KNX.ORG

Smart home and building solutions.
Global. Secure. Connected.

KNX
HVAC Manufacturer 2021

Why developing KNX solutions

CONTENT

KNX FOR HVAC MANUFACTURERS

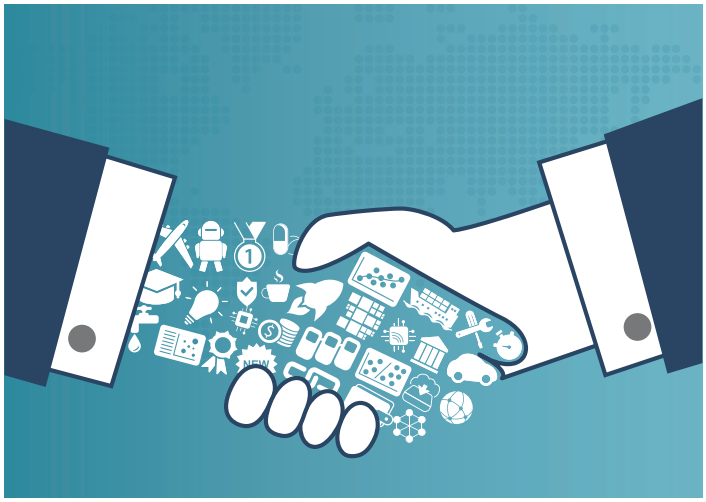
2003 CENELEC EN 50090 (Europe)
2004 ANSI/ASHRAE 135 Annex H.5 (USA)
2006 ISO/IEC 14543-3-1 to 7 (International Standard)
2012 CEN EN 13321-1 (Building automation control systems)
CEN EN 13321-2 (KNXnet/IP)
2013 GB/T 20965 (China)
2017 SA/SNZ ISO/IEC TS 14543.3.1-6:2018 (Australia & New Zealand)
2018 KNX Data Secure as EN50090-3-4
2019 ISO 22510 (KNXnet/IP Secure)

Perfect technology fit

Proclaiming that KNX is the perfect technology pairing for HVAC solutions is aiming very high, but the facts speak by themselves. Based on a HW-independent platform, HVAC manufacturers can rest assure that they will have freedom to design and develop their products. Not to mention the abundant references to HVAC in the KNX Specifications (ISO/IEC 14543-3-1 to 7). Lastly, all communication media are available to allocate every business case, including the best wireless solution specifically designed for home and building applications.

Committed network

More than 30 years building a community of professionals and organizations have produced a great network. Being HVAC one of the most important applications for homes and buildings, KNX Association developed the KNX HVAC course specialist, resulting in an upskilled community. Over the last three decades many HVAC manufacturers have joined our amazing and committed network, adding outstanding value.



Business enabling at the core

KNX means field devices... and much more! Leverage KNX IoT to connect to the latest trends in the market while focusing on what you do best: HVAC products! Enrich the HVAC portfolio of KNX products and solutions to create new business opportunities. Additionally, KNX is a big influencer in the market and finds synergy with other associations and technologies: Energy management with KNX is a great example.

TYPE OF SOLUTIONS

From field devices to vertical solutions, every approach is possible thanks to the rich development platform

Field devices

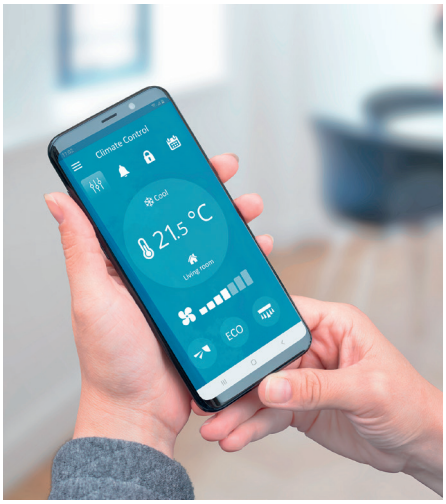
The cornerstone of any KNX installation, field devices represent the essence of KNX: interoperability, vendor-independent configuration and commissioning, backwards compatibility... The options are endless: thermostats, temperature probes, enthalpy controllers, dew sensors, fan coil controllers, and many more. The KNX Specifications offer many options, like the E-Mode (Easy Mode), where the devices can be configured without the need of a computer, or any communication media (TP, RF, IP). The manufacturer will not find limitations.

Gateways

Under certain conditions, gateways are a simplistic way to connect existing system to the KNX installation. The connection is typically at "field-level", so that the system acts as another device in the system. A good example are the air-conditioning units, which are normally interfaced to bring the user control to the KNX installation. Another example are boilers, which can then be included in energy management strategies (for example).

Applications

More and more, HVAC manufacturers offer new ways to control their systems, like applications: they make a great User Interface. The problem? They remain as a silo, without many opportunities to interact with the rest of the home or building. KNX IoT overcomes this issue, making the data from KNX available to the IT world in a developer-friendly way. Thanks to this approach, the interoperability of KNX at field level is translated at the application level (over IP).

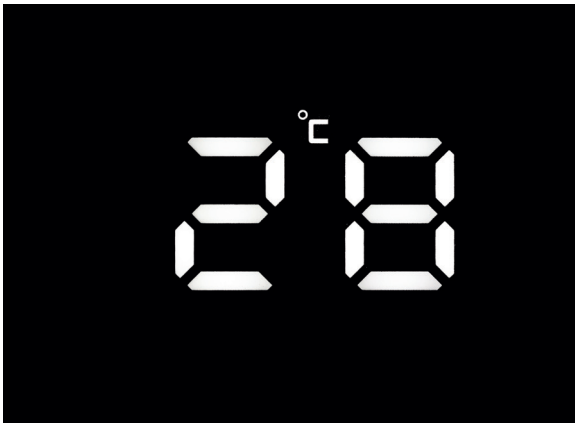


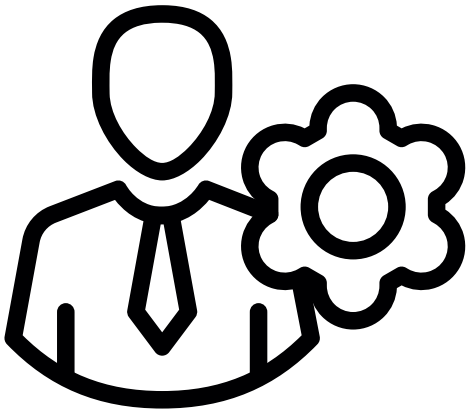
HVAC-FRIENDLY TECHNOLOGY

The KNX Specifications and tooling are regularly enhanced, and so is the HVAC related sections. A good example is the S-Mode HVAC FBs (Functional Blocks), which became Approved Standard in 2021.

Datapoints

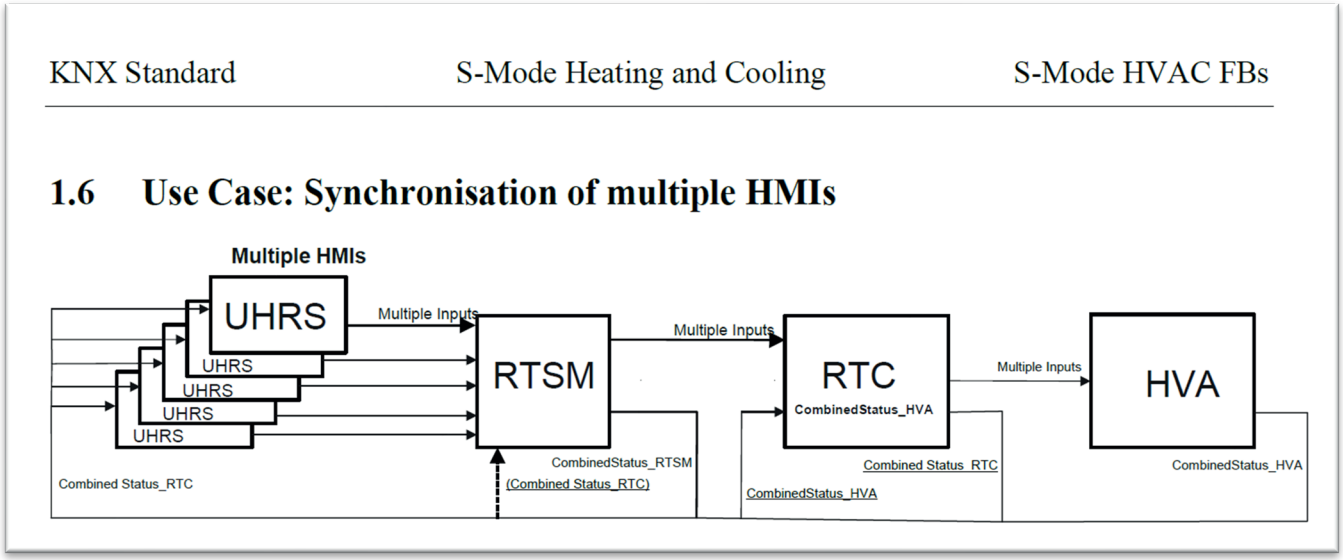
This is the key to the unbeatable interoperability of KNX. For more than 30 years, and with guaranteed backwards compatibility, any KNX certified device will work with any other KNX certified device at application level. No other technology can produce such statement. For this reason, manufacturers (including HVAC manufacturers) trust in KNX.





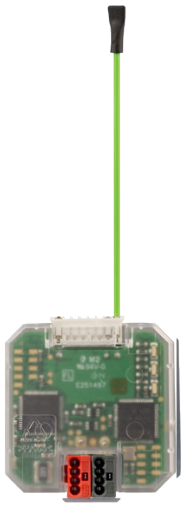
Functional Blocks

The Functional Blocks are based on the datapoints, and their goal is to create a set of data for every type of HVAC profile, ensuring the interoperability and usability between different manufacturers. This information is gathered in the 07_19_20 HVAC S-Mode FBs v01.03.01 AS document of the KNX Specifications. The image below represents the synchronization of multiple Human Machine Interfaces.



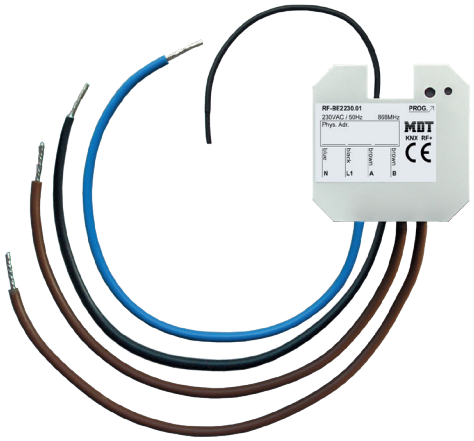
HVAC-FRIENDLY TECHNOLOGY

KNX RF technology has been enhanced over the last years, to achieve the same level of acceptance as the TP and IP communication media.



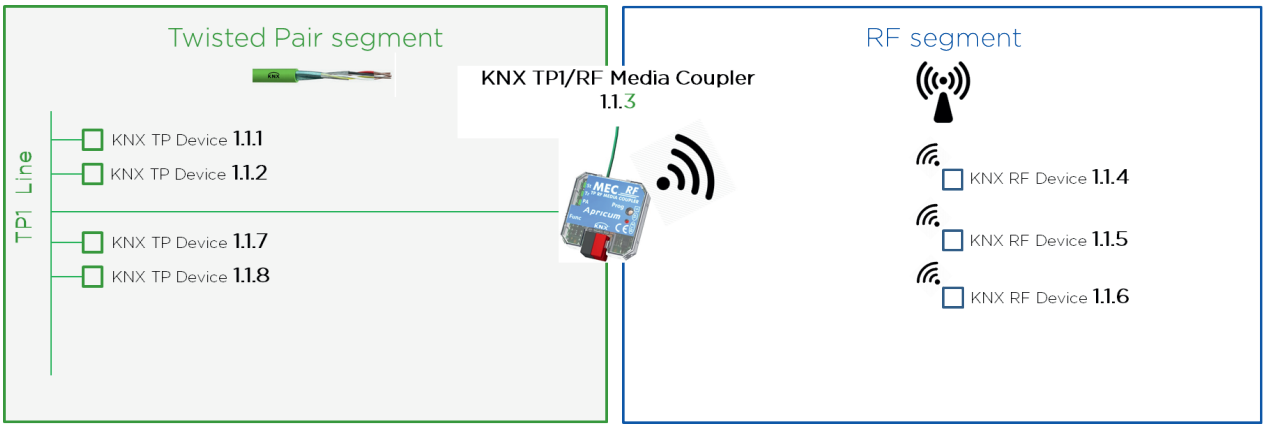
State-of-the-art technology

KNX RF is a solution on its own, which can work without the need of any TP device. The frequency (898 MHz for Europe and other parts of the world) is perfect for communicating devices, in a secure mode, that are in different rooms or floors, and without the need of repeaters. With various possibilities within the specifications (1 single-channel transceivers or 5 channels), the manufacturer can find the best combination for any requirements (including battery-less RF devices).



Easy retrofitting

With KNX RF is very easy to extend existing installations. This makes a very good business case: a new HVAC device (e.g. boiler) that counts on KNX RF connectivity can be added to the existing KNX installation with minimum effort. Likewise, it reduces the need of pulling TP cable to every corner in the house or building. The image below represents how a TP line is extended with KNX RF products thanks to a KNX Media Coupler.



HVAC-FRIENDLY TECHNOLOGY

Tailored HVAC knowledge rounds off the solution implementation lifecycle, thanks to upskilled installers and a better informed community.

KNX HVAC specialist course

This course is designed with the objective of giving integrators a better understanding of how to use KNX to control HVAC systems. The HVAC Specialist course will provide the knowledge of what is being controlled so that the integrator will be able to understand the different heating/cooling systems found in the real installations.

KNX E-Mode

In many occasions, the HVAC installers do not want to over-complicate the installation, that is why the KNX specifications include the E-Mode (Easy Mode): the installation can be design and commission without the need of a computer. Some manufacturers offer in fact both modes (System Mode and Easy Mode) in the same device, so it is up to the technician which configuration type is used (with or without a computer).

HVAC-FRIENDLY TECHNOLOGY

KNX Energy Management: building a more sustainable future for a smart living.

Customer Energy Manager

The Customer Energy Manager (CEM) is the central brain in the installation, aware of the energy needed by devices (in case only consuming) or the energy made available by devices in the building (in case producing). Examples of devices consuming could be e.g. HVAC systems or an e-car, of devices producing e.g. photovoltaic systems.

Standardization

KNX is actively involved in helping shape the EN 50491-12-x standard series. Part 2 of this standard will specify which data will be exchanged between the Customer Energy Manager (CEM) and the Resource Managers (RM) at the premises. This standard is being developed by the Working 18 of the CENELEC Technical Committee TC205.

KNX® ENERGY MANAGEMENT

KNX MANUFACTURERS

Company	Country	Website
Airzone – Corporation Empresarial Altra	Spain	www.airzonecontrol.com
Bosch Thermotechnik GmbH	Germany	www.bosch.com
Bosch (Shanghai)Smart Life Technology Ltd.	China	www.bosch-smartlife.com
Cool Automation LTD	Israel	www.coolautomation.com
Daikin Industries LTD	Japan	www.daikin.com
Fujitsu General Limited	Japan	www.fujitsu-general.com
F. W. Oventrop KG	Germany	www.oventrop.com
Helios Ventilatoren GmbH + Co. KG	Germany	www.heliosventilatoren.de
Hoval Aktiengesellschaft	Liechtenstein	www.hoval.com
Kermi GmbH	Germany	www.kermi.de
Max Weishaupt GmbH	Germany	www.weishaupt.de
MIDEA Heating & Ventilating Equipment CO.LTD.	China	hbt.midea.com
Smart Building Services GmbH	Switzerland	www.knxshopp4u.ch
Tecalor GmbH	Germany	www.tecalor.de
THERMOKON Sensortechik GmbH	Germany	www.thermokon.de
Uponor corporation	Finland	www.uponor.com
Vallox GmbH	Germany	www.vallox.de
Vaillant GmbH	Germany	www.vaillant-group.com
Viessmann Elektronik GmbH	Germany	www.viessmann.com

This list contains representative KNX Members in the HVAC industry.
Many KNX Members that are not in the list also offer HVAC-related solutions
(fan coil controllers, thermostats, valves and actuators... and much more!).

REFERENCES

KNX Development Solutions 2021
https://www.knx.org/knx-en/for-manufacturers/development/system-components/

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https://www.knx.org/knx-en/for-manufacturers/development/oem-devices/

KNX certified devices
https://www.knx.org/knx-en/for-professionals/get-started/certified-knx-products/

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https://knxcloud.org/index.php/s/kNSz8JkccAkhhwP

KNX Energy Management
https:/sustainabilityknx.org/

The future landscape of HVAC integration with KNX
https:/sustainabilityknx.org/archivos/15033/