

Compact KNX RF/TP Coupler KNX Data Security
KNX RF/TP Coupler 673 *secure*
Operation and installation manual



(Art. # 5188 KNX RF/TP Coupler 673 secure)

Weinzierl Engineering GmbH
Achatz 3
DE-84508 Burgkirchen / Alz
Tel : +49 (0)8677 / 91 636 – 0
info@weinzierl.de
www.weinzierl.de

Content

1	KNX Security	3
1.1	KNX Data Security for the device	3
1.2	KNX Data Security for group telegrams	3
1.3	Coupler – Function	4
2	Installation and commissioning	5
2.1	KNX Programming mode	5
2.2	Status display	5
2.3	Manual control TP.....	6
2.4	Manual control RF	6
3	Factory setting	6
3.1	Reset to factory settings	6
4	ETS Database	7
4.1	ETS-Parameter dialog	10

Application

The KNX RF/TP Coupler 673 secure is a KNX radio coupler in compact design. It connects KNX RF devices of a radio line to the KNX Bus Twisted Pair and optionally supports KNX Data Security.

The device has an extended filter table (main groups 0..31). The coupler supports long frames and is compatible with the ETS® software from ETS5.

The buttons on the front panel allow you to deactivate the telegram filters for test purposes. The LEDs indicate operating states and communication errors on the bus.

Power is supplied via the KNX bus.

1 KNX Security

The KNX standard has been extended by KNX Security to protect KNX installations from unauthorised access. KNX Security reliably prevents both eavesdropping on communication and manipulation of the installation.

KNX Data Security describes the encryption on telegram level. This means that the telegrams are encrypted both on the twisted pair bus and via radio.

1.1 KNX Data Security for the device

The KNX RF/TP Coupler 673 secure supports KNX Data Security to protect the device against unauthorised access from the KNX bus. If the KNX RF/TP coupler is programmed via the KNX bus, this is done with encrypted telegrams.

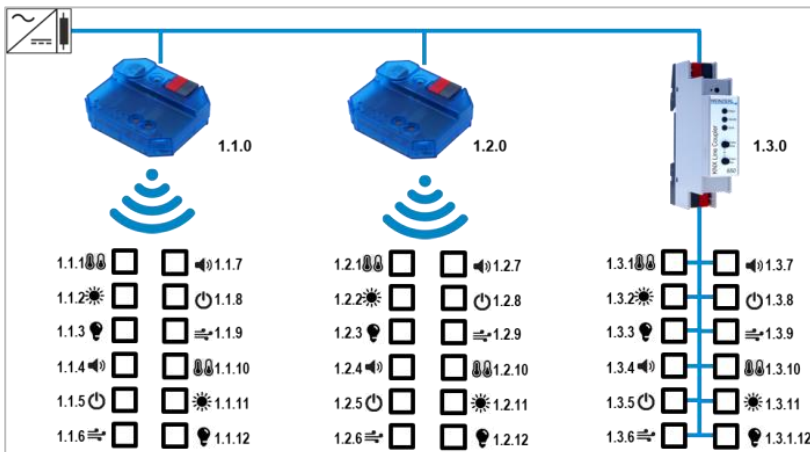


Encrypted telegrams are longer than the previously used unencrypted ones. For secure programming via the bus, it is therefore necessary that the interface used (e.g. USB) and any line couplers in between support KNX long frames.

1.2 KNX Data Security for group telegrams

Telegrams from the bus or from RF are forwarded or blocked according to the filter settings (parameters and filter table). It does not matter whether the telegrams are unencrypted or encrypted. Forwarding is exclusively based on the destination address. The security properties are checked by the respective recipient.

1.3 Coupler – Function



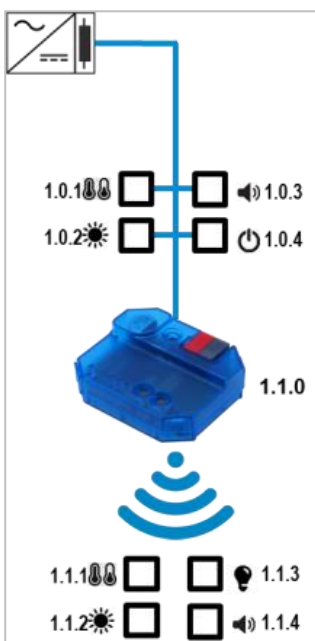
KNX RF/TP Coupler 673 secure as line coupler

The physical address of the KNX RF/TP Coupler 673 secure corresponds to the form x.y.0 (x, y: 1..15). Thus the device functions as a line coupler.



The unit functions as a coupler only if its physical address is of the form x.y.0.

The KNX RF/TP Coupler 673 secure has a filter table and thus helps to reduce the bus load. The filter table supports the extended group address range (main groups 0..31) and is automatically generated by the ETS.



KNX RF/TP Coupler 673 secure as wireless extension of a KNX line.

2 Installation and commissioning

Mounting can be recessed in the wall and thus almost "invisible", because the housing has the right size for mounting in a standard flush-mounted box.

When selecting the mounting location, the range of the radio devices to be connected to the device must be taken into account. Shielding objects (e.g. metal cabinets) or interfering transmitters (e.g. computers, electronic transformers, ballasts) near the gateway should be avoided.

The device is connected to the KNX bus by means of a bus terminal. The correct polarity of the terminal as printed on the device must be observed.

The KNX RF/TP Coupler 673 secure has the following controls and displays:



- ① Button P KNX Prog
- ② LED P KNX Prog
- ③ KNX Bus connection
- ④ LED S Status
- ⑤ LEDs 1-8
- ⑥ Button A
- ⑦ Button B



The device is only supplied via the KNX bus.

2.1 KNX Programming mode

The KNX programming mode is switched on or off via the KNX programming button P ①. When the programming mode is active, the programming LED ② lights up red. When delivered, the coupler has the individual Address 15.15.0.

2.2 Status display

The status LED ④ lights up green, when KNX bus voltage is present. This LED flashes red if the application is not running, e.g. after an aborted ETS download. If manual operation is active, this is indicated by an orange light of the status LED ④.

The LEDs 1-4 ⑤ indicate TP telegram traffic.

The LEDs 5-8 ⑤ indicate RF telegram traffic. If RF telegrams from another domain are received, the status LED ④ also flashes yellow briefly.

2.3 Manual control TP

Briefly pressing button A **6** activates the manual operation for TP mode.

Briefly pressing again the A button **6** enables/disables the Routing of the group telegrams. This is indicated by the LEDs 1 and 2 **5**.

Briefly pressing the B button **7** enables/disables the Routing of the individual addressed telegrams and the broadcast telegrams. This is indicated by LEDs 3 and 4 **5**.

A long press on button A **6** or button B **7** terminates manual operation.

Manual control can be locked in the ETS database.

2.4 Manual control RF

Briefly pressing the B button **7** activates the handset for RF mode.

Briefly pressing the A button **6** enables/disables the Routing of the group telegrams. This is indicated by the LEDs 5 and 6 **5**.

Briefly pressing the B button **7** enables/disables the Routing of the individual addressed telegrams, the (system-) broadcast telegrams. This is indicated by the LEDs 7 and 8 **5**.

A long press on button A **6** or button B **7** terminates manual operation.

Manual control can be locked in the ETS database.

3 Factory setting

The following configuration is preset at the factory:

Physical address of the device 15.15.0

Routing TP->RF:

Physically addressed telegrams: Filter

Group telegrams: Filter

Routing RF->TP:

Physically addressed telegrams: Filter

Group telegrams: Filter

3.1 Reset to factory settings

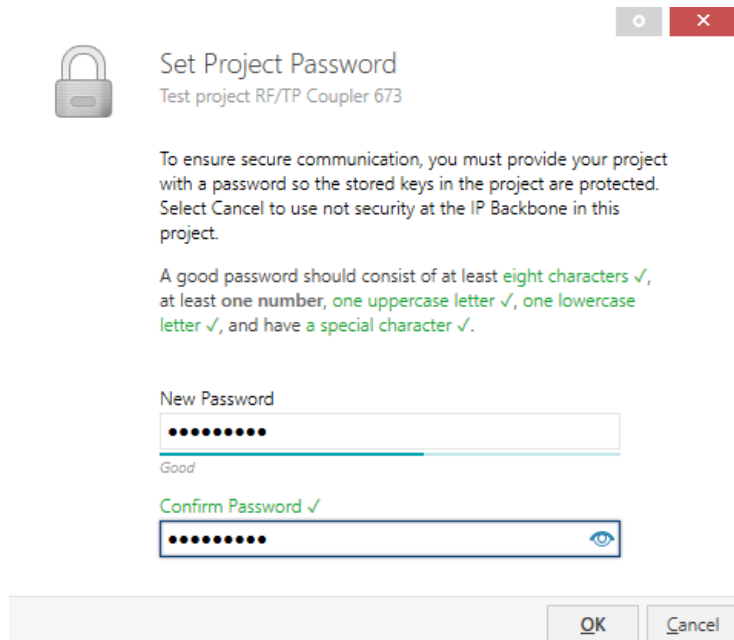
It is possible to reset the device to these factory settings.

- Disconnect the KNX bus connection **3** from the device
- KNX programming button **1** press and hold down
- Restore KNX bus connection **3** to the device
- Keep the programming button **1** pressed for at least 6 seconds
- A short flashing of all LEDs **2**, **4** and **5** indicates the successful reset to factory settings.

4 ETS Database

The ETS product database for the device can be downloaded from the Internet at www.weinzierl.de or from the KNX online catalogue integrated in ETS.

When the first product with KNX Security is inserted into a project, ETS asks for a project password.



Set Project Password
Test project RF/TP Coupler 673

To ensure secure communication, you must provide your project with a password so the stored keys in the project are protected. Select Cancel to use not security at the IP Backbone in this project.

A good password should consist of at least eight characters ✓, at least one number, one uppercase letter ✓, one lowercase letter ✓, and have a special character ✓.

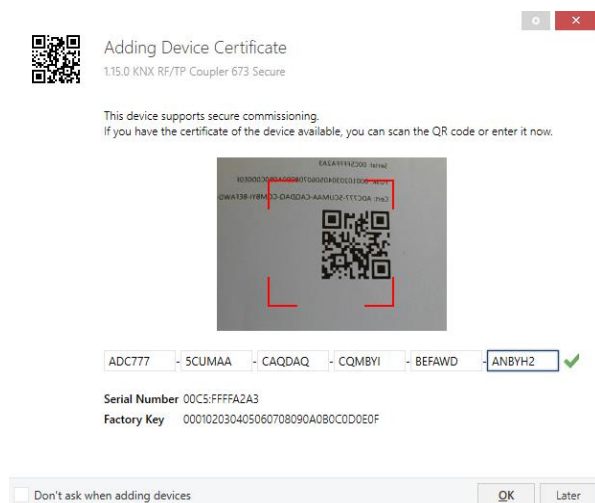
New Password
●●●●●●●●
Good

Confirm Password ✓
●●●●●●●●

OK Cancel

This password protects the ETS project against unauthorized access. This password is not a key that is used for KNX communication. Entering the password can be bypassed with "Cancel", but this is not recommended for security reasons. Without entering a password any security features cannot be used within the project.

For each device supporting KNX Security, ETS requires a device certificate. This certificate contains the serial number of the device and an initial key (FDSK = Factory Default Setup Key).



Adding Device Certificate
1.15.0 KNX RF/TP Coupler 673 Secure

This device supports secure commissioning.
If you have the certificate of the device available, you can scan the QR code or enter it now.

ADC777 - SCUMAA - CAQDAQ - CQM8YI - BEFAWD - AN8YH2 ✓

Serial Number 00C5:FFFFA2A3
Factory Key 000102030405060708090A0B0C0D0E0F

Don't ask when adding devices OK Later

The certificate is printed as text on the device. It can also be easily scanned from the printed QR code using a webcam. The list of all device certificates can be managed in the ETS window Overview - Projects - Security.

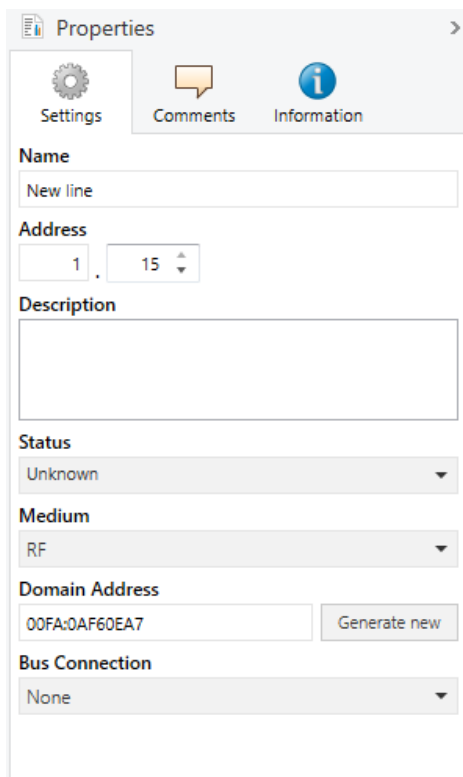
The initial key is needed to get a device up and running safely from the beginning. Even if the ETS download is recorded by a third party, this third party will not have access to the secured devices afterwards. During the first secure download, the initial key will be replaced by the ETS through a new key, which is created for each device individually. This prevents persons or devices that might know the initial key from accessing the device. The initial key is only reactivated after a master reset. The serial number in the certificate enables the ETS to assign the correct key to a device during a download.

By selecting the KNX RF/TP Coupler 673 secure in the tree structure of the Topology View of the ETS project, the overview "Properties" appears on the right side of the ETS window. In the Properties menu item "Settings" the device name of the KNX RF/TP Coupler 673 secure can be changed. Here also the retransmitter mode (repeater mode) of the device can be enabled or disabled. In this mode the received telegrams are sent again to increase the RF range.

The screenshot shows the 'Properties' window in the ETS software, specifically the 'Settings' tab. The window has a title bar 'Properties' with a right-pointing arrow. Below the title bar are three icons: a gear for 'Settings', a speech bubble for 'Comments', and an information icon for 'Information'. The 'Settings' tab is active. The main content area contains the following fields and controls:

- Name:** A text field containing 'KNX RF/TP Coupler 673 Secure'.
- Individual Address:** A field with a numeric input '1.15', a decimal separator '.', a spin button with '0', and a 'Park' button.
- Description:** A large empty text area.
- Retransmitter:** A checkbox that is currently unchecked.
- Last Modified:** A label followed by the timestamp '22.09.2020 20:43'.
- Last Downloaded:** A label followed by a hyphen '-'.
- Serial Number:** A label followed by a hyphen '-'.
- Secure Commissioning:** A section header followed by a dropdown menu showing 'Activated' with a shield icon.
- Add Device Certificate:** A button with a QR code icon.
- Status:** A label followed by a dropdown menu showing 'Unknown'.

By marking the radio line with the KNX RF/TP Coupler 673 secure in the tree structure of the topology view of the ETS project, the property dialog of the line appears on the right hand side of the ETS window. In the tab "Settings" the domain address of the radio line can be changed.



The screenshot shows the 'Properties' dialog box in the ETS software, specifically the 'Settings' tab. The dialog has three tabs: 'Settings' (selected), 'Comments', and 'Information'. The 'Settings' tab contains the following fields and controls:

- Name:** A text field containing 'New line'.
- Address:** A field with two parts: a text box containing '1' and a spinner box containing '15'.
- Description:** A large empty text area.
- Status:** A dropdown menu currently showing 'Unknown'.
- Medium:** A dropdown menu currently showing 'RF'.
- Domain Address:** A text field containing '00FA:0AF60EA7' and a 'Generate new' button.
- Bus Connection:** A dropdown menu currently showing 'None'.

4.1 ETS-Parameter dialog

The following parameters can be set with the ETS.

Description

1.15.0 KNX RF/TP Coupler 673 Secure > Description

Description

General settings

Routing TP->RF

Routing RF->TP

Compact KNX RF/TP Coupler

WEINZIERL

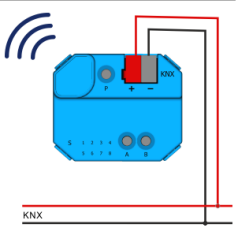
The KNX RF/TP Coupler 673 Secure is a compact KNX radio coupler, which supports the KNX Data security. It connects KNX RF devices of a radio line with the KNX Bus Twisted Pair.

The device has a filter table (8k byte). The coupler supports long frames and is compatible with the ETS® software ETS5 or higher.

The buttons on the front panel allow disabling the telegram filter for testing purposes. The LEDs indicate operating conditions as well as communication errors on the KNX bus.

The power is supplied via the KNX bus.

Wiring scheme:



Please consult device data sheet or manual for further information.

Contact:

Weinzierl Engineering GmbH
Achatz 3
84508 Burgkirchen Alz
Germany
www.weinzierl.de
info@weinzierl.de

General information about the device is displayed here.

General Settings

1.15.0 KNX RF/TP Coupler 673 Secure > General settings

Description

General settings

Routing TP->RF

Routing RF->TP

Device name

KNX RF/TP Coupler 673 Secure

Manual operation on device

Enabled with time limit 1 min

Device name (30 characters)

Any name for the KNX RF/TP Coupler 673 secure can be assigned here. The device name should be meaningful, e.g. "RF coupler ground floor.

Manual control on the device

Here the duration of the manual control mode is set. On termination, the system automatically returns to normal operating mode.



The activated manual control can reduce the security of the installation.

Routing TP->RF

1.15.0 KNX RF/TP Coupler 673 Secure > Routing TP->RF

Description	Group telegrams	Filter
General settings	Individual addressed telegrams	Filter
Routing TP->RF	System broadcast telegrams	<input checked="" type="radio"/> Block <input type="radio"/> Route
Routing RF->TP	Broadcast telegrams	<input type="radio"/> Block <input checked="" type="radio"/> Route
	Acknowledge (ACK) of group telegrams	<input type="radio"/> Always <input checked="" type="radio"/> If routed
	Acknowledge (ACK) of individual telegrams	<input type="radio"/> Always <input checked="" type="radio"/> If routed

Group telegrams

Block: No group telegram is forwarded to the RF line.

Route: All group telegrams are forwarded to the RF line regardless of the filter table.



This setting should only be used for test purposes.

Filter: The filter table is used to decide whether the received group telegram is to be forwarded to the RF line.

Individual addressed telegrams

Block: No physically addressed telegram is forwarded to the RF line.

Route: All physically addressed telegrams are forwarded to the RF line.



This setting should only be used for test purposes.

Filter: The destination address is used to check whether the received individual addressed telegram is forwarded to the RF line.

System broadcast telegrams

- Block: No received system broadcast telegram is sent to the RF line forwarded.
- Route: All received System Broadcast telegrams are forwarded to the RF line

Broadcast telegrams

- Block: No received broadcast telegram is forwarded to the RF line.
- Route: All received broadcast telegrams are forwarded to the RF line.

Acknowledge (ACK) of group telegrams

- Always: For received group telegrams (from the TP line) always send an acknowledge.
- If routed: For received group telegrams (from the TP line) an acknowledge is sent only when telegram is forwarded to the RF line.

Acknowledge (ACK) of individual telegrams

- Always: For received individual addressed telegrams (from the TP line) an acknowledge is always sent.
- If routed: For received individual addressed telegrams (from the TP line) an acknowledge is only sent when telegram is forwarded to the RF line.

Routing RF->TP

1.15.0 KNX RF/TP Coupler 673 Secure > Routing RF->TP

Description	Group telegrams	Filter
General settings	Individual addressed telegrams	Filter
Routing TP->RF	System broadcast telegrams	<input checked="" type="radio"/> Block <input type="radio"/> Route
Routing RF->TP	Broadcast telegrams	<input type="radio"/> Block <input checked="" type="radio"/> Route
	Management telegrams	<input type="radio"/> Ignore <input checked="" type="radio"/> Accept
	Repetition of group telegrams	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
	Repetition of individual addressed telegrams	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
	Repetition of broadcast telegrams	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled

Group telegrams

Block: No group telegram is written to the TP line forwarded.
Route: All group telegrams are forwarded to the TP Line.



This setting should only be used for test purposes.

Filter: The filter table is used to decide whether the received group telegram is forwarded to the TP line.

Individual addressed telegrams

Block: No physically addressed telegram is forwarded to the TP line.
Route: All physically addressed telegrams are forwarded to the TP line.



This setting should only be used for test purposes.

Filter: The destination address is used to check whether the received individual addressed telegram is forwarded to the TP line.

System broadcast telegrams

Block: No received System Broadcast telegram is forwarded to the TP line.
Route: All received System Broadcast telegrams are forwarded to the TP line.

Broadcast telegrams

Block: No received broadcast telegram is forwarded to the TP line.
Route: All received broadcast telegrams are forwarded to the TP line.

Management telegrams

Ignore: All management telegrams received and addressed to the coupler from the RF line are ignored.



In this setting, no access from ETS via the RF medium is possible!

Accept: All management telegrams received and addressed to the coupler from the RF line are accepted.

Repetition of group telegrams

Disabled: The forwarded group telegram will be not repeated in case of an error in the TP line.

Enabled: The forwarded group telegram will be repeated up to three times in case of error.

Repetition of individual addressed telegrams

Disabled: The forwarded individual addressed telegram will be not repeated in the TP line in case of an error.

Enabled: The forwarded individual addressed telegram will be repeated up to three times in case of error.

Repetition of broadcast telegrams

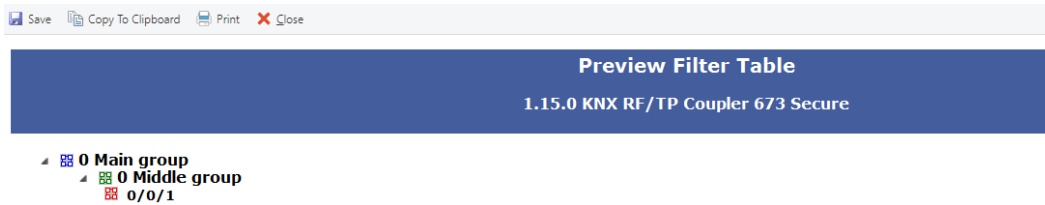
Disabled: The forwarded broadcast telegram will be not repeated in the TP line in case of an error.

Enabled: The forwarded broadcast telegram will be repeated up to three times in case of error.

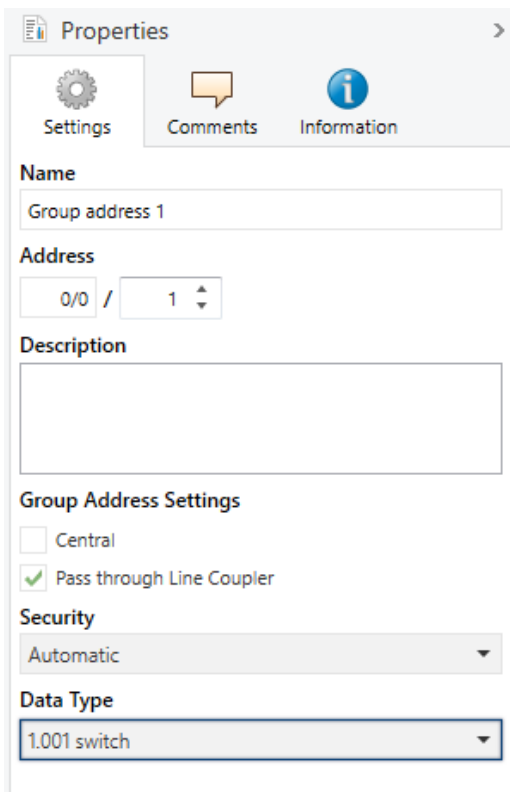
Filter table

The filter table is automatically created by ETS. The group addresses of the telegrams to be forwarded via the coupler are included in the filter table for this purpose. The contents of the filter table can be displayed via the preview:

Preview of the filter table



The filter table can be extended by manually adding of the group addresses. For this purpose, "Pass through Line Coupler" must be activated in the properties window of the corresponding group address.



Properties window of a group address.



WARNUNG

- The device may only be installed and put into operation by a certified electrician.
- The applicable safety and accident prevention regulations contraceptive instructions must be complied with.
- The device must not be opened.
- When planning and installing electrical systems, the relevant guidelines, regulations and provisions of the respective country must be adhered to.

ETS5 Database

www.weinzierl.de/en/products/673/ets5

Datasheet

www.weinzierl.de/en/products/673/datasheet

CE Declaration

www.weinzierl.de/en/products/673/ce-declaration



Weinzierl Engineering GmbH

D-84508 Burgkirchen / Alz

Germany

www.weinzierl.de

info@weinzierl.de

2021-11-09