configuration	8 * char	Global parameters (little endian)
26	Tool & Process Monitoring Configuration 1	4 * char	Monitored axis 1 (little endian)

Offset in bytes	Description	Format	Remark
30	Tool & Process Monitoring Configuration 2	4 * char	Monitored axis 2 (little endian)
34	Tool & Process Monitoring Configuration 3	4 * char	Monitored axis 3 (little endian)
38	Tool & Process Monitoring Configuration 4	4 * char	Monitored axis 4 (little endian)
42	Tool & Process Monitoring Configuration 5	4 * char	Monitored axis 5 (little endian)
46	Tool & Process Monitoring Configuration 6	4 * char	Monitored axis 6 (little endian)
50	Tool & Process Monitoring Configuration 7	4 * char	Monitored axis 7 (little endian)
54	Tool & Process Monitoring Configuration 8	4 * char	Monitored axis 8 (little endian)

Pos. Word.Bit	Function	Value/Action
4.0	reserved	Static 0
4.1	reserved	Static 0
4.2	reserved	Static 0
4.3	Monitoring Limit 6	Signal below Limit 6: 1 Signal above Limit 6: 0
4.4	Monitoring Limit 7	Signal below Limit 7: 1 Signal above Limit 7: 0
4.5	Monitoring Limit 8	Signal below Limit 8: 1 Signal above Limit 8: 0
4.6	Monitoring Limit 9	Signal below Limit 9: 1 Signal above Limit 9: 0
4.7	Monitoring Limit 10	Signal below Limit 10: 1 Signal above Limit 10: 0
4.8	Signal below Monitoring Envelope	Error response time not exceeded*: 1 Error response time exceeded*: 0
4.9	Signal above Monitoring Envelope	Error response time not exceeded*: 1 Error response time exceeded*: 0
4.10	reserved	Static 0
4.11	reserved	Static 0
4.12	reserved	Static 0
4.13	reserved	Static 0
4.14	reserved	Static 0
4.15	reserved	Static 0

* only valid with license 'Envelope'

9.7.5 Parameter description DM6000

9.7.5.1 Signal sources – standard

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
0	Continuous Measurement	1	0	Unsigned16	0	1	1	0 = False 1 = True	R/W
1	Measurement Time	1	0	Unsigned16	1	90	10	in s (1 s ... 90 s)	R/W
2	AE Offset Range/AE Auto Offset	1	0	Unsigned16	0x0000	0x0006	0x0004	Bit 1/0: AE Offset Range 0 = 0 ... 25 % 1 = 0 ... 66 % 2 = 0 ... 150 % Bit 2: AE Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
3	AE Input	1	0	Unsigned16	0	3	0	0 = Sensor 1 1 = Sensor 2 2 = Sensor 3 3 = Sensor 4	R/W
4	AE Signal Smoothing	1	0	Unsigned16	0	3	2	0 = 3 Hz 1 = 10 Hz 2 = 30 Hz 3 = 100 Hz	R/W
5	AE Frequency Range	1	0	Unsigned16	0	3	1	0 = Low 1 = Medium-low 2 = Medium-high 3 = High	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
6	AE Amplification	1	0	Unsigned16	0	70	50	in dB (0 ... 70 dB)	R/W
7	AE Offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %) depends on AE Offset Range (PNU2) Values above the Offset Range are limited to the maximum value.	R/W
8	Crash Amplification	1	0	Unsigned16	0	7	2	in steps of 5 dB 0 = 0 dB 1 = 5 dB ... 7 = 35 dB	R/W
9	Crash Offset	1	0	Unsigned16	0	25	0	in % (0 ... 25 %)	R/W
10	Crash Limit	1	0	Unsigned16	0	99	50	in % (0 ... 99 %)	R/W
11	Voltage Offset Range/Voltage Auto Offset	1	0	Unsigned16	0x0000	0x0006	0x0000	Bit 1/0: Voltage Offset Range 0 = 0 ... 25 % 1 = 0 ... 66 % 2 = 0 ... 150 % Bit 2: Voltage Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
12	Voltage Measurement Range	1	0	Unsigned16	0	3	3	0 = 1 V 1 = 2 V 2 = 5 V 3 = 10 V	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
13	Voltage Offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %) depends on Voltage Offset Range (PNU11) Values above the Offset Range are limited to the maximum value.	R/W
14	Invalid PNU							Parameter not available	R/W
15*	PROFIBUS 1 Auto Offset/Offset Range	1	0	Unsigned16	0x0003	0x0007	0x0003	Bit 1/0: Offset Range 3 = 0 ... 200 % Bit 2: Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
16*	PROFIBUS 1 signal source	1	0	Unsigned16	0	8	0	0 = Axis 1 1 = Axis 2 ... 7 = Axis 8 8 = Off	R/W
17*	PROFIBUS 1 signal type	1	0	Unsigned16	1	3	1	0 = Reserved 1 = Torque 2 = Real power 3 = Actual current value	R/W
18*	PROFIBUS 1 filter type/filter time constant	1	0	Unsigned16	0x0001	0xFFFE	10	Bit 15: Filter type 0 = Block Mean Value 1 = Pt1 Bit 0 to 14: Filter time constant in ms (1 ms ... 32766 ms) The min./max. values are interpreted per parameter	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
19*	PROFIBUS 1 Signal attenuation	1	0	Unsigned16	0	140	50	in dB	R/W
20*	PROFIBUS 1 Signal offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %)	R/W
21*	PROFIBUS 1 Emergency stop when exceeding limit	1	0	Unsigned16	0	10	0	0 = Off 1 = Limit 1 ... 10 = Limit 10 (limit assigned to emergency stop)	R/W
22*	PROFIBUS 1 reserved	1	0	Unsigned16	0	0	0	Reserved	R/W
23*	PROFIBUS 2 Auto Offset/Offset Range	1	0	Unsigned16	0x0003	0x0007	0x0003	Bit 1/0: Offset Range 3 = 0 ... 200 % Bit 2: Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
24*	PROFIBUS 2 signal source	1	0	Unsigned16	0	8	8	0 = Axis 1 1 = Axis 2 ... 7 = Axis 8 8 = Off	R/W
25*	PROFIBUS 2 signal type	1	0	Unsigned16	1	3	1	0 = Reserved 1 = Torque 2 = Real power 3 = Actual current value	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
26*	PROFIBUS 2 filter type/filter time constant	1	0	Unsigned16	1	0xFFFE	10	Bit 15: Filter type 0 = Block Mean Value 1 = Pt1 Bit 0 to 14: Filter time constant in ms (1 ms ... 32766 ms) The min./max. values are interpreted per parameter	R/W
27*	PROFIBUS 2 Signal attenuation	1	0	Unsigned16	0	140	50	in dB	R/W
28*	PROFIBUS 2 Signal offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %)	R/W
29*	PROFIBUS 2 Emergency stop when exceeding limit	1	0	Unsigned16	0	10	0	0 = Off 1 = Limit 1 ... 10 = Limit 10 (limit assigned to emergency stop)	R/W
30*	PROFIBUS 2 reserved	1	0	Unsigned16	0	0	0	reserved	R/W
31*	PROFIBUS 3 Auto Offset/Offset Range	1	0	Unsigned16	0x0003	0x0007	0x0003	Bit 1/0: Offset Range 3 = 0 ... 200 % Bit 2: Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
32*	PROFIBUS 3 signal source	1	0	Unsigned16	0	8	8	0 = Axis 1 1 = Axis 2 ... 7 = Axis 8 8 = Off	R/W
33*	PROFIBUS 3 signal type	1	0	Unsigned16	1	3	1	0 = Reserved 1 = Torque 2 = Real power 3 = Actual current value	R/W
34*	PROFIBUS 3 filter type/filter time constant	1	0	Unsigned16	1	0xFFFE	10	Bit 15: Filter type 0 = Block Mean Value 1 = Pt1 Bit 0 to 14: Filter time constant in ms (1 ms ... 32766 ms) The min./max. values are interpreted per parameter	R/W
35*	PROFIBUS 3 Signal attenuation	1	0	Unsigned16	0	140	50	in dB	R/W
36*	PROFIBUS 3 Signal offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %)	R/W
37*	PROFIBUS 3 Emergency stop when exceeding limit	1	0	Unsigned16	0	10	0	0 = Off 1 = Limit 1 ... 10 = Limit 10 (limit assigned to emergency stop)	R/W
38*	PROFIBUS 3 reserved	1	0	Unsigned16	0	0	0	reserved	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
39*	PROFIBUS 4 Auto Offset/Offset Range	1	0	Unsigned16	0x0003	0x0007	0x0003	Bit 1/0: Offset Range 3 = 0 ... 200 % Bit 2: Auto Offset 0 = False 1 = True The min./max. values are interpreted per parameter	R/W
40*	PROFIBUS 4 signal source	1	0	Unsigned16	0	8	8	0 = Axis 1 1 = Axis 2 ... 7 = Axis 8 8 = Off	R/W
41*	PROFIBUS 4 signal type	1	0	Unsigned16	1	3	1	0 = Reserved 1 = Torque 2 = Real power 3 = Actual current value	R/W
42*	PROFIBUS 4 filter type/filter time constant	1	0	Unsigned16	1	0xFFFE	10	Bit 15: Filter type 0 = Block Mean Value 1 = Pt1 Bit 0 to 14: Filter time constant in ms (1 ms ... 32766 ms) The min./max. values are interpreted per parameter	R/W
43*	PROFIBUS 4 Signal attenuation	1	0	Unsigned16	0	140	50	in dB	R/W
44*	PROFIBUS 4 Signal offset	1	0	Unsigned16	0	200	0	in % (0 ... 200 %)	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
45*	PROFIBUS 4 Emergency stop when exceeding limit	1	0	Unsigned16	0	10	0	0 = Off 1 = Limit 1 ... 10 = Limit 10 (limit assigned to emergency stop)	R/W
46*	PROFIBUS 4 reserved	1	0	Unsigned16	0	0	0	reserved	R/W

* depends on licensing:

Without license ,PROFIBUS® Data Channels':

Parameters not effective

With license ,PROFIBUS® Data Channels':

Parameters are effective

9.7.5.2 Evaluation strategies – limits

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
100	Limit 1	2	0 1	Unsigned16	0 0	99 6*	20 1	in % (0 ... 99 %) Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	R/W
101	Limit 2	2	0 1	Unsigned16	0 0	99 6*	40 1	in % (0 ... 99 %) Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	R/W
102	Limit 3	2	0 1	Unsigned16	0 0	99 6*	60 1	in % (0 ... 99 %) Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
103	Limit 4	2	0	Unsigned16	0	99	80	in % (0 ... 99 %)	R/W
			1		0	6*	1	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	
104	Limit 5	2	0	Unsigned16	0	99	50	in % (0 ... 99 %)	R/W
			1		0	6*	2	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	
105	Limit 6	2	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
			1		0	6*	0	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
106	Limit 7	2	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
			1		0	6*	0	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	
107	Limit 8	2	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
			1		0	6*	0	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	
108	Limit 9	2	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
			1		0	6*	0	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
109	Limit 10	2	0	Unsigned16	0	99	20	in % (0 ... 99 %)	R/W
			1		0	6*	0	Monitored input 0 = None 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	

* Max. value depends on licensing:

Without license ‚PROFIBUS® Data Channels’:

Max. value = 2

With license ‚PROFIBUS® Data Channels’:

Max. value = 6

9.7.5.3 Evaluation strategies – enhanced strategies

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
110	Envelope Additional Monitoring	2	0	Unsigned16	2	4	3	Number of Envelope nodes: 2 = 200 3 = 300 4 = 800	R/W
			1		0	6*	0	Monitored input: 0 = None, remaining Envelope parameters are not effective 1 = AE 2 = Voltage 3 = PROFIBUS 1 4 = PROFIBUS 2 5 = PROFIBUS 3 6 = PROFIBUS 4	
111	Envelope Free Envelope Memory	1	0	Unsigned16	0	411	411	Number of blocks of free Envelope memory (for 32 nodes respectively segment time points)	RO
112	Envelope Upper Limit	1	0	Unsigned16	0	199	10	in steps of 0.5 % (0.5 % ... 99.5 %) 0 = Off	R/W
113	Envelope Lower Limit	1	0	Unsigned16	0	199	10	in steps of 0.5 % (0.5 % ... 99.5 %) 0 = Off	R/W
114	Envelope Horizontal Offset	1	0	Unsigned16	1	30000	5	in steps of 0.01 s (0.01 s ... 30 s)	R/W
115	Envelope Error Response Time	1	0	Unsigned16	0	30000	10	in steps of 0.01 s (0.01 s ... 30 s)	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
116	Envelope Learning after each workpiece	1	0	Unsigned16	0	100	0	in steps of 1 % (1 % ... 100 %) 0 = False	R/W
117	Envelope Learning next workpiece	1	0	Unsigned16	0	100	0	in steps of 1 (1 ... 100) 0 = False	R/W
118	Envelope Envelope duration	1	0	Unsigned32	0	4294901759	0	in steps of 0.01 s (0.01 s ... 42949017.59 s) 0 = no Envelope available	RO
119	Envelope Segment Synchronisation	1	0	Unsigned16	0	2**	0	0 = No synchronisation 1 = Without time correction 2 = With time correction	R/W

* Max. value depends on licensing

Without license 'Envelope':

Max. value = 0

With license 'Envelope', without license 'PROFIBUS® Data Channels':

Max. value = 2

With license 'Envelope' and license 'PROFIBUS® Data Channels':

Max. value = 6

** Max. value depends on licensing (parameters effective only with license 'Envelope')

Without license 'Segmented Envelope':

Max. value = 0

With license 'Segmented Envelope':

Max. value = 2

9.7.5.4 AE Configuration

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
200	Parameter	3	0	Unsigned16	0x0000	0x003F	0x0000	Configuration word Bit 0: Sensor 1 0 = Passive, 1 = Active Bit 1: Sensor 2 0 = Passive, 1 = Active Bit 2: Sensor 3 0 = Passive, 1 = Active Bit 3: Sensor 4 0 = Passive, 1 = Active Bit 4: Positive Hold 0 = False, 1 = True Bit 5: Negative Hold 0 = False, 1 = True	R/W
			1		1	100	1	Hold Time in steps of 10 ms (10 ms ... 1000 ms)	
			2		10	65	10	Sinumerik Profibus Communication Communication clock in ms (only effective with license 'PROFIBUS® Data Channels')	
201	Invalid PNU							Parameter not available	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
202	Identification Data	15	0	Unsigned16	-	-	-	Low byte relevant only	RO
			1					Module Type 9	
			2					Production Year as of 2000	
			3					Production Week	
			4					Software Version value/10	
			5					Build number value/100	
			6					Article Number in BCD code hundred thsds/ten thsds	
			7					thousands/hundreds	
			8					tens/ones	
			9					Serial Number (4 bytes) LSB	
			10						
			11					MSB	
			12					Operating Hours	
			13					in hours (3 bytes) LSB	
			14					MSB	

10 Module S6000 (PROFIBUS® only)

10.1 Commissioning

- Adding ▶ To add a general Module DS6000 to the configuration click on the general Module »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out« with the left mouse button and drag and drop it to the detail view.
- ▶ The same success is achieved by double clicking on »DS6000 2 Byte In, 2 Byte Out« or »DS6000 1 Word In, 1 Word Out«.

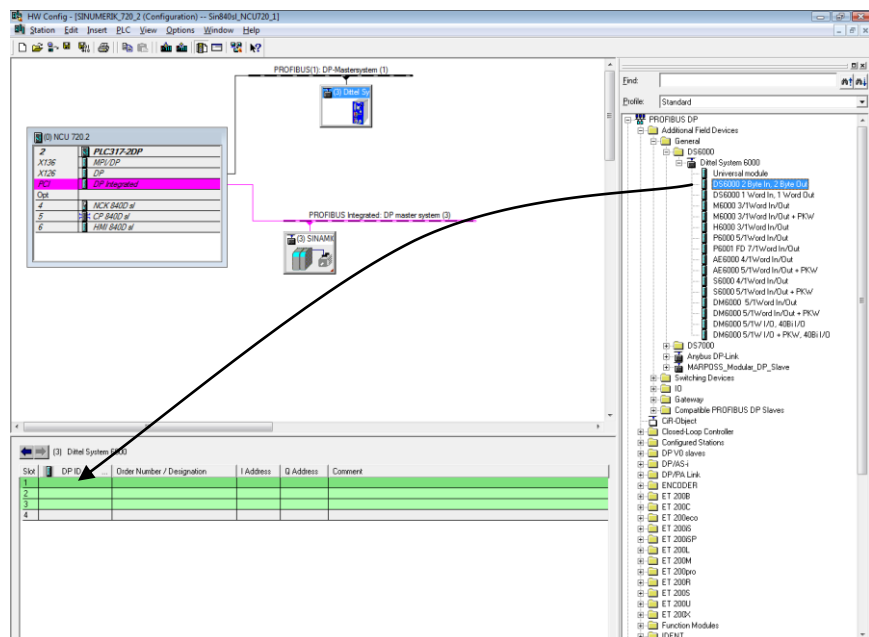


Figure 10-1 DS6000 2 Byte In, 2 Byte Out

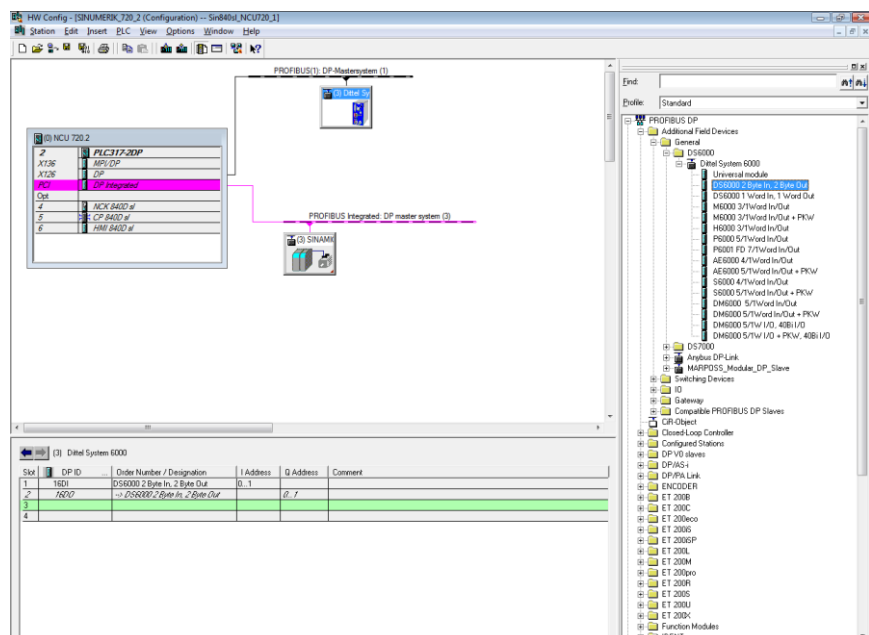


Figure 10-2 DS6000 2 Byte In, 2 Byte Out

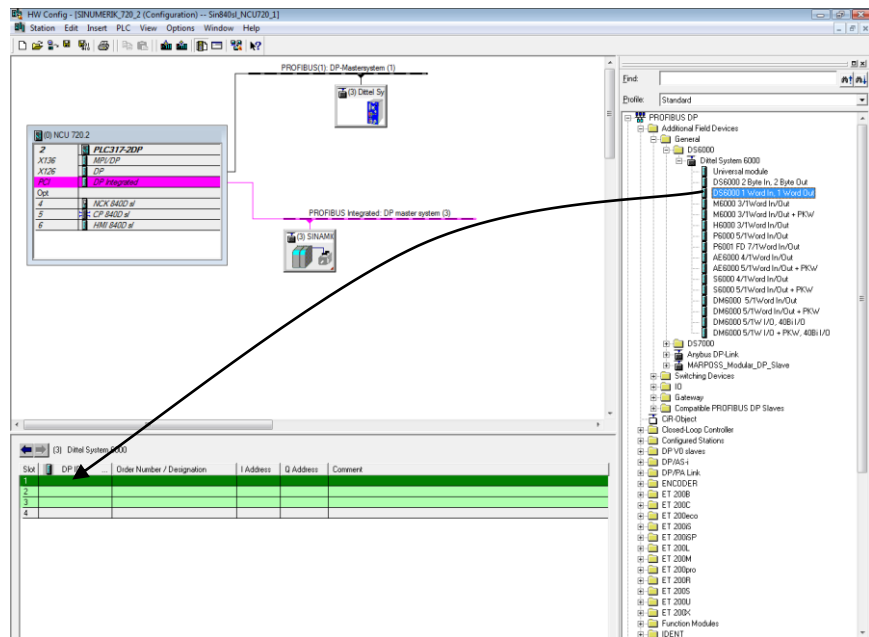


Figure 10-3 DS6000 1 Word In, 1 Word Out

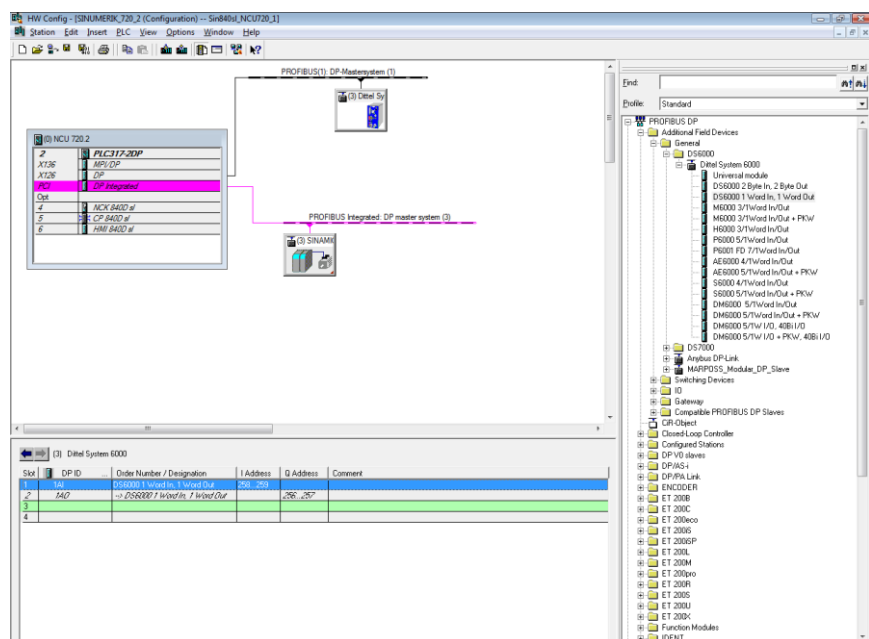


Figure 10-4 DS6000 1 Word In, 1 Word Out

10.2 Interface

10.2.1 Automation System to Module S6000

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.0	1.0	reserved	Static 0
0.1	1.1	reserved	Static 0
0.2	1.2	Operation via keys or buttons inhibited	Static 1: Operator actions on the PC or Automation System keyboard/Softkeys are disabled
0.3	1.3	Selects Set No. »1«	see Truth Table 10.2.3
0.4	1.4	Selects Set No. »2«	see Truth Table 10.2.3
0.5	1.5	reserved	Static 0
0.6	1.6	reserved	Static 0
0.7	1.7	reserved	Static 0
0.8	0.0	reserved	Static 0
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

Parallel Operation PROFIBUS® with static Hardware Interface, connector # 2

In principle, parallel operation of the PROFIBUS® with the Hardware Interface is possible. In this case, the last change is executed, both on the Hardware Interface and on PROFIBUS® word 0.

An exception is the signal **»Operation via keys or buttons inhibited«**. The static and the PROFIBUS® signal of this function are connected by logical OR.

10.2.2 Module S6000 to Automation System

Pos. Word.Bit	Pos. Byte.Bit	Function	Value/Action
0.0	1.0	Status	S6000 working: 1 S6000 not working: 0
0.1	1.1	AE-/Crash-Sensor Monitoring	Selected Sensor OK: 1 No Sensor connected or Sensor faulty. 0
0.2	1.2	reserved	Static 0
0.3	1.3	Monitoring AE Limit of selected Set	AE Signal below AE Limit: 1 AE Signal above AE Limit: 0
0.4	1.4	reserved	Static 0
0.5	1.5	reserved	Static 0
0.6	1.6	reserved	Static 0
0.7	1.7	reserved	Static 0
0.8	0.0	Monitoring Crash Limit of selected Set	Signal below Crash Limit: 1 Signal above Crash Limit: 0
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	Confirms Set No. »1«	see Truth Table 10.2.3
0.12	0.4	Confirms Set No. »2«	see Truth Table 10.2.3
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

10.2.3 Truth Table to select or confirm the appropriate Memory Sets

Selects Set No./confirms Set No.	»1«	»2«
Set No. 1	1	0
Set No. 2	0	1
No change	0	0
No change	1	1

10.3 Extension with Data Format »S6000 4/1Word In/Out«

From Module Software Version 1.0, build number 0.08 or later.

Project with »S6000 4/1Word In/Out«

Adding ▷ Highlight the data format »S6000 4/1Word In/Out«. Using the LEFT mouse button, drag and drop the data format to the detail view.

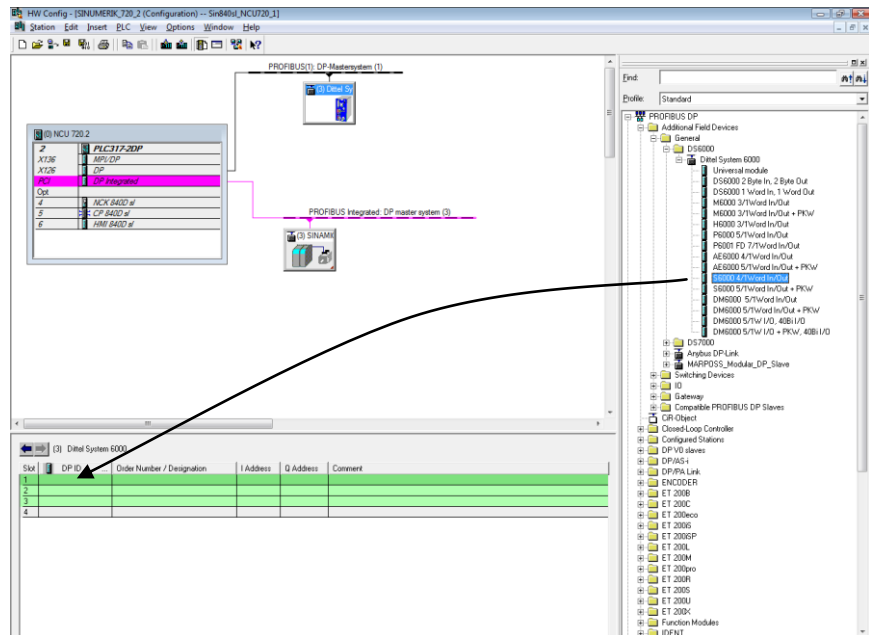


Figure 10-5 S6000 4/1Word In/Out

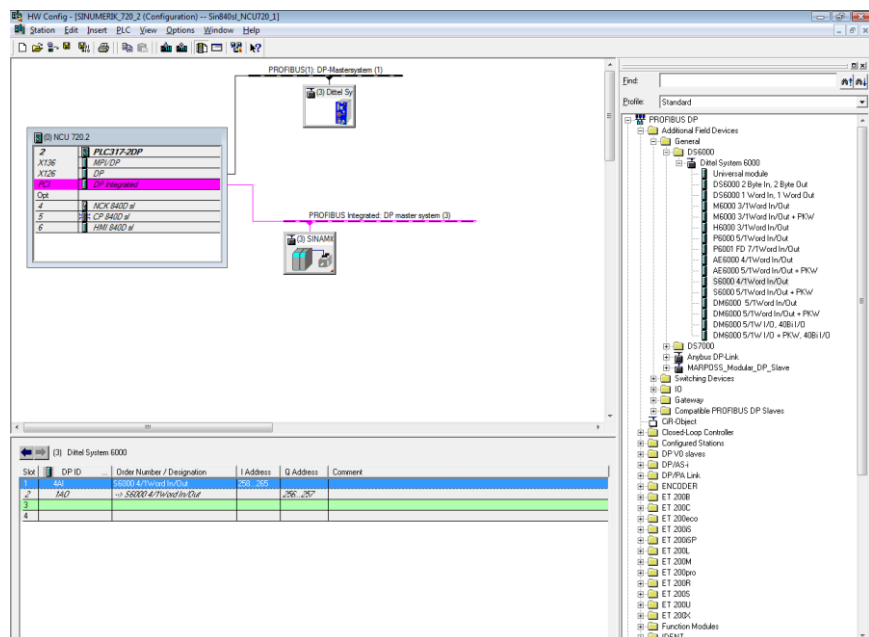


Figure 10-6 S6000 4/1Word In/Out

10.3.1 Automation System to Module S6000

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 10.2.1, Automation System to Module S6000

10.3.2 Module S6000 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 10.2.2, Module S6000 to Automation System
2	AE signal	short	Output of AE signal (100 ms sampling rate): Permissible range of values 0 ... 30.
4	Crash signal	short	Output of Crash signal (100 ms sampling rate): Permissible range of values 0 ... 30.
6	reserved	short	Static 0 / values are invalid.

10.4 Extension with Data Format »S6000 5/1Word In/Out + PKW«

From Module Software Version 1.0, build number 0.08 or later.

Project with »S6000 5/1Word In/Out + PKW«

Adding ▷ Highlight the data format »S6000 5/1Word In/Out + PKW«. Using the LEFT mouse button, drag and drop the data format to the detail view.

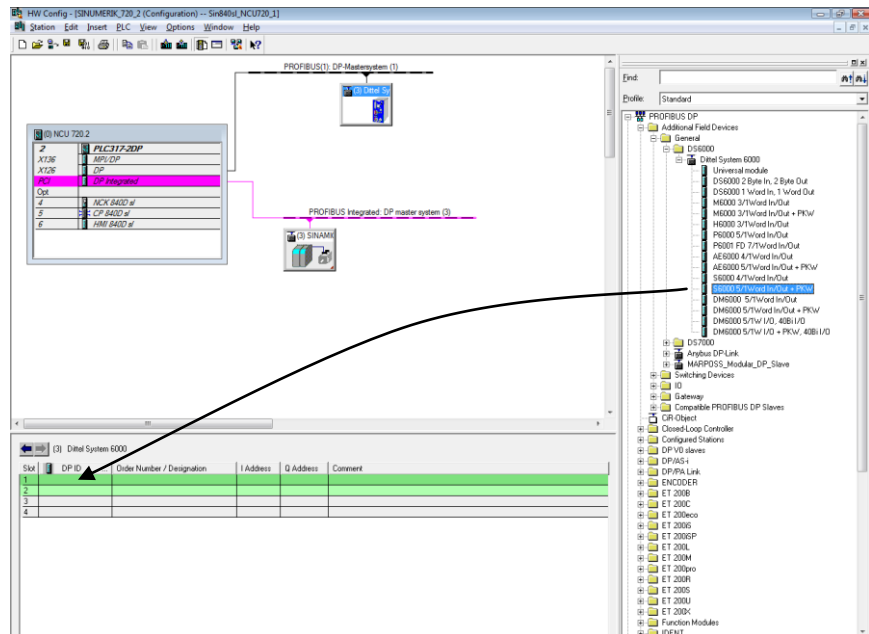


Figure 10-7 S6000 5/1Word In/Out + PKW

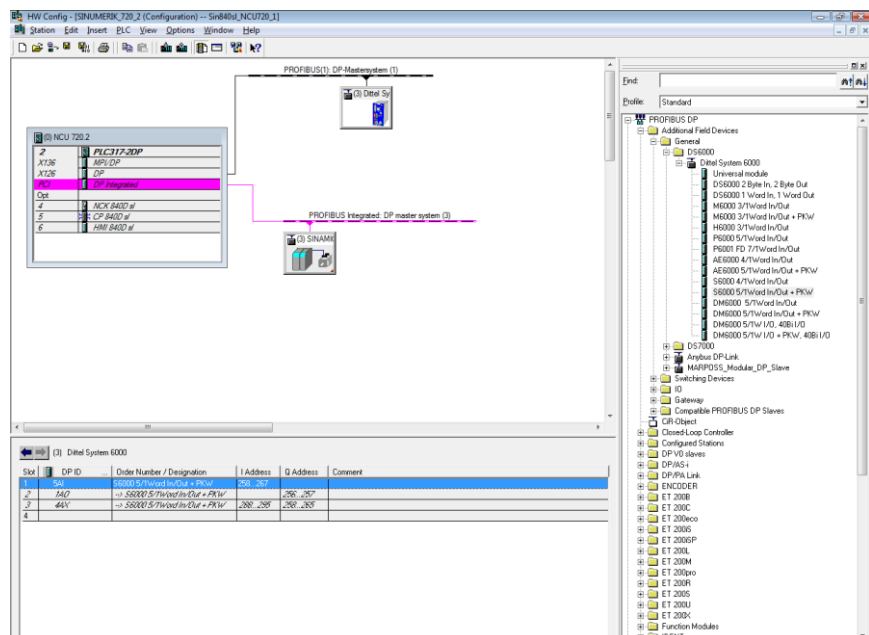


Figure 10-8 S6000 5/1Word In/Out + PKW

10.4.1 Automation System to Module S6000

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 10.2.1, Automation System to Module S6000
2	PKW	4 * short	Parameter data area

10.4.2 Module S6000 to Automation System

Offset in bytes	Description	Format	Remark
0	DS6000 Interface	short	see 10.2.2, Module S6000 to Automation System
2	AE signal	short	Output of AE signal (100 ms sampling rate): Permissible range of values 0 ... 30.
4	Crash signal	short	Output of Crash signal (100 ms sampling rate): Permissible range of values 0 ... 30.
6	reserved	short	Static 0 / values are invalid.
8	reserved	short	Static 0 / values are invalid.
10	PKW	4 * short	Parameter data area

10.4.3 Parameter description S6000

10.4.3.1 Signal sources – standard

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
0	Continuous Measurement	1	0	Unsigned16	1	1	1	1 = True	R/W
1	Measurement Time	1	0	Unsigned16	1	90	10	Parameter not effective	R/W
2	AE Offset Range/AE Auto Offset	1	0	Unsigned16	0x0001	0x0001	0x0001	Bit 1/0: AE Offset Range 1 = 0 ... 66 % Bit 2: AE Auto Offset 0 = False	R/W
3	AE Input	1	0	Unsigned16	0	1	0	0 = Sensor 1 1 = Sensor 2	R/W
4	AE Signal Smoothing	1	0	Unsigned16	2	2	2	2 = 30 Hz	R/W
5	AE Frequency Range	1	0	Unsigned16	1	2	1	1 = Low 2 = High	R/W
6	AE Amplification	1	0	Unsigned16	0	70	50	in dB (0 ... 70 dB)	R/W
7	AE Offset	1	0	Unsigned16	0	66	0	in % (0 ... 66 %)	R/W
8	Crash Amplification	1	0	Unsigned16	0	50	0	in steps of 1 dB (0 ... 50 dB)	R/W
9	Crash Offset	1	0	Unsigned16	0	0	0	0 %	R/W
10	Crash Limit	1	0	Unsigned16	33	33	33	33 %	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
11	Voltage Single Bits	1	0	Unsigned16	0x0000	0x0000	0x0000	Bit 0: Voltage Offset Range 0 = 0 ... 25 %	R/W
12	Voltage Amplification	1	0	Unsigned16	0	0	0	0 = 1 V	R/W
13	Voltage Offset	1	0	Unsigned16	0	0	0	0 %	R/W

10.4.3.2 Evaluation strategies – limits

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
100	Limit 1	1	0	Unsigned16	33	33	33	33 %	R/W
101	Limit 2	1	0	Unsigned16	0	0	0	0 %	R/W
102	Limit 3	1	0	Unsigned16	0	0	0	0 %	R/W
103	Limit 4	1	0	Unsigned16	0	0	0	0 %	R/W
104	Voltage Limit	1	0	Unsigned16	0	0	0	0 %	R/W

10.4.3.3 Evaluation strategies – enhanced strategies

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
110	Envelope Additional Monitoring	2	0	Unsigned16	1	4	1	Number of Envelope nodes: 1 = 100	R/W
			1		0	0	0	Monitored input: 0 = None, remaining Envelope parameters are not effective	
111	Envelope Free Envelope Memory	1	0	Unsigned16	0	222	222	Number of blocks of free Envelope memory (for 32 nodes)	RO
112	Envelope Upper Limit	1	0	Unsigned16	0	199	10	in steps of 0.5 % (0.5 % ... 99.5 %) 0 = Off	R/W
113	Envelope Lower Limit	1	0	Unsigned16	0	199	10	in steps of 0.5 % (0.5 % ... 99.5 %) 0 = Off	R/W
114	Envelope Horizontal Offset	1	0	Unsigned16	1	30000	5	in steps of 0.01 s (0.01 s ... 30 s)	R/W
115	Envelope Error Response Time	1	0	Unsigned16	0	30000	10	in steps of 0.01 s (0.01 s ... 30 s)	R/W
116	Envelope Learning after each workpiece	1	0	Unsigned16	0	100	0	in steps of 1 % (1 % ... 100 %) 0 = False	R/W
117	Envelope Learning next WP	1	0	Unsigned16	0	100	0	in steps of 1 (1 ... 100) 0 = False	R/W
118	Envelope Envelope duration	1	0	Unsigned32	0	4294901759	0	in steps of 0.01 s (0.01 s ... 42949017.59 s) 0 = no Envelope available	RO

10.4.3.4 AE Configuration

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
200	AE configuration	2	0	Unsigned16	0x0030	0x0033	0x0030	Configuration word Bit 0: Active Sensor 1 0 = False, 1 = True Bit 1: Active Sensor 2 0 = False, 1 = True Bit 4: Enable Positive Hold 1 = True Bit 5: Enable Negative Hold 1 = True The min./max. values are interpreted per parameter	R/W
			1					Hold Time 50 ms	
201	Invalid PNU							Parameter not available	R/W
202	Identification Data	15		Unsigned16	-	-	-	Low byte relevant only	RO
			0					Module Type	
			1					8	
			2					as of 2000	
			3					Production Year	
			4					Production Week	
			5					Software Version	
			6					value/10	
			7					Build number	
			8					value/100	
			9					Article Number in BCD code	
			10					hundred thsds/ten thsds	
			11					thousands/hundreds	
			12					tens/ones	
			13					Serial Number (4 bytes)	
			14					LSB	
								MSB	
								Operating Hours	
								in hours (3 bytes)	
								LSB	
								MSB	
203	Invalid PNU							Parameter not available	R/W

PNU	Parameter name	No. of sub-index elements	Sub-index	Data type	Min. value	Max. value	Default value	Description	Access
204	Save set (from Module Software Version 1.1, build number 0.09 or later)	1	0	Unsigned16	1	2	1	Write ¹ : Saving current settings as parameterised set number Read: Reading the currently selected set number	R/W
205	View (from Module Software Version 1.1, build number 0.09 or later)	2	0 1	Unsigned16	1 0	99 119	1 0	Number of view to be selected Address of operating unit 0 (- 99) Broadcast to all operating units 100 – 119 to addressed operating unit	R/W

¹ Typically 1,000,000 save operations are possible per set. This corresponds to an expected lifetime of approximately 10 years for the EEPROMs when saving every 5 minutes.

Appendix A Editing parameters with the PKW mechanism

A.1 Structure of the parameter area (PKW)

The parameter area consists of four words:

- 1st word: Parameter ID (PKE)
The Parameter ID contains the Parameter Number (PNU) and the Task or Reply ID (AK).
- 2nd word: Parameter Index (IND)
- 3rd word: High Value Word (PWE1)
- 4th word: Low Value Word (PWE2)

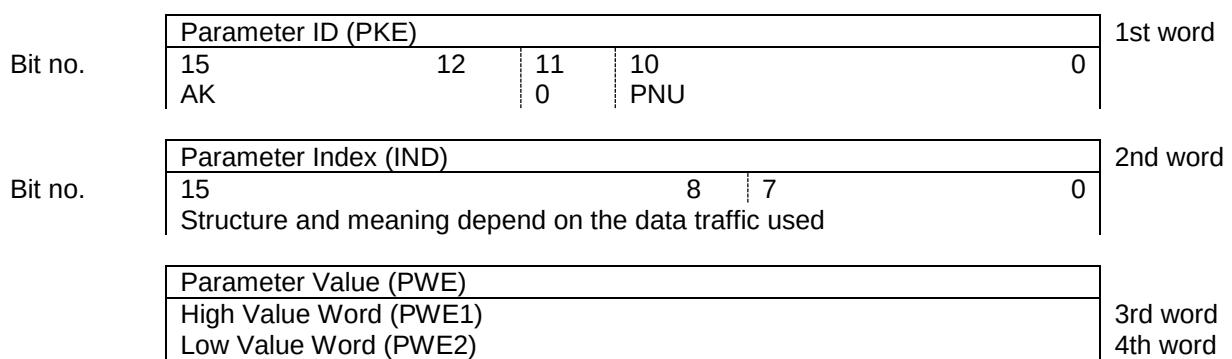


Figure A-1 Structure of the parameter area (PKW)

A.1.1 Parameter ID (PKE), 1st word

- The Parameter ID (PKE) is always a 16-bit value.
- Bits 0 to 10 (PNU) contain the number of the desired parameter.
- Bit 11 is reserved.
- Bits 12 to 15 (AK) contain the Task or Reply ID.

Only specific Reply IDs are possible, depending on the Task ID. If the Reply ID has value 7 (task not executable), an error number is assigned to the Low Value Word (PWE2) according to the table in section A.1.1.3.

A.1.1.1 Parameter ID (PKE) – Task ID (AK)

Task ID (AK)	Meaning	Reply ID	
		Positive	Negative
0	No Task	0	7
1	Request Parameter Value	1 / 2	7
2	Change Parameter Value (word)	1	7
3	Change Parameter Value (double word)	2	7
6	Request Parameter Value (array) ¹	4 / 5	7
7	Change Parameter Value (array, word) ¹	4	7
8	Change Parameter Value (array, double word) ¹	5	7
9	Request number of array elements	6	7

¹ IND (2nd word) provides the desired element of the indexed parameter.

A.1.1.2 Parameter ID (PKE) – Reply ID (AK)

Reply ID (AK)	Meaning
0	No Reply
1	Transmit Parameter Value (word)
2	Transmit Parameter Value (double word)
4	Transmit Parameter Value (array, word) ¹
5	Transmit Parameter Value (array, double word) ¹
6	Transmit number of array elements
7	Task not executable (with error number, see table in section A.1.1.3)

¹ IND (2nd word) provides the desired element of the indexed parameter.

A.1.1.3 Error number on Reply 'Task not executable'

No.	Meaning	
0	Invalid Parameter Number (PNU)	Parameter not available
1	Parameter Value cannot be changed	Parameter is a monitoring parameter
2	Lower or upper value limit exceeded	–
3	Error in sub-index	–
4	Not an array	Access to single parameter and sub-index > 0
5	Incorrect data type	Mix-up of word and double word
106	Task not implemented	–

A.1.2 Parameter Index (IND), 2nd word

The array sub-index (also referred to as sub-index in the PROFIdrive profile) is an 8-bit value and is transmitted in the most significant byte (bits 8 to 15) of the Parameter Index (IND) in cyclic data traffic.

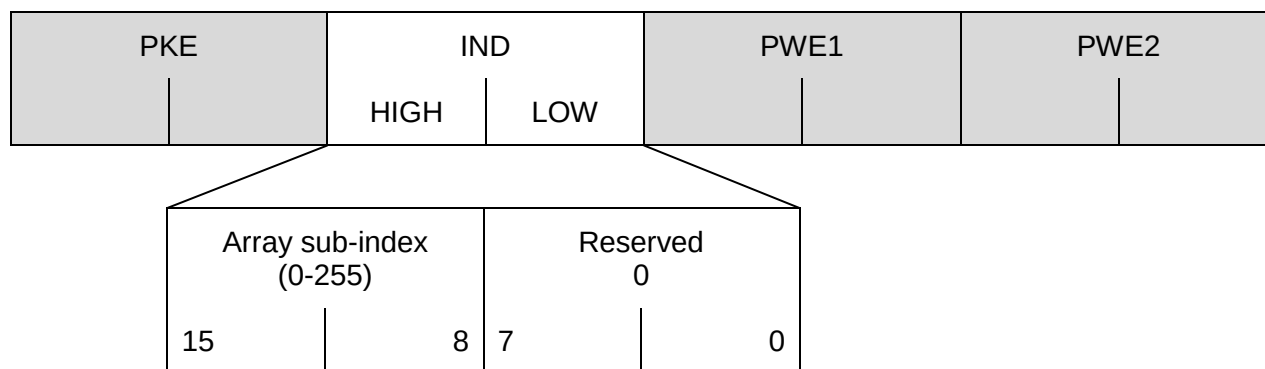


Figure A-2 Parameter Index (IND), 2nd word – array sub-index in the most significant byte

A.1.2.1 Function of the array sub-index in the Parameter Index (IND)

If the array sub-index is transferred with values between 0 and 255 in a Task, the desired index of an indexed parameter is transmitted. The number of the desired element is transmitted when editing a description element.

A.1.3 Parameter Value (PWE), 3rd and 4th word

- The Parameter Value (PWE) is always transmitted as a double word (32 bits).
- Only one Parameter Value can be transmitted.
- A 32-bit parameter value is composed of
 - PWE1 (most significant word = 3rd word) and
 - PWE2 (least significant word = 4th word).
- A 16-bit parameter value is transmitted in PWE2 (least significant word = 4th word). In this case PWE1 (most significant word = 3rd word) must be set to value 0 on the PROFIBUS-DP master.

A.2 Rules for Task or Reply Processing

A.2.1 General rules for Task or Reply Processing

- One task or one reply can only ever refer to one parameter.
- The master must repeat a Task until it has received the appropriate Reply.
- The master detects the Reply to an issued task by
 - Evaluation of received word 1 (PKE) by Reply ID (AK) and Parameter Number (PNU)
 - Through evaluation of received word 2 (IND), where appropriate
 - Through evaluation of received words 3 (PWE1) und 4 (PWE2), where appropriate
- The Task or Reply has to be transmitted completely in one frame. Split Task or Reply frames are not permitted.
- In the case of Reply frames which contain parameter values, the slave always replies with the current value when the Reply frame is repeated.
- When no information is required by the PKW interface in cyclic mode, the 'No Task' Task must be issued.

A.2.2 Supplementary rules for Task or Reply Processing

- The Task 'Change Parameter Value' is executed when the Task ID (AK) changes.
- If several parameters should be changed one after the other, the Task 'No Task' is shifted in between usually.
- Parameters can be edited without shifting in between 'No Task' by alternately using the following different Tasks 'Change Parameter Value'.

- 'Change Parameter Value (word)'
- 'Change Parameter Value (double word)'
- 'Change Parameter Value (array, word)'
- 'Change Parameter Value (array, double word)'

'Change Parameter Value (word)' can be replaced e.g. by 'Change Parameter Value (double word)' or 'Change Parameter Value (array, word)' with Parameter Index = 0.

- **M6000 only:** The Task 'Change Parameter Value' is executed on the M6000, when Task ID (AK), **Parameter Number (PNU)** or **Parameter Index (IND)** changes.
Thus, several parameters can be changed one after the other by evaluating **Parameter Number (PNU)** and **Parameter Index (IND)**.

Appendix B Abbreviations

LSB	Least significant byte
MSB	Most significant byte
PKW	Parameter-Kennung-Wert (Parameter-ID-Value)
R/W	Read/Write access
RO	„Read Only“ access



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