WAGO I/O SYSTEM 750

Modular I/O System

Quick Start WAGO-I/O-IPC 758-870/000-001

Version 3.0.0

WAGO® INNOVATIVE CONNECTIONS

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Every conceivable measure has been taken to ensure the correctness and completeness of this documentation. However, as errors can never be fully excluded, we would appreciate any information or ideas at any time.

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TABLE OF CONTENTS

1 Important Notes

To ensure fast installation and start-up of the units described in this manual, we strongly recommend that the following information and explanations are carefully read and adhered to.

1.1 Legal Principles

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1.1.1 Personnel Qualification

The use of the product described in this manual is exclusively geared to specialists having qualifications in SPS programming, electrical specialists or persons instructed by electrical specialists who are also familiar with the appropriate current standards. WAGO Kontakttechnik GmbH & Co. KG declines any liability resulting from improper action and damage to WAGO products and third party products due to non-observance of the information contained in this document.

1.1.2 Intended Use

For each individual application, the components are supplied from the factory with a dedicated hardware and software configuration. Modifications are only admitted within the framework of the possibilities documented in the manuals. All other changes to the hardware and/or software and any use of the components that is not in accordance with the intended use entail the exclusion of liability on the part of WAGO Kontakttechnik GmbH & Co. KG.

Please direct any requirements pertaining to a modified and/or new hardware or software configuration directly to WAGO Kontakttechnik GmbH & Co. KG.

1.2 Symbols

Danger
Always observe this information to protect persons from injury.

Warning
Warning Always observe this information to prevent damage to the device.

Attention
Marginal conditions that must always be observed to ensure smooth operation.

ESD (Electrostatic Discharge)
Warning of damage to the components through electrostatic discharge. Observe the precautionary measure for handling components at risk of electrostatic discharge.

Note
Routines or advice for efficient use of a device and software optimisation.

Additional information
References to additional literature, manuals, data sheets and INTERNET pages.

1.3 Number Notation

Number code	Example	Note
Decimal	100	Normal notation
Hexadecimal	0x64	C notation
Binary	'100' '0110.0100'	Within ', Nibble separated with dots

1.4 Safety Information

Attention
Switch off the system prior to working on bus modules.

In the event of deformed contacts, the module in question is to be replaced, as its functionality can no longer be ensured on a long-term basis.

The components are not resistant against materials having seeping and insulating properties. Belonging to this group of materials is: e.g. aerosols,silicones, triglycerides (found in some hand creams). If it cannot be ruled out that these materials appear in the component environment, then additional measures are to be taken:
- installation of the components into an appropriate enclosure.
- handling of the components only with clean tools and materials.

Attention
Attention Cleaning of soiled contacts may only be done with ethyl alcohol and leather cloths. Thereby, the ESD information is to be regarded.

Do not use any contact spray. The spray may impair the functioning of the contact area.

The WAGO-I/O-SYSTEM 750 and its components are an open system. It must only be assembled in housings, cabinets or in electrical operation rooms. Access must only be given via a key or tool to authorized qualified personnel.

The relevant valid and applicable standards and guidelines concerning the installation of switch boxes are to be observed.

ESD (Electrostatic Discharge)
The modules are equipped with electronic components that may be destroyedby electrostatic discharge. When handling the modules, ensure that theenvironment (persons, workplace and packing) is well grounded. Avoid touching conductive components, e.g. gold contacts.

1.5 Scope

These quick start instructions describe the start-up of the WAGO-I/O-IPC 758-870/000-001 and the possible configuration of a simple Profibus network.

Each WAGO-I/O-IPC 758-870/000-001 node consists of I/O modules 750-430, -530 and –600. The modules 750-343, -602, -430, -530, and –600 are part of the connected Profibus node.

You will find detailed information about operation, assembly and start-up in the manuals ”WAGO-I/O-IPC“ and ”WAGO-I/O-PRO CAA“. This documentation is hence only valid in connection with the appropriate manuals.

Further information
You can also find the manuals “WAGO-I/O-IPC“ and “WAGO-I/O-PRO CAA“ as PDF files on the ”WAGO-I/O-PRO CAA“ (759-333) CD-ROM and on the Internet under: www.wago.com.

2 Quick Start

2.1 Node Connection and Assembly

Build up both nodes as follows (from left to right):

IPC node: 758-870/000-001; 750-430; 750-530 ; 750-600
Profibus node: 750-343; 750-602; 750-430; 750-530; 750-600

Connect the supplies for the WAGO-I/O-IPC, the Profibus coupler and the power jumper contacts to a DC 24 V power supply unit (e.g. 787-612).
In this example, it would be sufficient for the WAGO-I/O-IPC to connect ”X4 +“ and ”+“ located on the right hand side supply module, or between ”X4 -“ and ”-“ using a wire jumper. It would also be sufficient for the Profibus ECO Coupler to connect the coupler’s “24V“ and the ”+“ of supply module 750-602, or the coupler’s ”0V“ and the “-“ of module 750-602 (see Fig.2.1a, Fig.2.1b).

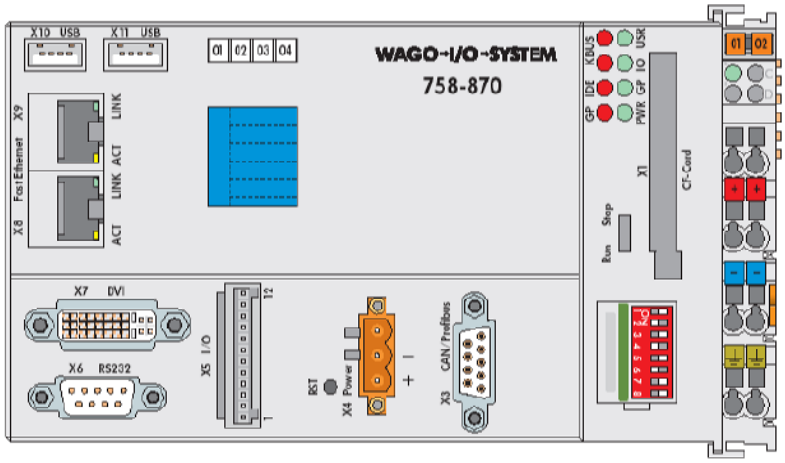

Fig.2.1a: WAGO-I/O-IPC 758-870/000-001

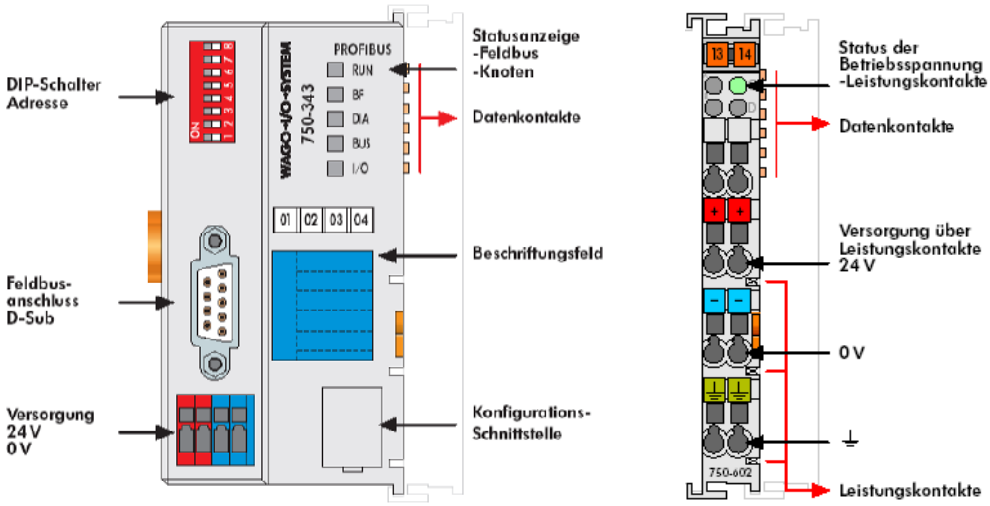

Fig.2.1b: WAGO Profibus DP ECO Fieldbus Coupler 750-343 + 750-602

2.2 Ethernet Network Start-Up

Connect the node to your Ethernet network via the Ethernet port **X9**.

Either connect it directly to a PC using a crossover cable (crossed Ethernet cables) or to a Hub or a Switch using a 1-to-1 patch cable.

Please write down the following Ethernet settings of your PC: the IP address (e.g. 192.168.1.1), the Subnet Mask (e.g. 255.255.0.0) and possibly the Gateway IP address. You can see the settings under Start à Settings à Network and Dialup Connections. Your network administrator can give you more information.

Write down the MAC ID of the Ethernet port X9 of the WAGO-I/O- IPC 758-870/000-001, which you can find on the sticker on the left-hand side of the housing.

Install the “WAGO BootP Server“ which you can find on the ”ELECTRONICC Tools and Docs“ CD (Item No.: 0888-0412/0001-0101) or for free download on the Internet under: www.wago.com "→ Service → Dokumentation → Software".
Click the “Edit Bootptab“ button. Create an entry in the bootptab file with the following structure:

“any name“ : ht=1 : ha= “MAC Id of the coupler“ : ip= ”New IP address of the coupler“ : sm= ”Subnet mask“

Example:

758-870/000-001:ht=1:ha=0030DE001234:ip=192.168.1.2:sm=255.255.0.0:

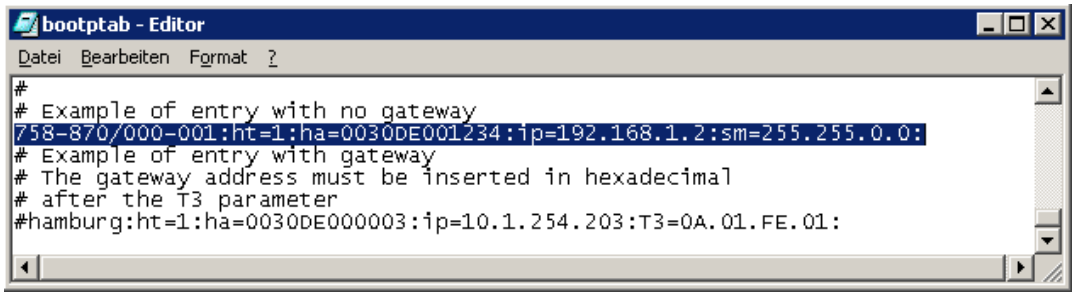

Fig. 2.2: Bootptab editor, entering the Ethernet settings

Restart the BootP server via the “Start“ button and disconnect the fieldbus node from the power supply for approx. 2 s. The WAGO-I/O-IPC 758-870/000-001 will now send a BootP request and will receive the previously set IP address from the BootP server.

Note
The IP address has not yet been stored permanently by the BootP server but only is in the RAM memory of the controller.

Note
The permanent storage of the IP address for the WAGO-I/O-IPC 758-870/000-001 is achieved in a different way it is the case with the ETHERNET fieldbus controller 750-842.

Leave the WAGO-I/O-IPC turned on and turn off the BootP server.

A first test can be performed on the IP address via the Windows console using a single "ping".

Start a browser (e.g. Internet Explorer, Netscape Navigator).

Enter the IP address of the WAGO-I/O-IPC 758-870/000-001 into the address bar of the browser (e.g. http://192.168.1.2).

The Proxy server should be avoided for local addresses.

Further information
Please find more information about avoiding the Proxy server for local addresses in the browser help section under “Proxy server“ and ”LAN settings“.

You will then get access to the integrated Web server’s default Web pages of the WAGO-I/O-IPC (see Fig. 2.3).

Password-protected authentication is required to access the protected pages of the Web server (e.g. to set up the network parameters and protocols) using the following default values:

User:	user
Passwort:	user00

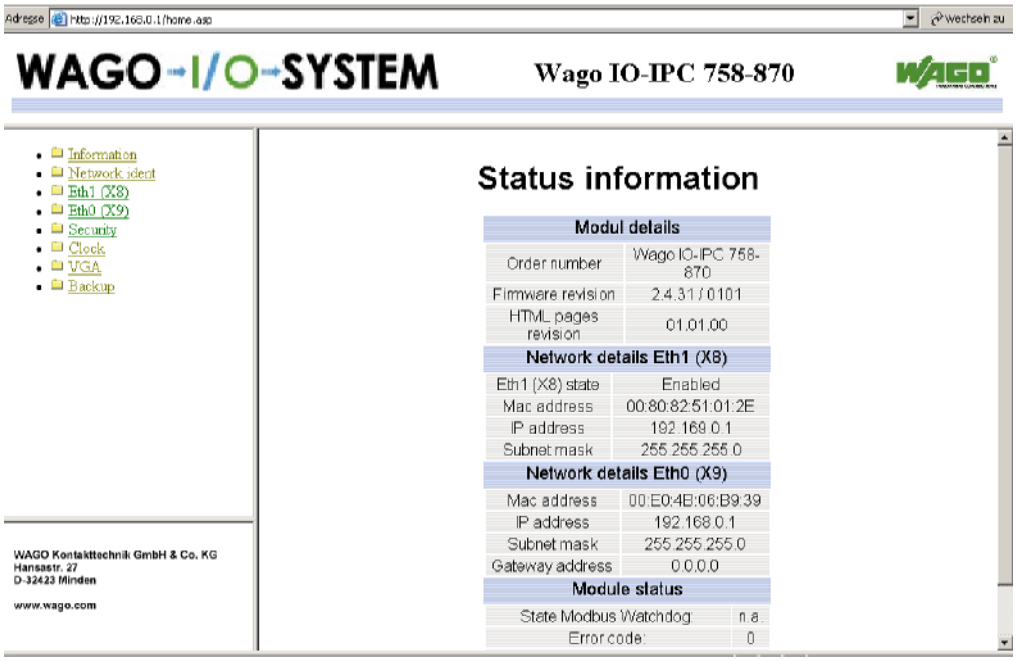

Fig. 2.3: Web server 758-870/000-001 “Top page of the navigation area“

On the first page you will find all relevant device and network settings that can be performed via the ”Web-based management“ of the WAGO-I/O-IPC.

Then, click on “ETH0 (X9) → TCP/IP” in the navigation area. The following page will be displayed (see Fig. 2.4) that allows you to change the TCP/IP parameters of the device.

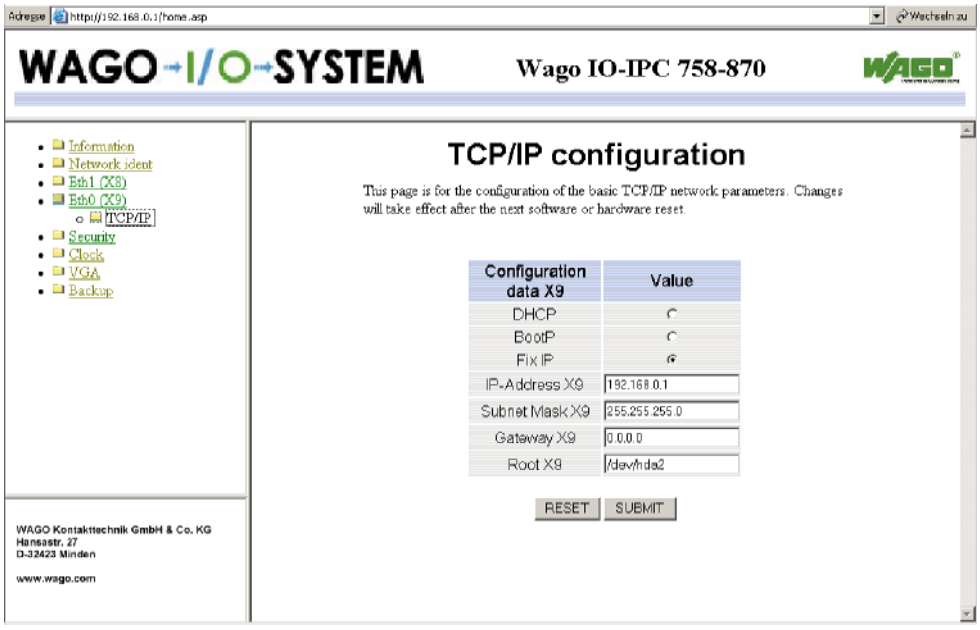

Fig. 2.4: Web server 758-870/000-001 ”TCP/IP configuration“

Select the desired network server and click the “Submit“ button on the Web page (see Fig. 4).

To set a fixed IP address in EEPROM, select “FixIP“ and enter the desired parameters into the list. By default, the values currently assigned via the BootP server can be stored if desired.

The network operation of the WAGO I/O-IPC with BootP requires the continuous presence of a BootP server on the net, which allocates its IP address to the device on restart.

The parameters can be changed at any time via the Web page. A new operation using a BootP server requires that the appropriate mode be reactivated.

You can easily check the IP address by turning the controller power off and on again and then viewing the Web pages using a browser.

Additionally, the protocols can be activated on the “Port configuration“ Web page (e.g. Modbus/TCP, Modbus/UDP, Ethernet/IP). The protocols will be immediately available for the process data communication via Ethernet.

2.3 The First Program

Prerequisite:
The WAGO-I/O-PRO CAA software has to be installed correctly and started. The target files required for the WAGO-I/O-IPC 758-870/000-001 must also be installed.

More information
More information Please find detailed information on how to install the different software components in the manual of the ”WAGO-I/O-PRO CAA“ (759-911) CD

Before programming the 758-870/000-001, the desired target settings have to be made. This is done when a new project is created or later under “→ Resources → Target settings“.

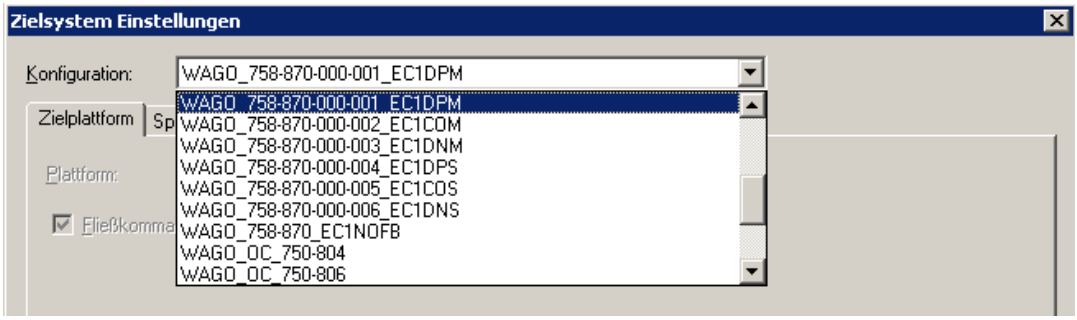

Fig. 2.5: WAGO-I/O-PRO CAA, target settings (1)

Select “WAGO, 758-870/000-001_EC1DPM“ (see Fig.2.5, Fig. 2.6).

All other target settings can be kept.

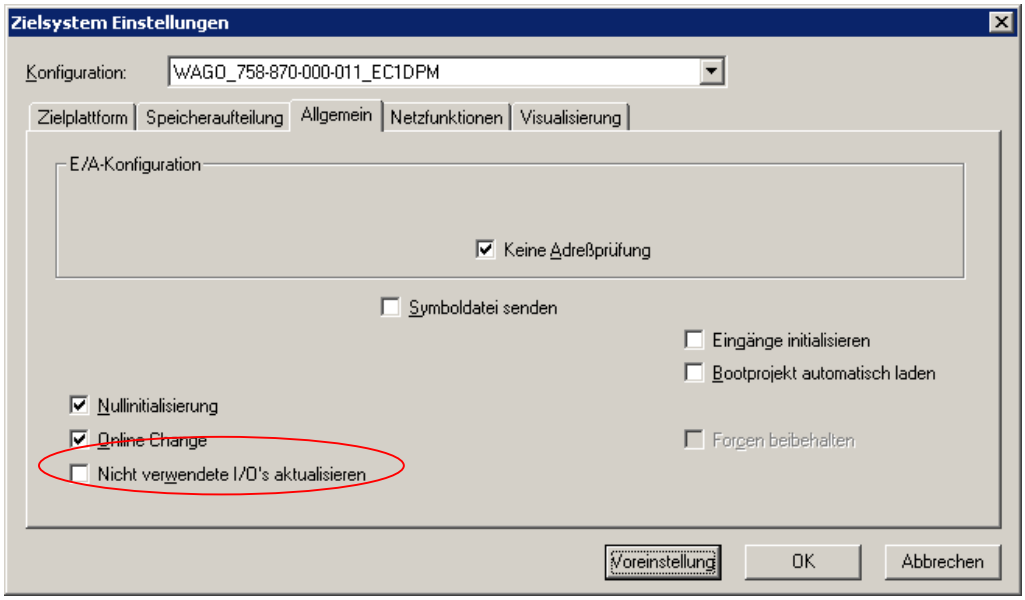
Zielsystem Einstellungen
Konfiguration:
WAGO_758-870-000-011_EC1DPM
Zielplattform
Speicheraufteilung
Allgemein
Netzfunktionen
Visualisierung
E/A-Konfiguration
Keine Adreßprüfung
Symboldatei senden
Eingänge initialisieren
Bootprojekt automatisch laden
Nullinitialisierung
Online Change
Forcen beibehalten
Nicht verwendete I/O's aktualisieren
Voreinstellung
OK
Abbrechen

Fig. 2.6: WAGO-I/O-PRO CAA, target settings (2)

Note
When the box of the selection menu **"Update unused I/O modules"** is checked, the data that has not been allocated in the PLC configuration will be updated and can be examined for debugging purposes.

More information
Please find more information on the supported functions in the Readme file of the WAGO-I/O-IPC 758-870/000-001 or WAGO-I/O-PRO CAA.

Now a small project will be created without Profibus connection (see description in section 2.5). Only the inputs and outputs that are directly connected are available.

A new POU “PLC_PRG“ is created using the programming language ”ST“ (Fig.2.7).

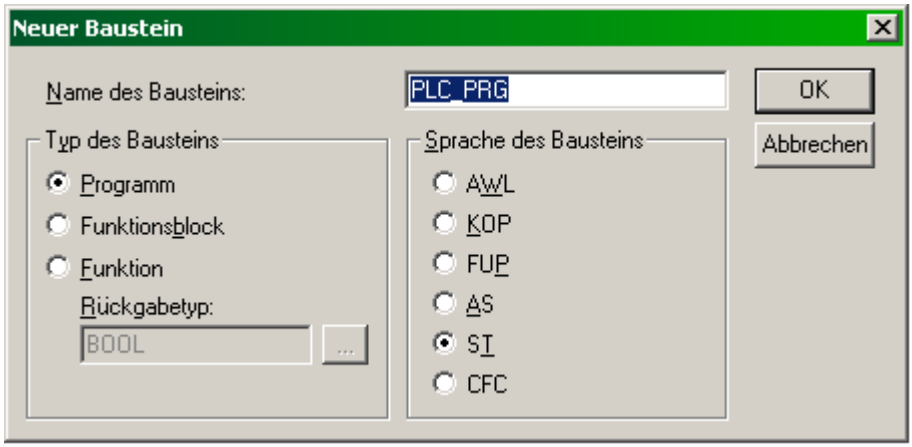

Fig.2.7: WAGO-I/O-PRO CAA, Creating a new POU

Under→ PLC Configuration the WAGO-I/O-IPC 758-870/000-001 can now be seen with its basic parameters, e.g. addresses of the inputs and outputs (see Fig.2.8).

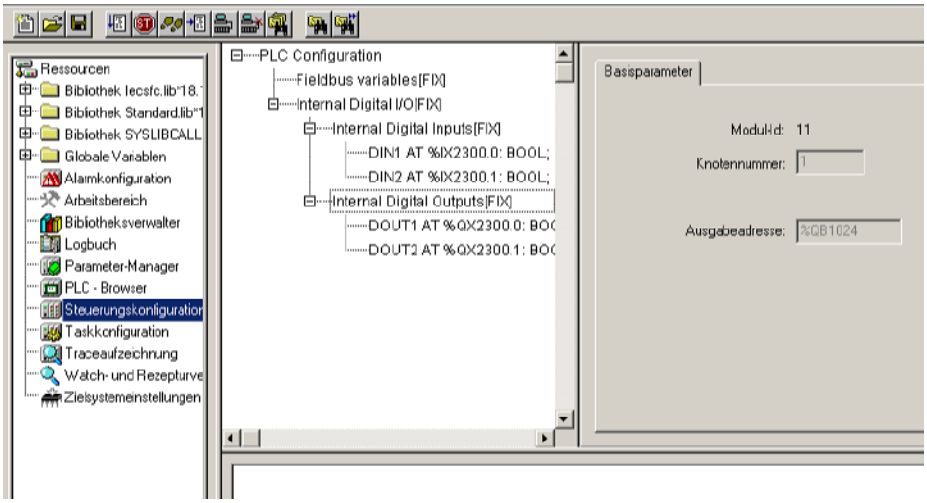

Fig.2.8: WAGO-I/O-PRO CAA, PLC Configuration

The simplest configuration would be the WAGO-I/O-IPC 758-870/000-001 with only one digital input module and one digital output module. The local process image will then look like the following (byte declaration):

```
Input_Byte      AT    %IB0:     BYTE;
Output_Byte     AT    %QB0:     BYTE;
```

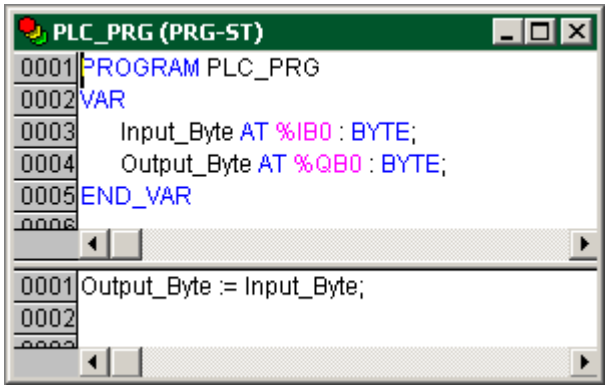

Fig.2.9: WAGO-I/O-PRO CAA, Declaration and assignment in the PLC-PRG

A simple assignment could be:

Output_Byte := Input_Byte;

The inputs are thus directly assigned to the outputs (see Fig.2.9).

To be run, the finished program must be assigned to a task so that it can be linked to the desired priority and type of task. In the first example, our program is assigned to a free-running task with the priority 1. The appropriate menu will be displayed by clicking the right mouse button in the task configuration (see Fig. 2.10).

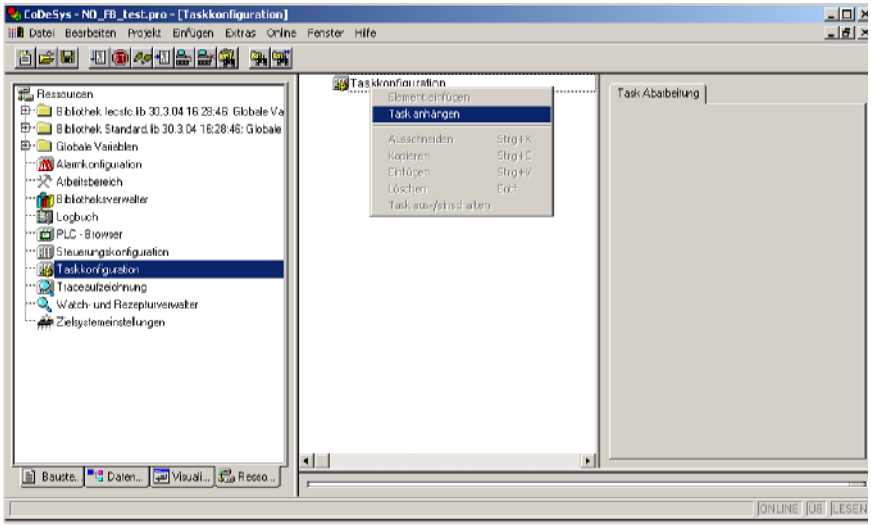

Fig.2.10: Task configuration, creating a task

The created program will then be attached to the newly created task in another menu (also using the right mouse button) (see Fig. 2.11).

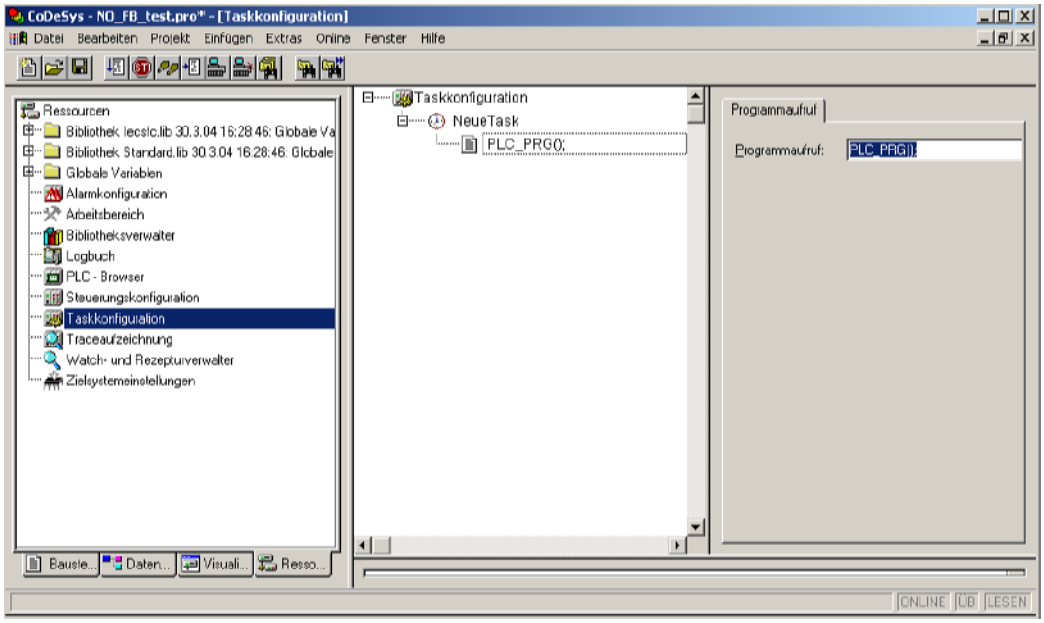

Fig.2.11: Task configuration, assigning the program to the task

The program has now been created. Task changes can be performed subsequently over and over again.

If the test program can be compiled without any problems it can then be loaded into the WAGO-I/O-IPC 758-870/000-001.

The compilation is started via "→ Project → Rebuild all".

2.4 Program Download to the 758-870/000-001

Click "→ Online → Communication parameter" in the menu and create a new communication channel (see Fig.2.12).
Select Tcp/Ip driver (Level 2 Route) and give it a name. Enter the IP address of your coupler (e.g. 192.168.1.2) under “IP address“.

Note
The Ethernet connection of the programming computer to the WAGO-I/O-IPC 758-870/000-001 is done via Port 1200, which must be entered in the communication parameters..

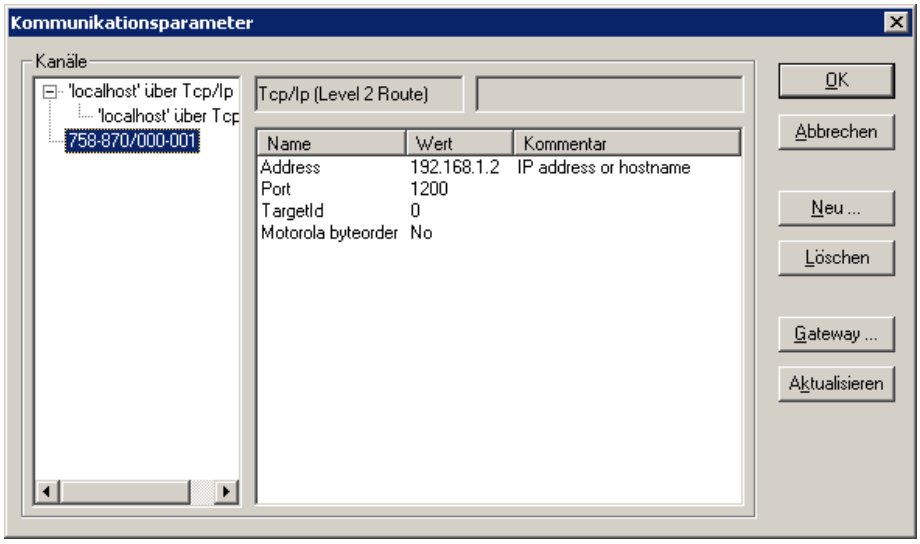

Fig.2.12: WAGO-I/O-PRO CAA, creating a new communication channel

Please note that the simulation is deactivated.

You can now download the program via "→ Online → Login“.

Start the program via "→ Online → Start".

Note
With the demo version of WAGO-I/O-PRO CAA it is not possible to store programs permanently; i.e. the program must be downloaded and started anew after a power failure.

2.5 The First Program with Profibus Connection

2.5.1 Profibus Network Configuration

The application program must first be configured before it can access the connected Profibus network.

The devices can be directly configured using the WAGO-I/O-PRO CAA programming software under → PLC Configuration.

In a first step, the internal Profibus master should be activated and appended to the target. This is done by right-clicking the mouse on “PLC Configuration“ and then on ”Append EC1-DEB-DPM“ (see Fig.2.13).

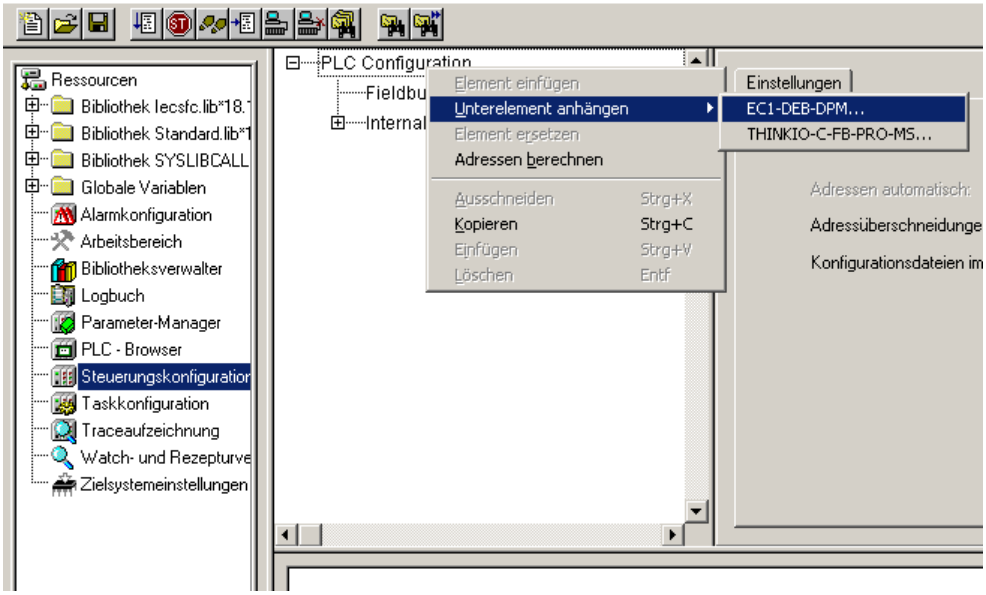

Fig.2.13: WAGO-I/O-PRO CAA, appending the Profibus master

Adding Profibus slaves (here 750-343) as “sub-elements“ to the Profibus master is done in the same way (see Fig. 2.14).

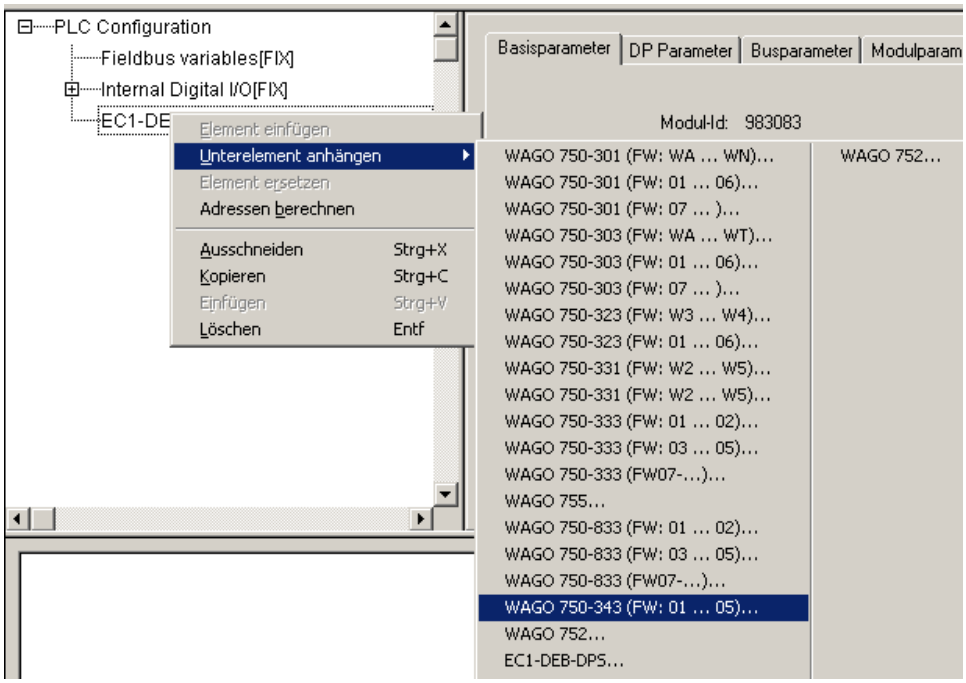

Fig.2.14: WAGO-I/O-PRO CAA, appending Profibus slaves

Note
The GSD files of current WAGO-I/O-System components are automatically integrated into the target files of the WAGO-I/O-IPC 758-870/000-001. To connect devices that are not from WAGO, the appropriate GSD files must be used. For connection see WAGO-I/O-IPC 758-870/000-001 manual..

In the configuration tree, click on Profibus DP coupler 750-343. In menu "→ Inputs/Outputs", the Profibus node's modules selected from the list can be loaded into the configuration according the their physical order from left to right (see Fig.2.15).

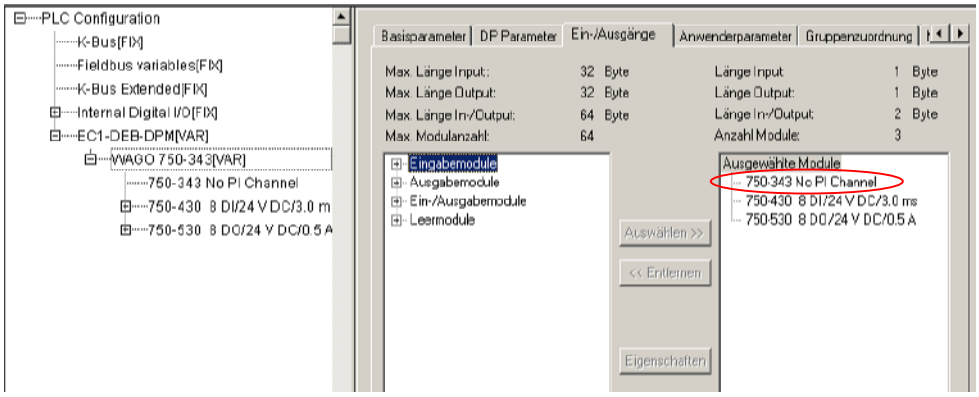

Fig.2.15: WAGO-I/O-PRO CAA, selecting modules

Note
Before selecting the modules of the node, the coupler's first entry should be "750-343 No Pi Channel" (which is to be found under "empty modules") (see. Fig.2.15).

Note
Modules without process data (e.g. supply modules, end module...) are irrelevant when configuring the Profibus and are thus not included in the GSD-file selection list.

Click on menu → Basic parameters for Profibus DP coupler 750-343 and extract the default addresses of the process data within the node (see Fig.2.16). No changes need to be done here for the example program..

Fig.2.16: WAGO-I/O-PRO CAA, basic parameters, address allocation

The station address in Profibus is specified under menu "→ DP parameters“. Entry “2“ is automatically generated for the first node (see Fig.2.17).

This entry should match the node address set on the Profibus slave DIP switches.

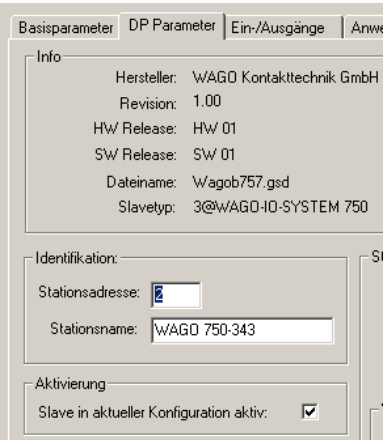

Fig.2.17: WAGO-I/O-PRO CAA, DP parameters

The basic parameters of the Profibus node have now been set.

2.5.2 The First Program for the Profibus Node

Using a small example program, the process image of the WAGO-IO-IPC 758-870/000-001 will look like the following (byte declaration):

```
PB_Input_Byte     AT    %IB4800:    BYTE;
PB_Output_Byte    AT    %QB4800:    BYTE;
```

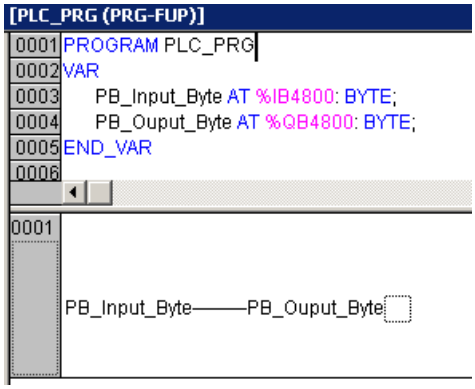

Fig. 2.18: WAGO-I/O-PRO CAA, declaration and statement part of the PLC-PRG in FBD

For a simple assignment in the statement part of the program see Fig.2.18. The inputs are directly assigned to the outputs.

If the test program can be compiled without any problems it can then be loaded into the WAGO-I/O-IPC 758-870/000-001.

The compilation is started via "→ Project → Rebuild all".

The program download has already been described in section 2.4.

Profibus is automatically initialized when the user program starts.

Note
If Profibus is stopped, e.g. by pulling the Profibus cable out, the WAGO-I/O-IPC 758-870/000-001 must be reset via "→ Online → Reset (origin)" and the program has to be reloaded..

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