

Application Descriptions

Hot Water Heating

Heat Production

Summary

This document is a part of the HVAC Application Interworking Standard for Hot Water Heating applications. This Chapter describes the Functional Blocks for Heat Production.

Version 01.02.01 is a KNX Approved Standard.

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

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Document updates

Version	Date	Modifications		
0.1	2001.03.22	BKY, document created from HWHFuncBlocV20 => document split-up into multiple chapters All functional block diagrams updated		
		Complete revision of the document: all datapoint descriptions updated		
0.2	2001.07.03	BKY, 32 bit encoding of operating hours, all DPT's updated,		
		Full integration of S-interface in all FB's All diagnostic data and parameters updated in BUC, BOC, HPM Revision of Data-Interface, diagnostic data and parameters of HPM-BST and HPM-BST/BOC		
0.3	2001.07.16	BKY, editorial update, changes are marked release for assessment in TFI		
0.4	2001.10.25	BKY, resolution of TFI & HWH TF comments		
0.5	2001.11.16	BKY, resolution of TFI comments		
0.6	2002.01.07	BKY, wording in chapter 1.3.2 updated; some editorial corrections; rename DPT_StatusFTC -> DPT_StatusWTC; CtrlSignPump: not yet defined; Safety Temperature Limiter function: constraints added in BUC and BOC		
0.7	2002.02.22	BKY, editorial corrections, OpHrsBurner optional implementation in BOC; updated forcing/locking signals according to chapter 7-11-5; TFI approved, KNX Handbook 1.0		
1.0	2002.09.10	BKY, editorial corrections; inclusion of new attribute EmergDem in DPT_TempFlowWaterDemAbs (210.100), TFI approved, updated for KNX Handbook 1.1		
1.1	2004.12.21	BKY, editorial: ProdSegmH parameters: range corrected from 131 to 116 according to LTE Specification Vol 10-1. Range of Heat Production Segments (116) and not supported wildcard addressing feature for Heat Production Segments is now explicitly stated in Introduction chapter 2.1		
1.2	2006.01.09	BKY: inclusion of new attribute DHWLegioReq in DPT_TempFlowWaterDemAbs (210.100)		
1.2	2009.05.29	Update in view of publication in the KNX Specifications v2.0.		
1.2	2009.06.17	Update in view of publication in the KNX Specifications v2.0.		
01.02.01	2013.10.29	Editorial updates for the publication of KNX Specifications 2.1.		

References

[01]	Chapter 3/7/2	"Datapoint Types"
[02]	Chapter 7/10/1	"HVAC Sensor Functional Blocks"
[03]	Chapter 7/10/2	"HVAC HMI Functional Blocks"
[04]	Chapter 7/10/3	"HVAC Actuator Functional Blocks"
[05]	Chapter 7/10/4	"HVAC Common Functional Blocks"
[06]	Chapter 7/10/5	"HVAC Scheduler Functional Blocks"
[07]	Chapter 7/11/4	"Room Heating Control"
[80]	Chapter 7/11/5	"Load Management"
[09]	Part 7/12	"Direct Electric Heating"
[10]	Part 7/13	"Terminal Unit Functional Blocks"
[11]	Part 7/14	"Ventilation, air conditioning and cold water"
[12]	Chapter 7/19/11	"Boiler Controller"
[13]	Part 10/1	"Logical Tag Extended"

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1 Introduction

1.1 Scope

This document is part of the KNX HVAC Application Interworking Standard. It contains the Specification of the Functional Blocks used for HVAC Hot Water Heating (HWH) applications – part Heat Production.

The target market is mainly (European) residential and small commercial buildings.

Functional Blocks specification for applications VAC [11], terminal units (TU) [10] and direct electric heating (DEH) [09] are described in separate documents.

General purpose Functional Blocks used for HVAC applications such as sensors, actuators, MMI and some common HVAC Functional Blocks are described in a separate document (HVAC Specification Functional Blocks, Sensors, MMI, Actuators, Common Controller Functions [02], [03], [04], [05] and [06]).

This document does not describe the general HVAC-HWH application field and application requirements to be covered. It does also not contain the description of typical application examples (scenarios) and application profiles.

1.2 Objectives

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

In addition, this document specifies the specific mechanisms for zoning and runtime process data distribution used in HVAC for an 'easy installation' system (LTE-HEE Mode [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 boiler & heating 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 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 HWH Specification such as data encoding and datapoint-types, object address tables, group address tables etc. are not part of this document.

1.3 Dependence on Configuration Modes

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

The document provides all necessary information needed:

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

1.3.1 Runtime Interworking

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

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

			STANDARD MODE	Ехте	
		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
	Outp2	GO_b	GO	GO	M

- Inp1: is mandatory M in LTE Mode but the information is not available NA in the Basic FB and all other modes because the datapoint type (DPT) is <u>today</u> not available in standard mode and there are no products on the market with this functionality.
- Inp2: is optional O in LTE Mode but the information is not available NA in the Basic FB and all other modes because the DPT is <u>today</u> not available in standard mode and there are no products on the market with this functionality.
- Inp3: is optional O in LTE Mode and an optional Group Object in the Basic FB (GO_b). The datapoint is optionally supported as Group Object in the LTE Standard Mode Interface (GO). For all other modes the implementation is not defined. This is indicated by an empty field.
- Outp1: is mandatory M in LTE Mode and has a structured DPT or a DPT with extended features which is today not available in standard mode. In the Basic FB the information of Outp1 is split up into Outp1-1 and Outp1-2 (separate datapoints with standard DPT).

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

Outp2: is mandatory in all modes

1.3.2 Parameters and Diagnostic Data

LTE implementation:

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

Other modes:

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

 Simple IOT mapping rule: IO Type^{used} = IO Type^{standardDPT} = IO Type^{HVAC-LTE} + 10000d (e.g. BUC^{HVAC-LTE} = 128 => BUC^{standardDPT} = 10128)
 - ⇒ It is allowed to implement in a device both Interface Object Types IO Type^{HVAC-LTE} and IO Type^{standardDPT}. The implementation of parameters and diagnostic data of one given Functional Block shall however be complete. It is thus not allowed to implement part of the datapoints of a Functional Block in IO Type^{standardDPT} and the remaining in IO Type^{HVACLTE}.

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

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

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

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

1.4 Abbreviations

Functional Blocks:

Hot Water Heating (HWH)

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
HDTACT	Heat Demand Transformer Actuator Position
HDTRT	Heat Demand Transformer Room Temperature
HDAUX	Auxiliary Heat Demand
DHWC	Domestic Hot Water Controller
DHWS	Domestic Hot Water Scheduler
DHWCPS	Domestic Hot Water Circulation Pump Scheduler
SDHWC	Solar Domestic Hot Water Controller
DHWSM	Domestic Hot Water Setpoint Manager
DHWCPC	Domestic Hot Water Circulation Pump Controller
UDHWSET	DHW User Settings

Ventilation, Air Conditioning and Cold Water (VAC)

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

Terminal Units (TU) [09]

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, MMI, Actuators - Common Controller Functions [02], [03], [04], [05] and [06]

Abbreviation	Description
CFWTS	Condensor Flow Temperature Sensor
CRNWTS	Condensor Retrun Water Temperature Sensor
DPS	Dew Point Status Sensor
FWTS	Flow Water Temperature Sensor
HVA	HVAC Valve
OAD	Outside Air Damper
ORHS	Outside Relative Humidity Sensor
OAQS	Outside Air Quality Sensor
OTS	Outside Air Temperature Sensor
PRD	Presence Detector
RRHS	Room Relative Humidity Sensor
RAQS	Room Air Quality Sensor
RNARHS	Return Air Relative Humidity Sensor
RNAQS	Return Air Quality Sensor
RNATS	Return Air Temperature Sensor
RNWTS	Return Water Temperature Sensor
RSMHD	Room Setpoint Manager HVAC-Mode Driven
RSMTD	Room Setpoint Manager Temperature Driven
RTS	Room Temperature Sensor
SARHS	Supply Air Relative Humidity Sensor
SAQS	Supply Air Quality Sensor
SATS	Supply Air Temperature Sensor
SIS	Sun Intensity Sensor
SMAQ	Setpoint Manager Air Quality
SMRH	Setpoint Manager relative Humidity
UAQSS	Air Quality Setpoint Setting
URHSS	Air Relative Humidity Setpoint Setting
UHRS	User HVAC Room Setting
UHD	User HVAC Display
WCOS	Water Change over Status Sensor
WOS	Window Switch
WSS	Wind Speed Sensor

General

Abbreviation	Description
cs	Company specific
NA	not allowed / not available
LTE	Logical Tag Extended Mode, see [13] Volume 10, LTE Specification
FB	Functional Block
DPT	Datapoint Type
IO	Interface Object
IR	LTE InfoReport Input / Output
IR/P	LTE InfoReport Input with Polling capability (LTE property client)
W	LTE Write Input / Output

2 Functional Blocks: Heat Production

2.1 Aims and objectives

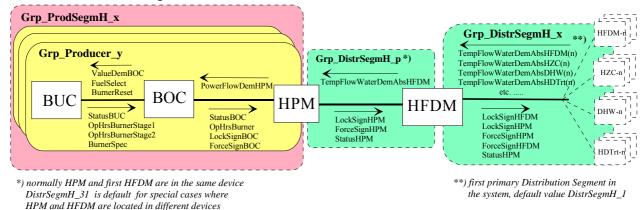


Figure 1 - Heat Production System (simplified)

Remark: the figure gives a rough overview of the main signals to be exchanged between functional blocks in the corresponding binding groups. The indication of signals is not complete.

Functional Blocks: BUC: Burner Controller BOC: Boiler Controller

HPM: Heat Producer Manager HFDM: Heating Flow Demand Manager

Data communication with the heat production in a distributed heating system has mainly 2 targets:

- energy savings due to demand-dependent heat production
- load management / load shedding in case of boiler overload or boiler overheat conditions

The figure shows a Heat Production Segment 'ProdSegmH' containing one or more producers (boiler sequence) which are coordinated by the Heat Producer Manager HPM. In a system with only one boiler the HPM functionality is reduced to a minimum.

Each producer contains a Burner Controller BUC and a Boiler Controller BOC which have a 1:1 relationship. They are often integrated into one device – otherwise BUC and BOC are linked by the group 'Producer'

The Producer Manager receives the resulting overall heat flow demand in the heating system from the "first" Heating Flow Demand Manager HFDM in the primary Heating Distribution Segment. HPM and "first" HFDM have always a 1:1 relationship and are usually located in the same device (and therefore data-flow between HPM and HFDM is normally purely device-internal). DistrSegmentH_31 is default for those special cases where HPM and "first" HFDM are not in the same device.

The HPM controls the Producers according to the current resulting overall heat flow demand by sending the appropriate flow temperature demand or power control information to each Boiler Controller BOC which then controls the Burner Controller BUC accordingly.

For boiler overheat protection or indication of oversupply or spare energy the BOC can send a forcing signal to the HPM. Contrary, locking signals from BOC are used for boiler startup and overload protection. Forcing and locking signals from each BOC are collected in the HPM and the resulting signals are passed by the "first" HFDM to the consumers and HFDM's in the primary heat distribution segment. For further details see [08].

- Forcing and locking signals from the HPM will be transparently routed from the "first" HFDM to the next "right-hand" HFDM and from there to the following Heat Distribution Segments etc. Therefore heat consumers will not have to know "their" 'ProdSegmH'. Since complex nesting of Heat Distribution Segments is rarely used, there is only minimal extra traffic on the bus due to routing of forcing and locking signals by the HFDM's
- HFDM may also generate forcing and locking signals which are distributed independently from forcing / locking information from HPM.

Multiple independent Heat Production Segments (up to 16) are possible for completely independent heating sub-systems. This is a market need because houses with independent heating systems are today often linked by bus for remote management only. This feature is also interesting for DHW schemes with separate boilers for DHW generation or nested heat production systems with buffer storage tanks..

Heat Production Segments are differentiated by different ProdSegmH numbers (1..16). Heat Distribution Segment numbers are not related to the ProdSegmH numbers (flat structure). Therefore each Heat Distribution Segment number must be unique in the system and may not be reused in different Heat Production Segments.

Wildcard addressing for all Heat Production Segments is not supported.

2.2 Functional Block: Burner Controller (BUC)

2.2.1 Functional Specification

The functional block BUC controls the burner (burner on/off, one stage, two stage or modulating) according to the process demand signal and further control information generated by the boiler controller BOC:

- 'ValueDemBOC' The input signal which is received from the BOC contains information

whether the burner should be off or on and additionally the requested relative power of the burner for 2-stage and modulating burner-type.

- 'FuelSelect' With this optional input signal the type of fuel (oil, gas etc.) can be

selected.

- 'BurnerReset' A remote reset of the burner can be executed with this input signal

(optional command). Safety-relevant handling of this signal in the

BUC is company specific.

Burner Controller Outputs:

'StatusBUC' BUC sends its current status information to the BOC (e.g. stage 1,2

active; current % modulation; fault etc.). This feedback is used in the

BOC for optimized boiler control.

'OpHrsBurnerStage1' burner operating hours for stage 1 / base stage

'OpHrsBurnerStage2' burner operating hours for stage 2 / modulation

- 'BurnerSpec' Optionally the burner can provide a specification signal containing

burner type and characteristics.

2.2.2 Constraints

The BUC has a safety relevant functionality and therefore must not rely on bus communication.

Implementation of Safety Temperature Limiter (STL) function (according to EN 60730-2-9): In todays solutions the STL is usually an independent electromechanical thermostat which is redundant and not using the boiler temperature sensor. However in future solutions it is quite possible that fully electronic STL solutions will be implemented. The STL function could either be implemented in the BUC or in the BOC. In both cases redundant safety mechanisms have to be implemented and redundant temperature sensors are needed.

- The BUC is already containing safety relevant functionality and therefore it would be natural to implement the STL also in the BUC ("all in one" safety approbation). However the BUC has today no BoilerTemperature sensor(s) connected which are needed for STL function and which are today connected to the BOC. The BUC would provide the TempBoiler information to the BOC and the BOC would need an additional TempBoiler input
- The BOC has today already a local Boiler Temperature Sensor connected and therefore it would be natural to implement the STL function also in the BOC. But the BOC is today not containing safety relevant functionality. The drawback of this solution is that with the STL function integrated the BOC needs a safety approbation.

The current KNX specification of the BUC and the BOC is not covering STL functionality and the additional signals and mechanisms are not described. If one electronic solution becomes well established on the market, this specification will be updated accordingly.

Burner Controller BUC has a 1:1 relationship with Boiler Controller BOC which are linked in LTE mode by the group 'Producer' in the same Production Segment.

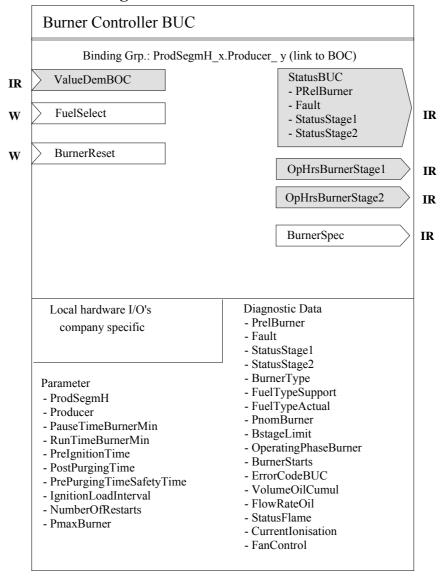
The control of the burner is today often done directly by relays.

IMPORTANT: the input signal ValueDemBOC from BOC 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 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 BUC functional block offer a bus-link to a BOC which controls the BUC by means of the ValueDemBOC signal.

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

2.2.3 Functional block diagram



2.2.4 Datapoint description

2.2.4.1 Overview

Data Point	Description		Datapoint Type	DPT N°
Outputs				
StatusBUC	Status information from BUC to BOC		DPT_StatusBUC	207.100
- PrelBurner	Current relative power of burner, % value (S-interface)	ue	DPT_Percent_U8	5.004
- Fault	burner failure, some error in the BUC (S-interface)		DPT_Bool	1.002
- StatusStage1	status stage 1 / base stage: on/off (S-int	erface)	DPT_Switch	1.001
- StatusStage2	status stage 2 / modulation: on/off (S-in	terface)	DPT_Switch	1.001
OpHrsBurnerStage1	burner operating hours stage 1 / base sta	ige	DPT_LongDeltaTimeSec	13.100
OpHrsBurnerStage2	burner operating hours stage 2 / modula	tion	DPT_LongDeltaTimeSec	13.100
BurnerSpec	Burner type information		DPT_SpecHeatProd	216.100
Inputs				
ValueDemBOC	Process demand signal from BOC		DPT_ValueDemBOC	207.102
FuelSelect	switch between different burner fuel opt	tions	DPT_FuelType	20.100
BurnerReset	Command for burner remote reset		DPT_Reset	1.015
Parameters	r) for remote access: read only			
ProdSegmH	LTE zoning information Heat Production Segment number	on	DPT_UcountValue8_Z	202.002
Producer	LTE zoning information Heat Producer number		DPT_UcountValue8_Z	202.002
PauseTimeBurnerMin	min burner pause time	r)	DPT_TimePeriod100MSec	7.004
RunTimeBurnerMin	min burner run time	r)	DPT_TimePeriod100MSec	7.004
PreIgnitionTime	burner pre-ignition time	r)	DPT_TimePeriod100MSec	7.004
PostPurgingTime	burner post purging time	r)	DPT_TimePeriod100MSec	7.004
PrePurgingTime	burner pre purging time	r)	DPT_TimePeriod100MSec	7.004
SafetyTime	burner safety time	r)	DPT_TimePeriod100MSec	7.004
IgnitionLoadInterval	burner ignition load interval	r)	DPT_TimePeriod100MSec	7.004
NumberOfRestarts	allowed number of burner restarts	r)	DPT_Value_1_Ucount	5.010
PmaxBurner	max. limitation of burner power	r)	DPT_PowerKW_Z	203.014
Diagnostic Data				
PrelBurner	current relative power of burner, % valu	ıe	DPT_RelValue_Z	202.001
Fault	burner failure (some error in the BUC)		DPT_Bool	1.002
StatusStage1	status stage 1 / base stage: on/off	status stage 1 / base stage: on/off		1.001
StatusStage2	status stage 2 / modulation: on/off		DPT_Switch	1.001
BurnerType	type of burner: 1 stage, 2 stage, modulat	ting	DPT_BurnerType	20.101
FuelTypeSupport	supported set of fuel types: gas, oil, soli fuel etc	d state	DPT_FuelTypeSet	21.104
FuelTypeActual	currently used fuel type		DPT_FuelType	20.100

Data Point	Description	Datapoint Type	DPT N°
PnomBurner	nominal power of burner [kW]	DPT_PowerKW_Z	203.14
BstageLimit	relative power limit % of stage 1 / base stage; void for 1stage boiler	DPT_RelValue_Z	202.001
OperatingPhaseBurner	current burner operating phase, numerical value; company specific interpretation	DPT_Value_1_Ucount	5.010
BurnerStarts	number of burner starts	DPT_Value_4_Ucount	12.001
ErrorCodeBUC	company specific numeric error code	DPT_Value_2_Ucount	7.001
VolumeOilCumul	cumulated oil volume in liter / in m³ (standard mode)	DPT_VolumeLiter_Z	218.001
FlowRateOil	current oil flow rate in liter/h	DPT_UflowRateLiter/h_Z	203.011
StatusFlame	burner flame status on/off	DPT_Switch	1.001
CurrentIonisation	ionisation current value μA	DPT_UelCurrentµA_Z	203.013
FanControl	relative fan control value %	DPT_RelValue_Z	202.001

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

			STANDARD MODE	EXTENDEI MODE				
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode			
Inputs	ValueDemBOC	NA 1)	NA	NA	M			
	FuelSelect	NA	NA	NA	О			
	BurnerReset	(GO _b)		(GO)	О			
Outputs	StatusBUC	NA	NA	NA	M			
	- PrelBurner	$GO_b^{\ 3)}$	GO 3)	GO 3)	NA			
	- Fault	GO _b	GO	GO	NA			
	- StatusStage1	GO _b	GO	GO	NA			
	- StatusStage2	$GO_b^{\ 2)}$	GO ²⁾	GO ²⁾	NA			
	OpHrsBurnerStage1	GO_b	GO	GO	M			
	OpHrsBurnerStage2	$GO_b^{2)}$	GO ²⁾	GO ²⁾	M 2)			
	BurnerSpec	NA	NA	NA	О			

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

Table 1: BUC Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	ProdSegmH	M
	Producer	M

Table 2: BUC LTE specific Properties

²⁾ not available on 1-stage burner

³⁾ not available on 1-stage burner, optional for 2-stage burner, mandatory for modulating burner

		Support
Parameter	PauseTimeBurnerMin	О
	RunTimeBurnerMin	О
	PreIgnitionTime	О
	PostPurgingTime	О
	PrePurgingTime	О
	SafetyTime	О
	IgnitionLoadInterval	О
	NumberOfRestarts	О
	PmaxBurner	О
Diagnostic Data	PrelBurner	О
	Fault	M
	StatusStage1	О
	StatusStage2	О
	BurnerType	О
	FuelTypeSupport	О
	FuelTypeActual	О
	PnomBurner	О
	BstageLimit	О
	OperatingPhaseBurner	О
	BurnerStarts	О
	ErrorCodeBUC	О
	VolumeOilCumul	О
	FlowRateOil	О
	StatusFlame	О
	CurrentIonisation	О
	FanControl	О

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

2.2.4.2 Output StatusBUC

Standard mode: NA => mapped to PrelBurner, Fault, StatusStage1 & 2

LTE-HEE mode:

FB:	BUC	LTE Serv	ver Output Name:	StatusBUC						datory ⊠ otional □
Desci	ription:									<u> </u>
	utput pro	cess signa	al contains status inf	formation of t	he burn	er to	be used	in the BC	C for bo	oiler
DPT:	Name	DPT St	atusBUC	DPT ID	207.10	0 [Datatype	format	U ₈ B ₈	
Field	INAITIC	101 1_00	Description	טו ווט	Sup.	Ran		Unit	COV	Default
PrelB	ırner		current relative pow	ver	M 1)	0 10	90 00%	%	10	CS *)
Attribu			Bitset containing st				0070		} <u>'-</u> Y	
									Υ	false
 StatusStage1 stage 1 / base stage active M on/off bool Y 									Ϋ́	off
	usStage2		stage 2 / modulatio		$M^{2)}$		on/off bool			off
								bool	Υ	false *)
Comr	nunicatio	n:	•		•				•	
Bind	ding Grou	ıp:								
Clas		•	Туре				Defau	ılt		
Ge	ographica	al 🗌								
Ap	plication S	Specific	ProdSegmH.Prod	lucer			1.1			
Un	assigned		Broadcast	Configura	able 🔲					
DP A	Address:		IO Type(ID):	128 (BUC))	Pro	perty ID): 5	51	
	-Services		COV 🛛	MinRepTim	e:		sec	Heart		3 min
Inf	oReport	\boxtimes	Output per defaul	t communica	ting 🗌			oup Wildc	ard allov	wed 🗌
			Tx Prio:	High 🗌		١	Normal 🛭	\leq	Low	
	ΓΕ Read-F									
	lling of the		Transm after Pow	erun: Stored	d Value	П	Act Valu	ie 🕅 D	efault V	alue 🗍
	all always	be	Transmatter ou	rorup. Otoroc	ı valac	ш	7 tot van		ordan v	
	pported)									
(ind	oerty-Ser ividual ad	ccess):	Read only	\leq	Read/V	Vrite				
Excep	otion Han	dling:						Save a	t Power	down
	al Featur									
BUC a	and BOC	are usuall	y located in the sam	ne device. In	thic cas	e this	s signal o	can be de	vice inte	rnal.
'' - ma	andatory f	or modula	iting burner;							
			burner => PrelBurn							
			I may contain in this				0/ 1			
		stage burr	ner: some 2 stage Bl	uc may be a	ble to ir	ndicat	e % valu	ie it only s	stage 1	is on. But
this	-	64 .	hin finlal in aution -1 f			المالية	!! .	!:	ID	\
	optional 1	ieature: I	his field is optional f	or ∠ stage bu	ırner =>	valid	iity accoi	uing to P	eiburne	er valid
flag	andatory f	or 2 stage	/ modulation burne	r only: not av	ailahle i	n 1 e	tage hur	ner => de	fault val	ا مالا
1110	andatory I	UI Z SIAUE		i oiliy, Hotav	anabit l	பட	Lage Dul	ue	iauit val	uc

2.2.4.3 Output PrelBurner

Standard mode

DP Name:	Pre	IBurner	•		Abbr.:				Ma	andat	tory 1)	\boxtimes	1
FB Name:	BU	С							Ca	an be	intern	al 🗵	1
Description													
Current relati	ve po	ower of	the bu	ırner									
Datapoint Ty	ре												
DPT_Name:	DI	PT_Per	cent_l	J8									
DPT Format:	U	3						DPT_ID:	5.0	004			
Field	De	escripti	on					Supp.	Rang	е	Unit	Default	
									0100	0%	%	0%	
Access Type)												
◆ Output													
this \rightarrow M			ti	his \rightarrow 1	\boxtimes								
Spontane	ous	\boxtimes	COV:		Δ-Value:	10%	Min	RepTime:	:		10s		
			Cyclic	; 🛛	Period:	3 Min							
Request		\square											
Communica	tion	Туре											
♦ Group Ol	oject	Datapo	int						Mand	latory	<i>r</i> : 🖂	1)	
Default Gr	oup	Addres	s: -	-									
Dynamics													
Power dov	vn:	Save:											
Power up:		Value	:	No initialisa	tion:		Defau	ılt value:					
				Saved value	e:		Actua	ıl value (n	ot for i	nput)	:		
		Trans	mit on	bus (only fo	r output):		Read	from bus	(only f	for in	put):		
Exception H	andli	ing											
Special Feat													
1) not availabl	e on	1-stage	e burne	er, optional f	or 2-stage	burner,	manda	atory for r	modula	iting b	ourner		

2.2.4.4 Output OpHrsBurnerStage1

Standard mode

DP Name:	OpHrsBurnerStag	ge1 /	Abbr.:				Manda	itory		\boxtimes
FB Name:	BUC						Can be	e interna	al	\boxtimes
Description										
	r operating hours f	for stage 1 / b	oase stag	je						
Datapoint Ty										
DPT_Name:	DPT_LongDelta	TimeSec								
DPT Format:	V ₃₂					DPT_ID:	13.100)		
Field	Description					Supp.	Range	Unit	Defau	ult
							>=0 1)	h	0	
Access Type										
♦ Output										
this \rightarrow M			\boxtimes							
Spontaneo	us 🛛 COV:		Δ-Value:		Minl	RepTime:				
	Cyclic	X I	Period:	1 h						
Request										
Communicat	ion Type									
	ject Datapoint						Mandator	y: 🛛		
	oup Address:	•								
Dynamics										
Power dov	n: Save:	\boxtimes								
Power up:	Value:	No initialisation	on:			ılt value:				
		Saved value:					ot for input	_		
		bus (only for o	output):		Read	from bus	(only for in	iput):		
Exception Ha	ındling									
Special Feat										
	on 32 bit signed int									of
	l resolution may b	e higher. Use	ed range:	0~68	years =	=> in prac	tise no bin	ary ove	rflow	
possible										

LTE-HEE mode:

FB:	BUC	LTE Serv	er Output Name:	Output Name: OpHrsBurnerStage1									
	iption:												
This c	utput pro	cess signa	al contains the cur	rent burner ope	erating h	nours t	for stag	e 1 / base	stage				
DPT:	Name	DPT_Lo	ngDeltaTimeSec	DPT ID	13.100	D	atatype	format	V_{32}				
Field			Description		Sup.	Rang	e	Unit	COV	Default			
						>=0	1)	h		CS			
Comr	nunicatio	n:			_	-		=	-				
Bind	ding Grou	лр:											
Clas	S		Туре				Defau	ult					
Ge	ographic	al 🔲											
Ap	plication	Specific $oxtime X$	ProdSegmH.Pro	oducer			1.1						
Un	assigned		Broadcast	Configura	able 🗌								
	Address:		IO Type(ID):	128 (BUC)		Prop	perty ID): 5	55				
		s (event):	COV Mi	inRepTime:		Se	ec	Heart	beat:	15 min			
Inf	oReport	\boxtimes	Output per defa	ult communica	ting 🔲			oup Wildc	ard allov	ved 🗌			
			Tx Prio:	High 🗌		N	ormal 🛭	\boxtimes	Low				
po sha	FE Read-liling of the all always oported)		Transm after Po	owerup: Stored	l Value	× 1	Act Val	ue 🗌 D	efault Va	alue 🗌			
	perty-Ser		Read only	\boxtimes	Read/V	Vrite							
Excep	otion Har	ndling:						Save a	t Power	down⊠			
Speci	al Featur	es:											
1) en the	coding on	32 bit sig	y located in the sa ned integer value may be higher. Us	with 1 second	<u>transpo</u>	rt form	<u>at</u> resc	lution. Th	e granul	arity of			

2.2.4.5 Output OpHrsBurnerStage2

Standard mode

DF	Name:	OpHrs	Burr	nerSta	ige2		Abbr.	: -						Manda	atory 2)		\boxtimes
FB	Name:	BUC												Can be	e intern	al	\boxtimes
De	scription																
Cu	irrent burner	r opera	ating	hours	for sta	age 2	/ modu	latior	า								
Da	tapoint Typ	ре															
DF	PT_Name:	DPT	Lon	gDelt	aTime:	Sec											
DF	PT Format:	V_{32}										DPT_ID:		13.100)		
Fie	eld	Desc	cription	on								Supp.	Rai	nge	Unit	Defa	ult
													>=() 1)	h	C)
Ac	cess Type																
♦	Output																
	$\text{this} \to M$			t	his →	1	\square										
	Spontaneo	us	\boxtimes	COV:	:		Δ-Va	lue:			Min	RepTime:					
				Cyclic	C	\boxtimes	Perio	d:	1 h								
	Request		\boxtimes														
Co	mmunicati	on Typ	ре														
♦	Group Obj	ject Da	tapo	int									Ма	ndator	y: 🛛 🖂	(2)	
	Default Gro	oup Ad	dres	s: -	-												
Dy	namics																
	Power dow	n: S	ave:														
	Power up:	V	alue		No in	itialisa	ation:			D	efau	ılt value:					
						d valu		\boxtimes		Α	ctua	l value (n	ot fo	r input	():		
		Tı	ransı	mit on	bus (d	only fo	or outpu	ıt):		R	ead	from bus	(onl	y for in	iput):		
Ex	ception Ha	ndling	1														
	ecial Featu																
1)	encoding o																of
	the interna	l resolu	ution	may	be higl	ner. U	sed rar	nge: (0~68	3 ye	ars =	=> in prac	tise	no bin	ary ove	rflow	
2)	possible	_															
۷)	mandatory	for 2 s	stage	/ mod	dulatio	n burr	ner only	/; not	t avail	able	e in 1	1 stage bu	ırne	r			

LTE-HEE mode:

FB:	BUC	LTE Serv	er Output Nam		Mandatory \boxtimes^{2} Optional \square						
Desc	ription:			-						i Ot	nioriai 🔝
	•	cess signa	al contains the c	urrent	t burner op	erating I	nours	for stag	je 2 / mod	dulation	
DPT:	Name		ngDeltaTimeSe		DPT ID	13.100			format		
Field			Description			Sup.	Rang	ge	Unit	COV	Default
							>=0	1)	h		cs
	nunicatio										
	ding Groւ	ıp:	T					T			
Clas			Туре					Defau	ult		
	ographica										
		Specific		rodu		· -		1.1			
	assigned		Broadcast		Configur					=-	
	Address:	<i>1</i> (1)	IO Type(ID):		128 (BUC			perty ID		56	45 .
		s (event):	cov 🗆		<u>MinRepTim</u>			sec	Hear	tbeat:	15 min
Int	oReport		Output per de	tault (communica	iting	Bin	ding Gro	oup Wildo	ard allow	ved 🗌
		Response	Tx Prio:		High 🗌		N	Iormal 🏻	\boxtimes	Low	
sh	lling of the all always		Transm after I	⊃owe	rup: Store	d Value	\boxtimes	Act Val	ue 🔲 🏻 🖸	efault Va	alue 🗌
	pported)										
	oerty-Ser ividual ad		Read only	\boxtimes		Read/V	Vrite				
Exce	otion Han	ıdling:							Save a	at Power	down⊠
	al Featur										
1) en	SUC and BOC are usually located in the same device. In thic case this signal can be device internal. encoding on 32 bit signed integer value with 1 second <u>transport format</u> resolution. The granularity of the internal resolution may be higher. Used range: 0~68 years => in practise no binary overflow possible										
		or 2 stage	/ modulation bu	rner o	only; not av	ailable i	n 1 st	age bur	ner		

2.2.4.6 Output Fault

Standard mode

DP Name:	Fault	Abbr.:			Manda	tory	
FB Name:	BUC				Can be	interna	al
Description							
reports a burn	er failure						
Datapoint Ty							
DPT_Name:	DPT_Bool						
DPT Format:	B ₁			DPT_ID:			
Field	Description			Supp.	Range	Unit	Default
							false
Access Type							
♦ Output							
this \rightarrow M	⊠ ¹) this	\rightarrow 1					
Spontaneo	us 🛛 COV:	Δ-Value:		MinRepTime:		10s	
	Cyclic	Period:	15 Min				
Request	\square						
Communicati	ion Type						
♦ Group Ob	ject Datapoint				Mandatory	/: \[\]	
Default Gro	oup Address:						
Dynamics							
Power dow	n: Save:						
Power up:	Value: No	o initialisation:	D	efault value:		\boxtimes	
	Sa	aved value:	A	ctual value (n	ot for input)): 📗	
		is (only for output):	R	Read from bus	(only for in	put):	
Exception Ha	ındling						
1							
Special Featu							
1) this datapoir	nt is also interesting	for visualisation and	not only i	use <mark>d in the B</mark> 0	OC		<u> </u>

2.2.4.7 Output StatusStage1

Standard mode

DP Name:	St	atusStage	e1		Abbr.:				Manda	tory	\boxtimes
FB Name:	BU	JC							Can be	e interna	al 🛛
Description											
status burne	r sta	ge 1 / bas	se sta	ge: on/off							
Datapoint T											
DPT_Name:		OPT_Swite	ch								
DPT Format		31						DPT_ID:	1.001		
Field		Description	n					Supp.	Range	Unit	Default
											off
Access Typ	е										
◆ Output											
$this \to M$				nis → 1	\boxtimes						
Spontane	ous		COV:		Δ-Value:		Minl	RepTime:		10s	
			Cyclic		Period:	3 Min					
Request											
Communica	tion	Туре									
		t Datapoir							Mandator	y: 🛛	
Default G	roup	Address:	:	-							
Dynamics											
Power do	wn:	Save:									
Power up):	Value:		No initialisa	ation:			ılt value:			
				Saved valu					ot for input		
			nit on	bus (only fo	or output):		Read	from bus	(only for in	put):	
Exception H	land	lling									
Special Fea	ture	S									

2.2.4.8 Output StatusStage2

Standard mode

DP Name:	Sta	atusStage2		Abbr.:				Manda	tory ²⁾	
FB Name:	BL	JC						Can be	interna	al 🛛
Description										
status burner	sta	ge 1 / base s	tage: on/off							
Datapoint Ty	/ре									
DPT_Name:		OPT_Switch								
DPT Format:	E	3 ₁					DPT_ID:	1.001		
Field		Description					Supp.	Range	Unit	Default
										off
Access Type)									
♦ Output										
this \rightarrow M			this \rightarrow 1	\boxtimes						
Spontane	ous	⊠ CO\	′ :	Δ-Value:		Min	RepTime:		10s	
		Cycl	ic 🛛	Period:	3 Min					
Request		\square								
Communica	tion	Туре								
♦ Group O	ojec	t Datapoint						Mandatory	<i>r</i> : 🛛	2)
Default G	oup	Address:								
Dynamics										
Power do	wn:	Save:								
Power up		Value:	No initialisa	tion:		Defau	ılt value:			
			Saved value	e:		Actua	l value (n	ot for input)):	
		Transmit o	n bus (only fo	r output):		Read	from bus	(only for in	put):	
Exception H	and	lling								
-										
Special Feat										
2) not availab	le oi	n 1-stage bur	ner						-	

2.2.4.9 Output BurnerSpec

Standard mode

Not applicable

LTE-HEE mode:

FB: BU	С	LTE Serv	er Output Name:	BurnerSpec	;					datory [
Description	on.									Aloria:
This datap BoilerCon	oint s troller	in order to	ne type and charact o allow specific boil ng runtime. Change	er control me	chanisn	ns. The	e value			
	lame		ecHeatProd	DPT ID	216.10			format	U ₁₆ U ₈ N ₈	B_8
Field			Description		Sup.	Range	Э	Unit	COV	Default
Pnom			Burner nominal pov	wer	M	0 65		kW	1	cs
BstageLim	nit 		relative power limit 1 resp. base stage	% of stage	M 1)	0100)%	%	10	cs
BurnerTyp	e		1 stage, 2 stage, metc.	nodulating	M	[13]		enum.	Y	CS
FuelType			set of supported fu	iel types	М	b2b0)	bitset	Υ	cs
Communi										
Binding	Grou	ıp:								
Class			Туре				Defau	ult		
Geogra				,						
		Specific⊠			-,		1.1			
Unassi			Broadcast	Configura			L			
DP Addi			IO Type(ID):	128 (BUC)			erty ID		52	
		(event):	COV 🖂	MinRepTim		8	sec	Неа	rtbeat:	min
InfoRe			Output per defau		ting			-	lcard allov	_
		Response	Tx Prio:	High 🗌		No	rmal 🏻	\leq	Low	
shall al suppor	ways ted)		Transm after Pov	verup: Stored	l Value	A	ct Val	ue 🛚	Default Va	alue 🗌
Property (individu			Read only	\boxtimes	Read/V	Vrite				
Exception	n Han	dling:	-					Save	at Power	down
Special F										
			y located in the san							
			y a constant value a							
			so change during ru	ıntime. In this	case s	oontan	eous ti	ransmiss	sion (COV) of the
			ted (no heartbeat).							
''dummy v	value	tor 1 stag	e burner: 100%							

2.2.4.10 Input ValueDemBOC

Standard mode: NA **LTE-HEE mode:**

FB:	BUC	LTE Clien	t Input Name:	nput Name: ValueDemBOC Ma								
Desc	ription:											
This i	nput signa	I contains t	he current burne	er co	ntrol info	mation from	om	the BOC.	It is use	d to contr	ol the	
			f one burner									
DPT:	Name	DPT_Valu	ueDemBOC		DPT ID	207.102	2	Datatype	format	U ₈ B ₈		
Field			Description						Sup.	Unit	Default	
RelBu	ırnerDem		Relative deman	id %	: for mod	ulating bu	rne	r only	M 1)	%	cs	
Attributes Bitset containing control info								•				
 Stage1Control controls operation of stage 1 or base stag 						е	М	bool	cs			
									2)	on/off		
- Sta	 Stage2Control controls stage 2 for two stage / modulating burne 								M ²⁾	bool	CS	
										on/off	L	
	municatio											
	Binding Group:											
Clas		. –	Туре				De	efault				
	eographic					·						
	~	Specific	ProdSegmH.Pr				1.1	<u> </u>			·	
	nassigned		Broadcast [Configura		Ļ			F 0		
	Address:	, A	IO Type(ID):		129 (BO	,	Р	roperty ID	:	53		
	-Service		InfoReport Snit	iter	on Bindin		N 4 ·	-	_			
	oReport	(Win)	Timeout:				Mi	n				
	-Service		Read Wildcard	/ Re	sp Sniffer	on Bindi	ng (Group: -	_			
	ead – Res		Defe	14 \ /	· /-l					24	lua 🗆	
	after Pov	•	Deta	uit v	′alue ⊠					Stored Va		
	ption Han				Cl - Cl					werdown		
			se a company s						or in cas	e of		
			o data from BOC						!		41 ₀ -	
	Current burner stage / modulation grade is also depending on safety related mechanisms within the urner controller											
	pecial Features:											
_			1.1 limb with DO	C)								
			1:1 link with BO									
			s:see table below		tod by 1 a	taga ar 2	oto	ao hurnor				
	nandatory for modulating burner, not supported by 1 stage or 2 stage burner nandatory for modulating burner or 2 stage burner, not supported by 1 stage burner											
IIIai	iuatory 101	modulatifi	y builler of 2 Sta	ye L	Juillet, IIC	i support	cu i	by I stage	buillel			

Burner type	BurnerMode	Stage 1 control	Stage 2 control	RelBurner Dem
1 Stage	off	0	X	X
	on	1	X	X
2 Stage	off	0	X	X
	Stage 1 on Stage 2 off	1	0	X
	Stage 2 on	1	1	X
Modulating	off	0	X	x
	Base Stage on Modulation disabled	1	0	X
	Base Stage on Modulation enabled	1	1	%

0 = off; 1 = on; x = don't care

Table 4: Burner type dependent BUC Control

2.2.4.11 Input FuelSelect

Standard mode: NA **LTE-HEE mode:**

FB:	BUC	LTE Serve	r Input Name:	FuelSelect						latory 🗌 tional 🔯
Desci	ription:									
		s to switch	between differen	nt fuel options	s and cont	ains	the type	of fuel to	be used	by the
BUC.	This infor	mation may	be written by the	e BoilerCont	roller.					•
DPT:	Name	DPT_Fue	ІТуре	DPT ID	20.100		Datatype	format	N ₈	
Field			Description					Sup.	Unit	Default
FuelS	elect		see above					M	enum	CS
Comr	nunicatio	n:								
Bind	ding Grou	ıp:								
Clas	ss		Туре			Def	fault			
Ge	eographic	al 🔲				L				
Ap	plication	Specific⊠	ProdSegmH.Pro	oducer		1.1				
Un	assigned		Broadcast	Configur	able 🔲					
DP /	Address:		IO Type(ID):	128 (BU	C)	Pr	operty ID:		53	
LTE Wr	-Service rite	(event):	Timeout:		2)	Mir	1			
	perty-Ser ividual ad		Read only		Read/V	Vrite				
Value	after Po	werup: 1)	Defau	ult Value ⊠				5	Stored Val	lue 🛚
Excep	otion Han	dling:					Sa	ve at Po	werdown	1)
1) The	burner co	ontroller will	use a company	specific defa	ult value o	or sto	ored value	e after p	ower-up (company
spec	cific behav	/ior)								
²⁾ This	s signal ha	as no hearth	eat => last value	e from BOC i	s kept unt	il ne	xt update	or defau	ult after po	ower-up
	al Featur									
This in	nout can b	e internal (1:1 link with BOO	2)						

2.2.4.12 Input BurnerReset

Standard Mode:

DP	Name: I	BurnerReset		Abbr.:		Mar	ndatory	
FB	Name:	BUC				Car	n be internal	
	cription							
see	LTE-HEE	Mode						
Dat	apoint Typ	e						
	Γ_Name:	DPT_Reset						
DP	Γ Format:	B ₁			DPT_	ID: 01.0)15 <u> </u>	
Fiel	d	Description			Sup	p. Rang	je Unit	Default
						{0,1}	1) bool	0
Acc	ess Type							
•	Input							
1	$N \rightarrow this$		$1 \rightarrow \text{this}$					
3	Spontaneou	ıs 🛛	Cyclically:		Ti	me-out:		
F	Request		Polling:		Pe	eriod:		
Cor	nmunication	on Type						
*	Group Obj	ect Datapoint				Manda	itory: 🛛	
]	Default Gro	up Address: -						
Dyr	namics							
F	Power down	n: Save:						
F	Power up:	Value:	No initialisation:] [efault valu	e:		
			Saved value:					
				R	Read from b	ous:		
Exc	eption Hai	ndling						
1								
	cial Featu							
1) TI	nis is a tran	sient "trigger" co	mmand, which may al	so be exec	cuted using	individual	addressing.	The
	datapoint v		t. Value = 0 ('no action					
	receiver!							

LTE-HEE mode:

FB:	BUC	LTE Serve	er Input Name:	Burne	erReset						latory ☐ tional ⊠
Desc	ription:		-							÷	
	optional da		ows remote reset t	the bu	urner. Th	nis inform	natio	on may be	written	by the Bo	iler
DPT:	Name		et	D	PT ID	01.015		Datatype	format	B ₈	
Field	I	_	Description						Sup.	Unit	Default
Burne	erReset		0 = no action / 1	= Re	eset com	mand ("t	rigg	jer")	M	boolean	0
Communication:									<u>-</u>		
Bine	Binding Group:										
Class Type Default											
Ge	eographic	al 🔲									
Ap	plication	Specific⊠	ProdSegmH.Producer 1.1								
	nassigned		Broadcast Configurable								
	Address:		IO Type(ID):	12	28 (BUC)	Pr	operty ID	54		
	:-Service rite	(event): ⊠	Timeout:			2)	Mir	า			
	perty-Ser ividual a		Read only			Read/W	/rite		1)		
Value	after Po	werup: 1)	Defau	It Valu	ue 🗵				,	Stored Val	lue 🗌
Exce	ption Har	dling:						Sa	ve at Po	werdown	
Impor	tant: Rem	ote reset o	f the burner may b	be sat	fety-rele	vant. Thi	s m	ust be ha	ndled by	the BUC	(e.g.
"perm BUC)		nding of Bu	rnerReset by a fa	ulty E	3OC mu	st not lea	id to	safety ci	ritical be	havior in t	he
Speci	ial Featur	es:									
								ividual ad	dressing	g. Read ac	ccess to
	This is a transient command, which may also be executed using individual addressing. Read access to see datapoint is not useful and will have the resulting data value '0'. The artheat repetition of this signal is not allowed => no receiver timeout										

2.2.4.13 Parameter ProdSegmH

FB:	BUC	Prope	rty l	Name (<u>Server</u>):	Р	rodSegml	1						datory 🛚
Desc	ription:				_							<u></u>	Ziloriai 🔲
	•	rmatio	n He	eat Production Sec	gm	ent							
DPT:	Name			ountValue8 Z		DPT ID	202.002	D	ataty	pe forma	t U ₈ Z	8	
Field				Description		-		Sup		ange	Unit		Default
Coun	terValue		ŀ	Heat Production S	egi	ment numb	per	M	_	.16			1
Statu	 S										bitse	t	
- Out	- OutOfService zone active /inac							Ο	tru	ıe/false			false
- all other flags not supported, fix					d t	:o '0'		NA					
Comr										enur	n		
- Norr	malWrite							M					
- Set0	DSV & Re	setOS\	/ 5	set zone inactive / active				Ο					
- all o	ther comr	nands	r	not supported				NA					
Comi	nunicatio	n:	-						-		_		
DP	Address:			IO Type(ID):		128 (BUC)	Pro	perty	ID:	101		
(in t	he serve	r)		Start-Index:		1		N° c	of ele	ments	1		
Pro	perty acc	ess:		Read only			Read/W	rite		\boxtimes			
Pro	tection			Read level				Writ	e lev	el			
Exce	ption Har	ndling:	\	/alue after Poweri	up:	Stored	Value 🛚	Act	Value	e 🔲 D	efault '	Valu	e 🗌
Spec	ial Featur	es:											
BUC	DP's are ı	not LTE	cor	nmunicating if zor	ne i	is 'OutOfSe	ervice'. If	Prod	Segn	nH is 'Οι	ıtOfSer	vice	also the
corres	spoinding	Produc	er z	one is 'OutOfServ	rice	e' (commo	n flag)						

2.2.4.14 Parameter Producer

FB:	BUC	Property	/ N	lame (<u>Server</u>):	P	roducer							datory 🖂
_												<u> </u>	tional 🗌
	ription:												
LTE z	oning info	ormation F	le	at Producer numb	er								
DPT:	Name	DPT_U	cou	untValue8_Z		DPT ID	202.002			atype forma		U_8Z_8	
Field			D	escription				Sı	up.	Range	Į	Jnit	Default
Count	terValue		Р	roducer-number					M	131	-	-	1
Status											t	oitset	
- Out	OfService		zone active /inactive						0	true/false			false
- all other flags			not supported, fixed to '0'						١A				
Comn	nand										E	enum	
- Norr	nalWrite								M				
- SetC	OSV & Re	setOSV	set zone inactive / active					(0				
- all o	ther comr	nands	not supported					Ν	١A				
Comr	nunicatio	n:							•		<u>-</u>		
DP A	Address:			IO Type(ID):		128 (BUC))	Pr	rope	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	;	\boxtimes			
Prof	tection			Read level				W	rite	level	-	-	
Exce	otion Har	ndling:	٧	alue after Poweru	ıp:	Stored \	∕alue ⊠	A	ct Va	alue 🔲 🏻 🗈	Defa	ault Value	e 🗌
	ial Featu												
BUC	DP's are	not LTE co	om	municating if zon	e i	s 'OutOfSe	ervice'. If	Pro	odSe	egmH is 'O	utO	fService'	also the
corres	spoinding	Producer	Z	one is 'OutOfServi	ice	' (commor	n flag)						

2.2.4.15 Parameter PauseTimeBurnerMin

FB:	BUC	Property	Name (<u>Server</u>):	Pau	seTime	BurnerN	lin		IV	landatory ☐ Optional ⊠
Desci	ription:								<u>-</u>	
Min. b	ourner pau	ıse timewit	th 100ms resolut							
DPT:	Name	DPT_Tim	nePeriod100MSec	D	PT ID	7.004	Dat	atype format	U ₁₆	
Field			Description				Sup.	Range	Unit	Default
								06553.5 s	S	cs
Comr	nunicatio	n:					-		-	•
DP /	Address:		IO Type(ID):	12	28 (BUC	;)	Prope	rty ID:	129	
(in t	he serve	r)	Start-Index:	1			N° of	elements	1	
Pro	perty acc	ess:	Read only	\leq		Read/W	rite/			
Prot	tection		Read level				Write	level		
Excep	otion Har	dling:	Value after Poweru	ıp:	Stored	Value 🛚	Act Va	alue 🔲 De	fault V	alue 🗌
Speci	ial Featur	es:								
safety	critical p	arameter, r	read-only via bus							

2.2.4.16 Parameter RunTimeBurnerMin

FB:	BUC	Property	Name (<u>Server</u>):	Rı	unTimeB	BurnerMin					ndatory 🗌 Optional 🖂
Desci	ription:	-		_						-	
Min b	urner run	time with 1	00ms resolution								
DPT:	Name	DPT_Tin	nePeriod100MSec		DPT ID	7.004	Dat	atyp	e format	U ₁₆	
Field			Description				Sup.	Ran	ige	Unit	Default
								06	553.5 s	s	cs
Comr	nunicatio	n:				=				-	9
DP A	Address:		IO Type(ID):		128 (BUC	C)	Prope			130	
(in t	he serve	r)	Start-Index:		1		N° of	elem	ents	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite]		
Prot	tection		Read level				Write	level			
Exce	otion Han	dling:	Value after Poweru	ıp:	Stored	l Value ⊠	Act Va	alue	□ De	fault Val	ue 🗌
Speci	ial Featur	es:			-		-			_	_
safety	critical pa	arameter, ı	ead-only via bus						•		

2.2.4.17 Parameter PreIgnitionTime

FB: BUC Proper	ty Name (<u>Server</u>):	PreIgnitionTime				datory 🗌 otional 🖂
Description:					•	
Burner pre-ignition time	with 100ms resolution	n				
DPT : Name DPT_	TimePeriod100MSec	DPT ID 7.004	Data	atype format	U ₁₆	
Field	Description		Sup.	Range	Unit	Default
				06553.5 s	S	CS
Communication:	•		-		•	
DP Address:	IO Type(ID):	128 (BUC)	Proper	rty ID:	131	
(in the server)	Start-Index:	1	N° of e	elements	1	
Property access:	Read only	⊠ Read/W	/rite			
Protection	Read level		Write I	evel		
Exception Handling:	Value after Poweru	ıp: Stored Value 🛛	Act Va	alue 🔲 🏻 De	fault Value	e 🗌
Special Features:						
safety critical paramete	r, read-only via bus		•			

2.2.4.18 Parameter PostPurgingTime

FB:	BUC	Property	Name (<u>Server</u>):	Po	ostPurgin	gTime						datory ☐ tional ⊠
Descr	ription:									-		
Burne	r post pur	ging time	with 100ms resoluti	ion								
DPT:	Name	DPT_Tin	nePeriod100MSec		DPT ID	7.004	Data	atyp	e format	U ₁₆		
Field			Description				Sup.	Ra	nge	Unit		Default
								00	3553.5 s	s		CS
Communication:												
DP /	Address:		IO Type(ID):		128 (BUC)	Prope	rty l	D:	132		
(in t	he serve	r)	Start-Index:		1		N° of e	eler	nents	1		
Prop	perty acc	ess:	Read only	\boxtimes		Read/Wi	rite					
Prot	ection		Read level				Write	leve	el			
Excep	otion Han	dling:	Value after Poweru	ıp:	Stored '	Value 🖂	Act Va	alue	e 🔲 De	fault	Value	
Speci	al Featur	es:										
safety critical parameter, read-only via bus												

2.2.4.19 Parameter PrePurgingTime

<u>rver</u>): Pr	rePurgingTime				datory 📙 itional 🔯
=				-	
resolution					
0MSec	DPT ID 7.004	Data	atype format	U ₁₆	
1		Sup.	Range	Unit	Default
			06553.5 s	S	CS
	•	-	•	•	
D):	128 (BUC)	Prope	rty ID:	133	
ex:	1	N° of e	elements	1	
y 🛛	Read/W	rite/			
el -		Write	level		
Powerup:	Stored Value 🛛	Act Va	alue 🔲 De	fault Value	
_			·	_	_
ia bus			-		
	D): ex: y Powerup:	resolution OMSec DPT ID 7.004 D): 128 (BUC) ex: 1 y	resolution OMSec DPT ID 7.004 Data Sup. D): 128 (BUC) Prope ex: 1 N° of ex y X Read/Write el Write Powerup: Stored Value X Act Va	resolution OMSec DPT ID 7.004 Datatype format Sup. Range 06553.5 s D): 128 (BUC) Property ID: ex: 1 N° of elements y	resolution OMSec DPT ID 7.004 Datatype format U ₁₆ Sup. Range Unit 06553.5 s s D): 128 (BUC) Property ID: 133 ex: 1 N° of elements 1 ey Read/Write el Write level Powerup: Stored Value Act Value Default Value

2.2.4.20 Parameter SafetyTime

FB:	BUC	Property	Name (<u>Server</u>):	Sa	ıfetyTime	9					datory 🗌 otional 🖂
Desci	ription:			=						_	
Burne	r safety ti	me with 10	00ms resolution								
DPT:	Name	DPT_Tir	nePeriod100MSec		DPT ID	7.004	Dat	atype forma	at I	U ₁₆	
Field			Description				Sup.	Range	L	Jnit	Default
								06553.5 s	S		CS
Communication:											
DP A	Address:		IO Type(ID):	•	128 (BUC	C)	Prope	rty ID:	1	134	
(in t	he serve	r)	Start-Index:	•	1		N° of	elements	1	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prot	tection		Read level	-	-		Write	level	-	_	
Exce	otion Har	dling:	Value after Poweru	ıp:	Stored	Value 🖂	Act Va	alue 🔲 D	efa	ult Value	e 🗌
Speci	ial Featur	es:									
safety	critical p	arameter,	read-only via bus								

2.2.4.21 Parameter IgnitionLoadInterval

FB:	BUC	Property	Name (<u>Server</u>):	IgnitionLo	adInterva			ı	Mandatory ☐ Optional ⊠	
Desci	ription:		-						·	
Burne	r ignition	load interva	al with 100ms resol	lution						
DPT:	Name	DPT_Tim	nePeriod100MSec	DPT ID	7.004	Dat	atype format	: U ₁₆		
Field			Description			Sup.	Range	Unit	Default	
							06553.5 s	S	cs	
Comr	nunicatio	n:			_		-	<u>.</u>	•	
DP A	Address:		IO Type(ID):	128 (BUC	C)	Prope	rty ID:	135		
(in t	he serve	r)	Start-Index:	1		N° of	elements	1		
Pro	perty acc	ess:	Read only	\leq	Read/W	rite				
Prot	tection		Read level			Write	level			
Exce	otion Har	ndling: `	Value after Poweru	p: Stored	Value 🖂	Act V	alue 🔲 🛮 De	efault \	√alue 🗌	
	<u>'</u>		<u>-</u>							
Speci	ial Featur	es:		_			·		·	
safety	safety critical parameter, read-only via bus									

2.2.4.22 Parameter NumberOfRestarts

FB:	BUC	Property	Name (<u>Server</u>):	Nı	umberOff	Restarts					datory ☐ otional ⊠
Descr	iption:									· ·	
Allowe	ed numbe	r of burne	r restarts (counter v	⁄alι	ıe)						
DPT:	Name	DPT_Va	lue_1_Ucount		DPT ID	5.010	Data	atype form	nat	U ₈	
Field			Description				Sup.	Range		Unit	Default
								0255			CS
Communication:											
DP A	Address:		IO Type(ID):		128 (BUC	;)	Prope	rty ID:		136	
(in t	he serve	r)	Start-Index:		1		N° of e	elements		1	
Prop	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prot	ection		Read level				Write	level			
Excep	otion Han	dling:	Value after Poweru	ıp:	Stored	Value 🖂	Act Va	alue 🗌	Def	ault Value	e 🗌
Speci	al Featur	es:			_	_	-	-		_	_
safety critical parameter, read-only via bus								•	•		

2.2.4.23 Parameter PmaxBurner

FB:	BUC	Property	Name (<u>Server</u>):	Pı	maxBurn	er				Man	datory 🔲
										Op	otional 🔯
Desc	ription:									-	
Max.	limitation	of burner	oower => adaption	to t	boiler						
DPT:	Name	DPT_Pc	werKW_Z		DPT ID	203.01	4 [Dat	atype format	U ₁₆ Z ₈	
Field			Description				Su	p.	Range	Unit	Default
Powe	r		power value, 1kW	res	solution		M	1	065535	kW	cs
Status - OutOfService max limitation active /inactive Outors									bitset		
	- OutOfService max limitation active /inactive								true/false		false
- all o	- all other flags not supported, fixed to '0' NA										
Comr	municatio	n:									
DP A	Address:		IO Type(ID):		128 (BUC	;)			rty ID:	137	
(in t	he serve	r)	Start-Index:		1		N°	of (elements	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/V	Vrite				
Prof	tection		Read level				Wri	ite	level		
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Defau									fault Valu	e 🗌	
			<u>-</u>		·					<u>'</u>	
Speci	pecial Features:										
safety	/ critical pa	arameter,	read-only via bus								

2.2.4.24 Diagnostic data PrelBurner

FB:	BUC	Property	Name (<u>Server</u>):	Pı	relBurner						datory 🗌
Desc	ription:	-		•							
Curre	nt relative	power of	burner								
DPT:	Name	DPT_Re	elValue_Z		DPT ID	202.001		Dat	atype format	U ₈ Z ₈	
Field			Description				Su	p.	Range	Unit	Default
RelVa	alue		relative value				Ν	1	0100%	%	(void)
Status	Status									bitset	
- OutOfService RelValue valid / void						M true/false				true	
- all o	ther flags		not supported, fixed to '0' NA								
Com	nunicatio	n:				-			-		
DP .	Address:		IO Type(ID):		128 (BUC))			rty ID:	110	
(in t	he serve	r)	Start-Index:		1		N°	of e	elements	1	
Pro	perty acc	ess:	Read only	X		Read/W	rite				
Pro	tection		Read level				Wr	ite	level		
Exception Handling: Value after Powerup: Stored Value Act Value						alue 🗵 🏻 De	fault Value	e 🗌			
Spec	ial Featur	es:			_	-			·	_	

2.2.4.25 Diagnostic data Fault

FB:	BUC	Property	Name (<u>Server</u>):	Fa	nult						datory 🛚 otional 🗀
Desc	ription:	•									
Burne	er failure (some error	in the BUC)								
DPT:	Name	DPT_Boo	ol		DPT ID	1.002	Dat	atype forma	t B	1	
Field			Description				Sup.	Range	Un	nit	Default
								true/false	bo	ol	false
Comi	municatio	on:							_		-
DP	Address:		IO Type(ID):	•	128 (BUC)	Prope	rty ID:	11	1	
(in t	the serve	r)	Start-Index:		1		N° of e	elements	1		
Pro	perty acc	ess:	Read only	X		Read/W	rite				
Pro	tection		Read level	-			Write	level			
Exce	ption Har	ndling:	Value after Powert	ıp:	Stored	Value 🗌	Act Va	alue 🛛 D	efau	lt Valu	e 🗌
Spec	ial Featu	res:			•		•			•	•

2.2.4.26 Diagnostic data StatusStage1

FB:	BUC	Property	Name (<u>Server</u>):	St	atusStage	e 1				Mano	datory 🗌
			-							Op	otional 🛚
Desc	ription:			_							
Status	s stage 1	/ base stag	e: on/off								
DPT:	Name	DPT_Sw	itch		DPT ID	1.001	Dat	atype form	at	B ₁	
Field			Description				Sup.	Range		Unit	Default
								on/off		bool	off
Comr	nunicatio	n:					_		-		
DP A	Address:		IO Type(ID):	•	128 (BUC))	Prope	•		112	
(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	ndling:	Value after Poweru	ıp:	Stored \	√alue 🗌	Act Va	alue 🖂 🗆	Def	ault Value	e 🗌
Speci	ial Featur	es:			_	-		_		_	_
			_				•			•	•

2.2.4.27 Diagnostic data StatusStage2

ED.	DUC	Duamantu	Nama (Camran).	Ct	-4··C4					Man	datam (
FB:	BUC	Property	Name (<u>Server</u>):	St	atusStag	jez					datory 🔲
										Op	otional 🖂
Desc	ription:									-	
Status	s stage 2	/ modulati	on: on/off								
DPT:	Name	DPT_Sv	vitch		DPT ID	1.001	Dat	atype forma	at E	3 ₁	
Field			Description				Sup.	Range	U	Init	Default
								on/off	b	ool	off
Communication:								-			
DP A	Address:		IO Type(ID):	•	128 (BUC	C)	Prope	rty ID:	1	13	
(in t	he serve	r)	Start-Index:		1		N° of	elements	1		
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	'rite				
Prof	tection		Read level				Write	level	-	-	
Exce	ption Har	ndling:	Value after Powerd	ıp:	Stored	Value 🗌	Act Va	alue 🛛 🏻 🛭	Defa	ult Value	e 🗌
Special Features:											

2.2.4.28 Diagnostic data BurnerType

FB:	BUC	Property	Name (<u>Server</u>):	Bur	nerTyp	е					datory ☐ tional ⊠
D				-						<u> </u>	tional 🖂
	ription:										
Type	of burner:	1 stage, 2	stage, modulating								
DPT:	Name	DPT_Bui	nerType	D	PT ID	20.101	Data	atype form	nat	N ₈	
Field			Description				Sup.	Range	l	Jnit	Default
								[13]	ϵ	enum.	CS
Comr	nunicatio	n:				-	-		-		
DP A	Address:		IO Type(ID):	12	28 (BUC	;)	Proper	rty ID:	•	114	
(in t	he serve	r)	Start-Index:	1			N° of e	elements		1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prof	tection		Read level				Write I	evel	-	-	
Exce	ption Har	dling:	Value after Poweru	ір:	Stored	Value 🛚	Act Va	alue 🗌	Defa	ault Value	
Speci	ial Featur	es:			-	_	-	-		_	_

2.2.4.29 Diagnostic data FuelTypeSupport

FB:	BUC	Property	Name (<u>Server</u>):	Fu	elTypeS	upport					datory ☐ tional ⊠
Desci	ription:									<u> </u>	
suppo	orted set c	of fuel type	s: gas, oil, solid sta	te fu	uel						
DPT:	Name	DPT_Fu	elTypeSet		DPT ID	21.104	Dat	atype forn	nat	B ₈	
Field			Description				Sup.	Range		Unit	Default
								b2b0		bitset	CS
Communication:											
DP A	Address:		IO Type(ID):	1	128 (BUC	;)	Prope			115	
(in t	he serve	r)	Start-Index:	1	1		N° of 6	elements		1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prot	tection		Read level	_	-		Write	level			
Exce	otion Har	dling:	Value after Poweru	ір:	Stored	Value 🖂	Act Va	alue 🗌	Def	ault Value	
Speci	ial Featur	es:			-	_		_		-	_
		•	_				•	•			

2.2.4.30 Diagnostic data FuelTypeActual

FB:	BUC	Property	Name (<u>Server</u>):	Fu	elTypeAd	ctual					datory 🗌 otional 🖂
Desc	ription:			-						<u> </u>	
Curre	ntly used	fuel type									
DPT:	Name	DPT_Fu	elType		DPT ID	20.100	Dat	atype form	at	N ₈	
Field			Description				Sup.	Range		Unit	Default
								[13] 1)	(enum	CS
Comr	nunicatio	n:				•					
	Address:		IO Type(ID):	1	128 (BUC))	Prope	rty ID:		116	
(in t	he serve	r)	Start-Index:	1	1		N° of	elements		1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prof	tection		Read level	-	-		Write	level			
Exce	ption Har	ndling:	Value after Poweru	ıp:	Stored \	Value □	Act Va	alue 🖂 🗆	Def	ault Value	e 🗌
Speci	ial Featui	es:									
1) not	to be mix	ed-up with	FuelSelect: the va	lue <i>i</i>	Auto is no	t allowed	l				<u>'</u>

2.2.4.31 Diagnostic data PnomBurner

FB: BU	С	Property	Name (<u>Server</u>):	Pr	nomBurne	er				datory 🗌
Descripti	on:			-					<u> </u>	
Nominal p	ower	of burner								
DPT: N	lame	DPT_Pc	owerKW_Z		DPT ID	203.014	Dat	atype format	$U_{16}Z_{8}$	
Field			Description				Sup.	Range	Unit	Default
Power			power value, 1kW	res	olution		M	065535	[kW]	cs
Status									bitset	
- OutOfSe	ervice		Pnom value valid of	or u	unknown/v	oid/	0	true/false		false
- all other	flags		not supported, fixe	d to	o '0'		NA			
Commun	icatio	n:	-			-	•	-		-
DP Add	ress:		IO Type(ID):	•	128 (BUC)	Prope	erty ID:	117	
(in the s	server	·)	Start-Index:	•	1		N° of	elements	1	
Propert	у асс	ess:	Read only	X		Read/W	rite			
Protecti	ion		Read level	-			Write	level		
Exception	n Han	dling:	Value after Poweru	лр:	Stored '	Value 🛚	Act V	alue 🔲 🏻 De	fault Value	e 🗌
-										
Special F	eatur	es:			<u> </u>	<u> </u>				

2.2.4.32 Diagnostic data BstageLimit

FB:	BUC	Property	Name (<u>Server</u>):	В	stageLimi	t					datory 🗌
	-									<u> </u>	tional 🛚
Desci	iption:										
Relati	ve power	limit % of	stage 1 / base stag	je							
DPT:	Name	DPT_Re	elValue_Z		DPT ID	202.001		ata	atype format	U_8Z_8	
Field			Description				Sup).	Range	Unit	Default
RelVa	lue		relative value				М		0100%	%	cs
Status	3									bitset	
	OfService		RelValue valid / vo	oid			Ο		true/false		false
- all of	her flags		not supported, fixe	d t	o '0'		NΑ	١.			
Comr	nunicatio	n:				_			-	•	
DP A	Address:		IO Type(ID):		128 (BUC))	Pro	per	ty ID:	118	
(in t	he serve	r)	Start-Index:		1		N° (of e	elements	1	
Pro	perty acc	ess:	Read only	X		Read/W	rite				
Prot	ection		Read level				Wri	te I	evel		
Excep	otion Han	dling:	Value after Poweru	ıp:	Stored \	/alue ⊠	Act	Va	lue 🗌 De	fault Value	
	<u>'</u>		·		<u>'</u>				·		
Speci	al Featur	es:		_							
void fo	or 1stage	burner									

2.2.4.33 Diagnostic data OperatingPhaseBurner

FB:	BUC	Property	Name (<u>Server</u>):	Op	peratingl	PhaseBur	ner				datory 🗌 otional 🗵
Desc	ription:	3									
Curre	nt burner	operating	phase, numerical v	alue	e; compa	ny specifi	c interp	retation			
DPT:	Name	DPT_Va	alue_1_Ucount		DPT ID	5.010	Dat	atype format	U ₈		
Field			Description				Sup.	Range	Unit	<u> </u>	Default
								0255			CS
Comr	nunicatio	n:				-			-		
DP A	Address:		IO Type(ID):	1	128 (BUC	C)	Prope		121		
(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 🗵 🛮 De	fault	Value	e 🗌
Speci	ial Featur	es:									

2.2.4.34 Diagnostic data BurnerStarts

FB:	BUC	Property	Name (<u>Server</u>):	В	urnerStar	rts				ndatory 🗌 ptional 🔯
Desc	ription:	-		-						
Numb	er of burr	ner starts,	32 bit counter							
DPT:	Name	DPT_Va	lue_4_Ucount		DPT ID	12.001	Dat	atype format	U ₃₂	
Field			Description				Sup.	Range	Unit	Default
								full range	1	0
Comr	nunicatio	n:				_		-	-	•
DP A	Address:		IO Type(ID):		128 (BUC	;)	Prope	rty ID:	122	
(in t	he serve	r)	Start-Index:		1		N° of	elements	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite			
Prof	tection		Read level				Write	level		
Exce	ption Har	ndling:	Value after Poweru	лр:	Stored	Value 🛚	Act V	alue 🔲 🏻 De	fault Valu	ıe 🗌
Speci	ial Featur	es:								

2.2.4.35 Diagnostic data ErrorCodeBUC

FB: BUC	Property	Name (<u>Server</u>):	Er	rorCode	BUC					datory ☐ otional ⊠
Description:	-								-	
Company spe	cific numeri	c 16 bit error code								
DPT : Nam	e DPT_Va	lue_2_Ucount		DPT ID	7.001	Data	atype forma	at	U ₁₆	
Field		Description				Sup.	Range		Unit	Default
							full range	-		CS
Communicat	ion:				-	•			•	
DP Addres	s:	IO Type(ID):	•	128 (BUC	(1)	Prope	rty ID:		123	
(in the serv	er)	Start-Index:		1		N° of e	elements		1	
Property ac	cess:	Read only	\boxtimes		Read/W	rite				
Protection		Read level	-			Write	level			
Exception H	andling:	Value after Poweru	лр:	Stored	Value 🗌	Act Va	alue 🛛 🏻 🛭	Defa	ault Value	e 🗌
Special Feat	ures:			_	_				_	_
				•	•	•	•		•	•

2.2.4.36 Diagnostic data VolumeOilCumul

FB: BUC Property	Name (<u>Server</u>):	VolumeOilCumul				datory 🗌
Description:		<u>-</u>				
Cumulated oil volume in li	ter					
DPT: Name DPT_Vol	umeLiter_Z	DPT ID 218.00°	1 Dat	atype format	$V_{32}Z_{8}$	
Field	Description		Sup.	Range	Unit	Default
VolumeLiter	cumulated value		М	>= 0 1)	liter	0
Status					bitset	
- OutOfService	VolumeLiter validavailable	d or void/not	M	true/false		false
- Fault	VolumeLiter corr	rupted, sensor failure	M	true/false		false
- InAlarm	critical limit is rea	ched	0	true/false		false
- AlarmUnAck	alarm acknowled		0	ack/unack		unack
- all other flags	not supported, fix		NA			
Command	standard Comma				enum	
- Write	I .	reset counter value	0			
- AlarmAck	alarm acknowled	ge	0			
- all other commands	not supported		NA		Ļ	
Communication:						
DP Address:	IO Type(ID):	128 (BUC)		erty ID:	124	
(in the server)	Start-Index:	1		elements	1	
Property access:	Read only [Read/W	/rite	$\boxtimes^{2)}$		
Protection	Read level		Write	level		
Exception Handling:	Value after Poweru	ıp: Stored Value 🛚	Act V	alue 🗌 🛮 De	fault Valu	e 🗌
Special Features:						
1) encoding on 32 bit sign					granularity	y of the
internal resolution may optional Write acces fo			w possil	ole		

2.2.4.37 Diagnostic data FlowRateOil

FB:	BUC	Property	Name (<u>Server</u>):	Flo	owRateO	il					datory 🗌
Desc	ription:										
Curre	nt oil flow	rate in lite	er/h								
DPT:	Name	DPT_UF	lowRateLiter/h_Z		DPT ID	203.011	D	ataty	pe format	U ₁₆ Z ₈	
Field			Description				Sup	. R	ange	Unit	Default
FlowF	Rate		flow rate current variesolution	llue	e, 0.01 l/h		М	0.	.655.35	l/h	CS
Status	3									bitset	
- Out	OfService		FlowrRate valid or	voi	id/not ava	ilable	M	tru	ue/false		false
- Faul	t		FlowRate corrupte			lure	M	tru	ue/false		false
- all o	ther flags		not supported, fixe	d to	· '0'		NA				
Comr	nunicatio	n:									
DP A	Address:		IO Type(ID):	•	128 (BUC)	Prop	erty	ID:	125	
(in t	he serve	r)	Start-Index:	•	1		N° c	f ele	ments	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prof	tection		Read level	-	-		Writ	e lev	rel		
Exce	otion Har	dling:	Value after Poweru	ıp:	Stored	Value 🗌	Act	Valu	e 🛛 De	fault Value	e 🗌
Speci	ial Featur	es:									

2.2.4.38 Diagnostic data StatusFlame

	0										
FB:	BUC	Property	Name (Server):	St	tatusFlan	ne				Mand	datory 🗌
			<u>,</u> ,							Or	tional 🔯
Desc	ription:								· ·		
Burne	r flame st	atus on/of	f								
DPT:	Name	DPT_Sv	vitch		DPT ID	1.001	Dat	atype format	B ₁		
Field			Description				Sup.	Range	Unit		Default
								on/off	bool		off
Comr	nunicatio	n:							•	•	
DP .	Address:		IO Type(ID):		128 (BUC	C)	Prope	rty ID:	126		
(in t	he serve	r)	Start-Index:		1		N° of e	elements	1		
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prof	tection		Read level	-			Write	level			
Exce	otion Har	dling:	Value after Powert	лр:	Stored	Value	Act Va	alue 🛛 De	fault \	Value	e 🗌
Speci	ial Featur	es:									
										•	

2.2.4.39 Diagnostic data CurrentIonisation

FB:	BUC	Property	Name (<u>Server</u>):	С	urrention	isation					datory 🔲
										Op	otional 🛚
Desc	ription:										
Ionisa	tion curre	nt value	AL								
DPT:	Name	DPT_UE	ElCurrentµA_Z		DPT ID	203.013		Dat	atype format	$U_{16}Z_{8}$	
Field			Description				Su	p.	Range	Unit	Default
ElCur	rent		ionisation current,	0.0)1 μA reso	lution	N	1	0655.35	μΑ	cs
Status	3									bitset	
- Out	OfService		ElCurrent valid or	vo	id/not avai	ilable	N	1	true/false		false
- Faul	t		ElCurrent corrupte			ilure	N	1	true/false		false
- all o	ther flags		not supported, fixed	d t	:o '0'		N.	Α			
Comr	nunicatio	n:				•			-		
DP A	Address:		IO Type(ID):		128 (BUC	;)	Pro	оре	rty ID:	127	
(in t	he serve	r)	Start-Index:		1		N°	of e	elements	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prof	ection		Read level				Wr	ite	level		
Exce	otion Han	ndling:	Value after Poweru	ıp:	Stored	Value 🗌	Ac	t Va	alue 🛛 De	fault Value	e 🗌
Speci	al Featur	es:									

2.2.4.40 Diagnostic data FanControl

FB:	BUC	Property	Name (<u>Server</u>):	FanContro	ol				datory 🗌
Desci	ription:								
Relati	ve fan co	ntrol value	· %						
DPT:	Name	DPT_Re	elValue_Z	DPT ID	202.001	Dat	atype format	U ₈ Z ₈	
Field			Description			Sup.	Range	Unit	Default
RelVa	llue		relative value			M	0100%	%	cs
Status	3							bitset	
- Out	OfService		RelValue valid / vo	oid		0	true/false		false
- all of	ther flags		not supported, fixe	d to '0'		NA			
Comr	nunicatio	n:				-			
DP /	Address:		IO Type(ID):	128 (BU	C)	Prope	rty ID:	128	
(in t	he serve	r)	Start-Index:	1		N° of	elements	1	
Pro	perty acc	ess:	Read only	\boxtimes	Read/W	/rite			
Prot	ection		Read level			Write	level		
Excep	otion Har	ndling:	Value after Poweru	up: Stored	l Value 🛚	Act V	alue 🔲 De	fault Valu	e 🗌
Speci	al Featur	es:		-	-	•		•	

2.3 Functional Block: Boiler Controller (BOC)

2.3.1 Functional Specification

The functional block Boiler Controller BOC controls the boiler temperature / flow temperature and optionally the boiler return temperature according to the present heat demand and boiler specific min. / max. temperature limitations.

Interworking with Heat Producer Manager HPM:

The operation of the Boiler Controller BOC is controlled by one Heat Producer Manager. The HPM may control multiple BOC's (boiler cascade) which must be located in the same Heat Production Segment.

Input:

- 'PowerFlowWaterDemHPM' The BOC the gets the flow temperature demand and power control

information from the Producer Manager and controls correspondingly the boiler temperature, the boiler pump and burner stages or burner

modulation.

Outputs:

- 'StatusBOC' The BOC reports the boiler status to the Producer Manager, which is

used in the HPM for boiler sequence control.

- 'OpHrsBurner' burner operating hours for stage 1 / base stage

'LockSignBOC' The BOC may generate locking signal (for boiler startup protection

and overload protection) which is evaluated in the HPM.

- 'ForceSignBOC' The BOC may generate forcing signal (for overheat protection or

indication of oversupply or spare energy) which is evaluated in the

HPM.

- 'BoilerSpec' Optionally the BOC can provide information containing boiler type

and characteristics to be used in the HPM for optimized boiler control

e.g. in a cascade.

Interworking with Burner Controller BUC:

Outputs used to control the burner:

- 'ValueDemBOC' The control of the burner BUC by the BOC can be done directly by

relays or by communicating with the Burner Controller BUC. In case of bus controlled BUC, the boiler controller will generate the process demand signal ValueDemBOC. This signal contains information whether the burner should be off or on and additionally the requested relative power of the burner for 2-stage and modulating burner-type.

- 'FuelSelect' With this optional signal the type of fuel in the BUC (oil, gas etc.) can

be selected by the BOC.

- 'BurnerReset' A remote reset of the burner can be executed by the BOC with the

signal BurnerReset (optional command).

Information from the burner:

- 'StatusBUC' This input contains burner status information from the BUC (e.g. stage

1,2 active; current % modulation; fault etc.). This feedback is used in

the BOC for optimized boiler control.

'OpHrsBurnerStage1' burner operating hours for stage 1 / base stage
'OpHrsBurnerStage2' burner operating hours for stage 2 / modulation

- 'BurnerSpec' The datapoint BurnerSpec contains burner type and characteristics in

order to allow specific control mechanisms in the BOC.

Boiler Controller BOC has a 1:1 relationship with Burner Controller BUC. Both functional blocks are linked by the group 'ProdSegmH.Producer'.

Sensors/actuators:

The boiler temperature is mandatory for boiler control. The boiler temperature sensor is always connected to the BOC locally (hard wired, safety relevant).

A boiler return temperature sensor is optional and is also always hard wired.

In case of boiler sequence also the common flow temperature is optionally often used. The flow temperature sensor may either be connected locally (hard wired) to the device containing the BOC *) or sensor data may be received from the bus. In addition also common return temperature is optionally used (either hard wired *) or data input from bus).

*) Remark: if flow temperature sensor resp. return temperature sensor is connected locally to the device containing the BOC, the corresponding Functional Blocks FLT (flow temperature) resp. RET (return temperature) are activated and distribute the temperature value in the 'ProdSegmH'

The boiler pump is normally hard wired but optionally also bus-connected pump is possible.

Optional boiler return temperature control can be handled by a Flow Temperature Controller FTC. The Flow Temperature Controller and the BOC have a 1:1 relationship and are often located in the same device (hard wired actuator). Otherwise the 1:1 functional binding is established by setting a specific 1:1 link group 'GenPeripheral'

Outside temperature input may be used for local SummerMode mechanism.

2.3.2 Constraints

The control of the burner (BUC) is today often done directly by relays in the BOC

A BOC is controlled only by one HPM (1:1 link)

IMPORTANT: the output signal ValueDemBOC to control a BUC via bus 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 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 BUC and BOC functional blocks offer a bus-link to control the BUC by means of the ValueDemBOC signal.

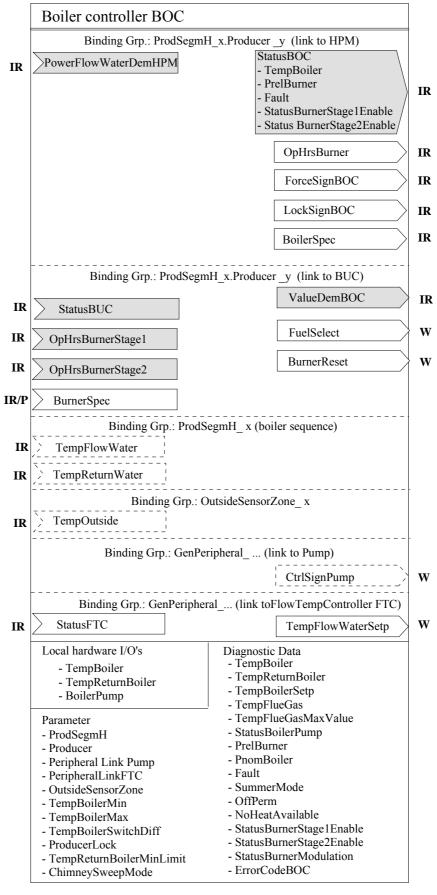
The input signal PowerFlowWaterDemHPM from HPM can <u>today</u> not be implemented in standard mode because the necessary compound HVAC DPT for runtime-interworking is not yet available in standard mode and mapping of this signal to multiple standard datapoints is not possible because of the necessary data consistency.

Therefore for the time being only LTE implementations of the BOC functional block offer a bus-link to a HPM which controls one ore multiple BOC by means of the signal PowerFlowWaterDemHPM (demand dependent heat production).

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

Implementation of Safety Temperature Limiter (STL) function (according to EN 60730-2-9): see remarks in functional block BUC, chapter 2.2.2

2.3.3 Functional block diagram



2.3.4 Datapoint description

2.3.4.1 Overview

Data Point	Description	Datapoint Type	DPT N°
Outputs			
StatusBOC	Status information from BOC	DPT_StatusBOC	215.100
- TempBoiler	Boiler temperature (S-interface)	DPT_Value_Temp	9.001
- PrelBurner	Current relative power of the attached burner (S-interface)	DPT_Percent_U8	5.004
- Fault	Boiler Fault (S-interface)	DPT_Bool	1.002
- StatusBunerStage1Enable	buner stage 1 / base stage: enabled /disabled (S-interface)	DPT_Enable	1.003
- StatusBunerStage2Enable	burner stage 2 / modulation: enabled /disabled (S-interface)	DPT_Enable	1.003
OpHrsBurner	Current operating hours stage 1, base stage of the attached burner: mapped/calculated value in the BOC	DPT_LongDeltaTimeSec	13.100
ForceSignBOC	Forcing signal, to force the consumers to consume energy from boiler	DPT_ForceSign	21.100
LockSignBOC	Locking signal, to force the consumers to reduce energy consumption from boiler	DPT_LockSign	207.101
BoilerSpec	Boiler type information	DPT_SpecHeatProd	216.100
ValueDemBOC	Process demand signal from BOC	DPT_ValueDemBOC	207.102
FuelSelect	switch between different burner fuel options	DPT_FuelType	20.100
BurnerReset	Command for burner remote reset	DPT_Reset	1.015
CtrlSignPump	Command for boiler pump with bus interface	t.b.d, probably multiple or complex DPT	?
TempFlowWaterSetp	Set value of boiler return temperature to be controlled by the FTC / LTE and S-interface	DPT_TempHVACAbs_Z	205.100 9.001
Inputs			
PowerFlowWaterDemHPM	Temperature demand from HPM	DPT_PowerFlowWater DemHPM	214.100
StatusBUC	Status information from BUC to BOC	DPT_StatusBUC	207.100
OpHrsBurnerStage1	Current burner operating hours for stage 1 / base stage	DPT_LongDeltaTimeSec	13.100
OpHrsBurnerStage2	Current burner operating hours for stage 2 / modulation	DPT_LongDeltaTimeSec	13.100
BurnerSpec	Burner type information	DPT_SpecHeatProd	216.100
TempFlowWater	Common flow water temperature of the hydraulic group / LTE and S-interface	DPT_TempHVACAbs_Z, DPT_Value_Temp	205.100 9.001
TempReturnWater	Common return water temperature of the hydraulic group / LTE and S-interface	DPT_TempHVACAbs_Z, DPT_Value_Temp	205.100 9.001
TempOutside	Outside temperature / LTE and S-interface	DPT_TempHVACAbs_Z, DPT_Value_Temp	205.100 9.001
StatusFTC	Status information from Flow Temperature Controller	DPT_StatusWTC	209.103
Parameters			
ProdSegmH	LTE zoning number Heat Production Segment	DPT_UcountValue8_Z	202.002
Producer	LTE zoning number Heat Producer	DPT_UcountValue8_Z	202.002
PeripheralLinkPump	LTE zoning number Peripheral link to pump	DPT_UcountValue16_Z	203.012

Data Point	Description	Datapoint Type	DPT N°
PeripheralLinkFTC	LTE zoning number Peripheral link to FTC	DPT_UcountValue16_Z	203.012
OutsideSensorZone	LTE zoning number for Outside Temperature	DPT_UcountValue8_Z	202.002
TempBoilerMax	Max. boiler temperature	DPT_TempHVACAbs_Z	205.100 *)
TempBoilerMin	Min. boiler temperature	DPT_TempHVACAbs_Z	205.100
TempBoilerSwitchDiff	boiler switching temperature difference	DPT_TempHVACRel_Z	205.101
ProducerLock	boiler is locked manually (parameter or diagnostic value only)	DPT_Bool	1.002
TempReturnBoilerMinLimit	minimal boiler return temperature	DPT_TempHVACAbs_Z	205.100
ChimneySweepMode	chimney sweep function active (parameter or diagnostic value only)	DPT_Bool	1.002
Diagnostic Data			
TempBoiler	Current boiler temperature	DPT_TempHVACAbs_Z	205.100
TempReturnBoiler	Current boiler return temperature	DPT_TempHVACAbs_Z	205.100
TempBoilerSetp	current boiler temperature setpoint	DPT_TempHVACAbs_Z	205.100
TempFlueGas	flue gas temperature	DPT_TempHVACAbs_Z	205.100
TempFlueGasMaxValue	max. flue gas temp value; with reset possibility	DPT_TempHVACAbs_Z	205.100
StatusBoilerPump	current relative power of the boiler pump, % value; for switched pump 0%=off, 100%=on	DPT_RelValue_Z	202.001
PrelBurner	current relative burner power (mapped/calculated value in the BOC)	DPT_RelValue_Z	202.001
PnomBoiler	nominal boiler power	DPT_PowerKW_Z	203.014
Fault	boiler failure (some error in the BOC)	DPT_Bool	1.002
SummerMode	boiler in summer mode	DPT_Bool	1.002
OffPerm	boiler perrmanently off	DPT_Bool	1.002
NoHeatAvailable	boiler is temporarily not providing heat	DPT_Bool	1.002
StatusBurnerStage1Enable	buner stage 1 / base stage: enabled /disabled	DPT_Enable	1.003
StatusBurnerStage2Enable	burner stage 2 / modulation: enabled /disabled	DPT_Enable	1.003
StatusBurnerModulation	status of burner modulation, % value	DPT_RelValue_Z	202.001
ErrorCodeBOC	company specific numeric error code	DPT_Value_2_Ucount	7.001

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

			STANDARD MODE	EXTEN MO	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Inputs	PowerFlowWaterDemHPM	NA 1)	NA	NA	M
	StatusBUC	NA 1)	NA	NA	M
	OpHrsBurnerStage1	GO_b	GO	GO	M
	OpHrsBurnerStage2	$\mathbf{GO_b}^{2)}$	GO ²⁾	GO 2)	M ²⁾
	BurnerSpec	NA	NA	NA	О
	TempFlowWater	(GO_b)		(GO)	О
	TempReturnWater	(GO_b)		(GO)	О
	TempOutside	(GO_b)		(GO)	О
	StatusFTC	NA	NA	NA	О
Outputs	StatusBOC	NA	NA	NA	M
	- TempBoiler	GO_b	GO	GO	NA
	- PrelBurner	GO_b	GO	GO	NA
	- Fault	GO_b	GO	GO	NA
	- StatusBurnerStage1Enable	GO_b	GO	GO	NA
	- StatusBurnerStage2Enable	$GO_b^{\ 2)}$	GO ²⁾	GO 2)	NA
	OpHrsBurner	(GO _b)		(GO)	О
	ForceSignBOC	NA	NA	NA	О
	LockSignBOC	NA	NA	NA	О
	BoilerSpec	NA	NA	NA	О
	ValueDemBOC	NA 1)	NA	NA	M
	FuelSelect	NA	NA	NA	О
	BurnerReset	(GO _b)		(GO)	О
	CtrlSignPump not yet defined				
	TempFlowWaterSetp	(GO _b)		(GO)	О

mandatory in LTE Mode but the information is NA in the Basic FB and all other modes because the datapoint type is today not available in standard mode.. Splitting of DPT is not possible because of necessary data consistency

Table 5: BOC Runtime Interworking - dependence on Configuration Modes

²⁾ mandatory if BOC is supporting 2-stage burner or modulating burner; not available if BOC is supporting 1 stage burner only

		Support
Parameter	ProdSegmH	M
	Producer	M
	PeripheralLinkPump	О
	PeripheralLinkFTC	О
	OutsideSensorZone	О

Table 6: BOC LTE specific Properties

		Support
Parameter	TempBoilerMax	О
	TempBoilerMin	О
	TempBoilerSwitchDiff	О
	ProducerLock	О
	TempReturnBoilerMinLimit	О
	ChimneySweepMode	О
Diagnostic Data	TempBoiler	M
	TempReturnBoiler	О
	TempBoilerSetp	M
	TempFlueGas	О
	TempFlueGasMaxValue	О
	StatusBoilerPump	О
	PrelBurner	О
	PnomBoiler	О
	Fault	M
	SummerMode	О
	OffPerm	О
	NoHeatAvailable	О
	StatusBurnerStage1Enable	О
	StatusBurnerStage2Enable	О
	StatusBurnerModulation	О
	ErrorCodeBOC	О

Table 7: BOC Standard Properties of Interface Objects (or memory mapped DP)

2.3.4.2 Output StatusBOC

Standard mode: NA => mapped to the datapoints TempBoiler, PrelBurner, Fault, StatusBurnerStage1Enable, StatusBurnerStage2Enable

LTE-HEE mode:

FB:	ВОС	LTE Serve	er Output Name:	StatusBOC					datory 🛚
Doso	ription:							l Ot	Juonal 🔲
		aine etatue	information of the	hoilor contro	llor to b	o used in th	o HDM for	hoilor co	allonco
contro		airis status	illioillation of the	boller contro	ilei to b	e useu III III	e i ir ivi ioi	Doller Se	quence
DPT:	Name	DPT_Stat	tusBOC	DPT ID	215.10		e format		
Field			Description		Sup.	Range	Unit	COV	Default
	Boiler		Boiler temperatur	е	M	full range	°C	2	cs
PrelB	urner 1)		Current relative pattached burner	ower of the	О	0100 %	%	10	CS
Attrib			Bitset containing]				
	pBoilerVa		validity of TempB		М	true/false	bool	Y	false
	lBurnerVa	lid	validity of PrelBoi	l Field	М	true/false	bool	Y	false
– Fau	-		boiler failure		М	true/false	bool	Y	false
– Sun	nmerMode	9	boiler switched of summer/winter m		0	true/false	bool	Y	false
– OffF	Perm		permanently off (r switch or failure)	nanual	0	true/false	bool	Y	false
– Not	HeatAvaila	ble	boiler is temporar providing heat	y not	0	true / false	bool	Υ	false
1	sBurnerSt	age1Enab	stage 1 or base si enabled	tage	М	enable/ disable	bool	Y	disable
le - Status	sRurnerSt	age2Enab	stage 2 / modulat	ion enabled	M ²⁾	enable/ disable	bool	Y	disable
le	obarriero.	agozinab				disable			
	ηNextStag	е	for boiler with two burner: power lim is reached, HPM	it of stage 1	0	true/false	bool	Y	false
– Red	ηNextBoile	r	to enable stage 2 power limit of boil reached, HPM is enable next boiler	requested to	0	true/false	bool	Y	false
– Red	ducedAvai	lability	boiler is in princip but other boilers s	le available should be	0	true/false	bool	Y	false
– Chii	mneySwe	ер	used with prefere ChimneySweep for active		0	true/false	bool	Y	false

Communication:						
Binding Group:						
Class	Туре		Defa	ault		
Geographical 🔲						
Application Specific⊠	ProdSegmH.Pr	oducer	1.1			
Unassigned	Broadcast	Configurable				
DP Address:	IO Type(ID):	129 (BOC)	Property I	D:	51	
LTE-Services (event):	COV 🛛	MinRepTime:	10 sec	Hea	artbeat:	3 min
InfoReport ⊠ (LTE Read-Response	Output per defa	ault communicating	Binding G	roup Wild	dcard allow	ved
polling of the output	Tx Prio:	High 🗌	Normal	\boxtimes	Low	
shall always be supported)	Transm after Po	owerup: Stored Value	Act Va	alue 🛚	Default Va	alue 🗌
Property-Service (individual access):	Read only	⊠ Read/W	rite []		
Exception Handling:				Save	at Power	down
-						
Special Features:						
In simple systems with only	y one boiler (no	boiler sequence) HPM a	ind BOC a	re usually	/ located ir	า the
same device and in this ca	se this signal ca	n be device internal.				
		ne BOC may be able to			ccording to	stage
on/off ratio. This field is	optional for 1 ar	nd 2 stage burner => Pre	elBurnerVa	lid Flag		
²⁾ mandatory for boiler wit	th 2 stage /modu	ulation burner only; not a	vailable in	1 stage t	ourner =>	default
value						

2.3.4.3 Output TempBoiler

Standard mode

DP N	ame:	ГетрВоі	ler		Abbr.:				Manda	tory	
FB Na	ame:	30C							Can be	interna	al 🔲
Desc	ription										
	nt boiler t		ure								
	point Typ										
_	Name:	DPT_V	alue_Te	mp							
	Format:	F ₁₆						DPT_ID:	9.001		
Field		Descrip	tion					Supp.	Range	Unit	Default
									full range	°C	CS
Acce	ss Type										
♦ 0	utput										
thi	$s \rightarrow M$	⊠ ¹)		his \rightarrow 1							
Sp	ontaneou	ıs 🛛	COV:	\boxtimes	Δ-Value	2 K	Min	RepTime:		10s	
			Cyclic	igtriangle	Period:	3 Min					
Re	equest	\boxtimes									
Comr	munication	on Type									
♦ G	roup Obje	ect Datar	ooint						Mandatory	/: \[\]	
De	efault Gro	up Addre	ess: -	=							
Dyna	mics										
Po	wer down	n: Save	e:								
Po	wer up:	Valu	e:	No initialisa	ation:		Defau	ılt value:			
				Saved valu	ie:		Actua	ıl value (n	ot for input)): 🛛	
		Tran	smit on	bus (only fo	or output):		Read	from bus	(only for in	put):	
Exce	ption Hai	ndling									
	ial Featu										
1) this	datapoin	t is also i	nterestii	ng for visual	lisation an	d not only	y used	I in the HF	РМ		·

2.3.4.4 Output PrelBurner

Standard mode

DP Name	e: F	PrelBurne	r		Abbr.:				Manda	atory 1)		
FB Name	e: E	3OC							Can b	e intern	al 🛛	
Descript	ion											
Current re	elative	power of	the at	tached bur	ner							
Datapoin	t Typ	е										
DPT_Nar	me:	DPT_Per	rcent_l	J8								
DPT Forr	nat:	U_8						DPT_ID:	5.004			
Field		Descripti	on					Supp.	Range	Unit	Default	
									0100%	%	0%	
Access 7	Гуре											
♦ Outp	ut											
this \rightarrow	M		tl	his \rightarrow 1								
Spont	aneou	s 🛚	COV:		Δ-Value	: 10%	Min	RepTime:		10s		
			Cyclic	; 🛛	Period:	3 Min]					
Reque	est											
Commun	nicatio	n Type										
♦ Grou	p Obje	ct Datapo	oint						Mandator	y: 🛛 🖂	1)	
Defau	It Grou	up Addres	ss: -	_								
Dynamic	s											
Power	r dowr	: Save:										
Power	r up:	Value	: :	No initialis	sation:		Defau	ılt value:				
				Saved val	ue:		Actua	ıl value (n	ot for input	t): 🛛		
		Trans	mit on	bus (only t	for output):		Read	from bus	(only for ir	nput):		
Exceptio	n Han	dling										
Special F												
			e burne	er, optional	for 2-stage	burner,	manda	atory for r	modulating	burner		

2.3.4.5 Output Fault

Standard mode

DP Name:	Fault	Abbr.:				Mandat	tory	
FB Name:	BOC					Can be	interna	al 🗌
Description								
reports a boile								
Datapoint Ty	pe							
DPT_Name:	DPT_Bool							
DPT Format:	B ₁				DPT_ID:	1.002		
Field	Description				Supp.	Range	Unit	Default
								false
Access Type								
♦ Output								
this \rightarrow M	\boxtimes 1) this \rightarrow 1							
Spontaneo	ous 🛛 COV:	Δ-Value:		Min	RepTime:		10s	
	Cyclic	Period:	15 Min					
Request								
Communicat	ion Type							
♦ Group Ob	ject Datapoint					Mandatory	r: 🖂	
Default Gr	oup Address:							
Dynamics								
Power dov	n: Save:							
Power up:	Value: No initialisat	ion:		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):	
Exception Ha	ndling							
Special Feat								
1) this datapoi	nt is also interesting for visualis	sation and	d not only	used	in the HF	PM		

2.3.4.6 Output StatusBurnerStage1Enable

Standard mode

DP Name:	S	StatusBun	erStag	e1Enable	A	bbr.:				Manda	itory		\boxtimes
FB Name:	В	SOC .								Can be	e interna	al [\boxtimes
Description	1												
buner stage	1/	base stag	ge: ena	able / disal	ble								
Datapoint T	уре	е											
DPT_Name		DPT_En	able										
DPT Format	: :	B ₁							DPT_ID:	1.003			
Field		Descripti	on						Supp.	Range	Unit	Default	t
												disab	le
Access Typ	е												
♦ Output													
this \rightarrow M			th	his \rightarrow 1]							
Spontane	eou	s 🛛	COV:		Δ	-Value:		Minl	RepTime:		10s		
			Cyclic	; 🛛	Р	eriod:	3 Min)			•		
Request			· · · · · ·										
Communic	atio	n Type											
♦ Group C)bje	ct Datapo	oint							Mandator	y: 🛛		
Default C	Prou	ıp Addres	SS:	_						•			
Dynamics		•											
Power do	own	: Save:											
Power up) :	Value) :	No initiali	isatio	n:		Defau	ılt value:				
				Saved va	alue:			Actua	l value (n	ot for input):		
		Trans	mit on	bus (only	for o	utput):		Read	from bus	(only for in	iput):		
Exception I	lan	dling											
Special Fea	tur	es											

2.3.4.7 Output StatusBurnerStage2Enable

Standard mode

DP Name:	StatusBunerStag	ge2Enable	Abbr.:				Manda	itory	$ \boxtimes $
FB Name:	BOC						Can be	e interna	al 🛛
Description									
buner stage 1	/ base stage: ena	able / disable	9						
Datapoint Ty	pe								
DPT_Name:	DPT_Enable								
DPT Format:	B ₁					DPT_ID:	1.003		
Field	Description					Supp.	Range	Unit	Default
									disable
Access Type									
♦ Output									
this \rightarrow M		his \rightarrow 1	\boxtimes						
Spontaneo	us 🛛 COV:		Δ-Value:		Minl	RepTime:		10s	
	Cyclic		Period:	3 Min					
Request									
Communicat	ion Type								
	ject Datapoint						Mandator	y: 🛛	
Default Gro	oup Address: -	-							
Dynamics									
Power dow	n: Save:								
Power up:	Value:	No initialisa			Defau	ılt value:			
		Saved value	e:		Actua	l value (n	ot for input): 🗌	
		bus (only fo	r output):		Read	from bus	(only for in	put):	
Exception Ha	ndling								
Special Featu									
	f BOC is supporti	ng 2-stage b	urner or m	nodulatin	g burn	er; not av	vailable if E	BOC is	supporting
1 stage burr	ner onlv								

2.3.4.8 Output OpHrsBurner

Standard mode

DP Name:	Орн	HrsBurner		Abbr.:				Manda	tory		
FB Name:	BO	C						Can be	e interna	al	\boxtimes
Description											
Current oper	ating	hours stage	1, base stage	of the at	tached b	ourner					
Datapoint T	уре										
DPT_Name:		PT_LongDelt	aTimeSec								
DPT Format:	V ₃	32					DPT_ID:	13.100)		
Field	De	escription					Supp.	Range	Unit	Defau	ult
								>=0 1)	h	0	
Access Typ	е										
♦ Output											
this \rightarrow M			his $\rightarrow 1$								
Spontane	ous	⊠ COV:		Δ-Value:		Minl	RepTime:				
		Cyclic		Period:	1 h						
Request											
Communica	tion	Туре									
Group O	bject	Datapoint						Mandatory	y: 🛛 🖂		
Group ODefault G			-					Mandatory	y: ⊠		
Default G Dynamics	roup							Mandatory	y: ⊠		
Default G	roup		 					Mandatory	y: 🗵		
Default G Dynamics	roup . wn:	Address: -	No initialisati			Defau	ılt value:	Mandatory	y: <u>\</u>		
Default G Dynamics Power do	roup . wn:	Address: -				Actua	l value (n	ot for input): <u> </u>		
Default G Dynamics Power do	roup . wn:	Address: - Save: Value:	No initialisati	: 🗵		Actua	l value (n	,): <u> </u>		
Default G Dynamics Power do	roup wn: :	Address: - Save: Value: Transmit on	No initialisati Saved value	: 🗵		Actua	l value (n	ot for input): <u> </u>		
Default G Dynamics Power do Power up	roup wn: :	Address: - Save: Value: Transmit on	No initialisati Saved value	: 🗵		Actua	l value (n	ot for input): <u> </u>		
Default G Dynamics Power do Power up Exception H Special Fear	wn: : andli	Address: - Save: Value: Transmit on	No initialisati Saved value bus (only for	output):		Actua	I value (n from bus	ot for input (only for in): D		
Default G Dynamics Power do Power up Exception H Special Fea This output is	wn: iandli	Address: - Save: Value: Transmit on ing onal because	No initialisati Saved value	output):		Actua	I value (n from bus	ot for input (only for in): D	[ı not
Default G Dynamics Power do Power up Exception H Special Fea This output is used / not in	wn: : andli tures s option	Address: - Save: Value: Transmit on ing onal because ented	No initialisati Saved value bus (only for	output):	(no boil	Actua Read er sequ	I value (n from bus uence) thi	ot for input (only for in	put):		
Default G Dynamics Power do Power up Exception H Special Fea This output is used / not im 1) encoding	wn: : andli tures s option	Address: - Save: Value: Transmit on ing onal because ented 2 bit signed in	No initialisati Saved value bus (only for in stand alon	output):	(no boil	Actua Read er sequ	I value (n from bus	ot for input (only for in	put):	ılarity (
Power up Exception H Special Fea This output is used / not im 1) encoding the intern	wn: : andli tures s option	Address: - Save: Value: Transmit on ing onal because ented 2 bit signed in	No initialisati Saved value bus (only for	output):	(no boil	Actua Read er sequ	I value (n from bus	ot for input (only for in	put):	ılarity (
Default G Dynamics Power do Power up Exception H Special Fea This output is used / not im 1) encoding the interripossible	wn: iandli andli andli andli andli andli andli	Save: Value: Transmit on ing onal because ented 2 bit signed in solution may	No initialisati Saved value bus (only for in stand alon	output): ne boilers with 1 seceed range	(no boil	er sequentsport f	vence) thi	ot for input (only for in	put):	ılarity (

LTE-HEE mode:

FB:	ВОС	LTE Serv	ver Output Name:	0	pHrsBurne	er				Mandatory ☐ Optional ⊠	
	ription:									-	
			al contains the curre	ent	boiler oper	ating ho	ours: bi	urner st	age 1, b	ase stag	е
(mapp	ed/calcul	ated value	e in the BOC)								
DPT:	Name	DPT_Lo	ngDeltaTimeSec		DPT ID	13.100			format	V ₃₂	
Field			Description			Sup.	Range	e l	Jnit	COV	Default
				>=0 ¹⁾ h							CS
Communication:									-		
Bind	ding Grou	ıp:									
Clas	S		Туре	Гуре Default							
Ge	ographica	al 🗌									
Ap	plication S	Specific $oxtime $	ProdSegmH.Prod	duc	cer			1.1			
	assigned		Broadcast		Configura	ıble 🗌					
DP /	Address:		IO Type(ID):		129 (BOC)		Prop	erty ID:		56	
		s (event):	COV 🗌		MinRepTime		S	ec	Hear	tbeat:	15 min
Inf	oReport		Output per defau	Output per default communicating Binding Group Wildcard allo							ved
(L	ΓΕ Read-l	Response	Tx Prio:	High ☐ Normal ⊠				Low			
ро	lling of the	e output									
	all always pported)	be	Transm after Pov	vei	rup: Stored	Value		ct Valu	e 🗌 D	efault Va	alue 🗌
	perty-Ser ividual ad		Read only	\boxtimes		Read/V	Vrite				
Excep	otion Han	dling:							Save a	at Power	down⊠
Speci	al Featur	es:									
This c	utput is o	ptional be	cause in stand alor	ne l	boilers (no	boiler se	equenc	e) this i	nformat	ion is noi	rmally not
	not imple	emented					-				-
			ned integer value v								
the	internal i	resolution	may be higher. Use	ed	range: 0~	68 year	rs => in	practis	e no bin	ary overf	low
ро	possible										

2.3.4.9 Output ValueDemBOC

FB: E	вос	LTE Serv	er Output Name:	Putput Name: ValueDemBOC Mandatory ⊠ Optional □								
Descrip	otion:											
This sig	ınal is pr	ovided by	the BOC in order t	o control the	corresp	onding	burner	BUC				
DPT:	Name	DPT_Va	lueDemBOC	DPT ID	207.10	2 Da	atatype	format	U ₈ B ₈			
Field			Description		Sup.	Range	е	Unit	COV	Default		
RelBurr			Relative demand % modulating burner		0	0100)%	%	5	0%		
Attribute			Bitset containing co									
Stage	:1Contro	l	controls operation stage 1 or base sta	M M 1)			bool on/off	Y	off			
Stage	2Contro	ı	controls stage 2 fo	controls stage 2 for two stage / modulating burner				bool on/off	Y	off		
Commi	unicatio	n:	modulating barrier		<u> </u>		<u></u>	011/011				
	ng Grou											
Class		•	Туре				Defau	lt				
Geo	graphica	al 🗌										
Appl	lication S	Specific $oxtime oxtime$	ProdSegmH.Prod	ducer			1.1					
Una	ssigned		Broadcast	Configura	able 🔲							
	ddress:		IO Type(ID):	129 (BOC)	Prop	erty ID		53			
		(event):	COV 🛛						rtbeat:	3 min		
	Report			Output per default communicating Binding Group Wildo				dcard allov	ved 🗌			
		Response	Tx Prio:	High 🗌		No	ormal 🔀	3	Low			
shall supp	ng of the I always ported)	be	Transm after Pov	verup: Store	d Value	□ <i>P</i>	Act Valu	ıe 🛚	Default Va	alue 🗌		
(indiv	erty-Servidual ac	cess):	Read only	\boxtimes	Read/V	Vrite						
Except	ion Han	dling:						Save	at Power	down		
	l Featur											
This sig	urner stage control information: see chapter 2.2.4.10 his signal can be device internal if BUC and BOC are located in the same device mandatory if BOC supports modulating burner or 2 stage burner, not supported if BOC may control only 1 stage burner											

2.3.4.10 Output LockSignBOC

FB:	ВОС	LTE Serv	er Output Name:	LockSignBC	C					datory 🗌 otional 🖂
Desc	ription:									
			nis output signal, th							
used	in the HPI	M for boile	r sequence control	and generation	n of Lo	ckSign	HPM s	ignal. T۱	vo types	of
			stinguished: overloa							ested
boiler	temperate	ure can no	t be provided but b	oiler temperat	ture is a	above c	ritical l	ower lim	nit)	
DPT:	Name	DPT_Lo	ckSign	DPT ID	207.10	1 Da	tatype	format	U_8B_8	
Field			Description		Sup.	Range		Unit	COV	Default
PwrR	eduction		Requested power-	consumption	M	0100	%	%	5	CS
			reduction							
			– 0 % no reduction							
			 100% max. reduce 		ļ					
Attributes			Bitset containing st							
LockRequest			indicates if power r		M	true/fa	lse	bool	Y	false
			necessary (validity	of						
_			PwrReduction)							
– Type			type of overload; va		M	critical		bool	Y	uncritical
_			meaningful if Lock	Request=true	<u> </u>	uncritical				
	nunicatio									
	ding Groເ	ıp:	T=				5 (
Clas	_	. –	Туре				Defau	<u>lt</u>		
	eographic									
		Specific	ProdSegmH.Prod				1.1			
	assigned		Broadcast	Configura		_				
	Address:	, ,	IO Type(ID):	129 (BOC)			erty ID:		55	<u>. 1)</u>
	-Services		COV 🗵	MinRepTime						3 1) min
Ini	oReport		Output per defau	it communicat	ating Binding Group Wildcard allowed				ved	
		Response	Tx Prio:	High 🗌		No	rmal 🗵		Low	'
	lling of the			4)						
	all always	be	Transm after Pov	verup: ''Store	d Value	: ∐ A	ct Valu	е 📙 🏻 [Default Va	alue 💹
	pported)									
	perty-Ser ividual ad		Read only	2)	Read/V	Vrite				
Exce	otion Han	dling:	•					Save	at Power	down
	ial Featur									
			internal if BOC and							
			s re-transmitted pei							
			the overload cond							
			he signal is still rep							
			s re-transmission is		a new	overloa	ad cond	dition ap	pears (th	is
			necessary bus-load							
⁻ ′ Re	Read access is possible but in practice not very useful									

2.3.4.11 Output ForceSignBOC

FB:	ВОС	LTE	Serve	er Output Name:	Fo	orceSignB	OC					datory 🗌
Dagas											U	otional 🛚
	ription:		:4b 4b:	a autout alamal. th	-++	ام اما		20129	- th at	tha hailam	haa **a**	nainina
ine B	outo ho us	ales v	vitti tili	s output signal, the	તા ા	ne boller i	Soveme	ealeu (or mai	the poller	nas ren	iaining
energ	y to be us	ea by	y the c	onsumers. See do	ocu	ment [08].	i ne sig	ınaı is i	usea ir	i the HPIV	I TOT DOIL	er
				eration of ForceSig				15				
DPT:	Name	DP		ceSign		DPT ID	21.100			format		1 =
Field			Descr				Sup.	Rang	е	Unit	COV	Default
Attribu				containing status		0	l	l		l		
- Forc	eRequest			tes if forced powe			М	true /	talse	bool	Υ	false
				imption is necessa	ary	(validity						
				naining attributes)			l	l		l		l
- Prot	ection			tes that overheat i	is c	critical (too	M	true /	talse	bool	Υ	false
_				ooiler temp.)								
- Ove	rsupply			tes that overheat i			М	true /	false	bool	Υ	false
				oiler temperature is								
			highe	r than requested b	y h	ıeat						
_				nd from HPM			l					
- Ove	rrun			tes that remaining			М	true /	false	bool	Υ	false
				ble in the boiler af	fter	load						
			shutde									
	VNorm			ailable in ForceSi			NA	false		bool		false
	VLegio			ailable in ForceSi			NA	false		bool		false
	mHComf			ailable in ForceSi			NA	false		bool		false
	mHMax		not av	ailable in ForceSi	gnE	30C	NA	false		bool		false
	nunicatio											
	ding Groເ	ıp:										
Clas				Туре					Defau	ult		
	eographic											
	plication	Speci	ific⊠	ProdSegmH.Producer 1.1								
	assigned			Broadcast		Configura						
DP A	Address:			IO Type(ID):	•	129 (BOC))	Prop	erty ID		54	
LTE	-Services	eve	ent):	COV 🛛		linRepTim		10 9	sec	Hear	beat:	3 ¹⁾ min
Inf	oReport		\boxtimes	Output per defaul	It co	ommunica	ting [Bind	ding G	roup Wild	card allo	wed
				Tx Prio:		High 🗌		No	ormal 🛭	\leq	Low	<i>'</i> 🔲
(L	ΓΕ Read-l	Resp	onse									
	lling of the		out	Transm after Pow	vori	un: 1)Storo	d Value		Act Val	ue 🗆 🖸	efault V	alua 🖂
sh	all always	be		Transin aller Fow	VEI	up. Store	u value	· 🗀 🗡	ici vai	ue 🗀 L	ciault v	alue 🔲
	pported)											
	perty-Ser			Read only 2)	\boxtimes		Read/V	Vrite				
•	ividual ad			Tread only	<u> </u>		T Caar V	VIIIC				
Exce	otion Han	dling	g:							Save a	at Power	down
	al Featur			1 116 0 0 0		. .						
				nternal if BOC and								
				re-transmitted per								
				he forcing condition								
				e signal is still rep								
				re-transmission is		opped unti	ı a new	torcing	j condi	tion appe	ars (this	
				ecessary bus-load								
⁻ ′ Re	Read access is possible but in practice not very useful											

2.3.4.12 Output BoilerSpec

FB: BOC	LTE Serv	er Output Name:	BoilerSpec						datory otional
Description:									
This datapoint of HPM in order to in the corresponding standard H	o allow spending Burr MH applic	he type and charac ecific boiler control nerSpec signal. But ation model) and th ne cases change du	mechanisms. a boiler could erefore the in	The cor I contain formation	ntent o n more on sho	f this s than o uld be	signal is cone burne separate	often the ser (excepted. The value)	same as tion to
DPT: Name		ecHeatProd	DPT ID	216.10				U ₁₆ U ₈ N ₈	B _s
Field		Description		Sup.	Range		Unit	COV	Default
Pnom		Boiler nominal pow	/er	M	0 65		kW	1	CS
		relative power limit	% of stage	M 1)	0100		%	10	cs
D. man a T. ma		1 resp. base stage			[4 2]				
BurnerType		1 stage, 2 stage, m		M	[13]		enum.	Y	CS
FuelType		set of supported fu	uei types	M	b2b0)	bitset	Y	CS
Communication Binding Group									
Class	- - - - - - - - - - 	Туре							
Geographic	al \square	71.				Defa			
Application		ProdSegmH.Prod	ducer			1.1			
Unassigned		Broadcast	Configura	ble 🗍					
DP Address:		IO Type(ID):	129 (BOC)		Prop	erty IE) :	52	
LTE-Services	s (event):	COV 🛛	MinRepTime	e:	sec Heartbeat: r				
InfoReport		Output per defau	It communica	ting				card allov	ved
(LTE Read-		Tx Prio:	High 🗌		No	rmal [\boxtimes	Low	
polling of the shall always supported)	be	Transm after Pov	verup: Stored	l Value	A	ct Val	ue 🛛 🏻 [Default Va	alue 🗌
Property-Ser (individual ad		Read only	\boxtimes	Read/V	Vrite]		
Exception Har	ndling:						Save	at Power	down
Special Featur	es:								
This datapoint I up. The datapo datapoint shall This signal can	This datapoint has usually a constant value and is read once by the HPM after system installation / power up. The datapoint may also change during runtime. In this case spontaneous transmission (COV) of the datapoint shall be supported (no heartbeat). This signal can be device internal if BOC and HPM are located in the same device Output Display the state of the same device internal if BOC and HPM are located in the same device								

2.3.4.13 Output FuelSelect

FB:	вос	LTE Clien	t Output Name:	FuelSelect						datory 🗌 otional 🖂		
Dosc	ription:								Ομ	nioriai 🖂		
		s used by t	the BOC to switch	hetween diffe	rent fue	l ontions	e in the	BLIC T	he BOC	knowe		
			ccording to the Bu				3 111 1110	DOC. 1	ne boo	KIIOWS		
DPT:	Name	DPT_Fue	elType	DPT ID	20.100	Dat	atype f	ormat	N ₈			
Field		Description			Sup.	Range	L	Jnit	COV	Default		
FuelSelect			see above		M	[1-3]	е	num	Υ	CS		
Communication:												
Bine	Binding Group:											
Clas	SS		Туре				Default					
Ge	eographica	al 🔲										
Ap	plication	Specific	ProdSegmH.Prod	ducer			1.1					
Ur	nassigned		Broadcast	Configura	able 🗌							
DP.	Address:		IO Type(ID):	128 (BUC))	Prope	erty ID:	/ ID: 53				
	-Services	`	COV 🛛	MinRepTim		se	ec	Heart	beat:	min		
Wı	rite		Output per defau	It communica	ting	Bindir	ng Grou	p Wildc	ard allov	ved 🗌		
			Tx Prio:	High 🗌			mal 🖂		Low			
			Transm after Pov	verup: Stored	Value	☐ Ac	ct Value	: 🛛 D	efault Va	alue 🗌		
Exce	otion Han	dling:						Save a	t Power	down		
	<u>'</u>		<u>-</u>	·	·	·						
Spec	ial Featur	es:										
This s	is signal can be device internal if BUC and BOC are located in the same device											

2.3.4.14 Output BurnerReset

Standard mode:

DP N	ame:	BurnerReset	Abbr.:			Manda	tory	
FB Na	ame:	BOC				Can be	e interna	al 🛛
Desc	ription							
see L	TE-HEE	Mode						
_	point Ty							
	Name:	DPT_Reset						
	Format:	B ₁			DPT_I	D: 1.015		
Field		Description			Supp.	Range	Unit	Default
						{0,1} 1)	bool	0
Acces	ss Type							
♦ 0	utput							
thi	$s \rightarrow M$		\boxtimes					
Sp	ontaneo	us 🛛 COV:	Δ-Value:		MinRepTim	e:	10s	
		Cyclic	Period:					
	equest							
Comr	municati	ion Type						
		ject Datapoint				Mandator	y: 🖂	
De	efault Gro	oup Address:						
Dyna	mics							
Po	wer dow							
Po	wer up:	Value: No initialisa			Default value			
		Saved value			Actual value			
		Transmit on bus (only for	r output):		Read from bu	us (only for in	put):	
Exce	ption Ha	ndling						
	ial Featι							
		nsient "trigger" command. Only		e '1' is tra	ansmitted. He	artbeat repet	ition of	this signal
is	not allov	ved; no transmission after pow	ver-up					

LTE-HEE mode:

FB:	BOC	LTE Clie	nt Output Name:	BurnerRese	t				Mandatory ☐ Optional 🖂	
Desc	ription:			-					<u> </u>	
			written by the Boile					ote reset	of the bu	rner may
be sa	fety-releva	ant. These	safety mechanism	is are handled	by the	BUC.				
DPT:	Name	DPT_Re	eset	DPT ID	01.015			format	N ₈	
			Description		Sup.	Rang	ge	Unit	COV	Default
BurnerReset		"reset" trigger	eset" trigger		[0/1]		bool	Υ	0	
			0 = no action							
			1 = trigger comma	nd						
Comr	nunicatio	n:			<u>-</u>			<u>-</u>	-5	
Bine	ding Grou	ıp:								
Clas	SS		Туре				Defau	ult		
Geographical										
Ap	plication	Specific	ProdSegmH.Prod	ducer			1.1			
Ur	assigned		Broadcast	Configura	Configurable					
DP A	Address:		IO Type(ID):	128 (BUC)		Property ID: 54				
LTE	-Services	(event):	COV 🛛	MinRepTime	e :		sec	Heart	beat:	¹⁾ min
Wı	rite		Output per defau	ılt communicat	ing	Bind	ding Gro	oup Wildo	ard allov	ved
			Tx Prio:	High 🗌		N	ormal [\overline{d}	Low	
			Transm after Pov	werup: 1)Stored	d Value	: 🗌	Act Val	ue 🔲 D	efault Va	alue 🗌
Exce	otion Har	dling:						Save a	t Power	down
Speci	al Featur	es:								
This s	This signal can be device internal if BUC and BOC are located in the same device This is a transient "trigger" command. Only the value '1' is transmitted. Heartbeat repetition of this signal is not allowed: no transmission after power-up									

2.3.4.15 Output CtrlSignPump

To be defined later together with pump manufacturers.

2.3.4.16 Output TempFlowWaterSetp

Standard mode

DP Nam	e: T	empFlowWa	aterSetp	Abbr.:				Manda	tory	
FB Name	e: E	SOC						Can be	intern	al 🛛
Descript	tion									
see LTE	-HEE n	node								
Datapoi	nt Type	9								
DPT_Na		DPT_Value	_Temp							
DPT For	mat:	F ₁₆					DPT_ID:	_		
Field		Description				Supp.	Range	Unit	Default	
								full range	°C	CS
Access	Type									
♦ Outp	out									
this -	→ M		this \rightarrow 1							
Spon	Spontaneous COV: Δ-Value: 1 °C MinRepTime: 10s									
		C	yclic 🛛	Period:	15 Min	1				
Requ		\boxtimes								
Commu	nicatio	n Type								
♦ Grou	ıp Obje	ct Datapoint	t					Mandatory	/:	
Defau	ult Grou	up Address:								
Dynamic	cs									
Powe	er down	: Save:								
Powe	er up:	Value:	No initialis	_			ılt value:			
			Saved value	_				ot for input)		
		Transmi	t on bus (only f	or output):		Read	from bus	(only for in	put):	
Exception	on Han	dling								
Special	Featur	es								

LTE-HEE mode:

FB:	ВОС	LTE Clie	ent Output Name	Output Name: TempFlowWaterSetp							Mandatory ☐ Optional ⊠	
Desci	ription:			•								
This s	ignal is o	otionally ι	used by the BOC	ю со	ntrol an "int	telligent	" boile	r returr	tempera	ature conf	roller.	
DPT:	Name	DPT_Te	empHVACAbs_Z		DPT ID	205.10	0 D	atatype	format	$V_{16}Z_{8}$		
Field			Description			Sup.	Rang	е	Unit	COV	Default	
Temp	FlowWate	erSetp	temperature set	ooint		М	full ra	nge	°C	1	CS	
Comn	nand		standard Comm	and f	field]			enum			
- Write	Э		normal Write			M						
- other Commands		not applicable			NA							
Communication:							=	<u> </u>				
Binding Group:												
Class		Туре					Defa	ult				
Ge	Geographical											
Ap	plication	Specific _										
	assigned	\boxtimes	Broadcast		Configurable 🗵 1							
DP A	Address:		IO Type(ID):		120 (FTC)		Prop	erty ID):	52		
	-Services	(event):			MinRepTim		10	sec	Hear	tbeat:	15 min	
ıW	rite		Output per defa	ault d	communica	ting	Bind	ling Gr	oup Wild	card allov	ved 🗌	
			Tx Prio:		High 🗌		No	ormal 🛭	\leq	Low		
			Transm after P	owe	rup: Stored	l Value		Act Val	ue 🛛 🏻 [Default Va	alue 🗌	
Exception Handling:									Save	at Power	down	
				•			•					
Speci	ial Featur	es:										
												

2.3.4.17 Input PowerFlowWaterDemHPM

Standard mode: NA LTE-HEE mode:

FB:	BOC	LTE Clien	t Input Name:	Po	werFlowW	aterDen	nHI	PM			latory ⊠ tional □
Desci	ription:										
			he current flow t								
			Producer Manag								
			wWaterDemHPN								
DPT:			etc. is also cons			214.100					CITIC.
ו אט	Name	PM	erFlowWaterDe	ШП	טו ואט	214.100	U	Datatype	iomal	V ₁₆ U ₈ D ₈	
Field	l	1	Description						Sup.	Unit	Default
Temp	FlowDem		flow temperatur	e de	emand / red	uested	boil	er temp	M	°C	CS
RelDe	emLimit		Relative deman	d %	: max. limit	ation for	r mo	odulating	M 1)	%	cs
			burner => used			nce					
Attribu			Bitset containing								
– Ten	npFlowDe	mValid	validity of Temp						М	bool	CS
04-	4 🗆	1	('false' means a					I		11	
– Stag	ge1Enable	ea	enabled / diable					be	M	bool	CS
activated by the BOC => forced or auto - Stage1Forced forced / auto: if forced: stage 1 is generally on M both										bool	cs
– Ota	ge II Olcei	J							IVI	booi	CS
if auto: stage 1 is activated if necessary according to boiler temperture											
– Stad	ge2Enable	Э	stage 2 control:						$M^{2)}$	bool	cs
	ge2Force		stage 2 control:						$M^{2)}$	bool	cs
– Boil	erEnable		enable / disable	: bo	iler pump i	s on (wa	ter	flow)	М	bool	cs
			must be enable	d be	efore burne	r is turne	ed c	on			
	nunicatio										
	ding Groເ	ıp:									
Clas			Туре				De	efault			
	ographic										
		Specific	ProdSegmH.Pro				1.1	1			
	assigned		Broadcast (ID)		Configurat		Ļ	(15		50	
	Address:	/avan4\-	IO Type(ID):	£~~	136 (HPM		Р	roperty ID	:	52	
	-Service oReport	(event):	InfoReport Snif Timeout:	iei	on Binding		Mi				
		 (polling):									
	ad – Res		Read Wildcard	/ Re	sp Sniffer o	on Bindii	ng (Group: -	-		
Value	after Po	werup:	Defa	ult V	′alue ⊠				(Stored Va	lue 🗌
Exce	otion Han	dling:								werdown	
			e a company sp	ecifi	c default va	alue afte	r po	ower-up o	r in case	of comm	unication
failure	e, if no dat	a from HPN	/I is received								
	al Featur										
This in	nput can b	pe internal (1:1 link with HPI	M)		t 1 16	-	0		. 4 -4	0
			rts modulating b	urne	er; not supp	опеа п	BO	C may co	ntroi oni	y i stage	or Z
2) mar	ige burne	i BOC sunno	rts modulating b	ıırna	er or 2 etea	e hurner	r n	nt sunnort	ed if RO	C may co	ntrol only
1101	stage burr	ner Doo suppu	i to modulating b	uiiit	o o z stay	C DUITIEI	, 110	σι συμμυπ	Ca ii DO	o may co	in or orny
		ntrol: table	below								

Burner type	Boiler Mode		Stage 1 enabled	Stage 1 forced	Stage 2 enabled	Stage 2 forced	Rel Demand Limit	Flow Temp Dem
1 Stage	disabled		0	х	X	X	X	Х
	enabled	forced	1	1	X	X	X	Х
		auto *)	1	0	X	X	X	°C
2 Stage	disabled		0	х	х	X	X	X
	Stage 1 enabled	Stage1 forced	1	1	0	X	X	Х
	Stage 2 disabled	Stage 1 auto	1	0	0	X	X	°C
	Stage 2 enabled	Stage 1 & 2 forced	1	х	1	1	X	X
		Stage 1 auto Stage 2 auto *)	1	0	1	0	Х	°C
		Stage 1 forced Stage 2 auto	1	1	1	0	X	°C
Modulating	disabled		0	х	х	X	X	X
	Base Stage enabled	B. Stage forced	1	1	0	X	X	X
	Modulation disabled	B. Stage auto	1	0	0	X	X	°C
	Modulation enabled	forced (100 %)	1	х	1	1	X	X
		B. Stage auto Modulation limit	1	0	1	0	%	°C
		B. Stage forced Modulation limit	1	1	1	0	%	°C
		auto *)	1	0	1	0	100%	°C

^{*)} typically stand alone operation, all other states are usually used in boiler cascade

 Table 8: Boiler Power Control (PowerFlowWaterDemHPM)

2.3.4.18 Input StatusBUC

Standard mode: NA LTE-HEE mode:

FB: BOC LTE Clien	t Input Name:	StatusBUC					latory 🛚			
Description:										
This process signal from E	SUC contains sta	tus information	of the b	urner to be i	used in th	ne BOC for	r boiler			
control.										
DPT: Name DPT_Star	tusBUC	DPT ID	207.100	Datatyp	e format	U ₈ B ₈				
Field	Description				Sup.	Unit	Default			
PrelBurner 1)	Current relative				M	%	0%			
Attributes	Bitset containin	g status info								
– Fault	burner failure				M	bool	false			
StatusStage1	stage 1 or base	stage active			M	bool	false			
StatusStage2	stage 2 active				M	bool	false			
 PrelBurnerValid ¹⁾ 	validity of PrelE	Burner Field			M	bool	false			
Communication:										
Class Type Default										
Class	Туре			Default						
Geographical 🔲			.							
Application Specific⊠	ProdSegmH.Pr		<u></u>	1.1						
Unassigned	Broadcast	Configura								
DP Address:	IO Type(ID):	128 (BUC	,	Property II	D:	51				
LTE-Service (event):	InfoReport Sni	ffer on Binding								
InfoReport 🖂	Timeout:		7	Min						
LTE-Service (polling): Read – Response ☐	Read Wildcard	/ Resp Sniffer	on Bindir	ng Group:						
Value after Powerup:	Defa	ult Value 🛚		_	,	Stored Val	lue 🗌			
Exception Handling:				S	ave at Po	owerdown				
-										
Special Features:										
This input can be internal										
¹⁾ value for 1 stage burne										
value for 2 stage burne							on. But			
this is an optional featu	re: This field is o	ptional for 2 st	age burn	er => validit	y accord	ing to				
PrelBurnerValid flag										
²⁾ value for 1 stage burner:	void => OpHrs	St2Valid Flag=	false							

2.3.4.19 Input OpHrsBurnerStage1

Standard mode

DP Name:	<u>OphrsBurnerSta</u>	ge1 Abbr.:			Mandat	ory	
FB Name:	BOC				Can be	interna	al 🛛
Description							
Current burner	operating hours	for stage 1 / base sta	ge of the attach	ned burner			
Datapoint Typ							
DPT_Name:	DPT_LongDelt	aTimeSec					
DPT Format:	V ₃₂			DPT_ID:	13.100		
Field	Description			Supp.	Range	Unit	Default
)	>=0 1)	h	0
Access Type							
♦ Input							
$N \rightarrow this$		$I \to this$					
Spontaneo	us 🛛	Cyclically:	\square	Time-c	out:	121 m	iin
Request		Polling:		Period			
Communicati	on Type						
♦ Group Obj	ect Datapoint			1	Mandatory	: 🛛	
Default Gro	oup Address: -	-					
Dynamics							
Power dow	n: Save:	\square					
Power up:	Value:	No initialisation:	Defau	ılt value:			
		Saved value:	Actua	I value (no	t for input)		
	Transmit on	bus (only for output):	Read	from bus (only for inp	out):	
Exception Ha	ndling						
Special Featu	res						
encoding c	n 32 bit signed ir	nteger value with 1 sec	cond transport f	ormat reso	olution. The	granu	larity of
the interna	I resolution may	be higher. Used range	: 0~68 years	=> in practi	se no bina	ry ove	rflow
possible							

LTE-HEE mode:

FB:	ВОС	LTE Clier	nt Input Name:	ne: OpHrsBurnerStage1						Mandatory ⊠ Optional □		
Desc	ription:	-		=						-		
Curre	nt burner	operating	hours for stage 1	/ ba	se stage o	f the atta	ache	d burne	r			
DPT:	Name	DPT_Loi	ngDeltaTimeSec		DPT ID	13.100		Datatyp	e format	V ₃₂		
Field			Description						Sup.	Unit	Default	
										h	0	
Com	municatio	n:	•						-	-	_	
Bin	ding Gro	up:										
Clas			Туре				Def	ault				
Geographical												
Ap	plication	Specific⊠	ProdSegmH.Pr	oduc	cer		1.1					
	nassigned		Broadcast		Configural	ole 🗌						
DP	Address:		IO Type(ID):		128 (BUC)	Pro	operty I	D:	55		
LTE	-Service	(event):	InfoReport Sni	ffer	on Binding	Group:						
In	foReport	\boxtimes	Timeout:			31	Min					
	-Service ead – Res	(polling): ponse	Read Wildcard	/ Re	sp Sniffer	on Bindi	ng G	roup:				
Value	after Po	werup: 1)	Defa	ult V	alue 🗌				-	Stored Va	lue 🛚	
Exception Handling: Save at Power							owerdown	\boxtimes				
												
Spec	ial Featu	res:										
			(1:1 link with BU									
1) end	oding on	32 bit signe	ed integer value v	vith	1 second <u>t</u>	ransport	form	<u>nat</u> reso	lution. Th	ie granulai	rity of the	
			higher. Used rar									

2.3.4.20 Input OpHrsBurnerStage2

Standard mode

DP Name:	OpHrsBurne	rStage2	Abbr.:					Manda	atory "		
FB Name:	BOC							Can b	e intern	al	\boxtimes
Description											
Current burn	er operating h	ours for stag	e 2 / modulat	ion of the	e attach	ned bu	ırner				
Datapoint T	/pe										
DPT_Name:	DPT_Long	DeltaTimeSe	ec								
DPT Format:	V ₃₂					DPT	ID:	13.100)		
Field	Description	า				Supp). F	Range	Unit	Defa	ult
								>=0 1)	h	0)
Access Type	9										
♦ Input											
$N \rightarrow this$		$1 \rightarrow \text{this}$									
Spontane	ous 🛛	C	yclically:			T	ime-c	out:	121 m	nin	
Request		Р	olling:			Р	eriod	:			
Communica	tion Type	<u>. </u>									
♦ Group O	bject Datapoir	nt					1	Mandator	y: 🛛	2)	
Default G	roup Address:										
Dynamics											
Power do	wn: Save:										
Power up	: Value:	No initi	alisation:		Defau	ılt valu	ıe:				
		Saved	value:	3	Actua	l value	e (not	t for input	t):		
	Transm	it on bus (on	ly for output):		Read	from	bus (only for ir	nput):		
Exception H	andling										
-											
Special Feat	ures										
	on 32 bit sign										of
	al resolution n	nay be highe	er. Used range	e: 0~68	years =	=> in p	oracti	se no bin	ary ove	rflow	
possible											
41 22 22 24 24 2 24	:f DOO :				I- · · · · · · · · · · · · · · · · ·		_ 4	.: _ :£ F	000 = 100		rtina
1 stage bu	IT BOC IS SUPP	porting 2-stag	ge burner or r	nodulatıı	ng burn	er; no	ot ava	allable it E	SOC IS	suppoi	ııııg

LTE-HEE mode:

FB:	ВОС	LTE Clien	E Client Input Name: OpHrsBurnerStage2					Mandatory \boxtimes^2 Optional				
Desci	ription:			-						-		
Curre	nt burner	operating h	nours for 2 / mod	ulati	on of the	attached	bur	ner				
DPT:	Name	DPT_Lor	gDeltaTimeSec		DPT ID	13.100		Dataty	pe format	V ₃₂		
Field			Description						Sup.	Unit	Default	
										h	0	
Comr	nunicatio	n:	•						Ī			
Bind	ding Grou	ıp:										
Clas	SS		Туре				De	efault				
Ge	Geographical											
Application Specific⊠ ProdSegmH.Producer 1.1												
Unassigned												
DP A	Address:		IO Type(ID): 128 (BUC) Property ID:							56		
LTE	-Service	(event):	InfoReport Snit	foReport Sniffer on Binding Group:								
Inf	oReport	\boxtimes	Timeout:			31	Mi	in				
	- Service ead – Res	(polling): ponse ☐	Read Wildcard	/ Re	sp Sniffer	on Bindi	ing	Group:				
Value	after Po	werup: 1)	Defa	ult V	/alue 🗌				-	Stored Va	lue 🗵	
Exce	otion Han	dling:							Save at Po	owerdown	\boxtimes	
Speci	Special Features:											
¹⁾ ence intern ²⁾ man	oding on 3 al resoluti	32 bit signe on may be 3OC is sup	(1:1 link with BU0 ed integer value v higher. Used rar porting 2-stage b	vith nge:	0~68 ye	ars => in	pra	actise no	binary ov	erflow pos	ssible	

2.3.4.21 Input BurnerSpec

Standard mode: NA **LTE-HEE mode:**

FB: BOC	LTE Clien	t Input Name:	BurnerSpec						latory	
Description								Ор	tional 🛚	
Description:			, , ,				T , .			
	_	UC specifies the	• •						on is	
		er in order to acti								
DPT : Name	DPT_Spe	cHeatProd	DPT ID	216.100	0 [Datatype		.0 0 0		
Field		Description					Sup.	Unit	Default	
Pnom		Burner nominal					M	kW	cs	
BstageLimit 1)		relative power l			base	stage	M	%	cs	
BurnerType		1 stage, 2 stage		etc.			M	enum.	cs	
FuelType		set of supporte	d fuel types				M	bitset	CS	
Communication	n:									
Binding Grou	up:									
Class Type Default										
Geographic	al 🔲									
Application	Specific⊠	ProdSegmH.Pr	oducer		1.1					
Unassigned		Broadcast	Configura	ble 🗌					_	
DP Address:		IO Type(ID):	128 (BUC	C)	Pro	perty ID	:	52		
LTE-Service	(event):	InfoReport Snit	ffer on Bindin	g Group:		-	-			
InfoReport	\boxtimes	Timeout:			Min					
LTE-Service	(polling):	Read Wildcard	/ Doen Sniffer	on Bindi	na G	roun:				
Read – Res	ponse 2)	ixeau vviiucaiu	/ IXesp Sillie	on bindi	ng G	Toup.				
Value after Po	werup:	Defa	ult Value 🛚				5	Stored Val	lue 🗌	
Exception Har	ndling:					Sa	ve at Po	werdown		
2) If the BUC is	not support	ing this datapoin	t (no response	e => time	out),	the boile	er contro	ler will us	e a	
company spe	company specific default value, as well as after power-up or in case of communication failure									
Special Featur	Special Features:									
This datapoint	has usually	a constant value	and is read o	nce by th	ne BC	OC after	system i	nstallation	າ / power	
up. But in some	e cases it m	ay change durin	g runtime. Cha	anges are	e rep	orted by	the BUC	spontane	eously	
(no heartbeat!)	and theref	ore spontaneous	reception mu	st be sup	porte	ed in the	BOC		-	
		1:1 link with BU	C)							
1) dummy value	for 1 stage	burner: 100%								

2.3.4.22 Input TempFlowWater

Standard mode

DF	Name:	Tem	pFlow₩	/ater	1	Abbr.:					Ma	andat	ory		
FB	Name:	BOC	;								Ca	an be	interna	al	\boxtimes
De	scription														
se	e LTE-HEE	mod	е												
Da	tapoint Ty	ре													
DF	PT_Name:	DP	T_Value	e_Temp											
DF	PT Format:	F ₁₆							DP	T_ID:	9.0	001			
Fie	eld	De	scription	1					Sup	op.	Range	е	Unit	Defau	ult
											full ra	nge	°C	CS	3
Ac	cess Type														
♦	Input														
	$N \to this$			$1 \rightarrow th$	is										
	Spontaneo	us	\boxtimes		Cyclical	lly:	\square			Time	-out:		31 mii	า	
	Request				Polling:					Perio	od:				
Co	mmunicati	ion T	уре												
•	Group Ob	ject [Datapoir	nt							Mand	atory	":		
	Default Gro	oup A	\ddress:												
Dy	namics														
	Power dow	/n:	Save:												
	Power up:		Value:	No in	itialisatio	on:		Defau	ılt va	alue:			\square		
				Save	d value:			Actua	ıl val	lue (n	ot for i	nput)	: 🔲		
			Transm	nit on bus (only for o	output):		Read	fron	n bus	(only f	or inp	out):		
Ex	ception Ha	ındli	ng												
Sp	ecial Featu	ıres													

LTE-HEE mode:

FB:	ВОС	LTE Client	nt Input Name: TempFlowWater								Mandatory ☐ Optional ⊠	
Desci	ription:									-		
			flow temperatur									
			cade) which ma	y be	optionally	used b	y the	BOC ins	stead of a	local flow	/	
tempe	erature se	nsor										
DPT:	Name	DPT_Tem	npHVACAbs_Z		DPT ID	205.1	00	Datatype	e format	$V_{16}Z_{8}$		
Field			Description						Sup.	Unit	Default	
Temp	FlowWate	er	temperature va	lue					M	°C	cs	
Status	3		standard Status	attr	ributes				M	bitset		
- Out	OfService		void sensor val	ue tr	ue / false				M	bool	false	
- Faul	t		sensor failure ti						M	bool	false	
- Ove	rridden		sensor value ov						0	bool	false	
- InAla			sensor value al						0	bool	false	
	mUnAck		alarm acknowle	edge	ment statu	ıs ack /	una	ck	0	bool	unack	
	ther flags		not supported						NA	bool		
Comr	nunicatio	n:										
Bind	ding Grou	ıp:										
Clas			Type				De	efault				
Ge	ographica	al 🗌										
Ap	plication S	Specific⊠	ProdSegmH				1					
	assigned		Broadcast		Configura	ole 🗌						
DP A	Address:		IO Type(ID):		324 (FWT	S)	Р	roperty II	D:	51		
	-Service	(event):	InfoReport Sni	ffer	on Binding							
Inf	oReport	\boxtimes	Timeout:			3	1 Mi	in				
		(polling):	Read Wildcard	/ Re	sp Sniffer	on Bind	ding	Group:				
	ad – Res				•		- 3				. —	
	Value after Powerup: Default Value □ Stored Value □											
	otion Han									werdown		
			e a company sp	ecifi	c default v	alue af	ter p	ower-up o	or in case	of comm	unication	
		nsor data is	received.									
	ecial Features:											
This in	nput can b	oe internal										

2.3.4.23 Input TempReturnWater

Standard mode

DF	P Name:	Tem	pReturnWa	ter		Abbr.:				Ma	andat	ory		
FB	Name:	BOC	;							Ca	n be	interna	al	\boxtimes
De	scription													
se	e LTE-HEE	mod	е											
Da	tapoint Ty	ре												
DF	PT_Name:	DF	T_Value_T	emp										
DF	PT Format:	F ₁₆	i					DP	T_ID:	9.0	001			
Fie	eld		scription					Sup	ор.	Range	е	Unit	Defau	ılt
										full rai	nge	°C	cs	;
Ac	cess Type													
♦	Input													
	$N \rightarrow this$			$1 \rightarrow th$	is	\boxtimes								
	Spontaneo	us			Cyclica	ally:			Time	-out:		31 mii	า	
	Request				Polling	:			Perio	od:				
Co	mmunicati	ion T	уре											
♦	Group Ob	ject [Datapoint							Mand	atory	: 🗆		
	Default Gro	oup A	Address:											
Dy	namics													
	Power dow	n:	Save:											
	Power up:		Value:	No in	itialisati	ion:	Defau	ılt va	alue:			\boxtimes		
				Save	d value	:	Actua	ıl val	ue (n	ot for ir	nput):			
			Transmit or	n bus (e	only for	output):	Read	fron	n bus	(only f	or inp	out):		
Ex	ception Ha	ndli	ng											
Sp	ecial Featu	ıres												

LTE-HEE mode:

FB:	вос	LTE Clien	ent Input Name: TempReturnWater								datory 🗌 otional 🏻
Descri	iption:										
This pr	rocess sig	gnal from a	temperature ser	nsor	contains t	he comn	non	return w	ater temp	erature o	f the
hydrau	ılic boiler	group (cas	cade).								
DPT:	Name	DPT_Ten	npHVACAbs_Z		DPT ID	205.100	0	Datatyp	e format	$V_{16}Z_{8}$	
Field			Description						Sup.	Unit	Default
TempF	ReturnWa	ater	temperature val	ue					M	°C	cs
Status			standard Status	attr	ibutes				M	bitset	
- OutO	fService 1		void sensor valu	ue tr	ue / false				M	bool	false
- Fault			sensor failure tr	ue /	false				M	bool	false
- Overridden sensor value overridden true / false O										bool	false
- InAlarm sensor value alarm true /false O I										bool	false
- AlarmUnAck alarm acknowledgement status ack / unack O be										bool	unack
										bool	
Comm	nunicatio	n:								-	-
Bind	ing Groເ	ıp:									
Class	S		Туре				De	efault			
Geo	ographica	al 🔲									
App	olication S	Specific	ProdSegmH			•	1				
Una	assigned		Broadcast		Configura	ble 🗌					
DP A	ddress:		IO Type(ID):		325 (RNV	VTS)	Pi	roperty II	D:	51	
LTE-	Service	(event):	InfoReport Snif	fer	on Bindin	g Group:					
	Report	\boxtimes	Timeout:			31	Mi	n			
	Service ad – Resp	(polling): ponse	Read Wildcard	/ Re	sp Sniffer	on Bindii	ng (Group:			
Value	after Pov	werup:	Defa	ult V	′alue 🛚			•	;	Stored Va	lue 🗌
Excep	tion Han	dling:						S	ave at Po	owerdown	
The bo	oiler contr	oller will us	e a company sp	ecifi	c default v	alue afte	r po	ower-up	or in case	of comm	unication
failure,	, if no ser	nsor data is	received.								
Specia	pecial Features:										
This in	put can b	e internal									

2.3.4.24 Input TempOutside

Standard mode

DF	P Name:	Tem	pOutside			Abbr.:				Mai	ndat	ory		
FB	Name:	BOC	,							Car	n be	interna	al	\boxtimes
De	scription													
se	e LTE-HEE	mod	е											
Da	tapoint Ty	ре												
DF	PT_Name:	DP	T_Value_	Temp										
DF	PT Format:	F ₁₆	i					DP	T_ID:	9.0	01			
Fie	eld		scription					Sup	op.	Range	:	Unit	Defau	lt
										full ran	ige	°C	cs	
Ac	cess Type													
♦	Input													
	$N \rightarrow this$]	$1 \rightarrow th$	is	\boxtimes								
	Spontaneo	us			Cyclica	ally:			Time	-out:		31 mii	า	
	Request				Polling	J.			Perio	d:				
Co	mmunicati	on T	уре											
♦	Group Ob	ject [Datapoint							Manda	atory	: 🗆		
	Default Gro	oup A	Address:											
Dy	namics													
	Power dow	'n:	Save:											
	Power up:		Value:	No in	itialisat	ion:	Defau	ılt va	alue:			\boxtimes		
				Save	d value	:	Actua	ıl val	ue (n	ot for in	put)	: [
			Transmit of	on bus (only for	output):	Read	fron	n bus	(only fo	or inp	out):		
Ex	ception Ha	ndli	ng											
Sp	ecial Featu	ires												

LTE-HEE mode:

FB:	ВОС	LTE Clien	t Input Name:	TempC	Outside	9					datory 🗌 otional 🏻
Descr	iption:									<u>'</u>	
Outsic	de temper	ature from	a remote outside	temper	rature s	sensor ca	an be use	ed for	local S	SummerM	ode
mecha	anism										
DPT:	Name	DPT_Ten	npHVACAbs_Z	DP	T ID	205.100	Datat	type t	format	$V_{16}Z_{8}$	
Field			Description						Sup.	Unit	Default
Temp	Outside		temperature val	ue					M	°C	cs
Status	3		standard Status	attribut	es				М	bitset	
- OutC	OfService		void sensor valu	ue true /	false				M	bool	false
- Faul	t		sensor failure tr	ue / fals	e				M	bool	false
- Over	ridden		sensor value ov	erridder	n true /	false			0	bool	false
										bool	false
										bool	unack
0 11										bool	
Communication:											-
Bind	ding Grou	ıp:									
Clas			Туре				Default				
Ge	ographica	al 🔲									
Ap	plication S	Specific⊠	OutsideSensor2	Zone			1				
Un	assigned		Broadcast	Cor	nfigurat	ole 🗌					
DP /	Address:		IO Type(ID):	320	OTS))	Propert	y ID:		51	
LTE	-Service	(event):	InfoReport Snif	fer on E	Binding	Group:					
Inf	oReport	\boxtimes	Timeout:			31	Min				
		(polling):	Read Wildcard	/ Doen 9	Sniffer	on Rindir	a Group				
Re	ad – Res	ponse	ineau villucatu i	r ivesp c		on bindii	ig Group				
Value after Powerup: Default Value ∑ Stored Y								Stored Va	lue 🗌		
Excep	otion Han	dling:						Sav	e at Po	werdowr	
			e a company sp								
failure	, if no ser	nsor data is	received. The or	utside te	empera	iture valu	ie from a	nothe	er OTS	(different	zone)
may a	lso be us	ed (compar	ny specific behav	riour)							
Speci	al Featur	es:									
This in	nput can b	e internal								· · · · · · · · · · · · · · · · · · ·	

2.3.4.25 Input StatusFTC

Standard mode: NA **LTE-HEE mode:**

FB: BOC	LTE	Clien	t Input Name:	Sta	tusFTC						latory ∐ tional ⊠	
Description:										Ор	tional 🖂	
	ntains t	he cu	rrent flow tempe	ratu	re and oth	er status	inform	nation	of a Flow	/ Tempera	iture	
Controller	intainio t	110 00	ment now tempe	iata	ic and our	or otatao		lation	01 4 1 10 1	rempere	itaic	
	t" boiler	returr	n temperature co	ntro	ller sends	it status i	inform	ation t	o the BO	C. The Bo	OC mav	
			timized boiler co								,	
DPT: Nam	e DPT	Stat	tusWTC		DPT ID	209.103	3 Da	atatype	e format	V ₁₆ B ₈		
Field		_	Description						Sup.	Unit	Default	
TempWater			current flow ten	npera	ature of F	ГС			М	°C	CS	
Attributes												
- TempWater	Valid		validity of Temp						M	bool	false	
- Fault			some failure in		FTC				M	bool	false	
- CtrlStatus Controller status O bool											on	
on: FTC is working (default if not supported)												
	off: FTC is stopped; no control of flow temperature											
Communicat	tion:											
Binding Gr	oup:											
Class			Туре					Defa	ult			
Geograph		<u></u> _										
Application		ic	<u></u>			<u></u>						
Unassigne		\boxtimes	Broadcast		Configur			1				
DP Address			IO Type(ID):		120 (FTC		Prop	erty IE):	51		
LTE-Servic		<u>-</u>	InfoReport Snit	ffer	on Binding	g Group:						
InfoReport		\boxtimes	Timeout:			31	Min					
LTE-Servic			Read Wildcard	/ Re	sn Sniffer	on Rindir	na Gro	un.				
Read – Re							ig Oio	up.				
Value after P	owerup):	Defa	ult V	alue 🛚				(Stored Va	lue 🗌	
Exception Ha	andling	:						S	ave at Po	werdown		
Special Feat												
This input car	n be inte	rnal										

2.3.4.26 Parameter ProdSegmH

FB:	ВОС	Property	Name (<u>Server</u>):	P	rodSegml	1						datory 🛚
Desc	ription:										<u> </u>	ntioriai 🔝
	•	rmation F	Heat Production Seg	m	ent							
DPT:	Name		countValue8 Z	_	DPT ID	202.002		Dat	atype forma	at	U ₈ Z ₈	
Field	<u> </u>	_	Description		·I.		Su		Range		Jnit	Default
Coun	terValue		Heat Production Se	eg	ment numb	per			116	-		1
Status	S			ive O true/false ed to '0' NA e			oitset					
- Out	OfService		zone active /inactiv	/e			C)	true/false			false
- all o	ther flags		not supported, fixe									
Comr	nand								e	enum		
- Norr	malWrite											
	DSV & Re		set zone inactive /	ve / active								
- all o	ther comn	nands	not supported				N.	A				
Com	nunicatio	n:										
DP .	Address:		IO Type(ID):		129 (BOC)	Pro	ope	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											
Special Features:												
	BOC DP's are not LTE communicating if zone is 'OutOfService'. If ProdSegmH is 'OutOfService' also the											
corres	spoinding	Producer	zone is 'OutOfServ	ice	e' (commo	n flag)						

2.3.4.27 Parameter Producer

FB:	BOC	Property	/ Name (<u>Server</u>):	Р	roducer					datory 🛚		
Desc	ription:			-						ptional		
	_	rmation I	Heat Producer numb	er	•							
DPT:	Name	DPT_U	countValue8_Z		DPT ID	202.002	D	atatype forma	t U ₈ Z ₈			
Field		_	Description		•		Sup		Unit	Default		
Coun	terValue		Producer-number				М	131		1		
Status	3			ictive O true/false NA					bitset			
	OfService		zone active /inactive	/e			_	true/false		false		
- all o	ther flags		not supported, fixe	fixed to '0' N						.		
Comr	nand		Ε						enum			
	nalWrite		M O									
	DSV & Re											
- all o	ther comn	nands	not supported				NA					
Comr	nunicatio	n:										
DP .	Address:		IO Type(ID):		129 (BOC)		erty ID:	102			
(in t	he serve	r)	Start-Index:		1		N° o	f elements	1			
	perty acc	ess:	Read only			Read/W		\boxtimes				
Protection Read level Write level												
Exce	xception Handling: Value after Powerup: Stored Value 🖂 Act Value 🗌 Default Value 🗌											
Spec	Special Features:											
	BOC DP's are not LTE communicating if zone is 'OutOfService'. If ProdSegmH is 'OutOfService' also the											
corres	spoinding	Producer	zone is 'OutOfServ	ice	e' (commo	n flag)						

2.3.4.28 Parameter PeripheralLinkPump

FB:	ВОС	Property	Name (<u>Server</u>):	P	eripherall	_inkPum	р					datory 🗌	
											Uβ	tional 🛚	
	ription:												
LTE z	oning nur	nber Peri	heral link to boiler	pui	mp								
DPT:	Name	DPT_U	countValue16_Z		DPT ID	203.012	2	Dat	atype forma	tΙ	U ₁₆ Z ₈		
Field			Description				S	Sup.	Range		Jnit	Default	
Count	erValue		peripheral link num	ıbe	er			M	full		_	1	
Status	3]			b	itset		
- Out	OfService		zone active /inactiv								false		
- all of	ther flags		not supported, fixe	o '0'		1	NA						
Comn	nand									е	num		
- Norr	nalWrite			M									
- SetC	SV & Re	setOSV	set zone inactive /	/ active O									
- all of	ther comn	nands	not supported				1	NA					
Comr	nunicatio	n:								-			
DP /	Address:		IO Type(ID):		129 (BOC	;)	Р	rope	rty ID:	1	103		
(in t	he serve	r)	Start-Index:		1		Ν	l° of	elements	1			
Pro	perty acc	ess:	Read only			Read/W	/rite	е	\boxtimes				
Protection Read level Write level													
Excep	cception Handling: Value after Powerup: Stored Value 🖂 Act Value 🗌 Default Value 🗌												
Speci	pecial Features:												
BOC i	s not LTE	commun	icating with the pum	ηр	if zone is '	OutOfSe	rvi	ce'					

2.3.4.29 Parameter PeripheralLinkFTC

FB:	ВОС	Property	Name (<u>Server</u>):	PeripheralL	inkFTC				datory 🗌			
Desc	ription:			-				<u> </u>				
LTE 2	zoning nur	nber Peri	pheral link to FTC									
DPT:	Name	DPT_U	countValue16_Z	DPT ID	203.012	Dat	atype forma	It $U_{16}Z_8$				
Field			Description			Sup.	Range	Unit	Default			
Coun	terValue		peripheral link num	umber M full					1			
Statu	S							bitset				
- Out	OfService		zone active /inactive						false			
- all o	ther flags		not supported, fixe	xed to '0' NA								
	mand											
I	malWrite					M						
- Set	OSV & Re	setOSV	set zone inactive /	active		0						
- all o	ther comr	nands	not supported			NA						
Com	municatio	n:					_	-	-			
DP	Address:		IO Type(ID):	129 (BOC))		rty ID:	104				
(in t	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	Exception Handling: Value after Powerup: Stored Value Act Value Default Value											
Special Features:												
BOC	is not LTE	commur	icating with the FTC	C if zone is 'O	utOfServ	ice'						

2.3.4.30 Parameter OutsideSensorZone

FB:	BOC	Property	Name (<u>Server</u>):	0	utsideSen	sorZone)					datory 📙
											Op	tional 🛚
Desci	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	at	U ₈ Z ₈	
Field			Description				S	up.	Range	Ų	Jnit	Default
Count	erValue		Outside sensor zor	ne	number			M	131	-	-	1
Status	3									b	oitset	
- Out	OfService		zone active /inactiv									false
- all o	ther flags		not supported, fixe									
Comn	nand									е	enum	
- Norr	nalWrite			M								
- SetC	OSV & Re	setOSV	set zone inactive /	/ active O								
- all of	ther comr	nands	not supported				١	١A				
Comr	nunicatio	n:	-					•				
DP A	Address:		IO Type(ID):		129 (BOC)	Pı	rope	rty ID:	1	105	
(in t	he serve	r)	Start-Index:		1		N'	° of e	elements	1	1	
Pro	perty acc	ess:	Read only			Read/W	rite	;	\boxtimes			
Protection Read level Write level												
Exce	ception Handling: Value after Powerup: Stored Value ☑ Act Value ☐ Default Value ☐											
Speci	Special Features:											
BOC i	is not usir	ng an exte	rnal outside temper	atı	ure sensor	if zone is	, <u>O</u>	ot O	fService'		·	

2.3.4.31 Parameter TempBoilerMax

FB:	ВОС	Property	Name (<u>Server</u>):	TempBoiler	Max				datory ptional			
Desc	ription:			-				<u> </u>				
Max.	limitation	of boiler to	emperature									
DPT:	Name	DPT_H	VACTempAbs_Z	DPT ID	205.100	Dat	atype forma	t $V_{16}Z_8$				
Field			Description			Sup.	Range	Unit	Default			
Temp)		temperature value			M	cs	° C	CS			
Statu	S							bitset				
- Out	OfService		max limitation active	/e /inactive		0	true/false		false			
- all o	ther flags		not supported, fixe	d to '0'		NA						
Comr	mand					enum						
	malWrite			M								
	DSV & Re		set limitation parar	neter inactive	/ active	0						
- all o	ther comr	nands	not supported			NA						
Com	municatio	n:										
DP	Address:		IO Type(ID):	129 (BOC)		Prope	erty ID:	114				
(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	Exception Handling: Value after Powerup: Stored Value 🗌 Act Value 🔲 Default Value 🗌											
Special Features:												
Limita	ation funct	ion is acti	vated or deactivated	d by the 'OutO	fService	e' Statu	S					

2.3.4.32 Parameter TempBoilerMin

FB:	ВОС	Property	Name (<u>Server</u>):	T	empBoile	rMin						datory [
											0	ptional 🛚
Desc	ription:											
Min. I	imitation o	of boiler te	mperature									
DPT:	Name	DPT_H	VACTempAbs_Z		DPT ID	205.1	00	Da	tatype forma	at \	/ ₁₆ Z ₈	
Field			Description				S	Sup.	Range	U	nit	Default
Temp)		temperature value					М	cs	0	С	cs
Statu	 S									b	itset	
- Out	OfService		min limitation activ	e/	inactive			0	true/false			false
- all o	ther flags		not supported, fixe	oported, fixed to '0'				NA				
Comr	nand								е	num		
- Nori	malWrite			M								
- Set	DSV & Re	setOSV	set limitation parar	ne	ter inactiv	e / activ	е	0				
- all o	ther comr	nands	not supported					NA				
Com	nunicatio	n:	•						-			•
DP	Address:		IO Type(ID):		129 (BOC	C)	F	rope	erty ID:	1	15	
(in t	he serve	r)	Start-Index:		1		N	l° of	elements	1		
Pro	perty acc	ess:	Read only			Read/	Writ	е				
Pro	Protection Read level						٧	Vrite	level	-		
Exce	ption Har	ndling:	Value after Powerd	лр:	Stored	Value [<u> </u>	\ct V	alue 🔲 🏻 🗈)efa	ult Valu	e 🗌
Special Features:												
Limita	ation funct	ion is acti	vated or deactivated	d b	y the 'Out	OfServi	ce' S	Statu	S		•	

2.3.4.33 Parameter TempBoilerSwitchDiff

ED	D.O.O.	D	<u> </u>	_		0 1/ 1 5					\Box
FB:	BOC	Property	Name (<u>Server</u>):	1	empBoile	SwitchL)ITT				datory 🔲
										0	otional 🔀
Descri	iption:										
Boiler	switching	tempera	ture difference								
DPT:	Name	DPT_Te	mpHVACRel_Z		DPT ID	205.101	Dat	atype form	at \	$V_{16}Z_{8}$	
Field			Description				Sup.	Range	U	Init	Default
Temp			temperature delta	val	lue		M	cs	0	K	CS
Status			not supported fixed to 'O'						b	itset	
- all fla	gs		not supported, fixe		NA						
Comm	and								е	num	
- Norm	nalWrite						M				
- all oth	her comn	nands	not supported				NA				
Comm	nunicatio	n:	-			•	_	-	-		•
DP A	ddress:		IO Type(ID):		129 (BOC)	Prope	erty ID:	1	16	
(in th	ne serve	r)	Start-Index:		1		N° of	elements	1		
Prop	erty acc	ess:	Read only			Read/W	rite/	\boxtimes			
Prote	ection		Read level				Write	level	-	-	
Excep	tion Har	dling:	Value after Poweru	ıp:	Stored '	Value 🛚	Act V	alue 🔲 🔝	Defa	ult Valu	e 🗌
Specia	al Featur	es:							-		

2.3.4.34 Parameter ProducerLock

FB:	ВОС	Property	Name (<u>Server</u>):	P	roducerLock				datory 🗌 otional 🖂			
Descr	iption:							-				
Boiler	is locked	manually (can be parameter	or	diagnostic value or	ıly)						
DPT:	Name	DPT_Boo	ol		DPT ID 1.002	Dat	atype format	B ₁				
Field			Description			Sup.	Range	Unit	Default			
							true/false		false			
Comn	nunicatio	n:			•	-	-		-			
DP A	DP Address:		3 ,		129 (BOC)	Prope	rty ID:	117				
(in t	he serve	r)	Start-Index:		1 N° of elements 1			1				
Prop	perty acc	ess:	Read only [Read/W	'rite	\boxtimes					
Prot	ection		Read level			Write	level					
Excep	otion Han	dling: \	Value after Poweru	JD:	Stored Value 🛛	Act Va	alue 🔲 🛮 De	fault Valu	e 🗌			
	-											
Speci	al Featur	es:	<u> </u>			-		_	_			

${\bf 2.3.4.35\ Parameter\ TempReturnBoilerMinLimit}$

FB:	вос	Property	Name (<u>Server</u>):	TempReturnBoilerMin					it			datory ☐ ptional ⊠
Dosc	ription:	-		-								ptional 🖂
	_ •											
		eturn tem						_				
DPT:	Name	DPT_H	/ACTempAbs_Z		DPT ID	205.100)	Dat	atype forma	it \	$I_{16}Z_{8}$	
Field			Description				S	up.	Range		nit	Default
Temp			temperature value				M cs °C bitset				С	cs
Status	3]			b	itset	
- Out	- OutOfService min limitation active /inactive							0	true/false			false
- all o	- all other flags not supported, fixed to '0'							NA NA				
Comn	Command									е	num	
- Norr	nalWrite							M				
- SetC	OSV & Re	setOSV	set limitation parar	ne	ter inactive	e / active		0				
- all o	ther comn	nands	not supported					NΑ				
Comr	nunicatio	n:	.				-		:	-		•
DP .	Address:		IO Type(ID):		129 (BOC	;)	Р	rope	erty ID:	1	18	
(in t	he serve	r)	Start-Index:		1	,			elements	1		
Pro	perty acc	ess:	Read only			Read/W	√rit€	е	\square			
	Protection Read level						V	/rite	level	-		
Exce	Exception Handling: Value after Powerup: Stored Value] A	ct V	alue 🔲 D	efa	ult Valu	е 🗌
Special Features:												
Limita	ition funct	ion is acti	vated or deactivated	d b	y the 'Out	OfService	e' S	Statu	s			

2.3.4.36 Parameter ChimneySweepMode

FB:	вос	Property	Name (<u>Server</u>):	C	himneySv	veepMod	de			datory 🗌 otional 🖂
Desci	ription:								<u> </u>	zionai 🔼
Chim	ney sweep	o function	active (can be para	me	eter or diag	gnostic va	alue onl	y)		
DPT:	Name	DPT_Bc	ool		DPT ID	1.002	Dat	atype format	B ₁	
Field			Description				Sup.	Range	Unit	Default
								true/false	-	false
Communication:										
DP A	DP Address: IO Type(ID): 129 (BOC) Property ID: 119									
(in t	he serve	r)	Start-Index:		1		N° of	elements	1	
Pro	perty acc	ess:	Read only	\boxtimes^1)	Read/W	/rite	∑ ²⁾		
Prot	tection		Read level				Write	level		
Exce	otion Han	dling:	Value after Poweru	ıp:	Stored '	Value 🗌	Act Va	alue 🗌 🏻 De	fault Value	e 🛛
Speci	pecial Features:									
	diagnostic value only: chimney sweep mode can only be set locally (not via bus)									
²⁾ para	parameter: remote setting of chimney sweep mode via bus									

2.3.4.37 Diagnostic data TempBoiler

FB:	BOC	Property	Name (<u>Server</u>):	Te	empBoile	ř					ndatory 🛚
Desci	ription:			-							parona.
Curre	nt boiler t	emperatui	·e								
DPT:	Name	DPT H	/ACTempAbs Z		DPT ID	205.100)	Dat	atype format	$V_{16}Z_8$	
Field		_	Description				S	up.	Range	Unit	Default
Temp			temperature value				1	M	cs	° C	cs
Status	3									bitset	
- Faul	t		temperature corrup	ı	M	true/false		false			
- InAla			critical limit is reac	hec	t		(0	true/false		false
	mUnAck		alarm acknowledge				0	ack/unack		unack	
	ther flags		not supported, fixe				N	IA_			
Comn			standard Comman		eld					enum	
- Aları			alarm acknowledge	е				0			
- all o	ther comr	nands	not supported				N	IA_			
Comr	nunicatio	n:									
DP A	Address:		IO Type(ID):		129 (BOC	()	Pr	rope	rty ID:	110	
(in t	he serve	r)	Start-Index:		1		N'	° of	elements	1	
Pro	perty acc	ess:	Read only			Read/W	rite/)	⊠ ¹⁾		
Prot	tection		Read level				W	rite	level		
Exce	otion Har	ndling:	Value after Powert	up:	Stored	Value 🗌	Α	ct V	alue 🗵 🛮 De	efault Valu	ıе 🗌
Speci	ial Featur	es:									
1) opti	onal Write	access f	or Alarm acknowled	lge	ment only						

2.3.4.38 Diagnostic data TempReturnBoiler

FB:	BOC	Property	Name (<u>Server</u>):	empRetur	nBoiler				Mar	ndatory 🔲	
										0	ptional 🔯
Desci	iption:										
Curre	nt boiler r	eturn tem	perature								
DPT:	Name	DPT_H\	/ACTempAbs_Z		DPT ID	205.100		Dat	atype format	$V_{16}Z_8$	
Field			Description				Sι	ıр.	Range	Unit	Default
Temp			temperature value				Ν	A	cs	° C	cs
Status	3									bitset	
- Fault temperature corrupted, se				d, sensor	failure	Ν	Л	true/false		false	
- InAlarm critical limit is reached											false
- AlarmUnAck alarm acknowledgemen							()	ack/unack		unack
- all other flags not supported, fixed to '					o '0'		N	Α			
Comn			standard Comman		ield					enum	
- Aları			alarm acknowledge	9			()			
- all of	her comn	nands	not supported				N	Α			
Comr	nunicatio	n:									
DP /	Address:		IO Type(ID):		129 (BOC	;)	Pr	ope	rty ID:	111	
(in t	he serve	r)	Start-Index:		1		N°	of e	elements	1	
Pro	perty acc	ess:	Read only			Read/W	rite		⊠ ¹⁾		
Protection Read level							W	rite	level		
Exception Handling: Value after Powerup: Sto					Stored	Value 🗌	Ac	ct Va	alue 🗵 De	fault Valu	ле 🗌
Speci	Special Features:										
1) opti	optional Write access for Alarm acknowledgement only										

2.3.4.39 Diagnostic data TempBoilerSetp

FB:	ВОС	Property	Name (<u>Server</u>):				datory 🛚				
Desc	ription:								· ·		
Curre	nt boiler t	emperatur	e setpoint								
DPT:	Name	DPT_H\	/ACTempAbs_Z		DPT ID	205.100	Da	atatype format	$V_{16}Z_8$		
Field			Description				Sup.	Range	Unit	Default	
Temp)		temperature value				M	cs	° C	cs	
Statu									bitset		
- Out	OfService		boiler is out of serv		0	true/false		false			
- Overridden external override of the setpoint								t O true/false O true/false NA			
- all o	ther flags		not supported, fixe								
Comr	nand		standard Comman	d f	ield				enum		
- Ove	rride & Re	elease	override and releas	se	setpoint		0				
- all o	ther comr	nands	not supported				NA				
Comi	municatio	n:	-			·		-	-	•	
DP	Address:		IO Type(ID):		129 (BOC	;)	Prop	erty ID:	112		
(in t	he serve	r)	Start-Index:		1		N° o	felements	1		
Pro	perty acc	ess:	Read only			Read/W	rite				
Protection Read level Write level											
Exce	ption Har	ndling:	Value after Poweru	ıp:	Stored	Value 🗌	Act \	/alue 🗵 De	efault Valu	e 🗌	
			·		<u>'</u>	<u>'</u>		·	<u>'</u>	<u>'</u>	
Spec	ial Featur	es:									
1) opti	onal Write	access f	or Override / Releas	se	function or	nly		_			

2.3.4.40 Diagnostic data TempFlueGas

FB:	BOC	Property	Name (<u>Server</u>):	Te	empFlueC	€as					datory 🔲	
										0	otional 🛚	
Desc	ription:											
Curre	nt flue ga	s tempera	ture									
DPT:	Name	DPT_H\	/ACTempAbs_Z		DPT ID	205.100		Data	atype format	$V_{16}Z_{8}$		
Field			Description				Sup	ο.	Range	Unit	Default	
Temp			temperature value				M		cs	° C	cs	
Status	S									bitset		
- Fault temperature corrupted, sensor failure								re M true/false				
- InAlarm critical limit is reached								O true/false				
- AlarmUnAck alarm acknowledgement status								O ack/unack				
- all o	ther flags		not supported, fixe	d t	o '0'		N/	\			L	
Comr	nand		standard Comman	d f	ield					enum		
- Alar	mAck		alarm acknowledge	Э			Ο					
- all o	ther comr	nands	not supported				NΑ	١.				
Com	nunicatio	n:				•				•	•	
DP .	Address:		IO Type(ID):		129 (BOC	;)	Pro	ре	rty ID:	120		
(in t	he serve	r)	Start-Index:		1		N° (of e	elements	1		
Pro	perty acc	ess:	Read only			Read/W	rite					
Protection Read level							Wri	te I	evel			
Exce	ption Har	ndling:	Value after Poweru	ıp:	Stored	Value 🗌	Act	Va	alue 🛛 🛮 De	fault Valu	e 🗌	
Spec	ial Featur	es:										
1) opti	optional Write access for Alarm acknowledgement only											

2.3.4.41 Diagnostic data TempFlueGasMaxValue

FB: BOC Prope	ty Name (<u>Server</u>):	TempFlueGasMaxV	/alue			datory 🗌			
Description:					-				
Max. flue gas temp va	ue; with reset possibil	lity							
DPT : Name DPT_	HVACTempAbs_Z	DPT ID 205.100	Dat	atype format	$V_{16}Z_{8}$				
Field	Description		Sup.	Range	Unit	Default			
Temp	temperature value		M	cs	° C	cs			
Status		bitset							
- all flags									
- all flags not supported, fixed to '0' NA Command standard Command field enu									
- NormalWrite => reset max. value O									
- all other commands	not supported		NA						
Communication:									
DP Address:	IO Type(ID):	129 (BOC)		erty ID:	121				
(in the server)	Start-Index:	1	N° of	elements	1				
Property access:	Read only	Read/W	√rite	∑ ¹)					
Protection	Read level		Write	level					
Exception Handling:	Value after Power	up: Stored Value 🗵	Act V	alue 🔲 De	efault Valu	e 🗌			
	·	<u>-</u>	·	·					
Special Features:	pecial Features:								
1) optional Write acces	if reset faeture is su	pported			•	•			

2.3.4.42 Diagnostic data StatusBoilerPump

FB:	ВОС	Property	Name (<u>Server</u>):	S	tatusBoile			datory 🗌 otional 🖂		
Desc	ription:									
Curre	nt relative	power of	the boiler pump							
DPT:	Name	DPT_Re	elValue_Z		DPT ID	202.001	Da	tatype format	U_8Z_8	
Field			Description				Sup.	Range	Unit	Default
RelVa	alue		relative value				М	0100%	%	CS
Status									bitset	
- OutOfService RelValue valid / void							Ο	true/false		false
- all o	ther flags		not supported, fixed to '0' NA							
Com	nunicatio	n:	•			•		•		
DP .	Address:		IO Type(ID):		129 (BOC	;)	Prope	erty ID:	113	
(in t	he 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		
Exception Handling: Value after Powerup: Stored Value Act Value						'alue 🛛 🏻 De	fault Value	е 🗌		
Special Features:										
for switched pump 0%=off, 100%=on										

2.3.4.43 Diagnostic data PrelBurner

FB:	ВОС	Property	Name (<u>Server</u>):	Pr	elBurner					datory 🔲
		-							Op	otional 🖂
Desci	ription:									
Curre	nt relative	power of	the attached burne	r (m	napped/ca	lculated v	value	in the BOC)		
DPT:	Name	DPT_Re	elValue_Z		DPT ID	202.001	D	atatype format	U_8Z_8	
Field			Description				Sup	Range	Unit	Default
RelVa	llue		relative value				М	0100%	%	CS
Status	3								bitset	
- Out	OfService		RelValue valid / vo	oid			M	true/false		true
- all of	ther flags		not supported, fixe	d to	· 0'		NA			
Comr	nunicatio	n:				-		-	=	-
DP /	Address:		IO Type(ID):	•	129 (BOC))	Prop	erty ID:	122	
(in t	he serve	r)	Start-Index:	•	1		N° o	f elements	1	
Pro	perty acc	ess:	Read only	X		Read/W	rite			
Prot	ection		Read level	-	-		Write	e level		
Excep	otion Han	dling:	Value after Poweru	ıp:	Stored \	/alue 🗌	Act '	√alue ⊠ De	fault Value	e 🗌
			_					·		
Speci	al Featur	es:					•			
	•						<u> </u>			•

2.3.4.44 Diagnostic data PnomBoiler

FB:	ВОС	Property	Name (<u>Server</u>):	Pr	nomBoile	r				datory 🗌
Desci	ription:			_						
Nomir	nal power	of the boi	ler							
DPT:	Name	DPT_Pc	werKW_Z		DPT ID	203.014	Dat	atype format	U ₁₆ Z ₈	
Field			Description				Sup.	Range	Unit	Default
Powe	r		power value, 1kW	res	olution		М	065535	[kW]	CS
Status	3								bitset	
- Out	OfService		Pnom value valid of	or u	unknown/\	oid/	0	true/false		false
- all of	all other flags		not supported, fixe	ed, fixed to '0' NA						
Comr	nunicatio	n:				-		-		-
DP A	Address:		IO Type(ID):		129 (BOC	()	Prope	erty ID:	123	
(in t	he serve	r)	Start-Index:	1	1		N° of	elements	1	
Pro	perty acc	ess:	Read only	X		Read/W	rite			
Prot	ection		Read level				Write	level		
Exce	otion Har	ndling:	Value after Poweru	ıp:	Stored	Value 🛚	Act V	alue 🗌 🏻 De	fault Valu	e 🗌
Speci	al Featur	es:			<u> </u>					
usuall	y a const	ant value								

2.3.4.45 Diagnostic data Fault

FB:	ВОС	Property	Name (<u>Server</u>):	Fa	ault						datory 🛚
Desc	ription:	3								-	
Boiler	failure (s	ome error	in the BOC)								
DPT:	Name	DPT_Bo	ol		DPT ID	1.002	Dat	atype forma	t E	3 ₁	
Field			Description				Sup.	Range	L	Jnit	Default
								true/false	b	ool	false
Comr	nunicatio	n:									
DP A	Address:		IO Type(ID):		129 (BOC	C)	Prope	rty ID:	1	25	
(in t	he serve	r)	Start-Index:		1		N° of	elements	1		
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prof	tection		Read level				Write	level	_	-	
Exce	otion Har	ndling:	Value after Poweru	ıp:	Stored	Value	Act Va	alue 🗵 🏻 D	efa	ult Value	e 🗌
Speci	ial Featur	es:									

2.3.4.46 Diagnostic data SummerMode

FB:	BOC	Property	Name (<u>Server</u>):	S	ummer M	ode						latory 🛚 tional 🔲
Desc	ription:			-						<u>-</u>		
Sumn	ner mode	status of the	he boiler									
DPT:	Name	DPT_Bo	ol		DPT ID	1.002	Dat	atyp	e format	B ₁		
Field			Description				Sup.	Rar	nge	Unit		Default
								true	e/false	bool		false
Comr	nunicatio	n:					-			•		
DP A	Address:		IO Type(ID):		129 (BOC	C)	Prope	rty II	D:	126		
(in t	he serve	r)	Start-Index:		1		N° of	elem	nents	1		
Pro	perty acc	ess:	Read only	X		Read/W	/rite					
Prof	tection		Read level				Write	leve	l			
Exce	ption Har	ndling:	Value after Powert	ıp:	Stored	Value _	Act V	alue	□ De	fault Va	alue	: 🗌
Speci	ial Featur	es:		_	•				•			•

2.3.4.47 Diagnostic data OffPerm

FB:	BOC	Property	Name (<u>Server</u>):	OffPerm					datory 🗌		
Desc	Description:										
Status info indicating whether boiler perrmanently off (e.g. manually switched off). This datapoint can also											
be a parameter to switch the boiler off via bus											
DPT:	Name	DPT_Bo	ol	DPT ID	1.002	Dat	atype forma	t B ₁			
Field			Description	Description				Unit	Default		
							true/false	bool	false		
Comr	nunicatio	n:				-		-	-		
DP Address:			IO Type(ID):	129 (BC	DC)	Prope	rty ID:	127	127		
(in t	he serve	r)	Start-Index:	1 N° of elements 1				1			
Pro	perty acc	ess:	Read only [Read/W	/rite					
Prof	tection		Read level			Write	level				
Exce	otion Har	dling:	Value after Poweru	ıp: Store	d Value	Act V	alue 🗵 🏻 D	efault Valu	e 🗌		
Speci	ial Featur	es:									
1) Wı	rite acces	s only if th	is datapoint is also	used to sw	itch the bo	iler off v	/ia bus. This	is an optic	nal		
fea	ature. e.a.	used for s	service					•			

2.3.4.48 Diagnostic data NoHeatAvailable

FB:	ВОС	Property	Name (<u>Server</u>):	No	oHeatAva	ilable					datory ☐ otional ⊠
Desc	ription:	-								-	
Status info indicating whether boiler is temporarily not providing heat											
DPT:	Name	DPT_Boo	ol	DPT ID 1.002 Datatype format B ₁				B ₁	B ₁		
Field			Description				Sup.	Range		Unit	Default
								true/false	:	bool	false
Comi	municatio	n:						3			
DP	Address:		IO Type(ID):	129 (BOC)		Prope	Property ID:		128		
(in t	he serve	r)	Start-Index:	•	1 N° of elements 1			1			
Pro	perty acc	ess:	Read only	\boxtimes		Read/V	Vrite				
Pro	tection		Read level			Write	Write level				
Exce	ption Har	ndling:	Value after Power	лр:	Stored	Value 🗌	Act Va	alue 🛚	Def	ault Value	e 🗌
Spec	ial Featu	res:					•				

2.3.4.49 Diagnostic data StatusBurnerStage1Enable

FB:	ВОС	Property	Name (<u>Server</u>):	StatusBurnerStage1Enable						datory 🗌 otional 🗵	
Description:											
Status info indication whether buner stage 1 / base stage is enabled or disabled											
DPT:	PPT: Name DPT_Enable DPT ID 1.003 Datatype format E					B ₁					
Field			Description				Sup.	Range		Unit	Default
										bool	disable
Com	nunicatio	n:				-		-	-		
DP .	Address:		IO Type(ID):	(ID): 129)			129		
(in t	he serve	r)	Start-Index:		1		N° of	elements	3	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Pro	tection		Read level				Write	level			
Exce	ption Har	ndling:	Value after Poweru	ıp:	Stored '	Value 🗌	Act Va	alue 🖂	Def	fault Value	-
Spec	ial Featur	es:									

2.3.4.50 Diagnostic data StatusBurnerStage2Enable

FB:	BOC	Property	Name (<u>Server</u>):	StatusBurnerStage2Enable						datory ☐ otional ⊠		
Desc	ription:	-									-	
Status info indication whether burner stage 2 / modulation is enabled or disabled												
DPT:	Name	DPT_Ena	able	DPT ID 1.003 Datatype formation				at	B_1			
Field			Description				Sı	лр.	Range	Į	Jnit	Default
										t	ool	disable
Comr	nunicatio	n:					=		-			
DP Address:			IO Type(ID):		129 (BOC)		Property ID:			,	130	
(in t	he serve	r)	Start-Index:		1		N°	of o	elements	•	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	/rite	!				
Prof	tection		Read level				Write level			-		
Exce	ption Har	ndling:	Value after Power	ıp:	Stored '	Value □	A	ct Va	alue 🖂 🏻 🗈)efa	ault Value	е 🗌
Speci	ial Featur	es:	-		•			<u> </u>	•		•	

2.3.4.51 Diagnostic data StatusBurnerModulation

FB:	ВОС	Property Name (<u>Server</u>): StatusBurnerModulation							Mandatory ☐ Optional ⊠		
Desc	Description:										
Current status of burner modulation: % value which is used by the BOC to control a attached modulating										dulating	
burner											
DPT:	Name	DPT_Re	elValue_Z		DPT ID	202.001		Dat	atype format	U_8Z_8	
Field			Description					Jр.	Range	Unit	Default
RelVa	alue		relative value	relative value				<u> </u>	0100%	%	(void)
Status	3									bitset	
	OfService		RelValue valid / void					V	true/false		true
- all o	ther flags		not supported, fixe	fixed to '0' NA				ΙA			
Comr	nunicatio	n:									
	Address:		IO Type(ID):	129 (BOC) Property				131			
(in t	he serve	r)	Start-Index:		1		N	of	elements	1	
	perty acc	ess:	Read only	\boxtimes		Read/W	rite				
Prof	tection		Read level				W	rite	level		
Exception Handling: Value after Poweru				ıp:	Stored '	Value □	Α	ct V	alue 🛛 🏻 De	fault Value	e 🗌
Status	s 'OutOfS	ervice' if th	ne attached burner	doe	es not sup	port mod	ula	tion	or if modulati	on is off	·
Speci	ial Featur	es:									
	•					•				•	

2.3.4.52 Diagnostic data ErrorCodeBOC

FB:	ВОС	Property	Name (<u>Server</u>):	Erre	orCodeE	вос					datory	
Desc	ription:	-		-						<u>-</u>		
Comp	any spec	ific numeri	c 16 bit error code									
DPT:	Name	DPT_Va	lue_2_Ucount		OPT ID	7.001	Dat	atype form	at	U ₁₆		
Field			Description				Sup.	Range	l	Jnit	Default	
								full range	-	_	cs	
Comr	munication	on:					3	3				
DP Address:			IO Type(ID):	12	129 (BOC)		Property ID:			132		
(in t	he serve	r)	Start-Index:	1	1 N° of elements 1			1				
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite/					
Prot	tection		Read level				Write	level				
Exce	ption Hai	ndling:	Value after Poweru	ір:	Stored \	Value □	Act Va	alue 🛛 🔝	Defa	ult Value	e 🗌	
Speci	ial Featu	res:			•	•	•	•		•	_	

2.4 Functional Block: Heat Producer Manager (HPM)

2.4.1 Functional Specification

The HPM is responsible for demand dependent heat-production, controlling a single boiler or a boiler sequence (cascade). The HPM gets the resulting flow temperature demand from the "first" Heating Flow Demand Manager HFDM on the primary Heating Distribution Segment and controls the allocated Boilers BOC including management of an boiler sequence.

Interworking with Boiler Controllers (BOC):

The operation of the Boiler Controller BOC is controlled by only one Heat Producer Manager. The HPM may control multiple BOC's (boiler cascade) which must be located in the same Heat Production Segment.

Inputs:

- 'StatusBOC' The BOC reports the boiler status to the Producer Manager, which is

used in the HPM for boiler sequence control. Since this signal is mandatory in BOC and HPM, it can be used in the HPM to build up a

boiler directory => see description of StatusBOC signal.

- 'OpHrsBurner' burner operating hours for stage 1 / base stage of the attached burner

- 'LockSignBOC' The BOC may generate locking signal (for boiler startup protection and

overload protection) which is evaluated in the HPM.

- 'ForceSignBOC' The BOC may generate forcing signal (for overheat protection or

indication of oversupply or spare energy) which is evaluated in the

HPM.

- 'BoilerSpec' Optionally the BOC can provide information containing boiler type and

characteristics to be used in the HPM for optimized boiler control e.g.

in a cascade.

Output:

- 'PowerFlowWaterDemHPM' The HPM sends the flow temperature demand and power control

information to the different BOC's and controls correspondingly the boiler temperatures, the boiler pump and burner stages or burner

modulation.

For each boiler the HPM must handle these inputs and outputs individually. I.e. multiple instances of these datapoints exist in the HPM. The number of boilers to be handled by a HPM is company specific and can be restricted (e.g. memory limitation).

Interworking with first HFDM:

Input:

- 'TempFlowWaterDemAbsHFDM'

This input contains the resulting flow temperature demand for the heat production. In addition to the requested flow temperature the demand signal contains several attributes which are used for enhanced control of the heat production system:

- the types of heat consumer(s) which request heat (DHW, room heating, ventilation etc.) are indicated. Dependent on the type of heat consumers the control mechanism for the heat production system may be different (e.g. in local 'SummerMode')
- load priority attributes are used for load management (generation of locking signals)
- attribute for control of a common system pump in the first Heat Distribution Segment

- attribute for flow temperature limitation (e.g. for DHW load)
- Emergency demand 'EmergDem' attribute: If supported by the heat production system, the attribute 'EmergDem'=true will activate heat production in any case (override of e.g. local 'summer mode') for frost protection.
- The 'DHWLegioReq' attribute is included in the heat demand signal (optional feature) to indicate, that DHW load is active in legionella protection mode. 'DHWLegioReq' may be set only if DHW load is active ('DHWReq' attribute set) A heat production system with active return temperature limitation can affect proper legionella protection due to reduced flow temperature to the DHWC. With 'DHWLegioReq' information,appropriate adaptation of the return temperature limitation can be managed by the heat production system

Output:

- 'LockSignHPM' The HPM may generate locking signal (for boiler sequence startup protection and overload protection)

protection and overload protection)

ForceSignHPM The HPM may generate forcing signal (for overheat protection or indication of oversupply or spare energy)

The HPM collects the locking and forcing signals from the BOC's and generates resulting locking and forcing signals which are then transmitted to the "first" HFDM who will distributed them to the consumers and HFDM's linked to the primary Heat Distribution Segment.

- StatusHPM curre

current values and attributes of the HPM Status HPM is provided by the HPM for visualisation or to inform the consumers e.g. if the heat production is on and is able do provide energy. This information is used in the heat consumers for optimization purpose and "learning-functions"(e.g. heat-curve adaptation).

The signal StatusHPM is reported by the HPM to the primary Distribution Segment where the HFDM will route it to the next "right-hand" Distribution Segments and HFDM's etc

Examples:

If boiler is off due to SummerMode or manual switch off, it is not reasonable in the heating zone controllers to turn the circulation pumps on

If the boiler can't provide energy, learning functions in the controllers should temporary be disabled.

Interworking with Peripheral Functional Blocks:

In case of boiler sequence also the <u>common</u> flow temperature of the hydraulic group is optionally used in the HPM. The flow temperature sensor may either be connected locally (hard wired) to the device containing the HPM*) or sensor data may be received in the HPM from the bus. In addition also common return temperature is optionally used (either hard wired*) or data input from bus).

^{*)} Remark: if flow temperature sensor resp. return temperature sensor is connected locally to the device containing the HPM, the corresponding Functional Blocks FWTS (flow temperature) resp. RNWTS (return temperature) are activated and distribute the temperature value in the 'ProdSegmH'

The common boiler sequence pump is normally hard wired but optionally also bus-connected pump is possible.

Optionally the control of common boiler sequence return temperature can be handled by an Flow Temperature Controller FTC. The Flow Temperature Controller and the HPM have a 1:1 relationship and are often located in the same device (hard wired actuator). Otherwise the 1:1 functional binding is established by setting a specific 1:1 link group 'GenPeripheral'

Outside temperature input may be used for local SummerMode mechanism.

Interworking with EIB Boiler OBIS

TempFlowWaterDemHeatShift is an <u>optional</u> input which is implemented in S-Mode only. It enables linking with HVAC devices for demand dependent heat generation (Boiler OBIS [12])

- => shifting of the temperature setpoint in the HPM.
- => this datapoint corresponds with PID_TEMP_SUPPLY_WATER_DELTA (dTsw, Delta supply water temperature) in the Boiler OBIS [12]
- => in the KNX HWH Model this datapoint is provided by the HDTACT functional block, see [07]

The absolute heat demand value in the HPM is derived from a fixed setpoint + TempFlowWaterDemHeatShift.

2.4.2 Constraints

The boiler sequence control mechanisms are company specific and are not subject of this specification.

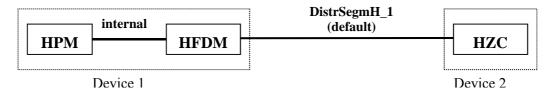
The number of boilers to be handled by a HPM is company specific and can be restricted (e.g. memory limitation) => to be indicated in the data-sheet of the product

In simple systems with only one boiler, the HPM functionality is reduced to a minimum. In this case BOC and HPM are usually located in the same device and data communication between BOC and HPM is device-internal.

The HPM and the "first" HFDM are normally located in the same device since they have a 1:1 relationship and rather tight coupling. Especially the handling of resulting forcing/locking signals from the HPM is simplified. In LTE mode the DistrSegmH_31 is default for those special cases where HPM and "first" HFDM are not in the same device.

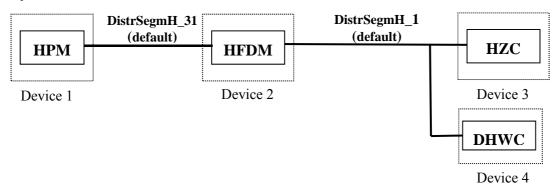
Example 1: simple system (e.g. single family home) "plug & play" LTE zoning

- system has only one heat distribution level
- HPM and HFDM are located in the same device
- a Heating Zone Controller HZC is directly connected to the heat production system.



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

- system has only one heat distribution level
- HPM and HFDM are NOT located in the same device => DistrSegmH_31 & DistSegmH_1 to be configured on the HFDM
- a Heating Zone Controller HZC and a DHW controller are directly connected to the heat production system.



IMPORTANT: the output signal PowerFlowWaterDemHPM to control a BOC 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 HPM and BOC functional blocks offer a bus-link to control one ore multiple BOC by means of the signal PowerFlowWaterDemHPM (demand dependent boiler control).

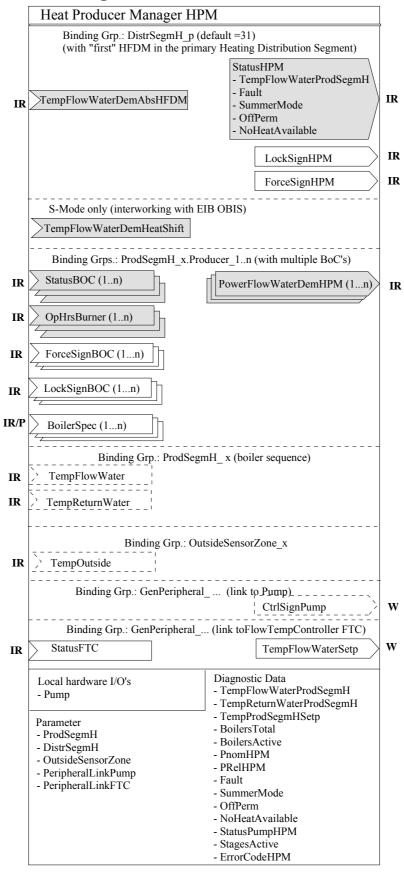
The Heat Demand input signal TempFlowWaterDemAbsHFDM from the associated HFDM can today not be implemented in standard mode because the necessary compound HVAC DPT for runtime-interworking is not yet available in standard mode

Therefore for the time being only LTE implementations of the HPM and HFDM functional blocks offer a bus-link to a demand dependent heat distribution system.

However in standard mode implementation, the HPM supports the functionality of demand dependent heat production according to ObIS Model [12].

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

2.4.3 Functional block diagram



2.4.4 Datapoint description

2.4.4.1 Overview

Data Point	Description	Datapoint Type	DPT N°
Outputs			
StatusHPM	Status information from 'Producer Manager'	DPT_StatusHPM	209.100
- TempFlowWaterProdSegmH	Common flow temperature of heat production segment	DPT_Value_Temp	9.001
- Fault	Boiler Fault (S-interface)	DPT_Bool	1.002
- SummerMode	Boiler sequence is in summer mode (S-interface)	DPT_Bool	1.002
- OffPerm	Boiler sequence is perrmanently off (S-interface)	DPT_Bool	1.002
- NoHeatAvailable	Boiler sequence is temporarily not providing heat (S-interface)	DPT_Bool	1.002
ForceSignHPM	Resulting locking signal of 'ProdSegment' sent to "first" HFDM, to force the consumers to reduce energy consumption	DPT_ForceSign	21.100
LockSignHPM	Resulting forcing signal of 'ProdSegment' sent to "first" HFDM, force the consumers to consume energy	DPT_LockSign	207.101
PowerFlowWaterDemHPM	Boiler temperature demand and control information to multiple BOC (1n different signals)	DPT_PowerFlowWaterDem HPM	214.100
CtrlSignPump	Command for boiler pump with bus interface	t.b.d, probably multiple or complex DPT	?
TempFlowWaterSetp	Set value of boiler return temperature to be controlled by the FTC / LTE and S-interface	DPT_TempHVACAbs_Z	205.100 9.001
Inputs			
TempFlowWaterDemAbsHFDM	Flow temperature demand from "first" HFDM in the primary Heat Distribution Segment (absolute temp)	DPT_TempFlowWater DemAbs	210.100
TempFlowWaterDemHeatShift	link with EIB Boiler OBIS => shifting of the heat demand, S-interface only	DPT_Value_Tempd	9.002
StatusBOC	Status information from multiple BOC (1n different signals). Needed in boiler sequence application.	DPT_StatusBOC	215.100
OpHrsBurner	Current operating hours stage 1, base stage from multiple BOC (1n different signals)	DPT_LongDeltaTimeSec	13.100
ForceSignBOC	Forcing signal from multiple BOC (1n different signals). Used to force the consumers to consume energy from boiler. Mapped to ForceSignHPM or locally used	DPT_ForceSign	21.100
LockSignBOC	Locking signal from multiple BOC (1n different signals). Used to request the consumers to reduce energy consumption from boiler. Mapped to LockSignHPM or locally used	DPT_LockSign	207.101
BoilerSpec	Boiler type information from multiple BOC (1n different signals)	DPT_SpecHeatProd	216.100
TempFlowWater	Common flow water temperature of the hydraulic group. LTE and S-interface	DPT_TempHVACAbs_Z, DPT_Value_Temp	205.100 9.001

Data Point	Description	Datapoint Type	DPT N°
TempReturnWater	Common return water temperature of the hydraulic group. LTE and S-interface	DPT_TempHVACAbs_Z, DPT_Value_Temp	205.100 9.001
TempOutside	Outside temperature / LTE and S-interface	DPT_TempHVACAbs_Z, DPT_Value_Temp	205.100 9.001
StatusFTC	Status information from Flow Temperature Controller	DPT_StatusWTC.	209.103
Parameters			
ProdSegmH	LTE zoning number Heat Production Segment	DPT_UcountValue8_Z	202.002
DistrSegmH	LTE zoning number Heat Distribution Segment: link with the attached HDFM	DPT_UcountValue8_Z	202.002
PeripheralLinkPump	LTE zoning number Peripheral link to common pumpin boiler sequence	DPT_UcountValue16_Z	203.012
PeripheralLinkFTC	LTE zoning number Peripheral link to FTC	DPT_UcountValue16_Z	203.012
OutsideSensorZone	LTE zoning number for Outside Temperature	DPT_UcountValue8_Z	202.002
Diagnostic Data			
TempFlowWaterProdSegmH	Common flow temperature of heat production segment	DPT_TempHVACAbs_Z	205.100
TempReturnWater ProdSegmH	Common return temp of heat production segment	DPT_TempHVACAbs_Z	205.100
TempProdSegmHSetp	boiler sequence flow temperature setpoint	DPT_TempHVACAbs_Z	205.100
BoilersTotal	Total number of boilers in boiler sequence	DPT_Value_1_Ucount	5.010
BoilersActive	Number of active boilers in boiler sequence	DPT_Value_1_Ucount	5.010
PnomHPM	Nominal power kW of boiler sequence	DPT_PowerKW_Z	203.014
PrelHPM	Current relative power % of boiler sequence	DPT_RelValue_Z	202.001
Fault	some error in the HPM (only HPM functionality, BOC have their own Fault attributes)	DPT_Bool	1.002
SummerMode	boiler sequence is in summer mode	DPT_Bool	1.002
OffPerm	boiler sequence is permanently off	DPT_Bool	1.002
NoHeatAvailable	boiler sequence is temporarily not providing heat	DPT_Bool	1.002
StatusPumpHPM	current relative power of the common pump in the boiler sequrence; for switched pump 0%=off, 100%=on	DPT_RelValue_Z	202.001
StagesActive	number of active stages in the boiler sequence: - stage 1active = 1; - stage 2 active = 2; - modulating = 1	DPT_Value_1_Ucount	5.010
ErrorCodeHPM	company specific numeric error code (only HPM functionality, BOC have their own ErrorCodeBOC)	DPT_Value_2_Ucount	7.001

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

			STANDARD MODE	EXTE: Mo	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	StatusHPM	NA	NA	NA	M
	-TempFlowWaterProdSegmH	GO_b	GO	GO	NA
	- Fault	GO_b	GO	GO	NA
	- SummerMode	(GO _b)		(GO)	NA
	- OffPerm	(GO _b)		(GO)	NA
	- NoHeatAvailable	(GO _b)		(GO)	NA
	ForceSignHPM	NA	NA	NA	О
	LockSignHPM	NA	NA	NA	О
	PowerFlowWaterDemHPM	NA 1)	NA	NA	M
	CtrlSignPump not yet defined				
	TempFlowWaterSetp	(GO _b)		(GO)	О
Inputs	TempFlowWaterDem AbsHFDM	NA 1)	NA	NA	M
	TempFlowWaterDemHeatShift	GO_b	GO	GO	NA
	StatusBOC	NA 1)	NA	NA	M
	OpHrsBurner	GO_b	GO	GO	M
	ForceSignBOC	NA	NA	NA	О
	LockSignBOC	NA	NA	NA	О
	BoilerSpec	NA	NA	NA	О
	TempFlowWater	(GO _b)		(GO)	О
	TempReturnWater	(GO _b)		(GO)	О
	TempOutside	(GO _b)		(GO)	О
	StatusFTC	NA	NA	NA	О

mandatory in LTE Mode but the information is NA in the Basic FB and all other modes because the datapoint type is today not available in standard mode. Splitting of DPT is not possible because of necessary data consistency

Table 9: HPM Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	ProdSegmH	M
	DistrSegmH	M 1) NA ²⁾
	PeripheralLinkPump	О
	PeripheralLinkFTC	О
	OutsideSensorZone	О

Table 10: HPM LTE specific Properties

		Support
Parameter		
Diagnostic Data	TempFlowWaterProdSegmH	M
	TempReturnWater ProdSegmH	О
	TempProdSegmHSetp	M
	BoilersTotal	О
	BoilersActive	О
	PnomHPM	О
	PrelHPM	О
	Fault	M
	SummerMode	О
	OffPerm	О
	NoHeatAvailable	О
	StatusPumpHPM	О
	StagesActive	О
	ErrorCodeHPM	0

Table 11: HPM Standard Properties of Interface Objects (or memory mapped DP)

¹⁾ if HPM and the first HFDM are not in the same device 2) if HPM and the first HFDM are located in the same device

2.4.4.2 Output StatusHPM

Standard mode: NA => mapped to TempFlowProdSegmH, Fault, SummerMode, OffPerm,

NoHeatAvailable

LTE-HEE mode:

FB:	HPM	LTE Serv	ver Output Name:	er Output Name: StatusHPM									
	iption:								-				
This s	ignal cont	ains statu	is information of the	boiler seque	nce ^{*)} ir	n orde	r to inf	orm the c	onsumers	s e.g. if			
			and is able to provi										
			I "learning-functions						ill be rece	eived by			
			n be routed to the rig										
DPT:	Name	DPT_St		DPT ID	209.10			e format					
Field			Description		Sup.	Rang		Unit	COV	Default			
Templ	FlowProd	SegmH	common flow temp		M	full ra	ange	°C	2	CS			
			heat production se	gment									
Attribu									.,				
- Tem	pFlowVali	id	validity of		M	true/f	alse	bool	Y	false			
- 10	ı		TempFlowProdSeg			t	-1			6-1			
- Fault	Į.		some failure in boil		M	true/f	aise	bool	Y	false			
Sum	merMode		(mainly for monitor boiler sequence sw		0	true/f	oloo	bool	Y	false			
- Sulli	menviode		due to local summe			li ue/i	aise	DOOI	Ť	laise			
			mode (mainly for r										
- OffPo	arm		boiler sequence is		0	true/f	alco	bool	Y	false			
- 0111 (CIIII		off (manual switch			li uc/i	aisc	5001	'	laise			
- NoH	eatAvailal	hle	boiler sequence is		0	true/1	alse	bool	Y	false			
14011	cab (valia	OIC .	not producing heat			li de/i	aisc	0001		laise			
	nunicatio		<u> </u>		1	<u>L</u>		<u></u>					
Bind	ling Groເ	ıp:											
Clas			Туре				Defa	ult					
	ographica						.						
		Specific X			<u></u> -		31 o	r NA					
	assigned		Broadcast	Configura									
	Address:		IO Type(ID):	136 (HPM)			perty II		51				
		(event):	COV 🛛	MinRepTime		10	sec	Hea	rtbeat:	15 min			
Info	oReport		Output per defau	It communica	ting	Bind	ding Gı	oup Wild	card allov	ved			
		Response	Tx Prio:	High 🗌		N	ormal	\boxtimes	Low				
	ling of the												
	all always	be	Transm after Pov	verup: Stored	l Value		Act Va	lue 🖂 🛛 I	Default Va	alue 🗌			
	oported)												
	erty-Ser		Read only	A	Read/V	Vrite	Г	1					
	ividual ad		Troud only					J					
Excep	tion Han	dling:						Save	at Power	down			
	al Featur			4.1									
			a system with only		d =!	۔ اہ ج		-4					
HP1// 2	ana the fir	SI HELUM	ALE LISHAUV IOCATED	in the same (IEVICE =	.> nev	ice — II	Hernal SI	าเกลเ ดทเพ				

2.4.4.3 Output TempFlowWaterProdSegmH

Standard mode

DP	Name:	Tem	npFlow	Waterl	ProdSegmH	l .	Abbr.:				Manda	atory	
FΒ	Name:	HPN	Л								Can b	e intern	al
Des	scription												
			peratu	re of h	eat producti	on se	egment,	mainl	y used	l for visua	llisation		
Dat	tapoint Typ	ре											
	T_Name:		PT_Val	ue_Te	mp								
DP	T Format:	F ₁₆	DPT_ID: 9.001										
Fie	ld	De	escripti	on						Supp.	Range	Unit	Default
											full range	°C	CS
Acc	cess Type												
♦	Output												
1	this \rightarrow M		3	tl	his \rightarrow 1								
	Spontaneo	us	$ \boxtimes $	COV:		Δ-\	/alue:	2 K	Min	RepTime		10s	
				Cyclic		Per	riod:	15 Mi	n				
	Request												
Col	mmunicati	ion 1	Гуре										
♦	Group Ob	ject l	Datapo	oint							Mandato	ry: 🛛 🖂	
	Default Gro	oup A	Addres	s: -	_								
Dyı	namics												
	Power dow	'n:	Save:										
	Power up:		Value	:	No initialisa	ation:				ult value:			
					Saved valu					•	ot for inpu		
				mit on	bus (only fo	or out	:put):		Read	from bus	(only for i	nput):	
Exc	ception Ha	ndli	ng										
Spe	ecial Featu	ires											

2.4.4.4 Output Fault

Standard mode

DP Name:	Fa	ıult			Abbr.:				Manda	tory	
FB Name:	HF	PM							Can be	intern	al
Description											
reports a failu	ıre i	n the bo	iler sed	quence, mai	inly used f	or visual	lisation				
Datapoint Ty	ре										
DPT_Name:		OPT_Boo	ol								
DPT Format:	E	3 ₁						DPT_ID:	1.002		
Field	Description								Range	Unit	Default
											false
Access Type)										
♦ Output											
this \rightarrow M		\boxtimes	th	nis → 1							
Spontane	ous		COV:		Δ-Value	:	Min	RepTime:		10s	
	Cyclic Period: 15 Min										
Request		\boxtimes									
Communica	tion	Туре									
♦ Group Ol	ojec	t Datapo	oint						Mandatory	/:	
Default Gr	oup	Addres	s:	-							
Dynamics											
Power do	vn:	Save:									
Power up:		Value	:	No initialisa	ation:		Defau	ılt value:		\boxtimes	
				Saved valu	ie:		Actua	ıl value (n	ot for input)): 🔲	
		Trans	mit on	bus (only fo	or output):		Read	from bus	(only for in	put):	
Exception H	and	lling									
Special Feat	ure	s									

2.4.4.5 Output SummerMode

Standard mode

DP Name:	Summe	erMode		Abbr.:				Manda	tory		
FB Name:	HPM							Can be	interna	al	
Description											
boiler sequen	ce switc	hed off di	ue to local su	mmer/wir	iter mod	e, mair	nly used fo	or visualisa	tion		
Datapoint Ty	ре										
DPT_Name:	DPT_	Bool									
DPT Format:	B ₁						DPT_ID:	1.002			
Field	Descr	iption					Supp.	Range	Unit	Defau	lt
										false	е
Access Type											
♦ Output											
this \rightarrow M		t	his \rightarrow 1								
Spontaneo	ous	COV:		Δ-Value:	:	Min	RepTime:		10s		
	Cyclic Period: 15 Min										
Request											
Communicat	ion Typ	е									
♦ Group Ob	ject Dat	apoint						Mandatory	/:		
Default Gr	oup Add	ress: -	_								
Dynamics											
Power dov	vn: Sa	ve:									
Power up:	Va	lue:	No initialisat	tion:		Defau	ılt value:				
			Saved value	e:]	Actua	l value (n	ot for input)): 🔲		
	Tra	ansmit on	bus (only for	r output):		Read	from bus	(only for in	put):		
Exception Ha	andling										
Special Feat	ures										

2.4.4.6 Output OffPerm

Standard mode

DP Name:	OffPerm	Abbr.:			Manda	tory			
FB Name:	HPM				Can be	interna	al		
Description									
boiler sequen	ce is permanently off (manual	switch or	failure), mainly	used for	visualisatio	n			
Datapoint Ty	pe								
DPT_Name:	DPT_Bool								
DPT Format:	B ₁			DPT_ID:	1.002				
Field	Description Supp. Range Unit Default								
							false		
Access Type									
♦ Output									
this \rightarrow M	\boxtimes this \rightarrow 1								
Spontaneo	ous 🛛 COV:	Δ-Value:	Mini	RepTime:		10s			
Cyclic Period: 15 Min									
Request									
Communicat	ion Type								
♦ Group Ob	ject Datapoint				Mandatory	<i>'</i> :			
Default Gr	oup Address:								
Dynamics									
Power dov	n: Save:								
Power up:	Value: No initialisa	ition:] Defau	ılt value:		\boxtimes			
	Saved valu	e:			ot for input)				
	Transmit on bus (only fo	r output):	Read	from bus	(only for in	put):			
Exception Ha	andling								
Special Feat	ıres								

2.4.4.7 Output NoHeatAvailable

Standard mode

DP Name:	No	HeatAv	ailable		Abbr.:				Manda	itory		
FB Name:	HF	PM							Can be	e interna	al	
Description												
boiler sequer	ice i	is tempo	rarily r	not producing	g heat, ma	ainly use	d for v	isualisatio	n			
Datapoint Ty	/ре											
DPT_Name:		OPT_Boo	ol									
DPT Format:	В	3 ₁						DPT_ID:	1.002			
Field		Description	on					Supp.	Range	Unit	Defau	ılt
											fals	e
Access Type)											
♦ Output												
this \rightarrow M		\boxtimes	th	nis \rightarrow 1								
Spontane	ous		COV:		Δ-Value:		Minl	RepTime:		10s		
	Cyclic Period: 15 Min											
Request												
Communica	tion	Туре										
♦ Group Ol	ojec	t Datapo	oint						Mandator	y: 🔲		
Default G	oup	Addres	ss:	-						•		
Dynamics												
Power do	wn:	Save:										
Power up:		Value	:	No initialisat	tion:		Defau	ılt value:				
				Saved value	e:		Actua	l value (n	ot for input): 🔲		
		Trans	mit on	bus (only for	r output):		Read	from bus	(only for in	put):		
Exception H	and	lling										
Special Feat	ure	S										

2.4.4.8 Output ForceSignHPM

Standard mode: NA LTE-HEE mode:

FB:	HPM	LTE Server Output Name:	ForceSignHPM	Mandatory ☐ Optional ⊠
Daga	rintian.			

Description:

The HPM indicates with this output signal, that one or more boilers are overheated or that boilers have remaining energy to be used by the consumers. The following cases are possible:

- Overheating is critical, i.e. boiler temperatures are too high => critical ForceSignHPM is sent (type 'Protection'). The addressed heat consumers shall consume energy (unconditional load), see [08]
- Oversupply, i.e. the boilers produce more than the requested flow temperature => uncritical ForceSignHPM is sent (type 'Oversupply'). The addressed heat consumers may consume energy (conditional load), see [08]
- After load shutdown, still some remaining energy is available from the boiler(s) => uncritical ForceSignHPM is sent (type 'Overrun'), consumers will continue to consume energy according to the last setpoint (just before shutdown), see [08]

In case of 'Protetion' and 'Oversupply' the ForceSignHPM signal allows to load DHW or room heating consumers separately and the load level is indicated in addition, see [08]

DPT: Name DPT_Ford	ceSian		21.100		_	format	B₃	
	Description			Rang		Unit	COV	Default
Attributes	•							
	ndicates if forced pov		M	true	/ false	bool	Υ	false
	consumption is neces							
	validity of the remain	ing						
	attributes)				, ,	l		
	ndicates that overhea		M	true	/ false	bool	Y	false
	critical (too high boile ndicates that overhea		М	truo	/ false	bool	Y	false
117	incritical but boiler te		IVI	uue	/ laise	DOOI	T	iaise
	s much higher than re							
	by heat demand	oquootou						
	ndicates that remaini	ng energy	M	true	/ false	bool	Υ	false
	s available in the boil							
	oad shutdown							
	_oad DHW to 'Norma		0	true	/ false	bool	Υ	CS
	case of overheat ('Pro	otection'						
	or 'Oversupply')					l		
	Load DHW to 'LegioP		0	true	/ false	bool	Y	CS
	_evel in case of overh 'Protection' or 'Overs							
	Load Room Heating t		0	true	/ false	bool	Y	cs
	Comfort' Level in cas		O	แนะ	/ laise	DOOI	' '	CS
	overheat ('Protection'							
'(Oversupply')	.						
	₋oad Room Heating v	with	0	true	/ false	bool	Υ	CS
r	maximum flow tempe	rature in						
	case of overheat ('Pro	otection'						
	or 'Oversupply')							
Communication:								
Binding Group:	Tuna				Dof	.14		
Class	Туре				Defa	JIL		
Geographical ☐ Application Specific⊠	DistrSegmH				31 or	NΔ		
Unassigned	Broadcast	Configura	hle 🗀		310	INA		
DP Address:	IO Type(ID):	136 (HPM)		Pro	perty ID):	53	
LTE-Services (event):		/linRepTime			sec			3 ¹⁾ min

InfoReport 🖂	Output per d	efault communicating	Binding G	roup Wildo	card allowed	
(LTE Read-Response	Tx Prio:	High 🗌	Normal	\boxtimes	Low 🗌	
polling of the output shall always be supported)	Transm after	Powerup: ¹⁾ Stored Va	alue 🗌 Act Va	ılue 📗 🏻 🗀	Default Value	
Property-Service (individual access):	Read only 2)	⊠ Rea	ad/Write]		
Exception Handling:				Save a	at Powerdowr	1
Special Features:						
HPM and the first HFDM	•			nternal sig	ınal only	
Some logical combination	ns of these attri	butes are not allowed	, see [08]			
attribute is true. Whe changes to false and messages). Afterward procedure reduces us Read access is possis HPM's with higher furcase of 'Protection' of "intelligent" load man	n the forcing con the signal is still ds re-transmissin necessary bus ble but in practin nctionality may r 'Oversupply' a agement is possionf and Rooml	ce not very useful indicate whether DHV nd in addition the load sible. If this function HMax shall be set to a	appears, the Forartheat-period of the forcing conditions of the forcing conditions of the force	rceRequesturing 9 middition appering should id. With this the attrib	st attribute inutes (3 ears (this liberactivated is feature butes DHWNo	in orm,

2.4.4.9 Output LockSignHPM

Standard mode: NA **LTE-HEE mode:**

FB:	HPM	LTE S	erve	r Output Name:	LockSignHF	PM					datory 🗌
Desc	ription:										
		ates wit	h thi	s output signal, th	at:						
				oiler system) is ov							
				nce is overloaded							
				ssible: for further							
				boiler temperatur					ow => criti	cal	
				all consumers sho							
				.e. the requested							
				above critical low							uncritical
			ent,	some consumers	(those withou	it ioad p	priority)	snouic	reduce 6	energy	
	onsumptio		ool (nama aa 2) hut na	oongumere r	oguaat	lood pri	ority -	> no l ool	.Cian∐E	M io cont
				same as 2) but no	DPT ID	207.10					IVI IS SEIIL
DPT: Field	Name	DPT_		cription	עו ואטן				format Unit	U ₈ B ₍₈	Default
	eduction			uested power redu	uotion	Sup.	Range 0100		%	5	
PWIR	eduction			uested power redt % no reduction	action	IVI	0100	70	70	5	CS
				0% max. reduction	n						
Attrib	 tes			et containing statu							
	Request			cates if power redu		М	true/fa	lse	bool	Υ	false
	toquoot			essary, validity of	.0011 10	'''	1.00,10	.00			10.00
				Reduction							
- Туре	Э			of overload; value	e is only	М	critical	/	bool	Υ	uncritical
, ,				ningful if LockReq			uncriti	cal			
Comr	nunicatio	n:				•	•			•	•
Bine	ding Grou	ıp:									
Clas	SS			Туре				Defau	ılt		
Ge	eographica	al [
Ap	plication S	Specific	\boxtimes	DistrSegmH				31 or	NA		
	nassigned			Broadcast	Configura						
	Address:			IO Type(ID):	136 (HPM)			erty ID		54	
	-Services			COV 🛛	MinRepTim		10 s	ec	Heart	beat:	3 1) min
	oReport	_	\leq	Output per defaul	t communica	ting	Bindi	na Gra	oup Wildo	ard allov	wed \square
	TE Read-F										_
	lling of the		t	Tx Prio:	High 🗌		No	rmal 🛭		Low	<u> </u>
	all always pported)	be		Transm after Pow	verup: 1)Store	d Value	:	ct Valı	ue 🗌 D	efault V	alue 🗌
	perty-Ser			Read only	≥ 2)	Read/V	Vrite				
	ividual ad			Troductiny 2		T (Odd) V	***************************************				
Exce	ption Han	dling:							Save a	t Power	down
	ial Featur										
				re usually located							
				re-transmitted per							
				the overload cond					•		
				e signal is still rep							
				re-transmission is ecessary bus-load		ıaııew	Overioa	au CON	αιτιστί αρμ	cais (li)	19
				e but in practice no							
110	au uooos	5 15 pos	,51010	S Sat III Practice III	or very aserur						

2.4.4.10 Output PowerFlowWaterDemHPM

Standard mode: NA LTE-HEE mode:

FB:	HPM	L	LTE Se	rve	er Output Name: P	owerFlow	WaterD	eml	HPI	М			datory 🔀
Descr	iption:												
					the current flow ten								
					e Producer Manage ne HPM => multiple :		to the	indiv	idu	al BO	C's. Eacl	n Produce	er BOC is
DPT:	Nam	е	DPT_F PM	Ow	verFlowWaterDemH	DPT ID	214.10	00	Da	itatype	format	$V_{16}U_8B_8$	
Field				De	escription		Sup.	Ra	nge)	Unit	COV	Default
Tomp	FlowDo	m		flo	w temperature dema	and /	M	full			°C	2	CS
remp	FlowDe				quested boiler temp			<u> </u>					
RelDe	mLimit			lim	elative demand %: m nitation for modulating used in boiler sequ	g burner	0	0	100	1%	%	10	100
Attribu					tset containing contr]	T					
– Tem	pFlowD	en	nValid		lidity of TempFlowDalse' means also 'no		M	tru	e / 1	false	bool	Y	false
– Stag	je1Enat	ole	d	if e	enabled, stage 1 car tivated by the BOC :	ı be ´	M	_	able abl	ed / ed	bool	Y	disabled
– Stag	je1Forc	ed		if fo	auto forced: stage 1 is gel auto: stage 1 is activ	ated if	M	for	ced	/auto	bool	Y	auto
				ne ter	cessary according to	o boiler							
– Stag	je2Enat	ole			age 2 control: see st	age 1	0	see	e st	age 1	bool	Υ	disabled
	e2Forc				age 2 control: see st		0			age 1	bool	Y	auto
– Boile	erEnabl	е			iler pump is on (water		М			ed /	bool	Y	disabled
					ust be enabled befor ned on	e burner is		ais	abl	eu			
Comn	nunicat	ior	1 :				<u>.</u>	l .			<u>L</u>	_ <u>\</u>	
Bind	ling Gr	ou	p:										
Clas				_	Туре					Defau	ult		
	ographi]									
	plication		pecific	XI.	ProdSegmH.Produ					1.n			
	assigne		L		Broadcast	Configura		Ъ		owh (ID		F0	
	Address -Service		lovont	١.	IO Type(ID): COV ⊠ I	136 (HPM MinRepTim			0 s	erty ID		52 rtbeat:	3 min
	Report		(event		Output per default								
(LT	E Read	I-R	espons	se				В		_			ved ¹⁾ 🛛
	ling of t				Tx Prio:	High 🗌			No	rmal [\preceq	Low	
	all alway oported)		be		Transm after Powe	rup: Stored	d Value		Α	ct Val	ue 🛛 🗆	Default V	alue 🗌
	erty-Se ividual				Read only		Read/\	Write	9				
Excep	tion Ha	anc	dling:								Save	at Power	down
	al Featu												
					of connected BOC a								. 4 4 5
					ds contain the defau y one boiler (no boile								
					ctionality is very limi								1 1116
1) Wilc	lcard or	P	roduce	r is	allowed to control a	II BOC in th	e same	Pro	dS	egmer	nt in para	allel.	

2.4.4.11 Output CtrlSignPump

same as in BOC, see chapter 2.3.4.15

2.4.4.12 Output TempFlowWaterSetp

same as in BOC, see chapter 2.3.4.16

2.4.4.13 Input TempFlowWaterDemAbsHFDM

Standard mode: NA LTE-HEE mode:

FB:	HPN	И	LTE Clien	t Input Name:	Ter	npFlowWa	aterDen	nAb	sHFDM			latory 🛚
Desci	riptic	n:										
This is	nput :	signa	contains t	he calculated re	sulti	ng flow ten	nperatu	re d	emand (a	bsolute f	low tempe	rature
value	to be	prov	ided by the	HPM) of the "fir	st" ŀ	HFDM in th						
releva	ant he	eat de	mand for t	he whole 'ProdS	egm	ıH'.						
DPT:	Na	ame	DPT_Tem	npFlowWater		DPT ID	210.10	00	Datatyp	e format	V ₁₆ B ₁₆	
			DemAbs									
Field				Description						Sup.	Unit	Default
Temp		Dem		flow temperatur	e de	mand (set	point)			M	°C	cs
Attribu												
- Dem	ıValid	t		Validity ofTemp						M	bool	false
				('false' means a								
- Absl	_oadl	Priorit	:y	absolute load p						0	bool	false
				request all avai								
- Shift	Load	Prior	ty	shift load priorit						0	bool	false
				in case of boiler								
- Max	Temp	pLimit	•	TempFlowDem						М	bool	false
	_			DHW load. Flow		np must be	e limited	l to r	nax level		l	
- Min				for cold water o	,					NA	bool	false
- DHV	VReq	1		Heat demand fr	om	DHW => to	or DHW	pre	paration	0	bool	false
_	.			during summer								
- Roo		IReq		Heat demand fr						0	bool	false
- Vent			_	Heat demand fr						0	bool	false
- Aux				demand from a						0	bool	false
- Syst	emP	umph	keq	request for water				tribu	ition	0	bool	false
	D.			segment (comn	non :	system pui	mp on)	4:			la a a l	falaa
- Eme	ergDe	em		emergency hea						0	bool	false
	\/I o a	ioDoc		=> heat product							haal	false
- DHV	vLeg	iokec	l	demand from D active (can only						0	bool	laise
0		4!		active (can only	be	true II Dn	wkeq -		ie)			
Comr												
		Grou	p:	Type				IDa	efault			
Clas		nhina		Туре				DE	lauit			
		phica		DietrCoamU					or NIA			
			pecific	DistrSegmH		Canfigural		31	or NA			
	nassio Addr			Broadcast IO Type(ID):		Configurat			roporty II	١.	E1	
			event):	IO Type(ID):	for	144 (HFD			roperty II	J.	51	
	oRep			InfoReport Snit	iei	on binding		Mi	n			
			polling):									
			onse 🗌	Read Wildcard	/ Re	sp Sniffer	on Bind	ing (Group:			
Value	afte	r Pov	verup:	Defa	ult V	alue 🛚				;	Stored Va	lue 🗌
Exce	otion	Han	dling:						S	ave at Po	werdown	
				nal for normal op	erat	ion. Due to	the "he	earth	peat" rep	etition of	the signal,	it is
				resence of the F								
Speci												
The H	The HPM and the "first" HFDM are normally located in the same device since they have a 1:1 relationship											
and ra	nd rather tight coupling. Therefore this is usually a device internal signal.											

${\bf 2.4.4.14\; Input\; TempFlowWaterDemHeatShift}$

Standard mode

DF	Name:	l emp⊦lo	<u>wWaterD</u>	emHeatShift	Abbr.:				Manda	tory		\boxtimes
FB	Name:	HPM							Can be	interna	al	
De	scription											
Lir	nk with EIB E	Boiler OB	IS => shi	fting of the hea	at demand	l, S-inte	rface o	nly				
Th	is datapoint	correspo	nds with	PID_TEMP_S	UPPLY_V	VATER	_DELT.	A (dTs۱	v, Delta su	pply wa	ater	
ter	nperature) ii	n the EİB	Boiler Ol	BIS. For furthe	er informat	ion see	EIB Bo	oiler OE	SIS docume	ent		
In '	the KNX HV	/H mode	I this data	apoint is provid	led by the	HDTA(CT fund	tional b	lock, see [07]		
	tapoint Typ											
DF	PT_Name:	DPT_V	alue_Ten	npd								
DF	PT Format:	F ₁₆					DI	PT_ID:	9.002			
Fie	eld	Descrip	otion				St	ıpp.	Range	Unit	Defau	ılt
									full range	K	0 K	(
Ac	cess Type											
♦	Input											
	$N \rightarrow this$		1 -	\rightarrow this								
	Spontaneo	ıs 🛚		Cyclically	<i>y</i> :	3		Time-	out:	31 mir	า	
	Request			Polling:				Perio	d:			
Co	mmunicati	on Type										
♦	Group Obj	ect Data	point						Mandatory	<i>'</i> : 🛛		
	Default Gro	up Addre	ess:							•		
Dy	namics	•										
	Power dow	n: Sav	e: [
	Power up:	Valu	ıe: 1	No initialisation	າ: 🔲	D	efault v	/alue:				
			3	Saved value:		Α	ctual va	alue (no	ot for input)	: 🗆		
		Trar	nsmit on b	ous (only for o	utput):	R	Read fro	m bus	(only for in	out):		
Ex	ception Ha											
Sp	ecial Featu	res										

2.4.4.15 Input StatusBOC

Standard mode: NA **LTE-HEE mode:**

FB:	HPM	LTE Client	t Input Name:	Sta	atusBOC					Mand			$\stackrel{\triangle}{=}$
Dane										- Op	tiona	II <u>L</u>	_
	ription:	:	- manufilm In DOO's	/	.4)		_4	:	4: £ 41		- 1 1 1	:1	
			n multiple BOC's			tains sta	atus	iniorma	tion of the	naivuau	ai boi	lier	S
			poiler sequence	CON		045.40		D-4-4	- f	N/ 11 D			
DPT:	Name	DPT_Stat			DPT ID	215.10	U	Datatyp	e format	V ₁₆ U ₈ B ₁₆		F	.14
Field	5 "		Description						Sup.	Unit	Def		IIT
	Boiler		Current boiler to						. M	°C		S	
PrelB	urner		Current relative	pov	wer of the a	ttached			M	%	С	S	
			boiler/burner										
Attrib			Bitset containin							l	١		
	pBoilerVa		validity of Temp						M	bool		lse	
	lBurnerVa	lid	validity of PrelB	oil F	-ield				M	bool	_	lse	
– Fau			boiler failure						M	bool		lse	
– Sun	nmerMode	9	boiler switched	off (due to local	summe	er/w	inter	M	bool	tai	lse	;
	_		mode							l	١		
– OffF			boiler is permar				ch o	r failure)		bool		lse	
- Nor	HeatAvaila	ible	boiler is tempor			ig neat			M	bool		lse	
-	D 01	4= 1	stage 1 or base	sta	ge enabled				M	bool	disa	abi	е
	sBurnerSt	age1Enab											
le										l			
_ 	- D01	OF I-	stage 2 / modul	atio	n enabled				M	bool	disa	abi	е
	sBurnerSt	age2Enab											
le	.N404	_	f t t b.	. : 1			1			la a a l	£		
– Red	NextStag	е	for two stage bo						M	bool	Tai	lse	;
D	.N.a4Da:Ia		reached, HPM i							la a a l	£		
– Red	NextBoile	: r	power limit of be				s re	questea	M	bool	Tai	lse	;
Doo	lugad Avai	lability.	to enable next b				r ha	iloro	N.4	haal	fo	lse	
- Rec	lucedAvai	lability	boiler is in princ should be used				טט ו	liers	M	bool	lai	ise	1
Chi	mnovSwo	on	boiler is in princ				r ho	ilore	М	bool	fo	lse	
- Cilli	mneySwe	eb	should be used				טט ו	liei S	IVI	DOOI	lai	150	1
C			silibulu be useu	WILI	preference	-					<u></u>		_
	munication ding Grou												
Clas		лр.	Typo				IDa	fault					
	eographica	J 🗆	Туре				De	iauit					
		aı Specific⊠	ProdSegmH.Pr	odu.	cor (1 n)		1.r						
	nassigned	Specific	Broadcast		Configurab	i		<u>'</u>					
	Address:		IO Type(ID):		129 (BOC)		D	roperty II	D.	51			
	-Service	(ovent):	InfoReport Snit					ioperty ii	Producer				
	oReport	(event).	Timeout:	IEI	on binding		Mi	n	Froducei				
		(polling):	Timeout.				IVII	II					
	ead – Res		Read Wildcard	/ Re	esp Sniffer o	n Bindi	ing (Group:	Producer	•			
Value	after Po	werup:	Defa	ult V	/alue 🛚				(Stored Va	lue [
Exce	ption Han	dling:						S	Save at Po	werdown			
			esence of the B	OC	in boiler se	quence.	. If S						
			red in the boiler									r	
			d to indicate def		•					•			
	any-speci	-						J					
•													

Special Features:

Since StatusBOC is mandatory for BOC, it can be used in the HPM in order to find out, which boiler controllers are connected to the HPM in the boiler sequence. Therefore a boiler directory in the HPM can easily be built up and maintained. This is an important feature too make boiler sequence configuration easy. No manual configuration of a boiler directory in the HPM is necessary.

In the HPM, this signal must be handled individually for each boiler in the cascade – including the timeout condition. HPM and <u>one</u> BOC are often located on the same device – in this case the input from this BOC is purely device-internal

In simple systems with only one boiler (no boiler sequence) HPM and BOC are usually located in the same device and HPM functionality is very limited. In thic case this signal can be device internal.

1) polling is optional in the HPM

=> may be used to build up quickly a boiler directory using one read request with wildcard addressing

2.4.4.16 Input OpHrsBurner

Standard mode

DP Name:	Opr	irsBurner			Abbr.:					Mand	ıato	ry		$ \boxtimes $
FB Name:	HPN	Л								Can I	oe i	nterna	al	\boxtimes
Description														
Current burne	er ope	erating hours	stage	1, base	e stage o	of the at	tached l	BOC&	BUC	;				
Datapoint Ty	/pe													
DPT_Name:	DF	PT_LongDelt	aTime	Sec										
DPT Format:	V_3	2						DPT_	_ID:	13.10)0_			
Field	De	escription						Supp).	Range		Unit	Defau	ult
									:	>=0 1)	' r	า	0	1
Access Type)													
◆ Input														
$N \rightarrow this$			$1 \rightarrow thi$	is	\boxtimes									
Spontaneo	ous			Cyclica	ally:			T	ime-d	out:	1	121 m	in	
Request				Polling	:			Р	eriod	l:				
Communicat	tion 7	Гуре												
♦ Group Ob	oject	Datapoint								Mandato	ry:			
Default Gr	oup /	Address:												
Dynamics														
Power dov	vn:	Save:												
Power up:		Value:	No in	itialisati	ion:		Defau	ılt valu	ıe:					
			Save	d value	: \		Actua	l value	e (no	t for inpu	ut):			
		Transmit or	bus (d	only for	output):		Read	from I	bus (only for	inpı	ut):		
Exception Ha	andli	ng												
Special Feat	ures													
1) encoding or	n 32	bit signed int	eger v	alue wi	th 1 seco	ond <u>tran</u>	sport fo	rmat r	esolu	ution. Th	e g	ranula	arity of	the
internal resi	olutio	n may he hi	aher I	leed rai	nae· 0 ~	68 veai	re => in	nractio	se no	hinary	OVE	rflow i	nneeih	ماد

LTE-HEE mode:

FB:	НРМ	LTE Clien	t Input Name:	Op	HrsBurne	r						datory 🛚
Desc	ription:	<u> </u>										
Curre	nt burner	operating h	ours stage 1, ba	se s	tage of the	attache	ed B	OC&B	UC			
DPT:	Name	DPT_Lon	gDeltaTimeSec		DPT ID	13.100		Dataty	/pe	format	V_{32}	
Field			Description							Sup.	Unit	Default
											h	0
Com	municatio	on:	-								-	-
Bin	ding Gro	up:										
Clas	SS		Туре				De	fault				
	eographic											
Ar	plication	Specific⊠	ProdSegmH.Pro	oduc	cer	-	1.1	<u> </u>				
Ur	nassigned		Broadcast		Configurat	ole 🗌						
	Address:		IO Type(ID):		129 (BOC			roperty	ID:		56	
	-Service	(event):	InfoReport Snif	fer	on Binding							
	foReport	\square	Timeout:			31	Mi	n				
Re	ead – Res		Read Wildcard	/ Re	sp Sniffer	on Bindi	ng (Group:				
Value	after Po	werup: 1)	Defa	ult V	alue 🗌					;	Stored Va	ılue 🛚
Exce	Exception Handling: Save at Powerdown											
	ial Featui											
			1:1 link with BO									
			poiler sequence)									ice and
			ng burner operat	on h	nours inforr	mation b	eca	iuse in	sim	ple sys	tem this	
		ot needed.									_	
			d integer value v									
intern	nternal resolution may be higher. Used range: 0~68 years => in practise no binary overflow possible											

2.4.4.17 Input ForceSignBOC

Standard mode: NA LTE-HEE mode:

FB: HPM	LTE Client	t Input Name:	ForceSignE	BOC				latory
							Op	tional 🛚
Description:								
		n multiple BOC's						
		er has remaining						ment [08]
		the HPM for bo						
		on or remaining				or in a sy	stem with	only
		ing ForceSignHF						
DPT: Name	DPT_Ford		DPT ID	21.100	Datatype		B ₈	D - f If
Field		Description				Sup.	Unit	Default
Attributes		Bitset containing		in the DO	C (validity of	N.4	bool	foloo
- ForceReques	Į.	indicates overhe		in the BOO	(validity of	M	bool	false
- Protection		remaining attrib		ical too bi	iah hailar	М	bool	false
- Protection		temp	verneat is cri	icai, too ni	igi i bollel	IVI	DOOI	laise
- Oversupply		indicates that o	vorboat is un	critical but	hailar tamp	М	bool	false
- Oversupply		is much higher				IVI	DOOI	laise
		from HPM	man request	od by ficat	acmana			
- Overrun		indicates that re	emaining ene	rov is avail	lable in the	М	bool	false
Overran		boiler after load		igy io avail			5001	laioo
- DHWNorm		unused in Force		be ianore	ed	NA	bool	false
- DHWLegio		unused in Force					bool	false
- RoomHČomf		unused in Force				NA	bool	false
- RoomHMax		unused in Force				NA	bool	false
Communication	n:		_			-		<u> </u>
Binding Grou	ıp:							
Class		Туре			Default			
Geographic	al 🔲							
Application	Specific⊠	ProdSegmH.Pro	oducer (1n)		1.n			-
Unassigned		Broadcast	Configur	able 🗌				
DP Address:		IO Type(ID):	129 (BO	C)	Property ID):	54	
LTE-Service	(event):	InfoReport Snif	fer on Bindir			Producer		
InfoReport	\square	Timeout: 1)		7	Min			
LTE-Service		Read Wildcard	/ Resn Sniffe	r on Rindir	na Group: F	Producer		
Read – Res			•	i on bindii	ig Group.			
Value after Po		Defa	ult Value 🖂			S	tored Val	lue 🗌
Exception Har	ndling:				Sa	ave at Po	werdown	
Special Featur								
		nternal if BOC a						
		lividually for eacl						
		event and perio						
		forcing condition						
		be repeated by t						
		transmission is s	stopped until	a new forc	ing condition	appears	(tnis pro	ceaure
reduces unnece	coodiy bus-	iuau).						

2.4.4.18 Input LockSignBOC

Standard mode: NA LTE-HEE mode:

FB:	HPM	LTE Clien	t Input Name:	Loc	kSignBO	С					ndatory 🗌
Desci	ription:									_	<u> </u>
This s	ignal is re		n multiple BOC's								
			overload situation ler temperature								
lower	limit)		·					·			
See a	lso docun	nent [08]									
This s	ignal may	be used in	the HPM for bo	iler s	sequence o	control	=> c	ompany-	specific b	ehavior.	Normally
			will be activated i								
In cas	se of overl	oad condition	on in the whole b	oile	r cascade	or in a	syst	em with c	nly one b	oiler, the	е
corres	sponding I	LockSignHF	PM signal is gen	erate	ed by the F	IPM.					
DPT:	Name	DPT_Loc	kSign		DPT ID	207.1	01	Datatyp	e format	U ₈ B ₈	
Field			Description						Sup.	Unit	Default
PwrR	eduction		Requested pow	er-c	onsumptio	n redu	ction		M	%	cs
			- 0 % no redu								
			- 100% max. re	duct	tion						
Attribu	utes		Bitset containin	g sta	atus info					1	
- Loc	kRequest		indicates if pow	er re	eduction is	necess	sary	(validity	M	bool	false
	•		of PwrReductio	n)			-	,			
– Тур	е		type of overload	d crit	ical/uncriti	cal; val	ue is	only	M	bool	uncritical
			meaningful if Lo	ckR	equest=tru	ıe					
Comr	nunicatio	n:							-	*	
Bind	ding Grou	ıp:									
Clas	SS		Type				De	efault			
Ge	eographica	al 🗌	•								
		Specific	ProdSegmH.Pr	oduc	er (1n)		1.	n			
	assigned		Broadcast 🗌		Configurat	ole 🗍					
	Address:	_	IO Type(ID):		129 (BOC		P	roperty II):	55	
	-Service		InfoReport Snit						Produce	r	
	oReport	` 🖄	Timeout: 1)				7 M				
LTE		(polling):	Read Wildcard	/ Re	sp Sniffer	on Bind	ding	Group:	Produce	ſ	
			Defe	.14.3.7	alue 🖂					Otana d V	/aliva 🖂
	after Po		Dela	uit V	alue 🔼			10		Stored V	
Exce	otion Han	ialing:						5	ave at Po	owerdow	n 🔲
	<u>ial Featur</u>		1 1:(000		IDM I				 		
I his s	ignal can	be device i	nternal if BOC a	nd H	IPM are lo	cated II	n the	same de	evice		
			event and perio								
			overload condition								
			be repeated by t								
			transmission is s	topp	ped until a	new ov	erio/	ad condit	ion appe	ars (tnis	proceaure
		essary bus-		an. a a	 11 		!	. 41		المناه	4:
		s signai mu	st be handled in	nvid	ually for ea	ach doi	ier ir	ı ine casi	ade – Ind	ciuaing ti	ne timeout
condit	uon.										

2.4.4.19 Input BoilerSpec

Standard mode: NA

LTE-HEE	mode:

FB:	HPM	LTE Clien	t Input Name:	BoilerSpec						datory		
									Ор	tional 🛚		
Descri												
			n multiple BOC's									
			tapoint may in so									
			. This informatio									
			information could	d be a part of	the boiler	dire	ectory in	the HPM	. It must b	е		
		h boiler ind		T	1				I			
DPT:	Name	DPT_Spe	cHeatProd	DPT ID	216.10	0	Datatype		$U_{16}U_8N_8E$			
Field			Description					Sup.	Unit	Default		
Pnom			Boiler nominal p					M	kW	CS		
	Limit 1)		relative power li			bas	e stage	M	% enum.	cs		
BurnerType 1 stage, 2 stage, modulating etc. M										CS		
FuelType set of supported fuel types M k										CS		
Comm	unicatio	n:										
Bind	ing Grοι	ıp:										
Class			Туре			De	fault					
	ographica											
		Specific⊠	ProdSegmH.Pro	oducer (1n)		1.n						
	assigned		Broadcast	Configur								
	ddress:		IO Type(ID):	129 (BO			operty ID):	52			
	Service	(event <u>):</u>	InfoReport Snif	ffer on Bindii				Producer	•			
	Report	\boxtimes	Timeout: 2)			Mir	1					
LTE-: Rea	Service ad – Res _l	(polling): ponse ²⁾ ⊠	Read Wildcard	/ Resp Sniffe	r on Bindi	ng C	Group:	Producer				
Value	after Pov	werup:	Defa	ult Value 🖂			-	(Stored Va	lue 🗌		
Excep	tion Han	dling:					S	ave at Po	werdown			
-												
Specia	Special Features:											
	This signal can be device internal if BOC and HPM are located in the same device											
1) can b	e ignore	d in case o	f 1 stage burner:	dummy valu	e 100%							
²⁾ This	This datapoint has usually a constant value and is read once by the HPM after system installation /											
	This datapoint has usually a constant value and is read once by the HPM after system installation /											

2.4.4.20 Input TempFlowWater

same as in BOC, see chapter 2.3.4.22

2.4.4.21 Input TempReturnWater

same as in BOC, see chapter 2.3.4.23

2.4.4.22 Input TempOutside

same as in BOC, see chapter 2.3.4.24

2.4.4.23 Input StatusFTC

same as in BOC, see chapter 2.3.4.25

2.4.4.24 Parameter ProdSegmH

FB:	HPM	Property	Name (<u>Server</u>):	: ProdSegmH								datory 🖂
											Op	tional 🔲
	ription:											
LTE z	oning info	rmation F	Heat Production Seg	gm	ent							
DPT:	Name	DPT_U	countValue8_Z		DPT ID	202.002	<u>-</u>	Dat	atype forma	t U ₈ Z	8	
Field			Description				S	up.	Range	Unit		Default
Count	erValue		Heat Production S	egi	ment numb	er		M	116			1
Status	3									bitse	t	
- Out	OfService		zone active /inactive	/e				0	true/false			false
- all other flags						١	NΑ					
Comn	nand									enur	n	
- NormalWrite								M				
- SetC	SV & Re	setOSV	set zone inactive /	ac	tive			Ο				
- all of	ther comn	nands	not supported				١	NΑ				
Comr	nunicatio	n:								•		-
DP A	Address:		IO Type(ID):		136 (HPM)	Р	rope	rty ID:	101		
(in t	he serve	r)	Start-Index:		1		Ν	° of e	elements	1		
Pro	perty acc	ess:	Read only			Read/W	rite)	\boxtimes			
Protection Read level							W	/rite	level			
Exce	otion Har	ndling:	Value after Powerd	лр:	Stored	Value 🛚	Α	ct Va	alue 🔲 D	efault \	√alu	e 🗌
Speci	al Featur	es:										
HPM	DP's are	not LTE c	ommunicating with	the	BOC's if z	zone is 'C	Out	OfSe	ervice'.			-

2.4.4.25 Parameter DistrSegmH

FB:	HPM	Property	operty Name (<u>Server</u>):			istrSegml	HPrimary	7			Ма		tory 🔯 1) otional 🔲
Desci	iption:	L										- -	
		ormation :	lin	k with the HFDM	in	the primar	y Heat Di	istr	ibuti	on Segmen	t		
DPT:	Name	DPT_U	cou	untValue8_Z		DPT ID	202.002		Dat	atype forma	t U ₈ Z ₈		
Field			D	escription				Sı	up.	Range	Unit		Default
Count	erValue		Н	eat DistributionSe	gr	ment numb	per	1	M	131			1 or 31 ³⁾
Status	3										bitset		
- Out	OfService		Z	one active /inactiv	e ²	2)		(0	true/false			false
- all o	her flags		no	ot supported, fixed	d to	o '0'		_ N	ΙA				
Command Normal Write											enum		
- NormalWrite								ſ	M				
- SetOSV & ResetOSV set zone inactive / a						tive			0				
- all of	ther comi	mands	n	ot supported				N	IA_				
Comr	nunication	on:											
DP A	Address			IO Type(ID):		136 (HPM	l)			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	;	\boxtimes			
Prot	ection			Read level				W	rite	level			
Exce	otion Ha	ndling:	٧	alue after Poweru	ıp:	Stored	Value 🛚	A	ct Va	alue 🔲 D	efault V	alue	e 🗌
Speci	al Featu	res:											
1) man	mandatory if the first HFDM is not located in the same device; NA if HPM and HFDM are in the same												
device	device												
²⁾ HPN	/I DP's ar	e not LTE	CC	mmunicating with	ı th	ne corresp	onding HI	FD	M if	zone is 'Out	:OfServi	ce'	
3) see	PM DP's are not LTE communicating with the corresponding HFDM if zone is 'OutOfService' ee chapter 2.4.1 and specification of HFDM												

2.4.4.26 Parameter PeripheralLinkPump

FB:	HPM	Property	/ N	lame (<u>Server</u>):	PeripheralLinkPump								datory \square
												<u> </u>	otional 🖂
Desci	ription:												
LTE z	oning nur	nber Peri	ph	eral link to commo	on	pump in b	oiler seqı	uer	nce				
DPT:	Name	DPT_U	CO	untValue16_Z		DPT ID	203.012	2	Dat	atype forma	at	U ₁₆ Z ₈	
Field			D	escription				S	up.	Range	J	Jnit	Default
Count	terValue		р	eripheral link num	be	r			M	full	-	-	1
Status	3		Ī								b	itset	
- Out	OfService		Z	one active /inactiv	e'e				0	true/false			false
- all o	- all other flags not supported, fixe					o '0'		_ N	NΑ				
Comn	Command										е	num	
- NormalWrite									M				
- SetC	DSV & Re	setOSV	S	et zone inactive / a	act	tive			Ο				
- all o	ther comr	nands	n	ot supported				١	NΑ				
Comr	nunicatio	n:	-					=		-			
DP A	Address:			IO Type(ID):		136 (HPM)	Р	rope	rty ID:	1	103	
(in t	he serve	r)		Start-Index:		1		Ν	° of	elements	1	Í	
Pro	perty acc	ess:		Read only			Read/W	/rite	;	\boxtimes			
Protection Read level								W	/rite	level	-	-	
Exce	otion Har	ndling:	٧	alue after Poweru	ıp:	Stored '	Value 🛚	Α	ct Va	alue 🔲 🏻 🗈)efa	ult Value	e 🗌
Speci	ial Featui	es:											
HPM	HPM is not LTE communicating with the pump if zone is 'OutOfService'												

2.4.4.27 Parameter PeripheralLinkFTC

FB: H	HPM	Property	Name (<u>Server</u>):	Peripher	alLinkFT(datory ptional				
Descri	ption:											
LTE zo	ning nur	nber Perij	oheral link to FTC (d	optionally ι	ised for co	ontro	l of t	the common	return ten	nperature)		
DPT:	Name	DPT_U	countValue16_Z	DPT II	203.01	12	Dat	atype forma	t $U_{16}Z_8$			
Field			Description			S	up.	Range	Unit	Default		
Counte	rValue		peripheral link num	nber			M	full		1		
Status									bitset			
- OutOf	fService		zone active /inactive	ve			Ο	true/false		false		
- all oth	er flags		not supported, fixe	ed to '0'			NΑ			L		
Comma	and								enum			
- Norma	alWrite						M					
- SetOS	SV & Re	setOSV	set zone inactive /	active			O					
- all oth	ner comn	nands	not supported			١	NA_					
Comm	unicatio	n:				_				-		
DP A	ddress:		IO Type(ID):	136 (HI	PM)	Р	rope	erty ID:	104			
(in th	e serve	r)	Start-Index:	1		Ν	° of	elements	1			
Prope	erty acc	ess:	Read only		Read/\	Write	Э	\boxtimes				
Prote	ection		Read level			W	/rite	level				
Except	Exception Handling: Value after Powerup: Stored Value 🖂 Act Value 🗌 Default Value 🗌											
Special Features:												
HPM is	HPM is not LTE communicating with the FTC if zone is 'OutOfService'											

2.4.4.28 Parameter OutsideSensorZone

FB:	HPM	Property	Name (<u>Server</u>):	OutsideSensorZone							Mand	datory 🔲
											Op	tional 🛚
Desci	ription:			=						_		
LTE z	oning nur	nber for th	ne link with an Outsi	ide	Temperat	ure Sens	or					
DPT:	Name	DPT_U	countValue8_Z		DPT ID	202.002		Dat	atype forma	ıt U	J_8Z_8	
Field			Description				Sı	up.	Range	U	nit	Default
Count	erValue		Outside sensor zor	пе	number		ı	M	131			1
Status	3									bi	tset	
- Out	OfService		zone active /inactiv	/e			(0	true/false			false
- all of	all other flags not supported, f				o '0'		N	١A				
Comn	Command									er	num	
- Norr	- NormalWrite						I	M				
- SetC	SV & Re	setOSV	set zone inactive /	ac	tive		(0				
- all of	ther comn	nands	not supported				N	١A				
Comr	nunicatio	n:	•			•						
DP A	Address:		IO Type(ID):		136 (HPM)	Pr	rope	rty ID:	10	05	
(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							W	/rite	level			
Exce	otion Har	ndling:	Value after Poweru	ıp:	Stored \	√alue 🛚	Α	ct Va	alue 🔲 D	efau	ult Value	e 🗌
	al Featur											
HPM	is not usir	ng an exte	rnal outside temper	atı	ure sensor	if zone is	G'C	ot O	fService'		· · · · · · · · · · · · · · · · · · ·	

2.4.4.29 Diagnostic data TempFlowWaterProdSegmH

FB:	HPM	Property	Name (<u>Server</u>):	TempFlow	WaterPro	mH		datory 🛚			
Desci	ription:	-						•			
Curre	nt flow ter	mperature	provided by the hea	at productior	segmen	t					
DPT:	Name	DPT_H	/ACTempAbs_Z	DPT ID	205.100	Da	tatype format	$V_{16}Z_{8}$			
Field			Description			Sup.	Range	Unit	Default		
Temp			temperature value			M	cs	° C	cs		
Status	3							bitset			
- Faul	t		temperature corrup		failure	M	true/false		false		
- InAla			critical limit is reach			0	true/false		false		
	mUnAck		alarm acknowledge			0	ack/unack		unack		
	ther flags		not supported, fixed			NA					
Comn			standard Comman					enum			
	mAck		alarm acknowledge	9		0					
- all o	ther comr	nands	not supported			NA					
Comr	nunicatio	n:									
	Address:		IO Type(ID):	136 (HPM	1)		erty ID:	110			
(in t	he serve	r)	Start-Index:	1		N° of	elements	1			
	perty acc	ess:	Read only		Read/W	'rite	⊠ ¹⁾				
Prof	tection		Read level		Write	level					
Exce	otion Har	ndling:	Value after Poweru	ıp: Stored	Value 🗌	Act V	alue 🛛 De	efault Valu	e 🗌		
Speci	ial Featur	es:									
1) opti	optional Write access for Alarm acknowledgement only										

2.4.4.30 Diagnostic data TempReturnWaterProdSegmH

FB:	HPM	Property	Name (<u>Server</u>):	me (<u>Server</u>): TempReturnWaterProdSegmH							datory 🗌	
Desc	ription:			-							otional 🔼	
		n return t	emperature of the h	ea	t production	n segme	nt					
DPT:	Name	DPT_H	VACTempAbs_Z		DPT ID	205.100)	Dat	atype format	$V_{16}Z_{8}$		
Field			Description				Sı	лр.	Range	Unit	Default	
Temp			temperature value				N	M	cs	° C	CS	
Status	3									bitset		
- Faul	t		temperature corrup	ote	d, sensor t	failure	N	M	true/false		false	
- InAla	arm		critical limit is reac	he	d		(C	true/false		false	
- Aları	mUnAck		alarm acknowledge	em	ent status		(C	ack/unack		unack	
- all other flags not supported, fixed					o '0'		N	IA			L	
Comn	nand		standard Comman	d f	ield					enum		
- Aları	-		alarm acknowledge	е			(C				
- all o	ther comn	nands	not supported				N	ΙA				
Comr	nunicatio	n:										
DP A	Address:		IO Type(ID):		136 (HPM	l)	Pr	ope	rty ID:	111		
(in t	he serve	r)	Start-Index:		1		N°	of e	elements	1		
Pro	perty acc	ess:	Read only			Read/W	rite	!	⊠ ¹⁾			
Prof	Protection Read level						W	rite	level			
Exce	otion Har	dling:	Value after Powert	up:	Stored	Value 🗌	Ac	ct Va	alue 🛛 🛮 De	fault Valu	e 🗌	
Speci	Special Features:											
1) opti	onal Write	access f	or Alarm acknowled	lge	ment only							

2.4.4.31 Diagnostic data TempProdSegmHSetp

FB:	HPM	Property	Name (<u>Server</u>):	T	empProd	SegmHSe			datory 🛚			
Desci	ription:								-			
Curre	nt commo	n flow wa	ter temperature set	ро	int of boile	r sequenc	ce					
DPT:	Name	DPT_H\	/ACTempAbs_Z		DPT ID	205.100	Dat	atype format	$V_{16}Z_{8}$			
Field			Description				Sup.	Range	Unit	Default		
Temp			temperature value				M	cs	° C	CS		
Status	3								bitset			
- Out	OfService		boiler is out of serv				Ο	true/false		false		
	rridden		external override o		•	t	Ο	true/false		false		
- all of	her flags		not supported, fixe	d t	:o '0'		NA					
Comn	nand		standard Comman	-					enum			
	rride & Re		override and releas	se	setpoint		Ο					
- all of	ther comn	nands	not supported				NA					
Comr	nunicatio	n:										
DP A	Address:		IO Type(ID):		136 (HPM	1)	Prope	rty ID:	112			
(in t	he serve	r)	Start-Index:		1		N° of	elements	1			
Pro	perty acc	ess:	Read only			Read/W	rite	\boxtimes 1)				
Prot	Protection Read level						Write	level				
Excep	otion Har	dling:	Value after Poweru	ıp:	Stored	Value 🗌	Act Va	alue 🗵 🛮 De	efault Valu	e 🗌		
	<u>'</u>	<u>'</u>	·		<u>'</u>	<u>'</u>		·	<u>'</u>			
Speci	Special Features:											
1) opti	onal Write	access f	or Override / Releas	se	function or	nly						

2.4.4.32 Diagnostic data BoilersTotal

FB:	HPM	Property	Name (<u>Server</u>):	В	oilersTota	al						datory _
											Op	otional 🛚
Desc	ription:											
Total	number o	f boilers in	boiler sequence (a	acc	ording to t	he boiler	dire	cto	ry)			
DPT:	Name	DPT_Val	ue_1_Ucount		DPT ID	5.010		Dat	atype format	tι	J ₈	
Field			Description				Su	p.	Range	U	nit	Default
								031	-		cs	
Communication:												
DP	DP Address:		IO Type(ID):		136 (HPM	1)	Pro	оре	rty ID:	1	13	
(in t	the serve	r)	Start-Index:		1		N°	of e	elements	1		
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	/rite					
Pro	tection		Read level				Wr	ite	level		•	
Exception Handling: Value after Powerup:						Value 🗌	Ac	t Va	alue 🛛 🛮 Do	efa	ult Value	e 🗌
Spec	ial Featui	res:										

2.4.4.33 Diagnostic data BoilersActive

FB:	HPM	Property	Name (<u>Server</u>):	В	oilersActi	ve						datory ☐ otional ⊠
Desc	ription:			_								
Numb	er of curr	ently activ	e boilers in boiler s	equ	uence							
DPT:	Name	DPT_Va	lue_1_Ucount		DPT ID	5.010		Dat	atype forn	nat	U ₈	
Field			Description				Sι	ıp.	Range		Unit	Default
									031			CS
Communication:											•	
DP	DP Address:		IO Type(ID):		136 (HPM)	Pro	оре	rty ID:		114	
(in t	he serve	r)	Start-Index:		1		N°	of e	elements		1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite					
Pro	tection		Read level				Wı	ite	level			
Exce	ption Har	ndling:	Value after Poweru	лр:	Stored \	√alue 🗌	Ac	t Va	alue 🛚	De	fault Valu	e 🗌
Spec	ial Featu	es:							_		-	_

2.4.4.34 Diagnostic data PnomHPM

FB:	HPM	Property	/ Name (<u>Server</u>):	PnomHPM						Mand	datory 🔲	
										Op	tional 🛛	
Desci	ription:	-		-								
Nomir	nal power	of the boi	iler sequence contro	olle	d by the H	IРМ						
DPT:	Name	DPT_Pc	owerKW_Z		DPT ID	203.014		Dat	atype format	U ₁₆ Z ₈		
Field			Description				S	up.	Range	Unit	Default	
Powe	r		power value, 1kW	res	solution			M	065535	[kW]	cs	
Status	3									bitset		
- Out	OfService		Pnom value valid of	or i	unknown/\	oid/		0	true/false		false	
- all other flags			not supported, fixe	d to	o '0'		N	١A				
Comr	nunicatio	n:	•			-	-		-			
DP A	Address:		IO Type(ID):		136 (HPM)	Р	rope	rty ID:	115		
(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				W	/rite	level			
Exception Handling:			Value after Poweru	лр:	Stored	Value 🗌	Α	ct Va	alue 🗵 🏻 De	fault Value	e 🗌	
Speci	Special Features:											
To be	calculate	d accordin	ng to the power valu	ıes	PnomBoi	ler of the	att	ache	ed boilers			

2.4.4.35 Diagnostic data PrelHPM

IPM	Property	Name (<u>Server</u>):	Р	relHPM					datory 🔲	
								Op	tional 🛛	
otion:								_		
								the attach	ned	
boilers. The calculation is done by the HPM and the mechanism is company specific.										
Name	DPT_Re	elValue_Z		DPT ID	202.001	Dat	atype format	U_8Z_8		
Field Description						Sup.	Range	Unit	Default	
е		relative value				M	0100%	%	cs	
Status								bitset		
- OutOfService RelValue			IValue valid / void M tri						true	
er flags		not supported, fixe	d t	d to '0' NA						
ınicatio	n:				-					
dress:		IO Type(ID):		136 (HPN	1)	Prope	rty ID:	116		
eserver	·)	Start-Index:		1		N° of e	elements	1		
rty acc	ess:	Read only	X		Read/W	'rite				
ction		Read level				Write	level			
Exception Handling: Value after Power				Stored	Value 🗌	Act Va	alue 🛛 🏻 De	fault Value	e 🗌	
Featur	es:				<u> </u>					
	<u>'</u>	·		<u>'</u>	<u>'</u>					
	tion: relative The calc Name e Service er flags inicatio dress: server rty acception on Han	tion: relative power of The calculation is Name DPT_Re e Service er flags inication: dress: e server) rty access:	relative power of the boiler sequence. The calculation is done by the HPM in the calculation is done by the HPM in the calculation in the calculat	relative power of the boiler sequence at The calculation is done by the HPM an Name DPT_RelValue_Z Description e relative value Service RelValue valid / void not supported, fixed to inication: Idress: IO Type(ID): Server) Start-Index: rty access: Read only Service Read level on Handling: Value after Powerup:	relative power of the boiler sequence according to The calculation is done by the HPM and the medical name DPT_RelValue_Z DPT ID	relative power of the boiler sequence according to the relative power of the boiler sequence according to the relative calculation is done by the HPM and the mechanism is Name DPT_RelValue_Z DPT ID 202.001 Description e relative value Service RelValue valid / void not supported, fixed to '0' Inication: Idress: IO Type(ID): 136 (HPM) Start-Index: 1 rty access: Read only I Read/Westion Read level On Handling: Value after Powerup: Stored Value	relative power of the boiler sequence according to the relative por The calculation is done by the HPM and the mechanism is comparable. Name DPT_RelValue_Z DPT ID 202.001 Dat Description Sup. relative value M Service RelValue valid / void M er flags not supported, fixed to '0' NA Inication: Idress: IO Type(ID): 136 (HPM) Prope Server) Start-Index: 1 N° of Gerty access: Read only Read/Write Stion Read level Write On Handling: Value after Powerup: Stored Value Act Value	tion: relative power of the boiler sequence according to the relative power values of The calculation is done by the HPM and the mechanism is company specific. Name DPT_RelValue_Z DPT ID 202.001 Datatype format Description Sup. Range e relative value M 0100% Service RelValue valid / void M true/false ont supported, fixed to '0' NA Inication: Idress: IO Type(ID): 136 (HPM) Property ID: N° of elements reserver) Start-Index: 1 N° of elements rety access: Read only Nead/Write Description Read level Write level on Handling: Value after Powerup: Stored Value Act Value Description Description Read Value Nead/Write Description Read Read Value Nead Value Nead Nead Nead Nead Nead Nead Nead Nea	tion: relative power of the boiler sequence according to the relative power values of the attack. The calculation is done by the HPM and the mechanism is company specific. Name DPT_RelValue_Z DPT ID 202.001 Datatype format U ₈ Z ₈ Description Sup. Range Unit relative value M 0100% % Service RelValue valid / void not supported, fixed to '0' NA bitset filags not supported, fixed to '0' NA bitset ID Type(ID): 136 (HPM) Property ID: 116 server) Start-Index: 1 N° of elements 1 rty access: Read only ⊠ Read/Write □ crion Read level Write level on Handling: Value after Powerup: Stored Value □ Act Value ☑ Default Value	

2.4.4.36 Diagnostic data Fault

FB:	HPM	Property	Name (<u>Server</u>):	Fault					ndatory 🛚 ptional 🔲			
Desc	ription:	•		-				· ·				
Some	Some error in the HPM (only concerning HPM functionality, BOC have their own Fault attributes)											
DPT: Name DPT_Bool			ol	DPT ID	1.002	Dat	atype forma	at B ₁				
Field		ı	Description			Sup.	Range	Unit	Default			
							true/false	bool	false			
Comi	munication	on:				-	-	<u>-</u>	-			
DP	Address:		IO Type(ID):	136 (HPM)		Prope	rty ID:	117	117			
(in t	the serve	r)	Start-Index:	1	N° of elements 1			1	1			
Pro	perty acc	ess:	Read only	\boxtimes	Read/V	Vrite						
Pro	tection		Read level			Write	level					
Exce	ption Har	ndling:	Value after Powert	ıp: Store	d Value 🗌	Act Va	alue 🖂 🏻 D	efault Valu	ıе 🗌			
Spec	ial Featu	res:		-	•	•	-	•	-			

2.4.4.37 Diagnostic data SummerMode

FB:	HPM	Property	Name (<u>Server</u>):	Sı	ummerMo	ode					ndatory 🗌 optional 🖂
Desc	ription:										
Sumn	ner mode	status in th	ne HPM => relevan	t fo	or the who	le boiler :	sequ	uenc	ce		
DPT : Name DPT Boo			ol		DPT ID 1.002 Datatype format E			B ₁	B ₁		
Field			Description					p.	Range	Unit	Default
									true/false	bool	false
Comr	nunicatio	n:								=	-
DP A	Address:		IO Type(ID):		136 (HPM	l)	Property ID		ty ID:	118	
(in t	he serve	r)	Start-Index:		1 N° of elements			1			
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	/rite				
Prof	tection		Read level				Wr	ite I	evel		
Exce	ption Har	dling:	Value after Poweru	ıp:	Stored	Value 🗌	Ac	t Va	ılue 🛛 🛮 De	fault Val	ıe 🗌
Speci	ial Featur	es:									

2.4.4.38 Diagnostic data OffPerm

FB:	HPM	Property	Name (<u>Server</u>):	OffP	erm					datory 🗌 otional 🖂
Desci	ription:			_					<u> </u>	
			ther the boiler sequ							f). This
datapoint can also be a parameter of the HPM in order to switch the boiler sequence off via bus										
DPT : Name DPT Bo			ol	DI	PT ID	1.002	Dat	atype format	B ₁	
Field Desc			Description				Sup.	Range	Unit	Default
								true/false	bool	false
Comr	nunicatio	n:					_	-		
DP Address:		IO Type(ID):	136 (HPM)		Prope	rty ID:	119			
(in t	he serve	r)	Start-Index:	1	1 N° of elements 1			1		
Pro	perty acc	ess:	Read only	Read/Write \(\square 1 \)						
Prot	ection		Read level				Write	level		
Exce	otion Har	dling:	Value after Powerd	up:	Stored	Value 🗌	Act Va	alue 🗵 🏻 De	fault Value	e 🗌
Speci	al Featur	es:								
	Write access only if this datapoint is also used to switch the boiler sequence off via bus. This is an optional feature, e.g. used for service									

2.4.4.39 Diagnostic data NoHeatAvailable

FB:	HPM	Property	Name (<u>Server</u>):	NoHeatAvailable				datory 🔲			
							O	ptional 🛚			
Desc	ription:										
Statu	Status info indicating whether boiler sequence is temporarily not providing heat										
DPT : Name DPT_Boo			ol	DPT ID 1.002	Dat	atype format	: B ₁				
Field			Description		Sup.	Range	Unit	Default			
				true/false	bool	false					
Comi	Communication:										
DP	Address:		IO Type(ID):	136 (HPM)	Prope	Property ID:					
(in t	the serve	r)	Start-Index:	1	N° of	elements	1	1			
Pro	perty acc	ess:	Read only	⊠ Read/V	Vrite						
Pro	tection		Read level		Write	level					
Exce	ption Har	ndling:	Value after Poweru	up: Stored Value] Act Va	alue 🛛 🛮 De	efault Valu	e 🗌			
Spec	ial Featui	es:									

2.4.4.40 Diagnostic data StatusPumpHPM

FB:	HPM	Property	y Name (<u>Server</u>):	St	atusPum	рНРМ				datory 🗌 otional 🖂
Desc	ription:			_						
Curre	nt relative	power of	f common pump in	the I	boiler sequ	uence				
DPT:	Name	DPT_Re	elValue_Z		DPT ID	202.001	Da	tatype format	U ₈ Z ₈	
Field			Description	Description					Unit	Default
RelValue			relative value	relative value					%	CS
Status									bitset	
 OutOfService 			RelValue valid / void				Ο	true/false		false
- all other flags			not supported, fixed to '0'				NA			
Comr	nunicatio	n:	•					-		
DP A	Address:		IO Type(ID):		136 (HPM)	Prope	erty ID:	121	
(in t	he serve	r)	Start-Index:		1		N° of	elements	1	
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite			
Prof	tection		Read level				Write	level		
Exce	otion Har	ndling:	Value after Power	up:	Stored \	√alue 🗌	Act V	′alue 🗵 🏻 De	fault Value	e 🗌
Speci	ial Featur	es:								
for sv	vitched pu	ump 0%=c	off, 100%=on							

2.4.4.41 Diagnostic data StagesActive

FB:	HPM	Property	Name (<u>Server</u>):	St	tagesActi	ve						latory 🔲	
											Ор	tional 🛚	
Desci	ription:										_		
Numb	er of activ	e stages	in the boiler sequen	ice	. This valu	ie is calcu	ulated	by	y the HPI	M ac	cording to	the the	
currer	currently active burner stages which are counted as follows:												
- stage 1active = 1													
- stage 2 active = 2													
- mod	ulating =	1											
DPT:	Name	DPT_Va	lue_1_Ucount		DPT ID	5.010	Da	ata	type forn	nat	U ₈		
Field			Description				Sup.	.	Range		Unit	Default	
								(062			CS	
Comr	nunicatio	n:				-					-		
DP A	Address:		IO Type(ID):		136 (HPM)	Property ID:				122		
(in t	he serve	r)	Start-Index:		1		N° o	f e	lements		1		
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	rite						
Prot	ection		Read level				Write	e le	evel				
Exception Handling: Value after Powerup				ıp:	Stored	Value 🗌	Act \	∕a	lue 🛚	Def	ault Value	-	
							•						
Speci	al Featur	es:											
	•					•	·						

2.4.4.42 Diagnostic data ErrorCodeHPM

FB:	HPM	Property	Name (<u>Server</u>):	Eı	rrorCodeF	IPM					datory ☐ otional ⊠	
Desc	ription:	-		_					<u>-</u>	•		
Comp	oany spec	ific numer	ic 16 bit error code									
DPT: Name DPT Valu			lue_2_Ucount		DPT ID	7.001	Dat	tatype format	: U ₁	6		
Field			Description				Sup.	Range	Un	it	Default	
								full range			CS	
Comi	municatio	on:				-		-	-		-	
DP	Address:	1	IO Type(ID):	136 (HPM))	Property ID:			123		
(in t	he serve	r)	Start-Index:		1	N° of elements			1	1		
Pro	perty acc	ess:	Read only	\boxtimes		Read/W	'rite					
Pro	tection		Read level				Write	level				
Exce	ption Hai	ndling:	Value after Power	up:	Stored \	√alue 🔲	Act V	alue 🛛 🛮 De	efaul	t Valu	e 🗌	
Spec	ial Featu	res:										

3 Heat production including Buffer Storage Tank (BST)

3.1 Aims and Objectives

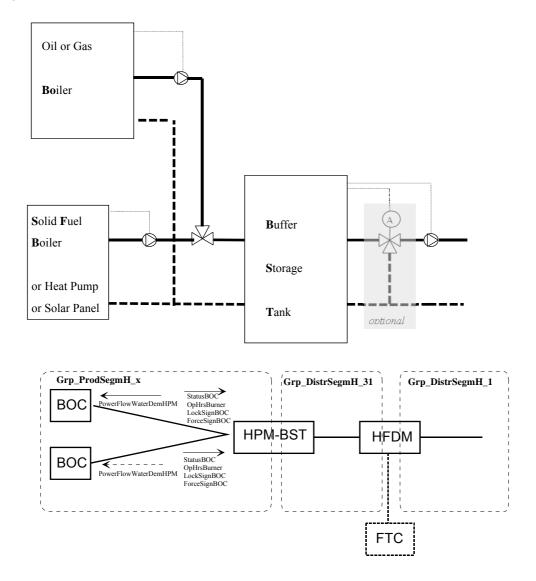
A buffer storage tank is used for optimized heat production and peak demand management.

E.g.

- store solar energy: moment and amount of energy production can't be influenced
- store oversupply energy from solid fuel boiler (e.g. wood fired): quick control of the current power of these boilers is not possible.
- loading of a buffer storage tank enables longer burner run-time and therefore higher efficiency
- stored energy in the BST is used to handle peak demand (e.g. morning boost). Nominal boiler power
 or the number of boilers in a cascade may be reduced.

A buffer storage tank is a part of a heat production system. Two application scenarios are considered.

Scenario 1



This BST application consists of a combination of oil/gas boiler(s) and solid fuel boiler(s) which are all connected to a buffer storage tank. No other boilers are present in the system.

The primary Heat Distribution Segment is connected to the BST – either directly or via an optional precontroller ('HFDM' + 'FTC').

The combination of heat producers (boilers, solar panel etc.) and the BST can be considered as <u>one</u> Heat Production Segment with a special heat producer manager 'HPM-BST'.

The 'HPM-BST' receives its heat demand from the corresponding 'HFDM'.

'HPM-BST' and 'HFDM' have a 1:1 relationship and are usually located in the same device, otherwise the default group DistrSegmH 31 is used for binding => same as HPM

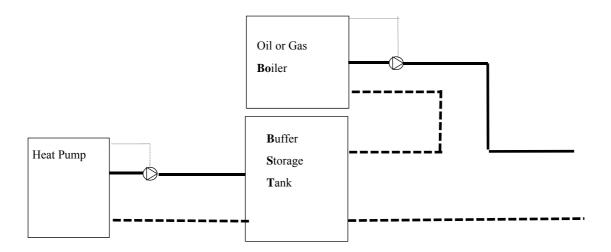
The heat demand is translated by the 'HPM-BST' to the corresponding BST water temperature and load status. The 'HPM-BST' controls the load of the storage tank and the power of the boilers so far as possible (oil or gas boilers). The interfaces to BOC are the same as in a normal boiler cascade.

The 'HPM-BST' will usually have only little influence on the heat production in a solar system or a solid fuel boiler. The data interface from 'HPM-BST' to this class of heat producers will be the same as for normal BOC, but 'PowerFlowWaterDemHPM' signal may not be considered by the producers. On the other hand, the producers will send their StatusBOC, LockSignBOC and ForceSignBOC signals to the 'HPM-BST'. These signals are used for optimized BST load control.

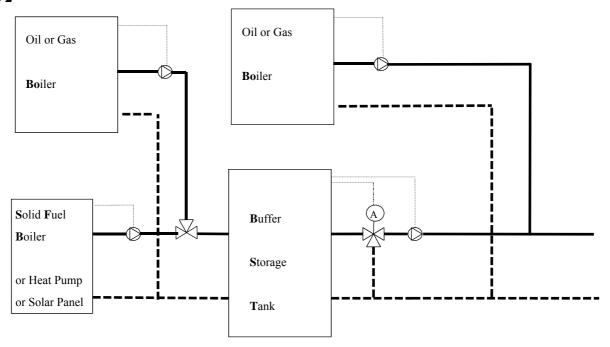
Alternative BST Scenario:

Parallel connection of a boiler to the buffer storage tank is not the only solution. Also serial connection is used in existing implementations. The boiler is used e.g. in heat-pump applications to raise the flow temperature from the BST to the needed level.

This scenario can be mapped to the same functional blocks as in buffer storage tank scenario 1 (HPM-BST controlling the buffer storing tank and the boiler)



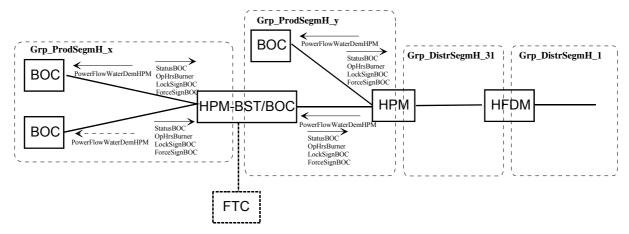
Scenario 2



A boiler / BST system as described in scenario 1 is part of a boiler cascade and is connected together with other boiler(s) to a 'HPM'. The sub-system described in scenario 1 can be considered as a sub-cascade within a boiler cascade and the BST is seen as a boiler 'BOC' from the 'HPM'. The additional boiler(s) connected to the HPM are not loading the BST.

Scenario 2 is not very usual, but in some applications it is favorable to connect one or more additional boilers directly to the primary Distribution Segment and therefore bypass the BST.

The concept of sub-cascades within a boiler cascade can be handled easily in the HWH application model as follows:



The sub-cascade including the BST is handled by the complex and compound functional block 'HPM-BST/BOC' which behaves in the sub - heat Production Segment x like a 'HPM' as described in scenario 1, and in the higher level heat Production Segment y as a boiler 'BOC' which is controlled by a normal 'HPM'.

The 'HPM-BST/BOC' includes also the pre-controller after the BST and tries to provide the flow temperature requested by the 'HPM'.

Both scenarios fit into the existing boiler / boiler sequence concept. The existing mechanisms can be reused. This leads to a homogeneous solution.

3.2 Functional Block: Heat Producer Manager for BST (HPM-BST)

3.2.1 Functional Specification

The 'HPM-BST' is responsible for demand dependent heat-production / boiler cascade management and buffer storage tank management as described in scenario 1 in chapter 3.1

In addition the 'HPM-BST' controls the load of the buffer storage tank using one or more BST temperature sensors and actuators (pump, switching valves etc.). These I/O's are usually hard wired.

The BST is expected to provide the requested flow temperature according to the TempFlowWaterDemAbsHFDM signal from 'HFDM' in the primary Distribution Segment. In some applications the primary Distribution Segment is directly connected to the BST without pre-control. In this case, the 'HPM-BST' will strive to provide at least the requested flow temperature. If the application requires a more accurate flow temperature, a pre-controller 'FTC' is added to the BST and controlled by the 'HFDM'.

3.2.2 Constraints

The 'HPM-BST' and the "first" 'HFDM' and 'FTC' are normally located in the same device since these functional blocks have a 1:1 relationship and rather tight coupling.

Important: Combined BST load management and boiler sequence control mechanisms are usually complex and very company specific. The local functionality of the HPM-BST is not subject of this specification.

LTE-HEE runtime interworking:

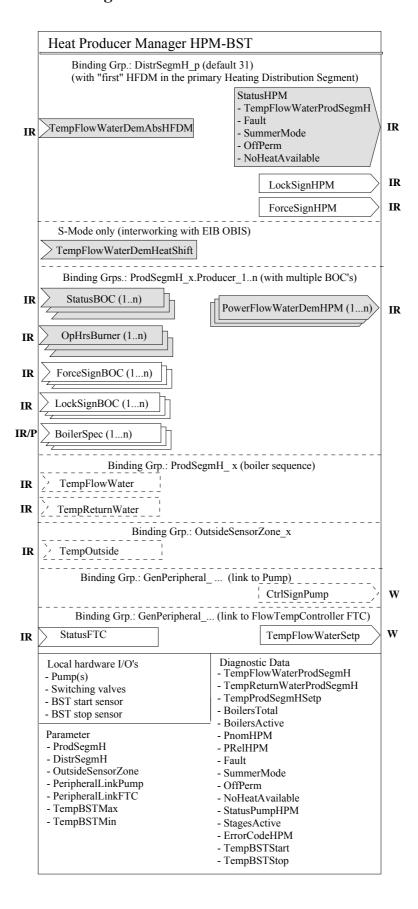
Regarding the interworking with the connected boilers and the "first" Heating Flow Demand Manager 'HFDM' on the primary Heat Distribution Segment, the data interface and black box behavior of the 'HPM-BST' is identical to the 'HPM' as described in chapter 2.4. Therefore concerning LTE-HEE runtime-interworking the HPM-BST behaves like a standard HPM. I. e. the process signals sent by the HPM-BST using InfoReport Service contain the Source Functional Block 'HPM'

The S-interface is identical to the HPM, see chapter 2.4.2

Parameters and diagnostic values:

- same type of datapoints as in HPM
- the datapoints are addressed by the Interface Object Type HPM-BST (137) and the corresponding local Property ID
- some HPM-BST specific additional datapoints are described in this chapter

3.2.3 Functional block diagram



3.2.4 Datapoint description

3.2.4.1 Overview

Data Point	Description	Datapoint Type	DPT N°					
Outputs								
for runtime interworking: same as	'HPM', see chapter 2.4.4							
Inputs								
for runtime interworking: same as	'HPM', see chapter 2.4.4							
Parameters								
ProdSegmH								
DistrSegmH								
PeripheralLinkPump	LTE zoning information: same as 'HPM', see ch	LTE zoning information: same as `HPM', see chapter 2.4.4 [Interface Object type: 137 (HPM-BST) but same Property ID, same features						
PeripheralLinkFTC	interface Object type. 137 (111 W-B31) but sain	troperty 1D, same reatures						
OutsideSensorZone								
TempBSTMax	BST maximum temperature	DPT_TempHVACAbs_Z	205.100					
TempBSTMin	BST minimum temperature	DPT_TempHVACAbs_Z	205.100					
Diagnostic Data								
TempFlowWaterProdSegmH								
TempReturnWater ProdSegmH								
TempProdSegmHSetp								
BoilersTotal								
BoilersActive								
PnomHPM								
PrelHPM	same as 'HPM', see chapter 2.4.4							
Fault	Interface Object type: 137 (HPM-BST) but same	e Property ID, same features						
SummerMode								
OffPerm								
NoHeatAvailable								
StatusPumpHPM								
StagesActive								
ErrorCodeHPM								
TempBSTStart	BST start temperature	DPT_TempHVACAbs_Z	205.100					
TempBSTStop	BST stop temperature	DPT_TempHVACAbs_Z	205.100					

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

3.2.4.2 Parameter TempBSTMax

FB:	HPM-BS	T	Prop	perty Name (<u>Server</u>):	TempBS	STMax			Mandatory ☐ Optional ⊠		
Desc	ription:	<u> </u>			_						otional 🔼
	•	of BS	Γ ter	nperature							
DPT:				/ACTempAbs_Z DPT ID 205.100 Datatype format \							
Field	<u> </u>	1		Description			S	Sup. Range		Unit	Default
Temp				temperature value				M	cs	° C	CS
Status										bitset	
- Out	OfService			max limitation active	/inactive			Ο	true/false		false
- all other flags				not supported, fixed to '0'							
Command										enum	
- NormalWrite											
- SetC	DSV & Re	setOS	V	set limitation parameter inactive / active				Ο			
- all o	ther comr	nands		not supported				NΑ			
Comr	nunicatio	n:							-	-	
DP.	Address:			IO Type(ID):	137 (HPN	1-BST)	Р	rope	rty ID:	140	
(in t	he serve	r)		Start-Index:	1		Ν	° of	elements	1	
Pro	perty acc	ess:		Read only		Read/W	rite)	\boxtimes		
Pro	tection			Read level			W	/rite	level		
Exception Handling: Value after Powerup:			Stored	Stored Value Act Value Defai			efault Valu	e 🗌			
Special Features:											
Limita	tion funct	ion is	activ	ated or deactivated b	v the 'Out	OfService	' S	tatu	S		

3.2.4.3 Parameter TempBSTMin

FB: HPM-BST	Prop	perty Name (<u>Server</u>):	TempBS	TMin					datory 🗌
Description:			-						
Min. limitation of BS	T tem	perature							
DPT : Name DP	T_H\	'ACTempAbs_Z	DPT ID	205.100) [Dat	atype format	$V_{16}Z_{8}$	
Field		Description			Su	p.	Range	Unit	Default
Temp		temperature value			M	1	cs	° C	cs
Status								bitset	
 OutOfService 		min limitation active /ii	nactive		0)	true/false		false
- all other flags		not supported, fixed to	o 'O'		N/	٩			L
Command								enum	
- NormalWrite						1			
- SetOSV & ResetO	SV	set limitation parameter inactive / active			0)			
- all other command	ls	not supported			N/	4			
Communication:					=				
DP Address:		IO Type(ID):	137 (HPM	-BST)	Pro	ре	rty ID:	141	
(in the server)		Start-Index:	1		N°	of (elements	1	
Property access:		Read only		Read/W	/rite		\boxtimes		
Protection		Read level			Wr	ite	level		
Exception Handlin	g:	Value after Powerup:	Stored '	Value ⊠	Act	t Va	alue 🔲 De	fault Valu	e 🗌
Special Features:									
Limitation function is	s activ	rated or deactivated by	the 'Out?	OfService	e' Sta	atu	S		

3.2.4.4 Diagnostic data TempBSTStart

FB:	нРМ-В	ST	Pro	pe	rty Name (<u>Server</u>):): TempBSTStart							datory [
												<u> </u>	otional 🖂
	ription:												
Curre	nt BST s	tart	tempe	rat	ure								
DPT:	Nam	e I	OPT_H	/A	.CTempAbs_Z	DP	T ID	205.100)	Data	atype format	$V_{16}Z_{8}$	
Field				D	escription				S	up.	Range	Unit	Default
Temp				te	emperature value				1	M	cs	° C	cs
Status	S											bitset	
- Fault				temperature corrupted, sensor failure				ı	M	true/false		false	
- InAlarm				C	ritical limit is reached	t			(0	true/false		false
- AlarmUnAck				alarm acknowledgement status			(0	ack/unack		unack		
- all other flags				not supported, fixed to '0'				N	ΙA			L	
Command			standard Command field						enum				
- Alar	mAck			alarm acknowledge			(0					
- all o	ther com	ıma	nds	not supported			_	١A					
Comr	nunicat	on						•				-	•
DP.	Address	S :			IO Type(ID):	137	(HPN	I-BST)	Pr	rope	rty ID:	142	
(in t	he serv	er)			Start-Index:	1			N'	° of e	elements	1	
Pro	perty ac	ces	s:		Read only			Read/W	rite	;			
Pro	tection				Read level				W	rite l	level		
Exce	ption Ha	nd	ling:	٧	alue after Powerup:	Si	tored	Value 🗌	Α	ct Va	alue 🗵 🛮 De	fault Valu	e 🗌
Spec	Special Features:												
1) opti	onal Wri	te a	ccess f	or	Alarm acknowledge	men	t only					·	

3.2.4.5 Diagnostic data TempBSTStop

FB:	HPM-BST	Pro	perty Name (<u>Server</u>	: TempBS	TStop				datory [
Desci	ription:	<u>.</u>		-					
Curre	nt BST sto	o tempe	rature						
DPT:	Name	DPT_H	VACTempAbs_Z	.CTempAbs_Z DPT ID 205.100 Datatype format					
Field			Description			Sup.	Range	Unit	Default
Temp			temperature value			M	cs	° C	cs
Status	3							bitset	
- Faul	t		temperature corrupt		ailure	M	true/false		false
- InAla			critical limit is reache			0	true/false		false
	mUnAck		alarm acknowledgement status			0	ack/unack		unack
- all of	her flags		not supported, fixed			NA			
Comn			standard Command	field				enum	
- Aları			alarm acknowledge			0			
	ther comma		not supported			NA	<u> </u>		<u> </u>
Comr	nunicatior):							
	Address:		IO Type(ID):	137 (HPM	-BST)		erty ID:	143	
(in t	he server)		Start-Index:	1		N° of	elements	1	
Pro	perty acce	ss:	Read only]	Read/W	'rite			
Prot	ection		Read level			Write	level		
Excep	otion Hand	lling:	Value after Powerup	: Stored \	/alue 🗌	Act V	alue 🗵 🛮 De	fault Valu	e 🗌
Speci	al Feature	s:							
1) opti	onal Write	access f	or Alarm acknowledg	ement only					

3.3 Functional Block: BST in boiler sub-cascade (HPM-BST/BOC)

3.3.1 Functional Specification

The 'HPM-BST/BOC' is responsible for demand dependent heat-production / boiler cascade management and buffer storage tank management in a **boiler sub-cascade** as described in scenario 2 in chapter 3.1

In addition, the 'HPM-BST/BOC' controls the load of the buffer storage tank using one or more BST temperature sensors and actuators (pump, switching valves etc.). These I/O's are usually hard wired.

From the point of view of the 'HPM', the BST is expected to provide the requested flow temperature like a boiler according to the PowerFlowWaterDemHPM signal. Usually a pre-controller 'FTC' is added to the BST in order to provide the requested flow temperature. The 'FTC' is directly controlled by the 'HPM-BST/BOC'. 'HPM-BST/BOC' and 'FTC' are normally located in the same device since these functional blocks have a 1:1 relationship and rather tight coupling.

3.3.2 Constraints

Important: Combined BST load management and boiler sub-sequence control mechanisms are usually complex and very company specific. The local functionality of the HPM-BST/BOC is not subject of this specification.

LTE-HEE runtime interworking:

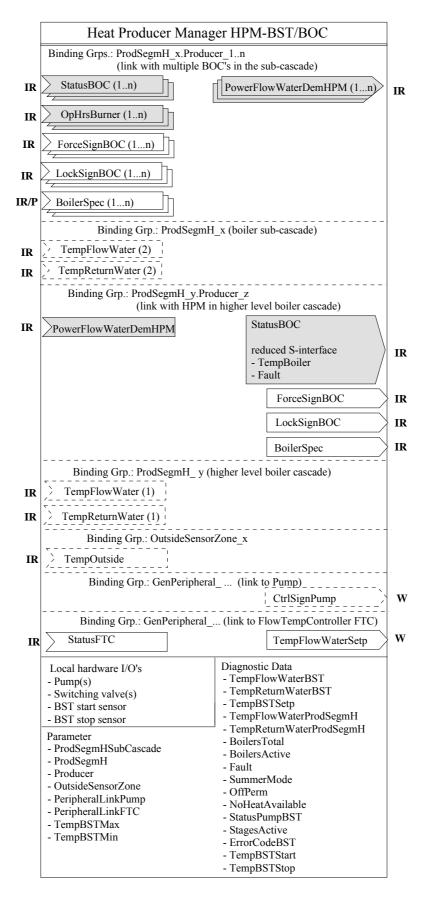
Regarding the interworking with the connected boilers in the sub-cascade, the data interface and black box behavior of the 'HPM-BST/BOC' is identical to the 'HPM' as described in chapter 2.4. Therefore concerning LTE-HEE runtime-interworking the HPM-BST/BOC behaves like a standard HPM. I. e. the process signals sent by the HPM-BST/BOC using InfoReport Service contain the Source Functional Block 'HPM'

Regarding the <u>interworking with the 'HPM' in the higher level boiler cascade</u>, the data interface and black box behavior of the 'HPM-BST/BOC' is identical to a 'BOC' **with 1-stage burner** as described in chapter 2.3. Therefore concerning LTE-HEE runtime-interworking the HPM-BST/BOC behaves in principle like a standard BOC. I. e. the process signals sent by the HPM-BST/BOC using InfoReport Service contain the Source Functional Block 'BOC'.

Restrictions: since the HPM-BST/BOC "emulates" a BOC some data values are not available (e.g. in StatusBOC) or fixed. This leads to a reduced S-interface in comparison with a normal BOC.

Same constraints concerning basic FB and standard mode implemetation as for BOC and HPM, see chapters 2.3.2 and 2.4.2

3.3.3 Functional block diagram



3.3.4 Datapoint description

3.3.4.1 Overview

Data Point	Description	Datapoint Type	DPT N°
Outputs			
PowerFlowWaterDemHPM	for runtime interworking: same as 'HPM', see ch	apter 2.4.4	
StatusBOC	StatusBOC: for runtime interworking: same as Bo	OC, some fields are void	
TempBoiler	=> reduced S-interface		
Fault	S-interface: see BOC chapter 2.3.4.3 and 2.3.4.5		
ForceSignBOC	6 (i i i i i i i i i i i i i i i i i i i	4.10 1.2.2.4.11	
LockSignBOC	for runtime interworking: see BOC, chapter 2.3.	4.10 and 2.3.4.11	
BoilerSpec	for runtime interworking: same as BOC, some fit BST/BOC	elds contain dummy values for	or
CtrlSignPump	for a discription of the transfer of the trans	(:1	
TempFlowWaterSetp	for runtime interworking: see 'HPM' or 'BOC'	(identical data interface)	
Inputs			
StatusBOC			
OpHrsBurner			
ForceSignBOC			
LockSignBOC	for runtime interworking: same as 'HPM', see cl	hapter 2.4.4	
BoilerSpec			
TempFlowWater (1)			
TempReturnWater (1)			
PowerFlowWaterDemHPM			
TempFlowWater (2)	for runtime interworking: same as 'BOC', see cha	apter 2.3.4	
TempReturnWater (2)			
TempOutside	for a dissipation of the transfer of the trans		
StatusFTC	for runtime interworking: see 'HPM' or 'BOC'		
Parameters			
ProdSegmHSubCascade	LTE zoning number Heat Production Segment of the sub-cascade	DPT_UcountValue8_Z	202.002
ProdSegmH	LTE zoning number Heat Production Segment of the higher level HPM	DPT_UcountValue8_Z	202.002
Producer	LTE zoning number Producer number of the BOC part in the higher level HPM system	DPT_UcountValue8_Z	202.002
PeripheralLinkPump	LTE zoning number Peripheral link to common pump in the BST system	DPT_UcountValue16_Z	203.012
PeripheralLinkFTC	LTE zoning number Peripheral link to FTC in the BST system used for control of the flow temperature from BST	DPT_UcountValue16_Z	203.012
OutsideSensorZone	LTE zoning number for Outside Temperature	DPT_UcountValue8_Z	202.002
TempBSTMax	BST maximum temperature	DPT_TempHVACAbs_Z	205.100
TempBSTMin	BST minimum temperature	DPT_TempHVACAbs_Z	205.100

Data Point	Description	Datapoint Type	DPT N°
Diagnostic Data			
TempFlowWaterBST	current BST flow temperature (in higher level ProdSegmH)	DPT_TempHVACAbs_Z	205.100
TempReturnWaterBST	current BST return temperature (in higher level ProdSegmH)	DPT_TempHVACAbs_Z	205.100
TempBSTSetp	current BST temperature setpoint	DPT_TempHVACAbs_Z	205.100
TempFlowWaterProdSegmH	common flow temperature in sub-cascade	DPT_TempHVACAbs_Z	205.100
TempReturnWaterProdSegmH	common return temperature in sub-cascade	DPT_TempHVACAbs_Z	205.100
BoilersTotal	Total number of boilers in sub-cascade	DPT_Value_1_Ucount	5.010
BoilersActive	Number of active boilers in sub-cascade	DPT_Value_1_Ucount	5.010
Fault	some error in the HPM-BST/BOC (only BST functionality, attached BOC have their own Fault attributes)	DPT_Bool	1.002
SummerMode	sub-cascade is in summer mode	DPT_Bool	1.002
OffPerm	sub-cascade is permanently off	DPT_Bool	1.002
NoHeatAvailable	sub-cascade is temporarily not providing heat	DPT_Bool	1.002
StatusPumpBST	current relative power of the common pump in the sub-cascade; for switched pump 0%=off, 100%=on	DPT_RelValue_Z	202.001
StagesActive	number of active stages in the sub-cascade: - stage 1active = 1; - stage 2 active = 2; - modulating = 1	DPT_Value_1_Ucount	5.010
ErrorCodeBST	company specific numeric error code (only BST functionality, BOC have their own ErrorCodeBOC)	DPT_Value_2_Ucount	7.001
TempBSTStart	BST start temperature	DPT_TempHVACAbs_Z	205.100
TempBSTStop	BST stop temperature	DPT_TempHVACAbs_Z	205.100

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

			STANDARD MODE	Ехте	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	PowerFlowWaterDemHPM	NA 1)	NA	NA	M
	StatusBOC	NA	NA	NA	M
	- TempBoiler	GO_b	GO	GO	NA
	- Fault	GO_b	GO	GO	NA
	ForceSignBOC	NA	NA	NA	О
	LockSignBOC	NA	NA	NA	О
	BoilerSpec	NA	NA	NA	О
	CtrlSignPump not yet defined				
	TempFlowWaterSetp	(GO _b)		(GO)	О
Inputs	StatusBOC	NA 1)	NA	NA	M
	OpHrsBurner	GO_b	GO	GO	M
	ForceSignBOC	NA	NA	NA	О
	LockSignBOC	NA	NA	NA	О
	BoilerSpec	NA	NA	NA	О
	TempFlowWater (2)	(GO _b)		(GO)	О
	TempReturnWater (2)	(GO _b)		(GO)	О
	PowerFlowWaterDemHPM	NA 1)	NA	NA	M
	TempFlowWater (1)	(GO _b)		(GO)	О
	TempReturnWater (1)	(GO _b)		(GO)	О
	TempOutside	(GO _b)		(GO)	О
	StatusFTC	NA	NA	NA	О

mandatory in LTE Mode but the information is NA in the Basic FB and all other modes because the datapoint type is <u>today</u> not available in standard mode. Splitting of DPT is not possible because of necessary data consistency

Table 12: HPM-BST/BOC Runtime Interworking - dependence on Configuration Modes

In the following chapters only the Inputs and Outputs of HPM-BST/BOC are specified again if there are relevant differences in comparison with HPM or BOC data interface. Otherwise the corresponding datapoint specifications of HPM or BOC shall be taken as reference.

		Support
Parameter	ProdSegmHSubCascade	M
	ProdSegmH	M
	Producer	M
	PeripheralLinkPump	О
	PeripheralLinkFTC	О
	OutsideSensorZone	O

Table 13: HPM-BST/BOC LTE specific Properties

		Support
Parameter	TempBSTMax	О
	TempBSTMin	О
Diagnostic Data	TempFlowWaterBST	M
	TempReturnWaterBST	О
	TempBSTSetp	M
	TempFlowWaterProdSegmH	М
	TempReturnWaterProdSegmH	О
	BoilersTotal	О
	BoilersActive	О
	Fault	М
	SummerMode	О
	OffPerm	О
	NoHeatAvailable	О
	StatusPumpBST	О
	StagesActive	О
	ErrorCodeBST	О
	TempBSTStart	О
	TempBSTStop	О

Table 14: HPM-BST/BOC Standard Properties of Interface Objects (or memory mapped DP)

3.3.4.2 Output StatusBOC

Standard mode: NA => mapped to the datapoints TempBoiler, Fault => reduced S-interface because some fields of StatusBOC are void (dummy values)

LTE-HEE mode:

FB: HPM-BST/BOC	LTE Server Output Name: S	LTE Server Output Name: StatusBOC						
Description:					1 - 1	otional 🗌		
	s information of the HPM-BST/B	OC to b	e used in the	higher le	vel HPM	for boiler		
sequence control				Ū				
DPT: Name DPT_Sta	atusBOC DPT ID	215.10	0 Datatype	e format	V ₁₆ U ₈ B ₁₆	5		
Field	Description	Sup.	Range	Unit	COV	Default		
TempBoiler	Boiler temperature	M	full range	°C	2	cs		
PrelBurner	dummy field for HPM- BST/BOC	NA		%		cs		
Attributes	Bitset containing status info							
-TempBoilerValid	validity of TempBoiler Field	M	true/false	bool	Y	false		
PrelBurnerValid	validity of PrelBoil Field	M	false	bool	N	false		
- Fault	failure in HPM-BST/BOC	M	true/false	bool	Υ	false		
- SummerMode	HPM-BST/BOC switched off due to local summer/winter mode	0	true/false	bool	Y	false		
- OffPerm	permanently off (manual switch or failure)	0	true/false	bool	Υ	false		
- NoHeatAvailable	HPM-BST/BOC is temporary not providing heat	O true / false bool			Υ	false		
_	stage 1 or base stage	М	enable	bool	Υ	enable		
StatusBurnerStage1Enab						0110110		
le	dummy for HPM-BST/BOC							
_ StatusBurnerStage2Enab	stage 2 / modulation enabled	М	disable	bool	Y	disable		
le								
- ReqNextStage	for boiler with two stage burner: power limit of stage 1 is reached, HPM is requested to enable stage 2 dummy for HPM-BST/BOC	0	false	bool	Y	false		
- ReqNextBoiler	power limit of producer is reached, HPM is requested to enable next boiler in cascade	0	true/false	bool	Y	false		
- ReducedAvailability	HPM-BST/BOC is in principle available but other boilers should be used with	0	true/false	bool	Y	false		
- ChimneySweep	preference ChimneySweep function active	0	true/false	bool	Y	false		
Communication:								
Binding Group:	1-		1					
Class	Туре		Defa	ult				
Geographical								
Application Specific⊠	ProdSegmH.Producer	-,-,	1.1					
Unassigned	Broadcast Configura		D		-4			
DP Address:	IO Type(ID): 129 (BOC))	Property ID):	51			

LTE-Services (event):	COV 🖂	MinF	RepTime	e:	10 sec	He	artbeat:	3	min
InfoReport ⊠ (LTE Read-Response	Output per de	Output per default communicating			Binding Group Wildcard allowed				
polling of the output	Tx Prio:	Hi	gh 🗌		Normal	\boxtimes	Lo	w 🔲	
shall always be supported)	Transm after	Powerup:	Stored	Value [Act Va	lue 🛚	Default \	√alue	
Property-Service (individual access):	Read only	\boxtimes		Read/Wr	rite [
Exception Handling:	-					Sav	e at Powe	erdowi	n 🗌
Special Features:									
some fields are void, see a	bove								

3.3.4.3 Output BoilerSpec

Standard mode: NA LTE-HEE mode:

LTE-	HEE mode:										
FB:	HPM-BST/B	OC	LTE Server Outլ	out Name:	Во	ilerSpe	eC				datory 🗌 otional 🖂
Descr	iption:										
			e type and chara	cteristics of	f the	produc	er. In d	case of	HPM-E	ST/BOC	some
	are dummy va										
			ead by the HPM i								
		-	me cases chang								•
DPT:	Name DF		ecHeatProd	DPT II)	216.10	0 Da	atatype	format	U ₁₆ U ₈ N ₈	B ₈
Field			Description			Sup.	Range		Unit	COV	Default
Pnom			HPM-BST/BOC r		ver	M	0 65		kW	1	cs
Bstag			dummy field, fixe	d value		M	100%		%		100%
Burne	rType		1 stage (fixed)			M	1		enum.		1
FuelT	ype	:	set of supported	fuel types		M	b2b0)	bitset	Υ	CS
Comn	nunication:									<u>-</u>	
Bind	ding Group:										
Clas			Туре					Defau	ılt		
Ge	ographical										
Ap	plication Spec	cific⊠	ProdSegmH.Pr	oducer				1.1			
	assigned		Broadcast	Confi	gura	ıble 🗌					
	Address:		IO Type(ID):	129 (B			Prop	erty ID		52	
	-Services (ev		COV 🖂	MinRep			8	sec	Hea	rtbeat:	min
	oReport		Output per defa	ult commur	nicat	ting	Bindi	ing Gro	oup Wild	dcard allov	wed
	ՐE Read-Resր		Tx Prio:	High			No	rmal 🏻		Low	<i>'</i> 🔲
	lling of the out	tput									
	all always be		Transm after Po	owerup: Sto	ored	Value		ct Val	ue 🖂	Default V	alue 🗌
	oported)										
	perty-Service ividual acces		Read only	\boxtimes		Read/V	Vrite				
Excep	otion Handlin	g:							Save	at Power	down
Speci	al Features:										
This d	atapoint has i	usually	a constant value	and is read	d on	ce by tl	he HPN	Л after	system	installatio	n / power
			o change during								
			ed (no heartbeat).							
1) dum	my value for	1 stage	e burner: 100%								

3.3.4.4 Input PowerFlowWaterDemHPM

Same behaviour as described in the BOC. For the HPM-BST/BOC the requested water temperature is usually relevant whereas "burner" stage 1, stage2 or modulation control information does not make much sense for HPM-BST/BOC. The HPM-BST/BOC "emulates" a boiler with 1 stage. Therefore the control information from the HPM will be usually interpreted as follows:

"Burner type"	HPM-BST/BOC Moo	le	Stage 1 enabled	Stage 1 forced	Stage 2 enabled	Stage 2 forced	Rel Demand Limit	Flow Temp Dem
1 Stage	disabled	1)	0	X	X	X	X	X
	enabled	forced 2)	1	1	X	X	Х	X
		auto 3)	1	0	Х	Х	Х	°C

¹⁾ the HPM-BST/BOC will not activate boilers in the sub-cascade but the BST will normally be loaded if solar energy is available

3.3.4.5 Parameter ProdSegmHSubCascade

FB:	HPM-BST/B		Property Name Server):		ProdSe	gmHSub(Casca	de			datory 🛚
Desci	ription:	-			-					-	
LTE z	oning informa	ition He	at Production S	Segme	ent of the	sub-casca	ade				
DPT:	Name DF	T_Uco	untValue8_Z		DPT ID	202.002	Dat	tatype form	nat	U_8Z_8	
Field			escription				Sup.	Range		Unit	Default
			san	ne as	ProdSegr	nH in HPI	M				
Comr	nunication:										
DP A	Address:		IO Type(ID):	138	(HPM-BS	ST/BOC)		erty ID:		101	
(in t	he server)		Start-Index:	1			N° of	elements		1	
Pro	perty access		Read only			Read/W	rite	\boxtimes			
Prot	ection		Read level				Write	level			
Excep	otion Handlin	ıg: ∨	alue after Pow	erup:	Stored	Value 🖂	Act V	alue 🗌	Def	ault Value	e 🗌
Speci	al Features:										
HPM-BST/BOC DP's are not LTE communicating with the BOC's if zone is 'OutOfService'.											

²⁾ the HPM-BST/BOC will activate all boilers in the sub-cascade if BST temperature is below a maximum temperature

³⁾ the HPM-BST/BOC will control the boilers in the sub-cascade in order to reach the requested BST temperature

3.3.4.6 Parameter ProdSegmH

FB:	HPM-BST/BOC	Property Name	(<u>Server</u>):	Prod	SegmH					datory 🛚 tional 🔲
Desci	ription:			-					<u>-</u>	
LTE z	oning information F	leat Production Se	egment w	ith the	higher le	evel HI	PM			
DPT:	Name DPT_U	countValue8_Z	DP	ΓID 2	202.002	Dat	atype forn	nat	U ₈ Z ₈	
Field		Description				Sup.	Range	U	Unit	Default
		sam	e as Prod	dSegml	H in BO	0				
Comr	nunication:									
DP A	Address:	IO Type(ID):	138 (HP	M-BST	/BOC)	Prope	rty ID:		102	
(in t	he server)	Start-Index:	1			N° of	elements		1	
Pro	perty access:	Read only		F	Read/Wi	rite	\boxtimes			
Prot	tection	Read level				Write	level			
Exce	otion Handling:	Value after Powe	rup: St	ored V	alue 🖂	Act Va	alue 🗌	Defa	ault Value	-
Speci	al Features:									
HPM-	BST/BOC DP's are	e not LTE commur	nicating v	vith the	HPM if:	zone is	s 'OutOfSe	ervic	e'.	

3.3.4.7 Parameter Producer

FB: HPM-BST/BOC	Property Name ((Server):	Producer		Mandatory	y 🛛 O	ptional 🗌
Description:							
LTE zoning information H	eat Producer num	nber withir	the higher	evel Heat	t Production	Segmen	t
DPT: Name DPT_Uc	ountValue8_Z	DPT	ID 202.00	2 Data	type format	U ₈ Z ₈	
Field	Description			Sup. I	Range	Unit	Default
	same as	Producer	parameter i	n BOC			
Communication:							
DP Address:	IO Type(ID):	138 (HPN	1-BST/BOC			103	
(in the server)	Start-Index:	1		N° of el	lements	1	
Property access:	Read only		Read/\	<i>Vrite</i>	\boxtimes		
Protection	Read level			Write le	evel		
Exception Handling:	Value after Powe	rup: Sto	red Value 🛭	Act Val	lue 🔲 De	fault Valu	ле 🗌
1							
Special Features:							
If ProdSegmH is 'OutOfSe	ervice' also the co	rrespoind	ng Produce	r zone is '	OutOfServio	ce' (comi	mon flag)

3.3.4.8 Parameter PeripheralLinkPump

FB:	HPM-BST/		Property Name (Server):		Periph	eralLinkl	Pump				datory ☐ otional ⊠
Desc	ription:										
LTE z	oning numb	er : Perip	oheral link to con	nmon p	oump in	the BST	system				
DPT:	Name [OPT_Uco	ountValue16_Z		PT ID	203.012	Dat	atype forr	nat	$U_{16}Z_{8}$	
Field		I	Description				Sup.	Range		Unit	Default
			same as	Peripl	heralLink	kPump in	HPM				
Com	munication:										
DP.	Address:		IO Type(ID):	138 (HPM-BS	T/BOC)	Prope	erty ID:		104	
(in t	he server)		Start-Index:	1			N° of	elements		1	
Pro	perty acces	s:	Read only			Read/W	rite	\boxtimes			
Pro	tection		Read level				Write	level			
Exce	ption Handl	ing: \	Value after Powe	rup:	Stored '	Value 🛚	Act V	alue 🗌	Def	ault Valu	e 🗌
									•		
Spec	ial Features	:							•		
HPM-	BST/BOC is	not LTE	communicating	with th	ne pump	if zone is	GutC	fService'			

3.3.4.9 Parameter PeripheralLinkFTC

FB:	HPM-BS1	Г/ВОС	Property Name		Periph	eralLinkl	FTC	;				datory 🔲
			(Server):								Ор	tional 🔯
Desc	ription:		•		-						-	
LTE z	oning num	ıber Peri	pheral link to FTC	(optio	onally use	d for con	trol	of t	he flow tem	ре	rature fro	m BST)
DPT:	Name	DPT_U	countValue16_Z		DPT ID	203.012		Dat	atype forma	at	U ₁₆ Z ₈	
Field			Description				Su	p.	Range	Į	Unit	Default
			same a	s Peri	ipheralLin	kFTC in I	HPN	Λ				
Comr	nunicatio	n:										
DP A	Address:		IO Type(ID):	138	(HPM-BS	T/BOC)	Pro	ope	rty ID:		105	
(in t	he server		Start-Index:	1			N°	of e	elements		1	
Pro	perty acce	ess:	Read only			Read/W	rite		\boxtimes			
Prof	tection		Read level	-			Wr	ite	level			
Exce	ption Hand	dling:	Value after Powe	erup:	Stored '	Value 🛚	Ac	t Va	alue 🔲 🏻 🗅	efa	ault Value	
Speci	ial Feature	es:										
HPM-	BST/BOC	is not LT	E communicating	with	the FTC i	fzone is '	Out	OfS	Service'			

3.3.4.10 Parameter OutsideSensorZone

FB:	HPM-BST/BOC	P	Property Name		Outs	ideSenso	orZone)		Man	datory 🔲
		(Server):							Or	otional 🛚
Desc	ription:	-			-					-	
LTE z	zoning number fo	r the	link with an Ou	tside	Tempera	ture Sens	or				
DPT:	Name DPT_	Uco	untValue8_Z		DPT ID	202.002	Da	tatype forr	nat	U_8Z_8	
Field			escription				Sup.	Range		Unit	Default
			same as	Outs	sideSenso	orZone in	HPM				
Com	munication:										
DP	Address:		IO Type(ID):	138	(HPM-BS	ST/BOC)		erty ID:		106	
(in t	the server)		Start-Index:	1			N° of	elements		1	
Pro	perty access:		Read only			Read/W	rite				
Pro	tection		Read level				Write	level			
Exce	ption Handling:	V	alue after Powe	erup:	Stored	Value 🖂	Act V	alue 🗌	Def	ault Valu	e 🗌
Spec	ial Features:										
HPM-	-BST/BOC is not	usin	g an external ou	ıtside	temperat	ure senso	or if zo	ne is 'Out	OfSe	ervice'	•

3.3.4.11 Diagnostic data TempFlowWaterBST

FB:	HPM-B	ST/BOC	Property Name	T	empFlow\	NaterBS ⁻	T			datory 🔯
			(Server):		O	otional 🔲				
Desc	ription:									
Curre	nt BST fl	ow tempei	rature (in higher lev	el F	ProdSegm	H)				
DPT:	Name	DPT_H	VACTempAbs_Z		DPT ID	205.100	Da	tatype format	$V_{16}Z_{8}$	
Field			Description				Sup.	Range	Unit	Default
Temp			temperature value) 			M	cs	° C	cs
Status - Fault temperature corrupted, sensor failure M true/fa									bitset	
- Fault temperature corrupted, sensor failure								true/false		false
- InAlarm critical limit is reached								true/false		false
- Alar	mUnAck		alarm acknowledg	0	ack/unack		unack			
- all other flags not supported, fixed to '0' NA										
Command standard Command field									enum	
- Alar	mAck		alarm acknowledg	e			0			
- all o	ther com	mands	not supported				NA			
Com	nunicati	on:					-			
DP .	Address	:	IO Type(ID):	138	3 (HPM-BS	ST/BOC)	Prope	erty ID:	110	
(in t	he serve	er)	Start-Index:	1			N° of	elements	1	
Pro	perty ac	cess:	Read only			Read/W	'rite	⊠ ¹⁾		
Protection Read level Write level										
Exce	otion Ha	ndling:	Value after Power	up:	Stored	Value 🗌	Act V	′alue 🗵 🛮 De	fault Valu	e 🗌
Special Features:										
1) opti	onal Writ	e access f	for Alarm acknowled	dge	ment only					

3.3.4.12 Diagnostic data TempReturnWaterBST

FB:	HPM-BST	/BOC	Property Name (Server):		TempFlov	wWaterB:	ST				datory [ptional [
Desc	ription:	*									
Curre	nt BST retu	ırn tempe	erature (in higher	leve	l ProdSeg	mH)					
DPT:	Name	DPT_HV	ACTempAbs_Z		DPT ID	205.100	Da	atatype forr	mat	$V_{16}Z_{8}$	
Field			Description				Sup.	Range		Unit	Default
			sam	e as	TempFlov	vWaterBS	T				
Com	munication) :									
DP.	Address:		IO Type(ID):	138	B (HPM-BS	ST/BOC)	Prop	erty ID:		111	
(in t	he server)		Start-Index:	1			N° of	elements		1	
Pro	perty acce	ss:	Read only			Read/W	rite	□ 1)			
Pro	tection		Read level				Write	e level			
Exce	ption Hand	lling:	Value after Powe	erup:	Stored	Value	Act \	/alue ⊠	Def	fault Valu	ie 🗌
Spec	ial Feature	s:									
1) opti	onal Write	access fo	r Alarm acknowl	edge	ement only		<u> </u>			•	

3.3.4.13 Diagnostic data TempBSTSetp

FB:	HPM-BST	/BOC	Property Name (Server):	T	empBSTS	etp					idatory 🔀 ptional 🔲
Desci	iption:		(00.10.)								ptional
	nt BST tem	peratur	e setpoint								
DPT:	Name	DPT_H	VACTempAbs_Z		DPT ID	205.100		Dat	atype format	V ₁₆ Z ₈	
Field			Description				S	up.	Range	Unit	Default
Temp			temperature value					M	cs	° C	cs
Status	3									bitset	
- OutO	OfService		boiler is out of serv	vice	e => no se	tpoint	(0	true/false		false
- Ove	ridden		external override of	of th	ne setpoint		(0	true/false		false
- all of	her flags		not supported, fixe	ed t	o '0'		_ N	١A			L
Comn	nand		standard Comman	ıd f	ield					enum	
- Ove	ride & Rele	ease	override and relea	se	setpoint		(0			
- all of	her comma	ands	not supported				١	١A			
Comr	nunication):	•			_			-		
DP A	Address:		IO Type(ID):	138	3 (HPM-BS	T/BOC)	Pr	rope	rty ID:	112	
(in t	he server)		Start-Index:	1			N	° of	elements	1	
Pro	perty acce	ss:	Read only			Read/W	rite)	∑ ¹⁾		
Prot	ection		Read level				W	/rite	level		
Excep	otion Hand	lling:	Value after Power	up:	Stored	Value 🗌	Α	ct Va	alue 🗵 🛮 De	efault Valu	ıe 🗌
Speci	al Feature	s:									
1) opti	onal Write	access	for Override / Releas	se	function or	nly					

3.3.4.14 Diagnostic data BoilersTotal

FB:	HPM-BST	T/BOC	Property Name (Server):	В	oilersTota	al					datory 🗌 otional 🖂
Desci	ription:									-	
Total	number of	boilers ir	n boiler sub-cascac	le (a	according	to the boi	ler dire	ctory i	n the H	PM-BST/	BOC)
DPT:	Name	DPT_Va	alue_1_Ucount		DPT ID	5.010	Dat	atype t	format	U ₈	
Field			Description				Sup.	Range	е	Unit	Default
								031		1	CS
Comr	nunicatior	า:				,		_			
DP A	Address:		IO Type(ID):	138	(HPM-BS	ST/BOC)	Prope	rty ID:		113	
(in t	he server)		Start-Index:	1			N° of	elemer	nts	1	
Pro	perty acce	ess:	Read only			Read/W	rite				
Prof	tection		Read level				Write	level			
Exce	ption Hand	dling:	Value after Power	up:	Stored	Value 🗌	Act Va	alue 🗵] De	fault Valu	e 🗌
Speci	ial Feature	es:									

3.3.4.15 Diagnostic data BoilersActive

FB:	HPM-BST	/BOC	Property Name (Server):	В	oilersActi	ive					datory ☐ ptional ⊠
Desc	ription:			-						<u>-</u>	
Numb	er of curre	ntly activ	e boilers in boiler	sub	-cascade						
DPT:	Name	DPT_Va	lue_1_Ucount		DPT ID	5.010	Da	atype for	mat	U ₈	
Field			Description				Sup.	Range		Unit	Default
								031			CS
Comr	municatior	า:					3	-			7
DP.	Address:		IO Type(ID):	138	3 (HPM-BS	ST/BOC)	Prope	erty ID:		114	
(in t	he server))	Start-Index:	1			N° of	elements		1	
Pro	perty acce	ss:	Read only	\boxtimes		Read/W	'rite				
Pro	tection		Read level				Write	level			
Exce	ption Hand	dling:	Value after Powe	rup:	Stored	Value 🗌	Act V	alue 🛚	De	fault Valu	e 🗌
Spec	ial Feature	s:	_		-			•			

3.3.4.16 Diagnostic data TempFlowWaterProdSegmH

FB: HPM-BST/BOC	Property Name (Server):	TempFlowWate	TempFlowWaterProdSegmH							
Description:	<u> </u>	-				<u>-</u>				
Current common flow te	mperature in sub-ca	scade								
DPT: Name DPT_H	VACTempAbs_Z	DPT ID 20:	5.100	Dat	atype format	$V_{16}Z_{8}$				
Field	Description	3	Sup.	Range	Unit	Default				
Temp	temperature value		М	cs	° C	cs				
Status						bitset				
- Fault	temperature corrup		re	M	true/false		false			
- InAlarm	critical limit is reac			О	true/false		false			
- AlarmUnAck	alarm acknowledge		О	ack/unack		unack				
- all other flags	not supported, fixe		<u> </u>	NA						
Command	standard Comman					enum				
- AlarmAck	alarm acknowledge	е		Ο						
- all other commands	not supported			NA						
Communication:										
DP Address:	IO Type(ID):	138 (HPM-BST/B			erty ID:	115				
(in the server)	Start-Index:	1	1	√° of	elements	1				
Property access:	Read only	Re	ad/Writ							
Protection	Read level		V	Vrite	level					
Exception Handling:	Value after Powert	up: Stored Valu	ıe 🔲 A	4ct V	alue 🛛 🛮 De	efault Valu	e 🗌			
Special Features:							_			
1) optional Write access for Alarm acknowledgement only										

3.3.4.17 Diagnostic data TempReturnWaterProdSegmH

FB:	HPM-BS	T/BOC	Property Name	Te	TempReturnWaterProdSegmH						Mandatory	
			(Server):							0	otional 🛚	
Desc	ription:											
Curre	nt commo	on return t	emperature of the s	sub-	-cascade							
DPT:	Name	DPT_H	VACTempAbs_Z		DPT ID	205.100) [Data	atype format	$V_{16}Z_{8}$		
Field			Description				Su	p.	Range	Unit	Default	
Temp			temperature value				M		cs	° C	cs	
Status	3									bitset		
- Fault temperature corrupted, sensor failure							M		true/false		false	
- InAla	arm		critical limit is read				0		true/false		false	
- Alar	mUnAck		alarm acknowledg				0)	ack/unack		unack	
	ther flags		not supported, fixed to '0'									
Comr	nand		standard Command field							enum		
- Alar	mAck		alarm acknowledg	ge			0)				
- all o	ther comr	nands	not supported				N/	4				
Com	nunicatio	n:										
DP .	Address:		IO Type(ID):	138	(HPM-BS	ST/BOC)	Pro	pe	rty ID:	116		
(in t	he serve	r)	Start-Index:	1			N°	of e	elements	1		
Pro	perty acc	ess:	Read only			Read/W	rite/		⊠ ¹⁾			
Pro	tection		Read level				Wri	ite I	evel			
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default									fault Valu	e 🗌		
Spec	ial Featu	es:										
1) opti	optional Write access for Alarm acknowledgement only											

3.3.4.18 Diagnostic data Fault

FB:	HPM-BS	T/BOC	Property Name (Server):	F	ault								datory 🛚 otional 🗀
Desc	ription:		•										
		ne HPM-E	SST/BOC (only con	cer	ning BST	fui	nctional	lity,	ВО	C have their	OW	n Fault	
attributes)													
DPT:	Name	DPT_B	ool		DPT ID	1	1.002		Dat	atype format	В	1	
Field			Description					Sı	ıр.	Range	Ur	nit	Default
										true/false	bo	ol	false
Comr	nunicatio	n:									-		-
DP A	Address:		IO Type(ID):	D): 138 (HPM-BST/BOC)				Property ID:			11	17	
(in t	he server)	Start-Index:	1	N° of elements 1				1				
Pro	perty acce	ess:	Read only	\boxtimes		F	Read/W	rite					
Pro	tection		Read level					W	rite	level			
Exce	ption Han	dling:	Value after Power	up:	Stored	ΙVa	alue 🗌	Ac	t Va	alue 🛛 De	efau	ılt Value	e 🗌
Speci	ial Feature	es:											

3.3.4.19 Diagnostic data SummerMode

FB:	HPM-BST/BOC	Property Name (Server):	Su	ımmerMo	ode					datory ☐ otional ⊠
Desc	ription:	-							-	
Sumr	mer mode status in	the HPM-BST/BOC	; =>	relevant f	or the wh	nole sub	o-cascad	е		
DPT:	Name DPT_B	ool		DPT ID	1.002	Dat	atype for	mat	B ₁	
Field		Description				Sup.	Range		Unit	Default
							true/fals	е	bool	false
Comi	munication:	-				-	<u>-</u>		-	•
DP	Address:	IO Type(ID):	138	(HPM-BS	T/BOC)	Prope	rty ID:		118	
(in t	the server)	Start-Index:	1			N° of	elements		1	
Pro	perty access:	Read only	\boxtimes		Read/W	/rite				
Pro	tection	Read level	-			Write	level			
Exce	ption Handling:	Value after Power	up:	Stored	Value 🗌	Act Va	alue 🛚	De	fault Valu	e 🗌
Spec	ial Features:			•		•	•		•	

3.3.4.20 Diagnostic data OffPerm

FB:	HPM-BS	Г/ВОС	Property Nam (Server):	e O	ffPerm					datory 🗌	
Desci	ription:		(901701).	-						rtioriai 🔼	
Status info indicating whether the sub-cascade is perrmanently off (e.g. manually switched off). datapoint can also be a parameter of the HPM-BST/BOC in order to switch the boiler sequence bus											
DPT:	Name	DPT_E	Bool		DPT ID	1.002	Dat	atype format	B ₁		
Field			Description			•	Sup.	Range	Unit	Default	
								true/false	bool	false	
Comr	nunicatio	n:					-				
DP /	Address:		IO Type(ID):	138	3 (HPM-BS	ST/BOC)	Prope	rty ID:	119		
(in t	he server)	Start-Index:	1			N° of	elements	1		
Pro	perty acco	ess:	Read only			Read/W	'rite				
Prot	ection		Read level				Write	level			
Excep	otion Han	dling:	Value after Pov	werup:	Stored	Value	Act V	alue 🛛 🏻 De	fault Value	e 🗌	
Speci	Special Features:										
	Write access only if this datapoint is also used to switch the boiler sequence off via bus. This is an optional feature, e.g. used for service										

3.3.4.21 Diagnostic data NoHeatAvailable

FB:	HPM-BST/BOC	Property Name	No	oHeatAva	ilable					datory 🔲	
		(Server):							Op	otional 🛚	
Desc	ription:	-							=		
Statu	s info indicating wh	ether sub-cascade	is te	emporarily	not prov	iding he	eat				
DPT:	Name DPT_B	ool		DPT ID	1.002	Dat	atype forn	nat	B ₁		
Field		Description				Sup.	Range		Unit	Default	
							true/false)	bool	false	
Comi	Communication:										
	Address:	IO Type(ID):	138	(HPM-BS	T/BOC)		rty ID:		120		
(in t	the server)	Start-Index:	1			N° of	elements		1		
Pro	perty access:	Read only			Read/W	/rite					
Pro	tection	Read level				Write	level				
Exce	ption Handling:	Value after Power	up:	Stored '	Value 🗌	Act V	alue 🛚	Def	fault Valu	e 🗌	
Spec	ial Features:										
		·									

3.3.4.22 Diagnostic data StatusPumpBST

FB:	HPM-BS	BOC	Pr	operty Name	S	tatusPum	pBST			Man	datory 🔲
			<u>(S</u>	<u>erver</u>):						0	ptional 🛚
Desc	ription:									<u>-</u>	
Curre	nt relative	power of	СО	mmon pump in t	the	BST syste	em				
DPT:	Name	DPT_R	elVa	alue_Z		DPT ID	202.001	Da	atatype format	U ₈ Z ₈	
Field			Description					Sup.	Range	Unit	Default
RelValue			relative value					М	0100%	%	CS
Status										bitset	
- OutOfService			RelValue valid / void						true/false		false
- all o	ther flags		no	ot supported, fixe	ed t	o '0'		NA			
Comi	municatio	n:					•		•	-	•
DP	Address:		Π	O Type(ID):	138	(HPM-BS	ST/BOC)	Prop	erty ID:	121	
(in t	he server)	3	Start-Index:	1			N° of	elements	1	
Pro	perty acce	ess:	F	Read only	\boxtimes		Read/W	'rite			
Pro	tection		F	Read level				Write	e level		
Exce	ption Hand	dling:	Va	alue after Power	up:	Stored	Value 🗌	Act \	/alue 🗵 De	fault Valu	ie 🗌
								•			
Spec	ial Feature	es:		-			•				-
for sv	witched pur	mp 0%=0	off,	100%=on							

3.3.4.23 Diagnostic data StagesActive

FB:	HPM-BS	T/BOC	Property Name	S	tagesActi	ve				Mand	datory ∐
			(Server):							Op	otional 🛚
Desc	ription:	•		_						-	
Numb	er of activ	e stages	in the sub-cascad	e. T	his value i	s calculat	ed by t	he HPM-B	ST/E	BOC acc	ording to
the cu	irrently act	ive burne	er stages which are	е со	unted as f	ollows:	-				_
- stag	e 1active =	= 1	•								
- stag	ge 2 active	= 2									
– mod	dulating = '	1									
only a	ctive boile	r stages a	are counted (exclu	uding	g solar par	nel)					
DPT:	Name	DPT_Va	lue_1_Ucount		DPT ID	5.010	Dat	atype form	at	U ₈	
Field			Description				Sup.	Range	Į	Unit	Default
								062	-		CS
Comr	nunicatio	n:					-	-	-		-
DP A	Address:		IO Type(ID):	138	3 (HPM-BS	ST/BOC)	Prope	rty ID:		122	
(in t	he server)	Start-Index:	1			N° of	elements		1	
Pro	perty acce	ess:	Read only	\boxtimes		Read/W	'rite				
Prof	tection		Read level				Write	level			
Exce	ption Han	dling:	Value after Powe	rup:	Stored	Value 🗌	Act Va	alue 🗵 🏻 I	Defa	ault Value	e 🗌
		•									
Speci	ial Feature	es:									

3.3.4.24 Diagnostic data ErrorCodeBST

FB:	HPM-BST/BOC	Property Name (Server):	Er	rorCodel	BST				andatory 🗌 Optional 🖂
Desc	ription:		_						
Comp	any specific nume	ric 16 bit error code							
DPT:	Name DPT_Va	alue_2_Ucount		DPT ID	7.001	Dat	atype format	U ₁₆	
Field		Description				Sup.	Range	Unit	Default
							full range		cs
Comr	munication:	-					-	-	
DP A	Address:	IO Type(ID):	138 (HPM-BST/BOC)			Prope	rty ID:	123	
(in t	he server)	Start-Index:	1 N° of elements 1					1	
Pro	perty access:	Read only	\boxtimes		Read/W	'rite			
Prof	tection	Read level	-	-		Write	level		
Exce	ption Handling:	Value after Power	up:	Stored	Value 🗌	Act Va	alue 🛛 De	fault Va	llue 🗌
Speci	ial Features:				•		-		

3.3.4.25 Parameter TempBSTMax

same as in HPM-BST; except IO Type (ID) = 138

3.3.4.26 Parameter TempBSTMin

same as in HPM-BST; except IO Type (ID) = 138

3.3.4.27 Diagnostic data TempBSTStart

same as in HPM-BST; except IO Type (ID) = 138

3.3.4.28 Diagnostic data TempBSTStop

same as in HPM-BST; except IO Type (ID) = 138