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1 What is a KNX certified training centre?

A **KNX certified training centre** is a training centre that has adopted the KNX Association's Certification Scheme for KNX training centres. This KNX Certification Scheme ensures that all affiliated KNX training centres follow a minimum set of requirements as mentioned in the General requirements for KNX training centres (See paragraph 3).

A KNX certified training centre teaches how a KNX installation is properly configured and commissioned by means of the ETS software. Building owners, electrical engineers, architects, system integrators etc. who have successfully taken a KNX Basic course at one of these KNX certified training centres, have the right to be called '**KNX Partner**', meaning that they have become a certified KNX installer. Such KNX Partners can put themselves as well as their company in the spotlight by appearing on the KNX website, which is visited by thousands of international visitors every month.

1.1 Definitions

Term	Explanation
KNX+ certified training centre	Training centre that is accredited by KNX Association for the organization of KNX Basic and Advanced courses.
KNX HVAC 'Specialist' certified training centre	Training centre that is accredited by KNX Association for the organization of KNX Basic and HVAC Specialist courses.
KNX++ certified training centre	Training centre that is accredited by KNX Association for the organization of KNX Basic, Advanced and Tutor courses.
KNX course	Can be a Basic, Advanced, KNX HVAC Specialist, Tutor or Refresher course with or without theoretical and/or practical exam. The course can be given online or on-site (F2F = face to face). F2F courses can be organized at the premises of the training centre or if mobile training rigs are used at the premises of the customer(s).
KNX tutor	Is someone who has successfully passed the exam of the Tutor course. This person is entitled to organize KNX (Condensed) Basic, (Condensed) Advanced, HVAC Specialist, Refresher and Preparatory Basic/Advanced courses. A KNX tutor is only allowed to offer Tutor courses if he/she passed the theoretical exam of the Tutor course with minimum 80 %.
Online (theoretical) exam	Is a True/False test that has to be taken by means of the student's MyKNX account (internet connection required in the classroom)
Offline (theoretical) exam	Is a True/False test that can be taken if there is no internet connection available in the classroom.
KNX Preparatory Basic/Advanced course	Is an uncertified online Basic or Advanced course
KNX Virtual	KNX Virtual is an application that can be run on a Windows computer. KNX Virtual graphically represents a set of KNX devices. By using the ETS together with KNX Virtual, it is possible to simulate, e.g., a light being switched on/off, a shutter being moved up/down etc.
KNX Training documentation	Can be Basic, Advanced, HVAC Specialist, Tutor or Refresher course training documentation
Self-educated person	A person who does not have a KNX training certificate, but who can prove many years of theoretical and/or practical experience with KNX and ETS.
MyKNX	Is a tailor-made Web tool from KNX Association for various target groups

https://my.knx.org	like ETS licensees, KNX members, KNX training centres, KNX Partners...
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1.2 Introduction - Training measures

It is indispensable that a KNX installation is properly configured and commissioned by skillful personnel. KNX Association has therefore drawn up training measures to inform about:

- selection of bus devices and installation material;
- fields of application and main applications of the KNX bus system;
- selection of the bus topology in view of the construction of the building and the desired functionalities;
- planning of the to be installed bus system;
- installation, thereby considering the relevant regulations (e.g., lightning protection, electromagnetic compatibility, etc.);
- commissioning and servicing of KNX installations.

2 Course types

2.1 Introduction

The following courses are **certified** course types of which the theoretical part *can* be attended fully online or Face to Face (F2F), whereas the **practical part and the exam(s) always have to be attended F2F** (except for the Tutor and Refresher course). After successful completion of each of these courses, the student will receive an official KNX certificate as well as credits for the "Knowledge" category of the Partner Ranking system.

- KNX Basic course (See paragraph [2.2.1](#))
- KNX Condensed practical Basic course (See paragraph [2.2.2](#))
- KNX Advanced course (See paragraph [2.2.3](#))
- KNX Condensed practical Advanced course (See paragraph [2.2.4](#))
- KNX HVAC Specialist course (See paragraph [2.2.5](#))
- KNX Tutor course (See paragraph [2.2.6](#))
- KNX Refresher course (See paragraph [2.2.7](#))

For attending the latter courses, the student will receive an official KNX certificate, ETS vouchers (depending on the attended course type) and credits for the Partner Ranking as explained in [KNX Partner Ranking explained](#) (See KNX Help Center).

The following courses are complete **online courses** of which the **(certified) theoretical part** and the **non-certified practical part** are attended via an E-learning platform, i.e. via a Live E-learning platform (e.g. Zoom, Microsoft Teams, Skype...) or a Self-paced E-Learning platforms (e.g. Moodle etc.). **For attending these courses, the student will not receive any official KNX certificate or vouchers, nor will he/she gain credits for the Partner Ranking.**

- Preparatory Basic course (See paragraph [2.3.1](#))
- Preparatory Advanced course (See paragraph [2.3.2](#))

2.2 Certified courses

2.2.1 KNX Basic course (min. 30h)

The KNX Basic course is the first course that one must attend in order to become a **KNX Partner** and to be listed as a KNX Partner on the KNX website. The theoretical and practical part of the Basic course is organized Face to Face (F2F). The theoretical part of the course can also be organized **online**. Mobile or fixed training rigs are used to convey the practical part of the course. The theoretical and practical exam is always organized F2F. The following topics shall be conveyed during the organization of a KNX Basic course:

	Topics	Location	Number of hours
1	ETS6 Professional	F2F	15h
2	System arguments	F2F / Online	30 min.
3	System overview	F2F / Online	3h
4	Topology	F2F / Online	3h
5	Bus devices	F2F / Online	1h, 30 min.
6	KNX RF	F2F / Online	1h
7	TP Installation	F2F / Online	3h
8	Theoretical exam	F2F	1h 30 min.
9	Practical exam	F2F	1h 30 min.

2.2.1.1 Requirements with regard to the KNX Basic course

- The duration of the total course incl. exams is at least 30 hours;
- The student must attend the course at least 75 % of the total course duration;
- All topics of the KNX Basic course documentation shall be dealt within the above-mentioned period of time;
- Theoretical as well as practical part shall be conveyed by a KNX certified tutor;
- The theoretical and practical exam shall always be organized F2F in the presence of a KNX tutor.
- One KNX tutor shall be available for every 16 students during practical classes;
- The proportion of practical classes shall be at least 50 % of the entire course duration;
- The student must pass the theoretical as well as the practical exam with minimum 50 % of the marks. The exam regulations can be found under Exam regulations for the different courses (See paragraph 6.1).

Note: The content of the certificate that can be issued for this course type shall be according to the sample certificate which can be found in the document 'Annexes' available on the KNX Cloud server.

2.2.2 KNX Condensed practical Basic course (min. 15h)

This course is a shortened course and is intended for *self-educated persons* or for those who have taken a complete Preparatory Basic course. The following topics shall be conveyed during the organization of a KNX Condensed practical Basic course:

	Topics	Location	Compulsory number of hours
1	ETS6 Professional	F2F	12h
2	Theoretical exam	F2F	1h, 30 min.
3	Practical exam	F2F	1h, 30 min.

2.2.2.1 Requirements with regard to KNX Condensed practical Basic course

- The duration of the total course incl. exams is at least 15 hours*;
- The student must attend the course at least 75 % of the total course duration;
- All chapters with regard to practical training (i.e., ETS6 Professional) of the KNX Basic course documentation shall be dealt within the above-mentioned period of time;
- Practical part shall be conveyed by a KNX certified tutor;
- One KNX tutor shall be available for every 16 students during practical classes;
- The practical part of the course as well as the exams shall always be organized F2F in the presence of a KNX tutor.
- Student must pass the theoretical as well as the practical exam with minimum 60 %** of the marks. The exam regulations can be found under Exam regulations for the different courses (See paragraph 6.1).

* Until further notice, the total duration of this course is 8 hours.

** Until further notice, the minimum score to pass the exam is 50 %.

Note: The content of the certificate that can be issued for this course type shall be according to the sample certificate which can be found in the document 'Annexes' available on the KNX Cloud server.

2.2.3 KNX Advanced course (min. 30h)

A KNX training centre that wants to take its course to the next level has the possibility to additionally offer the KNX Advanced course. The theoretical and practical part of the Advanced course is organized Face to Face (F2F). The theoretical part of the course can also be organized **online**. Mobile or fixed training rigs are used to convey the practical part of the course. The theoretical and practical exam is always organized F2F. The following topics shall be conveyed during the organization of a KNX Advanced course:

	Topics	Location	Number of hours
1	Fail-safe planning (<i>informative chapter</i>)	F2F / Online	-
2	ETS Apps (<i>informative chapter</i>)	F2F / Online	-
3	KNX and Multimedia (<i>informative chapter</i>)	F2F / Online	-
4	KNX and Smart Metering / Smart Grid (<i>informative chapter</i>)	F2F / Online	-
5	Flags	F2F / Online	2h
6	Interworking	F2F / Online	2h
7	KNX Telegram	F2F / Online	2h
8	KNX Secure	F2F	2h
9	HVAC control with KNX	F2F	4h
10	Couplers	F2F	4h
11	IP Communication	F2F	2h
12	Lighting control	F2F	3h
13	Security technology	F2F	1h
14	Logic operations	F2F	2h
15	Visualization systems	F2F	3h, 30 min.
16	Theoretical exam	F2F	30 min.
17	Practical exam	F2F	2h

2.2.3.1 Requirements with regard to the KNX Advanced course

- The duration of the course is at least 30 hours;
- The student must attend at least 75 % of the total course duration;
- The student must pass the Basic course exam in advance in order to attend the KNX Advanced course;
- All topics of the KNX Advanced course documentation shall be dealt within the above-mentioned period of time;
- Theoretical as well as practical part shall be conveyed by a KNX certified tutor;
- The theoretical and practical exam shall always be organized F2F in the presence of a KNX tutor.
- One KNX tutor shall be available for every 16 students during practical classes;
- The proportion of practical classes shall be at least 50 % of the entire course duration;
- Student must pass the theoretical and the practical exam (error finding, telegram/device analysis, project design) with minimum 50 % of the marks. The exam regulations can be found under Exam regulations for the different courses (See paragraph 6.1).

Note: The content of the certificate that can be issued for this course type shall be according to the sample certificate which can be found in the document 'Annexes' available on the KNX Cloud server.

2.2.4 KNX Condensed practical Advanced course (min. 15h)

This type of course is intended for KNX partners who have along their career gained deeper KNX knowledge, or for those who have taken a complete Preparatory Advanced course. The practical part of the course is organized F2F. Mobile or fixed training rigs are used to convey the practical part of the course. The theoretical and practical exam is always organized F2F in the presence of a KNX tutor. The following topics shall be conveyed during the organization of a Condensed practical Advanced course:

	Topics	Location	Number of hours
1	KNX Secure	F2F	1h
2	HVAC control with KNX	F2F	2h
3	Couplers	F2F	2h
4	IP Communication	F2F	2h
5	Lighting control	F2F	2h
6	Security technology	F2F	1h
7	Logic operations	F2F	1h
8	Visualization systems	F2F	1h, 30 min.
9	Theoretical exam	F2F	30 min.
10	Practical exam	F2F	2h

2.2.4.1 Requirements with regard to Condensed practical KNX Advanced course

- The duration of the course including the exam is at least 15 hours*;
- The student must attend at least 75 % of the total course duration;
- The student must pass the Basic course exam in advance in order to attend the KNX Condensed Practical Advanced course;
- All topics of the Condensed practical Advanced course documentation shall be dealt within the above-mentioned period of time;
- Practical part shall be conveyed by a KNX certified tutor;
- The theoretical and practical exam is always organized F2F in the presence of a KNX tutor.
- One KNX tutor shall be available for every 16 students during practical classes;
- Student must pass the theoretical and practical exam (error finding, telegram/device analysis, project design) with minimum 60 %** of the marks. The exam regulations can be found under Exam regulations for the different courses (See paragraph 6.1).

* Until further notice, the total duration of this course is 8 hours.

** Until further notice, the minimum score to pass the exam is 50 %.

Note: The content of the certificate that can be issued for this course type shall be according to the sample certificate which can be found in the document 'Annexes' available on the KNX Cloud server.

2.2.5 KNX HVAC Specialist course (min. 12h)

KNX Professionals installing KNX devices that have an impact on the proper functioning of HVAC components that in most cases are installed by a different company or person, must have sufficient knowledge on HVAC (technical terms and their implications) in order to be able to properly coordinate the work with the company that has installed the HVAC components.

The ultimate goal of the KNX HVAC Specialist course is:

- to lower the communication barrier with the heating/cooling engineer
- to explain important technical terms with regard to HVAC components
- to promote the KNX technology also in the HVAC market segment

The theoretical and practical part of the course is organized either F2F or online. The following topics shall be conveyed during the organization of a KNX HVAC Specialist course:

No	Topics	Location	Number of hours
1	Basic Know-how	F2F / Online	1h, 40 min.
2	Heat distribution systems	F2F / Online	1h
3	Heat generators	F2F / Online	1h
4	Legal framework	F2F / Online	30 min.
5	To understand "Steering and adjustment"	F2F / Online	2h
6	Heating control	F2F / Online	1h
7	Domestic water heating	F2F / Online	30 min.
8	Energy efficiency with KNX	F2F / Online	4h
9	Theoretical exam	F2F	20 min.

2.2.5.1 Requirements with regard to the KNX HVAC Specialist course

- The duration of the course shall be at least 12 hours;
- The student must pass the Basic course exam in advance in order to be admitted to the KNX HVAC Specialist course;
- All topics of the KNX HVAC Specialist course documentation shall be dealt with in the above-mentioned period of time;
- Theoretical as well as practical part shall be conveyed by a KNX certified tutor;
- One KNX tutor shall be available for every 16 students during practical classes;
- The proportion of practical classes shall be at least 50 % of the entire course duration;
- Student must pass the theoretical exam with minimum 50 % of the marks. The exam regulations can be found under Exam regulations for the different courses (See paragraph 6.1).

Note:

- The HVAC chapter from the KNX Advanced course (4h) contains valuable information, but is not enough to have a complete understanding of HVAC.
- A KNX training centre is not allowed to only offer KNX HVAC Specialist courses. An application for a KNX Basic course is a prerequisite.
- The content of the certificate that can be issued for this course type shall be according to the sample certificate which can be found in the document 'Annexes' available on the KNX Cloud server.

2.2.6 KNX Tutor course (min. 18h)

KNX Tutor courses are offered for those students who want to set up a certified KNX training centre themselves or who want to work as a KNX tutor at an already certified KNX training centre. The theoretical part of the course is organized either F2F or online. **The theoretical exam can be organized F2F or online.**

	Topics	Location	Number of hours
1	KNX Requirements for training centres	F2F / Online	1h
2	Structure and Scope of KNX Association	F2F / Online	1h
3	KNX Software	F2F / Online	30 min.
4	History of bus systems	F2F / Online	1h
5	Serial data transmission & KNX protocol	F2F / Online	5h
6	Microcontrollers	F2F / Online	4h
7	Application program	F2F / Online	2h
8	KNX Certification scheme for products	F2F / Online	1h
9	Theoretical exam	F2F / Online	2h, 30 min.

2.2.6.1 Requirements with regard to the KNX Tutor course

- The duration of the course is at least 18 hours;
- The student must pass the Advanced course exam in advance in order to be admitted to the KNX Tutor course. It is recommended that the Advanced qualification is acquired a maximum of two years before participating in the Tutor course;
- All topics of the KNX Tutor course documentation shall be dealt with in the above-mentioned period of time;
- **The Tutor course shall be conveyed by a KNX tutor who himself has passed his tutor exam with an overall mark of 80 %;**
- The theoretical exam shall be organized F2F or online;
 - If organized online, the tutor candidate must have a camera turned on while taking the exam, without any virtual background;
 - The KNX tutor (= examiner) must be present at his computer for the whole duration of the theoretical exam and must be able to monitor the candidate via the camera.
- Student must pass the theoretical exam with minimum 60 % of the marks. The exam regulations can be found under Exam regulations for the different courses (See paragraph 6.1).

Note:

- The KNX Tutor course does not include pedagogical or didactical training. The course also does not include marketing-related training.
- In order to prepare the students, the Tutor course documentation must be sent at least 2 weeks prior to the KNX Tutor course.
- A KNX training centre is not allowed to **only** offer KNX Tutor courses. An application for a KNX Basic and Advanced course is a prerequisite. The training centre needs to have trained 50 students for the Basic and 25 students for the Advanced course before it can submit an application for becoming a KNX++ training centre.
- The content of the certificate that can be issued for this course type shall be according to the sample certificate which can be found in the document 'Annexes' available on the KNX Cloud server.

2.2.7 KNX Refresher course (min. 8h)

The KNX Refresher course is a course that targets KNX partners who have taken the Basic course in the past. Thanks to this course, a KNX partner can refresh and develop his/her KNX skills further by receiving the latest information on the KNX system and tools novelties. The KNX Refresher courses can be fully given F2F or online, provided that the presence of the student can be checked via a real-time video-stream of the student. There is no exam for the Refresher course. The KNX tutor only needs to confirm the presence of the student right after the course. The following topics shall be conveyed during the organization of a KNX Refresher course:

	Topics	Location	Number of hours
1	ETS6 Professional	F2F / Online	6h
2	KNX Topology	F2F / Online	1h
3	KNX RF	F2F / Online	1h

2.2.7.1 Requirements with regard to the KNX Refresher course

- The duration of the course is at least 8 hours;
- The student must attend the course at least 75 % of the total course duration;
- The Refresher course documentation can be established by the training centre itself, based on the available Basic course training documentation;
- In order to take the Refresher course, the students must have successfully passed the KNX Basic course exam before;
- All topics of the KNX Refresher course documentation shall be dealt within the above-mentioned period of time;
- Theoretical as well as practical part shall be conveyed by a KNX certified tutor;
- One KNX tutor shall be available for every 16 students during practical classes;
- The proportion of practical classes shall be at least 50 % of the entire course duration;
- The KNX tutor must confirm the presence of the student after the course.

Note: The content of the certificate that can be issued for this course type shall be according to the sample certificate which can be found in the document 'Annexes' available on the KNX Cloud server.

2.3 Online courses

2.3.1 Preparatory Basic course

The Preparatory Basic course is a complete **online course** of which the (certified) theoretical part and the **non-certified practical part** is organized via an E-Learning platform, i.e., via a Live E-learning platform or a Self-paced E-Learning platform.

This course is intended for newcomers with no KNX knowledge at all. Taking this course will better prepare the student for a Condensed practical Basic course or a complete KNX Basic course. The non-certified practical part of such courses is organized with (software) tools such as:

- KNX Virtual
- proprietary KNX simulator programs
- remote access to the training rig via KNX IP Tunneling
- etc.

Note:

- A training centre can only request for approval of Preparatory Basic courses if it has been approved for the organization of KNX Basic courses.
- For taking this course, the student will not receive any official KNX certificate nor gain any credits for the Partner Ranking.

2.3.2 Preparatory Advanced course

The preparatory Advanced course is a complete **online course** of which the (certified) theoretical part and the **non-certified practical part** is organized via an E-Learning platform.

This course is intended for KNX partners who can prepare themselves online for a later Condensed Practical Advanced course or a complete Advanced course. The non-certified practical part of such courses is organized with (software) tools such as:

- KNX Virtual
- proprietary KNX simulator programs
- remote access to the training rig via KNX IP Tunneling
- etc.

Note:

- A training centre can only request for approval of Preparatory Advanced courses if it has been approved for the organization of KNX Advanced courses.
- For taking this course, the student will not receive any official KNX certificate nor gain any credits for the Partner Ranking.

2.3.3 E-Learning platforms

Two theoretical/practical E-Learning platform options are currently possible, i.e., the Live E-Learning and the Self-Paced E-Learning platform:

1. Live E-Learning (e.g., Adobe Connect, Zoom, Microsoft Teams, WebEx, GoToWebinar, Skype etc.)
2. Self-paced E-Learning in which the student can take the courses at his/her own pace (e.g., Moodle, recorded/interactive videos, simulations etc.) without any geographical constraint.

The below table shows for which type of courses and for which parts, E-Learning platforms (Live E-learning or Self-Paced E-Learning), can be used.

	Certified theoretical	Certified practical	Non-certified practical
Basic course	x	-	-
Advanced course	x	-	-
HVAC Specialist	x	-	-
Tutor course	x	-	-
Refresher course	x	x	-
Preparatory Basic	x	-	x
Preparatory Advanced	x	-	x

Basic/Advanced/HVAC Specialist/Tutor/Refresher/Preparatory Basic/Advanced course

The theoretical part of the above courses can be given via an E-Learning platform and can then be considered part of a certified KNX course. This is shown by the words in the table “certified theoretical”.

Refresher course

The practical part of the above course can be given via an E-Learning platform and can then be considered part of a certified KNX course. This is shown by the words in the table “certified practical”.

Preparatory Basic/Advanced course

The practical part of the above courses can be given via an E-Learning platform, but they are never considered as part of a certified KNX course. This is shown by the words in the table “non-certified practical”. This practical part needs to be re-done as part of a Condensed practical Basic/Advanced course or even – if the customer decides to do so - a complete Basic/Advanced course.

2.3.3.1 Requirements with regard to Online courses in general

2.3.3.1.1 Requirements for Live E-Learning

- The live courses must be organized by a KNX certified tutor;
- Only students registered in MyKNX for that specific course shall be able to access the live E-Learning platform;
- Courses may not be recorded and put online;
- The student attendance rate shall be measured/calculated;

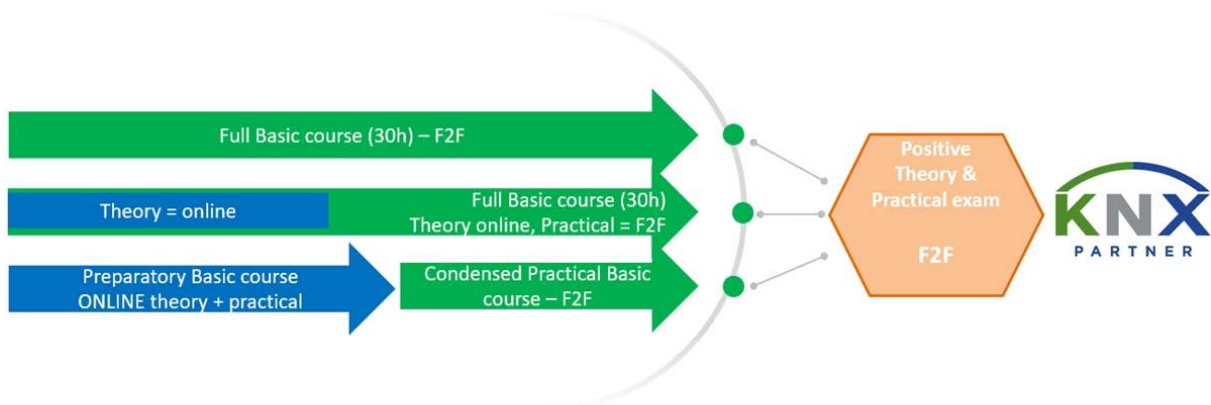
- The entire content of the standardized training documentation in PDF format may only be accessible via a username and password, which the students must have received after signing up to the course;
- For the certified practical part of the Refresher course and the non-certified practical part of the Preparatory Basic/Advanced course, the following practical tools can be amongst other used:
 - KNX Virtual
 - proprietary KNX simulator programs
 - remote access to the training rig via KNX IP Tunneling
 - etc.with or without online support from the KNX tutor.

2.3.3.1.2 Requirements for Self-Paced E-Learning

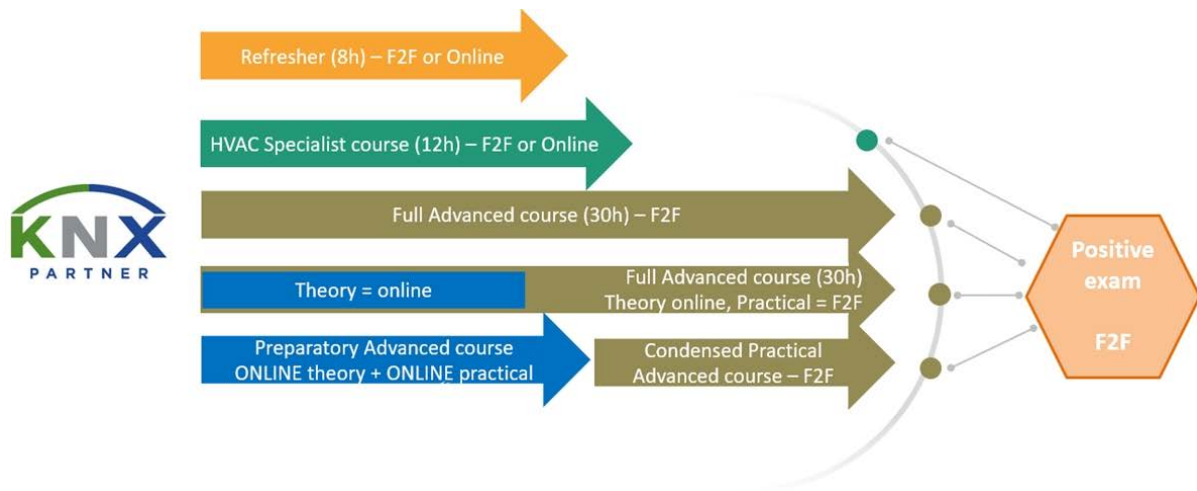
- Self-paced E-Learning programs shall be developed in close cooperation with a KNX certified tutor;
- Students shall be able to access the online platform via a unique username and password that will expire after the course has ended;
- After each theoretical chapter, a “checkpoint” shall be foreseen, consisting of a set of questions to test the knowledge acquired by the students. These questions may not be taken from the pool of official KNX theoretical exam statements. Only when succeeding the checkpoints, shall the student be allowed to proceed to the next chapter;
- A KNX certified tutor shall help the students by means of either a discussion board, chat sessions or emails. The answer to such questions shall be given maximum 12 hours after the student has raised his/her question;
- The student attendance rate shall be calculated;
- The entire content of the standardized training documentation in PDF format may only be accessible via a username and password, which the students must have received after signing up to the course;
- For the non-certified practical part of the Preparatory Basic/Advanced course, the following practical tools can be amongst other used:
 - KNX Virtual
 - proprietary KNX simulator programs
 - remote access to the training rig via KNX IP Tunneling
 - etc.with or without online support from the KNX tutor.

2.4 Course tracks

2.4.1 Possible course tracks prior to KNX Partnership



2.4.2 Possible course tracks after KNX Partnership (phase 1)



2.4.3 Possible course tracks after KNX Partnership (phase 2)



3 General requirements

3.1 Tutor knowledge

One of the requirements for organizing a certified KNX course is that the teacher has successfully taken a KNX Tutor course. The KNX Tutor course can be taken at a KNX training centre which is accredited by KNX Association for the organization of KNX Tutor courses (KNX++ training centres). A successful participation in the KNX Basic and Advanced course is a prerequisite in order to be admitted to the KNX Tutor course. The list of training centres that have scheduled KNX courses can be found on the KNX website.

Note:

- Only a KNX tutor who has the KNX tutor certificate shall teach the theoretical as well as the practical part of KNX courses. During practical classes, it is however allowed that the KNX tutor is assisted by a colleague who only has the partner certificate. KNX Association has the right to inspect the acquired KNX tutor certificate at all times.
- **Recommendation:** the KNX certified training centre should have at least one KNX certified tutor on the payroll

3.1.1 Recommendations for KNX tutors

- **Teaching experience:** A KNX tutor should be able to present proof of educational knowledge and experience in technical adult training.
- **Practical experience in conventional electrical installation techniques:** A KNX tutor should be familiar with the conventional electrical installation techniques. Only in this way is he able to assess the application of the KNX bus and spell out convincingly its advantages.
- **Knowledge of other bus systems in Building System Engineering and building automation:** As the KNX bus system is frequently compared to other bus systems in building system engineering and building automation, KNX tutors should be capable of explaining similarities and differences between different bus systems and be able to convey this to the students.
- **Update of tutor knowledge:** The tutor shall keep him/herself continuously up to date with the latest KNX developments in any or several of the underneath mentioned ways:
 - Study of any new versions of the KNX tutor documentation made available electronically to certified training centres;
 - Participation in the annual KNX conference for training centres;
 - Study of the KNX journal;
 - Study of KNX related product documentation;
 - Visits to national or international fairs with main focus on building automation.

3.2 KNX Training equipment

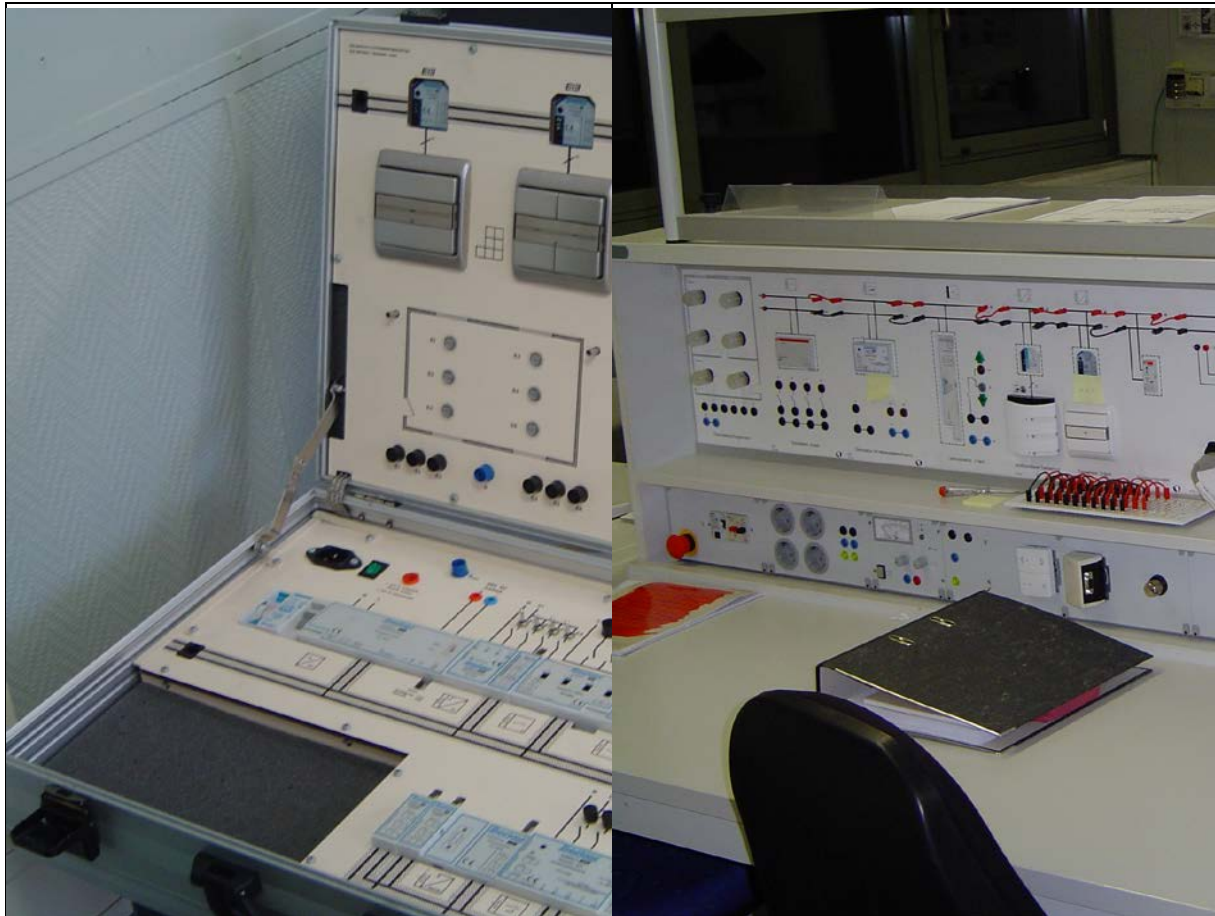
The training centre shall own at least two fixed or mobile training rigs. Maximum two students are allowed to work on one training rig. The training rigs may not be rented from other training centres or institutions.

3.2.1 Equipment Basic course

Please note that this equipment is also the same equipment as for the Condensed Practical Basic course/Refresher course and Preparatory Basic course.

The underneath mentioned product types shall be available in each training rig:

- Switch actuator
- Dimming actuator
- Shutter actuator
- The above products can be replaced by a multifunction actuator, e.g. switch/shutter actuator or a dim/switch actuator etc.
- Sensors with functions to 'switch', 'relative dimming' and 'drive control (shutter)'
- Line coupler or IP router
- Power supply
- 1 KNX RF S-Mode sensor and 1 KNX TP/RF media coupler (only for training centres that are located in a country in which the use of the 868 MHz frequency is allowed).



Example of a mobile KNX training rig

Example of a fixed KNX training rig

3.2.2 Equipment Advanced course

Please note that this equipment is also the same equipment as for Condensed Practical Advanced course and Preparatory Advanced course.

The underneath mentioned product types shall be additionally available in each training rig next to the equipment listed for the Basic course:

- Individual room controller
- Fan coil actuator
- Logical modules (standalone or part of other available equipment)
- Input devices with monitored cables / alarm system with a certified KNX interface:

- Input devices with monitored cables are more complex devices than regular KNX binary inputs. The required input devices offer the possibility to trigger alarms in case of short-circuiting the cable
- Weather station
- KNX/DALI Gateway
- KNX IP **Secure** router
- Recommended: RF or TP **secure** products

3.2.3 Equipment HVAC Specialist course

The underneath mentioned product types shall be additionally available in each training rig next to the equipment listed for the Basic course:

- Individual room controller
- Fan coil actuator
- Logical modules (standalone or part of other available equipment)
- Weather station
- Recommended: Visualization panel with integrated room temperature controller

3.2.4 Equipment Tutor course

There is no need for extra KNX components for this course type.

3.3 Computer / Software

- The computer of the tutor shall be equipped with an ETS Professional license.
- On the student's PC, at least an ETS Lite shall be installed. The student is allowed to bring his/her own PC to the course.

3.4 Media equipment

Projector, smart board, or similar media equipment shall be available in the room(s).

Note: It is recommended that the training rooms are subdivided into a theoretical and a practical room.

4 Obligations before/during/after the organization of a KNX course

4.1 Before the organization of a KNX course

4.1.1 Create a course in MyKNX

If the training centre has planned any courses, it must first add a KNX course in its MyKNX account, as explained in [Creating a Basic course in MyKNX](#). Students who are interested in taking this course have to sign up for this course by means of their MyKNX account as explained in [How to sign up for a KNX course?](#) Once all internal administrative tasks have been carried out (e.g., course fees paid etc.), the training centre must confirm the student's application. More information can be found in [First contact with a potential student](#) (See KNX Help Center).

4.1.1.1 Timetable

A timetable of the KNX course needs to be drawn up to document the number of hours allocated to the several topics of the KNX course. The timetable shall also include breaks, lunches... as well as the duration of the theoretical and practical exam. This timetable can also be shown on the website of the training centre. The following elements are an indispensable part of a timetable:

- Course name;
- Course date;
- Training documentation version used during the course;
- Number of allocated hours to each chapter, including breaks, lunches...;
- Exam duration;
- Course location;
- Name or number of the classroom;
- Name of the KNX tutor(s);

Note:

- This timetable also has to be established when creating the KNX course
- An example of a timetable can be found on the KNX Cloud server (see your MyKNX account for more information).

4.2 During the organization of a KNX course

4.2.1 Safety regulation

Right before the KNX course starts, it is important to inform the students on the relevant safety regulations. These safety regulations can be oral or written guidelines to prevent possible hazards and thus achieve a maximum degree of efficiency and safety during the KNX course.

Note: An example of the safety regulation can be found on the KNX Cloud server (see MyKNX for more information).

4.2.2 Attendance List

There are two possibilities to document the presence of the student in the KNX course:

- The tutor checks whether the student is present every training day and marks this in his attendance list;
- Each student individually signs the attendance list at the beginning of each day of class;

4.3 After the organization of a KNX course

4.3.1 Entering results of the KNX exam(s)

Once the course is finished, the student shall take a theoretical/practical exam. More information can be found in [Composing an online theoretical exam](#) and [Composing an offline theoretical exam](#) (See KNX Help Center).

4.3.2 Issuing the KNX Basic/Advanced/HVAC Specialist/Tutor/Refresher course certificate (Optional)

Each student will after successful exam receive a PDF certificate in his/her MyKNX account. If a KNX training centre decides to also issue a paper certificate (not an obligation), then it must do so based on the certificate template that is available on the KNX Cloud server. The content of the certificate shall be according to the sample certificate (see document 'Annexes' on the same Cloud server). The KNX certificate must contain the following details:

- name, date, and place of birth of the student
- title and contents of the course
- duration and time of the course
- date of issue, name of training centre (with logo of the training centre)
- place of examination
- signature of head of training and KNX certified tutor

4.3.3 Archiving of documents used before, during and after the course

The underneath listed documents shall be archived for at least the underneath specified time:

Documents to be archived	Archiving - duration
1 Print-out Building view documentation (Results of the practical test and the Building documentation can be archived in paper or in PDF format).	Papers of the last two conducted practical exams

5 Frequency course offerings

In order to be able to ensure the quality and topicality of the training, a

- **KNX certified training centre** should organize at least 4 KNX Basic courses.
- **KNX+ certified training centre** should organize at least 2 KNX Advanced courses
- **KNX HVAC Specialist certified training centre** should organize at least 2 KNX HVAC Specialist courses
- **KNX++ certified training centre** should organize at least 1 KNX Tutor course

per year.

6 Exam management

6.1 Exam regulations for the different courses

All the exam regulations for the certified course types for which it is mandatory to take an exam in order to pass the course can be found in the table below:

	Partner course	Partner course	Special course	Tutor course	Advanced partner course	Advanced partner course
	Basic	Condensed Basic	HVAC	Tutor	Advanced	Condensed Advanced
Number of True/False statements	100	100	20	100	25	25
Theory exam: scoring method	*	*	*	*	*	*
Practical exam	Planning, commissioning and diagnostics of a predetermined KNX project.	Planning, commissioning and diagnostics of a predetermined KNX project.	-	-	Error finding, telegram/device analysis, project design	Error finding, telegram/device analysis, project design
Duration Theory exam	1,5h	1,5h	20 min.	2,5h	30 min.	30 min.
Duration Practical exam	1,5h	1,5h	-	-	2h	2h
Pass rate	50 %	60 %**	50 %	60 %	50 %	60 %**
KNX Certificate issued by KNX	Yes	Yes	Yes	Yes	Yes	Yes
KNX Certificate issued by training centre (optional)***	Yes	Yes	Yes	Yes	Yes	Yes
Attendance confirmation****	Yes	Yes	Yes	Yes	Yes	Yes

* Theory exam - scoring method:

- A point is given for each statement which has been answered correctly.
- For each wrong statement, half a point (0,5) is deducted from the final score.
- For each statement that has not been answered at all, no points deducted or given.

** 50 % until further notice

*** For sample certificate, check the document 'Annexes' on the KNX Cloud server.

**** When the student does not pass the exam, an attendance confirmation may be handed out provided that the student's presence is documented for at least 75 % of the entire course duration. For a sample certificate, check the document 'Annexes' on the KNX Cloud server.

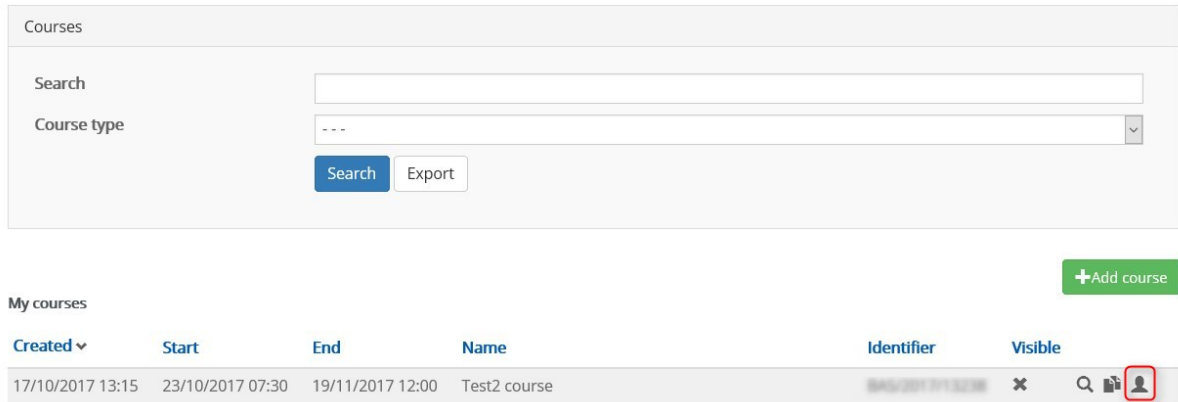
Note: A student is allowed to consult any paper documentation during the exam. After termination of the exam, the students have the possibility to review their exam.

6.2 Retaking the KNX exam

A student may retake the theoretical and/or practical exam max. 3 times. If the student fails all 3 exams, he/she has to attend the complete course again. Please note that the student is allowed to only retake the part he/she failed.

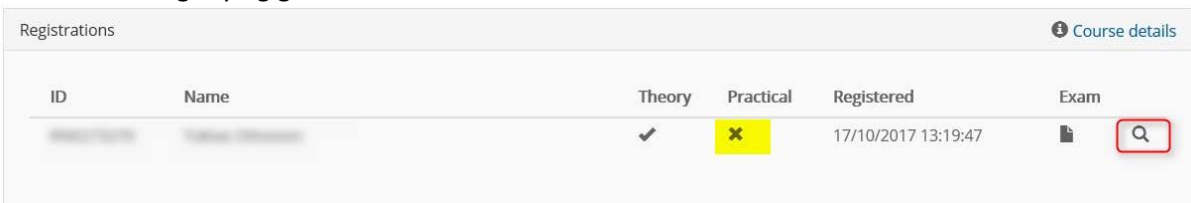
6.2.1 How to repeat the exam for the student?

1. Select the 'Person' icon next to the course for which the student failed the exam.



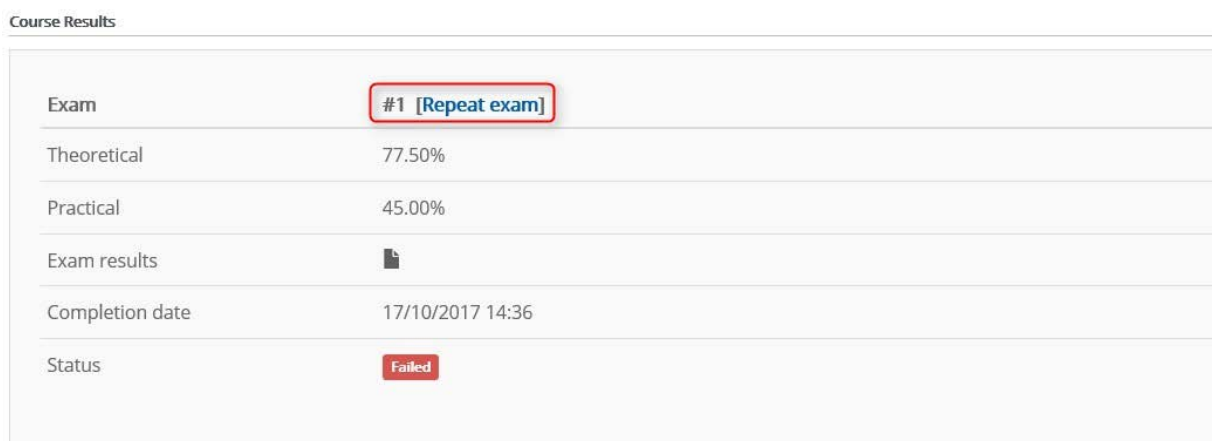
Created	Start	End	Name	Identifier	Visible	
17/10/2017 13:15	23/10/2017 07:30	19/11/2017 12:00	Test2 course	38452017113238	x	🔍 📄 👤

2. Click on the magnifying glass next to the student who has failed the exam.



ID	Name	Theory	Practical	Registered	Exam
38452017113238	Test2 course	✓	✗	17/10/2017 13:19:47	🔍 📄

3. Select Repeat exam.



Exam	
Theoretical	77.50%
Practical	45.00%
Exam results	📄
Completion date	17/10/2017 14:36
Status	Failed

4. As this student only failed the practical exam, only the practical exam has to be repeated. Select **Only practical** and click on the button **Submit**.



Repeat exam

If the student is not satisfied with his result, even if it has been successful, he can choose to repeat his exam to get a better grade.

Repeat exam:

Only practical ▼

Only theoretical

Only practical

Both



- The theoretical exam result of the first exam will be automatically copied.

Course Results

Exam	#1	#2 [Repeat exam]
Theoretical	77.50%	77.50%
Practical	45.00%	<input type="text"/>
Exam results		
Completion date	17/10/2017 14:36	×
Status	Failed	×

- The training centre now only has to enter the exam result of the repeated practical exam. Confirm the results.

Course Results

Exam	#1	#2 [Repeat exam]
Theoretical	77.50%	77.50%
Practical	45.00%	<input type="text" value="75.00"/>
Exam results		
Completion date	17/10/2017 14:36	×
Status	Failed	×

Confirm results

7. In our example, the student has now passed both the theoretical and the practical exam.

Course Results

Exam	#1	#2 [Repeat exam]
Theoretical	77.50%	77.50%
Practical	45.00%	75.00%
Exam results		
Completion date	17/10/2017 14:36	17/10/2017 16:12
Status	Failed	Passed

Note:

- Do not create a new course if the exam is retaken at another time. Go back to the course for which the student failed the exam and repeat the exam(s) there.
- The repeated theoretical exam will contain exam statements randomly selected by the exam tool.
- In case an offline exam has to be retaken, the KNX tutor has to click on 'Repeat exam', select 'Only theoretical' and download the **second** offline knxexam file.
- Consequently, this second offline knxexam has to be given to and taken by the student. Afterwards, the training centre must collect and upload the answer files of the **second** exam.
- It is not possible to retake one part of the exam (e.g. theoretical or practical part) at another certified training centre.

7 KNX Certification Procedure

7.1 Registration phase

- In order to become a KNX certified training centre, the interested training centre shall create an 'organization' in its MyKNX account and complete the online application (menu: Account / Applications / Become a KNX Certified Training Centre).

See KNX Help Center for an animated video of this process

- If the application is not accepted by KNX Association for any reason, the training centre will receive a notification that certain fields are incomplete and have to be updated. In this case, the training centre has to go back to the pending application and complete the corresponding fields.

See KNX Help Center for an animated video of this process

- As soon as the online application is accepted by KNX Association, the training centre will receive an order of €500 in its MyKNX account. Once the order is accepted and paid, the training centre will be approved as an official KNX certified training centre. The KNX certified training centre will now have access to various training resources (e.g. possibility to create courses, download the Word version of the training documentation and/or PowerPoint presentations, create exams etc.).

7.1.1 KNX Training documentation

The KNX training documentation assists the KNX tutor to convey the necessary level of basic knowledge to the students. Students of a KNX course have the right to receive a printed version or a PDF copy of this training documentation from the KNX certified training centre.

KNX training centres may modify this training documentation according to the KNX devices available in their classroom and according to their own local and organizational needs. Training centres are also allowed to put their training centre/company logo on the training documentation.

Should the training centre establish own documentation based on the KNX training documentation, a cross-reference list must be available, showing how the topics of the KNX training documentation are dealt with in the own documentation. Such a list must be kept up to date with new releases of the KNX and own training documentation.

Note:

- Which documentation languages are supported can be found in [Supported documentation languages](#) (See KNX Help Center).
- New versions of the training documentation as supplied by KNX Association shall be immediately used during KNX courses.

7.2 Certification phase

KNX Association grants the respective KNX certificate after successful assessment of the requested documentation (i.e., KNX tutor certificate, photos & invoices of training rigs and media equipment)

7.3 Surveillance phase

The continuous compliance of the training centre to the KNX certification program is checked by KNX Association on the basis of the completed online satisfaction surveys that are filled out by the KNX

students.

KNX Association has the right to organize surprise on-site inspections. If the inspector detects any irregularities or shortcomings, the expenses made by the KNX inspector shall be borne by the KNX training centre.

8 Training centre naming and trademark regulations

The number of KNX certified training centres is growing worldwide.

In order not to confuse potential students, it is necessary that KNX training centers abide by a number of rules with regard to the name of their training centre.

The following names **CANNOT** be used for your training centre:

- KNX Training (Centre)
- KNX Training (Centre) / in combination with city / region / country / continent;
- KNX (Training) Centre
- KNX (Training) Centre in combination with city / region / country / continent;
- KNX in combination with city / region / country / continent
- Training Centre name that contains 'International'.

The following combinations are however **ALLOWED**:

- Company name + KNX Training Centre
- Company name + KNX Centre
- Company name + KNX
- National group KNX + Country (only for official National Groups)

Important: The registration of any name of the training centre in combination with:

- the trademark "KNX" or
- **containing the letter combination** "KNX" or
- **imitating** the KNX Trademark

is **strictly** forbidden.

When the training centre should decide to register the KNX trademark as part of its own company logo, KNX Association will oppose this by legal means through its trademark office. The training centre will moreover be immediately removed from the list of the certified training centres and will not be able to organize KNX certified courses.

9 Training centre fees

For the continuous update of the KNX training documentation, KNX Association invoices KNX certified training centres a symbolic fee of €500 per year. A KNX certified training centre can renew its subscription with or without discount as explained in [Renewing subscription - no discount](#) and [Renewing subscription - with discount](#) (See KNX Help Center).

10 Advantages

10.1 Advantages for setting up a training centre

The advantages for setting up a KNX certified training centre can be summarized as follows. Certified KNX training centres:

1. Can hand out official KNX certificates to students after successful exam;
2. Get rebates on ETS licenses used in KNX certified courses. See Special rates ETS licenses (See paragraph 10.2)
3. Receive all KNX ETS Apps free of charge*;
4. Have free access to constantly updated Word version of the KNX training documentation in several languages;
5. Have access to the KNX Training logo that can be used on letter headed paper, business cards, website etc.;
6. Can promote upcoming KNX courses on the KNX website;
7. Get free publicity in the KNX Journal (reader audience >100.000);
8. Have the right to participate in the annual KNX training centre conference organized by KNX Association.

KNX Association offers the training centre a unique business opportunity whereby the training centre:

- Can extend its existing training activities;
- Can establish itself the course fees;
- Could become the first certified KNX training centre in the region/country;
- Has the liberty to organize KNX certified courses Face to Face (F2F) in the training centre / at the premises of the customer or online.

** Only if training centre also offers KNX Advanced courses. See [Offering KNX Advanced course - extra advantages](#) (See KNX Help Center)*

10.2 Special rates ETS licenses

A KNX certified training centre can buy the ETS licenses at a special price, provided that the **ETS licenses will be used for training purposes**. The training centre has to create a support ticket in order to get this exclusive offer.

	ETS6 Lite	ETS6 Professional*
non-ISO certified training centre	€60	€333
ISO 9001 certified training centre	€50	€250

*The training centre can buy as many ETS Lite licenses as it wants against these prices. It can however never buy more ETS Professional licenses than it has registered training rigs. In order to buy additional ETS Professional licenses, a training centre needs to increase the number of training rigs (see [New KNX devices in training rigs](#) (See KNX Help Center)).

More information on other advantages for KNX certified training centres can be found under [What are the advantages of setting up a certified KNX training centre?](#) (See paragraph [10.1](#))

