Technical Documentation Infinity

Status: Draft

Firmware Version : v1.2

Hardware Version : Infinity Snr. 140505

Order Number: INFXXX

Technical Details:

Power Supply	Min. 21 VDC, Max. 31 VDC, provided by the KNX bus line
Maximum Power Consumption	INF: 650 mW
Bus Power Consumption	Class 30mA
Fan-In Model	TP1-256
Connection to the bus via:	2 x 1 mm pins for bus connecting terminal (TP1), 0.5mm2 section
Operating Temperatures	-5 ºC to +45 ºC
Maximum Humidity	93% relative humidity, no moisture condensation
Type Of Protection (EN 60529)	IP20 (with front plate mounted)
Protective Separation	Device Group 3
Dimensions (w x h x d) (mm)	+/- 85 x 85 x 30 (metal/wood/corian) +/- 90 x 90 x 30 (glass/stone)

Functional Description

The INFINITY series of TENSE provides many advanced functions, available on a small space.

In stand-by modus it acts as a regular switch (INTENSITY) with multiple functions that are set through the ETS software of KNX.

The display can be used to show button function info, thermostat status, internal and external temperatures, date/time information.

The functions of the INFINITY series are:

- Switch or Send 1 or 2 Byte Values on
  - Short Touch
  - Short and Long Touch
  - Positive / Negative edges
- Dimming (using 1 or 2 buttons)
- Blind Control (using 1 or 2 buttons)
- Shutter Control (using 1 or 2 buttons), with predefined operation concepts:
  - Short Touch : start / Long : stop
  - Long Touch : start / Short : stop
  - Single Touch : (Short : start / stop)
- Recalling / Saving Scenes

The INFINITY series is further made complete by several functional modules:

- Temperature sensing
- Thermostat (PI and 2Point – Switching)
- Scene Module
- Timers
- Basic Logic Functions
- Up/Down Counters

Additionally, touching at least 2 buttons at the same time activates the menu.

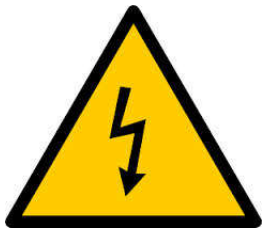
By swiping from left to right (forward) or from right to left (backward) on the upper 2 touch buttons, you can navigate through the head pages, which are organized by function.

Sub pages can be navigated by swiping on the lower 2 touch buttons. Each page contains a description of its function and the function of each button.

Available Pages:

- Thermostat - For changing the Mode and Setpoint , or Heating/Cooling
- 3 x 6 Lights (Switching /Dimming)
- 2 x 6 Shutters/Blinds/Curtains/…
- 2 x 6 Scenes
- 2 x 6 Value Pages
- Multimedia – various screens for controlling up to 4 sources and the volume.

Installation



Risk of electrocution

Only skilled electricians can carry out installation and commissioning of the device. Otherwise, there is a risk of fire and electrocution. Observe the regulations valid in the country of use, as well as the KNX guidelines. To be installed indoors.

1. Remove power from the KNX bus.

2. Connect the bus coupler with the KNX bus using the KNX TP1 bus connection terminal.

   Connect the red bus wire to the red terminal (+) and the black bus wire to the black terminal (–).

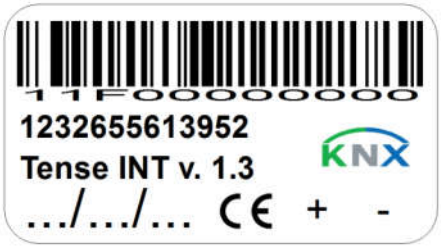
3. The bus coupler fits in a standard size 60-installation box .Use two screws to fix the bus coupler. Make sure the mounting is level and that the "TOP ↑" marking on the PCB points upwards.

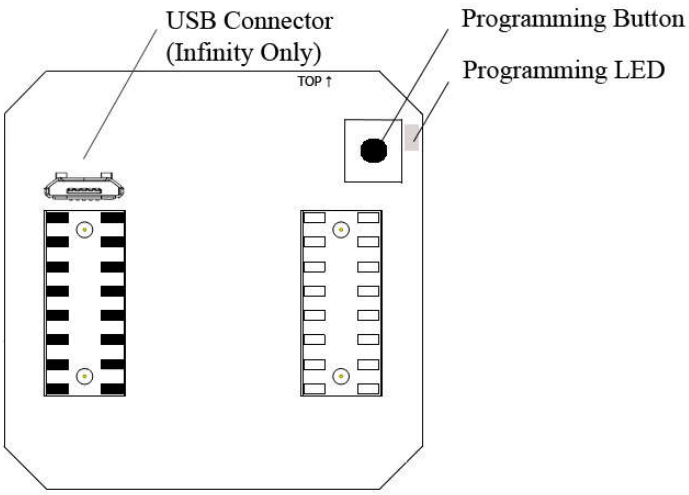
4. Plug the front onto the bus coupler. Make sure that the "TOP ↑" marking on the PCB (backside of the front) points upwards.

5. Power the KNX bus.

Commissioning

First, download the appropriate product databases from www.tense.be and import it into the ETS.
If you want to avoid a download of the firmware the first time, you can use the firmware version that matches the preprogrammed firmware. You find the version of the preprogrammed software version on the label at the backside of the bus coupler unit.





1. Remove the front.
2. Press the programming button. Make sure the red programming LED lights up.
3. In the ETS, add the device and assign the physical address.
4. Program the physical address. Make sure the red programming LED turns off.
5. Replug the front.
6. In the ETS, select the appropriate parameters and assign the group addresses.
7. Download the application program to the device.

KNX Product Database

The parameters are divided into 4 Parts

1. Configuration
   Here you can set what function is behind every touch surface. You can also configure the behavior of the LED that is integrated in every touch surface. It also allows you to set some general settings, and define the content of the main screen.
2. Temperature
   Contains the settings of the internal temperature sensor, as well as those for the thermostat.
3. Modules

   Activate additional functionality that comes with each switch. Currently supported:

   1. Scene Module, supporting eight scenes with eight actuators(1 Bit/1Byte/2Byte supported)
   2. Basic Logic Module (AND/OR functions), consisting of five Logic Channels that each have up to five 1-Bit inputs
   3. Timers, up to four
   4. Up/Down Counters, up to four
4. Menu
   Under Menu you can configure which extra functions you want to provide upon multi-touch.

Updatable Software

All the products of Tense can be updated with new internal Software *(firmware).* To install new software, just use the latest KNX database from our website. When the version of the KNX product database does not match the one inside the device, then ETS will automatically install the new software into the device. This update can take a while (**at least 45 minutes**) depending on the other traffic on the KNX bus.

You can use both full and partial download. When the new firmware is already installed, the ETS will just send the parameters.

However, if you use "**unload application**" then also the software will be erased, and will be downloaded the next time ETS wants to configure the device.

	Note that you never can destroy a device with this procedure. However, should a download of the firmware fail, then it might be that the device becomes unresponsive. To recover from this situation, hold the programming button while powering the device.

Configuration

General Settings

In this page you can set some general settings. e.g. The Function Text Display Time and the default brightness level of the color LEDs.

On every button page you can specify which text describes the function of the specific button. This specific text can be used to put it into the corners of the display.
The Function Text display time is the time this button text will remain on the screen after a button is pressed.

You can also enable a blocking object, which will cause the Infinity to ignore any touch input. The other functions are not affected by this setting and bus communication is still possible. LEDs will not provide tactile feedback, but otherwise the behavior of the LEDs will act as programmed.

Here you can also set the default LED brightness, in steps of 10%. Optionally you can choose to use a night object. When the night object is set, then the brightness will be set to the corresponding value of the parameter.

You can also specify the "**Read on Init delay time"**. The "Read On Init" flag is a communication object flag new for System B devices. If you set this flag on a communication object, then the Infinity will issue read requests upon power-up, to make sure that its status values are up-to-date.

Set this value to a time, where you are certain that every bus device is up and running and will answer read requests. In that way you assure that the internal states of the Infinity correspond to the actual values.

With the scroll step delay you determine how fast scrolling text will scroll on the screen. The lower this value, the faster text will scroll onto the display.
Text will scroll whenever it's too long to be displayed entirely on the screen. This scrolling is calculated by software and will happen automatically.

The line offset allows you to reposition the display content vertically.

List of available Communication Objects and Parameters:

Name	*Value Range*	*Comment*
Default LED Brightness Level	Off, 10-100%, Use Night Object	Default Brightness level, or option to use night object to select the dim level of the LEDs.
Level at Night = 1	Off, 10-100%	LED Brightness level at Night
Level at Night = 0	Off, 10-100%	LED Brightness level at Day
Enable Blocking Object	Yes/No	Disable Touch Input
Read On Init Delay(s)	4 – 255	Time To wait before reading objects with the ROI flag
Function Text Display Time (s)	3 – 30	The time button function text will be displayed on the screen after touch input
Scroll Step Delay (ms)	20 -240	wait time between each scroll step. The smaller this value, the faster text scrolls on the display.
Line Offset	0 – 4	Lines to shift the display content vertically
MultiTouch Subsequent Key Time (ms)	50 – 500	Only for advanced users. Use carefully. Finetune setting for MultiTouch. This is the time the user has, to touch two surfaces at the same time in order to generate a MultiTouch event. In other words, if the user touches one button he has to touch the other button within this time to generate a MultiTouch event. Note that no single button actions will be taken as long as this time has not elapsed. Also, swipe events will be interpreted as MultiTouch events if this time has not elapsed and two keys are touched at the same time.

No	*Name*	*I/O*	*DPT*	*Flags*	*Use*
1	Blocking Object	I	DPT1.2	WCTUI	Enables/Disables Touch Input
2	Internal Temperature	O	DPT9.001	RCT	Measurement of internal NTC Sensor
3	Night	I	DPT1.2	WCTUI	Changes the brightness of the LEDS

Main Page

The main page is on in 3 different conditions:

1. the "Main Page – display on/off" communication object is set to 1 (e.g. by a presence detector)
2. the "Value Pages – Page Select" communication object is set to 255 and the "'"
3. one of the buttons have been touched and the "Function Text Display Time" hasn't elapsed.

Warning

The display has a limited lifetime. To extend the longevity of it, only use the display whenever useful

The content of the main page is highly configurable.

Center Content

You can choose to display the current time. Or you can also display 2 info lines, e.g. like an incoming message, or the artist name and song title of the song currently playing. The possible values are equal to those of the value pages in the menu.

If you need runtime control of the content displayed, use the communication object "Main Page – Show Info Lines".

Border Content

You can opt to display the button function of each single button in it's corresponding corner. Or you can choose to display climate info, such as the internal and external temperature, along with setpoint and heating/cooling status of the thermostat (ony when this function is enabled in the menu), or even the current date.
The parameter "Default Border Content" and "Border Content On Multitouch" let you control when to display what by default. If you need further control of this, then you can use the communication object "Main Page – Show Climate Info"

List of parameters and communication objects:

Name	***Value Range***	***Comment***
Enable Main Page On/Off object	Yes/No	enable object to turn on the main page of the display
Enable Time Info	Yes/No	enable time as center content
Enable Info Lines	Yes/No	enable 2 lines of text as center content
Default Center Content	Time / 2 Info Lines	what center content to display by default
Value Type Line x	Yes/No	type of value to be displayed
Prefix	Text	prefix to put before the data
Suffix	Text	suffix to put after the data
Text On True	Text	Text to show if boolean value is True
Text On False	Text	Text to show if boolean value is False
Line Offset	0 – 4	Lines to shift the display content vertically
Default Border Content	Button Texts / Climate Info	what border content to display by default
Border Content On MultiTouch	Button Texts / Climate Info	what border content to display on MultiTouch
Add External Temp	Yes/No	show external temperature with other climate information
Add Current Date	Yes/No	show current date with climate information
Add Thermostat Info	Yes/No	show thermostat info with climate information. This information is directly related to the thermostat in the menu. when enabled, the setpoint temperature will be written into the upper left hand corner, and the actual temperature will be written into the upper right hand corner instead of the internal temperature. If the thermostat is actively heating/cooling then this will be display with a thermometer symbol. The '+' sign indicated heating, the '–' sign cooling

No	*Name*	*I/O*	*DPT*	*Flags*	*Use*
189	Main Page – Date	I	DPT11.001	WCTUI	the current date
190	Main Page – Time	I	DPT10.001	WCTUI	the current time
191	Main Page – Display On/Off	I	DPT1.001	WC	Main screen on/off (only when menu is not active)
192	Main – Line1 – Value	I	Various	WC	content of first line in main page
193	Main – Line2 – Value	I	Various	WC	content of second line in main page
194	Main Page – Show Info Lines	I	DPT1.001	WC	If 1,Center Content Info Lines, if 0, Clock
195	Main Page – Show Climate Info	I	DPT1.001	WC	If 1, Border content is climate info (+ date), or button function text
196	Main Page – External Temp	I	DPT9.001	WC	External Temperature

Switch + Values

The combination of Switch + Value allows you to send a different value on a Single Touch, short/long button touch, or on touching/releasing (= edge) the button.
On a single touch the desired action of the button will be executed as soon as the button is touched.
When short/long button touch is selected, a KNX telegram will be send a soon as the button is released, or when the time for a long touch has elapsed.

The parameters for the exact period of a long touch can be set.

Possible value types are 1Bit, 1Byte and 2Byte.

In this way you can use this module to

- turn on/off a 1-Bit actuator
- toggle a 1-Bit actuator
- recall a scene
- move a shutter to a certain position
- adjust the dimming to a fixed absolute value
- etc...

or a combination of any of these:

e.g: short touch toggles a light, while a long touch recalls a scene or short touch activates temperature comfort zone, long touch turns all lights off, …

List of the parameters and communication objects:

Name	***Value Range***	***Comment***
Touch Selection	Single Touch / Short And Long Touch / Edges	Type of touch to react upon
Value Type Selection	1 bit / 1 Byte / 2 Byte	type of value of the communication object
Action	On / Off / Toggle / None	type of action to take when communication object is 1 bit. None will disable any action.
Value	0-255, 0-65535	Value to be transmitted. Range depends on the value type
Long Touch Time (x 100ms)	3 – 50	minimum time a button must be touched in order to generate a long touch event

Communication Objects for the first Button :

No	Name	I/O	DPT	Flags	Use
4	Short Touch – 1 Bit	O	DPT1.1	WCTUI	Switch Object
4	Pos Edge - 1 Bit	O	DPT1.1	WCTUI	Switch Object
4	Single Touch – 1 Bit	O	DPT1.1	WCTUI	Switch Object
5	Long Touch – 1 Bit	O	DPT1.1	WCTUI	Switch Object
5	Neg Edge - 1 Bit	O	DPT1.1	WCTUI	Switch Object
6	Short Touch- 1 Byte	O	DPT1.1	CT	1 Byte Value
6	Pos Edge - 1 Byte	O	DPT1.1	CT	1 Byte Value
6	Single Touch- 1 Byte	O	DPT1.1	CT	1 Byte Value
7	Long Touch – 1 Byte	O	DPT1.1	CT	1 Byte Value
7	Neg Edge - 1 Byte	O	DPT1.1	CT	1 Byte Value
9	Short Touch- 2 Bytes	O	DPT1.1	CT	2 Bytes Value
9	Pos Edge - 2 Bytes	O	DPT1.1	CT	2 Bytes Value
9	Single Touch- 2 Bytes	O	DPT1.1	CT	2 Bytes Value
10	Long Touch – 2 Bytes	O	DPT1.1	CT	2 Bytes Value
10	Neg Edge - 2 Bytes	O	DPT1.1	CT	2 Bytes Value
11	Short Touch – Toggle Value – 1 Bit	O	DPT1.1	WCTUI	Value to be toggled
11	Pos Edge – Toggle Value – 1 Bit	O	DPT1.1	WCTUI	Value to be toggled
11	Single Touch – Toggle Value – 1 Bit	O	DPT1.1	WCTUI	Value to be toggled
12	Long Touch – Toggle Value – 1 Bit	O	DPT1.1	WCTUI	Value to be toggled
12	Neg Edge – Toggle Value – 1 Bit	O	DPT1.1	WCTUI	Value to be toggled

The objects of the second button start at 21. There is a spacing of 17 objects between each button channel.

Dimming

You can use the dimming function for the following functions:

– Dim up and down via one button (single-surface dimming).

– Either dim up or down. You need a second button to dim in the other direction (dual-surface dimming).

You can use the corresponding button to switch the light on or off (short touch) or dim it using a longer touch. When switching takes place, an ON/OFF telegram is sent via the switch object. For single surface dimming, the value of this telegram is the opposite value of its internal state.

When dimming, dimming up or dimming down is carried out via the Dim Relative object. In addition, you can also transmit the corresponding dimming step cyclically. For single surface dimming, the direction of the dimming is the opposite direction of its internal state. **If the Toggle Value is 0 then the dimming direction is always up.**

List of Communication Objects and parameters:

Name	***Value Range***	***Comment***
Dimming Direction	Up / Down / Up And Down	direction of the dimming
Dimming Step	100%, 50%, 25%,12.5%,6.25%, 3%, 1.5%	dimming step
Long Touch Time (x 100ms)	3 – 50	minimum time a button must be touched to generate a long touch event
Cyclic Dimming	Yes/No	Enable cyclic dimming, send the dimming step at every interval
Cycle Time (x 100ms)	5 – 50	interval to send dimming step during cyclic dimming

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
4	Dimming – Switch	I/O	DPT1.1	WCTUI	Switch/Toggle Object
11	Dimming – Relative	I/O	DPT3.7	WCTUI	Relative Dimming Object
12	Dimming – Toggle Value	I	DPT1.1	WCTUI	Status value to Toggle (only for up/down dimming)

Blind

With the blind control function, you can operate blinds using one or two touch surfaces. A long touch initiates a long motion. After a short touch a step/stop telegram is sent. Using two buttons, the direction will always be the same, upwards or downwards, either when adjusting the slats (short touch) or lowering/raising the blinds (long touch).

When only one direction is chosen, the option "Send fixed Position after extra keypress" becomes available. It enables an extra communication object "Blind Fixed Position", which will send "up" or "down" when the button is touched within 1,5 seconds after a long motion was started. This event can be used to drive the blinds to a predetermined position in the actor.

When using one button for both directions, the direction of lowering/raising depends on the previous action. I.e. when the blind has just been moved downwards, it will move upwards the next time the button is touched for a long period.

During adjustment of the slats the direction is only changed after the "Slat Direction Reversal Time" has elapsed. After a stop/step telegram has been transmitted to adjust the slats, a stop/step telegram for the same direction can be created by touching the button again, as long as this subsequent push-button action is carried out within a time period, specified by the Slat Direction Reversal Time. If this time period has elapsed, the direction of rotation of the slats will change when the button is touched shortly.

List of the parameters and communication objects:

Name	***Value Range***	***Comment***
Blind Direction	Up / Down / Up And Down	direction of the blind
Long Touch Time (x 100ms)	3 – 50	minimum time a button must be touched to generate a long touch event
Slat Direction Reversal Time(x 100ms)	3 – 50	Minimum time between two subsequent touches during step(slat adjustment) to change the direction
Send fixed Position after extra keypress	Yes/No	Sends extra Up/Down command with keypress within 1,5 seconds after long motion was started

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
4	Blind – Step/Stop	I/O	DPT1.7	CT	Step/Stop (Short Motion) Object
5	Blind – Up/Down	I/O	DPT1.8	WCTUI	Up/Down (Long Motion) Object
6	Blind – Fixed Position	I/O	DPT1.8	CT	Up/Down (Long Motion) Object

Shutter

Shutters do not have any rotating slats, so the step object is omitted. There are basically 3 operation concepts to use for controlling shutters:

1. Start motion on long touch , stop on short touch (comparable to blinds).
2. Start motion on short touch, stop on long touch.
3. Single Touch for Starting/Stopping the shutters. Depending on the current state of the shutter actuator, the Infinity will stop or start the shutter when the button is touched. Holding the key while the shutter was active will start a movement in the opposite direction.

To be able to keep track of the motion, the shutter motion time should be set according the duration of the shutters motion time to go from entirely down to completely up.

However, when possible, it is better to use the motion status object, which is sometimes available on shutter actors. Then the motion time is ignored.

While this is optional for operation concept 1 and 2 (don't set it too small though), for Single Touch it is necessary to set this accurately, otherwise the button might generate a new long motion if the key is being touched while the shutter is moving, or send a stop object while the shutter is actually not moving any longer.

List of the parameters and communication objects:

Name	***Value Range***	***Comment***
Shutter Direction	Up / Down / Up And Down	direction of the shutter with this button
Operation Concept	long: start – short: stop / short: start – long: stop / Single Touch	Behaviour of the shutter upon touch of the button
Long Touch Time (x 100ms)	3 – 50	minimum time a button must be touched to generate a long touch event
Shutter Motion Time(x 1s)	1 – 65	Time of movement of a shutter from completely down to completely up

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
4	Shutter Stop	I/O	DPT1.7	WCTU	Stop Object
5	Shutter Up/Down	I/O	DPT1.8	WCTU	Up/Down (Long Motion) Object
12	Shutter Motion Status	I	DPT1.10	WCTUI	Motion Status

Scene

A scene can be recalled by a short touch. If you also want to enable saving scenes, you can use the save function. Then a save telegram will be send out on a long key touch, after which the corresponding scene module starts saving the values of the actuators that belong to that scene. The period for the long touch time can be set.

If you need a more dynamic behaviour of the scene, e.g. Setting lights 100% at day, but only 10% at night, you can use the "Use scene number from external object". Some external logic determines beforehand which scene to recall when the touch surface is touched.

Examples of use:

- If a light is on in the room/house, touch this button to turn everything off in the room/house, otherwise turn on the light in that room.
- If the button is touched after midnight, the lights are set at 10%. Otherwise the light level is set to 100%.

List of the parameters and communication objects:

Name	***Value Range***	***Comment***
Use scene number from external object	Yes/No	whether to use a fixed scene value, or use one from an external communication object
Scene number	1 – 64	scene to be recalled when the button is touched
Use save function	Yes/No	long keypress will send out a save telegram for the current scene (from external object or fixed, as programmed)
Long Touch Time (x 100ms)	3 – 50	minimum time a button must be touched to generate a long touch event

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
6	Scene Value	O	DPT18.001	CT	Scene number
15	Scene Input Value	I	DPT18.001	WCTUI	Input object of scene number

LED control

The integrated LEDs provide status and tactile feedback. It is possible to control the color and brightness of the LED in many ways.

1. Always Off
2. Always on: color to be selected from a list of available colors, e.g. White During operation, this color will be fixed.
3. Bound to a status object, e.g. 1 = green, 0 = red
4. Upon button activation; distinct color when no touch detected, when touched, or when long touch time has been reached.
5. Based on External brightness object and color object. Brightness is an external scaling object that allows you to dim the LED. By filling in a number from 0 to 10 you can set the color List of Colors:

   0 = Off
   1 = White
   2 = Red
   3 = Green
   4 = Blue
   5 = Cyan
   6 = Magenta
   7 = Yellow
   8 = Violet
   9 = Orange

   The brightness object is a scaling object which will override the default LED brightness.

6. Through external RGB object(s). It's possible to control the color mixing of the multicolor LED over the bus by using the 3 R, G, B color components as a scaling object, or through the KNX specified RGB color object (DPT 232.600). General brightness parameters will be ignored.

In order to provide tactile feedback, (at most) 30 % of dim value (up to 100%) will be added to the current value so the LED lights up upon touch.

List of the parameters and communication objects:

Name	***Value Range***	***Comment***
LED Configuration	Disabled / Always On / Button Activation / External Bit Object / External Brightness and Color Byte / External RGB Object	mode of controlling the color and/or brightness of the LED
LED Color	White / Red / Green / Blue / Cyan / Magenta/ Yellow / Violet / Orange	list of predefined colors
LED Color when no Touch	Off / White / Red / Green / Blue / Cyan / Magenta/ Yellow / Violet / Orange	list of predefined colors

LED Color on Touch	Off / White / Red / Green / Blue / Cyan / Magenta/ Yellow / Violet / Orange	list of predefined colors
LED Color on Long Touch	Off / White / Red / Green / Blue / Cyan / Magenta/ Yellow / Violet / Orange	list of predefined colors
LED Color on Status = 0	Off / White / Red / Green / Blue / Cyan / Magenta/ Yellow / Violet / Orange	list of predefined colors
LED Color on Status = 1	Off / White / Red / Green / Blue / Cyan / Magenta/ Yellow / Violet / Orange	list of predefined colors
Default Color	Off / White / Red / Green / Blue / Cyan / Magenta/ Yellow / Violet / Orange	default color at startup. If ROI flag is enabled on the color object, this color will be overwritten as soon as the read response is received
Default Brightness	Off, 10-100%	default brigthness at startup. If ROI flag is enabled on the brightness object, this brightness will be overwritten as soon as the read response is received
Use 3 Bytes Color Byte	Yes/No	wheter you want to use a 3 Bytes DPT or 3 individual 1 Byte objects for each color component

No	*Name*	*I/O*	*DPT*	*Flags*	*Use*
16	LED control 1 Bit	I	DPT1.2	WCTUI	External Status Bit Object
17	LED control 3 Bytes	I	DPT232.600	WCTUI	External 3 Bytes Color Object
17	LED control – Red	I	DPT5.1	WCTUI	External Color Byte Object, scaling 0 – 100%
18	LED control – Green	I	DPT5.1	WCTUI	External Color Byte Object, scaling 0 – 100%
19	LED control – Blue	I	DPT5.1	WCTUI	External Color Byte Object, scaling 0 – 100%
19	LED control Color	I	DPT18.001	WCTUI	Color, 0 = Off / 1 = White / 2 = Red / 3 = Green / 4 = Blue / 5 = Cyan / 6 = Magenta/ 7 = Yellow / 8 = Violet / 9 = Orange
20	LED control Brightness	I	DPT1.2	WCTUI	External Brightness, scaling 0 – 100%

Temperature

All temperatures are in °C.

Internal Sensor

The Infinity contains an internal Temperature sensor which is sampled every 5 seconds. It measures temperatures from -40 °C to 125 °C. By using the parameter Temperature Correction you can correct the measured value when necessary. The temperature value can be send onto the bus after a cyclical time or when the new measured value differs too much from a previous value. The latter case will also reset the cyclical timer.

List of the parameters and communication objects:

Name	***Value Range***	***Comment***
Temperature Correction (x 0.1 °C)	-50 to 50	correction on measured value, in tenths of a degree (range -5° to +5°)
Send at a deviation of ... (x 0.1 °C)	0 to 50	send temperature automatically onto the bus as soon as the difference between the last sent temperature is bigger than the current temperature + or - this parameter. Set to 0 to disable.
Send at least every ... minute(s)	0 to 60	send temperature periodically onto the bus. Set to 0 to disable.

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
2	Internal Temperature	O	DPT9.1	RCT	(Corrected) Internally Measured Temperature

Thermostat

You can use a built-in thermostat to control the climate of your room. Heating, Cooling, Heating + Cooling with manual or automatic switch is supported. If a wait time is specified, then the thermostat will wait that period after a switch occurred before controlling the heating/cooling.
The status of heating/cooling can be monitored by the heating/cooling mode feedback, or by the corresponding bits in the RHCC Status Feedback object.

Note that when heating/cooling (manual switch) is used, the thermostat will remain unactive until the Heating/Cooling communication object has been set on the bus.

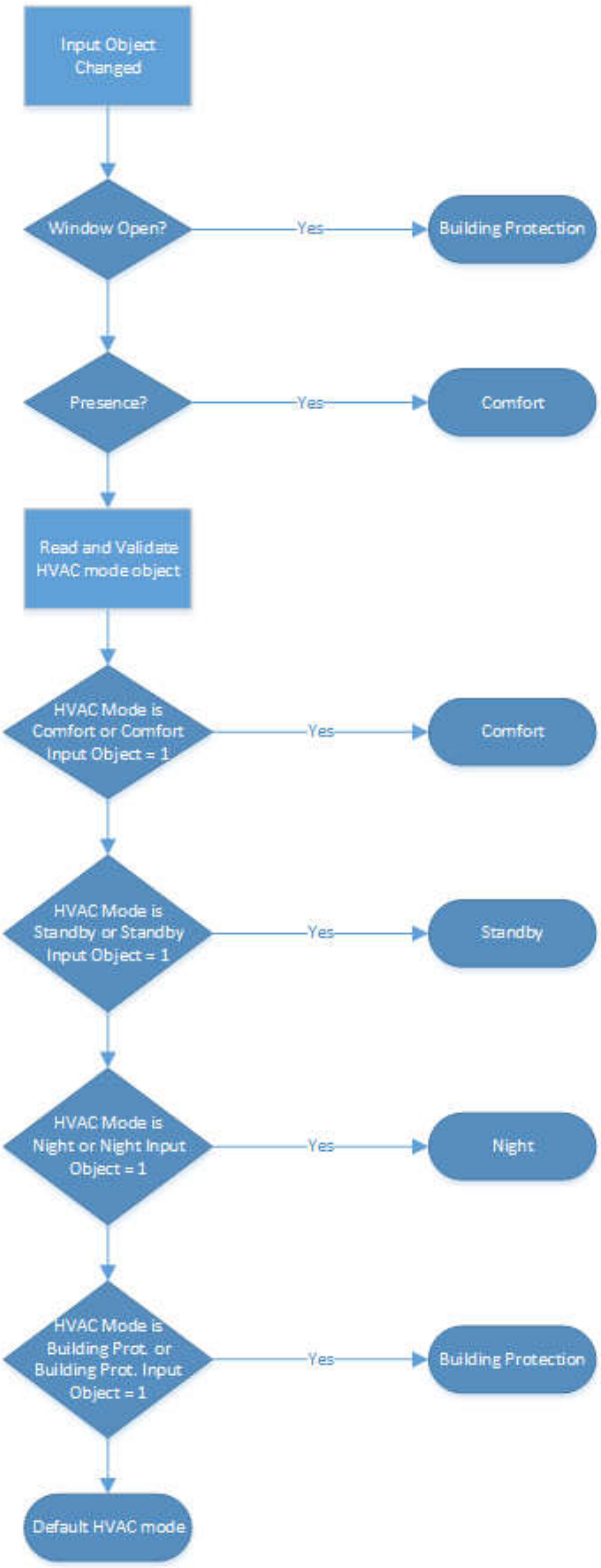
The method for controlling the climate can be 2-Step switching , PI continuous or PI switching. When switching is selected, an output object Heating (or Cooling) switch will appear. In the other case, a Heating (or Cooling) value will make you able to control your heating/cooling equipment.

4 Modes are supported :

- Comfort
- Standby
- Night
- Building Protection (a.k.a. Heat/Frost Protection)

The modes can be set over the HVAC object (DPT 20.102) , or over the corresponding 1 Bit object. The Presence or Window open object can also alter the current mode.

For a schematic overview of how the current HVAC mode is determined, see below.


Input Object Changed
Window Open?
Yes
Building Protection
Presence?
Yes
Comfort
Read and Validate HVAC mode object
HVAC Mode is Comfort or Comfort Input Object = 1
Yes
Comfort
HVAC Mode is Standby or Standby Input Object = 1
Yes
Standby
HVAC Mode is Night or Night Input Object = 1
Yes
Night
HVAC Mode is Building Prot. or Building Prot. Input Object = 1
Yes
Building Protection
Default HVAC mode

Feedback about the current mode can be obtained through the mode feedback status objects or through the HVAC status object (DPT_HVACStatus).

Status and Errors

Through the RHCC Status Feedback object (DPT 22.101) you can track the status of the thermostat. Following bits are implemented:

Bit0 : Fault

Bit7 : Heating Disabled

Bit8 : HeatCool mode

Bit11 : Cooling Disabled

Bit12 : DewPoint status

Bit13 : FrostAlarm

Bit14 : Overheat Alarm

Bit 6 (Controller Status) of the HVAC Status object indicates whether the thermostat is actively heating/cooling.

The "Dew Point Alarm" will disable the cooling immediately.

Frost Alarm will be set if the temperature drops below the frost protection setpoint. Overheat alarm when temperature is higher than the heat protection temperature.

Setpoint

The setpoint can be controlled in 2 ways

- by writing a new temperature to the Setpoint object
- Using the Setpoint Adjustment object. This can either be a floating point offset or a 1 bit switch object. The latter you can use to change the setpoint using button input. Writing a 0(up) will increase the offset with 0,5 K, writing a 1 (Down) will decrease it.

You can also limit the values that are written directly to the setpoint object, by setting "New Setpoint within Adjustment bounds" to "Yes".

Feedback of the setpoint , or the adjustment, will be given through the feedback objects.

Actual Temperature

It's possible to use an external temperature sensor to determine the actual temperature of the room, optionally for a certain proportion. Feedback on the calculated temperature can be obtained through the "Actual Temperature Feedback" object.

Name	***Value Range***	***Comment***
Control Mode	Heating / Cooling / Heating and Cooling (Automatic Switch) / Heating and Cooling (Manual Switch)	
Wait Time after switch (min)	0 – 240	time to wait after a heating/cooling mode switch has occurred to actually control the HVAC equipment
Default HVAC Mode	Comfort / Standby / Night / Building Protection	when the current HVAC mode cannot be determined (when the other objects have not be written or at 0), the thermostat will switch to this mode
Use external Temperature Sensor	Yes/No	whether you want to use an external temperature sensor or the internal one. The actual temperature the termostat is using can be read from the Actual Temperature Feedback object.
Proportion external sensor	20 % / 40 % / 50 % / 60 % / 80 % / 100 %	proportion of the the external sensor that is used to calculate the actual temperature.
Maximum Adjustment up	0°C to 7°C	maximum upward offset that can be set on the Setpoint Adjustment Object
Maximum Adjustment down	0°C to 7°C	maximum downward offset that can be set on the Setpoint Adjustment Object
Setpoint Adjustment Over	2 Byte Floating Point Object / 1 bit Object	wheter you want to use a 1 bit object (0 = +0.5°, 1 = -0.5°) or a floating point object to set the offset.
Setpoint Comfort Mode	5°C – 40 °C	Setpoint in HVAC mode "Comfort"
Standby Offset	+/- 0°C - 7°C	Offset applied to Setpoint in Standby Mode
Night Offset	+/- 0°C - 7°C	Offset applied to Setpoint in Night Mode
Setpoint Frost/Heat Protection	5°C – 40 °C	Setpoint in HVAC mode "Building Protection"
Control Method	2-Step Switching / PI Switching / PI Continuous	method to determine the heating/cooling. The best method depends on the type of HVAC equipment
Hysteresis	0.3 °C to 2.0 °C	the difference the Setpoint should be surpassed

Up		to stop heating/cooling
Hysteresis Up	0.3 °C to 2.0 °C	the difference the Setpoint should be surpassed to start heating/cooling
PWM Cycle Time (minutes)	1 to 60 minutes	the period of time of the PWM cycle duration when PI Switching is selected
Cooling System	Cooling Ceiling (5K / 240 min) / Fan Air Convector (4K / 90 min) / Split Unit (4K / 90 min) / User Defined	the type of cooling system. The differential and proportial factors for the PI controller are derived from this.
Heating System	Warm Water Heating (5K / 150 min) / Underfloor Heating (5K / 240 min) / Electric Heating (4K / 100 min) / Fan Convector (4K / 90 min) / Split Unit (4K / 90 min) / User Defined	the type of heating system. The differential and proportial factors for the PI controller are derived from this.
Proportional Range (x 0.1K)	10 – 50	the proportional factor of the PI controller
Reset Time (minutes)	0 – 240	the reset time of the PI controller

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
72	External Temperature	I	DPT9.1	WCTUI	Temperature from external sensor
73	Setpoint	I	DPT9.1	WCTUI	Current Setpoint
74	Setpoint Adjustment	I	DPT9.1	WC	Setpoint adjustment value (float value)
75	Setpoint Adjustment	I	DPT1.8	WC	Setpoint adjustment value (1 Bit input – Up/Down)
76	Dewpoint Alarm	I	DPT1.2	WC	dewpoint alarm for Thermostat in Cooling Mode
77	Presence	I	DPT1.2	WC	Presence object for determing the HVAC mode. Normally HVAC mode will switch to Comfort mode
78	Window Open	I	DPT1.2	WC	Window Open object for determing the HVAC mode. Normally HVAC mode will switch to Building Protection mode
79	HVAC mode	I	DPT20.102	WC	HVAC mode object for controlling the HVAC mode according to the values defined in DPT_HVACMode [0 .. 4]
80	Frost/Heat	I	DPT1.2	WC	switches the thermostat in Frost/Heat

	protection Mode				protection mode
81	Comfort Mode	I	DPT1.2	WC	switches the thermostat into comfort mode
82	Standby Mode	I	DPT1.2	WC	switches the thermostat into standby mode
83	Night Mode	I	DPT1.2	WC	switches the thermostat into night mode
84	Heating/Cooling selection	I	DPT1.2	WCTUI	if heating/cooling mode is set to switch manually, then writing 1 onto this object activates the heating mode
85	Disable Controller	I	DPT1.2	WC	enables or disables the thermostat
86	RHCC Status Feedback	O	DPT22.101	RCT	status information, bits defined according to DPT_RHCCStatus
87	Actual Temperature Feedback	O	DPT9.1	RCT	the calculated temperature, from internal and external sensors, used by the thermostat
88	Current Setpoint Feedback	O	DPT9.1	RCT	the actual setpoint, adjustment included
89	Setpoint Adjustment Feedback	O	DPT9.1	RCT	the adjustment applied
90	HVAC Status Feedback	O	--	RCT	HVAC mode feedback, bits according to DPT_HVACStatus
91	Frost/Heat Protection Feedback	O	DPT1.2	RCT	HVAC mode feedback, whether thermostat is in Frost/Heat Protection mode
92	Comfort Mode Feedback	O	DPT1.2	RCT	HVAC mode feedback, whether thermostat is in Comfort mode
93	Standby Mode Feedback	O	DPT1.2	RCT	HVAC mode feedback, whether thermostat is in Standby mode
94	Night Mode Feedback	O	DPT1.2	RCT	HVAC mode feedback, whether thermostat is in Night mode
95	Cooling Switch	O	DPT1.1	CT	Cooling object, active when the cooling is actively cooling the room.
96	Cooling Value	O	DPT5.1	CT	The calculated PWM value from the PI controller.
97	Heating Switch	O	DPT1.1	CT	Heating object, active when the thermostat is actively heating the room.
98	Heating Value	O	DPT5.1	CT	The calculated PWM value from the PI controller.
99	Cooling Mode feedback	O	DPT1.2	RCT	feedback whether the thermostat is in cooling mode
100	Heating Mode feedback	O	DPT1.2	RCT	feedback whether the thermostat is in heating mode

Modules

Under modules you can activate additional functionality that comes with each switch.

- Scene Module, supporting eight scenes with eight actuators(1 Bit/1Byte/2Byte supported)
- Basic Logic Module (AND/OR functions), consisting of five Logic Channels that each have up to five 1-Bit inputs
- Timers, up to four
- Up/Down Counters, up to four

Scene Module

The scene module is a matrix of 8 actuator groups, with 8 scenes that **optionally** have a value for every actuator. If you want an actuator not to change with a scene, you can specify not to use this value for this scene. For actuator 1-6 the type must be 1 Bit or 1 Byte. Actuator 7 and 8 can additionally contain a 2 Byte value.

It is also possible to save scenes. When the scene module receives a request to save a scene, it will issue a read request for the corresponding actuators and wait 1 second to receive all the read responses. It then saves the received values.

It's also possible to choose not to overwrite the existing scene parameters. This is useful in the case the end user already changed the scene their selves using the scene save functionality after a long touch. If you change the type of an actuator, then you must set this parameter to "No".

List of Parameters and Communication objects:

Name	***Value Range***	***Comment***
Overwrite Existing Scenes	Yes/No	Overwrite the scenes that were specified in the past. Otherwise, use the scene values from the parameters.
Actuator Type Group 1-6	Switch 1 bit / Value 1 Byte	Value type of actuator
Actuator Type Group 7-8	Switch 1 bit / Value 1 Byte / Value 2 Byte	Value type of actuator
Scene number	0 – 63	Number of this Scene. Writing this value to the com object "Scene Function" will activate this scene.
Use Value X	Yes/No	whether to sent the value to the actuator in this scene, or ignore it
Value	On / Off	value for 1 bit actuator
Value	0-255	value for 1 Byte actuator
Value	0-65535	value for 2 Byte actuator

No	*Name*	*I/O*	*DPT*	*Flags*	*Use*
101	Scene Function	I	DPT18.1	WC	Input object of scene number of type DPT_SceneControl
102	Actuator 1 – Switch 1 Bit	I/O	DPT1.1	WCTU	1 bit value to be sent / saved when a scene is recalled / saved
103	Actuator 1 – Value 1 Byte	I/O	DPT5.10	WCTU	1 Byte value to be sent / saved when a scene is recalled / saved
104	Actuator 2 – Switch 1 Bit	I/O	DPT1.1	WCTU	1 bit value to be sent / saved when a scene is recalled / saved
105	Actuator 2 – Value 1 Byte	I/O	DPT5.10	WCTU	1 Byte value to be sent / saved when a scene is recalled / saved
106	Actuator 3 – Switch 1 Bit	I/O	DPT1.1	WCTU	1 bit value to be sent / saved when a scene is recalled / saved
107	Actuator 3 – Value 1 Byte	I/O	DPT5.10	WCTU	1 Byte value to be sent / saved when a scene is recalled / saved
108	Actuator 4 – Switch 1 Bit	I/O	DPT1.1	WCTU	1 bit value to be sent / saved when a scene is recalled / saved
109	Actuator 4 – Value 1 Byte	I/O	DPT5.10	WCTU	1 Byte value to be sent / saved when a scene is recalled / saved
110	Actuator 5 – Switch 1 Bit	I/O	DPT1.1	WCTU	1 bit value to be sent / saved when a scene is recalled / saved
111	Actuator 5 – Value 1 Byte	I/O	DPT5.10	WCTU	1 Byte value to be sent / saved when a scene is recalled / saved
112	Actuator 6 – Switch 1 Bit	I/O	DPT1.1	WCTU	1 bit value to be sent / saved when a scene is recalled / saved
113	Actuator 6 – Value 1 Byte	I/O	DPT5.10	WCTU	1 Byte value to be sent / saved when a scene is recalled / saved
114	Actuator 7 – Switch 1 Bit	I/O	DPT1.1	WCTU	1 bit value to be sent / saved when a scene is recalled / saved
115	Actuator 7 – Value 1 Byte	I/O	DPT5.10	WCTU	1 Byte value to be sent / saved when a scene is recalled / saved
116	Actuator 7 – Value 2 Byte	I/O	DPT7.1	WCTU	2 Byte value to be sent / saved when a scene is recalled / saved
117	Actuator 8 – Switch 1 Bit	I/O	DPT1.1	WCTU	1 bit value to be sent / saved when a scene is recalled / saved
118	Actuator 8 – Value 1 Byte	I/O	DPT5.10	WCTU	1 Byte value to be sent / saved when a scene is recalled / saved
119	Actuator 8 – Value 2 Byte	I/O	DPT7.1	WCTU	2 Byte value to be sent / saved when a scene is recalled / saved

Timer

A Timer object can be used to start an action after another one has occurred, with a delay time. It is also possible to send out a value cyclically. In the latter case, a value will be sent each time the timer expires, as long as the input Activation Object is 1.

The timer period is Factor x Time Base, allowing you to specify a period from 100 milliseconds up to 255 hours.

You can choose when to activate the timer; whether a 1, or a 0 is written to the object, or on both edges. There is no way to cancel a non-cyclical timer that has been activated.

The value that is sent can be freely chosen. The copy/invert of a 1 Bit object will use the "Input Value" when the timer expires, not the value at the time of activation of the timer.

If a timer is "Resettable", then an incoming telegram on the activation object will reset the timer period to 0.

List of parameters and communication objects:

Name	***Value Range***	***Comment***
Time Factor	1 – 255	multiplied by Time Base to get the timer Period
Value	On / Off / Invert / Copy	Value to be transmitted. When Invert or Copy is selected than an 1 bit input object will be available onto which the input value must be written so that the desired operation can be carried out.
Value	0 – 255	1 Byte Value to be transmitted after timer expiry
Value	0 – 65535	2 Byte Value to be transmitted after timer expiry
Use Value from External Object	Yes/No	Available when 1 / 2 Byte output value type is selected. Provides a means to sent out a copy of a value when the timer expires.
Cyclic	Yes/No	timer is cyclic, thus will be restarted automatically every time the timer expires. When the activation object is set to 0 , then the timer will stop.
Use Value from External Object	Yes/No	Available when 1 / 2 Byte output value type is selected. Provides a means to sent out a copy of a value when the timer expires.
Activation on	On / Off / Both Edges	Edge on which the timer has to start
Resetable	Yes/No	a new write onto the input object that matches the Activation Parameters will reset (retrigger) the timer

These are the communication objects for Timer 1. Timer 2 starts at 248, with 5 objects intermittently for subsequent timers.

No	*Name*	*I/O*	*DPT*	*Flags*	*Use*
243	Activate	I	DPT1.1	WC	Activate the timer
244	Input Value – 1 Bit	I	DPT1.1	WC	Input value of a 1 Bit timer
244	Input Value – 1 Byte	I	DPT5.10	WCTUI	Input value of a 1 Byte timer
244	Input Value – 2 Byte	I	DPT7.1	WCTUI	Input value of a 2 Byte timer
245	Switch 1 Bit	O	DPT1.1	CT	Output value of a 1 Bit timer
246	Output Value – 1 Byte	O	DPT5.10	CT	Output value of a 1 Byte timer
247	Output Value – 2 Byte	O	DPT7.1	CT	Output value of a 2 Byte timer

Up/Down Counter

The Up/Down counter makes it possible to maintain a 1Byte unsigned value centrally, which can be increased/decreased with the specified step value by writing a 1(decrease)/0(increase) onto the input object. The bounds of this value will limit its range. It is also possible to reset the value by writing a 1 to the Reset Object.

List of parameters and communication objects:

Name	*Value Range*	*Comment*
Reset Value	0-255	initial value, or value to be set when the reset object is set to 1 .
Step Value	0-255	value to be added/subtracted each time the input object is set.
Minimum Value	0-255	the minimum value the counter can have. The counter will stop subtracting values once this value has been reached.
Maximum Value	0-255	the maximum value the counter can have. The counter will stop adding values once this value has been reached.

No	*Name*	*I/O*	*DPT*	*Flags*	*Use*
177	Input Value	I	DPT1.8	WC	Input value , 0 (Up) from adding the step value to the counter, 1(Down) to subtract it.
178	Reset	I	DPT1.1	WC	Input value
179	Output Value	O	DPT5.10	CT	Output value of the counter

Logic Module

Up to 5 logic channels can be defined. Each channel has up to 5 logic inputs , which can be inverted individually. You can use those to make an AND/OR comparison. The result of the function will be set onto the KNX bus, depending on the chosen setting:

1. only when the result of the logic function changes.

2. every time something is written onto an input object

Four output types can be selected: Switch 1 bit, 1 Byte, 2 Byte and 3 Byte RGB object (DPT232.600).
You can also use this mechanism as a value converter, enabling you to generate a value from the above types, starting from a single 1 bit communication object.

At startup the initial values of the logic inputs (0 by default, 1 if they are inverted) will be evaluated and the result of the function will always be sent onto the bus. Enable the ROI flag if you want to read effectively the object's value at startup. Upon reception of the value the logic function will be executed.

List of parameters and communication objects:

Name	***Value Range***	***Comment***
Logic Function	And / Or	type of logic function to apply
Number of Input Objects	1 – 5	how many 1 bit inputs the function uses
Invert Input 1	Yes/No	whether to invert input 1
Invert Input 2	Yes/No	whether to invert input 2
Invert Input 3	Yes/No	whether to invert input 3
Invert Input 4	Yes/No	whether to invert input 4
Invert Input 5	Yes/No	whether to invert input 5
Sending Condition	Not Automatic / When Input Object is Written / When Result Changes	when to send the result of the logic function
Output Value Type	Switch 1 bit / Value 1 Byte / Value 2 Byte / Value 3 Byte	value type of the result
Send value when expression is True	Yes/No	whether a value is to be sent when the expression evaluates to True
Send value when	Yes/No	whether a value is to be sent when the expression evaluates to True

expression is False		
Value	On / Off	1 Bit result
Value	0 – 255	1 Byte result
Value	0 – 65535	2 Byte result
Value Byte 1	0 – 255	1 Byte part when value Type is 3 Byte. This byte corresponds to Red when using DPT232.600 (RGB value)
Value Byte 2	0 – 255	1 Byte part when value Type is 3 Byte. This byte corresponds to Green when using DPT232.600 (RGB value)
Value Byte 3	0 – 255	1 Byte part when value Type is 3 Byte. This byte corresponds to Blue when using DPT232.600 (RGB value)

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
127	Input 1	I	DPT1.2	WC	Logic Input Object 1
128	Input 2	I	DPT1.2	WC	Logic Input Object 2
129	Input 3	I	DPT1.2	WC	Logic Input Object 3
130	Input 4	I	DPT1.2	WC	Logic Input Object 4
131	Input 5	I	DPT1.2	WC	Logic Input Object 5
132	Switch – 1 Bit	O	DPT1.1	CT	1 Bit Switch Output Object
132	Value – 1 Byte	O	DPT5.1	CT	1Byte Output value
132	Value – 2 Byte	O	DPT7.1	CT	2Byte Output value
132	Value – 3 Byte	O	DPT232.600	CT	3Byte Output value

Menu

If a Long Multitouch (parameter: Time to open Menu) is applied, then the Infinity will switch to Menu mode, where a lot of extra functional pages can be accessed.

By swiping from left to right (forward) or from right to left (backward) on the upper 2 touch buttons, you can navigate through the head pages (a.k.a. categories), which are organized by function.

Sub pages can be navigated by swiping on the lower 2 touch buttons. Each page contains a description of its function and the function of each button.

To leave the menu, one can just use the MultiTouch function, or wait until the inactivity timer expires.

Available Pages:

- Thermostat - For changing the Mode and Setpoint
- 3 x 6 Lights (Switching /Dimming)
- 2 x 6 Shutters/Blinds/Curtains/…
- 2 x 6 Scenes
- 2 x 6 Value Pages
- Multimedia Control

Content

Here you can define which functionality should be available in the menu. The submenus are organized by function.
The menu is built dynamically. If you set number of Submenus > 0, then a submenu will be inserted.

Every submenu allows you to define 2 lines of text that will be displayed while swiping. The text will be automatically vertically and horizontally centered. If you use 2 lines on some pages, but not on every page, you can use a space on the second line to keep it aligned with the other pages that do contain 2 lines of text.

Name	***Value Range***	***Comment***
Enable Thermostat Page	Yes/No	Allow the user to control the thermostat. This includes changing the mode (Comfort / Economy / Night / Heat+Frost Protection) and to adjust their setpoint (except H/F Protection). It is also possible to change the thermostat from heating to cooling mode
Number of Submenus	0 – 3	How many Light categories
Number of Scenes Submenus	0 - 2	How many Scene categories
Number of Motors Submenus	0 - 2	How many Motor categories
Number of Values Submenus	0 - 2	How many Value categories
Value Page Display Time (s) (255 = Infinite)	3 – 255	the amount of time the page with info has to be displayed when the Info Page – Screen Select object is written. Is this value is 255, then the page will be displayed until this object is set to 0 again.
Enable Multimedia Control	Yes/No	Allow the user to control up to 4 multimedia sources

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
197	Info Pages – Page Select	I	DPT5.10	WC	display a Value page. Write 1 for Info Pages1 – 1, 6 for Info Pages 1 – 6, 7 for Info Pages 2 – 1, 12 for Info Pages 2 – 6, **0 to hide any page, 254 to display all pages after each other, 255 to show the main page**

Settings

The settings allow you to customize the user interaction with the menu mode.

List of parameters and communication objects:

Name	***Value Range***	***Comment***
Inactivity Timeout(s)	10 – 240	time in seconds after the user stopped touching the buttons that the menu mode will be left automatically.
Time to open menu (x 100 ms)	5 – 100	MultiTouch time after which menu mode is entered or exited
Use only long events	Yes /No	use only long events in menu mode to perform an action. This settings makes sure that an action is not triggered unwillingly because a swipe motion was misinterpreted. Long keypress time is at least set to 400 ms, but otherwise the swipe subsequent key time
Led Color On Touch	Off / White / Red / Green / Blue / Cyan / Magenta/ Yellow / Violet / Orange	Color of led when a button is touched
Led Color On Long Touch	Off / White / Red / Green / Blue / Cyan / Magenta/ Yellow / Violet / Orange	Color of led when a button is touched and the long touch time has elapsed.
Swipe Subsequent Key Time (ms)	0-65535	Only for advanced users. Use carefully. Finetune setting for Swiping. This is the time the user has to touch the next surface in order to generate a Swipe event. In other words, if the user touches one button he has to touch the other button within this time to generate a Swipe event. Note that no single button actions will be taken as long as this time has not elapsed. Setting this value to a bigger value will allow the user to swipe at a slower speed.
Swipe Hold Off Key Time (ms)	0-65535	Only for advanced users. Use carefully. Finetune setting for Swiping. This is the time the user has, after he releases the first button, to touch the second button in order to generate a Swipe Event. Setting this value to a bigger value will allow the user to swipe at a slower speed, but will also delay single button actions

Texts

The texts page allows you to provide translations.

On this moment only the extended ASCII character set is supported.

Note that whenever Text is displayed that doesn't fit the width of the screen, then the text will automatically be scrolled.

Thermostat

The thermostat menu page allows you to control an internal or external thermostat. By swiping through the different HVAC mode pages, you can select the desired mode. Only the currently selected mode will contain a setpoint temperature. In the upper right corner you can monitor the current, actual temperature. Pressing Up/Down will increase/decrease the setpoint temperature with 0.5 . Holding the button will automatically increase / decrease every 0.5 seconds.

Name	***Value Range***	***Comment***
Use Internal Thermostat	Yes/No	This option is only available if the internal thermostat is enabled.
Enable Heating/Cooling Switchover	Yes/No	Whether to add a page to control the h/c mode

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
330	Menu – Thermostat – HVAC Mode	O	DPT20.102	CT	HVAC Mode object. Used to control the mode of the thermostat
331	Menu – Thermostat – Heating/Cooling Selection	O	DPT1.1	CT	Determines the Heating/Cooling mode of the thermostat
332	Menu – Thermostat – Setpoint Temperature	O	DPT9.1	CT	Sends out the current setpoint temperature
333	Menu – Thermostat – HVAC Status	I	DPT_HVACStatus	WCTUI	Feedback from the thermostat status using the DPT_HVACStatus object
334	Menu – Thermostat – Setpoint Temperature Feedback	I	DPT9.1	WCTUI	Setpoint Temperature Feedback from the thermostat
335	Menu – Thermostat – Actual Room Temperature Feedback	I	DPT9.1	WCTUI	Actual Room Temperature Feedback from the thermostat

Lights

The "lights" menu pages allow you control light sources, by switching or dimming them.

A progress bar provides visual feedback on the dim level. If the value feedback method is set to "Absolute" then the progress bar only reflects the values that were transmitted by the dimming actuator. Setting it to "Constant speed" or "Relative speed"will try to simulate the dimming speed according to the dim speed parameter. Use "constant speed" if the speed is constant (normal case). "Relative speed" is a different type of dimming (rarely used), where the speed is depending on the percentage to dim. E.g. If you start dimming down to 10%, the entire dimming time is used to travel that distance.

Name	***Value Range***	***Comment***
Number of Lights	1 – 6	Number of subpages under this category
Type Light X	Swiching / Dimming	whether the light source can be dimmed or only switched
Text Light X		the name of the light source
Value feedback	Absolute / Constant Speed / Relative Speed	dimming progress bar representation
Dimming Speed (x 100 ms)	1 – 255	speed of dimming
Cyclic Dimming	Yes / No	Enable cyclic dimming, send the dimming step at every interval
Cycle Time (x 100 ms)	5 – 50	time of every dim cycle
Step	100%, 50%, 25%,12.5%,6.25%, 3%, 1.5%	dimming step

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
198	Switch – 1 bit	O	DPT1.1	WCTUI	switch object for lighting
199	Switch Status – 1 bit	I	DPT1.1	WCTUI	switch status from actuator
200	Dim Relative	O	DPT3.7	CT	Relative dimming object
201	Dim Status Absolute	I	DPT5.1	WCTUI	Scaling feedback object from dimming actuator

The objects of the second lights page start at 202. There is a spacing of 4 objects between each lights page.

Scenes

The "scenes" menu pages allow you to recall or save scenes.
The button "set" is always present. If saving is enable, then another button "Save" will be displayed.

When a scene is activated, visual feedback is provided by a vertical scroll down effect.

Name	***Value Range***	***Comment***
Number of Scenes	1 – 6	Number of subpages under this category
Name Scene X		the name of the scene
Save Scene X	Yes / No	Enable Saving of the scene
Number Scene X	1 – 64	the number of the scene to send

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
270	Scene Value	O	DPT18.1	CT	Scene value object

The objects of the second scenes page start at 270. There is a spacing of 1 object between each scene page.

Motors

The "motors" menu pages allow you control motor drives. Distinction is made between 3 kinds of drives:

1. Shutters
2. Blinds
3. Curtains/Gates

For Shutters 3 operations are available: Up, Down and Stop. Blinds have rotating slats and Step Up and Step Down complement the Up and Down operations. Note that during a long Up and Down movement, pressing the Step Up or Step Down key will stop the movement.

Shutters and Curtains only differ in the texts displayed. Open and Close replace Up and Down.

Name	***Value Range***	***Comment***
Number of Motors	1 – 6	Number of subpages under this category
Type Motor X	Shutter / Blind / Curtain/Gate	type of motor
Text Motor X	Text	the name of the motor drive

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
282	Motor X – Shutter Stop	O	DPT1.7	WCTUI	stop object for shutters
283	Motor X – Shutter Up/Down	O	DPT1.8	WCTUI	long movement object for shutters
282	Motor X – Blinds Step/Stop	O	DPT1.7	WCTUI	Step/stop object for blinds
283	Motor X – Blinds Up/Down	O	DPT1.8	WCTUI	long movement object for blinds
282	Motor X – Curtain Stop	O	DPT1.7	WCTUI	stop object for curtain/gates
283	Motor X – Curtain Up/Down	O	DPT1.8	WCTUI	long movement object for curtain/gates

The objects of the second shutters page start at 286. There is a spacing of 4 objects between each motors page.

Value Pages

The "Value Pages" menu pages allow you give extra information about the value of objects at runtime. Besides the KNX 14 Bytes string type, most of the numerical KNX data types are supported:

1. 1 Bit Value
2. 1 Byte Unsigned Value
3. 1 Byte Scaling
4. 1 Byte Signed Value
5. 2 Byte Unsigned Value
6. 2 Byte Floating Point Value
7. 2 Byte Signed Value
8. 4 Byte Unsigned Value
9. 4 Byte Floating Point Value
10. 4 Byte Signed Value
11. 14 Byte String
12. Date
13. Time

In some case it is possible to add some extra text after the value. This "suffix" can be used to add extra information (e.g. Units as kWh) to the value.
It's also possible to put in some static text, that cannot be changed after programming.

In some cases it might be useful to also have the ability to send a fixed value out on the bus, e.g. to set the speed of a fan, or to change the color of an RGB strip. In this case you can set "Enable Output" to "Yes". Depending of the number of values selected, the corners will be filled with the corresponding text.

The text of the value always starts in the upper left corner. Depending on the "Value Orientation" parameter (CW = Clockwise, CCW = Counterclockwise), the text of the second button is either displayed in the upper right corner (CW) or lower left corner (CCW).

The possible values to send out, are a subset of the input values.

1. 1 Bit Value
2. 1 Byte Unsigned Value
3. 1 Byte Scaling
4. 1 Byte Signed Value
5. 2 Byte Unsigned Value
6. 2 Byte Floating Point Value

7. 2 Byte Signed Value

If the output and input value type correspond to each other, and they are assigned the same group address, then the feedback text of the value will correspond with the value of the corner. This functionality even works over several pages in the same category!

Name	***Value Range***	***Comment***
Number of Value Pages	1 – 6	Number of subpages under this category
Value Type Page X	see above	type of Value that will be displayed on this page
Title Page X	Text	the name of the value that will be displayed on this page
Page Info Display Time (s)	3 – 30	the amount of time the page with info has to be displayed when the Value Pages – Page Select object is written
Text on True	Text	text to be displayed when the value of the switch object is '0'
Text on False	Text	text to be displayed when the value of the switch object is '1'
Enable Output	Yes/No	Fill corners with button text info, that will send values onto the output object when touched
Suffix	Text	Extra text to append to the value.
Output Value Type	see above	type of output value
Value Orientation	CW / CCW	Clockwise or Counterclockwise orientation of the button texts
Text Corner X	Text	Text to be displayed in the corner
Value Corner X	See above	Value to be send on the output object if the button in the corresponding corner is touched

The objects of the second shutters page start at 332. There is a spacing of 2 objects between each value page.

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
197	Value Pages – Page Select	I	DPT5.10	WC	display a value page. Write 1 for Value Page 1 – 1, 6 for Value Page 1 – 6, 7 for Value Page2 – 1, 12 for Value Page 2 – 6, 0 to hide any page, 254 to display all pages after each other, 255 to show the main page
336	Values X – page X – Value –	I	DPT1.1	WCTUI	switch value for 1 bit Object

	1 bit				
336	Values X – page X – Value - 1 Byte Unsigned	I	DPT5.10	WCTUI	value for unsigned 1 Byte Object
336	Values X – page X – Value - 1 Byte Scaling	I	DPT5.1	WCTUI	0 – 100%, value for 1 Byte scaling Object
336	Values X – page X – Value - 1 Byte Signed	I	DPT6.10	WCTUI	value for signed 1 Byte Object
336	Values X – page X – Value - 2 Byte Unsigned	I	DPT7.1	WCTUI	value for unsigned 2 Byte Object
336	Values X – page X – Value - 2 Byte Floating Point	I	DPT9.xxx	WCTUI	value for 2 Byte Floating Point Object
336	Values X – page X – Value - 2 Byte Signed	I	DPT8.1	WCTUI	value for signed 2 Byte Object
336	Values X – page X – Value - 4 Byte Unsigned	I	DPT12.001	WCTUI	value for unsigned 4 Byte Object
336	Values X – page X – Value - 4 Byte Floating Point	I	DPT14.xxx	WCTUI	value for 4 Byte Floating Point Object
336	Values X – page X – Value - 4 Byte Signed	I	DPT13.xxx	WCTUI	value for signed 4 Byte Object
336	Values X – page X – Value - String	I	DPT16.0	WCTUI	ASCII String
336	Values X – page X – String	I	DPT11.001	WCTUI	Date
336	Values X – page X – Value - String	I	DPT10.001	WCTUI	Time
337	Values X – page X – Output Value – 1 bit	I	DPT1.1	WCTUI	switch value for 1 bit Output Object
337	Values X – page X – Output Value 1 Byte Unsigned	I	DPT5.10	WCTUI	value for unsigned 1 Byte Output Object
337	Values X – page X – Output Value – 1 Byte Scaling	I	DPT5.1	WCTUI	0 – 100%, value for 1 Byte scaling Output Object
337	Values X – page X – Output Value – 1 Byte Signed	I	DPT6.10	WCTUI	value for signed 1 Byte Output Object
337	Values X – page X – Output Value – 2 Byte Unsigned	I	DPT7.1	WCTUI	value for unsigned 2 Byte Output Object
337	Values X – page X – Output Value - 2 Byte Floating Point	I	DPT9.xxx	WCTUI	value for 2 Byte Floating Point Output Object
337	Values X – page X –Output Value – 2 Byte Signed	I	DPT8.1	WCTUI	value for signed 2 Byte Object

Multimedia

With the multimedia control functionality of the Infinity you can control up to 4 KNX audio sources in a very versatile way. The structure of the screens is built dynamically, depending on the selected functionality in the ETS.

The available screens are :

1. Volume Control
   To control the volume: On, Off (mute) and Up and Down.
2. Source List
   If more than 1 source is available, then a list of the possible sources is showed. Upon selection of a source, then the corresponding number is written onto the "Source-Select" object, and the "Source X - Switch" object of the previous source is set to '0', to '1' for the new object. The selected source is underlined if "Source – Select Status" has been assigned a Group Address, or if a "Source X – Switch Status" has been changed.
3. Source Control
   To start/stop/pause the source, or set loop or shuffle mode.
   If the music is stopped, then the stop button will be underlined. As for Play/Pause (if both buttons are enable), the state of the button will toggle between the two states.
4. Fixed Presets (Playlists)
   Up to 8 presets (spread over 2 screens) can be defined.
   The last selected preset is underlined.
5. Content Navigation Screens
   1. Browse Songs (previous/next) + FFWD/FRWD
      Also displays the current artist + song title (or 'Song' when not available).
   2. Browse Albums (previous/next)
      Also displays the current album title (or 'Album' when not available).
   3. Browse Playlists (previous/next)
      Also displays the current playlist title (or 'Playlist' when not available).

List of parameters and communication objects

Source List

Name	***Value Range***	***Comment***
Number of Sources	1-4	Amount of sources
Enable Source List	Yes/No	Show Screen for selection of source

No	Name	I/O	DPT	Flags	Use
364	Source - Select	O	DPT5.010	CT	Number of Currently selected Source
365	Source - Select Status	I	DPT5.010	WC	Input of number currently selected source
368	Source X - Switch	O	DPT1.1	CT	Switch Object of Source X
369	Source X - Switch Status	I	DPT1.1	WC	Switch Status of Source X

Volume Control

Name	Value Range	Comment
Invert On/Off (act as mute)	Yes/No	Invert the Volume-Switch objects so they can be linked with the Mute object of the audio actor
Show Volume Page on Source Change	Yes/No	Set this parameter to True if you want automatically to show the volume page if a source change occurs (only when menu is active).
Type Volume Object	1 Bit Step/ 4 bit Dimming object	Use a 1bit or 4bit(dimming) object to control the volume
Feedback Type	Absolute/Constant speed	If the audio actor doesn't update its volume status during volume control, you can use this object to simulate the volume increase/decrease
Speed (x100 ms)	Volume Dimming Speed	For simulating the progress bar. This value is the duration to go from 0 to 100% volume.

No	Name	I/O	DPT	Flags	Use
360	Volume - Switch	O	DPT1.1	CT	Switch Music Amplifier on/off
361	Volume - Switch Status	I	DPT1.1	WCTUI	Switch Status Music Amplifier
360	Volume - Mute	O	DPT1.3	CT	Mute Music Amplifier
361	Volume - Mute Status	I	DPT1.3	WCTUI	Mute Status Music Amplifier
362	Volume – Up/Down	O	DPT3.007	CT	Relative volume dimming
362	Volume – Up/Down	O	DPT1.007	CT	Volume Relative Step Control (1 = Increase, 0 = Decrease)
363	Volume – Absolute Value Feedback	I	DPT5.001	WC	Input of Current Volume (percentage)

Source Control

Name	***Value Range***	***Comment***
Name	Text	The Name of this source. Used for source selection and Source control screen.
Number	0-255	The number of the source, used for the "Source - Select" object
Enable Stop Button	Yes/No	Put a Stop Button on the "Source Control" screen and enable the Play and Stop objects.
Enable Pause Button	Yes/No	Put a Pause Button on the "Source Control" screen and enable the Play en Pause objects.
Enable Loop Button	Yes/No	Put a Loop Button on the "Source Control" screen and enable the Loop switch and status objects.
Enable Shuffle Button	Yes/No	Put a Shuffle Button on the "Source Control" screen and enable the Shuffle switch and status objects.

No	***Name***	***I/O***	***DPT***	***Flags***	*Use*
370	Source X – Play	O	DPT1.10	CT	Play Object
371	Source X – PlayState	I	DPT1.10	WCTUI	Play Status Object
372	Source X – Pause	O	DPT1.3	CT	Pause Object
373	Source X – PauseState	I	DPT1.3	WCTUI	Pause Status Object
374	Source X – Stop	O	DPT1.1	CT	Stop Object
375	Source X – StopState	I	DPT1.1	WCTUI	Stop Status Object
376	Source X – Loop	O	DPT1.3	CT	Loop Object
377	Source X – LoopState	I	DPT1.3	WCTUI	Loop Status Object
378	Source X – Shuffle	O	DPT1.3	CT	Shuffle Object
371	Source X – ShuffleState	I	DPT1.3	WCTUI	Shuffle Status Object

Song Navigation

The song navigation lets you skip/go back to a song, or rewind or fast forward.
By default, the text in the middle is 'Song', but this will be replaced if the text objects 'artist name' and 'song title' contain valid content.

Name	***Value Range***	***Comment***
Enable Next/Previous song buttons	Yes/No	Adds 2 buttons, previous and next, to the window, and enable the "Source X - next/ previous song" object.
Enable FRWD/FFWD	Yes/No	Enable FRWD/FFWD buttons
Value Type	2x 1Bit objects / 1x 4 Bit Dimming object	Type of the object to use for FRWD/FFWD operation

No	Name	I/O	DPT	Flags	Use
380	Source X – Next/Previous Song	O	DPT1.007	CT	Next (=1)/Previous(=0) Song
381	Source X - FRWD	O	DPT1.3	CT	FRWD 1-bit object
382	Source X - FFWD	O	DPT1.3	CT	FRWD 1-bit object
381	Source X – FFWD/FRWD	O	DPT3.007	CT	FFWD/FRWD 4-bit object Speed is fixed to 3
383	Source X – Song Title	I	DPT16	WC	Title of the Song
384	Source X – Artist Name	I	DPT16	WC	Name of the Artist

Album Browsing

If you want to browse the albums, you can enable “Album Browsing”. It will add a screen, with a previous and next button. By default, the text in the middle is ‘Album’, but this will be replaced if the text objects ‘Artist Name’ and ‘Album Name’ contain valid content.

Name	Value Range	Comment
Enable Album Browsing	Yes/No	Adds the album browsing screen

No	Name	I/O	DPT	Flags	Use
384	Source X – Artist Name	I	DPT16	WC	Name of the Artist
385	Source X – Next/Previous Album	O	DPT1.007	CT	Next (=1)/Previous(=0) Album
386	Source X – Album Name	I	DPT16	WC	Name of the Album

Preset Browsing

If you do not want to used fixed presets, , you can enable “Preset Browsing”. It will add a screen, with a previous and next button. The text in the middle is ‘Preset’, with underneath the contents of the text object ‘Preset Name’ .

Name	Value Range	Comment
Enable Preset Browsing	Yes/No	Adds the preset browsing screen

No	Name	I/O	DPT	Flags	Use
389	Source X – Next/Previous Preset	O	DPT1.007	CT	Next (=1)/Previous(=0) Preset
390	Source X – Preset Name	I	DPT16	WC	Name of the Preset

Preset List

By setting 'Enable Preset List' to true, you can define up to 8 fixed presets (e.g. playlists or radio stations), which can be easily selected by pressing the appropriate button. The last selected preset will be underlined. There are 4 presets per screen, 1 for each corner.

Name	***Value Range***	***Comment***
Enable Preset List	Yes/No	Adds the preset List
Number of Presets	1 - 8	Number of fixed presets
Name of Preset X	Text	Name of the preset
Number Preset X	Text	The number of the preset. This number will be written on the 'Source X – Preset Selection' object

No	***Name***	***I/O***	***DPT***	***Flags***	***Use***
387	Source X – Preset Selection	O	DPT 5.10	CT	Number of the chosen preset
388	Source X – Preset Selection Status	I	DPT 5.10	WC	Feedback object of the audio actor with the current preset.