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  - IP / KNX Interface

## Application software

### IP/KNX Interface

*Electrical / Mechanical characteristics : see product information*

	Order number	Product designation	Application software ref.	TP device RF devices
	TYF120	IP/KNX Interface	STYF120	

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## 1. Functional description

This device utilizes the KNXnet/IP standard and enables communication connections to KNX lines or systems via data networks using the Internet Protocol (IP). PC's or other data processing equipment can exchange data with KNX devices through this communication link.

The physical connection to the KNX bus is established via a bus connector terminal block. For connection to the data network (IP via 10BaseT) the device contains an RJ45 socket.

By using a LAN modem a KNX installation can be remotely accessed even if there is no direct data network connection between a PC and an IP Interface. LAN modems are available on the market for standard telephone, ISDN or DSL connections.

The IP Interface requires additional operating power for its operation.

The IP Interface can source this operating power via the network connection from "Power over Ethernet" according to IEEE 802.3af. Alternatively, the operating power can be provided via a second terminal block (white-yellow terminals) by a safety extra low voltage (SELV) power supply AC/DC 24 V. When a SELV power supply is connected the operating power is sourced from it

The IP Interface has these characteristics:

- Simple connection to hierarchically superimposed systems via Internet Protocol (IP)
- Direct access to the KNX installation from any access point to the IP network (KNXnet/IP Tunneling)
- Communication between buildings and facilities
- LED display of
  - operation
  - KNX communication
  - IP communication
- Simple configuration with standard ETS
- Easy connection to SCADA and Facility Management systems (see: Supported Software)

KNXnet/IP Tunneling interface to the bus

A direct connection between a networked PC and the bus can be established via a data network and the IP Interface. This allows for accessing the bus from any access point in the data network.

The IP Interface provides up to five KNXnet/IP Tunneling connections, allowing for e.g. simultaneous configuration with ETS3 and operation of visualization.

### **Note**

For stable communication via KNXnet/IP Tunneling the IP Interface must use a separate individual address for each KNXnet/IP Tunneling connection. These additional individual addresses must be different from the individual address of the device and must not be used by any other bus device. In ETS these individual addresses should be reserved by proxy devices.

ObjectServer interface to the bus

A direct connection between a networked PC and the bus can also be established via a data network and the IP Interface using ObjectServer. ObjectServer compared with KNXnet/IP Tunneling provides the advantage that the communication can be maintained even over network connections with a transmission time for the datagrams of over one second (e.g. satellite connections).

### Assignment of additional individual address(es)

Additional individual addresses are either assigned with ETS (see: Setting the additional individual address of the IP Interface with ETS3) or alternatively without a tool automatically by the device itself.

The automatic address assignment for KNXnet/IP Tunneling and ObjectServer is started when the learning button is pressed during normal operation for more than 5 seconds but less than 10 seconds. The programming LED flashes during the address assignment process. The device checks which individual addresses are already used by other bus devices connected to the bus line. These addresses are not used for the address assignment.

By adding additional bus devices at a later time one or more of the additional individual addresses could be assigned twice. When during normal operation the learning button is pressed for more than 10 seconds all additional individual addresses in the IP Interface are reset to the default value (15.15.255) and the programming LED is turned off.

### IP address assignment

Please consult your network administrator regarding configuration of the parameters device IP address, subnet mask, and DHCP.

The IP address of the IP Interface is assigned manually using ETS, automatically by a DHCP server in the IP network, or by the device itself (AutoIP). Assignment of the IP address by a DHCP server allows for changes of the device IP address without using ETS. Configuration of the DHCP server may require the MAC address, which is printed on the device. If a DHCP server is not available the device assigns itself an IP address (AutoIP).

### Default factory settings

The IP Interface ships with these default factory settings:

- Physical address of the IP Interface: 15.15.15 (= FFFF hex)
- IP address assignment via DHCP

### Configuration with ETS

The IP Interface can be configured with ETS2 V1.2 and later versions.

#### **Note**

The IP Interface can be reset to the default factory settings by pressing the learning button for more than six seconds when the operation voltage is turned on. The transition to the default state is indicated by a blinking programming LED. All parameter settings are deleted by this reset action.

## 2. Communication objects

The application program does not contain any communication objects.

### 2.1 Parameter General

Parameter	Settings
<b>Device name (max. 30 char)</b>	<b>IP_KNX_Interface</b>
This parameter determines the name (max. 30 characters) of the IP Interface, which is used for easy recognition of the device when searched by an KNXnet/IP visualisation or the ETS.	
<b>IP Address Assignment</b>	<b>by DHCP Server</b> manual input
This parameter determines the type of IP address assignment. By manual input" is selected two additional tabs appear for manual input default the parameter is set for automatic assignment of the IP address by a DHCP server. If "of the IP address, subnet mask, and the default gateway address.	

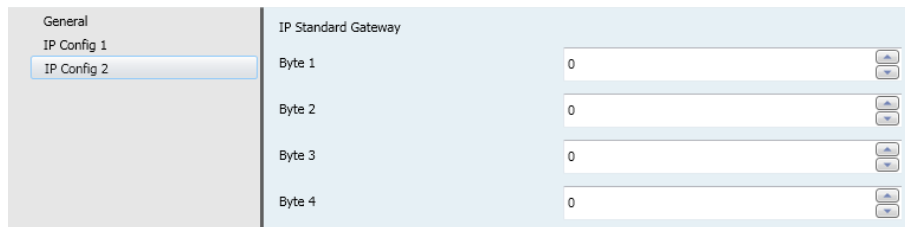
### 2.2 Parameter IP Konfiguration

#### 2.2.1 IP Config 1

Parameter	Settings
<b>IP Adress</b> <b>Byte 1,</b> <b>Byte 2,</b> <b>Byte 3,</b> <b>Byte 4</b>	<b>0.0.0.0</b>
This parameter is only visible if manual input was chosen for IP Address Assignment. It determines the IP address of the IP Interface. The factory default setting for the IP address is 0.0.0.0. This default value must be replaced by a valid IP address. Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for each byte.	

Parameter	Settings
<b>IP Subnetz Maske</b> <b>Byte 1,</b> <b>Byte 2,</b> <b>Byte 3,</b> <b>Byte 4</b>	<b>0.0.0.0</b>
<p>B This parameter is only visible if manual input was chosen for IP Address Assignment. It determines the IP subnet mask used by the IP Interface.</p> <p>The factory default value is <b>0.0.0.0</b>. This default value must be replaced by a valid subnet mask. Valid subnet mask values are e.g. 255.255.255.0 or 255.255.240.0.</p> <p>Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for each byte.</p>	

### 2.2.2 IP Config 2



Parameter	Settings
<b>IP Standard Gateway</b> <b>Byte 1,</b> <b>Byte 2,</b> <b>Byte 3,</b> <b>Byte 4</b>	<b>0.0.0.0</b>
<p>This parameter is only visible if manual input was chosen for IP Address Assignment. It determines the IP address of the IP Standard Gateway.</p> <p>The factory default value is 0.0.0.0. This default value may be replaced by a valid IP address.</p> <p>Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for each byte.</p> <p>The Standard Gateway transmits IP datagrams to IP devices with IP addresses outside of the local network. Use the prede- fined (invalid) IP address (0.0.0.0) if the device shall be configured without a Standard Gateway.</p>	

#### Note

When an IP Interface is unloaded this unloading process may fail with the error message “An internal error occurred”. Subsequently, no other device can be configured and ETS displays the error message “An internal error occurred.”. When attempting to check the “Settings” in menu “Extras → Options → Communication” the error message “Severe error” appears.

The problem is solved by either selecting a different interface or by closing and restarting ETS.

**Note**

If the communication to the KNX bus fails when a KNXnet/IP Tunneling connection exists then, even if the KNX bus is reconnected, a connection to the bus cannot be established and a download fails.

The problem is solved by either selecting a different interface or by closing and restarting ETS.

Then a connection to the previously used IP device can be established.

The same behavior shows if the power to the IP device fails.

**Note**

If the IP Interface is used as an interface to the bus and its own configuration is downloaded via the bus then ETS displays the error message "The device with the individual address %1 cannot be found.". The download is not executed.

The problem is solved by either selecting a different interface or by closing and restarting ETS.

Then a connection to the IP Interface can be established.

**Note**

After installing the ETS3 driver and selecting the

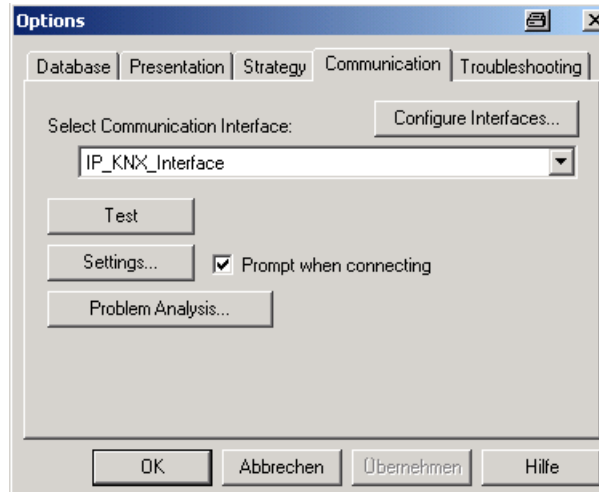
IP Interface or the IP Router as communication interface a windows message may pop up announcing that a "Class" is unknown.

In this case install the Microsoft .Net Framework that you can download from the Microsoft software update site (file size: approx. 25MB).

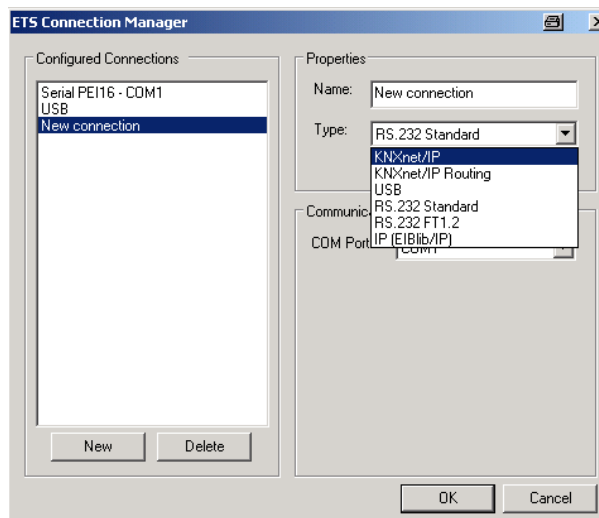
### 3. Setting the communication interface

#### 3.1 in ETS3

In ETS3 select Extras → Options.  
 In the Options window select the Communication tab.

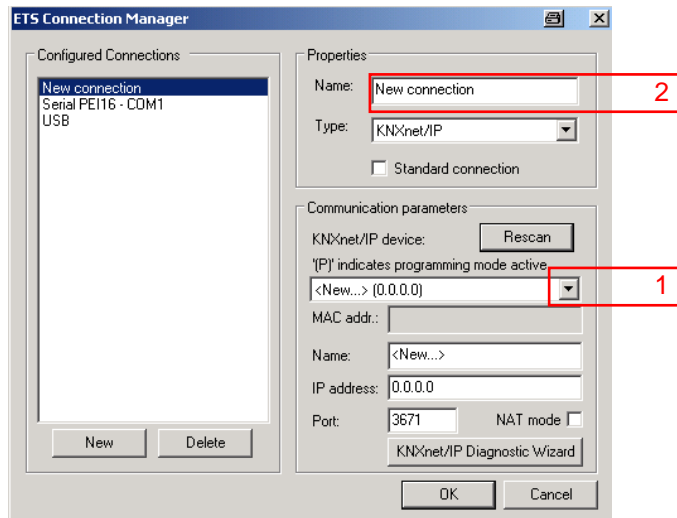


Click on „Configure Interfaces“.



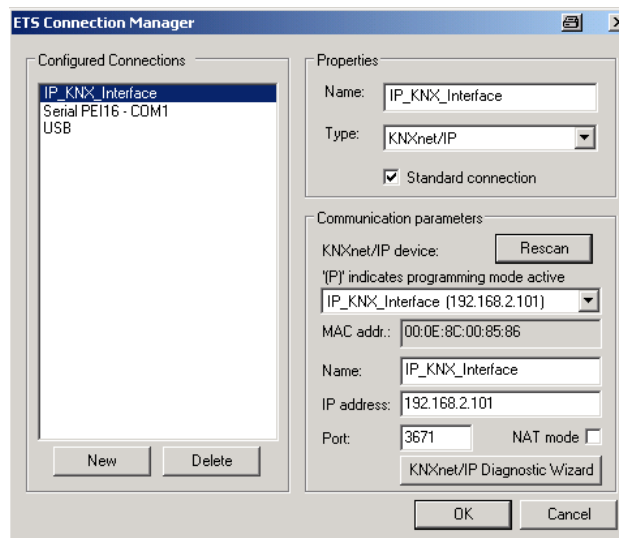
Generate a new interface and select the type KNXnet/IP. ETS3 automatically searches for all reachable IP Interfaces.





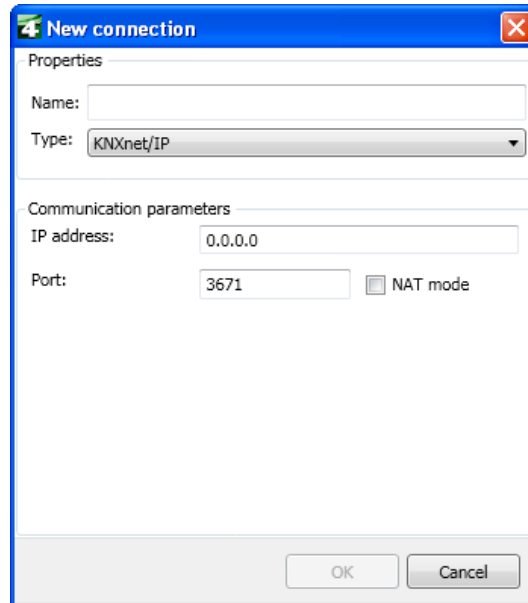
- (1) Select an IP Interface from the list.
- (2) Assign a name to this new interface.

The result could look like this.

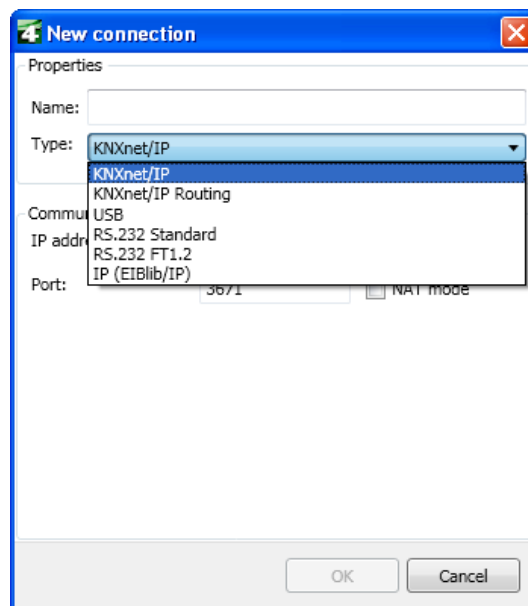


## 3.2 in ETS4

In ETS4 select Settings → Communication.  
In the window select the New button.



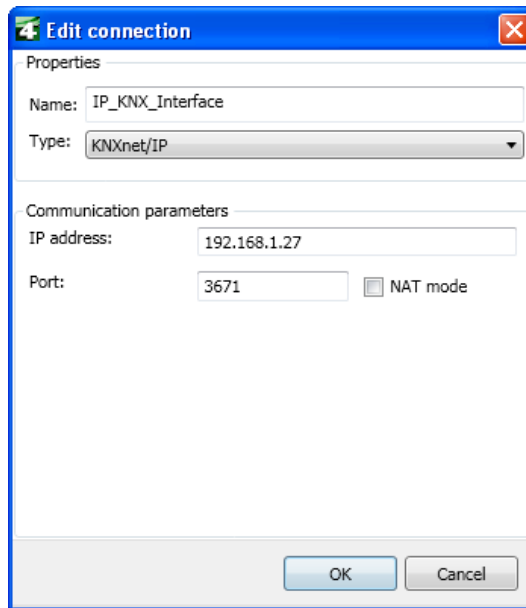
Click on „Type“.



Generate a new interface and select the type KNXnet/IP. ETS4 automatically searches for all reachable IP Interfaces.

- Select an IP Interface from the list.
- Assign a name to this new interface.

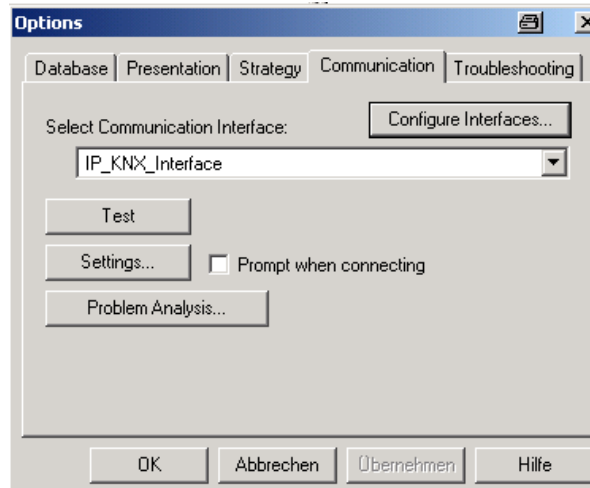
The result could look like this.



## 4. Setting the additional individual address of the IP Interface

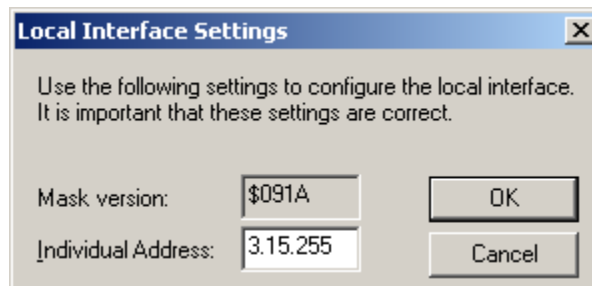
### 4.1 in ETS3

For a stable communication with the IP Interface via KNXnet/IP Tunneling a additional individual address must be set using ETS3.



Click on Settings.

ETS3 fetches the current setting of the additional individual address from the IP Interface.



The factory setting of the additional individual address of the IP Interface is 15.15.255.

Enter the desired additional individual address and acknowledge this entry by clicking on OK.

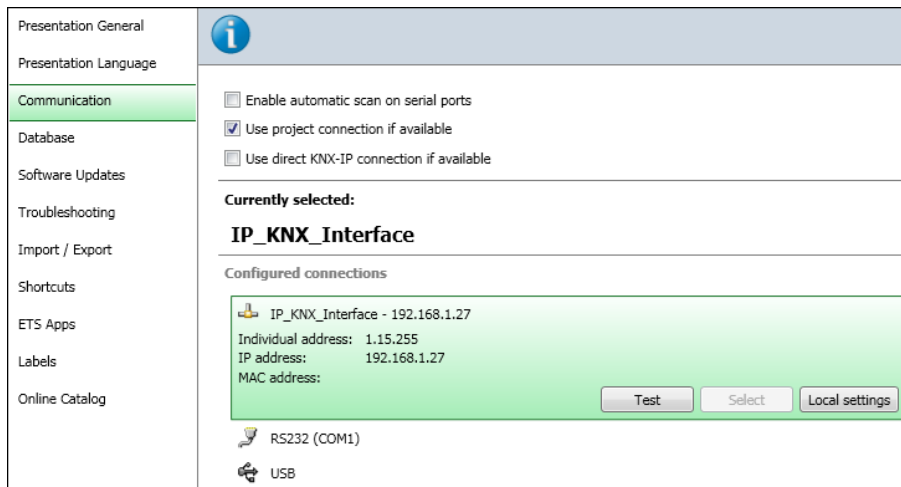
ETS3 sets the value in the IP Interface and closes the window.

#### Note

When entering the additional individual address take care that this individual address is not used by another bus device. A Dummy device with this individual address should be inserted in the ETS project.

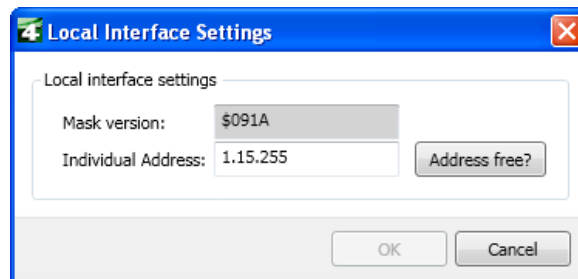
## 4.2 in ETS4

For a stable communication with the IP Interface via KNXnet/IP Tunneling a additional individual address must be set using ETS4.



Click on Local settings.

ETS4 fetches the current setting of the additional individual address from the IP Interface.



The factory setting of the additional individual address of the IP Interface is 15.15.255. Enter the desired additional individual address and acknowledge this entry by clicking on OK. ETS4 sets the value in the IP Interface and closes the window.

### Note

When entering the additional individual address take care that this individual address is not used by another bus device. A Dummy device with this individual address should be inserted in the ETS project.

