



Konnex Association

Introduction to KNX and Konnex



**Promoting
the World's first open
STANDARD for Home and
Building Control**





Konnex Association

Promotes the implementation of the World's first
open STANDARD for Home and Building Control
KNX

Table of Contents

1	The Association	3
2	The objectives.....	4
3	Structure of Konnex Working and Expert Groups.....	5
4	The KNX standard	7
4.1	Major Advantages.....	7
4.1.1	Interoperability.....	7
4.1.2	Product quality.....	7
4.1.3	Manufacturer independent functionalities.....	7
4.1.4	Others.....	7
4.2	Other features.....	7
4.2.1	Configuration Modes	7
4.2.2	Communication Media.....	8
4.3	SUMMARY	9
5	The KNX standard in international Standardisation Bodies	11
6	Members of <i>Konnex Association</i> per January 2004.....	13
7	How to become member of Konnex Association?	16
7.1	Categories of Members	16
7.2	Joining, Resignation, Expulsion as a Member.....	16
7.3	Membership Rights & Obligations	16
7.3.1	Category "M" and "S" Members Rights.....	16
7.3.2	Category "I" Members Rights	17
7.3.3	Member Obligations	17
7.4	Services Provided to Members.....	17
7.5	Fees	18
8	How to develop a KNX compatible device?	20
8.1	Flowchart.....	20
8.2	Useful Addresses	22
9	What is Certification procedure for products and training centres?.....	23
9.1	Products	23
9.2	Main fees for product certification.....	24
9.3	Accreditation of Test Labs	24
9.4	Certification of Training centres.....	24
9.5	Possibilities for non-certified training centres:.....	25
	Costs	25
10	Software ETS.....	26



Konnex Association

Promoting the World's first open STANDARD for Home and Building Control

KNX

1 The Association

In May 1999, members of the following associations founded **Konnex Association**:

- BatiBUS Club International (BCI)
- European Installation Bus Association (EIBA)
- European Home Systems Association (EHSA)

The main objective of this Association is to promote the a new and commonly defined "one-single-standard" for field bus applications in Homes and Buildings.

This standard, called **KNX**, is based on the well-established technology of EIB and enlarged with the configuration mechanisms and physical media from BatiBUS and EHS.

Konnex Association is an international non-profit organisation governed by Belgium Law.

The General Assembly - the highest legal authority of the association, in which all members have a seat - meets at least once a year to approve the activities undertaken and the budget for the coming year. The executive board (KEB), elected amongst the members of the General Assembly, is responsible for the association's strategy, its standard KNX and for the budget proposal.

The Konnex Executive Board was elected at the General Assembly in 2001 for a 4-year period. The following companies have a seat in this Board (situation February 2004), whereby the President is a non-voting member

Company	Members	Function
• ABB Stotz-Kontakt GmbH	Mr. Bernhard Schmeing	
• Albrecht Jung GmbH & Co. KG	Mr. Harald Jung	
• Busch-Jaeger Elektro GmbH	Mr. Hans-Georg Krabbe	
• Delta Dore	Mr. Philippe Fouquet	
• Electrolux	Mr. Fabrizio Dolce	
• Hager (FLASH)	Mr. Bernard Schott	
• Insta Elektro GmbH & Co. KG	Dr. Herbert Schliffke	
• Legrand S.A.	Mr. Alain Lambert	
• Merten GmbH & Co. KG	Mr. Udo Neumann	
• Ritto GmbH & Co. KG	Mr. Udo Neumann	
• Siemens AG	Dr. Peter Penczynski	President
• Siemens AG	Mr. Ferstl	
• Siemens Building Technologies	Mr. Andrew Fiddian-Green	
• Trialog	Ms. Madeleine Francillard	
• Schneider Electric S.A.	Mr. Claude Matinal	Vice-president



Konnex Association

The executive board is assisted by 2 permanent boards:

- Technical Board (KTB), convenor Dominique Beck - Hager Electro SA (beckdh@hager.com).
This Board coordinates all activities regarding the development of the common standard **KNX** and the procedures for the certification of KNX products.
- Marketing Board (KMB), convenor Claude Matinal – Schneider Electric SA (claudio-matinal@wanadoo.fr).
This Board coordinates the communication and promotional activities of Konnex Association around the KNX standard, as well as the activities undertaken in the different markets by the national Konnex groups.

For the daily activities the executive board has nominated a team of directors each responsible for a resort of activities:

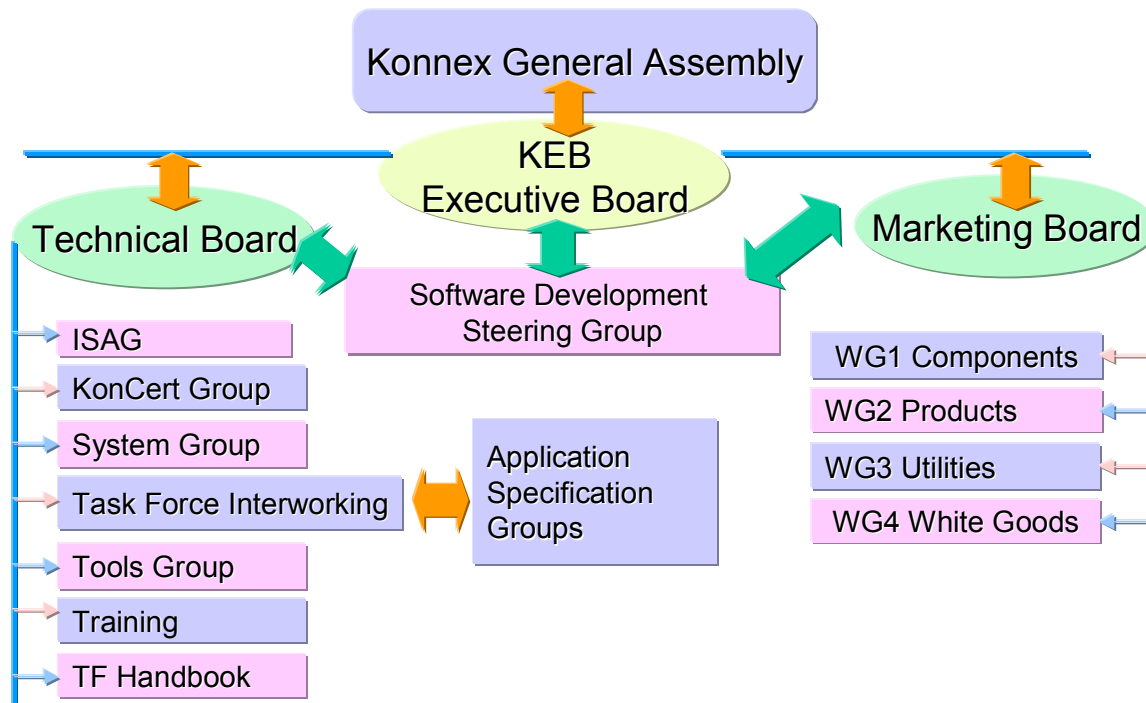
- Joost Demarest Administration and Certification
- Harry Crijns Marketing and communication

2 The objectives

The objectives of the association are oriented towards the development and promotion of an international communication standard for Home and Building Electronic Systems by (*excerpt from the Konnex Association statutes*):

- Developing through studies and exchange of their results a single stable and affordable system technology with the goal to improve overall market acceptance and expand the today's market, (mostly in commercial buildings), into the residential market,
- Encapsulating in one common standard as a platform for future evolution today's existing Home and Building Electronic Systems,
- Defining and improving the specification related to protocol, different media, configuration modes, communication models etc., whilst respecting its coherence,
- Standardizing system requirements, including test methods and interworking,
- Managing the relevant system related intellectual property rights, establishing trademarks and issuing trademark licenses,
- Setting-up an appropriate certification system to enable certification of "products" (hardware, software, components) and services in order to guarantee system compatibility and inter-working.
- Introducing this standard into the appropriate international HBES standardisation bodies and actively promoting it to become the norm,
- managing an appropriate software tool system,
- managing an appropriate training system for professional users such as contractors, planners and installers,
- Circulate all pertinent information that relates to the association's purpose.

3 Structure of Konnex Working and Expert Groups



As depicted in the above figure, the *Technical Board* has the following important sub groups (each of them with delegates from the member companies and/or Konnex Association):

Abbreviated Name of Working Group	Full name	Convenor and e-mail	Scope
ISAG	International Standardisation Advisory Group	Mr. Beck – Hager Electro (beckdh@hager.com)	defines the strategy of Konnex Association in the international standardisation arena (amongst others CENELEC TC 205 and CEN TC 247)
KONCERT	Konnex Certification Group	Mr. G. Luber (georg.luber@siemens.com)	responsible for the continuous update of Volume 4 (Hardware requirements), Volume 5 (Certification Manual), Volume 8 (Test Specifications) of the KNX Specifications
KSG	Konnex System Group	Mr. M. Goossens (marc.goossens@konnex.org)	responsible for the continuous update of Volume 3 (System Specifications) and Volume 6 (Profiles) of the KNX Specifications



Promoting the World's first open STANDARD for Home and Building Control

KNX

Konnex Association

Abbreviated Name of Working Group	Full name	Convenor and e-mail	Scope
TFI	TASK FORCE INTERWORKING	Mr. S. De Bruyne – Konnex Association (steven.debruyne@konnex.org)	responsible for the Konnex Interworking Model as well as the preparation (if necessary in appropriate application specification groups), assessment and approval of functional block descriptions for the various KNX application domains
	KONNEX TOOLS GROUP	Mr. M. Goossens – Konnex Association (marc.goossens@konnex.org)	is responsible for the technical specification of KNX software tools (amongst others ETS). The tools strategy and the priority of the extensions to the KNX software tools is proposed by the SDSG.
SDSG	Konnex Software Development Steering Group	Mr. P. Ferstl – Siemens AG (peter.ferstl@siemen.com)	The SDSG has advisory power to the Board of the EIB association, which remains the company responsible for KNX software development and sales
	TRAINING GROUP ¹	Mr. Y. Peters – Hager Electro (petersy@hager.com)	lays down the requirements for training centres and is responsible for the update of the Konnex Training documentation
	TASK FORCE HANDBOOK	Mr. Beck – Hager Electro (beckdh@hager.com)	group bearing the ultimate responsible for the publication of the KNX Specifications

The Marketing Board in turn is the body responsible for communication measures around the KNX system. The KMB contains representatives from the member companies and Konnex Association. In its working subgroups it prepares leaflets, attendance at fairs, ... for the following groups of members:

Abbreviated Name of Working Group	Full name	Convenor and e-mail	Scope
WG1	Components	Mr. U. Fiedler – ST Microelectronics (ulrich.fiedler@st.com)	Groups providers of building blocks for KNX devices (chips, bus interface modules, bus coupling units, ...)
WG2	Manufacturers	Mr. P. Meyer – Hager Electro (meyerpa@hager.fr)	Groups providers of electrical installation material and HVAC products
WG3	Service Providers	-	Groups utility companies (called in Konnex Association "S" members)
WG4	White Goods	-	Groups providers of white and brown goods

¹ Currently governed by a subgroup of the German EIBA/Konnex Group (ZVEI), i.e. the working group 'AK Schulung'



4 The KNX standard

4.1 Major Advantages

4.1.1 Interoperability

It ensures that products of different manufactures used in different applications will operate and communicate with each other. This permits a high degree of flexibility in the extension and in the modification of installations.

4.1.2 Product quality.

Konnex Association requires a high level of quality control during all stages of the product life. Therefore all Konnex members branding own developed KNX products with the KNX Trademark have to show compliance to ISO 9001 before they even can apply for KNX product certification.

Besides compliance of the manufacturer to ISO 9001, the products have to comply with the requirements of the European standard for Home and Building Electronic systems, i.e. EN 50090-2-2. In case of doubt, Konnex Association is entitled to have certified products retested or can require from the manufacturer test reports underlying his declaration of hardware conformity.

4.1.3 Manufacturer independent functionalities.

The KNX standard contains application profiles for many common applications in Home and Buildings. Under the Technical Board's supervision several application specification workgroups make proposals for standardisation of functionality (inputs, outputs, diagnostic data and parameters) in their specific application domain. To ensure a high degree of cross-discipline and multi-vendor interoperability, the Taskforce Interworking re-evaluate these proposals, before a decision is taken to incorporate an application profile into the KNX standard.

4.1.4 Others

- ❖ KNX can be developed on any type of hardware/software technology platform, even if off-the-shelf solutions are available.
- ❖ IPR of fellow-members as contained in the KNX specifications is free-of-charge for KNX certified products

4.2 Other features

The **KNX** standard allows each manufacturer a free choice between the configuration mode and the communication medium when developing a KNX compatible device.

4.2.1 Configuration Modes

For that reason the **KNX** Standard foresees 3 different configuration modes:

4.2.1.1 "S-mode" (System mode)

This configuration mechanism is meant for well-trained installers to realize sophisticated building control functions. An installation consisting of "S-mode" components can be planned by a common software tool (ETS™3 Professional) on the basis of the product databases provided by the S-mode product manufacturers :



Konnex Association

this tool is also used to link the products and configure them (i.e. set the available parameters as required by the installation and download) .. The "S-mode" offers the highest degree of flexibility for the realization of building control functions.

4.2.1.2 "E-mode" (Easy mode)

This configuration mechanism is meant for installers with basic KNX training . E-Mode compatible products offer limited functions, compared to "S-mode".

"E-mode" components are already pre-programmed and loaded with a default set of parameters. With a simple configurator, each component (mainly its parameter settings and communication links) can be partly reconfigured..

Also for ETS, a version exists which allows the planning, linking and configuration of S-Mode products with only basis KNX training. This version is called "ETS Starter" and requires specific ETS starter compatible databases.

4.2.1.3 "A-mode" (Automatic mode)

This configuration mechanism is especially intended for end-user applications e.g. household appliances or consumer installation add-ons, sold via the end-user sales channels.

The "A-mode" components support automatic configuration mechanisms that adapt their communication links to other "A-mode" components in the network. Each component contains a fixed setting of parameters and a library with instructions how to communicate with other "A-mode" components.

Some of the KNX products support more than one configuration mode, e.g. both S- as well as E-mode.

It is planned that future versions of ETS will allow to at least read the addresses, links and parameters attributed to products configured with other means than S-mode and not additionally supporting this mode. In this way, the future ETS will be able to link products regardless of their configuration mode to a single control network.

4.2.2 Communication Media

Apart from the 3 configuration modes, the **KNX** standard includes several communication media. Each communication medium can be used in combination with one or more configuration modes, allowing each manufacturer to choose the right combination for the targeted market segment and application.

4.2.2.1 TP-0, (Twisted pair, type 0)

This communication medium, twisted pair, bitrate 4800 bits/s, has been taken over from BatiBUS. The **KNX** TP0 certified products will operate on the same busline as the BatiBUS certified components but will not be able to exchange information amongst each other.

4.2.2.2 TP-1, (Twisted pair, type 1)

This communication medium, twisted pair, bitrate 9600 bits/s, has been taken over from EIB.

The EIB and the **KNX** certified TP1 products , will operate and communicate with each other on the same busline.

Konnex Association

4.2.2.3 PL-110, (Power-line, 110 kHz)

This communication medium, power line, bitrate 1200 bits/s, has also been taken over from EIB. The EIB and the **KNX PL110 products** will operate and communicate with each other on the same electrical distribution network.

4.2.2.4 PL-132, (Power-line, 132 kHz)

This communication medium, power line, bitrate 2400 bits/s, has been taken over from EHS, where it is still used. **KNX PL132** certified components and EHS 1.3a certified

products, will operate together on the same electrical distribution network but will not communicate with each other, without a dedicated protocol converter.

The EHS experts, in collaboration with the Konnex work-group "A-mode", will incorporate this type of converter in the A-mode specifications.

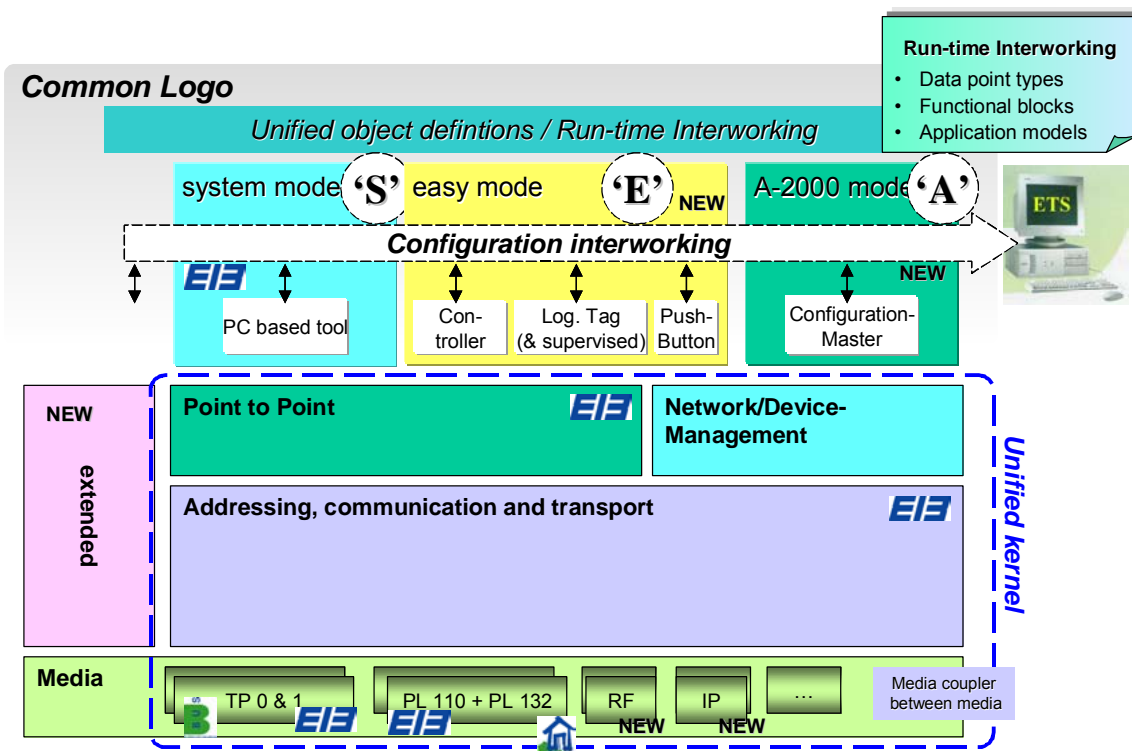
4.2.2.5 RF, (Radio frequency on 868 MHz)

This communication medium, radio frequency with a bitrate of 38.4 kbits/s, has been developed directly within the framework of the KNX standard.

4.2.2.6 Ethernet

This widespread communication medium can be used in conjunction with the 'KNX over IP' specifications, which allow the tunnelling of KNX frames encapsulated in IP frames.

4.3 SUMMARY



The KNX Device Network results from the formal merger of the 3 leading systems for Home and Building Automation (EIB, EHS, BatiBus) into the specification of the new Konnex Association. The common specification of the "KNX" system provides, besides



Promoting the World's first open STANDARD for Home and Building Control

KNX

Konnex Association

powerful runtime characteristics, an enhanced “toolkit” of services and mechanisms for network management.

On the Konnex Device Network, all the devices come to life to form distributed applications in the true sense of the word. Even on the level of the applications themselves, tight interaction is possible, wherever there is a need or benefit. All march to the beat of powerful Interworking models with standardised Datapoint Types and “Functional Block” objects, modelling logical device channels.

KNX explicitly encompasses a methodology and PC tools for Project Engineering, i.e. for linking a series of individual devices into a functioning installation, and integrating different KNX media and configuration modes. This is embodied in the vendor-independent Engineering Tool Software (ETS) suites for Windows.

In contrast to the “one size fits all” creed, the KNX system is entirely independent of any specific microprocessor platform or even architecture. Depending on the profile chosen by the manufacturer, he can select any suitable industry-standard chip, or opt for available KNX OEM solutions like Bus Coupling Units, BIM's, chip sets etc. Some KNX profiles allow a tiny system footprint (say < 5 kb), and easily run on an 8-bit processor. Other implementations use 16- or 32 bit processors, or even PC's in the full sense of the word.

Through all of the above, KNX Device Networks may be flexibly adapted to present an optimal solution for each application domain and installation. Furthermore, they have also the capability to be inserted in a “Service Network” environment (usually based on broadband networks running IP, the Internet Protocol), to further amplify and leverage the benefits of our intelligent home, office or business environment.

A product designed with one of the above mentioned configuration modes, in combination with one of the above mentioned communication media, results in a KNX compatible device, certifiable by ***Konnex Association***.

Members of Konnex Association are convinced that the Home and Building market requires open, flexible and interoperable solutions in the communication between controllers, actuators and sensors for standard applications on field bus level. The KNX standard is the first one that corresponds to these needs.

Its different configuration modes in combination with its different communication media, makes **KNX** the No.1 field bus choice for all Home and Building applications.

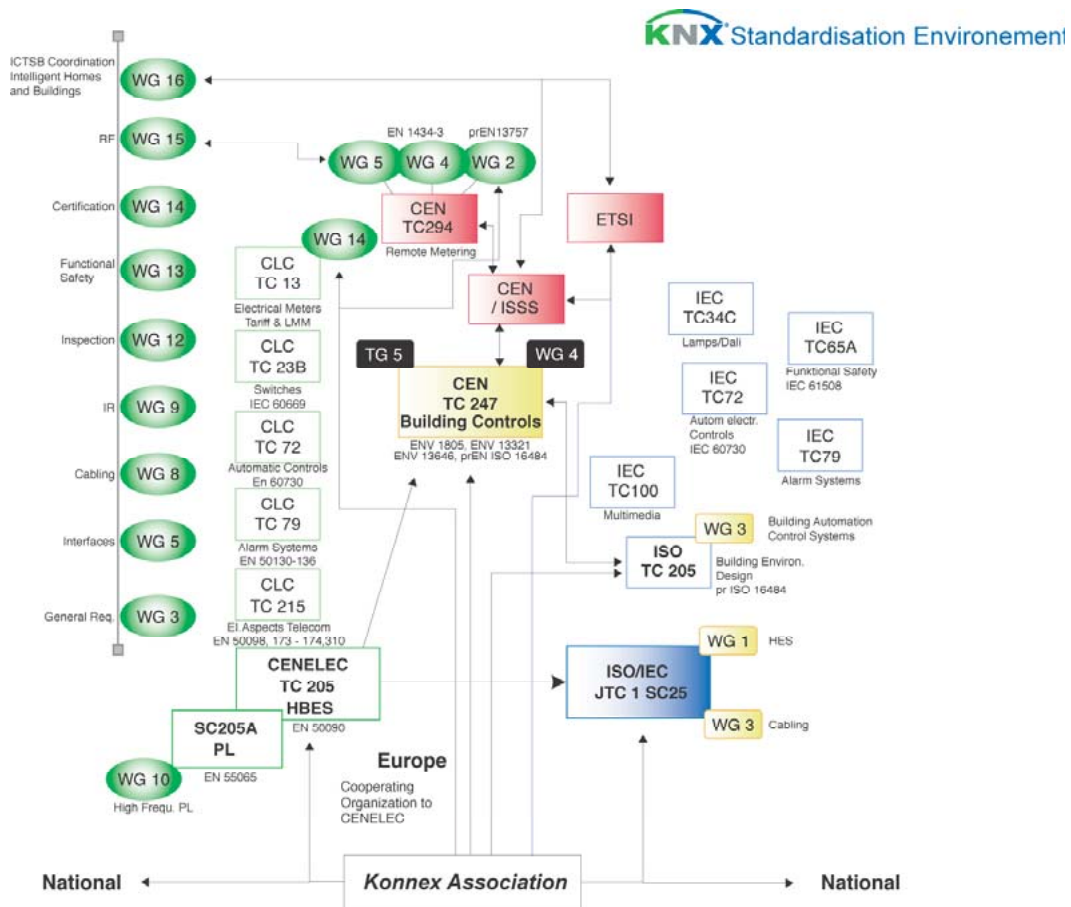
5 The KNX standard in international Standardisation Bodies

Standards and certified products conforming to standards, are an important asset of today's society. Both ensure that users and/or consumers interested in specific technologies may choose from a variety of products from different manufacturers as they are certain that they will get the expected features.

In addition, the authorities, in particular the European Union, have identified standards as an important means for enhancing the protection of human beings and the environment.

In line with the common policy of the three partners, BatiBUS, EIBA and EHSA, it has been the objective since the beginning to provide this resulting KNX standard in the interest of users and consumers on the one hand but also in the interest of ensuring a broad market for the members on the other hand. Home & Building Electronic System (HBES) standardisation activities were initiated in the late 1980's in CENELEC/TC 105 (renumbered later to TC 205) and in ISO/IEC JTC1/SC25/WG1.

In parallel, CEN/TC 247 has been standardising for 10 years, "Controls For Mechanical Building Services".



The previous figure gives an overview of these different standards bodies, the work of which has to be taken into consideration under Konnex Association standardisation activities.



Konnex Association

Whilst internationally little results have been achieved, CENELEC/TC 205 has issued in 1995 the first parts of the EN 50090 set on Home and Building Electronic Systems. Part 2-2 in particular, has become very important as it puts forward the technical requirements such products have to meet under the Low Voltage Directive and the EMC Directive of the EU. Moreover, a substantial set of technical reports has been issued. In addition the sub-committee SC 205A plays an important role in the standardisation of requirements for Powerline Communication.

In 1988, CEN/TC 247 in turn has published the ENV 13154 Part 2 on Data Communication for HVAC Application Field-Net, protocols to contain the separate BatiBUS, EIB and the EHSA protocol requirements.

As one of the consequences of joining forces in the framework of Konnex Association, on the 5th June 2000 a Cooperation Agreement was concluded between Konnex Association and CENELEC. By means of this Cooperation Agreement, Konnex Association, constituted by manufacturers, service providers and interested parties, achieves a privileged role within the framework of European standardisation. Thereby Konnex Association is able to directly supply to European standardisation, the requirements requested by all groups involved in the economic process in the HBES field such as consumers, crafts, service providers and industry.

Konnex Association has in the mean while submitted the KNX protocol as well as its TP and PL media as a basis for furthering the EN 50090 series.

In June 2003 the national committees voted positively during the Unique Acceptance Procedure on the following standard parts:

- EN 50090-3-2 corresponding to the KNX Application Interface Layer
- EN 50090-4-1 corresponding to the KNX Application Layer
- EN 50090-4-2 corresponding to the KNX Network, Transport and Link Layer (general part)
- EN 50090-7-1 corresponding to the KNX Management Procedures
- EN 50090-5-2 corresponding to the KNX TP medium

The following parts are about to be voted or are planned:

- EN 50090-3-x corresponding to the KNX Interworking Model (planned)
- EN 50090-5-5 corresponding to the KNX Radio Frequency Medium (planned)
- EN 50090-8-x corresponding to the KNX Application Descriptions (planned)
- EN 50090-5-1 corresponding to the KNX Powerline Medium (in voting)

It is planned to publish the KNX Infrared medium as a technical report.

In December 2003, the CENELEC Bureau Technique ratified the positively voted EN 50090 parts. *In this way, the KNX specifications have become the first European Standard for intelligent Homes and Buildings.*

Thanks to the coordination between the CEN and CENELEC, it is ensured that as soon as the relevant CENELEC/TC 205 standard is finalised, that CEN/TC247 will make reference to it. An appropriate submission to also endorse the EN 50090 series in ISO circles has in the mean while also been filed.



Konnex Association

Promoting the World's first open STANDARD for Home and Building Control

KNX

6 Members of *Konnex Association* per January 2004

No	Company	Country	Website
1	ABB SACE S.p.A.	Italy	www.it.abb.com
2	ABB STOTZ-KONTAKT GmbH	Germany	www.abb.de/eib
3	Agilent Technologies	Singapore	www.agilent.com
4	Albrecht Jung GmbH & Co. KG	Germany	www.jung.de
5	Altenburger Electronic GmbH	Germany	www.altenburger.de
6	APT GmbH	Germany	www.apr.de
7	AVE SpA	Italy	www.ave.it
8	Berker GmbH & Co. KG	Germany	www.berker.com
9	Bertelli & Partners S.r.l.	Italy	www.bertelli-partners.it
10	Bertoldo & c srl	Italy	www.bertoldo.it
11	Bischoff Elektronik GmbH	Germany	www.bischoff-elektronik.de
12	Bosch & Siemens Hausgeräte GmbH	Germany	www.siemens-hausgeraete.de www.bosch-hausgeraete.com
13	Botech AG	Sweden	www.botech.se
14	Brandt Industries	France	www.elcobrandt.com
15	Bticino SpA	Italy	www.bticino.it
16	Buderus Heiztechnik GmbH	Germany	www.buderus.de
17	Busch-Jaeger Elektro GmbH	Germany	www.busch-jaeger.com
18	CABA, Continental Automated Home & Building Association	Canada	www.caba.org
19	Dätwyler Kabel + Systeme GmbH	Germany	www.daetwyler.de
20	Dehn & Söhne GmbH & Co. KG	Germany	www.dehn.de
21	DELTA DORE S.A.	France	www.deltadore.com
22	Domologic Home Automation Technology	Germany	www.domologic.de
23	DORMA GmbH & Co. KG	Germany	www.dorma.de
24	Easyplug	France	www.easyplug.com
25	Eberle Controls GmbH, an Invensys Company	Germany	www.invensys.com
26	Electrak International Ltd	Untited Kingdom	www.electrak.co.uk
28	ELECTROLUX Home products Italy S.p.A.	Italy	www.electrolux.com
29	Elero GmbH Antriebstechnik	Germany	www.elerode
30	Emness Technology AG	Germany	www.emness.com
31	Fagor Electrodomésticos, S. Coop.	Spain	www.fagor.com
32	F. Schlaps & Partner GmbH	Germany	www.schlaps-automation.de
33	Feller AG	Switzerland	www.fellerag.ch
34	GE Grässlin GmbH & Co. KG	Germany	www.graesslin.de
35	Gewiss S.p.A.	Italy	www.gewiss.com



Konnex Association

Promoting the World's first open STANDARD for Home and Building Control

KNX

Members of Konnex Association per January 2004, suite....

No	Company	Country	Website
36	GIRA Giersiepen GmbH & Co. KG	Germany	www.gira.de
37	Gorenje d.d.	Slovenia	www.gorenje.si
38	Griesser Electronic AG	Switzerland	www.multronic.ch
39	Grundig AG	Germany	www.grundig.com
40	Gustav Hensel GmbH & Co. KG	Germany	www.hensel-electric.de
41	HAGER	France	www.hager.com
42	Heinrich Kopp AG	Germany	www.kopp-ag.de
43	Honeywell AG	Germany	www.honeywell.com
44	HTS High Technology Systems AG	Switzerland	www.hts.ch
45	Insta Elektro GmbH & Co. KG	Germany	www.insta.de
46	IPAS GmbH	Germany	www.ipas-gmbh.de
47	JEPAZ Elektronika spol, s.r.o.	Czech Republic	www.jepaz.cz
48	Jnet Systems	Switzerland	www.jnetsystems.com
49	Legrand S.A.	France	www.legrandelectric.com
50	Levy Fils AG	Switzerland	www.levyfiles.com
51	Lexel Finland AB	Finland	www.lxg.com
52	LG Electronics	South Korea	www.lgte.com www.lge.com
53	Lingg & Janke OHG	Germany	www.eibshop.de
54	LUXMATE Controls GmbH	Austria	www.luxmate.com
55	MERTEN GmbH & Co. KG	Germany	www.merten.com
56	Miele & Cie GmbH & Co.	Germany	www.miele.de
57	Mingardi Magnetic Srl	Italy	www.mingardimagnetic.com
58	Moeller Gebäudeautomation KG	Austria	www.moeller.net
59	Motorola Ltd	Untited Kingdom	www.motorola.com
60	OA0 "Research & Production Association SEM"	Rusia	www.selectm.msk.ru
61	Ritto Werke	Germany	www.ritto.de
62	S. Siedle & Söhne Stiftung & Co.	Germany	www.siedle.de
63	Samsung Electronics Co. Ltd.	South Korea	www.samsungelectronics.com
64	Schneider Electric b.v.	Netherlands	www.schneider-electric.nl
65	SCHNEIDER Electric S.A.	France	www.schneider-electric.com
66	Schupa GmbH	Germany	www.schupa.com
67	SHTRIH-M	Russia	www.shtrih-m.ru
68	SIEMENS AG	Germany	www.ad.siemens.com
69	Siemens Building Technologies Ltd.	Switzerland	www.sibt.com
70	Simon S.A.	Spain	www.simon-sa.es



Konnex Association

Promoting the World's first open STANDARD for Home and Building Control

KNX

Members of Konnex Association per January 2004, suite....

No	Company	Country	Website
71	SIPRO Srl	Italy	www.sipro-homesystems.com
72	Somfy S.A.	France	www.somfy.com
73	Stiebel Eltron GmbH & Co. KG	Germany	www.stiebel-eltron.com
74	STMicroelectronics	Germany	www.eu.st.com
75	Tapko Technologies GmbH	Germany	www.tapko.de
76	Techem Development GmbH	Germany	www.techem.de
77	Theben AG	Germany	www.theben.de
78	Theodor Heimeier Metallwerk GmbH & Co. KG	Germany	www.heimeier.com
79	Trialog	France	www.trialog.com
80	Trilogie	France	www.trilogie-net.com
81	Viessmann Werke GmbH & Co.	Germany	www.viessmann.com
82	Vimar S.p.A.	Italy	www.vimar.it
83	V-Zug AG	Switzerland	www.v-zug.ch
84	Walther Werke Ferdinand Walther GmbH	Germany	www.walter-werke.de
85	Weinzierl Engineering GmbH	Germany	www.weinzierl.de
86	Whirlpool Europe	Italy	www.whirlpool.com
87	Wieland Electric GmbH	Germany	www.wieland-electric.com
88	WILA Leuchten GmbH	Germany	www.wila.com
89	Wilhelm Huber + Söhne GmbH & Co. KG	Germany	www.rutenbeck.de
90	Wilhelm Rutenbeck GmbH & Co.	Germany	www.rutenbeck.com
91	WindowMaster A/S	Denmark	www.windowmaster.com
92	Winkhaus Sicherheitssysteme GmbH & Co. KG	Germany	www.winkhaus.com
93	Woertz	Switzerland	www.woertz.ch
94	Zumtobel AG	Austria	www.zumtobel.com



Konnex Association

Promoting the World's first open STANDARD for
Home and Building Control

KNX

7 How to become member of Konnex Association?

7.1 Categories of Members

There are three categories of members as described below:

Ref.	Type	Description
"M"	Manufacturers	Companies that envisage to manufacture and distribute certified system components and/or products (i.e. hardware and/or software)
"S"	Service Providers	Companies providing services or systems to the end user including the supply of energy, water or communications, and which have a profit-oriented interest in the "Home & Building Electronic Systems" subject of Konnex Association
"I"	Interested Parties	All other groups or individuals with an interest in the "Home & Building Electronic Systems" subject of Konnex Association

The three categories of members are hereafter referred to by the abbreviations "M", "S" and "I"

7.2 Joining, Resignation, Expulsion as a Member

Potential members shall fill in the application form for membership (see sample underneath) and forward it to Mrs. Johnson (Fax: 0032 2 675 50 28). They shall not forget to state the type of membership and the number of staff members. This application is then forwarded to the members of the Management Board for approval.

After approval, "M" or "S" members shall enter into the following contracts with the Association:

- IPR License Agreement.
- Trademark License Agreement.

7.3 Membership Rights & Obligations

7.3.1 Category "M" and "S" Members Rights

In short, Members in categories "M" and "S" are entitled, among other things, to the following:

- Access to all information generated, circulated and published by Konnex Association.
- Access to all services provided by Konnex Association – as detailed in the following chapter.
- The right to participate in working groups to define extensions to the "KNX Standard"



Konnex Association

Insofar as they have already entered into an *IPR License Agreement* and a *Trademark License Agreement* with the Association, members will benefit from the licenses granted there under.

7.3.2 Category “I” Members Rights

In short, Members in category “I” are entitled, among other things, to the following:

- Access to all information generated, circulated and published by Konnex Association.
- Limited possibility to make and certify products based on the Bus Standard, i.e.
 - ❖ Limited in turnover: only if the overall achieved turnover with products based on the Bus Standard does not exceed 150000 Euros per annum;
 - ❖ Limited in time: for a period of 5 years counted from the date of entry in Konnex, after which they automatically become “M” or “S” members, unless extension of the I membership with another 5 years is approved by the Konnex Management Board.

I members never have the possibility to enter into the IPR License Agreement with the Association. Consequently, such members can never benefit from the licenses granted there under. However, in the case where such members apply for certification of developed products, they must sign and abide by the rules of the Trademark License Agreement.

If I members do not meet the above requirements and still wish to make products based on the Bus Standard, they must change their membership to become a category ‘M’ or ‘S’ member.

7.3.3 Member Obligations

In short, Members have the following obligations, among other things:

- To behave in a manner compatible with the Mission and Objectives of the Association – as defined in the *Articles of Association*.
- To comply with the product conformity and certification regulations of Konnex Association – as in the conformity and certification sections of the *Konnex Specification Handbook*.
- To pay the entry fees and annual membership fees in full and in a timely manner.
- In respect of any debts incurred by Konnex Association, members shall have limited liability; - that is to say limited to the amount of entry fees and annual membership fees due.
- Insofar as they have already entered into an *IPR License Agreement* and a *Trademark License Agreement* with the Association, members must comply with the terms of these agreements.

7.4 Services Provided to Members

As a principle, Konnex Association aims at providing all the services currently conducted by the existing three associations (EIBA, BCI, EHSA).

Konnex Association is a non-profit organisation. As such, it is obliged to make a clear separation in its business plan, budget and reporting, between activities that are included within the scope of the membership fees, and other activities that may be provided by other entities. Currently the split is as follows:



Konnex Association

Promoting the World's first open STANDARD for Home and Building Control

KNX

A. Included in the membership fees:

- Promotion of the Bus Standard
- Maintenance and development of the Bus Standard
- The handbook
- Support to members for the interpretation of the Standard
- Standardisation activities
- IPR management
- Administration

B. Activities provided / sold by other entities:

- Tools (development, sales, support) (handled by the EIB association)
- Certification tests for products
- Executing special contracts for members (on a case by case basis)

The Management Board may modify the list of activities included in the membership fees; subject to ratification by the General Assembly.

7.5 Fees

	One Time Entry Fee *	Annual Member Fee	Annual IPR License Fee	Annual Trademark License Fee	Certification Fee
"S" & "M" Members > 100 Employees	1 x BFU	1 x BFU	Included	Included	see other scale of fees
"S" & "M" Members ≤ 100 Employees	0,50 x BFU	0.50 x BFU	Included	Included	
"S" & "M" Members ≤ 25 Employees	0,25 x BFU	0.25 x BFU	Included	Included	
"S" & "M" Members ≤ 10 Employees	0,20 x BFU	0.20 x BFU	Included	Included	
"I" Members	0,16 x BFU	0.16 x BFU			
Member's Subsidiary (Licensee) > 100 Employees			0.25 x BFU	0.5 x BFU	
Member's Subsidiary (Licensee) < 100 Employees			0.125 x BFU	0.25 x BFU	

The BFU (Basic Fee Unit) is fixed at € 12.500 for 2004.



Konnex Association

Application form for membership

Our company represented by the undersigned

Name of the company:	
Street:	
Post code – City:	
Country:	
VAT number:	
Company commercial registration nr.	
Category of the company according to the Konnex statutes:	Manufacturer 'M'
In case of selection of sublicense, state name of mother company	
Number of employees:	less or equal 10
Name of undersigned:	
Function of undersigned:	
Telephone number:	
Fax number:	
E-mail address:	
Company website	
Name of the principal representative ² :	
Function of the principal representative ¹ :	
Telephone number:	
Fax number:	
E-mail address:	

Herewith submits its application for **full membership** according to the rights and obligations as stipulated in **Konnex Association** aissbl Articles of Association and agrees in particular:

- To pay an **annual contribution** within 30 days after having received the invoice, to permit a balanced operational budget as accepted by the Annual General Assembly of **Konnex Association**.
- The annual contribution has been fixed by the General Assembly:
 - for companies larger than 100 employees at 12.500,- Euro
 - for companies from 26 up to 100 employees at 6.250,- Euro
 - for companies from 11 up to 25 employees at 3.750,- Euro
 - for companies up to 10 employees at 2.500,- Euro
 - for interested parties, "I"-member at 2.000,- Euro
 - for sublicensees with more than 100 employees 4.687,50 Euro
 - for sublicensees with fewer than 100 employees 2.337,50 Euro
- To pay an **entry fee** in the height of the annual contribution³.

Place:

Signature:

Date:

Please return this form by fax and mail to the Konnex secretariat, including a company profile and if available a copy of the last annual report.

² if not the undersigned

³ not applicable for members in legacy associations

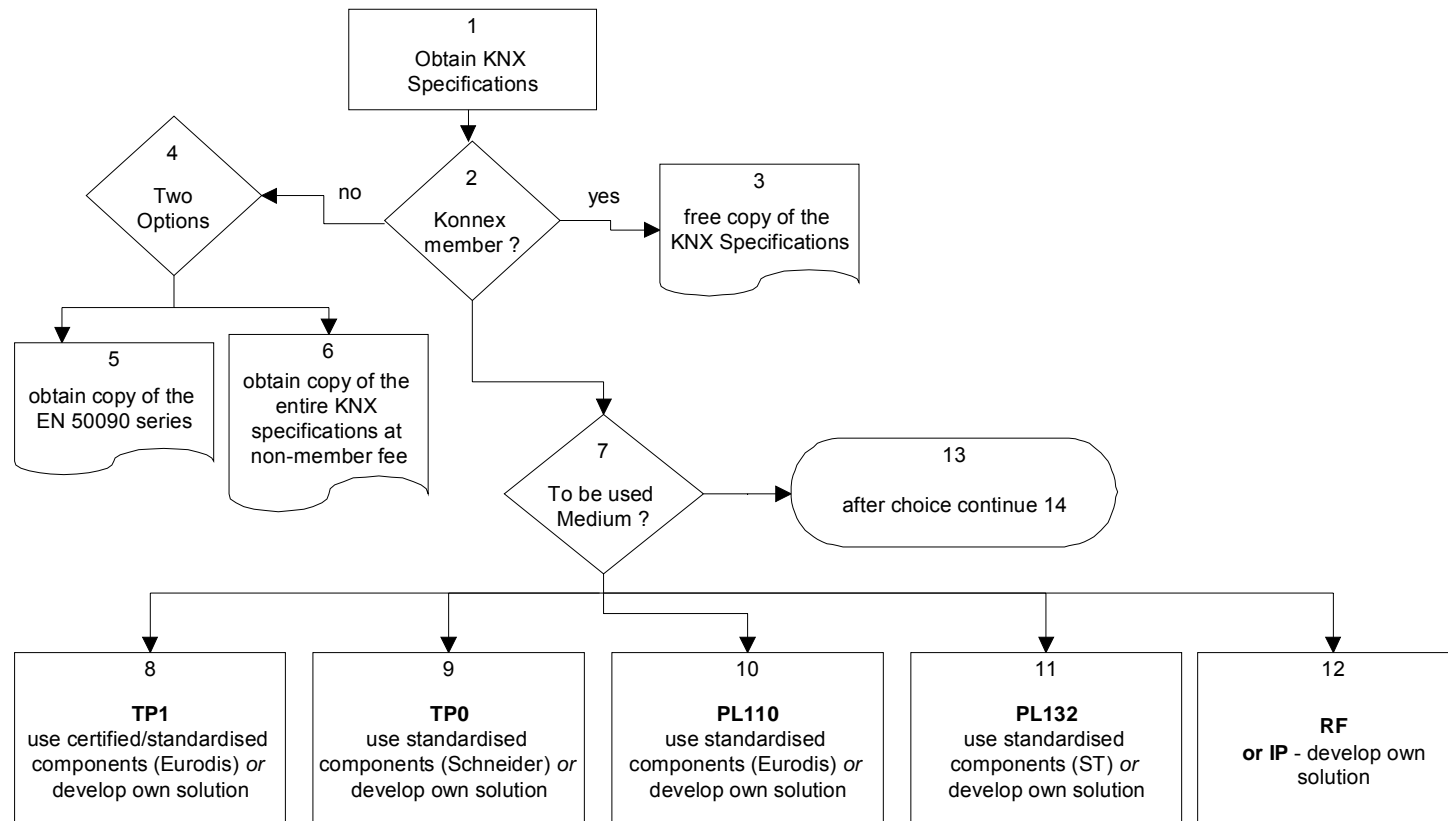


Konnex Association

Promotes the implementation of the World's first open STANDARD for Home and Building Control
KNX

8 How to develop a KNX compatible device?

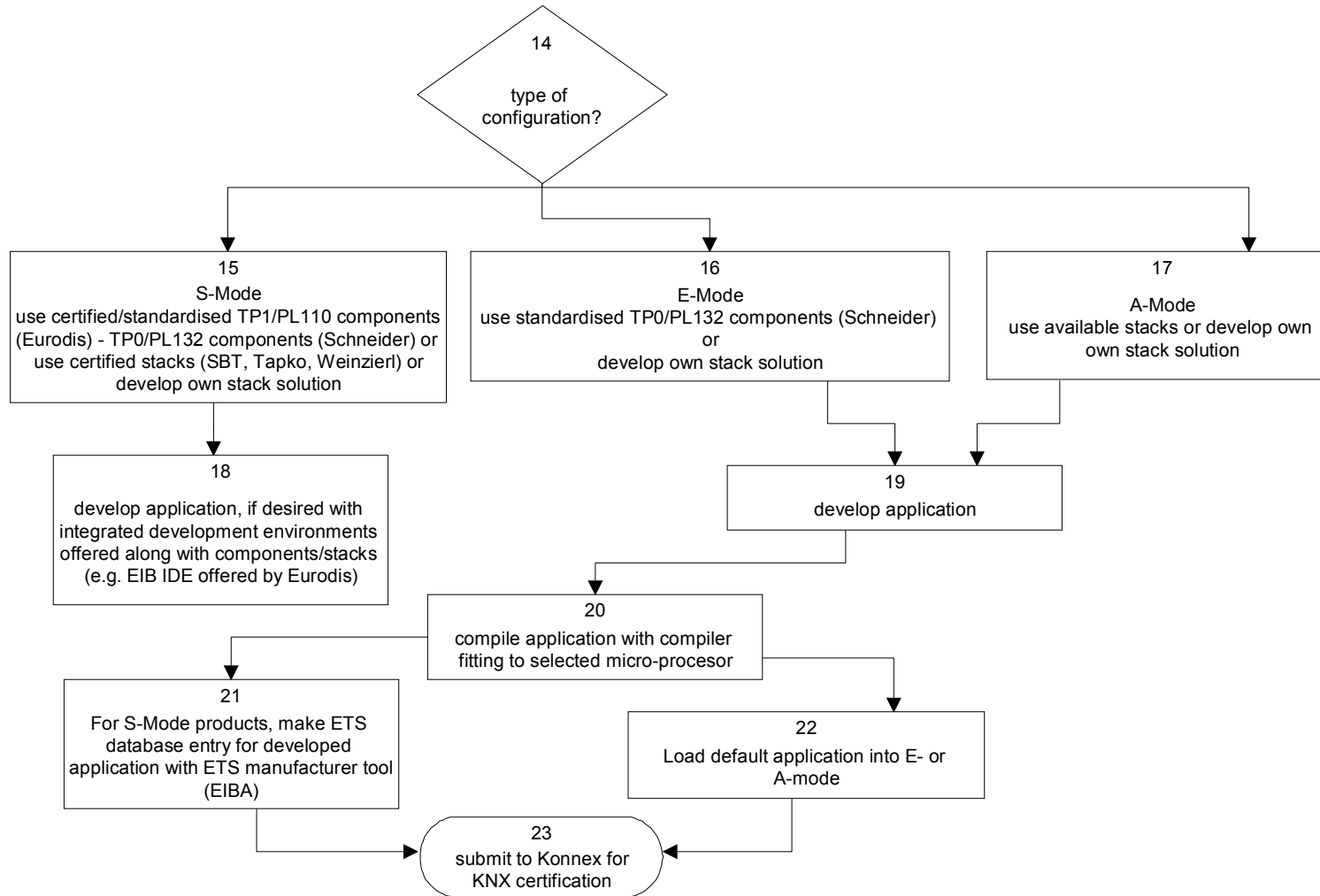
8.1 Flowchart





Konnex Association

Promotes the implementation of the World's first open STANDARD for Home and Building Control KNX





Konnex Association

**Promotes the implementation of the World's first
open STANDARD for Home and Building Control
KNX**

8.2 Useful Addresses

- EIBA srl, Mrs. Degol, Bessenveldstraat 5, B-1831 Diegem, Tel +32 2 775 86 54, Fax +32 2 675 50 28, e-mail c.degol@eiba.com
- Eurodis Enatechnik, . Mr. Claassen, Pascallehre 1, D-25451 Quickborn, Germany, Tel +49 4106 701-469, Fax +49 4106 701-74163, e-mail: ClaassenW@EURODIS.com .
- Schneider Electric, Mr. Teyssier, S2K plant, avenue des Jeux Olympiques, Grenoble, F-3850 Grenoble Cedex 9 Tel : +33 4 76 39 42 – Fax +33 4 76 39 41 92 e-mail: charles_teyssier@mail.schneider.fr
- Siemens Building Technologies, Mr. N. Stroick, Europadamm 2-6, D-41460 Neuss, Tel +49 2131 1599-542, Fax +49 2131 1599-555, e-mail norbert.stroick@siemens.com.
- STMicroelectronics, . Mr. U. Fiedler, Technical Marketing Manager, Werner-von-Siemens-Ring 3-5, D-86530 Grasbrunn, Tel +49 89 46006-2207, Fax 0049 89 46006-7-2207, e-mail Ulrich.fiedler@st.com
- TAPKO Technologies GmbH, Mr. Klaus Adler, Yorckstr. 22, D-93049 Regensburg, Tel: +49 941 / 30747-0, Fax: +49 941 / 30747-29, eMail: klaus.adler@tapko.de.
- Weinzierl Engineering, Mr. Weinzierl, Bahnhofstrasse 6, D-84558 Tyrlaching, Tel +49 8623 987 98 03, Fax +49 8623 987 98 09, t.weinzierl@weinzierl.de.



Konnex Association

Promotes the implementation of the World's first
open STANDARD for Home and Building Control
KNX

9 What is Certification procedure for products and training centres?

9.1 Products

In order to establish the KNX Trademark as a token for quality and interoperability of home and building system engineering products (based on the KNX protocol), the Konnex Association has launched its certification scheme for products.

A member of the Konnex Association will have to prove compliance to the following requirements, if it wants to label a developed KNX product with the KNX trademark:

- Implementation of a quality system according at least ISO 9001
- Requirements of the European standard EN 50090-2-2 (covering such aspects as EMC, electrical safety, environmental conditions, of bus products) and an appropriate product standard. Compliance can be shown to the Konnex Association by the submission of a CE declaration.
- Requirements of Volume 3 and Volume 6 of the KNX specifications, the former being a toolbox of the KNX protocol features, the latter listing the allowed profiles of the KNX stack based on the before-said toolbox.
- KNX Interworking requirements as regards standardised data types and (optionally) agreed functional blocks.

For registration (entry of the product data in the central database of the ETS software tool for project design and commissioning) and certification, the applicant will have to contact the Konnex Association.

In order to allow a speedy market entrance, products can be branded with the KNX trademark after registration. After that, the applicant has a maximum of 6 months to complete the testing of his products.

For software testing, the applicant will have the choice of a number of KNX accredited test labs, authorised to carry out third party KNX system and interworking testing. For hardware testing, the applicant either has the various testing facilities at his premises or takes recourse to a test lab of his choice.

During software testing, emphasis is put on testing of uncertified parts only. As an example, a product based on an already tested KNX bus access unit (of which compliance to the system specifications has already been proven) must merely be submitted to the interworking tests.

A uniform test tool ensures that the manufacturer is able to prepare much of the software test campaign at his premises and provide this preparation as input for third party testing.

As soon as all test reports as regards system and interworking conformity together with the CE declaration for the hardware reach the desk of the Konnex Certification Department, a certificate is issued confirming the use of the trademark on the tested product.



Promotes the implementation of the World's first
open STANDARD for Home and Building Control
KNX

Konnex Association

9.2 Main fees for product certification

- | | | |
|----|--|---------|
| 1. | registration of a hardware developed by applicant | € 600,- |
| 2. | registration of a software developed by applicant | € 180,- |
| 3. | Registration derived hardware | € 180,- |
| 4. | Registration derived software | € 60,- |
| 5. | Annual product surveillance fee for certified hard-and software combination developed by applicant | € 75,- |

9.3 Accreditation of Test Labs

In order to have Konnex Association accept test reports as a basis for KNX certification, the laboratory issuing such reports will have to pass successfully the Konnex accreditation. If not accredited nationally, the test lab will have to additionally pass an audit carried out by the Konnex Audit Team to show compliance to the ISO 17025 standard.

If nationally accredited, the Konnex audit will be limited to assessing the aptitude of the candidate test lab to carry out KNX conformity testing. This will be done on the basis of a sample test campaign prepared by the candidate test lab.

The cost of the above audit including travel and hotel expenses will be invoiced to the applicant.

For more detailed information, please contact the Konnex certification department.

9.4 Certification of Training centres

The basics of the Certification Scheme for training centres are fourfold:

- ensuring quality in training services through a number of guidelines or compliance to ISO 900x;
- ensuring a guaranteed level of knowledge of the trainee through uniform training documentation and examination. Three types of courses have been standardised by EIBA: combined course, upgrade/professional course and tutor course;
- ensuring proper training of tutors through tutor courses (in Germany held at bfe, Dial or Siemens – for non-German speaking tutors via self-training, crash course and examination by Konnex)
- ensuring proper training equipment at all certified training centres

The training centre certificate gives you the right to:

a) rights without ISO 9001/2

- Price for ETS Licenses: 1/3 of normal price
- right to hand out certificate after positive test (combined course) or sufficient attendance (upgrade course)
- students passing the combined course exam receive a reduction when ordering the ETS software
- access to standardised training documentation in electronic form
- Possibility to buy standardised training documentation on paper for unit price of 21 €



Promotes the implementation of the World's first
open STANDARD for Home and Building Control
KNX

Konnex Association

b) Additional rights with ISO 9001/2

- right to hand out free ETS 2 demo versions to course participants (after conclusion of a contract with EIBA)
- Price for ETS Licenses: 1/4 of normal price

9.5 Possibilities for non-certified training centres:

- Possibility to purchase paper copies of the training documentation to prepare pupils for an exam at a certified training centre:
 - 59 euro/per copy for non-vocational training centres
 - 29 euro/per copy for vocational training centres
- Price for ETS Licenses: 1/4 of normal price

Costs

Registration: € 1.200

Inspection fees: € 900 per man-day (without living allowance and hotel/travel expenses)

Annual fees: € 500



Konnex Association

Promotes the implementation of the World's first
open STANDARD for Home and Building Control
KNX

10 Software ETS

Ordering ETS™:	To order ETS™®, please print out the order form (double sided) corresponding to the language version of which you would like to obtain a license. Fill in the complete order form, sign it and send it back by normal mail, fax or email (in this case document scanning is valid) to the EIBA Association (contact information below). Forms are in PDF Acrobat format; you can download them here .
<u>EIB Association</u>	Chantal Degol Bessenveldstraat 5 B-1831 Brussels-Diegem Belgium Tel: +32 2 775 86 54 Fax: + 32 2 775 86 50 E-mail: sales@eiba.com

For more information feel free to contact us:

Harry Crijns, Marketing director

Konnex Association

Bessenveldstraat 5

B - 1831 Brussels-Diegem

Tel: +32 (0) 2 775 85 90

Fax: +32 (0) 2 675 50 28

E-mail: harry.crijns@konnex.org

Web: www.konnex.org