PNOZ m ES Ethernet/IP with Allen Bradley ControlLogix



Product

Type: Name: Manufacturer: PNOZ m ES Ethernet/IP PNOZ multi 2 series Pilz GmbH & Co. KG, Safe Automation

Document Release Number: 01 Release Date: 3 December 2015

Document Revision History

Release	Date	Changes	Chapter
01	2015-12-03	Creation	all

Validity of Application Note

This present Application Note is valid until a new version of the document is published. This and other Application Notes can be downloaded in the latest version and for free from <u>www.pilz.com</u>.

For a simple search, use our <u>content document (1002400)</u> or the <u>direct search function</u> in the download area.

Exclusion of liability

We have taken great care in compiling our application note. It contains information about our company and our products. All statements are made in accordance with the current status of technology and to the best of our knowledge and belief.

However, we cannot accept liability for the accuracy and entirety of the information provided, except in the case of gross negligence. In particular it should be noted that statements do not have the legal quality of assurances or assured properties.

We are grateful for any feedback on the contents.

December 15

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1. Useful documentation

Reading the documentation listed below is necessary for understanding this application note. The availability of the indicated tools and safe handling are also presupposed with the user.

1.1. Documentation from Pilz GmbH & Co. KG

No.	Description	Item No.
1	Pilz international homepage, download section	www.pilz.com
2	PNOZmulti 2 Communication Interfaces	1002971-EN-XX
3	Technical Catalogue PNOZmulti	1001153-EN-XX
4	Operating Manual PNOZ m B0	1002660-EN-XX
5	Operating Manual PNOZ m ES Ethernet/IP	1003387-EN-XX

1.2. Documentation from other sources of information

No.	Description	Item No.
1	Allen-Bradley portal (international)	-
	Internet-Link to "ab.rockwellautomation.com"	
2	Product catalogue of Allen-Bradley ControlLogix System (PLC)	-
	Internet-Link to product catalogue "ControlLogix System"	

2. Configuration

2.1. Used Hardware

2.1.1. Pilz products

No.	Descriptions	Order number	Version	Number
1	PNOZ m B0	772100	1.2	1
2	PNOZ m ES Ethernet/IP	772137	1.2	1

2.1.2. Rockwell products

No.	Descriptions	Order number	Version	Number
1	CPU ControlLogix 1756-L71S	-	23.12	1
2	Ethernet/IP Scanner 1756-EN2TR	-	10.1	1

2.2. Used IP addresses

2.2.1. Pilz products

No.	Descriptions	IP address
1	PNOZ m ES Ethernet/IP	192.168.1.131

2.2.2. Rockwell products

No.	Descriptions	IP address Version
1	Ethernet/IP Scanner 1756-EN2TR	192.168.1.10

2.3. Hardware configuration

2.3.1. Pilz products



Fig. 1: PNOZ multi Configurator - Hardware Configuration

2.3.2. Rockwell products



Fig. 2: Studio 5000 – Hardware Configuration Allen-Bradley ControlLogix PLC

2.4. Used Software

2.4.1. Pilz products

No.	Descriptions	Version
1	PNOZmulti Configurator	9.6.0 Build 20
2	PNOZ_m_ES_EtherNetIP.eds	-

2.4.2. Rockwell products

No.	Descriptions	Version
1	Studio 5000	23.00
2	EDS Hardware Installation Tool	-
3	BOOTP-DHCP Server	2.3.2.0

3. Application Task

Create a connection with EtherNet/IP to communicate between PNOZ m ES Ethernet/IP and Allen-Bradley ControlLogix PLC.

The initial ControlLogix Hardware configuration is not implemented in this "Application Note". You can get further details if you read the Allen-Bradley ControlLogix manuals, e.g.:

- > Allen-Bradley User Manual "EtherNet/IP Network Configuration"
- Allen-Bradley Quick Start "Logix5000 Control Systems: Connect POINT I/O Modules Over an EtherNet/IP"

In this application note is described how to

- Import EDS file
- Setting IP address on PNOZ m ES Ethernet/IP
- Configure the PNOZ m ES Ethernet/IP module in Allen-Bradley ControlLogix PLC
- Configure the PNOZmulti
- Download user program to the PNOZmulti

3.1. Steps before you can start

3.1.1. Set IP address of your PC

In this example the IP address for the PC is 192.168.1.100

IP-Adresse:	192.168.1.100
S <u>u</u> bnetzmaske:	255 . 255 . 255 . 0
<u>S</u> tandardgateway:	

Fig. 3: PC – Set IP address

3.1.2. Import EDS file

Start "EDS Hardware Installation Tool"



Fig. 4: Start "EDS Hardware Installation Tool"

Click "Add"

Rockwell Automation - Hardware Installation Tool		
This tool allows y information curre	ou to change the hardware description ntly installed on your computer.	
<u>Add</u>	Launch the EDS Wizard and add selected hardware description files only.	
<u>R</u> emove	Launch the EDS Wizard and remove selected hardware description files only.	
	<u>Exit</u>	

Fig. 5: EDS Hardware Installation Tool

Select EDS file

Registration	
Electronic Data Sheet file(s) will b Automation applications.	e added to your system for use in Rockwell
Register a single file	
C Register a directory of EDS files	🔲 Look in subfolders
Named:	
C:\Temp\PNOZ m ES EtherNetIP.e	eds Browse
	<u></u>
if there is an icon file (ico)	with the same name as the file(s) you are registering
• If there is an icon file (ico) then this image will be associ	with the same name as the file(s) you are registering iated with the device.
• If there is an icon file (ico) then this image will be associ	with the same name as the file(s) you are registering iated with the device. To perform an installation test on the file(s), click Ne
• If there is an icon file (ico) then this image will be associ	with the same name as the file(s) you are registering iated with the device. To perform an installation test on the file(s), click Ne



EDS File Installation T This test evaluates ea	est Results ch EDS file for errors	in the EDS file.	This test does not	1
guarantee EDS file va	idity.			<u>~</u>
	ults			
c:\temp\pnoz_n	_es_ethemetip.eds			
and the second				
View file				
		1.00012		
			(

Fig. 7: EDS Hardware Installation Tool – Installing EDS file (1)

ockwell Automatic	n's EDS Wizard
Change Graphi You can cha	c Image nge the graphic image that is associated with a device.
	Product Types
Change icon	Communications Adapter
	< Zurück Weiter > Abbrechen

Fig. 8: EDS Hardware Installation Tool – Installing EDS file (2)

kwell Automation's EDS wiz	ard	
Final Task Summary This is a review of the task	you want to complete.	A CONTRACTOR
You would like to res PNOZ m ES Eth	ister the following device. erNet/IP	

Fig. 9: EDS Hardware Installation Tool – Installing EDS file (3)

3.2. Setting IP address on PNOZ m ES Ethernet/IP

You can set the IP address via

- DHCP
- DIP Switch
- Web-Server

3.2.1.1. Setting the IP address via BOOTP/DHCP Server

Select the device with the correct MAC Address, Add to Relation List. Enter the desired IP Address.

(br:min:sec)				Hostname	
11·14·15	DHCP	C8-3E-67-00-01-4E	II Address	riosulallie	
11:14:15 DHCP 11:13:59 DHCP 11:13:51 DHCP	New Entry		×		
11:13:45	DHCP	Ethernet Address (MAC):	C8:3E:A7:00:01:4	1F	
		IP Address:	192.168.	1 . 131	
Relation List	- 1	Hostname:			
New Dele	te Enat	Description:			
Ethernet Addr	ress (MAC)		ОК	Cancel	
		W			

Fig. 10: BOOTP/DHCP Server – Enter the desired IP Address

IP Address is set to 192.168.1.131

BOOTP/DHCP Server	2.3			
<u>File lools H</u> elp				
Clear History Add	to Relation List			
(hr:min:sec) Type	Ethernet Address (MAC)	IP Address	Hostname	
11:14:47 DHCP 11:14:47 DHCP 11:14:15 DHCP 11:13:59 DHCP 11:13:51 DHCP 11:13:47 DHCP 11:13:47 DHCP 11:13:47 DHCP 11:13:47 DHCP 11:13:45 DHCP	C8:3E:A7:00:01:4F C8:3E:A7:00:01:4F C8:3E:A7:00:01:4F C8:3E:A7:00:01:4F C8:3E:A7:00:01:4F C8:3E:A7:00:01:4F C8:3E:A7:00:01:4F C8:3E:A7:00:01:4F	192.168.1.131		
Relation List New Delete Enal	ble BOOTP Enable DHCP D	isable BOOTP/DHCP	Description	
C8:3E:A7:00:01:4F	DHCP 192.168.1.13	1		Fabries
Sent 192.168.1.131 to Eth	nernet address C8:3E:A7:00:01:44	F		1 of 256

Fig. 11: BOOTP/DHCP Server – IP Address is set to 192.168.1.131

Disable the BOOTP/DHCP in the Module.

Clear History	Add to	o Relation List			
(hr:min:sec)	Туре	Ethernet Address (MAC)	IP Address	Hostname	
8:01:11 8:01:11 8:00:39 8:00:23	DHCP DHCP DHCP DHCP DHCP	C8:3E:A7:00:00:F8 C8:3E:A7:00:00:F8 C8:3E:A7:00:00:F8 C8:3E:A7:00:00:F8 C8:3E:A7:00:00:F8	192.168.1.131		
8:00:15 8:00:11 8:00:10	DHCP DHCP DHCP	C8:3E:A7:00:00:F8 C8:3E:A7:00:00:F8 C8:3E:A7:00:00:F8			
New Dele	te Enabl ess (MAC) J0:F8	le BOOTP Enable DHCP [Type IP Address DHCP 192.168.1.1	Disable BORTP/DHCF	2 ected device to retain	configuration in m
0			_		

Fig. 12: BOOTP/DHCP Server – Disable BOOTP/DHCP

DIP Switch	Description
	DHCP on
Adress	
1 128	
2 64	
3 32	
4 16	
5 8	
6 4	
ON OFF	
Adross	IP address is 192.168.1.20
Adress	
ON OFF	Configuration via Wah Conver
Adress	Configuration via web-Server
1 128	
ON OFF	

3.2.1.2. Setting the IP address via DIP Switch

Fig. 13: Setting IP address via DIP Switch

More information how to set the IP address you can find in the User Manual.

3.2.1.3. Setting the IP address via Web-Server

> Enter the IP Address of the PNOZ m ES Ethernet/IP Module

PNOZ m ES EtherNet/IP × +	
(() 192.168.1.131	
PNOZ m ES EtherNet/IP	pilz the spicit of safety
Username:	
Password:	

Fig. 14: Web-Server: Login Screen

PNOZ m	ES E	therNet/	IP				Log Out	pi
Input Byte 00	0	Send	Output Byte 00	0	LED Status	0xb0	-	17
Input Byte 01	0	Send	Output Byte 01	0	Tabelle	0	Send	3 O
Input Byte 02	0	Send	Output Byte 02	0	Segment	0	Send	1 25
Input Byte 03	0	Send	Output Byte 03	0	Data 00			0
Input Byte 04	0	Send	Output Byte 04	0	Data 01			0
Input Byte 05	0	Send	Output Byte 05	0	Data 02			0
Input Byte 06	0	Send	Output Byte 06	0	Data 03			0
Input Byte 07	0	Send	Output Byte 07	0	Data 04			0
Input Byte 08	0	Send	Output Byte 08	0	Data 05			0
Input Byte 09	0	Send	Output Byte 09	0	Data 06			0
Input Byte 10	0	Send	Output Byte 10	0	Data 07			0
Input Byte 11	0	Send	Output Byte 11	0	Data 08			0
Input Byte 12	0	Send	Output Byte 12	0	Data 09			0
Input Byte 13	0	Send	Output Byte 13	0	Data 10			0
Input Byte 14	0	Send	Output Byte 14	0	Data 11			0
Input Byte 15	0	Send	Output Byte 15	0	Data 12			12
Config Serial number Software Vers MAC Address	jurati	0N 123456 1.1 c8:3e:a7:00):01:4f					
DHCP		active						
IP address Subnet mask Gateway		192.168.1.3 255.255.25 192.168.1.1	30 5.0 1					
		Cha	nge Configuration	n j				

Fig. 15: Web-Server: Overview

Select "Change Configuration" to setup a new IP Address

Enter an IP Address and select "Apply", set all DIP-Switches in the OFF position and restart the device

			the spirit of
Change Co	onfiguration		
DHCP	Old Value active	New Value	
IP Address	192.168.1.131	192.168.1.131	
Subnet Mask	255.255.0.0	255.255.0.0	
Gateway	192.168.1.1	192.168.1.1	
Apply			
Abort			

Fig. 16: Web-Server: Setup a new IP Address

3.3. Steps for Allen-Bradley ControlLogix PLC

Start software "Studio 5000"

3.3.1. Ethernet/IP Scanner / Adapter Configuration

Create new Module Type (for EtherNet/IP Scanner):

Ente	er Search Text for Module	Туре	<u>C</u> lear	Filter	8		Hide Filters	*
	Module	Type Category Filters		V	Мо	odule Type Vendor I	Filters	
	Analog Communication Controller Digital		THE REAL PROPERTY IN THE REAL PROPERTY INTERNAL PROPERTY		Allen-Bradley Advanced Micro Hardy Instrument Molex Incorporat	Controls Inc. (AMC is, Inc. ed)	•
•		m	•	•		.111.	•	
Cat	talog Number	Description				Vendor	Category	*
	1756-EN2T	1756 10/100 Mbps Ethe	net Brid	lge, T	wisted-Pair Media	Allen-Bradley	Communication	
	1756-EN2TR	1756 10/100 Mbps Ethe	inet Brid	lge, 2	Port, Twisted-P	Allen-Bradley	Communication	
	1756-EN2TSC	1756 10/100 Mbps Ethe	net Brid	lge, T	wisted-Pair Medi	Allen-Bradley	Communication	16
	1756-EN3TR	1756 10/100 Mbps Ethe	net Brid	lge, 2	Port, Twisted-P	Allen-Bradley	Communication	
	1756-ENBT	1756 10/100 Mbps Ethe	net Brid	lge, T	wisted-Pair Media	Allen-Bradley	Communication	
	1756-ENET	1756 Ethernet Communic	ation In	terfac	e	Allen-Bradley	Communication	-
•		III					•	
135 a	of 135 Module Types Fou	nd					Add to Favori	tes

Fig. 17: Studio 5000 – Create new Module Type for Ethernet/IP Scanner (1)

• Enter a Name and the IP Address of the Ethernet/IP Scanner

General [*] (Connection	RSNetWorx	Module Info	Internet Protocol	Port Configuration	Network	Time Sync	
Type: Vendor: Parent: Na <u>m</u> e: Description	1756- Allen- Local Ethe	-EN2TR 1756 1 Bradley ernetIPScanner	D/100 Mbps Et	hernet Bridge, 2-Po	ort, Twisted-Pair Ma Ethernet Address Private Netwo IP Address:	edia C	Change Type) ← 92.168.1. 10 🗼	
Module D Revision Electroni Connect Time Sy	Definition : c Keying: tion: nc Connect	10.1 Comp. None ion: None	Ch	ange	Sl <u>o</u> t:	2)	

Fig. 18: Studio 5000 – Create new Module Type for Ethernet/IP Scanner (2)

Add a PNOZ m ES Ethernet/IP Module



Fig. 19: Studio 5000 – Create new PNOZ m ES Ethernet/IP Module (1)

Add the PNOZ m ES Ethernet/IP Module

Ente	r Search Text for Module	Туре		ear F	ilters		Hide Filter	s 🎓
	Module 1	ype Category Filters		•		Module Type Vendor F	ilters	*
VVVVVVVVVVVVV	Communication Communications Adapte Controller Digital	er		+		Parker Hannifin Corporation Pilz GmbH & Co Prosoft Technology Reliance Electric		T T
•		m	•		•	III		•
•	Catalog Number	Description				Vendor	Category	
	772137 Pilz Plc	PNOZ m ES EtherNet. PSS 4000	/IP			Pilz GmbH & Co Pilz GmbH & Co	Communicati Communicati	ons Ada ons Ada
•			111					F.

Fig. 20: Studio 5000 – Create new PNOZ m ES Ethernet/IP Module (2)

- > Enter a Name and the IP Address of the Ethernet/IP Adapter
- More about the IP Address of the Module you can find in Chapter 5.2

Type: Vendor:	772137 PNOZ m ES EtherNet/IP Pilz GmbH _Co	
Parent:	ETH1	
Na <u>m</u> e:	PNOZmulti	Ethernet Address
Descri <u>p</u> tion:		Private Network: 192.168.1.
- Module Defi	nition	
Revision:	1.002	
Electronic K	eying: Compatible Module	
Connections	≍ Exclusive Owner All	
	Change	

Fig. 21: Studio 5000 – Create new PNOZ m ES Ethernet/IP Module (3)

Click to "Change" - If necessary disable keying and change the length of transferred IO/Data

You can select between

- "Exclusive Owner All" with 32 Bytes (virtual I/Os, LED Status of Base Modul and table segments)
- "Exclusive Owner Assembley" with 17 Bytes (virtual I/Os and LED Status)
- > The Structure of the cyclic transferred data is explained in Chapter 5.3.4

Tune:	772137 PN07 m ES Et	herNet/IP					
Vendor:	Module Definition					X)
Parent:	Revision: [1 🔹	1	***			
Name:	Electronic Keying:	Disable Keying			-		
Description:	Connections:	Exact Match Compatible Moc	lule				× .
	Name	UNSIDE NeyIng	Size		Tag Su	ıffix	
	Exclusive Owner A	Input:	32	SINT	1	PNOZ_m_ES_EthernetIP:I1	
		Output:	32			PNOZ_m_ES_EthernetIP:O	
- Module De Revision: Electronic	Select a connection						
Connectio			Liene	ОК		Cancel Help	

Fig. 22: Studio 5000 – Create new PNOZ m ES Ethernet/IP Module (4)

Enter a valid RPI

New Module				x			
General [*] Connection Module Info Internet Protocol P	ort Configuration Netwo	rk					
Name	Requested Packet Inter (RPI) (ms)	val Input Type	Input Trigger				
Exclusive Owner All	20.0 💠 1.0 - 3200.) Unicast 🚽	Cyclic	•			
Inhibit Module	u Mada						
 Inhibit Module Major Fault On Controller If Connection Fails While in Run Mode Module Fault 							
Status: Creating		ОК	Cancel <u>H</u> e	lp			

Fig. 23: Studio 5000 – Create new PNOZ m ES Ethernet/IP Module (4)

Notice

If the used version of RSLogix5000 configuration file (EDS) is not supported, use the Generic Ethernet Module and configure the properties manually.

- » Input: Assembly Instance 100 (32 Bytes) or 101 (17 Bytes)
- » Output: Assembly Instance 150 (32 Bytes) or 151 (17 Bytes)
- » Configuration: Assembly Instance 4 (0 Byte)

3.3.2. Download project to ControlLogix PLC

Check before downloading that the correct communication path to ControlLogix PLC is set.

🖹 🖆 🛃 🎒 🛍 🗠 🖙 HM_Anlage_Grst 💿 🗸 🦓 🗛 🚺 💽 📝 🛒 🔍 🔍 Select la	
	anguage.
Offline 🛛 🗸 🗖 RUN Path: AB_ETH-1\192.168.1.10\Backplane\0 💌 🛃	



💕 Logix Designer - ApplicationNote [1756-L71S 23.12] File Edit View Search Logic Communications Tools Window Help Who Active 🗎 🖼 🖶 🎂 አ 🖻 🖻 🐥 🐴 强 🛅 📝 🛒 -Select Recent Path... Offline 🛛 🗸 🔳 RUN 몲 AB_ETH-1\192.168.1.10\Backplane\0 Ŧ 🔳 ОК Go Online No Forces ١. 🔲 Energy Sto ++ +/+ -()- -(U)- -(L)-Upload... 2 No Edits E 1/0 Download Favorites & Add-On & Alarms 0.0 K Bit Safety Unlocked Controller Organizer c) Program Mode Start Page 🖃 🔄 Controller ApplicationN <u>R</u>un Mode 🖉 Controller Tags Test Mode 🚞 Controller Fault Han -- Power-Up Handler Lock Controller 📥 📇 Tasks **Clear Faults** 🚊 🛃 MainTask 🛓 🚭 MainProgram Go To Faults

Fig. 25: Studio 5000 – Start Download to ControlLogix PLC

Notice

Start Download:

If the > Key-Switch on ControlLogix Controller is in RUN position, move it before you continue with download to REM or PROG position.

The keyswitch is in the RUN position. Move it to REM or PROG in Δ order to download.

Download		×		
D D	ownload offline pro	ject 'ApplicationNote' to the controller.		
<u> </u>	🔽 Download <u>P</u> r	oject Documentation and Extended Properties		
G	onnected Controlle	r:		
	Name:	Testwand		
	Type:	1756-L71S/B GuardLogix® 5570 Safety Controller		
	Path:	AB_ETH-1\192.168.1.10\Backplane\0		
	Serial Number:	10x06/29		
	Security:	No Protection		
1	The controller is i Remote Program	n Remote Run mode. The mode will be changed to prior to download.		
1	DANGER: This co synchronized cor turned off.	ntroller is the system time master.Servo axes in itrollers, in this chassis or other chassis, may be		
1	DANGER: Unexpe	ected hazardous motion of machinery may occur.		
	Some devices ma not loaded to the	intain independent configuration settings that are e device during the download of the controller.		
Verify these devices (drives, network devices, 3rd party produces have been properly loaded before placing the controller into mode.				
	oper configuration could result in misaligned data equipment operation.			
1	A non-recoverab	le safety fault will occur in the safety controller.		
	No designated Co	oordinated System Time (CST) master exists.		
	🔲 Enable Time S	iynchronization		
	Download	Cancel Help		

Fig. 26: Studio 5000 – Continue download to ControlLogix PLC

Notice
After download move > Key-Switch on ControlLogix Controller back to REM or RUN position!

3.3.3. Controller Tags

To view the process data from PNOZ m ES Ethernet/IP Module open the Controller Tags in the tree

- Go Online
- Select "Monitor Tags"
- Select the PNOZmulti

Scanner Input Byte 00	Virtual Output 07		ti
Scanner Input Byte 01	Virtual Output 815		đ
Scanner Input Byte 02	Virtual Output 1623		Ð
Scanner Input Byte 03	Virtual Output 2431		ů.
Scanner Input Byte 04	Virtual Output 3239		sta
Scanner Input Byte 05	Virtual Output 4047		<u> </u>
Scanner Input Byte 06	Virtual Output 4855	0	ev
Scanner Input Byte 07	Virtual Output 5663	9	Ĕ
Scanner Input Byte 08	Virtual Output 6471	nt	IO1
Scanner Input Byte 09	Virtual Output 7279	<u>d</u>	As
Scanner Input Byte 10	Virtual Output 8087	8	Ľ.
Scanner Input Byte 11	Virtual Output 8895	an	ũ,
Scanner Input Byte 12	Virtual Output 96103	Ist	Ó
Scanner Input Byte 13	Virtual Output 104111	-	Ve
Scanner Input Byte 14	Virtual Output 112119	be	nsi
Scanner Input Byte 15	Virtual Output 120, 127	3	U O
Scamer input byte 15	Virtual Output 120127		×
Scanner Input Byte 16	LED status	ssei	ш
Scanner Input Byte 16 Scanner Input Byte 17	LED status Table Number	, Assei	ш
Scanner Input Byte 16 Scanner Input Byte 17 Scanner Input Byte 18	LED status Table Number Segment Number	All, Assei	Ĕ
Scanner Input Byte 13 Scanner Input Byte 17 Scanner Input Byte 18 Scanner Input Byte 19	LED status Table Number Segment Number Reserved	er All, Assei	EX
Scanner Input Byte 13 Scanner Input Byte 16 Scanner Input Byte 17 Scanner Input Byte 18 Scanner Input Byte 19 Scanner Input Byte 20	LED status Table Number Segment Number Reserved Reserved	wner All, Assei	EX
Scanner Input Byte 13 Scanner Input Byte 16 Scanner Input Byte 17 Scanner Input Byte 18 Scanner Input Byte 19 Scanner Input Byte 20 Scanner Input Byte 21	LED status Table Number Segment Number Reserved Reserved Reserved	Owner All, Asser	E
Scanner Input Byte 13 Scanner Input Byte 16 Scanner Input Byte 17 Scanner Input Byte 18 Scanner Input Byte 19 Scanner Input Byte 20 Scanner Input Byte 21 Scanner Input Byte 22	LED status Table Number Segment Number Reserved Reserved Reserved Reserved	ive Owner All, Asser	EX
Scanner Input Byte 13 Scanner Input Byte 16 Scanner Input Byte 17 Scanner Input Byte 18 Scanner Input Byte 19 Scanner Input Byte 20 Scanner Input Byte 21 Scanner Input Byte 22 Scanner Input Byte 23	LED status Table Number Segment Number Reserved Reserved Reserved Reserved Reserved Reserved	lusive Owner All, Asser	Ex
Scanner Input Byte 13 Scanner Input Byte 16 Scanner Input Byte 17 Scanner Input Byte 18 Scanner Input Byte 19 Scanner Input Byte 20 Scanner Input Byte 21 Scanner Input Byte 22 Scanner Input Byte 23 Scanner Input Byte 24	LED status Table Number Segment Number Reserved Reserved Reserved Reserved Reserved Reserved Reserved	xclusive Owner All, Asser	Ex
Scanner Input Byte 13 Scanner Input Byte 16 Scanner Input Byte 17 Scanner Input Byte 18 Scanner Input Byte 19 Scanner Input Byte 20 Scanner Input Byte 21 Scanner Input Byte 22 Scanner Input Byte 23 Scanner Input Byte 24 Scanner Input Byte 25	LED status Table Number Segment Number Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved	Exclusive Owner All, Asser	Ex
Scanner Input Byte 13 Scanner Input Byte 16 Scanner Input Byte 17 Scanner Input Byte 18 Scanner Input Byte 19 Scanner Input Byte 20 Scanner Input Byte 21 Scanner Input Byte 22 Scanner Input Byte 23 Scanner Input Byte 24 Scanner Input Byte 25 Scanner Input Byte 26	LED status Table Number Segment Number Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved	Exclusive Owner All, Asser	Ex I
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3.3.4. Structure of the cyclic transferred data (Implicite Messaging)

Fig. 27: Structure of the cyclic transferred data – Scanner Input Bytes

		Virtual Input 07	Scanner Output Byte 00
e)		Virtual Input 815	Scanner Output Byte 01
anc		Virtual Input 1623	Scanner Output Byte 02
sta		Virtual Input 2431	Scanner Output Byte 03
5		Virtual Input 3239	Scanner Output Byte 04
Sey		Virtual Input 4047	Scanner Output Byte 05
T II	20	Virtual Input 4855	Scanner Output Byte 06
15	Ξ	Virtual Input 5663	Scanner Output Byte 07
As	nd	Virtual Input 6471	Scanner Output Byte 08
ut er,	Out	Virtual Input 7279	Scanner Output Byte 09
ξO	e	Virtual Input 8087	Scanner Output Byte 10
Ó	D U	Virtual Input 8895	Scanner Output Byte 11
Ve	sta	Virtual Input 96103	Scanner Output Byte 12
ISI	-	Virtual Input 104111	Scanner Output Byte 13
xc	ey	Virtual Input 112119	Scanner Output Byte 14
ш	đ	Virtual Input 120127	Scanner Output Byte 15
	se	Reserved	Scanner Output Byte 16
	As	Table Number	Scanner Output Byte 17
	,	Segment Number	Scanner Output Byte 18
	Sr A	Segment Data Byte 00	Scanner Output Byte 19
	'ne	Segment Data Byte 01	Scanner Output Byte 20
	ð	Segment Data Byte 02	Scanner Output Byte 21
	é	Segment Data Byte 03	Scanner Output Byte 22
	visr	Segment Data Byte 04	Scanner Output Byte 23
	clt	Segment Data Byte 05	Scanner Output Byte 24
1.22	ш	Segment Data Byte 06	Scanner Output Byte 25
		Segment Data Byte 07	Scanner Output Byte 26
		Segment Data Byte 08	Scanner Output Byte 27
		Segment Data Byte 09	Scanner Output Byte 28
		Segment Data Byte 10	Scanner Output Byte 29
		Segment Data Byte 11	Scanner Output Byte 30
		Segment Data Byte 12	Scanner Output Byte 31

Fig. 28: Structure of the cyclic transferred data – Scanner Output Bytes

Notice

The content of the Segment Data Bytes you can find in the Document "PNOZ multi 2 Communication Interfaces"

3.3.5. Structure of the acyclic transferred data (Explicit Messaging)

The PNOZ m ES Ethernet/IP Module also supports Explicit Messaging. In the document "PNOZmulti 2 Communication Interfaces" you can find the Instance and Attribute Number.

3.4. Steps for PNOZ multi

3.4.1. PNOZ multi Configuration

- Create a new project
- Select Modules



Fig. 29: PNOZmulti Configurator – Select Modules

Select the used Hardware



Fig. 30: PNOZmulti Configurator - Select the used Hardware

Notice

To test the communication between the PNOZ multi and the Ethernet/IP Scanner you need at least one safety function in the PNOZ multi program.

Insert a safety function, e.x. E-STOP

oject Manager 🕼 [/O List	(Page 1) 🖾 💠	<u> </u>
Untitled2		Function Elements
(Page 1)		S E- STOP
	NC 2	Safety Gate
	al.IMO	Light Curtain
		1 Two-Hand Button
		Enable Switch

Fig. 31: PNOZmulti Configurator – Insert E-Stop

Insert an output and connect it with the E-STOP



Fig. 32: PNOZmulti Configurator – Insert Output

Insert a virtual Output

)@`
		Function Elements
		E-STOP
	• · · · ·	Safety Gate
	Double Click	Two-Hand Button
	Sectivate Input/Output	
	typ 2 Select the t	fieldbus modulo
	Equipment ID: a2 • 1/0: 00	uses: Test Pulse 0
	Detection of shorts between of	n the input circuit
	Negate 02	🛓 🥹 Select a virtual output
	o4	
	Filter time o5	
() (With filter time 00	
	Change Default Value 08	Period (range 0-3000): 40 ms.
	Equipment ID 010	
	Enter equipment ID: 011 012	
	Location description 013	
	015	
	Enter location description: 016	·
	017	
	019	DK Cancel Help
	020	
	022	
	025	- Coore

Fig. 33: PNOZmulti Configurator – Insert a virtual Output

Connect the virtual Output with the E-STOP to get the status of the E-STOP

Untitled2* - PNOZmulti Configurator	-
Project Edit View Tools PNOZmulti Windows Macro Diagnostics Help	
🗂 🗁 🔚 🎂 🐇 🕼 🛣 🞺 🌣 🍳 🔍 🏹 🕸 🤮 🤜 🔇 🕅 🔻 🎧 🖄 🏟 🏙 Not connected 🗾 🔹 👫 📰 🔍 🗃	R
🆢 🔩 🤴 🧱 🥵 💿	
🖓 Hardware Configuration 🛛 📳 User Program	
P P I Program (Page I) 2 P	

Fig. 34: PNOZmulti Configurator - virtual Output is connected with E-Stop

3.4.2. PNOZ multi Download

Select Interface

ndows Macro Diagnostics Help	
🔍 🍳 🏐 🕲 🙆 畅 🔕 EN 🗕 🍋 🎲 🦛 🏟	COM4 (USB)
	Not connected COM3
	COM4 (USB)
	169.254.60.1 (Default)

Fig. 35: PNOZmulti Configurator – Select the Interface

2	
Download to Hardware	Online

Fig. 36: PNOZmulti Configurator – Download to PNOZmulti (1)



Fig. 37: PNOZmulti Configurator – Download to PNOZmulti (2)

📚 Set Passwords	×
Level 1	
Password:	*
Confirmation:	*
Level 2	
Password:	*
Confirmation:	*
Level 3	
Password:	*
Confirmation:	*
<u>OK</u> <u>C</u> an	icel <u>H</u> elp

Fig. 38: PNOZmulti Configurator – Download to PNOZmulti (3)

😎 Download	X
Download Data	
Program size:	120 byte(s)
Total program size on chip card	: 778 byte(s) of 32768 byte(s)
Optional	
🔽 Equipment identifier	12 byte(s)
📝 <u>E</u> lement user text	0 byte(s)
I ∕ <u>O</u> user text	0 byte(s)
🔽 Page <u>u</u> ser text	0 byte(s)
Location description	4 byte(s)
🔽 Display Messages	0 byte(s)
🕢 Macro Properties Data	0 byte(s) 🔓
Do not show again	
<u></u> K	<u>C</u> ancel <u>H</u> elp

Fig. 39: PNOZmulti Configurator – Download to PNOZmulti (4)



Fig. 40: PNOZmulti Configurator – Download to PNOZmulti (5)

EN ▼ 🦳 🏫 🎝 🏟 🏟 COM4 (USB)	- 🚺 🗘 🔳
Se PNOZmulti Configurator]
Download successful. Do you want to start PNOZmulti?	
Yes No	

Fig. 41: PNOZmulti Configurator – Download to PNOZmulti (6)

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○ Landscape

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