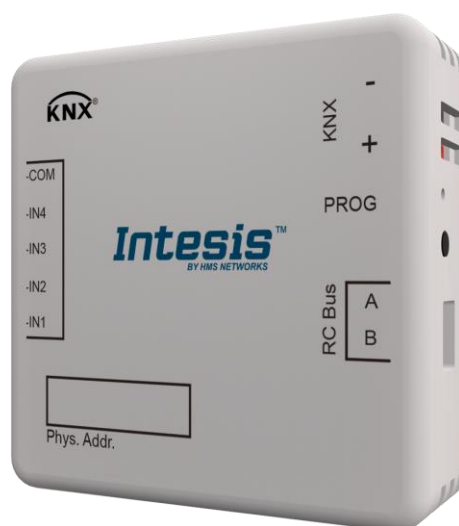




## KNX (TP-1) Interface for HITACHI VRF Air Conditioning

### USER MANUAL

Issue date: 07/2020 r1.4 ENGLISH



## Important User Information

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## KNX (TP-1) Interface for HITACHI VRF Air Conditioning

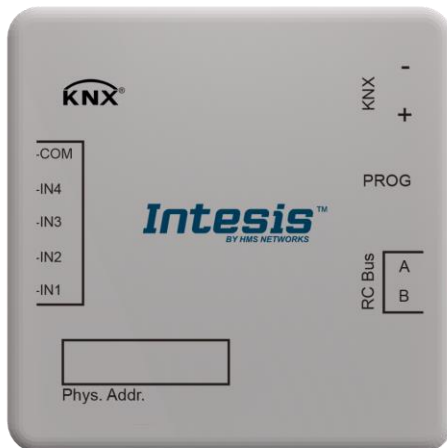
<b>ORDER CODE</b>	<b>LEGACY ORDER CODE</b>
INKNXHIT001R000	HI-RC-KNX-1i

**INDEX**

1.	Presentation .....	6
2.	Connection .....	7
2.1	INKNXHIT001R000 without Hitachi Remote Controller .....	7
2.2	INKNXHIT001R000 with Hitachi Remote Controller .....	7
3.	Configuration and setup .....	9
4.	ETS Parameters .....	10
4.1	General dialog .....	11
4.1.1	INKNXHIT001R000 is master in AB bus .....	11
4.1.2	Send READs for Control_ objects on bus recovery .....	11
4.1.3	Scene to load on bus recovery / startup .....	11
4.1.4	Disallow control from remote controller .....	12
4.1.5	Enable func "Control_ Lock Control Obj" .....	12
4.1.6	Enable use of objects for Filter .....	13
4.1.7	Enable func "Operating Time Counter" .....	13
4.1.8	Enable object "Error Code [2byte]" .....	14
4.1.9	Enable object "Error Text Code [14byte]" .....	14
4.2	Mode Configuration dialog .....	15
4.2.1	When Mode is AUTO Status_ objs report actual operating status (HEAT/COOL/..) .....	15
4.2.2	Enable use of Heat / Cool bit-type obj .....	15
4.2.3	Enable PID-Compat. Scaling Mode Objects .....	16
4.2.4	Enable use of +/- object for Mode .....	17
4.2.5	Enable use of bit-type Mode objects (for control) .....	17
4.2.6	Enable use of bit-type Mode objects (for status) .....	17
4.2.7	Enable use of Text object for Mode .....	18
4.3	Special Modes Configuration dialog .....	18
4.3.1	Enable use of POWER mode .....	19
4.3.2	Enable use of ECONOMY mode .....	20
4.3.3	Enable use of ADDITIONAL HEATING mode .....	20
4.3.4	Enable use of ADDITIONAL COOLING mode .....	21
4.4	Fan Speed Configuration dialog .....	22
4.4.1	Available fan speeds in Indoor Unit .....	22
4.4.2	Indoor unit has AUTO fan speed .....	23
4.4.3	DPT object type for fanspeed .....	23
4.4.4	Enable use of +/- object for Fan Speed .....	24
4.4.5	Enable use of bit-type Fan Speed objects (for Control) .....	25
4.4.6	Enable use of bit-type Fan Speed objects (for Status) .....	25
4.4.7	Enable use of Text object for Fan Speed .....	25
4.5	Vanes Up-Down Configuration dialog .....	26
4.5.1	Indoor unit has U-D Vanes .....	26
4.5.2	Available positions in Indoor Unit .....	27
4.5.3	DPT object type for Vanes Up-Down .....	27
4.5.4	Enable use of +/- object for Vanes U-D .....	28
4.5.5	Enable use of bit-type Vane U-D objects (for Control) .....	29
4.5.6	Enable use of bit-type Vane U-D objects (for Status) .....	29
4.5.7	Enable "Vanes U-D Swing" objects (for Control and Status) .....	30
4.5.8	Enable use of Text object for Vane U-D .....	30
4.6	Temperature Configuration dialog .....	31
4.6.1	Periodic sending of "Status_ AC Setp" .....	31
4.6.2	Transmission of "Status_ AC Reference Temp" .....	32
4.6.3	Enable use of +/- object for Setpoint Temp .....	32
4.6.4	Enable limits on Control_ Setpoint obj .....	32
4.6.5	Ambient temp. ref. is provided from KNX .....	33
4.7	Scene Configuration dialog .....	34
4.7.1	Enable use of scenes .....	34
4.7.2	Scenes can be stored from KNX bus .....	35

4.7.3	Enable use of bit objects for scene execution .....	35
4.7.4	Scene "x" preset .....	36
4.8	Switch-Off Timeouts Configuration dialog .....	37
4.8.1	Enable use of Open Window / Switch off timeout function .....	37
4.8.2	Enable use of Occupancy function .....	39
4.8.3	Enable use of SLEEP timeout .....	41
4.9	Binary Input "x" Configuration dialog .....	42
4.9.1	Enable use of Input "x" .....	42
4.9.2	Contact type .....	42
4.9.3	Debounce time .....	42
4.9.4	Disabling function.....	42
4.9.5	Function.....	43
5.	Specifications.....	51
6.	AC Unit Types compatibility. ....	52
7.	Error Codes	<a href="#">53</a>
<a href="#">8.</a>	Appendix A – Communication Objects Table .....	55

## 1. Presentation



INKNXHIT001R000 allows a complete and natural integration of HITACHI air conditioners with KNX control systems.

Compatible with VRF air conditioners commercialized by HITACHI.

Main features:

- Reduced dimensions, quick installation.
- Multiple objects for control and status (bit, byte, characters...) with KNX standard datapoint types.
- Status objects for every control available.
- Timeout for Open Window and Occupancy. Sleep function also available.
- Control of the AC unit based in the ambient temperature read by the own AC unit, or in the ambient temperature read by any KNX thermostat.
- AC unit can be controlled simultaneously by the wired remote control of the AC unit and by KNX.
- Direct connection to the AC indoor unit.
- Total Control and Monitoring of the AC unit from KNX, including monitoring of AC unit's state of internal variables, running hours counter (for filter maintenance control), and error indication and error code.
- Up to 5 scenes can be saved and executed from KNX, fixing the desired combination of Operation Mode, Set Temperature, Fan Speed, Vane Position and Remote Controller Lock in any moment by using a simple switching.
- Four potential-free binary inputs provide the possibility to integrate many types of external devices. Configurable from ETS too, they can be used for switching, dimming, shutter/blind control, and more.

## 2. Connection

### Connection of the INKNXHIT001R000 to the AC indoor unit

#### ***INKNXHIT001R000 without Hitachi Remote Controller***

The INKNXHIT001R000 can be connected directly to the AB bus of the indoor unit (no Hitachi remote controller -RC from now on- also connected in the AB bus). If this is the case, INKNXHIT001R000 must be configured as master (using the ETS software), see connection diagram below.

#### ***INKNXHIT001R000 with Hitachi Remote Controller***

If a Hitachi remote controller (RC) is present and connected to the AB bus, connect the gateway as Slave in parallel with the wired remote controllers (controller acts as Master).

- **Wired remote control available.**

Disconnect mains power from the AC unit and use a 2-wire cable with a diameter of 0.75mm<sup>2</sup> to 1.25mm<sup>2</sup> for the connection of INKNXHIT001R000, Hitachi remote controller and its corresponding indoor unit. Screw the suitably peeled cable ends in the corresponding AB terminals of each device, as summarized in the **Figure 2.2**.

Maximum AB bus length is 500 meter. HITACHI RC and INKNXHIT001R000 are no polarity dependent.

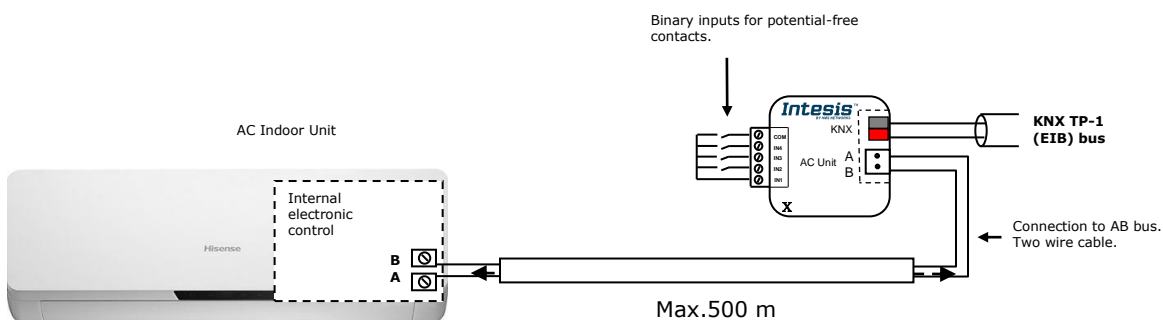
### Connection of the INKNXHIT001R000 to the KNX bus:

Disconnect power of the KNX bus. Connect the INKNXHIT001R000 to the KNX TP-1 (EIB) bus using the KNX standard connector (red/grey) of the INKNXHIT001R000, respect polarity.

Reconnect power of the KNX bus, and mains power of the AC unit.

### Connection diagrams:

#### INKNXHIT001R000 without HITACHI RC



INKNXHIT001R000 with HITACHI RC

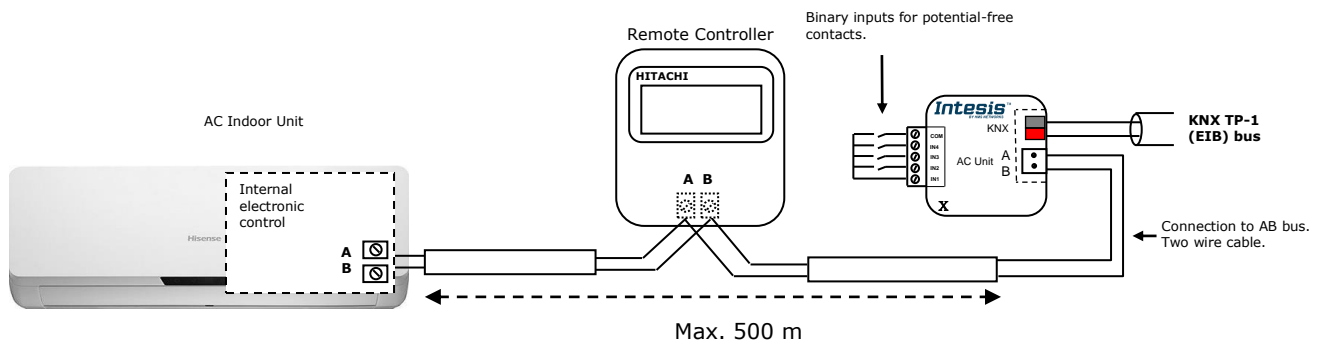


Figure 2.2 INKNXHIT001R000 connection diagrams



### 3. Configuration and setup

This is a fully compatible KNX device which must be configured and setup using standard KNX tool ETS.

ETS database for this device can be downloaded from:

<https://intesis.com/products/ac-interfaces/hitachi-gateways/hitachi-knx-inputs-vrf-hi-rc-knx-1i>

Please consult the README.txt file, located inside the downloaded zip file, to find instructions on how to install the database.

**⚠ Important:** Do not forget to select the correct settings of AC indoor unit being connected to the INKNXHIT001R000. This is in "Parameters" of the device in ETS.

## 4. ETS Parameters

When imported to the ETS software for the first time, the gateway shows the following default parameter configuration:

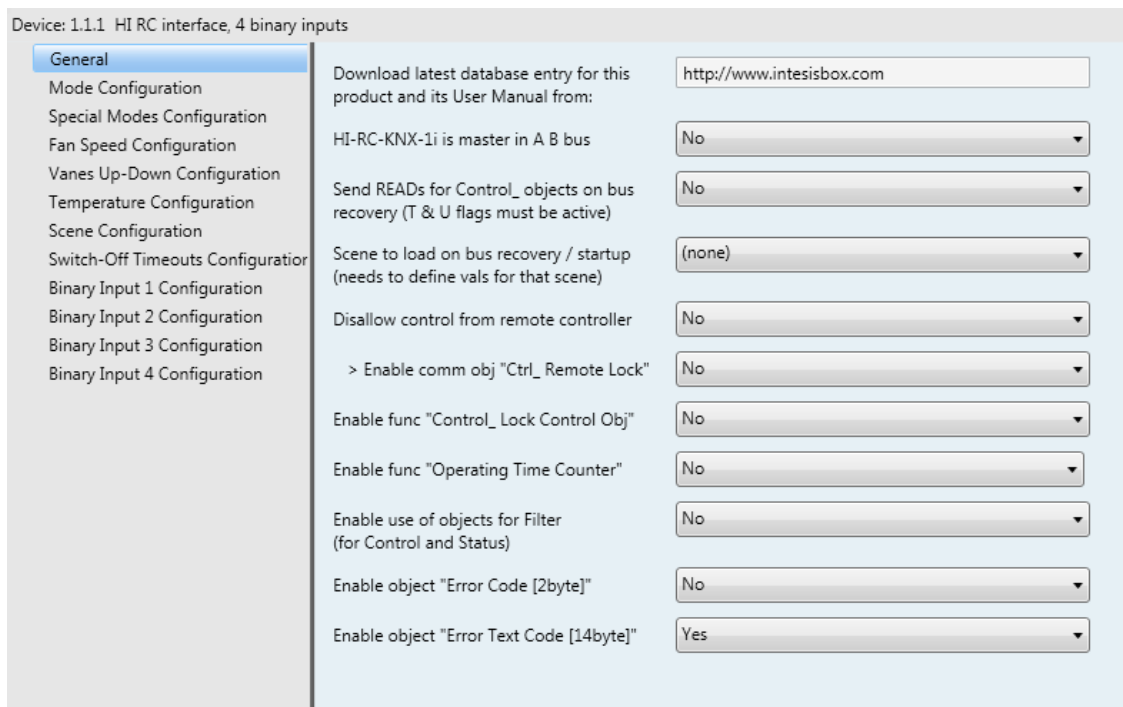


Figure 4.1 Default parameter configuration

With this configuration it's possible to send On/Off (*Control\_ On/Off*), change the AC Mode (*Control\_ Mode*), the Fan Speed (*Control\_ Fan Speed*), the Vane Position (*Control\_ Vanes U-D*) and also the Setpoint Temperature (*Control\_ Setpoint Temperature*). The *Status\_* objects, for the mentioned *Control\_* objects, are also available to use if needed. Also objects *Status\_ AC Reference Temp* and *Status\_ Error/Alarm* are shown.

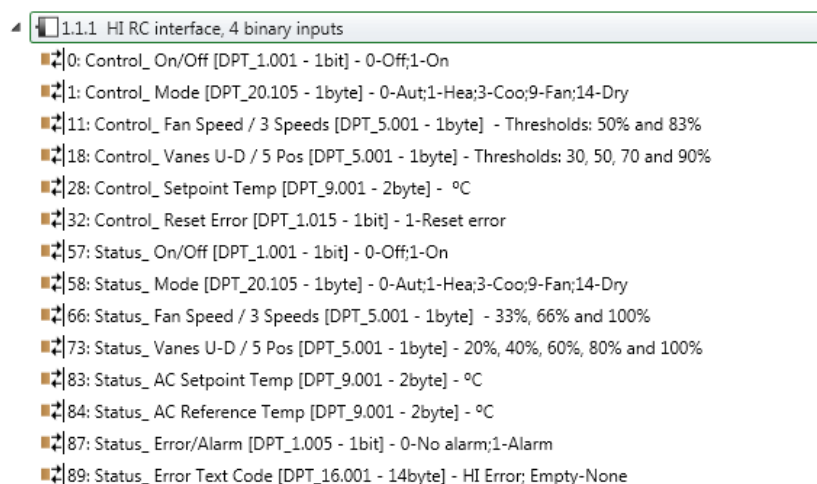


Figure 4.2 Default communication objects

## General dialog

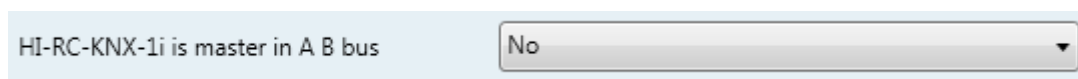
Inside this parameter's dialog it is possible to activate or change the parameters shown in the **Figure 4.1**.

The first field shows the URL where to download the database and the user manual for the product.

### 4.1.1 INKNXHIT001R000 is master in AB bus

This parameter changes the gateway's behavior, being able to program it as master or slave in AB bus.

- If set to **"no"**, the gateway will work as a slave and it will be necessary to have a Hitachi remote controller configured as a master.
- If set to **"yes"** the gateway will be master of the bus. It is not necessary to have any Hitachi remote controller in this case but, if there are, they must be configured as slave. The next parameter is also shown when selecting INKNXHIT001R000 as master in AB bus:



HI-RC-KNX-1i is master in A B bus No

**Figure 4.3** Parameter detail

### 4.1.2 Send READs for Control\_ objects on bus recovery

When this parameter is enabled, INKNXHIT001R000 will send READ telegrams for the group addresses associated on its *Control\_* objects on bus recovery or application reset/start-up.

- If set to **"no"** the gateway will not perform any action.
- If set to **"yes"** all *Control\_* objects with both Transmit (**T**) and Update (**U**) flags enabled will send READs and their values will be updated with the response when received.



Send READs for Control\_ objects on bus recovery (T and U flags must be active) yes

> Delay before sending READs (sec) 30

**Figure 4.4** Parameter detail

#### ➤ Delay before sending READs (sec):

With this parameter, a delay can be configured between 0 and 30 seconds for the READs sent by the *Control\_* objects. This is to give time enough to other KNX devices on the bus to start-up before sending the READs.

### 4.1.3 Scene to load on bus recovery / startup

This parameter executes a selected scene on bus recovery or startup, only if the selected scene has an enabled preset or values previously saved from KNX bus (see Scene Configuration dialog).

If the gateway is disconnected from the indoor unit the scene will not be applied, even when connecting to the indoor unit again.

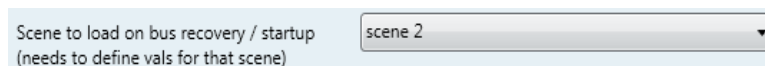


Figure 4.5 Parameter detail

#### 4.1.4 Disallow control from remote controller

This parameter allows:

- 1- Having the remote controller always locked, or
  - 2- Decide through a new communication object if the RC is locked or not.
- If set to **“yes”** all the actions performed through the remote controller will be disabled.
  - If set to **“no”** the remote controller will work as usually. It also appears a new parameter and the communication object *Control\_ Lock Remote Control*.

36 Control\_ Lock Remote Control [DPT\_1.002 - 1bit] 0-Unlock;1-Lock

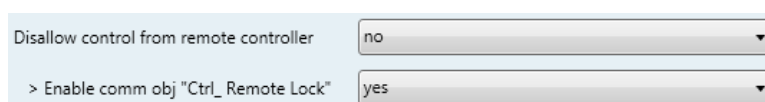


Figure 4.6 Communication object and parameter detail

#### ➤ Enable comm obj “Ctrl\_ Remote Lock”:

If set to **“no”** the object will not be shown.

If set to **“yes”** the *Control\_ Lock Remote Control* object will appear.

- When a **“1”** value is sent to this communication object, the remote controller is locked. To be unlocked a **“0”** value must be sent. The gateway remembers the last value received even if a KNX bus reset/failure happens.

**⚠ Important:** *If an initial scene is enabled and it has as Value for Remote Lock (unchanged) or unlocked, this would unlock the remote controller because the initial scene has priority over the Control\_ Lock Remote Control communication object.*

#### 4.1.5 Enable func “Control\_ Lock Control Obj”

This parameter shows/hide the *Control\_ Lock Control Obj* communication object which, depending on the sent value, locks or unlocks ALL the *Control\_* communication objects except itself.

37 37: Control\_ Lock Control Objects [DPT\_1.002 - 1bit] - 0-Unlock;1-Lock

- If set to **“no”** the object will not be shown.

- If set to **“yes”** the *Control\_ Lock Control Objects* object will appear.
  - When a **“1”** value is sent to this communication object, all the *Control\_* objects will be locked. To unlock a **“0”** value must be sent, as the gateway remembers the last value received even if a KNX bus reset/failure happens.

#### 4.1.6 Enable use of objects for Filter

This parameter shows/hides *Control\_ Reset Filter* and *Status\_ Filter Status* that lets reset the filter status and also monitor if there is a filter alarm.

- 31 *Control\_ Reset Filter* [DPT\_1.015 - 1bit] - 1-Reset filter
- 86 *Status\_ Filter Status* [DPT\_1.005 - 1bit] - 0-No alarm;1-Alarm

- If set to **“no”** the object will not be shown.
- If set to **“yes”** *Control\_ Reset Filter* and *Status\_ Filter Status* objects will appear.
  - When a **“0”** value is shown in the *Status\_* object, it indicates no filter alarm. When a **“1”** value is shown in the *Status\_* object, it indicates that the filter is full. Once the filter has been cleaned, alarm should be reset sending a **“1”** value to the *Control\_ Reset Filter* object.

#### 4.1.7 Enable func “Operating Time Counter”

This parameter shows/hides the *Status\_ Operation Sec Counter* communication object which counts the number of operating seconds for the INKNXHIT001R000.

- If set to **“no”** the object will not be shown.
- If set to **“yes”** the *Status\_ Operation Time Counter* object will appear. It also appears a new parameter.

- 97: *Status\_ Operating Sec Counter* [DPT\_13.100 - 4byte] - Number of operating seconds

- This object can be read and sends its status every time a whole functioning hour (3600s) is counted. The gateway keeps that count in memory and the status is sent also after a KNX bus reset/failure. Although this object is marked as a *Status\_* object it also can be written to update the counter when needed. To reset the counter should be written a **“0”** value.
- ⚠ **Important:** *This object comes by default without the write (W) flag activated. If is necessary to write on it, this flag must be activated.*
- ⚠ **Important:** *This object will also return its status, every time a value is written, only if it's different from the existing one.*
- ⚠ **Important:** *If the stored value is 0 hours, the gateway will not send the status to KNX.*

Enable func "Operating Time Counter"	Yes
> Enable func "Operating Hours Counter"	No

➤ Enable func "Operating Hours Counter":

If set to **"no"** the object will not be shown.

If set to **"yes"** the *Control\_ Operation Hour Counter* object will appear.

- It provides same functionality as *Status\_ Operating Sec Counter* but provides information in hours instead of seconds.

■ ↕ 96 Status\_ Operation Hour Counter [DPT\_7.001 - 2byte] - Number of operating hours

- ⚠ **Important:** This object comes by default without the write (**W**) flag activated. If is necessary to write on it, this flag must be activated.
- ⚠ **Important:** This object will also return its status, every time a value is written, only if it's different from the existing one.
- ⚠ **Important:** If the stored value is 0 hours, the gateway will not send the status to KNX.

#### 4.1.8 Enable object "Error Code [2byte]"

This parameter shows/hides the *Status\_ Error Code* communication object which shows the indoor unit errors, if occurred, in numeric format.

■ ↕ 88 Status\_ Error Code [2byte] - 0-No error /Any other see man.

- If set to **"no"** the object will not be shown.
- If set to **"yes"** the *Status\_ Error Code [2byte]* object will appear.
  - This object can be read and also sends the indoor unit error, if occurred, in numeric format. If a **"0"** value is shown that means no error.

#### 4.1.9 Enable object "Error Text Code [14byte]"

This parameter shows/hides the *Status\_ Error Text Code* communication object which shows the indoor unit errors, if occurred, in text format.

■ ↕ 89 Status\_ Error Text Code [DPT\_16.001 - 14byte] - 3-char MH Error; Empty-None

- If set to **"no"** the object will not be shown.
- If set to **"yes"** the *Status\_ Error Text Code* object will appear.
  - This object can be read and also sends the indoor unit error, if occurred, in text format. The errors shown have the same format as at the remote

controller and at the error list from the indoor unit manufacturer. If the object's value is empty that means no error.

### Mode Configuration dialog

Device: 1.1.1 HI RC interface, 4 binary inputs

Configuration Option	Value
Indoor unit has AUTO mode (see docum. for your indoor unit)	Yes
When mode is AUTO Status_ objs report actual operating status (HEAT/COOL/..)	No
Enable "Mode Cool/Heat" objects (for Control and Status)	No
Enable PID-Compat. Scaling Mode objects (for Control)	No
Enable use of +/- object for Mode	No
Enable use of bit-type Mode objects (for Control)	No
Enable use of bit-type Mode objects (for Status)	No
Enable use of Text object for Mode	No

Figure 4.7 Default Mode Configuration dialog

All the parameters in this section are related with the different mode properties and communication objects.

➡ 1 Control\_Mode [DPT\_20.105 - 1byte] - 0-Aut;1-Hea;3-Coo;9-Fan;14-Dry

The byte-type communication object for Mode works with the DTP\_20.105. Auto mode will be enabled with a "0" value, Heat mode with a "1" value, Cool mode with a "3" value, Fan mode with a "9" value and Dry mode with a "14" value.

#### 4.1.10 When Mode is AUTO Status\_ objs report actual operating status (HEAT/COOL/..)

When set to "no" (default) *Status\_* objects for operating mode will report 'AUTO' as operating mode while indoor unit is in AUTO mode.

If set to "yes", *Status\_* objects for operating mode will report actual operating mode of the whole system ('HEAT' or 'COOL'), according to status reported by the indoor unit.

#### 4.1.11 Enable use of Heat / Cool bit-type obj

This parameter shows/hides the *Control\_* and *Status\_ Mode Cool/Heat* communication objects.

➡ 2 Control\_Mode Cool/Heat [DPT\_1.100 - 1bit] - 0-Cool;1-Heat  
 ➡ 59 Status\_Mode Cool/Heat [DPT\_1.100 - 1bit] - 0-Cool;1-Heat

- If set to "no" the objects will not be shown.

- If set to **“yes”** the *Control\_* and *Status\_ Mode Cool/Heat* objects will appear.
  - When a **“1”** value is sent to the *Control\_* communication object, **Heat mode** will be enabled in the indoor unit, and the *Status\_* object will return this value.
  - When a **“0”** value is sent to the *Control\_* communication object, **Cool mode** will be enabled in the indoor unit, and the *Status\_* object will return this value.

#### 4.1.12 Enable PID-Compat. Scaling Mode Objects

This parameter shows/hides the *Control\_ Mode Cool & On* and *Control\_ Mode Heat & On* communication objects.

- 3 *Control\_ Mode Cool & On* [DPT\_5.001 - 1byte] - 0%-Off;0.1%-100%-On+Cool
- 4 *Control\_ Mode Heat & On* [DPT\_5.001 - 1byte] - 0%-Off;0.1%-100%-On+Heat

- If set to **“no”** the objects will not be shown.
- If set to **“yes”** the *Control\_ Mode Cool & On* and *Control\_ Mode Heat & On* objects will appear.
  - These objects provide compatibility with those KNX thermostats that control the demand of heating or cooling by using scaling (percentage) objects. In these thermostats, the percentage demand is meant to be applied on a fluid valve of the heating / cooling system.
  - INKNXHIT001R000 device does not provide individual control on the internal parts of the indoor unit (as can be its compressor, refrigerant valves, etc). Rather, it provides the same level of control as a (user) remote controller.
  - Objects “Control\_ Mode Cool & On” and “Control\_ Mode Heat & On” intend to bring compatibility between thermostats oriented to the control of custom heating / cooling systems and ready-made AC indoor units, by applying the following logic:
    - Whenever a non-zero value (>0%) is received at “Control\_ Mode Cool & On”, indoor unit will switch On in COOL mode.
    - Whenever a non-zero value (>0%) is received at “Control\_ Mode Heat & On”, indoor unit will switch On in HEAT mode.
      - Lastest updated object will define the operating mode
    - Indoor unit will switch off only when both objects become zero (0%) – or when an OFF is requested at object “0. On/Off [DPT\_1.001 - 1bit]”

**⚠ Important:** *These objects function is only to send On/Off and Cool/Heat to the indoor unit. The PID (Inverter system) is calculated by the indoor unit itself. Please consider introducing an appropriate PID configuration to the external KNX thermostat to not interfere the indoor unit PID.*



#### 4.1.13 Enable use of +/- object for Mode

This parameter shows/hides the *Control\_Mode* -/+ communication object which lets change the indoor unit mode by using two different datapoint types.

■ ↕ 10 Control\_Mode +/- [DPT\_1.007 - 1bit] - 0-Decrease;1-Increase

- If set to **"no"** the object will not be shown.
- If set to **"yes"** the *Control\_Mode* -/+ object and a new parameter will appear.

Enable use of +/- object for Mode	yes
> DPT type for +/- Mode Object	0-Up / 1-Down [DPT_1.008]

**Figure 4.8** Parameter detail

#### ➤ DPT type for +/- Mode Object

This parameter lets choose between the datapoints **0-Up / 1-Down [DPT\_1.008]** and **0-Decrease / 1-Increase [DPT\_1.007]** for the *Control\_Mode* -/+ object.

The sequence followed when using this object is shown below:



- Up / Increase
- Down / Decrease

**⚠ Important:** Read the documentation of your indoor unit to check if it has AUTO mode available.

#### 4.1.14 Enable use of bit-type Mode objects (for control)

This parameter shows/hides the bit-type *Control\_Mode* objects.

■ ↕ 5 Control\_Mode Auto [DPT\_1.002 - 1bit] - 1-Set AUTO mode  
 ■ ↕ 6 Control\_Mode Heat [DPT\_1.002 - 1bit] - 1-Set HEAT mode  
 ■ ↕ 7 Control\_Mode Cool [DPT\_1.002 - 1bit] - 1-Set COOL mode  
 ■ ↕ 8 Control\_Mode Fan [DPT\_1.002 - 1bit] - 1-Set FAN mode  
 ■ ↕ 9 Control\_Mode Dry [DPT\_1.002 - 1bit] - 1-Set DRY mode

- If set to **"no"** the objects will not be shown.
- If set to **"yes"** the *Control\_Mode* objects for Auto, Heat, Cool, Fan and Dry will appear. To activate a mode by using these objects a **"1"** value has to be sent.

#### 4.1.15 Enable use of bit-type Mode objects (for status)

This parameter shows/hides the bit-type *Status\_ Mode* objects.

- ↔ 60 Status\_ Mode Auto [DPT\_1.002 - 1bit] - 1-AUTO mode is active
- ↔ 61 Status\_ Mode Heat [DPT\_1.002 - 1bit] - 1-HEAT mode is active
- ↔ 62 Status\_ Mode Cool [DPT\_1.002 - 1bit] - 1-COOL mode is active
- ↔ 63 Status\_ Mode Fan [DPT\_1.002 - 1bit] - 1-FAN mode is active
- ↔ 64 Status\_ Mode Dry [DPT\_1.002 - 1bit] - 1-DRY mode is active

- If set to **"no"** the objects will not be shown.
- If set to **"yes"** the *Status\_ Mode* objects for Auto, Heat, Cool, Fan and Dry will appear. When enabled, a mode will return a **"1"** through its bit-type object.

#### 4.1.16 Enable use of Text object for Mode

This parameter shows/hides the *Status\_ Mode Text* communication object.

- ↔ 65 Status\_ Mode Text [DPT\_16.001 - 14byte] - ASCII String

- If set to **"no"** the object will not be shown.
- If set to **"yes"** the *Status\_ Mode Text* object will appear. Also, in the parameters, will be shown five text fields, one for each mode, that will let modify the text string displayed by the *Status\_ Mode Text* when changing mode.

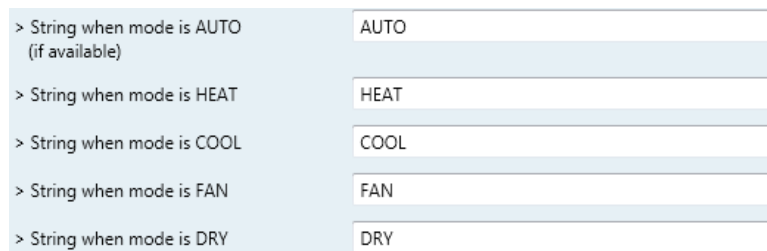


Figure 4.9 Parameter detail

### Special Modes Configuration dialog

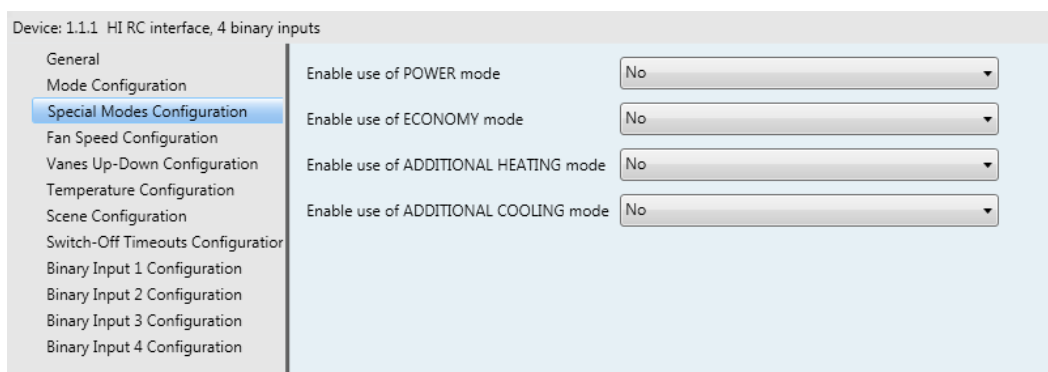


Figure 4.10 Default Special Modes Configuration dialog

The Special Modes can be parameterized through the ETS parameters dialog, and they can be used to give extra functionality.

- ⚠ **Important:** When executing any of the Special Modes the real state of the indoor unit will NOT be shown in KNX.
- ⚠ **Important:** When the predefined time for the Special Mode is finished or a "0" value is sent to stop it, the previous state will be recovered.
- ⚠ **Important:** If a value concerning On/Off, Mode, Fan Speed or Setpoint Temperature is received from KNX while any Special Mode is running ("1"), the Special Mode will stop and the previous state will be recovered. The value received will be also applied then.
- ⚠ **Important:** If a value concerning On/Off, Mode, Fan Speed or Setpoint Temperature is modified through the remote controller, the Special Mode will stop WITHOUT recovering the previous state. Then the real indoor unit state will be shown in KNX including the new value received through the remote controller.

#### 4.1.17 Enable use of POWER mode

This parameter shows/hides the *Control\_ Power Mode* and *Status\_ Power Mode* communication objects. The Power Mode lets change the Setpoint Temperature and the Fan Speed within a given period of time.

- ↕ 38 Control\_ Power Mode [DPT\_1.010 - 1bit] - 0-Stop;1-Start
- ↕ 92 Status\_ Power Mode [DPT\_1.001 - 1bit] - 0-Off;1-On

- If set to "no" the objects will not be shown.
- If set to "yes" the *Control\_ Power Mode* and *Status\_ Power Mode* objects and new parameters will appear.

Enable use of POWER mode	yes
> Action time for this mode (minutes) (0 = permanent / unlimited)	2
> Setpoint delta increase (HEAT) or decrease (COOL) - in Celsius	2.0°C
> Fanspeed for this mode	SPEED 3 (if avail.)

**Figure 4.11** Parameter detail

- When a "1" value is sent to the *Control\_* communication object Power Mode will be enabled, and the *Status\_* object will return this value.
  - When a "0" value is sent to the *Control\_* communication object, Power Mode will be disabled, and the *Status\_* object will return this value.
- ⚠ **Important:** This mode will ONLY work if the indoor unit is both turned on and in a Heat, Cool, Auto-Heat or Auto-Cool Mode.
- Action time for this mode (minutes):
- Duration of Power Mode, in minutes, once started.

➤ Setpoint delta increase (HEAT) or decrease (COOL) – in Celsius:

Number of degrees Celsius that will increase in Heat Mode, or decrease in Cool Mode, while in Power Mode.

➤ Fan Speed for this mode:

Fan Speed that will be set in the unit while in Power Mode.

#### 4.1.18 Enable use of ECONOMY mode

This parameter shows/hides the *Control\_ Econo Mode* and *Status\_ Econo Mode* communication objects. The Econo Mode lets change the Setpoint Temperature and the Fan Speed within a given period of time.

- ↕ 39 Control\_ Econo Mode [DPT\_1.010 - 1bit] - 0-Stop;1-Start
- ↕ 93 Status\_ Econo Mode [DPT\_1.001 - 1bit] - 0-Off;1-On

- If set to **"no"** the objects will not be shown.
  - If set to **"yes"** the *Control\_ Econo Mode* and *Status\_ Econo Mode* objects and new parameters will appear.
    - When a **"1"** value is sent to the *Control\_* communication object, EconoMode will be enabled, and the *Status\_* object will return this value.
    - When a **"0"** value is sent to the *Control\_* communication object, EconoMode will be disabled, and the *Status\_* object will return this value.
- ⚠ **Important:** This mode will ONLY work if the indoor unit is both turned on and in a Heat, Cool, Auto-Heat or Auto-Cool Mode.

➤ Action time for this mode (minutes):

Duration of EconoMode, in minutes, once started.

➤ Setpoint delta increase (HEAT) or decrease (COOL) – in Celsius:

Number of degrees Celsius that will increase in Heat Mode, or decrease in Cool Mode, while in EconoMode.

➤ Fan Speed for this mode:

Fan Speed that will be set in the unit while in EconoMode.

#### 4.1.19 Enable use of ADDITIONAL HEATING mode

This parameter shows/hides the *Control\_ Additional Heat Mode* and *Status\_ Additional Heat Mode* communication objects. The Additional Heating Mode lets change the Setpoint Temperature and the Fan Speed within a given period of time.

- ↕ 40 *Control\_ Additional Heat* [DPT\_1.010 - 1bit] - 0-Stop;1-Start
- ↕ 94 *Status\_ Additional Heat* [DPT\_1.001 - 1bit] - 0-Off;1-On

- If set to **"no"** the objects will not be shown.
- If set to **"yes"** the *Control\_ Start Additional Heat Mode* and *Status\_ Additional Heat Mode* objects and new parameters will appear.
  - When a **"1"** value is sent to the *Control\_* communication object, Additional Heating Mode will be enabled, and the *Status\_* object will return this value.
  - When a **"0"** value is sent to the *Control\_* communication object, Additional Heating Mode will be disabled, and the *Status\_* object will return this value.

⚠ **Important:** *This mode will ALWAYS turn on the indoor unit in Heat mode.*

➤ Action time for this mode (minutes):

Duration of Additional Heating Mode, in minutes, once started.

➤ Setpoint temp for this mode (°C):

Setpoint temperature that will be applied while in Additional Heating Mode.

➤ Fan Speed for this mode:

Fan Speed that will be set in the unit while in Additional Heating Mode.

#### 4.1.20 Enable use of ADDITIONAL COOLING mode

This parameter shows/hides the *Control\_ Additional Cool Mode* and *Status\_ Additional Cool Mode* communication objects. The Additional Heating Mode lets change the Setpoint Temperature and the Fan Speed within a given period of time.

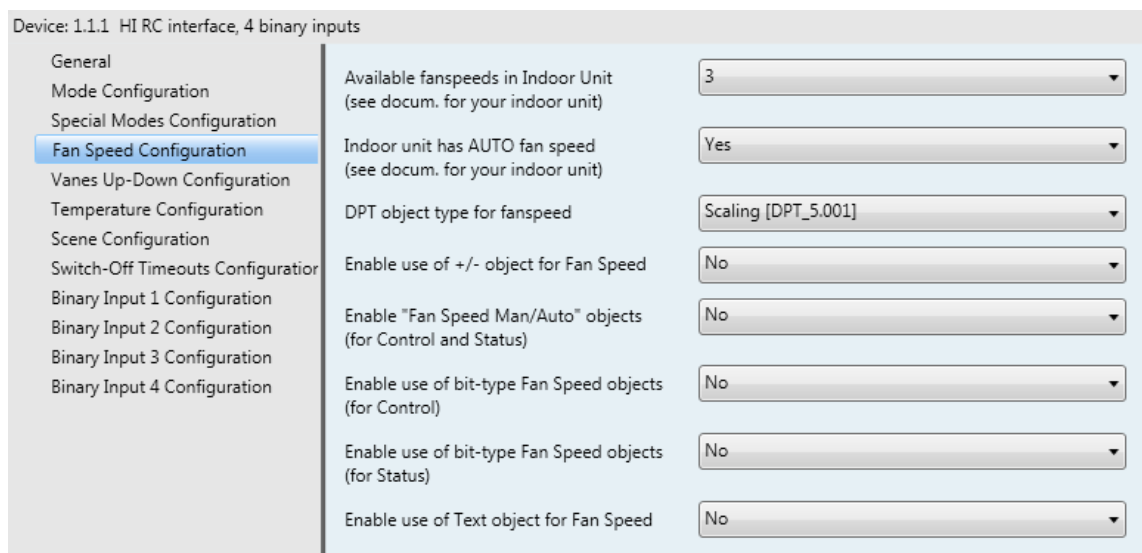
- ↕ 41 *Control\_ Additional Cool* [DPT\_1.010 - 1bit] - 0-Stop;1-Start
- ↕ 95 *Status\_ Additional Cool* [DPT\_1.001 - 1bit] - 0-Off;1-On

- If set to **"no"** the objects will not be shown.
- If set to **"yes"** the *Control\_ Start Additional Cool Mode* and *Status\_ Additional Cool Mode* objects and new parameters will appear.
  - When a **"1"** value is sent to the *Control\_* communication object, Additional Cooling Mode will be enabled, and the *Status\_* object will return this value.
  - When a **"0"** value is sent to the *Control\_* communication object, Additional Cooling Mode will be disabled, and the *Status\_* object will return this value.

⚠ **Important:** *This mode will ALWAYS turn on the indoor unit in Cool mode.*

- Action time for this mode (minutes):  
Duration of Additional Cooling Mode, in minutes, once started.
- Setpoint temp for this mode (°C):  
Setpoint temperature that will be applied while in Additional Cooling Mode.
- Fan Speed for this mode:  
Fan Speed that will be set in the unit while in Additional Cooling Mode.

### Fan Speed Configuration dialog



**Figure 4.12** Default Fan Speed Configuration dialog

All the parameters in this section are related with the Fan Speed properties and communication objects.

#### 4.1.21 Available fan speeds in Indoor Unit

This parameter lets choose how many fan speeds are available in the indoor unit.



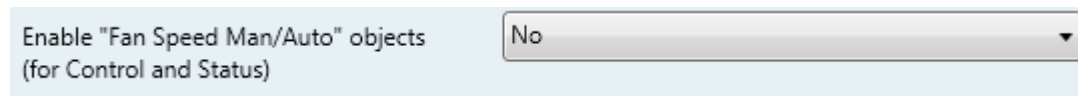
**Figure 4.13** Parameter detail

**⚠ Important:** Read the documentation of your indoor unit to check how many fan speeds are available.

#### 4.1.22 Indoor unit has AUTO fan speed

This parameter lets choose if AUTO fan speed is available in the indoor unit.

- When **“Yes”** is selected, *Enable “Fan Speed Man/Auto” objects* parameter will appear.



**Figure 4.14** Parameter detail

##### ➤ Enable “Fan Speed Man/Auto” objects

When **“Yes”** is selected, objects *Control\_* and *Status\_ Fan Speed Man/Auto* will appear.

- 12 *Control\_ Fan Speed Man/Auto* [DPT\_1.002 - 1bit] - 0-Manual;1-Auto
- 66 *Status\_ Fan Speed Man/Auto* [DPT\_1.002 - 1bit] - 0-Manual;1-Auto

When value 1-Auto is received at *Control\_* object, indoor unit will be set up Auto Fan Speed. When value 0-Manual is received, indoor unit will be set up in first speed (fan speed 1).

Writing a certain fan speed (1, 2, 3 or 4 (if available)) to its corresponding control object will cancel Auto fan speed.

- ⚠ **Important:** Read the documentation of your indoor unit to check if AUTO fan speed is available

#### 4.1.23 DPT object type for fanspeed

With this parameter is possible to change de DPT for the *Control\_ Fan Speed* and *Status\_ Fan Speed* byte-type communication objects. Datapoints Scaling (DPT\_5.001) and Enumerated (DPT\_5.010) can be selected.

- ⚠ **Important:** The communication objects shown in this section may be different depending on the number of fan speeds available, although they all share the same communication object number.

- When **“Enumerated [DPT 5.010]”** is selected, *Control\_ Fan Speed* and *Status\_ Fan Speed* communication objects for this DPT will appear.

- 11 *Control\_ Fan Speed / 3 Speeds* [DPT\_5.010 - 1byte] - Speed values: 1,2,3
- 66 *Status\_ Fan Speed / 3 Speeds* [DPT\_5.010 - 1byte] - Speed Values: 1,2,3

The first fan speed will be selected if a **“1”** is sent to the *Control\_* object. The second one will be selected sending a **“2”**; the third one (if available) will be selected sending a **“3”**; the fourth one (if available) will be selected sending a **“4”**.

The *Status\_* object will always return the value for the fan speed selected.

**⚠ Important:** If a "0" value is sent to the *Control\_* object, the minimum fan speed will be selected. If a value bigger than "4" is sent to the *Control\_* object, then the maximum fan speed will be selected.

- When "Scaling [DPT 5.001]" is selected, *Control\_ Fan Speed* and *Status\_ Fan Speed* communication objects for this DPT will appear.

- ↕ 11 *Control\_ Fan Speed / 3 Speeds* [DPT\_5.001 - 1byte] - Thresholds: 50% and 83%
- ↕ 66 *Status\_ Fan Speed / 3 Speeds* [DPT\_5.001 - 1byte] - 33%, 66% and 100%

The next table shows the range of values that can be sent through the *Control\_* object and the value returned by the *Status\_* object.

	Fan Speed 1	Fan Speed 2	Fan Speed 3	Fan Speed 4
<i>Control_</i>	0% - 49%	50% - 82%	83% - 100%	
<i>Status_</i>	33%	67%	100%	
<i>Control_</i>	0% - 37%	38% - 62%	63% - 87%	88% - 100%
<i>Status_</i>	25%	50%	75%	100%

**⚠ Important:** Read the documentation of your indoor unit to check how many fan speeds are available.

#### 4.1.24 Enable use of +/- object for Fan Speed

This parameter shows/hides the *Control\_ Fan Speed -/+* communication object which lets increase/decrease the indoor unit fan speed by using two different datapoint types.

- ↕ 17 *Control\_ Fan Speed -/+* [DPT\_1.007 - 1bit] - 0-Decrease;1-Increase

- If set to "no" the object will not be shown.
- If set to "yes" the *Control\_ Fan Speed -/+* object and a new parameter will appear.

Enable use of +/- object for Fan Speed: Yes

> DPT type for +/- Fan Speed object: 0-Decrease / 1-Increase [DPT\_1.007]

> Rollover Speed at upper/lower limit (when controlling with +/- obj): Yes

Figure 4.15 Parameter detail

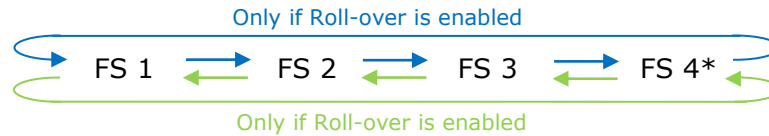
#### ➤ DPT type for +/- Fan Speed object

This parameter lets choose between the datapoints **0-Up / 1-Down [DPT\_1.008]** and **0-Decrease / 1-Increase [DPT\_1.007]** for the *Control\_ Fan Speed -/+* object.



➤ Roll-over Speed at upper/lower limit

This parameter lets choose if roll-over will be enabled (“**yes**”) or disabled (“**no**”) for the *Control\_ Fan Speed* -/+ object.



- Up / Increase
- Down / Decrease
- \* If Available

#### 4.1.25 Enable use of bit-type Fan Speed objects (for Control)

This parameter shows/hides the bit-type *Control\_ Fan Speed* objects.

- ↕ 13 Control\_ Fan Speed 1 [DPT\_1.002 - 1bit] - 1-Set Fan Speed 1
- ↕ 14 Control\_ Fan Speed 2 [DPT\_1.002 - 1bit] - 1-Set Fan Speed 2
- ↕ 15 Control\_ Fan Speed 3 [DPT\_1.002 - 1bit] - 1-Set Fan Speed 3
- ↕ 16 Control\_ Fan Speed 4 [DPT\_1.002 - 1bit] - 1-Set Fan Speed 4

- If set to “**no**” the objects will not be shown.
- If set to “**yes**” the *Control\_ Fan Speed* objects for Speed 1, Speed 2, Speed 3 and Speed 4 (if available) will appear. To activate a Fan Speed by using these objects a “**1**” value has to be sent.

#### 4.1.26 Enable use of bit-type Fan Speed objects (for Status)

This parameter shows/hides the bit-type *Status\_ Fan Speed* objects.

- ↕ 68 Status\_ Fan Speed 1 [DPT\_1.002 - 1bit] - 1-Fan in Speed 1
- ↕ 69 Status\_ Fan Speed 2 [DPT\_1.002 - 1bit] - 1-Fan in Speed 2
- ↕ 70 Status\_ Fan Speed 3 [DPT\_1.002 - 1bit] - 1-Fan in Speed 3
- ↕ 71 Status\_ Fan Speed 4 [DPT\_1.002 - 1bit] - 1-Fan in Speed 4

- If set to “**no**” the objects will not be shown.
- If set to “**yes**” the *Status\_ Fan Speed* objects for Speed 1, Speed 2, Speed 3 and Speed 4 (if available) will appear. When a Fan Speed is enabled, a “**1**” value is returned through its bit-type object.

#### 4.1.27 Enable use of Text object for Fan Speed

This parameter shows/hides the *Status\_ Fan Speed Text* communication object.

72 Status\_ Fan Speed Text [DPT\_16.001 - 14byte] - ASCII String

- If set to **"no"** the object will not be shown.
- If set to **"yes"** the *Status\_ Fan Speed Text* object will appear. Also, in the parameters, will be shown four text fields, one for each Fan Speed, that will let modify the text string displayed by the *Status\_ Fan Speed Text* when changing a fan speed.

> String when fan speed is 1	SPEED 1
> String when fan speed is 2 (if available)	SPEED 2
> String when fan speed is 3 (if available)	SPEED 3
> String when fan speed is 4 (if available)	SPEED 4

Figure 4.16 Parameter detail

### Vanes Up-Down Configuration dialog

Device: 1.1.1 HI RC interface, 4 binary inputs

General	Indoor unit has U-D Vanes (see docum. for your indoor unit)	Yes
Mode Configuration	Available positions in Indoor Unit (see docum. for your indoor unit)	5
Special Modes Configuration	DPT object type for Vanes Up-Down	Scaling [DPT_5.001]
Fan Speed Configuration	Enable use of +/- object for Vanes U-D	No
<b>Vanes Up-Down Configuration</b>	Enable use of bit-type Vanes U-D objects (for Control)	No
Temperature Configuration	Enable use of bit-type Vanes U-D objects (for Status)	No
Scene Configuration	Enable "Vanes U-D Swing" objects (for Control and Status)	No
Switch-Off Timeouts Configuratiorn	Enable use of Text object for Vanes U-D	No
Binary Input 1 Configuration		
Binary Input 2 Configuration		
Binary Input 3 Configuration		
Binary Input 4 Configuration		

Figure 4.17 Vanes Up-Down Configuration dialog

All the parameters in this section are related with the Vanes Up-Down properties and communication objects.

#### 4.1.28 Indoor unit has U-D Vanes

This parameter lets choose if the unit has Up-Down Vanes available or not.

Indoor unit has U-D Vanes (see docum. for your indoor unit)	Yes
--	-----

Figure 4.18 Parameter detail

- If set to **“no”** all the parameters and communication objects for the Up-Down Vanes will not be shown.
  - If set to **“yes”** all the parameters and communication objects (if enabled in the parameters dialog) for the Up-Down Vanes will be shown.
- ⚠ **Important:** Read the documentation of your indoor unit to check if Up-Down Vanes are available.

#### 4.1.29 Available positions in Indoor Unit

This parameter lets select the number of vane positions available in your indoor unit, from 5 to 7.

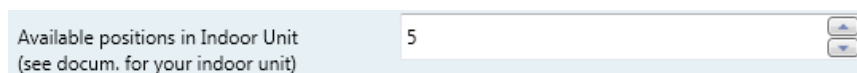


Figure 4.19 Parameter detail

- Number of Vane Positions configured here will have effect on the possible values in *Control\_* and *Status\_* objects for Vanes.
- ⚠ **Important:** Read the documentation of your indoor unit to check how many positions of Up-Down Vanes are available.

#### 4.1.30 DPT object type for Vanes Up-Down

With this parameter is possible to change the DPT for the *Control\_ Vanes U-D* and *Status\_ Vanes U-D* byte-type communication objects. Datapoints Scaling (DPT\_5.001) and Enumerated (DPT\_5.010) can be selected.

⚠ **Important:** The communication objects shown in this section may be different depending on the number of vanes position available, although they all share the same communication object number.

- When **“Enumerated [DPT 5.010]”** is selected, *Control\_ Vanes U-D* and *Status\_ Vanes U-D* communication objects for this DPT will appear.

- 18 *Control\_ Vanes U-D / 5 Pos [DPT\_5.010 - 1byte]* - Position values: 1,2,3,4,5
- 73 *Status\_ Vanes U-D / 5 Pos [DPT\_5.010 - 1byte]* - Position values: 1,2,3,4,5

To choose a vanes position, values from **“1”** to **“7”** can be sent to the *Control\_* object. Each value will correspond to the position (i.e. Value **“3”** = Position 3).

The *Status\_* object will always return the value for the vane position selected.

⚠ **Important:** If a "0" value is sent to the *Control\_* object, the Position 1 will be selected. If a value bigger than "7" is sent to the *Control\_* object, then the higher Position will be selected.

- When "Scaling [DPT 5.001]" is selected, *Control\_ Vanes U-D* and *Status\_ Vanes U-D* communication objects for this DPT will appear.

- ➡ 18 *Control\_ Vanes U-D / 5 Pos [DPT\_5.001 - 1byte]* - Thresholds: 30, 50, 70 and 90%
- ➡ 73 *Status\_ Vanes U-D / 5 Pos [DPT\_5.001 - 1byte]* - 20%, 40%, 60%, 80% and 100%

The next table shows the range of values that can be sent through the *Control\_* object and the value returned by the *Status\_* object.

	Vanes Pos.1	Vanes Pos.2	Vanes Pos.3	Vanes Pos.4	Vanes Pos.5	Vanes Pos.6	Vanes Pos.7
<i>Control_</i>	0% - 29%	30% - 49%	50% - 69%	70% - 89%	90% - 100%		
<i>Status_</i>	20%	40%	60%	80%	100%		
<i>Control_</i>	0% - 24%	25% - 41%	42% - 58%	59% - 74%	75% - 91%	92% - 100%	
<i>Status_</i>	16%	33%	50%	67%	83%	100%	
<i>Control_</i>	0% - 20%	21% - 35%	36% - 49%	50% - 64%	65% - 78%	79% - 92%	93% - 100%
<i>Status_</i>	14%	28%	43%	57%	71%	85%	100%

#### 4.1.31 Enable use of +/- object for Vanes U-D

This parameter shows/hides the *Control\_ Vanes U-D +/-* communication object which lets change the indoor unit vane position by using two different datapoint types.

- ➡ 27 *Control\_ Vanes U-D +/- [DPT\_1.007 - 1bit]* - 0-Decrease;1-Increase

- If set to "no" the object will not be shown.
- If set to "yes" the *Control\_ Vanes U-D +/-* object and a new parameter will appear.

Figure 4.20 Parameter detail

- DPT type for +/- Vanes U-D object

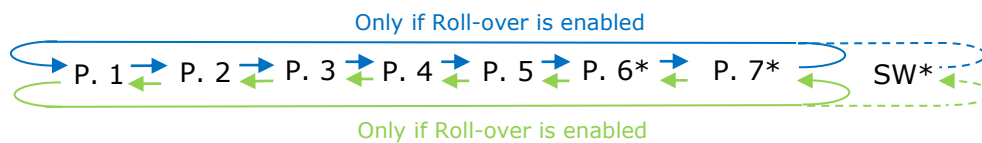
This parameter lets choose between the datapoints **0-Up / 1-Down [DPT\_1.008]** and **0-Decrease / 1-Increase [DPT\_1.007]** for the *Control\_ Vanes U-D -/+* object.

➤ Does +/- sequence include SWING vanes Up-Down?

This parameter lets choose if SWING function is included (“**yes**”) or not (“**no**”) in the sequence when using *Control\_ Vanes U-D -/+* object as shown in the discontinuous segment at the picture below.

➤ Roll over Vanes at upper/lower limit

This parameter lets choose if roll-over will be enabled (“**yes**”) or disabled (“**no**”) for the *Control\_ Vanes U-D -/+* object.



- Up / Increase
- Down / Decrease
- \* If Available

#### 4.1.32 Enable use of bit-type Vane U-D objects (for Control)

This parameter shows/hides the bit-type *Control\_ Vanes U-D* objects.

- 19 Control\_ Vanes U-D Pos 1 [DPT\_1.002 - 1bit] - 1-Set Position 1
- 20 Control\_ Vanes U-D Pos 2 [DPT\_1.002 - 1bit] - 1-Set Position 2
- 21 Control\_ Vanes U-D Pos 3 [DPT\_1.002 - 1bit] - 1-Set Position 3
- 22 Control\_ Vanes U-D Pos 4 [DPT\_1.002 - 1bit] - 1-Set Position 4
- 23 Control\_ Vanes U-D Pos 5 [DPT\_1.002 - 1bit] - 1-Set Position 5
- 24 Control\_ Vanes U-D Pos 6 [DPT\_1.002 - 1bit] - 1-Set Position 6
- 25 Control\_ Vanes U-D Pos 7 [DPT\_1.002 - 1bit] - 1-Set Position 7

- If set to “**no**” the objects will not be shown.
- If set to “**yes**” the *Control\_ Vanes U-D* objects for each Position will appear. To activate a Vanes Position by using these objects, a “**1**” value has to be sent.

#### 4.1.33 Enable use of bit-type Vane U-D objects (for Status)

This parameter shows/hides the bit-type *Status\_ Vanes U-D* objects.

- ↕ 74 Status\_Vanes U-D Pos 1 [DPT\_1.002 - 1bit] - 1-Vanes in Position 1
- ↕ 75 Status\_Vanes U-D Pos 2 [DPT\_1.002 - 1bit] - 1-Vanes in Position 2
- ↕ 76 Status\_Vanes U-D Pos 3 [DPT\_1.002 - 1bit] - 1-Vanes in Position 3
- ↕ 77 Status\_Vanes U-D Pos 4 [DPT\_1.002 - 1bit] - 1-Vanes in Position 4
- ↕ 78 Status\_Vanes U-D Pos 5 [DPT\_1.002 - 1bit] - 1-Vanes in Position 5
- ↕ 79 Status\_Vanes U-D Pos 6 [DPT\_1.002 - 1bit] - 1-Vanes in Position 6
- ↕ 80 Status\_Vanes U-D Pos 7 [DPT\_1.002 - 1bit] - 1-Vanes in Position 7

- If set to **"no"** the objects will not be shown.
- If set to **"yes"** the *Status\_Vanes U-D* objects for each Position will appear. When a Vanes Position is enabled, a **"1"** value is returned through its bit-type object.

#### 4.1.34 Enable "Vanes U-D Swing" objects (for Control and Status)

This parameter shows/hides the *Control\_Vanes U-D Swing* and *Status\_Vanes U-D Swing* communication objects.

- ↕ 26 Control\_Vanes U-D Swing [DPT\_1.002 - 1bit] - 0-Off;1-Swing
- ↕ 81 Status\_Vanes U-D Swing [DPT\_1.002 - 1bit] - 0-Off;1-Swing

- If set to **"no"** the objects will not be shown.
- If set to **"yes"** the *Control\_Vanes U-D Swing* and *Status\_Vanes U-D Swing* objects will appear.
  - When a **"1"** value is sent to the *Control\_* communication object, Vanes Up-Down will be in Swing mode, and the *Status\_* object will return this value.
  - When a **"0"** value is sent to the *Control\_* communication object, Vanes Up-Down will stop Swing mode. The *Status\_* object will return this value.

#### 4.1.35 Enable use of Text object for Vane U-D

This parameter shows/hides the *Status\_Vanes U-D Text* communication object.

- ↕ 82 Status\_Vanes U-D Text [DPT\_16.001 - 14byte] - ASCII String

- If set to **"no"** the object will not be shown.
- If set to **"yes"** the *Status\_Vanes U-D Text* object will appear. Also, in the parameters will be shown five text fields, four for the Vane Position and one for the Swing function that will let modify the text string displayed by the *Status\_Vanes U-D Text* when changing a vane position.

> String when vanes U-D in POS 1	U-D POS 1
> String when vanes U-D in POS 2	U-D POS 2
> String when vanes U-D in POS 3	U-D POS 3
> String when vanes U-D in POS 4	U-D POS 4
> String when vanes U-D in POS 5	U-D POS 5
> String when vanes U-D in POS 6	U-D POS 6
> String when vanes U-D in POS 7	U-D POS 7
> String when vanes U-D in SWING	U-D SWING

Figure 4.21 Parameter detail

### Temperature Configuration dialog

Device: 1.1.1 HI RC interface, 4 binary inputs

<ul style="list-style-type: none"> <li>General</li> <li>Mode Configuration</li> <li>Special Modes Configuration</li> <li>Fan Speed Configuration</li> <li>Vanes Up-Down Configuration</li> <li><b>Temperature Configuration</b></li> <li>Scene Configuration</li> <li>Switch-Off Timeouts Configuration</li> <li>Binary Input 1 Configuration</li> <li>Binary Input 2 Configuration</li> <li>Binary Input 3 Configuration</li> <li>Binary Input 4 Configuration</li> </ul>	<p>Periodic sending of "Status_ AC Setp" (in seconds;0=No periodic sending) <input type="text" value="0"/></p> <p>Transmission of "Status_ AC Refer. Temp" <input type="text" value="Only on change"/></p> <p>Enable use of +/- obj for Setpoint Temp <input type="text" value="No"/></p> <p>Enable limits on Setpoint Temperature (applies only to Heat and Cool modes) <input type="text" value="No"/></p> <p>Ambient temp. ref. is provided from KNX (carefully read User Guide if enabled) <input type="text" value="No"/></p>
--	--

Figure 4.22 Default Temperature Configuration dialog

All the parameters in this section are related with the Temperature properties and communication objects.

#### 4.1.36 Periodic sending of "Status\_ AC Setp"

This parameter lets change the interval of time (in seconds, from 0 to 255) at the end of which the AC setpoint temperature is sent to the KNX bus. For a "0" value, the AC setpoint temperature will ONLY be sent on change. The AC setpoint temperature is sent through the communication object *Status\_ AC Setpoint Temp*.

83 Status\_ AC Setpoint Temp [DPT\_9.001 - 2byte] - (°C)

Periodic sending of "Status\_ AC Setp"  
(in seconds; 0 = No periodic sending)

Figure 4.23 Parameter detail

**⚠ Important:** In case the ambient temperature is provided from KNX, the setpoint temperature returned from this object, will be the one resulting from the formula shown in the section "4.6.5 Ambient temp. ref. is provided from KNX".

### 4.1.37 Transmission of “Status\_ AC Reference Temp”

This parameter lets to you choose if the AC return temperature will be sent **“only cyclically”**, **“only on change”** or **“cyclically and on change”**. The AC reference temperature is sent through the communication object *Status\_ AC Reference Temp*.

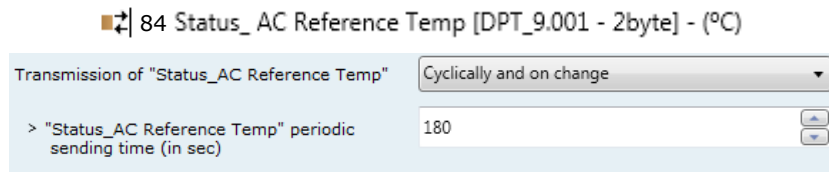


Figure 4.24 Parameter detail

➤ “Status\_ AC Reference Temp” periodic sending time (in sec)

This parameter will only be available for the **“only cyclically”** and **“cyclically and on change”** options, and let’s you change the interval of time (in seconds, from 1 to 255) at the end of which the AC return temperature is sent to the KNX bus.

### 4.1.38 Enable use of +/- object for Setpoint Temp

This parameter shows/hides the *Control\_ Setpoint Temp -/+* communication object which lets change the indoor unit setpoint temperature by using two different datapoint types.

■ 29 Control\_ Setpoint Temp +/- [DPT\_1.007 - 1bit] - 0-Decrease;1-Increase

- If set to **“no”** the object will not be shown.
- If set to **“yes”** the *Control\_ Setpoint Temp -/+* object and a new parameter will appear.

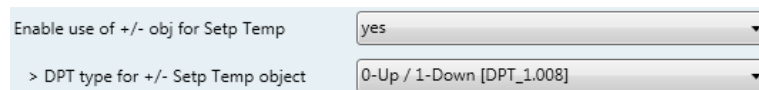
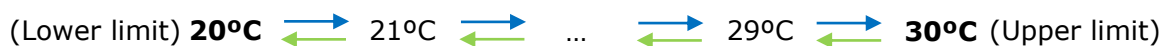


Figure 4.25 Parameter detail

➤ DPT type for +/- Setp Temp object

This parameter lets choose between the datapoints **0-Up / 1-Down [DPT\_1.008]** and **0-Decrease / 1-Increase [DPT\_1.007]** for the *Control\_ Setpoint Temp -/+* object.



- Up / Increase
- Down / Decrease

### 4.1.39 Enable limits on Control\_ Setpoint obj



This parameter enables to define temperature limits for the *Control\_ Setpoint Temperature* object.

Enable limits on Control_ Setpoint obj	Yes
> Lower limit (°C)	19.0 °C
> Upper limit (°C)	28.0 °C

**Figure 4.26** Parameter detail

- If set to **"no"** the setpoint temperature limits for the *Control\_ Setpoint Temperature* object will be the default: 18°C for the lower limit and 30°C for the upper limit.
- If set to **"yes"** it is possible to define temperature limits for the *Control\_ Setpoint Temperature* object.

➤ Lower limit (°C)

This parameter lets to define the lower limit for the setpoint temperature.

➤ Upper limit (°C)

This parameter lets to define the upper limit for the setpoint temperature.

⚠ **Important:** If a setpoint temperature above the upper defined limit (or below the lower defined limit) is sent through the *Control\_ Setpoint Temperature* object, it will be ALWAYS applied the limit defined.

⚠ **Important:** When limits are enabled, any setpoint temperature sent to the AC (even through scenes, special modes, etc.) will be limited.

#### 4.1.40 Ambient temp. ref. is provided from KNX

This parameter shows/hides the *Control\_ Ambient Temperature* communication object which lets use an ambient temperature reference provided by a KNX device.

🔗 30 Control\_ Ambient Temperature [DPT\_9.001 - 2byte] - (°C)

- If set to **"no"** the object will not be shown.
- If set to **"yes"** the *Control\_ Ambient Temperature* object will appear. Meant to be enabled when you want the temperature provided by a KNX sensor to be the reference ambient temperature for the air conditioner. Then, the following formula applies for calculation of real *Control\_ Setpoint Temperature* sent to the AC unit:

$$\text{"AC Setp. Temp"} = \text{"AC Ret. Temp"} - (\text{"KNX Amb. Temp."} - \text{"KNX Setp. Temp"})$$

- AC Setp. Temp: AC indoor unit setpoint temperature
- AC Ret. Temp: AC indoor unit return temperature
- KNX Amb. Temp.: Ambient temperature provided from KNX
- KNX Setp. Temp: Setpoint temperature provided from KNX

As an example, consider the following situation:

User wants: **19°C** ("KNX Setp. Temp.")

User sensor (a KNX sensor) reads: **21°C** ("KNX Amb Temp.")

Ambient temp. read by HITACHI system is: **24°C** ("AC Ret. Temp")

In this example, the final setpoint temperature that INKNXHIT001R000 will send out to the indoor unit (shown in "Setp. Temp.") will become  $24^{\circ}\text{C} - (21^{\circ}\text{C} - 19^{\circ}\text{C}) = \mathbf{22^{\circ}\text{C}}$ . This is the setpoint that will actually be requested to HITACHI unit.

This formula will be applied as soon as the *Control\_Setpoint Temperature* and *Control\_Ambient Temperature* objects are written at least once from the KNX installation. After that, they are kept always consistent.

Note that this formula will always drive the AC indoor unit demand in the *right* direction, regardless of the operation mode (Heat, Cool or Auto).

### Scene Configuration dialog

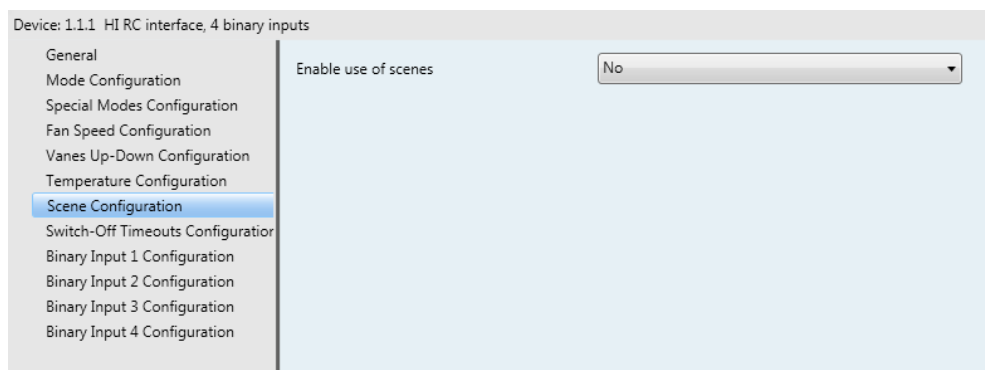


Figure 4.27 Parameter detail

All the parameters in this section are related with the Scene properties and communication objects. A scene contains values of: On/Off, Mode, Fan speed, Vane position, Setpoint Temperature and Remote Controller Disablement.

#### 4.1.41 Enable use of scenes

This parameter shows/hides the scene configuration parameters and communication objects.

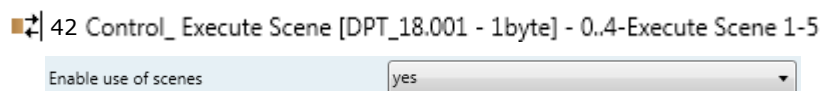


Figure 4.28 Parameter detail

- If set to **"no"** the scene parameters and communication objects will not be shown.
- If set to **"yes"** the scene parameters and communication objects will be shown. To execute a scene through the byte-type object, a value from **"0"** to **"4"** has to be sent, corresponding each one to a different scene (i.e. "0" = Scene 1;... "4" = Scene 5).

#### 4.1.42 Scenes can be stored from KNX bus

This parameter shows/hides the *Control\_ Save/Exec Scene* and all the *Control\_ Store Scene* (if enabled) communication objects.

- ↕ 42 Control\_ Save/Exec Scene [DPT\_18.001 - 1byte] - 0..4-Exec1-5;128..132-Save1-5
- ↕ 43 Control\_ Store Scene 1 [DPT\_1.002 - 1bit] - 1-Store Scene 1
- ↕ 44 Control\_ Store Scene 2 [DPT\_1.002 - 1bit] - 1-Store Scene 2
- ↕ 45 Control\_ Store Scene 3 [DPT\_1.002 - 1bit] - 1-Store Scene 3
- ↕ 46 Control\_ Store Scene 4 [DPT\_1.002 - 1bit] - 1-Store Scene 4
- ↕ 47 Control\_ Store Scene 5 [DPT\_1.002 - 1bit] - 1-Store Scene 5

- If set to **"no"** the communication objects will not be shown.
- If set to **"yes"** the communication objects and a new parameter will appear. To store a scene through the byte-type object, a value from **"128"** to **"132"** has to be sent to the object, corresponding each one to a different scene (i.e. "128" = Scene 1;... "132" = Scene 5).

Scenes can be stored from KNX bus

> Enable use of bit objects for storing scenes (from bus)

**Figure 4.29** Parameter detail

#### ➤ Enable use of bit objects for storing scenes (from bus)

If set to **"no"** the objects will not be shown.

If set to **"yes"** the *Control\_ Store Scene* objects for storing scenes will appear. To store a scene by using these objects, a **"1"** value has to be sent to the scene's object we want to store (i.e. to store scene 4, a "1" has to be sent to the *Control\_ Store Scene 4* object).

#### 4.1.43 Enable use of bit objects for scene execution

This parameter shows/hides the *Control\_ Execute Scene* bit-type communication objects.

- ↕ 48 Control\_ Execute Scene 1 [DPT\_1.002 - 1bit] - 1-Execute Scene 1
- ↕ 49 Control\_ Execute Scene 2 [DPT\_1.002 - 1bit] - 1-Execute Scene 2
- ↕ 50 Control\_ Execute Scene 3 [DPT\_1.002 - 1bit] - 1-Execute Scene 3
- ↕ 51 Control\_ Execute Scene 4 [DPT\_1.002 - 1bit] - 1-Execute Scene 4
- ↕ 52 Control\_ Execute Scene 5 [DPT\_1.002 - 1bit] - 1-Execute Scene 5

Enable use of bit objects for scene execution

**Figure 4.30** Parameter detail

- If set to **"no"** the communication objects will not be shown.

- If set to **"yes"** the communication objects will appear. To execute a scene by using these objects, a **"1"** value has to be sent to the scene's object we want to execute (i.e. to execute scene 4, a **"1"** has to be sent to the *Control\_ Execute Scene 4* object).

#### 4.1.44 Scene "x" preset

This parameter lets define a preset for a scene (the following description is valid for all the scenes).

Figure 4.31 Parameter detail

- If set to **"no"** the preset for the scene "x" will be disabled.
- If set to **"yes"** the preset will be enabled. When a scene is executed the values configured in the preset will be applied.

**⚠ Important:** If a scene's preset is enabled, will not be possible to modify (store) the scene from the KNX bus.

Figure 4.32 Parameter detail

➤ Scene "x" / Value for On-Off

This parameter lets choose the power of the indoor unit when the scene is executed. The following options are available: **"ON"**, **"OFF"** or **"(unchanged)"**.

➤ Scene "x" / Value for Mode

This parameter lets choose the mode of the indoor unit when the scene is executed. The following options are available: **"AUTO (if available)"**, **"HEAT"**, **"COOL"**, **"FAN"**, **"DRY"**, or **"(unchanged)"**.

➤ Scene "x" / Value for Fan Speed (if available)

This parameter lets choose the fan speed of the indoor unit when the scene is executed. The following options are available: **"FAN SPEED 1"**, **"FAN SPEED 2 (if available)"**, **"FAN SPEED 3 (if available)"**, **"FAN SPEED 4 (if available)"**, or **"(unchanged)"**.

➤ Scene "x" / Value for Vanes U-D (if available)

This parameter lets choose the vane position of the indoor unit when the scene is executed. The following options are available: **"VANES U-D POS 1"**, **"VANES U-D POS 2"**, **"VANES U-D POS 3"**, **"VANES U-D POS 4"**, **"VANES U-D SWING"** or **"(unchanged)"**.

➤ Scene "x" / Value for Setp Temp (°C)

This parameter lets choose the setpoint temperature of the indoor unit when the scene is executed. The following options are available: from **"18°C"** to **"30°C"** (both included), or **"(unchanged)"**.

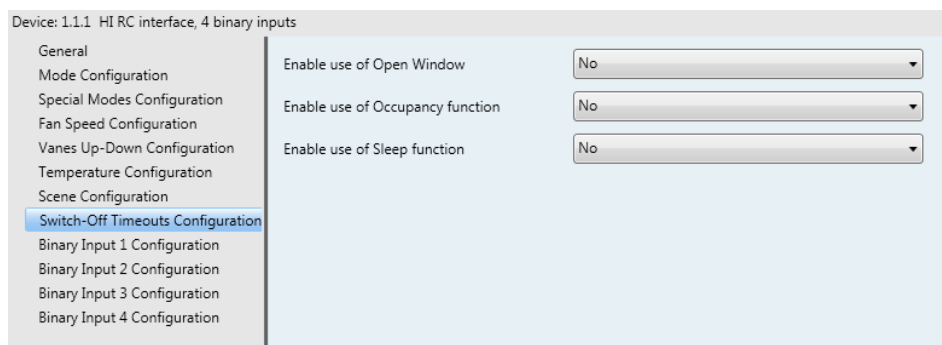
➤ Scene "x" / Value for Remote Lock

This parameter lets choose the remote controller status of the indoor unit when the scene is executed. The following options are available: **"locked"**, **"unlocked"**, or **"(unchanged)"**.

⚠ **Important:** If any preset value is configured as **"(unchanged)"**, the execution of this scene will not change current status of this feature in the AC unit.

⚠ **Important:** When a scene is executed, *Status\_ Current Scene* object shows the number of this scene. Any change in previous items does *Status\_ Current Scene* show **"No Scene"**. Only changes on items marked as **"(unchanged)"** will not disable current scene.

## Switch-Off Timeouts Configuration dialog



**Figure 4.33** Default Switch-Off Timeouts Configuration dialog

All the parameters in this section are related with the timeout properties and communication objects.

### 4.1.45 Enable use of Open Window / Switch off timeout function

This parameter shows/hides the *Control\_ Window Contact Status* communication object which lets Start/Stop a timeout to switch off the indoor unit.

➡ 33 Control\_ Window Contact Status [DPT\_1.009 - 1bit] - 0-Open;1-Closed

- If set to **"no"** the object will not be shown.
- If set to **"yes"** the *Control\_ Window Contact Status* object and new parameters will appear. If a **"1"** value is sent to this object, and the indoor unit is already turned on, the switch-off timeout will begin. If a **"0"** value is sent to this object, the switch-off timeout will stop.

Enable use of Open Window / Switch off timeout function	yes
> AC switch-off timeout (min)	2
> DPT for Window / Switch-off timeout	0-Open / 1-Closed Window [DPT_1.009]
> Reload last On/Off val once window is closed	no
> Disallow On/Off operation while window is Open	yes

Figure 4.34 Parameter detail

➤ AC switch-off timeout (min)

This parameter lets select how much time (in minutes) to wait before switching off the indoor unit.

➤ DPT for Window

This parameter lets choose between the datapoints **0-Open / 1-Closed Window [DPT\_1.009]** and **0-Closed / 1-Open Window [DPT\_1.019]**.

➤ Disallow On/Off operation while window is Open

If set to **"no"**, On/Off commands while the window is open will be accepted.

- If a **"1"** value is sent to the *Control\_ Switch Off Timeout* object the switch-off timeout period will begin again.
- If a **"0"** value is sent to the *Control\_ Switch Off Timeout* object, no action will be performed.

If set to **"yes"**, On/Off commands, while the window is open, will be saved (but not applied). These commands will be used in the next parameter if set to **"yes"**.

➤ Reload last On/Off value once window is closed?

If set to **"no"**, once the switch-off timeout is stopped, any value will be reloaded.

If set to **"yes"**, once the switch-off timeout is stopped, the last On/Off value sent will be reloaded.

- If a "1" value is sent to the *Control\_ Switch Off Timeout* object after the timeout period, the indoor unit will **turn on**.
- If a "0" value is sent to the *Control\_ Switch Off Timeout* after the timeout period, no action will be performed.

#### 4.1.46 Enable use of Occupancy function

This parameter shows/hides the *Control\_ Occupancy* communication object which lets apply different parameters to the indoor unit depending on the presence/no presence in the room.

➤ 34 Control\_ Occupancy [DPT\_1.018 - 1bit] - 0-Not Occupied;1-Occupied

- If set to "no" the object will not be shown.
- If set to "yes" the *Control\_ Occupancy* object and new parameters will appear. If a "1" value is sent to this object (no room occupancy), the timeout will begin. If a "0" value is sent to this object, the timeout will stop.

Enable use of Occupancy function	yes
> Timeout to apply action (minutes)	2
> Action after timeout elapsed	Apply Preset Delta

Figure 4.35 Parameter detail

##### ➤ Timeout to apply action (minutes)

This parameter lets choose how much time to wait (in minutes) before executing the action specified in the next parameter ("Action after timeout elapsed").

##### ➤ Action after timeout elapsed

When **Switch-Off** is selected, once the timeout has elapsed, the indoor unit will be turned off.

When **Apply Preset Delta** is selected, once the timeout has elapsed, a delta temperature will be applied in order to save energy (decreasing the setpoint when in Heat mode, or increasing the setpoint when in Cool mode). Also new parameters will appear.

> Temp delta decrease (HEAT) or increase (COOL) (°C)	2.0°C
> Enable secondary timeout	yes

Figure 4.36 Parameter detail

##### ➤ Temp delta decrease (HEAT) or increase (COOL) (°C)

This parameter lets configure the delta temperature (increase or decrease) that will be applied when the timeout has elapsed.

- ⚠ **Important:** When there is occupancy again after the application of a delta, the same delta will be applied inversely. (i.e. In a room with AC in cool mode

and 25°C setpoint temperature, a **+2°C** delta is applied after the occupancy timeout, setting the setpoint at 27°C because there is no occupancy in the room. If the setpoint is raised to 29°C during that period, when the room is occupied again, a **-2°C** delta will be applied and the final setpoint temperature will then be 27°C).

➤ Enable secondary timeout

If set to **"no"** nothing will be applied.

If set to **"yes"**, a new timeout will be enabled and two new parameters will appear.

> Timeout to apply action (min)	2
> Action after timeout elapsed	Apply Preset Delta
> Temp delta dec (HEAT) / or inc (COOL) (°C)	2.0°C

**Figure 4.37** Parameter detail

➤ Timeout to apply action (minutes)

This parameter lets choose how much time to wait (in minutes) before executing the action specified in the next parameter ("Action after timeout elapsed").

➤ Action after timeout elapsed

When **Switch-Off** is selected, once the timeout has elapsed, the indoor unit will turn off.

When **Apply Preset Delta** is selected, once the timeout configured is extinguished, a delta temperature will be applied (decreasing the setpoint when in Heat mode, or increasing the setpoint when in Cool mode). Also new parameters will appear.

➤ Temp delta decrease (HEAT) or increase (COOL) (°C)

This parameter lets configure the delta temperature that will be applied when the timeout is extinguished.

**⚠ Important:** When there is occupancy again after the application of a delta, the same delta will be applied inversely as explained above.

➤ Disallow On/Off operation while not Occupied

If set to **"no"**, On/Off commands while the window is open will be accepted.



- If a "1" value is sent to the *Control\_ Occupancy* object the switch-off timeout period will begin again.
- If a "0" value is sent to the *Control\_ Occupancy* object, no action will be performed.

If set to "yes", On/Off commands while not occupied will be saved (but not applied). These commands will be used in the next parameter if set to "Yes".

The screenshot shows two parameter settings in a light blue box. The first parameter is '> Reload last On/Off value when Occupied' with a dropdown menu set to 'yes'. The second parameter is '> Disallow On/Off operation while not Occupied' also with a dropdown menu set to 'yes'.

Figure 4.38 Parameter detail

➤ Reload last On/Off value when Occupied

If set to "no", once the switch-off timeout has elapsed, any value will be reloaded.

If set to "yes", once the switch-off timeout has elapsed, the last On/Off value will be reloaded.

- If a "1" value is sent to the *Control\_ Occupancy* object after the timeout period, the indoor unit will **turn on**.
- If a "0" value is sent to the *Control\_ Occupancy* after the timeout period, no action will be performed.

#### 4.1.47 Enable use of SLEEP timeout

This parameter shows/hides the *Control\_ Sleep Timeout* communication object which lets start a timeout to automatically turn off the indoor unit.

➤ 35 Control\_ Sleep Timeout [DPT\_1,010 - 1bit] - 0-Stop;1-Start

- If set to "no" the object will not be shown.
- If set to "yes" the *Control\_ Sleep Timeout* object and a new parameter will appear. If a "1" value is sent to this object the switch-off timeout will begin. If a "0" value is sent to this object, the switch-off timeout will stop.

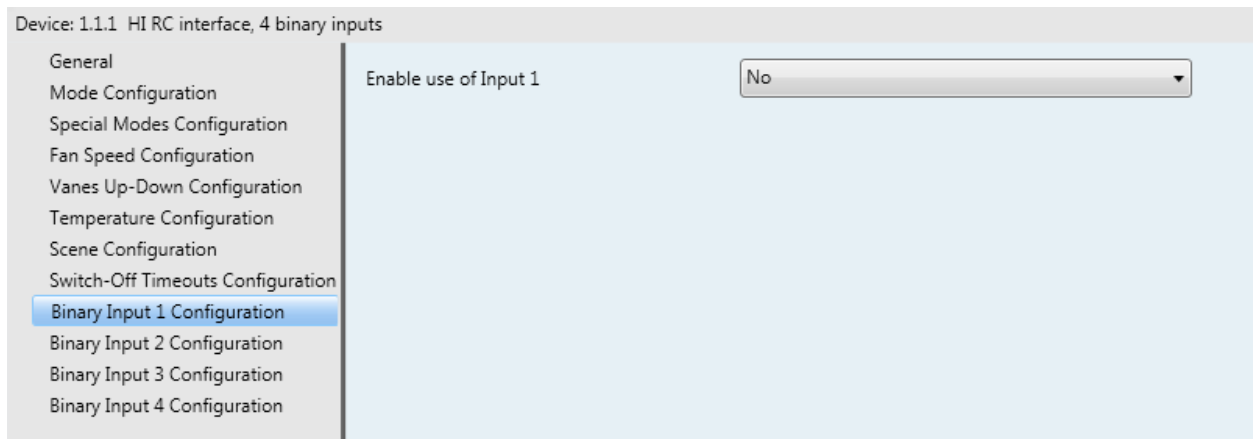
The screenshot shows two parameter settings in a light blue box. The first parameter is 'Enable use of SLEEP timeout' with a dropdown menu set to 'yes'. The second parameter is '> Sleep function switch-off timeout (minutes)' with a numeric input field set to '1' and up/down arrow buttons.

Figure 4.39 Parameter detail

➤ Sleep function switch-off timeout (minutes)

This parameter lets select how much time (in minutes) to wait before switching off the AC unit.

## Binary Input “x” Configuration dialog



**Figure 4.40** Binary Input Configuration dialog

All the parameters in this section are related with the binary inputs properties and communication objects.

### 4.1.48 Enable use of Input “x”

This parameter enables the use of the Input “x” and shows/hides the *Status\_Inx* communication object(s) which will act as configured in the “Function” parameter.

- 99 Status\_In1 - Switching [DPT\_1.001 - 1bit] - 0-Off;1-On
- 101 Status\_In2 - Switching [DPT\_1.001 - 1bit] - 0-Off;1-On
- 103 Status\_In3 - Switching [DPT\_1.001 - 1bit] - 0-Off;1-On
- 105 Status\_In4 - Switching [DPT\_1.001 - 1bit] - 0-Off;1-On

- If set to **“no”** the objects will not be shown.
- If set to **“yes”** the *Status\_Inx* object(s) and new parameters will appear.

### 4.1.49 Contact type

This parameter lets choose the behavior that will have the binary input depending on if the contact is normally open or normally closed.

- There are two possible options to configure the contact type: **“NO: Normally Open”** and **“NC: Normally Closed”**.

### 4.1.50 Debounce time

This parameter lets choose a debounce time (in milliseconds) that will be applied to the contact.

### 4.1.51 Disabling function

This parameter shows/hides the *Control\_Disable Input x* communication object which will let disable/enable the input x.

- ↕ 53 Control\_Disable Input 1 [DPT\_1.003 - 1bit] - 0-Disable;1-Enable;
- ↕ 53 Control\_Disable Input 1 [DPT\_1.002 - 1bit] - 0-False;1-True

- If set to **“no”** any object will be shown.
- When **“DPT 1.003: 0-Disable; 1-Enable”** is selected, the input can be disabled using the value **“0”** and enabled using the value **“1”**.
- When **“DPT 1.002: 1-True (Disable); 0-False (Enable)”** is selected, the input can be disabled using the value **“1”** and enabled using the value **“0”**.

#### 4.1.52 Function

This parameter lets choose the function that will have the binary input. There are 7 different functions available: Switching, Dimming, Shutter/Blind, Value, Execute Scene (internal), Occupancy (internal) and Window Contact (internal).

- When **“Switching”** is selected the communication object and new parameters for the Input **“x”** will appear as shown below.

■ ↕ 99 Status\_In1 - Switching [DPT\_1.001 - 1bit] - 0-Off;1-On

> Function	Switching
> Send telegram after bus recovery	No action
> Value on raising edge (contact activated)	Toggle (On/Off)
> Value on falling edge (contact deactivated)	No action
> Cyclical sending	Never

Figure 4.41 Parameter detail

#### ➤ Send telegram after bus recovery

This parameter lets select if the Binary Input **“x”** will send a telegram, or not, after a bus recovery, and the type of telegram sent (if enabled).

- When **“No action”** is selected, no telegram will be sent after a bus recovery.
- When **“Current status”** is selected, the binary input will send a telegram with its current status after a bus recovery. Also a new parameter will appear (see below).
- When **“On”** is selected, the binary input will send a telegram with a **“1”** value after a bus recovery. Also a new parameter will appear (see below).
- When **“Off”** is selected, the binary input will send a telegram with a **“0”** value after a bus recovery. Also a new parameter will appear (see below).

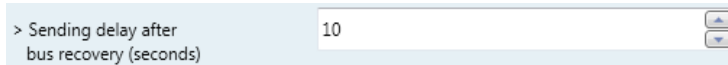


Figure 4.42 Parameter detail

➤ Sending delay after a bus recovery (seconds)

This parameter lets configure a delay (in seconds) that will be applied after a bus recovery and, after which, a telegram will be sent.

➤ Value on rising edge

This parameter lets select the value that the Binary Input "x" will send on a rising edge (contact activated).

- When **"On"** is selected, the binary input will always send telegrams with a **"1"** value.
- When **"Off"** is selected, the binary input will always send telegrams with a **"0"** value.
- When **"Toggle (On/Off)"** is selected, the binary input will send a **"1"** value after a **"0"** value and viceversa.
- When **"No action"** is selected, the binary input will not perform any action.

➤ Value on falling edge

This parameter lets select the value that the Binary Input "x" will send on a falling edge (contact deactivated).

- When **"On"** is selected, the binary input will always send telegrams with a **"1"** value.
- When **"Off"** is selected, the binary input will always send telegrams with a **"0"** value.
- When **"Toggle (On/Off)"** is selected, the binary input will send a **"1"** value after a **"0"** value and viceversa.
- When **"No action"** is selected, the binary input will not perform any action.

➤ Cyclical sending

This parameter lets enable/disable cyclical sending when a determined condition is met.

- When **"When output value is On"** is selected, everytime a **"1"** value is sent, it will be sent cyclically. Also a new parameter will appear (see below).
- When **"When output value is Off"** is selected, everytime a **"0"** value is sent, it will be sent cyclically. Also a new parameter will appear (see below).

- When **“Always”** is selected, the binary input will send any value cyclically. Also a new parameter will appear (see below).
  - When **“Never”** is selected, cyclical sending will be disabled.
- Period for cyclical sending (seconds)

This parameter lets configure a time (in seconds) for the cyclical sending.



Figure 4.43 Parameter detail

- When **“Dimming”** is selected the communication objects and new parameters for the Input “x” will appear as shown below.

- 101 Status\_In2 - Dimming - On/Off [DPT\_1.001 - 1bit] - 0-Off;1-On
- 102 Status\_In2 - Dimming - Step(%) [DPT\_3.007 - 4bit] - Dimming step

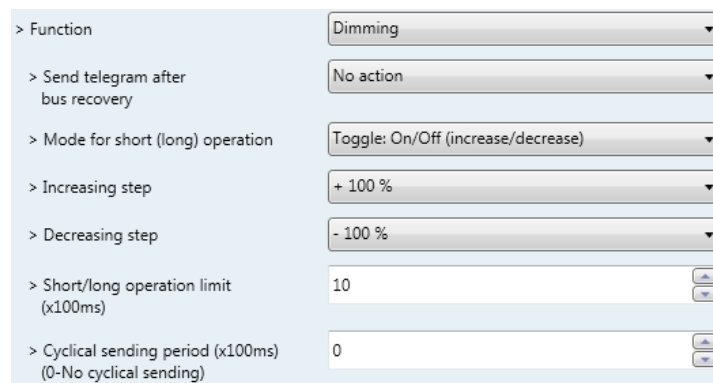


Figure 4.44 Parameter detail

- Send telegram after bus recovery

This parameter lets select if the Binary Input “x” will send a telegram, or not, after a bus recovery, and the type of telegram sent (if enabled).

- When **“No action”** is selected, no telegram will be sent after a bus recovery.
- When **“On”** is selected, the binary input will send a telegram with a **“1”** value after a bus recovery. Also a new parameter will appear (see below).
- When **“Off”** is selected, the binary input will send a telegram with a **“0”** value after a bus recovery. Also a new parameter will appear (see below).

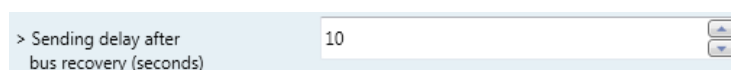


Figure 4.45 Parameter detail

➤ Sending delay after a bus recovery (seconds)

This parameter lets configure a delay (in seconds) that will be applied after a bus recovery and, after which, a telegram will be sent.

➤ Mode for short (long) operation

This parameter lets select the value that the Binary Input "x" will send on a rising edge (contact activated), for a short and a long operation.

- When **"On (increase)"** is selected, the binary input will always send telegrams with a **"1"** value for a short operation, and an **"increase step"** for a long operation.
- When **"Off (decrease)"** is selected, the binary input will always send telegrams with a **"0"** value for a short operation, and an **"decrease step"** for a long operation.
- When **"Toggle: On/Off (increase/decrease)"** is selected:
  - For the short operation the binary input will send a **"1"** value after a **"0"** value and viceversa.
  - For the long operation the binary input will send an **"increase step"** after a **"decrease step"** and viceversa.

⚠ **Important:** Note that the first long operation in toggle depends on the last short operation, meaning that after a **"1"** value will be sent a **"decrease step"** and after a **"0"** value will be sent an **"increase step"**.

⚠ **Important:** The time period between a short and a long operation is defined in the parameter "Short/long operation limit (x100ms)".

➤ Increasing step

This parameter lets select the increasing step value (in %) that will be sent for a long operation.

➤ Decreasing step

This parameter lets select the decreasing step value (in %) that will be sent for a long operation.

➤ Short/long operation limit (x100ms)

This parameter lets introduce the time period difference for the short and the long operation.

➤ Cycl. send. period in long oper. (x100ms)

This parameter lets configure a time (in seconds) for the cyclical sending of a long operation.

- When **“Shutter/Blind”** is selected the communication objects and new parameters for the Input “x” will appear as shown below.

■ 103 Status\_In3 - Shut/Blind - Step [DPT\_1.023 - 1bit] - 0-Step Up;1-Step Down  
■ 104 Status\_In3 - Shut/Blind - Move [DPT\_1.023 - 1bit] - 0-Move Up;1-Move Down

> Function	Shutter/Blind
> Send telegram after bus recovery	No action
> Operation	Toggle (Up/Down)
> Method	Step-Move-Step
> Short/long operation limit (x100ms)	10
> Vanes adjustment time (x100ms)	10

Figure 4.46 Parameter detail

#### ➤ Send telegram after bus recovery

This parameter lets select if the Binary Input “x” will send a telegram, or not, after a bus recovery and the type of telegram sent (if enabled).

- When **“No action”** is selected, no telegram will be sent after a bus recovery.
- When **“Move Up”** is selected, the binary input will send a telegram with a **“0”** value after a bus recovery. Also a new parameter will appear (see below).
- When **“Move Down”** is selected, the binary input will send a telegram with a **“1”** value after a bus recovery. Also a new parameter will appear (see below).

> Sending delay after bus recovery (seconds)	10
--	----

Figure 4.45 Parameter detail

#### ➤ Sending delay after a bus recovery (seconds)

This parameter lets configure a delay (in seconds) that will be applied after a bus recovery and, after which, a telegram will be sent.

#### ➤ Operation

This parameter lets select the value that the Binary Input “x” will send on a rising edge (contact activated).

- When **“Up”** is selected, the binary input will always send telegrams with a **“0”**.
- When **“Down”** is selected, the binary input will always send telegrams with a **“1”** value.

- When **“Toggle (Up/Down)”** is selected the binary input will send a **“0”** value after a **“1”** value and viceversa.

➤ Method

This parameter lets select the working method for the shutter/blind.

- When **“Step-Move-Step”** is selected: On a rising edge (contact activated) a step/stop telegram will be sent and will begin a time called **T1**. If a falling edge occurs (contact deactivated) during the **T1**, no action will be performed.

If the rising edge is maintained longer than **T1**, a move telegram will be sent and will start a time called **T2**. If a falling edge occurs during the **T2**, a step/stop telegram will be sent. If a falling edge occurs after **T2** no action will be performed.

- When **“Move-Step”** is selected: On a rising edge a move telegram will be sent and will begin the **T2** time. If a falling edge occurs during the **T2**, a step/stop telegram will be sent. If a falling edge occurs after **T2** no action will be performed.

⚠ **Important:** The **T1** time have to be defined in the "Short/long operation limit (x100ms)" parameter. The **T2** time has to be defined in the "Vanes adjustment time (x100ms)" parameter too.

➤ Short/long operation limit (x100ms)

This parameter lets introduce the time period difference for the short and the long operation (T1 time).

➤ Vanes adjustment time (x100ms)

This parameter lets introduce the time period for the vanes adjustment/blind movement (T2 time).

- When **“Value”** is selected the communication objects and new parameters for the Input "x" will appear as shown below.

➤ 106 Status\_In4 - Value [DPT\_5.010 - 1byte] - 1-byte unsigned value

> Function	Value
> Send telegram after bus recovery	Fixed value
> Sending delay after bus recovery (seconds)	10
> DPT to be sent	DPT 5.010 (1byte)
> Value on raising edge (when contact activated)	234

Figure 4.46 Parameter detail

➤ Send telegram after bus recovery



This parameter lets select if the Binary Input "x" will send a telegram, or not, after a bus recovery and the type of telegram sent (if enabled).

- When **"No action"** is selected, no telegram will be sent after a bus recovery.
- When **"Fixed value"** is selected, the binary input will send a telegram with the same value configured in the "Value on rising edge" parameter. Also a new parameter will appear (see below).



Figure 4.47 Parameter detail

➤ Sending delay after a bus recovery (seconds)

This parameter lets configure a delay (in seconds) that will be applied after a bus recovery and, after which, a telegram will be sent.

➤ DPT to be sent

This parameter lets select the DPT type for the value that will be defined in the next parameter. This value will be sent on a rising edge (contact activated).

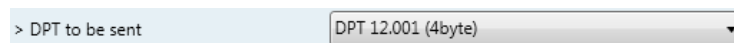


Figure 4.48 Parameter detail

➤ Value on rising edge (when contact activated)

This parameter lets define a value for the DTP type configured in the "DPT to be sent" parameter. This value will be sent on a rising edge (contact activated).

- When **"Execute Scene (internal)"** is selected, the binary input "x" will activate the scene defined in the next parameter, on a rising edge (contact activated).

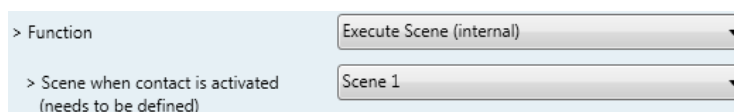
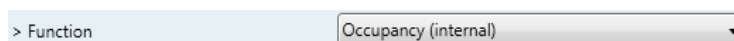


Figure 4.49 Parameter detail

➤ Scene when contact is activated

This parameter lets choose the scene that will be activated on a rising edge. This scene MUST be defined in the "Scene Configuration" dialog as a preset.

- When **"Occupancy (internal)"** is selected, the binary input "x" will have the same behavior as configured in the parameter "Enable use of Occupancy function" inside the "Switch-Off Timeouts Configuration" dialog.



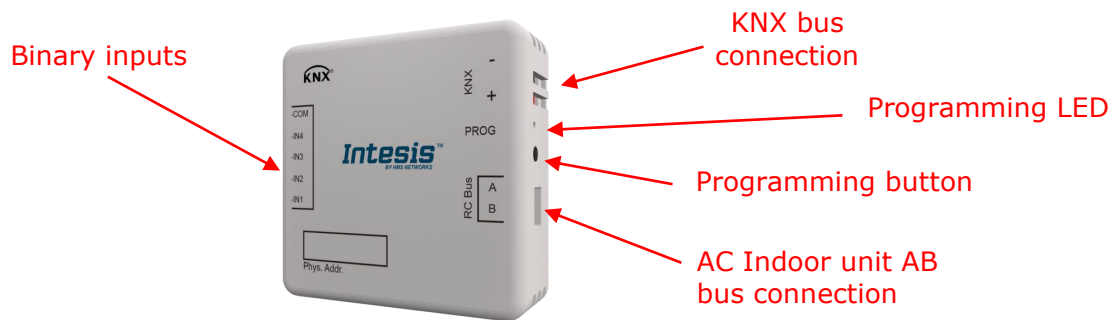
**Figure 4.50** Parameter detail

- When **“Window Contact (internal)”** is selected, the binary input “x” will have the same behavior as configured in the parameter “Enable use of Open Window / Switch off timeout function” inside the “Switch-Off Timeouts Configuration” dialog.

**Figure 4.51** Parameter detail

## 5. Specifications

<b>Envelope</b>	Plastic, type ABS (UL 94 V-0). 2,5 mm thickness
<b>Dimensions</b>	71 X 71 X 27 mm
<b>Weight</b>	70g
<b>Colour</b>	White, RAL 9010
<b>Power supply</b>	29V DC, 7mA Supplied through KNX bus.
<b>HITACHI AB Bus</b>	Voltage: 13-18V Current: 80mA
<b>LED indicators</b>	1 x KNX programming.
<b>Push buttons</b>	1 x KNX programming.
<b>Binary inputs</b>	4 x Potential-free binary inputs. Signal cable length: 5m unshielded, may be extended up to 20m with twisted. Compliant with the following standards: IEC61000-4-2: level 4 - 15kV (air discharge) - 8kV (contact discharge) MIL STD 883E-Method 3015-7: class3B
<b>Configuration</b>	Configuration with ETS.
<b>Operating Temperature</b>	From -25°C to 60°C
<b>Storage Temperature</b>	From -40°C to 85°C
<b>Isolation Voltage</b>	2500V
<b>RoHS conformity</b>	Compliant with RoHS directive (2002/95/CE).



## 6. AC Unit Types compatibility.

A list of Hitachi indoor unit models compatible with INKNXHIT001R000 can be found in:

[https://www.intesis.com/docs/compatibilities/inxxxhit001r000\\_compatibility](https://www.intesis.com/docs/compatibilities/inxxxhit001r000_compatibility)

## 7. Error codes

### 7.1. Intesis Codes

Error Code	Error in Controller	Error Category	Error Description
-1 (65535)	N/A	Intesis AC Interface	Error in the communication of Intesis AC Interface or the Remote Controller with the AC Unit
0	N/A	Intesis AC Interface	No active error

### 7.2 AC System Codes

Error Code	Error in Controller	Error Category	Error Description
01	01	Indoor Unit	Tripping of Protection Device
02	02	Outdoor Unit	Tripping of Protection Device
03	03	Transmission	Abnormality between Indoor and Outdoor
04	04	Inverter	Abnormality between Inverter and Control PCB
04.	04.		
05	05	Transmission	Abnormality of Power Source Wiring
06	06	Voltage drop	Fan motor locked, overload, over current
06.	06.		Swing flap motor error
07	07	Cycle	Overcurrent of AC input
08	08		Electronic expansion valve drive error
09	09	Outdoor Unit	Heater overheat
17	11	Sensor on Indoor Unit	Dust collector error / No-maintenance filter error
18	12		Capacity setting error (indoor)
19	13		Shortage of water supply
20	14		Malfunctions of a humidifier system (water leaking)
25	19		Malfunctions in a sensor system
33	21	Sensor on Outdoor Unit	Sensor system of drain water error
34	22		Heat exchanger (1) (Liquid pipe) thermistor system error
35	23		Heat exchanger (1) (Gas pipe) thermistor system error
36	24		Sensor system error of fan motor locked, overload
41	29		Sensor system of swing flap motor error
48	30		Sensor system of over-current of AC input
49	31		Suction air thermistor error
50	32		Discharge air thermistor system error
53	35		Contamination sensor error
54	36		Humidity sensor error
56	38		Remote control thermistor error
57	39	Radiation sensor error	

Error Code	Error in Controller	Error Category	Error Description
67	43	Pressure	High pressure switch sensor
68	44		Protection devices activated
69	45		Outdoor unit PCB assembly failure
70	46		High pressure switch (HPS) activated
71	47		Low pressure switch (LPS) activated
81	51	Inverter	Overload of inverter compressor motor
82	52		Over current of STD compressor motor
83	53		Overload of fan motor / Over current of fan motor
84	54	Outdoor Fan	Over current of AC input
86	56		Electronic expansion valve drive error
87	57		Four-way valve error
88	58	IU model setting	Pump motor over current
176	b0	Number setting	Incorrect setting address or refrigerant cycle
177	b1		Incorrect setting address or refrigerant cycle
181	b5	Inverter	Incorrect setting of indoor unit number for H-LINK type
238	EE		Water temperature abnormal

In case you detect an error code not listed, contact the technical support service of the HVAC Manufacturer for more information on the error meaning.

8.

8. Appendix A – Communication Objects Table

TOPIC	OBJECT NUMBER	NAME	LENGTH	DATAPOINT TYPE		FLAGS				FUNCTION
				DPT_NAME	DPT_ID	R	W	T	U	
<b>On/Off</b>	<b>0</b>	Control_ On/Off	1 bit	DPT_Switch	1.001		W	T		0 - Off; 1-On
<b>Mode</b>	<b>1</b>	Control_ Mode	1 byte	DPT_HVACContrMode	20.105		W	T		0 - Auto; 1 - Heat; 3 - Cool; 9 - Fan; 14 - Dry
	<b>2</b>	Control_ Mode Cool/Heat	1 bit	DPT_Heat/Cool	1.100		W	T		0 - Cool; 1 - Heat
	<b>3</b>	Control_ Mode Cool & On	1 byte	DPT_Scaling	5.001		W	T		0% - Off; 0.1%-100% - On + Cool
	<b>4</b>	Control_ Mode Heat & On	1 byte	DPT_Scaling	5.001		W	T		0% - Off; 0.1%-100% - On + Heat
	<b>5</b>	Control_ Mode Auto	1 bit	DPT_Bool	1.002		W	T		1 – Auto mode
	<b>6</b>	Control_ Mode Heat	1 bit	DPT_Bool	1.002		W	T		1 – Heat mode
	<b>7</b>	Control_ Mode Cool	1 bit	DPT_Bool	1.002		W	T		1 – Cool mode
	<b>8</b>	Control_ Mode Fan	1 bit	DPT_Bool	1.002		W	T		1 – Fan mode
	<b>9</b>	Control_ Mode Dry	1 bit	DPT_Bool	1.002		W	T		1 – Dry mode
	<b>10</b>	Control_ Mode -/+	1 bit	DPT_Step	1.007		W			0 - Decrease; 1 - Increase
		Control_ Mode -/+	1 bit	DPT_UpDown	1.008		W			0 - Up; 1 - Down
<b>11</b>	Control_ Fan Speed / 3 Speeds	1 byte	DPT_Scaling	5.001		W	T		0%-49% - Speed 1; 50%-82% - Speed 2; 83%-100% - Speed 3	
	Control_ Fan Speed / 3 Speeds	1 byte	DPT_Enumerated	5.010		W	T		1 - Speed 1; 2 - Speed 2; 3 Speed 3	

		Control_ Fan Speed / 4 Speeds	1 byte	DPT_Scaling	5.001	W	T	0%-37% - Speed 1; 38%-62% - Speed 2; 63%-87% - Speed 3; 88%-100% - Speed 4
		Control_ Fan Speed / 4 Speeds	1 byte	DPT_Enumerated	5.010	W	T	1 - Speed 1; 2 - Speed 2; 3 Speed 3; 4 - Speed 4
	<b>12</b>	Control_ Fan Speed Man/Auto	1 bit	DPT_Bool	1.002	W	T	0 - Manual; 1 - Auto
	<b>13</b>	Control_ Fan Speed 1	1 bit	DPT_Bool	1.002	W	T	1 - Set Fan Speed 1
	<b>14</b>	Control_ Fan Speed 2	1 bit	DPT_Bool	1.002	W	T	1 - Set Fan Speed 2
	<b>15</b>	Control_ Fan Speed 3	1 bit	DPT_Bool	1.002	W	T	1 - Set Fan Speed 3
	<b>16</b>	Control_ Fan Speed 4	1 bit	DPT_Bool	1.002	W	T	1 - Set Fan Speed 4
	<b>17</b>	Control_ Fan Speed +/-	1 bit	DPT_Step	1.007	W		0 - Decrease; 1 - Increase
Control_ Fan Speed +/-		1 bit	DPT_UpDown	1.008	W		0 - Up; 1 - Down	
<b>Vanes Up-Down</b>	<b>18</b>	Control_ Vanes U-D / 5 pos	1 byte	DPT_Scaling	5.001	W	T	0%-29% - Pos1; 30%-49% - Pos2; 50%-69% Pos3; 70%-89% - Pos4; 90%-100% - Pos5
		Control_ Vanes U-D / 5 pos	1 byte	DPT_Enumerated	5.010	W	T	1 - Pos1; 2 - Pos2; 3 - Pos3; 4 - Pos4; 5 - Pos5
		Control_ Vanes U-D / 6 pos	1 byte	DPT_Scaling	5.001	W	T	0%-24% - Pos1; 25%-41% - Pos2; 42%-58% Pos3; 59%-74% - Pos4; 75%-91% - Pos5; 92%-100% - Pos6
		Control_ Vanes U-D / 6 pos	1 byte	DPT_Enumerated	5.010	W	T	1 - Pos1; 2 - Pos2; 3 - Pos3; 4 - Pos4; 5 - Pos5; 6 - Pos6
		Control_ Vanes U-D / 7 pos	1 byte	DPT_Scaling	5.001	W	T	0%-20% - Pos1; 21%-35% - Pos2; 36%-49% Pos3; 50%-64% - Pos4; 65%-78% - Pos5; 79%-92% - Pos6; 93%-100% - Pos7
		Control_ Vanes U-D / 7 pos	1 byte	DPT_Enumerated	5.010	W	T	1 - Pos1; 2 - Pos2; 3 - Pos3; 4 - Pos4; 5 - Pos5; 6 - Pos6 7 - Pos7



	19	Control_ Vanes U-D Pos1	1 bit	DPT_Bool	1.002	W	T	1 – Set Position 1
	20	Control_ Vanes U-D Pos2	1 bit	DPT_Bool	1.002	W	T	1 – Set Position 2
	21	Control_ Vanes U-D Pos3	1 bit	DPT_Bool	1.002	W	T	1 – Set Position 3
	22	Control_ Vanes U-D Pos4	1 bit	DPT_Bool	1.002	W	T	1 – Set Position 4
	23	Control_ Vanes U-D Pos5	1 bit	DPT_Bool	1.002	W	T	1 – Set Position 5
	24	Control_ Vanes U-D Pos6	1 bit	DPT_Bool	1.002	W	T	1 – Set Position 6
	25	Control_ Vanes U-D Pos7	1 bit	DPT_Bool	1.002	W	T	1 – Set Position 7
	26	Control_ Vanes U-D Swing	1 bit	DPT_Bool	1.002	W	T	0 – Off; 1 – Swing
	27	Control_ Vanes U-D -/+	1 bit	DPT_Step	1.007	W		0 - Decrease; 1 - Increase
Control_ Vanes U-D -/+		1 bit	DPT_UpDown	1.008	W		0 - Up; 1 - Down	
Temperature	28	Control_ Setpoint Temperature	2 byte	DPT_Value_Temp	9.001	W	T	(°C)
	29	Control_ Setpoint Temp -/+	1 bit	DPT_Step	1.007	W		0 - Decrease; 1 - Increase
		Control_ Setpoint Temp -/+	1 bit	DPT_UpDown	1.008	W		0 - Up; 1 - Down
30	Control_ Ambient Temperature	2 byte	DPT_Value_Temp	9.001	W	T	(°C)	
Reset	31	Control_ Reset Filter	1 bit	DPT_Reset	1.015	W	T	1 – Reset filter
	32	Control_ Reset Error	1 bit	DPT_Reset	1.015	W	T	1 – Reset error
Timeout	33	Control_ Window Contact Status	1 bit	DPT_OpenClose	1.009	W	T	0 - Open; 1 - Closed
		Control_ Switch Off Timeout	1 bit	DPT_Start	1.010	W	T	0 - Stop; 1 - Start
	34	Control_ Occupancy	1 bit	DPT_Occupancy	1.018	W	T	0 - Not Occupied; 1 - Occupied
	35	Control_ Sleep Timeout	1 bit	DPT_Start	1.010	W	T	0 - Stop; 1 - Start
Locking	36	Control_ Lock Remote Control	1 bit	DPT_Bool	1.002	W	T	0 - Unlocked; 1 - Locked
	37	Control_ Lock Control Objects	1 bit	DPT_Bool	1.002	W	T	0 - Unlocked; 1 - Locked

<b>Special Modes</b>	<b>38</b>	Control_ Power Mode	1 bit	DPT_Start	1.010		W	T	0 - Stop; 1 - Start
	<b>39</b>	Control_ Econo Mode	1 bit	DPT_Start	1.010		W	T	0 - Stop; 1 - Start
	<b>40</b>	Control_ Additional Heat	1 bit	DPT_Start	1.010		W	T	0 - Stop; 1 - Start
	<b>41</b>	Control_ Additional Cool	1 bit	DPT_Start	1.010		W	T	0 - Stop; 1 - Start
<b>Scenes</b>	<b>42</b>	Control_ Save/Exec Scene	1 byte	DPT_SceneControl	18.001		W	T	0 to 4 - Control_Exec Scene 1 to 5; 128 to 132 - Control_Save Scene 1 to 5
	<b>43</b>	Control_ Store Scene1	1 bit	DPT_Bool	1.002		W		1 - Store Scene 1
	<b>44</b>	Control_ Store Scene2	1 bit	DPT_Bool	1.002		W		1 - Store Scene 2
	<b>45</b>	Control_ Store Scene3	1 bit	DPT_Bool	1.002		W		1 - Store Scene 3
	<b>46</b>	Control_ Store Scene4	1 bit	DPT_Bool	1.002		W		1 - Store Scene 4
	<b>47</b>	Control_ Store Scene5	1 bit	DPT_Bool	1.002		W		1 - Store Scene 5
	<b>48</b>	Control_ Execute Scene1	1 bit	DPT_Bool	1.002		W	T	1 - Execute Scene 1
	<b>49</b>	Control_ Execute Scene2	1 bit	DPT_Bool	1.002		W	T	1 - Execute Scene 2
	<b>50</b>	Control_ Execute Scene3	1 bit	DPT_Bool	1.002		W	T	1 - Execute Scene 3
	<b>51</b>	Control_ Execute Scene4	1 bit	DPT_Bool	1.002		W	T	1 - Execute Scene 4
	<b>52</b>	Control_ Execute Scene5	1 bit	DPT_Bool	1.002		W	T	1 - Execute Scene 5
<b>Disabling</b>	<b>53</b>	Control_ Disable Input 1	1 bit	DPT_Bool	1.002		W	T	0 - Enable; 1 - Disable
		Control_ Disable Input 1	1 bit	DPT_Enable	1.003		W	T	0 - Disable; 1 - Enable
	<b>54</b>	Control_ Disable Input 2	1 bit	DPT_Bool	1.002		W	T	0 - Enable; 1 - Disable
		Control_ Disable Input 2	1 bit	DPT_Enable	1.003		W	T	0 - Disable; 1 - Enable
	<b>55</b>	Control_ Disable Input 3	1 bit	DPT_Bool	1.002		W	T	0 - Enable; 1 - Disable
		Control_ Disable Input 3	1 bit	DPT_Enable	1.003		W	T	0 - Disable; 1 - Enable

	56	Control_Disable Input 4	1 bit	DPT_Bool	1.002		W	T	0 - Enable; 1 - Disable
		Control_Disable Input 4	1 bit	DPT_Enable	1.003		W	T	0 - Disable; 1 - Enable
<b>On/Off</b>	57	Status_On/Off	1 bit	DPT_Switch	1.001	R		T	0 - Off; 1-On
<b>Mode</b>	58	Status_Mode	1 byte	DPT_HVACContrMode	20.105	R		T	0 - Auto; 1 - Heat; 3 - Cool; 9 - Fan; 14 - Dry
	59	Status_Mode Cool/Heat	1 bit	DPT_Heat/Cool	1.100	R		T	0 - Cool; 1 - Heat
	60	Status_Mode Auto	1 bit	DPT_Bool	1.002	R		T	1 - Auto mode is active
	61	Status_Mode Heat	1 bit	DPT_Bool	1.002	R		T	1 - Heat mode is active
	62	Status_Mode Cool	1 bit	DPT_Bool	1.002	R		T	1 - Cool mode is active
	63	Status_Mode Fan	1 bit	DPT_Bool	1.002	R		T	1 - Fan mode is active
	64	Status_Mode Dry	1 bit	DPT_Bool	1.002	R		T	1 - Dry mode is active
	65	Status_Mode Text	14 byte	DPT_String_8859_1	16.001	R		T	ASCII String
<b>Fan Speeds</b>	66	Status_Fan Speed / 3 Speeds	1 byte	DPT_Scaling	5.001	R		T	33% - Speed 1; 67% - Speed 2; 100% - Speed 3
		Status_Fan Speed / 3 Speeds	1 byte	DPT_Enumerated	5.010	R		T	1 - Speed 1; 2 - Speed 2; 3 Speed 3
		Status_Fan Speed / 4 Speeds	1 byte	DPT_Scaling	5.001	R		T	25% - Speed 1; 50% - Speed 2; 75% - Speed 3; 100% - Speed 4
		Status_Fan Speed / 4 Speeds	1 byte	DPT_Enumerated	5.010	R		T	1 - Speed 1; 2 - Speed 2; 3 Speed 3; 4 - Speed 4
	67	Status_Fan Speed Man/Auto	1 bit	DPT_Bool	1.002	R		T	0 - Manual; 1 - Auto
	68	Status_Fan Speed 1	1 bit	DPT_Bool	1.002	R		T	1 - Fan is in speed 1
	69	Status_Fan Speed 2	1 bit	DPT_Bool	1.002	R		T	1 - Fan is in speed 2
	70	Status_Fan Speed 3	1 bit	DPT_Bool	1.002	R		T	1 - Fan is in Speed 3
	71	Status_Fan Speed 4	1 bit	DPT_Bool	1.002	R		T	1 - Fan is in Speed 4
	72	Status_Fan Speed Text	14 byte	DPT_String_8859_1	16.001	R		T	ASCII String

Vanes Up-Down	73	Status_ Vanes U-D / 5 pos	1 byte	DPT_Scaling	5.001	R		T	20% - Pos1; 40% - Pos2; 60% - Pos3; 80% - Pos4; 100% - Pos4
		Status_ Vanes U-D / 5 pos	1 byte	DPT_Enumerated	5.010	R		T	1 - Pos1; 2 - Pos2; 3 - Pos3; 4 - Pos4; 5 - Pos5
		Status_ Vanes U-D / 6 pos	1 byte	DPT_Scaling	5.001	R		T	16% - Pos1; 33% - Pos2; 50% - Pos3; 67% - Pos4; 83% - Pos5; 100% - Pos6
		Status_ Vanes U-D / 6 pos	1 byte	DPT_Enumerated	5.010	R		T	1 - Pos1; 2 - Pos2; 3 - Pos3; 4 - Pos4; 5 - Pos5; 6 - Pos6
		Status_ Vanes U-D / 7 pos	1 byte	DPT_Scaling	5.001	R		T	14% - Pos1; 28% - Pos2; 43% - Pos3; 57% - Pos4; 71% - Pos5; 85% - Pos6; 100% - Pos7;
		Status_ Vanes U-D / 7 pos	1 byte	DPT_Enumerated	5.010	R		T	1 - Pos1; 2 - Pos2; 3 - Pos3; 4 - Pos4; 5 - Pos5; 6 - Pos6; 7 - Pos7
	74	Status_ Vanes U-D Pos1	1 bit	DPT_Bool	1.002	R		T	1 - Position 1
	75	Status_ Vanes U-D Pos2	1 bit	DPT_Bool	1.002	R		T	1 - Position 2
	76	Status_ Vanes U-D Pos3	1 bit	DPT_Bool	1.002	R		T	1 - Position 3
	77	Status_ Vanes U-D Pos4	1 bit	DPT_Bool	1.002	R		T	1 - Position 4
78	Status_ Vanes U-D Pos5	1 bit	DPT_Bool	1.002	R		T	1 - Position 5	
79	Status_ Vanes U-D Pos6	1 bit	DPT_Bool	1.002	R		T	1 - Position 6	
80	Status_ Vanes U-D Pos7	1 bit	DPT_Bool	1.002	R		T	1 - Position 7	
81	Status_ Vanes U-D Swing	1 bit	DPT_Bool	1.002	R		T	0 - Off; 1 - Swing	
82	Status_ Vanes U-D Text	14 byte	DPT_String_8859_1	16.001	R		T	ASCII String	
Temperature	83	Status_ AC Setpoint Temp	2 byte	DPT_Value_Temp	9.001	R		T	(°C)
	84	Status_ AC Reference Temp	2 byte	DPT_Value_Temp	9.001	R		T	(°C)
Filter	86	Status_ Filter Status	1 bit	DPT_Bool	1.005	R		T	0 - No Alarm; 1 - Alarm