

DVPPF02-H2

PROFIBUS DP Slave Communication Module Application Manual



- ✓ Please read this instruction carefully before use and follow this instruction to operate the device in order to prevent damages on the device or injuries to staff.
- Switch off the power before wiring.
- ✓ DVPPF02-H2 is an OPEN TYPE device and therefore should be installed in an enclosure free of airborne dust, humidity, electric shock and vibration. The enclosure should prevent non-maintenance staff from operating the device (e.g. key or specific tools are required for operating the enclosure) in case danger and damage on the device may occur.
- ✓ DVPPF02-H2 is to be used for controlling the operating machine and equipment. In order not to damage it, only qualified professional staff familiar with the structure and operation of DVPPF02-H2 can install, operate, wire and maintain it.
- ✓ DO NOT connect input AC power supply to any of the I/O terminals; otherwise serious damage may occur. Check all the wirings again before switching on the power and DO NOT touch any terminal when the power is switched on. Make sure the ground terminal ⊕ is correctly grounded in order to prevent electromagnetic interference.

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1 Introduction

- 1. To ensure correct installation and operation of DVPPF02-H2, please read this chapter carefully before using your DVPPF02-H2.
- 2. This chapter provides only introductory information on DVPPF02-H2. Details of PROFIBUS DP protocol are not included in this sheet. For more information on PROFIBUS DP protocol, please refer to relevant references or literatures.
- 3. DVPPF02-H2 is a PROFIBUS DP slave communication module, connecting DVP-EH2 series PLC to PROFIBUS DP network.

1.1 Features

- 1. Supports loop-type data exchange between PROFIBUS DP master and many slaves.
- The length of I/O data can be freely configured through PROFIBUS DP network configuration tools. Max. input data length = 100 words (the sum of 4 slots); Max. output data length = 100 words (the sum of 4 slots).
- 3. Supports GSD files in PROFIBUS DP network configuration tool.
- 4. Supports 4 slots in PROFIBUS DP network configuration tool.
- 5. Auto-detects baud rates; supports Max. 12M bps.

1.2 Specifications

PROFIBUS DP connector

Transmission method	High-speed RS-485
Electrical isolation	500VDC
Interface	DB9 connector
Transmission cable	Shielded twisted pair cable

Communication

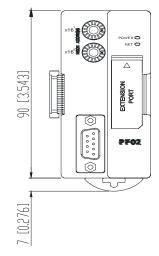
Message type	DPV0, loop-type data exchange
Equipment ID	0AFE (hex)
GSD file	DELT0AFE.GSD
Module name	DVPPF02-H2
Transmission speed (Auto-detect)	9.6 kbps \ 19.2 kbps \ 93.75 kbps \ 187.5 kbps \ 500 kbps \ 1.5 kbps \ 3 Mbps \ 6 Mbps \ 12 Mbps

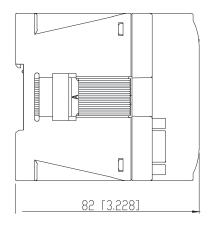
Environment

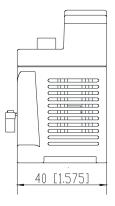
Noise immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2KV, Digital I/O: 1KV, Analog & Communication I/O: 1KV Damped-Oscillatory Wave: Power Line: 1KV, Digital I/O: 1KV RS (IEC 61131-2, IEC 61000-4-3): 26MHz ~ 1GHz, 10V/m
Operation/storage	Operation: 0°C ~ 55°C (temperature), 50% ~ 95% (humidity), pollution degree 2 Storage: -25°C ~ 70°C (temperature), 5% ~ 95% (humidity)
Vibration/shock immunity	Standard: IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)
Certificates	IEC 61131-2, UL508

2 Product Profile & Outline

2.1 Dimension

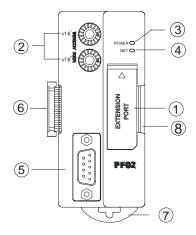






Unit: mm [inch]

2.2 Product Profiles

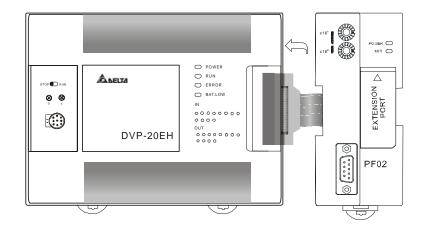


1	Extension port						
2	Address switch						
3	POWER indicator						
4	NET indicator						
5	PROFIBUS DP connection port						
6	Extension module interface						
\bigcirc	DIN rail clip						
8	DIN rail						

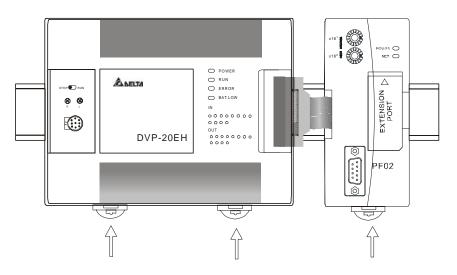
Extension port:	For connecting to the next H2 series extension module.			
Address switch:	For setting up the address of DVPPF02-H2 on PROFIBUS DP network.			
POWER indicator:	Indicating whether the power supply is normal.			
NET indicator:	Indicating if the connection between DVPPF02-H2 and PROFIBUS DP is normal.			
PROFIBUS DP connection port:	Connecting DVPPF02-H2 to PROFIBUS DP network.			
Extension module interface:	Connecting DVPPF02-H2 with DVP-EH2 MPU or H2 series extension modules.			
DIN rail clip:	Fixing DVPPF02-H2 to DIN rail.			
DIN rail:	Installing DVPPF02-H2 to DIN rail.			

2.3 Connecting DVPPF02-H2 to DVP-EH2 Series PLC MPU

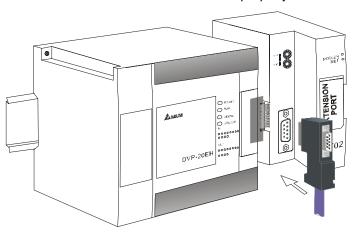
Switch off DVP-EH2. Open the connection port on the right hand side of DVP-EH2 and connect DVPPF02-H2 to DVP-EH2. Switch on DVP-EH2, and DVP-EH2 will supply power to DVPPF02-H2. There is no need to connect DVPPF02-H2 to an external power supply.



- 2.4 Installing DVP-EH2 & DVPPF02-H2 on DIN Rail
 - Use 35mm DIN rail.
 - Open the DIN rail clips on DVP-EH2 and DVPPF02-H2. Insert DVP-EH2 and DVPPF02-H2 on the DIN rail.
 - Clip up the DIN rail clips on DVP-EH2 and DVPPF02-H2 to fix DVP-EH2 and DVPPF02-H2 on the DIN rail.



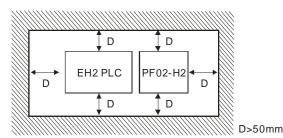
2.5 Connecting to PROFIBUS DP Connection Port Insert the PROFIBUS DP bus connector into the PROFIBUS DP connection port on DVPPF02-H2. Screw it tight to ensure DVPPF02-H2 and the PROFIBUS DP bus are properly connected.



2.6 Installation & Wiring

- Install DVPPF02-H2 in an enclosure with sufficient space around it to allow heat dissipation (see the figure).
- 2. DO NOT place the I/O signal wires and power supply wire in the same wiring circuit.





3.1 Address Switch

The address switches are two rotary switches, $x16^{\circ}$ and $x16^{1}$, setting up the node address of DVPPF02-H2 on PROFIBUS DP network. Rotate the switch to a position to indicate the value of the switch. The range for each switch is 0 ~ F. The address switches are in hexadecimal form. The factor of $x16^{\circ}$ is 16° , and the factor of $x16^{1}$ is 16^{1} . The set value of the address switch is the sum of the value of each of the two switches multiplied by its factor.

Value of address switch	Value at x16 ¹	Value at x16 ⁰	x16' ss to the second
Factor of address switch	16 ¹	16 ⁰	x16° x16°

Example: If you need to set the node address of DVPPF02-H2 to "26" (decimal), simply switch $x16^{1}$ to "1" and $x16^{0}$ to "A". 26 (decimal) = 1A (hex) = 1 × 16^{1} + A × 16^{0}.

Range for address switch:

Switch setting	Explanation
H'1 ~ H'7D	Valid PROFIBUS DP address
H'0 or H'7E ~ H'FF	Invalid PROFIBUS DP address If the node address in within this range, NET LED will flash quickly in red.

Note:

- Please set up the node address when the power is switched off. After the setup is completed, re-power DVPPF02-H2.
- When DVPPF02-H2 is operating, changing the set value of the node address will be invalid.
- Use slotted screwdriver to rotate the switch carefully in case you scratch the switch.

3.2 PROFIBUS DP Connection Port

PIN	PIN name	Definition	PIN	PIN name	Definition	
1		N/C	6	VP	Power voltage - positive	
2		N/C	7		N/C	9 5
3	RxD/TxD-P	Sending/receiving data P(B)	8	RxD/TxD-N	Sending/receiving data N(A)	0000
4		N/C	9		N/C	
5	DGND	Data reference potential (C)				

3.3 Transmission Distance & Baud Rate

The communication speed in PROFIBUS DP ranges from 9.6k bps to 12M bps, and the length of transmission cable varies upon the transmission speed. The transmission distance ranges from 100m to 1,200m. See the table below for the baud rates DVPPF02-H2 supports and their corresponding transmission speed.

Baud rate (bps)	9.6k	19.2k	93.75k	187.5k	500k	1.5M	ЗM	6M	12M
Distance (m)	1,200	1,200	1,200	1,000	400	200	100	100	100

4 Control Registers

4.1 Definitions

The control registers (CR) are the registers inside DVPPF02-H2. See the table below for the definitions of all the CRs. DVP-EH2 series PLC MPU can read or write the CR allowed through DFROM/DTO instructions.

CR#	Attribute	Content	High byte	Low byte	
#0	Read	Model name	DVPPF02-H2 model code = H'0250		
#1	Read	Firmware version	Displaying the current firmware version in hex, e.g. V1.00 is indicated as H'0100.		
#2	Read	Length of I/O data	Length of output I/O data	Length of input I/O data	
#3 ~ #102	Read/write	Input data mapping	5		
#103 ~ #202	#103 ~ #202 Read Output data mapping		Area for storing data from PROFIBUS DP master to DVPPF02-H2		
#203 ~ #206			Set up by the system. DO NOT use it.		
#207 ~ #250			Reserved		
#251	Read	Error code	Registers for storing errors. See the error code table i 21.6 for more details.		
#252 ~ #383			Reserved		
#384 ~ #511			Set up by the system. DO NOT use it.		

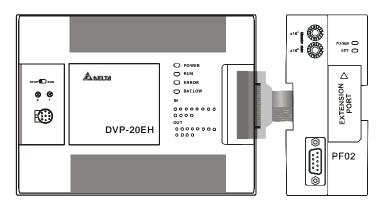
4.2 Data Transmission between DVPPF02-H2 & PROFIBUS DP Master

Once a PROFIBUS DP network is established, the data written into the data mapping area in PROFIBUS DP will be transmitted automatically to the registers starting from CR#103 in DVPPF02-H2 through PROFIBUS DP bus. The length of data transmitted is decided by the parameter setting, Max. 100 words at a time. The data in the registers starting from CR#3 in DVPPF02-H2 will be transmitted automatically to the data mapping area in PROFIBUS DP master through PROFIBUS DP bus. The length of data transmitted by the parameter setting, Max. 100 words at a time as well. See the table below for the data transmission between DVPPF02-H2 and PROFIBUS DP master.

Registers in DVP-EH2 PLC MPU	DFROM/DTO operation	Registers in DVPPF02-H2	Data transmission on PROFIBUS DP	Data mapping area in PROFIBUS DP master
DVP-EH2 reads CR in DVPPF02-H2.	DFROM (read)	CR#103 ~ #202		Output mapping area in PROFIBUS DP master
DVP-EH2 writes CR in DVPPF02-H2.	DTO (write)	CR#3 ~ #102		Input mapping area in PROFIBUS DP master

4.3 DFROM & DTO Instructions

1. DVP-EH2 PLC MPU reads or writes data in the CR of DVPPF02-H2 by using DFROM/DTO instruction.



Once DVPPF02-H2 is connected to DVP-EH2 through the connection port, DVP-EH2 will be able to read or write the CR data in DVPPF02-H2 by using DFROM/DTO instruction. The data transmission between DVPPF02-H2 and PROFIBUS DP master is done through PROFIBUS DP bus.

Note: Use DFROM/DTO instruction to read/write data instead of FROM/TO instruction.

2. DFROM & DTO instructions

API 78 DFROM	Image: P Image			
Operands	 (m): No. of special module (m2): CR# in special module to be read (D): Device for storing read data (n): Number of data to be read at a time 			
Ranges of operands (For DVP-EH2 models only)	 (m1): 0 ~ 7 (m2): 0 ~ 255 (n): 1 ~ (255 - (m2)) / 2 when (m2) is odd number. 1 ~ (256 - (m2)) / 2 when (m2) is even number 			
Program example	Read CR#103 of special module No.0 into D20 and CR#104 into D21. Only 1 datumis read at a time (n = 1). $X0$ $$ $DFR OM$ $K0$ $K103$ $D20$ $K1$			
API 79 DTO	m1 m2 S M Write CR Data into Special Modules			
Operands	 m: No. of special module m: CR# in special module to be written S: Data to be written in CR Number of data to be written at a time 			
Ranges of operands (For DVP-EH2 models only)	 (m): 0 ~ 7 (m2): 0 ~ 255 (n): 1 ~ (255 - (m2)) / 2 when (m2) is odd number. 1 ~ (256 - (m2)) / 2 when (m2) is even number. 			

Program example	Write the content in D10 and D11 into CR#3 and CR#4 of special module No.0. Only 1datum is written in at a time (n = 1).X0 $-$ DTOK0K3D10K1
Remarks	Operand rules: 1. Imp: : The No. of special modules connected to PLC MPU. No. 0 is the module closest to the MPU. Max. 8 modules are allowed to connected to a PLC MPU and they will not occupy any I/O points. 2. Imp: : Start CR#. CR (control register) is the 16-bit memory built in the special module, numbered in decimal as #0 ~ #n. PLC MPU reads or writes data in the CR by DFROM/DTO instruction. 3. DFROM and DTO are 32-bit instructions, reading or writing 2 CRs at a time. Higher 16-bit Lower 16-bit CR #10 CR #9 → Designated CR number 4. Number of data "n" to be transmitted: Due to that DFROM/DTO instruction is 32-bit instruction, the actual number of data read/written should be nx2. The example below is when n = 3. Imp: Imp: Imp: Imp: Imp: Imp: Imp: Imp:

5 GSD File

GSD file is a text file for identifying PROFIBUS DP device (master or slave). GSD file contains required information on configuring a PROFIBUS DP slave on a standard PROFIBUS DP master, including information on the supplier, baud rates supported, I/O signals available. GSD file is the basic tool recording the parameters

of the master. When DVPPF02-H2 is used as PROFIBUS DP slave, you have to add the GSD file of DVPPF02-H2 into the configuration tool of PROFIBUS DP master. The GSD file of DVPPF02-H2 is available for download at Delta's website <u>http://www.delta.com.tw/</u>.

6 LED Indicators & Trouble-shooting

There are two LED indicators on DVPPF02-H2, POWER LED and NET LED. POWER LED displays whether the power supply of DVPPF02-H2 is normal. NET LED displays whether the communication of DVPPF02-H2 is connected normally.

POWER LED

LED status	Indication	How to correct
Green light steady on	The power is normal.	
Off	No power	 Check if the power of DVP-EH2 is normal. Check if the connection between DVPPF02-H2 and DVP-EH2 is normal.

NET LED

LED status	Indication	How to correct
		1. Check if the power of DVP-EH2 is normal.
Off	No power	 Check if the connection between DVPPF02-H2 and DVP-EH2 is normal.
Red light steady on	DVPPF02-H2 is operating but is not connected to PROFIBUS DP network.	Check if DVPPF02-H2 is normally connected to PROFIBUS DP bus.
Red light flashes	Depending on the value in CR#251	See the error code table below for how to correct.
Green light steady on	DVPPF02-H2 is in data exchange status	

Error codes

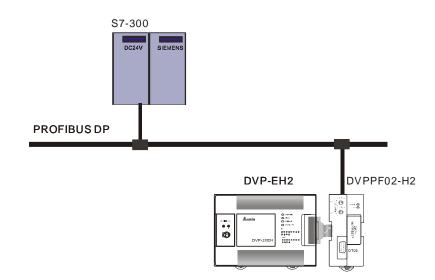
Code	Description	How to correct
00	DVPPF02-H2 operates normally.	
01	Hardware error	Send your DVPPF02-H2 back to the manufacturer for repair.
02	PROFIBUS DP watch dog error	Check if DVPPF02-H2 is normally connected to PROFIBUS DP bus.
03	Address setting error (0, or exceeding 0x01 ~ 0x7D)	Set the address of DVPPF02-H2 to be within the range 0x01 ~ 0x7D and re-power DVP-EH2.
04	24V low voltage error	Check if the power supply voltage of DVP-EH2 is normal, and check if DVPPF02-H2 is normally connected to DVP-EH2.
05	5V low voltage error	Send your DVPPF02-H2 back to the manufacturer for repair.

7 Application Example I

Target

Complete data exchange between S7-300 (Siemens PLC) and DVP-EH2 (Delta PLC) through PROFIBUS DP network.

- Establishing PROFIBUS DP network by DVPPF02-H2 (hardware configuration)
 - 1. Establish the network including S7-300 and DVPPF02-H2 by PROFIBUS DP bus, S7-300 as master and DVPPF02-H2 as slave.



2. Set the address of DVPPF02-H2 to "11" (decimal). See "21.3.1 Address Switch" section for how to set up the address.

After the address is set, re-power DVP-EH2.

3. Check and make sure S7-300, DVP-EH2 and DVPPF02-H2 all operate normally and the wiring of the entire network is correct.

◆ Configuring DVPPF02-H2 on PROFIBUS DP (software configuration)

- Establishing a new file by "Project Wizard".
 - 1. Open SIMATIC Manager software.

SIMATIC Manager		_ 🗆 🗙
<u>File PLC View Options Window H</u> elp		
Press F1 to get Help.		

2. Select "File" => "New Project Wizard...".

SIMATIC Manager	
File PLC View Options Window Help	
<u>N</u> ew	Ctrl+N
New Project' Wizard Open	Ctrl+O
Open Version 1 Project	CIII+O
	`
S7 Memory Card Memory Card File	
	· · ·
Delete Reorganize	
Manage	
Archive	
Archive	
Page Setup	
rage setup Labeling fields	
Print Setup	
1 PF01-S (Project) C.\Siemens\Step7\S7proj\Pf01_s	
<u>2</u> PF02-H2 (Project) D:\Pf02_h2	
<u>3</u> ttt (Project) D:\shiyan\2008\100word stl pf02 em277	
<u>4</u> PF02 (Project) D:\新資料夾\Pf02	
Exit	Alt+F4
Creates a new project step-by-step with the help of a wizard.	

3. Click on "Next".

STEP 7 Wizard: "New Project"		×	
K Introduction	1	(4)	
BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi BanDi	STEP 7 Wizard: "New Project" You can create STEP 7 projects quickly and easily using the STEP 7 Wizard. You can then start programming immediately. Click one of the following options: "Next" to create your project step-by-step "Finish" to create your project according to the preview.		
Display Wizard on starting t	he SIMATIC Manager Preview.<<		
S7_Pro2 	Block Name Symbolic Name DB1 Cycle Execution		
< <u>B</u> ack <u>N</u> ext >	Einish Cancel Help		

4. Select CPU of S7-300 and click on "Next".

STEP 7 Wizard: "New Project"			x
Which CPU are you us	ing in your projec	t?	2(4)
CP <u>U</u> :	CPU Type CPU313 CPU314 CPU314 IFM CPU315 CPU315-2 DP CPU316-2 DP	Order No 6ES7 313-1AD03-0AB0 6ES7 314-1AE04-0AB0 6ES7 314-5AE03-0AB0 6ES7 315-1AF03-0AB0 6ES7 315-2AF03-0AB0 6ES7 316-2AG00-0AB0	
<u>C</u> PU name: MPI <u>a</u> ddress:	instructio	iork memory; 0.3 ms/100 ons; MPI + DP connectio r DP slave); multi-tier con	n (DP 🗔 🗌
S7_Pro2 ⊡-∰ SIMATIC 300 Station ⊡-∯ CPU315-2 DP(1) ⊡-∯ S7 Program(1) ⊡-∰ Blocks	Block Name	Symbolic Name Cycle Execution	
< <u>B</u> ack <u>N</u> ext >	<u>F</u> inish	Cancel	Help

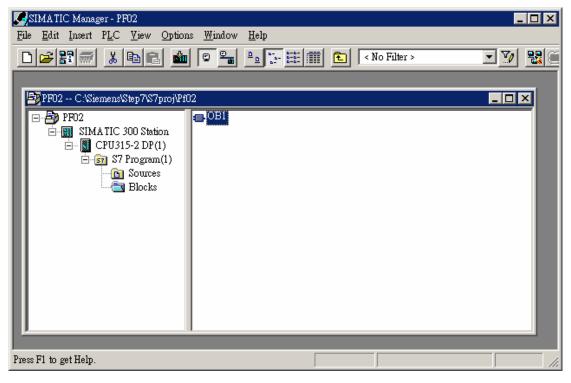
5. Select the block and the language for selected block, and click on "Next".

STEP 7 Wizard: "New Project"			x
🕀 Which blocks do you	want to add?		3(4)
Bloc <u>k</u> s:	Block Name OB1 OB1 OB10 OB11 OB12 OB13 Select <u>All</u>	Symbolic Name Cycle Execution Time of Day Interrupt 0 Time of Day Interrupt 1 Time of Day Interrupt 2 Time of Day Interrupt 3 ected Blocks	► Help on <u>O</u> B
	⊙S <u>I</u> L	o <u>L</u> ad	○ <u>F</u> BD
Create with <u>s</u> ource files			Previe <u>w</u> <<
S7_Pro2 SIMATIC 300 Station SIMATIC 300 Station CPU315-2 DP(1) S7 Program(1) Mage Blocks	Block Nar DB1	ne Symbolic Name Cycle Execution	
< <u>B</u> ack <u>N</u> ext >	<u>F</u> inish	Cancel	Help

6. Enter the project name and click on "Finish".

STEP 7 Wizard: "New Project"		×			
🔄 What do you want to	call your project?	4(4)			
Project name:	PF02				
Existing projects:	S7_Pro1 S7_Pro2 SHI SHIYAN				
	Check your new project in the preview. Click "Make" to create the project with the displayed structure. Previe <u>v</u>	<u>Ā</u> <<			
PF02 Image: Bind Simatic Station Image: Bind Simatic Station Image: Bind Station	Block Name Symbolic Name				
< <u>Back</u>	<u>F</u> inish Cancel Help				

7. You will then see a new window indicating that a new project has been created.



- Creating PROFIBUS DP bus
 - 1. Select "SIMATIC 300 Station" in the created project. Double click on "Hardware" in the right column, and a new "HW Config" window will appear.

SIMATIC Manager - PF02	
<u>File Edit Insert PLC View Options Window H</u> elp	
🗅 😅 🎥 🐖 🔏 🛍 🔍 💁 🏤 🏤 🏗 🏥 🏥 🔁 < No Filter >	- 🏹 🔡 🧉
PF02 C/Siemens/Step7/S7proj/Pf02	
PF02 CPU315-2 DP(1) CPU315-2 DP(1) Sources Blocks	
Press F1 to get Help.	

2. In the "HW Config" window, double click on "DP" in the table of the left column, and you will see a new dialog box appearing.

🔣 HW Config - [SIMATIC 300 Statio	n (Configuration) PF02	2]				_ 🗆 🗵
DO Station Edit Insert PLC Vie	ew <u>O</u> ptions <u>W</u> indow	<u>H</u> elp				<u>_ 8 ×</u>
D 📂 🔐 🖷 📭 🗎	6 🔬 🎰 🗖	🖪 🖁	▶?			
(0) UR 1 2 CPU315-2 DP(1) A2 1 DP 3 4 5 6 7				▲ 	Profile Standard Delta DVP PLC DVP PF01-S DVP PF02-H2 Compatible PROFIBUS DP DVAS-i Closed-Loop Controller DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i EncODER DVAS-i DVAS-i EncODER DVAS-i DVAS-i DVAS	
(0) UR					I ⊕-□ NC ⊕-□ SIMADYN ⊕-□ SIMATIC	
Slot 🚺 Module	Order number	Fi N	4 I C	2 C	🗄 🧰 SIMOREG	
1 2 S CPU315-2 DP(1) <u>X2</u> DP 3	6ES7 315-2AF03-0A	AF 2	1023*		PROFIBUS-DP slaves for SIMATIC S7, M7, and C7 (distributed rack)	►
Press F1 to get Help.						Chg //

3. Click on "Properties" on the dialog box, and another new dialog box will appear.

Properties - DP - (R0/S2.1)	x
General Addresses Operating Mode Configuration	
Short Description: DP	
	×
Order No.:	
Name: DP	
Interface	
Type: PROFIBUS	
Address: 2	
Networked: No Properties	
<u>C</u> omment:	
	A
	Curvel
OK	Cancel Help

4. Select "Address" as the address of the master. Next, click on "New", and you will see a new dialog box appearing.

Properties - 1	ROFIBUS interface	DP (R0/S2.1)	×
General	Parameters		
<u>A</u> ddress:	2		
Subnet: no	t networked		<u>N</u> ew
			Properties
			Delete

5. Select "Transmission Rate" and "Profile" and click on "OK".

roperties - New subnet PROFIBUS	2
General Network Settings	
Highest PROFIBUS Address:	126 Change
<u>T</u> ransmission Rate:	9.6 Kbps 19.2 Kbps 45.45 (31.25) Kbps 93.75 Kbps 187.5 Kbps 500 Kbps
Profile:	DP Standard Universal (DP/FMS) User-Defined Bus Parameters
	<u>B</u> us rarameters

6. Once all the parameters are set, a PROFIBUS DP bus will be created after the UR.

Big H W Config - [SIMATIC 300 Station (Configuration) PF02] Big Station Edit Insert PLC Yiew Options Window Help		_ D ×
	😫 💉	
Image: CPU315-2 DP(1) PROFIBU: 3	S(1): DP master system (1)	Profile Standard PROFIBUS DP PROFIBUS-PA SIMA TIC 300 SIMA TIC 400 SIMA TIC PC Based Control 300/400 SIMA TIC PC Station
(0) UR		
Slot Module Order number	Fi M I Q C	
1 CPU315-2 DP(1) 6ES7 315-2AF03-0AB0 XZ DP 3 4	2	PROFIBUS-DP slaves for SIMATIC S7, M7, and C7 (distributed rack)
Press F1 to get Help.		Chg //

- Creating GSD file
 - 1. Select "Options" => "Install New GSD" in the "HW Config" window.

🖳 HW Config - [SIMATIC 300 Station (Co	nfiguration) PF02]			
🛄 Station Edit Insert PLC View 🤅	<u>Options W</u> indow <u>H</u> elp)		
	Customi <u>z</u> e	Ctrl+Alt+E		
(0) UR 1 2 CPU315-2 DP(1) X2 DP 3 4 5 6 7 SIMA TIC 300 Station Steckplatz Bezeichnung UR	Specify Module Configure Network Symbol Table Report System Error Edit Catalog Profile Update Catalog Install New GSD Import Station GSD	Ctd+Alt+T	<u>ystem (1)</u>	Profile Standard PROFIBUS DP SIMA TIC 300 SIMA TIC 400 SIMA TIC PC Based Control 300/400 SIMA TIC PC Station
PROFIBUS(1) DP master system (1)				PROFIBUS-DP slaves for SIMATIC
, Installs new GSD files in the system and upda	tes the contents of the cat	talog.		

- 2. Find the path of the GSD file, select the GSD file to be installed and click on "Open" to create the GSD file needed.
- 3. Once the GSD file is created, you can find the relevant configuration parameters of DVPPF02-H2 in the right column.

Reg H W Config - [SIMATIC 300 Station (Configuration) PF02]	
💵 Station Edit Insert PLC View Options Window Help	
O) UR 1 2 CPU315-2 DP(1) X2 DP 3 4 5 6 7	Profile Standard PROFIBUS DP Additional Field Devices Additional Field Devices Gateway Gateway Comparison Drives DVP PLC DVP PF01-S DVP PF01-S DVP PF02-H2 Universal modul 1 Word Out-
	1 Word In - 2 Word Out - 2 Word In -
	- 4 Word Out -
(0) UR	- 4 Word In -
Slot Module Order number Fi M I Q C	16 Word Out -
1 A A A A A A A A A A A A A A A A A A A	16 Word In - 32 Word Out -
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	Field devices defined via device database files as DP slaves
Press F1 to get Help.	

- Creating DVPPF02-H2 slave and parameter configuration
 - 1. Select PROFIBUS DP bus and double click on the DVPPF02-H2 icon in the right column. A new dialog box will appear.

HW Config - [SIMATIC 300 Statio	m (Configuration) PFD	121				. 🗆 🗙
D Station Edit Insert PLC Vi						
			N2			
🚍 (0) UR				-	Profile Standard	-
1					PROFIBUS DP	
2 CPU315-2 DP(1)					Additional Field Devices	
X2 DP	PRC	OFIBUS(1): DP	master systen	a (1)	🗄 💼 Drives	
3 4					🗐 🕀 🧰 1/0	
5					🗄 🧰 Gateway	
					□ □ □ PLC □ □ □ Delta DVP PLC	
7	-				⊡ ⊡ Dena DVP PF01-S	
· · · · · · · · · · · · · · · · · · ·					DVP PF02-H2	
					⊕ 💼 Eaton ELC Control	ler
					🗄 🦲 SIMATIC	
				-	📄 💼 🧰 Compatible PROFIBUS	DPS
•				•	🗄 🦲 Closed-Loop Controller	
					E ⊡ Configured Stations	
(0) UR					I III DP VO slaves IIII IIII DP/AS-i	
Slot Module	Order number	Fi M	I Q	C	DP/PA Link	
	Clair Manber				4) i l
2 CPU315-2 DP(1)	6ES7 315-2AF03-0	DAH 2			PF02-H2	
X2 DP			1023		1102-112	<u>-</u>
3						
]						
Press F1 to get Help.						Chg 🎵

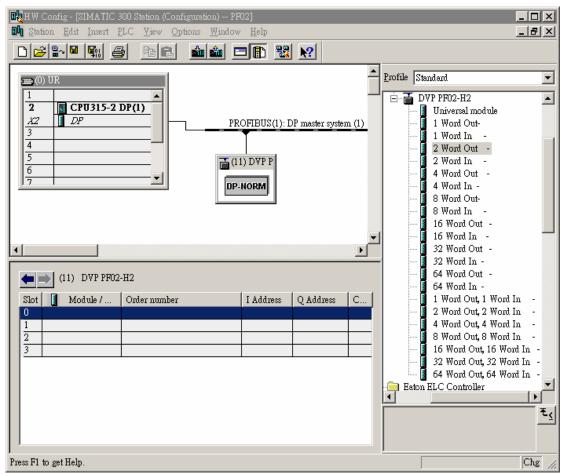
2. Select the address of DVPPF02-H2 slave (decimal). This address has to be the same as the address set by the address switch. Next, click on "OK".

Properties - PROFIBUS interface DVP PP02-H2	×
General Parameters	
Address:	
Transmission rate: 9.6 Kbps	
Subnet:	
not networked PROFIBUS(1) 9.6 Kbps	<u>N</u> ew
	Properties
	Delete

3. Add DVPPF02-H2 into PROFIBUS DP bus.

🖳 H W Config - [SIMATIC 300 Station (Configuration) PF02]	
💵 Station Edit Insert PLC View Options Window Help	_ & ×
Image: CPU 315-2 DP(1) PROFIBUS(1): DP master system (1) X2 DP 3 Image: CPU 315-2 DP(1) 3 Image: CPU 315-2 DP(1) 3 Image: CPU 315-2 DP(1) 4 Image: CPU 315-2 DP(1) 5 Image: CPU 315-2 DP(1) 6 Image: CPU 315-2 DP(1) 7 Image: CPU 315-2 DP(1) 9 Image: CPU 315-2 DP(1) 9 Image: CPU 315-2 DP(1) 9 Image: CPU 315-2 DP(1) 1 Image: CPU 315-2 DP(1) 3 Image: CPU 315-2 DP(1) 4 Image: CPU 315-2 DP(1) 9 Image: CPU 315-2 DP(1) 10 Image: CPU 315-2 DP(1) 11 Image: CPU 315-2 DP(1) 12 Image: CPU 315-2 DP(1) 13 Image: CPU 315-2 DP(1) 14 Image: CPU 315-2 DP(1) 15 Image: CPU 315-2 DP(1) 15 Image: CPU 315-2 DP(1) 16 Image: CPU 315-2 DP(1) 17 Image: CPU 315-2 DP(1) 18 Image: CPU 315-2 DP(1) 19 Image: CPU 315-2 DP(1) 19 Image:	Profile Standard Profile Standard Profile Standard Profile Standard Profile Standard Profile Standard Additional Field Devices Profile Standard Prof
(11) DVP PF02-H2	· ⊡ Configured Stations ⊕ ⊡ DP VO slaves
Slot Module / Order number I Address Q Address C 0 1 1 1 1 2 1 1 1 3 1 1 1	PF02-H2
Press F1 to get Help.	Chg //

4. Select "Slot 0" and double click on "2 Word Out" in the right column.



5. Configure the parameter of "2 Word Out" to Slot 0.

	_ 🗆 ×
🕅 Station Edit Insert PLC View Options Window Help	<u>- 8 ×</u>
Image: CPU315-2 DP(1) PROFIBUS(1): DP master system (1) Image: CPU315-2 DP(1) PROFIBUS(1): DP master system (1) Image: CPU315-2 DP(1) Image: CPU315-2 DP(1) Image: CPU315-2 DP(1) I	
0 2AO 2 Word Out - 256259	₹
	-1
3	
Press F1 to get Help.	Chg //

6. Configure parameters of other slots in the same way.

	×		C 300 Station (Configuration) <u>P</u> LC <u>V</u> iew <u>Options W</u> ind	-					_ D ×
_					R 10				
	1 2 <u>3</u> 4 5 6 7	UR CPU315- DP		PROFIBUS(1) (11) DVP P IP-HORM	: DP master s	<u>ystem (1)</u>		andard VP PF02-H2 Universal module 1 Word Out- 2 Word Out - 2 Word Out - 4 Word Out - 4 Word Out - 8 Word In - 8 Word Out- 8 Word In - 16 Word Out - 16 Word In -	•
Ŀ						Þ		32 Word Out – 32 Word In –	
	()	🔪 (11) DVP PF	02-H2					64 Word Out – 64 Word In –	
	Slot	🚺 Module /	Order number	I Address	Q Addre:	s C		1 Word Out, 1 Word	
		2AO	2 Word Out -		256259			2 Word Out, 2 Word	
	1	2AO	2 Word Out -		260263			4 Word Out, 4 Word	
	$\frac{2}{3}$	2AI 115	2 Word In - 4 Word Out, 4 Word In -	256259 260267	264271			8 Word Out, 8 Word 16 Word Out, 16 Wo	
	2	115	4 Word Out, 4 Word In -	200207	204271			32 Word Out, 32 Wo	
								64 Word Out, 64 Wo	
							नि 👘	· · · · · ·	
									₹ <u>≺</u>
Pr	ess F1 t	to get Help.					[Chg //

Note: DVPPF02-H2 is able to configure parameters in the 4 slots of the master. Configurable parameters in DVPPF02-H2 are in the column on the right hand side. You can configure different types of parameters in the 4 slots. The same type of parameters can be configured in different slots

(e.g. the configuration of slot 0, slot 1). The maximum length of total input data is 100 words (the sum of input length of 4 slots). The maximum length of total output data is 100 words (the sum of output length of 4 slots).

- Downloading configured parameters
 - 1. After the parameter is configured, click on in the "HW Config" window, and you will see the dialog box as below. Click on "OK" and another dialog box will appear.

Select Target Module			X
<u>T</u> arget Modules:			
Module	Racks	Slot	
CPU315-2 DP(1)	0	2	
Select <u>A</u> ll			
OK	Canc	el	Help

2. Click on "OK" to start to download the configured parameter.

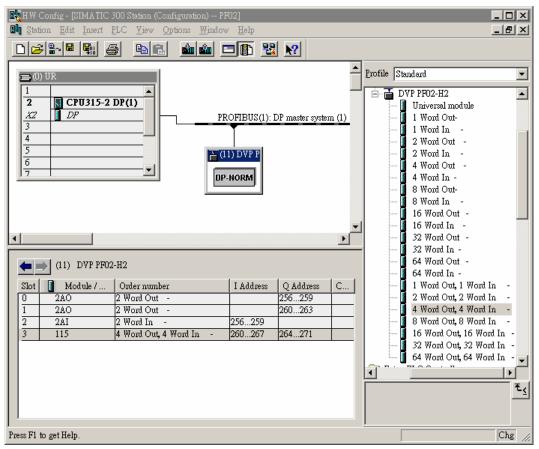
Select Station Add	lress	X
Over which stat DP(1)?	ion address is the program	nming device connected to the module CPU315-2
<u>R</u> ack: <u>S</u> lot:		
Target Station:	€ Local € Can be reached	l. by means of gateway
Connec	tion to target station	
Туре	Address	
MPI	2	
OK]	Cancel Help

3. The parameter is being downloaded.

Downloading	×
Station:	
SIMATIC 300 Station	
Module:	
[0/2/0] CPU315-2 DP(1)	
	Cancel

4. After the download is completed, the NET LED on DVPPF02-H2 will be constantly on in green.

Data mapping



See the data mapping information in the table below under the parameter configuration as shown above:

Slot	External I/O word for S7-300	Data transmission direction in PROFIBUS DP network	Register in DVPPF02-H2
0	PQW256		CR#103
0	PQW258		CR#104
1	PQW260		CR#105
I	PQW262		CR#106
	PQW264		CR#107
3	PQW266		CR#108
3	PQW268		CR#109
	PQW270		CR#110

Slot	External I/O word for S7-300	Data transmission direction in PROFIBUS DP network	Register in DVPPF02-H2
2	PIW256		CR#3
2	PIW258		CR#4
	PIW260		CR#5
3	PIW262		CR#6
5	PIW264		CR#7
	PIW266		CR#8

About data mapping:

The I Address of the master (starting from the first address of slot 0 ~ slot 4) corresponds to CR from CR#3 of the slave. The Q Address (starting from the first address of slot 0 ~ slot 4) corresponds to CR from CR#103. The I/Q Address in every slot increases by 2, in which the I Address is indicated as PIW and Q Address as PQW. The CR corresponds to PIW and PQW increases by 1. According to the table above, the data in PQW256 ~ PQW270 are transmitted automatically to CR#103 ~ CR#110, and the data in CR#3 ~ CR#8 are transmitted automatically to PIW256 ~ PIW266 through PROFIBUS DP bus. The above mapping relation will be formed automatically after the parameter is configured.

Program example

Program of slave

M1000		KO	K102	D10	
	DFROM	K0	K103	D10	K4
MO					
┝-╢┝─────	DTO	K0	K3	D20	K3
1	L				

- When DVP-EH2 PLC MPU is running and M1000 is On, DVP-EH2 will move the 8 words of data transmitted from PROFIBUS DP master to CR#103 ~ CR#110 to D10 ~ D17 through PROFIBUS DP bus. When M0 = On, DVP-EH2 will write the contents in D20 ~ D25 into CR#3 ~ CR#8.
 DVPPF02-H2 will transmit these data to PROFIBUS DP master through PROFIBUS DP bus.
- PROFIBUS DP bus completes the data transmission between the master and DVPPF02-H2.
 DFROM/DTO instruction however completes the reading/writing of CR data in DVPPF02-H2 by DVP-EH2.
- Make sure you use DFROM/DTO instruction instead of FROM/TO instruction to deal with the CR data in DVPPF02-H2 by DVP-EH2.

See the table below for the data transmission information:

Slot	External I/O word for S7-300	Data transmission direction in PROFIBUS DP network	Register in DVPPF02-H2	DFROM/DTO operation	Register in DVP-EH2
0	PQW256		CR#103	DFROM (read)	D10
0	PQW258		CR#104		D11
1	PQW260		CR#105	_	D12
	PQW262		CR#106		D13
3	PQW264		CR#107		D14

Slot	External I/O word for S7-300	Data transmission direction in PROFIBUS DP network	Register in DVPPF02-H2	DFROM/DTO operation	Register in DVP-EH2
	PQW266		CR#108		D15
	PQW268		CR#109		D16
	PQW270		CR#110		D17
2	PIW256		CR#3		D20
2	PIW258		CR#4		D21
	PIW260		CR#5	DTO (write)	D22
3	PIW262		CR#6		D23
3	PIW264		CR#7		D24
	PIW266		CR#8		D25

MEMO