

Indu-Sol GmbH – Specialist in Industrial Networks

# PROnetplan **User Manual**



## Diagnostic and service tools for PROFINET / Ethernet















## **Revision overview**

Date	Revision	Change(s)
06.12.2013	0	First version
31.03.2017	1	Update for Version 1.6

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#### Caution!

This device may only be put into operation and operated by qualified personnel. Qualified personnel, as referred to in the safety-related information of this manual, are persons who are authorised to put into operation, to earth and to label devices, systems and electrical circuits in accordance with the standards of safety engineering.



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## **1** General information

Please read this document thoroughly from start to finish before you begin installing the software and putting it into operation.

## 1.1 General

The PROnetplan software allows the preliminary design of PROFINET networks. In an intuitive way, the network can be assembled on a graphic interface. Important network parameters such as capacity utilisation, line depth and occupied ports are calculated and displayed automatically. The simple simulation of communication parameters and changes in network structure allows estimating and planning the utilisation of network capacity.

## 1.2 Disclaimer

Indu-Sol GmbH does not guarantee that the hardware and software will work properly in all application situations. With the technical means available today, it is not possible to develop software that perfectly meets all application requirements without errors. Indu-Sol GmbH therefore rejects any liability for direct or indirect damage arising from the operation of the hardware and software and the usability described in the manual.

## 1.3 Scope of supply

The scope of supply comprises the following individual parts:

• PROnetload Installation CD

## 1.4 System requirements

#### **Operating system**

- Windows 7 32 bit and 64 bit
- Windows 8 32 bit and 64 bit
- Windows 10 32 bit and 64 bit
- Windows 2008 Server
- Windows 2012 Server
- Windows 2016 Server

#### Hardware requirements

- Intel Atom 800MHz or better
- 1GB RAM or better
- Min. 400MB hard disk space



## 2 Installing PROnetload

To start the installation, double-click the setup.exe file, which can be found on the Installation CD.

If not all required Windows components have been pre-installed (e.g. NET Framework 4), the missing components will automatically be installed with the software.

Subsequently the PROnetplan software has to be configured.

Select an appropriate installation path for the installation (see Figure 1) and press 'Next' to start the installation.



🕝 PROnetplan **PROnetplan** ŚŎÙ EDOF. Copying files saving uninstaller register software Finished. Click on Next/Finished. <u>00000</u> 19090 -CAN DeviceNet SafetyBUS p k **SEMV** WIRELESS Back Finished Cancel

Figure 1: Selecting the installation path

Figure 2: Completing the entire installation



## 3 The user interface

In this chapter, the individual menu items are explained.



Figure 3: User interface

## 3.1 Topology

The topology can be created and edited in two different ways.

One way consists in using the functions of the individual devices in order to add additional devices to the network, or to remove them.





In addition to this option, the functions from the menu bar can be used for editing. The following options are available for this purpose:





line depth of a controller domain are shown. **Adding an I/O device:** A controller domain, update rate, number of ports

Adding a controller: For a controller, the network load and the maximum

and payload are assigned to each I/O device. For network planning, the total network load and the network load generated by the device are shown at each I/O device, as well as its own line depth and number of open ports.

Adding a switch: At the switch, the number of ports can be freely selected.

The total load at the switch is displayed, and devices can be added.





Uplink

Add

Connection

Selected element(s) Remove

Selection Multiple

Select New PROFINET devices:

All PROFINET devices:

selection

•

•

frame

1 ms

1 ms

Adding an IP device: IP devices are used if standard Ethernet devices are present in the network, such as e.g. computers, panels, cameras, etc. To establish a communication relation, a server-client connection must be configured.

Adding an uplink: An uplink describes the connection to another network that is separated e.g. by a router, firewall or gateway.

With this function, you can add individual connections between different devices.

All selected elements can be removed with this function.

You can select a group of devices by means of a 'Selection frame' or by 'Multiple selection'. The respective function must be activated.

With this function, you can specify the update rate for new or all I/O devices.



Setting the broadcast load for the network

Undo changes, or apply changes again.



#### 3.1.1 Network access

A network access should be provided for each connection of a controller. The following network access options are available:



#### 3.1.2 Device and connection information

By selecting a device or a connection, all important information can be displayed, e.g. the network configuration, order information, connection type, and a network access.

Controller							
1000				_			
Name:							
Controller 1							
Σ Load: 12.16000%							
Max. line depth: 8							
Free ports:				1			
		_		-			
Ports:			2	7			
IP address:							
192 . 168 .	212		1	٦			
Subpat made							
255 . 255 .	255		0	٦			
		-	-				
Gateway:				_			
192 . 168 .	212	•	1				
Manufacturer de	signa	atic	on:				
S7 300							
Order number:							
	,						
	•						
Memo:				_			
SPS							

Network access: Device: PROFINET-INspekt 🔻 Name: Network access IP address: 192 . 168 . 212 . 200 Subnet mask: 255 . 255 . 255 . Gateway: 192 . 168 . 212 . 254 Manufacturer designation: PROFINET-INspektor NT Order number: 124030100 Memo:

Device 1 (device name):

Device 2 (device name):

Connection type:

Controller 1

Cable link 🔻

Switch 1

1

0

Figure 7: Device information

Figure 8: Connection information



## 3.2 Device list

In the device list, all devices are clearly displayed with the configured settings.

n 1 2 PROnetplan - Indu-Sol GmbH			
Topology View Settings			
Controller 10 device Switch 19 device Uplink Add Device	Add Selected element(s) Selection Multiple frame selection Select	New PROPNET devices: 1 ms 1 ms 1 ms 0,00000 \$ % Update rate Broadcast	
Device type, Device name, Number of ports	Free ports Rayload (Rute) Generated network k	and (S) Local naturals load (S) Allocated controls	ar Manufacturer derivation Order number 10 Subnet mark Gategory Manu
Controller Controller 1 2	lo	12.16	En manufacturen designation of de number de solorier mask, Gateway wiend \$7.100 movementer www.envil.02.168.212.1 [29:555555.6] [20:162.12.1 [29:168.212.1]
Switch Switch 1 8 4	4 0	13.16	0000 00000 0000 102168212.000 052525250 102168212.000
Switch Switch 2 8	5 0	4.48	00000-00000-0000 192168212101 255.255.250 192168212.101
Uplink Uplink 1 1	0	1	popor-nonx 192168212254 255255.0 192168212254 Uplink
Switch Switch 3 8	5 0	8.68	xxxxx-xxxxx-xxxx 192.168.212.102 255.255.0 192.168.212.102
Switch Switch 4 8 6	5 0	3.84	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Switch Switch 5 8 6	5 0	4.84	0000-00000-0000 192.168.212.104 255.255.255.0 192.168.212.104
ID device I/O Device 1 3 1	56 0.64	4.48 Controller 1	0000-00001921062122 2552550 [920462122
10 device µ0 Device 8 µ I	50 0.04	4.84 Controller 1	00000-0000142/102/123 /252/252/50 102/182/123
ID device I/D Device 5 2	0 56 0.64	3.84 Controller 1	mm-mmm-mm/162/162/125 255/25/25/162/162/125
ID device I/O Device 6 2	0 56 0.64	4.2 Controller 1	0000 00000 0000 192 168 212.6 255 255 0 192 168 212.6
IO device I/O Device 7 2 0	0 56 0.64	3.2 Controller 1	xxxxx-xxxxx 192168212.7 2552555.0 192168212.7
IO device I/O Device 8 2 0	56 0.64	3.2 Controller 1	popor-socor-socox 1921682128 2552555.0 1921682128
IO device I/O Device 9 2 0	0 56 0.64	3.56 Controller 1	xxxxx-xxxxx 192168212.9 255.255.0 192168212.9
IO device I/O Device 10  2 0	56 0.64	2.56 Controller 1	ppppr-spope-spo
IO device I/O Device 11  2 0	0 56 0.64	2.56 Controller 1	boxxx-sxxxx 19216821211 25525550 19216821211
IO device I/O Device 12 /2 C	56 0.64	1.92 Controller 1	b0000-0000019216621212 [25525525] 92216821212
10 device 1/0 Device 13 /2 L	50 0.04	1.92 Controller 1	000010000010001 [22:105221213 [25:2525250] [20:105212213
ID device I/D Device 15 /2	) 56 0.64	2.92 Controller 1	0000+00000+0000192-106-211-24 [2522532530 [122:166:212:14] 0000+00000+0000192:106:2112:15 [252:555:55:56] [122:168:212:15
IO device I/O Device 16 2	56 0.64	2.28 Controller 1	xxxx xxx xxx 192.168.212.16 255.255.0 192.168.212.16
IO device I/O Device 17 2 0	0 56 0.64	1.28 Controller 1	xxxxxx xxxx 192.168.212.17 255.255.0 192.168.212.17
IO device I/O Device 18 2	0 56 0.64	1.64 Controller 1	xxxxx-xxxxx 19216821218 25525550 19216821218
IO device I/O Device 19 2 1	L 56 0.64	0.64 Controller 1	xxxxx-xxxxx-xxxx 192.168.212.19 255.255.50 192.168.212.19
IO device I/O Device 20 2 1	L 56 0.64	0.64 Controller 1	00000-00000-0000x192.168.212.20 255.255.0 192.168.212.20
IP device TCP/IP 2 1 C	1	1	IP-Camera poxxx-xxxx192.168.212.240[255.255.0]192.168.212.254
Version 16 (Build 32) Topology Device list			

Figure 8: Device list



## 4 Glossary

#### 4.1 Network load

PROnetplan dynamically shows the resulting load for every connection in the network. This also applies to complex network structures, or networks with multiple controllers. This helps to identify potential bottlenecks already at the planning stage.

## 4.2 Line depth

PROnetplan shows the line depth dynamically for each device. The communication partner can be assigned for every device in the network.

## 4.3 Free ports

Displays remaining free ports on switches and devices. For switches, certain ports are designated strictly for the Service port, and a warning is issued if an attempt is made to assign such ports otherwise.

#### 4.4 Update rate

The update rate can be set uniformly for all devices, or separately at each device. By means of simple simulations, the effects of the selected update rate on the network load can be run through in advance.

## 4.5 Payload

The payload describes the size of the process data to be transmitted. The value can be selected freely between 40 Byte and 1436 Byte.

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