Part 1: S7-300 smart slave station

Step1: create a project and insert a S7-300 station named slave



Step2: make the hardware configuration



🚍 (0) U	R
1	PS 307 5A
2	CPU 315-2 DP
X2	DP
3	
4	DI16xDC24V
5	DI16xDC24V
6	D016xDC24V/0.5A
7	D016xDC24V/0.5A
8	
9	
10	
11	

Step3: DP property setting Set the DP station address:

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- (0) []		¢
	H	
1	PS 307 5A	
2	CPU 315-2 DP	
X2	DP	
3		
4	DI16xDC24V	
5	DI16xDC24V	
6	D016xDC24V/0.5A	
7	D016xDC24V/0.5A	
8		
9		
10		
11		
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Properties - DP - (R0/S2.1)		×
General Addresses Operating Mode Configuration Clock		
Short Description: DP		
		<
Order No.:		
Name: DP		
Interface Type: PROFIBUS Address: 6 Networked: Yes Properties Comment:		
		~
OK	Cancel	Help

Set the DP operation mode:

1	PS 307 5A
2	CPU 315-2 DP
X2	DP
3	
4	DI16xDC24V
5	DI16xDC24V
6	D016xDC24V/0.5A
7	D016xDC24V/0.5A
8	
9	
10	
11	

Properties - DP -	(RU/SZ.1)	n na San Ì Claub Ì		
C No DP C DP master C DP slave Test, c Master:	ommissioning, routing Station Module	SIMATIC 300(r DP	naster)	
	Receptacle for interfac	e module X2		
Diagnostic	address:	2046	[
Address for	"slot" 2:	2045		
ОК			Cancel	Help

Step 4: compile and save

비성	HW Cor	nfig -	[SIMA	FIC 3	00(sla	ive) (Coi	nfigurati	ion)	
00	Station	Edit	Insert	PLC	View	Options	Window	Help	
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🚍 (0) U	R
1	PS 307 5A
2	CPU 315-2 DP
X2	DP
3	
4	DI16xDC24V
5	DI16xDC24V
6	D016xDC24V/0.5A
7	D016xDC24V/0.5A
8	
9	
10	
11	

<u> </u>	SIMATIC Manager - [smart-
B	File Edit Insert PLC View
][) 🚅 🏪 🐖 🐰 🖻 💼
E	- 🞒 smart- <u>salve station_300</u>
	SIMATIC 300(master)
	Imatic 300(slave)
	R
1	PS 307 5A
2	CPU 315-2 DP
<u>X2</u>	DP
3	
4	DI16xDC24V
5	DI16xDC24V
6	D016xDC24V/0.5A
7	D016xDC24V/0.5A
8	
9	
10	
11	

Step 5: insert a S7-300 station named master and make the hardware configuration

Step6: DP property setting and insert the smart slave station

Set the station address: be different with the smart salve station

	Properties - DP - (RO/S2.1)	
OUUR 1 PS 307 5A 2 CPU 315-2 DP X2 DP 3	Properties - DP - (R0/S2.1) General Addresses Deperating Mode Configuration Clock Short Description: DP Order No :	
8 9 10 11	Name: DP Interface Type: PROFIBUS Address: 3 Networked: No Properties Comment:	
	OK Cancel He	

Create a new Profibus connection:

Properties - PROFIBUS interface DP (R0/S2.1)	Properties - New subnet PROFIBUS
General Parameters	General Network Settings
Address: 3 💽	Highest PROFIBUS Options
Subnet:	Transmission Rate: 45.45 (31.25) Kbps 93.75 Kbps 1875 Kbps 500 Kbps 1.5 Micos
Delete	Profile: Profile: DP Standard Universal (DP/FMS) UserDefined
OK Cancel Help	DK Cancel Help

20 (0) U	JR	
1	PS 307 5A	
2	CPU 315-2 DP	PROFIBILIS(1): DP master sustem (1)
<u>X2</u>	DP	
3		
4	DI16xDC24V	
5	DI16xDC24V	
6	D016xDC24V/0.5A	
7	D016xDC24V/0.5A	
8		
9		
10		
11		
-		

Insert the smart salve station:



Click the 'connect' button in the pop window:

DP	slave properti	es				X
G	ieneral Connectio	n Configuration				
	Configured Slave Configured slave Select a slave ar	Controllers controllers can be cor nd click "Connect":	nnected to th	ne PROFIBUS master.		
	Slave	PROFIBUS	Address	in Station	Slot	
	CPU 315-2 DP	nicht vernetzt	6	SIMATIC 300(slave)	0/2/1	
	<					
				4	Connect	
	Active Connectio	n>		[Disconnect	
	ОК			0	Cancel Help	

A new pop window is created; click the 'OK' button, the S7-300 smart slave station is inserted:

DP slave prope	rties				×	
General Conne	ction Configuration					
Configured SI	ave Controllers	nnected to th	e PBOFIBLIS master			
Select a slav	e and click "Connect":					
Slave	PROFIBUS	Address	in Station	Slot		
LPU 315-2	UP nicht vernetzt	ь	SIMATIC 300(slave)	0/2/1		
Ins	ert (13:4501)					
4	The slave select connected with	ted is not net PROFIBUS(1	worked. Should it be }?			
<				>		
OK Cancel Details nect						
Active Conne <no connect<="" td=""><td>ction- tion></td><td></td><td></td><td>Disconnect</td><td></td></no>	ction- tion>			Disconnect		
			_	0.1999/111995		
				(_	

 (0) UR	
1	📕 PS 307 5A	
2	CPU 315-2 DP	PPOEIPUIC(1): DP master system (1)
X2	DP	
3		
4	DI16xDC24V	
5	DI16xDC24V	🛗 (6) 57-300 Г
6	D016xDC24V/0.5A	
7	D016xDC24V/0.5A	
8		
9		
10		
11		

Double click the smart salve station and choose the configuration menu :

DP slave	P slave properties						
General	Connecti	ion Configuration]				
Row	Mode	Partner DP a	Partner addr	Local addr	Length	Consiste	
1	MS	3		0 100	5 Word	Unit	
2	MS	3		0 110	5 Word	Unit	
							Î
							Ŧ
							_
	Νοω	Edit	1	Delete	1		
	14699			Delete			
⊢ MS I	Master-slav	e configuration —					1
Ma	aster:	(3) DP					
St	ation:	SIMATI	C 300(master)				
Co	omment:						
						•	
	_				_	1	
ОК					Cano	el H	elp

Double click the highlight line and set the parameters, here is the address where the master station can transfer data with the smart slave station:

Row 1 2	Mode Partner DP a MS 3 MS 3	Partner addr 	Local addr 0 100 0 110	Length 5 Word 5 Word	Consiste Unit Unit	
	DP slave properties	- Configuratio	n - Row 1			D
	Mode:	MS 💌	(Master-slav	e configuratio	on)	
	DP Partner: Master		Local: Sla	ave		
	DP address:	3 💌	DP addre	ess:	6	
	Name:	DP	Name:		DP	
– MS №	Address type:	Output 💌	Address	type:	Input	┓
Ma Sta	Address:	100	Address:		100	
Cor	"Slot":	4	"Slot":		4	
	Process image:		Process	image:	OB1 PI	-
ОК	Interrupt OB:	_	Diagnost	ic address:		
	Length: 5 Unit: W Consistency: Ur		omment:			~

Then double click the next line in the DP slave property window and set the parameters:

Row Mode	Partner DP a	Partner add	fr Local addr	Length	Consiste.	
1 MS 2 MS	3	1110	0 110	5 Word 1 Byte	Unit	
IP slave prop	erties - Config	uration - R	ow 2			
Mode:	MS	(M.	aster-slave configu	ration)		
- DP Partner: Ma	aster		Local: Slave			
DP address:	3	v	DP address:		6	T.
Name:	DP		Name:		DP	
Address type:	Input		Address type:	1	Output	-
Address:	100	—)	Address:		100	-
"Slot":	5		"Slot":		5	-
Process image	OBT PI	~	Process image:		OB1 PI	Ŧ
Interrupt OB:		*	Diagnostic addres	\$10	[
Length:	5	Comme	nt			
Unit	Ward -					~
Consistency:	Unit					

Click the OK button, compile and save, and then the hardware configuration is finished. Now if you open the smart salve station HW-config window, you will find the following tips:

	Properties - DP - (R0/52,1) General Addresses Operating Mode Configuration Clou	*	Eind: Profile:
3 4 1 D116xDC24V 5 D116xDC24V 6 D016xDC24V/0.5A 7 1 D016xDC24V/0.5A 8 9 10 11	Short Description: DP Order No.: Name: DP Interface Type: PROFIBUS Address: 6 Networked: Yes Properties	Properties - PROFIBUS interface DP (RO/S2.1) General Parameters Address: B - Highest address: 126 Transmission rate: 1.5 Mbps Subnet: PROFIBURICE 1.5 Mbps:	New
IO UR Sict Module 1 PS 307 5A 66577 2 ICPU 315-2 DP 6657 3 4 ID Inspic 2ay FE57	Comment:	ОК	Cancel Help

Prope	Properties - DP - (RO/S2.1)							
Gene	eral Addresse	es Operating Mo	ode Configuratio	Clock				
B 2	ow Mode MS MS	Partner DP a 3 3	Partner addr 0 100 I 100	Local-addr 1100 0 100	Length 5 Word 5 Word	Consiste Unit Unit	î I	
	New	Edit.		Delete				
M	IS Master-slav Master: Station: Comment:	e configuration (3) DF SIMA ⁻) FIC 300(master)			^ V		
	ОК				Cano	el H	elp	

Attention: To avoid the CPU going into the STOP mode, we have to download OB82, OB86 into the CPU, this is very important.

Maybe when you have established the smart salve station, there would be a error when you compile and save the configuration. It often happens when the CPU just has the MPI/DP interface. Here you have to set the interface into DP mode and then the Operation Mode menu can be chosen. Active the DP Slave and go on to set the parameters in the menu Configuration. Create a new connection and set input or output address (now the parameters on the left side are not available).

📼 (0) UR	Properties - MPI/DP - (R0/S2.1)
1 PS 307 10A 2 N CPU 315-2 PN/DP X1 MBI/DP X2 PN-IO	General Addresses Operating Mode Configuration Clock Short Description: MPI/DP
X2 P1 Poil 1 3	Order No :
7 7 8 9 10	
<u> 11 </u>	Address: 4 Networked: Yes Properties
III III	Comment:
. 0 Fi M I Q Commer 6ES7 6ES7 6ES7 7	OK Cancel Help

Properties - MPI/D	P - (R0/S2.1)			
General Addresses	Operating Mode Configurat	ion Clock		[
C No DP				
C DP master				
• DP slave	\sum			
Test, com	missioning, routing			
Master:	Station Module	SIMATIC 400(1) DP		
	Rack (R) / slot (S) Receptacle for interface mo	(R0/S3) dule X2		
Diagnostic ad	ldress:	2044		
Address for "s	slot'' 2:	2043		
ОК			Cancel	Help

Image: Display state Properties - MPI/DP - 1 PS 307 10 2 CPU 315 X7 MPI/DP X2 PV/D	(R0/S2.1)
X2 P7 Port 1 3	Properties - MPI/DP - (RO/S2.1) - Configuration - Row 1 Mode: Image: Properties - Matter Master DP Pattner: Master DP address: Image: Properties - MPI/DP Address type: Address type: Address type: Address image: Interrupt GB: Diagnostic address:
6ES7 OK 6ES7 2047 2046 2045 6GK7 ∨5.0 256 6ES7 47 6ES7 811	Length: 1 Comment: Unit Byte I Consistency: Unit I

Pr	opertie	s - MPI/	DP - (R0/S2.1)			X
	ieneral	Addresse	s Operating Mode Co	nfiguration Clock		
	Row 1 2	Mode MS MS	Partner DP a Partn 	eraddr Localaddr I 100 0 100	Length Co 5 Word Ur 5 Word Ur	nsiste iit iit I
	MS Ma Mast Static Comr	ew aster-slave er: on: ment:	Edit	Delete		
	OK				Cancel	Help

After this setting, the hardware configuration can be right compiled and saved.

Step7: download the hardware configuration into the smart salve station and master station separately through the MPI, and then connect the two stations with profibus line by the DP interface.

Step8: programming

In the Step6, we have set up the area of the data transfer between the master and slave. The relationship is like this:



We just have to use the 'MOVE' function block to transfer the data to each other. In the STEP7, in the master station block:



Use this we have transferred the data MW20 to the smart slave station PIW100.