theben

Manual
Media Coupler TP-RF KNX
9070868

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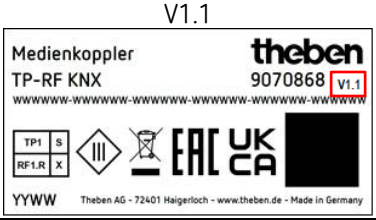
Contents

1 Application programme (ETS product database)

For media coupler TP-RF KNX, various application programmes are available.
You can find them at www.theben.de or in the ETS online catalogue.

> Depending on the device version and the ETS used, the correct application programme must be selected.

Device version	Application programme	ETS 5	ETS 6	Segment Coupling	Security Proxy
V1.0 	Media coupler_ TP-RF_V1_0	✔	✔	✕	✕
V1.1 	Media coupler_ TP RF_V2_0_ETS5	✔	✔	✕	✕
V1.1 	Media coupler_ TP-RF_V2_0_ETS6	✕	✔	✔	✔

2 General information

2.1 Product features

- The media coupler TP-RF KNX connects KNX-RF devices with the KNX TP medium (Twisted Pair).
- The device supports KNX Data Security.
- The Security Proxy and Segment Coupler functionality is only supported with the ETS 6 database.
- The coupler has a filter table (8 k bytes), supports long frames and is compatible with the ETS 5 software.

2.2 Technical data

KNX bus voltage	21 – 32 V DC
KNX bus power input	< 10 mA
Type	RF1.R
Wireless interface	KNX RF, ISM band 868, 3 MHz, FSK
Transmission power	6 dBm
Security	KNX Data Secure (AES-128), incl. Security Proxy (ETS 6 only)
Topology	Segment coupling (ETS 6 only)
Protection rating	IP 20 in accordance with EN 60529
Protection class	III
Operating temperature	-5 °C ... +45°C
Pollution degree	2
Rated impulse voltage	0.8 kV
Software class	A
Dimensions	48 x 40 x 18 mm

3 Installation and start-up

➢ Install in conventional flush-mounted boxes (according to DIN 49073).

Installation location: Observe the range of wireless devices that are to exchange information with the device. Avoid shielding objects or interfering transmitters (e.g. computers etc.) in the vicinity of the device.

For further information and notes on the installation of KNX-RF systems, please refer to the KNX-RF System Manual (https://www.theben.de/de/medienkoppler-tp-rf-knx-9070868).

4 General information about KNX Secure

ETS 5 Version 5.5 and higher support secure communication in KNX systems. A distinction is made between secure communication via the IP medium using KNX IP Secure and secure communication via the TP and RF media using KNX Data Secure.

The following information refers to KNX Data Secure.

In the ETS catalogue, KNX products supporting "KNX Secure" are clearly marked.

As soon as a "KNX-Secure" device is included in the project, the ETS requests a project password. If no password is entered, the device is included with Secure Mode deactivated. However, the password can also be entered or changed later in the project overview.

4.1 Start-up with KNX Data Secure

For secure communication, the FDSK (Factory Device Setup Key) is required. If a KNX product supporting "KNX Data Secure" is included in a line, the ETS requires the input of the FDSK. This device-specific key is printed on the device label and can either be entered by keyboard or read by using a code scanner or notebook camera.

Example of FDSK on device label:

After entering the FDSK, the ETS generates a device-specific tool key. The ETS sends the tool key to the device to be configured via the bus. The transmission is encrypted and authenticated with the original and previously entered FDSK key. Neither the tool key nor the FDSK key are sent in plain text via the bus.
After the previous action, the device only accepts the tool key for further communication with the ETS.

The FDSK key is no longer used for further communication, unless the device is reset to the factory setting: In this case, all set safety-related data will be deleted.
The ETS generates as many runtime keys as needed for the group communication you want to protect. The ETS sends the runtime keys to the device to be configured via the bus.
Transmission takes place by encrypting and authenticating them via the tool key. The runtime keys are never sent in plain text via the bus.

The FDSK is saved in the project and can be viewed in the project overview.
All keys for this project can also be exported (backup).

During project planning, it can be defined subsequently which functions/objects are to communicate securely. All objects with encrypted communication are identified by the "Secure" icon in the ETS.

4.2 Start-up without KNX Data Secure

Alternatively, the device can also be put into operation without KNX Data Secure. In this case, the device is unsecured and behaves like any other KNX device without KNX Data Secure function.

To start up the device without KNX Data Secure, select the device in the 'Topology' or 'Devices' section and set the 'Secure start-up' option in the 'Properties' area of the 'Settings' tab to 'Disabled'.

4.3 Security Proxy

Security Proxy translates an encrypted group communication from one side to an unencrypted group communication to the other side and vice versa.

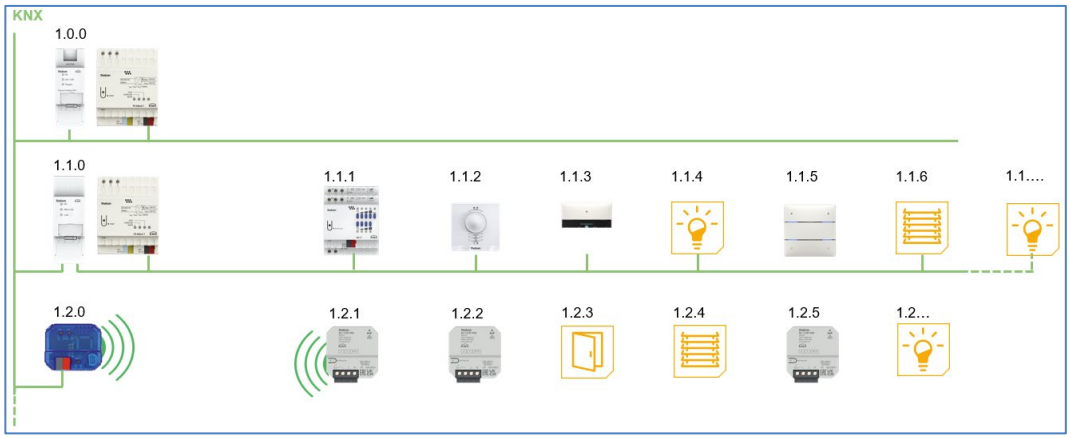
This allows, for example, encrypted group communication on the KNX-RF medium and basically unencrypted group communication on the KNX-TP medium.

5 Topology

The media coupler can be used as a line/area coupler or, from ETS 6 and higher, as a segment coupler.

5.1 Line/area coupler

The device functions as a line or area coupler if its physical address is of the form x.y.0. The coupler is thus the first device in the subordinate RF line.



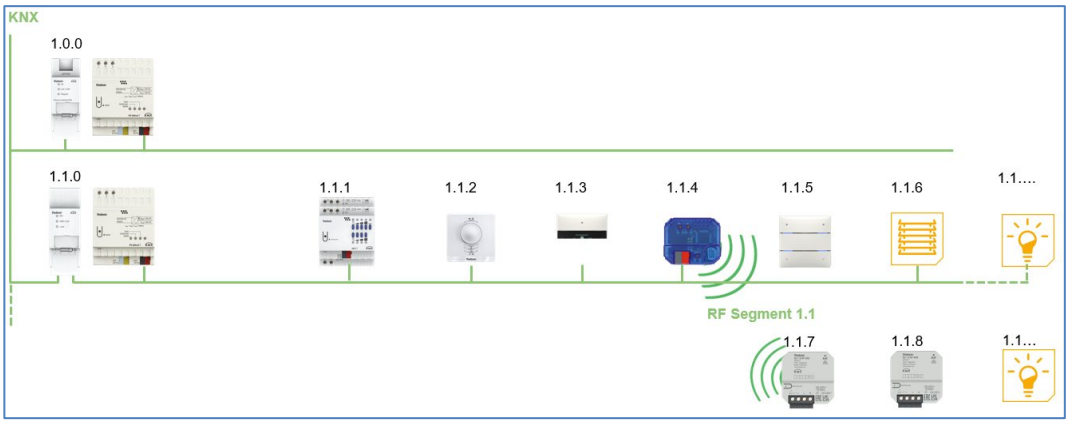
The media coupler has a filter table and can thus contribute to reducing the bus load.

> It is **strongly** recommended that the filter function is used and only the telegrams required in the RF line are transferred into it.

The filter table (main groups 0 ... 31) supports the extended group address range and is generated automatically by the ETS.

5.2 Segment coupler

From ETS 6 and device version V1.1 and higher (Application programme (ETS product database)), the media coupler can be integrated into an existing TP line as a segment coupler. Its physical address is then of the form x.y.1-255.



6 Parameter settings

6.1 General parameters

Parameters	Values	Description
Device name	30 characters	Any name for the device can be assigned here.
Manual operation on the device	Blocked **Can be activated with time limit 1 min.** Can be activated with time limit 10 min. Can be activated with time limit 30 min. Can be activated without time limit	This parameter is used to configure manual operation on the device. The manual operation mode can be blocked or activated (with or without time limit). The time limit defines the duration until the automatic return from manual operation back to normal operating mode.

(**Default** setting)

6.2 Routing TP → RF

Parameters	Values	Description
Group telegrams	Block Forward **Filter**	No group telegram is forwarded to the RF line. All group telegrams are forwarded to the RF line regardless of the filter table. ⓘ The "Forward" setting should only be used for test purposes. The filter table is used to decide whether the received group telegram is forwarded to the RF line.
Physically addressed telegrams	Block Forward **Filter**	No physically addressed telegram is forwarded to the RF line. All physically addressed telegrams are forwarded to the RF line. ⓘ The "Forward" setting should only be used for test purposes. The filter table is used to decide whether the received physically addressed telegram is forwarded to the RF line.
System broadcast telegrams	Block **Forward**	No received system broadcast telegram is forwarded to the RF line. All received system broadcast telegrams are forwarded to the RF line.

Broadcast telegrams	Block **Forward**	No received broadcast telegram is forwarded to the RF line. All received broadcast telegrams are forwarded to the RF line.
Acknowledgement (ACK) of group telegrams	Always **Only if forwarded**	For received group telegrams (from the TP line), an acknowledgement is always sent. For received group telegrams (from the TP line), an acknowledgement is sent only when forwarded to the RF line.

(**Default** setting)

6.3 Routing RF → TP

Parameters	Values	Description
Group telegrams	Block Forward **Filter**	No group telegram is forwarded to the TP line. All group telegrams are forwarded to the TP line regardless of the filter table. ⓘ The "Forward" setting should only be used for test purposes. The filter table is used to decide whether the received group telegram is forwarded to the TP line.
Physically addressed telegrams	Block Forward **Filter**	No physically addressed telegram is forwarded to the TP line. All physically addressed telegrams are forwarded to the TP line. ⓘ The "Forward" setting should only be used for test purposes. The filter table is used to decide whether the received physically addressed telegram is forwarded to the TP line.
System broadcast telegrams	Block **Forward**	No received system broadcast telegram is forwarded to the TP line. All received system broadcast telegrams are forwarded to the TP line.
Broadcast telegrams	Block **Forward**	No received broadcast telegram is forwarded to the TP line. All received broadcast telegrams are forwarded to the TP line.
Repeated sending of group telegrams	Deactivated **Activated**	In the event of an error, the forwarded group telegram is not sent repeatedly to the TP line. In the event of an error, the forwarded group telegram will be repeated up to three times.

Repeated sending of physically addressed telegrams	Deactivated **Activated**	In the event of an error, the forwarded physically addressed telegram is not sent repeatedly to the TP line. In the event of an error, the forwarded physically addressed telegram will be repeated up to three times.
Repeated sending of broadcast telegrams	Deactivated **Activated**	In the event of an error, the forwarded broadcast telegram is not sent repeatedly to the TP line. In the event of an error, the forwarded broadcast telegram will be repeated up to three times.

(**Default** setting)

6.4 Filter table

If "Filter" is set in the above parameter settings, the filter table will be created automatically by the ETS.
The group addresses of the telegrams that are to be forwarded via the coupler will be added to the filter table. The contents of the filter table can be displayed via the preview.
The security proxy tables are also displayed here.

The filter table can be extended by manually adding group addresses. To do so, "Forward (do not filter)" must be activated in the properties window of the corresponding group address.

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Dispose of the device separately from domestic waste at an official collection point.