



Getting started with PROFINET Card MD500-PN1

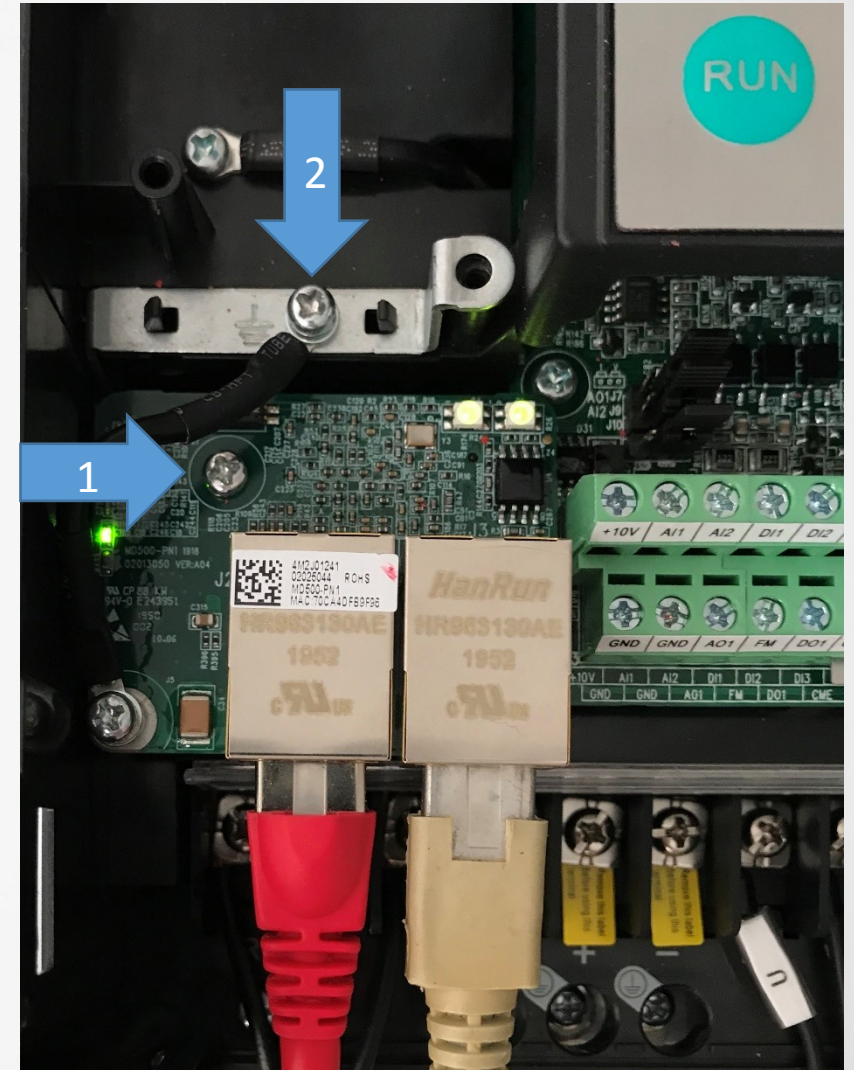
Purpose / Limitations of this document

- This document is addressed to experienced professionals in Automation and Drives.
- Knowledge of Simatic S7 and TIA-Portal is a prerequisite.
- For further details please refer to the manual.

MD500 / MD290 drives set up

Hardware installation

- Remove the cover of the drive.
- Install the card as shown in the picture.
- Fix the card by using the screw ⇒ 1
- Connect the card to the earth bar ⇒ 2



Communication concept

- Description of data exchange:
 - Up to 12 PZD (process data) can be exchanged in real time between master and MD500-PN1 in both directions.
 - PZD1 (command/status) and PZD2 (frequency) are by default reserved, PZD3 - PZD12 can be configured.
 - There are 7 different communication modules. All modules have PZD1/2. Up to 10 additional PZDs are available (standard telegram 6).

⇒ Master to drive		
Command word	Target Frequency	Configurable process data
PZD1	PZD2	PZD3 - PZD12
⇐ Drive to master		
Status word	Operating frequency	Configurable process data
PZD1	PZD2	PZD3 - PZD12

	⇒ Master to drive
PZD1	Command word 01 _d : Forward 02 _d : Backward 03 _d : Forward jogging 04 _d : Reverse jogging 05 _d : Free stop 06 _d : Stop (stop mode defined by F6-10) 07 _d : Fault reset Note: 0 _d does not stop the Drive, use 5 or 6!
PZD2	Target frequency, 0.01Hz

	⇐ Drive to master
PZD1	Status word Bit 0: Drive is operating Bit 1: 0=Forward; 1=Reverse Bit 2: Fault Bit 3: Operating frequency reached
PZD2	Operating frequency, 0.01Hz

Different types of communication modules

Data Type	Data Length	Supported Functions
Standard telegram 1	PZD-2/2	⇒ Drive command (PZD1), target frequency setting (PZD2) ⇌ Drive status (PZD1), operating frequency feedback (PZD2)
Standard telegram 2	PZD-4/4	⇒ Drive command (PZD1), target frequency setting (PZD2), configurable process data (PZD 3 - 4) ⇌ Drive status (PZD1), operating frequency feedback (PZD2), configurable process data (PZD 3 - 4)
Standard telegram 3	PZD-6/6	⇒ Drive command (PZD1), target frequency setting (PZD2), configurable process data (PZD 3 - 6) ⇌ Drive status (PZD1), operating frequency feedback (PZD2), configurable process data (PZD 3 - 6)
Standard telegram 4	PZD-8/8	⇒ Drive command (PZD1), target frequency setting (PZD2), configurable process data (PZD 3 - 8) ⇌ Drive status (PZD1), operating frequency feedback (PZD2), configurable process data (PZD 3 - 8)
Standard telegram 5	PZD-10/10	⇒ Drive command (PZD1), target frequency setting (PZD2), configurable process data (PZD 3 - 10) ⇌ Drive status (PZD1), operating frequency feedback (PZD2), configurable process data (PZD 3 - 10)
Standard telegram 6	PZD-12/12	⇒ Drive command (PZD1), target frequency setting (PZD2), configurable process data (PZD 3 - 12) ⇌ Drive status (PZD1), operating frequency feedback (PZD2), configurable process data (PZD 3 - 12)
Supplementary telegram	PZD-2/6	⇒ Drive command (PZD1), target frequency setting (PZD2) ⇌ Drive status (PZD1), operating frequency feedback (PZD2), configurable process data (PZD 3 - 6)

General settings

- Set **F0-28 = 1**, to allow communication between PROFINET card and drive.
- Set **F0-02 = 2**, to set PROFINET as source for operation command.
- Set **F0-03 = 9**, to set PROFINET as source for frequency command.

Define the mapping

- Please enter in “**Value**” the name of the parameter, whose value should be exchanged between drive and master, i.e. U0-04 to monitor the output torque.

⇒ Master to drive		
	Parameter	Value
PZD 1	FE-00	U3-17; default
PZD 2	FE-01	U3-16; default
PZD 3	FE-02	Configurable
PZD 4	FE-03	Configurable
PZD 5	FE-04	Configurable
PZD 6	FE-05	Configurable
PZD 7	FE-06	Configurable
PZD 8	FE-07	Configurable
PZD 9	FE-08	Configurable
PZD 10	FE-09	Configurable
PZD 11	FE-10	Configurable
PZD 12	FE-11	Configurable

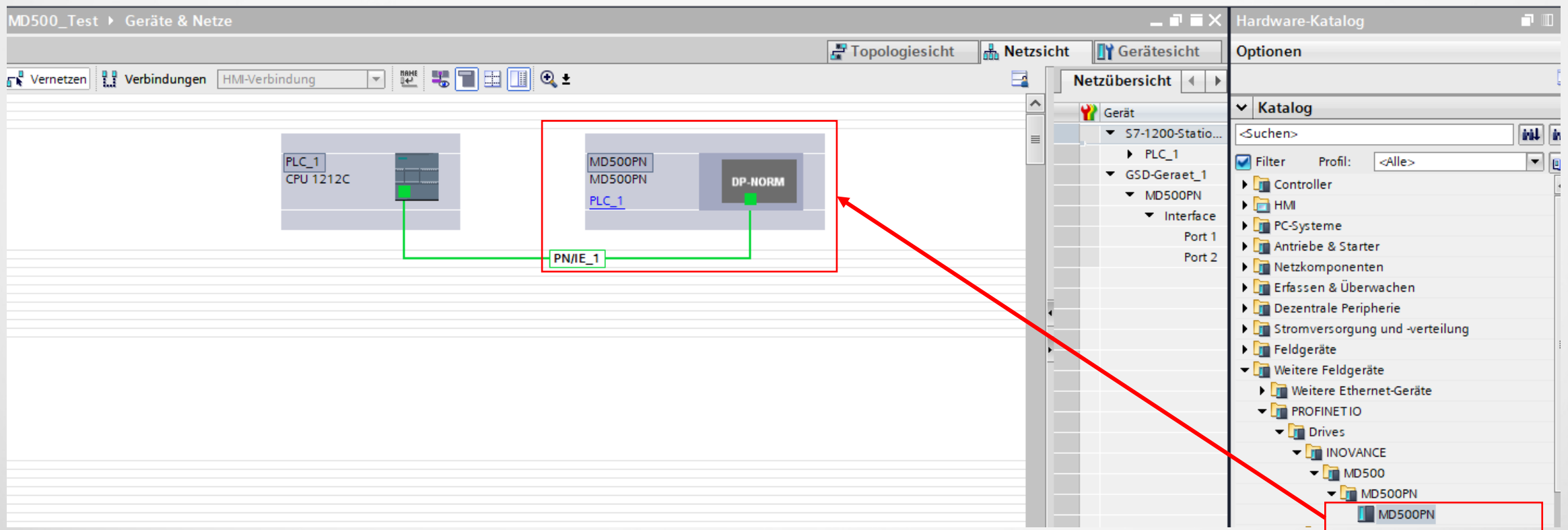
⇐ Drive to master		
	Parameter	Value
PZD 1	FE-20	U0-68; default
PZD 2	FE-21	U0-69; default
PZD 3	FE-22	Configurable
PZD 4	FE-23	Configurable
PZD 5	FE-24	Configurable
PZD 6	FE-25	Configurable
PZD 7	FE-26	Configurable
PZD 8	FE-27	Configurable
PZD 9	FE-28	Configurable
PZD 10	FE-29	Configurable
PZD 11	FE-30	Configurable
PZD 12	FE-31	Configurable

Note: PZD1 and PZD2 settings are also configurable.

TIA – Portal set up

TIA-Project

- Install the GSDML (device description) on the TIA-Portal.
- Create a new project and add the MD-500PN as a device, connect it to the master.



Add the communication module

- Double click the MD500-PN device and choose the right communication module, please refer to „Different types of communication modules”

The screenshot shows the SIMATIC Manager HW Config interface. On the left, a rack diagram shows an MD500PN device with a DP-NORM module. The main window displays the 'Geräteübersicht' (Device Overview) table, which lists the modules installed in the device. A red box highlights the 'Standard telegram 6, PZD-1...' module. A red arrow points from this module to the 'Hardware-Katalog' (Hardware Catalog) on the right, where the same module is selected in the 'Modul' list.

Modul	Baugr...	Steck...	E-Adresse	A-Adres...
MD500PN	0	0		
Interface	0	0 X1		
Port 1	0	0 X1 P1		
Port 2	0	0 X1 P2		
Standard telegram 6, PZD-1...	0	1	68...91	64...87

Hardware-Katalog

Optionen

Katalog

<Suchen>

Filter Profil: <Alle>

Kopfmodul

MD500PN

MD500PN

Modul

- Standard telegram 1, PZD-2/2
- Standard telegram 2, PZD-4/4
- Standard telegram 3, PZD-6/6
- Standard telegram 4, PZD-8/8
- Standard telegram 5, PZD-10/10
- Standard telegram 6, PZD-12/12
- Supplementary telegram, PZD-2/6

Configuration

- In *Project View*, check the assigned **IP-address** and **PROFINET name** (assigned by TIA Portal) and change it, if necessary.

The screenshot displays the Siemens TIA Portal interface for configuring an MD500PN device. The top window shows the 'Geräteübersicht' (Device Overview) table, which lists the device and its associated interfaces. The bottom window shows the 'Eigenschaften' (Properties) dialog for the MD500PN device, with the 'Ethernet-Adressen' tab selected. Red boxes highlight the IP address settings and the PROFINET device name settings.

Modul	Baugr...	Steck...	E-Adresse	A-Adres
MD500PN	0	0		
Interface	0	0 X1		
Standard telegram 6, PZD-1...	0	1	68...91	64...87

Eigenschaften (MD500PN [MD500PN])

Subnetz: PN/IE_1

IP-Protokoll

- ☒ IP-Adresse im Projekt einstellen
 - IP-Adresse: 192 . 168 . 0 . 2
 - Subnetzmaske: 255 . 255 . 255 . 0
- ☒ Router-Einstellungen mit IO-Controller synchronisieren
- ☐ Router verwenden
 - Router-Adresse: 0 . 0 . 0 . 0
- ☐ Anpassen der IP-Adresse direkt am Gerät erlauben

PROFINET

- ☒ PROFINET-Gerätename automatisch generieren

PROFINET-Gerätename: md500pn

Konvertierter Name: md500pn

Gerätenummer: 1

Device Configuration

- Go online, search for reachable devices. Select the appropriate MD500-PN node and assign the **IP-address** (from *Project View*) to the device.

The screenshot shows the Siemens TIA Portal software interface. On the left, the 'Geräte' (Devices) tree is expanded, showing the 'md500pn [192.168.0.2]' node selected. In the center, the 'Funktionen' (Functions) tree is expanded, showing the 'IP-Adresse zuweisen' (Assign IP Address) function selected. The main window displays the 'IP-Adresse dem Gerät zuweisen' (Assign IP Address to the device) dialog box. The dialog box contains a warning icon and text: 'Geräte, die an ein Firmennetzwerk oder an das Internet angeschlossen werden, müssen gegen unbefugten Zugriff angemessen geschützt sein, z. B. durch die Verwendung von Firewalls und Netzwerksegmentierung. Weiterführende Informationen über Industrial Security finden Sie unter <http://www.siemens.com/industrialsecurity>'. Below this, there are input fields for 'MAC-Adresse' (70 - CA - 4D - FB - 9F - 96), 'IP-Adresse' (192 . 168 . 0 . 2), 'Subnetzmaske' (255 . 255 . 255 . 0), and 'Router-Adresse' (192 . 168 . 0 . 2). The 'IP-Adresse zuweisen' button is highlighted with a red box.

Device Configuration

- Go online, search for reachable devices. Select the appropriate MD500-PN node and assign the **PROFINET name** (from *Project View*) to the device.

Projektnavigation

Geräte

- Online-Sicherungen
- Traces
- Geräte-Proxy-Daten
- Programminformationen
- PLC-Meldetextlisten
- Lokale Module
- Dezentrale Peripherie
- Nicht gruppierte Geräte
- Security-Einstellungen
- Geräteübergreifende Funktionen
- Gemeinsame Daten
- Dokumentationseinstellungen
- Sprachen & Ressourcen
- Version Control Interface
- Online-Zugänge
 - Schnittstellen anzeigen/verbergen
 - Realtek PCIe GbE Family Controller
 - Erreichbare Teilnehmer aktualisieren
 - Weitere Informationen anzeigen
 - plc_1 [192.168.0.1]
 - md500pn [192.168.0.2]
 - Online & Diagnose
 - TAP-Windows Adapter V9
 - Intel(R) Wireless-AC 9260 160MHz

Online-Zugänge > Realtek PCIe GbE Family Controller > md500pn [192.168.0.2] > md500pn [192.168.0.2] [192.168.0.2]

Diagnose

- Allgemein
- Diagnosestatus
- Kanaldiagnose
- PROFINET-Schnittstelle [X1]
 - IO-Controller
 - Ethernet-Adresse
 - Netzwerkverbindung
 - IP-Parameter
 - Ports
 - Kommunikationsdiagn...
 - PROFINET IO-Diagnose
 - Domain
- Funktionen
 - IP-Adresse zuweisen
 - PROFINET-Gerätename verg...
 - Rücksetzen auf Werkseins...

PROFINET-Gerätename vergeben

Konfiguriertes PROFINET-Gerät

PROFINET-Gerätename: md500pn

Gerätetyp: MD500

Gerätefilter

- ☐ Nur Geräte gleichen Typs anzeigen
- ☐ Nur falsch parametrisierte Geräte anzeigen
- ☐ Nur Geräte ohne Namen anzeigen

Erreichbare Teilnehmer im Netzwerk:

IP-Adresse	MAC-Adresse	Gerät	PROFINET-Gerätename	Status



INOVANCE

Forward, Always Progressing!