

# **Application Description**

Ventilation, Air Conditioning and Cold Water

**Ventilation, Air Conditioning** 

#### Summary

This document is a part of the HVAC Application Interworking Standard. It describes the specific Functional Blocks for ventilation and air conditioning applications.

Version 01.03.01 is a KNX Approved Standard.

This document is part of the KNX Specifications v2.1.

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## **Document updates**

Version	Date	Modifications		
0.1	2001.05.21	Document split (ventilation and air conditioning)		
0.2	2001.08.20	Update demand transformers		
0.3	2001.12.05	Update AHUC		
0.4	2002.02.08	Finish document as draft for TFI		
0.5	2002.03.05	Release for TFI assessment		
1.0	2002.03.28	TFI approved		
1.1	2002.12.17	Update handbook v1.1		
		Emergency Bit at DPT: 207.104, 210.100		
		- "read only" for diagnopstic data 2.6.4.6 and 2.7.4.6		
1.2	2006.01.09	- DHWLegioReq at DPT: 210.100		
1.2	2009.06.18	Update in view of publication in the KNX Specifications v2.0.		
1.3.00	2010.11.24	SATC: Removed Parameters TempSupplyAirSetpMin and		
		TempSupplyAirSetpMax.		
		Editorial corrections (references).		
01.03.01	2013.10.29	Editorial updates for the publication of KNX Specifications 2.1.		

#### References

[01]	Chapter 3/7/2	"Datapoint Types"
[02]	Part 7/10	"HVAC General Functional Blocks"
[03]	Chapter 7/10/10	"Interface Object Type Identifier"
[04]	Chapter 7/11/1	"HWH Production"
[05]	Chapter 7/11/2	"HWH Distribution"
[06]	Chapter 7/11/3	"HWH Domestic Hot Water Control"
[07]	Chapter 7/11/4	"HWH Room Heating Control"
[80]	Chapter 7/11/5	"HWH Load Management"
[09]	Chapter 7/11/9	"HWH Property Identifiers"
[10]	Part 7/12	"Direct Electric Heating"
[11]	Part 7/13	"Terminal Unit Functional Blocks"
[12]	Chapter 7/14/1	"VAC Ventilation, Air Conditioning"
[13]	Chapter 7/14/2	"VAC Cold Water"
[14]	Chapter 7/14/9	"VAC Property Identifiers"
[15]	Part 10/1	"Logical Tag Extended"

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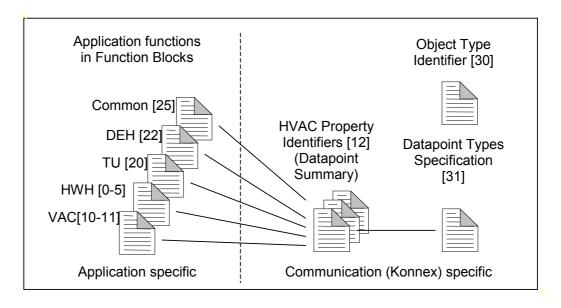
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#### 1 Introduction

### 1.1 Scope

This document contains the specification of the specific Functional Blocks used for HVAC ventilation, air conditioning (VAC) applications, mainly for (European) residential and small commercial markets.



Functional Blocks specification for applications like hot water heating (HWH) [0-5], cold water (VAC) (this document), terminal units (TU) [11] and direct electric heating (DEH) [10] are described in separate documents.

General purpose Functional Blocks used for HVAC applications such as sensors, actuators, HMI and some common HVAC Functional Blocks are described in a separate document (HVAC Specification Functional Blocks, Sensors, HMI, Actuators, Common Controller Functions [02]).

All these documents are part of the KNX HVAC-Application Interworking Standard.

This part of the KNX HVAC specification is mainly but not completely independent of the underlying protocol since specific mechanisms for 'easy configuration' and runtime data distribution must be available on the network.

Completely protocol dependent parts of the HVAC VAC specification such as data encoding and datapoint-types, object address tables, group address tables etc. are not part of this specification. This is described in HVAC Interface Object Type Identifier [03] and HVAC Specifications Datapoint Types [01].

## 1.2 Objectives

This document includes the information necessary to build interoperable HVAC products using the KNX system.

The focus is runtime process interworking between HVAC control-devices at the application level.

In addition, this document specifies the specific mechanisms for zoning and runtime process data distribution used in HVAC for an 'easy installation' system (LTE-HEE Mode [15]).

This is a technical specification with informative material provided as needed to convey key concepts. The approach taken here is a top-down view of interoperability. The HVAC system model is based on the decomposition of the distributed HVAC application by means of Functional Blocks i.e. black-box description of Functional Blocks including data-interface and relationship to other Functional Blocks.

Every Functional Block may be part of a complex device (e.g. a chiller and cold water controller) containing more than one Functional Block.

Because of this modular approach, there is no attempt in this specification to describe or dictate the internal construction of a Functional Block or to describe specific device types.

This document only includes details of the transport protocol as needed to specify interoperability and easy installation mechanisms.

The document does not specifically cover implementation aspects, but guidelines are included where appropriate.

This document does not describe the general HVAC-VAC application field and application requirements and it does also not contain the description of typical application examples (scenarios) and application profiles.

### 1.3 Dependence on Configuration Modes

The main focus of this document is the specification of the **Basic Functional Blocks** and the **LTE** specific parts.

The document provides all necessary information needed:

- for a complete implementation of the Functional Blocks in LTE mode
- for the implementation of mandatory objects used for runtime interworking in Standard Mode (Basic Functional Block)

### 1.3.1 Runtime Interworking

Mode dependent (S, LT-R, LT-S, Ctrl, Pb, A) implementation of optional runtime interworking objects is not specified in this document, e.g. "easy channel" definitions.

The following table (example) shows the mode dependencies concerning runtime interworking

			STANDARD EXTENDED MODE		
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Inputs	Inp1	NA	NA	NA	M
	Inp2	NA	NA	NA	О
	Inp3	(GO <sub>b</sub> )		(GO)	О
Outputs	Outp1	NA	NA	NA	M
	- Outp1-1	$GO_b$	GO	GO	NA
	- Outp1-2	$GO_b$	GO	GO	NA

Inp1: is mandatory M in LTE Mode but the information is not available NA in the Basic FB and all other modes because the datapoint type (DPT) is <u>today</u> not available in Standard Mode and there are no products on the market with this functionality.

- Inp2: is optional O in LTE Mode but the information is not available NA in the Basic FB and all other modes because the DPT is <u>today</u> not available in Standard Mode and there are no products on the market with this functionality.
- Inp3: is optional O in LTE Mode and an optional Group Object in the Basic FB (GO<sub>b</sub>). The datapoint is optionally supports as Group Object in the LTE Standard Mode Interface (GO). For all other modes the implementation is not defined. This is indicated by an empty field.
- Outp1: is mandatory M in LTE Mode and has a structured DPT or a DPT with extended features, which is today not available in Standard Mode. In the Basic FB the information of Outp1 is split up into Outp1-1 and Outp1-2 (separate datapoints with standard DPT).

  Outp1-1 and Outp1-2 are mandatory Group Objects GO in the Basic FB and are therefore mandatory in all modes.

#### 1.3.2 Parameters and Diagnostic Data

#### LTE implementation:

- Parameters and Diagnostic Data of a Functional Block shall be implemented as Properties of the corresponding Interface Object, which are accessed using individual addressing.
- These Properties are addressed via the standard Interface Object Type (IO Type) for this Functional Block. This IO Type is also used for datapoint addressing in the LTE runtime interworking model
- Standard DPT or HVAC specific DPT with extended features are used where appropriate.

#### Other modes:

- Parameters and Diagnostic Data can in principle be implemented as memory mapped datapoints or Group Objects or Properties of an Interface Object. This document does not lay down how to implement Parameters and Diagnostic Data in S, LT-R, LT-S, Ctrl, Pb and A-Mode.
- In case of **Memory Mapped** datapoints the DPT may be manufacturer specific
- In case of **Group Objects** standard DPT shall be used instead of HVAC specific (extended) DPT. The description of these Group Objects shall be part of the mode-dependent specification (e.g. Channel definition).
- In case of **Properties**, the implementation of HVAC specific DPT with extended features may be a problem (depending on the available microcontroller resources). The manufacturer has the choice:
  - ⇒ to use the LTE style Property implementation as specified in this document (with the DPT and IO Type for LTE implementations)
  - ⇒ to implement these Properties using standard DPT only.

    In this case, the same Property ID but a different IO Type<sup>b</sup> shall be used since the DPT of a Property shall be unambiguous for each IO Type.

Simple IOT mapping rule: IO Type<sup>b</sup> = IO Type<sup>LTE</sup> + 10000d (e.g., 
$$BUC^{LTE} = 128 \implies BUC^b = 10128$$
)

⇒ It is allowed to implement in a device both Interface Object Types IO Type<sup>HVAC-LTE</sup> and IO Type<sup>standardDPT</sup>. The implementation of parameters and diagnostic data of one given Functional Block shall however be complete. It is thus not allowed to implement part of the datapoints of a Functional Block in IO Type<sup>standardDPT</sup> and the remaining in IO Type<sup>HVACLTE</sup>.

	Implementation of Parameter and Diagnostic Data			
Property based  LTE style Standard DPT			Group Object	Memory mapped
ІО Туре	IO Type <sup>LTE</sup> e.g. BUC=128	IO Type <sup>LTE</sup> + 10000 e.g. BUC=10128		
Property ID	Property ID x	Property ID x		
	standard DPT	=> same standard DPT	=> same standard DPT	
DPT	HVAC specific*) e.g. 205.100	=> mapped standard DPT, e.g. 9.001	=> mapped standard DPT, e.g. 9.001	manufacturer specific

In this document only the **LTE style** of Parameters and Diagnostic Data is specified.

In the FB datapoint overview those Parameters and Diagnostic Data with HVAC specific (extended) DPT are marked "\*)"

The mapping of HVAC specific DPT to standard DPT is generic and described in the document [01] – HVAC Datapoint Types; Supplement 11 (TFI 18)

### 1.4 Abbreviations of Functional Blocks

This clause shows an overview of Functional Blocks, which are used in this document.

#### Ventilation, Air Conditioning, and Cold Water (VAC)

Abbreviation	Description
AHUC	Air Handling Unit Controller
CC	Chiller Control
CDAUX	Auxiliary Cooling Demand
CDAUXPER	Auxiliary Cooling Demand Percent
CDTAHU	Cooling Demand Transformer Air Handling Unit
CFDM	Cooling Flow Demand Manager
CPM	Cold Water Production Manager
CRC	Re-Cooling Controller
CZC	Cooling Zone Controller
HDAUXPER	Auxiliary Heating Demand Percent
HDTAHU	Heating Demand Transformer Air Handling Unit
SATC	Supply Air Temperature Controller

#### Hot Water Heating (HWH) [04]-[08]

Abbreviation	Description
BUC	Burner Controller
BOC	Boiler Controller
HPM	Heat Production Manager
BST	Buffer Storage Tank
HFDM	Heating Flow Demand Manager
FTC	Flow Temperature Controller
HPM	Heat Production Manager
HZC	Heating Zone Controller
HIRC	Heating Individual Room Controller
HRDM	Heating Room Demand Manager
HDAUX	Auxiliary Heating Demand
HDTACT	Heat Demand Transformer Actuator Position

HDTRT Heat Demand Transformer Room Temperature

DHWC Domestic Hot Water Controller DHWS Domestic Hot Water Scheduler

DHWCPS Domestic Hot Water Circulation Pump Scheduler

SDHWC Solar Domestic Hot Water Controller DHWSM Domestic Hot Water Setpoint Manager

DHWCPC Domestic Hot Water Circulation Pump Controller

UDHWSET DHW User Settings

#### Terminal Units (TU) [11]

## **Abbreviation Description**

ACDTTU Air Cooler Energy Demand Transformer Terminal Unit
AHDTTU Air Heater Energy Demand Transformer Terminal Unit
CCDTTU Chilled Ceiling Energy Demand Transformer Terminal Unit

FCC Fan Coil Unit Controller

RCC Radiator and Chilled Ceiling Control

RHDTTU Radiator Heating Energy Demand Transformer Terminal Unit

SPUC Split Unit Control

VAVC Variable Air Volume Control

VDTTU Ventilation Demand Transformer Terminal Unit

WHPC Water Heat Pump Control

#### Sensor, HMI, Actuators - Common Controller Functions [02]

#### **Abbreviation** Description

CFWTS Condenser Flow Temperature Sensor

CRNWTS Condenser Return Water Temperature Sensor

DPS Dew Point Status Sensor

FWTS Flow Water Temperature Sensor

HVA HVAC Valve
HVACOPT HVAC Optimiser

HVACEMS HVAC Emergency Source
OAD Outside Air Damper

ORHS Outside Relative Humidity Sensor

OAQS Outside Air Quality Sensor
OTS Outside Air Temperature Sensor

PRD Presence Detector

RRHS Room Relative Humidity Sensor

RAQS Room Air Quality Sensor

RNARHS Return Air Relative Humidity Sensor

RNAQS Return Air Quality Sensor RNATS Return Air Temperature Sensor RNWTS Return Water Temperature Sensor

RSMHD Room Setpoint Manager HVAC-Mode Driven RSMTD Room Setpoint Manager Temperature Driven

RTS Room Temperature Sensor

SARHS Supply Air Relative Humidity Sensor

SAQS Supply Air Quality Sensor SATS Supply Air Temperature Sensor

SIS Sun Intensity Sensor

SMAQ Setpoint Manager Air Quality
SMRH Setpoint Manager relative Humidity

UAQSS Air Quality Setpoint Setting

URHSS Air Relative Humidity Setpoint Setting

UHRS User HVAC Room Setting UHD User HVAC Display

WCOS Water Change over Status Sensor

WOS Window Switch WSS Wind Speed Sensor

#### General

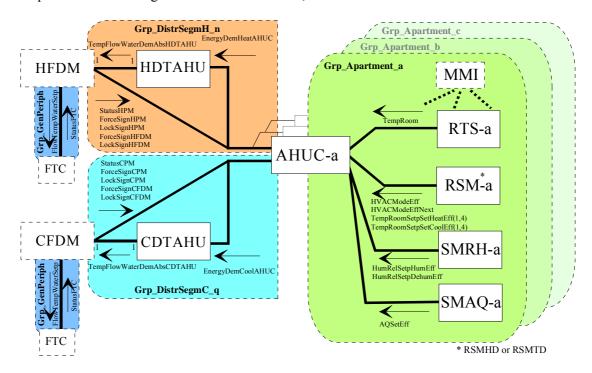
Abbreviation	Description
cs	Company Specific
DPT	Datapoint Type
FB	Functional Block
GO	Group Object
IO	Interface Object
IR	LTE-Service InfoReport
LTE	Logical Tag Extended Mode, see [15] Volume 10, LTE Specification
NA	not available
M	Mandatory
W	LTE-Service Write

## 2 Functional Blocks: Ventilation and Air Conditioning

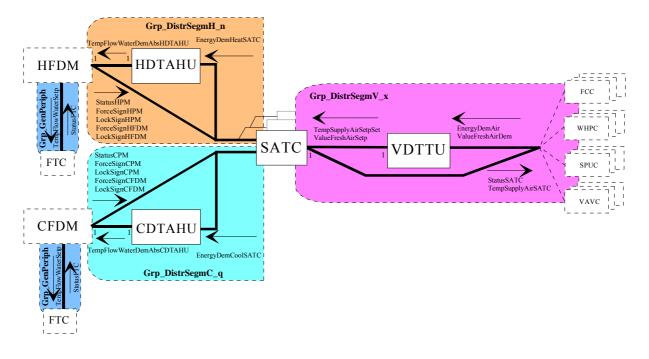
#### 2.1 Overview

There are two different types of air handler unit controllers:

a) Independent air handling units controllers AHUC, stand-alone air handler unit controllers



b) Demand controlled air handlers SATC, supply air temperature controllers in connection with terminal unit functional block VDTTU



### 2.2 Functional Block: Air Handling Unit Controller (AHUC)

#### 2.2.1 Description

The Functional Block AHUC controlls a stand-alone air handling unit. This may be a cascade control, direct room control with or without supply air temperature limitation or a supply air temperature control with room influence.

One of the following Room Setpoint Managers RSMHD (HVAC-Mode driven) or RSMTD (temperature driven) provides the room setpoints, and depending on the manager HVACMode and HVACModeNext. Optionally there is the controller mode ContrMode provided from a management station to ensure extended functions especially on manual controlling of the AHUC.

Supply air temperature control (without room influence) is also solved with the Air Handling Unit Controller AHUC Functional Block. Supply air temperature setpoints are internal parameters. The Room Setpoint Manager Block is only used for the HVACMode. Due to this the RSMHD temperature inputs are optional inputs. The Room Setpoint Manager RSMTD is not supported for this application.

The temperature control of the Air Handling Unit Controller AHUC is company-specific and not part of this specification. Heating valves, cooling valves, fans, dampers, energy recovery, electric heaters, are directly connected to the Air Handling Unit Controller AHUC via hardwiring or via optional communication signals (Bind. Grp.: Apartment). The controller may be configured to select between different control strategies.

Output signals from the Air Handling Unit Controller AHUC are the demand signals for hot water EnergyDemHeatAHUC and cold water EnergyDemCoolAHUC. This is the link to the air handler Heating Demand Transformers HDTAHU and air handler Cooling Demand Transformers CDTAHU, which collect the demand signals (n signals in percent) and convert them into hot water and cold water flow temperature signals. These signals are only optional because not each air handling unit requires hot water heating and cold water cooling. There are air handler without heating and cooling, or heating only, or cooling only or both.

Some Air Handling Units may have different heating coils (preheater, reheater) on different hot water header. Due to this the Air Handler Unit Controller may produce two different EnergyDemHeatAHUC signals in different Hot Water Distribution Segment. This addition is company specific and not described in this document.

Force and Lock signals of the hot and cold water producer and distribution are transferred to the air handler unit to ensure the functionality of the temperature control. Important: Neither forcing nor locking signals must have an influence on the calculation of the demand signals EnergyDemHeatAHUC and EnergyDemCoolAHUC. Otherwise the system may oscillate!

Forcing or enabling the Air Handling Unit Controller to a special controller mode (Night\_Purge, Fan only,...) may be done via the optional ContrMode input signal.

Fire and SmokeClearance signals are normally hardwired to the AHUC. This emergency functions are company-specific and not part of this specification. Never less in more sophisticated systems, the optional EmergMode (Pressurisation, Fire,...) may be sent via bus from a HVAC fire/smoke device (HVACEMS).

The Air Handling Unit Controller AHUC supports relative humidity control (optional). This may be a reference room humidity control with supply air humidity limits, return air humidity control with supply air humidity limits or a simple supply air humidity control. The algorithm is company-specific and not part of this description. The humidity setpoint HumRelSetpHumEff and HumRelSetpDehumEff is a set of humidification / dehumidification setpoints and are only valid during operation of the air handling unit. These setpoints may be internal parameter (in percent) within the Air Handling Unit Controller AHUC or set via communication (Bind.Grp.: Apartment) with the Functional Block Setpoint Manager Humidity SMRH.

Absolute humidity control may be supported within the Functional Unit Block and not part of this description.

The Air Handling Unit Controller AHUC supports air quality control (optional). This may be a reference room air quality control, return air quality control or a supply air quality control. It is possible to connect an air quality sensor via communication (Bind. Grp.: Apartment) to the Air Handling Unit Controller AHUC. The air quality setpoint AQSetpEff is set as an internal parameter (in ppm, mixing gas is converted in a representative ppm-value) within the Air Handling Unit Controller AHUC or via communication (Bind. Grp.: Apartment) with the Functional Block Setpoint Manager Air Quality SMAQ. The algorithm is company-specific and not part of this description.

Air quantity (fan speed) for Air Handling Unit Controller AHUC may be controlled via independent pressure loops or in conjunction with air quality control. The algorithm is company-specific and not part of this description.

Room Units (HMI) like Room Temperature Setpoint Absolute Setting, Room Temperature Setpoint Relative Setting, Air Quality Setpoint Setting or Air Humidity Setpoint Setting are specified in HVAC Specifications – Functional Blocks Sensors, HMI, Actuators, Common Controller Functions [02] and linked to the appropriate Room Setpoint Manager.

Additionally to the already shown sensors there may be other devices connected to the air handling unit controller AHUC. For example room air quality / humidity sensors or return air temperature / air quality / humidity sensors or outside air quality / humidity sensors. The same applies to additional actuators or HMI-displays. It may be also possible to add in the near future sensor, displays or actuators to the AHUC.

#### 2.2.1.1 LTE Zoning for the AHUC: usage of Room Level 'R' and SubZone 'S'

In normal systems with air handling unit controllers, the support of the Room and Subzone tags not relevant. A mix of AHUC and Terminal Unit Controllers [11] **within one Apartment** (Geographical-Tag) shall be not possible. The AHUC is therefore always communicating with explicit **A.1.1** zoning information (unambiguous zoning information, no wildcard on Room or Subzone).

For further information on geographical LTE zones see also [15]

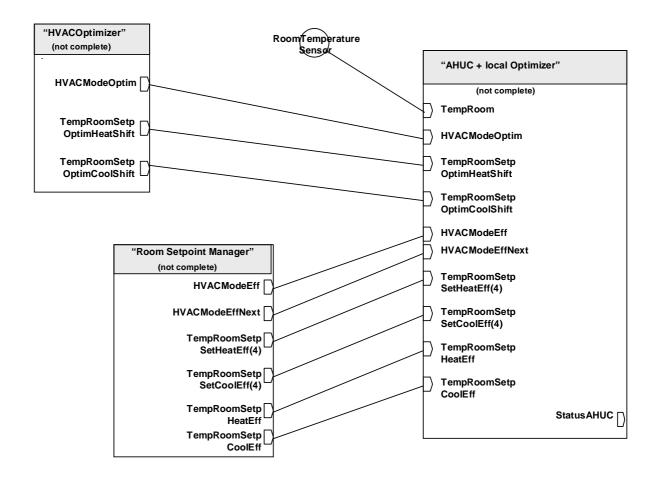
#### 2.2.1.2 External HVAC Optimiser

Overview only: for more details see [02].

In more advanced systems the Air Handling Unit Controller AHUC may incorporate a <u>local</u> optimiser (company specific functions: morning boost, start and stop optimisation etc).

In addition the AHUC may provide optional inputs for an <u>external</u> (central) "HVAC Optimiser" which may be located in a central unit or management station etc.

HVAC Optimiser provides an optimised HVAC Mode (HVACModeOptim) and a delta room temperature setpoint values, which allows shift the current room temperature setpoint, e.g. for morning boost (TempRoomSetpOptimHeatShift) respective TempRoomSetpOptimCoolShift. The Air Handling Unit Controller consumes these values.



#### 2.2.2 Constraints

IMPORTANT: reporting of the hot and cold water demand signals may be implemented in the Standard Mode but can <u>today</u> not be routed via demand transformers (HDTAHU, CDTAHU) to the hot or cold water distribution segment because the necessary compound HVAC DPT for runtime-interworking is not yet available in Standard Mode.

Therefore for the time being only LTE implementations offer a link to a <u>demand dependent</u> hot and cold water distribution and production system.

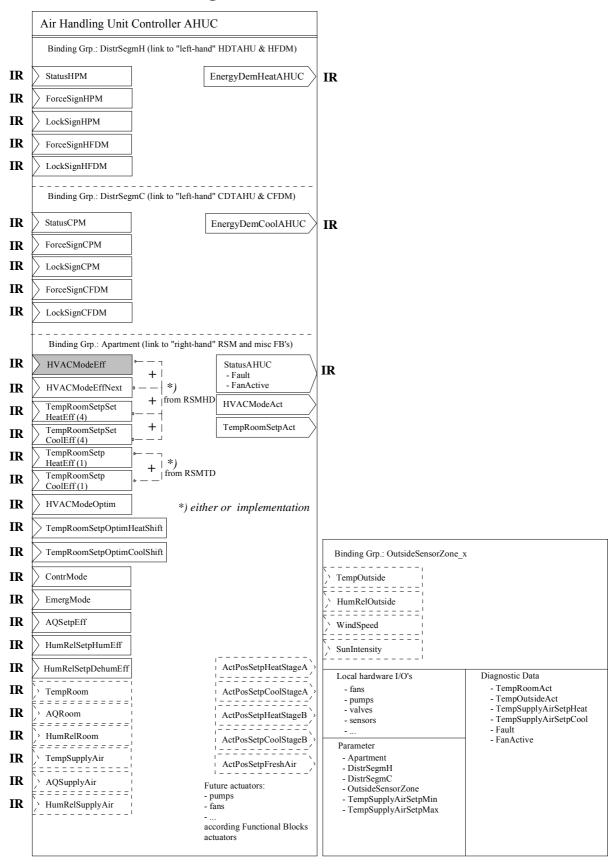
In air handling units the location of room sensors may be a problem due to architectural or design reasons. Therefore some installers install return air sensors instead of a room sensors. The downside of this implementation is a "wrong" reading whenever the airflow in the ductwork stops. Features like, controlled start by low or high temperatures, low or high humidity or bad air quality in HVACMode Economy may be not accurate.

Never less to simplify the Functional Block:

- Return air temperature is equal to room temperature
- Return air humidity sensor is equal to room humidity sensor
- Return air quality is equal to room air quality.

In the Standard Model all outside sensors are located in the same LTE Outside Sensor Zone (only one zoning parameter). Manufacturer specific parameters shall be used if different Outside Sensor Zones for the outside temperature, wind speed or sun intensity have to be supported.

### 2.2.3 Functional Block diagram



## 2.2.4 Description of the Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
EnergyDemHeatAHUC	Air handler unit hot water demand in percent (LTE and S-interface)	DPT_ActPosDemAbs DPT_Percent_U8	207.104 5.004
EnergyDemCoolAHUC	Air handler unit cold water demand in percent (LTE and S-interface)	DPT_ActPosDemAbs DPT_Percent_U8	207.104 5.004
StatusAHUC	Status information of the air handling unit controller	DPT_StatusAHU	21.106
- Fault	Failure, some error in the AHUC (S-interface)	DPT_Bool	1.002
- FanActive	Supply and/or exhaust air fans are operating (S-interface)	DPT_Bool	1.002
HVACModeAct	Actual active HVAC mode (LTE and S-interface)	DPT_HVACMode_Z DPT_HVACMode	201.100 20.102
TempRoomSetpAct	Actual room temperature setpoint (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
ActPosSetpHeatStageA	Actuator position setpoint air handler heating valve stage A to be written to the connected valve(s) HVA. (LTE and S-interface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001
ActPosSetpHeatStageB	Actuator position setpoint air handler heating valve stage B to be written to the connected valve(s) HVA. (LTE and S-interface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001
ActPosSetpCoolStageA	Actuator position setpoint air handler cooling valve stage A to be written to the connected valve(s) HVA. (LTE and S-interface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001
ActPosSetpCoolStageB	Actuator position setpoint air handler cooling valve stage B to be written to the connected valve(s) HVA. (LTE and S-interface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001
ActPosSetpFreshAir	Actuator position setpoint air handler outside air damper to be written to the air damper actuator ADA. (LTE and S-interface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001
	Future actuators (fans, pumps,) under discussion	t.b.d. probably complex datapoints	?
Inputs			
StatusHPM	Status information from Hot Water Production Manager	DPT_StatusHPM	209.100
ForceSignHPM	Forcing signal from Hot Water Production Manager, to force consumer to consume more energy	DPT_ForceSign	21.100

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Datapoint	Description	Datapoint Type	DPT_ID
LockSignHPM	Locking signal from Hot Water Production Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
ForceSignHFDM	Forcing signal from Heating Flow Demand Manager, to force consumer to consume more energy	DPT_ForceSign	21.100
LockSignHFDM	Locking signal from Heating Flow Demand Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
StatusCPM	Status information from Cold Water Production Manager	DPT_StatusCPM	209.102
ForceSignCPM	Forcing signal from CPM due to danger of freezing, to force consumer to consume more energy	DPT_ForceSignCool	21.101
LockSignCPM	Locking signal from CPM due to chiller overload, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
ForceSignCFDM	Forcing signal from CFDM in the Cold Water Distribution Segment	DPT_ForceSignCool	21.101
LockSignCFDM	Locking signal from CFDM in the Cold Water Distribution Segment	DPT_LockSign	207.101
HVACModeEff	Present/active 'HVAC Mode' from Room Setpoint Manager RSMHD, may depend on automatic time schedule, local user operation, presence detection, widow status, comfort prolongation, etc 1)	DPT_HVACMode_Z	201.100
HVACModeEffNext	Next HVAC mode and time to next HVAC mode from RSMHD 1)	DPT_HVACModeNext	206.100
TempRoomSetpSetHeatEff (4)	Set of 4 effective temperature setpoints for heating 'Comfort', 'Standby', 'Economy' and 'Building Protection' 1)	DPT_TempRoomSetpSet [4]	213.100
TempRoomSetpSetCoolEff (4)	Set of 4 effective temperature setpoints for cooling 'Comfort', 'Standby', 'Economy' and 'Building Protection' 1)	DPT_TempRoomSetpSet [4]	213.100
TempRoomSetpHeatEff (1)	Effective temperature setpoint for heating from RSMTD (LTE and S-interface) 1)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
TempRoomSetpCoolEff(1)	Effective temperature setpoint for cooling from RSMTD (LTE and S-interface) 1)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
HVACModeOptim	Optimised HVAC mode from external HVAC mode optimiser	DPT_HVACMode_Z	201.100

Datapoint	Description	Datapoint Type	DPT_ID
TempRoomSetpOptim HeatShift	Room temperature setpoint shift heat from external HVAC mode optimiser (LTE and S-interface)	DPT_TempHVACRel_Z DPT_Value_Tempd	205.101 9.002
TempRoomSetpOptim CoolShift	Room temperature setpoint shift cool from external HVAC mode optimiser (LTE and S-interface)	DPT_TempHVACRel_Z DPT_Value_Tempd	205.101 9.002
ContrMode	Controller mode from management station. To enable or force the AHUC into a special application mode (LTE and S-interface)	DPT_HVACContrMode_Z DPT_HVACContrMode	201.104 20.105
EmergMode	Emergency mode from management station. To force the AHUC into fire or smoke clearance. (LTE and S-interface)	DPT_HVACEmergMode_Z DPT_HVACEmergMode	201.109 20.106
AQSetpEff	The effective air quality setpoint (LTE and S-interface)	DPT_HVACAirQual_Z DPT_Value_AirQuality	203.100 9.008
HumRelSetpHumEff	Relative air humidity setpoint for humidification (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
HumRelSetpDehumEff	Relative air humidity setpoint for dehumidification (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
TempRoom	Current room temperature value (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
AQRoom	Current room air quality value (LTE and S-interface)	DPT_HVACAirQual_Z DPT_Value_AirQuality	203.100 9.008
HumRelRoom	Current relative room humidity value (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
TempSupplyAir	Current supply air temperature sensor value (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
AQSupplyAir	Current supply air quality sensor value (LTE and S-interface)	DPT_HVACAirQual_Z DPT_Value_AirQuality	203.100 9.008
HumRelSupplyAir	Current relative supply air humidity sensor value (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
TempOutside	Current outside air temperature sensor (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
HumRelOutside	Current relative outside air humidity sensor (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
WindSpeed	Current wind speed value (LTE and S-interface)	DPT_WindSpeed_Z DPT_Value_Wsp	203.101 9.005
SunIntensity	Current sun intensity value W/m <sup>2</sup> (LTE and S-interface)	DPT_SunIntensity_Z DPT_PowerDensity	203.102 9.022
Parameters			
Apartment	LTE zoning number Geographical Tag Apartment	DPT_UCountValue8_Z	202.002

Datapoint	Description	Datapoint Type	DPT_ID
DistrSegmH	LTE zoning number Hot Water Distribution Segment	DPT_UCountValue8_Z	202.002
DistrSegmC	LTE zoning number Cold Water Distribution Segment	DPT_UCountValue8_Z	202.002
OutsideSensorZone	LTE zoning number Outside Sensor Zone	DPT_UCountValue8_Z	202.002
TempSupplyAirSetpMin	Minimum supply air temperature setting to ensure no condensation	DPT_TempHAVCAbs_Z	205.100
TempSupplyAirSetpMax	Maximum supply air temperature setting to ensure no heat dumping or smell	DPT_TempHAVCAbs_Z	205.100
Diagnostic Data			
TempRoomAct	Actual room temperature used by the AHUC	DPT_TempHAVCAbs_Z	205.100
TempOutsideAct	Actual outside temperature used by the AHUC	DPT_TempHAVCAbs_Z	205.100 *)
TempSupplyAirSetpHeat	Actual supply air temperature setpoint for heating	DPT_TempHAVCAbs_Z	205.100 *)
TempSupplyAirSetpCool	Actual supply air temperature setpoint for cooling	DPT_TempHAVCAbs_Z	205.100
Fault	Failure, some error in the AHUC	DPT_Bool	1.002
FanActive	Supply and/or exhaust air fans are operating	DPT_Bool	1.002

<sup>\*)</sup> Implementation of Properties using standard DPT see clause 1.3.2

			STANDARD MODE	Ехте	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	EnergyDemHeatAHUC	(GO <sub>b</sub> )		(GO)	О
	EnergyDemCoolAHUC	(GO <sub>b</sub> )		(GO)	О
	StatusAHUC	NA <sup>1</sup> )	NA	NA	О
	- Fault	(GO <sub>b</sub> )		(GO)	NA
	- FanActive	(GO <sub>b</sub> )		(GO)	NA
	HVACModeAct	(GO <sub>b</sub> )		(GO)	О
	TempRoomSetpAct	(GO <sub>b</sub> )		(GO)	О
	ActPosSetpHeatStageA	(GO <sub>b</sub> )		(GO)	О
	ActPosSetpHeatStageB	(GO <sub>b</sub> )		(GO)	О
	ActPosSetpCoolStageA	(GO <sub>b</sub> )		(GO)	О
	ActPosSetpCoolStageB	$(GO_b)$		(GO)	О
	ActPosSetpFreshAir	$(GO_b)$		(GO)	О
Inputs	StatusHPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignHPM	NA <sup>1</sup> )	NA	NA	О
	LockSignHPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignHFDM	NA <sup>1</sup> )	NA	NA	О
	LockSignHFDM	NA <sup>1</sup> )	NA	NA	О
	StatusCPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignCPM	NA <sup>1</sup> )	NA	NA	О
	LockSignCPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignCFDM	NA <sup>1</sup> )	NA	NA	О
	LockSignCFDM	NA <sup>1</sup> )	NA	NA	О
	HVACModeEff	NA <sup>3</sup> )	NA	NA	$M^2$ )
	HVACModeEffNext	NA <sup>1</sup> )	NA	NA	$O^2$ )
	TempRoomSetpSet HeatEff(4)	NA <sup>2</sup> )	NA	NA	$M^2$ )
	TempRoomSetpSet CoolEff(4)	NA <sup>2</sup> )	NA	NA	$M^2$ )
	TempRoomSetpHeatEff(1)	$GO_b$	GO	GO	$M^2$ )
	TempRoomSetpCoolEff(1)	$GO_b$	GO	GO	$M^2$ )
	HVACModeOptim	NA <sup>3</sup> )	NA	NA	О
	TempRoomSetpOptim HeatShift	(GO <sub>b</sub> )		(GO)	О
	TempRoomSetpOptim CoolShift	(GO <sub>b</sub> )		(GO)	О
	ContrMode	$(GO_b)$		(GO)	О

EmergMode	$(GO_b)$	(GO)	О
AQSetpEff	(GO <sub>b</sub> )	(GO)	О
HumRelSetpHumEff	(GO <sub>b</sub> )	(GO)	О
HumRelSetpDehumEff	(GO <sub>b</sub> )	(GO)	О
TempRoom	(GO <sub>b</sub> )	(GO)	О
AQRoom	(GO <sub>b</sub> )	(GO)	О
HumRelRoom	(GO <sub>b</sub> )	(GO)	О
TempSupplyAir	(GO <sub>b</sub> )	(GO)	О
AQSupplyAir	(GO <sub>b</sub> )	(GO)	О
HumRelSupplyAir	(GO <sub>b</sub> )	(GO)	О
TempOutside	(GO <sub>b</sub> )	(GO)	О
HumRelOutside	(GO <sub>b</sub> )	(GO)	О
WindSpeed	(GO <sub>b</sub> )	(GO)	О
SunIntensity	$(GO_b)$	(GO)	О

<sup>1)</sup> the information is NA in the Basic FB and all other modes because the datapoint type is today not yet available in Standard Mode. Splitting of DPT is not possible because of necessary data consistency

Table 1: AHUC Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	Apartment	M
	DistrSegmH	О
	DistrSegmC	О
	OutsideSensorZone	О

**Table 2: AHUC LTE specific Properties** 

<sup>2)</sup> Either implementation of {HVACModeEff + TempRoomSetpSetHeatEff[4], TempRoomSetpSetCoolEff[4]} or {TempRoomSetpHeatEff, TempRoomSetpCoolEff}

3) Implementation of HVACModeEff or HVACModeOptim inputs only without TempRoomSetpSetHeatEff [4] or

TempRoomSetpSetCoolEff [4] does not make sense

		Support
Parameter	TempSupplyAirSetpMin	О
	TempSupplyAirSetpMax	О
Diagnostic Data	TempRoomAct	О
	TempOutsideAct	О
	TempSupplyAirSetpHeat	О
	TempSupplyAirSetpCool	О
	Fault	О
	FanActive	О

Table 3: AHUC Standard Properties of Interface Objects (or memory mapped DP)

### 2.2.4.1 Output signal: EnergyDemHeatAHUC

#### **Standard Mode**

DP Name:	Ene	rgyDemHea	tAHUC	Abbr.:				Mand	atory		
FB Name:	AHU	JC						Can b	e intern	al	
Description											
See LTE-HEE	E mo	de, only % va	alue, no dem	and validit	y, load p	oriority	or emerg	gency dem	and attr	ibutes.	
<b>Datapoint Ty</b>	/ре										
DPT_Name:	_	PT_Percent_	U8								
DPT Format:	U <sub>8</sub>						DPT_ID				
Field	De	escription					Supp.	Range	Unit	Defau	ult
				see LTE-H	EE mod	e					
Access Type	<del>)</del>										
♦ Output											
this $\rightarrow$ M			this $\rightarrow$ 1	$\boxtimes$							
Spontaneo	ous	⊠ Cov	: 🛛	Δ-Value:	10%	Mi	n repetiti	on period:	10s		
		Cycli	c 🛛	Period:	15 Mi	n					
Request											
Communicat	tion <sup>-</sup>	Гуре									
♦ Group Ob	oject	Datapoint						Mandato	ry: 🛛 🖂		
Default Gr	oup A	Address:									
Dynamics											
Power dov	vn:	Save:									
Power up:		Value:	No initialisa	ition:		Defau	ılt value:				
			Saved value	_		Actua	I value (r	not for inpu	t): 🛛 🖂		
			n bus (only fo	r output):		Read	from bus	s (only for i	nput):		
<b>Exception Ha</b>	andli	ng									
Special Feat	ures										

FB: AHUC	LTE Ser	ver	r Output Name: EnergyDemHeatAHUC Mandatory ☐ Optional ☑											
Description:	-								-					
			contains the heati											
			mand to be sent											
			the heating valve							n.				
DPT: Name	PIDPI_A		osDemAbs	DPT ID	207.10			e format		D ( 11				
Field			escription		Sup.			Unit	COV	Default				
(1				Iculated heating demand O 0100 % 00% = max. demand)				10	0					
Attributes														
- DemValid			alidity of heating of		M		/false	bool	Y	false				
<ul> <li>AbsLoadPrid</li> </ul>	ority		solute load priori		0	true	/false	bool	Υ	false				
Chifft and Dri	a wide .		quested by AHU(			4	/foloo	haal	V	foloo				
<ul><li>ShiftLoadPri</li></ul>	ority		nift load priority re HUC	equested by	0	true	/false	bool	Y	false				
– EmergDem		l	nergency heat de	emand for	0	true	/false	bool	Υ	false				
Lineigbein			om frost protection			uuo	710100	5001		10100				
Communicati	on:					<u> </u>		<u></u>	<u>!</u>					
Binding Gro	up:													
Class			Type Default											
Geographi		<u>.</u>												
Application		$\boxtimes$	DistrSegmH_		<u></u>	<u>_</u>	1							
Unassigne			Broadcast	Configu		_								
DP Address			IO Type(ID):	240 (AHU			roperty		51					
LTE-Service	· <u> </u>		COV 🛛	MinRepTin			0 sec		tbeat:	15 min				
InfoReport			Output per defau		ating L	_   B		Froup Wild						
(LTE Read	Decrence	_	Tx Prio:	High			Norma	Ι <u></u>	Lo	)W <u> </u>				
polling of the		,	T		-1. \ / - 1		A -4 V	/ N	D - 6 14	V-1 □				
shall alway	s be		Transm after Po	werup: Store	d valu	е 🗀	ACT V	′alue ⊠	Detauit	Value 🗌				
supported)														
Property-Se (individual a			Read only	$\boxtimes$	Read	/Writ	e							
<b>Exception Ha</b>	ndling:							Save	at Powe	erdown				
Special Featu	ires:													

## 2.2.4.2 Output signal: EnergyDemCoolAHUC

### **Standard Mode**

DP Name:			oolAHUC	A	bbr.:					datory		
FB Name:	AHU	С							Can	be interr	ıal	
Description												
See LTE-HE	E mod	le, only %	value, no	demand	d validi	ty, load	oriori	ty or emerg	ency der	nand attr	ibutes.	
Datapoint Ty												
DPT_Name:		T_Percer	nt_U8									
DPT Format:	·							DPT_ID:				
Field									Range	Unit	Defau	ult
				see	LTE-H	IEE mod	le					
Access Type	9											
♦ Output			1	1 = -								
this $\rightarrow$ M			this $\rightarrow 1$									
Spontaneous												
			clic	$\boxtimes$  P	eriod:	15 M	n					
Request												
Communicat										1 -		
♦ Group Ob			_						Mandat	ory: 🛛 🖂	]	
Default Gr	roup A	ddress:										
Dynamics												
Power dov		Save:										
Power up:	:	Value:		alisatior	า:	<u> </u>		ault value:			<u></u>	
	_		Saved					ual value (n			]	
			on bus (on	ly for ou	utput):		Rea	ad from bus	(only for	input):		
Exception Ha	andlir	ng										
Special Feat	ures											

FB:	AHUC	LTE Ser	ver	Output Name: En		Mandatory ☐ Optional ⊠					
Desc	ription:	-		<del>.</del>						-	
				contains the cooling							
				emand to be sent to							
				the cooling valve po							١.
DPT:	<u> </u>										
				escription			Rar		Unit	COV	Default
			alculated cooling de		0	01	00	%	10	0	
			(1	00% = max. deman	<u>d)</u>						
Attrib			١								
_	nValid			alidity of cooling den	nand	M		/false	bool	Y	false
				solute load priority		0	true	/false	bool	Υ	false
OI- :				quested by AHUC			4	/C = 1 = =	11		6-1
– Snii	tLoadPric	ority		nift load priority requ HUC	ested by	0	true	/false	bool	Υ	false
Em	oraDom			nergency cooling demand O true/false bool				Υ	false		
	ergDem <b>nunicati</b> o	<b>.</b>	<u> </u>	nergency cooling de	illallu		liue	riaise	DOOI	ı	iaise
	ding Gro										
Clas		up.		Туре				Defa	ault		
	eographic	al		Турс				Dele	auit		
	plication		Ħ.	DistrSegmC				<del> </del>			
	nassigned		음.	Broadcast	Configu	rahle [	<u> </u>				
	Address:			IO Type(ID):	240 (AHU		P	roperty I	D.	52	
		s (event):			MinRepTin			0 sec		tbeat:	15 min
	oReport			Output per default					roup Wild		
	•	_		Tx Prio:	High 🗌	<u>-</u>		Normal		Lo	
(L	TE Read-	Response	,								
po	lling of th	e output		Transma offer Days	www. Ctoro	ام ۱ امار		A a4 \ /	alua M	Defectle	Valua 🖂
sh	all always	s be		Transm after Powe	rup: Store	u valu	е 🗀	ACI V	alue 🛚	Delault	Value 🗌
	pported)										
	perty-Sei			Read only		Read	/\//rit	آ ۾			
	ividual a			rtead only		rtcaa	/ <b>V V</b> I I I		<u> </u>		
Exce	ption Har	ndling:							Save	at Powe	rdown
Spec	ial Featu	res:									

## 2.2.4.3 Output signal: StausAHUC

#### **Standard Mode**

Separate datapoints Fault, FanActive

FB: AHUC LT	ΓE Serve	r Output Name:	StatusAHUC			ndatory $\square$			
Description:			-						
Information provid room unit).	led by the	e AHUC mainly fo	r visualization	1 & mor	itorin	ıg e.g. d	n an end-	user HN	/II (e.g.
<b>DPT:</b> Name D	PT_State	usAHU	DPT ID	21.106	6	Datatyp	tatype format		
Field		escription		Sup. Range Unit			COV	Default	
- Fault	Α	HUC has a failure	е	M	true	/false	bool	Υ	false
<ul> <li>FanActive</li> </ul>		upply and/or exh	aust air fans	0	true	/false	bool	Υ	false
		re operating							
		entilation Control	ler is in	0	true	/false	bool	Υ	false
		eating mode		_					
- Cool		entilation Control	ler is in	0	true	/false	bool	Υ	false
		ooling mode							
Communication:									
Binding Group:		T_							
Class		Туре				Defa			
Geographical	<u>\</u>	Apartment				1 (4	4.1.1, refe	r 2.2.1.1	l)
Application Spe	ecific 📙			<u></u>					
Unassigned		Broadcast	Configu						
DP Address:		IO Type(ID):	240 (AHU			roperty I		53	
LTE-Services (e		COV 🛛	MinRepTin			) sec		rtbeat:	15 min_
InfoReport	$\boxtimes$	Output per defa		ating 🛭	⊴  Bi		Group Wild	card all	owed 📙
(LTE Read-Res		Tx Prio:	High 🗌			Norma	I 🖂	Lo	ow 📙
polling of the o					_				
shall always be	Э	Transm after Po	owerup: Store	ed Valu	е 📙	Act V	alue 🛚	Default	Value
supported)									
Property-Service		Read only	$\bowtie$	Read	/Write	e [			
(individual acce		<u> </u>							
Exception Handli	ıng:						Save	at Powe	erdown 🗌
Special Features	:								

## 2.2.4.4 Output Fault

### **Standard Mode**

DP Na	me:	Faul	t			Abbr.:				Manda	tory		
FB Na	me:	AHL	JC							Can be	intern	al 🛛	
Descri	iption												
Report	ts a failu	re in	the A	HUC,	mainly us	ed for visual	isation						
Datap	oint Typ	е											
DPT_N	Name:	DF	PT_Boo	ol									
DPT F	ormat:	B <sub>1</sub>							DPT_ID: 1.002				
Field		De	scripti	on					Supp.	Range	Unit	Default	
												false	
Acces	s Type												
<ul><li>◆ Ot</li></ul>	ıtput												
this	$s \to M$			1	this $\rightarrow$ 1								
Spo	Spontaneous   COV:   Δ-Value:   Min repetition period:   10s												
				Cycli	c 🛛	Period:	15 Mi	in					
Red	quest		$\square$										
Comm	nunicati	on T	уре										
♦ Gr	oup Obj	ect [	Datapo	oint						Mandatory	/:		
Def	fault Gro	up A	Addres	s: -									
Dynan	nics												
Pov	ver dow	n:	Save:										
Pov	wer up:		Value	:	No initial	isation:		Defau	ılt value:		$\boxtimes$		
					Saved va		]	Actua	l value (n	ot for input)	): 📗		
			Trans	mit or	n bus (only	for output):		Read	from bus	(only for in	put):		
Excep	tion Ha	ndli	ng										
Specia	al Featu	res											

#### LTE-HEE Mode

Not applicable.

## 2.2.4.5 Output FanActive

#### **Standard Mode**

DP N	Name:	Far	Active			Abbr.:				Manda	tory	
FB N	Name:	ΑH	UC							Can be	interna	al 🛛
Desc	cription											
			naust air f	ans a	are operating	g, mainly i	used for	visuali	sation			
	point Ty											
	_Name:	D	PT_Bool									
	Format:	B.	1						DPT_ID:	1.002		
Field	1	D	escription						Supp.	Range	Unit	Default
											false	
Acce	ess Type											
<b>♦</b> (	Output											
th	$nis \to M$			th	$nis \rightarrow 1$							
S	Spontaneous   COV:   Δ-Value:     Min repetition period:   10s											
			С	yclic	$\boxtimes$	Period:	15 Mi	n				
R	Request		$\square$									
Com	nmunicati	ion	Туре									
<b>♦</b> (	Group Ob	ject	Datapoin	t						Mandatory	<i>r</i> :   🖂	
D	efault Gro	oup	Address:		-							
Dyna	amics											
P	ower dow	n:	Save:									
Р	ower up:		Value:		No initialisat	tion:		Defau	ılt value:			
					Saved value	e:		Actua	I value (no	ot for input)	: 🛛	
			Transmi	t on	bus (only for	output):		Read	from bus	(only for in	put):	
Exce	eption Ha	ndl	ing									
Spec	cial Featu	ires										

### LTE-HEE Mode

Not applicable.

## 2.2.4.6 Output signal: HVACModeAct

### **Standard Mode**

DF	Name:	HV	ACModeAct		Abbr.:			Mandat	Mandatory		
FB	Name:	ΑHι	JC					Can be	interna	l	$\boxtimes$
De	escription										
Th	is output co	ntaiı	ns the actual	HVAC Mode of the air h	andling ι	unit.					
Da	tapoint Typ	Эе									
	PT_Name:	DF	PT_HVACMod	de							
DPT Format: N <sub>8</sub> DPT_ID:											
Field Description								Range	Unit	Defa	ult
								14 <sup>1</sup> )		CS	;
Ac	cess Type										
•	Output										
	this $\rightarrow$ M		☑ th	nis $\rightarrow$ 1							
	Spontaneo	us	⊠ COV:	Δ-Value:		Min	repetition	period:	10sec		
			Cyclic	Period:	15min						
	Request										
ŭ	mmunicati	on <sup>-</sup>	Туре								
<b>♦</b>	Group Obj	ect	Datapoint					Mandatory	$:   \boxtimes $		
	Default Gro	up /	Address:								
Dy	namics										
	Power dow	n:	Save:								
	Power up:		Value:	No initialisation:			ılt value:				
				Saved value:	Α	ctua	ıl value:				
			Transmit on	bus:							
Ex	ception Ha	ndli	ing								
_	ecial Featu										
¹) '	value 0='Aut	to' is	s not allowed								

FB:	AHUC	LTE S	Server	er Output Name: HVACModeAct Mandatory Optional								
Desc	ription:									<u> </u>	<u> </u>	
		lode o	f the a	ir handling unit (wh	nich may als	so depe	end o	n interna	al optimise	er functi	ons in the	
AHUC	C).											
DPT:	Name	DPT		CMode_Z	DPT ID	201.10			e format			
Field				ription			Range Unit		Unit	COV	Default	
	Mode		Actua	al HVAC Mode		M	[14	<u>4] 1)                                   </u>	enum.	Υ	cs	
Status						_			bitset			
	rridden		false	C mode overridden	true /	0	true	e/false	bool	Y	true	
	ther flags			upported								
Comr				only)								
	rride &		overr	ide and release se	tpoint	0						
Relea			not o	innorted		NA						
comm			1101 51	upported		INA						
	nunicatio	n:				<u> </u>	<u> </u>			<u> </u>		
	ding Gro											
Clas		ир.		Туре	vpe Default							
	eographic	al	$\boxtimes$	Apartment.					.1.1, refe	r 2.2.1.1	1)	
	plication		<del></del> :								2	
	nassigned		···· <del>·</del>	Broadcast Configurable								
	Address:			IO Type(ID):								
LTE	-Service	s (eve	nt):	COV	MinRepTir	ne:		0 sec		rtbeat:	15 min	
	oReport		$\boxtimes$		Output per default communicating   Binding Group Wildcard allowed							
	TE Read-			Tx Prio:	High 🗌			Normal	$\boxtimes$	Lo	ow 🗌	
	lling of th		ut		_		_				—	
	all always	be		Transm after Pow	erup: Store	ed Valu	е 📙	Act V	alue 🛚	Default	Value	
	pported)											
Property-Service (individual access):					Read	/Writ	te [	∑ <sup>2)</sup>				
Exce	Exception Handling: Save at Powerdown											
	ial Featu											
	ue 'Auto'				£	and with			46- 01111	O	ما ا	
VVIII				for Override / Relea		oniy: ii	UV	erriaaen'	ine AHU	U uses 1	ne	
VVIII				temperature contro		Offig. II	OV	emuuem	lile Al IO	C uses	li IC	

## 2.2.4.7 Output signal: TempRoomSetpAct

### **Standard Mode**

DP Name:	Temp	Roor	nSetp	Act		Abbr.:	: .						Manda	tory	
FB Name:	AHUC	)											Can be	intern	al 🛛
Description															
Actual room to	empera	ature	of the	e air han	dling	ı unit.									
Datapoint Ty															
DPT_Name:		_Val	lue_Te	emp											
DPT Format:	F <sub>16</sub>										DPT_ID		9.001		1
Field	Des	cripti	on								Supp.		ange	Unit	Default
												fu	II range	°C	CS
Access Type	<u> </u>														
◆ Output	1					. —									
this $\rightarrow$ M				this $\rightarrow 1$											
Spontaneous   COV:   Δ-Value:   0.2 K   Min repetition period:   10s															
			Cycli	С	$\boxtimes$	Perio	d:	15 M	lin						
Request		$\boxtimes$													
Communicat															
♦ Group Ob												M	andatory	<i>r</i> : 🛛	
Default Gr	oup Ac	ddres	s: -												
Dynamics															
Power dov		Save:													
Power up:	\  \	/alue	:	No init			Ш				ılt value:				
				Saved		~ .	Ш		_		ıl value (				
			mit or	n bus (or	nly fo	r outpu	ıt):		Re	ead	from bu	s (or	nly for in	put):	
Exception Ha	andling	g													
Special Feat	ures														

FB:	AHUC	LTE S	Server	rver Output Name: TempRoomSetpAct Mandatory Optional								
Desci	ription:										puonai 🔼	
		mperat	ure se	tpoint of the air ha	andling unit	controlle	er.					
DPT:	Name	DPT	Temp	HVACAbs_Z	DPT ID	205.10	00	Datatype	e format	$V_{16}Z_{8}$		
Field				ription		Sup.	Ran	ge	Unit	COV	Default	
Temp			Room	n temperature set	ooint	М		ange	°C	0.2	cs	
Status							bitse					
	OfService			value: setpoint no	t available	M		/false	bool	Υ	false	
	rridden		•	oint overridden		0	true/	/false	bool	Υ	false	
	ther flags			upported		ļ	ļ					
Comn				only)								
	rride &		Overr	ide and release s	etpoint	0						
Relea			4			NI A						
- all of			not st	ipported NA								
comm						<u> </u>				-		
	nunicatio											
Clas	ding Gro	up:		Typo				Dofe	I <del>.</del>			
	eographic	ol.	$\square$	Type	Type Default Apartment 1 (A.1.1, refer 2.2.1.1)							
	plication		<u></u> .	7 (7.1.1, 1616) 2.2.1.1)								
	nassigned		.·	Broadcast Configurable								
	Address:			IO Type(ID):	240 (AHL		_ Pr	roperty I	D·	55		
	-Service:		nt)·	COV 🕅	MinRepTir			0 sec		tbeat:	15 min	
	oReport		$\boxtimes$	Output per defau					roup Wild			
	ΓΕ Read-			Tx Prio:	High	umg 2	<u> </u>	Normal			ow $\square$	
	lling of the			TX T TIO	g <u></u>			110111101			/	
	all always			Transm after Pov	werup: Store	ed Value	е П	Act Va	alue 🖂	Default	Value □	
su	pported)				•						_	
Pro	perty-Ser	vice		Read only		Read	/\//rita	<u> </u>	∑ 1)			
	ividual a			rtead only		rteau	/ <b>V V I I L</b>					
Exce	otion Har	ndling							Save	at Powe	erdown	
	ial Featu											
') writ	e access	is opti	onal; f	or AlarmAck funct	tion only							

## 2.2.4.8 Output signal: ActPosSetpHeatStageA

### **Standard Mode**

FB Name: AHUC  Description  This datapoint contains the percent setpoint value for the actuator position. (Note: consistensy with existing valves and ObIS)  Datapoint Type  DPT_Name: DPT_Scaling  DPT Format: Us Description  DPT_ID: 5.001  Field Description  Supp. Range Unit Default  Field Description  Supp. Range Unit Default  This → M S T Default Value: 5% Min repetition period: 10s  COV: ACCEST Type  Output  This → M S T Default Value: 5% Min repetition period: 10s  Default Group Address:  Dynamics  Power down: Save: Default Group Address:  Dynamics  Power down: Save: Default Value: Saved Value: Default Value: Saved Value: Read from bus (only for input): Default Value: No initialisation: Read from bus (only for input): Default Value: No only for output): Read from bus (only for input): Default Value: No only for output): Read from bus (only for input): Default Value: No only for output): Transmit on bus (only for output): Read from bus (only for input): Default Value: No only for output): Transmit on bus (only for output): Default Value: No only for input): Transmit on bus (only for output): Default Value: No only for input): Default Value: No only for output): Default Value: No only for input): Default Value: No only for output): Default Value: No only for output): Default Value: No only for input): Default Value: No only for output): Default Value: No only for input): Default Value: No only for output): Default Value: No only for input): Default Value: No only for output): Default Value: No only for input): Defau	DP Name:   ActPosSetpHeatSta	ageA Abbr.:			Mandat	tory				
This datapoint contains the percent setpoint value for the actuator position. (Note: consistensy with existing valves and ObIS)  Datapoint Type  DPT_Name: DPT_Scaling  DPT Format: U <sub>8</sub> DPT_ID: 5.001  Field Description Supp. Range Unit Default    Default Default Default	FB Name: AHUC				Can be	interna	al 🛛			
existing valves and ObIS)  Datapoint Type  DPT_Name: DPT_Scaling  DPT Format: U <sub>8</sub> DPT_ID: 5.001  Field Description Supp. Range Unit Default	Description									
Datapoint Type         DPT Name:       DPT Scaling         DPT Format:       U <sub>8</sub> DPT ID:   5.001         Field       Description       Supp.   Range   Unit   Default   Def		nt setpoint value for	the actuator po	osition. (Note	e: consist	tensy w	/ith			
DPT_Name:       DPT_Scaling         DPT Format:       U <sub>8</sub> DPT_ID: 5.001         Field       Description       Supp. Range Unit Default 0100²) % cs         Access Type         ◆ Output       this → M	,									
DPT Format: U8       DPT ID: 5.001         Field       Description       Special Features         Special Features         DPT ID: 5.001         Supp. Range Unit Default         Supp. Range Unit Default         Supp. Range Unit Default         Composite Default         Cov: □ Default       Δ-Value: 5% Min repetition period: 10s         Communication Type         ◆ Group Object Datapoint       Mandatory: □         Default Group Address:         Dynamics         Power down: Save: □ No initialisation: □ Default value: □ Actual value (not for input): □         Exception Handling         Exception Handling										
Supp.   Range   Unit   Default										
Access Type  Output  this → M										
Access Type   Output   this → M □   Spontaneous □   COV: □   Cyclic □   Period: 15 Min   Request □    Communication Type  Togroup Object Datapoint  Default Group Address:  Power down: Save: Power down: Save: Power up: Value: No initialisation: □ Default value: □   Power up: Value: No initialisation: □ Default value (not for input): □   Saved value: □ Actual value (not for input): □   Transmit on bus (only for output): □ Read from bus (only for input): □   Exception Handling    **Power up: Values on bus controlled in parallel	Field Description			Supp. Ra			Default			
♦ Output   this → M □ this → 1 □   Spontaneous □ COV: □ ∆-Value: 5% Min repetition period: 10s   Request   Request   Communication Type   ♦ Group Object Datapoint Mandatory: □   Default Group Address:   Dynamics   Power down: Save: □   Power up: Value: No initialisation: □ Default value: □   Saved value: □ Actual value (not for input): □   Exception Handling     Special Features   ¹¹) one or multiple valves can be controlled in parallel				0.	.100 <sup>2)</sup>	%	CS			
this → M	Access Type									
Spontaneous										
Communication Type  ◆ Group Object Datapoint	this $\rightarrow$ M $\boxtimes$ 1) this	$\rightarrow 1$								
Request										
Communication Type  ◆ Group Object Datapoint	Cyclic Period: 15 Min									
→ Group Object Datapoint	Request									
Default Group Address:  Dynamics  Power down: Save: Default value: Default value: Saved value: Actual value (not for input): Transmit on bus (only for output): Read from bus (only for input): Special Features  1) one or multiple valves can be controlled in parallel	Communication Type									
Power down: Save: Power up: Value: No initialisation: Default value: Saved value: Actual value (not for input): Transmit on bus (only for output): Read from bus (only for input):   Exception Handling  Special Features  1) one or multiple valves can be controlled in parallel	♦ Group Object Datapoint			M	andatory	<i>r</i> : 🛛				
Power down: Save:  Power up: Value: No initialisation: Default value:  Saved value: Actual value (not for input):  Transmit on bus (only for output): Read from bus (only for input):  Exception Handling   Special Features  1) one or multiple valves can be controlled in parallel	Default Group Address:									
Power up:  Value:  No initialisation:  Saved value:  Transmit on bus (only for output):  Exception Handling   Special Features  1) one or multiple valves can be controlled in parallel	Dynamics									
Saved value:  Transmit on bus (only for output):  Exception Handling   Special Features  1) one or multiple valves can be controlled in parallel	Power down: Save:									
Transmit on bus (only for output): Read from bus (only for input):  Exception Handling Special Features  1) one or multiple valves can be controlled in parallel	Power up: Value: No	o initialisation:	Defau	ılt value:						
Exception Handling Special Features  1) one or multiple valves can be controlled in parallel	Sa	aved value:	Actua	I value (not f	or input)	: 🛛				
Special Features  1) one or multiple valves can be controlled in parallel	Transmit on bu	us (only for output):	Read	from bus (or	nly for in	put):				
one or multiple valves can be controlled in parallel										
one or multiple valves can be controlled in parallel										
	Special Features									
<sup>2)</sup> The encoding of the actuator setpoint value is: $0\% \Rightarrow 0.100\% \Rightarrow 255$		ontrolled in parallel								
The checking of the detactor selpoint value is: 070 \(\text{is } \text{is } \	<sup>2)</sup> The encoding of the actuator se	etpoint value is: 0% =	$\Rightarrow$ 0, 100% $\Rightarrow$ 2	255						

#### LTE-HEE Mode

FB:	AHUC	LTE Clie	nt	Output Name:	ActPosSetp	HeatSt	ageA			Mandatory ☐ Optional ⊠	
Desci	ription:									<u> </u>	ptioriai 🔼
This c	utput sigi	nal contaii	ns t	the actuator pos	ition setpoint,	which i	s sent	by the	AHUC to	the valv	e(s).
Calcu	lation of t	he valve p	os	ition setpoint: m	ethod is comp	any sp	ecific.				
DPT:	Name	DPT_Re	elVa	alue_Z	DPT ID	202.00	)1 C	atatyp	e format	U <sub>8</sub> Z <sub>8</sub>	
Field			Ď	escription		Sup.	Rang	е	Unit	COV	Default
RelVa	llue		Αc	tuator position s	etpoint %	M	0100	0	%	5	cs
	MAND						enum	1			
	nalWrite					M					
- all o	ther comr	nands	no	t allowed		NA					
Comr	nunicatio	on:									
Bind	ding Gro	up:									
Clas	S			Туре				Defa	ault		
Ge	eographic	al [	$\boxtimes$	Apartment				1_(A	\.1.1, refe	r 2.2.1.1	)
Ap	plication	Specific	$\Box$	·							
	assigned			Broadcast	Configu						
	Address:			IO Type(ID):	352 (HVA		Pro	perty I	D:	51	
		s (eve <u>nt)</u> :		COV 🖂	MinRepTir			sec		rtbeat:	15 min
W	rite	$\boxtimes$		Output per defa		ating [			roup Wild	card allo	owed 🗵
				Tx Prio:	High			Normal			w 🗌
				Transm after Po	ower-up: Store	<u>ed Valu</u>	e 🗌	Act Va	alue 🗵	Default	Value 🗌
Exce	otion Har	ndling:							Save	at Powe	rdown
Speci	ial Featui	res:									

### 2.2.4.9 Output signal: ActPosSetpHeatStageB

**Standard Mode/LTE-HEE Mode** 

Refer to ActPosSetpHeatStageA. LTE: IO Type(ID): 352 (HVA) Property ID: 52

#### 2.2.4.10 Output signal: ActPosSetpCoolStageA

**Standard Mode/LTE-HEE Mode** 

Refer to ActPosSetpHeatStageA. LTE: IO Type(ID): 352 (HVA) Property ID: 53

#### 2.2.4.11 Output signal: ActPosSetpCoolStageB

**Standard Mode/LTE-HEE Mode** 

Refer to ActPosSetpHeatStageA. LTE: IO Type(ID): 352 (HVA) Property ID: 54

## ${\bf 2.2.4.12~Output~signal:~ActPosSetpFreshAir}$

### **Standard Mode**

DP Name:	<u>ActPosSetpFrest</u>	nAir /	Abbr.:				Manda	itory		
FB Name:	AHUC						Can be	e interna	al	$\boxtimes$
Description							·			
This datapoin	contains the per-	cent setpoint v	alue for t	the actu	ator po	osition. O	nly ActPos	SetpFre	shAir	
percent value	without command	d field (Note: o	consisten	sy with	existin	g valves	and ObIS)			
<b>Datapoint Ty</b>	pe									
DPT_Name:	DPT_Scaling									
DPT Format:	U <sub>8</sub>					DPT_ID:	5.001			
Field	Description					Supp.	Range	Unit	Defau	ılt
							0100	%	CS	i
Access Type										
♦ Output										
this $\rightarrow$ M	$\boxtimes$ 1) t	his $\rightarrow$ 1								
Spontaneous   COV:   Δ-Value: 5%   Min repetition period: 10s										
Cyclic Period: 15 Min										
Request	$\boxtimes$									
Communicat	ion Type									
♦ Group Ob	ject Datapoint						Mandator	y:   🛛		
Default Gr	oup Address: -	-								
Dynamics										
Power dov	n: Save:									
Power up:	Value:	No initialisation	on:		Defau	ılt value:				
		Saved value:			Actua	I value (n	ot for input	): 🛛		
		bus (only for o	output):		Read	from bus	(only for in	put):		
<b>Exception Ha</b>	ındling									
Special Feat										
	ple dampers can									
<sup>2)</sup> The encodi	ng of the actuator	setpoint value	is: 0% =	⇒ 0, 100	$0\% \Rightarrow 1$	255				

FB:	AHUC	LTE Clie	nt	Output Name:	ActPosSetpl	Fresh <i>A</i>	Air			Mandatory ☐ Optional ⊠	
Desc	ription:				-					<u> </u>	
This c	output sig	nal contai	ns	the damper actu	ator position s	etpoint	i, which i	s sen	t by the A	AHUC to	the fresh
air da	mper(s).										
Calcu	lation of t	he dampe	er p	osition setpoint:	method is cor	npany	specific.				
DPT:	Name	DPT_R	elVa	alue_Z	DPT ID	202.00	01 Da	tatype	format	$U_8Z_8$	
Field			De	escription		Sup.	Range		Unit	COV	Default
RelVa	alue		Αc	tuator position s	etpoint %	М	0100		%	5	cs
COMI	MAND						enum				
- Norr	malWrite					M					
- all o	ther comr	mands	no	t allowed		NA					
Comr	Communication:										
Bine	Binding Group:										
Clas				Type				Defa	ult		
Ge	eographic	al	$\boxtimes$	Apartment				1 (A	.1.1, refe	r 2.2.1.1	)
Ap	plication	Specific	$\Box$								
Ur	nassigned			Broadcast	Configu	rable 🗌					
DP	Address:			IO Type(ID):	362 (ADA	.)	Prop	erty I[		51	
LTE	-Service:	s (event):	:	COV 🛛	MinRepTin		10 s	ес	Hear	tbeat:	15 min
Wı	rite	$\boxtimes$		Output per defa	ult communica	ating [			oup Wild	card allo	owed 🛚
				Tx Prio:	High 🗌		No	ormal	$\boxtimes$	Lo	w 🗌
				Transm after Po	ower-up: Store	ed Valu	e 🗌 🛮 🗡	\ct Va	alue 🛚	Default	Value 🗌
Exce	ption Har	ndling:							Save	at Powe	rdown
Speci	ial Featu	res:									

## 2.2.4.13 Input signal: StatusHPM

### **Standard Mode**

Not applicable.

FB: AHUC LTE Client	Input Name:	StatusHPM					datory 🗌 otional 🖂		
Description:		-				•			
This signal contains various	status informa	ation of the heat	production	n. Status	HPM may	also used	for local		
control functions in the AHL					•				
DPT: Name DPT_Statu	sHPM	DPT ID	209.100	Dataty	oe format	$V_{16}B_{8}$			
Field	Description				Sup.	Unit	Default		
TempFlowProdSegmH	Common flow	temperature of	heat prod	duction	M	°C	CS		
	segment								
Attributes									
- TempFlowValid		npFlowProdSe(			M	bool	false		
- Fault		poiler(s) have a			M	bool	false		
		nanufacturer sp	ecific reac	tion in the	Э				
	HZC								
- SummerMode	Boiler / boiler	bool	false						
		r mode (mainly							
- OffPerm		rmanently off (r	nanual sw	ltch or	0	bool	false		
N. 11. 40. 11.11	failure)								
- NoHeatAvailable		sequence is ter	nporary n	ot	0	bool	false		
	producing hea	<u>at                                     </u>							
Communication:									
Binding Group:	Γ		1.	5 ( );					
Class	Туре			Default					
Geographical									
Application Specific	DistrSegmH			1					
Unassigned	Broadcast [	Configura		<u> </u>	ID.	F 4			
DP Address:	IO Type(ID):	136 (HPN		Property	וט:	51			
LTE-Service (event):		niffer on Bindin		N 41					
InfoReport 🖂	Timeout:		/	Min					
LTE-Service (polling): Read – Response ☐	Read Wildcare	d / Resp Sniffer	on Bindin	ng Group:					
Value after Powerup: Default Value ⊠							lue 🗍		
Exception Handling: Save at Po									
Special Features:									

### 2.2.4.14 Input signal: ForceSignHPM

### **Standard Mode**

Not applicable.

FB:	B: AHUC LTE Client Input Name: ForceSignHPM Mandatory Optional									
Descri	iption:			_					<u>.                                    </u>	
		from Hot Wa	ter Production	Mana	ager, to fo	orce consu	ımer to consi	ume moi	e energy.	Refer to
DPT:	Name	DPT Force	eSian		DPT ID	21.100	Datatype	format	B <sub>8</sub>	
Field	11441110	<u>                                      </u>	Description		151 1 15	1211100	Butatype	Sup.	Unit	Default
Attribu	tes		Bitset contain	ina s	tatus info			- Сир.		20.00.0
	Reques	t	indicates over			in the HP	M (validity	М	bool	false
	. 10 40.00	•	of remaining a				(			
- Prote	ection		indicates that			itical. too h	niah boiler	M	bool	false
			temp			,				
- Overs	supply		indicates that	over	heat is un	critical but	t supply	M	bool	false
	,		temp is much							
			demand	Ŭ		•	•			
- Overi	run		indicates that	rema	aining ene	ergy is ava	ilable in the	M	bool	false
			boiler(s) after	load	shutdowr	1				
- DHW	/Norm <sup>2)</sup>		Load DHW to	'Nor	mal' Leve	l in case o	of overheat	0	bool	false
			('Protection' o	or 'Ov	ersupply'	)				
- DHW	/Legio <sup>2)</sup>		Load DHW to	'Leg	ioProtect'	Level in c	ase of	0	bool	false
	overheat ('Protection' or 'Oversupply')									
- RoomHComf <sup>2)</sup> Load Room Heating to 'Comfort' Level in case of O bool false										
			overheat ('Pro							
- Roon	nHMax <sup>2)</sup>		Load Room H					0	bool	false
			temperature i	n cas	e of overl	heat ('Prot	ection' or			
			'Oversupply')							
	nunicatio									
	ing Gro	up:								
Class			Туре				Default			
	ographic		ļ							
	olication	<u></u> -	DistrSegmH			<u></u>	1			
	assigned		Broadcast		Configu					
	Address:		IO Type(ID):		136 (HP		Property ID	):	53	
	Service		InfoReport Si	niffer	on Bindi			-		
	InfoReport Timeout: 1) 7 Min									
	LTE-Service (polling):  Read Wildcard / Resp Sniffer on Binding Group:									
	ad – Res				•	on bindi	ng Group.			
Value	after Po	werup:	Defa	ault V	′alue 🛚			(	Stored Va	lue 🗌
Excep	tion Har	ndling:					Sav	e at Pov	verdown	
	al Featur									
			event and peri							
		. When the f	orcing condition	n in t	he HPM o	disappears	s, the ForceR	equest a	attribute c	hanges
to false										
<sup>∠)</sup> HPM	2) HPM's with higher functionality may indicate whether DHW or Heating should be activated in case of									
oversu	oversupply. This flags is not considered in the AHUC									

# 2.2.4.15 Input signal: LockSignHPM

### **Standard Mode**

Not applicable.

FB: AHU	IC	LTE Client	Input Name:	out Name: LockSignHPM							
Descriptio	n:								-		
			ter Production	Manager	, to for	ce the co	nsumer to	reduce ei	nergy		
		efer to [08].									
	ame	DPT_Lock		DP	TID	207.101	Datatype	e format	U <sub>8</sub> B <sub>8</sub>		
Field			Description					Sup.	Unit	Default	
PwrReduct	ion		Requested po		sumption	on reduct	ion	M	%	cs	
			– 0 % no red								
			– 100% max.	reduction	<u>)</u>						
Attributes							,,		l		
<ul><li>LockRequ</li></ul>	uest		Indicates if po		ction is	s necessa	ary (validity	M	bool	false	
Tuna			of PwrReducti		-1/	المداد باممانا	براهم ماري	N.4	bool	aritiaal	
– Туре			Type of overlo				ie is only	M	bool	uncritical	
Cammunia	4!-		meaningiui ii i	LockRequ	uest-ti	ue					
Communic											
Binding (	Grou	ıp:	T			1	Default				
Class	nhina		Type Default								
Geogra		<del></del> -	DietrCeaml				 1				
		Specific 🔀	DistrSegmH Broadcast		nfiguro	blo 🗀	-!				
Unassig DP Addre					nfigura 6 (HPN		Droporty	D.	54		
LTE-Serv		(avant).	IO Type(ID): InfoReport Sr				Property I	υ.	54		
InfoRep		(event).	Timeout: 1)	illiel on	DIIIUIII		Min				
LTE-Serv			Timeout.			- 1	IVIII I				
Read –			Read Wildcard / Resp Sniffer on Binding Group:								
Value after	r Pov	werup:	Defa	ult Value	<u> </u>			(	Stored V	alue 🗌	
Exception	Han	dling:					Sa	ve at Pov	verdowr		
		_					•				
Special Fe	atur	es:									
1) The signa	al is ı	received on	event and perio	odically (i	if no C	OV occui	rred) as lon	g as the l	ockReq	uest	
			verload conditi								
to false.											

# 2.2.4.16 Input signal: ForceSignHFDM

### **Standard Mode**

Not applicable.

FB: AHUC	LTE Client	Input Name:	put Name: ForceSignHFDM							
Description:	•									
	I from Heating	Flow Demand	Man	ager, to fo	rce consi	ume	er to cons	ume mo	re energy	. Refer
to [08].										
<b>DPT:</b> Name	e DPT_Force	eSign		DPT ID	21.100		Datatype	format	B <sub>8</sub>	
Field		Description						Sup.	Unit	Default
Attributes										
- ForceReque	st	indicates if for						M	bool	false
		necessary (va				trib	)			
<ul> <li>Protection</li> </ul>		indicates that						M	bool	false
<ul> <li>Oversupply</li> </ul>		indicates that						M	bool	false
- Overrun		indicates that				ilab	le in the	M	bool	false
	,	heat-exchange								
- DHWNorm <sup>2</sup>	)	Load DHW to			in case o	f o	verheat	0	bool	false
		('Protection' o								
- DHWLegio <sup>2</sup>	)	Load DHW to					e of	0	bool	false
	2)		rheat ('Protection' or 'Oversupply') ad Room Heating to 'Comfort' Level in case of O							
- RoomHCom	f <sup>2)</sup>			case of	0	bool	false			
	2)	overheat ('Protection' or 'Oversupply')								
- RoomHMax							0	bool	false	
		temperature in	ı cas	e of overh	eat ('Prot	ecti	ion' or			
		'Oversupply')							<u> </u>	
Communicat										
Binding Gre	oup:	1_				_				
Class		Туре				De	fault			
Geographi										
	Specific 🗵	DistrSegmH				1				
Unassigne		Broadcast		Configura						
DP Address		IO Type(ID):		144 (HFD			roperty ID	):	53	
LTE-Service		InfoReport Sr	niffer	on Bindin			-	-		
InfoReport										
LTE-Service		Read Wildcare	d / Re	esp Sniffer	on Bindi	na	Group: -	_		
Read – Re						9				
Value after P		Defa	ult Va	alue 🛚					Stored Val	lue
Exception Ha	andling:						Sav	e at Pov	verdown	
Special Feat										
		event and peri								
	e. When the f	orcing conditio	າ in th	ne HFDM (	disappeai	rs, t	the Force	Request	attribute	changes
to false)										
ا This flag is ا	not considered	d in the AHUC								

# 2.2.4.17 Input signal: LockSignHFDM

### **Standard Mode**

Not applicable.

FB:	AHUC	LTE Client	E Client Input Name: LockSignHFDM Mandatory								
	_									C	ptional 🛚
	ription:										
			Flow Demand	Mar	nager, to fo	orce the c	consum	er to	reduce e	nergy	
		Refer to [08].									
DPT:	Name	DPT_Lock			DPT ID	207.101	Data	atype	e format	U <sub>8</sub> B <sub>8</sub>	
Field			Description						Sup.	Unit	Default
PwrR	eduction		Requested po			on reduc	tion		M	%	cs
			– 0 % no red								
			– 100% max.	redu	ction						
Attribu											
<ul><li>Loc</li></ul>	kRequest		Indicates if po		reduction i	s necess	ary (val	idity	M	bool	false
	of PwrReduction) Type of overload; not used in LockSignHFDM NA bool uncritical										
– Тур			Type of overlo	oad; r	not used ir	ı LockSig	nHFDN	1	NA	bool	uncritical
Comr	Communication:										
Bine	ding Gro	up:									
Clas	~~		Туре				Defaul	t			
	eographic										
	plication		DistrSegmH				1				
Ur	nassigned		Broadcast		Configura						
DP /	Address:		IO Type(ID):		144 (HF		Prope	erty II	D:	52	
LTE	-Service	(event):	InfoReport Sr	niffer	on Bindir	g Group:					
	oReport	$\boxtimes$	Timeout: 1)			7	Min				
	: <b>-Service</b> ead – Res	<b>(polling):</b> ponse⊡	Read Wildcard	d/R	esp Sniffe	r on Bindi	ing Gro	up:			
Value	after Po	werup:	Defa	ult V	alue 🛚				(	Stored V	alue 🗌
Exce	otion Har	ndling:						Sa	ve at Pov	verdowr	ı 🔲
Speci	ial Featur	es:									
1) The	signal is	received on	event and perio	odica	ally (if no C	OV occu	rred) as	long	g as the L	ockReq	uest
			uest attribute cl				,		-	•	

### 2.2.4.18 Input signal: StatusCPM

### **Standard Mode**

Not applicable.

FB: AHUC L1	TE Clien	t Input Name:	StatusCPI	M				latory ☐ tional ⊠
Description:							-	
This input signal co chilled water flow to indication.								
<b>DPT:</b> Name DF	PT_ Statu	ısCPM	DPT ID	209.102	Data	type format	$V_{16}B_{8}$	
Field		Description				Sup.	Unit	Default
TempFlowProdSeg	mC	Chilled water flo production segr		ure in the c	ooling	М	°C	cs
Attributes								
<ul><li>TempFlowValid</li></ul>		Validity of Temp	oFlowProdS	egmC		M	bool	false
<ul><li>Fault</li></ul>		Chiller failure				0	bool	false
<ul><li>OffPerm</li></ul>		Permanently of				0	bool	false
<ul><li>NoCoolAvailable</li></ul>		Temporary no cavailable	cooling in the	e productioi	n segme	ent O	bool	false
Communication:						<del></del>	-	
Binding Group:								
Class		Type			Default			
Geographical Application Spec Unassigned	cific 🔯	DistrSegmC Broadcast	Configu	rable 🗍	1			
DP Address:		IO Type(ID):	199 (CI		Proper	ty ID:	51	
LTE-Service (eve	ent):	InfoReport Snif	fer on Bind	ing Group:				
InfoReport	$\boxtimes$	Timeout:		31	Min			
LTE-Service (pol Read – Respons		Read Wildcard	/ Resp Sniff	er on Bindi	ng Grou	p:		
Value after Power	up:	Defau	lt Value ⊠			-	Stored Va	lue 🗌
<b>Exception Handlin</b>	ng:				·	Save at Po	werdown	
<b>Special Features:</b>								

# 2.2.4.19 Input signal: ForceSignCPM

### **Standard Mode**

Not applicable.

FB:	AHUC	LTE Clien	t Input Name:	nput Name: ForceSignCPM						Mandatory ☐ Optional ⊠	
Desci	ription:	-								-	
This in	nput signal	indicates tl	hat the chiller un	it ha	as remainii	ng energ	y to	be used	by the c	onsumers	
DPT:	Name	DPT_ Force	eSignCool		DPT ID	21.101		Datatype	format	B <sub>8</sub>	
Field			Description						Sup.	Unit	Default
Attribu	utes										
– Ford	ceRequest		Forced power c	ons	sumption is	necessa	ary		0	bool	false
Comr	nunicatio	n:									
Bind	ding Grou	p:									
Clas	S		Type				De	efault			
Ge	ographica	<u> </u>									
Ap	plication S	pecific 🖂	DistrSegmC				1				
Un	assigned		Broadcast		Configura	ble 🗌					
DP A	Address:		IO Type(ID):		199 (CPM	1)	Р	roperty ID	<b>)</b> :	53	
	-Service (	event):	InfoReport Snif	fer	on Bindin	g Group:		-			
Inf	oReport	$\square$	Timeout:			31	Mi	in			
	<b>-Service (</b> ad – Resp		Read Wildcard	/ Re	esp Sniffer	on Bindi	ng	Group: -			
Value	after Pow	verup:	Defau	t Va	alue 🛚				5	Stored Val	ue 🗌
Excep	otion Hand	dling:						Save	at Powe	erdown	
Speci	al Feature	es:									

# 2.2.4.20 Input signal: LockSignCPM

### **Standard Mode**

Not applicable.

FB:	AHUC	LTE Cli	ent Input Name:	nput Name: LockSignCPM							
Descri	iption:	=								-	
			that the Cold Wa								oad
			ts) and the consu	mer			_			ion.	
DPT:	Name	DPT_Lc	ckSign		DPT ID	207.101		Datatype	format	U <sub>8</sub> B <sub>8</sub>	
Field			Description						Sup.	Unit	Default
PwrRe	duction		Requested povereduction)	ver	reduction (	100% = 1	max	kimum	M	%	cs
Attribu	tes										
– Lock	Request		Indicates if pov of PwrReduction		reduction i	s necess	ary	(validity	M	bool	false
– Туре	<b>:</b>		Type of overloa	,	value only	valid if Lo	ockl	Request	М	bool	uncrit.
Comm	nunication	n:									•
Bind	ing Grou	p:									
Class	3		Туре				De	efault			
	ographical										
	olication S	pecific				<u></u>	1				
	assigned		Broadcast		Configura						
	ddress:		IO Type(ID):		199 (CPI			roperty ID	):	54	
	Service (	<u> </u>	InfoReport Sn	iffer	on Bindin			-	-		
	Report		Timeout:			31	Mi	n			
	<b>Service (</b>   ad – Resp		Read Wildcard	/R	esp Sniffei	on Bind	ing	Group: -	-		
Value	after Pow	erup:	Defa	ılt V	alue 🛚			-		Stored Va	lue 🗌
Excep	tion Hand	lling:						Save	at Powe	erdown	
Specia	al Feature	s:									

# 2.2.4.21 Input signal: ForceSignCFDM

### **Standard Mode**

Not applicable.

FB:	AHUC	LTE Clien	Input Name: ForceSignCFDM							Mandatory ☐ Optional ⊠	
Desci	ription:			-							
			nat the Cooling F				r CFDN	И (Со	ld Water	Distributio	n
Segm	ent) has re	emaining en	ergy to be used	by t	the consur	ners.					
DPT:	Name	DPT_Force	eSignCool		DPT ID	21.101	Da	tatype	e format	B <sub>8</sub>	
Field			Description						Sup.	Unit	Default
Attribu	utes										
– For	ceRequest		Forced power c	ons	sumption is	necessa	ary		0	bool	false
Comr	nunicatior	1:	-						<del>-</del>	=	
Bind	ding Group	p:									
Clas	SS		Туре				Defau	ult			
Ge	eographical	·									
Ap	plication S	pecific 🛚	DistrSegmC				1				
Un	nassigned		Broadcast		Configura	ıble 🗌					
DP A	Address:		IO Type(ID):		208 (CFD	M)	Prop	erty II	D:	52	
	-Service (	event):	InfoReport Snif	fer	on Bindin	g Group:					
Inf	oReport	$\boxtimes$	Timeout:			31	Min				
	- <b>Service (</b>   ead – Resp		Read Wildcard	/ Re	esp Sniffer	on Bindi	ing Gro	oup:			
Value	after Pow	erup:	Defau	lt Va	alue 🗵			•	(	Stored Val	ue 🗌
Exce	otion Hand	dling:						Sa	ve at Pov	verdown	
Speci	ial Feature	es:									

# 2.2.4.22 Input signal: LockSignCFDM

### **Standard Mode**

Not applicable.

FB: A	AHUC	LTE CI	ien	t Input Name:	nput Name: LockSignCFDM							
Descri	ption:	-									-	
				nat the Cooling F								n
Segme	,			the consumers	ha		ce the	ir chil	led wate	r consump	otion.	
DPT:	Name	DPT_L	ock	Sign		DPT ID	207.1	101	Datatyp	e format	U <sub>8</sub> B <sub>8</sub>	
Field				Description						Sup.	Unit	Default
PwrRed	duction			Requested pow reduction)	er r	eduction (	(100%	= ma	aximum	M	%	cs
Attribut	es											
– LockF	Request			Indicates if pow of PwrReductio		eduction i	s nece	essary	/ (validity	M	bool	false
– Туре				Type of overloa = true		alue only	valid if	f Lock	«Reques	i NA		
Comm	unicatio	<b>1</b> :										L
Bindi	ing Grou	p:										
Class	;			Туре				D	efault			
	graphica		□.									
	lication S	pecific	$\boxtimes$	DistrSegmC			<u></u>	1				
	ssigned			Broadcast		Configura						
	ddress:			IO Type(ID):		208 (CFE			Property	ID:	53	
	Service (	<u> </u>		InfoReport Sni	ffer	on Bindin						
	Report	$\boxtimes$		Timeout:			,	31 M	lin			
	<b>Service (</b> ad – Resp			Read Wildcard	/ Re	esp Sniffe	on Bi	nding	Group:			
Value a	after Pow	erup:		Defau	lt V	alue 🛚					Stored Va	lue 🗌
Except	tion Hand	dling:							Sa	ave at Pov	werdown	
Specia	I Feature	es:										

### 2.2.4.23 Input signal: HVACModeEff

### **Standard Mode**

Not applicable.

FB:	AHUC	LTE Clie	ent Input Name:	Input Name:       HVACModeEff       Mandatory       ☑         Optional       □						
Desci	ription:	•						•		
This in		vided by the	RSMHD and defi	nes the HV	AC opera	iting mod	e of the air l	handling u	nit	
DPT:	Name	DPT_HVA	CMode_Z	DPT ID	201.100	Datat	ype format	$N_8Z_8$		
Field			Description				Sup.	Unit	Defa	ault
	Mode		HVAC Mode, rang				M	enum.	CS	S
STAT			Can be ignored b	y the AHUC	;		NA			
	nunicatio									
	Binding Group:									
	Class Type Default									
Geographical Apartment						1 (A.1.1	, refer 2.2.1	.1)		
	plication S	pecific 🔲								
	assigned		Broadcast	Configura						
	Address:		IO Type(ID):	100 (RSN		Propert	y ID:	51		
	-Service (	<u> </u>	InfoReport Sniffe	r on Bindin						
	oReport	$\square$	Timeout:		31	Min				
	<b>-Service (</b> ad – Resp	<u> </u>	Read Wildcard / F	Resp Sniffer	on Bindi	ing Group	o:			
	after Pow		Default	Value 🛛				Stored Val	ue 🗆	
	Exception Handling:  Save at Powerdown									
Speci	al Feature	es:								
[4] 2.2	(+ HVAC <b>!</b> 2.3.	ModeEffNex	(HVACModeEff + <sup>-</sup> ct)} or { TempRoor	nSetpHeatE	ff + Tem	pRoomS	etpCoolEff}			IEff
valu	ralue 0='Auto' is not allowed => to be ignored by the AHUC => use default value									

### 2.2.4.24 Input signal: HVACModeEffNext

### **Standard Mode**

Not applicable.

### LTE-HEE Mode

FB:	AHUC LTE Client Input Name			HVACMod	leEffNext			Mand Optio	atory $\square$ onal $\square^2$ )
Desci	ription:	<u> </u>		_				Optio	,,, <u>,</u>
		ded by the	RSMHD and defi	nes the nex	t HVAC o	perating r	mode and t	he delay t	ime to it.
			able the time is se						
≠ 'Aut				`	•		•		
This in	nformation is	used by	the AHUC for loca	l optimiser t	unctions,	e.g. start/	stop optim	isation.	
DPT:	Name D	PT_HVA	CModeNext	DPT ID	206.100	Dataty	pe format	U <sub>16</sub> N <sub>8</sub>	
Field			Description				Sup.	Unit	Default
Time			Time to next HVA				M	min	0
			0 = no next HVA0						
HVAC	Mode		Next HVAC Mode	e, range [1	4]		M	enum.	CS
			and [0] = Mode U	ndefined 1)					
	nunication:								
Bind	Binding Group:								
Clas			Type			Default			
	ographical		Apartment			1 (A.1.1,	refer 2.2.1	.1)	
	plication Spe	ecific 🔲							
	assigned		Broadcast 🗌	Configura					
	Address:		IO Type(ID):	100 (RSI		Property	ID:	52	
	-Service (ev		InfoReport Sniffe	er on Bindin					
	oReport		Timeout:		31	Min			
	-Service (po		Read Wildcard / F	Resp Sniffer	on Bindir	ng Group:			
	ad – Respor			<u> </u>		J			
	after Powe		Default	Value 🛚				Stored Val	ue <u> </u>
Exce	otion Handli	ing:				S	Save at Pov	verdown	
Speci	al Features	:							
'' enc	encoding of special conditions, see table below								

### Interpretation of Time and HVACMode fields

Time	HVACMode	
= 0 (Undefined)	= 0 (Undefined)	the content of the datapoint is void / undefined => no next HVAC Mode available for an undefined time period
= 0 (Undefined)	= {14}	defined and valid next HVACMode but the delay time is undefined (unknown) => in case of manually selected HVACModeUser ≠ 'Auto' (i.e. next HVACMode = current HVACModeEff)
> 0	= 0 (Undefined)	undefined (unknown) HVACMode during a defined delay time => in practice this combination is useless and is interpreted like Time=0 / HVACMode=0 (default value)
> 0	= {14}	defined and valid HVACMode and delay time

### 2.2.4.25 Input signal: TempRoomSetpSetHeatEff [4]

### **Standard Mode**

Not applicable.

FB: AHUC LTE Client	Input Name:	Ten	npRoomS	etpSetH	eatEff [4	]			ory ⊠ ') tional □	
Description:								=		
This input is provided by th				ur effecti	ve (after	corre	ctions)	heating ro	om	
temperature setpoints, which										
	pRoomSetpSet	[4]	DPT ID	213.100	Data	type f	ormat	$V_{16}V_{16}V_{16}$		
Field	Description						Sup.	Unit	Default	
TempSetpComf	Comfort setpo						M	°C	CS	
TempSetpStdby	Standby setpo						0	°C	CS	
TempSetpEco	Economy setp		_				М	°C	CS	
TempSetpBProt	Building prote	ction	setpoint h	eating			M	°C	CS	
Communication:										
Binding Group:										
Class	Туре		Default							
Geographical 🛛	Apartment				1 (A.1.	1, ref	er 2.2.1	.1)		
Application Specific										
Unassigned	Broadcast		Configura	able 🗌						
DP Address:	IO Type(ID):		100 (RSN	ЛHD)	Proper	ty ID:		53		
LTE-Service (event):	InfoReport Sr	niffer	on Bindin	g Group	:					
InfoReport 🖂	Timeout:			31	Min					
LTE-Service (polling): Read – Response ☐	Read Wildcare	d/R	esp Sniffe	on Bind	ing Grou	p:				
Value after Power-up:	Defa	ult V	′alue ⊠				(	Stored Val	lue 🗌	
Exception Handling: Save at Powerdown										
-										
Special Features:										
1) Either implementation of	{HVACModeEf	f + T	empRoom	SetpSetl	HeatEff[4	.] + Te	empRod	omSetpSe	tCoolEff	
[4] (+ HVACModeEffNe: 2.2.3.										

# ${\bf 2.2.4.26\ Input\ signal: TempRoomSetpSetCoolEff\ [4]}$

### **Standard Mode**

Not applicable.

FB:	AHUC	LTE Client	Input Name:	Tem	npRoomS	etpSetCo	oolEff [4]	]			ory ⊠ ') tional □	
Descr	iption:									-		
			RSMHD and			ur effectiv	/e (after o	correct	tions)	cooling ro	om	
			h are valid for t									
DPT:	Name	DPT_Temp	RoomSetpSet	[4]	DPT ID	213.100	Datat	type fo	rmat	V <sub>16</sub> V <sub>16</sub> V <sub>16</sub>	<sub>5</sub> V <sub>16</sub>	
Field			Description					;	Sup.	Unit	Default	
	SetpCom <sup>-</sup>		Comfort setpo						M	°C	cs	
	SetpStdb	y	Standby setpo						0	°C	CS	
	SetpEco		Economy setp						M	°C	cs	
Temps	SetpBPro	t	Building prote	ction	setpoint of	ooling			M	°C	CS	
Comm	nunicatio	n:						-		-	=	
Bind	ling Grοι	ıp:										
Class Type Default												
Ge	ographica	al 🔲	Apartment				1 (A.1.1	1, refer	2.2.1	.1)		
Apr	olication S	Specific										
Una	assigned		Broadcast		Configura	able 🗌						
DP A	Address:		IO Type(ID):		100 (RSI		Propert	ty ID:		54		
LTE-	Service	(event):	InfoReport Sr	niffer	on Bindir	g Group:						
Info	Report	$\boxtimes$	Timeout:			31	Min					
	<b>Service</b> ad – Res	(polling): ponse⊡	Read Wildcard	d / Re	esp Sniffe	on Bindi	ng Group	p:				
Value	after Po	wer-up:	Defa	ult V	alue 🛚				9	Stored Val	ue 🗌	
Exception Handling: Save at Powerdown												
Specia	al Featur	es:										
			(HVACModeEf									
[4] 2.2	•	ModeEffNex	t)} or { TempR	ooms	SetpHeatE	ff + Temp	oRoomSe	etpCod	olEff} r	efer to cla	use	

# 2.2.4.27 Input signal: TempRoomSetpHeatEff

DP I	Name:	Tem	pRoomSetpl	HeatE	ff	Abbr.:					N	1andat	ory		X
FB N	Name:	AHU	С								C	an be	interna	al [	X
Des	cription														
see	LTE-HEE	mod	е												
Data	apoint Typ	эе													
DPT	_Name:	DP	T_Value_Te	mp											
DPT	Format:	F <sub>16</sub>							DP	T_ID:	9	.001			
Field	<u>t</u>	De	scription						Su	pp.	Rang	ge	Unit	Defaul	t
											full ra	ange	°C	cs	
Acc	ess Type														
<b>♦</b>	Input														
N	$I \rightarrow this$		] 1	$\rightarrow$ th	is	$\boxtimes$									
S	Spontaneo	us			Cyclica	ally:	$\boxtimes$			Time	-out:		31 mir	1	
F	Request				Polling	g:				Perio	d:				
Con	nmunicati	on T	уре												
•	Group Obj	ject [	Datapoint								Man	datory	: 🛛		
	Default Gro	oup A	ddress: -	-											
Dyn	amics														
P	Power dow	n:	Save:												
F	Power up:		Value:	No in	itialisat	tion:		Defau	ılt va	alue:					
					d value			 Actua	ıl va	lue (n	ot for	input):			
			Transmit on	bus (	only for	output)	: [	Read	fror	n bus	(only	for inp	out):		
Exc	eption Ha	ndlir	ng												
Spe	cial Featu	ires													

FB:	AHUC	LTE Client	Input Name:	ff		Mandat	tory 🔯 1) tional 🔲					
Desc	ription:			-					Ор	lionai 🔝		
		ovided by the	RSMTD and	define	es the effe	ective (afte	er correction:	s) heatin	g setpoint	t, which		
			is information i					,	0 1	,		
DPT:			HVACAbs_Z		DPT ID	205.100		format	$V_{16}Z_{8}$			
Field			Description					Sup.	Unit	Default		
Temp	erature		Room temper	ature	setpoint v	/alue		M	°C	cs		
Status	S							M	bitset			
	OfService		Void setpoint					M	bool	false		
	rridden		Setpoint value		rridden tru	ıe / false		O NA	bool	false		
	- all other flags not supported  Communication:											
	Binding Group:											
Clas			Туре				Default					
	eographic	<del></del> -	Apartment				1 (A.1.1, re	fer 2.2.1	.1)			
	plication					<u></u>						
	nassigned		Broadcast		Configura							
	Address:		IO Type(ID):		100 (RSI		Property ID	):	55			
	-Service	` —	InfoReport Sr	niffer	on Bindir			-				
	oReport	$\boxtimes$	Timeout:			31	Min					
	: <b>-Service</b> ead – Res	<b>(polling):</b> ponse□	Read Wildcard	d / Re	esp Sniffe	r on Bindi	ng Group: -	-				
Value	after Po	werup:	Defa	ult V	alue 🛚		-	(	Stored Val	lue 🗌		
Exception Handling: Save at Powerdown												
In cas	n case of missing input data (timeout) or value 'OutOfService' the AHUC will have a company specific											
behav	/ior.											
	ial Featu											
1) Eith	er implen	nentation of {	HVACModeEff	+ Te	empRoom	SetpSetH	eatEff[4] + T	empRod	mSetpSe	tCoolEff		
			or { TempRoon	nSet	oHeatEff +	<ul> <li>TempRo</li> </ul>	omSetpCoo	IEff} refe	r to clause	e 2.2.3.		
This i	nput can l	be device-int	ernal.									

# 2.2.4.28 Input signal: TempRoomSetpCoolEff

DP N	lame:	Tem	pRoomSetp(	CoolEt	ff	Abbr.:					N	landat	ory		$\boxtimes$
FB N	lame:	AHU	С								С	an be	interna	al	$\boxtimes$
Desc	cription														
see L	TE-HEE	mod	е												
Data	point Typ	эе													
DPT_	_Name:	DP	T_Value_Te	mp											
DPT	Format:	F <sub>16</sub>							DP	T_ID:	9	.001			
Field		De	scription						Su	pp.	Rang	ge	Unit	Defau	lt
											full ra	ange	°C	cs	
Acce	ess Type														
<b>♦</b> I	nput														
Ν	$\rightarrow$ this		1	$\rightarrow$ thi	is	$\boxtimes$									
S	pontaneo	us	$\square$		Cyclica		$\boxtimes$			Time	-out:		31 mir	1	
R	equest				Polling	J:				Perio	d:				
Com	municati	on T	уре												
<b>♦</b> (	Group Obj	ject [	Datapoint								Man	datory	: 🛛		
D	efault Gro	oup A	ddress:	-											
	amics														
P	ower dow	n:	Save:												
P	ower up:		Value:	No in	itialisat	ion: [		Defau	ılt va	alue:					
					d value							input):			
			Transmit on	bus (d	only for	output)	: _	Read	fror	n bus	(only	for inp	out):		
Exce	eption Ha	ndlir	ng												
Spec	cial Featu	ires													

FB:	AHUC	LTE Client	Input Name:	Eff		Mandat On	tory 🔯 1) tional 🔲				
Desci	ription:								<u> </u>		
			RSMTD and					s) coolin	g setpoint	which is	
valid f	or the co	ntroller. This	information is i	used	for simple	applicati	ons.				
DPT:	Name	DPT_Temp	HVACAbs_Z		DPT ID	205.100	Datatype	format	$V_{16}Z_{8}$		
Field			Description					Sup.	Unit	Default	
Temp	erature		Room tempera	ature	setpoint v	alue		M	°C	cs	
Status	3							M	bitset		
	OfService		Void setpoint	value	<b>;</b>			M	bool	false	
- all of	ther flags		not supported					NA	bool		
Comr	-	•									
Bind	ding Gro	up:									
Clas	S		Туре				Default				
Ge	ographic	al 🛛	Apartment				1 (A.1.1, re	efer 2.2.1	.1)		
	plication										
Un	assigned		Broadcast		Configura	ıble 🗌					
DP /	Address:		IO Type(ID):		100 (RSN	ИHD)	Property II	D:	56		
LTE	-Service	(event):	InfoReport Sr	niffer	on Bindin	g Group:					
Inf	oReport	$\boxtimes$	Timeout:			31	Min				
	<b>-Service</b> ad – Res	<b>(polling)</b> : ponse□	Read Wildcard	d / Re	esp Sniffer	on Bindi	ing Group:				
Value	after Po	werup:	Defa	ult V	alue 🛚			(	Stored Val	lue 🗌	
Excep	otion Har	ndling:					Sa	ve at Pov	verdown		
In cas	In case of missing input data (timeout) or value 'OutOfService' the AHUC will have a company specific										
behav	ior.		, ,								
Speci	al Featu	res:									
			(HVACModeEf								
			or { TempRoon	nSetp	oHeatEff +	TempRo	omSetpCod	IEff} refe	r to clause	e 2.2.3.	
This in	nput can	be device-int	ernal.								

### 2.2.4.29 Input signal: HVACModeOptim

### **Standard Mode**

Not applicable.

FB:	AHUC	LTE Clie	ent Input Name:	HVACMod				latory □ tional ⊠	
Desci	ription:	•		-					
			by an external HV	AC Optimis	er and de	fines the or	timised F	IVAC oper	rating
		handling co							
DPT:	Name	DPT_HVA		DPT ID	201.100	Datatyp	e format	$N_8Z_8$	
Field			Description				Sup.	Unit	Default
HVAC	Mode		Optimised HVAC	Mode, rang	je [14] o	r 0 1)	M	enum.	0
Status							M	bitset	
	OfService		Void value => no	optimised I	HVAC Mo	de availabl		bool	true
	ther flags		not supported				NA	bool	
	nunicatio								
	ding Grou	ıp:	T			1			
Clas			Туре		Default				
	ographica		Apartment			1 (A.1.1, ı	efer 2.2.1	.1)	
	plication S	Specific 📙	 						
	assigned		Broadcast	Configur					
	Address:		IO Type(ID):	115 (HV		Property	D:	51	
	-Service		InfoReport Sniffe	er on Bindir					
	oReport		Timeout:		31	Min			
	-Service		Read Wildcard / F	Resp Sniffe	r on Bindi	ina Group:			
	ad – Res								
	after Pov	•	Default	Value 🛚				Stored Val	ue
Excep	otion Han	dling:				S	ave at Pov	verdown	
	al Featur								
			Status 'OutOfServi						
			signal is supported						
	_		nal HVACModeEff	f from the F	SMHD ar	nd use the	optimised	HVAC Mo	ode
ins	tead if HV	'ACModeOp	otim is ≠ 'Auto						

# 2.2.4.30 Input signal: TempRoomSetpOptimHeatShift

ב	name:	ren	іркоотібец	oopum	пеаเรпп		ADDI.:				Mandai	ory	
E	Name:	AΗι	JC								Can be	internal	$\boxtimes$
De	escription												
					ernal HVAC						ion value to	the roo	m
			ng setpoint.	This sh	ift value is u	sed e	e.g. for	mornin	g boo	ost.			
	tapoint Typ	ре											
	PT_Name:	DF	PT_Value_T	empd									
DF	PT Format:	F <sub>1</sub>	6						DPT	_ID:	9.002		
Fie	eld	De	escription						Sup	op.	Range	Unit	Default
											full range	K	0
Ac	cess Type												
•	Input												
	$N \rightarrow this$			$1 \rightarrow th$	is 🛛								
	Spontaneo	us			Cyclically:		$\boxtimes$		Т	ime-	-out:	31min	
	Request				Polling:				F	Perio	d:		
ŏ	ommunicati	on T	Гуре										
•	Group Ob	ject	Datapoint								Mandatory	·: 🛛	
	Default Gro	oup /	Address:										
Dy	/namics												
	Power dow	'n:	Save:										
	Power up:		Value:	No in	itialisation:			Defau	ılt valı	ue:			
				Save	d value:								
								Read	from	bus:			
Ex	ception Ha	ndli	ng										
Sp	ecial Featu	ıres											
-													

### **LTE-HEE Mode Interface:**

FB:	AHUC	LTE Client Input Name		TempR	oomSetp	OptimHe	atShift			Mand	atory 🗌 tional 🖂
Desc	ription:	input ituine								<u> </u>	
		put signal fro	om an extern	al HVA	C Optimis	er contail	ns a corr	ectio	n value	to the roo	m
tempe	erature he	ating setpoir	nt. This shift	value is	used e.g.	for morn	ing boos	st.			
DPT:	Name	DPT_Temp	HVACRel_Z	<u>-</u>	DPT ID	205.101	Data	type	format	$V_{16}Z_{8}$	
Field			Description						Sup.	Unit	Default
Temp	erature		Room temp	erature	setpoint s	hift value	;		M	K	0
Status	S								М	bitset	
- all fla	ags		not supporte	ed, can	be ignore	d			NA	bool	
Comr	nunicatio	n:						•		-	-
Bine	ding Gro	ıp:									
Clas	SS		Туре				Default				
Ge	eographic	al 🖂	Apartment				1 (A.1.	1, ref	er 2.2.1	.1)	
Ap	plication	Specific									
	nassigned		Broadcast [		Configura						
	Address:		IO Type(ID)		115 (HVA		Proper	ty ID	:	52	
	-Service	(event <u>):</u>	InfoReport	Sniffer	on Bindin	<u> </u>		-	-		
	oReport	$\square$	Timeout:			31	Min				
	: <b>-Service</b> ead – Res	<b>(polling):</b> ponse□	Read Wildca	ard / Re	esp Sniffer	on Bindi	ng Grou	p: -	-		
Value	after Po	wer-up:	De	efault V	alue 🛚				5	Stored Val	ue 🗌
Exce	ption Har	ndling:						Sav	e at Pov	verdown	
Spec	ial Featur	es:									
									·		

# 2.2.4.31 Input signal: TempRoomSetpOptimCoolShift

DF	Name:	Ten	npRoomSet	pOptim	CoolShift		Abbr.:				Mandat	ory	
FB	Name:	AΗι	JC								Can be	internal	$\boxtimes$
De	escription												
	is optional i			an ext	ernal HVAC	Opt	imiser c	ontains	a corre	ction	value to	the roo	m
	oling tempe		re setpoint.										
	tapoint Typ												
	PT_Name:	_	PT_Value_T	empd									
DF	PT Format:	F <sub>1</sub>	6						DPT_IE	):	9.002		
Fie	eld	De	escription						Supp.	F	Range	Unit	Default
										fu	ll range	K	0
Ac	cess Type												
<b>♦</b>	Input												
	$N \rightarrow this$			$1 \rightarrow th$	is 🛛								
	Spontaneo	us			Cyclically:				Tim	e-ou	t:	31min	
	Request				Polling:				Peri	od:			
Co	mmunicati	on T	Гуре										
<b>*</b>	Group Ob	ject	Datapoint							Ma	andatory	: 🛛	
	Default Gro	oup /	Address:										
Dy	namics												
	Power dow	'n:	Save:										
	Power up:		Value:	No in	itialisation:			Defau	ılt value:				
				Save	d value:								
								Read	from bu	s:			
Ex	ception Ha	ndli	ng										
Sp	ecial Featu	ıres											
I													

FB:	AHUC	LTE Client Input Name		TempR	oomSetp	OptimCo	olS	Shift				latory □ tional ⊠
Desci	ription:	IIIput Ivaille	<u>.                                    </u>								[ Ор	lional 🖂
		put signal fro	m an extern	al HVA	C Ontimise	er contair	ns a	corre	ction	value	to the roc	m
	•	oling setpoin		Q	о оринис	or cornain			0	value	10 1110 100	
DPT:	Name		HVACRel Z	7	DPT ID	205.101		Dataty	ne fo	rmat	V <sub>16</sub> Z <sub>8</sub>	
Field	11111111		Description					,		Sup.	Unit	Default
	erature		Room temp	erature	setpoint s	hift value				M	K	0
Status										М	bitset	
- all fla	ags		not supporte	ed, can	be ignored	t				NA	bool	
	nunicatio	on:		-					<del></del>		<u>-</u>	<u>-</u>
Binding Group:												
Clas		•	Туре				De	fault				
Ge	ographic	al 🖂	Apartment				1 (	(A.1.1,	, refe	r 2.2.1	.1)	
Ap	plication	Specific										
Ur	assigned		Broadcast		Configura	ble 🗌						
	Address:		IO Type(ID)		115 (HVA		Pr	roperty	/ ID:		55	
LTE	-Service	(event):	InfoReport	Sniffer	on Binding	g Group:						
	oReport	$\square$	Timeout:			31	Mir	n				
		(polling):	Read Wildc	ard / Re	en Sniffer	on Rindi	na (	Groun				
Re	ad – Res	ponse	TCaa Wilde	ara / rec	Jop Office	On Dinai	''9	Oroup				
Value	after Po	wer-up:	De	efault Va	alue 🛚					,	Stored Va	lue 🗌
Exce	otion Har	ndling:						9	Save	at Pov	werdown	
Speci	al Featu	res:										

# 2.2.4.32 Input signal: ContrMode

### **Standard Mode**

DF	Name:	Con	trMode			Abbr.:					Ma	andat	tory		
B	Name:	AHL	JC								Ca	an be	interna	al	$\boxtimes$
De	scription														
Сι	rrent HVAC	Cor	ntroller Mod	le of a r	nanage	ment sta	ition, re	fer to L1	ΓE d	escrip	otion.				
Da	tapoint Ty	ре													
	PT_Name:	DF	PT_HVACC	ontrMo	de										
	PT Format:	N <sub>8</sub>							DP	T_ID:	20	0.105			
Fie	eld	De	escription						Sup	op.	Rang	е	Unit	Defau	ult
											020			CS	S
Ac	cess Type														
<b>♦</b>	Input														
	$N \to this$			$1 \rightarrow th$	is	$\boxtimes$									
	Spontaneo	us	$\square$		Cyclica	ılly:	$\square$			Time	-out:		31 mii	1	
	Request				Polling	:				Perio	d:				
Co	mmunicat	ion 1	Гуре												
•	Group Ob	ject l	Datapoint								Mand	latory	r: 🛛 🖂		
	Default Gro	oup A	Address:												
Dy	namics														
	Power dow	n:	Save:												
	Power up:		Value:	No in	itialisati	on:		Defau	ılt va	alue:					
					d value			Actua	ıl val	ue (n	ot for i	nput)	: 🗌		
			Transmit o	n bus (	only for	output):		Read	fron	n bus	(only f	for in	out):		
Ex	ception Ha	ndli	ng												
Sp	ecial Featu	ires													

FB:	AHUC	LTE Clie	ent Input Name:			latory ☐ tional ⊠				
Desc	ription:	<u>.</u>		=				<u>.</u>		
		ded by a i	management statio	n and enab	les or for	ces the int	ernal appl	ication mo	de of the	
	andling unit c		J				• •			
DPT:	Name D	PT HVA	CContrMode Z	DPT ID	201.104	Dataty	pe format	N <sub>8</sub> Z <sub>8</sub>		
Field	•	_	Description	•			Sup.	Unit	Default	
HVA	CContrMode		HVAC Controller	Mode, rang	e [020]		M	enum.	CS	
STAT	ΓUS		May be ignored b	y the AHUC			NA			
Com	Communication:									
Bin	ding Group									
Cla	SS		Туре			Default				
G	eographical		Apartment			1 (A.1.1,	refer 2.2.1	.1)		
	oplication Sp	ecific 🔲								
U	nassigned		Broadcast	Configura	able 🗌					
DP	Address:		IO Type(ID):	115 (HVA		Property	ID:	56		
LTE	E-Service (e	vent):	InfoReport Sniffe	r on Bindir	g Group:					
In	foReport	$\boxtimes$	Timeout:		31	Min				
LTE-Service (polling): Read – Response Read – Response Read – Response Read – Response Read Wildcard / Resp Sniffer on Binding Group:										
Value after Power-up:   Default Value ∑								Stored Va	lue 🗌	
Exce	ption Handl	ing:				S	ave at Po	werdown		
Spec	ial Features	;;								

# 2.2.4.33 Input signal: EmergMode

### **Standard Mode**

DP	Name:	Eme	ergMode			Abbr.:					Mar	ndat	ory		
FB	Name:	AHU	JC								Car	า be	interna	al	$\boxtimes$
De	scription														
Cu	rrent HVAC	Em	ergency Mo	ode of a	a manag	gement s	tation,	refer to	LTE	descr	ription.				
Da	tapoint Ty	ре													
	PT_Name:	DF	PT_HVACE	mergM	ode										
	T Format:	N <sub>8</sub>							DP	T_ID:	20.	106			
Fie	eld	De	escription						Sup	op.	Range	!	Unit	Defa	ult
											05			CS	3
Ac	cess Type														
•	Input														
	$N \rightarrow this$			$1 \rightarrow th$	is	$\boxtimes$									
	Spontaneo	us			Cyclica	ally:				Time	-out:		31 mir	1	
	Request				Polling	:				Perio	d:				
Co	mmunicat	ion 🛚	Гуре												
<b>*</b>	Group Ob	ject	Datapoint								Manda	itory	·: 🛛		
	Default Gro	oup /	Address:												
Dy	namics														
	Power dow	vn:	Save:												
	Power up:		Value:	No in	nitialisati	ion:		Defau	ult va	alue:					
				Save	ed value			Actua	al val	ue (n	ot for in	put)	: 🗆		
			Transmit o	n bus (	only for	output):		Read	fron	n bus	(only fo	r inp	out):		
Ex	ception Ha	andli	ng												
ł															
Sp	ecial Featu	ıres													
-															

FB:	AHUC	LTE Clie	ent Input Name:			latory ☐ tional ⊠				
Desc	ription:	Ė		-				Ė		
This i	nput is prov	rided by an	fire / smoke contr	ol device for	ces the i	nternal e	mergency	node (fire	/ smoke	
cleara	ance contro	l) of the air	handling unit cont	roller.						
DPT:	Name	DPT_HVA	CEmergMode_Z	DPT ID	201.109	Datat	ype format	$N_8Z_8$		
Field			Description				Sup.	Unit	Default	
	CEmergMod	de	HVAC Emergence				M	enum.	cs	
STAT	US		May be ignored b	y the AHUC	;		NA			
Comi	-									
Binding Group:										
Clas	ss		Туре			Default				
Ge	eographical		Apartment			1 (A.1.1	l, refer 2.2.	1.1)		
	plication Sp	oecific 🔲								
	nassigned		Broadcast	Configura						
DP	Address:		IO Type(ID):	108 (HVA		Propert	y ID:	51.		
	-Service (e	event):	InfoReport Sniffe	r on Bindin	g Group:					
Inf	oReport		Timeout:		31	Min				
	: <b>-Service (p</b> ead – Respo		Read Wildcard / F	Resp Sniffer	on Bindi	ng Group	o:			
Value after Power-up: Default Value ⊠ Stored Value									lue 🗌	
Exce	ption Hand	lling:					Save at Po	werdown		
									·	
Spec	ial Feature	s:								
	•									

# 2.2.4.34 Input signal: AQSetpEff

DF	Name:	AQS	etpEff			Abbr.:				Man	date	ory		
FB	Name:	AHU	C							Can	be	interna	al 🗵	1
De	scription													
Air	quality set	point	refer to LTE	desc	ription.									
Da	tapoint Ty	ре												
DF	PT_Name:	DP	T_Value_Aiı	Quali	ty									
DF	PT Format:	F <sub>16</sub>	i					DP	T_ID:	9.00	8			
Fie	eld	De	scription					Su	pp.	Range		Unit	Default	
										full rang	je	ppm	CS	
Ac	cess Type													
<b>♦</b>	Input													
	$N \rightarrow this$		]  1	$\rightarrow$ th	is	$\boxtimes$								
	Spontaneo	us			Cyclica	ally:			Time	-out:		31 mir	1	
	Request				Polling	:			Perio	d:				
Co	mmunicati	ion T	уре											
<b>♦</b>	Group Ob	ject [	Datapoint							Mandat	ory:			
	Default Gro	oup A	Address: -	-										
Dy	namics													
	Power dow	/n:	Save:											
	Power up:		Value:	No in	itialisat	ion:	Defau	ult va	alue:			$\boxtimes$		
				Save	d value	:	Actua	al va	lue (n	ot for inp	ut):			
			Transmit on	bus (	only for	output):	Read	fror	n bus	(only for	inp	ut):		
Ex	ception Ha	ındliı	ng											
Sp	ecial Featu	ıres												

FB:	AHUC	LTE Client	nt Input Name: AQSetpEff							latory ☐ tional ⊠
	ription:	-							-	
This in	nput is pr	ovided by the	e SMAQ and de	efines	the air qu	ailty setp	oint which	is valid fo	r the cont	roller.
DPT:	Name	DPT_HVA	CAirQual_Z		DPT ID	203.100	Datatype	e format	$U_{16}Z_{8}$	
Field			Description					Sup.	Unit	Default
Air Qu	uality		Room air qual	ity se	tpoint valu	ıe		M	ppm	cs
Status	3							M	bitset	
- Out	OfService		Void setpoint					M	bool	false
- Ove	rridden		Setpoint value	over	ridden tru	e / false		0	bool	false
- all of	ther flags		not supported					NA	bool	
Communication:									=	=
Bind										
Clas	SS		Type				Default			
Ge	eographic	al 🛛	Apartment				1 (A.1.1, r	efer 2.2.1	.1)	
Ap	plication	Specific 🗌								
Un	assigned		Broadcast		Configura	ble 🗌				
DP A	Address:		IO Type(ID):		102 (SMA	NQ)	Property I	D:	51	
LTE	-Service	(event):	InfoReport Sr	iffer	on Bindin	g Group:				
Inf	oReport	$\boxtimes$	Timeout:			31	Min			
	<b>-Service</b> ad – Res	<b>(polling):</b> ponse⊡	Read Wildcard	d / Re	esp Sniffer	on Bindi	ng Group:			
Value	after Po	werup:	Defa	ult Va	alue 🛚			5	Stored Va	lue 🗌
Exception Handling:							Sa	ve at Pov	verdown	
In cas		ing input dat	a (timeout) or v	alue	'OutOfSer	vice' the	AHUC will I	nave a co	mpany sp	ecific
Special Features:										

### 2.2.4.35 Input signal: HumRelSetpHumEff

DF	Name:	Hun	ıRelSetpHւ	umEff		Abbr.:					Mai	nda	tory		
FB	Name:	AHL	JC								Car	n be	interna	al	$\boxtimes$
De	scription														
Ro	om humidit	y set	point for hu	umidifica	ation, re	fer to L	TE desc	ription.							
Da	tapoint Ty	ре													
DF	PT_Name:	DF	PT_Value_l	<b>Humidity</b>	/										
DF	PT Format:	F <sub>16</sub>	3						DP	T_ID:	9.0	07			
Εie	eld		scription						Sup	op.	Range		Unit	Defa	ult
											full ran	ige	%	C	S
Ac	cess Type														
<b>♦</b>	Input														
	$N \rightarrow this$			$1 \rightarrow th$	is	$\boxtimes$									
	Spontaneo	us			Cyclica	illy:				Time-	-out:		31 mii	า	
	Request				Polling:					Perio	d:				
C	mmunicati	ion 1	Гуре												
•	Group Ob	ject l	Datapoint								Manda	itory	<i>r</i> : 🛛		
	Default Gro	oup A	Address:												
Dy	namics														
	Power dow	/n:	Save:												
	Power up:		Value:	No in	itialisati	on:		Defau	ılt va	alue:			$\boxtimes$		
				Save	d value:			Actua	ıl val	ue (n	ot for in	put)	:		
			Transmit of	on bus (	only for	output)	:	Read	fron	n bus	(only fo	r in	put):		
Ex	ception Ha	ndli	ng												
ł															
Sp	ecial Featu	ıres													
	<del></del>														

FB: AHUC LTE Client	TE Client Input Name: HumRelSetpHumEff								latory □ tional ⊠	
Description:		-						- <del>-</del>		
This input is provided by th	e SMRH and de	efines	s the humi	ditification	า ร	etpoint w	hich is va	alid for the	!	
controller.										
<b>DPT</b> : Name DPT_RelV	/alue_Z		DPT ID	202.001		Datatype	e format	$U_8Z_8$		
Field	Description						Sup.	Unit	Default	
Humidity	Room humidif	icatio	n setpoint	value			M	%	cs	
Status							M	bitset		
- OutOfService	Void setpoint						M	bool	false	
- Overridden	Setpoint value		rridden tru	e / false			0	bool	false	
- all other flags	not supported						NA	bool		
Communication:										
Binding Group:										
Class	Туре					efault				
Geographical 🛛	Apartment				1	(A.1.1, re	efer 2.2.1	.1)		
Application Specific										
Unassigned	Broadcast		Configura							
DP Address:	IO Type(ID):		103 (SMF			roperty II	D:	51		
LTE-Service (event):	InfoReport Sr	niffer	on Bindin	g Group:						
InfoReport 🖂	Timeout:			31	Mi	n				
LTE-Service (polling): Read – Response ☐	Read Wildcard	d / Re	esp Sniffer	on Bindi	ng	Group:				
Value after Powerup:	Defa	ult V	alue 🛚					Stored Val	lue 🗌	
Exception Handling: Save at Pow								verdown		
In case of missing input da	ta (timeout) or v	alue	'OutOfSer	vice' the	ΑH	IUC will I	nave a co	mpany sp	ecific	
behavior.										
Special Features:										

### 2.2.4.36 Input signal: HumRelSetpDehumEff

DP	Name:	Hum	RelSetpDe	humEff	•	Abbr.:					Mar	ndat	tory		
FΒ	Name:	AHL	IC								Car	ı be	interna	al	$\boxtimes$
De	scription														
Ro	om humidit	y set	point for de	humidit	fication	, refer to	LTE des	cription	า.						
	tapoint Ty	_													
	PT_Name:	DF	PT_Value_H	lumidity	/										
DP	T Format:	F <sub>16</sub>							DP1	Γ_ID:	9.00	)7			
Fie	eld	De	scription						Sup	p.	Range		Unit	Defa	ult
											full ran	ge	%	C	s
Ac	cess Type														
<b>♦</b>	Input														
	$N \rightarrow this$		]	$1 \rightarrow th$	is	$\boxtimes$									
	Spontaneo	us	$\square$		Cyclic	ally:			-	Time-	-out:		31 mii	า	
	Request				Polling	<b>j</b> :			l l	Perio	d:				
Co	mmunicati	ion 1	уре												
<b>♦</b>	Group Ob										Manda	tory	/:   🖂		
	Default Gro	oup A	Address:												
Dy	namics														
	Power dow	n:	Save:												
	Power up:		Value:	No in	itialisat	tion:		Defau							
					d value		<u> </u>				ot for in				
			Transmit o	n bus (d	only for	output):		Read	from	bus	(only fo	r in	put):		
Ex	ception Ha	ndli	ng												
Sp	ecial Featu	ires													

FB:	AHUC	LTE (	Client	Input Name:	Hun	nRelSetpI	DehumEf	f				latory ☐ tional ⊠
Desc	ription:											
		ovided	by the	SMRH and de	efines	the dehu	midification	on setp	ooint, v	which is	valid for t	he
contro												
DPT:	Name	DPT	_RelV	alue_Z		DPT ID	202.001	Dat	tatype	format	$U_8Z_8$	
Field				Description						Sup.	Unit	Default
Humi				Room dehumi	difica	tion setpo	int value			M	%	CS
Status										M	bitset	
	OfService			Void setpoint						M	bool	false
	rridden			Setpoint value	ove	rridden tru	e / false			0	bool	false
	ther flags			not supported						NA	bool	
	Communication:											
	ding Gro	up:										
Clas				Туре				Defau				
	eographic		⊠.	Apartment				1 (A.	1.1, re	fer 2.2.1	.1)	
	plication		IC 📙									
	nassigned		Ш	Broadcast		Configura		_	, ,-			
	Address:			IO Type(ID):		103 (SMF			erty ID	):	52	
	-Service	(even	<u> </u>	InfoReport Sr	niffer	on Bindin			-	-		
	oReport		<u> </u>	Timeout:			31	Min				
	- <b>Service</b> ead – Res			Read Wildcard	d / Re	esp Sniffer	on Bindi	ng Gro	oup: -	-		
Value after Powerup:   Default Value								Stored Va	lue 🗌			
Exception Handling: Save at Pow							verdown					
		ing inp	out dat	a (timeout) or v	alue	'OutOfSer	vice' the	AHUC	will h	ave a co	mpany sp	ecific
behav												
Spec	ial Featu	res:										

# 2.2.4.37 Input signal: TempRoom

DF	Name:	Tem	ıpRoom			Abbr.:	<b> </b>				Ma	ında	tory		
FB	Name:	AHL	JC								Ca	n be	interna	al	$\boxtimes$
De	scription														
Cu	irrent room	temp	erature va	lue.											
Da	tapoint Ty	ре													
DF	PT_Name:	DF	PT_Value_	Temp											
DF	PT Format:	F <sub>16</sub>	3						DP	T_ID:	9.0	01			
Εie	eld	De	escription						Sup	p.	Range	9	Unit	Defa	ult
											full rar	nge	°C	C	S
A	cess Type														
<b>*</b>	Input														
	$N \rightarrow this$			$1 \rightarrow th$	is	$\leq$									
	Spontaneo	us			Cyclica	lly:				Time-	-out:		31 mii	n	
	Request				Polling:					Perio	d:				
C	mmunicat	ion T	уре												
•	Group Ob	ject I	Datapoint								Manda	atory	<i>ı</i> : 🛛		
	Default Gro	oup A	\ddress:												
Dy	namics														
	Power dow	n:	Save:												
	Power up:		Value:	No in	itialisati	on:		Defau	ılt va	lue:					
				Save	d value:			Actua	ıl valı	ue (no	ot for in	nput)	: 🔲		
			Transmit of	on bus (	only for	output):		Read	from	n bus	(only fo	or in	out):		
Ex	ception Ha	ındli	ng												
ł															
Sp	ecial Featu	ıres													

FB: AHUC LTE Client	Input Name:	TempRoom					datory 🗌 tional 🔯
Description:		-				-	
This process signal from a	room temperat	ure sensor RTS	S contains t	the room	n temperatu	re value.	
<b>DPT:</b> Name DPT_Tem	pHVACAbs_Z	DPT ID	205.100	Dataty	pe format	$V_{16}Z_{8}$	
Field	Description				Sup.	Unit	Default
TempRoom	Room temper	ature value			M	°C	cs
Status					M	bitset	
- OutOfService		alue true / false	9		M	bool	false
- Fault	Sensor failure				M	bool	false
- Overridden		overridden true alarm true /fals			0	bool	false
- InAlarm	0	bool	false				
- AlarmUnAck	bool	unack					
- all other flags	bool						
Communication:							
Binding Group:							
Class	Туре			Default			
Geographical 🛛	Apartment		1	l (A.1.1,	, refer 2.2.1	.1)	
Application Specific							
Unassigned	Broadcast	Configur	able 🗌 📗				
DP Address:	IO Type(ID):	321 (RTS	S)	Property	/ ID:	51	
LTE-Service (event):	InfoReport Si	niffer on Bindir	ng Group:				
InfoReport 🖂	Timeout:		31 N	∕lin			
LTE-Service (polling): Read – Response ☐	Read Wildcar	d / Resp Sniffe	r on Bindin	g Group	:		
Value after Powerup:	Defa	ault Value 🛚			5	Stored Va	lue 🗌
Exception Handling:				(	Save at Pov	verdown	
The AHUC will use a comp	any specific de	fault value afte	r power-up	or in cas	se of comm	unication	failure, if
no sensor data is received							
Special Features:							

# 2.2.4.38 Input signal: AQRoom

DP Name:	AQRoom	Al	bbr.:				Λ	/landat	ory	
FB Name:	AHUC						C	Can be	interna	al 🛛
Description										
	air quality value.									
<b>Datapoint Ty</b>										
DPT_Name:	DPT_Value_Ai	rQuality								
DPT Format:	F <sub>16</sub>					DPT_ID		800.0		
Field	Description					Supp.	Ran		Unit	Default
							full r	ange	ppm	CS
Access Type										
♦ Input										
$N \rightarrow this$		$1  o  ext{this}$								
Spontaneo	ous 🛚	Cyclically	<b>/</b> :			Time	e-out:		31 mir	1
Request		Polling:				Peri	od:			
Communicat	ion Type									
♦ Group Ob	ject Datapoint						Man	datory	':   🖂	
Default Gr	oup Address: -									
Dynamics										
Power dov	vn: Save:									
Power up:	Value:	No initialisation	า: 🗀			ılt value:				
		Saved value:		<u> </u>		l value (ı				
		bus (only for ou	utput):		Read	from bus	s (only	for inp	out):	
<b>Exception Ha</b>	andling									
Special Feat	ures									

FB: AHUC LTE CI	ient	Input Name:	AQF	Room						datory 🗌 otional 🖂			
Description:			_						-				
This process signal from a room air quality sensor RAQS contains the room air value.													
<b>DPT</b> : Name DPT_I	DPT_HVACAirQual_Z							$U_{16}Z_{8}$					
Field		Description						Sup.	Unit	Default			
AQRoom		Room air qual	ity va	alue				M	ppm	cs			
Status								M	bitset				
<ul> <li>OutOfService</li> </ul>		Void sensor va			)			M	bool	false			
- Fault		Sensor failure						М	bool	false			
- Overridden		Sensor value overridden true / false							bool	false			
- InAlarm		Sensor value						0	bool	false			
- AlarmUnAck		Alarm acknowledgement status ack / unack							bool	unack			
- all other flags		not supported							bool				
Communication:													
Binding Group:													
	Class			Type Default									
Geographical		Apartment 1 (A.1.1,						, refer 2.2.1.1)					
Application Specific													
Unassigned		Broadcast Configurable											
DP Address:		IO Type(ID):		331 (RAC		Proper	ty ID	:	51				
LTE-Service (event)	InfoReport Sniffer on Binding Group:												
illioi topoit													
LTE-Service (polling Read – Response	g): 	Read Wildcard / Resp Sniffer on Binding Group:											
Value after Powerup:   Default Value ∑							Stored Value						
Exception Handling: Save at Por							verdown						
The AHUC will use a c	omp	any specific de	fault v	value after	r power-u	p or in c	ase o	of comm	unication	failure, if			
no sensor data is recei	ved.					-							
Special Features:			-				_						

# 2.2.4.39 Input signal: HumRelRoom

DP Name		HumRelRoom			Abbr.:	Abbr.:					Mandatory				
FB Name									al	$\boxtimes$					
Descripti	ion														
Current ro	oom h	umid	ity value.												
Datapoin		е													
DPT_Nar	ne:	DPT	_Value_H	umidity	/										
DPT Forn	nat:	F <sub>16</sub> DPT_ID: 9.007													
Field Description								Sup	p.	Rang	e	Unit	Defa	ult	
											full ra	nge	%	C	s
Access 1	Гуре														
♦ Input															
$N \rightarrow th$	าis			$1 \rightarrow thi$	is	$\boxtimes$									
Spontaneous					ally: Time-c				-out:	ut: 31 min					
Request Polling					g:		Period:								
Commun	icatio	n Ty	ре												
♦ Group Object Datapoint Mandatory:															
Default Group Address:															
<b>Dynamic</b>	S														
Power	dowr	n:   S	Save:												
Power	Power up: Value: No initialisat				tion: Default value:										
	Saved value														
	Transmit on bus (only for output					output):		Read from bus (only for input):							
<b>Exceptio</b>	n Har	ndling	g												
Special F	eatu	es													

FB: AHUC LTE Cli	LTE Client Input Name:			HumRelRoom					Mandatory ☐ Optional ⊠			
Description:		•							•			
This process signal from a room air humidity sensor RRHS contains the room air humidity value.												
DPT:   Name   DPT_RelValue_Z   DPT ID   202.001   Datatype format							$U_8Z_8$					
Field Description Sup.							Unit %	Default				
AirHumidityRoom	Room	Room air humidity value M M								cs		
Status		M										
<ul> <li>OutOfService</li> </ul>			alue true		<b>:</b>			М	bool	false		
- Fault	Sensor	failure	true / fal	lse				M	bool	false		
- Overridden		Sensor value overridden true / false							bool	false		
- InAlarm			alarm tru		-			0	bool	false		
- AlarmUnAck		Alarm acknowledgement status ack / unack							bool	unack		
- all other flags	not sup	not supported						NA	bool			
Communication:												
Binding Group:												
Class	Туре	Type Default										
Geographical		Apartment 1 (A.1.1						1, refer 2.2.1.1)				
Application Specific												
Unassigned	☐ Broadcast ☐ Configurable ☐											
DP Address:	IO Typ	IO Type(ID): 337 (RRHS) Property ID:						51				
LTE-Service (event):	InfoRe	InfoReport Sniffer on Binding Group:										
InfoReport 🗵												
LTE-Service (polling Read – Response	Read V	Read Wildcard / Resp Sniffer on Binding Group:										
Value after Powerup: Default Value ⊠							Stored Va	lue 🗌				
Exception Handling: Save at Po						e at Pov	verdown					
The AHUC will use a co	mpany spe	cific def	ault valu	ie aftei	power-u	p or in o	case o	of comm	nunication	failure, if		
no sensor data is receiv					•	•						
Special Features:												

# 2.2.4.40 Input signal: TempSupplyAir

DF	Name:	Ten	npSupplyAir			Abbr.:				Mar	ndat	tory		
FB	Name:	ΑHU	JC							Can	be	interna	al	$\boxtimes$
De	escription													
Сι	irrent supply	y air	temperature	value										
Da	tapoint Ty	ре												
DF	PT_Name:	DF	PT_Value_Te	mp										
DF	PT Format:	F <sub>1</sub>	6					DF	PT_ID:	9.00	)1			
Fie	eld	De	escription					Su	ірр.	Range		Unit	Defa	ult
										full rang	ge	°C	С	s
Ac	cess Type													
<b>*</b>	Input													
	$N \rightarrow this$		] 1	$I \rightarrow th$	is	$\boxtimes$								
	Spontaneo	us			Cyclica	ally:			Time	-out:		31 mii	า	
	Request				Polling	<del></del>			Perio	od:				
Co	mmunicat	ion <sup>-</sup>	Гуре											
<b>*</b>	Group Ob	ject	Datapoint							Mandat	tory	<i>ı</i> : 🛛		
	Default Gro	oup /	Address: -	-								-		
Dy	namics													
	Power dow	/n:	Save:											
	Power up:		Value:	No ir	itialisat	ion:	Defa	ult v	alue:					
				Save	d value	e: [	Actu	al va	alue (n	ot for inp	out)			
			Transmit on	bus (	only for	output):	Rea	d fro	m bus	(only for	r in	out):		
Ex	ception Ha	ndli	ng											
ł														
Sp	ecial Featu	ıres												
	·						 							

FB:	AHUC	LTE Cli	ent	Input Name:	Ten	pSupply/	Air					latory □ tional ⊠
Descr	ription:				=						-	
This p	rocess si	gnal fror	n a s	supply air temp	eratu	ire sensor	SATS co	nta	ins the su	pply air	temperati	ure
value.												
DPT:	Name	DPT_T	emp	HVACAbs_Z		DPT ID	205.100		Datatype	format	$V_{16}Z_{8}$	
Field				Description						Sup.	Unit	Default
	SupplyAii	<b>.</b> 		Supply air tem	pera	ture value				M	°C	cs
Status										М	bitset	
- Out	OfService			Void sensor va	alue 1	true / false	<b>;</b>			М	bool	false
- Faul	t			Sensor failure	true	/ false				М	bool	false
- Over	rridden			Sensor value	overr	idden true	/ false			0	bool	false
- InAla	arm			Sensor value	alarm	n true /fals	е			0	bool	false
- Alarr	mUnAck			Alarm acknow	ledge	ement stat	us ack / u	ına	ck	0	bool	unack
- all ot	ther flags			not supported						NA	bool	
Comn	nunicatio	n:		-					•	=	=	<del>-</del>
Bind	ding Gro	лр:										
Clas	S			Туре				De	efault			
Ge	ographic	al	$\boxtimes$	Apartment				1	(A.1.1, ref	er 2.2.1	.1)	
Ap	plication	Specific										
Un	assigned			Broadcast		Configura	able 🗌					
	Address:			IO Type(ID):		322 (SAT			roperty ID	:	51	
	-Service	(event):		InfoReport Sr	niffer	on Bindin				-		
	oReport	$\boxtimes$	•	Timeout:			31	Mi	n			
	<b>-Service</b> ad – Res		<b>):</b> ]	Read Wildcard	d / Re	esp Sniffer	on Bindiı	ng	Group: -	_		
Value	after Po	werup:		Defa	ult V	alue 🛚			<del>-</del>	(	Stored Va	lue 🗌
Excep	otion Har	ndling:							Sav	e at Pov	verdown	
The A	HUC will	use a co	mpa	any specific det	fault '	value after	power-u	ро	r in case o	of comm	unication	failure, if
	nsor data			- ·				-				
Speci	al Featur	es:										

# 2.2.4.41 Input signal: AQSupplyAir

DF	Name:	AQ	SupplyAir			Abbr.:				Manda	tory	
FB	Name:	АН	UC							Can be	interna	al 🛛
De	scription											
Cu	irrent suppl	y air	quality value	Э.								
	tapoint Ty	ре										
	PT_Name:		PT_Value_A	irQuali	ty							
DF	PT Format:	F	16					DP.	T_ID:	9.008		
Fie	eld	D	escription					Sup	op.	Range	Unit	Default
										full range	ppm	CS
Ac	cess Type	<u> </u>										
<b>♦</b>	Input											
	$N \rightarrow this$		]	$1 \rightarrow th$	is	$\boxtimes$						
	Spontaneo	ous			Cyclic	ally:			Time	-out:	31 mii	ı
	Request				Polling	g:			Perio	d:		
Ö	mmunicat	ion	Туре									
<b>♦</b>	Group Ob	ject	Datapoint							Mandatory	/:   🖂	
	Default Gr	oup	Address:									
Dy	namics											
	Power dov	vn:	Save:									
	Power up:		Value:	No in	itialisa	tion:	Defau	ılt va	alue:			
				Save	d value	e: [				ot for input)		
			Transmit or	n bus (	only fo	r output):	Read	fron	n bus	(only for in	put):	
Ex	ception Ha	andl	ing									
Sp	ecial Feat	ures										

FB: AHUC LTE Client	Input Name:	AQSupplyAir	•				datory 🗌 tional 🔯
Description:		-				-	
This process signal from a	supply air quali	ity sensor SAQ	S contains	the sup	ply air qualit	y value.	
<b>DPT</b> : Name DPT_HVA	CAirQual_Z	DPT ID	203.100	Dataty	ype format	$U_{16}Z_{8}$	
Field	Description				Sup.	Unit	Default
AQSupplyAir	Supply air qua	ality value			M	ppm	cs
Status					M	bitset	
- OutOfService		alue true / false	9		M	bool	false
- Fault	Sensor failure				M	bool	false
- Overridden		overridden true alarm true /fals			0	bool	false
- InAlarm		0	bool	false			
- AlarmUnAck		vledgement sta	tus ack / ur	nack	0	bool	unack
- all other flags	not supported				NA	bool	
Communication:							
Binding Group:							
Class	Туре			Default			
Geographical 🗵	Apartment		1	(A.1.1	, refer 2.2.1	.1)	
Application Specific							
Unassigned	Broadcast 🗌	Configura					
DP Address:	IO Type(ID):	332 (SAC		Property	y ID:	51	
LTE-Service (event):	InfoReport S	niffer on Bindir	ng Group:				
InfoReport 🖂	Timeout:		31 N	∕lin			
LTE-Service (polling): Read – Response ☐	Read Wildcar	d / Resp Sniffe	r on Bindin	g Group	):		
Value after Powerup:	Defa	ault Value 🛚			5	Stored Va	lue 🗌
Exception Handling:					Save at Pov	verdown	
The AHUC will use a comp	any specific de	fault value afte	r power-up	or in ca	se of comm	unication	failure, if
no sensor data is received							
Special Features:							

# 2.2.4.42 Input signal: HumRelSupplyAir

DF	Name:	Hun	nRelSupplyA	ir		Abbr.:					Man	dato	ory		
FB	3 Name:	ΑHL	JC								Can	be i	interna	al	$\boxtimes$
De	escription														
Сι	irrent supply	/ air	humidity valu	ıe.											
Da	atapoint Ty	ре													
DF	PT_Name:	DF	PT_Value_Ηι	ımidity	У										
DF	PT Format:	F <sub>1</sub>							DF	T_ID:	9.00	7			
Fie	eld	De	escription						Su	pp.	Range		Unit	Defa	ult
											full rang	ge	%	С	s
Ac	cess Type														
<b>♦</b>	Input														
	$N \rightarrow this$		]  1	$\rightarrow$ th	is	$\boxtimes$									
	Spontaneo	us			Cyclica	ally:	$\boxtimes$			Time	-out:		31 mir	1	
	Request				Polling	<b>j</b> :				Perio	od:				
ŏ	ommunicati	ion <sup>-</sup>	Гуре												
•	Group Ob	ject	Datapoint								Mandat	ory:			
	Default Gro	oup /	Address: -	-											
Dy	/namics														
	Power dow	n:	Save:												
	Power up:		Value:	No in	itialisat	ion:		Defa	ult v	alue:					
				Save	d value	e: [		Actu	al va	lue (n	ot for inp	ut):			
			Transmit on	bus (	only for	output):		Rea	d froi	n bus	(only for	inp	ut):		
Ex	ception Ha	ndli	ng												
Sp	pecial Featu	ıres													

FB: AHUC LTE Client	Input Name:	HumRelSupp	olyAir				datory 🗌 tional 🔯
Description:							
This process signal from a	supply air hum	idity sensor SA	RHS conta	ins the s	supply air hu	umidity va	ılue.
<b>DPT</b> : Name DPT_Rel\	/alue_Z	DPT ID	202.001	Dataty	pe format	$U_8Z_8$	
Field	Description				Sup.	Unit	Default
HumRelSupplyAir	Supply air hur	midity value			M	%	cs
Status					M	bitset	
- OutOfService		alue true / false	е		M	bool	false
- Fault	Sensor failure				M	bool	false
- Overridden		overridden true			0	bool	false
- InAlarm	Sensor value	-		0	bool	false	
- AlarmUnAck		vledgement sta	itus ack / ur	nack	0	bool	unack
- all other flags	not supported				NA	bool	
Communication:							
Binding Group:	ı						
Class	Туре			Default			
Geographical 🗵	Apartment			1 (A.1.1	, refer 2.2.1	.1)	
Application Specific							
Unassigned	Broadcast	Configur					
DP Address:	IO Type(ID):	338 (SAI		Property	y ID:	51	
LTE-Service (event <u>):</u>		niffer on Bindiı					
InfoReport 🖂	Timeout:		31 N	Min			
LTE-Service (polling): Read – Response	Read Wildcar	d / Resp Sniffe	r on Bindin	g Group	):		
Value after Powerup:	Defa	ault Value 🛚			5	Stored Va	lue 🗌
Exception Handling:				;	Save at Pov	verdown	
The AHUC will use a comp	any specific de	fault value afte	r power-up	or in ca	se of comm	unication	failure, if
no sensor data is received.							
Special Features:							

# 2.2.4.43 Input signal: TempOutside

DP	Name:	Tem	pOutside			Abbr.:					Mano	lator	y	
FB	Name:	AHU	С								Can I	be in	terna	al 🛛
De	scription													
Cu	rrent outsid	le air	temperature											
Da	tapoint Ty	ре												
DP	PT_Name:	DP	T_Value_Te	mp										
DP	T Format:	F <sub>16</sub>							DP	T_ID:	9.001			
Fie	eld	De	scription						Su	pp.	Range		nit	Default
											full range	e  °C	2	CS
Ac	cess Type													
<b>♦</b>	Input													
	$N \rightarrow this$		] 1	$\rightarrow$ th	is	$\boxtimes$								
	Spontaneo	us			Cyclic	ally:	$\boxtimes$			Time	-out:	3	1 mir	)
	Request				Polling	g:				Perio	d:			
Co	mmunicati	ion T	уре											
<b>♦</b>	Group Ob	ject [	Datapoint								Mandato	ry:	$\boxtimes$	
	Default Gro	oup A	Address: -	_										
Dy	namics													
	Power dow	n:	Save:											
	Power up:		Value:	No in	itialisat	tion:		Defau	ult va	alue:				
					d value			Actua	al va	lue (n	ot for inpu	ut):		
			Transmit on	bus (	only for	routput):		Read	fror	n bus	(only for	input	t):	
Ex	ception Ha	ındliı	ng											
Sp	ecial Featu	ıres												

FB:	AHUC	LTE Client	Input Name:	TempC	Outside					datory 🗌 otional 🏻
Desci	ription:									
		ature from a	remote outside	e tempe	rature s	ensor ca	n be used fo	or local c	ontrol stra	ategy and
frost p	rotection	•		•						
DPT:	Name	DPT_Temp	HVACAbs_Z	DF	PT ID	205.100	Datatype	format	$V_{16}Z_{8}$	
Field			Description					Sup.	Unit	Default
Temp	Outside		Temperature v	/alue				M	°C	cs
Status								M	bitset	
	OfService		Void sensor va					M	bool	false
- Faul			Sensor failure Sensor value					M	bool	false
	rridden			0	bool	false				
- InAla				0	bool	false				
	mUnAck		ınack	0	bool	unack				
	ther flags			NA	bool	<u> </u>				
	nunicatio									
	ding Grou	ıp:	r							
Clas			Туре				Default			
	ographic			. <u></u>						
	plication		OutsideSenso			<u></u>	1			
	assigned		Broadcast		onfigura					
	Address:		IO Type(ID):		0 (OTS		Property II	D:	51	
	-Service	· <u> </u>	InfoReport Sr	niffer on	Binding			<b></b>		
	oReport	$\boxtimes$	Timeout:			31	Min			
		(pollin <u>g</u> ):	Read Wildcard	d / Resp	Sniffer	on Bindii	na Group.			
	ad – Res					OH Billan				
	after Po		Defa				Stored Va	lue		
	otion Har							ve at Pov		
			any specific def							
			The outside ter	mperatu	re value	from an	other OTS	(different	zone) ma	ay also be
		specific beh	navior)							
Speci	al Featur	es:								

# 2.2.4.44 Input signal: HumRelOutside

DF	Name:	Hum	RelOutside			Abbr.:					Mand	atory		
FB	Name:	AHU	С								Can b	e inter	nal 🛚 🗀	1
De	scription													
Cu	rrent outsid	le air	humidity val	ue.										
	tapoint Ty													
	PT_Name:		T_Value_Hւ	ımidity	/									
DF	PT Format:	F <sub>16</sub>							DP	T_ID:				
Fie	eld	De	scription						Sup	ор.	Range	Unit	Default	
											full range	%	CS	
Ac	cess Type													
<b>♦</b>	Input													
	$N \rightarrow this$		] 1	$\rightarrow$ th	is	$\boxtimes$								
	Spontaneo	us			Cyclic		$\square$			Time-	-out:	31 m	nin	
	Request				Pollin	g:				Perio	d:			
Co	mmunicat	ion T	уре											
<b>♦</b>	Group Ob	,	•								Mandato	ry: 🛛		
	Default Gro	oup A	ddress: -	-										
Dy	namics													
	Power dow	/n:	Save:											
	Power up:		Value:	No in	itialisa	ition:		Defau						
					d valu	~ ·					ot for inpu			
			Transmit on	bus (	only fo	r output)	):	Read	fron	n bus	(only for i	nput):		
Ex	ception Ha	ndlir	ng											
Sp	ecial Featu	ıres												

FB: AHUC LTE C	lient	Input Name:	Hun	nRelOutsi					datory 🗌	
Description:										
Outside air humidity fr	om a	remote outside	air h	numidity se	ensor can	be used	d for	local co	ntrol strat	egy.
<b>DPT</b> : Name DPT	RelV	alue_Z		DPT ID	202.001	Data	type	format	$U_8Z_8$	
Field		Description						Sup.	Unit	Default
HumRelOutside		Outside air hu	midit	y value				M	%	cs
Status								М	bitset	
<ul> <li>OutOfService</li> </ul>		Void sensor v			<b>:</b>			M	bool	false
- Fault		Sensor failure						M	bool	false
- Overridden Sensor value overridden true / false									bool	false
- InAlarm		Sensor value	alarm	n true /fals	е			0	bool	false
<ul> <li>AlarmUnAck</li> </ul>		Alarm acknow	rledge	ement stat	us ack / ι	unack		0	bool	unack
- all other flags		not supported						NA	bool	
Communication:		-						=	-	7 <del>-</del>
Binding Group:										
Class		Туре				Default				
Geographical										
Application Specifi	c 🛛	OutsideSenso	rZon	е		1				
Unassigned		Broadcast		Configura	able 🗌					
DP Address:		IO Type(ID):		336 (ORI	HS)	Proper	ty ID	:	51	
LTE-Service (event	<b>:):</b>	InfoReport Sr	niffer	on Bindin	g Group:		-	-		
InfoReport	$\boxtimes$	Timeout:			31	Min				
LTE-Service (pollin Read – Response		Read Wildcard	d / Re	esp Sniffe	on Bindi	ng Grou	p: -	_		
Value after Powerup	:	Defa	ult V	alue 🛚			_	;	Stored Va	lue 🗌
<b>Exception Handling:</b>							Sav	e at Pov	werdown	
The AHUC will use a	comp	any specific de	fault v	value after	power-u	p or in c	ase o	of comm	nunication	failure, if
no sensor data is rece										
be used (company sp				•				•	,	-
Special Features:		•								

# 2.2.4.45 Input signal: WindSpeed

DP	Name:	Wind	Speed			Abbr.:					Manda	tory	
FΒ	Name:	AHU	С								Can be	intern	al 🛛
De	scription												
Cu	rrent wind s	speed	l value.										
	tapoint Ty <sub>l</sub>	ре											
	T_Name:	DP	T_Value_	_Wsp									
DP	T Format:	U <sub>16</sub>							DP	T_ID:	9.005		
Fie	eld	De	scription						Su	pp.	Range	Unit	Default
											full range	m/s	CS
Ac	cess Type												
<b>♦</b>	Input												
	$N \rightarrow this$			$1 \rightarrow th$	iis	$\boxtimes$							
	Spontaneo	us	$\square$		Cyclic	cally:	$\boxtimes$			Time	-out:	31 mii	1
	Request				Pollin	g:				Perio	d:		
Co	mmunicati	ion T	уре										
<b>♦</b>	Group Ob	ject [	<b>Datapoint</b>								Mandator	y: 🛛 🖂	
	Default Gro	oup A	ddress:										
Dy	namics												
	Power dow	n:	Save:										
	Power up:		Value:	No ir	nitialisa	ition:		Defau					
					ed valu	<u> </u>					ot for input		
			Transmit	on bus (	only fo	r output):		Read	fror	n bus	(only for in	put):	
Ex	ception Ha	ndlir	ng										
Sp	ecial Featu	ıres											

FB: AHUC LTE Clien	t Input Name: Wi	Input Name: WindSpeed								
Description:	-					-				
This process signal from a	wind speed sensor	r WSS conta	ins the cu	rrent wir	nd speed int	formation.				
<b>DPT:</b> Name DPT_Win	dSpeed_Z	DPT ID	203.101	Dataty	pe format	$U_{16}Z_{8}$				
Field	Description				Sup.	Unit	Default			
WindSpeed	Current wind spec	ed value			M	m/s	cs			
Status					M	bitset				
- OutOfService	Void sensor value				M	bool	false			
- Fault	Sensor failure true Sensor value ove				M	bool	false			
- Overridden	0	bool	false							
- InAlarm	Sensor value alar		-		0	bool	false			
- AlarmUnAck	Alarm acknowled	gement stati	us ack / ui	nack	0	bool	unack			
- all other flags	not supported				NA	bool				
Communication:	·				-					
Binding Group:										
Class	Туре		]	Default						
Geographical	]									
Application Specific 🗵	OutsideSensorZo	ne		1						
Unassigned	] Broadcast □	Configura	ble 🗌							
DP Address:	IO Type(ID):	347 (WSS	S)	Property	/ ID:	51				
LTE-Service (event):	InfoReport Sniffe	er on Binding	g Group:							
InfoReport 🛛	Timeout:		31 I	Min						
LTE-Service (polling): Read – Response ☐	Read Wildcard / F	Resp Sniffer	on Bindin	g Group	:					
Value after Powerup:	Default '	Value ⊠				Stored Va	lue 🗌			
Exception Handling:				(	Save at Pov	verdown				
The AHUC will use a com	pany specific defaul	t value after	power-up	or in ca	se of comm	unication	failure, if			
no sensor data is received	·									
Special Features:										

# 2.2.4.46 Input signal: SunIntensity

1 PD	Name:	Sunl	ntensity			Abbr.:	_	-				Mar	ndate	ory	
FB N	Name:	AHU	С									Can	ı be	internal	
Des	cription														
Curr	ent sun in	tensi	ty value.												
	apoint Ty	ре													
	_Name:	DP	T_PowerDe	nsity											
DPT	Format:	U <sub>16</sub>								DP	T_ID:	9.02	22		
Field	t	De	scription							Su	op.	Range		Unit	Default
												full rang	ge	W/m <sup>2</sup>	CS
Acc	ess Type														
<b>♦</b>	Input														
N	$I \rightarrow this$		]	$1 \rightarrow th$	is	$\boxtimes$									
S	Spontaneo	us			Cyclic	cally:		$\boxtimes$			Time	-out:		31 min	
F	Request				Pollin	g:					Perio	d:			
Con	nmunicat	ion T	уре												
<b>♦</b>	Group Ob	ject [	Datapoint									Manda	tory:		
	Default Gro	oup A	Address: -	-											
Dyn	amics														
F	Power dow	n:	Save:												
F	Power up:		Value:	No in	itialisa	ition:			Defau						
					d valu	<u> </u>						ot for inp			
			Transmit on	bus (	only fo	r output	):		Read	fror	n bus	(only fo	r inp	ut):	
Exc	eption Ha	ındliı	าg												
Spe	cial Featu	ıres													

FB: AHUC LTE Client	Input Name:	SunIntensity					datory 🗌			
Description:		-								
This process signal from a					n intensity in	formation	າ in W/m²			
=> not to be confused with			_							
<b>DPT</b> : Name DPT_SunI		DPT ID	203.102	Dataty	pe format	$U_{16}Z_{8}$				
Field	Description				Sup.	Unit	Default			
SunIntensity	Current sun ir	ntensity value			M	W/m <sup>2</sup>	cs			
Status					M	bitset				
- OutOfService	Void sensor v	/alue true / fals	е		M	bool	false			
- Fault	M	bool	false							
- Overridden	0	bool	false false							
- InAlarm	<ul> <li>Overridden</li> <li>InAlarm</li> <li>Sensor value overridden true / false</li> <li>Sensor value alarm true /false</li> </ul>									
- AlarmUnAck	Alarm acknow	vledgement sta	tus ack / un	nack	0	bool	unack			
- all other flags	NA	bool								
Communication:	-				<u>-</u>		-			
Binding Group:										
Class	Туре			Default						
Geographical 🔲	l									
Application Specific 🛛	OutsideSenso	orZone	1							
Unassigned 🔲	Broadcast 🗌	Configur	able 🔲							
DP Address:	IO Type(ID):	348 (SIS		Property	y ID:	51				
LTE-Service (event):	InfoReport Si	niffer on Bindi	ng Group:							
InfoReport 🖂	Timeout:		31 N	/lin						
LTE-Service (polling): Read – Response□	Read Wildcar	d / Resp Sniffe	r on Bindin	g Group	):					
Value after Powerup:	Stored Va	lue 🗌								
Exception Handling:				;	Save at Pov	verdown				
The AHUC will use a comp	any specific de	fault value afte	r power-up	or in ca	se of comm	unication	failure, if			
no sensor data is received.	•		•				,			
Special Features:										

# 2.2.4.47 Parameter: Apartment

FB:	AHUC	Proper	ty	Name ( <u>Server</u> ):	Α	partment							datory ⊠ tional □
Desc	ription:	_										<u> </u>	
LTE z	one: Apart	ment nu	mb	er.									
DPT:	Name	DPT_U	Со	untValue8_Z		DPT ID	202.002	2	Dat	atype format	t U	$J_8Z_8$	
Field			D	escription			•	S	Sup.	Range	U	nit	Default
Coun	terValue		Α	partment number					М	1126	<u> </u>		1
Status	3		T					1			bi	tset	
- Out	OfService		Z	one active /inactiv	e/e			O true/false					false
- all other flags not supported, fixed to '0' NA									<u> </u>	l			
Comr	nand										er	num	
- Norr	nalWrite		M										
- SetC	OSV & Res	etOSV	Set zone inactive / active										
- all o	ther comm	ands	not supported						NA				
Com	nunicatior	า:						-		-			
DP .	Address:			IO Type(ID):		240 (AHU	C)	Р	rope	rty ID:	10	01	
(in t	he server)			Start-Index:		1		N	l° of e	elements	1		
Pro	perty acce	ess:		Read only			Read/W	/rit	е	$\boxtimes$			
Protection Read level Write level													
Exce	otion Hand	dling:	V	alue after Poweru	ıp:	Stored	Value 🛚	1	ct Va	alue 🔲 De	efau	ult Value	
Spec	ial Feature	es:											
Relev	ant AHUC	DP's are	n	ot LTE communic	ati	ina if zone	is 'OutO	fSe	ervice	e'.		<u> </u>	

# 2.2.4.48 Parameter: DistrSegmH

FB: AHUC P	roper	y Name ( <u>Server</u> ):	DistrSegmH				ndatory 🗌 ptional 🖂				
Description:			-				p				
LTE zoning informa	ation H	ot Water Distributio	n Segment.								
		CountValue8 Z	DPT ID 202.00	2 Da	tatype forma	at U <sub>8</sub> Z <sub>8</sub>					
Field		Description	1	Sup.	Range	Unit	Default				
CounterValue		Hot Water Distribut	ion Segment	M	131		1				
		number									
Status						bitset					
<ul> <li>OutOfService</li> </ul>	Zone active /inactiv	0	true/false		false						
- all other flags		not supported, fixed	d to '0'	NA							
Command						enum					
- NormalWrite				M							
- SetOSV & ResetC		Set zone inactive /	active	0							
- all other command	ds	not supported		NA							
Communication:											
DP Address:		IO Type(ID):	240 (AHUC)		erty ID:	102					
(in the server)		Start-Index:	1	N° of	elements	1					
Property access	:	Read only	Read/V	Vrite	$\boxtimes$						
Protection		Read level		Write	level						
<b>Exception Handlin</b>	ng:	Value after Poweru	ıp: Stored Value 🗵	Act V	alue 🔲 🏻 🗈	efault Valu	ıe 🗌				
<b>Special Features:</b>											
Relevant AHUC DF	elevant AHUC DP's are not LTE communicating if zone is 'OutOfService'.										

# 2.2.4.49 Parameter: DistrSegmC

FB:	AHUC	Proper	ty Name ( <u>Server</u> ):	Di	strSegm0	;					datory 🗌 otional 🏻	
Descr	iption:	<u>'</u>							-		<u></u>	
LTE z	oning infor	mation C	Cold Water Distributi	ion	Segment.							
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002	Dat	atype forma	at U <sub>8</sub> Z	8		
Field			Description				Sup.	Range	Unit		Default	
Count	erValue		Cold Water Distribu	utio	n Segmer	nt	М	131			1	
			number									
Status	-						_		bitse	et		
	OfService		Zone active /inactive				0	true/false			false	
	her flags		not supported, fixe	o '0'		NA						
Comm								enur	n			
_	nalWrite				M							
	SV & Res		Set zone inactive /		0							
	her comma		not supported				NA					
	nunication	):										
	Address:		IO Type(ID):	2	240 (AHU	C)	Prope		103			
(in t	he server)		Start-Index:		1		N° of	elements	1			
Prop	perty acce	ss:	Read only			Read/W	rite	$\boxtimes$				
Protection Read level Write level												
Excep	otion Hand	lling:	Value after Poweru	ıp:	Stored \	∕alue ⊠	Act Va	alue 🔲 🏻 🗈	Default	Value	e 🗌	
Speci	al Feature	s:										
Releva	elevant AHUC DP's are not LTE communicating if zone is 'OutOfService'.											

# 2.2.4.50 Parameter: OutsideSensorZone

FB:	AHUC	Property	Name ( <u>Server</u> ):	ne ( <u>Server</u> ): OutsideSensorZone							datory 🗌	
Desci	ription:			_							rtioriai 🔼	
	_	nber for th	ne link with an Outsi	de	Temperat	ure Sens	or					
DPT:	Name		countValue8_Z		DPT ID	202.002	_	atype forma	at U	$I_8Z_8$		
Field			Description				Sup.	Range	Ur	nit	Default	
Count	erValue		Outside sensor zor	ne	number		M	131			1	
Status	3								bit	tset		
- Out	OfService		Zone active /inactive	/e			0	true/false			false	
- all o	ther flags			NA				L				
Comn									er	num	İ	
- Norr	nalWrite						M				i	
- SetC	OSV & Re	setOSV	Set zone inactive /	ac	ctive		О				i	
- all o	ther comn	nands	not supported				NA					
Comr	nunicatio	n:										
DP A	Address:		IO Type(ID):		240 (AHU	C)	Prope	erty ID:	10	)4		
(in t	he serve	r)	Start-Index:		1		N° of	elements	1			
Pro	perty acc	ess:	Read only			Read/W	rite	$\boxtimes$				
Prot	ection		Read level				Write	level				
Exce	Exception Handling: Value after Powerup: Stored Value 🛛 Act Value 🗌 Default Value 🗌											
Speci	al Featur	es:										
	.HUC is not using an external outside sensor(s) (OTS, OAQS, ORHS, WSS, SIS) if zone is 'OutOfService'											

# 2.2.4.51 Parameter: TempSupplyAirSetpMin

FB:	AHUC	Proper	ty Name ( <u>Server</u> ):	Te	empSuppl	yAirSetp		Mandatory _		
									Op	tional 🛚
Desci	ription:								_	
Min sı	upply air te	mperatu	re limitation in the ai	ir h	nandling ur	nit control	ller. Su	ipply air tempe	erature sh	all not be
below	this limit.									
DPT:	Name	DPT_Te	mpHVACAbs_Z		DPT ID	205.100	Da	tatype format	$V_{16}Z_{8}$	
Field			Description				Sup.	Range	Unit	Default
Temp			Temperature value				М	full range	° C	CS
Status	3								bitset	
- Out	OfService		Limitation active /in	ac	tive		Ο	true/false		false
- all of	ther flags		not supported, fixed		NA					
Comn	nand								enum	
- Norr	nalWrite									
- SetC	SV & Res	etOSV	Set limitation paran	ne	ter inactive	0				
			active							
- all of	ther comma	ands	not supported				NA			
Comr	nunication	<u> </u>								
DP A	Address:		IO Type(ID):		240 (AHU	C)	Prope	erty ID:	110	
(in t	he server)		Start-Index:		1		N° of	elements	1	
Pro	perty acce	ss:	Read only			Read/W	rite	$\boxtimes$		
Protection Read level Write level										
Excep	otion Hand	lling:	Value after Poweru	ıp:	Stored \	√alue ⊠	Act V	alue 🔲 De	fault Value	e 🗌
Speci	al Feature	s:								
Limita	tion function	on is acti	vated or deactivated	l b	y the 'OutC	OfService	' Statu	ıs		

# 2.2.4.52 Parameter: TempSupplyAirSetpMax

FB:	AHUC	Proper	ty Name ( <u>Server</u> ):	Te	empSuppl	lyAirSetp		Mandatory ∟ Optional ⊠		
Desci	ription:	<del>-</del>		-					<del>-</del>	
Max s	upply air te	emperati	ire limitation in the a	air h	nandling u	nit contro	ller. Su	ipply air temp	erature sh	nall not
be ab	ove this lim	iit.								
DPT:	Name	DPT_Te	empHVACAbs_Z		DPT ID	205.100	Dat	atype format	$V_{16}Z_{8}$	
Field			Description				Sup.	Range	Unit	Default
Temp			Temperature value	;			М	full range	° C	CS
Status									bitset	
- OutOfService Limitation active /inactive							Ο	true/false		false
- all other flags not supported, fixed to '0'										
Comn	nand								enum	
- Norr	nalWrite						M			
- SetC	SV & Rese	etOSV	Set limitation parar	net	ter inactive	0				
			active							
- all of	ther comma	ands	not supported				NA			
Comr	nunication	1:								
DP /	Address:		IO Type(ID):	1	240 (AHU	C)	Prope		111	
(in t	he server)		Start-Index:		1		N° of	elements	1	
Pro	perty acce	ss:	Read only			Read/W	rite	$\boxtimes$		
Protection Read level Write level										
Excep	otion Hand	lling:	Value after Poweru	ıp:	Stored '	Value 🛚	Act Va	alue 🔲 De	fault Valu	e 🗌
Speci	al Feature	s:								
Limita	tion function	n is acti	vated or deactivated	d by	y the 'OutO	OfService	' Statu	S		

# 2.2.4.53 Diagnostic data: TempRoomAct

FB:	AHUC	Property	Name ( <u>Server</u> ):	Te	empRoom	Act					datory ∐ otional ⊠	
Desci	ription:											
			value used by the									
image	of the Te	mpRoom	input or of a hardw	ire	d sensor, v	which ma	y be	ove	rridden by a	tool for s	ervice	
function	ons.											
DPT:	Name	DPT_Te	empHVACAbs_Z		DPT ID	205.100	D	atat	type format	$V_{16}Z_{8}$		
Field			Description				Sup	). F	Range	Unit	Default	
Temp			Temperature value	;			М	fı	ull range	° C	CS	
Status	3									bitset		
- OutOfService TempRoomAct is not available								tr	rue/false		false	
- Overridden Override of the temperature value								tr	rue/false		false	
- Fault Temperature corrupted, sensor failure									rue/false		false	
- InAla	arm		Critical limit is read	he	d		0	tr	rue/false		false	
- Alarr	mUnAck		Alarm acknowledge	em	ent status		0	а	ck/unack		unack	
- all of	ther flags		not supported, fixe	d to	o '0'		NA					
Comn			Standard Comman	nd f	ield				enum			
- Ove	rride & Re	elease	Override and relea	se	temperatu	ire	0					
			value									
- Aları	nAck		Alarm acknowledge	е			Ο					
- all of	ther comn	nands	not supported				NA					
Comr	nunicatio	n:										
DP A	Address:		IO Type(ID):		240 (AHU	C)	Pro	perty	y ID:	112		
(in t	he serve	r)	Start-Index:		1		N° (	of ele	ements	1		
Pro	perty acc	ess:	Read only [			Read/W	rite		⊠ <sup>1)</sup>			
Prot	ection		Read level				Writ	te le	vel			
Excep	otion Han	dling:	Value after Poweru	ıp:	Stored	Value 🗌	Act	Valu	ue 🛛 De	fault Valu	e 🗌	
	Special Features:											
1) opti	onal Write	access f	or Alarm acknowled	lge	ment only				·			

# 2.2.4.54 Diagnostic data: TempOutsideAct

FB: AHUC F	Property	Name ( <u>Server</u> ):	TempO	utsi	deAct				ndatory [] ptional [X]
Description:								<del></del>	
Actual outside te	mperatur	e value may be use	ed by the	e AH	UC for ro	om ter	nperature cor	trol loop.	This is
the local image of	of the Ter	npOutside input or	a hard-v	vired	sensor v	vhich n	nay be overric	den by a	tool for
service functions	5.								
<b>DPT:</b> Name	DPT_Te	mpHVACAbs_Z	DPT	ID	205.100	) Da	tatype format	$V_{16}Z_{8}$	
Field		Description				Sup.	Range	Unit	Default
Temp		Temperature value				M	full range	° C	cs
Status						bitset			
<ul> <li>OutOfService</li> </ul>	9	0	true/false		cs				
- Overridden		Override of the terr		0	true/false		false		
- Fault		Temperature corrupted, sensor failure					true/false		false
- InAlarm		Critical limit is reac	hed			0	true/false		false
- AlarmUnAck		Alarm acknowledge		tatus		0	ack/unack		unack
- all other flags		not supported, fixed	d to '0'			NA			
Command		standard Comman	d field					enum	
- Override & Rele	ease	override and releas	se tempe	eratui	e value	0			
- AlarmAck		alarm acknowledge	)			0			
- all other comma	ands	not supported				NA			
Communication	):								-
DP Address:		IO Type(ID):	240 (	AHU	C)		erty ID:	113	
(in the server)		Start-Index:	1			N° of	elements	1	
Property access: Read only ☐ Read/Write ☐ 1)									
Protection		Read level				Write	level		
<b>Exception Hand</b>	lling:	Value after Poweru	ip: Sto	ored \	√alue 🗌	Act V	alue 🗵 🏻 De	fault Valu	ле 🗌
<b>Special Feature</b>									
1) optional Write a	access fo	r Alarm acknowled	gement	only					

# 2.2.4.55 Diagnostic data: TempSupplyAirSetpHeat

FB:	AHUC	Property	Name ( <u>Server</u> ):	TempSupplyAirSetpHeat							Mandatory Continuation	
Dagas	lu4lau.			-							- Op	nional 🖂
	iption:											
Actua	l supply a	ir heating	temperature setpoi	<u>nt</u>	of the AHU	IC.						
DPT:	Name	DPT_Te	mpHVACAbs_Z		DPT ID	205.100	)	Dat	atype forma	t V	<sub>16</sub> Z <sub>8</sub>	
Field			Description				S	Sup.	Range	Ur	_	Default
Temp			Temperature value	,				M	full range	° (	2	cs
Status	3									bit	set	
- Out	OfService		=> no setpoint (e.g	ı. h	neating is o	ff)	O true/false					false
- Over	ridden		External override of	·	O true/false					false		
- all other flags not supported, fixed to '0' NA												
Comn	nand		Standard Comman				er	ıum				
- Over	ride & Re	elease	Override and relea	setpoint		Ο						
- all ot	her comn	nands	not supported									
Comr	nunicatio	n:										
DP /	Address:		IO Type(ID):		240 (AHU	C)	Р	rope	rty ID:	11	14	
(in t	he serve	r)	Start-Index:		1		N	l° of e	elements	1		
Prop	perty acc	ess:	Read only			Read/W	rite	е	□ 1)			
Protection Read level Write level												
Excep	otion Har	ndling:	Value after Poweru	ıp:	Stored \	Value 🗌	Α	ct Va	alue 🛛 🛮 D	efau	ılt Value	e 🗌
Speci	al Featur	es:										
1) optio	optional Write access for Override / Release function only											

# 2.2.4.56 Diagnostic data: TempSupplyAirSetpCool

FB:	AHUC	Propert	y N	Name ( <u>Server</u> ):	: TempSupplyAirSetpCool							Mandatory ∐   Optional ⊠	
					_							<u>i</u> Ot	Dilonal 🔼
	ription:												
Actua	I supply a	ir cooling	j te	mperature <u>setpoir</u>	<u>าt</u> c	of the AHU	C						
DPT:	Name	DPT_T	em	pHVACAbs_Z		DPT ID	205.100		Dat	atype form	at	$V_{16}Z_{8}$	
Field				Description				S	up.	Range	Į	Jnit	Default
Temp			Т	emperature value	;				М	full range	٥	Ö	CS
Status	3		T								k	oitset	
- Out	OfService		=	> no setpoint (e.g	. C	ooling is of	f)	O true/false					false
- Ove	rridden		External override of the setpoint							true/false			false
- all o	ther flags		not supported, fixed to '0' NA										
Comn	nand		Standard Command field								E	enum	
- Ove	rride & Re	elease	Override and release setpoint						0				
- all o	ther comr	nands	not supported						۱A				
Comr	nunicatio	n:	-				_			-			-
DP .	Address:			IO Type(ID):		240 (AHU	C)	Р	rope	rty ID:		115	
(in t	he serve	r)		Start-Index:		1		N	° of	elements	•	1	
Pro	perty acc	ess:		Read only			Read/W	rite	;	□ 1)			
Protection Read level Write level								-					
Exce	otion Har	ndling:	٧	alue after Poweru	ıp:	Stored \	/alue 🗌	Α	ct Va	alue 🗵 🏻 [	Defa	ault Value	e 🗌
Speci	ial Featur	es:											
1) opti	optional Write access for Override / Release function only												

# 2.2.4.57 Diagnostic data: Fault

FB:	AHUC	Property	Name (Server):	Fa	ault					Man	datory 🔲
			,-								• • =
										O,	otional 🛚
Desc	ription:										
Some error in the AHUC.											
DPT:	PT: Name DPT_Bool DPT ID 1.002 Datatype format E						B <sub>1</sub>				
Field	Field Description						Sup.	Range		Unit	Default
								true/false		bool	false
Comr	nunicatio	n:									
DP	Address:		IO Type(ID):	IO Type(ID): 240 (AHUC)			Property ID: 1			116	
(in t	he serve	r)	Start-Index:	1 N° of elements 1			1				
Pro	perty acc	ess:	Read only	$\boxtimes$		Read/W	rite/				
Prof	tection		Read level				Write	level			
Exce	ption Har	ndling:	Value after Powert	up:	Stored	Value	Act Va	alue 🛚	Def	ault Valu	e 🗌
			·								
Speci	ial Featu	res:									
			•				•	•		•	

# 2.2.4.58 Diagnostic data: FanActive

FB:	AHUC	Property	Name ( <u>Server</u> ):	FanActive						datory 🗌 otional 🖂
Desc	ription:	<u>:</u>		=				<u> </u>	<u> </u>	
Suppl	ly and/or	exhaust air	fans are operating							
DPT: Name DPT Boo			ol	DPT ID	1.002	Dat	atype forma	at B₁		
Field			Description			Sup.	Range	Unit	•	Default
	true/false t							boo	l	false
Comr	nunication	on:				-	<u>-</u>	<del>-</del>		
DP.	Address		IO Type(ID):	240 (AHUC)		Prope	117	117		
(in t	he serve	r)	Start-Index:	1	1 N° of elements 1			1		
Pro	perty acc	ess:	Read only	$\boxtimes$	Read/Write					
Pro	tection		Read level			Write	level			
Exce	ption Hai	ndling:	Value after Poweru	ıp: Stored	Value 🗌	Act Va	alue 🛛 🏻 🏻 🗈	Default	Valu	е 🗌
Spec	ial Featu	res:		-	•		•			

## 2.3 Functional Block: Supply Air Temperature Controller (SATC)

# 2.3.1 Description

The Functional Block Supply Air Temperature Controller SATC is controlling an air handling unit in connection with terminal unit blocks. Terminal unit blocks may be Fan Coil Unit Controllers FCC, Water Heat Pumps WHPC, Split Unit Control SPUC or Variable Air Volume units VAVC. For an overview, please refer to clause 2.1.

The Ventilation Demand Transformer VDTTU (refer HVAC-TU document [11]) transforms via a company-specific algorithm the EnergyDemAir out of the Terminal Units into two supply air temperature setpoints for heating and cooling TempSupplyAirSetpSet (2), as well as controller mode and emergency mode attributes. (Controller mode of Terminal Units: Heat, Cool, NoDem, Night\_Purge, Fan\_only,...Emergency mode of Terminal Units: Normal, Pressurisation, Fire,...) Some Terminal Units may have also requirements for (fresh) outside air, these values are calculated in the ValueFreshAirSetp.

Between the Ventilation Demand Transformer VDTTU and the Supply Air Temperature Controller SATC is a 1:1 connection (refer to Overview, Clause 2.1). It is even recommended to combine the two Functional Blocks in one device.

The temperature control of the Supply Air Temperature Controller SATC is company-specific and not part of this specification. Heating valves, cooling valves, fans, dampers, energy recovery, electric heaters, are directly connected to the Supply Air Temperature Controller SATC via hardwiring or via optional communication signals (GenPeripheral-tag 1:1 link). The controller may be configured to select between different control strategies.

Output signals from the Supply Air Temperature Controller SATC are the demand signals for hot water EnergyDemHeatSATC and cold water EnergyDemCoolSATC. This is the link to the air handler Heating Demand Transformers HDTAHU and air handler Cooling Demand Transformers CDTAHU, which collect the demand signals (n signals in percent) and convert them into hot water and cold water flow temperature signals. These signals are only optional because not each supply air handling unit requires hot water heating and cold water cooling. There are supply air handler without heating and cooling, or heating only, or cooling only or both.

Some supply air handling units may have different heating coils (preheater, reheater) on different hot water header. Due to this the Air Handler Unit Controller may produce two different EnergyDemHeatSATC signals in different Hot Water Distribution Segment. This addition is company specific and not described in this document.

Force and Lock signals of the hot and cold water producer and distribution are transferred to the Supply Air Temperature Controller SATC to ensure functions of the temperature control. Important: Neither forcing nor locking signals must have an influence on the calculation of the demand signals EnergyDemHeatSATC and EnergyDemCoolSATC. Otherwise the system may oscillate!

Forcing or enabling the Supply Air Temperature Controller to a special controller mode (Night\_Purge, Fan\_only,...) may be done via the optional ContrMode input signal.

Fire and SmokeClearance signals are normally hardwired to the SATC. This emergency functions are company-specific and not part of this specification. Never less in more sophisticated systems, the optional EmergMode (Pressurisation, Fire,...) may be sent via bus from a HVAC fire/smoke device (HVACEMS).

The Supply Air Temperature Controller SATC supports relative humidity control (optional). This may be a reference room humidity control with supply air humidity limits, return air humidity control with supply air humidity limits or a simple supply air humidity control. The algorithm is company-specific and not part of this description. The humidity setpoint HumRelSetpHumEff and HumRelSetpDehumEff is a set of humidification / dehumidification setpoints and are only valid during operation of the supply air handling unit. These setpoints may be internal parameter (in percent) within the Supply Air Temperature Controller SATC or set via communication (Bind.Grp.: GenPeripheral-tag 1:1 link) with the Functional Block Setpoint Manager Humidity SMRH. Humidity control via humidity demand signals from Terminal Units is not supported (refer HVAC-TU Specifications [11]).

Absolute humidity control may be supported within the Functional Unit Block and not part of this description.

The Supply Air Temperature Controller SATC supports air quality control (optional). This may be a reference room air quality control, return air quality control or a supply air quality control. It is possible to connect an air quality sensor via communication (GenPeripheral-tag 1:1 link) to the Supply Air Temperature Controller SATC. The air quality setpoint AQSetpEff is set as an internal parameter (in ppm, mixing gas is converted in a representative ppm-value) within the Supply Air Temperature Controller SATC or via communication (GenPeripheral-tag 1:1 link) with the Functional Block Setpoint Manager Air Quality SMAQ. The algorithm is company-specific and not part of this description.

Air quality may be also controlled within Terminal Units blocks (VAV, FCC, ...) via ValueFreshAirDem, respectively ValueFreshAirSetp. Refer to the description above.

Air quantity (fan speed) for Supply Air Temperature Controller SATC may be controlled via independent pressure loops or in conjunction with air quality control. The algorithm is company-specific and not part of this description.

Room Units (HMI) like Room Temperature Setpoint Absolute Setting, Room Temperature Setpoint Relative Setting, Air Quality Setpoint Setting or Air Humidity Setpoint Setting are specified in HVAC Specifications – Functional Blocks Sensors, HMI, Actuators, Common Controller Functions [02] and linked to the appropriate Room Setpoint Manager.

Additionally to the already shown sensors there may be other devices connected to the Supply Air Temperature Controller SATC. For example room air quality / humidity sensors or return air temperature / air quality / humidity sensors or outside air quality / humidity sensors. The same applies to additional actuators or HMI-displays. It may be also possible to add in the near future sensor, displays or actuators to the SATC.

#### 2.3.2 Constraints

IMPORTANT: reporting of the hot and cold water demand signals may be implemented in the **Standard Mode** but can <u>today</u> not be routed via demand transformers (HDTAHU, CDTAHU) to the hot or cold water distribution segment because the necessary compound HVAC DPT for runtime-interworking is not yet available in **Standard Mode**.

Therefore for the time being only LTE implementations offer a link to a <u>demand dependent</u> hot and cold water distribution and production system.

In air handling units the location of reference room sensors may be a problem due to architectural or design reasons. Therefore some installers install return air sensors instead of a room sensors. The downside of this implementation is a "wrong" reading whenever the airflow in the ductwork stops. Features like, controlled start by low or high humidity or bad air quality in HVACMode Economy may be not accurate.

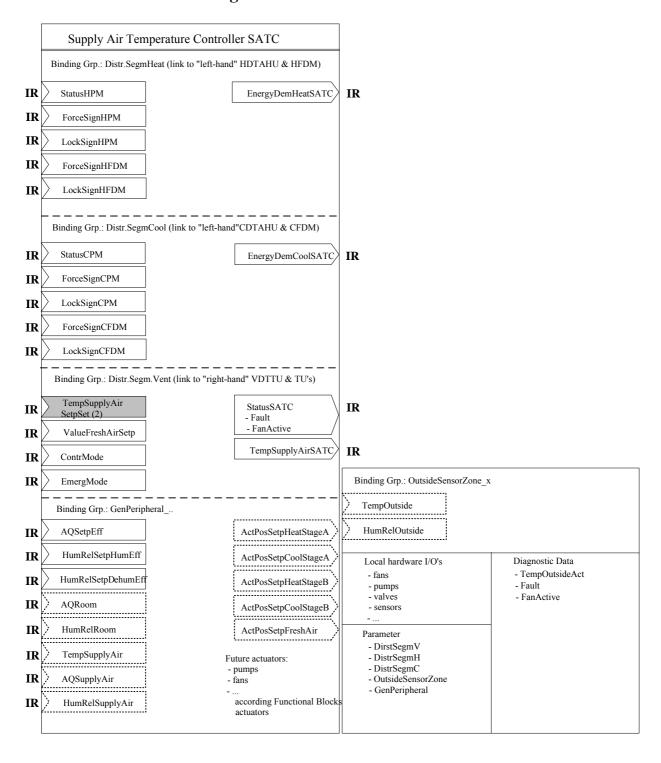
Neverless to simplify the Functional Block:

- Return air humidity sensor is equal to room humidity sensor
- Return air quality is equal to room air quality.

In the Standard Model all outside sensors are located in the same LTE Outside Sensor Zone (only one zoning parameter). Manufacturer specific parameters shall be used if different Outside Sensor Zones for the outside temperature, wind speed or sun intensity have to be supported.

External optimiser can not be interlinked with the Supply Air Temperature Controller SATC. In systems where optimizer are required, these have to be connected to the appropriate Terminal Units and will send their ventilation demand via Ventilation Demand Transformer VDTTU to the SATC.

## 2.3.3 Functional Block diagram



# 2.3.4 Description of the Datapoints

Datapoint	Description	Datapoint Type	DPT_ID	
Outputs				
EnergyDemHeatSATC	Air handler unit hot water demand in percent (LTE and S-interface)	DPT_ActPosDemAbs DPT_Percent_U8	207.104 5.004	
EnergyDemCoolSATC	Air handler unit cold water demand in percent (LTE and S-interface)	DPT_ActPosDemAbs DPT_Percent_U8	207.104 5.004	
StatusSATC	Status information of the air handling unit controller	DPT_StatusAHU	21.106	
- Fault	Failure, some error in the SATC (S-interface)	DPT_Bool	1.002	
- FanActive	Supply and/or exhaust air fans are operating (S-interface)	DPT_Bool	1.002	
TempSupplyAirSATC	Actual supply air temperature of the SATC (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001	
ActPosSetpHeatStageA	Actuator position setpoint air handler heating valve stage A to be written to the connected valve(s) HVA. (LTE and S-interface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001	
ActPosSetpCoolStageA	Actuator position setpoint air handler cooling valve stage A to be written to the connected valve(s) HVA. (LTE and S-interface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001	
ActPosSetpHeatStageB	Actuator position setpoint air handler heating valve stage B to be written to the connected valve(s) HVA. (LTE and S-interface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001	
ActPosSetpCoolStageB	Actuator position setpoint air handler cooling valve stage B to be written to the connected valve(s) HVA. (LTE and S-interface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001	
ActPosSetpFreshAir	Actuator position setpoint air handler outside air damper to be written to the air damper actuator ADA. (LTE and Sinterface)	DPT_RelValue_Z DPT_Scaling	202.001 5.001	
	Future actuators (fans, pumps,) under discussion	t.b.d. probably complex datapoints	?	
Inputs				
StatusHPM	Status information from Hot Water Production Manager	DPT_StatusHPM	209.100	
ForceSignHPM	Forcing signal from Hot Water Production Manager, to force consumer to consume more energy	DPT_ForceSign	21.100	
LockSignHPM	Locking signal from Hot Water Production Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101	

Datapoint	Description	Datapoint Type	DPT_ID
ForceSignHFDM	Forcing signal from Heating Flow Demand Manager, to force consumer to consume more energy	DPT_ForceSign	21.100
LockSignHFDM	Locking signal from Heating Flow Demand Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
StatusCPM	Status information from Cold Water Production Manager	DPT_StatusCPM	209.102
ForceSignCPM	Forcing signal from CPM due to danger of freezing, to force consumer to consume more energy	DPT_ForceSignCool	21.101
LockSignCPM	Locking signal from CPM due to chiller overload, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
ForceSignCFDM	Forcing signal from CFDM in the Cold Water Distribution Segment	DPT_ForceSignCool	21.101
LockSignCFDM	Locking signal from CFDM in the Cold Water Distribution Segment	DPT_LockSign	207.101
TempSupplyAirSetp Set(2)	Supply temperature setpoints for heating and cooling, controller and emergency mode	DPT_TempSupplyAir SetpSet	224.100
ValueFreshAirSetp	Fresh air (outside air) demand setpoint	DPT_RelValue_Z	202.001
ContrMode	Controller mode from management station. To enable or force the SATC into a special application mode (LTE and S-interface)	DPT_HVACContrMode_Z DPT_HVACContrMode	201.104 20.105
EmergMode	Emergency mode from management station. To force the SATC into fire or smoke clearance. (LTE and S-interface)	DPT_HVACEmergMode_Z DPT_HVACEmergMode	201.109 20.106
AQSetpEff	The effective air quality setpoint (LTE and S-interface)	DPT_HVACAirQual_Z DPT_Value_AirQuality	203.100 9.008
HumRelSetpHumEff	Relative air humidity setpoint for humidification (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
HumRelSetpDehumEff	Relative air humidity setpoint for dehumidification (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
AQRoom	Current room air quality value (LTE and S-interface)	DPT_HVACAirQual_Z DPT_Value_AirQuality	203.100 9.008
HumRelRoom	Current relative room humidity value (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
TempSupplyAir	Current supply air temperature sensor value (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
AQSupplyAir	Current supply air quality sensor value (LTE and S-interface)	DPT_HVACAirQual_Z DPT_Value_AirQuality	203.100 9.008

Datapoint	Description	Datapoint Type	DPT_ID
HumRelSupplyAir	Current relative supply air humidity sensor value (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
TempOutside	Current outside air temperature sensor (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
HumRelOutside	Current relative outside air humidity sensor (LTE and S-interface)	DPT_RelValue_Z DPT_Value_Humidity	202.001 9.007
Parameters			
DistrSegmV	LTE zoning number Ventilation Distribution Segment	DPT_UCountValue8_Z	202.002
DistrSegmH	LTE zoning number Hot Water Distribution Segment	DPT_UCountValue8_Z	202.002
DistrSegmC	LTE zoning number Cold Water Distribution Segment	DPT_UCountValue8_Z	202.002
OutsideSensorZone	LTE zoning number Outside Sensor Zone	DPT_UCountValue8_Z	202.002
Gen_Peripheral	LTE zoning number General Peripheral	DPT_UCountValue16_Z	203.012
Diagnostic Data			
TempOutsideAct	Actual outside temperature used by the SATC	DPT_TempHAVCAbs_Z	205.100
Fault	Failure, some error in the SATC	DPT_Bool	1.002
FanActive	Supply and/or exhaust air fans are operating	DPT_Bool	1.002

<sup>\*)</sup> Implementation of Properties using standard DPT see clause 1.3.2

			STANDARD MODE	EXTE Mo	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	EnergyDemHeatSATC	(GO <sub>b</sub> )		(GO)	О
	EnergyDemCoolSATC	$(GO_b)$		(GO)	О
	StatusSATC	NA <sup>1</sup> )	NA	NA	О
	- Fault	$(GO_b)$		(GO)	NA
	- FanActive	$(GO_b)$		(GO)	NA
	TempSupplyAirSATC	(GO <sub>b</sub> )		(GO)	О
	ActPosSetpHeatStageA	(GO <sub>b</sub> )		(GO)	О
	ActPosSetpHeatStageB	(GO <sub>b</sub> )		(GO)	О
	ActPosSetpCoolStageA	$(GO_b)$		(GO)	О
	ActPosSetpCoolStageB	$(GO_b)$		(GO)	О
	ActPosSetpFreshAir	(GO <sub>b</sub> )		(GO)	О
Inputs	StatusHPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignHPM	NA <sup>1</sup> )	NA	NA	О
	LockSignHPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignHFDM	NA <sup>1</sup> )	NA	NA	О
	LockSignHFDM	NA <sup>1</sup> )	NA	NA	О
	StatusCPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignCPM	NA <sup>1</sup> )	NA	NA	О
	LockSignCPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignCFDM	NA <sup>1</sup> )	NA	NA	О
	LockSignCFDM	NA <sup>1</sup> )	NA	NA	О
	TempSupplyAirSetpSet	NA <sup>1</sup> )	NA	NA	M
	ValueFreshAirSetp	NA <sup>1</sup> )	NA	NA	О
	ContrMode	(GO <sub>b</sub> )		(GO)	О
	EmergMode	(GO <sub>b</sub> )		(GO)	О
	AQSetpEff	(GO <sub>b</sub> )		(GO)	О
	HumRelSetpHumEff	(GO <sub>b</sub> )		(GO)	О
	HumRelSetpDehumEff	(GO <sub>b</sub> )		(GO)	О
	AQRoom	(GO <sub>b</sub> )		(GO)	О
	HumRelRoom	(GO <sub>b</sub> )		(GO)	О
	TempSupplyAir	(GO <sub>b</sub> )		(GO)	О
	AQSupplyAir	(GO <sub>b</sub> )		(GO)	О

		STANDARD MODE	Ехте	
	Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
HumRelSupplyAir	(GO <sub>b</sub> )		(GO)	О
TempOutside	(GO <sub>b</sub> )		(GO)	О
HumRelOutside	(GO <sub>b</sub> )		(GO)	О

<sup>&</sup>lt;sup>1)</sup> the information is NA in the Basic FB and all other modes because the datapoint type is <u>today</u> not yet available in Standard Mode. Splitting of DPT is not possible because of necessary data consistency

Table 4: SATC Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DistSegmV	M
	DistrSegmH	О
	DistrSegmC	О
	OutsideSensorZone	О
	GenPeripheral	О

**Table 5: SATC LTE specific Properties** 

		Support
Diagnostic Data	TempOutsideAct	О
	Fault	О
	FanActive	О

Table 6: SATC Standard Properties of Interface Objects (or memory mapped DP)

# 2.3.4.1 Output signal: EnergyDemHeatSATC

### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC as EnergyDemHeatAHUC. Only the signal name and FB Name are changed to ...SATC. In the LTE-HEE mode the IO Type (ID) is set to 241 (SATC).

For further info please refer to clause 2.2.4.1.

# 2.3.4.2 Output signal: EnergyDemCoolSATC

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC as EnergyDemCoolAHUC. Only the signal name and FB Name are changed to ...SATC. In the LTE-HEE mode the IO Type (ID) is set to 241 (SATC).

For further info please refer to clause 2.2.4.2.

### 2.3.4.3 Output signal: StatusSATC

#### **Standard Mode**

Separate datapoints Fault, FanActive

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC as StatusAHUC. Only the signal name and FB Name are changed to SATC. In the LTE–HEE mode the IO Type (ID) is set to 241 (SATC) and sent in the Ventilation Distribution Segment.

For further info please refer to clause 2.2.4.3.

#### 2.3.4.4 Output Fault

#### **Standard Mode**

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.4.

#### LTE-HEE Mode

Not applicable.

## 2.3.4.5 FanActive

#### **Standard Mode**

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.3.4.5.

#### LTE-HEE Mode

Not applicable.

# 2.3.4.6 Output TempSupplyAirSATC

DP Name:	Tei	mpSupply	yAirS	SATC	Abbr.:				Mandat	Mandatory		
FB Name:	SA	TC							Can be	interna	al 🛛	
Description												
Actual supply	y air	temperat	ure ir	n the Ventilat	ion Distrik	oution Se	egmen	t.				
Datapoint T												
DPT_Name:		PT_Valu	ie_Te	emp				_	9.001			
DPT Format:	T Format: F <sub>16</sub> DPT_ID:									•		
Field	Description Supp. F								Range	Unit	Default	
									full range	°C	CS	
	Access Type											
◆ Output					_							
this $\rightarrow$ M		$\boxtimes_{\underline{}}$		his → 1								
Spontane	ous		COV:		Δ-Value:			in repetition	on period:	10s		
			Cyclic		Period:	15 Mi	n					
Request												
Communica												
		t Datapoii							Mandatory	r:   🛛		
Default G	roup	Address	i: -	<u>-</u>								
Dynamics												
Power do		Save:					•					
Power up	:	Value:		No initialisa				ılt value:				
				Saved value					ot for input)			
	Transmit on bus (only for output): Read from bus (only for inp								out):			
<b>Exception H</b>	land	ling										
Special Feat	tures	S										

FB:	SATC	LTE S	Server	er Output Name: TempSupplyAirSATC Mandatory Optional									
	ription:			-						_			
Actua	I supply a	air tem	peratu	re in the Ventilation	on Distributio	n Segn	nent.						
DPT:	Name	DPT	_Temp	HVACAbs_Z	DPT ID	205.10	00 [	Datatype	e format	$V_{16}Z_{8}$			
Field			Desci	ription	Sup. Range Unit			COV	Default				
Temp			Supp	ly air temperature	air temperature			full range °C		0.2	cs		
Status						[	bitset	t		[			
- Fault Sens				or failure true / fal		M	true/f		bool	Υ	false		
- InAlarm Sens				or value alarm tru		0	true/f		bool	Υ	false		
- Aları	mUnAck			n acknowledgeme	ent status	0	ack/u	ınack	bool	Υ	unack		
				unack									
	ther flags			upported		ļ 							
Comn				only)									
- Aları				acknowledge		0							
			not su	upported		NA							
comm													
	nunicatio												
	ding Gro	up:						1					
Clas				Type Default									
	eographic		$\square$										
	plication		ic 📙		DistrSegmV1								
	nassigned			Broadcast	Configu								
	Address:			IO Type(ID):	241 (SAT			perty I		54			
	-Service			cov ⊠	MinRepTin			sec		tbeat:	15 min		
	oReport		$\boxtimes$	Output per defau		ating 🛭			roup Wild				
	ΓΕ Read-			Tx Prio:	High 🗌			Normal	$\boxtimes$	Lo	ow 📙		
•	lling of th		ut						. 5				
	all always	s be		Transm after Po	werup: Store	ed Valu	е 📙	Act Va	alue 🛚	Default	Value		
	pported)												
Property-Service (individual access):						Read	/Write		∑ 1)				
Exception Handling:									Save	at Powe	erdown		
	Special Features:												
			onal; f	or AlarmAck func	tion only			· · · · · · · · · · · · · · · · · · ·		<del></del>			

## 2.3.4.7 Output signal: ActPosSetpHeatStageA

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. Only the FB Name is changed to SATC. For further info please refer to clause 2.2.4.8.

### 2.3.4.8 Output signal: ActPosSetpHeatStageB

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. Only the FB Name is changed to SATC. For further info please refer to clause 2.2.4.9.

# 2.3.4.9 Output signal: ActPosSetpCoolStageA

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. Only the FB Name is changed to SATC. For further info please refer to clause 2.2.4.10.

# 2.3.4.10 Output signal: ActPosSetpCoolStageB

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. Only the FB Name is changed to SATC. For further info please refer to clause 2.2.4.11.

#### 2.3.4.11 Output signal: ActPosSetpFreshAir

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. Only the FB Name is changed to SATC. For further info please refer to clause 2.2.4.12.

#### 2.3.4.12 Input signal: StatusHPM

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.13.

#### 2.3.4.13 Input signal: ForceSignHPM

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.14.

# 2.3.4.14 Input signal: LockSignHPM

#### **Standard Mode**

Not applicable.

### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.15.

#### 2.3.4.15 Input signal: ForceSignHFDM

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.16.

## 2.3.4.16 Input signal: LockSignHFDM

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.17.

## 2.3.4.17 Input signal: StatusCPM

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.18.

### 2.3.4.18 Input signal: ForceSignCPM

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.19.

## 2.3.4.19 Input signal: LockSignCPM

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.20.

### 2.3.4.20 Input signal: ForceSignCFDM

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.21.

## 2.3.4.21 Input signal: LockSignCFDM

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.22.

# 2.3.4.22 Input signal: TempSupplyAirSetpSet (2)

# **Standard Mode**

Not applicable.

FB:	SATC	LTE Client	Input Name:	nput Name: TempSupplyAirSetpSet (2)							datory 🛚	
_				_						Ü	otional 🗌	
	ription:		<del></del>									
			e VDTTU and d				ating an	id coc	oling set	points, c	ontroller	
		_	ch is valid for the									
DPT:	Name	DPT_Tem	pSupplyAirSetp	Set	DPT ID	224.100	Data	type 1	format			
Field			Description						Sup.	Unit	Default	
	perature		Supply air tem	•		<u> </u>			Υ	°C	CS	
	perature		Supply air tem				nt		Y Y	°C	CS	
	Mode			HVAC Controller Mode, range [020]						enum.	CS	
Emer	gMode		HVAC Emerge	HVAC Emergency Mode, range [05] Y						enum.	CS	
Com	Communication:											
Bin	ding Gro	up:										
Cla	SS		Type				Default					
G	eographic	al 🛚										
A	oplication	Specific	DistrSegmV				1					
Uı	nassigned		Broadcast		Configura	ble 🗌						
DP	Address:		IO Type(ID):		248 (VDT	TU)	Proper	rty ID:		51		
LTE	-Service	(event):	InfoReport Sr	iffer	on Bindin	g Group:						
In	foReport	$\boxtimes$	Timeout:			31	Min					
	E <b>-Service</b> ead – Res	(polling): ponse	Read Wildcard	d/R	esp Sniffer	on Bindi	ng Grou	ıp:				
Value	e after Po	werup:	Defa	ult V	alue 🛚				(	Stored Va	alue 🗌	
Exception Handling: Save at Pow							verdown					
In cas	In case of missing input data (timeout) the SATC will have a company specific behavior.											
Spec	Special Features:											

## 2.3.4.23 Input signal: ValueFreshAirSetp

#### **Standard Mode**

Not applicable.

#### LTE-HEE Mode

FB:	SATC	LTE Client Input Name:			ValueFreshAirSetp						Mandatory ☐ Optional ⊠	
Description:											tional 🔼	
This input is provided by the VDTTU and defines the fresh (outside) air setpoint in percent, which is valid										is valid		
for the SATC controller.												
DPT:	Name	DPT_RelV			DPT ID 202.001		Data	Datatype format		$U_8Z_8$		
Field			Description						Sup.	Unit	Default	
Percei			Value fresh air setpoint						M	%	cs	
Status									M	bitset		
	)fService		Void setpoint value						M	bool	false	
- Overridden			Setpoint value overridden true / false						0	bool	false	
- all ot	her flags		not supported						NA	bool		
Communication:												
Binding Group:												
Class			Туре				Default					
Geographical 🛚												
Application Specific			DistrSegmV				1					
Unassigned			Broadcast Configurable									
DP Address:			IO Type(ID): 248 (VDTTU) Property ID					: 52				
LTE-Service (event):			InfoReport Sniffer on Binding Group:									
Info	InfoReport 🖂		Timeout: 31 Min									
	<b>-Service</b> ad – Res	<b>(polling):</b> ponse□	Read Wildcard / Resp Sniffer on Binding Group:						-			
Value	after Po	werup:	Default Value ⊠					Stored Value				
Exception Handling: Save at Po												
In case of missing input data (timeout) or value 'OutOfService' the SATC will have a company specific												
behavior.												
Special Features:												

# 2.3.4.24 Input signal: ContrMode

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Ventilation Distribution Segment. For further info please refer to clause 2.2.4.32.

# 2.3.4.25 Input signal: EmergMode

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Ventilation Distribution Segment. For further info please refer to clause 2.2.4.33.

# 2.3.4.26 Input signal: AQSetpEff

Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Gen Peripheral Tag. For further info please refer to clause 2.2.4.34.

## 2.3.4.27 Input signal: HumRelSetpHumEff

### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Gen Peripheral Tag. For further info please refer to clause 2.2.4.35.

## 2.3.4.28 Input signal: HumRelSetpDehumEff

### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Gen Peripheral Tag. For further info please refer to clause 2.2.4.36.

## 2.3.4.29 Input signal: AQRoom

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Gen\_Peripheral\_Tag. For further info please refer to clause 2.2.4.38.

# 2.3.4.30 Input signal: HumRelRoom

## Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Gen Peripheral Tag. For further info please refer to clause 2.2.4.39.

## 2.3.4.31 Input signal: TempSupplyAir

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Gen Peripheral Tag. For further info please refer to clause 2.2.4.40.

## 2.3.4.32 Input signal: AQSupplyAir

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Gen\_Peripheral\_Tag. For further info please refer to clause 2.2.4.41.

## 2.3.4.33 Input signal: HumRelSupplyAir

### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC but connected to the Gen Peripheral Tag. For further info please refer to clause 2.2.4.42.

## 2.3.4.34 Input signal: TempOutside

#### Standard Mode / LTE-HEE Mode

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.43

## 2.3.4.35 Input signal: HumRelOutside

## **Standard Mode / LTE-HEE Mode**

**This** optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.44.

# 2.3.4.36 Parameter: DistrSegmV

FB:	SATC	Proper	ty Name ( <u>Server</u> ):	D	istrSegm\	/						datory 🖂
Desc	ription:	<u> </u>										
LTE z	oning infor	mation \	entilation Distribution	on	Segment.							
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002	<u>}</u>	Dat	atype forma	at l	$U_8Z_8$	
Field			Description				S	up.	Range	U	Jnit	Default
Coun	terValue		Ventilation Distribunumber	tio	n Segmen	t		M	131		-	1
Status	s									b	itset	
- Out	OfService		Zone active /inactive	/e				Ο	true/false			false
- all o	ther flags		not supported, fixe	d t	o '0'		١	۱ <u>A</u>				
Comr	nand									е	num	
- Norr	malWrite							M				
- SetC	DSV & Res	etOSV	Set zone inactive /	ac	ctive			O				
- all o	ther comma	ands	not supported				١	۱A				
Com	munication	<b>)</b> :				•				Ī		
DP .	Address:		IO Type(ID):		241 (SAT	C)	Р	rope	rty ID:	1	101	
(in t	he server)		Start-Index:		1		Ν	° of e	elements	1	<u> </u>	
Pro	perty acce	ss:	Read only [			Read/W	rite	;	$\boxtimes$			
Pro	tection		Read level				W	/rite	level		-	
Exce	ption Hand	lling:	Value after Poweru	ıp:	Stored	Value 🛚	Α	ct Va	alue 🔲 🏻 🗈	Defa	ult Value	e 🗌
Spec	ial Feature	s:					_					
SATO	DP's are r	not LTE	communicating if zo	ne	is 'OutOf	Service'.						

# 2.3.4.37 Parameter: DistrSegmH

Same as in AHUC, refer to clause 2.2.4.48.

# 2.3.4.38 Parameter: DistrSegmC

Same as in AHUC, refer to clause 2.2.4.49.

# 2.3.4.39 Parameter: OutsideSensorZone

Same as in AHUC, refer to clause 2.2.4.50.

# 2.3.4.40 Parameter: GenPeripheral

FB: SATC Property	Name ( <u>Server</u> ):	Gen_Periph	eral				datory 🗌 otional 🏻
Description:							7.10110.1
LTE zoning number Gene	ral Peripheral.						
DPT: Name DPT UC	ountValue16_Z	DPT ID	203.012	Dat	atype format	U <sub>16</sub> Z <sub>8</sub>	
	Description	1		Sup.	Range	Unit	Default
CounterValue	peripheral link num	ber		M	full range		1
Status						bitset	
- OutOfService	Zone active /inactiv	re		0	true/false		false
- all other flags	not supported, fixed	d to '0'		NA			
Command						enum	
- NormalWrite				M			
- SetOSV & ResetOSV	Set zone inactive /	active		0			
- all other commands	not supported			NA			
Communication:			-		-		
DP Address:	IO Type(ID):	241 (SATC	;)	Prope	erty ID:	105	
(in the server)	Start-Index:	1		N° of	elements	1	
Property access:	Read only		Read/Wri	ite	$\boxtimes$		
Protection	Read level		1	Write	level		
Exception Handling:	Value after Poweru	p: Stored \	/alue ⊠	Act V	alue 🔲 De	fault Valu	e 🗌
Special Features:							
SATC DP's are not LTE co	SATC DP's are not LTE communicating if zone is 'OutOfService'.						

# 2.3.4.41 Diagnostic data: TempOutsideAct

Same as in AHUC, but Property ID 112, refer to clause 2.2.4.54.

# 2.3.4.42 Diagnostic data: Fault

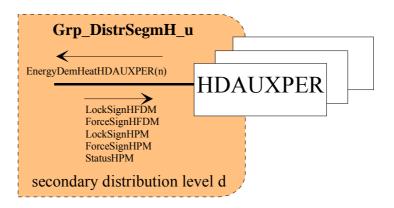
Same as in AHUC, but Property ID 113, refer to clause 2.2.4.57.

# 2.3.4.43 Diagnostic data: FanActive

Same as in AHUC, but Property ID 114, refer to clause 2.2.4.58.

## 2.4 Functional Block: Auxiliary Heating Demand Percent (HDAUXPER)

The HDAUXPER represents an auxiliary "multi-purpose" control sequence of a hot water consumer and connects to the hot water distribution system. The HDAUXPER can be used to model very specific / "exotic" hot water consumers in connection with heating coils which do not belong to the category "Heating Zone Controller" (e.g. pre-heater etc.).



# 2.4.1 Description

The Auxiliary Heating Demand Percent HDAUXPER represents the EnergyDemHeat in the Hot Water Distribution Segment.

Calculation of the EnergyDemHeat (and any control loop mechanism) is company specific and not part of this specification.

The Auxiliary Heating Demand Percent HDAUXPER connects via HDTAHU to the HFDM.

For an overview please refer to clause 2.6.

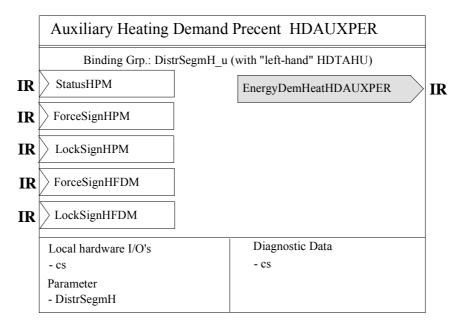
### 2.4.2 Constraints

IMPORTANT: reporting of the hot water demand signal EnergyDemHeatHDAUXPER by the HDAUXPER can today not be implemented in Standard Mode because the necessary compound HVAC DPT for runtime-interworking is not yet available in Standard Mode

Therefore for the time being only LTE implementations of the HDAUXPER functional block offer a link to a demand dependent hot water distribution via Hot Water Demand Transformer Air Handling Unit (HDTAHU).

HDAUXPER implementations in Standard Mode are currently not meaningful.

# 2.4.3 Functional Block diagram



Ventilation, AC

# 2.4.4 Description of the Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
EnergyDemHeat HDAUXPER	Hot water demand in percent to be sent to the HDTAHU	DPT_ActPosDemAbs DPT_Percent_U8	207.104 5.004
Inputs			
StatusHPM	Status information from Hot Water Production Manager	DPT_StatusHPM	209.100
ForceSignHPM	Forcing signal from Hot Water Production Manager, to force consumer to consume more energy	DPT_ForceSign	21.100
LockSignHPM	Locking signal from Hot Water Production Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
ForceSignHFDM	Forcing signal from Heating Flow Demand Manager, to force consumer to consume more energy	DPT_ForceSign	21.100
LockSignHFDM	Locking signal from Heating Flow Demand Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
Parameters			
DistrSegmH	LTE zoning number Hot Water Distribution Segment	DPT_UCountValue8_Z	202.002
Diagnostic Data			

			STANDARD MODE	<b>Е</b> хте <b>М</b> С	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	EnergyDemHeat HDAUXPER	$GO_b$	GO	GO	M
Inputs	StatusHPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignHPM	NA <sup>1</sup> )	NA	NA	О
	LockSignHPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignHFDM	NA <sup>1</sup> )	NA	NA	О
	LockSignHFDM	NA <sup>1</sup> )	NA	NA	О

<sup>&</sup>lt;sup>1)</sup> the information is NA in the Basic FB and all other modes because the datapoint type is <u>today</u> not yet available in Standard Mode. Splitting of DPT is not possible because of necessary data consistency

Table 7: HDAUXPER Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DistrSegmH	M

**Table 8: HDAUXPER LTE specific Properties** 

	Support
Parameter	 
Diagnostic Data	 

Table 9: HDAUXPER Standard Properties of Interface Objects (or memory mapped DP)

# 2.4.4.1 Output EnergyDemHeatHDAUXPER

# **Standard Mode**

HD	ergyDemHeat AUXPER		Abbr.:				Manda	atory	
FB Name: HD	AUXPER						Can b	e internal	
Description									
see LTE-HEE mo	de, only % val	ue, no dema	nd validit	y, load p	riority	or emerge	ency dema	and attribu	tes.
Datapoint Type									
	PT_Percent_L	J8							
DPT Format: U	•					DPT_ID:	5.004		
Field D	escription					Supp.	Range	Unit [	Default
		S	ee LTE-H	EE mod	le				
Access Type									
♦ Output									
this $\rightarrow$ M	□  th	$nis \rightarrow 1$	$\boxtimes$						
Spontaneous	⊠ COV:	$\boxtimes$	Δ-Value:	10%	Mi	n repetitio	n period:	10s	
	Cyclic	$\square$	Period:	15 Mi	n				
Request									
Communication	Туре								
♦ Group Object	Datapoint						Mandator	γ:   🗵	
Default Group	Address:								
Dynamics									
Power down:	Save:								
Power up:	Value:	No initialisat				ılt value:			
		Saved value	):		Actua	I value (n	ot for input	t): 🛛	
	Transmit on	bus (only for	output):		Read	from bus	(only for ir	nput):	
<b>Exception Handl</b>	ling								
<b>Special Features</b>									

### LTE-HEE Mode

FB: HDAUXP L1 ER Na	ΓE Serve ame:	er Output	r Output EnergyDemHeatHDAUXPER Mandatory ☐ Optional ☐						
Description:			-					·	
This output signal c							. It is ser	t via the	
HDTAHU to the HF									
	PT_Act	PosDemAbs	DPT ID	207.10	4 Da	tatype	format		
Field	I	Description		Sup.	Range	)	Unit	COV	Default
ActPosDemAbs		Calculated heat (100% = max. c		0	0100		%	10	0
Attributes					]				
<ul><li>DemValid</li></ul>	'	Validity of heati	ng demand	M	true/fa	lse	bool	Υ	false
<ul><li>AbsLoadPriority</li></ul>		Absolute load p		0	true/fa	lse	bool	Υ	false
		requested by H							
<ul><li>ShiftLoadPriority</li></ul>		Shift load priorit HDAUXPER	ty requested by	0	true/fa	lse	bool	Y	false
<ul><li>– EmergDem</li></ul>	l l	Emergency hea		0	true/fa	lse	bool	Υ	false
	ı	plant / room pro	otection						
Communication:									
Binding Group:									
Class		Туре				Defau	ult		
Geographical									
Application Spec	cific 🖂	DistrSegmH				1			
Unassigned		Broadcast	Configura	able 🗌					
DP Address:		IO Type(ID):	146 (HDAUXPE	ER)	Prope	erty ID	):	51	
LTE-Services (ev	/ent):	COV 🖂	MinRepTim	e:	10 s	ес	Hear	beat:	15 min
InfoReport	Ø	Output per de	fault communica	ting 🗌	Bindi	ng Gr	oup Wilde	card allov	wed $\square$
(LTE Read-Resp		Tx Prio:	High 🗌			rmal		Lov	
polling of the out	tput								
shall always be		Transm after I	Powerup: Stored	l Value		Act Va	lue 🖂 🗆	Default V	/alue □
supported)									
Property-Service		Read only	$\boxtimes$	Read/\	Vrite	Г	1		
(individual acces								·	. —
<b>Exception Handlin</b>	ıg:						Save	at Power	down
Special Features:									

## 2.4.4.2 Input signal: StatusHPM

# **Standard Mode**

Not applicable.

## LTE-HEE Mode

This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.13.

# 2.4.4.3 Input signal: ForceSignHPM

## **Standard Mode**

Not applicable.

## LTE-HEE Mode

This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.14.

# 2.4.4.4 Input signal: LockSignHPM

## **Standard Mode**

Not applicable.

### LTE-HEE Mode

This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.15.

## 2.4.4.5 Input signal: ForceSignHFDM

### **Standard Mode**

Not applicable.

### LTE-HEE Mode

This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.16.

## 2.4.4.6 Input signal: LockSignHFDM

### **Standard Mode**

Not applicable.

### LTE-HEE Mode

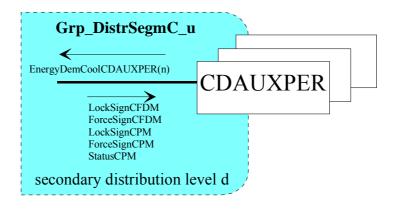
This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.17.

## 2.4.4.7 Parameter: DistrSegmH

FB: HDAUXP Proper	ty Name ( <u>Server</u> ): DistrSegmH				datory 🛚 otional 🔲
Description:					
LTE zoning information I	lot Water Distribution Segment.				
<b>DPT</b> : Name DPT_U	CountValue8_Z DPT ID 202.00	2 Dat	tatype forma	at U <sub>8</sub> Z <sub>8</sub>	
Field	Description	Sup.	Range	Unit	Default
CounterValue	Hot Water Distribution Segment number	M	131		1
Status				bitset	
- OutOfService	Zone active /inactive	0	true/false		false
- all other flags	not supported, fixed to '0'	NA			
Command				enum	
- NormalWrite		M			
- SetOSV & ResetOSV	Set zone inactive / active	0			
- all other commands	not supported	NA			
Communication:					
DP Address:	IO Type(ID): 146 (HDAUXPER)	) Prope	erty ID:	101	
(in the server)	Start-Index: 1	N° of	elements	1	
Property access:	Read only Read/V	Vrite	$\boxtimes$		
Protection	Read level	Write	level		
<b>Exception Handling:</b>	Value after Powerup: Stored Value 🗵	Act V	alue 🔲 🏻 🗈	Default Valu	e 🗌 💮
Special Features:					
HDAUXPER DP's are no	t LTE communicating if zone is 'OutOfSe	ervice'.			

# 2.5 Functional Block: Auxiliary Cooling Demand Percent (CDAUXPER)

The CDAUXPER represents an auxiliary "multi-purpose" control sequence of a cold water consumer and connects to the cold water distribution system. The CDAUXPER can be used to model very specific / "exotic" cold water consumers in connection with cooling coils which do not belong to the category "Cooling Zone Controller" (e.g. cooling of a sole etc.).



# 2.5.1 Description

The Auxiliary Cooling Demand Percent CDAUXPER represents the EnergyDemCool in the Cold Water Distribution Segment.

Calculation of the EnergyDemCool (and any control loop mechanism) is company specific and not part of this specification.

The Auxiliary Cooling Demand Percent CDAUXPER connects via CDTAHU to the CFDM.

For an overview please refer to clause 2.7.

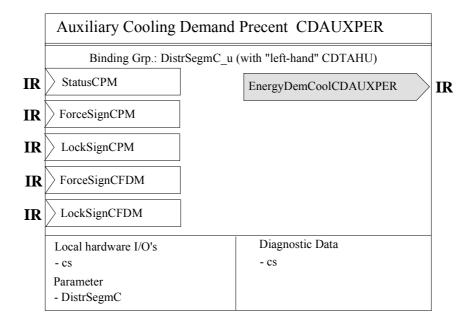
### 2.5.2 Constraints

IMPORTANT: reporting of the cold water demand signal EnergyDemCoolCDAUXPER by the CDAUXPER can today not be implemented in Standard Mode because the necessary compound HVAC DPT for runtime-interworking is not yet available in Standard Mode

Therefore for the time being only LTE implementations of the CDAUXPER functional block offer a link to a demand dependent cold water distribution via Cold Water Demand Transformer Air Handling Unit (CDTAHU).

CDAUXPER implementations in Standard Mode are currently not meaningful.

# 2.5.3 Functional Block diagram



Ventilation, AC

# 2.5.4 Description of the Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
EnergyDemCool CDAUXPER	Cold water demand in percent to be sent to the CDTAHU	DPT_ActPosDemAbs DPT_Percent_U8	207.104 5.004
Inputs			
StatusCPM	Status information from Cold Water Production Manager	DPT_StatusCPM	209.102
ForceSignCPM	Forcing signal from Cold Water Production Manager, to force consumer to consume more energy	DPT_ForceSignCool	21.101
LockSignCPM	Locking signal from Cold Water Production Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
ForceSignCFDM	Forcing signal from Cooling Flow Demand Manager, to force consumer to consume more energy	DPT_ForceSignCool	21.101
LockSignCFDM	Locking signal from Cooling Flow Demand Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
Parameters			
DistrSegmC	LTE zoning number Cold Water Distribution Segment	DPT_UCountValue8_Z	202.002
Diagnostic Data			

			STANDARD MODE	Exte Mo	NDED DDE
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	EnergyDemCool CDAUXPER	$GO_b$	GO	GO	M
Inputs	StatusCPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignCPM	NA <sup>1</sup> )	NA	NA	О
	LockSignCPM	NA <sup>1</sup> )	NA	NA	О
	ForceSignCFDM	NA <sup>1</sup> )	NA	NA	О
	LockSignCFDM	NA <sup>1</sup> )	NA	NA	О

<sup>&</sup>lt;sup>1)</sup> the information is NA in the Basic FB and all other modes because the datapoint type is <u>today</u> not yet available in Standard Mode. Splitting of DPT is not possible because of necessary data consistency

Table 10: CDAUXPER Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DistrSegmC	M

**Table 11: CDAUXPER LTE specific Properties** 

	Support
Parameter	 
Diagnostic Data	 

Table 12: CDAUXPER Standard Properties of Interface Objects (or memory mapped DP)

# 2.5.4.1 Output EnergyDemCoolCDAUXPER

# **Standard Mode**

FB Name: CDAUXPER	DP Name:		rgyDemCool AUXPER		Abbr.:				1	Manda	itory		
See LTE-HEE mode, only % value, no demand validity, load priority or emergency demand attributes.    Datapoint Type	FB Name:	CDA	AUXPER						(	Can be	e intern	al	
Datapoint Type         DPT_Name:       DPT_Parcent_U8         DPT Format:       U <sub>8</sub> Field       Description         See LTE-HEE mode         Access Type         ◆ Output       this → 1         Spontaneous       COV:       △ -Value:       10%       Min repetition period:       10s         Request       △         Communication Type         ◆ Group Object Datapoint       Mandatory:         Default Group Address:          Dynamics         Power down:       Save:         Power up:       Value:       No initialisation:       Default value:         Saved value:       Actual value (not for input):       Colspan="5">C													
DPT_Name: DPT_Percent_U8   DPT Format: U <sub>8</sub> DPT_ID: 5.004   Field Supp. Range Unit Default   see LTE-HEE mode   Access Type   ◆ Output this → 1 △   Spontaneous COV: △ A-Value: 10% Min repetition period: 10s   Cyclic Period: 15 Min   Request   Communication Type   ◆ Group Object Datapoint Mandatory: △   Default Group Address:   Dynamics Power down: Save: □   Power up: Value: No initialisation: □ Default value: □   Saved value: □ Actual value (not for input): □   Transmit on bus (only for output): □ Read from bus (only for input): □    Exception Handling			de, only % val	ue, no dema	and validit	y, load p	riority	or emerg	ency	dema	nd attri	butes.	
DPT Format: U <sub>8</sub>													
Supp.   Range   Unit   Default				J8									
See LTE-HEE mode  Access Type  ◆ Output  this → M	DPT Format							_	: !	5.004			
Access Type   this → M this → 1   Spontaneous COV:	Field	De	escription					Supp.	Rar	nge	Unit	Defa	ult
♦ Output   this → M □ this → 1 □   Spontaneous □ COV: □ □ ∆-Value: 10% Min repetition period: 10s   Cyclic □ Period: 15 Min   Request □   Communication Type   ♦ Group Object Datapoint Mandatory: □   Default Group Address:   Power down: Save: □ Power down: Save: □   Power up: Value: No initialisation: □ Default value: □   Saved value: □ Actual value (not for input): □   Transmit on bus (only for output): □ Read from bus (only for input): □    Exception Handling				S	ee LTE-H	EE mod	le						
this → M	Access Typ	е											
Spontaneous	♦ Output												
Cyclic	$\text{this} \to M$		th	$nis \rightarrow 1$	$\boxtimes$								
Request	Spontane	Spontaneous   COV:   Δ-Value:   10%   Min repetition period:   10s											
Communication Type  ◆ Group Object Datapoint					Period:	15 Mi	n						
◆ Group Object Datapoint Mandatory:   Default Group Address:    Power down:  Power up:  Value:  No initialisation:  Saved value:  Saved value:  Transmit on bus (only for output):  Read from bus (only for input):  Exception Handling   Mandatory:  Default value:  Actual value (not for input):  Read from bus (only for input):  Default value:  Read from bus (only for input):  Default value:  Actual value (not for input):  Default value:  Actual value (not for input):  Default value:  Actual value (not for input):  Default value:  No initialisation:  Read from bus (only for input):  Default value:  No initialisation:  No initialisation:  Saved value:  Read from bus (only for input):  Default value:  No initialisation:  No initia													
Default Group Address:	Communica	ation <sup>-</sup>	Гуре										
Dynamics         Power down:       Save:	♦ Group C	bject	Datapoint						Mar	ndator	y: 🛛 🖂	<u>l</u>	
Power down: Save:  Power up: Value: No initialisation: Default value:  Saved value: Actual value (not for input):  Transmit on bus (only for output): Read from bus (only for input):  Exception Handling	Default G	roup .	Address:	-									
Power up:    Value:   No initialisation:   Default value:       Saved value:   Actual value (not for input):       Transmit on bus (only for output):   Read from bus (only for input):       Exception Handling	Dynamics												
Saved value:  Transmit on bus (only for output):  Exception Handling	Power do	wn:	Save:										
Transmit on bus (only for output): Read from bus (only for input):  Exception Handling	Power up	):	Value:	No initialisat	tion:		Defau	ılt value:					
Exception Handling				Saved value	e:		Actua	I value (n	ot for	r input	): 🛛		
				bus (only for	output):		Read	from bus	(only	y for in	put):		
Special Features	<b>Exception F</b>	łandli	ng										
Special Features													
	Special Fea	tures											

### LTE-HEE Mode

FB:			er Output	EnergyDemCo	olCDA	UXPE	R			Mandatory ⊠ Optional □		
<u> </u>	ER	Name:										
	ription:	11	Alana and Parasi alam			<u> </u>	IVDED	14 !	4! - 41	ODTALIL		
				nand (in percent)			UXPER	. It is sen	t via the	CDTAHU		
				ater Distribution								
DPT:	Name	IDPI_AC	tPosDemAbs	DPT ID	207.10			format		D ( 1)		
Field			Description			Rang		Unit	COV	Default		
ActPo	sDemAbs		Calculated cool (100% = max. c		0	010	00	%	10	0		
Attribu	utes								1			
– DemValid			Validity of cooling	ng demand	М	true/	false	bool	Υ	false		
- Abs	LoadPriorit	v	Absolute load p		0	true/	false	bool	Υ	false		
		,	requested by C									
- Shif	tLoadPriori	ty		ty requested by	0	true/	false	bool	Υ	false		
			CDAUXPĖR	, ,								
<ul><li>– EmergDem</li></ul>			Emergency coo	oling demand for	0	true/	false	bool	Υ	false		
			plant / room pro	lant / room protection								
Comr	nunication	:			-	-		-	-			
Bind	ding Group	<b>)</b> :										
Clas	S		Туре				Defa	ult				
Ge	eographical											
Ар	plication S	oecific 🛚	DistrSegmC				1					
Un	assigned		Broadcast 🗌	Configura	able 🗌							
DP /	Address:		IO Type(ID):	210 (CDAUXPI	ER)	Pro	perty IE	):	52 <sup>1)</sup>			
LTE	-Services	(event):	COV 🖂	MinRepTim		10	sec	Hear	beat:	15 min		
	oReport	Ĭ	Output per de	fault communica		Bin	ding Gr	oup Wilde		wed $\square$		
	ΓΕ Read-R		Tx Prio:	High [	<u> </u>		Normal		Lov			
рo	lling of the	output	-	<u> </u>						_		
sh	all always b	e .	Transm after	Powerup: Stored	l Value		Act Va	lue 🛛	Default V	/alue □		
su	pported)			·								
Pro	perty-Serv	ice	Read only	$\bowtie$	Read/	∧/rita		7				
	ividual acc		Tread only		1 Cau	vviile	<u> </u>					
Exce	otion Hand	lling:						Save a	at Power	down		
	al Feature											
1) Coi	nsistency to	all Energ	yDemCool si	gnals as Property	y Identi	fier 52	2					

## 2.5.4.2 Input signal: StatusCPM

# **Standard Mode**

Not applicable.

## LTE-HEE Mode

This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.18.

# 2.5.4.3 Input signal: ForceSignCPM

## **Standard Mode**

Not applicable.

## LTE-HEE Mode

This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.19.

# 2.5.4.4 Input signal: LockSignCPM

## **Standard Mode**

Not applicable.

### LTE-HEE Mode

This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.20.

## 2.5.4.5 Input signal: ForceSignCFDM

### **Standard Mode**

Not applicable.

### LTE-HEE Mode

This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.21.

## 2.5.4.6 Input signal: LockSignCFDM

### **Standard Mode**

Not applicable.

### LTE-HEE Mode

This optional signal is described in the Functional Block AHUC. For further info please refer to clause 2.2.4.22.

## 2.5.4.7 Parameter: DistrSegmC

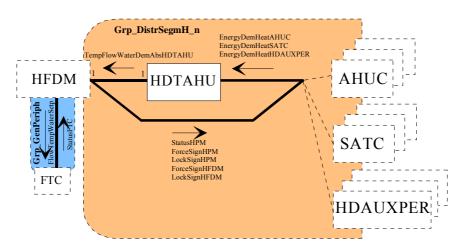
FB: CDAUXP Proper	rty Name ( <u>Server</u> ): D	DistrSegmC					Mandatory ⊠ Optional □
Description:							
LTE zoning information	Cold Water Distribution	n Segment.					
<b>DPT</b> : Name DPT_U	CountValue8_Z	DPT ID	202.002	Dat	atype form	nat U <sub>8</sub> 2	$Z_8$
Field	Description			Sup.	Range	Uni	t Default
CounterValue	Cold Water Distributi number	ion Segment		M	131		1
Status						bits	et
- OutOfService	Zone active /inactive	!		Ο	true/false		false
- all other flags	not supported, fixed to '0'						
Command						enu	ım
- NormalWrite							
- SetOSV & ResetOSV	Set zone inactive / active						
- all other commands	not supported	not supported					
Communication:	1						
DP Address:	IO Type(ID):	210 (CDAL	XPER)			101	İ
(in the server)	Start-Index:	1			elements	1	
Property access:	Read only		Read/W		$\boxtimes$		
Protection	Read level			Write			
<b>Exception Handling:</b>	Value after Powerup	: Stored V	alue 🖂	Act V	alue 🗌	Default	t Value 🗌
<b>Special Features:</b>							
CDAUXPER DP's are no	ot LTE communicating	if zone is 'C	utOfSer	vice'.	<u>'</u>	·-	· ·

# **2.6** Functional Block: Heating Demand Transformer for air handling units (HDTAHU)

## 2.6.1 Description

The Functional Block HDTAHU is converting the heating demand signals of the air handling unit controllers (SATC or AHUC) and from Auxiliary Heating Demand Percent (HDAUXPER) into a heating flow temperature for the Heating Flow Demand Manager HFDM. It may be a demand compensated curve with minimum and maximum values, which is additionally outside air temperature compensated. This convert algorithm is company specific and not part of this description.

There may be several Supply Air Temperature Controllers SATC, Air Handling unit Controllers AHUC or Auxiliary Heating Demand Percent HDAUXPER in the same distribution segment, but there is a 1: 1 connection between the Heating Demand Transformer HDTAHU and the Heating Flow Demand Manager HFDM. (Refer also clause 2.1 Overview)



The Heating Demand Transformer HDTAHU does not have to know which and how many consumers (SATC, AHUC, or HDAUXPER) are allocated in the Distribution Segment. So the HDTAHU has no list of all the SATC, AHUC, or HDAUXPER connected to it. Therefore adding or removing of air handler (heat consumers) is simple. It is not necessary to store all the EnergyDemHeat... signals from all connected air handlers in the Heating Demand Transformer HDTAHU. Due to the heartbeat reception of the SATC, AHUC, or HDAUXPER demand signals, it is sufficient to have a dynamic process of the most relevant demands. The optional diagnostic value ValueEnergyDemHeatAct represents the value of this calculation. This algorithm is company specific and not part of this description.

The calculation of the resulting flow temperature demand output depending on heat demand signal inputs is not part of the KNX certification.

To insure interworking to following section describes a **recommended procedure** to calculate the resulting hot water flow temperature demand (TempFlowWaterDemAbsHDTAHU). The mechanism is complex and may also depend on company specific needs and parameter settings.

## Plug & Play mechanism in the LTE-HEE implementation:

Remark: This mechanism is only possible in LTE-HEE implementations.

HDTAHU functionality can today not be implemented in Standard Mode since the necessary DPT are not available in Standard Mode.

If DPT\_TempFlowWaterDemAbs would be available in the Standard Mode in the future, there would be still some restrictions concerning the implementation.

Reason:

In the shared variable model (e.g. S-mode) implementation all "partners" of the HDTAHU have to be linked and separate Group Addresses must be assigned for each Demand input signal. The number of "partners" has to be defined at design time of the product.

The HDTAHU does not need to know which and how many consumers are allocated in the Hot Water Distribution Segment.

Due to the heartbeat repetition of the EnergyDemHeat... signals, it is sufficient to have a dynamic process image of the N temporary "most relevant" demands.

## Structure of the Main List (recommendation, manufacturer specific solution)

	Main List												
Entry N°	Energy DemHeat	Attrib: - DemValid - AbsLoadPriority - ShiftLoadPriority - EmergDem	Source FB Type and Instance	Source Individual Addr	Timeout								
1													
2													
$N \ge 4$													

Criteria for a new entry in the main list of the most relevant signals:

- 1. first check if there is already an entry in the list with the same sender (source individual address) If Yes: delete the entry in the list (in the next steps the new data will be entered instead)
- 2. check the DemValid attribute

Signals with DemValid = false ("no demand") are ignored and not further processed (deleted from the list)

If DemValid = true: If there is still free space in the list (void entries) the signal is inserted in the list.

3. The following rules apply if the new signal has DemValid = true and all entries in the list are valid. One of the entries may be replaced in the following cases:

Check the attribute EmergDem:

This attribute must be considered with the highest priority because the EnergyDemHeat of the consumers who request emergency demand is in this case relevant.

Check the attribute AbsLoadPriority:

This attribute must be considered with second priority because the EnergyDemHeat of the consumers who request load priority is in this case relevant.

Check the attribute ShiftLoadPriority:

This attribute must be considered with thrid priority because the EnergyDemHeat of the consumers who request shift load priority are prioritised and all other consumers with no priority attributes (AbsLoasPriority or ShiftLoadPriority) have to reduce their energy consumption.

Check the EnergyDemHeat value with forth priority. The higher the value the more relevant the signal is.

4. If one of the entries in the main list has a timeout, than this entry shall be deleted.

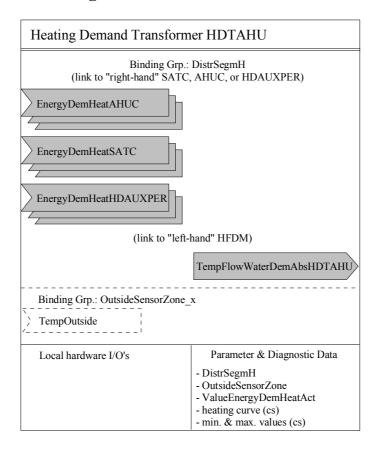
A void entry in the list is marked with the attribute DemValid = false.

## 2.6.2 Constraints

IMPORTANT: reporting of the Hot Water Demand signal TempFlowWaterDemAbsHDTAHU by the HDTAHU can <u>today</u> not be implemented in **Standard Mode** because the necessary compound HVAC DPT for runtime-interworking is not yet available in **Standard Mode** 

Therefore for the time being only LTE implementations of the HDTAHU functional block offer a link to a <u>demand dependent</u> hot water distribution (HFDM) and hot water production system (HPM). HDTAHU implementations in **Standard Mode** must therefore rely on an "autonomous" hot water production / hot water distribution system which provides sufficient hot water flow temperature.

# 2.6.3 Functional Block diagram



# 2.6.4 Description of the Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
TempFlowWaterDem AbsHDTAHU	Resulting flow water temperature demand to be sent to the HFDM	DPT_TempFlowWater DemAbs	210.100
Inputs			
EnergyDemHeat	Air handler unit hot water demand from AHUC and/or SATC and/or HDAUXPER in percent (LTE and S-interface)	DPT_ActPosDemAbs DPT_Percent_U8	207.104 5.004
TempOutside	Outside air temperature sensor	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Parameters			
DistrSegmH	Hot Water Distribution Segment	DPT_UCountValue8_Z	202.002
OutsideSensorZone	Outside Sensor Zone	DPT_UCountValue8_Z	202.002
Diagnostic Data			
ValueEnergyDem HeatAct	Calculation of actual ValueEnergyDemHeat signal	DPT_Percent_U8	5.004

			STANDARD MODE	EXTEN MOD	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	TempFlowWaterDemAbs HDTAHU	NA <sup>1</sup> )	NA	NA	M
Inputs	EnergyDemHeat	$(\mathbf{GO_b})^2$		$(GO)^2$	$M^2$ )
	TempOutside	(GO <sub>b</sub> )		(GO)	О

<sup>&</sup>lt;sup>1)</sup> the information is NA in the Basic FB and all other modes because the datapoint type is <u>today</u> not yet available in Standard Mode. Splitting of DPT is not possible because of necessary data consistency

**Table 13: HDTAHU Runtime Interworking - dependence on Configuration Modes** 

<sup>&</sup>lt;sup>2</sup>) It is not necessary to have mandatory EnergyDemHeat... signals from AHUC, SATC as well as from HDAUXPER, so it may be possible to have only demands from any source (e.g. SATC).

		Support
Parameter	DistrSegmH	M
	OutsideSensorZone	О

**Table 14: HDTAHU LTE specific Properties** 

		Support
Parameter		
Diagnostic Data	ValueEnergyDemHeatAct	О

Table 15: HDTAHU Standard Properties of Interface Objects (or memory mapped DP)

# **2.6.4.1** Output signal: TempFlowWaterDemHDTAHU Standard Mode

Not applicable.

# LTE-HEE Mode

FB:	HDT	LTE	Server	Output Name:	TempFlowV	/aterD	emA	bs	HDTAHU				itory 🔯
	AHU			Optional									
	Description: This output process signal contains the flow temperature heating demand (absolute value) and the												
										val	ue) a	and the	)
				I the Heating Flow							١/ ٦		
DPT:	Name		_ i emp nAbs	FlowWater	DPT ID	210.1	00	Da	atatype form	nat	V <sub>16</sub> E	3 <sub>16</sub>	
Field			Descr				Su		Range	Un		COV	Default
	FlowDem		Flow t	emperature dema	and (setpoint	)	M	l	full range	°C		2K	cs
Attrib													
	mand Vali			lity of TempFlowDemand					true/false	bo		Y	false
	sLoadPrio			ute load priority			0		true/false	bo	-	Y	false
	ftLoadPric			oad priority			0		true/false	boo		Y	false
				FlowDem contain rature limit <sup>1</sup> )	s max.		0	)	true/false	boo	OI	Y	false
– Min	TempLim	it		FlowDem contain rature limit <sup>2</sup> )	s min.		0	)	true/false	boo	ol	Y	false
– DH	WReq			demand from DH\	W. for DHW	onlv	N/	4	false	boo	ol	N	false
	omCtrlRed	1		nd from room hea			N/		false	boo		N	false
	ntReq	•		nd from ventilatio		3	0		true/false	boo		N	true
	κAllSeasoι	nReq	Dema	nd from auxiliary	heat consum	ner, all	0	)	true/false	boo	ol	N	false
			seaso										
– Sys	stemPump	Req		est for water circu ution segment	lation in the		0	)	true/false	boo	ol	Y	false
– Em	ergDem			rgency heat demand for room frost O					true/false	boo	ol	Υ	false
	3		protec										
– DH	<b>WLegioRe</b>	eq	for DH	IW only			N/	٩	false	boo	ol	N	false
	municatio												
	ding Gro	up:		_					1				
Cla				Туре					Default				
	eographic		<u> </u>						,				
	oplication		fic 🔼	DistrSegmH 3)			<del></del>		1				
	nassigned			Broadcast	Configu			<b></b>			<b>-</b> 4		
	Address:		4\-	IO Type(ID):	152 (HDT				perty ID:	laai	51 rtbea	.1. 1	5 min
	E-Services foReport	s (eve	ent):	Output per defau	MinRepTir				sec F ling Group \				
""	ioixepoit			Tx Prio:	High	ating [			ormal 🖂	VVIIC	icarc	Low	
(1	TE Read-	Resno	nnse	TX PIIU.	підіі 🗀			IN	omai 🖂			LOW	
po sh su	olling of the nall always upported)	e outp		Transm after Po	werup: Store	ed Valu	ıe 🗌		Act Value [	$\boxtimes$	Defa	ault Va	lue 🗌
	perty-Ser		_	Read only	$\boxtimes$	Read	1/Writ	te					
	lividual a			Ttoda offiy			A7 V V 1 1 1						
Exce	ption Har	ndling	J:						S	ave	at P	owerdo	own
	ial Featur												
. 11				um flow temperat									
				nit in this hydraulid									
	This value sets a minimum flow temperature limit for the Heating Flow Demand Transformer HFDM. It is a low temperature limit in this hydraulic circuit. High temperature limits have priority.												
	The in- and output signals of this functional Blocks are in the same Hot Water Distribution Segment												
				n between HDTA			Juille	U 1 1	or water Di	i Julik	Julio	Gegi	HOTH

# 2.6.4.2 Input signal: EnergyDemHeat...

This is the common description of all the demand signals from the AHUC, SATC, or HDAUXPER.

# **Standard Mode**

DF	Name:	Ener	EnergyDemHeat   Abbr.:     Mandatory   [												
FΒ	Name:	HDT	AHU								С	an be	interna	al	
	Description														
se	see LTE-HEE mode, only % value, no demand validity, load priority or emergency demand attributes.														
	tapoint Ty														
	DPT_Name: DPT_Percent_U8														
	T Format:	U <sub>8</sub>								T_ID:		.004			
Fie	eld	_	scription						Su	op.	Rang	ge	Unit	Defa	ult
		_	LTE-HEE	mode,	without	attributes									
Ac	cess Type														
<b>♦</b>	Input														
	$N \rightarrow this$			$1 \rightarrow th$	is 🛭	<u> </u>									
	Spontaneo	us			Cyclical	lly:	$\boxtimes$			Time-	-out:		31 mii	n	
	Request				Polling:					Perio	d:				
Co	mmunicat	ion T	уре												
<b>♦</b>	Group Ob	ject [	Datapoint								Man	datory	: 🛛		
	Default Gro	oup A	ddress:												
Dy	namics														
	Power dow	n:	Save:												
	Power up:		Value:		itialisatio	on:		Defau							
		_		Save	d value:			Actua	al va	lue (no	ot for	input)			
			Transmit or	n bus (e	only for o	output):		Read	fror	n bus	(only	for inp	out):		
Ex	ception Ha	ndlir	ng												
Sp	ecial Featu	ıres													

## LTE-HEE Mode

FB: HDT AHU	LTE Client	Input Name:	nput Name: EnergyDemHeat								
Description:	Description: This input process signal contains the heating demand (in percent) and the attributes validity, load										
This input production priorities and e Controller AHL	mergency de	emand from the	Supply Air Te	mperature							
<b>DPT</b> : Name	DPT_ActP	osDemAbs	DPT ID	207.104	Datatype	format	U <sub>8</sub> B <sub>8</sub>				
Field		Description				Sup.	Unit	Default			
ActPosDemAb	S	Calculated he demand)	ating demand	(100% = ma	ax.	M	%	cs			
Attributes  – DemValid  – AbsLoadPrio	rity	Validity of hea Absolute load or HDAUXPEI	priority reques	sted by AHL	JC, SATC,	M O	bool bool	false false			
<ul><li>ShiftLoadPrid</li></ul>	ority	Shift load prio	rity requested	by AHUC, S	SATC, or	0	bool	false			
– EmergDem			Emergency demand for plant / room frost O b protection requested by AHUC, SATC, or HDAUXPER								
Communication	on:	<del>-</del>				-	-				
Binding Gro	up:										
Class		Туре			Default						
Geographic Application		DistrSegmH									
Unassigned		Broadcast	Configur	able 🗀 🗀							
DP Address	:	IO Type(ID):	240 (ÄH 241 (SA 146 (HDAUX	UC) TC) (PER)	Property ID	):	51				
LTE-Service	· <u>-</u>		niffer on Bindi			-					
InfoReport		Timeout:		31 N	/lin						
LTE-Service Read – Res		Read Wildcard	d / Resp Sniffe	er on Binding	g Group: -	-					
Value after Po	werup:	Defa	ult Value 🛚		-	5	Stored Val	ue 🗌			
<b>Exception Hai</b>							verdown				
The HDTAHU will use a company specific default value after power-up or in case of communication failure, if no data from AHUC, SATC, or HDAUXPER is received (normally: DemValid = false).											
Special Featu		,		(	<u> </u>						

# 2.6.4.3 Input signal: TempOutside

Same as in AHUC, refer to clause 2.2.4.43 2

# 2.6.4.4 Parameter: DistrSegmH

FB:	HDT	Property	Name ( <u>Server</u> ):	D	istrSegml	1					datory 🛚
	AHU									Op	otional 🔝
Descr	iption:									·-	
LTE z	oning info	rmation F	lot Water Distribution	n :	Segment						
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002		Dat	atype format	U <sub>8</sub> Z <sub>8</sub>	
Field			Description					p.	Range	Unit	Default
CounterValue			Hot Water Distribution Segment				M		131		1
			number								
Status										bitset	
- OutOfService			Zone active /inactive					)	true/false		false
- all of	her flags		not supported, fixed to '0'				N/	١_			
Command										enum	
- Norn	nalWrite						M				
- SetC	SV & Re	setOSV	Set zone inactive / active				0	)			
- all of	her comr	nands	not supported				N/	4			
Comn	nunicatio	n:	-			<del>_</del>					=
DP /	Address:		IO Type(ID):		152(HDTA	AHU)	Pro	ре	rty ID:	101	
(in t	he serve	r)	Start-Index:		1		N°	of e	elements	1	
Prop	perty acc	ess:	Read only			Read/W	rite		$\boxtimes$		
Prot	ection		Read level				Wr	ite	level		
Excep	Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐									e 🗌	
	-										
Speci	al Featur	es:									
HDTA	HDTAHU DP's are not LTE communicating if zone is 'OutOfService'.										

# 2.6.4.5 Parameter: OutsideSensorZone

FB: HDT		Property	/ Name ( <u>Server</u> ):	OutsideSensorZone							Mandatory _	
AHL	J										Ор	tional 🛚
Description	n:											
LTE zoning	g nun	nber for t	he link with an Outsi	de	Temperat	ure Sens	or					
DPT: Na	ame	DPT_U	countValue8_Z		DPT ID	202.002	<u>-</u>	Data	atype forma	ıt U	<sub>8</sub> Z <sub>8</sub>	
Field			Description					up.	Range	Un	nit	Default
CounterValue			Outside sensor zor	ne	number			M	131			1
Status									bit	set		
- OutOfService			Zone active /inactive					0	true/false			false
- all other f	lags		not supported, fixed to '0'					۱A				
Command										en	um	
- NormalW	/rite							M				
- SetOSV 8	& Res	setOSV	Set zone inactive / active					0				
- all other of	comm	nands	not supported				^	۱A				
Communic	catio	n:	•			,				-	-	
DP Addr	ess:		IO Type(ID):		152 (HDT/	AHU)	Pı	rope	rty ID:	10	)2	
(in the se	erver	)	Start-Index:		1		N'	° of e	elements	1		
Property	acce	ess:	Read only			Read/W	rite	;	$\boxtimes$			
Protection	on		Read level				W	/rite	level			
<b>Exception</b>	Exception Handling: Value after Powerup: Stored Value 🖂 Act Value 🗌 Default Value 🗌											
	-											
Special Features:												
HDTAHU is not using an external outside temperature sensor if zone is 'OutOfService'												

# 2.6.4.6 Diagnostic Data: ValueEnergyDemHeatAct

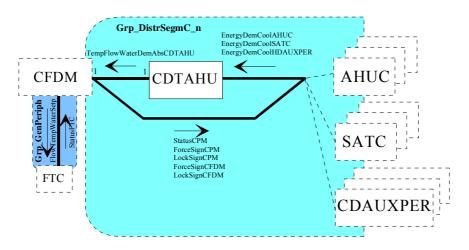
FB:	HDT AHU	Property	Name ( <u>Server</u> ):	Val	ueEner	gyDemHe	Mandatory ☐ Optional ⊠			
Desci	ription:								<u> </u>	
			lueEnergyDemHeat any specific algorithr		ignal (op	otional). Th	nis calc	ulation may b	e the max	kimum
							U <sub>8</sub>			
Field		<del>_</del>	Description				Sup.	Range	Unit	Default
ValueEnergyDem			Calculated actual M 0100						%	CS
HeatA	ct		ValueEnergyDemH	ValueEnergyDemHeat						
Comr	nunicatio	n:	-			-				
DP /	Address:		IO Type(ID):	152 (HDTAHU)		Prope	,	110		
(in t	he serve	r)	Start-Index:	1			N° of	elements	1	
Pro	perty acc	ess:	Read only	$\leq$		Read/W	rite			
Prot	ection		Read level		-		Write	level		
Excep	otion Har	dling:	Value after Poweru	ір:	Stored	Value	Act Va	alue 🛛 🏻 De	fault Value	e 🗌
Speci	al Featur	es:								

# **2.7** Functional Block: Cooling Demand Transformer for air handling units (CDTAHU)

# 2.7.1 Description

The Functional Block CDTAHU is converting the cooling demand signals of the air handling unit controllers (SATC, AHUC, or CDAUXPER) into a cooling flow temperature for the Cooling Flow Demand Manager CFDM. It may be a demand compensated curve with minimum and maximum values, which is additionally outside air temperature compensated. This convert algorithm is company specific and not part of this description.

There may be several Supply Air Temperature Controllers SATC, Air Handling unit Controllers AHUC, or Auxiliary Cooling Demand Percent CDAUXPER in the same distribution segment, but there is a 1: 1 connection between the Cooling Demand Transformer CDTAHU and the Cooling Flow Demand Manager CFDM. (Refer also Clause 2.1 Overview).



The Cooling Demand Transformer CDTAHU does not have to know which and how many consumers (SATC, AHUC, or CDAUXPER) are allocated in the Distribution Segment. So the CDTAHU has no list of all the SATC, AHUC, or CDAUXPER connected to it. Therefore adding or removing of air handler (cold water consumers) is simple. It is not necessary to store all the EnergyDemCool... signals from all connected air handlers in the Cooling Demand Transformer HDTAHU. Due to the heartbeat reception of the SATC, AHUC, or CDAUXPER demand signals, it is sufficient to have a dynamic process of the most relevant demands. The optional diagnostic value ValueEnergyDemCoolAct represents the value of this calculation. This algorithm is company specific and not part of this description.

The calculation of the resulting flow temperature demand output depending on cooling demand signal inputs is not part of the KNX certification.

To insure interworking to following section describes a **recommended procedure** to calculate the resulting cold water flow temperature demand (TempFlowWaterDemAbsCDTAHU). The mechanism is complex and may also depend on company specific needs and parameter settings.

## Plug & Play mechanism in the LTE-HEE implementation:

Remark: This mechanism is only possible in LTE-HEE implementations.

CDTAHU functionality can today not be implemented in Standard Mode since the necessary DPT are not available in Standard Mode.

If DPT\_TempFlowWaterDemAbs would be available in the Standard Mode in the future, there would be still some restrictions concerning the implementation.

In the shared variable model (e.g. S-mode) implementation all "partners" of the CDTAHU have to be linked and separate Group Addresses must be assigned for each Demand input signal. The number of "partners" has to be defined at design time of the product.

The CDTAHU does not need to know which and how many consumers are allocated in the Cold Water Distribution Segment.

Due to the heartbeat repetition of the EnergyDemCool... signals, it is sufficient to have a dynamic process image of the N temporary "most relevant" demands.

## Structure of the Main List (recommendation, manufacturer specific solution)

	Main List										
Entry N°	Energy DemCool	Attrib: - DemValid - AbsLoadPriority - ShiftLoadPriority - EmergDem	Source FB Type and Instance	Source Individual Addr	Timeout						
1											
2											
$N \ge 4$											

Criteria for a new entry in the main list of the most relevant signals:

- 1. first check if there is already an entry in the list with the same sender (source individual address) If Yes: delete the entry in the list (in the next steps the new data will be entered instead)
- 2. check the DemValid attribute

Signals with DemValid = false ("no demand") are ignored and not further processed (deleted from the list)

If DemValid = true: If there is still free space in the list (void entries) the signal is inserted in the list.

3. The following rules apply if the new signal has DemValid = true and all entries in the list are valid. One of the entries may be replaced in the following cases:

Check the attribute EmergDem:

This attribute must be considered with the highest priority because the EnergyDemCool of the consumers who request load priority is in this case relevant.

Check the attribute AbsLoadPriority:

This attribute must be considered with second priority because the EnergyDemCool of the consumers who request load priority is in this case relevant.

Check the attribute ShiftLoadPriority:

This attribute must be considered with second third because the EnergyDemCool of the consumers who request shift load priority are prioritised and all other consumers with no priority attributes (AbsLoasPriority or ShiftLoadPriority) have to reduce their energy consumption.

Check the EnergyDemCool value with forth priority. The higher the value the more relevant the signal is.

4. If one of the entries in the main list has a timeout, than this entry shall be deleted.

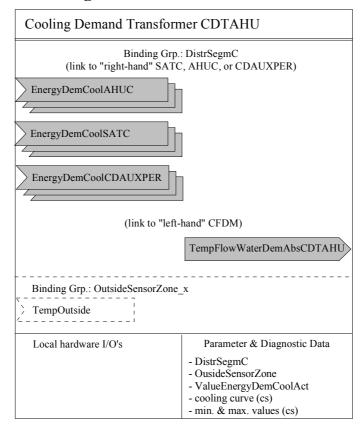
A void entry in the list is marked with the attribute DemValid = false.

## 2.7.2 Constraints

IMPORTANT: reporting of the Cold Water Demand signal TempFlowWaterDemAbsCDTAHU by the CDTAHU can <u>today</u> not be implemented in **Standard Mode** because the necessary compound HVAC DPT for runtime-interworking is not yet available in **Standard Mode** 

Therefore for the time being only LTE implementations of the CDTAHU functional block offer a link to a <u>demand dependent</u> cold water distribution (CFDM) and cold water production system (CPM). CDTAHU implementations in **Standard Mode** must therefore rely on an "autonomous" cold water production / cold water distribution system which provides sufficient cold water flow temperature.

# 2.7.3 Functional Block diagram



# 2.7.4 Description of the Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
TempFlowWaterDem AbsCDTAHU	Resulting flow water temperature demand to be sent to the CFDM	DPT_TempFlowWater DemAbs	210.100
Inputs			
EnergyDemCool	Air handler unit cold water demand from AHUC and/or SATC and/or CDAUXPER in percent	DPT_ActPosDemAbs DPT_Percent_U8	207.104 5.004
TempOutside	Outside air temperature sensor	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Parameters			
DistrSegmC	Cold Water Distribution Segment	DPT_UCountValue8_Z	202.002
OutsideSensorZone	Outside Sensor Zone	DPT_UCountValue8_Z	202.002
Diagnostic Data			
ValueEnergyDem CoolAct	Calculation of actual ValueEnergyDemCool signal	DPT_Percent_U8	5.004

			STANDARD MODE	EXTEN MOD	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	TempFlowWaterDemAbs CDTAHU	NA <sup>1</sup> )	NA	NA	M
Inputs	EnergyDemCool	$(\mathbf{GO_b})^2$		(GO) <sup>2</sup> )	$M^2$ )
	TempOutside	(GO <sub>b</sub> )		(GO)	О

<sup>&</sup>lt;sup>1)</sup> the information is NA in the Basic FB and all other modes because the datapoint type is <u>today</u> not yet available in Standard Mode. Splitting of DPT is not possible because of necessary data consistency

Table 16: CDTAHU Runtime Interworking - dependence on Configuration Modes

<sup>&</sup>lt;sup>1</sup>) It is not necessary to have mandatory EnergyDemCool... signals from AHUC, SATC as well as from CDAUXPER, so it may be possible to have only demands from any source (e.g. SATC).

		Support
Parameter	DistrSegmC	M
	OutsideSensorZone	О

**Table 17: CDTAHU LTE specific Properties** 

		Support
Parameter		
Diagnostic Data	ValueEnergyDemCoolAct	О

Table 18: CDTAHU Standard Properties of Interface Objects (or memory mapped DP)

# **2.7.4.1** Output signal: TempFlowWaterDemCDTAHU Standard Mode

Not applicable.

# LTE-HEE Mode

FB:	CDT	LTE Se	erver	Output Name:	TempFlow	Water[	DemAb	s CDTAH	U		atory 🔯
	AHU									Opt	ional 🗌
	ription:										
				contains the flow I the Cooling Flo					ute valu	ue) and th	е
DPT:	Name	DPT_	Temp	FlowWater Dem	Abs DI	PT ID	210.10	0 Data	atype fo	rmat V <sub>16</sub>	B <sub>16</sub>
Field	•		Desc	cription			Sup.	Range	Unit	COV	Default
Temp	FlowDem	1	Flow	temperature dei	mand (setpo	oint)	M	full range	e °C	0.5K	CS
Attrib	utes										
	mand Vali			lity of TempFlow			M	true/false		Y	false
	LoadPrio			olute load priority			0	true/false		Y	false
	ftLoadPric			load priority			0	true/false		Y	false
				pFlowDem conta	ins max.		0	true/false	bool	Y	false
				perature limit 1)			_				1
				pFlowDem conta	ains min.		0	true/false	e bool	Y	false
D	MD			perature limit 2)					l		
– DH	WReq			demand from D	HW, for DH	vv	NA	false	bool	N	false
Б.	O(-ID		only					6-1	1 1		6-1
	omCtrlRed	1		and from room h		ooling	NA	false	bool	N	false
– Ver		aDaa	_	and from ventilat			0	true/false		N	true
– Aux	AllSeaso	nkeq		and from auxilia	•		0	true/false	bool	N	false
Svo	temPump	Dog		umer, all season uest for water cir		ho	0	true/false	e bool	Υ	false
– Sys	item rump	nceq		bution segment	culation in t	i ie	O	li ue/iaise	=  DOOI	I	laise
Em	ergDem			rgency heat dem	and for roo	m	0	true/false	bool	Y	false
- [	eigbeili			protection	iana ioi 100	'''	0	li uc/iaise		'	laise
– DH	WLegioRe	ea l		HW only			NA	false	bool	N	false
	municatio		10. 5	1111 01119				iaico			10.00
	ding Gro										
Clas		ир.		Туре				Defaul	t		
	eographic	al	П	. , , ,				Bolau.	•		
	plication			DistrSegmC 3)				1			
	nassigned			Broadcast	Confic	urable					
	Address:			IO Type(ID):	215 (CE			operty ID:		51	
	-Services		t):	COV 🛛	MinRepT			sec			15 min
	foReport		<u> </u>	Output per defa						card allow	
	•	_		Tx Prio:	High [	7		Normal >		Low	
(L	TE Read-	Respon	se					<u></u>			
po	lling of the	e output	t	T				A -4 \ / - I.		D = f =  4 \ / .	
sh	all always	be		Transm after Po	werup: Sto	red val	iue 🗀	Act Valu	ie 🖂	Default Va	alue 🗀
su	pported)										
Pro	perty-Ser	vice		Read only	$\boxtimes$	Res	ad/Write				
	lividual a			TCad Offig		1100	ad/ vviite	· L			
Exce	ption Har	ndling:							Save	at Powerd	lown 🗌
Spec	ial Featui	res:									
1) Th	is value s	ets a m	axim	um flow tempera	ture limit for	r the Co	ooling Fl	low Dema	nd Trar	nsformer (	CFDM. It
				it in this hydrauli							
<sup>2)</sup> Th	nis value s	ets a m	inimu	ım flow temperat	ure limit for	the Co	oling Flo	ow Demai	nd Tran	sformer C	FDM. It
				t in this hydraulic							
				ls of this function			e same	Cold Wat	er Distri	bution Se	gment
(th	iere is a 1	:1 conn	ectio	n between CDTA	NHU and CF	·DM					

# 2.7.4.2 Input signal: EnergyDemCool...

This is the common description of all the demand signals from the AHUC, SATC, or CDAUXPER.

# **Standard Mode**

DF	Name:	Ene	gyDemCoo	l		Abbr.:							andatory		
FΒ	Name:	CDT	AHU								Ca	an be	interna	al	
	scription														
se	e LTE-HEE	mod	e, only % va	alue, n	o deman	d validity	, load	priority	or e	merge	ency d	eman	d attrib	outes.	
Da	tapoint Ty														
	PT_Name:	DP	T_Percent_	_U8											
	PT Format:				DP.	T_ID:	5.0	004							
Fie	eld					Sup	op.	Rang	е	Unit	Defa	ult			
see LTE-HEE mode without attributes															
Ac	Access Type														
<b>♦</b>	♦ Input														
	$N \to this$			$1 \rightarrow th$	is 🛭	<u> </u>									
	Spontaneo	us			Cyclical	ly:	$\boxtimes$			Time-	-out:		31 mir	า	
	Request				Polling:					Perio	d:				
Co	mmunicat	ion T	уре												
<b>♦</b>	Group Ob	ject [	Datapoint								Mand	latory	: 🛛		
	Default Gro	oup A	Address:												
Dy	namics														
	Power dow	n:	Save:												
	Power up:		Value:		itialisatic	on:		Defau							
				Save	d value:			Actua	ıl val	ue (no	ot for i	nput):			
			Transmit or	n bus (	only for o	output):		Read	fron	n bus	(only f	for inp	out):		
Ex	ception Ha	ındliı	าg												
Sp	ecial Featu	ıres													

## LTE-HEE Mode

FB: CDT AHU	LTE Client	Input Name:	nput Name: EnergyDemCool									
Description:							-					
This input proce Supply Air Tem Demand Perce	perature Co	ntrollers SATC										
<b>DPT</b> : Name	DPT_ActPo	osDemAbs	DPT ID	207.104	Datatype	format	U <sub>8</sub> B <sub>8</sub>					
Field		Description				Sup.	Unit	Default				
ActPosDemAbs	3	Calculated coddemand)	%	cs								
Attributes												
<ul><li>DemValid</li></ul>		Validity of coo				М	bool	false				
<ul><li>AbsLoadPrior</li></ul>	rity	Absolute load or CDAUXPE	priority reques R	ted by AHU	C, SATC,	0	bool	false				
<ul> <li>Shift load priority requested by AHUC, SATC, or CDAUXPER</li> </ul>								false				
<ul> <li>EmergDem</li> <li>Emergency demand for plant / room protection</li> <li>requested by AHUC, SATC, or CDAUXPER</li> </ul>												
Communication	n:					<u> </u>	<u> </u>					
Binding Grou	ıp:											
Class		Туре		D	efault							
Geographic	al 🔲											
Application	Specific 🖂	DistrSegmC		1								
Unassigned		Broadcast	Configura									
DP Address:		IO Type(ID):	240 (AHU 241 (SAT 210 (CDAUXI	C) F	Property ID	:	52					
LTE-Service	(event):	InfoReport Sr	niffer on Bindin		-	-						
InfoReport	$\boxtimes$	Timeout:		31 M	lin							
LTE-Service Read – Res		Read Wildcard	d / Resp Sniffe	on Binding	Group: -	-						
Value after Po	werup:	Defa	ult Value 🛚			5	Stored Val	ue 🗌				
<b>Exception Har</b>							verdown					
The CDTAHU v failure, if no dat								on				
	Special Features:											

# 2.7.4.3 Input signal: TempOutside

Same as in AHUC, refer to clause 2.2.4.43

# 2.7.4.4 Parameter: DistrSegmC

FB:	CDT	Property	Name ( <u>Server</u> ):	D	istrSegm	C					Mand	latory 🖂
	AHU										Op	tional 🗌
Desci	ription:	-										
LTE z	oning info	ormation C	Cold Water Distributi	ion	Segment							
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002		Dat	atype forma	ıt I	$U_8Z_8$	
Field			Description					up.	Range	l	Jnit	Default
CounterValue			Cold Water Distrib	utio	on Segme	nt	1	M	131		-	1
			number							Ш.		
Status	3									b	itset	
- OutOfService			Zone active /inactive					О	true/false			false
- all of	ther flags		not supported, fixed to '0'					IA_		.⊥.		
Command										е	num	
- Norr	nalWrite							M				
- SetC	OSV & Re	setOSV	Set zone inactive / active					О				
- all of	ther comr	nands	not supported				Ν	IA_				
Comr	nunicatio	n:									_	
DP A	Address:		IO Type(ID):		215(CDT/	AHU)	Pr	ope	rty ID:	1	101	
(in t	he serve	r)	Start-Index:		1		N	of e	elements	1		
Pro	perty acc	ess:	Read only [			Read/W	rite	;	$\boxtimes$			
Prot	ection		Read level				W	rite	level	-	-	
Exce	otion Har	ndling:	Value after Poweru	ıp:	Stored	Value 🛚	Α	ct Va	alue 🔲 🏻 D	efa	ult Value	
<del></del>												
Speci	Special Features:											
CDTA	CDTAHU DP's are not LTE communicating if zone is 'OutOfService'.											

## 2.7.4.5 Parameter: OutsideSensorZone

Same as in HDTAHU, refer to clause 2.6.4.52

## 2.7.4.6 Diagnostic Data: ValueEnergyDemCoolAct

This is the calculated ValueEnergyDemCool... signal (optional). This calculation may be the maximum value or any other company specific algorithm.

This diagnostic value corresponds to the ValueEnergyDemHeatAct signal, same datapoint type but instead of heating / cooling value. For further information refer to 2.6.4.6.

## 3 Actuators

Air Handling Unit Controller AHUC or Supply Air Temperature Controller SATC Functional Blocks may have different actuators like valves, pumps, fans, dampers,.. connected. All these connection are optional and depend on the controller Functional Block type. For more details about actuators please refer HVAC Specifications - Functional Blocks Sensors, HMI, Actuators, Common Controller Functions [02].

## 3.1 Future Functional Blocks

In the near future the following Functional Blocks may be specified in KNX:

◆ Functional Block: Fan (Supply, Return)

♦ Functional Block: Pump