

# IL ETH BK DI8 DO4 2TX-PAC: IP ASSIGNMENT & WATCHDOG

IL ETH BK DI8 DO4 2TX-PAC:  
IP Address Assignment With the "IP Assignment Tool"  
and Setting the Process Data Watchdog



## AUTOMATION

Application Note  
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### Description

This document describes:

- The use of the "IP Assignment Tool" software to assign IP parameters for the IL ETH BK DI8 DO4 2TX-PAC bus coupler.
- The function and options for changing the process data watchdog.

### Requirements

The following are required when assigning the IP parameters for the bus coupler:

#### Hardware

1. PC or laptop with operating system Windows 95 or later (referred to below as the PC)
2. IL ETH BK DI8 DO4 2TX-PAC bus coupler, which is connected to a 24 V supply voltage
3. Network cable for a direct connection between the PC and bus coupler

#### Software

IPAssign.exe

This software can be downloaded free of charge at  
[www.download.phoenixcontact.com](http://www.download.phoenixcontact.com).



Windows 95, Windows 98, Windows NT, Windows 2000, Windows XP, and Windows Vista are trademarks of the Microsoft Corporation.



Make sure you always use the latest documentation.  
It can be downloaded at [www.download.phoenixcontact.com](http://www.download.phoenixcontact.com).  
A conversion table is available on the Internet at  
[www.download.phoenixcontact.com/general/7000\\_en\\_00.pdf](http://www.download.phoenixcontact.com/general/7000_en_00.pdf).



This application note is valid for all products listed on the following page:

## Ordering Data

### Product

| Description  | Type                      | Order No. | Pcs./Pck. |
|--|---------------------------|-----------|-----------|
| Inline bus coupler for Ethernet with eight digital inputs and four digital outputs | IL ETH BK DI8 DO4 2TX-PAC | 2703981   | 1         |

### Software

| Description                                   | Type         | Order No.  | Pcs./Pck. |
|---|--------------|--|-----------|
| BootP IP addressing tool (IP Assignment Tool) | IPAssign.exe | This software can be downloaded free of charge at <a href="http://www.download.phoenixcontact.com">www.download.phoenixcontact.com</a> . |           |

### Documentation

| Description  | Type                            | Order No. | Pcs./Pck. |
|--|---------------------------------|-----------|-----------|
| Data sheet:<br>"Inline Bus Coupler for Ethernet With 8 Digital Inputs and 4 Digital Outputs" | DB EN IL ETH BK DI8 DO4 2TX-PAC | 7275      | –         |

## Installing Hardware

- Install the hardware according to your requirements. When creating the Inline station, use only Inline terminals, which are supported by the bus coupler (see "I/O Modules on Bus Couplers" data sheet).
- Connect the supply voltage. Please refer to the information in the data sheet for the bus coupler.
- Select the network cable and connect your PC to the bus coupler. The bus coupler has auto crossing. This means you can use any type of network cable (1:1 or crossover cable).

Once the PC has been connected correctly to the bus coupler, the Link LEDs light up on both the PC and the bus coupler, indicating the correct physical link between both components.

## IP Address Assignment (General)

For communication between the PC and the bus coupler, both devices require an IP address.

The IP address of the PC is set via the Control Panel.

The IP address of the bus coupler is 0.0.0.0 by default upon delivery and can be assigned individually by the user. The bus coupler uses the BootP protocol for IP address assignment. The bus coupler transmits BootP requests in regular cycles until IP address assignment is successful.

A wide range of BootP servers are available on the Internet. Any one of these programs can be used for address assignment.

This application note explains IP address assignment using the "IP Assignment Tool" software.

## Notes on BootP

During initial startup, the bus coupler transmits BootP requests without interruption until it receives a valid IP address. The requests are transmitted at varying intervals (2 s, 4 s, 8 s, 2 s, 4 s, etc.). As soon as the bus coupler receives a correct IP address, no further BootP requests are transmitted.

If the bus coupler already has a valid IP address and BootP is not disabled, it only transmits three more BootP requests on a restart. If it receives a BootP reply, the new parameters are saved. If the bus coupler does not receive a reply, it starts with the previous configuration. To make the bus coupler transmit three more BootP requests, reset the bus coupler or remove and reconnect the power supply to the bus coupler.

If BootP is disabled and a valid configuration is available, the bus coupler starts immediately and does not transmit a BootP request. To make the bus coupler transmit BootP requests again, restore the factory settings by pressing the reset button while connecting the power supply.

If no BootP requests are reported in the BootP IP addressing tool during initial startup or following a reset/connection of the power supply, even though BootP is active, it may be that the firewall for your operating system is preventing communication attempts by the bus coupler. In this case, check the firewall settings.

## IP Address Assignment With IPAssign.exe

### Step 1: Download and Execute Program

- On the Internet, select the link [www.download.phoenixcontact.com](http://www.download.phoenixcontact.com).
- In the search mask, enter the order number for the bus coupler.

The BootP IP addressing tool is under "Configuration file".

- Double-click on the "IPAssign.exe" file.
- In the window that opens, select "Run".

### Step 2: "IP Assignment Wizard"

The program is opened and the start screen for the addressing tool is displayed.



Figure 1 Start screen

For reasons of internationality, the program is mostly in English. The program buttons change according to your country-specific settings.

The IP address of the PC is displayed on the start screen. This helps in later steps when addressing the bus coupler.

- Select "Next".

### Step 3: "IP Address Request Listener"

In the window that opens, all devices that transmit a BootP request are listed and wait for a new IP address.

Please refer to the notes in "Notes on BootP" on page 3.

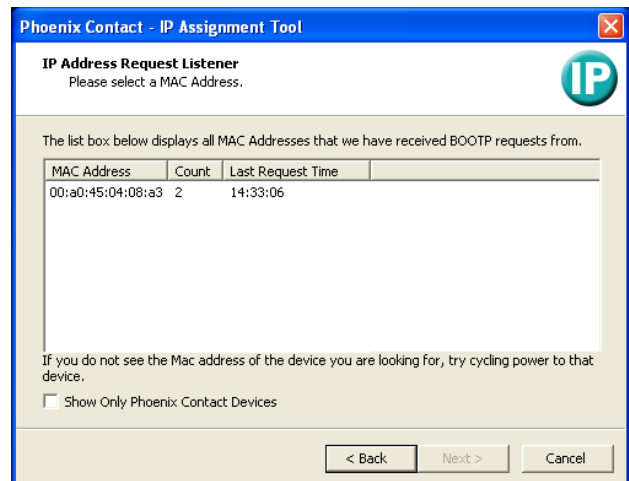


Figure 2 "IP Address Request Listener" window

In this example, the bus coupler has the MAC ID 00.A0.45.04.08.A3.

- Select the device to which you would like to assign an IP address.
- Select "Next".

**Step 4: "Set IP Address"**

In the window that opens, the following information is displayed:

- IP address of the PC
- MAC address of the selected device
- IP parameters of the selected device (IP address, subnet mask, and gateway address)
- Any incorrect settings

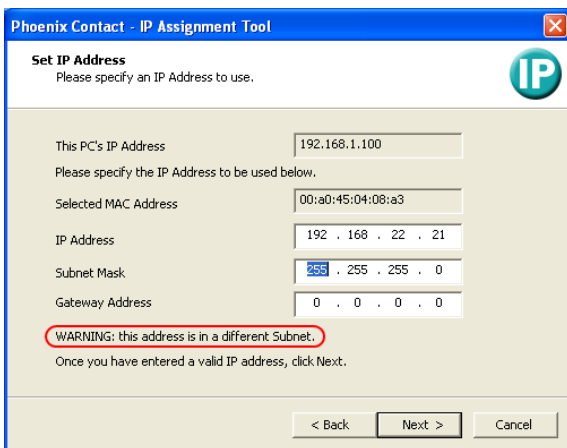


Figure 3 "Set IP Address" window with incorrect settings

- Adapt the IP parameters to your requirements.

Once all the data is correct, a message indicates that a valid IP address has been set.

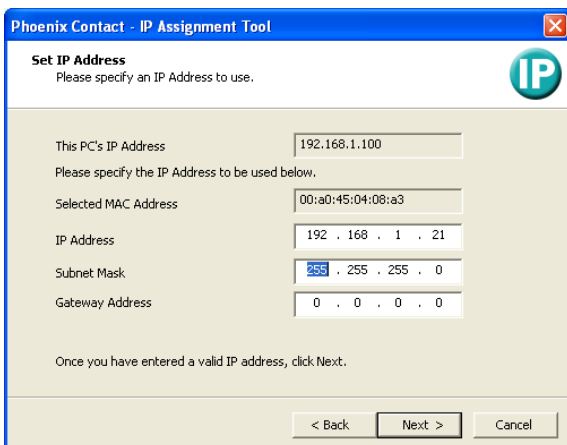


Figure 4 "Set IP Address" window with correct settings

- Select "Next".

**Step 5: "Assign IP Address"**

The program attempts to transmit the set IP parameters to the bus coupler.

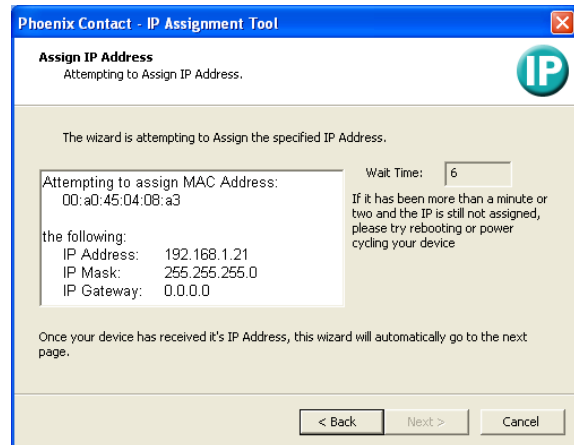


Figure 5 "Assign IP Address" window

Following successful transmission, the next window opens.

**Step 6: Completing IP Address Assignment**

The following window indicates that IP address assignment has been completed successfully. It provides an overview of the IP parameters which have been transmitted to the device with the displayed MAC address.

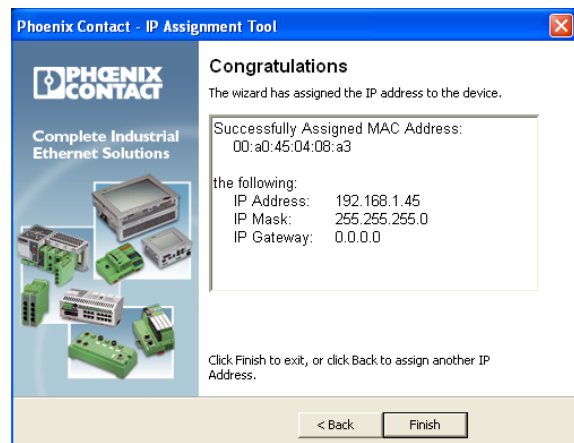


Figure 6 "Congratulations" window

To assign IP parameters for other devices:

- Select "Back".

To exit IP address assignment:

- Select "Finish".



After assigning the IP address, reset the bus coupler. Full functionality is now ensured. After the reset, IP address assignment is complete.



The IP parameters can be changed again at any time, if required.

## Process Data Watchdog

A process data watchdog is integrated into the IL ETH BK DI8 DO4 2TX-PAC to avoid uncontrolled setting/resetting of the IO station outputs in the event of an error.

If station outputs are set, the controlling process must be able to access the station. In the event of an error, e.g., a network cable interrupt or a function error in the controlling process, the bus coupler can respond accordingly via the process data watchdog. By default upon delivery, the watchdog is activated with a 500 ms timeout. The first write process activates the process data watchdog. The next write process is expected during the timeout period. During error-free operation, the write process is performed during the timeout period and the watchdog is restarted (triggered).

### NET FAIL

If there is no triggering during timeout, an error occurred. Two responses follow:

- The selected fault response mode, which specifies how inputs and outputs should respond, is executed.
- The Netfail signal is set.  
The Netfail LED lights up red.

For safety reasons, the user cannot stop the watchdog once it has been activated. If the user terminates the controlling application, there is no watchdog triggering. When the timeout period elapses, the Netfail signal is set and the selected fault response mode is executed. After the watchdog has been triggered, the outputs are only enabled again after acknowledgment.

## Configuration of the Process Data Watchdog

The process data watchdog timeout period can be configured from 200 ms to 65000 ms.

Timeout periods can be set via web-based management, by writing to Modbus register 2000 or using the "Set\_Value" service for variable 2233<sub>hex</sub>. By default upon delivery, the process data watchdog is activated with a 500 ms timeout period.

Read calls do not trigger the process data watchdog.

When the error is acknowledged, the watchdog is restarted. This means that it must be triggered during the timeout period, otherwise an error is indicated again.

Timeout periods can only be changed if the watchdog is in the "INIT" state. The "INIT" state is present in the following cases:

- After a power up, provided no process data exchange has taken place
- When a timeout has occurred and fault response has been activated, and Netfail has not yet been acknowledged

## Bus Coupler Web Page

Figure 7 shows the web page for the bus coupler, on which the process data watchdog can be set. By default upon delivery, the password for setting the time is "private".

| Process Data Monitoring  |  |
|--|--|
| Fault Response Mode  | <input checked="" type="radio"/> Reset Fault Mode (default)<br><input type="radio"/> Standard Fault Mode<br><input type="radio"/> Hold Last State Mode                                     |
| Process Data Watchdog Timeout  | <input type="text" value="500"/> ms<br><small>The time is indicated in milliseconds and ranges from 200 ms to 65,000 ms. A value of 0 ms disables the Process OUT Data Monitoring.</small> |
| <input type="text" value="Enter password"/> <input type="button" value="Apply"/>   |  |
| <b>Network Failure</b>   |  |
| Status   | No network failure (nF) occurred.  |
| <input type="text" value="Enter password"/> <input type="button" value="Confirm"/> |  |

Figure 7 Bus coupler web page



For test purposes outside a system, the watchdog can also be deactivated using the value "0".



When the watchdog is deactivated, the connected system parts are not protected.