

# APPLICATION EXAMPLE PROFIBUS DP

# **Revision 1**



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# 1 General information

This operating instructions serves to start up a WANDFLUH Electronic card with Profibus DP interface (Wandfluh DP-Slave). The following points are described step by step

- · Wiring of the Wandfluh DP-Slave with a Profibus DP Master and may be other DP-Slaves
- Preferences on the Wandfluh DP-Slave via PASO
- Integration of the Wandfluh DP-Slave in a PLC system ()
- Data exchange via a PLC system (as an example with a Siemens CPU and Step 7 with Wandfluh Program blocks)
- Error detection and diagnostics during operation

It is assumed that basic knowledge about the Profibus DP are available. Also some knowledge concerning the Siemens CPU and Step 7 should be available.

Full details about the functionality from the Wandfluh DP slave are available in the corresponding operating instructions (<u>www.wandfluh.com/en/downloads/accompanying documents for electornics</u>).



# 2 Wiring

# 2.1 Connection on Wandfluh DP-Slave

#### Wandfluh DP-Slave = SD7:

On the Wandfluh DP-Slave SD7 the Profibus DP connection is made with the 9-pole D-Sub receptacle (female) X4 direct on the front plate.



D-Sub receptacle Profibus DP (female) X4

SD7 Amplifier und SD7 Controller Basic



D-Sub receptacle Profibus DP (female) X4

SD7 Controller Enhanced

The pin assignment is as follows:

D-Sub receptacle	RS485 galvanic separated • Pin 1 = Reserved
9-pole:	<ul> <li>Pin 2 = Reserved</li> <li>Pin 3 = RxD/TxD-P (receive-/transmit data positive, B-line)</li> <li>Pin 5 = DGND (Ground for data signals and VP)</li> </ul>
	<ul> <li>Pin 6 = VP (Power supply for the terminating resistors 5VDC)</li> <li>Pin 7 = Reserved</li> <li>Dia 9 = PVD(Typ N) (receive (transmit data pageting A line)</li> </ul>
	<ul> <li>Pin 8 = HxD/TxD-N (receive-/transmit data negative, A-line)</li> <li>Pin 9 = Reserved</li> </ul>



#### Wandfluh DP-Slave = DSV:

On the Wandfluh DP-Slave DSV the Profibus DP connection is made with the 5-pole M12 receptacle (female) B-coded X3 direct on the housing.



The pin assignment is as follows:

M12	RS485 galvanic separated
receptacle	<ul> <li>Pin 1 = VP (Power supply for the terminating resistors 5VDC)</li> </ul>
(female)	<ul> <li>Pin 2 = RxD/TxD-N (receive-/transmit data negative, A-line)</li> </ul>
5-pole:	<ul> <li>Pin 3 = DGND (Ground for data signals and VP)</li> </ul>
	<ul> <li>Pin 4 = RxD/TxD-P (receive-/transmit data positive, B-line)</li> </ul>
	• Pin 5 = Shield



# 2.2 **Profibus DP connection**

#### 2.2.1 **Profibus DP cable**

As a Profibus DP cable only the cable type A should be used. During installation the cable should not be bent or injured. In particular the Profibus DP cable should not be stretched or compressed and the minimum bend radius (typically 75mm for wire cables and 45 - 65mm for strand cables) is always observed.

The max. cable length depends on the transmission rate and should not exceed the following values:

Baud rate in kbit/s	max. cable length in m
9.6	1200
19.2	1200
45.45	1200
93.75	1200
187.5	1000
500.0	400
1500.0	200
3000.0	100
6000.0	100
12000.0	100



#### 2.2.2 D-Sub connector

The 9-pole D-Sub connector with one cable outlet should have the following structure:



The 9-pole D-Sub connector with an additional cable outlet should have the following structure:



Start and end of the line must be terminated!



## 2.2.3 M12 T-connector

The 4-pole M12 T-connector should have the following structure:



Pin 5 (Shield) is not performed on the T-connector.

#### 2.2.4 M12 terminating resistor (Termination)

The 4-pole M12 terminating resistor should have the following structure:



Start and end of the line must be terminated!



# 2.3 Connection to Profibus DP-Master

If the Wandfluh DP-Slave is the only device on the Profibus network, the connection is made as follows

#### Wandfluh DP-Slave = SD7:





# 2.4 Connection with several Profibus DP-Slaves

If there are several slaves (Wandfluh DP-Slaves or other participants) on the Profibus network, the connection is made as follows

#### Wandfluh DP-Slave = SD7:

Connection with connectors with a second cable outlet:



#### Wandfluh DP-Slave = DSV:

Connection with T-connectors:





# 3 Preferences on the Wandfluh DP-Slave

## 3.1 Fieldbus Parameter

Parameters on the Wandfluh DP-Slave can be changed via the parameterisation software PASO.



The parameterisation software PASO serves for the parameterising and diagnosing of all Electronic cards of the WANDFLUH AG company. The software provides a user interface, through which by means of a keyboard or a mouse all adjustments and settings can easily be carried out. The communication with the digital card takes place through a USB-interface. The PASO software can be downloaded via the Internet free of charge (<a href="http://www.wandfluh.com/downloads/software">www.wandfluh.com/downloads/software</a>).



The following parameters must be set on the Wandfluh DP-Slave before the first start:

#### **Bus Node Address**

Each Slave in the Profibus DP network has its one address. The adjusted address must correspond to the settings on the DP-Master (refer to section "Establish a Profibus DP connection 15").

The Bus Node Address is set in the menu "Fieldbus - Info"

External Bus	×
Bus Adjustments Bus Stat	te
Bus Node Address	€ 6
Baudrate	1.5 MBaud
<u>ō</u> k <u>č</u>	ancel <u>H</u> elp

#### Telegram type

Normally, the DP-Master determines which telegram type is used. In this case, the selected telegram type on the DP-Slave will be overwritten.

However, there are simple DP-Master which send no configuration data to the DP-Slave. In this case, the desired telegram type must be adjusted on the DP-Slave.

The telegram types set in the menu "Fieldbus - Parameters".

Channel	Kanal 1	<u> </u>
Telegramm		
Telegram type	1 •	

For more information about the telegram types please refer to section "Telegram selection 18".



# 4 Configuration DP Master

## 4.1 Siemens device configuration

The used Siemens CPU (in the example CPU 1212C) must be configured in the Step 7.

In addition a Profibus DP communication module CM1243-5 must be present.

IMPORTANT: Because all Wandfluh Electronic cards with Profibus DP interface are slaves, a master communication module must be used!





## 4.2 Insert Wandfluh DP-Slave

The Wandfluh DP slave is inserted via the corresponding GSD file. In the example the GSD file of the Wandfluh SD7 card is inserted.

The following step are necessary:

- 1. Download the corresponding GSD file at www.wandfluh.com/downloads/application
- 2. Open in the Step 7 the menu "Options Manage general station description files (GSD)"
- 3. Select at "Source path" the previously downloaded GSD file and click to "Install"
- 4. Activate the view "Devices & networks" and activate on the right side (Taskcards) the selection "Hardware catalog"
- 5. At "Other field devices PROFIBUS DP PLC Wandfluh AG SD7 Electronic" the selection "SD7Electronic" appears



6. Click with the left mouse button on "SD7 Electronic", hold button and drag next to CPU



7. The Wandfluh DP-Slave is now inserted in the project

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# 4.3 Establish a Profibus DP connection

The inserted Wandfluh DP slave now needs to be connected to the Siemens DP-Master:

1. Click with the left mouse button on the Profibus DP interface from the Siemens DP-Master (red rectangle), hold button and drag to the Profibus DP interface from the Wandfluh DP-Slave (red rectangle)



2. Alternatively the text "Not assigned" can be activated and then click to "Select master: CPU xxxx,CM1243-5.DP-Schnittstelle"

BeispielProjektAnleitung → Devices & networks				
		<b>2</b> 1		
Network	ion 💌 😾 🥦 🕰 🍳 ±	3		
CPU 1212C CPU 1212C	Slave_1 SD7 Electronic Not assigned Select master: CPU 1212C.CM 1243-5.DP-Schnittstelle			

3. The created connection is displayed as follows:

BeispielProjektAnleitung > Devices &	networks	
Network Connections HMI connection	in 🔻 📅 🖽 🔍 ±	
		4 Master system: CPU 1212C.DP-Mastersystem (1)
CPU 1212C CPU 1212C	Slave_1 SD7 Electronic CM 1243-5 DP-Mastersyst	

4. Click with the left mouse button on the connection (CPUxxx.DP-Mastersystem) and activate below (Inspector window) the selection "Properties" and "PROFIBUS"

5. Select the desired transmission speed

BeispielProjektAnleitung 🕨 D	evices & networks							_ # =>
					🛃 Topology vie	v 🚮 Netw	ork view 🛛 🕅	Device view
Network LI Connections	A connection 🕞 🔣 👯	@ ±		8	Network	overview	Connections	
CPU 1212C	slave_1 GDF Electronic CM 1243-5 CPU 1212C DP-Mastersyst	Ĩ	# Master system: CPU 12	12C DP-Mastersystem (1)	V Device	-1200-Station_1 CM1243-5 CPU 1212C iD device_1 Slave_1	Type 57-12 0M 12 CPU 1 650-0 507 E	20-Station 43-5 21 2C ACIDONIy inset inset inset
: 1 PP-Mastersystem (Mastersystem General 10 tags Sy	em litem constants Texts		[ <b>X</b> ] 100%	<b>a</b>	Properties	I Tujinfo	5 Diagnostic	s i u
General PROPEUS General Network Kentings Cable configuration Additional network devices Usus parametera Overview of addresses Handware identifier	PROFIDUS	PROFIBUS_1 CD00 - 1 126 15 Mbps	_)					
	Prome.	ur.						

- 6. Click with the left mouse button on the Profibus DP interface from the Wandfluh DP-Slave (red rectangle) and activate below (Inspector window) the selection "Properties" and "PROFIBUS address"
- 7. Select the desired address.

This address must also be set on the Wandfluh DP-Slave via PASO (refer to section "Preferences on the Wandfluh DP-Slave [11<sup>b</sup>]")

BelspielProjektAnleitung 🕨 l	Devices & networks			_ # =>
		<u>e</u> 1	opology view 📊 Network vie	w Device view
Network	Miconnection 📑 🔛 👯 🖽 🍭 🛨	8	Network overview Conn	ections 4
		Master system: CPU 1212C.DP-Mastersystem (1)	Y Device	Туре
			<ul> <li>\$7-1200-Station_1</li> </ul>	S7-1200-Station
CPU1212C	Slave_1		• CM1243-5	CM 1243-5
CPU 1212C	SO7 Electronic		CPU 1212C	CPU 1212C ACIDCRIy
	CM 1243-5		Slave_1	SD7 Electronic
L	CPU 1212C DP-Mostersyst			
C F		> 100%	K U	
General 10 tags 5	vstem constants Texts		3 Properties	hagnostics
• General	PROFIBUS address			
General DP parameters	Interface networked with			
Wetchdog				
SYNCIFREEZE	Subnet: PROFIBUS_1			•
Hardware identifier	Add new	aubnet		
	Parameters			
				100
	Address: 0			
	rignest address: 126			
	Transmission speed: 1.5 Mbps			

8. Activate below (Inspector window) the section "Watchdog"



9. Enable the watchdog if desired. If the watchdog is not enabled, the Wandfluh DP-Slave recognizes a missing Profibus DP connection not as an error (refer to section "Possible errors on the DP-Slave [48]").

BelspielProjektAnleitung + Devices & n	etworks						_#=×
			2	Topology view	A Netwo	ork view	vice view
Network	- E 🐮 🏭 🍳 ±		3	Network ove	view	Connections	< k
		# Master system: CPU 121	2C DP-Mastersystem (1) 🛆	V Device		Type	
			-	* \$7-12	00-Station_1	\$7-1200-5	tation
CPU 1212C	Slave 1	7	1	• • •	11243-5	CM 1243-5	P
CPU 1212C	SD7 Electronic			• 0	U 1212C	CPU 1212	CACIDCIRIY
	CM 1243-5			▼ GSD g	evice_1	GSD-Gerar	et .
				SI	ne_1	SD7 Electr	onic
CPU1212C1	DE-Mastersyst			-			
CO IL ILC.	or marce space.			8			
				1			
				1.000			
				1			
				1000			
< n		> 100%		<	1		5
Slave_1 [P81]		ili - Ma		Reporties	1 Info	& Diagnostics	- 2 C -
General IO tags System const	tants Texts						
• General							
PROFIBUS address Watche	log						
General DP parameters							
Warding	Watchdog ac	tivated					
SYNCIFREEZE							
Hardware identifier							



## 4.4 Telegram selection

The communication via Profibus DP is carried out by means of telegrams. For this, the telegram type must be defined. The information about the supported telegrams from the Wandfluh DP-Slave are included in the GSD file.

The telegram type is defined by

- card type (Amplifier / Controller)
- controller mode (e.g. pressure / flow / position open loop / closed loop)
- with / without parameter channel PKW

The following telegram types are available on the Wandfluh DP-Slave:

•	Data exchange <b>with</b> parameter channel with 4 words for parameters and 3 words for data exchange	$\rightarrow$ telegram type 1
•	Data exchange <b>without</b> parameter channel with 3 words for data exchange	$\rightarrow$ telegram type 2
•	Data exchange <b>with</b> parameter channel with 4 words for parameters and 2 words for data exchange	$\rightarrow$ telegram type 3
•	Data exchange <b>without</b> parameter channel with 2 words for data exchange	$\rightarrow$ telegram type 4
•	Data exchange <b>with</b> parameter channel with 4 words for parameters and 7 words for data exchange DP-Slave SD7)	→ telegram type 103 (only Wandfluh
•	Data exchange <b>without</b> parameter channel with 7 words for data exchange DP-Slave SD7)	ightarrow telegram type 101 (only Wandfluh

	Controller mode								
	1 (Spool valve open loop)	3 (Pressure/flow valve open loop)	4, -5 (Pressure/flow valve closed loop)	6 (Position open loop )	7 (Speed control closed loop)	9 (Position closed loop)	-6, -7, -8 (n-point controller)		
Telegram type	3 / 4	3 / 4	3 / 4 / 101 / 103	1/2	1 / 2 / 101 / 103	1 / 2 / 101 / 103	1 / 2		
Profibus Amplifier	selec	table		not selectable					
Profibus Controller		selectable							

A detailed description of all telegrams is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section "Cyclical process data exchange (PZD)". This document can be downloaded at <a href="https://www.wandfluh.com/downloads/accompanying documents for electronics">www.wandfluh.com/downloads/accompanying documents for electronics</a>



1. Double click in the network view on the Wandfluh DP-Slave. The device view appears

IProjektAnleitung > CPU 1212C [CPU 1212C AC/DC/Rly] > Distributed	I/O ► DP-Mastersystem (1):	PROFIBUS_1 ► Slav	/e_1			_ # = ×	Hardware catalog	<b>1</b> 1
			2 Topology view	Net	work view	Device view	Options	
ave_1 💌 🔠 🐮 🝊 🗄 🔍 ±	<b>1</b>	Device overview						
	^	Module	Rack	Slot	Laddress	Q address Type	✓ Catalog	
		Slave_1	0	0		SD7 Electro	<search></search>	init in
N			0	1			S Filter	
also -	100		0	2			E SD2 Electronic	
*			0	3			Universal module	
			0	4			Module-Separator	
			0	5			PKW+PZD-3E/3A(TG 1)	
			0	6			PZD-3EJ3A(TG 2)	
			0	7			PKW+PZD-2E/2A(TG 3)	
			0	8			PZD-2E/2A(TG 4)	
			0	9			PZD-3E/7A(TG 101)	
							PKW+PZD-3E/7A(TG 103)	
							1997	
	7							

- 2. On the right side the telegram selection read from the GSD file appears..
- 3. Click with the left mouse button on the desired telegram type (in the example "PKW+PZD-3E/3A(TG1)", hold button and drag into the table "Device overview Module". Make sure that there are no blank lines in the table.

BeispielProjektAnleitung → CPU 1212C [CPU 1212C AC/DC/Rly] → Distributed VO → DP	Mastersystem (1):	PROFIBUS_1 > Slave_1					_ 🖬 🖬 🗙	Hardware catalog	🖬 🖬 🕨	
		🖉 Topolog	y view	th Net	work view	De De	vice view	Options		E
# Slave_1 💌 🗉 塑 🔏 田 电 ±	-	Device overview							E	Har
	^	Module	Back	Slot	Laddress	O address	Туре	✓ Catalog		EM0
		Slave_1	0	0			SD7 Electro	<search></search>	ini jini	E C
		PKW4PZD A(TG 1)_3	1 0	1	6875	6471	PKW+PZD	Filter		ata
4 And Contraction of the Contrac	=	PKW+PZD-3E/3A(TG 1)_3 PKW+PZD-3E/3A(TG 1)_3	2 0	2	7681	7277	PKW+PZD+	SD7 Electronic		60
			0	4			-	Module-Separator		12
			0	5				PKW+PZD-3E/3A(TG 1)		0
<i>e</i> 2			0	7				PZD-3E/3A(TG 2)		in the
			0	8				PR04P2D-2E(2A(1G 3)		to
			0	9				PZD-3E/7A(TG 101)		sis
								PKW+PZD-3E/7A(TG 103)		-
										1
										ask
										1
										L
	ų.									Libras
	1									ries

4. If you work with two channels on the Wandfluh DP-Slave, a separate telegram for each channel must be inserted. There can be separate telegram types for each channel. As a separation between the two telegrams, the "Module-Separator" must be inserted.





# 4.5 Load hardware configuration to the Siemens DP-Master

The set configuration must now be downloaded to the Siemens DP-Master.

1. Click on the left side (Project navigator) with the right mouse button on "CPI xxx" and select "Download to device - Hardware configuration"

Project tree	🔲 📢 BeispielProje	ktAnleitung → Devices & networks
Devices		
000	🔲 📑 💦 Network	🖞 Connections 🛛 HMI connection 🔍 🕎 👯 🔛 🍳 🖢 🔤
		🕴 Master system: CPU 1212C.DP-Mastersystem (1)
Add new device	orks CPU 1212C CPU 1212C CPU 1212C	Slave_1 SD7 Electronic
Common data      Documentation	Open in new editor Open block/PLC data type F7	
Card Reader/USB m	X Cut         Ctrl+X           Image: Copy         Ctrl+C           Image: Paste         Ctrl+V	CPU 1212C. DP-Mastersyst
	X Delete Del Rename F2	
	🚰 Go to topology view 攝 Go to network view	
	Compile	
	Download to device	Hardware and software (only changes) Hardware configuration
	✓ Go online         Ctrl+K           ✓ Go offline         Ctrl+M           ☑ Online & diagnostics         Ctrl+D	Software (only changes)
	Snapshot of the monitor values Apply snapshot values as start values	
	Start simulation Ctrl+Shift+X	
	🙆 Compare 🔸	
1		

2. On the first connect to the Siemens DP-Master the following window appears:

	Device	Device type	Slot	Туре	Address	Sub	net
	CPU 1212C	CPU 1212C AC/D	1 X1	PN/IE	192.168.0.1		
	CM 1243-5	CM 1243-5	101 2	PROFIBUS	2	PRO	FIBUS_1
		Type of the PG/PC inte	erface:	PN/IE			
		PG/PC inte	erface:	Intel(R) Giga	abit-CT-Desktopadapt	er	- 0
		Connection to interface/s	ubnet:	Direct at slot '			- 💎
		1st ga	teway:				- 🐨
	Compatible devic	es in target subnet:			Show all compa	atible devices	
_	Compatible devic	es in target subnet:	Type	۵	Show all compa	tible devices	levice
	Compatible devic Device 	es in target subnet: Device type —	Type PN/IE	A	Show all compa ddress access address	Target o	levice
	Compatible devic Device —	es in target subnet: Device type —	Type PN/IE	A	Show all compa ddress ccess address	atible devices Target d 	levice
	Compatible devic Device —	tes in target subnet: Device type —	Type PN/IE	A	Show all compa ddress access address	atible devices Target o —	levice
	Compatible devic Device 	es in target subnet: Device type —	Type PN/IE	A	Show all compa ddress address	Target d	levice
ED	Compatible devic Device -	es in target subnet: Device type —	Type PN/IE	A	Show all compa ddress address	Target o	levice
D	Compatible device Device -	es in target subnet: Device type —	Type PN/IE	A	Show all compa ddress cccess address	atible devices Target d 	fevice
	Compatible device	es in target subnet: Device type –	Type PN/IE	A	Show all compa ddress cccess address	atible devices Target d -	levice tart search
LED	Compatible devic Device	es in target subnet: Device type —	Type PN/IE	A	Show all compa ddress cccess address	Target c	Jevice tart search
LED	Compatible devic Device -	es in target subnet: Device type —	Type PN/IE	A	Show all compe ddress cccess address	Target o	levice tart search
LED	Compatible device Device	ies in target subnet: Device type —	Type PN/IE	A	Show all compa ddress cccess address	atible devices Target d –	levice tart search
ED	Compatible device	es in target subnet: Device type —	Type PN/IE	A	Show all compa ddress access address	Target c	levice tart search

- 3. Click to "Start search" and then to "Load"
- 4. The following windows may look different depending on the state of the Siemens DP-Master (download first time, a program is already running, etc).
- In the window "Load preview" the desired action can be selected. It is important that "Stop all" and "Download to device" is selected.
   ATTENTION: An already suppling program is stopped and overwritten!

ATTENTION: An already running program is stopped and overwritten!



Click to "Load".

Status	1	Target	Message	Action
+[]	0	▼ CPU 1212C	Ready for loading.	
	0	Stop modules	The modules are stopped for downloading to device.	Stop all
	0	Device configurati	Delete and replace system data in target	Download to device

6. After successfully loading, the Siemens DP-Master must be started. It is important that "Start all" is selected. Click to "Finish".

oad res	sults			
<b>?</b> •	Status	and actions after downloa	ading to device	
Status	1	Target	Message	Action
4	<u> </u>	<ul> <li>CPU 1212C</li> </ul>	Downloading to device completed without error.	
	Å	Start modules	Start modules after downloading to device.	🛃 Start all
<			10	



7. Now a green LED "RUN" should light on the Siemens DP-Master and the Wandfluh DP-Slave should be in the DP-State "Data Exchange" and in the TG-State "2" (TG-State 2 correspond to the number of the selected telegram). Select the menu item "Fieldbus - Info - Bus State" in the PASO for check this states.

External Bus	x
Bus Adjustments Bus	State
Bustype	Profibus-DP
ID-Number	0B8EH
WD-State	DP_Mode
DP-State	Data_Exchange
TG-State	2,-
<u>o</u> k	Cancel Help



# 5 Using the Wandfluh program blocks

## 5.1 Introduction

This section describes the use of Wandfluh program blocks.

With these program blocks, the effort for programming the communication via the Profibus DP in Step 7 is limited to the call of the desired module with corresponding parameter transfer. The whole handling with the assignment to the right word in the telegram is made automatically in the program block. Also the conversion to the little-endian format (low-byte resp. low-word before high-byte resp. high-word) is made direct in the program block.

For each telegram type (refer to section "<u>Telegram selection</u> 18") has an own program block. In order to work with the program blocks, the global library "Wandfluh Profibus DP Step 7" must be integrated into the Step 7 project.

## 5.2 Insert the Wandfluh library

In order to work with the program blocks, the global library "Wandfluh Profibus DP Step 7" must be integrated into the Step 7 project.

The following step are necessary:

- 1. Download the Wandfluh library "Wandfluh Profibus DP Step 7" on www.wandfluh.com/downloads/application
- 2. Activate on the right side (Task cards) the selection "Libraries"
- 3. Click in the section "Global libraries" on "Open global library"

Libraries	🖬 🗉 🕨	
Options		
🛃 Library view 🙆		Har
✓ Project library		dwa
🖄 🔝 All		reo
▶ 🦵 Project library		atalog
Open global library		online tools
✓ Global libraries		
0 0 4 t		H
LI Buttons-and-Switches		
		Isks
Lu Long Functions		Isks
Long Functions     Monitoring-and-control-objects		isks 🛛 🖂
Long Functions     Monitoring-and-control-objects     Documentation templates		isks 🛛 🖯 Lib
Long Functions     Monitoring-and-control-objects     Documentation templates     WinAC_MP		isks 🛛 🗃 Libraries



4. Select the previously downloaded library and click to "Open"

Suchen in:	퉬 Wandfluh	Profibus DP Step 7		6 🦻 🖻 🛄 -	
a.	Name	*		Änderungsdatum	Тур
2	Additiona	alFiles		27.08.2015 13:41	Dateiordner
uletzt besucht	IM 📕			27.08.2015 13:41	Dateiordner
	System			27.08.2015 14:14	Dateiordner
	TMP			27.08.2015 13:41	Dateiordner
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5. The Wandfluh library is now inserted and can be used

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# 5.3 Wandfluh program blocks

#### 5.3.1 Insert

The Wandfluh program block is inserted in the Step 7 project in the desired organization- or function block (e.g. Main [OB1])

The following step are necessary:

1. Open the view of the block where the Wandfluh program block should be inserted (in this example "Main [OB1]")



2. Click on the right side (Task cards) on the selection "Libraries"



3. Click with the left mouse button on the desired Wandfluh program block, hold button and drag into the desired network (in the example "Network 1")

#### **IMPORTANT:**

The program block must correspond to the selected telegram type (refer to section "<u>Telegram selection</u> [18<sup>-</sup>]"). In the example selected telegram type = "PKW+PZD-3E/3A(TG1)" => program block = "Handling\_TG1"



4. For each Wandfluh program block a corresponding data block is created. In this data block all transfer parameters are stored. Enter the name and click to OK.



5. Several program blocks can be inserted. When working with two channels on the Wandfluh DP-Slave (two telegram types are inserted, refer to section "Telegram selection [18]") or several Wandfluh DP-Slaves are available, it is mandatory to insert a program block for each channel or Slave. Each program block has his own data block.



6. The Wandfluh program block is now inserted and can be used. The transfer parameters must be passed resp. analysed in accordance with the user program. The values must be entered in normal format. The conversion to the little-endian format (low-byte resp. low-word before high-byte resp. high-word) is made automatically in the program block.

For example, if the Wandfluh DP-Slave should be enabled, the control word must be written with the value 00007 (hex).

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#### 5.3.2 Transmission

All Wandfluh DP-Slaves communicate with the transmission protocol DPV0. With this protocol, all data are always transmitted cyclically. Thus, the Wandfluh program block sends or reads permanently data on or from the Profibus DP, even if the program block is called only once.



Thus the Wandfluh DP-Slave does not to have constantly update PKW data, the transfer parameter PKW\_AK\_SEND (refer to section "<u>PKW\_AK\_SEND</u> 38") should be set to 0 after a successful PKW transfer. With an AK value of 0, the Wandfluh DP-Slaves mirrored only the previous PKW values.

Thus, the following procedure is recommended for the PKW transfer:

- 1. First describe the block number (<u>PKW IND SEND</u> 38), parameter number (<u>PKW PNU SEND</u> 38) and parameter value (<u>PKW VALUE SEND</u> 38) of the desired parameter
- 2. Afterwards describe the instruction signature (PKW AK SEND 38) corresponding to the parameter
- 3. As soon as the program block returns the suitable response signature (<u>PKW\_AK\_READ</u>) as well as the read block number (<u>PKW\_IND\_SEND</u>) and parameter number (<u>PKW\_PNU\_SEND</u>) correspond to the sent values, the PKW transfer is successfully completed and the instruction signature (<u>PKW\_AK\_SEND</u>) should set to 0.
- A detailed description about the instruction and response signature is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section " Cyclical parameter data exchange (PKW)".
- 5. Example: Parameter Imin should be written with 150mA:





#### 5.3.3 Handling\_TG1



Input parameter		Output parameter	
PKW IO Address 35 PZD Q Address 35 PZD I Address 37 PKW AK SEND 38 PKW IND SEND 38 PKW PNU SEND 38 PKW VALUE SEND 38 ControlWord 39 CommandValue 39	HW_IO (Word) HW_IO (Word) HW_IO (Word) Byte Byte DWord Word DWord	Error 40 PKW AK READ 41 PKW IND READ 41 PKW PNU READ 41 PKW VALUE READ 41 StatusWord 42 FeedbackValue 42	Int Byte Byte DWord Word DWord



#### 5.3.4 Handling\_TG2



Input parameter		Output parameter	
PZD Q Address 36 PZD I Address 37 ControlWord 39 CommandValue 39	HW_IO (Word) HW_IO (Word) Word DWord	<u>Error</u> ଏଦି <u>StatusWord</u> ଏହି <u>FeedbackValue</u> ଏହି	Int Word DWord



#### 5.3.5 Handling\_TG3



Input parameter		Output parameter	
PKW IO Address 35 PZD Q Address 37 PZD I Address 37 PKW AK SEND 38 PKW IND SEND 38 PKW PNU SEND 38 PKW VALUE SEND 38 ControlWord 39 CommandValue 39	HW_IO (Word) HW_IO (Word) HW_IO (Word) Byte Byte DWord Word Word	Error 40 PKW AK READ 41 PKW IND READ 41 PKW PNU READ 41 PKW VALUE READ 41 StatusWord 42 FeedbackValue 42	Int Byte Byte DWord Word Word



#### 5.3.6 Handling\_TG4



Input parameter		Output parameter	
PZD Q Address 36 PZD I Address 37 ControlWord 39 CommandValue 39	HW_IO (Word) HW_IO (Word) Word Word	<u>Error</u> विषे <u>StatusWord</u> विष्टे <u>FeedbackValue</u> विष्टे	Int Word Word



#### 5.3.7 Handling\_TG103

Communication via device telegram 103



Input parameter		Output parameter	
PKW IO Address 35 PZD Q Address 37 PZD I Address 37 PKW AK SEND 38 PKW IND SEND 38 PKW PNU SEND 38 PKW VALUE SEND 38 ControlWord 39 CommandValue 39 Velocity 39 Acceleration 39 Decelration 40	HW_IO (Word) HW_IO (Word) HW_IO (Word) Byte Byte DWord Word DWord DWord Word Word Word	Error PKW AK READ PKW IND READ PKW PNU READ FKW VALUE READ StatusWord FeedbackValue	Int Byte Byte DWord Word DWord



#### 5.3.8 Handling\_TG101

Communication via device telegram 101



Input parameter		Output parameter	
PZD_Q_Address36PZD_I_Address37ControlWord39CommandValue39Velocity39Acceleration39Decelration40	HW_IO (Word) HW_IO (Word) Word DWord DWord Word Word	Error 40 StatusWord 42 FeedbackValue 42	Int Word DWord



#### 5.3.9 Transfer parameter

#### 5.3.9.1 PKW\_IQ\_Address

Туре:	Input		
Data type:	HW_IO (Word)		
Program blocks:	Handling_TG1, Handling_TG3, Handling_TG103		
Program blocks: Description:	Handling_TG1, Handling_TG3, Handling_TG103 Corresponds to the start address from the PKW range of the selected telegram type. The PKW range corresponds to the first row in the table "Device overview - Device view - Module"		
	1     1       1 </td		



#### 5.3.9.2 PZD\_Q\_Address

Туре:	Input	
Data type:	HW_IO (Word)	
Program blocks:	all	
Description:	Corresponds to the start address from the PZD output range (Q address) of the selected telegram type. The PZD output range correspond to the third row in the table "Device overview - Device view - Module"	
	Province overprieter	
	Device overview         Catalog         * Catalog         SD7 Electronic         NUM-ZD-3E/3A(TG 1).3.1       0       0       6471       KW+ZD-3E/3A(TG 1).3.1       0       0       6471       KW+ZD-3E/3A(TG 1).3.2       0       2       7681       KW+ZD-3E/3A(TG 1).3.2       0       2       7681       KW+ZD-3E/3A(TG 1).3.3       0       4       With FZD-3E/3A(TG 1)       With FZD-3E/3A(TG 1)         PKW+ZD-3E/3A(TG 1).3.3       0       4       Module       Module       Module         MWHZD-3E/3A(TG 1).3.3       0       4       FXW+ZD-3E/3A(TG 1)       FXW+ZD-3E/3A(TG 1) <th col<="" td=""></th>	
	Ye91         'Handling_TG1DB'         'F81         'Handling_TG1"         ENO         PKW_UQ-         Error         'Local-Pulse_1'         Hw_Pwm         'Local-Pulse_3'         Hw_Pwm         'Local-Pulse_3'         Hw_Pwm         'Local-Pulse_4'         Hw_Pwm         'Vandfluh_SD7_Slave-RtwPzD-3E_3A(TG_1)_3_1'         Hw_SubModule         'Wandfluh_SD7_Slave-RtwPzD-3E_3A(TG_1)_3_2'         Hw_SubModule         'Wandfluh_SD7_Slave-RtwPzD-3E_3A(TG_1)_3_2'         Hw_SubModule	



#### 5.3.9.3 PZD\_I\_Address

Туре:	Input
Data type:	HW_IO (Word)
Program blocks:	all
Program blocks: Description:	all Corresponds to the start address from the PZD input range of the selected telegram type. The PZD input range corresponds to the second row in the table "Device overview - Device view - Module"
	Image: Stave_1-rKW+PZD-3E_3A(TG         Hw_subMod



#### 5.3.9.4 PKW\_AK\_SEND

Туре:	Input (value is sent to the Wandfluh DP-Slave)
Data type:	Byte
Program blocks:	Handling_TG1, Handling_TG3, Handling_TG103
Description:	Corresponds to the AK (instruction signature) of the PKW.
	DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section " Cyclical parameter data exchange (PKW)".

#### 5.3.9.5 PKW\_IND\_SEND

Туре:	Input (value is sent to the Wandfluh DP-Slave)
Data type:	Byte
Program blocks:	Handling_TG1, Handling_TG3, Handling_TG103
Description:	Corresponds to the IND (block number) of the PKW.
	A detailed description about the PKW is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section " Cyclical parameter data exchange (PKW)".

#### 5.3.9.6 PKW\_PNU\_SEND

Туре:	Input (value is sent to the Wandfluh DP-Slave)
Data type:	Byte
Program blocks:	Handling_TG1, Handling_TG3, Handling_TG103
Description:	Corresponds to the PNU (parameter number) of the PKW.
	A detailed description about the PKW is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section " Cyclical parameter data exchange (PKW)".

#### 5.3.9.7 PKW\_VALUE\_SEND

Туре:	Input (value is sent to the Wandfluh DP-Slave)
Data type:	DWord
Program blocks:	Handling_TG1, Handling_TG3, Handling_TG103
Description:	Corresponds to the PWE (parameter value) of the PKW.
	A detailed description about the PKW is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section " Cyclical parameter data exchange (PKW)".



#### 5.3.9.8 ControlWord

Туре:	Input (value is sent to the Wandfluh DP-Slave)
Data type:	Word
Program blocks:	all
Description:	Corresponds to the control word of the PZD receive data. A detailed description about the PZD and the telegram types is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section "Cyclical process data exchange (PZD)".

#### 5.3.9.9 CommandValue

Туре:	Input (value is sent to the Wandfluh DP-Slave)
Data type:	DWord (Handling_TG1, Handling_TG1, Handling_TG103, Handling_TG2) Word (Handling_TG3, Handling_TG4)
Program blocks:	all
Description:	Corresponds to the command value of the PZD receive data. A detailed description about the PZD and the telegram types is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section "Cyclical process data exchange (PZD)".

#### 5.3.9.10 Velocity

Туре:	Input (value is sent to the Wandfluh DP-Slave)
Data type:	DWord
Program blocks:	Handling_TG103, Handling_TG101
Description:	Corresponds to the velocity of the PZD receive data.
	A detailed description about the PZD and the telegram types is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section "Cyclical process data exchange (PZD)".

#### 5.3.9.11 Acceleration

Туре:	Input (value is sent to the Wandfluh DP-Slave)
Data type:	Word
Program blocks:	Handling_TG103, Handling_TG101
Description:	Corresponds to the acceleration of the PZD receive data.
	A detailed description about the PZD and the telegram types is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section "Cyclical process data exchange (PZD)".



#### 5.3.9.12 Deceleration

Туре:	Input (value is sent to the Wandfluh DP-Slave)
Data type:	Word
Program blocks:	Handling_TG103, Handling_TG101
Description:	Corresponds to the deceleration of the PZD receive data. A detailed description about the PZD and the telegram types is located in the document
	in the section "Cyclical process data exchange (PZD)".

#### 5.3.9.13 Error

Туре:	Output	
Data type:	Int	
Program blocks:	all	
Description:	Error cod	e
	Following	errors can occur:
	0000	no error
	8090	Following cases are possible:
		• for the specified logical base address no module is configured
		<ul> <li>the restriction on the length of consistent data was ignored</li> </ul>
		<ul> <li>the start address (PKW_IQ_Address, PZD_Q_Address or</li> </ul>
		PZD_I_Address) has not been entered in hex format
	8093	There is no Profibus DP module available with the start address
		(PKW_IQ_Address, PZD_Q_Address or PZD_I_Address)
	80A0	When accessing the I/O devices, an access error was detected
	00.4.1	(Error while reading)
	80A1	(Frror while sending)
	80B0	Wandfluh DP-Slave failure
	80C0	The data have not been read by the DP-Slave (error only when
		reading)
	80C1	The data have not been sent to the DP-Slave (error only when
		sending)
	For more Step 7.	details about the errors, please refer to the documentation for the Siemens



#### 5.3.9.14 PKW\_AK\_READ

Туре:	Output (value is read from the Wandfluh DP-Slave)
Data type:	Byte
Program blocks:	Handling_TG1, Handling_TG3, Handling_TG103
Description:	Corresponds to the AK (response signature) of the PKW. A detailed description about the PKW is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section "

#### 5.3.9.15 PKW\_IND\_READ

Туре:	Output (value is read from the Wandfluh DP-Slave)
Data type:	Byte
Program blocks:	Handling_TG1, Handling_TG3, Handling_TG103
Description:	Corresponds to the IND (block number) of the PKW.
	A detailed description about the PKW is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section " Cyclical parameter data exchange (PKW)".

#### 5.3.9.16 PKW\_PNU\_READ

Туре:	Output (value is read from the Wandfluh DP-Slave)
Data type:	Byte
Program blocks:	Handling_TG1, Handling_TG3, Handling_TG103
Description:	Corresponds to the PNU (parameter number) of the PKW.
	A detailed description about the PKW is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section " Cyclical parameter data exchange (PKW)".

#### 5.3.9.17 PKW\_VALUE\_READ

Туре:	Output (value is read from the Wandfluh DP-Slave)
Data type:	DWord
Program blocks:	Handling_TG1, Handling_TG3, Handling_TG103
Description:	Corresponds to the PWE (parameter value) of the PKW.
	A detailed description about the PKW is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section " Cyclical parameter data exchange (PKW)".



#### 5.3.9.18 StatusWord

Туре:	Output (value is read from the Wandfluh DP-Slave)
Data type:	Word
Program blocks:	all
Description:	Corresponds to the status word of the PZD transmit data. A detailed description about the PZD and the telegram types is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section "Cyclical process data exchange (PZD)".

#### 5.3.9.19 FeedbackValue

Туре:	Output (value is read from the Wandfluh DP-Slave)
Datatype:	DWord (Handling_TG1, Handling_TG1, Handling_TG103, Handling_TG2) Word (Handling_TG3, Handling_TG4)
Program blocks:	all
Description:	Corresponds to the feedback value of the PZD transmit data.
	A detailed description about the PZD and the telegram types is located in the document "XXX-PROFIBUS DP-Protocol" (XXX represents the corresponding Wandfluh card type) in the section "Cyclical process data exchange (PZD)".



# 6 Error detection and diagnostics

# 6.1 Error indication on the DP Master

#### 6.1.1 Introduction

On the Siemens DP-Master (in the example Siemens CPU 1212C) an existing error is displayed with a flashing red LED.



By means of the Step 7 software, the diagnostic buffer can be read out. The following steps are necessary:

- 1. Open the menu item "Online Go online"
- 2. Change to the "Network view"
- 3. Double click on the diagnostics icon on the image of the Siemens DP-Master (in the example CPU 1212C)



4. The diagnostics window appears. In the section "Diagnostic buffer" the details about the error can be displayed.

BeispielProjektAnleitung + CPU	212C [CPU 1212C AC/DC/RIy]	_ # = ×	Online tools	<b>₫</b> ∏ ►
			Options	
Online access Diagnostics	Diagnostics buffer	~	CDU and	
General Diagnostic status Diagnostics buller Cycle time	Events  I Display CPU Time Stamps in PSIPC local time		CPU 1212C [CPU	1212C ACIDCIRIY
Memory PROFINETINE(ke(k)) Functions	No. Date and line       Levet         1       9/2/2015 854:10.032 AM. 10 device failure -         2       9/2/2015 854:10.032 AM. 10 device failure -         3       9/2/2015 854:10.032 AM. 10 device failure -         3       9/2/2015 854:10.037 AM. 10 device failure -         4       9/2/2015 84:41.0037 AM. 10 device failure -         5       9/2/2015 84:41.0037 AM. 10 device failure -         6       9/2/2015 7:32:50:84 AM. Followon operating mode change - CPU changes from STXP to STAREU mode         6       9/2/2015 7:32:50:834 AM. Followon operating mode change - CPU changes from STXP to STAREU mode         7       9/2/2015 7:32:50:834 AM. Followon operating mode change - CPU changes from STXP to STAREU mode         6       9/2/2015 7:32:50:834 AM. Followon operating mode change - CPU changes from ND POWER to STOP (initialization) to         7       9/2/2015 7:32:50:334 AM. Followon operating mode Change - CPU changes from STXP to STAREU mode         7       9/2/2015 7:32:57:12:3 AM. Followon operating mode Change - CPU changes from ND POWER to STOP (initialization) mode         8       9/2/2015 7:32:57:12:3 AM. Followon operating mode change - CPU changes from STXP to STXP (initialization) mode         7       0       1         Teream display   Details on event:          Details is on event:             1       of 5		ERIOR MAINT ✓ II ✓ Cycle time Shortest: Currentilist:	<u>STOP</u> мяез 150 ms
	Time stamp:     9/2/2015 8:54:10.032 AM       Krédule:     [slave_1]       Rackisto:     Racki Slot       Plant designation:     -       Location identifier     -       Incoming/outgoing:     Error       Incoming/outgoing:     Error		Memory  Load memory  Work memory  Retain memory	Free:97 % Free:98 % Free:100 %



#### 6.1.2 Possible errors on the DP-Master

#### Wrong bus node address:

Error description:	Details on event: Details on event: Description: CPU error: New I/O access error during process image update output 72 (6 Bytes) will temporarily not be updated as part of process image PIP 0 PKW+PZD-3E/3A(TG 1)_3_3
	Time stamp:       9/2/2015 9:06:11.876 AM         Module:       Slave_1 / PKW+PZD-3E/3A(TG 1)_3_3         Rack/slot:       Rack 0 / Slot 3         Plant designation:       -         Location identifier       -         Priority:       Error         Incoming/outgoing:       Incoming event         Help on event       Open in editor       Save as
Possible causes:	he set node address on the Siemens DP-Master must correspond to the set node address n the Wandfluh DP-Slave. If the node address on the DP-Master is wrong, these erro nessage appears.
Trouble shooting:	o fix the error, set the correct node address on the Siemens DP-Master (refer to section stablish a Profibus DP connection 15").

#### **Missing Profibus DP connection:**

Error description:	Details on event: Details on event: 1 of 50 Event ID: 16# 02:39CB Description: Error: IO device failure - Slave_1	
	Time stamp:       9/2/2015 9:32:13.700 AM         Module:       Slave_1         Rack/slot:       Rack/ Slot         Plant designation:       -         Location identifier       -         Priority:       Error         Incoming/outgoing:       Incoming event         Help on event       Open in editor       Save as	
Possible causes:	If no or a faulty connection is available between the Siemens DP-Master and the War DP-Slave, these error message appears	ldfluh
Trouble shooting:	To fix the error, the connection between the Siemens DP-Master and the Wandfluh DP- must be checked (refer to section " <u>Establish a Profibus DP connection</u> [15]").	Slave



# 6.2 Error indication on the DP Slave

#### 6.2.1 Introduction

On the Wandfluh DP-Slave SD7 an existing error is displayed with a flashing red LED (5x flashing) and the active digital out "Error".



On the Wandfluh DP-Slave DSV an existing error is displayed with the active digital out "Error".



By means of the parameterisation software PASO, a detailed error description can be displayed. The following steps are necessary:

- 1. Open the menu item "Analysis Diagnostics"
- 2. The diagnostics window with the corresponding error description appears



so Diagnostics			-
Error message [Fieldbus error 15]			
Error: Bus state Bus communication is lost.			
			<u></u>
	More	Close	Help

3. Furthermore with the menu item "Fieldbus - Info - Bus state" the current Profibus DP state can be displayed

Bus Einstellungen	s Zustand
Bustype	Profibus-DP
ID-Number	OBSEH
WD-State	DP_Mode
DP-State	Data_Exchange
TG-State	1

4. The following DP-states are possible:

#### Wait\_Prm:

After the start-up, the Wandfluh DP-Slave is waiting for a parameter telegram. No data exchange is possible.

#### Wait\_Cfg:

The Wandfluh DP-Slave is waiting for a configuration telegram. No data exchange is possible

#### Data\_Exchange:

The data exchange via the Profibus DP is enable and possible.



#### 6.2.2 Possible errors on the DP-Slave

#### **Missing Profibus DP connection:**

Error description:	Paso Diagnostics         Error message         [Fieldbus error 15]         Error: Bus state         Bus communication is lost.         More       Qose         Help         This error can only be detected if the watchdog on the Siemens DP-Master is enabled (refer to section "Establish a Profibus DP connection [12 <sup>on</sup> ])
Possible	If no or a faulty connection is available between the Siemens DP-Master and the Wandfluh
causes:	DP-Slave, these error message appears
Trouble shooting:	To fix the error, the connection between the Siemens DP-Master and the Wandfluh DP-Slave must be checked (refer to section "Establish a Profibus DP connection 15").

#### Bus initialisation error:

Error description:	Paso Diagnostics Error message [Fieldbus error 14] Error: Bus initialisation There was a error during the initialisiation of the bus.
Possible causes:	The Profibus DP node on the Wandfluh DP-Slave cannot be started.
Trouble shooting:	This errorcan not be resolved by the user. Please contact sales@wandfluh.com



## 6.3 Other errors

#### 6.3.1 Introduction

If there is no error indicated neither on the Siemens DP-Master nor on the Wandfluh DP-Slave, the communication via the Profibus DP is correct. By means of the parameterisation software PASO the values sent by the DP-Master can be displayed. The following steps are necessary:

- 1. Open menu item "Analysis Show values"
- 2. The values transmitted via the Profibus DP are displayed directly in the main window:



3. If in the Siemens DP-Master a command value from e.g. 8192 (dez) is entered, this value must be displayed in the PASO



#### 6.3.2 Possible errors

#### The data sent by the Siemens DP-Master do not arrive on the Wandfluh DP-slave:

Error description:	The data sent by the	e Siemens DF	P-Master a	are not displa	iyed in t	he PASC	)		
Possible causes:	The values pass to t	he Wandfluh	program	block are no	t correc	t			
Trouble shooting:	Check the values Siemens Step 7 on program blocks - Ins Handling_TG_DB	that are pas the data bloc sert 25") and	sed to the k association solution open the Start value	ne Wandfluh ated with prog menu item "(	progra gram ble Online -	m block ock (refer Go online	. Double r to secti e": visible in s	e clici on " <u>V</u>	k in the Vandfluh
	1 🕣 🔻 Input								
	2 - PKW IO-Adresse	HW IO	16#0	16#0114					
	3 - PZD O-Adresse	HW IO	16#1	16#0116					
	4 - PZD I-Adresse	HW IO	16#0	16#0115	ň			Ä	
	5 - PKW AK SEND	Byte	16#0	16#00				Ä	
	6 🔄 = PKW IND SEND	Byte	16#0	16#00				ā	
	7 - PKW PNU SEND	Byte	16#0	16#00				Ä	
	8 - PKW WERT SEND	DWord	16#0	16#0000 0000				Ä	
	9 4 ControlWord	Word	16#0	16#0007	- H			E .	-
	10 CommandValue	DWord	16#0	16#0000 2000					
		Davora	10#0	18#0000_2000					
		Inc	0	0					
	12 - Error	Int	0	0		Sec. 1			
	13 📶 = PKW_AK_READ	Byte	16#0	16#00					
	14 🔄 = PKW_IND_READ	Byte	16#0	16#00					
	15 🔄 = PKW_PNU_READ	Byte	16#0	16#00					
	16 - PKW_WERT_READ	DWord	16#0	16#0000_0000					
	17 📲 🔹 StatusWord	Word	16#0	16#000F		$\checkmark$	<ul> <li>Image: A start of the start of</li></ul>		
	18 🕣 = FeedbackValue	DWord	16#0	16#0001_C73F		<b>V</b>	<b>V</b>		
	19 📶 InOut								
	20 🕣 🔻 Static								
	21 📹 = Ret_Error	Int	0	0					
	In the section "Input" important: The w Significant Bit) on th Example: Activate the DP-Slaw Set command value	' all values pa values must e right side a ve => control to 8192 => c	assed to t be displ nd MSB ( word = 00 ommand	he Wandfluh ayed in nor Most Signific 000 0000 000 value = 8192	program mal for ant Bit) 00 0111 2 <sub>(dez)</sub> =>	m block a mat, this on the let <sub>(bin)</sub> => di display =	re displa s means ft side! splay = ( = 0000 2	ayed. 5 LSE 0007 ( 000 (h	3 (Least hex)



Error

description:									
Possible causes:	The transfer does a High-Byte resp. H working with the W	not take place igh-Word). Th andfluh progra	in the lit ne assig am block	tle-endian for nment to the s, this error c	rmat (Low e bytes r annot occ	/-Byte re esp. wo cur.	əsp. Low-W ords is wro	ord before ong. When	
Trouble	Open the data block with the word array of the read values resp. the word array with the								
shooting: values and open the menu item "Online - Go online".									
	When working with the Wandfluh program blocks, this word array cannot be opened! The following pictures show the correct assignment to the bytes resp. words: PKW write (Master => Slave) and read (Slave => Master)								
	Name	Datentyp	Startwert	Beobachtungswert	Remanenz	Erreichbar a	Sichtbar i Einstell	wert	
	1 Static	Array(0, 3) o III							
	3 🔄 = WR_PKW[0]	Word	16#0	16#0620					
	4 💷 🔹 WR_PKW[1]	Word	16#0	16#00FA	9				
	5 📶 = WR_PKW[2] 6 📶 = WR_PKW[3]	Word Word	16#0	16#1D05 16#0000					
	Write narameter Im	in with 150mA				100			
	$\Delta K = 2$ and PN	11 - 6 - 20	 106 -	-> display - 0	620	(mombo	r (1)		
		0 – 0 <sub>(dez)</sub> – 20	(hex) -	-> uispiay = 0	(hex)	(membe	10)		
	$IND = 250_{(dez)} = 00$	0FA <sub>(hex)</sub> => dis	play = 00	0FA <sub>(hex)</sub> (mer	nber 1)				
	value = 1309 (dez) =	$051D_{(hex)} => 0$	display =	1D05 (hex) (n	nember 2	) / 0000	(memb	er 3)	
	(002)	(nex)						-	
	DZD write (Meeter								
	PZD write (master	=> Slave)	Frank	D L L		F	ciabalanti ciana II		
	1 🕣 🔻 Static	Datentyp	Startwert	Beobachtungswert	t Kemanenz	Erreichbar a	Sichtbar I Einstein	Wert	
	2 📶 🗖 🔻 WR_Data	Array[02] o	-					)	
	3 - WR_Data[0]	Word	16#0	16#0700					
	5 - WR_Data[1]	Word	16#0	16#0000		<ul> <li>Image: A start of the start of</li></ul>			
	Control word = Akti	v = 0007 "	-> displa	v = 0700  "	(member	· 0)			
		(hex)		) = c, cc (hex)				1 0000	
	Command value =	$8192_{(dez)} = 00$	000 0200	o <sub>(hex)</sub> => aisp	ay = 002	:0 <sub>(hex)</sub> (i	nember 1)	/ 0000 <sub>(hex)</sub>	
	(member 2)								
	PZD read (Slave =	> Master)							
	Name	Datentyp	Startwert	Beobachtungswert	t Remanenz	Erreichbar a	Sichtbar i Einstell	wert	
	1 - Static	America 21 a line	-						
	3 📶 = RD_Data[0]	Word	16#0	16#0F10					
	4 📶 = RD_Data[1]	Word	16#0	16#381E	Q				
	5 📶 🖷 RD_Data[2]	Word	16#0	16#0000		<ul> <li>Image: A start of the start of</li></ul>	✓		
	display = 0F10 (hex)	(member 0) =	> Status	word $= 100F$	= <sub>(hex)</sub> = ac	ctive, rea	ady and targ	get window	
	reached								
	display = 381E (hex)	(member 1)	/ 0000 <sub>(h</sub>	<sub>ex)</sub> (member 2	2) => fee	dback 0	000 1E38 <sub>(t</sub>	<sub>hex)</sub> = 7736	
	(dez)		(	,			(.	,	

#### The data sent by the Siemens DP-Master do arrive on the Wandfluh DP-slave in a wrong way:

The data sent by the Siemens DP-Master are displayed in the PASO in a wrong way



# 7 Example project

The complet project "ExampleProjectProfibusDPStep7" for the Siemens Step 7 software can be downloaded at <u>www.wandfluh.com/downloads/application</u>. This project demonstrates with a concrete example, how the Wandfluh program blocks are integrated in a Step 7 project. In addition, the project shows how the corresponding values can be inputted resp. outputted via an HMI.

The project is only an example, any user can modify it to suit his needs.

The following hardware configuration is the example project basis:



The following settings have to be made on the Wandfluh DP slave SD7:

- "Fieldbus Info Bus Adjustments Bus Node Address" = 6
- "Controller Controller mode" = Position closed loop (2-sol)
- "Enable Channel Operating mode" = bus
- "Command scaling Command value mode" = bus
- "Command scaling min bus interface" = 0
- "Command scaling max bus interface" = 100000
- "Command scaling min reference" = 0.00 mm
- "Command scaling max reference" = 100.00 mm

Using the HMI, the following functions can be performed:

- · describe the control word via PZD (Disable, Hold, Active, Error Reset)
- display the Statusword via PZD (Disable, Hold, Active, Ready)
- describe the command value via PZD (input 0 ... 100000 = 0.000 ... 100.000 mm)
- display the feedback value via PZD
- write resp. read of PKW value
- switching between the PZD and the PKW window is done using the F1 button