

# User Manual

## Connection to IBH Soft-PLC

Part Number: 80 860.662

Version: 2

Date: 22.11.2005

Valid for: TSwin .net 4.0x  
TSwin .net 4.1x

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<b>Version</b>	<b>Date</b>	<b>Modifications</b>
1	05.08.2005	First edition
2	22.11.2005	Validation extended, chapter "Important Notes" added

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# 1 Important Notes

## 1.1 Symbols

The symbols in this manual are used to draw your attention on notes and dangers.



### **Danger**

This symbol is used to refer to instructions which, if ignored or not carefully followed could result in personal injury.



### **Note**

This symbol indicates application tips or supplementary notes.



### **Reference to source of information**

This symbol refers to detailed sources of information on the current topic.

## 1.2 Safety Notes

- Read this manual carefully before using the operating device. Keep this manual in a place where it is always accessible to all users.
- Proper transportation, handling and storage, placement and installation of this product are prerequisites for its subsequent flawless and safe operation.
- This user manual contains the most important information for the safe operation of the device.
- The user manual, in particular the safety notes, must be observed by all personnel working with the device.
- Observe the accident prevention rules and regulations that apply to the operating site.
- Installation and operation must only be carried out by qualified and trained personnel.

## 1.3 Intended Use

- The device is designed for use in the industry.
- The device is state-of-the-art and has been built to the latest standard safety requirements. However, dangerous situations or damage to the machine itself or other property can arise from the use of this device.
- The device fulfills the requirements of the EMC directives and harmonized European standards. Any modifications to the system can influence the EMC behavior.

## 1.4 Target Group

All configuration and programming work in connection with the automation system must be performed by trained personnel only (e.g. qualified electricians, electrical engineers).

The configuration and programming personnel must be familiar with the safety concepts of automation technology.

## 2 IBH Soft-PLC

The IBH Soft-PLC protocol only applies to TesiP@n operating devices that are equipped with the TSvisRT CE runtime system.

### 2.1 Data Types

Access via this protocol is possible to the following native data types.

Table 2-1 Native data types, IBH Soft-PLC

Data Type	Range of Values	Comment
BIT	0, 1	
BYTE	8 Bit	
WORD	16 Bit	High Byte, Low Byte
DWORD	32 Bit	High Word, Low Word
Array of Bytes	Multiple of 8 Bit	
OctetString	Multiple of 8 Bit	
BitString	1 Or More Bytes	1st Byte, 2nd Byte, 3rd Byte, etc.

The programming software provides direct access to the following data types.

Table 2-2 Data types, IBH Soft-PLC

Data Type	Mnemonic	Range of Values
Flag Bit	M	0.0 to 16383.7
Input Bit	E	0.0 to 16383.7
Output Bit	A	0.0 to 16383.7
Flag Byte	MB	0 to 16383
Input Byte	EB	0 to 16383
Output Byte	AB	0 to 16383
Flag Word	MW	0 to 16382
Input Word	EW	0 to 16382
Output Word	AW	0 to 16382
Flag Double-Word	MD	0 to 16380
Input Double-Word	ED	0 to 16380
Output Double-Word	AD	0 to 16380
Data Block Bit	DB DBX	DB 0 DBX 0 to DB 8183 DBX 65535.7
Data Block Byte	DB DBB	DB 0 DBB 0 to DB 8192 DBB 65535
Data Block Word	DB DBW	DB 0 DBW 0 to DB 8192 DBW 65534

Table 2-2 Data types, IBH Soft-PLC

Data Type	Mnemonic	Range of Values
Data Block Double-Word	DB DBD	DB 0 DBD 0 to DB 8192 DBD 65532
SIMATIC S7 Counter	Z	Z 0 to Z 512
SIMATIC S7 Timer	T	T 0 to T 512

## 2.2 Programming

### 2.2.1 Protocol Parameters

With the protocol parameters, you can adapt the communication of the controller used.

#### 2.2.1.1 Timeout for Response

This parameter specifies how long the operating device waits for a response from the PLC.

Table 2-3 Timeout for response

Configurable Values	Default Value
0 ms to 65535 ms	1000 ms

#### 2.2.1.2 Delay until Connection Set-Up

This parameter specifies the waiting time after which the operating device starts the communication.

Table 2-4 Delay until connection set-up

Configurable Values	Default Value
0 s to 20 s	2 s

## 2.2.2 Input Syntax

The following image illustrates the structure of the input syntax for variables in the programming software.

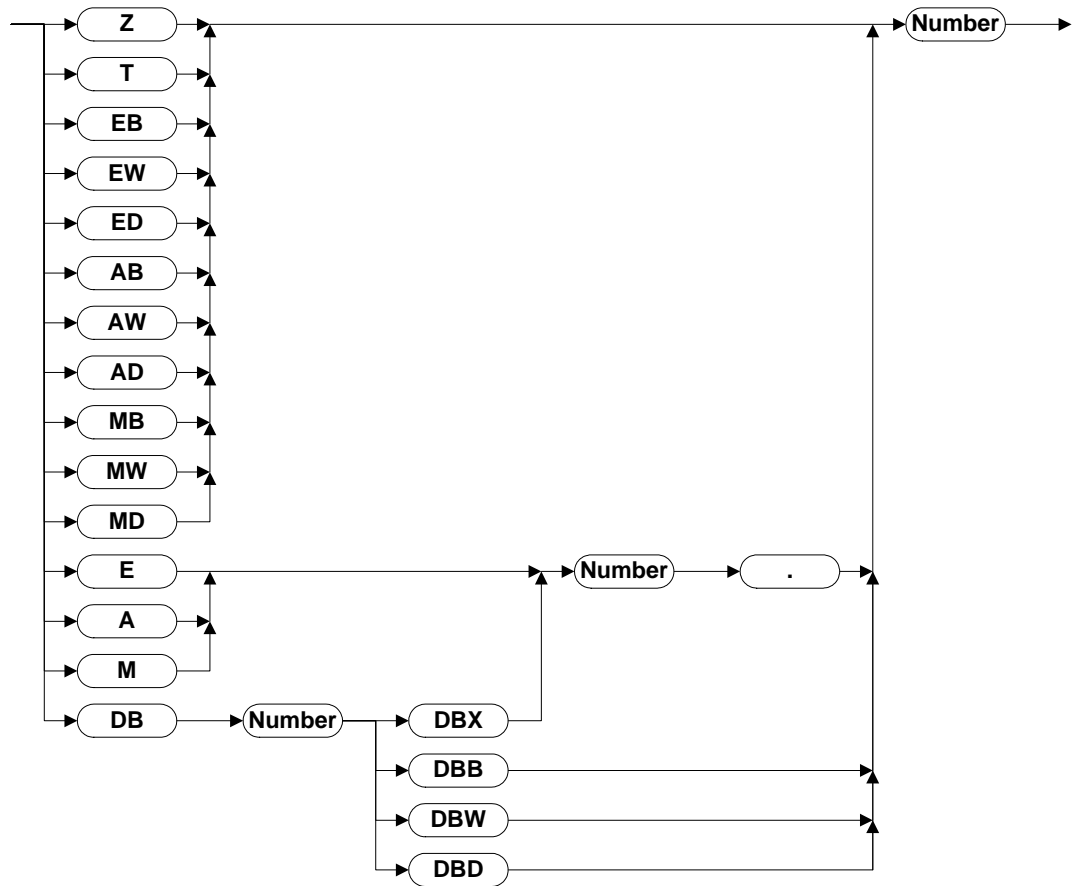


Figure 2-1 Syntax diagram

## 2.3 Error Messages

Error messages are displayed on the operating device along with a code and sub-code. Error messages are composed as follows:

Communication Error

Code           XXXXX

Subcode       XXXXX

Retries        XXXXX

Table 2-5 Error messages for IBH Soft-PLC

Code	Subcode	Description	Possible Cause
50		DLL not found	File IBH_PLC.DLL not loaded or contains errors.
51		Exception error	Access to IBH_PLC.DLL failed.
52		Access error	Write or Read Access to IBH_PLC.DLL failed. Perhaps you entered a wrong address.
53		Error during memory access	Memory access to IBH_PLC.DLL failed. Perhaps there is not enough memory.

## 2.4 Applications

### 2.4.1 Soft-PLC S7 315 with PROFIBUS

If you are setting the field bus (Profibus) parameters with the SyCon configurator, select the option **CIF30-DPM / CIF104-DPM /-R** for the master controller board.

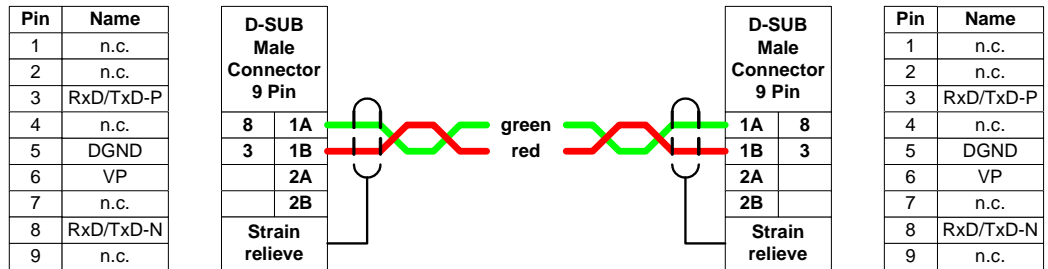


Figure 2-2 Cable for PROFIBUS

#### 2.4.1.1 Termination

Terminate the PROFIBUS at both ends by terminating resistors. If you are using special PROFIBUS connectors, these resistors are usually integrated into the connector and can be connected.

### 2.4.2 Soft-PLC S7 315 with CANopen or DeviceNet

If you are setting the field bus CANopen parameters with the SyCon configurator, select the option **CIF30-COM** for the master controller board. For the field bus DeviceNet select the option **CIF30-DNM** for the master controller board.

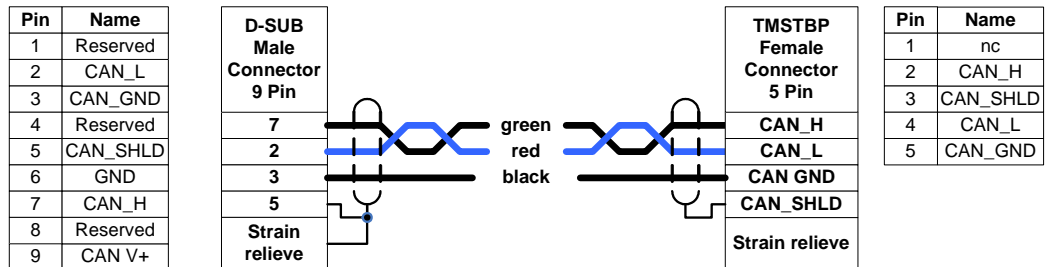


Figure 2-3 Cable for CANopen and DeviceNet

#### 2.4.2.1 Termination

Terminate the CAN bus at both ends by terminating resistors (120 Ohm).

### 2.4.3 Connection Settings with IBHNet

Before you can use the Simatic S7 Manager to access the IBH Soft-PLC, you need to configure IBHNet for the communication of the Soft-PLC with the Simatic S7 Manager. The name of the resulting connection configuration is made available in the Simatic S7 Manager.

1. Start IBHsoftec's program **IBHNet**.

The **IBH network settings** dialog appears.

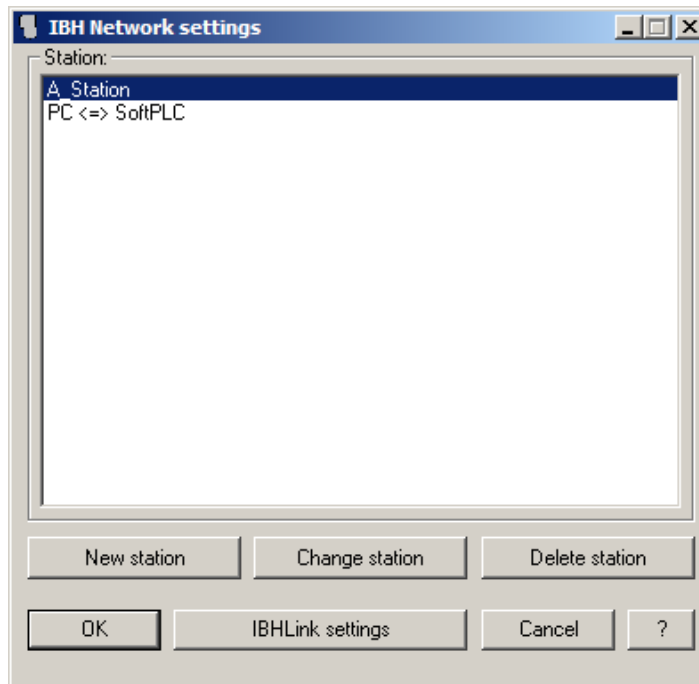


Figure 2-4 Dialog IBH network settings

2. Click the **New station** button.

The **Station** dialog appears.

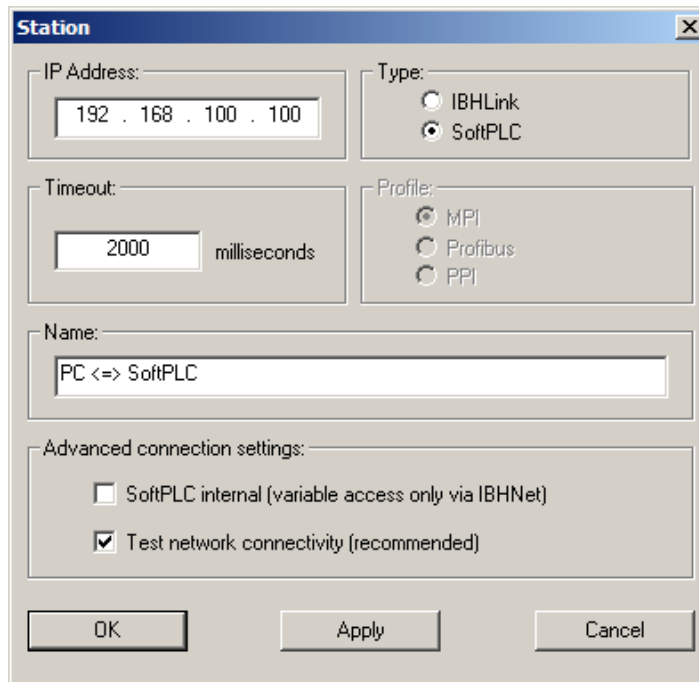


Figure 2-5 Dialog Station

3. In the **IP address** area, enter the IP address for your TesiP@n operating device (the IP address shown in the figure is simply an example).
4. In the **Type** area, activate the option **SoftPLC**.
5. In the **Timeout** area, enter a time of 2000 ms.

6. In the **Name** area, enter a unique name for the connection configuration (example: PC <=> SoftPLC).
7. In the **Advanced connection options** area, select the **Test network connectivity** check box .
8. Confirm the **Station** dialog with **OK**.
9. Confirm the **IBH network settings** dialog with **OK**.
10. The IBHNet configurator is automatically closed.

You have now configured the interface for the communication between the Simatic S7 Manager and the IBH Soft-PLC.



To determine the IP address of the operating device, start the operating device up with the connected Ethernet cable. Double-click the network icon in the taskbar or call up the **Command Prompt** program. In this program, enter the command **ipconfig**.

## 2.4.4 Connection Between Simatic S7 Manager And IBH Soft-PLC

1. Start up the **Simatic S7 Manager**.
2. Select **Set PG/PC interface** from the **Tools (Extras)** menu.

The **Set PG/PC interface** appears.

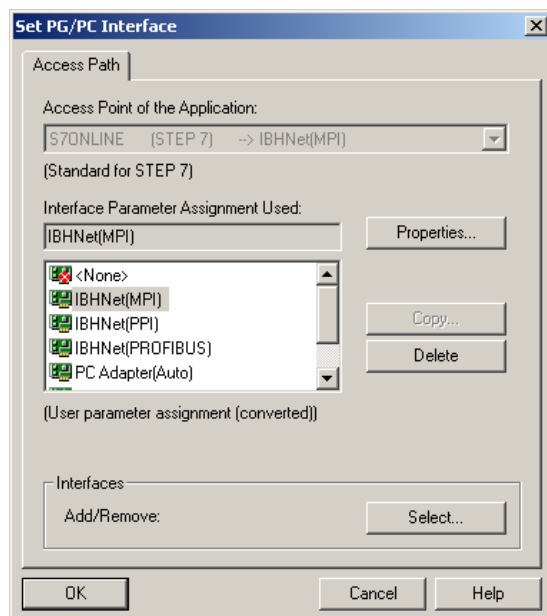


Figure 2-6 Dialog Set PG/PC interface

3. Select **IBHNet(MPI)** from the list and click the **Properties** button.



You must select the option **IBHNet(MPI)** irrespective of what bus system (PROFIBUS, CAN or DeviceNet) you choose!

The **IBH Network (MPI)** dialog appears.

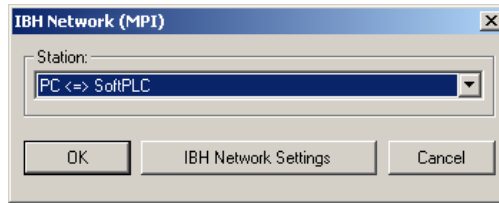


Figure 2-7 Dialog IBH Network (MPI)

4. Select the station created with IBHNet (example: PC <=> SoftPLC).
5. Click **OK** to confirm your selection.

You are returned to the "Set PG/PC interface" dialog.

6. Click **OK** to confirm your input.

You are now ready to establish a connection between a PC or programming unit and an operating device using an Ethernet cable.

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