TECHNICAL INSTRUCTION

PLC-Interfaces with TIA Portal
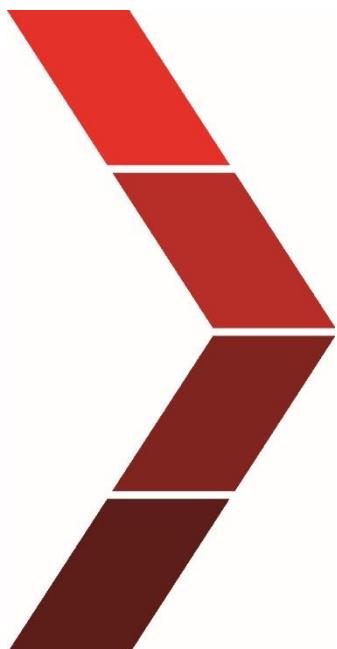
Description

The technical instruction describes the step by step process to set up the PLC interface with the TIA Portal.

Table of contents

1. General

The documentation is used to set up the PLC interface with TIA Portal.

2. All Interfaces

The starting addresses of the input and output data listed in the documentation are only the start addresses of the Congrav®.
The start addresses of the input and output data in the PLC are independent of this and can be adapted to them.

3. Protocol type V2

The correct feeder type (address 00H) and the toggle bit (Address 01H) must be sent.
The toggle bit needs to be generated, it must not be returned the received.
In the input buffer, the data is checked for changes and only accepted when changed. This is the normal application.
With "Data update", all data of the input buffer is taken over immediately. This is necessary only in special situations. Therefore, the "Data update" must not be toggled.

4. Profinet

The Congrav® is identified only by the name. This must fulfill certain conditions, so that a communication to Congrav® can be established.

The name for   H-,G- and C-Type: **btfeederh**-xxx
                      N- and A-Type: **btfeedern-**xxx

btfeederh- / btfeedern- is fixed and must not be changed

xxx is the address of the Congrav®, it is changeable

5. Configuration PLC-Interface with Congrav ® OP1-S
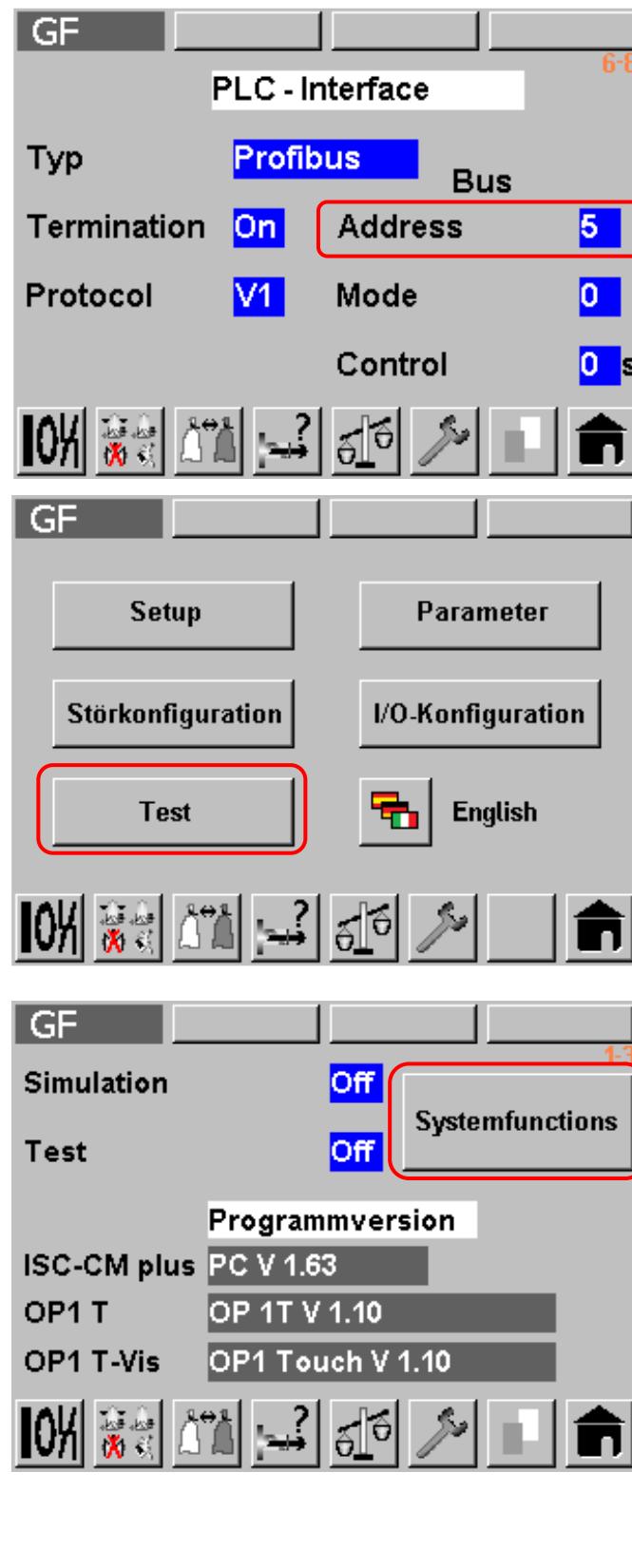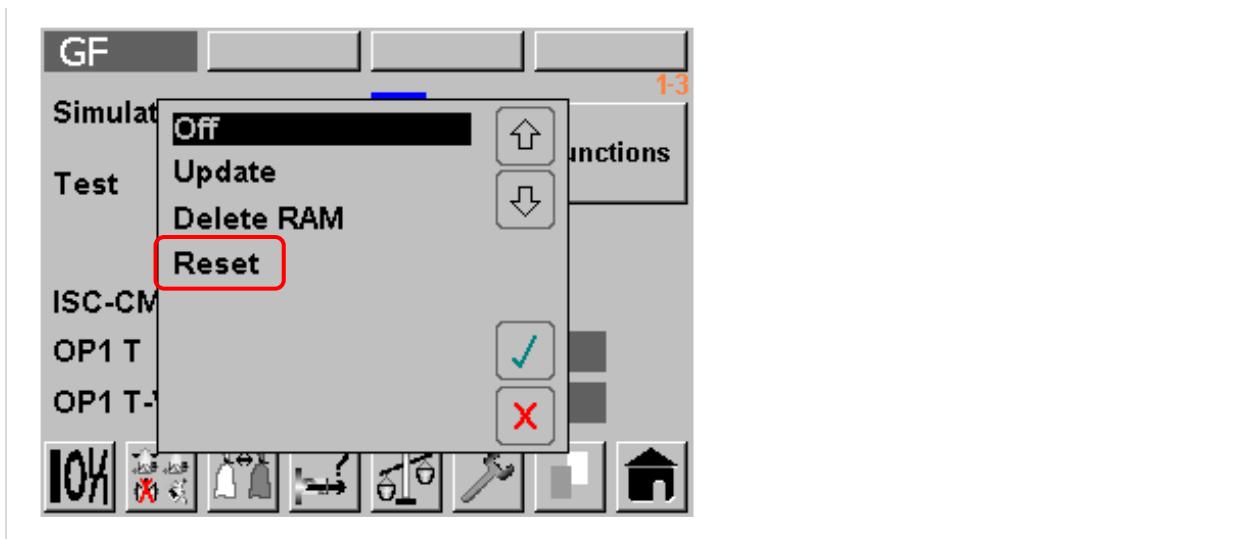
6. Hardware configuration with TIA Portal

6.1. Profibus Congrav® CM/CB

GSD file: HIL-0A12.gsd

6.1.1. Protocol type V1

Modul	Baugr...	Steck...	E-Adresse	A-Adres...	Typ	Artikel-Nr.
Slave_1	0	0	2043*		NETX-DPS	
16 byte input con (0x9F)_1	0	1	1000......		16 byte input con (0x9F)	
32 byte input con (0x40,0x9F)_1	0	2	1016......		32 byte input con (0x40,0x9F)	
32 byte input con (0x40,0x9F)_2	0	3	1048......		32 byte input con (0x40,0x9F)	
32 byte input con (0x40,0x9F)_3	0	4	1080......		32 byte input con (0x40,0x9F)	
16 byte output con (0xAF)_1	0	5		1000......	16 byte output con (0xAF)	
32 byte output con (0x80,0x9F)_1	0	6		1016......	32 byte output con (0x80,0x9F)	
32 byte output con (0x80,0x9F)_2	0	7		1048......	32 byte output con (0x80,0x9F)	
	0	8				

6.1.2. Protocol type V2

...	Modul	Baugr...	Steck...	E-Adresse	A-Adres...	Typ	Artikel-N
	Congrav CM-CB	0	0	2043*		NETX-DPS	
	32 byte input con (0x40,0x9F)_1	0	1	1000......		32 byte input con (0x40,0x9F)	
	32 byte input con (0x40,0x9F)_2	0	2	1032......		32 byte input con (0x40,0x9F)	
	32 byte input con (0x40,0x9F)_3	0	3	1064......		32 byte input con (0x40,0x9F)	
	32 byte input con (0x40,0x9F)_4	0	4	1096......		32 byte input con (0x40,0x9F)	
	32 byte output con (0x80,0x9F)_1	0	5		1000......	32 byte output con (0x80,0x9F)	
	32 byte output con (0x80,0x9F)_2	0	6		1032......	32 byte output con (0x80,0x9F)	
	32 byte output con (0x80,0x9F)_3	0	7		1064......	32 byte output con (0x80,0x9F)	
		0	8				

6.2. Profibus Congrav® OP6

6.2.1. Protocol type V1

...	Modul	Baugr...	Steck...	E-Adresse	A-Adresse	Typ	Artil
	Slave_1	0	0			NETX-DPS	
	16 byte input con (0x9F)_1	0	1	1000...1015		16 byte input con (0x9F)	
	32 byte input con (0x40,0x9F)_1	0	2	1016...1047		32 byte input con (0x40,0x9F)	
	32 byte input con (0x40,0x9F)_2	0	3	1048...1079		32 byte input con (0x40,0x9F)	
	32 byte input con (0x40,0x9F)_3	0	4	1080...1111		32 byte input con (0x40,0x9F)	
	32 byte input con (0x40,0x9F)_4	0	5	1112...1143		32 byte input con (0x40,0x9F)	
	32 byte input con (0x40,0x9F)_5	0	6	1144...1175		32 byte input con (0x40,0x9F)	
	32 byte input con (0x40,0x9F)_6	0	7	1176...1207		32 byte input con (0x40,0x9F)	
	16 byte input con (0x9F)_2	0	8	1208...1223		16 byte input con (0x9F)	
	16 byte output con (0xAF)_1	0	9		1000...1015	16 byte output con (0xAF)	
	32 byte output con (0x80,0x9F)_1	0	10		1016...1047	32 byte output con (0x80,0x9F)	
	32 byte output con (0x80,0x9F)_2	0	11		1048...1079	32 byte output con (0x80,0x9F)	
	32 byte output con (0x80,0x9F)_3	0	12		1080...1111	32 byte output con (0x80,0x9F)	
	32 byte output con (0x80,0x9F)_4	0	13		1112...1143	32 byte output con (0x80,0x9F)	
		0	14				

6.3. Profibus Congrav® OP16

6.3.1. Protocol type V1

Modul	Baugr...	Steck...	E-Adresse	A-Adresse	Typ	
Slave_1	0	0			FC310x-SLAVE	
16 BYTE Slave-Out/Master-In...	0	1	1000...1015		16 BYTE Slave-Out/...	
32 Bytes Slave-Out/Master-I...	0	2	1016...1047		32 Bytes Slave-Out/...	
32 Bytes Slave-Out/Master-I...	0	3	1048...1079		32 Bytes Slave-Out/...	
32 Bytes Slave-Out/Master-I...	0	4	1080...1111		32 Bytes Slave-Out/...	
32 Bytes Slave-Out/Master-I...	0	5	1112...1143		32 Bytes Slave-Out/...	
32 Bytes Slave-Out/Master-I...	0	6	1144...1175		32 Bytes Slave-Out/...	
32 Bytes Slave-Out/Master-I...	0	7	1176...1207		32 Bytes Slave-Out/...	
16 BYTE Slave-Out/Master-In...	0	8	1208...1223		16 BYTE Slave-Out/...	
16 Byte Slave-In/Master-Out ...	0	9		1000...1015	16 Byte Slave-In/Ma...	
32 Bytes Slave-In/Master-Ou...	0	10		1016...1047	32 Bytes Slave-In/M...	
32 Bytes Slave-In/Master-Ou...	0	11		1048...1079	32 Bytes Slave-In/M...	
32 Bytes Slave-In/Master-Ou...	0	12		1080...1111	32 Bytes Slave-In/M...	
32 Bytes Slave-In/Master-Ou...	0	13		1112...1143	32 Bytes Slave-In/M...	
	0	14				

6.4. Profinet Congrav® CM/CB 2.0

CB/CM:	GSDML-V2.2-HILSCHER-NETX 500 RE PNS-20110413.xml

6.4.1. Protocol type V1

Modul	Baugr...	Steck...	E-Adresse	A-Adresse	Typ	Artikel-Nr.
▼ btfeederh-002	0	0			NETX 500 RE/PNS V...	2210.000
▶ PN-IO	0	0 X1			netx500repns	
64 Byte Eingang_1	0	1	1000...1063		64 Byte Eingang	
64 Byte Eingang_2	0	2	1064...1127		64 Byte Eingang	
64 Byte Ausgang_1	0	3		1000...1063	64 Byte Ausgang	
64 Byte Ausgang_2	0	4		1064...1127	64 Byte Ausgang	
	0	5				

6.4.2. Protocol type V2

Modul	Baugr...	Steck...	E-Adresse	A-Adresse	Typ	Artikel-Nr.
▼ btfeederh-002	0	0			NETX 500 RE/PNS V...	2210.000
▶ PN-IO	0	0 X1			netx500repns	
32 Byte Eingang_1	0	1	1000...1031		32 Byte Eingang	
32 Byte Eingang_2	0	2	1032...1063		32 Byte Eingang	
32 Byte Eingang_3	0	3	1064...1095		32 Byte Eingang	
32 Byte Eingang_4	0	4	1096...1127		32 Byte Eingang	
32 Byte Ausgang_1	0	5		1000...1031	32 Byte Ausgang	
32 Byte Ausgang_2	0	6		1032...1063	32 Byte Ausgang	
32 Byte Ausgang_3	0	7		1064...1095	32 Byte Ausgang	
	0	8				

- ▼ 🗊 Hilscher Gesellschaft für Systemautom...
  - ▼ 🗊 PNS
    - 🔲 NETX 500 RE/PNS V3.1.x
    - 🔲 NETX 500 RE/PNS V3.2.x - V3.4.18
    - 🔲 NETX 500 RE/PNS V3.4.19 - V3.4.x
- ▶ 🗊 ICP DAS
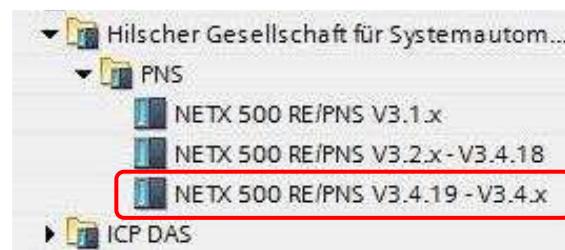
6.5. Profinet Congrav® CM/CB 3.0

CB-E/CM-E 3.0:   GSDML-V2.35-HILSCHER-NETX 90 RE PNS-20200402.xml

6.5.1. Protocol type V1

Module	...	Rack	Slot	I address	Q address	Type	Article number	Firmware
▼ btfeederh-001		0	0	2042*		NETX 90 RE/PNS V5....	7833.000	V5.1.0
▶ PN-IO		0	0 X1	2041*		netx90repns		
64 Byte Eingang_1		0	1	1000......		64 Bytes Input		
64 Byte Eingang_2		0	2	1064......		64 Bytes Input		
64 Byte Ausgang_1		0	3		1000......	64 Bytes Output		
64 Byte Ausgang_2		0	4		1064......	64 Bytes Output		

6.5.2. Protocol type V2

Module	...	Rack	Slot	I address	Q address	Type	Article number	Firmware
▼ btfeederh-001		0	0	2042*		NETX 90 RE/PNS V5....	7833.000	V5.1.0
▶ PN-IO		0	0 X1	2041*		netx90repns		
32 Byte Eingang_1		0	1	1000......		32 Bytes Input		
32 Byte Eingang_2		0	2	1032......		32 Bytes Input		
32 Byte Eingang_3		0	3	1064......		32 Bytes Input		
32 Byte Eingang_4		0	4	1096......		32 Bytes Input		
32 Byte Ausgang_1		0	5		1000......	32 Bytes Output		
32 Byte Ausgang_2		0	6		1032......	32 Bytes Output		
32 Byte Ausgang_3		0	7		1064......	32 Bytes Output		

- ▶ Controllers
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- ▼ Other field devices
  - ▶ Additional Ethernet devices
  - ▼ PROFINET IO
    - ▶ Drives
    - ▶ Encoders
    - ▶ Gateway
    - ▼ I/O
      - ▼ Hilscher Gesellschaft für Systemautomation ...
        - ▼ PNS
          - ▼ Head module
            - NETX 500 RE/PNS V3.1.x
            - NETX 500 RE/PNS V3.2.x - V3.4.18
            - NETX 500 RE/PNS V3.4.19 - V3.4.x
            - NETX 90 RE/PNS V5.1.0 - V5.1.x
            - NETX 90 RE/PNS V5.2.0 - V5.2.x
            - NETX 90 Usecase A RE/PNS V5.3.0 - ...
            - NETX 90 Usecase C RE/PNS V5.3.0 - ...
            - NETX RE/PNS V5.1.0 Brabender PLC ...

7. Configuration Checklist

☐   Are the interface parameters set correctly in the controller?
       Type Profibus/Profinet - protocol V1/V2 - termination - address - mode

☐   Is he correct GSDML file for Profinet selected for the controller?
Profibus is identical for both controllers

☐   Has the correct device with firmware been selected?

☐   Are the inputs and outputs configured correctly?
Addressing does not necessarily have to follow the documentation, but should be configured coherently

☐   Is he controller naming BtfeederX_00X and the IP addressing correct?
       IP address range must be the same, note the subnet mask

☐   Is the tooglebit generated and sent by the PLC for Profibus/Profinet V2?