

Application Descriptions

Terminal Unit Functional Blocks

Energy Demand Transformer Functional Blocks

Summary:

This document is part of the HVAC Application Interworking Standard for HVAC applications. This Chapter describes the Terminal Unit Energy Demand Transformer Functional Blocks.

Version 02.04.02 is a KNX Approved Standard.

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Document updates

Version	Date	Modifications		
001.18	2001.xx.xx	Excerpt from former document TU_FB_17B Adapted to the Template		
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001.21	2002.04.19	Document completed and ready for TFI presentation		
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02.04.02	2013.10.29	Editorial updates for the publication of KNX Specifications 2.1.		

References

[01]	Chapter 3/7/2	"Datapoint Types"
[02]	Chapter 7/10/1	"HVAC Sensor Functional Blocks"
[03]	Chapter 7/10/2	"HVAC HMI Functional Blocks"
[04]	Chapter 7/10/3	"HVAC Actuator Functional Blocks"
[05]	Chapter 7/10/4	"HVAC Common Functional Blocks"
[06]	Chapter 7/10/5	"HVAC Scheduler Functional Blocks"
[07]	Part 7/11	"Hot Water Heating - Introduction"
[80]	Part 7/12	"Direct Electric Heating"
[09]	Part 7/13	"Terminal Unit Functional Blocks"
[10]	Chapter 7/13/1	"Terminal Unit Controller"
[11]	Part 7/14	"Ventilation & Air Conditioning and Cold Water"
[12]	Part 10/1	"Logical Tag Extended"

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1 Introduction

1.1 Scope

This document is part of the KNX HVAC Application Interworking Standard. It contains the specification of the Terminal Unit Energy Demand Transformer Functional Blocks used for HVAC applications.

Other general purpose Functional Blocks used for HVAC applications such as 'HVAC Sensors' [02], 'HVAC HMI' [03], 'HVAC Actuators' [04], 'HVAC Common Functions' [05] and 'HVAC Schedulers' [06] are described in separate documents.

The Functional Blocks of the 'TU Controllers' [10] are described in a separate document.

Functional Block specification for the applications 'Hot Water Heating' (HWH) [07], 'Direct Electric Heating' (DEH) [08] and 'Ventilation & Air Conditioning' (VAC) [11] are described in separate documents.

1.2 Objectives

This document includes the information necessary to build interoperable HVAC products using the KNX system. Runtime process interworking between HVAC control devices at the application level is the focus. Also data-interfaces for parameter setting, visualisation etc. are specified where appropriate (only state of the art datapoints generally used in all companies).

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 [12]).

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 heating controller) containing more than one Functional Block. Because of this modular approach, apart of some examples, 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 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 Specification such as data encoding and datapoint-types, object address tables, group address tables etc. are not part of this document.

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 MODE	EXTENDED MODE		
		Basic FB	S-Mode	Standard Mode Interface	LTE-MODE
Inputs	Inp1	NA	NA	NA	M
	Inp2	NA	NA	NA	О
	Inp3	(GO _b)		(GO)	О
Outputs	Outp1	NA	NA	NA	M
	- Outp1-1	GO_b	GO	GO	NA
	- Outp1-2	GO_b	GO	GO	NA
	Outp 2	GO_b	GO	GO	M

- 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_b). The datapoint is optionally supported 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.

Outp2: is 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 using individual addressing. 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 ressources). 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) IO Type^{used} = IO Type^{HVAC-LTE}
 - ⇒ to implement these Properties using standard DPT only.
 In this case, the same Property ID but a different IO Type shall be used since the DPT of a Property shall be unambiguous for each IO Type.

 Simple IOT mapping rule: IO Type^{used} = IO Type^{standardDPT} = IO Type^{HVAC-LTE} + 10000d (e.g. BUC^{HVAC-LTE} = 128 => BUC^{standardDPT} = 10128)
 - ⇒ It is allowed to implement in a device both Interface Object Types IO Type^{HVAC-LTE} and IO Type^{standardDPT}. 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^{standardDPT} and the remaining in IO Type^{HVAC-LTE}.

	Implementation of Parameter and Diagnostic Data				
		ty based	Group Object	Memory mapped	
	LTE style	Standard DPT			
IO Type	IO Type ^{HVAC-LTE} e.g. BUC=128	$ \begin{aligned} \text{IO Type}^{\text{HVAC-LTE}} + 10000 \\ \text{e.g. BUC=} 10128 \end{aligned} $			
Property ID	Property ID x	Property ID x			
	if standard DPT	=> same standard DPT	=> same standard DPT	company specific	
DPT	if HVAC-LTE specific*) e.g. 205.100	=> mapped standard DPT, e.g. 9.001	=> mapped standard DPT, e.g. 9.001		

In this document only the **HVAC-LTE style** of Parameters and Diagnostic Data is specified for IO Type^{HVAC-LTE}.

In the FB datapoint overview those Parameters and Diagnostic Data with HVAC-LTE 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

1.4 Glossary

This glossary only contains a few positions, which might be misunderstood.

Term	Description
Supervisor	Supervisor stands for building management station, programme unit or similar installations, which normally are computer based.
XX	
XX	

1.5 Abbreviations

Functional Blocks:

Sensors [02], HMI [03], Actuators [04], Common Controller Functions [05]

Abbreviation	[Doc]	Description
OTS	1	Outside Temperature Sensor

Terminal Units (TU) [09]

as far as relevant in this document

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
RCCTU	Radiator and Chilled Ceiling Room Control
RHDTTU	Radiator Heating Energy Demand Transformer Terminal Unit
RRCTU	Radiator Room Control TU
SPUC	Split Unit Control
VAVCEA	Variable Air Volume Control Extract Air
VAVCSA	Variable Air Volume Control Supply Air
VDTTU	Ventilation Demand Transformer Terminal Unit
WHPC	Water Heat Pump Control

General

Abbreviation	Description
cs	Company Specific
GO	Group Object mandatory
(GO)	Group Object optional
M	Mandatory
NA	Not Allowed / Not Applicable
O	Optional
S	Has to be implemented in Standard Mode, if implemented in LTE-HEE Mode
HEE	HVAC Easy Extension
HVAC	Heating Ventilation Air Conditioning
LTE	Logical Tag Extended
IR	LTE-Service InfoReport
W	LTE-Service Write

2 Formal matters

2.1 Introduction to Functional Blocks

The Functional Blocks are described in a standard way as described below.

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

A Functional Block never can be split. Although not all inputs, outputs etc. are mandatory. The optional inputs, outputs do not have to be realised.

2.2 Description of Functional Blocks

2.2.1 Aims and objectives

This clause shall give a overview of the functionality of the Functional Block, as well as eventually information about interworking with other Functional Blocks.

2.2.2 Functional specification

This chapter gives detailed information about the Inputs, the Outputs, the Parameters, the Diagnostic Data, the Alarms and the Hardwired I/O's.

2.2.3 Constraints

Constraints for the use of the Functional Block as well as for the use of Inputs, Outputs, Parameters, Diagnostic Data, Alarms etc. are described here.

2.2.4 Functional Block

On top of the Functional Block the name and it's abbreviation is marked.

Then the Inputs / Outputs are following.

The Inputs / Outputs are grouped in Binding Groups, according to LTE (Logical Tag Extended).

Mandatory Inputs / Outputs have a grey arrow with the letter M.

They also have to be available in the System Mode.

Optional Inputs / Outputs have a white arrow.

Some of these Inputs / Outputs, in case of being implemented, also have to be available in the System Mode. These Inputs / Outputs have a white arrow with the letter S.

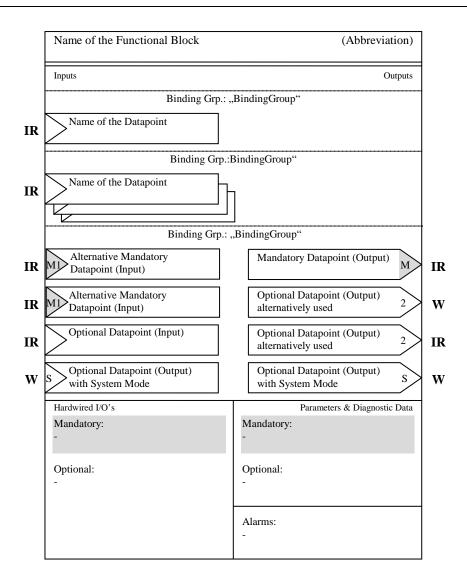
Some of the Inputs / Outputs only make sense in combination, others may be used either / or. Such Inputs / Outputs are grouped with numbers.

At the bottom there are three fields:

On the left-hand side we find the Hardwired Inputs / Outputs, the mandatory ones in a grey field, the optional ones in a white field.

On the right-hand side there is a field for the Parameters and the Diagnostic Data used in the Functional Block (mandatory in grey, optional in white).

On the right-hand side at the bottom there is the field for the Alarms, generated in the Functional Block (for use in the Functional Block Alarm Source).



2.2.5 Datapoints / Formats

Datapoints	Description / Remarks	Datapoint Type	Additional Information
Inputs			
Name of the Data- Point	Descriptions, remarks if necessary	Name of the Datapoint Type and/or coding	
		S: DPT_Value_Temp F ₁₆	
			M = mandatory, with system mode M1/M2 = alternative mandatory
			O = optional, system mode optional
			S = optional, but if implemented, then with system mode
			1,2 the numbers represent alternative packages
			Unit of the Datapoint Value Default Value
			Range indications
Outputs			
Name of the Data- Point	see above	see above	see above
Parameters			
Name of the Parameter	see above	see above	see above
Diagnostic Data			
Name of the Diagnostic Data	see above	see above	see above

Alarm	Description / Remarks	Er	ror	Additional Information
		Code	Prio	
Name of the Alarm	Descriptions, remarks if necessary	Code of the Alarm	Priority of the Alarm	Additional Information

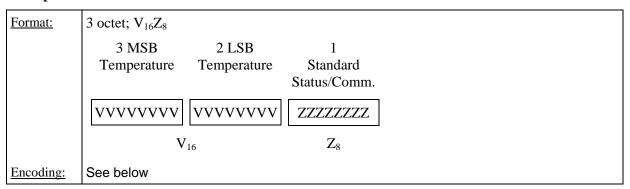
Detailed specification of the Datapoints

Detailed description of the Datapoints is given in a separate document [01].

Notations:

Symbol	Field
A	Character
$A_{[n]}$	Character String with Length n
В	Boolean / Bit set
С	Control
E	Exponent
F	Float (with ME)
M	Mantisse
N	eNumeration
S	Sign
U	Unsigned value
V	2's Complement signed value
Z_8	Standardised Status/Command B ₈

Example:



Octets are transmitted from left to right, i.e. octet 1 is transmitted last.

Standard Status/Command Information

Some of the Datapoints are combined with Standard Status/Command Information. For further information see [01].

3 Terminal Unit Energy Demand Transformer Functional Blocks

3.1 Introduction to TU Energy Demand Transformer Functional Blocks

This document contains the Terminal Unit Energy Demand Transformer Functional Blocks.

It is possible to combine more than one Functional Block in a device.

3.2 Radiator Heating Energy Demand Transformer TU (RHDTTU)

3.2.1 Aims and objectives

The Functional Block 'Radiator Heating Energy Demand Transformer TU' transforms the heating energy demand information out of the terminal units (e.g. radiator control or floor heating control) into a flow water temperature value.

In plants with floor heating and radiator heating this Functional Block may be applied twice (with different max temperatures and different distribution segments)

There are corresponding Functional Blocks for chilled ceiling cooling and for air re-heater / cooler and for ventilation.

3.2.2 Functional specification

To transform the energy demand values to a flow temperature there are different possibilities: e.g.

- demand % to °C by means of a curve
- demand (yes/no) plus a heating curve (based on outside temperature)
- a combination of the above
- demand (yes/no) to a fix temperature

Detailed realisation is manufacturer specific.

(see also 3.7 'Collection and Processing of Demand Information in LTE-HEE)

Inputs

• TempOutside	This information contains the outside temperature, delivered from another device with this functionality.
• EnergyDemRD (n times)	This information is delivered by the TU controllers which need hot water. (100 % = full heating) The LTE information is completed with an attribute containing information from the ContrMode.
• ValueEnergyDemRD (n times)	This information is delivered by the TU controllers which need hot water. (100 % = full heating) (only in S-Mode separate, see EnergyDemRD)
• ContrModeAct (n-times)	The controlling mode delivered by the TU controllers. (only in S-Mode separate, see EnergyDemRD)

Outputs

• TempFlowWaterDemRHDTTU This value represents the demanded flow water temperature for heating plus attributes.

Binding Groups (LTE)

The Functional Block shows 2 different binding groups.

• DistrSegmH_a This binding group defines the distribution segment

heating.

OutsideSensorZone_o
 This binding group defines the outside sensor zone,

from which the outside temperature will be taken.

Parameters

• cs

Diagnostic Data

• ValueEnergyDemAct This value represents a theoretical average value of the input demands. The calculation is company specific.

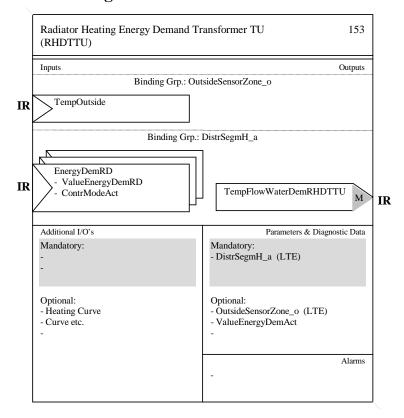
Alarms

• cs

3.2.3 Constraints

None.

3.2.4 Functional Block Diagram



3.2.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Inputs			
Temp Outside	Outside temperature actual value with: - COV and RepPer - Z ₈ STATUS supported from FB 'Outside Temperature Sensor'	LTE: 205.100 DPT_TempHVACAbs_Z V ₁₆ Z ₈ S: 9.001 DPT_Value_Temp F ₁₆	LTE: O S: (GO) °C
n times			
Energy Dem RD	Energy demand value for Heat Flow Demand manager (water) (100 % = full heating) plus ContrMode with: - COV and RepPer from FB various TU controller	LTE:211.100 DPT_EnergyDemWater U ₈ N ₈ S: NA	LTE: M S: NA 0% 100 % plus Attribute
Value Energy Dem RD	Energy demand value for Heat Flow Demand manager (water) (100 % = full heating) with: - COV and RepPer from FB various TU controller	LTE: NA S: 5.004 DPT_Percent_U8 U ₈	LTE: NA S: (GO) 0% 100 %
Contr Mode Act	Active Controlling Mode with: - COV and RepPer from FB various TU controller	LTE: NA S: 20.105 DPT_HVACContrMode N ₈	LTE: NA S: (GO) enum.
Outputs			
Temp Flow Water Dem RHDTTU	Demanded flow water temperature with: - COV and RepPer to FB 'Heat Flow Demand Manager'	LTE: 210.100 DPT_TempFlowWaterDemAbs V ₁₆ B ₁₆ S: NA	LTE: M S: NA °C plus attributes
Parameter			
Distr SegmH_a	LTE zoning number for Distribution Segment Heating	202.002 DPT_UcountValue8_Z U ₈ Z ₈	M 1
Outside Sensor Zone_o	LTE zoning number for Outside Sensor Zone	202.002 DPT_UcountValue8_Z U ₈ Z ₈	O 1
Diagnostic Data			
Value Energy Dem Act	Theoretical, calculated value for the energy demand	5.004 1) DPT_Percent_U8 U ₈	O 0% 100 %

¹⁾ Implementation of Properties using standard DPT see chapter 1.3.2

RHDTTU Runtime Interworking - Dependence on Configuration Modes

			STANDARD MODE	EXTE MO	
		Basic FB	S-Mode	Standard Mode Interface	LTE-MODE
Inputs	TempOutside	(GO _b)		(GO)	О
	EnergyDemRD 1)	NA _b	NA	NA	M
	ValueEnergyDemRD 2)	(GO _b)		(GO)	NA
	ContrModeAct 2)	(GO _b)		(GO)	NA
Outputs	TempFlowWaterDemRHDTTU	NA _b	NA	NA	M

RHDTTU LTE specific Properties

		Support
Parameter	DistrSegmH_a	M
	OutsideSensorZone_o	0

RHDTTU Standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter		
DiagnosticData	ValueEnergyDemAct	0

¹⁾ combined information not available in S-Mode (see also ²⁾) ²⁾ single information of 1) (only in S-Mode available, see also ¹⁾)

3.2.6 Detailed specification of the Datapoints

3.2.6.1 Input TempOutside

Standard Mode

DF	Name:	Tem	pOutside			Abbr.:			Manda	tory		
FΒ	Name:	RHD	TTU						Can be	internal		
De	scription											
Th	is information	on is	provided	by the F	unctional Blo	ck 'Outside	Tempe	erature Se	nsor'.			
Da	tapoint Ty	ре										
Б	PT_Name:	DP	T_Value_	Temp								
Б	PT Format:	F ₁₆						DPT_ID:	9.001			
Fie	eld	De	scription					Supp.	Range	Unit	Defa	ult
								0	full	°C	cs	
Ac	cess Type											
♦	Input											
	$N \rightarrow this$]	$1 \rightarrow th$	nis 🛛							
	Spontaneo	us			Cyclically:			Time	-out:	31 min	(rec.)	
	Request				Polling:			Perio	d:			
C	mmunicati	on T	уре									
•	Group Ob	ject [Datapoint						Mandatory	/: X		
	Default Gro	oup A	ddress:									
Dy	namics											
	Power dow	'n:	Save:									
	Power up:		Value:	No ir	nitialisation:		Defau	ılt value:				
				Save	ed value:							
							Read	from bus	• •			
Ex	ception Ha	ndlii	ng									
Sp	ecial Featu	ires					•					

LTE-HEE Mode

FB:	RHDTTU	LTE C		TempOuts	side					Mandatory ☐ Optional ⊠		
Desc	ription:	- i								-		
				unctional E	Block 'Outs	ide Temp	erature	Sens	or' and	includes t	he	
STAT	US of the i	nformatio	า.									
DPT:	Name	DPT_Ter	npHVACA	.bs_Z	DPT ID	205.100	Data	type fo	ormat	$V_{16}Z_{8}$		
Field			Descrip						Sup.	Unit	Default	
Temp	erature		Outside	temperatui	re value				M	°C.	CS	
STAT			Bitset						M			
	OfService			out of servi					M	t/f	false	
- Faul				value is cor					0	t/f	false	
	rridden			is temporar	ily overrid	den			0	t/f	false	
- InAla				is in alarm					0	t/f	false	
- Aları	<u>mUnAck</u>		Acknow	/ledgement	of alarm				0	t/f	false	
	nunicatior											
	ding Grou	p:										
Clas			Туре				Default					
	ographica											
	plication S	pecific 🛭	4	SensorZon			1					
Ur	assigned] Broadca		Configura	ıble 🗌						
	Address:		IO Type		320 (OTS		Proper	rty ID:		51		
	-Service (InfoRep	ort Sniffer o	on Binding							
	oReport	\boxtimes	Timeou	t:		31	Min					
	-Service (Read W	/ildcard / Re	esn Sniffer	on Rindi	na Grau	ın·				
	ad – Resp		Trodd V			OII DIIIGII	ing Orou	ι ρ .				
Value	after Pow	er-up:		Default V	alue 🛚				5	Stored Val	ue 🗌	
Exce	otion Hand	dling:						Save	at Pov	verdown		
Speci	al Feature	s:										

3.2.6.2 Input EnergyDemRD

Standard Mode

Not applicable.

LTE-HEE Mode

FB:	RHDTTU	LTE (Clie	nt	EnergyD	emRD						Mano	datory	\boxtimes
		Input	Na	me:								Op	tional	
	ription:													
	nput is provi											nd.		
DPT:	Name D	PT_Er	nerç	gyDemV		DPT ID	211.10	0	Dataty	/pe	format	U_8N_8		
Field				Descrip							Sup.	Unit	Defa	ıult
Value				Energy	demand v	/alue					M	%	CS	
Mode				0 = Au 1 = He	eat		= Mrning\				M M O	enum.	0	
					ecool	6	= Night P = Off	Ū			0			
				7 = Te 9 = Fa 11 = Ice	n only	10	= Emergh = Free Co = NoDem	ool	t		0 0 0			
				other er	nums.						NA			
Comr	munication:												-	
	ding Group:													
Clas				Type				D	efault					
	eographical		Щ											
	plication Sp	ecific		DistrSe				1						
	nassigned		Ш	Broadca	ast 💹	Configu								
	Address:			ІО Турє		256 (RR 257 (RC 261 (VA	CRC) VCSA)	P	Property	y ID:		71		
	-Service (ev					on Bindin					•			
	oReport			Timeou	t:		31	M	lin					
	- Service (po ead – Respo		•	Read W	/ildcard / F	Resp Sniffe	er on Bind	ding	Group):				
Value	after Powe	r-up:			Default \	Value 🛚				-	(Stored Val	ue 🗌	
Exce	ption Handl	ing:							;	Save	e at Pov	werdown		
Spec	ial Features	:												

Energy Demand Transformer

3.2.6.3 Input ValueEnergyDemRD

LTE-HEE Mode

Not applicable.

Standard Mode

DP Name:	ValueEnergyDe	emRD	Abbr.:			Manda	tory	
FB Name:	RHDTTU					Can be	internal	
Description								
		y the TU controllers an	d contains	the value	e for th	ne energy c	lemand.	
Datapoint Ty	ре							
DPT_Name:	DPT_Percent	t_U8						
DPT Format:	U ₈			DP	T_ID:	5.004		
Field	Description			Sı	upp.	Range	Unit	Default
					М	full	%	CS
Access Type								
♦ Input								
$N \rightarrow this$		$1 \rightarrow \text{this}$						
Spontaneo	us 🛛	Cyclically:			Time-	out:	31 min	(rec.)
Request		Polling:			Perio	d:		
Communicat	ion Type							
♦ Group Ob	ject Datapoint					Mandatory	/: X	
Default Gro	oup Address:							
Dynamics								
Power dow	n: Save:							
Power up:	Value:	No initialisation:		Default va	alue:		\boxtimes	
		Saved value:						
			F	Read fror	n bus:			
Exception Ha	ndling							
Special Featu	ıres							

3.2.6.4 Input ContrModeAct

LTE-HEE Mode NA:

Standard Mode

DP N	Name: (ContrModeAct		Abbr.:			Manda	tory				
FB N	lame:	RHDTTU	TTU Can be internal									
	cription											
		n is provided by the T	U controllers and	contains th	ne acti	ve Con	trMode.					
	point Typ											
	_Name:	DPT_HVACContrMc	ode									
	Format:	N ₈				PT_ID:	20.105		T			
Field		Description			S	Supp.	Range	Unit	Default			
		0 = Auto				M			0			
		1 = Heat	2 = MrningV			0						
		3 = Cool	4 = Night Pu	ırge		0						
		5 = Precool	6 = Off	_		0						
		7 = Test	8 = EmergH			0						
		9 = Fan only	10 = Free Co	ol		0						
		11 = Ice	20 = NoDem			0						
		other enums.				NA						
	ess Type											
_	nput	15-7										
	\rightarrow this	$1 \rightarrow th$				T						
	pontaneou	ıs 🗵	Cyclically:			Time-		31 min	(rec.)			
	equest		Polling:			Perio	<u>d:</u>					
	munication											
		ect Datapoint					Mandatory	<i>'</i> : 🛛				
		up Address:										
	amics											
Р	ower dowr											
P	ower up:		nitialisation:	De	efault v	/alue:						
		Save	ed value:									
				Re	ead fro	m bus:						
Exce	eption Har	ndling										
						·						
Spec	cial Featu	res										

3.2.6.5 Output TempFlowWaterDemRHDTTU

Standard Mode

Not applicable.

LTE-HEE Mode

FB:	RHDTTU	LTE Se	rver Name:	TempFlo	wWaterD	er	nRHD	TT	U				Mandatory ⊠ Optional □	
Desc	ription:	Outpu	italiio.	me:								<u> </u>	dona	
		ains the s	etpoint valu	ue for the f	ow water t	te	mperat	ture	e coi	ntroller	·			
DPT:	Name		npFlowWat				210.100				format	Vı	₆ B ₁₆	
		S						-		,		- 10	0- 10	
Field	I.		Descript	ion	<u>I</u>		Sup.	Ra	ange)	Unit		COV	Default
Temp	erature		Tempera	ature setpo	int value		M		fu		°C		2	CS
			for flow v	vater										
Attribu		Bit								t B ₁₆				
- Dem		0		of FlowTen			M			false	bool		Υ	false
	LoadPrio	1		load prior	ity		О			false	bool		Υ	false
	tLoadPrio	2	Shift load				0			false	bool		Υ	false
	TempLimit	3			h max limit		0			false	bool		Υ	false
- Min	TempLimit	4	TempFlo	wDem wit	h min limit		0	t	rue/	false	bool		Υ	false
- DHV	VReq	5	Demand only	from DHV	V, for DHW	/	NA		fal	se	bool			false
- Roo	mCtrlReq	6		from room	control		0	t	rue/	false	bool		Υ	true
- Vent		7		from venti			NA	`	fal		bool			false
	AllSeasonf			from auxil			Ö	t		false	bool		Υ	false
			consum.		•						DOOI			
- Syst	:PumpReq	9		for water of			0	t	rue/	false	bool		Υ	false
- Eme	ergDem	10		emergeno			0	t	rue/	false	bool		Υ	false
				for frost pr	otection									
	VLegioRed		for DHW	only			NA		fal	se	bool			false
- rese		12-15				┙	NA							false
	nunicatio													
	ding Grou	p:												
Clas			Туре							Defau	ılt			
	eographica		1											
	plication S	pecific 🛭	,					1		1				
	nassigned		Broadca		Configu									
	Address:		IO Type(153 (RHD					erty ID		51		
	-Services	`	COV		MinRepTin				10 s		Hea			15 min
Inf	oReport	\boxtimes		er default	communic:	at	ing L	J E			oup Wild	dcar		
<i>,</i> , -			Tx Prio:		High				No	ormal [$\underline{\times}$		Low	<u>' </u>
	TE Read-R													
	lling of the		Transm	after Powe	r-up: Store	ed	l Value	, [1 /	Act Val	ue 🏻	De	fault V	alue 🗍
Silali always be						-		_						
	pported)	•												
	perty-Serv ividual ac		Read on	ly 🗌			Read/\	Wri	ite	\boxtimes				
											Savo	at l	Doword	lown 🗆
Exce	ption Han	unny.									Save	all	Powerd	
Space	ial Eggtura) C:												
Spec	ial Feature	;5.												

3.2.6.6 Parameter DistrSegmH

FB:	RHDTTU	Prop	erty Name (<u>Server</u>):	DistrSeg	JmΗ				datory 🔯
								Op	otional 🗌
Desci	ription:	_		-				-	
Numb	er of the he	eating di	stribution segment.						
DPT:	Name	DPT_U	countValue8_Z	DPT ID	202.002	Data	atype format	U_8Z_8	
Field			Description			Sup.	Range	Unit	Default
Zone			Number of the Heatin	g Segmen	it	М	(0) 131		1
STAT	US							Bitset	
- Outo	ofService		zone active / inactive			0	true/false		false
- all of	ther bits		not supported, fixed to	o '0'		NA		bool	false
COMI	MAND						enum		CS
- Norr	nalWrite					M			
- SetC	OSV & Rese	etOSV	Set zone inactive / ac	tive		0			
- all of	ther comma	ands	not supported			NA			
Comr	nunication	:	-				-	-	-
DP A	Address:		IO Type(ID):	153 (RHD	TTU)	Proper	ty ID:	101	
(in t	he server)		Start-Index:	1		N° of e	elements	1	
Pro	perty acce	ss:	Read only		Read/W	'rite			
Prot	ection		Read level	-		Write I	evel	-	
Exce	otion Hand	ling:	Value after Power-up:	: Stored '	Value 🛚	Act Va	lue 🗌 Def	ault Value	<u> </u>
Speci	ial Feature	s:							
The d	evice is not	LTE co	mmunicating in this zo	ne if zone	is 'OutOf	fService	·'.		

3.2.6.7 Parameter OutsideSensorZone

FB: R	RHDTTU	Prope	erty Name (<u>Server</u>):	OutsideSensorZ		Mandatory ☐ Optional ⊠		
Descrip	otion:	<u>.</u>		-			·	
Number	r of the out	side se	nsor zone.					
DPT:	U ₈ Z ₈	U_8Z_8						
Field			Description		Sup.	Range	Unit	Default
Zone			Number of the Outsid	e Sensor Zone	M	(0) 131		1
STATU	S						Bitset	
- OutofS	Service		zone active / inactive		0	true/false		false
- all other	er bits		not supported, fixed to	o '0'	NA		bool	false
COMMAND						enum		CS
- Norma					M			
- SetOS	SV & Reset	OSV	Set zone inactive / active					
- all other	er comman	nds	not supported	NA NA				
Commu	unication:				•	-	-	=
DP Ac	ddress:		IO Type(ID):	153 (RHDTTU)	102			
(in the	e server)		Start-Index:	1	N° of e	elements	1	
Prope	erty access	s:	Read only	Read/V	Vrite	\boxtimes		
Protec	ction		Read level	-	Write I	evel	-	
Excepti	ion Handli	ng:	Value after Power-up:	Stored Value 🗵	Act Va	alue 🗌 Def	fault Value	
Special	l Features:							
The dev	vice is not L	TE co	mmunicating in this zo	ne if zone is 'OutO)fService	e'.		

${\bf 3.2.6.8} \quad {\bf Diagnostic\ Data\ Value Energy Dem Act}$

FB:	RHDTTU	Prope	verty Name (<u>Server</u>): ValueEnergyDemAct						datory 🗌 otional 🖂			
Desci	Description:											
Calcu	Calculated value of energy demand.											
DPT:	Name D	PT_Pe	rcent_U8	DPT ID	5.004	Data	atype format	U ₈	J_8			
Field			Description			Sup.	Range	Unit	Default			
Value			Calculated energy demand value M full					%	CS			
Comr	nunication:											
DP A	Address:		IO Type(ID):	153 (RHI	OTTU)	Property ID:		111				
(in t	he server)		Start-Index: 1 N° of			N° of e	elements 1					
Pro	perty access	s:	Read only		Read/W	/rite						
Prot	ection		Read level	-		Write I	evel	-				
Excep	otion Handli	ng:	Value after Power-up	: Stored	Value 🛚	Act Va	lue 🗌 Def	ault Value				
Speci	al Features	:		•	•		-	•				

3.3 Chilled Ceiling Energy Demand Transformer TU (CCDTTU)

3.3.1 Aims and objectives

The Functional Block 'Chilled Ceiling Energy Demand Transformer TU' transforms the cooling energy demand information out of the terminal units (e.g. chilled ceiling control) into a flow water temperature value.

There are corresponding Functional Blocks for radiator heating and for air re-heater / cooler and for ventilation.

3.3.2 Functional specification

To transform the energy demand values to a flow temperature there are different possibilities: e.g.

- demand % to °C by means of a curve
- demand (yes/no) plus a cooling curve (based on outside temperature)
- a combination of the above
- demand (yes/no) to a fix temperature

Detailed realisation is manufacturer specific.

Inputs

• TempOutside	This information contains the outside temperature, delivered from another device with this functionality.
• EnergyDemCC (n times)	This information is delivered by the TU controllers which need cold water. (100 % = full cooling) The LTE information is completed with an attribute containing information from the ContrMode.
• ValueEnergyDemCC (n times)	This information is delivered by the TU controllers which need cold water. (100 % = full cooling) (only in S-Mode separate, see EnergyDemCC)
• ContrModeAct (n-times)	The controlling mode delivered by the TU controllers. (only in S-Mode separate, see EnergyDemCC)

Outputs

• TempFlowWaterDemCCDTTU This value represents the demanded flow water temperature for cooling plus attributes.

Binding Groups (LTE)

The Functional Block shows 2 different binding groups.

•	DistrSegmC_b	This binding group defines the distribution segment
		cooling.
	Outside Sensor Zone o	This hinding group defines the outside sensor zone

• OutsideSensorZone_o This binding group defines the outside sensor zone, from which the outside temperature will be taken.

Parameters

• cs

Diagnostic Data

• ValueEnergyDemAct

This value represents a theoretical average value of the input demands. The calculation is company specific.

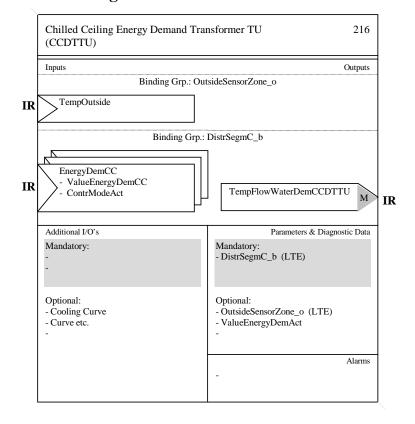
Alarms

• cs

3.3.3 Constraints

None.

3.3.4 Functional Block Diagram



3.3.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Inputs			
Temp Outside	Outside temperature actual value with: - COV and RepPer - Z ₈ STATUS supported from FB 'Outside Temperature Sensor'	LTE: 205.100 DPT_TempHVACAbs_Z V ₁₆ Z ₈ S: 9.001 DPT_Value_Temp F ₁₆	LTE: O S: (GO) °C
n times			
Energy Dem CC	Energy demand value for Cold Flow Demand manager (water) (100 % = full cooling) plus ContrMode with: - COV and RepPer from FB various TU controller	LTE: 211.100 DPT_EnergyDemWater U ₈ N ₈ S: NA	LTE: M S: NA 0% 100 % plus Attribute
Value Energy Dem CC	Energy demand value for Cold Flow Demand manager (water) (100 % = full cooling) with: - COV and RepPer from FB various TU controller	LTE: NA S: 5.004 DPT_Percent_U8 U ₈	LTE: NA S: (GO) 0% 100 %
Contr Mode Act	Active Controlling Mode with: - COV and RepPer from FB various TU controller	LTE: NA S: 20.105 DPT_HVACContrMode N ₈	LTE: NA S: (GO) enum.
Outputs			
Temp Flow Water Dem CCDTTU	Value for demanded flow water temperature with: - COV and RepPer to FB 'Cold Flow Demand Manager'	LTE: 210.100 DPT_TempFlowWaterDemAbs V ₁₆ B ₁₆ S: NA	LTE: M S: NA °C plus attributes
Parameter			
Distr SegmC_b	LTE zoning number for Distribution Segment Heating	202.002 DPT_UcountValue8_Z U ₈ Z ₈	M 1
Outside Sensor Zone_o	LTE zoning number for Outside Sensor Zone	202.002 DPT_UcountValue8_Z U ₈ Z ₈	O 1
Diagnostic Data			
Value Energy Dem Act	Theoretical, calculated value for the energy demand	5.004 1) DPT_Percent_U8 U ₈	O 0% 100 %

¹⁾ Implementation of Properties using standard DPT see chapter 1.3.2

CCDTTU Runtime Interworking - Dependence on Configuration Modes

			STANDARD MODE	NDED DE	
		Basic FB	S-Mode	Standard Mode Interface	LTE-MODE
Inputs	TempOutside	(GO _b)		(GO)	O
	EnergyDemCC	NA _b	NA	NA	M
	ValueEnergyDemCC	(GO _b)		(GO)	NA
	ContrModeAct	(GO _b)		(GO)	NA
Outputs	TempFlowWaterDemCCDTTU	NA _b	NA	NA	M

CCDTTU LTE specific Properties

		Support
Parameter	DistrSegmC_b	M
	OutsideSensorZone_o	0

CCDTTU Standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter		
DiagnosticData	ValueEnergyDemAct	0

combined information not available in S-Mode (see also ²⁾) single information of 1) (only in S-Mode available, see also ¹⁾)

3.3.6 Detailed specification of the Datapoints

3.3.6.1 Input TempOutside

Standard Mode

DF	Name:	Tem	pOutside			Abbr.:			Manda	tory		
FΒ	Name:	CCD	TTU						Can be	internal	i [
De	scription											
Th	is information	on is	provided	by the F	unctional Blo	ck 'Outside	Tempe	erature Se	nsor'.			
Da	tapoint Ty	ре										
Б	PT_Name:	DP	T_Value_	Temp								
Б	PT Format:	F ₁₆						DPT_ID:	9.001			
Fie	eld	De	scription					Supp.	Range	Unit	Defa	ult
								0	full	°C	cs	
Ac	cess Type											
♦	Input											
	$N \rightarrow this$			$1 \rightarrow th$	nis 🛛							
Spontaneous								Time	-out:	31 min (rec.)		
	Request				Polling:			Perio	d:			
C	mmunicat	on T	уре									
•	Group Ob	ject [Datapoint						Mandatory	/:		
	Default Gro	oup A	ddress:									
Dy	namics											
	Power dow	'n:	Save:									
	Power up:		Value:	No ir	nitialisation:		Defau	ılt value:				
				Save	ed value:							
							Read	from bus	- -			
Ex	ception Ha	ndlir	ng									
i												
Sp	ecial Featu	ires										
							·					

LTE-HEE Mode

FB: CCDTTU LTE Clic		TempOut	side						datory 🗌 otional 🖂
Description:		-							
This information is provided		unctional E	Block 'Outs	ide Temp	erature	Senso	or' and	includes t	he
STATUS of the information			_						
DPT : Name DPT_Tem			DPT ID	205.100	Data	type fo		$V_{16}Z_{8}$	
Field	Descrip	tion					Sup.	Unit	Default
Temperature	Outside	temperatu	re value				M	°C.	CS
STATUS	Bitset						M		
- OutOfService		out of servi					M	t/f	false
- Fault		value is co					0	t/f	false
- Overridden		is tempora	rily override	den			0	t/f	false
- InAlarm		is in alarm					0	t/f	false
- AlarmUnAck Acknowledgement of alarm O								t/f	false
Communication:									
Binding Group:									
Class	Type				Default				
Geographical									
Application Specific 🛛	Outside	SensorZon	ne		1				
Unassigned	Broadc	ast 🗌	Configura	ıble 🗌					
DP Address:	Ю Туре		320 (OTS		Proper	ty ID:		51	
LTE-Service (event):	InfoRep	ort Sniffer	on Binding	Group:					
InfoReport 🖂	Timeou	t:		31	Min				
LTE-Service (polling):	Pood W	/ildcard / R	oen Sniffor	on Rindi	na Grou	n·			
Read – Response 🗌	ixeau v	/ilucaru / ixi	esh Silliei	OH BIHUI	ng Grou	ρ			
Value after Power-up:	•	Default V	′alue 🛚			<u>-</u> -	S	Stored Val	ue 🗌
Exception Handling:						Save	at Pov	verdown	
Special Features:									

3.3.6.2 Input EnergyDemCC

Standard Mode

Not applicable.

LTE-HEE Mode

FB:	CCDTTU	LTE			Energyl	Dem(CC							datory 🖂
_		Input	Na	me:									Optional	
	ription:													
					TU controllers and contains the value for the energy demar									
DPT:	Name [DPT_E	ner	gyDemWater DPT ID 211.100 Datatype form						U_8N_8				
Field				Descrip								Sup.	Unit	Default
Value				Energy	demand	value)					M	%	CS
Mode	!											M	enum.	0
				0 = Au								M		
				1 = He				MrningV				0		
				3 = Cc				Night P	urge	е		0		
				5 = Pr	ecool		6 =	•				0		
				7 = Te				Emergh		t		0		
					ın only	n only 10 = Free Čool O								
				$11 = lc\epsilon$							0			
				other er	nums.							NA		
Com	munication:													
Bin	ding Group	:												
Clas	SS			Type					D	efault				
Ğ	eographical													
Ap	plication Sp	ecific	\boxtimes	DistrSe	gmC				1					
Ur	nassigned			Broadca	ast 🗌	C	onfigura	able 🗌						
DP	Address:			Ю Туре	e(ID):		57 (RC0 51 (VA)		Р	ropert	y ID	•	72	
LTE	-Service (e	vent):		InfoRep	ort Sniffe	er on	Binding	Group:				-		
Inf	oReport	\boxtimes		Timeou	t:			31	M	in				
	- Service (p ead – Respo		:	Read W	/ildcard /	Resp	Sniffe	on Bind	ling	Group):	-		
Value	after Powe	er-up:			Default	: Valu	e 🖂				_	,	Stored Val	ue 🗌
Exce	ption Handl	ling:									Sav	e at Pov	werdown	
														· ·
Spec	ial Features	S :												

3.3.6.3 Input ValueEnergyDemCC

LTE-HEE Mode

Not applicable.

Standard Mode

FB Name: CCDTTU Can be in Description This Information is provided by the TU controllers and contains the value for the energy de		
	emand.	
This Information is provided by the TII controllers and contains the value for the energy do	emand.	
This information is provided by the 10 controllers and contains the value for the energy de		
Datapoint Type		
DPT_Name: DPT_Percent_U8		
DPT Format: U ₈ DPT_ID: 5.004		
Field Description Supp. Range	Unit	Default
M full	%	CS
Access Type		
♦ Input		
$N \rightarrow \text{this}$ \square $1 \rightarrow \text{this}$ \square		
Spontaneous Cyclically: Time-out: 3	31 min	(rec.)
Request Polling: Period:		
Communication Type		
♦ Group Object Datapoint Mandatory:		
Default Group Address:		
Dynamics		
Power down: Save:		
Power up: Value: No initialisation: Default value:		
Saved value:		
Read from bus:		
Exception Handling		
Special Features		

3.3.6.4 Input ContrModeAct

LTE-HEE Mode

Not applicable.

Standard Mode

DF	Name:	ContrModeAct					Manda	Mandatory				
		CCDTTU					Can be	internal				
Description												
	This Information is provided by the TU controllers and contains the active ContrMode.											
	Datapoint Type											
	PT_Name:	DPT_HVACC	ontrMode									
	PT Format: N ₈ DPT_ID: 20.105											
Fie	eld	Description				Supp.	Range	Unit	Default			
		0 = Auto				M			0			
		1 = Heat	2 = Mrning			0						
		3 = Cool	4 = Night F	urge		0						
		5 = Precool	6 = Off			0						
		7 = Test	8 = Emerg			0						
		9 = Fan only				0						
		11 = Ice	20 = NoDem			0						
		other enums.				NA						
	cess Type											
	♦ Input											
	$N \rightarrow this$		$1 \rightarrow \text{this}$	- I								
	Spontaneou	ıs 🗵	Cyclically:			Time-		31 min (rec.				
	Request		Polling:			Perio	d:					
Co	mmunication							- L K				
♦		ect Datapoint					Mandatory	′ : ⊠				
		up Address:										
Dy	namics											
	Power down		<u> </u>	_								
	Power up:	Value:	No initialisation:		Defau	ılt value:						
			Saved value:									
					Read	from bus:						
Ex	ception Ha	ndling										
Sp	ecial Featu	res										

3.3.6.5 Output TempFlowWaterDemCCDTTU

Standard Mode

Not applicable.

LTE-HEE Mode

FB: CCDTTU		LTE Sei	•							Mar	Mandatory 🖂		
Output N		Name:							0	Optional			
Description:													
This output contains the setpoint value for the flow water temperature controller.													
DPT:	Name	D s	PT_Tem	pFlowWate	FlowWaterDemAb DPT ID 210.100 Datatype format V_1					V ₁₆ B ₁₆			
Field				Description			S	Sup.	Rang	е	Unit	COV	Default
Temp	erature			Temperature setpoint value				М	fı	ااد	°C	0.5	CS
				for flow water									
Attribu			Bit							et B ₁₆			
- Dem			0	Validity of				M		/false	bool	Υ	false
	₋oadPrio		1	Absolute		ity		0		/false	bool	Υ	false
	LoadPrio		2	Shift load				0		/false	bool	Υ	false
	TempLimi		3			h max limit		0		/false	bool	Υ	false
	TempLimit		4			h min limit		0		/false	bool	Υ	false
- DHV	VRequest		5	Demand for only	from DHV	V, for DHW	/ 1	NA	fa	lse	bool		false
- Roo	mCtrlReq		6		from room	control		0	true	/false	bool	Υ	true
- Vent			7	Demand from ventilation				ΝA		lse	bool		false
	AllSeason	R	8		Demand from auxiliary			0		/false	bool	Υ	false
			consum.										
	- SystPumpReq 9 Reques				circulation		0	true/false		bool	Y	false	
- Eme	rgDem		10	resulting emergency heat				0	true	/false	bool	Y	false
				demand f		otection							
	<u>VLegioRe</u>	q	11	for DHW only				NA	fa	lse	bool		false
- reserved 12-15					1	NA					false		
	nunicatio												
	ding Groເ	ıp:								1			
Clas				Type Default						ılt			
	eographica												
	plication S	Spe	ecific 🔀	DistrSegmC 1									
	assigned				Broadcast Configurable								
	Address:				IO Type(ID): 216 (CCDTTU) Property ID: 51								
	-Services	(e			COV MinRepTime: 10 sec Heartbeat: 15 min								
Inf	oReport		\boxtimes	Output per default communicating Binding Group Wildcard allowed									
<i>,</i> , _		_		Tx Prio: High ☐ Normal ⊠ Low ☐									
	ΓΕ Read-I												
	lling of the			Transm a	fter Powe	r-up: Store	d V	/alue		Act Val	ue 🖂	Default \	/alue □
shall always be								U. U. U					
	pported)												
	perty-Ser ividual ad			Read only	y 🗆		Re	ead/V	Vrite]		
Exce	otion Han	dli	ng:								Save	at Power	down
Speci	ial Featur	es											
					<u> </u>							· · · · · · · · · · · · · · · · · · ·	

3.3.6.6 Parameter DistrSegmC

FB:	CCDTTU	Prope	erty Name (Server):	DistrSeg	JmC			Man	datory 🛛		
								Op	otional 🗌		
Description:											
Numb	Number of the cooling distribution segment.										
DPT:	Name D	PT_U	countValue8_Z	untValue8_Z DPT ID 202.002 Datatype format U ₈ Z ₈							
Field			Description			Sup.	Range	Unit	Default		
Zone			Number of the Coolin	g Segmen	t	М	(0) 131		1		
STAT	US							Bitset			
- Out	ofService		zone active / inactive			0	true/false		false		
- all o	ther bits		not supported, fixed to	o '0'		NA		bool	false		
COM	MAND			enum				CS			
- Nor	malWrite			M							
- SetOSV & ResetOSV			Set zone inactive / ac	ctive O							
- all other commands			not supported			NA					
Communication:											
DP	Address:		IO Type(ID):	216 (CCD	TTU)	Property ID: 101					
(in the server)			Start-Index:	1		N° of e	elements	1			
Property access: Read only			Read only		Read/W	/rite	\boxtimes				
Protection Read level				-		Write I	evel	=			
Exce	ption Handli	ng:	Value after Power-up	: Stored \	Value ⊠	Act Va	lue 🗌 🛮 Def	ault Value	<u> </u>		
	Special Features:										
The device is not LTE communicating in this zone if zone is 'OutOfService'.											

3.3.6.7 Parameter OutsideSensorZone

FB: CCDTTU Prop	perty Name (<u>Server</u>): OutsideSensorZone					Mandatory ☐ Optional ⊠				
Description:										
Number of the outside sensor zone. DPT: Name DPT UcountValue8 Z DPT ID 202.002 Datatype format U ₈ Z ₈										
DPT : Name DPT_U	U ₈ Z ₈									
Field	Description		Sup.	Range	Unit	Default				
Zone	Number of the Outsid	le Sensor Zone	M	(0) 131		1				
STATUS					Bitset					
- OutofService	zone active / inactive		0	true/false		false				
- all other bits	not supported, fixed to	o '0'	NA		bool	false				
COMMAND			enum			CS				
- NormalWrite		M								
- SetOSV & ResetOSV	Set zone inactive / ac	Set zone inactive / active								
- all other commands	not supported		NA							
Communication:	-		•	-	<u>-</u>					
DP Address:	IO Type(ID):	216 (CCDTTU)	Proper	rty ID:	102					
(in the server)	Start-Index:	1	N° of e	N° of elements 1						
Property access:	√rite	\boxtimes								
Protection	Read level	-	Write level -							
Exception Handling: Value after Power-up: Stored Value ☐ Act Value ☐ Default Value ☐										
Special Features:										
The device is not LTE communicating in this zone if zone is 'OutOfService'.										

${\bf 3.3.6.8} \quad {\bf Diagnostic\ Data\ Value Energy Dem Act}$

FB:	CCDTTU	Prope	erty Name (<u>Server</u>):	ty Name (<u>Server</u>): ValueEnergyDemAct					Mandatory ☐ Optional ⊠		
Description:											
Calculated value of energy demand.											
DPT : Name DPT_Per			rcent_U8	DPT ID	5.004	Data	atype format	U ₈			
Field			Description			Sup.	Range	Unit	Default		
Value			Calculated energy de	mand val	ue	М	full	%	CS		
Comn	Communication:										
DP Address:			IO Type(ID):	216 (CCDTTU) Property ID: 1			111	111			
(in t	he server)		Start-Index:	1 N° of elements			1				
Property access:			Read only		Read/W	/rite					
Prot	ection		Read level	-		Write I	evel	-			
Excep	otion Handl	ling:	Value after Power-up	: Stored	Value 🛚	Act Va	lue 🔲 De	fault Value			
Speci	al Features	S :									

3.4 Air Heater Energy Demand Transformer TU (AHDTTU)

3.4.1 Aims and objectives

The Functional Block 'Air Heater Energy Demand Transformer TU' transforms the heating energy demand information out of the terminal units (e.g. re-heater of VAV control) into a flow water temperature value.

There are corresponding Functional Blocks for radiator heating, chilled ceiling cooling and for air re-cooler and for ventilation.

3.4.2 Functional specification

To transform the energy demand values to a flow temperature there are different possibilities: e.g.

- demand % to °C by means of a curve
- demand (yes/no) plus a heating curve (based on outside temperature)
- a combination of the above
- demand (yes/no) to a fix temperature

Detailed realisation is manufacturer specific.

Inputs

• TempOutside	This information contains the outside temperature, delivered from another device with this functionality.
• EnergyDemAH (n times)	This information is delivered by the TU controllers which need hot water. (100 % = full heating) The LTE information is completed with an attribute containing information from the ContrMode.
• ValueEnergyDemAH (n times)	This information is delivered by the TU controllers which need hot water. (100 % = full heating) (only in S-Mode separate, see EnergyDemAH)
• ContrModeAct (n-times)	The controlling mode delivered by the TU controllers. (only in S-Mode separate, see EnergyDemAH)

Outputs

• TempFlowWaterDemAHDTTU This value represents the demanded flow water temperature for heating plus attributes.

Binding Groups (LTE)

The Functional Block shows 2 different binding groups.

•	DistrSegmH_c	This binding group defines the distribution segment heating.
•	OutsideSensorZone_o	This binding group defines the outside sensor zone, from which the outside temperature will be taken.

Parameters

• cs

Diagnostic Data

• ValueEnergyDemAct

This value represents a theoretical average value of the input demands. The calculation is company specific.

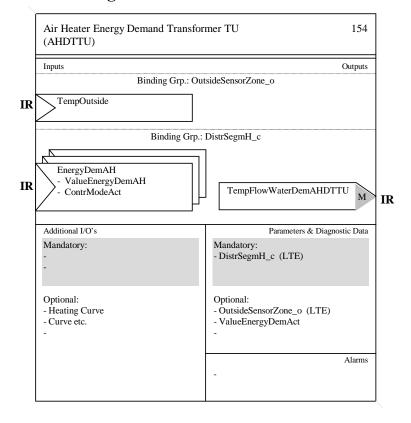
Alarms

• cs

3.4.3 Constraints

None.

3.4.4 Functional Block Diagram



3.4.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Inputs			
Temp Outside	Outside temperature actual value with: - COV and RepPer - Z ₈ STATUS supported from FB 'Outside Temperature Sensor'	LTE: 205.100 DPT_TempHVACAbs_Z V ₁₆ Z ₈ S: 9.001 DPT_Value_Temp F ₁₆	LTE: O S: (GO) °C
n times			
Energy Dem AH	Energy demand value for Heat Flow Demand manager (water) (100 % = full heating) plus ContrMode with: - COV and RepPer from FB various TU controller	LTE: 211.100 DPT_EnergyDemWater U ₈ N ₈ S: NA	LTE: M S: NA 0% 100 % plus Attribute
Value Energy Dem AH	Energy demand value for Heat Flow Demand manager (water) (100 % = full heating) with: - COV and RepPer from FB various TU controller	LTE: NA S: 5.004 DPT_Percent_U8 U ₈	LTE: NA S: (GO) 0% 100 %
Contr Mode Act	Active Controlling Mode with: - COV and RepPer from FB various TU controller	LTE: NA S: 20.105 DPT_HVACContrMode N ₈	LTE: NA S: (GO) enum.
Outputs			
Temp Flow Water Dem AHDTTU	Demanded flow water temperature with: - COV and RepPer to FB 'Heat Flow Demand Manager'	LTE: 210.100 DPT_TempFlowWaterDemAbs V ₁₆ B ₁₆ S: NA	LTE: M S: NA °C plus attributes
Parameter			
Distr SegmH_c	LTE zoning number for Distribution Segment Heating	202.002 DPT_UcountValue8_Z U ₈ Z ₈	M 1
Outside Sensor Zone_o	LTE zoning number for Outside Sensor Zone	202.002 DPT_UcountValue8_Z U ₈ Z ₈	O 1
Diagnostic Data			
Value Energy Dem Act	Theoretical, calculated value for the energy demand	5.004 1) DPT_Percent_U8 U ₈	O 0% 100 %

¹⁾ Implementation of Properties using standard DPT see chapter 1.3.2

AHDTTU Runtime Interworking - Dependence on Configuration Modes

			STANDARD MODE	EXTE MO	
		Basic FB	S-Mode	Standard Mode Interface	LTE-MODE
Inputs	TempOutside	(GO _b)		(GO)	O
	EnergyDemAH 1)	NA _b	NA	NA	M
	ValueEnergyDemAH 2)	(GO _b)		(GO)	NA
	ContrModeAct 2)	(GO _b)		(GO)	NA
Outputs	TempFlowWaterDemAHDTTU	NA _b	NA	NA	M

AHDTTU LTE specific Properties

		Support
Parameter	DistrSegmH_c	M
	OutsideSensorZone_o	0

AHDTTU Standard Properties of Interface Objects (or memory mapped DP)

-		Support
Parameter		
DiagnosticData	ValueEnergyDemAct	0

combined information not available in S-Mode (see also ²⁾) single information of 1) (only in S-Mode available, see also ¹⁾)

3.4.6 Detailed specification of the Datapoints

3.4.6.1 Input TempOutside

DF	Name:	Tem	<u>pOutside</u>			Abbr.:			Manda	tory		
FΒ	Name:	AHD	TTU						Can be	interna	[
De	scription											
ħ	is information	on is	provided	by the F	unctional Blo	ck 'Outside	Tempe	erature Se	nsor'.			
Da	tapoint Ty	ре										
Б	DPT_Name: DPT_Value_Temp											
Б	PT Format:	F ₁₆						DPT_ID:	9.001			
Fie	eld	De	scription					Supp.	Range	Unit	Defa	ult
								0	full	°C	cs	
Ac	cess Type											
♦	Input											
	$N \rightarrow this$]	$1 \rightarrow th$	nis 🛛							
	Spontaneo	us			Cyclically:			Time	-out:	31 min	(rec.)	
	Request				Polling:			Perio	d:			
Co	mmunicat	ion T	уре									
•	Group Ob	ject [Datapoint						Mandatory	/:		
	Default Gro	oup A	Address:									
Dy	namics											
	Power dow	n:	Save:									
	Power up:		Value:	No ir	nitialisation:		Defau	ılt value:				
				Save	ed value:							
							Read	from bus	- -			
Ex	ception Ha	ndli	ng									
Sp	ecial Featu	ıres					•					

FB: AHDTTU LTE Cli Input N		TempOut	side					Mandatory ☐ Optional ⊠		
Description:		-						-		
This information is provided		unctional E	Block 'Outs	ide Temp	erature	Senso	or' and	includes t	he	
STATUS of the information										
DPT: Name DPT_Tem			DPT ID	205.100	Data	type fo		$V_{16}Z_{8}$		
Field	Descrip	tion					Sup.	Unit	Default	
Temperature	Temperature Outside temperature value M °C. cs									
STATUS	Bitset						М			
 OutOfService 		out of serv					М	t/f	false	
- Fault		value is co					0	t/f	false	
- Overridden		is tempora	rily override	den			0	t/f	false	
- InAlarm		is in alarm					0	t/f	false	
- AlarmUnAck	Acknow	/ledgement	of alarm				0	t/f	false	
Communication:										
Binding Group:										
Class	Type				Default					
Geographical										
Application Specific 🛛	Outside	SensorZon	ne		1					
Unassigned	Broadca	ast 🗌	Configura	ıble 🗌						
DP Address:	Ю Туре		320 (OTS		Proper	ty ID:		51		
LTE-Service (event):	InfoRep	ort Sniffer	on Binding	Group:						
InfoReport 🖂	Timeou	t:		31	Min					
LTE-Service (polling):	Pood W	/ildcard / R	oen Sniffor	on Rindi	na Grou	n:				
Read – Response 🗌	ixeau v	viidcaid / ix	esp Silliei	OH BIHUI	ng Grou	ρ				
Value after Power-up:	-	Default V	′alue 🛚			<u>-</u>	S	Stored Val	ue 🗌	
Exception Handling:						Save	at Pov	verdown		
Special Features:										

3.4.6.2 Input EnergyDemAH

Standard Mode

Not applicable.

FB:	AHDTTU	LTE (EnergyDe	emAH						datory 🖂
Door	rintion	Input	Na	me:							- Op	tional 🗌
	ription:	dod by	the	TILoon	trallara and	d contains	the velue	for the	0000	u domo	nd	
	nput is provid											
DPT:	Name D	PI_E	ner	gyDemV		DPT ID	211.100	Data	atype	format	U ₈ N ₈	D - (- 1)
Field				Descrip						Sup.	Unit	Default
Value				Energy	demand va	alue				M	%	CS
Mode				7 = Te	eat ool ecool est un only	4 = 6 = 8 = 10 =	= MrningW = Night Pu = Off = EmergH = Free Cod = NoDem	irge ·		M M O O O O O NA	enum.	0
Comi	nunication:			Other er	iuiiis.					INA		
	ding Group:											
Clas		1		Туре				Default	•			
	eographical		П	Турс				Delauli				
	plication Spe	ecific	$\overline{\square}$	DistrSe	amH			1				
	nassigned	COIIIC	$\frac{\square}{\square}$	Broadca		Configur	able \square	•				
DP	Address:			ІО Туре		258 (FC 259 (WH 260 (SP 261 (VA	C) IPC) UC)	Prope	rty ID	:	73	
LTE	-Service (ev	/ent):		InfoRep	ort Sniffer	on Bindin	g Group:			-		
Inf	oReport	\boxtimes		Timeou	t:		31	Min				
	- Service (po ead – Respoi		:	Read W	/ildcard / R	esp Sniffe	r on Bindi	ng Grou	ıp:	-		
Value	after Powe	r-up:			Default V	′alue 🛚				Ç	Stored Val	ue 🗌
Exce	ption Handli	ing:							Sav	e at Pov	werdown	
Spec	ial Features	:										
											<u>-</u>	

3.4.6.3 Input ValueEnergyDemAH

LTE-HEE Mode

Not applicable.

DP N	ame:	√alueEne	ergyDei	mAH			Abbr.:				Mar	ndat	ory		
FB Na	ame:	AHDTTU									Can	be	internal		
Desc	ription														
			ided by	the TU	controllers	and	contair	ns the v	value	for th	ne energ	gy d	emand.		
Datap	oint Typ	е													
	Name:	DPT_P	ercent_	_U8											
	ormat:	U ₈							DP	Γ_ID:	5.00)4			
Field		Descrip	tion						Su	pp.	Rang	е	Unit	Defa	ault
									1	M	full		%	CS	3
Acces	ss Type														
♦ In	put														
N -	\rightarrow this			$1 \rightarrow \text{this}$;										
Sp	ontaneo	ıs 🛛		(Cyclically:		\boxtimes			Time-	out:		31 min	(rec.)	
Re	equest			F	Polling:					Perio	d:				
Comr	nunicati	on Type													
♦ G	roup Obj	ect Datar	point								Manda	tory	: 🛛		
De	fault Gro	up Addre	ess:												
Dyna	mics														
Po	wer dow	n: Save	e:												
Po	wer up:	Valu	ie:	No init	ialisation:			Defau	ult va	lue:			\boxtimes		
				Saved	value:										
								Read	l from	bus:					
Exce	otion Ha	ndling												·	
Speci	ial Featu	res													

3.4.6.4 Input ContrModeAct

LTE-HEE Mode NA:

DF	Name:	ContrMode ContrMode	eAct		Abbr.:			Manda	Mandatory		
FB	Name:	AHDTTU						Can be	internal		
	scription										
Th	is Information	n is provid	led by the T	U controllers	and contain	ns the a	active Con	trMode.			
	Datapoint Type										
	PT_Name:		ACContrMo	ode							
	PT Format:	N ₈					DPT_ID:				
Fie	eld	Description					Supp.	Range	Unit	Default	
		0 = Auto					M			0	
		1 = Hea			ngWarmup)	0				
		3 = Coo			nt Purge		0				
		5 = Prec		6 = Off			0				
		7 = Test		8 = Eme			0				
		9 = Fan	only	10 = Free			0				
		11 = Ice		20 = NoD	em		0				
۸.	Turns	other enu	ıms.				NA				
	cess Type										
*	Input										
	$N \rightarrow this$		$1 \rightarrow t$		1 🗖		T	- 1	04	(max.)	
	Spontaneo	us 🗵		Cyclically:			Time		31 min	(rec.)	
•	Request			Polling:			Perio	a:			
	mmunicati							NA	[7]		
*		ect Datapo						Mandatory	r: 🛛		
ć	Default Gro	up Adares	S:								
υy	namics Power dow										
				nitialiantian.	1	Defe					
	Power up:	Value		nitialisation:	 	Delac	ılt value:				
			Sav	ed value:		Dood	from bus:				
Ev	contion Ho	n dlin a				Read	nom bus.				
⊏X	ception Ha	nuling									
2-	Special Features										
5 p	eciai reatu	162									

3.4.6.5 Output TempFlowWaterDemAHDTTU

Standard Mode

Not applicable.

FB:	AHDTTU	LTE Ser		owWaterD	emAHI	OTT	J			ndatory 🔯
		Output I	Name:						С	ptional 🗌
	ription:									
			point value for the f							
DPT:		OPI_Temp	oFlowWaterDemAb	טו ואט	210.10		, ,	e format	V ₁₆ B ₁₆	
Field			Description		Sup.	Rar		Unit	COV	Default
Temp	erature		Temperature setpe	M	M full		°C	2	cs	
			for flow water							
Attrib		Bit				tset B ₁₆				
- Dem		0	Validity of FlowTe		M		ıe/false	bool	Υ	false
	_oadPrio	1	Absolute load prio	rity	0		ıe/false	bool	Y	false
	LoadPrio	2	Shift load priority		0		ıe/false	bool	Y	false
- Max	TempLimit	3	TempFlowDem wi	th max	0	tru	ıe/false	bool	Υ	false
- Min	TempLimit	4	TempFlowDem wi	th min	0	tru	ıe/false	bool	Y	false
- DHV	VReq	5	Demand from DH\ DHW only	N, for	NA		false	bool		false
- Roo	mCtrlReq	6	Demand from roor	n control	0	tru	ıe/false	bool	Υ	true
- Vent		7	Demand from vent	tilation	NA		false	bool		false
- Aux	AllSeasonR	8	Demand from aux	iliary	0	true/false		bool	Υ	false
- Svst	PumpReq	9	consum. Request for water		0	trı	ıe/false	bool	Y	false
0,00			circulation				.0, .000			
- Eme	ergDem	10	resulting emergen demand for frost p		0	tru	ıe/false	bool	Υ	false
- DHV	VLegioReq	11	for DHW only	TOLCOLIOIT	NA false bool			bool		false
- rese		12-15			NA					false
Comr	nunication	:						•	•	
Bine	ding Group	:								
Clas			Туре				Defa	ault		
Ge	eographical		• •							
	plication Sp	ecific 🛛	DistrSegmH				1			
Ur	assigned		Broadcast	Configu	rable [
DP A	Address:		IO Type(ID):	154 (AHE	OTTU)	P	roperty I	D:	51	
LTE	-Services (event):	COV 🛛	MinRepTir	ne:	1	0 sec	Hear	tbeat:	15 min
Inf	oReport	\boxtimes	Output per default	communic	ating [E	inding G	roup Wild	card allo	wed 🗌
			Tx Prio:	High 🗌			Norma		Lo	w 🗌
	TE Read-Re									
	lling of the		Transm after Powe	er-up: Store	ed Valu	е П	Act V	alue 🖂	Default \	/alue □
	all always b	е	Transmanor rowe	or up. Otore	ou valu	• Ш	7101		Doladit	valuo 🗀
	pported)									
	perty-Servi ividual acc		Read only]	Read	/Wri	te [\boxtimes		
	otion Hand							Save	at Powe	rdown
			_							
Speci	ial Features	<u></u>								

3.4.6.6 Parameter DistrSegmH

FB:	AHDTTU	Prop	erty Name (<u>Server</u>):	DistrSeg	JmΗ	Mandatory 🔀			
								Op	otional 🗌
Desci	ription:	_		-				-	
Numb	er of the he	eating di	stribution segment.						
DPT:	Name	DPT_U	countValue8_Z	DPT ID	202.002	Data	atype format	U ₈ Z ₈	
Field			Description			Sup.	Range	Unit	Default
Zone			Number of the Heatin	g Segmen	М	(0) 131		1	
STAT	US							Bitset	
- Outo	ofService		zone active / inactive			0	true/false		false
- all of	ther bits		not supported, fixed to	o '0'		NA		bool	false
COMI	MAND						enum		CS
- Norr	nalWrite					M			
- SetC	OSV & Rese	etOSV	Set zone inactive / ac	tive		0			
- all of	ther comma	ands	not supported			NA			
Comr	nunication	:	-					-	-
DP A	Address:		IO Type(ID):	154 (AHD	TTU)	Proper	ty ID:	101	
(in t	he server)		Start-Index:	1		N° of e	lements	1	
Pro	perty acce	ss:	Read only		Read/W	'rite	\boxtimes		
Prot	ection		Read level	-		Write I	evel	-	
Exce	otion Hand	ling:	Value after Power-up:	: Stored '	Value 🛚	Act Va	lue 🔲 🛮 Def	ault Value	<u> </u>
Speci	ial Feature	s:							
The d	evice is not	LTE co	mmunicating in this zo	ne if zone	is 'OutOf	fService	'.		

3.4.6.7 Parameter OutsideSensorZone

FB: AHDTTU Prop	erty Name (<u>Server</u>):	rty Name (<u>Server</u>): OutsideSensorZone								
Description:		·			Ė					
Number of the outside s	ensor zone.									
DPT: Name DPT_U	countValue8_Z	DPT ID 202.002	2 Data	atype format	U ₈ Z ₈	U_8Z_8				
Field	Description		Sup.	Range	Unit	Default				
Zone	Number of the Outsid	e Sensor Zone	М	(0) 131		1				
STATUS					Bitset					
- OutofService	zone active / inactive		0	true/false		false				
- all other bits	not supported, fixed to	o '0'	NA		bool	false				
COMMAND				enum		cs				
- NormalWrite			M							
- SetOSV & ResetOSV	Set zone inactive / ac	tive	0							
- all other commands	not supported		NA							
Communication:	-		-	-	<u>-</u>	=				
DP Address:	IO Type(ID):	154 (AHDTTU)	Proper	rty ID:	102					
(in the server)	Start-Index:	1	N° of e	elements	1					
Property access:	Read only	Read/W	/rite	\boxtimes						
Protection	Read level	-	Write I	evel	-					
Exception Handling:	Value after Power-up	: Stored Value 🛚	Act Va	lue 🗌 Det	fault Value	e 🗌				
	·	·		•						
Special Features:										
The device is not LTE co	ommunicating in this zo	ne if zone is 'OutO	fService	e'.						

${\bf 3.4.6.8} \quad {\bf Diagnostic\ Data\ Value Energy Dem Act}$

FB:	AHDTT	U	Prope	erty Name (<u>Server</u>):	r): ValueEnergyDemAct							Mandatory Optional		
Desc	ription:		<u>!</u>			-					<u></u>	<u> </u>		
Calcu	lated val	ue c	f energ	gy demand.										
DPT:	DPT : Name DPT_Pe			ercent_U8	cent U8 D			Datatype format			U ₈			
Field	Field Description							Sup.	R	ange	Unit	Default		
Value			Calculated energy	der	emand value M full					%	cs			
Comr	nunicati	on:												
DP A	Address	:		IO Type(ID):	•	154 (AHD	Prope	Property ID:						
(in t	he serve	r)		Start-Index:	•	1		N° of e	eler	ments	1			
Pro	perty ac	ces	s:	Read only			Read/W	/rite						
Pro	tection			Read level	-	•		Write	leve	el	-			
Exce	ption Ha	ndli	ng:	Value after Power-u	лр:	Stored	Value 🛚	Act Va	alue	e 🔲 De	fault Valu	e 🗌		
Speci	ial Featu	res				•	•	•		•				

3.5 Air Cooler Energy Demand Transformer TU (ACDTTU)

3.5.1 Aims and objectives

The Functional Block 'Air Cooler Energy Demand Transformer TU' transforms the cooling energy demand information out of the terminal units (e.g. re-cooler of a VAV control) into a flow water temperature value.

There are corresponding Functional Blocks for radiator heating, chilled ceiling cooling and for air re-heater and for ventilation.

3.5.2 Functional specification

To transform the energy demand values to a flow temperature there are different possibilities: e.g.

- demand % to °C by means of a curve
- demand (yes/no) plus a cooling curve (based on outside temperature)
- a combination of the above
- demand (yes/no) to a fix temperature

Detailed realisation is manufacturer specific.

Inputs

• TempOutside	This information contains the outside temperature, delivered from another device with this functionality.
• EnergyDemAC (n times)	This information is delivered by the TU controllers which need cold water. (100 % = full cooling) The LTE information is completed with an attribute containing information from the ContrMode.
 ValueEnergyDemAC (n times) 	This information is delivered by the TU controllers which need cold water. (100 % = full cooling) (only in S-Mode separate, see EnergyDemAC)
• ContrModeAct (n-times)	The controlling mode delivered by the TU controllers. (only in S-Mode separate, see EnergyDemAC)

Outputs

• TempFlowWaterDemACDTTU This value represents the demanded flow water temperature for cooling plus attributes.

Binding Groups (LTE)

The Functional Block shows 2 different binding groups.

•	DistrSegmC_d	This binding group defines the distribution segment cooling.
•	OutsideSensorZone_o	This binding group defines the outside sensor zone, from which the outside temperature will be taken.

Parameters

• cs

Diagnostic Data

• ValueEnergyDemAct

This value represents a theoretical average value of the input demands. The calculation is company specific.

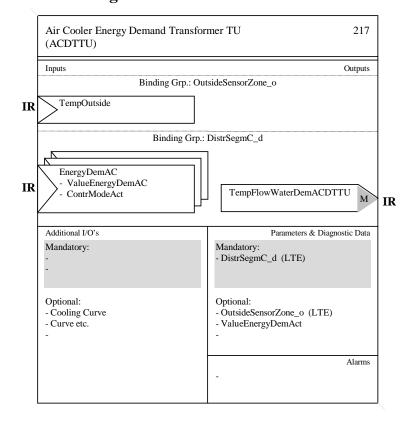
Alarms

• cs

3.5.3 Constraints

None.

3.5.4 Functional Block Diagram



3.5.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info		
Inputs					
Temp Outside	Outside temperature actual value with: - COV and RepPer - Z ₈ STATUS supported from FB 'Outside Temperature Sensor'	LTE: 205.100 DPT_TempHVACAbs_Z V ₁₆ Z ₈ S: 9.001 DPT_Value_Temp F ₁₆	LTE: O S: (GO) °C		
n times					
Energy Dem AC	Energy demand value for Cold Flow Demand manager (water) (100 % = full cooling) plus ContrMode with: - COV and RepPer from FB various TU controller	LTE: 211.100 DPT_EnergyDemWater U ₈ N ₈ S: NA	LTE: M S: NA 0% 100 % plus Attribute		
Value Energy Dem AC	Energy demand value for Cold Flow Demand manager (water) (100 % = full cooling) with: - COV and RepPer from FB various TU controller	LTE: NA S: 5.004 DPT_Percent_U8 U ₈	LTE: NA S: (GO) 0% 100 %		
Contr Mode Act	Active Controlling Mode with: - COV and RepPer from FB various TU controller	LTE: NA S: 20.105 DPT_HVACContrMode N ₈	LTE: NA S: (GO) enum.		
Outputs					
Temp Flow Water Dem ACDTTU	Value for demanded flow water temperature with: - COV and RepPer to FB 'Cold Flow Demand Manager'	LTE: 210.100 DPT_TempFlowWaterDemAbs V ₁₆ B ₁₆ S: NA	LTE: M S: NA °C plus attributes		
Parameter					
Distr SegmC_d	LTE zoning number for Distribution Segment Cooling	202.002 DPT_UcountValue8_Z U ₈ Z ₈	M 1		
Outside Sensor Zone_o	LTE zoning number for Outside Sensor Zone	202.002 DPT_UcountValue8_Z U ₈ Z ₈	O 1		
Diagnostic Data					
Value Energy Dem Act	Theoretical, calculated value for the energy demand	5.004 1) DPT_Percent_U8 U ₈	O 0% 100 %		

¹⁾ Implementation of Properties using standard DPT see chapter 1.3.2

ACDTTU Runtime Interworking - Dependence on Configuration Modes

			STANDARD MODE	EXTE MO	
		Basic FB	S-Mode	Standard Mode Interface	LTE-MODE
Inputs	TempOutside	(GO _b)		(GO)	О
	EnergyDemAC	NA _b	NA	NA	M
	ValueEnergyDemAC	(GO _b)		(GO)	NA
	ContrModeAct	(GO _b)		(GO)	NA
Outputs	TempFlowWaterDemACDTTU	NA _b	NA	NA	M

ACDTTU LTE specific Properties

		Support
Parameter	DistrSegmC_d	M
	OutsideSensorZone_o	0

ACDTTU Standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter		
DiagnosticData	ValueEnergyDemAct	0

combined information not available in S-Mode (see also ²⁾) single information of 1) (only in S-Mode available, see also ¹⁾)

3.5.6 Detailed specification of the Datapoints

3.5.6.1 Input TempOutside

DF	Name:	Tem	<u>pOutside</u>			Abbr.:			Manda	Mandatory			
FΒ	Name:	ACD	TTU						Can be	internal	[
De	scription												
Th	is information	on is	provided	by the F	unctional Blo	ck 'Outside	Tempe	erature Se	nsor'.				
Da	tapoint Ty	ре											
Б	PT_Name:	DP	T_Value_	Temp									
Б	PT Format:	F ₁₆						DPT_ID:	9.001				
Fie	eld	De	scription					Supp.	Range	Unit	Defau	ult	
								0	full	°C	cs		
Ac	cess Type												
♦	Input												
	$N \rightarrow this$]	$1 \rightarrow th$	nis 🛛								
	Spontaneo	us			Cyclically:			Time	-out:	31 min (rec.)			
	Request				Polling:			Perio	d:				
Co	mmunicat	on T	уре										
•	Group Ob	ject [Datapoint						Mandatory	/:			
	Default Gro	oup A	Address:										
Dy	namics												
	Power dow	'n:	Save:										
	Power up:		Value:	No ir	nitialisation:		Defau	ılt value:					
				Save	ed value:								
							Read	from bus:					
Ex	ception Ha	ndlii	ng										
i													
Sp	ecial Featu	ires											
								·					

FB: ACDTTU LTE CI		TempOut	side		Mandatory ☐ Optional ⊠				
Description:								=	
This information is provide		unctional E	Block 'Outs	ide Temp	erature	Senso	or' and	includes t	he
STATUS of the information			_						
DPT : Name DPT_Tem			DPT ID	205.100	Data	type fo		$V_{16}Z_{8}$	
Field	Descrip	tion					Sup.	Unit	Default
Temperature	Outside	temperatu	re value				М	°C.	CS
STATUS	Bitset						М		
 OutOfService 		out of servi					М	t/f	false
- Fault	0	t/f	false						
- Overridden	0	t/f	false						
- InAlarm		is in alarm					0	t/f t/f	false
- AlarmUnAck Acknowledgement of alarm O									false
Communication:									
Binding Group:									
Class	Туре				Default				
Geographical									
Application Specific 🗵	Outside	SensorZon	ie		1				
Unassigned	Broadc	ast 🗌	Configura	ıble 🗌					
DP Address:	IO Type		320 (OTS		Proper	ty ID:		51	
LTE-Service (event):	InfoRep	ort Sniffer	on Binding	Group:					
InfoReport 🖂	Timeou	t:		31	Min				
LTE-Service (polling):	Pood W	/ildcard / R	oen Sniffor	on Rindi	na Grou	n:			
Read – Response 🗌	INEau V	viidcard / iXi	esp Silliei	OH BIHUI	ng Grou	ρ			
Value after Power-up: Default Value ⊠							S	Stored Val	ue 🗌
Exception Handling:						Save	at Pov	verdown	
Special Features:									

3.5.6.2 Input EnergyDemAC

Standard Mode

Not applicable.

FB:	ACDTTU	LTE (Mandatory 🖂		
_		Input	Na	me:									Op	tional 🗌	
	ription:														
	nput is provi							_							
DPT:	Name [PT_E	ner	gyDemV			PT ID	211.10	0	Dataty	ype	format	U ₈ N ₈		
Field				Descrip								Sup.	Unit	Default	
Value				Energy demand value							М	%	CS		
Mode												М	enum.	0	
				0 = Au								М			
			1 = He				: Mrning\				0				
			3 = Cc				Night P	urg	е		0				
					ecool		6 =	•				0			
				7 = Te				Emergh		t		0			
					n only			Free Co				0			
				11 = Ice 20 = NoDem							0				
_				other er	nums.							NA	<u></u>		
	nunication:														
	ding Group	:		_											
Clas			_	Type				D	Default						
	eographical		<u>Ц</u>												
	plication Sp	ecific	$\underline{\boxtimes}$	DistrSe					1						
	nassigned			Broadca	ast 💹		Configura								
DP	Address:			Ю Туре	e(ID):		258 (FC0 261 (VA)		P	Propert	y ID	:	74		
	-Service (e			InfoRep	ort Sniffe	er on	Binding					-			
Inf	oReport	\boxtimes		Timeou	t:			31	М	in					
	- Service (p ead – Respo		:	Read W	/ildcard /	Res	p Sniffe	r on Bind	ding	Group	o:	-			
Value after Power-up: Default Value ⊠								(Stored Val	ue 🗌					
Exce	ption Handl	ing:		Sav					ve at Powerdown						
Spec	ial Features	s:													

3.5.6.3 Input ValueEnergyDemAC

LTE-HEE Mode

Not applicable.

DF	Name:		ueEnergyD	emAC		Abbr.:		-		Man	ıdat	ory		
FΒ	Name:	ACE	DTTU							Can	be	internal		
De	scription													
Th	is Informati	on is	provided b	y the T	U controllers	and contai	ns the	value	e for th	ne energ	jy d	emand.		
	tapoint Ty													
	PT_Name:	DF	PT_Percent	t_U8										
DF	PT Format:	U ₈						DP	T_ID:	5.00)4			
Fie	eld	De	escription					Sı	upp.	Range	е	Unit	Defa	ault
									М	full		%	CS	S
Ac	cess Type													
♦	Input													
	$N \rightarrow this$			$1 \rightarrow th$	nis 🔲									
	Spontaneo	us			Cyclically:				Time	-out:		31 min	(rec.))
	Request				Polling:				Perio	d:				
Co	mmunicat	ion 1	Гуре											
*	Group Ob	ject	Datapoint							Mandat	tory	: 🛛		
	Default Gro	oup /	Address:											
Dy	namics													
	Power dow	n:	Save:											
	Power up:		Value:	No ir	nitialisation:		Defa	ault va	alue:					
				Save	ed value:									
							Rea	d fror	n bus:	•				
Ex	ception Ha	ındli	ng											
Sp	ecial Featu	ıres												

3.5.6.4 Input ContrModeAct

LTE-HEE Mode

Not applicable.

DF	Name:	Contr	ModeAct				Abbr.:				Manda	tory	
	FB Name: ACDTTU Can be internal												
	scription												
	is Informatio		provided by	the T	U contr	ollers and	d contain	s the a	active	e Con	trMode.		
	tapoint Typ												
	PT_Name:		T_HVACC	ontrMo	de								
	T Format:	N ₈								T_ID:	20.105		
Fie	eld		cription							ıpp.	Range	Unit	Default
		-	= Auto							M			0
			= Heat			= Mrning				0			
		_	= Cool			= Night P	urge			0			
			= Precool			= Off				0			
			= Test			= Emergl				0			
			= Fan only		_	= Free C				0			
			= Ice		20 =	= NoDerr				0			
_		othe	er enums.						<u> </u>	۱A			
	cess Type												
♦	Input					_							
	$N \rightarrow this$		T R	$1 \rightarrow th$		<u> </u>							
	Spontaneou	JS			Cyclic					Time-		31 min	(rec.)
	Request				Polling	g:				Perio	<u>d:</u>		
Co	mmunicati											1 5	
♦											Mandatory	/:	
	Default Gro	up A	ddress:										
Dy	namics												
	Power dow		Save:				_						
	Power up:	\	√alue:		itialisat			Defau	ılt va	lue:			
				Save	d value	e:							
								Read	fron	<u>1 bus:</u>			
Ex	ception Ha	<u>ndlin</u>	g										
Sp	ecial Featu	res											

3.5.6.5 Output TempFlowWaterDemACDTTU

Standard Mode

Not applicable.

FB:	ACDTTU		LTE Ser		er TempFlowWaterDemACDTTU					Mandatory 🗵				
Output N			Name:									Op	tional 🗌	
Description: This output contains the setpoint value for the flow water temperature controller.														
	-						_							
DPT:	Name	DF s	PT_Temp	FlowWate	erDemAb	DPT ID	2	10.100	ם כ	atatype	format	V ₁₆	₆ B ₁₆	
Field				Description	on			Sup.	Ran	ge	Unit		COV	Default
Temp	erature			Temperate for flow w		int value		М		full	°C		0.5	cs
Attribu	utes		Bit				T		Bits	set B ₁₆				
- Dem			0	Validity of	fFlowTen	npDem	T	М		e/false	bool		Υ	false
	LoadPrio		1	Absolute				O		e/false	bool		Y	false
- Shift	LoadPrio		2	Shift load		,		0		e/false	bool		Υ	false
	TempLimit	t	3			h max limit	t	0	tru	e/false	bool		Υ	false
	TempLimit		4			h min limit		Ö		e/false	bool		Y	false
- DHV			5			V, for DHW		NA		alse	bool			false
- Roo	mCtrlReq		6	Demand	from room	control		0	tru	e/false	bool		Υ	true
- Vent			7	Demand				NA		alse	bool			false
	allSeasoni	R	8	Demand				Ö		e/false	bool		Υ	false
				consum.		•								
	:PumpReq		9			circulation		0		e/false	bool		Y	false
- Eme	ergDem		10	resulting				0	tru	e/false	bool		Υ	false
- DHV	VLegioRed	,	11	demand f		otection		NA	f	alse	bool			false
- rese		1	12-15	IOI DI IVV	Office		_	NA	'	aisc	DOOL			false
	nunicatio	n:									L			
	ding Grou													
Clas				Type						Defau	ult			
Ge	eographica	al		,										
Ap	plication S	Spe	cific 🛚	DistrSegr	nC					1				
Ur	nassigned			Broadcas	t 🗌	Configu	ral	ble 🗌						
	Address:			IO Type(I		217 (ACD				perty ID		51		
	-Services	(ev		COV 🖂		MinRepTin				sec	Hea			15 min
Inf	oReport		\boxtimes		er default	communic	ati	ing 🗌	Bin	ding Gr	oup Wild	dcar	d allow	/ed 🗌
				Tx Prio:		High 🗌				Normal	\boxtimes		Low	
	TE Read-F													
	lling of the		tput	Transm a	fter Powe	r-up: Store	he	Value	П	Act Va	lue 🕅	De	fault V	alue 🗍
	all always	be		Transm a	itoi i owe	n up. Otore	Ju	vaide	ш	7101 14		00	iddit V	
	pported)													
Property-Service (individual access): Read only ☐ Read/Write ☐														
Exce	ption Han	dlin	ng:								Save	at I	Powero	lown
Speci	ial Feature	es:												
		_		· <u></u>										

3.5.6.6 Parameter DistrSegmC

FB:	ACDTTU	Prop	erty Name (<u>Server</u>):	DistrSeg	mC				datory 🔯
								Op	otional 🗌
Desci	ription:	-		-				-	
Numb	er of the co	oling di	stribution segment.						
DPT:	Name	DPT_U	countValue8_Z	DPT ID	202.002	Data	atype format	U_8Z_8	
Field			Description			Sup.	Range	Unit	Default
Zone			Number of the Cooling	g Segmen	t	M	(0) 131		1
STAT	US							Bitset	
- Outo	fService		zone active / inactive			0	true/false		false
- all of	ther bits		not supported, fixed to	o '0'		NA		bool	false
COMI	MAND						enum		CS
- Norr	nalWrite					M			
- SetC	SV & Rese	etOSV	Set zone inactive / active O						
- all of	ther comma	ınds	not supported			NA			
Comr	nunication	:	-		-			-	-
DP A	Address:		IO Type(ID):	217 (ACD	TTU)	Proper	ty ID:	101	
(in t	he server)		Start-Index:	1		N° of e	lements	1	
Pro	perty acces	ss:	Read only		Read/W	rite	\boxtimes		
Prof	ection		Read level	-		Write I	evel	-	
Exce	otion Hand	ling:	Value after Power-up:	Stored \	/alue ⊠	Act Va	lue 🔲 🛮 Def	ault Value	: <u> </u>
Speci	al Feature	s:							
The d	evice is not	LTE co	mmunicating in this zo	ne if zone	is 'OutOf	Service	' .		•

3.5.6.7 Parameter OutsideSensorZone

FB: ACDTTU Prop	perty Name (<u>Server</u>): OutsideSensorZone					datory 🗌			
Description:		·			Ė				
Number of the outside se	ensor zone.								
DPT: Name DPT_U	countValue8_Z	DPT ID 202.002	2 Data	atype format	U_8Z_8				
Field	Description	Sup.	Range	Unit	Default				
Zone	Number of the Outsid	e Sensor Zone	М	(0) 131		1			
STATUS					Bitset				
- OutofService	zone active / inactive		0	true/false		false			
- all other bits	not supported, fixed to	NA		bool	false				
COMMAND				enum		CS			
- NormalWrite			M						
- SetOSV & ResetOSV	Set zone inactive / ac	0							
- all other commands	not supported NA								
Communication:	•		-	-	<u>-</u>				
DP Address:	IO Type(ID):	217 (ACDTTU)	Proper	rty ID:	102				
(in the server)	Start-Index:	1	N° of e	elements	1				
Property access:	Read only	Read/W	/rite	\boxtimes					
Protection Read level - Write level					-				
Exception Handling: Value after Power-up: Stored Value ☐ Act Value ☐ Default Value ☐									
Special Features:									
The device is not LTE co	The device is not LTE communicating in this zone if zone is 'OutOfService'.								

${\bf 3.5.6.8} \quad {\bf Diagnostic\ Data\ Value Energy Dem Act}$

FB: ACDTTU Prope		rty Name (<u>Server</u>):	ValueE	nergyDen	nAct			datory 🗌 otional 🖂	
Desci	ription:	-						•	
Calcu	lated value o	of energ	y demand.						
DPT:	Name D	PT_Pe	rcent_U8	DPT ID	5.004	Data	atype format	U ₈	
Field			Description			Sup.	Range	Unit	Default
Value			Calculated energy de	mand val	ue	М	full	%	CS
Comn	nunication:								
DP /	Address:		IO Type(ID):	217 (ACE	DTTU)	Proper	ty ID:	111	
(in t	he server)		Start-Index:	1		N° of e	elements	1	
Prop	perty access	s:	Read only		Read/W	/rite			
Prot	ection		Read level	-		Write I	evel	-	
Excep	otion Handli	ng:	Value after Power-up	: Stored	Value 🛚	Act Va	lue 🗌 Def	fault Value	-
Speci	al Features	:		•	•		-	-	

3.6 Ventilation Demand Transformer TU (VDTTU)

3.6.1 Aims and objectives

The Functional Block 'Ventilation Demand Transformer TU' transforms the energy demand and the fresh air demand information out of the terminal units into a supply air temperature value set (heat and cool) and a fresh air demand value.

The determination of the temperature values as well as the fresh air demand value is manufacturer specific.

The limitation of the supply air temperature setpoint shall be set via the Parameter TempSupplyAirSetpMin and TempSupplyAirSetpMax.

Example:

3.6.2 Functional specification

Inputs

•	TempOutside	This information	contains the o	outside temperature	e, delivered from
---	-------------	------------------	----------------	---------------------	-------------------

another device.

• EnergyDemAir This information is delivered by the TU controllers that need

(n times) preconditioned air.

(-100 % = full heating, +100 % = full cooling)

The LTE information is completed with attributes containing information from the ContrMode and the EmergencyMode.

• ValueEnergyDemAir This information is delivered by the controllers that need

(n times) preconditioned air.

(-100 % = full heating, +100 % = full cooling) (only in S-Mode separate, see EnergyDemAir)

ContrModeAct The controlling mode delivered by the TU controllers.

(n times) (only in S-Mode separate, see EnergyDemAir)

• EmergMode The emergency mode delivered by the supervisor.

(n times) (only in S-Mode separate, see EnergyDemAir)

• ValueFreshAirDem This information is delivered by the TU controllers that need fresh

(n times) air.

(0% = minimum fresh air, 100 % = maximum fresh air)

Outputs

• TempSupplyAirSetpSet This information contains the setpoints for the supply air

temperature control (2 values, one for heating, one for cooling) as

well as the information about the ContrMode and the

EmergencyMode.

• ValueFreshAirSetp This value represents the setpoint for fresh air demand from the

supply air temperature control.

Binding Groups (LTE)

The Functional Block shows 2 different binding groups.

• DistrSegmV This binding group defines the distribution segment ventilation.

• OutsideSensorZone This binding group defines the outside sensor zone, from which the

outside temperature will be taken.

Parameters

• TempSupplyAirSetpMin Minimum supply air temperature setting to ensure no

condensation.

• TempSupplyAirSetpMax Maximum supply air temperature setting to ensure no heat

dumping or smell.

Diagnostic Data

• ValueEnergyDemAirActMin This value represents the minimum value of the energy demand

inputs.

• ValueEnergyDemAirActMax This value represents the maximum value of the energy demand

inputs.

• ValueFreshAirDemAct This value represents a theoretical average value for the fresh air

demand. The calculation is company specific.

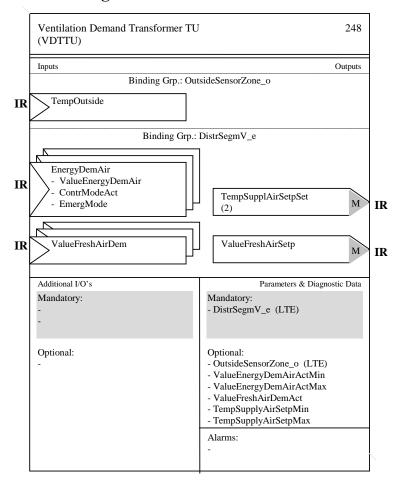
Alarms

• cs

3.6.3 Constraints

None.

3.6.4 Functional Block Diagram



3.6.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Inputs			
Temp Outside	Outside temperature actual value with: - COV and RepPer - Z ₈ STATUS supported from FB 'Outside Temperature Sensor'	LTE: 205.100 DPT_TempHVACAbs_Z V ₁₆ Z ₈ S: 9.001 DPT_Value_Temp F ₁₆	LTE: O S: (GO) °C
n times			
Energy Dem Air	Energy demand value for Air Handling Unit (Air) -100 % = full heating +100 % = full cooling plus modes with: - COV and RepPer from FB various TU controller	LTE: 223.100 DPT_EnergyDemAir V ₈ N ₈ N ₈ S: NA	LTE: M S: NA -100° +100 % plus modes
Value Energy Dem Air	Energy demand value for Air Handling Unit (Air) -100 % = full heating +100 % = full cooling with: - COV and RepPer from FB various TU controller	LTE: NA S: 6.001 DPT_Percent_V8 V ₈	LTE: NA S: (GO) -100° +100 %
Contr Mode Act	Active Controlling Mode with: - COV and RepPer from FB various TU controller	LTE: NA S: 20.105 DPT_HVACContrMode N ₈	LTE: NA S: (GO) enum
Emerg Mode	EmergencyMode with: - COV and RepPer from FB HVAC Emergency Source	LTE: NA S: 20.106 DPT_HVACEmergMode N ₈	LTE: NA S: (GO) enum
Value Fresh Air Demand	Value for primary fresh air demand with: - COV and RepPer from FB various TU controller	LTE: 202.001 DPT_RelValue_Z U_8Z_8 S: 5.004 DPT_Percent_U8 U_8	LTE: O S: (GO)
Outputs			
Temp Supply Air Setp Set	Pair of temperature setpoints (for heating and for cooling) plus modes with - COV and RepPer to FB 'Supply Air Temperature Control'	LTE: 224.100 DPT_TempSupplyAirSetpSet V ₁₆ V ₁₆ N ₈ N ₈ S: NA	LTE: M S: NA °C (2 values) plus modes
Value Fresh Air Setp	Value for fresh air demand with: - COV and RepPer to FB 'Supply Air Temperature Control'	LTE: 202.001 DPT_RelValue_Z U ₈ Z ₈ S: NA	LTE: M S: NA %

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Parameter			
Distr SegmV	LTE zoning number for Distribution Segment Ventilation	202.002 DPT_UcountValue8_Z U ₈ Z ₈	M 1
Outside Sensor Zone	LTE zoning number for Outside Sensor Zone	202.002 DPT_UcountValue8_Z U ₈ Z ₈	O 1
TempSupplyAirSetp Min	Minimum supply air temperature setting to ensure no condensation.	205.100 DPT_TempHVACAbs_Z	0
TempSupplyAirSetp Max	Maximum supply air temperature setting to ensure no heat dumping or smell.	205.100 DPT_TempHVACAbs_Z	0
Diagnostic Data			
Value Energy Dem Air Act Min	Minimum value of the energy demand inputs	6.001 1) DPT_Percent_V8 V ₈	O -100° +100 %
Value Energy Dem Air Act Max	Maximum value of the energy demand inputs	6.001 1) DPT_Percent_V8 V ₈	O -100° +100 %
Value Fresh Air Dem Act	Theoretical, calculated value for the fresh air demand	202.001 1) DPT_RelValue_Z U ₈ Z ₈	O %

¹⁾ Implementation of Properties using standard DPT see chapter 1.3.2

VDTTU Runtime Interworking - Dependence on Configuration Modes

			STANDARD MODE	D EXTENDE MODE		
		Basic FB	S-Mode	Standard Mode Interface	LTE-MODE	
Inputs	TempOutside	(GO _b)		(GO)	О	
	EnergyDemAir 1)	NA _b	NA	NA	M	
	ValueEnergyDemAir ²⁾	(GO _b)		(GO)	NA	
	ContrModeActive 2)	(GO _b)		(GO)	NA	
	EmergMode 2)	(GO _b)		(GO)	NA	
	ValueFreshAirDem	(GO _b)		(GO)	О	
Outputs	TempSupplyAirSetpSet	NA _b	NA	NA	M	
	ValueFreshAirSetp	NA _b	NA	NA	0	

VDTTU LTE specific Properties

		Support
Parameter	DistrSegmV	M
	OutsideSensorZone	0

VDTTU Standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter	TempSupplyAirSetpMin	0
	TempSupplyAirSetpMax	0
DiagnosticData	ValueEnergyDemAirEff	0
	ValueFreshAirDemEff	0

combined information not available in S-Mode (see also 2) \square single information of 1) (only in S-Mode available, see also 1)

3.6.6 Detailed specification of the Datapoints

3.6.6.1 Input TempOutside

DF	P Name:		npOutside				Abbr.:				M	andate	ory	
FB	Name:	VD	TU								Ca	an be	internal	
De	scription													
Th	is information	on is	provided b	y the Fu	unctional Bloc	ck 'C	utside	Tempe	eratu	re Se	nsor'.			
Da	tapoint Ty	ре												
DF	PT_Name:	DI	PT_Value_1	Гетр										
DF	PT Format:	F ₁	6						DP	T_ID:	9.	001		
Fie	eld	De	escription						Su	ıpp.	Ran	nge	Unit	Default
									(0	fu	II	°C	CS
Ac	cess Type													
♦	Input													
	$N \rightarrow this$			$1 \rightarrow th$	is 🛛									
	Spontaneo	us			Cyclically:		\boxtimes			Time-	-out:		31 min	(rec.)
	Request				Polling:					Perio	d:			
Cc	mmunicati	ion ⁻	Гуре											
♦	Group Ob	ject	Datapoint								Mano	datory:		
	Default Gro	oup .	Address:											
Dy	namics													
	Power dow	/n:	Save:											
	Power up:		Value:	No in	itialisation:			Defau	ult va	ılue:			\boxtimes	
				Save	d value:									
								Read	fron	า bus:				
Ex	ception Ha	ındli	ng											
Sp	ecial Featu	ıres												
	·													

FB: VDTTU LTE Clic		TempOut	side						datory 🗌 otional 🖂
Description:		•						-	
This information is provided		unctional E	Block 'Outs	ide Temp	erature	Senso	r' and	includes t	he
STATUS of the information			_						
DPT : Name DPT_Tem			DPT ID	205.100	Data	type fo		$V_{16}Z_{8}$	
Field	Descrip	tion				:	Sup.	Unit	Default
Temperature	Outside	temperatu	ıre value				M	°C.	CS
STATUS	Bitset						M		
- OutOfService		out of serv					M	t/f	false
- Fault		value is co					0	t/f	false
- Overridden		is tempora		den			0	t/f	false
- InAlarm		is in alarm					0	t/f	false
- AlarmUnAck	Acknow	<i>l</i> ledgement	of alarm				0	t/f	false
Communication:									
Binding Group:									
Class	Type				Default				
Geographical									
Application Specific 🛛	Outside	SensorZor	ne		1				
Unassigned	Broadc	ast 🗌	Configura	ıble 🗌					
DP Address:	Ю Туре		320 (OTS		Proper	ty ID:		51	
LTE-Service (event):	InfoRep	ort Sniffer	on Binding	Group:					
InfoReport 🖂	Timeou	t:		31	Min				
LTE-Service (polling):	Pood W	/ildcard / R	oen Sniffor	on Rindi	na Grou	n:			
Read – Response 🗌	ixeau v	/ilucalu / IX	esp Sillie	OH BIHUII	ng Grou	ρ			
Value after Power-up:	-	Default V	′alue ⊠			-	5	Stored Val	ue 🗌
Exception Handling:						Save	at Pov	verdown	
Special Features:									
								<u> </u>	<u> </u>

3.6.6.2 Input EnergyDemAir

Standard Mode

Not applicable.

FB:	VDTTU	LTE Clie		EnergyDe	mAir							datory 🖂 otional 🗌
Desc	ription:	input No										nioriai 🗀
This I as the	nformation is attributes ModeAct and				lers and	d cont	ains the	value fo	or the	e energy	demand	as well
DPT:		PT_Ener			DPT	ID 2	223.100	Data	type	format	$V_8N_8N_8$	
Field		_	Descri							Sup.	Unit	Default
Value	!		Energy	demand v	alue					M	%	CS
Mode	gMode		7 = T 9 = F 11 = Ic other 6 0 = N 1 = E 3 = E	eat cool recool est an only ce enums. ormal mergPress mergPurge	2 6 8 1 2 ure 2	4 = N 6 = 0 8 = E 10 = N 20 = N	EmergH Free Co NoDem	irge eat		M M O O O O O O NA M M O O O	Enum	0
			5 = E	mergFire enums						O NA		
Comr	nunication:		100.00	711011101						1		
	ding Group:											
Clas			Туре					Default				
Ge	eographical											
Ap	plication Sp	ecific 🛚	DistrSe	egmV				1				
Ur	nassigned		Broado	cast 🗌	Confi	gurab	le 🗌					
	Address:		Ю Тур	e(ID):	261 (VAVC	DA)	Proper	rty ID):	75	
LTE	-Service (ev	vent):	InfoRe	port Sniffer	on Bind	ding (Group:		-	-		
	oReport	\boxtimes	Timeo	ut:			31	Min				
	-Service (po ead – Respo		Read \	Nildcard / F	Resp Sn	niffer o	on Bindi	ng Grou	ıp: -	-		
Value	after Powe	r-up:	-	Default \	Value ∑	\leq	_				Stored Val	ue 🗌
	ption Handl								Sav	e at Pov	verdown	
		_										
Speci	ial Features	:										

3.6.6.3 Input ValueEnergyDemAir

LTE-HEE Mode

Not applicable.

DF	P Name:	Val	ueEnergyDei	mAir				Abbr.:	-				Manda	tory		
FB	Name:	VD	ΓΤU										Can be	internal		
De	escription															
Th	is Information	on is	provided by	the TI	J con	trollers a	and	contair	ns the	e va	lue for	the	energy o	demand.		
Da	tapoint Ty	ре														
DF	PT_Name:	DI	PT_Percent_	_V8												
DF	PT Format:	V									DPT_ID):	6.001			
Fie	eld	De	escription								Supp.	F	Range	Unit	Def	ault
											M		full	%	С	s
Ac	cess Type															
•	Input															
	$N \rightarrow this$			$1 \rightarrow th$	is											
	Spontaneo	us			Cycli	cally:		\boxtimes			Tim	e-ou	t:	31 min	(rec.)
	Request				Pollir	ng:					Peri	od:				
ŭ	ommunicati	ion	Туре													
•	Group Ob	ject	Datapoint									Ma	andatory	/:		
	Default Gro	oup.	Address:													
Dy	/namics															
	Power dow	n:	Save:													
	Power up:		Value:	No in	itialis	ation:			Defa	ault	value:					
				Save	d valu	ıe:										
									Rea	ad fr	om bu	s:				
Ex	ception Ha	ındli	ing													
Sp	ecial Featu	ıres														

3.6.6.4 Input ContrModeAct

LTE-HEE Mode

Not applicable.

DP Name:	ContrModeAct	Abbr.:			Mandat	tory	
FB Name:	VDTTU				Can be	internal	
Description							
	on is provided by the TU controllers and	d contains the	e active	Contr	Mode.		
Datapoint Ty							
DPT_Name:	DPT_HVACContrMode						
DPT Format:	N ₈		DPT		20.105		
Field	Description		Sup		Range	Unit	Default
Mode			N		020	enum	0
	0 = Auto		M				
	1 = Heat 2 = Mrning\		C				
	3 = Cool $4 = Night P$	urge	C				
	5 = Precool 6 = Off		C				
	7 = Test 8 = Emergh		C				
	9 = Fan only 10 = Free Co	-	C				
	11 = Ice 20 = NoDem		C				
	other enums.		N.	<u> </u>			
Access Type							
♦ Input							
$N \rightarrow this$	$1 \rightarrow \text{this}$					l	
Spontaneo				ime-c		31 min	(rec.)
Request	Polling:		F	Period	:		
Communicat							
	ject Datapoint			I	Mandatory	<i>י</i> : ⊠	
	oup Address:						
Dynamics							
Power dov							
Power up:	Value: No initialisation:	Def	fault val	ue:			
	Saved value:						
		_ ∐ Rea	ad from	bus:			
Exception Ha	andling						
Special Featu	ures						

3.6.6.5 Input EmergencyMode

LTE-HEE Mode

Not applicable.

DP Nam	ie: E	mergMode		Abbr.:			Manda	tory	
FB Nam	e: V	'DTTU					Can be	internal	
Descrip									
			e TU controllers and	l contains th	ne activ	e Eme	ergencyMo	de.	
Datapoi									
DPT_Na		DPT_HVAVEmer	gMode						
DPT For	mat:	N ₈				PT_ID:	20.106		
Field		Description			S	upp.	Range	Unit	Default
Mode						M	05	Enum	0
		0 = Normal				M			
			ure 2 = Emerg			0			
		3 = EmergPurge	4 = EmergS	Shutdown		0			
		5 = EmergFire				0			
	_	other enums.				NA			
Access									
♦ Inpu									
$N \rightarrow 1$			→ this	15-2		1		T	
-	taneou	s 🗵	Cyclically:			Time		31 min	(rec.)
Requ			Polling:			Perio	d:		
Commu								157	
		ct Datapoint					Mandatory	/: X	
		ıp Address:							
Dynami			_						
	er down							1	
Powe	er up:		o initialisation:	De	efault v	alue:			
		S	aved value:						
				_ <u></u> R∈	ad fro	m bus:			
Exception	on Han	dling							
Special	Featur	es							

${\bf 3.6.6.6} \quad Input\ Value Fresh Air Dem$

DP	Name: \	/alu	eFreshAir[)em			Abbr.:		-		Manda	tory		
FB	Name: \	/DT	TU								Can be	e internal		
Des	scription													
This	s Information	n is	provided b	y the TI	J controllers	and	contair	s the	dem	and fo	r fresh air.			
	apoint Typ													
	T_Name:	DP	T_Percent	_U8										
DP	T Format:	U ₈							DF	PT_ID:	5.004			
Fiel	d	De	scription						S	upp.	Range	Unit	Defa	ault
										0	full	%	C	S
Acc	cess Type													
*	Input													
I	$N \rightarrow this$			$1 \rightarrow th$	is 🗌									
;	Spontaneou	ıs	\square		Cyclically:		\boxtimes			Time-	out:	31 min	(rec.)	
	Request				Polling:					Period	d:			
Cor	mmunicatio	on T	уре											
*	Group Obje	ect [Datapoint								Mandator	y: 🛛		
	Default Grou	up A	ddress:											
Dyr	namics													
	Power dowr	า:	Save:											
l l	Power up:		Value:	No in	itialisation:			Defa	ult v	alue:				
				Save	d value:									
								Read	d fro	m bus:				
Exc	eption Har	ndlir	ng											
Spe	ecial Featur	res												

FB:	VDTTU	LTE (lient Name:	ValueF	reshAirDe	m				datory ☐ otional ⊠
Descri	iption:	-		-					•	
This in	put is pro	vided by	the TU co	ntrollers a	and contain	s the value	for the fre	esh air de	mand.	
DPT:	Name	DPT_Re	lValue_Z		DPT ID	202.001	Datatype	e format	U_8Z_8	
Field			Descrip	otion				Sup.	Unit	Default
Value			Fresh a	air demar	nd value			М	%	cs
STATU								М	bitset	
	OfService	(OSV)		value is ı	not valid			М	true/false	false
	her bits		not sup	ported				NA		
Comm	unicatio	n:								
	ing Grou	p:								
Class	3		Туре				Default			
	ographica									
	olication S	Specific	☑ DistrSe				1			
Una	assigned		Broado		Configu					
	ddress:		ІО Тур			AVCDA)	Property	/ ID:	76	
	Service (event):			er on Bindir					
	Report	\square	Timeou	ıt:		31	Min			
	Service (ad – Resp		Read V	Vildcard /	Resp Sniff	er on Bindi	ng Group:	:		
Value	after Pov	ver-up:	-	Defaul	lt Value ⊠			•	Stored Val	ue 🗌
Excep	tion Han	dling:						Save at F	Powerdown	
						_			_	
Specia	al Feature	es:				·				

3.6.6.7 Output TempSupplyAirSetpSet

Standard Mode

Not applicable.

FB:	VDTTU	LTE Ser		TempSu	ıpplyAirSe	etpSet					ndatory $oxedsymbol{oxtime}$
Desc	ription:	- Catput	1011101							<u> </u>	уриона: <u></u>
		tains the se	tpoint value	es for hea	ating and fo	or coolii	ng a	nd attribu	ites for the	e supply	air
	erature co		•		J		Ü			,	
DPT:	Name	DPT_			DPT ID	224.10	00	Datatyp	e format	V ₁₆ V ₁₆ N	₈ N ₈
		TempSupp	lAirSetpSe	et[2]						_	
Field		Descript				Sup.	Rai	nge	Unit	COV	Default
Temp	perature	Tempera cooling	ature setpo	int value	for	М		full	°C	0.2	CS
Temp	oerature	Tempera heating	ature setpo	int value	for	М		full	°C	0.2	cs
Mode)					М		020	enum.	Υ	0
		0 = Aut	0			М					
		1 = Hea	at 2	= Mrnng		0					
		3 = Co		= Night F	Purge	0					
		5 = Pre		= Off		0					
		7 = Tes		= Emerg		0					
			,	= Free C		0					
		11 = Ice other en		= NoDer	n	O NA					
Emai	rgMode	Other en	uiiis			M		05	enum.	Υ	0
Lille	givioue	0 = Noi	mal			M	Л			'	
				s2 = EmrgDepress O							
			rgPurge	4 :		Ö					
		EmrgSh									
		5 = Em				0					
		other en	ums			NA					
	municatio										
	ding Grou	ıb:	1					1			
Cla			Туре					Defa	ault		
	eographic		D: . 0								
	oplication :		DistrSegn		0 "		_	1			
	nassigned		Broadcas		Configu			2	<u> </u>	F4	
	Address:	(2)(2)(1)	IO Type(I		248 (VD)			Property 10 sec		51 rtbeat:	1 F 100 in
	E-Services foReport				MinRepTir communic				roup Wild		15 min
111	ioneport		Tx Prio:	delauit	High _	aung <u>L</u> I	□	Norma		Lo	
(L	TE Read-l	Response	TX FIIO.		i ligii _			INOIIIIa		LU	W
	olling of the		_		•		_	1	. 🖂	5 ();	
	nall always		I ransm a	fter Powe	er-up: Stor	ed Valu	e] Act V	alue 🛚	Default	Value 🗌
	upported)										
	perty-Ser dividual a		Read only	/]	Read	/Wri	te	\boxtimes		
	ption Han		Ŀ						Save	at Powe	rdown
Spec	ial Featur	es:									

3.6.6.8 Output ValueFreshAirSetp

Standard Mode

Not applicable.

FB:	VDTTU	LTE S	er'	ver	ValueFre	eshAirSet _l	р						ndatory 🗌
		Outp	ut N	Name:								О	ptional 🛚
	ription:												
	output con				oint value	for the su							
DPT:	Name	DPT_R	elV	alue_Z		DPT ID	202.00)1	Dat	atype	e format	U_8Z_8	
Field				escription			Sup.	Rar	nge		Unit	COV	Default
Value				esh air de Iue	mand set _l	point	М		full		%	10	cs
STAT	US						М				bitset.		
	OfService	(OSV)	0	SV = value	e is not va	lid	0	tru	ıe/fa	lse		Υ	false
	other bits	,	no	t supporte	ed		NA						
COM	MAND		no	t supporte	ed		NA						
Comr	nunicatio	n:					-				<u>-</u>	=	
Bine	ding Grou	ıp:											
Clas	SS			Type						Defa	ıult		
	eographica												
Ap	plication S	Specific	\boxtimes	DistrSegr						1			
	nassigned			Broadcas	_	Configu							
	Address:			IO Type(I		248 (VDT				erty I		52	
	-Services			COV 🖂		MinRepTin			0 s			tbeat:	15 min
Inf	oReport	\boxtimes			er default	communic	ating [B			roup Wild	card allo	wed
		_		Tx Prio:		High 🗌			No	rmal	\boxtimes	Lo	w 🗌
po sh su	TE Read-F Iling of the all always pported)	output be	•	Transm a	ifter Powe	er-up: Store	ed Valu	e 🗌	Α	ct Va	alue 🛚	Default \	/alue □
	perty-Servividual ac			Read only	у 🗆		Read	/Writ	te		\leq		
	ption Han										Save	at Powe	rdown
	puon nan	uning.									Joave	ati owe	uowii
Spec	ial Featur	es.											
	ar i catar												

3.6.6.9 Parameter DistrSegmV

FB:	VDTTU	Prop	erty Name (<u>Server</u>):	DistrSeg	mV			Man	datory 🛛
			-					Op	otional 🗌
Desc	ription:			-				-	
Numl	per of the ver	ntilation	distribution segment.						
DPT:	Name [PT_U	countValue8_Z	DPT ID	202.002	Data	atype format	U ₈ Z ₈	
Field			Description			Sup.	Range	Unit	Default
Zone			Number of the Ventila	ation Segme	ent	М	131		1
STAT	TUS							Bitset	
- Out	ofService		zone active / inactive			0	true/false		false
- all c	ther bits		not supported, fixed to	o '0'	o '0' NA				false
COM	- all other bits not supported, fixed to '0' COMMAND						enum		CS
- Nor	malWrite					M			
- Set	OSV & Rese	tOSV	Set zone inactive / ac	tive		0			
- all c	ther comma	nds	not supported			NA			
Com	munication:		-				-		
DP	Address:		IO Type(ID):	248 (VDTT	U)	Prope	rty ID:	101	
(in	the server)		Start-Index:	1		N° of e	elements	1	
Pro	perty acces	s:	Read only		Read/W	rite/	\boxtimes		
Pro	tection		Read level	-		Write I	evel	-	
Exce	ption Handl	ing:	Value after Power-up	: Stored V	/alue 🛚	Act Va	alue 🗌 🛮 Def	ault Value	<u> </u>
Spec	ial Features	:							
The o	device is not	LTE co	mmunicating in this zo	ne if zone i	s 'OutOl	fService) '.		

3.6.6.10 Parameter OutsideSensorZone

FB: VDTTU	J F	Prope	erty Name (<u>Server</u>):	OutsideSensor	Zone			datory 🗌				
Description:				-								
Number of the	e outsi	de se	nsor zone.									
DPT : Nam	e DP	T_Uc	countValue8_Z	DPT ID 202.00	2 Data	atype format	U_8Z_8					
Field			Description		Sup.	Range	Unit	Default				
Zone			Number of the Outsid	e Sensor Zone	M	(0) 131		1				
STATUS						Bitset						
- OutofServic	е		zone active / inactive		0	true/false		false				
- all other bits	i		not supported, fixed to	0' (0'	NA			false				
COMMAND					1	enum		cs				
- NormalWrite	9											
- SetOSV & F	ResetO	SV	Set zone inactive / ac	tive								
- all other cor	nmand	ls	not supported		NA							
Communicat	tion:				.	-	=					
DP Addres	s:		IO Type(ID):	248 (VDTTU)	Proper	rty ID:	102					
(in the serv	er)		Start-Index:	1	N° of e	elements	1					
Property ac	ccess:		Read only	Read/\	Vrite	\boxtimes						
Protection			Read level	Write I	evel	-						
Exception H	andlin	g:	Value after Power-up:	Stored Value	Act Va	alue 🔲 Def	ault Value					
			<u> </u>									
Special Feat	Special Features:											
The device is	e device is not LTE communicating in this zone if zone is 'OutOfService'.											

3.6.6.11 Parameter: TempSupplyAirSetpMin

FB:	VDTTU	Proper	ty Name (<u>Server</u>):	Те	TempSupplyAirSetpMin					Mandatory ☐ Optional ☒	
Desc	ription:			-							ptional 🖂
	•	mperatu	re limitation for the s	sup	ply air ten	nperature	con	tro	ller. Supply a	ir tempera	ature
setpoint shall not be below this limit.											
DPT:	Name	DPT_Te	empHVACAbs_Z	npHVACAbs_Z DPT ID 205.100 Datatype format V						$V_{16}Z_{8}$	
Field			Description				Su	٥.	Range	Unit	Default
Temp)		Temperature value	;			М		full range	° C	CS
Status	S									bitset	
- Out	OfService		Limitation active /inactive				Ο		true/false		false
- all other flags			not supported, fixed to '0'				N/	١.			
Comr	nand									enum	
- Norr	malWrite						M				
- SetC	DSV & Res	etOSV	Set limitation parameter inactive /				О				
			active								
- all o	ther comma	ands	not supported				N/	1			
Comi	<u>munication</u>):									
DP	Address:		IO Type(ID):	Type(ID): 248 (VDTTU)		TU)	Property ID:		114		
(in t	he server)		Start-Index:	•	1		N°	of e	elements	1	
Property access:		Read only	☐ Read/V		Read/W	Vrite ⊠					
Protection		Read level			Write level						
Exception Handling: Value after Powerup: Stored Value				Value 🛚	Act	٧a	alue 🔲 🏻 De	fault Valu	e 🗌		
Spec	ial Feature	s:									
Limita	ation functio	n is acti	vated or deactivated	d by	the 'Out(OfService	' Sta	atus	S		

3.6.6.12 Parameter: TempSupplyAirSetpMax

FB: VDTTU Prope	rty Name (<u>Server</u>):	TempSupplyAirSetpMax					ndatory 🗌 ptional 🖂	
Description:						-		
Max supply air temperature limitation for the supply air temperature controller. Supply air temperature								
setpoint shall not be abo	setpoint shall not be above this limit.							
DPT : Name DPT_T	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 /ir	nactive		0	true/false		false	
- all other flags	not supported, fixed to '0'							
Command						enum		
- NormalWrite				M				
- SetOSV & ResetOSV	Set limitation parameter inactive /			0				
	active							
- all other commands	not supported			NA	<u> </u>			
Communication:								
DP Address:	IO Type(ID):	248 (VDT	ΓU)		erty ID:	115		
(in the server)	Start-Index:	1		N° of	elements	1		
Property access:	Read only		Read/W	√rite ⊠				
Protection	Read level			Write	level			
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐						e 🗌		
Special Features:								
Limitation function is act	ivated or deactivated	by the 'OutO	OfService	' Statu	s	·		

3.6.6.13 Diagnostic Data ValueEnergyDemAirActMin

FB:	FB: VDTTU Property Name (<u>Server</u>): ValueEnergyDemAirActMin						Mandatory Coptional			
										optional 🖂
	ription:									
Calcu	Calculated minimum value of energy demands.									
DPT:	Name	DPT_Pe	ercent_V8		DPT ID	6.001	Dat	atype format	V ₈	
Field			Description				Sup.	Range	Unit	Default
Value			Calculated min er	nerg	y demand	value	М	full	%	CS
Comn	nunicatior) :								
DP /	Address:		IO Type(ID):		248 (VDT	TU)	Prope	rty ID:	111	
(in t	he server)		Start-Index:		1	N° of elements		1		
Prop	perty acce	ss:	Read only	\boxtimes		Read/W	/rite			
Prot	ection		Read level		-		Write	level	-	
Excep	otion Hand	lling:	Value after Power	-up	: Stored	Value 🛚	Act V	alue 🔲 De	fault Val	re 🗌
Speci	al Feature	s:		<u> </u>	-		•	-	•	-
		•	_				•		•	

3.6.6.14 Diagnostic Data ValueEnergyDemAirActMax

FB:	VDTTU Property Name (<u>Server</u>): ValueEnergyDemAirActMax					Mandatory ☐ Optional ⊠					
Desci	ription:									-	
Calcu	Calculated maximum value of energy demands.										
DPT:	Name	DPT_Pe	rcent_V8		DPT ID 6.001 Datatype format \			V ₈	V_8		
Field			Description	escription				p.	Range	Unit	Default
Value			Calculated max en	Calculated max energy demand value			М		full	%	CS
Comr	nunicatio	า:				•				-	=
DP A	Address:		IO Type(ID):	248 (VDTTU)		Property ID:		112			
(in t	he server		Start-Index:	1 N° of elements		1					
Pro	perty acce	ess:	Read only								
Prot	tection		Read level		-		Wri	te le	evel	-	
Exce	otion Hand	dling:	Value after Power-	up:	Stored	Value 🛚	Act	Val	lue 🔲 De	fault Value	
Speci	Special Features:										

${\bf 3.6.6.15\ Diagnostic\ Data\ Value Fresh Air Dem Act}$

FB:	VDTTU	Prope	rty Name (<u>Server</u>):	ValueFi	ValueFreshAirDemAct				Mandatory ☐ Optional ⊠		
Desci	ription:			<u>-</u>				<u> </u>			
Calcu	Calculated value for fresh air demand.										
DPT:	Name D	PT_Re	Value_Z	DPT ID	202.001	1 Data	atype format	U ₈ Z ₈	U_8Z_8		
Field			Description			Sup.	Range	Unit	Default		
Value			Calculated value for	fresh air d	emand	М	full	%	cs		
STAT	US		not supported								
COMMAND			not supported			NA					
Comr	nunication:	-				-	-	-	=		
DP A	Address:		IO Type(ID): 248 (VDTTU)		TTU)	Property ID:		113			
(in t	he server)		Start-Index:	1	1 N° of elements		1				
Pro	perty access	S:	Read only		Read/W	/rite					
Protection			Read level -		Write I	evel	-				
Exception Handling: Value after Power-up: Stored Value ☐ Act Value ☐ Default Value ☐						e 🗌					
Speci	Special Features:										

3.7 Collection and Processing of Demand Information in LTE-HEE

3.7.1 General remark to this chapter

The following description is only thought as example how the collection and processing of the demands may be realised.

Final realisation is company specific!

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

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

In the shared variable model (e.g. S-mode) implementation all "partners" of the demand transformers 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.

3.7.3 Processing of the demand information

In LTE the demand transformers do not need to know which and how many consumers are allocated in the corresponding Distribution Segment. The demand transformer has no complete list of all controllers connected to it (no directory). Therefore adding or removing of "partners" is simple.

It is not necessary to store the demand information (data image) from **all** connected controller FB's in the demand transformer in order to calculate the resulting demand e.g. the setpoint of the corresponding medium. Due to the "heartbeat" repetition of the demand information, it is sufficient to have a dynamic process image of the N temporary "**most relevant**" demands.

Out of this dynamic data image the entries with the highest priority (demand value and attributes) are taken for the calculation of the setpoint signals for the corresponding medium.

3.7.3.1 Structure of the Main List: (proposal / example)

	Main List							
Entry N°	EnergyDem	Demand-attribute: - ContrModeAct - EmergMode *)	Source FB Type and Instance	Source Individual Addr	Timeout			
1								
2								
•••								
N > 8								

^{*)} Ventilation demand transformer only

3.7.3.2 Criteria for a new entry in the Main List: (proposal / example)

Each received signal in the same Distribution Segment is checked whether it is relevant enough to become an entry of the list. The steps are as follows:

- 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 payt step the payy data will be entered.)
 - If Yes: delete the entry in the list (in the next step the new data will be entered instead)
- 2. Check demand attribute (ContrModeAct & EmergMode *):

	EmergMode *)	EmergMode *)
	E = 0	E = 1,2,3,4,5
ContrModeAct		
$C = 0,1,2,3,4,5,7 \\ 8,9,10,12,$	Demand	Demand
ContrModeAct		
C = 6,11,20 and all others	No Demand	Demand

^{*)} Example for Ventilation demand transformer

Information with:

No Demand are ignored and not further processed

Demand: If there is still free space in the list (void entries) the information is inserted in the list.

3. The following rules apply if the new information has **Demand** but all positions in the list are already occupied with valid data.

Signals with **EmergMode** ≠ **0** are **prioritized** to any "Normal" signals (ventilation demand transformer only).

For the attributes a priority list has to be defined too.

For signals with the same priority the following applies:

Check if the new demand information is higher than any other signals in the list:

If Yes: replace the lowest value in the list.

(In the ventilation demand transformer positive and negative values have to be treated separate.)

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

Out of the Main List the "**highest" signal** is used for transformation into the temperature setpoint. A void entry in the list is marked as:

ContrMode = NoDem

EmergMode = Normal