

Industry Online Support

-

NEWS

# Integrating CM 1542-5 as I slave in STEP 7 V5.x

Product / version / specification / keyword

https://support.industry.siemens.com/cs/ww/en/view/109744337

Siemens Industry Online Support



This entry is from the Siemens Industry Online Support. The general terms of use (<u>http://www.siemens.com/terms\_of\_use</u>) apply.

Security information Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks. In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept. Customer is responsible to prevent unauthorized access to its plants, systems,

machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit <a href="http://www.siemens.com/industrialsecurity">http://www.siemens.com/industrialsecurity</a>.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under <u>http://www.siemens.com/industrialsecurity</u>.

### Table of content

1	Preface	4
2	Instructions	4

#### 1 Preface

You can use the communication module CM 1542-5 to operate an S7-1500 as I slave on a PROFIBUS DP master.

Chapter  $\frac{2}{2}$  gives you instructions for connecting the CM 1542-5 as I slave in STEP 7 V5.x to an S7-300/S7-400.

### 2 Instructions

Follow the instructions below to connect the CM 1542-1 as I slave in STEP 7 V5.x to an S7-300/S7-400.

#### Settings in STEP 7 (TIA Portal)

- 1. Configure the S7-1500 station and your physically existing hardware setup.
- In the Network or Device view you mark the communication module CM 1542-5. The properties of the CM 1542-5 are displayed in the inspector window.
- 3. In the "General" tab you navigate to "PROFIBUS interface > PROFIBUS address" and enter the PROFIBUS address of the CM 1542-5.

CM 1542-5_1 [CM 1542-5]		🖳 Properties						
General IO tags Sys	stem constants Texts							
General     PPOFIRIUS addrong								
<ul> <li>Module parameters</li> </ul>								
General	Interface networked with							
<ul> <li>PROFIBUS interface</li> </ul>								
General	Subnet:	PROFIBUS_1						
PROFIBUS address		Add new subnet						
Operating mode								
Time synchronization	Parameters							
SYNC/FREEZE	ratameters							
Hardware identifier	Address	3						
	/iddress:							
	Highest address:	126						
	Transmission speed:	1.5 Mbps						

 In the "General" tab you navigate to "PROFIBUS interface > Operating mode" and select "DP slave" as the operating mode. Specify the transfer areas including the lengths.

CM 1542-5_1 [CM 1542-5]							9	Properties	🔄 Info
General IO tags Sys	tem cons	tants Texts							
General	General								
<ul> <li>Module parameters</li> </ul>	1-51	ave communication							
General	Tran	sfer areas							
<ul> <li>PROFIBUS interface</li> </ul>									
General		Transfer area	Туре	Master address	+	Slave address	Length	Unit	Consistency
PROFIBUS address	1	InFromMaster	MS		-	12	1	Byte	Total length
<ul> <li>Operating mode</li> </ul>	2	OutFromMaster	MS		+	QO	1	Byte	Total length
I-slave communication	З	<add new=""></add>							
Time synchronization									
SYNC/FREEZE									
Hardware identifier									

5. In the Network view you mark the PROFIBUS subnet of the CM 1542-5. The properties of the PROFIBUS subnet are displayed in the inspector window.

- 6. In the "General" tab you navigate to "Network Settings" and enter the following parameters:
  - Highest PROFIBUS address: 126, for example
  - Transmission speed: 1.5 Mbit/s, for example
  - Profile: User-defined



7. In the "General" tab you navigate to "Bus parameters". Set the bus parameters for the CM 1542-5 exactly as for the DP master system in your STEP 7 V5.x project.

PROFIBUS_1 [Profibus]					<b>Q</b> Properties	🗓 Info 🤢 🗓 Diagnosti
General IO tags	System constants	Texts				
General	Bue parameters					
Network settings	bus parameters	-				
Cable configuration						
Additional network devices	Cyclic distril	oution				
	Enable cyc		us parameters			
	Parameters					
	Tslot_In	it: 300 t_Bit	Tslot:	300		t_Bit
	Max. Tso	dr: 150 t_Bit	Tid2:	150		t_Bit
	Min. Tso	dr: 11 t_Bit	Trdy:	11		t_Bit
	Tse	et: 1 t_Bit	Tid1:	37		t_Bit
	• Tq	ui: 0 t_Bit	: Ttr:	31540 t_Bit		
			-	21.0		ms
	Gap facto	pr: 10	Ttr typical:	441		t_Bit
			=	0.300		ms
	Retry lim	it: 1	Watchdog:	68094 t_Bit		
			=	45.4		ms
				Recalculate		

8. Then load the configuration into the S7-1500 station.

#### Settings in STEP 7 V5.x

- Download the GSD file of the CM 1542-5 from the Industry Online Support Portal.
  - https://support.industry.siemens.com/cs/ww/en/view/113652
- 2. Install the GSD file of the CM 1542-5 in STEP 7 V5.x.
- Once you have successfully installed the GSD file, the CM 1542-5 appears in the Hardware Catalog under: "PROFIBUS-DP > Other Field Devices > IO > S7 1500"
- 4. Drag-and-drop the CM 1542-5 to the PROFIBUS DP master system of the DP master.
- 5. Configure the inputs and outputs.
  Note
  The inputs configured in STEP (TIA Portal) are configured as outputs in STEP 7 V5.x.
  The outputs configured in STEP (TIA Portal) are configured as inputs in STEP 7 V5.x.
  The modules "1 Byte Output" and "1 Byte Input" are consistent via total length.

Ng HW Config - [SIMATIC 300 (Configuration) Test]	
💵 Station Edit Insert PLC View Options Window Help	
D 😂 🖫 🖳 🦣   🖶 🛍   🏙 🏜   🖺 🗖   🎇 💦	

1 2	PS 307 10A	
3 4 5		PROFIBUS(1): DP-Mastersystem (1)
6		 (3) CM 154
		DP-NORM

۲									
	(3) CM 1542-5								
	Slot	DPID	Order Number / Designation	I Address	Q Address	Comment			
	1	128	1 Byte Output		700				
	2	64	1 Byte Input	700					
	2								

- 6. Double-click the CM 1542-5. The properties of the CM 1542-5 are opened.
- 7. Click the "PROFIBUS" button. The Properties dialog of the PROFIBUS interface of the CM 1542-5 opens.

Properties - DP slave		<u> </u>	3
General Parameter /	Assignment		
Module			1
Order number: Family: DP slave type:	6GK7 542-5DX00-0XE0 I/O CM 1542-5	GSD file (type file): SI0181AC.GSD	
Designation:	CM 1542-5		
Addresses Diagnostic address	2046	Node/Master System       PROFIBUS       3       DP-Mastersystem (1)	
SYNC/FREEZE Ca	pabilities		1
SYNC SYNC	FREEZE	✓ Watchdog	
Comment:			
		×	
ОК		Cancel Help	

 For the CM 1542-5 you enter the same PROFIBUS address as in STEP 7 (TIA Portal). Click the "Properties" button. The Properties dialog of the PROFIBUS DP master system opens.

Properties - PROFIBUS interface CM 1542-5 General Parameters	×
Address:	
Transmission rate: 1.5 Mbps	
Subnet: not networked	New
PROFIBUS(1) 1.5 Mbps	Properties
	Delete
ОК	Cancel Help

- 9. In the Network Settings tab you set the same values as in STEP 7 (TIA Portal) for the following parameters.
  - Highest PROFIBUS address: 126, for example
  - Transmission speed: 1.5 Mbit/s, for example
  - Bus parameters

Properties - PROFIBUS General Network Settings				X
Highest PROFIBUS Address:	126 💌	Change	Optic	ons
Transmission Rate:	45.45 (31.25) Kbps 93.75 Kbps 187.5 Kbps 500 Kbps 1.5 Mbps 3 Mbps	▲ III		
Profile:	DP Standard Universal (DP/FMS) User-Defined		Bus Para	ameters
ок			Cancel	Help

10. If you select "User-Defined" for the bus profile and click the "Bus Parameters..." button, you can set the bus parameters manually. Set the same bus parameters as in STEP 7 (TIA Portal).

PROFIBUS(1)								
Bus Parameters								
Tum on cyc	lic distribution of the bus pa	rameters						
Tslot_Init:	300 t_bit	Tslot:	300	t_bit				
Max.Tsdr:	150 🛨 t_bit	Tid2:	150	t_bit				
Min.Tsdr:	11 🕂 t_bit	Trdy:	11	t_bit				
Tset:	1 ÷ t_bit	Tid1:	37	t_bit				
Tqui:	0 🛨 t_bit	Ttr:	31540	t_bit				
		=	21.0	ms				
Gap Factor:	10 🛨	Ttr typically:	1379	t_bit				
Retry limit:	1÷	=	0.9	ms				
	, _	Watchdog:	69093	t hit				
		=	45.4	ms				
			Recalculate					
ОК			Cancel	Help				

## **NOTE** It's **not** necessary to call the following function blocks in the user program of the S7-CPU to send and receive data via PROFIBUS:

- FC1 "DP\_SEND"
- FC2 "DP\_RECV"