## Summary


1. This advanced product news introduces the new product HC-A16KNX.
2. The details are indicated in the description.


## Description

**1. Applicable products, model code and date of sales:**

New product:

| Model Description | Model Code | Sales Date |
|---|---|---|
| HC-A16KNX | 7E513300 | June 2010 |

**2. Features**

KNX is a European Standard Protocol used for household and industrial Buliding Management System (BMS).

This new accessory allows the full integration between Hitachi Air Conditioning installation and a KNX system.

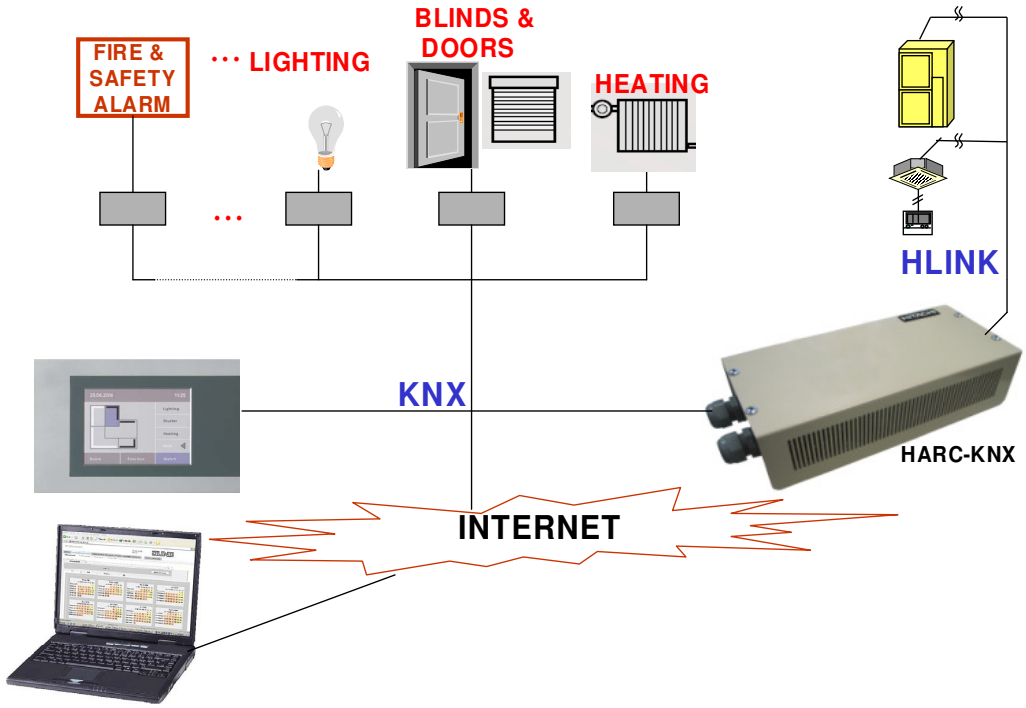
(1) KNX Direct Adapter

HC-A16KNX is a gateway that allows connection between KNX BMS communication network and Hitachi proprietary H-Link line.
HC-A16KNX is configured directly from KNX ETS software like most devices in KNX network which is supplied and managed by KNX company.

(2) H-LINK 2 Compatible

HC-A16KNX adds compatibility with the new version of H-LINK communication called H-LINK 2 while maintaining full compatibility with current H-LINK (H-LINK 1) units.

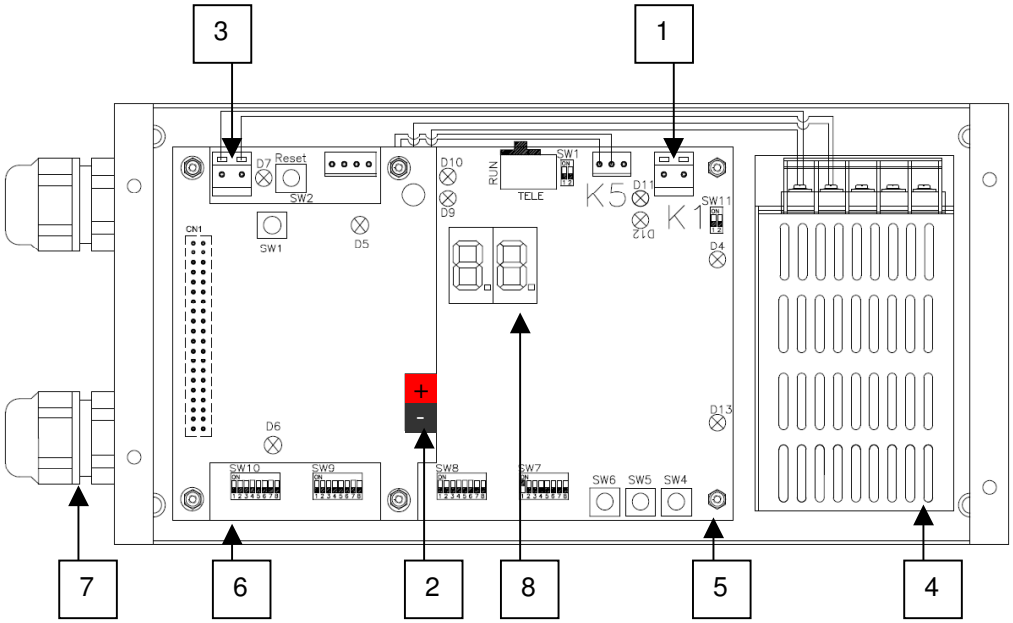
Up to 16 HC-A16KNX can be connected in an H-LINK line. One and only one of this HC-A16KNX must be set as master.




HC-A16KNX can be connected in an H-LINK 1 and/or H-LINK 2 communication line.

## 3. New Product General Data

### 3.1. Component Names




[1] K1: H-LINK Connector.

[2] KNX Port

[3] K3: +5V DC Power Connection

[4] Power Source

[5] H-LINK PCB

[6] KNX PCB

[7] Packing glands (2)

[8] 7-Segments

3.2. Specifications

**Hardware Specifications**

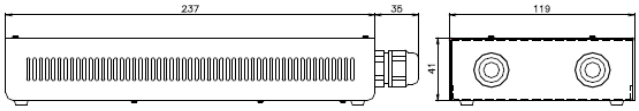
| Item | Specifications |
|---|---|
| Power supply | 1~230 V ±10% 50Hz |
| Consumption | 25 W (maximum) |
| Outer dimensions | Width: 143 mm, Depth: 302 mm, Height: 76 mm<br>Weight 1.75 kg |
| Assembling conditions | Indoors (in a control panel or desktop) |
| Ambient temperature | 0~40 ℃ |
| Humidity | 20~85% (Without condensation) |

**H-LINK**

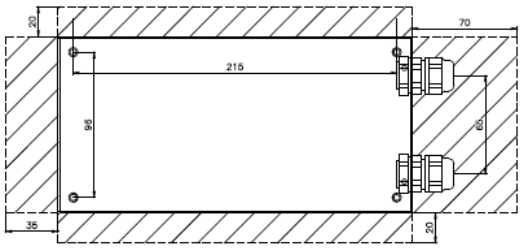
| Item | Specifications |
|---|---|
| Communication with | HITACHI PACKAGED |
| Communication line | Twisted pair shielded cable, non polarity |
| Communications system | Half-duplex |
| Communication method | Asynchronous |
| Speed of transmission | 9600 Bauds |
| Length of wiring | 1000 m maximum (total length of HLINK I/O bus) |
| Maximum number of HC-A16KNX | 8 HC-A16KNX/H-LINK SYSTEM (PACKAGED) |

3.3. Dimensional Data

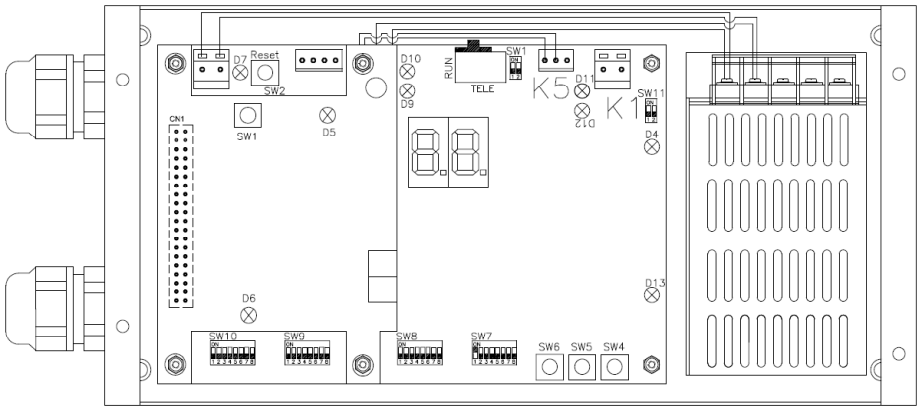
(1) Dimensions




(2) Area needed for ventilation and cable



3.4. DIP Switch Settings




| Name | Function | Factory setting | Description |
|---|---|---|---|
| SW1 – KNX PCB | Reset KNX PCB | - | Reset button. To be used in case of KNX communication has been locked. |
| SW1 – H-LINK PCB | Not available |  | All in off (no function) |
| SW2 | Reset | - | Reset button. To be used in case of program has been locked |
| SW3 (TELE) | Not available |  | Factory purposes. Never change it |
| SW4 | Configuration | - | Setting functions |
| SW5 | Configuration | - | Setting functions |
| SW6 | Configuration | - | Setting functions |
| SW7 | Options 2 |  | Configuration as MASTER HC-A16KNX:<br>SW7-1=ON.<br>Only one HC-A16KNX can be set as a MASTER HC-A16KNX. Setting by default.<br>Configuration as SLAVE HC-A16KNX:<br>SW7-1= OFF.<br>It should be 1 HC-A16KNX configured as MASTER, all the rest of HC-A16KNX must be configured as SLAVE. |
| SW8 | Options 1 (Application type) |  | All in off (no function) |
| SW9 | Not available |  | All in off (no function) |
| SW10 | HC-A16KNX address |  | HC-A16KNX address from 0 to 31 by pins 1 to 5 |
| SW11 | H-LINK DSW |  | SW11-1: H-LINK end resistance<br>SW11-2: Not used |
| D4, D11 | H-LINK | - | H-LINK transmission |
| D5 | Not used | - | - |
| D6 | Units configuration alarm | - | ON- No alarms<br>OFF- Units not configured |
| D7 | Power | - | Power supply ON/OFF |
| D9/D10 | Not used | - | - |
| D12 | KNX | - | Internal communication between the KNX PCB and the H-LINK PCB. |
| D13 | Operation | - | Normal software operation |

3.5. Configuration method

Every HC-A16KNX can control up to 16 I.U, considering that in the same H-LINK can be connected up to 160 IU, it must be set which indoor units are selected for each HC-A16KNX.

Setting concept consist in an "id" table listing up to 16 numbers for the assignation of each OU+IU addresses as shows the following example.

| Id | Rerigerant cycle address | Indoor unit address |
|---|---|---|
| 00 | 00 | 00 |
| 01 | 00 | 01 |
| 02 | 00 | 02 |
| 03 | 00 | 03 |
| 04 | 00 | 04 |
| 05 | 00 | 05 |
| 06 | 00 | 06 |
| 07 | 00 | 07 |
| 08 | 00 | 08 |
| 09 | 00 | 09 |
| 10 | 00 | 10 |
| 11 | 00 | 11 |
| 12 | 00 | 12 |
| 13 | 00 | 13 |
| 14 | 00 | 14 |
| 15 | 00 | 15 |

***NOTE:***

– *It can be selected for 1 HC-A16KNX up to 16 I.U from 16 different refrigerant cycles or 16 I.U from the same refrigerant cycle. Those I.U. must be assigned to a BMS id from 0 to 15, from 16 to 31 must be without any configuration.*

***CAUTION:***

– *Be sure not to set same Indoor Unit to more than one HC-A16KNX. This error is undetectable and can cause undesired operations.*

– *Addresses over id 15 are not used because they cannot be controlled with HC-A16KNX. Using them could create some problems with the configured units between 0 and 15.*

- Example:

| Step number | Action | 7 segments (display) | Remarks |
|---|---|---|---|
| 1 | Press SW4 for 3 seconds | id | Configuration mode selected |
| 2 | Press SW4 | 00 | Id selection (IU No.) from 0 to 15 by pushing SW5 ▲ or SW6 ▼ |
| 3 | Press SW4 | oU | Refrigerant cycle address |
| 4 | Press SW4 | --→00 | Refrigerant cycle address selection from 0 to 15 (e.g. 00) (by pushing SW5 ▲ & SW6 ▼) |
| 5 | Press SW4 | iU | Indoor unit address |
| 6 | Press SW4 | --→00 | Indoor unit address selection from 0 to 15 (e.g. 00) (by pushing SW5 ▲ & SW6 ▼) |
| For "id" 01 repeat steps 1 to 6 | | | |
| 7 | Press SW4 for 3 seconds | id | Configuration mode selected |
| 8 | Press SW4 | 00→01 | Id selection (IU No.) from 0 to 15 by pushing SW5 ▲ or SW6 ▼ |
| 9 | Press SW4 | oU | Refrigerant cycle address |
| 10 | Press SW4 | --→00 | Refrigerant cycle address selection from 0 to 15 (e.g. 00) (by pushing SW5 ▲ & SW6 ▼) |
| 11 | Press SW4 | iU | Indoor unit address |
| 12 | Press SW4 | --→01 | Indoor unit address selection from 0 to 15 (e.g. 01; push SW5 once) (by pushing SW5 ▲ & SW6 ▼) |
| ... Repeat steps 1 to 6 for all the rest "Id" | | | |
| 91 | Press SW4 for 3 seconds | id | Configuration mode selected |
| 92 | Press SW4 | 00→31 | Id selection (IU No.) from 0 to 15 by pushing SW5 ▲ or SW6 ▼ |
| 93 | Press SW4 | oU | Refrigerant cycle address |
| 94 | Press SW4 | --→01 | Refrigerant cycle address selection from 0 to 15 (e.g. 01; push SW5 once)) (by pushing SW5 ▲ & SW6 ▼) |
| 95 | Press SW4 | iU | Indoor unit address |
| 96 | Press SW4 | --→ 15 | Indoor unit address selection from 0 to 15 (e.g. 15; push SW6 once) (by pushing SW5 ▲ & SW6 ▼) |
| 97 | Press SW4 for 3 seconds | Nothing displayed | Exit from configuration mode |

3.6. Available Data

KNX Default address for this device is 1.1.1, it can later be modify using ETS software from KNX Association.

The maximum numbers of units that can be controlled using HC-A16KNX are 16. Each unit has 15 communication objects.
These objects are explained as follows:

| Address | Name | Length | Description | Values |
|---|---|---|---|---|
| 0 | Unit-N On/Off | 1 bit | ON / OFF order. | 0-On<br>1-Off |
| 1 | Unit-N Mode | 1 byte | Mode setting order. | 0=Auto<br>1=Heat<br>2=Dry<br>3=Fan<br>4=Cool |
| 2 | Unit-N Fan | 1 byte | Fan setting order. | 0~30%= Low<br>31~60%= Medium<br>61~100%= High |
| 3 | Unit-N Louver Scale | 1 byte | Louver position setting. | 0~15%= Pos0<br>16~30%= Pos1<br>31~45%=Pos2<br>46~60%= Pos3<br>61~75%=Pos4<br>76~90%= Pos5<br>91~100%= Pos6 |
| 4 | Unit-N Louver Auto | 1 bit | Automatic Louver Setting. | 1=Louver Automatic active |
| 5 | Unit-N Set Temperature | 2 bytes | Setting temperature. | 17~30ºC |
| 6 | Unit-N Ambient Temperature | 2 bytes | Inlet Air Ambient Temperature. | 17~30ºC |
| 7 | Unit-N Alarm | 1 bit | Alarm notification. | 1= alarm on unit N |
| 8 | Unit-N Alarm Code | 1 byte | Alarm code. | See errors table from HC-A16KNX |
| 9 | Unit-N Mode Cool | 1 bit | Cool mode order. | 1=Mode Cool Active |
| 10 | Unit-N Mode Dry | 1 bit | Dry mode order. | 1=Mode Dry Active |
| 11 | Unit-N Mode Fan | 1 bit | Fan mode order. | 1=Mode Fan Active |
| 12 | Unit-N Mode Heat | 1 bit | Heat mode order. | 1=Mode Heat Active |
| 13 | Unit-N Mode Auto | 1 bit | Auto mode order. | 1=Mode Auto Active |
| 14 | Unit-N Prohibit | 1 bit | On Yes works only with KNX orders, on No, the unit could receive local orders and from KNX too. | 0=No<br>1=Yes |

Note:
- Offset position is N*Address as shown in table, where N is the Indoor Unit position in the address table (1~16).
- Address from 9 to 13 will work together. They are used to set the function mode. Only one of them could be activated at the same time. When one of these bits will be set as 1, the rest will be changed at 0.

Global objects:

| Address | Name | Length | Description | Values |
|---|---|---|---|---|
| 1~16 | Unit-1~16 | 1 bit per unit | Shows if HC-A16KNX used the communication with the H-LINK PCB for unit N where N is the address to read. | 1=Communication works |
| 240 | Communication Alarm | 1 bit | With value is 1 means that is not possible to communicate with the H-LINK PCB. On 0, communication is working properly. | 1=Communication Alarm. |

Error code list:

| Code (in Hexadecimal) | Description |
|---|---|
| 0 | No Error |
| 1~98 | See Hitachi documentation |
| 99 | Unit not configured |