



Setup-Manual AZD Driver with PROFINET Interface

 SIMATIC S7-1200, S7-1500 Manufactured by Siemens AG

Setup with TIA Portal

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- **O**riental motor
- (1) Before using these instructions, it is the responsibility of the system manufacturer to observe the specifications of the individual components and the basic safety precautions. Only a qualified electrician or an electrically trained person, under the supervision of a qualified electrician, should carry out the installation and wiring of the individual components. It is imperative that the appropriate safety devices are used! (LS FI / RCD). Before starting work, it is essential to determine that there is no live voltage connected and to guarantee this remains the case for the duration of the work.
- (2) In order to set up the system safely, please be sure to observe the safety instructions contained in the instructions for the individual products and refer to the respective products. You will always find these in the instructions under "Safety Precautions" or "Safety Instructions".
- (3) The system manufacturer is obliged to comply with the norms or national standards of the components of the machine.
- (4) Redistribution of this document or parts of this document is not permitted without the consent of Oriental Motor (Europa) GmbH.
- (5) The information and versions of the software contained in this document are current as of November 15th. The information in this document is not updated regularly and is subject to change without notice.
- (6) This document serves only as an example for orientation during initial commissioning. Oriental Motor (Europa) GmbH assumes no liability for the functionality of the program or any consequences or damage caused by programs created with the help of this example program.

Products

- **PROFINET** compatible Version of the AZ series with AC or DC power supply
- * Product knowledge of the AZ series is helpful during setup.

Preparation

Please have a copy of the operating instructions for reference.

The latest version can be downloaded from the Oriental Motor homepage.

1	HM-60252	AZ-Series Function Edition (E)
2	HM-60411	AZ-Series Operation Manual (E) PROFINET



AZ series PROFINET compatible driver

Version

Ver4.2

V15.1

24 VDC

Ver 4.4.0.0



Note:

Each IP address may only be used once in a network.



Change the setting of the IP address to be used:

- Click the Windows button in the lower left corner of the taskbar Search for "control panel"
- ② Click on [Netzwork and Sharing Centre].
- ③ Click on [Ethernet] of the network, connected to the PLC.



④ Click on [Properties].

WiFi Status

(5) After selecting [Internet Protocol Version 4 (TCP / IPv4)], click [Properties].

 \times

6 Set the IP address and the subnet mask.
 In this manual, the IP address is "192.168.0.100".
 Set the subnet mask to "255.255.255.0".

Device	IP address	Subnet mask
PC	192.168.0.100	255.255.255.0
SPS	192.168.0.1	255.255.255.0
AZD-xPN	192.168.0.2	255.255.255.0

General	WiFi Properties ×	7
Connection IPv4 Connectivity: IPv6 Connectivity: No Media State: SSID: v Duration: Speed:	Networking Sharing Connect using:	Internet Protocol Version 4 (TCP/IPv4) Properties X General You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Signal Quality: Details Wireless Properties Activity Sent Bytes: 107,093,839 Diagnos Diagnos	Client for Microsoft Networks	 Obtain an IP address automatically 6 Use the following IP address: IP address: IP address: Subnet mask: 255 . 255 . 0 Default gateway: I92 . 168 . 0 . 1 Obtain DNS server address automatically Obtain DNS server: Image: Image: I
		OK Cancel

A GSD file is a configuration file that configures communication settings for PROFINET devices. Please download the GSD file from our website in advance. https://www.orientalmotor.de/

			_			Enter Key	yword! Others - eu 😭
		Orientalmo	tor	I DOWNLOADS	INFO CEN	TER CC	DMPANY CONTACT PRODUCT FIND
		AC MOTORS BRUSHLESS DC N	NOTORS STEPPER MOTORS SERVOM	DTORS LINEAR & ROTAI	RY ACTUATO	DRS FAN	IS
		You are here: Home » Downloads					
		Registration	Downloads				
		Help	elp This is where you will find numerous supporting documents for downloading.				
			Catalogues CAD-Files	Manuals Software			Delivery a payment
							SAVED ITEMS
			MEXE02			<u>▶ Show</u>	Hotline
			EZED2			<mark>↓ <u>Show</u></mark>	
			Immediate Motion Creator (IMC) for C	M/SCX Series		▶ <u>Show</u>	E-Mail: info@orientalmotor
			CC05IF-USB Device File			<mark>↓ <u>Show</u></mark>	
			ESI Files			Show	Best fit drive system.
			EDS Files			↓ <u>Show</u>	Discover our efficient solutions.
			GSD Files			<u> ↑ Hide</u>	
			GSD File AZD-CPN	Download	6 KB	XML	AZ Series - Learn more
			GSD File AZD-KPN	Download	6 KB	XML	The new stepper motor and
D-CPN	230	VAC Version					driver package AZ Series is
	04/4						

* Files differ depending on the version.

Start the TIA Portal:

- ① Define the project name, the path and the author.
- ② Click on [Create].
- ③ Click on [Project view].

			Totally Integrated Automation PORTAL
Start 🧤		Create new project	
Devices & The second se	Open existing project	Project name: Path:	Project2 C:\TIA_PORTAL
	🥚 Create new project	Version:	V15.1
programming	Migrate project	Author:	
	Close project	comment.	i i
technology			
			2 Create
	Welcome Tour		
Online & Diagnostics	First steps		
	Installed software		
	Help		
	🚯 User interface language		



Install the downloaded GSD file for the desired driver.

- ① Click on [Options> Manage general station description (GSD)].
- ② Select the folder in which the GSD file is to be saved and tick the check box for the GSD files to be installed.
- ③ Click on [Install].

roject2\	Project2								
Online	Options Tools Window Help								
1	🍸 Settings	e 🧯	2						
	(1) Support packages	C D							
	Manage general station description files (GSD) Start Automation License Manager		Ma	nage general s nstalled GSDs	tation description GSDs in the p	files project			2
	🔮 Show reference text	•	s	ource path:	::\TIA_PORTAL\Projekt	1 \AdditionalFi	les\GSD		
	🛄 Global libraries	,	C	ontent of impo	rted path				
	1			File		Version	Language	Status	Info
				SDML-V2.4-Or	ientalmotor-AZD-x	V2.4	English	Already installed	Stepper Mo
				GSDML-V2.4-Or	ientalmotor-AZD-x	V2.4	English	Already installed	Stepper Mo
			<	:					>
								Delete Install	Cancel

Add AZ Driver

Oriental motor

Add the driver installed under "Install the GSD file":

- ① Double-click on [Devices & networks].
- In the [Catalog] directory, double-click the driver you want to use and add the driver.
 Place it in any position.

K Siemens - C:\TIA_PORTAL\Projekt1\Projekt1		_	□x
<u>Project Edit View Insert Online Options To</u>	<u>W</u> indow <u>H</u> elp	Siemens - C:\TIA_PORTAL\Projekt1\Projekt1	
📑 📑 🔚 Save project 📑 🐰 🏥 📬 🗙 🏷 🛨	± 🖥 🛄 🕼 🖳 🗖 Go online 🖉 Go offline 🛔 🖪 🕼 🛠 🖃 🛄 <earch in="" project=""></earch>	PORTA	L.
Project tree	Projekt1 → Devices & networks _ ■ ■ X	Hardware catalog 🛛 🖬 💷	T
Devices	🚰 Topology view 🛛 🛗 Network view 🔄 Device view	Options	
	Network 🔛 Connections HMI connection 🔻 🔛 🖽 🛄 🔍 ±		민취
		✓ Catalog	- d
Name			- 1 5
🚆 👻 📑 Projekt1			- 2
Add new device	PLC_1 AZD-PNDC	Filter Profile: <all></all>	비흥
🖞 📩 Devices & networks	CPU 1212C AZD-xPNx DC DP-NORM	Controllers	, ŭ
PLC_1 [CPU 1212C DC/DC/DC]	Not assigned	🕨 🧰 HMI	
Ungrouped devices		C systems	8
Security settings		Drives & starters	9
Unassigned devices		Network components	
🕨 🙀 Common data		Detecting & Monitoring	et
Documentation settings		Distributed I/O	<u> </u>
Languages & resources		Power supply and distribution	l ° l
🔻 🔚 Online access		Field devices	
Y Display/hide interfaces		▼ Other field devices	
 Intel(R) Ethernet Connection (4) I219-LM 		Additional Ethernet devices	้อร
Pupdate accessible devices		▼ 📑 PROFINET IO	ŝ
Pisplay more information		Drives	
Realtek USB GbE Family Controller			
Microsoft Wi-Fi Direct Virtual Adapter		✓ ☐ AZ Series AZD-xPNx	- F
Intel(R) Dual Band Wireless-AC 8265		AZD-xPNx AC	rar
Generic Mobile Broadband Adapter		AZD-xPNx DC	es
Fortinet SSL VPN Virtual Ethernet Adapter	·	SIEMENS AG	
Card Reader/USB memory	< Ⅲ > 100% ▼	Encoders	
		Gateway	
Reference projects	Network data	Sensors 💊	1
> Details view	🔍 Properties 🔛 Info 🔃 Diagnostics 🗖 🖹 🛆	> Information	
Portal view 🔛 Overview 🚠	vices & ne 💺 AZD-xPN I/O 💺 AZD-xPN I/O 👹 PLC tags 🔛	i Scanning for devices completed for int	

₭ Both AC and DC GSD files are installed.

Specify the driver's connection destination:

- ③ Drag a connection from the PLC "PLC_1" to the AZD-xPNx driver.
- ④ When the connection has been established, the driver AZD-xPNx is assigned to the PLC "PLC_1".



- 1 Click on the PLC in the red frame.
- ② Click on [Properties> General> Project Information] and change the name to any name.
 - "PLC_1" is assigned in this manual.
- ③ Set the IP address and the subnet mask under [PROFINET interface> Ethernet addresses]. In this manual the IP address: 192.168.0.1 and the subnet mask: 255.255.255.0 are defined. Also, change the name, IP address, and subnet mask on the driver side to match.





Parameter	PLC	Driver
Name	PLC_1	AZD-PNDC
IP address	192.168.0.1	192.168.0.2
Subnet mask	255.255.255.0	255.255.255.0

Ladder diagrams use variables, also called "tags", to control devices. The address of the I / O device must be assigned to these tags. To do this, set the start address of the driver here:

- 1 Double-click on [Ungrouped devices> AZD-PNDC> Device configuration].
- ② Display the tab [Device view> Device overview].
- ③ Check the input address (I address) and the output address (O address).

In this manual, both the I address and the O address are set to "2".



Tag settings

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Create a tag that will be assigned to a register address:

- ④ Double-click on [PLC tags> Add new tag table] to create a tag table and assign a name. Here: "AZD-xPN I/O Register"
- 5 Double-click on the created variable table to create the desired variables.

	Project tree		Proj	ect1)	• PLC_1 [CPU 1212		C] → PLC to	ags	> AZ	D-xPN I/C) Regist	er [1]
	Devices											
	ÊŬ	💷 🛃		¥ -	🕈 🚰 🚏 🏥							
P			A	ZD-xP	N I/O Register							
Ĩ.	Name			N	ame	Data type	Address	R	etain	Acces	Writa	Visibl
Tam	Project1	^	1	-00	RemoteIO_IN	Word	%QW2	•				
<u>B</u>	Add new device		2		<add new=""></add>		Operand ide	ntifier	0			-
Ē	n Devices & networks						Operan	d tune	Tw			
2	PLC_1 [CPU 1212C DC/DC/DC]		- Data	type	Format		Operan	u type:				
	Device configuration		Dala	type	Tormat		Ad	dress:	2			
	Q Online & diagnostics		Bo	loc	1 [Bit]			/				
	🕨 🚘 Program blocks		١٨/	ord	2 [Puto]			_/			×	×
	🕨 🙀 Technology objects		VV	Jiu	Z [Dyte]							
	External source files		Dw	ord	4 [Byte]							
	+4 PLC tags		L									
	🕞 🔄 Show all tags						/					
	🗳 Add new tag table				Operand id	entifier			D	Descript	ion	
	🝯 Default tag table [35]				0		D	DLC output (Input to the driver)				drivor)
	👆 AZD-xPN I/O Register [1]				Q		Г		Juipu	it (input	to the	unver)
	PLC data types				I		PL	C inp	out (C	Dutput f	rom the	e driver)
					М				Inte	ernal PL	C flag	

Create the tags for the output registers:



Tags: Output Data

Continued on next page

Create the tags for the input registers:

		Device overvie	w								Byte	Byte Size (byte)
		🍟 Module		Rack	Slot	I address	Q address	Туре			0,1	0,1 2
		✓ AZD-	PNDC nterface	0	0 0 X1			AZD-xPNx DC		2,3	3	3 2
		Drive	er IO data_1	0	1	257	241	Driver IO data		4,5		2
						7				6,7		2
	AZD->	kPN I/O Register	Dette to		مططعمه					8~11		4
	-00	RemoteIO_OUT	Word	pe	%IW2					12~15		4
7		OperNumSel_R	Word		%IW4			•	\square	16~19		4
		FixedIO_OUT PresentAlm	Word		%IW6 %IW8					20,21	Ī	2
)	-00	FeedbackPos	DWord		%ID10			:		22,23	l	2
1		FeedbackVel CmdPos	DWord		%ID14			:		24~27	l	4
-	-	Torque	Word		%IW22					28,29	l	2
4		OpCrnt	Word		%IW24					30,31	ĺ	2
5 6		Reserved_I(1)	WChar		%IW30					32,33		2
7	-00	ReadPrmID_R	Word		%IW32					34.35		2
8	- -	RW_Status WritePrmID_R	Word		%IW34 %IW36					36~39		4
0	-	ReadData	DWord		%ID38					40 40		-
1	-	Monitor0	DWord		%ID42					40~43		4
32	-	Monitor1	DWord		%ID46					44~47	l	4
3	-	Monitor2	DWord		%ID50					48~51		4
4		Monitor3	Dword		%ID54				- i		Ì	4

Tags: Input Data

I/O Data output (Driver \rightarrow Master)

You can also create variables bit by bit, this is useful for controlling signals:

When creating bit-by-bit variables, pay attention to the placement of the bits in the addresses.

					A	ZD-x	PN I/O Bit Order						
						1	Name	Data t	pe Address				
					1	1	FixedIO_IN_FW-JOG	Bool	🔳 %Q7.0	Byte	Bit	Name	Description
D					1		FixedIO_IN_RV-JOG	Bool	%Q7.1		0		Evenute IOC exerction in the forward direction
Pro	jekt1		. שמשמשכן	PLC tags			FixedIO_IN_RESERVED0	Bool	%Q7.2		0	FW-JOG	Execute JOG operation in the forward direction.
							FixedIO_IN_START	Bool	%Q7.3		1	RV-JOG	Execute JOG operation in the reverse direction.
		1 m m					FixedIO_IN_ZHOME	Bool	%Q7.4		2	Decembral	
=					_/_	- -	FixedIO_IN_STOP	Bool	%Q7.5		2	Reserved	A value is disregarded.
	AZD-xP	N I/O Register					FixedIO_IN_FREE	Bool	%Q7.0	$\left \right\rangle$	3	START	Execute stored data operation.
	N	ame	Data type	Address	1	-	FixedIO_IN_TRIG	Bool	%06.0		4	THOME	Fourte high encoding to home encycling
1		RemoteIO_IN	Word	🗉 %QW2	10	-	FixedIO IN TRIG-MODE	Bool	%06.1	5	4	ZHOME	Eecute high-speed return-to-nome operation.
2	-	OperNumSel	Word	%QW4	1	-	FixedIO_IN_ETO-CLR	Bool	%Q6.2		5	STOP	Stop the motor.
3		FixedIO_IN	Word	%QW6	2	-	FixedIO_IN_RESERVED1	Bool	%Q6.3				
4		DDO_Type	Word	%QW8	3	-	FixedIO_IN_FW-JOG-P	Bool	%Q6		~		shut on the motor current to remove the motor excitation.
5		DDO_Pos	DWord	%QD10	÷.	-	FixedIO_IN_RV-JOG-P	Bool	%Q6.5		6	FREE	In the case of an electromagnetic brake motor, the
6		DDO_Vel	DWord	%QD14	5	-00	FixedIO_IN_FW-POS	Bool	%Q6.6				electromagnetic brake is released.
7		DDO_Acc	DWord	%QD18	6		FixedIO_IN_RV-POS	Bool	%Q6.7	\land	7	ALM-RST	Reset the alarm being generated presently.
8		DDO_Dec	DWord	%QD22	7	-	FixedIO_OUT_SEQ-BSY	Bool	%17.0	1	•	TDIO	Free suite allocate data an emption
9		DDO_Crnt	Word	%QW26	8		FixedIO_OUT_MOVE	Bool	%17.1		8	TRIG	Execute direct data operation.
10		DDO_Trans	Word	%QW28	9		FixedIO_OUT_IN-POS	Bool	%17.2				Set the judgment level for the TRIG.
11	-00	Reserved_Q	Word	%QW30	10		FixedIO_OUT_START_R	Bool	%17.3		9	TRIG-MODE	0: Start at ON edge
12		ReadPrmID	Word	%QW32	12		FixedIO_OUT_HOME-END	Bool	7617.4 %17.5				1: Start at ON level
13		WriteReq	Word	%QW34	3		FixedIO_OUT_DCMD-RDY	Bool	%17.6		40		
14		WritePrmID	Word	%QW36	4		FixedIO OUT ALM-A	Bool	%17.7	\	10	ETO-CLR	Release the ETO-mode.
15	-00	WriteData	DWord	%QD38	:5	-	FixedIO_OUT_TRIG_R	Bool	%16.0	4	11	Reserved	A value is disregarded.
R	oni	star hasad	anct		26	-	FixedIO_OUT_TRIG-MODE_R	Bool	%16.1		40		Evenues inching expension in the ferround dir
11	cgi		lays		27	-00	FixedIO_OUT_SET-ERR	Bool	%16.2		12	FW-JUG-P	Execute inching operation in the forward dir.
					28		FixedIO_OUT_EXE-ERR	Bool	%16.3		13	RV-JOG-P	Execute inching operation in the reverse dir.
					29	-	FixedIO_OUT_DCMD-FULL	Bool	%16.4		4.4		Evenue continuous conception in the forward dire
					30		FixedIO_OUT_STOP_R	Bool	%16.5		14	FW-POS	Execute continuous operation in the forward dir.
					31	-	FixedIO_OUT_ETO-MON	Bool	%16.6		15	RV-POS	Execute continuous operation in the reverse dir.

Bit-by-bit tags

FixedIO OUT

I/O Data output (Master \rightarrow Driver)

Define variables to control the internal PLC flags. The following internal flag are used in the test mode.

			-	Tags	🗉 User co	nsta	ints ,	🗐 Syste	m const	ants	
ŕ	Ē	🖻 🛃 °	ÊÌ							-	
	Defau	ult tag tabl	е								
		Name		Data type	Address		Retain	Acces	Writa	Visibl	
	-	MI_BITO		Bool	%M0.0	•					
2		MI_BIT1		Bool	%M0.1				\checkmark		
1	-	MI_BIT2		Bool	%M0.2				\checkmark		
ł.		MI_BIT3		Bool	%M0.3				\checkmark		
				_							
	Da	ta type	Format		Opera	ndi	identifi	er			
Ĩ		Bool	1 [Bit]		Q				PLC output (Input to the driver)		
	١	Nord	2 [Byte]				PLC input (Output from the drive				
	D	word	4 [Byte]			Ν	1		Internal PLC flag		

Control of the motor with PROFINET communication.

1) Operation by I / O control Control of the fixed I / O and remote I / O signals with PROFINET IO via bits. In this manual, [FW-POS] for continuous operation and the stop signal [STOP] are controlled via the network.

Output signals can be assigned via a branch in order to display the status.

2) Operation by DDO
Control with the "Direct Data Operation" registers with PROFINET IO.
The motor is controlled by the signals [TRIG] and [TRIG-MODE].
This manual explains the process from setting the operating data to starting operation.

It is also possible to start the process just by updating a value.

- 1) Create a network that uses I / O functions.
- ① Double-click on [Program blocks> Main [OB1]].
- ② Click on the point where you want to place the components in "Network 1".
- ③ Click on the desired Boolean component to place it there.



Create branch

Oriental motor

Assign the tags created on page 19 to the branches of the ladder diagram:

④ Double-click on the component's <??.?> And click on the symbol displayed to show the list of variables.

Select the tags from the list - as shown in the following figure:



See pages 16 to 20 to learn how to set tags.

Compile the created ladder diagram:

- (5) Click on [Compile].
- If the compiling completes successfully, the message
 "Compiling finished (errors: 0; warnings: 0)" will be shown
 Check the displayed content for errors.



- 2) Create a branch for DDO operation:
- Create a branch in "Network 2" as in the previous example I / O branch. To set the travel data, use "MOVE" to output the input values.
- ② Click on [Empty box] to place it on the branch in "Network 3".
- ③ Double click on the placed [Empty box] "??" and enter "MOVE". (6 times)
- ④ Set the values and tags that correspond to the following table for the input (IN) and the output (OUT1) of each MOVE block.
- (5) Compile using the same procedure as on page 24.

	Name	Tag(OUT1)	Value (IN)	Remarks
▼ Network 2: Motor function test (DDO control)	Operation type	DDO_Type	2	Incremental (based on FB)
FixedIO_IN_IRIG	Target Position	DDO_Pos	10000	[step]
	Speed	DDO_Vel	2000	[Hz]
FixedIO_IN_TRIG-MODE %06.1 *FixedIO_IN	Acceleration	DDO_Acc	1000000	[0.001kHz/s]
"MI_BIT3" TRIG-MODE"	Deceleration	DDO_Dec	1000000	[0.001kHz/s]
	Operation Current	DDO_Crnt	1000	[0.1%]
H H H H H H H H H H H H H H H H H H H		Please	e refer to the ins	truction manual for more inform
Accc	MOVE EN ENO IN * OUTI - "DDO DD 1000000 - IN * OUTI - "DDO IN * OUTI - "DDO NOVE EN ENO * OUTI - "DDO DD	0 _ ^{Pos*} O_Pos 2 _ ^{Dec*} O Dec	2000 - IN 2000 - IN WOVE WOVE EN - ENO EN - ENO EN - CO CO CO CO CO CO CO CO CO CO	DO_Vel* DO_Vel* wz6 DO_Crnt* DO_Crnt



Configure the communication settings for the device to be used:

The device connected to the Ethernet cable is displayed in the menu.

- Open [Online access] and open the folder for the Ethernet connection that is connected to the device. In this manual, open [Intel (R) Ethernet Connection (4) I1219-LM].
- ② Double-click on [Update accessible devices] to find the detected devices.

They are displayed as [New Device [xx-xx-xx-xx-xx]].

[xx -...] is the MAC address, which is different for each device.

If communication settings have already been configured, the device name and IP address are displayed.

K Siemens - C:\TIA_PORTAL\Project1\Project1	
Project Edit View Insert Online Options	Tools Window Help
📑 📑 🔚 Save project 📑 💥 🗐 🗊 🗙 🖷) ± (🗝 ± 🗟 🗓 🖸 😫 🕵 🚿 Go online 🖋 Go offline 🏭 🖪 🕼
Project tree 🔲 🖣	Project1 > Devices & networks
Devices	
	Network 🔛 Connections HMI connection 💌 🖽 🖽 🗌
×.	
Name	
🗧 🔽 📄 Project1	
😤 📑 Add new device	PLC_1 AZD-PNDC
🖞 📩 Devices & networks	
PLC_1 [CPU 1212C DC/DC/DC]	
Ungrouped devices	
Security settings	PLC_1.PN/IE_1 (100)
Common data	
Documentation settings	
Languages & resources	
Conline access	
Display/hide interfaces	
Intel(k) Ethernet Connection (4) 12	
2 Spisplay more information	
▶ plc 1 [192 168.0.1]	h
azd-pndc [192.168.0.2]	
Card Reader/USB memory	μ
-	

Set the driver's IP address:

- ① Double-click on PLC (here: plc_1) and then [Device> Online & diagnostics].
- ② Click on [Functions> Assign IP address].
- ③ Specify the IP address and subnet mask specified on page 14 and click on [Assign IP address]. ※

Kiemens - C:\TIA_PORTAL\Projec	t1\Project1							_ ¤ ×
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XIf the IP address has already been set in the PLC, you may not be able to change it.

Set the device name:

- ① Click on [Functions> Assign PROFINET device name].
- ② Set the device name. "PROFINET device name" can only be assigned in lower case letters. Set "PLC_1" - from page 14 - as "plc_1".
- ③ Click on [Assign name].
- ④ Set the IP address and the device name for the driver in the same way.

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	🔐 Update accessible devices		IR address	MAC address	Device	PROFINET device name	Status			
	Display more information	(4)	ir address	MAC address	Device	PROFINET device name	Status			
	plc_1 [192.168.0.1]									
	🞖 Online & diagnostics									
	Program blocks									
	Technology objects									
	PLC data types									
	• 🛄 azd-pndc [192.168.0.2]							(3)		
	Card Reader/USB memory					Archar	data lint			
						masnes Up	date list	Assign name		

Load the created project into the PLC:

- ① Check the items to be confirmed before downloading.
- ② Click on "PLC_1" to download it.
- ③ Click on [Download to device].

Жŝ	Siemens - C:\TIA_PORTAL\Project1\Project1			
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eta	Name		(1)	
ā	Projecti	PLC_1	AZD-PNDC	
ŝ	Povices & potworks	CPU 121	2C AZD-xPNx DC DP-NORM	
evid			PLC_1	
ŏ	Ungrouped devices			
	Security settings			
	Common data		PLC_1.PN/IE_1 (100)	
	Documentation settings			
	Languages & resources			
	 Goline access 		Checklist	Ref.
	Y Display/hide interfaces			
	 Intel(R) Ethernet Connection (4) I219-LM 		Are the IP addresses of the PC, PLC and driver set to 192.168.0.x?	P.6-7
	2 Update accessible devices			P.14,27
	Display more information			D 4 6
	▼ plc_1 [192.168.0.1]		Have the correct connections been used for the devices?	P.13
	Conline & diagnostics		Be careful with PLCs with multiple connections.	
	Technology chiests		Do the DDOFINET double and set in the ansist and an the	D 4 4 00
	PIC data types		Do the PROFINE I device names specified in the project and on the	P.14,28
	▼ azd-pndc [192 168 0 2]		devices match?	
	Q Online & diagnostics			
	Card Reader/USB memory			

- ④ The [Extended download] window opens.
 - Please set each item using the following table.
- 5 Click on [Start Search].
- 6 Select the target PLC for loading.
- ⑦ Click on [Load].

The confirmation screen will be displayed.

	Configured acce	ess nodes of "PLC_1"				
	Device	Device type	Slot	Interface type	Address	Subnet
	PLC_1	CPU 1212C DC/D	1 X1	PN/IE	192.168.0.1	PN/IE_1
		Type of the PG/PC inte	rface	PN/IE		
		PG/PC inte	rface:	💹 Intel(R) Ethern	et Connection (4) I2	219-LM 🔽
		Connection to interface/su	bnet:	PN/IE_1		•
		1st gat	eway:			- (
	Select target de	vice:		[Show all compatib	le devices
	Device	Device type	Interfac	ceture Add	recc	Target device
	Device PLC_1	CPU 1212C DC/D	Interfac	ce type Add 192	Iress 1.168.0.1	Target device PLC_1
	PLC_1	CPU 1212C DC/D.	Interfac PN/IE PN/IE	ce type Add 192 Acc	lress 2.168.0.1 ess address	Target device PLC_1
Flash LED	PLC_1	Device type CPU 1212C DC/D 	Interfac PN/IE PN/IE	ce type Add 192 Acc	iress 168.0.1 ess address	PLC_1
Flash LED	PLC_1	Device type CPU 1212C DC/D. -	Interfac PN/IE PN/IE	ce type Add 192 Acc	iress 168.0.1 ess address	Target device PLC_1 5
Flash LED	PLC_1	CPU 1212C DC/D. -	Interfac PN/IE PN/IE	ce type Add 192 Acc	iress :168.0.1 ess address Display only erro	Target device PLC_1 - 5 <u>Start sea</u> r messages
Flash LED	PLC_1 FLC_1 6	Device type CPU 1212C DC/D. 	Interfac	ce type Add 192 Acc	iress :168.0.1 ess address Display only erro	Target device PLC_1 - 5 <u>Start sea</u> r messages
Flash LED	PLC_1 PLC_1 6 on: ished to the device to compatible devices: is partiaul compatible	Device type CPU 1212C DC/D. 	Interfac	ce type Add 192 Acc	iress :168.0.1 ess address Display only erro	Target device PLC_1 - 5 <u>Start sea</u> r messages
Flash LED	Device PLC_1 6	Device type CPU 1212C DC/D. 	Interfac	ce type Add 192 Acc	iress 168.0.1 ess address	Target device PLC_1 5 <u>Start sea</u> r messages

Settings	Set values
[Type of PG/PC interface]	PN/IE
[PG/PC interface]	Please select the interface according to your environment This manual uses [Intel (R) Ethernet Connection I219-LM].
[Connection to Interface/Subnet]	PN / IE_1 Select the communication name connected on page 13.

⑧ Click on the confirmation screen as shown below to complete the download.



The project download is now complete.

Establish an online connection with the PLC for test operation:

- ① Click on [Go online].
- (2) Check if the device is online and click [GoOnline].

Ж	Siemens - C:\TIA_PORTAL\Project1\Project1		_ — ×	
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k			PLC 1.PN/IE 1 (100)	
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8	Add new device	PLC_1		
ice	Devices & networks	Select devices for opening the	online connection	×
B	PLC_1 [CPU 1212C DC/DC/DC]			
	 Ungrouped devices 	Name	Interface type	Go online
	AZD-PNDC [AZD-xPNx DC]	PLC_1.PN/IE_1 (100 PLC_1	CPU 1212C DC/DC/DC	2
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	Common data			
	Languages & resources			
	Online access			
	Y Display/hide interfaces	AZD-PNDC		
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When you go online the title will turn orange.

If the symbol in frame "A" is green, the TIA Portal project and the PLC settings will match. If the symbol is not green, carry out the following steps to match the settings in the project with the PLC:

① Click on [Go offline].

② Click on [PLC_1 [CPU 1212C DC / DC / DC]] to select it.

③ Click [Download to device] to download. (Same procedure as p. 29 ~ 31)



Set the ladder diagram screen to monitor state in order to operate the program:

1 By default, the PLC is not in the RUN state

- Click [Start CPU], then click [OK] on the warning screen.
- ② Click the [Monitoring on / off] symbol to start monitoring.



Check the operation of the motor with the ladder diagram programme created on p.22-24. **X** Please check the security of your ambient in advance. The motor turns.

- Right-click on [MI_BIT0] and click on [Modify> Modify to 1]. [FixedIO_IN_FW-POS] is switched on. As a result, the FW-POS signal is set in the driver and the motor rotates continuously in the FWD direction.
- ② When MI_BIT1 is turned on in the same way, [FixedIO_IN_STOP] is turned on. As a result, the STOP signal is input to the driver and the continuous operation is stopped.
- ③ After you have checked the operation of the motor, right-click on [MI_BIT0] and [MI_BIT1]. Select [Modify> Modify to 0] to turn off the signals in the driver.



The checking of the motor operation by I/O branch is now finished.

Direct data operation is performed using the ladder diagram created on page 25. ***** Please check the security of your ambient in advance. The motor turns.

① Make sure that the [OUT1] value of each MOVE corresponds to the value of IN.

At this point the value for the driver's direct data operation is set.

② If [MI_BIT2] is switched on, [FixedIO_IN_TRIG] is switched on and DDO operation is started.



If you want to monitor the driver value, you can check it by following the steps below:

- ① Double-click on [PLC tags> AZD-xPN I/O-Register] to open it.
- ② Click [Monitor all] to check the register values shown.

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Ę	PLC_1 [CPU 1212C DC/DC/DC]		16	-0	RemotelC	OUT	Word	78NA/2					16#4020)		es l
	Device configuration		17		OperNum	Sel_R	Word	%IW4					16#0000)		
	Online & diagnostics	_	18	-	FixedIO_0	DUT	Word	%IW6					16#0164	1		
	Program blocks		19	-00	PresentAl	m	Word	%IW8					16#0000)		
	Technology objects		20	-00	Feedback	Pos	DWord	%ID10					16#0000	D_EF22		
	External source files		21	-00	Feedback	Vel	DWord	%ID14					16#0000	0000_0		
	▼ 📮 PLC tags	• /	22	-	CmdPos		DWord	%ID18					16#0000	D_EF22		
	Show all tags		23	-00	Torque		Word	%IW22					16#0010	2		
	📑 Add new tag table		24	-00	OpCrnt		Word	%IW24					16#01F4	L I		=
	📑 Default ag table [42]		25	-00	Informatio	on	DWord	%ID26					16#0000	0000_0		
	🖳 AZD-xPN 🕅 Bit Order [32]	/	26	-00	Reserved	J	Word	%IW30					16#0000)		
	🚑 AZD-xPN I/O Register [34]		27	-	ReadPrmi	D_R	Word	%IW32					16#0000)		
	PLC data types		28	-00	RW_Statu	s	Word	%IW34					16#0000)		
	Watch and force tables		29	-00	WritePrml	D_R	Word	%IW36					16#0000)		-
	🕨 📴 Online backups		30	-00	ReadData	1	DWord	%ID38					16#0000	0000_0		
	🕨 🔛 Traces		31	-00	Monitor0		DWord	%ID42					16#0000	0_0129		
	Device proxy data		32	-00	Monitor1		DWord	%ID46					16#0000	0_0134		
	Program info		33	-00	Monitor2		DWord	%ID50					16#00A9	9_547C		
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③ Rotate the motor with the ladder diagram: The value of FeedbackPos (actual position) is increased.

By using the appropriate internal flags in the ladder diagram.

View of all variables in the corresponding window.



17	-	FixedIO_OUT	Word	%IW6			16#0440	
18	-	PresentAlm	Word	%IW8			16#0000	
19		FeedbackPos	DWord	%ID10			16#0004_F473	
20		FeedbackVel	DWord	%ID14		\sim	16#0000_0000	324723 dec
21	-	CmdPos	DWord	%ID18			16#0004_F473	
17	-	FixedIO_OUT	Word	%IW6			16#2400	
18	-	PresentAlm	Word	%IW8			16#0000	
19	-	FeedbackPos	DWord	%ID10			16#0005_1EAD	335533 dec
20		FeedbackVel	DWord	%ID14			16#0000_0000	

Oriental motor



A created variable table can be imported or exported:

- 1 Importing a previously generated variable table.
 - For this manual [PLC tags> Add new tag table].
- ② Click on [Import].
- 3 Select the file to be imported and click on [OK].

The imported tag file is displayed under [PLC tags]. This manual reads the export data from the tag table created on page 19.

Click ④ to export.

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							3	2.	
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Technology objects	Zu importierende Elem	ente: 🛃 Variablen							
External source files		Konstanter		3)					
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Show all tags		OK	Abbrechen						
Add new tag table		0.0	- Abbrechen						
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Watch and force tables					-	PLC ta	ags		
Online backups						Tel. et			
🕨 🔄 Traces		Show all tags							
Device proxy data							-	a tabla	·····
🔤 Program info						AC AC	id new ta	ig table	
E PLC alarm text lists						De De	fault tan	table [35]	
Local modules							in one tog	rapic [22]	
Distributed I/O				_		L AZ	D-xPN I/C	Register 1 [34	1
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It is possible to write any parameters in the driver via PROFINET communication. The following PROFINET IO registers must be used to write a parameter:

Used Bytes	Size (Byte)	Name	Comment		
32,33	2	WriteReq	Write request WR-REQ ON.		
34,35	2	WritePrmID	Address of the register to be written		
36~39	4	WriteData	Value to be written into the register		

Example for changing the base current (parameter ID: 294) from 100.0 [%] to 10.0 [%].

Create a MOVE component to transfer the value and a branch that activates the write request.
 Activate [Monitoring] and switch on [MI_BIT4] to write the parameters.

The successful execution of the command can be checked with the help of the monitors.



It is possible to read any parameters via PROFINET communication. The following PROFINET IO registers must be used to read a parameter.

Direction	Bytes in use	Size (Byte)	Name	Remarks
Ausgabe (Host \rightarrow Treiber)	30, 31	2	ReadPrmID	Address of the register to be read
Eingabe (Treiber \rightarrow Host)	36~39	4	ReadData	Value that was read out.

Reading the base current (Base Current - Parameter-ID: 294).

- ① Create a branch in which the parameter ID to be read and the value are temporarily stored.
- ② If [Monitoring] is switched on, you can check whether the current value in ReadData is read correctly. "1000" is read before the change, when the parameter as shown on page 40 has been changed, "100" is read.

The successful execution of the command can be checked with the help of the monitors.



* For details, see the instruction manual.

History	Content
March 2021	Newly created

Hint:

We are available for you: 00800 22 55 66 22

Mon-Thu from 8:00 a.m. to 4:30 p.m., Friday: 8:00 a.m. to 3:00 p.m.

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