Home and Building Control
Overview of content

- KNX Concept
- DALI
- Building Application
- Infrastructure Application
- Home Application
KNX CONCEPT - Worldwide STANDARD for Home and Building Control

- Definition of testing and quality standards via working and expert groups (KNX Specifications)

- Technical Hotline for manufacturers developing KNX compatible devices

- Issue of KNX Trademark on the basis of specifications through KNX Certification

- National and International Standardization Activities

- Promotion of training measures by certification of training centers

- Promotional activities (web site, trade fairs, brochures, …)

- Encouraging forming of national groups

- Scientific Partnership for Technical institutes

- Rest specification work/promotion/certification of legacy systems
• Approved the KNX technology as the International Standard ISO/IEC 14543-3 in 2006.

• Approved the KNX technology as the European Standard EN 50090 in 2003.

• Approved the KNX technology as EN 13321-1 (as a mere reference to EN 50090) and EN1332-2 (KNXnet/IP) in 2006

• Approved the KNX technology as the Chinese Standard GB/Z 20965 in 2007

• Approved the KNX technology as the US Standard ANSI/ASHRAE 135 in 2005
more than 10,000 registered and certified products (including legacy solutions)
more than 100 manufacturers
more than 90 recognised training schools
more than 5 European test sites
more than 80,000 implemented projects
more than 20 million installed products
Conventional: Confusing, rigid wiring

Light

Brightness-sensor

Push-Buttons

Infra-Red

Distribution-Board

230 / 400 V
**KNX: Simple wiring**

- **Light**
- **Brightness-sensor**
- **Push-Buttons**
- **Infra-Red**
- **Distribution-Board**
- **230 / 400 V**
- **instabus**
EIB/KNX – Technology

- Lighting
- Heating
- Blinds/Shutter

- Infrared
- Central

Time dependent
Weather dependent
Room dependent
Brightness dependent
Network wiring without restrictions

Linear topology    Loop topology    Star topology

Tree topology      Mixed topology
Standard Tool

**ETS3 Tester**

starter version without possibility to access the bus.

**ETS3 Starter**

for users, who did not participate to a certified training, version limited to installations with maximum 64 devices.

**ETS3 Professional**

for users with certified traininging, version without limitations.
Multi Vendor

- simple
- economical
- clear
- flexible

Customer

heating

Manufacturer A

product 1

product 2

system 3

Manufacturer K

system 1

product 2

system 3

Manufacturer L

system 1

product 2

heating

lighting

blinds/shutter

system 1

product 2

system 3

heating

lighting

blinds/shutter
## KNX Partners result

**Limited to Hong Kong**  
**Ordered by company**  
*(click headers to order)*

<table>
<thead>
<tr>
<th>Info</th>
<th>Company</th>
<th>Name</th>
<th>Country</th>
<th>Zip + City</th>
</tr>
</thead>
<tbody>
<tr>
<td>More info</td>
<td>Easy System Company Ltd.</td>
<td>Lee Man Sing Michael</td>
<td>Hong Kong</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>More info</td>
<td>Kin Hong Wong</td>
<td>Kin Hong Wong</td>
<td>Hong Kong</td>
<td>00852 Hong Kong</td>
</tr>
<tr>
<td>More info</td>
<td>Hager Electro Ltd</td>
<td>Chan Cherish</td>
<td>Hong Kong</td>
<td>Tsim Sha Tsui Kowloon</td>
</tr>
<tr>
<td>More info</td>
<td>LIVING TECH LIMITED</td>
<td>Yeung KaHo</td>
<td>Hong Kong</td>
<td>Hong Kong.</td>
</tr>
<tr>
<td>More info</td>
<td>Nixon Technology Company Ltd</td>
<td>Simon Leung</td>
<td>Hong Kong</td>
<td>N/A Hong Kong</td>
</tr>
<tr>
<td>More info</td>
<td>Passion Living Accessories Ltd</td>
<td>Wong Thomas</td>
<td>Hong Kong</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>More info</td>
<td>Schneider Electric (Hong Kong) Limited</td>
<td>Ip Man Ming</td>
<td>Hong Kong</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>More info</td>
<td>Schneider Electric (Hong Kong) Limited</td>
<td>Leung Chun Yip</td>
<td>Hong Kong</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>More info</td>
<td>Schneider Electric Asia Pacific Limited</td>
<td>Yeung William</td>
<td>Hong Kong</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>More info</td>
<td>Siemens Ltd.</td>
<td>Wang Peter</td>
<td>Hong Kong</td>
<td>Kwun Tong</td>
</tr>
<tr>
<td>More info</td>
<td>The Hong Kong Polytechnic University</td>
<td>Kai Tai Yung</td>
<td>Hong Kong</td>
<td>Hung Hom, Kowloon</td>
</tr>
</tbody>
</table>

0 to 11 from 11
- KNX Concept
- DALI
- Building Application
- Infrastructure Application
- Home Application
Digital Addressable Lighting Interface (DALI)

- **Standard**: EN 60929: 2006-11 "AC and/or DC-supplied electronic control gear for tubular fluorescent lamps – Performance requirements"
- **Standard series**: IEC 62386
  "Digital addressable lighting interface"
  (work in process)

---

**Advantage:**
Bidirectional communication enables, for example, the reporting of lighting equipment failures

* Trade name of the DALI Working Group
Digital Addressable Lighting Interface (DALI) Comparison with 1 ... 10 V

1 ... 10 V Dimming signal

ON/OFF relay

Dimming and switching

1 ... 10 V - ECG

DALI - ECG
DALI Principle – control unit and ECG interaction

Addressing:
- Single
- Group
- All

Control unit

Operation

Sensors

Network line 3
Control line 2
Max. 300

Distribution into up to 16 groups of lights

Max. 64 DALI ECGs
DALI principle
Installation notes for the control line

- Up to 64 DALI ECGs per control line
- Control line, free topology, (no loop), max. 300 m with 1.5 mm²
- Types of addressing: All, by groups, individually
Positioning of KNX and DALI in building systems and application fields

- Building (BMS)
- Corridors or parts of buildings
- Single room

Diagram:
- KNX
- DALI
- Lighting
- Shutter/blind
- HVAC
- Other
Presence-dependent lighting control

BMS

LAN

IP controller N350E

Max. 30 Max. 30

Max. 64

Max. 30 Max. 30

Max. 30 Max. 30

8x 8x

1 ... 10 V
Integration into building management and facility management

KNXnet/IP

PROFI®NET

OPC

BACnet

OLE for Process Control

KNX

Industrial & Ethernet

Non-residential

Industry
- KNX Concept
- DALI
- Building Application
- Infrastructure Application
- Home Application
Building Automation

- Time-dependent lighting control
- Daylight-dependent lighting control
- Presence-dependent lighting control
Daylight-dependent lighting control – constant light level control

1st track of lights | 2nd track of lights | 3rd track of lights

500 lx desired lighting intensity

Available daylight

Artificial light required

E.g. 100%

E.g. 70%

26% 48% 70%

Available daylight

Receivers
Daylight-dependent lighting control – constant light level control

Utilization of daylight
- Reduced energy expense for lighting
- Utilization of the difference between the design value and the maintenance value of the light intensity
- If ECGs from notable manufacturers are used, the service life of the lamps is not influenced by dimming.
- KNX Concept
- DALI
- Building Application
- Infrastructure Application
- Home Application
Tunnel Lighting Control

- Stage control based on exterior daylight level
- Avoid drivers experiencing the hazardous “Black Hole” effect
- EIB/KNX Integrate with DALI ballast
- Down to luminance fault detection
- Fail-safe control
- KNX Concept
- DALI
- Building Application
- Infrastructure Application
- Home Application
Home Automation – Audio System
Home Automation – Audio System
Thank you for your time!