



Using the application program

Product range: System device
 Product type: IP Router
 Manufacturer: IPAS GmbH

 Name: 3622-ComBridge-IPR-01-0212
 Order no: 3622-141-17

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Function

The ComBridge IP router is based on the KNXnet/IP standard and connects KNX lines to the IP network. Individual KNX lines can thereby communicate with each other. The IP router can replace the “classic” line coupler. KNX lines are completely galvanically isolated. The data connection via IP is realised with IP Multicast. It is possible to create filter tables for group addresses to reduce the load in the KNX line. These filter tables are automatically generated with the ETS (Engineering Tool Software).

A bus coupler is used to connect to the KNX. To connect to the IP network, please use an RJ45 plug.

The device requires an additional safety extra-low voltage of 24V AC/DC, which can be connected via a second terminal block (white/yellow).

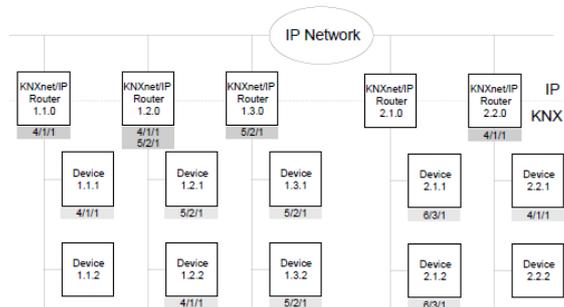
The ComBridge IPR supports up to 5 tunnel connections for other applications such as, for example, the ETS or other visualisation systems (ComBridge Evolution). Depending on the ETS projection, the device can be used either as line coupler or area coupler.

In addition, the current status or statistical values can be controlled via a website.

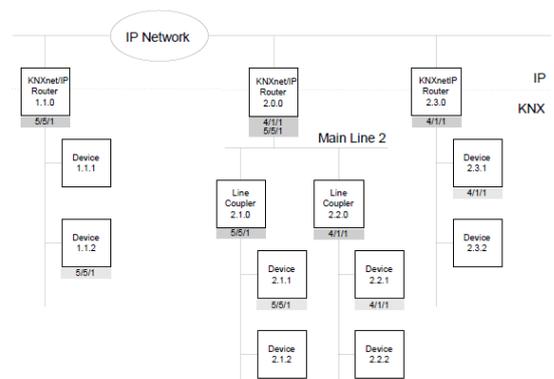
Via an authenticated log-in these values can be reset and the tunnel or object server connection can be enabled/disabled.

Assigning the physical address

Please remember to assign the correct physical address depending on usage. The following graphic shows the usage as line coupler.



You may also choose a mixed topology with classic line couplers:



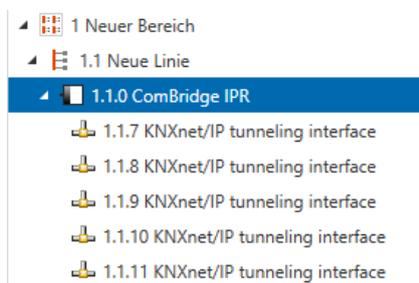
Using the tunnel connection

Use the IP network for a direct connection between a PC and the device. Please use the KNXnet/IP protocol for this purpose.

The ComBridge IPR supports up to 5 simultaneous tunnel connections.

Please remember that each tunnel connection has its own physical address which can be set with the ETS. This address must not yet exist in the KNX system.

In the ETS 5 and ETS application 1.2 all tunnel connections with the corresponding phy. Address displayed in the ETS and can be assigned easily:



Tip: Please see the website <http://<ip>> for an overview of already assigned addresses for the tunnels. (Condition: The website has to be enabled, see parameters)

Using the object server connection

Use the IP network to directly connect a PC to the device. This type of connection is suitable for visualisations, e.g. ComBridge Evolution.

Default status

By default, the ComBridge IPR has the physical address 15.15.0.

All group addresses are set to "filter". A confirmation (acknowledgement of group telegrams) is only sent for transmitted telegrams.

The IP address is assigned via DHCP.

To assign a fixed IP address (Tip: recommended), please use the ETS.

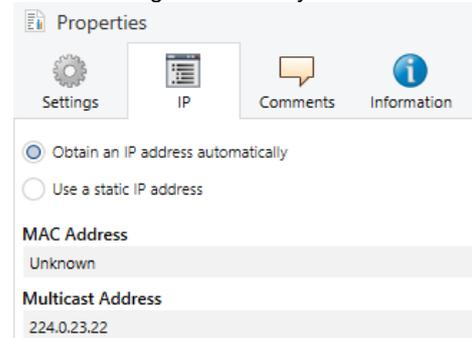
ETS configuration overview

ETS configuration

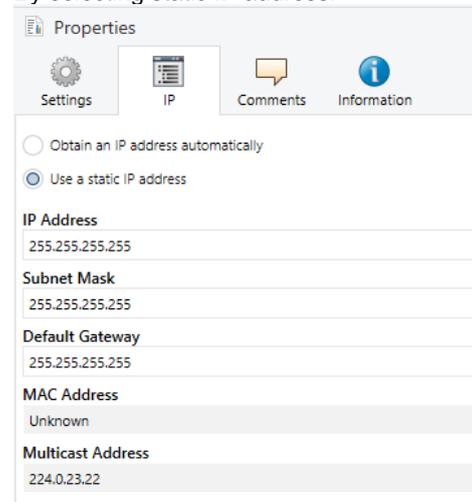
The ETS configuration is used for principal device settings.

IP Settings

The IP settings are done by standard ETS IP panel:



By selecting static IP address:

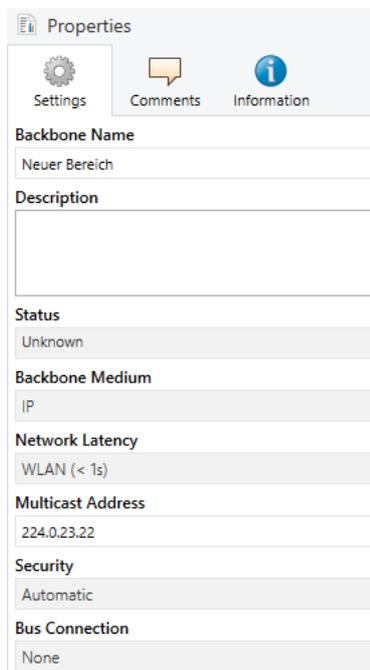




Multicast

IP routers communicate via a multicast address. All participants with the same multicast address can receive all telegrams. The multicast address 224.0.23.12 is reserved specifically for KNXnet/IP. The multicast addresses 239.0.0.0 to 239.255.255.255 can be used for general use in a network.

The multicast address is set in ETS by clicking the property window on Topology node.



General settings:

Parameter	Settings
Device name (max. 30 char)	ComBridge_IPR
Defines the name of the device.	
Support of unconfigured interfaces	enabled disabled
Older interfaces such as RS 232 interfaces, which have topologically wrong addresses, can be supported.	
Monitoring of bus voltage failure	enabled disabled
A KNX bus voltage failure can be notified via KNXnet/IP.	

Routing (Bus -> IP):

Parameter	Settings
Telegrams in main group 0..13	filter block transmit all (for testing only)
Defines the filter function for the group-oriented telegrams in the main groups 0 to 13. If the setting is "filter (normal)", a check of the filter table determines whether to transmit the value.	
Telegrams in main group 14..31	filter block
Defines the filter function for the group-oriented telegrams in the main groups 14 to 31. If the setting is "filter (normal)", a check of the filter table determines whether to transmit the value.	
Individually addressed and broadcast telegrams	filter block transmit all (for testing only)
Sets the filter function for individually addressed telegrams and broadcast telegrams. If the setting is "filter (normal)", the telegrams are filtered depending on the address of the IP router. The only time broadcast telegrams are not transmitted is when the parameter is set to "block". Independently of this setting, broadcast telegrams are always accepted by the IP router itself.	
Telegram confirmation of group-oriented telegrams	only if routed always
Defines when telegrams should be confirmed (acknowledged). If the parameter is set to "always", group telegrams are acknowledged by the IP router even if they are not transmitted to KNXnet/IP.	

Routing (IP -> Bus):

Parameter	Settings
Telegrams in main group 0..13	filter block transmit all (for testing only)
Defines the filter function for group-oriented telegrams in the main groups 0 to 13. If the setting is "filter (normal)", a check of the filter table determines whether to transmit the value.	
Telegrams in main group 14..31	filter block
Defines the filter function for the group-oriented telegrams in the main groups 14 to 31. If the setting is "filter (normal)", a check of the filter table determines whether to transmit the value.	
Individually addressed and broadcast telegrams	filter block transmit all (for testing only)
Sets the filter function for individually addressed telegrams and broadcast telegrams. If the setting is "filter (normal)", the telegrams are filtered depending on the address of the IP router. The only time broadcast telegrams are not transmitted is when the parameter is set to "block". Independently of this setting, broadcast telegrams are always accepted by the IP router itself.	



Advanced Settings:

Parameter	Settings
System bus traffic	Normal bus load High bus load
Use these parameters to vary the internal queues and the bus load behaviour. We strongly recommend that you use and load the filter tables so that there is always a "normal bus load". Should it be necessary, however, to leave the filter tables open for test purposes and you expect a very high bus load, this parameter can be changed. The internal queues will be enlarged and the timing adjusted so that communication is possible without losing any telegrams.	
Enable maintenance webpage	disabled enabled
Defines whether the web page displaying status information should be enabled or disabled.	
Select webpage language	English German
Defines the language in which the web page will be displayed. Attention: this change only becomes active after a re-start. After a partial download, the ETS does not foresee a re-start. You should therefore either re-start the device manually after a partial download or select a complete download in the ETS.	
Enable webpage control functionality	disabled enabled
Defines whether control of the web page should be enabled through an authentication process. A further control pop-up makes it possible to re-set the counter. The tunnel and object server connections can also be disabled. If the connections are disabled, clients such as, for example, ETS cannot make a tunnel connection to the router.	
User Name	admin
Defines the user name ETS 3: Up to 16 characters are available (Attention: Special characters are not supported in ETS3) From ETS 4 upwards: Up to 8 characters are available (UTF-8 coded)	
Password	1234
Defines the password. ETS 3: Up to 16 characters are available (Attention: Special characters are not supported in ETS3) From ETS 4 upwards: Up to 8 characters are available (UTF-8 coded)	

Communication Objects

None

Web page

If you have enabled the web page in the ETS parameters, status information from the IP router can be displayed.

The screenshot shows the ComBridge IPR web interface. At the top, it displays system information: Time Stamp: Mon Dec 08 2014 16:01:31 GMT+0100 (Mittleeuropäische Zeit), User Friendly Name: ComBridge_IPR_unten, KNX Individual Address: 1.2.0, Firmware Version: 0.9.1, and Multicast Address: 224.0.23.22. A 'Login' button is visible in the top right corner. The main content area is divided into two sections: 'Current KNXnet/IP Connections' and 'Maintenance Information'. The 'Current KNXnet/IP Connections' section contains a table with columns for No., Phys. Address, Client IP, and Enabled. The 'Maintenance Information' section is further divided into 'KNX > IP Communication' and 'IP > KNX Communication', each with a table showing transmission rates and queue overflow counts.

No.	Phys. Address	Client IP	Enabled
1	1.2.254	192.168.10.154	●
2	15.15.255	not connected	●
3	15.15.255	not connected	●
4	15.15.255	not connected	●
5	15.15.255	not connected	●
Obj	1.2.0	not connected	●

The header shows the following information:

- Current time (browser data)
- Device name
- Individual address
- Firmware version
- Multicast address

The second part shows the current KNXnet/IP connections and the transmission statistics.

This screenshot is a zoomed-in view of the 'Current KNXnet/IP Connections' table from the previous screenshot. It shows five tunnel connections and one object server connection, all with green status indicators.

No.	Phys. Address	Client IP	Enabled
1	1.2.254	192.168.10.154	●
2	15.15.255	not connected	●
3	15.15.255	not connected	●
4	15.15.255	not connected	●
5	15.15.255	not connected	●
Obj	1.2.0	not connected	●

Five tunnel connections and one object server connection are available. This overview shows which physical address has been assigned to which tunnel connection. In addition, the IP address of a client is displayed.

The website also shows whether the connection is currently enabled. A green dot shows that further clients can be connected to the device via a tunnel. A red dot shows that the connection is currently disabled.

These settings can only be changed after user authentication via the "log-in" button. See the chapter "Website control" below.

The bottom part shows the transmission details:

Maintenance Information	
KNX ► IP Communication	
Transmission Rate per Minute	0
Max. Transmission Rate per Minute	0
Total Transmission Count	0
Queue Overflow	0
IP ► KNX Communication	
Transmission Rate per Minute	0
Max. Transmission Rate per Minute	0
Total Transmission Count	0
Queue Overflow	0

The following values are calculated:

- Transmission rate per minute
- Maximum transmission rate per minute
- Total transmission count
- Queue overflow

The values are calculated in both directions, KNX and IP.

These values can also be re-set via the log-in.

Web page control

If you press the "log-in" button, the following dialogue appears:

Authentifizierung erforderlich ✕

Für den Server <http://192.168.10.52:80> ist ein Nutzernamen und ein Passwort erforderlich. Der Server meldet Folgendes:
IPR@192.168.10.52.

Nutzername:

Passwort:

You can set both name and password in the ETS.

A pop-up window with the following options appears:



- Re-set statistical values (counter)
- Enable/disable tunnel
- Enable/disable object server

Attention: Existing tunnel or object server connections are immediately shut down if you disable the connection.

Press the button in the top right-hand corner to leave the window.

Reset to original state

By pressing the program button and plugging the 24 V power the device is reset to original parameter. During this reset the program LED is blinking.

Phy. address: 15.15.0
IP address: via DHCP