

Application Description

Ventilation, Air Conditioning and Cold Water

Cold Water

Summary

This document is a part of the HVAC Application Interworking Standard. It describes the specific Functional Blocks for cold water applications.

Version 01.03.01 is a KNX Approved Standard.

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Document updates

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0.2	2000.09.05	Revising chapter ventilation and air conditioning
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		ProdSegMC parameters: range corrected from 131 to 116 according
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1.3	2006.01.09	- DHWLegioReq at DPT: 210.100
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References

Chapter 3/7/2	"Datapoint Types"
Part 7/10	"HVAC General Functional Blocks"
Chapter 7/10/10	"Interface Object Type Identifier"
Chapter 7/11/1	"HWH Production"
Chapter 7/11/2	"HWH Distribution"
Chapter 7/11/3	"HWH Domestic Hot Water Control"
Chapter 7/11/4	"HWH Room Heating Control"
Chapter 7/11/5	"HWH Load Management"
Chapter 7/11/9	"HWH Property Identifiers"
Part 7/12	"Direct Electric Heating"
Part 7/13	"Terminal Unit Functional Blocks"
Chapter 7/19/11	"Boiler Controller"
Part 10/1	"Logical Tag Extended"
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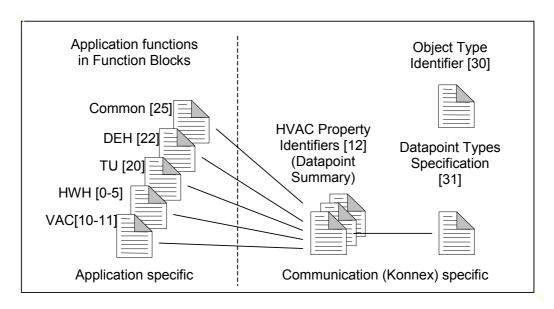
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1 Introduction

1.1 Scope

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



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

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

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

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

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

1.2 Objectives

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

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

In addition, this document specifies the specific mechanisms for zoning and runtime process data distribution used in HVAC for an 'easy installation' system (LTE-HEE Mode [13]).

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

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

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

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

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

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

1.3 Dependence on Configuration Modes

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

The document provides all necessary information needed:

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

1.3.1 Runtime Interworking

Mode dependent (S-Mode, Ctrl-Mode, PB-Mode) 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	EXTE Mo	
		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

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 supports as Group Object in the LTE Standard Mode Interface (GO). For all other modes the implementation is not defined. This is indicated by an empty field.
- Outp1: is mandatory M in LTE-Mode and has a structured DPT or a DPT with extended features which is today not available in Standard Mode. In the Basic FB the information of Outp1 is split up into Outp1-1 and Outp1-2 (separate datapoints with standard DPT).

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

1.3.2 Parameters and Diagnostic Data

LTE implementation:

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

Other modes:

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

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

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

⇒ 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^{HVACLTE}.

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	"		vv.	411	

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

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

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

The mapping of HVAC specific DPT to standard DPT is generic and described in the document [01] – **HVAC Datapoint Types**

Abbreviations of Functional Blocks 1.4

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

Ventilation, Air Conditioning, and Cold Water (VAC)

Description
Air Handling Unit Controller
Chiller Control
Auxiliary Cooling Demand
Auxiliary Cooling Demand Percent
Cooling Demand Transformer Air Handling Unit
Cooling Flow Demand Manager
Cold Water Production Manager
Re-Cooling Controller
Cooling Zone Controller
Auxiliary Heating Demand Percent
Heating Demand Transformer Air Handling Unit
Supply Air Temperature Controller

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

Abbreviation	Description
BUC	Burner Controller
BOC	Boiler Controller
HPM	Heat Production Manager
BST	Buffer Storage Tank
HFDM	Heating Flow Demand Manager
FTC	Flow Temperature Controller
HPM	Heat Production Manager
HZC	Heating Zone Controller
HIRC	Heating Individual Room Controller
HRDM	Heating Room Demand Manager
HDAUX	Auxiliary Heating Demand
HDTACT	Heat Demand Transformer Actuator Position
HDTRT	Heat Demand Transformer Room Temperature
DHWC	Domestic Hot Water Controller
DHWS	Domestic Hot Water Scheduler
DHWCPS	Domestic Hot Water Circulation Pump Schedule

np Scheduler

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

Domestic Hot Water Circulation Pump Controller **DHWCPC**

UDHWSET DHW User Settings

Terminal Units (TU) [11]

Abbreviation	Description
ACDTTU	Air Cooler Energy Demand Transformer Terminal Unit
AHDTTU	Air Heater Energy Demand Transformer Terminal Unit
CCDTTU	Chilled Ceiling Energy Demand Transformer Terminal Unit
FCC	Fan Coil Unit Controller
RCC	Radiator and Chilled Ceiling Control
RHDTTU	Radiator Heating Energy Demand Transformer Terminal Unit
SPUC	Split Unit Control
VAVC	Variable Air Volume Control
VDTTU	Ventilation Demand Transformer Terminal Unit
WHPC	Water Heat Pump Control

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

Abbreviation	Description
CFWTS	Condenser Flow Temperature Sensor
CRNWTS	Condenser Return Water Temperature Sensor
DPS	Dew Point Status Sensor
FWTS	Flow Water Temperature Sensor
HVA	HVAC Valve
HVACOPT	HVAC Optimiser
HVACEMS	HVAC Emergency Source
OAD	Outside Air Damper
ORHS	Outside Relative Humidity Sensor
OAQS	Outside Air Quality Sensor
OTS	Outside Air Temperature Sensor
PRD	Presence Detector
RRHS	Room Relative Humidity Sensor
RAQS	Room Air Quality Sensor

RNARHS Return Air Relative Humidity Sensor

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

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

Room Temperature Sensor RTS

Supply Air Relative Humidity Sensor **SARHS**

Supply Air Quality Sensor SAQS Supply Air Temperature Sensor **SATS**

Sun Intensity Sensor SIS

Setpoint Manager Air Quality **SMAQ SMRH** Setpoint Manager relative Humidity **UAQSS** Air Quality Setpoint Setting

Air Relative Humidity Setpoint Setting **URHSS**

UHRS User HVAC Room Setting User HVAC Display **UHD**

WCOS Water Change over Status Sensor

Window Switch WOS WSS Wind Speed Sensor

General

Abbreviation Description Company Specific cs Datapoint Type **DPT Functional Block** FB **Group Object** GOInterface Object Ю

LTE-Service InfoReport IR

Logical Tag Extended Mode, see [13] Volume 10, LTE Specification LTE

not available NA M Mandatory Optional O

W LTE-Service Write

2 Cold Water Production

2.1 Overview

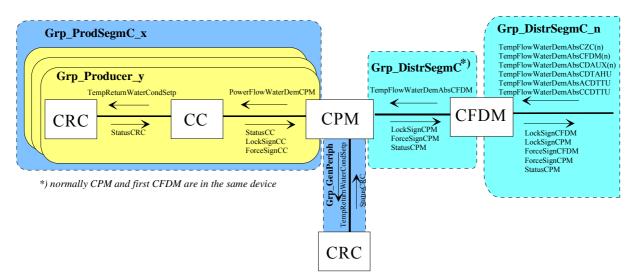
The Functional Block Cold Water Flow Demand Manager CFDM collects all chilled water requirements and sends the calculated TempFlowWaterDemAbsCFDM to the Cold Water Production Manager CPM. The CPM is controlling/scheduling one or more Chiller Controllers CC. A Chiller Controller CC is a stand alone chilled water production unit. The control of the condensed water circuit may be implemented via:

- a) Package unit (within the Chiller Controller CC)
- b) Split unit, remote location from the Chiller Controller CC (on the roof). For this scenario, a Re-Cooling Controller CRC is connected to the Chiller Controller CC.
- c) With a common Re-Cooling Controller e.g. cooling tower (wet, dry) or seawater re-cooling. For this scenario a Re-Cooling Controller CRC is connected directly to the Cold Water Production Manager CPM.

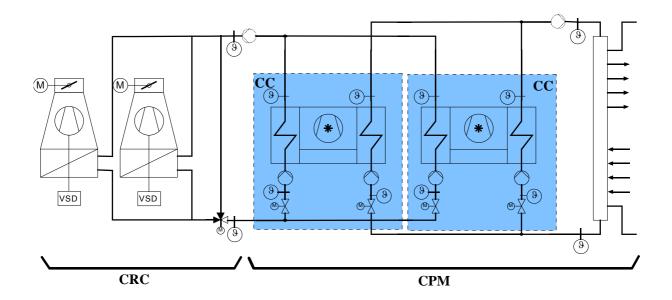
The functions of cold water system with buffer storage tanks are incorporated in the Cold Water Production Manager CPM.

Wildcardaddressing for all Cold Water Production Segements is not supported.

The overview below shoes all scenarios combined in one picture.



Especially larger chilled water systems may have common condensed water cooling tower (or a group of cooling towers). An example is shown below. Instead of the cooling tower they may be a common dry or wet air cooler system. The Re-Cooling Controller CRC controls this functionality.



2.2 Functional Block: Chiller Controller (CC)

2.2.1 Description

The Functional Block Chiller Controller CC is a cold water producer, so called chiller unit and controls the chilled water temperature / flow temperature and optionally return temperature according to the present cooling demand PowerFlowWaterDemCPM from the Cold Water Production Manager CPM.

A Cold Water Production Manager CPM may controls more than one chiller in a cooling production segment (ProdSegmC). So a chiller is in its own production segment (Prod). Therefore the Chiller Controller CC has the binding group ProdSemgC.Prod.

The Chiller Controller CC reports to the Cold Water Production Manager CPM via:

- StatusCC: These are operating mode, flow temperature, fault, operating hoursinformation

for the CPM to determine the control strategy.

- LockSignCC: The chiller may generate a looking signal (e.g. start-up or overload protection)

which is evaluated by the CPM.

- ForceSignCC The chiller may generate a forcing signal (e.g. freezing protection) which is

evaluated by the CPM.

Sensors, like chilled water flow temperature or chilled water return temperature and actuators, like the chiller primary water pump are hard-wired to the Chiller Control out of safety reasons. But temperature values and pump status are available via StatusCC or more detailed via diagnostic data.

The function of the CC may also manage the temperature setpoints and status of a condenser water recooling circuit or air re-cooling circuit. The Re-Cooling Controller CRC is responsible for the actual temperature control.

2.2.2 Constraints

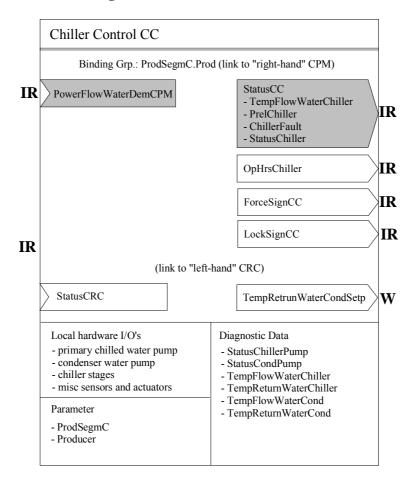
A CC is controlled only by one CPM (1:1 link)

IMPORTANT The input signal PowerFlowWaterDemCPM from CPM can today not be implemented in Standard Mode because the necessary compound HVAC DPT for runtime-interworking is not yet available in Standard Mode and mapping of this signal to multiple standard datapoints is not possible because of the necessary data consistency.

Therefore for the time being only LTE implementations of the CC functional block offer a bus-link to a CPM which controls one or multiple CC by means of the signal PowerFlowWaterDemCPM (demand dependent cold water production).

However the basic FB definition of the CC enables the integration of the CC into a standard system for remote control or visualisation.

2.2.3 Functional Block diagram



2.2.4 Description of Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
StatusCC	Status information from Chiller Control	DPT_StatusCC	215.101
- TempFlowWaterChiller	Chilled water flow temperature (S-interface)	DPT_Value_Temp	9.001
- PrelChiller	Current relative power usage of chiller, in % (S-interface)	DPT_Percent_U8	5.004
- ChillerFault	Chiller Fault (S-interface)	DPT_Bool	1.002
- StatusChiller	Operating status of chiller controller (S-interface)	DPT_Switch	1.001
OpHrsChiller	Operating Hours chiller controller (LTE and S-interface)	DPT_LongDeltaTimeSec	13.100
ForceSignCC	Calculated forcing signal, to force the consumers to consume energy from chiller	DPT_ForceSignCool	21.101

Datapoint	Description	Datapoint Type	DPT_ID
LockSignCC	Calculated locking signal, to force the consumers to reduce energy consumption from chiller	DPT_LockSign	207.101
TempReturnWater CondSetp	Condenser water return temperature setpoint (condenser temperature setpoint back to the chiller unit) (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Inputs			
PowerFlowWater DemCPM	Demand signal from CPM	DPT_PowerFlowWater DemCPM	214.101
StatusCRC	Status information from CRC	DPT_StatusWTC	209.103
Parameters			
ProdSegmC	LTE zoning number Cooling Production Segment	DPT_UCountValue8_Z	202.002
Producer	LTE zoning number Cold Water Production	DPT_UCountValue8_Z	202.002
Diagnostic Data			
StatusChillerPump	Chilled water pump status	DPT_RelValue_Z	202.001
StatusCondPump	Condensed water pump status	DPT_RelValue_Z	202.001
TempFlowWaterChiller	Chilled water flow temperature sensor	DPT_TempHVACAbs_Z	205.100
TempReturnWater Chiller	Chilled water return temperature sensor	DPT_TempHVACAbs_Z	205.100
TempFlowWaterCond	Condenser water flow temperature sensor	DPT_TempHVACAbs_Z	205.100
TempReturnWaterCond	Condenser water return temperature sensor	DPT_TempHVACAbs_Z	205.100 *)

^{*)} Implementation of Properties using standard DPT see clause 1.3.2

			STANDARD MODE	Ехте	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	StatusCC	NA	NA	NA	M
	- TempFlowWaterChiller	GO_b	GO	GO	NA
	- PrelChiller	(GO_b)	(GO)	(GO)	NA
	- ChillerFault	GO_b	GO	GO	NA
	- StatusChiller	GO_b	GO	GO	NA
	OpHrsChiller	(GO _b)	(GO)	(GO)	О
	ForceSignCC	NA ¹)	NA	NA	О
	LockSignCC	NA ¹)	NA	NA	О
	TempReturnWaterCondSetp	(GO _b)		(GO)	О
Inputs	PowerFlowWaterDemCPM	NA ¹)	NA	NA	M
	StatusCRC	NA	NA	NA	О

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

Table 1: CC Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	ProdSegmC	M
	Producer	M

Table 2: CC LTE specific Properties

		Support
Parameter		
Diagnostic Data	StatusChillerPump	О
	StatusCondPump	О
	TempFlowWaterChiller	О
	TempReturnWaterChiller	О
	TempFlowWaterCond	О
	TempReturnWaterCond	О

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

2.2.4.1 Output signal: StatusCC

Standard Mode

Not applicable.

→ mapped to TempFlowWaterChiller, PrelChiller, ChillerFault, StatusChiller

FB:	CC	LTE Serv	er	Output Name: StatusCC						ndatory 🛚
				<u> </u>						ptional 🗌
	ription:									00146
				ontains status information of t						
				is the chilled water flow temper						
			. ob	perating hours and attributes I	ike faul	t, perma	nent	off, requir	ement c	of next
	s or next	_								
DPT:	Name				215.10		tatype		$V_{16}U_8B_1$	
Field				scription	Sup.	Range		Unit	COV	Default
	Chiller			illed water flow temperature	0	full rang	ge	°C	0.5	cs
PrelC	hiller		Cu	rrent relative power (stages	0	0100		%	10	0%
			in J	percent)	ļ					
Attrib										
Ten	npChiller\			lidity of ChillerTemp field	M	true/fals	se	bool	Υ	false
Pre	lChillerVa	lid	Va	lidity of PrelChiller field	M	true/fal:	se	bool	Υ	false
Stat	tus		Ch	iller running status	M	true/fals	se	bool	Υ	false
Fau	ılt		Ch	iller failure	M	true/fals	se	bool	Υ	false
OffF	Perm		Рe	rmanently off (manual switch	0	true/fals	se	bool	Υ	false
				failure)						
Rec	NextStag			wer limit of current stage is	0	true/fal:	se	bool	Υ	false
				ached, next stage required						
– Red	NextChill	_	_	wer limit of chiller is	0	true/fal:	se	bool	Υ	false
			rea	ached, next chiller required						
– Red	ducedAva			duce availability, chiller is in	0	true/fal:	se	bool	Υ	false
				nciple available, but						
			pre	eferably an other chiller is						
			us	ed						
Comr	nunicatio	on:			-	-	_			
Bine	ding Gro	up:								
Clas				Туре			Defa	ult		
Ge	eographic	al [T							
	plication	<u>-</u>	ā	ProdSegmC.Producer			1.1			
	nassigned	<u>-</u>	Ħt	Broadcast Configu	rable [7				
	Address:		_	IO Type(ID): 192 (CC)		Prop	erty II	J.	51	
		s (event):		COV MinRepTir	ne.	10 s			tbeat:	3 min
	oReport		-	Output per default communic				roup Wild		
	o. topo.t		-	Tx Prio: High	ating L		ormal		Lo	
(1 -	TF Read-	Response	-	TXTTIO.		140	Jiiiiai			, vv
	lling of the							_		_
	all always			Transm after Powerup: Store	ed Valu	e ∐ /	Act Va	alue $oxtime $	Default	Value 🗌
	pported)	, 50								
	perty-Ser	vice			_		_			
	ividual a			Read only	Read	I/Write	L			
	ption Har							Save	at Powe	rdown
	palon mai	ıanııg.						Joave	ati owe	I GOVVII
Snoo	ial East	'001								
spec	ial Featui	45.								

2.2.4.2 Output signal: TempFlowWaterChiller

Standard Mode

DF	Name:	Tem	npFlow	Water	Chiller	Abbr.:				Mand	Mandatory			
B	Name:	CC								Can b	e intern	al		
De	scription													
Сι	irrent chilled	l wat	ter flow	v temp	erature.									
Da	tapoint Ty	ре												
	PT_Name:	DF	PT_Va	lue_Te	emp									
DF	PT Format:	F ₁₀	6						DPT_ID	9.001				
Fie	eld	De	escripti	on					Supp.	Range	Unit	Defau	ult	
										full range	e °C	CS	3	
Ac	cess Type													
♦	Output													
	$\text{this} \to M$			t	his \rightarrow 1									
	Spontaneous													
	Cyclic Period: 3 Min													
	Request													
Co	mmunicati	ion 1	Гуре											
♦	Group Ob	ject l	Datapo	oint						Mandato	ry: 🛛 🖂			
	Default Gro	oup A	Addres	s: -	-									
Dy	namics													
	Power dow	'n:	Save:											
	Power up:		Value	:	No initialisa				ılt value:					
					Saved value]			not for inpu				
				mit on	bus (only for	r output):		Read	from bus	(only for i	nput):			
Ex	ception Ha	ndli	ng											
_	ecial Featu													
¹) t	this datapoi	nt is	also in	iteresti	ing for visuali	isation an	d not only	y used	d in the C	PM				

LTE-HEE Mode

2.2.4.3 Output signal: PrelChiller

Standard Mode

DF	Name:	PrelChiller Abbr.: Mandatory												
FB	Name:	CC									Can be	interna	al 🛛	
De	scription													
Сι	ırrent relativ	e po	wer us	sage of	f the chiller	unit.								
Da	tapoint Ty	ре												
DF	PT_Name:	DF	PT_Re	IPos_V	/alve									
DF	PT Format:	Uε	3						DPT_ID:		5.004			
Fie	eld	De	escripti	on					Supp.	Ra	nge	Unit	Default	
										01	100	%	0	
Ac	cess Type													
♦	Output													
	this \rightarrow M			tl	his \rightarrow 1									
	Spontaneo	us		COV:	\boxtimes	Δ-Value	: 10%	Min	repetition	n per	iod:	10s		
				Cyclic	igtriangle	Period:	3 Min							
	Request													
Co	mmunicat	ion ⁻	Гуре											
♦	Group Ob	ject	Datapo	oint						Ma	ndatory	/: \[\]		
	Default Gro	oup /	Addres	ss: -	=									
Dy	namics													
	Power dow	/n:	Save:											
	Power up:		Value	:	No initialisa	ation:			ılt value:					
					Saved valu	_			ıl value (n					
			Trans	mit on	bus (only for	or output):		Read	from bus	(onl	y for in	put):		
Ex	ception Ha	ındli	ng											
Sp	ecial Featu	ıres												

LTE-HEE Mode

2.2.4.4 Output signal: ChillerFault

Standard Mode

DP Name:	ame: ChillerFault Abbr.: Mandatory												
FB Name:	С	С							Can be	interna	al 🗌		
Description	1												
Reports a c													
Datapoint 7	Гуре	!											
DPT_Name		DPT_B	ool										
DPT Forma	t:	B ₁						DPT_ID:	1.002				
Field		Descrip	otion					Supp.	Range	Unit	Default		
	false												
Access Ty	эе												
◆ Output													
this $\rightarrow N$	this \rightarrow M \boxtimes 1) this \rightarrow 1 \square												
Spontan	Spontaneous COV: Δ-Value: Min repetition period: 10s												
	Cyclic Period: 15 Min												
Request		\boxtimes											
Communic	atio	ո Type											
♦ Group (Obje	ct Data	point						Mandatory	r: 🛛 🖂			
Default (3rou	p Addre	ess:										
Dynamics													
Power d	own:	Sav	e:										
Power u	p:	Valu	ıe:	No initialisa	tion:		Defau	ılt value:		\square			
				Saved value	e:		Actua	I value (no	ot for input)	:			
	Transmit on bus (only for output): Read from bus (only for input):												
Exception	Hand	dling											
Special Fea	ature	es											
1) this datap	oint	is also	interes	sting for visuali	sation and	d not onl	y used	in the CF	PM				

LTE-HEE Mode

2.2.4.5 Output signal: StatusChiller

Standard Mode

DF	Name:	StatusChiller Abbr.: Mandatory										\boxtimes
FB	Name:	CC								Can be	e interna	al 🛛
De	scription											
Op	erating stat	us c	of chille	r contr	oller.							
Da	tapoint Ty	ре										
	PT_Name:	DI	PT_Sw	ritch								
DF	PT Format:	B₁							DPT_ID:	1.001		
Fie	eld	De	escripti	on					Supp.	Range	Unit	Default
	Off											Off
Ac	cess Type											
♦	Output											
	this \rightarrow M			th	his \rightarrow 1							
	Spontaneous COV: Δ-Value: Min repetition period: 10s											
				Cyclic	igtriangle	Period:	3 Min					
	Request		\boxtimes									
Co	mmunicati	ion ⁻	Туре									
•	Group Ob	ject	Datapo	oint						Mandator	y: 🛛 🖂	
	Default Gro	oup .	Addres	ss:	=							
Dy	namics											
	Power dow	n:	Save:									
	Power up:		Value	:	No initialisa	tion:			ılt value:			
					Saved value		<u> </u>			ot for input		
			Trans	mit on	bus (only fo	r output):		Read	from bus	(only for in	iput):	
Ex	ception Ha	ndli	ing									
	ecial Featu											
¹) t	his datapoi	nt is	also in	teresti	ng for visual	isation an	d not onl	ly used	d in the CF	PM		

LTE-HEE Mode

2.2.4.6 Output signal: OpHrsChiller

Standard Mode

DP Name:	OpHrsChiller	Abbr.:			Manda		
FB Name:	CC				Can be	interna	al 🖂
Description							
Current operat	ing hours of chiller uni	t.					
Datapoint Typ	oe e						
DPT_Name:	DPT_LongDeltaTime	eSec					
DPT Format:	V ₃₂			DPT_ID:	13.100		
Field	Description			Supp.	Range	Unit	Default
					>=0 1)	h	0
Access Type							
♦ Output							
this \rightarrow M	$\boxtimes^{2)}$ this \rightarrow						
Spontaneo		Δ-Value:	: Min	repetition	period:		
	Cyclic	Period:	1 h				
Request							
Communicati	on Type						
♦ Group Obj	ect Datapoint				Mandatory	<i>r</i> : 🛛	
	oup Address:						
Dynamics							
Power dow							
Power up:	Value: No ir	nitialisation:		It value:			
		ed value:	Actua	l value (no	ot for input)	:	
	Transmit on bus	(only for output):	Read	from bus	(only for in	put):	
Exception Ha	ndling						
Special Featu	res						
1) Encoding of	on 32 bit signed intege	r value with 1 sec	cond <u>transport f</u>	<u>format</u> res	solution. Th	e granı	ılarity of
the interna	resolution may be high	her. Used range	: 0~68 years =	⇒ in pract	tise no bina	ry over	flow
possible	,		•	•		-	
2) this datapo	int is also interesting t	or visualisation a	ind not only use	ed in the C	CPM		

FB: CC		LTE Serv	/er	Output Name:	Output Name: OpHrsChiller											
Descripti				-							-					
This outpo	ut pro			contains the curre		_	rating h	our	S							
	lame	DPT_Lo		DeltaTimeSec	DPT	ID	13.100)	Datatype	e format	V_{32}					
Field			De	escription		Sup. Range Unit				Unit	COV	Default				
								>=0) 1)	h		CS				
Commun	icatio	n:														
Binding	g Grou	ıp:														
Class				Type					Defa	ault						
Geogr		<u>.</u>]													
		Specific	록	ProdSegmC.Pro			<u></u>		1.1							
Unass			IJ,	Broadcast		าfigur	able 🔃									
DP Add				IO Type(ID):	192 (P	roperty I		52					
		s (even <u>t)</u> :		COV	MinRe				sec		tbeat:	15 min				
InfoRe	port	\boxtimes		Output per defau			ating L	_ B		roup Wild	card allo	wed 📙				
		_		Tx Prio:	Hig	h 📙			Normal	\boxtimes	Lo	w 📙				
	of the	Response output be		Transm after Po	werup: S	Store	d Value	e 🖂	Act V	alue 🗌	Default	Value □				
Propert				Read only	\boxtimes		Read	/Writ	te [
(individ				rtodd o'ny												
Exceptio	n Han	dling:								Save	at Powe	rdown⊠				
Special F																
	ernal i			ed integer value way be higher. Use												

2.2.4.7 Output signal: ForceSignCC

Standard Mode

Not applicable.

FB:	CC	LTE Serv	ver	r Output Name: ForceSignCC									Mandatory [
													0	ptional 🛚
	ription:													
				ndicates that the										
		_		PM for chiller con	tro							_		nal.
DPT:	Name	DPT_Fc	_	eSignCool		DPT ID	21.10			tatype	e forma	at		
Field			De	escription			Sup.	Rar	nge		Unit		COV	Default
Attribu			_						<i>.</i>					
– Ford	ceReques	it		orced power cons	sun	nption is	M	true	e/fals	se	bool		Υ	false
	necessary Communication:													
	ding Grou	ıp:		Γ						5 (
Clas	-			Туре						Defa	ult			
	ographic		글.							,,-				
	plication		Щ.	ProdSegmC.Pro	odu		<u></u>	-		1.1				
	assigned			Broadcast		Configu	able _				_			
	Address:									53				
		s (event):		COV 🛛		MinRepTin			0 s				tbeat:	15 min
Int	oReport	\boxtimes		Output per defa	ult		ating L	<u> </u>				۷ild	card allo	
4 -	FF D 1 1	-		Tx Prio:		High			No	ormal	\boxtimes		Lo	w 🔲
po sh su	lling of the all always pported)	be	•	Transm after Po	we	erup: Store	d Valu	e 🗌	A	Act Va	alue 🛚]	Default	Value □
	perty-Ser ividual a			Read only	\boxtimes		Read	/Writ	te					
Exce	otion Har	dling:									Sa	ve a	at Powe	erdown
Speci	al Featur	es:												

2.2.4.8 Output signal: LockSignCC

Standard Mode

Not applicable.

		utput Name:LockSignCCMandateOption											
Description:		-					-						
This output process signa	al indicates that the	chiller is ove	rloaded	and	the con	sumers ha	ave to re	duce the					
chilled water consumptio	n. The signal is use	ed in the CPM	for chi	ller se	equence	control a	nd gene	ration of					
LockSignCC signal.													
DPT : Name DPT_Lo		DPT ID	207.10			e format							
Field	Description		Sup.	Ran	ge	Unit	COV	Default					
PwrReduction	Requested power		M	010	00	%	5	cs					
	(100% = maximum	reduction)											
Attributes													
LockRequest	Indicates if power		M	true	/false	bool	Υ	false					
	necessary (validity												
_	PwrReduction)				,								
– Type	Type of overload,		0		ritical /	bool	Y	uncrit.					
	valid if LockReque	st = true	<u> </u>	critic	cal	<u> </u>	<u> </u>						
Communication:													
Binding Group:	T _				ID (14							
Class	Туре				Defa	ault							
Geographical													
	ProdSegmC.Pro			 -	1.1								
Unassigned [Broadcast (ID)	Configu	rable L				F 4						
DP Address:	IO Type(ID):	192 (CC)			roperty		54	45					
LTE-Services (event):	COV 🛛	MinRepTir			0 sec		rtbeat:	15 min					
InfoReport 🖂	Output per defa		ating L	_ BI		Froup Wild							
/LTE Bood Bospons	Tx Prio:	High			Norma	Ι <u></u>	Lo	w ∐					
(LTE Read-Response polling of the output													
shall always be	Transm after Po	owerup: Store	ed Valu	e 🗌	Act V	alue 🛚	Default	Value 🗌					
supported)													
Property-Service						_							
(individual access):	Read only		Read	/Write	e l								
Exception Handling:						Save	at Powe	erdown 🗌					
Special Features:													

2.2.4.9 Output signal: TempReturnWaterCondSetp

Standard Mode

DP Name:	TempReturnWaterCondSetp Abbr.: Mandatory												
FB Name:	CC										Can be	e interna	al 🛛
Description													
see LTE-HEE	mod	е											
Datapoint Ty	ре												
DPT_Name:			ue_Te	mp									
DPT Format:	F ₁₆									DPT_ID:	9.001		
Field	De	scripti	on							Supp.	Range	Unit	Default
											full range	°C	CS
Access Type)												
◆ Output													
this \rightarrow M			tl	$his \rightarrow 1$		\leq							
Spontaneo	ous		COV:			Δ-Valu	e:	0.5 K	Min	repetition	period:	10s	
			Cyclic	; 🗵		Period	:	15 Mii	n	-			
Request		\boxtimes											
Communicat	ion T	уре											
♦ Group Ob	ject D	Datapo	oint							Mar	ndatory:		
Default Gr	oup A	ddres	s:	=									
Dynamics													
Power dov	vn:	Save:											
Power up:		Value	:	No initia	lisatio	on:			Defau	ılt value:			
				Saved v					Actua	ıl value (n	ot for inpu	ut): 🛛	
			mit on	bus (only	y for	output):			Read	from bus	(only for	input):	
Exception Ha	andlir	ng											
Special Feat	ures												

FB:	CC	LTE Clie	nt	Output Name:									ndatory 🗌 ptional 🏻
Desci	ription:				-							<u> </u>	
This s			ıse	d by the CC to co	ontro	l an "inte	lligent"	con	dense	r wa	ter retur	n tempe	rature
DPT:	Name	DPT_Te	emp	HVACAbs_Z		PT ID	205.10	00	Datat	type	format	$V_{16}Z_{8}$	
Field			De	escription			Sup.	Rar	nge		Jnit	COV	Default
Temp	ReturnWa	aterSetp		ondenser water to tpoint	empe	erature	M	full	range		,C	0.5	CS
Comn	nand			andard Comman	nd fiel	d				(enum		
- Write	~			ormal Write			M						
- othe	r Comma	nds	no	t applicable			NA						
Comr	nunicatio	n:					-	_					
Bind	ding Gro	up:											
Clas	SS			Туре					D	efau	ılt		
Ge	eographic	al											
Ap	plication	Specific											
Ur	nassigned		\boxtimes	Broadcast		Configu	rable 🛭		1				
DP A	Address:			IO Type(ID):	2	00 (CRC	;)	P	roper	ty IC):	51	
LTE	-Services	s (event):		COV 🛛	Mi	inRepTin	ne:	1	0 sec	2	Hea	rtbeat:	15 min
1W	rite	\boxtimes		Output per defa	ult co	mmunic	ating [B	Binding	g Gr	oup Wild	dcard allo	owed 🗌
				Tx Prio:		High 🗌			Norr	mal	\boxtimes	Lo	w 🗌
				Transm after Po	oweru	ıp: Store	d Valu	e 🗌	Ac	t Va	lue 🛚	Default	Value 🗌
Exce	otion Har	ndling:									Save	at Powe	rdown
											•		_
Speci	ial Featui	res:											

2.2.4.10 Input signal: PowerFlowWaterDemCPM Standard Mode

Not applicable.

(Reason: Splitting of DPT is not possible because of necessary data consistency).

FB:	CC	LTE Client	Input Name:	put Name: PowerFlowWaterDemCPM Mandatory Optional							
Descri	intion:									<u> </u>	lionai 🔲
		l contains th	ne current flow	tomn	oraturo do	mand (ah	scol	uto vali	io) and fu	rthor chille	or control
			/ater Productio)5UI	ule vail	ie) aliu iu	i u iei ci iiii	er Cortuoi
DPT:	-	DPT	valer i Toductio	II ivia	DPT ID	214.101		Dototus	a farmat	\/	
DP1:	Name		/WaterDemCPI	١,1	טו ו אט	214.101	'	Dalalyp	e format	$V_{16}U_8B_8$	
Field		Powerriow	Description	VI					Cup	Unit	Default
	-lowDom		Chilled water	flow t	omporatur	o doman	۸		Sup.	°C	
	lowDem								M ¹⁾	<u>C</u> %	CS
RelDer	MLIMIL		This value set						IVI ′	70	CS
			percent, used								
			the Cold Wate				PIVI	(0% =			
Attribu			no stages, 100	J 70 —	all Stayes	<u> </u>					
		m\/alid	Validity of shill	امط بد	otor flow t	omporati	ro		N.4	bool	false
	pFlowDe		Validity of chil				ie		M		false
The second of										false	
- Crime	ei Eilabie	;	before chiller					ibieu		DOOI	laise
			applicable wh					able)			
Comm	nunicatio	n:	applicable with	CII CI	illied water	pullip av	anc	abic)	<u> </u>		
	ing Grou										
Class		ip.	Туре				Do:	fault			
	ographica	J 🗆	туре				De	iauit			
	olication		ProdSegmC.F	Produ	cer		1.1				
	assigned		Broadcast	TOGG	Configura	hle 🗍					
	ddress:		IO Type(ID):		199 (CPM		Pr	operty I	D.	52	
	Service	(event):	InfoReport Sr	niffer				operty i		02	
	Report		Timeout:		OH Billain,		Mir	<u> </u>			
	•	(polling):									
	ad – Res		Read Wildcard	d / Re	esp Sniffer	on Bindii	ng (Group:			
Value	after Pov	werup:	Defa	ult V	alue 🛚					Stored Va	lue 🗌
Excep	tion Han	dling:						Sa	ave at Pov	verdown	
Specia	pecial Features:										
1) Eith	Either / or. Any of these datapoints may be mandatory or optional										

2.2.4.11 Input signal: StatusCRC

Standard Mode

Not applicable.

FB: CC	LTE Client	Input Name:	StatusCRC					latory ☐ tional ⊠			
Description:							Ор	lional 🖂			
This input signa	al contains st	atus informatio	on of the Re-c	ooling contr	oller CRC						
DPT: Name			DPT ID	209.103		e format	V ₁₆ B ₈				
Field		Description	ו וטו	200.100	Batatyp	Sup.	Unit	Default			
TempWater		Current conde	enser water re	turn temper	ature	M	°C	CS			
		value									
Attributes											
TempWaterV	alid	Validity of Ter	npWater field			М	bool	false			
– Fault		Some failure i	Some failure in the CRC M								
– CtrlStatus		Controller stat	Controller status O								
		on: CRC is wo	orking (default	if not suppo	orted)						
		off: CRC is sto	opped; no con	trol							
Communication	n:										
Binding Grou	ıp:										
Class		Туре			Default						
Geographic											
Application	Specific 🛚	ProdSegmC.F	Producer		1.1						
Unassigned		Broadcast	Configu	rable 🗌							
DP Address:		IO Type(ID):	200 (CF		Property I	D:	52				
LTE-Service	(event):	InfoReport Si	niffer on Bind								
InfoReport	\boxtimes	Timeout:		31 I	Min						
LTE-Service		Read Wildcar	d / Rosn Sniff	er on Rindin	a Group:						
Read – Res	ponse 🗌	Tread Wildean	d / Resp Offili	er on bindin	ig Group.						
Value after Po	werup:	Defa	ault Value 🖂			(Stored Va	lue 🗌			
Exception Har	ndling:				Sa	ive at Pov	werdown				
Special Featur	es:										

2.2.4.12 Parameter: ProdSegmC

FB:	CC	Property	/ Name (<u>Server</u>):	Pı	rodSegm	C						datory 🖂
Desc	ription:			_							<u> </u>	
LTE z	oning info	ormation C	Cold Water Production	on	Segment							
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002		Dat	atype forma	tι	J_8Z_8	
Field			Description				Sı	ир.	Range	U	nit	Default
Coun	terValue		Cold Water Produc	ctio	n Segmer	nt	ľ	M	116			1
Statu	 S									bi	tset	
- OutOfService Zone active /inactive						(C	true/false			false	
	- all other flags not supported, fixed to '0'						N	ΙA		<u> </u>		
Command										eı	num	
	nalWrite						-	M				
	DSV & Re		Set zone inactive /	ac	tive			C				
- all o	ther comr	nands	not supported				N	IA				
Comi	nunicatio	n:										
DP.	Address:		IO Type(ID):		192 (CC)				rty ID:	1	01	
(in t	he serve	r)	Start-Index:		1				elements	1		
Pro	perty acc	ess:	Read only [Read/W	rite		\boxtimes			
Pro	tection		Read level				W	rite	level			
Exce	ption Har	ndling:	Value after Poweru	лр:	Stored	Value 🛚	A	ct Va	alue 🔲 D	efaı	ult Value	
Spec	ial Featur	es:										
CC D	P's are no	t LTE cor	nmunicating if zone	is	'OutOfSer	vice'. If P	roc	Seg	mC is 'Out(OfSe	ervice' a	lso the
corre	C DP's are not LTE communicating if zone is 'OutOfService'. If ProdSegmC is 'OutOfService' also the presponding Producer zone is 'OutOfService' (common flag)											

2.2.4.13 Parameter: Producer

FB:	CC	Property	Name (<u>Server</u>):	Pro	oducer						datory 🛚
Desci	ription:			-						<u> </u>	
LTE z	oning info	rmation C	Cold Water Produce	r nur	mber						
DPT:	Name	DPT_U	CountValue8_Z		OPT ID	202.002		Dat	atype format	U_8Z_8	
Field			Description				S	up.	Range	Unit	Default
Count	erValue		Producer-number					M	131		1
Status	3									bitset	
- OutOfService Zone active /inactive						O true/false			false		
- all other flags											
									enum		
- Norr	nalWrite							M			
- SetC	OSV & Re	setOSV	Set zone inactive /	activ	ve			0			
- all o	ther comn	nands	not supported				1	NA			
Comr	nunicatio	n:									
DP A	Address:		IO Type(ID):	1	92 (CC)				rty ID:	102	
(in t	he serve	r)	Start-Index:	1			N	° of e	elements	1	
Pro	perty acc	ess:	Read only			Read/W	rite	9	\boxtimes		
Prot	ection		Read level		-		W	/rite	level		
Exce	otion Har	ndling:	Value after Poweru	ıp:	Stored \	√alue 🛚	Α	ct Va	alue 🔲 🏻 De	fault Value	e 🗌
Speci	al Featur	es:									
CC D	P's are no	t LTE cor	nmunicating if zone	is 'C	OutOfSer	vice'. If P	ro	dSeg	mC is 'OutO	fService' a	lso the
corres	spondina	Producer:	zone is 'OutOfServi	ce'	(common	ı flag)					

2.2.4.14 Diagnostic data: StatusChillerPump

FB:	CC	Property	Name (<u>Server</u>):	StatusChillerPump							datory 🗌 otional 🖂
Desc	ription:			-						1 0	zionai 🔼
Curre	nt relative	power of	the chiller pump.								
DPT:	Name	DPT_Re	elValue_Z		DPT ID	202.001		Dat	atype format	U ₈ Z ₈	
Field			Description				Sı	лр.	Range	Unit	Default
RelVa									%	CS	
Status	Status b								bitset		
- Out	- OutOfService RelValue valid / void O true/false									false	
- all o	ther flags		not supported, fixe	d to	o '0'		Ν	ΙA			
Com	nunicatio	n:	-			·-	_		-		-
DP .	Address:		IO Type(ID):		192 (CC)		Pr	ope	rty ID:	110	
(in t	he serve	r)	Start-Index:		1		N°	of	elements	1	
Pro	perty acc	ess:	Read only	X		Read/W	rite	!			
Pro	tection		Read level				W	rite	level		
Exce	Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐										
Spec	ial Featur	es:									
for sv	vitched pu	ımp 0%=c	off, 100%=on								

2.2.4.15 Diagnostic data: StatusCondPump

FB:	CC	Property	Name (<u>Server</u>):	Status	Cond	dPump				datory 🗌 ptional 🗵
Desci	ription:			-					-	
Curre	nt relative	power of	the condenser pur	ıp.						
DPT:	Name	DPT_Re	elValue_Z	DP	ΓID	202.001	Dat	atype format	U_8Z_8	
Field			Description				Sup.	Range	Unit	Default
RelVa	alue		Relative value				M	0100	%	cs
Status	S								bitset	
- Out	OfService		RelValue valid / vo	oid			Ο	true/false		false
- all of	ther flags		not supported, fixe	d to '0'			NA			
Comr	nunicatio	n:				-		-	-	
DP A	Address:		IO Type(ID):	192	(CC)		Prope	erty ID:	111	
(in t	he serve	r)	Start-Index:	1			N° of	elements	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite			
Prot	tection		Read level				Write	level		
Exce	ption Har	dling:	Value after Poweru	up: St	tored	Value 🗌	Act V	alue 🗵 🏻 De	fault Valu	e 🗌
Speci	ial Featur	es:								
for sv	witched pu	ımp 0%=c	ff, 100%=on							

2.2.4.16 Diagnostic data: TempFlowWaterChiller

FB:	CC	Property	Name (<u>Server</u>):	TempFlow	WaterChi	ller			datory ☐ otional ⊠
Desci	ription:								otional 🔼
	•	signal co	ntains the chilled wa	ater flow tem	perature v	value. 0	Out of safety r	eason, th	is sensor
is alw	ays hardv	vired to th	e Chiller Controller.				_		
DPT:	Name	DPT_Te	empHVACAbs_Z	DPT ID	205.100	Dat	atype format	$V_{16}Z_{8}$	
Field			Description			Sup.	Range	Unit	Default
Temp			Temperature value	!		M	full range	°C	CS
Status	3						bitset		
- Faul	t		Temperature corru	r failure	M	true/false		false	
- InAla	arm		Critical limit is reac		0	true/false		false	
	mUnAck		Alarm acknowledge		3	0	ack/unack		unack
- all o	ther flags		not supported, fixed			NA			
Comn			Standard Comman					enum	
- Aları	mAck		Alarm acknowledge	е		0			
- all o	ther comr	nands	not supported			NA			
Comr	nunicatio	n:							
DP A	Address:		IO Type(ID):	192 (CC)			rty ID:	112	
(in t	he serve	r)	Start-Index:	1		N° of	elements	1	
Pro	perty acc	ess:	Read only		Read/W	'rite	∑ ¹⁾		
Protection Read level Write level									
Exce	otion Har	ndling:	Value after Poweru	ıp: Stored	Value	Act Va	alue 🛛 🏻 De	fault Valu	e 🗌
Speci	al Featur	es:							
1) opti	onal Write	access f	or Alarm acknowled	gement only	<i>-</i>				

2.2.4.17 Diagnostic data: TempReturnWaterChiller

FB:	CC	Property	Name (<u>Server</u>):			datory 🗌 otional 🖂					
Desc	ription:								<u> </u>		
			ntains the chilled wa						y reason,	this	
			cable - is always har	œ۷					T		
DPT:	Name	DPT_Te	mpHVACAbs_Z		DPT ID	205.100		tatype format			
Field			Description				Sup.	Range	Unit	Default	
Temp			Temperature value				M	full range	°C	CS	
Status	3								bitset		
- Fault Temperature corrupted, sensor failure								true/false		false	
- InAlarm Critical limit is reached							0	true/false		false	
- AlarmUnAck Alarm acknowledgement status							0	ack/unack		unack	
- all o	ther flags		not supported, fixed				NA				
Comn	nand		Standard Comman	d f	field				enum		
- Aları	mAck		Alarm acknowledge	9			0				
- all o	ther comn	nands	not supported				NA				
Comr	nunicatio	n:							-	-	
DP A	Address:		IO Type(ID):		192 (CC)		Prop	erty ID:	113		
(in t	he serve	r)	Start-Index:		1		N° of	elements	1		
Pro	perty acc	ess:	Read only			Read/W	rite				
Protection Read level Write level											
Exce	otion Har	ndling:	Value after Poweru	p:	Stored '	Value 🗌	Act V	′alue 🗵 🏻 De	fault Valu	e 🗌	
Speci	pecial Features:										
1) opti	onal Write	access for	or Alarm acknowled	ge	ment only	•	•				

2.2.4.18 Diagnostic data: TempFlowWaterCond

FB:	CC	Property	Name (<u>Server</u>):			datory ∐ otional ⊠				
Desci	ription:			-					Į Or	ntioriai 🖂
	•	signal co	ntains the condense	r wate	r flow to	emperati	ure valu	ue. Out of saf	etv reasoi	n. this
			cable - is always ha							.,
DPT:			empHVACAbs Z			205.100		atype format	V ₁₆ Z ₈	
Field			Description					Range	Unit	Default
Temp			Temperature value	!			M	full range	°C	CS
Status									bitset	
- Faul	t		Temperature corru	pted, s	ensor f	ailure	M true/false fa			false
- InAla	arm		Critical limit is reac					false		
- AlarmUnAck Alarm acknowledgement status O ack/										unack
- all of	ther flags		not supported, fixe	d to '0'			NA			
Comn	nand		Standard Comman	d field					enum	
- Aları	mAck		Alarm acknowledge	е			0			
- all of	ther comn	nands	not supported				NA			
Comr	nunicatio	n:	-			<u>_</u>	-			
DP /	Address:		IO Type(ID):	192	(CC)		Prope	rty ID:	114	
(in t	he serve	r)	Start-Index:	1			N° of e	elements	1	
Pro	perty acc	ess:	Read only [Read/W	rite	⊠ ¹⁾		
Prot	ection		Read level				Write	level		
Excep	otion Har	ndling:	Value after Poweru	ıp: S	Stored \	/alue 🗌	Act Va	alue 🗵 🏻 De	fault Value	e 🗌
Speci	al Featur	es:								
1) opti	onal Write	e access f	or Alarm acknowled	gemer	nt only					

${\bf 2.2.4.19~ Diagnostic~ data: Temp Return Water Cond}$

FB: CC	Property	Name (<u>Server</u>):	TempRetur	nWaterC	ond			datory ☐ otional ⊠
Description:							<u> </u>	Dilonal 🔼
•	-!	-4-: 46			_4	alua Out af a	-f-4	4l-:-
		ntains the condense					atety reas	son, this
,		cable - is always har						
DPT : Name	DPT_Te	mpHVACAbs_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	
- Fault		Temperature corru	pted, sensor	failure	M	true/false		false
- InAlarm		0	true/false		false			
- AlarmUnAck		Ö	ack/unack		unack			
- all other flags		Alarm acknowledge not supported, fixed			NA			
Command		Standard Comman	d field				enum	
- AlarmAck		Alarm acknowledge	е		Ο			
- all other comr	nands	not supported			NA			
Communication	n:							-
DP Address:		IO Type(ID):	192 (CC)		Prope	rty ID:	115	
(in the serve	r)	Start-Index:	1		N° of	elements	1	
Property acc	ess:	Read only		Read/W	rite	⊠ ¹⁾		
Protection		level						
Exception Har	ndling:	Value after Poweru	ip: Stored \	Value 🗌	Act Va	alue 🛛 🏻 De	fault Valu	e 🗌
Special Featur	res:							
1) optional Write	e access f	or Alarm acknowled	gement only					

2.3 Functional Block: Cold Water Producer Manager (CPM)

2.3.1 Description

The Functional Block Cold Water Production Manager CPM is responsible for demand depended cold water production of 1 to 31 production units, so called Chiller Controllers CC.

The CPM controls each chilled water unit in its own producer segment within a cooling production segment. Therefore the link(s) to the Chiller Controller(s) is made via ProdSegmC.Prod (for an overview please refer to clause 2.1).

Each Chiller Controller CC reports via:

- StatusCC
- LockSignCC
- ForceSignCC

to the Cold Water Production Manager CPM. For a description of this signals please refer to the description of the Functional Block CC, clause 2.2.

To determine the demand, the CPM collects the TempFlowWaterDemAbsCFDM and converts it to the PowerFlowWaterDemCPM for each of the chiller units. It is possible to connect up to 31 chiller units to a CPM. There is always an 1:1 connection between the first Cooling Flow Demand Manager and the CPM. These two Functional Blocks are often integrated in one device.

This chiller control sequence algorithm, evaluation of optimum COP and other control strategies are company specific and not part of this description.

The function of the CPM also manages the temperature setpoints and status of a common condenser water re-cooling circuit or air re-cooling circuit. Note: This is an optional feature (refer scenario c, clause 2.1). The Re-Cooling Controller CRC is responsible for the actual temperature control.

There may be a chilled water pump connected to the CPM. Note: Condenser water pumps are connected depending on the scenario:

a) directly to the CC

b&c) within the CRC controller

The functions of cold water system with buffer storage tanks are incorporated in within this Functional Blocks, via company specific control algorithm.

2.3.2 Constraints

IMPORTANT The output signal PowerFlowWaterDemCPM to control a CC via bus can today not be implemented in Standard Mode because the necessary compound HVAC DPT for runtime-interworking is not yet available in Standard Mode and mapping of this signal to multiple standard datapoints is not possible because of the necessary data consistency.

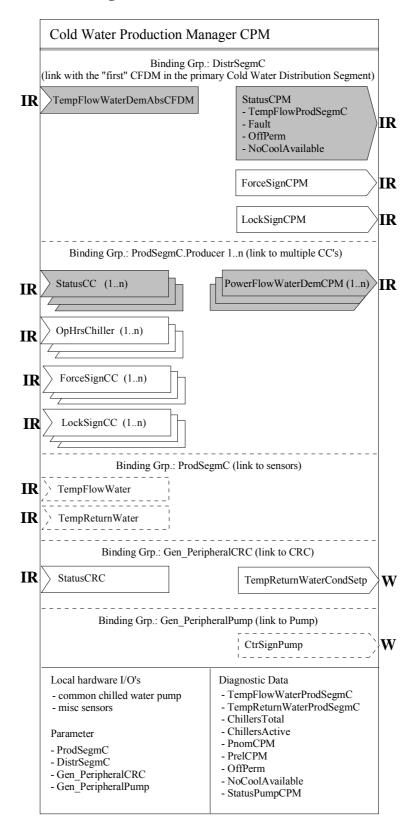
Therefore for the time being only LTE implementations of the CPM and CC functional blocks offer a bus-link to control one or multiple CC by means of the signal PowerFlowWaterDemCPM (demand dependent chiller control).

The cold water demand input signal TempFlowWaterDemAbsCFDM from the associated CFDM can today not be implemented in Standard Mode because the necessary compound HVAC DPT for runtime-interworking is not yet available in Standard Mode

Therefore for the time being only LTE implementations of the CPM and CFDM functional blocks offer a bus-link to a demand dependent cold water distribution system.

In addition the basic FB definition of the CPM enables the integration of the CPM into a standard system for remote control or visualisation.

2.3.3 Functional Block diagram



2.3.4 Description of Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
StatusCPM	Status information of the CPM	DPT_StatusCPM	209.102
- TempFlowWater ProdSegmC	Common flow temperature of the cooling production segment (S-interface)	DPT_Value_Temp	9.001
- Fault	Chiller Fault (S-interface)	DPT_Bool	1.002
- OffPerm	Chiller sequence is permanently off (S-interface)	DPT_Bool	1.002
- NoCoolAvailable	Chiller sequence is temporary not providing cold water (S-interface)	DPT_Bool	1.002
PowerFlowWater DemCPM	CPM demand signal and control information (1n different signals)	DPT_PowerFlowWater DemCPM	214.101
ForceSignCPM	Resulting forcing signal of Cold Water Production Segment sent to the "first" CFDM, to force the consumers to consume energy	DPT_ForceSignCool	21.101
LockSignCPM	Resulting locking signal of Cold Water Production Segment sent to the "first" CFDM, to force the consumers to reduce energy consumption	DPT_LockSign	207.101
CtrlSignPump	Command of common chiller pump by bus	t.b.d. probably complex DPT	?
TempReturnWater CondSetp	Condenser water return temperature setpoint (condenser temperature setpoint to a common re-cooling unit) LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Inputs			
TempFlowWaterDem AbsCFDM	Flow temperature demand from the "first" CFDM in the primary Cold Water Distribution Segment	DTP_TempFlowWater DemAbs	210.100
StatusCC	Status information from multiple CC (1n). Needed in chiller sequence application.	DPT_StatusCC	215.101
OpHrsChiller	Operating Hours CC (1n)	DPT_LongDeltaTimeSec	13.100
ForceSignCC	Forcing signal from multiple CC (1n) Used to force the consumers to consume energy from chiller	DPT_ForceSignCool	21.101
LockSignCC	Locking signal from multiple CC (1n) Used to force the consumers to reduce energy consumption from chiller	DPT_LockSign	207.101
StatusCRC	Status information from Re-Cooling Controller	DPT_StatusWTC	209.103
TempFlowWater	Common chilled water flow temperature sensor LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001

Datapoint	Description	Datapoint Type	DPT_ID
TempReturnWater	Common chilled water return temperature sensor LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Parameters			
ProdSegmC	LTE zoning number Cooling Production Segment	DPT_UCountValue8_Z	202.002
DistSegmC	LTE zoning number Cold Water Distribution Segment	DPT_UCountValue8_Z	202.002
Gen_PeripheralCRC	LTE zoning number general peripheral for common Re-Cooling Controller	DPT_UCountValue16_Z	203.012
Gen_PeripheralPump	LTE zoning number general peripheral for common chiller pump	DPT_UCountValue16_Z	203.012
Diagnostic Data			
TempFlowWater ProdSegmC	Chilled water flow temperature sensor	DPT_TempHVACAbs_Z	205.100
TempReturnWater ProdSegmC	Chilled water return temperature sensor	DPT_TempHVACAbs_Z	205.100
ChillersTotal	Total number of chiller in chiller sequence	DPT_Value_1_UCount	5.010
ChillersActive	Number of currently active chillers in chiller sequence	DPT_Value_1_UCount	5.010
PnomCPM	Nominal power kW of chiller sequence	DPT_PowerKW_Z	203.014 *)
PrelCPM	Current relative power of chiller sequence	DPT_RelValue_Z	202.001
OffPerm	Chiller sequence is permanently switched off	DPT_Bool	1.002
NoCoolAvailable	Chiller sequence is temporary not providing any cold water	DPT_Bool	1.002
StatusPumpCPM	common chilled water pump in the chiller sequence; for switched pump 0%=off, 100%=on	DPT_RelValue_Z	202.001

^{*)} Implementation of Properties using standard DPT see clause 1.3.2

			STANDARD MODE	EXTE: Mo	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	StatusCPM	NA	NA	NA	M
	- TempFlowWater ProdSegmC	GO_b	GO	GO	NA
	- Fault	GO_b	GO	GO	NA
	- OffPerm	(GO _b)		(GO)	NA
	- NoCoolAvailable	(GO _b)		(GO)	NA
	PowerFlowWaterDemCPM	NA ¹)	NA	NA	M
	ForceSignCPM	NA ¹)	NA	NA	О
	LockSignCPM	NA ¹)	NA	NA	О
	CtrlSignPump (not defined yet)				
	TempReturnWaterCondSetp	(GO _b)		(GO)	О
Inputs	TempFlowWaterDem AbsCFDM	NA ¹)	NA	NA	M
	StatusCC	NA ¹)	NA	NA	M
	OpHrsChiller	GO	GO	GO	О
	ForceSignCC	NA ¹)	NA	NA	О
	LockSignCC	NA ¹)	NA	NA	О
	StatusCRC	NA ¹)	NA	NA	О
	TempFlowWater	(GO _b)		(GO)	О
	TempReturnWater	(GO _b)		(GO)	О

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

Table 4: CPM Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	ProdSegmC	M
	DistrSegmC	M or NA ¹⁾
	Gen_PeripheralCRC	О
	Gen_PeripheralPump	О

Table 5: CPM LTE specific Properties

¹⁾ Whenever the first CFDM and CPM are in the same device, the data of this Distribution Segment (refer clause 3.1) does not have to be available on the bus. Therefore this DistrSegmC is only mandatory when the first CFDM and CPM are located in different devices.

		Support
Parameter		
Diagnostic Data	TempFlowWaterProdSegmC	О
	TempReturnWaterProdSegmC	О
	ChillersTotal	О
	ChillersActive	О
	PnomCPM	О
	PrelCPM	О
	OffPerm	О
	NoCoolAvailable	О
	StatusPumpCPM	О

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

2.3.4.1 Output signal: StatusCPM

Standard Mode

Not applicable.

→ Mapped to TempFlowProdSegmC, Fault, OffPerm, NoCoolAvailable.

FB: CPM	LTE Serv	/er	Output Name:	StatusCPM						ndatory 🛚
Description:	-			-					=	•
different consu	mers to m	ay	contains status in be used for their alt, permanent off	control strate	gy. Thi	s is the	chille	d water flo		
	DPT_Sta			DPT ID	209.10				V ₁₆ B ₈	
Field	<u> </u>	De	escription		Sup.	Range		Unit	COV	Default
TempFlowProd		in	nilled water flow t the cooling produ gment		M	full range °0		°C	0.5	cs
Attributes										
TempFlowVa	ılid	Te	alidity of empFlowProdSeg	gmC	M	true/fal	se	bool	Y	false
Fault			niller failure		М	true/fal		bool	Υ	false
OffPerm			ermanently off (m	nanual switch	0	true/fal	se	bool	Y	false
– NoCoolAvaila	able	Te	f failure) Temporary no cooling in the or oduction segment available				se	bool	Y	false
Communication	on:									
Binding Gro	up:									
Class	_		Туре				Defa	ault		
Geographic].	ļ							
Application		<u> </u>	DistrSegmC_			<u> </u>	31 o	r NA		
Unassigned			Broadcast	Configu			L			
DP Address:			IO Type(ID):	199 (CPM		Prop			51	
LTE-Service			COV 🛛	MinRepTin		10 s			tbeat:	15 min
InfoReport	\boxtimes		Output per defa		ating L			roup Wild		
(LTE Read-	Doononoo		Tx Prio:	High 🗌		N	ormal	X	Lo	w ∐
polling of th shall always supported)	e output s be		Transm after Po	owerup: Store	ed Valu	e 🗌 - /	Act V	alue 🗵	Default	Value □
Property-Sei (individual a			Read only	\boxtimes	Read	/Write	[
Exception Har	ndling:							Save	at Powe	rdown
Special Featur										
Note: CPM is a	also prese	nt i	n a system with	only 1 chiller.						
CPM and	d the first (CF	DM are usually lo	ocated in the	same d	evice =	devi devi	ce – inter	nal sign	al only.

2.3.4.2 Output signal: TempFlowWaterProdSegmC

Standard Mode

DP Nam		TempFlo ProdSeg			Abbr.:				Manda	tory		\boxtimes
FB Nam	ne:	CPM				•			Can be	intern	al [X
Descrip	tion											
Commo	n cold	water flo	w tempe	erature of co	ld water p	oroductio	n segn	nent, main	ly used for	visuali	sation	
Datapoi	int Typ	е										
DPT_Na		DPT_V	alue_Te	emp								
DPT For	rmat:	F ₁₆						DPT_ID:	9.001			
Field		Descrip	otion					Supp.	Range	Unit	Default	t
									full range	°C	cs	
Access	Type											
♦ Out	put											
this -	→ M		t	his → 1								
Spor	ntaneou	ıs 🛚	COV:		Δ-Value	e: 0.5 K	Min	repetition	period:	10s		
			Cyclic		Period:	15 M	in					
Requ		\boxtimes										
Commu	ınicatio	on Type										
♦ Gro	up Obj	ect Data	point						Mandatory	/:		
Defa	ult Gro	up Addre	ess: -	-								
Dynami	ics											
Powe	er dowi	n: Sav	e:									
Powe	er up:	Valu	ıe:	No initialisa	ition:		Defau	ılt value:				
				Saved valu	e: [Actua	ıl value (n	ot for input): 🛛		
		Trar	nsmit on	bus (only fo	r output)		Read	from bus	(only for in	put):		
Excepti	on Hai	ndling										
Special	Featu	res										

LTE-HEE Mode

2.3.4.3 Output signal: Fault

Standard Mode

DP Nam	e: F	aul	t			Abbr.:				Manda	tory	
FB Name	e: (CPM	1							Can be	interna	al 🗌
Descript	tion											
reports a	failure	e in t	the chi	iller se	equence, maii	nly used t	for visual	lisatior				
Datapoi	nt Typ	е										
DPT_Na	me:	DP	T_Boo	ol								
DPT For	mat:	B_1							DPT_ID:	1.002		
Field		De	scription	on					Supp.	Range	Unit	Default
												false
Access	Type											
♦ Outp	ut											
this -	→ M]	1	this \rightarrow 1							
Spon	taneou	IS		COV		Δ-Value:		Min	repetition	period:	10s	
				Cycli	C	Period:	15 Mi	n				
Requ	est		\boxtimes									
Commu	nicatio	n T	уре									
♦ Grou	ıp Obje	ect E	Datapo	int						Mandatory	<i>ı</i> : 🛛	
Defau	ult Gro	up A	Addres	s:								
Dynamic	cs											
Powe	r dowr	າ:	Save:									
Powe	r up:		Value:		No initialisat	tion:		Defau	ılt value:			
					Saved value			Actua	I value (no	ot for input)):	
				mit or	n bus (only for	r output):		Read	from bus	(only for in	put):	
Exception	on Har	ndlir	ng									
Special	Featu	es										

LTE-HEE Mode

2.3.4.4 Output signal: OffPerm

Standard Mode

DP	Name:	OffF	Perm			Abbr.:				Man	datory		
FΒ	Name:	CPI	М							Can	be interr	ıal	\boxtimes
De	scription												
chi	ller sequen	ce is	perma	anently	off (manual	switch or	failure),	mainly	used for	visualisa	ation		
Da	tapoint Ty	ре											
DP	PT_Name:	DI	PT_Boo	ol									
DP	T Format:	B ₁							DPT_ID:	1.00	2		
Fie	eld	Description Supp. Range Unit Default											lt
												false	е
Ac	cess Type												
♦	Output												
	this \rightarrow M		◁	th	$nis \rightarrow 1$								
	Spontaneo	us	\boxtimes	COV:		Δ-Value	:	Min	repetition	period:	10s		
				Cyclic		Period:	15 Mi	n					
	Request		\boxtimes										
Со	mmunicati	ion ⁻	Туре										
♦	Group Ob	ject	Datapo	int						Mandat	ory: 🛛 🖂]	
	Default Gro	oup .	Addres	s:	-								
Dy	namics												
	Power dow	n:	Save:										
	Power up:		Value	:	No initialisat	tion:			ılt value:		\boxtimes]	
					Saved value		<u> </u>		l value (n			<u>]</u>	
			Trans	mit on	bus (only for	r output):		Read	from bus	(only for	input):		
Ex	ception Ha	ndli	ing										
Sp	ecial Featu	ıres											

LTE-HEE Mode

2.3.4.5 Output signal: NoCoolAvailable

Standard Mode

DP Na	me:	NoC	CoolAvailable Abbr.: Mandatory											
FB Na	me:	CPN	Л							Can be	interna	al 🛛		
Descri	iption													
chiller	sequend	ce is	tempo	rarily	not producing	g cold wa	ter, main	ly use	d for visua	alisation				
Datapo	oint Typ	е												
DPT_N	Name:	DF	PT_Boo	ol										
DPT F	ormat:	B ₁							DPT_ID:	1.002				
Field		De	escription	on					Supp.	Range	Unit	Default		
false											false			
Acces	s Type													
♦ Ou	ıtput													
this	$\rightarrow M$			t	this \rightarrow 1									
Spo	ontaneo	JS		COV:		Δ-Value:		Min	repetition	period:	10s			
				Cyclic		Period:	15 Mi	n						
Red	quest													
Comm	nunicati	on 1	Гуре											
♦ Gr	oup Obj	ect l	Datapo	int						Mandatory	r: 🖂			
Def	ault Gro	up /	Addres	s: -	- -									
Dynan	nics													
Pov	ver dow	n:	Save:											
Pov	wer up:		Value	:	No initialisat	tion:		Defau	ılt value:		\square			
					Saved value	e:		Actua	I value (no	ot for input)	: _			
			Trans	mit on	bus (only for	output):		Read	from bus	(only for in	out):			
Excep	tion Ha	ndli	ng											
Specia	al Featu	res												

LTE-HEE Mode

2.3.4.6 Output signal: PowerFlowWaterDemCPM Standard Mode

Not applicable.

Reason: Splitting of DPT is not possible because of necessary data consistency

FB:	СРМ	LTE Serv	E Server Output Name: PowerFlowWaterDemCPM											
Desc	ription:			-							<u>.</u>			
chiller Powe	control ir	nformation erDemCF	ı w	contains the currer hich is sent to eac signal(s) to be ser	h chiller con	troller i	ndiv	^r idua	llỳ. T	herefore	there are	1n		
DPT:	ole signals Name	DPT			DPT ID	214.10	11	Dat	atvne	e format	$V_{16}U_8B_8$			
DI 1.	Ivaille	_	lov	vWaterDemCPM	ווטו ווט	217.10	, ,	Dai	atypo	5 IOIIIIat	V 16O8D8			
Field	•			escription	•	Sup.	Ra	nge		Unit	COV	Default		
Temp	FlowDem			hilled water flow te emand	emperature	M ¹⁾	full range			°C	0.5	cs		
RelDemLimit c			de in by M	This value sets the relative lemand limit in percent, used in chiller sequences controlled by the Cold Water Production Manager CPM (0% = no tages, 100% = all stages)			0	100		%	5	CS		
Attribi – Ten	utes npFlowDe	mValid	V	alidity of chilled wa		М	tru	e/fal	se	bool	Υ	false		
	 RelDemLimitValid 			Validity of relative demand limit Chilled water pump enabled					bool bool	Y	false false			
01111	(nust be enabled be ompressor is starte oplicable when chil ump available)	efore chiller ed, only	0	uu	o, rai		5001		10100		
	municatio													
	ding Gro	up:		-					D (
Clas		al I	_	Туре					Defa	lult				
Ap	eographic plication	Specific		ProdSegmC.Prod					1.n					
	nassigned			Broadcast	Configur				ا باست	D.	F 0			
	Address:	s (event):		IO Type(ID):	199 (CPM MinRepTin			10 s	erty II		52 rtbeat:	2 min		
	oReport			Output per defaul			7 E			roup Wild		3 min owed ²⁾		
(L	TE Read-	Response)	Tx Prio:	High 🗌		<u> </u>		rmal	\boxtimes	Lo	w 🗌		
sh	illing of the all always pported)			Transm after Pow	verup: Store	d Value	e 🗌	Δ	ct Va	alue 🛚	Default \	√alue □		
	perty-Ser lividual a			Read only	\triangleleft	Read	/Wri	te						
Exce	ption Har	ndling:								Save	at Powe	rdown		
	ial Featur													
				datapoints may be					amer	nt in nara	llel			

2.3.4.7 Output signal: ForceSignCPM

Standard Mode

Not applicable.

FB:	CPM	LTE Serv	rver Output Name: ForceSignCPM												
Desc	ription:				-					-					
			al i	ndicates that the	Cold Water F	Producti	ion Ma	anager	has rema	ining en	ergy to be				
used	by the cor	nsumers.													
DPT:	Name	DPT_Fc		SignCool	DPT ID	21.101			e format						
Field			De	Description Sup. Range Uni					Unit	COV	Default				
Attrib															
– For	ceReques	t		orced power consumption is M true/false bool						Y	false				
_			ne	cessary											
	nunicatio														
	ding Grou	ıp:		_											
Clas				Туре				Defa	ault						
	eographic		긜.												
	plication		뙫.	DistrSegmC_				31 0	r NA						
	nassigned			Broadcast											
	Address:			IO Type(ID): 199 (CPM) Property ID: 53											
	-Services			COV MinRepTime: 10 sec Heartbeat: 15 min											
Inf	oReport	\boxtimes		Output per defa		ating L			<u>roup Wild</u>	card allo	owed 📙				
		_		Tx Prio:	High 🗌			Normal	\boxtimes	Lo	w 📙				
po sh su	TE Read-l lling of the all always pported)	e output be		Transm after Po	owerup: Store	ed Value	e 🗌	Act V	alue 🛚	Default	Value □				
	perty-Ser ividual a			Read only 1)	\boxtimes	Read	/Write	: [
Exce	ption Har	ndling:							Save	at Powe	rdown				
Spec	ial Featur	es:													
Note:	CPM and	first CFD	M	are usually locat	ed in the sam	e devic	$e \Rightarrow d$	levice -	internal	signal or	ıly				
¹) Re	ead acces	s is possi	ole	but in practice n	ot very useful										

2.3.4.8 Output signal: LockSignCPM

Standard Mode

Not applicable.

LTE-HEE Mode

FB: CPM	LTE Serv	er Output Name:	tput Name: LockSignCPM Mandatory										
								U	ptional 🛚				
Description:			0 11111 1										
		al indicates that the						blem to	deliver the				
		e consumers have				•							
DPT: Name	DPT_Lo		DPT ID	207.10			e format						
Field		Description		Sup.	Range		Unit	COV	Default				
PwrReduction			equested power reduction M 0100 % 100% = maximum reduction)				5	cs					
Attributes													
– LockReques	st	Indicates if power necessary (validity		M	true/fa	lse	bool	Υ	false				
T		PwrReduction)				1/	11	\ \ \ \					
– Туре		Type of overload,		M	uncritic		bool	Y	uncrit.				
Communicati	on:	valid if LockReque	est = true		critical			<u> </u>					
Binding Gro													
Class		Type	Type Default										
Geographic	cal [
Application		DistrSegmC				31							
Unassigne		Broadcast 🗌	Configu	rable []								
DP Address		IO Type(ID):	199 (CPN		Prop	perty I	D:	54					
LTE-Service	es (event):	COV 🛛	MinRepTir	ne:	10			rtbeat:	15 min				
InfoReport		Output per defa	ault communic	ating [Bind	ling G	roup Wild	dcard allo	wed 🗌				
		Tx Prio:	High 🗌			ormal		Lo]				
(LTE Read polling of the shall alway supported)	ne output	Transm after Po	owerup: Store	ed Valu	e 🗌	Act V	alue 🗵	Default	Value 🗌				
Property-Se	rvice	Read only 1)	\boxtimes	Paad	/Write	Г	7						
(individual a	access):	Read Only		Neau	/ vviile	L							
Exception Ha	ndling:	-					Save	at Powe	rdown				
Special Featu													
		M are usually locat			e ⇒ de	vice -	- internal	signal or	ıly				
1) Read acce	ss is possil	ole but in practice n	not very useful	<u>. </u>									

2.3.4.9 Output signal: CtrlSignPump

To be defined later together with pump manufacturers.

2.3.4.10 Output signal: TempReturnWaterCondSetp

Same as in CC, refer to clause 2.2.4.9

2.3.4.11 Input signal: TempFlowWaterDemAbsCFDM Standard Mode

Not applicable.

FB:	СРМ	LTE Client	Input Name:	Tem	pFlowWa	terDem A	٩b	sCDFM			atory 🛚
Desc	ription:		-	-						- 1	
This i	nput proce		ntains the flow						ute temp	erature va	alue) and
			ntrol the Coolin	g Flo			_				
DPT:	Name	DPT_			DPT ID	210.100		Datatype	format	$V_{16}B_{16}$	
		TempFlow\	WaterDemAbs							11.14	5 ()
Field			Description		1 1 /	1 1 1			Sup.	Unit	Default
	FlowDem		Flow temperat	ure c	demand (se	etpoint)			<u> </u>	°C	cs
Attrib	นเes nValid		Validity of Ton	an Elo	wDomond				М	bool	false
	rivalio LoadPrioi	rity.	Validity of Ten Absolute load						O	bool	false
	tLoadPrio	,	Shift load prior	•	ity				0	bool	false
	(TempLim		TempFlowDer		ntains max	temnera	atı ı	re limit 1)	Ö	bool	false
	TempLimi		TempFlowDer						Ö	bool	false
	· omp_m	•	(e.g. dew poin			tomporat	·	O IIIIII		5001	10100
– DH\	NReg		Heat demand			DHW only	V		NA	bool	false
	mCtrlRed			0	bool	false					
– Ven				0	bool	false					
	AllSeasor	nReq	umer, all	0	bool	false					
			season		•						
- Sys	temPump	Req	Request for wa					bution	0	bool	false
			Segment (com								
– Em	ergDem		Emergency co	ld wa	ater demar	nd for plar	nt		0	bool	false
			protection								
– DH	NLegioRe	eq	demand from l						0	bool	false
_			active (can on	ly be	'true' if DF	HWReq =	'tr	ue')			
	nunicatio										
	ding Grou	ib:	T					. £ IL			
Clas			Туре				De	efault			
	eographic		Diatro				24				
		Specific 🔲	DistrSegmC		Configura		31	or NA			
	nassigned Address:		Broadcast IO Type(ID):		Configura		В	roporty ID		E 1	
	-Service	(ovent):	InfoReport Sn	iffor	208 (CFD			roperty ID		51	
	oReport	(event).	Timeout:	iiiei	OH BIHUIH	31	NΛi	in -	_		
		(polling):	Timeout.			JI	IVII	111			
	ead – Res		Read Wildcard	d / Re	esp Sniffer	on Bindir	ng	Group: -	-		
Value	after Po	werup:	Defa	ult V	alue 🛚			-	9	Stored Val	ue 🗌
Exce	ption Han	dling:						Save	at Powe	erdown	
The C	PM need	s this signal	for normal oper	ratior	n. Due to th	ne heartb	ea	t repetitior	of the	signal, it is	3
possil	ble to sup	ervise the pr	esence of the C	CFDN	Л.						
Spec	ial Featur	es:									
Note:	lote: CPM and first CFDM are usually located in the same device ⇒ device – internal signal only. There										
is			veen the CPM a							•	
			um flow temper			the Cool	ling	g Flow De	mand Tr	ansforme	r CFDM.
			imit in this hydr						. —	-	
			ım flow tempera								CFDM.
<u>I</u> t i	<u>s a low</u> te	mperature lir	mit in this hydra	ulic (circuit. Low	<i>ı</i> tempera	<u>atu</u>	<u>re limits</u> ha	ave prio	rity.	

2.3.4.12 Input signal: StatusCC

Standard Mode

Not applicable.

FB:	СРМ	LTE Client	Input Name:			atory 🛚					
Dosci	ription:			_						Ор	
		al contains th	ne status inform	nation from	the	chiller co	ntroller	units	CC to co	ontrol the	СРМ
			d water flow ter								
			manent off, req							u	, ,
DPT:	Name	DPT State		DPT I		215.101			format	V ₁₆ U ₈ B ₁₆	
Field	1	12 0.0.0	Description				1 2 6.0	u. t y 0 0	Sup.	Unit	Default
	Chiller		Chilled water	flow temper	atur	re			0	°C	CS
PrelC			Current relativ				ent)		0	%	CS
Attribu											
- Ten	npChillerV	′alid	Validity of Chi	llerTemp fie	eld				M	bool	false
- Prel	ChillerVal	id	Validity of Pre	Chiller field	t				M	bool	false
- Stat	us		Chiller running Chiller failure	g status					M	bool	false
Fau	-	M	bool	false							
– OffF		0	bool	false							
Req	NextStag	0	bool	false							
_			stage required								
– Req	NextChill	er	Power limit of	chiller is rea	ache	ed, next c	hiller		0	bool	false
D		L = 1- 1114 .	required	. 1. 1114 1. 111	• .			-1-1-	•	11	6-1
– Red	lucedAvai	iability	Reduce availa				ie avaii	abie,	0	bool	false
<u> </u>			but preferably	an other cr	illei	is used					
	nunicatio										
	ding Grou	ıp:	T				D - f !	14			
Clas			Туре				Defaul	Ţ			
	eographic		DradCampC F		1		 1 m				
	plication	Specific 🛚	ProdSegmC.F				1.n				
	assigned Address:		Broadcast	Config			Drane			E4	
		(a) (a mt) :	IO Type(ID):	192 (C		~ C*****	Prope	erty ID		51	
	-Service oReport	(event):	InfoReport Sr Timeout:	illier on Bir	IUIII		Min				
	•		Timeout.			/	IVIIII				
	ad – Res	(polling):	Read Wildcard	d / Resp Sn	iffer	on Bindi	ng Gro	up: -	-		
	after Po		Dofo	ıult Value 🔀	7			-		Stored Val	по П
	otion Han		Dela	iuit value 🗠	7			Sav		verdown	
EXCE	JUI Hall	ulliy.						Jav	c al FUV	verdown	
Spaci	al Featur	OC.									
	ai Featur	co.									

2.3.4.13 Input OpHrsChiller

Standard Mode

DI	P Name:	Opt	IrsChiller		1	Abbr.:				Mand	atory	
FE	3 Name:	CPI	Л							Can b	e intern	nal 🖂
De	escription											
Сι	urrent chille	r ope	rating hour	rs								
	atapoint Ty	ре										
DI	PT_Name:	DF	PT_LongDe	eltaTime	eSec							
DI	PT Format:	V_3	2						DPT_ID	: 13.10	0	
Fi	eld	De	escription						Supp.	Range	Unit	Default
										>=0 1)	h	0
A	ccess Type	<u> </u>										
•	Input											
	$N \rightarrow this$			$1 \rightarrow th$	nis							
	Spontaneo	ous			Cyclica	lly:	\boxtimes		Time	e-out:	121 n	nin
	Request				Polling:				Perio	od:		
Co	ommunicat	ion ⁻	Гуре									
•	Group Ob	ject	Datapoint							Mandato	ry: 🛛 🖂	
	Default Gr	oup /	Address:									
Dy	ynamics											
	Power dov	vn:	Save:									
	Power up:		Value:		nitialisatio				ult value:]
					ed value:		\boxtimes	_		not for inpu		<u> </u>
			Transmit of	on bus (only for o	output)):	Read	from bus	(only for i	nput):	
E	cception Ha	andli	ng									
	•											
	pecial Feati											
1)	Encoding or	n 32	bit signed i	integer	value wit	h 1 sec	cond <u>trar</u>	nsport fo	ormat reso	olution. The	e granu	larity of the
	internal reso	olutic	n may be l	higher. I	Used ran	ge: 0	~68 yeaı	$rs \Rightarrow in$	practise r	no binary o	verflow	possible

FB:	СРМ	LTE Cli	ent	Input Name:	Input Name: OpHrsChiller								
Desc	ription:	-			-						-		
Curre	ent chiller	operating	g ho	urs									
DPT:	Name	DPT_L	ong	DeltaTimeSec		DPT ID	13	.100	Datat	ype forma	t V ₃₂		
Field				Description						Sup	Unit	Default	
											h	0	
Com	municat	on:		-							<u>-</u>	-	
Bin	ding Gro	oup:											
Cla	SS			Туре					Default				
G	eographi	cal											
Aı	oplication	Specific		ProdSegmC.F	Produ	ıcer			1.1				
U	nassigne	d		Broadcast 🗌		Configui	rable						
DP	Address	:		IO Type(ID):		192 (CC	;)		Propert	y ID:	52		
LTE	E-Service	e (event):		InfoReport Si	niffer	on Bindi	ng G	roup:					
In	foReport	\boxtimes		Timeout:				31	Min				
		e (polling sponse		Read Wildcar	d/R	esp Sniffe	er on	Bind	ing Group):			
Value	e after P	owerup:	1)	Defa	ault V	′alue 🗌				-	Stored Va	lue 🛚	
Exce	ption Ha	ndling:								Save at P	owerdown	\boxtimes	
	-												
Spec	ial Featu	ıres:											
This	input can	be intern	al (1	I:1 link with CC	;)								
1) End	coding or	32 bit sig	gnec	d integer value	with	1 second	trans	sport	format re	solution. 7	he granula	rity of the	
				nigher. Used ra									

2.3.4.14 Input signal: ForceSignCC

Standard Mode

Not applicable.

FB: CPM	LTE Client	Input Name:	Forc	eSignCC	;					Mand Op	atory 🗌 tional 🖂
Description:		-								<u> </u>	
	al indicates t	hat the chiller u	nit ha	s remain	ing energ	y to	be us	sed by	the c	onsumers	
DPT : Name	DPT_ Ford	eSignCool		DPT ID	21.101		Dataty	ype fo	rmat	B ₈	
Field		Description							Sup.	Unit	Default
Attributes											
ForceReques	st	Forced power	cons	umption i	s necess	ary			0	bool	false
Communication:											
Binding Group:											
Class Type Default											
Geographical											
Application	Specific 🖂	ProdSegmC.P	roduc	cer (1n))	1.r	າ				
Unassigned	d 🗌	Broadcast		Configur	able 🗌						
DP Address	-	IO Type(ID):		192 (CC)	Р	roperty	y ID:		53	
LTE-Service	(event):	InfoReport Sn	iffer	on Bindir	ng Group:						
InfoReport	\boxtimes	Timeout:			31	Mi	n				
LTE-Service (polling): Read – Response ☐ Read Wildcard / Resp Sniffer on Binding Group:											
Value after Po	werup:	Defa	ult Va	alue 🛚					(Stored Val	ue 🗌
Exception Ha	ndling:						(Save	at Po	verdown	
Special Featu	res:										

2.3.4.15 Input signal: LockSignCC

Standard Mode

Not applicable.

LTE-HEE Mode

FB: CPM	LTE Client	Input Name:	Loc	kSignCC					Mand Opt	atory 🗌 ional 🔯
Description:			<u>-</u>						-	
This input signa		hat the chiller u	nit is	overloade	ed and the	e co	onsumer	s have to	reduce th	eir
chilled water co		0:		DDT ID	007.404		D 1 1			
DPT: Name	DPT_ Lock			DPT ID	207.101		Datatype		U ₈ B ₈	D - f II
Field		Description			14000/			Sup.	Unit	Default
PwrReduction		Requested po reduction)	wer r	reduction (100% = i	max	kimum	M	%	cs
Attributes										
LockRequest		Indicates if po		eduction i	s necess	ary	(validity	M	bool	false
T		of PwrReducti		بالمدادة	ـ ا عاد ا د	1 - 1	D = = = =4		la a a l	
– Туре		Type of overlo	oad, v	alue only	valid if Lo	CK	Request	0	bool	uncrit.
Communication	n:	1.40								
Binding Grou	ıp:									
Class		Туре				De	efault			
Geographica	al 🔲									
Application S	Specific 🛚	ProdSegmC.F	rodu	cer (1n)	1.r	1			
Unassigned		Broadcast		Configura						
DP Address:		IO Type(ID):		192 (CC)			roperty II	D:	54	
LTE-Service	(event <u>):</u>	InfoReport Sr	niffer	on Bindin						
InfoReport	\boxtimes	Timeout:			31	Mi	n			
LTE-Service (polling): Read – Response ☐ Read Wildcard / Resp Sniffer on Binding Group:										
Value after Po		Defa	ult V	alue 🖂				9	Stored Val	пе П
Exception Han		Dele	uit V				Sa	ve at Po		
	umg.						Joa	ve at i ot	VCIUOVII	
Special Featur	es:									

2.3.4.16 Input signal: StatusCRC

Same as in CC, refer to clause 2.2.4.11.

2.3.4.17 Input signal: TempFlowWater

Standard Mode

DF	Name:	Tem	pFlowWa	ter		Abbr.:					Manda	tory	
FB	Name:	CPN	1								Can be	interna	al 🛛
De	scription												
	e LTE-HEE		е										
	tapoint Ty	ре											
	PT_Name:	_	T_Value_	Temp									
DF	T Format:	F ₁₆								T_ID:			
Fie	eld	De	scription						Sup	op.	Range	Unit	Default
											full range	°C	CS
Ac	cess Type												
♦	Input												
	$N \rightarrow this$]	$1 \rightarrow th$	is	\boxtimes							
	Spontaneo	us			Cyclica	ally:	\boxtimes			Time	-out:	31 mii	n
	Request				Polling	g:				Perio	d:		
Co	mmunicat	ion 1	уре										
*	Group Ob	ject l	Datapoint								Mandatory	/:	
	Default Gro	oup A	Address:										
Dy	namics												
	Power dow	n:	Save:										
	Power up:		Value:	No ir	nitialisat	tion:]	Defau					
				Save	ed value	e: [<u>] </u>				ot for input)		
			Transmit	on bus (only for	output):		Read	fron	n bus	(only for in	put):	
Ex	ception Ha	ındli	ng										
Sp	ecial Featu	ıres											

FB:	СРМ	LTE Client	Input Name:	Tem	pFlowWa	ter				Mand Op	latory ☐ tional ⊠
Desci	ription:									-	
This p	rocess si	gnal from a t	emperature se	nsor	contains th	ne <u>comm</u>	<u>n</u> c	hilled wa	ter flow	temperatu	ure of the
	•	e, which may	y be optionally	used	by the CP	M instead	d of	a local c	old wate	r flow tem	perature
senso											
DPT:	Name	DPT_Temp	HVACAbs_Z		DPT ID	205.100		Datatype		$V_{16}Z_{8}$	
Field			Description						Sup.	Unit	Default
Temp	FlowWate	er	Temperature \	/alue					М	°C	cs
Status	3								М	bitset	
- Out	OfService		Void sensor va	alue t	rue / false				М	bool	false
- Faul	- Fault Sensor failure true / false - Overridden Sensor value overridden true / false									bool	false
- Ove	rridden			0	bool	false					
- InAlarm Sensor value alarm true /false										bool	false
_	mUnAck		Alarm acknow	ledge	ement stati	us ack / u	nac	k	0	bool	unack
	ther flags		not supported						NA	bool	
	nunicatio										
	ding Gro	up:									
Clas			Туре				Def	ault			
	eographic										
	plication		ProdSegmC				1				
Un	assigned		Broadcast		Configura	ble 🗌					
	Address:		IO Type(ID):		324 (FWT		Pro	operty ID	:	51	
LTE	-Service	(event):	InfoReport Sr	iffer	on Binding			-	-		
	oReport	\boxtimes	Timeout:			31	Min	1			
		(pollin <u>g</u>):	Read Wildcard	l / Re	esp Sniffer	on Bindi	na G	Group: -	_		
	ad – Res										
	after Po	•	Defa	ult Va	alue 🛚					Stored Val	ue
Exce	otion Har	ndling:						Sav	e at Pow	/erdown	
Speci	al Featui	es:									

2.3.4.18 Input signal: TempReturnWater

Standard Mode

DP Nam			ReturnWate	er		Abbr.:					М	andat	ory		
FB Name	e: (CPM									C	an be	interna	al	
Descript	tion														
see LTE-	-HEE r	node)												
Datapoii		е													
DPT_Na	me:	DPT	Γ_Value_Te	mp											
DPT For	mat:	F ₁₆							DP	Γ_ID:	9.	.001			
Field		Des	cription						Sup	p.	Rang	ge	Unit	Defa	ult
											full ra	ange	°C	С	s
Access	Type														
♦ Input	t														
$N \rightarrow t$	this		1	\rightarrow th	is	\boxtimes									
Spont	taneou	IS	\boxtimes		Cyclica	ally:	\boxtimes			Time-	-out:		31 mii	n	
Requ	est				Polling	j:				Perio	d:				
Commu	nicatio	n Ty	/pe												
♦ Grou	ıp Obje	ect D	atapoint								Mand	datory	': 		
Defau	ılt Gro	up Ad	ddress: -	-											
Dynamic	cs														
Powe	r dowr	n: S	Save:												
Powe	r up:	\	/alue:	No in	itialisat	ion:		Defau	ılt va	lue:			\square		
				Save	d value	e: [ot for i				
		1	Transmit on	bus (only for	output):		Read	from	n bus	(only	for in	out):		
Exception	on Har	ndlin	g												
Special	Featur	es													

FB:	СРМ	LTE Client	Input Name:	Tem	pReturnV	Vater					datory tional	
Desc	ription:			-						-		
This p	rocess si	gnal from a t	emperature se	nsor	contains th	ne <u>comm</u>	on c	hilled wa	ater retur	n temper	ature	of
			may be optiona	ally u	sed by the	CPM ins	stead	d of a loo	cal cold v	vater retu	rn	
tempe	erature se	nsor										
DPT:	Name	DPT_Temp	HVACAbs_Z		DPT ID	205.100	С	atatype	format	$V_{16}Z_{8}$		
Field			Description						Sup.	Unit	Defa	ault
	FlowWate	er	Temperature v	/alue					M	°C	cs	
Status	S								M	bitset		
	OfService		Void sensor va						M	bool	false	-
- Faul	-		Sensor failure						M	bool	false	
	rridden		Sensor value of Sensor value o						0	bool	false	-
- InAla			0	bool	false							
	mUnAck		Alarm acknow	ledge	ement stat	us ack / ι	ınac	k	0	bool	unac	ck
	ther flags		not supported						NA	bool	<u> </u>	
	nunicatio											
	ding Gro	up:				,						
Clas			Туре				Defa	ault				
	eographic	 -										
	plication		ProdSegmC				1					
	nassigned		Broadcast		Configura							
	Address:		IO Type(ID):		325 (RNV		Pro	perty ID):	51		
	-Service	(event <u>):</u>	InfoReport Sr	iffer	on Bindin			-	-			
	oReport	\boxtimes	Timeout:			31	Min					
LTE-Service (polling): Read – Response ☐ Read Wildcard / Resp Sniffer on Binding Group:												
Value	after Po	werup:	Defa	ult Va	alue 🛚			-	5	Stored Va	lue 🗌	
Exce	ption Har	ndling:						Sav	e at Pov	verdown		
Speci	ial Featu	res:										

2.3.4.19 Parameter: ProdSegmC

FB:	CPM	Property	/ Name (<u>Server</u>):	P	rodSegm	C						datory 🗵
											Op	tional 🔲
	ription:	-									_	
LTE z	oning info	ormation C	Cold Water Producti	on	Segment							
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002	2	Dat	atype form	at	U_8Z_8	
Field			Description				S	up.	Range	Ų	Jnit	Default
Coun	terValue		Cold Water Production	ctio	n Segmer	nt		M	116	-	-	1
Status]			t	itset	
	OfService		Zone active /inacti					0	true/false			false
	ther flags		not supported, fixe	d t	o '0'		١	١A				
Comr										e	enum	
- Norr	nalWrite							M				
- SetC	DSV & Re	setOSV	Set zone inactive /	ac	ctive			0				
- all o	ther comr	nands	not supported				١	١A				
Com	nunicatio	n:								-		
DP .	Address:		IO Type(ID):		199 (CPM	l)	Pi	rope	rty ID:	•	101	
(in t	he serve	r)	Start-Index:		1		N	° of e	elements	•	1	
Pro	perty acc	ess:	Read only			Read/W	/rite)	\boxtimes			
Protection Read level Write level									-			
Exce	Exception Handling: Value after Powerup: Stored Value Act Value Default Value											
Spec	ial Featui	es:										
CPM	DP's are	not LTE c	ommunicating if zor	ne i	is 'OutOfS	ervice'.		•				

2.3.4.20 Parameter: DistrSegmC

FB: CPM	Property	Name (<u>Server</u>):	D	istrSegmC	;					tory 🔯 1)
Description:			-						<u> </u>	otional 🗌
	rmation C	Cold Water Primary	Die	etribution S	eament					
			Dis	_			1010	ativa a favorat	11.7	
DPT: Name	ואם _	CountValue8_Z		DPT ID	202.002		_	atype format		D (11
Field		Description				Sup		Range	Unit	Default
CounterValue		Cold Water Distribution	utio	on Segmer	nt	M		131		31
Status									bitset	
- OutOfService		Zone active /inactive	vе			0		true/false		false
- all other flags		not supported, fixe	d t	o '0'		NΑ	\			
Command									enum	
- NormalWrite						М				
- SetOSV & Re	setOSV	Set zone inactive /	ac	tive		0				
- all other comn	nands	not supported				NΑ				
Communication	n:	•					-		1	
DP Address:		IO Type(ID):		199 (CPM)	Pro	per	ty ID:	102	
(in the serve	r)	Start-Index:		1 `	,			elements	1	
Property acc	•	Read only			Read/W			\boxtimes		
Protection		Read level				Wri	te I	evel		
Exception Han	dling:	Value after Poweru	ıp:	Stored \	√alue ⊠	Act	Va	lue 🗍 De	efault Value	е 🗍
			•		<u> </u>			<u>—</u>		
Special Featur	es:									
1) Whenever the	first CFD	M and CPM are in	the	same dev	ice the D	istrS	Seg	mC does no	t have to b	е
implementet.							Ŭ			
•	not LTE co	ommunicating if zor	ne i	is 'OutOfSe	ervice'.					

2.3.4.21 Parameter: Gen_PeripheralCRC

FB:	CPM	Property	N	lame (<u>Server</u>):	G	en_Periph	neralCRC	;				datory 🔲
											Op	otional 🛚
Desc	ription:	-			='						-	
LTE z	oning nur	nber Peri	oh	eral link to CRC (d	opt	tionally use	ed for cor	ntro	of	the common	condense	r water
tempe	erature)											
DPT:	Name	DPT_U	Co	untValue16_Z		DPT ID	203.012		Dat	atype format	U ₁₆ Z ₈	
Field			D	escription				Sι	ıр.	Range	Unit	Default
Count	terValue		р	eripheral link num	be	er		١	/	full range		1
Status	3										bitset	
- Out	OfService		Ζ	one active /inactiv	⁄e			()	true/false		false
- all o	ther flags		n	ot supported, fixed	d to	o '0'		N	Α			
Comn	nand										enum	
- Norr	nalWrite							Ν	Λ			
- SetC	SV & Re	setOSV	S	et zone inactive /	ac	tive		()			
- all o	ther comn	nands	n	ot supported				N	A			
Comr	nunicatio	n:										
DP A	Address:			IO Type(ID):		199 (CPM)	Pr	ope	rty ID:	103	
(in t	he serve	r)		Start-Index:		1		N°	of	elements	1	
Pro	perty acc	ess:		Read only			Read/W	rite		\boxtimes		
Prof	ection			Read level				W	rite	level		
Exce	otion Har	ndling:	٧	alue after Poweru	ıp:	Stored \	Value 🛚	Ac	t Va	alue 🔲 🏻 De	fault Valu	e 🗌
Speci	al Featur	es:										
CPM	is not LTE	commun	ic	ating with the CRO	C it	f zone is 'C	OutOfServ	vice	,'			

2.3.4.22 Parameter: Gen_PeripheralPump

FB: CPM Property Name (<u>Server</u>): Gen_PeripheralPump											datory 🗌
Desc	ription:	<u>!</u>		-							<u> </u>
LTE:	zoning nui	mber Peri	pheral link to pump								
DPT:	Name	DPT_U	CountValue16_Z		DPT ID 20	3.012	Dat	atype forma	at l	J ₁₆ Z ₈	
Field			Description				Sup.	Range	U	Init	Default
Cour	terValue		peripheral link nun	nber	r		М	full range			1
Statu	S								b	itset	
- Out	OfService		Zone active /inacti	ive			0	true/false			false
	- all other flags not supported, fixed to '0'						NA				
	mand								е	num	
	malWrite						M				
	OSV & Re		Set zone inactive	/ act	tive		0				
	ther comr		not supported				NA				
Com	municatio	on:									
	Address:		IO Type(ID):	1	199 (CPM)			erty ID:	1	04	
(in	the serve	r)	Start-Index:	1	1			elements	1		
Pro	perty acc	ess:	Read only		Re	ead/W	rite	\boxtimes			
Pro	tection		Read level	-			Write	level	-	-	
Exce	ption Har	ndling:	Value after Power	up:	Stored Value	ue 🛚	Act V	alue 🔲 🏻 🗈)efa	ult Valu	e 🗌
Spec	ial Featu	res:									
CPM	CPM is not LTE communicating with pump if zone is 'OutOfService'										

2.3.4.23 Diagnostic data: TempFlowWaterProdSegmC

FB:	agnostic signal contains the common Name DPT_TempHVACAbs_Z Description Temperature value Temperature corn Critical limit is real Alarm acknowled not supported, fix and Alarm acknowled not supported		TempFlowWater ProdSegmC					Mandatory \square			
										Op	otional 🛚
Desc	ription:										
This c	liagnostic	signal co	ntains the common	ch	illed water	flow temp	perat	ure value.			
DPT:	Name	DPT_Te	mpHVACAbs_Z		DPT ID	205.100		atatype form	nat '	$V_{16}Z_{8}$	
Field			Description				Sup	. Range		Jnit	Default
Temp			Temperature value)			М	full range	0	С	cs
Status	3								b	oitset	
- Faul	t		Temperature corru	pte	ed, sensor	failure	M	true/false			false
- InAla	arm		Critical limit is read	he	ed .		Ο	true/false			false
- Aları	mUnAck		Alarm acknowledge	em	nent status		Ο	ack/unacl	<		unack
- all o				d t	o '0'		NΑ	.			
Comn	nand		Standard Comman	nd field					е	enum	
- Aları	nAck		Alarm acknowledge	е			Ο				
- all o	ther comn	nands	not supported				NΑ				
Comr	nunicatio	n:						_	-		
DP A	Address:		IO Type(ID):		199 (CPN	l)	Pro	perty ID:	1	110	
(in t	he serve	r)	Start-Index:		1		N° (of elements	1	1	
Pro	perty acc	ess:	Read only [Read/W	rite	⊠ ¹⁾			
Prof	ection		Read level				Wri	e level	-	-	
Exce	otion Han	dling:	Value after Poweru	ıp:	Stored	Value 🗌	Act	Value 🛚	Defa	ault Value	e 🗌
Speci	al Featur	es:									
1) opti	onal Write	access f	or Alarm acknowled	lge	ment only						

2.3.4.24 Diagnostic data: TempReturnWaterProdSegmC

FB: (СРМ	Property	Name (<u>Server</u>):	TempReturnWater	r ProdSe	egmC		datory ☐ otional ⊠
Descri	ption:			-			-	
This dia	agnostic	signal co	ntains the common	chilled water return	tempera	ture value.		
DPT:	Name	DPT_Te	empHVACAbs_Z	DPT ID 205.10	00 Da	tatype format	$V_{16}Z_{8}$	
Field			Description		Sup.	Range	Unit	Default
Temp			Temperature value)	M	full range	°C	cs
Status							bitset	
- Fault				pted, sensor failure	M	true/false		false
- InAlar	rm		Critical limit is read		0	true/false		false
- Alarm	nUnAck		Alarm acknowledge		0	ack/unack		unack
- all oth	ner flags		not supported, fixe		NA			
Comma	and		Standard Commar				enum	
- Alarm	ıAck		Alarm acknowledge	e	0			
- all oth	ner comn	nands	not supported		NA			
Comm	unicatio	n:						
DP A	ddress:		IO Type(ID):	199 (CPM)	Prope	erty ID:	111	
(in th	e serve	r)	Start-Index:	1	N° of	elements	1	
Prop	erty acc	ess:	Read only [Read/	Write	∑ ¹⁾		
Prote	ection		Read level		Write	level		
Except	tion Han	dling:	Value after Poweru	ıp: Stored Value [Act V	alue 🛛 De	fault Valu	e 🗌
Specia	al Featur	es:						
1) optio	nal Write	access f	or Alarm acknowled	gement only		·		

2.3.4.25 Diagnostic data: ChillersTotal

FB:	СРМ	Property	Name (<u>Server</u>):	Cl	hillersTot	al					datory _
										Οþ	otional 🛚
Desc	ription:										
Total	number o	f chillers ir	n chiller sequence	(acc	cording to	the chille	er direct	ory).			
DPT:	Name	DPT_Va	lue_1_Ucount		DPT ID	5.010	Dat	atype format	U ₈		
Field			Description				Sup.	Range	Unit		Default
								031			CS
Comi	municatio	n:					-		•	•	
DP	Address:		IO Type(ID):		199 (CPM	1)	Prope	rty ID:	112		
(in t	the serve	r)	Start-Index:		1		N° of	elements	1		
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	/rite				
Pro	tection		Read level				Write	level			
Exce	ption Har	ndling:	Value after Power	up:	Stored	Value 🗌	Act Va	alue 🗵 🛮 De	efault \	Value	e 🗌
Spec	ial Featui	es:		·		•	•				_
	•						•	•			

2.3.4.26 Diagnostic data: ChillersActive

FB:	СРМ	Property	Name (<u>Server</u>):	Ch	nillersActive					datory 🗌 tional 🏻
D										illoriai 🖂
	ription:									
Numb	er of curr	ently active	e chillers in chiller s	sequ	uence.					
DPT:	Name	DPT_Va	lue_1_Ucount		DPT ID 5.010	Dat	atype forr	nat	U ₈	
Field			Description			Sup.	Range	Į	Jnit	Default
							031	-	-	CS
Comr	nunicatio	n:				-		· <u>-</u>	•	
DP A	Address:		IO Type(ID):	1	199 (CPM)	Prope	rty ID:		113	
(in t	he serve	r)	Start-Index:	1	1	N° of	elements	-	1	
Pro	perty acc	ess:	Read only	X	Read/W	/rite				
Prof	tection		Read level	-		Write	level			
Exce	ption Har	ndling:	Value after Poweru	ıp:	Stored Value	Act Va	alue 🛚	Defa	ault Value	
Speci	ial Featur	es:					_		-	
		•	•		•	•		•		

2.3.4.27 Diagnostic data: PnomCPM

FB:	СРМ	Property	Name (<u>Server</u>):	PnomC	PM					datory 🗌
Desc	ription:	-		-						
Nomi	nal power	of the chil	ler sequence contro	olled by	the C	CPM.				
DPT:	Name	DPT_Po	werKW_Z	DPT	ID	203.014	Dat	atype format	U ₁₆ Z ₈	
Field			Description				Sup.	Range	Unit	Default
Powe	r		Power value, 1kW	resolution	on		M	065535	kW	CS
Status	3								bitset	
- Out	OfService		Pnom value valid of	or unkno	ywn/۱	oid/	Ο	true/false		false
- all o	all other flags not		not supported, fixed to '0'			NA				
Comr	nunicatio	n:				=		-		•
DP	Address:		IO Type(ID):	199 (CPM	l)		rty ID:	114	
(in t	he serve	r)	Start-Index:	1			N° of	elements	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite			
Prof	ection		Read level				Write	level		
Exce	otion Har	ndling:	Value after Poweru	up: Sto	ored '	Value 🗌	Act V	alue 🗵 🏻 De	fault Valu	e 🗌
Speci	al Featur	es:								
To be	calculate	d accordir	ng to the power valu	ues Pnor	nChi	llers of th	e attac	hed chillers.		

2.3.4.28 Diagnostic data: PrelCPM

FB:	CPM	Property	Name (<u>Server</u>):	P	reICPM					datory 🔲
									Op	otional 🛚
Descr	iption:								·-	
			the chiller sequence						f the attac	hed
chiller	s. The ca	Iculation is	s done by the CPM	an	d the med	hanism is	compa	any specific.		
DPT:	Name	DPT_Re	elValue_Z		DPT ID	202.001	Dat	atype format	U_8Z_8	
Field			Description				Sup.	Range	Unit	Default
RelVa	lue		Relative value				M	0100	%	cs
Status	3								bitset	
- Out	OfService		RelValue valid / vo	oid			M	true/false		true
- all of	her flags		not supported, fixe	d t	o '0'		NA			
Comn	nunicatio	n:				•	-	-		-
DP /	Address:		IO Type(ID):		199 (CPM	1)	Prope	rty ID:	115	
(in t	he serve	r)	Start-Index:		1		N° of	elements	1	
Prop	perty acc	ess:	Read only	\boxtimes		Read/W	/rite			
Prot	ection		Read level				Write	level		
Excep	otion Han	dling:	Value after Powert	лр:	Stored	Value 🗌	Act Va	alue 🗵 🏻 De	fault Valu	e 🗌
Speci	al Featur	es:			_	_			_	_
		•				•	•		•	

2.3.4.29 Diagnostic data: OffPerm

FB:	СРМ	Property	Name (<u>Server</u>):	OffPerm					datory 🗌 otional 🏻
Descr	iption:			_					<u></u>
			ther the chiller seq						
datap	<u>oint can a</u>	lso be a pa	arameter of the CP	M in order	to switch th	ne chille	er sequence o	off via bus.	ı
DPT:	Name	DPT_Bo	ol	DPT ID	1.002	Dat	atype format	B ₁	
Field			Description			Sup.	Range	Unit	Default
							true/false	bool	false
Comn	nunicatio	n:				_	-		
DP /	Address:		IO Type(ID):	199 (CF	M)	Prope		116	
(in t	he serve	r)	Start-Index:	1		N° of	elements	1	
Prop	erty acc	ess:	Read only		Read/W	/rite	⊠ ¹⁾		
Prot	ection		Read level			Write	level		
Excep	otion Har	dling:	Value after Poweru	ıp: Store	d Value 🗌	Act Va	alue 🗵 🏻 De	fault Value	e 🗌
	al Featur	es:							
			s datapoint is also sed for service.	used to sw	itch the chi	iller seq	uence off via	bus. This	is an

2.3.4.30 Diagnostic data: NoCoolAvailable

FB:	СРМ	Property	Name (<u>Server</u>):	No	CoolAvailable					datory ☐ otional ⊠
Desc	ription:	-		-					-	
Statu	s info indi	cating whe	ther chiller sequen	ce is	s temporarily not p	rovidin	g cold wat	er.		
DPT:	Name	DPT_Bo	ol		DPT ID 1.002	Dat	atype form	nat	B ₁	
Field			Description			Sup.	Range		Unit	Default
							true/false		bool	false
Comi	nunicatio	n:				-	_	 -		
DP.	Address:		IO Type(ID):	1	199 (CPM)	Prope	rty ID:		117	
(in t	he serve	r)	Start-Index:	1	1	N° of	elements		1	
Pro	perty acc	ess:	Read only	X	Read/W	/rite				
Pro	tection		Read level	-		Write	level			
Exce	ption Har	ndling:	Value after Poweru	ıp:	Stored Value	Act Va	alue 🛛	Def	ault Value	e 🗌
Spec	ial Featui	es:								

2.3.4.31 Diagnostic data: StatusPumpCPM

FB:	СРМ	Property	Name (<u>Server</u>):	St	tatusPump	СРМ				datory 🗌 otional 🏻
Desci	ription:			-					<u> </u>	zionai 🔼
Curre	nt relative	power of	common chilled wa	iter	pump in th	ne chiller	sequ	ence.		
DPT:	Name	DPT_Re	elValue_Z		DPT ID	202.001	Da	tatype format	U ₈ Z ₈	
Field			Description				Sup.	Range	Unit	Default
RelVa	llue		Relative value				М	0100	%	CS
Status	3								bitset	
	OfService		RelValue valid / vo				0	true/false		false
- all of	ther flags		not supported, fixe	d to	o '0'		NA			
Comr	nunicatio	n:				-		-	•	
DP A	Address:		IO Type(ID):		199 (CPM))	Prop	erty ID:	118	
(in t	he serve	r)	Start-Index:		1		N° of	elements	1	
Pro	perty acc	ess:	Read only	X		Read/W	rite			
Prot	ection		Read level				Write	level		
Excep	otion Har	dling:	Value after Poweru	ıp:	Stored \	/alue 🗌	Act \	/alue 🗵 🏻 De	fault Valu	e 🗌
Speci	al Featur	es:								
for sv	vitched pu	ımp 0%=0	off, 100%=on				•			

2.4 Functional Block: Re-Cooling Control (CRC)

2.4.1 Description

The Functional Block Re-Cooling Controller CRC is controlling the incoming condenser return temperature to the chiller unit(s) by bypass valve or cooling tower fans (1..n) and/or dampers (1..m). The temperature setpoint TempReturnWaterCondSetp is determent by the Cold Water Production Manager CPM or by the Chiller Controller CC. Refer to the overview, clause 2.1.

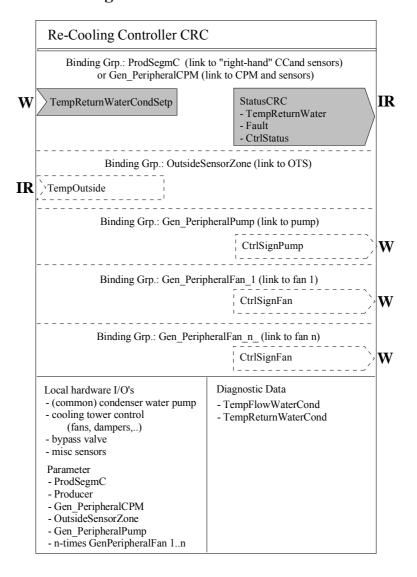
Out of controlling purpose the condenser water return sensor has to be connected to the Re-Cooling Controller, as well as the condenser water flow temperature sensor.

Additionally it is possible to connect the condenser water pump to the CRC.

2.4.2 Constraints

The TempRetrunWaterSetp signal shall be provided by one FB (1:1 link to CRC). Otherwise the actual temperature setpoint in the CRC will toggle.

2.4.3 Functional Block diagram



2.4.4 Description of Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
StatusCRC	Status information of CRC	DPT_StatusWTC	209.103
- TempReturnWater	Current water return temperature (S-interface)	DPT_Value_Temp	9.001
- Fault	CRC fault (S-interface)	DPT_Bool	1.002
- CtrlStatus	Controller Status (S-interface)	DPT_Switch	1.001
CtrlSignPump	Command of common condenser pump by bus when the CRC is connected to the CPM, or condenser pump of a chiller unit when connected to CC.	t.b.d. probably complex DPT	t.b.d.
CtrlSignFan (1n)	Command of re-cooling control (cooling tower fan) number #n	t.b.d. probably complex DPT	t.b.d.
Inputs			
TempReturnWater CondSetp	Condenser water return temperature setpoint (condenser temperature setpoint back to the chiller unit) (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
TempOutside	Outside air temperature sensor input (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Parameters			
ProdSegmC	LTE zoning number Cooling Production Segment	DPT_UCountValue8_Z	202.002
Producer	LTE zoning number Cooling Producer Segment	DPT_UCountValue8_Z	202.002
Gen_PeripheralCPM	LTE zoning number general peripheral connection to CPM	DPT_UCountValue16_Z	203.012
OutsideSensorZone	LTE zoning number for outside air temperature sensor	DPT_UCountValue8_Z	202.002
Gen_PeripheralPump	LTE zoning number general peripheral connection to pump	DPT_UCountValue16_Z	203.012
Gen_PeripheralFan#1	LTE zoning number general peripheral for Fan #1	DPT_UCountValue16_Z	203.012
Gen_PeripheralFan#n	LTE zoning number general peripheral for Fan #n	DPT_UCountValue16_Z	203.012
Diagnostic Data			
TempFlowWaterCond	Common condenser water flow temperature sensor	DPT_TempHVACAbs_Z	205.100
TempReturnWaterCond	Common condenser water return temperature sensor	DPT_TempHVACAbs_Z	205.100

^{*)} Implementation of Properties using standard DPT see clause 1.3.2

			STANDARD MODE	NDED DE	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	StatusCRC	NA	NA	NA	M
	- TempReturnWater	GO_b	GO	GO	NA
	- Fault	GO_b	GO	GO	NA
	- CtrlStatus	GO_b	GO	GO	NA
	CtrlSignPump (not defined yet)				
	CtrlSignFan (1n) (not defined yet)	·			
Inputs	TempReturnWaterCondSetp	GO_b	GO	GO	M
	TempOutside	(GO _b)		(GO)	О

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

Table 7: CRC Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	ProdSegmC	$M^{1)2)}$
	Producer	M ¹⁾²⁾
	Gen_PeripheralCPM	M ¹⁾
	OutsideSensorZone	О
	Gen_PeripheralPump	О
	Gen_PeripheralFan#1	О
	Gen_PeripheralFan#n	О

Table 8: CRC LTE specific Properties

¹⁾ either / or. Depending on the configuration (connection to CPM or CC, refer Overview 2.1)

²⁾ these two segments are part of one LTE zone

		Support
Parameter		
Diagnostic Data	TempFlowWaterCond	О
	TempReturnWaterCond	О

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

2.4.4.1 Output signal: StatusCRC

Standard Mode

Not applicable.

→ Mapped to the datapoints TempReturnWater, Fault, CtrlStatus

FB: CR	С	LTE Server Output Name: StatusCRC Mai												
Description	on:		•											
			rrent return tempera											
in the partner functional block for optimised control loop mechanisms or as a diagnostic val														
visualizati														
	lame	DPT_State		DPT ID	209.10			√ ₁₆ B ₈						
Field			Description			Range	Unit	COV	Default					
TempWate	er		Current return tem	nperature	M	full range	°C	0.5	cs					
Attributes														
-TempWa	aterVa	ılid	Validity of TempR	eturnWater	M	true/false	bool	Υ	false					
			Field											
Fault			Some failure in the	e CRC	M	true/false	bool	Υ	false					
- CtrlStatu	JS		Controller status		0	on/off	bool	Υ	on					
			on: CRC is workin											
			(default if not s											
			off: CRC is stoppe	ed; no										
			control											
0	:4:-		of flow temper	ature				_						
Communi														
Binding Class	Grot	лр:	Typo	Type Default										
Geogra	anhior	ы П	Туре			Dela	uit							
		Specific [
Unassi		Specific [Broadcast	Broadcast Configurable 1										
DP Add			IO Type(ID):	200 (CRC		Property II)·	52						
		(event):	COV 🛛	MinRepTim		10 sec	Heart		15 min					
InfoRe			Output per default			Binding G								
		Response	Tx Prio:	High	ing _	Normal		Lov						
		output	TXTTIO.	ı ııgıı 🗀		Nomai		LOV	<u>'</u> Ш					
shall al			Transm after Pow	erup: Store	d Value	☐ Act Va	alue 🖂 🏻 🛭	Default V	/alue □					
suppor	,		Transmit alter i ew	orup. Otoro	a valuo			Joiaun V						
Property		vice	Daniel V	7	D 1/1	A/-:								
(individ	ual ac	ccess):	Read only		Read/\	write L								
Exception	ո Han	dling:	·				Save a	t Power	down					
							•							
Special F	eatur	es:												
			<u> </u>											

2.4.4.2 Output TempReturnWater

Standard Mode

DF	Name:	Tem	pRetu	rnWate	er	Abbr.:					Ma	andat	ory		\leq
FB	Name:	CRC										an be	interna	al 🛛	\leq
De	escription														
Сι	irrent re-coc	ling	conde	nser re	eturn tempe	erature.									
Da	tapoint Ty	ре													
DF	PT_Name:	DF	PT_Val	lue_Te	mp										
DF	PT Format:	F ₁₆	3							DPT_ID:	9.0	001			
Fie	eld	De	scripti	on						Supp.	Rang	е	Unit	Default	
											full ra	inge	°C	cs	
Ac	Access Type														
♦	Output														
	this \rightarrow M		¹)	ti	his \rightarrow 1										
	Spontaneo	us	\square	COV:	\boxtimes	Δ-Value	0.5	K	Minl	RepTime:		10s			
				Cyclic	$ \boxtimes $	Period:	15	Min							
	Request		\boxtimes												
Co	mmunicati	on 1	Гуре												
♦	Group Ob	ject I	Datapo	oint							Mand	latory	': 		
	Default Gro	oup A	Addres	s: -	=										
Dy	namics														
	Power dow	'n:	Save:												
	Power up:		Value	:	No initialis	ation:			Defau	ılt value:					
					Saved val			P	\ctua	l value (n	ot for i	nput)	: 🛛		
Transmit on bus (only for output): Read from bus (only for input):															
Ex	ception Ha	ndli	ng												
	ecial Featu														
1) 1	this datapoir	nt is	also in	teresti	ng for visua	alisation an	d not o	only	used	d in the as	ssociat	ed FE	3		

LTE-HEE Mode

2.4.4.3 Output Fault

Standard Mode

DF	Name:	Fau	lt			Abbr.:				Mano	datory	\boxtimes		
FB	Name:	CRO	С				Can	be intern	al 🛛					
De	scription													
Re	eports a failu	ire o	of the C	RC.										
Da	tapoint Ty	ре												
	PT_Name:	DF	PT_Bo	ol										
DF	PT Format:	B ₁							DPT_ID:	1.002	2			
Fie	eld	De	escripti	on					Supp.	Range	Unit	Default		
												false		
Ac	Access Type													
♦	Output													
	$this \to M$			tl	$nis \rightarrow 1$									
	Spontaneo	us		COV:		Δ-Value:		Min	MinRepTime: 10s					
				Cyclic	igtriangledown	Period:	15 Mi	in						
	Request		\boxtimes											
Co	mmunicati	ion ⁻	Туре											
♦	Group Ob	ject	Datapo	oint						Mandato	ory: 🛛 🖂			
	Default Gro	oup /	Addres	s: -	-									
Dy	namics													
	Power dow	n:	Save:											
	Power up:		Value	:	No initialisa			Defau	ılt value:		\boxtimes			
					Saved value		<u>l</u>		ıl value (n					
				mit on	bus (only fo	r output):		Read	from bus	(only for	input):			
Ex	ception Ha	ndli	ing											
	ecial Featu													
1) t	his datapoir	nt is	also in	terestir	ng for visuali	isation an	d not onl	ly used	I in the as	sociated	FB			

LTE-HEE Mode

2.4.4.4 Output CtrlStatus

Standard Mode

DP Name:	CtrlStatus	Abb	or.:				Mandat	ory				
FB Name:	CRC						Can be	interna	al 🖂			
Description												
Controller status												
on: CRC is working (default if not supported)												
off: CRC is stopped; no control of flow temperature												
Datapoint Type												
DPT_Name:	DPT_Switch											
DPT Format:	B ₁					DPT_ID:	1.001					
Field	Description					Supp.	Range	Unit	Default			
									on			
Access Type												
◆ Output												
this \rightarrow M \boxtimes 1) this \rightarrow 1 \square												
Spontaneo	us 🛛 COV:	Δ-V	'alue:		Minl	RepTime:		10s				
	Cyclic	: 🛛 Peri	iod:	15 Mir	า							
Request												
Communicati	on Type											
♦ Group Ob	ect Datapoint						Mandatory	': 🛛				
Default Gro	oup Address: -	-										
Dynamics												
Power dow	n: Save:											
Power up:	Value:	No initialisation:			Defau	ılt value:						
		Saved value:			Actua	I value (no	ot for input)					
	Transmit on	bus (only for outp	put):		Read	from bus	(only for in	out):				
Exception Ha	ndling											
-												
Special Featu												
1) this datapoir	nt is also interesti	ng for visualisatio	n and	not only	y used	in the ass	sociated FE	3				

LTE-HEE Mode Not applicable.

2.4.4.5 Output signal: CtrlSignPump

To be defined later together with pump manufacturer. Refer to clause 2.3.4.9.

2.4.4.6 Output signal: CtrlSignFan

To be defined later together with fan manufacturer.

2.4.4.7 Input signal: TempReturnWaterCondSetp

Standard Mode

DP Nam			ReturnWa	trerCor	ndSetp	Abbr.:					Ma	ındat	ory		
FB Name	e: (CRC									Ca	n be	interna	al	
Descript	tion														
			turn tempe	rature	setpoint										
Datapoii		е													
DPT_Na		DPT	DPT_Value_Temp												
DPT For	mat:	F ₁₆							DP	Γ_ID:	9.0	01			
Field		Des	cription						Sup	p.	Range)	Unit	Defa	ult
		see	LTE-HEE	mode							full rar	nge	° C	C	S
Access Type															
♦ Input	t														
$N \rightarrow t$	this			$1 \rightarrow th$	is 🛭										
Spont	taneou	IS	\boxtimes		Cyclical	lly:	\boxtimes	Time-out: 31 min					า		
Requ	est				Polling:			Period:							
Commu	nicatio	n Ty	ре												
♦ Grou	ıp Obje	ect Da	atapoint								Manda	atory	: 🛛		
Defau	ılt Gro	up Ac	ddress:												
Dynamic	cs														
Powe	r dowr	n: S	Save:												
Powe	r up:	V	/alue:	No in	itialisatio	on:		Defau	ılt va	lue:			\boxtimes		
				Save	d value:			Actua	l val	ue (no	ot for in	iput):			
		Transmit on bus (only for output):								n bus	(only fo	or inp	out):		
Exception	on Har	ndling	g												
Special	Featur	es													

FB:	CRC	LTE Server	Input Name:	put Name: TempReturnWaterCondSetp						Mandatory ∑ Optional ☐	
Desc	ription:									i i	
			denser return wa			e setpoii	nt with a	a STA	TUS info	ormation.	The
			means of COM	<u>IAM</u>							
DPT:	Name	DPT_Temp	HVACAbsp_Z		DPT ID	205.100	Data	atype	format	$V_{16} Z_8$	
Field			Description						Sup.	Unit	Default
Temp	FlowWate	erSetp	Condenser retu			erature s	etpoint		M	° C	cs
STAT	US		For Read Servi	ice o	only					Bitset	
- Out	OfService		Input out of ser	vice)				0	bool	false
- Ove	rridden		Input is tempor	arily	overridder /	1			0	bool	false
- all o	ther bits		fixed to '0'						NA	bool	false
COM	MAND		For Write Servi	ce o	only					enum.	
- Norr	malWrite		Used for norma	al ru	ntime comr	nunicatio	n (LTE	:	M		
			Write Service)								
- Ove	rride / Re	ease	Used for tempo						0		
			(mainly by tool	usir	ng Property	Write ad	cess w	/ith			
			individual addre	essi	ng)						
- all o	ther comr	nands							NA		
Comr	nunicatio	n:									
	ding Gro	ıp:									
Clas	SS		Type				Defaul	t			
Ge	eographic	al 🔲									
Ap	plication	Specific									
Ur	nassigned		Broadcast		Configurat	ole 🗵	1				
DP.	Address:		IO Type(ID):		200 (CRC)	Prope	rty ID		51	
LTE	-Service		Timeout:			31	Min				
	rite	\boxtimes	Timeout.			31	IVIIII				
	perty-Ser		Read only		1	Read/V	/rite				
(ind	ividual a	ccess):	rtead offig			r (Cau, v	viile				
	after Po	•	Defau	ılt V	alue 🛚					Stored Val	ue 🗌
Exce	ption Har	ndling:						Sav	e at Pov	ver-down	
Spec	ial Featui	es:									

2.4.4.8 Input signal: TempOutside

Standard Mode

DP	Name:	Tem	pOutside			Abbr.:				Mano	latory		
FΒ	Name:	CRC	;							Can b	oe inte	erna	ıl 🛛
De	scription												
see	ELTE-HEE	mod	е										
Da	tapoint Ty	ре											
DP	PT_Name:	DP	T_Value_Te	mp									
DP	T Format:	F ₁₆						DP	T_ID:	9.001			
Fie	eld	De	scription					Su	pp.	Range	Un		Default
										full range	e l°C		CS
Ac	cess Type												
♦	Input												
	$N \rightarrow this$] 1	\rightarrow th	is	\boxtimes							
Ī	Spontaneo	us			Cyclic	ally:			Time	-out:	31	mir	
Ī	Request				Polling	g:			Perio	d:			
Co	mmunicat	ion T	уре										
♦	Group Ob	ject [Datapoint							Mandato	ry:	\boxtimes	
	Default Gro	oup A	ddress: -	_									
Dy	namics												
	Power dow	/n:	Save:										
	Power up:		Value:	No in	itialisat	tion:	Defau	ult va	alue:			\boxtimes	
				Save	d value	e: [Actua	ıl va	lue (n	ot for inpu	ıt):		
			Transmit on	bus (only for	output):	Read	fror	n bus	(only for	input)	:	
Ex	ception Ha	ndlii	ng										
Sp	ecial Featu	ıres											

FB:	CRC	LTE Client	Input Name:	Tem	pOutside					datory □ otional ⊠
Desci	ription:								- i	
	•		remote outside	e tem	perature s	ensor ca	n be used f	or local c	ontrol str	ategy and
frost p	rotection									
DPT:	Name	DPT_Temp	pHVACAbs_Z		DPT ID	205.100	Datatype		$V_{16}Z_{8}$	
Field			Description					Sup.	Unit	Default
	Outside		Temperature v	value				M	°C	cs
Status	3							М	bitset	
	OfService		Void sensor va					M	bool	false
- Faul			Sensor failure					M	bool	false
	rridden		Sensor value					0	bool	false
- InAla			Sensor value				_	0	bool	false
	mUnAck		Alarm acknow		ement stati	us ack / ι	ınack	0	bool	unack
	ther flags		not supported					NA	bool	
	nunicatio									
	ding Gro	ıp:	T							
Clas		. —	Туре				Default			
	ographic			<u>-</u>						
	plication	' :	OutsideSenso	r∠one			1			
	assigned		Broadcast		Configura			_		
	Address:		IO Type(ID):		320 (OTS		Property I	D:	51	
	-Service	(event):	InfoReport Sr	niffer	on Binding					
	oReport	<u> </u>	Timeout:			31	Min			
		(polling):	Read Wildcard	d / Re	sp Sniffer	on Bindi	ng Group:			
	ad – Res				•		<u> </u>			
	after Po		Deta	ult Va	alue 🛚				Stored Va	alue 🔃
	otion Har							ve at Pov		
			will use a comp							
			sensor data is				emperature	value fro	m anothe	er OTS
			used (compar	ny spe	ecitic beha	viour).				
Speci	al Featur	es:								

2.4.4.9 Parameter: ProdSegmC

FB:	СРМ	Property	Name (<u>Server</u>):	ProdS	SegmC					tory ⊠ ¹) otional □
Desci	ription:			_					<u> </u>	
LTE z	oning info	rmation C	Cold Water Production	on Segi	ment.	This segr	ment i	s only used w	nen the Cl	RC is
directl	y connec	ted to the	Chiller Controller.							
DPT:	Name	DPT_U	CountValue8_Z	DP	ΓID	202.002	Da	tatype format	U_8Z_8	
Field			Description				Sup.	Range	Unit	Default
Count	erValue		Cold Water Product number	tion Se	gment		M	131		1
Status	3								bitset	
	OfService		Zone active /inactive	/e			0	true/false		false
- all of	her flags		not supported, fixe	d to '0'			NA			
Comn									enum	
	nalWrite						M			
	SV & Re		Set zone inactive /	active			0			
- all of	ther comr	nands	not supported				NA			
	nunicatio									
	Address:		IO Type(ID):	200	(CRC)			erty ID:	101	
(in t	he serve	r)	Start-Index:	1				elements	1	
	perty acc	ess:	Read only [Read/W		\boxtimes		
Prot	ection		Read level				Write	level		
Excep	otion Har	ndling:	Value after Poweru	ıp: St	tored V	′alue 🖂	Act V	′alue 🔲 🛮 De	fault Value	e 🗌
Speci	al Featur	es:								
			iguration (connection				Over	view 2.1)		
CRC	DP's are i	not LTE co	ommunicating if zon	<u>ie is 'Οι</u>	utOfSe	rvice'.				

2.4.4.10 Parameter: Producer

FB:	CRC	Property	/ Name (<u>Server</u>):	Pı	roducer					tory 🔯 ¹) otional 🔲
Desc	ription:	<u>l</u>		-						
LTE 2	zoning info	ormation C	Cold Water Produce	r n	umber. Thi	s segme	nt is or	nly used wher	the CRC	is
direct	ly connec	ted to the	Chiller Controller.							
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002	Dat	atype format	U_8Z_8	
Field			Description				Sup.	Range	Unit	Default
Coun	terValue		Producer-number				M	131		1
Statu	S								bitset	
- Out	OfService		Zone active /inactiv	ve			0	true/false		false
- all c	ther flags		not supported, fixe	d to	o '0'		NA			
Com	mand								enum	
- Nor	malWrite						M			
- Set	OSV & Re	setOSV	Set zone inactive /	ac	tive		0			
- all c	ther comr	nands	not supported				NA			
Com	municatio	n:								
DP	Address:		IO Type(ID):		200 (CRC))	Prope	erty ID:	102	
(in	the serve	r)	Start-Index:		1		N° of	elements	1	
Pro	perty acc	ess:	Read only			Read/W	'rite	\boxtimes		
Pro	tection		Read level				Write	level		
Exce	ption Har	ndling:	Value after Poweru	ıp:	Stored \	/alue ⊠	Act V	alue 🔲 🏻 De	fault Value	e 🗌
Spec	ial Featui	res:								
1) De	1) Depending on the configuration (connection to CPM or CC, refer Overview 2.1)									
	CRC DP's are not LTE communicating if zone is 'OutOfService'. If ProdSegmC is 'OutOfService' also the									
corre	sponding	Producer	zone is 'OutOfServi	ce'	(common	flag)				

2.4.4.11 Parameter: Gen_PeripheralCPM

FB:	CRC	Property	Name (<u>Server</u>):	Gen_Periph	neralCPM	1			tory ⊠ ') otional □
Dosc	ription:							i ot	nioriai 🔲
	•	nhar Darir	oheral link to CRC (ontionally use	ad for con	trol of	the common	condense	r water
			ent is only used whe						water
	iction Mar	_	only used whe	iii tile Oixo is	directly c	Joinnec	ica io ine coi	u vvatei	
DPT:	Name	DPT_U	CountValue16_Z	DPT ID	203.012	Dat	atype format	U ₁₆ Z ₈	
Field			Description			Sup.	Range	Unit	Default
Coun	terValue		Peripheral link nun	nber		М	full range		1
Status	3							bitset	
- Out	OfService		Zone active /inactive	ve		О	true/false		false
- all o	ther flags		not supported, fixe	d to '0'		NA			
Comr	nand							enum	
- Norr	nalWrite					M			
- SetC	DSV & Re	setOSV	Set zone inactive /	active		Ο			
- all o	ther comn	nands	not supported			NA			
Comr	nunicatio	n:							
DP .	Address:		IO Type(ID):	200 (CRC)	Prope	erty ID:	103	
(in t	he serve	r)	Start-Index:	1		N° of	elements	1	
Pro	perty acc	ess:	Read only [Read/W	rite	\boxtimes		
Pro	tection		Read level			Write	level		
Exce	ption Har	ndling:	Value after Poweru	ıp: Stored	Value 🖂	Act V	alue 🔲 De	fault Value	e 🗌
_	ial Featur								
			iguration (connection				riew 2.1)		
CPM	IS NOT LIE	: commun	icating with the CR	C if zone is C	JutOfSer\	/ice			

2.4.4.12 Prameter: OutsideSensorZone

FB:	CRC	Property	Name (<u>Server</u>):	0	utsideSen	sorZone	•			Man	datory 🔲
										0	ptional 🔯
Desci	ription:	3									
LTE z	oning nur	nber for th	ne link with an Outsi	de	Temperat	ure Sens	or				
DPT:	Name	DPT_U	countValue8_Z		DPT ID	202.002	2	Dat	atype format	U_8Z_8	
Field			Description				S	up.	Range	Unit	Default
Count	erValue		Outside sensor zor	ne	number			M	131		1
Status	3									bitset	
- Out	OfService		Zone active /inactive	/e			(0	true/false		false
- all o	ther flags		not supported, fixe	d t	o '0'		N	IA_			
	Command									enum	
- Norr	nalWrite						I	M			
- SetC	SV & Re	setOSV	Set zone inactive /	ac	ctive		(0			
- all of	ther comn	nands	not supported				N	١A			
Comr	nunicatio	n:									-
DP A	Address:		IO Type(ID):		200 (CRC)	Pı	rope	rty ID:	104	
(in t	he serve	r)	Start-Index:		1		N'	° of e	elements	1	
Pro	perty acc	ess:	Read only [Read/W	rite/)	\boxtimes		
Prot	ection		Read level				W	/rite	level		
Exce	otion Har	ndling:	Value after Poweru	ıp:	Stored \	Value 🛚	Α	ct Va	alue 🔲 De	efault Valu	ie 🗌
Speci	ial Featur	es:									
CRC	is not usir	ng an exte	rnal outside temper	atı	ure sensor	if zone is	s 'O	utO	fService'		•

2.4.4.13 Parameter: Gen_PeripheralPump

Same as in CPM with the Property Identifier number 105, refer to clause 0.

2.4.4.14 Parameter: Gen_PeripheralFan

Same as above with the Property Identifier numbers 106 to [106 + (n-1)] for fan #1 to #n.

2.4.4.15 Diagnostic data: TempFlowWaterCond

LTE-HEE Mode

This diagnostic signal contains the common condenser water flow temperature value as described in clause 2.2.4.18 of the chiller controller.

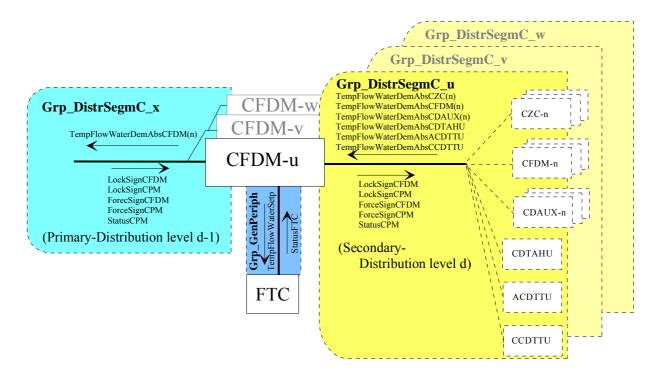
2.4.4.16 Diagnostic data: TempReturnWaterCond

LTE-HEE Mode

This diagnostic signal contains the common condenser water return temperature value as described in clause 2.2.4.19 of the chiller controller.

3 Cold Water Distribution

3.1 Overview



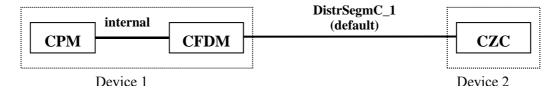
In more complex systems the consumers are not linked directly to the primary Cold Water Distribution Segment. Different levels of cold water distribution are possible. Each distribution level has there own cold water pipework.

The Cold Water Demand Manager CFDM and Flow Temperature Controller FTC represent such a hydraulic cold water circuit. All the relevant demand signals from all the connected consumers in a Cold Water Distribution Segment are collected and control the hydraulic cold water circuit. A new demand signal is calculated and sent to the next distribution level (level d-1).

The "first" Cooling Flow Demand Manager CFDM in a Cold Water Distribution System is linked to the Cold Water Production Manager CPM which receives from the CFDM the resulting overall cold water flow demand of the primary Cold Water Distribution Segment. CPM and "first" CFDM have always a 1:1 relationship and are usually located in the same device (and therefore data-flow between CPM and CFDM is normally purely device-internal). DistrSegmC_31 is default for those special cases where CPM and "first" CFDM are not in the same device. DistrSegmC_1 is default for the first cold water distribution level in order to enable "plug & play" LTE zoning with cold water consumers in simple systems.

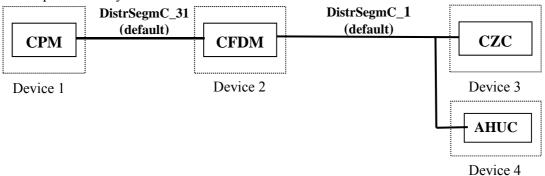
Example 1: simple system "plug & play" LTE zoning

- system has only one cold water distribution level
- CPM and CFDM are located in the same device
- a Cooling Zone Controller CZC is directly connected to the cold water production system.



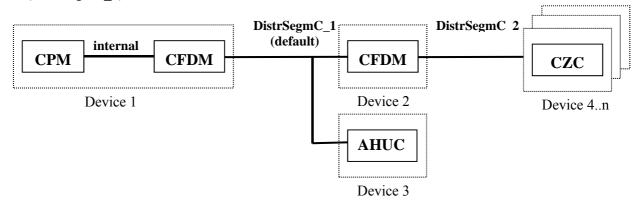
Example 2: small system with multiple devices, "plug & play" LTE zoning for cold water consumers

- system has only one cold water distribution level
- CPM and CFDM are **NOT** located in the same device ⇒ DistrSegmC_31 & DistSegmC_1 to be configured on the CFDM
- a Cooling Zone Controller CZC and a Air Handling Unit Controller are directly connected to the cold water production system.



Example 3: complex system (e.g. multi family home, LTE zoning configuration necessary)

- two Cold Water Distribution Segments
- CPM and CFDM are located in the same device
- an Air Handling Unit AHUC is directly connected to the cold water production system (DistrSegmC 1)
- multiple Cooling Zone Controller are connected to the secondary Cold Water Distribution Segment (DistrSegmC 2)



There is usually no pre-controller FTC associated with the <u>first CFDM</u>, which is directly linked to the CPM because the CPM is already providing the requested flow temperature.

3.2 Functional Block: Cooling Flow Demand Manager (CFDM)

3.2.1 Description

The Functional Block CFDM manages the cold water flow demand of a distribution segment. The CFDM gets demands from:

- Cooling Zone Controller CZC
- Other Cold Water Flow Demand Managers CFDM's of the "right-hand" secondary Cold Water Distribution Segment
- Auxiliary Cooling Demand CDAUX
- Cooling Demand Transformers Air Handling Unit CDTAHU (1:1 link)
- Air Cooling Demand Transformer Terminal Unit ACDTTU (1:1 link)
- Chilled Ceiling Demand Transformer Terminal Unit CCDTTU (1:1 link)

According to a company specific algorithm (e.g. minimum or average temperature and validity) the CFDM calculates the TempFlowWaterSetp for the Flow Temperature Controller FTC. This Functional Block is described in Hot Water Heating, Chapter Heat Distribution HVAC Specifications [05].

The CFDM then calculates the TempFlowWater DemAbsCFDM for the "left-hand" primary Cold Water Distribution Segment (level d-1).

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

NOTE Volume control on cold water circuits is done as part of the Flow Temperature Controller FTC as an independed control loop. To support certain control strategies the Cooling Flow Demand Manager CFDM may calculate a fake TempFlowWaterDemAbsCFDM.

Routing of forcing and locking and status signals from CPM is actually a mandatory feature of the CFDM. The only exception is a device where no CPM is implemented and this information is not available.

The CFDM handles incoming forcing and locking signals from the CPM or preceding CFDM and also generates forcing and locking signals to the consumers in the "right-hand" Cold Water Distribution Segment.

Calculation of CFDM locking signal

- normally generated by absolute or shift load priority from consumers

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

Plug & Play mechanism in the LTE-HEE implementation:

NOTE This mechanism is only possible in LTE-HEE implementations.

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

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

Reason:

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

The CFDM does not need to know which and how many consumers are allocated in the secondary Cold Water Distribution Segment. Due to the heartbeat repetition of the TempFlowWaterDemAbs... signals, it is sufficient to have a dynamic process image of the N temporary "most relevant" demands.

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

	Main List										
Entry N°	TempFlow WaterDem	Attrib: - DemValid - AbsLoadPriority - MinTempLimit - EmergDem	Source FB Type and Instance	Source Individual Addr	Timeout						
1											
2											
•••											
$N \ge 4$											

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

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

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

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

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

Check the attribute EmergDem:

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

Check the attribute AbsLoadPriority:

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

Check the attribute MinTempLimit:

This attribute must be considered with third priority because min. temperature limitations must be respected. I.e. the resulting flow temperature demand must be not lower than specified in the flow temperature signal. For example as dew-point limitation.

Check the FlowDemTemp value with forth priority. The lower the value the more relevant the signal is

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

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

3.2.2 Constraints

IMPORTANT: CFDM functionality can today not be implemented in Standard Mode because:

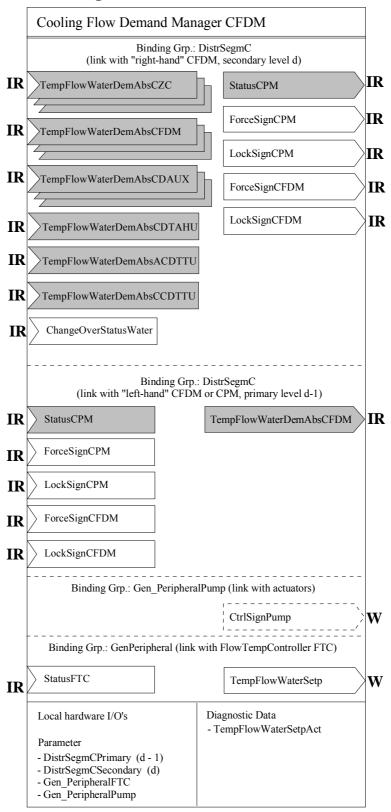
- the necessary compound HVAC DPT for runtime-interworking are not yet available in Standard Mode
- mapping to standard DPT is not possible because of loss of the necessary data consistency Therefore for the time being only LTE implementations of the CFDM functional block are possible.

After a transition period the DPT for Cold Water Flow Demand Management may be accepted in Standard Mode. Therefore this documents already contains references to Standard Mode implementations where appropriate.

Routing of StatusCPM by the CFDM from the primary to the secondary Cold Water Distribution Segment is necessary in LTE-HEE mode only. In Standard Mode routing of these signals is not necessary and therefore not supported because of different linking mechanisms.

In LTE implementations using the producer/consumer model, the number of partners of the CFDM in the secondary Cold Water Distribution Segment is "unlimited" and is not relevant at design time of a product. For Standard Mode implementations using the shared variable model the number of partners of the CFDM in the secondary Cold Water Distribution Segment is limited (max. number to be defined at design time of a product) because for every TempFlowWaterDemAbs.. input one separate Group Address must be assigned.

3.2.3 Functional Block diagram



3.2.4 Description of Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
TempFlowWaterDem-AbsCFDM	Resulting flow water temperature demand to be sent to the preceding primary CFDM or CPM (absolute flow temperature including temperature shift)	DPT_TempFlowWater DemAbs	210.100
StatusCPM	Routed status information from CPM to the secondary Cold Water Distribution Segment	DPT_StatusCPM Note: this datapoint is sent as CPM	209.102
ForceSignCPM	Routed forcing signal from CPM to the secondary Cold Water Distribution Segment to force consumer to increase energy consumption	DPT_ForceSignCool Note: this datapoint is sent as CPM	21.101
LockSignCPM	Routed locking signal from CPM to the secondary Cold Water Distribution Segment ⇒ consumers reduce energy consumption	DPT_LockSign Note: this datapoint is sent as CPM	207.101
ForceSignCFDM	Forcing signal from CFDM to force consumer to consume energy	DPT_ForceSignCool	21.101
LockSignCFDM	Locking signal from CFDM for load management in the Cold Water Distribution Segment to force the consumer to reduce energy consumption	DPT_LockSign	207.101
CtrlSignPump	Command of common distribution chiller pump (SystemPump) with bus interface	t.b.d. probably complex DPT	?
TempFlowWaterSetp	Flow temperature setpoint to be controlled by the FTC. (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Inputs			
TempFlowWaterDem-Abs	Flow water temperature demand(s) from allocated consumer units (absolute temperature and attributes)	DPT_TempFlowWater DemAbs	210.100
StatusCPM	Status information from Cold Water Production Manager	DPT_StatusCPM	209.102
ForceSignCPM	Forcing signal from CPM due to freezing protection, to force consumer to consume more energy \Rightarrow to be routed to the secondary Cold Water Distribution Segment	DPT_ForceSignCool	21.101
LockSignCPM	Locking signal from CPM due to overload, to force the consumer to reduce energy consumption ⇒ to be routed to the secondary Cold Water Distribution Segment	DPT_LockSign	207.101
ForceSignCFDM	Forcing signal from CFDM in the primary Cold Water Distribution Segment	DPT_ForceSignCool	21.101
LockSignCFDM	Locking signal from CFDM in the primary Cold Water Distribution Segment	DPT_LockSign	207.101
StatusFTC	Status information from Flow Temperature Controller	DPT_StatusWTC	209.103
ChangeOverStatusWat er	Status Information of changeover sensor, 0 = cooling, 1 = heating (LTE and S-interface)	DPT_Heat/Cool_Z DPT_Heat/Cool	200.100 1.100

Datapoint	Description	Datapoint Type	DPT_ID
Parameters			
DistSegmCPrimary	LTE zoning number primary Cold Water Distribution Segment (level d - 1)	DPT_UCountValue8_Z	202.002
DistSegmCSecondary	LTE zoning number secondary Cold Water Distribution Segment (level d)	DPT_UCountValue8_Z	202.002
Gen_PeripheralFTC	LTE zoning number general peripheral for Flow Temperature Controller	DPT_UCountValue16_Z	203.012
Gen_PeripheralPump	LTE zoning number general peripheral for chilled water pump	DPT_UCountValue16_Z	203.012
Diagnostic Data			
TempFlowWaterSetp Act	Actual calculated cold water flow temperature setpoint	DPT_TempHVACAbs_Z	205.100

^{*)} Implementation of Properties using standard DPT see clause 1.3.2

			STANDARD MODE	EXTE Mo	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	TempFlowWaterDem AbsCFDM	NA ¹)	NA	NA	M
	StatusCPM	NA ²)	NA	NA	M
	ForceSignCPM	NA ¹)	NA	NA	О
	LockSignCPM	NA ¹)	NA	NA	О
	ForceSignCFDM	NA ¹)	NA	NA	О
	LockSignCFDM	NA ¹)	NA	NA	О
	CtrlSignPump (not defined yet)				
	TempFlowWaterSetp	(GO_b)		(GO)	О
Inputs	TempFlowWaterDemAbs	NA ¹)	NA	NA	M
	StatusCPM	NA ¹)	NA	NA	M
	ForceSignCPM	NA ¹)	NA	NA	О
	LockSignCPM	NA ¹)	NA	NA	О
	ForceSignCFDM	NA ¹)	NA	NA	О
	LockSignCFDM	NA ¹)	NA	NA	О
	StatusFTC	NA	NA	NA	О
	ChangeOverStatusWater	(GO _b)	_	(GO)	О

¹⁾ the information is NA in the Basic FB and all other modes because the datapoint type is today not yet available in Standard Mode. Splitting of DPT is not possible because of necessary data consistency
2) routing of datapoint is only useful in LTE-HEE, not necessary in Standard Mode.

Table 10: CFDM Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DistrSegmCPrimary (level d - 1)	M or NA ¹⁾
	DistrSegmCSecondary (level d)	M
	Gen_PeripheralFTC	О
	Gen_PeripheralPump	O

Table 11: CFDM LTE specific Properties

¹⁾ Whenever the first CFDM and CPM are in the same device, the data of this distribution segment (refer overview) does not have to be available on the bus. Therefore this DirstSegmC is only mandatory when the first CFDM and CPM are located in different devices.

		Support
Parameter		
Diagnostic Data	TempFlowWaterSetpAct	О

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

3.2.4.1 Output signal: TempFlowWaterDemAbsCFDM

Standard Mode

Not applicable.

FB:	CFDM	LTE	Serve	er Output Name:	TempFlowWat	erDem/	Abs CFDM	ı		ry ⊠¹) onal □
Dosc	ription:								Ори	Oriai 🗀
		200	signal o	contains the actual	flow temperature	cooling	n demand (ahsoluta	value) s	and the
				I the Cooling Flow						and the
DPT:				FlowWater DemAl			00 Dataty			3
Field		ו וט		escription	טו וטן	Sup.	Range	Unit	COV	Default
	pFlowDem			emperature deman	nd (setnoint)	M	full range	°C	0.5	CS
Attrib			1 10 11 1	cimperature deman		!٧'		<u>×</u>	0.0	- 00
	mValid		Validit	y of TempFlowDen	nand	М	true/false	bool	Υ	false
	sLoadPriorit	v		ute load priority	ilaria	Ö	true/false	bool	Ý	false
	iftLoadPriori	-		oad priority		Ö	true/false	bool	Ý	false
	xTempLimit			FlowDem contains	max.	Ö	true/false	bool	Ý	false
	p			rature limit ²)					•	10.100
– Mir	TempLimit			FlowDem contains	min.	0	true/false	bool	Υ	false
				rature limit (e.g. de						
	limitation) 3)									
– DH	 DHWReq Heat demand from DHW, for DHW only NA false bool N false 									
	 RoomCtrlReq Demand from room heating or cooling O true/false bool N false 									
 VentReq Demand from ventilation O true/false bool N false 										
– Aux	xAllSeasonf	Req	Dema	nd from auxiliary he	eat or cool	0	true/false	bool	N	false
			consu	mer, all season						
– Sys	stemPumpR	Req	Reque	est for water circula	tion in the	0	true/false	bool	Υ	false
			distrib	ution segment (cor	nmon chilled					
			water	pump)						
– Em	nergDem		Emerg	gency cooling dema	and for plant	0	true/false	bool	Υ	false
			protec							
– DH	lWLegioRec	1	for DI	IW only		NA	false	bool	N	false
Com	munication	1:								
	ding Group	o:								
Cla				Туре			Default			
	eographical									
A	pplication S	pecif	fic 🖂	DistrSegmC (prim			1 or 31 (refer 3.1)	
U	nassigned			Broadcast	Configurable					
DP	Address:			IO Type(ID):	208 (CFDM)		operty ID:	51		
LTE	E-Services	(eve	nt):	COV 🛛	MinRepTime:	10	sec	Heartbe	eat: 1	5 min
	foReport		\boxtimes	Output per default	communicating	Biı	nding Group	Wildca	rd allowe	ed 🗌
(L	TE Read-R	espo	nse	Tx Prio:	High 🗌		Normal 🖂		Low	
	olling of the		ut							
	nall always t	ре		Transm after Pow	erup: Stored Va	lue 🗌	Act Value	⊠ De	efault Va	lue 🗌
	upported)									
	Property-Service Read only Read/Write									
•	(individual access):									
Exce	Exception Handling: Save at Powerdown									
Spec	ial Feature	s:								
1) C	PM and the	first	CFDN	are usually locate	d in the same de	vice ⇒	device inter	rnal sign	al in this	case.
			maxim	um flow temperatur	re limit for the CF	FDM. It	is a high tei	mpera t ui	re limit ir	n this
_ hy	ydraulic circ									
	This value sets a minimum flow temperature limit for the CFDM. It is a low temperature limit in this									
hy	I his value sets a minimum flow temperature limit for the CFDM. It is a low temperature limit in this hydraulic circuit. Low temperature limits have priority.									

3.2.4.2 Output signal: StatusCPM

Standard Mode

Not applicable.

LTE-HEE Mode

FB: CFDM	LTE Serv	er Output Name:	Sta	tusCPM						atory 🗵 3)
									0	ptional 🗌
Description:										
		to the secondary (Nater Dis	tributior	າ Seg	gment. D	ata value	is unch	anged
	2.3.4.1 and	CPM specification								
DPT : Nam	e DPT_Sta	atusCPM		DPT ID	209.10			e format	$V_{16}B_8$	
Field		Description			Sup.	Ran	ge	Unit	COV	Default
see CPM spe	cification									
Communicat	tion:									
Binding Gr	oup:									
Class		Туре					Defa	ault		
Geograph	ical [
Application	n Specific 🛭	⊠ DistrSegmC (s	econ	dary)			1 or	2 (refer 3	3.1)	
Unassigne	ed [☐ Broadcast ☐		Configu	rable 🗌					
DP Addres	s:	IO Type(ID):		199 (CPM		Pi	roperty I		51	
LTE-Servic		COV 🛛	Mir	nRepTime) : ²⁾		0 sec		eat: 2)	15 min
InfoRepor		Output per defa	ault c	ommunic	ating [Bi	inding G	roup Wild	card allo	owed 🗌
	d-Response	Tx Prio:		High 🗌			Normal		Lo	w 🗌
polling of t						_		_		_
shall alwa	ys be	Transm after P	ower	up: Store	ed Value	e ∐	Act V	alue 🖂	Default	Value 🗌
supported	,									
Property-S (individual		Read only		1)	Read	/Write	e [
								Cava	ot Dowo	rdown
Exception H	andling:							Save	at Powe	ruown
Consider Foot										
Special Feat		Lie the OFDM (e.e.	I	4'> 41					EDM:-	4
		I in the CFDM (on	iy rot	iting) ther	etore re	ead-a	access tr	om the C	FDIVI IS I	101
supported 2) transmission		on reception of the	eian	al (routin	a functi	onali	tv/)			
, transmissic		signal not received								

3.2.4.3 Output signal: ForceSignCPM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is sent as Functional Block CPM. For further info please refer to clause 2.3.4.7. Default Cold Water Distribution Segment (secondary): 1 or 2, refer 3.1.

3.2.4.4 Output signal: LockSignCPM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is sent as Functional Block CPM. For further info please refer to clause 2.3.4.8. Default Cold Water Distribution Segment (secondary): 1 or 2, refer 3.1.

3.2.4.5 Output signal: ForceSignCFDM

Standard Mode

Not applicable.

FB:	CFDM	LTE Se	rve	er Output Name:	Forc	eSign	CFDM						ndatory 🗌 Optional 🔯
Desci	iption:	-		-								-	
				ndicates that the C		g Flow	Demai	nd M	lanage	er ha	s rema	ning en	ergy to be
				secondary level d).									
DPT:	Name			SignCool	DP	T ID	21.101			ype f	ormat	B ₈	
Field			De	scription			Sup.	Rar	nge	U	nit	COV	Default
Attribu													
– Ford	eRequest			rced power consu	mptic	on is	M	true	/false	b	ool	Υ	false
			ne	cessary									
	nunicatior												
Bind	ding Grou	p:											
Clas				Type					D	efaul	t		
	ographica												
	plication S	pecific	\square	DistrSegmC (second					1	or 2	(refer 3	.1)	
	assigned			Broadcast		onfigu							
	Address:			IO Type(ID):		8 (CFD			roper	•		52	
	-Services	`		COV 🛛		RepTin			0 sec			rtbeat:	15 min
Inf	oReport	\boxtimes		Output per defaul	t com	nmunic	ating [] B				card all	owed 🗌
				Tx Prio:	Н	ligh 🗌			Norr	nal 🛭	3	Lo	w 🗌
po sha	TE Read-R lling of the all always l oported)	output		Transm after Pow	erup:	: Store	ed Value	е 🗌	Act	t Valu	ıe 🛚	Default	Value □
	oerty-Serv ividual ac			Read only			Read	/Writ	:e				
Excep	otion Hand	dling:									Save	at Powe	erdown
Speci	al Feature	es:											

3.2.4.6 Output signal: LockSignCFDM

Standard Mode

Not applicable.

LTE-HEE Mode

FB:	CFDM	LTE Se	rver Output Name:	LockSign(CFDM					ndatory [
Desc	ription:	-		_					÷	
			al indicates that the							
			e consumers (of sec		,					nption.
DPT:	Name	DPT_Lo		DPT ID	207.10		, ,	e format	U ₈ B ₈	
Field			Description		Sup.	Range		Unit	COV	Default
PwrR	eduction		Requested power re (100% = maximum)		M	0100		%	5	cs
Attrib										
– Loc	kRequest		Indicates if power re necessary (validity of		M	true/fal	lse	bool	Y	false
_			PwrReduction)		l			l		
– Тур	е		Type of overload, valid if LockReques		NA	uncritic critical	-	bool		
Comr	nunication		· '		<u>.</u>	L		<u>L</u>	<u>.</u>	
	ding Group									
Clas			Туре				Defa	ault		
Ge	eographical	[
Ap	plication S	oecific [\boxtimes DistrSegmC (sec	condary)			1 or	2 (refer 3	.1)	
Ur	nassigned		☐ Broadcast ☐	Configu	rable [
DP.	Address:		IO Type(ID):	208 (CFE	DM)	Prop	erty I	D:	53	
	-Services			MinRepTir		10 :	sec	Hea	rtbeat:	15 min
Inf	oReport	\boxtimes	Output per defau		ating [roup Wild		
			Tx Prio:	High 🗌		N	orma	l 🛛	Lo	w 🗌
po sh su	TE Read-Read-Read Iling of the all always to poorted)	output be	Transm after Pov	werup: Store	ed Valu	e 🗌 .	Act V	alue 🛚	Default	Value □
	perty-Serv		Read only	\boxtimes	Read	/Write	ſ			
	ividual acc		Ticad only		rtcau	VVIIIC	L			
Exce	ption Hand	lling:						Save	at Powe	rdown
Spec	ial Feature	s:								

3.2.4.7 Output signal: CtrlSignPump

To be defined later together with pump manufacturers. Refer to clause 2.3.4.9.

3.2.4.8 Output signal: TempFlowWaterSetp

Standard Mode

DP Name:	Ten	າpFlow₩	Vater9	Setp	Abbr.:				Manda	itory	
FB Name:	CFE	DM							Can be	e interna	al 🛛
Description											
see LTE-HEE	mod	de									
Datapoint Ty	/pe										
DPT_Name:		PT_Valu	e_Te	emp							
DPT Format:	F ₁	6						DPT_ID:	9.001		
Field	De	escription	n					Supp.	Range	Unit	Default
									full range	°C	CS
Access Type	•										
♦ Output											
this \rightarrow M				his \rightarrow 1	\boxtimes						
Spontane	ous		COV:	\boxtimes	Δ-Value			repetition	period:	10s	
			Cyclic		Period:	15 Mi	n				
Request											
Communica	tion 1	Гуре									
♦ Group Ol									Mandator	y: 🛛 🖂	
Default G	roup /	Address	:								
Dynamics											
Power do	wn:	Save:									
Power up:		Value:		No initialisa	ation:			ult value:			
				Saved valu					ot for input		
			nit on	bus (only fo	r output):		Read	from bus	(only for in	put):	
Exception H	andli	ng									
Special Feat	ures										

FB:	CFDM	LTE Clie	nt Output Name:	Output Name: TempFlowWaterSetp						
Desc	ription:	-		-				- -		
This s	ignal is opt	tionally us	ed by the CFDM to	control an "in	ntelligen	ıt" cold wa	ter flow tem	perature		
contro	oller.									
DPT:	Name	DPT_Te	mpHVACAbs_Z	DPT ID	205.10	0 Datat	ype format	$V_{16}Z_{8}$		
Field			Description		Sup.	Range	Unit	COV	Default	
Temp	FlowWater	Setp	Temperature setpo	oint	M	full range	°C	0.5	cs	
Comn	nand		Standard Commar	nd field			enum			
- Write	е		Normal Write		M					
- othe	r Comman	ds	not applicable		NA					
Comr	nunication	1:			<u>-</u>	-	-	-	=	
Bine	ding Grou	p:								
Clas	SS		Туре			De	efault			
Ge	eographical									
Ap	plication S	pecific []							
Ur	assigned	\boxtimes	Broadcast □	Configur	able 🛚	1				
DP A	Address:		IO Type(ID):	120 (FTC))	Property	y ID:	52		
LTE	-Services	(event):	COV 🛛	MinRepTim	ne:	10 sec	Hear	beat:	15 min	
Wı	rite	\boxtimes	Output per defau	It communica	ating 🗌	Binding	Group Wilde	card allo	wed 🗌	
			Tx Prio:	High 🗌		Norm	nal 🛚	Lov	v 🗌	
			Transm after Pov	werup: Store	d Value	☐ Act	Value ⊠	Default \	/alue 🗌	
Exce	otion Hand	dling:	-				Save a	at Power	down	
Speci	ial Feature	s:						•		

3.2.4.9 Input signal: TempFlowWaterDemAbs...

This is the common description of all the demand signals from the CZC, ACDTTU, CCDTTU, CDTAHU, CDAUX or other CFDM.

Standard Mode

Not applicable.

FB:	CFDM	LTE (Clien	nt Input Name: TempFlowWaterDemAbs Mandatory Optional								
Desci	ription:	•							,			
difference from of Air Ha (one s	ent attribute other CFDN andling Unit	es to co //'s (n-s t CDT/ n Air C	ontrol signa AHU oolin	I the Cooling Flo ls), from Cooling (one signal), Chi	w E g Zo illed	emperature cooling Demand Manager (one Controllers CZ I Ceiling Demand T mer Terminal Unit	CFDM. C, fro Transf	It is possible m Cooling Dormer Termi	le to ema nal	hav and Unit	e dem Transf CCDT	ands ormers TU
DPT:				pFlowWaterDem	ıΑb	s DPT ID 21	0.100	Datatype	forr	nat	V ₁₆ E	16
Field				cription					S	up.	Unit	Default
	FlowDem		Flow	temperature de	ma	nd (setpoint)			!	M	Ŝ	cs
- Shiff - Max - Min' - DH\ - Roo - Ven - Aux - Sys'	nValid LoadPriorit tLoadPriori cTempLimit TempLimit WReq mCtrlReq	ty ty Req	Absorbands	pFlowDem contains initiation) 2) and from room cand from ventila and from auxilia uest for water ciremon chilled watergency demand	y ains HW cool tior ry h ccula er p req vhile	max. temperature min. temperature min. temperature ming meat or cool consuration in the distribution min the distr	limit (e mer, al ition se	e.g. dew I season egment	Z	M 0 0 0 0 0 0 0 0 0 0 0 0	bool bool bool bool bool bool bool bool	false false false false false false false false
Comr	nunication					,						
	ding Group	o:	1				ı					
Clas				Туре			Defa	ult				
Ар	eographical plication S assigned			DistrSegmC (se Broadcast □	eco	ndary) Configurable 🗌	1 or 2	2 (refer 3.1)				
DP /	Address:			IO Type(ID):		208 (CFDM) 209 (CDAUX) 215 (CDTAHU) 216 (CCDTTU) 217 (ACDTTU) 224 (CZC)	Prop	perty ID:		51		
	-Service (e				fer	on Binding Group						
	oReport	\geq		Timeout:		31	Min					
	- Service (բ ead – Respe		j):]	Read Wildcard	/ Re	esp Sniffer on Bind	ling Gr	oup:				
	after Pow			Defau	lt V	alue 🛚					d Valu	ie 🗌
Exce	otion Hand	lling:						Save at Po	owe	rdov	vn	

- Special Features:

 1) This value sets a This value sets a maximum flow temperature limit for the Cooling Flow Demand Transformer CFDM. It is a high temperature limit in this hydraulic circuit.
- 2) This value sets a minimum flow temperature limit for the Cooling Flow Demand Transformer CFDM. It is a low temperature limit in this hydraulic circuit. Low temperature limits have priority.

3.2.4.10 Input signal: StatusCPM

Standard Mode

Not applicable.

FB: CFDM LTE Clier	nt Input Name:	StatusCPM					atory 🛚
Description:						<u>-</u>	
This input signal contains s							chilled
water flow temperature of the	ne production seg	gment, fault, p	ermanent c	off and no	cooling a	available	
indication.							
DPT : Name DPT_ Stat	usCPM	DPT ID	209.102	Datatype	format	$V_{16}B_{8}$	
Field	Description				Sup.	Unit	Default
TempFlowProdSegmC	Chilled water floor production segr		e in the cod	oling	М	°C	CS
Attributes]		
TempFlowValid	Validity of Temp	pFlowProdSeg	mC		M	bool	false
– Fault	Chiller failure				0	bool	false
OffPerm	Permanently of				0	bool	false
NoCoolAvailable	Temporary no cavailable	cooling in the p	roduction s	segment	0	bool	false
Communication:					-	_	-
Binding Group:							
Class	Туре		D	efault			
Geographical 🔲							
Application Specific 🛛	DistrSegmC (p	rimary)	1	or 31 (refe	er 3.1)		
Unassigned	Broadcast	Configural					
DP Address:	IO Type(ID):	199 (CPM		Property ID):	51	
LTE-Service (event):	InfoReport Snif	ffer on Binding					
InfoReport 🖂	Timeout:		31 M	in			
LTE-Service (polling): Read – Response□	Read Wildcard	/ Resp Sniffer	on Binding	Group:			
Value after Powerup:	Defau	lt Value ⊠				Stored Val	ue 🗌
Exception Handling:				Sav	e at Pov	verdown	
Special Features:							

3.2.4.11 Input signal: ForceSignCPM

Standard Mode

Not applicable.

FB:	CFDM	LTE Clien	t Input Name:	Fo	rceSignCl	PM				Mand Op	ator tiona	• =
Desci	ription:									· ·		
This in	nput signal	indicates tl	hat the chiller uni	t ha	as remainir	ng energ	y to b	e used	by the c	onsumers		
DPT:	Name	DPT_ Force	eSignCool		DPT ID	21.101	Da	atatype	format	B ₈		
Field			Description						Sup.	Unit	De	fault
Attribu	utes											
– Ford	ceRequest		Forced power c	ons	sumption is	necessa	ary		0	bool	fa	lse
Comr	nunicatior	า:	-						-	-		
Bind	ding Grou	p:										
Clas	S		Туре				Defa	ult				
Ge	ographica	l										
Ap	plication S	pecific 🖂	DistrSegmC (pr	rima	ary)		1 or 3	31 (refe	er 3.1)			
Un	assigned		Broadcast		Configura	ble 🗌						
DP A	Address:		IO Type(ID):		199 (CPN	l)	Prop	erty ID):	53		
	-Service (event):	InfoReport Snif	fer	on Binding	g Group:		-	-			
Inf	oReport	\boxtimes	Timeout:			31	Min					
	-Service (ad – Resp		Read Wildcard	/ Re	esp Sniffer	on Bindi	ng Gr	oup: -	· -			
Value	after Pow	/erup:	Defaul	t Va	alue 🛚			_		Stored Val	ue [
Excep	otion Hand	dling:						Save	at Powe	erdown		
						-						
Speci	al Feature	es:	_									

3.2.4.12 Input signal: LockSignCPM

Standard Mode

Not applicable.

FB:	CFDM	LTE Clien	t Input Name:	Lo	ckSignCF	M				Mand Op	atory 🗌 tional 🔯
	iption:	-								-	
			nat the Cold Wat								oad
	•) and the consur	ner							
DPT:	Name	DPT_Lock			DPT ID	207.101		Datatype			T
Field			Description						Sup.	Unit	Default
PwrRe	eduction		Requested pow reduction)	er ı	reduction (100% = ı	max	kimum	M	%	cs
Attribu	ites										
– Lock	Request		Indicates if pow of PwrReduction		eduction is	necess	ary	(validity	M	bool	false
– Туре	e		Type of overloa = true	d́, ۱	alue only	valid if Lo	ockF	Request	М	bool	uncrit.
Comn	nunication	1:							<u> </u>	l	l
Bind	ling Grou	p:									
Clas	S		Type				De	fault			
Ge	ographica	l									
		pecific 🗵	DistrSegmC (p	rim			1 c	or 31 (refe	er 3.1)		
	assigned		Broadcast		Configura						
	Address:		IO Type(ID):		199 (CPM			operty ID):	54	
	-Service (event <u>):</u>	InfoReport Snif	fer	on Bindin			-	-		
	Report	\boxtimes	Timeout:			31	Mir	า			
	-Service (ad – Resp		Read Wildcard	/ Re	esp Sniffer	on Bindi	ing	Group: -			
Value	after Pow	/erup:	Defau	lt V	alue 🛚			=	5	Stored Val	ue 🗌
Excep	tion Hand	dling:						Save	at Powe	erdown	
Speci	al Feature	es:									

3.2.4.13 Input signal: ForceSignCFDM

Standard Mode

Not applicable.

FB:	CFDM	LTE Clien	t Input Name:	ForceSignC	FDM			Mand	atory ☐ tional ⊠
Desc	ription:							Ор	lionai 🔼
This is	nput signal		nat the Cooling F					Distributio	n
Segm			l) has remaining			the consu	ımers.		
DPT:	Name	DPT_Forc	eSignCool	DPT ID	21.101	Datat	ype format	B ₈	
Field			Description				Sup.	Unit	Default
Attribu	utes								
– For	ceRequest		Forced power of	consumption is	necessa	ary	0	bool	false
Comr	nunication	n:	-					-	-
Bine	ding Group	o:							
Clas	SS		Type			Default			
Ge	ographical								
Ap	plication S	pecific 🖂	DistrSegmC (p	rimary)		1 (refer 3	3.1)		
Ur	assigned		Broadcast	Configura	ıble 🗌				
DP A	Address:		IO Type(ID):	208 (CFD	M)	Propert	y ID:	52	
LTE	-Service (e	event):	InfoReport Snit	ffer on Bindin	g Group:				
Inf	oReport	\boxtimes	Timeout:		31	Min			
LTE	-Service (p	oolling):	Read Wildcard	/ Doon Spiffor	on Dindi	na Crour			
Re	ad – Resp	onse	Read Wildcard	/ Resp Stiller	OH BIHUI	rig Group)		
Value	after Pow	erup:	Defau	lt Value ⊠				Stored Val	ue 🗌
Exce	otion Hand	lling:					Save at Pov	verdown	
Speci	al Feature	s:							
			•		•	•			

3.2.4.14 Input signal: LockSignCFDM

Standard Mode

Not applicable.

FB: CFDM	LTE Clier	nt Input Name:	nput Name: LockSignCFDM									
Description:	-		-				-					
This input signal indicates that the Cooling Flow Demand Manager CFDM (Cold Water Distribution Segment, secondary level d) is overloaded and the consumers have to reduce their chilled water consumption.												
DPT: Name	e DPT_Lock	κSign	DPT ID	207.101	Datatyp	e format	U ₈ B ₈					
Field		Description				Sup.	Unit	Default				
PwrReduction		Requested pow reduction)	er reduction (100% = m	aximum	M	%	CS				
Attributes												
LockReques	st		ndicates if power reduction is necessary (validity M									
– Type		of PwrReductio										
TypeType of overload, value only valid if LockRequestNAtrue												
Communicat	ion:	-				_	-	-				
Binding Gro	oup:											
Class		Туре			Default							
Geographi												
Application		DistrSegmC (pr			(refer 3.	1)						
Unassigne		Broadcast	Configura									
DP Address		IO Type(ID):	208 (CFD		Property I	D:	53					
LTE-Service		InfoReport Snit	ffer on Bindin									
InfoReport		Timeout:		31 N	/lin							
LTE-Service Read – Re		Read Wildcard	/ Resp Sniffer	on Bindin	g Group:							
Value after P	owerup:	Defau	lt Value ⊠				Stored Val	ue 🗌				
Exception Ha	andling:				Sa	ive at Pov	werdown					
Special Featu	ıres:											

3.2.4.15 Input signal: StatusFTC

Standard Mode

Not applicable.

FB:	CFDM	LTE Clien	t Input Name:	Input Name: StatusFTC Mandatory Optional										
Desci	ription:	•								-				
This s Contr		ins the cur	rent flow tempera	atuı	re and oth	er status i	nform	ation o	f a Flow	/ Tempera	ture			
DPT:	Name	DPT_Statu	sWTC		DPT ID	209.103	Da	tatype	format	$V_{16}B_{8}$				
Field			Description						Sup.	Unit	Default			
Temp	FlowWater		Current flow ter	npe	rature of I	-TC			М	°C	cs			
Attribu	utes													
- Tem	pFlowValid	i	Validity of Temp			eld			М	bool	false			
- Faul	-		Some failure in the FTC						М	bool	false			
- CtrlS	Status		Controller status						0	bool	on			
on: FTC is working (default if not supported)														
			off: FTC is stop	pec	l; no contr	ol of flow								
			temperature											
	nunicatior													
Bine	ding Grou	0:												
Clas	SS		Туре					Defau	ılt					
	eographical													
	plication S													
Ur	nassigned	\boxtimes	Broadcast			ırable 🛚		1						
	Address:		IO Type(ID):		120 (FTC		Prop	erty ID	:	51				
	-Service (InfoReport Snif	ffer	on Bindir			-	-					
	oReport	\boxtimes	Timeout:			31	Min							
	: -Service (¡ ead – Resp		Read Wildcard	/ R	esp Sniffe	r on Bindir	ng Gro	oup: -	_					
Value	after Pow	erup:	Defau	lt V	alue 🛚			-	5	Stored Val	ue 🗌			
Exce	otion Hand	lling:						Sav	e at Pov	werdown				
Speci	ial Feature	s:												

${\bf 3.2.4.16\ Input\ signal:\ Change Over Status Water}$

Standard Mode

D	P Name:	Cha	ngeOverSt	atusWa	ter	Abbr.:			tory		
B	Name:	CFE	M						Can be	internal	\boxtimes
De	scription										
se	e LTE-HEE	Mod	le								
Da	tapoint Ty	ре									
	PT_Name:		PT_Heat/Co	ool							
	PT Format:	B ₁						DPT_ID:	01.100		
Fie	eld	De	escription					Supp.	Range	Unit	Default
									cooling / heating	bool	cooling
Ac	cess Type										
•	Input										
	$N \rightarrow this$			$1 \rightarrow th$	is 🛛						
Spontaneous								31			
	Request				Polling:			Perio	od:		
Ö	mmunicati	on 1	Гуре								
•	Group Ob	ject l	Datapoint						Mandatory	/:	
	Default Gro	oup A	Address:								
Dy	namics										
	Power dow	n:	Save:								
	Power up:		Value:		nitialisation:]	Defau	ılt value:			
				Save	ed value:						
							Read	from bus	:		
Ex	ception Ha	ndli	ng								
Sp	ecial Featu	res									

FB:	CFDM	LTE Clien	t Input Name:	Ch	angeOve	rStatusV	Vater			Mandatory ☐ Optional ⊠		
Desc	ription:	-										
			dicates the water									
			The Cooling Flow			nager CF	FDM is o	deact	ivated w	henever t	his input	
			verStatusWater :	= 1)		T				B ₁ Z ₈		
DPT:	Name	DPT_ Hea										
Field			Description						Sup.	Unit	Default	
Heat/			Change over sta	atus	s(0 = cool	ing, 1 = h	neating)		M	bool	cooling	
Status	_								_	bitset		
	rridden		Sensor value ov	/err	idden true	/ false			0	bool	false	
								bool				
	munication											
	ding Group	o:										
Clas			Туре				Default					
	eographical											
	plication S	pecific 🗵	DistrSegmC_(se	eco		<u></u>	1 or 2 (refer	3.1)			
	nassigned		Broadcast		Configura							
	Address:		IO Type(ID):		342 (WC		Prope	rty ID	:	51		
	-Service (-	InfoReport Snif	fer	on Bindin				_			
	oReport	\boxtimes	Timeout:			31	Min					
	:-Service (pead – Resp		Read Wildcard	/ Re	esp Sniffer	on Bindi	ng Grou	ıp: -	_			
Value after Powerup: Default Value ⊠								Stored Va	lue 🗌			
Exce	ption Hand	on Handling: Save at Pow							verdown			
	_								•			
Spec	ial Feature	s:										

3.2.4.17 Parameter: DistrSegmCPrimary

FB:	CFDM	Proper	ty	Name (<u>Server</u>):	D	istrSegm	Primary	'			Mandatory 🖂 "		
						Op	otional 🗌						
	ription:												
				d Water Distribut						evel d - 1. Thi	s segmen	t is not	
used v				and the CPM are	loc	cated in the		_	ce.				
DPT:	Name DPT_UCountValue8_Z DPT ID 202.002 Datatype format								U ₈ Z ₈				
Field			_	escription				Sı	Jр.	Range	Unit	Default	
Count	erValue			old Water Distrib	utio	on Segmer	nt	ľ	M	131		1 1)	
			nı	umber								or 31 ²⁾	
												or NA 3)	
Status			_						_	4	bitset	6-1	
	OfService		_	one active /inacti		· · · · · · ·			O IA	true/false		false	
- all other flags				not supported, fixed to '0'					IA		onum		
Command - NormalWrite									М		enum		
- SetOSV & ResetOSV			Set zone inactive / active					-	O C				
	ther comma		not supported						ΙA				
	nunication			ot capportoa									
	Address:	••		IO Type(ID):		208 (CFD	M)	Pr	one	rty ID:	101		
	he server)			Start-Index:		1	,			elements	1		
	perty acce		_	Read only	П	•	Read/W						
	ection		_	Read level				W	rite	level			
Excer	otion Hand	llina:	٧	alue after Poweri	up:	Stored '	Value 🖂	A	ct Va	alue 🗍 De	fault Value	еП	
		U											
Speci	al Feature	s:											
CFDM	1 DP's are	not LTE	СО	mmunicating if zo	one	e is 'OutOf	Service'.						
1) nori	mal case fo	or "stand	al	one" CFDM									
²⁾ CFI	DM is the "	first" CFI	DΝ	and is NOT loca	ate	d together	with the (CPI	M in	the same de	vice		
3) CFI	DM is the "	first" CFI	ΟN	1 and is located to	oge	ether with t	he CPM i	n t	he s	ame device :	the paran	neter is	
no	t available												

See examples clause 3.1

3.2.4.18 Parameter: DistrSegmCSecondary

FB:	CFDM	Proper	ty	Name (<u>Server</u>):	D	DistrSegmCSecondary							Mandatory ⊠ Optional □	
Dana					_							<u> </u>	nionai 🔝	
	ription:													
LIEZ				d Water Distribut	ion				ndar	y level d.				
DPT:	Name	DPT_U	Co	untValue8_Z		DPT ID	202.002			atype forma	t l	U_8Z_8		
Field			D	escription				Sı	лр.	Range	7	Jnit	Default	
Coun	terValue		ı	old Water Distrib	utio	on Segme	nt	N	VI	131		-	1 1)	
			number										or 2 2)	
Statu	-										b	itset		
	OfService		_	one active /inactiv	-				O .	true/false			false	
- all o	ther flags		n	ot supported, fixe	d t	o '0'		N	IA		ļ.			
Comr											е	num		
- Norr	malWrite							Ν	VI					
- Set0	DSV & Res	etOSV	S	et zone inactive /	/ active				C					
- all o	ther comma	ands	n	ot supported				Ν	IΑ					
Comi	nunication	1:	-							=				
DP	Address:		IO Type(ID): 208 (CFDM)				M)	Property ID: 1			102			
(in t	he server)			Start-Index:		1		N° of elements 1						
Pro	perty acce	ss:		Read only [Read/W	rite	!	\boxtimes				
Pro	tection			Read level				W	rite	level	_	_		
Exce	ption Hand	lling:	٧	alue after Poweru	ıp:	Stored	Value 🛚	Ac	ct Va	alue 🔲 D	efa	ult Value	e 🗌	
Spec	ial Feature	s:												
CFDN	/I DP's are	not LTE	СО	mmunicating if zo	one	e is 'OutOt	fService'.							
1) CF	DM is the "i	first" CFI	DΝ	1 and is located to	oge	ether with	the CPM	in tl	he s	ame device				
	other cases				•									
See e	xamples cl	ause 3.1												

3.2.4.19 Parameter: Gen_PeripheralFTC

FB:	CFDM	Proper	ty Name (<u>Server</u>):	Peripherall	-тс				datory ☐ ptional ⊠			
Daga	ription:								ptioriai 🖂			
				0 1 11 5	то							
			o Flow Temperature									
DPT:												
Field			Description			Sup.	Range	Unit	Default			
Coun	terValue		peripheral link num	nber		M	full range		1			
Statu	 S							bitset				
- Out	OfService		Zone active /inactive	ve		0	true/false		false			
- all o	ther flags		not supported, fixe	d to '0'		NA						
Command								enum				
- Nori	malWrite					M						
- Set0	OSV & Res	etOSV	Set zone inactive /	active		0						
- all o	ther comma	ands	not supported			NA						
Com	nunication	1:			-		-	<u> </u>	•			
DP	Address:		IO Type(ID):	208 (CFD	M)	Prope	erty ID:	103				
(in t	he server)		Start-Index:	1		N° of	elements	1				
Pro	perty acce	ss:	Read only		Read/W	rite	\boxtimes					
Pro	tection		Read level			Write	level					
Exce	ption Hand	lling:	Value after Poweru	up: Stored	Value 🛚	Act V	alue 🔲 D	efault Valu	e 🗌			
Spec	Special Features:											
CFDN	/I DP's are	not LTE	communicating if zo	one is 'OutOf	Service'.		·					

3.2.4.20 Parameter: Gen_PeripheralPump

Same as in CPM with the Property Identifier number 104, refer to clause 0.

3.2.4.21 Diagnostic data: TempFlowWaterSetpAct

FB:	CFDM	Proper	ty Name (<u>Server</u>):	Te	empFlow\		Mandatory ☐ Optional ☒				
Desc	ription:									<u> </u>	otional 🖂
	_	d cold wa	ater flow temperature	e s	setpoint in	the Cold	Water	Distribution	Segm	ent.	
DPT:	Name	DPT_Te	empHVACAbs_Z		DPT ID	205.100	Da	tatype forma	at V ₁₆	Z_8	
Field			Description				Sup.	Range	Unit		Default
Temp	1		Temperature value	:			М	full range	° C		CS
Status	S								bits	et	
- Outo	ofService		No resulting cold water demand ⇒ no					true/false			true
			setpoint								
- Ove	rridden		External override of the setpoint					true/false			false
- all o	ther flags		not supported, fixed to '0'								
Command			Standard Command field						enu	m	
- Ove	rride & Rel	ease	Override and release setpoint								
- all o	ther comma	ands	not supported								
Comr	nunicatior	1:				•		·	•		•
DP	Address:		IO Type(ID):		208 (CFD	M)	Prop	erty ID:	110)	
(in t	he server)		Start-Index:		1		N° of	elements	1		
Pro	perty acce	ss:	Read only			Read/W	rite	∑ ¹⁾			
Prof	tection		Read level				Write	elevel			
Exce	ption Hand	lling:	Value after Poweru	ıp:	Stored '	Value □	Act \	/alue 🗵 🏻 D	efault	Valu	e 🗌
Speci	ial Feature	s:									
1) opti	onal Write	access f	or Override / Releas	se ·	function or	nlv					

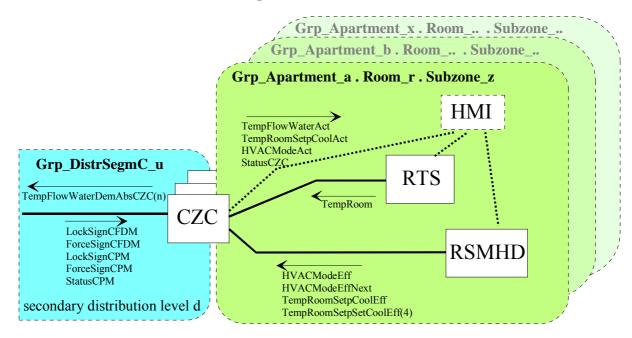
4 Cold Water Consumers

4.1 Overview

Cold water consumers are:

- Fixed setpoint or weather compensated cooling circuits CZC
- Cooling Demand Auxiliary CDAUX
- Cold water coils of air handling units (refer HVAC-VAC chapter: Ventilation and Air Conditioning, Supply Air Temperature Controller SATC, Air Handling Unit Controller AHUC, and Auxilary Cooling Demand in Percent CDAUXPER) (this document)
- Cold water coils of Terminal Units, like in fan coil units, variable air volumes... (refer HVAC-TU Specifications, Functional Blocks FCC, VAV,..[11])
- Cold water consumers like chilled ceiling units (refer HVAC-TU Specifications, Functional Block RCC [11])

4.2 Functional Block: Cooling Zone Controller (CZC)



LTE Zoning for the CZC: usage of Room Level 'R' and SubZone 'S'

In simple systems with only one cooling zone controller per Apartment, the support of the Room and Subzone tags is in principle not relevant.

But also a flexible mix of CZC and Terminal Unit Controllers [11] within one Apartment shall be possible. The CZC is therefore always communicating with explicit A.R.S zoning information (unambiguous zoning information, no wildcard on Room or Subzone).

- the CZC shall support the setting of the 'Apartment' parameter
- in CZC implementation the support of the 'Room' <u>parameter</u> is optional If 'Room' parameter setting is not supported, the CZC shall communicate on the default Room=1 ⇒ Geographical Zone A.1.S
- in CZC implementation the support of the 'Subzone' <u>parameter</u> is optional If 'Subzone' parameter setting is not supported, the HZC shall communicate on the default Subzone=1 ⇒ Geographical Zone A.R.1

if both Room and Subzone parameters are not supported, the CZC shall communicate on the default Geographical Zone A.1.1

For further information on geographical LTE zones see also [13].

4.2.1 Description

The Cooling Zone Controller CZC calculates and controls the necessary flow temperature for its zone (flow temperature control loop). This may be a stand alone cooling control with fixed setpoints or weather-compensated cooling circuit.

Calculation of the flow temperature setpoint and the control loop mechanism for the flow temperature control is company specific and not part of this specification. CZC may use built-in algorithm like outside air temperature compensation, room temperature load compensation, dew-point compensation, or any others.

The Room setpoint manager RSMHD sets the required operating mode and the cooling temperature setpoint. These values are mandatory. Alternatively it may be possible to have set to the CZC the actual room temperature setpoint TempRoomSetCoolEff.

Optimising function, like optimised start / stop control, are incorporated within this Functional Block and company specific. A centralised HVAC optimiser HVACOPT may be connected via the inputs HVACModeOptim and TempRoomSetpOtimCoolShift. More information about the external HVAC mode optimiser are described in clause 4.2.1.1, in the Hot Water Heating document [07], and Common Controller Functions [02].

The CZC receives forcing and locking signals via the Cold Water Distribution Segment.

- Forcing: increase the consumers energy consumption
- Locking: decrease the consumers energy consumption

IMPORTANT: Neither lock- nor forcing signals must NOT have an influence on the calculation of the flow temperature demand signal (otherwise the system may oscillate!).

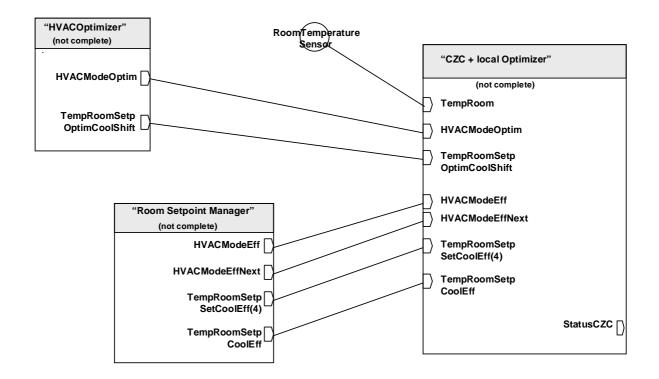
4.2.1.1 External HVAC Optimiser

Overview only: for more details see [02]

In more advanced systems the Cooling Zone Controller CZC may incorporate a local optimiser (company specific functions: pre-cool, start and stop optimisation etc).

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

HVAC Optimiser provides an optimised HVAC Mode (HVACModeOptim) and a delta room temperature setpoint values which allows shift the actual room temperature setpoint, e.g. for pre-cool (TempRoomSetpOptimCoolShift). These values are consumed by the CZC.



4.2.2 Constraints

Constraints concerning the usage of the LTE zone 'Room' and 'Subzone' refer 4.2

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

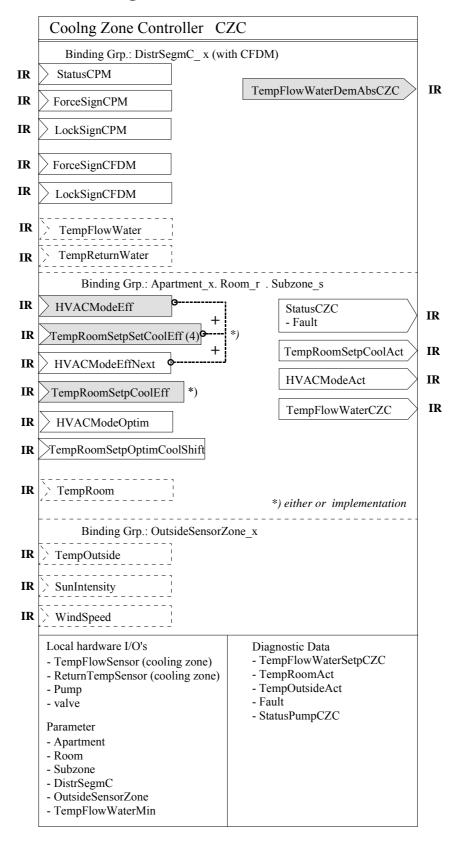
The usage of HVACModeEff/HVACModeEffNext + TempRoomSetpSetCoolEff[4] for optimised zone control is restricted to LTE implementations only since the necessary compound HVAC DPT for runtime-interworking are not yet available in Standard Mode.

In Standard Mode implementations, the CZC room temperature control mechanism is based on the TempRoomSetpCoolEff information only (simplified model used in EIB ObIS [12]). In this case more sophisticated functions like start/stop optimisation in the CZC can not be implemented.

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

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

4.2.3 Functional Block diagram



4.2.4 Description of Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
TempFlowWaterDem AbsCZC	Flow water temperature demand of the CZC to be sent to the allocated CFDM	DPT_TempFlowWater DemAbs	210.100
StatusCZC	Status information of CZC	DPT_StatusRCC	21.105
- Fault	Failure, some error in the CZC (S-interface)	DPT_Bool	1.002
TempRoomSeptCoolAct	Actual room temperature setpoint of the cooling zone (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
HVACModeAct	Actual active HVAC mode used by the CZC (LTE and S-interface)	DPT_HVACMode_Z DPT_HVACMode	201.100 20.102
TempFlowWaterCZC	Actual water flow temperature of the cooling zone (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Inputs			
StatusCPM	Status information from Cold Water Production Manager	DPT_StatusCPM	209.102
ForceSignCPM	Forcing signal from CPM due to danger of freezing, to force consumer to consume more energy	DPT_ForceSignCool	21.101
LockSignCPM	Locking signal from CPM due to chiller overload, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
ForceSignCFDM	Forcing signal from CFDM in the Cold Water Distribution Segment	DPT_ForceSignCool	21.101
LockSignCFDM	Locking signal from CFDM in the Cold Water Distribution Segment	DPT_LockSign	207.101
TempFlowWater	Common chilled water flow temperature value in the distribution segment (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
TempReturnWater	Common chilled water return temperature value in the distribution segment (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
HVACModeEff	Current/active HVAC mode from RSMHD	DPT_HVACMode_Z	201.100
TempRoomSetpSet CoolEff (4)	Set of 4 effective temperature setpoints for cooling 'Comfort', 'Standby', 'Economy', 'BuildingProt'	DPT_TempRoomSetpSet[4	213.100
HVACModeEffNext	Next HVAC mode and time to next HVAC mode from RSMHD	DPT_HVACModeNext	206.100
TempRoomSetpCoolEff	Effective actual temperature setpoint for cooling (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
HVACModeOptim	Optimised HVAC mode from external HVAC mode optimiser	DPT_HVACMode_Z	201.100

Datapoint	Description	Datapoint Type	DPT_ID
TempRoomSetpOptim CoolShift	Room temperature setpoint shift from external HVAC mode optimiser (LTE and S-interface)	DPT_TempHVACRel_Z DPT_Value_Tempd	205.101 9.002
TempRoom	Current room temperature (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
TempOutside	Current outside air temperature (LTE and S-interface)	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
SunIntensity	Current sun intensity value in W/m ² (LTE and S-interface)	DPT_SunIntensity_Z DPT_PowerDesity	203.102 9.022
WindSpeed	Current wind speed value (LTE and S-interface)	DPT_WindSpeed_Z DPT_Value_Wsp	203.101 9.005
Parameters			
Apartment	LTE zoning number Apartment	DPT_UCountValue8_Z	202.002
Room	LTE zoning number Room	DPT_UCountValue8_Z	202.002
Subzone	LTE zoning number Subzone	DPT_UCountValue8_Z	202.002
DistrSegmC	LTE zoning number Cold Water Distribution Segment	DPT_UCountValue8_Z	202.002
OutsideSensorZone	LTE zoning number Outside air Segment	DPT_UCountValue8_Z	202.002
TempFlowWaterMin	Minimum flow temperature setting to ensure there is no condensation	DPT_TempHVACAbs_Z	205.100
Diagnostic Data			
TempFlowWater SetpCZC	Actual flow water temperature setpoint in the cooling zone	DPT_TempHVACAbs_Z	205.100
TempRoomAct	Actual room temperature used by the CZC	DPT_TempHVACAbs_Z	205.100
TempOutsideAct	Actual outside temperature used by the CZC	DPT_TempHVACAbs_Z	205.100
Fault	Failure, some error in the CZC	DPT_Bool	1.002
StatusPumpCZC	Chilled water pump status in the CZC	DPT_RelValue_Z	202.100

^{*)} Implementation of Properties using standard DPT see clause 1.3.2

			STANDARD MODE	EXTENT MO	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	TempFlowWaterDem AbsCZC	NA ¹)	NA	NA	M
	StatusCZC	NA	NA	NA	О
	- Fault	(GO _b)		(GO)	NA
	TempRoomSeptCoolAct	(GO _b)		(GO)	О
	HVACModeAct	(GO _b)		(GO)	О
	TempFlowWaterCZC	(GO _b)		(GO)	О
Inputs	StatusCPM	NA ¹)	NA	NA	О
	ForceSignCPM	NA ¹)	NA	NA	О
	LockSignCPM	NA ¹)	NA	NA	О
	ForceSignCFDM	NA ¹)	NA	NA	О
	LockSignCFDM	NA ¹)	NA	NA	О
	TempFlowWater	(GO _b)		(GO)	О
	TempReturnWater	(GO _b)		(GO)	О
	HVACModeEff	NA ³)	NA	NA	M^2)
	TempRoomSetpSet CoolEff(4)	NA ²)	NA	NA	M^2)
	HVACModeEffNext	NA ¹)	NA	NA	O ²)
	TempRoomSetpCoolEff	GO_b	GO	GO	M^2)
	HVACModeOptim	NA ³)	NA	NA	О
	TempRoomSetpOptim CoolShift	(GO _b)		(GO)	О
	TempRoom	(GO _b)		(GO)	О
	TempOutside	(GO _b)		(GO)	О
	SunIntensity	(GO _b)		(GO)	О
	WindSpeed	(GO _b)		(GO)	О

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

Table 13: CZC Runtime Interworking - dependence on Configuration Modes

²) Either implementation of {HVACModeEff + TempRoomSetpSetCoolEff[4]} or {TempRoomSetpCoolEff} ³⁾ Implementation of HVACModeEff or HVACModeOptim inputs only without TempRoomSetpSetCoolEff [4] does not make sense

		Support
Parameter	Apartment	M
	Room	О
	Subzone	О
	DistrSegmC	M
	OutsideSensorZone	О

Table 14: CZC LTE specific Properties

		Support
Parameter	TempFlowWaterMin	О
Diagnostic Data	TempFlowWaterSetpCZC	О
	TempRoomAct	О
	TempOutsideAct	О
	Fault	О
	StatusPumpCZC	О

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

4.2.4.1 Output TempFlowWaterDemAbsCZC

Standard Mode

Not applicable.

FB:	CZC	LTE Serv	ver	Output Name: Te	mpFlov	٧W	aterDo	emAb	sC	ZC			ndatory 🔯
<u> </u>		•										(Optional 🗌
	ription:	aal aantai		the coloulated flaut		4	- do	d	bor		value) of	the C7	C It is
sent to		OM in the	cor	the calculated flow to responding Cold Wa	ater Dis	trib	ution S	Segme	nt.	Jiule	value) oi	the GZ	C. It is
DPT:	Name	DPT_Te	emp	FlowWaterDemAbs	DF	PT II		210.10		Dat	atype for	mat V	₁₆ B ₁₆
Field				escription			Sup.	Rang	_		Unit	COV	Default
	FlowDem		Re	equested flow tempe	rature		M	full ra	ang	e	°C	0.5	cs
Attribu													
	nValid			lidity of TempFlowD	emand)	İ	M	true/			bool	Υ	false
	LoadPrio			solute load priority			0	true/			bool	Υ	false
	tLoadPric			nift load priority			0	true/			bool	Y	false
– Max	TempLin	nit		empFlowDem contai mperature limit ¹)	ns max		Ο	true/	tals	е	bool	Υ	false
– Min	TempLim	it		mpFlowDem contai	ns min.		0	true/	fals	е	bool	Υ	false
te				mperature limit (e.g. int limitation) ²)						•			
– DH\	VReq			eat demand from DF	W, for		NA	false			bool	N	false
				HW only									
– Roo	mCtrlRed	1		emand from room he oling	eating o	r	0	true/	fals	е	bool	N	false
– Ven	tRea			emand from ventilati	on		0	true/	fale	_	bool	N	false
		nRea		emand from auxiliary		r	Ö	true/			bool	N	false
, (0)	•			ol consumer, all sea		•	Ū		. u. u	•	500.	.,	10.00
- Sys	temPump	Reg		equest for water circ		in	0	true/	fals	е	bool	Υ	false
,				e distribution segme									
			(co	ommon chilled water	r pump))							
– Eme	ergDem			nergency cooling de		or	0	true/	fals	е	bool	Υ	false
				ant / room protection	1								
	NLegioRe		for	DHW only			NA	false b			bool	N	false
	nunicatio												
	ding Gro	up:											
Clas				Туре						Defa	ult		
	ographic		닞.	D'-1-00						<u>-</u>			
	plication		<u> </u>	DistrSegmC	O 6			 -		1			
	assigned		Ш	Broadcast	Confi						D.	<u> </u>	
	Address:			IO Type(ID):	224 (C				_	erty I		51 tbeat:	1E min
	-Service: oReport	s (event):			MinRep			_	Se				15 min
		△ Response		Output per default o	High	IIICa	aurig [rmal	roup Wild	Caru alio	
•	lling of the	•	,	Tx Prio:	підп	Щ			INO	IIIIai		LC	w 🔲
	all always			Transm after Powe	run: St	ore	d Valu		Δ	ct V	alue 🖂	Default	Value 🗌
	pported)	, 50		Transm alter r owe	iup. Ot	010	a vala		,,			Delaali	value
Pro	perty-Ser			Read only			Reac	d/Write	<u> </u>	Г	7		
	ividual a										_		
Exce	otion Har	ndling:									Save	at Powe	rdown
	al Featur		.1	fla ka	Line it C	41		. I		D -			- OEDM "
•				um flow temperature		or tr	ie Coc	ning F	IOW	Der	nand Irai	istorme	CFDM. It
				iit in this hydraulic ci ım flow temperature		r th		ling Fl	O\4/	Den	and Tran	eformer	CEDM It
,				iiii iiow temperature t in this hydraulic cir									OI DIVI. IL

4.2.4.2 Output: StatusCZC

Standard Mode

Not applicable.

Separate Datapoint Fault.

FB:	CZC	LTE Serv	er Output Name:	StatusCZC						datory 🗌 otional 🖂
Desc	ription:			-					<u>-</u>	
Inforn	nation pro	vided by t	he CZC mainly for v	visualisation 8	& monito	oring e.	g. on a	n end-u	iser HMI (e.g. room
unit)										
DPT:	Name	DPT_Sta	atusRCC	DPT ID	21.105	Da	tatype	format	B ₈	
Field			Description		Sup.	Range	9	Unit	COV	Default
- Faul	t		CZC has a failure		M	true/fa	ılse	bool	Υ	false
- rese	rved		reserved for future	attributes						
Com	nunicatio	n:								
Bine	ding Grou	ıp:								
Clas	SS		Туре				Defau	ılt		
Ge	eographic	al 🛛	Apartment.Room	partment.Room.Subzone 1.1.1						
Ap	plication	Specific								
Ur	nassigned		Broadcast	Configura	able 🗌					
	Address:		IO Type(ID):	224 (CZC)			erty ID		52	
		s (event):	COV 🛛	MinRepTim		10 s			rtbeat:	15 <u>min</u>
	oReport	\boxtimes	Output per defau	It communica	ting 🖂				dcard allov	wed 🗌
		Response	Tx Prio:	High 🗌		No	rmal 🛭		Low	' 🗌
	lling of the					_		_		_
	all always	be	Transm after Pov	werup: Stored	d Value	∐ A	ct Valu	ıe ⊠	Default V	alue 💹
	pported)									
	perty-Ser ividual ad		Read only	\boxtimes	Read/V	Vrite				
Exce	otion Han	dling:						Save	at Power	down
Spec	ial Featur	es:								

4.2.4.3 Output Fault

Standard Mode

DP 1	Name:	Faι	ult	Abbr.:				Mandat	tory		
FB N	Name:	CZ	С					Can be	interna	al	
Des	cription										
Rep	orts a failu	ıre i	n the CZC, ma	ainly used for visualisa	ation.						
Data	apoint Ty	ре									
DPT	_Name:	D	PT_Bool								
DPT	PT Format: B ₁ DPT_ID: 1.002										
Field	ield Description Supp. Range Unit Default										
										false	
Acc	ess Type										
• (Output										
th	$nis \to M$		⊠ tŀ	nis \rightarrow 1							
S	Spontaneous COV: Δ-Value: Min repetition period: 10s										
			Cyclic	Period:	15 Mi	n					
R	Request										
Con	nmunicat	ion	Туре								
• (Group Ob	ject	Datapoint					Mandatory	r: 🛛 🖂		
	efault Gro	oup	Address:	-							
Dyn	amics										
P	ower dow	n:	Save:								
Р	ower up:		Value:	No initialisation:		Defau	ılt value:				
				Saved value:		Actua	I value (no	ot for input)	: _		
			Transmit on	bus (only for output):		Read	from bus	(only for in	out):		
Exc	eption Ha	ındl	ing								
Spe	cial Featu	ıres									

LTE-HEE Mode

Not applicable.

4.2.4.4 Output TempRoomSetpCoolAct

DP Name:	TempRoomSetpCo	olAct Abbi	r.: -				Mandat	tory	
FB Name:	CZC						Can be	interna	al 🛛
Description									
Actual room to	emperature setpoint	of the cooling z	one.						
Datapoint Ty	o <u>e</u>								
DPT_Name:	DPT_Value_Temp	р							
DPT Format:	F ₁₆					DPT_ID:	9.001		
Field	Description					Supp.	Range	Unit	Default
							full range	°C	CS
Access Type									
♦ Output									
this $\rightarrow M$		$s \to 1$							
Spontaneo	us 🛛 COV:		alue:	0.2 K		n repetitio	n period:	10s	
	Cyclic		od:	15 Mir	า				
Request	\boxtimes								
Communicat	on Type								
	ject Datapoint						Mandatory	r: 🛛 🖾	
	oup Address:								
Dynamics									
Power dow	n: Save:								
Power up:	Value: N	o initialisation:			Defau	It value:			
		aved value:			Actua	l value (n	ot for input)	: 🛛	
	Transmit on bu	us (only for outp	ut):		Read	from bus	(only for in	out):	
Exception Ha	ndling								
Special Featu	ires								

FB:	HZC	LTE S	Server	er Output Name: TempRoomSetpCoolAct Mandatory Optional								
Desc	ription:										<u> </u>	
		npera	ture se	etpoint of the coo	ling zone.							
DPT:	Name	DPT	Temp	DHVACAbs_Z	DPT ID	205.10	00	Datatyp	e format	$V_{16}Z_{8}$		
Field			Desc	ription		Sup.	Ran	nge	Unit	COV	Default	
Temp)		Temp	erature setpoint	value	М	full	range	°C	0.2	cs	
Statu									bitset			
	OfService			value: setpoint n					Υ	true		
	rridden			oint overridden tr	ue / false	0	true	/false	bool	Υ	true	
	ther flags			upported		ļ				ļ		
Comr				only)					bitset			
	rride &		Overr	ride and release	setpoint	0						
Relea												
- all o			not su	upported		NA						
comn						<u> </u>				L		
	municatio											
	ding Gro	up:		Γ				1				
Clas				Туре				Defa				
	eographic		<u> </u>	Apartment.Roor	m.Subzone			1.1.	1			
	plication		ic 📙			<u></u>						
	nassigned			Broadcast	Configu		_					
	Address:			IO Type(ID):	224 (CZC			roperty I		53		
	-Services			COV 🛛	MinRepTir			0 sec		tbeat:	15 min	
	foReport		\boxtimes	Output per defa		ating [⊠ B		roup Wild			
	TE Read-			Tx Prio:	High			Normal	\boxtimes	Lo	ow 🔲	
	olling of the		ut	_ "	01			A 137	. 5	D (11		
	all always	be		Transm after Po	owerup: Store	ed Valu	е 🔛	Act V	alue 🖂	Default	Value	
	pported)											
	perty-Ser		١.	Read only		Read	/Writ	:e [⊠ 1)			
_	(individual access): Read only Read/Write Save at Powerdown Save at Powerdown											
Exce	ption Har	ialing	•						Save	at Powe	ardown∐	
C												
	Special Features: 1) Write access is optional; for Override / Release function only. If 'Overridden' the CZC uses the override											
					iease function	i only.	ıı Ov	rerriaaen	ine CZC	uses tr	ie override	
٧a	iue 101 100	וווו נפוו	iperati	ure control.								

4.2.4.5 Output: HVACModeAct

DF	P Name:	HV	ACModeAct		Abbr.:			Mandat	ory		
FB	Name:	CZC	C					Can be	interna	al	
De	escription										
Th	is output co	ntai	ns the actual	HVAC Mode of the Cold	l Water I	Distri	bution Se	gment.			
Da	tapoint Ty	эе									
DF	PT_Name:	DI	PT_HVACMod	de							
DF	DPT Format: N ₈ DPT_ID: 20.102										
Fie	eld	De	escription				Supp.	Range	Unit	Defa	ult
								14 1)		cs	
Ac	cess Type										
♦	Output										
	this \rightarrow M			nis \rightarrow 1 \Box							
	Spontaneous COV: Δ-Value: Min repetition period: 10sec										
			Cyclic	Period:	15min						
	Request										
Co	ommunicati	on ⁻	Туре								
*	Group Ob							Mandatory	: 🗵		
	Default Gro	oup .	Address:								
Dy	namics										
	Power dow	n:	Save:								
	Power up:		Value:	No initialisation:			ılt value:				
				Saved value:	P	∖ctua	l value:				
	Transmit on bus (only for output):										
Ex	Exception Handling										
	ecial Featu										
¹) '	value 0='Au	to' is	s not allowed								

FB:	CZC	LTE S	Server	Output Name: H	VACMode	Act					ndatory 🗌 Optional 🖂
Desc	ription:										<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>
		1ode o	f the c	cooling zone (which	may also d	depend	on ir	nternal o	otimiser fu	unctions	in the
CZC)	·										
DPT:	Name	DPT		CMode_Z	DPT ID	201.10				N_8Z_8	
Field				ription			Ran	nge	Unit	COV	Default
	Mode		Actua	al HVAC Mode		M	[14	<u>4] ''</u>	enum.	Υ	cs
Status						_			bitset		
	fals			C mode overridden	true /	0	true	e/false	bool	Y	true
				upported		ļ					
Comr				only)	to a local						
	rride &		Overr	ride and release se	etpoint	0					
Relea			not ci	upported		NA					
comm			1101 51	ирропец		INA					
	nunicatio	n.				<u>L</u>	<u> </u>			<u>L</u>	
	ding Grou										
Clas		<u>ир.</u>		Туре				Defa	ault		
	eographic	al	\boxtimes	Apartment.Room.	Subzone			1.1.			
	plication		 -								
	assigned			Broadcast 🗌	Configu	rable 🗌					
DP.	Address:			IO Type(ID):	224 (HZC	;)	Р	roperty I		54	
LTE	-Services	s (eve	nt):	COV 🛛	MinRepTir	ne:		0 sec		tbeat:	15 min
	oReport		\boxtimes	Output per default	t communic	ating 🏻	⊠ B		roup Wild	card all	owed 🗌
	ΓΕ Read-l			Tx Prio:	High 🗌			Normal	\boxtimes	Lo	ow 🗌
	lling of the		ut				_				
	all always	be		Transm after Pow	erup: Store	ed Valu	е 📙	Act V	alue 🛚	Default	Value 🗌
	pported)	vice									
(ind	Property-Service (individual access): Read only □ Read/Write □ ²)										
Exce	otion Har	ndling	:						Save	at Powe	erdown
	ial Featur										
	value 0 = 'Auto' is not allowed										
VVIII	write access is optional; for Override / Release function only: if 'Overridden' the CZC uses the override value for room temperature control										

4.2.4.6 Output TempFlowWaterCZC

DP Name:	TempFlowWaterCZ(C Abbr.:			Mandat	tory	
FB Name:	CZC				Can be	interna	al 🛛
Description							
Actual flow ter	nperature of the Cold	d Water Distribution	Segment.				
Datapoint Ty	<u>e</u>						
DPT_Name:	DPT_Value_Temp	<u> </u>					
DPT Format:	F ₁₆			DPT_ID:	9.001		
Field	Description			Supp.	Range	Unit	Default
					full range	°C	CS
Access Type							
♦ Output							
this $\rightarrow M$		\rightarrow 1					
Spontaneo	us 🛛 COV:	Δ-Value:	0.5 K	Min repetition	on period:	10s	
	Cyclic	Period:	15 Min				
Request	\boxtimes						
Communicati	on Type						
♦ Group Ob	ect Datapoint				Mandatory	r: 🛛	
Default Gro	oup Address:						
Dynamics							
Power dow	n: Save:						
Power up:	Value: No	initialisation:	D	efault value:			
	Sa	ived value:	A	ctual value (n	ot for input)	: 🛛	
	Transmit on bus	s (only for output):	R	ead from bus	(only for in	out):	
Exception Ha	ndling						
Special Featu	res						

FB:	CZC	LTE S	Server	Output Name:			ndatory 🗌 Optional 🖂							
	ription:	•		-						-				
Actua	I flow tem	nperatu	ire of t	he cold water zor	ne.									
DPT:	Name	DPT	_Temp	HVACAbs_Z	DPT ID	205.10	00 Da	tatyp	e format	$V_{16}Z_{8}$				
Field			Desc	ription		Sup.	Range		Unit	COV	Default			
Temp	1		Cold	water flow tempe	rature	М	full ran	ge	°C	0.5	cs			
Status	S								bitset					
- Faul	t			or failure true / fal		M	true/fal		bool	Υ	false			
- InAla	-			or value alarm tru		0	true/fal		bool	Υ	false			
- Aları	mUnAck			n acknowledgeme	bool	Υ	unack							
				unack										
	ther flags		not supported (write only)											
Comn														
- Aları				m acknowledge O										
- all o			not su	upported		NA								
comm														
	nunicatio													
	ding Gro	up:		T										
Clas				Туре				Defa						
	eographic			Apartment.Roon	n.Subzone			1.1.	1					
	plication		ic 📙	· <u></u>		<u></u>	<u>_</u>							
	nassigned			Broadcast	Configu									
	Address:			IO Type(ID):	224 (CZC			erty I		55				
	-Service			COV 🛛	MinRepTin		10 :			rtbeat:	15 <u>min</u>			
	oReport		\boxtimes	Output per defau		ating 🛭			roup Wild					
	TE Read-			Tx Prio:	High 🗌		N	ormal	\boxtimes	Lo	ow 🔲			
	lling of th		ut				_		. 🗖		🗖			
	all always	s be		Transm after Po	werup: Store	ed Valu	e	Act V	alue 🖂	Default	Value			
	pported)													
	perty-Sei ividual a):	Read only		Read	/Write		∑ ¹⁾					
Exce	ption Hai	ndling	:						Save	at Powe	erdown			
	ial Featu													
1) writ	e access	is opti	onal; f	or AlarmAck func	tion only									

4.2.4.7 Input signal: StatusCPM

Standard Mode

Not applicable.

LTE-HEE Mode

This optional (difference to reference) signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.10.

4.2.4.8 Input signal: ForceSignCPM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.11.

4.2.4.9 Input signal: LockSignCPM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.12.

4.2.4.10 Input signal: ForceSignCFDM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.13.

4.2.4.11 Input signal: LockSignCFDM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.14.

4.2.4.12 Input signal: TempFlowWater

DF	Name:	Tem	pFlowWater			Abbr.:	-	_				Manda	atory	
FΒ	Name:	CZC										Can b	e intern	al
De	scription													
se	e LTE-HEE	mod	e											
	tapoint Ty													
	PT_Name:		T_Value_Te	mp										
DF	T Format:	F ₁₆									T_ID:	9.001		
Fie	eld	De	scription							Su	pp.	Range	Unit	Default
												full range	°C	CS
Ac	cess Type													
♦	Input													
	$N \rightarrow this$		1	\rightarrow th	is	\boxtimes								
	Spontaneo	us			Cyclic			\boxtimes			Time	-out:	31 m	n
	Request				Pollin	g:					Perio	d:		
Co	mmunicat	ion T	уре											
♦	Group Ob	ject [Datapoint									Mandato	′y: ∑	
	Default Gro	oup A	ddress: -	-										
Dy	namics													
	Power dow		Save:											
	Power up:		Value:		itialisa				Defau					
					d value		<u>Ц</u>					ot for inpu		
			Transmit on	bus (only fo	r output	:):		Read	fror	n bus	(only for in	nput):	
Ex	ception Ha	ındliı	ng											
Sp	ecial Featu	ıres												

FB: CZC LT	E Client	Input Name:	Tem	pFlowWa				latory 🗌 tional 🔯		
Description:									-	
This process signa										
of the Cold Water	Distribution	on Segment \Rightarrow	may	be used in	n the CZC	c fo	r a com	pany spec	cific contro	ol
algorithm (Dew po	int compe	ensation).								
	PT_Temp	HVACAbs_Z		DPT ID	205.100		Datatyp	e format	$V_{16}Z_{8}$	
Field		Description						Sup.	Unit	Default
TempFlowWater		Temperature v	/alue					M	°C	cs
Status								M	bitset	
 OutOfService 		Void sensor va	alue t	rue / false	!			M	bool	false
- Fault		Sensor failure				M	bool	false		
 Overridden 		Sensor value	overr	idden true		0	bool	false		
- InAlarm		Sensor value				0	bool	false		
 AlarmUnAck 		Alarm acknow	ledge	ement stat	ick	O NA	bool	unack		
- all other flags									bool	
Communication:										
Binding Group:										
Class		Туре				De	efault			
Geographical										
Application Spe	ecific 🔯	DistrSegmC				1				
Unassigned		Broadcast		Configura						
DP Address:		IO Type(ID):		324 (FW			roperty I	D:	51	
LTE-Service (ev	/ent <u>):</u>	InfoReport Sr	niffer	on Bindin						
InfoReport	\boxtimes	Timeout:			31	Mi	n			
LTE-Service (po Read – Respor		Read Wildcard	d / Re	esp Sniffer	on Bindi	ng	Group:			
	lue after Powerup: Default Value ⊠								Stored Va	lue 🗍
Exception Handli							ve at Pov			
	CZC will use a company specific default value after power-up or in case of								ailure, if	
no sensor data is received.									,	
Special Features	:									
Special Features: 										

4.2.4.13 Input signal: TempReturnWater

DP	Name:	Tem	pReturnWat	er		Abbr.:				Mano	dato	ry]
FΒ	Name:	CZC								Can	be ir	nterna	al 🗵	1
De	scription													
see	e LTE-HEE	mod	е											
Da	tapoint Ty	ре												
DP	PT_Name:	DP	T_Value_Te	mp										
DP	T Format:	F ₁₆						DP	T_ID:	9.00	1			
Fie	eld	De	scription					Su	pp.	Range		Jnit	Default	
										full rang	e °	С	CS	
Ac	cess Type													
♦	Input													
	$N \rightarrow this$] 1	\rightarrow th	is	\boxtimes								
	Spontaneo	us			Cyclica	ally:			Time	-out:	3	31 mir)	
	Request				Polling	<u> :</u>			Perio	d:				
Со	mmunicati	ion T	уре											
♦	Group Ob	ject [Datapoint							Mandato	ory:	\boxtimes		
	Default Gro	oup A	ddress: -	_										
Dy	namics													
	Power dow	/n:	Save:											
	Power up:		Value:	No in	itialisati	ion:	Defa	ult v	alue:			\boxtimes		
				Save	d value	:	Actua	al va	lue (n	ot for inp	ut):			
			Transmit on	bus (d	only for	output):	Read	I fror	n bus	(only for	inpu	ıt):		
Ex	ception Ha	ndlii	ng											
Sp	ecial Featu	ıres												

FB: CZC										latory ☐ tional ⊠
Description:	-		=						-	
This process s										the
Cold Water Dis	stribution Seg	$gment \Rightarrow may \ b$	e us	ed in the C	ZC for op	otimise	d zone	e contro	l	
DPT: Name	DPT_Temp	pHVACAbs_Z		DPT ID	205.100	Data	atype	format	$V_{16}Z_{8}$	
Field		Description						Sup.	Unit	Default
TempReturnW	ater	Temperature	value) 				M	°C	cs
Status								М	bitset	
 OutOfService 	!	Void sensor va	alue '	true / false				М	bool	false
- Fault		Sensor failure	true	/ false		M	bool	false		
 Overridden 		Sensor value	overr	ridden true		0	bool	false		
- InAlarm		Sensor value	alarn	n true /fals		0	bool	false		
- AlarmUnAck		Alarm acknow	ledge	ement stat		0	bool	unack		
 all other flags 		not supported		NA	bool					
Communication	on:	•						=	=	=
Binding Gro	up:									
Class		Туре				Defaul	t			
Geographic	al 🔲									
Application	Specific 🛛	ProdSegmC				1				
Unassigned		Broadcast		Configura	ıble 🗌					
DP Address		IO Type(ID):		325 (RNV		Prope	erty ID	:	51	
LTE-Service	(event):	InfoReport Sr	niffer	on Bindin			-	_		
InfoReport	\square	Timeout:			31	Min				
LTE-Service		Read Wildcard	d / Re	esp Sniffer	on Bindi	na Gro	up: -	_		
Read – Response Read Wildcard / Resp Sniffer on Binding Group:										
Value after Powerup: Default Value ∑									Stored Val	lue
· · · · · · · · · · · · · · · · · · ·								verdown		
The CZC will use a company specific default value after power-up or in case of							ase of	commu	nication fa	ilure, if
no sensor data is received.										
Special Featu	res:									
Special Features:										

4.2.4.14 Input signal: HVACModeEff

Standard Mode

Not applicable.

FB: CZC LTE Clie	ent Input Name:	HVACModeEff		Mandato Optional	ry ⊠ ') □						
Description:						-					
This input is provided by the controller.	e RSMHD and defi	nes the actual HV	AC (operating	mode of t	he cooling	zone				
DPT : Name DPT_HVA	CMode_Z	DPT ID 201.1	00	Dataty	pe format	N_8Z_8					
Field	Description				Sup.	Unit	Default				
HVACMode	Actual HVAC Mod				M	enum.	CS				
STATUS	Can be ignored b	y the CZC			NA						
Communication:											
Binding Group:											
Class	-5155										
Geographical 🖂	Apartment . Room . SubZone 1.1.1										
Application Specific											
Unassigned	Broadcast	Configurable									
DP Address:	IO Type(ID):	100 (RSMHD)		Property	ID:	51					
LTE-Service (event):	InfoReport Sniffe	r on Binding Grou	•								
InfoReport 🗵	Timeout:	3	31 N	Иin							
LTE-Service (polling): Read – Response	Read Wildcard / F	Resp Sniffer on Bir	ndin	g Group:							
Value after Power-up:											
Exception Handling:	Save at Powerdown										
Special Features:											
1) Either implementation of {TempRoomSetpCoolEt 2) value 0='Auto' is not allow	f}	·			`	lodeEffNe	xt)} or				

4.2.4.15 Input signal: TempRoomSetpSetCoolEff [4]

Standard Mode

Not applicable.

FB: CZ	C C	LTE Client	Input Name:	Tem	pRoomSetpSetCo	oolEff [4]]			ory ⊠ ¹) tional □
Descripti	ion:								<u> </u>	
This inpu	t is pro				ins the four effective	/e (after	corre	ctions)	cooling ro	om
temperati	ure se	tpoints, whic	h are valid for t	he co	ontroller.					
DPT: 1	Name	DPT_Temp	RoomSetpSet	[4]	DPT ID 213.100	Datat	type f	ormat	$V_{16}V_{16}V_{16}$	₆ V ₁₆
Field			Description					Sup.	Unit	Default
TempSet	pCom	f	Comfort setpo	int co	oling			M	°C	CS
TempSet	pStdb	y	Standby setpo	int co	ooling		Ο	°C	CS	
TempSet	pEco		Economy setp				M	°C	cs	
TempSet	pBPro	t	Building prote	ction	setpoint cooling		M	°C	CS	
Commun	nicatio	n:					-	-		
Binding	g Grou	ıp:								
Class			Туре			Default				
Geogr	aphica	al 🖂	Apartment . R	oom .	SubZone	1.1.1				
Applic	ation 9	Specific 🗌								
Unass	signed		Broadcast		Configurable					
DP Add	ress:		IO Type(ID):		100 (RSMHD)	Propert	ty ID:		54	
LTE-Se	rvice	(event):	InfoReport Sr	iffer	on Binding Group:					
InfoRe	eport	\boxtimes	Timeout:		31	Min				
		(polling): ponse□	Read Wildcard	d / Re	sp Sniffer on Bindi	ng Grouլ	p:			
Value aft	er Po	wer-up:	Defa	9	Stored Val	lue 🗌				
Exceptio	n Han	dling:		at Pov	verdown					
-										
Special F	eatur	es:								
				VACModeEff + TempRoomSetpSetCoolEff [4] (+ HVA						
{Temp	Room	SetpCoolEff	7}							

4.2.4.16 Input signal: HVACModeEffNext

Standard Mode

Not applicable.

LTE-HEE Mode

FB:	CZC	LTE Clie	ent Input Name:	HVACMode			latory □ onal ⊠ ¹⁾		
Desci	ription:	<u>:</u>		-				•	
This in	nput is provi	ded by the	e RSMHD and defi	ines the next	HVAC c	perating	mode and t	he delay t	ime to it.
If the	next mode is	not avail	able the time is se	et to zero (e.g	. in case	of manu	ually selecte	d HVACN	lodeUser
≠ 'Aut	o').								
This in	nformation is	used by	the CZC for local of	optimiser fun	ctions, e	.g. start/s	stop optimis	ation.	
DPT:	Name D	PT_HVA	CModeNext	DPT ID	206.100	Datat	ype format	$U_{16}N_8$	
Field			Description				Sup.	Unit	Default
Delay	Time		Time to next HVA				M	min	0
			0 = no next HVA0						
HVAC	Mode		Next HVAC Mode	e, range [14	M	enum.	cs		
			and [0] = Mode U	Indefined 2)					
Comr	nunication:								
Bind	ding Group:								
Clas	s		Туре			Default			
Ge	ographical		Apartment . Roor	n . SubZone		1.1.1			
Ap	plication Sp	ecific 🔲							
Un	assigned		Broadcast	Configural	ole 🗌				
DP /	Address:		IO Type(ID):	100 (RSM		Propert	y ID:	52	
LTE	-Service (ev	rent):	InfoReport Sniffe	er on Binding	Group:				
Inf	oReport	\boxtimes	Timeout:		31	Min			
LTE	-Service (po	olling):	Read Wildcard / F	Doen Sniffer	on Rindi	na Grour	· ·		
Re	ad – Respoi	nse 🗌		<u> </u>	on bindi	ng Group			
Value	after Powe	r-up:	Default	Value 🛚				Stored Va	lue 🗌
Excep	otion Handl	ing:					Save at Pov	werdown	
Speci	al Features	:							
1) Eith	er implemen	tation of {	HVACModeEff +	TempRoomS	etpSetC	oolEff [4]	(+ HVACM	odeEffNe	xt)} or
{Te	empRoomSe	etpCoolEf	f}	·	•				
²⁾ enc	oding of spe	cial condi	tions, see table be	low					

Interpretation of Time and HVACMode fields

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

4.2.4.17 Input signal: TempRoomSetpCoolEff

DP	Name:	Tem	pRoomSetp(CoolE	ff	Abbr.:						М	andat	ory		
FB I	Name:	CZC										C	an be	interna	al 🛚	
Des	cription															
see	LTE-HEE	mod	е													
Data	apoint Ty	ре														
DPT	Γ_Name:	DP	T_Value_Te	mp												
DPT	Γ Format:	F ₁₆								DP	T_ID:	9.	.001			
Field	d	De	scription							Su	op.	Rang	ge	Unit	Default	
												full ra	ange	°C	CS	
Acc	ess Type															
♦	Input															
١	$N \rightarrow this$] 1	\rightarrow th	is	\boxtimes										
5	Spontaneo	us			Cyclica	ally:	\boxtimes				Time	-out:		31 mir	า	
F	Request				Polling	g:					Perio	d:				
Con	nmunicati	on T	уре													
♦	Group Ob	ject [Datapoint									Mano	datory	: 🛛		
	Default Gro	oup A	Address: -	-												
Dyn	amics															
F	Power dow	'n:	Save:													
F	Power up:		Value:	No in	itialisat	tion:		D	efau	ılt va	alue:					
				Save	d value	e: [Α	ctua	l va	lue (n	ot for i	input):			
			Transmit on	bus (only for	output)	:	R	Read	fror	n bus	(only	for inp	out):		
Exc	eption Ha	ndlir	ng													
Spe	cial Featu	ires														

FB: CZC L	TE Client	Input Name:	Tem	npRoomS	etpCoolE	ff				tory ⊠ tional 「	1)
Description:									<u> </u>	tional L	_
This input is prov								s) coolin	g setpoint	, which	
is valid for the co	ntroller. Th	is information i	s use	ed for simp	le applic	ations	5.				
	DPT_Temp	HVACAbs_Z		DPT ID	205.100	Da	atatype	format	$V_{16}Z_{8}$	_	
Field		Description						Sup.	Unit	Defaul	lt
Temperature		Room tempera	ature	setpoint v	alue			M	°C	cs	
Status									bitset		
- OutOfService Void setpoint value									bool	false	
- all other flags not supported									bool		
Communication											
Binding Group											
Class Type Default											
Geographical		Apartment . R	oom	. SubZone) 	1.1.1					
Application Sp	pecific 🔲										
Unassigned		Broadcast		Configura	ıble 🗌						
DP Address:		IO Type(ID):		100 (RSN	(dHD	Prop	perty II	D:	56		
LTE-Service (e	event):	InfoReport Sr	niffer	on Bindin	g Group:						
InfoReport	\boxtimes	Timeout:			31	Min					
LTE-Service (p Read – Respo		Read Wildcard	d / Re	esp Sniffer	on Bindi	ng Gr	oup:				
									Stored Va	lue 🗌	
Exception Handling: Save at P								ve at Pov	werdown		
In case of missing input data (timeout) or value 'OutOfService' the CZC will have a comp behaviour								npany spe	cific		
Special Features:											
1) Either implementation of {HVACModeEff + TempRoomSetpSetCoolEff [4] (+ HVAC								HVACM	lodeFffNe	xt)} or	
{TempRoomSetp				Jp. 100111			. [.] (,, 0.	

4.2.4.18 Input signal: HVACModeOptim

Standard Mode

Not applicable.

FB:	CZC	LTE (lient Input Name	ent Input Name: HVACModeOptim Mandato Option									
Desci	ription:			-						Ор	tional 🔀		
		e provide	ed by an external F	łVΑ	C Optimise	er and de	fines tl	ne opti	mised H	IVAC opei	ating		
	for the co										J 3		
DPT:	Name	DPT_H\	/ACMode_Z		DPT ID	201.100	Da	tatype	format	N_8Z_8			
Field			Description						Sup.	Unit	Default		
HVAC	Mode		Optimised HVA	/C I	Mode, rang	je [14] o	r 0 ¹⁾		M	enum.	0		
Status	3								M	bitset			
	OfService		Void value ⇒ r	no o	ptimised H	IVAC Mod	de ava	ilable	M	bool	true		
- all o	ther flags		not supported						NA	bool			
Communication:													
Binding Group:													
Clas			Туре				Defau	ılt					
	ographica		Apartment . Ro	om	. SubZone	9	1.1.1						
	plication S	Specific	<u> </u>			- ; -, ; ,							
	assigned		Broadcast		Configura								
	Address:		IO Type(ID):		115 (HVA			erty ID):	51			
	-Service	`	InfoReport Sn	ıtter	on Bindir								
	oReport	<u>, 🛚 </u>	Timeout:			31	Min						
	-Service ad – Res _l		Read Wildcard	/R	esp Sniffe	r on Bindi	ng Gro	oup: -	-				
Value	after Pov	ver-up:	Defa	ılt V	′alue 🛚					Stored Val	ue 🗌		
Exce	otion Han	dling:						Sav	e at Pov	verdown			
Speci	al Featur	es:											
1) HV	ACMode 0)= 'Auto' (or Status 'OutOfSe	rvic	e' ⇒ no o _l	ptimiser a	ctive,	CZC u	ses HVA	ACModeEt	îf		
			is signal is suppor										
				ff fro	om the RS	MHD and	l use th	ne opti	mised H	VAC Mod	е		
ins	CZC will ignore the signal HVACModeEff from the RSMHD and use the optimised HVAC Mode instead if HVACModeOptim is ≠ 'Auto												

4.2.4.19 Input signal: TempRoomSetpOptimCoolShift

DP Name:	Ten	pRoomSe	tpOptimCoolShift	Abbr.:	:	_	Mandat	tory	
FB Name:	CZC							internal	
Description	•								<u> </u>
This optional	input	signal fron	n an external HVAC	Optimiser of	contain	s a correct	ion value to	the act	ual room
temperature s		int.							
Datapoint Ty	ре								
DPT_Name:	DF	PT_Value_	Tempd						
DPT Format:	F ₁₀					DPT_ID:			
Field	De	escription				Supp.	Range	Unit	Default
							full range	K	0
Access Type	<u> </u>								
♦ Input									
$N \rightarrow this$			$1 \rightarrow \text{this}$						
Spontaneo	ous		Cyclically:			Time	-out:	31min	
Request			Polling:			Perio	d:		
Communicat	ion 1	Гуре							
♦ Group Ob	ject	Datapoint					Mandatory	r: 🛛	
Default Gr	oup /	Address:							
Dynamics									
Power dov	vn:	Save:							
Power up:		Value:	No initialisation:		Defa	ult value:		\boxtimes	
			Saved value:						
					Read	from bus			
Exception Ha	andli	ng							
Special Feat	ures								

FB:	CZC	LTE Client		TempR	oomSetp	OptimCo	olShi	ft		Mand	
		Input Name:								Opt	tional 🛚
Desc	ription:		_								
This c	ptional	input signal fro	om an extern	al HVA	C Optimise	er contair	ns a co	orrectio	n value	to the acti	ual room
tempe	erature s	setpoint.									
DPT:	Nam	e DPT_Temp	HVACRel_Z	<u> </u>	DPT ID	205.101	Da	tatype	format	$V_{16}Z_{8}$	
Field			Description			•			Sup.	Unit	Default
Temp	erature		Room temp	erature	setpoint s	hift value	;		M	K	0
Status	3								М	bitset	
- all fla	ags		not supporte	ed, can	be ignored	b			NA	bool	
Comr	nunicat	ion:	•								
Bine	ding Gr	oup:									
Clas	SS		Туре				Defau	ılt			
Ge	eograph	ical 🖂	Apartment .	Room	. SubZone		1.1.1				
Ap	plication	n Specific 🔲									
Ur	assigne	ed 🔲	Broadcast [Configura	ble 🗌					
DP A	Addres	s:	IO Type(ID)	:	115 (HVA	COPT)	Prop	erty ID	:	55	
LTE	-Servic	e (event):	InfoReport	Sniffer	on Bindin	g Group:		-	-		
Inf	oRepor	t 🖂	Timeout:			31	Min				
LTE	-Servic	e (polling):	Read Wildo	ard / Da	on Sniffor	on Bindi	ina Gra	un.			
Re	ad – Re	esponse	Read Wilde	alu / Ne	sp Silliei	OH BIHUI	ing Git	Jup	-		
Value	after P	ower-up:	De	efault Va	alue 🛚			-	5	Stored Val	ue 🗌
Exce	otion Ha	andling:						Sav	e at Pov	verdown	
		-									
Speci	ial Feat	ures:									

4.2.4.20 Input signal: TempRoom

DP Name			Room			Abbr.:				M	andat	tory			
FB Name	e: (CZC								Ca	an be	intern	al		
Descript															
			rature val	ue.											
Datapoir		е													
DPT_Nai	me:	DPT	_Value_T	emp											
DPT Forr	mat:	F ₁₆						DP	Γ_ID:	9.	001				
Field		Des	cription					Sup	p.	Rang	e	Unit	Defa	ult	
										full ra	nge	°C	С	S	
Access 7	Гуре														
♦ Input															
$N \rightarrow t$	his			$1 \rightarrow th$	is	\boxtimes									
Spont	aneou	IS	\boxtimes		Cyclica	ally:			Time-	-out:		31 mi	n		
Reque	est				Polling	g:			Perio	d:					
Commun	nicatio	n Ty	ре												
♦ Grou	p Obje	ect Da	atapoint							Mand	datory	r: 🛛			
Defau	It Gro	up Ac	ddress:												
Dynamic	s														
Powe	r dowr	n: S	Save:												
Powe	r up:	V	/alue:	No in	itialisat	tion:	Defau	ılt va	lue:						
				Save	d value	e: [ot for i					
		T	ransmit o	n bus (only for	output):	Read	from	bus 1	(only	for in	out):			
Exception	n Har	ndling	g												
Special I	Featur	es													

FB: CZC L	TE Client	Input Name:	TempRoom					latory ☐ tional ⊠
Description:			-				-	
This process sig	nal from a r	oom temperatu	ure sensor RTS	S contains	the curr	ent room ter	nperature	·-
DPT: Name	DPT_Temp	HVACAbs_Z	DPT ID	205.100	Datat	ype format	$V_{16}Z_{8}$	
Field		Description				Sup.	Unit	Default
TempRoom		Room tempera	ature value			M	°C	cs
Status						M	bitset	
 OutOfService 			alue true / false	Э		M	bool	false
- Fault		Sensor failure				M	bool	false
 Overridden 			overridden true alarm true /fals			0	bool	false
- InAlarm	0	bool	false					
- AlarmUnAck	bool	unack						
- all other flags			NA	bool				
Communication								
Binding Group	p:							
Class		Type			Default			
Geographical		Apartment . R	oom . Subzone	e	1.1.1			
Application S	pecific 🗌							
Unassigned		Broadcast	Configur	able 🗌				
DP Address:		IO Type(ID):	321 (RTS	S)	Propert	ty ID:	51	
LTE-Service (event):	InfoReport Sr	niffer on Bindir	ng Group:				
InfoReport	\boxtimes	Timeout:		31	Min			
LTE-Service (_I Read – Resp	<u></u>	Read Wildcard	d / Resp Sniffe	r on Bindin	ng Group	p:		
Value after Pow	/erup:	Defa	iult Value 🛚			5	Stored Va	lue 🗌
Exception Hand	dling:					Save at Pov	verdown	
The CZC will use		y specific defa	ult value after ¡	ower-up c	or in cas	e of commu	nication fa	ailure, if
no sensor data is	s received.							
Special Feature	es:							

4.2.4.21 Input signal: TempOutside Standard Mode & LTE-HEE Mode

This signal is described in the Functional Block CRC. For further info please refer to clause 2.4.4.8.

4.2.4.22 Input signal: SunIntensity

DP	Name:	Sunl	ntensity			Abbr.:					Mar	ndat	ory	
FB I	Name:	CZC									Car	ı be	internal	
Des	cription													
Curi	rent sun in	tensi	ty value.											
	apoint Ty	ре												
	Γ_Name:	DP	T_PowerDe	nsity										
DPT	Γ Format:	U ₁₆							DP	T_ID:	9.02	22		
Field	d	De	scription						Sup	op.	Range		Unit	Default
											full ran	ge	W/m ²	CS
Acc	ess Type													
♦	Input													
١	$N \rightarrow this$] 1	$1 \rightarrow th$	is	\boxtimes								
5	Spontaneo	us			Cyclic	cally:	\boxtimes			Time	-out:		31 min	
F	Request				Pollin	g:				Perio	d:			
Con	nmunicat	ion T	уре											
♦	Group Ob	ject [Datapoint								Manda	tory	$ \square $	
	Default Gro	oup A	Address: -	-										
Dyn	amics													
F	Power dow	n:	Save:											
F	Power up:		Value:	No in	itialisa	ition:		Defau						
					d value	~ ·					ot for in			
			Transmit on	bus (only fo	r output)):	Read	fron	n bus	(only fo	r inp	out):	
Exc	eption Ha	ındliı	าg											
Spe	cial Featu	ıres												

FB: CZC	LTE Client	Input Name:	Sun	Intensity						latory ☐ tional ⊠		
Description:			-						<u>. </u>			
This process si	gnal from a	sun intensity se	nsor	SIS conta	ins the cu	urrent	sun in	itensity ir	nformation	in W/m²		
\Rightarrow not to be co	nfused with l	_ight sensor wh	iich p	rovides Li	ux informa	ation.						
DPT: Name	DPT_SunI	ntensity_Z		DPT ID	203.102	Da	atatype	format	$U_{16}Z_{8}$	_		
Field		Description						Sup.	Unit	Default		
SunIntensity		Sun intensity	value	<u>, </u>				M	W/m ²	cs		
Status								M	bitset			
 OutOfService 		Void sensor v	alue 1	true / false	;			M	bool	false		
- Fault		Sensor failure	true	/ false				M	bool	false		
 Overridden 		Sensor value	overr	idden true	: / false			0	bool	false		
- InAlarm	0	bool	false									
- AlarmUnAck	0	bool	unack									
- all other flags not supported NA												
Communication:												
Binding Gro												
Class		Туре				Defa	ult					
Geographic	al 🔲											
Application	Specific 🛚	OutsideSenso	rZon	е		1						
Unassigned		Broadcast		Configura	able 🔲							
DP Address:		IO Type(ID):		348 (SIS			perty II	D:	51			
LTE-Service	(event):	InfoReport Sr	niffer	on Bindir								
InfoReport	\boxtimes	Timeout:			31	Min						
LTE-Service		Read Wildcare	4 / P4	en Sniffe	on Rindi	na Gi	oun.					
Read – Res	ponse	iteau Wildcan	J / 130	csp Sillie	OH BIHUI	ng Gi	oup.					
Value after Powerup: Default Value ⊠ Sto										lue 🗌		
Exception Har	ndling:						Sa	ve at Pov	verdown			
The CZC will u		ny specific defa	ult va	alue after p	ower-up	or in	case o	f commu	nication fa	ailure, if		
no sensor data	is received.											
Special Featur	res:											
				<u> </u>					<u> </u>			

4.2.4.23 Input signal: WindSpeed

DP Name			Speed			Abbr.:					Ma	andat	ory		
FB Name	e: (CZC									Ca	an be	interna	al	
Descript															
Current v			value.												
Datapoir															
DPT_Nai			_Value_V	Vsp											
DPT Form	mat:	U_{16}							DP.	<u>T_ID:</u>	9.0	005			
Field		Des	cription						Sup	p.	Rang		Unit	Defa	ult
											full ra	nge	m/s	C	<u>s</u>
Access	Туре														
♦ Input															
$N \rightarrow t$	his			$1 \rightarrow th$	is	\boxtimes									
Spont	aneou	S	\boxtimes		Cyclica	ally:	\boxtimes			Time-	-out:		31 mii	า	
Reque	est				Polling	j :				Perio	d:				
Commun	nicatio	n Ty	ре												
♦ Grou	p Obje	ect Da	atapoint								Mand	latory	': 🖂		
Defau	ılt Grou	up Ac	ddress:												
Dynamic	s														
Powe	r dowr	n: S	Save:												
Powe	r up:	V	/alue:	No in	itialisat	ion:		Defau	ılt va	lue:					
				Save	d value	e:					ot for i				
		T	ransmit o	n bus (only for	output):		Read	fron	n bus	(only f	for inp	out):		
Exception	n Har	ndling	g												
Special I	Featur	es													

FB: CZC	LTE Client	Input Name:	WindSpeed					datory 🗌 otional 🖂
Description:							-	
This process s	ignal from a	wind speed ser	nsor WSS cont	ains the cu	urrent wi	nd speed inf	ormation	
DPT : Name	DPT_Wind	Speed_Z	DPT ID	203.101	Datat	ype format	$U_{16}Z_{8}$	
Field		Description				Sup.	Unit	Default
WindSpeed		Wind speed v	alue			M	m/s	cs
Status						M	bitset	
 OutOfService 	•		alue true / fals	е		M	bool	false
- Fault		Sensor failure				M	bool	false
 Overridden 			overridden true alarm true /fals			0	bool	false
- InAlarm	0	bool	false					
- AlarmUnAck	0	bool	unack					
- all other flags	3	not supported				NA	bool	
Communicati								
Binding Gro	up:							
Class		Туре			Default			
Geographic								
Application	Specific 🖂	OutsideSenso	orZone		1			
Unassigne	<u> </u>	Broadcast	Configur	able 🗌				
DP Address		IO Type(ID):	347 (WS		Propert	ty ID:	51	
LTE-Service	e (event <u>):</u>		niffer on Bindi					
InfoReport	\square	Timeout:		31	Min			
LTE-Service Read – Re		Read Wildcard	d / Resp Sniffe	r on Bindir	ng Group	o:		
Value after Po	owerup:	Defa	ault Value 🛚			S	Stored Va	lue 🗌
Exception Ha	ndling:					Save at Pow	erdown	
		ny specific defa	ult value after	power-up	or in cas	e of commur	nication fa	ailure, if
no sensor data	a is received.	<u> </u>						
Special Featu	res:							

4.2.4.24 Parameter: Apartment

FB:	CZC	Proper	ty Name (<u>Server</u>):	Α	partment							datory 🛚
Doco	ription:	<u> </u>		-							1 OF	Dilonal 🔲
		mont nu	mhor									
	one: Apart				T			T _				
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002			atype form	at	U_8Z_8	
Field			Description				S	up.	Range	Į	Unit	Default
Count	terValue		Apartment number					M	1126	-	-	1
Status	 S						Ì			t	oitset	
- Out	OfService		Zone active /inactive	/e				0	true/false			false
- all o	ther flags		not supported, fixe	d t	o '0'		١	NΑ				
Comn	nand						i			e	enum	
- Norr	nalWrite							M				
- SetC	OSV & Res	etOSV	Set zone inactive /	ac	ctive			0				
- all o	ther comma	ands	not supported				١	NΑ				
Comr	nunication	1:	<u> </u>							<u> </u>		<u></u>
DP	Address:		IO Type(ID):		224 (CZC	:)	Р	rope	rty ID:	•	101	
(in t	he server)		Start-Index:		1		N	° of	elements		1	
Pro	perty acce	ss:	Read only			Read/W	/rite)	\boxtimes			
Prof	tection		Read level				W	/rite	level	-		
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Def										Defa	ault Value	e 🗌
Speci	ial Feature	s:										
CZC I	DP's are no	ot LTE co	ommunicating if zon	e i	s 'OutOfS	ervice'. If	Aр	artm	ent is 'Out	OfS	ervice' a	Iso the
			d Subzone is 'OutOf									

4.2.4.25 Parameter: Room

FB:	CZC	Proper	ty Name (<u>Server</u>):	R	oom				N		datory 🗌	
Desc	ription:	<u>!</u>							<u> </u>			
LTE 2	zone: Roon	n numbe	r. parameter used o	r fi	xed value '	*' (=0) ==	see re	emark in clau	ıse 4.2			
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002	2 Dat	atype forma	t U ₈ Z ₈	3		
Field			Description				Sup.	Range	Unit		Default	
Coun	terValue		Room number				M	0, 163			1	
Statu	s								bitset	t		
	OfService		Zone active /inactive			0	true/false			false		
- all o	ther flags		not supported, fixe		NA		1					
Comr	mand						enum	1				
- Nor	malWrite						M					
	OSV & Res		Set zone inactive /	ac	ctive		0					
	ther comm		not supported				NA					
Com	municatio	า:										
DP	Address:		IO Type(ID):		224 (CZC))	Prope	erty ID:	102			
(in t	the server)		Start-Index:		1		N° of	elements	1			
Pro	perty acce	ess:	Read only			Read/W	rite/	\boxtimes				
Protection Read level Write level												
Exce	Exception Handling: Value after Powerup: Stored Value 🖂 Act Value 🗌 Default Value 🗌											
Spec	ial Feature	es:										
CZC	DP's are no	ot LTE co	ommunicating if zon	e i	s 'OutOfSe	rvice'. If	Apartn	nent is 'OutC	fServic	e' a	lso the	
corre	sponding R	loom and	d Subzone is 'OutOf	Se	ervice' (cor	nmon fla	g)					

4.2.4.26 Parameter: Subzone

FB:	CZC	Pro	pert	y Name (<u>Server</u>):	S	ubzone						datory 🗌 otional 🖂
Desc	ription:									<u></u>	<u> </u>	Moriai 🖂
	•	bzone	numk	er within the Subz	on	e see rema	ark in cla	use 4	2			
DPT:	Nam			ountValue8 Z			202.002		tatype forma	at II	I_8Z_8	
Field	III	C Di		Description		וטווט	202.002	Sup.	Range		nit	Default
	terValue			Subzone number				M	0, 115		ш	1
Status				Subzone number					0, 115	hit	tset	
	s OfServic			Zone active /inactiv	, n			0	true/false	Dii	.501	false
		_			-			NA	liue/iaise		ļ	laise
- all other flags not supported, fixed to '0' Command										00	num	
	nalWrite							М		CI	iuiii	
	OSV & F		21/	Set zone inactive /		O			ļ			
					ac	Slive		NA				
	ther con)	not supported				INA				
	nunicat			110 = (15)		004 (070)		_				
	Addres			IO Type(ID):		224 (CZC)			erty ID:	10	03	
(in t	he serv	er)		Start-Index:		1			elements	1		
Pro	perty ac	cess:		Read only			Read/W	rite	\boxtimes			
Pro	tection			Read level				Write	level			
Exce	otion Ha	andling	j:	Value after Poweru	ıp:	Stored V	/alue ⊠	Act V	alue 🔲 🏻 D	efau	ılt Valu	e 🗌
Spec	ial Feat	ures:										
CZCI	DP's are	not LT	E co	mmunicating if zon	e i	is 'OutOfSe	rvice'. If	Apartn	nent is 'OutC	OfSe	rvice' a	Iso the
corres	sponding	g Subzo	one is	G'OutOfService' (c	on	nmon flag)						

4.2.4.27 Parameter: DistrSegmC

FB:	CZC	Proper	ty Name (<u>Server</u>):	DistrSegmC					datory 🗵	
Description:										
LTE zoning information Cold Water Distribution Segment.										
DPT:	DPT: Name DPT_UCountValue8_Z DPT ID 202.002 Datatype format U ₈ Z ₈									
Field			Description			Sup.	Range	Unit	Default	
CounterValue			Cold Water Distribution Segment number			M	131		1	
Statu	 S							bitset		
- Out	OfService		Zone active /inactive				true/false		false	
- all o	ther flags		not supported, fixed to '0'			NA				
Comr						М		enum		
- NormalWrite										
- SetOSV & ResetOSV			Set zone inactive / active			O NA				
- all o	ther comma	ands	not supported							
Comi	<u>munication</u>	:								
DP.	Address:		IO Type(ID):	224 (CZC)	Prope	erty ID:	104	104		
(in t	he server)		Start-Index:	1		N° of	elements	1		
Pro	Property access: Read only				Read/Wri					
Protection			Read level	Write level			level			
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐								ie 🗌		
Spec	Special Features:									
CZC DP's are not LTE communicating if zone is 'OutOfService'.										

4.2.4.28 Parameter: OutsideSensorZone

FB:	CZC	Property	Name (<u>Server</u>):	0	OutsideSensorZone						Mandatory ☐ Optional ⊠	
											Op	otional 🖂
Desc	ription:											
LTE z	oning nur	nber for th	ne link with an Outs	ide	Temperat	ure Sens	or					
DPT:	Name	DPT_U	countValue8_Z		DPT ID	202.002		Dat	atype forma	t U ₈ Z	<u>Z</u> 8	
Field			Description				Su	ρ.	Range	Uni	t	Default
Count	terValue		Outside sensor zor	ne	number		M		131			1
Status	3									bits	et	
- Out	OfService		Zone active /inactive	ve			Ο		true/false			false
- all o	ther flags		not supported, fixed to '0'				N/	١				
Comn	nand									enu	m	
- Norr	nalWrite						M					
- SetC	DSV & Re	setOSV	Set zone inactive / active				Ο					
- all o	ther comr	nands	not supported					١				
Comr	nunicatio	n:	-			•					,	
DP A	Address:		IO Type(ID):		224 (CZC))	Pro	ре	rty ID:	105	5	
(in t	he serve	r)	Start-Index:	1 N° of elements 1				1				
Property access: Read only			Read only			Read/W	rite		\boxtimes			
Protection Read level			Write level									
Exce	otion Har	ndling:	Value after Powert	ıp:	Stored \	√alue 🗵	Act	٠Va	alue 🔲 D	efault	Value	e 🗌
	<u>-</u>	·										
Speci	ial Featur	es:										
CZC i	s not usin	g an exte	rnal outside temper	atι	ire sensor	if zone is	'Ou	tŌſ	Service'			

4.2.4.29 Parameter: TempFlowWaterMin

FB:	CZC	Proper	rty Name (<u>Server</u>): TempFlowWaterMin							Mandatory ☐ Optional ⊠	
Desc	Description:										
	Min flow temperature limitation in the cold water zone. Flow temperature shall not be below this limit										
because of condensation.											
DPT:	DPT: Name DPT_TempHVACAbs_Z DPT ID 205.100 Datatype format V							$V_{16}Z_{8}$			
Field			Description				Sup.	Range	Unit	Default	
Temp			Temperature value	.			M	full range	° C	cs	
Statu									bitset		
	OfService		Limitation active /inactive				0	true/false		false	
	ther flags		not supported, fixed to '0'			NA					
Comr								enum			
	malWrite	-+00/	Cat limitation management on in a ation /				M				
- SetOSV & ResetOSV			Set limitation parameter inactive / active				0				
- all o	ther comma	ands	not supported				NA				
Comi	munication):	-			•		-	•	•	
DP.	Address:		IO Type(ID):		\ /			110			
(in t	he server)		Start-Index:	1 N° of elements 1				1			
Property access:			Read only	☐ Read/W				\boxtimes			
Protection			Read level			Write	level				
Exce	ption Hand	Value after Poweru	up:	Stored	Value 🛚	Act V	alue 🔲 De	fault Valu	ıe 🗌		
	Special Features:										
Limita	Limitation function is activated or deactivated by the 'OutOfService' Status										

4.2.4.30 Diagnostic data: TempFlowWaterSetpCZC

FB: CZC	Property	/ Name (<u>Server</u>):	TempFlowWaterSetpCZC					Mandatory ☐ Optional ⊠	
Description:									
Actual cold water flow temperature <u>setpoint</u> of the CZC.									
DPT: Name DPT_TempHVACAbs_Z DPT ID 205.100 Datatype format V ₁₆ Z ₈									
Field		Description			Sup.	Range	Unit	Default	
Temp		Temperature value)	M	full range	° C	cs		
Status							bitset		
- OutOfService)	⇒ no setpoint (e.g	. cooling is of	f)	0	true/false		false	
 Overridden 		External override of	of the setpoint	0	true/false		false		
- all other flags		not supported, fixe			NA				
Command		Standard Command field					enum		
- Override & R	elease	Override and relea	se setpoint		0				
- all other com	mands	not supported		NA					
Communicati	on:			•		_	-		
DP Address	:	IO Type(ID): 224 (CZC)				erty ID:	111	111	
(in the serve	er)	Start-Index:	1 N° of elements				1		
Property acc	Read only		Read/W	'rite	⊠ ¹⁾				
Protection		Read level			Write	level			
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐							е		
Special Features:									
1) optional Write access for Override / Release function only									

4.2.4.31 Diagnostic data: TempRoomAct

FB:	CZC	Property	/ Name (<u>Server</u>):	Te	empRoom	Act					datory otional
Desc	ription:			-							<u> </u>
			value used by the								
image	of the Te	mpRoom	input or of a hard v	vire	ed sensor v	which ma	y be	ove	erridden by a	tool for s	ervice
function	functions.										
DPT:	Name	DPT_Te	empHVACAbs_Z		DPT ID	205.100	D	ata	type format	$V_{16}Z_{8}$	
Field			Description				Sup		Range	Unit	Default
Temp			Temperature value)			М	1	full range	° C	CS
Status										bitset	
- Out	OfService		TempRoomAct is r	not	available		Ο	1	true/false		false
- Ove	rridden		Override of the ten	npe	erature val	ue	Ο	1	true/false		false
- Fault			Temperature corrupted, sensor failure					1	true/false		false
- InAlarm			Critical limit is reached				Ο	1	true/false		false
- AlarmUnAck			Alarm acknowledgement status				Ο	í	ack/unack		unack
- all o	ther flags		not supported, fixed to '0'								
Comn	nand		Standard Command field							enum	
- Ove	rride & Re	elease	Override and release temperature				Ο				
			value								
- Aları	mAck		Alarm acknowledge								
- all o	ther comn	nands	not supported				NA				
Comr	nunicatio	n:	•			-					-
DP .	Address:		IO Type(ID):		224 (CZC)	Pro	per	ty ID:	112	
(in t	he serve	r)	Start-Index:		1	•	N° c	of e	lements	1	
Pro	perty acc	ess:	Read only			Read/W	rite		⊠ ¹⁾		
Prof	ection		Read level				Writ	e le	evel		
Exce	otion Han	dling:	Value after Poweru	лр:	Stored	Value 🗌	Act	Va	lue 🛛 De	fault Value	e 🗌
Speci	al Featur	es:									
1) opti	onal Write	access f	or Alarm acknowled	lge	ment only						<u> </u>

4.2.4.32 Diagnostic data: TempOutsideAct

FB:	CZC	Property	Name (<u>Server</u>):	16	empOutsi	deAct				otional 🖂
Descr	iption:			_					<u> </u>	
Actual	outside t	emperatu	ire value may be us	ed	by the CZ	C for rooi	m tem	perature contr	ol. This is	the local
image	of the Te	empOutsion	de input or a hard-w	ire	d sensor w	hich may	be o	verridden by a	tool for se	ervice
function	ons.									
DPT:	Name	DPT_Te	empHVACAbs_Z		DPT ID	205.100	Da	atatype format	$V_{16}Z_{8}$	
Field			Description				Sup.	Range	Unit	Default
Temp			Temperature value	<u> </u>			M	full range	° C	cs
Status	;								bitset	
- OutC	OfService		TempOutsideAct is	s no	ot available	е	0	true/false		cs
- Over	ridden		Override of the ten				Ο	true/false		false
- Fault	•		Temperature corru			failure	М	true/false		false
- InAlarm			Critical limit is reached				0	true/false		false
	nUnAck		Alarm acknowledgement status				O NA	ack/unack		unack
	her flags		not supported, fixed to '0'							
Comm			Standard Command field						enum	
- Over	ride & Re	elease	Override and release temperature value							
- Alarr	n A ck		1 5.1.5.5				0			
	her comn	nande	Alarm acknowledge not supported				NA			
	nunicatio		пот варропеа				14/ (_		
	Address:	<u>′•••</u>	IO Type(ID):		224 (CZC)	Pron	erty ID:	113	
	he serve	r)	Start-Index:		1	,		f elements	1	
_ `	perty acc	<u>, </u>	Read only			Read/W		□ 1)	-	
	ection		Read level				Write	e level		
Excep	tion Han	dling:	Value after Poweru	up:	Stored '	Value 🗌	Act \	/alue ⊠ De	fault Valu	e 🗌
	al Featur			_						
1) optio	onal Write	access f	or Alarm acknowled	lge	ment only					

4.2.4.33 Diagnostic data: Fault

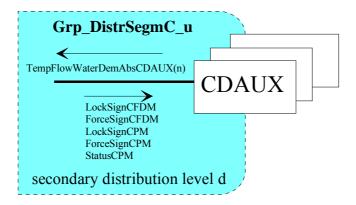
FB:	CZC	Property I	Name (<u>Server</u>):	Fa	ult							datory ☐ otional ⊠
Desc	ription:										<u> </u>	otional 🔼
Some	error in t	he CZC										
DPT:	Name	DPT_Boo	ol		DPT ID	1.002	Da	atatyp	oe format	B ₁		
Field]	Description				Sup.	Ra	nge	Un	it	Default
								tru	e/false	bo	ol	false
Comi	municatio	n:						-				•
DP.	Address:		IO Type(ID):	O Type(ID): 224 (CZ))	Property ID:			11	114	
(in t	the serve	r)	Start-Index:	•	1	N° of elements		1	1			
Pro	perty acc	ess:	Read only			Read/W	rite					
Pro	tection		Read level	-			Write	leve	el			
Exce	ption Har	ndling: \	Value after Power	up:	Stored	Value 🗌	Act \	/alue	⊵⊠ D€	efau	lt Valu	e 🗌
Spec	ial Featui	res:										

4.2.4.34 Diagnostic data: StatusPumpCZC

FB:	CZC	Property	Name (<u>Server</u>):	StatusPum	pCZC				datory 🗌
Descr	ription:	-						<u> </u>	
Actua	l relative _l	ower of t	he pump in the coo	ling zone.					
DPT:	DPT: Name DPT RelValue Z DPT ID 202.001 Datatype format U							U ₈ Z ₈	
Field	Field Description				•	Sup.	Range	Unit	Default
RelVa	llue		Relative value			М	0100	%	CS
Status	3							bitset	
- OutOfService			RelValue valid / void				true/false		false
- all other flags			not supported, fixed to '0'						
Comn	nunicatio	n:			•	-	-	•	
DP /	Address:		IO Type(ID):	e(ID): 224 (CZC)			rty ID:	115	
(in t	he serve	r)	Start-Index:	1		N° of	elements	1	
Prop	perty acc	ess:	Read only	\boxtimes	Read/W	'rite			
Prot	ection		Read level			Write	level		
Excep	otion Har	dling:	Value after Powert	up: Stored	Value 🗌	Act V	alue 🗵 🏻 De	fault Valu	e 🔲
Speci	Special Features:								
for sv	vitched pu	ımp 0%=c	off, 100%=on						

4.3 Functional Block: Auxiliary Cooling Demand (CDAUX)

The CDAUX connects an auxiliary "multi-purpose" cold water consumer to the cold water distribution system. The CDAUX can be used to model very specific / "exotic" cold water consumers which do not belong to the category "Cooling Zone Controller" (e.g. cooling of a soie etc.).



4.3.1 Description

The Auxiliary Cooling Demand CDAUX calculates the necessary flow temperature demand TempFlowWaterDemAbsCDAUX in the Cold Water Distribution Segment.

Calculation of the flow temperature demand (and any control loop mechanism for the flow temperature control) is company specific and not part of this specification.

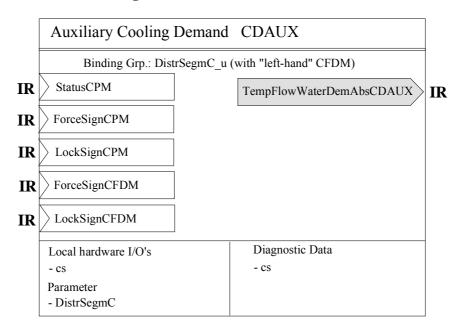
4.3.2 Constraints

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

Therefore for the time being only LTE implementations of the CDAUX functional block offer a link to a <u>demand dependent</u> cold water distribution (CFDM) and cold water production system (CPM).

CDAUX implementations in Standard Mode are currently not meaningful.

4.3.3 Functional Block diagram



4.3.4 Description of Datapoints

Datapoint	Description	Datapoint Type	DPT_ID
Outputs			
TempFlowWaterDem AbsCDAUX	Flow water temperature demand of the CDAUX to be sent to the CFDM	DPT_TempFlowWater DemAbs	210.100
Inputs			
StatusCPM	Production Manager		209.102
ForceSignCPM	Forcing signal from Cold Water Production Manager, to force consumer to consume more energy	DPT_ForceSignCool	21.101
LockSignCPM	Locking signal from Cold Water Production Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
ForceSignCFDM	Forcing signal from Cooling Flow Demand Manager, to force consumer to consume more energy	DPT_ForceSignCool	21.101
LockSignCFDM	Locking signal from Cooling Flow Demand Manager, to force the consumer to reduce energy consumption	DPT_LockSign	207.101
Parameters			
DistrSegmC	LTE zoning number Cold Water Distribution Segment	DPT_UCountValue8_Z	202.002
Diagnostic Data			

			STANDARD MODE	Е ХТЕ М О	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	TempFlowWaterDem AbsCDAUX	NA ¹)	NA	NA	M
Inputs	StatusCPM	NA ¹)	NA	NA	О
	ForceSignCPM	NA ¹)	NA	NA	О
	LockSignCPM	NA ¹)	NA	NA	О
	ForceSignCFDM	NA ¹)	NA	NA	О
	LockSignCFDM	NA ¹)	NA	NA	О

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

Table 16: CDAUX Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DistrSegmC	M

Table 17: CDAUX LTE specific Properties

	Support
Parameter	
Diagnostic Data	

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

4.3.4.1 Output TempFlowWaterDemAbsCDAUX

Standard Mode

Not applicable.

LTE-HEE Mode

FB:	CDAUX	LTE Serv Name:	er Output	TempFlowWat	erDem	AbsCDAUX		Mandatory ⊠ Optional □	
Desc	ription:							1	
		al contains	the calculated t	flow temperature	demar	nd (absolute	value) of	the CD/	UX. It is
sent t	o the CFDI	M in the co	rresponding Co	ld Water Distribu	ution Se	egment.	,		
DPT:	Name	DPT Te	mpFlowWaterD	emAbs D	PT ID	210.100	Datatype f	ormat \	/ ₁₆ B ₁₆
Field	•		Description		Sup.	Range	Unit	COV	Default
Temp	FlowDem		Requested flow	temperature	M	full range	°C	0.5	CS
Attrib					1			1	
– Der	nValid		Validity of Temp	oFlowDemand	М	true/false	bool	Υ	false
- Abs	LoadPriorit		Absolute load p	0	true/false	bool	Υ	false	
- Shif	ftLoadPrior	ity	Shift load priorit	ty	0	true/false	bool	Υ	false
– Max	kTempLimit		TempFlowDem		0	true/false	bool	Υ	false
			temperature lim				l		
– Min	TempLimit		TempFlowDem		0	true/false	bool	Y	false
			temperature lim point limitation)						
– DH\	WReq		Heat demand fr	om DHW, for	NA	false	bool	N	false
_	01.15		DHW only				l		
– Roc	mCtrlReq		Demand from recooling	0	true/false	bool	N	false	
– Ven	ntRea		Demand from v	0	true/false	bool	N	false	
			Demand from a	ŏ	true/false	bool	N	false	
•			cool consumer,	•		ti do/idioo	5001	'`	10100
– Sys	temPumpF			ter circulation in	0	true/false	bool	Υ	false
			the distribution						
			(common chille	d water pump)					
– Ene	ergyDem		Emergency coo	0	true/false	bool	Υ	false	
			plant protection						
	WLegioRed		for DHW only		NA	false	bool	N	false
	municatior								
Bine	ding Grou	p:							
Clas			Туре			Def	ault		
	eographica								
	plication S	pecific 🛚			<u></u> -	1			
	nassigned		Broadcast	Configur					
	Address:		IO Type(ID):	209 (CDA		Property		51	
	-Services		COV 🛛	MinRepTim	ie:	10 sec	Heart		15 min
	oReport	\boxtimes		fault communica	iting _		Group Wilde	card allo	wed 🗌
	TE Read-R		Tx Prio:	High 🗌		Norma	ıl 🛛	Lov	v 🗌
	lling of the			_		_			
	all always I	oe	Transm after I	Powerup: Store	d Value	:	′alue ⊠ ା	Default \	/alue ∐
	pported)								
	perty-Serv		Read only	\boxtimes	Read/	Write	П		
	ividual ac		<u> </u>						
Exce	ption Hand	dling:					Save a	at Power	down
	·								
	ial Feature				- 0 "		T		OFD!!
				rature limit for th	e Cooli	ng Flow De	mand Iran	stormer	CFDM. It
			nit in this hydrau		. Coolin	a Elou Dar	nand Trans	oformer (
,				ature limit for the					JEDIVI. IL

4.3.4.2 Input signal: StatusCPM

Standard Mode

Not applicable.

LTE-HEE Mode

This optional (difference to reference) signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.10.

4.3.4.3 Input signal: ForceSignCPM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.11.

4.3.4.4 Input signal: LockSignCPM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.12.

4.3.4.5 Input signal: ForceSignCFDM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.13.

4.3.4.6 Input signal: LockSignCFDM

Standard Mode

Not applicable.

LTE-HEE Mode

This signal is described in the Functional Block CFDM. For further info please refer to clause 3.2.4.14.

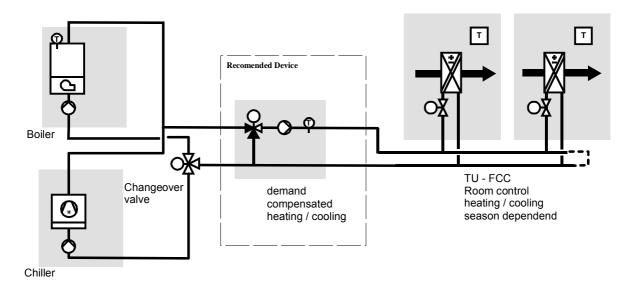
4.3.4.7 Parameter: DistrSegmC

FB:	CDAUX	Proper	ty Name (<u>Server</u>):	D	istrSegmC	;				ndatory 🖂
Dana		<u> </u>		_						optional
	ription:									
			Cold Water Distributi	ion						
DPT:	Name	DPT_U	CountValue8_Z		DPT ID	202.002		atype forma		
Field			Description				Sup.	Range	Unit	Default
Count	terValue		Cold Water Distribi	utio	on Segmen	t	M	131		1
			number							
Status	S								bitset	
- Out	OfService		Zone active /inactive	ve			0	true/false		false
- all o	ther flags		not supported, fixe	d t	:o '0'		NA			
Comn	nand								enum	
- Norr	malWrite						М			
- SetC	OSV & Res	etOSV	Set zone inactive / active				0			
- all o	ther comma	ands	not supported				NA			
Comr	nunicatior	1:	-			-		=	<u>-</u>	<u> </u>
DP	Address:		IO Type(ID):		209 (CDAL	JX)	Prope	rty ID:	101	
(in t	he server)		Start-Index:		1		N° of	elements	1	
Pro	perty acce	ss:	Read only [Read/W	rite	\boxtimes		
Pro	tection		Read level				Write	level		
Exce	ption Hand	lling:	Value after Poweru	ıp:	Stored \	/alue ⊠	Act Va	alue 🔲 D	efault Val	ue 🗌
Special Features:										
CDAL	JX DP's are	e not LTE	E communicating if a	zoi	ne is 'OutO	fService'			•	

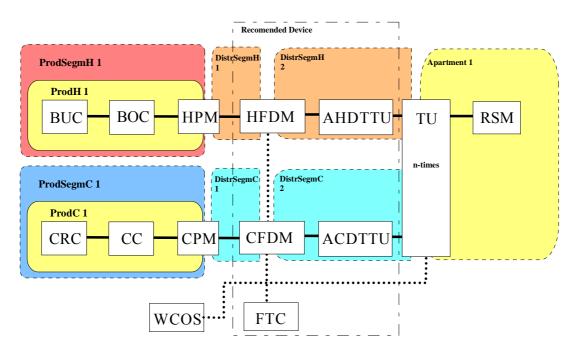
5 Cold / Hot Water Distribution in changeover systems

5.1 Overview

Changeover systems are used to reduce the pipework (installation cost) in the Terminal Unit area. The following schematic diagram shows a simplified example of a 2-pipe changeover system:



The modulation of a changeover system "demand compensated heating / cooling" with KNX Functional Blocks:



The Terminal Unit controllers are sending their demands regardless of the status of the changeover system in their Distribution Segments. The transformers AHDTTU and ACDTTU are collecting all the data and determine a setpoint for the HFDM respective CFDM.

The calculated setpoint of the Flow Temperature Controller is set depending on the changeover sensor input into the HFDM / CFDM.

Flow Temperature Demand signals to the HPM / CPM are only sent if the changeover sensor is set accordingly.