KNX Secure

EN 01

KNX – FACTS AND FIGURES

1990 Over 30 years on the market

94,398 partners in 171 countries

500 manufacturers in 45 countries

500 training centres in 72 countries

DATE: NOVEMBER 2020

KNX – the worldwide standard

Anyone who wants to live and work smart relies on KNX and KNX Secure. Because the field bus is the global uniform standard for fitting private and commercial buildings with future-proof building system technology.

The European standard EN 50090 has become established as a global standard according to ISO/IEC 14543-3. The KNX brand thus stands for the system compatibility of products from all manufacturers. As a founding member of the KNX Association, JUNG has supported this highly intelligent technology from the beginning.

KNX allows the central and individual networking and control of home and building automation components – and is now even more secure with the encryption using KNX Secure!

The most intelligent worldwide standard for the modern building: Investors and owners, but also planners, architects and electrical installers thus have long-term security. From the easy to use control element to the complex system, the JUNG KNX components provide comprehensive, future-proof solutions for control, visualisation and organisation of the building system technology. Areas such as lighting, shade, heating or air conditioning, safety and multimedia are completely covered.

The advantages of KNX at a glance

FOR INSTALLERS

- Fast installation of devices and cabling
- Quick connection technology that covers all manufacturers
- High quality and reliability of products
- Commissioning independent of manufacturer
- Fast, flexible, extended and maintained
- Remote access for maintenance and diagnostics
- 500 training centres worldwide

ARCHITECT

- Can be used in any type of building
- Easy logic connections between functions and devices
- Constant expansion of functions and applications
- Commissioning independent of manufacturer
- Certified and trained installers
- Connection possible to many other systems, protocols and standards
- More than 8,000 devices from 500 manufacturers from 45 countries can communicate with each other.

FOR USERS

- A large selection of products
- Great convenience, high operational reliability
- Coordinated interlinking of the devices and functions
- Multifunctional use of multiple devices
- A modular, scalable system
- Easy to upgrade or adapt for changing needs
- Interoperability between manufacturers
- Increased value of the building

HYATT REGENCY
SOCHI, RUSSIA
Architect: Desallesflint, London

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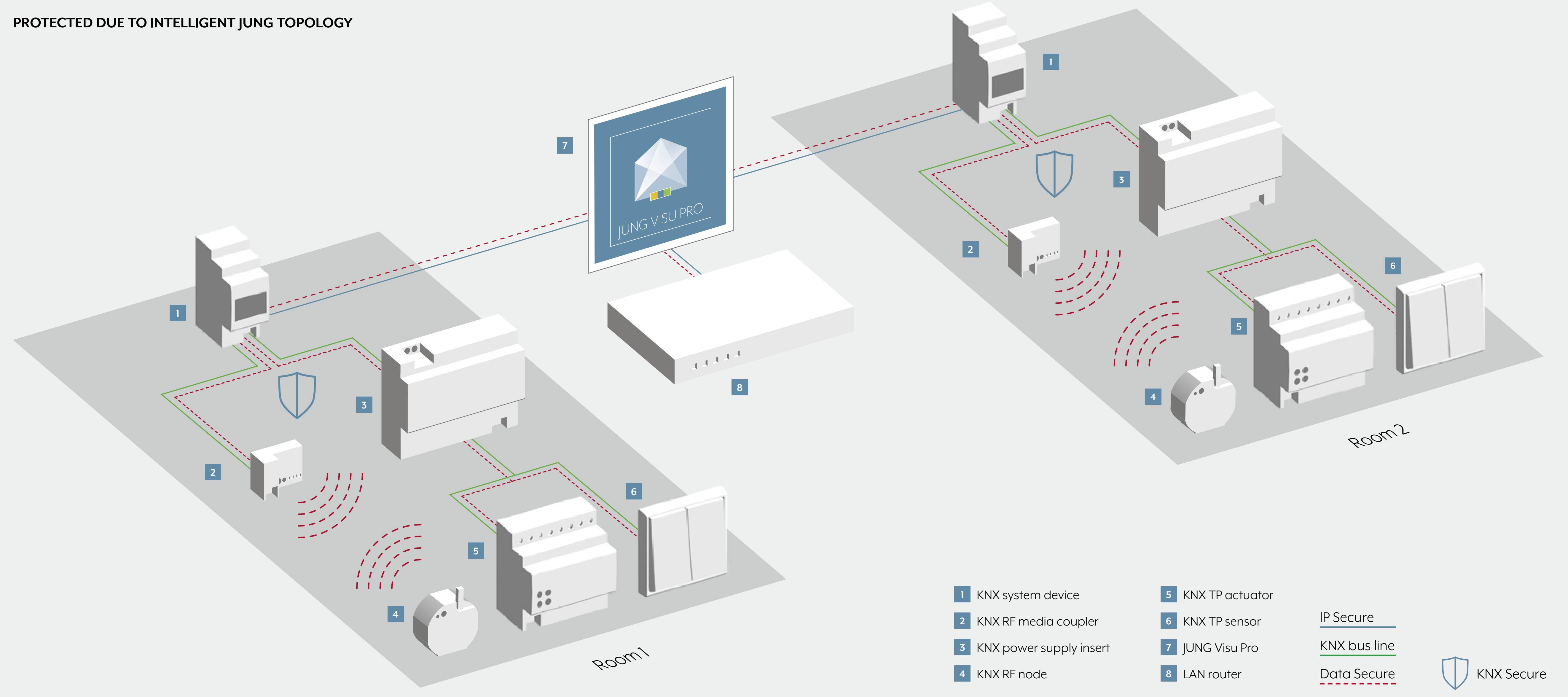
KNX Secure: security in the field bus and IP network

PROTECTED DUE TO INTELLIGENT JUNG TOPOLOGY

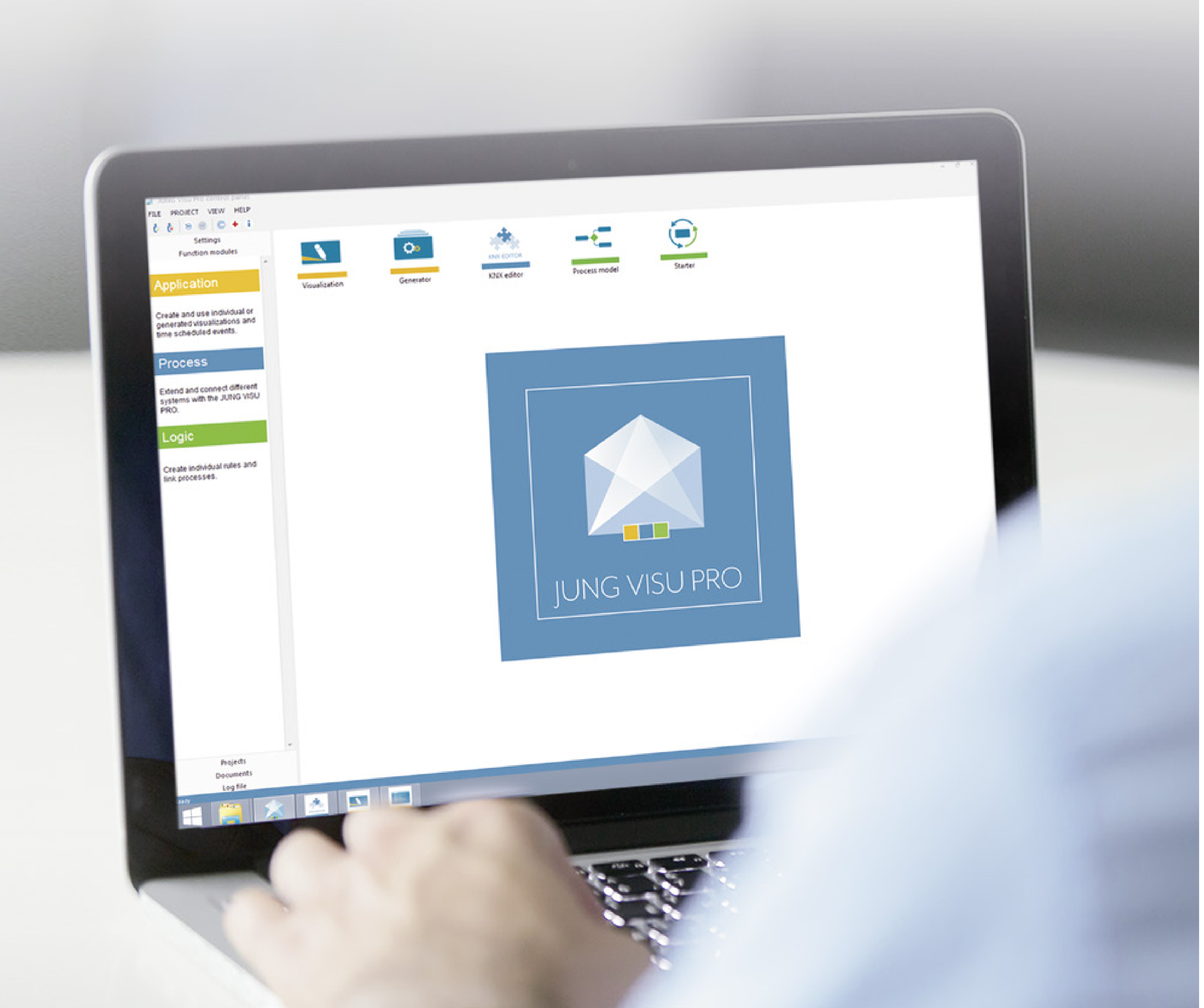


The discussion about data protection also does not stop at a smart building. Because everything you can operate digitally yourself, can theoretically also be controlled by unauthorised third parties. This is where JUNG KNX Secure comes in and provides effective protection thanks to encryption with the AES128 algorithm.

KNX Secure provides double protection: KNX IP Secure encrypts the transmission at network layer. It authenticates selected telegrams regardless of the medium and encrypts the transmitted data with the AES128 algorithm. Thus the communication between sensor and actuator in the IP network cannot be interpreted or manipulated. This also ensures secure communication with visualisations. KNX Data Secure also encrypts and authenticates the data on the bus line (twisted pair) or via wireless communication (RF). This reliably prevents attack scenarios such as telegram recording, telegram repetitions (replay attack) or modification (man-in-the-middle attack).

JUNG Visu Pro Server with KNX Secure

Control and visualisation of the entire building automation: The JUNG Visu Pro Server and the software of the same name are ideally suited for demanding applications in smart buildings. The JUNG Visu Pro Server has been completely supporting KNX Secure since version 4.5.

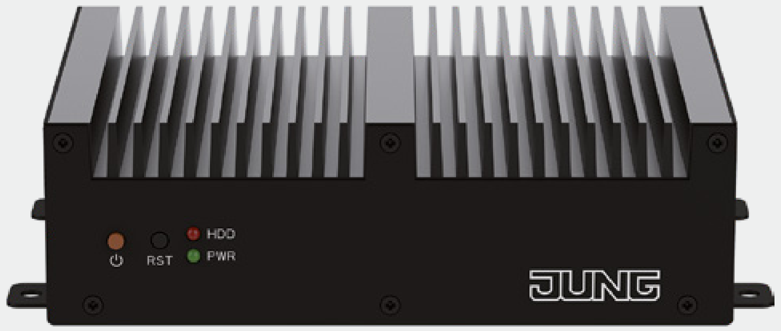


Create and use individual or generated visualizations and time scheduled events.

Extend and connect different systems with the JUNG VISU PRO.

Create individual rules and link processes.

JUNG VISU PRO SERVER



ENCRYPTED

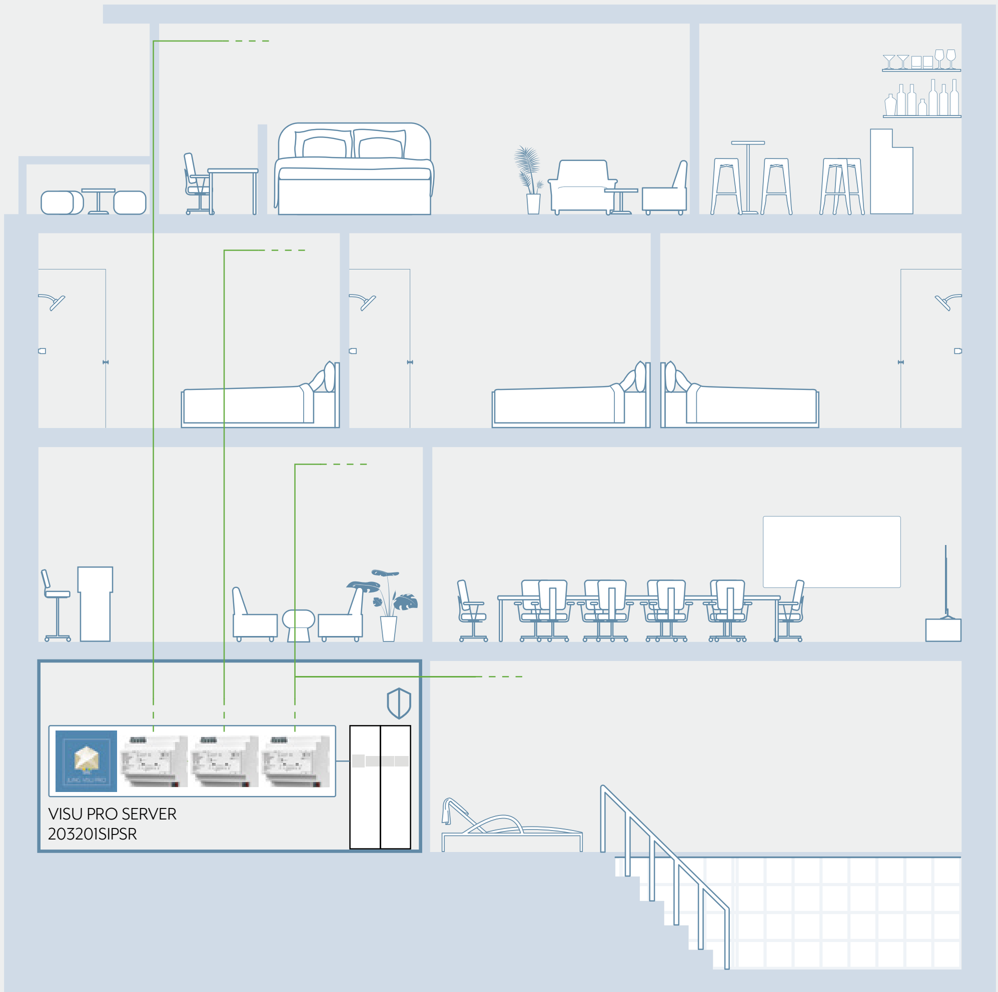
JUNG secures the visualisation in a smart building: The JUNG Visu Pro Server encrypts the communication in the network with KNX IP Secure and KNX Data Secure. This means that the telegrams in the entire building are safe from manipulation and cannot be intercepted. JUNG thus encrypts the communication in the building on the network level. The data exchange of server and clients, e.g. Smart Control or tablet, is also secure: The communication between server and client is performed using HTTPS – the information can thus not be read by third parties.

VERSION 4.5: OPTIMISED & UPDATED

JUNG is continuously expanding the Visu Pro Server with additional functions, such as the astro function and a new online weather service, improving the handling in the software and providing numerous other optimisations. A particular strength of the Visu Pro Server is the remote access: Instead of the previous subscription model, only a one-time licensing is now required. Simply purchase remote access in the myJUNG Portal and access the smart building on the move without limitations. Additional devices are not necessary. JUNG also optimises the voice control: Since the update to version 4.5, Google Assistant has also been available to users as a voice service.

Use case:
The smart hotel

NEW CONSTRUCTION OF A SMART HOTEL



Modern hotels set new standards for comfort and efficiency. As sensitive data are also transmitted, this information should be protected with KNX Secure. A smart hotel is the solution: It enables secure data exchange and greater comfort for the guests.

OTHER USE CASES: JUNG.DE/KNX-SECURE

With a KNX system, hotel operators can on the one hand set the temperature in all rooms from one point. On the other hand, guest requirements such as “Please do not disturb” or “Please clean room” can also be viewed at a central location. The KNX installations of the individual rooms designed as “islands” are interconnected using the JUNG Visu Pro software. Communication takes place via the IP infrastructure and is secure thanks to KNX Secure. Hacker attacks or manipulations are not possible – all data are protected.

KNX power supply with IP interface

OBJECTIVE OF THE PROJECT

- The security of guest data has the highest priority
  – Communication according to the latest security standards
- Each section is considered as its own “island”
  – Project planning can be reflected almost infinitely
- JUNG Visu Pro (JVP) Hotel manages central information of each “island” via the KNX-IP interface
- The required knowledge is minimised in the event of an error
  – Minimisation of spare devices storage
  – Replacement devices can already be pre-programmed

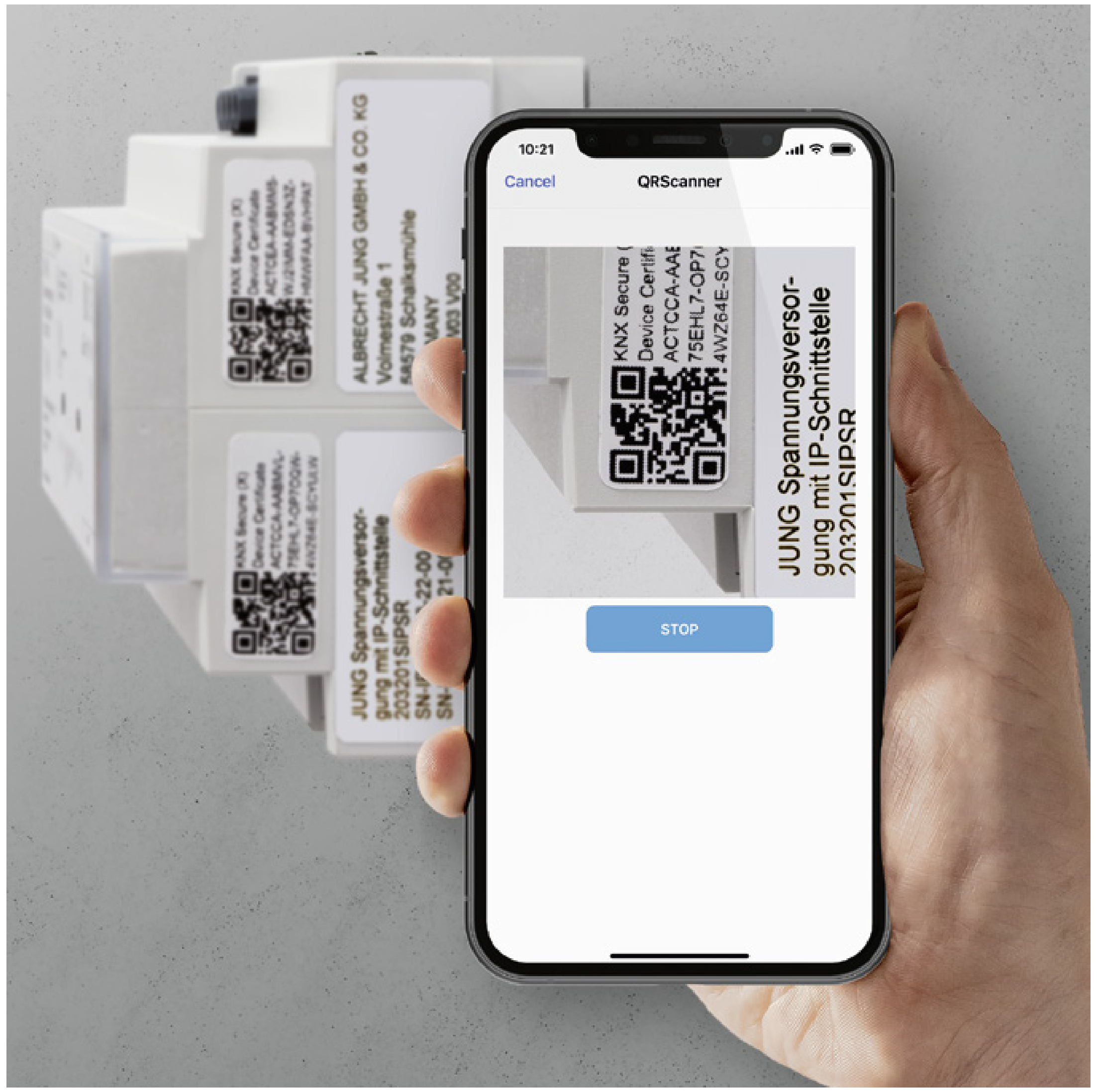
STEPS IN ETS

- Create new project and assign project password
- Add lines
  – Add KNX power supply with IP interface (20320 IS IPS R)
- Use 20320 IS IPS R in encrypted mode
  – Input of the device certificate
  – Change commissioning password (optional)
  – Change authentication code (recommended)
  – Use and start up the preferred connection in the application (for visualisation communication)
  – Establish IP tunnelling for visualisation (use reserved tunnel)
- Put all other devices into operation according to the manufacturer specifications

ADDITIONAL NOTES

- The commissioning password must be entered if the project is not open.

JUNG KNX Secure Apps: Secure & fast in operation



Professional installers need the certificates of the individual KNX Secure components to make a KNX installation secure. They are printed on the devices as a QR code and must be integrated into the ETS. The easiest way to do this is via app.

1. INSTALL JUNG KNX SECURE SCANNER APP

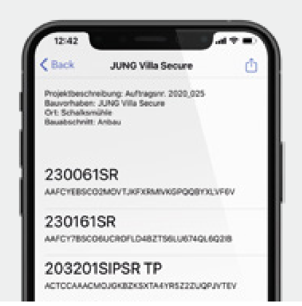
The smartphone app is installed before the installation. KNX Secure Scanner is available in the app stores of Apple and Google at no charge. Using the KNX Secure Scanner app, installers can easily scan the QR codes on JUNG KNX devices.

Download on the App Store

GET IT ON Google Play

2. REGISTER CERTIFICATES VIA SMARTPHONE APP

The scanning with the JUNG KNX Secure Scanner app is quick and easy. The keys are shown there as a list view. With the app, the installer then creates a protected JSON file or lists the Secure keys in a password-protected PDF. Then the KNX components are installed.



Projektbeschreibung: Auftragsnr. 2020_025
Bauvorhaben: JUNG Villa Secure
Ort: Schalksmühle
Bauabschnitt: Anbau

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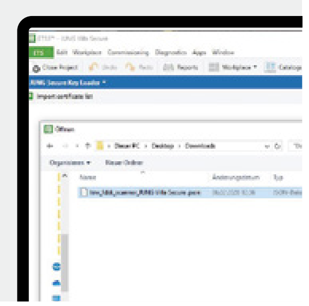
230161SR
AAFCY7BSCO6UCROFLD4BZTS6LU674QL6Q2IB

203201SIPSR TP
ACTCCAAACMOJGKBZKSXTA4YRSZ2ZUQPJVTEV

3. IMPORT CERTIFICATES VIA KNX SECURE KEY LOADER APP

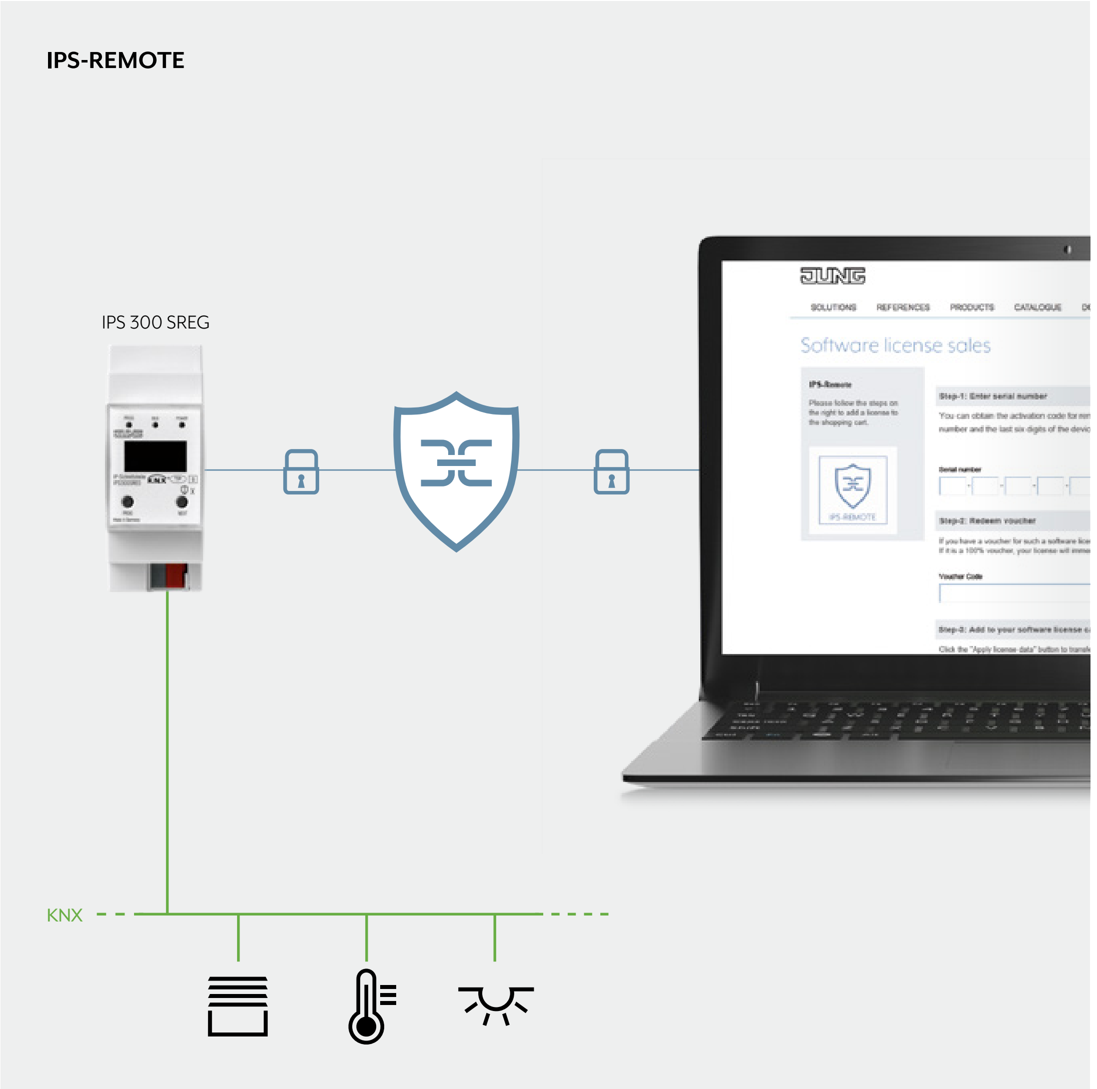
In order to securely integrate the scanned device certificates into the ETS, the installer transfers the JSON files created with the JUNG KNX Secure Scanner to his computer. Several files can come together there, which he archives and imports into the ETS project using the ETS app JUNG KNX Secure Key Loader. This extension is available via the KNX Association App-Shop and is bound to the ETS dongle. The installation is performed via the App menu in the main menu of ETS 5 Professional.



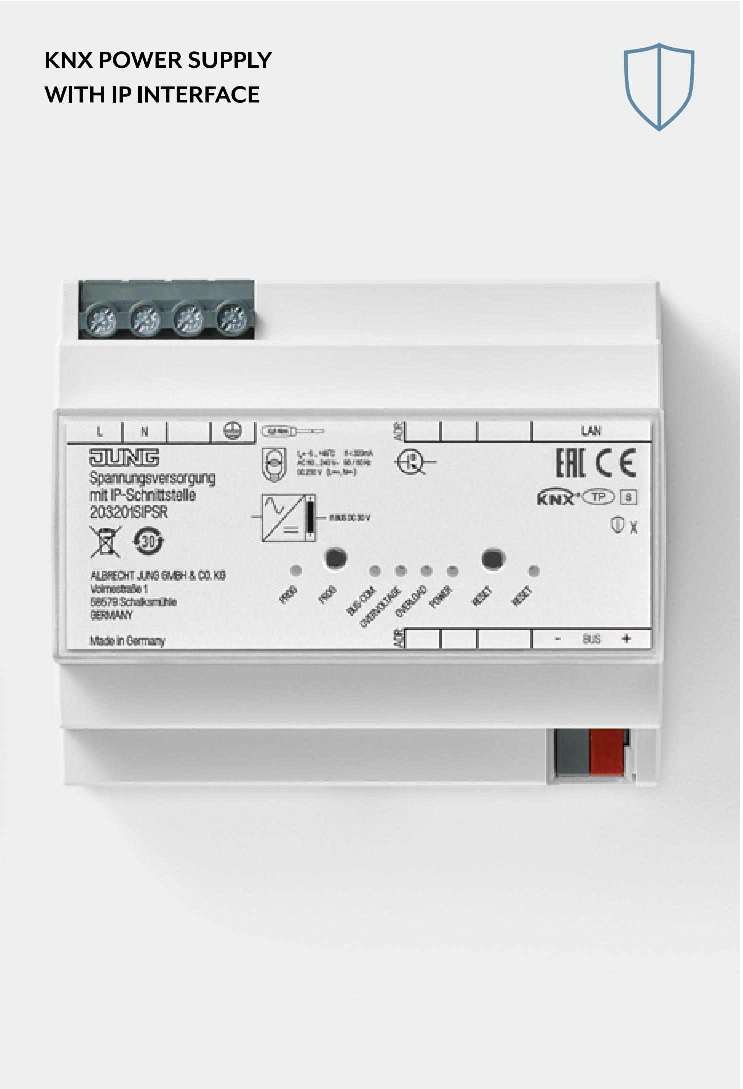
4. OPTIONAL: UPDATE KNX COMPONENTS

All KNX devices can be conveniently updated with the JUNG ETS Service app. The extension makes it possible to install new firmware in the components – for example to activate KNX Data Secure in a JUNG line coupler. Furthermore, older firmware versions can be transferred to existing devices. The app is available at no charge in the ETS Shop of the KNX Association.

Remote maintenance of the KNX system


IPS-REMOTE
IPS 300 SREG
JUNG
SOLUTIONS
REFERENCES
PRODUCTS
CATALOGUE
Software license sales
IPS-Remote
Please follow the steps on the right to add a license to the shopping cart.
IPS-REMOTE
Step-1: Enter serial number
You can obtain the activation code for ren
number and the last six digits of the devic
Serial number
Step-2: Redeem voucher
If you have a voucher for such a software lice
If it is a 100% voucher, your license will imme
Voucher Code
Step-3: Add to your software license c
Click the "Apply license data" button to transf
KNX

KNX IP INTERFACE



KNX POWER SUPPLY WITH IP INTERFACE

Simple and secured remote maintenance and programming of all KNX components: IPS-Remote makes it possible. Remote maintenance is convenient for the expert and costeffective for the building owner.

With encrypted remote maintenance via IPS-Remote, system integrators only access the customer's KNX components. Time-consuming and cost-intensive journeys are not necessary. The necessary requirements for this are clear: The ETS app IPS-Remote, the IP interface IPS 300 SREG or a power supply with IP interface and the remote maintenance licence IPS-L bound to the respective interface. System integrators acquire these via their myJUNG access – also subsequently. Once linked, professional installers maintain the KNX components behind the IP interface as usual via ETS 5. If necessary, the customer grants access to the system integrator – this is done via Smart Visu Server or via connection to a push-button sensor. In this way, the control always remains with the customer. Remote maintenance focuses exclusively on the KNX system.

JUNG.DE/MYJUNG

Switching with KNX Secure

KNX F 10 PUSH-BUTTON

LS 990 IN ALUMINIUM

Attractive design, smart operation: The KNX F 10 push-button looks like a light switch, but masters intelligent technology. Each individual switching operation is encrypted via KNX Data Secure.

The functions of the F 10

AT A GLANCE

INTUITIVE AND VERSATILE OPERATION

The function assignment of the JUNG KNX F 10 push-buttons can be completely customised. The push-buttons switch blinds, dim lamps and much more. In addition, their individual switching points can be assigned multiple times thanks to a sophisticated operating concept. In this way, they make versatile control of the smart building possible.

PRECISE TEMPERATURE SENSOR

The JUNG KNX F 10 push-button in the Universal version has a temperature sensor. It thus records the room temperature with pinpoint accuracy and passes the information on to, for example, a KNX temperature controller Fan Coil. This then regulates the heating to a desired value. This saves energy and the KNX installation is also more cost-efficient.

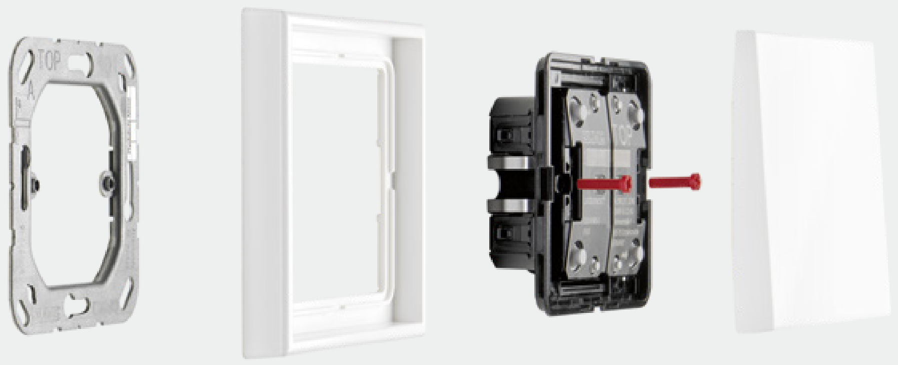
NUMEROUS ADDITIONAL FUNCTIONS

In the guise of a classic switch, the JUNG KNX F 10 push-buttons provide a wide range of functions. Both versions have a controller satellite unit and an energy saving mode. The KNX F 10 Universal push-button also has alarm signalling, lock function and HSV colour control.

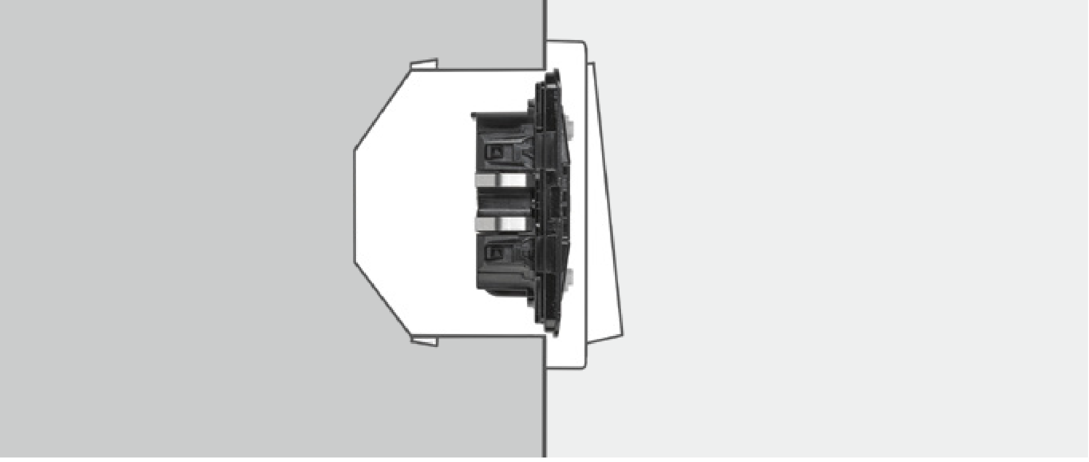
The new JUNG KNX F 10 push-buttons enable extensive options in the technical interior equipment of an intelligent building. Its range of functions is large, and thanks to its classic design, the KNX systems are simple to operate.

Design and installation of the KNX F 10 push-button

COMPONENTS IN DETAIL

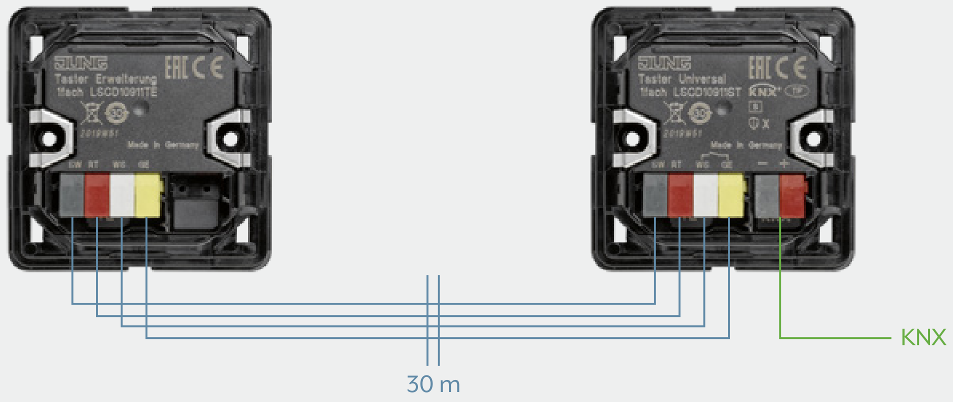


LOW INSTALLATION DEPTH

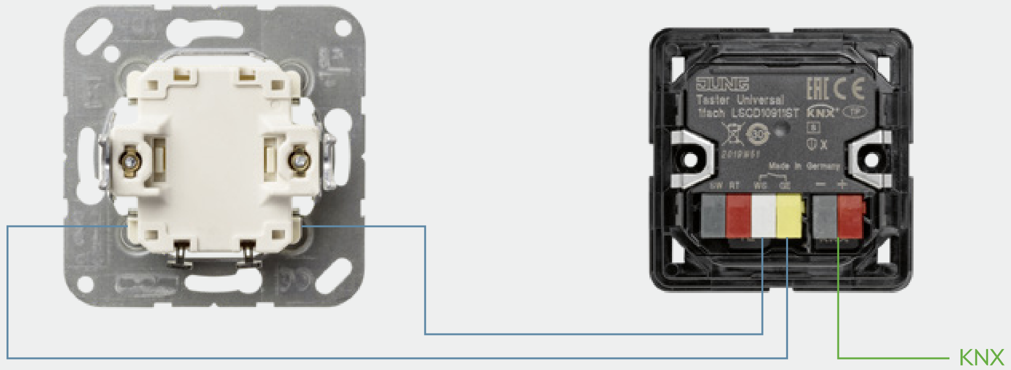


The design of a KNX push-button F 10 consists of a support ring made of solid galvanised steel, a frame in the JUNG design, a push-button module and a suitable rocker. Its compact design of only 15 millimetres creates significantly more space for wiring.

ATTACHING A KNX PUSH-BUTTON EXTENSION



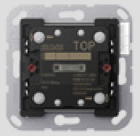
ATTACHING A LIGHT BUTTON



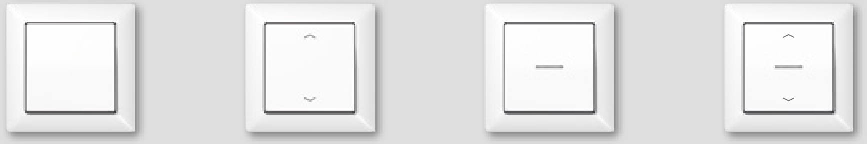
The JUNG KNX push-button F 10 in the Universal version can be connected to a KNX push-button extension via the left-justified connections. Alternatively, extensions with floating contact can be connected there, such as reed contacts or conventional light buttons. The installation is successful with a supply line of up to 30 metres in length. Thus the JUNG KNX push-buttons F 10 enable a smart and at the same time considerably more cost-efficient electrical installation.

System design for KNX Standard and Universal push-buttons

Standard 1-gang
Ref. no.: A 10711 ST


Universal 1-gang
Ref. no.: A 10911 ST

AS range



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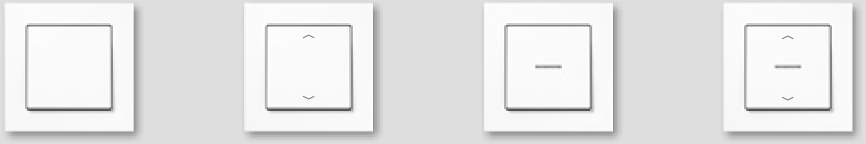
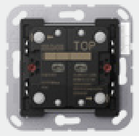
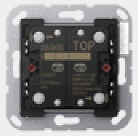



Standard 2-gang
Ref. no.: A 10721 ST


Universal 2-gang
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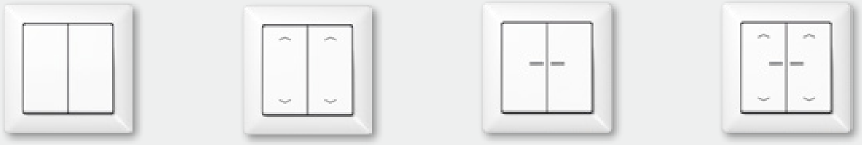

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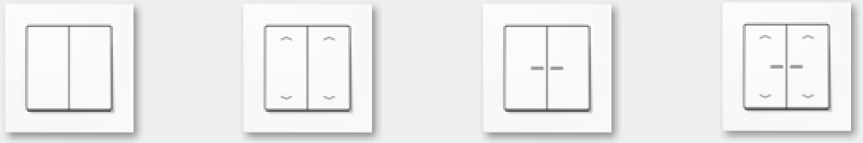
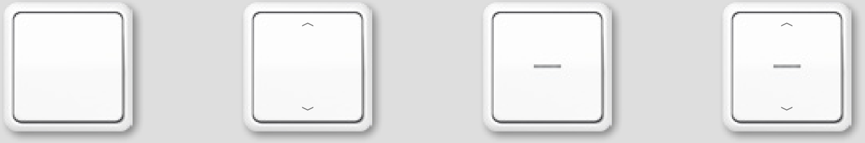


Standard 1-gang
Ref. no.: LS CD 10711 ST

Universal 1-gang
Ref. no.: LS CD 10911 ST

CD range



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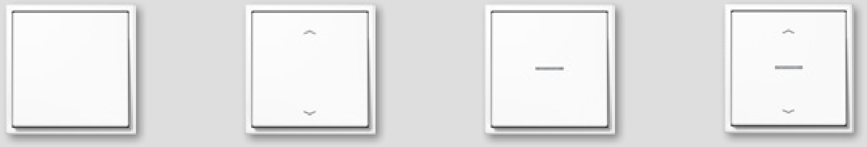
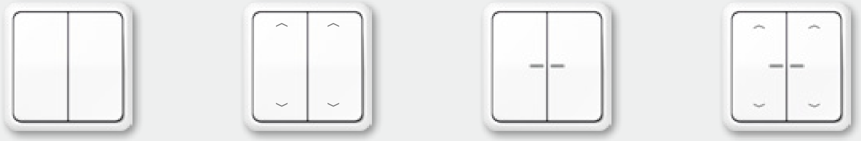


Standard 2-gang
Ref. no.: LS CD 10721 ST

Universal 2-gang
Ref. no.: LS CD 10921 ST

CD range



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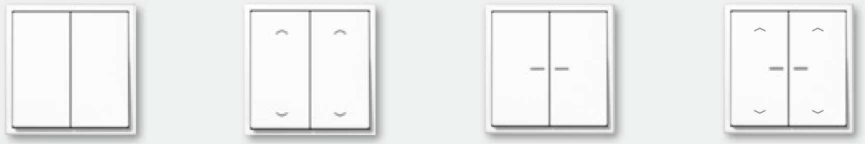
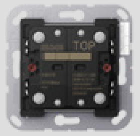
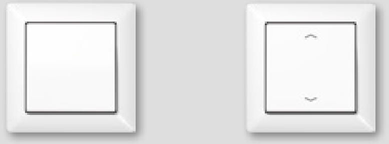


System design for KNX push-button extensions


Extension 1-gang
Ref. no.: A 10911 TE

Can only be combined with KNX Universal push-button

AS range



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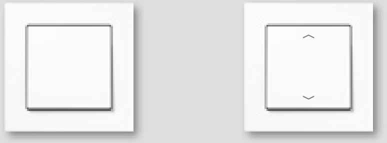
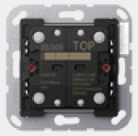
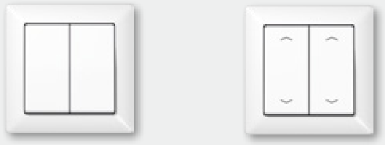



Extension 2-gang
Ref. no.: A 10921 TE

Can only be combined with KNX Universal push-button

AS range



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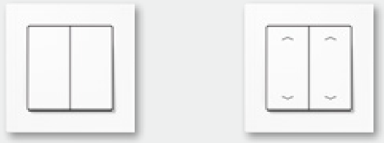
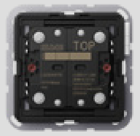
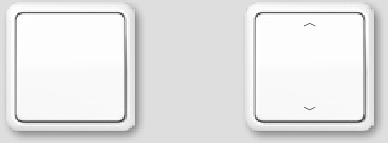


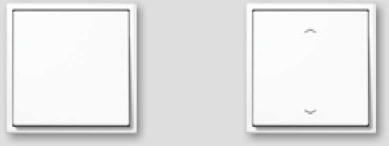

Extension 1-gang
Ref. no.: LS CD 10911 TE

Can only be combined with KNX Universal push-button

CD range



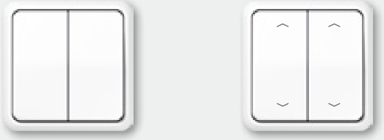
LS range



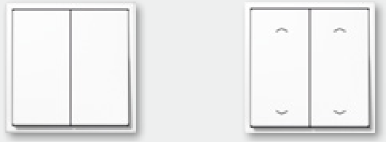
Extension 2-gang
Ref. no.: LS CD 10921 TE

Can only be combined with KNX Universal push-button

CD range



LS range



Individual button assignment

PUSH-BUTTON FUNCTION

On and off:
Like conventional push-switches.

ROCKER FUNCTION

Up at the top, down at the bottom:
Move shutters intuitively.

PUSH-BUTTON FUNCTION 2-GANG

Double assignment:
Switch two functions on and off.

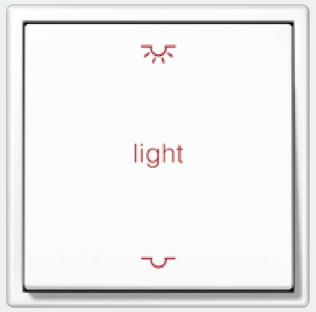
ROCKER FUNCTION 2-GANG

Dimming or shading:
Two functions per rocker.

The KNX F 10 push-buttons master both the push-button function and the rocker function. The rocker function of the Standard version enables additional control possibilities such as dimming lamps. Among other things, the push-button function in the Universal version enables full-surface operation.

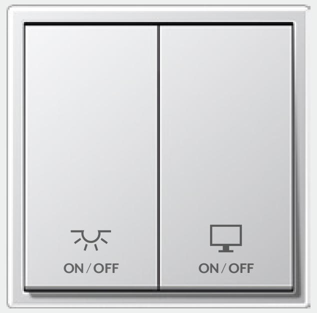
Individual labelling

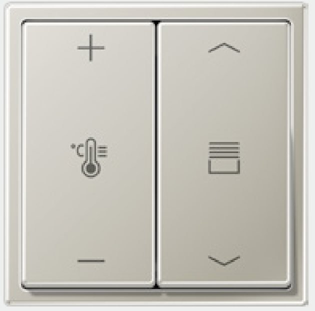
COLOUR PRINTING



Designed using abrasion-resistant colour printing, the KNX F 10 push-button is unmistakable.

LASER ENGRAVING





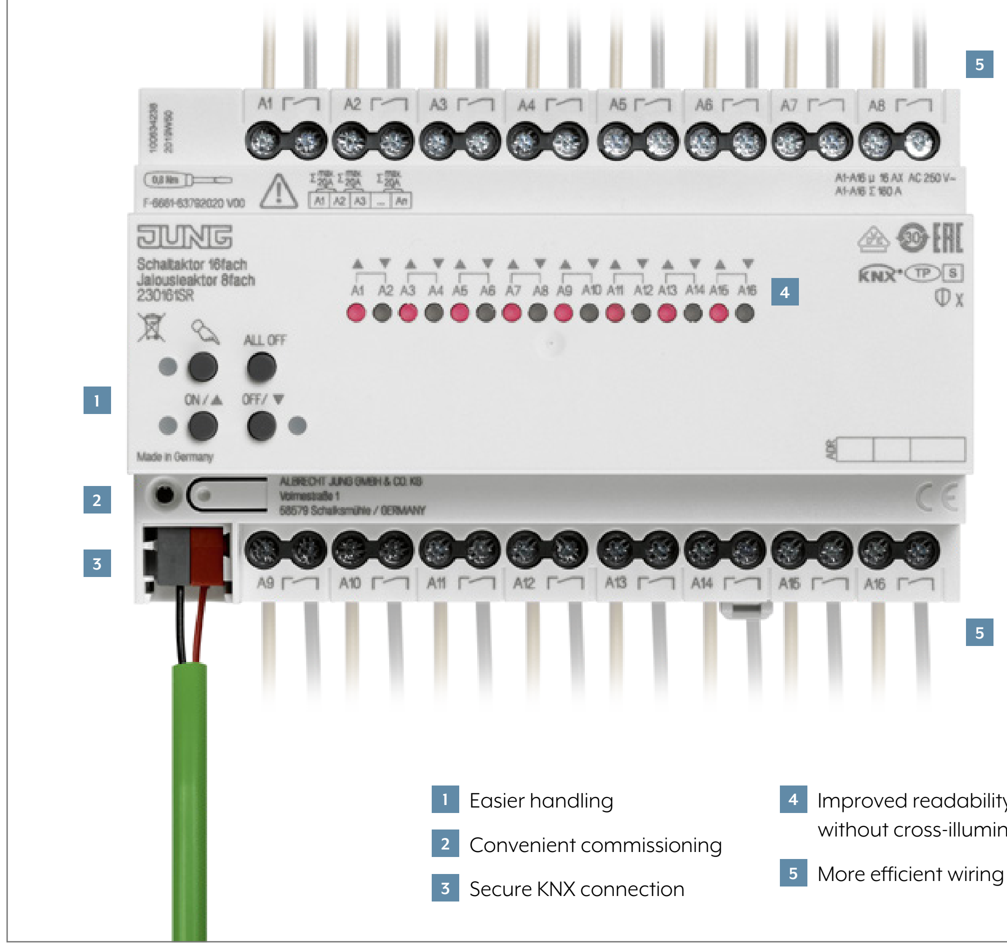
Finish the surfaces of the KNX F 10 push-button with high-quality laser engraving as desired.

With the JUNG Graphic Tool, the KNX F 10 push-button can be provided with symbols, text, logos or motifs. Laser engraving or colour printing are available for individualisation.

JUNG.DE/GT

A new generation of the KNX switch and blind actuators

KNX SWITCH ACTUATOR, 16-GANG
KNX BLIND ACTUATOR, 8-GANG



1 Easier handling

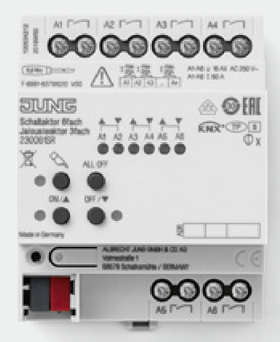
2 Convenient commissioning

3 Secure KNX connection

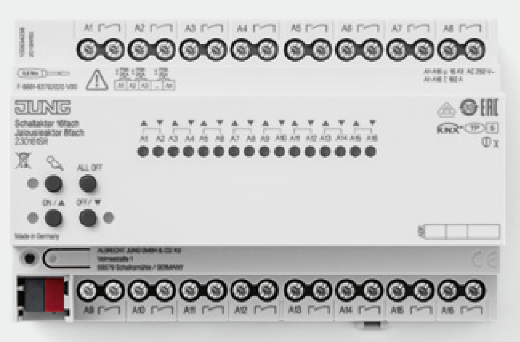
4 Improved readability without cross-illumination

5 More efficient wiring

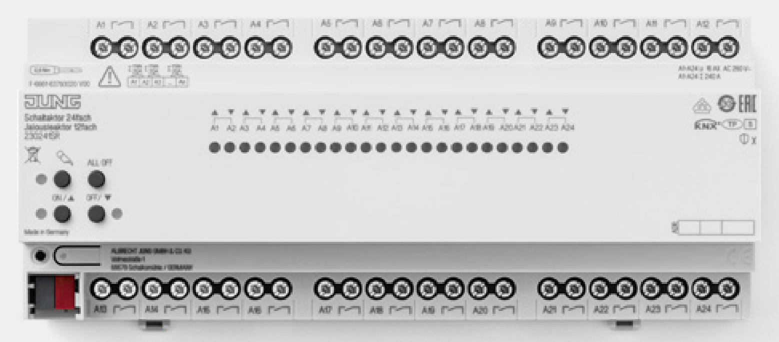
The JUNG KNX switch and blind actuators have a holistically improved concept. The actuators simplify installation and increase security: they work with KNX Data Secure and effectively encrypt all KNX telegrams as a result. All this with a reduced energy use at the same time.



KNX switch actuator, 6-gang /
KNX blind actuator, 3-gang



KNX switch actuator, 16-gang /
KNX blind actuator, 8-gang

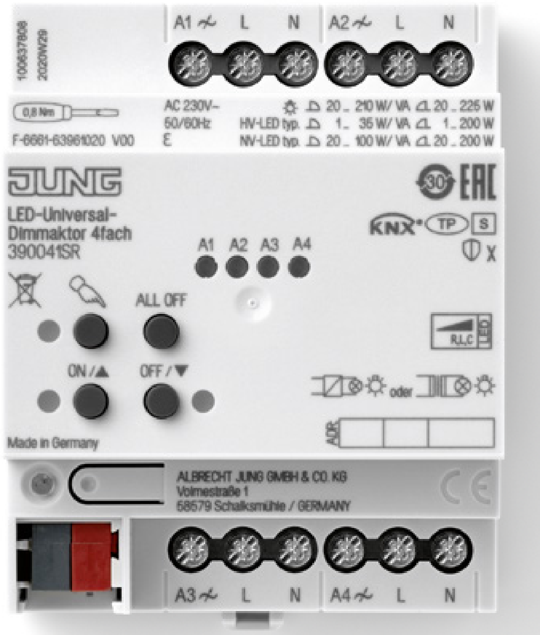


KNX switch actuator 24-gang / KNX blind actuator 12-gang

The JUNG KNX actuators in the 6-gang, 16-gang and 24-gang versions work with KNX Secure. Telegrams on the twisted pair line are tap-proof. The actuators receive updates via the ETS Service app. The KNX actuators of the latest generation are more compact thanks to their single-storey design. They are clear and easy to read and their installation is simple. Furthermore, once configured, actuators, for example for controlling blinds, can be multiplied using the teaching function: Installed once, copied several times – the work in the property is done quickly. The bistable relays of the actuators reduce the power loss to a minimum. This makes the actuators more energy efficient.

The new KNX LED Universal dimming actuator, 4-gang

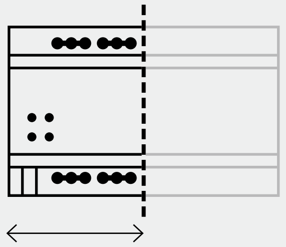
KNX LED UNIVERSAL DIMMING ACTUATOR, 4-GANG



Optimum lighting according to requirements and occasion significantly enhances comfort in a smart building. The JUNG KNX LED Universal dimming actuator, 4-gang, enables reliable dimming of energy-saving light sources. It is also future-proof, works with KNX Data Secure and effectively encrypts all KNX telegrams.

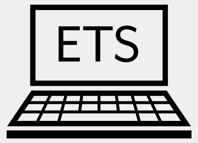
The advantages at a glance

REDUCED WIDTH



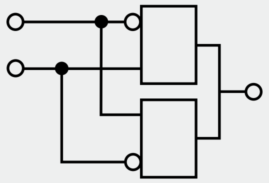
The width of the dimming actuator is only 4 rail units. This effectively saves space in the distributor.

ETS 5 OPTIMISED DATABASE



The parametrisation is much more intuitive with the new actuator generation.

INTEGRATED LOGIC FUNCTIONS



Logics can be set up decentrally and without a linking device.

MINIMUM LOAD FOR HV LED = 1 W

1W

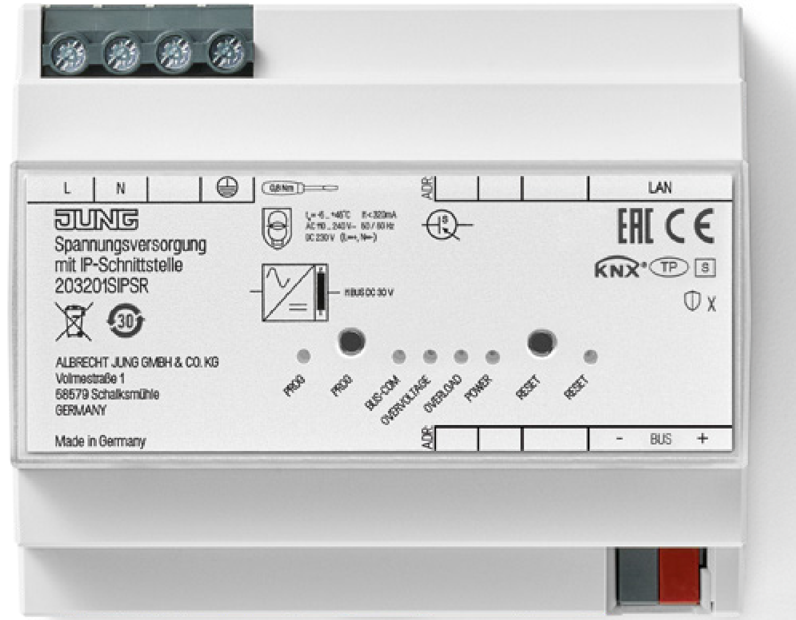
Thanks to the reduced minimum load, users can choose from a wide range of compatible and dimmable luminaires.

The JUNG KNX dimming actuator is impressive due to its high functionality in a compact design. The dimming actuator has eight logics, converters, comparators as well as filter and time functions. It also has optimised and adjustable dimming characteristics in the time and value range. However, with only 4 rail units, it is only half as wide as its predecessors. This results in clear cost advantages.

Thanks to its update capability, the dimming actuator is future-proof. If a new firmware version is available, installers can install this via the JUNG ETS Service App. Communication on the twisted pair cable is secure thanks to KNX Data Secure and transmissions are protected against manipulation. With the dimming actuator, JUNG creates the best conditions for individual and safe lighting scenes.

System devices with KNX Secure

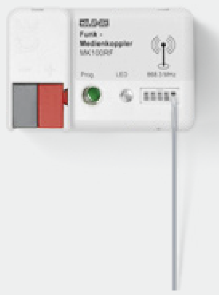
KNX POWER SUPPLY WITH IP INTERFACE



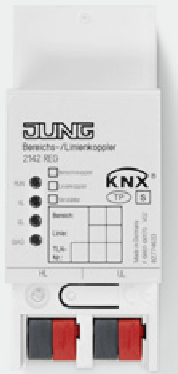
JUNG provides KNX system devices with KNX Secure and brings important areas together. All components ensure data security and reliably control the complete building technology.

The KNX power supply with IP interface brings together what is needed in every KNX installation: Power supply and interface. This makes it easier to select components already at the planning stage.

But JUNG also provides secure interfaces for all other areas in the smart building. They protect the data exchange using KNX Secure and reliably control the complete building technology.

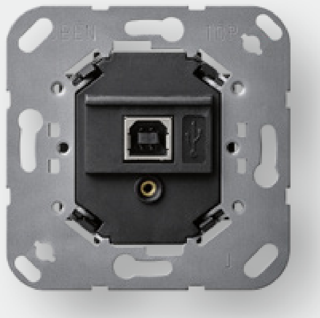


KNX RF media coupler



KNX area / line coupler

KNX USB data interface



USB data interface flush-mounted

KNX IP interface

KNX IP router

OVERVIEW OF THE ADVANTAGES OF THE SYSTEM DEVICES:

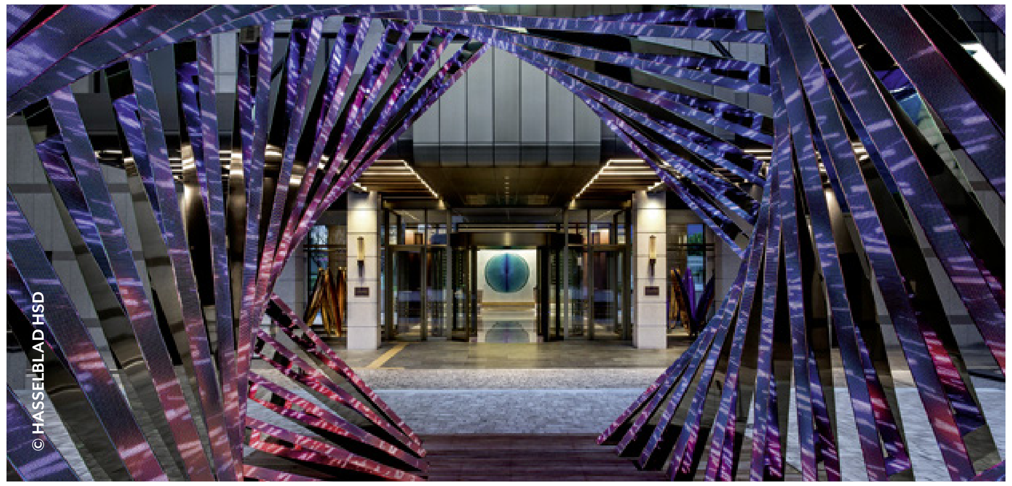
- Secure communication
- Protected visualisation
- Modern encryption process
- Reliable control

© SHANGRI-LA HOTEL SINGAPORE

SHANGRI-LA SINGAPORE
Architect: Innenarchitekt LRF Designers

Intelligent comfort

© JULIAN FRANKLIN



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Numerous hotels throughout the world rely on JUNG KNX products. With KNX Secure, maximum comfort for the guest is combined with security and cost effectiveness for the operator.

Smart and economical

FUTURIUM, BERLIN
Architect: RICHTER MUSIKOWSKI GmbH

© WWW.MM-FOTOWERBUNG.DE

Throughout the world, planners of public offices and administrative buildings trust JUNG solutions. Investment security is alongside cost effectiveness and energy efficiency an important argument in the decision for building automation. The intelligent KNX components contribute to effective operation and allow a stylish and aesthetic ambience. In addition, KNX Secure increases security to a new level.

DREISCHEIBENHAUS
Architect: HPP Hentrich – Petschnigg & Partner

© MICHAEL SANDMAIER

Check list for increased security in KNX installations

1 HAVE THE FOLLOWING ARRANGEMENTS BEEN MADE IN THE INSTALLATION?

□ Have the applications and devices been firmly installed? Has it been ensured that devices are protected against easy removal (use of anti-theft devices)?

□ Has it been ensured that sub-distributions with KNX devices are difficult to access for unauthorised persons (e.g. always locked or in locked rooms)?

□ Have devices in outside areas been installed where they are sufficiently difficult to access (e.g. at sufficient height)?

□ If the KNX installation can be operated from public areas that are not monitored, has the use of securely located (e.g. in the sub-distribution) binary inputs or push-button interfaces been considered?

2 ARE TWISTED-PAIR BUS CABLES USED AS THE COMMUNICATION MEDIUM?

□ Is the bus line protected against unauthorised access both inside and outside the house or building?

□ If a bus line is used in outside areas or in areas needing particular protection, have the arrangements mentioned under Point 6 been made for the couplers?

3 IS POWERLINE USED AS THE COMMUNICATION MEDIUM?

□ Have appropriate band-stop filters been installed?

□ If Powerline is in use in outside areas, have the arrangements mentioned under Point 6 been made for the media couplers?

4 IS IP USED AS THE COMMUNICATION MEDIUM?

□ Have the network settings been documented and given to the building owner or LAN administrator?

□ Are switches and routers set up so that only known MAC addresses have access to communication media?

□ Has a separate IP network been set up with its own hardware for the KNX communication?

□ Is the access to the (KNX) IP network limited to an authorised group of people using user ID and strong passwords?

□ If using KNX IP multicast, a different IP address than the default should be used (default: 224.0.23.12). Has the IP multicast address been changed?

□ Has the default SSID been changed for wireless access points?
Has the periodic transmission of the SSID been disabled?

□ Are ports in the routers towards the Internet closed to KNX and is the default gateway of the KNX net/IP router set to 0? Has the (W)LAN installation been protected by an appropriate firewall? If Internet access is necessary to the installation, check the possibility of implementing the following:
1. Establishing a VPN connection with the Internet router
2. Use of a manufacturer-specific KNX object server

5 IS WIRELESS USED AS THE COMMUNICATION MEDIUM?

□ Have the arrangements mentioned under Point 6 been made for the media couplers?

□ Has a separate domain address been set for each wireless coverage area?

6 ARE YOU USING COUPLERS IN THE INSTALLATION?

□ Have the physical addresses for the devices been set in accordance with the topology?

□ Are the relevant coupler parameters set in such a way that incorrect source addresses from outside the range are not forwarded?

□ Are point-to-point and broadcast communication beyond the couplers blocked?

□ Are the filter tables correctly loaded and are the settings made so that the filter tables are evaluated?

□ Have the arrangements for the couplers from Point 7 been made?

7 ARE THE DEVICES PROTECTED AGAINST RECONFIGURATION?

□ If not, enter a BAU password[1] in the ETS project.

8 ARE YOU USING KNX SECURE[2] DEVICES?

□ Are you using the authentication and encryption mechanisms intended by the device for the group communication to be protected?

9 DO YOU SUSPECT THAT THERE WILL BE UNAUTHORISED ACCESS TO THE BUS?

□ Record the telegram traffic and analyse it.

□ Read out the PID_Device_Control[3] from the devices and verify whether other devices are transmitting with the same physical address.

□ Read out the PID_Download_Control[3] from the devices and verify whether the device has been reloaded since it was configured.

10 COUPLING KNX WITH SECURITY INSTALLATIONS

□ If KNX is coupled with security installations, has this been implemented as follows?
1. KNX devices or interfaces certified by VdS?
2. Using floating contacts (binary inputs, push-button interfaces, etc.)?
3. Using appropriate interfaces or gateways? Has it been ensured that the KNX communication does not trigger any security-relevant functions in the third-party system?

[1] not all devices can be protected against reconfiguration in this way – contact the respective manufacturer
[2] recommended from ETS 5.7.3
[3] not supported in all devices

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TITLE IMAGE: ELEKTRO PRINZBACH

P-GB-SECURE 1120