KNX Training
Requirements for KNX Training Centres

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1 Explanation of some basic terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>KNX certified training centre:</td>
<td>training centre that is accredited by KNX Association for the organization of KNX Basic courses or 12h practical course + exam.</td>
</tr>
<tr>
<td>KNX+ certified training centre:</td>
<td>training centre that is accredited by KNX Association for the organization of KNX Basic courses as well as KNX Advanced courses.</td>
</tr>
<tr>
<td>KNX HVAC ‘Specialist’ certified training centre:</td>
<td>training centre that is accredited by KNX Association for the organization of KNX Basic courses and KNX HVAC Specialist courses</td>
</tr>
<tr>
<td>KNX++ certified training centre:</td>
<td>training centre that is accredited for the organization of KNX Basic courses, KNX Advanced courses as well as KNX Tutor courses.</td>
</tr>
<tr>
<td>KNX course:</td>
<td>can be a Basic course, Advanced course, KNX HVAC Specialist course or Tutor course with theoretical and/or practical exam</td>
</tr>
<tr>
<td>KNX workstation:</td>
<td>consists of a (mobile) computer with installed ETS software and a (mobile) training rig with KNX products</td>
</tr>
<tr>
<td>KNX Training documentation:</td>
<td>can be Basic, Advanced or Tutor course documentation</td>
</tr>
<tr>
<td>Self-educated person:</td>
<td>person who can prove many years of experience with KNX or ETS.</td>
</tr>
<tr>
<td>MyKNX:</td>
<td>tailor-made Web tool from KNX Association for various target groups like ETS licensees, KNX members, KNX training centres… (<a href="https://my.knx.org">https://my.knx.org</a>)</td>
</tr>
</tbody>
</table>

Fixed KNX workstation (training rig + computer)  
Mobile KNX training rig (only training rig)
2 Introduction

It is indispensable that a KNX installation is properly programmed 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 taking into account the relevant regulations (e.g. lightning protection, electromagnetic compatibility, etc.);
- commissioning and servicing of KNX installations.

3 KNX Training documentation

Once confirmed, each KNX certified training centre will have automatically access to the Word version and/or the PowerPoint presentations1 of the KNX training documentation. This documentation will assist 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 or a PDF copy of this training documentation.

KNX Training centres may modify this training documentation according to the KNX devices available in their classes and according to their own local and organizational needs. Training centres are also allowed to put their training centre 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 subjects 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.

! New versions of the training documentation as supplied by KNX Association shall be immediately used during KNX courses.

---

1 PowerPoint presentations not available in all languages and not for all course types
3.1 Types of KNX courses

3.1.1 KNX Basic course

The KNX Basic course is the first course that one must attend in order to become a KNX Partner and in order to be listed as a KNX Partner on the KNX website. The theoretical and practical part of the Basic course shall be organized at the premises of the training centre or at the premises of the customer (on-site). Mobile or fixed workstations are used to convey the practical part of the course. The theoretical and practical exam shall always be organized on-site in the presence of a KNX tutor.

The following topics shall be conveyed during the organization of a KNX Basic course:

<table>
<thead>
<tr>
<th>No.</th>
<th>Topic</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>KNX Project Design ETS: Basic</td>
<td>6h</td>
</tr>
<tr>
<td>2</td>
<td>KNX Project Design ETS: Advanced (only for informative purposes)</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>KNX Commissioning ETS</td>
<td>6h</td>
</tr>
<tr>
<td>4</td>
<td>KNX Diagnostics</td>
<td>3h</td>
</tr>
<tr>
<td>5</td>
<td>KNX System arguments</td>
<td>30 min.</td>
</tr>
<tr>
<td>6</td>
<td>KNX System overview</td>
<td>3h</td>
</tr>
<tr>
<td>7</td>
<td>KNX TP Topology</td>
<td>3h</td>
</tr>
<tr>
<td>8</td>
<td>KNX Bus devices</td>
<td>1h, 30 min.</td>
</tr>
<tr>
<td>9</td>
<td>KNX RF</td>
<td>1h</td>
</tr>
<tr>
<td>10</td>
<td>KNX TP Installation</td>
<td>3h</td>
</tr>
<tr>
<td>11</td>
<td>KNX Theoretical exam</td>
<td>1h, 30 min.</td>
</tr>
<tr>
<td>12</td>
<td>KNX Practical exam</td>
<td>1h, 30 min.</td>
</tr>
</tbody>
</table>

Minimum 50% of total course duration
Recommended number of hours
Compulsory number of hours

30 hours

2 30 hours of 60 minutes.
3.1.1.1 Requirements with regard to the KNX Basic course

- The duration of the course 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;
- 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 as well as the practical exam with minimum 50% of the marks (See §6.1 for exam regulations)

3.1.2 KNX 12h practical course + exam³

This type of course is intended for the KNX self-educated persons provided that a 12h practical course is organized before the theoretical and practical exam. Students that attend this course and succeed in the exam can also become a KNX Partner. The practical part of the course as well as the theoretical and practical exam shall always be organized on-site in the presence of a KNX tutor.

The following topics shall be conveyed during the organization of a 12h practical course + exam:

<table>
<thead>
<tr>
<th>No.</th>
<th>Topic</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>KNX Project Design ETS: Basic</td>
<td>4h</td>
</tr>
<tr>
<td>2</td>
<td>KNX Project Design ETS: Advanced (only for informative purposes)</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>KNX Commissioning ETS</td>
<td>5h</td>
</tr>
<tr>
<td>4</td>
<td>KNX Diagnostics</td>
<td>3h</td>
</tr>
<tr>
<td>5</td>
<td>KNX Theoretical exam</td>
<td>1h, 30 min.</td>
</tr>
<tr>
<td>6</td>
<td>KNX Practical exam</td>
<td>1h, 30 min.</td>
</tr>
</tbody>
</table>

3 The 12h practical course + exam has been reduced to 5h practical + exam until the end of 2020.
4 15 hours of 60 minutes.
3.1.2.1 Requirements with regard to the 12h practical course + exam

- The duration of the course 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. KNX Project Design, Commissioning, Diagnostics) 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;
- Student must pass the theoretical as well as the practical exam with minimum 60% of the marks (See §6.1 for exam regulations)
3.1.3 KNX Advanced Course

Training Centres that want to take their courses to the next level have the possibility to also offer KNX Advanced courses. The theoretical and practical part of the course is organized at the premises of the training centre or at the premises of the customer (on-site). Mobile or fixed workstations are used to convey the practical part of the course. The practical exam is always organized on-site in the presence of a KNX tutor.

The following topics shall be conveyed during the organization of a KNX Advanced course:

<table>
<thead>
<tr>
<th>No.</th>
<th>Topic</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fail-safe planning <em>(only for informative purposes)</em></td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Flags</td>
<td>2h</td>
</tr>
<tr>
<td>3</td>
<td>HVAC control with KNX</td>
<td>4h</td>
</tr>
<tr>
<td>4</td>
<td>Interworking</td>
<td>2h</td>
</tr>
<tr>
<td>5</td>
<td>Couplers</td>
<td>4h</td>
</tr>
<tr>
<td>6</td>
<td>IP Communication</td>
<td>2h</td>
</tr>
<tr>
<td>7</td>
<td>KNX Secure</td>
<td>2h</td>
</tr>
<tr>
<td>8</td>
<td>KNX Telegram</td>
<td>2h</td>
</tr>
<tr>
<td>9</td>
<td>Lighting control</td>
<td>3h</td>
</tr>
<tr>
<td>10</td>
<td>Security technology</td>
<td>1h</td>
</tr>
<tr>
<td>11</td>
<td>Logic operations</td>
<td>2h</td>
</tr>
<tr>
<td>12</td>
<td>Visualization Systems</td>
<td>4h</td>
</tr>
<tr>
<td>13</td>
<td>ETS Apps <em>(only for informative purposes)</em></td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>KNX and Multimedia <em>(only for informative purposes)</em></td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>KNX and Smart Metering/Smart Grid <em>(only for informative purposes)</em></td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Practical exam</td>
<td>2h</td>
</tr>
</tbody>
</table>

Recommended number of hours

| 30 hours⁵ |

⁵ 30 hours of 60 minutes.
3.1.3.1 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;
- 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;
- 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 practical exam (error finding, telegram/device analysis, project design) with minimum 50% of the marks (See §6.2 for exam regulations).
3.1.4 KNX HVAC Specialist Course

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

The ultimate goal of the KNX HVAC Specialist course is:
- lowering 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 following topics shall be conveyed during the organization of a KNX HVAC Specialist course:

<table>
<thead>
<tr>
<th>No.</th>
<th>Topic</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basic Know-How</td>
<td>1h 40 min.</td>
</tr>
<tr>
<td>2</td>
<td>Heat distribution systems</td>
<td>1h</td>
</tr>
<tr>
<td>3</td>
<td>Heat generators</td>
<td>1h</td>
</tr>
<tr>
<td>4</td>
<td>Legal framework</td>
<td>30 min.</td>
</tr>
<tr>
<td>5</td>
<td>To understand “Steering and adjustment”</td>
<td>2h</td>
</tr>
<tr>
<td>6</td>
<td>Heating control</td>
<td>1h</td>
</tr>
<tr>
<td>7</td>
<td>Drinking water</td>
<td>30 min.</td>
</tr>
<tr>
<td>8</td>
<td>Energy efficiency with KNX</td>
<td>4h</td>
</tr>
<tr>
<td>9</td>
<td>KNX Theoretical exam</td>
<td>20 min.</td>
</tr>
</tbody>
</table>

Recommended number of hours: 12 hours

Compulsory number of hours:

12 hours

---

6 The chapter HVAC from the advanced course (3h) contains valuable information but is not enough to have a complete understanding of HVAC.

7 12 hours of 60 minutes.
3.1.4.1 Requirements with regard to the KNX HVAC Specialist course

- The duration of the course shall be at least 12 hours;
- 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 (See §6.3 for exam regulations).

⚠️ A KNX training centre is not allowed to only offer KNX HVAC Specialist courses. An application for a KNX Basic course is a prerequisite.
3.1.5 KNX Tutor Course

KNX Tutor courses are offered for those students who want to start up a certified KNX training centre themselves or who want work as a KNX tutor at an already certified KNX training centre. The theoretical part of the course is organized at the premises of the training centre or at the premises of the customer (on-site). The theoretical exam is always organized on-site in the presence of a KNX tutor.

A KNX training centre is not allowed to only offer KNX Tutor courses. An application for a KNX Basic course as well as a KNX Advanced course is a prerequisite.

The following topics shall be conveyed during the organization of KNX Tutor courses:

<table>
<thead>
<tr>
<th>No.</th>
<th>Topic</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>KNX Requirements for Training centres</td>
<td>1h</td>
</tr>
<tr>
<td>2</td>
<td>Structure and Scope of KNX Association</td>
<td>1h</td>
</tr>
<tr>
<td>3</td>
<td>KNX Software</td>
<td>30 min.</td>
</tr>
<tr>
<td>4</td>
<td>History of Bus systems</td>
<td>1h</td>
</tr>
<tr>
<td>5</td>
<td>Serial Data Transmission &amp; KNX Protocol</td>
<td>5h</td>
</tr>
<tr>
<td>6</td>
<td>Microcontrollers</td>
<td>4h</td>
</tr>
<tr>
<td>7</td>
<td>Application program</td>
<td>2h</td>
</tr>
<tr>
<td>8</td>
<td>KNX Certification Scheme for products</td>
<td>1h</td>
</tr>
<tr>
<td>9</td>
<td>Theoretical exam</td>
<td>2h30</td>
</tr>
</tbody>
</table>

Recommended number of hours: 18 hours

Compulsory number of hours: 18 hours

---

30 hours of 60 minutes.
3.1.5.1 Requirements with regard to the KNX Tutor course

- The duration of the course is at least 18 hours;
- 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 to the Tutor course;
- All topics of the KNX Tutor course documentation shall be dealt with in the above mentioned period of time;
- Theoretical part of the course shall be conveyed by a KNX tutor who himself has passed his tutor exam with an overall mark of 80 %;
- Student must pass the theoretical exam with minimum 60 % of the marks (See §6.4 for exam regulations)

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 course participants, the Tutor course documentation must be sent at least 2 weeks prior to the KNX Tutor course.

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9 If the candidate tutor claims to be a self-educated person, the training centre may give him the possibility to sit only the exam of the Advanced course prior to the KNX Tutor course. If the student is successful, he may attend the KNX Tutor course.
3.2 KNX Online Courses

KNX training centres have the possibility to offer the theoretical part of the Basic/Advanced/HVAC Specialist/Tutor course via an online distance learning platform. Two online training options are currently possible, i.e. the Live E-Learning platform and the Self-Paced E-Learning platform:

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

3.2.1 Requirements with regard to online courses

3.2.1.1 Requirements Live E-Learning:
- The live courses have to 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 may only be accessible to subscribed students via username and password obtained through the KNX certified training centre upon subscription.

3.2.1.2 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 the 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 measured/calculated;
- The entire content of the standardized training documentation in PDF may only be accessible to subscribed students via username and password obtained through the KNX certified training centre upon subscription.

The requirements for the practical part of these courses can be found in the respective clauses of these courses.
3.2.2 Other types of courses

For all other KNX courses, which do not comply with the above requirements, a training centre may only hand out an attendance confirmation\(^{10}\). Even when the student did not pass the Basic, Advanced, HVAC Specialist or Tutor exam, such an attendance confirmation can be handed out.

Prerequisite for KNX attendance confirmations shall be a documented presence of the student of at least 75% of the entire course duration.

3.3 Incentives given for students who attend a standardized course

3.3.1 KNX Basic course

Each student following a Basic course will receive the following voucher upon registration by the KNX training centre in MyKNX:

- **70% rebate voucher for ETS Lite (140 €)**: voucher to be used when purchasing an ETS Lite\(^{11}\)

Each student passing the Basic course exam will receive the following vouchers once the theoretical and practical exam results have been entered by the training centre in MyKNX:

- **25% rebate voucher (200 €)**: voucher to be used when upgrading the ETS Lite license to ETS Professional\(^{12}\)
- **50% rebate voucher for ETS Inside (80 €)**: voucher to be used when purchasing an ETS Inside software

3.3.2 12h practical + exam

For this type of course, the student will receive no vouchers.

3.3.3 KNX Advanced course

In case the KNX Partner has passed the KNX advanced course exam, he will automatically receive a 50% rebate voucher for buying all the ETS Apps developed by KNX Association in his MyKNX account\(^{13}\).

3.3.4 KNX HVAC Specialist course

For this type of course, the student will receive no vouchers.

\(^{10}\) See sample certificate Annex 10.7

\(^{11}\) The ETS Partner Lite voucher is limited in time (one year valid)

\(^{12}\) This voucher is also limited in time (one year valid)

\(^{13}\) The ETS Apps offered by KNX Association are: Device compare, EIBlib/IP, Extended copy, ETS App Device Reader, Labels, Long-term recorder, My Product Templates, Project Tracing, Replace Device, Split & Merge. The rebate voucher will only be active if the KNX ETS Apps are all bought together in the same order.
3.3.5 KNX Tutor course

For this type of course, the student will receive no vouchers.

4 Prerequisites for organizing a KNX Course

4.1 Tutor certificate

One of the requirements for organizing a KNX course is that the tutor has followed a KNX Tutor course and has successfully passed the KNX Tutor exam. The KNX Tutor course can be followed at KNX training centres which are accredited for the organization of KNX Tutor courses (KNX++ training centres). A prerequisite for following the Tutor course is however that the student prior to the KNX Tutor exam has successfully passed the KNX Basic and Advanced course exam.

Only a KNX tutor who has the KNX tutor certificate shall conduct the theoretical as well as the practical part of KNX courses. During practical classes, it is allowed that the KNX tutor is assisted by a colleague who has the partner certificate. KNX Association has the right to inspect the acquired KNX tutor certificate at all times.

4.1.1 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 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 bi-annual KNX journal;
- Study of KNX related product documentation;
- Visits to national or international fairs with main focus on building automation;
4.2 **Media Equipment**

Examples are:

- Flip chart
- Board
- Projector
- Smart board

4.3 **Computer / software equipment**

4.3.1 **PC equipment / Software of the KNX Tutor**

- PC shall be the property of the training centre / tutor
- Installed and licensed ETS Professional software

4.3.2 **PC equipment / Software of the student**

- The PC for the students may be brought along to the course by the student him/herself:
  - The training centre in this case does not need to buy ETS Lite licenses
    (See Annex 10.10 for more information)
- If training centre provides a computer for the students:
  - At least ETS Lite license required for each computer

4.4 **Training equipment**

4.4.1 **Basic course and 12h practical course + exam**

The training centre shall own at least two fixed or mobile workstations. Maximum two students are allowed to work on one workstation. The workstations may not be rented from other training centres or institutions. The underneath mentioned product types shall be available in each training rig:

- Switch actuator
- Dimming actuator
- Shutter actuator
- (Combination of the above)
- Sensors with functions to “switch”, “relative dimming” and “drive control” (shutter)
- Line coupler or IP router
- Power supply
- USB-Interface (alternatives are an IP Interface or an IP Router)
- 1 KNX RF S-Mode sensor and 1 KNX TP/RF media coupler installed on one training rig (this material must only be purchased if the training centre is located in a country in which the 868 MHz frequency is allowed\(^\text{14}\))

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\(^\text{14}\) Deadline for mandatory purchase of this material is 31/05/2020
4.4.2 Advanced course
The training centre shall own at least two fixed or mobile workstations. Maximum two students are allowed to work on one workstation. The workstations may not be rented from other training centres or institutions. The underneath mentioned product types shall be additionally available in each training rig next to the equipment listed under 4.4.1:

- 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
- Weather station
- KNX/DALI Gateway
- 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

4.4.3 KNX HVAC Specialist course
The training centre shall own at least two fixed or mobile workstations. Maximum two students are allowed to work on one workstation. The workstations may not be rented from other training centres or institutions. The underneath mentioned product types shall be additionally available in each training rig next to the equipment listed under 4.4.1.

- 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

4.4.4 Tutor course
There is no need for extra KNX components for this course.
5 Obligations before / during / after the organization of a KNX Course

5.1 Before the organization of a KNX course

Once the student has subscribed himself to the course and once all internal administrative tasks have been carried out (e.g. course fees paid etc.), the training centre has to confirm the participation of the student to the course in his MyKNX account. More information on how a student can subscribe himself to a course and how the training centre can confirm or reject his subscription can be found in Annex 10.12 resp. 10.13.

The student can only sign up for a course in his MyKNX account (https://my.knx.org).

5.1.1 Timetable (see example Annex 10.9)\textsuperscript{15}

A timetable of the KNX course needs to be drawn up to document the number of hours allocated to the various topics of the KNX course. The timetable shall also include possible 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:

- Name of the course;
- Date of the course;
- Training documentation version used during the course;
- Number of allocated hours to each chapter including possible breaks, lunches…;
- Exam duration;
- Location where the course was organized;
- Name or number of the classroom;
- Name of the KNX tutor(s);

\textsuperscript{15} As part of the course creation module (see Annex 10.11) KNX Association requires that a training centre creates a timetable. If this timetable is not created, then it is not possible to subscribe students for this course.
5.2 During the organization of a KNX course

5.2.1 Safety Procedure (see example Annex 10.8)
Right before the KNX course starts, it is important to inform the students on the relevant safety procedures. These safety procedures can be oral or written guidelines to prevent possible hazards and thus achieve a maximum degree of efficiency and safety during the KNX course.

5.2.2 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 class day and marks this in his attendance list;
- Each student individually signs the attendance list at the beginning of each class day;

Recommendations with regard to the frequency of the organization of KNX courses

- 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.
  - a 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
  - a KNX++ certified training centre should organize at least 1 KNX Tutor course per calendar year;
- the KNX certified training centre should have at least one KNX certified tutor on the payroll;
- The training rooms should be subdivided into a theoretical and a practical room.
5.3 After the organization of a KNX course

5.3.1 Entering results of a KNX Basic course (See Annex 10.14)\(^{16}\)

Once the course is finished, the student shall participate in a theoretical and a practical exam.

5.3.1.1 Theoretical exam – Online (See Annex 10.14.2)

If an online connection (Wi-Fi, Ethernet) is available in the classroom, then the student is able to take the theoretical exam via his MyKNX account in the presence of a KNX tutor. The practical exam results however need to be entered manually.

5.3.1.2 Theoretical exam – Offline (See Annex 10.14.4)

If there is no online connection available in the classroom, then the student is able to take the theoretical exam via an offline tool that can be made available to him by the training centre. In this way, the student is still able to take the theoretical exam on a computer in the presence of a KNX tutor. The practical exam results however need to be entered manually.

5.3.1.3 OPTIONAL: Issuing the KNX Basic course certificate

KNX training centres are not obliged to issue KNX paper certificates to students who have passed the KNX Basic course exam. However, if the KNX training centre decides to issue such a paper certificate, it must do so on the electronic certificate template that is available in his MyKNX account. The content of the certificate shall be according to the sample certificate in Annex 10.1 and 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

\(^{16}\) For the Advanced course, the training centre only needs to manually enter the practical exam results. For the Tutor course: same approach as Basic course, with the only difference that there is no practical exam.
5.3.1.4 OPTIONAL: Issuing the KNX Advanced course certificate
The content of the certificate shall be according to the sample certificate in Annex 10.3. The KNX Advanced course certificate must contain the following information:

- 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

A successful participation to the Basic course exam is a prerequisite for the partnership contract. Passing the Advanced course gives the student the right to an extra entry of this qualification in his KNX partner details.

5.3.1.5 OPTIONAL: Issuing the KNX HVAC Specialist course certificate
The content of the certificate shall be according to the sample certificate in Annex 10.6. The KNX HVAC Specialist course certificate must contain the following information:

- 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

A successful participation to the Basic course exam is a prerequisite for the partnership contract. Passing the KNX HVAC Specialist course gives the student the right to an extra entry of this qualification in his KNX partner details.

5.3.1.6 OPTIONAL: Issuing the KNX Tutor course certificate
The content of the certificate shall be according to the sample certificate in Annex 10.6. The KNX Tutor course certificate must contain the following information:

- 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
5.3.2 Archiving of documents used before, during and after the course

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

<table>
<thead>
<tr>
<th>No</th>
<th>Documents to be archived</th>
<th>Archiving - duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Print-out building view documentation(^{17})</td>
<td>Papers of the last two conducted practical exams</td>
</tr>
</tbody>
</table>

\(^{17}\) Results of the practical test and the building documentation can be archived in paper or electronic form (e.g. printed out by Acrobat or similar).
6 KNX exam

6.1 KNX Basic course exam and 12h practical course + exam

<table>
<thead>
<tr>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>The KNX Basic course exam may only be organized by KNX, KNX+ or KNX++ certified training centres</td>
</tr>
<tr>
<td>- A certificate can be handed out if the student passes this exam (see sample certificate Annex 10.2 – issuing this certificate is optional)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theoretical exam:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- the duration of theoretical exam is 1h and 30 minutes;</td>
</tr>
<tr>
<td>- 100 true / false statements are randomly selected by the KNX exam tool:</td>
</tr>
<tr>
<td>o a point is given for each statement which has been answered correctly</td>
</tr>
<tr>
<td>o For each wrong statement half a point (0,5) is deducted from the final score</td>
</tr>
<tr>
<td>o For each statement that has not been answered at all no points deducted or given</td>
</tr>
<tr>
<td>- It is absolutely forbidden to show the answers of the theoretical exam to the students prior or during the exam.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practical exam: planning, commissioning and diagnostics of a predetermined KNX project.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- the duration of the practical exam is 1h and 30 minutes;</td>
</tr>
<tr>
<td>- the maximum marks that can be given per true/false statement are reflected in the exam papers.</td>
</tr>
<tr>
<td>the minimum marks for both the theoretical as well as the practical examination of the KNX Basic course equals 50 %;</td>
</tr>
<tr>
<td>the minimum marks for both the theoretical as well as the practical examination of the KNX 12h practical course + exam equals 60 %;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target group</th>
</tr>
</thead>
<tbody>
<tr>
<td>students of the KNX Basic course</td>
</tr>
<tr>
<td>KNX self-educated persons</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>180 minutes</td>
</tr>
</tbody>
</table>
### 6.2 KNX Advanced course exam

| Prerequisites | The KNX exam may only be organized by KNX+ or KNX++ certified training centres  
|               | These training centres also have the right to offer the KNX Advanced exam separately for KNX self-educated persons. |
|               | **If a self-educated person is a KNX Partner, he is allowed to only sit the exam of the KNX Advanced course.**  
|               | **In this case, this person shall receive two weeks prior to the exam of the Advanced course, a copy of the latest version of the Advanced course documentation.**  
|               | - A certificate can be handed out if the student passes this exam (optional) (see sample certificate Annex 10.4) |
| Exam regulations | Practical exam: (error finding, telegram/device analysis, project design)  
|                 | - the duration of the practical exam is 2 hours;  
|                 | - the maximum marks that can be given per question are reflected in the exam papers.  
|                 | - the minimum marks for the practical examination equals 50 %; |
| Target group | students of the KNX Advanced course  
|               | KNX self-educated persons  
| Duration | 120 minutes |
### 6.3 KNX HVAC Specialist course exam

<table>
<thead>
<tr>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical exam:</td>
</tr>
<tr>
<td>- the duration of theoretical exam is 20 minutes;</td>
</tr>
<tr>
<td>- 20 true / false statements are randomly selected by the KNX exam tool:</td>
</tr>
<tr>
<td>o a point is given for each statement which has been answered correctly</td>
</tr>
<tr>
<td>o For each wrong statement half a point (0.5) is deducted from the final score</td>
</tr>
<tr>
<td>o For each statement that has not been answered at all no points deducted or given</td>
</tr>
<tr>
<td>- It is absolutely forbidden to show the answers of the theoretical exam to the students prior or during the exam</td>
</tr>
<tr>
<td>- The KNX exam may only be organized by KNX HVAC Specialist training centres</td>
</tr>
<tr>
<td>- A certificate can be handed out if the student passes this exam (optional) (see sample certificate Annex 10.5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exam regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical exam:</td>
</tr>
<tr>
<td>- the duration of the theoretical exam is 20 minutes;</td>
</tr>
<tr>
<td>- the maximum marks that can be given per true/false statement are reflected in the exam papers</td>
</tr>
<tr>
<td>- the minimum marks for the theoretical examination equals 50 %;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target group</th>
</tr>
</thead>
<tbody>
<tr>
<td>students of the KNX Basic course</td>
</tr>
<tr>
<td>students of the KNX Advanced course</td>
</tr>
<tr>
<td>students of the KNX Tutor course</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 minutes</td>
</tr>
</tbody>
</table>
6.4 **KNX Tutor course exam**

<table>
<thead>
<tr>
<th>Prerequisites</th>
<th>The KNX exam may only be held by KNX++ certified training centres</th>
</tr>
</thead>
</table>
| Contents      | • Theoretical exam  
|               |   - the duration of the theoretical exam is 2,5 hours;  
|               |   - 100 true / false statements are randomly selected by the KNX  
|               |     exam tool:  
|               |       o a point is given for each statement that was answered  
|               |         correctly  
|               |       o For each wrong statement half a point (0,5) is deducted  
|               |         from the final score  
|               |       o For each statement that was not answered at all there  
|               |         are no points deducted or given  
|               |   - It is absolutely forbidden to show the answers of the theoretical  
|               |     exam to the students prior or during the exam.  
|               | • the minimum marks for the theoretical examination equals 60 %; |
| Target group  | students of the KNX Tutor course |
| Duration      | 150 minutes |

6.5 **Additional regulations for KNX Basic, Advanced, HVAC Specialist or Tutor course exam**

| Additional regulations | any paper documentation may be consulted by the student during the exam.  
|                        | after termination of the exam, the students have the possibility to review their exam  
|                        | when the student does not pass the exam, merely an attendance confirmation may be handed out to him/her (provided that his/her presence is documented for at least 75 % of the entire course duration);  
|                        | the exam may be repeated maximum 3 times. If unsuccessful after 3 attempts, the student needs to retake the course. |
7 The KNX Certification procedure for training centres

7.1 Registration phase:
In order to become a KNX certified training centre, the interested training centre completes the online application in its personal MyKNX account (menu: My Account – My Applications – Become a KNX Certified Training Centre).

Note: Training centres that have already been KNX certified for the organization of Basic courses can apply for an extension to their certification towards Advanced\(^{18}\) or Tutor\(^{19}\) courses by submitting the respective documents in their MyKNX account (Menu: My account – My Applications – Update your KNX training centre profile), in this way showing compliance to the additional requirements.

\(^{18}\) Training centre can only apply for an extension towards Advanced courses if it has organized Basic courses for at least 50 students

\(^{19}\) Training centre can only apply for an extension towards Tutor courses if it has organized Advanced courses for at least 25 students and if the tutor passed his own tutor exam with an overall mark of 80 %
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 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 Annual Fees

For the continuous update of the KNX training documentation, KNX Association invoices KNX certified training centres a symbolic fee of 500 EUR / year. A training centre can renew its subscription as a KNX certified training centre (up to max. 6 years) by going to its MyKNX account (menu: Shop - Subscriptions).
9 Advantages for KNX certified training centres

- Considerably reduced prices for ETS5 Professional licenses used in KNX certified courses:
  - ETS for regular customers: 1000 EUR
  - ETS for KNX certified TC (non ISO): 333 EUR
  - ETS for KNX certified TC (ISO): 250 EUR
  - ETS Inside for all certified TCs 80 EUR

- ETS Lite licenses for your students used in KNX certified courses:
  - for KNX certified TC (ISO): 50 EUR
  - for KNX certified TC (non ISO): 60 EUR

- Existing ETS licenses are upgraded to the latest version of ETS free of charge

- All KNX ETS Apps free of charge

- Free access to constantly updated Word version of the KNX training documentation in several languages.
  - The Basic course documentation;
  - The Advanced course documentation is currently available in English, German, French and Spanish;
  - The Tutor course documentation is currently available in English, German and French

- Use of the KNX Training logo (on letter headed paper, envelopes, business cards...)

- Free publicity in the KNX Journal (reader audience > 100.000)

- Right to attend the KNX training centre conference organized by KNX Association

- Listing of training centre in the KNX international database that can be consulted via the KNX Association website.

- Business Opportunity
  - Extending one’s training activities
  - Fix the required training fees yourself
  - Become the first certified KNX training centre in your region / country.
  - Liberty to organize training on-site or off-site (other region, country, continent...)

---

20 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.

21 The training centre however has to purchase the KNX USB dongle (60 EUR/dongle)

22 Only if training centre also offers KNX advanced courses (only available for one computer)

23 The ETS5 basic course documentation is currently available in Chinese, English, German, French, Spanish, Italian, Greek, Polish, Russian, Turkish, Japanese, Portuguese and Korean.
10 Annexes

10.1 KNX Basic course with KNX exam

**KNX Training centre**

**CERTIFICATE**

Mr. John Jones
born on 15 May 1952
in London

has successfully attended the

**KNX Basic course with KNX exam**

The KNX Basic course was organized at the above-mentioned training centre from xx.xx.20xx until xx.xx.20xx. The KNX exam consisted of:

- **Theoretical exam** based on the uniform KNX training documentation (KNX System Arguments, KNX System overview, KNX TP Topology, KNX Bus Devices, KNX TP Installation, KNX RF, ETS Project Design, ETS Commissioning, ETS Diagnostics)
- **Practical exam** - planning, commissioning and diagnostics of a predetermined KNX project

Examination location: Brussels, 20 February 20xx

--------------------------------------------------------------    ---------------------------------------------------------

Head of Training Centre     KNX certified tutor
10.2 KNX Exam – Basic with preceding practical training

KNX Training centre

CERTIFICATE

Mr. John Jones
born on 15 May 1952
in London

has successfully passed the

KNX Exam – Basic with preceding practical training

The KNX practical course as well as the exam was held at the above-mentioned certified training centre from xx.xx.20xx until xx.xx.20xx. The KNX exam consisted of:

- **Theoretical exam** based on the uniform KNX training documentation (KNX System Arguments, KNX System overview, KNX TP Topology, KNX Bus Devices, KNX TP Installation, KNX RF, ETS Project Design, ETS Commissioning, ETS Diagnostics)
- **Practical exam** - planning, commissioning and diagnostics of a predetermined KNX project

Examination location: Brussels, 20 February 20xx

--------------------------------------------

Head of Training Centre
KNX certified tutor
10.3  **KNX Advanced course with exam**

**KNX Training centre**

---

**CERTIFICATE**

Mr. John Jones  
born on 15 May 1952  
in London  

has successfully attended the  

**KNX Advanced course with exam**  

The KNX Advanced course was organized at the above-mentioned certified training centre from xx.xx.20xx until xx.xx.20xx and consisted of the following topics:

- Flags  
- HVAC control with KNX  
- Interworking  
- Couplers  
- IP Communication  
- KNX Secure  
- KNX Telegram  
- Lighting Control  
- Security technology  
- Logic Operations  
- Visualization Systems  
- Practical test (error finding, telegram/device analysis, project design)  

Examination location: Brussels, 20 February 20xx  

--------------------------------------------------------------    ---------------------------------------------------------  

Head of Training Centre     KNX certified tutor
CERTIFICATE

Mr. John Jones
born on 15 May 1952
in London

has successfully passed the

KNX Exam - Advanced

The KNX Advanced course exam was organized at the above mentioned certified training centre on the xx.xx.20xx and consisted of

- Practical test (error finding, telegram/device analysis, project design)

Examination location: Brussels, 20 February 20xx

__________________________________________  ______________________________________
Head of Training Centre                      KNX certified tutor
CERTIFICATE

Mr. John Jones
born on 15 May 1952
in London

has successfully attended the

KNX HVAC Specialist course with exam

The KNX HVAC Specialist course was organized at the above-mentioned certified training centre from xx.xx.20xx until xx.xx.20xx and consisted of the following topics:

- Basic Know-How
- Heat distribution installations
- Heat generators
- Legal framework
- To understand “Controlling and regulating”
- Heating control
- Drinking water heating
- Energy efficiency with KNX
- Concluding KNX Theoretical exam

Examination location: Brussels, 20 February 20xx

--------------------------------------------------------------    ---------------------------------------------------------
Head of Training Centre     KNX certified tutor
10.6  KNX Tutor course

KNX Training centre

CERTIFICATE

Mr. John Jones
born on 15 May 1952
in London

has successfully attended the

KNX Tutor course

The KNX Tutor course was organized at the above-mentioned training centre from xx.xx.20xx till xx.xx.20xx. The KNX exam consisted of:

- KNX requirements for training centres
- Structure and scope of KNX Association
- KNX software
- Serial data transmission
- Microcontrollers
- KNX application programs
- KNX certification scheme for KNX products
- History of bus systems
- Concluding theoretical exam

Examination location: Brussels, 20 February 20xx

--------------------------------------------------------------    ---------------------------------------------------------
Head of Training Centre     KNX certified tutor
Mr. John Jones
born on 15 May 1952
in London

has attended the training session

**Course title:** **KNX Basic course**

**Contents:**
- KNX System arguments
- KNX System overview
- KNX TP Topology
- KNX Bus devices
- KNX TP Installation
- KNX RF
- ETS Project Design
- ETS Commissioning
- ETS Diagnostics

**Duration:**

12.02.20xx – 15.02.20xx
30 hours

Brussels, 20 February 20xx

-------------------------------------------------------------    ---------------------------------------------------------
Head of Training Centre     KNX certified tutor
10.8 Example of Safety regulation

This document describes the following basic rules for the handling of installed KNX components to ensure the safety of persons and equipment.

1. Always press the main safety switch before handling any device from your workstation.
2. Do not try to connect the power supply while this is already pre-connected to the mains.
3. Do not change anything to the power circuit (switches, lamps, etc…) when these are still plugged in.
4. Both sensors and actuators should be handled with care.
5. Do not remove any modules from the workstation.
6. In case connected devices to the bus have to be replaced, it must be done very carefully. Do not use excessive force to replace them.
7. In case of fire, do not use the elevators, but use the stairs in order to exit the building.
8. …

Complementary to the above, in order to ensure the proper behavior of the KNX installation, the students and teacher shall only use KNX certified devices as well as legal copies of ETS.

The student undersigned acknowledges that the rules mentioned in this document have been explained, and he agrees with them

<table>
<thead>
<tr>
<th>First name &amp; last name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>
## 10.9 Example of timetable

Room: ___________   KNX Tutor: ___________________________   Date course: _______________________________

Training Documentation Version: ______________________________________   Location: ____________________________

### KNX Basic course 04/2020

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>System Arguments</td>
<td>System overview</td>
<td>Topology</td>
<td>Installation</td>
<td>ETS Diagnostics</td>
</tr>
<tr>
<td></td>
<td>KNX RF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td>System overview</td>
<td>Topology</td>
<td>Bus devices</td>
<td>Installation</td>
<td>ETS Diagnostics</td>
</tr>
<tr>
<td>11:00</td>
<td>System overview</td>
<td>Topology</td>
<td>Bus devices</td>
<td>Installation</td>
<td>ETS Diagnostics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:00</td>
<td>ETS Project Design</td>
<td>ETS Project Design</td>
<td>ETS Commissioning</td>
<td>ETS Commissioning</td>
<td>Summary: Practical</td>
</tr>
<tr>
<td>14:00</td>
<td>ETS Project Design</td>
<td>ETS Project Design</td>
<td>ETS Commissioning</td>
<td>ETS Commissioning</td>
<td>Theoretical exam</td>
</tr>
<tr>
<td>15:00</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>15:30</td>
<td>ETS Project Design</td>
<td>ETS Project Design</td>
<td>ETS Commissioning</td>
<td>ETS Commissioning</td>
<td>Practical exam</td>
</tr>
<tr>
<td>15:30</td>
<td>ETS Project Design</td>
<td>ETS Project Design</td>
<td>ETS Commissioning</td>
<td>ETS Commissioning</td>
<td></td>
</tr>
</tbody>
</table>
10.10 Activation of ETS5 Lite license

For running any type of ETS5 license (except for the demo), a KNX USB dongle is required.

**Procedure for purchasing the KNX USB dongle**

1) After passing the KNX Basic course exam, a student has two vouchers at his disposal in his MyKNX account under “My Vouchers”.

1: A 70 % rebate voucher that one receives upon registration by the KNX training centre (140 EUR)
2: A 25 % rebate voucher for passing the exam of the KNX Basic course (200 EUR)

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24 In case the KNX Partner has passed the KNX advanced course, he will automatically receive a 50 % rebate voucher when buying all available KNX ETS Apps in his MyKNX account.
2) **Start a new order by clicking the submenu “Software” in the menu “Shop” and select ETS5 Lite. Click on “Buy” in order to go to the next page.**

3) **On top of the screen, you will now see that you have added 1 product to the basket (1). Confirm your order by clicking on “Checkout” (2).**

4) **In the order overview, you now have the possibility to select the ETS5 Lite Partner voucher. Click on “Continue”**.
5) The value of the ETS5 Lite Partner voucher (140 EUR) will be automatically deducted from the normal price of an ETS5 Lite license. Click on “Continue”.
6) **Select the invoice information or add a new invoice address. Click on “Continue”.**

![Invoice information](image)

7) **Select the address to which the KNX USB dongle should be shipped.**

![Shipping information](image)

8) **Enter a reference to be put on your invoice. Select “Software License Agreement” if you agree with the license agreement contract and click on “Continue”**.
9) **Select the payment method and click on “Continue”. You have the option between online payment and wire transfer.**

![Payment method selection](image)

10) **Here you will find an overview of what you have ordered. Select “Continue”.**

<table>
<thead>
<tr>
<th>Product</th>
<th>Amount</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETS Lite</td>
<td>1</td>
<td>€200.00</td>
</tr>
<tr>
<td>ETSS Lite Partner voucher</td>
<td>1</td>
<td>€140.00</td>
</tr>
<tr>
<td>[Shipping] UPS Standard shipment</td>
<td></td>
<td>€17.25</td>
</tr>
</tbody>
</table>

**Total price:** €177.25  
**VAT (0%):** €0.00  
**To Pay:** €177.25
11) You have now ordered the KNX USB dongle. After payment, the ETS5 Lite license will be put in your MyKNX account (My account – Products).

12) Go to the menu “Support” and select “ETS, – Get Started, Licensing ETS5 & ETS5 Apps” to find out more about the licensing procedure.
Requirements for KNX Training Centres

Procedure for upgrading from ETS5 Lite to ETS5 Professional by using the 25 % rebate voucher

Once you have licensed your ETS5 Lite software and after passing the KNX Basic course exam, you can now upgrade your ETS5 Lite license to an ETS5 Professional license by using the 25 % rebate voucher.

1) **Select the submenu “Upgrade options” in the menu “Shop”. Select Upgrade ETS5 Lite to ETS5 Professional and click on “Buy” and click on “Add to Cart”**

2) **On top of your screen, you will now see that you have added 1 product to the basket. Confirm your order by clicking on “Checkout”**.
3) You will now have the possibility to select the ETS5 Lite to ETS5 Pro Update Partner voucher.

4) The value of the ETS5 Lite to ETS5 Pro Update Partner voucher (200 EUR) will be automatically deducted from the normal update price for an ETS5 Professional license. Click on “Continue”.

5) Repeat step 6 until 9

6) Here you will find an overview of what you have ordered. Select “Continue”.
7) After payment you will find the ETS5 Professional license in your MyKNX account (My account – Products)
10.11  Creating a KNX course in MyKNX

It is absolutely forbidden to add courses in MyKNX, fill them with imaginary students and make them partners without them actually attending a course, also not for testing purposes.

1) Select menu item “My Training Centre” and click on the submenu “Courses”. Select “Add course”.

![MyKNX Training Centre interface](image-url)
2) **Enter the course details.**

![Course detail form](image)

<table>
<thead>
<tr>
<th><strong>Name:</strong></th>
<th>Give your course a specific name: e.g. Basic Course: May 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course type:</strong></td>
<td>Select the course type: Advanced, Basic, Tutor</td>
</tr>
<tr>
<td><strong>Tutors:</strong></td>
<td>Select the KNX tutor(s) who are going to organize the course</td>
</tr>
<tr>
<td><strong>Lecture language:</strong></td>
<td>Select the lecture language of the course itself</td>
</tr>
<tr>
<td><strong>Training documentation language:</strong></td>
<td>Select the language of the training documentation</td>
</tr>
<tr>
<td><strong>Exam language:</strong></td>
<td>Select the exam language.</td>
</tr>
</tbody>
</table>
| **Location:** | **On-site**: Select this option if you are organizing the course in your training centre  
**Other location**: Select this option if you are organizing the course in another location. If other location, complete the fields “street”, “house number”, “zip”, “city” and “country”. |
| **Theory** | Select “online” if your training centre has been approved for the organization of online theoretical courses |
| **Theoretical exam organization:** | **Online**: Select this option when the theoretical exam will be organized online. For this, the computers on which the students will take the exam |
Requirements for KNX Training Centres

need internet access (Wi-Fi or Ethernet connection). The student needs to be able to access his MyKNX account on https://my.knx.org.

**Offline:** Select this option when the theoretical exam will be organized offline. In this case, the computers on which the students will take the exam do not need any internet access (Wi-Fi or Ethernet connection). The training centre has to provide the students with an offline tool (will be provided to the training centre so that the exam can be taken on the computer).

<table>
<thead>
<tr>
<th><strong>Software version</strong></th>
<th>Select the ETS software that will be used during the course</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum students</strong></td>
<td>Select the number of students that can participate to the course. This number depends on the number of the available training rigs.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>In this field, the training centre can enter extra notes with regard to this course: e.g. bring your own laptop…</td>
</tr>
<tr>
<td><strong>Email notification to students prior to the course</strong></td>
<td>Select the number of days before the start of the course, on which the student will be informed about the course.</td>
</tr>
</tbody>
</table>

3) **Click on Continue to proceed to the next screen. In the second window, you have the possibility to drag & drop the different course modules into the calendar. Please note that the:**

- **Minimum course duration:** 30:00 hours
- **Practical chapters:** minimum 50 % of total course duration
- **All mandatory modules (blue and green) should at least have been selected once.**
- **The theoretical & practical exam are considered as “theoretical”**
Requirements for KNX Training Centres

Once you insert a module in the timetable you will be allowed to rename it. Please ensure that the new name will reflect the content of the inserted module.

<table>
<thead>
<tr>
<th>KNX NF (only for informative purposes)</th>
<th>KNX Powerline 110 (only for informative purposes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunch</td>
<td>Break</td>
</tr>
<tr>
<td>KNX Project Design ETS: Basic</td>
<td>KNX Project Design ETS: Advanced (only for informative purposes)</td>
</tr>
<tr>
<td>KNX Diagnostics &amp; Troubleshooting ETS</td>
<td></td>
</tr>
<tr>
<td>KNX System overview</td>
<td></td>
</tr>
<tr>
<td>KNX TP Installation</td>
<td></td>
</tr>
<tr>
<td>KNX Bus devices</td>
<td></td>
</tr>
<tr>
<td>KNX Practical exam</td>
<td></td>
</tr>
<tr>
<td>KNX System arguments</td>
<td></td>
</tr>
<tr>
<td>KNX TP Topology</td>
<td></td>
</tr>
<tr>
<td>KNX TP Telegram</td>
<td></td>
</tr>
<tr>
<td>KNX Theoretical exam</td>
<td></td>
</tr>
<tr>
<td>KNX Commissioning ETS</td>
<td></td>
</tr>
</tbody>
</table>

Drag & Drop

May 1 - 7, 2017

Enter more info with regard to this chapter

Pull out to increase hours

Delete
4) It is possible to load one of the last 10 created courses. Select the first day on the calendar and click the “Load” button to fetch the desired timetable. Please note that already dragged & dropped modules will be deleted.

5) Click on “Continue” to go to the next screen. In the third window, you can make your course visible. When keeping this option activated, your course will be visible to all MyKNX customers who are looking for a specific course in MyKNX. Moreover, the course will also be visible on the KNX website. By checking this option, you will be able to attract more students to your course.

6) The training centre can now "Save" and "Enable" the course. Students can only subscribe to a course, which is "enabled".
7) Your course is now published and is visible to all registered MyKNX customers who are looking for a specific course. MyKNX customers are now able to subscribe to this course.

8) You can disable the course at any time by pressing the button “Disable”. In the latter case, the course will not be visible to potential students nor will it be possible that students can subscribe to this course.
10.12 How to subscribe to a course?

1) If the course is published, then all MyKNX customers can subscribe to this course. The customer first needs to go to the “My applications” menu in his MyKNX account and press the button “Subscribe to a KNX certified course”

2) The student will first see the training centres from his own country that have published any courses.

   In this view it is possible to filter according to:
   a. Country: Select the desired country in which you want to take the course
   b. Course type: select the course type: Basic, HVAC Specialist, Advanced, Tutor, 12h practical – KNX exam
   c. Lecture language: select the language in which you want to follow the course
   d. Documentation language: select the language of the training documentation

   It is possible to see the course details by clicking on the magnifying glass that is located next to the course.

   **Note:** Student needs to select “I have received a course code from the Training Centre”, if he wishes to subscribe to a course that is published but not visible in MyKNX. For this, the training centre shall provide him with the course identification code. This code starts with either BAS (Basic course), HVA (HVAC Specialist), ADV (Advanced course) or TUT (Tutor course). It is very useful for training centres that do not want that their course is visible to all MyKNX customers (e.g. internal course for company personnel, course for last grade high school students…)


**Note:**

- A regular customer can only subscribe to a Basic course
- A KNX Partner can only subscribe to a HVAC Specialist course and an Advanced course<sup>25</sup>
- A KNX Partner holding the KNX Advanced certificate can only subscribe to a Tutor course<sup>26</sup> and a HVAC Specialist course.

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<sup>25</sup> If the student is not registered as a KNX partner in the MyKNX database, the student needs to send a copy of his Basic course certificate to KNX Association. KNX Association will subsequently register the student as a KNX partner. Only after this procedure, the student will be able to sign up for an Advanced course.

<sup>26</sup> If the student is not known as a KNX partner in the MyKNX database, the student needs to send a copy of his Basic and Advanced course certificate to KNX Association. KNX Association will subsequently register the student as a KNX partner. Only after this procedure, the student will be able to sign up for a Tutor course.
3) The student now needs to confirm his subscription to the course. The training centre will be informed about the student’s request and can contact the student if necessary.

Note: it is not possible to cancel the subscription once the “Confirm” button is pressed. In order to cancel the subscription, the student needs to contact the training centre.

Note: At this stage, the student has the possibility to already state whether he/she wants to be visible on the website once he/she has passed both the theoretical as well as practical exam.
4) The student has a pending application in his MyKNX account.
10.13 First contact with potential student

1) The training centre is informed about a student subscription in its MyKNX account and via a separate email\(^ {27}\). The training centre can alternatively go to the submenu “Students,” which can be found in the menu “My Training Centre” in its MyKNX account to see that there is a pending registration. In order to verify the candidate student, the training centre has to click on the course summary.

2) The training centre can reject or confirm the subscription of the student directly or first by viewing the student’s subscription details by clicking on the magnifying glass. The training centre can e.g. state that it has completed the administrative follow-up with the student or/and can additionally state that it has received the payment of the course fees. If all administrative issues with regard to the student subscription have been completed, the training centre can either confirm or reject the subscription of the student. Press the “Confirm subscription” button.

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\(^ {27}\) The roles of the employees who require this email have to be set to “Director” or “Administration”. If this is not the case, the training centre has to update its profile in its MyKNX account (Menu: My account – My applications)
3) As soon as the training centre confirms the subscription, an email is sent to the student informing him that he has been subscribed to the course.
10.13.1 Important notes

1) It is not possible to subscribe more students than the number of students set when creating the course. This number depends on the number of training rigs you have in your training centre.

2) You can change all course properties even if there are students registered to the course.

3) You can only delete the course if the student(s) is/are unsubscribed.

4) Once you have the maximum number of students for a course, the course will not be published anymore. You need to unsubscribe a student if you want that the course is published again.

5) Important note: Once an exam has been started, then it is not possible anymore to unsubscribe any student!
10.14 Composing exam

10.14.1 Composing online theoretical exam

1) Select the students for which you want to compose an “online exam”. Please note that the “online” examination was fixed when creating the course.

2) As soon as the training centre presses the “Compose exam” button, an online exam icon is created next to names of the students who are going to take part in the exam. This means that an online exam has now been composed.

   Important Note: The online exam may only be composed on the day that the exam will take place! The exam can only be taken in the presence of a KNX tutor.
10.14.2 Taking online theoretical exam

1) As “online exam” was selected, this means that the student now needs to take the exam online on the day of the exam (by going to their MyKNX account – menu: “My Training”)

2) By clicking on the magnifying glass, the student has the possibility to see once again the course details.

3) The exam starts when pressing on the “Start exam” button.
4) The student needs to reply to all statements by either selecting the radio button “True” or “False”. If he does not know the answer, he can skip the statement and continue with the next statement.
5) **Once the last statement is presented, the student has the possibility to review all answers. Each individual statement can be reviewed by selecting the pencil icon.**

**Exam for KNX Basic Course**

**Review your answers**

Review your answers. When you are satisfied, press the 'submit answers' button to save your exam and to see the result.

### Overview of your answers:

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Your answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>True</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>True</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>True</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>True</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>True</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>True</td>
</tr>
</tbody>
</table>

6) **As soon as the student submits the answers, he will see his score together with an overview of the answers. Moreover, the student can filter according to “correct”, “wrong” and “not answered” statements.**

**Exam for KNX Basic Course**

**Your score:** 72.50%

Congratulations! You have successfully passed the theoretical exam. As soon as you have passed the practical exam, you will be invited to participate in an online survey. Once you have replied to all statements in this survey you will be able to download the KNX partner certificate as well as the KNX partner logo from your account. Moreover your company will be listed as a KNX partner on www.knx.org. Good luck!
7) The training centre can verify in his MyKNX account the achieved result of the student. For this, it needs to go to the submenu “Courses” in the menu “My training centre” of his MyKNX account. For the student who has already filled out the online exam the “online exam” icon has disappeared. When clicking on the magnifying glass the training centre will see the theoretical exam result of the student. The training centre now only needs to enter the practical exam result in the same window.
10.14.3 Composing offline theoretical exam

1) Select the students for which you want that an “offline exam” is composed. Please note that the “offline” examination was fixed when creating the course.

2) As soon as the training centre presses the “Compose exam” button, an offline exam icon is created next to students who are going to take the exam. This means that an offline exam has now been composed.

   Important Note: The offline exam may be composed a couple of days before the day exam will take place! The exam can however only be taken in the presence of a KNX tutor.
3) Click on the offline exam icon of both students and download the corresponding files on your hard drive or on a USB stick. Please note that a different exam is composed for each individual student. Also, download the KNX offline exam tool.

4) Provide the students with the corresponding files. The training centre has to make sure that he gives the correct files to the correct student. Basically this means that the training centre has to provide:
   a. Student 1 → exam-KNXStudent1.knxexam file + extracted KNX offline exam tool
   b. Student 2 → exam-KNXStudent2.knxexam file + extracted KNX offline exam tool
   The extracted KNX offline exam tool contains the folder “bin”, “exam” and the KNX Exam Tool.exe file.
10.14.4 Taking offline theoretical exam

1) The student has to run the file on his computer by selecting the KNX Exam Tool exe file. If Windows informs that running this app might put the PC at risk, then the student needs to ignore this message.

2) As a second step, the student needs to select & load the exam-XXXXXX.knxexam file.
3) The student needs to check whether it is the correct file. The student should normally see his name and his KNX Login number. When the student feels confident enough, he can start the exam by pressing the button “Start exam”.

![KNX Offline Exam Tool](image)

**Welcome Peter!**

Welcome to the KNX Exam Tool!

Pay attention to the following when taking the theoretical part of the Basic course exam:

- There are 100 statements which have to be answered by either True or False.
- One point is given for each statement which has been answered correctly.
- For each wrong statement half a point (0.5) will be deducted from the final score.
- For each statement which has not been answered at all there are no points deducted or given.
- You will pass the theoretical part of the exam when achieving at least 50% of the points available.

Your exam will start when you click the button below. Good luck!

[Start exam]

4) The student needs to reply to all statements by either selecting the radio button “True” or “False”. If he does not know the answer, he can skip the statement and continue with the next statement.

![KNX Offline Exam Tool](image)

**Exam “Basic”**

Module: System Arguments

![Statement](image)
5) The student has the possibility to review his answers.

6) As soon as the student submits his answers, he will see his exam result displayed in color. The exact exam result is at this stage not shown yet.
7) The training centre now has to collect the exam files of each individual student which can be found in the “Exam” folder. It has to “move” both files to a USB stick so that these files are not available anymore on the computer.
   a. answers-KNXxxxxxx.knxexam
   b. exam-KNXxxxxxx.knxexam

8) Once the tutor has collected all files, he has to upload the answers-KNXxxxxxx.knxexam files in his MyKNX account. The upload field can be found when clicking on the magnifying glass next to the corresponding course.