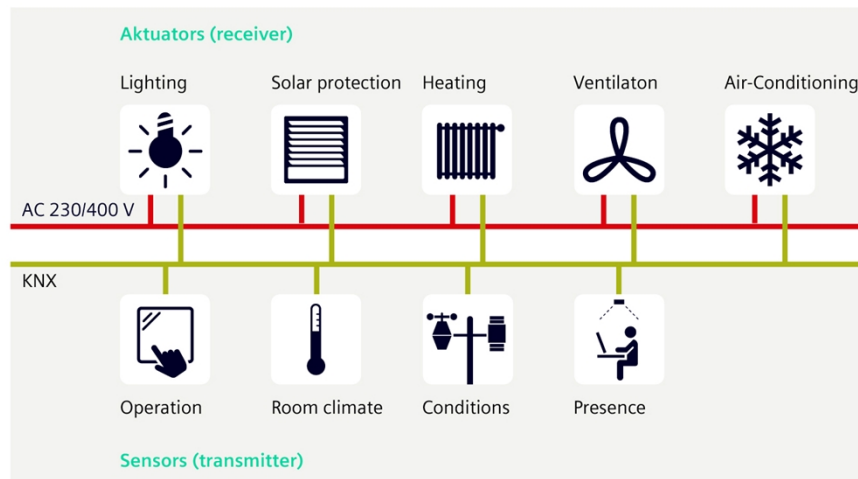


Technical Information and Application Examples

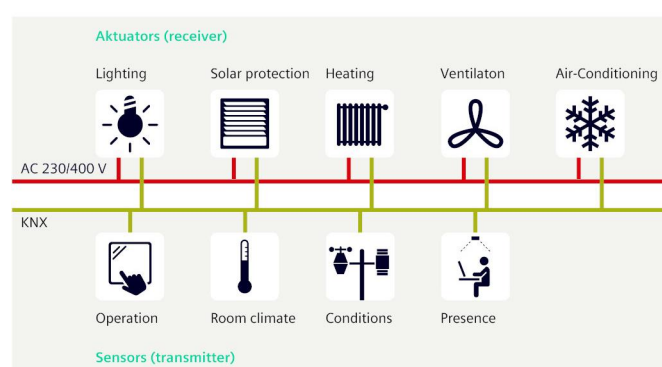


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KNX Building Control GAMMA instabus – future proof installation system

KNX is an event-oriented, distributed control installation system, KNX is the worldwide standard for home and building control. KNX is approved as an International Standard (ISO/IEC 14543-3), as a European Standard (CENELEC EN 50090 and CEN EN 13321-1) and as a Chinese Standard (GB/T 20965). Hence, KNX is future-proof. KNX products of different vendors can be combined - the KNX logo guarantees networking and interworking. KNX is the only world-wide open standard for control of residential and non-residential including industrial buildings. With the consistent bus system KNX control information (from command senders) is sent to all building control components. The actuators (command recipients) receive these commands via the KNX bus line and act accordingly.

Installation system with KNX



Examples of application with KNX:

- Lighting
- Solar protection
- Heating, including demand driven control of primary system
- Ventilation
- Air conditioning
- Display and operation
- Room climate to measure CO₂, air quality and air humidity
- Evaluation of weather data such as wind force, solar radiation, day and night time
- Presence in a room

In residential and non-residential buildings, KNX integrates many building functions which used to be realized with separated systems until now. The demand for comfort in rooms increases and can be realized with daytime and presence dependent air conditioning and lighting. Furthermore, the efficient use of energy is getting more and more important. An intelligent monitoring and control of all products implies the wiring of all sensors und actuators with the central supervisory monitoring and control system. The conventional wiring leads to cable loads and to higher planning and installation efforts, fire risk and rapidly increasing costs. Using the intelligent networking of all bus devices via KNX bus wiring, the wiring and thus the fire load is reduced. The mains power is directly wired to the loads and with the decentralized actuators being close to the load the power wiring can be run from one load to another load. The sensors are connected via the bus line. The KNX system is designed for integrating several disciplines i.e., using a multi pushbutton user control the lighting can be controlled, the solar protection moved and the ventilation can be turned on and off.

An installation on basis KNX offers the following advantages:

- Installation of a future-proof system technology
- Reduction of wiring
- Fast and easy retrofitting of additional functions
- Cross-discipline usage of products from several different vendors is possible
- Reduction of power demand and operating costs
- Reduced costs for later changes in room usage and changes of the original room setup (change of configuration versus change of installation)
- Remote maintenance and surveillance via IP network connection for distributed facilities

System design

KNX is an upwards-compatible, flexible, and innovative system for various residential and non-residential building applications. The bus wiring KNX TP (Twisted Pair), but also Ethernet KNXnet/IP and Radio System KNX RF (Radio frequency) can be used as transmission medium. Thus KNX helps to implement specific customer requests and perform a fast and easy change in use of rooms and buildings.

KNX TP (Twisted Pair)

The signal transmission of KNX TP (Twisted Pair) happens via the certified bus wire. Using this wiring as the transfer medium assures a high resistance to interference. With KNX Data Secure, an optional secure transmission technology is also available.

KNXnet/IP and KNX IP Secure (Ethernet)

Information transmission with KNXnet/IP is done using the Internet Protocol (IP). It allows using the existing network infrastructure (LAN). Coupling between KNX and the local area network (LAN) is done via KNXnet/IP interfaces. This allows for coupling of complete KNX installations between buildings and the remote access. KNX IP Secure is available for the secure transfer of data and protection against unauthorized access.

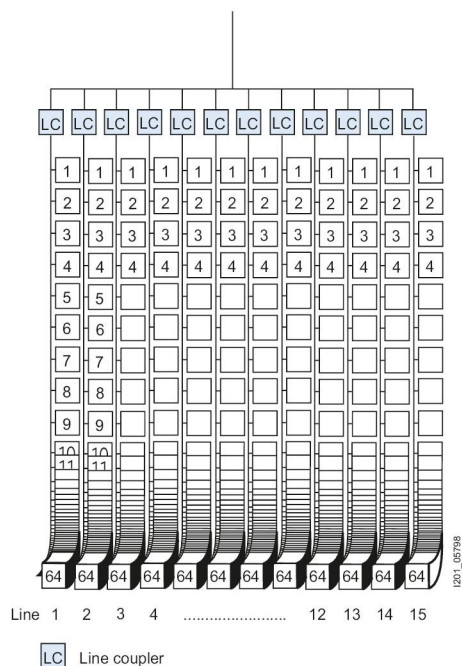
KNX RF (radio frequency)

KNX device supporting this communication medium uses radio frequency (RF) to transmit KNX telegrams. These are transmitted on the 868 MHz frequency band.

Topology

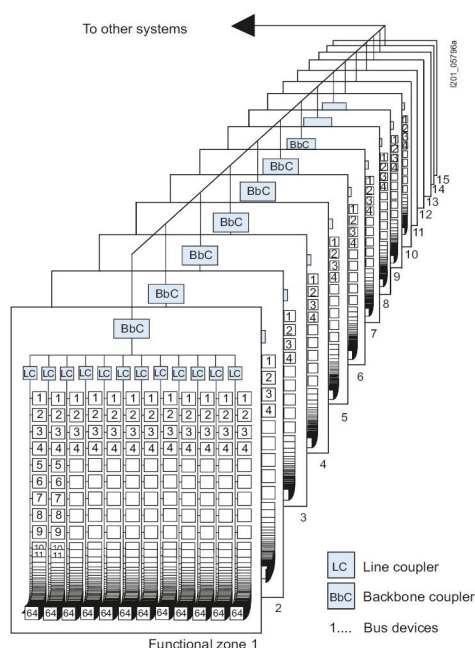
KNX is hierarchically structured and can be adjusted individually to the size of the installation. The smallest part in a KNX installation is a line. Each line, also the main line, includes up to 64 bus devices. Via the line coupler (LC) a maximum of 15 lines can be combined to a functional zone.

Installation system with KNX - one functional zone with 15 lines



Via the backbone coupler (BbC) the 15 functional zones can be combined once again. Thus, more than 14.400 KNX devices can be controlled and such a KNX installation can be further expanded via repeaters.

Installation system with KNX - 15 functional zones combined



If more than 64 devices are necessary in one line, up to 4 line segments can be combined via a line amplifier. This line amplifier can also be used to extend the line length beyond the maximum line length. One line segment needs one KNX power supply.

For each line segment there are the same rules about the maximum amount of devices to connect and the distances to each other as well as the length of the lines. In one line a maximum amount of further 3 line couplers is allowed, leading to a maximum amount of 4 times 64, i.e. 256, bus devices allowed to be installed in one line. At the main line and the functional zone there are no line amplifiers allowed. With each line having its own power supply, each line needs to galvanically isolated using line/backbone couplers. This guarantees that a failure of a line does not impact the remainder of the system.

Another advantage of separating a system in lines and functional zones is to limit the transmission of such data to the functions within one line. The line and backbone couplers transfer only those telegrams which are relevant for these lines or zones. This also enables a parallel communication in several lines and functional zones at the same time. Due to the hierarchical organization of a KNX system, a clear commissioning, diagnose and maintenance is possible any time. In case the disciplines shall be structured independently, the topology or the system design with lines and functional zones provides suitable solutions. The system can be structured like this: line structure, star structure, tree structure and a mixed structure out of these three designs. Within a line there are the following wire installation rules to note:

- Maximum length of wire in one line: 1000 m
- Maximum distance between two participants: 700 m
- Maximum distance between participant and power supply: 350 m

Transmission Technology

The individual bus participants exchange information via telegrams. The telegram contains for example switching commands or status messages. As the bus wire is symmetrically structured and the wiring is installed floating potential free to Earth ground, a potential difference between the two wire cores does not cause disturbances with reference to the earth potential. Regarding transmission speed, pulse generation and pulse reception the transmission technology is designed that no termination resistor is necessary and any wiring topology is possible. The transmission rate of KNX TP is 9600 bit/s, which are about 40 to 50 telegrams per second.

The bus access of each KNX product secures a well ordered information exchange. This is guaranteed by a serial and asynchronous transmission on the bus line. For increasing the reliability and targeting highest transmission rate, KNX applies the CSMA/CA- bus access procedures (Carrier Sense Multiple Access with Collision Avoidance). With the help of this procedure no telegram gets lost when several KNX users are sending telegrams and the higher prioritized telegram gets through the line first.

All KNX participants are always listening to the bus. The participant decides on its own when the telegram is sent to the bus as long as the bus is not busy with transmitting information. The transmission of KNX is event-driven, that means, the telegrams are only sent to the bus when the event actually happens and the transmission of information is necessary.

Telegram structure

A telegram consists of a sequence of characters. Each character has 11 Bit, which contains a Start Bit, followed by eight data bits, a parity Bit and a stop Bit. The telegram is a sequence of information, the bus specific information and the user specific information. To begin transmission of the information, the KNX needs to be free for a certain time in order to start the sending procedure.

First, a control field is sent, which contains information about the system e.g. the priority of the transmission or whether it is the first or a repeated telegram. The control field is followed by the address field. This consists of the source address and the target address of the telegram. The source address is the physical address of the sender and the target address of the receiving participant. The target address can be a physical or group address. After the address field is sent out, the data field with the user data information follows. The security field serves to check and secure the telegram (vertical parity). After the security field, the bus is silent for a certain time (break). After that all the addressed participants confirm the error-free receipt of the telegram.

If the telegram is not understood right, the participant who received that signal sends out in the confirm field NAK (Not Acknowledge) and repeats the whole telegram. If no participant confirms the telegram, the sender repeats the telegram.

A KNX participant sends out up to three repetitions. A telegram signed NAK is higher prioritized than an understood telegram (ACK = Acknowledge) which leads to a repetition of the telegram.

Addressing

Communication among KNX participants can be distinguished between two kinds of addressing:

Physical address

The address of the product is also called „physical address“. It serves for a unique naming for the sending KNX participant (name). Due to this rule, the sender can be tracked. When a certain participant is addressed, i.e. the telegram is sent to a specific device, then, the target address is the unique physical address. This is the case when an application program of the ETS (Engineering Tool Software) is loaded to a KNX participant via the KNX interface. Normally, the target address is a group address.

Group address

A group address is associated with a specific function e.g. switching, dimming or heating. In this case, information is sent from a sensor to an actuator function using a group address. As all KNX participants are informed via the KNX bus they check each telegram whether the telegram contains a group address determined for them. If the target address is identical with a group address registered in the participant, the telegram initiates the pre-defined function. If different push-buttons control the same actuators, the same function can be triggered by several sensors.

A participant sends a telegram with a group address and any number of participant listen to this (multicast). Thus, one pushbutton can control different actuators and cause an execution of a function. Central functions e.g. turn off the window-side luminaries on the South-facing façade can be implemented in a building.

Sensors are for example pushbuttons, motion detectors, room temperature controllers, brightness sensors, and combined meters for wind speed and wind direction, binary input (e.g. window contact for window surveillance/switching status)

Actuators are for example load switches, dimmers, binary outputs, solar protection actuators, valve actuator for heating

Engineering Tool Software (ETS)

The ETS (Engineering Tool Software) is a vendor-neutral software, which supports planning, project configuration, commissioning up to failure diagnosis of KNX systems. It is easy and clearly structured and thus optimally suitable for all user groups.

With the ETS, consultant engineers, planners and electrical installers can plan the whole plant, set the device configuration as well as establish the function assignment of the sensors and actuators. After project planning it is possible to export the single work steps and to give them to the installer.

In principle, members of the KNX Association provide their KNX product data base to the ETS users. The current KNX product data base can be downloaded from the Internet, in order for the user to quickly receive the latest data of the KNX products.

In addition to the ETS, several manufacturers offer ETSApps, which are additional software providing specific or advanced functions for project planning, commissioning or data transfer.

Link: www.knx.org



System data

Bus cable

• Cable type	mm ²	YCYM 2 x 2 x 0.8 One core pair (red, black) for signal transmission and power supply, one core pair (yellow, white) for additional applications (SELV or voice)
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Cable length

• Cable lengths of one line in total (core diameter: 0.8 mm)	m	Max. 1000 (including all junctions)
• Length between two bus devices	m	Max. 700
• Length between bus device and power supply unit (320 mA)/choke	m	Max. 350
• Length between power supply unit (320 mA) and choke		Side-by-side mounting necessary

Bus devices

• Number of areas		Max. 15
• Number of lines per area		Max. 15
• Number of bus devices per line		Max. 64

Topology

• Topology structure		Line, star or tree structure
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Power supply

• Power supply	V DC	24 (SELV safety extra-low voltage)
• Power supply units per line		Minimum one power supply unit (160, 320 or 640 mA or 2 x 640 mA)

Transmission

• Transmission technology		Distributed, event-controlled, serial, symmetric
• Baud rate	bit/s	9600

Device characteristics (unless otherwise specified)

Device properties

Degree of protection according to EN 60529		IP20
Protective measure		Bus: safety extra-low voltage SELV 24 V DC
Overvoltage category		III
Rated insulation voltage Ui	V	250
Degree of pollution		2
EMC requirements		complies with EN 50428
Resistance to climate		EN50491-2

Operating conditions

Application		For fixed installation indoors, for dry rooms and installation in heavy-current distribution boards
Ambient operating temperature	°C	-5 to +45
Humidity in operation	%	Max. 93
Storage temperature	°C	-25 to +70
Humidity in storage	%	Max. 93
Certification		KNX certified
CE marking		Compliant with EMC Directive (residential and non-residential buildings), Low Voltage Directive

Fitting power supplies for every KNX system

Each bus line needs its own power supply unit. The power supply unit provides the system power necessary for the instabus KNX.

The KNX system provides for decentralized and central power supply units. Central power supply units are installed as DIN rail mounted devices in distribution boards and control cabinets, while decentralized power supply units are designed for installation in junction boxes, in parapet channels or in room control boxes.

Central power supply units provide 320 mA or 640 mA bus current. Maximum up to two central power supply units may be attached to a single bus line. A second unit is not required unless the supply voltage at a bus device is less than 21 V.

When more than 30 bus devices are installed in short bus cable distance (e.g. 10 m), e.g. in distribution boards, the power supply unit should be arranged near these bus devices. The distance between power supply unit and any of its bus devices must not exceed 350 m.

A decentralized power supply provides 80 mA bus current. This allows for decentralized solutions for self-sufficient control of a single room or, by integration of several room control islands, of a floor or even a complete building. Up to eight decentralized power supply units may be operated in parallel, such that a complete KNX bus line can be setup with e.g. eight room control boxes.

When several bus devices are installed in short bus cable distance (e.g. 10 m), e.g. in distribution boards, or in a room control box AP 641, the power supply units shall be arranged near these bus devices. The distance along the bus wire between any bus device and the closest power supply unit must not exceed 350 m. If only the decentralized power supply RL 125/23 is used, then the maximum KNX cable length in a bus line is 350 m for one, 700 m for two, and 1000 m for 3 or more decentralized power supplies RL 125/23.

In principle, central and decentralized power supply units can be operated in parallel with each other. Consideration must be taken regarding the sum of the short circuit currents of the power supply units, which must be lower than 3 amperes.

The following table shows the respective short circuit current:

Material number	Type	Short circuit current	Bus current
5WG1125-4AB23	RL 125/23	< 0.2 A	80 mA
5WG1125-1AB12	N 125/12	< 1.0 A	320 mA
5WG1125-1AB22	N 125/22	< 1.5 A	640 mA

With eight decentralized power supply units RL 125/23 operated in parallel the maximum short circuit current is 1.6 A.

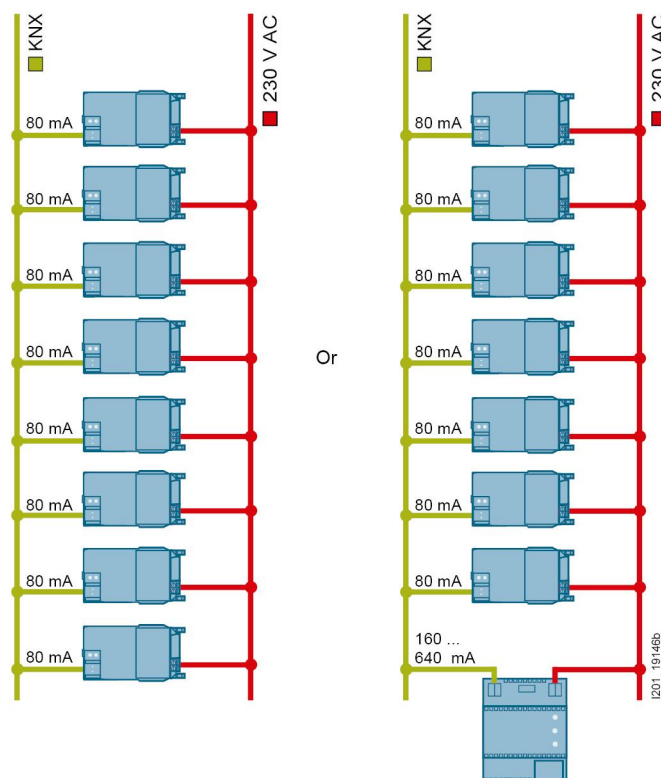
Additionally, it is possible to operate a power supply unit N 125/12 in parallel to eight RL 125/23. Only with the power supply unit N 125/22 observe that it has a short circuit current of 1.5 A, which is why only seven decentralized power supply units can be operated in parallel.

To ensure an uninterrupted power supply a separate circuit with safety separation should be used for the power supply unit N 125/x2 power supply line.

The power supply units N 125/x2 can supply DC 24 V power from an additional pair of terminals (yellow-white).

All power supply units N 125/x2, RL 125/23 and RL 125 can be powered by AC 230 V.

A minimum cable length is not required between these power supply units from Siemens.



KNX devices and fast download with ETS6

Starting with ETS6, in addition to KNX Standard Telegrams ETS supports Telegrams with „Long Frames“, which allow sending longer telegrams on the KNX bus.

For devices supporting the reception of these „Long Frames“ more user data can be packed into a telegram. This leads to shorter download times of downloads with ETS.

Following GAMMA KNX products support the „Long Frame“ Download with ETS

Product Title	Stock No.
Line/backbone coupler N 140/13	5WG1140-1AB13
KNX/DALI Gateway N 141/14	5WG1141-1AB14
KNX/DALI Gateway N 141/32 Twin	5WG1141-1AB32
IP Router 146/03	5WG1146-1AB03
Interface N 148/12 USB	5WG1148-1AB12
IP Interface N 148/23	5WG1148-1AB23
Push button interface 4x potential-free contact UP 220/31	5WG1220-2DB31
Push button single i-system UP 221/2	5WG1221-2DB12
Push button single i-system UP 221/3	5WG1221-2DB13
Push button double i-system UP 222/2	5WG1222-2DB12
Push button double i-system UP 222/3	5WG1222-2DB13
Push button triple i-system UP 223/2	5WG1223-2DB12
Push button triple i-system UP 223/3	5WG1223-2DB13
Brightness sensor UP 255D21	5WG1255-2DB21
Presence detector DESK UP 258D12	5WG1258-2DB12
Presence detector WIDE UP 258D31	5WG1258-2DB31
Presence detector WIDE UP 258D33	5WG1258-2DB33
Presence detector WIDE UP 258D41	5WG1258-2DB41
Presence detector WIDE UP 258D51	5WG1258-2DB51
Presence detector WIDE DualTech UP 258D61	5WG1258-2DB61
Binary input RL 260/23	5WG1260-4AB23
Push button single style UP 285/2	5WG1285-2DB12
Push button single style UP 285/3	5WG1285-2DB13
Push button double style UP 286/2	5WG1286-2DB12
Push button double style UP 286/3	5WG1286-2DB13
Push button quadruple style UP 287/2	5WG1287-2DB12
Push button quadruple style UP 287/3	5WG1287-2DB13

Technical Information and Application Examples

Technical Information

Fast Download using ETS5 with KNX "Long Frames"

Following GAMMA KNX products support the „Long Frame“ Download with ETS

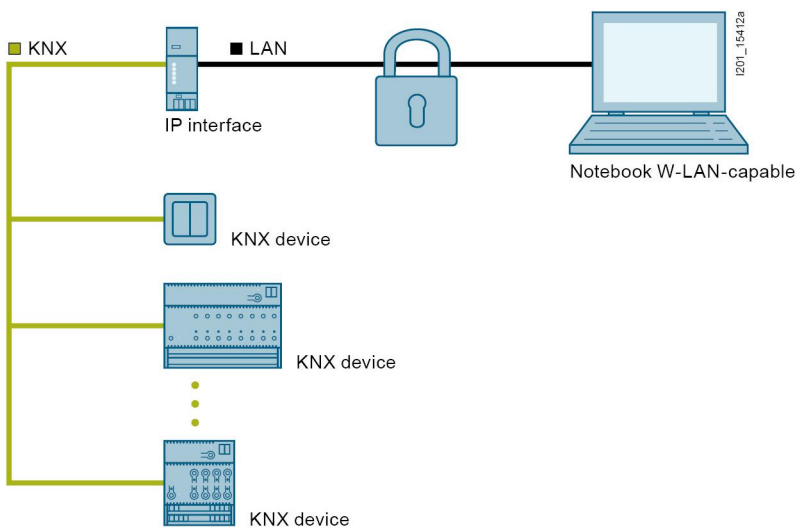
Product Title	Stock No.
Binary output device UP 510/03	5WG1510-2AB03
Binary output device UP 510/13	5WG1510-2AB13
Binary output device RS 510/23	5WG1510-2AB23
Thermo drive actuator RS 510K23	5WG1510-2KB23
Switching actuator RL 512/23	5WG1512-4AB23
Binary output 3x6A RL 513D23	5WG1513-4DB23
Solar protection actuator UP 520/03	5WG1520-2AB03
Solar protection actuator UP 520/13	5WG1520-2AB13
Solar protection actuator RS 520/23	5WG1520-2AB23
Solar protection actuator RL 521/23	5WG1521-4AB23
Universal dimmer UP 525/03	5WG1525-2AB03
Universal dimmer UP 525/13	5WG1525-2AB13
Universal dimmer RS 525/23	5WG1525-2AB23
Universal dimmer N 528D01, 2 x 300 VA, AC 230 V	5WG1528-1DB01
Switching actuator N 530D31 4x AC 230 V 6 AX	5WG1530-1DB31
Switching actuator N 530D51 8x AC 230 V 6 AX	5WG1530-1DB51
Switching actuator N 530D61 12x AC 230 V 6 AX	5WG1530-1DB61
Switching actuator N 532D31 4x AC 230 V 10 AX	5WG1532-1DB31
Switching actuator N 532D51 8x AC 230 V 10 AX	5WG1532-1DB51
Switching actuator N 532D61 12x AC 230 V 10 AX	5WG1532-1DB61
Switching actuator N 534D31 4x AC 230 V 16/20 AX	5WG1534-1DB31
Switching actuator N 534D51 8x AC 230 V 16/20 AX	5WG1534-1DB51
Switching actuator N 534D61 12x AC 230 V 16/20 AX	5WG1534-1DB61
Switching actuator N 535D51 8x AC 230 V 16/20 AX, with Load-Check	5WG1535-1DB51
Switch-/Dimming actuator N 536D31	5WG1536-1DB31
Switch-/Dimming actuator N 536D51	5WG1536-1DB51
Solar protection actuator N 543D31	5WG1543-1DB31
Solar protection actuator N 543D51	5WG1543-1DB51
Universal dimmerN 554D31	5WG1554-1DB31
Thermal drive actuator RL 605D23	5WG1605-4DB23
Thermal drive actuator N 605D41	5WG1605-1DB41

Fast and secure download saves time

In every KNX project, the devices are commissioned after their installation. Once the physical addresses have been assigned, application programs, parameters and addresses are loaded to the devices. This can take some time in large-scale projects with many devices.

The LAN connection from Siemens makes it all go much faster, saving you time and money. Simply connect your notebook to KNX via an IP interface and start the download. With a LAN connection, the download takes only half as long as it does with USB.

The solution



Benefits

- Plan, configure, commission and diagnose with ETS, the KNX commissioning software
- Simply connect your notebook and start the download
- Downloading takes only half as long, thereby halving commissioning times and significantly reducing time at the project site

Follow these steps

- Connect the IP interface to the KNX bus line
- Connect the notebook to the IP interface using the Ethernet cable – and start the download.

You will need

- An IP interface, for example
- 24-V power supply for IP interface, e.g. Power over Ethernet, unchoked bus voltage
- LAN-enabled notebook
- ETS; see knx.org for the latest version

Note:

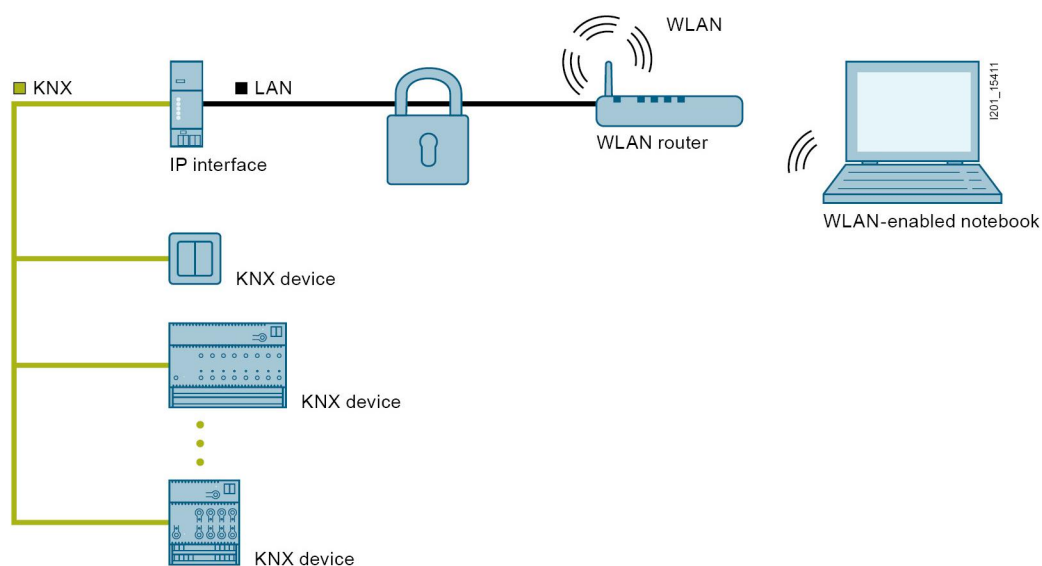
LAN stands for Local Area Network. In LANs, data transport is organized using the IP (Internet Protocol) – the standard network protocol on the Internet.

Commissioning – Easy and safe access via WLAN

In every KNX project, the devices are commissioned after their installation. First, the physical addresses must be assigned. To do this, select the device in ETS on the notebook and press the programming key on the device. If you have various devices at different places such as flush-mounted bus coupling units, this can result in intensive walkways. That's the reason why two people usually perform the commissioning.

You can save yourself this considerable extra work by connecting your notebook wirelessly to the KNX via WLAN. This lets you move about freely during commissioning – just take your notebook with you to each room. Any errors such as mixup of devices due to misunderstandings are ruled out.

The solution



Benefits

- Wireless KNX commissioning via WLAN
- Possible to move freely throughout the building
- Only one person needed for commissioning

Follow these steps

- Connect the IP interface with the KNX, and connect the WLAN router to the IP interface using the Ethernet cable – and you can go to each individual room with your notebook and the ETS
- The related safety and security requirements governing the LAN and WLAN have to be observed

You will need

- An IP interface, for example
- 24-V power supply for IP interface, e.g. Power over Ethernet, unchoked bus voltage
- Ethernet
- WLAN router
- WLAN-enabled notebook
- ETS; see knx.org for the latest version

Note:

WLAN stands for Wireless Local Area Network and describes a „wireless“ local radio network for data transmission.

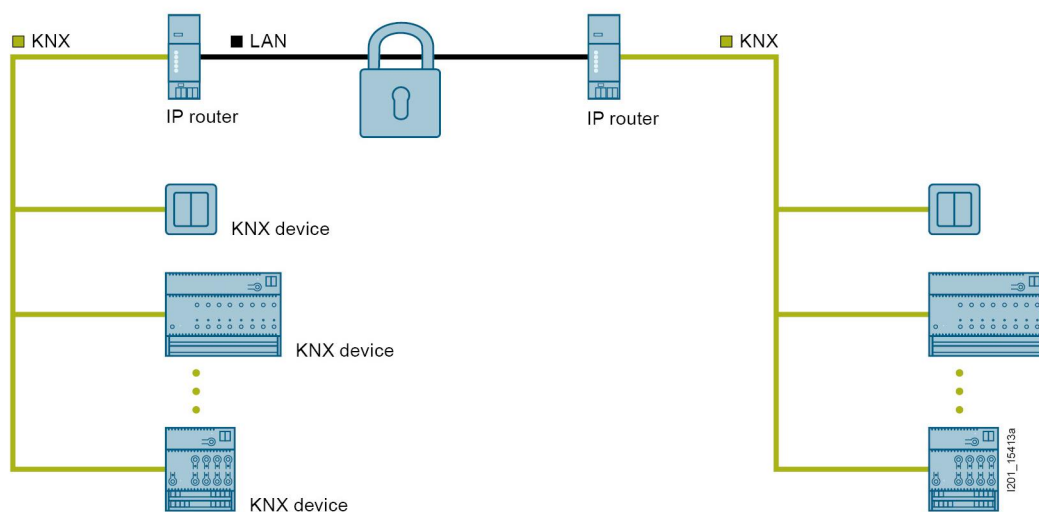
WLANs are quick and easy to install, cover large areas and operate cost-effectively.

Connect main and backbone lines via KNXnet/IP and KNX IP Secure

The new KNXnet/IP standard enables KNX telegrams to be transmitted via Ethernet (LAN), which leads to new applications and solutions.

Existing network infrastructure and technologies are used to securely transmit KNX data over longer distances. Connections between buildings or floors can be clearly and easily implemented with KNXnet/IP.

The solution



Benefits

- LAN as the main and backbone line
- Data can be transmitted over longer distances
- Existing data network and components (LAN) can be used

Follow these steps

- Connect an IP router to every KNX line (instead of a line coupler N 140)
- Connect the IP router via a multicaster-enabled LAN
- Commission each IP router just like a “conventional” line/backbone coupler using ETS
- Observe the related safety and security requirements governing the LAN

You will need

- One IP router per line
- 24-V power supply for IP router, e.g. Power over Ethernet, unchoked bus voltage
- Ethernet patch cable or LAN, depending on the size
- ETS; see knx.org for the latest version

Note:

LAN stands for Local Area Network. In LANs, data transport is organized using the IP (Internet Protocol) – the standard network protocol on the Internet.

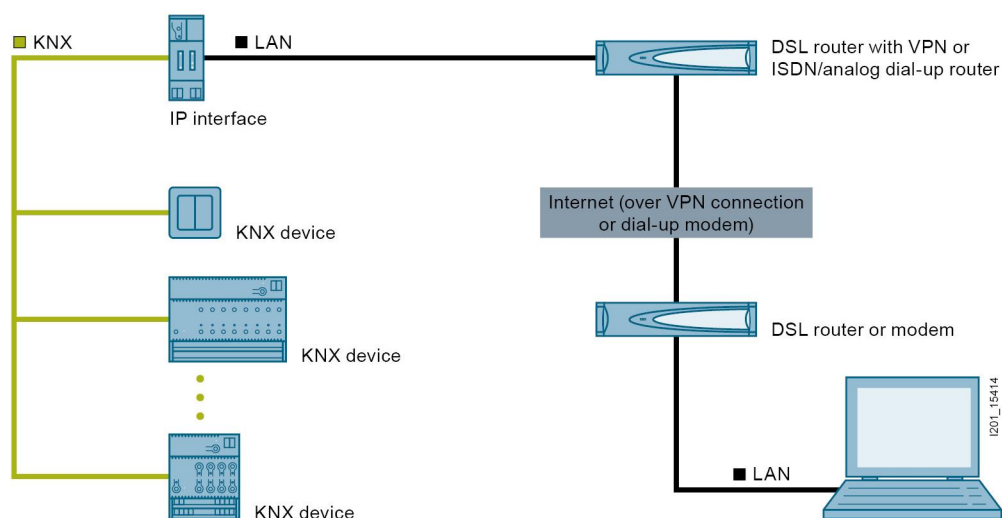
Multicast-capable: multicast telegrams can simultaneously operate several IP devices in the LAN. In the case of network components (network switches, routers) this requires the appropriate configuration.

Easy remote access

In almost every project, changes are often requested during building completion or after the building goes into operation, for example if the set lighting times are too long. Up to now this meant making an appointment with the customer, driving to the property, changing the parameter settings, driving back again.

Now you can cut time and costs by making these changes remotely from your office via Internet, LAN or a wired broadband connection (fiber optics or DSL). Most buildings already have an Internet and LAN connection – thus providing global connectivity. This is why data security must be ensured using a VPN DSL router or dial-up router respectively.

The solution



Benefits

- Parameters can be quickly changed by remote access
- Remote access saves driving time and costs
- Data security is ensured

Follow these steps

- Connect IP interface to the KNX and LAN
- Configure the VPN DSL router or dial-up router

You will need

- An IP interface, for example
- 24-V power supply for IP interface, e.g. Power over Ethernet, unchoked bus voltage
- VPN DSL router or ISDN/analog dial-up router
- ETS; see knx.org for the latest version

Note:

LAN stands for Local Area Network. In LANs, data transport is organized using the IP (Internet Protocol) – the standard network protocol on the Internet.

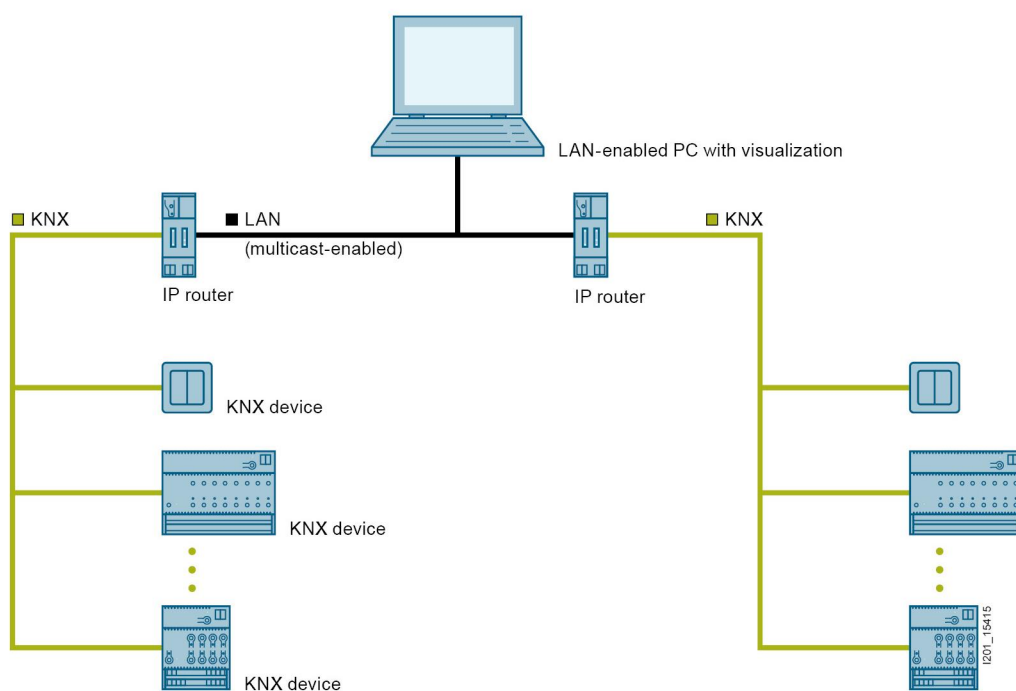
VPN (Virtual Private Network) lets you set up a secure subnetwork via an open, unsecured network (Internet, wireless network) by protecting all communication against access or being tapped into by unauthorized third parties. This is achieved by means of „tunneling“ the data traffic via a VPN server, which means that any connections must be authenticated and that all data is also encoded.

Visualization – up to 200 times faster with KNXnet/IP

When retrieving large numbers of data points cyclically for visualization in large projects, waiting periods can sometimes occur while data is being updated.

Use your LAN as the main and backbone line and connect your PC for visualization to the LAN. This makes visualization up to 200 times faster: you can monitor larger numbers of data points and the data volume is no longer important.

The solution



Benefits

- LAN as the main and backbone line
- Visualization up to 200 times faster than previously
- High data volume possible
- No data concentrators needed

Follow these steps

- Commission the KNX devices, including the IP router
- Install the visualization software
- Find and connect the IP router as the visualization interface
- Configure the visualization
- Observe the related safety and security requirements governing the LAN

You will need

- One IP router per line
- IP Control Center N 152
- 24-V power supply for IP interface, e.g. Power over Ethernet, unchoked bus voltage
- Ethernet network (LAN)
- ETS; see knx.org for the latest version

Note:

LAN stands for Local Area Network. In LANs, data transport is organized using the IP (Internet Protocol) – the standard network protocol on the Internet.

Multicast-capable: multicast telegrams can simultaneously operate several IP devices in the LAN. In the case of network components (network switches, routers) this requires the appropriate configuration.

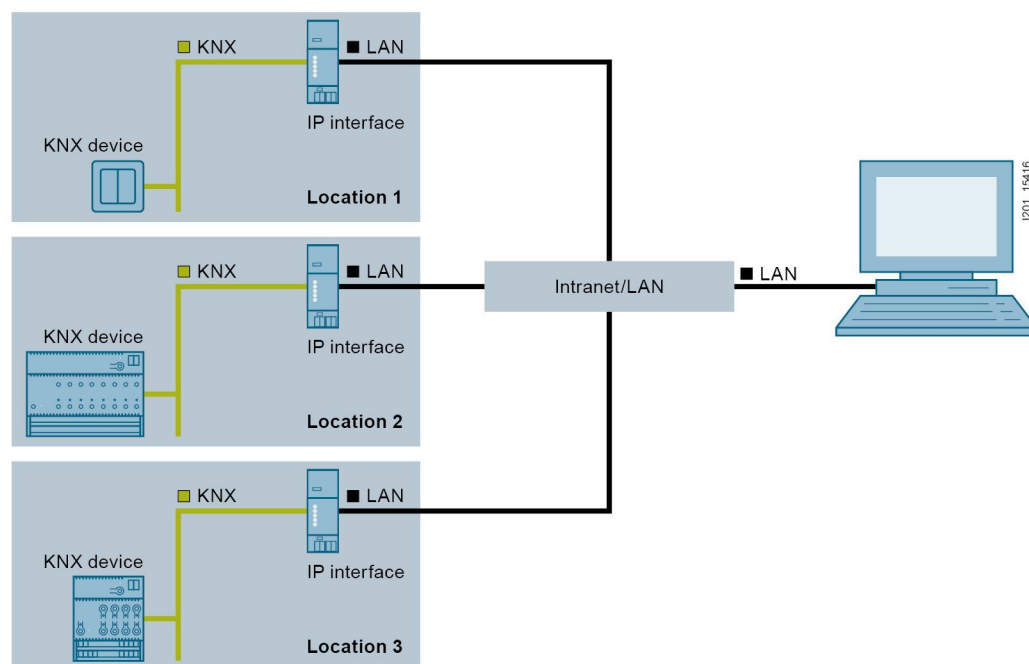
Remote operation and remote visualization

In many cases, several locations need to be managed simultaneously. There are many such examples:

- Monitoring of cooling temperatures in several supermarkets or warehouses
- Monitoring of fans for failure
- Monitoring of temperature and humidity in several greenhouses

It is now possible to carry out these monitoring tasks centrally via the Internet/Intranet from absolutely anywhere. This saves you human resources, time and money. And the Internet/Intranet is available everywhere. Commissioning is further facilitated by the fact that distributed locations can be configured identically.

The solution



Benefits

- Plants and locations can be remotely visualized, controlled and monitored via existing networks
- Simple commissioning thanks to options for identical configuration of different locations

Follow these steps

- Connect one IP interface per location to the KNX
- Connect the IP interface to the LAN
- Configure the IP interface via the Intranet/Internet
- Define the IP interface

You will need

- One IP interface for each property, for example
- 24-V power supply for IP interface, e.g. Power over Ethernet, unchoked bus voltage
- Visualization software
- ETS; see knx.org for the latest version

Note:

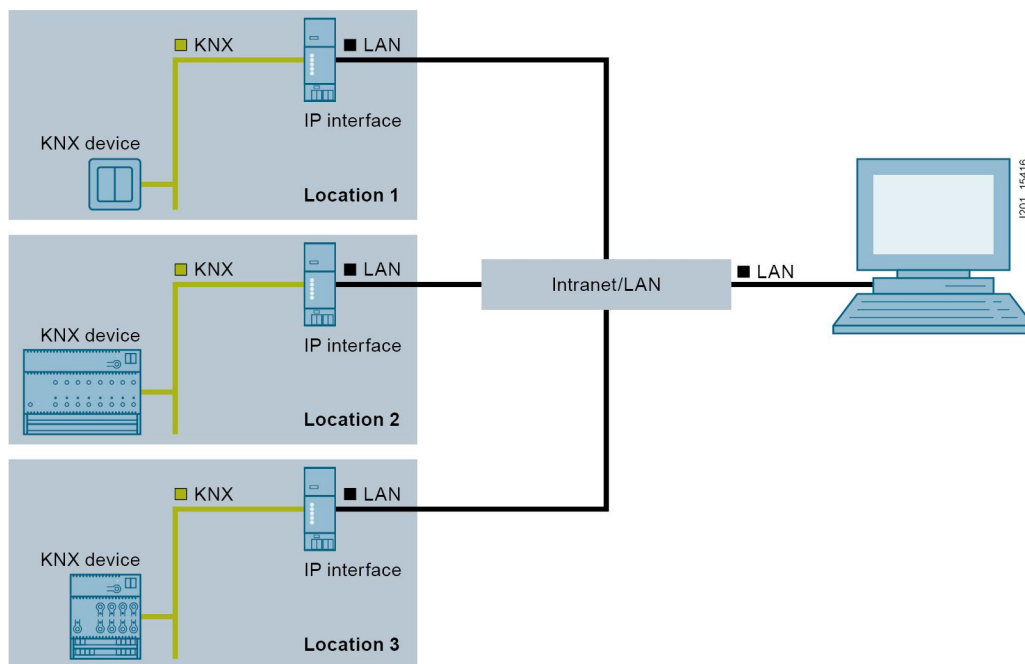
LAN stands for Local Area Network. In LANs, data transport is organized using the IP (Internet Protocol) – the standard network protocol on the Internet.

Demand-oriented maintenance through remote signaling

Some distributed properties need to be checked regularly for certain conditions and maintained accordingly, for example the fill levels of oil tanks in distributed apartment buildings or the operating hours of consumers.

These states can now be reported centrally to any location. This can eliminate the need for cyclical inspection walkthroughs and appropriate maintenance can be carried out when needed, such as refilling the oil tanks in distributed properties. You can even select the best time to do this, such as when oil prices are lowest.

The solution



Benefits

- Central status messages for distributed properties
- Less maintenance required
- Optimization of maintenance costs

Follow these steps

- Connect one IP interface to the KNX for each property
- Connect the IP interface to the LAN
- Configure the IP interface via the Internet/intranet for accessibility
- Define the IP interface in the visualization software or ETS respectively
- Observe the related safety and security requirements governing the LAN

You will need

- One IP interface for each property, for example
- 24-V power supply for IP interface, e.g. Power over Ethernet, unchoked bus voltage
- Visualization software
- ETS; see knx.org for the latest version

Note:

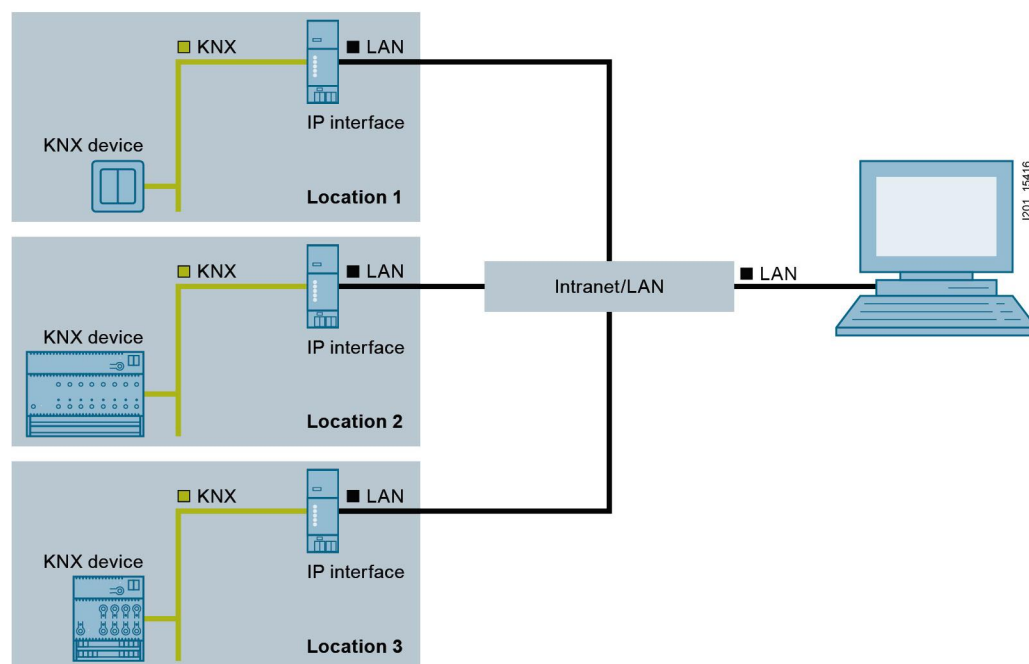
LAN stands for Local Area Network. In LANs, data transport is organized using the IP (Internet Protocol) – the standard network protocol on the Internet.

Enhanced plant availability due to early fault detection

Whether dealing with a lamp failure in depots or offices, a drop in pressure in filters, or pump failure - automated plants in distributed locations are constantly subject to possible faults/malfunctions. The earlier such faults are detected, the less costly they are to remedy.

If such plants are being controlled with GAMMA instabus and are connected over LAN/IP, these types of fault indications can be forwarded over the Internet. A fast response means that the functionality of the plant is quickly restored and costs are kept to a minimum.

The solution



Benefits

- Central solution for distributed locations
- Fast forwarding of fault indications
- Fast responses mean less damage

Follow these steps

- Connect one IP interface per location to the KNX
- Connect the IP interface to the LAN
- Configure the IP interface over the Intranet/Internet
- Define the IP interface in your visualization program/ETS

You will need

- One IP interface for each property, for example
- 24-V power supply for IP interface, e.g. Power over Ethernet, unchoked bus voltage
- Visualization software
- ETS; see knx.org for the latest version

Note:

LAN stands for Local Area Network. In LANs, data transport is organized using the IP (Internet Protocol) – the standard network protocol on the Internet.

VPN (Virtual Private Network) lets you set up a secure subnetwork via an open, unsecured network (Internet, wireless network) by protecting all communication against access or being tapped into by unauthorized third parties. This is achieved by means of „tunneling“ the data traffic via a VPN server, which means that any connections must be authenticated and that all data is also encoded.

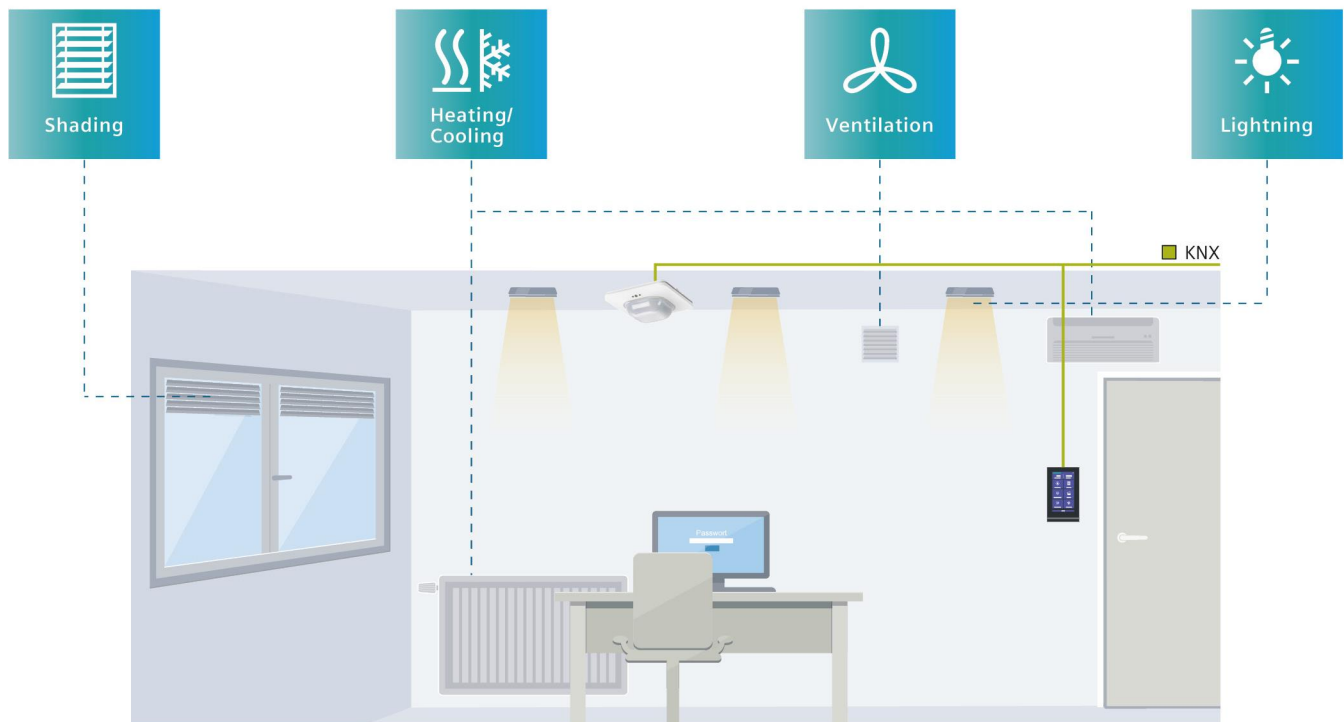
The smart way to control your room

The integrated KNX controller of the KNX Touch Control TC5 contains comprehensive lighting control for switching, dimming, tunable white as well as solar protection control. The room temperature controller supports many HVAC applications and the device can not only monitor several ambient measurements, but also evaluate them and indicate visually their quality level.

Scene editor and timer functions complete the features of the TC5, allowing you to meet all room requirements.

The solution

The smart way to a productive and healthy working environment



Benefits

- Automatic and manual control of lighting and solar protection
- Human Centric Lighting application with use of Tunable White
- Display of indoor measurements, such as temperature, humidity and CO2
- Control of HVAC and/or ventilation system. Floor heating or radiators in this case.
- Visual alarm in case of low quality level

You will need

- Touch control TC5 UP 205/22
- KNX / DALI Gateway plus N 141/14
- Presence detector WIDE multi UP 258D51
- Solar protection actuator N 543D31
- KNX valve actuators SSA118

Follow these steps

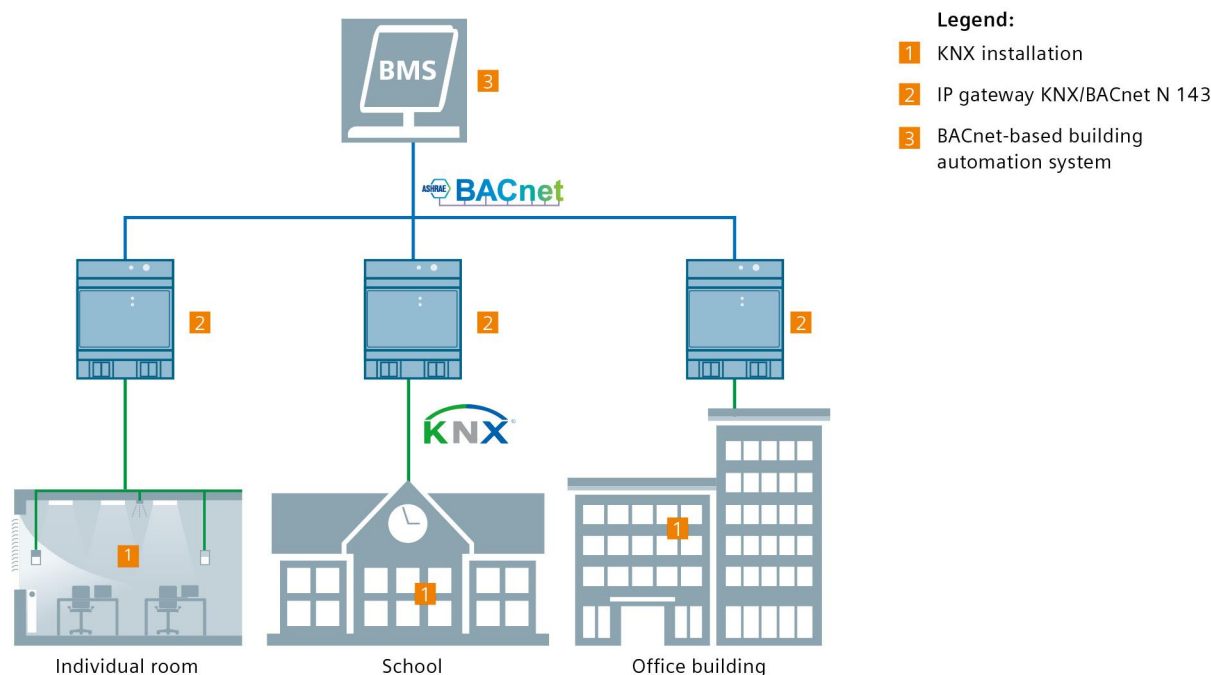
- Configure buttons for the desired functions on the TC5 together with the respective KNX actuators
- Create an HCL profile in TC5 and link it with the KNX/DALI gateway.
- Create a page in the TC5 to display all the indoor values sent by the multisensor
- Set the HVAC controller to have the right temperature with KNX valve actuators
- Utilize the color strip of the TC5 as a visual alarm in case of low quality level

Easy combination of a KNX installation into a BACnet installation system

The IP gateway KNX/BACnet enables KNX installations to be integrated into BACnet-based networks and building automation systems quickly, simply and efficiently. No separate commissioning interface is needed owing to the KNXnet/IP interface integrated into the gateway. This facilitates for example the integration of new KNX installations into already existing building management systems that use BACnet as their system protocol.

It enables building automation systems to be expanded simply and costefficiently. Thanks to its KNXnet/IP interface, the KNX installation technician can commission the gateway using the ETS. The system integrator that recognizes the IP gateway KNX/BACnet as controller (B-ASC) is responsible for the integration into the BACnet system.

The solution



Benefits

- Commissioning of the IP gateway KNX/BACnet N 143 by the KNX installation technician only using the ETS
- Integration of a KNX installation into a BACnet system without KNX knowledge by the BACnet system integrator
- Clear separation of responsibility for KNX installation and BACnet system integration/building management
- Simple, flexible integration of a KNX installation
- Integrated Web server for documentation of the configuration and export of an EDE file
- Configuration of a KNX installation via IP gateway KNX/BACnet N 143

Follow these steps

- Connect the IP gateway KNX/BACnet N 143 to the KNX, configure and program it in ETS
- 250 BACnet objects can be created, for which up to 455 BACnet entries for automatic forwarding of BACnet object values can be stored

You will need

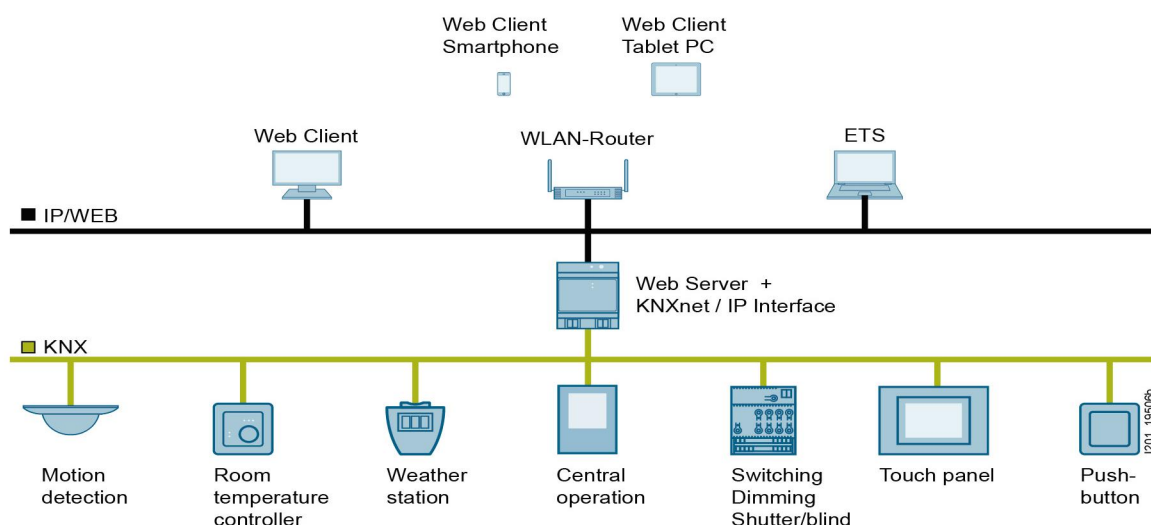
- IP gateway KNX/BACnet N 143
- ETS; see knx.org for the latest version

WEB Visualization of a KNX installation with an IP Control Center

The Control Center N 152 is a compact visualization controller. It enables the entire room and building automation to be conveniently operated and visualized via Web-enabled PCs, tablets and smartphones – also in a wireless configuration via WLAN. Up to 1250 KNX objects and group addresses are available for this purpose.

In the event of a fault, an alarm message is sent via e-mail. The integrated KNX interface allows commissioning of the KNX installation. With an additional router, the KNX installation can be serviced via remote maintenance.

The solution



Benefits

- IP Control Center N 152
- An integrated Web editor
- For all Web-enabled operating devices such as PCs, notebooks, tablets and smartphones
- Create customized visualization of operating and display interfaces

Follow these steps

- Connect the IP Control Center N 152 to the KNX, configure and program it in ETS
- Create the visualization of the operating and display interfaces via the Web editor
- The related safety and security requirements governing the WLAN shall be observed

You will need

- IP Control Center N 152
- ETS; see knx.org for the latest version

Note:

To handle comprehensive building and room functions, up to 1250 KNX objects are available with the IP Control Center. In addition, there are powerful application modules for scene control, scheduler programs, chart modules, data logging, alarm reporting and logic functions for use in connection with central control. A clear model project is available via download for the IP Control Center.

